CITY OF SOUTHPORT
BOARD OF ALDERMEN
REGULAR MEETING AGENDA

223 E. BAY STREET
June 12, 2025
6:00 PM

Agenda

Please turn off all cell phones

Meetings are open to the public. If you are not able to attend the Board of Aldermen meetings in person, the meeting will be available for you to watch via live-stream on the City of Southport website (https://cityofsouthport.com/board-of-aldermen-meetings/), Facebook page, and YouTube channel.

ETHICS STATEMENT:

"If any members know of any conflict of interest or the appearance of a conflict of interest concerning matters on the agenda, please so state at this time."

A. Call to Order

B. Invocation

C. Pledge of Allegiance

D. Public Comment

E. Approval of Agenda

F. Approval of the Consent Agenda (Pgs. 3-9)

1. FY25 Budget Amendments
2. Resolution Requesting the Assistance of the State For our City's Stormwater Needs
3. Golf Cart Ordinance Update

G. Agenda

1. Paid Parking
2. Public Hearing: FY26 Energy Rates (Pg.10, City Manager Noah Saldo)
3. Public Hearing: FY26 Budget (Pgs. 11-31, City Manager Noah Saldo)
4. Public Hearing - Zoning Text Amendment – Section 2.11 Conditional Rezoning (Pgs. 32-80, Planning Services Director Maureen Meehan)
5. Public Hearing – Development Agreement – Waterway Community (Pgs. 81-881, Special Counsel Tom Terrell and Planning Services Director Maureen Meehan)
6. Public Hearing – Conditional Zoning Map Amendment – CZ-25-01 Waterway Community (Pgs. 882-922, Planning Services Director Maureen Meehan)

7. Major Subdivision Preliminary Plat SUB-25-01 – Deep Point Marina (Pgs. 923-935, Planning Services Director Maureen Meehan

8. Major Subdivision Preliminary Plat SUB-25-02 – Deep Point Marina (Pgs. 936-948, Planning Services Director Maureen Meehan)
9. Major Subdivision Final Plat – Deep Point Marina (Pgs.949-955, Planning Services Director Maureen Meehan)

H. Committee Reports

1. ABC Board (Pgs. 956-957)

I. Manager's Report

J. Mayor's Comments

K. Staff Reports

1. Development Services (Pgs. 958-965)

L. Board Comments

M. Adjourn

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 6-12-2025 **DEPARTMENT:** Administration

PRESENTED BY: City Manager Noah Saldo

ITEM/TOPIC: Consent Agenda

CITY MANAGER COMMENTS:

FY25 Budget Amendments-Budget Amendments 11 and 12 include adjustments related to Appropriated Fund Balance, ABC Revenue, ABC Expenditures, and Capital Outlay – Equipment. The City has received unbudgeted revenue, and these amendments are necessary to allocate those funds appropriately and ensure continued compliance with Local Government Commission (LGC) requirements and State Statute. Without these amendments, the City's budget would be out of balance and non-compliant.

State Stormwater Resolution-This resolution formally acknowledges the challenges that stormwater impacts pose for the City. It urges the North Carolina Department of Transportation and our local legislative delegation to provide support and assistance in addressing the City’s stormwater management needs.

Golf Cart Ordinance Update- This ordinance update changes the registration period for golf carts from the fiscal year to the calendar year. The adjustment aims to simplify the registration process for both residents and staff.

REQUESTED ACTION: Approve items on the consent agenda

Budget Amendment
Fiscal Year 2024-2025
Budget Amendment 11

WHEREAS on October 17, 2023, the city entered into a Memorandum of Agreement (MOA) as a subrecipient of the Homeland Security Grant Program (HSGP) Grant Number #EMW-2023-SS-00034 by the North Carolina Department of Public Safety (NCDPS); and

WHEREA under this MOA the city agreed this was a reimbursable grant opportunity that required the city to provide the upfront funding; and

WHEREAS on January 11, 2024, the city purchased a Mobile Camera Trailer using General Fund Monies that had been reallocated by the City Manager; and

WHEREAS on March 26, 2025, the city received the grant funding reimbursement and would like to allocate the funds to the account for which they were originally expended.

NOW THEREFORE BE IT ORDAINED, by the Board of Aldermen of the City of Southport, North Carolina that the annual budget ordinance for fiscal year 2024-2025 shall be amended as follows:

Revenue	Increase
Police Miscellaneous Grants 10-10-3443-0300	$41,850.00

Expenditures	Increase
Capital Outlay – Equipment 10-10-4310-5500	$41,850.00

Adopted by the Southport Board of Aldermen in regular session, June 12th, 2025.

_____
Rich Alt
Mayor, City of Southport

_____
Tori Deviney
Deputy City Clerk

Budget Amendment
Fiscal Year 2024-2025
Budget Amendment 12

WHEREAS, pursuant to North Carolina General Statute § 18B-805(h), certain funds distributed from local ABC Board profits must be used for the treatment of alcoholism or substance abuse, or for research or education on alcohol or substance abuse; and

WHEREAS, in Fiscal Year 2024, the City of Southport Police Department received $22,100 from the local ABC Board for such purposes; and

WHEREAS, these funds were recorded as revenue in the General Fund under the Police Department, and the funds were not expended during Fiscal Year 2024 and rolled into the General Fund's unassigned fund balance; and

WHEREAS, the City now seeks to recognize the revenue in the FY2025 budget and appropriate it for immediate eligible use by the Police Department in accordance with the statutory restrictions

NOW THEREFORE BE IT ORDAINED, by the Board of Aldermen of the City of Southport, North Carolina that the annual budget ordinance for fiscal year 2024-2025 shall be amended as follows:

Revenue ABC Revenue for Law Enforcement 10-10-3838-0000	Increase $22,100.00
Revenue Appropriated Fund Balance 10-00-3991-0000	Decrease $22,100.00
Expense ABC Tax Expenditures 10-10-4310-3102	Increase $22,100.00

Adopted by the Southport Board of Aldermen in regular session, June 12th, 2025.

_____
Rich Alt
Mayor, City of Southport

_____
Tori Deviney
Deputy City Clerk

Resolution #25-0612.01

A RESOLUTION OF THE SOUTHPORT BOARD OF ALDERMEN URGING THE ASSISTANCE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)AND THE GENERAL ASSEMBLY FOR STORMWATER HELP

WITNESSETH:

WHEREAS, Bonnets Creek serves as a primary drainage corridor for stormwater for a substantial area of Southport,

WHEREAS, Bonnets Creek HOA has sent a letter to the City and our local member of the NC House of Representatives,

WHEREAS, other neighborhoods in Southport including but not limited to the residents on North and South Fodale Ave have also advocated for help due to stormwater issues and experience flooding even during mild storms,

WHEREAS, the existing infrastructure where Bonnets Creek passes under Moore Street (a state-maintained roadway) creates a severe bottleneck that significantly restricts the natural flow of water. Specifically, the current undersized drainage pipe is further obstructed by a main water line, compounding the restriction of stormwater egress. This situation results in frequent backups and localized flooding, with several homes in the surrounding neighborhoods and other areas of the City which caused repeated flooding,

WHEREAS, potential solutions to Bonnets Creek include Replacing the existing undersized drainage pipes with a larger concrete culvert or Constructing a small bridge structure to eliminate the flow restrictions entirely,

WHEREAS, Southport requires the assistance of the State through the North Carolina Department of Transportation (NCDOT) and other available resources to help address and alleviate these issues,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF SOUTHPORT:

1. The North Carolina Department of Transportation (NCDOT) is hereby requested to assist the City and our residents in helping to address the stormwater needs of the City, particularly the infrastructure of Bonnets Creek,

2. We urge our representatives of the NC General Assembly, Rep. Charlie Miller and Sen. Bill Rabon to advocate for the City with the North Carolina Department of Transportation (NCDOT) and any other available resources to help the City address these important stormwater infrastructure needs.

Adopted this 12th day of June 2025.

X

Rich Alt
Mayor

X

Tori Deviney
Deputy City Clerk

AN ORDINANCE AMENDING CHAPTER 17. OF THE SOUTHPORT CODE OF ORDINANCES

BE IT ORDAINED, by the Board of Aldermen of the City of Southport that Chapter 17 Article III, Sec. 17-80(b) of the Code of Ordinances entitled "**Golf Carts**" and Registration and permit requirements is hereby amended to remove, replace, and add the following:

(b)Registration and permit requirements.

(1)Registration and permit required. In order to operate a golf cart in the corporate limits of the City of Southport under this section, the golf cart must be registered annually with the City of Southport using an application furnished by the city. A fee according to the current fiscal year fee schedule, from January 1 through December 31, must be paid to the city before a registration sticker is issued. The registration sticker must be displayed on the left rear fender of the golf cart. Low speed vehicles subject to state regulation and licenses will be exempt from a permit and inspection, but the City of Southport requests low speed vehicle owners to register with the city and obtain a sticker free of charge so the city can maintain an accurate count of low speed vehicles in Southport..

The foregoing Ordinance shall take effect immediately, All 2025 stickers are good through 12/31/2025. New 2026 stickers to start being issued December 1, 2025. Very few 2026 stickers have been issued. If they have they are good through 12/31/2026. The Renewal period will run from December 1 to March 31. If renewal occurs after March 31 there is a $25 late fee (Does not apply to new golf carts or first time registrants)

The following ordinance having been submitted to a vote, received the following vote and was was duly adopted this this 12th day of June 2025.

Ayes: _____

Noes: _____

Absent or Excused: _____

_____
Rich Alt
Mayor

_____
Tori Deviney
Deputy City Clerk

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 6-12-2025 **DEPARTMENT:** Electric

PRESENTED BY: City Manager Noah Saldo

ITEM/TOPIC: Electric Rate Public Hearing

CITY MANAGER COMMENTS: Duke Energy is increasing electric rates by 3.5%, which will impact the City through its participation in ElectriCities. In response, the City will adopt updated electric rates to reflect this change. As required by N.C. General Statute 159B-16.1, a public hearing must be held before any changes to municipal electric rates can be approved.

REQUESTED ACTION: Hold a Public Hearing on Electric Rates.

PROPOSED MOTION: No action is needed. New rates will be adopted as part of the budget and fee schedule.

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 6-12-2025 **DEPARTMENT:** Administration

PRESENTED BY: City Manager Noah Saldo

ITEM/TOPIC: FY26 Budget

CITY MANAGER COMMENTS:

The FY26 budget represents a significant step forward in strengthening the City's financial health and long-term stability. It is a balanced budget with no tax increases and no use of General Fund balance.

This year's budget continues to invest in the critical services our community depends on daily, while also prioritizing our City employees—ensuring we remain competitive in attracting and retaining top talent to serve our residents effectively.

In addition, the FY26 budget embraces innovation, incorporating new software and service delivery improvements to enhance efficiency and responsiveness.

Importantly, the budget maintains a robust fund balance, positioning the City not only on a solid financial foundation today, but also ensuring long-term fiscal strength for the years ahead.

REQUESTED ACTION: Hold a public hearing for the FY26 budget. Approve the FY26 Budget Ordinance and accompanying fee schedule as presented.

Budget Ordinance
Fiscal Year 2025-2026
City of Southport

BE IT ORDAINED by the Board of Aldermen for the City of Southport, North Carolina, that, following a duly advertised public hearing, the following annual budget ordinance is adopted to estimate revenues and make appropriations for the financial operations of the City of Southport for the fiscal year beginning July 1, 2025, and ending on June 30, 2026.

SECTION I. GENERAL FUND

A. Anticipated Revenues. The following revenues are estimated to be available in the General Fund for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Current Year Ad Valorem Taxes	$4,939,010
Local Option Sales Tax	2,131,403
Fire District Fees	2,127,350
Inspection Permits	648,230
Interest Earned	600,000
Powell Bill	598,000
Rescue Squad Fees	590,000
Southport ABC Distribution	583,291
Other Miscellaneous Revenues	507,574
Utility Franchise Tax	505,177
Solid Waste	378,750
Cost Transfers from Electric	365,842
Federal/State Grant Revenue	335,000
Community Building Rental	313,000
Current Year Motor Vehicles Tax Collections	257,405
Local Occupancy Tax	210,000
	$15,090,032

B. Expenditures. The following amounts are hereby appropriated in the General Fund for the expenses of the City government and its activities for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Fire	$3,213,026
Public Works	2,626,921
Police	2,572,995
Rescue/EMS	1,297,170
Administration	1,114,784
Parks & Recreation	1,032,797
Finance	941,237
Community Relations	542,222
Planning, Zoning, Code Enforcement	511,173
Permitting	402,279
Solid Waste	378,750
Board of Aldermen	296,278
Information Technology	160,400
	$15,090,032

SECTION II. ELECTRIC FUND

A. Anticipated Revenues. The following revenues are estimated to be available in the Electric Fund for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Sale Of Electricity	$8,202,331
Utility Sales Tax	600,000
Service Charges	27,453
Interest Earned	210,683
Appropriated Fund Balance	607,236
	$9,647,703

B. Expenditures. The following amounts are hereby appropriated in the Electric Fund for expenses for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Power Purchase	$6,133,029
Utility Sales Tax	600,000
Contracted Maintenance	949,105
City Management Costs	482,736
Load Management Switches	31,533
Other Expenses	156,300
Contingency	145,000
Underground Workplan	1,000,000
Pole Replacement	50,000
Sectionalization/Mitigation	100,000
	$9,647,703

SECTION III. CAPITAL PROJECT FUND

A. Anticipated Revenues. The following revenues are anticipated in the Capital Project Fund for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Fund Balance Carryover from FY2025	$302,477
$0.01 of Tax Revenue	$159,600
Appropriated Capital Fund Balance	$942,923
	$1,405,000

B. Expenditures. The following amounts are hereby appropriated in the Capital Project Fund for expenses for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Lowe White Bridge Improvements	$170,000
Street Resurfacing	150,000
Sidewalk Improvements	150,000
Stormwater Improvements	125,000
City Building Repairs	100,000
Community Building Deck Replacement	95,000
Franklin Square Park	50,000
Capital Reserve Fund	565,000
	$1,405,000

SECTION IV. WATERFRONT STABILIZATION FUND

A. Anticipated Revenues. The following revenues are anticipated in the Waterfront Stabilization Fund for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

2025 Budget Carryover	**$5,000,044**

B. Expenditures. The following amounts are hereby appropriated in the Waterfront Stabilization Fund for expenses for the fiscal year beginning July 1, 2025, and ending June 30, 2026:

Expenditures	**$5,000,044**

SECTION V. TAX RATE

There is hereby levied, for Fiscal Year 2025-2026, a tax at the rate of thirty-one cents ($0.31) on each one-hundred dollars ($100) of assessed valuation of property located within the City of Southport for the purpose of raising revenue in the General Fund and the Capital Fund. The rate of $0.31 consists of $0.30 going to the General Fund Revenue and $0.01 going to the Capital Fund Revenue. This rate is based on an estimated assessed value of property being $1,595,998,652.

SECTION VI. BUDGET OFFICER AUTHORITY

The City Manager (Budget Officer) is hereby authorized to transfer appropriations within a fund and between funds under the following terms:

A They may transfer amounts between appropriations within the same fund, provided that a report of such transfers shall be made no later than the next Regular Financial report to the Board of Aldermen.

B. They may authorize temporary transfers of cash among funds as necessary to meet cash flow needs.

All other transfers of funds between appropriations or budget funds shall be accomplished by Board amendment of this ordinance.

SECTION VII. BUDGET IMPLMENTATION

This ordinance and the supporting budget document shall be the basis of the financial plan for the City of Southport municipal government for the 2025-2026 fiscal year. The budget officer shall administer the budget and shall ensure the Finance Officer and Department Heads of the City are provided with sufficient guidance to properly implement this plan. Copies of the Budget Ordinance shall be furnished to the City Manager, and the Finance Officer for their use and direction in the disbursement of funds and to the City Clerk for the official records of the City.

SECTION VIII. ADOPTION

This ordinance has been adopted by the City of Southport Board of Aldermen in Regular session on June 12, 2025, upon the motion of Alderman _____, and the second of Alderman _____, with a vote of _____ ayes and _____ noes and shall be effective July 1, 2025.

_____
Richard Alt, Mayor
City of Southport

_____
Tori Deviney
Deputy City Clerk

FY 2025-2026 BUDGET
PROPOSED FEE SCHEDULE

SOUTHPORT COMMUNITY BUILDING

WEDDINGS-LIVE OAK

(Interior and Exterior-this package gives you access to the great hall, our tables and chairs, the catering kitchen, the bridal room, deck and outdoor area, and interior restrooms. This package is recommended if you plan to have both the ceremony and reception at the Community Building)

Peak Season
(March, April, May, September, October, November)

Non-Taxpayers		Taxpayers	
Friday-Sunday	$ 7,500 Per Day	Friday-Sunday	$ 3,750 Per Day
Monday-Thursday	$ 4,000 Per Day	Monday-Thursday	$ 2,000 Per Day

Off-Peak Season
(January, February, June, July, August, December)

Non-Taxpayers		Taxpayers	
Friday-Sunday	$ 5,000 Per Day	Friday-Sunday	$ 2,500 Per Day
Monday-Thursday	$ 2,500 Per Day	Monday-Thursday	$ 1,250 Per Day

WEDDINGS-INTRACOASTAL

(Exterior, Restrooms, and Bridal Room-this package gives you access to the bridal room, deck and outdoor area, and interior restrooms.)

Peak Season Rates
(March, April, May, September, October, November)

Non-Taxpayers		Taxpayers	
Friday-Sunday	$ 4,000 Per Day	Friday-Sunday	$ 2,000 Per Day
Monday-Thursday	$ 2,000 Per Day	Monday-Thursday	$ 1,000 Per Day

Off-Peak Season
(January, February, June, July, August, December)

Non-Taxpayers		Taxpayers	
Friday-Sunday	$ 2,500 Per Day	Friday-Sunday	$ 1,250 Per Day
Monday-Thursday	$ 1,000 Per Day	Monday-Thursday	$ 500 Per Day

CELEBRATIONS OF LIFE

$200 Per Hour Regardless of Residency
(If reserved less than (30) days prior to the event)

ALL OTHER EVENTS: (2 hours minimum)

Non-Taxpayers		Taxpayers/Non-profits/City Employees	
Friday-Sunday	$ 500 Per Hour	Friday-Sunday	$ 250 Per Hour
Monday-Thursday	$ 350 Per Hour	Monday-Thursday	$ 150 Per Hour

INDIAN TRAIL MEETING HALL

Non-Profit Organizations:	Yearly Fee: $300 Per Use Fee: $30 Hours over (2):$15/hour
Local Businesses: (City limits)	Yearly Fee: $300 Per Use Fee: $30 Hours over (2): $15/hour
Others:	Yearly Fee: $1000 Per Use Fee: $100 Hours over (2): $50/hour

All yearly usage fees are for a maximum of (12) reservations/uses.

Each reservation is for a period of (2) hours.

Additional hours will be charged on an hourly basis.

ANIMAL PROTECTIVE SERVICES
CITY OF SOUTHPORT CODE OF ORDINANCES:
CHAPTER 3-ANIMAL WELFARE

PERMITS

TYPE	COST	FREQUENCY
Dog/Cat License:		
Spayed/Neutered	$15.00	Annually
Unaltered	$25.00	Annually
Boarding Fee	$10.00	Daily
Dangerous Dog Permit	$500.00	Annually

PENALTIES & ADMINISTRATIVE FEES

At-Large Dogs	$100.00	Each Offense
Redemption Fee	$50.00	1st Offense
	$75.00	2nd Offense
	$100.00	3rd Offense
	$150.00	4th and Subsequent
Prohibited Acts	$100.00	Each Offense
Public Nuisance	$100.00	Each Offense
Abandonment	$500.00	Each Offense
Cruelty to Animals	$500.00	Each Offense
Dog Park Violations	$100.00	Each Offense

Violations of any provision of Chapter 3, for which no specific penalty is set, shall subject the offender to a civil penalty in the amount of $100.00 for each violation which shall be paid within (14) days of receipt of citation.

Each day's continuing violation shall be a distinct and separate offense.

OTHER UTILITY FEES:

Credit Card Convenience Fee	2.5% of total
Returned Check Fee	$35.00
Recycling/Yard Debris Collection	$12.75/month

Recycling/Yard Debris will be billed and collected by Brunswick County

ELECTRIC FEES

PREPAY	RESIDENTIAL	COMMERCIAL	Charge/kWh
SPRE0	SR0	SC0	$0.131
SPRE1	SR1	SC1	$0.121
SPRE2	SR2	SC2	$0.111
SPRE3	SR3	SC3	$0.100
SPRE4	SR4	SC4	$0.087

Base charge Residential	$23.00
Base charge Commercial	$25.50
Base charge Prepay	$26.00

Security Lights		
Rate	Type	Cost
S01	100 W	$11.75
S05	150 W	$14.21
S04	250 W	$24.10
S02	400 W	$32.41
S03	1000 W	$45.20
S99	100 W	Contract Light

Rate	Description
SP4	Security Light Only Account
SP15	Small Renewable Generation
SP33	Construction Account

	Base Rate Mo.	Usage (kwh)	CP Demand KW	Excess kw (NCP_CP)
Commercial Demand				
30kW to 100kW	75.00	0.05710	32.72	2.50
Large Commercial Demand				
100kw to 300kw	75.00	0.05980	26.00	4.00

BUILDING INSPECTIONS

Building Valuation-Residential Construction (Schedule A):

(All fees based on the International Code Council Valuations)

Finished and Unfinished Space (per sf)	ICC Building Valuation Data
Decks (per sf)	Valuated at $65.00 per sf
Porches (per sf)	Valuated at $65.00 per sf
Enclosed storage (per sf)	Valuated at $100.00 per sf
Fences (per linear foot)	Valuated at $25.00 per linear foot

Other Residential Construction:

From $200.01 to $1,000.00	$95.00
From $1,000.01 to $3,000.00	$105.00
From $3,000.01 to $6,000.00	$115.00
From $6,000.01 to $10,000.00	$135.00
From $10,000.01 to $15,000.00	$145.00
From $15,000.01 to $25,000.00	$155.00
From $25,000.02 to $50,000.00	$215.00
$55,000.01 and up	$335 plus $8 per thousand over $50,000.00
Accessory Structures	$95.00 for up to 400 square feet General Construction Value for over 400 square feet

Fee Schedule B: Non-Residential Construction

From $100.00 to $1,000.00	$95.00
From $1,000.01 to $50,000.00	$95.00 plus $6.50 per thousand over $1,000.01
From $50,000.01 to $100,000.00	$415.00 plus $5.50 per thousand over $50,000.01
$100,000.01 and above	$755.00 plus $3.50 per thousand over $100,00.01

Plumbing Permit Fees

Fixtures, Sewer & Water Connections with other work	$17.00
Sewer Connection only (Each Building)	$85.00
Water Service Only (Each Pipe or Water Tap)	$85.00
Minimum Fee for any Plumbing Permit	$85.00

Electrical Permit Fees

Residential New Construction (Per Unit)	
Temporary Service Connection	$85.00
Rough-in	$85.00
Conditional Power	$85.00
Final	$85.00
Commercial, Industrial, Institutional	$215.00 Base Fee Up to 50 Circuits + $5 for each additional
Service Upgrade Residential	$135.00
Service Upgrade Commercial	$190.00
Wiring up to 20 Outlets with no service	$130.00
Wiring over 20 Outlets with no service	$155.00
Electrical Miscellaneous/Other	$85.00

Mechanical Permit Fees

Residential Heating and Cooling Fee	$85.00 per unit
Commercial Heating and Cooling Fee	$115.00 per unit
Gas Appliances	$85.00
Fuel Heater Equipment	$85.00
Permit Fees for Installation of Blower or Fan	$85.00
Installation of Tank of Flammable/Combustible Liquids	$180.00 + $0.35 cents per barrel
Hoods (commercial)(includes duct and ventilation test)	$140.00 all sizes
Hoods (residential)(includes duct and ventilation test)	$85.00
Bathroom Vents	$85.00
Solar Panels	$130.00

Gas Permit Fees

Gas Piping Systems	$85.00
Gas Piping and Up to (3) Appliances	$85.00 + $28.00 for each appliance over (3)

Other Fees

Homeowners Recovery Fee	$10.00
Mobile Home Set Up (all trades included)	$265.00
House Moving (not including trades)	$265.00
Demolition Fee	$265.00
Swimming Pools	Based on Schedule for General Construction (Valuation)
Extra/Reinspection's	$85.00
Starting Work Without a Permit Fee	2 x Basic permit fee, minimum of $200.00
Failure to Obtain Final Inspection	$300.00
Habitual Working Without Permit Fee:	$400.00 second violation $1500 fee for subsequent violations
Occupying without CO	$100.00/day
Refunds on Building Permit	80% Refund on Unexpired; at Dept Heads Discretion
Renewals on Building Permit	20% of initial fee, not to exceed $500.00
Commercial Shell Permit Fee	Based on Schedule for General Construction (Valuation)
Commercial Up-Fit Permit	Based on Schedule for General Construction (Valuation)
Commercial Pre-Final Stocking Fee	$100.00
ABC Inspection (Building and Zoning)	$100.00
Temporary Certificate of Occupancy	$50.00 Residential; $100.00 Commercial

DEVELOPMENT FEES

Rezoning: Less than 6 Acres	$750.00
Rezoning: 6.01 + Acres	$1000.00 +$100/acre
Minor Subdivision: 1-7 lots	$500.00 +$50/lot
Creation of lots (heirs)	$100.00
Subdivision Exception	$200.00
Major Subdivision	$1,000.00 +$100/lot
Master Plan Approval (PUD)	$1,000.00 +$100/acre
PUD Modification (Minor)	$500.00
PUD Modification (Major)	$1,000.00

Minor Site Plan Review		$500.00
Minor Site Plan Modification		$250.00
Major Site Plan Modification		$1000.00
Major Site Plan Review		$1500.00
Conditional Rezoning		$1000.00 +$100/acre
Special Use Permit		$750.00
Special Use Permit Modification		$250.00
Home Occupation or Accessory Dwelling Unit SUP		$250.00
Variance		$750.00
Variance Modification		$250.00
Appeal		$250.00
Interpretation		$250.00
Certificate of Appropriateness		
Zoning Text Change/Code of Ordinance Amendment		$300.00
Zoning Verification Letter		$100.00
Zoning Compliance Permit		$100.00
Zoning Compliance Change of Use (existing structure)		$100.00
Floodplain Development Permit		$100.00
Flood-zone Determination Letter		$100.00
Tree Removal Permit		No charge
Sign Permit 0-20 SF		$75.00
Sign Permit > 20 SF		$100.00
Billboard		$1,000.00
Mobile Food Vendor		$100/year
Tree Removal Penalty (per the UDO)		$1.00 for every square foot of the parcel/s
Residential Stormwater Plan Review		$100.00/per plan (single lot)
		$200.00/per plan (2-3 lots)
	(up to two acres; and more than three lots)	$300.00/per plan
	(over two acres; and more than three lots)	$500.00/per plan
Commercial Stormwater Plan Review	(up to two acres)	$300.00/per plan
	(over two acres)	$500.00/per plan
Soil Import Fee		$100.00
Soil Export Fee		$100.00

ENGINEERING OR CONSULTING Up to $75,000 or up to 100% of the costs
(If the City has to contract with an engineering firm or consultant for the review or planning of any project with the City limits or the Extra-territorial jurisdiction)

FIRE INSPECTION FEES AND SCHEDULE FOR EXISTING BUILDINGS

Inspection schedules of existing buildings shall be in accordance with Section 106 of the N.C. Fire Prevention Code, and shall be conducted no less frequently than described in the schedule below:

OCCUPANCY CLASSIFICATION	INSPECTION FREQUENCY
Public Schools	Every Six Months
Hazardous	Inspectors Discretion
Institutional	Every Year
High Rise	Every Year
Assembly	Every Year
Residential (Other than one- and two-family dwellings)	Every Year
Industrial	Every Year
Educational (Except Public Schools)	Every Year
Foster Care Home (GS 131-D)	Every Year
Group Care Home	Every Year
Business	Every Year
Mercantile	Every Year
Storage	Every Year
Churches and Synagogues	Every Year

SCHEDULED INSPECTION FEE	
Under 1,500 square feet	$75.00
1,500 – 5,000 square feet	$150.00
5,000 to 10,000 square feet	$350.00
Over 10,000 square feet	$500.00 + $10.00/1,000 square feet
Special Situations (i.e., Outside storage, LP Bulk Storage, No Building)	$150.00
Foster Care Inspection	n/a
Residential	
Footprint of building less than 10,000 square feet	$95.00
Tents under 200 square feet (Cooking & Concession)	$75.00
Tents over 200 square feet	$150.00

This inspection schedule is intended to meet the requirements of GS 153A-364 and GS 160A-424. Political subdivisions assuming inspection duties as set out in GS 153A-351 and GS 160A-411, shall have a periodic inspection schedule for the purpose of identifying activities and conditions in buildings, structures and premises that pose dangers of fire, explosion, or related hazards. Frequency of inspections of occupancies as mandated by the NC General Statutes shall supersede the above inspection schedule.

(North Carolina State Building Code Volume V, Fire Prevention, Section 106)

PLAN REVIEW AND INSPECTION FEE SCHEDULE	
Small plan review < 2,500 square feet	$100.00 (includes inspection)
Basic plan review 2,500<10,000 square feet	$250.00 (includes inspection)
Intermediate plan review 10,001–25,000 square feet	$500.00 (includes 1 inspection)

Complex plan review 25,000 –100,000 square feet	$750.00 (includes 2 inspections)
Special plan review >100,001 square feet	$1000.00 + $10.00 per 1,000 square feet (includes 2 inspections)
Small and Basic re-inspection (each trip)	$50.00
Intermediate re-inspection (each trip)	$100.00
Complex re-inspection (each trip)	$100.00
Special re-inspection (each trip)	$100.00

(North Carolina State Building Code Volume V, Fire Prevention, Section 104.2)

CONSTRUCTION PERMITS

A construction permit must be obtained from the Office of the City of Southport Fire Marshal in the following situations:

3.2.2 – Construction Permits
(Applies to installation of new systems and renovations to existing systems)

Code Section	Description	Permitting Fee
105.7.1	Automatic fire-extinguishing systems	$150.00 + 5.00 per Nozzle/Head
105.7.2	Battery Systems	$175.00
105.7.2	Compressed Gases	$100.00
105.7.3	Cryogenic Fluids	$200.00
105.7.5	Emergency Responder Radio Coverage System	$200.00
105.7.3	Fire Alarm and Detection Sys./Related equipment	$150.00 + 5.00 per initiating Device
105.7.4	Fire Pumps and Related Equipment	$175.00
105.7.5	Flammable and Combustible liquids	$100.00
105.7.9	Gates/Barricades Across Fire Apparatus Roads	$100.00
105.7.6	Hazardous Materials	$250.00
105.7.7	Industrial Ovens	$225.00
105.7.8	L.P./Natural Gas Installation and Mod. (Applies only to occupancies covered by the N.C. Fire Prevention Code)	$100.00
105.7.9	Private Fire Hydrants	$75.00 per hydrant
105.7.14	Smoke Control and/or Smoke Exhaust Systems	$225.00
105.7.15	Solar Photovoltaic Power System	$225.00
105.7.10	Spraying and Dipping	$50.00
105.7.11	Standpipe Systems	$150.00 with Sprinkler System $100.00 W/O Sprinkler System
105.7.12	Temporary Membrane structures, tents, and canopies	$175.00

The code official is authorized to issue construction permits for work as set forth in sections 105.7.1 through 105.7.118.
(North Carolina State Building Code Volume V, Fire Prevention, Section 105.7)

Operational Permits 3.2.1

Code Section	Description	Permitting Fee
105.6.1	Aerosol products	$100.00

105.6.2	Amusement Buildings	$150.00
105.6.3	Aviation Facilities	$100.00
105.6.4	Carbon Dioxide Systems (beverage dispensing machines)	$75.00
105.6.4	Carnivals and Fairs	$475.00
105.6.6	Cellulose Nitrate Film	$115.00
105.6.7	Combustible Dust-Producing Operations	$175.00
105.6.8	Combustible Fibers (Except Agriculture)	$125.00
105.6.9	Compressed Gases	$250.00
105.6.10	Covered Mall Buildings	$275.00
105.6.11	Cryogenic Fluids	$325.00
105.6.12	Cutting and Welding	$175.00
105.6.13	Dry Cleaning Plants	$195.00
105.6.14	Exhibits and Trade Shows	$275.00
105.6.15	Explosives	$275.00
105.6.16	Fire Hydrants and Valves	$75.00/unit
105.6.17 (1)	Flammable &Combustible Liquids Pipeline	$275.00
105.6.17 (2)	Flammable &Combustible Liquids Class I Storage	$275.00
105.6.17 (3)	Flammable &Combustible Liquids Class II Storage	$275.00
105.6.17 (4)	Flammable & Combustible Liquids Removal	$275.00
105.6.17 (5)	Flammable & Combustible Liquids production, processing, transportation storage, dispensed, used	$275.00
105.6.17 (6)	Install, alter, remove, or abandon flammable or combustible liquid tanks	$275.00
105.6.17 (7)	Change the contents of a flammable or combustible liquid tank	$275.00
105.6.17 (8)	Manufacture, process, blend, or refine flammable or combustible liquids	$275.00
105.6.17 (9)	To engage in the dispensing of liquid fuels into the fuel tanks of motor vehicles at commercial, industrial, governmental, or manufacturing establishments	$275.00
105.6.17 (10)	To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of motor vehicles at commercial, industrial, governmental, or manufacturing establishments	$100.00
105.6.18	Floor Finishing using Class I or II Liquids	$175.00
105.6.19	Fruit and Crop Ripening	$125.00
105.6.20	Fumigation and Thermal insecticidal fogging	$275.00
105.6.21	Hazardous Materials Storage, Transport, Dispense, Use and Handling	$275.00
105.6.22	Hazardous Materials Facilities	$175.00
105.6.23	High-Piled Storage	$125.00
105.6.24	Hot Work	$175.00
105.6.25	Industrial Ovens	$125.00
105.6.26	Lumber Yards and Woodworking Plants	$475.00
105.6.27	Liquid or Gas fueled vehicles or equipment in assembly buildings	$125.00
105.6.28	L.P.Gas Bulk Storage	$100.00
105.6.29	Magnesium	$125.00
105.6.30	Miscellaneous Combustible Storage	$125.00
105.6.31	Motor Fuel Dispensing Facilities	$275.00
105.6.32	Open Burning	$350.00
105.6.33	Open Flames and Torches	$225.00
105.6.34	Open Flames and Candles	$125.00
105.6.33	Organic Coatings	$175.00

105.6.34 Operation of Places of Assembly	$375.00
105.6.35 Private fire hydrants removal from service, use or operation	$110.00/hydrant
105.6.36 Pyrotechnic special effects materials	$450.00
105.6.37 Pyroxylin Plastics	$125.00
105.6.38 Regulated Refrigeration Equipment	$125.00
105.6.39 Repair Garages and Service Stations	$175.00
105.6.40 Rooftop Heliports	$375.00
105.6.41 Spraying or dipping operations	$125.00
105.6.42 Storage of Scrap Tires and Tire Byproducts	$250.00
105.6.43 Temporary membrane structures, tents, and canopies	$225.00
105.6.44 Tire-Rebuilding Plants	$225.00
105.6.45 Waste Handling	$225.00
105.6.46 Wood Products	$175.00

**Churches and synagogues shall be exempt from Operational permitting fees*
These permits will only be issued during a new construction situation. The permit will be valid for the same period as the inspection schedule in section 106 and the renewal will be the payment of the inspection fee for existing buildings.

An existing building may be issued an operational permit for the above situations, the permit will be included in the fee for the inspection of an existing building in accordance with section 106.

The code official is authorized to issue operational permits for the operations set forth in sections 105.6.1 through 105.6.46.
(North Carolina State Building Code Volume V, Fire Prevention, Section 105.6)

Collection of Fees

Plan Review Fees-Plan review fees shall be collected, or arrangements make for collection prior to issuance of any building or fire permits.

Inspection Fees (New Construction)-In the event additional fees are required to be assessed during a construction project, and all fees must be paid in full prior to the issuance of the building's Code of Occupancy. Occupying a building that has not been issued a Certificate of Occupancy will constitute a civil penalty for each day's continued offense.

Inspection Fees (Existing Buildings)-The fee for an inspection of an existing building shall be assessed and an invoice will be supplied to the owner, occupant, or designee. Subjects will have thirty (30) days to remit payment. After (30) days, the bill will be placed in a past due status and a second invoice will be sent to the subject. After a period of sixty (60) days of non-payment, the account will be subject to a 10% late fee and the account will be placed on hold and no additional inspections or permits will be issued. Civil action will be taken through the court system after a period of (90) days.

Civil Penalty Schedule

Any person who shall violate any of the provisions of the N.C. Fire Prevention Code, or fail to comply therewith, or who shall violate or fail to comply with any order made there under, or who shall build in violation of any detailed statement of specifications or plans submitted and approved there under or any certificate or permit issued there under, shall be subject to penalties as specified below as approved by the City of Southport Board of Alderman. These penalties shall be recovered by the City in a Civil Action in the nature of debt if the offender does not pay the penalties within a period of 30 days after the issuance of the notice of violation. The notice of violation shall be in writing, signed by the Fire Marshal and/or the Fire Official charged with the enforcement of the N.C. Fire Prevention Code and shall be delivered or mailed to the offender either at his/her residence or place of business or at the location where the violation occurred. Each day's continuing violation shall be a separate and distinct offense. Any action to recover such penalties may be joined in an action for appropriate equitable remedy, including injunctions and orders of abatement and including an action to recover damages by the City in abating, correcting, limiting, and otherwise dealing with the harmful effects of the offending action. Civil penalties are assessed in accordance with North Carolina G.S. 153A and G.S. 160A.

First Offense	$100.00
Second Offense	$300.00
Third and Subsequent Offenses	$500.00

Violation(s) consisting of locked and/or blocked exits, impedance of the occupants to quickly evacuate a structure or premise, or conditions posing imminent danger to the occupants on or about the premise or Violation(s) of Occupancy Limits established pursuant to the North Carolina State Building and/or Fire Code must be corrected during the time of the inspection if at all possible.

PARKS AND RECREATION

Activity/Facility	City Resident Rate	Non-Resident Rate
Summer Camp	$90/week	$115/week
Before/Afterschool	$50/week	$60/week
Youth Basketball	$60	$70
Aerobics/Fitness	$40/month	$50/month
Seniors	Cost of activity	Cost of activity
Special Activities	Cost of the Activity	Cost of Activity + $10
Jaycee Building	$150 (4 hour minimum)	$250 (4 hour minimum)
Senior Building	$150 (4 hour minimum)	$250 (4 hour minimum)
Lowe/White Park	$150 (4 hour minimum)	$250 (4 hour minimum)
Franklin Square Park	$150 (4 hour minimum)	$300 (4 hour minimum)
Taylor Field	$150 (4 hour minimum)	$300 (4 hour minimum)
Caviness Park	$75 (4 hour minimum)	$150 (4 hour minimum)
Kingsley Park	$75 (4 hour minimum)	$150 (4 hour minimum)
Keziah Park	$75 (4 hour minimum)	$150 (4 hour minimum)
Riverwalk	$75 (4 hour minimum)	$150 (4 hour minimum)
City Gym	Movie Rental ONLY $1,000/day	

GENERAL & MISCELLANEOUS FEES

FILMING LICENSES

Filming	$500.00 per filming day
Equipment on Location	$100.00 per non-filming days
Onsite Pre/Post-Production	$250.00 per day
Commercial Photography	$250.00 per day

Filming on City Property:

Community Building	Current Rental Rates
Fort Johnston	$1000.00/day
Indian Trail Mtg Hall	$500.00/day
Riverwalk/Gazebo	$500.00/day
Jaycees Building	$200.00/day
Waterfront Park/City Pier	$500.00/day
City Dock at Yacht Basin	$200.00/day (no docking of boats)
City Hall	$500.00/day
Stevens Park	$200.00/day
Taylor Field	$500.00/day
Lowe White Park	$500.00/day
Keziah Park	$500.00/day
Caviness Park	$500.00/day
Tennis Court (Leonard St)	$200.00/day
Franklin Square Park	$500.00/day
City Gym	$1000.00/day
Street Closure per Block	$250.00/day

City Property Use:

Marked Patrol Vehicle	$21.50/hour
Fire/Rescue Vehicles	$200.00/hour
Hydrant Meter	$35.00/daily
Barricades	$20.00/hour
Dump Truck	$75.00/hour
Backhoe/Excavator	$125.00/hour

City Personnel Use:

Police Officers on Duty	TBD (ODM) https://odm.officertrak.com/Southport-NC-PD
Fire Inspector	TBD (ODM) https://odm.officertrak.com/Southport-NC-PD
Public Services Staff	$60.00/hour-Regular Time $90.00/hour-Overtime

Other:

A & B Explosives Permit	$20.00/per event
C Explosives Permit	$35.00/per event
Fireworks Permit	$200.00/per event

Requests made in less than (2) working days' notice: $250.00 extra
Services/Property Not Listed: Based on time, equipment, and materials + $250.00
Partial days are considered full days for expense purposes

BUSINESS REGULATIONS AND MISCELLANEOUS FEES

BEER & WINE LICENSE

BEER	WINE
On Premise: $15.00	On Premise: $15.00
Off Premise: $5.00	Off Premise: $10.00

ITINERANT/PEDDLERS PERMIT $50.00

TAXICAB PERMIT $100.00

GOLF CART PERMIT $50.00
Valid January 1 to December 31 annually

GOLF CART PERMIT LATE FEE $25.00
Renewals Only – If renewed after March 31 annually

INFORMATION REQUESTS:
Digital: No fee if delivered via email, or a flash drive is provided.
Paper: $0.20 per copy

OTHER COPIES:
Standard Size/Graphics: $0.20 per copy
Ledger Size/Heavy Graphics: $0.50 per copy

BURIAL PERMITS: Monday-Friday $50.00
Weekends and Holidays $150.00

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Development Services

ITEM/TOPIC: Applicant Initiated Unified Development Ordinance Amendment to Section 2.11 Conditional Rezoning and Appendix A: Submittal Requirements

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: At their May 15, 2025, meeting, the Planning Board voted to send a recommendation of approval to the Board of Aldermen with amendments to the applicant proposed Unified Development Ordinance Amendment to Section 2.11 Conditional Rezoning and Appendix A: Submittal Requirements. This amendment expands conditional zoning opportunities to all zoning districts, excluding open space and allows applicant proposed dimensional standards. A duly advertised public hearing must be held prior to the consideration of the proposal by the Board of Aldermen.

IMPACT IF NOT APPROVED: This application is a legislative decision as defined by North Carolina General Statutes. The Board of Aldermen is under no obligation to approve the Zoning Text Amendment. In accordance with North Carolina General Statutes, in a motion to approve or deny a Zoning Text Amendment, the Board shall adopt a corresponding consistency statement explaining the chosen decision's consistency with the adopted Land Use Plan of the City.

DEPARTMENT HEAD COMMENTS: Previous text amendment proposals to Section 2.11 Conditional Rezoning, sponsored by Staff to extend conditional districts to residential zoning districts, failed in February 2024. Since then, several significant changes have been made to the city's zoning jurisdiction with the loss of our extraterritorial jurisdiction (ETJ) and statewide zoning authority with the passing of SB382, which does not allow local jurisdictions to create a downzoning situation or the creation of nonconformities due to a zoning text or map amendment without consent of all affected property owners. Previously, local governments could amend zoning maps and local ordinances without the consent of the property owners. Conditional rezoning is a tool that allows flexibility and encourages quality projects that cannot be considered or built with conventional zoning districts.

CITY MANAGER COMMENTS:

ATTACHMENTS: Staff Report, PB Proposed Language, Applicant Proposed Language, Consistency Statement, Application

REQUESTED ACTION: Hold a public hearing and consider adoption of the amendments to the Unified Development Ordinance.

PROPOSED MOTION: Motion to hold a public hearing.

Motion to adopt the amendments of Unified Development Ordinance Section 2.11 Conditional Rezoning and Appendix A: Submittal Requirements and attached consistency statement.

STAFF REPORT – ZTA 25-03
ZONING TEXT AMENDMENT APPLICATION
CONDITIONAL ZONING & APPENDIX A

APPLICATION SUMMARY	
Presentation Date	June 12, 2025 Board of Aldermen
Applicant	East West Partners Management Company, Inc./Bald Head Island Limited, LLC
Relevant Ordinance Sections	Section 2.11 Conditional Rezoning & Appendix A: Submission Requirements

ZONING TEXT AMENDMENT PROPOSAL

Chad Paul, Chief Executive Officer and Manager of Bald Head Limited, LLC, requests a Zoning Text Amendment to Section 2.11 Conditional Rezoning to the City of Southport Unified Development Ordinance. The proposed amendment allows applications for conditional rezonings in all residential and nonresidential zoning districts except Open Space and modifies Appendix A in format and adds required submittals for conditional rezonings. All proposed changes are attached to this report.

REVIEW PROCESS

A Zoning Text Amendment proposal is considered a legislative process. As laid out by North Carolina General Statutes, a legislative process is a policy-level decision with broad discretion by the decision-making authority, in Southport's case, the Board of Aldermen. Per the City of Southport Unified Development Ordinance, the Planning Board shall provide a recommendation on any proposed Zoning Text Amendment to the Board of Aldermen.

The Board of Aldermen shall hold a duly advertised public hearing before voting on any Zoning Text Amendment. In approving or denying a legislative proposal, the Board of Aldermen shall include a statement describing whether the proposal is consistent or inconsistent with the locally adopted land use or comprehensive plan

AMENDMENT DESCRIPTION

The City of Southport Planning Staff are presenting this Zoning Text Amendment for the applicant. The amendments modify the City's existing Conditional Rezoning process. The request includes the following changes:

1. Allowing a Conditional Rezoning request to originate from any zoning district other than Open Space, and allows custom conditional zoning districts with unique dimensional requirements and standards;

2. The proposed text introduces streamlined text that requires the applicant to follow the procedures laid out in Section 2.10 UDO Text and Zoning Map Amendments of the UDO and statutory requirements of 160D-703(b) Conditional Districts; and

3. Amendment of Appendix A, to change the format to a list and modify Section C. Conditional Rezoning application submittals.

The following provides the applicant's proposed changes to the UDO including exact text language highlighted in yellow with discussion.

2.11.A Purpose

Conditional zoning districts allow zoning regulations to be imposed upon and adapted to a particular site and its context and to the anticipated impacts of its future development. Such districts may be achieved through refinement of existing general-use zoning districts or creation of a new conditional zoning district. Where appropriate, a development agreement may provide further certainty regarding any planned development project and greater flexibility than a Planned Unit Development.

The proposed narrative describes conditional zoning districts as allowing site-specific standards rather than firm zoning development standards for each conventional zoning district. This language does not prohibit a conditional rezoning proposal from using an existing zoning district's development standards; it only removes them as a requirement. This type of zoning is more flexible than a Planned Unit Development, and a development agreement can accompany the proposal, which gives further certainty to an applicant and the city for long-term, large-scale projects.

2.11.B Conditional Zoning District Requirements

1 No conditional zoning proposals shall be considered within the Open Space zoning district.

2 Dimensional standards within the proposed Conditional Zoning District shall be designated by the applicant as set forth in Appendix A Submission Requirements.

The new text allows conditional rezonings in both residential and nonresidential zoning districts, while the existing ordinance only allows conditional rezonings within nonresidential zoning districts. Currently, no conditional rezonings can be considered in Open Space or PUD zoning districts.

Each application for conditional rezoning requires dimensional standards designated by the

applicant. This language does not change the existing requirements for standards proposed by the applicant, except it does not require the dimensional standards to be associated with the underlying zoning district.

2.11.A Application and Conditional Zoning Review Procedure

1 All applications must include a master development plan, a narrative that includes supporting information and text which specifies the use or uses intended for the property and provides an overview of the project, dimensional standards, and any development standards to be approved concurrently with the rezoning application. The Master Development Plan shall include the requirements outlined in Appendix A: B. Master Development Plan.

2 Applications for Conditional Rezoning requests shall be filed, reviewed, and acted on in accordance with the procedures set forth in Section 2.10 UDO Text and Zoning Map Amendments and subject to the procedures and requirements of N.C. Gen. Stat. §160D-703(b). Prior to the required public hearing on the rezoning, the applicant must conduct one (1) public input meeting and file a report of the results to the UDO Administrator.

As required in the existing conditional rezoning language, a master development plan must be submitted with a conditional rezoning application following the requirements outlined in Appendix A: Submittal Requirements B. Master Development Plan. The master development plan provides the framework for development and a visual overview of the project, providing vicinity location and property features. Further, the language requires the submission of a narrative that includes proposed uses, dimensional standards, and any other development standards or conditions to be approved with the rezoning.

All applications for conditional rezoning shall follow the rezoning process found in Section 2.10 of the UDO, which includes a review and recommendation by the Planning Board to the Board of Aldermen, a public hearing, and a final decision by the Board of Aldermen. The provision includes the policy and procedures of GS 160D-703(b) Conditional Districts by reference in the ordinance. These policies guide proposed conditions – the flexibility afforded by conditional rezoning and leverage for local governments. All conditions proposed must be approved by the local government and consented to in writing by the applicant. The conditions will then be incorporated into the zoning district.

The proposed language maintains the requirement that the public input meeting be held and the report from such meeting filed with the UDO Administrator prior to the required public hearing.

2.11.B Effect of Approval

Following the approval of the petition for a conditional zoning district, the subject property shall be identified on the zoning maps by the appropriate district designation. A parallel conditional zoning shall be identified by the same designation as the underlying general district followed by the letters “CZ” and the number of its instance (for example “CBD-CZ1"). In the case of a conditional zoning district without a reference to an existing zoning district,

the district shall be identified by the letters “CZ” and the number of its instance (for example, “CZ-3”).

This section outlines how Conditional Zoning districts are designated on the City's official zoning map, providing a naming structure for both custom Conditional Zoning districts and districts that correspond to a traditional zoning district. This is not a change to the existing language. Language removed from the existing ordinance includes that the property shall be governed by the determined ordinance requirements of the district, the master development plan does not substitute for a site plan review or subdivision plat, that no permit shall be issued except in accordance with the applicable site plan review, subdivision, and permits, and that any violation shall be treated the same as any other violation of the ordinance.

The removed sections still apply to every conditional rezoning, even if not explicitly outlined. The UDO outlines each of the elements separately in their sections. The zoning district, as defined and conditioned, is the ordinance requirement of the district. The applicant must follow Section 2.7 Specific Review Procedures, Section 2.8 Creation of New Lots/Division of Land, and Section 2.6 Common Review Procedures. Section 2.15 Enforcement applies to all properties within the City's corporate limits. The act of conditionally rezoning a property does not preclude the requirements of the UDO.

Appendix A

Currently, Appendix A exists as a table, with rows representing the information required to be displayed on site plan documents and columns representing review/permit/plat approvals where the required information is marked by an ‘X’.

The draft Ordinance language includes a reconstructed Appendix A, which references approval types: Master Development Plan, Conditional Rezoning, Minor Site Plan, Major Site Plan & Special Use Permit, Subdivision Preliminary Plat, and Subdivision Final Plat. Proposed amendments to the specific language within Appendix A include the allowance of approximation of most information within a Conditional Rezoning, the removal of boundaries described by bearing and distance where they do not follow existing parcel boundaries and removing the requirement of listing maximum building height in stories. The listing of site conditions is caveated as applicable.

EVALUATION AND CONTEXT

The previous text amendment to Section 2.11 Conditional Rezoning, sponsored by Staff to extend conditional districts to residential zoning districts, failed in January 2024. Since then, several significant changes have been made to the city’s zoning jurisdiction with the loss of our extraterritorial jurisdiction (ETJ) and statewide zoning authority with the passing of SB382, which does not allow local jurisdictions to create a downzoning situation or the creation of nonconformities due to a zoning text or map amendment without consent of all affected property owners. Previously, local governments could amend zoning maps and local ordinances without the consent of the property owners.

Conditional rezoning is a tool that allows flexibility and also encourages quality projects that cannot be considered or built with conventional zoning districts. Any interested party can initiate a zoning text amendment.

Unified Development Ordinance Compliance
Zoning Text Amendments, like General Use Zoning Map Amendments (Rezonings), follow the process in Section 2.10 of the City of Southport Unified Development Ordinance. Under this section, the Planning Board shall advise and comment on whether the proposed text or zoning map amendment is consistent with the comprehensive plan or any other applicable official adopted plans. The Board of Aldermen shall, in their final decision-making capacity, base their decision upon the same.

2014 CAMA Core Land Use Plan Compliance
While there are no direct references to conditional rezoning in the LUP, many themes and planning principles are discussed that cannot be accomplished with conventional zoning or even planned unit developments. Smart growth is a concept that is not new but is applicable just as much today as planners first proposed years ago to combat urban sprawl. Another planning concept, traditional neighborhood development that focuses on complete neighborhoods with mixed uses, reduced street sizes, sidewalks, and front porch living, is seen in the policies of the LUP. Both smart growth and traditional neighborhood principles provide increased public spaces, environmental protection, and a sense of community that can be lost with conventional subdivisions requiring strict dimensional standards.

On Page 128 of the 2014 CAMA Core Land Use Plan, the following can be found:
Completing the LUP, illustrating the City's vision for the future, does not ensure that its objectives will be met. The City must continuously work at accomplishing plan implementation and maintaining an effective planning program. One important concept is 'smart development.'

The Plan goes on to speak at length on six principles of "smart development" or "smart growth," some of which speak directly to the same possibilities that can come from conditional rezoning projects:

Principle 1 - Efficient Use of Land Resources: Smart development supports the preservation of land and natural resources. These benefits result from compact building forms, in-fill development, and moderation in street and parking standards. Compact building patterns preserve land for city and neighborhood parks as well as local woods and wetlands. Furthermore, compact development shortens trips, lessening dependence on the automobile, and therefore reducing levels of energy consumption and air pollution. Finally, a compact development pattern supports more cost-effective infrastructure than does low-density fringe development.

Principle 2 - Full Use of Urban Services: The same frugality of land development supports efficient use of public and private infrastructure. Smart development means creating neighborhoods where more people will use existing services like water lines and sewers, roads, emergency services, and schools. Inefficient land use, whether within or outside urban areas, places a

financial strain on communities trying to provide for the construction and maintenance of infrastructure needs.

Building compactly does not mean that all areas must be densely developed. Rather, the goal is an average density for the area, at a level that makes full use of urban services. Averaging allows areas to have a mix of low-, medium-, and high-density development. Mixing densities to encourage efficient use of services also means requiring a high level of building and siting compatibility, encouraging neighborhoods to have both character and privacy.

Careful street sizing and the accommodation of some parking on streets reduces impervious surfaces and efficiently uses urban services by saving on land acquisition, construction, and maintenance costs. In short, streets should be sized for their use: lower density areas that have little through traffic are best served by slower, narrower streets, while transportation corridors that move district-wide traffic need wider travel ways.

Principle 3 - Mix of Uses: Locating stores, offices, residences, schools, and recreation spaces within walking distance of each other in compact neighborhoods with pedestrian-oriented streets promotes:

- independence of movement, especially for the young and the elderly who can conveniently walk, cycle, or ride transit;
- safety in commercial areas, through around-the-clock presence of people;
- reduction in auto use, especially for shorter trips;
- support for those who work at home, through nearby services and parks; and
- a variety of housing choices, so that the young and old, singles and families, and those of varying economic ability may find places to live.

Mixed-use examples include a corner store in a residential area, an apartment near or over a shop, and a lunch counter in an industrial zone. Most codes prohibit the co-location of any residential and commercial buildings. This prohibition is based on the functional and architectural incompatibility of the buildings. Using design standards, in tandem with mixed-use zoning, overcomes incompatibility. Additionally, limitations on commercial functions, such as hours of operation and delivery truck access, may be necessary. More fundamentally, to gain the full benefits of a mix of uses, buildings must be conveniently connected by streets and paths. Otherwise, people will still be inclined or required to use cars, even for the shortest trips.

Principle 6 - Implementation: Southport's ability to adopt smart development principles will depend on the ability and willingness of developers to apply the principles. Frustrating, costly, and time-consuming delays due, in part, to inflexible standards, regulations, and processes will discourage innovative approaches to development and design. Providing for flexibility and certainty in the application of standards, and administrative approval of "minor" variances, can help promote creative development that complies with the principles. Effective use of Planned Unit Developments (PUD's) can also relieve some of the regulatory barriers for developers and

lighten the administrative load for planners (See pages 128-130 of the 2014 CAMA Core Land Use Plan).

Principles 4 and 5 (Transportation Options and Detailed, Human-Scale Design) are also relevant in the context of Conditional Rezonings but are not necessarily appropriate to every project, as is more often the case with the other four. All six principles should be considered in the context of reviewing every Conditional Rezoning proposal in addition to the goals, objectives, and policies contained within the rest of the Plan.

There is no guarantee that the principles above will apply to every conditional rezoning application. However, given the inflexibility of traditional zoning districts currently used in Southport, it is quite difficult for projects within Southport today to be consistent with these principles. Conditional Zoning is one tool that can allow progressive land use techniques to be incorporated into a proposed development while maintaining the ability to review those techniques on a site-specific basis, ensuring that those aspects remain compatible with the surrounding community and that any impacts created by the project are appropriately mitigated.

The following policies can be used to consider consistency with the proposed text amendment and subsequent conditional rezoning applications:

> **Policy 2.1:** Southport discourages the rezoning of existing residentially developed or zoned areas to a non-residential classification. Such rezoning and amendments in classifications to the future land use map should be carefully balanced with a demonstrated need for such proposed development.
>
> **Policy 2.3:** Southport supports quality development reflecting the spectrum of housing needs, from low-end (affordable) residences to high-end (luxury) residences.
>
> **Policy 2.5:** The City supports providing adequate conservation/open space buffers between areas designated for residential development as indicated on the future land use map and any adjacent non-residential land use.
>
> **Policy 2.7:** Southport does not support “strip” residential development along highways and certain roads carrying heavy traffic and encourage service roads or an internal street pattern to eliminate direct driveway connections to highways and roads.
>
> **Policy 2.9:** Southport supports utilizing Office/Institutional/Multi-family development as a buffer between light industrial and commercial development and adjacent residential land uses.
>
> **Policy 2.10:** Southport supports Office/Institutional/Multi-family land uses that are developed along transportation thoroughfares to provide transition between commercial nodes and to preserve vehicle carrying capacity.

Policy 2.11: Southport supports development that blends a mix of uses at a reasonable scale offering convenient retail facilities to nearby residents in an effort to reduce traffic flow on main thoroughfares.

Policy 2.15: Southport supports industrial development which will be located adjacent to and/or with direct access to major thoroughfares.

PLANNING BOARD REVEW

The Planning Board met on April 17, May 2, and May 15, 2025, to review and consider the applicant's text amendment. There were discussions of the merits of conditional rezonings and the need to ensure a full review and analysis of individual proposals. The Planning Board discussed and recommends including the following language from the final 2024 Staff text proposal and updates to Appendix A for conditional zoning and other processes.

Recommendations to the Board of Aldermen:

- Required pre-application meeting
- Required technical review committee (TRC) meeting
- Required 20% open-space
- A major modification to the master development plan after the public input meeting will require a subsequent review and recommendation by the Planning Board to the Board of Aldermen.
- Required annual progress report to the Planning Board starting at year three of the project
- Appendix A: Add stormwater to the list of required elements to be included in a conditional zoning application.
- Appendix A: Require a development schedule or phasing plan at the time of application.
- Appendix A: Require that detailed utility plans must be made available at the time of application of a major subdivision preliminary plat

PLANNING BOARD RECOMMENDATION

The Planning Board recommends approval of the zoning text amendments with the updates described above and attached to this report. The proposal is found to be consistent with the 2014 CAMA Core Land Use Plan, specifically regarding desired outcomes for development as well as the inclusion of the public within the development process and remaining consistent with the Unified Development Ordinance.

Attachments

Planning Board Recommended Text including Appendix A
Applicant Proposed Text including Appendix A
Consistency Statement
Application

CONDITIONAL REZONING

A. PURPOSE

Conditional zoning districts allow zoning regulations to be imposed upon and adapted to a particular site and its context and to the anticipated impacts of its future development. Such districts may be achieved through refinement of existing general-use zoning districts or creation of a new conditional zoning district. Where appropriate, a development agreement may provide further certainty regarding any planned development project and greater flexibility than a Planned Unit Development.

1. ~~A conditional zoning district is intended for a development that has a high level of certainty of being constructed and the most commonly expected application will contain a specified use or uses, permitted by right or special use, on small- and large-scale projects.~~
2. ~~All uses listed as part of any application must be in the same format and description as listed in the table of uses.~~
3. ~~Except as provided herein, all applications to establish a conditional zoning district must follow the regulations prescribed in this section in addition to the standard zoning map amendment (rezoning) process as described in this ordinance~~.

B. CONDITIONAL ZONING DISTRICT REQUIREMENTS

1. No conditional zoning proposals shall be considered within the Open Space zoning district.

2. Dimensional standards within the proposed Conditional Zoning District shall be designated by the applicant as set forth in Appendix A Submission Requirements.

~~APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE~~

~~1. The application for a conditional rezoning approval shall also be accompanied by an application to amend the zoning map (rezoning) to the conditional development zoning district. The rezoning application shall be submitted concurrently with the conditional zoning master development plan. The procedure for such shall be followed as outlined in Section 2.9. The approved master development plan shall provide the framework for development in the conditional zoning district. All applications must include a master development plan, supporting information and text which specifies the use or uses intended for the property, dimensional standards, and any development standards to be approved concurrently with the rezoning application. Development standards include such things as parking, landscaping, design guidelines, and buffers.~~

~~2. Applications and proposals for conditional zoning approval shall only be considered within a nonresidential zoning district. All proposals for a conditional~~

~~zoning application must abide by the uses and the dimensional standards required by the underlying base zoning district for which the proposal is located. No conditional zoning proposals shall be considered within the Open Space or PUD zoning district.~~

~~3. An application for conditional zoning approval shall be accompanied by 12 hard copies and one (1) digital copy of a conditional zoning master development plan.~~

~~4. The master development plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina and shall include all of the required information as provided in Appendix A: Submission Requirements and any other information deemed necessary by the UDO Administrator, Planning Board, or Board of Aldermen.~~

~~5. The UDO Administrator or his/her designee will review the conditional zoning master development plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.~~

~~6. The UDO Administrator shall, in writing, provide a recommendation to the Planning Board within 60 days following receipt of the complete application for a conditional zoning district proposal and associated master development plan.~~

~~7. Following receipt of recommendation from the Planning Board, the Board of Aldermen shall approve, conditionally approve, or deny the conditional zoning master development plan.~~

~~8. When evaluating an application for the creation of a conditional zoning district, the Planning Board and Board of Aldermen shall consider the following:~~

~~a) The application's consistency to the general policies and objectives of the City's Comprehensive Plan, any other officially adopted plan that is applicable, and the Unified Development ordinance.~~

~~b) The potential impacts and/or benefits on the surrounding area, adjoining properties.~~

~~c) The report of results from the public input meeting.~~

~~9. The Board of Aldermen may not vote to rezone property to a conditional zoning district during the time period beginning on the date of a municipal general election and concluding on the date immediately following the date on which the Board of Aldermen holds its organizational meeting following a municipal general election unless no person spoke against the rezoning at the public hearing.~~

C. APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE

1. Pre Application Meeting: Applicants must request a pre-application meeting with the UDO Administrator prior to discuss the procedural and substantive requirements related to the proposed application.

2. All applications must include a master development plan, a narrative that includes supporting information and text which specifies the use or uses intended for the property and provides an overview of the project, dimensional standards, and any development standards to be approved concurrently with the rezoning application. The Master Development Plan shall include the requirements outlined in Appendix A: B. Master Development Plan.

3. The UDO Administrator or his/her designee will review the conditional zoning master development plan and shall require a Technical Review Meeting. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, public works, engineering, fire department, police department, NC Division of Coastal Management, NC Department of Environmental Quality, NC Department of Transportation, Brunswick County Utilities, Brunswick County Environmental Health.

4. Applications for Conditional Rezoning requests shall be filed, reviewed, and acted on in accordance with the procedures set forth in Section 2.10 UDO Text and Zoning Map Amendments and subject to the procedures and requirements of N.C. Gen. Stat. §160D-703(b). Prior to the required public hearing on the rezoning, the applicant must conduct one (1) public input meeting and file a report of the results to the UDO Administrator. Changes to the master development plan resulting from public input that creates a major modification to the proposal must be sent back to the Planning Board for a subsequent recommendation to the Board of Aldermen.

~~D. PUBLIC INPUT MEETING~~

~~1. Prior to scheduling a public hearing on the rezoning application, the applicant must conduct one (1) public input meeting and file a report of the results with the UDO Administrator.~~

~~2. The report for the public hearing will include a summary of the public input meeting.~~

~~3. The applicant shall mail a notice for the public input meeting to the owners of all properties located within 500 feet of the perimeter of the project bounds not less than 10 days prior to the scheduled meeting.~~

~~4. The notice shall include the time, date, and location of the meeting as well as a description of the proposal.~~

~~5. The applicant's report of the meeting shall include:~~

~~a) A copy of the letter announcing the meeting~~

~~b) A list of adjoining property owners contacted~~

~~c) An attendance roster~~

~~d) A summary of the issues discussed~~

~~e) The results of the meeting including changes to the project's proposal, if any.~~

D. ~~CONDITIONS TO APPROVAL OF PETITION~~

~~1. In approving a petition for the reclassification of property to a conditional zoning district, the Planning Board may recommend, and the Board of Aldermen may request that the applicant add reasonable and appropriate conditions to the approval of the petition.~~

~~2. Any such conditions should relate to the relationship of the proposed use to the impact on city services, surrounding property, proposed support facilities such as parking areas and driveways, pedestrian and vehicular circulation systems, screening and buffer areas, the timing of development, street and right-of-way improvements, water and sewer improvements, stormwater drainage, the provision of open space, and other matters that the participants in the public input meeting, staff, Planning Board, and Board of Aldermen find appropriate or the petitioner may propose. Such conditions to approval of the petition may include right-of-way dedication, easements for streets, water, sewer, or other public utilities necessary to serve the proposed development.~~

~~3. The petitioner shall consider and respond to any such conditions after the Planning Board meeting and within three (3) days prior to the staff report for the Board of Aldermen being published. If the applicant does not agree with the Planning Board or staff's recommendations of additional conditions, the Board of Aldermen shall have the authority to accept any or all of the conditions forwarded from the review process.~~

~~4. If for any reason any condition for approval is found to be illegal or invalid or if the applicant should fail to accept any condition following approval, the approval of the site plan for the district shall be null and void and of no effect and proceedings shall be instituted to rezone the property to its previous zoning classification. All conditions must be consented to in writing by the petitioner.~~

D. EFFECT OF APPROVAL

Following the approval of the petition for a conditional zoning district, the subject property shall be identified on the zoning maps by the appropriate district designation. A parallel conditional zoning shall be identified by the same designation as the underlying general district followed by the letters "CZ" and the number of its instance (for example "CBD-CZ1"). In the case of a conditional zoning district without a reference to an existing zoning district, the district shall be identified by the letters "CZ" and the number of its instance (for example, "CZ-3").

E. REVIEW OF APPROVAL OF A CONDITIONAL ZONING DISTRICT

1. It is intended that property shall be reclassified to a conditional zoning district only in the event of firm plans to develop the property. Therefore, no sooner than three

(3) years after the date of approval of the petition, the Planning Board may examine the progress made toward developing the property in accordance with the approved petition and any conditions attached to the approval. The UDO Administrator shall provide this information to the Planning Board at least once every 12 months and upon request by the Planning Board.

2. If the Planning Board determines that progress has not been made in accordance with the approved petition and conditions, the Planning Board shall forward to the Board of Aldermen a report which may recommend that the property be rezoned to its previous zoning classification or to another district.

Appendix A: Submission Requirements

A. Submission Requirements
Applications submitted to the City of Southport for the following approval types shall include all the information listed below.

B. Master Development Plan

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.
    g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    h) Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow described boundaries.
    i) Development Schedule and/or Phasing Plan

2. Land Use
    a) Approximate location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.

3. Traffic, Parking, Movement
    a) Approximate location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Approximate location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Approximate total square footage of existing and proposed impervious surfaces.
    e) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
        i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and

map panels.

b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.

c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.

5. Landscaping & Tree Preservation
   a) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

C. Conditional Rezoning

1. General Project Information
   a) Applicant name(s), including mailing address(es) and telephone number(s).
   b) Property owner name(s), including mailing address(es) and telephone number(s).
   c) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
   d) Boundaries of any proposed or pending zoning districts on site.

2. Land Use
   a) If an existing zoning district is proposed as the basis of the requested conditional zoning district, then any proposed changes to such district, whether more or less restrictive than applicable in the underlying district, shall be set forth in the Conditional Rezoning application.
   b) If a conditional zoning district is proposed without reference to an underlying zoning district, then the following requirements shall be set forth in the Conditional Rezoning application, if applicable, and may vary across areas, uses, or other site components: permitted, special, and prohibited uses; maximum building height; minimum required parking spaces; maximum required parking spaces; landscaping requirements; maximum residential density; maximum non-residential building square footage; signage; building setbacks; site buffers; open space; and tree conservation, and stormwater, as applicable.
   ~~c)~~ All Conditional Rezoning applications may contain development standards that exceed or reduce the requirements of the Unified Development Ordinance, ~~if applicable.~~ except there must be a minimum 20% of open space area.

D. Minor Site Plan

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    g) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
        i. Only required when prepared by a licensed professional.
2. Land Use
    a) Location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.
    b) Location and dimensions of existing and proposed buildings or structures on the site and all adjacent tracts, including existing buildings or structures to be removed. Total number of stories of all multi-story buildings and height of all building must be indicated.
    c) Location and labeling of minimum building setback lines.
    d) Total number and type of dwelling units, by development phase.
    e) Signage.
    f) Outdoor Lighting Plan.

3. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Total square footage of existing and proposed impervious surfaces.
    e) Location and dimensions of parking and loading spaces and drive aisles, including handicapped parking.
    f) Location and dimensions of existing and proposed sidewalks and accessible accessways.
    g) Location and dimensions of all trash containers and required screening.

h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
    i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.

    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
    d) Existing and proposed topography.
    e) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
    f) Location and size of stormwater basins or other comparable stormwater management mechanisms.

5. Landscaping & Tree Preservation
    a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
    b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
    c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
    d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
    e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

E. Major Site Plan & Special Use Permit

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation;

Map scale, denoted graphically and numerically.

f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.

g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.

h) Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow described boundaries.

i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.

2. Land Use

a) Location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.

b) Location and dimensions of existing and proposed buildings or structures on the site and all adjacent tracts, including existing buildings or structures to be removed. Total number of stories of all multi-story buildings and height of all building must be indicated.

c) Location and labeling of minimum building setback lines.

d) Total number and type of dwelling units, by development phase.

e) Signage.

f) Outdoor Lighting Plan.

g) Location and dimensions of all trash containers and required screening.

3. Traffic, Parking, Movement

a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.

b) Location of roads appearing on officially adopted plans.

c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.

d) Total square footage of existing and proposed impervious surfaces.

e) Names, cross sections, approximate grades, and pavement widths of proposed road rights-of-way, including design engineering data for all corners and curves.

f) Location and dimensions of parking and loading spaces and drive aisles, including handicapped parking.

g) Location and dimensions of existing and proposed sidewalks and accessible accessways.

h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.

i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
   a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
   b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
   c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
   d) Existing and proposed topography.
   e) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
   f) Location and size of stormwater basins or other comparable stormwater management mechanisms.
   g) Detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow- offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers.
      ~~i. NOTE: Detailed plans may be submitted after site plan or preliminary plat are approved and must be approved by the City's Public Services Department prior to construction of improvements or the issuance of building permits or approval of a final plat.~~

5. Landscaping & Tree Preservation
   a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
   b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
   c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
   d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
   e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

F. Preliminary Plat

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.
    g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    h) Lots numbered consecutively throughout the subdivision.
    i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
    j) Accurate locations and descriptions of all monuments, markets, and control points.

2. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Total square footage of existing and proposed impervious surfaces.
    e) Names, cross sections, approximate grades, and pavement widths of proposed road rights-of-way, including design engineering data for all corners and curves.
    f) Type of street dedication, either public or private.
    g) Location and dimensions of existing and proposed sidewalks and accessible accessways.
    h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
        i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

3. Other Land Use
    a) Location and dimensions of all trash containers and required screening.
    b) Location and labeling of minimum building setback lines.
    c) Signage.

d) Outdoor Lighting Plan.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
    d) Existing and proposed topography.
    e) Location, dimensions, and description of all areas to be dedicated to the public or to a property owners association.
    f) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
    g) Location and size of stormwater basins or other comparable stormwater management mechanisms.

    h) Detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow- offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers.
        i. NOTE: Detailed plans may be submitted after site plan or preliminary plat are approved and must be approved by the City's Public Services Department prior to construction of improvements or the issuance of building permits or approval of a final plat.

5. Landscaping & Tree Preservation
    a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
    b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
    c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
    d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
    e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

7. Required Certifications:
    a) Certificate of Survey and Accuracy
    b) Certification of Board of Aldermen Approval
    c) Certificate of Purpose of Plat

G. Final Plat

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    g) Exact existing and proposed or pending property boundary lines by bearings and distances and the location of intersecting boundary lines of adjacent lands.
    h) Lots numbered consecutively throughout the subdivision.
    i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
    j) Accurate locations and descriptions of all monuments, markets, and control points.
    k) Location and labeling of minimum building setback lines.

2. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Type of street dedication, either public or private.

3. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.

d) Location, dimensions, and description of all areas to be dedicated to the public or to a property owners association.

4. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

5. Required Certifications:
    a) Certificate of Ownership and Dedication
    b) Certificate of Survey and Accuracy
    c) Certification of Board of Aldermen Approval
    d) Certificate of Approval of the Design and Installation of Streets, Utilities, and Other Required Improvements
    e) Certification of Septic and Water Supplies
    f) Certificate of Disclosure; 404 Wetlands
    g) Certificate of Disclosure; City of Southport Floodplain Management Regulations
    h) Acknowledgment of Compliance (Private Developments)
    i) Certificate of Purpose of Plat
    j) Certificate of Approval for Recording

Original Applicant Text Amendment Language

CONDITIONAL REZONING

A. PURPOSE

Conditional zoning districts allow zoning regulations to be imposed upon and adapted to a particular site and its context and to the anticipated impacts of its future development. Such districts may be achieved through refinement of existing general-use zoning districts or creation of a new conditional zoning district. Where appropriate, a development agreement may provide further certainty regarding any planned development project and greater flexibility than a Planned Unit Development.

1. ~~A conditional zoning district is intended for a development that has a high level of certainty of being constructed and the most commonly expected application will contain a specified use or uses, permitted by right or special use, on small- and large-scale projects.~~
2. ~~All uses listed as part of any application must be in the same format and description as listed in the table of uses.~~
3. ~~Except as provided herein, all applications to establish a conditional zoning district must follow the regulations prescribed in this section in addition to the standard zoning map amendment (rezoning) process as described in this ordinance~~.

B. CONDITIONAL ZONING DISTRICT REQUIREMENTS

1. No conditional zoning proposals shall be considered within the Open Space zoning district.

2. Dimensional standards within the proposed Conditional Zoning District shall be designated by the applicant as set forth in Appendix A Submission Requirements.

~~APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE~~

~~1. The application for a conditional rezoning approval shall also be accompanied by an application to amend the zoning map (rezoning) to the conditional development zoning district. The rezoning application shall be submitted concurrently with the conditional zoning master development plan. The procedure for such shall be followed as outlined in Section 2.9. The approved master development plan shall provide the framework for development in the conditional zoning district. All applications must include a master development plan, supporting information and text which specifies the use or uses intended for the property, dimensional standards, and any development standards to be approved concurrently with the rezoning application. Development standards include such things as parking, landscaping, design guidelines, and buffers.~~

~~2. Applications and proposals for conditional zoning approval shall only be considered within a nonresidential zoning district. All proposals for a conditional~~

~~zoning application must abide by the uses and the dimensional standards required by the underlying base zoning district for which the proposal is located. No conditional zoning proposals shall be considered within the Open Space or PUD zoning district.~~

3. ~~An application for conditional zoning approval shall be accompanied by 12 hard copies and one (1) digital copy of a conditional zoning master development plan.~~
4. ~~The master development plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina and shall include all of the required information as provided in Appendix A: Submission Requirements and any other information deemed necessary by the UDO Administrator, Planning Board, or Board of Aldermen.~~
5. ~~The UDO Administrator or his/her designee will review the conditional zoning master development plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.~~
6. ~~The UDO Administrator shall, in writing, provide a recommendation to the Planning Board within 60 days following receipt of the complete application for a conditional zoning district proposal and associated master development plan.~~
7. ~~Following receipt of recommendation from the Planning Board, the Board of Aldermen shall approve, conditionally approve, or deny the conditional zoning master development plan.~~
8. ~~When evaluating an application for the creation of a conditional zoning district, the Planning Board and Board of Aldermen shall consider the following:~~
   a) ~~The application's consistency to the general policies and objectives of the City's Comprehensive Plan, any other officially adopted plan that is applicable, and the Unified Development ordinance.~~
   b) ~~The potential impacts and/or benefits on the surrounding area, adjoining properties.~~
   c) ~~The report of results from the public input meeting.~~
9. ~~The Board of Aldermen may not vote to rezone property to a conditional zoning district during the time period beginning on the date of a municipal general election and concluding on the date immediately following the date on which the Board of Aldermen holds its organizational meeting following a municipal general election unless no person spoke against the rezoning at the public hearing.~~

C. APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE

1. All applications must include a master development plan, a narrative that includes supporting information and text which specifies the use or uses intended for the property and provides an overview of the project, dimensional standards, and any development standards to be approved

concurrently with the rezoning application. The Master Development Plan shall include the requirements outlined in Appendix A: B. Master Development Plan.

2. Applications for Conditional Rezoning requests shall be filed, reviewed, and acted on in accordance with the procedures set forth in Section 2.10 UDO Text and Zoning Map Amendments and subject to the procedures and requirements of N.C. Gen. Stat. §160D-703(b). Prior to the required public hearing on the rezoning, the applicant must conduct one (1) public input meeting and file a report of the results to the UDO Administrator.

~~D. PUBLIC INPUT MEETING~~

~~1. Prior to scheduling a public hearing on the rezoning application, the applicant must conduct one (1) public input meeting and file a report of the results with the UDO Administrator.~~

~~2. The report for the public hearing will include a summary of the public input meeting.~~

~~3. The applicant shall mail a notice for the public input meeting to the owners of all properties located within 500 feet of the perimeter of the project bounds not less than 10 days prior to the scheduled meeting.~~

~~4. The notice shall include the time, date, and location of the meeting as well as a description of the proposal.~~

~~5. The applicant's report of the meeting shall include:~~

~~a) A copy of the letter announcing the meeting~~

~~b) A list of adjoining property owners contacted~~

~~c) An attendance roster~~

~~d) A summary of the issues discussed~~

~~e) The results of the meeting including changes to the project's proposal, if any.~~

D. ~~CONDITIONS TO APPROVAL OF PETITION~~

~~1. In approving a petition for the reclassification of property to a conditional zoning district, the Planning Board may recommend, and the Board of Aldermen may request that the applicant add reasonable and appropriate conditions to the approval of the petition.~~

~~2. Any such conditions should relate to the relationship of the proposed use to the impact on city services, surrounding property, proposed support facilities such as parking areas and driveways, pedestrian and vehicular circulation systems, screening and buffer areas, the timing of development, street and right-of-way improvements, water and sewer improvements, stormwater drainage, the provision of open space, and other matters that the participants in the public input meeting, staff, Planning Board, and Board of Aldermen find appropriate or the petitioner may propose. Such conditions to approval of the petition may~~

~~include right-of-way dedication, easements for streets, water, sewer, or other public utilities necessary to serve the proposed development.~~

3. ~~The petitioner shall consider and respond to any such conditions after the Planning Board meeting and within three (3) days prior to the staff report for the Board of Aldermen being published. If the applicant does not agree with the Planning Board or staff's recommendations of additional conditions, the Board of Aldermen shall have the authority to accept any or all of the conditions forwarded from the review process.~~
4. ~~If for any reason any condition for approval is found to be illegal or invalid or if the applicant should fail to accept any condition following approval, the approval of the site plan for the district shall be null and void and of no effect and proceedings shall be instituted to rezone the property to its previous zoning classification. All conditions must be consented to in writing by the petitioner.~~

D. EFFECT OF APPROVAL

Following the approval of the petition for a conditional zoning district, the subject property shall be identified on the zoning maps by the appropriate district designation. A parallel conditional zoning shall be identified by the same designation as the underlying general district followed by the letters "CZ" and the number of its instance (for example "CBD-CZ1"). In the case of a conditional zoning district without a reference to an existing zoning district, the district shall be identified by the letters "CZ" and the number of its instance (for example, "CZ-3").

Appendix A: Submission Requirements

A. Submission Requirements
Applications submitted to the City of Southport for the following approval types shall include all information listed below.

B. Master Development Plan

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.
    g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    h) Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow described boundaries.

2. Land Use
    a) Approximate location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.

3. Traffic, Parking, Movement
    a) Approximate location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Approximate location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Approximate total square footage of existing and proposed impervious surfaces.
    e) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
        i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.

b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.

5. Landscaping & Tree Preservation
    a) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

C. Conditional Rezoning

1. General Project Information
    a) Applicant name(s), including mailing address(es) and telephone number(s).
    b) Property owner name(s), including mailing address(es) and telephone number(s).
    c) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    d) Boundaries of any proposed or pending zoning districts on site.

2. Land Use
    a) If an existing zoning district is proposed as the basis of the requested conditional zoning district, then any proposed changes to such district, whether more or less restrictive than applicable in the underlying district, shall be set forth in the Conditional Rezoning application.
    b) If a conditional zoning district is proposed without reference to an underlying zoning district, then the following requirements shall be set forth in the Conditional Rezoning application, if applicable, and may vary across areas, uses, or other site components: permitted, special, and prohibited uses; maximum building height; minimum required parking spaces; maximum required parking spaces; landscaping requirements; maximum residential density; maximum non-residential building square footage; signage; building setbacks; site buffers; open space; and tree conservation, as applicable.
    c) All Conditional Rezoning applications may contain development standards that exceed or reduce the requirements of the Unified Development Ordinance, if applicable.

D. Minor Site Plan

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    g) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
        i. Only required when prepared by a licensed professional.
2. Land Use
    a) Location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.
    b) Location and dimensions of existing and proposed buildings or structures on the site and all adjacent tracts, including existing buildings or structures to be removed. Total number of stories of all multi-story buildings and height of all building must be indicated.
    c) Location and labeling of minimum building setback lines.
    d) Total number and type of dwelling units, by development phase.
    e) Signage.
    f) Outdoor Lighting Plan.

3. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Total square footage of existing and proposed impervious surfaces.
    e) Location and dimensions of parking and loading spaces and drive aisles, including handicapped parking.
    f) Location and dimensions of existing and proposed sidewalks and accessible accessways.
    g) Location and dimensions of all trash containers and required screening.

h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
    i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.

    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
    d) Existing and proposed topography.
    e) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
    f) Location and size of stormwater basins or other comparable stormwater management mechanisms.

5. Landscaping & Tree Preservation
    a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
    b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
    c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
    d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
    e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

E. Major Site Plan & Special Use Permit

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation;

Map scale, denoted graphically and numerically.

f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.

g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.

h) Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow described boundaries.

i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.

2. Land Use

a) Location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.

b) Location and dimensions of existing and proposed buildings or structures on the site and all adjacent tracts, including existing buildings or structures to be removed. Total number of stories of all multi-story buildings and height of all building must be indicated.

c) Location and labeling of minimum building setback lines.

d) Total number and type of dwelling units, by development phase.

e) Signage.

f) Outdoor Lighting Plan.

g) Location and dimensions of all trash containers and required screening.

3. Traffic, Parking, Movement

a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.

b) Location of roads appearing on officially adopted plans.

c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.

d) Total square footage of existing and proposed impervious surfaces.

e) Names, cross sections, approximate grades, and pavement widths of proposed road rights-of-way, including design engineering data for all corners and curves.

f) Location and dimensions of parking and loading spaces and drive aisles, including handicapped parking.

g) Location and dimensions of existing and proposed sidewalks and accessible accessways.

h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.

i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
    d) Existing and proposed topography.
    e) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
    f) Location and size of stormwater basins or other comparable stormwater management mechanisms.
    g) Detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow- offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers.
        i. NOTE: Detailed plans may be submitted after site plan or preliminary plat are approved and must be approved by the City's Public Services Department prior to construction of improvements or the issuance of building permits or approval of a final plat.

5. Landscaping & Tree Preservation
    a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
    b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
    c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
    d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
    e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

F. Preliminary Plat

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.
    g) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    h) Lots numbered consecutively throughout the subdivision.
    i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
    j) Accurate locations and descriptions of all monuments, markets, and control points.

2. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.
    d) Total square footage of existing and proposed impervious surfaces.
    e) Names, cross sections, approximate grades, and pavement widths of proposed road rights-of-way, including design engineering data for all corners and curves.
    f) Type of street dedication, either public or private.
    g) Location and dimensions of existing and proposed sidewalks and accessible accessways.
    h) Trip generation calculations in accordance with the most recent version of the ITE Trip Generation Manual.
        i. If trip generation calculations are found to exceed Traffic Impact Study threshold, a Traffic Impact Study shall also be submitted following the process outlined in Section 3.13.

3. Other Land Use
    a) Location and dimensions of all trash containers and required screening.
    b) Location and labeling of minimum building setback lines.
    c) Signage.

d) Outdoor Lighting Plan.

4. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.
    d) Existing and proposed topography.
    e) Location, dimensions, and description of all areas to be dedicated to the public or to a property owners association.
    f) Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.
    g) Location and size of stormwater basins or other comparable stormwater management mechanisms.

    h) Detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow- offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers.
        i. NOTE: Detailed plans may be submitted after site plan or preliminary plat are approved and must be approved by the City's Public Services Department prior to construction of improvements or the issuance of building permits or approval of a final plat.

5. Landscaping & Tree Preservation
    a) Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.
    b) Location, species, and size of all regulated and specimen trees as defined by this ordinance.
    c) Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.
    d) Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.
    e) Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.

6. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

7. Required Certifications:
    a) Certificate of Survey and Accuracy
    b) Certification of Board of Aldermen Approval
    c) Certificate of Purpose of Plat

G. Final Plat

1. General Project Information
    a) Proposed or approved name of development, project, subdivision, and/or phase.
    b) Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).
    c) Property owner name(s), including mailing address(es) and telephone number(s).
    d) Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).
    e) Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.
    f) Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.
    g) Exact existing and proposed or pending property boundary lines by bearings and distances and the location of intersecting boundary lines of adjacent lands.
    h) Lots numbered consecutively throughout the subdivision.
    i) Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.
    j) Accurate locations and descriptions of all monuments, markets, and control points.
    k) Location and labeling of minimum building setback lines.

2. Traffic, Parking, Movement
    a) Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.
    b) Location of roads appearing on officially adopted plans.
    c) Type of street dedication, either public or private.

3. Environmental Standards
    a) FEMA-designated flood hazard areas, including flood zone designations and map panels.
    b) Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.
    c) Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.

d) Location, dimensions, and description of all areas to be dedicated to the public or to a property owners association.

4. Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.

5. Required Certifications:
    a) Certificate of Ownership and Dedication
    b) Certificate of Survey and Accuracy
    c) Certification of Board of Aldermen Approval
    d) Certificate of Approval of the Design and Installation of Streets, Utilities, and Other Required Improvements
    e) Certification of Septic and Water Supplies
    f) Certificate of Disclosure; 404 Wetlands
    g) Certificate of Disclosure; City of Southport Floodplain Management Regulations
    h) Acknowledgment of Compliance (Private Developments)
    i) Certificate of Purpose of Plat
    j) Certificate of Approval for Recording

Text Amendment

City of Southport, North Carolina

1029 N. Howe St, Southport NC 28461
www.southportnc.org

Planning & Inspections
Phone 910-457-7961 Fax 910-457-7957

For Staff Use Only

PERMIT No. ZTA-25-03 **FEE: $** 300- **Date Received:** 3/12/25

Applicant's Name: East West Partners Management Company, Inc./ Bald Head Island Limited, LLC

Mailing Address: 1460 Environ Way **City:** Chapel Hill

State: NC **Zip Code:** 27517 **Phone:** 919-929-0660

Email: mbboening@ewpnc.com

Current Section Impacted by Proposed Text Amendment: 2.11

Please describe the conditions that makes the proposed text amendment necessary for the promotion of public health, safety, and general welfare; or that identifies an obvious error in the UDO. Also explain why the proposal is or is not consistent with the Land Use Plan and other adopted plans (Attach separate sheet if necessary).

See Attachment A.

In filing this Text Amendment Petition, I hereby certify that all of the information presented in this application is accurate to the best of my knowledge, information, and belief.

Bald Head Island Limited, LLC

Signature (Applicant) — Date: 3/12/25

Charles A. Paul, III, Chief Executive Officer and Manager

APPROVED BY:

Maureen Meehan

UDO Administrator — Date: 4/4/25

Attachment A

This proposed text amendment is being submitted, along with an application for a development agreement and an application to rezone the property in a manner consistent with the terms of the text amendment, for a project known as Waterway. If these three applications are approved, the portion of the land use plan affecting this property will be changed by operation of law to be consistent with the text amendment and the rezoning. The proposed project will add substantial public infrastructure, create new housing choices, substantially expand the Town's tax base, and provide public amenities.

On February 8, 2024, the Southport Board of Aldermen, by a vote of 4-2, rejected a text amendment that would have allowed for conditional zoning in residential districts. Proponents of the amendment said that it would offer the city greater flexibility with the ability to negotiate with developers as well as garner more public input. Detractors feared that it would lead to out-of-control growth, and were content with the amount of control that the then-current zoning gave Southport residents over future development of nearby land.

This application similarly broadens the City's ability to apply conditional zoning. Since February of 2024:

1) **The City of Southport lost jurisdiction over nearby land.** On July 1, 2024, The NC General Assembly extinguished Southport's Exterritorial Jurisdiction (ETJ). The statute gave Brunswick County 60 days to apply County zoning to the ETJ area. The entire ETJ encompasses 615 Tax Parcels and approx.1911.16 acres and covers properties located to the North, East, and West between the City of Southport Limits and the Duke Energy Canal.

   This means that the former ETJ area is subject to zoning requirements of Brunswick County, NOT Southport. Considering only the 327 acres of Waterway between Robert Ruark and 9th St. that were reclassed from ETJ to Brunswick County:

   - Under the City's previous jurisdiction, the parcel was zoned R-20, requiring a minimum lot size of 20,000 square feet, which would have permitted 400 residential units.
   - Under Brunswick County zoning, the property was rezoned to R-7500 Medium Density Residential, and was thereby entitled to 5.8 units per acre or 1896 residential units.

2) **Southport faces a budget shortfall of $1.4 million.**

An article from the Port City Daily, entitled "Facing budget shortage, Southport city manager looks to increase taxes, reduce cost-of-living adjustments" is attached to this application and incorporated herein.

There are three ways to address a budget shortfall: reduce costs, raise taxes on the existing tax base, or increase the size of the tax base. As noted in the article attached, Southport needs to keep funding capital improvement projects, city services, and city staff. The article also noted that the City's aldermen are reluctant to raise property taxes.

If the City's goal is to increase its tax base, then it must entice property owners to annex their land and their projects. The only way to do so is to offer zoning tools, processes, and flexibility not otherwise available through the county or which are *at least as accommodating as what is offered in the County.*

- By using a conditional zoning tool available through Brunswick County, the developer of Waterway ultimately agreed to a maximum of 1,100 residential units, including a Continuing Care Retirement Community and workforce housing requirements, as well as a maximum amount of medical office building and retail. That conditional zoning also created 40% more open space than is otherwise required by the Brunswick UDO, among other benefits.
- To keep this agreement intact with the county, and to build a continuous and cohesive project, the developer is requesting to rezone the remaining 13% of the property in a manner which is consistent with this proposed zoning text amendment. By adopting this text amendment and the corresponding application, the developer will bring in a potential $600 million of taxable property to the city, thereby relieving upward pressure on the existing tax base and allowing for the funding of new capital projects.
- Additionally, by adopting this zoning text amendment, the City of Southport will increase its leverage over new development, increase its influence over the way residential projects are developed in the City, and create a new tool to entice developers to annex their projects to add to the City's tax base.

Accordingly, this text amendment will substantially promote the public health, safety, and general welfare of the City and its residents.

Facing budget shortage, Southport city manager looks to increase taxes, reduce cost-of-living adjustments

By **Brenna Flanagan** February 11, 2025

A coastal town in Brunswick County is facing the budget crunch, prompting its city manager to propose a "shared sacrifice strategy" to shore up hundreds of thousands of dollars ahead of next fiscal year.

SOUTHPORT — A coastal town in Brunswick County is facing the budget crunch, prompting its city manager to propose a "shared sacrifice strategy" to shore up hundreds of thousands of dollars ahead of next fiscal year.

More on Port City

Advertisement

After less than a year in the job, Southport City Manager Stuart Turille Jr. was tasked with addressing the city's $1.44 million deficit in the FY25-26 fiscal year. His recommendations include the following:

- 1 cent increase to the ad valorem tax, currently at 30 cents per $100, generating $164,955
- Reassign the 1 cent of the tax rate going toward the capital fund to the general fund, generating $164,955
- Lowering the cost-of-living adjustment to salaries and wages to 2% and suspending merit increases, generating $413,000
- Pull $698,500 from the $3.6-million fund balance

"Going forward, more development, higher property values, more people and sales taxes, and a future reassessment will continue the upward trend in our revenues," Turille said at the meeting. "But this is not yet here."

Not only is this year's deficit $1.4 million, but the city manager is also predicting a $281,000 shortfall in fiscal year 2026-2027, and with the county's property valuation still two years away, a surplus of funds without raising taxes or cutting

ent

back on city services, though Turille said the city was already lean, pulling more from the fund balance and moving to a higher tax rate.

Carroll and Mosteller agreed the city should do the latter two, raising the tax rate to something more along the lines of 2% or 3%. A 2-cent tax rate hike would bring in an additional $330,000, while a 3% increase would garner $495,000.

"Certinaly I don't want to not fund our capital projects because there's too many

ent

record, but I think that I like the approach that the city manager has taken, as far as asking the staff, asking the citizens and fund balance to kind of all come together to balance this budget," Kelley said.

Carroll scoffed at Kelley's comment, noting he didn't want to raise taxes either, nor "steal from capital," "take away from the employees," or "rape the fund balance." However, the city has to come up with the money in some way.

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2.11 CONDITIONAL REZONING

A. PURPOSE. Conditional zoning districts allow zoning regulations districts to be specifically imposed upon and adapted to a particular site and its context, and to the anticipated impacts of its future development. Such districts This may be achieved through refinement of existing general-use zoning districts or creation of a new conditional zoning district. Where appropriate, a development agreement may provide further certainty regarding any planned development project.

B. CONDITIONAL ZONING DISTRICT REQUIREMENTS

1. No conditional zoning proposals shall be considered within the Open Space zoning district.

2. Dimensional standards within the proposed Conditional Zoning District shall be designated by the applicant as set forth in Appendix A Submission Requirements.

C. APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE. Applications for Conditional Rezoning requests shall be filed, reviewed, and acted on in accordance with the procedures set forth in Section 2.10 UDO Text and Zoning Map Amendments and subject to the procedures and requirements of N.C. Gen. Stat. §160D-703(b).

D.E. EFFECT OF APPROVAL

Following the approval of the petition for a conditional zoning district, the subject property shall be identified on the zoning maps by the appropriate district designation. A parallel conditional zoning shall be identified by the same designation as the underlying general district followed by the letters "CZ" and the number of its instance (for example "CBD-CZ1"). In the case of a conditional zoning district without a reference to an existing zoning district, the district shall be identified by the letters "CZ" and the number of its instance (for example, "CZ-3").

RECEIVED
MAR 06 2025
BY: MLM

Appendix A: Submission Requirements

A. Submission Requirements

Applications submitted to the City of Southport for the following approval types shall include all information listed below.

[B omitted from draft – no changes proposed.]

C. Conditional Rezoning

1. General Project Information

a) Applicant name, mailing address, and telephone number.

b) Property owner name (s), mailing address(es), and telephone number(s).

c) Tax parcel number(s), owner(s), zoning classification(s), and book and page numbers of the site tract(s) and adjacent tracts.

d) Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow existing parcel boundaries.

2. Land Use

a) If an existing zoning district is proposed as the basis of the requested conditional zoning district, then any proposed changes to such district, whether more or less restrictive than applicable in the underlying district, shall be set forth in the Conditional Rezoning application.

b) If a conditional zoning district is proposed without reference to an underlying zoning district, then the following requirements shall be set forth in the Conditional Rezoning application, if applicable, and may vary across areas, uses, or other site components: permitted, special, and prohibited uses; maximum building height in stories; minimum required parking spaces; maximum required parking spaces; landscaping requirements; maximum residential density; maximum non-residential building square footage; signage; building setbacks; site buffers; open space; and tree conservation.

c) All Conditional Rezoning applications may contain development standards that exceed or reduce the requirements of the Unified Development Ordinance, if applicable.

City Of Southport
1029 N. Howe St
Southport, NC 28461
(910) 457-7900

Receipt: 00200990
Date: 04/17/2025 09:04 AM
ktooley

BALD HEAD ISLAND LIMITED LLC,

Planning Zoning Planning Zoning Fees ZTA-25-03		300.00
Total		300.00
Check	122725	300.00
Change		0.00

Balance Remaining:
$0.00

Have a nice day!
Visit us at cityofsouthport.com

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Development Services

ITEM/TOPIC: Public Hearing and Consideration of the Development Agreement Between the City of Southport and Waterway of Southport, LLC

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: Local governments have the authority to enter into development agreements pursuant to the procedures and requirements of Sections 160D-1001 through 160D-1012 of the North Carolina General Statutes. Development agreements can be a beneficial tool for both private developers and local governments, as the projects involve substantial commitments of time and private capital, as well as public resources. The agreement ensures that development standards remain consistent throughout the phased development.

This agreement between the City and Waterway of Southport outlines the specifics of the project including the subject properties, obligation of annexation, term limits of the agreement, permitted uses and architectural standards, density and intensity, traffic impacts, environmental protections, public access and recreation, public facilities, property owner association and restrictions, laws governing the development, and miscellaneous provisions.

Per G.S. 160D-1005 this hearing has been duly noticed (published notice once a week for 2 successive weeks, mailed notice to adjacent property owners, and posted notice on the property at between 10 and 25 days prior to the hearing).

IMPACT IF NOT APPROVED: This agreement is a legislative decision as defined by North Carolina General Statutes. The Board of Aldermen is under no obligation to approve the Development Agreement. However, if this agreement is not approved, the portion of the proposal in county jurisdiction will not be annexed.

DEPARTMENT HEAD COMMENTS: This agreement will guide the development of a significant portion of land in the city. The terms of the agreement, vetted by staff, were found to be consistent with the 2014 CAMA Land Use Plan (LUP) and the draft 2050 Comprehensive Plan, which will soon replace the existing LUP. The development will remain a cohesive unit until completion, providing stability for future property owners.

ATTACHMENTS: Development Agreement including all Exhibits

REQUESTED ACTION: Hold a public hearing and consider approval and execution of the development agreement.

PROPOSED MOTION: Motion to hold a public hearing.

Motion to approve the development agreement with Waterway of Southport, LLC.

AN ORDINANCE TO ADOPT THE DEVELOPMENT AGREEMENT BY AND BETWEEN WATERWAY OF SOUTHPORT, LLC AND THE CITY OF SOUTHPORT

WHEREAS, N.C.G.S. §160D-1001 through §160D-1012 (the "Act"), authorizes municipalities to enter into development agreements with developers under the terms and conditions stated in the statutes, and

WHEREAS, Waterway of Southport, LLC, ("Developer") and the City of Southport ("City") have negotiated an agreement in accord with and under the authority of the cited statutes, and

WHEREAS, a public hearing was held on June 12, 2025 as set forth in N.C.G.S. §160D-1003 and N.C.G.S. §160D-1005 providing public review of the Development Agreement, as defined below; and

WHEREAS, the City finds that the Development Agreement is consistent with the Act, the City's policy guidance, current regulations, and is reasonable and in the public interest for the reasons set forth in the Development Agreement:

NOW, THEREFORE, BE IT ORDAINED, by the City of Southport Board of Aldermen that:

I. Pursuant to the authority granted to the City by Article 10 of Chapter 160D of the North Carolina General Statutes, the City hereby adopts the Development Agreement by and among the Developer and the City, attached hereto (the "Development Agreement").

2. This ordinance is effective upon adoption.

Adopted this 12th day of June, 2025.

X

Richard Alt
Mayor

X

Tori Deviney
Deputy City Clerk

DEVELOPMENT AGREEMENT

BETWEEN
THE CITY OF SOUTHPORT
AND
WATERWAY OF SOUTHPORT, LLC

Prepared by and Return to:
Thomas E. Terrell, Jr.
Fox Rothschild LLP
230 N. Elm Street, Suite 1200
Greensboro, N.C. 27401

STATE OF NORTH CAROLINA)
)
COUNTY OF BRUNSWICK)

DEVELOPMENT AGREEMENT

This Development Agreement ("Agreement") is entered into this _____ day of _____, 2025 (the "Effective Date") pursuant to N.C. Gen. Stat. §160D Chapter 10 between the City of Southport ("City"), a North Carolina municipal corporation and Waterway of Southport, LLC ("Waterway Developer") (collectively, the "Parties") the development of a Master Planned Community to be called Waterway, in consideration of the mutual promises made herein, upon the following terms:

ARTICLE I.
LEGAL FRAMEWORK, BACKGROUND, AND PURPOSE

1.1 The North Carolina General Statutes ("N.C.G.S.") §160D-1001 through §160D-1012, as it exists on the Effective Date of this Agreement (the "Act"), enables local governments to enter into binding development agreements with entities intending to develop real property under certain conditions set forth in the Act. Among other things, the Act provides as follows:

1.2 N.C.G.S. §160D-1001(a)(1) provides that "Development projects often occur in multiple phases over several years, requiring a long-term commitment of both public and private resources."

1.3 N.C.G.S. §160D-1001(a)(2) provides that "Such developments often create community impacts and opportunities that are difficult to accommodate within traditional zoning processes."

1.4 N.C.G.S. §160D-1001(a)(3) provides that "Because of their scale and duration, such projects often require careful coordination of public capital facilities planning, financing, and construction schedules and phasing of the private development."

1.5 N.C.G.S. §160D-1001(a)(4) provides that "Such projects involve substantial commitments of private capital, which developers are usually unwilling to risk without sufficient assurances that development standards will remain stable through the extended period of development."

1.6 N.CG.S. §160D-1001(a)(5) provides that "Such developments often permit communities and developers to experiment with different or nontraditional types of development concepts and standards, while still managing impacts on the surrounding areas."

1.7 N.C.G.S. §160D-1001(a)(6) provides that "To better structure and manage development approvals for such developments and ensure their proper integration into local capital facilities programs, local governments need flexibility to negotiate such developments."

1.8 N.C.G.S. §160D-1004 provides that "a local government may enter into a development agreement with a developer for the development of property as provided in this Article for developable property of any size," and that "development agreements shall be of a reasonable term specified in the agreement."

1.9 The foregoing expressly authorizes local governments to enter into development agreements with developers pursuant to the procedures and requirements of N.C.G.S. §160D-1001 through §160D-1012, which procedures and requirements include approval of the development agreement by the governing body of the local government by ordinance after a duly noticed public hearing.

1.10 In addition to the force of law conferred upon this Agreement by North Carolina law related to local governments, the terms of this Agreement also are contractual in nature, are a significant inducement and consideration for both Parties to enter into this Agreement and may be enforced as contractual terms.

1.11 The City will benefit from this Agreement because, among other things, this Agreement will secure quality planning and growth, strengthen the tax base, coordinate the delivery of public services and construction of infrastructure, and be consistent with the City's Comprehensive Plan.

1.12 Waterway Developer will benefit from this Agreement because, among other things, this Agreement provides for certainty and clarity as to the regulations to be applicable to the Property (as defined below) through the term of this Agreement.

1.13 Pursuant to N.C.G.S. 160D-1005, the Board of Aldermen conducted a public hearing regarding this Agreement on _____, 2025. The notice of public hearing specified, among other things, the location of the Property subject to this Agreement, the development uses proposed for the Property in accordance with the Master Plan, and a place where a copy of the proposed Agreement could be obtained. The initial draft of this Agreement was available for public inspection at City offices.

1.14 The Board of Aldermen has authorized the entry of the City into this Agreement. The approval of this Agreement constitutes a legislative act of the Board of Aldermen.

1.15 The Parties have determined that a development agreement is an effective means for defining the obligations of each party to ensure successful completion of Waterway to the advantages of each.

1.16 Waterway Developer intends to develop a Master Planned community of residential and non-residential uses to be called "Waterway" (the "Project"), which will be governed by a master property owners' association (the "POA").

1.17 The Project is anticipated to be annexed into the City in sections, as set forth in Section 3.1 hereof.

1.18 Terms not otherwise defined in this Agreement shall have the meanings set forth in the City of Southport Unified Development Ordinance (the "UDO").

1.19 All provisions of this Agreement, including, without limitation, those of this Article I, are material terms hereof.

1.20 In the event that the conditional zoning text amendment, initial rezoning, and other ordinance amendments necessary or desirable to effectuate the intent of the agreements contained herein have not been adopted by the City on or before June 30, 2025, this Agreement shall be null, void, and of no further force or effect.

ARTICLE II.
LAND GOVERNED BY AGREEMENT

2.1 The Project encompasses approximately 378.79acres, comprised of 331.18 acres currently within the Brunswick County jurisdiction (the "County Land"), and 47.61 acres in the City (the "City Land"). The City Land is comprised of 28.51 acres that includes the existing marina and the and an additional 19.1 acres within the City but not adjacent to the marina (the "City Land," and "County Land" together comprise the "Property." The legal descriptions of and list of parcels comprising the Property components are attached to this Agreement as Exhibit A.

2.2 Master Plan. Attached as Exhibit B is a 10-page Master Plan prepared by Waterway Developer that illustrates the Property boundary, access locations, water and sewer plans, locations of uses, environmentally sensitive areas, and other features.

2.3 Amendments to Property Covered by Agreement. Amendments, expansions, and modifications to the Property covered by this Agreement shall be governed by the provisions in Article XV.

ARTICLE III.
ANNEXATION, ZONING, APPROVALS, AND VESTING

3.1. Annexation.

3.1.1 Waterway Developer's Obligation to Petition for Annexation. Waterway Developer agrees to petition the City for annexation and original zoning of each separately platted area ("Platted Area") within ~~30~~60 days of the following having occurred:

3.1.1.1 The plat for each Platted Area shall have been recorded.

~~3.1.1.2 Water and sewer lines serving the Platted Area have been installed, inspected, and accepted by the City.~~

~~3.1.1.3~~ 3.1.1.2 The City has hired an inspector or inspector to oversee vertical construction.

~~3.1.1.4~~3.1.1.3 The Parties have agreed upon a process by which permitting for vertical construction will be handled.

3.1.1.4 The Parties interpret Article 3 to require the Developer to submit a petition for annexation for any Platted Area prior to the commencement of vertical construction. The Parties also interpret Article 3 as not requiring the submittal of a petition for annexation for any Platted Area upon which horizontal construction has not yet been completed. For the purposes of this Agreement, "vertical construction" shall mean the construction of any building or walled structure intended for the support, shelter and enclosure of persons, animals, chattels or movable property of any kind. For the purposes of this Agreement, "horizontal construction" shall mean the construction of infrastructure upon or within the ground of the kind that is necessary to support, connect and make possible vertical construction including, without limitation, water and sewer lines, gas lines, stormwater facilities, tunnels, bridge, roads.

3.1.2 No Obligation to Annex. The City has no obligation to annex any portion of the Property but shall process each annexation petition in accordance with its adopted procedures for such requests and other applicable law.

3.1.3 Notice on Deeds and Plats. Prior to recordation, each plat shall have the following notice prominently written and displayed: THE LOTS ON THIS PLAT ARE SUBJECT

TO AN AGREEMENT FOR ANNEXATION INTO THE CITY OF SOUTHPORT. Upon the sale of each lot or structure, the deed shall contain the following notice prominently written and displayed: THIS PROPERTY IS SUBJECT TO AN AGREEMENT FOR ANNEXATION INTO THE CITY OF SOUTHPORT

3.2. Original Zoning. Upon receipt of Waterway Developer's petition for original zoning, the City shall process such petition in accordance with its adopted procedures for the processing of such requests, and other applicable law. Waterway Developer's original zoning petition shall seek to zone each Platted Area to a conditional district in the City's jurisdiction in accordance with, at Waterway Developer's election, either (i) existing structures, uses, lots, and site elements within such Platted Area, such that no nonconformity shall be created, or (ii) the Master Plan (such rezoning in accordance with clauses (i) or (ii), a "Conforming Rezoning"). In the event a rezoning is approved by the City that is neither a Conforming Rezoning nor otherwise agreed upon by Waterway Developer, then the annexation petition and rezoning petition for such property so rezoned shall be deemed withdrawn and shall be null, void, and of no further force or effect. The Parties acknowledge that the Marina and Parking Lots Land and the City Land are being rezoned as of the date hereof, and, if not rezoned in accordance with this agreement, this agreement shall be null, void, and of no further force or effect, and the annexation petition or petitions contemplated in Section 3.1 above shall be withdrawn.

3.3. Amended Laws. Because the City does not exercise zoning jurisdiction over the County Land, amendments to the City's ordinances, policies, regulations, and approval processes may be needed to protect each party's interests, to facilitate better design, and to expedite and clarify approval processes that might impose unnecessary or repetitive layers of administrative review. To the extent the City's ordinances, including its conditional zoning provisions, policies, regulations, and approval processes require amendment to effectuate the terms or the spirit of this Agreement, the Parties agree to reasonably and timely cooperate to make necessary modifications. Unified Development Ordinance amendments applicable explicitly to the project may be initiated by Waterway Developer. If the amendment would have broader application, then it may be initiated by any Party.

3.4. Permitting. In recognition that time is often the greatest development cost, the City or Developers may select and hire third-party planning professionals, architects, engineers and or technicians ("Third-Party Inspectors") to oversee project permitting and plan review as authorized by N. C. Gen. Stat. §160D-402 and N.C. Gen. Stat. §160D-1110.1.

3.4.1 Third-Party Inspector Reimbursement. If the City hires Third-Party Inspectors pursuant to N. C. Gen. Stat. §160D-402, then the City shall charge and Waterway Developer shall reimburse the City ("Reimbursement Fees") on a flat-fee basis for all permits required by the N.C. State Building Code upon the following schedule and within 30 days of invoicing:

$1500 per single-family residential unit
$500 per residential unit for multi-family structures
$500 per 1,000 square feet of non-residential structures
$3,000 for each plat review

3.4.2 Inflation adjustment. The Reimbursement Fees shall be increased 3% per annum beginning January 1, 2027.

3.4.5 Administrative fee. The City may charge an administrative fee upon the following schedule, to be invoiced and paid with the Reimbursement Fees.

$150 per single-family residential unit
$50 per residential unit for multi-family structures
$100 per 1,000 square feet of non-residential structures
$300 for each plat review

3.5 Reimbursement. Waterway Developer shall pay $30,000 to reimburse the City's legal and other consultant costs in the negotiation of the development agreement.

ARTICLE IV.
USES AND ARCHITECTURAL STANDARDS

4.1 Uses. Permitted uses shall be as set forth on Exhibit C for the CZ-1 zoning district.

4.2 Residential Standards. The Waterway Developer agrees to impose architectural standards on all residential structures within the Project generally as attached hereto as Exhibit D (Architectural Guidelines) which illustrate ways in which the Architectural Guidelines could be incorporated into building design. It is understood that each residential structure could deviate from these architectural renderings in material ways but the overall expression of style and quality shall not change and that these guidelines may be updated from time to time by the Property Owners' Association.

4.3. Non-Residential Standards.

Notwithstanding the terms of Section 6.5 below, up to 12,000 square feet of non-residential uses may be constructed on the combined City Land and Marina and Parking Lots Land in exchange for lighting, signage, and architectural standards within the City Land and Marina and Parking Lots Land that exceed the trade dress of retail uses in typical highway business corridors. The Parties shall negotiate in good faith on the types of standards that would trigger the additional 2,000 square foot bonus. The 2,000 square foot bonus may be allocated among multiple buildings or uses.

ARTICLE V.
DEVELOPMENT STANDARDS FOR
DENSITY, INTENSITY, AFFORDABILITY, AND LANDSCAPING

5.1 Residential Density- City Land and Marina and Parking Lots Land. Up to 199 residential units of any type may be developed on the combined City Land, and Marina and Parking Lots

Land, provided that no more than 160 residential units of any type may be developed on the Marina and Parking Lots Land.

5.2 Residential Density – County Land. Up to 1,250 residential units of any type may be developed on the County Land, which limit shall include units within a Nursing and Personal Care Facility, if one is developed.

5.3 Workforce Housing. At least 5% of the rental multifamily units in the Project, if any, shall be affordable to households with incomes up to and including 80% of the Area Median Income as published annually by the federal department of Housing and Urban Development.

5.4 Non-Residential Development –Marina and Parking Lots Land. A total of 10,000 square feet of non-residential development shall be permitted on the Marina and Parking Lots Land Subject to the provisions of Section 5.3.

5.5 Non-Residential Development – County Land. Consistent with existing zoning of the County Land, a total of 100,000 square feet of non-residential development shall be permitted on the County Land, provided that the square footage of any Nursing and Personal Care Facility use shall not count against the square footage of non-residential uses permitted pursuant to this Section 5.5.

5.6 Allocation of Uses. Any allocation of residential units or non-residential square footage which is not used by Waterway Developer on the City Land or the Marina and Parking Lots Land may be used by Waterway Developer on the County Land.

5.7 Substitution of Uses. Notwithstanding the provisions of Sections 6.1 and 6.2.1 herein, Waterway Developer may elect to substitute one additional dwelling unit, in excess of those otherwise permitted by this Agreement for every 1,000 square feet of non-residential uses permitted by this agreement that it elects not to develop.

5.8 Landscaping and Vegetative Buffers. The Project shall have a minimum 30-foot, 0.6 opacity peripheral buffer that incorporates existing vegetation. Where the 0.6 opacity is not achieved by existing vegetation, the Waterway Developer shall plant additional evergreen vegetation that will achieve that standard when mature. Opaque fencing may be incorporated to achieve the 0.6 opacity if fencing is also used with additional vegetation. Where additional vegetation is required, it shall be of evergreen varieties that thrive in native soils and that are expected to reach no less than 12 to 15 feet at maturity.

ARTICLE VI.
TRANSPORTATION

6.1. Transportation Impact Analysis. Waterway Developer has completed a Transportation Impact Analysis ("TIA") of the Project as fully developed, which has been approved by Brunswick County and the North Carolina Department of Transportation ("NCDOT") pursuant to Brunswick

County and NCDOT requirements, attached hereto as Exhibit E. The City has had an opportunity to review the TIA as it affects City-maintained streets and accepts the mitigations required by the analysis and approved by NCDOT.

6.2. TIA Mitigations. Traffic mitigations required by the TIA shall be completed as set forth therein and may be subject to the enforcement provisions of this Agreement.

6.3. TIA Updates. The TIA shall be updated as the Project is developed over time if required by NCDOT in the event that changes in the Master Plan could reasonably impact levels of service at nearby intersections.

6.4. Road Repairs. Waterway Developer shall repair the Project-adjacent NCDOT-controlled roads to NCDOT standards, and City-maintained streets to City standards, to the extent the roads or streets are damaged by trucks during construction of the Project.

ARTICLE VII.
PUBLIC SERVICES AND UTILITIES

7.1 Water and Sewer Service. Brunswick County Public Utilities shall provide water and sewer service to the Project. Waterway Developer shall separately negotiate the terms of water and sewer to be provided.

7.2 Electric Service. Electric service shall be provided by the appropriate service provider (City of Southport, Brunswick Electric, or Duke Energy Progress), as elected by Waterway Developer based on available capacity and other reasonable business considerations.

ARTICLE VIII.
ENVIRONMENTAL PROTECTIONS

8.1 Open Space and Tree Save. Waterway Developer shall ensure the declaration(s) of covenants and restrictions to be recorded with respect to the Project shall require that the tree save area designated in the Master Plan shall be managed by the POA pursuant to a tree save management plan set forth on Exhibit F (the "Management Plan").

8.1.1 The Management Plan shall be designed and sealed by a certified North Carolina arborist. The tree save program shall identify and attempt to save hardwood trees greater than 24 inches diameter at breast height, including trees that exist on private lots to be created.

8.1.2 Mass grading of the Property shall not be permitted except as necessary for improvements designated on or necessitated by uses designated on the Master Plan, including, without limitation, for roadways and infrastructure, and for intended building footprints.

8.1.3 Environmentally sensitive areas, including, without limitation, jurisdictional wetlands, and enhanced stormwater control measures may be counted towards open space.

8.2 Stormwater. Waterway Stormwater will be designed in compliance with all state and local stormwater regulations. Stormwater control measures will be designed to hold the 100-year storm without overtopping and the stormwater control measures will release the storm events with emergency spillways in accordance with Stormwater regulations.

8.3 Permitting. Waterway Developer shall timely provide the City with copies of all state and federal permits. The City shall cooperate with the Project's state and federal permitting processes, including, without limitation, stormwater, wetlands, CAMA, and stream permitting, or other environmental permitting required by law. Cooperation as used in this sub-paragraph shall be defined as the timely execution of any permits that involve City-owned land, timely provision of information relevant to permit applications, and non-interference with or objection to a permit's issuance.

8.4 Wetlands. All areas delineated as jurisdictional wetlands shall have, at minimum, a natural and undisturbed buffer averaging 20-feet in width.

8.5 Flood Zones. Buildings constructed within the AE Flood Zone shall meet applicable flood building codes.

ARTICLE IX.
PUBLIC ACCESS

9.1 Public access.

9.1.1 The public shall have access to trails, greenways, and other parts of the Project dedicated to active or passive recreation (the "Recreation Space"), which is shown on the Master Plan as the Nature Park, Central Park, Pocket Park, and Linear Greens areas. Trails and greenways shall be maintained by the POA and contain trash receptables in reasonable locations. Public access pursuant to this Article IX shall be granted through a limited-purpose public access easement that may contain restrictions on any public activity except specified active and passive recreation in the discretion of Waterway Developer together with enforcement provisions related to such use. Public access as set forth herein shall be provided for in applicable covenants and restrictions and enforced by the POA.

9.1.2 Trails or greenways shall connect to Smithville Woods and Cades Cove communities provided that written request for such connection is received by Waterway Developer from the appropriate authority for each community on or before September 1, 2025. If no request has been received by Waterway Developer on or before such date, Waterway Developer shall have no obligation to complete the connections contemplated in this Section 10.1.2.

ARTICLE X.
PROPERTY OWNERS' ASSOCIATION AND PRIVATE RESTRICTIONS

10.1 Enforcement of architectural standards. The Project's architectural standards shall be administered and enforced by the POA.

10.2 Short-term rentals. All residential units shall be restricted by covenants and restrictions to prohibit short-term rentals. For the purposes of this Agreement, a short-term rental is one governed by the regulation of "short-term vacation rentals" in the UDO or any successor ordinance thereto.

ARTICLE XI
PUBLIC RECREATIONAL FACILITY

11.1 Developer agrees to offer for-sale memberships to nonresidents of the Project for main amenity pool and fitness facility subject to reasonable limitation to control peak-hour capacity.

ARTICLE XII
TERM

12.1. Term. Unless and until modified by the Parties, the term of this Agreement shall be 20 years from the date of recordation of this agreement and shall automatically renew for an additional 20 years at the expiration thereof unless either Party has delivered a notice of nonrenewal to the other Party prior to such expiration date. Waterway Developer shall be vested during the term of this Agreement pursuant to the laws existing at the time of adoption and described in Article XIII.

12.2 Sunset Provisions. Agreement provisions that become obsolete, including but not limited to provisions related to construction of roads, utilities, and residential and non-residential structures shall expire with respect to each Platted Area at the time such Platted Area of the Project has been constructed and annexed by the City, or otherwise granted a final certificate of occupancy.

ARTICLE XIII
LAWS GOVERNING DEVELOPMENT OF THE PROJECT

13.1 Ordinance of Adoption. This Agreement is entered into and adopted by ordinance, making this Agreement legally binding and enforceable by its terms and by powers vested in the City by statute.

13.2. Unified Development Ordinance, City Policies, and Other Laws. The City's current UDO and all City standards and policies are listed by title and date of adoption on Exhibit G attached. Other laws applicable to the Project include the adopted conditional use zoning as and when applied to each Platted Area, the Master Plan attached to this Agreement as Exhibit B, and this Agreement (collectively "Laws"). The covenants and restrictions and other rules adopted to govern the Project and its POA are not considered Laws and may be modified and amended in the sole discretion of Waterway Developer, provided that no such covenants, rules, or restrictions shall be inconsistent with this Agreement.

13.3. Permits. Permits issued by the State of North Carolina or the United States exist as to term and validity pursuant to the terms of the permit and underlying general statutes and federal codes.

Permits referenced in this paragraph do not establish vested rights except as to common law application.

13.4. Vested rights.

13.4.1 Duration. Waterway Developer is vested for the duration of this Agreement under the laws and policies existing at the time of the Agreement, specifically including, without limitation, the laws and policies referenced in Section 13.2 above ("Existing Laws"). Fees included on the City's Fee Schedules at the time of the Agreement shall constitute the maximum applicable fees for each such purpose set forth therein.

13.4.2 Consent Required. Except as expressly provided in N.C. Gen. Stat. §§ 160D-108(c) or 160D-108.1(f), no changes, amendments, alterations, expansions, enhancements, or application of Existing Laws shall apply to the Project without the written consent of Waterway Developer pursuant to N.C. Gen. Stat. §143-755.

13.4.3 Change in State or Federal Law. As provided in N.C. Gen. Stat. § 160D-1007(c), in the event State or federal law is changed after this Agreement has been entered into and the change prevents or precludes compliance with one or more provisions of this Agreement, the Parties may modify the affected provisions, upon a finding that the change in State or federal law has a fundamental effect on the Agreement. To the extent that a change in State or federal law has a fundamental effect on the Agreement to the detriment of Waterway Developer and amendment of this Agreement is not prohibited by law, the City agrees that its consent to amendment shall not be unreasonably or capriciously withheld.

13.4.4 Nonconformities. No nonconformities have been or will be created by the adoption of this Agreement.

13.5. Existing Laws Retained. The Existing Laws shall be kept in a permanent file in the Southport City Hall clearly marked "PERMANENT CITY RECORDS – DO NOT DISCARD OR AMEND." These documents govern the development of Indigo Plantation." If Waterway Developer have officially named the Project at the time this Agreement is executed, the Existing Laws may be stored under the Project's name. Existing Laws shall also be stored electronically and retained permanently as provided in NCGS Section 132 et seq.

13.6 Interpretation. All Laws shall be interpreted as though the Parties intended consistent interpretation and application and shall be read for consistent interpretation and application. To the extent allowed under North Carolina law, the terms and conditions of this Agreement shall control. Where there is a discrepancy in interpretation or application, the UDO that existed on the date of this Agreement's adoption shall be considered the controlling ordinance. If a provision in the UDO that existed on the date of this Agreement's adoption is ambiguous as to how it is applied to this Project, then this Agreement shall be considered first as the City's official interpretation of that provision and secondarily as an expression of the City's intent. To the extent there is an ambiguity in terms or meaning not resolved by the above-listed canons of construction, then the ambiguity shall follow the rule at common law that ambiguities shall be interpreted to favor the free use of land.

ARTICLE XIV.
ARTICLE 160D-1006 CERTIFICATIONS

14.1 Description. A description of the property subject to the agreement and the names of its legal and equitable property owners is found in Exhibit A.

14.2 The duration of the agreement. The duration of this Agreement shall be 20 years from the date of recordation and shall automatically renew for an additional 20 years unless either Party has delivered a notice of nonrenewal to the other Party.

14.3 Permitted uses, densities, placement on the site, and design. Uses and unit counts shall be as listed in Articles IV and V. Placement on the site shall be as illustrated in the Master Plan attached as Exhibit B. Design shall be as described under Article IV (Architectural Standards).

14.4 Public facilities, responsibility for construction, dates and schedules of delivery. All provisions in the Agreement related to public facilities, who shall develop and provide the services, the sequences of delivery and who is responsible are described in Article VII (Public Services) and Article VI (Transportation). To the extent that the City has incurred obligations for public services as described in this Agreement, such obligations shall be tied to successful performance by the Waterway Developer in their development of the Project and meeting their own obligations as described in this Agreement. The obligations of Waterway Developer hereunder shall be tied to successful performance by the City of its obligations as described herein.

14.5 Land reserved, dedicated or sold for public purposes and provisions for the protection of environmentally sensitive property. Public dedications or acquisitions are described in Article VI, Article VII, Article VIII, and Article IX.

14.6 Other protections for health, safety, and welfare. Public safety is further protected by several provisions contained within Article VII (Public Services), Article VIII, Article IX, and public welfare is further protected by provisions in all Articles.

14.7 Descriptions of provisions for preservation and restoration of historic structures. The Parties agree that the Property does not contain historic structures. There is purported to be a cemetery known as the "English Field" near the intersection of Maple Street and West 9th Street, Waterway Developer shall make all reasonable efforts to locate and protect the English Field.

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ARTICLE XV.
MISCELLANEOUS

15.1 Amendment. This Agreement may be amended by the mutual consent of the Parties or their successors in interest. As required by G.S. 160D-1006(e), consideration of a proposed major modification of the agreement shall follow the same procedures as required for initial approval of the Agreement. By the mutual consent of the Parties, the City's Zoning Administrator shall have the authority to approve minor, administrative amendments and modifications to this Agreement and the Master Plan and any other plans approved in connection with the Project as provided

herein. Major modifications shall include (1) the addition of new uses that increase the vehicle trips per day more than 5%; (2) reductions exceeding the greater of (a) 5 feet, and (b) 20% for setbacks or bufferyards; (3) the addition of new access point or points; and (4) increases in residential units greater than 2%. Any modification that is not defined as a major modification shall be a minor modification.

15.2 Recordation. Waterway Developer shall record this Agreement in the Office of the Brunswick County Register of Deeds within fourteen (14) days after the date of adoption. All recording costs shall be paid by Waterway Developer.

15.3 Periodic Review. This Agreement shall be reviewed on a regular and routine basis during the development of the Project, including, but not limited to, the submittal of any site plans or other development plans for public services. Upon buildout, the Agreement shall be reviewed by the City as reasonably necessary, but not less than once per year, to determine if there are matters of noncompliance that require enforcement.

15.4 Default. In the event one Party believes the other Party is in default, the Parties shall make a good faith effort to negotiate and informally resolve the issues in dispute prior to terminating or modifying this Agreement. In the event of an impasse, the Parties shall make good faith efforts to negotiate and informally resolve the issue in dispute (the "Claim"). If the Parties do not resolve the Claim through negotiation within thirty (30) days of the date of the notice of default, the Parties agree to submit the claim to mediation pursuant to the following process:

15.4.1 The non-defaulting Party (the "Claimant") shall have thirty (30) additional days within which to submit the Claim to mediation under the auspices of any dispute resolution center or other such independent agency providing similar services upon which the Parties may mutually agree.

15.4.2 If the Parties do not settle the Claim within thirty (30) days after initiation of mediation or within such time as determined reasonable or appropriate by the mediator, the mediator shall issue a notice of termination of the mediation proceedings. Such notice shall set forth when and where the Parties met, that the Parties are at an impasse, and the date that mediation was terminated.

15.4.3 If settlement does not occur and mediation is terminated, the Parties may pursue any actions at law and equity permitted under this Agreement subject to applicable rights to notice and cure provided for in this Agreement.

15.4.4 The costs of mediation shall be paid in equal shares by the Parties; provided, however, a Party who refuses to participate in a mediation that has been requested pursuant to this Paragraph may be assessed the entire costs of the mediation.

15.5 Notices. Notices shall be made to the following persons. Each Party shall make a good faith effort to determine the successors in interest of each of the following:

To the City:

Noah Saldo, City Manager
1029 N Howe St
Southport, N.C. 28461
nsaldo@cityofsouthport.com

With a copies to:

Thomas E. Terrell, Jr.
Fox Rothschild LLP
230 N. Elm St. Suite 230
Greensboro, NC 27401
tterrell@foxrothschild.com

To Waterway Developer:

Charles A. Paul, III
Chief Executive Officer
Bald Head Island Limited, LLC
PO Box 3069
Bald Head Island, NC 28461
cpaul@bhisland.com

And:

Roger Perry
East-West Partners
East West Partners Management Company, Inc.
1450 Environ Way
Chapel Hill, NC 27517

With copies to:

William J. Brian, Jr.
Morningstar Law Group
700 West Main Street
Durham, NC 27701

Molly M. Stuart
Morningstar Law Group
434 Fayetteville Street, #2200

Raleigh, NC 27601

15.6 Entire Agreement. This Agreement and the Laws described in Article XIII set forth and incorporate by reference all promises, terms, conditions and understandings between the Parties related to the Property and the Project, and there are no promises, agreements, conditions or understandings, oral or written, expressed or implied, among the Parties related to the matters addressed in this Agreement.

15.7 Construction. Counsel for the City and the Parties have reviewed and revised this Agreement and any rule of construction that ambiguities are to be resolved against the drafting party shall not apply.

15.8 Runs With the Land. This Agreement shall be binding upon, enforceable against, and inure to the benefit of the Parties and their heirs, successors, and assigns. This Agreement shall run with the Property and the rights and obligations of Waterway Developer shall be binding upon future owners thereof.

15.9. Governing Law. This Agreement shall be governed by the laws of the State of North Carolina and the Laws described in Article XIII.

15.10. Counterparts. This Agreement may be executed in several counterparts, each of which shall be deemed an original, and such counterparts shall constitute one and the same instrument.

15.11. Agreement to Cooperate. In the event of legal action instituted by a third party challenging the validity of any annexation, rezoning, or the adoption of this Agreement or any provision contained herein, the Parties agree to cooperate in defending such action; provided, however, each party shall retain the right to pursue its own independent legal defense. Waterway Developer further agrees to pay the City's reasonable attorneys' fees up to and including $50,000 to participate in litigation which defends Developers' interests.

15.12 Severability. If any term or provision herein shall be judicially determined to be void or of no effect, such determination shall not affect the validity of the remaining terms and provisions.

15.13 No Pledge of Taxing Power or Governmental Authority. No provision of this Agreement shall be construed or interpreted as (1) creating a pledge of the faith and credit of the City within the meaning of any constitutional debt limitation, (2) delegating governmental powers, or (3) a donation or a lending of the credit of the City within the meaning of the Constitution of the State of North Carolina. No provision of this Agreement shall be construed to pledge or to create a lien on any class or source of City funds or operate beyond its intended scope so as to restrict, to any extent prohibited by law, any future action or right of action on the part of the City. To the extent of any conflict between this section and any other provision of this Agreement, this section shall take priority. The City has pre-audited this Agreement and the obligations hereunder to ensure compliance with budgetary accounting requirements (if any) that may apply. This Agreement is conditioned upon, and shall not be operative until, any required pre-audited certificate is supplied.

15.14 Authority. Each party represents that it has undertaken all actions necessary for corporate or public approval of this Agreement, and that the person signing this Agreement has the authority to bind Waterway Developer or the City.

15.15 Parties. The City shall include the City of Southport as a municipal corporation and, appropriate to context, its aldermen, employees, contractors, consultants, and other agents acting on its behalf. Waterway Developer shall mean Waterway Developer as a company and, appropriate to context, its owners, manager, directors, employees, contractors, consultants, and other agents acting on its behalf.

15.16 Validity. Waterway Developer has fully participated in the negotiation and execution of this Agreement and affirms that the provisions and conditions herein pertaining to its financial and other obligations comport with all requirements of the UDO and the laws of the State of North Carolina, the laws of the United States, and common law.

[SIGNATURES ON FOLLOWING PAGES]

City of Southport

By:_____

Print Name:_____

Title:_____

State of North Carolina

_____ County

I certify that the following person personally appeared before me this day and acknowledged to me that he or she voluntarily signed the foregoing document for the purpose stated therein on behalf of City of Southport, and in the capacity indicated: _____.

Date: _____ _____

Notary Public

My Commission Expires:

_____ Print Name: _____

[Affix Notary Stamp or Seal below]

PRE-AUDIT CERTIFICATION
This instrument has been preaudited in the manner required by the Local Government Budget and Fiscal Control Act.

_____

Joseph Kronenwetter, City of Southport Finance Director

Waterway of Southport, LLC

By: East West Partners Management Company, Inc., Authorized Signatory

By: _____
Name: _____
Title: _____

State of North Carolina

_____ County

I certify that the following person personally appeared before me this day and acknowledged to me that he or she voluntarily signed the foregoing document for the purpose stated therein on behalf of [_____] a _____ corporation, and in the capacity indicated: _____.

Date: _____ _____
Notary Public

My Commission Expires:

_____ Print Name: _____

[Affix Notary Stamp or Seal below]

Waterway of Southport, LLC

By: Bald Head Island Limited LLC, Authorized Signatory

By: _____
Name: _____
Title: _____

State of North Carolina

_____ County

I certify that the following person personally appeared before me this day and acknowledged to me that he or she voluntarily signed the foregoing document for the purpose stated therein on behalf of [_____] a _____ corporation, and in the capacity indicated: _____.

Date: _____ _____
Notary Public

My Commission Expires:

_____ Print Name: _____

[Affix Notary Stamp or Seal below]

Exhibit A

Property

Tax ID	Address	Owner
Marina and Parking Lots Land		
237KA004	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA003	6099 Indigo Plantation Drive	BALD HEAD ISLAND LIMITED LLC
237KA006	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA00302	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA00501	No address listed	BALD HEAD ISLAND LIMITED LLC
City Land		
2370000301	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000423	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000420	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000416	No address listed	BALD HEAD ISLAND LIMITED LLC
237FB002	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD001	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD002	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD003	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000305	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD004	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD005	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD006	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000424	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000401	810 W. 9th Street County	BALD HEAD ISLAND LIMITED LLC
County Land		
22100027	No address listed	BALD HEAD ISLAND LIMITED LLC
2210002901	No address listed	BALD HEAD ISLAND LIMITED LLC
221OA001	4017 Robert Ruark Dr SE	BALD HEAD ISLAND LIMITED LLC
23700015	No address listed	BALD HEAD ISLAND LIMITED LLC
23700016	No address listed	BALD HEAD ISLAND LIMITED LLC
2370001601	No address listed	BALD HEAD ISLAND LIMITED LLC
23700018	No address listed	BALD HEAD ISLAND LIMITED LLC
23700020	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000401	810 W. 9th ST	BALD HEAD ISLAND LIMITED LLC
2370000419	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000417	No address listed	BALD HEAD ISLAND LIMITED LLC
23700005	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000502	712 W. 11th ST	BALD HEAD ISLAND LIMITED LLC
23700005	No address listed	BALD HEAD ISLAND LIMITED LLC

Exhibit B
Master Plan

REZONING PACKAGE

INDIGO

MASTER PLANNED COMMUNITY

BRUNSWICK COUNTY, NORTH CAROLINA

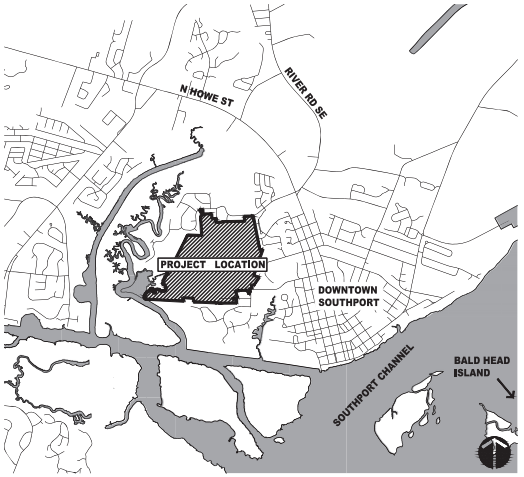
DATE: 11.06.2024

SHEET INDEX

Sheet List Table

Sheet Number	Sheet Title
RZ-0	COVER
RZ-1	SURVEY
RZ-2	EXISTING CONDITIONS
RZ-3	MASTER DEVELOPMENT PLAN
RZ-4	PROPOSED STREET TYPOLOGY
RZ-5	STREET SECTIONS
RZ-6	PROPOSED OPEN SPACE
RZ-7	CHARACTER IMAGERY
RZ-8	UTILITY CONCEPT PLAN
RZ-9	PHASING PLAN

VICINITY MAP



PROJECT TEAM

OWNER/DEVELOPER
INDIGO
EAST WEST PARTNERS
226 N FRONT ST
WILMINGTON, NC 28401
910.386.8683

LANDSCAPE ARCHITECT
LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT NAME:ERIC POHLMANN

SURVEYOR
MICHAEL UNDERWOOD & ASSOCIATES, P.A.
102 CINEMA DR, SUITE A
WILMINGTON, NC 28403
910.815.0650

CIVIL ENGINEER
NORRIS & TUNSTALL CONSULTING ENGINEERS, P.C.
2602 IRON GATE DR. SUITE 102
WILMINGTON, NC 28412
910.343.9653

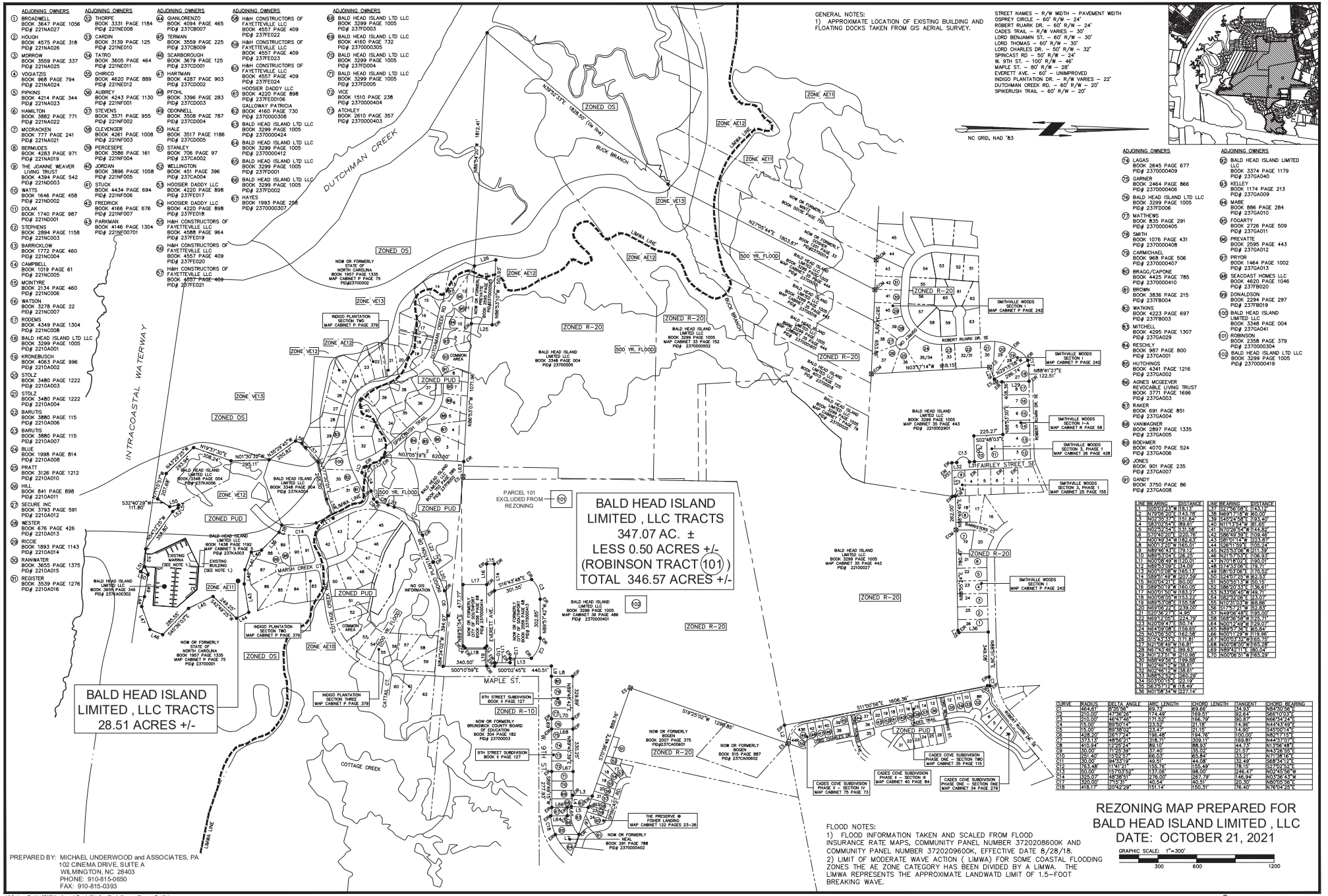
Brunswick County
Planning Board
Approved
December 9, 2024
See Approval Letter for Conditions

Marc A. Fages

INDIGO
LD PN 1021180
COVER

LandDesign.

11/6/2024 3:38 PM AMELIA ALLAWAY P:\CLT_2021\1021180\CAD\ENTITLEMENTS\1021180_RZN_COVER.DWG


BALD HEAD ISLAND LIMITED , LLC TRACTS 347.07 AC. ± LESS 0.50 ACRES +/- (ROBINSON TRACT (101)) TOTAL 346.57 ACRES +/-
BALD HEAD ISLAND LIMITED , LLC TRACTS 28.51 ACRES +/-
PARCEL 101 EXCLUDED FROM REZONING
DUTCHMAN CREEK
BUCK BRANCH
COTTAGE CREEK
INTRACOASTAL WATERWAY
LIMWA LINE
500 YR. FLOOD
ZONED OS
ZONED R-20
ZONED PUD
ZONED R-10
ZONE AE11
ZONE AE12
ZONE VE12
ZONE VE13
ZONE AE10
MAPLE ST.
FAIRWAY STREET SE
ROBERT RUARK DR. SE
MARSH CREEK CT.
OSPREY CIRCLE
CADES TRAIL
BARRISTERS CT.
CATTAIL CT.
EVERETT AVE.
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NOW OR FORMERLY BOGEN BOOK 2007 PAGE 375 PID#237C000601
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NOW OR FORMERLY BOGEN BOOK 291 PAGE 788 PID# 2370000402
NOW OR FORMERLY STATE OF NORTH CAROLINA BOOK 1957 PAGE 1335 MAP CABINET P PAGE 75 PID#237000001
NOW OR FORMERLY STATE OF NORTH CAROLINA BOOK 1957 PAGE 1335 MAP CABINET P PAGE 75 PID#237000002
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BALD HEAD ISLAND LIMITED LLC BOOK 3348 PAGE 004 PID# 237K4006
EXISTING MARINA (SEE NOTE 1)
EXISTING BUILDING (SEE NOTE 1)
COMMON AREA
NO GIS INFORMATION
GENERAL NOTES:
1) APPROXIMATE LOCATION OF EXISTING BUILDING AND FLOATING DOCKS TAKEN FROM GIS AERIAL SURVEY.
STREET NAMES – R/W WIDTH – PAVEMENT WIDTH
OSPREY CIRCLE – 60' R/W – 24'
ROBERT RUARK DR. – 60' R/W – 24'
CADES TRAIL – R/W VARIES – 30'
LORD BENJAMIN ST. – 60' R/W – 30'
LORD THOMAS – 60' R/W – 30'
LORD CHARLES DR. – 50' R/W – 32'
SPINCAST RD – 50' R/W – 24'
W. 9TH ST. – 100' R/W – 46'
MAPLE ST. – 80' R/W – 28'
EVERETT AVE. – 60' – UNIMPROVED
INDIGO PLANTATION DR. – R/W VARIES – 22'
DUTCHMAN CREEK RD. – 60' R/W – 20'
SPIKERUSH TRAIL – 60' R/W – 20'
NC GRID, NAD '83
ADJOINING OWNERS
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19 KRONEBUSCH BOOK 4063 PAGE 996 PID# 2210A002
20 STOLZ BOOK 3480 PAGE 1222 PID# 2210A003
21 STOLZ BOOK 3480 PAGE 1222 PID# 2210A004
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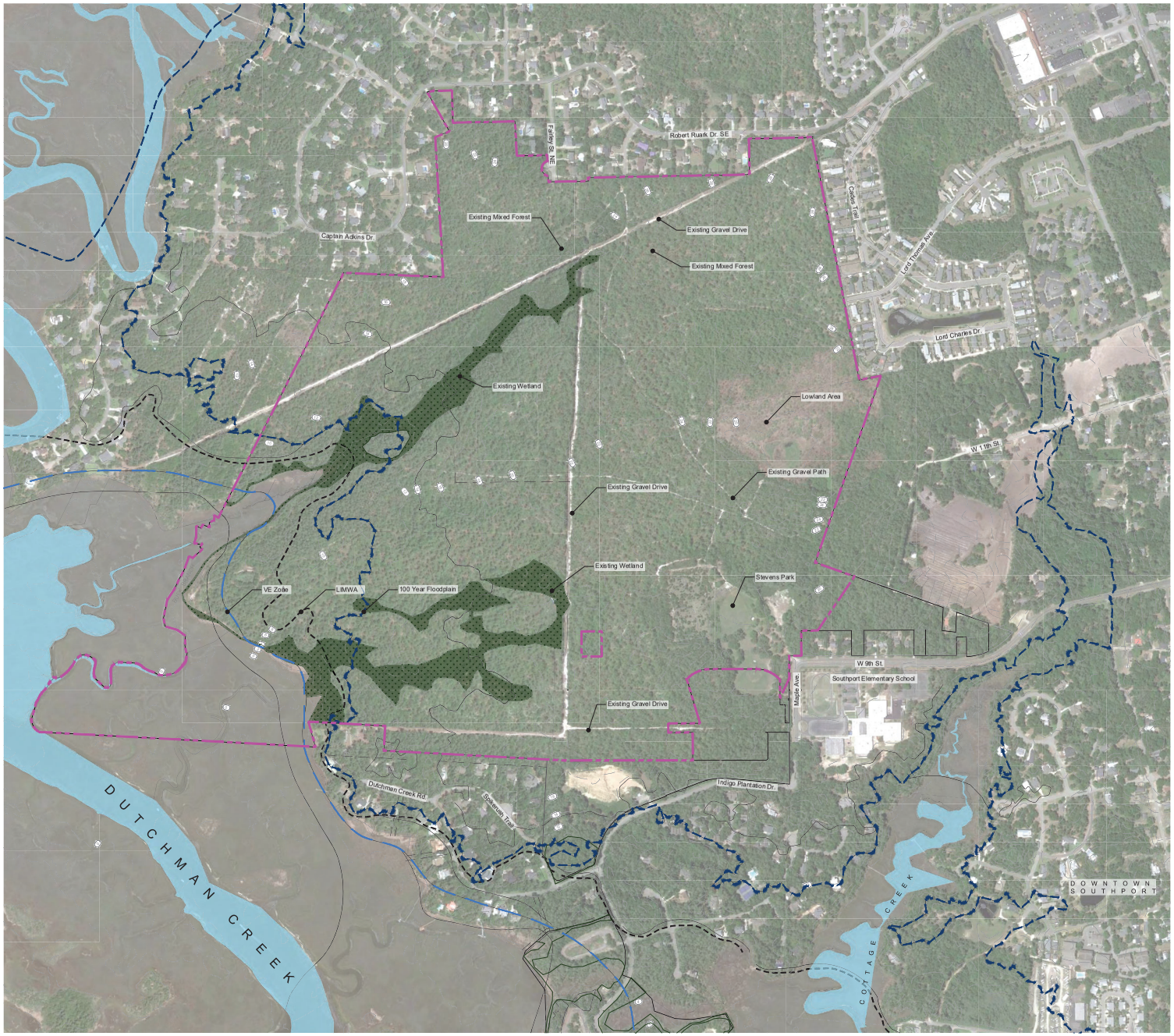
30 RAINWATER BOOK 3655 PAGE 1375 PID# 2210A015
31 REGISTER BOOK 3539 PAGE 1276 PID# 2210A016
32 THORPE BOOK 3331 PAGE 1184 PID# 221NE008
33 CARDIN BOOK 3139 PAGE 125 PID# 221NE010
34 TATRO BOOK 3605 PAGE 464 PID# 221NE011
35 CHIRICO BOOK 4620 PAGE 889 PID# 221NE012
36 AUBREY BOOK 4243 PAGE 1130 PID# 221NF001
37 STEVENS BOOK 3571 PAGE 955 PID# 221NF002
38 CLEVENGER BOOK 4261 PAGE 1008 PID# 221NF003
39 PERCESEPE BOOK 3586 PAGE 161 PID# 221NF004
40 JORDAN BOOK 3896 PAGE 1058 PID# 221NF005
41 STUCK BOOK 4434 PAGE 694 PID# 221NF006
42 FREDRICK BOOK 4166 PAGE 676 PID# 221NF007
43 PARKMAN BOOK 4146 PAGE 1304 PID# 221NF00701
44 GIANLORENZO BOOK 4094 PAGE 465 PID# 237CB007
45 TERMAN BOOK 3559 PAGE 225 PID# 237CB009
46 SCARBOROUGH BOOK 3679 PAGE 125 PID# 237CD001
47 HARTMAN BOOK 4287 PAGE 903 PID# 237CD002
48 PFOHL BOOK 3396 PAGE 283 PID# 237CD003
49 ODONNELL BOOK 3508 PAGE 787 PID# 237CD004
50 HALE BOOK 3517 PAGE 1186 PID# 237CD005
51 STANLEY BOOK 706 PAGE 97 PID# 237CA002
52 WELLINGTON BOOK 451 PAGE 396 PID# 237CA004
53 HOOSIER DADDY LLC BOOK 4220 PAGE 898 PID# 237FE017
54 HOOSIER DADDY LLC BOOK 4220 PAGE 898 PID# 237FE018
55 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4588 PAGE 964 PID# 237FE019
56 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4557 PAGE 409 PID# 237FE020
57 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4557 PAGE 409 PID# 237FE021
58 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4557 PAGE 409 PID# 237FE022
59 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4557 PAGE 409 PID# 237FE023
60 H&H CONSTRUCTORS OF FAYETTEVILLE LLC BOOK 4557 PAGE 409 PID# 237FE024
61 HOOSIER DADDY LLC BOOK 4220 PAGE 898 PID# 237FE00106
62 GALLOWAY PATRICIA BOOK 4160 PAGE 730 PID# 2370000308
63 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 2370000424
64 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 2370000412
65 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD001
66 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD002
67 HAYES BOOK 1993 PAGE 258 PID# 2370000307
68 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD003
69 BALD HEAD ISLAND LTD LLC BOOK 4160 PAGE 732 PID# 2370000305
70 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD004
71 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD005
72 VICE BOOK 1510 PAGE 238 PID# 2370000404
73 ATCHLEY BOOK 2610 PAGE 357 PID# 2370000403
74 LAGAS BOOK 2645 PAGE 677 PID# 2370000409
75 GARNER BOOK 2464 PAGE 866 PID# 2370000406
76 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 237FD006
77 MATTHEWS BOOK 835 PAGE 291 PID# 2370000405
78 SMITH BOOK 1076 PAGE 431 PID# 2370000408
79 CARMICHAEL BOOK 968 PAGE 506 PID# 2370000407
80 BRAGG/CAPONE BOOK 4425 PAGE 785 PID# 2370000410
81 BROWN BOOK 3836 PAGE 215 PID# 237FB004
82 WATKINS BOOK 4223 PAGE 697 PID# 237FB003
83 MITCHELL BOOK 4295 PAGE 1307 PID# 237GA029
84 RESCHLY BOOK 967 PAGE 800 PID# 237GA001
85 HUTCHINGS BOOK 4354 PAGE 1216 PID# 237GA002
86 AGNES MCGEEVER REVOCABLE LIVING TRUST BOOK 3771 PAGE 1696 PID# 237GA003
87 BAKER BOOK 691 PAGE 851 PID# 237GA004
88 VANWAGNER BOOK 2897 PAGE 1335 PID# 237GA005
89 BOEHMER BOOK 4070 PAGE 524 PID# 237GA006
90 JONES BOOK 901 PAGE 235 PID# 237GA007
91 GANDY BOOK 3750 PAGE 86 PID# 237GA008
92 BALD HEAD ISLAND LIMITED LLC BOOK 3374 PAGE 1179 PID# 237GA040
93 KELLEY BOOK 1174 PAGE 213 PID# 237GA009
94 MABE BOOK 886 PAGE 284 PID# 237GA010
95 FOGARTY BOOK 2726 PAGE 509 PID# 237GA011
96 PREVATTE BOOK 2595 PAGE 443 PID# 237GA012
97 PRYOR BOOK 1464 PAGE 1002 PID# 237GA013
98 COASTAL HOMES LLC BOOK 4620 PAGE 1046 PID# 237FB020
99 PHILLIDGE BOOK 2294 PAGE 297 PID# 237FB019
100 BALD HEAD ISLAND LIMITED LLC BOOK 3348 PAGE 004 PID# 237GA041
101 ROBINSON BOOK 2358 PAGE 379 PID# 2370000304
102 BALD HEAD ISLAND LTD LLC BOOK 3299 PAGE 1005 PID# 2370000419
LINE BEARING DISTANCE
L1 S05°03'23"W 15.13'
L2 N73°05'40"E 143.78'
L3 N02°35'37"E 151.84'
L4 S83°02'54"E 89.61'
L5 N02°52'54"E 131.56'
L6 S74°07'09"E 220.76'
L7 N00°49'34"W 182.63'
L8 N00°13'20"W 165.01'
L9 N89°46'43"E 79.12'
L10 N89°33'04"E 26.25'
L11 N00°08'49"W 120.01'
L12 N89°33'09"E 14.09'
L13 N89°33'09"E 165.13'
L14 S89°51'49"W 207.59'
L15 N00°08'11"E 60.00'
L16 S89°50'19"W 160.05'
L17 N00°01'50"W 183.27'
L18 N00°08'09"W 153.22'
L19 N89°33'09"E 155.58'
L20 N09°06'22"E 239.00'
L21 S20°56'27"E 4.95'
L22 N69°12'00"E 224.79'
L23 N20°05'47"E 50.74'
L24 N64°39'08"E 159.65'
L25 N03°50'20"E 162.58'
L26 S19°43'15"E 171.81'
L27 N21°39'49"W 116.81'
L28 N67°43'46"E 99.93'
L29 N01°37'51"W 210.98'
L30 N89°49'56"E 199.88'
L31 N02°48'12"W 38.61'
L32 N02°48'12"W 38.61'
L33 N88°52'55"E 260.29'
L34 S03°00'15"E 22.19'
L35 S63°57'12"W 18.49'
L36 N01°08'34"W 227.14'
CURVE RADIUS DELTA ANGLE ARC LENGTH CHORD LENGTH TANGENT CHORD BEARING
C1 464.61' 8°50'56" 89.73 89.66 44.93' N84°20'56"E
C2 210.00' 47°36'26" 174.49' 169.51' 92.64' S66°10'03"E
C3 210.00' 46°47'46" 171.57' 166.79' 90.87' N66°34'45"E
C4 15.00' 89°50'14" 23.52' 21.18' 14.95' N44°43'49"E
C5 15.00' 89°38'02" 23.47' 21.15' 14.90' S45°01'14"E
C6 428.20' 26°17'24" 196.48' 194.76' 100.00' N82°17'15"E
C7 373.13' 48°56'21" 318.71' 309.11' 169.81' N44°37'07"E
C8 410.94' 12°29'24" 89.63' 89.47' 44.93' N11°56'48"E
C9 30.00' 71°29'59" 37.40' 35.02' 21.57' N43°26'59"E
C10 251.40' 15°02'57" 66.03' 65.84' 33.31' N71°38'16"E
C11 30.00' 94°53'19" 49.51' 44.08' 32.49' S68°34'12"E
C12 263.48' 11°41'31" 155.76' 155.49' 78.15' S57°40'56"E
C13 60.00' 157°05'52" 164.52' 118.00' 246.47' N72°45'56"W
C14 326.07' 48°38'51" 276.00' 267.79' 146.94' N03°36'43"W
C15 120.00' 74°51'31" 40.54' 40.51' 20.30' N50°05'58"E
C16 418.17' 20°42'29" 151.14' 150.31' 76.40' N76°14'25"E
FLOOD NOTES:
1) FLOOD INFORMATION TAKEN AND SCALED FROM FLOOD INSURANCE RATE MAPS, COMMUNITY PANEL NUMBER 3720208600K AND COMMUNITY PANEL NUMBER 3720209600K, EFFECTIVE DATE 8/28/18.
2) LIMIT OF MODERATE WAVE ACTION (LIMWA) FOR SOME COASTAL FLOODING ZONES THE AE ZONE CATEGORY HAS BEEN DIVIDED BY A LIMWA. THE LIMWA REPRESENTS THE APPROXIMATE LANDWATD LIMIT OF 1.5-FOOT BREAKING WAVE.
REZONING MAP PREPARED FOR BALD HEAD ISLAND LIMITED , LLC
DATE: OCTOBER 21, 2021
GRAPHIC SCALE: 1"=300'
300 600 1200
PREPARED BY: MICHAEL UNDERWOOD and ASSOCIATES, PA
102 CINEMA DRIVE, SUITE A
WILMINGTON, NC 28403
PHONE: 910-815-0650
FAX: 910-815-0393
I:\Carlson Buddy 2019\Norris and Tunstall\Indigo Plantation – Stevens Park\dwg
© 2021 MICHAEL UNDERWOOD and ASSOCIATES, PA



LEGEND:

- EXISTING WETLAND
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

EXISTING IMPERVIOUS AREA: 10.93 AC

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Brunswick County Planning Board Approved

KEY MAP

SEAL

NORTH CAROLINA C-015 LandDesign, Inc.

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1991 ERIC MICHAEL PORKMAN

PROJECT

INDIGO

BALD HEAD ISLAND, LLC

BRUNSWICK COUNTY, NC

28461

LANDDESIGN PROJ#

1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE

VERT: N/A
HORZ: 1" = 300'

0 150.0001 300.0002 600.0005

NORTH

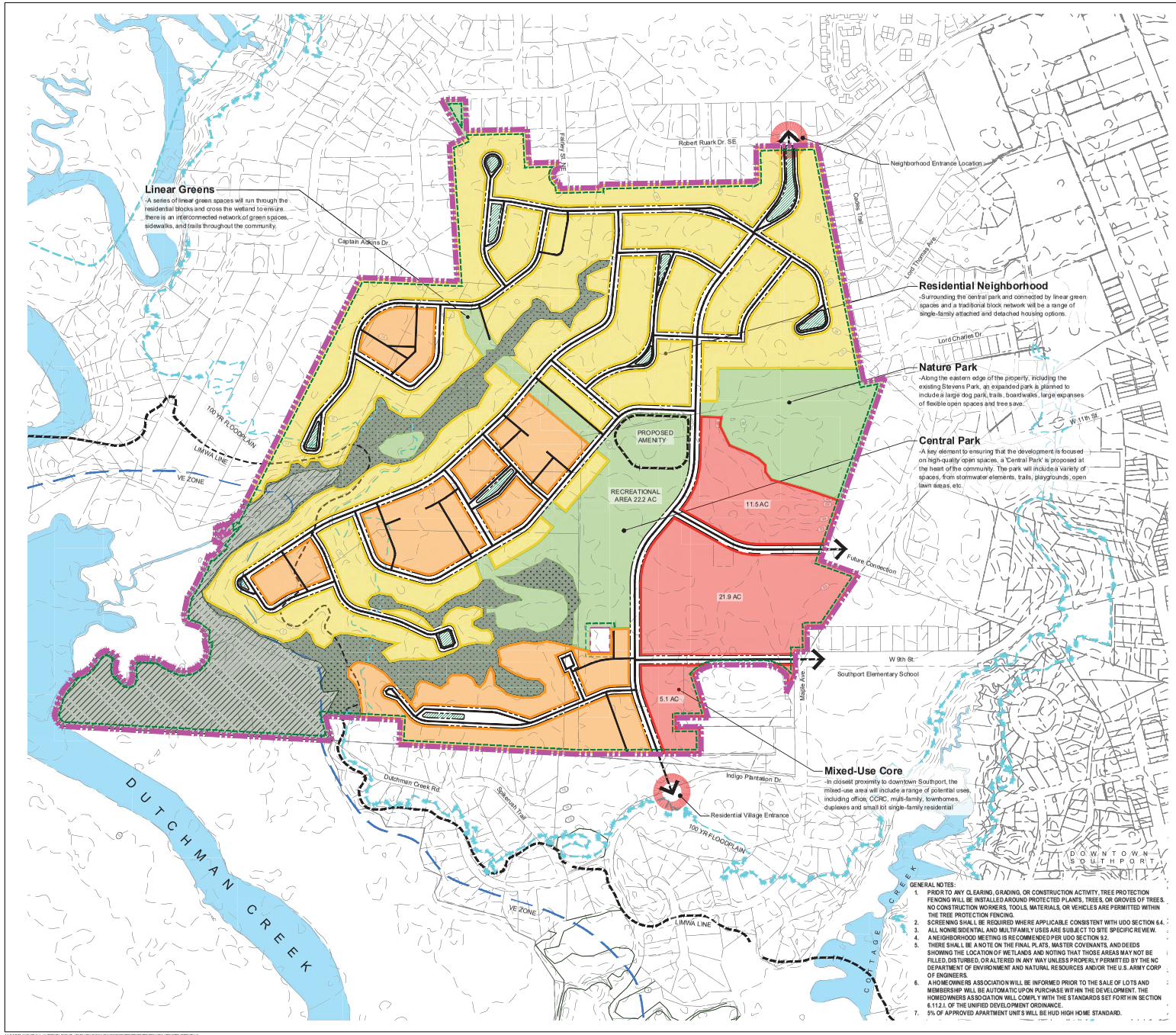
SHEET TITLE

EXISTING CONDITIONS

SHEET NUMBER

RZ-2

ORIGINAL SHEET SIZE: 24" X 36"



DEVELOPMENT SUMMARY

PROPOSED ZONING: PUD
OVERALL TRACT AREA: 326.96 TOTAL ACRES
OVERALL DENSITY: 3.36 UNITS PER ACRE
DENSITY ALLOWED: 5.8 DUA MAX. WITH WATER + WASTEWATER
PROPOSED UNITS: 1100

AREA A: MIXED-USE : 39.9 TOTAL ACRES
NON-RESIDENTIAL USES: COMMERCIAL, RETAIL, RESTAURANT, MEDICAL
RESIDENTIAL USES: MULTI-FAMILY, OR TOWNHOME
MAX NON-RESIDENTIAL 100,000 SQ FT
MAX RESIDENTIAL UNITS : 500 TOTAL MULTIFAMILY UNITS, UNIT MIX TBD.
CAP OF 350 FOR EITHER TYPE: CONTINUING CARE RETIREMENT COMMUNITY OR MULTIFAMILY

AREA B: MEDIUM DENSITY RESIDENTIAL : 50.6 TOTAL ACRES
RESIDENTIAL USES: SINGLE FAMILY COTTAGE, DUPLEX, OR TOWNHOME
MAX RESIDENTIAL UNITS: 200
APPROXIMATE DENSITY: 4.0

AREA C: LOW DENSITY RESIDENTIAL : 135.5 TOTAL ACRES
RESIDENTIAL USES: SINGLE FAMILY, OR SINGLE FAMILY COTTAGE
MAX RESIDENTIAL UNITS: 400
APPROXIMATE DENSITY: 3.0

TOTALS:
-NON-RESIDENTIAL: 100,000 SF MAX.
-RESIDENTIAL: 1,100 UNITS MAX.

LOT TYPE	WxL (MIN)	FRONT SETBACK (MIN)	SIDE SETBACK (MIN)	REAR SETBACK (MIN)
SINGLE FAMILY - FRONT LOAD	50' x 110'	10'/20' *	5'	10'
SINGLE FAMILY - REAR LOAD	40' x 100'	10'	5'	5'/18' **
COTTAGE - REAR LOAD	35' x 80'	10'	5'	5'/18' **
DUPLEX	40' x 100'	10'	5'	5'/18' **
TOWNHOME	18' x 80'	10'	5'	5'/18' **

GARAGE PARKING MINIMUM 20' FROM ROW
** 18' IF PARKING PAD IS PROVIDED AT REAR OF GARAGE
** OTHER LOT SIZES ARE TYPICAL OF BRUNSWICK COUNTY'S PLANNING STANDARDS

ELEMENTS OF EXCEPTIONAL DESIGN

1. 28% OPEN SPACE, OF WHICH THE MAJORITY IS CONTIGUOUS TO MAXIMIZE HABITAT CREATION AND TREE SAVE. ALONG WITH THESE OPEN SPACES, THERE WILL BE MULTIPLE POCKET PARKS NESTLED THROUGHOUT THE COMMUNITY
2. THE CONSTRUCTION PROCESS WILL NOT INCLUDE CLEAR-CUTTING OF TREES, AND INSTEAD WILL BE CLEARING AND GRADING FOR THE STREET SYSTEM. INDIVIDUAL LOTS WILL BE REQUIRED TO CONDUCT INDIVIDUAL TREE SURVEYS FOR FUTURE DEVELOPMENT.
3. INTERCONNECTED BLOCK SYSTEM TO ALLOW FOR EASY PEDESTRIAN AND VEHICULAR MOVEMENT. ALL STREETS WILL BE TREE-LINED WITH SIDEWALKS TO HELP SHADE WALKWAYS AND OVERALL HEAT ISLAND EFFECT. ALONG WITH SIDEWALKS, A SERIES OF TRAIL SYSTEMS WILL CONNECT THROUGHOUT THE COMMUNITY AND WHERE POSSIBLE (AND DESIRED BY ADJOINING COMMUNITIES), TO ADJACENT NEIGHBORHOODS AS WELL.
4. A MIXTURE OF HOUSING TYPOLOGIES WILL BE DEVELOPED TO PROVIDE VARIOUS PRICE POINTS FOR THE COMMUNITY.
5. WHILE NOT REQUIRED, NOR ADMINISTERED, BY BRUNSWICK COUNTY, DESIGN GUIDELINES WILL BE DEVELOPED FOR THIS COMMUNITY THAT WILL PROVIDE GUIDANCE FOR BUILDERS ON ARCHITECTURAL STYLES AND LANDSCAPE AND HARDSCAPE REQUIREMENTS. THIS WILL ENSURE A COMMITMENT TO A HIGH-QUALITY NEIGHBORHOOD THAT WILL HAVE A REGIONAL VERNACULAR FITTING IN WITH THE CONTEXT OF THE LOCATION.

LEGEND

- AREA A - MIXED USE
- AREA B - MEDIUM DENSITY RESIDENTIAL
- AREA C - LOW DENSITY RESIDENTIAL
- OPEN SPACE
- EXISTING WETLAND
- EXISTING FLOODPLAIN
- PROPOSED STREET
- 100 YEAR FLOODPLAIN
- VE ZONE
- PROPERTY LINE
- 30' PERIPHERAL / STREET BUFFER

GENERAL NOTES:

1. PRIOR TO ANY CLEARING, GRADING, OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED PLANTS, TREES, OR GROVES OF TREES. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
2. SCREENING SHALL BE REQUIRED WHERE APPLICABLE CONSISTENT WITH UDO SECTION 6.4.
3. ALL NONRESIDENTIAL AND MULTIFAMILY USES ARE SUBJECT TO SITE SPECIFIC REVIEW.
4. A NEIGHBORHOOD MEETING IS RECOMMENDED PER UDO SECTION 9.2.
5. THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND/OR THE U.S. ARMY CORP OF ENGINEERS.
6. A HOMEOWNERS ASSOCIATION WILL BE INFORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITHIN THE DEVELOPMENT. THE HOMEOWNERS ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION 6.11.2.I. OF THE UNIFIED DEVELOPMENT ORDINANCE.
7. 5% OF APPROVED APARTMENT UNITS WILL BE HUD HIGH HOME STANDARD.

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KEY MAP

SEAL

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT C-015

NORTH CAROLINA CHAPTER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS 1991 ENRICHING POSSIBILITIES

PROJECT

INDIGO

BALD HEAD ISLAND, LLC
BRUNSWICK COUNTY, NC
28461

DESIGN PROJECT
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

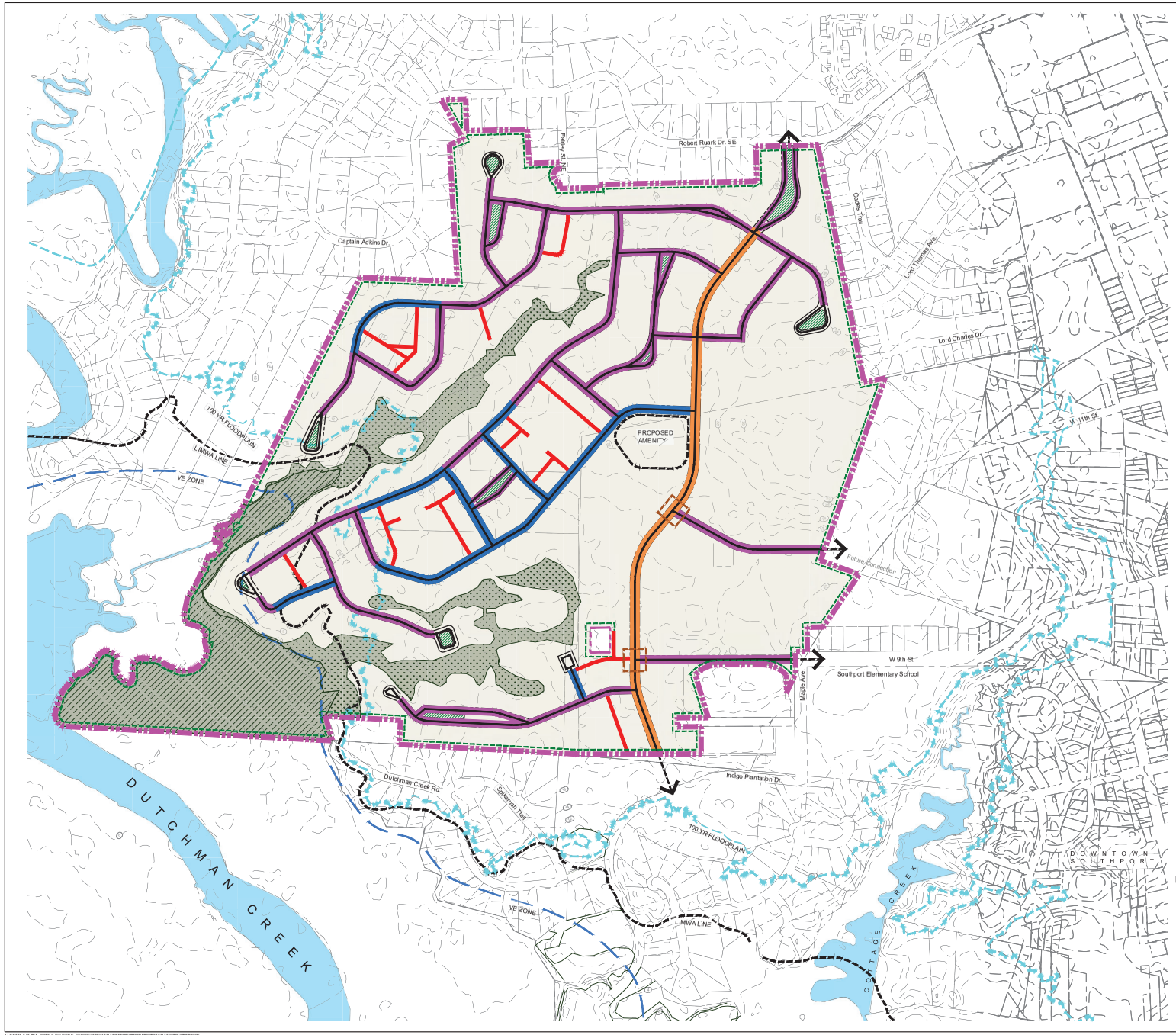
SCALE
VERT: N/A
HORZ: 1" = 300'
0 150 300 600

NORTH

SHEET TITLE
MASTER DEVELOPMENT PLAN

SHEET NUMBER
RZ-3

ORIGINAL SHEET SIZE: 24" X 36"



STREET TYPOLOGY

- AVENUE - 61' RIGHT OF WAY -ON STREET BOTH SIDE
- STREET TYPE A - 54' RIGHT OF WAY -ON STREET ONE SIDE
- STREET TYPE B - 47' RIGHT OF WAY -NO PARKING
- ALLEY TYP. - 20' RIGHT OF WAY -NO PARKING
- EXISTING WETLAND
- EXISTING FLOODPLAIN
- 100 YEAR FLOODPLAIN
- VE ZONE
- PROPERTY LINE
- 30' PERIPHERAL / STREET BUFFER
- ENHANCED SCHOOL CROSSING INTERSECTION

NOTES:

1. ALL ROADS WILL BE BUILT TO NCDOT MINIMUM PAVING STANDARDS FOR SUBDIVISION ROADS.
2. ANY STREET LIGHTING SHALL BE CONSISTENT WITH UDO SECTION 6.9.
3. INDIVIDUAL DRIVEWAYS SHALL BE LIMITED ON THE MAIN COLLECTOR STREET BETWEEN ROBERT RUARK DRIVE, W. 9TH STREET, AND INDIGO PLANTATION DRIVE.
4. THERE WILL BE 2 NON GARAGE PARKING SPACES PROVIDED PER SINGLE FAMILY RESIDENCE.
5. TIA WILL BE REVISED AT A LATER DATE BASED ON THE PLAN THAT IS ULTIMATELY APPROVED.

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Brunswick County Planning Board Approved

KEY MAP

SEAL

NORTH CAROLINA LANDSCAPE ARCHITECTURE C-015

NORTH CAROLINA LANDSCAPE ARCHITECTURE 1991 ERIC MICHAEL POMMIER

PROJECT

INDIGO

BALD HEAD ISLAND, LLC
BRUNSWICK COUNTY, NC
28461

DESIGN PROJ #
1021180

REVISION / ISSUANCE

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2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

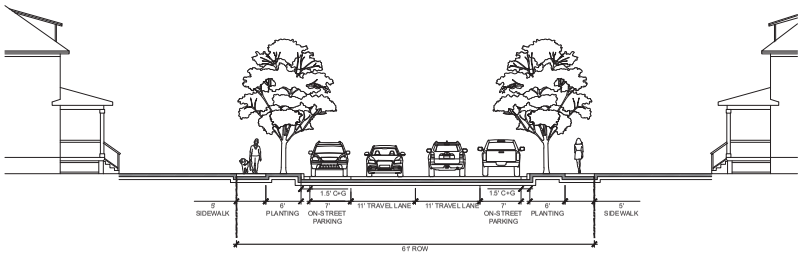
SCALE
VERT: N/A
HORZ: 1" = 300'
0 150 0 281 300 0562 600 1124

NORTH

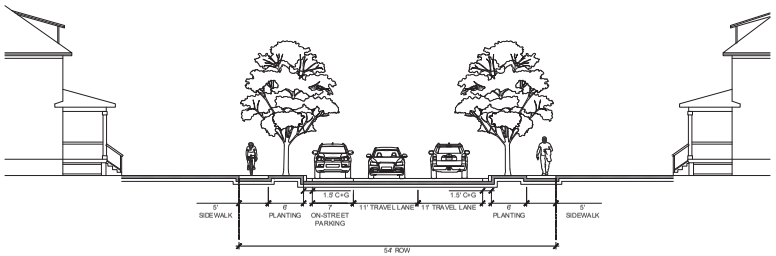
SHEET TITLE
PROPOSED STREET TYPOLOGY

SHEET NUMBER
RZ-4

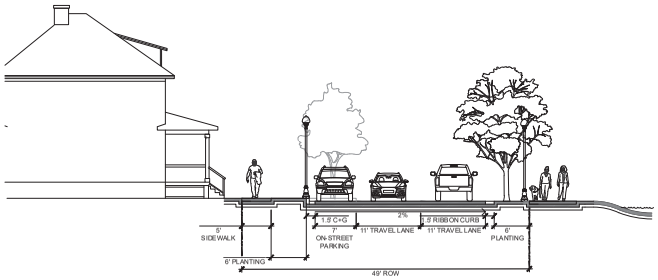
ORIGINAL SHEET SIZE: 24" X 36"



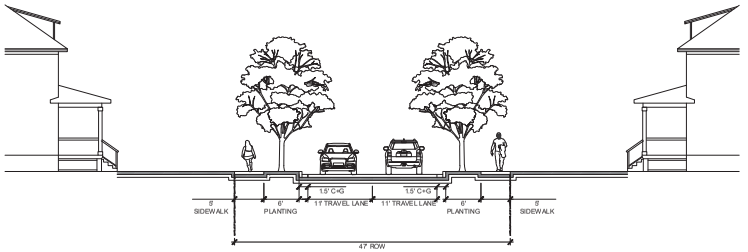
AVENUE STREET: 61' ROW
- LOCATED ALONG THE MAIN NORTH/SOUTH STREET THROUGH THE COMMUNITY. PEDESTRIAN-ORIENTED WITH ON-STREET PARKING ON BOTH SIDES OF THE STREET.



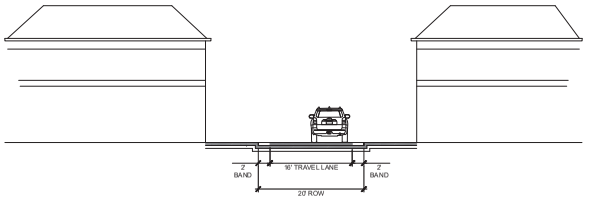
STREET TYPE A-1: 54' ROW
- LOCATED ADJACENT TO PARK SPACES AND WHERE ALLEY-LOADED LOTS ARE DESIGNED TO PROVIDE VISITOR PARKING.



STREET TYPE A-2: 49' ROW
- WHERE OPPORTUNITIES EXIST ALONG THE GREAT PARK AND OTHER LOCATIONS WHERE STORMWATER ELEMENTS MAY BE DESIGNED, A RIBBON CURB AND DITCH/SWALE SECTION MAY BE UTILIZED.



STREET TYPE B: 47' ROW
- THE TYPICAL STREET SECTION IN THE COMMUNITY WHERE FRONT-LOADED LOTS EXIST, WHILE ALSO PROVIDING PEDESTRIAN ORIENTED SIDEWALKS/STREET TREES ON BOTH SIDES OF THE STREET.



ALLEY, TYP.: 20' ROW

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Brunswick County
Planning Board
Approved

KEY MAP

SEAL:

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT C-015 Expiration Date: 12/31/2025

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1991 ERIC MICHAEL PORTMANN

PROJECT

INDIGO

BALD HEAD ISLAND, LLC
BRUNSWICK COUNTY, NC
28461

DATE/DESIGN PROJ#

1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE NORTH

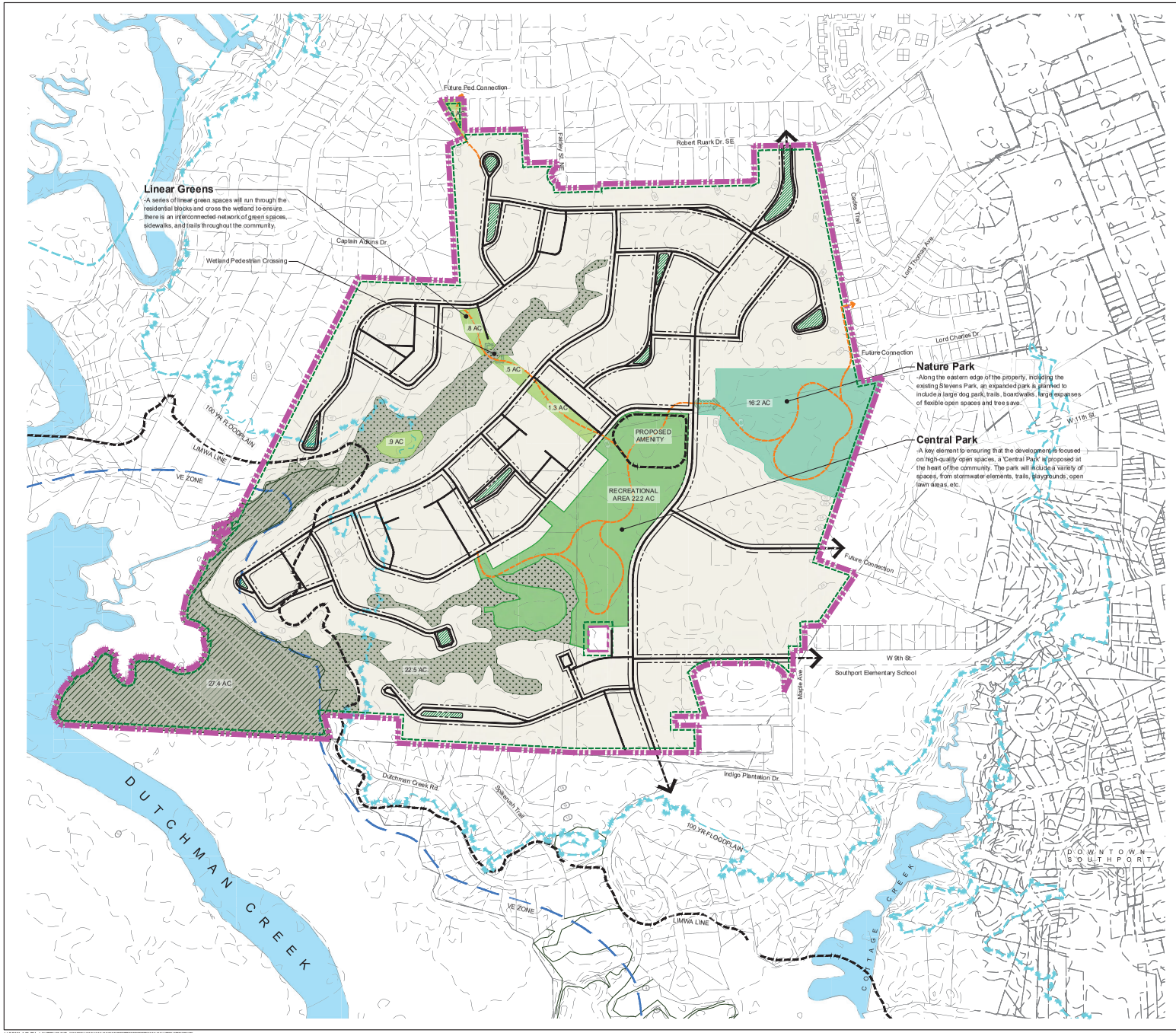
VERT: N/A
HORZ:

SHEET TITLE

STREET SECTIONS

SHEET NUMBER

RZ-5



SITE AREA: 326.96 AC
REQUIRED OPEN SPACE 65.4 AC (20%)
PROVIDED OPEN SPACE: 92.4 AC

OPEN SPACE: 20% REQUIRED BASED ON OVERALL DEVELOPMENT
-MIN. REQUIRED: 65.4 ACRES
-EXISTING WETLANDS/FLOODPLAIN: 49.9 ACRES
-PROPOSED OPEN SPACE: 42.5 ACRES
-TOTAL OPEN SPACE: 92.4 ACRES

RECREATION AREA: 15% REQUIRED BASED ON MIN. REQUIRED OPEN SPACE
-MIN. REQUIRED: 9.8 ACRES
-PROVIDED: 22.2 ACRES (UPLAND)

OPEN SPACE TYPES

NATURE PARK - 16.2 AC*
DOG PARK, SWIM, TRAILS/FIELDS, ETC

CENTRAL PARK / POCKET PARK - 22.2 AC*
PLAYGROUND, DOCKS, SHADED AREAS, GREENS, COURTS, ETC

LINEAR GREENS - 4.1 AC*
GREEN TRAIL NETWORK

EXISTING FLOODPLAIN - 27.4 AC

EXISTING WETLAND - 22.5 AC

PROPOSED STREET

100 YEAR FLOODPLAIN

VE ZONE

PROPERTY LINE

30' PERIPHERAL / STREET BUFFER**

PEDESTRIAN TRAIL

*THESE AREAS AND ASSOCIATED TRAIL ALIGNMENTS ARE CONCEPTUAL IN NATURE AND SUBJECT TO CHANGE.

NOTES:
1. AVERAGE OF 20' BUFFER ALONG WETLANDS, MIN 5'.**
2. 30' PERIPHERAL BUFFER WILL HAVE .6 OPACITY**
3. ** NOT INCLUDED IN OVERALL OPEN SPACE CALCULATIONS.

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east west partners

NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.

Brunswick County Planning Board Approved

KEY MAP

SEAL

NORTH CAROLINA C-015 LandDesign, Inc.

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1991 ERIC MICHAEL PORTMAN

PROJECT

INDIGO

BALD HEAD ISLAND, LLC

BRUNSWICK COUNTY, NC

28461

LANDDESIGN PROJ #
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

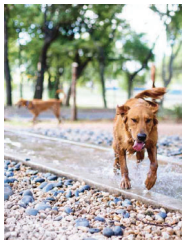
SCALE
VERT: N/A
HORZ: 1" = 300'
0 150 300 600

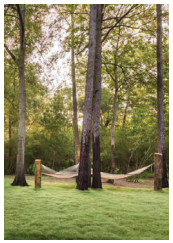
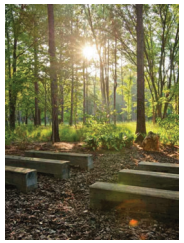
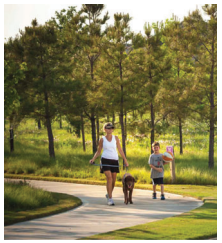
SHEET TITLE
PROPOSED OPEN SPACE

SHEET NUMBER
RZ-6

ORIGINAL SHEET SIZE 24" X 36"

NATURE PARK



CENTRAL PARKS/POCKET PARKS

LINEAR GREENS

NOTE:
THESE IMAGES ARE MEANT TO REPRESENT QUALITY AND INTENT FOR EACH OF
THE GREEN SPACES AND WILL BE SUBJECT TO FINAL PROGRAMMING AND DESIGN.

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KEY MAP

SEAL

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT C-015 Tunstall, Inc.

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1991 ERIC MICHAEL PORTMANN

PROJECT

INDIGO

BALD HEAD ISLAND, LLC
BRUNSWICK COUNTY, NC
28461

DATE/DESIGN PROJ#
1021180

REVISION / ISSUANCE

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1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE NORTH

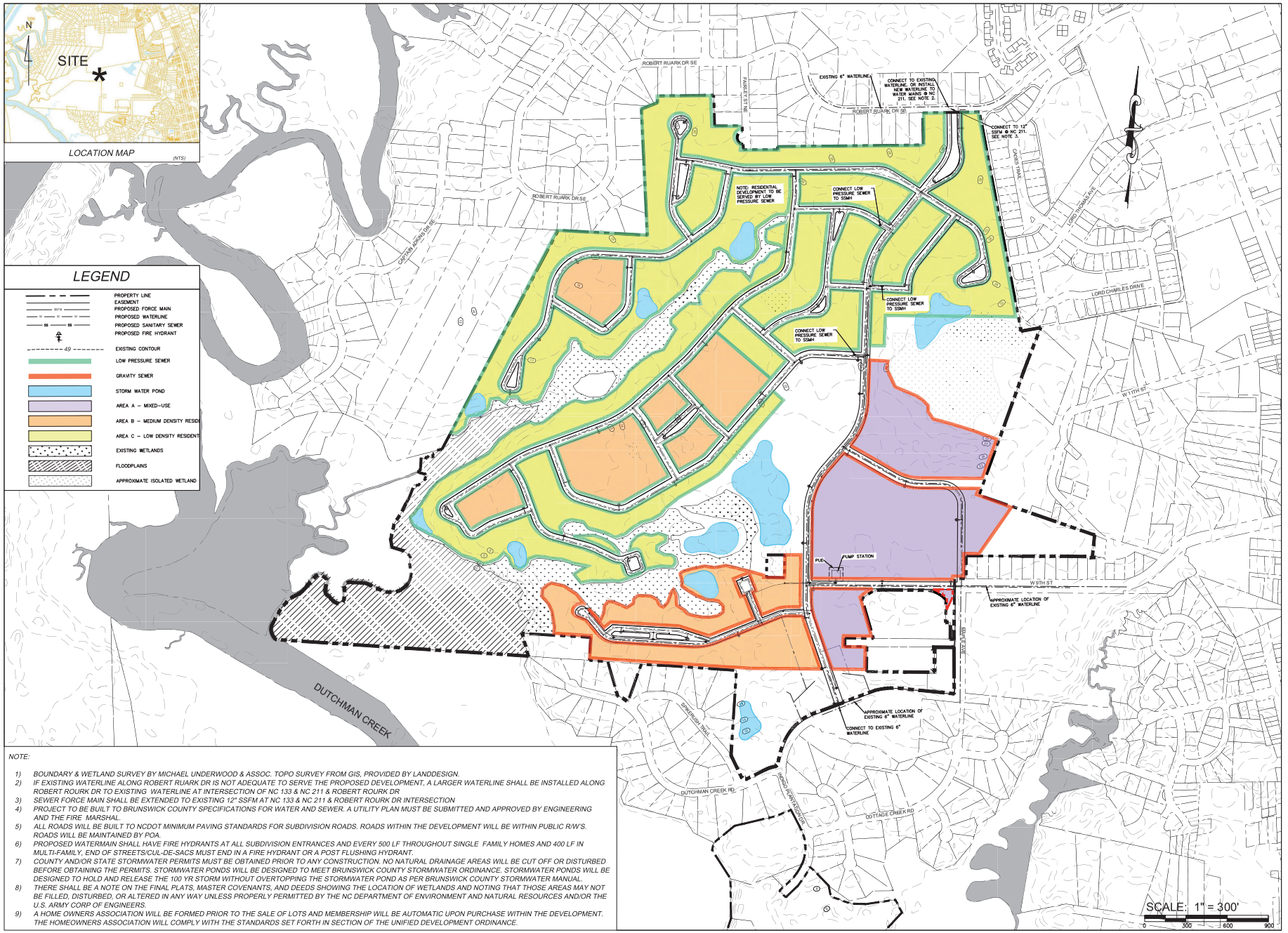
VERT: N/A
HORZ:

SHEET TITLE
CHARACTER IMAGERY

SHEET NUMBER
RZ-7

9/18/2025 3:38 PM AMELIA.VILLANWAY P:\PLSTL\2021\1021180\CAD\SHEETS\SUBMITTED\1021180_RZ02.DWG

ORIGINAL SHEET SIZE: 24" X 36"



NOTE:

1) BOUNDARY & WETLAND SURVEY BY MICHAEL UNDERWOOD & ASSOC. TOPO SURVEY FROM GIS, PROVIDED BY LANDDESIGN.
2) IF EXISTING WATERLINE ALONG ROBERT RUARK DR IS NOT ADEQUATE TO SERVE THE PROPOSED DEVELOPMENT, A LARGER WATERLINE SHALL BE INSTALLED ALONG ROBERT ROURK DR TO EXISTING WATERLINE AT INTERSECTION OF NC 133 & NC 211 & ROBERT ROURK DR
3) SEWER FORCE MAIN SHALL BE EXTENDED TO EXISTING 12" SSFM AT NC 133 & NC 211 & ROBERT ROURK DR INTERSECTION
4) PROJECT TO BE BUILT TO BRUNSWICK COUNTY SPECIFICATIONS FOR WATER AND SEWER. A UTILITY PLAN MUST BE SUBMITTED AND APPROVED BY ENGINEERING AND THE FIRE MARSHAL.
5) ALL ROADS WILL BE BUILT TO NCDOT MINIMUM PAVING STANDARDS FOR SUBDIVISION ROADS. ROADS WITHIN THE DEVELOPMENT WILL BE WITHIN PUBLIC R/W'S. ROADS WILL BE MAINTAINED BY POA.
6) PROPOSED WATERMAIN SHALL HAVE FIRE HYDRANTS AT ALL SUBDIVISION ENTRANCES AND EVERY 500 LF THROUGHOUT SINGLE FAMILY HOMES AND 400 LF IN MULTI-FAMILY, END OF STREETS/CUL-DE-SACS MUST END IN A FIRE HYDRANT OR A POST FLUSHING HYDRANT.
7) COUNTY AND/OR STATE STORMWATER PERMITS MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. NO NATURAL DRAINAGE AREAS WILL BE CUT OFF OR DISTURBED BEFORE OBTAINING THE PERMITS. STORMWATER PONDS WILL BE DESIGNED TO MEET BRUNSWICK COUNTY STORMWATER ORDINANCE. STORMWATER PONDS WILL BE DESIGNED TO HOLD AND RELEASE THE 100 YR STORM WITHOUT OVERTOPPING THE STORMWATER POND AS PER BRUNSWICK COUNTY STORMWATER MANUAL.
8) THERE SHALL BE A NOTE ON THE FINAL PLATS, MASTER COVENANTS, AND DEEDS SHOWING THE LOCATION OF WETLANDS AND NOTING THAT THOSE AREAS MAY NOT BE FILLED, DISTURBED, OR ALTERED IN ANY WAY UNLESS PROPERLY PERMITTED BY THE NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND/OR THE U.S. ARMY CORP OF ENGINEERS.
9) A HOME OWNERS ASSOCIATION WILL BE FORMED PRIOR TO THE SALE OF LOTS AND MEMBERSHIP WILL BE AUTOMATIC UPON PURCHASE WITHIN THE DEVELOPMENT. THE HOMEOWNERS ASSOCIATION WILL COMPLY WITH THE STANDARDS SET FORTH IN SECTION OF THE UNIFIED DEVELOPMENT ORDINANCE.

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NORRIS & TUNSTALL CONSULTING ENGINEERS PC

Brunswick County Planning Board Approved

KEY MAP (NOT TO SCALE)

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19681 JOHN S. TUNSTALL

PROJECT

APPLICANT
Mr. McKay Siegel, Project Manager
East West Partners
226 N. Front Street
Wilmington, NC 28401
910-386-8683 (Cell)
msiegel@ewpnc.com

NORRIS & TUNSTALL PROJ.#
24028

REVISION / ISSUANCE

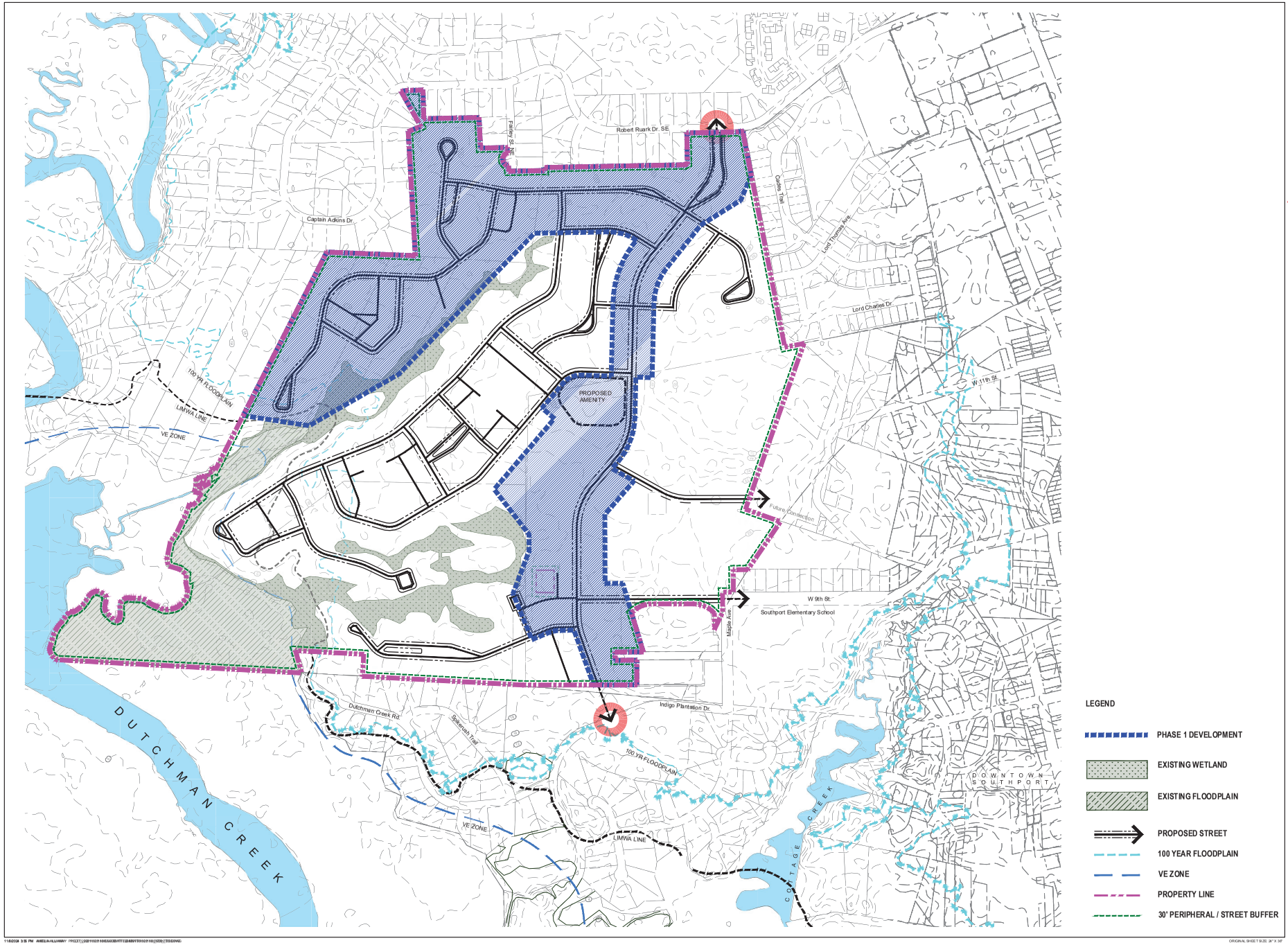
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024

DESIGNED BY: JST
DRAWN BY: LPM
CHECKED BY: TJC

SCALE
NORTH
VERT: 1" = 300'
HORZ: 1" = 300'

SHEET TITLE
UTILITY CONCEPT PLAN

SHEET NUMBER
RZ-8



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Brunswick County
Planning Board
Approved

KEY MAP

SEAL

C-015

1991

PROJECT

INDIGO

BALD HEAD ISLAND, LLC
BRUNSWICK COUNTY, NC
28461

LANDDESIGN PROJ #
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	09.12.2024
2	REZONING SUBMITTAL	10.11.2024
3	REZONING SUBMITTAL	11.06.2024

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 300'
0 150 300 600

SHEET TITLE
PHASING PLAN

SHEET NUMBER
RZ-9

CITY REZONING

WATERWAY

CITY REZONING

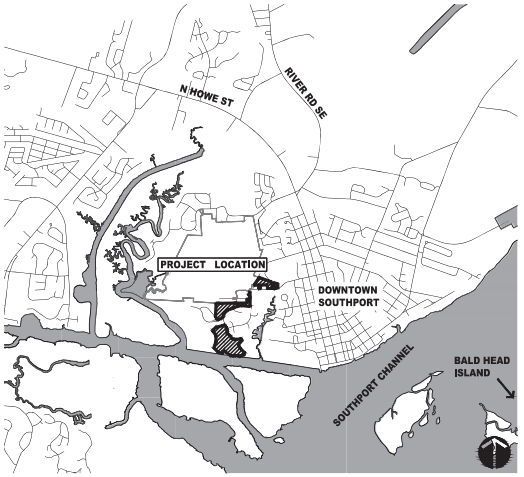
SOUTHPORT, NC

DATE: 04.14.2025

SHEET INDEX

Sheet List Table	
Sheet Number	**Sheet Title**
RZ-0	COVER
RZ-1	SURVEY
RZ-2	EXISTING CONDITIONS
RZ-3	REZONING SUBMITTAL

VICINITY MAP



PROJECT TEAM

OWNER/DEVELOPER
INDIGO
EAST WEST PARTNERS
226 N FRONT ST
WILMINGTON, NC 28401
910.386.8683

LANDSCAPE ARCHITECT
LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT NAME:ERIC POHLMANN

SURVEYOR
MICHAEL UNDERWOOD & ASSOCIATES, P.A.
102 CINEMA DR, SUITE A
WILMINGTON, NC 28403
910.815.0650

CIVIL ENGINEER
NORRIS & TUNSTALL CONSULTING ENGINEERS, P.C.
2602 IRON GATE DR. SUITE 102
WILMINGTON, NC 28412
910.343.9653

WATERWAY
LD PN 1021180
COVER

LandDesign.

4/11/2025 12:57 PM OLIVIA MAYNE P:\CLT_2021\1021180\CAD\ENTITLEMENTS\CITY\1021180_RZN_COVR.DWG

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CONSULTING ENGINEERS PC.

KEY MAP

SEAL

NORTH CAROLINA
PROFESSIONAL
C-015
ENGINEER
SEAL
Jason Hardison

PROJECT

WATERWAY

BALD HEAD ISLAND, LLC.
SOUTHPORT, NC
28461

LANDDESIGN PROJ#
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 200'
0 100 200 400

NORTH

SHEET TITLE
SURVEY

SHEET NUMBER
RZ-1

4/11/2025 12:59 PM CLAWHAMM PROJECT_[2021\1021180\DESIGN\TITLE\RZ\RZ1_SURVEY.DWG LAYOUT: RZ-1

ORIGINAL SHEET SIZE: 24" X 36"

LEGEND:

- EXISTING WETLAND
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

LandDesign.

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KEY MAP

SEAL

NORTH CAROLINA
C-015
LandDesign, Inc.

PROJECT

WATERWAY

BALD HEAD ISLAND, LLC.
SOUTHPORT, NC
28461

LANDDESIGN PROJ# 1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 200'
0 100 200 400

NORTH

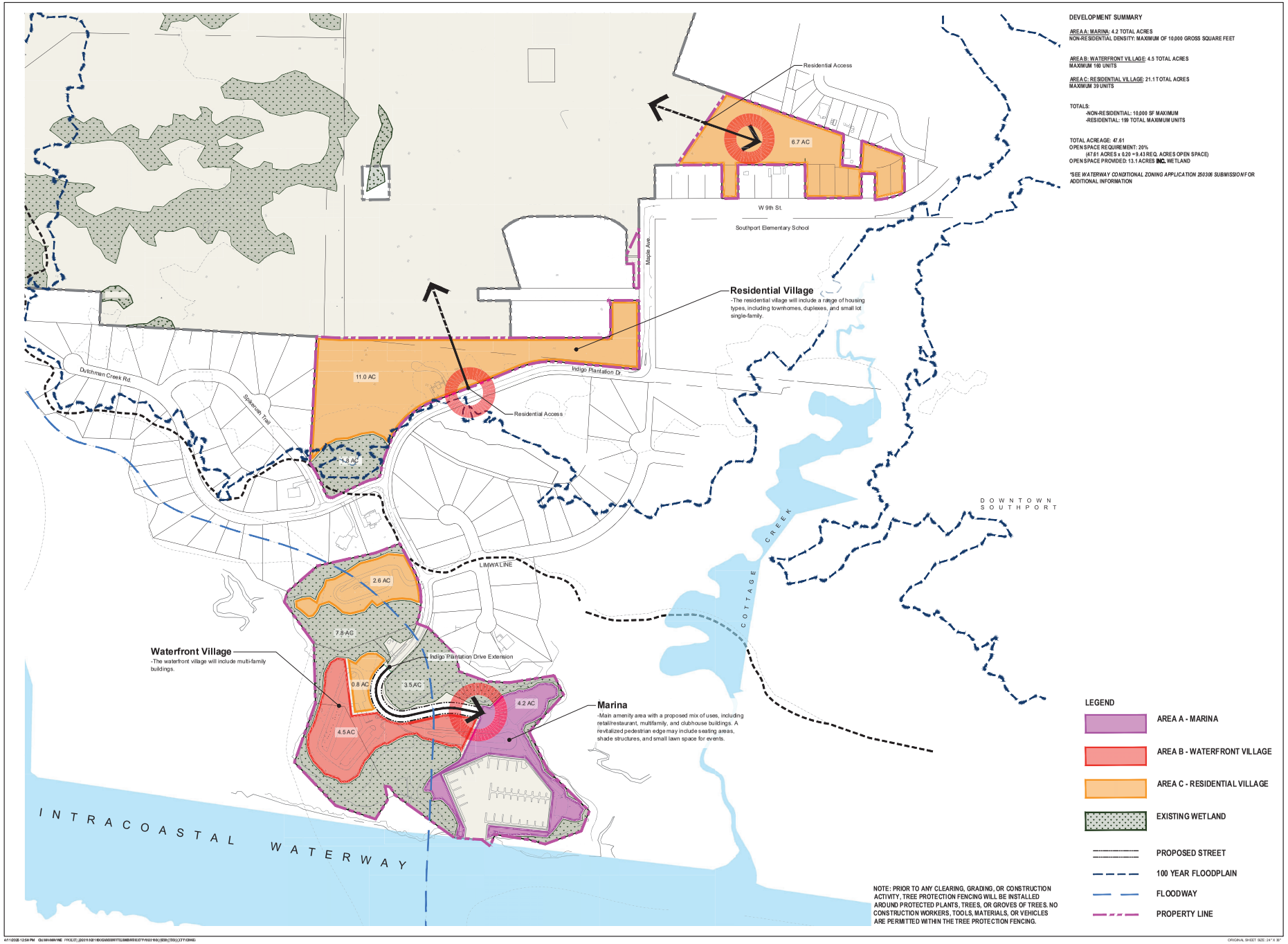
SHEET TITLE

EXISTING CONDITIONS

SHEET NUMBER

RZ-2

ORIGINAL SHEET SIZE: 24" X 36"



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NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.

KEY MAP

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER C-015 Seal 049615

PROJECT
WATERWAY

BALD HEAD ISLAND, LLC.
SOUTHPORT, NC
28461

LD DESIGN PROJ#
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 200'
0 100 200 400

NORTH

SHEET TITLE
REZONING SUBMITTAL

SHEET NUMBER
RZ-3

4/11/2025 12:56 PM CLIMWAMWINE PROJECT_2021\$\$\$\1800\$\$\$\$\$\$\TITLE\$\$\$\$\$\$\$\CITY\2021800\(\$\$\$\)TITLE\(CITY CONFIG)

ORIGINAL SHEET SIZE: 24" X 36"

Exhibit C

Permitted Uses

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
Accessory Uses															
ACCESSORY STRUCTURES OR USES, GENERAL		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.A
ACCESSORY DWELLING, COMMERCIAL						SS	SS	SS	SS	SS	SS	SS		SS	3.6.B
ACCESSORY DWELLING, RESIDENTIAL		SS	SS	SS	SS	SS	SS							SS	3.6.C
CEMETERIES AND MAUSOLEUMS		SS	SS	SS	SS	SS	SS	PS	PS	PS				SS	3.6.D
DOCKS, , PIERS, GAZEBOS, BULKEADS, AND LIVING SHORELINES		PS	PS	PS	PS	PS	PS	PS	PS				SS	PS	3.6.E
HOME DAYCARE, ADULT AND CHILD		SS	SS	SS	SS	SS								SS	3.6.F
HOME OCCUPATION		SS	SS	SS	SS	SS								SS	3.6.G
HOMESTAY		PS	PS	PS		PS								PS	3.6.H
MODULAR UNIT					PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.I
OUTDOOR DISPLAY								PS	PS	PS					3.6.J
OUTDOOR STORAGE									PS	PS	PS	PS			3.6.K
OUTDOOR VENDING MACHINE					PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.L
PORTABLE STORAGE CONTAINERS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.M
RECREATIONAL VEHICLE OR TRAVEL TRAILER		PS	PS		PS	PS	PS							PS	3.6.N
SELF-SERVICE ICE VENDING MACHINES									SS	SS					3.6.O
SOLAR ENERGY SYSTEMS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.P
SWIMMING POOLS		PS	PS	PS	PS	PS	PS	PS						PS	3.6.Q

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
TEMPORARY SALES OFFICES		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.R
TEMPORARY HEALTHCARE STRUCTURES		PS	PS	PS	PS	PS								PS	3.6.S
Residential Uses															
DWELLING, SINGLE-FAMILY		P	P	P	P	P	P							P	
DWELLING, TWO-FAMILY (DUPLEX)		S	S	P	P	P	P							P	
DWELLING, MULTI-FAMILY				PS		SS	SS							PS	3.7.A
DWELLING, TRIPLEX OR QUADRAPLEX				PS	SS	SS	SS							PS	3.7.B
FAMILY CARE HOME		PS	PS	PS	PS	PS								PS	3.7.C
MANUFACTURED HOME ON SINGLE LOT					PS										3.7.D
MANUFACTURED HOME PARK					PS										3.7.E
MIXED USES						PS	PS	PS	PS					PS	3.7.F
MODULAR HOMES		PS	PS	PS	PS	PS	PS								3.7.G
Nonresidential Uses															
ADULT ESTABLISHMENT												SS			3.8.A
ALCOHOLIC BEVERAGES, PACKAGED, RETAIL SALES								P	P	P					
AUTOMOTIVE, MAJOR									SS	P	P	P			3.8.B
AUTOMOTIVE, MINOR								SS	P	P	P				3.8.B
BED & BREAKFAST	721191	SS	SS	SS	SS	SS	SS	SS	SS	SS					3.8.C

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
BOTTLE SHOP AND WINE BAR						P		P	P	P				P	
BUILDING MATERIAL DEALERS	444190								S	P	P	P			
BUSINESS,COMMERCIAL, OR OTHER NON-RESIDENTIAL USE NOT ELSEWHERE CLASSIFIED	561						SS	SS	SS	SS				SS	3.8.D
BUS TERMINALS AND RAILROAD STATIONS									P	P					
CHURCHES, SYNAGOGUES & OTHER ASSOC. ACTIVITIES, INCL. OFFICES, ACTIVITY CENTER, ETC.	813110	SS	SS	SS	SS	SS	SS	PS	PS	PS				SS	3.8.E
CLUBS OR LODGE		SS	SS			SS		SS	PS	PS				SS	3.8.F
COMMERCIAL PARKING LOTS	812930						SS	SS	SS	PS	SS				3.8.G
COMMERCIAL RECREATION, INDOOR						S		S	P	P				S	
COMMERCIAL RECREATION, OUTDOOR										P				S	
CONTRACTORS, EQUIPMENT & SUPPLY DEALERS & SERVICE	811310									P	P	P			
CONTRACTORS, HEAVY CONSTRUCTION; GRADING, PAVING, MARINE, ETC.	234										P	P			
CULTURAL ARTS CENTER, INCL. THEATERS, OFFICES, CLASSROOMS, ETC.						P	P	P	P	P				P	
DANCE STUDIOS	611610					P	P	P	P	P				P	
DAYCARE, ADULT AND CHILD	624120						SS	SS	PS	PS				SS	3.8.H
DIVERS, COMMERCIAL								P	P	P	P	P			
DRY CLEANERS	812320					SS		PS	PS	PS				SS	3.8.I

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
DRY STORAGE										PS	PS	PS			3.8.J
EDUCATIONAL FACILITY		S	S	S	S	S	P	P	P	P				S	
ELECTRONIC GAMING OPERATIONS										SS					3.8.K
EXTERMINATING SERVICES	561710							PS	PS	P	P	P			3.8.L
FARMERS'S MARKET	445230	SS				SS		SS	PS	PS			SS	SS	3.8.M
FARM MACHINERY SALE AND SERVICE									S	P	P				
FEED, SEED, AND FERTILIZER SALES, RETAIL									S	P	P				
FISHING, COMMERCIAL	11411							P	P	P					
FLEA MARKET										SS					3.8.N
FRUIT & VEGETABLE MARKET, WHOLESALE WITH INCIDENTAL RETAIL	445230							SS	SS	PS	PS	SS			3.8.O
FUEL & ICE DEALERS	422710								P	P	P	P		PS	
FUNERAL HOMES	812210						P	P	P	P					
FURRIERS AND FUR STORAGE									P	P					
GARBAGE COLLECTION, PRIVATE (NO LANDFILLS)	562111											P			
GAS COMPANIES (LP-BOTTLED & BULK STORAGE)	324110										P	P			
GOLF COURSE, PRIVATE OR PUBLIC, W/RELATED SERVICES INCL. PRO SHOP	713910	P	P	P		P									
GOVERNMENT USE, CITY OF SOUTHPORT		P	P	P	P	P	P	P	P	P	P	P	P	P	
GOVERNMENT USES WITH BUILDINGS, NON-CITY OF SOUTHPORT		SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS		SS	3.8.P

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
GROCERY STORES	445110					P		P	P	P				P	
HARDWARE, LAWN, OR GARDEN STORE	444130							P	P	P	P	P			
HEALTH SERVICES,						P	P	P	P	P				P	
HELIPAD							SS								3.8.Q
HOSPITALS	622110						P	P	P	P				P	
HOTEL, MOTEL, OR INN	721110					SS	SS		SS	PS					3.8.R
HOTEL, RESIDENTIAL OR BOUTIQUE						SS	SS	PS	PS	PS					3.8.S
INSTITUTIONAL CARE FACILITY, ADULT										S				S	
INSTITUTIONAL CARE FACILITY, CHILD HANDICAPPED									S	S				S	
JAIL	922140									PS	PS	PS			3.8.T
KENNEL	812910									SS	PS	PS			3.8.U
LAUNDRY, INDUSTRIAL	812332									P	P	P			
LAUNDRY, COIN-OPERATED									P	P					
LIBRARY	514120					P	P	P	P	P				P	
LIQUOR STORES	445310							P	P	P					
MANUFACTURED HOME DEALERS	453930									P	P				
MANUFACTURED HOME (INDIVIDUAL) FOR OFFICE AND/OR EXHIBITION					S	S	S	S	S	S	S	S		S	
MANUFACTURING, ARTISAN									P	P	P	P			
MANUFACTURING, GENERAL											C	P			

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
MANUFACTURING, INTENSIVE												CS			3.8.V
MANUFACTURING, LIMITED										P	P	P			
MARINA, COMMERCIAL	713930					PS		PS	PS	PS	PS	PS		PS	3.8.W
MARITIME SALES, RENTAL, AND SERVICE									P	P				P	
MICROBREWERY AND MICRODISTILLERY								SS	PS	PS	PS			PS	3.8.X
MOBILE VENDOR OR FOOD TRUCK								PS	PS	PS	PS	PS		PS	3.8.Y
MOTION PICTURE PRODUCTION & DISTRIBUTION	512110										P	P			
MOTOR FREIGHT COMPANIES, MOVERS, VAN LINES, AND STORAGE										P	P	P			
MUSEUMS, ART GALLERIES	712110						P	P	P	P					
NIGHTCLUB	722410							SS	SS	SS					3.8.Z
NURSING & PERSONAL CARE FACILITY	623110					SS	SS		SS	PS				PS	3.8.AA
OFFICE, GENERAL						P	P	P	P	P				P	
PACKAGE DELIVERY SERVICES, COMMERCIAL	492210						SS	SS	SS	PS	PS	PS			3.8.BB
PARKS & RECREATION AREAS, MUNICIPAL	924120	P	P	P	P	P	P	P	P	P			P	P	
PERSONAL SERVICE ESTABLISHMENT						P	P	P	P	P				P	
RADIO & TELEVISION STATIONS, STUDIOS, AND OFFICES							SS		PS	PS					3.8.CC

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
RECREATION FACILITY PRIVATE, INCL. CLUBS & RECREATION FACILITIES ASSOC. WITH MULTIPLE FAMILY COMPLEXES, GOLF COURSES, TENNIS FACILITIES, COUNTRY CLUBS, ETC.		SS	SS	SS	SS	SS	SS	SS	SS	SS				SS	3.8.F
RECREATIONAL VEHICLE PARK										SS					3.8.DD
RESEARCH & DEVELOPMENT							SS	SS		PS	PS	PS		SS	3.8.EE
RESTAURANT, CARRY-OUT	722211					S		P	P	P				P	
RESTAURANT, STANDARD & FAST-FOOD	722211					S		P	P	P				P	
RETAIL SALES, MAJOR										P					
RETAIL SALES, MINOR						P		P	P	P				P	
RETAIL SALES, MODERATE									P	P					
SALVAGE OPERATIONS												SS			3.8.FF
SHOPPING CENTER	233320					SS		SS	PS	PS				SS	3.8.GG
SHOOTING RANGE, INDOOR										PS	PS	PS			3.8.HH
SHOOTING RANGE, OUTDOOR												SS			3.8.HH
SHORT- TERM VACATION RENTALS						PS		PS	PS						3.8II
SOLAR FARM												SS			3.8.JJ
STORAGE, SELF-SERVICE										PS	PS	PS			3.8.KK
TATTOO AND PIERCING ESTABLISHMENT												S			
TAXICAB STANDS								SS	PS	PS					3.8.LL

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
TELEPHONE COMMUNICATION FACILITY, UNATTENDED	513340	SS	SS	SS	SS	SS	SS	SS	SS	SS	PS	PS		SS	3.8.M M
TRANSITIONAL HOUSING FACILITIES							S								3.8.NN
US POSTAL SERVICE	491110					P	P	P	P	P	P	P		P	
UTILITY STATIONS & PLANTS (PUBLIC & PRIVATE) INCL. LIFT STATIONS, SUBSTATIONS, ETC.		P	P	P	P	P	P	P	P	P	P	P	P	P	
VETERINARY SERVICES WITH OPEN PENS	541940									P	P	P			
VETERINARY SERVICES WITH PENS ENCLOSED IN A BUILDING	541940								S	P	P	P		SS	
WAREHOUSING, GENERAL	493110									PS	PS	PS			3.8.OO
WATER TRANSPORTATION INCL. DOCKS, TUGBOATS, BARGES, AND EXCURSIONS									P	P	P	P		P	
WELDING, REPAIR	811310								P	P	P	P			
WIRELESS TELECOMMUNICATION FACILITY OR COMPLEX, FREESTANDING AND SUBSTANTIAL MODIFICATIONS										SS	SS	SS		SS	See Article 7
WIRELESS TELECOMMUNICATION FACILITY, COLLOCATION OR COLLOCATED SMALL/MICRO-WIRELESS FACILITY		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	See Article 7
YARD SALES		P	P	P	P	P	P	P	P	P				P	

Exhibit D
Architectural Guidelines

Waterway

Architectural Design Guidelines
and Architectural Committee Review Procedures

March 2025

Prepared By

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INTRODUCTION AND MISSION STATEMENT

The objective of Waterway is to create a unique community in harmony with Southport's existing architecture and detailing, which exemplifies the highest design standards. It is not developed to be just another typical suburban neighborhood or traditional neighborhood development. The Waterway Property Owners Association has organized a Waterway Architectural Review Committee (WARC) to ensure an attractive, compatible, and aesthetically pleasing community. The WARC's function is to guide residential development in architectural correctness and compatibility and to maximize compatibility of all improvements with the natural beauty and topography of the land at Waterway and a friendly neighbor to the nearby existing Southport architectural vernacular.

Maintaining high standards of design excellence at Waterway requires attention to many details. These Architectural Design Guidelines (Guidelines) reflect much thought and experience. Extensive research defining the Southport architectural vernacular has found prominent architectural styles, including Colonial Revival, Craftsman, Cottage, and Neoclassical. Although many other less prominent architectural styles are present in Southport, these have been defined and agreed upon as the primary architectural styles in historic neighborhoods. These styles, in combination with the tree-shaded streets and detailed landscaping, define Southport's history and what visitors and natives remember as the image of Southport's neighborhoods and lifestyle. Examples of historic Southport architecture are included within this document.

The WARC encourages the use of architectural styles that blend with the Southport vernacular and will approve all such proposals based on architectural style, detail correctness, and compatibility.

Implementation of the Guidelines will materially enhance the community. The WARC intends to apply the rules in all cases. Variances are to be granted only when the WARC is convinced that they are justified, necessary, and in the best interest of the total community.

The design of each residence directly impacts every neighbor. Each of the four elevations of every residence should be articulated and landscaped to be aesthetically pleasing from every angle viewed based on the house's architectural style. Natural exterior features and materials are desired.

Landscaping should address the retention of natural spaces. The topography should dictate the building envelope. Cutting into hillsides and sloping terrain to make level areas should be minimized.

Property owners are invited to review these guidelines and make comments and recommendations to the WARC. Comments and recommendations shall be made in writing so that they may be fully addressed.

ARCHITECTURAL REVIEW COMMITTEE
PURPOSE AND PROCEDURES

1. The following Waterway Architectural Design Guidelines (Guidelines) embody the preceding description of what Waterway is and should continue to be in the future. These Guidelines will be the primary vehicle for establishing and maintaining the architectural correctness, compatibility, and diversity unique to Waterway. The Guidelines may be periodically updated as required by the Waterway Architectural Review Committee (WARC).

2. The WARC shall enforce the Guidelines. Before beginning construction, proposed houses must be submitted to the WARC for final review and approval. Plans for improvements and any alterations to existing improvements must also be forwarded to the WARC for design approval before proceeding.

3. The WARC meets weekly or as required to review all application submittals. Copies of the WARC meeting summaries will be promptly forwarded to East West Partners, the Waterway Sales Office Manager, and the Property Owners.

4. The WARC reserves the right to limit the number of Applications per WARC Review Meeting.

5. Property Owners proposing improvements or any alterations to existing structures must submit such proposals to the WARC. See the "Alterations and Additions Review" procedures and requirements on page 6.

6. Failure to follow and comply with WARC requirements will result in the Property Owner not receiving formal approval and having to remove and reconstruct improvements and restore the affected landscaping features.

7. All proposals shall be submitted in PDF format to the WARC by email to msiegel@ewpnc.com.

8. Submittals shall include the specific design phase Application and Checklist (a copy of which is included in the Appendix of the Guidelines) with requirements as noted below for each design phase. The design documents should adhere to the criteria outlined in the checklists to provide information necessary for a systematic and uniform review of the proposed construction. Be sure that all application packages are complete. Incomplete applications will not be scheduled for review.

Applicant Responsibilities

The WARC assumes no liability for Applicant's (Property Owner) responsibilities, which include but are not limited to the following:

1. Preparation of Applications and Plans and making all improvements in compliance with the Waterway Architectural Design Guidelines (Guidelines), Waterway Architectural Review Committee (WARC) Guidelines and Procedures, and Waterway Covenants and Restrictions.

2. Performance or quality of work of any architect/ designer, contractor, or subcontractor by the plans prepared and sealed by a North Carolina licensed Architect, Landscape Architect, and/or designer and as approved by the WARC.

3. Compliance with all laws, codes, and ordinances of all governmental agencies or bodies, Waterway Covenants, etc.

4. Determination of environmental restrictions, drainage, grading requirements, and all surface and subsurface soil conditions.

5. Competent architects, engineers, contractors, and similar professionals can only determine the structural, mechanical, electrical, and all other technical aspects of a proposed design.

6. Accuracy and completeness of all plans, applications, certificates, stakeouts, and surveys.

General

The following sections outline the steps required in the design and construction approval process, from the preliminary design review to the final construction inspection review. Again, note that all property owners proposing improvements or any alterations to existing improvements must submit such proposals to the Waterway Community Association and WARC per the "Alterations and Additions Review" procedures and requirements. Please note that the participating architect, designer, and/or landscape architect who prepares the design documents for each home proposal should participate in each design review phase unless otherwise approved by the WARC.

Preliminary Design Review

1. The Preliminary Design Review provides the Architect / Designer and Property Owner an opportunity to review proposed plans with the WARC and take advantage of input from the WARC early in the design process. This step is crucial if any deviation is proposed from the Guidelines, intrusion into any setback, approval of any new material, variance request, questions about the Covenants or these Guidelines, any deviation from a standard plan or footprint, etc.

2. The Property Owner or Builder must submit one copy of the Preliminary Design Application package, which consists of the Preliminary Design Review Application (filled out completely) and preliminary construction drawings in PDF format. The Preliminary Design Review Package will be transmitted electronically to McKay Siegel at msiegel@ewpnc.com.

3. The Applicant must submit the completed Preliminary Design Review Application package before 5 PM on the Monday before the regularly scheduled WARC meeting. The WARC will review the Application for completeness. The Property Owner will be notified of any missing required information. The Property Owner must provide all the necessary information before scheduling a time to present the proposal to the WARC. The Architect / Designer and/or Property Owner must personally present the package to the WARC.

4. The Application will be reviewed per the following: Approved (Proceed with Final Design Review Application), Approved with exceptions (Re-submit for WARC review and approval before proceeding with the Final Design Review Application), or Not Approved/Re-submit. The Property Owner shall not proceed to the Final Design Review Application Phase without approval of the Preliminary Design Review Application Phase.

5. The WARC will respond in writing within fourteen (14) days of the presentation of a completed application.

Final Design Review

1. The Final Design Review allows the Architect / Designer and Property Owner to review the final plans with the WARC and verify that the proposal is based on the previously approved Preliminary Design Review Application. This step is also crucial if there is any proposed deviation from the Preliminary Design Review Application.

2. The Property Owner must submit one copy of the Final Design Review Application package consisting of the Final Design Review Application (filled out completely) and full-size construction documents in PDF format. The Final Design Review Package is to be transmitted electronically to msiegel@ewpnc.com.

3. The Applicant must submit the completed Final Design Review Application package before 5:00 PM on the Monday before the regularly scheduled WARC meeting. The WARC will review the Application for completeness. The Property Owner will be notified of any missing required information. The Property Owner must provide all the necessary information before scheduling a time to present the proposal to the WARC. The Architect / Designer and/or Property Owner must personally present the Application package to the WARC.

4. The Application will be reviewed per the following: Approved (Proceed with Construction and Pre-Construction Review Application), Approved with exceptions (Re-submit for WARC review and approval before proceeding with Construction), or Not Approved Re-submit. The Owner shall not proceed with construction without approval of the Final Design Review Application Phase.

5. The WARC will respond in writing within fourteen (14) days of the presentation of a completed application.

Pre-Construction Review

1. The Applicant or his representative must stake the site according to the approved Site Plan (including silt fencing, tree fencing, etc.). Tree protection fencing shall be used to protect all significant remaining trees. A designated WARC member must approve this stakeout before beginning house construction. All erosion control and other plans shall be strictly followed. Flagging or tree fencing shall be used as needed to prevent damage to trees, including the root zones and natural areas. Construction materials and machinery shall be kept away from trees, off root zones and out of natural areas. **NOTE: All utilities are located underground, and the Owner / Builder is responsible for verifying all utility locations before construction and taking extreme care not to damage such utilities. Total and expeditious repair of any utilities damaged during construction is the sole responsibility of the Owner / Builder.**

2. The site and adjacent streets shall always be kept neat and clean. All debris must be removed by 3:00 PM each Friday. If Waterway must clean a site, a fee will be imposed.

3. Before planting any trees, shrubs, or sod, installing irrigation, mulching, or other landscape work, contact the WARC to schedule an onsite review and approval meeting. The Builder and/or Property Owner must closely supervise landscape installation. It is essential that the landscaping do what it is intended to do. Features of particular importance include the complete screening of mechanical equipment and the underside of decks, the proper initial size of plant material, and careful placement of all shrubs and specimen trees to provide screening where intended. Since the Builder is responsible for the entire project, he should be familiar with the approved landscaping and irrigation plans to supervise the installation properly.

4. The WARC may conduct a detailed field inspection, comparing the installation with the approved plans. If a particular species or variety of plants specified on the plan is unavailable, the WARC may authorize the substitution of another species or variety of the same size if the WARC is confident that the substitute will accomplish the intended objective. Changes in the field that address topography and maintain the effect of mature plants that complement the house and tie it into the setting are generally acceptable. Any such substitutions or field changes should be reviewed and approved by the WARC, and revised drawings submitted for the record.

5. The Applicant must notify and obtain approval from the WARC in writing before making any changes in the approved site and grading plans, exterior elevations, or landscape plans. Any requests for changes in exterior colors or materials must be accompanied by an adequately labeled sample and any additional information that may assist the WARC in determining the suitability of the request. Applicants requesting design change approvals should submit revised plans prepared and sealed by their respective Architects/Designers or Landscape Architects for approval.

6. In the event the Applicant desires to substitute a material different from one already approved by the WARC, it is the responsibility of the Applicant to provide the documentation necessary for the WARC to determine whether the proposed substitute is well-designed, composed of acceptable, high-quality materials, and compatible with the appearance of both the material it is intended to replace and other approved exterior materials.

7. The WARC will respond in writing within seven (7) days of the presentation of any requested revision.

Final Construction Inspection Review

1. At least one month before the construction is completed, the Property Owner, Architect / Designer, and/or Builder shall contact the WARC to set up an on-site meeting to conduct a Final Construction Inspection Review. If the improvements have been completed by the plans approved by the WARC, Guidelines, criteria requirements, and Covenants, then immediately upon concluding the Final Construction Inspection Review, the WARC will issue a Certificate of Compliance. If the improvements deviate from the approved plans and specifications, all incomplete items shall be completed prior to issuing a Certificate of Compliance and occupancy of the building.

2. In cases where the WARC has approved a delayed planting schedule to allow cool season planting for larger trees and fescue grass, the WARC may allow occupancy of the building; however, the final approval Certificate of Compliance will be processed at the completion, inspection, and approval of the completed landscaping installation.

3. Waterway requires an as-built impervious surface survey before the Certificate of Compliance is issued. The impervious surface square footage is based on the specific maximum impervious surface deed restriction and will be fully enforced.

4. If the completion of a Certificate of Compliance from WARC acceptance is delayed more than thirty (30) days after the Final Construction Inspection Review, then the WARC will not approve the Builder for another project until the deficiencies are corrected. The WARC may record a Certificate of Non-Compliance or take other actions as the Guidelines and Covenants provide.

Alterations and Additions Review

1. One of the features that attracted the Property Owners to Waterway is the architectural character and quality controls planned for this community. Certain restrictions have been established to assist and preserve the integrity of the community, including a review of any alterations and additions to any existing structure and/or site after occupancy.

2 All alterations, additions, or modifications to the Waterway property must be reviewed and approved by the WARC, as with the original design review procedures and requirements. These modifications include but are not limited to, building decks, patios, dog enclosures, fences, retaining walls, satellite dish installation, changing the exterior house detailing and/or color, etc.

3. The Property Owner must submit one copy of the Alterations and Additions Application package consisting of the Alterations and Additions Review Application (filled out completely) and full-size construction documents in PDF format. The Alternations and Additions Review Package is to be transmitted electronically to msiegel@ewpnc.com.

4. Please note that only one form exists for the Alterations and Additions Review. This form will be used for both the Preliminary Design Review and the Final Design Review Application.

5. The Applicant must submit the completed Alterations and Additions Review Application package one week before the WARC meeting. The Waterway Community Association will review the Application for completeness. The Property Owner will be notified of any missing required information. The Property Owner must provide all the necessary information before scheduling a time to present the proposal to the WARC. The Waterway Community Association (Architect / Designer and/or Property Owner should also personally be present) will schedule and present the Application package to the WARC.

6. The Application will be reviewed according to the following: Approved (Proceed with Final Design Review Application), Approved with exceptions (Re-submit for WARC review and approval before proceeding with the Final Design Review Application), or Not Approved/Re-submit. The Property Owner shall not proceed to the Final Design Review Application Phase without approval of the Preliminary Design Review Application Phase.

7. The WARC will respond in writing within seven (7) days of the presentation of a completed application in each review phase.

Miscellaneous Inspections

1. The WARC has the right to inspect construction for conformance with approved design documents at any time, and Applicants should cooperate fully with members or agents of the WARC.

SITE DESIGN GUIDELINES

Setbacks

1. Waterway has established setbacks that protect adjacent land uses and maintain a strong architectural edge along the street, helping to define the community's urban character.

2. Additionally, various tree protection buffers established along the rear of each lot will affect how homes can be sited.

3. The setbacks established for single-family detached lots are included in the Appendix and will be reviewed and approved by the WARC on a site-by-site basis.

Impervious Areas

1. A portion of the Waterway development abuts High-Quality Waters and requires water quality protection measures as critical development components. To protect the environment, the developer restricts Impervious Areas, which contribute to stormwater runoff.

2. Impervious surfaces include buildings, pavement, gravel drives, recreation facilities, etc., or any surface composed of any material that impedes or prevents the natural filtration of water into the soil. Wooden slatted decks and the water area of a swimming pool are considered impervious surfaces.

3. Alternative driveway treatments are encouraged (see Driveways) to reduce impervious areas.

4. Allocations of impervious areas are established for single-family lots within Waterway as a deed restriction for each lot on the recorded site plans. Impervious areas must be measured and submitted with each application to WARC and updated in the event of construction modifications.

Driveways

1. Driveways are an essential unifying element in defining the streetscape in an urban setting. Although a moderate range of surfacing materials (brick, concrete pavers, etc.) may be considered, concrete will serve as the predominant driveway paving material. The maximum width of any single driveway shall be 12 feet. Shared driveways are encouraged where appropriate.

2. Impervious area constraints encourage using "Carolina Driveways," which typically include a turf strip along straight sections of driveways and give visual relief to longer drives. This serves to reduce impervious areas and break up large expanses of concrete. The dimensions for a "Carolina Drive" shall be 2' 6" wide concrete on each side of a 3' 0" wide sod strip for a total width of 8' 0". The drive should allow the required turning radius to avoid driving on the center sod strip. Brick pavers and/or textured concrete are also encouraged as an alternative infill in the sod strip area.

3. The siting and construction of driveways must not concentrate stormwater runoff onto adjacent properties.

Waterway

Walkways

1. Walkways welcome neighbors, providing an essential feature of a "neighborly" streetscape next to front porches.
2. All homes within Waterway must include a walkway that extends to the sidewalk along the street.
3. Architectural diversity is encouraged through the use of a variety of materials, including (brick, stone, pavers, edged gravel, etc.).

Fences

1. The historic districts and other neighborhoods in Southport contain minimal front yard fencing and typically low wooden fencing adjoining entry sidewalks and steps. They are used to define the property edges, maintaining openness to the street and adjacent lots. These low fences also provide high visibility of the house and front yard and include welcoming, friendly pedestrian access to the house. There are also very few fences in the rear yards. Therefore, it is strongly recommended that similar enclosures be provided in Waterway. Fencing, if needed, should be used only when necessary to protect children or pets and shall be integrated into the architectural character of the house. Reference the photos of existing Southport homes in the Appendix.
2. Wherever possible, landscaping should be considered as an alternative to fencing.
3. Fencing between the residence and the street shall be a maximum of 30" in height and similar in style to the examples provided in the Appendix. Fences must be painted and finished to complement the home.
4. Solid fencing is not recommended in front yards. Provide a minimum of 1" spacing between pickets.
5. 6' 0" high fences are permitted but may not be located closer to the street than the rear corner of the house. Corner lot fences shall not be closer than the adjacent house's front face to maintain clear visibility from the adjoining house to the street. Landscape screening of fencing is encouraged.
6. Chain-link and horizontal rail fencing are not permitted.
7. PVC Fencing is not permitted.
8. Fences with only one side finished shall always have the finished surface facing out.
9. Fences shall be located wherever possible, so trees do not have to be removed.
10. All requests for the installation of fencing must be submitted to WARC.

Retaining Walls

1. Waterway is situated on relatively flat land. In rare instances, retaining walls may be needed to accommodate land uses that require leveling areas within confined limits. Southport has historically used brick retaining walls to deal with these situations, helping to establish an essential element in the area's architectural vernacular. New retaining walls should replicate the materials of existing retaining walls.

Lighting

1. Post lights near the walkway are encouraged and present the best opportunity for individual treatment. The request for post lamps must include the proposed size and style.

Flags & Flagpoles

1. Wall-mounted flags no larger than 4' x 6' are permitted. Flagpoles are not allowed.

Outdoor Living Areas & Outbuildings

1. Waterway encourages all outdoor living areas (patios, pools, cabanas, gazebos, etc.) but requires them to be included in the impervious area computation for each lot.
2. All outdoor living structures shall be finished (detailing, color, etc.) to match or coordinate with the house's architectural style.
3. Dog houses shall be located to avoid being obtrusive and visible from the street or adjacent houses. They shall be painted and finished to blend with the immediate surroundings and match the house finishes, details, and colors. Prefab chain link fence dog runs will generally not be allowed unless painted black, screened by wood fencing, and/or located within a heavily planted area.
4. Play equipment shall be placed in rear yards and not visible from the street or adjacent houses. Natural wood equipment is encouraged. Painted metal equipment shall be painted dark green or brown to blend with natural areas.
5. Playhouses shall be placed in rear yards. They must be scaled to fit the size of the house, yard, and other outbuildings and finished to match the house's architectural style.
6. Skateboard and bike ramps and other similar structures shall be placed in the rear of the property and not visible from the street.
7. Tree houses are prohibited due to their visibility from neighboring property and streets.
8. Above-ground swimming pools are not allowed. In-ground swimming pools are permitted and will be reviewed case-by-case before beginning construction. Pools shall comply with all local, state, and safety codes and requirements. All swimming pool concrete decks are considered impervious.
9. Basketball goals and similar play equipment are not allowed to be mounted on the front facade of the house, in the yard, or on driveways visible from the street.
10. Every request for the development of outdoor living areas is subject to the established setbacks and must be submitted to WARC for approval.

Grading, Drainage and Clearing

1. Grading, stormwater drainage, and clearing of existing landscaping and soils are environmentally sensitive. The developer intends the lots to remain wooded to the greatest extent possible, so minimal lot clearing and tree removal are encouraged.

2. The final design review application requires identification of cleared limits and identification of all trees to be removed exceeding a 4" in caliper. Tree protection fencing should be identified on the site plan. Erosion control measures should be clearly shown. Silt fencing is required around the entire lot perimeter. Installation of a 10' x 30' washed gravel construction entrance is required. Ingress and egress must be limited to the construction entrance to prevent dragging or run-off mud and other debris into the street.

3. The WARC requires an inspection immediately following the completion of lot clearing to ensure that all protective measures are in place and constructed by the design review application.

Landscaping and Sod

1. Guidelines for landscaping single-family homes have been approved as part of the overall Waterway Master Plan.

2 Interior lots require sod in front yards, extended 8' -0" back into side yards, and between sidewalk and curb. Corner lots require sod in front yards, extended into side yards to the rear corner of the house and between the sidewalk and curb entire front and side yard of the property. Corner lots require sod from the rear of the house and rear yards back to the property line due to the high visibility of the corner lot. Irrigation of sodded areas is required. Permitted grass types include zoysia, centipede, and bermuda.

Street Trees

1. Street tree plantings are planned as a part of the overall revegetation of Waterway.

2. Each single-family home is responsible for contributing payment of one street tree in a location on your lot prescribed by WARC.

3. The tree variety and general location are illustrated on The Waterway Master Landscape Plan available from WARC.

Signage

1. Construction and builder/subcontractor signage are restricted to the format noted in the Appendix.

Service Areas

1. Service areas, including garbage containment, mechanical equipment, meters, electrical equipment, etc., must be screened from adjacent homes' streets and outdoor living areas.

3. Screening must be by a means that is compatible with the architecture or the landscaping of the home.

Utilities

1. Each lot is responsible for the location/verification of all utilities before any clearing, excavation, or grading activity commences. All utilities are located underground, and it is the responsibility of the Owner / Builder to field verify all utility locations and take extreme care not to damage such utilities. Total and expeditious repair of any utilities damaged during construction is the sole responsibility of the Owner / Builder.

2. Any discrepancies must be brought to the immediate attention of WARC before any clearing begins.

Port-A-Johns

1. Port-a-johns are required per local ordinances and must be placed outside the street & utility rights-of-way to permit the timely placement of utilities

Garbage Containment and Recycles

1. Facilities for the containment & recycling of construction debris are required for each building lot.

2. These facilities must be located outside the street and utility rights-of-way and serviced as needed to maintain a neat appearance.

3. Permanent garbage containment must be screened in an appropriate service area.

Materials Storage

1. All material deliveries must be placed outside the street & utilities rights-of-way.

ARCHITECTURAL DESIGN GUIDELINES

Design Duplication, Diversity, and Detailing

1. Applicants should select building sites and home plans so as not to construct repetitious designs within proximity to one another. Similar designs or design duplications are discouraged and subject to disapproval by the WARC if sufficient variations in exterior colors, materials, finishes, trim, and detailing are absent.

2. Elevations that are similar in appearance and have the same/similar exterior colors are prohibited on any adjacent sites and any sites immediately across the street.

3. Approving plans, materials, or colors for a specific site does not imply approval for another building site.

4. Architectural diversity is crucial to Waterway. Colonial Revival, Craftsman (including Bungalows, Prairies, etc.), Cottage, and Neoclassical style detailing are encouraged. This detailing and more traditional style architecture help achieve the diversity and classic older Southport neighborhood features offered at Waterway.

5. Examples of various existing Southport Historic District homes are also included for reference in the Appendix.

6. The following architectural styles will not be considered or accepted: Log cabins, "A" Frames, Adobe, Spanish, Octagonal, and Dome.

Exterior Elevations

1. Exterior elevations will be reviewed for architectural design, materials, and aesthetic appearance regarding the overall dwelling and its relationship to other homes.

2. Design should be site-specific and take advantage of the natural setting. For example, most houses within historic Southport are situated below an existing tree canopy. Efforts to save existing significant trees and maintain a tree canopy for development are encouraged. Any home with a three-story elevation will be closely scrutinized to ensure it fits the natural landscaping of the area. Careful placement of architectural components and windows can maximize views of neighborhood features and distant vistas.

3. Elevations and plans shall address the total architectural design style of the home, including the front, rear, and side elevations. Each of the four elevations of every residence should be articulated and landscaped to be aesthetically pleasing from every angle of view based on the house's architectural style.

4. The review of exterior design will be based upon the overall design themes and consideration of mass and scale, materials, textures, colors, and finishes, continuity between primary design elements and secondary surface treatments, placement of windows, doors, and openings, vertical and horizontal lines, and roof pitches.

5. Depending on the architectural style, preferred exterior features and materials include horizontal or vertical wood siding, brick, stucco, and brick chimneys.

6. The WARC may bar any proposed new construction or changes to existing homes on purely aesthetic grounds, where in its sole judgment, such action is required to maintain the Waterway standard of architectural excellence in exterior materials and design.

7. Exterior finishes for new construction shall be consistent on all four elevations. A substantial change in material finish or style at different elevations is prohibited.

8. Vinyl siding and trim are not allowed.

9. Framed chimneys with stucco or brick panel finishes are permitted. Direct vents are allowed; however, they must be integrated into the architecture (e.g., gable or shed roofs over fireplace boxes). Masonry chimneys are encouraged.

10. Synthetic stone or stone veneer is not permitted.

11. Exterior mechanical equipment shall be concealed/screened and located so as not to harm the use of adjacent property.

Exterior Colors and Materials

1. Historically and architecturally suitable exterior colors that blend with the historic Southport architectural examples are preferred. The intent is for the individual house to blend into the neighborhood and natural setting. Roof colors should not contrast sharply with the rest of the house.

2. A color scheme must be selected and submitted to the WARC for review and approval before painting the house. In the case of a similar color scheme on adjacent existing homes, another color choice may be required for WARC review and approval. Colors should be submitted with the original house submittal to ensure your first-choice selection. Note: Color selection approval is based on a first-come, first-serve basis.

3. Various exterior colors are encouraged on the same house as appropriate to some Southport architectural styles (i.e., siding, siding in gable ends, dormers, doors, shutters, window sashes, muntins, etc.).

4. Garage doors shall be painted to match the trim or siding color. The WARC intends to minimize the impact of the garage doors on the streetscape.

5. Fences visible from the street will be painted to match the house's trim color. Other non-visible wood fencing may be left natural as approved by the WARC. See also the historic fencing examples included in the appendix for additional information.

6. The selection of exterior materials shall be harmonious with the architectural style of each dwelling unit and the community development. Natural materials are preferred over synthetic materials. Depending upon the specific application, materials approved include the following:

   Wood: Cypress, cedar, redwood, board-and-batten siding, cedar shakes or shingles, tongue-and-groove siding, Hardiplank, and other cementitious-type siding materials.

   Plywood: Will be considered on a case-by-case basis.

   Stucco: Synthetic stucco hard coat stucco systems are approved for foundation walls. Color and texture should match existing Southport historical precedents.

   Masonry: Brick.

   Windows: Wood, aluminum clad, PVC clad, fiberglass clad or painted.

   Garage doors: Wood and raised panel insulated steel. Glass panels are required in Craftsman-style homes and are encouraged in all others.

Chimney: Exterior to be masonry or stucco. Flues for fireplaces and woodburning stoves must include spark arrestors. Spark arrestors and chimney caps are to be unobtrusive and appropriately proportioned. Any flue pipe at the chimney top must be concealed unless it is an approved design feature. Direct vent gas units are allowed; however, vents must be an integral design feature of the house. Thru-wall gas ventilation is not permitted. Exposed equipment shall be painted/finished to match the adjacent finish color.

7. The following exterior materials are not approved for construction: Metal siding; decorative concrete block; concrete block (except sub-surface wall); fiberglass, plastic, asphalt, and vinyl siding and trim; logs (imitation or otherwise, except for landscaping purposes); flagstone used as siding; fiberglass or asphalt shingles for siding; vinyl clad fascia; certain types of imitation stone and brick. The WARC will consider other high-quality simulated materials (e.g., stone and brick) on their merit.

8. The WARC shall have final approval of all exterior colors and materials. In the opinion of the WARC, exterior colors that would be inharmonious, discordant, or incongruous with the intent of Waterway and adjacent existing homes will not be permitted.

Roofs

1. Generally, rooflines should follow the appropriate architectural style slopes defined previously (i.e., Colonial Revival, Craftsman, Cottages, etc.). Primary roofs should slope at a minimum of 5/12 pitch. Flat roofs are permitted; however, they will be reviewed on a case-by-case basis and in relation to the architectural correctness of the proposed style. Wide overhangs are encouraged.

2. Recommended roof surfacing materials include asphalt, cedar shingles, natural slate, tile, and standing seam metal roofing. The WARC may approve other roofing materials on an individual case-by-case basis.

3. The WARC has the right to disapprove any roofing material or color choice that it deems inharmonious or discordant with the house design, surroundings, or overall development.

4. Gutters and downspouts should be copper or metal with a factory-applied paint finish. They are to match the trim. Any proposed leaf guards must be compatible with the roof color or painted to match the gutter.

5. All roof stacks, flashing, and metal chimney caps shall have a dark, dull finish. Copper or anodized aluminum is recommended for flashing. Roof stacks and plumbing vents shall be placed on the roofs' rear slopes.

6. Solar roof panels are not permitted unless designed to be mounted flush with the roof plane or are an integral part of the architectural design and not a significant design element of the house.

7. Antennas and DSS dishes are permitted only if they are designed and located in rear yards so as not to be visible from front yard streets, common property, or common areas. Prior written approval of the WARC is required, and the WARC is to conduct an inspection after installation. DSS dishes larger than 2' -0" in diameter are not allowed. DSS dishes shall be painted to match the house or roof color.

Awnings

I. Awnings, canopies, and shutters shall not be permitted or affixed to the residence's exterior without prior approval of the WARC and unless they are compatible with the proposed architectural style and detailing. Awnings may, in some cases, be appropriate for rear or side-yard patios, decks, or exposed entrances.

2 Exterior shutters are allowed where appropriate. Shutters are only allowed on single windows and shall be sized appropriately to the size of the window and architectural style. Shutters are not permitted on "craftsman" style architecture and certain other architectural styles as determined by the WARC.

Porches, Decks, and Patios

1. Porches are encouraged on all lots and required on specific lots. Lots requiring porches will have those requirements contained within the property deed. Wrapped porches are recommended on all corner lots. Porches shall be functional with the central area of the porch to have a minimum of 8'-0" clear floor space between the face of the house and the inside face of the porch column and/or handrail. The intention is to provide ample space for furnishings (swing, glider, chairs, etc.) and circulation. Porch space used for circulation only may be smaller and will be reviewed case-by-case.

2. Houses on corner lots shall be designed to address the corner and both street frontages architecturally. Therefore, it is recommended that houses on corner lots have porches that wrap the house corner (facing the intersection) at least 8'-0" around the side elevation or provide side porch-type features (i.e., screened porches are also acceptable). It is suggested that additional doors and steps be located on the wrapped porch where appropriate (i.e., private door from a living, dining, or bedroom area).

3. All porches, decks, and stair risers must be enclosed. The lattice under the front porch must be horizontal (not diagonal). Diagonal lattice may be used under rear porches and decks. The lattice must be framed between structural members and trimmed out in wood.

4. All rear decks and porches visible from a street (i.e., corner lots) shall be finished to match the front porch detailing (handrails, horizontal lattice, etc.) and colors. Additional landscape screening may be required at "visible" decks.

5. All exposed vertical wood trim, risers, stringers, etc., must be painted to match the trim color.

6. Various porch columns and handrail detailing are encouraged (e.g., brick piers with a concrete cap and tapered wood columns, tapered round columns, triple and double square columns at corners, and major elements such as steps).

7. Where grades and impervious surface requirements allow, patios are encouraged instead of decks.

8. Brick pavers, textured concrete, etc. surfaces are encouraged on all sidewalks and patios.

9. Decks and patios should be located at the house's rear or within a fully enclosed area.

10. The sizes of porches, decks, and patios shall be consistent with the size of the house and yard and will be reviewed with respect to their visual impact on adjacent property.

Carports, Garages, and Utility Apartments

1. Elevations must be designed to subordinate garages to the house to the greatest extent possible. Garages shall not face the street unless no other means are available and are approved by the WARC and the Town of Southport. Front-load garages shall have single-width garage doors only with a maximum of two doors. Front-load projecting garages are not allowed. Front-load garages shall be set back a minimum of 2' 0" from the front face of the house or 4'-0" from a front porch. Side-load garages are encouraged, and glass in upper garage door panels is required on Craftsman-style houses and encouraged on all others.

2. Detached and rear-load garages are encouraged.

3. Utility apartments may be allowed subject to Town of Southport requirements.

Duplexes

1. Duplexes are allowed on certain lots but must appear architecturally to be a single-family home.

Minimum Square Footage Requirements

1. Minimum square footage requirements have been established for the development, as noted below. Note: All heated and cooled floor areas are counted towards minimum square footage requirements, except basements, third-floor walk-up attics, and garages.

House/Lot Type	Minimum SF
Townhome	1,300 SF
Duplex	1,500 SF
Single Family 35' width lot	1,200 SF
Single Family 50' width lots	1,500 SF
Single Family lots larger than 50' width	
One Story	1,700 SF
Two Story	2,000 SF

ARCHITECTURAL STYLE REFERENCE

Colonial Revival

Houses built as Colonial Revivals have a wide range of history to draw from, and many sub-forms and important characteristics denote their style. Prominence is given to the front door with a pediment of varying shapes supported by pilasters. This pediment can also be extended forward and supported on slender columns to form a small entry porch. The door usually has overhead fanlights and or sidelights. The facade is typically symmetrical concerning the windows, and the door is almost always centered. Windows have double-hung sashes and multiple glazing in one or both sashes.

Colonial Revival is accepted as nine different sub-forms. It can be asymmetrical with free-form facades or boxed with hipped roofs and full-width porches. Homes are also built as side gables with one or two stories. When the side gable is two stories, a centered front gable is often added to this form further to accentuate the front door, or the second floor can be pulled out to overhang the first. Gambrel roofs are also used, as well as three-story homes capped with a low-sloped hip roof.

From these forms, combinations can be used to further extend the builder's pallet. Both shed and gable dormers are frequently used in these homes. They can be individual or continuous dormers, depending on the application. One-story side rooms with flat roofs were also added on frequently. Whether Georgian, Adam, or Dutch, there are many possibilities for a Colonial Revival home.

Reference: "A Field Guide to American Houses" by Virginia & Lee McAlester

ARCHITECTURAL STYLE EXAMPLES

Colonial Revival

ARCHITECTURAL STYLE EXAMPLES

Craftsman

Craftsman-style architecture can be developed in several forms and has many characteristics unique to the look. These homes have low-pitched, gable roofs and unenclosed eve overhangs. The roof rafters are often exposed, and false beams (usually three) or knee braces are commonly added under the gables. The porch and its details are a potent symbol of the craftsman style.

The porch is supported on piers that extend from the ground past the floor plane. They are constructed from brick, concrete masonry, shingles, stucco, or stone and continue to the roof themselves or support any number of wooden column types. Variations in wooden columns include square and tapered, straight and square, and double columns. It is also essential to choose a well-detailed handrail for the porch.

There are four main variations in overall form for a craftsman house. On the front-gabled roofs, the main roof is used to shelter the front porch on most one-stories, but a second gable can also be projected out from the front of the house. Side-gabled roofs often contain the porch under the main roof as well; a break in the roof slope frequently accentuates the porch. Two-story side gables incorporate a full-width porch and a shed or gable dormers. Crossed-gabled roofs are also popular. A partial-width, front-gabled porch forms the cross-gable on many of these houses, although other porch styles can be used. The fourth form, hipped roofs, is less popular than the others because of the lack of detail. The roof style deprives the builder of opportunities for exposed roof rafters and other typical details used in craftsman architecture, so the home often resembles a prairie style. From these basic forms, a builder can incorporate details and variations of the forms to create an interesting

aesthetic.

Diverse roof styles, building massing, and materials are emphasized. Roof brackets and roofs with wide overhangs (1' 6" to 2' 6" wide and 1' 0" wide at dormers) are strongly encouraged. Roof brackets or braces shall be constructed of 4" x 4" wood members at a minimum. Large "bungalow" style dormers (i.e., shed, gable, hipped, etc.) are encouraged. They may be required on some 1 and 1 ½-story Craftsman houses.

Continuous horizontal trim at the base of siding and above window/door heads is a primary element in Craftsman (and some revival types) style architecture. The Craftsman style also includes simple square-edged exterior trim, including wide window and door trim. Textured finish materials such as shakes or siding of different widths are emphasized at the gable ends of roofs and around dormers. The emphasis also applies to trim detailing at gable ends and dormers.

Various muntin configurations should be used in windows (i.e., no upper and lower sashes, 2 over 1, 4 over 1, 6 over 1, prairie-style muntin, etc.). Various-shaped windows are encouraged (i.e., cottage-style and unique-shaped windows such as rounds, ovals, etc.). Various unique window configurations are encouraged (i.e., triple window including one 6 over 1 center window with 4 over 1 side windows). Half-glass doors (with various muntin configurations matching the window muntins) and doors with sidelights contribute to the architectural correctness of the Craftsman and Bungalow style houses.

Reference: "A Field Guide to American Houses" by Virginia & Lee McAlester

ARCHITECTURAL STYLE EXAMPLES

Craftsman

ARCHITECTURAL STYLE EXAMPLES

Cottage

The Cottage Style borrowed from the Early Gothic Style also created new rules soon to be followed by American housebuilders. The house was to be irregular, like the forms of nature. It was to be nestled into the landscape to appear picturesque when viewed from various sites and afford attractive views from its windows and porches. It was to be built of natural materials or painted tan, gray, or green to harmonize with the earth and its plants. It was the opposite of the symmetrical, hard-edged, white Greek Revival-style house designed to stand out in the landscape.

During the mid-nineteenth century, many house pattern books inspired by A. J. Downing provided the increasingly large middle class with detailed plans for highly affordable cottages. The building boom that occurred then was a product of the American economy and the availability of technologically sound, easy-to-build, inexpensive, comfortable dwellings.

The Cottage Style is credited with giving birth to the American front porch. It provided a roof over the main entrance and a semiprivate place to sit and enjoy the outdoors while protected from the hot sun and inclement weather. It was usually covered with honeysuckle or some other flowering vine, which pleasantly scented warm summer evenings.

Reference: "American Shelter: An Illustrated Encyclopedia of the American Home" by Lester Walker

ARCHITECTURAL STYLE EXAMPLES

Cottage

ARCHITECTURAL STYLE EXAMPLES

Neoclassical

Neoclassical architecture follows a few rules of style. The windows and doors on the front facade are symmetrical. The building is set behind a dominating full-height porch supported by classical columns, typically Ionic or Corinthian. Although a full-height entry porch is common to all buildings, there are still variations of the form.

One variant has an entry porch that is less than full width and is centrally located on the front facade. These porches carry pediments most of the time. A variation of the first example can be achieved by adding lower wings onto the porch, making it full width as a one-story, but full height in the middle - pediments are used here also. Another common form uses a full-width porch that is full height as well. These porches are covered by extending the roof on a front-gabled house or a flat roof on a side gable. The neoclassical style can also be incorporated into one story. These have hip roofs and either a full-width or partial porch. The hip can be extended over the colonnade, or a separate flat or shed roof can be used.

More subtle details can also be manipulated for variation within the Neoclassical style. Doorways are often very elaborate and are based on Greek Revival precedents. A cornice is also common with a moderate overhang and dentils or modillions beneath. Early precedents use windows with double sashes with 6 or 9 panes. However, almost every other window type has been incorporated in later designs. Roof-line balustrades are another common feature of the Neoclassical style.

Reference: "A Field Guide to American Houses" by Virginia & Lee McAlester.

ARCHITECTURAL STYLE EXAMPLES

Neoclassical

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APPENDIX

Southport Historic District

Existing Property Boundaries and Details:

- Southport Examples: Sidewalks and Front Entries
- Southport Examples: Entry Drives
- Southport Examples: Low Walls
- Southport Examples: Fences

General Landscape Requirements

Dimensional Requirements

Construction Signage

SOUTHPORT HISTORIC DISTRICT

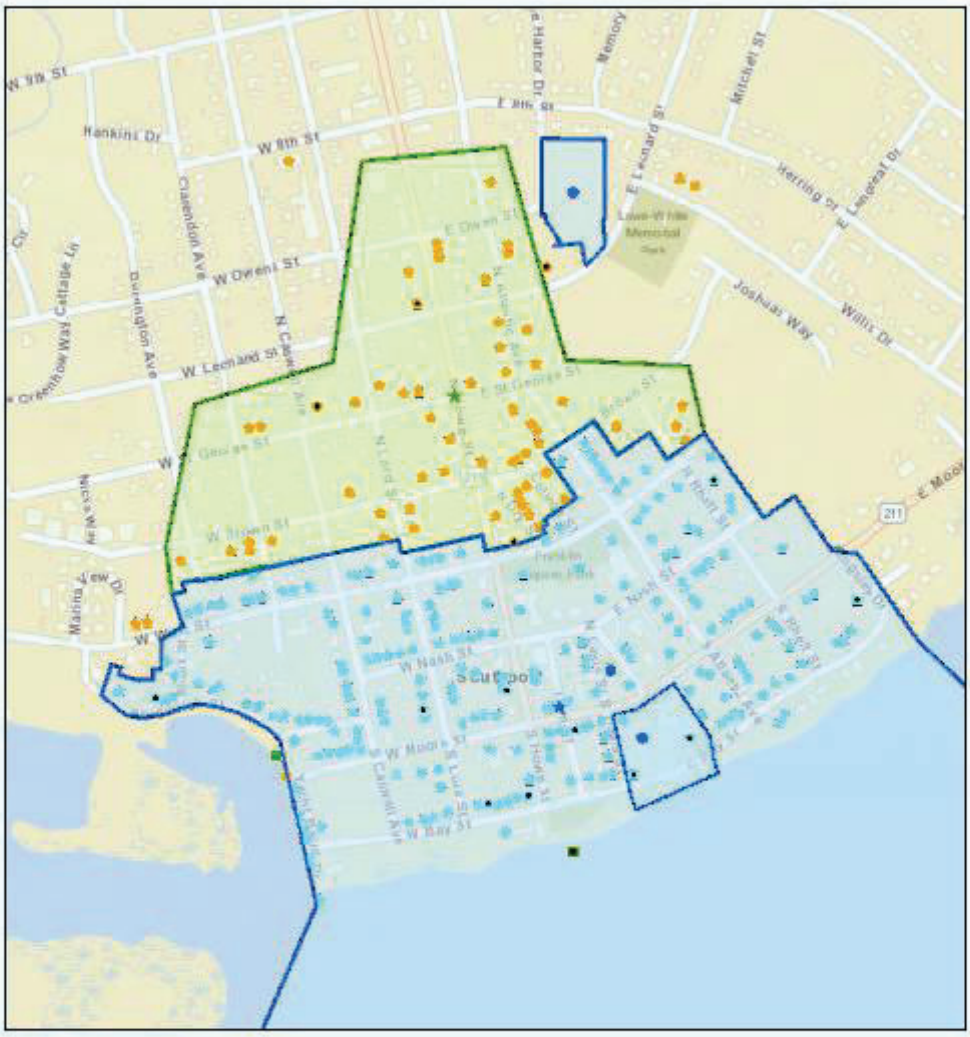
Southport's Historic District is primarily defined by the expansive tree canopy preserved and incorporated into the town's planning and individual building placement. Individual dwellings are broadly traced to vernacular building types, where a front porch is emphasized to take advantage of the region's climate.

Below is an excerpt from the 1979 Southport Historic District's Nomination Form for the National Register of Historic Places, which highlights the integration of built structures and nature:

Located at the mouth of the Cape Fear River, the small village of Southport is the best example of a Victorian [Era] coastal town in North Carolina. The town has barely grown past its original 1792 boundaries. Over half of the structures in the historic district date from the 1885-1905 period when Southport bustled with economic activity and speculative ventures. Most of the plain one and two-story frame dwellings that border the meandering tree-lined streets were built by about half a dozen local carpenters working in the local tradition. All the residential streets feature a canopy of live and water oaks, which tie the town together into an oak grove. Viewed from the river the town appears much like a park. Beyond the main commercial blocks of Moore and Howe Streets, the streets, which remain uncurbed, wind between the gnarled oaks. The combination of shady informal streets, river orientation, vernacular Victorian [Era] buildings, fishing boats, and docks give the town a distinctive character. Because well over one hundred of the buildings in the town can be traced to an individual carpenter-builder and a specific year of construction, the town presents an excellent study of Victoria [Era] building practices in a small North Carolina town.

The book THE ARCHITECTURE OF SOUTHPORT, by Carl Lounsbury, published in 1979 by The Southport Historical Society, Inc., provides an excellent record of the development of Smithville and later the Town of Southport, complete with an architectural inventory of Southport's Historic District.

SOUTHPORT HISTORIC DISTRICT



Area in Blue: Southport Historic District Boundary as designated in 1980.
Area in Green: Southport Historic District Boundary as enlarged and amended in 2010.

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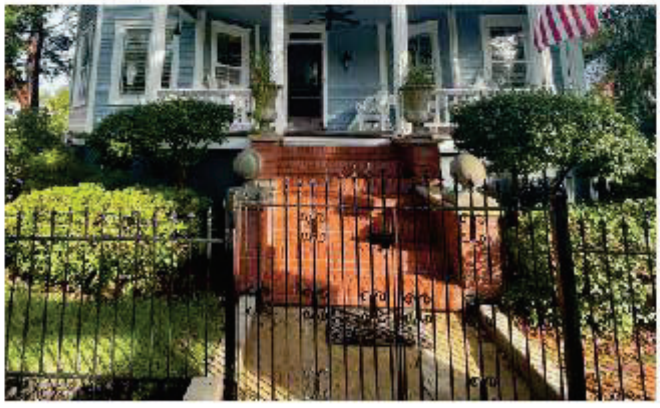
SOUTHPORT EXAMPLES:

Sidewalks And Front Entries



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SOUTHPORT EXAMPLES:

Sidewalks And Front Entries

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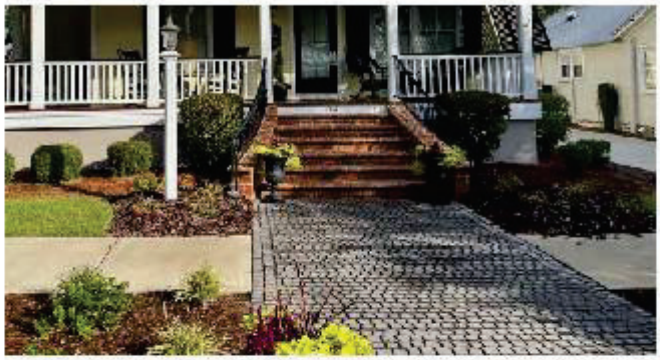
SOUTHPORT EXAMPLES:

Sidewalks And Front Entries



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SOUTHPORT EXAMPLES:

Sidewalks And Front Entries

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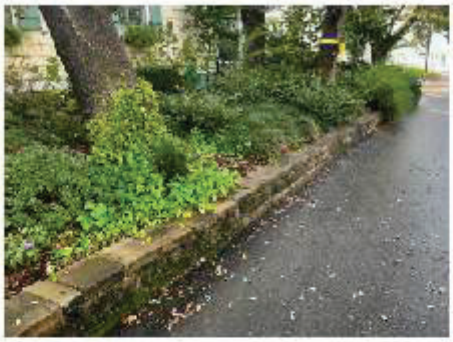
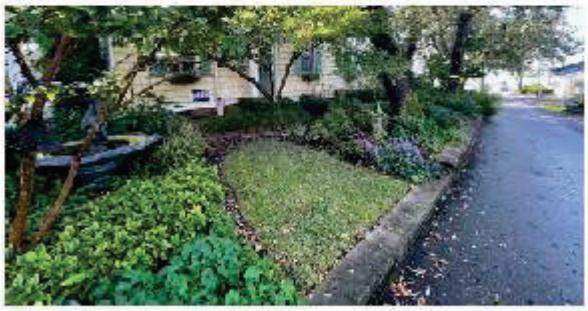
SOUTHPORT EXAMPLES:
Entry Drives

Waterway

SOUTHPORT EXAMPLES:

Low Walls





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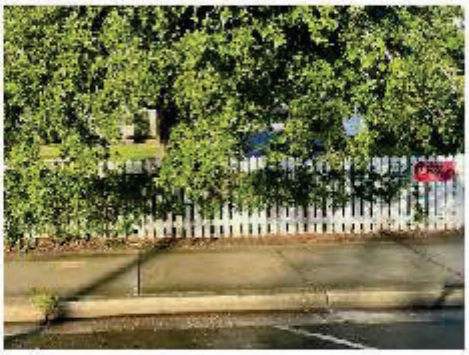
SOUTHPORT EXAMPLES:

Fences



General Landscape Guidelines

General

The landscape aesthetic of Coastal North Carolina should embody the region's natural character by incorporating native plant communities, durable materials, and a thoughtful balance between formal and informal outdoor spaces. A well-designed landscape is essential to the overall identity of Waterway, ensuring the community harmonizes with its coastal surroundings. The design should emphasize low-maintenance, regionally appropriate plantings that blend seamlessly with the natural environment. Existing vegetation should be preserved on each home site wherever possible to maintain ecological integrity and reinforce the area's coastal character.

Planting Design and Requirements

1. All plant selections should be native or well-adapted to Coastal North Carolina, with a preference for salt-tolerant species, drought-resistant species, and suited to sandy soils. Non-native, invasive, or high-maintenance species should be avoided – a list of not-approved species is listed below. The City of Southport's approved tree list, Brunswick County's approved landscaping species list, and the North Carolina Native Plant Society's approved list are all good resources to find recommended species.
2. Existing trees and other vegetation are to be incorporated into the designs and dictate the placement of buildings and related improvements.
3. Utilize plant materials and existing vegetation to anchor buildings to the site and provide screening. "Next generation": oaks and/or magnolias will be included in landscape designs.
4. The landscape is to be pervasive and intertwined with built elements. Plantings are to spill over onto, climb up, or otherwise soften surrounding site walls, foundations, steps, and fences to blend the built environment with the natural.
5. Landscape designs are to minimize the use of expansive lawn areas to reduce irrigation, fertilization, and maintenance requirements.
6. Planting materials should be placed to obscure views of the garage, driveway, and service areas as much as possible.
7. Foundation planting at the front of the house should be layered from the ground plane using smaller plants and transitioning to larger plants near the foundation. Foundation shrubs are to be of sufficient size to soften and reduce the apparent height of the home. Utilizing plant materials of different sizes, colors, and textures in natural groupings is encouraged.
8. Edible vegetables, fruits, and/or herbs may be allowed on homesites, provided the garden area is always maintained.
9. Integrate flowering vines and perennials in garden structures and entry designs.
10. Landscape designs generally prefer to be relaxed and casual, reflecting the natural coastal setting rather than highly controlled or manicured.

11. Minimum lot planting numbers are for the entire lot; applicable yards are indicated per category.

12. Consider seasonality and year-round interest in plantings

13. Place trees and shrubs with consideration of their anticipated mature sizes

14. Foundation planting should be used to enhance the street frontage of each lot and give seasonal interest. Select evergreen shrubs adjacent to the building to provide an aesthetically pleasing appearance during all seasons.

15. Homeowners are encouraged to design their landscapes according to recognized North Carolina-specific certifications prioritizing native planting, habitat creation, and water conservation.

    a. **Certification & Sustainability Goals**

    To enhance biodiversity and resilience, the community encourages homeowners to design their landscapes to meet the following certifications:

    - **North Carolina Native Plant Habitat Certification (NC Native Plant Society)** – Encourages the use of native species that support pollinators and local ecosystems.
    - **Certified Wildlife Habitat (NC Wildlife Federation & National Wildlife Federation)** – Promotes landscapes that provide food, water, and shelter for birds, butterflies, and beneficial wildlife.
    - **Xeriscape & Water-Wise Landscaping** – Emphasizes drought-tolerant and low-water-use plantings to reduce irrigation needs and stormwater runoff.

Minimum Lot Planting Standards

Lot Width	Shade Tree (3" DBH min. caliper) front yard	Ornamental Tree (10-12' tall) front/side yard	Evergreen Tree (8-10' tall) front/side yard	Evergreen Shrub (Min. 24" tall) front/side yard	Deciduous/ Evergreen Shrub (5 gal.) front/side yard	Ornamental Grasses (1 gal.) front/side yard	Perennials (1 gal.) front/side yard	Groundcover (SP4) front/side yard	Bermuda Sod (max %) front yard
Townhome	0	1	1	10	8	8	8	80 sf	10%
Duplex	0	1	1	10	8	8	8	80 sf	10%
35'	0	1	2	14	14	8	8	100 sf	15%
50'	0	2	2	18	18	10	10	100 sf	15%
75'	1	2	3	20	20	12	12	100 sf	20%
80'	1	2	3	24	24	14	14	200 sf	20%
90'	1	3	4	32	32	22	22	300 sf	25%

Irrigation

1. Utilize indigenous or naturalized plant materials, grouped according to water consumption needs, to reduce irrigation needs.

2. All permanent irrigation systems must be below ground, fully automatic, and include a backflow preventer. Water-conserving systems, such as drip irrigation and rain/moisture sensors, are also required.

3. Mulch at least 4" deep is encouraged in planting areas to retain moisture and reduce erosion.

Maintenance

When developing the landscape design, long-term growth and maintenance should be considered. Landscape materials should present an attractive presence when initial planting and all landscape areas should be adequately maintained to preserve their health and appearance. Proper maintenance includes watering, mowing, weeding, edging, pruning, removal and/or replacement of dead or diseased plant materials, and maintenance of drainage patterns and facilities.

Not-Approved Species

Trees, Palms, and Shrubs

- Bradford Pear (Pyrus calleryana)
- Tree of Heaven (Ailanthus altissima)
- Mimosa (Albizia julibrissin)
- Chinaberry (Melia azedarach)
- Golden Bamboo (Phyllostachys aurea)
- Japanese Privet (Ligustrum japonicum)
- Chinese Tallow (Triadica sebifera)
- Saltcedar (Tamarix spp.)
- Sabal Palmetto (Sabal palmetto)
- Windmill Palm (*Trachycarpus fortunei*)
- Pindo Palm (*Butia capitata*)
- Canary Island Date Palm (*Phoenix canariensis*)
- Mediterranean Fan Palm (*Chamaerops humilis*)

Vines

- Kudzu (Pueraria montana)
- Japanese Honeysuckle (Lonicera japonica)
- English Ivy (Hedera helix)
- Wisteria (Wisteria sinensis, Wisteria floribunda)
- Air Potato (Dioscorea bulbifera)

Groundcovers & Perennials

- Nandina (Nandina domestica)
- Chinese Silvergrass (Miscanthus sinensis)
- Liriope (Liriope spicata)
- Elephant Ear (Colocasia esculenta) (in wetland areas)
- Periwinkle (Vinca major, Vinca minor)

Dimensional Requirements

USE	MIN. LOT AREA (SF)	MIN. LOT WIDTH (FT)	MAX. LOT COVERAGE	MAX. DENSITY (GROSS UNITS PER ACRE)	PRIMARY STRUCTURE MAX. HEIGHT (FT)	PRIMARY STRUCTURE MINIMUM SETBACKS (FT)
Dwelling, Single-Family (accessed from street)	3,200	40	75%	N/A	40*	Front: 10 Side: 5 Rear: 10
Dwelling, Single-Family (alley loaded)	1,800	30	75%	N/A	40*	Front: 10 Side: 5 Rear: 0
Dwelling, Two-Family (Duplex)	5,000 minimum overall project size	18	80% for overall project	8	40	Front: 10 Side: 5 (on end of buildings); 0 (if attached to another unit on the side) Rear: 5 Rear (Garage): None
Dwelling, Multi-Family	10,000	50	85%	30 max units is 250	45**	Front: 10 Side: 10 Rear: 10
Non-Residential Uses and Mixed Use	None	None	75%	N/A	45	Front: 1 Side: 10 Rear: 10

*Maximum primary structure height for all Dwelling, Single-Family uses located in the AE Zones, Coastal A, V-Zones, and/or Ocean Hazard Areas, as defined by the Coastal Resources Commission, shall be 45'.

**A Dwelling, Multi-Family having a pitched roof may be a maximum of 55' in height.

PAINT COLOR SELECTION

March 2025
Paint Color Selection Procedures and General Notes

1. Before painting the house, one color scheme must be selected and submitted to the Waterway Architectural Review Committee (WARC) for review and approval. In case of conflict with existing homes, another color choice may be required for WARC review and approval.

2. Review the Waterway files and adjacent house colors for color coordination and prevention of color duplication before submittal.

3. Color schemes will be considered on a case-by-case basis. Colors shall be submitted with color chip samples (minimum 2" square in size; larger samples may be required) for WARC review and approval.

4. Colors should be submitted with the Preliminary Design Review submittal to best assure your first-choice selection. Color selection approval is based on a first-come-first-served basis.

5. Various exterior colors are encouraged on the same house (e.g., siding, siding in gable ends, dormers, doors, shutters, window sashes, etc.). The WARC suggests accent colors in gable ends (e.g., cedar shakes, etc.), including all visible gables on front elevations, dormers, and corner lot side elevations.

6. Garage doors may be painted to match the trim, siding, or accent color. The WARC will decide to minimize the impact of the garage doors on the streetscape.

7. Fences in the side and rear yards may remain unfinished. However, fences in front yards and locations visible from the street (e.g., side yard fences facing the street, corner lot fences facing and visible from streets, etc.) shall be painted to match the house trim color.

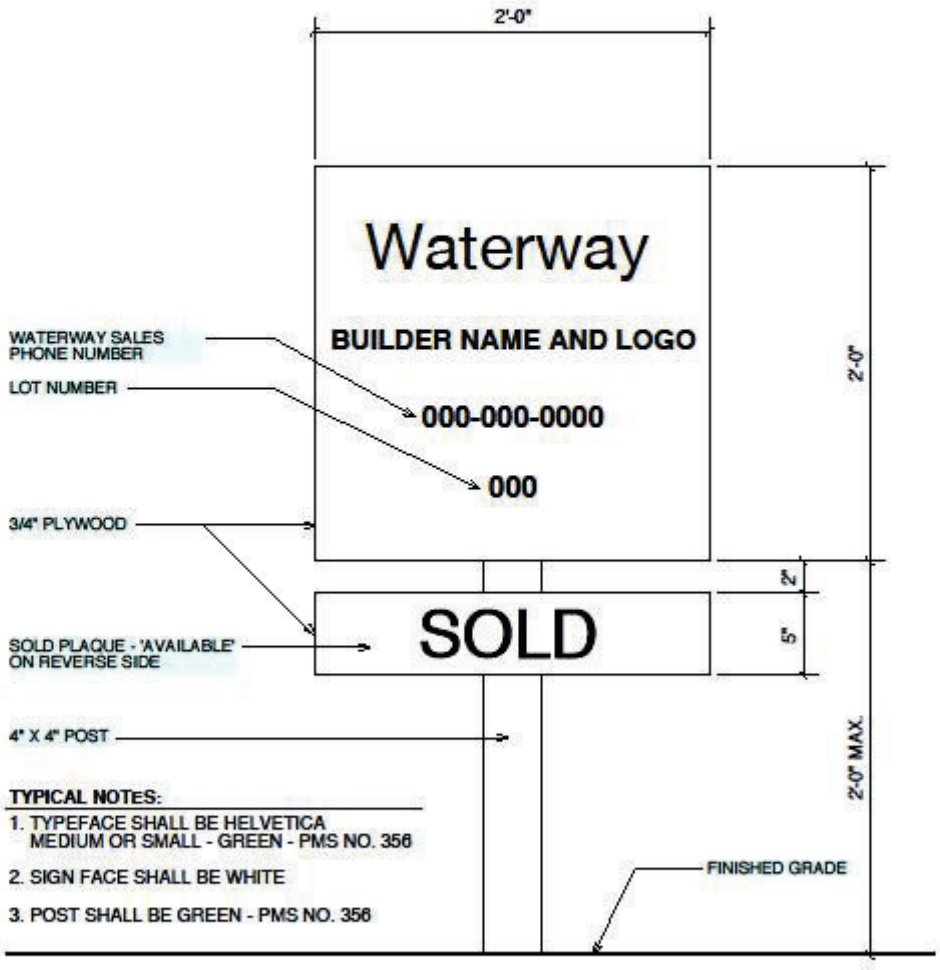
8. A darker siding color is recommended for at least every fourth house (or 25% of all houses).

9. No duplicate or similar color will be approved within 3 houses on each side of the street.

10. Houses of the same exterior design shall not match the same color scheme.

11. Gutters and downspouts shall match the trim color.

CONSTRUCTION SIGNAGE



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DESIGN REVIEW APPLICATIONS AND CHECKLISTS

PRELIMINARY DESIGN REVIEW APPLICATION AND CHECKLIST

FINAL DESIGN REVIEW APPLICATION AND CHECKLIST

PRE-CONSTRUCTION REVIEW APPLICATION AND CHECKLIST

FINAL CONSTRUCTION INSPECTION REVIEW APPLICATION AND CHECKLIST

CERTIFICATE OF COMPLIANCE FORM

ALTERATIONS AND ADDITIONS REVIEW APPLICATION AND CHECKLIST

COLOR SELECTION FORM

Waterway

PRELIMINARY DESIGN REVIEW APPLICATION AND CHECKLIST

NO SUBMITTAL WILL BE REVIEWED UNLESS ALL REQUIRED INFORMATION IS INCLUDED

BUILDER/ OWNER NAME_____ **LOT NO**_____

PLAN NAME_____ **DATE SUBMITTED**_____

STREET ADDRESS_____ **TELEPHONE NUMBER**_____

SITE PLAN (One copy 8 1/2" x 11")

- ☐ Property Lines and Setbacks
- ☐ Building footprint and finished floor elevation
- ☐ Clearing limits not to exceed necessary construction zone (indicate on plan)
- ☐ Water meter & sewer locations (from field observation)
- ☐ Driveway (include any unique materials) and finished elevation at street
- ☐ Walkways (include minimum 3'-0" wide walkway to the street sidewalk)
- ☐ Decks and patios
- ☐ Fencing and retaining walls (including fence detail if proposed)
- ☐ Service areas (include a method of screening)
- ☐ Outbuildings (if any)
- ☐ Impervious area square footage (house, covered porches, drives, walkways, patios, etc.)

ARCHITECTURAL FLOOR PLANS AND ELEVATIONS

One copy 8-1/2" x 11" or a copy of the Approved Builder Cut-Sheet
Floor plans and elevations may be freehand for this submittal

- ☐ Floor plans (All levels including covered porches, decks, patios, etc., with heated square footage)
- ☐ Front, sides & rear elevations (with material indications)

COLORS AND MATERIALS

Color samples are not required for this submittal

- ☐ Color Selection Form must be attached

The WARC has reviewed the Application with the following decisions and comments and is only for conformance with the Waterway Architectural Design Guidelines. The Owner / Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

- ☐ Approved (Proceed with the Final Design Review Application.)
- ☐ Approved as Noted (See attached comments for inclusion in the Final Design Review Application.)
- ☐ Not Approved/Re-Submit (See attached comments for WARC review and approval before proceeding with the Final Design Review Application.)

WARC REPRESENTATIVE _____ **DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

Waterway

FINAL DESIGN REVIEW APPLICATION AND CHECKLIST

NO SUBMITTAL WILL BE REVIEWED UNLESS ALL REQUIRED INFORMATION IS INCLUDED

BUILDER / OWNER NAME_____ **LOT NO**_____

PLAN NAME_____ **DATE SUBMITTED**_____

STREET ADDRESS_____ **TELEPHONE NUMBER**_____

SITE PLAN (One copy 8-1/2" x 11")

Property Lines and Setbacks
Building footprint and finished floor elevation
Clearing limits not to exceed necessary construction zone (indicate on plan)
Water meter & sewer locations (from field observation)
Driveway (include any unique materials) and finished elevation at street
Walkways (include minimum 3'-0" wide walkway to the street sidewalk)
Decks and patios
Fencing and retaining walls (including fence detail if proposed)
Service areas (include a method of screening)
Outbuildings (if any)
Impervious area square footage (house, covered porches, drives, walkways, patios, etc.)
Landscaping Plan (One copy 8-1/2" x 11" including existing plantings)
Tree protection fencing
All trees 4" caliper or greater to be removed must be labeled by species.
Stormwater control and silt fencing for the entire lot perimeter.
Construction entry with a gravel base

ARCHITECTURAL FLOOR PLANS AND ELEVATIONS (
One copy 8-1/2" x 11" or a copy of the Approved Builder Cut-Sheet
Floor plans and elevations may be freehand for this submittal

☐ Floor plans (All levels including covered porches, decks, patios, etc., with heated / finishable square footage)
☐ Front, sides & rear elevations (with material indications)

COLORS AND MATERIALS
☐ The Color Selection Form must be attached

ENERGY PROGRAM CERTIFICATION
☐ Plan Review and Certification Letter

The WARC has reviewed the Application with the following decisions and comments and is only for conformance with the Waterway Architectural Design Guidelines. The Owner / Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

☐ Approved (Proceed with clearing the lot and the Pre-Construction Review Application.)
☐ Approved as Noted (See attached comments for inclusion in the Pre-Construction Review Application.)
☐ Not Approved / Re-Submit (See attached comments for WARC review and approval before proceeding with clearing the lot and the Pre-Construction Review Application.)

WARC REPRESENTATIVE _____ **DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

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Waterway

PRE-CONSTRUCTION REVIEW APPLICATION AND CHECKLIST

NO SUBMITTAL WILL BE REVIEWED UNLESS ALL REQUIRED INFORMATION IS INCLUDED

BUILDER/ OWNER NAME_____LOT NO._____

PLAN NAME_____DATE SUBMITTED_____

STREET ADDRESS_____TELEPHONE NUMBER_____

Clear the lot and stake out the following before scheduling the WARC Review: Provide the Final Design Review Site Plan for reference and attach it to this form.

- ☐ Property Lines and Setbacks
- ☐ Building footprint and finished floor elevation
- ☐ Clearing limits not to exceed necessary construction zone (indicate on plan)
- ☐ Water meter & sewer locations (from field observation)
- ☐ Driveway and walkways (include minimum 3'-0" wide walkway to the street sidewalk)
- ☐ Decks and patios
- ☐ Fencing and retaining walls
- ☐ Service areas (include a method of screening)
- ☐ Outbuildings (if any)
- ☐ Impervious area square footage (house, covered porches, drives, walkways, patios, etc.)
- ☐ Landscaping Plan (One copy 8-1/2" x 11" including existing plantings)
- ☐ Tree protection fencing
- ☐ All trees 4" caliper or greater to be removed
- ☐ Stormwater control and silt fencing for the entire lot perimeter
- ☐ Construction entry with a gravel base

The WARC has reviewed the application and made the following decisions and comments. This review is only for conformance with the Waterway Architectural Design Guidelines. The Owner/ Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

- ☐ Approved (Proceed with construction and landscaping. Schedule the Final Construction Inspection Review at least two weeks before construction completion.)
- ☐ Approved as Noted (See attached comments for completion before Final Construction Inspection Review.)
- ☐ Not Approved / Re-Submit (See attached comments for WARC review and approval before proceeding with construction and landscaping.)

WARC REPRESENTATIVE _____**DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

Waterway

FINAL CONSTRUCTION INSPECTION REVIEW APPLICATION AND CHECKLIST

No submittal will be reviewed unless all required information is completed.

BUILDER /OWNER NAME_____ **LOT NO.**_____

PLAN NAME_____ **DATE SUBMITTED**_____

STREET ADDRESS_____ **TELEPHONE NUMBER**_____

Schedule the Final Construction Inspection Review at least two weeks before construction completion for proper WARC scheduling and confirmation that all construction and requirements noted below have been completed.

Please attach a copy of the Final Design Review Site Plan, Floor plans, Elevations (for reference only), and a final impervious square footage survey to this form.

- ☐ The proposed structure(s) are completed, including decks, patios, storage buildings, dog houses, etc.
- ☐ Proposed site features completed, including driveways, sidewalks, fences, retaining walls, gazebos, pools, etc.)
- ☐ Impervious area square footage verification per previous reviews/ approvals.
- ☐ The proposed landscaping is finally completed (or a bond will be provided for completion later).
- ☐ Proposed utilities completed, including meters.
- ☐ Exterior colors and finishes completed.
- ☐ Town of Southport Certificate of Occupancy.

OWNER CERTIFICATION

I have reviewed and verified that this Application and Checklist (including required documentation attachments) are complete and submitted for the WARC Final Construction Inspection Review. I agree to all conditions as outlined in the Architectural Guidelines.

SIGNATURE OF PROPERTY OWNER_____ **DATE**_____

The WARC has reviewed the Application with the following decisions and comments and is only for conformance with the Waterway Architectural Design Guidelines. The Owner/ Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

- ☐ Approved (Certificate of Compliance attached.)
- ☐ Approved as Noted (See attached comments for completion and WARC review and approval before occupying.)
  the property and receiving the Certificate of Compliance.)
- ☐ Not Approved / Re-Submit (See attached comments for completion and WARC review and approval before occupying the property and receiving the Certificate of Compliance.)

WARC REPRESENTATIVE _____ **DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

Waterway

CERTIFICATE OF COMPLIANCE

BUILDER/ OWNER NAME_____

STREET ADDRESS_____

TELEPHONE NUMBER_____

The Waterway Architectural Review Committee, Owner, and Builder have completed the Final Construction Inspection Review and hereby certifies that the building and site improvements, as noted, follow the Waterway Architectural Guidelines and are by the Waterway Covenants and all other governing agencies, codes, and requirements.

OWNER CERTIFICATION

I have reviewed and verified that the Final Inspection Review and all construction are complete and submitted for the WARC Certificate of Compliance certification. I agree to all conditions as outlined in the Architectural Guidelines.

SIGNATURE OF PROPERTY OWNER _____ **DATE**_____

The WARC has reviewed the Application with the following decisions and comments and is only for conformance with the Waterway Architectural Design Guidelines. The Owner/ Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

☐ Approved

☐ Approved as Noted / Re-Submit (See attached comments for completion and WARC review and approval before occupying the property and receiving the Certificate of Compliance.)

WARC REPRESENTATIVE _____ **DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

Waterway

ALTERATIONS AND ADDITIONS REVIEW APPLICATION AND CHECKLIST

NO SUBMITTAL WILL BE REVIEWED UNLESS ALL REQUIRED INFORMATION IS INCLUDED

OWNER NAME_____LOT NO._____

PLAN NAME_____DATE SUBMITTED_____

STREET ADDRESS_____TELEPHONE NUMBER_____

SITE PLAN (ONE COPY 8 1/2" X 11")

- ☐ Property lines and setbacks
- ☐ Adjacent lot numbers and existing buildings (if any)
- ☐ Existing house and other structures (including decks, patios, driveways, walks, fences, etc.)
- ☐ Proposed alterations and additions (including detailed landscape plan), including a short description below.
  finished floor elevations, square footage, details, etc.
- ☐ Impervious area square footage (house, covered porches, drives, walkways, patios, etc.)

ARCHITECTURAL FLOOR PLANS AND ELEVATIONS (IF REQUIRED ONE COPY 8 1/2" X 11" FORMAT. NOTE: FLOOR PLANS AND ELEVATIONS MAY BE FREE HAND FOR THIS SUBMITTAL.)

- ☐ Floor plans of alterations and additions, including existing construction (All levels, including covered porches, decks, patios, etc., with heated/ finishable square footage)
- ☐ Front, sides & rear elevations of alterations and additions, including existing construction (with material indications)

COLORS AND MATERIALS

- ☐ The Color Selection Form must be attached.

Brief description of proposed alterations and additions (attach more detailed description if required).

The WARC has reviewed the Application with the following decisions and comments. This review is only for conformance with the Waterway Architectural Design Guidelines. The Owner/ Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

- ☐ Preliminary Design Review
- ☐ Final Design Review
- ☐ Approved (Proceed with construction.)
- ☐ Approved as Noted (See attached comments for inclusion in the construction.)
- ☐ Not Approved / Re-Submit (See attached comments for WARC review and approval before proceeding withconstruction.)

WARC REPRESENTATIVE _____DATE_____

This Application is valid for six (6) months from the WARC review date, as noted above.

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Waterway

COLOR SELECTION FORM

OWNER NAME_____ **LOT NO.**_____

PLAN NAME_____ **DATE SUBMITTED**_____

STREET ADDRESS_____ **TELEPHONE NUMBER**_____

Complete and submit one copy of the Color Selection Form for the Waterway Architectural Review Committee (WARC) review and approval before proceeding with exterior finishing and painting. Attach this form to the specific design phase application. All color selections and this form are strongly recommended at the Preliminary Design Review Phase due to the importance of the color selections relative to previous color selections in the neighborhood. However, color selections may be delayed until the Final Design Review. If an incomplete form is submitted, the WARC will automatically reject your application, and the application will be returned and completed before scheduling a final color review and approval. Include all applicable colors, material samples, etc., as required to communicate most efficiently with the WARC. List all colors if multiple colors are proposed (i.e., accent siding color on shake detailing, upper gables, trim, window sashes/ muntins, doors, etc.). Color samples are not required if a recommended Waterway Color Scheme is proposed.

PROPOSED COLOR SELECTIONS

Color Scheme No. Proposal (Color samples not required):_____

Siding:_____

Brick:_____

Stone:_____

Trim:_____

Doors:_____

Windows:_____

Garage Doors:_____

Shutters:_____

Roof:_____

Other (List as required):_____

The WARC has reviewed the Application with the following decisions and comments. This review is only for conformance with the Waterway Architectural Design Guidelines. The Owner/ Builder is responsible for compliance with the Guidelines, state and local codes, regulations, ordinances, etc.

☐ Approved (Proceed with exterior finishing and painting.)

☐ Approved as Noted (See attached comments. Proceed with exterior finishing and painting.)

☐ Not Approved/ Re-Submit (See attached comments for WARC review and approval before proceeding with exterior finishing and painting.)

WARC REPRESENTATIVE _____ **DATE**_____

This Application is valid for six (6) months from the WARC review date, as noted above.

Exhibit E

Traffic Impact Analysis

Southport Mixed-Use Development

Traffic Impact Analysis

Southport, North Carolina

Prepared for

East West Partners

Prepared by

Kimley»Horn

February 2022

© Kimley-Horn and Associates, Inc.

Southport Mixed-Use Development

Traffic Impact Analysis

Southport, NC

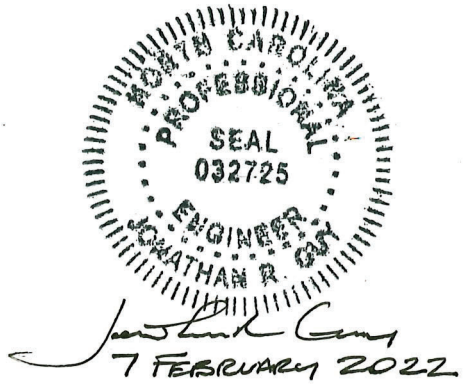
Prepared for

East West Partners

Prepared by

Kimley»Horn

NC #F-0102



February 2022

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115 Fairchild Street, Suite 250
Charleston, South Carolina, 29492

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1 Executive Summary

The proposed Southport Mixed-Use Development is located in Southport, NC west of the Southport city limits within a currently vacant parcel bounded by Robert Ruark Drive (to the north), W 11th Street/W 9th Street (to the east), Indigo Plantation Drive (to the south), and the Dutchman Creek floodplain (to the west). Based on the current site plan, the proposed development is anticipated to consist of the following land uses:

- Residential Land Uses
  - 330 single-family detached homes
  - 340 single-family attached townhomes
  - 480 recreational homes
  - 120 senior adult detached housing units
  - 200 senior adult attached housing units
- Office Land Uses
  - 80,000 square feet of medical-dental office space
- Retail Land Uses
  - 8,000 square feet of retail shopping center space

The full build of the proposed development is anticipated to be complete in 2032 with access to be provided as follows:

- Connection to existing Robert Ruark Drive approximately 800 feet west of Forest Oak Drive/Cades Trail
- Connection to existing W 9th Street in front of Southport Elementary School

The North Carolina Department of Transportation (NCDOT) has a project identified (STIP Project R-5021) which will widen NC 211 (N. Howe Street) from NC 87 (River Drive) to NC 906. In coordination with NCDOT, it was determined that the future year analysis from this TIP project (2040) would be analyzed as part of the Southport Mixed-Use Development analysis. This traffic impact analysis (TIA) evaluates traffic operations under 2021 Existing, 2032 No-Build, 2032 Build, 2040 No-Build, and 2040 Build traffic conditions during the AM and PM peak hours at the following intersections:

1. NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive
2. NC 211 (N. Howe Street) at 11th Street
3. NC 211 (N. Howe Street) at Fodale Avenue
4. NC 211 (N. Howe Street) at 9th Street
5. NC 211 (N. Howe Street) at West Street
6. NC 211 (N. Howe Street) at Moore Street

7. NC 211 (N. Howe Street) at 12th Street/Stuart Avenue
8. NC 211 (S. Howe Street) at Bay Street
9. Robert Ruark Drive at Proposed Site Access #1

The NCDOT TIA scoping document associated with this project was originally approved by NCDOT on July 21, 2021. This NCDOT TIA scoping document is included in **Appendix A** for reference. The Town of Southport requested the addition of the Bay Street intersection in January of 2022. This report has been amended to include this intersection at this request.

Kimley-Horn was retained to determine the potential traffic impacts of this development and identify transportation improvements that may be required to accommodate these impacts in accordance with the guidelines set forth in the North Carolina Department of Transportation (NCDOT) *Congestion Management Capacity Analysis Guidelines* and NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. This report presents trip generation, trip distribution, capacity analyses, and recommendations for transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

Based on the results of the analyses described within this report, the following improvements are recommended to accommodate site traffic associated with the proposed development:

NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive

- Construct one (1) additional eastbound left-turn lane to form dual left-turn lanes with approximately 350 feet of full-width storage and an appropriate taper length.
- Construct one (1) eastbound right turn lane with approximately 350 feet of full-width storage and an appropriate taper length.
- Modify signal timing and phasing to accommodate the proposed improvements and changes in traffic volumes on each approach.

NC 211 (N. Howe Street) at 9th Street

- Construct a southbound right-turn lane with a minimum of 300 feet of full-width storage and an appropriate taper length, as utility and right-of-way constraints allow.
- Optimize signal timing in the context of the proposed improvements and increases in traffic volumes on each approach.

The following additional improvements have been identified based on No-Build traffic volumes (i.e., without the proposed Southport Mixed-Use Development) and are not the responsibility of the developer:

NC 211 (N. Howe Street) at 12th Street

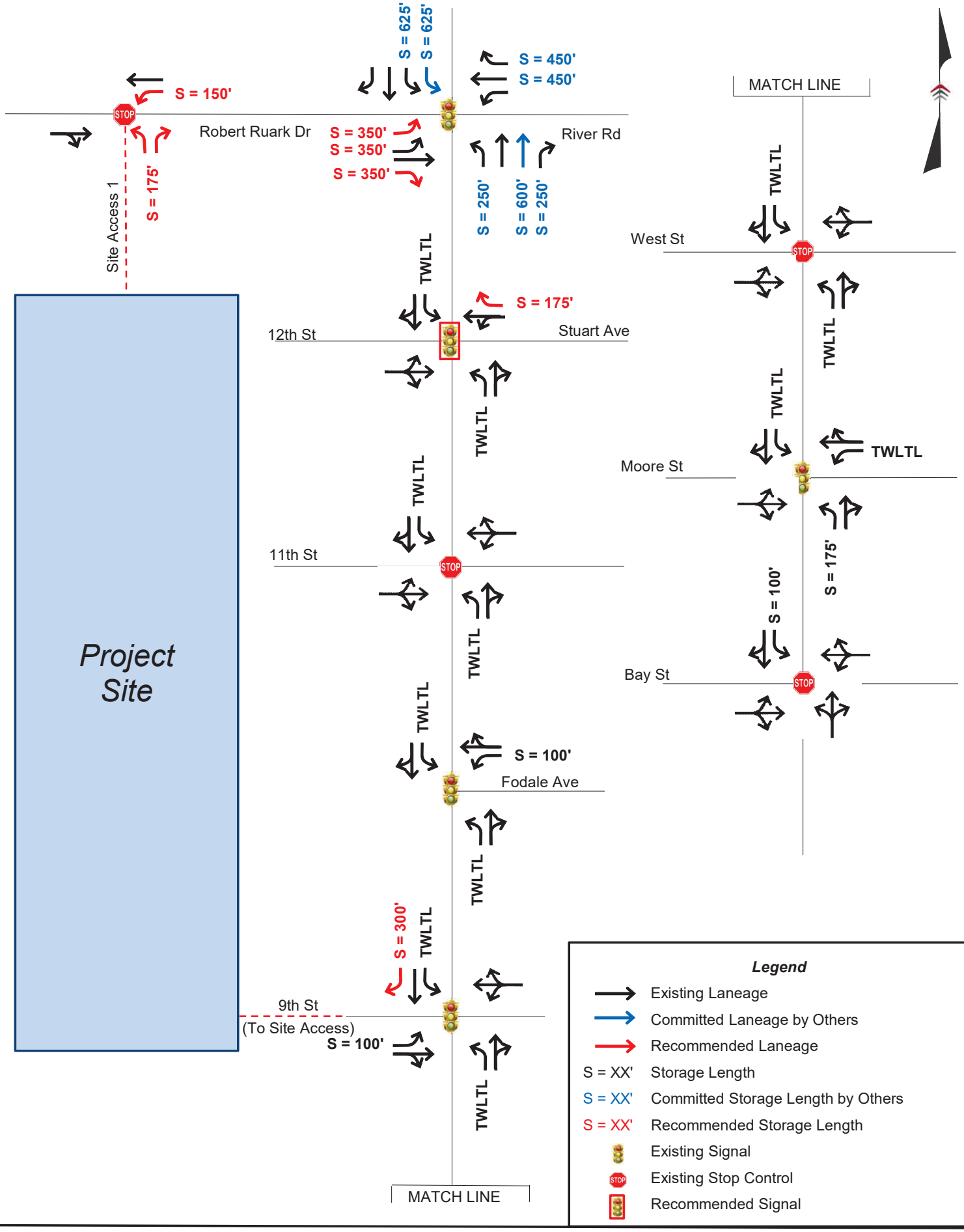
- Install a fully actuated traffic signal to operate with existing geometry and permitted phasing on all approaches.
- Install a westbound right turn lane with 175 feet of storage and appropriate taper

Robert Ruark Drive at Site Access #1

- Construct a westbound left-turn lane with a minimum of 150 feet of full-width storage and an appropriate taper length.
- Construct the site access point to include one ingress lane and two egress lanes:
  - One northbound left-turn lane
  - One northbound right-turn lane with a minimum of 175 feet of full-width storage and an appropriate taper length

Based on forecasted traffic volumes developed through coordination with NCDOT, additional improvements may be warranted at the intersections of NC 211 (N. Howe Street) with 11th Street and Fodale Avenue. The need for these improvements was identified through the analyses described herein, but the design and construction of these improvements are not the responsibility of the developer.

Figure ES-1 shows the recommended roadway geometry and traffic control at the study area intersections as described above.


S = 625'
S = 625'
S = 450'
S = 450'
S = 150'
Robert Ruark Dr
S = 350'
S = 350'
S = 350'
River Rd
S = 250'
S = 600'
S = 250'
S = 175'
Site Access 1
TWLTL
S = 175'
12th St
Stuart Ave
TWLTL
TWLTL
11th St
TWLTL
TWLTL
S = 100'
Fodale Ave
TWLTL
S = 300'
TWLTL
9th St
(To Site Access)
S = 100'
TWLTL
MATCH LINE
Project Site
MATCH LINE
TWLTL
West St
TWLTL
TWLTL
Moore St
TWLTL
S = 175'
S = 100'
Bay St
Legend
Existing Laneage
Committed Laneage by Others
Recommended Laneage
S = XX' Storage Length
S = XX' Committed Storage Length by Others
S = XX' Recommended Storage Length
Existing Signal
Existing Stop Control
Recommended Signal

1 Introduction

The proposed Southport Mixed-Use Development is located in Southport, NC west of the Southport city limits within a currently vacant parcel bounded by Robert Ruark Drive (to the north), W 11th Street/W 9th Street (to the east), Indigo Plantation Drive (to the south), and the Dutchman Creek floodplain (to the west). Based on the current site plan, the proposed development is anticipated to consist of the following land uses:

- Residential Land Uses
  - 330 single-family detached homes
  - 340 single-family attached townhomes
  - 480 recreational homes
  - 120 senior adult detached housing units
  - 200 senior adult attached housing units
- Office Land Uses
  - 80,000 square feet of medical-dental office space
- Retail Land Uses
  - 8,000 square feet of retail shopping center space

The full build of the proposed development is anticipated to be complete in 2032 with access to be provided as follows:

- Connection to existing Robert Ruark Drive approximately 800 feet west of Forest Oak Drive/Cades Trail
- Connection to existing W 9th Street in front of Southport Elementary School

The North Carolina Department of Transportation (NCDOT) has a project identified (STIP Project R-5021) which will widen NC 211 (N. Howe Street) from NC 87 (River Drive) to NC 906. In coordination with NCDOT, it was determined that the future year analysis from this TIP project (2040) would be analyzed as part of the Southport Mixed-Use Development analysis. This traffic impact analysis (TIA) evaluates traffic operations under 2021 Existing, 2032 No-Build, 2032 Build, 2040 No-Build, and 2040 Build traffic conditions during the AM and PM peak hours at the following intersections:

1. NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive
2. NC 211 (N. Howe Street) at 11th Street
3. NC 211 (N. Howe Street) at Fodale Avenue
4. NC 211 (N. Howe Street) at 9th Street
5. NC 211 (N. Howe Street) at West Street

6. NC 211 (N. Howe Street) at Moore Street
7. NC 211 (N. Howe Street) at 12th Street/Stuart Avenue
8. NC 211 (S. Howe Street) at Bay Street
9. Robert Ruark Drive at Proposed Site Access #1

The NCDOT TIA scoping document associated with this project was originally approved by NCDOT on July 21, 2021. This NCDOT TIA scoping document is included in **Appendix A** for reference. The Town of Southport requested the addition of the Bay Street intersection in January of 2022. This report has been amended to include this intersection at this request.

Kimley-Horn was retained to determine the potential traffic impacts of this development and identify transportation improvements that may be required to accommodate these impacts in accordance with the guidelines set forth in the North Carolina Department of Transportation (NCDOT) *Congestion Management Capacity Analysis Guidelines* and NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. This report presents trip generation, trip distribution, capacity analyses, and recommendations for transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

2 Existing Conditions

2.1 Study Area

The study area for this TIA includes the following intersections:

1. NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive
2. NC 211 (N. Howe Street) at 11th Street
3. NC 211 (N. Howe Street) at Fodale Avenue
4. NC 211 (N. Howe Street) at 9th Street
5. NC 211 (N. Howe Street) at West Street
6. NC 211 (N. Howe Street) at Moore Street
7. NC 211 (N. Howe Street) at 12th Street/Stuart Avenue
8. NC 211 (S. Howe Street) at Bay Street
9. Robert Ruark Drive at Proposed Site Access #1

This study area was determined based on coordination with NCDOT.

Figure 1 shows the study area intersections for this analysis, and **Figure 2** shows the proposed site plan for the development.

2.2 Existing Roadway Characteristics

The proposed Southport Mixed-Use Development is located in Southport, NC west of the Southport city limits within a currently vacant parcel bounded by Robert Ruark Drive (to the north), W 11th Street/W 9th Street (to the east), Indigo Plantation Drive (to the south), and the Dutchman Creek floodplain (to the west). Key characteristics of each of the roadways within the study area are summarized below.

NC 211 (N. Howe Street) is a two-lane, divided roadway with a center two-way left-turn lane (TWLTL) and posted speed limits of 45 mph and 35 mph north and south of NC 87 (River Road), respectively. Per NCDOT, NC 211 (N. Howe Street) has a 2019 Average Annual Daily Traffic (AADT) of 23,000 vehicles per day (vpd) north of NC 87 (River Road), 20,000 vpd between NC 87 (River Road) and W 10th Street, 11,000 vpd between 10th Street and Nash Street and 3,700 vpd south of Nash Street.

NC 87 (River Road) is a two-lane, undivided roadway with a posted speed limit of 35 mph east of NC 211 (N. Howe Street). Per NCDOT, NC 87 (River Road) has a 2019 AADT of 8,100 vpd.

Robert Ruark Drive is a two-lane, undivided roadway with a posted speed limit of 35 mph west of NC 211 (N. Howe Street). NCDOT does not provide a reported AADT for Robert Ruark Drive.

11th Street is a two-lane, undivided roadway with a posted speed limit of 25 mph. NCDOT does not provide a reported AADT for 11th Street.

Fodale Avenue is a two-lane, undivided roadway with a posted speed limit of 25 mph. NCDOT does not provide a reported AADT for Fodale Avenue.

9th Street is a two-lane, undivided roadway with a posted speed limit of 35 mph. Per NCDOT, 9th Street has a 2019 AADT of 2,600 vpd west of NC 211 (N. Howe Street).

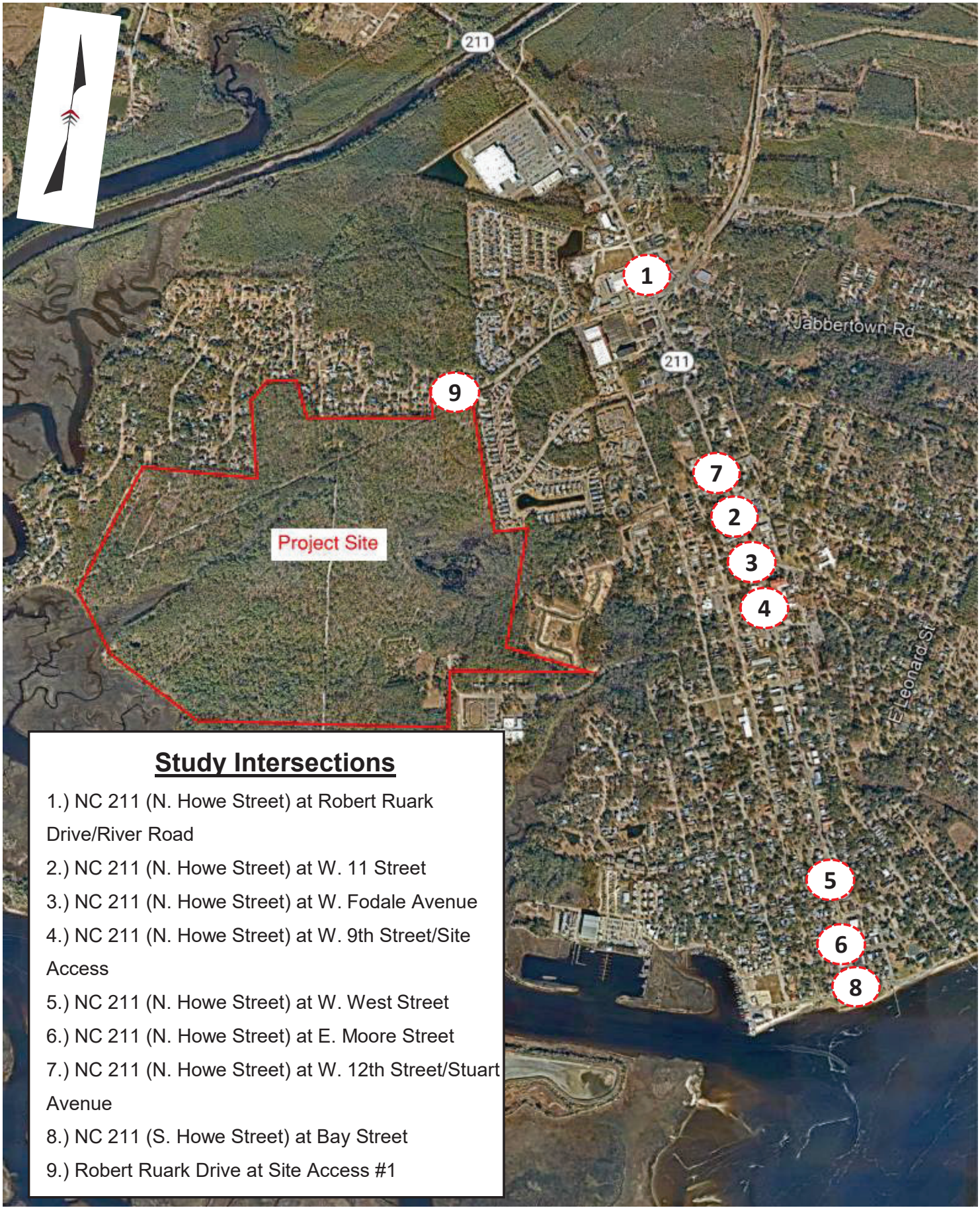
West Street is a two-lane, undivided roadway with a posted speed limit of 25 mph. Per NCDOT, West Street has a 2019 AADT of 1,400 vpd west of NC 211 (N. Howe Street).

Moore Street is a two-lane, undivided roadway west of NC 211 (N. Howe Street), a two-lane, divided roadway with a TWLTL east of NC 211 (N. Howe Street) and has on-street angled parking on both sides of NC 211 (N. Howe Street). The posted speed limit on Moore Street is 20 mph. Per NCDOT, Moore Street has a 2019 AADT of 3,700 vpd.

12th Street is a two-lane, undivided roadway west of NC 211 (N. Howe Street) with a posted speed limit of 25 mph. NCDOT does not provide a reported AADT for 12th Street.

Bay Street is a two-lane, undivided local roadway with a posted speed limit of 20 mph. NCDOT does not provide a reported AADT for Bay Street.

Figure 3 shows the existing geometry and traffic control at the study area intersections.



Study Intersections

1.) NC 211 (N. Howe Street) at Robert Ruark Drive/River Road

2.) NC 211 (N. Howe Street) at W. 11 Street

3.) NC 211 (N. Howe Street) at W. Fodale Avenue

4.) NC 211 (N. Howe Street) at W. 9th Street/Site Access

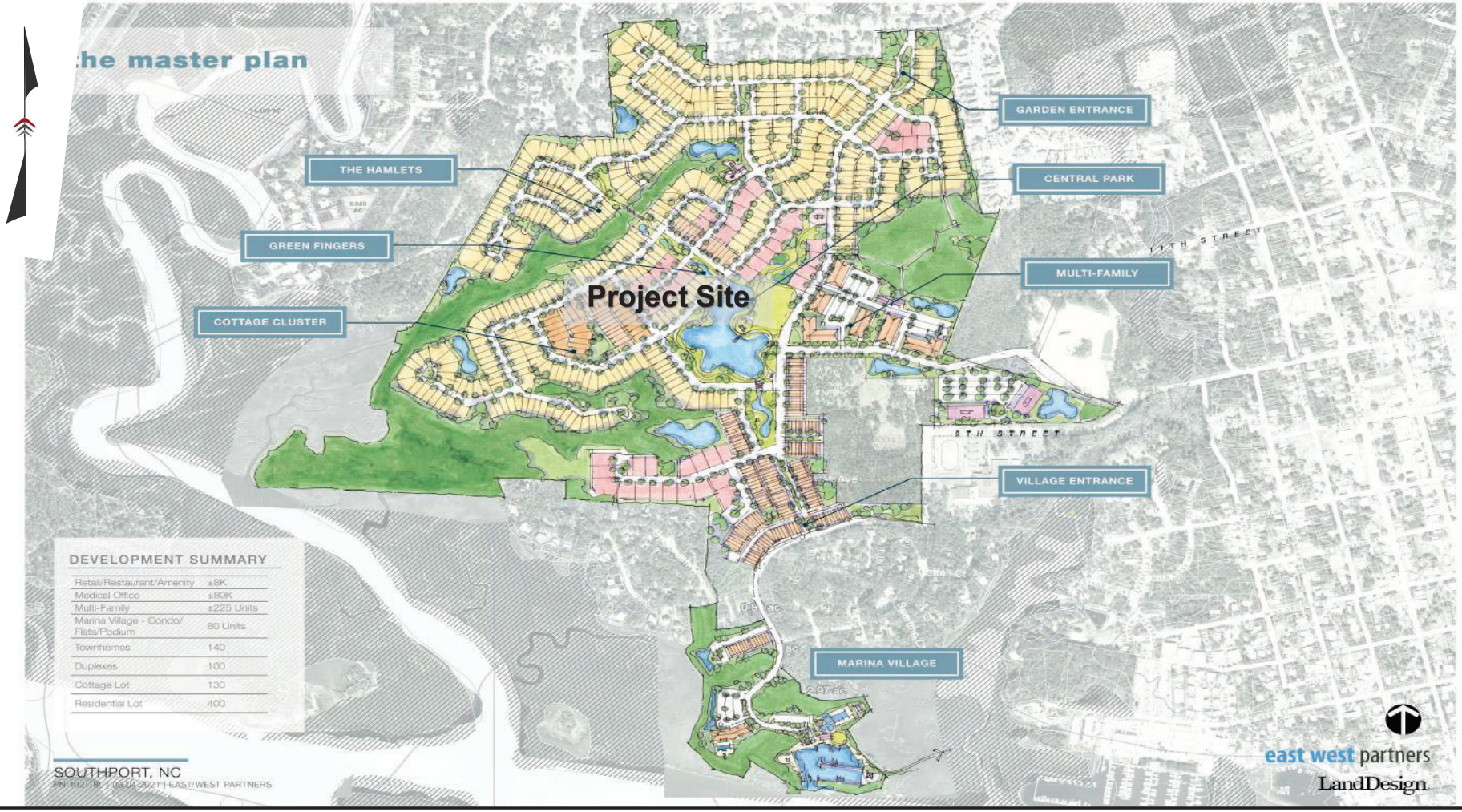
5.) NC 211 (N. Howe Street) at W. West Street

6.) NC 211 (N. Howe Street) at E. Moore Street

7.) NC 211 (N. Howe Street) at W. 12th Street/Stuart Avenue

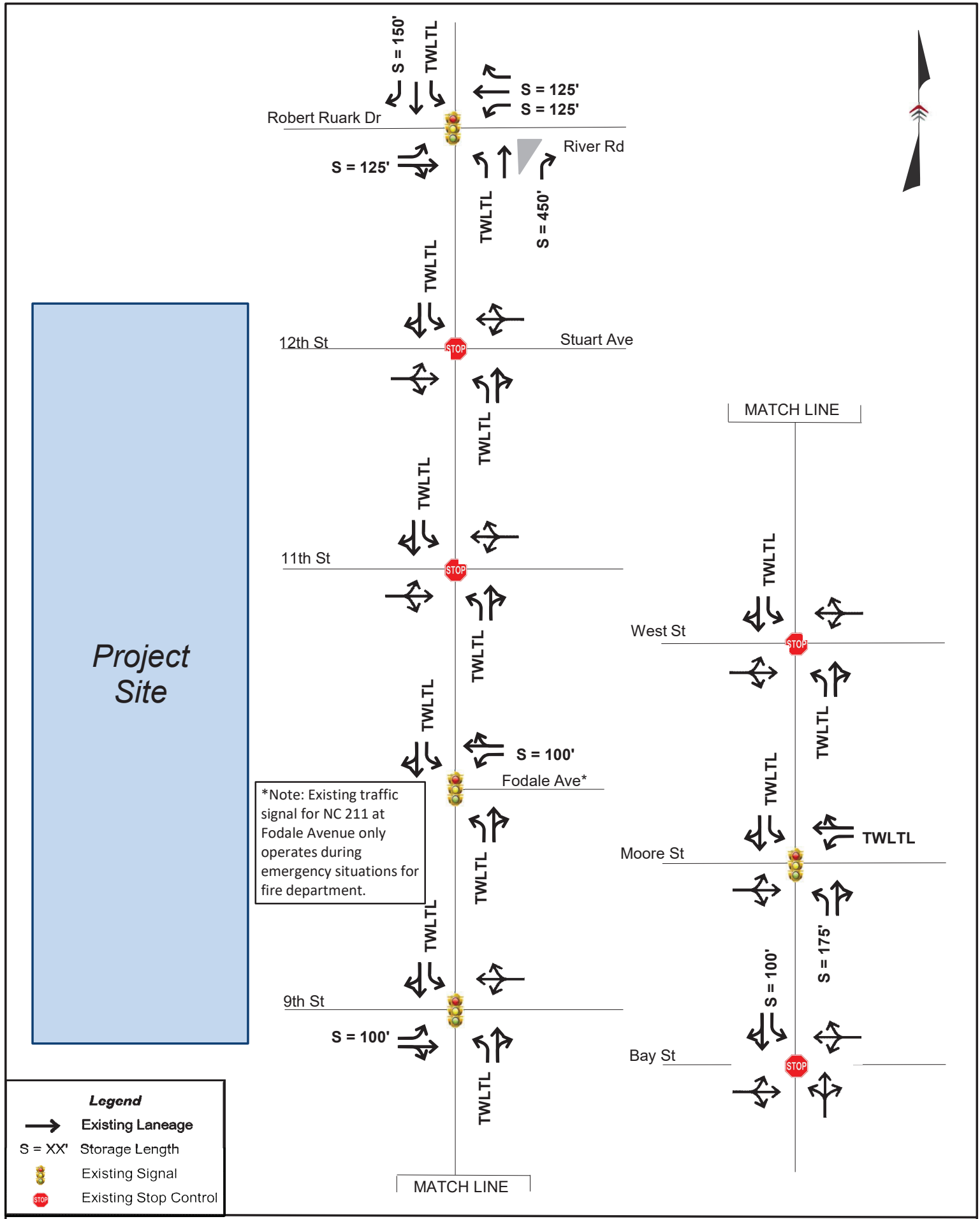
8.) NC 211 (S. Howe Street) at Bay Street

9.) Robert Ruark Drive at Site Access #1



Kimley»Horn

Southport Mixed-Use Development Traffic Impact Analysis
Figure 2 - Conceptual Site Plan


S = 150'
TWLTL
S = 125'
S = 125'
Robert Ruark Dr
River Rd
S = 125'
TWLTL
S = 450'
TWLTL
12th St
Stuart Ave
TWLTL
TWLTL
11th St
TWLTL
TWLTL
S = 100'
Fodale Ave*
TWLTL
TWLTL
9th St
S = 100'
TWLTL
MATCH LINE
TWLTL
West St
TWLTL
TWLTL
TWLTL
Moore St
S = 175'
S = 100'
Bay St
MATCH LINE
Project Site
*Note: Existing traffic signal for NC 211 at Fodale Avenue only operates during emergency situations for fire department.
Legend
Existing Laneage
S = XX' Storage Length
Existing Signal
Existing Stop Control

3 Project Traffic

3.1 Trip Generation

The trip generation rates and equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* were used to estimate the trip generation potential of the proposed development for each applicable land use code (LUC). As noted previously, the Southport Mixed-Use Development is anticipated to consist of the following land uses:

- Residential Land Uses
  - 330 single-family detached homes (ITE LUC 210)
  - 340 single-family attached townhomes (ITE LUC 220)
  - 480 recreational homes (ITE LUC 260)
  - 120 senior adult detached housing units (ITE LUC 251)
  - 200 senior adult attached housing units (ITE LUC 252)
- Office Land Uses
  - 80,000 square feet of medical-dental office space (ITE LUC 720)
- Retail Land Uses
  - 8,000 square feet of retail shopping center space (ITE LUC 820)

It should be noted that the average rate was used for the calculation of the ITE LUC 820 – Shopping Center trip generation potential in lieu of the fitted curve equation as specified for use by the NCDOT Congestion Management *Rate Versus Equation Spreadsheet.* Due to the low square footage intensity analyzed as a part of this TIA, the fitted curve equation for this land use would result in a site trip estimate that would not correlate with the size of the proposed retail buildout analyzed.

Due to the mixed-use nature of the proposed development, internal capture and pass-by trip reductions were estimated based on methodologies in the ITE *Trip Generation Handbook, 3rd Edition*. It should be noted that pass-by reductions were limited to 10% of the adjacent street traffic per NCDOT guidelines.

After internal capture and pass-by trip reductions, it is estimated that the proposed development has the potential to generate 817total (345 enter/472 exit) net new external trips during the AM peak hour, and 1,016 total (511 enter/505 exit) net new external trips during the PM peak hour.

The ITE estimated trip generation for the proposed development is summarized in **Table 1**.

Table 1 - Trip Generation Summary

Table 1: South Port Mixed Use Development Trip Generation

Land Use	Intensity	Units	Daily	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Medical-Dental Office	80.0	KSF	2,986	183	143	40	273	76	197
Shopping Center	8.0	KSF	302	8	5	3	30	14	16
Single-Family Detached Housing	330	DU	3,119	239	60	179	320	202	118
Multifamily Housing Low-Rise	340	DU	2,530	153	35	118	176	111	65
Senior Adult Housing - Detached	120	DU	660	47	16	31	55	34	21
Senior Adult Housing - Attached	200	DU	779	40	14	26	50	28	22
Recreational Homes	480	DU	1,666	163	80	83	169	74	95
Subtotal			**12,042**	**833**	**353**	**480**	**1,073**	**539**	**534**
Internal Capture			**512**	**16**	**8**	**8**	**49**	**24**	**25**
ITE 820 Pass-By - 0% AM / 34% PM			*8*	*0*	*0*	*0*	*8*	*4*	*4*
Pass-By			**8**	**0**	**0**	**0**	**8**	**4**	**4**
Total Net New External Trips			**11,522**	**817**	**345**	**472**	**1,016**	**511**	**505**

Note: Trip generation was calculated using the following data:

Daily Traffic Generation

Medical-Dental Office	ITE 720	=	T = 38.42 * (X) + (-87.62); (50 % In; 50 % Out)
Shopping Center	ITE 820	=	T = 37.75 (X); (50 % In; 50 % Out)
Single-Family Detached Housing	ITE 210	=	LN (T) = 0.92 * LN (X) + (2.71); (50 % In; 50 % Out)
Multifamily Housing Low-Rise	ITE 220	=	T = 7.56 * (X) + (-40.86); (50 % In; 50 % Out)
Senior Adult Housing - Detached	ITE 251	=	LN (T) = 0.88 * LN (X) + (2.28); (50 % In; 50 % Out)
Senior Adult Housing - Attached	ITE 252	=	T = 4.02 * (X) + (-25.37); (50 % In; 50 % Out)
Recreational Homes	ITE 260	=	T = 3.47 (X); (50 % In; 50 % Out)

AM Peak-Hour Traffic Generation

Medical-Dental Office	ITE 720	=	LN (T) = 0.89 * LN (X) + (1.31); (78 % In; 22 % Out)
Shopping Center	ITE 820	=	T = 0.94 (X); (62 % In; 38 % Out)
Single-Family Detached Housing	ITE 210	=	T = 0.71 * (X) + (4.8); (25 % In; 75 % Out)
Multifamily Housing Low-Rise	ITE 220	=	LN (T) = 0.95 * LN (X) + (-0.51); (23 % In; 77 % Out)
Senior Adult Housing - Detached	ITE 251	=	LN (T) = 0.76 * LN (X) + (0.21); (33 % In; 67 % Out)
Senior Adult Housing - Attached	ITE 252	=	T = 0.2 * (X) + (-0.18); (35 % In; 65 % Out)
Recreational Homes	ITE 260	=	LN (T) = 0.77 * LN (X) + (0.34); (49 % In; 51 % Out)

PM Peak-Hour Traffic Generation

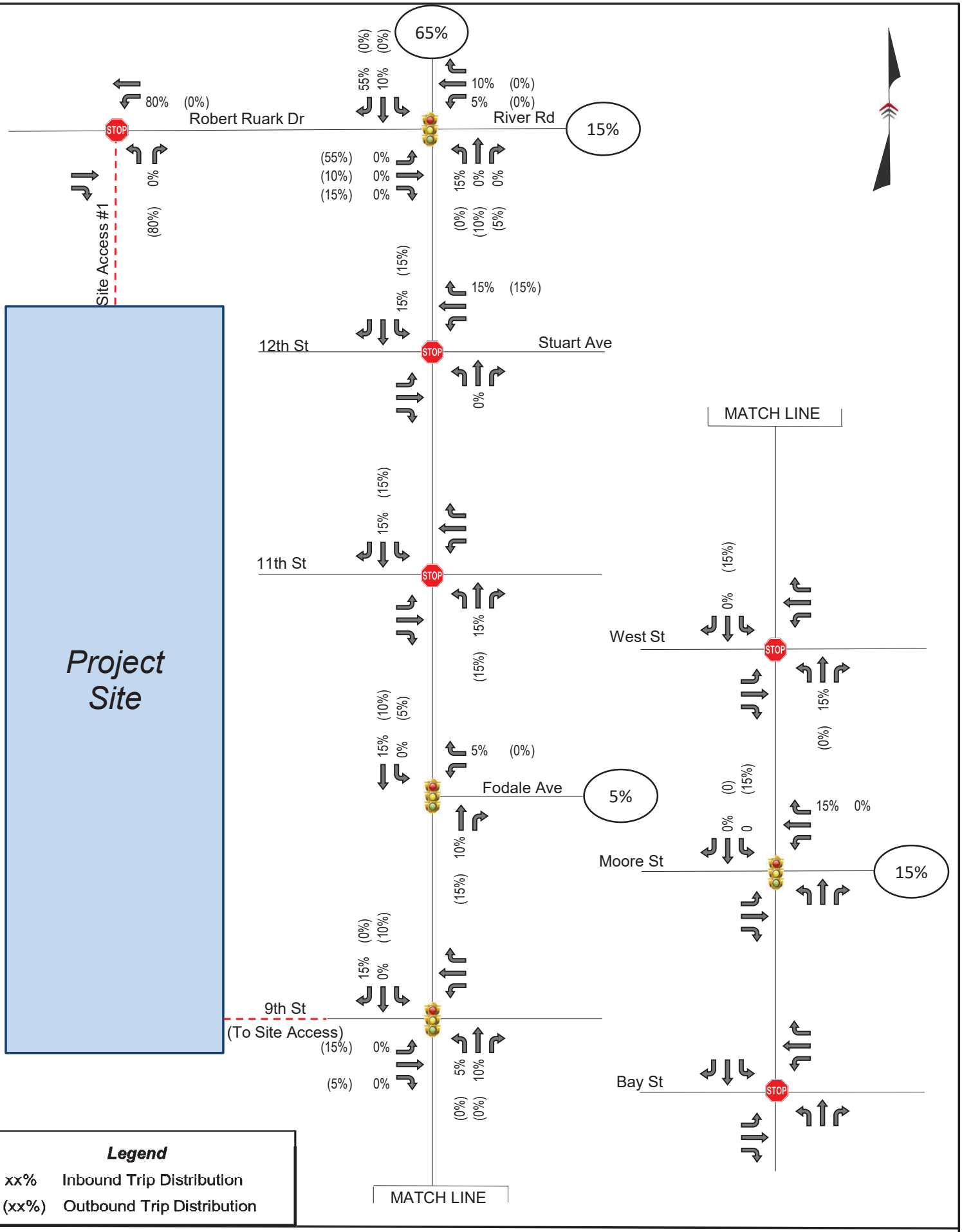
Medical-Dental Office	ITE 720	=	T = 3.39 * (X) + (2.02); (28 % In; 72 % Out)
Shopping Center	ITE 820	=	T = 3.81 (X); (48 % In; 52 % Out)
Single-Family Detached Housing	ITE 210	=	LN (T) = 0.96 * LN (X) + (0.2); (63 % In; 37 % Out)
Multifamily Housing Low-Rise	ITE 220	=	LN (T) = 0.89 * LN (X) + (-0.02); (63 % In; 37 % Out)
Senior Adult Housing - Detached	ITE 251	=	LN (T) = 0.78 * LN (X) + (0.28); (61 % In; 39 % Out)
Senior Adult Housing - Attached	ITE 252	=	T = 0.24 * (X) + (2.26); (55 % In; 45 % Out)
Recreational Homes	ITE 260	=	LN (T) = 0.8 * LN (X) + (0.19); (44 % In; 56 % Out)

3.2 Trip Distribution & Assignment

The proposed development's trips were assigned to the surrounding roadway network based on existing peak hour turning movements, proposed land uses, and the proposed site layout. The following site trip distribution percentages used in this analysis were reviewed and approved by NCDOT:

- 65% to/from the North via NC 211 (N. Howe Street)
- 15% to/from the east via NC 211 (Moore Street)
- 15% to/from the East via NC 87 (River Road)
- 5% to/from the East via Fodale Avenue

The site trip distribution and assignment is shown in **Figure 4**.


65%
Robert Ruark Dr
River Rd
15%
Site Access #1
Project Site
12th St
Stuart Ave
11th St
West St
Fodale Ave
5%
Moore St
15%
9th St
(To Site Access)
Bay St
MATCH LINE
MATCH LINE
Legend
xx% Inbound Trip Distribution
(xx%) Outbound Trip Distribution

4 Traffic Volume Development

4.1 2021 Existing Traffic

Peak period intersection turning movement and heavy vehicle counts were performed by National Data and Surveying Services from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on Tuesday, June 29, 2021 for the study area intersections. Based on further coordination with NCDOT, the intersection of NC 211 (N. Howe Street) at 9th Street and NC 211 (N. Howe Street) at 12th Street/Stuart Avenue were recounted by All Traffic Data Services on Tuesday, September 15, 2021. The September 15, 2021 traffic count at NC 211 (N. Howe Street) at 12th Street was a 13-hour turning movement count from 6:00 AM to 7:00 PM.

At the direction of the Town of Southport, the intersection of NC 211 (S. Howe Street) at Bay Street was added to the TIA study area. The intersection was counted on Wednesday, January 19th, 2022.

The June 29, 2021 counts were balanced up to the September 15, 2021 counts, as the September counts were higher than the June counts. Based on coordination with NCDOT, no seasonal adjustment factor (SAF) was applied to the existing turning movements to account for seasonal adjustments in traffic since the September (Fall) counts were higher than the June (Summer) counts. Similarly, no adjustments were made to the January 2022 counts, and this data was assumed applicable to a base year of 2021.

Figure 5 shows the 2021 Existing AM/PM peak hour traffic volumes. The raw turning movement count data are included in **Appendix B**.

4.2 Future-Year No-Build Traffic Development

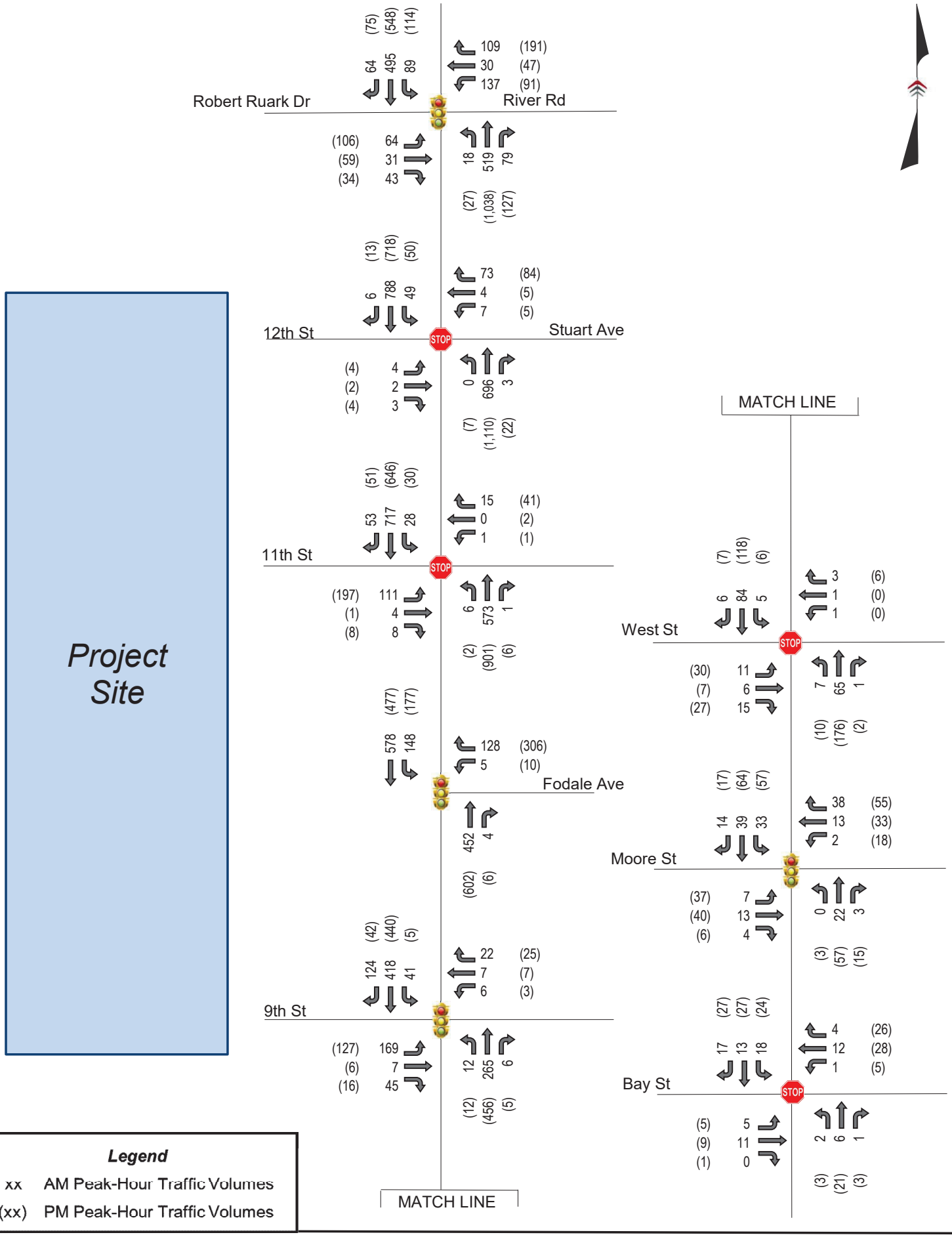
Historical traffic growth represents the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area (i.e., that not associated with the subject development). An annual growth rate of 2.0% was established based on NCDOT historical count data and was approved by NCDOT on July 21, 2021. The growth estimation and TIA scoping document are included in **Appendix A**.

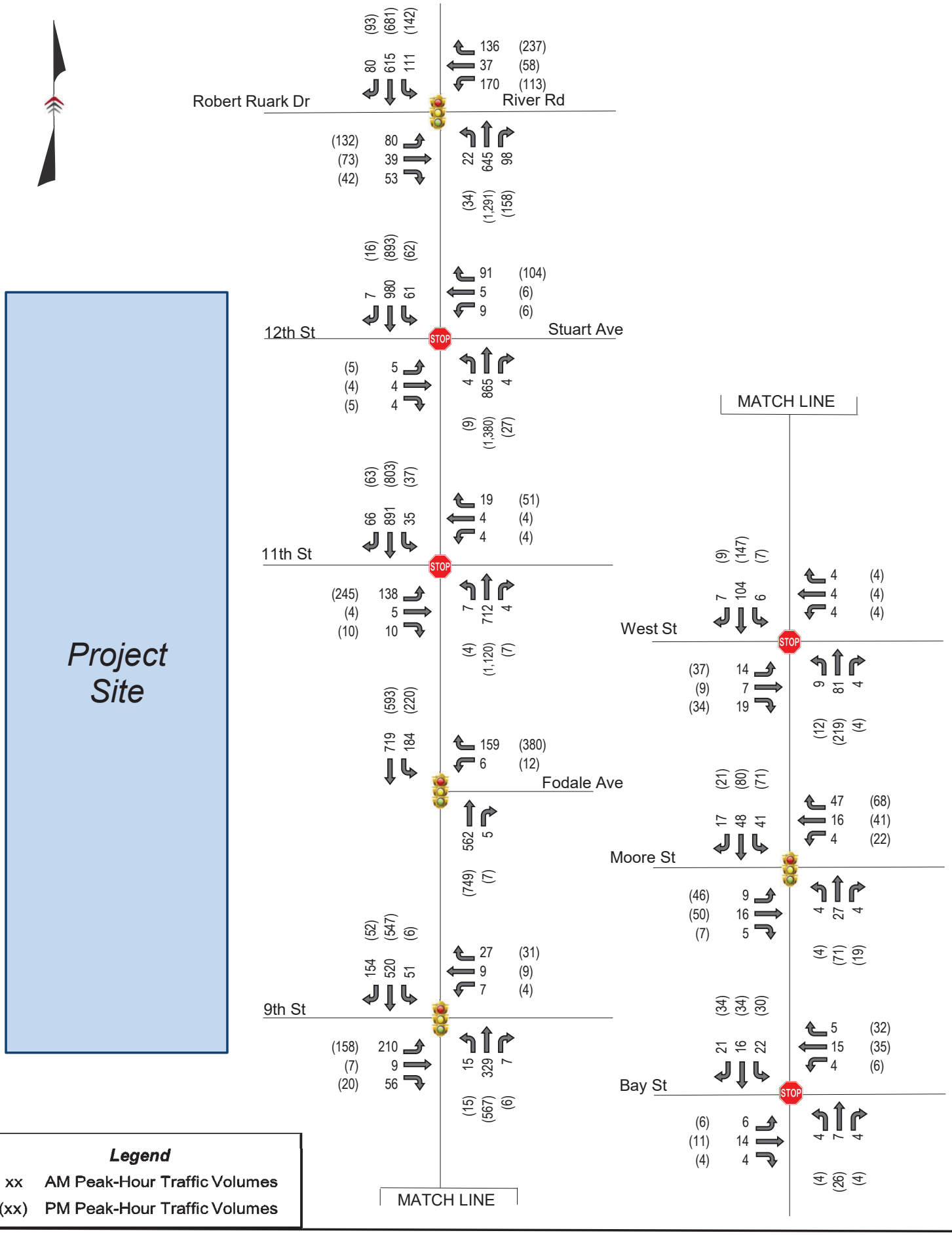
The 2032 (Southport Mixed-Use Development Opening Year) No-Build traffic volumes were estimated by increasing 2021 Existing traffic volumes at a rate of 2.0% per year for 11 years. The 2032 No-Build AM/PM peak hour No-Build traffic volumes are shown in **Figure 6**. Volume development worksheets are included in **Appendix C**.

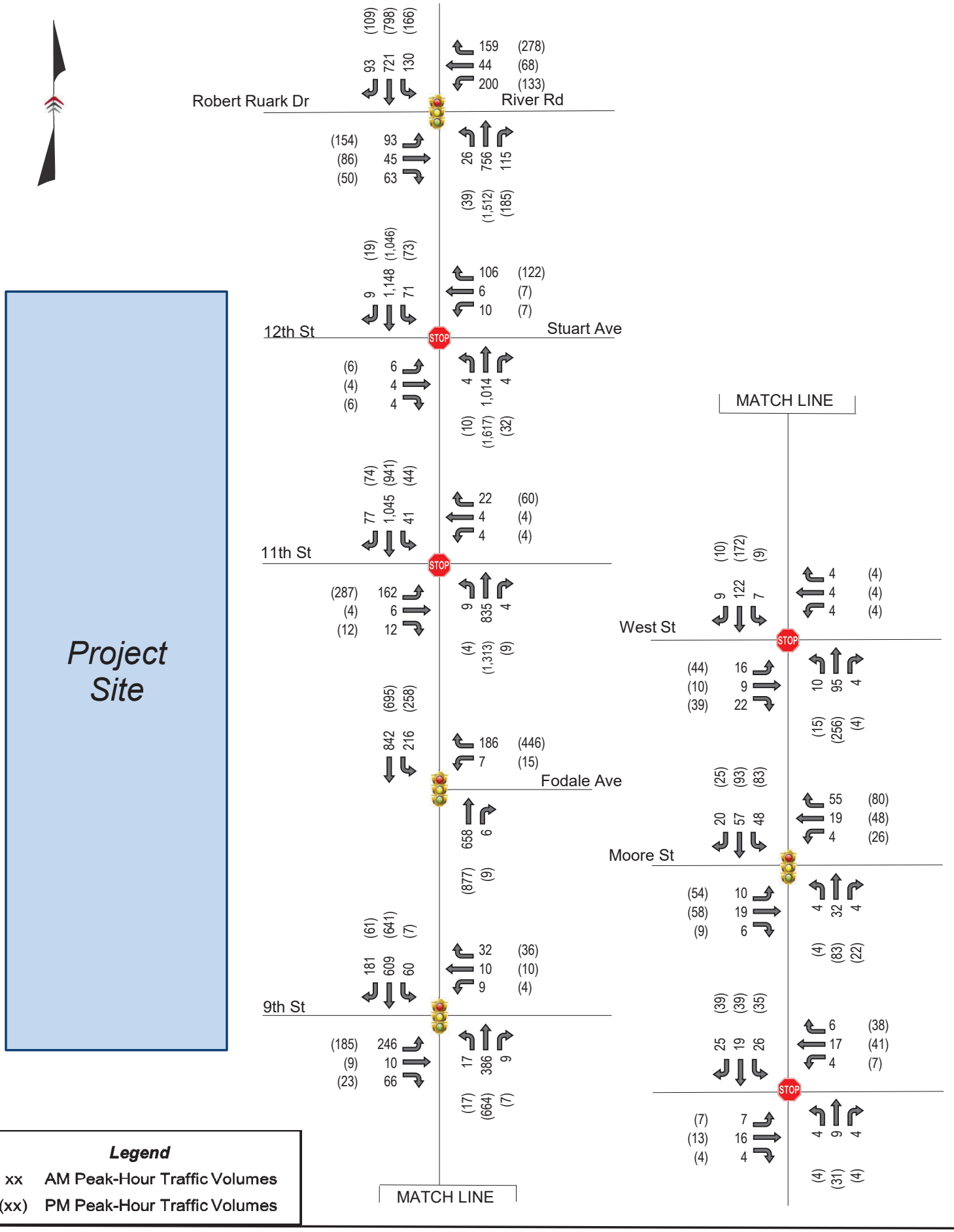
The 2040 (STIP Project R-5021 Design Year) No-Build traffic volumes were estimated by increasing 2021 Existing traffic volumes at a rate of 2.0% per year for 19 years. The 2040 No-Build AM/PM peak hour No-Build traffic volumes are shown in **Figure 7**. Volume development worksheets are included in **Appendix C**.

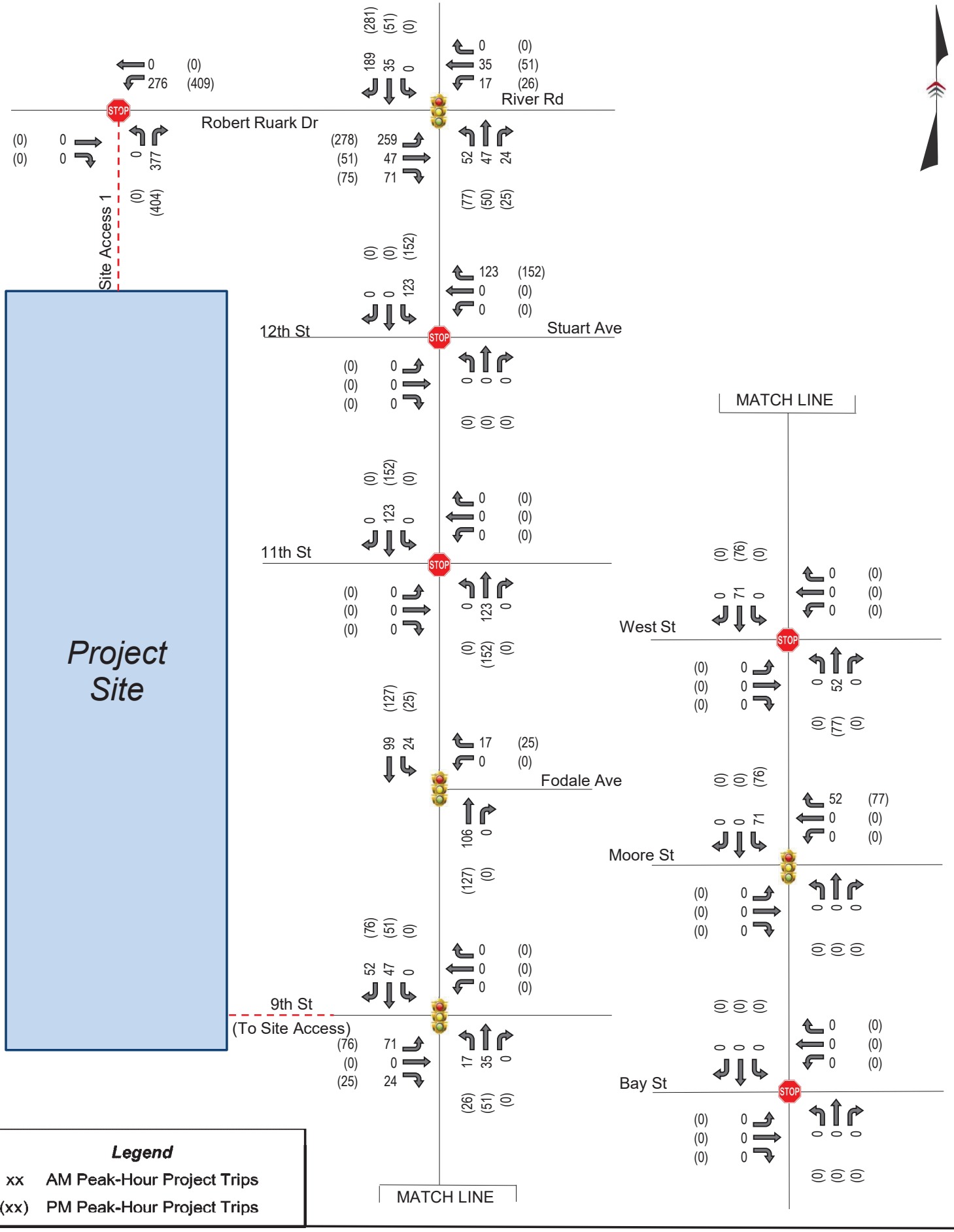
4.3 Future-Year Build Traffic Development

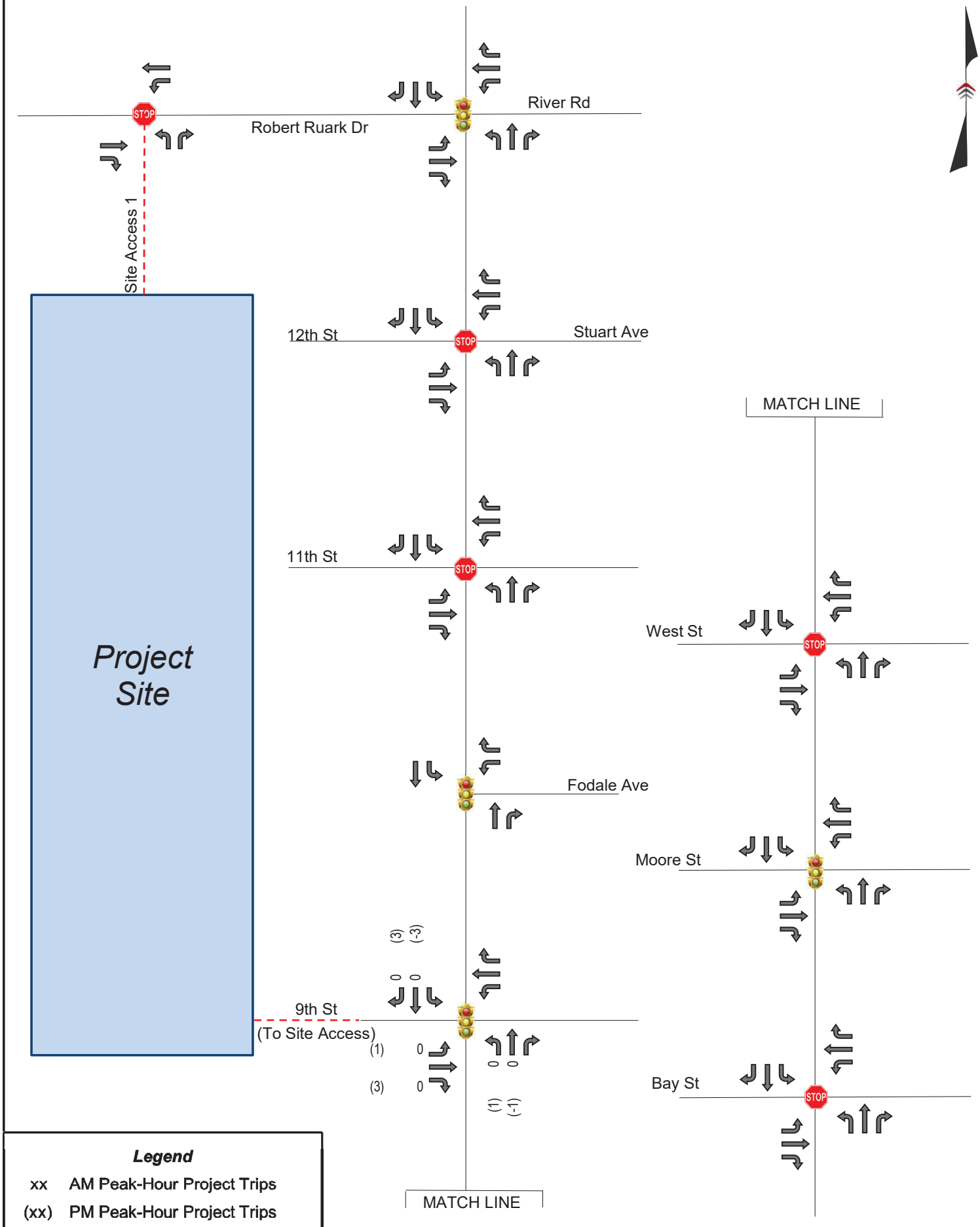
The 2032 and 2040 Build traffic volumes include the 2032 and 2040 No-Build traffic volumes plus trips generated by the proposed development. The estimated net new external project trips and pass-by trips are shown in **Figure 8** and **Figure 9**, respectively. The 2032 and 2040 AM/PM peak hour Build traffic volumes are shown in **Figure 10** and **Figure 11**, respectively.

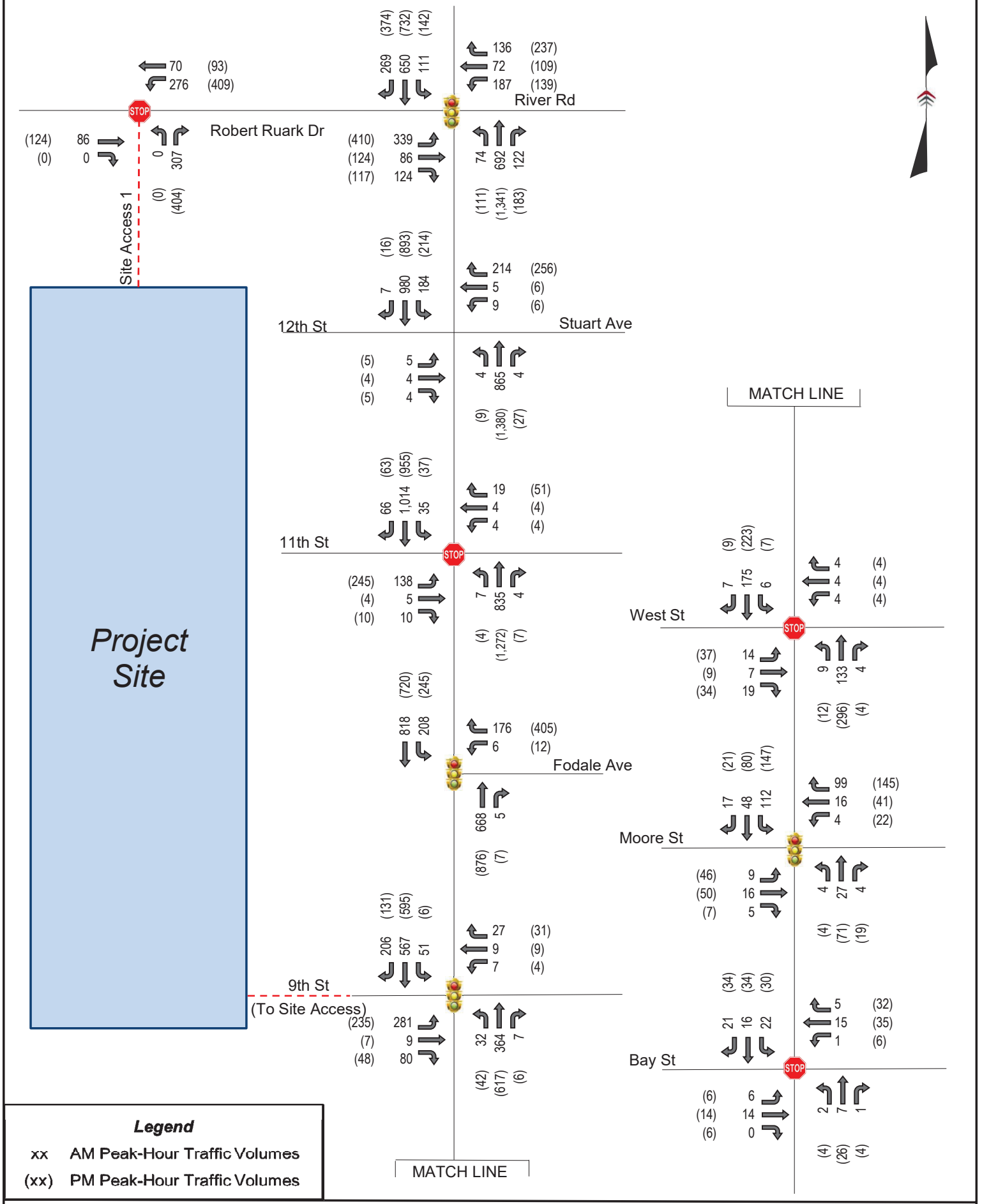

Project Site
Robert Ruark Dr
River Rd
12th St
Stuart Ave
11th St
Fodale Ave
9th St
MATCH LINE
MATCH LINE
West St
Moore St
Bay St
STOP
Legend
xx AM Peak-Hour Traffic Volumes
(xx) PM Peak-Hour Traffic Volumes

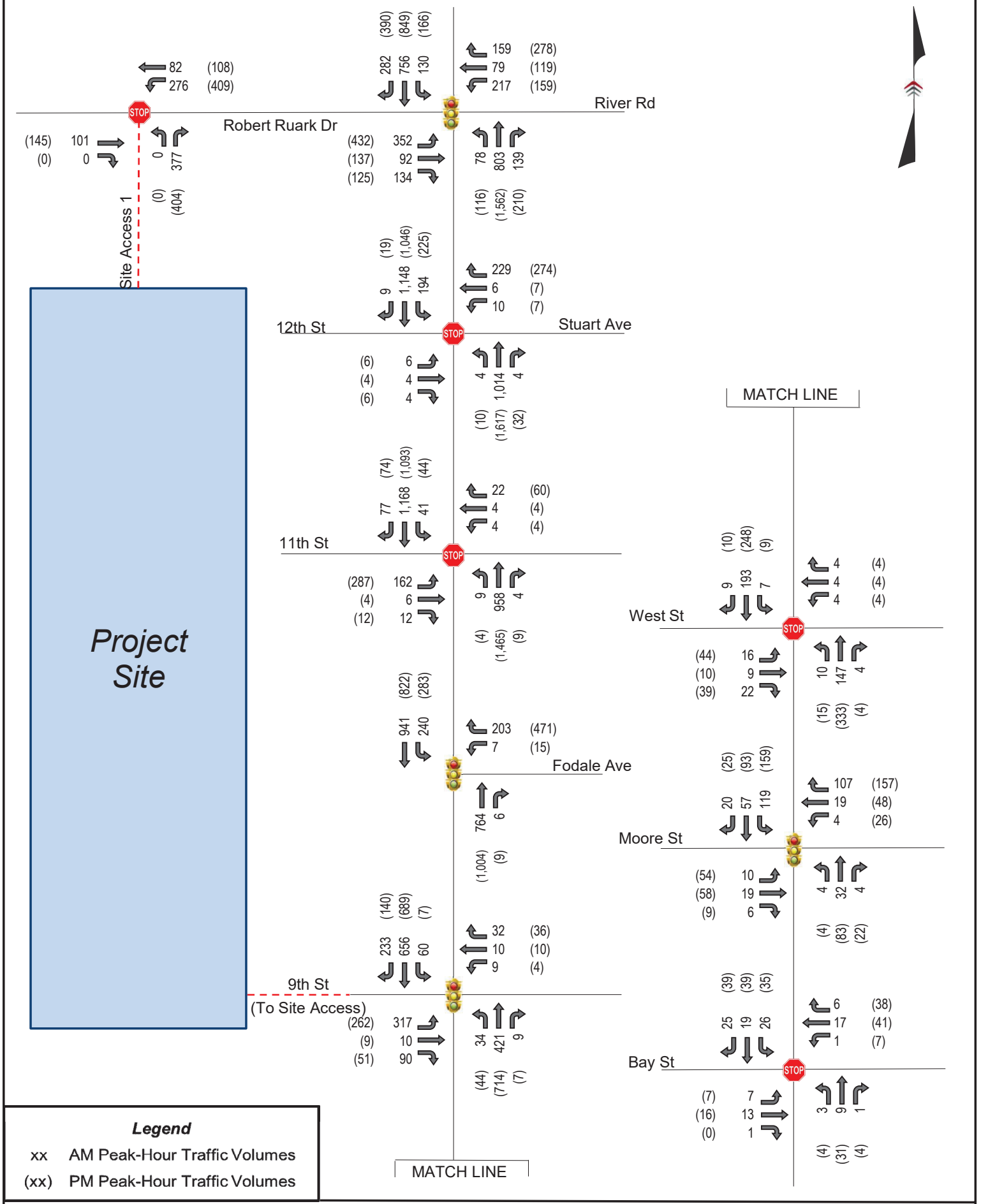

Project Site
Robert Ruark Dr
River Rd
12th St
Stuart Ave
11th St
Fodale Ave
9th St
MATCH LINE
MATCH LINE
West St
Moore St
Bay St
STOP
Legend
xx AM Peak-Hour Traffic Volumes
(xx) PM Peak-Hour Traffic Volumes


Project Site
Robert Ruark Dr
River Rd
12th St
Stuart Ave
11th St
Fodale Ave
9th St
West St
Moore St
MATCH LINE
MATCH LINE
STOP
Legend
xx AM Peak-Hour Traffic Volumes
(xx) PM Peak-Hour Traffic Volumes


Project Site
Site Access 1
Robert Ruark Dr
River Rd
12th St
Stuart Ave
11th St
Fodale Ave
9th St
(To Site Access)
West St
Moore St
Bay St
MATCH LINE
MATCH LINE
STOP
Legend
xx AM Peak-Hour Project Trips
(xx) PM Peak-Hour Project Trips


Robert Ruark Dr
River Rd
Site Access 1
Project Site
12th St
Stuart Ave
11th St
Fodale Ave
9th St
(To Site Access)
MATCH LINE
West St
Moore St
Bay St
MATCH LINE
(3) (-3)
0 0
(1) 0
(3) 0
0 0
(-1) (-1)
Legend
xx AM Peak-Hour Project Trips
(xx) PM Peak-Hour Project Trips


Project Site
Site Access 1
Robert Ruark Dr
River Rd
12th St
Stuart Ave
11th St
Fodale Ave
9th St
(To Site Access)
West St
Moore St
Bay St
MATCH LINE
MATCH LINE
STOP
Legend
xx AM Peak-Hour Traffic Volumes
(xx) PM Peak-Hour Traffic Volumes



Kimley»Horn

Southport Mixed-Use Development Traffic Impact Analysis

Figure 11 - 2040 Build Peak Hour Traffic Volumes

5 Capacity Analysis

Capacity analyses were conducted under 2021 Existing, 2032 No-Build, 2032 (Opening Year) Build, and 2040 (TIP Design Year) Build conditions using Synchro Version 10 software. Synchro software utilizes methodologies contained within the *Highway Capacity Manual, 6th Edition* (HCM6) to evaluate the operating characteristics of an intersection under given geometric, traffic control, and traffic demand scenarios.

The evaluations presented throughout the remainder of this section make frequent reference to the level of service (LOS) of a given segment or intersection approach As defined by HCM6, LOS is used to convert numeric performance measures into a letter grade-based system representative of the average traveler's perception of the operating efficiency of an intersection. HCM6 defines six letter grades, LOS A through LOS F, where LOS A represents the best operating conditions from the traveler's perspective, and LOS F represents the worst. However, it should be noted that the underlying complexity of traffic flow cannot be reduced to a single letter grade, and comparative analysis involves a variety of other variables, such as control delay, travel speeds, and queue length. Furthermore, roadways are not typically designed to provide operations commensurate with LOS A throughout the entirety of the day. Rather, roadways are designed, constructed, and operated such that some decline in LOS is to be expected during the peak periods of travel. In urbanized areas, LOS D is a typical target utilized by agencies.

The LOS for two-way stop-controlled (TWSC) intersections is determined based on control delay on the minor street approaches and for the major street left-turn movements during the AM and PM peak hours of travel. It should be noted that it is typical for the minor street approaches of a TWSC intersection—particularly left-turn movements onto the major street—to experience long delays during the peak hours of travel. However, most of the traffic moving through the intersection (i.e., major street through movements) experiences minimal delay. The HCM6 methodology considers the possibility of two-stage turning movements via storage of up to two vehicles within a TWLTL, when present.

Table 2 lists the control delay-based LOS thresholds published in HCM6 for unsignalized intersections and roundabouts, along with the nomenclature used to describe each LOS grouping herein.

Table 2 – Vehicular LOS Control Delay Thresholds for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle [sec/veh]	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

At signalized intersections, all movements and approaches are likely to experience some delay

during the peak hours of travel, and drivers are more likely to accept longer delays as they await their “turn” to proceed through the intersection. As a result, the control delay threshold bins are larger for signalized intersections, and LOS is typically reported by approach and for the overall intersection. During the peak hours of travel, one or more movements may operate poorly even while the overall intersection operates at a satisfactory LOS. **Table 3** summarizes the control delay-based LOS thresholds published in HCM6 for signalized intersections.

Table 3: Vehicular LOS Control Delay Thresholds for Signalized Intersections

Level of Service	Average Control Delay per Vehicle [sec/veh]
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

NCDOT Analysis & Mitigation Guidelines

All analyses were conducted in accordance with the traffic study guidelines set forth by the NCDOT Congestion Management *Capacity Analysis Guidelines* and NCDOT *Policy on Street and Driveway Access to North Carolina Highways*, except where otherwise noted within this section. Improvements required to mitigate the traffic impacts of the proposed development were noted and recommended based on NCDOT requirements, which state that “the applicant shall be required to identify mitigation improvements to the roadway network if at least one of the following conditions exists when comparing base network conditions to project conditions:

- the total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same level of service
- the Level of Service degrades by at least one level,
- or Level of Service is ‘F’.”

For the purposes of determining required improvements, 2032 No-Build and 2032 Build conditions are compared in the following subsections. Capacity analysis and SimTraffic queueing/blocking reports are included in **Appendix E** and **Appendix F**.

5.1 NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive

The capacity analysis results for the NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive intersection are presented in **Table 4A** (AM Peak) and **Table 4B** (PM Peak) on the following pages.

Results

As part of NCDOT STIP Project R-5021, NC 211 (N. Howe Street) will be widened to a four-lane facility beginning north of the TIA study area, and additional turn bays or turn bay storage will be constructed on the northbound, southbound, and westbound approaches of the intersection with NC 87 (River Road)/Robert Ruark Drive. These improvements are anticipated to increase traffic volumes on NC 211 (N. Howe Street) and contribute to moderate queueing on the northbound and southbound approaches of the intersection with NC 87 (River Road)/Robert Ruark Drive. However, this intersection is expected to operate at LOS C or LOS D under all analyzed No-Build scenarios and LOS F under 2032 Build (PM Peak) conditions.

Recommendations

To accommodate site trips to and from east of the intersection, the following improvements are recommended:

- Construct a second eastbound left-turn lane to form dual eastbound left-turn lanes with approximately 350 feet of full-width storage and an appropriate taper length
- Construct an eastbound right turn lane with approximately 350 feet of full-width storage and an appropriate taper length
- Optimize signal timing and phasing based on changes in traffic volumes on each approach

Under the 2032 Build Improved scenario, these improvements provide adequate storage for preventing eastbound left-turn queues from blocking eastbound through/right-turn movements. The addition of the eastbound right-turn lane improves operations to LOS D or better on all approaches under 2032 conditions. It is important to note that as analyzed under the direction of NCDOT (i.e., with a provision for no right turn on red and protected-only phasing for all left-turn movements), a higher level of delay was modeled than that expected to be present under field conditions with TIP project improvements in place. Delays and queues increase further under the 2040 TIP Design Year scenarios; however, additional improvements are likely to be needed absent the proposed development should these traffic volumes materialize.

The forecast utilized in this analysis considers a significant growth rate of 2% per year, compounded annually for 19 years. As such, the recommendations presented herein accommodate site traffic in conjunction with these forecasted No-Build volumes; however, less extensive improvements may ultimately be needed to accommodate actual field conditions.

Table 4A – NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive Capacity Analysis Results (AM Peak Hour)

Condition	Measure	EB (Robert Ruark Drive)		WB (River Road)			NB (NC 211)			SB (NC 211)			Intersection
		EBL	EBTR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM Peak Hour													
2021 Existing	LOS (Delay)	B (19.3)		C (21.5)			C (21.6)			B (12.5)			B (17.9)
	Synchro 95th Q	66'	47'	131'	36'	28'	11'	345'	21'	39'	318'	17'	
	SimTraffic Max Q	83'	78'	122'	88'	108'	42'	260'	0'	95'	203'	54'	
2032 No-Build	LOS (Delay)	D (45.5)		D (36.7)			C (23.8)			C (29.8)			C (30.0)
	Synchro 95th Q	#118	120'	201'	51'	122'	43'	264'	54'	74'	#712	59'	
	SimTraffic Max Q	122'	98'	240'	51'	133'	46'	208'	114'	113'	291'	163'	
2032 Build	LOS (Delay)	F (203.3)		D (43.4)			C (31.1)			D (49.2)			E (72.2)
	Synchro 95th Q	#672	252'	236'	84'	118'	116'	316'	77'	78'	#849	214'	
	SimTraffic Max Q	1107'	225'	237'	173'	144'	175'	325'	74'	131'	690'	438'	
2032 Build Improved	LOS (Delay)	E (58.0)		D (39.7)			C (24.6)			D (38.4)			D (38.1)
	Synchro 95th Q	#242	114' (132' EBR)	214'	87'	123'	107'	290'	63'	73'	#783	183'	
	SimTraffic Max Q	254'	108' (146 EBR)	228'	134'	196'	93'	266'	91'	168'	562'	169'	
2040 No-Build	LOS (Delay)	D (49.2)		C (40.8)			C (27.4)			D (51.2)			D (40.6)
	Synchro 95th Q	#158	142'	239'	58'	141'	51'	343'	65'	89'	#956	73'	
	SimTraffic Max Q	143'	153'	263'	71'	257'	66'	215'	266'	161'	932'	58'	
2040 Build Improved	LOS (Delay)	D (51.6)		D (42.3)			C (32.1)			F (85.6)			E (56.5)
	Synchro 95th Q	#266	115' (164 EBR)	#290	92'	137'	115'	377'	86'	86'	#1038	215'	
	SimTraffic Max Q	283'	105' (192' EBR)	218'	199'	210'	129'	293'	108'	825'	962'	962'	
	Existing Storage	-	125'	125'	125'	-	250'	-	450'	150'	-	150'	
	Committed Storage	-	-	-	-	450'	250'	-	250'	625'	-	-	
	Recommended Storage	350'	350' (EBR)	-	-	-	-	-	-	-	-	-	

Table 4B – NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive Capacity Analysis Results (PM Peak Hour)

Condition	Measure	EB (Robert Ruark Drive)		WB (River Road)			NB (NC 211)			SB (NC 211)			Intersection
		EBL	EBTR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
PM Peak Hour													
2021 Existing	LOS (Delay)	D (42.1)		C (30.6)			C (31.0)			B (10.0)			C (25.5)
	Synchro 95th Q	116'	85'	103'	59'	121'	12'	#981	25'	76'	284'	17'	
	SimTraffic Max Q	173'	132'	116'	137'	207'	320'	1076'	494'	156'	250'	102'	
2032 No-Build	LOS (Delay)	D (54.0)		D (40.0)			D (36.8)			C (32.5)			D (37.3)
	Synchro 95th Q	#217	137'	143'	73'	213'	57'	#669	87'	87'	#761	59'	
	SimTraffic Max Q	335'	225'	472'	492'	474'	70'	235'	185'	107'	499'	57'	
2032 Build	LOS (Delay)	F (317.8)		D (38.6)			F (93.6)			F (86.6)			F (121.2)
	Synchro 95th Q	#764	266'	184'	119'	207'	#202	#901	133'	96'	#1044	312'	
	SimTraffic Max Q	1069'	225'	160'	203'	284'	178'	379'	160'	117'	951'	932'	
2032 Build Improved	LOS (Delay)	E (67.3)		E (60.0)			D (37.1)			D (35.4)			D (44.3)
	Synchro 95th Q	#319	183' (152 EBR)	205'	160'	298'	#240	746'	103'	110'	#944	239'	
	SimTraffic Max Q	253'	172' (128' EBR)	176'	201'	373'	134'	371'	344'	193'	583'	204'	
2040 No-Build	LOS (Delay)	E (58.2)		D (42.6)			F (82.2)			D (47.0)			E (64.4)
	Synchro 95th Q	#266	158'	#175	83'	253'	64'	#881	107'	101'	#982	71'	
	SimTraffic Max Q	323'	225'	129'	91'	367'	91'	284'	118'	138'	932'	948'	
2040 Build Improved	LOS (Delay)	F (103.7)		E (59.9)			D (54.2)			D (54.0)			E (62.4)
	Synchro 95th Q	#398	206' (194' EBR)	241'	169'	351'	#274	#1107	127'	#150	#1279	297'	
	SimTraffic Max Q	449'	833' (171 EBR)	463'	795'	550'	133'	374'	344'	825'	925'	925'	
	Existing Storage	-	125'	125'	125'	-	250'	-	450'	150'	-	150'	
	Committed Storage	-	-	-	-	450'	250'	-	250'	625'	-	-	
	Recommended Storage	350'	350' (EBR)	-	-	-	-	-	-	-	-	-	

$: Delay exceeds 300 seconds

5.2 NC 211 (N. Howe Street) at 11th Street

The capacity analysis results for the NC 211 (N. Howe Street) at 11th Street intersection are presented in **Table 5** on the next page.

Results

The minor street approaches of this intersection are anticipated to operate at LOS F under all future year traffic conditions.

Recommendations

No site traffic is expected to utilize the minor street approaches of this intersection, and it is common for minor street approaches to experience long delays at stop-controlled intersections with major thoroughfares in the peak hours. Furthermore, the installation of a traffic signal at the intersection of NC 211 (N. Howe Street) with 12th Street/Stuart Avenue (see **Section 5.7**) is likely to lead to redistribution of traffic volumes within the study area and will provide an alternative to 11th Street for minor street traffic. Therefore, no improvements are recommended at this intersection as a part of this TIA.

Table 5 – NC 211 (N. Howe Street) at 11th Street Capacity Analysis Results

Condition	Measure	11th Street	11th Street	NB (NC 211)		NB (NC 211)	
		EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
AM Peak Hour							
2021 Existing	LOS (Delay)	$	F (59.5)	A (0.1)		A (0.3)	
	Synchro 95th Q	305'	18'	0'	-	3'	-
	SimTraffic Max Q	269'	69'	28'	2'	43'	7'
2032 No-Build	LOS (Delay)	$	F (59.5)	A (0.1)		A (0.3)	
	Synchro 95th Q	475'	30'	0'	-	3'	-
	SimTraffic Max Q	324'	92'	28'	2'	49'	13'
2032 Build	LOS (Delay)	$	F (111.3)	A (0.1)		A (0.3)	
	Synchro 95th Q	523'	48'	0'	-	5'	-
	SimTraffic Max Q	342'	107'	28'	6'	30'	158'
2040 No-Build	LOS (Delay)	$	F (130.2)	A (0.1)		A (0.4)	
	Synchro 95th Q	625'	58'	3'	-	5'	-
	SimTraffic Max Q	342'	154'	26'	2'	199'	523'
2040 Build Improved	LOS (Delay)	$	$	A (0.1)		A (0.4)	
	Synchro 95th Q	645'	83'	3'	-	5'	-
	SimTraffic Max Q	329'	87'	28'	71'	102'	155'
PM Peak Hour							
2021 Existing	LOS (Delay)	$	D (30.9)	A (0.0)		A (0.4)	
	Synchro 95th Q	625'	28'	0'	-	3'	-
	SimTraffic Max Q	327'	89'	21'	6'	61'	2'
2032 No-Build	LOS (Delay)	$	F (76.1)	A (0.0)		A (0.5)	
	Synchro 95th Q	918'	73'	0'	-	5'	-
	SimTraffic Max Q	305'	223'	25'	4'	52'	14'
2032 Build	LOS (Delay)	$	F (184.6)	A (0.0)		A (0.5)	
	Synchro 95th Q	945'	115'	0'	-	8'	-
	SimTraffic Max Q	305'	223'	28'	4'	50'	69'
2040 No-Build	LOS (Delay)	$	F (226.6)	A (0.0)		A (0.6)	
	Synchro 95th Q	1105'	140'	0'	-	10'	-
	SimTraffic Max Q	305'	373'	26'	14'	51'	297'
2040 Build Improved	LOS (Delay)	$	$	A (0.0)		A (0.6)	
	Synchro 95th Q	1118'	198'	0'	-	10'	-
	SimTraffic Max Q	305'	375'	28'	50'	199'	526'
	Existing Storage	-	-	100'	-	100'	-

$: Delay exceeds 300 seconds

5.3 NC 211 (N. Howe Street) at Fodale Avenue

The capacity analysis results for the NC 211 (N. Howe Street) at Fodale Avenue intersection are presented in **Table 6** on the next page.

Results

The westbound approach of this intersection is anticipated to operate at LOS F under all future year traffic conditions during the PM peak hour.

Recommendations

This intersection does not meet NCDOT signal spacing requirements (approximately 850 feet from 9th Street), and right-of-way constraints preclude the construction of a roundabout or additional turn bays. Furthermore, over-capacity conditions are prevalent under the No-Build scenarios (i.e., absent the proposed development). Finally, the installation of a traffic signal at the intersection of NC 211 (N. Howe Street) with 12th Street/Stuart Avenue (see **Section 5.7**) is likely to lead to redistribution of traffic volumes within the study area and will provide an alternative to Fodale Avenue for minor street traffic. Therefore, no improvements are recommended at this intersection as a part of this TIA.

Table 6 – NC 211 (N. Howe Street) at Fodale Avenue Capacity Analysis Results

Condition	Measure	WB (Fodale Avenue)		NB (NC 211)	SB (NC 211)	
		WBL	WBR	NBTR	SBL	SBT
AM Peak Hour						
2021 Existing	LOS (Delay)	B (14.4)		A (0.0)	A (1.9)	
	Synchro 95th Q	3'	28'	-	15'	-
	SimTraffic Max Q	19'	55'	2'	86'	22'
2032 No-Build	LOS (Delay)	C (17.0)		A (0.0)	A (2.0)	
	Synchro 95th Q	3'	40'	-	20'	-
	SimTraffic Max Q	16'	73'	51'	91'	20'
2032 Build	LOS (Delay)	C (21.5)		A (0.0)	A (2.2)	
	Synchro 95th Q	5'	60'	-	28'	-
	SimTraffic Max Q	59'	131'	14'	200'	370'
2040 No-Build	LOS (Delay)	C (22.0)		A (0.0)	A (2.2)	
	Synchro 95th Q	5'	65'	-	28'	-
	SimTraffic Max Q	15'	93'	200'	132'	373'
2040 Build Improved	LOS (Delay)	D (31.0)		A (0.0)	A (2.4)	
	Synchro 95th Q	8'	102'	-	38'	-
	SimTraffic Max Q	16'	201'	170'	166'	225'
PM Peak Hour						
2021 Existing	LOS (Delay)	D (29.9)		A (0.0)	A (2.7)	
	Synchro 95th Q	5'	143'	-	20'	-
	SimTraffic Max Q	98'	262'	18'	121'	47'
2032 No-Build	LOS (Delay)	F (124.7)		A (0.0)	A (3.1)	
	Synchro 95th Q	8'	413'	-	33'	-
	SimTraffic Max Q	200'	1161'	27'	160'	148'
2032 Build	LOS (Delay)	F (258.4)		A (0.0)	A (3.4)	
	Synchro 95th Q	10'	625'	-	45'	-
	SimTraffic Max Q	200'	1179'	31'	193'	251'
2040 No-Build	LOS (Delay)	$		A (0.0)	A (3.7)	
	Synchro 95th Q	15'	755'	-	50'	-
	SimTraffic Max Q	200'	1166'	54'	186'	239'
2040 Build Improved	LOS (Delay)	$		A (0.0)	A (4.2)	
	Synchro 95th Q	20'	978'	-	70'	-
	SimTraffic Max Q	200'	1179'	22'	200'	380'
	Existing Storage	100'	-	-	100'	-

$: Delay exceeds 300 seconds

5.4 NC 211 (N. Howe Street) at 9th Street

The capacity analysis results for the NC 211 (N. Howe Street) at 9th Street intersection are presented in **Table 7A** (AM Peak) and **Table 7B** (PM Peak) on the next page.

Results

The eastbound approach of this intersection is expected to operate at LOS E under 2032 Build conditions. The intersection is expected to operate at LOS C or LOS D on all other approaches under each analyzed scenario.

Recommendations

To mitigate increases in delay and queue length on the southbound and eastbound approaches of the intersection due to additional trips associated with the proposed Southport Mixed-Use Development, a southbound right-turn lane with approximately 300 feet of full-width storage (as feasible based on utility and right-of-way constraints) should be constructed. Signal timing should be optimized in the context of this improvement to allocate more green time within the signal cycle for the eastbound approach of the intersection. Synchro and SimTraffic outputs indicate that all approaches of the intersection will operate acceptably under 2032 Build Improved conditions.

Table 7A – NC 211 (N. Howe Street) at 9th Street Capacity Analysis Results (AM Peak)

Condition	Measure	EB (9th Street)		WB (9th Street)	NB (NC 211)		NB (NC 211)		Intersection
		EBL	EBTR	WBLTR	NBL	NBTR	SBL	SBTR	
AM Peak Hour									
2021 Existing	LOS (Delay)	C (32.2)		B (11.5)	A (5.9)		B (14.6)		B (15.7)
	Synchro 95th Q	#149	24'	24'	5'	60'	24'	#275	
	SimTraffic Max Q	127'	77'	54'	39'	126'	55'	230'	
2032 No-Build	LOS (Delay)	D (43.1)		D (38.1)	B (17.2)		C (29.0)		C (29.1)
	Synchro 95th Q	#281	64'	61'	29'	211'	70'	#637	
	SimTraffic Max Q	162'	85'	76'	28'	226'	199'	570'	
2032 Build	LOS (Delay)	F (81.6)		D (40.8)	B (18.0)		D (43.6)		D (45.8)
	Synchro 95th Q	#369	80'	60'	48'	231'	70'	#780	
	SimTraffic Max Q	200'	761'	136'	70'	198'	200'	772'	
2032 Build Improved	LOS (Delay)	D (35.5)		D (39.5)	C (23.0)		C (28.5)		C (29.0)
	Synchro 95th Q	#322	75'	61'	48'	271'	70'	#542 (83' SBR)	
	SimTraffic Max Q	199'	253'	116'	53'	222'	199'	647' (225' SBR)	
2040 No-Build	LOS (Delay)	D (53.6)		D (38.6)	B (18.9)		C (31.9)		C (33.1)
	Synchro 95th Q	#323'	71'	68'	31'	256'	77'	#779	
	SimTraffic Max Q	200'	379'	96'	87'	282'	200'	771'	
2040 Build Improved	LOS (Delay)	D (44.7)		D (42.0)	C (26.8)		C (32.0)		C (33.8)
	Synchro 95th Q	#377	82'	69'	52'	332'	78'	#645 (168' SBR)	
	SimTraffic Max Q	200'	506'	74'	199'	340'	200'	364' (178' SBR)	
	Existing Storage	100'	-	-	100'	-	100'	-	
	Recommended Storage	-	-	-	-	-	-	300'	

$: Delay exceeds 300 seconds

Table 7B – NC 211 (N. Howe Street) at 9th Street Capacity Analysis Results (PM Peak)

Condition	Measure	EB (9th Street)		WB (9th Street)	NB (NC 211)		NB (NC 211)		Intersection
		EBL	EBTR	WBLTR	NBL	NBTR	SBL	SBTR	
PM Peak Hour									
2021 Existing	LOS (Delay)	C (22.7)		B (10.2)	A (8.9)		B (13.2)		B (12.6)
	Synchro 95th Q	#106	17'	23'	5'	114'	6'	225'	
	SimTraffic Max Q	104'	66'	55'	36'	146'	28'	190'	
2032 No-Build	LOS (Delay)	D (36.0)		D (36.3)	B (18.4)		C (24.0)		C (23.7)
	Synchro 95th Q	#199	33'	60'	29'	422'	17'	#517	
	SimTraffic Max Q	128'	54'	76'	50'	332'	28'	301'	
2032 Build	LOS (Delay)	E (58.7)		D (40.3)	B (19.0)		C (33.8)		C (32.4)
	Synchro 95th Q	#310	55'	60'	59'	#539	17'	#718	
	SimTraffic Max Q	200'	237'	116'	199'	507'	51'	465'	
2032 Build Improved	LOS (Delay)	D (37.1)		D (39.9)	C (24.4)		C (27.7)		C (28.3)
	Synchro 95th Q	#310'	55'	60'	58'	459'	17'	453' (52' SBR)	
	SimTraffic Max Q	195'	148'	74'	199'	311'	49'	536' (225 SBR)	
2040 No-Build	LOS (Delay)	D (48.8)		D (38.5)	B (19.0)		C (25.2)		C (26.1)
	Synchro 95th Q	#254	38'	67'	31'	#582	18'	#652	
	SimTraffic Max Q	158'	103'	74'	199'	415'	199'	408'	
2040 Build Improved	LOS (Delay)	D (51.9)		D (41.0)	C (24.7)		C (28.5)		C (31.2)
	Synchro 95th Q	#329	57'	67'	61'	#701	18'	#677' (58' SBR)	
	SimTraffic Max Q	199'	300'	74'	199'	685'	199'	452' (300 SBR)	
	Existing Storage	100'	-	-	100'	-	100'	-	
	Recommended Storage	-	-	-	-	-	-	300'	

$: Delay exceeds 300 seconds

5.5 NC 211 (N. Howe Street) at West Street

The capacity analysis results for the NC 211 (N. Howe Street) at West Street intersection are presented in **Table 8** on the next page.

Results

This intersection is expected to operate with short delays on all approaches under all analyzed scenarios.

Recommendations

The proposed development's traffic is expected to have a negligible impact on operations at this intersection. Therefore, no improvements are recommended as part of this TIA.

Table 8 – NC 211 (N. Howe Street) at West Street Capacity Analysis Results

Condition	Measure	EB (West Street)	WB (West Street)	NB (NC 211)		SB (NC 211)	
		EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
AM Peak Hour							
2021 Existing	LOS (Delay)	A (9.7)	A (9.8)	A (0.7)		A (0.4)	
	Synchro 95th Q	3'	3'	0'	-	0'	-
	SimTraffic Max Q	51'	31'	17'	0'	8'	0'
2032 No-Build	LOS (Delay)	B (10.0)	B (10.0)	A (0.7)		A (0.4)	
	Synchro 95th Q	5'	3'	0'	-	0'	-
	SimTraffic Max Q	53'	31'	29'	0'	15'	0'
2032 Build	LOS (Delay)	B (10.9)	B (10.9)	A (0.5)		A (0.2)	
	Synchro 95th Q	5'	3'	0'	-	0'	-
	SimTraffic Max Q	71'	31'	27'	0'	6'	0'
2040 No-Build	LOS (Delay)	B (10.3)	B (10.3)	A (0.7)		A (0.4)	
	Synchro 95th Q	5'	3'	0'	-	0'	-
	SimTraffic Max Q	67'	30'	30'	0'	14'	0'
2040 Build Improved	LOS (Delay)	B (11.3)	B (11.3)	A (0.5)		A (0.3)	
	Synchro 95th Q	8'	3'	0'	-	0'	-
	SimTraffic Max Q	55'	30'	28'	2'	28'	0'
PM Peak Hour							
2021 Existing	LOS (Delay)	B (11.0)	B (10.8)	A (0.4)		A (0.3)	
	Synchro 95th Q	10'	3'	0'	-	0'	-
	SimTraffic Max Q	63'	30'	24'	0'	12'	0'
2032 No-Build	LOS (Delay)	B (11.9)	B (11.3)	A (0.4)		A (0.3)	
	Synchro 95th Q	13'	3'	0'	-	0'	-
	SimTraffic Max Q	73'	54'	30'	0'	28'	0'
2032 Build	LOS (Delay)	B (14.0)	B (12.8)	A (0.3)		A (0.2)	
	Synchro 95th Q	18'	3'	0'	-	0'	-
	SimTraffic Max Q	78'	30'	29'	0'	30'	0'
2040 No-Build	LOS (Delay)	B (13.1)	B (11.8)	A (0.4)		A (0.4)	
	Synchro 95th Q	18'	3'	0'	-	0'	-
	SimTraffic Max Q	91'	31'	30'	0'	29'	2'
2040 Build Improved	LOS (Delay)	C (15.7)	B (13.4)	A (0.3)		A (0.3)	
	Synchro 95th Q	23'	3'	0'	-	0'	-
	SimTraffic Max Q	92'	55'	32'	0'	30'	0'
	Existing Storage	-	-	100'	-	100'	-

$: Delay exceeds 300 seconds

5.6 NC 211 (N. Howe Street) at Moore Street

The capacity analysis results for the NC 211 (N. Howe Street) at Moore Street intersection are presented in **Table 9** on the next page.

Results

This intersection is expected to operate at LOS C or better on all approaches under all analyzed scenarios.

Recommendations

The proposed development's traffic is expected to have a negligible impact on operations at this intersection. Therefore, no improvements are recommended as part of this TIA.

Table 9 – NC 211 (N. Howe Street) at Moore Street Capacity Analysis Results

Condition	Measure	EB (Moore Street)	WB (Moore Street)		NB (NC 211)		SB (NC 211)		Intersection
		EBLTR	WBL	WBTR	NBL	NBTR	SBL	SBTR	
AM Peak Hour									
2021 Existing	LOS (Delay)	A (5.6)	A (3.8)		A (3.3)		A (3.1)		A (3.6)
	Synchro 95th Q	8'	3'	10'	3'	9'	11'	13'	
	SimTraffic Max Q	66'	28'	67'	23'	43'	53'	56'	
2032 No-Build	LOS (Delay)	B (14.7)	B (10.7)		B (13.3)		B (12.3)		B (12.3)
	Synchro 95th Q	29'	8'	34'	8'	28'	38'	48'	
	SimTraffic Max Q	72'	31'	79'	29'	30'	75'	50'	
2032 Build	LOS (Delay)	B (16.8)	B (14.7)		B (16.7)		B (17.7)		B (16.5)
	Synchro 95th Q	29'	8'	56'	8'	29'	80'	48'	
	SimTraffic Max Q	71'	31'	115'	29'	52'	96'	50'	
2040 No-Build	LOS (Delay)	B (13.8)	B (10.3)		B (12.6)		B (12.0)		B (11.8)
	Synchro 95th Q	30'	8'	35'	8'	29'	39'	50'	
	SimTraffic Max Q	72'	31'	99'	30'	74'	51'	48'	
2040 Build Improved	LOS (Delay)	B (15.4)	B (11.6)		B (14.2)		B (13.4)		B (13.3)
	Synchro 95th Q	33'	8'	39'	8'	31'	43'	55'	
	SimTraffic Max Q	50'	31'	96'	29'	68'	129'	49'	
PM Peak Hour									
2021 Existing	LOS (Delay)	A (7.6)	A (4.8)		A (5.7)		A (6.1)		A (6.0)
	Synchro 95th Q	21'	7'	16'	3'	18'	17'	19'	
	SimTraffic Max Q	77'	37'	80'	25'	66'	72'	71'	
2032 No-Build	LOS (Delay)	B (17.8)	B (14.5)		B (17.2)		B (15.6)		B (16.1)
	Synchro 95th Q	77'	28'	56'	9'	69'	64'	74'	
	SimTraffic Max Q	143'	52'	140'	28'	114'	129'	91'	
2032 Build	LOS (Delay)	B (18.8)	C (16.9)		B (19.6)		C (22.8)		B (19.8)
	Synchro 95th Q	77'	28'	91'	9'	70'	#145	75'	
	SimTraffic Max Q	96'	50'	138'	28'	94'	113'	70'	
2040 No-Build	LOS (Delay)	C (21.6)	B (15.3)		C (20.3)		B (18.5)		B (18.6)
	Synchro 95th Q	89'	33'	65'	9'	80'	74'	87'	
	SimTraffic Max Q	99'	56'	96'	28'	95'	91'	106'	
2040 Build Improved	LOS (Delay)	C (22.1)	B (16.7)		C (22.1)		C (26.9)		C (22.2)
	Synchro 95th Q	90'	33'	102'	9'	81'	#169	87'	
	SimTraffic Max Q	120'	53'	158'	29'	118'	162'	72'	
	Existing Storage	-	100'	-	175'	-	100'	-	

$: Delay exceeds 300 seconds

5.7 NC 211 (N. Howe Street) at 12th Street/Stuart Avenue

The capacity analysis results for the NC 211 (N. Howe Street) at 12th Street/Stuart Avenue intersection are presented in **Table 10A** (AM Peak) and **Table 10B** (PM Peak) on the following pages.

Results

This intersection is expected to operate with long delays on the minor eastbound and westbound approaches under 2032 No-Build and 2032 Build conditions. Based on coordination with NCDOT, 13-hour turning movement counts were collected at this intersection in September 2021 to facilitate a full signal warrant analysis. The following assumptions were considered as part of this signal warrant analysis:

- Southport is classified as an "isolated community with population less than 10,000"
- All right-turn volumes on 12th Street/Stuart Avenue were included in the analysis, as each approach operates with a shared lane configuration

The results of the signal warrant analysis indicate that Warrant 1 (Eight-Hour Vehicular Volume) within the *Manual on Uniform Traffic Control Devices* (MUTCD) is met based on 2032 No-Build traffic volumes.

Recommendations

A traffic signal is warranted at this intersection based on No-Build traffic volumes and should be considered for installation absent the proposed development. As noted previously, signalized intersection spacing and right-of-way constraints preclude the installation of a traffic signal at adjacent intersections such as Fodale Avenue. However, given network interconnectivity and increases in through traffic expected on NC 211 (N. Howe Street) over the next 10-20 years, the installation of a traffic signal at 12th Street/Stuart Avenue could provide reliable alternatives for access to/from NC 211 (N. Howe Street) and adjacent existing development.

The forecast utilized in this analysis considers a significant growth rate of 2% per year, compounded annually for 19 years. As such, despite long queues modeled on the northbound and southbound approaches of the intersection, the forecasted 2032 No-Build and 2040 No-Build traffic volumes are conservative and represent a scenario that considers a level of growth that likely will not be realized for Southport.

The proposed development's traffic is expected to have a negligible impact on operations at this intersection when comparing No-Build to Build conditions. Installation of a traffic signal and the right-turn lane at this intersection should be considered based on forecasted No-Build traffic volumes but is not the responsibility of the proposed Southport Mixed-Use Development. No additional improvements are recommended at this intersection as part of this TIA.

Table 10A – NC 211 (N. Howe Street) at 12th Street/Stuart Avenue Capacity Analysis Results (AM Peak)

Condition	Measure	EB (12th Street)	WB (Stuart Avenue)	NB (NC 211)		SB (NC 211)		Intersection
		EBLTR	WBLTR	NBL	NBTR	SBL	SBTR	
AM Peak Hour								
2021 Existing	LOS (Delay)	F (86.6)	E (42.5)	A (0.1)		A (0.6)		-
	Synchro 95th Q	23'	68'	0'	-	5'	-	
	SimTraffic Max Q	46'	114'	27'	2'	60'	0'	
2032 No-Build	LOS (Delay)	F (207.4)	F (113.5)	A (0.0)		A (0.6)		-
	Synchro 95th Q	40'	143'	0'	-	8'	-	
	SimTraffic Max Q	50'	117'	31'	2'	67'	13'	
2032 Build	LOS (Delay)	$	F (285.0)	A (0.0)		A (0.6)		-
	Synchro 95th Q	53'	215'	0'	-	10'	-	
	SimTraffic Max Q	53'	266'	31'	7'	74'	29'	
2032 Build Improved	LOS (Delay)	C (29.8)	D (36.0)	C (30.5)		-24.2		C (27.5)
	Synchro 95th Q	22'	24 (94 WBR)	12'	#926	#79	#1079	
	SimTraffic Max Q	53'	31 (131' WBR)	29'	517'	199'	708'	
2040 No-Build	LOS (Delay)	$	$	A (0.0)		A (0.7)		-
	Synchro 95th Q	70'	288'	0'	-	10'	-	
	SimTraffic Max Q	53'	325'	31'	22'	199'	1022'	
2040 Build Improved	LOS (Delay)	D (53.2)	F (103.7)	C (28.6)		C (27.8)		C (31.8)
	Synchro 95th Q	34'	38' (#207 WBR)	15'	#1213	#149	#1457	
	SimTraffic Max Q	53'	246' (200 WBR)	31'	489'	199'	404'	
	Existing Storage	-	-	100'	-	100'	-	
	Recommended Storage		WBR 175'					

Table 10B – NC 211 (N. Howe Street) at 12th Street/Stuart Avenue Capacity Analysis Results (PM Peak)

Condition	Measure	EB (12th Street)	WB (Stuart Avenue)	NB (NC 211)		SB (NC 211)		Intersection
		EBLTR	WBLTR	NBL	NBTR	SBL	SBTR	
PM Peak Hour								
2021 Existing	LOS (Delay)	F (199.1)	F (91.3)	A (0.1)		A (0.8)		-
	Synchro 95th Q	35'	118'	0'	-	8'	-	
	SimTraffic Max Q	44'	179'	33'	8'	66'	21'	
2032 No-Build	LOS (Delay)	$	$	A (0.1)		A (1.0)		-
	Synchro 95th Q	83'	293'	0'	-	15'	-	
	SimTraffic Max Q	51'	160'	31'	10'	72'	79'	
2032 Build	LOS (Delay)	+	$	A (0.1)		A (0.9)		-
	Synchro 95th Q	+	368'	3'	-	18'	-	
	SimTraffic Max Q	162'	325'	31'	12'	77'	120'	
2032 Build Improved	LOS (Delay)	E (63.2)	F (83.5)	F (82.3)		B (12.1)		D (54.4)
	Synchro 95th Q	39'	36' (163' WBR)	29'	#2204	#152	850'	
	SimTraffic Max Q	52'	31' (193' WBR)	72'	514'	75'	646'	
2040 No-Build	LOS (Delay)	+	$	A (0.1)		A (1.2)		-
	Synchro 95th Q	+	455'	3'	-	23'	-	
	SimTraffic Max Q	96'	349'	31'	22'	94'	139'	
2040 Build Improved	LOS (Delay)	D (37.9)	E (71.0)	F (187.3)		C (28.5)		F (118.8)
	Synchro 95th Q	30'	28' (#171' WBR)	7'	#1791	#98	#1011	
	SimTraffic Max Q	72'	52' (194 WBR)	31'	482'	200'	1814'	
	Existing Storage	-	-	100'	-	100'	-	
	Recommended Storage		WBR 175'					

5.8 NC 211 (S. Howe Street) at Bay Street

The capacity analysis results for the NC 211 (S. Howe Street) at Bay Street intersection are presented in **Table 11** on the following page.

Results

This intersection is expected to operate at LOS A or LOS B on all approaches under all analyzed scenarios.

Recommendations

The proposed development's traffic is expected to have a negligible impact on operations at this intersection. Therefore, no improvements are recommended as part of this TIA.

Table 11 – NC 211 (S. Howe Street) at Bay Street Capacity Analysis Results

Condition	Measure	EB (Bay Street)	WB (Bay Street)	NB (NC 211)	SB (NC 211)		Intersection
		EBLTR	WBLTR	NBLTR	SBL	SBTR	
AM Peak Hour							
2021 Existing	LOS (Delay)	A (2.3)	A (0.4)	A (9.2)	A (8.9)		-
	Synchro 95th Q	0'	0'	0'	3'	3'	
	SimTraffic Max Q	0'	0'	35'	38'	47'	
2032 No-Build	LOS (Delay)	A (1.8)	A (1.2)	A (9.1)	A (9.0)		-
	Synchro 95th Q	0'	0'	3'	3'	3'	
	SimTraffic Max Q	6'	0'	30'	30'	30'	
2032 Build	LOS (Delay)	A (2.2)	A (0.3)	A (9.2)	A (9.0)		-
	Synchro 95th Q	0'	0'	0'	3'	3'	
	SimTraffic Max Q	30'	31'	56'	0'	31'	
2040 No-Build	LOS (Delay)	A (1.2)	A (1.1)	A (9.3)	A (9.1)		-
	Synchro 95th Q	0'	0'	3'	3'	5'	
	SimTraffic Max Q	6'	3'	32'	48'	30'	
2040 Build Improved	LOS (Delay)	A (2.1)	A (1.1)	A (9.2)	A (9.0)		-
	Synchro 95th Q	0'	0'	3'	3'	5'	
	SimTraffic Max Q	3'	30'	31'	50'	53'	
PM Peak Hour							
2021 Existing	LOS (Delay)	A (2.4)	A (0.6)	A (9.5)	A (9.2)		-
	Synchro 95th Q	0'	0'	3'	3'	5'	
	SimTraffic Max Q	6'	3'	41'	41'	64'	
2032 No-Build	LOS (Delay)	A (1.7)	A (0.6)	A (9.8)	A (9.5)		-
	Synchro 95th Q	0'	0'	5'	3'	8'	
	SimTraffic Max Q	19'	6'	78'	50'	104'	
2032 Build	LOS (Delay)	A (1.7)	A (0.6)	A (9.8)	A (9.5)		-
	Synchro 95th Q	0'	0'	5'	3'	8'	
	SimTraffic Max Q	14'	0'	31'	55'	56'	
2040 No-Build	LOS (Delay)	A (1.9)	A (0.6)	B (10.0)	A (9.7)		-
	Synchro 95th Q	0'	0'	5'	5'	8'	
	SimTraffic Max Q	31'	66'	55'	30'	90'	
2040 Build Improved	LOS (Delay)	A (1.9)	A (0.6)	B (10.0)	A (9.7)		-
	Synchro 95th Q	0'	0'	5'	5'	8'	
	SimTraffic Max Q	31'	30'	49'	54'	54'	
	Existing Storage	-	-	-	100'	-	

5.9 Robert Ruark Drive at Proposed Site Access #1

The capacity analysis results for the Robert Ruark Drive at Proposed Site Access #1 intersection are presented in **Table 12** on the following pages.

Results

This intersection is expected to operate at LOS A on all approaches under all analyzed scenarios except for the northbound site driveway approach, which is projected to operate at LOS B under all analyzed scenarios.

Recommendations

To accommodate the proposed development, the following improvements are recommended as a part of the construction of the development at full buildout:

- Construct a westbound left-turn lane with a minimum of 150 feet of full-width storage and an appropriate taper length.
- Construct of a northbound right-turn lane with a minimum of 175 feet of full-width storage and an appropriate taper length.

Table 12 – Robert Ruark Drive at Site Access #1 Capacity Analysis Results

Condition	Measure	EB (Robert Ruark Dr)	WB (Robert Ruark Dr)	NB (Site Access #1)	
		EBLTR	WBLTR	NBL	NBR
AM Peak Hour					
2032 Build Improved	LOS (Delay)	A (0.0)	A (6.4)	B (11.7)	
	Synchro 95th Q	0'	20'	0'	57'
	SimTraffic Max Q	2'	80'	31'	122'
2040 Build Improved	LOS (Delay)	A (0.0)	A (6.2)	B (12.0)	
	Synchro 95th Q	0'	20'	3'	57'
	SimTraffic Max Q	2'	54'	28'	101'
PM Peak Hour					
2032 Build Improved	LOS (Delay)	A (0.0)	A (7.0)	B (13.0)	
	Synchro 95th Q	0'	35'	3'	70'
	SimTraffic Max Q	4'	162'	29'	243'
2040 Build Improved	LOS (Delay)	A (0.0)	A (6.9)	B (13.4)	
	Synchro 95th Q	0'	35'	3'	73'
	SimTraffic Max Q	22'	159'	30'	114'
Recommended Storage		-	150' (WBL)	-	175' (NBR)

6 Unsignalized Turn Lane Warrants

Warrants for additional turn-lane improvements at unsignalized intersection locations – beyond those needed for capacity – were determined based on a review of the figure titled "Warrant for Left and Right-Turn Lanes" found on page 80 in the *NCDOT Policy of Street and Driveway Access to North Carolina Highways*.

Turn lane warrants were examined under 2032 and 2040 conditions for movements with projected volumes (right- or left-turn) greater than 50 vehicles in the peak hour. The results of these warrants are summarized below under 2032 conditions for left- and right-turn lanes at unsignalized intersections within the study area. Full turn lane warrant analysis results are included in **Appendix H**.

12th Street/Stuart Avenue at NC 211 (N. Howe Street)

- NB Right – 25 ft of Storage Warranted – No-Build Conditions
- WB Right – 75 ft of Storage Warranted – No-Build Conditions
- SB Right – 25 ft of Storage Warranted – No-Build Conditions

11th Street at NC 211 (N. Howe Street)

- SB Right – 50 ft of Storage Warranted – No-Build Conditions
- EB Left – 500 ft of Storage Warranted – No-Build Conditions
- WB Right – 50 ft of Storage Warranted – No-Build Conditions

West Street at NC 211 (N. Howe Street)

- WB Left – 50 ft of Storage Warranted – No-Build Conditions

A westbound left-turn lane and northbound right-turn lane were deemed necessary at the proposed unsignalized intersection of Robert Ruark Drive with Site Access #1 based on site traffic volumes. This intersection was excluded from the turn lane warrant analysis, as storage for these turn bays was determined based on capacity analysis outputs. Additionally, it is important to note that the proposed site does not add additional traffic to the proposed auxiliary movements (right- or left-turn lanes) at any of the existing unsignalized intersections.

7 Conclusion

The proposed Southport Mixed-Use Development is located in Southport, NC west of the Southport city limits within a currently vacant parcel bounded by Robert Ruark Drive (to the north), W 11th Street/W 9th Street (to the east), Indigo Plantation Drive (to the south), and the Dutchman Creek floodplain (to the west). The development includes a mix of residential, office, and retail land uses and is anticipated to be complete in 2032. This TIA evaluates traffic operations under 2021 Existing, 2032 No-Build, 2032 Build, 2040 No-Build, and 2040 Build traffic conditions during the AM and PM peak hours of travel.

Based on the results of the analyses described within this report, the following improvements are recommended to accommodate site traffic associated with the proposed development:

NC 211 (N. Howe Street) at NC 87 (River Road)/Robert Ruark Drive

- Construct one (1) additional eastbound left-turn lane to form dual left-turn lanes with approximately 350 feet of full-width storage and an appropriate taper length.
- Construct one (1) eastbound right turn lane with approximately 350 feet of full-width storage and an appropriate taper length.
- Modify signal timing and phasing to accommodate the proposed improvements and changes in traffic volumes on each approach.

NC 211 (N. Howe Street) at 9th Street

- Construct a southbound right-turn lane with a minimum of 300 feet of full-width storage and an appropriate taper length, as utility and right-of-way constraints allow.
- Optimize signal timing in the context of the proposed improvements and increases in traffic volumes on each approach.

The following additional improvements have been identified based on No-Build traffic volumes (i.e., without the proposed Southport Mixed-Use Development) and are not the responsibility of the developer:

NC 211 (N. Howe Street) at 12th Street

- Install a fully actuated traffic signal to operate with existing geometry and permitted phasing on all approaches.
- Install a westbound right turn lane with 175 feet of storage and appropriate taper

Robert Ruark Drive at Site Access #1

- Construct a westbound left-turn lane with a minimum of 150 feet of full-width storage and an appropriate taper length.
- Construct the site access point to include one ingress lane and two egress lanes:

- One northbound left-turn lane
- One northbound right-turn lane with a minimum of 175 feet of full-width storage and an appropriate taper length

Based on forecasted traffic volumes developed through coordination with NCDOT, additional improvements may be warranted at the intersections of NC 211 (N. Howe Street) with 11th Street and Fodale Avenue. The need for these improvements was identified through the analyses described herein, but the design and construction of these improvements are not the responsibility of the developer.

Figure 12 shows the recommended roadway geometry and traffic control at the study area intersections as described above.

Beyond the capacity improvements listed above, the following turn lanes are warranted based on projected No-Build traffic volumes and are not the responsibility of the developer:

12th Street/Stuart Avenue at NC 211

- One (1) northbound right-turn lane with a minimum of 100 feet of full-width storage and an appropriate taper length
- One (1) westbound right-turn lane with a minimum of 100 feet of full-width storage and an appropriate taper length
- One (1) southbound right-turn lane with a minimum of 100 feet of full-width storage and an appropriate taper length

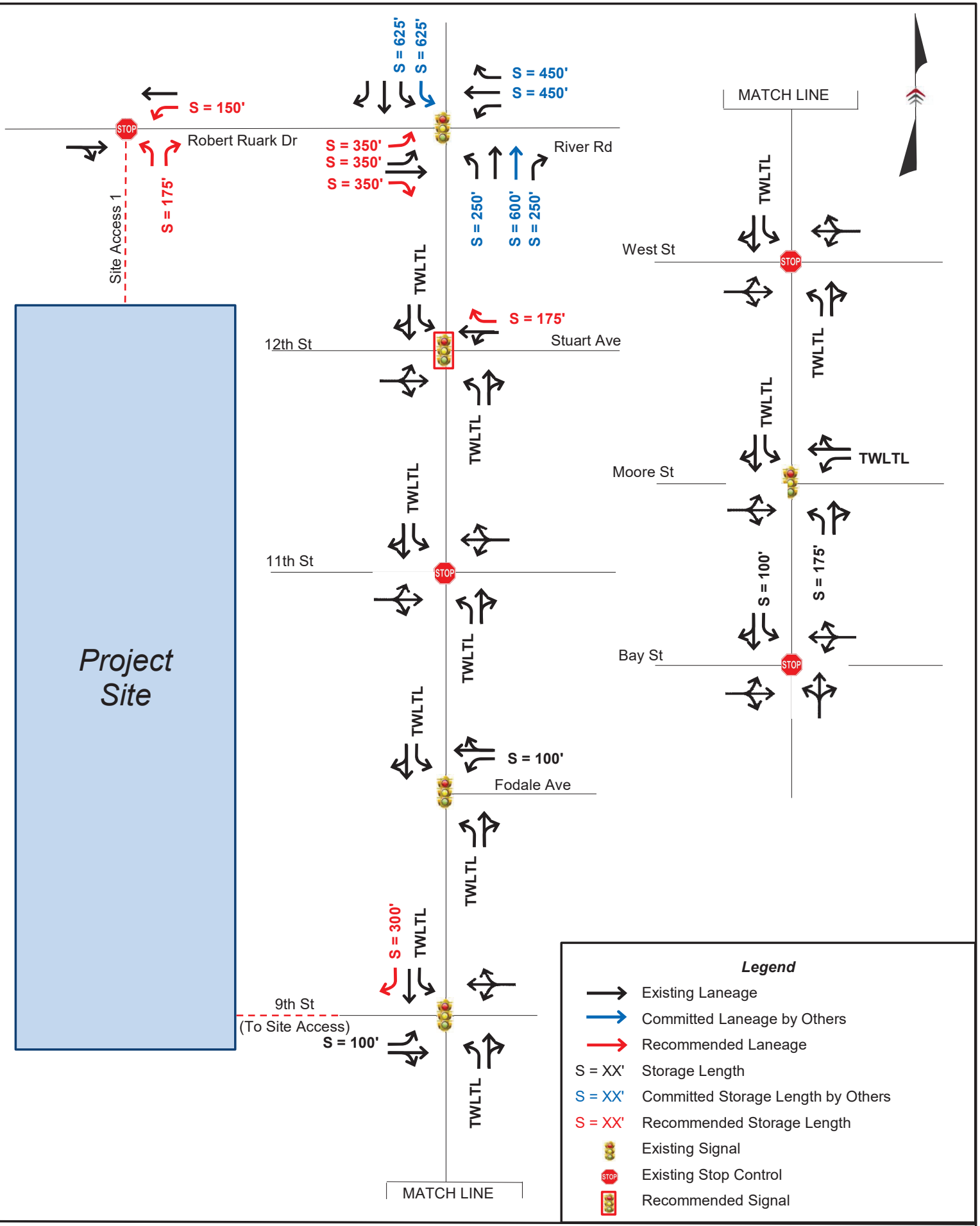
11th Street at NC 211

- One (1) southbound right-turn lane with a minimum of 100 feet of full-width storage and an appropriate taper length
- One (1) eastbound left-turn lane with a minimum of 500 feet of full-width storage and an appropriate taper length
- One (1) westbound right-turn lane with a minimum of 100 feet of full-width storage and an appropriate taper length

West Street at NC 211

- One westbound left-turn lane with a minimum of 150 feet of full-width storage and an appropriate taper length

The turn bay storage lengths summarized above were increased relative to those drawn directly from the turn lane warrant analysis described in **Section 6** to adhere to typical NCDOT minimums.


Project Site
Site Access 1
Robert Ruark Dr
S = 150'
S = 175'
S = 625'
S = 625'
S = 450'
S = 450'
S = 350'
S = 350'
S = 350'
River Rd
S = 250'
S = 600'
S = 250'
TWLTL
12th St
S = 175'
Stuart Ave
11th St
Fodale Ave
S = 100'
S = 300'
9th St
(To Site Access)
S = 100'
MATCH LINE
MATCH LINE
West St
Moore St
Bay St
S = 100'
S = 175'
Legend
Existing Laneage
Committed Laneage by Others
Recommended Laneage
S = XX' Storage Length
S = XX' Committed Storage Length by Others
S = XX' Recommended Storage Length
Existing Signal
Existing Stop Control
Recommended Signal

Appendix A – TIA Scoping Document

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

July 21, 2021

Jonathan Guy, PE
Kimley-Horn

RE: Approved Scope for the Traffic Impact Analysis associated with the proposed **Southport Mixed Use Development** in Southport, NC

The site for the proposed development is located at the intersection of N Howe Street and W 11th Street.

Based on the information provided in the scoping checklist, it is our understanding that the proposed development will consist of:

• 200 dwelling units	Single Family Housing	*(LUC 210)*
• 220 dwelling units	Multifamily Housing	*(LUC 220)*
• 50 dwelling units	Senior Adult Housing - Detached	*(LUC 251)*
• 100 dwelling units	Senior Adult Housing - Attached	*(LUC 252)*
• 280 dwelling units	Recreational Homes	*(LUC 260)*
• 80,000 square feet	Medical Dental Office	*(LUC 720)*
• 8,000 square feet	Shopping Center	*(LUC 820)*
Build Year: 2032		

Below is the scope to be used for the Traffic Impact Analysis.

1. **Data collection – Analysis Parameters**
   a) Study Intersections
      1) NC 211 (N Howe Street) and SR 1852 (Robert Ruark Drive)
      2) NC 211 (N Howe Street) and 11th Street
      3) NC 211 (N Howe Street) and Fodale Avenue
      4) NC 211 (N Howe Street) and 9th Street
      5) NC 211 (N Howe Street) and SR 1194 (West Street)
      6) NC 211 (N Howe Street) and SR 1528 (Moore Street)
      7) NC 211 (N Howe Street) and 12th Street / Stuart Avenue
      8) SR 1852 (Robert Ruark Drive) and Site Access 1
      9) 9th Street and Site Access 2

   b) Count Development
      1) New peak hour turning movement counts need to be performed at all of the existing intersections. This includes a weekday AM 7-9am and weekday PM 4-6pm. Please note that counts should be performed after the Howe Street Sewer Rehabilitation Project concluded. If the new counts are collected after the peak summer season, a seasonal

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WILMINGTON, NC 28401-5647

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Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location
300 DIVISION DRIVE
WILMINGTON, NC 28401

factor should be applied to the counts. Reach out to NCDOT once the count date is confirmed to determine the seasonal factor.

2) 13-hour counts need to be performed at the NC 211 / 12th Street / Stuart Avenue intersection, including pedestrians.

c) Site Trip Generation, Site Trip Distribution and Background Traffic Assumptions

i. Site Trip Generation Estimate
- Approved trip generation is attached.

ii. Site Trip Distribution
- To be submitted for review after collecting counts and before TIA submittal.

iii. Adjacent Developments (approved but not yet built)
- Osprey Landing

iv. Planned Roadway Improvements
- R-5021

v. Background Traffic Assumptions
- Horizon year – 2032
- Growth rate – 2% per year

2. Capacity Analysis: Weekday AM and Weekday PM

a) 2021 Existing Conditions
b) 2032 Future No-Build Conditions
[existing + 2% background growth]
c) 2032 Future Build Condition (without improvements)
[existing + 2% background growth + site trips]
d) 2032 Future Build Condition (with improvements)
[existing + 2% background growth + site trips]
e) 2040 (TIP design year) Future No-Build Conditions
[existing + 2% background growth]
f) 2040 (TIP design year) Future Build Condition (without improvements)
[existing + 2% background growth + site trips]
g) 2040 (TIP design year) Future Build Condition (with improvements)
[existing + 2% background growth + site trips]

3. Signal Warrant Analysis

a) Perform signal warrant analysis at the following intersections:

i. NC 211 and 12th Street / Stuart Avenue

b) Include the following MUTCD warrants:

i. Warrant 1: 8-hour volume warrant
ii. Warrant 2: 4-hour volume warrant
iii. Warrant 3: peak hour volume warrant

4. **Final Report Submittal**
   a) Signed and sealed by a Professional Engineer
   b) Three printed copies of TIA
   c) Synchro analysis files in digital format
   d) Three USB drives with PDF of TIA and Synchro files

5. **Notes**
   a) The TIA report shall be prepared following NCDOT Congestion Management guidelines and signed and sealed by a Professional Engineer. Any deviations must be approved prior to submitting the TIA. Failure to do so will result in an invalid submittal.
   Congestion Management's guidelines can be found at the following location:
   https://connect.ncdot.gov/resources/safety/Pages/Congestion-Management.aspx
   b) Unless proposed by the project developer, any improvements shown as needed for the background no-build condition shall reflect programmed and funded State/Municipal projects or those required as mitigation for surrounding approved development. Should improvements outside those listed above be included, the TIA is considered invalid and will not be reviewed.
   c) If the developer wishes to phase recommended/required improvements, the TIA shall be phased accordingly.
   d) Data collected, or analysis performed prior to the issuance of an official scoping letter may invalidate the TIA.
   e) **Any deviations from this approved scope will result in the invalidation of the TIA.**

Sincerely,

Benjamin T. Hughes, PE
District Engineer
Division 3, District 3

Attachments: *Site Plan*
Division 3 Supplemental Guidelines
Approved Trip Generation

EC: Aaron LeBeau, Assistant District Engineer, NCDOT
Jessi Leonard, PE, Division Traffic Engineer, NCDOT
Eva Covarrubias, Assistant Division Traffic Engineer, NCDOT
Marc Pages, Brunswick County Planning
Helen Bunch, Brunswick County Zoning Administrator

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: South Port Mixed Use Development **Previous Name:** If Applicable

Location: Parcel 4; Waterscape Way **County:** Brunswick **Municipality:** South Port

Project Description: Mixed Use Development

Project Contact:	Applicant	TIA Consultant
Company Name	East West Partners	Kimley-Horn
Contact Person	McKay Siegel	Jonathan Guy
Phone Number	910-386-8683	704.488.3055
Email	msiegel@ewpnc.com	jonathan.guy@kimley-horn.com
Mailing Address	1450 Envron Way Chapel Hill, NC 27517	115 Fairchild Street, Suite 250 Charleston, SC

Site Plan Prepared By: Land Design **Site Plan Date:** 06.04.2021

See site plan/vicinity map requirements on page 2.

Parcel Size: 350 Acre(s) **Anticipated Build-Out Year:** 2032

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
210	Single family	200	DU	1967	Adj. Street	147	37	110	198	125	73	ITE Equation
220	Multi Family	220	DU	1622	Adj. Street	101	23	78	119	75	44	ITE Equation
251	Senior Adult	50	DU	306	Adj. Street	24	8	16	28	17	11	ITE Equation
252	Senior Adult	100	DU	377	Adj. Street	20	7	13	26	14	12	ITE Equation
260	Recreational	280	DU	972	Generator	216	106	110	224	99	125	ITE Equation
720	Medical Dental	8	KSF	2986	Adj. Street	183	143	40	273	76	197	ITE Equation
820	Shopping Center	80	KSF	1079	Adj. Street	156	97	59	84	40	44	ITE Equation
Total		850+88	DU+KSF	9309		847	421	426	952	446	506	

Refer to the current *NCDOT Congestion Management Capacity Analysis Guidelines* for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used:

☒ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.

☐ The estimated site trips meet the municipal TIA trip threshold of

☐ This project is located in a known STIP and/ or local CIP project #

☐ This project includes a rezoning request.

☐ The proposed site access is located within 1,000 feet of an interchange.

☐ The Applicant requests for a new or modified control-of-access break.

☐ The Applicant requests for a new or modified median break.

Applicant's Signature	Jonathan Guy Print Name	7.7.2021 Date

Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: _____ **Project Reference Number:** _____

☐ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.

☐ **A TIA is Required by NCDOT,** per the *Policy on Street and Driveway Access to North Carolina Highways*.

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

☐ **A TIA is NOT required**. This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

Additional Comments:

The TIA need decision is made by the NCDOT Division ____ District____ on _____.

_____ _____

NCDOT District Representative's Signature | Print Name

Email concurrence may be used in lieu of the signature.

NCDOT TIA Scoping Checklist

TIA Need Screening → TIA Scoping → TIA Submittal

Project Name: _____ **TIA Scoping Date:** _____

☒ **TIA Need Screening Forms are Attached.** Project Reference #: _____ Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.
Refer to NCDOT's *Policy on Street and Driveway Access to North Carolina Highways* pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	Ruark Road	Conventional Full-Mvmt	2-Way Stop	1470	NE	N. Howe Street
Access B	9 th Street	Conventional Full-Mvmt	2-Way Stop	650	NE	N. Howe Street
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	**Proposed Interconnectivity** (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1			Please Select	Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☐ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

☐

Proposed K-12 School Site

☐ NCDOT MSTA School Traffic Calculator for Select School Type shall be used.

☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).

☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.

☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).

☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current *NCDOT Congestion Management Capacity Analysis Guidelines*, and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
210	Singl family	200	DU	1967	Adj. Street	147	37	110	198	125	73	ITE Equation
220	Multifamily	220	DU	1622	Adj. Street	101	23	78	119	75	44	ITE Equation
251	Senior Adult	50	DU	306	Adj. Street	24	8	16	28	17	11	ITE Equation
252	Senior Adult	100	DU	377	Adj. Street	20	7	13	26	14	12	ITE Equation
260	Recreational	280	DU	972	Generator	216	106	110	224	99	125	ITE Equation
720	Medical Dental	80	KSF	2986	Adj. Street	183	143	40	273	76	197	ITE Equation
820	Shopping Center	8	KSF	1079	Adj. Street	156	97	59	84	40	44	ITE Equation
Unadjusted Site Trips				9309		847	421	426	952	446	506	
Internal Capture Trips (Attach Calculation Sheets)				948		57	29	28	68	34	34	ITE Rate
Internal Capture % of Unadjusted Site Trips				10 %		6 %			7 %			
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
820	Shopping Center	Please Select		%		%			34 %			ITE Rate
				%		%			%			
				%		%			%			
				%		%			%			
				%		%			%			
Pass-By Trips (Attach Calculation Sheets)				0		0	0	0	22	11	11	
Adjacent Street Volumes				0		0			0			Please Select
Non-Pass-By Primary Trips												
Diverted Trips, if Applicable and Justifiable												Please Select

**Explain local or other data sources, if used:

☐ Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
					Please Select							Please Select
Total Existing Site Trips												

☒ **Trip Distribution**

☐ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).

☐ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)

☐ Inter-Development Trips (if 'internal" trips cross public streets)

☐ Pass-By Trips

☐ Diverted Trips

☐ Each Analysis Period

☐ **Mode Split**

☐ Provide Data Source and Justification

Mode / Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ **Analysis Peak Periods:**

☒ Weekday AM Peak 7-9

☒ Weekday PM Peak 4-6

☐ Weekday Midday Peak _____

☐ Weekday PM School Peak _____

☐ Weekend _____ Peak _____

☐ Other _____

☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under "Site Plan and Access" on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	N. Howe Street	Robert Ruark Dr	Signal	Require New Counts	6/29/2021		Intersection
#2	N. Howe Street	11th Street	2-Way Stop	Require New Counts	6/29/2021		Intersection
#3	N. Howe Street	Fodale Avenue	Signal	Require New Counts	6/29/2021		Intersection
#4	N. Howe Street	9th street	Signal	Require New Counts	6/29/2021		Intersection
#5	N. Howe Street	West Street	2-Way Stop	Require New Counts	6/29/2021		Intersection
#6	N. Howe Street	Moore Street	Signal	Require New Counts	6/29/2021		Intersection
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101			Please Select	Please Select		Please Select	
#102							
#103							
#104							
#105							

The following data will be collected:

☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)
Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.

☐ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:

intersections numbered: _____

and access points numbered: _____

☒ Traffic Forecast Data for TIP: R-5021

☒ Roadway/Intersection Configuration & Traffic Control

☒ Traffic Signal Phasing & Timing Data

☐ Crash Data: _____ Period: _____

☒ Other:

Counts collected the week of the July 4th holiday to account for vacation/summer traffic

☒ Future Year Conditions

☒ Project Build-Out Year: 2032

☒ Future Analysis Year(s): R-5021 Forecast Horizon Year (2040)

☐ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description	Year Complete
R-5021	NC 211 Widening	2024

Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements

☒ Annual Growth Factor: 2 %

Justification/Data Source: NCDOT ADT volumes from 2019 to 2014 - see attached data

☐ Local Comprehensive Transportation Plan Compliance

☐ Identify Applicable Local Transportation Planning Documents

☐ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #

☒ Study Method

The traffic analysis shall follow the current *NCDOT Congestion Management Capacity Analysis Guidelines*, *Policy on Street and Driveway Access to North Carolina Highways*, and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:

☒ 5. TIP Design Year Analysis R-5021 Forecast Design Year (2040)

☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- ☐ Signal Warrant Analysis for accesses/intersections _____
- ☐ Multi-Modal Level of Service Analysis
- ☐ School Loading Zone Traffic Simulation
- ☐ Phasing Analysis (scope separately as needed)
- ☐ Safety/Crash Analysis
- ☐ Control-of-Access Modification Justification
- ☐ Median Break / Modification Justification
- ☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS). To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

☐ Div. Traffic Engr ☐ Regional Traffic Engr ☐ Congestion Management ☐ Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required		Please Select	
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

☐ **Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)

Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

	McKay Siegel	7/7/2021
Signature	Print Name	Date

TIA CONSULTANT

	Jonrthan Guy	7/7/2021
Signature	Print Name	Date

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

Signature	Print Name	Date

Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division ____ District ____ on _____.

Signature	Print Name

Email concurrence may be used in lieu of the signature.

NCDOT TIA Submittal Checklist

TIA Need Screening → TIA Scoping → TIA Submittal

Submittal: Please Select **Document Date:** _____

Project Name: _____ **Previous Name:** If Applicable _____

NCDOT Division: _____ **District:** _____ **County:** _____ **Municipality:** _____

TIA Consultant: _____ Submitted By: _____

Phone Number: _____ Email: _____

TIA Scoping Checklist Approval Date: _____ **Unadjusted Daily Site Trips:** _____

☒ The approved TIA Scoping Checklist is included in this submittal.

☒ LOS D or better is expected at all study intersections after proposed mitigations.

☒ The study report is sealed by a NC Professional Engineer with expertise in traffic engineering.

☒ This study has identified all known deficiencies with and without the proposed development.

☒ This study has identified mitigation measures to adequately accommodate the site trips.

Explain here if any of the boxes above are unchecked:

The undersigned affirms that, except for the deviations noted below, the TIA submittal conforms to the current *NCDOT Congestion Management Capacity Analysis Guidelines*, *Policy on Street and Driveway Access to North Carolina Highways*, and the TIA Scoping Checklist approved by the NCDOT District Office. The undersigned also acknowledges that the TIA will be rejected if the deviations and justifications are not properly documented and approved by NCDOT.

Deviations and Justifications (e.g., changes in site plan, development schedule, site trip and off-site trip estimates, study area, data collection, analysis period and method. Attached separate sheets if needed.)

TIA Consultant's Signature	Jonathan Guy	2/9/2021
(Professional Engineer of TIA Record)	Print Name	Date

Appendix B – Raw Turning Movement Counts

Project ID: 21-160049-001
Location: SR 211/N Howe St & SR 87/Robert Ruark Dr/River Rd
City: Southport

Day: Tuesday
Date: 6/29/2021

Groups Printed - Cars, PU, Vans - Heavy Trucks

	SR 211/N Howe St Northbound						SR 211/N Howe St Southbound						SR 87/Robert Ruark Dr/River Rd Eastbound						SR 87/Robert Ruark Dr/River Rd Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	3	38	12	0	0	53	26	48	8	0	0	82	8	12	12	0	0	32	26	8	14	0	0	48	215
7:15 AM	2	44	13	0	0	59	15	90	11	0	0	116	15	6	5	0	0	26	33	9	20	0	0	62	263
7:30 AM	2	58	20	1	0	81	19	92	11	0	0	122	19	6	5	0	0	30	26	5	20	0	0	51	284
7:45 AM	3	59	15	0	0	77	29	115	12	0	0	156	14	5	7	0	1	26	42	13	27	0	0	82	341
Total	10	199	60	1	0	270	89	345	42	0	0	476	56	29	29	0	1	114	127	35	81	0	0	243	1103
8:00 AM	5	72	11	0	0	88	22	101	8	0	0	131	11	7	8	0	0	26	27	7	26	0	0	60	305
8:15 AM	4	78	21	0	0	103	22	114	14	0	0	150	11	5	9	0	1	25	39	5	18	0	0	62	340
8:30 AM	3	76	16	0	0	95	23	133	15	0	0	171	24	6	13	0	0	43	38	4	33	0	0	75	384
8:45 AM	6	80	31	0	0	117	22	147	27	0	0	196	18	13	13	0	0	44	33	14	32	0	0	79	436
Total	18	306	79	0	0	403	89	495	64	0	0	648	64	31	43	0	1	138	137	30	109	0	0	276	1465
BREAK																									
4:00 PM	7	171	40	0	0	218	29	134	25	0	0	188	22	10	12	0	0	44	27	7	43	0	0	77	527
4:15 PM	7	155	25	0	0	187	18	146	18	0	0	182	30	19	7	0	0	56	21	14	46	0	0	81	506
4:30 PM	3	161	23	0	0	187	34	123	13	0	0	170	24	20	11	0	0	55	22	13	67	0	0	102	514
4:45 PM	10	123	39	0	0	172	33	145	19	0	0	197	30	10	4	0	0	44	21	13	35	0	0	69	482
Total	27	610	127	0	0	764	114	548	75	0	0	737	106	59	34	0	0	199	91	47	191	0	0	329	2029
5:00 PM	5	158	49	0	0	212	27	120	20	0	0	167	35	10	8	0	0	53	22	9	52	0	0	83	515
5:15 PM	6	138	30	0	0	174	29	128	25	0	0	182	26	22	7	0	0	55	30	17	43	0	0	90	501
5:30 PM	9	141	28	0	0	178	28	133	21	0	0	182	20	10	6	0	0	36	28	13	35	0	0	76	472
5:45 PM	3	106	28	0	0	137	19	118	12	0	0	149	23	18	8	0	1	49	18	11	30	0	0	59	394
Total	23	543	135	0	0	701	103	499	78	0	0	680	104	60	29	0	1	193	98	50	160	0	0	308	1882
Grand Total	78	1658	401	1	0	2138	395	1887	259	0	0	2541	330	179	135	0	3	644	453	162	541	0	0	1156	6479
Apprch %	3.6	77.5	18.8	0.0	0.0		15.5	74.3	10.2	0.0	0.0		51.2	27.8	21.0	0.0	0.5		39.2	14.0	46.8	0.0	0.0		
Total %	1.2	25.6	6.2	0.0	0.0	33.0	6.1	29.1	4.0	0.0	0.0	39.2	5.1	2.8	2.1	0.0	0.0	9.9	7.0	2.5	8.4	0.0	0.0	17.8	
Cars, PU, Vans	78	1637	391	1		2107	379	1868	255	0		2502	324	174	135	0		633	441	156	519	0		1116	6358
% Cars, PU, Vans	100.0	98.7	97.5	100.0		98.6	95.9	99.0	98.5	0.0		98.5	98.2	97.2	100.0	0.0		98.3	97.4	96.3	95.9	0.0		96.5	98.1
Heavy trucks	0	21	10	0		31	16	19	4	0		39	6	5	0	0		11	12	6	22	0		40	121
%Heavy trucks	0.0	1.3	2.5	0.0		1.4	4.1	1.0	1.5	0.0		1.5	1.8	2.8	0.0	0.0		1.7	2.6	3.7	4.1	0.0		3.5	1.9

Project ID: 21-160049-001
Location: SR 211/N Howe St & SR 87/Robert Ruark Dr/River F
City: Southport

PEAK HOURS

Day: Tuesday
Date: 6/29/2021

AM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					SR 87/Robert Ruark Dr/River Rd Eastbound					SR 87/Robert Ruark Dr/River Rd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	5	72	11	0	88	22	101	8	0	131	11	7	8	0	26	27	7	26	0	60	305
8:15 AM	4	78	21	0	103	22	114	14	0	150	11	5	9	0	25	39	5	18	0	62	340
8:30 AM	3	76	16	0	95	23	133	15	0	171	24	6	13	0	43	38	4	33	0	75	384
8:45 AM	6	80	31	0	117	22	147	27	0	196	18	13	13	0	44	33	14	32	0	79	436
Total Volume	18	306	79	0	403	89	495	64	0	648	64	31	43	0	138	137	30	109	0	276	1465
% App. Total	4.5	75.9	19.6	0.0	100	13.7	76.4	9.9	0.0	100	46.4	22.5	31.2	0.0	100	49.6	10.9	39.5	0.0	100	
PHF					0.861					0.827					0.784					0.873	0.840
Cars, PU, Vans	18	301	77	0	396	82	484	61	0	627	62	30	43	0	135	129	27	102	0	258	1416
% Cars, PU, Vans	100.0	98.4	97.5	0.0	98.3	92.1	97.8	95.3	0.0	96.8	96.9	96.8	100.0	0.0	97.8	94.2	90.0	93.6	0.0	93.5	96.7
Heavy trucks	0	5	2	0	7	7	11	3	0	21	2	1	0	0	3	8	3	7	0	18	49
%Heavy trucks	0.0	1.6	2.5	0.0	1.7	7.9	2.2	4.7	0.0	3.2	3.1	3.2	0.0	0.0	2.2	5.8	10.0	6.4	0.0	6.5	3.3

PM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					SR 87/Robert Ruark Dr/River Rd Eastbound					SR 87/Robert Ruark Dr/River Rd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	7	171	40	0	218	29	134	25	0	188	22	10	12	0	44	27	7	43	0	77	527
4:15 PM	7	155	25	0	187	18	146	18	0	182	30	19	7	0	56	21	14	46	0	81	506
4:30 PM	3	161	23	0	187	34	123	13	0	170	24	20	11	0	55	22	13	67	0	102	514
4:45 PM	10	123	39	0	172	33	145	19	0	197	30	10	4	0	44	21	13	35	0	69	482
Total Volume	27	610	127	0	764	114	548	75	0	737	106	59	34	0	199	91	47	191	0	329	2029
% App. Total	3.5	79.8	16.6	0.0	100	15.5	74.4	10.2	0.0	100	53.3	29.6	17.1	0.0	100	27.7	14.3	58.1	0.0	100	
PHF					0.876					0.935					0.888					0.806	0.963
Cars, PU, Vans	27	600	122	0	749	112	545	75	0	732	106	56	34	0	196	90	47	188	0	325	2002
% Cars, PU, Vans	100.0	98.4	96.1	0.0	98.0	98.2	99.5	100.0	0.0	99.3	100.0	94.9	100.0	0.0	98.5	98.9	100.0	98.4	0.0	98.8	98.7
Heavy trucks	0	10	5	0	15	2	3	0	0	5	0	3	0	0	3	1	0	3	0	4	27
%Heavy trucks	0.0	1.6	3.9	0.0	2.0	1.8	0.5	0.0	0.0	0.7	0.0	5.1	0.0	0.0	1.5	1.1	0.0	1.6	0.0	1.2	1.3

Project ID: 21-160049-002
Location: SR 211/N Howe St & W 11th St/E 11th St
City: Southport

Day: Tuesday
Date: 6/29/2021

Groups Printed - Cars, PU, Vans - Heavy Trucks

	SR 211/N Howe St Northbound						SR 211/N Howe St Southbound						W 11th St/E 11th St Eastbound						W 11th St/E 11th St Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	24	2	0	0	26	6	44	4	0	0	54	21	0	0	0	0	21	0	1	2	0	0	3	104
7:15 AM	0	26	1	0	0	27	3	73	15	0	0	91	13	1	1	0	0	15	1	0	8	0	0	9	142
7:30 AM	1	28	0	0	0	29	3	70	9	0	0	82	27	1	3	0	0	31	1	0	5	0	0	6	148
7:45 AM	1	30	0	0	0	31	3	96	17	0	0	116	20	5	2	0	1	27	1	0	6	0	0	7	181
Total	2	108	3	0	0	113	15	283	45	0	0	343	81	7	6	0	1	94	3	1	21	0	0	25	575
8:00 AM	1	33	0	0	0	34	6	77	14	0	0	97	19	0	0	0	0	19	0	0	5	0	1	5	155
8:15 AM	3	31	0	0	0	34	9	104	14	0	0	127	28	3	2	0	0	33	0	0	4	0	0	4	198
8:30 AM	0	41	1	0	0	42	4	115	13	0	0	132	29	0	1	0	0	30	1	0	4	0	1	5	209
8:45 AM	2	44	0	0	0	46	9	116	12	0	0	137	35	1	5	0	0	41	0	0	2	0	0	2	226
Total	6	149	1	0	0	156	28	412	53	0	0	493	111	4	8	0	0	123	1	0	15	0	2	16	788
BREAK																									
4:00 PM	0	106	2	0	0	108	7	112	11	0	0	130	47	0	1	0	0	48	1	1	17	0	0	19	305
4:15 PM	1	82	1	0	0	84	7	130	9	0	0	146	51	0	2	0	0	53	0	0	7	0	0	7	290
4:30 PM	0	79	3	0	0	82	9	98	16	0	0	123	59	0	2	0	0	61	0	0	7	0	0	7	273
4:45 PM	1	71	0	0	0	72	7	119	15	0	0	141	40	1	3	0	0	44	0	1	10	0	0	11	268
Total	2	338	6	0	0	346	30	459	51	0	0	540	197	1	8	0	0	206	1	2	41	0	0	44	1136
5:00 PM	1	88	0	0	0	89	10	90	15	0	0	115	64	2	1	0	0	67	0	1	10	0	0	11	282
5:15 PM	0	62	1	0	0	63	5	112	18	0	0	135	48	2	2	0	0	52	1	0	2	0	0	3	253
5:30 PM	3	69	0	0	0	72	12	91	17	0	0	120	34	3	2	0	0	39	0	0	8	0	0	8	239
5:45 PM	0	58	2	0	0	60	10	91	13	0	0	114	40	1	1	0	0	42	1	0	12	0	0	13	229
Total	4	277	3	0	0	284	37	384	63	0	0	484	186	8	6	0	0	200	2	1	32	0	0	35	1003
Grand Total	14	872	13	0	0	899	110	1538	212	0	0	1860	575	20	28	0	1	623	7	4	109	0	2	120	3502
Apprch %	1.6	97.0	1.4	0.0	0.0		5.9	82.7	11.4	0.0	0.0		92.3	3.2	4.5	0.0	0.2		5.8	3.3	90.8	0.0	1.7		
Total %	0.4	24.9	0.4	0.0	0.0	25.7	3.1	43.9	6.1	0.0	0.0	53.1	16.4	0.6	0.8	0.0	0.0	17.8	0.2	0.1	3.1	0.0	0.1	3.4	
Cars, PU, Vans	14	860	12	0		886	106	1519	207	0		1832	564	19	28	0		611	6	4	104	0		114	3443
% Cars, PU, Vans	100.0	98.6	92.3	0.0		98.6	96.4	98.8	97.6	0.0		98.5	98.1	95.0	100.0	0.0		98.1	85.7	100.0	95.4	0.0		95.0	98.3
Heavy trucks	0	12	1	0		13	4	19	5	0		28	11	1	0	0		12	1	0	5	0		6	59
%Heavy trucks	0.0	1.4	7.7	0.0		1.4	3.6	1.2	2.4	0.0		1.5	1.9	5.0	0.0	0.0		1.9	14.3	0.0	4.6	0.0		5.0	1.7

Project ID: 21-160049-002
Location: SR 211/N Howe St & W 11th St/E 11th St
City: Southport

PEAK HOURS

Day: Tuesday
Date: 6/29/2021

AM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					W 11th St/E 11th St Eastbound					W 11th St/E 11th St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	1	33	0	0	34	6	77	14	0	97	19	0	0	0	19	0	0	5	0	5	155
8:15 AM	3	31	0	0	34	9	104	14	0	127	28	3	2	0	33	0	0	4	0	4	198
8:30 AM	0	41	1	0	42	4	115	13	0	132	29	0	1	0	30	1	0	4	0	5	209
8:45 AM	2	44	0	0	46	9	116	12	0	137	35	1	5	0	41	0	0	2	0	2	226
Total Volume	6	149	1	0	156	28	412	53	0	493	111	4	8	0	123	1	0	15	0	16	788
% App. Total	3.8	95.5	0.6	0.0	100	5.7	83.6	10.8	0.0	100	90.2	3.3	6.5	0.0	100	6.3	0.0	93.8	0.0	100	
PHF					0.848					0.900					0.750					0.800	0.872
Cars, PU, Vans	6	147	1	0	154	27	401	50	0	478	105	4	8	0	117	0	0	14	0	14	763
% Cars, PU, Vans	100.0	98.7	100.0	0.0	98.7	96.4	97.3	94.3	0.0	97.0	94.6	100.0	100.0	0.0	95.1	0.0	0.0	93.3	0.0	87.5	96.8
Heavy trucks	0	2	0	0	2	1	11	3	0	15	6	0	0	0	6	1	0	1	0	2	25
%Heavy trucks	0.0	1.3	0.0	0.0	1.3	3.6	2.7	5.7	0.0	3.0	5.4	0.0	0.0	0.0	4.9	100.0	0.0	6.7	0.0	12.5	3.2

PM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					W 11th St/E 11th St Eastbound					W 11th St/E 11th St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	106	2	0	108	7	112	11	0	130	47	0	1	0	48	1	1	17	0	19	305
4:15 PM	1	82	1	0	84	7	130	9	0	146	51	0	2	0	53	0	0	7	0	7	290
4:30 PM	0	79	3	0	82	9	98	16	0	123	59	0	2	0	61	0	0	7	0	7	273
4:45 PM	1	71	0	0	72	7	119	15	0	141	40	1	3	0	44	0	1	10	0	11	268
Total Volume	2	338	6	0	346	30	459	51	0	540	197	1	8	0	206	1	2	41	0	44	1136
% App. Total	0.6	97.7	1.7	0.0	100	5.6	85.0	9.4	0.0	100	95.6	0.5	3.9	0.0	100	2.3	4.5	93.2	0.0	100	
PHF					0.801					0.925					0.844					0.579	0.931
Cars, PU, Vans	2	331	5	0	338	28	455	51	0	534	193	1	8	0	202	1	2	39	0	42	1116
% Cars, PU, Vans	100.0	97.9	83.3	0.0	97.7	93.3	99.1	100.0	0.0	98.9	98.0	100.0	100.0	0.0	98.1	100.0	100.0	95.1	0.0	95.5	98.2
Heavy trucks	0	7	1	0	8	2	4	0	0	6	4	0	0	0	4	0	0	2	0	2	20
%Heavy trucks	0.0	2.1	16.7	0.0	2.3	6.7	0.9	0.0	0.0	1.1	2.0	0.0	0.0	0.0	1.9	0.0	0.0	4.9	0.0	4.5	1.8

Project ID: 21-160049-003
Location: SR 211/N Howe St & Fodale Ave/Southport Fire Dept Dwy
City: Southport

Day: Tuesday
Date: 6/29/2021

Groups Printed - Cars, PU, Vans - Heavy Trucks

	SR 211/N Howe St Northbound						SR 211/N Howe St Southbound						Fodale Ave/Southport Fire Dept Dwy Eastbound						Fodale Ave/Southport Fire Dept Dwy Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	6	0	0	0	6	18	26	0	0	0	44	0	0	0	0	0	0	0	0	19	0	0	19	69
7:15 AM	0	3	1	0	0	4	34	39	0	0	0	73	0	0	0	0	0	0	1	0	24	0	0	25	102
7:30 AM	0	1	1	0	0	2	26	50	0	0	0	76	0	0	0	0	0	0	0	0	28	0	0	28	106
7:45 AM	0	2	2	0	0	4	41	57	0	0	0	98	0	0	0	0	1	0	3	0	29	0	0	32	134
Total	0	12	4	0	0	16	119	172	0	0	0	291	0	0	0	0	1	0	4	0	100	0	0	104	411
8:00 AM	0	10	1	0	0	11	29	47	0	0	0	76	0	0	0	0	0	0	1	0	24	0	1	25	112
8:15 AM	0	6	0	0	0	6	33	73	0	0	0	106	0	0	0	0	0	0	0	0	28	0	1	28	140
8:30 AM	0	4	1	0	0	5	43	73	0	0	0	116	0	0	0	0	0	0	3	0	38	0	1	41	162
8:45 AM	0	10	2	0	0	12	43	79	0	0	0	122	0	0	0	0	0	0	1	0	38	0	1	39	173
Total	0	30	4	0	0	34	148	272	0	0	0	420	0	0	0	0	0	0	5	0	128	0	4	133	587
BREAK																									
4:00 PM	0	15	2	0	0	17	52	58	0	0	0	110	1	0	0	0	0	1	1	0	88	0	0	89	217
4:15 PM	0	6	2	0	0	8	44	91	1	0	0	136	0	0	0	0	0	0	2	0	78	0	0	80	224
4:30 PM	0	6	1	0	0	7	35	63	0	0	0	98	0	0	0	0	0	0	6	0	76	0	0	82	187
4:45 PM	0	10	1	0	0	11	46	75	0	0	1	121	0	0	0	0	1	0	1	0	64	1	0	66	198
Total	0	37	6	0	0	43	177	287	1	0	1	465	1	0	0	0	1	1	10	0	306	1	0	317	826
5:00 PM	0	15	2	0	0	17	28	64	1	1	0	94	0	0	1	0	0	1	1	0	71	0	0	72	184
5:15 PM	0	12	1	0	0	13	38	71	0	0	0	109	0	0	0	0	0	0	0	0	51	0	0	51	173
5:30 PM	0	11	1	0	0	12	38	59	0	0	0	97	0	0	0	0	0	0	0	0	62	0	1	62	171
5:45 PM	0	10	2	0	0	12	29	66	0	0	0	95	0	0	0	0	0	0	1	0	49	0	0	50	157
Total	0	48	6	0	0	54	133	260	1	1	0	395	0	0	1	0	0	1	2	0	233	0	1	235	685
Grand Total	0	127	20	0	0	147	577	991	2	1	1	1571	1	0	1	0	2	2	21	0	767	1	5	789	2509
Apprch %	0.0	86.4	13.6	0.0	0.0		36.7	63.1	0.1	0.1	0.1		50.0	0.0	50.0	0.0	100.0		2.7	0.0	97.2	0.1	0.6		
Total %	0.0	5.1	0.8	0.0	0.0	5.9	23.0	39.5	0.1	0.0	0.0	62.6	0.0	0.0	0.0	0.0	0.1	0.1	0.8	0.0	30.6	0.0	0.2	31.4	
Cars, PU, Vans	0	125	19	0		144	571	977	2	1		1551	1	0	1	0		2	21	0	757	1		779	2476
% Cars, PU, Vans	0.0	98.4	95.0	0.0		98.0	99.0	98.6	100.0	100.0		98.7	100.0	0.0	100.0	0.0		100.0	100.0	0.0	98.7	100.0		98.7	98.7
Heavy trucks	0	2	1	0		3	6	14	0	0		20	0	0	0	0		0	0	0	10	0		10	33
%Heavy trucks	0.0	1.6	5.0	0.0		2.0	1.0	1.4	0.0	0.0		1.3	0.0	0.0	0.0	0.0		0.0	0.0	0.0	1.3	0.0		1.3	1.3

Project ID: 21-160049-003
Location: SR 211/N Howe St & Fodale Ave/Southport Fire Dep
City: Southport

PEAK HOURS

Day: Tuesday
Date: 6/29/2021

AM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					Fodale Ave/Southport Fire Dept Dwy Eastbound					Fodale Ave/Southport Fire Dept Dwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	0	10	1	0	11	29	47	0	0	76	0	0	0	0	0	1	0	24	0	25	112
8:15 AM	0	6	0	0	6	33	73	0	0	106	0	0	0	0	0	0	0	28	0	28	140
8:30 AM	0	4	1	0	5	43	73	0	0	116	0	0	0	0	0	3	0	38	0	41	162
8:45 AM	0	10	2	0	12	43	79	0	0	122	0	0	0	0	0	1	0	38	0	39	173
Total Volume	0	30	4	0	34	148	272	0	0	420	0	0	0	0	0	5	0	128	0	133	587
% App. Total	0.0	88.2	11.8	0.0	100	35.2	64.8	0.0	0.0	100	0.0	0.0	0.0	0.0	0	3.8	0.0	96.2	0.0	100	
PHF					0.708					0.861										0.811	0.848
Cars, PU, Vans	0	29	3	0	32	144	264	0	0	408	0	0	0	0	0	5	0	127	0	132	572
% Cars, PU, Vans	0.0	96.7	75.0	0.0	94.1	97.3	97.1	0.0	0.0	97.1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	99.2	0.0	99.2	97.4
Heavy trucks	0	1	1	0	2	4	8	0	0	12	0	0	0	0	0	0	0	1	0	1	15
%Heavy trucks	0.0	3.3	25.0	0.0	5.9	2.7	2.9	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8	2.6

PM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					Fodale Ave/Southport Fire Dept Dwy Eastbound					Fodale Ave/Southport Fire Dept Dwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	15	2	0	17	52	58	0	0	110	1	0	0	0	1	1	0	88	0	89	217
4:15 PM	0	6	2	0	8	44	91	1	0	136	0	0	0	0	0	2	0	78	0	80	224
4:30 PM	0	6	1	0	7	35	63	0	0	98	0	0	0	0	0	6	0	76	0	82	187
4:45 PM	0	10	1	0	11	46	75	0	0	121	0	0	0	0	0	1	0	64	1	66	198
Total Volume	0	37	6	0	43	177	287	1	0	465	1	0	0	0	1	10	0	306	1	317	826
% App. Total	0.0	86.0	14.0	0.0	100	38.1	61.7	0.2	0.0	100	100.0	0.0	0.0	0.0	100	3.2	0.0	96.5	0.3	100	
PHF					0.632					0.855					0.250					0.890	0.922
Cars, PU, Vans	0	36	6	0	42	176	284	1	0	461	1	0	0	0	1	10	0	300	1	311	815
% Cars, PU, Vans	0.0	97.3	100.0	0.0	97.7	99.4	99.0	100.0	0.0	99.1	100.0	0.0	0.0	0.0	100.0	100.0	0.0	98.0	100.0	98.1	98.7
Heavy trucks	0	1	0	0	1	1	3	0	0	4	0	0	0	0	0	0	0	6	0	6	11
%Heavy trucks	0.0	2.7	0.0	0.0	2.3	0.6	1.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.9	1.3

Project ID: 21-160049-005
Location: SR 211/N Howe St & W West St/E West St
City: Southport

Day: Tuesday
Date: 6/29/2021

Groups Printed - Cars, PU, Vans - Heavy Trucks

	SR 211/N Howe St Northbound						SR 211/N Howe St Southbound						W West St/E West St Eastbound						W West St/E West St Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	9	0	0	1	9	0	4	2	0	0	6	3	1	1	0	2	5	0	0	0	0	1	0	20
7:15 AM	2	4	0	0	0	6	1	6	1	0	4	8	5	0	0	0	2	5	0	0	0	0	0	0	19
7:30 AM	0	10	2	0	0	12	0	19	2	0	4	21	0	2	1	0	2	3	2	0	1	0	2	3	39
7:45 AM	2	10	0	0	0	12	0	25	5	0	2	30	2	1	1	0	3	4	0	0	1	0	2	1	47
Total	4	33	2	0	1	39	1	54	10	0	10	65	10	4	3	0	9	17	2	0	2	0	5	4	125
8:00 AM	0	10	0	0	0	10	2	11	2	0	3	15	4	0	2	0	0	6	0	1	0	0	3	1	32
8:15 AM	3	25	0	0	0	28	2	19	1	2	4	24	1	3	5	0	1	9	0	0	0	0	2	0	61
8:30 AM	0	20	1	0	0	21	0	26	3	0	0	29	0	0	6	0	0	6	1	0	0	0	0	1	57
8:45 AM	4	10	0	0	0	14	1	28	0	0	1	29	6	3	2	0	1	11	0	0	3	0	3	3	57
Total	7	65	1	0	0	73	5	84	6	2	8	97	11	6	15	0	2	32	1	1	3	0	8	5	207
BREAK																									
4:00 PM	7	50	1	0	0	58	1	32	2	0	0	35	8	0	8	0	7	16	0	0	1	0	1	1	110
4:15 PM	1	54	0	0	0	55	2	22	1	0	0	25	7	2	3	0	5	12	0	0	1	0	0	1	93
4:30 PM	2	31	0	0	0	33	2	28	1	0	0	31	8	2	9	0	1	19	0	0	0	0	1	0	83
4:45 PM	0	41	1	1	0	43	1	36	3	0	0	40	7	3	7	0	1	17	0	0	4	0	1	4	104
Total	10	176	2	1	0	189	6	118	7	0	0	131	30	7	27	0	14	64	0	0	6	0	3	6	390
5:00 PM	6	45	0	0	0	51	1	24	1	0	0	26	6	0	4	0	6	10	0	0	2	0	0	2	89
5:15 PM	2	30	0	0	0	32	1	20	2	0	0	23	13	1	10	0	6	24	0	1	1	0	2	2	81
5:30 PM	1	26	1	0	0	28	1	30	2	0	1	33	8	2	5	0	1	15	0	0	1	0	1	1	77
5:45 PM	0	41	2	0	0	43	1	34	2	0	0	37	5	2	5	0	2	12	0	0	0	0	5	0	92
Total	9	142	3	0	0	154	4	108	7	0	1	119	32	5	24	0	15	61	0	1	4	0	8	5	339
Grand Total	30	416	8	1	1	455	16	364	30	2	19	412	83	22	69	0	40	174	3	2	15	0	24	20	1061
Apprch %	6.6	91.4	1.8	0.2	0.2		3.9	88.3	7.3	0.5	4.6		47.7	12.6	39.7	0.0	23.0		15.0	10.0	75.0	0.0	120.0		
Total %	2.8	39.2	0.8	0.1	0.1	42.9	1.5	34.3	2.8	0.2	1.8	38.8	7.8	2.1	6.5	0.0	3.8	16.4	0.3	0.2	1.4	0.0	2.3	1.9	
Cars, PU, Vans	30	408	8	1		447	16	360	27	2		405	82	22	68	0		172	3	2	15	0		20	1044
% Cars, PU, Vans	100.0	98.1	100.0	100.0		98.2	100.0	98.9	90.0	100.0		98.3	98.8	100.0	98.6	0.0		98.9	100.0	100.0	100.0	0.0		100.0	98.4
Heavy trucks	0	8	0	0		8	0	4	3	0		7	1	0	1	0		2	0	0	0	0		0	17
%Heavy trucks	0.0	1.9	0.0	0.0		1.8	0.0	1.1	10.0	0.0		1.7	1.2	0.0	1.4	0.0		1.1	0.0	0.0	0.0	0.0		0.0	1.6

Project ID: 21-160049-005
Location: SR 211/N Howe St & W West St/E West St
City: Southport

PEAK HOURS

Day: Tuesday
Date: 6/29/2021

AM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					W West St/E West St Eastbound					W West St/E West St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	0	10	0	0	10	2	11	2	0	15	4	0	2	0	6	0	1	0	0	1	32
8:15 AM	3	25	0	0	28	2	19	1	2	24	1	3	5	0	9	0	0	0	0	0	61
8:30 AM	0	20	1	0	21	0	26	3	0	29	0	0	6	0	6	1	0	0	0	1	57
8:45 AM	4	10	0	0	14	1	28	0	0	29	6	3	2	0	11	0	0	3	0	3	57
Total Volume	7	65	1	0	73	5	84	6	2	97	11	6	15	0	32	1	1	3	0	5	207
% App. Total	9.6	89.0	1.4	0.0	100	5.2	86.6	6.2	2.1	100	34.4	18.8	46.9	0.0	100	20.0	20.0	60.0	0.0	100	
PHF					0.652					0.836					0.727					0.417	0.848
Cars, PU, Vans	7	61	1	0	69	5	82	5	2	94	10	6	15	0	31	1	1	3	0	5	199
% Cars, PU, Vans	100.0	93.8	100.0	0.0	94.5	100.0	97.6	83.3	100.0	96.9	90.9	100.0	100.0	0.0	96.9	100.0	100.0	100.0	0.0	100.0	96.1
Heavy trucks	0	4	0	0	4	0	2	1	0	3	1	0	0	0	1	0	0	0	0	0	8
%Heavy trucks	0.0	6.2	0.0	0.0	5.5	0.0	2.4	16.7	0.0	3.1	9.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	3.9

PM

	SR 211/N Howe St Northbound					SR 211/N Howe St Southbound					W West St/E West St Eastbound					W West St/E West St Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	7	50	1	0	58	1	32	2	0	35	8	0	8	0	16	0	0	1	0	1	110
4:15 PM	1	54	0	0	55	2	22	1	0	25	7	2	3	0	12	0	0	1	0	1	93
4:30 PM	2	31	0	0	33	2	28	1	0	31	8	2	9	0	19	0	0	0	0	0	83
4:45 PM	0	41	1	1	43	1	36	3	0	40	7	3	7	0	17	0	0	4	0	4	104
Total Volume	10	176	2	1	189	6	118	7	0	131	30	7	27	0	64	0	0	6	0	6	390
% App. Total	5.3	93.1	1.1	0.5	100	4.6	90.1	5.3	0.0	100	46.9	10.9	42.2	0.0	100	0.0	0.0	100.0	0.0	100	
PHF					0.815					0.819					0.842					0.375	0.886
Cars, PU, Vans	10	175	2	1	188	6	118	7	0	131	30	7	27	0	64	0	0	6	0	6	389
% Cars, PU, Vans	100.0	99.4	100.0	100.0	99.5	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	100.0	99.7
Heavy trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
%Heavy trucks	0.0	0.6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

Project ID: 21-160049-006
Location: SR 211/N Howe St/S Howe St & W Moore St/E Moore St/SR 211
City: Southport

Day: Tuesday
Date: 6/29/2021

Groups Printed - Cars, PU, Vans - Heavy Trucks

	SR 211/N Howe St/S Howe St Northbound						SR 211/N Howe St/S Howe St Southbound						W Moore St/E Moore St/SR 211 Eastbound						W Moore St/E Moore St/SR 211 Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	2	0	0	2	2	0	5	0	1	1	6	0	1	0	0	2	1	0	1	3	0	1	4	13
7:15 AM	0	3	2	0	0	5	2	2	0	0	2	4	2	0	0	0	3	2	0	3	1	0	1	4	15
7:30 AM	0	2	2	0	1	4	5	5	3	0	0	13	2	0	0	0	7	2	0	5	3	0	2	8	27
7:45 AM	0	4	3	0	2	7	4	10	3	0	1	17	2	2	2	0	2	6	1	1	8	0	3	10	40
Total	0	11	7	0	5	18	11	22	6	1	4	40	6	3	2	0	14	11	1	10	15	0	7	26	95
8:00 AM	0	2	1	0	2	3	8	5	2	0	4	15	1	5	1	0	0	7	0	4	8	0	6	12	37
8:15 AM	0	7	1	0	1	8	6	12	3	0	7	21	2	1	0	0	2	3	1	1	11	0	7	13	45
8:30 AM	0	5	0	0	2	5	14	8	4	1	3	27	2	2	2	0	0	6	1	2	12	0	3	15	53
8:45 AM	0	8	1	0	2	9	5	14	5	0	1	24	2	5	1	0	2	8	0	6	7	0	1	13	54
Total	0	22	3	0	7	25	33	39	14	1	15	87	7	13	4	0	4	24	2	13	38	0	17	53	189
BREAK																									
4:00 PM	0	17	3	0	32	20	20	12	4	0	45	36	16	14	4	0	38	34	5	8	15	0	30	28	118
4:15 PM	3	21	6	0	29	30	13	12	3	0	20	28	8	10	1	0	9	19	6	9	14	0	27	29	106
4:30 PM	0	9	3	0	45	12	11	17	4	0	17	32	7	6	1	0	27	14	7	11	14	0	28	32	90
4:45 PM	0	10	3	0	36	13	13	23	6	0	26	42	6	10	0	0	21	16	0	5	12	0	23	17	88
Total	3	57	15	0	142	75	57	64	17	0	108	138	37	40	6	0	95	83	18	33	55	0	108	106	402
5:00 PM	2	16	4	0	14	22	9	16	6	0	54	31	15	6	5	0	35	26	1	8	9	0	27	18	97
5:15 PM	0	7	3	0	22	10	5	12	7	0	12	24	6	4	6	0	4	16	7	12	8	0	19	27	77
5:30 PM	0	8	3	0	14	11	8	12	3	0	13	23	6	12	3	0	7	21	2	5	17	0	7	24	79
5:45 PM	0	18	4	0	6	22	12	22	3	0	6	37	16	10	3	0	13	29	4	3	13	0	21	20	108
Total	2	49	14	0	56	65	34	62	19	0	85	115	43	32	17	0	59	92	14	28	47	0	74	89	361
Grand Total	5	139	39	0	210	183	135	187	56	2	212	380	93	88	29	0	172	210	35	84	155	0	206	274	1047
Apprch %	2.7	76.0	21.3	0.0	114.8		35.5	49.2	14.7	0.5	55.8		44.3	41.9	13.8	0.0	81.9		12.8	30.7	56.6	0.0	75.2		
Total %	0.5	13.3	3.7	0.0	20.1	17.5	12.9	17.9	5.3	0.2	20.2	36.3	8.9	8.4	2.8	0.0	16.4	20.1	3.3	8.0	14.8	0.0	19.7	26.2	
Cars, PU, Vans	5	137	38	0		180	135	184	55	2		376	92	86	29	0		207	35	82	151	0		268	1031
% Cars, PU, Vans	100.0	98.6	97.4	0.0		98.4	100.0	98.4	98.2	100.0		98.9	98.9	97.7	100.0	0.0		98.6	100.0	97.6	97.4	0.0		97.8	98.5
Heavy trucks	0	2	1	0		3	0	3	1	0		4	1	2	0	0		3	0	2	4	0		6	16
%Heavy trucks	0.0	1.4	2.6	0.0		1.6	0.0	1.6	1.8	0.0		1.1	1.1	2.3	0.0	0.0		1.4	0.0	2.4	2.6	0.0		2.2	1.5

Project ID: 21-160049-006
Location: SR 211/N Howe St/S Howe St & W Moore St/E Moor
City: Southport

PEAK HOURS

Day: Tuesday
Date: 6/29/2021

AM

	SR 211/N Howe St/S Howe St Northbound					SR 211/N Howe St/S Howe St Southbound					W Moore St/E Moore St/SR 211 Eastbound					W Moore St/E Moore St/SR 211 Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
8:00 AM	0	2	1	0	3	8	5	2	0	15	1	5	1	0	7	0	4	8	0	12	37
8:15 AM	0	7	1	0	8	6	12	3	0	21	2	1	0	0	3	1	1	11	0	13	45
8:30 AM	0	5	0	0	5	14	8	4	1	27	2	2	2	0	6	1	2	12	0	15	53
8:45 AM	0	8	1	0	9	5	14	5	0	24	2	5	1	0	8	0	6	7	0	13	54
Total Volume	0	22	3	0	25	33	39	14	1	87	7	13	4	0	24	2	13	38	0	53	189
% App. Total	0.0	88.0	12.0	0.0	100	37.9	44.8	16.1	1.1	100	29.2	54.2	16.7	0.0	100	3.8	24.5	71.7	0.0	100	
PHF					0.694					0.806					0.750					0.883	0.875
Cars, PU, Vans	0	20	3	0	23	33	37	14	1	85	6	11	4	0	21	2	12	37	0	51	180
% Cars, PU, Vans	0.0	90.9	100.0	0.0	92.0	100.0	94.9	100.0	100.0	97.7	85.7	84.6	100.0	0.0	87.5	100.0	92.3	97.4	0.0	96.2	95.2
Heavy trucks	0	2	0	0	2	0	2	0	0	2	1	2	0	0	3	0	1	1	0	2	9
%Heavy trucks	0.0	9.1	0.0	0.0	8.0	0.0	5.1	0.0	0.0	2.3	14.3	15.4	0.0	0.0	12.5	0.0	7.7	2.6	0.0	3.8	4.8

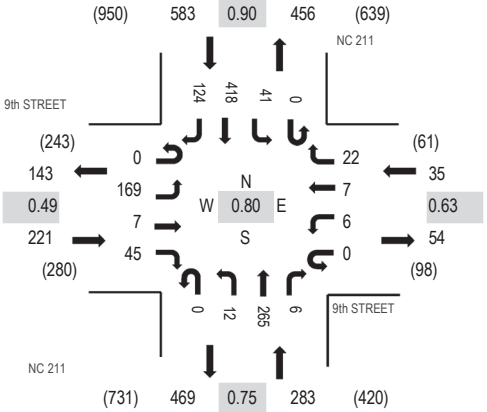
PM

	SR 211/N Howe St/S Howe St Northbound					SR 211/N Howe St/S Howe St Southbound					W Moore St/E Moore St/SR 211 Eastbound					W Moore St/E Moore St/SR 211 Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	17	3	0	20	20	12	4	0	36	16	14	4	0	34	5	8	15	0	28	118
4:15 PM	3	21	6	0	30	13	12	3	0	28	8	10	1	0	19	6	9	14	0	29	106
4:30 PM	0	9	3	0	12	11	17	4	0	32	7	6	1	0	14	7	11	14	0	32	90
4:45 PM	0	10	3	0	13	13	23	6	0	42	6	10	0	0	16	0	5	12	0	17	88
Total Volume	3	57	15	0	75	57	64	17	0	138	37	40	6	0	83	18	33	55	0	106	402
% App. Total	4.0	76.0	20.0	0.0	100	41.3	46.4	12.3	0.0	100	44.6	48.2	7.2	0.0	100	17.0	31.1	51.9	0.0	100	
PHF					0.625					0.821					0.610					0.828	0.852
Cars, PU, Vans	3	57	14	0	74	57	64	17	0	138	37	40	6	0	83	18	33	55	0	106	401
% Cars, PU, Vans	100.0	100.0	93.3	0.0	98.7	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	0.0	100.0	99.8
Heavy trucks	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
%Heavy trucks	0.0	0.0	6.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

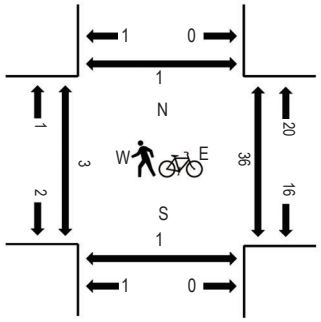
Location: 1 NC 211 & 9th STREET AM
Date: Wednesday, September 15, 2021
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	9th STREET Eastbound				9th STREET Westbound				NC 211 Northbound				NC 211 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	7	2	2	0	0	0	4	0	1	27	0	0	5	38	6	92	589	0	3	0	0
7:15 AM	0	9	1	2	0	1	2	10	0	2	26	0	0	12	51	8	124	726	1	6	0	0
7:30 AM	0	12	0	3	0	0	2	0	0	4	33	1	0	6	53	24	138	952	0	4	0	0
7:45 AM	0	15	2	4	0	0	2	5	0	6	35	2	0	13	108	43	235	1,095	0	12	0	0
8:00 AM	0	25	1	5	0	1	5	3	0	3	37	0	0	8	84	57	229	1,122	0	1	0	0
8:15 AM	0	88	3	23	0	0	1	4	0	3	59	2	0	10	115	42	350		0	7	0	0
8:30 AM	0	45	3	10	0	2	0	5	0	4	88	2	0	11	100	11	281		0	12	0	1
8:45 AM	0	11	0	7	0	3	1	10	0	2	81	2	0	12	119	14	262		1	16	1	0

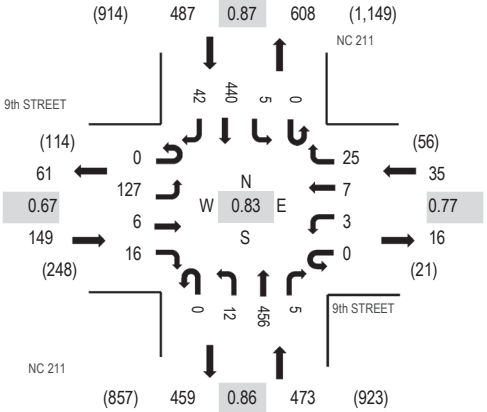
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Lights	0	166	6	44	0	6	6	22	0	11	254	6	0	41	405	123	1,090
Mediums	0	3	1	1	0	0	1	0	0	1	11	0	0	0	11	1	30
Total	0	169	7	45	0	6	7	22	0	12	265	6	0	41	418	124	1,122

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

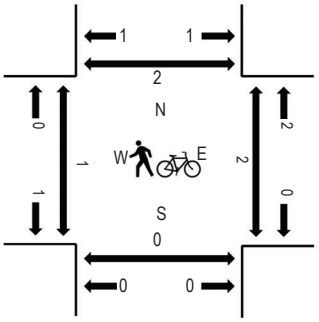
Location: 1 NC 211 & 9th STREET PM
Date: Wednesday, September 15, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	9th STREET Eastbound				9th STREET Westbound				NC 211 Northbound				NC 211 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	44	5	7	0	0	1	9	0	4	131	3	0	1	132	7	344	1,144	0	0	0	1
4:15 PM	0	34	0	4	0	1	2	7	0	2	112	1	0	1	100	12	276	1,090	0	2	0	1
4:30 PM	0	25	1	3	0	1	4	6	0	2	106	1	0	1	95	9	254	1,047	0	0	0	0
4:45 PM	0	24	0	2	0	1	0	3	0	4	107	0	0	2	113	14	270	1,028	0	0	0	0
5:00 PM	0	33	0	3	0	2	0	10	0	2	135	0	0	1	92	12	290	997	0	0	0	0
5:15 PM	0	29	0	2	0	1	2	1	0	4	96	0	0	1	89	8	233		0	0	0	0
5:30 PM	0	17	0	4	0	0	0	2	0	4	105	2	0	1	89	11	235		0	0	0	1
5:45 PM	0	10	0	1	0	0	0	3	0	2	100	0	0	0	115	8	239		0	0	0	0

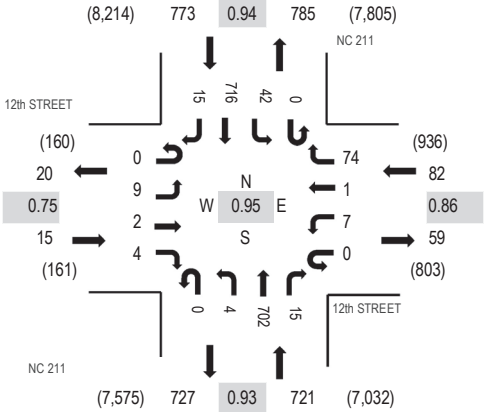
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5
Lights	0	123	5	16	0	3	7	25	0	12	444	5	0	5	430	41	1,116
Mediums	0	4	1	0	0	0	0	0	0	0	10	0	0	0	7	1	23
Total	0	127	6	16	0	3	7	25	0	12	456	5	0	5	440	42	1,144

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

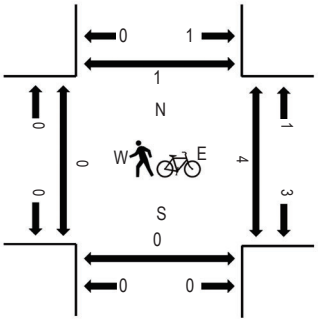
Location: 2 NC 211 & 12th STREET AM
Date: Wednesday, September 15, 2021
Peak Hour: 11:30 AM - 12:30 PM
Peak 15-Minutes: 11:45 AM - 12:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	12th STREET Eastbound				12th STREET Westbound				NC 211 Northbound				NC 211 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
6:00 AM	0	1	0	0	0	0	0	5	0	0	7	1	0	11	39	0	64	426	0	0	1	0
6:15 AM	0	0	0	0	0	0	0	5	0	0	20	0	0	14	37	1	77	500	0	0	0	0
6:30 AM	0	1	1	0	0	1	0	5	0	0	25	0	0	10	76	0	119	598	0	0	0	0
6:45 AM	0	1	0	1	0	2	0	8	0	0	38	0	0	16	98	2	166	665	1	0	0	0
7:00 AM	0	0	1	0	0	2	1	7	0	0	50	0	0	11	65	1	138	809	0	0	0	0
7:15 AM	0	1	3	0	0	1	0	9	0	1	56	0	0	13	89	2	175	960	0	0	0	0
7:30 AM	0	2	0	0	0	1	0	15	0	0	43	0	0	14	110	1	186	1,184	0	0	0	0
7:45 AM	0	1	1	1	0	2	0	11	0	0	74	2	0	17	199	2	310	1,318	0	0	0	0
8:00 AM	0	1	0	1	0	2	0	18	0	0	81	0	0	9	177	0	289	1,323	0	0	2	0
8:15 AM	0	2	1	0	0	2	1	26	0	0	147	0	0	14	205	1	399	1,317	0	1	0	0
8:30 AM	0	1	0	2	0	2	2	20	0	0	143	2	0	11	134	3	320	1,223	0	1	0	0
8:45 AM	0	0	1	0	0	1	1	9	0	0	112	1	0	15	173	2	315	1,186	0	0	2	0
9:00 AM	0	1	0	0	0	4	1	22	0	1	103	5	0	6	140	0	283	1,194	0	0	0	0
9:15 AM	0	1	0	0	0	3	0	9	0	0	127	0	0	6	158	1	305	1,242	0	0	0	0
9:30 AM	0	1	1	0	0	1	0	14	0	0	114	1	0	9	140	2	283	1,296	0	0	0	0
9:45 AM	0	5	0	0	0	1	0	12	0	0	117	3	0	11	174	0	323	1,305	0	0	0	0
10:00 AM	0	0	1	2	0	0	0	14	0	0	128	0	0	11	174	1	331	1,310	0	0	0	0
10:15 AM	0	1	0	0	0	2	0	22	0	0	168	3	0	8	152	3	359	1,339	0	0	0	0
10:30 AM	0	2	1	2	0	2	1	11	0	1	126	1	0	11	134	0	292	1,352	0	0	0	0
10:45 AM	0	0	0	1	0	1	1	10	0	1	131	0	0	11	168	4	328	1,466	0	0	0	0
11:00 AM	0	2	0	0	0	0	1	11	0	0	168	2	0	8	167	1	360	1,556	0	0	0	0
11:15 AM	0	4	0	0	0	1	0	11	0	2	149	2	0	10	191	2	372	1,580	0	0	0	0
11:30 AM	0	1	1	1	0	2	1	13	0	0	168	6	0	9	204	0	406	1,591	0	0	0	0
11:45 AM	0	1	0	0	0	0	0	24	0	0	183	2	0	8	196	4	418	1,581	0	0	0	0
12:00 PM	0	4	1	0	0	2	0	15	0	1	183	3	0	12	159	4	384	1,531	0	0	0	0
12:15 PM	0	3	0	3	0	3	0	22	0	3	168	4	0	13	157	7	383	1,551	0	2	0	0
12:30 PM	0	4	0	1	0	1	0	17	0	1	165	5	0	11	187	4	396	1,547	0	2	0	0
12:45 PM	0	0	0	0	0	1	1	12	0	1	162	3	0	12	175	1	368	1,493	0	3	0	1
1:00 PM	0	2	1	3	0	1	0	19	0	0	164	5	0	13	191	5	404	1,520	0	0	0	0
1:15 PM	0	4	0	0	0	2	0	12	0	0	168	2	0	17	174	0	379	1,492	0	0	0	0
1:30 PM	0	0	0	1	0	1	0	15	0	0	147	7	0	7	162	2	342	1,441	0	0	1	0
1:45 PM	0	2	0	1	0	2	1	23	0	1	177	4	0	17	166	1	395	1,457	0	0	0	0
2:00 PM	0	1	0	0	0	1	0	18	0	0	178	4	0	18	152	4	376	1,428	0	0	0	0
2:15 PM	0	3	0	3	0	2	0	23	0	1	164	3	0	11	115	3	328	1,439	0	0	0	0
2:30 PM	0	1	0	4	0	0	1	24	0	1	142	2	0	12	168	3	358	1,487	0	0	0	0

2:45 PM	0	2	0	0	0	3	1	18	0	1	140	2	0	13	181	5	366	1,508	0	2	0	0
3:00 PM	0	1	1	1	0	7	0	13	0	0	176	5	0	17	165	1	387	1,558	0	0	2	0
3:15 PM	0	1	0	2	0	4	0	23	0	1	170	2	0	15	156	2	376	1,560	0	2	0	0
3:30 PM	0	3	0	1	0	0	0	20	0	1	166	6	0	10	169	3	379	1,526	0	2	0	0
3:45 PM	0	4	0	2	0	0	1	21	0	0	196	3	0	22	166	1	416	1,488	0	1	0	1
4:00 PM	0	1	1	0	0	1	1	26	0	2	193	7	0	9	146	2	389	1,405	0	1	0	0
4:15 PM	0	1	1	1	0	1	1	19	0	2	165	4	0	17	125	5	342	1,394	0	1	0	0
4:30 PM	0	2	0	2	0	1	2	26	0	2	172	5	0	12	115	2	341	1,367	0	0	0	0
4:45 PM	0	0	0	1	0	2	1	13	0	1	152	6	0	12	141	4	333	1,338	0	0	0	0
5:00 PM	0	1	0	1	0	1	0	27	0	0	197	1	0	25	121	4	378	1,296	0	1	0	3
5:15 PM	0	6	1	0	0	1	1	19	0	1	153	3	0	18	110	2	315	1,170	0	1	0	0
5:30 PM	0	5	0	1	0	1	0	22	0	0	136	7	0	14	122	4	312	1,084	1	0	1	0
5:45 PM	0	6	0	0	0	1	0	18	0	1	123	3	0	10	126	3	291	1,040	0	0	0	0
6:00 PM	0	1	0	0	0	3	0	24	0	0	108	5	0	17	91	3	252	987	0	0	0	0
6:15 PM	0	3	0	2	0	3	0	11	0	0	101	0	0	13	95	1	229		0	0	1	0
6:30 PM	0	3	1	1	0	0	0	16	0	0	114	1	0	9	122	1	268		0	0	0	0
6:45 PM	0	4	0	2	0	1	0	9	0	0	113	1	0	11	95	2	238		0	0	0	0

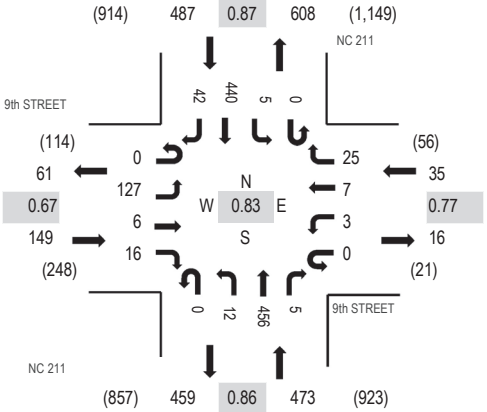
Peak Rolling Hour Flow Rates

	Eastbound				Westbound				Northbound				Southbound				
Vehicle Type	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Lights	0	8	2	4	0	7	1	72	0	4	690	14	0	41	705	15	1,563
Mediums	0	1	0	0	0	0	0	2	0	0	10	1	0	1	9	0	24
Total	0	9	2	4	0	7	1	74	0	4	702	15	0	42	716	15	1,591

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

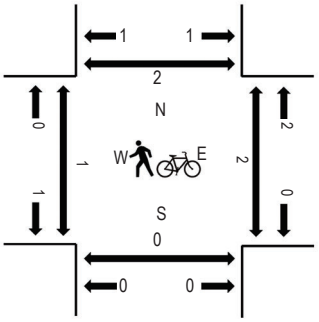
Location: 1 NC 211 & 9th STREET PM
Date: Wednesday, September 15, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	9th STREET Eastbound				9th STREET Westbound				NC 211 Northbound				NC 211 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	44	5	7	0	0	1	9	0	4	131	3	0	1	132	7	344	1,144	0	0	0	1
4:15 PM	0	34	0	4	0	1	2	7	0	2	112	1	0	1	100	12	276	1,090	0	2	0	1
4:30 PM	0	25	1	3	0	1	4	6	0	2	106	1	0	1	95	9	254	1,047	0	0	0	0
4:45 PM	0	24	0	2	0	1	0	3	0	4	107	0	0	2	113	14	270	1,028	0	0	0	0
5:00 PM	0	33	0	3	0	2	0	10	0	2	135	0	0	1	92	12	290	997	0	0	0	0
5:15 PM	0	29	0	2	0	1	2	1	0	4	96	0	0	1	89	8	233		0	0	0	0
5:30 PM	0	17	0	4	0	0	0	2	0	4	105	2	0	1	89	11	235		0	0	0	1
5:45 PM	0	10	0	1	0	0	0	3	0	2	100	0	0	0	115	8	239		0	0	0	0

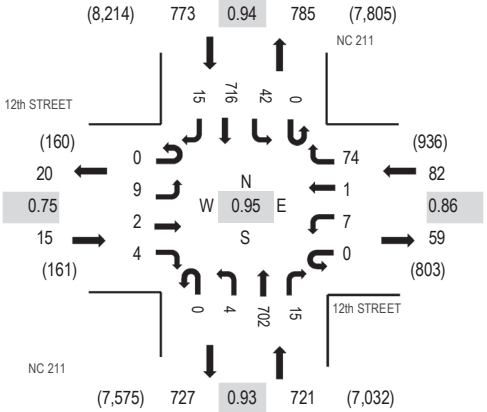
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5
Lights	0	123	5	16	0	3	7	25	0	12	444	5	0	5	430	41	1,116
Mediums	0	4	1	0	0	0	0	0	0	0	10	0	0	0	7	1	23
Total	0	127	6	16	0	3	7	25	0	12	456	5	0	5	440	42	1,144

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

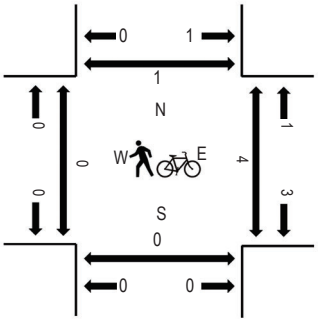
Location: 2 NC 211 & 12th STREET AM
Date: Wednesday, September 15, 2021
Peak Hour: 11:30 AM - 12:30 PM
Peak 15-Minutes: 11:45 AM - 12:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	12th STREET Eastbound				12th STREET Westbound				NC 211 Northbound				NC 211 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
6:00 AM	0	1	0	0	0	0	0	5	0	0	7	1	0	11	39	0	64	426	0	0	1	0
6:15 AM	0	0	0	0	0	0	0	5	0	0	20	0	0	14	37	1	77	500	0	0	0	0
6:30 AM	0	1	1	0	0	1	0	5	0	0	25	0	0	10	76	0	119	598	0	0	0	0
6:45 AM	0	1	0	1	0	2	0	8	0	0	38	0	0	16	98	2	166	665	1	0	0	0
7:00 AM	0	0	1	0	0	2	1	7	0	0	50	0	0	11	65	1	138	809	0	0	0	0
7:15 AM	0	1	3	0	0	1	0	9	0	1	56	0	0	13	89	2	175	960	0	0	0	0
7:30 AM	0	2	0	0	0	1	0	15	0	0	43	0	0	14	110	1	186	1,184	0	0	0	0
7:45 AM	0	1	1	1	0	2	0	11	0	0	74	2	0	17	199	2	310	1,318	0	0	0	0
8:00 AM	0	1	0	1	0	2	0	18	0	0	81	0	0	9	177	0	289	1,323	0	0	2	0
8:15 AM	0	2	1	0	0	2	1	26	0	0	147	0	0	14	205	1	399	1,317	0	1	0	0
8:30 AM	0	1	0	2	0	2	2	20	0	0	143	2	0	11	134	3	320	1,223	0	1	0	0
8:45 AM	0	0	1	0	0	1	1	9	0	0	112	1	0	15	173	2	315	1,186	0	0	2	0
9:00 AM	0	1	0	0	0	4	1	22	0	1	103	5	0	6	140	0	283	1,194	0	0	0	0
9:15 AM	0	1	0	0	0	3	0	9	0	0	127	0	0	6	158	1	305	1,242	0	0	0	0
9:30 AM	0	1	1	0	0	1	0	14	0	0	114	1	0	9	140	2	283	1,296	0	0	0	0
9:45 AM	0	5	0	0	0	1	0	12	0	0	117	3	0	11	174	0	323	1,305	0	0	0	0
10:00 AM	0	0	1	2	0	0	0	14	0	0	128	0	0	11	174	1	331	1,310	0	0	0	0
10:15 AM	0	1	0	0	0	2	0	22	0	0	168	3	0	8	152	3	359	1,339	0	0	0	0
10:30 AM	0	2	1	2	0	2	1	11	0	1	126	1	0	11	134	0	292	1,352	0	0	0	0
10:45 AM	0	0	0	1	0	1	1	10	0	1	131	0	0	11	168	4	328	1,466	0	0	0	0
11:00 AM	0	2	0	0	0	0	1	11	0	0	168	2	0	8	167	1	360	1,556	0	0	0	0
11:15 AM	0	4	0	0	0	1	0	11	0	2	149	2	0	10	191	2	372	1,580	0	0	0	0
11:30 AM	0	1	1	1	0	2	1	13	0	0	168	6	0	9	204	0	406	1,591	0	0	0	0
11:45 AM	0	1	0	0	0	0	0	24	0	0	183	2	0	8	196	4	418	1,581	0	0	0	0
12:00 PM	0	4	1	0	0	2	0	15	0	1	183	3	0	12	159	4	384	1,531	0	0	0	0
12:15 PM	0	3	0	3	0	3	0	22	0	3	168	4	0	13	157	7	383	1,551	0	2	0	0
12:30 PM	0	4	0	1	0	1	0	17	0	1	165	5	0	11	187	4	396	1,547	0	2	0	0
12:45 PM	0	0	0	0	0	1	1	12	0	1	162	3	0	12	175	1	368	1,493	0	3	0	1
1:00 PM	0	2	1	3	0	1	0	19	0	0	164	5	0	13	191	5	404	1,520	0	0	0	0
1:15 PM	0	4	0	0	0	2	0	12	0	0	168	2	0	17	174	0	379	1,492	0	0	0	0
1:30 PM	0	0	0	1	0	1	0	15	0	0	147	7	0	7	162	2	342	1,441	0	0	1	0
1:45 PM	0	2	0	1	0	2	1	23	0	1	177	4	0	17	166	1	395	1,457	0	0	0	0
2:00 PM	0	1	0	0	0	1	0	18	0	0	178	4	0	18	152	4	376	1,428	0	0	0	0
2:15 PM	0	3	0	3	0	2	0	23	0	1	164	3	0	11	115	3	328	1,439	0	0	0	0
2:30 PM	0	1	0	4	0	0	1	24	0	1	142	2	0	12	168	3	358	1,487	0	0	0	0

2:45 PM	0	2	0	0	0	3	1	18	0	1	140	2	0	13	181	5	366	1,508	0	2	0	0
3:00 PM	0	1	1	1	0	7	0	13	0	0	176	5	0	17	165	1	387	1,558	0	0	2	0
3:15 PM	0	1	0	2	0	4	0	23	0	1	170	2	0	15	156	2	376	1,560	0	2	0	0
3:30 PM	0	3	0	1	0	0	0	20	0	1	166	6	0	10	169	3	379	1,526	0	2	0	0
3:45 PM	0	4	0	2	0	0	1	21	0	0	196	3	0	22	166	1	416	1,488	0	1	0	1
4:00 PM	0	1	1	0	0	1	1	26	0	2	193	7	0	9	146	2	389	1,405	0	1	0	0
4:15 PM	0	1	1	1	0	1	1	19	0	2	165	4	0	17	125	5	342	1,394	0	1	0	0
4:30 PM	0	2	0	2	0	1	2	26	0	2	172	5	0	12	115	2	341	1,367	0	0	0	0
4:45 PM	0	0	0	1	0	2	1	13	0	1	152	6	0	12	141	4	333	1,338	0	0	0	0
5:00 PM	0	1	0	1	0	1	0	27	0	0	197	1	0	25	121	4	378	1,296	0	1	0	3
5:15 PM	0	6	1	0	0	1	1	19	0	1	153	3	0	18	110	2	315	1,170	0	1	0	0
5:30 PM	0	5	0	1	0	1	0	22	0	0	136	7	0	14	122	4	312	1,084	1	0	1	0
5:45 PM	0	6	0	0	0	1	0	18	0	1	123	3	0	10	126	3	291	1,040	0	0	0	0
6:00 PM	0	1	0	0	0	3	0	24	0	0	108	5	0	17	91	3	252	987	0	0	0	0
6:15 PM	0	3	0	2	0	3	0	11	0	0	101	0	0	13	95	1	229		0	0	1	0
6:30 PM	0	3	1	1	0	0	0	16	0	0	114	1	0	9	122	1	268		0	0	0	0
6:45 PM	0	4	0	2	0	1	0	9	0	0	113	1	0	11	95	2	238		0	0	0	0

Peak Rolling Hour Flow Rates

	Eastbound				Westbound				Northbound				Southbound				
Vehicle Type	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Lights	0	8	2	4	0	7	1	72	0	4	690	14	0	41	705	15	1,563
Mediums	0	1	0	0	0	0	0	2	0	0	10	1	0	1	9	0	24
Total	0	9	2	4	0	7	1	74	0	4	702	15	0	42	716	15	1,591

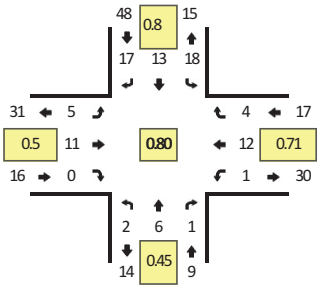
Type of peak hour being reported: Intersection Peak

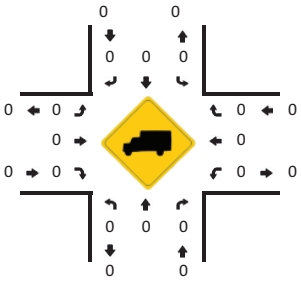
Method for determining peak hour: Total Entering Volume

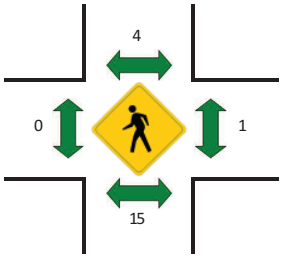
LOCATION: S. Howe St -- Bay St
CITY/STATE: Southport, NC

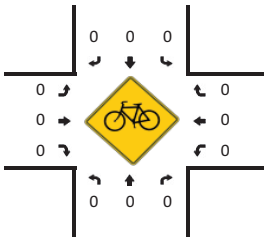
QC JOB #: 15683701
DATE: Wed, Jan 19 2022

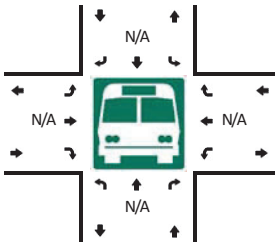
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

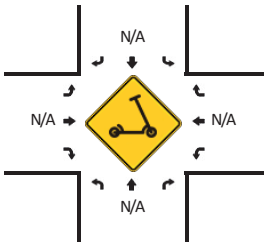












15-Min Count Period Beginning At	S. Howe St (Northbound)				S. Howe St (Southbound)				Bay St (Eastbound)				Bay St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	0	0	1	2	0	0	0	0	0	0	0	0	3	0	8	
7:15 AM	0	0	0	0	5	1	3	0	3	0	0	0	0	3	2	0	17	
7:30 AM	0	2	0	0	3	3	2	0	0	0	0	0	0	2	3	0	15	
7:45 AM	2	0	1	0	7	4	7	0	1	0	0	0	0	0	2	0	24	64
8:00 AM	0	1	0	0	6	2	6	0	1	1	0	0	0	2	1	0	20	76
8:15 AM	0	0	0	0	5	0	3	0	2	2	0	0	0	4	2	0	18	77
8:30 AM	1	2	0	0	2	5	4	0	1	7	0	0	0	2	0	0	24	86
8:45 AM	1	3	1	0	5	6	4	0	1	1	0	0	1	4	1	0	28	90

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	12	4	0	20	24	16	0	4	4	0	0	4	16	4	0	112
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		8				4				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

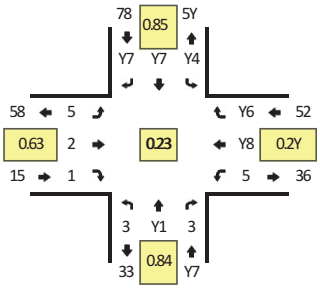
Report generated on 1/25/2022 8:53 AM

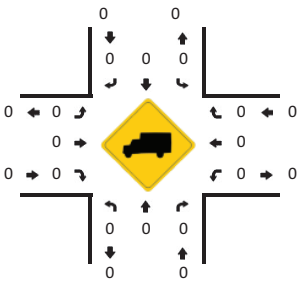
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

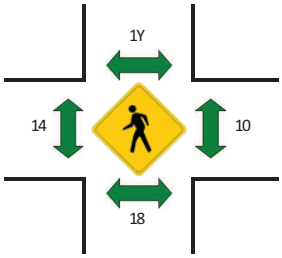
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

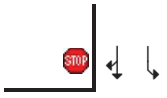
LOCATION: S. Howe St -- Bay St | **QC JOB #:** 1568370Y
CIT/, STATE: SouthportDNC | **WATE:** 9 edDJan 12 Y0YY

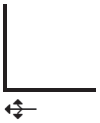
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

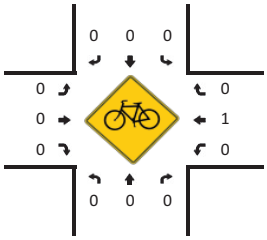


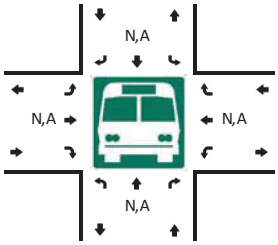


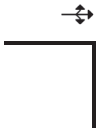


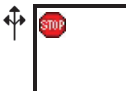


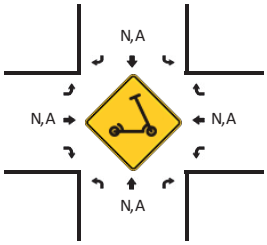












15-Min Count Period Beginning At	S. Howe St (Northbound)				S. Howe St (Southbound)				Bay St (Eastbound)				Bay St (9 estbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	8	1	0	3	5	2	0	0	1	0	0	0	4	2	0	41	
4:15 PM	1	4	0	0	4	6	7	0	1	5	0	0	1	6	8	0	43	
4:30 PM	Y	4	Y	0	10	7	4	0	1	Y	0	0	3	7	6	0	48	
4:45 PM	0	8	0	0	5	2	2	0	1	0	1	0	1	6	5	0	45	177
5:00 PM	0	5	1	0	5	5	7	0	Y	Y	0	0	0	2	7	0	43	172
5:15 PM	1	3	1	0	3	5	6	0	1	0	0	0	0	Y	4	0	Y6	16Y
5:30 PM	0	3	Y	0	5	11	6	0	6	1	0	0	0	7	5	0	46	160
5:45 PM	0	6	Y	0	3	8	7	0	1	4	0	0	0	3	3	0	37	15Y

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				9 estbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	16	8	0	40	Y8	16	0	4	8	0	0	1Y	Y8	Y4	0	12Y
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		36				0				8				Y4			68
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1, Y5, Y0YY 8:53 AM | SOURCE: Quality CountsDLLC (http:, , www.qualitycounts.net) 1-877-580-YY1Y

Appendix C – Intersection Volume Development Worksheets

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Robert Ruark Dr. at N. Howe Street
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.84 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.96 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	64	31	43	0	137	30	109	0	18	306	79	0	89	495	64
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	213	0	0	0	0	0
AM 2021 EXISTING TRAFFIC	**0**	**64**	**31**	**43**	**0**	**137**	**30**	**109**	**0**	**18**	**519**	**79**	**0**	**89**	**495**	**64**
AM Heavy Vehicle Percentage	2%	3%	3%	2%	2%	6%	10%	6%	2%	2%	2%	3%	2%	8%	2%	5%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	16	8	10	0	33	7	27	0	4	126	19	0	22	120	16
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	29	14	20	0	63	14	50	0	8	237	36	0	41	226	29
AM 2032 NO-BUILD TRAFFIC	**0**	**80**	**39**	**53**	**0**	**170**	**37**	**136**	**0**	**22**	**645**	**98**	**0**	**111**	**615**	**80**
AM 2040 NO-BUILD TRAFFIC	**0**	**93**	**45**	**63**	**0**	**200**	**44**	**159**	**0**	**26**	**756**	**115**	**0**	**130**	**721**	**93**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering						**5%**	**10%**			**15%**					**10%**	**55%**
	Exiting		**55%**	**10%**	**15%**							**10%**	**5%**				

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	**259**	**47**	**71**	0	**17**	**35**	0	0	**52**	**47**	**24**	0	0	**35**	**189**
AM TOTAL PROJECT TRIPS		**0**	**259**	**47**	**71**	**0**	**17**	**35**	**0**	**0**	**52**	**47**	**24**	**0**	**0**	**35**	**189**
AM 2032 BUILD-OUT TRAFFIC		**0**	**339**	**86**	**124**	**0**	**187**	**72**	**136**	**0**	**74**	**692**	**122**	**0**	**111**	**650**	**269**
AM 2040 BUILD-OUT TRAFFIC		**0**	**352**	**92**	**134**	**0**	**217**	**79**	**159**	**0**	**78**	**803**	**139**	**0**	**130**	**756**	**282**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	106	59	34	0	91	47	191	0	27	610	127	0	114	548	75
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	428	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	**0**	**106**	**59**	**34**	**0**	**91**	**47**	**191**	**0**	**27**	**1,038**	**127**	**0**	**114**	**548**	**75**
PM Heavy Vehicle Percentage	2%	2%	5%	2%	2%	1%	2%	2%	2%	2%	2%	4%	2%	2%	1%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	26	14	8	0	22	11	46	0	7	253	31	0	28	133	18
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	48	27	16	0	42	21	87	0	12	474	58	0	52	250	34
PM 2032 NO-BUILD TRAFFIC	**0**	**132**	**73**	**42**	**0**	**113**	**58**	**237**	**0**	**34**	**1,291**	**158**	**0**	**142**	**681**	**93**
PM 2040 NO-BUILD TRAFFIC	**0**	**154**	**86**	**50**	**0**	**133**	**68**	**278**	**0**	**39**	**1,512**	**185**	**0**	**166**	**798**	**109**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	**5%**	**10%**	0%	0%	**15%**	0%	0%	0%	0%	**10%**	**55%**
	Exiting	0%	**55%**	**10%**	**15%**	0%	0%	0%	0%	0%	0%	**10%**	**5%**	0%	0%	0%	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	**278**	**51**	**75**	0	**26**	**51**	0	0	**77**	**50**	**25**	0	0	**51**	**281**
PM TOTAL PROJECT TRIPS		**0**	**278**	**51**	**75**	**0**	**26**	**51**	**0**	**0**	**77**	**50**	**25**	**0**	**0**	**51**	**281**
PM 2032 BUILD-OUT TRAFFIC		**0**	**410**	**124**	**117**	**0**	**139**	**109**	**237**	**0**	**111**	**1,341**	**183**	**0**	**142**	**732**	**374**
PM 2040 BUILD-OUT TRAFFIC		**0**	**432**	**137**	**125**	**0**	**159**	**119**	**278**	**0**	**116**	**1,562**	**210**	**0**	**166**	**849**	**390**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 2.N. Howe Street at W. 11 Street
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.87 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.93 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	111	4	8	0	1	0	15	0	6	149	1	0	28	412	53
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	424	0	0	0	305	0
AM 2021 EXISTING TRAFFIC	**0**	**111**	**4**	**8**	**0**	**1**	**0**	**15**	**0**	**6**	**573**	**1**	**0**	**28**	**717**	**53**
AM Heavy Vehicle Percentage	2%	5%	2%	2%	2%	100%	2%	7%	2%	2%	1%	2%	2%	4%	3%	6%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	27	1	2	0	0	0	4	0	1	139	0	0	7	174	13
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	51	2	4	0	0	0	7	0	3	262	0	0	13	328	24
AM 2032 NO-BUILD TRAFFIC	**0**	**138**	**5**	**10**	**0**	**4**	**4**	**19**	**0**	**7**	**712**	**4**	**0**	**35**	**891**	**66**
AM 2040 NO-BUILD TRAFFIC	**0**	**162**	**6**	**12**	**0**	**4**	**4**	**22**	**0**	**9**	**835**	**4**	**0**	**41**	**1,045**	**77**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering											**15%**				**15%**	
	Exiting											**15%**				**15%**	

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	**123**	0	0	0	**123**	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**123**	**0**	**0**	**0**	**123**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**138**	**5**	**10**	**0**	**4**	**4**	**19**	**0**	**7**	**835**	**4**	**0**	**35**	**1,014**	**66**
AM 2040 BUILD-OUT TRAFFIC		**0**	**162**	**6**	**12**	**0**	**4**	**4**	**22**	**0**	**9**	**958**	**4**	**0**	**41**	**1,168**	**77**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	197	1	8	0	1	2	41	0	2	338	6	0	30	459	51
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	563	0	0	0	187	0
PM 2021 EXISTING TRAFFIC	**0**	**197**	**1**	**8**	**0**	**1**	**2**	**41**	**0**	**2**	**901**	**6**	**0**	**30**	**646**	**51**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	17%	2%	7%	1%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	48	0	2	0	0	0	10	0	0	219	1	0	7	157	12
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	90	0	4	0	0	1	19	0	1	412	3	0	14	295	23
PM 2032 NO-BUILD TRAFFIC	**0**	**245**	**4**	**10**	**0**	**4**	**4**	**51**	**0**	**4**	**1,120**	**7**	**0**	**37**	**803**	**63**
PM 2040 NO-BUILD TRAFFIC	**0**	**287**	**4**	**12**	**0**	**4**	**4**	**60**	**0**	**4**	**1,313**	**9**	**0**	**44**	**941**	**74**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	**15%**	0%
	Exiting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	**15%**	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	**152**	0	0	0	**152**	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**152**	**0**	**0**	**0**	**152**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**245**	**4**	**10**	**0**	**4**	**4**	**51**	**0**	**4**	**1,272**	**7**	**0**	**37**	**955**	**63**
PM 2040 BUILD-OUT TRAFFIC		**0**	**287**	**4**	**12**	**0**	**4**	**4**	**60**	**0**	**4**	**1,465**	**9**	**0**	**44**	**1,093**	**74**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 3.N. Howe Street at W. Fodale Avenue
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.85 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.92 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	0	0	0	0	5	0	128	0	0	30	4	0	148	272	0
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	422	0	0	0	306	0
AM 2021 EXISTING TRAFFIC	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**128**	**0**	**0**	**452**	**4**	**0**	**148**	**578**	**0**
AM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	3%	25%	2%	3%	3%	2%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	0	0	0	0	1	0	31	0	0	110	1	0	36	141	0
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	0	0	0	0	2	0	58	0	0	206	2	0	68	264	0
AM 2032 NO-BUILD TRAFFIC	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**159**	**0**	**0**	**562**	**5**	**0**	**184**	**719**	**0**
AM 2040 NO-BUILD TRAFFIC	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**186**	**0**	**0**	**658**	**6**	**0**	**216**	**842**	**0**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering								**5%**			**10%**				**15%**	
	Exiting											**15%**			**5%**	**10%**	

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**17**	0	0	**106**	0	0	**24**	**99**	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**0**	**106**	**0**	**0**	**24**	**99**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**0**	**0**	**0**	**0**	**6**	**0**	**176**	**0**	**0**	**668**	**5**	**0**	**208**	**818**	**0**
AM 2040 BUILD-OUT TRAFFIC		**0**	**0**	**0**	**0**	**0**	**7**	**0**	**203**	**0**	**0**	**764**	**6**	**0**	**240**	**941**	**0**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	1	0	0	1	10	0	306	0	0	37	6	0	177	287	1
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	565	0	0	0	190	0
PM 2021 EXISTING TRAFFIC	**0**	**1**	**0**	**0**	**1**	**10**	**0**	**306**	**0**	**0**	**602**	**6**	**0**	**177**	**477**	**1**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	1%	1%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	0	0	0	0	2	0	74	0	0	147	1	0	43	116	0
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	0	0	0	0	5	0	140	0	0	275	3	0	81	218	0
PM 2032 NO-BUILD TRAFFIC	**0**	**1**	**0**	**0**	**1**	**12**	**0**	**380**	**0**	**0**	**749**	**7**	**0**	**220**	**593**	**1**
PM 2040 NO-BUILD TRAFFIC	**0**	**1**	**0**	**0**	**1**	**15**	**0**	**446**	**0**	**0**	**877**	**9**	**0**	**258**	**695**	**1**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	**5%**	0%	0%	**10%**	0%	0%	0%	**15%**	0%
	Exiting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	**5%**	**10%**	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**25**	0	0	**127**	0	0	**25**	**127**	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**0**	**127**	**0**	**0**	**25**	**127**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**1**	**0**	**0**	**1**	**12**	**0**	**405**	**0**	**0**	**876**	**7**	**0**	**245**	**720**	**1**
PM 2040 BUILD-OUT TRAFFIC		**0**	**1**	**0**	**0**	**1**	**15**	**0**	**471**	**0**	**0**	**1,004**	**9**	**0**	**283**	**822**	**1**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 4.N. Howe Street at W. 9th Street
COUNT DATE: September 15, 2021
AM PEAK HOUR FACTOR: 0.80 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.83 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	169	7	45	0	6	7	22	0	12	265	6	0	41	418	124
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM 2021 EXISTING TRAFFIC	**0**	**169**	**7**	**45**	**0**	**6**	**7**	**22**	**0**	**12**	**265**	**6**	**0**	**41**	**418**	**124**
AM Heavy Vehicle Percentage	2%	2%	14%	2%	2%	2%	14%	2%	2%	8%	4%	2%	2%	2%	3%	1%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	41	2	11	0	1	2	5	0	3	64	1	0	10	102	30
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	77	3	21	0	3	3	10	0	5	121	3	0	19	191	57
AM 2032 NO-BUILD TRAFFIC	**0**	**210**	**9**	**56**	**0**	**7**	**9**	**27**	**0**	**15**	**329**	**7**	**0**	**51**	**520**	**154**
AM 2040 NO-BUILD TRAFFIC	**0**	**246**	**10**	**66**	**0**	**9**	**10**	**32**	**0**	**17**	**386**	**9**	**0**	**60**	**609**	**181**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering										**5%**	**10%**					**15%**
	Exiting		**15%**		**5%**											**10%**	

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	**71**	0	**24**	0	0	0	0	0	**17**	**35**	0	0	0	**47**	**52**
AM TOTAL PROJECT TRIPS		**0**	**71**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**17**	**35**	**0**	**0**	**0**	**47**	**52**
AM 2032 BUILD-OUT TRAFFIC		**0**	**281**	**9**	**80**	**0**	**7**	**9**	**27**	**0**	**32**	**364**	**7**	**0**	**51**	**567**	**206**
AM 2040 BUILD-OUT TRAFFIC		**0**	**317**	**10**	**90**	**0**	**9**	**10**	**32**	**0**	**34**	**421**	**9**	**0**	**60**	**656**	**233**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	127	6	16	0	3	7	25	0	12	456	5	0	5	440	42
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	**0**	**127**	**6**	**16**	**0**	**3**	**7**	**25**	**0**	**12**	**456**	**5**	**0**	**5**	**440**	**42**
PM Heavy Vehicle Percentage	2%	3%	17%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	31	1	4	0	1	2	6	0	3	111	1	0	1	107	10
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	58	3	7	0	1	3	11	0	5	208	2	0	2	201	19
PM 2032 NO-BUILD TRAFFIC	**0**	**158**	**7**	**20**	**0**	**4**	**9**	**31**	**0**	**15**	**567**	**6**	**0**	**6**	**547**	**52**
PM 2040 NO-BUILD TRAFFIC	**0**	**185**	**9**	**23**	**0**	**4**	**10**	**36**	**0**	**17**	**664**	**7**	**0**	**7**	**641**	**61**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering										**20%**	**-20%**				**-80%**	**80%**
	Exiting		**20%**		**80%**												
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	0%	0%	**5%**	**10%**	0%	0%	0%	0%	**15%**
	Exiting	0%	**15%**	0%	**5%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**10%**	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By		**1**		**3**						**1**	**-1**				**-3**	**3**
	Diverted Trips																
	Net New	0	**76**	0	**25**	0	0	0	0	0	**26**	**51**	0	0	0	**51**	**76**
PM TOTAL PROJECT TRIPS		**0**	**77**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**27**	**50**	**0**	**0**	**0**	**48**	**79**
PM 2032 BUILD-OUT TRAFFIC		**0**	**235**	**7**	**48**	**0**	**4**	**9**	**31**	**0**	**42**	**617**	**6**	**0**	**6**	**595**	**131**
PM 2040 BUILD-OUT TRAFFIC		**0**	**262**	**9**	**51**	**0**	**4**	**10**	**36**	**0**	**44**	**714**	**7**	**0**	**7**	**689**	**140**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 5.N. Howe Street at W. West Street
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.85 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.89 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	11	6	15	0	1	1	3	0	7	65	1	2	5	84	6
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM 2021 EXISTING TRAFFIC	**0**	**11**	**6**	**15**	**0**	**1**	**1**	**3**	**0**	**7**	**65**	**1**	**2**	**5**	**84**	**6**
AM Heavy Vehicle Percentage	2%	9%	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	2%	17%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	3	1	4	0	0	0	1	0	2	16	0	0	1	20	1
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	5	3	7	0	0	0	1	0	3	30	0	1	2	38	3
AM 2032 NO-BUILD TRAFFIC	**0**	**14**	**7**	**19**	**0**	**4**	**4**	**4**	**0**	**9**	**81**	**4**	**4**	**6**	**104**	**7**
AM 2040 NO-BUILD TRAFFIC	**0**	**16**	**9**	**22**	**0**	**4**	**4**	**4**	**0**	**10**	**95**	**4**	**4**	**7**	**122**	**9**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering											**15%**					
	Exiting															**15%**	

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	**52**	0	0	0	**71**	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**52**	**0**	**0**	**0**	**71**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**14**	**7**	**19**	**0**	**4**	**4**	**4**	**0**	**9**	**133**	**4**	**4**	**6**	**175**	**7**
AM 2040 BUILD-OUT TRAFFIC		**0**	**16**	**9**	**22**	**0**	**4**	**4**	**4**	**0**	**10**	**147**	**4**	**4**	**7**	**193**	**9**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	30	7	27	0	0	0	6	1	10	176	2	0	6	118	7
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	**0**	**30**	**7**	**27**	**0**	**0**	**0**	**6**	**1**	**10**	**176**	**2**	**0**	**6**	**118**	**7**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	7	2	7	0	0	0	1	0	2	43	0	0	1	29	2
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	14	3	12	0	0	0	3	0	5	80	1	0	3	54	3
PM 2032 NO-BUILD TRAFFIC	**0**	**37**	**9**	**34**	**0**	**4**	**4**	**4**	**1**	**12**	**219**	**4**	**0**	**7**	**147**	**9**
PM 2040 NO-BUILD TRAFFIC	**0**	**44**	**10**	**39**	**0**	**4**	**4**	**4**	**1**	**15**	**256**	**4**	**0**	**9**	**172**	**10**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	0%	0%
	Exiting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	**77**	0	0	0	**76**	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**77**	**0**	**0**	**0**	**76**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**37**	**9**	**34**	**0**	**4**	**4**	**4**	**1**	**12**	**296**	**4**	**0**	**7**	**223**	**9**
PM 2040 BUILD-OUT TRAFFIC		**0**	**44**	**10**	**39**	**0**	**4**	**4**	**4**	**1**	**15**	**333**	**4**	**0**	**9**	**248**	**10**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 6.N. Howe Street at E. Moore Street
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.88 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.85 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	7	13	4	0	2	13	38	0	0	22	3	1	33	39	14
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM 2021 EXISTING TRAFFIC	**0**	**7**	**13**	**4**	**0**	**2**	**13**	**38**	**0**	**0**	**22**	**3**	**1**	**33**	**39**	**14**
AM Heavy Vehicle Percentage	2%	14%	15%	2%	2%	2%	8%	3%	2%	2%	9%	2%	2%	2%	5%	2%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	2	3	1	0	0	3	9	0	0	5	1	0	8	9	3
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	3	6	2	0	1	6	17	0	0	10	1	0	15	18	6
AM 2032 NO-BUILD TRAFFIC	**0**	**9**	**16**	**5**	**0**	**4**	**16**	**47**	**0**	**4**	**27**	**4**	**1**	**41**	**48**	**17**
AM 2040 NO-BUILD TRAFFIC	**0**	**10**	**19**	**6**	**0**	**4**	**19**	**55**	**0**	**4**	**32**	**4**	**1**	**48**	**57**	**20**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering								**15%**								
	Exiting														**15%**		

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**52**	0	0	0	0	0	**71**	0	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**52**	**0**	**0**	**0**	**0**	**0**	**71**	**0**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**9**	**16**	**5**	**0**	**4**	**16**	**99**	**0**	**4**	**27**	**4**	**1**	**112**	**48**	**17**
AM 2040 BUILD-OUT TRAFFIC		**0**	**10**	**19**	**6**	**0**	**4**	**19**	**107**	**0**	**4**	**32**	**4**	**1**	**119**	**57**	**20**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	37	40	6	0	18	33	55	0	3	57	15	0	57	64	17
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	**0**	**37**	**40**	**6**	**0**	**18**	**33**	**55**	**0**	**3**	**57**	**15**	**0**	**57**	**64**	**17**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	9	10	1	0	4	8	13	0	1	14	4	0	14	16	4
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	17	18	3	0	8	15	25	0	1	26	7	0	26	29	8
PM 2032 NO-BUILD TRAFFIC	**0**	**46**	**50**	**7**	**0**	**22**	**41**	**68**	**0**	**4**	**71**	**19**	**0**	**71**	**80**	**21**
PM 2040 NO-BUILD TRAFFIC	**0**	**54**	**58**	**9**	**0**	**26**	**48**	**80**	**0**	**4**	**83**	**22**	**0**	**83**	**93**	**25**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	0%	0%	0%	0%	0%
	Exiting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**77**	0	0	0	0	0	**76**	0	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**77**	**0**	**0**	**0**	**0**	**0**	**76**	**0**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**46**	**50**	**7**	**0**	**22**	**41**	**145**	**0**	**4**	**71**	**19**	**0**	**147**	**80**	**21**
PM 2040 BUILD-OUT TRAFFIC		**0**	**54**	**58**	**9**	**0**	**26**	**48**	**157**	**0**	**4**	**83**	**22**	**0**	**159**	**93**	**25**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 7.N. Howe Street at 12th Street
COUNT DATE: September 15, 2021
AM PEAK HOUR FACTOR: 0.83 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.90 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	4	2	3	0	7	4	73	0	0	483	3	0	49	689	6
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	213	0	0	0	99	0
AM 2021 EXISTING TRAFFIC	**0**	**4**	**2**	**3**	**0**	**7**	**4**	**73**	**0**	**0**	**696**	**3**	**0**	**49**	**788**	**6**
AM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	14%	2%	3%	2%	2%	3%	2%	2%	4%	2%	2%

AM 2032 NO-BUILD TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	1	0	1	0	2	1	18	0	0	169	1	0	12	192	1

AM 2040 NO-BUILD TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	2	1	1	0	3	2	33	0	0	318	1	0	22	360	3
AM 2032 NO-BUILD TRAFFIC	**0**	**5**	**4**	**4**	**0**	**9**	**5**	**91**	**0**	**4**	**865**	**4**	**0**	**61**	**980**	**7**
AM 2040 NO-BUILD TRAFFIC	**0**	**6**	**4**	**4**	**0**	**10**	**6**	**106**	**0**	**4**	**1,014**	**4**	**0**	**71**	**1,148**	**9**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering								**15%**			0%			**15%**		
	Exiting								**15%**						**15%**		

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**123**	0	0	0	0	0	**123**	0	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**123**	**0**	**0**	**0**	**0**	**0**	**123**	**0**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**5**	**4**	**4**	**0**	**9**	**5**	**214**	**0**	**4**	**865**	**4**	**0**	**184**	**980**	**7**
AM 2040 BUILD-OUT TRAFFIC		**0**	**6**	**4**	**4**	**0**	**10**	**6**	**229**	**0**	**4**	**1,014**	**4**	**0**	**194**	**1,148**	**9**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	4	2	4	0	5	5	84	0	7	682	22	0	50	527	13
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	428	0	0	0	191	0
PM 2021 EXISTING TRAFFIC	**0**	**4**	**2**	**4**	**0**	**5**	**5**	**84**	**0**	**7**	**1,110**	**22**	**0**	**50**	**718**	**13**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%

PM 2032 NO-BUILD TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	1	0	1	0	1	1	20	0	2	270	5	0	12	175	3

PM 2040 NO-BUILD TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	2	1	2	0	2	2	38	0	3	507	10	0	23	328	6
PM 2032 NO-BUILD TRAFFIC	**0**	**5**	**4**	**5**	**0**	**6**	**6**	**104**	**0**	**9**	**1,380**	**27**	**0**	**62**	**893**	**16**
PM 2040 NO-BUILD TRAFFIC	**0**	**6**	**4**	**6**	**0**	**7**	**7**	**122**	**0**	**10**	**1,617**	**32**	**0**	**73**	**1,046**	**19**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	0%	0%	**15%**	0%	0%
	Exiting	0%	0%	0%	0%	0%	0%	0%	**15%**	0%	0%	0%	0%	0%	**15%**	0%	0%

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	**152**	0	0	0	0	0	**152**	0	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**152**	**0**	**0**	**0**	**0**	**0**	**152**	**0**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**5**	**4**	**5**	**0**	**6**	**6**	**256**	**0**	**9**	**1,380**	**27**	**0**	**214**	**893**	**16**
PM 2040 BUILD-OUT TRAFFIC		**0**	**6**	**4**	**6**	**0**	**7**	**7**	**274**	**0**	**10**	**1,617**	**32**	**0**	**225**	**1,046**	**19**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: 8. S. Howe Street at Bay Street
COUNT DATE: January 19, 2022
AM PEAK HOUR FACTOR: 0.80 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.93 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Adjusted Turning Movement Counts[1]	0	5	11	0	0	1	12	4	0	2	6	1	0	18	13	17
AM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM 2021 EXISTING TRAFFIC	**0**	**5**	**11**	**0**	**0**	**1**	**12**	**4**	**0**	**2**	**6**	**1**	**0**	**18**	**13**	**17**
AM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	1	3	0	0	0	3	1	0	0	1	0	0	4	3	4
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	2	5	0	0	0	5	2	0	1	3	0	0	8	6	8
AM 2032 NO-BUILD TRAFFIC	**0**	**6**	**14**	**4**	**0**	**4**	**15**	**5**	**0**	**4**	**7**	**4**	**0**	**22**	**16**	**21**
AM 2040 NO-BUILD TRAFFIC	**0**	**7**	**16**	**4**	**0**	**4**	**17**	**6**	**0**	**4**	**9**	**4**	**0**	**26**	**19**	**25**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering																
	Exiting																

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
AM 2032 BUILD-OUT TRAFFIC		**0**	**6**	**14**	**4**	**0**	**4**	**15**	**5**	**0**	**4**	**7**	**4**	**0**	**22**	**16**	**21**
AM 2040 BUILD-OUT TRAFFIC		**0**	**7**	**16**	**4**	**0**	**4**	**17**	**6**	**0**	**4**	**9**	**4**	**0**	**26**	**19**	**25**

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	5	9	1	0	5	28	26	0	3	21	3	0	24	27	27
PM Volume Balancing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	**0**	**5**	**9**	**1**	**0**	**5**	**28**	**26**	**0**	**3**	**21**	**3**	**0**	**24**	**27**	**27**
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	1	2	0	0	1	7	6	0	1	5	1	0	6	7	7
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	2	4	0	0	2	13	12	0	1	10	1	0	11	12	12
PM 2032 NO-BUILD TRAFFIC	**0**	**6**	**11**	**4**	**0**	**6**	**35**	**32**	**0**	**4**	**26**	**4**	**0**	**30**	**34**	**34**
PM 2040 NO-BUILD TRAFFIC	**0**	**7**	**13**	**4**	**0**	**7**	**41**	**38**	**0**	**4**	**31**	**4**	**0**	**35**	**39**	**39**

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering																
	Exiting																

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM TOTAL PROJECT TRIPS		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PM 2032 BUILD-OUT TRAFFIC		**0**	**6**	**11**	**4**	**0**	**6**	**35**	**32**	**0**	**4**	**26**	**4**	**0**	**30**	**34**	**34**
PM 2040 BUILD-OUT TRAFFIC		**0**	**7**	**13**	**4**	**0**	**7**	**41**	**38**	**0**	**4**	**31**	**4**	**0**	**35**	**39**	**39**

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Robert Ruark Dr. at Site Access #1
COUNT DATE: June 29, 2021
AM PEAK HOUR FACTOR: 0.90 **AM FUTURE PEAK HOUR FACTOR:** 0.90
PM PEAK HOUR FACTOR: 0.90 **PM FUTURE PEAK HOUR FACTOR:** 0.90

AM Peak Hour

AM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM 2021 EXISTING TRAFFIC	0	0	69	0	0	0	56	0	0	0	0	0	0	0	0	0
AM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
AM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2032 NO-BUILD TRAFFIC GROWTH	0	0	17	0	0	0	14	0	0	0	0	0	0	0	0	0
AM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2040 NO-BUILD TRAFFIC GROWTH	0	0	32	0	0	0	26	0	0	0	0	0	0	0	0	0
AM 2032 NO-BUILD TRAFFIC	0	0	86	0	0	0	70	0	0	0	0	0	0	0	0	0
AM 2040 NO-BUILD TRAFFIC	0	0	101	0	0	0	82	0	0	0	0	0	0	0	0	0

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering						80%										
	Exiting												80%				

"AM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	276	0	0	0	0	0	377	0	0	0	0
AM TOTAL PROJECT TRIPS		0	0	0	0	0	276	0	0	0	0	0	377	0	0	0	0
AM 2032 BUILD-OUT TRAFFIC		0	0	86	4	0	276	70	0	0	4	0	377	0	0	0	0
AM 2040 BUILD-OUT TRAFFIC		0	0	101	4	0	276	82	0	0	4	0	377	0	0	0	0

PM Peak Hour

PM 2021 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Adjusted Turning Movement Counts[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Volume Balancing	0	0	100	0	0	0	75	0	0	0	0	0	0	0	0	0
PM 2021 EXISTING TRAFFIC	0	0	100	0	0	0	75	0	0	0	0	0	0	0	0	0
PM Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PM 2032 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2032 NO-BUILD TRAFFIC GROWTH	0	0	24	0	0	0	18	0	0	0	0	0	0	0	0	0
PM 2040 NO-BUILD TRAFFIC	**EBU**	**EBL**	**EBT**	**EBR**	**WBU**	**WBL**	**WBT**	**WBR**	**NBU**	**NBL**	**NBT**	**NBR**	**SBU**	**SBL**	**SBT**	**SBR**
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
PM 2040 NO-BUILD TRAFFIC GROWTH	0	0	45	0	0	0	33	0	0	0	0	0	0	0	0	0
PM 2032 NO-BUILD TRAFFIC	0	0	124	0	0	0	93	0	0	0	0	0	0	0	0	0
PM 2040 NO-BUILD TRAFFIC	0	0	144	0	0	0	107	0	0	0	0	0	0	0	0	0

"SITE TRAFFIC DISTRUBUTION"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																
	Exiting																
Diverted Trip Distribution	Entering																
	Exiting																
Net New Distribution	Entering						80%										
	Exiting												80%				

"PM PROJECT TRIPS"

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Project Trip	Pass - By																
	Diverted Trips																
	Net New	0	0	0	0	0	409	0	0	0	0	0	404	0	0	0	0
PM TOTAL PROJECT TRIPS		0	0	0	0	0	409	0	0	0	0	0	404	0	0	0	0
PM 2032 BUILD-OUT TRAFFIC		0	0	124	4	0	409	93	0	0	4	0	404	0	0	0	0
PM 2040 BUILD-OUT TRAFFIC		0	0	144	4	0	409	107	0	0	4	0	404	0	0	0	0

Appendix D – Capacity Analysis Worksheets

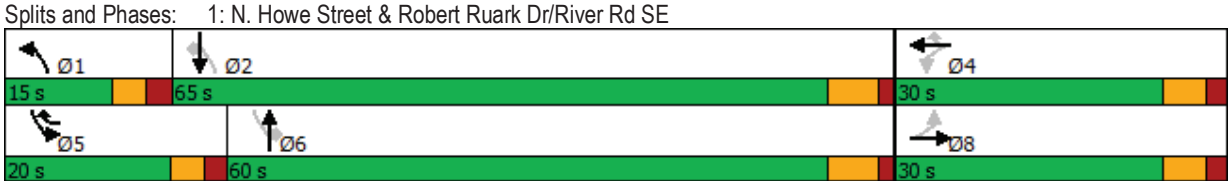
2021 EXISTING CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	31	43	137	30	109	18	519	79	89	495	64
Future Volume (vph)	64	31	43	137	30	109	18	519	79	89	495	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	125		0	250		450	150		100
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			50			100			100		
Satd. Flow (prot)	1752	1694	0	1703	1727	1524	1770	1863	1568	1671	1863	1538
Flt Permitted	0.734			0.700			0.313			0.228		
Satd. Flow (perm)	1354	1694	0	1255	1727	1524	583	1863	1568	401	1863	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51				130			94			81
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			325			2212			583	
Travel Time (s)		9.4			6.3			43.1			8.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	88	0	163	36	130	21	618	94	106	589	76
Turn Type	Perm	NA		Perm	NA	pm+ov	D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases		8			4	5	1	6		5	2	
Permitted Phases	8			4		4	2		6	6		2
Detector Phase	8	8		4	4	5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	10.0	7.0	12.0	12.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	14.0	17.0	17.0	14.0	19.0	19.0
Total Split (s)	30.0	30.0		30.0	30.0	20.0	15.0	60.0	60.0	20.0	65.0	65.0
Total Split (%)	27.3%	27.3%		27.3%	27.3%	18.2%	13.6%	54.5%	54.5%	18.2%	59.1%	59.1%
Yellow Time (s)	3.8	3.8		3.8	3.8	3.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.1	2.1		2.1	2.1	2.1	2.3	1.5	1.5	2.1	1.5	1.5
Lost Time Adjust (s)	-0.9	-0.9		-0.9	-0.9	-0.1	-0.3	-1.0	-1.0	-0.1	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.0	14.0		14.0	14.0	27.0	38.4	27.0	27.0	34.7	36.0	36.0
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.42	0.59	0.42	0.42	0.54	0.56	0.56
v/c Ratio	0.26	0.22		0.60	0.10	0.18	0.04	0.79	0.13	0.29	0.57	0.09
Control Delay	25.8	13.7		34.9	23.4	4.1	6.0	24.9	3.5	8.1	14.6	3.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	13.7		34.9	23.4	4.1	6.0	24.9	3.5	8.1	14.6	3.2
LOS	C	B		C	C	A	A	C	A	A	B	A
Approach Delay		19.3			21.5			21.6			12.5	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	24	11		55	11	0	3	189	0	14	104	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	66	47		131	36	28	11	345	21	39	318	17
Internal Link Dist (ft)		400			245			2132			503	
Turn Bay Length (ft)				125			250		450	150		100
Base Capacity (vph)	555	724		514	708	890	548	1588	1350	560	1665	1383
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12		0.32	0.05	0.15	0.04	0.39	0.07	0.19	0.35	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 64.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	4	8	4	4	15	6	573	4	28	717	53
Future Volume (vph)	111	4	8	4	4	15	6	573	4	28	717	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1397	0	1770	1879	0	1736	1823	0
Flt Permitted		0.957			0.991		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1397	0	1770	1879	0	1736	1823	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	142	0	0	27	0	7	664	0	32	885	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	40.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	4	8	4	4	15	6	573	4	28	717	53
Future Vol, veh/h	111	4	8	4	4	15	6	573	4	28	717	53
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	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	128	5	9	5	5	17	7	659	5	32	824	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1606	1597	855	1602	1625	662	885	0	0	664	0	0
Stage 1	919	919	-	676	676	-	-	-	-	-	-	-
Stage 2	687	678	-	926	949	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 83	106	358	51	102	453	765	-	-	916	-	-
Stage 1	321	350	-	317	453	-	-	-	-	-	-	-
Stage 2	432	452	-	220	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 74	101	358	46	98	453	765	-	-	916	-	-
Mov Cap-2 Maneuver	~ 74	101	-	46	98	-	-	-	-	-	-	-
Stage 1	318	338	-	314	449	-	-	-	-	-	-	-
Stage 2	408	448	-	204	327	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	489.5	35.8	0.1	0.3
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	765	-	-	79	143	916	-	-
HCM Lane V/C Ratio	0.009	-	-	1.79	0.185	0.035	-	-
HCM Control Delay (s)	9.7	-	-	$ 489.5	35.8	9.1	-	-
HCM Lane LOS	A	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	12.2	0.7	0.1	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	128	452	4	148	578
Future Volume (vph)	5	128	452	4	148	578
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1839	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1839	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	151	537	0	174	680
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	128	452	4	148	578
Future Vol, veh/h	5	128	452	4	148	578
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	6	151	532	5	174	680

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1563	535	0	0	537	0
Stage 1	535	-	-	-	-	-
Stage 2	1028	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	123	547	-	-	1026	-
Stage 1	587	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	102	547	-	-	1026	-
Mov Cap-2 Maneuver	215	-	-	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	215	547	1026	-
HCM Lane V/C Ratio	-	-	0.027	0.275	0.17	-
HCM Control Delay (s)	-	-	22.2	14.1	9.2	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	1.1	0.6	-

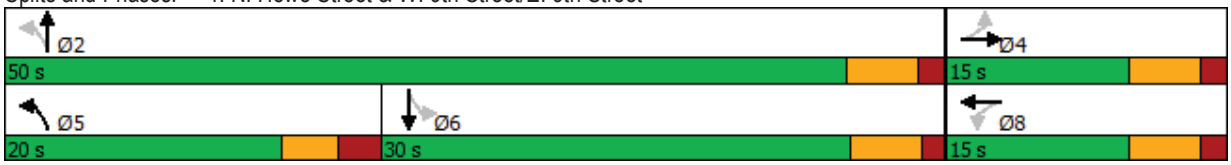
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	7	45	6	7	22	12	265	6	41	418	124
Future Volume (vph)	169	7	45	6	7	22	12	265	6	41	418	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1596	0	0	1652	0	1671	1820	0	1770	1790	0
Flt Permitted	0.728				0.944		0.197			0.557		
Satd. Flow (perm)	1356	1596	0	0	1574	0	347	1820	0	1038	1790	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			28			4			27	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	65	0	0	45	0	15	339	0	51	678	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	17.0		17.0	17.0	
Total Split (s)	15.0	15.0		15.0	15.0		20.0	50.0		30.0	30.0	
Total Split (%)	23.1%	23.1%		23.1%	23.1%		30.8%	76.9%		46.2%	46.2%	
Yellow Time (s)	3.8	3.8		3.8	3.8		3.0	3.8		3.8	3.8	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	1.5		1.3	1.3	
Lost Time Adjust (s)	-0.3	-0.3			-0.3		-0.3	-0.3		-0.1	-0.1	
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Act Effct Green (s)	10.1	10.1			10.1		28.2	28.2		26.2	26.2	
Actuated g/C Ratio	0.21	0.21			0.21		0.58	0.58		0.54	0.54	
v/c Ratio	0.75	0.17			0.13		0.04	0.32		0.09	0.69	
Control Delay	39.4	8.8			11.5		4.2	6.0		7.6	15.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	39.4	8.8			11.5		4.2	6.0		7.6	15.1	
LOS	D	A			B		A	A		A	B	
Approach Delay		32.2			11.5			5.9			14.6	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	50	2			3		2	40		5	101	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#149	24			24		5	60		24	#275	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	283	377			350		616	1686		573	1001	
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	0.75	0.17			0.13		0.02	0.20		0.09	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 48.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 58.4%		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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	6	15	4	4	4	7	65	4	5	84	6
Future Volume (vph)	11	6	15	4	4	4	7	65	4	5	84	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1675	0	0	1750	0	1770	1780	0	1770	1826	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1675	0	0	1750	0	1770	1780	0	1770	1826	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	15	0	8	81	0	6	106	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	6	15	4	4	4	7	65	4	5	84	6
Future Vol, veh/h	11	6	15	4	4	4	7	65	4	5	84	6
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	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	13	7	18	5	5	5	8	76	5	6	99	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	215	212	103	222	213	79	106	0	0	81	0	0
Stage 1	115	115	-	95	95	-	-	-	-	-	-	-
Stage 2	100	97	-	127	118	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	727	685	952	734	684	981	1485	-	-	1517	-	-
Stage 1	873	800	-	912	816	-	-	-	-	-	-	-
Stage 2	889	815	-	877	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	715	679	952	710	678	981	1485	-	-	1517	-	-
Mov Cap-2 Maneuver	715	679	-	710	678	-	-	-	-	-	-	-
Stage 1	869	797	-	907	812	-	-	-	-	-	-	-
Stage 2	875	811	-	850	795	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.8	0.7	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1485	-	-	800	769	1517	-	-
HCM Lane V/C Ratio	0.006	-	-	0.047	0.018	0.004	-	-
HCM Control Delay (s)	7.4	-	-	9.7	9.8	7.4	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	13	4	4	13	38	4	22	4	33	39	14
Future Volume (vph)	7	13	4	4	13	38	4	22	4	33	39	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1620	0	1770	1718	0	1770	1750	0
Flt Permitted		0.989					0.718			0.738		
Satd. Flow (perm)	0	1632	0	1863	1620	0	1337	1718	0	1375	1750	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			43			5			16	
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	5	58	0	5	30	0	38	60	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	34.0	34.0		33.0	33.0		31.0	31.0		27.0	27.0	
Total Split (s)	30.0	30.0		30.0	30.0		35.0	35.0		35.0	35.0	
Total Split (%)	46.2%	46.2%		46.2%	46.2%		53.8%	53.8%		53.8%	53.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		-1.2		-1.2	-1.2		-1.2	-1.2		-1.2	-1.2	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		8.3		8.3	8.3		22.8	22.8		22.8	22.8	
Actuated g/C Ratio		0.31		0.31	0.31		0.86	0.86		0.86	0.86	
v/c Ratio		0.05		0.01	0.11		0.00	0.02		0.03	0.04	
Control Delay		5.6		5.8	3.6		3.8	3.3		3.5	2.8	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		5.6		5.8	3.6		3.8	3.3		3.5	2.8	
LOS		A		A	A		A	A		A	A	
Approach Delay		5.6			3.8			3.3			3.1	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2		1	1		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		8		3	10		3	9		11	13	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		1504		1716	1496		1337	1718		1375	1750	
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		0.02		0.00	0.04		0.00	0.02		0.03	0.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 26.5			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.11			
Intersection Signal Delay: 3.6		Intersection LOS: A	
Intersection Capacity Utilization 24.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	7	4	73	4	696	4	49	788	6
Future Volume (vph)	4	4	4	7	4	73	4	696	4	49	788	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1750	0	0	1608	0	1770	1843	0	1736	1861	0
Flt Permitted		0.984			0.996		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1608	0	1770	1843	0	1736	1861	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			2212	
Travel Time (s)		8.7			9.4			11.1			43.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	101	0	5	844	0	59	956	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	4	7	4	73	4	696	4	49	788	6
Future Vol, veh/h	4	4	4	7	4	73	4	696	4	49	788	6
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	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	14	2	3	2	3	2	4	2	2
Mvmt Flow	5	5	5	8	5	88	5	839	5	59	949	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1969	1925	953	1928	1926	842	956	0	0	844	0	0
Stage 1	1071	1071	-	852	852	-	-	-	-	-	-	-
Stage 2	898	854	-	1076	1074	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.24	6.52	6.23	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.626	4.018	3.327	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	47	67	314	47	67	363	719	-	-	784	-	-
Stage 1	267	297	-	338	376	-	-	-	-	-	-	-
Stage 2	334	375	-	252	296	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	31	62	314	41	62	363	719	-	-	784	-	-
Mov Cap-2 Maneuver	31	62	-	41	62	-	-	-	-	-	-	-
Stage 1	265	275	-	336	373	-	-	-	-	-	-	-
Stage 2	248	372	-	225	274	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	86.6	42.5	0.1	0.6
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	719	-	-	58	193	784	-	-
HCM Lane V/C Ratio	0.007	-	-	0.249	0.524	0.075	-	-
HCM Control Delay (s)	10	-	-	86.6	42.5	10	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.9	2.7	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	11	0	1	12	4	2	6	1	18	13	17
Future Volume (vph)	5	11	0	1	12	4	2	6	1	18	13	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1833	0	0	1796	0	0	1818	0	1770	1703	0
Flt Permitted		0.984			0.998			0.990		0.950		
Satd. Flow (perm)	0	1833	0	0	1796	0	0	1818	0	1770	1703	0
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		582			456			156			393	
Travel Time (s)		19.8			15.5			5.3			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	20	0	0	10	0	21	35	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	5	11	0	1	12	4	2	6	1	18	13	17
Future Vol, veh/h	5	11	0	1	12	4	2	6	1	18	13	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	13	0	1	14	5	2	7	1	21	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	19	0	0	13	0	0	61	46	13	48	44	17
Stage 1	-	-	-	-	-	-	25	25	-	19	19	-
Stage 2	-	-	-	-	-	-	36	21	-	29	25	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1597	-	-	1606	-	-	934	846	1067	953	848	1062
Stage 1	-	-	-	-	-	-	993	874	-	1000	880	-
Stage 2	-	-	-	-	-	-	980	878	-	988	874	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1597	-	-	1606	-	-	900	842	1067	943	844	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	900	842	-	943	844	-
Stage 1	-	-	-	-	-	-	989	871	-	996	879	-
Stage 2	-	-	-	-	-	-	943	877	-	975	871	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0.4	9.2	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	875	1597	-	-	1606	-	-	943	955
HCM Lane V/C Ratio	0.012	0.004	-	-	0.001	-	-	0.023	0.037
HCM Control Delay (s)	9.2	7.3	0	-	7.2	0	-	8.9	8.9
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1	0.1

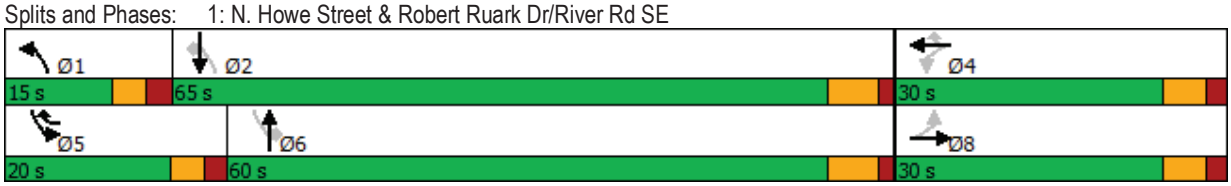
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	59	34	91	47	191	27	1038	127	114	548	75
Future Volume (vph)	106	59	34	91	47	191	27	1038	127	114	548	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	125		0	250		450	150		100
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			50			100			100		
Satd. Flow (prot)	1770	1728	0	1787	1863	1583	1770	1863	1553	1770	1881	1583
Flt Permitted	0.725			0.695			0.385			0.069		
Satd. Flow (perm)	1350	1728	0	1307	1863	1583	717	1863	1553	129	1881	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				60			132			81
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			325			2212			583	
Travel Time (s)		9.4			6.3			43.1			8.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	96	0	95	49	199	28	1081	132	119	571	78
Turn Type	Perm	NA		Perm	NA	pm+ov	D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases		8			4	5	1	6		5	2	
Permitted Phases	8			4		4	2		6	6		2
Detector Phase	8	8		4	4	5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	10.0	7.0	12.0	12.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	14.0	17.0	17.0	14.0	19.0	19.0
Total Split (s)	30.0	30.0		30.0	30.0	20.0	15.0	60.0	60.0	20.0	65.0	65.0
Total Split (%)	27.3%	27.3%		27.3%	27.3%	18.2%	13.6%	54.5%	54.5%	18.2%	59.1%	59.1%
Yellow Time (s)	3.8	3.8		3.8	3.8	3.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.1	2.1		2.1	2.1	2.1	2.3	1.5	1.5	2.1	1.5	1.5
Lost Time Adjust (s)	-0.9	-0.9		-0.9	-0.9	-0.1	-0.3	-1.0	-1.0	-0.1	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	12.1	12.1		12.1	12.1	24.8	66.0	55.1	55.1	62.9	63.2	63.2
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.28	0.73	0.61	0.61	0.70	0.70	0.70
v/c Ratio	0.61	0.38		0.54	0.20	0.42	0.05	0.95	0.13	0.52	0.43	0.07
Control Delay	51.3	31.4		48.3	36.2	20.7	3.7	35.3	2.1	20.5	8.8	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	31.4		48.3	36.2	20.7	3.7	35.3	2.1	20.5	8.8	2.1
LOS	D	C		D	D	C	A	D	A	C	A	A
Approach Delay		42.1			30.6			31.0			10.0	
Approach LOS		D			C			C			A	
Queue Length 50th (ft)	59	37		51	25	63	3	495	0	14	89	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	116	85		103	59	121	12	#981	25	76	284	17
Internal Link Dist (ft)		400			245			2132			503	
Turn Bay Length (ft)				125			250		450	150		100
Base Capacity (vph)	376	498		364	518	603	651	1141	1002	371	1349	1158
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.19		0.26	0.09	0.33	0.04	0.95	0.13	0.32	0.42	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 86.0%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	4	8	4	4	41	4	901	6	30	646	51
Future Volume (vph)	197	4	8	4	4	41	4	901	6	30	646	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1604	0	1770	1859	0	1687	1859	0
Flt Permitted		0.955			0.996		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1604	0	1770	1859	0	1687	1859	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	52	0	4	975	0	32	750	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	183.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	4	8	4	4	41	4	901	6	30	646	51
Future Vol, veh/h	197	4	8	4	4	41	4	901	6	30	646	51
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	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	5	2	2	17	7	1	2
Mvmt Flow	212	4	9	4	4	44	4	969	6	32	695	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1791	1770	723	1773	1794	972	750	0	0	975	0	0
Stage 1	787	787	-	980	980	-	-	-	-	-	-	-
Stage 2	1004	983	-	793	814	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 63	83	426	65	80	302	859	-	-	688	-	-
Stage 1	385	403	-	301	328	-	-	-	-	-	-	-
Stage 2	291	327	-	382	391	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 50	79	426	59	76	302	859	-	-	688	-	-
Mov Cap-2 Maneuver	~ 50	79	-	59	76	-	-	-	-	-	-	-
Stage 1	383	384	-	299	326	-	-	-	-	-	-	-
Stage 2	244	325	-	353	373	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1654.2	30.9	0	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	859	-	-	52	191	688	-	-
HCM Lane V/C Ratio	0.005	-	-	4.322	0.276	0.047	-	-
HCM Control Delay (s)	9.2	-	-	$ 1654.2	30.9	10.5	-	-
HCM Lane LOS	A	-	-	F	D	B	-	-
HCM 95th %tile Q(veh)	0	-	-	25	1.1	0.1	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	306	602	6	177	477
Future Volume (vph)	10	306	602	6	177	477
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	333	661	0	192	518
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	306	602	6	177	477
Future Vol, veh/h	10	306	602	6	177	477
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	11	333	654	7	192	518

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1560	658	0	0	661	0
Stage 1	658	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	123	464	-	-	932	-
Stage 1	515	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	464	-	-	932	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	314	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.9	0	2.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	219	464	932	-
HCM Lane V/C Ratio	-	-	0.05	0.717	0.206	-
HCM Control Delay (s)	-	-	22.3	30.1	9.9	-
HCM Lane LOS	-	-	C	D	A	-
HCM 95th %tile Q(veh)	-	-	0.2	5.7	0.8	-

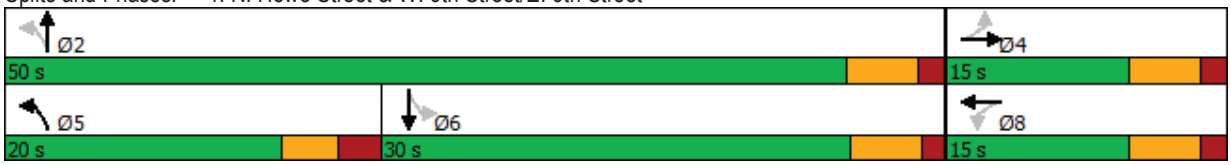
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	6	16	4	7	25	12	456	5	5	440	42
Future Volume (vph)	127	6	16	4	7	25	12	456	5	5	440	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1595	0	0	1678	0	1770	1841	0	1770	1839	0
Flt Permitted	0.729				0.968		0.235			0.456		
Satd. Flow (perm)	1345	1595	0	0	1634	0	438	1841	0	849	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			30			2			9	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	26	0	0	43	0	14	555	0	6	581	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	17.0		17.0	17.0	
Total Split (s)	15.0	15.0		15.0	15.0		20.0	50.0		30.0	30.0	
Total Split (%)	23.1%	23.1%		23.1%	23.1%		30.8%	76.9%		46.2%	46.2%	
Yellow Time (s)	3.8	3.8		3.8	3.8		3.0	3.8		3.8	3.8	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	1.5		1.3	1.3	
Lost Time Adjust (s)	-0.3	-0.3			-0.3		-0.3	-0.3		-0.1	-0.1	
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Act Effct Green (s)	9.5	9.5			9.5		22.8	22.8		21.0	21.0	
Actuated g/C Ratio	0.22	0.22			0.22		0.54	0.54		0.49	0.49	
v/c Ratio	0.51	0.07			0.11		0.03	0.56		0.01	0.64	
Control Delay	24.7	10.8			10.2		4.5	9.0		7.6	13.3	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	24.7	10.8			10.2		4.5	9.0		7.6	13.3	
LOS	C	B			B		A	A		A	B	
Approach Delay		22.7			10.2			8.9			13.2	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	25	1			2		1	77		1	81	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#106	17			23		5	114		6	225	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	324	399			416		716	1762		514	1117	
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	0.47	0.07			0.10		0.02	0.31		0.01	0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 42.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 47.7%		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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	7	27	4	4	6	10	176	4	6	118	7
Future Volume (vph)	30	7	27	4	4	6	10	176	4	6	118	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1718	0	0	1723	0	1770	1875	0	1770	1846	0
Flt Permitted		0.977			0.987		0.950			0.950		
Satd. Flow (perm)	0	1718	0	0	1723	0	1770	1875	0	1770	1846	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	15	0	11	202	0	7	141	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	7	27	4	4	6	10	176	4	6	118	7
Future Vol, veh/h	30	7	27	4	4	6	10	176	4	6	118	7
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	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	1	2	2	2	2
Mvmt Flow	34	8	30	4	4	7	11	198	4	7	133	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	379	375	137	392	377	200	141	0	0	202	0	0
Stage 1	151	151	-	222	222	-	-	-	-	-	-	-
Stage 2	228	224	-	170	155	-	-	-	-	-	-	-
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	579	556	911	567	555	841	1442	-	-	1370	-	-
Stage 1	851	772	-	780	720	-	-	-	-	-	-	-
Stage 2	775	718	-	832	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	565	549	911	537	548	841	1442	-	-	1370	-	-
Mov Cap-2 Maneuver	565	549	-	537	548	-	-	-	-	-	-	-
Stage 1	844	768	-	774	714	-	-	-	-	-	-	-
Stage 2	758	712	-	792	765	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	10.8	0.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1442	-	-	670	640	1370	-	-
HCM Lane V/C Ratio	0.008	-	-	0.107	0.025	0.005	-	-
HCM Control Delay (s)	7.5	-	-	11	10.8	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	40	6	18	33	55	4	57	15	57	64	17
Future Volume (vph)	37	40	6	18	33	55	4	57	15	57	64	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1804	0	1770	1688	0	1770	1785	0	1770	1803	0
Flt Permitted		0.806		0.727			0.695			0.702		
Satd. Flow (perm)	0	1486	0	1354	1688	0	1295	1785	0	1308	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			65			18			20	
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	21	104	0	5	85	0	67	95	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	34.0	34.0		33.0	33.0		31.0	31.0		27.0	27.0	
Total Split (s)	30.0	30.0		30.0	30.0		35.0	35.0		35.0	35.0	
Total Split (%)	46.2%	46.2%		46.2%	46.2%		53.8%	53.8%		53.8%	53.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.2	3.2		3.2	3.2		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		-1.2		-1.2	-1.2		-1.2	-1.2		-1.2	-1.2	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		8.3		8.3	8.3		15.6	15.6		15.6	15.6	
Actuated g/C Ratio		0.31		0.31	0.31		0.59	0.59		0.59	0.59	
v/c Ratio		0.21		0.05	0.18		0.01	0.08		0.09	0.09	
Control Delay		7.6		6.8	4.4		6.5	5.6		6.8	5.6	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		7.6		6.8	4.4		6.5	5.6		6.8	5.6	
LOS		A		A	A		A	A		A	A	
Approach Delay		7.6			4.8			5.7			6.1	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		8		2	3		1	6		6	7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		21		7	16		3	18		17	19	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		1392		1268	1584		1295	1785		1308	1803	
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		0.07		0.02	0.07		0.00	0.05		0.05	0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 26.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	5	5	84	7	1110	22	50	718	13
Future Volume (vph)	4	4	4	5	5	84	7	1110	22	50	718	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1750	0	0	1634	0	1770	1857	0	1770	1839	0
Flt Permitted		0.984			0.997		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1634	0	1770	1857	0	1770	1839	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			2212	
Travel Time (s)		8.7			9.4			11.1			43.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	105	0	8	1257	0	56	812	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	4	5	5	84	7	1110	22	50	718	13
Future Vol, veh/h	4	4	4	5	5	84	7	1110	22	50	718	13
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	-	-	100	-	-
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	3	2
Mvmt Flow	4	4	4	6	6	93	8	1233	24	56	798	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2228	2190	805	2182	2185	1245	812	0	0	1257	0	0
Stage 1	917	917	-	1261	1261	-	-	-	-	-	-	-
Stage 2	1311	1273	-	921	924	-	-	-	-	-	-	-
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	31	45	382	33	46	212	814	-	-	553	-	-
Stage 1	326	351	-	209	241	-	-	-	-	-	-	-
Stage 2	195	238	-	324	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	14	40	382	27	41	212	814	-	-	553	-	-
Mov Cap-2 Maneuver	14	40	-	27	41	-	-	-	-	-	-	-
Stage 1	323	316	-	207	239	-	-	-	-	-	-	-
Stage 2	106	236	-	284	313	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	199.1	91.3	0.1	0.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	814	-	-	30	134	553	-	-
HCM Lane V/C Ratio	0.01	-	-	0.444	0.779	0.1	-	-
HCM Control Delay (s)	9.5	-	-	199.1	91.3	12.2	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.4	4.7	0.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	9	1	5	28	26	3	21	3	24	27	27
Future Volume (vph)	5	9	1	5	28	26	3	21	3	24	27	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1816	0	0	1744	0	0	1827	0	1770	1723	0
Flt Permitted		0.984			0.996			0.995		0.950		
Satd. Flow (perm)	0	1816	0	0	1744	0	0	1827	0	1770	1723	0
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		432			479			152			393	
Travel Time (s)		14.7			16.3			5.2			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	61	0	0	28	0	25	56	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	5	9	1	5	28	26	3	21	3	24	27	27
Future Vol, veh/h	5	9	1	5	28	26	3	21	3	24	27	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	9	1	5	29	27	3	22	3	25	28	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	56	0	0	10	0	0	101	86	10	85	73	43
Stage 1	-	-	-	-	-	-	20	20	-	53	53	-
Stage 2	-	-	-	-	-	-	81	66	-	32	20	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1549	-	-	1610	-	-	880	804	1071	901	817	1027
Stage 1	-	-	-	-	-	-	999	879	-	960	851	-
Stage 2	-	-	-	-	-	-	927	840	-	984	879	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	1610	-	-	830	799	1071	876	812	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	830	799	-	876	812	-
Stage 1	-	-	-	-	-	-	996	876	-	957	848	-
Stage 2	-	-	-	-	-	-	869	837	-	954	876	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.6	9.5	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	826	1549	-	-	1610	-	-	876	907
HCM Lane V/C Ratio	0.034	0.003	-	-	0.003	-	-	0.029	0.062
HCM Control Delay (s)	9.5	7.3	0	-	7.2	0	-	9.2	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0.2

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	L	T	R
Maximum Queue (ft)	83	78	122	88	108	42	260	95	203	54
Average Queue (ft)	29	24	62	22	41	13	123	40	77	10
95th Queue (ft)	64	57	104	65	80	39	216	78	154	37
Link Distance (ft)	432				286		2150		533	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		125	125	125		250		150		100
Storage Blk Time (%)	0	0	0	0	0		0	0	2	
Queuing Penalty (veh)	0	0	0	0	0		0	0	4	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	269	69	28	2	43	7
Average Queue (ft)	105	22	3	0	12	0
95th Queue (ft)	240	58	16	2	37	6
Link Distance (ft)	290	360		356		512
Upstream Blk Time (%)	6					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			100		100	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	19	55	2	86	22
Average Queue (ft)	2	18	0	38	1
95th Queue (ft)	12	43	2	69	17
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				0	0

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	127	77	54	39	126	55	230
Average Queue (ft)	61	23	18	7	46	19	96
95th Queue (ft)	102	55	46	27	95	48	171
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	1	0			0	0	5
Queuing Penalty (veh)	1	0			0	0	2

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	51	31	17	8
Average Queue (ft)	20	9	1	0
95th Queue (ft)	47	32	11	5
Link Distance (ft)	355	231		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	66	28	67	23	43	53	56
Average Queue (ft)	19	4	29	1	6	10	11
95th Queue (ft)	53	20	55	12	28	37	40
Link Distance (ft)	387		362		332		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)							0
Queuing Penalty (veh)							0

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	46	114	27	2	60
Average Queue (ft)	12	43	2	0	22
95th Queue (ft)	39	87	12	3	52
Link Distance (ft)	285	310		512	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: S. Hown Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	35	38	47
Average Queue (ft)	8	14	21
95th Queue (ft)	31	39	46
Link Distance (ft)	127		332
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 9

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	173	132	116	137	207	320	1076	494	156	250	102
Average Queue (ft)	74	47	58	36	93	48	526	98	62	110	13
95th Queue (ft)	138	102	105	100	169	212	1041	445	116	208	57
Link Distance (ft)	432				286		2150			533	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)		125	125	125		250		450	150		100
Storage Blk Time (%)	2	0	0	0	4		28		0	6	
Queuing Penalty (veh)	2	0	1	0	5		43		1	12	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	327	89	21	6	61	2
Average Queue (ft)	303	35	2	0	18	0
95th Queue (ft)	334	71	13	4	48	2
Link Distance (ft)	290	360		356		512
Upstream Blk Time (%)	93					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			100		100	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	98	262	18	121	47
Average Queue (ft)	9	93	1	54	3
95th Queue (ft)	53	202	10	96	31
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)		14		1	0
Queuing Penalty (veh)		1		4	0

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	104	66	55	36	146	28	190
Average Queue (ft)	50	16	19	8	69	3	81
95th Queue (ft)	84	48	46	29	127	16	158
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	0				2		3
Queuing Penalty (veh)	0				0		0

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	63	30	24	12
Average Queue (ft)	31	12	2	1
95th Queue (ft)	55	35	13	9
Link Distance (ft)	355	231		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	77	37	80	25	66	72	71
Average Queue (ft)	38	12	36	2	22	24	24
95th Queue (ft)	69	37	66	14	52	56	57
Link Distance (ft)	387		362		331		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			0			0	0
Queuing Penalty (veh)			0			0	0

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	44	179	33	8	66	21
Average Queue (ft)	12	63	4	0	27	1
95th Queue (ft)	39	148	20	5	58	14
Link Distance (ft)	285	310		512		2150
Upstream Blk Time (%)		1				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)			100		100	
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					0	0

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	6	3	41	41	64
Average Queue (ft)	0	0	19	16	31
95th Queue (ft)	6	3	44	42	57
Link Distance (ft)	398	444	124		331
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				100	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Zone Summary

Zone wide Queuing Penalty: 70

2032 NO-BUILD CONDITIONS

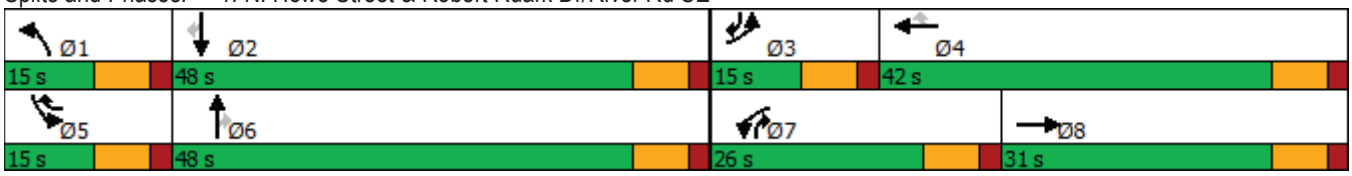
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	39	53	170	37	136	22	645	98	111	615	80
Future Volume (vph)	80	39	53	170	37	136	22	645	98	111	615	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	0		450	500		250	625		0
Storage Lanes	1		1	1		2	0		1	2		1
Taper Length (ft)	100			50			100			200		
Satd. Flow (prot)	1752	1694	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1752	1694	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			874			408			968	
Travel Time (s)		9.4			17.0			7.9			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	102	0	189	41	151	24	717	109	123	683	89
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	15.0	31.0		26.0	42.0	15.0	15.0	48.0	26.0	15.0	48.0	15.0
Total Split (%)	12.5%	25.8%		21.7%	35.0%	12.5%	12.5%	40.0%	21.7%	12.5%	40.0%	12.5%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	14.7	12.7		16.5	17.6	26.1	9.6	34.0	55.7	10.4	44.8	67.2
Actuated g/C Ratio	0.16	0.14		0.18	0.19	0.29	0.11	0.38	0.62	0.12	0.50	0.74
v/c Ratio	0.31	0.43		0.61	0.12	0.34	0.13	0.54	0.11	0.33	0.74	0.08
Control Delay	45.3	45.7		45.9	32.1	26.4	45.7	25.3	8.7	44.9	29.6	10.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	45.7		45.9	32.1	26.4	45.7	25.3	8.7	44.9	29.6	10.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	D		D	C	C	D	C	A	D	C	B
Approach Delay		45.5			36.7			23.8			29.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	47	52		96	18	55	12	177	26	32	294	16
Queue Length 95th (ft)	#118	120		201	51	122	43	264	54	74	#712	59
Internal Link Dist (ft)		400			794			328			888	
Turn Bay Length (ft)						450	500		250	625		
Base Capacity (vph)	284	508		412	737	440	204	1756	1059	374	924	1143
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.20		0.46	0.06	0.34	0.12	0.41	0.10	0.33	0.74	0.08

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 90.4
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 30.0 Intersection LOS: C
Intersection Capacity Utilization 66.8% 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: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	5	10	4	4	19	7	712	4	35	891	66
Future Volume (vph)	138	5	10	4	4	19	7	712	4	35	891	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1428	0	1770	1879	0	1736	1823	0
Flt Permitted		0.957			0.993		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1428	0	1770	1879	0	1736	1823	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	29	0	8	795	0	39	1063	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	117

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	5	10	4	4	19	7	712	4	35	891	66
Future Vol, veh/h	138	5	10	4	4	19	7	712	4	35	891	66
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	-	-	100	-	-
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, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	153	6	11	4	4	21	8	791	4	39	990	73

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1927	1916	1027	1922	1950	793	1063	0	0	795	0	0
Stage 1	1105	1105	-	809	809	-	-	-	-	-	-	-
Stage 2	822	811	-	1113	1141	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 49	68	285	28	64	381	655	-	-	818	-	-
Stage 1	252	286	-	261	394	-	-	-	-	-	-	-
Stage 2	364	393	-	167	275	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 42	64	285	24	60	381	655	-	-	818	-	-
Mov Cap-2 Maneuver	~ 42	64	-	24	60	-	-	-	-	-	-	-
Stage 1	249	272	-	258	389	-	-	-	-	-	-	-
Stage 2	336	388	-	150	262	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	1435.7	59.5	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	655	-	-	45	95	818	-	-
HCM Lane V/C Ratio	0.012	-	-	3.778	0.316	0.048	-	-
HCM Control Delay (s)	10.6	-	-	$ 1435.7	59.5	9.6	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	19	1.2	0.1	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	159	562	5	184	719
Future Volume (vph)	6	159	562	5	184	719
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1839	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1839	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	177	630	0	204	799
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	159	562	5	184	719
Future Vol, veh/h	6	159	562	5	184	719
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	7	177	624	6	204	799

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1834	627	0	0	630	0
Stage 1	627	-	-	-	-	-
Stage 2	1207	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	84	485	-	-	947	-
Stage 1	532	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	66	485	-	-	947	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	222	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	167	485	947	-
HCM Lane V/C Ratio	-	-	0.04	0.364	0.216	-
HCM Control Delay (s)	-	-	27.5	16.6	9.8	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	1.6	0.8	-

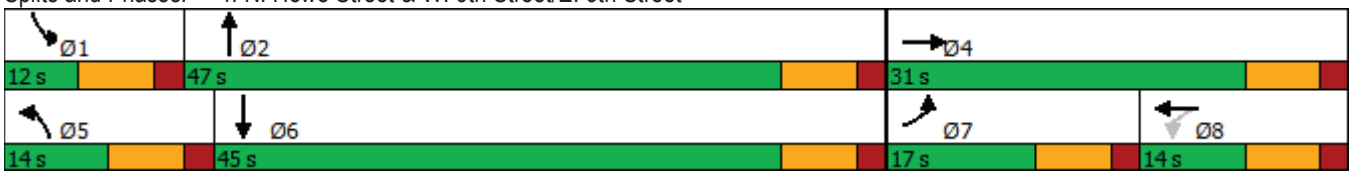
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	9	56	7	9	27	15	329	7	51	520	154
Future Volume (vph)	210	9	56	7	9	27	15	329	7	51	520	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1596	0	0	1652	0	1671	1822	0	1770	1790	0
Flt Permitted	0.950				0.925		0.950			0.950		
Satd. Flow (perm)	1770	1596	0	0	1541	0	1671	1822	0	1770	1790	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	72	0	0	48	0	17	374	0	57	749	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	17.0	31.0		14.0	14.0		14.0	47.0		12.0	45.0	
Total Split (%)	18.9%	34.4%		15.6%	15.6%		15.6%	52.2%		13.3%	50.0%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	12.9	19.9			9.7		9.7	34.5		7.5	36.1	
Actuated g/C Ratio	0.18	0.28			0.14		0.14	0.48		0.11	0.51	
v/c Ratio	0.73	0.16			0.23		0.08	0.42		0.31	0.82	
Control Delay	49.3	22.9			38.1		36.7	16.3		41.3	28.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	49.3	22.9			38.1		36.7	16.3		41.3	28.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	B		D	C	
Approach Delay		43.1			38.1			17.2			29.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	108	23			21		7	137		26	269	
Queue Length 95th (ft)	#281	64			61		29	211		70	#637	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	320	625			209		226	1152		186	1078	
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	0.73	0.12			0.23		0.08	0.32		0.31	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 69.0%		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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	7	19	4	4	4	9	81	4	6	104	7
Future Volume (vph)	14	7	19	4	4	4	9	81	4	6	104	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1675	0	0	1750	0	1770	1785	0	1770	1827	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1675	0	0	1750	0	1770	1785	0	1770	1827	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	12	0	10	94	0	7	124	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	7	19	4	4	4	9	81	4	6	104	7
Future Vol, veh/h	14	7	19	4	4	4	9	81	4	6	104	7
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	-	-	100	-	-
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, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	16	8	21	4	4	4	10	90	4	7	116	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	250	248	120	261	250	92	124	0	0	94	0	0
Stage 1	134	134	-	112	112	-	-	-	-	-	-	-
Stage 2	116	114	-	149	138	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	689	655	931	692	653	965	1463	-	-	1500	-	-
Stage 1	853	785	-	893	803	-	-	-	-	-	-	-
Stage 2	872	801	-	854	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	677	647	931	664	645	965	1463	-	-	1500	-	-
Mov Cap-2 Maneuver	677	647	-	664	645	-	-	-	-	-	-	-
Stage 1	847	781	-	887	797	-	-	-	-	-	-	-
Stage 2	857	795	-	822	778	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10	0.7	0.4
HCM LOS	B	B		

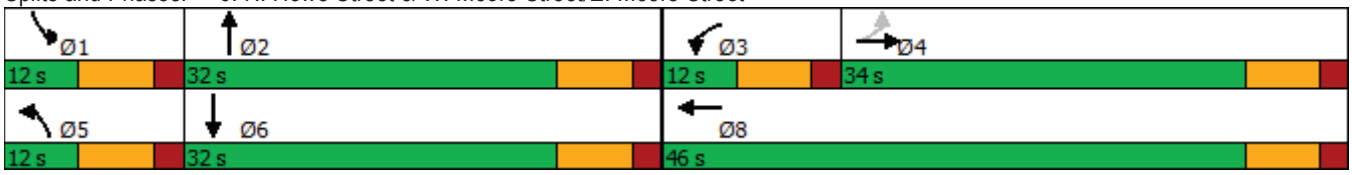
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1463	-	-	771	733	1500	-	-
HCM Lane V/C Ratio	0.007	-	-	0.058	0.018	0.004	-	-
HCM Control Delay (s)	7.5	-	-	10	10	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	5	4	16	47	4	27	4	41	48	17
Future Volume (vph)	9	16	5	4	16	47	4	27	4	41	48	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1620	0	1770	1725	0	1770	1750	0
Flt Permitted		0.876		0.950			0.950			0.950		
Satd. Flow (perm)	0	1445	0	1770	1620	0	1770	1725	0	1770	1750	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			435			861	
Travel Time (s)		14.4			13.5			14.8			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	4	70	0	4	34	0	46	72	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	32.0		12.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	35.6%		13.3%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		10.0		7.7	11.5		7.7	23.8		7.7	25.8	
Actuated g/C Ratio		0.29		0.22	0.33		0.22	0.69		0.22	0.74	
v/c Ratio		0.08		0.01	0.13		0.01	0.03		0.12	0.06	
Control Delay		14.7		17.0	10.4		17.0	12.9		16.4	9.7	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		14.7		17.0	10.4		17.0	12.9		16.4	9.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		B	B		B	B		B	A	
Approach Delay		14.7			10.7			13.3			12.3	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		2		0	3		0	0		3	0	
Queue Length 95th (ft)		29		8	34		8	28		38	48	
Internal Link Dist (ft)		342			316			355			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		1232		395	1542		395	1393		395	1413	
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		0.03		0.01	0.05		0.01	0.02		0.12	0.05	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 34.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.13			
Intersection Signal Delay: 12.3		Intersection LOS: B	
Intersection Capacity Utilization 25.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	4	9	5	91	4	865	4	61	980	7
Future Volume (vph)	5	4	4	9	5	91	4	865	4	61	980	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1753	0	0	1608	0	1770	1843	0	1736	1861	0
Flt Permitted		0.979			0.996		0.950			0.950		
Satd. Flow (perm)	0	1753	0	0	1608	0	1770	1843	0	1736	1861	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1805	
Travel Time (s)		8.7			9.4			11.1			35.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	117	0	4	965	0	68	1097	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	4	4	9	5	91	4	865	4	61	980	7
Future Vol, veh/h	5	4	4	9	5	91	4	865	4	61	980	7
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	-	-	100	-	-
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	14	2	3	2	3	2	4	2	2
Mvmt Flow	6	4	4	10	6	101	4	961	4	68	1089	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2254	2202	1093	2204	2204	963	1097	0	0	965	0	0
Stage 1	1229	1229	-	971	971	-	-	-	-	-	-	-
Stage 2	1025	973	-	1233	1233	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.24	6.52	6.23	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.626	4.018	3.327	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	29	45	261	29	45	309	636	-	-	706	-	-
Stage 1	218	250	-	289	331	-	-	-	-	-	-	-
Stage 2	284	330	-	205	249	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	40	261	24	40	309	636	-	-	706	-	-
Mov Cap-2 Maneuver	16	40	-	24	40	-	-	-	-	-	-	-
Stage 1	217	226	-	287	329	-	-	-	-	-	-	-
Stage 2	187	328	-	179	225	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	207.4	113.5	0	0.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	636	-	-	30	132	706	-	-
HCM Lane V/C Ratio	0.007	-	-	0.481	0.884	0.096	-	-
HCM Control Delay (s)	10.7	-	-	207.4	113.5	10.6	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	5.7	0.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	4	4	15	5	4	7	4	22	16	21
Future Volume (vph)	6	14	4	4	15	5	4	7	4	22	16	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1802	0	0	1794	0	0	1778	0	1770	1706	0
Flt Permitted		0.987			0.993			0.988		0.950		
Satd. Flow (perm)	0	1802	0	0	1794	0	0	1778	0	1770	1706	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		501			491			139			435	
Travel Time (s)		13.7			13.4			3.8			8.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	27	0	0	16	0	24	41	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	4	4	15	5	4	7	4	22	16	21
Future Vol, veh/h	6	14	4	4	15	5	4	7	4	22	16	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	4	4	17	6	4	8	4	24	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	20	0	0	81	63	18	66	62	20
Stage 1	-	-	-	-	-	-	32	32	-	28	28	-
Stage 2	-	-	-	-	-	-	49	31	-	38	34	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1592	-	-	1596	-	-	907	828	1061	927	829	1058
Stage 1	-	-	-	-	-	-	984	868	-	989	872	-
Stage 2	-	-	-	-	-	-	964	869	-	977	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1592	-	-	1596	-	-	868	822	1061	911	823	1058
Mov Cap-2 Maneuver	-	-	-	-	-	-	868	822	-	911	823	-
Stage 1	-	-	-	-	-	-	980	865	-	985	869	-
Stage 2	-	-	-	-	-	-	921	866	-	960	864	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	1.2	9.1	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	888	1592	-	-	1596	-	-	911	942
HCM Lane V/C Ratio	0.019	0.004	-	-	0.003	-	-	0.027	0.044
HCM Control Delay (s)	9.1	7.3	0	-	7.3	0	-	9.1	9
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0.1

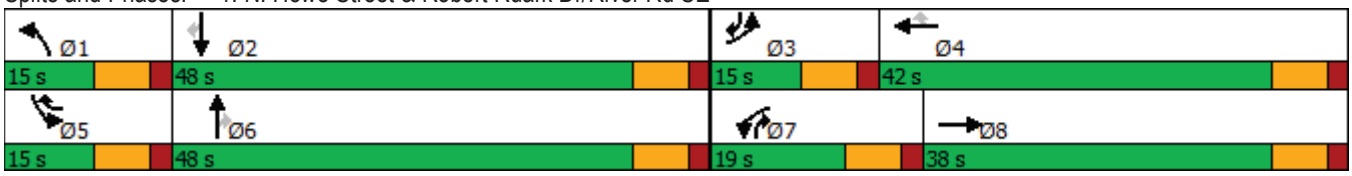
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	73	42	113	58	237	34	1291	158	142	681	93
Future Volume (vph)	132	73	42	113	58	237	34	1291	158	142	681	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	0		450	500		250	625		0
Storage Lanes	1		1	1		2	0		1	2		1
Taper Length (ft)	100			50			100			200		
Satd. Flow (prot)	1770	1728	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1728	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			874			401			968	
Travel Time (s)		9.4			17.0			7.8			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	128	0	126	64	263	38	1434	176	158	757	103
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	15.0	38.0		19.0	42.0	15.0	15.0	48.0	19.0	15.0	48.0	15.0
Total Split (%)	12.5%	31.7%		15.8%	35.0%	12.5%	12.5%	40.0%	15.8%	12.5%	40.0%	12.5%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	12.9	13.7		12.3	16.2	28.2	9.3	43.1	60.4	10.0	49.7	68.7
Actuated g/C Ratio	0.13	0.14		0.12	0.16	0.28	0.09	0.43	0.61	0.10	0.50	0.69
v/c Ratio	0.64	0.54		0.57	0.21	0.59	0.23	0.93	0.19	0.46	0.80	0.09
Control Delay	58.7	48.6		52.4	36.8	34.8	47.1	39.8	9.7	47.9	32.4	9.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	48.6		52.4	36.8	34.8	47.1	39.8	9.7	47.9	32.4	9.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	D		D	D	C	D	D	A	D	C	A
Approach Delay		54.0			40.0			36.8			32.5	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	94	77		76	35	136	23	451	45	50	442	27
Queue Length 95th (ft)	#217	137		143	73	213	57	#669	87	87	#761	59
Internal Link Dist (ft)		400			794			321			888	
Turn Bay Length (ft)						450	500		250	625		
Base Capacity (vph)	229	576		252	696	449	179	1538	973	347	942	1096
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.22		0.50	0.09	0.59	0.21	0.93	0.18	0.46	0.80	0.09

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 99.2
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 70.2% 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: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	4	10	4	4	51	4	1120	7	37	803	63
Future Volume (vph)	245	4	10	4	4	51	4	1120	7	37	803	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1597	0	1770	1859	0	1687	1859	0
Flt Permitted		0.955			0.997		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1597	0	1770	1859	0	1687	1859	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	0	0	65	0	4	1252	0	41	962	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.1%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	790.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	4	10	4	4	51	4	1120	7	37	803	63
Future Vol, veh/h	245	4	10	4	4	51	4	1120	7	37	803	63
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	-	-	100	-	-
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	5	2	2	17	7	1	2
Mvmt Flow	272	4	11	4	4	57	4	1244	8	41	892	70

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2296	2269	927	2273	2300	1248	962	0	0	1252	0	0
Stage 1	1009	1009	-	1256	1256	-	-	-	-	-	-	-
Stage 2	1287	1260	-	1017	1044	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 27	40	325	28	39	208	715	-	-	539	-	-
Stage 1	290	318	-	210	243	-	-	-	-	-	-	-
Stage 2	~ 202	242	-	287	306	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 17	37	325	23	36	208	715	-	-	539	-	-
Mov Cap-2 Maneuver	~ 17	37	-	23	36	-	-	-	-	-	-	-
Stage 1	288	294	-	209	242	-	-	-	-	-	-	-
Stage 2	~ 143	241	-	252	283	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	7156.4	76.1	0	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	715	-	-	18	111	539	-	-
HCM Lane V/C Ratio	0.006	-	-	15.988	0.591	0.076	-	-
HCM Control Delay (s)	10.1	-	-	$ 7156.4	76.1	12.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	36.7	2.9	0.2	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	380	749	7	220	593
Future Volume (vph)	12	380	749	7	220	593
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	422	840	0	244	659
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	26.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	380	749	7	220	593
Future Vol, veh/h	12	380	749	7	220	593
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	13	422	832	8	244	659

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1983	836	0	0	840	0
Stage 1	836	-	-	-	-	-
Stage 2	1147	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	67	~ 367	-	-	799	-
Stage 1	425	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	47	~ 367	-	-	799	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	211	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	124.7	0	3.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	147	367	799	-
HCM Lane V/C Ratio	-	-	0.091	1.15	0.306	-
HCM Control Delay (s)	-	-	31.9	127.6	11.5	-
HCM Lane LOS	-	-	D	F	B	-
HCM 95th %tile Q(veh)	-	-	0.3	16.5	1.3	-

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

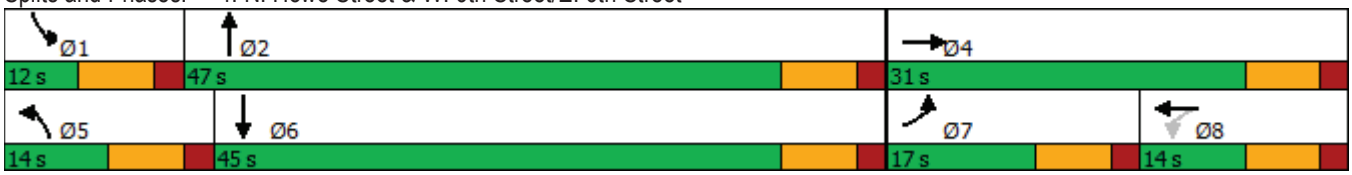
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	7	20	4	9	31	15	567	6	6	547	52
Future Volume (vph)	158	7	20	4	9	31	15	567	6	6	547	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1595	0	0	1677	0	1770	1841	0	1770	1839	0
Flt Permitted	0.950				0.966		0.950			0.950		
Satd. Flow (perm)	1752	1595	0	0	1627	0	1770	1841	0	1770	1839	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	30	0	0	48	0	17	637	0	7	666	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	17.0	31.0		14.0	14.0		14.0	47.0		12.0	45.0	
Total Split (%)	18.9%	34.4%		15.6%	15.6%		15.6%	52.2%		13.3%	50.0%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	12.8	19.9			9.9		9.9	35.1		7.7	32.7	
Actuated g/C Ratio	0.19	0.29			0.15		0.15	0.52		0.11	0.48	
v/c Ratio	0.53	0.06			0.20		0.07	0.67		0.04	0.75	
Control Delay	38.5	21.5			36.3		35.7	18.0		37.5	23.9	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	38.5	21.5			36.3		35.7	18.0		37.5	23.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	B		D	C	
Approach Delay		36.0			36.3			18.4			24.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	65	7			18		6	203		3	218	
Queue Length 95th (ft)	#199	33			60		29	422		17	#517	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	340	672			237		258	1296		200	1192	
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	0.52	0.04			0.20		0.07	0.49		0.04	0.56	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 67.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 55.7% 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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	9	34	4	4	7	12	219	4	7	147	9
Future Volume (vph)	37	9	34	4	4	7	12	219	4	7	147	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1714	0	0	1715	0	1770	1877	0	1770	1846	0
Flt Permitted		0.977			0.988		0.950			0.950		
Satd. Flow (perm)	0	1714	0	0	1715	0	1770	1877	0	1770	1846	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	16	0	13	247	0	8	173	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			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	9	34	4	4	7	12	219	4	7	147	9
Future Vol, veh/h	37	9	34	4	4	7	12	219	4	7	147	9
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	-	-	100	-	-
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	1	2	2	2	2
Mvmt Flow	41	10	38	4	4	8	13	243	4	8	163	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	461	457	168	479	460	245	173	0	0	247	0	0
Stage 1	184	184	-	271	271	-	-	-	-	-	-	-
Stage 2	277	273	-	208	189	-	-	-	-	-	-	-
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	511	500	876	497	498	794	1404	-	-	1319	-	-
Stage 1	818	747	-	735	685	-	-	-	-	-	-	-
Stage 2	729	684	-	794	744	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	497	493	876	463	491	794	1404	-	-	1319	-	-
Mov Cap-2 Maneuver	497	493	-	463	491	-	-	-	-	-	-	-
Stage 1	811	743	-	728	679	-	-	-	-	-	-	-
Stage 2	710	678	-	745	740	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	11.3	0.4	0.3
HCM LOS	B	B		

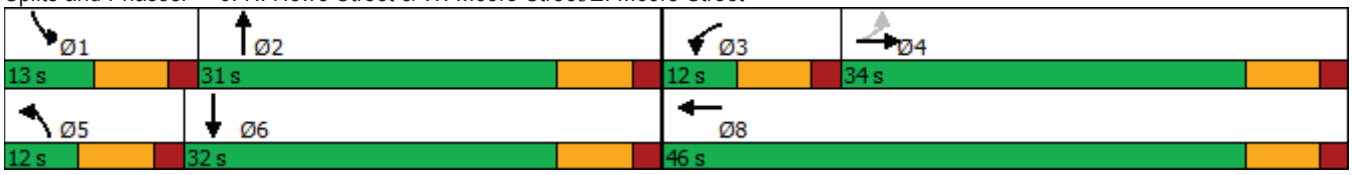
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1404	-	-	608	586	1319	-	-
HCM Lane V/C Ratio	0.009	-	-	0.146	0.028	0.006	-	-
HCM Control Delay (s)	7.6	-	-	11.9	11.3	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	50	7	22	41	68	4	71	19	71	80	21
Future Volume (vph)	46	50	7	22	41	68	4	71	19	71	80	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1805	0	1770	1690	0	1770	1785	0	1770	1805	0
Flt Permitted		0.799		0.950			0.950			0.950		
Satd. Flow (perm)	0	1475	0	1770	1690	0	1770	1785	0	1770	1805	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			429			861	
Travel Time (s)		14.4			13.5			14.6			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	24	122	0	4	100	0	79	112	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		11.2		7.6	12.8		7.6	16.3		8.6	21.4	
Actuated g/C Ratio		0.27		0.18	0.31		0.18	0.39		0.21	0.52	
v/c Ratio		0.29		0.07	0.23		0.01	0.14		0.21	0.12	
Control Delay		17.8		21.3	13.2		21.2	17.0		20.6	12.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		17.8		21.3	13.2		21.2	17.0		20.6	12.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		C	B		C	B		C	B	
Approach Delay		17.8			14.5			17.2			15.6	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		23		5	24		1	20		16	11	
Queue Length 95th (ft)		77		28	56		9	69		64	74	
Internal Link Dist (ft)		342			316			349			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		1120		327	1534		327	1226		374	1288	
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		0.10		0.07	0.08		0.01	0.08		0.21	0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 41.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 31.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	5	6	6	104	9	1380	27	62	893	16
Future Volume (vph)	5	4	5	6	6	104	9	1380	27	62	893	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1736	0	0	1634	0	1770	1857	0	1770	1839	0
Flt Permitted		0.982			0.997		0.950			0.950		
Satd. Flow (perm)	0	1736	0	0	1634	0	1770	1857	0	1770	1839	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1812	
Travel Time (s)		8.7			9.4			11.1			35.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	130	0	10	1563	0	69	1010	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	48.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Traffic Vol, veh/h	5	4	5	6	6	104	9	1380	27	62	893	16
Future Vol, veh/h	5	4	5	6	6	104	9	1380	27	62	893	16
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	-	-	100	-	-
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	3	2
Mvmt Flow	6	4	6	7	7	116	10	1533	30	69	992	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2769	2722	1001	2712	2716	1548	1010	0	0	1563	0	0
Stage 1	1139	1139	-	1568	1568	-	-	-	-	-	-	-
Stage 2	1630	1583	-	1144	1148	-	-	-	-	-	-	-
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	12	21	295	14	21	140	686	-	-	423	-	-
Stage 1	245	276	-	139	171	-	-	-	-	-	-	-
Stage 2	128	169	-	243	273	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 1	17	295	10	17	140	686	-	-	423	-	-
Mov Cap-2 Maneuver	~ 1	17	-	10	17	-	-	-	-	-	-	-
Stage 1	241	231	-	137	168	-	-	-	-	-	-	-
Stage 2	21	166	-	196	229	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	4066.8	$ 552.2	0.1	1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	686	-	-	3	68	423	-	-
HCM Lane V/C Ratio	0.015	-	-	5.185	1.895	0.163	-	-
HCM Control Delay (s)	10.3	-	-	$ 4066.8	$ 552.2	15.2	-	-
HCM Lane LOS	B	-	-	F	F	C	-	-
HCM 95th %tile Q(veh)	0	-	-	3.3	11.7	0.6	-	-

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Future Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Flt Permitted		0.988			0.996			0.995		0.950		
Satd. Flow (perm)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		468			400			150			429	
Travel Time (s)		12.8			10.9			4.1			8.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	82	0	0	37	0	33	76	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Future Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	7	7	39	36	4	29	4	33	38	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	23	0	0	143	123	20	121	108	57
Stage 1	-	-	-	-	-	-	34	34	-	71	71	-
Stage 2	-	-	-	-	-	-	109	89	-	50	37	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1592	-	-	826	767	1058	854	782	1009
Stage 1	-	-	-	-	-	-	982	867	-	939	836	-
Stage 2	-	-	-	-	-	-	896	821	-	963	864	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1592	-	-	760	759	1058	820	774	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	760	759	-	820	774	-
Stage 1	-	-	-	-	-	-	977	863	-	934	832	-
Stage 2	-	-	-	-	-	-	819	817	-	922	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.6	9.8	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	785	1524	-	-	1592	-	-	820	876
HCM Lane V/C Ratio	0.048	0.004	-	-	0.004	-	-	0.041	0.086
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.6	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1	0.3

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	122	98	240	51	133	46	208	189	114	62	133	291
Average Queue (ft)	59	48	93	17	55	17	177	128	42	7	57	191
95th Queue (ft)	113	81	181	45	110	39	208	202	82	27	95	287
Link Distance (ft)	426		812									916
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		125		450	450				250	625	625	
Storage Blk Time (%)	1											
Queuing Penalty (veh)	1											

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB
Directions Served	R
Maximum Queue (ft)	163
Average Queue (ft)	19
95th Queue (ft)	72
Link Distance (ft)	916
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	324	92	28	49
Average Queue (ft)	262	24	2	17
95th Queue (ft)	363	66	14	43
Link Distance (ft)	290	360		
Upstream Blk Time (%)	47			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	L
Maximum Queue (ft)	16	73	51	91
Average Queue (ft)	2	28	3	46
95th Queue (ft)	11	62	19	75
Link Distance (ft)		1127	762	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100			100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	162	85	76	28	226	199	570
Average Queue (ft)	89	33	35	9	108	42	222
95th Queue (ft)	147	68	73	29	184	118	408
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	9	0			7		27
Queuing Penalty (veh)	6	0			1		13

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	53	31	29
Average Queue (ft)	24	16	2
95th Queue (ft)	46	40	13
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	72	31	79	29	30	75	50
Average Queue (ft)	24	6	36	2	6	29	16
95th Queue (ft)	60	26	65	14	26	59	40
Link Distance (ft)	387		362		372		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	50	117	31	67
Average Queue (ft)	9	56	1	23
95th Queue (ft)	34	93	11	54
Link Distance (ft)	285	309		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	30	30	30
Average Queue (ft)	12	21	22
95th Queue (ft)	36	43	42
Link Distance (ft)	112		372
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 21

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	335	225	472	492	474	70	235	215	185	46	107	499
Average Queue (ft)	100	70	94	71	194	23	190	188	55	11	76	220
95th Queue (ft)	221	157	227	255	360	55	209	199	145	35	110	407
Link Distance (ft)	426		813									916
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		125		450	450				250	625	625	
Storage Blk Time (%)	13	0	1	0	1							
Queuing Penalty (veh)	16	0	2	0	1							

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB
Directions Served	R
Maximum Queue (ft)	57
Average Queue (ft)	17
95th Queue (ft)	45
Link Distance (ft)	916
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	305	223	52
Average Queue (ft)	303	89	22
95th Queue (ft)	309	178	47
Link Distance (ft)	290	360	
Upstream Blk Time (%)	100		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	200	1161	160	148
Average Queue (ft)	79	1013	79	16
95th Queue (ft)	239	1438	136	83
Link Distance (ft)		1127		356
Upstream Blk Time (%)		71		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)		100	6	0
Queuing Penalty (veh)		12	35	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	128	54	76	50	332	28	301
Average Queue (ft)	69	14	31	17	171	4	154
95th Queue (ft)	111	42	63	44	285	19	262
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	2				16		19
Queuing Penalty (veh)	1				2		1

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	73	54	30	28
Average Queue (ft)	33	15	2	1
95th Queue (ft)	53	42	14	10
Link Distance (ft)	355	231		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	143	52	140	28	114	129	91
Average Queue (ft)	54	18	46	2	42	48	24
95th Queue (ft)	95	44	91	14	78	93	62
Link Distance (ft)	388		362		366		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			0			1	0
Queuing Penalty (veh)			0			1	0

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	51	160	31	72
Average Queue (ft)	13	69	7	34
95th Queue (ft)	41	118	28	59
Link Distance (ft)	285	310		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	78	50	104
Average Queue (ft)	25	18	37
95th Queue (ft)	53	44	73
Link Distance (ft)	123		366
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 23: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 72

2032 BUILD CONDITIONS

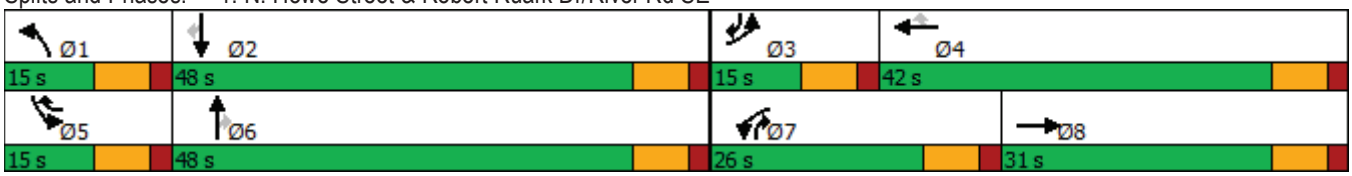
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	86	124	187	72	136	74	692	122	111	650	269
Future Volume (vph)	339	86	124	187	72	136	74	692	122	111	650	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	450		450	500		250	625		0
Storage Lanes	1		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	1752	1692	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1752	1692	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1083			874			414			968	
Travel Time (s)		21.1			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	377	234	0	208	80	151	82	769	136	123	722	299
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	15.0	31.0		26.0	42.0	15.0	15.0	48.0	26.0	15.0	48.0	15.0
Total Split (%)	12.5%	25.8%		21.7%	35.0%	12.5%	12.5%	40.0%	21.7%	12.5%	40.0%	12.5%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	15.3	20.7		18.1	27.2	38.7	9.9	40.0	63.2	10.1	43.9	65.6
Actuated g/C Ratio	0.14	0.19		0.17	0.25	0.35	0.09	0.37	0.58	0.09	0.40	0.60
v/c Ratio	1.53	0.73		0.74	0.19	0.28	0.51	0.59	0.15	0.41	0.97	0.32
Control Delay	294.2	56.9		61.4	32.2	24.5	63.4	31.1	11.6	54.8	61.1	18.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	294.2	56.9		61.4	32.2	24.5	63.4	31.1	11.6	54.8	61.1	18.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E		E	C	C	E	C	B	D	E	B
Approach Delay		203.3			43.4			31.1			49.2	
Approach LOS		F			D			C			D	
Queue Length 50th (ft)	~469	165		147	45	72	60	240	43	45	~585	134
Queue Length 95th (ft)	#683	255		#250	85	120	#117	321	79	79	#861	218
Internal Link Dist (ft)		1003			794			334			888	
Turn Bay Length (ft)				450		450	500		250	625		
Base Capacity (vph)	246	410		333	596	540	165	1422	953	302	747	923
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	0.57		0.62	0.13	0.28	0.50	0.54	0.14	0.41	0.97	0.32

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 109.3
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.53
Intersection Signal Delay: 72.4 Intersection LOS: E
Intersection Capacity Utilization 81.3% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	5	10	4	4	19	7	835	4	35	1014	66
Future Volume (vph)	138	5	10	4	4	19	7	835	4	35	1014	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1428	0	1770	1879	0	1736	1825	0
Flt Permitted		0.957			0.993		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1428	0	1770	1879	0	1736	1825	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	29	0	8	932	0	39	1200	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	192.5

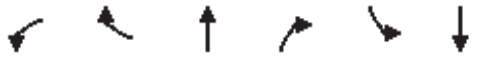
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	138	5	10	4	4	19	7	835	4	35	1014	66
Future Vol, veh/h	138	5	10	4	4	19	7	835	4	35	1014	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
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, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	153	6	11	4	4	21	8	928	4	39	1127	73

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2201	2190	1164	2196	2224	930	1200	0	0	932	0	0
Stage 1	1242	1242	-	946	946	-	-	-	-	-	-	-
Stage 2	959	948	-	1250	1278	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 31	45	237	17	43	317	582	-	-	726	-	-
Stage 1	211	247	-	214	340	-	-	-	-	-	-	-
Stage 2	305	339	-	136	237	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 25	42	237	14	40	317	582	-	-	726	-	-
Mov Cap-2 Maneuver	~ 25	42	-	14	40	-	-	-	-	-	-	-
Stage 1	208	234	-	211	335	-	-	-	-	-	-	-
Stage 2	277	334	-	120	224	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	2670.8	111.3	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	582	-	-	27	61	726	-	-
HCM Lane V/C Ratio	0.013	-	-	6.296	0.492	0.054	-	-
HCM Control Delay (s)	11.3	-	-	$ 2670.8	111.3	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	20.9	1.9	0.2	-	-

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	176	668	5	208	818
Future Volume (vph)	6	176	668	5	208	818
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1840	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1840	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	196	748	0	231	909
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	176	668	5	208	818
Future Vol, veh/h	6	176	668	5	208	818
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	7	196	742	6	231	909

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2116	745	0	0	748	0
Stage 1	745	-	-	-	-	-
Stage 2	1371	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	56	416	-	-	856	-
Stage 1	469	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	416	-	-	856	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	172	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.5	0	2.2
HCM LOS	C		

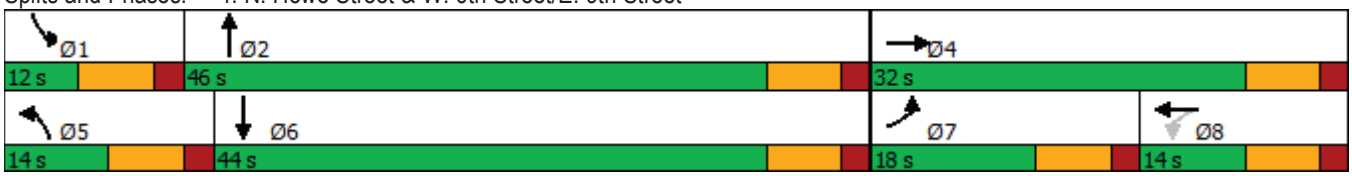
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	129	416	856	-
HCM Lane V/C Ratio	-	-	0.052	0.47	0.27	-
HCM Control Delay (s)	-	-	34.4	21.1	10.8	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	2.4	1.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	281	9	80	7	9	27	32	364	7	51	567	206
Future Volume (vph)	281	9	80	7	9	27	32	364	7	51	567	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1592	0	0	1652	0	1671	1822	0	1770	1780	0
Flt Permitted	0.950				0.919		0.950			0.950		
Satd. Flow (perm)	1770	1592	0	0	1531	0	1671	1822	0	1770	1780	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		781			345			2934			854	
Travel Time (s)		15.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	312	99	0	0	48	0	36	412	0	57	859	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	18.0	32.0		14.0	14.0		14.0	46.0		12.0	44.0	
Total Split (%)	20.0%	35.6%		15.6%	15.6%		15.6%	51.1%		13.3%	48.9%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	13.4	20.8			9.3		9.3	41.4		7.2	40.3	
Actuated g/C Ratio	0.17	0.26			0.12		0.12	0.53		0.09	0.51	
v/c Ratio	1.04	0.24			0.27		0.18	0.43		0.35	0.94	
Control Delay	99.5	25.0			40.8		39.0	16.2		44.8	43.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	99.5	25.0			40.8		39.0	16.2		44.8	43.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	C			D		D	B		D	D	
Approach Delay		81.6			40.8			18.0			43.6	
Approach LOS		F			D			B			D	
Queue Length 50th (ft)	~220	42			26		19	159		31	~566	
Queue Length 95th (ft)	#380	82			61		48	242		70	#792	
Internal Link Dist (ft)		701			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	301	563			181		197	980		162	910	
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	1.04	0.18			0.27		0.18	0.42		0.35	0.94	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.8			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 45.8		Intersection LOS: D	
Intersection Capacity Utilization 73.0%		ICU Level of Service C	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	7	19	4	4	4	9	133	4	6	175	7
Future Volume (vph)	14	7	19	4	4	4	9	133	4	6	175	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1675	0	0	1750	0	1770	1787	0	1770	1841	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1675	0	0	1750	0	1770	1787	0	1770	1841	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	12	0	10	152	0	7	202	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	7	19	4	4	4	9	133	4	6	175	7
Future Vol, veh/h	14	7	19	4	4	4	9	133	4	6	175	7
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	-	-	100	-	-
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, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	16	8	21	4	4	4	10	148	4	7	194	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	386	384	198	397	386	150	202	0	0	152	0	0
Stage 1	212	212	-	170	170	-	-	-	-	-	-	-
Stage 2	174	172	-	227	216	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	560	550	843	563	548	896	1370	-	-	1429	-	-
Stage 1	774	727	-	832	758	-	-	-	-	-	-	-
Stage 2	812	756	-	776	724	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	549	543	843	538	541	896	1370	-	-	1429	-	-
Mov Cap-2 Maneuver	549	543	-	538	541	-	-	-	-	-	-	-
Stage 1	769	723	-	826	753	-	-	-	-	-	-	-
Stage 2	797	751	-	745	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.9	0.5	0.2
HCM LOS	B	B		

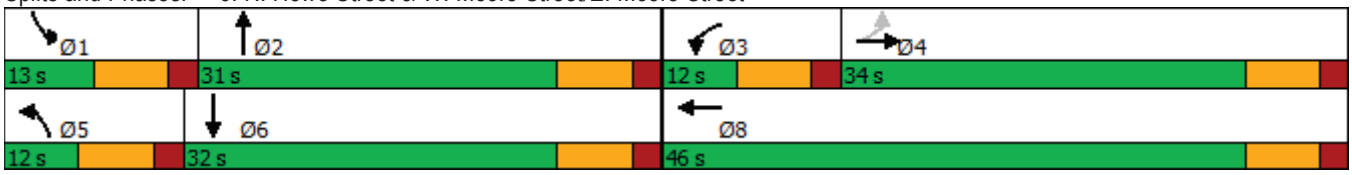
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	656	622	1429	-	-
HCM Lane V/C Ratio	0.007	-	-	0.068	0.021	0.005	-	-
HCM Control Delay (s)	7.6	-	-	10.9	10.9	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	5	4	16	99	4	27	4	112	48	17
Future Volume (vph)	9	16	5	4	16	99	4	27	4	112	48	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1596	0	1770	1725	0	1770	1750	0
Flt Permitted		0.855		0.950			0.950			0.950		
Satd. Flow (perm)	0	1410	0	1770	1596	0	1770	1725	0	1770	1750	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			427			861	
Travel Time (s)		14.4			13.5			14.6			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	4	128	0	4	34	0	124	72	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.6		7.1	11.6		7.1	12.4		8.1	24.6	
Actuated g/C Ratio		0.22		0.16	0.26		0.16	0.28		0.18	0.56	
v/c Ratio		0.11		0.01	0.31		0.01	0.07		0.38	0.07	
Control Delay		16.8		18.2	14.6		18.2	16.5		21.4	11.2	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		16.8		18.2	14.6		18.2	16.5		21.4	11.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		B	B		B	B		C	B	
Approach Delay		16.8			14.7			16.7			17.7	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		6		1	25		1	6		26	7	
Queue Length 95th (ft)		29		8	56		8	29		80	48	
Internal Link Dist (ft)		342			316			347			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		933		283	1494		283	1024		323	1204	
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		0.04		0.01	0.09		0.01	0.03		0.38	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 44.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 29.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	4	9	5	91	4	988	4	61	1103	7
Future Volume (vph)	5	4	4	9	5	91	4	988	4	61	1103	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1753	0	0	1608	0	1770	1843	0	1736	1861	0
Flt Permitted		0.979			0.996		0.950			0.950		
Satd. Flow (perm)	0	1753	0	0	1608	0	1770	1843	0	1736	1861	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	117	0	4	1102	0	68	1234	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	15.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	5	4	4	9	5	91	4	988	4	61	1103	7
Future Vol, veh/h	5	4	4	9	5	91	4	988	4	61	1103	7
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	-	-	100	-	-
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	14	2	3	2	3	2	4	2	2
Mvmt Flow	6	4	4	10	6	101	4	1098	4	68	1226	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2528	2476	1230	2478	2478	1100	1234	0	0	1102	0	0
Stage 1	1366	1366	-	1108	1108	-	-	-	-	-	-	-
Stage 2	1162	1110	-	1370	1370	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.24	6.52	6.23	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.626	4.018	3.327	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	19	30	217	18	30	257	565	-	-	626	-	-
Stage 1	182	215	-	241	286	-	-	-	-	-	-	-
Stage 2	237	285	-	170	214	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	9	27	217	14	27	257	565	-	-	626	-	-
Mov Cap-2 Maneuver	9	27	-	14	27	-	-	-	-	-	-	-
Stage 1	181	192	-	239	284	-	-	-	-	-	-	-
Stage 2	140	283	-	145	191	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 432.9	285	0	0.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	565	-	-	18	89	626	-	-
HCM Lane V/C Ratio	0.008	-	-	0.802	1.311	0.108	-	-
HCM Control Delay (s)	11.4	-	-	$ 432.9	285	11.4	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.1	8.6	0.4	-	-

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	0	1	15	5	2	7	1	22	16	21
Future Volume (vph)	6	14	0	1	15	5	2	7	1	22	16	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1835	0	0	1796	0	0	1824	0	1770	1706	0
Flt Permitted		0.985			0.998			0.991		0.950		
Satd. Flow (perm)	0	1835	0	0	1796	0	0	1824	0	1770	1706	0
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		420			401			148			427	
Travel Time (s)		14.3			13.7			5.0			14.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	24	0	0	11	0	24	41	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	0	1	15	5	2	7	1	22	16	21
Future Vol, veh/h	6	14	0	1	15	5	2	7	1	22	16	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	0	1	17	6	2	8	1	24	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	16	0	0	73	55	16	57	52	20
Stage 1	-	-	-	-	-	-	30	30	-	22	22	-
Stage 2	-	-	-	-	-	-	43	25	-	35	30	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1592	-	-	1602	-	-	918	836	1063	940	839	1058
Stage 1	-	-	-	-	-	-	987	870	-	996	877	-
Stage 2	-	-	-	-	-	-	971	874	-	981	870	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1592	-	-	1602	-	-	879	832	1063	929	835	1058
Mov Cap-2 Maneuver	-	-	-	-	-	-	879	832	-	929	835	-
Stage 1	-	-	-	-	-	-	983	867	-	992	876	-
Stage 2	-	-	-	-	-	-	929	873	-	967	867	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.3	9.2	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	860	1592	-	-	1602	-	-	929	948
HCM Lane V/C Ratio	0.013	0.004	-	-	0.001	-	-	0.026	0.043
HCM Control Delay (s)	9.2	7.3	0	-	7.2	0	-	9	9
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1	0.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	86	4	276	70	4	377
Future Volume (vph)	86	4	276	70	4	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1668	0	1593	1676	1593	1425
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1668	0	1593	1676	1593	1425
Link Speed (mph)	35			35	35	
Link Distance (ft)	933			1398	941	
Travel Time (s)	18.2			27.2	18.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	307	78	4	419
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			

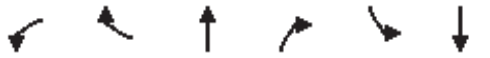
Intersection	
Int Delay, s/veh	8.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	86	4	276	70	4	377
Future Vol, veh/h	86	4	276	70	4	377
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	96	4	307	78	4	419

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	100	0	790	98
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	692	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1493	-	359	958
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	285	958
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	285	958	-	-	1493	-
HCM Lane V/C Ratio	0.016	0.437	-	-	0.205	-
HCM Control Delay (s)	17.8	11.6	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	2.3	-	-	0.8	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	888	0	0	961
Future Volume (vph)	0	0	888	0	0	961
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		100	0	
Storage Lanes	0	0		1	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	5085	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	52		1799			414
Travel Time (s)	1.2		40.9			9.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	987	0	0	1068
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

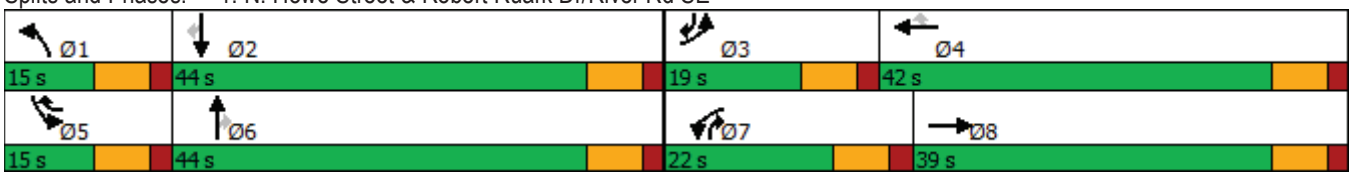
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	410	124	117	139	109	237	111	1341	183	142	732	374
Future Volume (vph)	410	124	117	139	109	237	111	1341	183	142	732	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	450		450	500		250	625		0
Storage Lanes	1		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	1770	1701	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1701	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1058			874			414			968	
Travel Time (s)		20.6			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	456	268	0	154	121	263	123	1490	203	158	813	416
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	19.0	39.0		22.0	42.0	15.0	15.0	44.0	22.0	15.0	44.0	19.0
Total Split (%)	15.8%	32.5%		18.3%	35.0%	12.5%	12.5%	36.7%	18.3%	12.5%	36.7%	15.8%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	14.1	23.1		14.4	23.4	38.3	10.1	39.5	58.9	9.8	39.3	58.4
Actuated g/C Ratio	0.13	0.22		0.13	0.22	0.36	0.09	0.37	0.55	0.09	0.37	0.55
v/c Ratio	1.96	0.73		0.64	0.30	0.46	0.74	1.14	0.24	0.50	1.18	0.48
Control Delay	474.4	51.3		58.0	35.6	28.6	75.5	105.9	14.4	54.0	127.4	19.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	474.4	51.3		58.0	35.6	28.6	75.5	105.9	14.4	54.0	127.4	19.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D		E	D	C	E	F	B	D	F	B
Approach Delay		317.8			38.6			93.6			86.6	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	~493	174		101	69	136	84	~646	69	54	~683	172
Queue Length 95th (ft)	#764	266		184	119	207	#202	#901	133	96	#1044	312
Internal Link Dist (ft)		978			794			334			888	
Turn Bay Length (ft)				450		450	500		250	625		
Base Capacity (vph)	233	544		285	648	570	166	1306	894	323	690	863
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.96	0.49		0.54	0.19	0.46	0.74	1.14	0.23	0.49	1.18	0.48

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 107
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.96
Intersection Signal Delay: 121.2 Intersection LOS: F
Intersection Capacity Utilization 89.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	4	10	4	4	51	4	1272	7	37	955	63
Future Volume (vph)	245	4	10	4	4	51	4	1272	7	37	955	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1597	0	1770	1859	0	1687	1863	0
Flt Permitted		0.955			0.997		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1597	0	1770	1859	0	1687	1863	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	0	0	65	0	4	1421	0	41	1131	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 95.1%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1627.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	245	4	10	4	4	51	4	1272	7	37	955	63
Future Vol, veh/h	245	4	10	4	4	51	4	1272	7	37	955	63
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	-	-	100	-	-
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	5	2	2	17	7	1	2
Mvmt Flow	272	4	11	4	4	57	4	1413	8	41	1061	70

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2634	2607	1096	2611	2638	1417	1131	0	0	1421	0	0
Stage 1	1178	1178	-	1425	1425	-	-	-	-	-	-	-
Stage 2	1456	1429	-	1186	1213	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 16	25	259	16	23	165	618	-	-	464	-	-
Stage 1	~ 233	265	-	168	201	-	-	-	-	-	-	-
Stage 2	~ 161	200	-	230	255	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	23	259	12	21	165	618	-	-	464	-	-
Mov Cap-2 Maneuver	~ 8	23	-	12	21	-	-	-	-	-	-	-
Stage 1	~ 232	242	-	167	200	-	-	-	-	-	-	-
Stage 2	~ 103	199	-	197	233	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 16642.5	184.6	0	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	618	-	-	8	71	464	-	-
HCM Lane V/C Ratio	0.007	-	-	35.972	0.923	0.089	-	-
HCM Control Delay (s)	10.9	-	-	$ 16642.5	184.6	13.5	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	37.8	4.6	0.3	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	405	876	7	245	720
Future Volume (vph)	12	405	876	7	245	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	450	981	0	272	800
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	49

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	405	876	7	245	720
Future Vol, veh/h	12	405	876	7	245	720
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	13	450	973	8	272	800

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2321	977	0	0	981	0
Stage 1	977	-	-	-	-	-
Stage 2	1344	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	41	~ 304	-	-	708	-
Stage 1	365	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	25	~ 304	-	-	708	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	150	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	258.4	0	3.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	106	304	708	-
HCM Lane V/C Ratio	-	-	0.126	1.48	0.384	-
HCM Control Delay (s)	-	-	43.8	264.8	13.2	-
HCM Lane LOS	-	-	E	F	B	-
HCM 95th %tile Q(veh)	-	-	0.4	25	1.8	-

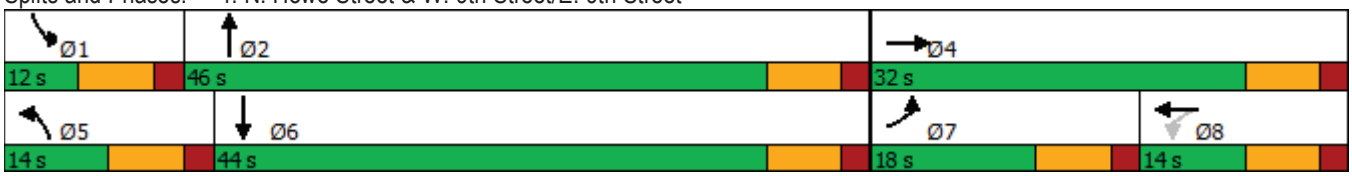
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	7	48	4	9	31	42	617	6	6	595	131
Future Volume (vph)	235	7	48	4	9	31	42	617	6	6	595	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1590	0	0	1677	0	1770	1841	0	1770	1812	0
Flt Permitted	0.950				0.962		0.950			0.950		
Satd. Flow (perm)	1752	1590	0	0	1620	0	1770	1841	0	1770	1812	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		797			345			2934			854	
Travel Time (s)		15.5			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	261	61	0	0	48	0	47	693	0	7	807	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	18.0	32.0		14.0	14.0		14.0	46.0		12.0	44.0	
Total Split (%)	20.0%	35.6%		15.6%	15.6%		15.6%	51.1%		13.3%	48.9%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	13.4	20.8			9.3		9.3	45.9		7.2	40.6	
Actuated g/C Ratio	0.17	0.26			0.12		0.12	0.58		0.09	0.51	
v/c Ratio	0.88	0.15			0.25		0.23	0.65		0.04	0.87	
Control Delay	66.9	23.9			40.3		39.4	17.6		39.2	33.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	66.9	23.9			40.3		39.4	17.6		39.2	33.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	C			D		D	B		D	C	
Approach Delay		58.7			40.3			19.0			33.8	
Approach LOS		E			D			B			C	
Queue Length 50th (ft)	~161	25			26		25	239		4	~495	
Queue Length 95th (ft)	#310	55			60		59	#539		17	#718	
Internal Link Dist (ft)		717			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	297	560			190		207	1082		161	930	
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	0.88	0.11			0.25		0.23	0.64		0.04	0.87	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 32.4		Intersection LOS: C	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	9	34	4	4	7	12	296	4	7	223	9
Future Volume (vph)	37	9	34	4	4	7	12	296	4	7	223	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1714	0	0	1715	0	1770	1877	0	1770	1852	0
Flt Permitted		0.977			0.988		0.950			0.950		
Satd. Flow (perm)	0	1714	0	0	1715	0	1770	1877	0	1770	1852	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	16	0	13	333	0	8	258	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	9	34	4	4	7	12	296	4	7	223	9
Future Vol, veh/h	37	9	34	4	4	7	12	296	4	7	223	9
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	-	-	100	-	-
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	1	2	2	2	2
Mvmt Flow	41	10	38	4	4	8	13	329	4	8	248	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	632	628	253	650	631	331	258	0	0	333	0	0
Stage 1	269	269	-	357	357	-	-	-	-	-	-	-
Stage 2	363	359	-	293	274	-	-	-	-	-	-	-
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	393	400	786	382	398	711	1307	-	-	1226	-	-
Stage 1	737	687	-	661	628	-	-	-	-	-	-	-
Stage 2	656	627	-	715	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	380	393	786	352	391	711	1307	-	-	1226	-	-
Mov Cap-2 Maneuver	380	393	-	352	391	-	-	-	-	-	-	-
Stage 1	730	682	-	654	622	-	-	-	-	-	-	-
Stage 2	638	621	-	666	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	12.8	0.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	489	477	1226	-	-
HCM Lane V/C Ratio	0.01	-	-	0.182	0.035	0.006	-	-
HCM Control Delay (s)	7.8	-	-	14	12.8	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	-	-

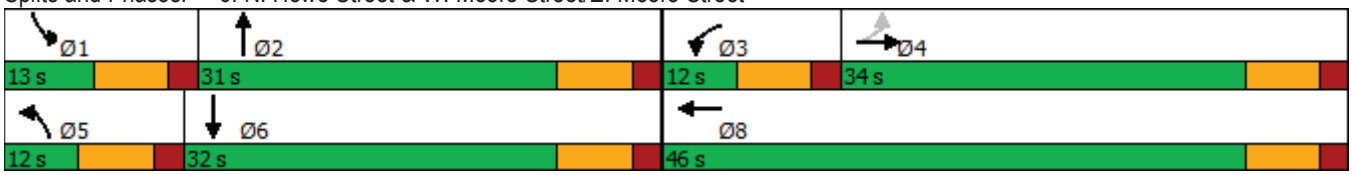
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	50	7	22	41	145	4	71	19	147	80	21
Future Volume (vph)	46	50	7	22	41	145	4	71	19	147	80	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1805	0	1770	1645	0	1770	1785	0	1770	1805	0
Flt Permitted		0.760		0.950			0.950			0.950		
Satd. Flow (perm)	0	1403	0	1770	1645	0	1770	1785	0	1770	1805	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			423			861	
Travel Time (s)		14.4			13.5			14.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	24	207	0	4	100	0	163	112	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		12.0		7.2	13.8		7.2	10.1		8.2	21.6	
Actuated g/C Ratio		0.25		0.15	0.29		0.15	0.21		0.17	0.45	
v/c Ratio		0.32		0.09	0.43		0.01	0.26		0.53	0.14	
Control Delay		18.8		22.1	16.3		21.8	19.5		29.9	12.5	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		18.8		22.1	16.3		21.8	19.5		29.9	12.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		C	B		C	B		C	B	
Approach Delay		18.8			16.9			19.6			22.8	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		23		5	43		1	21		37	13	
Queue Length 95th (ft)		77		28	91		9	70		#145	75	
Internal Link Dist (ft)		342			316			343			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		877		267	1454		267	1000		305	1050	
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		0.13		0.09	0.14		0.01	0.10		0.53	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 47.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 44.2%		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: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	5	6	6	104	9	1532	27	62	1045	16
Future Volume (vph)	5	4	5	6	6	104	9	1532	27	62	1045	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1736	0	0	1634	0	1770	1856	0	1770	1859	0
Flt Permitted		0.982			0.997		0.950			0.950		
Satd. Flow (perm)	0	1736	0	0	1634	0	1770	1856	0	1770	1859	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	130	0	10	1732	0	69	1179	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.1%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	53.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	4	5	6	6	104	9	1532	27	62	1045	16
Future Vol, veh/h	5	4	5	6	6	104	9	1532	27	62	1045	16
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	-	-	100	-	-
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	7	2	2	2
Mvmt Flow	6	4	6	7	7	116	10	1702	30	69	1161	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3107	3060	1170	3050	3054	1717	1179	0	0	1732	0	0
Stage 1	1308	1308	-	1737	1737	-	-	-	-	-	-	-
Stage 2	1799	1752	-	1313	1317	-	-	-	-	-	-	-
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	7	12	235	8	13	~ 111	592	-	-	364	-	-
Stage 1	196	229	-	111	141	-	-	-	-	-	-	-
Stage 2	102	139	-	195	227	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	10	235	~ 4	10	~ 111	592	-	-	364	-	-
Mov Cap-2 Maneuver	-	10	-	~ 4	10	-	-	-	-	-	-	-
Stage 1	193	185	-	109	139	-	-	-	-	-	-	-
Stage 2	-	137	-	151	184	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 1296.8	0.1	0.9
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	592	-	-	-	38	364	-	-
HCM Lane V/C Ratio	0.017	-	-	-	3.392	0.189	-	-
HCM Control Delay (s)	11.2	-	-	-	$ 1296.8	17.2	-	-
HCM Lane LOS	B	-	-	-	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	14.7	0.7	-	-

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Future Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Flt Permitted		0.988			0.996			0.995		0.950		
Satd. Flow (perm)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		426			368			156			423	
Travel Time (s)		11.6			10.0			4.3			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	82	0	0	37	0	33	76	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Future Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	7	7	39	36	4	29	4	33	38	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	23	0	0	143	123	20	121	108	57
Stage 1	-	-	-	-	-	-	34	34	-	71	71	-
Stage 2	-	-	-	-	-	-	109	89	-	50	37	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1592	-	-	826	767	1058	854	782	1009
Stage 1	-	-	-	-	-	-	982	867	-	939	836	-
Stage 2	-	-	-	-	-	-	896	821	-	963	864	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1592	-	-	760	759	1058	820	774	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	760	759	-	820	774	-
Stage 1	-	-	-	-	-	-	977	863	-	934	832	-
Stage 2	-	-	-	-	-	-	819	817	-	922	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.6	9.8	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	785	1524	-	-	1592	-	-	820	876
HCM Lane V/C Ratio	0.048	0.004	-	-	0.004	-	-	0.041	0.086
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.6	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1	0.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	124	4	409	93	4	404
Future Volume (vph)	124	4	409	93	4	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1855	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1855	0	1770	1863	1770	1583
Link Speed (mph)	35			35	35	
Link Distance (ft)	863			1434	715	
Travel Time (s)	16.8			27.9	13.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	454	103	4	449
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	124	4	409	93	4	404
Future Vol, veh/h	124	4	409	93	4	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	138	4	454	103	4	449

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	1151	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	1011	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1441	-	219	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1441	-	150	908
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	241	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	150	908	-	-	1441	-
HCM Lane V/C Ratio	0.03	0.494	-	-	0.315	-
HCM Control Delay (s)	29.7	12.8	-	-	8.6	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	2.8	-	-	1.4	-

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	B11	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	1107	225	1341	237	173	144	175	263	325	74	118	131
Average Queue (ft)	926	206	425	126	59	77	64	126	137	35	11	53
95th Queue (ft)	1223	299	1235	204	129	129	131	209	223	71	49	92
Link Distance (ft)	1002		1336		812		353	353	353			
Upstream Blk Time (%)	49		2									
Queuing Penalty (veh)	237		8									
Storage Bay Dist (ft)		125		450		450				250	625	625
Storage Blk Time (%)	90	8							1			
Queuing Penalty (veh)	189	28							1			

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	690	438
Average Queue (ft)	404	73
95th Queue (ft)	646	204
Link Distance (ft)	916	916
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	2	
Queuing Penalty (veh)	2	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	342	107	28	30	158
Average Queue (ft)	307	32	4	14	7
95th Queue (ft)	323	76	20	38	56
Link Distance (ft)	290	360			512
Upstream Blk Time (%)	97				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)					1
Queuing Penalty (veh)					0

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	59	131	200	370
Average Queue (ft)	7	44	66	61
95th Queue (ft)	29	91	137	237
Link Distance (ft)		1127		356
Upstream Blk Time (%)				0
Queuing Penalty (veh)				5
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)		1	1	6
Queuing Penalty (veh)		0	6	13

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	200	761	136	70	198	200	772
Average Queue (ft)	173	242	47	27	107	87	499
95th Queue (ft)	234	599	101	54	182	207	830
Link Distance (ft)		746	311		2871		762
Upstream Blk Time (%)		1					3
Queuing Penalty (veh)		0					26
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	65	1			9	3	48
Queuing Penalty (veh)	58	3			3	21	25

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	71	31	27
Average Queue (ft)	23	15	1
95th Queue (ft)	50	40	9
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	71	31	115	29	52	96	50
Average Queue (ft)	21	6	54	6	16	48	18
95th Queue (ft)	54	27	92	23	48	83	46
Link Distance (ft)	388		362		365		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			1			0	
Queuing Penalty (veh)			0			0	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	53	266	31	74
Average Queue (ft)	11	70	2	20
95th Queue (ft)	37	167	15	50
Link Distance (ft)	285	310		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (ft)	30	31	56	31
Average Queue (ft)	1	4	19	22
95th Queue (ft)	10	22	48	44
Link Distance (ft)	386	120		365
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	54	28	101
Average Queue (ft)	17	1	50
95th Queue (ft)	48	10	79
Link Distance (ft)		907	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		250
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 623

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	B11	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	T	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	1069	225	1378	160	203	284	178	379	373	160	117	825
Average Queue (ft)	1017	224	591	84	68	132	76	228	250	60	36	398
95th Queue (ft)	1143	227	1503	136	126	226	142	324	344	113	97	1008
Link Distance (ft)	977		1368		812		353	353	353			
Upstream Blk Time (%)	69		2					0	0			
Queuing Penalty (veh)	370		10					1	2			
Storage Bay Dist (ft)		125		450		450				250	625	625
Storage Blk Time (%)	83	22							7			
Queuing Penalty (veh)	200	89							13			

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	951	932
Average Queue (ft)	749	473
95th Queue (ft)	1089	1181
Link Distance (ft)	916	916
Upstream Blk Time (%)	32	25
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)	43	
Queuing Penalty (veh)	62	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	305	223	28	50
Average Queue (ft)	303	90	3	27
95th Queue (ft)	309	183	17	51
Link Distance (ft)	290	360		
Upstream Blk Time (%)	100			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	200	1179	31	193	251
Average Queue (ft)	65	894	4	89	40
95th Queue (ft)	217	1411	19	157	153
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)		48			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)		100		12	0
Queuing Penalty (veh)		12		96	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	200	237	116	199	507	51	465
Average Queue (ft)	132	60	37	50	162	8	273
95th Queue (ft)	205	176	85	127	324	31	417
Link Distance (ft)		762	311		2871		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	32	0		0	18		35
Queuing Penalty (veh)	18	0		0	8		2

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	78	30	30
Average Queue (ft)	34	9	3
95th Queue (ft)	55	31	18
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	96	50	138	28	94	113	70
Average Queue (ft)	51	16	67	1	40	66	31
95th Queue (ft)	89	42	105	10	72	101	69
Link Distance (ft)	388		362		361		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			1			1	
Queuing Penalty (veh)			0			1	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	162	325	31	77	120
Average Queue (ft)	59	214	3	34	4
95th Queue (ft)	137	409	19	69	41
Link Distance (ft)	285	310			1755
Upstream Blk Time (%)		48			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)					0
Queuing Penalty (veh)					0

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	31	55	56
Average Queue (ft)	20	14	33
95th Queue (ft)	43	41	51
Link Distance (ft)	128		361
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	162	29	243
Average Queue (ft)	46	5	62
95th Queue (ft)	108	23	101
Link Distance (ft)		677	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		250
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 886

2032 BUILD IMPROVED CONDITIONS

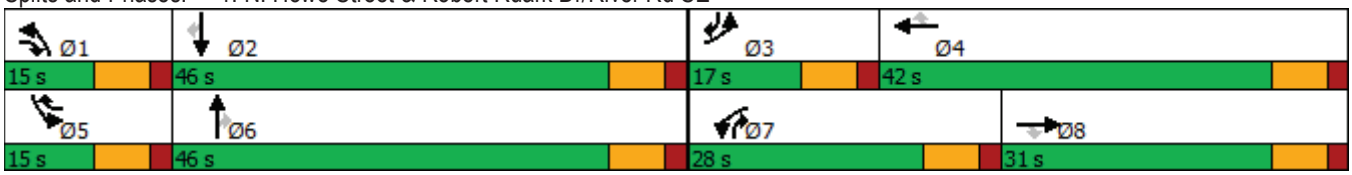
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	86	124	187	72	136	74	692	122	111	650	269
Future Volume (vph)	339	86	124	187	72	136	74	692	122	111	650	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		275	450		450	500		250	625		0
Storage Lanes	2		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	3400	1845	1583	1703	1727	1524	1770	3539	1568	3242	1863	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3400	1845	1583	1703	1727	1524	1770	3539	1568	3242	1863	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1083			874			414			968	
Travel Time (s)		21.1			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	377	96	138	208	80	151	82	769	136	123	722	299
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Detector Phase	3	8	1	7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0	15.0	15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	17.0	31.0	15.0	28.0	42.0	15.0	15.0	46.0	28.0	15.0	46.0	17.0
Total Split (%)	14.2%	25.8%	12.5%	23.3%	35.0%	12.5%	12.5%	38.3%	23.3%	12.5%	38.3%	14.2%
Yellow Time (s)	5.0	5.0	5.0	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	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	12.2	12.0	23.3	18.0	17.8	29.3	9.8	41.5	64.6	10.0	41.7	58.9
Actuated g/C Ratio	0.12	0.12	0.24	0.18	0.18	0.30	0.10	0.42	0.66	0.10	0.42	0.60
v/c Ratio	0.89	0.43	0.37	0.67	0.26	0.33	0.47	0.51	0.13	0.37	0.91	0.32
Control Delay	69.2	48.4	34.1	49.7	36.8	27.4	54.6	24.4	7.9	47.8	47.1	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	48.4	34.1	49.7	36.8	27.4	54.6	24.4	7.9	47.8	47.1	13.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	D	C	D	D	C	D	C	A	D	D	B
Approach Delay		58.0			39.7			24.6			38.4	
Approach LOS		E			D			C			D	
Queue Length 50th (ft)	126	59	72	126	45	72	51	195	32	39	445	96
Queue Length 95th (ft)	#242	114	132	214	87	123	107	290	63	73	#783	183
Internal Link Dist (ft)		1003			794			334			888	
Turn Bay Length (ft)	350		275	450		450	500		250	625		
Base Capacity (vph)	422	496	381	405	661	456	182	1504	1116	335	790	923
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.19	0.36	0.51	0.12	0.33	0.45	0.51	0.12	0.37	0.91	0.32

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 98.2
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 38.1 Intersection LOS: D
Intersection Capacity Utilization 69.6% 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: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	5	10	4	4	19	7	835	4	35	1014	66
Future Volume (vph)	138	5	10	4	4	19	7	835	4	35	1014	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1428	0	1770	1879	0	1736	1825	0
Flt Permitted		0.957			0.993		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1428	0	1770	1879	0	1736	1825	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	29	0	8	932	0	39	1200	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	192.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	5	10	4	4	19	7	835	4	35	1014	66
Future Vol, veh/h	138	5	10	4	4	19	7	835	4	35	1014	66
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	-	-	100	-	-
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, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	153	6	11	4	4	21	8	928	4	39	1127	73

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2201	2190	1164	2196	2224	930	1200	0	0	932	0	0
Stage 1	1242	1242	-	946	946	-	-	-	-	-	-	-
Stage 2	959	948	-	1250	1278	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 31	45	237	17	43	317	582	-	-	726	-	-
Stage 1	211	247	-	214	340	-	-	-	-	-	-	-
Stage 2	305	339	-	136	237	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 25	42	237	14	40	317	582	-	-	726	-	-
Mov Cap-2 Maneuver	~ 25	42	-	14	40	-	-	-	-	-	-	-
Stage 1	208	234	-	211	335	-	-	-	-	-	-	-
Stage 2	277	334	-	120	224	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	2670.8	111.3	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	582	-	-	27	61	726	-	-
HCM Lane V/C Ratio	0.013	-	-	6.296	0.492	0.054	-	-
HCM Control Delay (s)	11.3	-	-	$ 2670.8	111.3	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	20.9	1.9	0.2	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	176	668	5	208	818
Future Volume (vph)	6	176	668	5	208	818
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1840	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1840	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	196	748	0	231	909
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	176	668	5	208	818
Future Vol, veh/h	6	176	668	5	208	818
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	7	196	742	6	231	909

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2116	745	0	0	748	0
Stage 1	745	-	-	-	-	-
Stage 2	1371	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	56	416	-	-	856	-
Stage 1	469	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	416	-	-	856	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	172	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.5	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	129	416	856	-
HCM Lane V/C Ratio	-	-	0.052	0.47	0.27	-
HCM Control Delay (s)	-	-	34.4	21.1	10.8	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	2.4	1.1	-

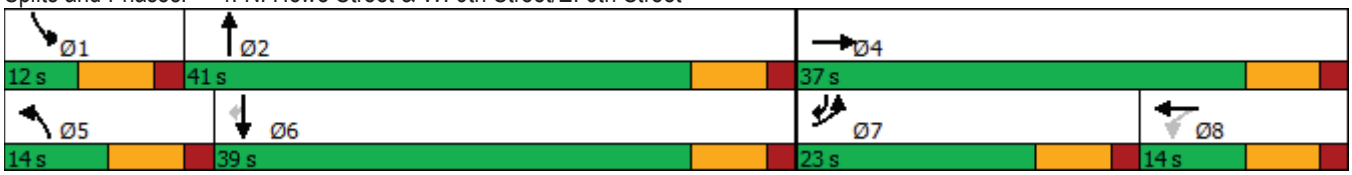
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	281	9	80	7	9	27	32	364	7	51	567	206
Future Volume (vph)	281	9	80	7	9	27	32	364	7	51	567	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1592	0	0	1652	0	1671	1822	0	1770	1845	1599
Flt Permitted	0.950				0.919		0.950			0.950		
Satd. Flow (perm)	1770	1592	0	0	1531	0	1671	1822	0	1770	1845	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		781			345			2934			854	
Travel Time (s)		15.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	312	99	0	0	48	0	36	412	0	57	630	229
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases				8								6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	5.0
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	12.0
Total Split (s)	23.0	37.0		14.0	14.0		14.0	41.0		12.0	39.0	23.0
Total Split (%)	25.6%	41.1%		15.6%	15.6%		15.6%	45.6%		13.3%	43.3%	25.6%
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	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	None
Act Effct Green (s)	18.7	25.5			10.0		10.0	30.5		7.7	29.5	56.9
Actuated g/C Ratio	0.26	0.35			0.14		0.14	0.42		0.11	0.40	0.78
v/c Ratio	0.69	0.18			0.23		0.16	0.54		0.30	0.84	0.18
Control Delay	40.4	20.1			39.5		38.3	21.6		42.7	35.3	6.3
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	40.4	20.1			39.5		38.3	21.6		42.7	35.3	6.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	C		D	D	A
Approach Delay		35.5			39.5			23.0			28.5	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	174	38			26		19	178		31	332	50
Queue Length 95th (ft)	#322	75			61		48	271		70	#542	83
Internal Link Dist (ft)		701			265			2854			774	
Turn Bay Length (ft)	100						100			100		200
Base Capacity (vph)	484	773			209		228	995		188	952	1237
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.64	0.13			0.23		0.16	0.41		0.30	0.66	0.19

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 29.0 Intersection LOS: C
Intersection Capacity Utilization 70.4% 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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	7	19	4	4	4	9	133	4	6	175	7
Future Volume (vph)	14	7	19	4	4	4	9	133	4	6	175	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1675	0	0	1750	0	1770	1787	0	1770	1841	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1675	0	0	1750	0	1770	1787	0	1770	1841	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	12	0	10	152	0	7	202	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	7	19	4	4	4	9	133	4	6	175	7
Future Vol, veh/h	14	7	19	4	4	4	9	133	4	6	175	7
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	-	-	100	-	-
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, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	16	8	21	4	4	4	10	148	4	7	194	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	386	384	198	397	386	150	202	0	0	152	0	0
Stage 1	212	212	-	170	170	-	-	-	-	-	-	-
Stage 2	174	172	-	227	216	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	560	550	843	563	548	896	1370	-	-	1429	-	-
Stage 1	774	727	-	832	758	-	-	-	-	-	-	-
Stage 2	812	756	-	776	724	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	549	543	843	538	541	896	1370	-	-	1429	-	-
Mov Cap-2 Maneuver	549	543	-	538	541	-	-	-	-	-	-	-
Stage 1	769	723	-	826	753	-	-	-	-	-	-	-
Stage 2	797	751	-	745	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.9	0.5	0.2
HCM LOS	B	B		

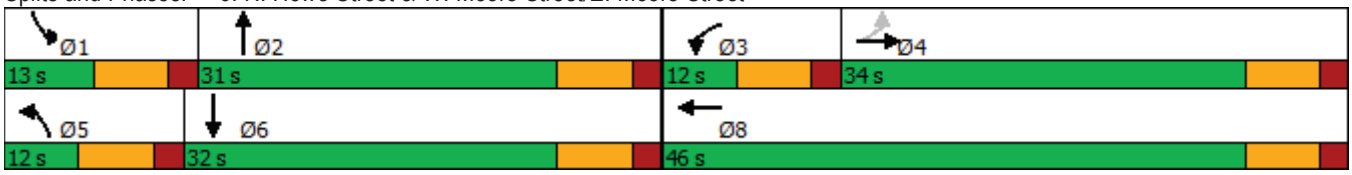
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	656	622	1429	-	-
HCM Lane V/C Ratio	0.007	-	-	0.068	0.021	0.005	-	-
HCM Control Delay (s)	7.6	-	-	10.9	10.9	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	5	4	16	99	4	27	4	112	48	17
Future Volume (vph)	9	16	5	4	16	99	4	27	4	112	48	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1596	0	1770	1725	0	1770	1750	0
Flt Permitted		0.855		0.950			0.950			0.950		
Satd. Flow (perm)	0	1410	0	1770	1596	0	1770	1725	0	1770	1750	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			427			861	
Travel Time (s)		14.4			13.5			14.6			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	4	128	0	4	34	0	124	72	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.6		7.1	11.6		7.1	12.4		8.1	24.6	
Actuated g/C Ratio		0.22		0.16	0.26		0.16	0.28		0.18	0.56	
v/c Ratio		0.11		0.01	0.31		0.01	0.07		0.38	0.07	
Control Delay		16.8		18.2	14.6		18.2	16.5		21.4	11.2	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		16.8		18.2	14.6		18.2	16.5		21.4	11.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		B	B		B	B		C	B	
Approach Delay		16.8			14.7			16.7			17.7	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		6		1	25		1	6		26	7	
Queue Length 95th (ft)		29		8	56		8	29		80	48	
Internal Link Dist (ft)		342			316			347			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		933		283	1494		283	1024		323	1204	
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		0.04		0.01	0.09		0.01	0.03		0.38	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 44.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 29.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	4	9	5	91	4	988	4	61	1103	7
Future Volume (vph)	5	4	4	9	5	91	4	988	4	61	1103	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		175	100		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1753	0	0	1683	1568	1770	1843	0	1736	1861	0
Flt Permitted		0.880			0.825		0.950			0.950		
Satd. Flow (perm)	0	1575	0	0	1432	1568	1770	1843	0	1736	1861	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	16	101	4	1102	0	68	1234	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	8	5	2		1	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)	25.0	25.0		25.0	25.0	25.0	12.0	25.0		12.0	25.0	
Total Split (s)	25.0	25.0		25.0	25.0	25.0	12.0	53.0		12.0	53.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	13.3%	58.9%		13.3%	58.9%	
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		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		12.3			12.5	12.5	7.1	53.4		7.1	60.4	
Actuated g/C Ratio		0.15			0.15	0.15	0.09	0.66		0.09	0.75	
v/c Ratio		0.06			0.07	0.42	0.03	0.91		0.45	0.89	
Control Delay		29.8			30.1	37.0	36.8	30.4		47.4	22.9	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		29.8			30.1	37.0	36.8	30.4		47.4	22.9	

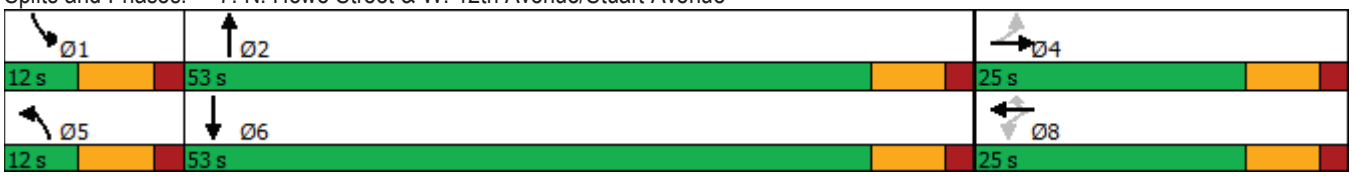
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C			C	D	D	C		D	C	
Approach Delay		29.8			36.0			30.5			24.2	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)		6			7	48	2	~619		34	423	
Queue Length 95th (ft)		22			24	94	12	#926		#79	#1079	
Internal Link Dist (ft)		239			264			490			1719	
Turn Bay Length (ft)						175	100			100		
Base Capacity (vph)		392			356	390	154	1216		151	1389	
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		0.04			0.04	0.26	0.03	0.91		0.45	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.9			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 7: N. Howe Street & W. 12th Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	4	4	15	5	4	7	4	22	16	21
Future Volume (vph)	6	14	4	4	15	5	4	7	4	22	16	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1802	0	0	1794	0	0	1778	0	1770	1706	0
Flt Permitted		0.987			0.993			0.988		0.950		
Satd. Flow (perm)	0	1802	0	0	1794	0	0	1778	0	1770	1706	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		420			401			148			427	
Travel Time (s)		11.5			10.9			4.0			8.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	27	0	0	16	0	24	41	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	4	4	15	5	4	7	4	22	16	21
Future Vol, veh/h	6	14	4	4	15	5	4	7	4	22	16	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	4	4	17	6	4	8	4	24	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	20	0	0	81	63	18	66	62	20
Stage 1	-	-	-	-	-	-	32	32	-	28	28	-
Stage 2	-	-	-	-	-	-	49	31	-	38	34	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1592	-	-	1596	-	-	907	828	1061	927	829	1058
Stage 1	-	-	-	-	-	-	984	868	-	989	872	-
Stage 2	-	-	-	-	-	-	964	869	-	977	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1592	-	-	1596	-	-	868	822	1061	911	823	1058
Mov Cap-2 Maneuver	-	-	-	-	-	-	868	822	-	911	823	-
Stage 1	-	-	-	-	-	-	980	865	-	985	869	-
Stage 2	-	-	-	-	-	-	921	866	-	960	864	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	1.2	9.1	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	888	1592	-	-	1596	-	-	911	942
HCM Lane V/C Ratio	0.019	0.004	-	-	0.003	-	-	0.027	0.044
HCM Control Delay (s)	9.1	7.3	0	-	7.3	0	-	9.1	9
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	86	4	276	70	4	377
Future Volume (vph)	86	4	276	70	4	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1668	0	1593	1676	1593	1425
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1668	0	1593	1676	1593	1425
Link Speed (mph)	35			35	35	
Link Distance (ft)	933			1407	941	
Travel Time (s)	18.2			27.4	18.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	307	78	4	419
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	CBD		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			

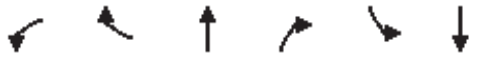
Intersection	
Int Delay, s/veh	8.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	86	4	276	70	4	377
Future Vol, veh/h	86	4	276	70	4	377
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	96	4	307	78	4	419

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	100	0	790	98
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	692	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1493	-	359	958
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	285	958
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	285	958	-	-	1493	-
HCM Lane V/C Ratio	0.016	0.437	-	-	0.205	-
HCM Control Delay (s)	17.8	11.6	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	2.3	-	-	0.8	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	888	0	0	961
Future Volume (vph)	0	0	888	0	0	961
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		100	0	
Storage Lanes	0	0		1	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	5085	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	52		1799			414
Travel Time (s)	1.2		40.9			9.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	987	0	0	1068
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

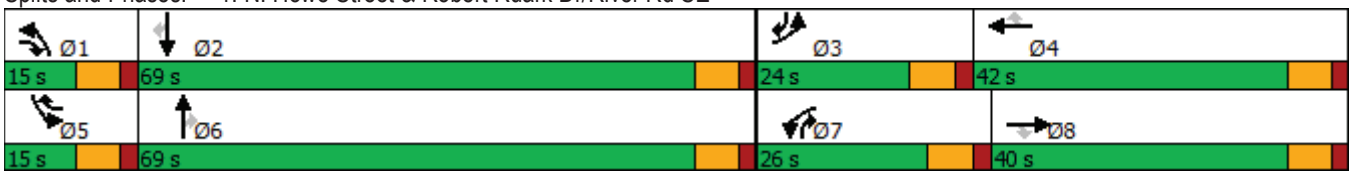
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	410	124	117	139	109	237	111	1341	183	142	732	374
Future Volume (vph)	410	124	117	139	109	237	111	1341	183	142	732	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		275	450		450	500		250	625		0
Storage Lanes	2		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	3433	1810	1583	1787	1863	1583	1770	3539	1553	3433	1881	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1810	1583	1787	1863	1583	1770	3539	1553	3433	1881	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1058			874			414			968	
Travel Time (s)		20.6			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	456	138	130	154	121	263	123	1490	203	158	813	416
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8	1	7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Detector Phase	3	8	1	7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0	15.0	15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	24.0	40.0	15.0	26.0	42.0	15.0	15.0	69.0	26.0	15.0	69.0	24.0
Total Split (%)	16.0%	26.7%	10.0%	17.3%	28.0%	10.0%	10.0%	46.0%	17.3%	10.0%	46.0%	16.0%
Yellow Time (s)	5.0	5.0	5.0	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	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	19.0	18.2	33.2	16.9	16.0	30.9	10.0	64.2	86.1	9.9	64.1	88.1
Actuated g/C Ratio	0.15	0.14	0.26	0.13	0.12	0.24	0.08	0.50	0.67	0.08	0.50	0.68
v/c Ratio	0.90	0.54	0.32	0.66	0.52	0.70	0.90	0.85	0.20	0.60	0.87	0.39
Control Delay	76.6	60.8	42.0	67.8	60.9	55.0	113.6	34.7	9.0	69.0	41.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	60.8	42.0	67.8	60.9	55.0	113.6	34.7	9.0	69.0	41.5	10.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	E	D	E	E	E	F	C	A	E	D	B
Approach Delay		67.3			60.0			37.1			35.4	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)	193	109	89	122	96	202	102	542	57	65	573	132
Queue Length 95th (ft)	#319	183	152	205	160	298	#240	746	103	110	#944	239
Internal Link Dist (ft)		978			794			334			888	
Turn Bay Length (ft)	350		275	450		450	500		250	625		
Base Capacity (vph)	505	491	407	290	534	380	137	1759	1085	266	933	1079
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.28	0.32	0.53	0.23	0.69	0.90	0.85	0.19	0.59	0.87	0.39

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 129.2
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 44.3 Intersection LOS: D
Intersection Capacity Utilization 78.9% 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: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	4	10	4	4	51	4	1272	7	37	955	63
Future Volume (vph)	245	4	10	4	4	51	4	1272	7	37	955	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1597	0	1770	1859	0	1687	1863	0
Flt Permitted		0.955			0.997		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1597	0	1770	1859	0	1687	1863	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	0	0	65	0	4	1421	0	41	1131	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 95.1%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1627.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	4	10	4	4	51	4	1272	7	37	955	63
Future Vol, veh/h	245	4	10	4	4	51	4	1272	7	37	955	63
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	-	-	100	-	-
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	5	2	2	17	7	1	2
Mvmt Flow	272	4	11	4	4	57	4	1413	8	41	1061	70

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2634	2607	1096	2611	2638	1417	1131	0	0	1421	0	0
Stage 1	1178	1178	-	1425	1425	-	-	-	-	-	-	-
Stage 2	1456	1429	-	1186	1213	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 16	25	259	16	23	165	618	-	-	464	-	-
Stage 1	~ 233	265	-	168	201	-	-	-	-	-	-	-
Stage 2	~ 161	200	-	230	255	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	23	259	12	21	165	618	-	-	464	-	-
Mov Cap-2 Maneuver	~ 8	23	-	12	21	-	-	-	-	-	-	-
Stage 1	~ 232	242	-	167	200	-	-	-	-	-	-	-
Stage 2	~ 103	199	-	197	233	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 16642.5	184.6	0	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	618	-	-	8	71	464	-	-
HCM Lane V/C Ratio	0.007	-	-	35.972	0.923	0.089	-	-
HCM Control Delay (s)	10.9	-	-	$ 16642.5	184.6	13.5	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	37.8	4.6	0.3	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	405	876	7	245	720
Future Volume (vph)	12	405	876	7	245	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	450	981	0	272	800
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	49

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	405	876	7	245	720
Future Vol, veh/h	12	405	876	7	245	720
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	13	450	973	8	272	800

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2321	977	0	0	981	0
Stage 1	977	-	-	-	-	-
Stage 2	1344	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	41	~ 304	-	-	708	-
Stage 1	365	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	25	~ 304	-	-	708	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	150	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	258.4	0	3.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	106	304	708	-
HCM Lane V/C Ratio	-	-	0.126	1.48	0.384	-
HCM Control Delay (s)	-	-	43.8	264.8	13.2	-
HCM Lane LOS	-	-	E	F	B	-
HCM 95th %tile Q(veh)	-	-	0.4	25	1.8	-

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

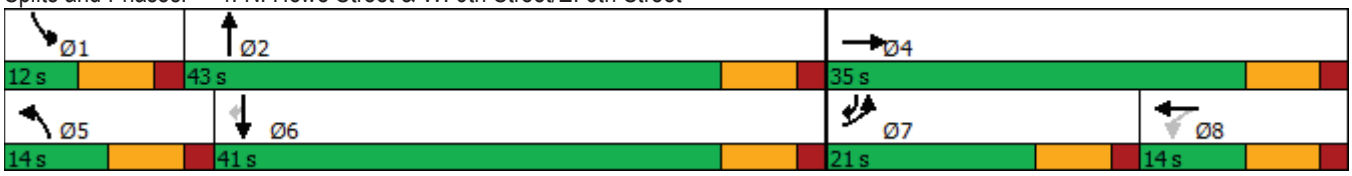
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	7	48	4	9	31	42	617	6	6	595	131
Future Volume (vph)	235	7	48	4	9	31	42	617	6	6	595	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1590	0	0	1677	0	1770	1841	0	1770	1863	1583
Flt Permitted	0.950				0.962		0.950			0.950		
Satd. Flow (perm)	1752	1590	0	0	1620	0	1770	1841	0	1770	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		797			345			2934			854	
Travel Time (s)		15.5			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	261	61	0	0	48	0	47	693	0	7	661	146
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases				8								6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	5.0
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	12.0
Total Split (s)	21.0	35.0		14.0	14.0		14.0	43.0		12.0	41.0	21.0
Total Split (%)	23.3%	38.9%		15.6%	15.6%		15.6%	47.8%		13.3%	45.6%	23.3%
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	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	None
Act Effct Green (s)	16.7	23.5			10.0		10.0	35.9		7.8	31.1	56.5
Actuated g/C Ratio	0.23	0.32			0.14		0.14	0.50		0.11	0.43	0.78
v/c Ratio	0.65	0.12			0.21		0.19	0.76		0.04	0.83	0.12
Control Delay	40.9	20.9			39.0		38.4	23.4		39.2	32.3	6.1
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	40.9	20.9			39.0		38.4	23.4		39.2	32.3	6.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	C		D	C	A
Approach Delay		37.1			39.0			24.4			27.7	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	145	24			26		25	263		4	342	30
Queue Length 95th (ft)	#275	52			60		59	#575		17	#553	54
Internal Link Dist (ft)		717			265			2854			774	
Turn Bay Length (ft)	100						100			100		200
Base Capacity (vph)	431	734			224		245	1174		190	1032	1222
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.61	0.08			0.21		0.19	0.59		0.04	0.64	0.12

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 62.9% 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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	9	34	4	4	7	12	296	4	7	223	9
Future Volume (vph)	37	9	34	4	4	7	12	296	4	7	223	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1714	0	0	1715	0	1770	1877	0	1770	1852	0
Flt Permitted		0.977			0.988		0.950			0.950		
Satd. Flow (perm)	0	1714	0	0	1715	0	1770	1877	0	1770	1852	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	16	0	13	333	0	8	258	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	9	34	4	4	7	12	296	4	7	223	9
Future Vol, veh/h	37	9	34	4	4	7	12	296	4	7	223	9
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	-	-	100	-	-
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	1	2	2	2	2
Mvmt Flow	41	10	38	4	4	8	13	329	4	8	248	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	632	628	253	650	631	331	258	0	0	333	0	0
Stage 1	269	269	-	357	357	-	-	-	-	-	-	-
Stage 2	363	359	-	293	274	-	-	-	-	-	-	-
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	393	400	786	382	398	711	1307	-	-	1226	-	-
Stage 1	737	687	-	661	628	-	-	-	-	-	-	-
Stage 2	656	627	-	715	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	380	393	786	352	391	711	1307	-	-	1226	-	-
Mov Cap-2 Maneuver	380	393	-	352	391	-	-	-	-	-	-	-
Stage 1	730	682	-	654	622	-	-	-	-	-	-	-
Stage 2	638	621	-	666	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	12.8	0.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	489	477	1226	-	-
HCM Lane V/C Ratio	0.01	-	-	0.182	0.035	0.006	-	-
HCM Control Delay (s)	7.8	-	-	14	12.8	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	-	-

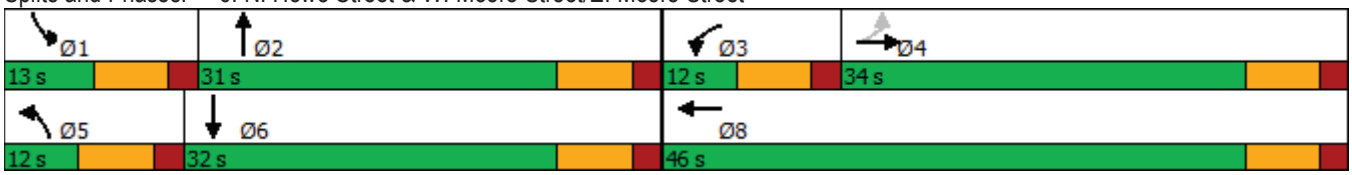
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	50	7	22	41	145	4	71	19	147	80	21
Future Volume (vph)	46	50	7	22	41	145	4	71	19	147	80	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1805	0	1770	1645	0	1770	1785	0	1770	1805	0
Flt Permitted		0.760		0.950			0.950			0.950		
Satd. Flow (perm)	0	1403	0	1770	1645	0	1770	1785	0	1770	1805	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			423			861	
Travel Time (s)		14.4			13.5			14.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	24	207	0	4	100	0	163	112	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		12.0		7.2	13.8		7.2	10.1		8.2	21.6	
Actuated g/C Ratio		0.25		0.15	0.29		0.15	0.21		0.17	0.45	
v/c Ratio		0.32		0.09	0.43		0.01	0.26		0.53	0.14	
Control Delay		18.8		22.1	16.3		21.8	19.5		29.9	12.5	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		18.8		22.1	16.3		21.8	19.5		29.9	12.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		C	B		C	B		C	B	
Approach Delay		18.8			16.9			19.6			22.8	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		23		5	43		1	21		37	13	
Queue Length 95th (ft)		77		28	91		9	70		#145	75	
Internal Link Dist (ft)		342			316			343			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		877		267	1454		267	1000		305	1050	
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		0.13		0.09	0.14		0.01	0.10		0.53	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 47.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 44.2%		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: 6: N. Howe Street & W. Moore Street/E. Moore Street

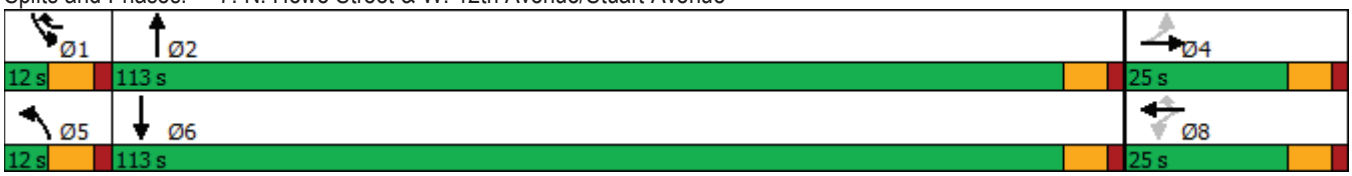


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	4	5	6	6	104	9	1532	27	62	1045	16
Future Volume (vph)	5	4	5	6	6	104	9	1532	27	62	1045	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		175	100		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1736	0	0	1818	1583	1770	1856	0	1770	1859	0
Flt Permitted		0.871			0.834		0.950			0.950		
Satd. Flow (perm)	0	1540	0	0	1554	1583	1770	1856	0	1770	1859	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	14	116	10	1732	0	69	1179	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	1	5	2		1	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)	25.0	25.0		25.0	25.0	12.0	12.0	25.0		12.0	25.0	
Total Split (s)	25.0	25.0		25.0	25.0	12.0	12.0	113.0		12.0	113.0	
Total Split (%)	16.7%	16.7%		16.7%	16.7%	8.0%	8.0%	75.3%		8.0%	75.3%	
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	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		8.9			8.8	12.7	7.0	108.3		7.0	121.3	
Actuated g/C Ratio		0.07			0.07	0.10	0.05	0.83		0.05	0.93	
v/c Ratio		0.15			0.13	0.76	0.11	1.13		0.73	0.69	
Control Delay		63.2			62.7	86.0	65.0	82.4		101.6	6.9	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		63.2			62.7	86.0	65.0	82.4		101.6	6.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		E			E	F	E	F		F	A	
Approach Delay		63.2			83.5			82.3			12.1	
Approach LOS		E			F			F			B	
Queue Length 50th (ft)		12			11	~121	8	~1564		56	0	
Queue Length 95th (ft)		39			36	163	29	#2204		#152	850	
Internal Link Dist (ft)		239			264			490			1719	
Turn Bay Length (ft)						175	100			100		
Base Capacity (vph)		235			237	153	94	1533		94	1720	
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		0.07			0.06	0.76	0.11	1.13		0.73	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 131.1			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 54.4		Intersection LOS: D	
Intersection Capacity Utilization 105.4%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: N. Howe Street & W. 12th Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Future Volume (vph)	6	14	6	6	35	32	4	26	4	30	34	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Flt Permitted		0.988			0.996			0.995		0.950		
Satd. Flow (perm)	0	1781	0	0	1746	0	0	1826	0	1770	1723	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		426			368			156			423	
Travel Time (s)		11.6			10.0			4.3			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	82	0	0	37	0	33	76	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Future Vol, veh/h	6	14	6	6	35	32	4	26	4	30	34	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	7	16	7	7	39	36	4	29	4	33	38	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	23	0	0	143	123	20	121	108	57
Stage 1	-	-	-	-	-	-	34	34	-	71	71	-
Stage 2	-	-	-	-	-	-	109	89	-	50	37	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1592	-	-	826	767	1058	854	782	1009
Stage 1	-	-	-	-	-	-	982	867	-	939	836	-
Stage 2	-	-	-	-	-	-	896	821	-	963	864	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1592	-	-	760	759	1058	820	774	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	760	759	-	820	774	-
Stage 1	-	-	-	-	-	-	977	863	-	934	832	-
Stage 2	-	-	-	-	-	-	819	817	-	922	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.6	9.8	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	785	1524	-	-	1592	-	-	820	876
HCM Lane V/C Ratio	0.048	0.004	-	-	0.004	-	-	0.041	0.086
HCM Control Delay (s)	9.8	7.4	0	-	7.3	0	-	9.6	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1	0.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	124	4	409	93	4	404
Future Volume (vph)	124	4	409	93	4	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1855	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1855	0	1770	1863	1770	1583
Link Speed (mph)	35			35	35	
Link Distance (ft)	863			1427	715	
Travel Time (s)	16.8			27.8	13.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	454	103	4	449
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	124	4	409	93	4	404
Future Vol, veh/h	124	4	409	93	4	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	138	4	454	103	4	449

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	1151	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	1011	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1441	-	219	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1441	-	150	908
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	241	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	150	908	-	-	1441	-
HCM Lane V/C Ratio	0.03	0.494	-	-	0.315	-
HCM Control Delay (s)	29.7	12.8	-	-	8.6	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	2.8	-	-	1.4	-

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	248	254	108	146	228	134	196	93	245	266	91	129
Average Queue (ft)	92	110	58	57	101	60	73	38	126	149	28	17
95th Queue (ft)	182	198	105	118	169	113	143	80	203	212	69	68
Link Distance (ft)			1001			813		344	344	344		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	350	350		275	450		450				250	625
Storage Blk Time (%)										1		
Queuing Penalty (veh)										1		

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	168	562	169
Average Queue (ft)	66	315	69
95th Queue (ft)	125	478	130
Link Distance (ft)		910	910
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	625		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	324	134	50	50	51
Average Queue (ft)	283	43	6	2	12
95th Queue (ft)	378	97	26	17	39
Link Distance (ft)	290	360		356	
Upstream Blk Time (%)	83				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	16	129	197	254
Average Queue (ft)	3	45	58	19
95th Queue (ft)	13	94	113	109
Link Distance (ft)		1127		356
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)		1	2	0
Queuing Penalty (veh)		0	18	0

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	199	253	116	53	222	199	647	225
Average Queue (ft)	108	54	40	14	144	51	225	68
95th Queue (ft)	176	152	88	42	226	125	456	193
Link Distance (ft)		732	311		2871		762	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100		100		200
Storage Blk Time (%)	13	0			16	0	27	0
Queuing Penalty (veh)	12	0			5	2	70	0

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	99	52	27
Average Queue (ft)	30	14	1
95th Queue (ft)	63	41	9
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	53	31	174	28	52	95	63
Average Queue (ft)	16	4	51	3	16	44	22
95th Queue (ft)	45	22	102	16	44	77	52
Link Distance (ft)	388		362		365		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			1			0	
Queuing Penalty (veh)			0			0	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	53	31	131	29	517	199	708
Average Queue (ft)	12	11	60	2	305	55	256
95th Queue (ft)	39	35	100	14	470	143	534
Link Distance (ft)	285	309			512		1742
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					2		
Storage Bay Dist (ft)			175	100		100	
Storage Blk Time (%)					31	0	15
Queuing Penalty (veh)					1	1	10

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	30	31	31
Average Queue (ft)	14	16	24
95th Queue (ft)	38	41	44
Link Distance (ft)	120		365
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	22	56	31	80
Average Queue (ft)	1	26	3	53
95th Queue (ft)	7	58	18	77
Link Distance (ft)	899		907	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		250		250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 123

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	253	239	172	128	176	201	373	134	328	371	344	179
Average Queue (ft)	126	144	76	58	87	96	164	71	235	241	57	47
95th Queue (ft)	194	219	139	116	148	174	288	111	314	330	161	137
Link Distance (ft)			977			813		344	344	344		
Upstream Blk Time (%)									0	0	0	
Queuing Penalty (veh)									0	1	0	
Storage Bay Dist (ft)	350	350		275	450		450				250	625
Storage Blk Time (%)										6		
Queuing Penalty (veh)										11		

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	193	583	204
Average Queue (ft)	97	372	78
95th Queue (ft)	162	545	153
Link Distance (ft)		910	910
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	625		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	305	375	46	155	70
Average Queue (ft)	300	169	3	6	25
95th Queue (ft)	308	374	18	53	59
Link Distance (ft)	290	360		356	
Upstream Blk Time (%)	100	15			
Queuing Penalty (veh)	0	0			
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)				1	
Queuing Penalty (veh)				0	

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	200	1166	55	199	288
Average Queue (ft)	42	657	3	91	43
95th Queue (ft)	164	1361	21	160	175
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)		32			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)		81		9	0
Queuing Penalty (veh)		10		66	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	195	148	74	199	311	49	536	225
Average Queue (ft)	95	34	38	50	179	5	231	111
95th Queue (ft)	158	101	68	126	271	24	413	270
Link Distance (ft)		749	311		2871		762	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100		100		200
Storage Blk Time (%)	10	1		0	19		29	0
Queuing Penalty (veh)	6	1		1	8		40	1

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	70	31	30	30
Average Queue (ft)	37	5	1	0
95th Queue (ft)	62	24	10	0
Link Distance (ft)	355	231		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	95	31	158	28	98	188	71
Average Queue (ft)	46	15	74	2	44	68	31
95th Queue (ft)	86	39	121	11	80	128	65
Link Distance (ft)	388		362		361		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			3			5	
Queuing Penalty (veh)			1			5	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	52	31	193	72	514	75	646
Average Queue (ft)	12	14	104	9	260	36	94
95th Queue (ft)	40	37	186	38	450	66	322
Link Distance (ft)	285	309			512		1742
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					2		
Storage Bay Dist (ft)			175	100		100	
Storage Blk Time (%)			3		14		4
Queuing Penalty (veh)			0		1		3

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (ft)	30	54	78	56
Average Queue (ft)	1	21	23	34
95th Queue (ft)	10	46	56	57
Link Distance (ft)	392	128		361
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	95	30	139
Average Queue (ft)	39	3	60
95th Queue (ft)	84	17	96
Link Distance (ft)		678	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		250
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 158

2040 NO-BUILD CONDITIONS

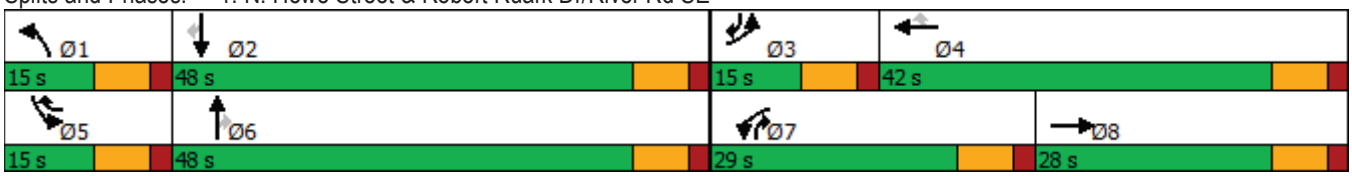
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	45	63	200	44	159	26	756	115	130	721	93
Future Volume (vph)	93	45	63	200	44	159	26	756	115	130	721	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	450		450	500		250	625		0
Storage Lanes	1		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	1752	1692	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1752	1692	0	1703	1727	1524	1770	3539	1568	3242	1863	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			874			414			968	
Travel Time (s)		9.4			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	120	0	222	49	177	29	840	128	144	801	103
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	15.0	28.0		29.0	42.0	15.0	15.0	48.0	29.0	15.0	48.0	15.0
Total Split (%)	12.5%	23.3%		24.2%	35.0%	12.5%	12.5%	40.0%	24.2%	12.5%	40.0%	12.5%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	19.2	13.7		18.6	20.0	28.3	9.4	36.6	60.3	10.1	44.1	70.9
Actuated g/C Ratio	0.19	0.14		0.19	0.20	0.28	0.09	0.37	0.61	0.10	0.44	0.71
v/c Ratio	0.30	0.52		0.70	0.14	0.41	0.17	0.65	0.13	0.44	0.97	0.09
Control Delay	47.7	50.5		51.9	32.7	29.1	50.0	29.5	9.0	50.5	56.3	12.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	50.5		51.9	32.7	29.1	50.0	29.5	9.0	50.5	56.3	12.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	D		D	C	C	D	C	A	D	E	B
Approach Delay		49.2			40.8			27.4			51.2	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	68	77		142	27	85	19	233	32	48	~599	32
Queue Length 95th (ft)	#158	142		239	58	141	51	343	65	89	#956	73
Internal Link Dist (ft)		400			794			334			888	
Turn Bay Length (ft)				450		450	500		250	625		
Base Capacity (vph)	338	401		420	658	436	182	1567	1044	334	825	1095
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30		0.53	0.07	0.41	0.16	0.54	0.12	0.43	0.97	0.09

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 99.5
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	6	12	4	4	22	9	835	4	41	1045	77
Future Volume (vph)	162	6	12	4	4	22	9	835	4	41	1045	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1439	0	1770	1879	0	1736	1823	0
Flt Permitted		0.957			0.994		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1439	0	1770	1879	0	1736	1823	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	32	0	10	932	0	46	1247	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	295.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	162	6	12	4	4	22	9	835	4	41	1045	77
Future Vol, veh/h	162	6	12	4	4	22	9	835	4	41	1045	77
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	-	-	100	-	-
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, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	180	7	13	4	4	24	10	928	4	46	1161	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2260	2248	1204	2256	2289	930	1247	0	0	932	0	0
Stage 1	1296	1296	-	950	950	-	-	-	-	-	-	-
Stage 2	964	952	-	1306	1339	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 28	42	224	15	39	317	558	-	-	726	-	-
Stage 1	196	232	-	212	339	-	-	-	-	-	-	-
Stage 2	303	338	-	125	222	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 22	39	224	12	36	317	558	-	-	726	-	-
Mov Cap-2 Maneuver	~ 22	39	-	12	36	-	-	-	-	-	-	-
Stage 1	192	217	-	208	333	-	-	-	-	-	-	-
Stage 2	271	332	-	107	208	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	3617.5	130.2	0.1	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	558	-	-	24	58	726	-	-
HCM Lane V/C Ratio	0.018	-	-	8.333	0.575	0.063	-	-
HCM Control Delay (s)	11.6	-	-	$ 3617.5	130.2	10.3	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	25	2.3	0.2	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	186	658	6	216	842
Future Volume (vph)	7	186	658	6	216	842
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1839	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1839	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	207	738	0	240	936
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	186	658	6	216	842
Future Vol, veh/h	7	186	658	6	216	842
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	8	207	731	7	240	936

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2151	735	0	0	738	0
Stage 1	735	-	-	-	-	-
Stage 2	1416	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	53	421	-	-	863	-
Stage 1	474	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	38	421	-	-	863	-
Mov Cap-2 Maneuver	123	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	162	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	123	421	863	-
HCM Lane V/C Ratio	-	-	0.063	0.491	0.278	-
HCM Control Delay (s)	-	-	36.2	21.5	10.8	-
HCM Lane LOS	-	-	E	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	2.6	1.1	-

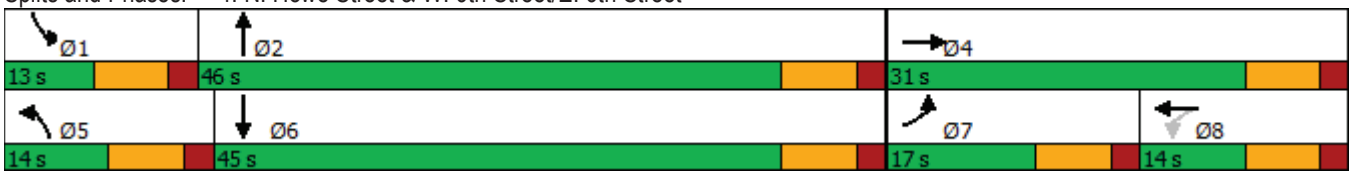
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	10	66	9	10	32	17	386	9	60	609	181
Future Volume (vph)	246	10	66	9	10	32	17	386	9	60	609	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1596	0	0	1652	0	1671	1822	0	1770	1790	0
Flt Permitted	0.950				0.919		0.950			0.950		
Satd. Flow (perm)	1770	1596	0	0	1532	0	1671	1822	0	1770	1790	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	84	0	0	57	0	19	439	0	67	878	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	17.0	31.0		14.0	14.0		14.0	46.0		13.0	45.0	
Total Split (%)	18.9%	34.4%		15.6%	15.6%		15.6%	51.1%		14.4%	50.0%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	12.3	19.9			9.3		9.3	35.7		8.1	41.1	
Actuated g/C Ratio	0.16	0.26			0.12		0.12	0.47		0.11	0.54	
v/c Ratio	0.95	0.20			0.31		0.09	0.51		0.36	0.91	
Control Delay	79.7	23.9			40.1		36.8	19.0		41.8	35.2	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	79.7	23.9			40.1		36.8	19.0		41.8	35.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	C			D		D	B		D	D	
Approach Delay		66.6			40.1			19.8			35.7	
Approach LOS		E			D			B			D	
Queue Length 50th (ft)	130	27			25		8	173		30	359	
Queue Length 95th (ft)	#338	72			69		31	261		78	#800	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	287	561			186		203	1010		191	968	
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	0.95	0.15			0.31		0.09	0.43		0.35	0.91	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 76
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 37.9 Intersection LOS: D
Intersection Capacity Utilization 78.5% 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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	9	22	4	4	4	10	95	4	7	122	9
Future Volume (vph)	16	9	22	4	4	4	10	95	4	7	122	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1678	0	0	1750	0	1770	1786	0	1770	1826	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1678	0	0	1750	0	1770	1786	0	1770	1826	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	12	0	11	110	0	8	146	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	9	22	4	4	4	10	95	4	7	122	9
Future Vol, veh/h	16	9	22	4	4	4	10	95	4	7	122	9
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	-	-	100	-	-
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, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	18	10	24	4	4	4	11	106	4	8	136	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	291	289	141	304	292	108	146	0	0	110	0	0
Stage 1	157	157	-	130	130	-	-	-	-	-	-	-
Stage 2	134	132	-	174	162	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	647	621	907	648	619	946	1436	-	-	1480	-	-
Stage 1	829	768	-	874	789	-	-	-	-	-	-	-
Stage 2	853	787	-	828	764	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	634	613	907	616	611	946	1436	-	-	1480	-	-
Mov Cap-2 Maneuver	634	613	-	616	611	-	-	-	-	-	-	-
Stage 1	822	764	-	867	783	-	-	-	-	-	-	-
Stage 2	838	781	-	791	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	10.3	0.7	0.4
HCM LOS	B	B		

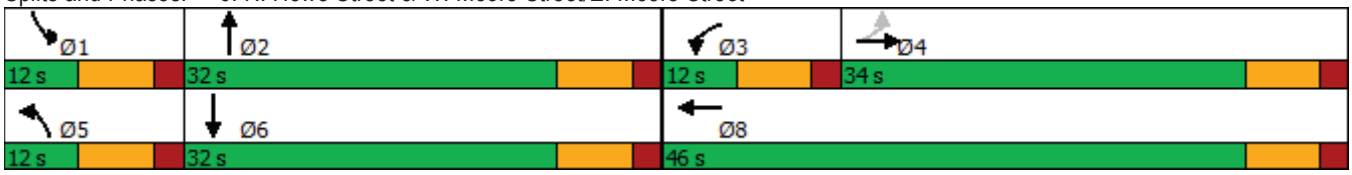
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1436	-	-	732	695	1480	-	-
HCM Lane V/C Ratio	0.008	-	-	0.071	0.019	0.005	-	-
HCM Control Delay (s)	7.5	-	-	10.3	10.3	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	19	6	4	19	55	4	32	4	48	57	20
Future Volume (vph)	10	19	6	4	19	55	4	32	4	48	57	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1618	0	1770	1728	0	1770	1752	0
Flt Permitted		0.876		0.950			0.950			0.950		
Satd. Flow (perm)	0	1445	0	1770	1618	0	1770	1728	0	1770	1752	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	4	82	0	4	40	0	53	85	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	32.0		12.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	35.6%		13.3%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.7		7.5	11.3		7.5	20.0		7.5	22.2	
Actuated g/C Ratio		0.27		0.21	0.31		0.21	0.55		0.21	0.61	
v/c Ratio		0.10		0.01	0.16		0.01	0.04		0.15	0.08	
Control Delay		15.4		17.5	11.3		17.5	13.8		17.4	10.9	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		15.4		17.5	11.3		17.5	13.8		17.4	10.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		B	B		B	B		B	B	
Approach Delay		15.4			11.6			14.2			13.4	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		4		1	8		1	4		6	8	
Queue Length 95th (ft)		33		8	39		8	31		43	55	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		1228		365	1535		365	1375		365	1394	
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		0.03		0.01	0.05		0.01	0.03		0.15	0.06	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 36.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.16			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 26.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	4	4	10	6	106	4	1014	4	71	1148	9
Future Volume (vph)	6	4	4	10	6	106	4	1014	4	71	1148	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1754	0	0	1609	0	1770	1843	0	1736	1861	0
Flt Permitted		0.977			0.996		0.950			0.950		
Satd. Flow (perm)	0	1754	0	0	1609	0	1770	1843	0	1736	1861	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	136	0	4	1131	0	79	1286	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	29.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	6	4	4	10	6	106	4	1014	4	71	1148	9
Future Vol, veh/h	6	4	4	10	6	106	4	1014	4	71	1148	9
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	-	-	100	-	-
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	14	2	3	2	3	2	4	2	2
Mvmt Flow	7	4	4	11	7	118	4	1127	4	79	1276	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2639	2578	1281	2580	2581	1129	1286	0	0	1131	0	0
Stage 1	1439	1439	-	1137	1137	-	-	-	-	-	-	-
Stage 2	1200	1139	-	1443	1444	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.24	6.52	6.23	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.24	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.626	4.018	3.327	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	15	26	202	16	26	247	539	-	-	610	-	-
Stage 1	165	198	-	232	277	-	-	-	-	-	-	-
Stage 2	226	276	-	154	197	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 5	22	202	12	22	247	539	-	-	610	-	-
Mov Cap-2 Maneuver	~ 5	22	-	12	22	-	-	-	-	-	-	-
Stage 1	164	172	-	230	275	-	-	-	-	-	-	-
Stage 2	115	274	-	128	171	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	1007.3	$ 458.9	0	0.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	539	-	-	10	79	610	-	-
HCM Lane V/C Ratio	0.008	-	-	1.556	1.716	0.129	-	-
HCM Control Delay (s)	11.7	-	-	$ 1007.3	$ 458.9	11.8	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.8	11.5	0.4	-	-

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	31	4	4	17	6	4	9	4	26	19	25
Future Volume (vph)	7	31	4	4	17	6	4	9	4	26	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1824	0	0	1791	0	0	1787	0	1770	1703	0
Flt Permitted		0.991			0.993			0.989		0.950		
Satd. Flow (perm)	0	1824	0	0	1791	0	0	1787	0	1770	1703	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		420			418			276			393	
Travel Time (s)		11.5			11.4			7.5			7.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	30	0	0	18	0	29	49	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	7	31	4	4	17	6	4	9	4	26	19	25
Future Vol, veh/h	7	31	4	4	17	6	4	9	4	26	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	8	34	4	4	19	7	4	10	4	29	21	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	26	0	0	38	0	0	107	86	36	90	85	23
Stage 1	-	-	-	-	-	-	52	52	-	31	31	-
Stage 2	-	-	-	-	-	-	55	34	-	59	54	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1588	-	-	1572	-	-	872	804	1037	895	805	1054
Stage 1	-	-	-	-	-	-	961	852	-	986	869	-
Stage 2	-	-	-	-	-	-	957	867	-	953	850	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1588	-	-	1572	-	-	827	798	1037	877	799	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	827	798	-	877	799	-
Stage 1	-	-	-	-	-	-	956	848	-	981	866	-
Stage 2	-	-	-	-	-	-	906	864	-	933	846	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.1	9.3	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	851	1588	-	-	1572	-	-	877	926
HCM Lane V/C Ratio	0.022	0.005	-	-	0.003	-	-	0.033	0.053
HCM Control Delay (s)	9.3	7.3	0	-	7.3	0	-	9.2	9.1
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0.2

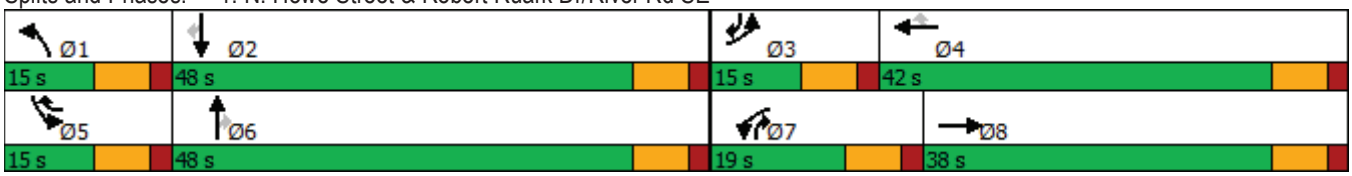
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	86	50	133	68	278	39	1512	185	166	798	109
Future Volume (vph)	154	86	50	133	68	278	39	1512	185	166	798	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		125	450		450	500		250	625		0
Storage Lanes	1		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	1770	1728	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1728	0	1787	1863	1583	1770	3539	1553	3433	1881	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		480			874			414			968	
Travel Time (s)		9.4			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	152	0	148	76	309	43	1680	206	184	887	121
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases						4			6			2
Detector Phase	3	8		7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0		15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	15.0	38.0		19.0	42.0	15.0	15.0	48.0	19.0	15.0	48.0	15.0
Total Split (%)	12.5%	31.7%		15.8%	35.0%	12.5%	12.5%	40.0%	15.8%	12.5%	40.0%	12.5%
Yellow Time (s)	5.0	5.0		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	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-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	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	13.3	15.2		13.0	18.0	30.0	9.4	43.1	61.1	10.0	49.6	69.0
Actuated g/C Ratio	0.13	0.15		0.13	0.18	0.30	0.09	0.43	0.60	0.10	0.49	0.68
v/c Ratio	0.74	0.59		0.65	0.23	0.66	0.26	1.12	0.22	0.54	0.96	0.11
Control Delay	66.1	49.7		56.9	36.5	37.2	48.8	91.8	10.6	51.1	51.1	10.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	49.7		56.9	36.5	37.2	48.8	91.8	10.6	51.1	51.1	10.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	D		E	D	D	D	F	B	D	D	B
Approach Delay		58.4			42.6			82.2			47.0	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)	114	94		92	42	165	27	~673	57	60	~659	34
Queue Length 95th (ft)	#266	158		#175	83	253	64	#881	107	101	#982	71
Internal Link Dist (ft)		400			794			334			888	
Turn Bay Length (ft)				450		450	500		250	625		
Base Capacity (vph)	232	563		247	681	467	175	1504	951	339	921	1077
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.27		0.60	0.11	0.66	0.25	1.12	0.22	0.54	0.96	0.11

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 101.4
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 64.4 Intersection LOS: E
Intersection Capacity Utilization 80.0% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	4	12	4	4	60	4	1313	9	44	941	74
Future Volume (vph)	287	4	12	4	4	60	4	1313	9	44	941	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1591	0	1770	1859	0	1687	1859	0
Flt Permitted		0.955			0.997		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1591	0	1770	1859	0	1687	1859	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	336	0	0	75	0	4	1469	0	49	1128	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 99.8%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2864.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	287	4	12	4	4	60	4	1313	9	44	941	74
Future Vol, veh/h	287	4	12	4	4	60	4	1313	9	44	941	74
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	-	-	100	-	-
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	5	2	2	17	7	1	2
Mvmt Flow	319	4	13	4	4	67	4	1459	10	49	1046	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2693	2662	1087	2666	2698	1464	1128	0	0	1469	0	0
Stage 1	1185	1185	-	1472	1472	-	-	-	-	-	-	-
Stage 2	1508	1477	-	1194	1226	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 14	23	263	15	21	155	619	-	-	444	-	-
Stage 1	~ 230	263	-	158	191	-	-	-	-	-	-	-
Stage 2	~ 151	190	-	228	251	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	20	263	11	19	155	619	-	-	444	-	-
Mov Cap-2 Maneuver	~ 6	20	-	11	19	-	-	-	-	-	-	-
Stage 1	~ 229	234	-	157	190	-	-	-	-	-	-	-
Stage 2	~ 83	189	-	189	223	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 26001.5	226.6	0	0.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	619	-	-	6	71	444	-	-
HCM Lane V/C Ratio	0.007	-	-	56.111	1.064	0.11	-	-
HCM Control Delay (s)	10.9	-	-	$ 26001.5	226.6	14.1	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	44.2	5.6	0.4	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	446	877	9	258	695
Future Volume (vph)	15	446	877	9	258	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	496	984	0	287	772
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.0%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	66

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	446	877	9	258	695
Future Vol, veh/h	15	446	877	9	258	695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	17	496	974	10	287	772

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2325	979	0	0	984	0
Stage 1	979	-	-	-	-	-
Stage 2	1346	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	41	~ 303	-	-	706	-
Stage 1	364	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	~ 303	-	-	706	-
Mov Cap-2 Maneuver	103	-	-	-	-	-
Stage 1	364	-	-	-	-	-
Stage 2	144	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 321.5	0	3.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	103	303	706	-
HCM Lane V/C Ratio	-	-	0.162	1.635	0.406	-
HCM Control Delay (s)	-	-	46.6	$ 330.7	13.5	-
HCM Lane LOS	-	-	E	F	B	-
HCM 95th %tile Q(veh)	-	-	0.6	30.2	2	-

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

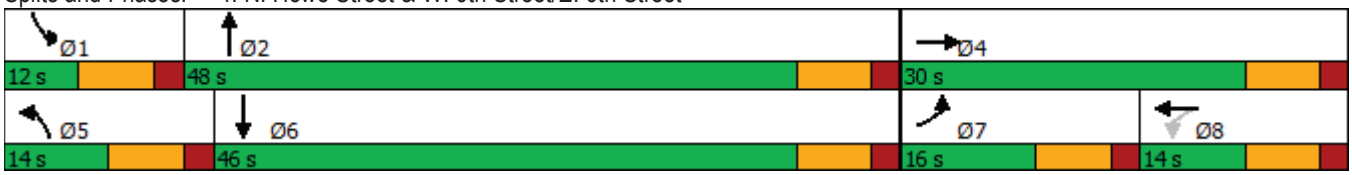
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	9	23	4	10	36	17	664	7	7	641	61
Future Volume (vph)	185	9	23	4	10	36	17	664	7	7	641	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1596	0	0	1673	0	1770	1841	0	1770	1839	0
Flt Permitted	0.950				0.970		0.950			0.950		
Satd. Flow (perm)	1752	1596	0	0	1630	0	1770	1841	0	1770	1839	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		420			345			2934			854	
Travel Time (s)		8.2			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	206	36	0	0	55	0	19	746	0	8	780	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								
Detector Phase	7	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	
Total Split (s)	16.0	30.0		14.0	14.0		14.0	48.0		12.0	46.0	
Total Split (%)	17.8%	33.3%		15.6%	15.6%		15.6%	53.3%		13.3%	51.1%	
Yellow Time (s)	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	
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	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	11.6	18.8			9.5		9.5	41.8		7.4	39.2	
Actuated g/C Ratio	0.16	0.26			0.13		0.13	0.57		0.10	0.54	
v/c Ratio	0.74	0.09			0.26		0.08	0.71		0.04	0.79	
Control Delay	53.3	23.3			38.5		36.6	18.5		38.3	25.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	53.3	23.3			38.5		36.6	18.5		38.3	25.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	B		D	C	
Approach Delay		48.8			38.5			19.0			25.2	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	96	12			24		8	253		4	273	
Queue Length 95th (ft)	#254	38			67		31	#582		18	#652	
Internal Link Dist (ft)		340			265			2854			774	
Turn Bay Length (ft)	100						100			100		
Base Capacity (vph)	277	574			211		229	1187		178	1084	
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	0.74	0.06			0.26		0.08	0.63		0.04	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 62.7%		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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	10	39	4	4	9	15	256	4	9	172	10
Future Volume (vph)	44	10	39	4	4	9	15	256	4	9	172	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1718	0	0	1704	0	1770	1877	0	1770	1848	0
Flt Permitted		0.977			0.989		0.950			0.950		
Satd. Flow (perm)	0	1718	0	0	1704	0	1770	1877	0	1770	1848	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	18	0	17	288	0	10	202	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	10	39	4	4	9	15	256	4	9	172	10
Future Vol, veh/h	44	10	39	4	4	9	15	256	4	9	172	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	-	-	100	-	-
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	1	2	2	2	2
Mvmt Flow	49	11	43	4	4	10	17	284	4	10	191	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	544	539	197	564	542	286	202	0	0	288	0	0
Stage 1	217	217	-	320	320	-	-	-	-	-	-	-
Stage 2	327	322	-	244	222	-	-	-	-	-	-	-
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	450	449	844	436	447	753	1370	-	-	1274	-	-
Stage 1	785	723	-	692	652	-	-	-	-	-	-	-
Stage 2	686	651	-	760	720	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	434	440	844	399	438	753	1370	-	-	1274	-	-
Mov Cap-2 Maneuver	434	440	-	399	438	-	-	-	-	-	-	-
Stage 1	776	717	-	684	644	-	-	-	-	-	-	-
Stage 2	664	643	-	704	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	11.8	0.4	0.4
HCM LOS	B	B		

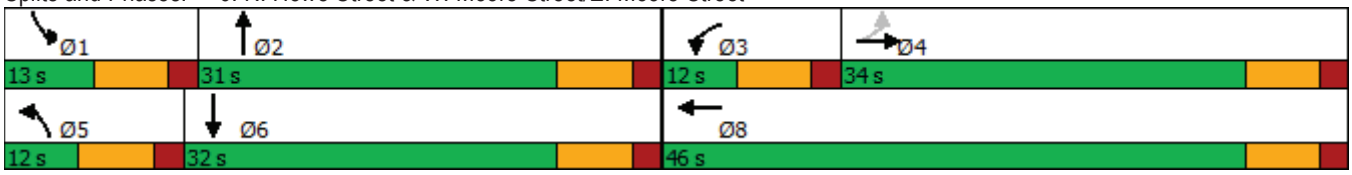
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	546	546	1274	-	-
HCM Lane V/C Ratio	0.012	-	-	0.189	0.035	0.008	-	-
HCM Control Delay (s)	7.7	-	-	13.1	11.8	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	58	9	26	48	80	4	83	22	83	93	25
Future Volume (vph)	54	58	9	26	48	80	4	83	22	83	93	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1804	0	1770	1688	0	1770	1787	0	1770	1803	0
Flt Permitted		0.789		0.950			0.950			0.950		
Satd. Flow (perm)	0	1455	0	1770	1688	0	1770	1787	0	1770	1803	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	29	142	0	4	116	0	92	131	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		12.0		7.6	15.7		7.6	17.7		8.6	25.8	
Actuated g/C Ratio		0.25		0.16	0.33		0.16	0.37		0.18	0.54	
v/c Ratio		0.37		0.10	0.26		0.01	0.18		0.29	0.13	
Control Delay		21.6		24.6	13.4		24.2	20.1		25.2	13.9	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		21.6		24.6	13.4		24.2	20.1		25.2	13.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		C	B		C	C		C	B	
Approach Delay		21.6			15.3			20.3			18.5	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)		28		6	29		1	24		21	15	
Queue Length 95th (ft)		89		33	65		9	80		74	87	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		957		281	1431		281	1054		321	1104	
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		0.14		0.10	0.10		0.01	0.11		0.29	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 47.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: N. Howe Street & W. Moore Street/E. Moore Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	3	6	7	7	122	10	1617	32	73	1046	19
Future Volume (vph)	6	3	6	7	7	122	10	1617	32	73	1046	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1723	0	0	1632	0	1770	1857	0	1770	1839	0
Flt Permitted		0.980			0.997		0.950			0.950		
Satd. Flow (perm)	0	1723	0	0	1632	0	1770	1857	0	1770	1839	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	152	0	11	1833	0	81	1183	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 102.1%		ICU Level of Service G	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	96.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	6	7	7	122	10	1617	32	73	1046	19
Future Vol, veh/h	6	3	6	7	7	122	10	1617	32	73	1046	19
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	-	-	100	-	-
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	3	2
Mvmt Flow	7	3	7	8	8	136	11	1797	36	81	1162	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3244	3190	1173	3177	3182	1815	1183	0	0	1833	0	0
Stage 1	1335	1335	-	1837	1837	-	-	-	-	-	-	-
Stage 2	1909	1855	-	1340	1345	-	-	-	-	-	-	-
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	~ 6	10	234	~ 6	10	~ 97	590	-	-	332	-	-
Stage 1	189	223	-	97	126	-	-	-	-	-	-	-
Stage 2	88	123	-	188	220	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	7	234	~ 3	~ 7	~ 97	590	-	-	332	-	-
Mov Cap-2 Maneuver	-	7	-	~ 3	~ 7	-	-	-	-	-	-	-
Stage 1	185	169	-	95	124	-	-	-	-	-	-	-
Stage 2	-	121	-	135	166	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 2080.7	0.1	1.2
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	590	-	-	-	30	332	-	-
HCM Lane V/C Ratio	0.019	-	-	-	5.037	0.244	-	-
HCM Control Delay (s)	11.2	-	-	-	$ 2080.7	19.3	-	-
HCM Lane LOS	B	-	-	-	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	18.2	0.9	-	-

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	16	4	7	41	38	4	31	4	35	39	39
Future Volume (vph)	7	16	4	7	41	38	4	31	4	35	39	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1805	0	0	1746	0	0	1829	0	1770	1723	0
Flt Permitted		0.987			0.996			0.995		0.950		
Satd. Flow (perm)	0	1805	0	0	1746	0	0	1829	0	1770	1723	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		410			453			168			393	
Travel Time (s)		11.2			12.4			4.6			7.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	96	0	0	42	0	39	86	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	7	16	4	7	41	38	4	31	4	35	39	39
Future Vol, veh/h	7	16	4	7	41	38	4	31	4	35	39	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	8	18	4	8	46	42	4	34	4	39	43	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	88	0	0	22	0	0	162	140	20	138	121	67
Stage 1	-	-	-	-	-	-	36	36	-	83	83	-
Stage 2	-	-	-	-	-	-	126	104	-	55	38	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1508	-	-	1593	-	-	803	751	1058	833	769	997
Stage 1	-	-	-	-	-	-	980	865	-	925	826	-
Stage 2	-	-	-	-	-	-	878	809	-	957	863	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1508	-	-	1593	-	-	729	743	1058	794	761	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	729	743	-	794	761	-
Stage 1	-	-	-	-	-	-	975	861	-	920	822	-
Stage 2	-	-	-	-	-	-	792	805	-	910	859	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.6	10	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	765	1508	-	-	1593	-	-	794	863
HCM Lane V/C Ratio	0.057	0.005	-	-	0.005	-	-	0.049	0.1
HCM Control Delay (s)	10	7.4	0	-	7.3	0	-	9.8	9.6
HCM Lane LOS	B	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2	0.3

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	143	153	263	71	257	66	215	266	161	61	109	932
Average Queue (ft)	59	60	130	31	94	19	137	149	37	13	59	380
95th Queue (ft)	114	116	205	68	173	50	207	211	92	41	104	740
Link Distance (ft)	426			812		353	353	353				916
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)		125	450		450				250	625	625	
Storage Blk Time (%)	1	0						0				4
Queuing Penalty (veh)	1	0						0				6

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB
Directions Served	R
Maximum Queue (ft)	58
Average Queue (ft)	13
95th Queue (ft)	39
Link Distance (ft)	916
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	342	154	26	199	523
Average Queue (ft)	301	39	3	27	177
95th Queue (ft)	352	113	16	88	560
Link Distance (ft)	290	360			512
Upstream Blk Time (%)	92				1
Queuing Penalty (veh)	0				11
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)					14
Queuing Penalty (veh)					6

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	15	93	200	373
Average Queue (ft)	1	37	116	144
95th Queue (ft)	6	76	223	430
Link Distance (ft)		1127		356
Upstream Blk Time (%)				4
Queuing Penalty (veh)				44
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)		0	3	23
Queuing Penalty (veh)		0	22	51

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	200	379	96	87	282	200	771
Average Queue (ft)	138	133	40	18	111	48	460
95th Queue (ft)	214	336	81	48	207	145	920
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)		0					6
Queuing Penalty (veh)		0					57
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	38	2		0	11	0	39
Queuing Penalty (veh)	29	5		0	2	1	24

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	67	30	30
Average Queue (ft)	30	12	1
95th Queue (ft)	60	36	11
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	TR	L	TR
Maximum Queue (ft)	72	31	99	74	51	48
Average Queue (ft)	34	1	34	7	23	17
95th Queue (ft)	68	11	66	35	43	46
Link Distance (ft)	387		362	330		797
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100			100	
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	TR	L	TR
Maximum Queue (ft)	53	325	22	199	1022
Average Queue (ft)	19	168	1	70	203
95th Queue (ft)	44	342	8	188	755
Link Distance (ft)	285	310	512		1755
Upstream Blk Time (%)		8			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)				100	
Storage Blk Time (%)					11
Queuing Penalty (veh)					8

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	NB	SB	SB
Directions Served	LTR	L	TR
Maximum Queue (ft)	32	48	30
Average Queue (ft)	13	22	24
95th Queue (ft)	38	46	41
Link Distance (ft)	248		330
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 267

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	323	225	129	91	367	91	277	284	118	138	825	932
Average Queue (ft)	126	102	68	46	166	24	198	222	55	44	177	487
95th Queue (ft)	255	206	115	88	280	64	271	289	98	116	568	933
Link Distance (ft)	426			812		353	353	353				916
Upstream Blk Time (%)												5
Queuing Penalty (veh)												0
Storage Bay Dist (ft)		125	450		450				250	625	625	
Storage Blk Time (%)	28	2						3				14
Queuing Penalty (veh)	39	3						5				26

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB
Directions Served	R
Maximum Queue (ft)	948
Average Queue (ft)	159
95th Queue (ft)	706
Link Distance (ft)	916
Upstream Blk Time (%)	3
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	305	373	26	51
Average Queue (ft)	302	117	1	20
95th Queue (ft)	309	302	9	49
Link Distance (ft)	290	360		
Upstream Blk Time (%)	100	1		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	200	1166	54	186	239
Average Queue (ft)	99	1096	4	107	56
95th Queue (ft)	254	1316	27	189	176
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)		85			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)		100		19	0
Queuing Penalty (veh)		15		133	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	158	103	74	199	415	199	408
Average Queue (ft)	89	19	35	22	187	10	215
95th Queue (ft)	145	65	70	85	326	73	344
Link Distance (ft)		385	311		2870		762
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			100		100	
Storage Blk Time (%)	13	0			19		27
Queuing Penalty (veh)	4	0			3		2

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	91	31	30
Average Queue (ft)	37	12	2
95th Queue (ft)	66	36	15
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	99	56	96	28	95	91	106
Average Queue (ft)	59	24	50	1	53	36	28
95th Queue (ft)	91	52	92	10	91	63	70
Link Distance (ft)	387		362		330		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			0			0	0
Queuing Penalty (veh)			0			0	0

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	96	349	31	22	94	139
Average Queue (ft)	42	250	5	2	44	11
95th Queue (ft)	99	411	23	11	81	72
Link Distance (ft)	285	310		512		1755
Upstream Blk Time (%)		57				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)			100		100	
Storage Blk Time (%)					1	0
Queuing Penalty (veh)					14	0

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (ft)	31	66	30	90
Average Queue (ft)	2	22	19	35
95th Queue (ft)	16	50	42	64
Link Distance (ft)	376	140		330
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 245

2040 BUILD IMPROVED CONDITIONS

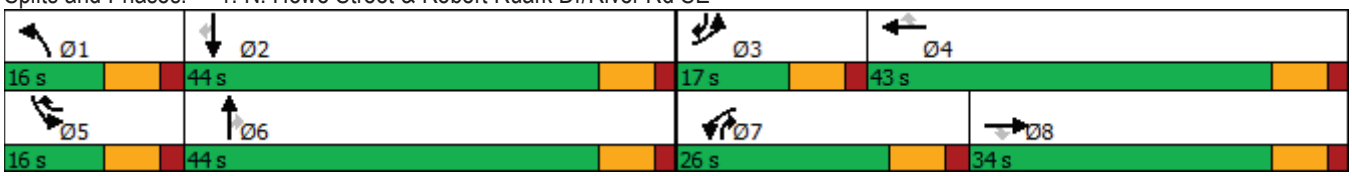
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	352	92	134	217	79	159	78	803	139	130	756	282
Future Volume (vph)	352	92	134	217	79	159	78	803	139	130	756	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		275	450		450	500		250	625		0
Storage Lanes	2		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	3400	1845	1583	1703	1727	1524	1770	3539	1568	3242	1863	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3400	1845	1583	1703	1727	1524	1770	3539	1568	3242	1863	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1130			874			414			968	
Travel Time (s)		22.0			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	2%	6%	10%	6%	2%	2%	3%	8%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	391	102	149	241	88	177	87	892	154	144	840	313
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Detector Phase	3	8	8	7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0	15.0	15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	17.0	34.0	34.0	26.0	43.0	16.0	16.0	44.0	26.0	16.0	44.0	17.0
Total Split (%)	14.2%	28.3%	28.3%	21.7%	35.8%	13.3%	13.3%	36.7%	21.7%	13.3%	36.7%	14.2%
Yellow Time (s)	5.0	5.0	5.0	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	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	16.5	16.1	16.1	19.0	22.3	34.7	10.5	35.5	59.6	11.0	39.8	62.7
Actuated g/C Ratio	0.16	0.16	0.16	0.19	0.22	0.34	0.10	0.35	0.58	0.11	0.39	0.61
v/c Ratio	0.71	0.35	0.60	0.76	0.23	0.34	0.48	0.72	0.17	0.41	1.16	0.33
Control Delay	53.7	43.3	51.8	57.7	34.2	25.4	56.4	33.5	10.8	49.6	117.7	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	43.3	51.8	57.7	34.2	25.4	56.4	33.5	10.8	49.6	117.7	16.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	D	D	E	C	C	E	C	B	D	F	B
Approach Delay		51.6			42.3			32.1			85.6	
Approach LOS		D			D			C			F	
Queue Length 50th (ft)	~148	64	97	157	49	83	57	272	43	48	~721	124
Queue Length 95th (ft)	#266	115	164	#290	92	137	115	377	86	86	#1038	215
Internal Link Dist (ft)		1050			794			334			888	
Turn Bay Length (ft)	350		275	450		450	500		250	625		
Base Capacity (vph)	549	534	459	357	656	521	194	1380	953	356	726	944
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.19	0.32	0.68	0.13	0.34	0.45	0.65	0.16	0.40	1.16	0.33

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 102
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 56.5 Intersection LOS: E
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	6	12	4	4	22	9	958	4	41	1168	77
Future Volume (vph)	162	6	12	4	4	22	9	958	4	41	1168	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1721	0	0	1439	0	1770	1879	0	1736	1825	0
Flt Permitted		0.957			0.994		0.950			0.950		
Satd. Flow (perm)	0	1721	0	0	1439	0	1770	1879	0	1736	1825	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	2%	2%	100%	2%	7%	2%	1%	2%	4%	3%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	32	0	10	1068	0	46	1384	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	479

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	162	6	12	4	4	22	9	958	4	41	1168	77
Future Vol, veh/h	162	6	12	4	4	22	9	958	4	41	1168	77
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	-	-	100	-	-
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, %	5	2	2	100	2	7	2	1	2	4	3	6
Mvmt Flow	180	7	13	4	4	24	10	1064	4	46	1298	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2533	2521	1341	2529	2562	1066	1384	0	0	1068	0	0
Stage 1	1433	1433	-	1086	1086	-	-	-	-	-	-	-
Stage 2	1100	1088	-	1443	1476	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.22	8.1	6.52	6.27	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	7.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.318	4.4	4.018	3.363	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 18	28	186	9	26	264	495	-	-	645	-	-
Stage 1	~ 164	200	-	174	292	-	-	-	-	-	-	-
Stage 2	254	292	-	101	190	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 13	25	186	6	24	264	495	-	-	645	-	-
Mov Cap-2 Maneuver	~ 13	25	-	6	24	-	-	-	-	-	-	-
Stage 1	~ 161	186	-	171	286	-	-	-	-	-	-	-
Stage 2	222	286	-	84	177	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	6505.5	$ 339.1	0.1	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	495	-	-	14	33	645	-	-
HCM Lane V/C Ratio	0.02	-	-	14.286	1.01	0.071	-	-
HCM Control Delay (s)	12.4	-	-	$ 6505.5	$ 339.1	11	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	26.1	3.6	0.2	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	203	764	6	240	941
Future Volume (vph)	7	203	764	6	240	941
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1599	1840	0	1761	1854
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1599	1840	0	1761	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	25%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	226	856	0	267	1046
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	203	764	6	240	941
Future Vol, veh/h	7	203	764	6	240	941
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	1	3	25	3	3
Mvmt Flow	8	226	849	7	267	1046

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2433	853	0	0	856	0
Stage 1	853	-	-	-	-	-
Stage 2	1580	-	-	-	-	-
Critical Hdwy	6.42	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	35	360	-	-	780	-
Stage 1	418	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	23	360	-	-	780	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	418	-	-	-	-	-
Stage 2	122	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31	0	2.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	93	360	780	-
HCM Lane V/C Ratio	-	-	0.084	0.627	0.342	-
HCM Control Delay (s)	-	-	47.2	30.4	12	-
HCM Lane LOS	-	-	E	D	B	-
HCM 95th %tile Q(veh)	-	-	0.3	4.1	1.5	-

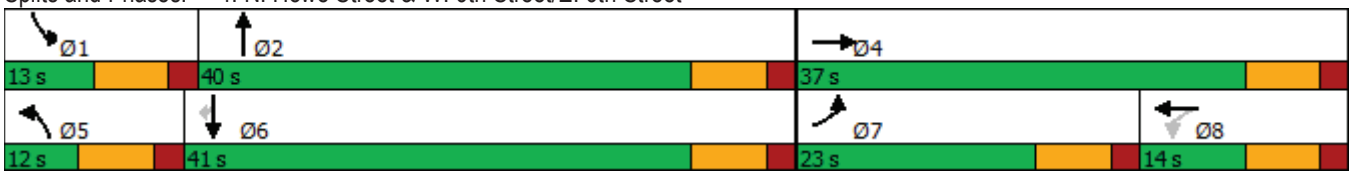
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	10	90	9	10	32	34	421	9	60	656	233
Future Volume (vph)	317	10	90	9	10	32	34	421	9	60	656	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		300
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1770	1593	0	0	1652	0	1671	1822	0	1770	1845	1599
Flt Permitted	0.950				0.912		0.950			0.950		
Satd. Flow (perm)	1770	1593	0	0	1520	0	1671	1822	0	1770	1845	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		703			345			2934			854	
Travel Time (s)		13.7			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	14%	2%	2%	14%	2%	8%	4%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	352	111	0	0	57	0	38	478	0	67	729	259
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases				8								6
Detector Phase	7	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.0	14.0		14.0	14.0		12.0	17.0		12.0	17.0	17.0
Total Split (s)	23.0	37.0		14.0	14.0		12.0	40.0		13.0	41.0	41.0
Total Split (%)	25.6%	41.1%		15.6%	15.6%		13.3%	44.4%		14.4%	45.6%	45.6%
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	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	18.7	26.0			9.3		7.3	32.2		8.2	36.0	36.0
Actuated g/C Ratio	0.24	0.33			0.12		0.09	0.41		0.10	0.46	0.46
v/c Ratio	0.84	0.21			0.32		0.25	0.64		0.37	0.86	0.35
Control Delay	52.1	21.1			42.0		42.7	25.5		43.7	35.6	18.6
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	52.1	21.1			42.0		42.7	25.5		43.7	35.6	18.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	C			D		D	C		D	D	B
Approach Delay		44.7			42.0			26.8			32.0	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	201	43			31		21	221		37	402	103
Queue Length 95th (ft)	#377	82			69		52	332		78	#645	168
Internal Link Dist (ft)		623			265			2854			774	
Turn Bay Length (ft)	100						100			100		300
Base Capacity (vph)	420	672			180		153	840		186	876	759
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.84	0.17			0.32		0.25	0.57		0.36	0.83	0.34

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 78.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 33.8 Intersection LOS: C
Intersection Capacity Utilization 75.4% 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: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	9	22	4	4	4	10	147	4	7	193	9
Future Volume (vph)	16	9	22	4	4	4	10	147	4	7	193	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1678	0	0	1750	0	1770	1787	0	1770	1838	0
Flt Permitted		0.983			0.984		0.950			0.950		
Satd. Flow (perm)	0	1678	0	0	1750	0	1770	1787	0	1770	1838	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%	17%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	12	0	11	167	0	8	224	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	9	22	4	4	4	10	147	4	7	193	9
Future Vol, veh/h	16	9	22	4	4	4	10	147	4	7	193	9
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	-	-	100	-	-
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, %	9	2	2	2	2	2	2	6	2	2	2	17
Mvmt Flow	18	10	24	4	4	4	11	163	4	8	214	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	426	424	219	439	427	165	224	0	0	167	0	0
Stage 1	235	235	-	187	187	-	-	-	-	-	-	-
Stage 2	191	189	-	252	240	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	527	522	821	528	520	879	1345	-	-	1411	-	-
Stage 1	753	710	-	815	745	-	-	-	-	-	-	-
Stage 2	795	744	-	752	707	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	515	515	821	499	513	879	1345	-	-	1411	-	-
Mov Cap-2 Maneuver	515	515	-	499	513	-	-	-	-	-	-	-
Stage 1	747	706	-	808	739	-	-	-	-	-	-	-
Stage 2	780	738	-	715	703	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	11.3	0.5	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1345	-	-	624	589	1411	-	-
HCM Lane V/C Ratio	0.008	-	-	0.084	0.023	0.006	-	-
HCM Control Delay (s)	7.7	-	-	11.3	11.3	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

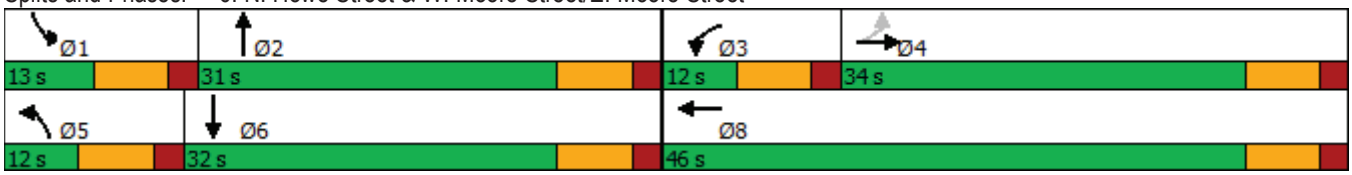
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	19	6	4	19	107	4	32	4	119	57	20
Future Volume (vph)	10	19	6	4	19	107	4	32	4	119	57	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1627	0	1770	1597	0	1770	1728	0	1770	1752	0
Flt Permitted		0.856		0.950			0.950			0.950		
Satd. Flow (perm)	0	1412	0	1770	1597	0	1770	1728	0	1770	1752	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	15%	2%	2%	8%	3%	2%	9%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	4	140	0	4	40	0	132	85	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		9.9		7.1	11.8		7.1	12.0		8.1	24.4	
Actuated g/C Ratio		0.23		0.16	0.27		0.16	0.27		0.18	0.56	
v/c Ratio		0.12		0.01	0.33		0.01	0.09		0.40	0.09	
Control Delay		16.9		18.8	14.9		18.8	16.7		22.1	11.2	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		16.9		18.8	14.9		18.8	16.7		22.1	11.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B		B	B		B	B		C	B	
Approach Delay		16.9			15.0			16.9			17.8	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		7		1	28		1	8		28	9	
Queue Length 95th (ft)		33		8	61		8	32		#86	55	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		947		286	1492		286	1039		327	1197	
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		0.04		0.01	0.09		0.01	0.04		0.40	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 43.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 32.0%		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: 6: N. Howe Street & W. Moore Street/E. Moore Street



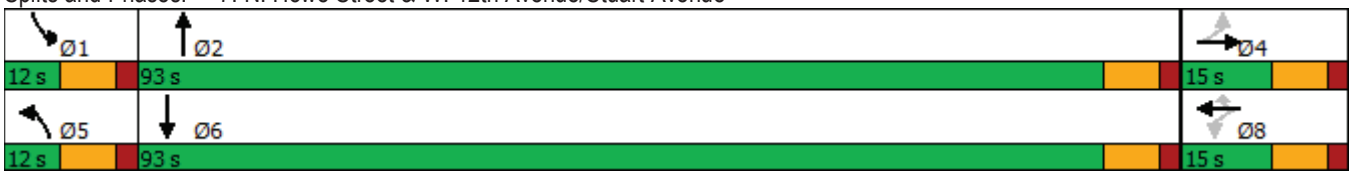
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	4	4	10	6	106	4	1137	4	71	1271	9
Future Volume (vph)	6	4	4	10	6	106	4	1137	4	71	1271	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		175	100		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1754	0	0	1686	1568	1770	1845	0	1736	1861	0
Flt Permitted		0.852			0.805		0.950			0.950		
Satd. Flow (perm)	0	1530	0	0	1399	1568	1770	1845	0	1736	1861	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	14%	2%	3%	2%	3%	2%	4%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	18	118	4	1267	0	79	1422	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	15.0	15.0		15.0	15.0	15.0	12.0	18.0		12.0	18.0	
Total Split (s)	15.0	15.0		15.0	15.0	15.0	12.0	93.0		12.0	93.0	
Total Split (%)	12.5%	12.5%		12.5%	12.5%	12.5%	10.0%	77.5%		10.0%	77.5%	
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		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		10.0			10.0	10.0	7.0	87.5		7.0	97.1	
Actuated g/C Ratio		0.08			0.08	0.08	0.06	0.73		0.06	0.81	
v/c Ratio		0.12			0.16	0.90	0.04	0.94		0.78	0.94	
Control Delay		53.2			54.4	111.2	54.2	28.5		99.7	23.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		53.2			54.4	111.2	54.2	28.5		99.7	23.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D			D	F	D	C		F	C	
Approach Delay		53.2			103.7			28.6			27.8	
Approach LOS		D			F			C			C	
Queue Length 50th (ft)		11			13	92	3	732		61	588	
Queue Length 95th (ft)		34			38	#207	15	#1213		#149	#1457	
Internal Link Dist (ft)		239			264			490			1719	
Turn Bay Length (ft)						175	100			100		
Base Capacity (vph)		128			116	131	103	1358		101	1512	
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		0.12			0.16	0.90	0.04	0.93		0.78	0.94	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 119.5
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 31.8 Intersection LOS: C
Intersection Capacity Utilization 85.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	13	4	4	17	6	4	9	4	26	19	25
Future Volume (vph)	7	13	4	4	17	6	4	9	4	26	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1796	0	0	1791	0	0	1787	0	1770	1703	0
Flt Permitted		0.985			0.993			0.989		0.950		
Satd. Flow (perm)	0	1796	0	0	1791	0	0	1787	0	1770	1703	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		406			425			171			393	
Travel Time (s)		11.1			11.6			4.7			7.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	30	0	0	18	0	29	49	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	7	13	4	4	17	6	4	9	4	26	19	25
Future Vol, veh/h	7	13	4	4	17	6	4	9	4	26	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
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	8	14	4	4	19	7	4	10	4	29	21	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	26	0	0	18	0	0	87	66	16	70	65	23
Stage 1	-	-	-	-	-	-	32	32	-	31	31	-
Stage 2	-	-	-	-	-	-	55	34	-	39	34	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1588	-	-	1599	-	-	899	825	1063	922	826	1054
Stage 1	-	-	-	-	-	-	984	868	-	986	869	-
Stage 2	-	-	-	-	-	-	957	867	-	976	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1588	-	-	1599	-	-	853	818	1063	904	819	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	853	818	-	904	819	-
Stage 1	-	-	-	-	-	-	979	864	-	981	866	-
Stage 2	-	-	-	-	-	-	906	864	-	956	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	1.1	9.2	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	874	1588	-	-	1599	-	-	904	938
HCM Lane V/C Ratio	0.022	0.005	-	-	0.003	-	-	0.032	0.052
HCM Control Delay (s)	9.2	7.3	0	-	7.3	0	-	9.1	9
HCM Lane LOS	A	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	101	4	276	82	4	377
Future Volume (vph)	101	4	276	82	4	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1853	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1853	0	1770	1863	1770	1583
Link Speed (mph)	35			35	35	
Link Distance (ft)	1241			1458	839	
Travel Time (s)	24.2			28.4	16.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	0	307	91	4	419
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.6%		ICU Level of Service A	
Analysis Period (min) 15			

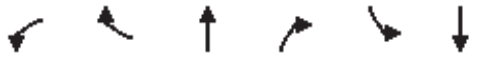
Intersection	
Int Delay, s/veh	8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	4	276	82	4	377
Future Vol, veh/h	101	4	276	82	4	377
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	112	4	307	91	4	419

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	116	0	819	114
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	705	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1473	-	345	939
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1473	-	273	939
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.2	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	939	-	-	1473	-
HCM Lane V/C Ratio	0.016	0.446	-	-	0.208	-
HCM Control Delay (s)	18.4	11.9	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	2.3	-	-	0.8	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑
Traffic Volume (vph)	0	0	1020	0	0	1107
Future Volume (vph)	0	0	1020	0	0	1107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		100	0	
Storage Lanes	0	0		1	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	5085	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	52		1799			414
Travel Time (s)	1.2		40.9			9.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1133	0	0	1230
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

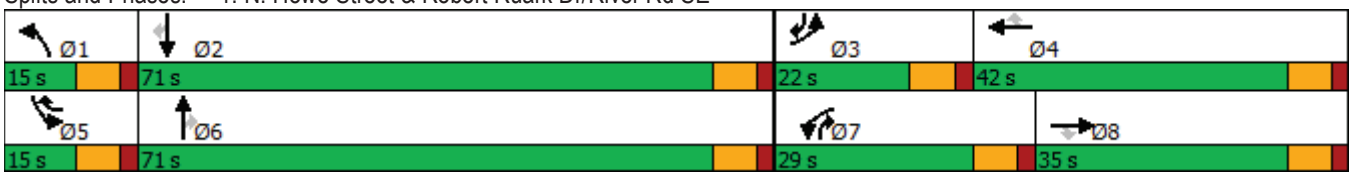
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	432	137	125	159	119	278	116	1562	210	166	849	390
Future Volume (vph)	432	137	125	159	119	278	116	1562	210	166	849	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	350		275	450		450	500		250	625		0
Storage Lanes	2		1	1		1	0		1	2		1
Taper Length (ft)	100			100			100			200		
Satd. Flow (prot)	3433	1810	1583	1787	1863	1583	1770	3539	1553	3433	1881	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1810	1583	1787	1863	1583	1770	3539	1553	3433	1881	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			45	
Link Distance (ft)		1119			874			414			968	
Travel Time (s)		21.8			17.0			8.1			14.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	5%	2%	1%	2%	2%	2%	2%	4%	2%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	480	152	139	177	132	309	129	1736	233	184	943	433
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4	5	1	6	7	5	2	3
Permitted Phases			8			4			6			2
Detector Phase	3	8	8	7	4	5	1	6	7	5	2	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0	7.0	7.0	12.0	7.0
Minimum Split (s)	15.0	15.0	15.0	15.0	42.0	15.0	15.0	41.0	15.0	15.0	25.0	15.0
Total Split (s)	22.0	35.0	35.0	29.0	42.0	15.0	15.0	71.0	29.0	15.0	71.0	22.0
Total Split (%)	14.7%	23.3%	23.3%	19.3%	28.0%	10.0%	10.0%	47.3%	19.3%	10.0%	47.3%	14.7%
Yellow Time (s)	5.0	5.0	5.0	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	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	None
Act Effct Green (s)	17.1	18.8	18.8	18.9	20.7	35.8	10.0	66.2	90.2	10.0	66.2	88.3
Actuated g/C Ratio	0.13	0.14	0.14	0.14	0.15	0.27	0.07	0.49	0.67	0.07	0.49	0.66
v/c Ratio	1.10	0.60	0.63	0.70	0.46	0.73	0.98	0.99	0.22	0.72	1.02	0.42
Control Delay	126.4	64.9	67.8	70.9	55.9	55.3	134.4	54.3	9.5	77.9	67.9	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.4	64.9	67.8	70.9	55.9	55.3	134.4	54.3	9.5	77.9	67.9	13.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	E	E	E	E	F	D	A	E	E	B
Approach Delay		103.7			59.9			54.2			54.0	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	~242	126	116	148	106	245	114	767	71	81	~834	164
Queue Length 95th (ft)	#398	206	194	241	169	351	#274	#1107	127	#150	#1279	297
Internal Link Dist (ft)		1039			794			334			888	
Turn Bay Length (ft)	350		275	450		450	500		250	625		
Base Capacity (vph)	436	406	355	321	515	422	132	1747	1103	256	929	1042
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.37	0.39	0.55	0.26	0.73	0.98	0.99	0.21	0.72	1.02	0.42

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 134.1
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 62.4 Intersection LOS: E
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N. Howe Street & Robert Ruark Dr/River Rd SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	4	12	4	4	60	4	1465	9	44	1093	74
Future Volume (vph)	287	4	12	4	4	60	4	1465	9	44	1093	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1770	0	0	1591	0	1770	1859	0	1687	1863	0
Flt Permitted		0.955			0.997		0.950			0.950		
Satd. Flow (perm)	0	1770	0	0	1591	0	1770	1859	0	1687	1863	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			397			412			570	
Travel Time (s)		8.9			10.8			8.0			11.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	2%	2%	17%	7%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	336	0	0	75	0	4	1638	0	49	1296	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 107.8%		ICU Level of Service G	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7823.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	287	4	12	4	4	60	4	1465	9	44	1093	74
Future Vol, veh/h	287	4	12	4	4	60	4	1465	9	44	1093	74
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	-	-	100	-	-
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	5	2	2	17	7	1	2
Mvmt Flow	319	4	13	4	4	67	4	1628	10	49	1214	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3030	2999	1255	3003	3035	1633	1296	0	0	1638	0	0
Stage 1	1353	1353	-	1641	1641	-	-	-	-	-	-	-
Stage 2	1677	1646	-	1362	1394	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.25	4.12	-	-	4.17	-	-
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	3.345	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	~ 8	14	209	8	13	123	535	-	-	382	-	-
Stage 1	~ 185	218	-	126	158	-	-	-	-	-	-	-
Stage 2	~ 120	157	-	183	208	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 2	12	209	5	11	123	535	-	-	382	-	-
Mov Cap-2 Maneuver	~ 2	12	-	5	11	-	-	-	-	-	-	-
Stage 1	~ 184	190	-	125	157	-	-	-	-	-	-	-
Stage 2	~ 53	156	-	146	181	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 38874.2	$ 612.2	0	0.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	535	-	-	2	41	382	-	-
HCM Lane V/C Ratio	0.008	-	-	168.333	1.843	0.128	-	-
HCM Control Delay (s)	11.8	-	-	$ 78874.2	$ 612.2	15.8	-	-
HCM Lane LOS	B	-	-	F	F	C	-	-
HCM 95th %tile Q(veh)	0	-	-	44.7	7.9	0.4	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	471	1004	9	283	822
Future Volume (vph)	15	471	1004	9	283	822
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			-1%
Storage Length (ft)	100	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1843	0	1796	1891
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1843	0	1796	1891
Link Speed (mph)	25		35			35
Link Distance (ft)	1189		854			412
Travel Time (s)	32.4		16.6			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	3%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	523	1126	0	314	913
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 89.2%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	98.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	471	1004	9	283	822
Future Vol, veh/h	15	471	1004	9	283	822
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	1	1
Mvmt Flow	17	523	1116	10	314	913

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2662	1121	0	0	1126	0
Stage 1	1121	-	-	-	-	-
Stage 2	1541	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	25	~ 251	-	-	624	-
Stage 1	311	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 12	~ 251	-	-	624	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	97	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 519.5	0	4.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	71	251	624	-
HCM Lane V/C Ratio	-	-	0.235	2.085	0.504	-
HCM Control Delay (s)	-	-	70.6	$ 533.8	16.5	-
HCM Lane LOS	-	-	F	F	C	-
HCM 95th %tile Q(veh)	-	-	0.8	39.1	2.8	-

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

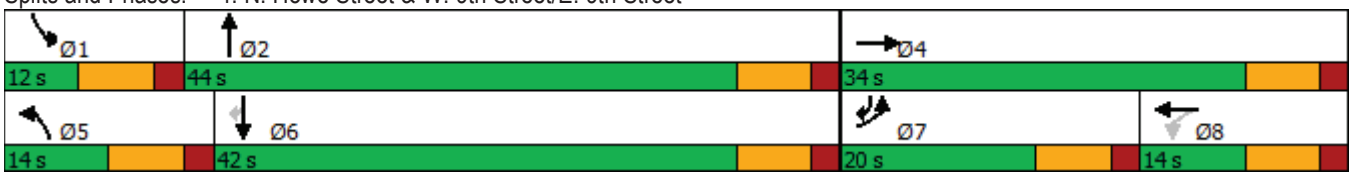
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	9	51	4	10	36	44	714	7	7	689	140
Future Volume (vph)	262	9	51	4	10	36	44	714	7	7	689	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		0	0		0	100		0	100		200
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			25			100			100		
Satd. Flow (prot)	1752	1589	0	0	1673	0	1770	1843	0	1770	1863	1583
Flt Permitted	0.950				0.966		0.950			0.950		
Satd. Flow (perm)	1752	1589	0	0	1623	0	1770	1843	0	1770	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		675			345			2934			854	
Travel Time (s)		13.1			6.7			57.2			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	17%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	291	67	0	0	55	0	49	801	0	8	766	156
Turn Type	Prot	NA		Perm	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases				8								6
Detector Phase	7	4		8	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	5.0	7.0		7.0	7.0		7.0	10.0		5.0	10.0	5.0
Minimum Split (s)	12.0	14.0		14.0	14.0		14.0	17.0		12.0	17.0	12.0
Total Split (s)	20.0	34.0		14.0	14.0		14.0	44.0		12.0	42.0	20.0
Total Split (%)	22.2%	37.8%		15.6%	15.6%		15.6%	48.9%		13.3%	46.7%	22.2%
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	-2.0
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	None
Act Effct Green (s)	15.5	22.9			9.3		9.3	43.8		7.2	38.5	61.7
Actuated g/C Ratio	0.20	0.29			0.12		0.12	0.55		0.09	0.49	0.78
v/c Ratio	0.85	0.15			0.29		0.24	0.79		0.05	0.84	0.13
Control Delay	58.6	22.5			41.0		39.7	23.8		39.3	32.9	5.9
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	58.6	22.5			41.0		39.7	23.8		39.3	32.9	5.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	C			D		D	C		D	C	A
Approach Delay		51.9			41.0			24.7			28.5	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	167	27			30		26	325		4	~425	33
Queue Length 95th (ft)	#329	57			67		61	#701		18	#677	58
Internal Link Dist (ft)		595			265			2854			774	
Turn Bay Length (ft)	100						100			100		200
Base Capacity (vph)	343	601			190		208	1036		161	910	1234
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.85	0.11			0.29		0.24	0.77		0.05	0.84	0.13

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 79.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 67.5% ICU Level of Service C
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: N. Howe Street & W. 9th Street/E. 9th Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	10	39	4	4	9	15	333	4	9	248	10
Future Volume (vph)	44	10	39	4	4	9	15	333	4	9	248	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1718	0	0	1704	0	1770	1877	0	1770	1852	0
Flt Permitted		0.977			0.989		0.950			0.950		
Satd. Flow (perm)	0	1718	0	0	1704	0	1770	1877	0	1770	1852	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			266			861			2934	
Travel Time (s)		10.6			7.3			16.8			57.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	18	0	17	374	0	10	287	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	10	39	4	4	9	15	333	4	9	248	10
Future Vol, veh/h	44	10	39	4	4	9	15	333	4	9	248	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	-	-	100	-	-
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	1	2	2	2	2
Mvmt Flow	49	11	43	4	4	10	17	370	4	10	276	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	715	710	282	735	713	372	287	0	0	374	0	0
Stage 1	302	302	-	406	406	-	-	-	-	-	-	-
Stage 2	413	408	-	329	307	-	-	-	-	-	-	-
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	346	359	757	335	357	674	1275	-	-	1184	-	-
Stage 1	707	664	-	622	598	-	-	-	-	-	-	-
Stage 2	616	597	-	684	661	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	332	351	757	303	350	674	1275	-	-	1184	-	-
Mov Cap-2 Maneuver	332	351	-	303	350	-	-	-	-	-	-	-
Stage 1	698	659	-	614	590	-	-	-	-	-	-	-
Stage 2	594	589	-	629	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	13.4	0.3	0.3
HCM LOS	C	B		

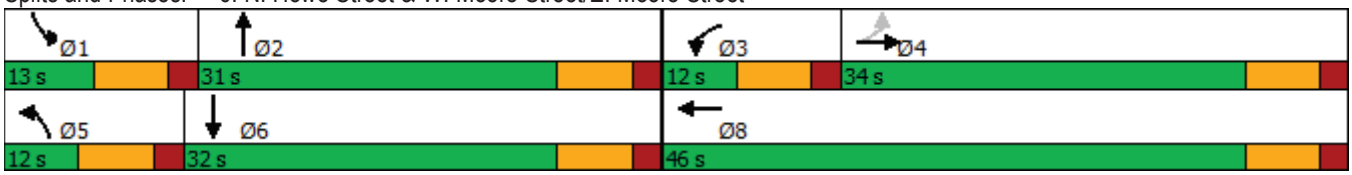
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1275	-	-	438	448	1184	-	-
HCM Lane V/C Ratio	0.013	-	-	0.236	0.042	0.008	-	-
HCM Control Delay (s)	7.9	-	-	15.7	13.4	8.1	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	58	9	26	48	157	4	83	22	159	93	25
Future Volume (vph)	54	58	9	26	48	157	4	83	22	159	93	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	175		0	100		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			100			75			100		
Satd. Flow (prot)	0	1804	0	1770	1649	0	1770	1787	0	1770	1803	0
Flt Permitted		0.750		0.950			0.950			0.950		
Satd. Flow (perm)	0	1383	0	1770	1649	0	1770	1787	0	1770	1803	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		422			396			393			861	
Travel Time (s)		14.4			13.5			13.4			29.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	29	227	0	4	116	0	177	131	0
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	34.0	34.0		12.0	33.0		12.0	31.0		12.0	27.0	
Total Split (s)	34.0	34.0		12.0	46.0		12.0	31.0		13.0	32.0	
Total Split (%)	37.8%	37.8%		13.3%	51.1%		13.3%	34.4%		14.4%	35.6%	
Yellow Time (s)	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	
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	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		12.5		7.2	16.4		7.2	10.7		8.3	22.3	
Actuated g/C Ratio		0.25		0.14	0.32		0.14	0.21		0.16	0.44	
v/c Ratio		0.39		0.12	0.43		0.02	0.31		0.62	0.17	
Control Delay		22.1		25.2	15.6		24.8	22.0		36.2	14.3	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		22.1		25.2	15.6		24.8	22.0		36.2	14.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		C	B		C	C		D	B	
Approach Delay		22.1			16.7			22.1			26.9	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)		28		7	50		1	26		43	16	
Queue Length 95th (ft)		90		33	102		9	81		#169	87	
Internal Link Dist (ft)		342			316			313			781	
Turn Bay Length (ft)				100			175			100		
Base Capacity (vph)		814		251	1372		251	943		287	988	
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		0.16		0.12	0.17		0.02	0.12		0.62	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 51			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 46.8%		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: 6: N. Howe Street & W. Moore Street/E. Moore Street



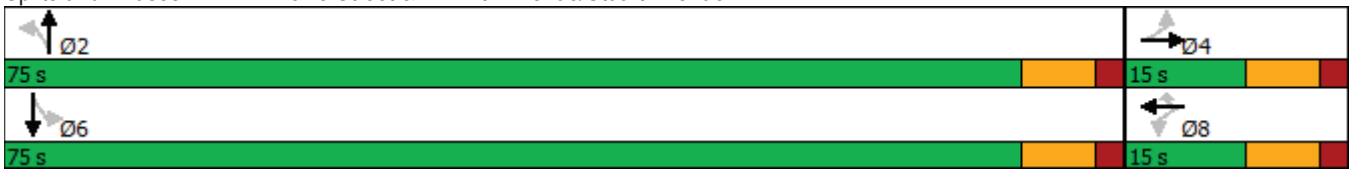
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	4	6	7	7	122	10	1769	32	73	1198	19
Future Volume (vph)	6	4	6	7	7	122	10	1769	32	73	1198	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		175	100		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1731	0	0	1818	1583	1770	1857	0	1770	1841	0
Flt Permitted		0.878			0.846		0.055			0.054		
Satd. Flow (perm)	0	1549	0	0	1576	1583	102	1857	0	101	1841	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		319			344			570			1799	
Travel Time (s)		8.7			9.4			11.1			35.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	16	136	11	2002	0	81	1352	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	15.0	15.0		15.0	15.0	15.0	18.0	18.0		18.0	18.0	
Total Split (s)	15.0	15.0		15.0	15.0	15.0	75.0	75.0		75.0	75.0	
Total Split (%)	16.7%	16.7%		16.7%	16.7%	16.7%	83.3%	83.3%		83.3%	83.3%	
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?												
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		10.0			10.0	10.0	74.1	74.1		74.1	74.1	
Actuated g/C Ratio		0.11			0.11	0.11	0.79	0.79		0.79	0.79	
v/c Ratio		0.11			0.10	0.81	0.14	1.37		1.03	0.93	
Control Delay		37.9			37.6	74.9	6.7	188.3		130.3	22.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.9			37.6	74.9	6.7	188.3		130.3	22.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D			D	E	A	F		F	C	
Approach Delay		37.9			71.0			187.3			28.5	
Approach LOS		D			E			F			C	
Queue Length 50th (ft)		9			8	76	1	~1530		~50	496	
Queue Length 95th (ft)		30			28	#171	7	#1791		#98	#1011	
Internal Link Dist (ft)		239			264			490			1719	
Turn Bay Length (ft)						175	100			100		
Base Capacity (vph)		165			168	168	80	1461		79	1448	
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		0.11			0.10	0.81	0.14	1.37		1.03	0.93	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 94.2
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.37
Intersection Signal Delay: 118.8 Intersection LOS: F
Intersection Capacity Utilization 120.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	16	4	7	41	38	4	31	4	35	39	39
Future Volume (vph)	7	16	4	7	41	38	4	31	4	35	39	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	100		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1805	0	0	1746	0	0	1829	0	1770	1723	0
Flt Permitted		0.987			0.996			0.995		0.950		
Satd. Flow (perm)	0	1805	0	0	1746	0	0	1829	0	1770	1723	0
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		358			402			211			393	
Travel Time (s)		9.8			11.0			5.8			7.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	96	0	0	42	0	39	86	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	7	16	4	7	41	38	4	31	4	35	39	39
Future Vol, veh/h	7	16	4	7	41	38	4	31	4	35	39	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
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	8	18	4	8	46	42	4	34	4	39	43	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	88	0	0	22	0	0	162	140	20	138	121	67
Stage 1	-	-	-	-	-	-	36	36	-	83	83	-
Stage 2	-	-	-	-	-	-	126	104	-	55	38	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1508	-	-	1593	-	-	803	751	1058	833	769	997
Stage 1	-	-	-	-	-	-	980	865	-	925	826	-
Stage 2	-	-	-	-	-	-	878	809	-	957	863	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1508	-	-	1593	-	-	729	743	1058	794	761	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	729	743	-	794	761	-
Stage 1	-	-	-	-	-	-	975	861	-	920	822	-
Stage 2	-	-	-	-	-	-	792	805	-	910	859	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0.6	10	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	765	1508	-	-	1593	-	-	794	863
HCM Lane V/C Ratio	0.057	0.005	-	-	0.005	-	-	0.049	0.1
HCM Control Delay (s)	10	7.4	0	-	7.3	0	-	9.8	9.6
HCM Lane LOS	B	A	A	-	A	A	-	A	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2	0.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	145	4	409	108	4	404
Future Volume (vph)	145	4	409	108	4	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	250		0	250
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	1857	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1857	0	1770	1863	1770	1583
Link Speed (mph)	35			35	35	
Link Distance (ft)	1264			1409	1117	
Travel Time (s)	24.6			27.4	21.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	165	0	454	120	4	449
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	145	4	409	108	4	404
Future Vol, veh/h	145	4	409	108	4	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	250
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	161	4	454	120	4	449

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	165	0	1191	163
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	1028	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1413	-	207	882
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1413	-	141	882
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	234	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.9	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	882	-	-	1413	-
HCM Lane V/C Ratio	0.032	0.509	-	-	0.322	-
HCM Control Delay (s)	31.4	13.2	-	-	8.8	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	2.9	-	-	1.4	-

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	262	283	105	192	218	199	210	129	271	293	108	82
Average Queue (ft)	111	128	59	72	143	75	92	58	155	159	39	21
95th Queue (ft)	202	219	110	142	219	143	176	111	251	263	81	56
Link Distance (ft)			1047			813		344	344	344		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	350	350		275	450		450				250	625
Storage Blk Time (%)										1		
Queuing Penalty (veh)										2		

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	825	962	962
Average Queue (ft)	654	936	927
95th Queue (ft)	1191	958	942
Link Distance (ft)		910	910
Upstream Blk Time (%)		76	43
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	625		
Storage Blk Time (%)		74	
Queuing Penalty (veh)		96	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	329	87	28	102	155
Average Queue (ft)	300	29	5	24	6
95th Queue (ft)	337	68	23	61	53
Link Distance (ft)	290	360			512
Upstream Blk Time (%)	94				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				1	0

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	SB	SB
Directions Served	L	R	L	T
Maximum Queue (ft)	16	201	170	225
Average Queue (ft)	5	64	71	30
95th Queue (ft)	16	146	126	127
Link Distance (ft)		1127		356
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)		6	4	0
Queuing Penalty (veh)		0	40	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	200	506	74	199	340	200	364	178
Average Queue (ft)	165	168	35	39	179	58	227	87
95th Queue (ft)	232	401	64	137	312	150	325	165
Link Distance (ft)		656	311		2870		762	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100		100		300
Storage Blk Time (%)	42	2		0	21	1	32	
Queuing Penalty (veh)	43	6		0	7	8	94	

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	55	30	30	28
Average Queue (ft)	28	12	3	1
95th Queue (ft)	55	36	18	10
Link Distance (ft)	355	231		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	50	31	96	29	68	129	49
Average Queue (ft)	21	4	57	2	24	52	23
95th Queue (ft)	46	22	92	14	61	94	54
Link Distance (ft)	374		362		330		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			0			1	
Queuing Penalty (veh)			0			1	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	53	246	200	31	489	199	404
Average Queue (ft)	16	38	126	2	305	66	228
95th Queue (ft)	42	150	208	12	449	138	394
Link Distance (ft)	285	309			512		1742
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			175	100		100	
Storage Blk Time (%)			14		21	2	12
Queuing Penalty (veh)			2		1	28	8

Intersection: 8: S. Howe Street/N. Howe Street & Bay Street

Movement	WB	NB	SB	SB
Directions Served	LTR	LTR	L	TR
Maximum Queue (ft)	30	31	50	53
Average Queue (ft)	1	17	20	28
95th Queue (ft)	10	41	45	54
Link Distance (ft)	384	143	330	330
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	74	31	118
Average Queue (ft)	24	3	55
95th Queue (ft)	62	18	89
Link Distance (ft)		804	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		250
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: N. Howe Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 338

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	T	T	R	L
Maximum Queue (ft)	400	449	833	171	463	795	550	133	354	374	344	137
Average Queue (ft)	286	316	339	81	158	214	393	70	244	276	102	56
95th Queue (ft)	475	526	823	152	319	559	621	117	330	355	271	128
Link Distance (ft)			1036			813		344	344	344		
Upstream Blk Time (%)						0			0	1	0	
Queuing Penalty (veh)						0			2	6	0	
Storage Bay Dist (ft)	350	350		275	450		450				250	625
Storage Blk Time (%)	22	33	0		0	1	12			10		
Queuing Penalty (veh)	59	88	1		0	4	34			21		

Intersection: 1: N. Howe Street & Robert Ruark Dr/River Rd SE

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	825	925	925
Average Queue (ft)	268	687	447
95th Queue (ft)	801	1095	1114
Link Distance (ft)		910	910
Upstream Blk Time (%)		25	10
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	625		
Storage Blk Time (%)		31	
Queuing Penalty (veh)		52	

Intersection: 2: N. Howe Street & W. 11th Street/E. 11th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	305	375	28	50	199	526
Average Queue (ft)	288	352	1	2	55	176
95th Queue (ft)	307	416	10	10	152	548
Link Distance (ft)	290	360		356		512
Upstream Blk Time (%)	100	84				9
Queuing Penalty (veh)	0	0				105
Storage Bay Dist (ft)			100		100	
Storage Blk Time (%)					14	13
Queuing Penalty (veh)					159	6

Intersection: 3: N. Howe Street & Fodale Avenue

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	200	1179	22	200	380
Average Queue (ft)	90	1117	2	142	171
95th Queue (ft)	222	1273	11	226	438
Link Distance (ft)		1127	762		356
Upstream Blk Time (%)		87			10
Queuing Penalty (veh)		0			112
Storage Bay Dist (ft)	100			100	
Storage Blk Time (%)	16	100		46	0
Queuing Penalty (veh)	72	15		385	1

Intersection: 4: N. Howe Street & W. 9th Street/E. 9th Street

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	199	300	74	199	685	199	452	300
Average Queue (ft)	132	69	35	56	255	9	243	48
95th Queue (ft)	208	216	75	155	543	70	400	170
Link Distance (ft)		627	311		2871		762	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100		100		200
Storage Blk Time (%)	23				24		36	
Queuing Penalty (veh)	14				11		53	

Intersection: 5: N. Howe Street & W. West Street/E. West Street

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	92	55	30
Average Queue (ft)	46	15	4
95th Queue (ft)	77	44	21
Link Distance (ft)	355	231	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: N. Howe Street & W. Moore Street/E. Moore Street

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR	L	TR
Maximum Queue (ft)	120	53	158	29	118	162	72
Average Queue (ft)	63	23	67	3	52	73	28
95th Queue (ft)	98	49	121	18	96	136	62
Link Distance (ft)	387		362		328		797
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		100		175		100	
Storage Blk Time (%)			2			5	
Queuing Penalty (veh)			1			6	

Intersection: 7: N. Howe Street & W. 12th Avenue/Stuart Avenue

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	72	52	194	31	482	200	1814
Average Queue (ft)	16	12	88	8	299	67	693
95th Queue (ft)	49	41	173	29	433	165	1704
Link Distance (ft)	285	309			512		1742
Upstream Blk Time (%)							10
Queuing Penalty (veh)							110
Storage Bay Dist (ft)			175	100		100	
Storage Blk Time (%)			2		20	2	30
Queuing Penalty (veh)			0		2	29	21

Intersection: 8: S. Howe Road/N. Howe Street & Bay Street/Basy Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	31	30	49	54	54
Average Queue (ft)	3	1	22	22	33
95th Queue (ft)	19	10	46	48	50
Link Distance (ft)	324	365	184		328
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				100	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Site Access #1 & Robert Ruark Dr

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	22	159	30	114
Average Queue (ft)	1	52	3	62
95th Queue (ft)	10	111	18	99
Link Distance (ft)	1228		1081	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		250		250
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 24: N. Howe Street

Movement	SB
Directions Served	T
Maximum Queue (ft)	358
Average Queue (ft)	37
95th Queue (ft)	213
Link Distance (ft)	344
Upstream Blk Time (%)	5
Queuing Penalty (veh)	49
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1418

Appendix E – Signal Warrant Analysis Worksheets

Southport Mixed-Use Development
TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: NC 211 at W 12th Street

COUNT DATE: 15-Sep-21

INTERSECTION CONDITION: Existing

MAJOR STREET: NC 211

OF APPROACH LANES: 1

MINOR STREET: W 12th Street/Stuart Avenue

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): Y

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	MAJOR ST / BOTH APPROACHES	HIGHEST HOUR MINOR ST / HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
									CONDITION A			CONDITION B				
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES →			350	105		525	53		280	84		420	42			
06:00 AM TO 07:00 AM	395	26	Y						Y							
07:00 AM TO 08:00 AM	750	49	Y			Y			Y			Y	Y	**Y**		
08:00 AM TO 09:00 AM	1,230	84	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
09:00 AM TO 10:00 AM	1,118	67	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
10:00 AM TO 11:00 AM	1,236	64	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
11:00 AM TO 12:00 PM	1,482	64	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
12:00 PM TO 01:00 PM	1,441	74	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
01:00 PM TO 02:00 PM	1,430	76	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
02:00 PM TO 03:00 PM	1,323	91	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
03:00 PM TO 04:00 PM	1,453	89	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
04:00 PM TO 05:00 PM	1,301	94	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	1,184	91	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:00 PM TO 07:00 PM	903	67	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	15,246	936			**0**			**11**			**5**			**12**	**11**	**6**
			8 HOURS NEEDED **NOT SATISFIED**			8 HOURS NEEDED **SATISFIED**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **NOT SATISFIED**						4 HRS NEEDED **SATISFIED**	1 HR NEEDED **SATISFIED**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

Southport Mixed-Use Development
TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: NC 211 at W 12th Street

COUNT DATE: 15-Sep-21

INTERSECTION CONDITION: No-Build

MAJOR STREET: NC 211

OF APPROACH LANES: 1

MINOR STREET: W 12th Street/Stuart Avenue

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): Y

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
									CONDITION A			CONDITION B				
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES →			350	105		525	53		280	84		420	42			
06:00 AM TO 07:00 AM	491	33	Y						Y			Y				
07:00 AM TO 08:00 AM	931	60	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
08:00 AM TO 09:00 AM	1,530	105	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
09:00 AM TO 10:00 AM	1,390	83	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	1,537	79	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
11:00 AM TO 12:00 PM	1,843	79	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
12:00 PM TO 01:00 PM	1,792	92	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
01:00 PM TO 02:00 PM	1,778	94	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
02:00 PM TO 03:00 PM	1,646	112	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
03:00 PM TO 04:00 PM	1,807	111	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
04:00 PM TO 05:00 PM	1,617	116	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	1,471	113	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:00 PM TO 07:00 PM	1,123	84	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	18,956	1,161			**5**			**12**			**8**			**12**	**12**	**11**
			8 HOURS NEEDED **NOT SATISFIED**			8 HOURS NEEDED **SATISFIED**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **SATISFIED**						4 HRS NEEDED **SATISFIED**	1 HR NEEDED **SATISFIED**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

Southport Mixed-Use Development
TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: NC 211 at W 12th Street

COUNT DATE: 15-Sep-21

INTERSECTION CONDITION: Build

MAJOR STREET: NC 211

OF APPROACH LANES: 1

MINOR STREET: W 12th Street/Stuart Avenue

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): Y

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
									CONDITION A			CONDITION B				
			MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES →			350	105		525	53		280	84		420	42			
06:00 AM TO 07:00 AM	553	33	Y			Y			Y			Y				
07:00 AM TO 08:00 AM	1,099	60	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
08:00 AM TO 09:00 AM	1,696	105	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
09:00 AM TO 10:00 AM	1,551	83	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
10:00 AM TO 11:00 AM	1,696	79	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
11:00 AM TO 12:00 PM	2,002	79	Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	**Y**
12:00 PM TO 01:00 PM	1,950	92	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
01:00 PM TO 02:00 PM	1,941	94	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
02:00 PM TO 03:00 PM	1,825	112	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
03:00 PM TO 04:00 PM	1,993	111	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
04:00 PM TO 05:00 PM	1,810	116	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
05:00 PM TO 06:00 PM	1,687	113	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:00 PM TO 07:00 PM	1,252	84	Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
07:00 PM TO 08:00 PM	94	0														
08:00 PM TO 09:00 PM	78	0														
09:00 PM TO 10:00 PM	51	0														
	21,278	1,161			**5**			**12**			**8**			**12**	**12**	**11**
			8 HOURS NEEDED **NOT SATISFIED**			8 HOURS NEEDED **SATISFIED**			8 HOURS OF BOTH COND. A AND COND. B NEEDED **SATISFIED**						4 HRS NEEDED **SATISFIED**	1 HR NEEDED **SATISFIED**

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

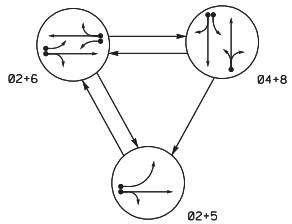
WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

Appendix F – Signal Timing Plans

PROJECT REFERENCE NO.	SHEET NO.
POR	Sig.1.0

PHASING DIAGRAM



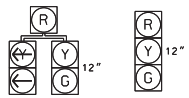
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION				
SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4+8	FLASH
21	G	G	R	Y
22	G	G	R	Y
41, 42	R	R	G	R
61, 62	R	G	R	Y
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

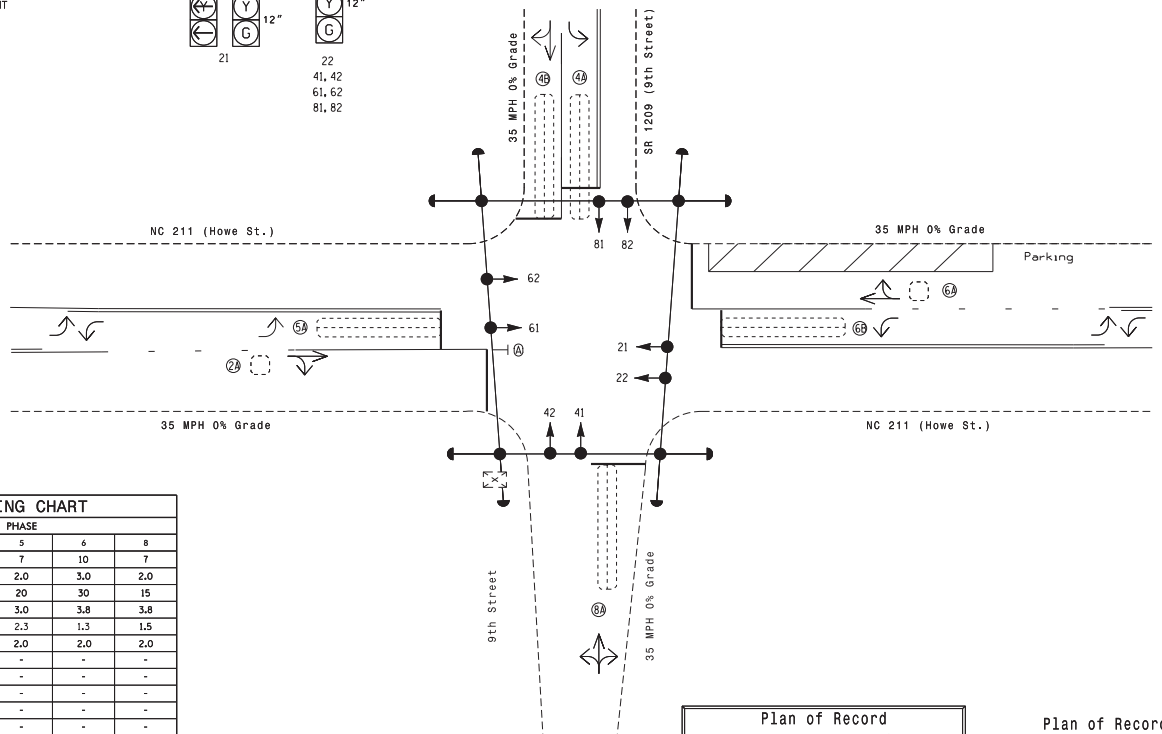


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	EXISTING	-	2	Y	Y	-	-	-	-	-
4A	6X40	+10	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
					2	Y	Y	-	-	-	-	-
6A	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	-
6B	6X40	0	2-4-2	-	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

3 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Set all detector units to presence mode.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ

OASIS 2070 TIMING CHART					
	PHASE				
FEATURE	2	4	5	6	8
Min Green 1 *	10	7	7	10	7
Extension 1 *	3.0	2.0	2.0	3.0	2.0
Max Green 1 *	30	15	20	30	15
Yellow Clearance	3.8	3.8	3.0	3.8	3.8
Red Clearance	1.5	1.5	2.3	1.3	1.5
Red Revert	5.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

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

Plan of Record			
PREPARED BY:	X. Han	DATE:	October 2020
REVIEWED BY:	K.G.P. Jr.	DATE:	October 2020
SIGNATURE	Kenneth G. Predin, Jr.		10/8/2020
Converted to base mounted cabinet.			
This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.			

Plan of Record

Prepared in the Offices of:
Traffic Engineering Branch
Traffic Engineering, Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

NC 211 (Howe Street)
at
SR 1209 (9th Street)

Division 3 Brunswick County Southport

PLAN DATE:	May 2007	REVIEWED BY:	
PREPARED BY:	Sterling	REVIEWED BY:	

REVISIONS	INIT.	DATE

SCALE 0 20 1"=20'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

Not a certified document. This document originally issued and sealed by Robert J.Ziemba,026486 on 6/6/2007 This document shall not be considered a certified document.

DATE

SIG. INVENTORY NO. 03-0506

08-OCT-2020 09:53
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sterling

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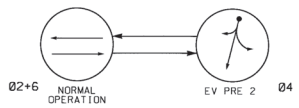
PROJECT REFERENCE NO.	SHEET NO.
N/A	Sig.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

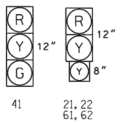
TABLE OF OPERATION

SIGNAL FACE	PHASE 02+6	EV PRE	FLASH
21, 22	FY	R	Y
61, 62	FY	R	Y
41	DRK	G	R

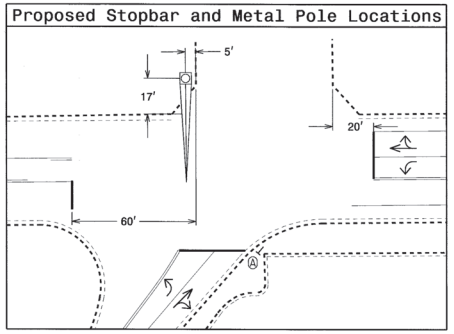
FY = 8" Flashing Yellow
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



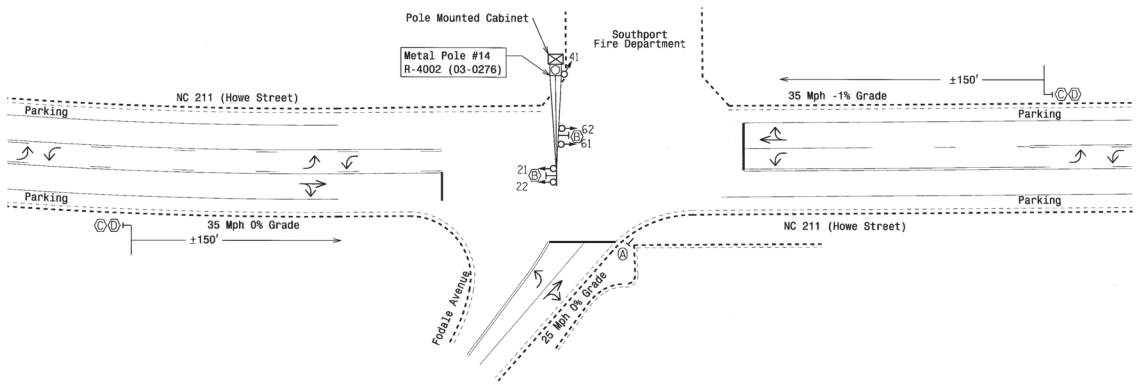
Proposed Stopbar and Metal Pole Locations



2 Phase Emergency Vehicle Preemption Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
4. Emergency vehicle preemption switch is located in the fire department.
5. The Division Traffic Engineer will determine the Delay Time and Dwell Min time for the emergency vehicle preemption timing.
6. Clear signal heads 21, 22, 61 and 62 from flashing 8" yellow to steady 12" yellow during interval 1 and steady red during interval 2.
7. Head 41 will display red indication during clearance to preemption.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
A	"STOP" Sign (R1-1)	A
B	"Emergency Signal" Sign (R10-13)	B
C	Emergency Vehicle Sign (W11-8)	C
D	"Emergency Signal Ahead" Sign(W11-12p)	D

OASIS 2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	14	7	14
Extension 1 *	-	-	-
Max Green 1 *	30	30	30
Yellow Clearance	3.8	3.8	3.9
Red Clearance	2.1	1.3	2.4
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	-	-	-
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

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

2070 EV PREEMPTION

FUNCTION	PRE 2
Interval 1 – Dwell Green	255
Interval 1 – Dwell Yellow	0.0*
Interval 1 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Priority	Medium
Delay Time	**
Min Green Before Pre	1
Ped Clear Before Pre	0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	**
Enable Backup Protection	N
Ped Clear Through Yellow	N
Preempt Extend**	N/A
Omit Overlaps	-

* Time defaults to time used for phase during normal operation
** See note #5

New Installation

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

NC 211 (Howe Street) At Southport Fire Department/ Fodale Avenue

Division 3 | Brunswick County | Southport

PLAN DATE: January 2013 | REVIEWED BY: JPG
PREPARED BY: IOU/JPG | REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE 0 30 1"=30'

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29904 JASON P. GALLIN
SIGNATURE
5/7/13
DATE
SIG. INVENTORY NO. 03-1074

07-MAR-2013 08:21
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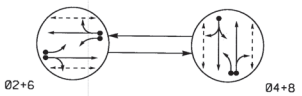
PROJECT REFERENCE NO.	SHEET NO.
N/A	Sig.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION			
SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

P21, P22
P41, P42
P61, P62
P81, P82

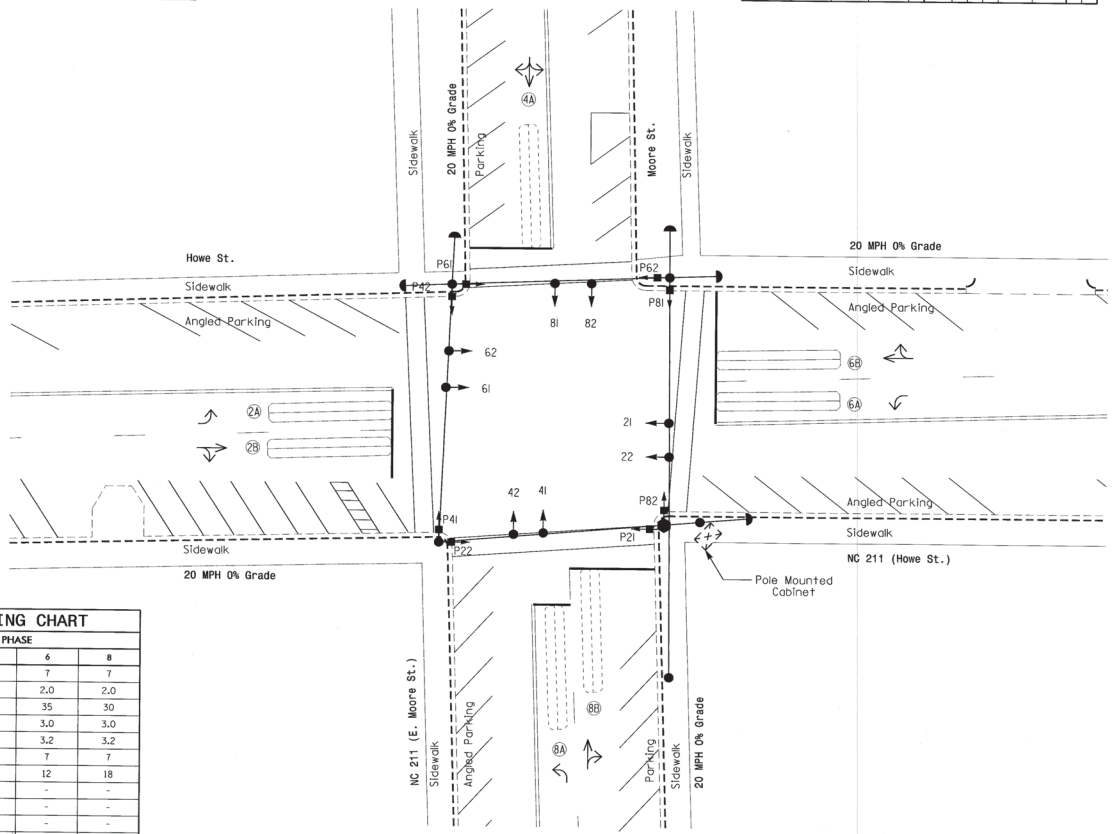
21, 22
41, 42
61, 62
81, 82

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-	-

2 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Pavement markings are existing.



LEGEND

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

OASIS 2070L TIMING CHART				
FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	7	7	7	7
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	35	30	35	30
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	3.2	3.2	3.2	3.2
Walk 1 *	7	7	7	7
Don't Walk 1	16	19	12	18
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	-	-	-	-
Vehicle Call Memory	-	-	-	-
Dual Entry	ON	ON	ON	ON
Simultaneous Gap	ON	ON	ON	ON

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

Signal Upgrade

Prepared In the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy.,Garner,NC 27529

NC 211 (Howe St.)/Howe St.
at
NC 211 (E. Moore Street)/
Moore St.

Division 3 Brunswick County Southport

PLAN DATE: July 2012 REVIEWED BY:
PREPARED BY: I. O. Umozurike REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23489 ALEXANDER
SIGNATURE 8/21/12 DATE

SIG. INVENTORY NO. 03-0063

21-AUG-2012 13:13
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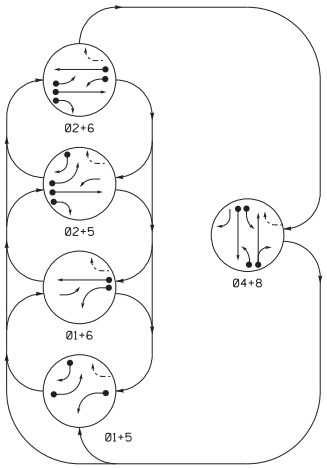
lumozurike

PROJECT REFERENCE NO.	SHEET NO.
	Sig. 1.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	04+8	FLASH
11	~~←~~	~~←~~	~~F Y~~	~~R~~	~~Y~~
21,22	R	R	G	R	Y
41	R	R	R	G	R
42	~~R~~	R	~~R~~	G	R
51	~~←~~	~~F Y~~	~~←~~	~~F Y~~	~~R~~	~~Y~~
61,62	R	G	R	G	R	Y
81,82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

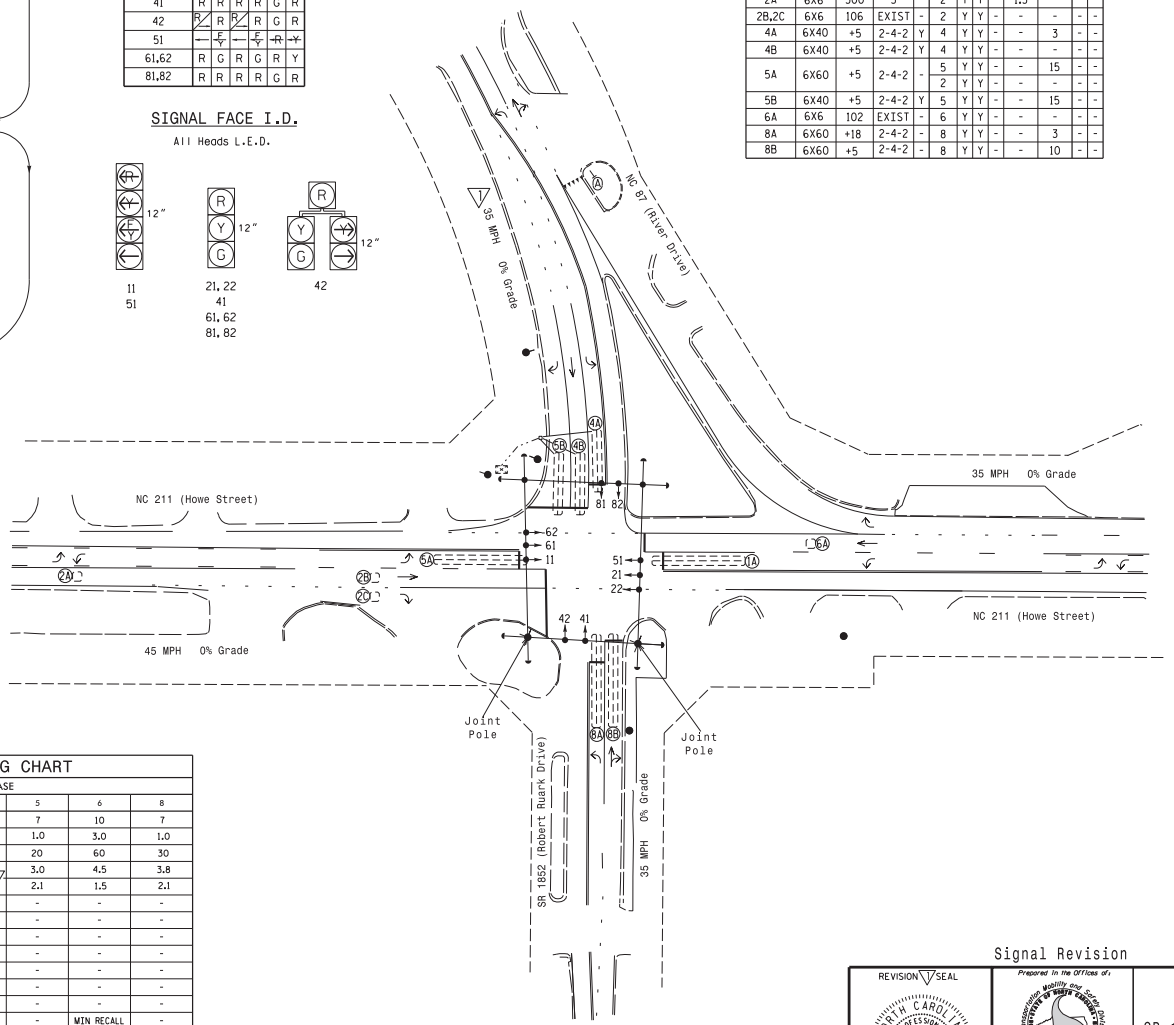
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	15	-	-
					6	Y	Y	-	-	-	-	-
2A	6X6	300	5	-	2	Y	Y	-	1.3	-	-	-
2B,2C	6X6	106	EXIST	-	2	Y	Y	-	-	-	-	-
4A	6X40	+5	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X40	+5	2-4-2	Y	4	Y	Y	-	-	-	-	-
5A	6X60	+5	2-4-2	-	5	Y	Y	-	-	15	-	-
					2	Y	Y	-	-	-	-	-
5B	6X40	+5	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A	6X6	102	EXIST	-	6	Y	Y	-	-	-	-	-
8A	6X60	+18	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	-

5 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	10	7
Extension 1 *	1.0	2.0	1.0	1.0	3.0	1.0
Max Green 1 *	15	60	20	20	60	30
Yellow Clearance	3.0	4.5	3.8	3.0	4.5	3.8
Red Clearance	2.3	1.5	2.1	2.1	1.5	2.1
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

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

Signal Revision

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Jason P. Galloway 8/4/2016 DATE

Prepared In the Offices of:

Traffic Engineering Branch, Signal Design Section

NC DEPARTMENT OF TRANSPORTATION

750 N.Greenfield Pkwy.,Garner,NC 27529

NC 211 (Howe Street) at NC 87 (River Drive)/ SR 1852 (Robert Ruark Drive)

Division 3 Brunswick County Southport

PLAN DATE:	July 2016	REVIEWED BY:	JPG
PREPARED BY:	KGP, Jr.	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	BY	DATE
1 Revise phase 4 speed limit and clearance intervals	JPG	8/4/2016

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Pamela L.Alexander,PE-023489 on 3-17-2015 This document is only certified as to the revisions.

DATE

SIG. INVENTORY NO. 03-0215

04-AUG-2016, 16:37
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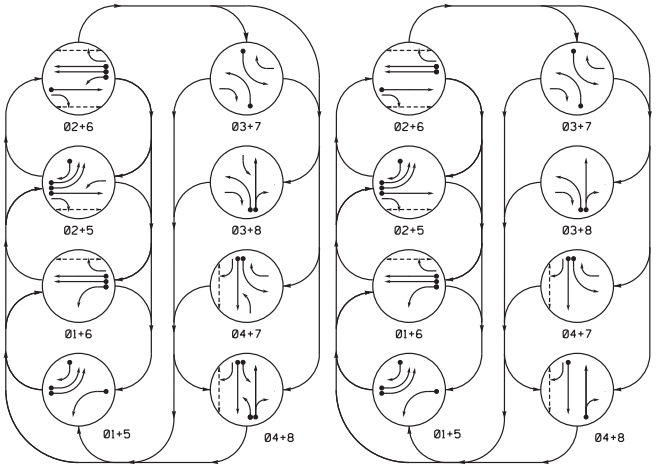
kgpowell

DocuSign Envelope ID: 14SD7C6B-47E8-48AA-98B9-DFBE17E3EA63

PROJECT REFERENCE NO.	SHEET NO.
R-5021	Sig. 45.0

DEFAULT PHASING DIAGRAM



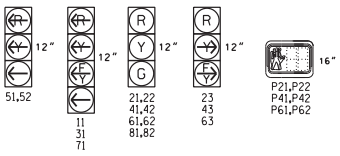
ALTERNATE PHASING DIAGRAM

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	—	—	FY	FY	R	R	R	R	Y
21,22	R	R	G	G	R	R	R	R	Y
23	R	R	FY	FY	FY	FY	R	R	Y
31	R	R	R	R	—	—	FY	FY	R
41,42	R	R	R	R	R	R	G	G	R
43	FY	R	FY	R	R	R	FY	FY	R
51,52	—	R	—	R	R	R	R	R	R
61,62	R	G	R	G	R	R	R	R	Y
63	R	FY	R	FY	FY	FY	R	FY	Y
71	R	R	R	R	—	FY	—	FY	R
81,82	R	R	R	R	R	G	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DW	DRK

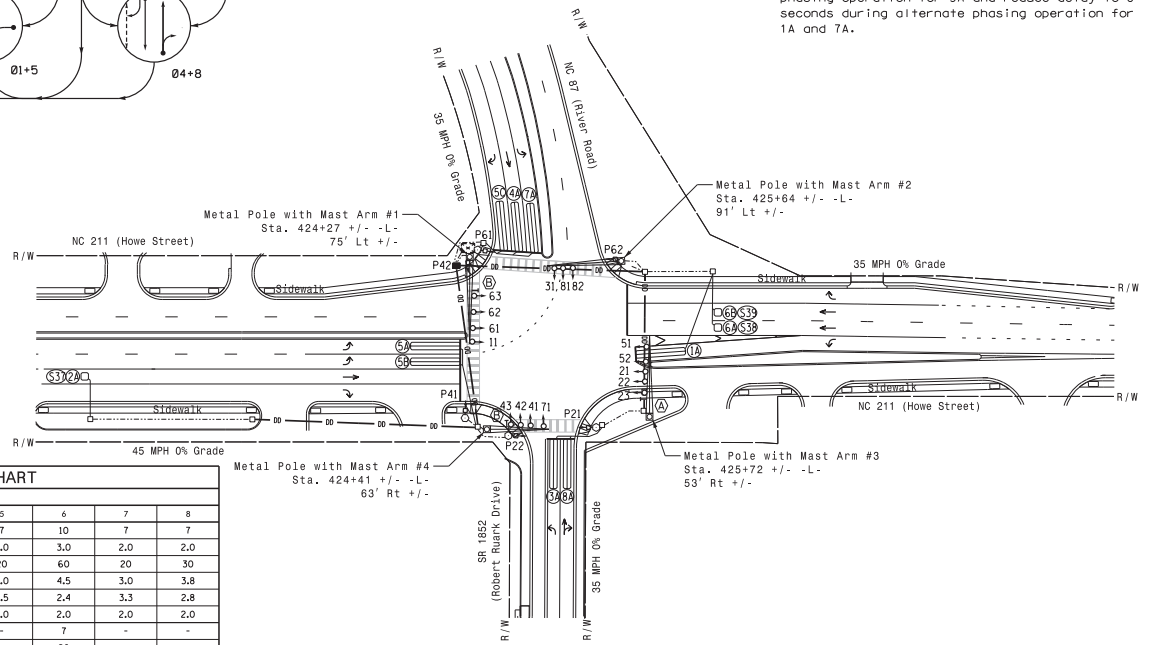
ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	—	—	R	R	R	R	R	R	Y
21,22	R	R	G	G	R	R	R	R	Y
23	R	R	FY	FY	FY	FY	R	R	Y
31	R	R	R	R	—	—	R	R	R
41,42	R	R	R	R	R	R	G	G	R
43	FY	R	FY	R	R	R	FY	FY	R
51,52	—	R	—	R	R	R	R	R	R
61,62	R	G	R	G	R	R	R	R	Y
63	R	FY	R	FY	FY	R	FY	R	Y
71	R	R	R	R	—	R	—	R	R
81,82	R	R	R	R	R	G	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DW	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	✱✱15	-	Y
					✱6	Y	Y	-	-	-	-	Y
2A/S37	6X6	300	5	Y	2	Y	Y	-	-	-	Y	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	✱✱15	-	Y
					✱8	Y	Y	-	-	3	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
5C	6X40	0	2-4-2	Y	5	Y	Y	-	-	✱✱15	-	Y
6A/S38	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
6B/S39	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	✱✱15	-	Y
					✱4	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

✱ Disable phase 4,6,and 8 call for 1A,3A,and 7A during alternate phasing operation.
✱✱ Reduce delay to 3 seconds during alternate phasing operation for 3A and reduce delay to 0 seconds during alternate phasing operation for 1A and 7A.



OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	10	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1 *	20	60	20	30	20	60	20	30
Yellow Clearance	3.0	4.5	3.0	3.8	3.0	4.5	3.0	3.8
Red Clearance	3.2	2.4	3.4	2.8	3.5	2.4	3.3	2.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7	-	7	-	-
Don't Walk 1	-	10	-	27	-	26	-	-
Seconds Per Actuation *	-	2.5	-	-	-	-	-	-
Max Variable Initial *	-	34	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	-	-	-
Time To Reduce *	-	30	-	-	-	-	-	-
Minimum Gap	-	3.0	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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

8 Phase
Fully Actuated
(NC 133 Closed Loop System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. The Division Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Closed loop system data: Controller Asset #: 0215.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
DD	Directional Drill	N/A
	Metal Pole with Mastarm	
	Type II Signal Pedestal	
	Wheelchair Ramp	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ
Ⓑ	"RIGHT TURN MUST YIELD TO U-TURN" Sign	Ⓑ

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, Traffic Engineering Branch, Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

NC 211 (Howe Street)
at
NC 87 (River Road)/
SR 1852 (Robert Ruark Drive)
Division 03 Brunswick Co. Southport

PLAN DATE: June 2017 REVIEWED BY: A.D. Klinksiek
PREPARED BY: A.H. Thornburg REVIEWED BY: N.R. Simmons

SCALE 0 50 1"=50'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS
Natasha R Simmons
"DOCUSIGNED" SIGNATURE
DATE
SIG. INVENTORY NO. 03-0215

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Appendix G – Proposed Site Plan

REZONING PACKAGE

INDIGO

MASTER PLANNED COMMUNITY

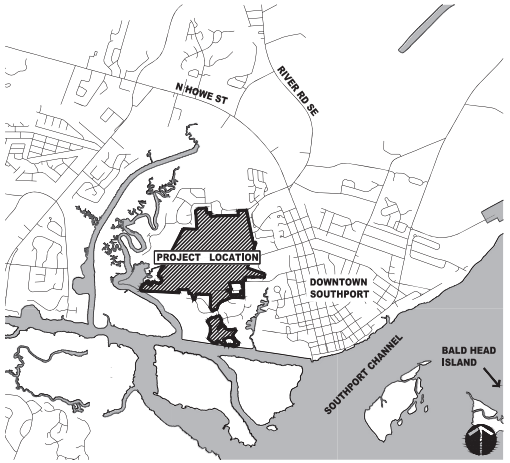
SOUTHPORT, NORTH CAROLINA

DATE: 07.23.2021

SHEET INDEX

Sheet List Table	
Sheet Number	Sheet Title
RZ-1	COVER
RZ-2	EXISTING CONDITIONS
RZ-3	TECHNICAL DATA SHEET
RZ-4	PROPOSED STREET TYPOLOGY
RZ-5	STREET SECTIONS
RZ-6	PROPOSED OPEN SPACE
RZ-7	CHARACTER IMAGERY

VICINITY MAP



PROJECT TEAM

INDIGO

LD PN 1021180

COVER

LandDesign.

7/23/2021 8:37 AM LAUREN CLINE N:\2021\1021180\CAD\ENTITLEMENT\1021180_RZN_COVR.DWG

LEGEND:

- EXISTING WETLAND
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

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SCALE

VERT: N/A
HORZ: 1" = 300'

0 150 300 600

NORTH

SHEET TITLE

EXISTING CONDITIONS

SHEET NUMBER

RZ-2

7/23/2021 3:39 PM

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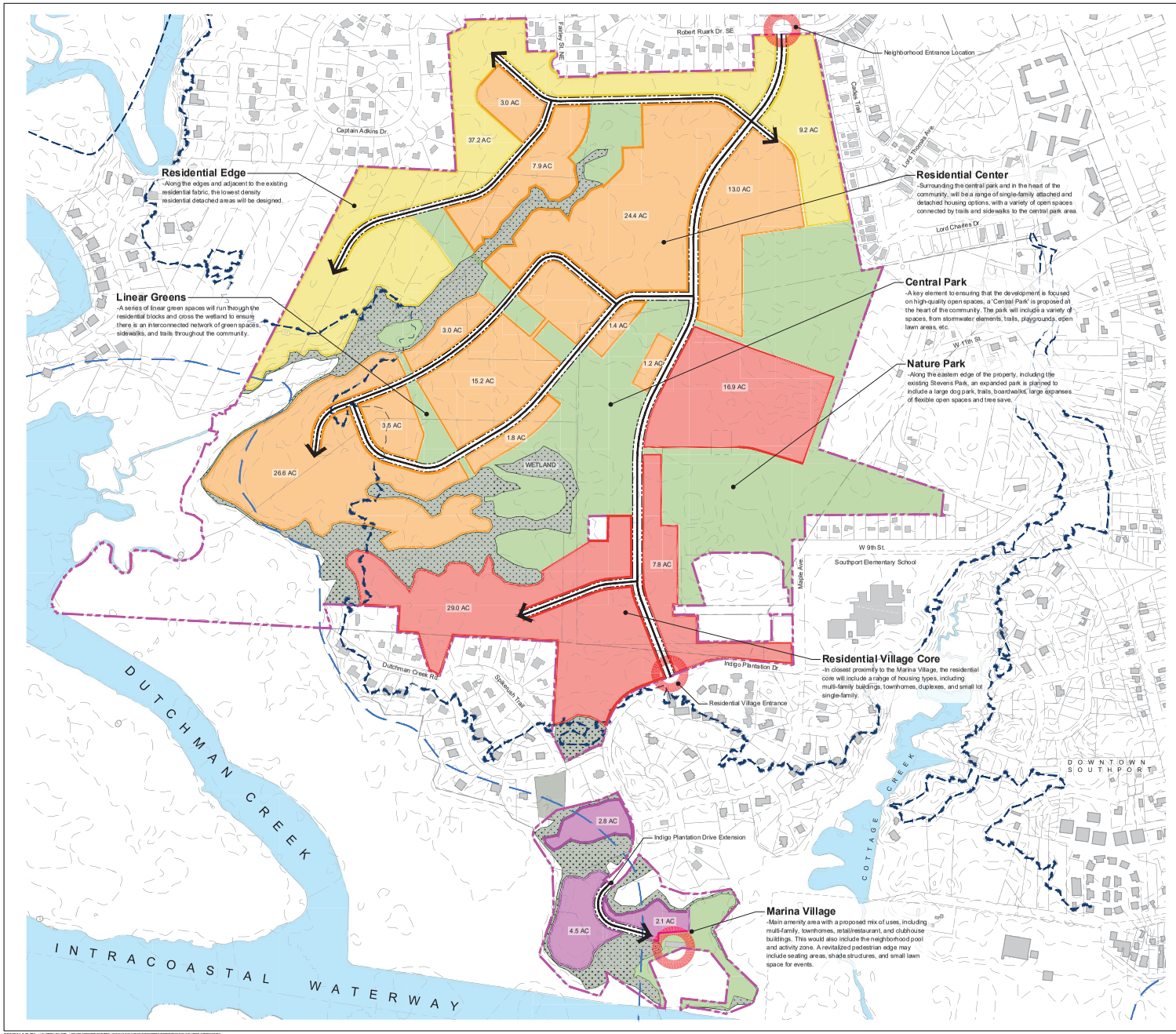

DEVELOPMENT SUMMARY

PROPOSED ZONING: PUD
OVERALL DEVELOPMENT AREA: 372.67 TOTAL ACRES

AREA A: MARINA VILLAGE : 9.4 TOTAL ACRES
-NON-RESIDENTIAL: 20,000 SF MAX
-RESIDENTIAL: 20 DUA MAX = 188 TOTAL UNITS

AREA B: RESIDENTIAL CORE : 53.7 TOTAL ACRES
-NON-RESIDENTIAL: 60,000 SF MAX
-RESIDENTIAL: 10 DUA MAX = 537 TOTAL UNITS

AREA C: RESIDENTIAL CENTER : 101.0 TOTAL ACRES
-NON-RESIDENTIAL: NA
-RESIDENTIAL: 6 DUA MAX = 606 TOTAL UNITS

AREA D: MARINA VILLAGE : 46.4 TOTAL ACRES
-NON-RESIDENTIAL: NA
-RESIDENTIAL: 3 DUA MAX = 139 TOTAL UNITS

TOTALS:
-NON-RESIDENTIAL: 80,000 SF MAX
-RESIDENTIAL: 1,470 TOTAL UNITS (AVG 3.9 DUA)*

*NOTE: CITY OF SOUTHPORT UDO ALLOWS MAXIMUM SIX (6) DWELLING UNITS PER ACRE WITHIN PUD AREAS OR 2,236 UNITS ON THIS PARCEL.

OPEN SPACE: 20% REQUIRED BASED ON OVERALL DEVELOPMENT EXCLUSIVE OF 404 WETLANDS
-TOTAL REQUIRED: 74.5 ACRES
-TOTAL PROPOSED: 75.3 ACRES

LEGEND

- AREA A - MARINA
- AREA B - RESIDENTIAL CORE
- AREA C - RESIDENTIAL CENTER
- AREA D - RESIDENTIAL EDGE
- OPEN SPACE
- EXISTING WETLAND
- PROPOSED STREET
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

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SCALE
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NORTH

SHEET TITLE
TECHNICAL DATA SHEET

SHEET NUMBER
RZ-3

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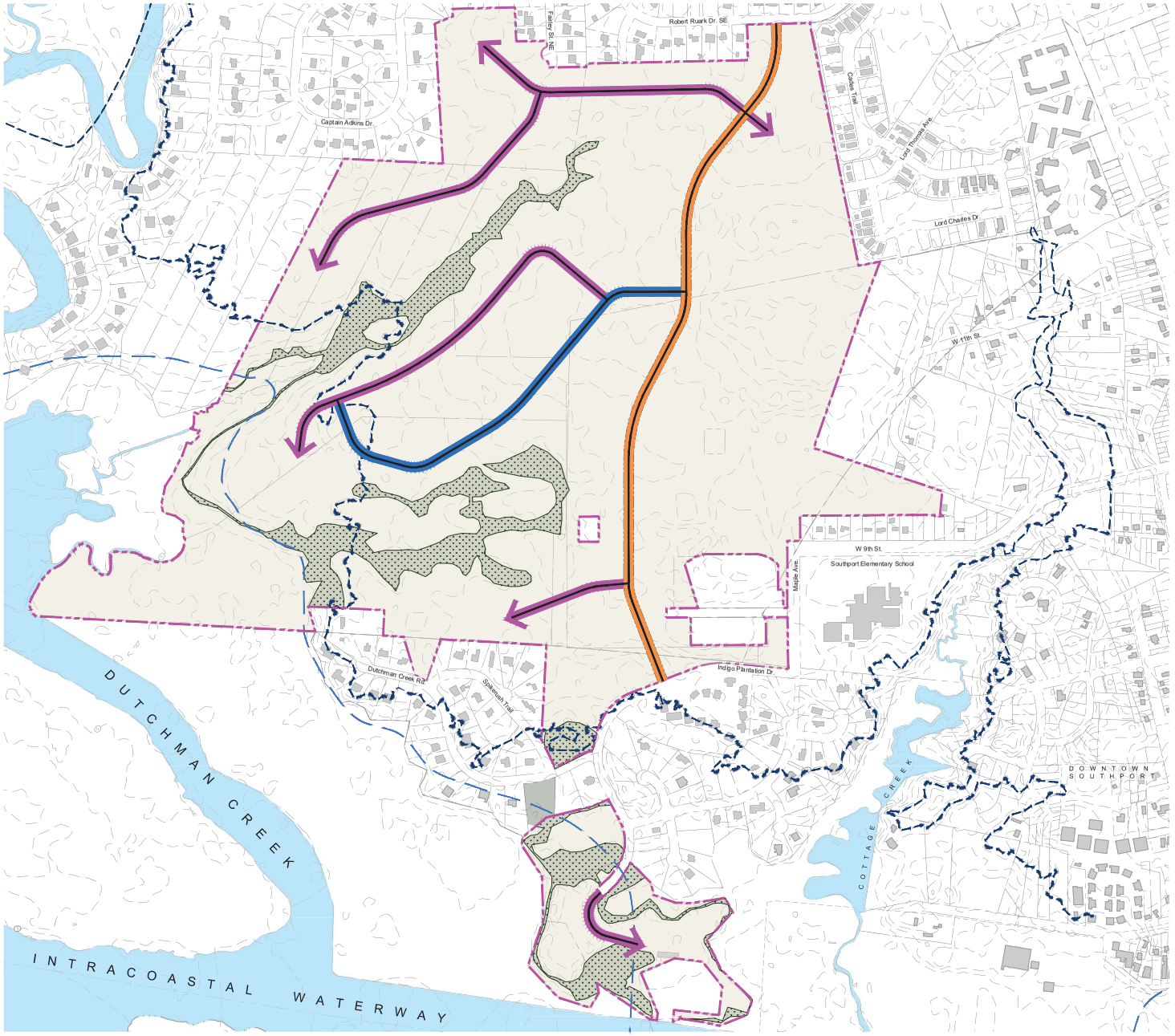

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SCALE

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VERT: N/A
HORZ: 1" = 300'
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SHEET TITLE

PROPOSED STREET TYPOLOGY

SHEET NUMBER

RZ-4

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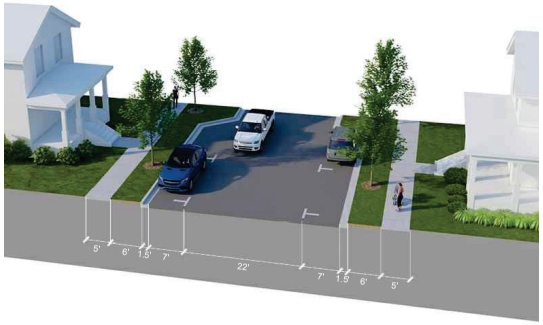
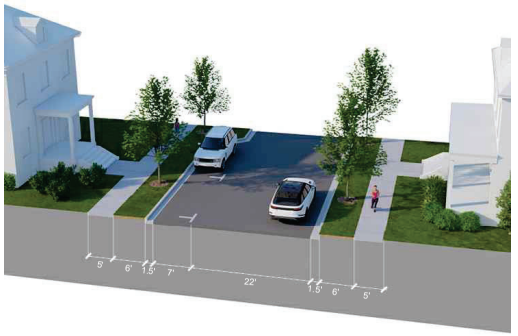
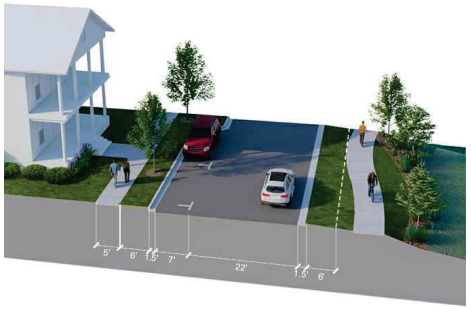


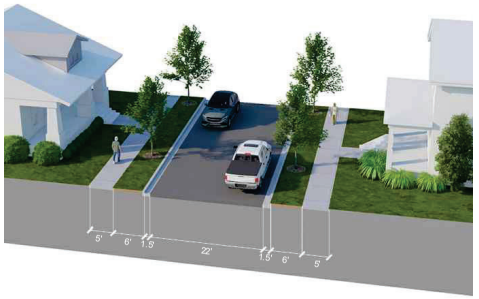
AVENUE STREET: 61' ROW
- LOCATED ALONG THE MAIN NORTH/SOUTH STREET THROUGH THE COMMUNITY. PEDESTRIAN-ORIENTED WITH ON-STREET PARKING ON BOTH SIDES OF THE STREET.



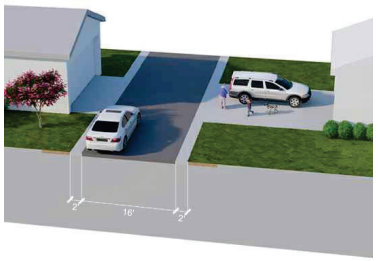
STREET TYPE A-1: 54' ROW
- LOCATED ADJACENT TO PARK SPACES AND WHERE ALLEY-LOADED LOTS ARE DESIGNED TO PROVIDE VISITOR PARKING.



STREET TYPE A-2: 49' ROW
- WHERE OPPORTUNITIES EXIST ALONG THE GREAT PARK AND OTHER LOCATIONS WHERE STORMWATER ELEMENTS MAY BE DESIGNED, A RIBBON CURB AND DITCH/SWALE SECTION MAY BE UTILIZED.



STREET TYPE B: 47' ROW
- THE TYPICAL STREET SECTION IN THE COMMUNITY WHERE FRONT-LOADED LOTS EXIST, WHILE ALSO PROVIDING PEDESTRIAN ORIENTED SIDEWALKS/STREET TREES ON BOTH SIDES OF THE STREET.



ALLEY, TYP.: 20' ROW

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SHEET TITLE

STREET SECTIONS

SHEET NUMBER

RZ-5

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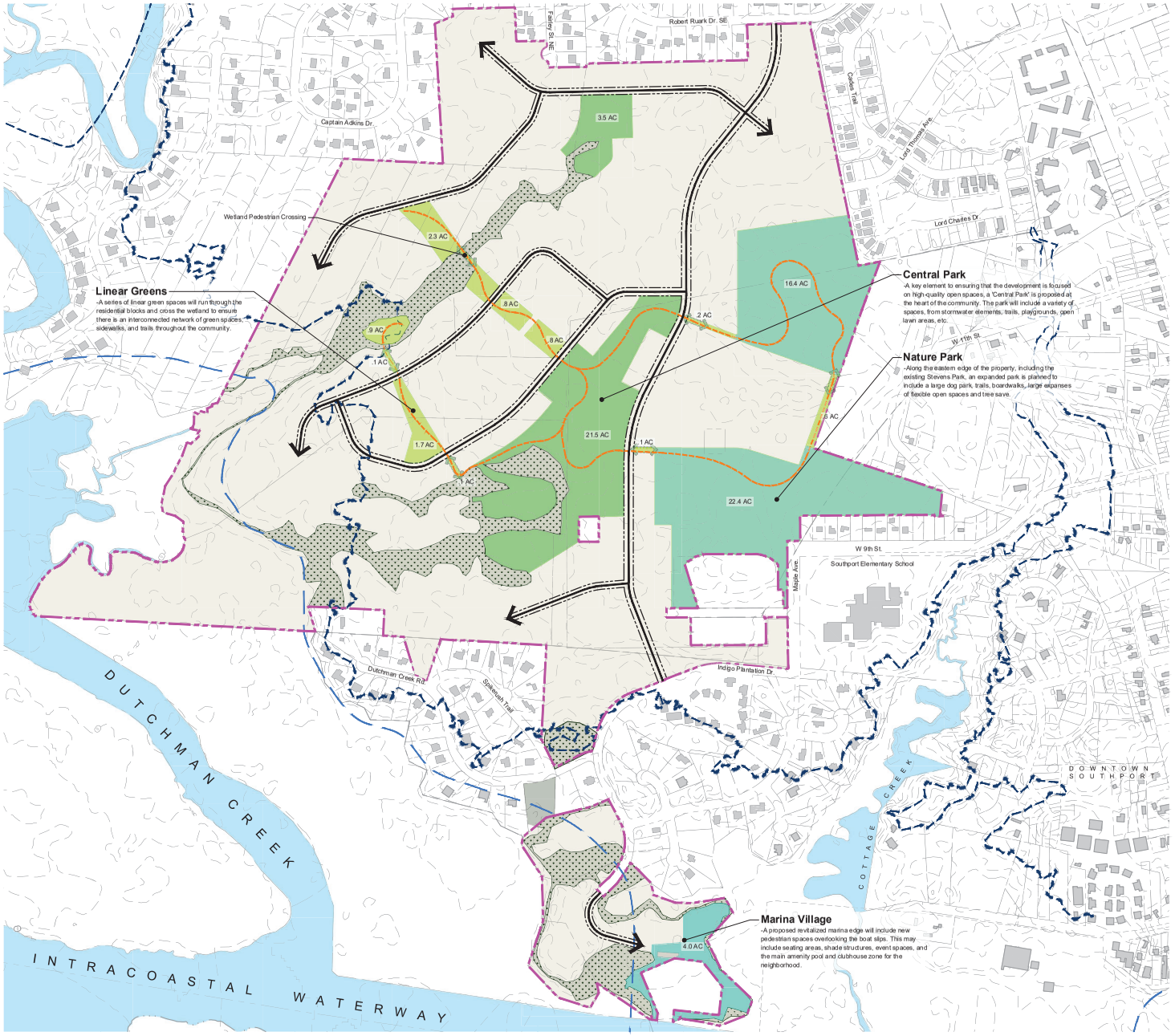

SITE AREA: 372.67 AC
TOTAL OPEN SPACE 75.3 AC (20%)

OPEN SPACE TYPES

- NATURE PARK - 38.8 AC — DOG PARK, SWIM, TRAILS/FIELDS, ETC
- CENTRAL PARK / POCKET PARK - 25.0 AC — PLAYGROUND, DOCKS, SHADED AREAS, GREENS, COURTS, ETC
- MARINA - 4.0 AC — BOARDWALK / MARINA
- LINEAR GREENS - 7.5 AC — GREEN TRAIL NETWORK
- EXISTING WETLAND
- PROPOSED STREET
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE
- PEDESTRIAN TRAIL

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SCALE NORTH

VERT: N/A
HORZ: 1" = 300'

0 150 300 600

SHEET TITLE

PROPOSED OPEN SPACE

SHEET NUMBER

RZ-6

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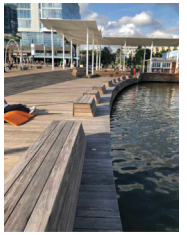
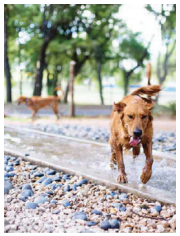
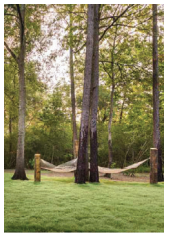
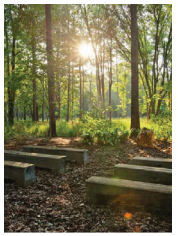
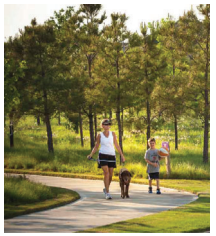
CENTRAL PARKS/POCKET PARKS

MARINA



NATURE PARK



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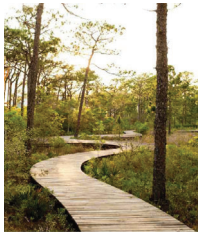

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SCALE NORTH

VERT: N/A
HORZ: #########

SHEET TITLE

CHARACTER IMAGERY

SHEET NUMBER

RZ-7

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ORIGINAL SHEET SIZE: 24" X 36"

Appendix H – Turn Lane Warrants

2032/2040
NO-BUILD TURN LANE WARRANTS

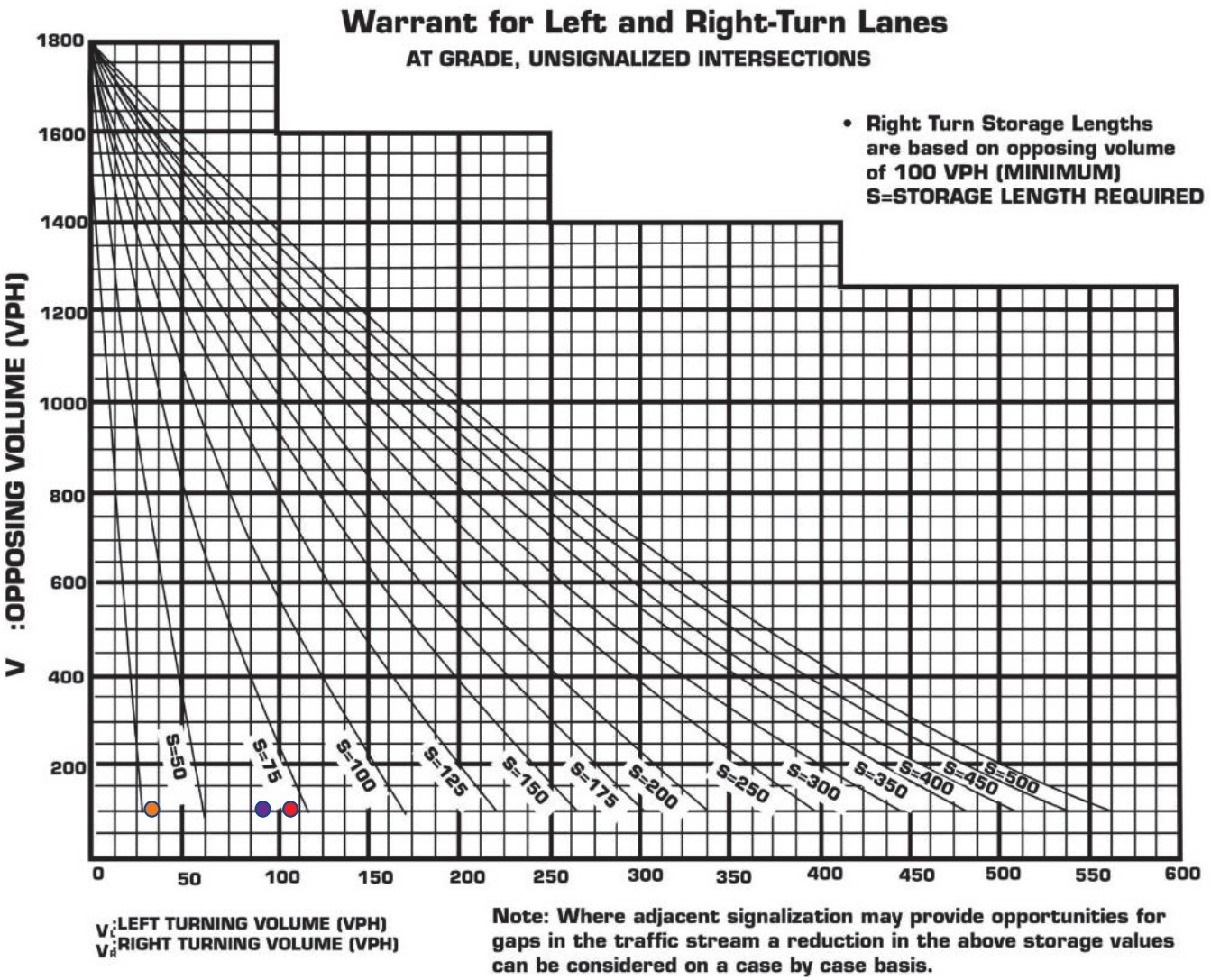
12th/Stuart Avenue at NC 211 (N. Howe St) - NO BUILD

2032 PM – NB Right — 25 ft Warranted
Vol Right = 27
Volume Opposed = 100

2032 AM – WB Right — 75 ft Warranted
Volume Right = 91
Volume Opposed = 100

2032 PM – WB Right — 75 ft Warranted
Volume Right = 104
Volume Opposed = 100

Note:
SB Right, NB Right, EB Right, EB Left, WB Left volumes are too low to warrant a turn lane



12th/Stuart Avenue at NC 211 (N. Howe St) - NO BUILD

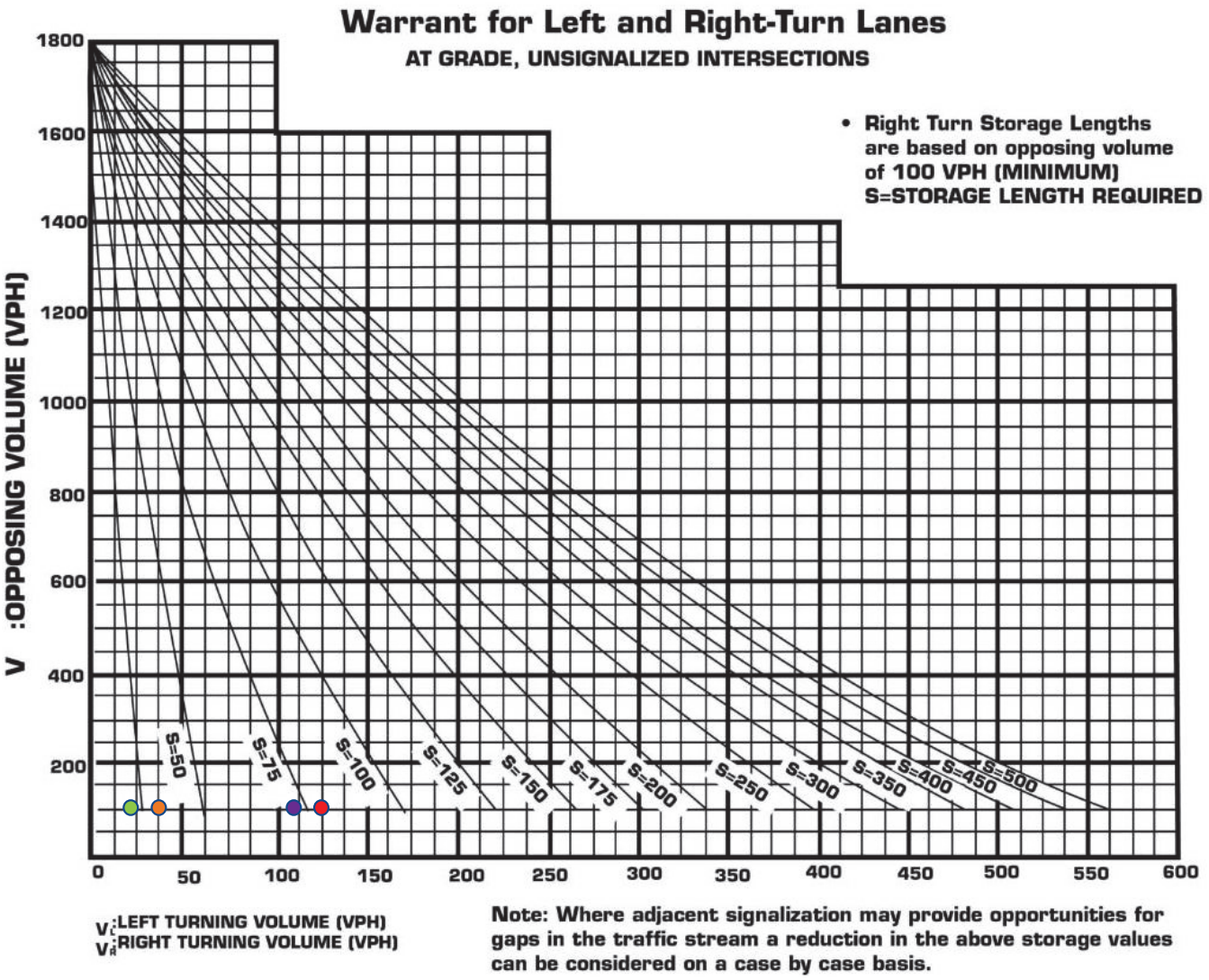
2040 PM – NB Right — 25 ft Warranted
Vol Right = 32
Volume Opposed = 100

2040 PM – SB Right — 25 ft Warranted
Vol Right = 19
Volume Opposed = 100

2040 AM – WB Right — 75 ft Warranted
Volume Right = 106
Volume Opposed = 100

2040 PM – WB Right — 75 ft Warranted
Volume Right = 122
Volume Opposed = 100

Note:
EB Right, EB Left, WB Left volumes are too low to warrant a turn lane



11th Street at NC 211 (N. Howe St) - NO BUILD

2032 AM – SB Right — 50 ft Warranted
Vol Right = 66
Volume Opposed = 100

2032 PM – SB Right — 25 ft Warranted
Vol Right = 63
Volume Opposed = 100

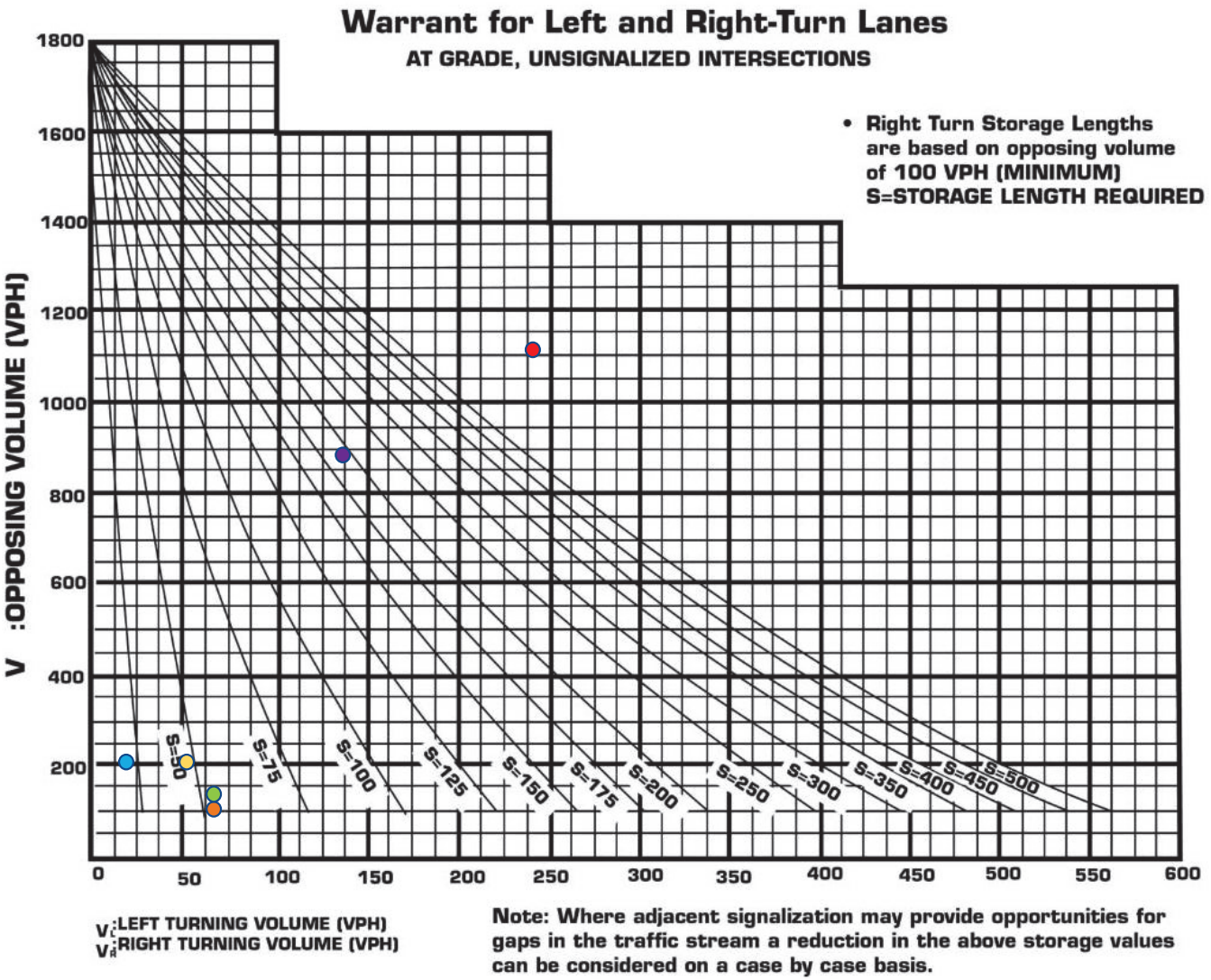
2032 AM – EB Left — 200 ft Warranted
Volume Left = 138
Volume Opposed = 891 (highest mainline through approach)

2032 PM – EB Left — 500 ft Warranted
Volume Left = 245
Volume Opposed = 1120 (highest mainline through approach)

2032 AM – WB Right — 0 ft Warranted
Volume Right = 19
Volume Opposed = 100

2032 PM – WB Right — 50 ft Warranted
Volume Right = 51
Volume Opposed = 100

Note:
EB Right, WB Left, NB Right volumes are too low to warrant a turn lane



11th Street at NC 211 (N. Howe St) - NO BUILD

2040 AM – SB Right — 50 ft Warranted
Vol Right = 77
Volume Opposed = 100

2040 PM – SB Right — 25 ft Warranted
Vol Right = 74
Volume Opposed = 100

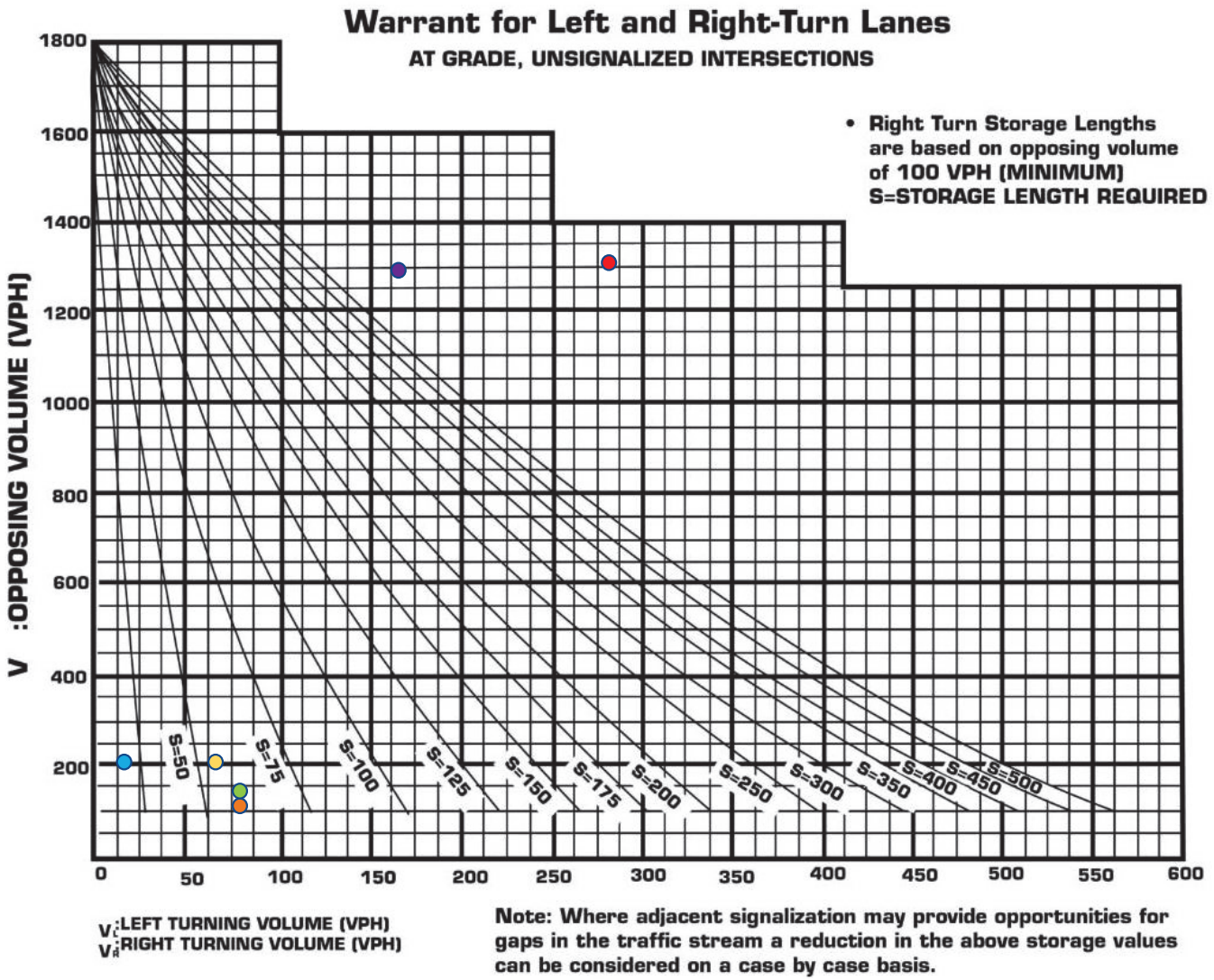
2040 AM – EB Left — 500 ft Warranted
Volume Left = 162
Volume Opposed = 1045 (highest mainline through approach)

2040 PM – EB Left — 500 ft Warranted
Volume Left = 287
Volume Opposed = 1313 (highest mainline through approach)

2040 AM – WB Right — 0 ft Warranted
Volume Right = 22
Volume Opposed = 100

2040 PM – WB Right — 50 ft Warranted
Volume Right = 60
Volume Opposed = 100

Note:
EB Right, WB Left, NB Right volumes are too low to warrant a turn lane



West Street at NC 211 (N. Howe St) - NO BUILD

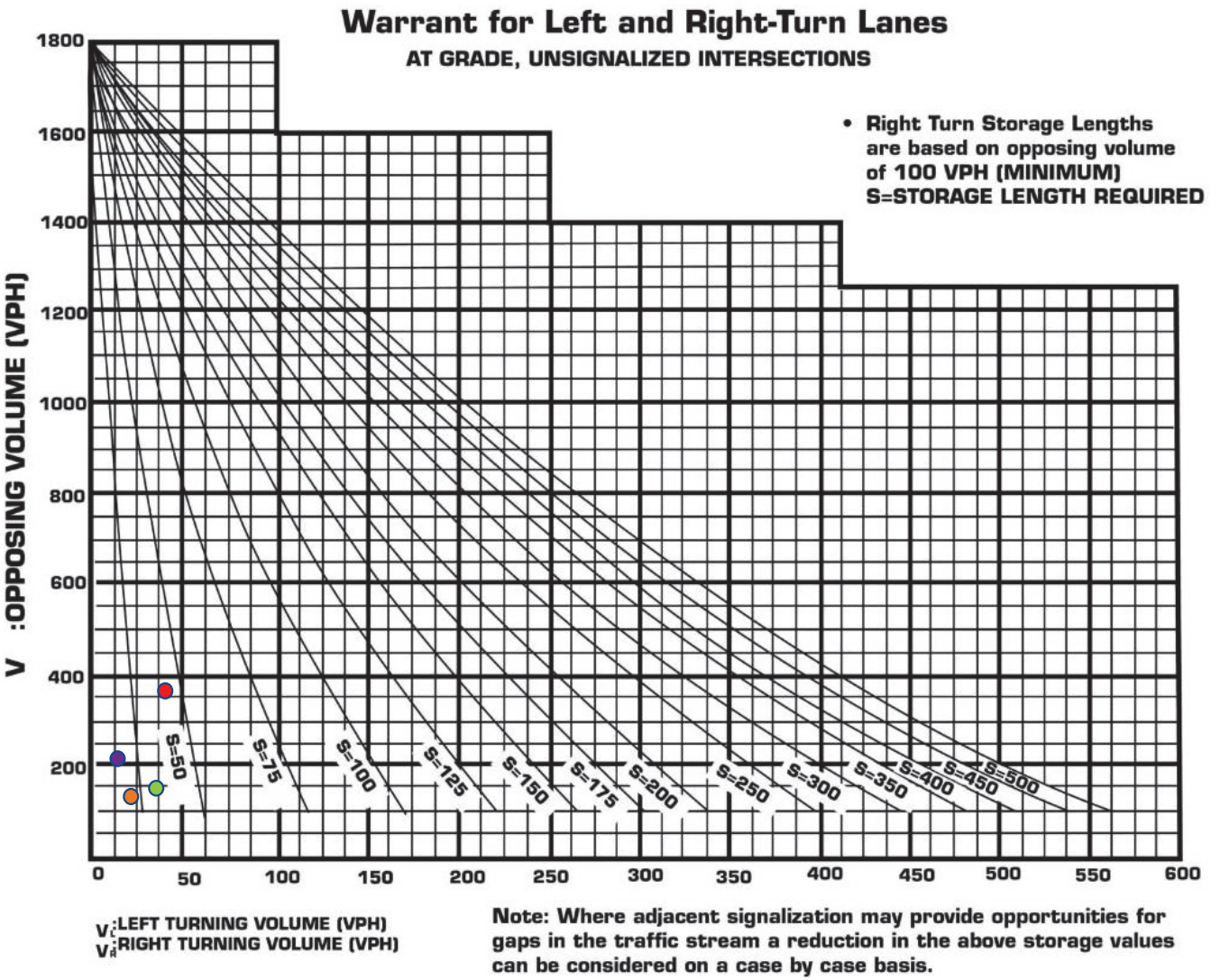
2032 AM – WB Right — 0 ft Warranted
Vol Right = 19
Volume Opposed = 117

2032 PM – WB Right — 0 ft Warranted
Vol Right = 34
Volume Opposed = 162

2032 AM – WB Left — 0 ft Warranted
Volume Left = 14
Volume Opposed = 208

2032 PM – WB Left — 0 ft Warranted
Volume Left = 37
Volume Opposed = 396

Note:
NB Right, SB Right, WB Right, WB Left volumes are too low to warrant a turn lane



West Street at NC 211 (N. Howe St) - NO BUILD

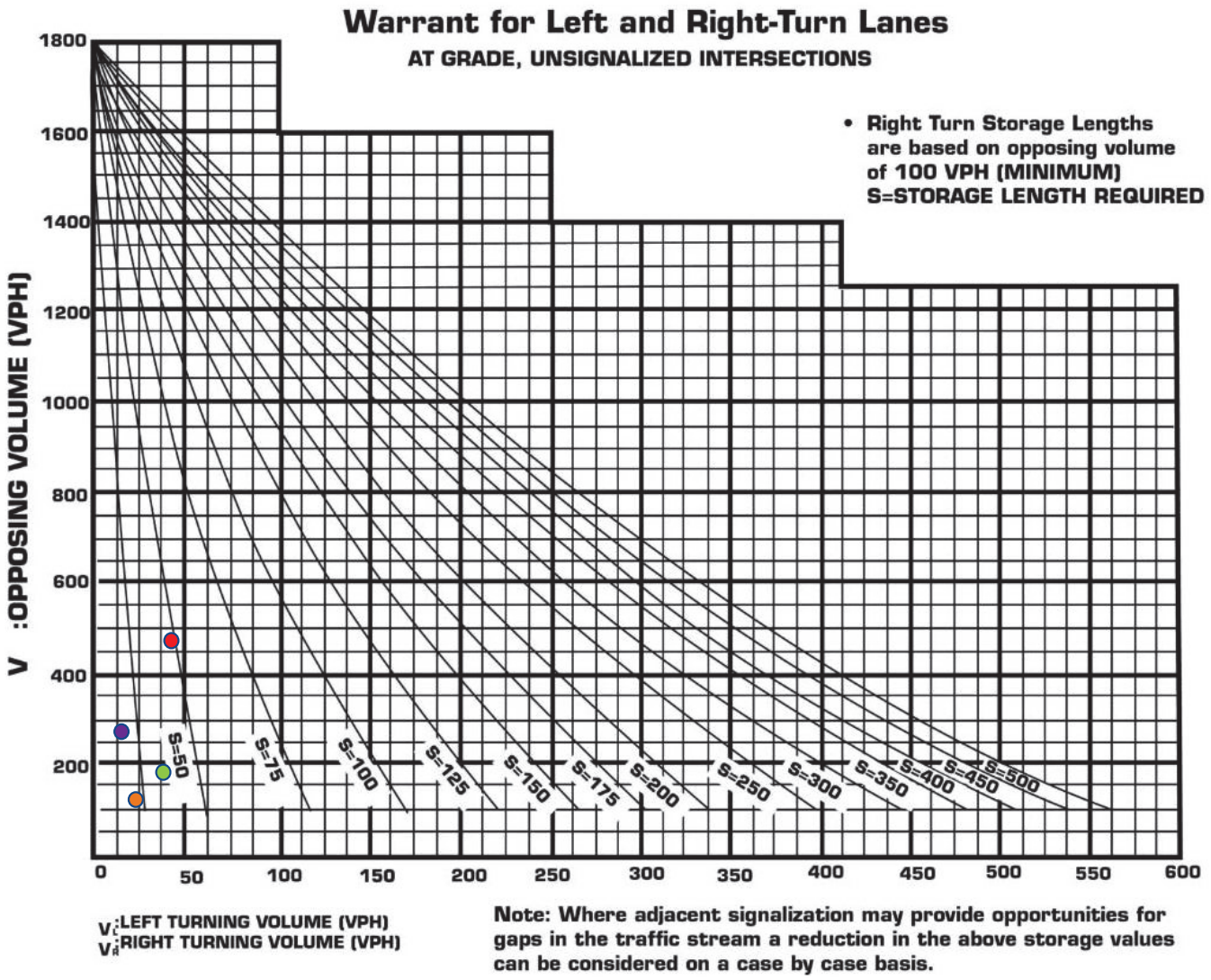
2040 AM – WB Right — 0 ft Warranted
Vol Right = 22
Volume Opposed = 137

2040 PM – WB Right — 0 ft Warranted
Vol Right = 39
Volume Opposed = 191

2040 AM – WB Left — 0 ft Warranted
Volume Left = 16
Volume Opposed = 243

2040 PM – WB Left — 50 ft Warranted
Volume Left = 44
Volume Opposed = 465

Note:
NB Right, SB Right, WB Right, WB Left volumes are too low to warrant a turn lane



2032/2040
BUILD TURN LANE WARRANTS

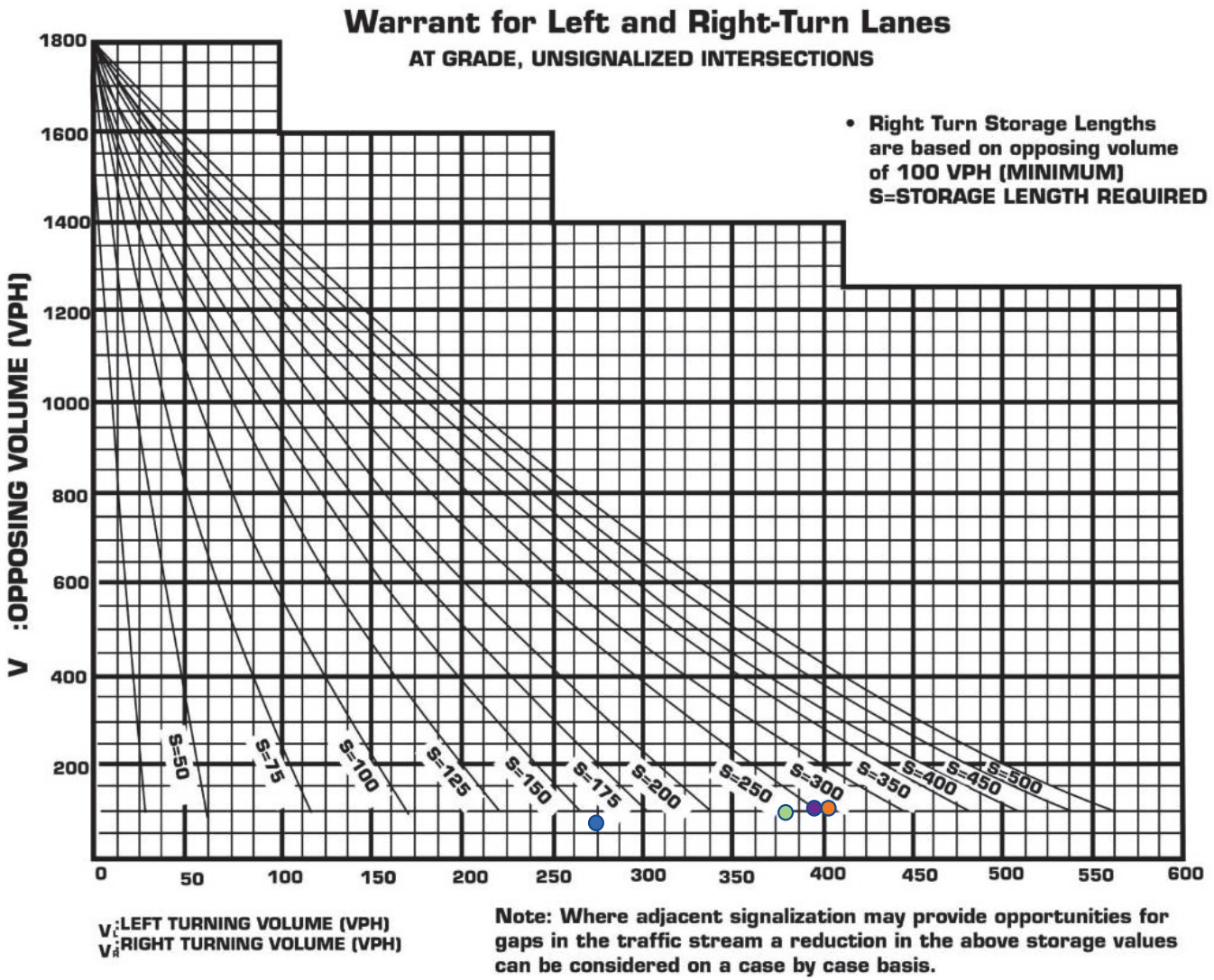
Robert Raurk Dr at Access #1- BUILD

2032 AM – EB Left — 150 ft Warranted
Vol Left = 276
Volume Opposed = 86

2032 PM – EB Left — 250 ft Warranted
Vol Left = 409
Volume Opposed = 124

2040 AM – NB Right — 200 ft Warranted
Vol Right = 377
Volume Opposed = 100

2040 PM – EB Left — 250 ft Warranted
Vol Right = 404
Volume Opposed = 124



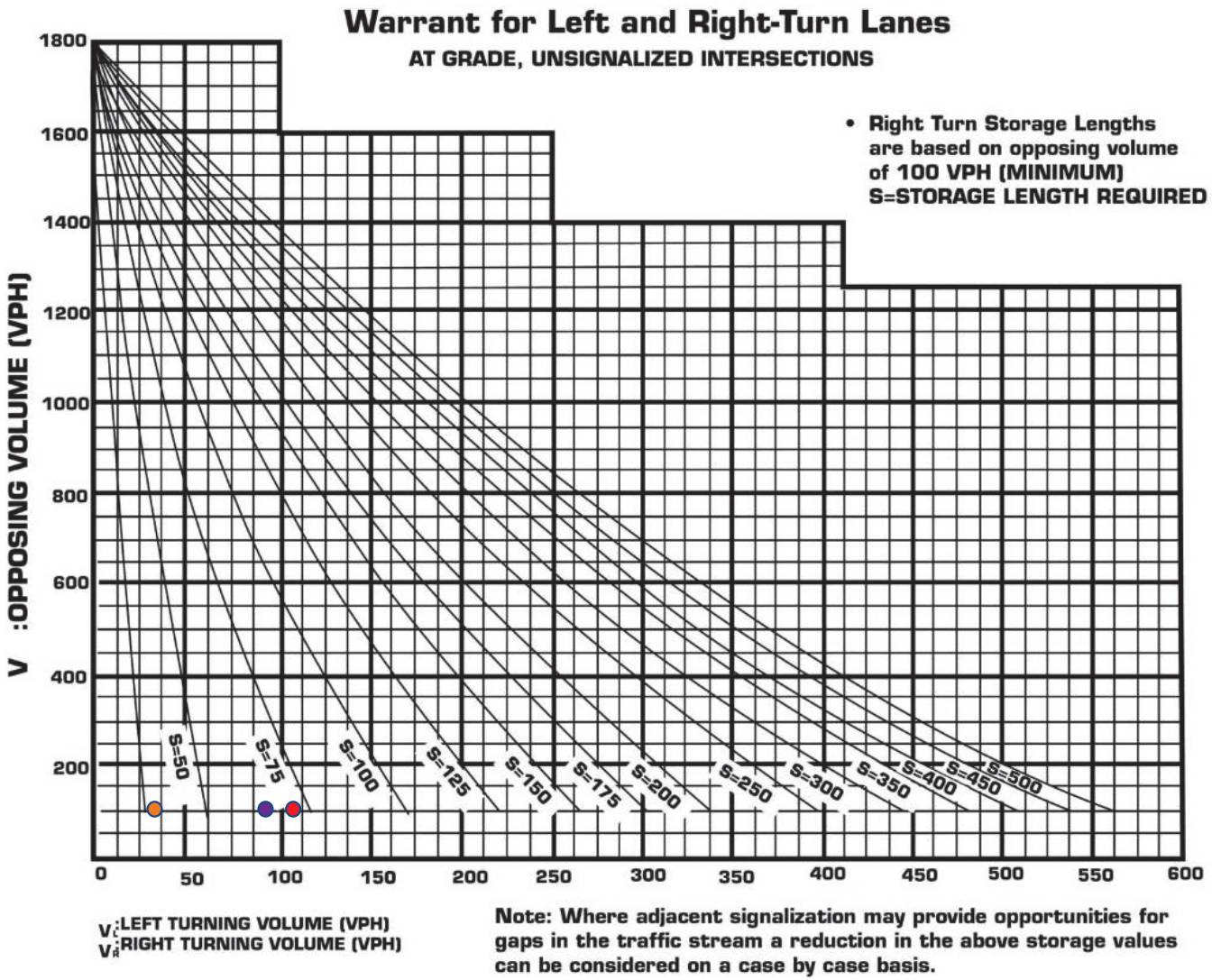
12th/Stuart Avenue at NC 211 (N. Howe St) - BUILD

2032 PM – NB Right — 25 ft Warranted
Vol Right = 27
Volume Opposed = 100

2032 AM – WB Right — 75 ft Warranted
Volume Right = 91
Volume Opposed = 100

2032 PM – WB Right — 75 ft Warranted
Volume Right = 104
Volume Opposed = 100

Note:
SB Right, NB Right, EB Right, EB Left, WB Left volumes are too low to warrant a turn lane



12th/Stuart Avenue at NC 211 (N. Howe St) - BUILD

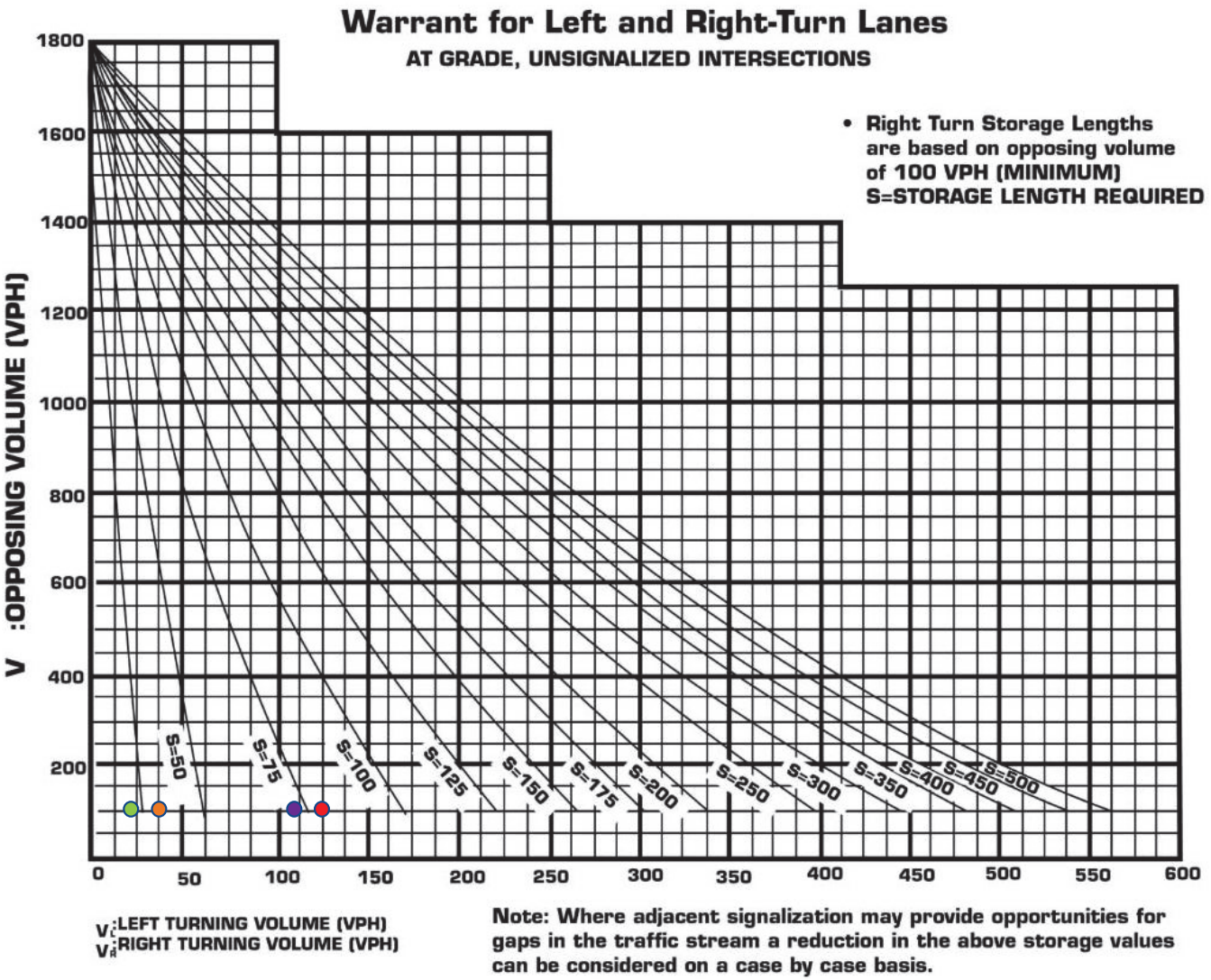
2040 PM – NB Right — 25 ft Warranted
Vol Right = 32
Volume Opposed = 100

2040 PM – SB Right — 25 ft Warranted
Vol Right = 19
Volume Opposed = 100

2040 AM – WB Right — 75 ft Warranted
Volume Right = 106
Volume Opposed = 100

2040 PM – WB Right — 75 ft Warranted
Volume Right = 122
Volume Opposed = 100

Note:
EB Right, EB Left, WB Left volumes are too low to warrant a turn lane



11th Street at NC 211 (N. Howe St) - BUILD

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Volume Right = 51
Volume Opposed = 100

Note:
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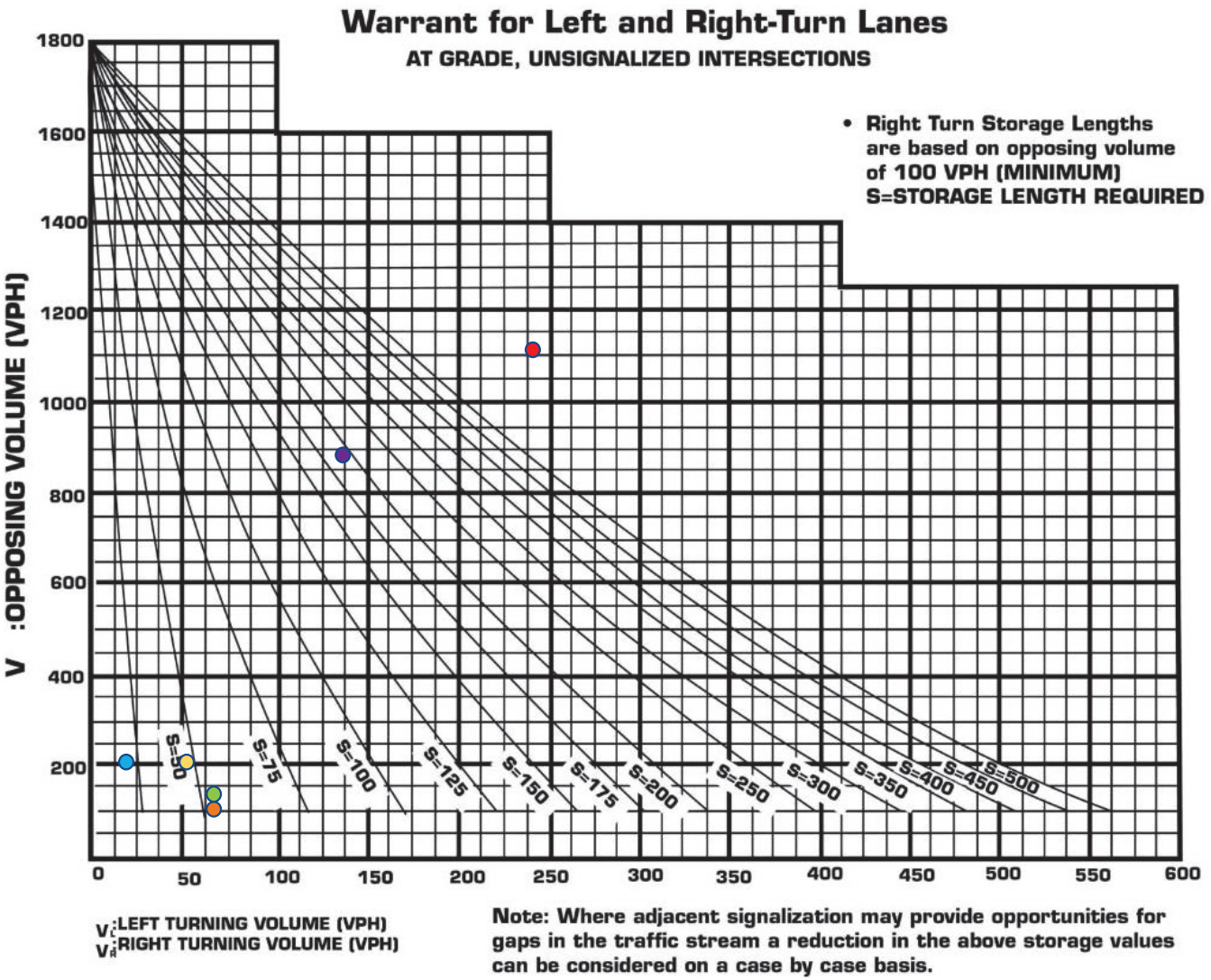

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Volume Opposed = 1313 (highest mainline through approach)

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Volume Opposed = 100

2040 PM – WB Right — 50 ft Warranted
Volume Right = 60
Volume Opposed = 100

Note:
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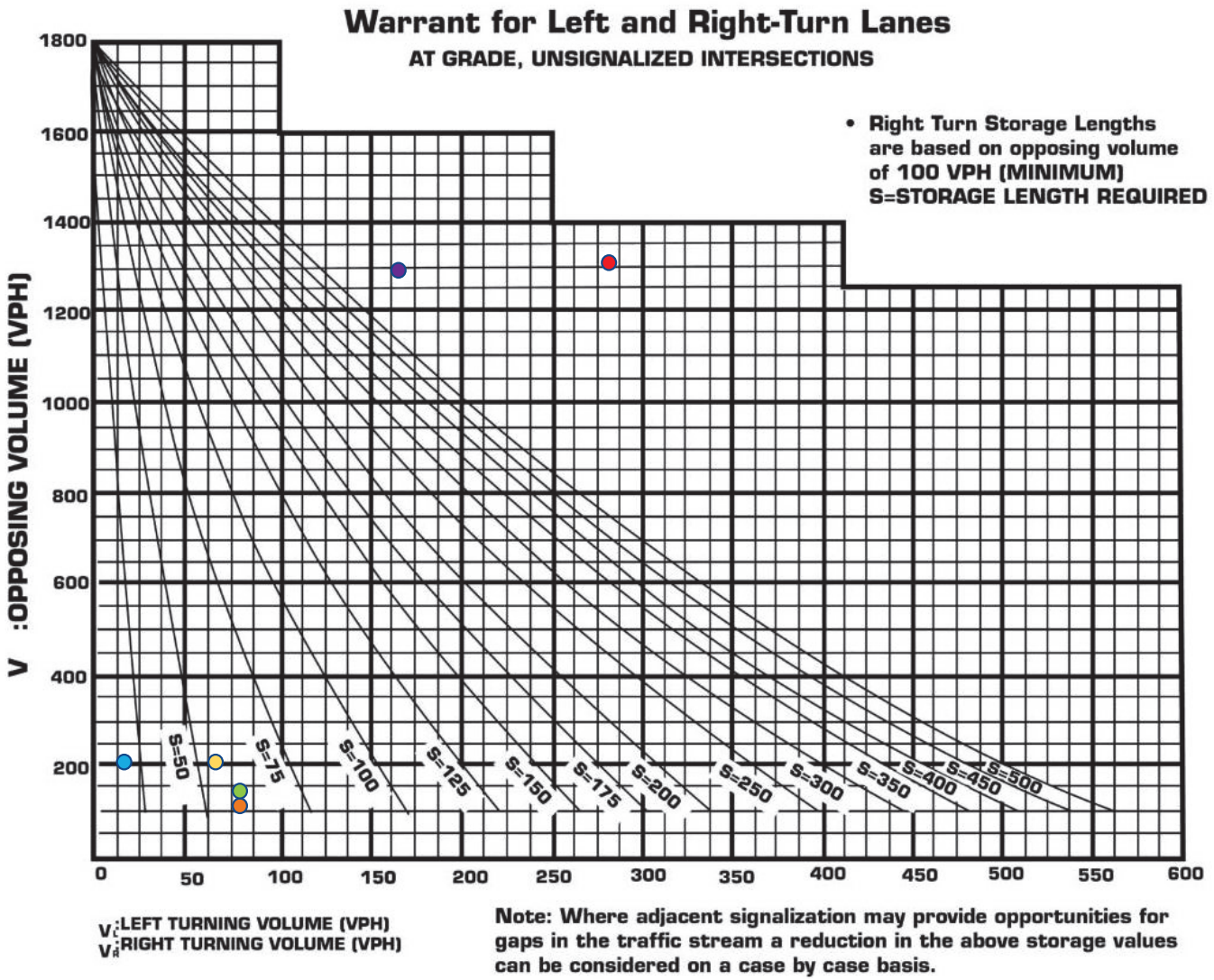

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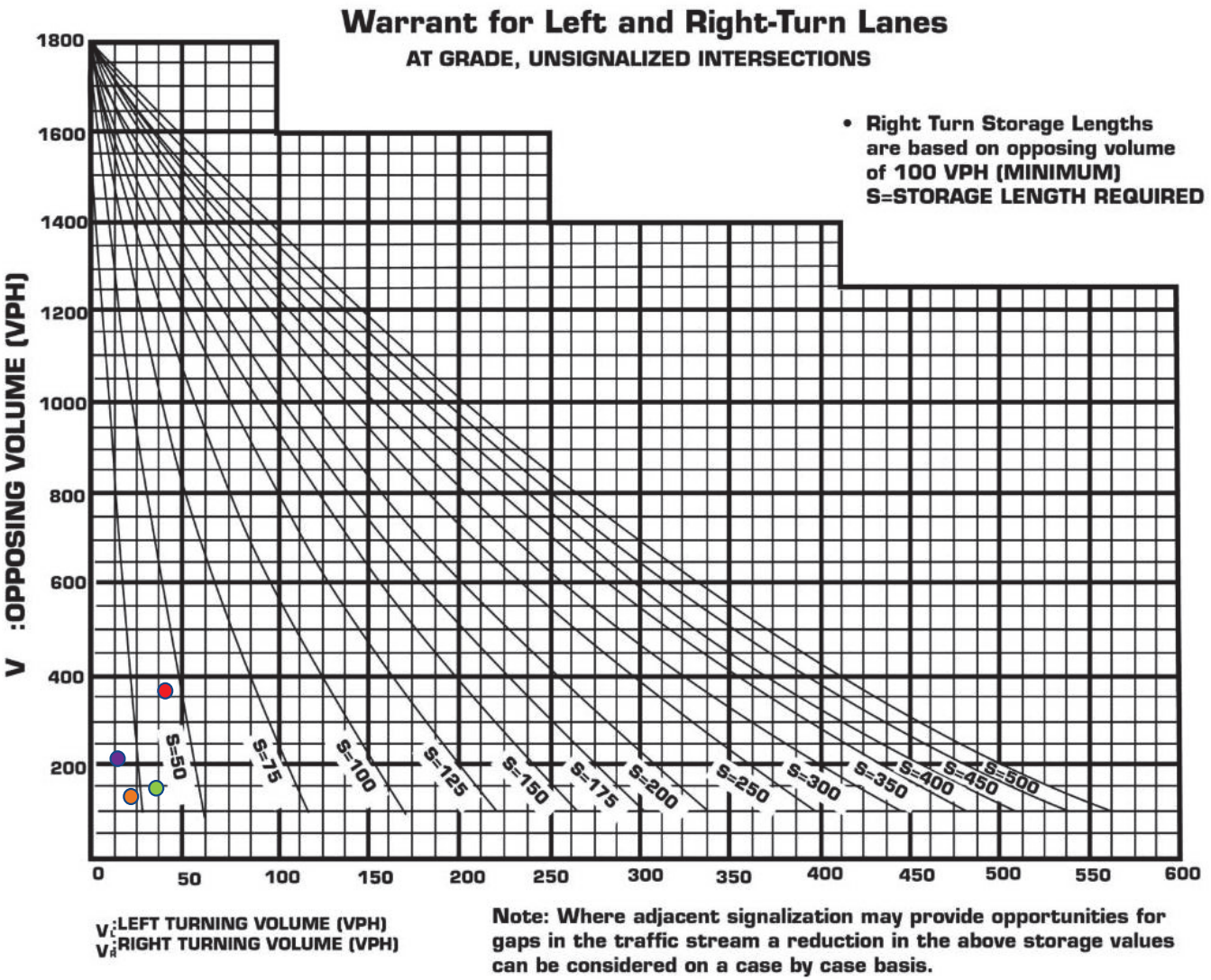

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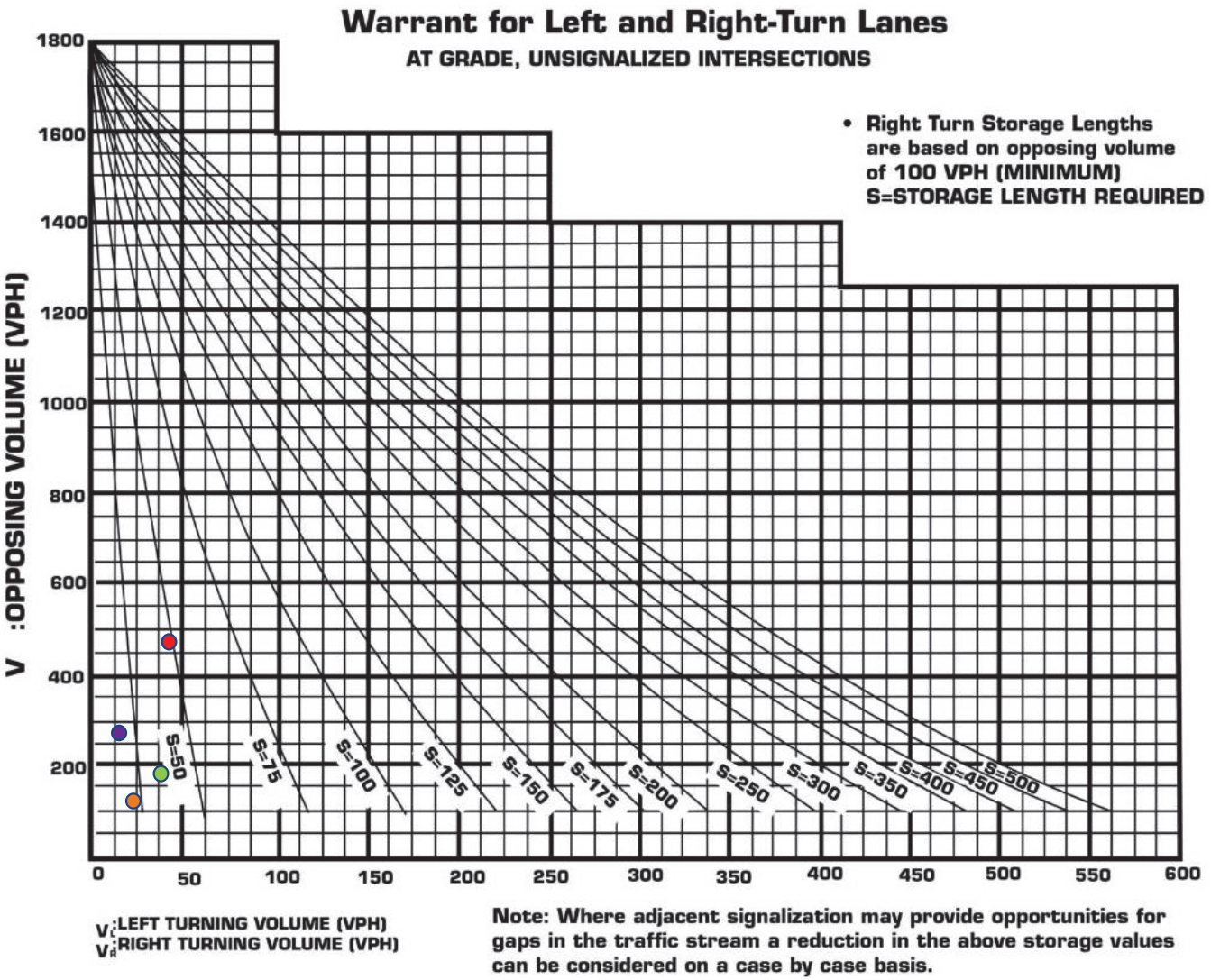

Exhibit F

Management Plan

1. Purpose & Objectives

The Tree Management Plan (TMP) establishes guidelines for tree preservation, removal, and mitigation within the proposed master-planned community. The goal is to balance development needs while maintaining the area's natural character and ecological integrity. Additionally, this plan aims to enhance environmental sustainability, improve air and water quality, and provide aesthetic and recreational benefits to residents.

2. Tree Preservation Strategy

2.1 Protected Trees

- Specimen Trees: Defined as trees meeting or exceeding the following size thresholds:
    - Deciduous Trees: ≥ 24 inches DBH (Diameter at Breast Height)
    - Evergreen Trees: ≥ 18 inches DBH
    - Longleaf Pine: ≥ 16 inches DBH
- All specimen trees shall be identified, surveyed, and prioritized for preservation during the site planning process.
- Preservation efforts shall include root zone protection, fencing during construction, and adjustments to grading plans where feasible.
- Development designs should prioritize the retention of tree groupings and forested corridors to support wildlife habitats and maintain natural drainage patterns.
- Where feasible, preserved trees shall be integrated into parks, trails, and open spaces to enhance community amenities.

3. Tree Removal & Mitigation

3.1 Removal Allowances

- Tree removal is permitted when necessary for essential infrastructure, roads, utilities, and building sites.
- If removal of specimen trees is unavoidable, a **1:1 mitigation ratio** shall apply.
- Prior to removal, alternative site designs shall be evaluated to minimize tree loss.
- Trees that are removed should be repurposed where possible, including use for mulch, habitat enhancement, or lumber for community projects.

3.2 Mitigation Requirements

- Replacement trees shall meet the following criteria:
    - Minimum caliper of 2" (deciduous-shade tree), 1.5" single-stem or 6' multi-stem (deciduous-ornamental tree) or height of 8' (evergreens) at the time of planting.
    - Must be of a native or regionally adapted species to enhance biodiversity and resilience.

    - Replacement trees should be placed in areas that maximize ecological and aesthetic benefits.

- Mitigation plantings can occur anywhere on the overall property with all intent to be designated in open spaces, buffers, or streetscapes.
- If on-site mitigation is not feasible, off-site mitigation in conservation areas or community reforestation projects may be considered.

4. Implementation & Compliance

4.1 Documentation & Monitoring

- A Tree Survey & Preservation Plan shall be submitted as part of the development approval process.
- Compliance with mitigation requirements shall be verified through an annual inspection for the first three years post-planting.

4.2 Long-Term Management

- The community's HOA or designated property manager shall oversee ongoing tree care, including irrigation, pruning, and health assessments.
- A contingency plan for replanting shall be in place for any mitigation trees that fail within three years of installation.

Exhibit G

Current Ordinances and Policies

Article 1: General Provisions

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1.1 TITLE

This ordinance shall be known and may be cited as the City of Southport Unified Development Ordinance (UDO). This ordinance may be referred to as "this ordinance" of which contains zoning, subdivision, signage, wireless telecommunication, and other land development regulations.

1.2 AUTHORITY

A. This ordinance is adopted pursuant to the authority contained in North Carolina General Statute (NCGS) 160A-174 which states that a city may, by ordinance, define, prohibit, regulate, or abate acts, omissions, or conditions detrimental to the health, safety, or welfare of its citizens and the peace and dignity of the city, and may define and abate nuisances.

B. Zoning provisions enacted herein are under the authority of NCGS 160D-702, which extends to cities the authority to enact regulations which promote the health, safety, morals, or the general welfare of the community.

C. Subdivision provisions enacted herein are under the authority of NCGS 160D, Article 8 which provide for the coordination of streets within proposed subdivisions with existing or planned street and with other public facilities, the dedication or reservation of recreation areas serving residents of the immediate neighborhood within the subdivision, or alternatively, for the provision of funds to be used to acquire recreation areas serving residents of more than one neighborhood in the immediate area, and for the distribution of population and traffic in a manner that will avoid congestion and overcrowding.

D. This UDO, which combines zoning and subdivision authority, is further enacted under the authority of NCGS 160D-103.

1.3 EFFECTIVE DATE

The provisions in this ordinance were originally adopted September 23, 2020 and became effective on September 23, 2020 and as subsequently amended.

1.4 JURISDICTION AND ZONING MAP

A. This ordinance shall be effective throughout the city's planning jurisdiction. The city's planning jurisdiction comprises the area within the corporate boundaries of the city as well as the extraterritorial area as shown on the "Official Zoning Map" for the City of Southport. Such planning jurisdiction may be modified from time to time in accordance with NCGS 160D-202.

B. A copy of the official zoning map showing the boundaries of the city's planning jurisdiction shall be available for public inspection in the Planning and Inspections Department office. The map may be in paper or digital format.

1.5 INTERPRETATION OF ZONING DISTRICT BOUNDARIES

Where uncertainty exists as to the boundaries of districts as shown on the Official Zoning Map, the UDO Administrator shall employ the following rules of interpretation:

A. Boundaries indicated as approximately following the centerlines of alleys, streets, highways, streams, or railroads shall be construed to follow such centerline;
B. Boundaries indicated as approximately following lot lines, city limits, or extraterritorial boundary lines, shall be construed as following such lines, limits, or boundaries;
C. Boundaries indicated as following shorelines shall be construed to follow such shorelines, and in the event of change in the shoreline shall be construed as following such shorelines;
D. Where a district boundary divides a lot each part of the lot or tract so divided shall be used in conformity with the regulations established by this ordinance for the district in which said part is located, nor shall a change in lot line be construed to have modified a zoning district boundary;
E. Where any street or alley is hereafter officially vacated or abandoned, the regulations applicable to each parcel of abutting property shall apply to that portion of such street or alley added thereto by virtue of such vacation or abandonment.
F. Where any further uncertainty exists, the UDO Administrator shall interpret the intent of the map as to location of such boundaries.

1.6 RELATIONSHIP TO EXISTING ZONING AND SUBDIVISION ORDINANCES

A. To the extent that the provisions of this ordinance are the same in substance as the previously adopted provisions that they replace in the city's zoning and subdivision ordinances, they shall be considered as continuations thereof and not as new enactments unless otherwise specifically provided. In particular, a situation that did not constitute a lawful, nonconforming situation under the previously adopted zoning ordinance does not achieve lawful nonconforming status under this ordinance merely by the repeal of the previous ordinance(s).
B. Any violation of the previous zoning ordinance or subdivision regulations shall continue to be a violation under this ordinance and any other applicable ordinances, laws, or statutes. Violations of this ordinance shall be subject to the penalties set forth herein, and any other applicable ordinances, laws, or statutes, unless the use, development, construction, or other activity complies with the express terms of this ordinance.

1.7 INTERPRETATION AND CONFLICT

In interpreting and applying the provisions of this ordinance, they shall be held to be the minimum requirements for the promotion of the public safety, health, convenience, prosperity and general welfare. It is not intended by this ordinance to interfere with, abrogate, or annul any easements or covenants between parties; provided, however, that where this ordinance imposes a greater restriction upon land development, the use of land or buildings, or requires larger open spaces than are imposed or required by other ordinances, rules, regulations or by easements, covenants, or agreements, the provisions of this ordinance shall govern.

1.8 RELATIONSHIP TO THE COMPREHENSIVE PLAN

It is the intention of the Board of Aldermen that this ordinance implement the planning policies adopted by the Board of Aldermen for the city and its extraterritorial planning area, as reflected in the comprehensive plan and other planning documents. While the Board of Aldermen

reaffirms its commitment that this ordinance and any amendment to it be in conformity with adopted planning policies, the Board of Aldermen hereby expresses its intent that neither this ordinance nor any amendment to it may be challenged on the basis of any alleged nonconformity with any planning document.

1.9 NO DEVELOPMENT OR LAND DISTURBANCE UNTIL COMPLIANCE WITH THIS ORDINANCE

A. No land shall be developed, occupied, or used without full compliance with the provisions of this ordinance and all other applicable City, County, State, and Federal laws, rules, and regulations. Compliance with regulations from the following agencies may be required prior to issuance of any land development permit: US Fish and Wildlife Service, US Army Corp of Engineers, Brunswick County Environmental Health, NC Division of Coastal Management, NC Department of Transportation, and/or the NC Department of Environmental Quality among others.

B. No alteration of vegetation, trees, or landscape material in excess of three (3) inches DBH shall occur on a lot or building site prior to the issuance of a zoning or tree removal permit. Some clearing of understory trees and shrubs may be required to prepare a site for survey, inspection by governmental agencies as part of any permitting process, or to stake the proposed building site.

C. On densely vegetated lots, a walking access trail not to exceed three (3) feet may be cleared for access purposes. Permission to clear any understory trees and shrubs less than three (3) inches DBH for said walking access shall be permitted following consultation with the UDO Administrator; however, clearing shall be kept to an absolute minimum.

1.10 COMPUTATION OF TIME

A. Unless otherwise specifically provided, the time within which an act is to be done shall be computed by excluding the first and including the last day. If the last day is a Saturday, Sunday, or legal holiday, that day shall be excluded. When the period of time prescribed is less than seven days, intermediate Saturdays, Sundays, and holidays shall be excluded.

B. Unless otherwise specifically provided, whenever a person has the right or is required to do some act within a prescribed period after the service of a notice or other paper upon him and the notice or paper is served by mail, three (3) days shall be added to the prescribed period.

1.11 SEVERABILITY

It is hereby declared to be the intention of the Board of Aldermen that the sections, paragraphs, sentences, clauses, and phrases of this ordinance are severable, and if any such section, paragraph, sentence, clause, or phrase is declared unconstitutional or otherwise invalid by any court of competent jurisdiction in a valid judgment or decree, such unconstitutionality or invalidity shall not affect any of the remaining sections, paragraphs, sentence, clauses, or phrases of this ordinance since the same would have been enacted without the incorporation into this ordinance of such unconstitutional or invalid section, paragraph, sentence, clause, or phrase.

1.12 FEES

A. Reasonable fees sufficient to cover the costs of administration, inspection, publication of notice and similar matters may be charged to applicants for zoning permits, sign permits, special use permits, subdivision plat approval, zoning amendments, variances, appeals and any other applicable land development permit. The amount of the fees charged shall be as set forth in the city's budget or as established by resolution of the Board of Aldermen filed in the office of the city clerk.

B. Fees established in accordance with Subsection (A) shall be paid upon submission of a signed application and no application shall be considered complete without submission of the applicable fee.

Article 2: Administration and Procedures

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2.1 GENERAL

This article contains powers and duties, approval procedures, amendment procedures, and enforcement mechanisms. The following bodies and city staff have powers and responsibilities in administering this ordinance, reviewing applications for development/subdivision proposals, hearing matters of a quasi-judicial nature, or amendments under this ordinance:

A. Board of Alderman
B. Planning Board
C. Board of Adjustment
D. UDO Administrator

2.2 BOARD OF ALDERMEN

A. POWERS AND DUTIES

The Board of Aldermen has the following responsibilities in relation to this ordinance:

1. Hear and decide applications for zoning map and text amendments to this ordinance.
2. Hear and decide proposals for Major Subdivision Preliminary and Final Plats, as specified in this ordinance.
3. Establish rules of procedure for the conduct of hearings and other proceedings before the Board of Aldermen.
4. Make the necessary appointments to the Planning Board and Board of Adjustment.
5. Such other actions as are, or may be, authorized by North Carolina General Statutes (NCGS) Chapter 160D.

B. CONFLICTS OF INTEREST

A Board of Aldermen member shall not vote on any legislative decision regarding a development regulation adopted pursuant to this ordinance where the outcome of the matter being considered is reasonably likely to have a direct, substantial, and readily identifiable financial impact on the member. A board member shall not vote on any zoning amendment if the landowner of the property subject to a rezoning petition or the applicant for a text amendment is a person with whom the member has a close familial, business, or other associational relationship.

2.3 PLANNING BOARD

A. POWERS AND DUTIES

The Planning Board has the following responsibilities in relation to this ordinance:

1. Acquire and maintain in current form such basic information and materials as are necessary to an understanding of past trends, present conditions, and forces at work to cause changes in these conditions.
2. Prepare and from time to time amend and revise a comprehensive and coordinated plan for the physical, social, and economic development of the area.
3. Establish goals and policies for guiding action in the development of the area.

4. Prepare and recommend to the Board of Aldermen ordinances promoting orderly development along the lines indicated in the comprehensive plan.
5. Review and recommend to the Board of Aldermen proposals for any zoning map or text amendment.
6. Review and recommend to the Board of Aldermen applications for Major Subdivision Preliminary and Final Plats, as specified in this ordinance.
7. Hear and decide applications for Major Site Plans, as specified in this ordinance.
8. Determine whether specific proposed developments conform to the principles and requirements of the comprehensive plan for the growth and improvement of the area.
9. Keep the Board of Aldermen and the general public informed and advised as to these matters.
10. Make recommendations for the timely implementation of programs to meet the goals and policies as adopted in the comprehensive plan.
11. Perform any other duties which may be lawfully assigned to it.
12. The Planning Board shall review and report as recommendations to the Board of Aldermen upon the extent, location, and design of all public structures and facilities, on the acquisition and disposal of public properties, and on the establishment of building lines However, in the absence of a recommendation from the Planning Board, the Board of Aldermen may after the expiration of thirty (30) days from the date on which the questions have been submitted in writing to the Planning Board for review and recommendation, take final action.
13. Attend planning conferences or meetings of planning institutes or hearings upon pending planning legislation.

B. MEMBERSHIP, VACANCIES, AND MEETINGS

1. The Planning Board shall consist of seven (7) members and two (2) alternate members. Five (5) members and one (1) alternate member shall be citizens and residents of the city and shall be appointed by the Board of Aldermen. Two (2) members and (1) alternate member shall be citizens and residents of the extra-territorial jurisdiction of the city as described pursuant to NCGS 160D-307 and shall be appointed by the Brunswick County Board of Commissioners. All members shall serve a term of three (3) years. The Chairman and Vice-Chairman shall serve a term of one (1) year and may be reappointed following the end of the term at the discretion of the Planning Board.
2. The city clerk will advertise for vacancies when they occur. All candidates, including board members whose terms are expiring and who are seeking reappointment, must have an application no less than 30 days prior to the Board of Aldermen meeting in which the selection(s) are made and [no older than 90 days prior to the date of vacancy] on file with the city clerk's office and must inform the clerk they wish to be considered for the vacant position. All applicants must be interviewed by a committee, selected by the Board of Aldermen, consisting of two (2) Board of Aldermen members and the Chairman of the Planning Board. If the Chairman's term is expiring and he/she wants to apply for

reappointment, the Vice-Chairman of the Planning Board will be selected for the committee. The committee will make recommendations to the Board of Aldermen for the vacant position(s). Any citizen who has filed a current application and completed the interview shall be eligible for nomination. Citizens who have not met these requirements are not eligible for nomination to the Planning Board. The city clerk will place the applications of all candidates who meet these requirements in the agenda packets prior to the meeting in which the selection(s) are made.

3. Alternate members shall not be entitled to vote on matters before the Planning Board except when a regular Planning Board member is absent from a duly called meeting. In that situation, the alternate shall have the same privileges as the regular members and may count for quorum purposes and vote if a regular member is absent. Vacancies occurring for reasons other than expiration of terms shall be filled as they occur for the period of the unexpired term. Faithful attendance at the meetings of the board is considered a pre- requisite for the maintenance of membership on the board. Extraterritorial representatives shall have equal rights, privileges, and duties with the other members of the board to which they are appointed, regardless of whether the matters at issue arise within the city or within the extraterritorial area.
4. Meetings of the Planning Board will normally occur on the third Thursday of the month at a time and place designated by the board and shall be open to the public. A quorum shall consist of four (4) members of the board.
5. All regular members may vote on any issue unless they have disqualified themselves for one or more of the reasons listed in Section 2.3(C). A vote of a majority of the members present and voting shall decide issues before the board.
6. Special meetings may be called by the Chairman. It shall be the duty of the Chairman to call such a meeting upon a recommendation of the board. During a special meeting, no other business may be considered except that which was specified by advanced notice. The city clerk shall notify all members of the board in writing not less than five (5) days in advance of such special meeting. Notice of time, place, and subject of such meeting shall be published in a newspaper having general circulation in the City of Southport when possible.
7. The order of business at regular meetings shall be as follows:
    a) Call to Order;
    b) Approval of Minutes of Previous Meetings;
    c) Approval of the Agenda;
    d) Public Input;
    e) Unfinished Business;
    f) New Business;
    g) Announcements;
    h) Adjournment.

8. The petitioner or applicant who is on the agenda may withdraw the petition or application at any time; but if a motion is pending to make a recommendation to grant or deny, such motion shall have precedence.

C. RULES OF CONDUCT

Members of the Board may be removed for cause, including violation of any rule stated below:

1. Faithful attendance at all meetings of the Board and conscientious performance of the duties required of members of the Board shall be considered a prerequisite of continuing membership on the Board. Absence from four (4) regularly scheduled Board meetings during any one calendar year shall be considered cause for a recommendation to the Board of Aldermen of dismissal from the Board.
2. Members of the Planning Board shall not vote on recommendations regarding any zoning map, text amendment, or development approval where the outcome of the matter being considered is reasonably likely to have a direct, substantial, and readily identifiable financial impact on the member or where the member has a close familial, business, or other associational relationship.
3. No board member shall discuss any case with any parties thereto prior to the meeting on that case; provided however, that members may receive and/or seek information pertaining to the case from any other member of the board, or staff prior to the meeting. Board members shall disclose publicly any contact made by any party to a matter before the board.
4. Members of the board shall not express individual opinions on the proper judgment of any case with any parties thereto prior to the board's determination of that case. Violation of this rule shall be cause for dismissal from the board.

D. BASIC STUDIES

As background for its comprehensive plan and any ordinances it may prepare, the Planning Board may gather maps and aerial photographs of manmade and natural physical features of the area, statistics on past trends and present conditions with respect to population, property values, the economic base of the community, land use, and such other information as is important or likely to be important in determining the amount, direction, and kind of development to be expected in the area and its various parts. The Planning Board may make studies as to the community's social, economic, as well as its physical needs. In addition, the Planning Board may make, cause to be made, or obtain special studies on the location, condition, and adequacy of specific facilities, which may include but are not limited to studies of housing; commercial and industrial facilities; parks, playgrounds, and recreational facilities; public and private utilities; and traffic, transportation, and parking facilities. All city officials shall, upon request, furnish to the Planning Board such available records or information as it may require in its work. The board or its agents may, in the performance of its official duties, enter upon lands and make examinations or surveys and maintain necessary monuments thereon.

E. COMPREHENSIVE PLAN

1. The comprehensive plan, with the accompanying maps, charts, and descriptive matter, shall be the Planning Board's recommendations to the Board of Aldermen for the development of such territory, including, among other things, the general location, character, and extent of streets, bridges, boulevards, parkways, playgrounds, squares, parks, aviation fields, and other public ways, grounds, and open spaces; the general location and extent of public utilities and terminals, whether publicly or privately owned or operated, for water, light, sanitation, transportation, communication, power, and other purposes; the removal, relocation, widening, narrowing, vacating, abandonment, change of use, or extension of any of the foregoing ways, buildings, grounds, open spaces, property, utilities, or terminals; and the most desirable patterns of land use within the area.
2. The plan and any ordinances or other measures to effectuate it shall be made with the general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the city and its environs which will, in accordance with present and future needs, best promote health, safety, morals, and the general welfare, as well as efficiency and economy in the process of development; including, among other things, adequate provisions for traffic, the promotion of safety from fire and other dangers, adequate provision for light and air, the promotion of the healthful and convenient distribution of population, the promotion of good civic design and arrangement, wise and efficient expenditure of public funds, and the adequate provision of public utilities, services, and other public requirements and the improvement of the community social and economic attributes.

F. ZONING AND SUBDIVISION REGULATIONS

1. The Planning Board may initiate, from time to time, proposals for amendment of this ordinance, based upon its studies and comprehensive plan. In addition, it shall review and make recommendations to the Board of Aldermen concerning all proposed amendments to this ordinance.
2. The Planning Board shall review, from time to time, the need for regulations for the control of land subdivision in the area and submit to the Board of Aldermen its recommendations, if any, for adoption or revision of such regulations.

G. PLANNING BOARD PROCEDURES FOR REPORTING TO THE BOARD OF ALDERMEN

The Planning Board will submit copies of all minutes of its regular and special meetings to the Board of Aldermen. Minutes shall be submitted to the city clerk within seven (7) days of approval of the minutes by the Planning Board.

H. ADVISORY COUNCIL AND SPECIAL COMMITTEES

1. The Planning Board may establish an unofficial advisory council and may cooperate with this council to the end that its investigations and plans may

receive fullest consideration, but the board may not delegate to such advisory council any of its official prerogatives.

2. The Planning Board may set up special committees, of up to three members, to assist in the study of specific questions and problems.

2.4 BOARD OF ADJUSTMENT

A. POWERS AND DUTIES

The Board of Adjustment is established to conduct hearings in a quasi-judicial manner as provided in this ordinance in the course of the following:

1. Deciding whether variances from the requirements of this ordinance should be granted. Nothing in this ordinance shall be construed to authorize the Board of Adjustment or other approval body to permit a use in a district where that use is neither a permitted use nor Special Use.
2. Hear, review, and decide appeals from any final order, final decision of this ordinance, or official determination made by the UDO Administrator in the performance of official duties. Administratively review appeals from interpretation and enforcement of this ordinance by an official which is subject to an administrative appeal.
3. Hear and decide applications for Special Use Permits, as specified in this ordinance.
4. Pass upon, decide, or determine such other matters as may be required by this ordinance.

B. MEMBERSHIP, VACANCIES, AND MEETINGS

1. The City of Southport Board of Adjustment is hereby created under the authority of NCGS 160D-302.
2. The Board of Adjustment shall consist of seven (7) members and two (2) alternate members. Five (5) members and one (1) alternate member shall be citizens and residents of the city and shall be appointed by the Board of Aldermen. Two (2) members and one (1) alternate member shall be citizens and residents of the extraterritorial jurisdiction of the city as described pursuant to NCGS 160D-307 and shall be appointed by the Brunswick County Board of Commissioners. The members of the board serving on the effective date of this ordinance, under the ordinance effective prior hereto, shall be considered as the five (5) members to be appointed by the Board of Aldermen, and each of these members shall serve the balance of the term to which he was appointed. The members of the board shall be appointed for terms of three (3) years.
3. The alternate members shall serve on the board in the absence or temporary disqualification of any regular member or to fill a vacancy pending appointment of a member. Alternate members shall be appointed for the same term, at the same time, and in the same manner as regular members. Each alternate member, while attending any regular or special meeting of the board and serving

on the behalf of any regular member, shall have and may exercise all the powers and duties of a regular member.

4. The Board of Adjustment shall elect one (1) of its members as Chairman and another as Vice- Chairman who shall serve for one (1) year. The city clerk, or designee, shall serve as secretary to the Board of Adjustment. The board shall draw up and adopt the rules of procedures under which it will operate. Meetings of the board shall be held at the call of the Chairman and at such other times as the board may determine. The Chairman, or in his absence, the Acting Chairman, may administer oaths and compel the attendance of witnesses. All meetings of the board shall be open to the public. The board shall keep minutes of its proceedings, showing the vote of each member upon every question, or his absence or failure to vote, indicating such fact, and also keep records of its examination and any other official action.
5. The city clerk will advertise for vacancies when they occur. All candidates, including board members whose terms are expiring and who are seeking reappointment, must have an application no less than 30 days prior to the Board of Aldermen meeting in which the selection(s) are made and [no older than 90 days prior to the date of vacancy] on file with the city clerk's office and must inform the clerk they wish to be considered for the vacant position. All applicants must be interviewed by a committee, selected by the Board of Aldermen, consisting of one (1) appointed Board of Aldermen liaison and the Chairman of the Board of Adjustment. If the Chairman's term is expiring and he/she wants to apply for reappointment, the Vice-Chairman of the Board of Adjustment will be selected for the committee. The committee will make recommendations to the Board of Aldermen for the vacant position(s). Any citizen who has filed a current application and completed the interview shall be eligible for nomination. Citizens who have not met these requirements are not eligible for nomination to the Board of Adjustment. The city clerk will place the applications of all candidates who meet these requirements in the agenda packets prior to the meeting in which the selection(s) are made.
6. A quorum of the Board of Adjustment, necessary to conduct any business of the BOA, shall consist of four (4) members.
7. Pursuant to NCGS 160D-109(d), a member of the board or any other body exercising the functions of the Board of Adjustment shall not participate in or vote on any quasi-judicial matter in a manner that would violate an affected persons' constitutional rights to an impartial decision maker. Impermissible conflicts include, but are not limited to, a member having a fixed opinion prior to hearing the matter that is not susceptible to change, undisclosed ex parte communications, a close familial, business or other associational relationship with an affected person, or a financial interest in the outcome of the matter. If an objection is raised to a member's participation and that member does not recuse himself or herself, the remaining members shall by majority vote rule on the objection.

8. For the purposes of this subsection, vacant positions on the board and members who are disqualified from voting on a quasi-judicial matter shall not be considered “members of the board” for calculation of the requisite majority if there are no qualified alternates available to take the place of such members.

C. QUASI-JUDICIAL DECISIONS AND JUDICIAL REVIEW

1. The Board of Adjustment shall determine contested facts and make its decision within a reasonable time. Every quasi-judicial decision shall be based upon competent, material, and substantial evidence in the record and subject to the procedures provided in NCGS 160D-406 . Each quasi-judicial decision shall be reduced to writing and reflect the board’s determination of contested facts and their application to the applicable standards. The written decision shall be signed by the Chairman or other duly authorized member of the Board of Adjustment. A quasi-judicial decision is effective upon filing the written decision with the clerk to the Board of Adjustment. The decision of the board shall be delivered by personal delivery, electronic mail, or by first-class mail to the applicant, property owner, and to any person who has submitted a written request for a copy, prior to the date the decision becomes effective. The person required to provide notice shall certify that proper notice has been made.
2. Every quasi-judicial decision shall be subject to review by the superior court by proceedings in the nature of certiorari pursuant to NCGS 160D-1402. A petition for review shall be filed with the clerk of superior court by the later of 30 days after the decision is effective or after a written copy thereof is given in accordance with section (1) of this subsection. When first-class mail is used to deliver notice, three (3) days shall be added to the time to file the petition.

2.5 UDO ADMINISTRATOR

A. POWERS AND DUTIES

The duty of the UDO Administrator is to assure enforcement of the provisions of this ordinance. The UDO Administrator is empowered to do those things set forth in this ordinance and other ordinances as specified as necessary to carry out his/her duties. The UDO Administrator shall be appointed by the city manager. It is the intention of this ordinance that all questions arising in connection with enforcement and interpretation shall be presented first to the UDO Administrator. Appeal from the UDO Administrator’s decision shall be to the Board of Adjustment. In administering the provisions of this ordinance, the UDO Administrator shall:

1. Make and maintain records of all applications for land development permits and requests, and records of all permits issued or denied, with notations of all special conditions or modifications involved.
2. Make interpretations and determinations of this ordinance as requested.
3. Modify typographical errors, spelling changes, numerical reference errors, errors in section or page numbering or other purely non-substantive editorial changes without formal adoption by the Board of Aldermen provided that such corrections do not change the meaning of the ordinance and any correction

made pursuant to this section shall be reported in writing to the Board of Aldermen and made a part of the board's regular meeting minutes.

4. File and safely keep copies of all plans submitted, and the same shall form a part of the records of his or her office and shall be available for inspection at reasonable times by any interested party.
5. Transmit to the appropriate board or commission and the Board of Aldermen all applications and plans for which their review and approval is required.
6. Conduct inspections of premises and, upon finding that any of the provisions of this ordinance is being violated, notify in writing the person responsible for such violations, indicating the nature of the violation and ordering the action necessary to correct it. In exercising this power, staff are authorized to enter any premises within the jurisdiction of the city at all reasonable hours for the purposes of inspection or other enforcement action, upon presentation of proper credentials; provided, however, that the appropriate consent has been given for inspection of areas not open to the public or that an appropriate inspection warrant has been secured.
7. Except as otherwise provided by law, the UDO Administrator shall administer, review and enforce the city's land development ordinances and all approvals issued under the same. All development approvals shall be issued in writing. Any development approval issued exclusively in electronic form shall be protected from further editing once issued.
8. In addition to powers and duties of the official enumerated herein, the UDO Administrator shall have all those powers set forth in other provisions of this ordinance and those provided in NCGS Chapter 160D.
9. The UDO Administrator or any staff member shall not make a final decision on an administrative decision required by this ordinance if the outcome of that decision would have a direct, substantial, and readily identifiable financial impact on the staff member or if the applicant or other person subject to that decision is a person with whom the staff member has a close familial, business, or other associational relationship. If a staff member has a conflict of interest under this section, the decision shall be assigned to the supervisor of the staff person or such other staff person as may be designated by the development regulation or other ordinance.
10. No staff member shall be financially interested or employed by a business that is financially interested in a development subject to regulation under this ordinance unless the staff member is the owner of the land or building involved. No staff member or other individual or an employee of a company contracting with the city to provide staff support shall engage in any work that is inconsistent with his or her duties or with the interest of the city, as determined by the Board of Aldermen.

2.6 COMMON REVIEW PROCEDURES

A. COMPLETE APPLICATIONS

All applications for any approval required by this ordinance must be complete. Applicants who submit incomplete applications will receive a written notice stating the information needed to complete the application and a date by which the information must be submitted to maintain the review schedule. No application for any provision of this ordinance will be considered complete until all fees required by the city's fee schedule have been paid in full.

Upon receipt of an application, the UDO Administrator shall determine if the application is complete. A complete application is one that:

1. Contains all information and materials established by the UDO Administrator and/or the requirements of this ordinance as required for submittal of the particular type of application.
2. Is in the form established by the UDO Administrator as required for submittal of the particular type of application.
3. Includes information in sufficient detail to evaluate the application to determine whether it complies with the appropriate substantive standards of this ordinance.
4. Is accompanied by the fee established for the particular type of application.
5. Is signed by the property owner, a designated owner's agent, or a contract purchaser of a property with authorization of the property owner. Written proof of authority must be submitted with every application.

B. ZONING PERMIT

1. A zoning permit shall be required for changes of use or of any of the following: all new principal and accessory structures; enlargements of existing structures; construction/installation of fences/walls, piers, docks, decks, stairs, signs, and driveways; and/or any activity which proposes to increase the amount of impervious square footage on a lot.
2. It shall be unlawful to commence site preparation or excavation for the construction of any building or other structure including accessory structures or to commence the moving, alteration or repair of any structure or the use of any land or building including accessory structures, or the paving, site disturbance, tree removal, or other installation or construction of a hardened surface upon the site, until the UDO Administrator has issued a zoning permit for such work or use.
3. Zoning permits shall be void after one (1) year from date of issue if the use has not commenced. Unless substantial progress has been made or a building permit has been issued, an applicant must reapply for a zoning permit or submit an application for approval of vested rights in accordance with provisions of this ordinance.

4. Zoning permits are transferable so long as the land or structures or any portion thereof covered under a permit continues to be used for the purposes for which the permit was granted.
5. A completed application form for a zoning permit shall be submitted to the UDO Administrator. An application for a zoning permit must be accompanied by the applicable minor site plan, major site plan, or any other plan as required by this ordinance.
6. The UDO Administrator shall issue the zoning permit if the proposed activity set forth in the application is in conformity with the provisions of this ordinance and any applicable approved plans.

C. BUILDING PERMIT

1. Unless exempted in accordance with the State Building Code or NCGS 160D-1110, before commencing the construction, erection, repair, alteration, addition to, or moving of any building or structure or part thereof, or before commencing any excavation for such building or structure, or any form of activity pertaining to buildings and building regulations, a building permit for the same shall be obtained from the applicable building inspector with responsibility over building code and related matters. Compliance with all applicable provisions of the City's Building Code shall be required prior to the issuance of a building permit. Building permit shall be valid for six months in accordance with NCGS 160D-1111.
2. Before commencing the removal or demolition of any building or structure or part thereof, a building permit authorizing said removal or demolition shall be obtained from the building inspector.

D. TREE IMPACT PERMIT

Tree impact permits shall be issued by the UDO Administrator for any proposed removal or alteration of a regulated tree, as defined by this ordinance, and in accordance with Article 3: Zoning.

E. FLOODPLAIN DEVELOPMENT PERMIT

Floodplain development permits shall be issued by the UDO Administrator for all development located within the Special Flood Hazard Area (SFHA) in accordance with Article 5: Flood Damage Prevention Ordinance.

F. SIGN PERMIT

Sign permits shall be issued by the UDO Administrator in accordance with Article 3: Zoning.

G. STORMWATER PERMIT

Stormwater permits shall be issued by the Public Services Director in accordance with Article 6: Stormwater Discharge Control Ordinance.

H. CAMA PERMIT

CAMA permits shall be issued by the Division of Coastal Management or designated City Local Permit Officer for any development within a regulated Area of Environmental Concern as defined by NCGS 113A-113.

I. ANNUAL ZONING PERMIT FOR HOMESTAYS AND SHORT-TERM VACATION RENTALS

An annual zoning permit is required for certain land uses, including Homestays and Short-Term Vacation Rentals. The UDO Administrator shall issue homestay and Short-Term Vacation Rental permits in accordance with Article 3: Zoning. These annual zoning permits must be renewed each year before the expiration date and in accordance with the terms of this UDO. The Annual Zoning Permit for Homestays and Short-Term Vacation Rentals is valid from January 1 thru December 31 in the year of issue and must be renewed annually. In addition, the annual zoning permit for a nonconforming Short-Term Vacation Rental located in a residential zoning district must be renewed by the property owner of record prior to the expiration of the existing zoning permit to maintain the nonconforming use. Failure to maintain a valid zoning permit for a nonconforming short-term vacation rental will result in forfeiture of all legal rights and claims to continue that use.

J. MODIFICATION OF PERMITS OR APPROVALS

1. Insignificant deviations from the permit (including approved plans and conditional district rezoning) issued by the Board of Aldermen, the Planning Board, the Board of Adjustment, or the UDO Administrator are permissible and the UDO Administrator may authorize such insignificant deviations unless classified as a major change as provided below.
2. Major changes to approved permits, plans, and conditions of development may be authorized only by the permit issuing authority in the same manner as outlined in this article for original submission. Major changes include, but are not limited to:
    a) Change in use.
    b) Any increase in development density; such as, increase in density of units, whether residential, office, commercial or industrial; an increase in number of off-street parking or loading spaces; or an increase in impervious surface area.
    c) An increase in overall ground coverage by structures.
    d) A change in any site dimension by more than 10 percent.
    e) A reduction in approved open space or screening.
    f) A change in access and internal circulation design.
3. The UDO Administrator shall determine whether amendments to and modifications of permits constitute an insignificant deviation or a major change as described herein.
4. A developer requesting approval of changes shall submit a written request for such approval to the UDO Administrator, and that request shall identify the changes. Approval of all changes must be given in writing.

K. PERMIT REVOCATION

1. Any permit required by this ordinance may be revoked by the permit- issuing authority (in accordance with the provisions of this section) if the permit recipient fails to develop or maintain the property in accordance with the plans submitted, the requirements of this ordinance, or any additional requirements lawfully imposed by the permit-issuing board.
2. Before a special use permit may be revoked, all of the notice and hearing requirements as provided in NCGS 160D-406(b) shall be complied with. The notice shall inform the permit recipient of the alleged grounds for the revocation.
3. Before any other permit may be revoked, the UDO Administrator shall give the permit recipient 10 days notice of intent to revoke the permit and shall inform the recipient of the alleged reasons for the revocation and of his/her right to obtain an informal hearing on the allegations. If the permit is revoked, the UDO Administrator shall provide to the permittee a written statement of the decision and the reasons therefor.
4. No person may continue to make use of land or buildings in the manner authorized by any required permit after such permit has been revoked in accordance with this ordinance.

L. RECONSIDERATION OF DENIAL

1. Whenever an application for a permit or approval authorized by this ordinance is denied, on any basis other than the failure of the applicant to submit a complete application, such action may not be reconsidered within a 12 month period unless explicitly specified by this ordinance or the applicant clearly demonstrates that:
   a) Circumstances affecting the property that is the subject of the application have substantially changed or
   b) New information is available that could not with reasonable diligence have been previously presented. A request to be heard on this basis must be filed in writing with the UDO Administrator.

2.7 SPECIFIC REVIEW PROCEDURES

A. MINOR SITE PLAN

1. Purpose. Minor site plan review is intended to ensure that the layout and general design of low-intensity development is compatible with all applicable standards in this ordinance and all other applicable city regulations.
2. Applicability. The following development types must submit a minor site plan as specified in this ordinance:
   a) Proposals for single-family residential uses, duplexes, and attached residential units consisting of three (3) or fewer dwelling units or for renovation/rehabilitation projects that will modify an existing structure's footprint. A minor site plan is not required for changes of use whereby

no increase in impervious square footage or an enlargement in an existing structure's footprint is proposed.

b) Nonresidential development projects whereby less than 10,000 square feet of impervious surfaces are proposed.

c) Accessory structures, construction/installation of fences/walls, piers, docks, decks, stairs, signs, and driveways.

3. Application Materials and Submittal. One (1) digital copy and three (3) hard copies of the minor site plan shall be submitted with all such applications. Minor site plans shall be submitted for review along with the typical building permit application, when required. When a building permit is not required, a copy of the plan should be submitted directly to the UDO Administrator for review and approval. Minor site plans shall be prepared and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the State of North Carolina.

   a) Accessory structures less than 150 square feet and construction/installation of fences/walls, piers, docks, decks, stairs, signs, and driveways do not require a minor site plan to be prepared by a licensed professional.

4. Minor site plans shall include all required information as provided in Appendix A: Submission Requirements.

5. Minor site Plan Review Procedure:

   a) Within 30 working days of receipt of a complete application for a minor site plan, the UDO Administrator shall review the plans and make a determination to approve or disapprove plans based on this ordinance and other applicable land development ordinances.

   b) If it is determined that more information is needed or that a significant number of changes must be made before the plan can be approved, the applicant shall make the necessary changes; and re-submit the plans. All re-submissions shall contain a list of the changes made. A new 30-day review period may begin on the date of the re-submission of a required information.

   c) If plan approval is denied, the reasons for this action shall be communicated to the applicant in writing.

   d) Minor site plan approval expires six (6) months from the date of approval.

   e) Zoning permits may be issued once the minor site plan is approved.

6. In the event of failure to comply with an approved minor site plan or condition related thereto, the plan shall immediately become void and of no effect, no further permits for construction or compliance shall be issued and existing permits may be suspended or revoked by the UDO Administrator.

B. MAJOR SITE PLAN

1. Purpose. A major site plan is intended for more intense development proposals requiring greater discretion of the city.

2. Applicability. The following development types must submit a major site plan as specified in this ordinance:
   a) Residential development of four (4) or more dwelling units on a lot.
   b) Nonresidential development whereby 10,000 square feet or more of impervious surfaces are proposed.
   c) All other development not subject to minor site plan approval.
3. Pre-Application Meetings. Applicants may request a pre-application meeting with the UDO Administrator prior to submission of an application to discuss procedural and substantive matters related to the proposed application.
4. Application Materials and Submittal. One (1) digital copy and 12 hard copies of the major site plan shall be submitted with all such applications.
5. The major site plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina and shall include all of the required information as provided in Appendix A: Submission Requirements.
6. In the course of evaluating the proposed major site plan, the UDO Administrator may request additional information from the applicant. A request for such additional information shall stay until a date certain established by UDO Administrator any further consideration of the application.
7. Major Site Plan Review Procedure:
   a) The UDO Administrator shall review the major site plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire Department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.
   b) If the UDO Administrator determines that more information is needed or that a significant number of changes must be made before the plan can be approved, the applicant shall make the necessary changes; and re-submit the plans. All re-submissions shall contain a list of the changes made. A new 30-day review period may begin on the date of the re-submission of a required information.
   c) Upon determination that a major site plan application is complete, within 30 working days of the submittal date, the UDO Administrator and the Technical Review Committee (if applicable) shall review the plans and make a recommendation to the Planning Board as to compliance with this ordinance. The major site plan will be placed on the agenda of the next regularly scheduled Planning Board meeting following 30 working days of submittal of a complete application for a major site plan.
   d) The Planning Board shall review the major site plan and written recommendations of the UDO Administrator and the Technical Review Committee (if applicable) prior to approving, denying, or conditionally

approving the site plan. If the site plan submitted otherwise meets all of the standards of this ordinance, the Planning Board shall approve such.

e) If plan approval is denied, the reasons for this action shall be communicated to the applicant in writing. A revised plan may then be submitted in the manner of a new application.

f) Major site plan approval expires 24 months from the date of approval.

g) Zoning permits may be issued once the site plan is approved.

8. In the event of failure to comply with an approved major site plan or condition related thereto, the plan shall immediately become void and of no effect, no further permits for construction or compliance shall be issued and existing permits may be suspended or revoked by the UDO Administrator.

C. SPECIAL USE PERMIT

1. Special use permits may be issued by the UDO Administrator, after approval by the Board of Adjustment. The petition for a special use permit and accompanying plans shall be submitted to the UDO Administrator. The application shall be processed in accordance with provisions pertaining to quasi-judicial hearings. Please note, all previously issued conditional use permits shall be subject to the conditions outlined in the initial approval. Additionally, any valid conditional use permit issued prior shall be deemed a special use permit.
2. Application Materials and Submittal. One (1) digital copy and 12 hard copies of the special use permit site plan shall be submitted with all such applications.
3. The special use permit site plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina, and shall include all of the required information as provided in Appendix A: Submission Requirements.
    a) Applications for home occupations, commercial or residential accessory dwellings, duplexes, triplexes, quadraplexes, bed & breakfast uses, and temporary sales offices shall prepare a minor site plan that includes all of the applicable information as provided in Appendix A: Submission Requirements. Preparation of the minor site plan for these uses by a licensed surveyor, landscape architect, or engineer is encouraged, but not required.
4. In the course of evaluating the proposed special use permit site plan, the UDO Administrator may request additional information from the applicant. A request for such additional information shall stay until a date certain established by UDO Administrator any further consideration of the application. This information may include (but not be limited to) the following:
    a) Approved NC stormwater permit.
    b) Proposed sign types and locations.
    c) Scale of buildings relative to abutting property.
    d) Exterior features and illumination of proposed development.
    e) Description and copies of proposed deed restrictions to be placed on the property.

f) Any other information reasonably needed to consider the application in reference to these regulations.

5. Notice of quasi-judicial hearing. Notice of hearings conducted pursuant to this section shall be mailed to the person or entity whose request is the subject of the hearing; to the owner of the property that is the subject of the hearing if the owner did not initiate the hearing; to the owners of all parcels of land abutting the parcel of land that is the subject of the hearing. The notice must be deposited in the mail at least 10 days, but not more than 25 days, prior to the date of the hearing. Within that same time period, the city shall also prominently post a notice of the hearing on the site that is the subject of the hearing or on an adjacent street or highway right-of-way.

6. Special Use Permit Review Procedure:
   a) The UDO Administrator shall review the special use site plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.
   b) If the UDO Administrator determines that more information is needed or that a significant number of changes must be made before the plan can be approved, the applicant shall make the necessary changes; and re-submit the plans. All re-submissions shall contain a list of the changes made. A new 30-day review period may begin on the date of the re-submission of a required information.
   c) Upon determination that a special use permit application is complete, within 30 working days of the submittal date, the UDO Administrator and the Technical Review Committee (if applicable) shall review the plans and make a recommendation to the Board of Adjustment as to compliance with this ordinance. The special use permit site plan will be placed on the agenda of the next regularly scheduled Board of Adjustment meeting following 30 working days of submittal of a complete application for a special use permit.
   d) The Board of Adjustment shall approve, modify, or deny the application for a special use permit. In approving a special use permit the Board of Adjustment, with due regard to the nature and state of all adjacent structures and uses in the district, shall make written findings that the following are fulfilled:
      i) That the use will not materially endanger the public health, safety, or general welfare if located where proposed and developed according to the plan as submitted and approved;
      ii) That the use meets all required conditions and specifications;

iii) That the use will not adversely affect the use or any physical attribute of adjoining or abutting property, or that the use is a public necessity; and

iv) That the location and character of the use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located and in general conformity with the City of Southport Comprehensive Plan.

e) In approving the special use permit, the Board of Adjustment may designate, such conditions in addition and in connection therewith as will, in its opinion, assure that the use in its proposed location will be harmonious with the area in which it is proposed to be located and with the spirit of this ordinance. All such additional conditions shall be entered in the minutes of the meeting at which the special use permit is granted and also on the special use permit approving, and on the approved plans submitted therewith. All specific conditions shall run with the land and shall be binding on the original applicant for the special use permit, the heirs, successors, and assigns. Such conditions shall be consented to in writing by the applicant/landowner and may include the following:

i) A time limitation.

ii) Conditions may be imposed which require that one or more things be done before the use requested can be initiated. For example, "that a solid board fence be erected around the site to a height of six (6) feet before the use requested is initiated."

iii) Conditions of a continuing nature may be imposed. For example: "exterior loudspeakers shall not be used between the hours of 10:00 p.m. and 9:00 a.m."

f) Conditions and safeguards imposed under this subsection shall not include requirements for which the city does not have authority under statute to regulate nor requirements for which the courts have held to be unenforceable if imposed directly by the city, including, without limitation, taxes, impact fees, building design elements within the scope of NCGS 160D-702(b), driveway-related improvements in excess of those allowed in NCGS 136-18(29) and NCGS 160A-307, or other unauthorized limitations on the development or use of land.

g) The final written decision of the Board of Adjustment shall be delivered by personal delivery, electronic mail, or by first-class mail to the applicant, property owner, and to any person who has submitted a written request for a copy, prior to the date the decision becomes effective, by the city clerk. If the Board of Adjustment denies the permit, it shall enter the reason for its action in the minutes of the meeting at which the action is taken.

h) Approved special use permits shall be recorded in the Brunswick County Registry by the City of Southport and indexed under the record owner's name as grantor.

i) In a case where a special use permit has not been exercised within the time limit set by the Board of Adjustment or within 12 months if no specific time limit has been set, then without further action, the special use permit shall be null and void. The term "exercised," as set forth in this subsection, means that binding contracts for the construction of the main building have been let; or in the absence of contracts that the main building is under construction to a substantial degree; or that prerequisite conditions involving substantial investment are contracted for, in substantial development, or completed (sewerage, drainage, etc.). When construction is not a part of the use, the term "exercised" means that the use is in operation in compliance with the conditions set forth in the permit.

D. VARIANCE

1. An application for a variance shall be submitted to the Board of Adjustment by filing a copy of the application with the UDO Administrator.
2. Notice of quasi-judicial hearing. Notice of hearings conducted pursuant to this section shall be mailed to the person or entity whose application or request is the subject of the hearing; to the owner of the property that is the subject of the hearing if the owner did not initiate the hearing; to the owners of all parcels of land abutting the parcel of land that is the subject of the hearing. The notice must be deposited in the mail at least 10 days, but not more than 25 days, prior to the date of the hearing. Within that same time period, the city shall also prominently post a notice of the hearing on the site that is the subject of the hearing or on an adjacent street or highway right-of-way.
3. When unnecessary hardships would result from carrying out the strict letter of the UDO, a variance shall be granted by the Board of Adjustment upon a showing of the following:
   a) Unnecessary hardship would result from a strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property;
   b) The hardship results from conditions that are peculiar to the property, such as location, size or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis from granting a variance;
   c) The hardship did not result from actions taken by the applicant or property owner. The act of purchasing property with knowledge that circumstances exist that might justify a variance shall not be considered as a self-created hardship;

d) The requested variance is consistent with the spirit, purpose and intent of the ordinance, such that public safety is secured and substantial justice achieved.

4. Before granting a variance, the Board of Adjustment must take a separate vote and vote affirmatively (by a four-fifths majority) on each of the four (4) required findings stated above in Section 2.7.D.3. Insofar as practicable, a motion to make an affirmative finding on each of the requirements set forth herein shall include a statement of the specific reasons or findings of fact supporting such motion.
5. A motion to deny a variance may be made on the basis that any one (1) or more of the four (4) criteria set forth in Section 2.7.D.3 are not satisfied or that the application is incomplete. Insofar as practicable, such a motion shall include a statement of the specific reasons or findings of fact that support it.
6. Appropriate conditions, which must be reasonably related to the condition or circumstance that gives rise to the need for a variance, may be imposed on any variance issued by the Board of Adjustment.
7. No change in permitted uses may be authorized by variance.
8. A variance may be issued for an indefinite duration or for a specified duration only.
9. The nature of the variance and any conditions attached to it shall be entered on the face of the zoning permit, or the zoning permit may simply note the issuance of the variance and refer to the written record of the variance for further information. All such conditions are enforceable in the same manner as any other applicable requirement of this ordinance.
10. The final written decision of the Board of Adjustment shall be delivered by personal delivery, electronic mail, or by first-class mail to the applicant, property owner, and to any person who has submitted a written request for a copy, prior to the date the decision becomes effective, by the city clerk.
11. An aggrieved person may appeal a decision by the Board of Adjustment on an application for appeal to the Superior Court. Such appeal shall be in the nature of certiorari and must be filed within 30 days of the effective decision and as provided by NCGS160D-1402.

E. APPEAL

1. An appeal from any final order or decision of the UDO Administrator or official charged with enforcement of the UDO or other ordinance that regulates land use or development may be taken to the Board of Adjustment by any party who has standing under NCGS160D-1402. Appeals of a final subdivision decision may be made in accordance with NCGS 160D-1403(b). The official who made the decision shall give written notice to the owner of the property and the party who sought the decision, if different. A notice of appeal, specifying the grounds therefor, shall be considered filed with the official and the Board of Adjustment when delivered to the city clerk, and the date and time of filing shall be entered on the notice by the clerk.

2. The owner or other party shall have 30 days from the date of the receipt of a written final, binding determination by the official to file an appeal. The written notice shall be delivered by personal delivery, electronic mail, or by first class mail. Any other person with standing to appeal shall have 30 days from the receipt of any source of actual or constructive notice of the decision to file an appeal. In the absence of evidence to the contrary, notice given pursuant to NCGS 160D-403(b) by first class mail is deemed received on the third business day following deposit of the notice for mailing with the United States Postal Service.
3. Notice of quasi-judicial hearing. Notice of hearings conducted pursuant to this section shall be mailed to the person or entity whose appeal, application, or request is the subject of the hearing; to the owner of the property that is the subject of the hearing if the owner did not initiate the hearing; to the owners of all parcels of land abutting the parcel of land that is the subject of the hearing. The notice must be deposited in the mail at least 10 days, but not more than 25 days, prior to the date of the hearing. Within that same time period, the city shall also prominently post a notice of the hearing on the site that is the subject of the hearing or on an adjacent street or highway right-of-way.
4. Whenever an appeal is filed, the official shall forthwith transmit to the Board of Adjustment all the papers, documents and exhibits constituting the record relating to the action appealed from, with a copy provided to the appellant and land owner, if the landowner is not the appellant.
5. An appeal of a notice of violation or other enforcement order stays enforcement of the action appealed from and accrual of any fines assessed during the pendency of the appeal to the Board of Adjustment and any subsequent appeal in accordance with NCGS 160D-1402 or during the pendency of any civil proceeding authorized by law or appeals therefrom, unless the official certifies by affidavit to the Board of Adjustment that a stay would, in his/her opinion, cause imminent peril to life or property or because the violation is transitory in nature a stay would seriously interfere with enforcement of the ordinance. In that case, enforcement proceedings shall not be stayed except by a restraining order issued by a court. If enforcement proceedings are not stayed, the appellant may file with the official a request for an expedited hearing of the appeal, and the Board of Adjustment shall meet to hear the appeal within 15 days after such a request is filed. Notwithstanding the foregoing, appeals of decisions granting a permit or otherwise affirming that a proposed use of property is consistent with the ordinance shall not stay the further review of an application for permits or permissions to use such property; in these situations the appellant may request and the board may grant a stay of a final decision of permit applications or building permits affected by the issue being appealed.
6. The official, or person currently occupying that position, who rendered the determination that has been appealed shall appear at the hearing as a witness. The Board of Adjustment may reverse or affirm (wholly or partly) or may modify

the order, requirement, decision, or determination appealed from and shall make any order, requirement, decision, or determination that in its opinion ought to be made in the case before it. To this end the board shall have all the powers of the officer from whom the appeal is taken. The board shall continue the hearing if new issues are presented at the hearing that were not in the notice of appeal and immediate consideration might unduly prejudice a party of interest or the city.

7. The final written decision of the Board of Adjustment shall be delivered by personal delivery, electronic mail, or by first-class mail to the applicant, property owner, and to any person who has submitted a written request for a copy, prior to the date the decision becomes effective, by the city clerk.
8. An aggrieved person may appeal a decision by the Board of Adjustment on an application for appeal to the Superior Court. Such appeal shall be in the nature of certiorari and must be filed within 30 days of the effective decision and as provided by NCGS160D-1402.

2.8 CREATION OF NEW LOTS/DIVISION OF LAND

A. GENERAL

No land within the city's planning jurisdiction shall be subdivided, combined, or re-subdivided and offered for sale, gifted, exchanged, or in any other way conveyed until a plat thereof has been approved as herein provided. No plat shall be recorded by the Brunswick County Register of Deeds until this approval is entered in writing on the face of the plat as herein provided.

B. EXEMPT PLAT REVIEW

1. Applicability. Divisions or land and creation of lots which do not meet the statutory definition of subdivision in accordance with NCGS 160D-802 or are as provided in this section. In accordance with NCGS 160D-802(a)(1) & (4), newly created lots must be equal to or exceed the dimensional standards of the zoning district in which they are located.
2. Application Materials and Submittal. The applicant shall submit one (1) digital copy and one (1) hard copy of the final plat so marked to UDO Administrator for approval. The final plat shall be prepared by a licensed land surveyor or engineer registered to practice in the state of North Carolina. The final plat shall conform to the provisions for plats, subdivisions, and mapping requirements set forth in NCGS 47-30 and the Standards of Practice for Land Surveying in North Carolina.
3. Property owners or their authorized agents must present a paper or recordable map to the UDO Administrator for determination of whether the action created by the recording of the map meets the ordinance standards to be exempt.
4. If the proposal meets the exemptions listed in this ordinance or in NCGS 160D-802 the UDO Administrator shall sign an exemption note on the face of the recordable map before it is recorded.
5. In addition to the divisions of land identified in NCGS 160D-802(a)(1) through (4), the following divisions of land shall not be included within the definition of the term "subdivision" and shall not be subject to the lot dimensional standards in

this ordinance: (1) the division of land for the purpose of creating a lot for use as a site for a public utility; (2) the creation of a lot to be conveyed to the city or to a non-profit entity for the purpose of creating public parks, public access, or public open space, provided that the plat and the deed creating such parcel shall specifically state that the parcel created may not be used for any other purpose, and (3) the division of land owned by a governmental entity to facilitate the conveyance of a portion of said land to another governmental entity for governmental or public use.

6. If the proposal does not meet the exemptions, the UDO Administrator shall return the unsigned map to the property owner or authorized agent with a written description of why the map does not qualify to be exempt.
7. The applicant shall file any approved exempt plat with the Register of Deeds of Brunswick County within 30 days of approval; otherwise, such approval shall be null and void.
8. The exempt plat shall include all of the required certificates as provided in Appendix A: Submission Requirements.

C. MINOR SUBDIVISION REVIEW

1. Applicability. The city only requires submittal of a final plat for review of minor subdivision if it meets the criteria as provided in NCGS 160D-802(c) or the tract to be subdivided is five (5) acres or less in size and is subject to the following provisions:
   a) Fronts on an existing approved street;
   b) Does not involve any new public streets, right-of-way dedication, or prospectively requiring any new street for access to interior property;
   c) Does not require drainage improvements or easements to serve the applicant's property or interior properties;
   d) Does not involve any utility extensions; and
   e) Does not require any easements, other than rear and side lot line easements.
   f) However, if the subdivider owns, leases, holds an option on, or holds any legal or equitable interest in any property adjacent to or located directly across a street, easement, road, or right-of-way from the property to be subdivided, the subdivision shall not qualify under the minor subdivision procedure. Furthermore, the minor subdivision procedure may not be used a second time within three (3) years on any property less than 1,500 feet from the original property boundaries by anyone who owned, had an option on, or any legal interest in the original subdivision at the time the subdivision received preliminary or final plat approval.
2. Application Materials and Submittal. The applicant shall submit one (1) digital copy and one (1) hard copy of the final plat so marked to the UDO Administrator for approval. The final plat shall be prepared by a licensed land surveyor or engineer registered to practice in the state of North Carolina. The final plat shall conform to the provisions for plats, subdivisions, and mapping requirements set

forth in NCGS 47-30 and the Standards of Practice for Land Surveying in North Carolina.

3. The UDO Administrator shall review the final plat and shall proceed with approval, conditional approval with modifications to bring the plat into compliance, or disapproval of the final plat with reasons within 30 days of initial receipt of a complete application for a minor subdivision plat.
4. The applicant shall file any approved final plat with the Register of Deeds of Brunswick County within 30 days of approval; otherwise, such approval shall be null and void.
5. The minor subdivision plat shall include all of the required information and certificates as provided in Appendix A: Submission Requirements.

D. MAJOR SUBDIVISION SKETCH PLAN REVIEW

1. Applicability. Subdivisions and/or divisions of land not qualifying as exempt or as a minor subdivision.
2. Application Materials and Submittal. Prior to the filing of an application for approval of a major subdivision preliminary plat, the subdivider may submit to the UDO Administrator one (1) digital copy and 12 hard copies of a sketch design plan of the proposed subdivision which generally depicts the concept of the development and any explanatory materials as may be desirable. Copies of any pertinent additional information regarding the proposed subdivision or of adjoining property as may be useful to the Planning Board in formulating an overall plan for any given section of the city may be submitted.
3. The Planning Board at their next regularly scheduled meeting following acceptance of the sketch design plan by the UDO Administrator shall meet with the potential subdivider and the subdivider shall meet with the Planning Board. At this stage the subdivider should discuss his or her thoughts and ideas pertaining to the subdivision and also become familiar with the regulations affecting the land to be subdivided.
4. The discussion and any recommendations made by the Planning Board shall be advisory.

E. MAJOR SUBDIVISION PRELIMINARY PLAT

1. Applicability. Subdivisions and/or divisions of land not qualifying as exempt or as a minor subdivision.
2. Pre-Application Meetings. Applicants may request a pre-application meeting with the UDO Administrator prior to submission of an application to discuss procedural and substantive matters related to the proposed application.
3. Application Materials and Submittal. One (1) digital copy and 12 hard copies of the major subdivision preliminary plat shall be submitted with all applications for such.
4. The major subdivision preliminary plat shall be prepared by and sealed by a licensed land surveyor or engineer registered to practice in the state of North Carolina, and shall include all of the required information and certificates as

provided in Appendix A: Submission Requirements in addition to any other required information in Article 4: Subdivision Regulations.

5. Major subdivision preliminary plat review procedure:
   a) The UDO Administrator or his/her designee will review the major subdivision preliminary plat and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.
   b) If the UDO Administrator determines that more information is needed or that a significant number of changes must be made before the plat can be approved, the applicant shall make the necessary changes; and re-submit the plat. All re-submissions shall contain a list of the changes made. A new 30-day review period may begin on the date of the re-submission of a required information.
   c) Upon determination that a major subdivision preliminary plat application is complete, within 30 working days of the submittal date, the UDO Administrator and the Technical Review Committee (if applicable) shall review the plat and make a recommendation to the Planning Board as to compliance with this ordinance. The major subdivision preliminary plat will be placed on the agenda of the next regularly scheduled Planning Board meeting following 30 working days of submittal of a complete application for a major subdivision preliminary plat.
   d) The Planning Board shall review the major subdivision preliminary plat and written recommendations of the UDO Administrator and the Technical Review Committee (if applicable) prior to recommending approval, denial, or conditional approval of the major subdivision preliminary plat to the Board of Aldermen. Within 90 days of receipt of the major subdivision preliminary plat, the Planning Board shall transmit a formal recommendation to the Board of Aldermen.
   e) Should the Planning Board fail to act on the major subdivision preliminary plat within 90 days after acceptance of the preliminary plat by the Planning Board, the subdivider may proceed to major subdivision preliminary plat approval by the Board of Aldermen without a recommendation of the Planning Board.
   f) The Board of Aldermen shall consider approval or denial of the major subdivision preliminary plat at any of the next three (3) regularly scheduled meetings following receipt of the preliminary plat.
   g) The Board of Aldermen by formal motion may approve, conditionally approve, or disapprove the preliminary plat. If the plat is disapproved, the reasons shall be set forth in writing and refer specifically to those

parts of this ordinance or other land development ordinances with which the plat does not comply.

h) Approval of the major subdivision preliminary plat by the Board of Aldermen is authorization for the subdivider to proceed with the construction of the required improvements in preparation for submission of the final plat.

6. The approval granted by the Board of Aldermen shall expire 24 months from the date of action by the Board of Aldermen. However, extensions may be granted upon application and request for such to the Board of Aldermen. Such time limits shall expire automatically unless extended by the Board of Aldermen, and once lapsed shall not be extended.

F. MAJOR SUBDIVISION FINAL PLAT

1. Applicability. Subdivisions and/or divisions of land not qualifying as exempt or as a minor subdivision and whereby a major subdivision preliminary plat has been approved and all necessary and/or required improvements have been installed in accordance with Article 4: Subdivision Regulations, Section 4.7, shall comply with the following procedures in order to obtain final plat approval. No final plat will be accepted for review by the Board of Aldermen unless accompanied by written notice by the city clerk acknowledging compliance with the improvement standards of this ordinance.
2. All improvements required by Article 4: Subdivision Regulations, Section 4.7, shall be installed, inspected, and approved prior to approval of any final plat. Performance guarantees in lieu of installation of required improvements shall not be allowed.
3. Pre-Application Meetings. Applicants may request a pre-application meeting with the UDO Administrator prior to submission of an application to discuss procedural and substantive matters related to the proposed application.
4. Application Materials and Submittal. One (1) digital copy and 12 hard copies of the major subdivision final plat shall be submitted with all such applications.
5. Final As-Built Drawings. Accompanying the application for a major subdivision final plat approval will be digital copies of as-built drawings showing the actual construction, location, and materials used in the installation of all required improvements as required by Article 4: Subdivision Regulations. These drawings will become a part of the public record of the city.
6. The subdivider shall within 24 months of the date of major subdivision preliminary plat approval or approval with conditions, unless an extension is granted by the Board of Aldermen, submit to the UDO Administrator a complete application for approval of a final plat. If the preliminary plat was approved with conditions, the final plat shall show the modifications made to meet the conditions attached to the preliminary plat approval. Final plats can continue to be submitted for subsequent sections of the major subdivision beyond the 24 months provided the first phase receives final approval during the initial 24-

month period. Each successive final plat for a stage of the subdivision shall be submitted for approval within 24 months of the date of approval of the previous final plat for a stage of the subdivision.

7. The major subdivision final plat shall be prepared by and sealed by a licensed land surveyor or engineer registered to practice in the state of North Carolina. The final plat shall constitute only that portion of the approved preliminary plat which the subdivider proposes to record and develop at the time and shall include all of the required information and certificates as provided in Appendix A: Submission Requirements in addition to any other required information in Article 4: Subdivision Regulations.
8. Major Subdivision Final Plat Review procedure:
   a) The UDO Administrator or his/her designee shall review the major subdivision final plat and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.
   b) If the UDO Administrator determines that more information is needed or that a significant number of changes must be made before the plat can be approved, the applicant shall make the necessary changes; and re-submit the plat. All re-submissions shall contain a list of the changes made. A new 30-day review period may begin on the date of the re-submission of a required information.
   c) Upon determination that a major subdivision final plat application is complete, within 30 working days of the submittal date, the UDO Administrator and the Technical Review Committee (if applicable) shall review the plat and make a recommendation to the Board of Aldermen as to compliance with this ordinance.
   d) The Board of Aldermen shall review the major subdivision final plat and written recommendations of the UDO Administrator and the Technical Review Committee (if applicable) prior to approval, denial, or conditional approval of the major subdivision final plat.
   e) The Board of Aldermen shall approve or disapprove, according to the provisions of this ordinance, the final plat within fifty (50) days after receipt of the plat. Failure of the Board of Aldermen to act within fifty (50) days shall constitute denial of the plat.
   f) If the Board of Aldermen by formal motion disapproves the final plat, the reasons shall be set forth in writing and refer specifically to those parts of this ordinance or other land development ordinances with which the plat does not comply.

g) Within 30 working days after the approval of the Board of Aldermen of the final plat, the subdivider shall file the final plat with the Brunswick County Register of Deeds. Failure to file an approved final plat within 30 days shall make such approval null and void.

2.9 PLANNED UNIT DEVELOPMENT

A. PURPOSE

A Planned Unit Development (PUD), is planned and developed as an integral unit, in a single development operation or a definitely programmed series of development operations and according to an approved master development plan. All PUDs require an amendment to the city's zoning map and master development plan approval, followed by the major subdivision approval process as specified in this ordinance.

B. APPLICABILITY

The minimum amount of land (unified control to be planned and developed as a whole) required for a PUD district shall be eight (8) acres of net buildable area within the city corporate limits, on one or more contiguous parcels or 25 acres of net buildable area in the ETJ, on one (1) or more parcels (this may include parcels on both sides of a street).

C. APPLICATION AND PLANNED UNIT DEVELOPMENT REVIEW PROCEDURE

1. The application for a planned unit development (PUD) shall be accompanied by an application to amend the zoning map (rezoning) to the planned unit development zoning district. The rezoning application shall be submitted concurrently with the PUD master development plan. The procedure for such shall be followed as outlined in Section 2.10. The approved master development plan shall provide the framework for development in the PUD. All applications must include a master development plan, supporting information and text which specifies the use or uses intended for the property, dimensional standards, and any development standards to be approved concurrently with the rezoning application. Development standards include such things as parking, landscaping, design guidelines, and buffers. The proposal shall comply with the design guidelines provided in Article 4: Subdivision Regulations, Section 4.15.
2. An application for PUD approval shall be accompanied by 12 hard copies and one (1) digital copy of a PUD master development plan.
3. The master development plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina and shall include all of the required information as provided in Appendix A: Submission Requirements, any other required information in Article 4: Subdivision Regulations, and any other information deemed necessary by the UDO Administrator, Planning Board, or Board of Aldermen.
4. The UDO Administrator or his/her designee will review the PUD master development plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager,

Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.

5. The UDO Administrator shall, in writing, provide a recommendation to the Planning Board within 60 days following receipt of the complete application for a PUD proposal and associated master development plan.
6. Following receipt of recommendation from the Planning Board, the Board of Aldermen shall approve, conditionally approve, or deny the PUD master development plan.
7. When evaluating an application for the creation of a PUD zoning district, the Planning Board and Board of Aldermen shall consider the following:
   a) The application's consistency to the general policies and objectives of the City's Comprehensive Plan, any other officially adopted plan that is applicable, and the Unified Development ordinance.
   b) The potential impacts and/or benefits on the surrounding area, adjoining properties.
8. Following Board of Aldermen approval of a rezoning petition to establish a planned unit development district (PUD), the property for which approval was granted by the ordinance shall be labeled "PUD" on the official zoning map of the City of Southport. No permits for development shall be issued within any area designated as "PUD" except in accordance with an approved petition and applicable site plan, subdivision plat, and/or permit for development within the PUD. If an application for an applicable site plan, subdivision plat, and/or permit for development within the PUD is not filed with the UDO Administrator within 12 months of such approval, the Board of Aldermen shall reserve the right to rezone the property to the original zoning classification.

2.10 UDO TEXT AND ZONING MAP AMENDMENTS

A. INITIATION OF AMENDMENTS

1. Purpose and applicability. Pursuant to NCGS 160D-601, the text of this ordinance or the zoning district boundaries as shown on the city's zoning map may be amended in accordance with the procedures established herein. A petition by the appropriate person or entity shall be submitted to the UDO Administrator and reviewed by the Planning Board, which shall consider its merit and make a recommendation to the Board of Aldermen. In no case shall final action by the Board of Aldermen be taken on amending, changing, supplementing, modifying or repealing the regulations or district boundaries hereby established until a public hearing has been held by the Board of Aldermen at which parties in interest and citizens shall have an opportunity to be heard.
   a) Proposed changes or amendments to the zoning map may be initiated by the Board of Aldermen, Planning Board, city administration, or by the owner, or his or her agent, of property within the area proposed to be changed.

b) Proposed amendments to the text of the ordinance may be initiated by any interested party.

c) No amendment to zoning regulations or a zoning map that down-zones property shall be initiated nor is it enforceable without the written consent of all property owners whose property is the subject of the down-zoning amendment, unless the down-zoning amendment is initiated by the city. For purposes of this section, "down-zoning" means a zoning ordinance that affects an area of land in one of the following ways:

i) By decreasing the development density of the land to be less dense than was allowed under its previous usage.

ii) By reducing the permitted uses of the land that are specified in a zoning ordinance or land development regulation to fewer uses than were allowed under its previous usage.

2. Application. An application for any change or amendment shall contain a description and/or statement of the present and proposed zoning regulation or district boundary. If a zoning map amendment is proposed, the names and addresses of the owners of the property involved shall be included. Such application shall be filed not later than 30 days prior to the meeting of the Planning Board at which the application is to be considered, and in all cases with enough lead time to properly advertise.

3. Public hearing requirement, advertised, mailed, and posted notice.

a) Public hearing. A public hearing is required for all amendments prior the final decision before the Board of Aldermen. Public hearings are optional for advisory recommendations of the Planning Board.

i) Notification of the Board of Aldermen public hearing shall be published once a week for two (2) successive calendar weeks in a local newspaper of general circulation in the city. The notice shall be published the first time not less than 10 days nor more than 25 days before the date fixed for the hearing.

b) Mailed notice. When a change in the zoning classification of a piece of property is requested (zoning map change), the applicant shall provide to the UDO Administrator a list of names and addresses, as obtained from the county tax listings and tax abstract, of all abutting property owners and all owners of property within the area under consideration for rezoning, along with two sets of business (No. 10) envelopes stamped with a first class stamp and addressed to each person on the list. For the purposes of this section, properties are abutting even if separated by a street, railroad, or other transportation corridor. These addressed envelopes and the list shall be submitted at least 30 workdays prior to the Board of Aldermen meeting and public hearing at which the amendment will be considered. The UDO Administrator shall then mail notices of the public hearing to each person on the list at least 10 but no

more than 25 days prior to the date of the meetings at which the Board of Aldermen will consider the request for a zoning map amendment. The letter of notification shall contain a description of the request and the time, date, and location of the public hearing. Such certification shall be deemed conclusive in the absence of fraud.

c) Posted notice. Notice of a proposed zoning change for any parcel, shall be prominently posted on the site proposed for rezoning or on an adjacent public street or highway right-of-way for at least 10 but no more than 25 days prior to the public hearing before the Board of Aldermen. When multiple parcels are included within a proposed zoning map amendment, a posting on each individual parcel is not required, but the UDO Administrator or his/her designee shall post sufficient notices to provide reasonable notice to interested persons. The posted notices shall be provided and erected by the UDO Administrator and shall include in the message the:
   i) Present zoning classification
   ii) Proposed zoning classification
   iii) Time and place of the public hearing
   iv) Location where additional information may be obtained.

4. Reapplication for amendment. With the exception of requests originating with the Board of Aldermen, Planning Board, or city administration, an application for any rezoning of the same property or any application for the same amendment to the ordinance text shall be permitted only once within any six (6) month period following official action. The Board of Aldermen, by simple majority, may waive this restriction if it finds any emergency exists.

B. PLANNING BOARD ACTION

1. Every proposed amendment, supplement, change, modification or repeal of this ordinance shall be referred to the Planning Board for its recommendation and report.
2. A petition to amend the district boundaries or regulations established by this ordinance shall be considered by the Planning Board at its next regular monthly meeting or any called special meeting, provided it has been filed, complete in form and content, at least 30 days prior to such meeting. Otherwise, consideration may be deferred until the following monthly meeting.
3. The Planning Board shall provide an advisory recommendation on any properly filed petition within 90 days after the introduction of such petition at a regularly scheduled meeting and shall transmit its recommendation and report, including the reasons for its determinations, to the Board of Aldermen.
4. Pursuant to NCGS 160D-604, the Planning Board shall advise and comment on whether the proposed text or zoning map amendment is consistent with the comprehensive plan or any other officially adopted plans that are applicable. The Planning Board shall provide a written recommendation to the Board of Aldermen that addresses plan consistency and other matters deemed

appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the comprehensive plan shall not preclude consideration or approval of the proposed amendment by the Board of Aldermen. If no written report is received from the Planning Board within 30 days of referral of the amendment to that board, the governing board may act on the amendment without the planning board report. If a zoning map amendment qualifies as a "large-scale rezoning" under NCGS 160D-602(b), the Planning Board statement describing plan consistency may address the overall rezoning and describe how the analysis and policies in the relevant adopted plans were considered in the recommendation made.

C. BOARD OF ALDERMEN ACTION

1. Before taking such lawful action as it may deem advisable, the Board of Aldermen shall consider the Planning Board's recommendations on each proposed text or zoning map amendment.
2. Board of Aldermen members shall not vote on any zoning map or text amendment where the outcome of the matter being considered is reasonably likely to have a direct, substantial, and readily identifiable financial impact on the member. A Board of Aldermen member shall not vote on any zoning amendment if the landowner of the property subject to a rezoning petition or the applicant for a text amendment is a person with whom the member has a close familial, business, or other associational relationship.
3. Prior to adopting or rejecting any zoning amendment, the Board shall adopt a written statement describing whether its action is consistent with the City Comprehensive Plan or any other officially adopted plans that are applicable. For zoning map amendments, a statement of reasonableness shall also be provided explaining why the Board considers the action to be reasonable and in the public interest. If a zoning map amendment qualifies as a "large-scale rezoning" under NCGS 160D-602(b), the statement describing plan consistency and reasonableness may address the overall rezoning and describe how the analysis and policies in the relevant adopted plans were considered.
4. If a zoning map amendment is adopted and the action was deemed inconsistent with the adopted plan, the zoning amendment shall have the effect of also amending any future land-use map in the approved plan, and no additional request or application for a plan amendment shall be required. A plan amendment and a zoning amendment may be considered concurrently.
5. Pursuant to NCGS 160A-75, no member shall be excused from voting except upon matters involving the consideration of the member's own conflict of interest or official conduct. A failure to vote by a member who is physically present in the aldermen’s chamber, or who has withdrawn without being excused by a majority vote of the remaining members present, shall be recorded as an affirmative vote.
6. An affirmative vote equal to a majority of all the members of the Board of Aldermen not excused from voting on the question in issue, including the

mayor's vote in case of an equal division, shall be required to adopt any amendment to this ordinance or to take any action having the effect of an ordinance.

7. If any resident or property owner in the city submits a written statement regarding a proposed amendment, modification, or repeal this ordinance to the city clerk at least five (5) business days prior to the proposed vote on such change, the city clerk shall deliver such written statement to the Board of Aldermen.

D. APPLICATION WITHDRAWAL

Any application submitted for a text or zoning map amendment may be withdrawn at any time, but fees are nonrefundable.

2.11 CONDITIONAL REZONING

A. PURPOSE

1. A conditional zoning district is intended for a development that has a high level of certainty of being constructed and the most commonly expected application will contain a specified use or uses, permitted by right or special use, on small- and large-scale projects.
2. All uses listed as part of any application must be in the same format and description as listed in the table of uses.
3. Except as provided herein, all applications to establish a conditional zoning district must follow the regulations prescribed in this section in addition to the standard zoning map amendment (rezoning) process as described in this ordinance.

B. APPLICATION AND CONDITIONAL ZONING REVIEW PROCEDURE

1. The application for a conditional rezoning approval shall also be accompanied by an application to amend the zoning map (rezoning) to the conditional development zoning district. The rezoning application shall be submitted concurrently with the conditional zoning master development plan. The procedure for such shall be followed as outlined in Section 2.9. The approved master development plan shall provide the framework for development in the conditional zoning district. All applications must include a master development plan, supporting information and text which specifies the use or uses intended for the property, dimensional standards, and any development standards to be approved concurrently with the rezoning application. Development standards include such things as parking, landscaping, design guidelines, and buffers.
2. Applications and proposals for conditional zoning approval shall only be considered within a nonresidential zoning district. All proposals for a conditional zoning application must abide by the uses and the dimensional standards required by the underlying base zoning district for which the proposal is located. No conditional zoning proposals shall be considered within the Open Space or PUD zoning district.

3. An application for conditional zoning approval shall be accompanied by 12 hard copies and one (1) digital copy of a conditional zoning master development plan.
4. The master development plan shall be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered to practice in the state of North Carolina and shall include all of the required information as provided in Appendix A: Submission Requirements and any other information deemed necessary by the UDO Administrator, Planning Board, or Board of Aldermen.
5. The UDO Administrator or his/her designee will review the conditional zoning master development plan and may require a Technical Review Procedure. The Technical Review Committee may include, but not necessarily be limited to, the following individuals/departments: UDO Administrator, building inspector, city manager, Fire department, Police Department, NC Division of Coastal Management, NC Department of Environmental Quality, Brunswick County Utilities, or Brunswick County Environmental Health.
6. The UDO Administrator shall, in writing, provide a recommendation to the Planning Board within 60 days following receipt of the complete application for a conditional zoning district proposal and associated master development plan.
7. Following receipt of recommendation from the Planning Board, the Board of Aldermen shall approve, conditionally approve, or deny the conditional zoning master development plan.
8. When evaluating an application for the creation of a conditional zoning district, the Planning Board and Board of Aldermen shall consider the following:
    a) The application's consistency to the general policies and objectives of the City's Comprehensive Plan, any other officially adopted plan that is applicable, and the Unified Development ordinance.
    b) The potential impacts and/or benefits on the surrounding area, adjoining properties.
    c) The report of results from the public input meeting.
9. The Board of Aldermen may not vote to rezone property to a conditional zoning district during the time period beginning on the date of a municipal general election and concluding on the date immediately following the date on which the Board of Aldermen holds its organizational meeting following a municipal general election unless no person spoke against the rezoning at the public hearing.

C. PUBLIC INPUT MEETING

1. Prior to scheduling a public hearing on the rezoning application, the applicant must conduct one (1) public input meeting and file a report of the results with the UDO Administrator.
2. The report for the public hearing will include a summary of the public input meeting.
3. The applicant shall mail a notice for the public input meeting to the owners of all properties located within 500 feet of the perimeter of the project bounds not less than 10 days prior to the scheduled meeting.

4. The notice shall include the time, date, and location of the meeting as well as a description of the proposal.
5. The applicant's report of the meeting shall include:
   a) A copy of the letter announcing the meeting
   b) A list of adjoining property owners contacted
   c) An attendance roster
   d) A summary of the issues discussed
   e) The results of the meeting including changes to the project's proposal, if any.

D. CONDITIONS TO APPROVAL OF PETITION

1. In approving a petition for the reclassification of property to a conditional zoning district, the Planning Board may recommend, and the Board of Aldermen may request that the applicant add reasonable and appropriate conditions to the approval of the petition.
2. Any such conditions should relate to the relationship of the proposed use to the impact on city services, surrounding property, proposed support facilities such as parking areas and driveways, pedestrian and vehicular circulation systems, screening and buffer areas, the timing of development, street and right-of-way improvements, water and sewer improvements, stormwater drainage, the provision of open space, and other matters that the participants in the public input meeting, staff, Planning Board, and Board of Aldermen find appropriate or the petitioner may propose. Such conditions to approval of the petition may include right-of-way dedication, easements for streets, water, sewer, or other public utilities necessary to serve the proposed development.
3. The petitioner shall consider and respond to any such conditions after the Planning Board meeting and within three (3) days prior to the staff report for the Board of Aldermen being published. If the applicant does not agree with the Planning Board or staff's recommendations of additional conditions, the Board of Aldermen shall have the authority to accept any or all of the conditions forwarded from the review process.
4. If for any reason any condition for approval is found to be illegal or invalid or if the applicant should fail to accept any condition following approval, the approval of the site plan for the district shall be null and void and of no effect and proceedings shall be instituted to rezone the property to its previous zoning classification. All conditions must be consented to in writing by the petitioner.

E. EFFECT OF APPROVAL

1. If a petition for conditional zoning is approved, the development and use of the property shall be governed by the predetermined ordinance requirements applicable to the district's classification, the approved master development plan for the district, and any additional approved rules, regulations, and conditions, all of which shall constitute the zoning regulations for the approved district and are

binding on the property as an amendment to these regulations and to the zoning maps.

2. Following the approval of the petition for a conditional zoning district, the subject property shall be identified on the zoning maps by the appropriate district designation. A parallel conditional zoning shall be identified by the same designation as the underlying general district followed by the letters "CZ" (for example "CBD-CZ").
3. The master development plan does not substitute for an approved minor site plan, site plan, or subdivision plat as required by this ordinance.
4. No permit shall be issued for any development activity within a conditional zoning district except in accordance with the approved petition and applicable site plan, subdivision plat, and or permit for the district.
5. Any violation of the approved regulations and conditions for the district shall be treated the same as any other violation of this ordinance and shall be subject to the same remedies and penalties as any such violation.

F. REVIEW OF APPROVAL OF A CONDITIONAL ZONING DISTRICT

1. It is intended that property shall be reclassified to a conditional zoning district only in the event of firm plans to develop the property. Therefore, no sooner than three (3) years after the date of approval of the petition, the Planning Board may examine the progress made toward developing the property in accordance with the approved petition and any conditions attached to the approval.
2. If the Planning Board determines that progress has not been made in accordance with the approved petition and conditions, the Planning Board shall forward to the Board of Aldermen a report which may recommend that the property be rezoned to its previous zoning classification or to another district.

2.12 VESTED RIGHTS

A. PURPOSE

The purpose of this section is to implement the provisions of NCGS 160D-108 pursuant to which a statutory zoning vested right is established upon the approval of a site-specific vesting plan as defined in this ordinance.

B. ESTABLISHMENT OF A ZONING VESTED RIGHT

1. A zoning vested right shall be deemed established following the valid approval, or conditional approval, of a site-specific vesting plan and separate approval by the Board of Aldermen of a request for statutory zoning vested rights.
2. Notwithstanding subsection (1) this section, approval of a site-specific vesting plan with the condition that a variance be obtained shall not confer a zoning vested right unless and until the necessary variance is obtained.
3. The establishment of a zoning vested right shall not preclude the application of overlay zoning that imposes additional requirements but does not affect the allowable type or intensity of use, or ordinances or regulations that are general in nature and are applicable to all property subject to land use regulation by the

city, including, but not limited to, building, fire, plumbing, electrical and mechanical codes. Otherwise applicable new or amended regulations shall become effective with respect to property that is subject to a site-specific vesting plan upon the expiration or termination of the vested right in accordance with this article.

4. A zoning vested right is not a personal right, but shall attach to and run with the applicable property. After approval of a site-specific vesting plan and approval of an application for statutory zoning vested rights before the Board of Aldermen, all successors to the original landowner shall be entitled to exercise such right while applicable.

C. APPROVAL PROCEDURES AND AUTHORITY

1. Except as otherwise provided in this section, an application for site specific development plan approval shall be processed in accordance with the procedures established by ordinance and shall be considered by the designated approval authority for the specific type of zoning or land use permit or approval for which application is made. Consideration and approval of a zoning vested right constitutes a separate approval process under the sole discretion of the Board of Aldermen. Any application for a zoning vested right shall be processed concurrently or after the approval of the associated site-specific vesting plan and a duly advertised public hearing.
2. In order to obtain a zoning vested right, the applicant must request in writing at the time of application for the particular site-specific vesting plan type that the application for a zoning vested right be considered concurrently or following approval of such and acted on by the Board of Aldermen following notice and a public hearing. Notice of hearings conducted pursuant to this section shall be mailed to the person or entity whose application or request is the subject of the hearing; to the owner of the property that is the subject of the hearing if the owner did not initiate the hearing and to the owners of all parcels of land abutting the parcel of land that is the subject of the hearing. The notice must be deposited in the mail at least 10 days, but not more than 25 days, prior to the date of the hearing. Within that same time period, the city shall also prominently post a notice of the hearing on the site that is the subject of the hearing or on an adjacent street or highway right-of-way.
3. In order for a zoning vested right to be established following approval of a site-specific vesting plan, the applicant must indicate at the time of application, on a form to be provided by the city, that a zoning vested right is being sought.
4. Each map, plat, site plan or other document evidencing a site-specific vesting plan shall contain the following notation: "Approval of this plan establishes a zoning vested right under NCGS 160D-108.1. Unless terminated at an earlier date, the zoning vested right shall be valid until (date)."
5. Following approval or conditional approval of a site-specific vesting plan and approval of zoning vested rights by the Board of Aldermen, nothing in this article shall exempt such a plan from subsequent reviews and approval to ensure

compliance with the terms and conditions of the original approval, provided that such reviews and approvals are not inconsistent with the original approval.

6. Nothing in this article shall prohibit the revocation of the original approval or other remedies for failure to comply with applicable terms and conditions of the approval or this ordinance.

D. DURATION

1. A zoning right that has been vested as provided in this article shall remain vested for a period of two (2) years unless specifically and unambiguously provided otherwise pursuant to subsection (2) of this section. This vesting shall not be extended by any amendments or modifications to a site-specific vesting plan unless expressly provided by the approval authority at the time the amendment or modification is approved.
2. Notwithstanding the provisions of subsection (1) of this section, the approval authority may provide that rights shall be vested for a period exceeding two (2) years but not exceeding five (5) years where warranted in light of all relevant circumstances, including, but not limited to, the size of the development, the level of investment, the need for or desirability of the development, economic cycles and market conditions. These determinations shall be in the sound discretion of the Board of Aldermen in consideration of approval of vested rights.
3. Upon issuance of a building permit, the expiration provisions of NCGS 160D-1111 and the revocation provisions of NCGS 160D-1115 shall apply, except that a building permit shall not expire or be revoked because of the running of time while a zoning vested right under this section is outstanding.

E. TERMINATION

1. A zoning right that has been vested as provided in this ordinance shall terminate in accordance with any one of the following:
   a) At the end of the applicable vesting period with respect to buildings and uses for which no valid building permit applications have been filed.
   b) With the written consent of the affected landowner.
   c) Upon findings by the Board of Aldermen, by ordinance after notice and a quasi-judicial hearing, that natural or manmade hazards on or in the immediate vicinity of the property, if uncorrected, would pose a serious threat to the public health, safety and welfare if the project were to proceed as contemplated in the site-specific vesting plan.
   d) Upon payment to the affected landowner of compensation for all costs, expenses and other losses incurred by the landowner, including, but not limited to, all fees paid in consideration of financing, and all architectural, planning, marketing, legal and other consultant's fees incurred after approval by the city, together with interest thereon at their legal rate until paid. Compensation shall not include any diminution in the value of the property which is caused by such action.

e) Upon findings by the Board of Aldermen, by ordinance after notice and a quasi-judicial hearing, that the landowner or his representative intentionally supplied inaccurate information or made material misrepresentations which made a difference in the approval by the approval authority of the site-specific vesting plan.

f) Upon the enactment or promulgation of a state or federal law or regulation that precludes development as contemplated in the site-specific vesting plan, in which case the approval authority may modify the affected provisions, upon a finding that the change in state or federal law has a fundamental effect on the plan, by ordinance after notice and a hearing.

F. VOLUNTARY ANNEXATION

A petition for annexation filed with the city under NCGS 160A-31 or 160A-58.1 shall contain a signed statement declaring whether or not any zoning vested right with respect to the properties subject to the petition has been established under NCGS 160D-108 or 160D-108.1. A statement that declares that no zoning vested right has been established under NCGS 160D-108 or 160D-108.1, or the failure to sign a statement declaring whether or not a zoning vested right has been established, shall be binding on the landowner and any such zoning vested right shall be terminated.

G. LIMITATIONS

Nothing in this article is intended or shall be deemed to create any vested right other than those established pursuant to NCGS 160D-108 and 160D-108.1.

H. PERMIT CHOICE

If a land development regulation is amended between the time a development permit application was submitted and a development permit decision is made or if a land development regulation is amended after a development permit decision has been challenged and found to be wrongfully denied or illegal, NCGS 143-755 applies.

2.13 REVIEW PROCEDURES SUMMARY

Table 2.1: Review Procedures Summary

Application Type	Advisory or Decision-Making Body					
	Board of Aldermen	Planning Board	Board of Adjustment	UDO Administrator	CAMA LPO	Building Inspector
FD = Final Decision; R = Advisory Recommendation; PH = Public Hearing; QJ = Quasi-judicial Hearing						
Complete Application				FD		
Zoning Permit, Sign Permit, Floodplain Permit, Tree Removal Permit				FD		
Building Permit						FD
CAMA Minor Permit					FD [1]	
Minor Site Plan				FD		
Major Site Plan		FD		R		
Special Use Permit			FD-QJ	R		
Variance, Appeal			FD-QJ			
Exempt Plat, Minor Subdivision				FD		
Major Subdivision Sketch Plan		R		R		
Major Subdivision Preliminary Plat	FD	R		R		
Major Subdivision Final Plat	FD			R		
Planned Unit Development (PUD)	FD-PH	R		R		
Text Amendment, Zoning Map Amendment (Rezoning)	FD-PH	R		R		
Conditional Zoning District	FD-PH	R		R		
Statutory Zoning Vested Rights	FD-PH			R		
[1] CAMA general and major permits are decided by the NC Division of Coastal Management and Coastal Resources Commission.						

2.14 PUBLIC NOTIFICATION REQUIREMENTS

Table 2.2: Public Notification Summary				
Application Type	**Advisory or Decision-Making Body**	**Published Notice [1]**	**Mailed Notice [2]**	**Posted Notice [3]**
X = Notification Required; PH = Public Hearing; QJ = Quasi-judicial Hearing				
Special Use Permit	Board of Adjustment		X-QJ	X-QJ
Variance	Board of Adjustment		X-QJ	X-QJ
Appeal	Board of Adjustment		X-QJ	X-QJ
Text Amendment	Planning Board			
	Board of Aldermen	X-PH		
Zoning Map Amendment	Planning Board			
	Board of Aldermen	X-PH	X-PH	X-PH
Statutory Zoning Vested Rights	Board of Aldermen		X-QJ	X-QJ
[1] Published notice provided once a week for 2 successive calendar weeks, with the first notice between 10 and 25 days before the hearing. [2] Mailed notice provided to affected owners and landowners abutting the subject lot between 10 and 25 days before the hearing. [3] Posted notice provided on site or adjacent street between 10 and 25 days before the hearing.				

2.15 ENFORCEMENT

A. COMPLAINTS REGARDING VIOLATIONS

Whenever the UDO Administrator receives a complaint, which may be anonymous, alleging a violation of this ordinance, he shall investigate the complaint, take whatever action is warranted, and inform the complainant what actions have been or will be taken. The building inspector shall be responsible for enforcement matters pertaining to the City and State Building Code.

B. PERSONS LIABLE

The owner, tenant, or occupant of any building or land or part thereof and any architect, builder, contractor, agent, or other person who participates in, assists, directs, creates, or maintains any situation that is contrary to the requirements of this ordinance may be held responsible for the violation and suffer the penalties and be subject to the remedies herein provided.

C. PROCEDURES UPON DISCOVERY OF VIOLATIONS

1. If the UDO Administrator finds that any provision of this ordinance is being violated, he/she shall send a written notice to the person responsible f or such violation, indicating the nature of the violation and ordering the action necessary

to correct it. The notice of violation shall be delivered to the holder of the development approval and to the landowner of the property involved, if the landowner is not the holder of the development approval, by personal delivery, electronic delivery, or first-class mail and may be provided by similar means to the occupant of the property or the person undertaking the work or activity. The notice of violation may be posted on the property. The person providing the notice of violation shall certify to the city clerk that the notice was provided, and the certificate shall be deemed conclusive in the absence of fraud. Additional written notices may be sent at the UDO Administrator's discretion.

2. The final written notice (and the initial written notice may be the final notice) shall state what action the administrator intends to take if the violation is not corrected and shall advise that the administrator's decision or order may be appealed to the Board of Adjustment.
3. Notwithstanding the foregoing, in cases when delay would seriously threaten the effective enforcement of this ordinance or pose a danger to the public health, safety, or welfare, the UDO Administrator may seek enforcement without prior written notice by invoking any of the penalties or remedies as described herein.

D. PENALTIES AND REMEDIES FOR VIOLATIONS

1. Any act constituting a violation of the provisions of this ordinance or a failure to comply with any of its requirements, including violations of any conditions and safeguards established in connection with the grants of variances or special use permits, shall also subject the offender to a civil penalty of $25. If the offender fails to pay this penalty within 10 days after being cited for a violation, the penalty may be recovered by the city in a civil action in the nature of debt.
2. This ordinance may also be enforced by any appropriate action listed in G.S. 160A-175, Enforcement of Ordinance.
3. Each day that any violation continues after notification by the administrator that such violation exists shall be considered a separate offense for purposes of the penalties and remedies specified in this section.
4. Any one, all, or any combination of the foregoing penalties and remedies may be used to enforce this ordinance.

E. TRANSFERRING LOTS IN UNAPPROVED SUBDIVISIONS; VIOLATION

1. Any person who, being the owner or agent of the owner of any land located within the planning jurisdiction of the City, thereafter subdivides his or her land in violation of this ordinance or transfers or sells land by reference to, exhibition of, or any other use of a plat showing a subdivision of the land before the plat has been properly approved under this Article and recorded in the Office of the Register of Deeds, shall be guilty of a Class 1 misdemeanor.
2. The description by metes and bounds in the instrument of transfer or other document used in the process of selling or transferring land shall not exempt the transaction from this penalty.

3. The City may bring an action for injunction of any illegal subdivision, transfer, conveyance or sale of land, and the court shall, upon appropriate findings, issue an injunction and order requiring the offending party to comply with this ordinance.
4. The City may deny building permits for any lots that have been illegally subdivided in violation of this ordinance.
5. In addition to other remedies, the City may institute any appropriate action or proceedings to prevent the unlawful subdivision of land, to restrain, correct, or abate the violation, or to prevent any illegal act or conduct

Article 3: Zoning

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3.1 GENERAL

A. TYPES OF ZONING DISTRICTS

All land within the city's planning jurisdiction is classified by this ordinance to be within one (1) of the several base zoning districts or overlay districts respectively.

B. OVERLAY ZONING AREAS AND RELATIONSHIP TO ZONING DISTRICTS

Land within any base zoning district may also be classified into one (1) or more overlay zoning areas, as listed in Section 3.3, Overlay Zoning Districts. Regulations governing development in an overlay area shall apply in addition to the regulations governing development in the underlying district. If the standards governing a zoning district expressly conflict with those governing an overlay zoning area, the more restrictive standard shall control.

C. COMPLIANCE WITH DISTRICT STANDARDS

No land within the city shall be developed except in accordance with the zoning district use, use and development standards, and requirements of this article and all other regulations of this ordinance, as applicable.

3.2 BASE ZONING DISTRICTS

A. ESTABLISHMENT OF BASE ZONING DISTRICTS

For the purpose of this ordinance, the City of Southport and its extraterritorial jurisdiction is divided into the following classes of base zoning districts:

1. R-10: Residential District. Single and two-family residential district with 10,000 square foot minimum lot area.
2. R-20: Residential Agricultural District. Single and two-family residences with 20,000 square foot minimum lot area.
3. MF: Multi-Family District. A district designed to accommodate a variety of attached single-family dwellings up to a density of 11 units per acre.
4. MH: Manufactured Housing. A district established to offer affordable housing alternatives and to ensure the orderly development of such establishments.
5. CZ: Conditional Zoning District. A special district where uses and densities are established through public input for a development that has a high level of certainty of being constructed and the most commonly expected application will contain a specified use or uses, permitted by right or conditional use, on small- and large-scale projects.
6. PUD: Planned Unit Development District. A special district where multiple residential and commercial uses may be proposed and density and lot dimensions may be different from that of the base residential zoning districts in trade-off for significant dedication of open space, alternative housing types, and affordable development.
7. O/I: Office/Institutional District. A district designed for office/institutional uses at low to moderate densities and multi-family housing. This district should be used as a transitional zone between areas of conflicting land uses.

8. CBD: Central Business District. Restricted district in which commercial uses are densely developed in accordance with the City's historical commerce center.
9. BD: Business District. A commercial related district with lot and setback requirements suitable for placement abutting residential areas.
10. HC: Highway Commercial District. A district established for the retailing of durable goods, provision of commercial services to industrial areas, and the provision of services to transients.
11. LI: Light Industrial District. A district established to accommodate commercial warehousing and light industrial uses.
12. HI: Heavy Industrial District. A district designed for commercial, warehousing, and industrial uses.
13. OS: Open Space District. Areas of special public interest that should be placed in a zone protected from any development other than improvements or uses undertaken by the City of Southport.

3.3 OVERLAY DISTRICTS

A. ESTABLISHMENT OF OVERLAY DISTRICTS

For the purpose of this ordinance, the City of Southport is subject to the following overlay zoning districts:

A. YBO: Yacht Basin Overlay District. The following uses are allowed in the areas shown on the Official Zoning Map of the City of Southport as the Yacht Basin Overlay District.
   1. Commercial Parking Lots are allowed, and the following standards shall apply:
      a. Surfacing. Materials are limited to pervious pavers and number 57 driveway slate gravel. The perimeters of the parking lot will be delineated with wooden borders. Concrete or asphalt parking lot surfacing is prohibited in the overlay district.
      b. Borders. 8"x8" wooden beams are to be used for horizontal lot boundaries. 4"x4" wooden posts are to be used for vertical boundaries.
      c. Driveway Entrances. All driveway entrances to City rights-of-way or streets shall include an apron. Aprons are to be sized to contain surface aggregate and to consist of cast-in-place concrete, or with an alternative paving material (e.g. concrete pavers, brick, "turfstone" or similar pervious material) determined to exhibit equivalent wear resistance and load-bearing characteristics to concrete.
      d. Maintenance. Off-street parking areas shall be properly inspected and maintained on a regular basis using industry standard best practices.

3.4 INTERPRETATION OF DISTRICT REGULATIONS

A. Regulations for each district shall be enforced and interpreted according to the following rules:
   1. Uses by right. All listed permitted uses are permitted by right according to the terms of this article.
   2. Special uses. Special uses are permitted, subject to compliance with the additional regulations specified.
   3. Permitted or special use with standards. Uses with additional standards are denoted with an "S."

4. Unlisted uses. The uses listed may not address all possible uses. In determining if a use is permitted, the UDO Administrator shall consider which category of expressed uses most closely matches the use proposed and apply the regulations pertaining to that category to the proposed use. In determining the use which most closely matches the proposed use, the UDO Administrator shall consider the density and intensity of the use, and anticipated traffic, noise, light, and odor on adjacent properties. Such interpretation shall be provided in writing to the property owner and subject to appeal by the Board of Adjustment.
5. Minimum regulations. Regulations set forth in this article shall be minimum regulations. If the requirements set forth in this article are at variance with the requirements of any other lawfully adopted rules, regulations or ordinances, the more restrictive or higher standard shall govern.
6. Restrictive covenants and deed restrictions. Unless restrictions established by covenants and deed restrictions running with the land are prohibited by the provisions of this article, nothing herein contained shall be construed to render such covenants or restrictions inoperative.

3.5 TABLE OF PERMITTED AND SPECIAL USES

A. USE TABLE

The following uses are listed as permitted by right (P), special (S), or permitted by right with an additional use standard (PS), or special with an additional use standard (SS) in each zoning district where allowed. The Use Table (3.1) is separated by Accessory Uses, Residential Uses, and Nonresidential Uses.

B. PROHIBITED USES

1. If a cell in the table of uses is blank the use is prohibited in the corresponding zoning district.
2. The following uses are prohibited throughout the City's planning jurisdiction in an effort to mitigate natural and manmade hazards, maintain desired environmental qualities, and enhance public health, safety, and welfare, as desired in the City's Comprehensive Plan:
   a) The manufacturing, processing, fabrication, and/or bulk storage of acetylene gas (except for use on premises), ammunition, explosives, fireworks, gunpowder, jute, or matches;
   b) The manufacturing, processing, and/or fabrication of acids (except non-corrosive acids), ammonia, ammonium nitrate, animal byproducts, bleaching powder, cellulose, chlorine, creosote and creosote treatment, detergents, enamels, lacquers, linoleum, oilcloth, paints, paper pulp, pigments, lime, plastic, rubber (except tire recappers), soaps (except artisan manufacturing), tannery products, turpentine, varnishes, whiting and/or wood fillers, and environmentally hazardous material. The fabrication of plastics is exempt from this prohibition.
   c) The slaughtering of animals, except seafood processing.

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
Accessory Uses														
ACCESSORY STRUCTURES OR USES, GENERAL		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		3.6.A
ACCESSORY DWELLING, COMMERCIAL						SS	SS	SS	SS	SS	SS	SS		3.6.B
ACCESSORY DWELLING, RESIDENTIAL		SS	SS	SS	SS	SS	SS							3.6.C
CEMETERIES AND MAUSOLEUMS		SS	SS	SS	SS	SS	SS	PS	PS	PS				3.6.D
DOCKS, , PIERS, GAZEBOS, BULKEADS, AND LIVING SHORELINES		PS	PS	PS	PS	PS	PS	PS	PS				SS	3.6.E
HOME DAYCARE, ADULT AND CHILD		SS	SS	SS	SS	SS								3.6.F
HOME OCCUPATION		SS	SS	SS	SS	SS								3.6.G
HOMESTAY		PS	PS	PS		PS								3.6.H
MODULAR UNIT					PS	PS	PS	PS	PS	PS	PS	PS		3.6.I
OUTDOOR DISPLAY								PS	PS	PS				3.6.J
OUTDOOR STORAGE									PS	PS	PS	PS		3.6.K
OUTDOOR VENDING MACHINE					PS	PS	PS	PS	PS	PS	PS	PS		3.6.L
PORTABLE STORAGE CONTAINERS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		3.6.M
RECREATIONAL VEHICLE OR TRAVEL TRAILER		PS	PS		PS	PS	PS							3.6.N
SELF-SERVICE ICE VENDING MACHINES									SS	SS				3.6.O
SOLAR ENERGY SYSTEMS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		3.6.P
SWIMMING POOLS		PS	PS	PS	PS	PS	PS	PS						3.6.Q
TEMPORARY SALES OFFICES		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		3.6.R
TEMPORARY HEALTHCARE STRUCTURES		PS	PS	PS	PS	PS								3.6.S

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
Residential Uses														
DWELLING, SINGLE-FAMILY		P	P	P	P	P	P							
DWELLING, TWO-FAMILY (DUPLEX)		S	S	P	P	P	P							
DWELLING, MULTI-FAMILY				PS		SS	SS							3.7.A
DWELLING, TRIPLEX OR QUADRAPLEX				PS	SS	SS	SS							3.7.B
FAMILY CARE HOME		PS	PS	PS	PS	PS								3.7.C
MANUFACTURED HOME ON SINGLE LOT					PS									3.7.D
MANUFACTURED HOME PARK					PS									3.7.E
MIXED USES						PS	PS	PS	PS					3.7.F
MODULAR HOMES		PS	PS	PS	PS	PS	PS							3.7.G
Nonresidential Uses														
ADULT ESTABLISHMENT												SS		3.8.A
ALCOHOLIC BEVERAGES, PACKAGED, RETAIL SALES								P	P	P				
AUTOMOTIVE, MAJOR									SS	P	P	P		3.8.B
AUTOMOTIVE, MINOR								SS	P	P	P			3.8.B
BED & BREAKFAST	721191	SS	SS	SS	SS	SS	SS	SS	SS	SS				3.8.C
BOTTLE SHOP AND WINE BAR						P		P	P	P				
BUILDING MATERIAL DEALERS	444190								S	P	P	P		
BUSINESS,COMMERCIAL, OR OTHER NON-RESIDENTIAL USE NOT ELSEWHERE CLASSIFIED	561						SS	SS	SS	SS				3.8.D

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
BUS TERMINALS AND RAILROAD STATIONS									P	P				
CHURCHES, SYNAGOGUES & OTHER ASSOC. ACTIVITIES, INCL. OFFICES, ACTIVITY CENTER, ETC.	813110	SS	SS	SS	SS	SS	SS	PS	PS	PS				3.8.E
CLUBS OR LODGE		SS	SS			SS		SS	PS	PS				3.8.F
COMMERCIAL PARKING LOTS	812930						SS	SS	SS	PS	SS			3.8.G
COMMERCIAL RECREATION, INDOOR						S		S	P	P				
COMMERCIAL RECREATION, OUTDOOR										P				
CONTRACTORS, EQUIPMENT & SUPPLY DEALERS & SERVICE	811310									P	P	P		
CONTRACTORS, HEAVY CONSTRUCTION; GRADING, PAVING, MARINE, ETC.	234										P	P		
CULTURAL ARTS CENTER, INCL. THEATERS, OFFICES, CLASSROOMS, ETC.						P	P	P	P	P				
DANCE STUDIOS	611610					P	P	P	P	P				
DAYCARE, ADULT AND CHILD	624120						SS	SS	PS	PS				3.8.H
DIVERS, COMMERCIAL								P	P	P	P	P		
DRY CLEANERS	812320					SS		PS	PS	PS				3.8.I
DRY STORAGE										PS	PS	PS		3.8.J
EDUCATIONAL FACILITY		S	S	S	S	S	P	P	P	P				
ELECTRONIC GAMING OPERATIONS										SS				3.8.K
EXTERMINATING SERVICES	561710							PS	PS	P	P	P		3.8.L

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
FARMERS'S MARKET	445230	SS				SS		SS	PS	PS			SS	3.8.M
FARM MACHINERY SALE AND SERVICE									S	P	P			
FEED, SEED, AND FERTILIZER SALES, RETAIL									S	P	P			
FISHING, COMMERCIAL	11411							P	P	P				
FLEA MARKET										SS				3.8.N
FRUIT & VEGETABLE MARKET, WHOLESALE WITH INCIDENTAL RETAIL	445230							SS	SS	PS	PS	SS		3.8.O
FUEL & ICE DEALERS	422710								P	P	P	P		
FUNERAL HOMES	812210						P	P	P	P				
FURRIERS AND FUR STORAGE									P	P				
GARBAGE COLLECTION, PRIVATE (NO LANDFILLS)	562111											P		
GAS COMPANIES (LP-BOTTLED & BULK STORAGE)	324110										P	P		
GOLF COURSE, PRIVATE OR PUBLIC, W/RELATED SERVICES INCL. PRO SHOP	713910	P	P	P		P								
GOVERNMENT USE, CITY OF SOUTHPORT		P	P	P	P	P	P	P	P	P	P	P	P	
GOVERNMENT USES WITH BUILDINGS, NON-CITY OF SOUTHPORT		SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS		3.8.P
GROCERY STORES	445110					P		P	P	P				
HARDWARE, LAWN, OR GARDEN STORE	444130							P	P	P	P	P		
HEALTH SERVICES,						P	P	P	P	P				
HELIPAD							SS							3.8.Q

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
HOSPITALS	622110						P	P	P	P				
HOTEL, MOTEL, OR INN	721110					SS	SS		SS	PS				3.8.R
HOTEL, RESIDENTIAL OR BOUTIQUE						SS	SS	PS	PS	PS				3.8.S
INSTITUTIONAL CARE FACILITY, ADULT										S				
INSTITUTIONAL CARE FACILITY, CHILD HANDICAPPED									S	S				
JAIL	922140									PS	PS	PS		3.8.T
KENNEL	812910									SS	PS	PS		3.8.U
LAUNDRY, INDUSTRIAL	812332									P	P	P		
LAUNDRY, COIN-OPERATED									P	P				
LIBRARY	514120					P	P	P	P	P				
LIQUOR STORES	445310							P	P	P				
MANUFACTURED HOME DEALERS	453930									P	P			
MANUFACTURED HOME (INDIVIDUAL) FOR OFFICE AND/OR EXHIBITION					S	S	S	S	S	S	S	S		
MANUFACTURING, ARTISAN									P	P	P	P		
MANUFACTURING, GENERAL											C	P		
MANUFACTURING, INTENSIVE												CS		3.8.V
MANUFACTURING, LIMITED										P	P	P		
MARINA, COMMERCIAL	713930					PS		PS	PS	PS	PS	PS		3.8.W
MARITIME SALES, RENTAL, AND SERVICE									P	P				

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
MICROBREWERY AND MICRODISTILLERY								SS	PS	PS	PS			3.8.X
MOBILE VENDOR OR FOOD TRUCK								PS	PS	PS	PS	PS		3.8.Y
MOTION PICTURE PRODUCTION & DISTRIBUTION	512110										P	P		
MOTOR FREIGHT COMPANIES, MOVERS, VAN LINES, AND STORAGE										P	P	P		
MUSEUMS, ART GALLERIES	712110						P	P	P	P				
NIGHTCLUB	722410							SS	SS	SS				3.8.Z
NURSING & PERSONAL CARE FACILITY	623110					SS	SS		SS	PS				3.8.AA
OFFICE, GENERAL						P	P	P	P	P				
PACKAGE DELIVERY SERVICES, COMMERCIAL	492210						SS	SS	SS	PS	PS	PS		3.8.BB
PARKS & RECREATION AREAS, MUNICIPAL	924120	P	P	P	P	P	P	P	P	P			P	
PERSONAL SERVICE ESTABLISHMENT						P	P	P	P	P				
RADIO & TELEVISION STATIONS, STUDIOS, AND OFFICES							SS		PS	PS				3.8.CC
RECREATION FACILITY PRIVATE, INCL. CLUBS & RECREATION FACILITIES ASSOC. WITH MULTIPLE FAMILY COMPLEXES, GOLF COURSES, TENNIS FACILITIES, COUNTRY CLUBS, ETC.		SS	SS	SS	SS	SS	SS	SS	SS	SS				3.8.F
RECREATIONAL VEHICLE PARK										SS				3.8.DD
RESEARCH & DEVELOPMENT							SS	SS		PS	PS	PS		3.8.EE

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													**Use Standard**
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
RESTAURANT, CARRY-OUT	722211					S		P	P	P				
RESTAURANT, STANDARD & FAST-FOOD	722211					S		P	P	P				
RETAIL SALES, MAJOR										P				
RETAIL SALES, MINOR						P		P	P	P				
RETAIL SALES, MODERATE									P	P				
SALVAGE OPERATIONS												SS		3.8.FF
SHOPPING CENTER	233320					SS		SS	PS	PS				3.8.GG
SHOOTING RANGE, INDOOR										PS	PS	PS		3.8.HH
SHOOTING RANGE, OUTDOOR												SS		3.8.HH
SHORT- TERM VACATION RENTALS						PS		PS	PS					3.8II
SOLAR FARM												SS		3.8.JJ
STORAGE, SELF-SERVICE										PS	PS	PS		3.8.KK
TATTOO AND PIERCING ESTABLISHMENT												S		
TAXICAB STANDS								SS	PS	PS				3.8.LL
TELEPHONE COMMUNICATION FACILITY, UNATTENDED	513340	SS	SS	SS	SS	SS	SS	SS	SS	SS	PS	PS		3.8.MM
TRANSITIONAL HOUSING FACILITIES							S							3.8.NN
US POSTAL SERVICE	491110					P	P	P	P	P	P	P		
UTILITY STATIONS & PLANTS (PUBLIC & PRIVATE) INCL. LIFT STATIONS, SUBSTATIONS, ETC.		P	P	P	P	P	P	P	P	P	P	P	P	
VETERINARY SERVICES WITH OPEN PENS	541940									P	P	P		

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard													Use Standard
Uses	ICS	R-10	R-20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	Section #
VETERINARY SERVICES WITH PENS ENCLOSED IN A BUILDING	541940								S	P	P	P		
WAREHOUSING, GENERAL	493110									PS	PS	PS		3.8.OO
WATER TRANSPORTATION INCL. DOCKS, TUGBOATS, BARGES, AND EXCURSIONS									P	P	P	P		
WELDING, REPAIR	811310								P	P	P	P		
WIRELESS TELECOMMUNICATION FACILITY OR COMPLEX, FREESTANDING AND SUBSTANTIAL MODIFICATIONS										SS	SS	SS		See Article 7
WIRELESS TELECOMMUNICATION FACILITY, COLLOCATION OR COLLOCATED SMALL/MICRO-WIRELESS FACILITY		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		See Article 7
YARD SALES		P	P	P	P	P	P	P	P	P				

3.6 ACCESSORY USE STANDARDS

A. ACCESSORY STRUCTURE OR USE, GENERAL

Where permitted, the following shall apply:

1. There shall not be more than two (2) accessory structures or uses per lot, excluding swimming pools, docks, piers, and waterside structures, in the R-10, R-20, MF, MH, PUD, O-I, CBD, BD and HC districts.
2. The total area of accessory structures, excluding swimming pools, shall not exceed 50% of the rear yard area of the lot and shall meet all rear and side yard setbacks of the district. However, accessory structures with a footprint of 530 square feet or smaller in any district may have setbacks of five (5) feet to a side or rear property line. No accessory structure shall be constructed beyond the front building line of the primary structure, except as allowed for riverfront lots as described below.

3. Riverfront lots: Detached garages are permitted in the street front yard on lots with frontage on the Cape Fear River in the R-10 district provided they are no closer than 75 feet from the street right-of-way.
4. No accessory structure, whether residential or nonresidential, shall be greater than 30 feet in height.

B. ACCESSORY DWELLING, COMMERCIAL

Where permitted, the following shall apply:

1. The residential unit may be occupied solely by the person engaged in the principal use or a full-time employee, and their family members residing with them.
2. The site shall provide an area of open space not occupied by any buildings, parking or structures equal to the floor area of the residential unit.
3. The amount of floor area for the residential unit shall not exceed 1,500 square feet.
4. The residential unit shall be located totally above the ground floor or totally to the rear of the principal use so as not to interrupt the commercial frontage.
5. In addition to the required off-street parking for the principal use, two (2) off-street parking spaces shall be provided for the residential unit.

C. ACCESSORY DWELLING, RESIDENTIAL

Where permitted, the following shall apply:

1. An accessory dwelling may be within, attached, or separate from the principal residential structure.
2. The principal use of the lot shall be a detached single-family dwelling, built to the standards of the North Carolina State Building Code.
3. No more than one (1) accessory dwelling shall be permitted on a single deeded lot in conjunction with the principal residential structure.
4. The accessory dwelling shall be owned by the same person as the principal residential structure.
5. The accessory dwelling shall not be served by a driveway separate from that serving the principal residential structure.
6. There shall be a separate parking space for the accessory dwelling subject to the off-street parking requirements of Section 3.14.
7. The accessory dwelling shall not exceed 800 square feet.
8. Detached garages with a second-floor accessory residential dwelling may not exceed a ground level building footprint area of 530 square feet and shall be constructed behind the front building line, except as allowed for riverfront lots, provided they are located no closer than five (5) feet to any adjoining lot line.

D. CEMETERIES AND MAUSOLEUMS

Where permitted, a cemetery or mausoleum may be allowed as an accessory use to churches and synagogues. No crematoriums shall be permitted.

E. DOCKS, PIERS, BULKHEADS, AND LIVING SHORELINES

Where permitted, docks, piers, bulkheads, and living shorelines shall be constructed in accordance with the CAMA use standards as stated in 15A NCAC 07H and the Army Corps of Engineers setback requirements. Within the Open Space District, only non-commercial residential docks and piers shall be permitted. Within the Open Space District, a residential community dock attached to a homeowners/property owners association (HOA/POA) common area is permitted only within the community it serves. A residential HOA/POA community dock is not allowed in the Open Space District as a remote recreation facility for non-contiguous HOA/POA common areas. Docks may be utilized as a principal or accessory structure where permitted.

F. HOME DAYCARE, ADULT AND CHILD

Where permitted, the following shall apply:

1. All outdoor play areas are to be surrounded by a fence or wall at least four (4) feet in height.
2. There shall be adequate road ingress and egress to and from the site.
3. Traffic generated by the facility shall not be disruptive to any adjacent residentially developed properties.
4. Outdoor play areas may be located in the rear yard or side yard only. If located in the side yard, a minimum side yard setback of ten feet shall be observed. On corner or through lots, a minimum 20-foot setback, as measured from the abutting street right-of-way line, shall be observed. Greater setbacks may be required if otherwise called for in the underlying zoning district.
5. It complies with all applicable home occupation requirements, except the gross floor area requirement.

G. HOMESTAY

Where permitted, the following shall apply:

1. No displays of goods, products, services, or other advertising shall be visible outside the dwelling.
2. The homestay operation shall be managed and carried on by a person who:
   a) Is a full-time resident of the property; and
   b) Is present during the homestay term for the entire time lodgers are staying at the property. To be a “full-time resident,” the person must reside on the property on a permanent basis, and it must be the person’s primary home. For the purposes of this section, a person can only have one primary, full-time residence. To be “present during the homestay term,” the full-time resident shall be at the property overnight and not away on vacation, visiting friends or family, traveling out of town for business or personal reasons, etc., during the homestay term. However, the full-time resident may be temporarily absent from the property for purposes related to normal residential activities such as shopping, working, attending class, etc. A minimum of two documents establishing proof of residency shall be supplied from an approved list of documents.

3. No activities other than lodging shall be provided. Special events, including weddings, receptions, and other large gatherings, are expressly prohibited.
4. No additional off-street parking is required for a homestay.
5. Only one homestay permit shall be permitted per property.
6. Homestay permits shall be limited to two guest rooms at a time.
7. No signage shall be allowed for homestays.
8. The length of stay of guests shall not exceed 30 days.
9. Exterior lighting shall be residential in nature and shall comply with the lighting requirements of the UDO.
10. The homestay owner or operator shall maintain a minimum of $500,000 general liability insurance on the property, which covers the homestay use and homestay guests.
11. The homestay owner or operator must pay any applicable taxes, including occupancy and sales taxes, to the appropriate governmental entities.
12. The homestay owner or operator shall not prepare food for guests or provide pre-packaged or unpacked food items or beverages for guests.
13. The homestay area of the dwelling shall comply with all current and applicable building codes.
14. Accessory Dwellings with a Special Use Permit are not eligible for homestay use.

H. HOME OCCUPATION

Where permitted, the following shall apply:

1. Home occupations shall be a use that is clearly a customary, incidental, and use of a residential dwelling unit and shall be permitted subject to the following limitations.

    a) No exterior display of projects.
    b) Industrial uses shall not be allowed including: manufacturing, processing, fabrication, and/or bulk storage of acetylene (except for use on premises), ammunition, explosives, fireworks, gunpowder, jute, or matches.
    c) Not more than 25% of the gross floor area of the dwelling unit (excluding porch and garage areas) or 500 square feet, whichever is more, shall be used in the conduct of the home occupation. The 25% or 500 square feet, whichever is more, may be used in either the dwelling unit or an accessory structure or a combination of the two.
    d) There shall be no change in the outside appearance of the building or premises, or other visible evidence of the conduct of such home occupation.
    e) There shall be no outside storage of anything connected with the home occupation, except one vehicle used in connection with the business. Such vehicle may be no larger than a passenger van or pick-up truck.
    f) No traffic shall be generated by such home occupation in greater volumes than would normally be expected in a residential neighborhood. One (1) additional off-street parking space shall be required for any home occupation.

g) No equipment or process shall be used in such home occupation which creates noise, vibration, glare, fumes, odors, or electrical interferences detectable to the normal sense off the lot. In the case of electrical interference, no equipment or process shall be used which creates visual or audible interference in any radio or television receivers off the premises, or causes fluctuations in line voltage off the premises.

h) There shall not be more than one (1) person other than residents of the dwelling unit employed at the premises in connection with the home occupation.

I. MODULAR UNIT

Where permitted, the following shall apply:

1. Modular units to be utilized for office or classroom use must have been originally constructed for such use and shall not be a renovated or modified manufactured home. Plans and specifications shall bear an engineer's seal and a third-party inspection certification. The modular unit must have a permanent foundation if it is meant to be located on site as a permanent fixture.
   a) Parking. One (1) space for each person employed in the office at any given time during a 24-hour period plus four (4) spaces for visitors.
   b) Requirements. A temporary certificate of occupancy/compliance may be issued, allowing modular units to be used for permanent stand-alone office space and to be located on a designated lot or land location.
   c) Notwithstanding the foregoing, a temporary certificate of occupancy/compliance may be issued for a modular unit for use as a temporary field office for contractors, if the modular unit:
      i) And the structure under construction are located on the same property;
      ii) Is not moved to the site more than 30 days prior to construction and is removed not later than 30 days after construction has been completed;
      iii) Is not used for any other purpose other than that connected with on-site construction;
      iv) Is justified by the size and nature of the construction project;
      v) Is to be used for a period not to generally exceed 18 months with subsequent annual renewals permissible upon demonstrated continued need;
      vi) Is utilized only incidental to on-site construction during daylight hours and not for residential living quarters;
      vii) Is parked in a location approved in advance;
      viii) Sanitary facilities are connected with an approved sewer system unless an on-site port-a-john is provided;
      ix) Electrical facilities are connected in compliance with regulations as set forth in the North Carolina State Building Code.

   (a) Also, notwithstanding the foregoing, a certificate of occupancy/compliance may be issued for a modular unit for use as a classroom by a public or private school, for a school administrative office, or for a manufactured home sales office, if the following requirements are met:

x) Sanitary facilities are connected with an approved sewer system;
xi) Electrical facilities are connected in compliance with regulations as set forth in the North Carolina State Building Code;
xii) Provisions pertaining to a modular unit foundation and anchorage shall be as provided in the NC State Building Code or its successor document.

J. OUTDOOR DISPLAY

Where permitted, outdoor display shall comply with the following minimum standards. This section applies to the display of retail and rental goods outside of an enclosed building. This section does not apply to permitted farmers' markets.

1. Outdoor display must be incidental to a permitted principal use in the zoning district. Only the business or entity occupying the principal use or structure shall sell merchandise or rent equipment in the outdoor display areas.
2. Merchandise or rental equipment shall not be placed or located where it will interfere with pedestrian or building access or egress, required vehicular parking and handicapped parking, aisles, access or egress, fire lanes, alarms, hydrants, standpipes, or other fire protection equipment, or emergency access or egress.
3. Outdoor display shall be removed at the close of operating hours and shall not be permitted to remain overnight, except in the Highway Commercial Zoning District.

K. OUTDOOR STORAGE

Where permitted, the following shall apply:

1. All outdoor/open storage areas shall be fenced with a minimum of a six (6) foot opaque fence and shall not be visible from the public right-of-way.
2. All outdoor storage materials shall be kept in the rear of buildings and in no case shall outdoor storage materials be located closer than five (5) feet from any adjoining property line.

L. OUTDOOR VENDING MACHINE

Where permitted, the following shall apply:

1. Within the CBD zoning district, only attached automatic bank teller machines which are associated with the principal financial institution shall be permitted. No other outdoor vending machines or outdoor independently owned teller machines shall be permitted within the CBD zoning district.
2. Outdoor vending machines shall not obstruct pedestrian pathways, driving aisles, parking spaces, or any areas necessary for proper vehicular circulation or loading activities. A clear path of travel at least four feet wide must be provided around outdoor vending machines.
3. Outdoor vending machines shall not be located within four feet of the public right-of-way, or located in such a manner as to encourage or require customers to stand or park in the right-of-way in order to use the machine.

4. The back of an outdoor vending machine may not be located more than 18 inches from an exterior wall of the primary structure on the lot.
5. If exposed conduits or pipes are required (e.g., to supply the outdoor vending machine with power, coolant for refrigeration, or the product being dispensed), they shall be secured to the building and painted or otherwise screened to match the building exterior. Exposed conduits, pipes, and utility connections shall not bridge a span or gap greater than 18 inches.
6. All outdoor vending machines shall be maintained in a clean and attractive condition. Any graffiti on an outdoor vending machine shall be removed within 24 hours. If the outdoor vending machine is removed, the area shall be cleaned and restored to its previous condition, including the removal of any abandoned pipes, conduits or other connecting hardware.
7. In addition to the above, the following criteria shall apply to outdoor vending machines:
    a) Outdoor vending machines shall not block or visually obstruct the sales counter as viewed from outside the establishment.
    b) The area occupied by outdoor vending machines may not exceed 20% of the width of the building elevation along which they are located, nor shall the combined width of all vending machines at any one site exceed 30 feet.
    c) Sign copy on an outdoor vending machine shall be limited to that which fits on the exterior panels of the machine and shall only advertise the actual product or service provided by the machine.

M. PORTABLE STORAGE CONTAINERS.

Where permitted, the following shall apply:

1. A temporary portable storage container may be placed for 30 or less consecutive days in any 12-month period without issuance of a permit in all zoning districts upon notification of the UDO Administrator.
2. Temporary portable storage containers being used for over 30 days shall apply for and obtain a zoning permit from the UDO Administrator. A maximum of one (1) portable storage container shall be allowed per lot in residential areas for up to a 12-month period if the following conditions are met:
    a) The principal structure is damaged and is undergoing repairs, construction, reconstruction, or renovation.
    b) A building permit has been issued for the repairs, construction, reconstruction, or renovation, if required, and is valid.
    c) After a 12-month period, an extension may be granted for up to 30 additional days as approved by the UDO Administrator.
    d) Temporary portable storage containers used by developers for construction of a subdivision shall renew their permit with the UDO Administrator every 12 months. Portable storage containers must be removed upon completion of the subdivision.
3. Permanent portable storage containers may be permitted for commercial use as storage. Permanent portable storage containers may be permitted in the HC, LI,

and HI districts. Permanent portable storage containers shall submit a site plan for review by the UDO Administrator.

4. Permanent portable storage containers in commercial areas shall be screened from view of any public right-of-way, private street or access easements and any residential use or residential zoning district. Screening shall be accomplished by a combination of fencing or landscaping, which is contiguous and at least one (1) foot higher than the height of the container. Screening plans shall be included in the site plan submitted for review.
5. Permanent portable storage containers shall not be permitted as accessory structures or habitable structures in residential districts.
6. Portable storage containers shall not be located in an area that displaces required parking standards.
7. Setback requirements for portable storage containers shall be the same as setback requirements in their respective zoning districts.
8. Portable storage containers shall meet the following appearance standards:
    a) Portable storage containers shall not exceed the dimensions of 40 feet in length, eight (8) feet in width and 10 feet in height. Stacking of portable storage containers shall not be permitted.
    b) No sign shall be attached to a portable storage container other than the provider's contact information.
    c) The structure of a portable storage container shall be maintained in good condition free from structural damage, rust and deterioration.

N. RECREATIONAL VEHICLES OR TRAVEL TRAILERS

Where permitted, the following shall apply:

1. Recreational vehicles occupied for human habitation and intended for permanent residential use must be placed in an approved manufactured home or recreational vehicle park. However, temporary residential use may occur in cases where the recreational vehicle is secondary to a primary residential use, only when construction or repair of a single-family home occurs. Two general restrictions for either temporary residential use shall apply, as well as specific restrictions and limitations for each. In no case shall the recreational vehicle be utilized as a short or long-term rental unit. The general restrictions and limitations are as follows:
    a) Location of the recreational vehicle shall be in the rear yard, unless evidence can be provided to the UDO Administrator that size constraints or other factors prevent rear yard location. The specific restrictions and limitations are as follows:
        i) When secondary to a primary residential use, the period of human habitation shall not exceed 14 days, and may not be re-established for a period of 90 days from the last day terminated;
        ii) When construction or repair of a single-family home occurs, the homeowner and his family may occupy a recreational vehicle for

a period of 180 days. An extension to a maximum of 365 days may be granted by the UDO Administrator upon presentation of evidence that construction cannot be completed within 180 days due to factors beyond their control. All occupied recreational vehicles shall maintain an adequate disposal system and a source of potable water. Emptying of wastewater disposal systems shall be done in accordance with the City of Southport Sewer Use Ordinance.

O. SELF-SERVICE ICE VENDING MACHINES

Where permitted, the following shall apply:

1. Self-service ice vending machines or other similar uses shall be an accessory to an existing business or commercial entity in the Business District (BD). Such uses shall only be located as an accessory for convenience stores, car washes, and marinas of 20 boat slips or more.
2. Self-service ice vending machines or other similar uses may be located in the Highway Commercial (HC) District as a principal use.
3. No self-service ice vending machine or other similar use shall encroach into the minimum required setback.
4. Architectural features of any self-service ice vending machine or other similar use shall be complementary to existing development in the immediate area. Building elevations shall be submitted with each application considered for approval.
5. The foundation of each unit shall be screened by skirting, lattice or landscaping.
6. Roof-mounted or other equipment on top of the unit shall be screened by a parapet wall.
7. Within 30 calendar days of the closure or ceasing of operations of any self-service ice vending unit or other similar use, all equipment and incidentals shall be removed from the premises.
8. Landscaping:
    a) Where a self-service ice vending machine or other similar use is proposed as an accessory to an existing business location that has an approved site plan on record, skirting, lattice or landscaping shall be provided around the foundation of the unit. If the landscaping option is chosen, the planting of vegetation similar to that on the existing site or immediate vicinity shall be provided.
9. Access:
    a) Ingress and egress shall be located where such will not impede pedestrian or vehicular traffic flow.
    b) The existing access or driveway of the primary business shall be utilized, unless deemed inappropriate.
10. Vehicle Parking and Stacking Lane:

a) Four (4) standard parking spaces shall be available on the site. In the design of the area around the self-service ice vending machine, a provision will be made for the stacking of vehicles on the property. The stacking area will be designed to avoid a backup of vehicles on to the public right of way. The design standard for the stacking requirements will include:
   i) Required stacking lane shall be a minimum of eight feet wide by one hundred 150 feet long in total length with a vertical clearance of 15 feet in order to accommodate full-size pickup trucks with boats on trailers.
   ii) The stacking lane shall be located on private property and as much as possible to the rear or side of the lot. In no case shall a stacking lane be arranged or located in any way that impedes off-site traffic movements on adjacent public roadways.

P. SOLAR ENERGY SYSTEMS

Where permitted, the following shall apply:

1. Roof-mounted solar energy systems. Solar panels should generally relate to the slope of the roof surface to which they are attached. However, the height not exceed the maximum building height requirement of the district in which it is located. Roof-mounted solar energy systems shall in no instance extend beyond the edge of the roof to which they are attached.
2. Ground-mounted solar energy systems shall be prohibited.

Q. SWIMMING POOLS

Where permitted, swimming pools shall be setback five (5) feet from the existing property line and enclosed by protective fencing meeting the requirements of the NC Residential Building Code.

R. TEMPORARY SALES OFFICE

Where permitted, temporary sales offices are intended to serve the development/property which the office is associated with, to include but not necessarily be limited to, approved subdivisions and major site plans. Temporary sales offices are accessory uses. The temporary sales office shall be discontinued when 90% of the principal use development, subdivision, or planned building group is sold, occupied, and/or leased wholly or partially, including timeshare agreements.

S. TEMPORARY HEALTHCARE STRUCTURES.

Temporary healthcare structures shall be permitted in accordance with NCGS 160D-915.

3.7 RESIDENTIAL USE STANDARDS

A. DWELLING, MULTI-FAMILY (INCLUDING TOWNHOUSES, APARTMENTS & CONDOMINIUMS)

Where permitted, the following shall apply:

1. The site plan must be designed to give adequate consideration to the following factors:
   a) The size and shape of the tract.
   b) The topography and necessary grading.
   c) The reasonable preservation of the natural features of the land and vegetation.
   d) The size of the development in relationship with adjacent and nearby land uses.
   e) The impact on city infrastructure.
2. Developments with 50 or more dwelling units shall have a direct point of ingress and egress onto a major or minor thoroughfare. Developments with 100 or more dwelling units shall have at least two (2) direct points of direct ingress and egress onto a major or minor thoroughfare.
   a) Developments with 100 or more dwelling units shall be provided with a divided ingress-egress driveway with a landscaped median for all entrances from public streets.
   b) Any proposed ingress and egress points shall be located and designed so as to not result in a substantial amount of vehicular traffic to be channeled onto adjacent non-thoroughfare local streets.
   c) Sidewalks and/or paths shall be constructed within the development to link the interior of the development with residential buildings within the development and to other destinations such as, but not limited to, adjoining streets, mailboxes, trash disposal areas, on- site amenity areas and the like.
3. The minimum spacing between multi-family buildings within a development shall be 20 feet, plus one (1) foot for each one (1) foot of height in excess of 30 feet, or as required by the City of Southport fire code.
4. In order to provide an interesting and aesthetically attractive development, the following standards shall apply:
   a) With the exceptions of buildings that front the same public street, buildings shall be arranged in patterns that are not strictly linear. Exceptions shall be allowed for buildings that define common space such as a courtyard or green.
   b) Building entryways shall face a street, sidewalk or common area. Buildings shall not face the rear of other buildings within the same development.
5. Multi-family residential structures shall be controlled by a maximum height, maximum number of dwelling units per acre, [maximum floor area ratio (FAR)], the maximum open space ratio (OSR), and maximum impervious coverage ratio as provided below:
   a) Maximum number of dwelling units per acre shall be 11.
   b) Maximum FAR shall be 3:1.
   c) Minimum OSR shall be 55%.

d) Maximum impervious coverage ratio shall be 35%.

6. No more than 20% of the off-street parking associated with the multi-family use may be located in the front yard facing a public street.
7. For all multi-family developments not specifically developed for the elderly and containing more than 100 dwelling units, a shelter shall be constructed at a location where a public-school bus may pick up and/or drop off children riding county school buses.
8. Multi-family exterior building design must comply with the following:
   a) Exterior materials shall be durable and residential in character. Suggested materials include wood clapboard, wood shingles, brick, stone, stucco, vinyl, or similar materials. Suggested pitched roof materials include asphalt shingles, standing seam metal, slate, or similar materials.
9. The following minimum building design standards shall be complied with:
   a) Buildings shall not exceed 150 feet in length;
   b) Facades greater than 50 feet in length, measured horizontally, shall incorporate wall plan projection or recesses. Ground-floor facades that face public streets shall have arcades, windows, entry areas, awnings, or other such features for at least 60 percent of their horizontal length;
   c) Buildings shall be arranged so that they are aligned parallel to a sidewalk or around common open space, such as courtyards, greens, squares, or plazas; and
   d) On owner-occupied units (townhouses and condominiums), side- or rear-entry garages are encouraged. When front-entry garages are provided, the garage should be recessed at least four (4) feet behind the unit front wall line closest to the required front yard setback.
10. Orientation. Multi-family buildings shall be oriented as follows:
   a) For lots not exceeding 40,000 square feet, all multi-family buildings shall be oriented to the street.
   b) For lots that are at or over 40,000 square feet, at least 80 percent of the ground are between the front lot line and the maximum setback, excluding required driveways and access points, shall be occupied by multi-family dwelling units that are oriented to the street. The remaining area may include driveways and required access points, or courtyards or similar open spaces.
11. Fenestration. Windows, porches, balconies, and entryways shall comprise of at least 30 percent of the length of the front elevation on each floor.
12. Articulation/Modulation. Buildings that contain multi-family dwellings shall be articulated as follows:
   a) Multi-family buildings that face single-family homes shall be articulated at intervals consistent with the existing yard requirements or the yard requirements of the opposing block.

b) The articulation of buildings pursuant to this section shall include at least two (2) of the following:
   i) Horizontal projections or offsets, such as towers or turrets, which extend at least five (5) feet from the front elevation and the height of the building up to the eaves. Projections or offsets shall be at least three (3) feet in depth and eight (8) feet in width;
   ii) Projecting entryways, such as stoops, balconies, porticoes, bay windows, arcades, or porches
   iii) Changes in roof elevations, roof dormers, hips, or gables; or
   iv) Open balconies that project at least six (6) feet from the front building plane.

13. Townhouse:
   a) No unit shall be connected on more than two (2) sides by common walls.
   b) All yard dimensional requirements shall apply to the property lines of the entire development. The minimum lot size and setback requirements of the base zoning district shall only apply to the parent parcel. Zero lot lines may be utilized for individual units.
   c) A zero (0) side and/or rear yard setback, may be permitted in a townhouse subject to the following provisions:
      i) Any wall, constructed on the side or rear lot line shall be a solid doorless and windowless wall. Such wall shall contain no electrical, mechanical, heating, air conditioning, or other fixtures that project beyond such wall. Roof eaves may encroach two (2) feet into the adjoining lot;
      ii) A five (5) foot maintenance and access easement with a maximum eave encroachment easement of two (2) feet within the maintenance easement shall be established on the adjoining lot and shall assure ready access to the lot line wall at reasonable periods of the day for normal maintenance;
      iii) Where zero (0) side or rear yard setbacks are proposed, the buildable area for each lot shall be indicated on the preliminary and final subdivision plat.
      iv) Zero lot lines shall not be allowed on any perimeter boundary line or lot line of a townhouse.

14. Open space areas shall be provided for all multi-family developments with over five (5) dwelling units. Swimming pools and their accessory areas shall not constitute any part of the open space requirements. No part of the required play area shall be used for any other purpose. All recreation areas shall be enclosed with permanent fencing at least five (5) feet in height.
   a) All open space shown on the site plan or plat shall be recorded in the Brunswick County Register of Deeds Office and shall be conveyed by leasing or conveying title including beneficial ownership to a corporation,

association, or other legal entity, the terms of such lease or other instruments of conveyance must include provisions suitable to the city for guaranteeing:

i) The continued use of land for the intended purposes;
ii) Continuity of proper maintenance for those portions of open space land requiring maintenance;
iii) When appropriate, the availability of funds required for such maintenance;
iv) Adequate insurance protection; and
v) Recovery for loss sustained by casualty, condemnation, or otherwise.

b) Furthermore, the applicant shall file in the Brunswick County Register of Deeds office at the time of site plan approval, legal documents which shall produce the above guarantees and in particular, will provide a method for reserving the use of open space for the use and enjoyment of the residents of the development.

c) Required open space shall comply the provisions outlined in Section 4.14.G. Criteria of the Subdivision Article.

B. DWELLING, QUADRAPLEX OR TRIPLEX

Where permitted, the following shall apply:

1. The quadraplex, or triplex must be architecturally consistent with adjacent properties and the principal entrance of each dwelling unit must be located on an exterior wall facing a public street right-of-way. The exterior design must comply with the following:
   a) Exterior materials shall be durable and residential in character. Exterior wall materials shall be wood clapboard siding, wood shingles, brick, stone, stucco, vinyl, or similar materials. Roof materials shall be asphalt shingles, standing seam metal, slate or similar materials.
2. Windows. Windows shall have a vertical-to-horizontal ratio of at least 1.5:1 and less than 3:1, which are recessed into the face of the building and broken up with smaller planes of glass.

C. FAMILY CARE HOME

Family care homes shall be permitted in accordance with NCGS 168-22.

D. MANUFACTURED HOME ON SINGLE LOT

Where permitted, the following shall apply:

1. Skirting and Curtain Wall Requirements for Manufactured Homes.
   a) All single-wide manufactured homes shall have skirting placed around the base prior to the issuance of a Certificate of Occupancy.

b) Double-wide manufactured homes shall have a curtain wall constructed around the base within 90 days from the date the home is placed on a lot.

c) For both single- and double-wide manufactured homes, one (1) row of ventilation ports, 8-inch by 16-inch, shall be provided every ten feet, and one (1) access opening with a door that is between 18 inches and 42 inches in height and between 24 inches and 60 inches in width.

2. Electrical Service Requirements for Manufactured Homes. All manufactured homes shall have electrical service within 90 days from the date the home is placed on a lot.

E. MANUFACTURED HOUSING PARK

Where permitted, the following shall apply:

1. No person shall begin construction of a manufactured home park or make any addition to a manufactured home park that either alters the number of sites for manufactured homes within the park or affects the facilities required therein until he first secures a permit authorizing such construction or addition.
2. If the owner of a manufactured home community (which consists of at least five (5) manufactured homes) intends to convert the land to another use, the landowner must give each owner of each manufactured home notice of the intended conversion at least 180 days before the home owner is required to vacate and move, regardless of the term of tenancy.
3. In no case shall the size of a manufactured home space be less than 8,500 square feet.
4. All manufactured home parks shall be located on an undivided tract of land not less than three (3) acres in size.
5. Parking space sufficient to accommodate at least two (2) automobiles shall be located on each manufactured home space.
6. The manufactured home park shall be located on ground that is not susceptible to flooding. The park shall be graded so as to prevent any water from ponding or accumulating on the premises. All ditch banks shall be sloped and seeded.
7. There shall be at least 20 feet clearance between manufactured homes including manufactured homes parked end to end. No manufactured home shall be located closer than 20 feet of any exterior boundary line of the park, no closer than 15 feet to the edge of any interior street right-of-way, or closer than 10 feet to any manufactured home space (lot) boundary line.
8. Existing manufactured home parks which provide manufactured home spaces having a width or area less than that described above may continue to operate with spaces of existing width and area, but in no event shall any such nonconforming manufactured home park be allowed to expand unless such extension meets the requirements of this ordinance.

9. Each manufactured home space shall be graded and grassed to prevent erosion and provide adequate storm drainage (including retention pond facilities, when applicable) away from the manufactured home.
10. Interior Drives. All manufactured home spaces shall abut upon an interior drive of no less than 36 feet in right-of-way, which shall have unobstructed access to a public street or highway, it being the intent of this section that manufactured home spaces shall not have unobstructed access to public streets or highways except through said interior drive. All interior drives shall be graded to their full right-of-way and shall have a road of at least 20 feet in width. Minimum improvements shall be a compacted base of four (4) inches of #7 ABC stone. Roads shall be maintained with passable surface. Graded and stabilized road shoulders and ditches shall be provided.
11. Cul-de-sacs. Any interior drive designed to be closed shall have a turnaround at the closed end with a minimum right-of-way diameter of 100 feet. The entire right-of-way of such turnaround shall be graded and usable for the turning of motor vehicles.
12. Intersections. Drives shall intersect as nearly as possible at right angles, and no drive shall intersect at less than 75 degrees.
13. Spaces Numbered. Each manufactured home space shall be identified by a permanent number which shall not be changed. The appropriate number of each manufactured home space must be permanent and visibly displayed. Each number shall be placed on a concrete, wood, metal, or any permanent post and conspicuously located on the lot.
14. Signs for Identification of Parks. Permanent identification sign(s) shall be required for every manufactured home park. The size of the signs shall be as follows: Not more than two (2) signs with a total maximum area of 48 square feet and a total minimum area of 12 square feet. Signs must be located on the park property within 50 feet of the entrance and at least 10 feet off the front property line. Signs must be located a minimum of five (5) feet from any side property lines. Only indirect non-flashing lighting may be used for illumination, and the sign must be constructed in such a manner as to prevent a direct view of the light source from any public road right-of-way.
15. Sanitary Facilities, Water Supply, Sewerage, Electricity, Lighting, and Refuse Collection Facilities. Each manufactured home space shall be equipped with plumbing and electrical connections and shall be provided with electrical current in sufficient amount to safely meet the maximum anticipated requirements of a manufactured home.
16. Water, Sewerage, and Electricity. Each manufactured home space shall be provided with and shall be connected to a public sanitary sewerage and water supply systems. Wells and septic tanks shall be prohibited.
17. Lighting. Distribution lines shall be installed underground. Underground lines shall be placed at least 18 inches below the ground surface where possible and

at least one (1) foot radial distance from water, sewer, gas, or communications lines.

18. Exterior lighting shall be provided for all streets, walkways, buildings, and other facilities subject to nighttime use. The average illumination level in manufactured home parks shall be at least three tenths (0.3) footcandle, and a minimum level of one tenth (0.1) footcandle shall be maintained on all streets. Potentially hazardous locations such as street intersections and walkways shall be individually illuminated with a minimum level of six tenths (0.6) footcandle.
19. Refuse Collection Facilities. The park owner is responsible for seeing to refuse collection.
20. Manufactured Home Stands and Anchors.
    a) The area of the manufactured home stand shall be improved to provide an adequate foundation for the placement and anchoring of the manufactured home, thereby securing the structure against uplift, sliding, rotation, and/or overturning.
    b) Each manufactured home owner shall provide anchorage in accordance with the State of North Carolina Regulations for Manufactured Homes.
    c) Any manufactured home placed in a manufactured home park after adoption of this ordinance shall have skirting.
21. Service, Administration, and Other Buildings.
    a) Within a manufactured home park, one (1) manufactured home may be used as an administrative office. Other administrative and service buildings housing sanitation and laundry facilities or any other such facilities shall comply with all applicable ordinances, codes, and statutes regarding buildings, electrical installations, plumbing, and sanitation systems.
    b) All service buildings, commercial structures, and the grounds of the park shall be maintained in a clean condition and kept free from any condition that will menace the health of any occupant or the public or constitute a nuisance.
22. Structural Additions. All structural additions to manufactured homes other than those which are built into the unit and designed to fold out or extend from it shall be erected only after a building permit shall have been obtained. The building permit shall specify whether such structural additions may remain permanently, must be removed when the manufactured home is removed, or must be removed within a specified length of time after the manufactured home is removed.
23. Storage. Storage of a manufactured home or recreational vehicle is prohibited.
24. Management. In each manufactured home park, the permittee or duly authorized attendant or caretaker shall be in charge at all times to keep the manufactured home park, its facilities and equipment in a clean, orderly, safe, and sanitary condition.

25. Manufactured Home Park. It shall be the duty of the operator of a manufactured home park to keep an accurate register containing a record of all registered occupants. The operator shall keep the register available at all times for inspection by law enforcement officials, public health officials, and other officials whose duties necessitate acquisition of the information contained in the register.
26. Sales in Manufactured Home Parks.
    a) It shall be unlawful to sell on a commercial basis manufactured homes or trailers within manufactured home parks.
    b) It shall be unlawful to sell a manufactured home space(s) within the manufactured home parks.

F. MIXED USES

Where permitted, the following shall apply:

1. First floor shall be permitted business uses only.
2. The floor area devoted to the dwelling(s) in the CBD or BD shall not exceed the floor area devoted to the permitted business use(s).
3. The floor area devoted to the dwelling(s) in the PUD or O-I shall not exceed twice the floor area devoted to the permitted business use(s).
4. The minimum floor area for each dwelling shall be 500 square feet and the maximum floor area shall be 1,000 square feet.
5. No mixed-use building shall exceed the maximum height limit established in 3.9 Dimensional Requirements, Table 3.2.
6. No mixed-use building shall exceed 40 feet (i.e. one (1) floor commercial plus two (2) floors residential) in height.
7. Each dwelling shall have a direct means of access to the exterior of the building so that no access to the dwelling is provided through the use located on the lower floor(s) of the commercial building.
8. Parking for such dwelling(s) shall be in addition to that required for the permitted lower floor use(s).
9. Proposed curb cuts and driveways for required off-street parking lots that eliminate existing on-street parking spaces shall replace the number of on-street parking spaces eliminated by said curb cut(s) and driveway(s) within the parking lot being created, in addition to the number of parking spaces otherwise required by this ordinance.

G. MODULAR HOMES

Where permitted, the following shall apply:

1. The pitch of the roof for homes with a single predominant roofline shall be no less than five (5) feet rise for every 12 feet of run.
2. The eave projections of the roof shall not be less than 10 inches (excluding roof gutters) unless the roof pitch is 8/12 or greater.
3. The minimum height of the first story exterior wall must be at least 7 feet 6 inches.

4. The materials used in and the texture of the exterior must be compatible in composition, appearance, and durability to the materials commonly used in the exteriors of standard residential construction.
5. The modular home must be designed to require foundation supports around the perimeter. These may be in the form of piers, piers and curtain walls, piling foundations, perimeter walls, or another type of approved perimeter support.

3.8 NONRESIDENTIAL USE STANDARDS

A. ADULT ESTABLISHMENT

Where permitted, the following shall apply:

1. The sexually oriented business may not be located or operated 1,000 feet of:
   a) A church, synagogue, or regular place of worship;
   b) A public or private elementary or secondary school;
   c) A public library;
   d) A boundary of any residential district;
   e) A publicly owned park, beach, beach access, or other recreation area or facility;
   f) A licensed day care center;
   g) An entertainment business that is oriented primarily towards children;
   h) Another sexually oriented business.
2. For the purpose of this section, measurement shall be made in a straight line, without regard to intervening structures or objects, from the nearest portion of the building or structure used as part of the premises where a sexually oriented business is to be conducted, to the nearest property line of the premises of any use listed in (1) above.
3. No more than one (1) adult or sexually oriented business establishment or massage business shall be located in the same building or structure or on the same lot. No person shall permit any building, premises, structure, or other facility that contains any adult establishment to contain any other kind of adult establishment. No person shall permit any building, premises, structure, or other facility in which sexually oriented devices are sold, distributed, exhibited, or contained to contain any adult establishment.
4. No person shall permit any viewing booth in an adult mini motion picture theater to be occupied by more than one (1) person at any time.
5. It shall be unlawful for an owner or operator of a sexually oriented business to allow the merchandise or activities of the establishment to be visible from a point outside the establishment.
6. It shall be unlawful for the owner or operator of a sexually oriented business to allow the exterior portion of the sexually oriented business to have flashing lights, or any words, lettering, photographs, silhouettes, drawings, or pictorial representations of any manner except to the extent permitted by the provisions of this article.

7. It shall be unlawful for the owner or operator of a sexually oriented business to allow exterior portions of the establishment to be painted any color other than a single monochromatic color. This provision shall not apply to a sexually oriented business if the following conditions are met:
   a) The establishment is a part of a commercial multi-unit center; and
   b) The exterior portions of each individual unit in the commercial multi-unit center, including the exterior portions of the business, are painted the same color as one another or are painted in such a way so as to be a component of the overall architectural style or pattern of the commercial multi-unit center.
   c) Nothing in this section shall be construed to require the painting of an otherwise unpainted exterior portion of a sexually oriented business.
   d) A violation of any provision of this section shall constitute a violation of this ordinance.
8. No sexually oriented business, except for an adult motel, may remain open at any time between the hours of 1:00 AM and 8:00 AM on weekdays and Saturdays, and 1:00 AM and 12:00 PM on Sundays.

B. AUTOMOTIVE, MAJOR AND MINOR

Where permitted, the following shall apply

1. Minor automotive establishments are limited in function to dispensing gasoline, oil, grease, antifreeze, tires, batteries, and automobile accessories directly related to motor vehicles; to washing, polishing and servicing motor vehicles, only to the extent of installation of the above-mentioned items; and to selling at retail the items customarily sold by service stations. A minor automotive establishment shall not overhaul motors, provide upholstery work, auto glass work, painting, welding, bodywork, tire recapping, or auto dismantling.
2. Lighting facilities shall be arranged and of such nature that nearby residential properties are not disturbed.
3. All automotive establishments shall extinguish all floodlights at the close of daily operation or 11:00 PM., whichever is earlier.
4. Automotive establishments located within the City shall have no gasoline or oil pump located within 12 feet of any street right-of-way line. Outside the City, no such pump shall be located within 15 feet of any street right-of-way line.
5. Car wash facilities shall be subject to the following requirements:
   a) Vacuuming, drying and polishing facilities may not be located in any required yard or buffer area adjacent to a residential zoning district.
   b) At least two staging spaces and one drying space per wash bay shall be provided.
   c) Hours of operation may be from 8:00 AM to 9:00 PM only, when adjoining a residential zone.
   d) All vehicular accessible areas on the lot shall be at least 100 feet from any interior lot line separating the lot from a residential zone.

e) Security light must be shielded from adjacent residential zoned properties to prevent undo bright lights from shining onto/into dwellings.
f) Loud music is to be controlled by the property owner.

6. Automotive establishments engaged in repair work shall be prohibited from the storage of vehicles on-site for more than 10 days, otherwise such use shall be deemed a salvage operation.

C. BED AND BREAKFAST

Where permitted, the following shall apply:

1. Sanitation. Compliance with rules governing the sanitation of bed and breakfast homes, section 2200 of the North Carolina Administrative Code, Title 10, Department of Human Resources.
2. Management Plan. The application for a bed and breakfast home should include a management plan.
3. An on-site manager shall be required to have permanent residence at any permitted bed and breakfast establishment.

D. BUSINESS, COMMERCIAL, OR OTHER NON-RESIDENTIAL USE NOT ELSEWHERE CLASSIFIED

Where permitted, the following shall apply:

1. The Board of Adjustment must find that the proposed use will be similar in character and intensity to other permitted or conditional uses provided for within the district in which it is proposed. Such determination shall be noted as a finding of fact and shall be included in the record of the final disposition of the application.
2. Any proposed outdoor operations, inventory display and/or storage must be specifically approved by the Board of Adjustment who may establish any additional conditions as may be determined necessary. Such conditions may include, but shall not be limited to: screening, buffering, increased setbacks or other appropriate conditions up to and including denial of such proposed outdoor use for the location sought for due cause in order to protect, maintain or promote the general public, health, safety and welfare. Such due cause shall be noted as a finding of fact and shall be included in the record of the final disposition of the application.
3. Parking and/or loading requirements shall be those noted for the use most closely associated with the proposed use as determined by the Board of Adjustment in conjunction with staff review and recommendation.
4. The Board of Adjustment shall reasonably consider and may require the establishment of appropriate hours of operation for the proposed use should they determine such limitation to be appropriate in order to protect, maintain or promote the general public health, safety and welfare.

5. The Board of Adjustment shall consider and may require any additional relevant time, place and manner conditions or restrictions as may be deemed appropriate for the location sought for due cause in order to protect, maintain or promote the general public health, safety and welfare. Such due cause shall be noted as a finding of fact and shall be included in the record of the final disposition of the application.

E. CHURCHES, SYNAGOGUES, & OTHER ASSOCIATED ACTIVITIES, INCLUDING OFFICES, ACTIVITY CENTER, ETC.

Where permitted, the following shall apply:

1. If a school is operated on-premises, parking needs may be satisfied by that already provided by the church. A school having an enrollment certification of 100 or more students shall be considered a separate use and approved as an educational facility. It shall be considered a separate principal use and may be allowed on the same lot so long as the school meets all applicable use, area, bulk, and setback requirements.
2. A single-family residential use, occupied by the pastor, priest, rabbi, and the like of the facility, may be placed on the lot containing the church/house of worship. The structure shall meet all setback requirements for single-family dwellings for the zoning district in which the lot is located. The structure may not be used for day care facilities.
3. If a day care center with an enrollment capacity in excess of 25 students is operated on-premises, the day care center shall be deemed a separate use and approved as such.

F. CLUB OR LODGE

Where permitted, the following shall apply:

1. Outdoor recreational facilities, with the exception of swimming pools, shall be located at least 20 feet from any side or rear lot line, except 50 feet shall be required if in or adjacent to a residential district. Rear and side yard setbacks for outdoor swimming pools shall be 50 feet each, unless adjacent to residential districts.
2. Outdoor swimming pools shall be at least 100 feet from any adjoining residential zoning district.
3. Hours of operation may be between 7:00 AM and 10:00 PM only, if located in a residential zoning district.

G. COMMERCIAL PARKING LOTS

Where permitted, the following shall apply:

1. Landscaping. A screen not less than six (6) feet high of dense plant material is required where lot abuts a residential lot. Plant material shall be of a type which will grow to a height of six (6) feet within five (5) years following planting. Any additional buffering provisions subject to non-residential uses shall apply.

2. Signage. Proposed location of one (1) sign which may be no larger than 10 square feet; sign shall be freestanding and not higher than seven (7) feet above the ground. Two (2) incidental unlighted entrance and exit signs not exceeding two square feet each may be provided at each entrance and/or exit.

H. DAYCARE, ADULT AND CHILD

Where permitted, the following shall apply:

1. All outdoor play areas are to be surrounded by a fence or wall at least four (4) feet in height.
2. There shall be adequate road ingress and egress to and from the site.
3. Traffic generated by the facility shall not be disruptive to any adjacent residentially developed properties.
4. Outdoor play areas may be located in the rear yard or side yard only. If located in the side yard, a minimum side yard setback of ten feet shall be observed. On corner or through lots, a minimum 20-foot setback, as measured from the abutting street right-of-way line, shall be observed. Greater setbacks may be required if otherwise called for in the underlying zoning district.

I. DRY CLEANERS

Where permitted, the dry cleaner shall be limited to a customer pick-up station with 2,000 square feet or less of enclosed floor area. There shall be no on-site dry cleaning or washing of clothes.

J. DRY STORAGE

Where permitted, the following shall apply:

1. All storage areas shall be fenced with a minimum of an eight (8) foot opaque fence and screened with a Type A bufferyard along all property lines, including the front.
2. Dry storage facilities with 10 or more spaces shall provide a dustproof surface with adequate drainage facilities and must comply with the Parking Facility Landscaping requirements contained within this article. Dry storage facilities containing 25 or more spaces shall be paved with concrete, asphalt material, or with alternative paving material determined to exhibit equivalent water resistance and load bearing characteristics as asphalt or concrete.

K. ELECTRONIC GAMING OPERATIONS

Where permitted, the following shall apply:

1. Days/Hours of operation: businesses engaging in electronic gaming operations activities may operate from 8:00 am until 12:00 midnight each day, seven (7) days per week.
2. The maximum number of machines/terminals/computers for any electronic gaming operations business is 20.
3. Minimum paved parking spaces:

a) One (1) space per every two (2) terminals or one (1) space per every 100 square feet of total floor area, whichever is greater;
b) One (1) handicapped space per every 25 or fewer spaces;
c) One (1) in every eight (8) accessible spaces, but not less than one, shall be served by an access aisle 96 inches wide minimum and shall be designed "van accessible";
d) One (1) additional space per each one (1) employee.

4. All applicable permits must be issued to the applicant prior to the issuance of the conditional use permit and the opening of business.
5. If food or beverage is served, the establishment must meet the requirements of the Brunswick County Health Department, including any and all necessary permits and/or licenses.
6. The establishment must be a minimum of 500 feet from any building being used as a dwelling or residential zoning district.
7. The establishment must be a minimum of 1,000 feet from any other organization engaged in an electronic gaming operations business or any adult and sexually oriented business.
8. The establishment must be a minimum of 1,000 feet from any established religious institution/synagogue, school, daycare center/home, library, public park, recreation area or motion picture establishment where "G" or "PG" rated movies are shown to the general public on a regular basis.
9. A current certificate and straight-line drawing prepared within 30 days prior to application by a registered land surveyor depicting the property lines and the structures containing any existing electronic gaming businesses within 1,000 feet of the property to be certified; the property lines of any established religious institution/synagogue, school, daycare center/home, library, public park, recreation area or motion picture establishment where "G" or "PG" rated movies are shown to the general public on a regular basis that is within 1,000 feet of the property to be certified. For purposes of this Section, a use shall be considered existing or established if it is in existence at the time an application is submitted.
10. Measurement of distance separation shall be in a straight line from the closest point of the buildings at which the internet cafe/sweepstakes business is located.
11. No alcohol.

L. EXTERMINATING SERVICES

Where permitted, the use shall be comprised of administrative offices only, no chemical storage or service vehicles.

M. FARMERS MARKET

Where permitted, the following shall apply:

1. All farmer's market activities must be located open-air with no activities located in permanent structures. No activities may be located within a public right-of-way.

2. Off-street parking shall not be required in the CBD. No activities may be located within a public right-of-way.

N. FLEA MARKET

Where permitted, no activities shall be located within a public right-of-way. Operating hours shall be 8:00 AM to 5:00 PM. Temporary living quarters will not be permitted.

O. FRUIT & VEGETABLE MARKET, WHOLESALE WITH INCIDENTAL RETAIL

Where permitted, all sales and storage of materials, goods, and/or commodities shall be inside the principal structure. In the CBD and BD districts, all outside parking and loading/unloading shall be screened/buffered from adjacent residentially zoned or used property.

P. GOVERNMENT USES WITH BUILDINGS, NON-CITY OF SOUTHPORT

Where permitted, all structures must be designed to closely resemble the neighborhood's basic architecture. All government uses with buildings must also comply with the following:

1. All outdoor lighting is installed so as not to shine or reflect directly onto surrounding properties.
2. All signs shall be non-illuminated.

Q. HELIPAD

Where permitted, the following shall apply:

1. Helipads or heliports shall only be permitted in accordance with a duly established and operated hospital facility.
2. Compliance with federal regulations and standards. The establishment of any helipad and the operation and flight of helicopters within and above the corporate limits of the city shall at all times comply and be in conformity with at least the minimum of all pertinent regulations and standards promulgated from time to time by the Federal Aviation Administration and other applicable federal agencies, with particular reference to applicable federal air regulations, civil air regulations, and advisory circulars or successor publications.
3. Minimum altitude for helicopter flight. Except when necessary for take-off or landing, no person may operate a helicopter below the following altitudes:
    a) Generally. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with the routes, altitudes and other directions and regulations specifically prescribed for helicopters by any rule or ordinance pertaining to the same. At no time shall a helicopter be below 500 feet without special permission granted by the City Manager.
    b) Over congested areas. Over any congested area of the city or over any open-air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the helicopter.
    c) Over other than congested areas. An altitude of 500 feet above the surface of open fields or areas upon which there are no trees, building or

other obstacles; provided, however, the helicopter shall not be operated closer than 500 feet to any person, vehicle, vessel, tree, tower or structure.

4. Permit to operate helipad – Required; application; issuance; terms and conditions.
   a) No helipad shall be established or used unless an application for the establishment of the same shall have first been filed in writing with and approved by the Board of Adjustment. Such application shall contain a description of the proposed location, dimensions, obstruction clearance planes, proximity and height of nearest buildings, trees, towers or other structures, characteristics of the immediate area of such helipad and such other information as the Board of Adjustment may require.
   b) If the Board of Adjustment finds and determines that the public safety and convenience will be preserved and a nuisance or other burdensome condition will not be created and that the public interest will not be adversely affected by the establishment and use a helipad at such site and under such conditions and that such use at such site will be in accord with pertinent zoning regulations, it may issue a permit for the establishment and use of such helipad and the operation of helicopters to and from the same. The Board of Adjustment may impose such terms and conditions in the issuance of such permit as it determines to be necessary in the promotion of the public safety, convenience, health and welfare.
   c) No helipad shall be established or used unless such permit therefore has been granted under the provisions hereof and the required insurance has been issued and is in effect as required in this article.
5. Compliance with safety and fire prevention standards. As a further condition precedent to the issuance of a permit to establish and use a helipad and to land and take-off helicopters from such helipad, the applicant for such permit shall first secure written certification from the City Manager that the helipad being considered complies with all safety and fire prevention standards necessary for the safety of the operation and adjacent properties and with the other provisions in this section.
6. Area, design, construction, and location of heliports and helipads.
   a) The minimum dimension of the area which describes an approved helipad shall be equal to not less than 1 ½ times the diameter of the rotors of the helicopter.
   b) Approved helipads shall be so located that at least two (2) obstruction clearance planes are available which are compatible with the flight characteristics of the helicopter. Obstruction clearance planes shall be selected with due regard to the safety and convenience of persons and to the safety of property on the surface.

c) That is such helipad is to be elevated in any manner by being constructed on a platform or on the roof of a building, such platform or building shall be inspected and approved as structurally safe for use by a certified structural engineer at the expense of the applicant.

d) That is such helipad is to be at ground level it shall either: (a) be located in an enclosed area which does not permit access by the public at will, or (b) be completely enclosed by a fence or wall, either temporary or permanent, designed so as to provide safety for persons, vehicles or other things in the area.

e) That the design, construction and physical characteristics of any such helipad shall conform to applicable standards, rules and regulations of the Federal Aviation Administration. That the plans and specifications of any such helipad shall be submitted to the City Manager of the City of Southport for examination and determination whether they conform to any applicable provisions of the existing building code, and the necessary permits, if any are required pursuant to such code, shall be obtained before any construction is begun.

f) Landing Pad. Every helipad located above ground level shall be provided with a landing pad constructed in accordance with applicable Building Codes and/or FAA Regulations.

g) Dust-Proof Cover. All helipad landing areas shall be composed of asphalt.

h) Lighting. Any helipad intended to be used for night landing or take-off shall be provided with flood lights which are directed toward the ground and windsock only, and with linear perimeter lighting of fluorescent or cold cathode type, or by amber lights spaced around the helipad pad, not less than 20 feet apart.

i) All elevated helipads shall be restricted to helicopters not exceeding the gross weight or load rating stated in the application for permit or permits.

j) All helipads shall be marked in accordance with FAA criteria.

k) Fencing. Every ground level helipad shall be fenced and protected to prevent entrance of unauthorized personnel with a fence, a minimum of 36 inches in height, entirely surrounding the minimum helipad area as established by the FAA; except that the minimum fence height may be increased 12 inches for each 10 feet that the landing area is extended beyond the minimum area required. Other fencing shall be in accordance with applicable Building Code requirements, if any. Each side of this fence shall be marked with an appropriate warning sign, two (2) feet by two (2) feet in size.

7. Minimum Area. No permit shall be issued for a helipad which does not meet the minimum area standards of applicable FAA regulations.

8. Safety Features Required. No permit for the operation of helipad shall be approved by the Chief of the Southport Fire Department until the following fire prevention equipment is provided at the site of the proposed helipad:
   a) A set standpipe not less than two and one-half inches in diameter shall be provided at each helipad landing site. This standpipe shall be provided with a hose sufficiently long to reach the landing pad. This hose is to be equipped with a spray nozzle and a water supply sufficient to efficiently operate same.
   b) When a set standpipe cannot be provided, a Badger 50 lb. wheeled A, B, C extinguisher unit: 50 lb.A/B/C wheeled (30- A, /160-B,C) ½' hose 25' long w/quick release handle and tires of hard rubber, shall be provided.
   c) A telephone, other than a pay phone, shall be provided at each helipad for emergency purposes.
   d) Any elevated, or roof-top landing area shall be provided with two exits as remote from each other as practical; at least one of the exits shall be a stairway exit. The other exit may be an emergency exit leading from the area by means of a ladder or a stairway on any landing area.
   e) No smoking shall be permitted on any landing area.
   f) No fueling or major repairing of helicopters shall be permitted at any helipad.
   g) Fire protection and other required emergency equipment shall be property sheltered from weather.
9. No permit shall be approved by the Board of Adjustment until they are sufficiently satisfied that no inordinate danger to the public will be created by operation of helipads or by external load of temporary landing operations.
10. Inspection. The Fire Chief, Police Chief or the Building Inspector, or any of their authorized personnel, shall have authority to make periodic inspections of the helipad to determine that all the requirements of a permit issued are complied with.
11. Proof of Air Operation Liability Insurance or Bonding of Aircraft Operator. All operators of all aircraft using these facilities shall file proof of possession of adequate insurance or other surety in the amount of $1,000,000.00, in case of accidents, fires or personal or property damage resulting from operation of their facility or aircraft.
12. Notice of Construction, Alteration or De-activation Required by Federal Law. All applicants shall give proper notice to the United States of American of construction, alteration or de-activation as required by Federal Law on FAA Form 7480-1. Proof of this notice shall be submitted with the application.
13. Approach Zone. A helipad shall provide at least two approach lanes at least 90 degrees apart for landing or takeoff, sufficiently clear of obstructions to provide a slope of 1:8, approximately 7 degrees measured from the horizontal. Any curved approach necessary due to the obstruction of buildings or structures shall

provide a turning radius of 600 feet. The flight approach to a helipad shall be over open area and along major transportation corridors to the extent possible.

R. HOTEL, MOTEL OR INN

Where permitted, the following shall apply:

1. The lot size shall be a minimum of one (1) acre.
2. The primary means of ingress and egress shall be via a major thoroughfare as designated on the Brunswick County Comprehensive Transportation Plan (CTP).
3. The property shall have a minimum of 200 feet of frontage on a major thoroughfare.
4. Any building on the site must be a minimum of 200 feet from any residential district.
5. In the HC district, the building height may exceed 40 feet if approved by the Board of Adjustment and if the building satisfies the following:
   a) The City of Southport Fire Chief finds that the City can provide adequate/safe fire protection.
   b) Buildings which exceed 40 feet in height and are located on parcels adjacent to residentially zoned property must have an additional one-half (½) foot of both rear and side yard setback for each one (1) foot of building height over 40 feet.

S. HOTEL, RESIDENTIAL OR BOUTIQUE

Where permitted, residential or boutique hotels shall be limited to 10 or fewer rooms or suites. There shall not be any exterior accessory uses (including swimming pools) except for off- street parking and structures associated with landscaping.

T. JAIL

Where permitted, jails shall not be sited within 200 feet of any existing church, school, or day care facility. The jail shall be fenced and screened as provided in the case of salvage operations and junkyards.

U. KENNEL

Where permitted, the following shall apply:

1. All pens shall be enclosed in a building.
2. The property on which the kennel is to be located shall be no closer than 200 feet to any residential zoning district.
3. Limited outdoor exercise runs or facilities shall be permitted so long as their hours of use are restricted to the hours between 8:00 a.m. and 5:00 p.m.

V. MANUFACTURING, INTENSIVE

Where permitted, the following shall apply:

1. The approved conditional use must demonstrate compliance with all state and federal environmental regulations including assurances of non adverse impact(s)

on air or water quality. An environmental impact assessment may be required as a part of the conditional use permit and must be prepared and sealed by a North Carolina Licensed and Registered Engineer.

2. The use will not overly impact the ability of a public agency to collect and/or treat any wastewater generated by the use or the ability of the public agency to treat and distribute any potable water needed by the use.
3. The use will not overly impact (impact beyond capacity) the system of streets serving the use, or improvements will be made to the streets in consort with the development of the use, the result of which will be adequate handling of the additional traffic generated.
4. Not only will the use meet the minimum screening requirements of this ordinance, but also additional screening will be installed, as necessitated by the visual characteristics of the particular use, so that the use will be screened from view of adjoining residential districts, or the nature of the topography makes the screening from distance view from the residential areas impossible, and other measures such as heavy on-site landscaping will be taken to lessen any near or distance visual impacts.

W. MARINA, COMMERCIAL

Where permitted, the following shall apply:

1. Activities and possible uses on the marina property shall be limited to wet boat storage, dry stack boat storage, boat service and repairs, boat accessory sales, ship's store, coffee shop, boat trailer parking areas, automobile parking areas, launching ramps, piers, and boat petroleum service areas.
2. If dry stack boat storage buildings are located as part of the commercial marina, it shall be located no closer than 30 feet from any property line unless such property line abuts the water.
3. Dry stack boat storage buildings shall be fully enclosed.

X. MICROBREWERY AND MICRODISTILLERY

Where permitted, the following shall apply:

1. Microbreweries or microdistilleries shall not exceed 10,000 square feet of gross floor area, except that there is no size limit within the HC and LI Zoning District.
2. Required parking shall be calculated based on square footage proposed for each use.
3. Storage of materials, including silos, products for distribution and other items requiring long-term storage shall be allowed in areas behind a building, in enclosed buildings, or otherwise screened from the public right-of-way or pedestrian way.
4. All microbreweries or microdistillers shall include one (1) or more accessory uses such as a tasting room, tap room, restaurant, retail, demonstration area, education and training facility or other use incidental to the facility and open and accessible to the public.

5. All microbreweries or microdistillers shall be designed such that all newly constructed loading and unloading facilities (if applicable) are internal to the site or in-service alleys or back of building.

Y. MOBILE VENDOR OR FOOD TRUCK

Where permitted, the following shall apply:

1. Zoning Permit. A zoning permit is required for each site and must be signed by the property owner, including the city, and completed and submitted along with a minor site plan (the site plan may be sketched). The zoning permit shall be renewed annually upon issuance. If a property owner has a property large enough to accommodate more than one mobile vendor, only one zoning permit is required to be submitted showing the location of all mobile vendors. The minor site plan must show the limits of the property, the location(s) of the proposed mobile vendors, and label adjoining uses on neighboring properties. The applicant must also submit a NC Department of Agriculture Permit and a copy of the vehicle or trailer registration.
2. Place of Operation. Mobile vendors may operate on an individual property for a maximum of 120 days per 12-month period. Mobile vendors and all related equipment shall be removed from the site following the permitted hours of operation.
3. Mobile vendors may not park in handicapped accessible parking spaces, nor can they park in access or drive aisles. The approved location for parking the trucks, as shown on the zoning permit, must be physically marked. The food truck parking space can be marked with paint, tape, cones, or other easily identifiable material.
4. Prohibitions. All equipment associated with a mobile vendor must be located within three (3) feet of the vendor. The operator is responsible for disposing of all trash associated with the operation. City trash receptacles may not be used to dispose trash or waste. All areas within five (5) feet of the mobile vendor must be kept clean. Grease and liquid waste may not be disposed in tree pits, storm drains, the sanitary sewer system or public streets. Mobile vendors are all subject to the City-wide noise ordinance.
5. Maximum Number of Mobile Vendor Locations Per Property.
   a) Maximum of two (2) vendors on lots of one-half acres or less.
   b) Maximum of three (3) vendors on lots between one-half acre and 1 acre.
   c) Maximum of four (4) vendors on lots greater than 1 acre.
6. Food Truck Location. Food trucks must be located at least 50 feet from the front door of any restaurant and outdoor dining area and at least 50 feet from any permitted mobile food vending cart location. These minimum distance requirements are all measured in a straight line from the closest point of the proposed food truck location to the closest point from the buffered point, or in the case of a restaurant measured from the closest point of the restaurants main entrance. If a zoning permit is issued and a restaurant subsequently opens within

50 feet (measured from the restaurants main entrance) of the approved food truck location, the food truck may continue to operate until the permit expires.

7. Temporary outdoor seating associated with a food truck is only permitted on lots at least two (2) acres in size or greater.

Z. NIGHT CLUBS, NOT CONTAINED IN RESTAURANTS, MOTELS OR SIMILAR BUSINESSES

Where permitted, no part of a parcel of property containing a night club shall be located within 500 linear feet of any portion of a parcel of property containing a residence or residences.

AA. NURSING AND PERSONAL CARE FACILITY

Where permitted, the following shall apply:

1. Any facility which is licensed to have greater than 50 residents shall maintain a side setback of at least 20 feet and a rear setback of at least 35 feet when the side or rear yard is in or abuts a residential district or a lot containing a principal residential use, unless a greater setback is otherwise required for the zoning district in which it is located.
2. No sign exceeding four (4) square feet in area shall be permitted and all signs shall be non-illuminated.
3. The lot size shall be no less than 5,000 square feet.
4. The construction and operation of such facilities shall comply with the provisions of the General Statutes of the State of North Carolina and any other applicable federal, state, or local codes.

BB. PACKAGE DELIVERY SERVICES, COMMERCIAL

Where permitted, exterior loading areas must be completely screened from view from any public right-of-way.

CC. RADIO & TELEVISION STATIONS, STUDIOS, AND OFFICES

No communication towers are permitted. Satellite dishes must be screened from ground level view.

DD. RECREATIONAL VEHICLE PARKS (INCLUDING TRAVEL TRAILERS)

Where permitted, the following shall apply:

1. An RV Park shall require a minimum lot size of three (3) acres.
2. A minimum of 8% of the total land area shall be devoted to accessible common open spaces intended for recreational use. These open spaces are separate from the individual RV sites, hereinafter referred to as campsites, and shall be grouped and of character suitable for active and passive recreation and shall be reasonable located for safe and convenient access to residents. Sufficiency of size of each open space shall be determined by the Board of Adjustment.
3. A buffer strip of at least 10 feet in width shall be maintained along all public road frontages and along the perimeter of the RV Park. These buffers shall be free of all encroachment by campsites, buildings or structures, parking areas or impervious coverage.

4. An RV Park shall contain at least 15 individual campsites.
5. All campsites shall be located on land with elevations that are not susceptible to flooding. Campsites shall be graded to prevent any water from ponding or accumulating within the park. Each campsite shall be properly graded to obtain a reasonably flat area and to provide adequate drainage away from the space. This requirement is not intended to circumvent FEMA regulations or the City of Southport Flood Damage Prevention Ordinance.
6. Each campsite shall be located at least 30 feet from the edge of any publicly-maintained street or road.
7. RV Park shall be designed to prevent overcrowding, fire hazards, and to provide sufficient light and air. In no case shall an individual campsite be less than 1,250 square feet in area or have a minimum average width of less than 25 feet. In no case shall an RV be parked closer than 15 feet to another RV.
8. No campsite shall have direct vehicular access to a public road.
9. Each campsite shall be identified by a permanent number which may not be changed. The appropriate number of each campsite must be permanent and visibly displayed on each space. Each number shall be placed on a concrete, wood, metal, or any permanent post and conspicuously located on the campsite.
10. Each RV Park and any future additions thereto must meet the minimum standards and requirements set forth in the International Building Codes with North Carolina Amendments for sanitation and plumbing installations, accommodations, use and any associated parking. These structures may also contain a retail sales counter and/or coin operated machine for the RV Park residents' use, provided there is no exterior advertising. Vending machines also may be permitted in a sheltered area provided there is no exterior advertising on the structure. All service structures shall be maintained in a clean and sanitary condition and kept in good repair at all times. Structures shall be safely and adequately illuminated. Facilities shall be easily accessible and conveniently located to all users of the RV Park. All structures shall be constructed in accordance with the International Building Code with North Carolina Amendments, and shall meet Building Code and/or UDO setback requirements.
11. In addition to the prohibition on advertising on vending structures, the sign regulations for the base zoning district in which the RV Park is located shall apply.
12. Parking within the RV Park shall take place off an internal street within designated parking areas only.
13. Access to all campsites and accessory structures within the RV Park shall be made using internal streets.
14. Internal Street Standards
    a) One or two-way streets shall be used throughout the RV Park. Such streets shall be well-maintained and clearly identified. All streets within the RV Park shall be privately owned and maintained. Each campsite shall abut an internal street within the RV Park.

b) Streets shall have a minimum width of 20 feet for two-way streets and 14 feet for one-way streets.
c) Any dead-end shall be provided with a permanent turnaround with a minimum radius of 40 feet.
d) All internal streets within the RV Park shall be surfaced with a minimum of six (6) inches of compacted stone and shall be capable of supporting the imposed load of fire apparatus in accordance with the Fire Apparatus Access Roads Standard in the North Carolina Fire Code (NC Fire Code Section 503, fire apparatus weighing at least 75,000 pounds) and be equipped with adequate and suitable drainage facilities.
e) Maintenance of all internal streets and drainage facilities shall be the responsibility of the owner of the RV Park. Such streets shall be maintained in a manner to be free from pot holes, breaks in the pavement, rough surfaces, ponding of water and associated problems which would impede or cause hazards to motor vehicles. Speed reduction bumps on paved internal streets are permissible, but they shall be painted and appropriate signs indicating the bump must be placed along the street.
f) All internal streets shall be subject to annual inspections by the City of Southport Code Enforcement Officer or Building Inspector per Section 106 of the North Carolina Fire Code.

15. External Access
a) An RV Park shall not be located on through lots. RV Park roads shall be designed to slow traffic.
b) An RV Park with only one point of external access shall provide at least one permanent turnaround within the campsite. All external access must be approved by the Southport Public Services Director or the North Carolina Department of Transportation if the connecting street is a state-maintained road.
c) Any proposed electronic vehicular access gates or barricades must be siren-activated for Emergency Vehicle access.

16. Water
a) An accessible, adequate, safe and potable supply of water shall be required. Where public, municipal, or community water systems exist within 1,000 feet of the park, the developer shall connect to such system.
b) Internal water distribution systems shall be installed in accordance with minimum City Standards.

17. Sewer
a) Adequate and safe sewage disposal facilities shall be provided in all RV Parks. Where public, municipal, or community sewer systems exist within 1,000 feet of the RV Park, the developer shall connect to such system.

b) Each RV Park shall provide at least one sewage dumping station for each 100 campsites which are not equipped within individual sewer and water connections. Sewage dumping stations shall be approved by the Brunswick County Health Department or the North Carolina Division of Water Quality.

18. RV Park Operation
    a) The person to whom an operating permit for an RV Park is issued shall operate the RV Park in compliance with this ordinance and shall be responsible for maintaining the RV Park, its facilities and equipment in good repair and in a clean and sanitary condition.
    b) The RV Park owner shall notify its visitors of all applicable provisions of this ordinance and inform them of their responsibilities under this ordinance.
    c) The RV Park owner shall be responsible for refuse collection. Storage, collection, and disposal of refuse shall be so managed as not to create health hazards, rodent harborage, insect-breeding areas, accident, fire hazards, or air pollution. Any refuse storage devises shall be enclosed on three sides by opaque fencing material. The method of garbage disposal shall be noted on the plan and approved by the City of Southport Board of Adjustment.
    d) Swimming pools or bathing areas shall be installed, altered, improved, and used in compliance with applicable County and State Health Services regulations. Any bathing area shall require the approval of the Brunswick County Health Department.
    e) Except as specifically permitted by this paragraph, it shall be unlawful to locate a mobile home in an RV Park. Two (2) mobile homes shall be permitted to be located within a RV Park to be used as residences of persons responsible for the operation and/or maintenance of the RV Park.
    f) No more than one (1) RV camper may be parked on any one (1) campsite.
    g) RV campers and travel trailers shall not be permitted on parcels, lots, or spaces other than those approved through these regulations.
    h) The transfer of title of campsites, either by sale or by any other manner shall be prohibited within any RV Park.
    i) All RV campers must be placed individually on approved campsites where all design standards and utilities have been completed.
    j) Junked or wrecked vehicles shall be prohibited in an RV Park.
19. Inspection
    a) The Brunswick County Health Department, the City of Southport Building Inspector, the City of Southport Code Enforcement Officer and the Public Services Department are hereby authorized and directed to make such inspections as are necessary to determine satisfactory compliance with

this ordinance. It shall be the duty of the owners of RV Parks to give these agencies free access to such premises at reasonable times for inspections.

EE. RESEARCH & DEVELOPMENT

Where permitted, the research and development activity must not include/require any hazardous materials. All research and development activities must be enclosed in a permanent structure.

FF. SALVAGE OPERATIONS

Where permitted, the following shall apply:

1. Any portion of the proposed use/site must be located at least 500 feet from any residentially zoned property.
2. The salvage operation and junkyard shall be entirely surrounded by a screened security fence or by a nonscreened security fence/vegetation screen. In the event that a salvage operation or junkyard shall be surrounded by a nonscreened security fence, the vegetation screen shall be planted on at least one side and contiguous to the security fence. The vegetation shall be of a type that will reach a minimum height of six (6) feet within five (5) years and shall be planted at intervals evenly spaced and in close proximity to each other so that a continuous, unbroken hedgerow will exist along the length of the security fence surrounding the salvage operation or junkyard. Each owner, operator, or maintainer of a salvage operation or junkyard to which this ordinance applies and who chooses to surround said salvage operation or junkyard with a security fence and vegetation screen shall utilize good husbandry techniques with respect to said vegetation, including, but not limited to, proper pruning, proper fertilizer and mulching so that the vegetation will reach maturity as soon as possible and will have maximum density and foliage. Dead or diseased vegetation shall be replaced at the next appropriate planting time.
3. The security fence shall be maintained in good order and shall not be allowed to deteriorate. All gates shall be closed and securely locked at all times, except during business

GG. SHOPPING CENTER

Where permitted, all exterior lighting shall be directed onto the proposed shopping center site. Within the CBD district, no individual establishment shall include a drive-through nor be greater than 3,000 square feet in area. Within the BD district, no individual establishment shall be greater than 5,000 square feet in floor area.

HH. SHOOTING RANGE, INDOOR AND OUTDOOR

Where permitted, the following shall apply:

A. This section is intended to regulate the establishment and operation of shooting range facilities. Such recreational and training complexes, due to their potential noise impacts and safety concerns, merit careful review to minimize adverse effects on adjoining

properties. Further, the regulations of this section have been made with reasonable consideration among other things, as to the character of the City and its areas and their peculiar suitability for these businesses and recreational facilities.

B. It is the intent of this section to accomplish the following:
   1. Shot containment. Each shooting range facility shall be designed to contain the bullets, shot or arrows on the range facility within the safety fan zone.
   2. Noise mitigation. Each shooting range facility shall be designed to minimize offsite noise impacts generated by the activities conducted on the range facility.

C. All new shooting facilities shall be designed, constructed and operated in strict compliance with National Rifle Association (herein referred to as the N.R.A.) standards, specifically "The Range Manual, A Guide to Planning and Construction," Section 1: Chapters 1 through 7, Section 2: Chapters 1 through 18, Section 3: Chapters 1 through 12; Section 4 and verified by the NRA Range Technical Team, National Shooting Sports Foundation (NSSF), the U.S. Occupational Safety and Health Administration (OSHA:), and the National Institute of Occupational Safety and Health (NOISH). In addition, construction standards shall comply with all appurtenant North Carolina Building Codes and verified by a professional engineer.

D. Setbacks. All outdoor shooting stations on a range facility shall be located a minimum of 150 feet from any property line.

E. Warning signs. Warning signs meeting N.R.A. guidelines for shooting ranges shall be posted at 100-foot intervals along the entire perimeter of the outdoor shooting range facility.

F. Distance from occupied dwelling. All outdoor shooting range stations shall be located at least 1,000 feet from any occupied dwelling, excluding those dwellings occupied by the range owner and staff of the range. A shooting range lawfully operating as a conforming use shall not be rendered nonconforming by the subsequent location of a residence within 1,000 feet of the shooting station.

G. The permittee shall be required to carry a minimum of $500,000 of liability insurance. Such insurance shall name the city as an additional insured party and shall save and hold the city, its elected and appointed officials and employees acting within the scope of their duties harmless from and against all claims, demands and causes of action of any kind or character, including the cost of defense thereof, arising in favor of a person or group's members or employees or third parties on account of any property damage arising out of use of the range, or in any way arising out of the acts or omissions of the permittee, his/her group, club or its agents or representatives. The City shall be notified of any policy changes or lapses in coverage.

H. The site plan shall also include a complete layout of each range, including shooting stations or firing lines, target areas, shotfall zones or safety fans, backstops, berms and baffles, when necessary and projected noise contours;

I. Permit display. Permits shall be kept and displayed in a readily visible location on the shooting range facility and at all times be available for public inspection.

J. Changes or expansions. If any shooting range facility is intended to be substantially changed or expanded to include types of ranges, operations or activities not covered by

an approved permit or otherwise cause nonconformance with this section, a new permit for the entire facility shall be secured.

K. Abandonment and discontinuance. When an existing shooting range is discontinued without the intent to reinstate the range use, the property owner shall notify the city of such intent by providing written notice to the UDO Administrator.

II. SHORT-TERM VACATION RENTALS

Where permitted, the following shall apply:

1. No displays of goods, products, services, or other advertising shall be visible outside the dwelling.
2. No activities other than lodging shall be provided. Special events, including weddings, receptions, and other large gatherings, are expressly prohibited.
3. Off-street parking requirements shall be consistent with residential use requirements in 3.14 D.
4. No signage shall be allowed for short-term vacation rentals.
5. The length of stay of guests shall be less than 30 days.
6. Exterior lighting shall be residential in nature and shall comply with the lighting requirements in the UDO.
7. Rental rules, including the maximum number of guests per stay, prohibition of any large gatherings, trash disposal procedures and sanitation schedules, noise ordinance hours, where guests are to park, and emergency contact information must be posted in a common area of the unit.
8. All Short-Term Vacation Rentals operating within this planning jurisdiction shall have a designated responsible party who is available twenty-four hours a day during all times that the property is rented or used on a transient basis. The name, telephone number, and email address of the designee shall be conspicuously posted within the short-term rental unit. The designee shall reside within (20) miles of the short-term rental property and be available to respond to complaints within forty-five (45) minutes of their receipt.
9. The short-term vacation rental owner or operator shall maintain a minimum of $1,000,000 of general liability insurance on the property, covering short-term vacation rental use and guests.
10. The short-term vacation rental owner or operator must pay any applicable taxes, including occupancy and sales taxes, to appropriate governmental entities.
11. The short-term vacation rental shall comply with all current and applicable building codes.
12. A zoning permit shall be required prior to the establishment of any Short-Term Vacation rental use.
13. Short-term vacation rentals in residential zoning districts (R-10, R-20, MF) shall be considered nonconforming and only permitted with the following standards and restrictions:

a) A short-term vacation rental in residential zoning districts must have been in operation as a short-term vacation rental prior to the date of the adoption of the standards and regulations herein. For purposes of this ordinance, in order to have been in operation prior to the adoption hereof, the short-term vacation rental must have received verifiable bookings prior to the date of adoption of this ordinance. No new short-term vacation rentals may be established and/or permitted in residential zoning districts (R-10, R-20, MF) after the adoption of the standards and regulations herein.

b) To establish the legal nonconforming status, pre-existing short-term vacation rentals in residential zoning districts (R-10, R-20, MF) must apply for a short-term vacation rental permit within 60 days of the adoption of the standards and regulations herein.

c) Legal nonconforming short-term vacation rentals in residential zoning districts may continue in operation until such time that the use is discontinued for a period greater than 180 consecutive days, provided, however, that rental of the dwelling unit for periods of longer than thirty (30) days shall not be deemed a discontinuance during said rental period for the purpose of this section.

14. Any short-term vacation rental for which there are three (3) final determinations of violations of City Code and/or criminal convictions related to the property (on, adjacent to, or within the property) by a property owner, tenant, guest, host, lessee, or individual otherwise related directly to the property within any rolling three hundred sixty-five (365) day period, shall constitute a violation of the supplemental standards of the permitted use and shall terminate the short-term vacation rental zoning permit. For any short-term vacation rental zoning permit that is terminated due to code/criminal violations, a property owner shall be ineligible for permitting for a period of three (3) years.

15. The rights and claims to operate a legal nonconforming short-term vacation rental are forfeited after three (3) final determinations of violations of the City Code and/or criminal convictions related to the property (on, adjacent to, or within the property) by a property owner, tenant, guest, host, lessee, or individual otherwise related directly to the property within any rolling three hundred sixty-five (365) day period.

JJ. SOLAR FARM

Where permitted, the following shall apply:

1. Solar farms shall be located a minimum of 100 feet from all property lines (inclusive of equipment and fencing).

2. Solar farms shall have fencing installed a minimum of six (6) feet in height and secured to reduce/eliminate trespassing.

3. Height. The maximum height of any solar panel and associated equipment (not including power lines) shall not exceed 25 feet.

4. Buffers. Evergreen buffers having a minimum of three (3) feet in height at the time of project construction and reaching a minimum of eight (8) feet in height within five (5) years.
5. Landscaping including vegetative buffers, security fences and gates shall be maintained for the duration of the solar farm operation, up to and including decommissioning (dismantled/removed).
6. Vegetative buffers shall be installed (exception granted if an existing natural buffer meeting the requirements of this ordinance exists) surrounding the solar farm site to screen adjacent properties - with the exception of the entrance-road frontage of the lot or parcel where a buffer is not required.
7. Solar panels/arrays shall be constructed so as to minimize glare or reflection onto adjacent properties and roadways.
8. Decommissioning. The UDO Administrator shall be advised, in writing within thirty (30) days, by the solar farm operator or property owners (whichever entity/party holds the zoning and building permits holder) in the event the project is sold or otherwise transferred to another entity/party and/or the current operator/owner abandons the project.
9. At the time of applying for permits the applicant (solar farm developer or property owner) shall include a decommissioning plan with the anticipated life expectancy of the solar farm and the anticipated cost in current dollars, as well as the method (s) of insuring that funds will be available for decommissioning and restoration of the project site to its original, natural condition prior to the solar farm development.
10. If the site is damaged, the solar farm operator shall have 12 months to bring the project back to its operational capacity and within compliance with the UDO. If for any reason the solar farm is not generating electricity after six (6) months, the operator shall have six (6) months to complete decommissioning of the solar farm in compliance with this section.
11. In the event of bankruptcy or similar financial default of the solar farm, the property owner of the project site shall bear the decommissioning costs.
12. Other Applicable Codes/Inspections. All solar farms shall be in compliance the requirements of the most current State Building and Electrical Codes, the State of North Carolina and the City of Southport.
13. All active solar farms shall be inspected by the UDO Administrator or his designee on an annual basis to ensure compliance with applicable State Building and electrical Codes.
14. Each solar farm shall be required to have the facility inspected annually for three (3) years by the UDO Administrator or his/her designee following the issuance of a Certificate of Occupancy to verify continued compliance with the UDO as applicable.
15. Additional inspections shall be conducted as necessary in the event of complaints and shall not replace the noted inspections outlined in this section.

KK. STORAGE, SELF-SERVICE

Where permitted, the following shall apply:

1. All storage compartments within the facility shall front on a private drive having a minimum width of 25 feet to ensure sufficient room for vehicular circulation, loading and parking.
2. Driveways providing ingress and egress to the site shall not permit any parking or loading extending to within 30 feet of the adjoining street right-of-way.
3. If the facility has a locked and keyed entrance, two (2) staging spaces must be provided directly in front of the entrance.
4. All self-storage facilities must have a minimum setback of 100 feet from any adjacent residential zoned property.
5. If the facility is located adjacent to a residential district; hours of operation may be from 8:00 AM to 9:00 PM only.
6. Security lights are to be shielded from all residential zoned property adjacent to mini-warehouses to prevent undo bright lights shining onto/into houses.
7. Accessory outdoor and dry storage may be permitted subject to the required use standards for each.

LL. TAXICAB STANDS

Where permitted, taxicab Stands shall be limited to parking spaces to accommodate five (5) or less taxicabs. No use or parking space shall be located on a public right-of-way. Signage shall be non-illuminated and limited to six (6) square feet.

MM. TELEPHONE COMMUNICATION FACILITY, UNATTENDED

Where permitted, all structures must be architecturally consistent with adjacent properties. Cell or communication towers will not be permitted. Satellite dishes must be screened from ground level view.

NN. TRANSITIONAL HOUSING

Where permitted, the following shall apply:

1. There shall be two parking spaces for each dwelling unit and one (1) parking space for each 300 gross square feet of office area.
2. Transitional Housing Facilities shall be screened from adjacent properties with an eight (8) foot opaque fence where adjacent to residential.
3. Transitional Housing Facilities shall have a maximum of five (5) dwelling units

OO. WAREHOUSING, GENERAL

Where permitted, the wholesale of non-durable goods shall not be located within 500 feet of any portion of any residentially used or zoned property.

3.9 DIMENSIONAL REQUIREMENTS

A. GENERAL

1. The following dimensional standards shall be regarded as the minimum required for each zoning district. The minimum yards, setbacks, or other open spaces

required by this ordinance, including those provisions regulating intensity of use, for each and every building hereafter erected or structurally altered shall not be encroached upon, unless specifically authorized by this ordinance, or considered as meeting the yard or open space requirements or the intensity of use provisions for any other building.

2. The location of required front, side, and rear yards on irregularly shaped lots shall be determined by the UDO Administrator. The determination will be based on the spirit and intent of this ordinance to achieve an appropriate spacing and location of buildings and structures on individual lots.

Table 3.2:
Dimensional Requirements by Zoning District

Zoning District	Minimum Lot Size (square feet)	Minimum Lot Width (feet)	Minimum Front Setback (feet)	Minimum Rear Setback (feet)	Minimum Side Setback [1] (feet)	Maximum Height Limit (feet)
R-10	10,000	75	25	20	8	40
R-20	20,000	100	40	25	12	40
MF	13,750	100	25	20	8	40
MH	5,000	50	20	20	4	40
PUD	Section 4.15	Section 4.15	Section 4.15	Section 4.15	Section 4.15	40
O/I	12,000	70	25	15	10	40
CBD	0	0	0	0	0	30(2)
BD	0	0	0	10	0	30(2)
HC	10,000	75	25	20	8	40
LI	10,000	75	25	20	8	50
HI	43,560	100	25	25	15	100
OS	None	None	None	None	None	None

1. Where any side yard is provided, though not required, the same shall be not less than four (4) feet.

2. In "Special Flood Hazard Areas" within CBD and BD, where regulatory flood protection elevations are required, the maximum heigh limit shall be forty (40) feet.

B. SETBACK EXCEPTIONS AND ENCROACHMENTS

1. Nonconforming lots which are located in the R-10 district may be granted rear and side yard setbacks proportionate to the size of the lot. Example: If a 10,000 square foot lot is required and the lot is 6,000 square feet, a 40 percent reduction is allowed.
2. Reduction of Minimum Front setbacks In Residential Districts Where Lots Along Block Face Have Less Than The Required Minimum. Where the front setbacks of lots along the block face containing a subject lot are less than the minimum front yard setback of the district, the average front yard setbacks of the lots along the block face containing a subject lot shall be the minimum front yard for such lot, with the exception that no house may be constructed over city utility easements, including sidewalks.

3. Docks, piers, boardwalks, and similar water-based appurtenances in compliance with CAMA regulations are not subject to setback requirements.
4. Steps, fire escapes, stairways, balconies and chimneys may project into a minimum setback not more than four (4) feet.
5. Sills, cornices, buttresses, ornamental features, gutters, and eaves shall not extend more than 18" into a required setback. Mechanical equipment such as air conditioning units, generators, pool equipment, and similar items for residential uses may extend into any required side yard no more than 50% of the required setback.
6. Elevators, liftavators, and other mechanical devices for elevating people and cargo may encroach into any required setback not more than 30 inches.
7. Carports open on three (3) sides may encroach on a side yard to a distance of not less than five (5) feet from a side lot line, except on the street side yard of a corner lot where the setback shall be one-half (½) of the distance of the required front yard setback up to a maximum of 20 feet. Storage areas may be constructed across the rear of a carport open on three (3) sides that encroaches on a side yard, provided such storage area shall not contain more than 72 square feet nor constitute more than eighteen percent (18%) of the area contained in the carport, whichever is less.
8. Canopies. Any non-residential land use that incorporates a canopy which is totally or partially supported by a structural pillar (upright support), such as but not limited to canopies over gasoline pumps, said canopy may extend to the street right-of-way line, or property line of a non-residentially used or zoned property if no street right-of-way line is involved, provided that each pillar is located at least 10 feet from a property line and the canopy is open on all four (4) sides. Any side of a canopy may be enclosed provided that side meets the required yard setbacks. The canopy roof shall be located horizontally and vertically at least 12 feet from any electrical conductor (line).
9. Signs. Setbacks for signs shall be as provided in Section 3.19.

C. HEIGHT EXCEPTIONS

Attached chimneys, belfries, cupolas, domes, elevator support structures, HVAC units, and similar appurtenances may exceed the maximum height requirement by not more than five (5) feet. All other structures shall comply with the height requirements of this ordinance.

3.10 GENERAL DEVELOPMENT STANDARDS

A. ONE PRINCIPAL STRUCTURE

Only one (1) principle structure per lot shall be allowed unless specifically authorized by this ordinance. More than one (1) principal structure devoted to a non-residential, multi-family, or manufactured home park use may be located on a lot, provided that access is available from a public street or a 20-foot easement is maintained from a public street to each building for use by service or emergency vehicles.

B. FENCES AND WALLS

1. No fence or wall shall be erected without the issuance of a zoning permit.
2. No fence or wall shall impede the visual locating of 911 emergency street addresses.
3. No fence or wall shall block pedestrian access from doors or windows and must have a clearance of at least two (2) feet from building walls, except where perpendicular to a building wall.
4. Fences or walls shall not alter or impede the natural flow of water in any stream, creek, drainage swale, or ditch.
5. The finished side of a fence shall face off-site.
6. The use of chain link fences shall be prohibited along any street right-of way property line. Barb-wire and electrified fences shall be prohibited within the CBD, BD, HC, and all residential zoning districts.
7. Fences and walls not exceeding a height of four (4) feet shall be exempt from the yard and building setback line requirements of this ordinance. Fences not exceeding a height of eight (8) feet to be erected only in side or rear yards shall be exempt from the yard and building setback line requirements of this ordinance, provided that no fence exceeding a height of four (4) feet will be constructed within 15 feet to any street right-of-way line. In all cases, the corner visibility provisions of this ordinance shall be observed.
8. Retaining Walls. The setback and yard requirements of this ordinance shall not apply to a retaining wall not more than five (5) feet high, as measured from the lowest ground elevation to the top of the wall except where such is considered to be a bulkhead directly adjacent to a body of water in which case setbacks shall not apply.
9. The following height limits for fences and walls shall apply:
    a) Within front yards, or circumstances where the rear or side yard of a newly subdivided parcel of land fronts a pre-existing roadway, street, right-of- way, lot, or parcel frontage the maximum height is (4) feet;
    b) Within any side or rear yards, the maximum height is eight (8) feet;
    c) Height limits shall not apply to electric/gas substations, water/sewer treatment plants or facilities, municipal water storage facilities, government facilities, uses within the LI and HI district, or waste treatment facilities;
    d) Height limits shall not apply to chain link fences surrounding tennis courts, ball field backstops, or similar recreational facilities;
    e) Fence height shall be measured along the grade of the adjacent property.
10. Walls shall be constructed of one or a combination of the following materials: stucco over concrete block, exposed aggregate concrete, brick, stone, or architectural block in a structurally safe and attractive condition.
11. No wall shall be located within any required drainage, utility, or similar easement.

C. CORNER LOT VISIBILITY – SITE DISTANCE TRIANGLE

On a corner lot, within the area formed by a triangle 25 feet from the intersection of the edges of the roadway surfaces or curbs, there shall be no obstruction to vision between a height of 32 inches and a height of 10 feet above the average centerline of each street.

D. UNDERGROUND ELECTRICAL LINES

Electrical, phone, and/or cable utility lines must be installed underground from all utility poles to any building, including residences, accessory/utility buildings, and detached garages.

3.11 BUILDING DESIGN STANDARDS

A. PURPOSE

The purpose of this section is to ensure architectural compatibility and the establishment and preservation of architectural character throughout the city.

B. APPLICABILITY

The requirements of this section shall apply to the CBD and BD zoning districts in the following circumstances:

1. All new construction other than single-family or two-family dwellings.
2. Communication towers, religious institutions, government buildings, public structures, and uses within the LI and HI district shall be exempt from these requirements.

C. DESIGN STANDARDS

1. The primary entrance of the structure shall be architecturally and functionally designed on the front facade facing the primary street.
2. Except for corner lots, the front facade of the principal structure shall be parallel to the front lot line and street.
3. Façade colors shall be of low reflectance earth tone, muted, subtle, or neutral colors. Building trim may feature brighter colors as an accent material. The use of high-intensity, metallic, fluorescent, dayglow, or neon colors shall be prohibited.
4. Ground mounted mechanical equipment, solid waste storage, and recycling storage shall be located to the rear or side yard and screened from view of the street.
5. Outparcels shall be designed and integrated with the main project or principal structure.
6. No portion of a building facing a front or side lot line, unless a zero lot line common wall, shall be constructed of unadorned (unfaced) concrete masonry units or corrugated and/or sheet metal.
7. No single facade extending unbroken more than 35 feet in a horizontal plane may be visible from a public roadway. Compliance may be obtained through one of the following:
    a) The use of projections or recesses. When used, each projection or recess shall have a projection (or depth) dimension of no less than 18 inches and a width of no less than 36 inches; or

b) The use of columns or other architectural detail to provide visual interest. Where used, columns should be harmonious with the general design of the structure.

8. At least 25% of the first floor of the street facade(s) shall be transparent (including all sides facing a street right-of-way). Street level windows shall be visually permeable. Mirrorized glass is not permitted in any location. False or display casements are not permitted in lieu of exterior window treatments for the frontage elevation. A window shall be measured as follows:
   a) Minimum area: 16 square feet
   b) Minimum width: 3 feet
   c) Minimum height: 4 feet
9. A pitched roof shall have eaves a minimum of 12 inches from the building face including gutters. This shall not apply to zero lot line structures.
10. No structure shall exceed two (2) stories.

D. COMPLIANCE

Compliance with the requirements of this section shall be demonstrated through submittal of architectural drawings in conjunction with the appropriate approval type. Drawings shall include, but not be limited to, a floor plan, roof plan, and all exterior building elevations.

3.12 TRANSPORTATION AND STREET ACCESS

A. STREET ACCESS

No building shall be erected on a lot which does not abut a street or have access to a public street by means of an unobstructed permanent access easement of record or private street. For the purposes of this ordinance, an easement of record shall mean that the easement is recorded in the county register of deeds office and made a part of the deed for the property it is on.

B. DRIVEWAYS

1. General. After the date of passage of this section, only driveways designed, approved, constructed, and surfaced in accordance with the provisions herein shall be allowed to provide motor vehicle access to or from any property upon which a building has been constructed, reconstructed, or physically altered. All driveways shall be paved with either asphalt or concrete, or with alternative paving material (e.g., concrete pavers, brick, “turfstone” or similar pervious material) determined to exhibit equivalent wear resistance and load bearing characteristics as asphalt or concrete.
2. Before a zoning permit is issued for the construction, reconstruction, or change in use of any building or land. “Construction, reconstruction, or change in use” refers to those improvements made to the site involving overall structure size or to changes in use which would require the addition of one (1) or more off-street parking spaces; it is not intended to refer to construction activities which merely involve changes to exterior architectural features (e.g., painting, addition of siding, roofing activities, etc.).

3. No driveway shall conflict with any municipal facility such as traffic signal standards, catch basins, fire hydrants, crosswalks, loading zones, bus stops, utility poles, fire-alarm supports, meter boxes, and sewer clean- outs or other necessary structures, except with the express approval of the Director of Public Works. Any adjustments to municipal facilities to avoid such conflicts shall be at the expense of the driveway applicant.
4. Driveway Location(s):
    a) Two (2) driveways entering the same street from a single lot shall be permitted only if the minimum distance between the closest edges of the driveways equals or exceeds 50 feet.
    b) Three (3) driveways entering the same street from a single lot shall be permitted only if the minimum distance between the closest edges of the driveways equals or exceeds 150 feet.
    c) Four (4) or more driveways entering the same street from a single lot shall be prohibited.
    d) In no case may the total width of all driveways exceed 50% of the total property frontage.
    e) No nonresidential driveway (nearest edge) shall be located within 10 feet of a side lot property line except in the case of a shared driveway (single curb/access point) utilized by two (2) or more lots. Residential driveways shall not be located within two (2) feet of side lot property lines.
    f) No driveway (nearest edge) shall be located within 25 feet of an intersection on a secondary road and 40 feet on a primary road except in the case where no other lot access to a public street or city-approved private road is available.
5. Brick Driveways. Brick driveways will be allowed consisting of smooth, hard-burned clay bricks with an appropriate concrete base. In the event repairs are required after brick driveways are installed due to utility replacement or other construction work, the driveway applicant shall pay that portion of the repair cost which exceeds the cost of repair using standard concrete six (6) inches in thickness. Normal maintenance or replacement will be the responsibility of the driveway applicant.
6. Driveway Inspection. Once the driveway is constructed a Public Services representative shall inspect the driveway for compliance with the provisions herein. The inspector or other authorized representative of the city shall have the authority to require the immediate stoppage of work not performed either in accordance with the approved plans or under the requirements of this section and may order the nonconforming installations be corrected and/or blocked.
7. Compliance with the requirements of this section shall be demonstrated through submittal of scaled drawings prior to the issuance of a zoning permit. A change of use, redevelopment, or addition shall not require compliance with this section.

3.13 TRAFFIC IMPACT STUDY

A. PURPOSE

A traffic impact study shall be required for any land development, subdivision, or use which will collectively generate more than 500 trips per day as identified by the most recent version of the ITE Trip Generation Manual. This study shall also be required for projects submitted by the same applicant or owner within a six (6) month time period which are adjacent to or located within 500 linear feet of one another which will collectively generate more than 500 trips per day. The study will enable the City of Southport to assess the impact of a proposed permit or development on the highway system when that system is at or near capacity or a safety problem exists. Its purpose is to ensure that proposed developments do not adversely affect the highway network and to identify any traffic problems associated with access from the site to the existing transportation network. The purpose of the study is also to identify solutions to potential problems and to present improvements to be incorporated into the proposed development.

B. CONDUCT

A traffic impact study shall be prepared by a qualified professional transportation engineer and/or certified transportation planner with previous traffic study experience.

Prior to the preparation of a traffic impact study, a scoping meeting shall be held, including the planning staff, the applicant, and the preparer of the study. The discussion at this meeting should set the study parameters, including the study area, planned and committed roadway improvements (by NCDOT or others), road links and intersections to be analyzed, preliminary traffic distribution, other planned developments to be considered, traffic growth rate, available data, periods for which analysis is to be performed, and other staff concerns. The qualifications of the preparer may be discussed at or prior to this meeting.

C. EXEMPTION

Any land development, subdivision, or use which collectively generates more than 500trips per day traffic may be exempted from the requirements to prepare and submit a traffic impact study if: (1) a traffic impact study has previously been prepared for this particular project or development, and (2) there is to be no change in land use or density that would increase travel, and (3) there is to be no change in access to the external street system, or (4) material is submitted by and sealed by a licensed professional transportation engineer to demonstrate that traffic created by the proposal when adding to existing traffic will not result in a need for transportation improvements. The Board of Aldermen will review material submitted in support of an exemption and will determine from that material whether or not to grant the exemption.

D. TRAFFIC IMPACT STUDY REQUIRED INFORMATION

1. General Site Description. The site description shall include the size, location, proposed land uses, number of units and gross square footage by land use, existing land use and zoning, construction staging, and completion date of the proposed land development to the extent known or able to be described at the time the application is prepared. If the development is residential, types of

dwelling units and number of bedrooms shall also be included. A brief description of other major existing and proposed land developments within the study area shall be provided. The general site description shall also include probable socio- economic characteristics of potential site users to the extent that they may affect the transportation needs of the site (i.e., number of senior citizens).

2. Transportation Facilities Description. The description shall contain a full documentation of the proposed internal and existing external transportation system. This description shall include proposed internal vehicular, bicycle, and pedestrian circulation; all proposed ingress and egress locations; all internal roadway widths and rights-of-way, turn lanes, parking conditions, traffic channelization's; and any traffic signals or other intersection control devices at all intersections within the site.
3. The report shall describe the entire external roadway system within the study area. Major intersections in the study area and all intersections or driveways adjacent to or within 800 feet of the site shall be identified and sketched. All existing and proposed public transportation services and facilities within one-mile of the site shall also be documented. Future highway improvements, including proposed construction and traffic signalization, shall be noted.
4. Existing Traffic Conditions. Existing traffic conditions shall be documented for all roadways and intersections in the study area. This shall include documentation of traffic accident counts as recorded by the NC Department of Transportation District Engineers Office, municipal or city law enforcement, and the NC Highway Patrol. Existing traffic volumes for average daily traffic, peak highway hour(s) traffic, and peak development generated hour(s) traffic, if appropriate, shall be recorded. Manual traffic counts at major intersections in the study area shall be conducted, encompassing the peak highway and development generated hour(s), if appropriate, and documentation shall be included in the report. A volume/capacity analysis based upon existing volumes shall be performed during the peak highway hour(s) and the peak development generated hour(s), if appropriate, for all roadways and major intersections expected to be impacted by development traffic. Levels of service shall be determined for each signalized intersection or roadway segment analyzed above.
5. This analysis will determine the adequacy of the existing roadway system to serve the current traffic demand. Roadways and/or intersections experiencing levels of service E or F shall be noted as congestion locations.
6. Transportation Impact of the Development. Estimation of vehicular trips to result from the proposed development shall be completed for the average weekday, the average daily peak hours of highway travel in the study area, and if appropriate, the peak hour of traffic generation by the development. These development-generated traffic movements, as estimated, and the reference source(s) and methodology followed shall be documented. These generated volumes shall be distributed to the study area and assigned to the existing

roadways and intersections throughout the study area. Documentation of all assumptions used in the distribution and assignment phase shall be provided. All average daily traffic link volumes within the study area shall be shown graphically. Peak hour turning movement volumes shall be shown for signalized and other major intersections, including all access points to the development. Pedestrian and bicycle volumes at school crossings and as otherwise applicable shall be reported. Any characteristics of the site that will cause trip generation to vary significantly from average rates available in published sources shall be documented, including such factors as diversion of passer-by traffic, internal capture, staggered work hours, or use of transit.

7. Analysis of Transportation Impact. The total traffic demand that will result from construction of the proposed development shall be calculated. This demand shall consist of the combination of the existing traffic, traffic generated by the proposed development, and traffic due to other developments and other growth in traffic that would be expected to use the roadway at the time the proposed development is completed. If staging of the proposed development is anticipated, calculations for each stage of completion shall be made. This analysis shall be performed for average weekday traffic, the peak highway hour(s) and, if appropriate, peak development-generated hour(s) for all roadways and major intersections in the study area. Volume/capacity calculations shall be completed for all major intersections. It is usually at these locations that capacity is most restricted.
8. All access points and pedestrian crossings shall be examined for adequate sight distance and for the necessity of installing traffic signals. The traffic signal evaluation shall compare the projected traffic and pedestrian volumes to the warrants for traffic signal installation.
9. Conclusions and Recommended Improvements. Levels of service for all roadways and signalized intersections serving ten percent (10%) or more of peak-hour project traffic shall be reported. All roadways and/or signalized intersections showing a level of service below D in urban or developed areas or below C in rural areas shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed. This listing of recommended improvements shall include, but not be limited to, the following elements: internal circulation design, site access location and design, external roadway and intersection design and improvements, traffic signal installation, and operation including signal timing, and transit service

E. SUBMISSION AND IMPLEMENTATION

1. Time of Submission. The traffic impact study shall be submitted to the UDO Administrator with, and as a part of, the application for the applicable rezoning, development, or subdivision approval permit. In the case of a Planned Unit Development, the traffic impact study shall be submitted and approved prior to the accompanying major subdivision preliminary plat. The traffic impact study shall be approved concurrent with the initial approval of any Conditional

Rezoning proposal. The approval authority for the applicable land development, subdivision, or use shall also be responsible for approval of the accompanying traffic impact study.

2. Implementation. For site plans, prior to the issuance of a building permit, all required traffic impact recommendations shall be installed and inspected. For subdivisions, prior to approval of a final plat, all required traffic impact recommendations shall be installed and inspected.

3.14 PARKING

A. GENERAL

1. Each application for a zoning permit shall include information as to the location and dimensions of off-street parking and the means of ingress and egress to such space. This information shall be in sufficient detail to enable the UDO Administrator to determine whether the requirements of this section are met.

B. PARKING LOT DESIGN

1. Surfacing. All parking lots with 10 or more spaces shall provide a dustproof surface with adequate drainage facilities and must comply with the Parking Facility Landscaping requirements contained within this article. Parking facilities containing 25 or more spaces shall be paved with concrete, asphalt material, or with alternative paving material determined to exhibit equivalent water resistance and load bearing characteristics as asphalt or concrete. When parking is proposed in excess of the minimum requirements, alternative pervious surface materials are encouraged.
2. Lighting. Any lighting shall be so arranged as to direct the light and glare away from streets and adjacent property.
3. Setbacks. All parking lots shall observe a minimum front setback of not less than five (5) feet and a side yard on a corner lot of not less than five (5) feet.
4. Curb or Bumpers. The required parking setbacks shall be set off from parking areas by either continuous curb or one (1) noncontinuous stationary bumper for each parking space abutting on a yard, which curb or bumper shall not be less than five (5) inches or more than two (2) feet high.
5. Separation of Bumper and Walkways. In the event any parking stall abuts upon a walkway or sidewalk, there shall be a space of three and a half feet between the wheel bumper or curb and the edge of the walkway.
6. Off-street parking areas shall be designed to facilitate adequate movement and access by sanitation, emergency, and other public service vehicles.
7. Off-street parking areas shall be designed so that parked vehicles do not encroach upon, extend onto, or cause vehicles to back into public rights-of-way, sidewalks, or strike against or damage any wall, vegetation, utility, or other structure.
8. The size of any single surface parking lot area shall be limited to three (3) acres, unless divided by a street, building, or continuous landscaped area. Larger parking lots shall be separated by buildings or landscaped areas.

9. Paved parking areas shall have lines demarcating each parking space.
10. Off-street parking areas shall be properly maintained in all respects. In particular, and without limiting the foregoing, off-street parking area surfaces shall be kept in good condition (free from potholes, etc.) and parking space lines or markings shall be kept clearly visible and distinct.
11. Each off-street automobile parking area shall comply with the following minimum dimensions, compact spaces (eight (8) feet width by 16 feet long) may be utilized to meet 10% of the required parking:

Table 3.3: Parking Lot Dimensional Requirements

Angle (degrees)	Stall Width (feet)	Stall Depth (feet)	Aisle Width between parking spaces (feet)
0	9	9	12
20	9	14	12
30	9	16-1/2	12
45	9	19-1/6	12
60	9	20-1/2	14-1/2
70	9	20-5/6	23
90	9	18	24

C. MINIMUM OFF-STREET PARKING REQUIREMENTS

1. The number of exclusive off-street residential parking spaces required by this section shall be provided on the same lot with the principal use, unless otherwise permitted by this ordinance, and the required number of off-street parking spaces specified for each use shall be considered as the absolute minimum.
2. In the case of mixed uses (an establishment comprised of more than one (1) use; e.g. restaurant and hotel), which may include a principal and accessory use, the total requirements for off-street parking shall be the sum of the requirements of the various uses computed separately and the off-street parking space for one (1) use shall not be considered as providing the required off-street parking for any other use, except as provided for in the shared parking criteria in this article.
3. Handicapped parking spaces shall be in accordance with the regulations set forth by the Americans with Disabilities Act and shall be identified by appropriate signage. The minimum number of spaces shall be provided in accordance with the state building code.
4. Fractional space requirements shall be rounded up to the next whole space.

D. MINIMUM OFF-STREET PARKING RATIOS

1. The following table establishes the formulas to be used to calculate the number of parking spaces required for a particular use. For uses that do not correspond to the use types listed in Table 3.4, Minimum Off-Street Parking Spaces Required, the UDO Administrator shall determine the minimum parking space requirement. In such instances, the applicant shall provide adequate information for review, which includes, but is not limited to the type of use(s), number of employees, the occupancy of the building, square feet of sales, service and office area, parking spaces proposed, and hours of operation.

2. Within the CBD zoning district, no off-street parking shall be required for any nonresidential use, whether new construction or change of use/redevelopment. Within the CBD zoning district, all residential uses require full compliance with the off-street parking requirements contained herein.
3. In the BD zoning district, for nonresidential uses, where on-street or public parking facilities are located within 500 linear feet of a proposed use, measured as a straight-line distance from the entrance of the building, the minimum off-street parking requirement may be reduced by 50%. This reduction shall not apply to residential uses.
4. Within any zoning district, if the off-street parking space required by this ordinance cannot be reasonably provided on the same lot on which the principal use is located, such space may be provided on any land within 400 feet of the main entrance to such principal use.

Table 3.4: Minimum Off-Street Parking Spaces Required

Change of Use or Redevelopment in the CBD and BD District	
A change of use or redevelopment whereby the floor area of the building or parcel is not expanded by greater than 15%.	No parking required.
Change of use or redevelopment whereby the floor area of the building or parcel is expanded by greater than 15%.	Additional parking required shall be calculated based on the increase in square footage in floor area, above the 15% threshold, of the expanded building. All other applicable requirements of this section shall apply.
Change of use from a residential to nonresidential use.	50% of the required parking shall be provided. All other applicable requirements of this section shall apply.
Change of use from a nonresidential to residential use or the addition of residential uses.	Full compliance with residential off-street parking space minimum and all other requirements.
Uses	**Required Parking**
Residential Uses	
DWELLING, SINGLE-FAMILY, MANUFACTURED HOME ON SINGLE LOT, MODULAR HOMES	Two (2) spaces per dwelling unit. Nonconforming lots within the R-10 district are exempt from this requirement.
DWELLING, TWO-FAMILY (DUPLEX), MULTI-FAMILY, TRIPLEX OR QUADRAPLEX	Two (2) spaces on the same lot for each dwelling unit. In addition to this requirement, overflow parking shall be provided as follows: 1- 10 units = 2 spaces, 10- 20 units = 4 spaces, 21- 30 units = 5 spaces, 31- 40 units = 6 spaces, 41- 50 units = 7 spaces, 51-100 units = 10 spaces.
FAMILY CARE HOME	One (1) space for each attendant in addition to the required two (2) spaces per dwelling unit.
MANUFACTURED HOME PARK	Parking space sufficient to accommodate at least two (2) automobiles shall be located on each manufactured home space.
MIXED USES	One (1) space per dwelling unit in addition to that required by the other uses contained within the development.

Table 3.4: Minimum Off-Street Parking Spaces Required	
Nonresidential Uses	
ADULT ESTABLISHMENT; ELECTRONIC GAMING OPERATIONS; TATTOO AND PIERCING ESTABLISHMENT	One (1) space per 100 square feet of floor area.
ALCOHOLIC BEVERAGES, PACKAGED, RETAIL SALES; LIQUOR STORES	One (1) space per 200 square feet of floor area.
ASSOCIATIONS OR ORGANIZATIONS: CIVIC, SOCIAL & FRATERNAL; CLUBS AND LODGES CATERING EXCLUSIVELY TO MEMBERS AND THEIR GUESTS; CULTURAL ARTS CENTER, INCL. THEATERS, OFFICES, CLASSROOMS, ETC.; AND MUSEUMS, ART GALLERIES	One (1) space per 300 square feet of floor area.
AUTOMOTIVE, MAJOR AND MINOR; SERVICE STATIONS	One (1) space per each 400 square feet of floor area; One (1) space for each service bay; four (4) stacking spaces for each washing stall, plus two (2) drying spaces for each washing stall; and/or 1.5 spaces for each fuel nozzle.
BED & BREAKFAST	One (1) space for every rental room plus one (1) space for every two (2) permanent occupants.
BOTTLE SHOP AND WINE BAR; NIGHTCLUB	One (1) space per 200 square feet of floor area.
BUILDING MATERIAL DEALERS; HARDWARE, LAWN, OR GARDEN STORE; FEED, SEED, AND FERTILIZER SALES, RETAIL; FARM MACHINERY SALE AND SERVICE; FUEL & ICE DEALERS; MANUFACTURED HOME DEALERS	One (1) space per 500 square feet of floor area.
BUSINESS, COMMERCIAL, OR OTHER NON-RESIDENTIAL USE NOT ELSEWHERE CLASSIFIED	One (1) space per 200 square feet of floor area.
BUS TERMINALS AND RAILROAD STATIONS; TAXICAB STANDS	One (1) space per 500 square feet of floor area.
CHURCHES, SYNAGOGUES & RELIGIOUS INSTITUTIONS	One (1) space per every 6 seats, or (1) space per every 100 square feet of seating area in main assembly room, whichever is greater. Note: Churches located within the Southport National Register Historic District are exempt from providing off-street parking.
COMMERCIAL PARKING LOTS	One (1) space per employee; otherwise, none required.
COMMERCIAL RECREATION, INDOOR; SHOOTING RANGE, INDOOR; DANCE STUDIOS	One (1) space per every 200 square feet of floor area, excluding bowling alley lanes, range stalls, and similar areas not utilized by the public.
COMMERCIAL RECREATION, OUTDOOR; RECREATION FACILITY PRIVATE, INCL. CLUBS & RECREATION FACILITIES ASSOC. WITH MULTIPLE FAMILY COMPLEXES, GOLF COURSES, TENNIS FACILITIES, COUNTRY CLUBS, ETC; GOLF COURSE, PRIVATE OR PUBLIC, W/RELATED SERVICES INCL. PRO SHOP; SHOOTING RANGE, OUTDOOR	One (1) space per every 400 square feet of recreation-related area and/or 25 spaces per nine holes, plus one (1) space per employee on shift of greatest employment.
CONTRACTORS, EQUIPMENT & SUPPLY DEALERS & SERVICE; CONTRACTORS, HEAVY CONSTRUCTION; GRADING, PAVING, MARINE, ETC.	One (1) space per 1,000 square feet of floor area.

Table 3.4: Minimum Off-Street Parking Spaces Required	
DAYCARE, ADULT AND CHILD	One (1) space for each employee and one (1) space for every 10 children/adults or fraction thereof.
DIVERS, COMMERCIAL; FISHING, COMMERCIAL; FURRIERS AND FUR STORAGE; EXTERMINATING SERVICES	One (1) space per 400 square feet of floor area.
DRY CLEANERS; LAUNDRY, COIN-OPERATED	One (1) space for each 200 square feet of floor area used by the general public.
DRY STORAGE	One (1) space per employee, if applicable.
EDUCATIONAL FACILITY	Two (2) spaces per classroom. For high schools or college/post-secondary, one (1) space per 10 students.
FARMERS'S MARKET; FRUIT & VEGETABLE MARKET, WHOLESALE WITH INCIDENTAL RETAIL	One (1) space per 500 square feet of permanent retail area; otherwise none required if a seasonal/temporary market.
FLEA MARKET	One (1) space per 1,000 square feet of floor area.
FUNERAL HOMES	One (1) parking space for each five (5) seats in the chapel or parlor, plus one (1) for each funeral vehicle.
GOVERNMENT USE, CITY OF SOUTHPORT; GOVERNMENT USES WITH BUILDINGS, NON-CITY OF SOUTHPORT	One (1) space per 300 square feet of floor area.
HEALTH SERVICES	One (1) space per 300 square feet of floor area.
HOSPITALS	Two (2) spaces for each bed.
HOTEL, MOTEL, OR INN; HOTEL, RESIDENTIAL OR BOUTIQUE; GUEST LODGING	One (1) space for every rental room.
JAIL	One (1) space per employee on the largest shift.
KENNEL	One (1) space per 400 square feet of floor area.
LIBRARY	One (1) space per 500 square feet of floor area.
MANUFACTURING, ARTISAN	One (1) space per 500 square feet of floor area.
MANUFACTURING, GENERAL, LIMITED, AND INTENSIVE; GAS COMPANIES (LP-BOTTLED & BULK STORAGE); MOTOR FREIGHT COMPANIES, MOVERS, VAN LINES, AND STORAGE; MOTION PICTURE PRODUCTION & DISTRIBUTION; RESEARCH & DEVELOPMENT; SALVAGE OPERATIONS; WELDING, REPAIR; LAUNDRY, INDUSTRIAL; GARBAGE COLLECTION, PRIVATE (NO LANDFILLS)	One (1) space per employee on the largest shift.
MARINA, COMMERCIAL	One (1) parking space for each wet slip, one (1) parking space for every four (4) dry stack boat storage units, and where applicable 25 total 12' x 40' spaces per boat ramp, plus parking required for other uses.
MARITIME SALES, RENTAL, AND SERVICE	One (1) space per each 400 square feet of floor area and/or one (1) space for each service bay
MICROBREWERY OR MICRODISTILLERY	One (1) space per 100 square feet of floor area tasting room area; One (1) per 500 square feet for production and storage areas.

Table 3.4: Minimum Off-Street Parking Spaces Required	
NURSING & PERSONAL CARE FACILITY	One (1) space per three (3) residents, plus one (1) additional space for each employee.
OFFICE, GENERAL; RADIO & TELEVISION STATIONS, STUDIOS, AND OFFICES; MANUFACTURED HOME (INDIVIDUAL) FOR OFFICE AND/OR EXHIBITION	One (1) space per 300 square feet of floor area.
PARKS & RECREATION AREAS, MUNICIPAL	No parking required.
PERSONAL SERVICE ESTABLISHMENT	One (1) space per 300 square feet of floor area.
RECREATIONAL VEHICLE PARK	Two (2) parking spaces at each campsite + 1 per 500 sq. ft. of enclosed area for offices, maintenance facilities, etc. within the park.
RESTAURANT, CARRY-OUT	One (1) space per 200 square feet of floor area.
RESTAURANT, STANDARD & FAST-FOOD	One (1) space per 100 square feet of floor area.
RETAIL SALES, MAJOR; GROCERY STORES; SHOPPING CENTER	One (1) space per 300 square feet of floor area.
RETAIL SALES, MINOR AND MODERATE	One (1) space per 200 square feet of floor area.
SOLAR FARM	One (1) space per facility.
STORAGE, SELF-SERVICE	Minimum five (5) spaces or one (1) space for each 100 storage units, whichever is greater, plus one (1) space for each employee and two (2) spaces for manager's quarters, if present.
TELEPHONE COMMUNICATION FACILITY, UNATTENDED; WIRELESS TELECOMMUNICATION FACILITY OR COMPLEX, FREESTANDING AND SUBSTANTIAL MODIFICATIONS	One (1) space per facility.
US POSTAL SERVICE; PACKAGE DELIVERY SERVICES, COMMERCIAL	One (1) space per 400 square feet of floor area.
UTILITY STATIONS & PLANTS (PUBLIC & PRIVATE) INCL. LIFT STATIONS, SUBSTATIONS, ETC.	One (1) space per employee employed on-site, if applicable; Otherwise, none required.
VETERINARY SERVICES	One (1) space per 500 square feet of floor area
WAREHOUSING, GENERAL; WHOLESALE TRADE, DURABLE AND NON-DURABLE GOODS;	One (1) space per 1,000 square feet of gross floor area
WATER TRANSPORTATION INCL. DOCKS, TUGBOATS, BARGES, AND EXCURSIONS	No parking required.

E. SHARED PARKING

The required parking space for any number of separate uses may be combined in one lot but the required space assigned to one use may not be assigned to another use, except that one half (½) of the parking spaces required for churches, theater, or assembly halls whose peak attendance will be at night or on Sundays may be assigned to a use which will be closed at night and on Sundays.

F. UTILIZATION OF BOAT SLIPS AS REQUIRED PARKING

1. A boat slip is defined herein as a space designed for the mooring of a single watercraft and usually projecting from a dock. Eating and drinking establishments and water-oriented retail businesses may utilize boat slips to meet off- street parking requirements subject in accordance with the following standards:
   a) All slips must be under the ownership or long-term control of the subject business.
   b) Boat slips must be available on a first come, first served basis, with no fee assessed for use.
   c) Boat slips must be reasonably designed to accommodate customer boats.
   d) The dock facility must be properly accessible in accordance with the regulations governing the maneuvering of water craft on the adjacent waterway.
   e) Boat slips must only be used for transient mooring of customers frequenting said establishment and no extended storage of vessels shall be allowed.
   f) Boat slips are allowed to meet off-street parking requirements strictly on a one parking space per 20' linear dockage.

3.15 PEDESTRIAN FACILITIES

A. These regulations are intended to promote walking and other forms of nonmotorized transportation, allow the citizens to reap significant social, environmental, and health benefits that are often not available in auto-oriented places. This will be achieved by ensuring safe, convenient, and accessible sidewalks to provide opportunities for exercise, help people meet and socialize, and give children and others who do not drive mobility options.

B. Sidewalks shall be required on at least one (1) side of the street, in all new major subdivisions, multi-family developments, and new construction nonresidential development of a principal use within the BD, CBD, HC, OI, and MF districts. Redevelopment or change of use of existing nonresidential or multi-family structures does not require the installation of sidewalks.

C. Sidewalks shall be installed within the right-of-way and connect to adjacent facilities where applicable. Where right-of-way widths adjacent to the edge of pavement are in excess of 10 feet, sidewalks shall be separated by a minimum three (3) foot landscaped strip adjacent to the edge of pavement.

D. In all cases, sidewalks shall extend to the property line.

E. Sidewalks shall be at least five (5) feet wide and constructed of concrete at least five (5) inches thick. Sidewalks shall consist of a minimum of six (6) inches of concrete at driveway crossings or shall be adequately reinforced otherwise. All sidewalks must meet ADA requirements, including where necessary to serve required cluster mailbox locations within subdivisions or multi-family development.

F. Sidewalks built adjacent to an NCDOT road facility shall be built to meet NCDOT sidewalk standards.

G. Pedestrian walkways shall form an on-site circulation system that minimize conflict between pedestrians and traffic at all points of pedestrian access to on-site parking and building entrances. Pedestrian walkways shall connect building entrances to one another and from building entrances to public sidewalk connections. Pedestrian walkways shall be provided to any pedestrian access point or any parking space that is more than 50 feet from the building entrance or principal on-site destination. All developments containing more than one (1) building shall provide walkways between the principal entrances of the buildings.

3.16 LIGHTING

A. APPLICABILITY

1. The requirements of this section shall apply to all new construction nonresidential development, multi-family development, and major subdivisions. Changes of use do not trigger applicability with this section.
2. The following activities are exempt from the requirements of this section:
   a) Outdoor lights used for a temporary event;
   b) Outdoor lights used exclusively for recreational activities, concerts, plays or other outdoor events that are open to the public, provided that the event or function meets all other applicable ordinance requirements. Such lighting shall be located at least 50 feet from any adjoining residential district or use;
   c) Outdoor lighting exempt from the section shall only be illuminated while the activity takes place and during high traffic periods immediately before and after the event; or
   d) One and two-family residential uses.

B. FIXTURE HEIGHT

1. Lighting fixtures shall be a maximum of 40 feet in height within a parking lot or street right-of-way and shall be a maximum of 15 feet in height within non-vehicular pedestrian areas. Where placed adjacent to sidewalks, light fixtures shall not exceed 15 feet in height. All light fixtures located within 50 feet of any residential use or residential property boundary shall not exceed 15 feet in height.
2. The UDO Administrator shall allow fixtures above this height to provide internal lighting for ball fields, recreational facilities, arenas, and similar facilities.

C. LIGHT SOURCE (LAMP)

1. Incandescent, florescent, metal halide, light emitting diodes (LED), fiber optics, or color corrected high-pressure sodium are permitted. The UDO Administrator shall have the authority to deny use of particular lamps based on the color spectrum emitted or the lamp brightness. Non color corrected high pressure sodium lamps are prohibited.

2. The same light source type must be used for the same or similar types of lighting on any one site throughout any development.
3. The light source color temperature for outdoor lighting shall not exceed 3,000 degrees Kelvin.

D. FIXTURE

1. Fixtures shall be mounted in such a manner that the cone of light is contained on-site and does not cross any property line of the site.
2. The light source shall be completely concealed behind an opaque surface and recessed within an opaque housing and shall not be visible from any street right-of-way or adjoining properties. Overhead lighting fixtures shall be designed to prevent light from emitting upwards towards the sky.
3. Under canopy lighting fixtures should be completely recessed within the canopy and shall not create glare off-site.
4. Spotlights are prohibited throughout the City.

3.17 LANDSCAPING AND BUFFERS

A. PURPOSE

1. The governing body and advisory boards of the City of Southport recognize the importance of the contribution made to the community by the abundance of native trees and vegetation. It is this vegetation that gives the city an aesthetic appeal that contributes to its growth and economic prosperity. As economic growth occurs, the removal of this valued vegetation sometimes results, contributing to a depletion of a most valuable resource. The city feels it is necessary to both conserve and restore those valuable assets and declares the objective of this section to be as follows:
   a) To provide visual and spatial buffering between adjoining and competing uses;
   b) To enhance the beautification of the city;
   c) To enhance property values and protect public and private investment;
   d) To provide a habitat for living things that might not otherwise occur in an urban environment; and
   e) To ensure that planting areas are distributed within developing sites in a manner which will provide shade, buffer noise, and filter glare.

B. APPLICABILITY

1. Landscape installation is required for all new construction non-residential and multi-family uses or a change in use or redevelopment where such change would result in the addition of 10 or more parking spaces. The following site areas are required to be addressed in accordance with the provisions of this section:
   a) Street yards
   b) Foundation planting
   c) Parking facility landscaping
   d) Bufferyards

C. GENERAL PROVISIONS

1. All planted and retained living material, required to meet the provisions of this section, shall be maintained by the owner of the property on which the material is located. Any planted material which becomes damaged or diseased or dies shall be replaced by the owner within 60 days of the occurrence of such condition. If, in the opinion of the UDO Administrator, there are seasonal conditions which will not permit the timely replacement of the vegetation (e.g., too hot or too cool for successful replanting), this requirement may be administratively waived until a time certain.
2. All planted material subject to the provisions of this ordinance shall be of a native species and in accordance with the planting material list as provided in Tables 3.5 through 3.7.
3. Nonliving screening buffers shall be maintained, cleaned, or repaired by the owner of the property on which the buffer is located. Such buffers shall be kept free of litter and advertising.
4. Up to 15% of the area to be landscaped may be covered with surfaces specifically intended to afford intensive use and enjoyment by employees or the public (such as sidewalks, walking paths, bench and table pads, etc.).
5. It is encouraged that stormwater management systems be integrated into landscaping areas.
6. Prior to the issuance of a certificate of occupancy, the property owner shall submit a final planting plan to the UDO Administrator demonstrating compliance with this ordinance.

D. LANDSCAPING ON PUBLIC PROPERTY

It shall be unlawful for any person to place or cause to be placed on any public street, road, alley, sidewalk, or other public right-of-way within the city any wall, fence, gate, brick, stone, wood, rock, vegetation, or other structure, material, or substance above the horizontal plane of the existing ground.

E. PLANTING MATERIAL SIZE AND SPECIES

1. Where the provisions of this section apply, the plant lists in Tables 3.5 through 3.7 shall be utilized for the selection of required landscape material.
2. The minimum height and diameter at breast height (DBH = 4.5 feet above ground) at planting for the following planting categories/list shall be as follows:
   a) Canopy Trees. At the time of planting, the tree shall have a minimum three (3) inch DBH with a height of eight (8) to 10 feet. Canopy trees shall be of a species having an average minimum height of 30 feet and a minimum mature crown spread of 20 feet.
   b) Understory Trees. At the time of planting, the tree shall have a minimum two (2) inch DBH. Understory trees shall be of a species having an average minimum height of 10 feet and a minimum mature crown spread of 12 feet.

c) Shrubs. Shrubs shall have a minimum mature height of 24 inches and a minimum planting height of 18 inches.

Table 3.5: Canopy Tree Species

Botanical Name	Common Name	Recommended Varieties	Height/Spread (feet)
Acer rubrum	Red Maple	October Glory, Red Sunset, Brandywine, Sun Valley	40-50/25-35
Betula nigra	River Birch	Heritage, Duraheat	40-70/40-60
Celtis laevigata	Sugarberry		60-80/50-70
Diospyros virginiana	Persimmon		30-60/15-25
Fraxinus pennsylvanica	Green Ash	Patmore	50-60/25-30
Liquidambar styracifua	Sweetgum		60-80/40-60
Magnolia grandiflora	Southern Magnolia	Little Gem, Brackens Brown Beauty, Alta, Kay Paris, Edith Bogue, Claudia Wannamaker, D.D. Blanchard	25-60/15-30
Morus rubrum	Red Mulberry		35-50/15-30
Nyssa sylvatica	Black Gum		30-50/20-30
Pinus palustris	Longleaf Pine		60-100/20-30
Pinus taeda	Loblolly Pine		60-100/30-60
Prunus serotina	Black Cherry		40-60/30-60
Quercus hemisphaerica	Laurel Oak	Darlington	40-60/30-40
Quercus virginiana	Live Oak		60-80/60-80
Quercus lyrata	Overcup Oak		40-60/30-50
Quercus nigra	Water Oak		50-80/30-60
Quercus nutallii	Nuttall Oak		40-60/30-50
Quercus phellos	Willow Oak		80-100/40-50
Taxodium ascendens	Pondcypress		60-80/15-20
Taxodium distichum	Baldcypress		50-70/20-30

Table 3.6: Understory Tree Species

Botanical Name	Common Name	Recommended Varieties	Height/Spread (feet)
Acer barbatum	Southern Sugar Maple		20-25/15/20
Acer buergerianum	Trident Maple		20-25/10-15
Aesculus pavia	Red Buckeye		10-20/10-15
Amelanchier arborea	Serviceberry	Autumn Brilliance	20-25/10-15
Asimina triloba	Pawpaw		15-20/10-15
Carpinus caroliniana	Ironwood		20-30/15-25
Cercis canadensis	Redbud	Forest Pansy, Oklahoma, Texas White	20-30/20-25
Chamaecyparis thyoides	Atlantic White Cedar		40-60/10-20

Table 3.6: Understory Tree Species			
Botanical Name	Common Name	Recommended Varieties	Height/Spread (feet)
Chionanthus virginicus	Fringe Tree		10-20/15-20
Cornus florida	Flowering Dogwood	Cloud 9, Cherokee Chief, Cherokee Princess	15-25/10-20
Crataegus phaenopyrum	Washington Hawthorne		25-30/20-25
Ilex decidua	Possumhaw	Warren's Red, Council Fire	15-20/10-15
Ilex opaca	American Holly		20-30/15-20
Ilex vomitoria	Yaupon Holly	Hoskin's Shadow, Kathy Ann, Katherine	15-20/10-15
Ilex x attenuata	Topel Holly	Savannah, Foster's #2, East Palatka	20-30/10-15
Ilex x	Nellie Stevens Holly	Nellie R. Stevens	15-25/10-15
Ilex hybrids	Red Holly	Oakleaf, Cardinal, Robin, Liberty, Patriot	10-15/8-15
Juniperus virginiana	Eastern Red Cedar		30-50/10-20
Magnolia virginiana	Sweet Bay Magnolia		20-30/10-20
Myrica cerifera	Wax Myrtle		4-20/20-40
Oxydendrum arboretum	Sourwood		20-50/10-25
Persea borbonia	Redbay		30-60/10-25
Prunus angustifolia	Chickasaw Plum		4-20/20-40
Prunus caroliniana	Carolina Cherry Laurel		20-30/15-20
Sabal palmetto	Palmetto Palm		10-30/10-15
Sassafras albidum	Sassafras		30-60/25-40
Zanthoxylum clava-herculis	Prickley Ash		15-30/10-25

Table 3.7: Shrub Species			
Botanical Name	Common Name	Recommended Varieties	Height/Spread (feet)
Aralia spinosa	Devil's Walking Stick		10-20/6-10
Aronia arbutifolia	Chokeberry		6-10/3-6
Bignonia capreolata	Cross Vine	Tangerine Beauty	30' spread
Callicarpa americana	American Beautyberry		5-10/5-10
Calycanthus floridus	Carolina Allspice		5-10/5-10
Cephalanthus occidentalis	Buttonbush		6-12/5-10
Clematis armandii	Evergreen Clematis	vine	20' spread
Clematis virginiana	Autumn Clemantis Vine		12-36' spread
Clethra alnifolia	Summersweet	Hummingbird, Sixteen Candles, White Doves	2-3/4-6
Cyrilla racemilflora	Swamp Titi		12-36/6-25
Decumaria barbara	Climbing Hydrangea	deciduous vine	20' spread
Euonymus americanus	Strawberry Bush/Hearts-a-bustin'		4-6/4-6

Table 3.7: Shrub Species			
Botanical Name	Common Name	Recommended Varieties	Height/Spread (feet)
Fothergilla gardenia	Dwarf Fothergilla		2-4/2-4
Gelsemium rankenii	Swamp Jessamine vine		20' spread
Gelsemium Sempervirens	Carolina Jessamine vine		20' spread
Hydrangea Arborescens	Smooth Hydrangea	Annabelle	3-5/3-5
Hydrangea quercifolia	Oakleaf Hydrangea	Alice, Snow Queen	5-10/5-15
Ilex glabra	Inkberry Holly	Shamrock	6-8/8-10
Ilex verticillata	Winterberry	Winter Red, Red Sprite	5-15/5-15
Ilex vomitoria	Yaupon Holly	Hoskin's Shadow Kathy Ann, Katherine	15-20/10-15
Ilex vomitoria 'nana'	Dwarf Yaupon	Bordeaux, Schillings	3-4/4-5
Ilex hybrids	Holly	Emily Brunner, San Jose, Mary Nell	15-25/10-15
Itea virginica	Virginia Sweetspire	Little Henry, Merlot	3-4/3-5
Jasminum nudiflorum	Winter jasmine		3-4/3-4
Lonicera sempervirens	Coral Honeysuckle	native vine	20' spread
Lonicera x heckrottii	Goldflame vine Honeysuckle		20' spread
Myrica cerifera	Southern Wax Myrtle		6-20/6-20
Osmanthus americanus	Devilwood		15-25/10-20
Rhapidophyllum hystrix	Needle Palm		5-8/5-8
Rhododenron atlanticum	Coastal Azaela		2-4/2-4
Rhus copallina	Winged Sumac		6-12/12-36
Sabal minor	Dwarf Palmetto		4-5/4-5
Vaccinium stamineum	Farkleberry/Sparkleberry		12-15/6-12
Viburnum nudum	Possomhaw Viburnum		5-10/5-10
Viburnum obovatum	Walter's Viburnum		4-10/3-8
Viburnum plicatum var. tomentosum	Doublefile Viburnum	Shasta, Mariesii	8-10/8-10
Viburnum prunifolium	Blackhaw Viburnum		10-20/10/15
Viburnum x burkwoodii	Burkwood Viburnum		8-10/5-7
Viburnum rufidulum	Southern Blackhaw		10-20/10-20
Yucca aloifolia	Spanish Dagger Yucca		6-12/6-10
Yucca filamentosa	Adam's Needle Yucca	Color Guard, Garland Gold, Bright Edge	2-4/2-4

F. STREET YARDS

1. A street yard shall be provided for applicable development located adjacent to a public street right-of-way, with a minimum depth of 50% of the required front or corner side setback as measured perpendicular to the street right-of-way, provided that no street yard in excess of 10 feet in depth shall be required. Street yards shall not be required in the BD or CBD districts.
2. Planting requirements. One (1) canopy tree per every 50 linear feet; one (1) understory tree per every 20 linear feet of road frontage; 20 shrubs per 100

linear feet of road frontage. Where overhead utility lines are present, the location, height, and selection of tree material shall be established in consultation with the Public Services Director.

3. Property used for a business primarily engaged in the sale and display of motor vehicles, manufactured housing, boats, recreational vehicles, or similar equipment may have the required landscaping within the streetyard installed at a minimum height of 18 inches at planting and not exceeding three (3) feet at maturity.

G. PARKING FACILITY LANDSCAPING

1. All parking facility areas containing more than 10 spaces shall be landscaped in accordance with the following minimum standards:
   a) Minimum standards: At least eight (8) percent of the gross paved area of a parking facility shall be landscaped and located in the interior. For purposes of this section, interior shall mean the area within the parking facility curb or pavement and extensions that create a common geometric shape such as a square, rectangle or triangle.
   b) Trees and shrubbery planted pursuant to this section shall include at least one (1) canopy tree and six (6) shrubs. At least fifty 50 percent of the trees planted shall be of a canopy tree species as outlined in Table 3.5.
   c) In support of the above, the following standards shall apply to interior plantings:
      i) All plantings shall be evenly distributed throughout the parking facility.
      ii) All interior plantings shall be curbed or otherwise physically protected.
      iii) Consecutive parking spaces shall incorporate landscape peninsulas no more than 10 spaces apart and at least the ends of all parking rows. Peninsulas shall contain at least 100 square feet in area and at least eight (8) feet in width, measured from back of curb/barrier to back of curb/barrier.
2. The provisions of this section shall not apply to property used for a business primarily engaged in the sale and display of motor vehicles, manufactured housing, boats, recreational vehicles, or similar equipment or for any facility which is limited to periodic or intermittent use for vehicular parking, such as parking lots for churches or recreational facilities, provided the facility is completely covered by grass or otherwise presents a landscaped effect .

H. FOUNDATION PLANTINGS

1. For all portions of buildings, which are adjacent to parking facilities or internal drive aisles, foundation plantings shall be required and located between the buildings face and the parking or drive isle curb. Where sidewalks will be

provided, the planting shall be located on the building side of the sidewalk. The following minimum standard shall apply:

a) The area of the building face adjacent to the parking area or internal drive isle shall be calculated and multiplied by a minimum of 12%. The resultant total square footage shall be planted as landscaped areas of shrubs, grass, and groundcover. Understory trees are encouraged where ample space is available.

2. Exceptions from these requirements may be granted when the following circumstances exist or when any of the following conditions are proposed on the site:

a) For those portions of buildings which have drive up services along any side or rear of the building. Such examples would include but not be limited to pharmacies, banks, fast food restaurants, and dry cleaners.

b) On the rear side of a building when less than 10% of the total required parking is located in the rear of the building and the rear is not adjacent to any public right-of-way.

I. BUFFERYARDS

1. Where there are competing or conflicting land uses and/or differences in the intensity of the land uses, bufferyards shall be required as provided herein.
2. Perpendicular encroachments by driveways, pedestrian-ways, and utilities are permitted, but should be minimized to the extent feasible.
3. Bufferyards shall not overlap into required street yards.
4. Stormwater BMPs and impoundments may be placed within a required buffer only when the applicant demonstrates that no reasonably practicable alternative exists, and provided that the performance standard of the buffer can be maintained. Bioretention areas may be placed within buffers without additional justification provided the performance standard of the buffer is maintained.
5. All regulated and specimen trees located within required buffers shall be retained and protected.
6. Bufferyards range in width from 10 to 40 feet. The following table illustrates the required bufferyard widths:

Table 3.8 Bufferyard Width

	Adjacent Property Zoning and Required Buffer Width (feet)					
Applicant Zoning District	#1: OS	#2: R-10, R-20	#3: MF, MH, O&I	#4: BD, CBD	#5: HC	#6: HI, LI
#1: OS	**0'**	**0'**	**0'**	**0'**	**0'**	**0'**
#2: R-10, R-20	**0'**	**0'**	**0'**	**0'**	**0'**	**0'**
#3: MF, MH, O&I	20'	20'	**0'**	20'	20'	20'
#4: BD	10'	20'	10'	**0'**	**0'**	**0'**
#5: CBD	**0'**	**20'**	**10'**	**0'**	**0'**	**0'**
#6: HC	40'	40'	20'	0'	**0'**	20'
#7: HI, LI	40'	40'	40'	20'	20'	**0'**

7. Bufferyard types identify the type of vegetation required. The following table outlines the requirements of a Type A and Type B bufferyard:

Table 3.9 Bufferyard Type		
Buffer Type	Type A	Type B
Adjacent Land Uses	One and Two-family Residential	Non-Residential/Multi-family
Minimum # of Trees	2 canopy, 4 understory per 1,000 square feet	1 canopy, 2 understory per 1,000 square feet
Minimum # of Shrubs	12 per 1,000 square feet	8 per 1,000 square feet
Minimum % of Evergreen	75%	50%

8. Alternatives: Fences, Walls, and Earth Berms.
   a) Earthen berms are encouraged as a viable alternative to Type A or B bufferyards. Such berms shall be installed at a minimum height of six (6) feet above the lowest adjacent grade and shall include a minimum of 10 shrubs per 1,000 square feet.
   b) If required landscaping of a bufferyard makes up over 20% of the total square footage of a lot, the use of a solid wall or fence may reduce the yard requirement by one half (½). If the yard requirement is reduced, it shall meet the following:
      i) A fence or solid wall shall be of material compatible with the principal building in composition and color;
      ii) Maximum height of a fence or solid wall used in a bufferyard shall be eight (8) feet, the top two (2) feet of which may have up to 50% opacity; and
      iii) Plantings shall be located between the fence or wall and the adjoining property line.

3.18 TREE PROTECTION AND LANDSCAPE PRESERVATION

A. GENERAL

The overarching goal of this section is to proactively manage the City of Southport's Urban Maritime Forest and its tree canopy. This management will take the form of tree preservation when at all possible, and mitigation through the replanting of trees when others must be removed.

A healthy and expansive tree canopy provides a wide range of benefits to the citizens of Southport. Aesthetically, the nurturing of trees and tree canopy provides for a pleasant and beautiful community in which both residents and visitors alike benefit from. Economically, a robust tree canopy provides a consistent cooling effect on our community and on individual properties that can significantly reduce cooling costs for homeowners and businesses alike. Property values on both public and private land are increased when trees form part of the landscape. A healthy tree can increase residential property values by as much as 27 percent.

One large tree can lift up to 100 gallons of water out of the ground and discharge it into the air in a day, helping to filter the air that we breathe and control storm water. In our coastal location, Southport's tree canopy protects our community and helps mitigate the damage caused by wind during tropical storms and hurricanes.

The city finds that the preferred method used by developers of proposed development for minor, major, or PUD development in the city is to clearcut the entire area to be developed and then to replant trees in mitigation of the damage done by the clearcutting. The City finds that, even when fully mitigated pursuant to this ordinance, both the aesthetic and environmental damage done by the mass and indiscriminate destruction of forest by such clearcutting can never be fully restored until the trees planted in mitigation reach maturity many years in the future. For this reason, the City seeks to limit the environmental and aesthetic damage done in the process of development to the extent reasonably possible by reducing the number of trees removed in development rather than planting new trees in substitution therefore.

For all these reasons, the City of Southport places great value on our Urban Maritime Forest and the tangible and intangible benefits that it provides. This section provides a plan to ensure that existing trees are protected, in particular our signature heritage Live Oaks, and at the same time provides guidelines for mitigation through the replanting of native species when it is necessary to remove trees.

B. PURPOSE

1. The general purpose of this section is to regulate and control the planting maintenance, and removal of trees and vegetation on both public and private property.
2. The specific purposes of this section are:
    a) To safeguard and enhance property values and to protect public and private investment through the maintenance and protection of significant existing trees.
    b) To prevent lot clearing;
    c) To outline the City's responsibilities with regard to protection and maintenance of Southport's urban forest trees and landscaping on public property; and
    d) To prevent the indiscriminate removal of trees and ensure mitigation when trees are necessarily removed.

C. AUTHORITY TO TREAT OR REMOVE TREES ON PRIVATE PROPERTY

1. The UDO Administrator may cause or order the removal of any tree or part thereof on public or private property which is in an unsafe condition, damaging or likely to damage sewers or other public improvements facilities, or which is infested by an injurious fungus, disease, insect or other pest.
2. The UDO Administrator may cause or order necessary treatment for any tree on public or private property which is infested by any injurious fungus, disease, insect or other pest when they determine such action is necessary to prevent the spread of any such injurious condition or pest and to prevent danger therefrom to persons or property or to vegetation planted on adjacent property.
3. Before exercising the authority conferred by this section, the UDO Administrator shall order the owner or occupant of the property to take corrective action. The order shall be in writing and shall state that the action specified therein must be

taken within 10 consecutive calendar days after the order is mailed. The order shall be mailed by certified or registered mail, return receipt requested. Failure to comply with the order of the UDO Administrator shall be a violation of this section. If the condition has not been corrected or if action that would lead to a timely correction of the condition has not been taken within the time specified above, the UDO Administrator or their designee may seek an injunction, order of abatement or other equitable remedy in a court of competent jurisdiction against the property owner to ensure compliance in accordance with NCGS 160A-175.

D. TREE IMPACT PERMIT

1. Removal or damage to any protected tree or development activities within the critical root zone of any protected tree without the prior issuance of a tree impact permit or the failure to conform to the terms and conditions thereof is hereby prohibited. A protected, or Regulated Tree, is defined as follows:

   Regulated Tree: The subsurface roots, crown, and trunk of any self-supporting woody perennial plan such as a large shade tree, which usually has one (1) main stem or trunk, and has a measured DBH as follows:

   A. A hardwood tree, having a single trunk at least eight (8) inches in DBH. Trees may have a single or multiple trunks, but at least one trunk must measure eight (8) inches in diameter.
   B. A coniferous tree, having a single trunk at least twelve (12) inches DBH.
   C. Any tree, of any species, with a DBH of thirty (30) inches or greater **(Specimen Tree)**

2. For previously platted residential lots or one or two-family residential uses, a tree impact permit shall be required to remove or conduct any development within the critical root zone of any protected regulated tree located within any setback and for a protected specimen tree located anywhere on said property. An as-built tree survey will be required prior to the Certificate of Occupancy for new residential construction.

3. For nonresidential, multi-family, or major subdivisions, a tree impact permit shall be required to remove any protected tree located anywhere on site. An as-built tree survey shall be required for Major Site Plans prior to the Certificate of Occupancy and for Major Subdivisions prior to Final Plat approval.

4. Any protected trees permitted to be removed pursuant to any tree impact permit shall be mitigated pursuant to subsection H (entitled “Mitigation”) of this section of this ordinance. All persons seeking a permit for removal of a protected tree as provided above shall make application to the city via the tree impact permit application.

E. EXCEPTIONS

1. The UDO Administrator may waive the requirements of this section during a city declared state of emergency in accordance with NCGS 166A-19.22.
2. If any regulated tree shall be determined to be a hazard tree such that it may:
    a) Immediately endanger the public health, safety or welfare; or
    b) Cause an immediate disruption of public services.

F. TREE PLAN

1. A tree plan must be submitted to, reviewed, and approved by the UDO Administrator prior to the issuance of a tree impact permit.
2. For nonresidential, multi-family, major subdivisions, or planned unit developments the tree plan shall be a scaled plan not less than 1"= 30' and shall be prepared by a landscape architect registered in the state and the tree plan shall provide the following information:
    a) Two separate zones during the planning phase:
        i) Tree Removal Zones – Zones that show the impacts of utility, infrastructure, and drainage improvements. These improvements would still require mitigation for all regulated live oaks 8" or greater in diameter.
        ii) Tree Safe Zones/Lot Preservation – The area designated on a preliminary plat of a minor or major subdivision or PUD that makes up the individual lots where trees are to be left untouched. 80% of the lot is to be left untouched prior to lot development.
    b) Property line with bearings and distances, easements, marsh and wetland delineations and other information necessary to depict the development area;
    c) All existing and proposed buildings, paving, infrastructure, and utilities;
    d) All protected regulated and specimen trees located on the site indicating the diameter, species, and the critical root zone for each protected tree;
    e) All regulated and specimen trees located on the site proposed to be removed, including species and size;
    f) All proposed newly planted trees indicating the DBH and height at planting, and species;
    g) Tree protection zones, protective fencing details, and tree wall and/or tree well details;
    h) Maintenance plan identifying the methods to ensure the viability of all trees and the party responsible for continuing maintenance;
    i) Listing of total number of trees and DBH inches to be removed and the total number of trees and DBH inches to be planted by species; and
    j) Seal of the design professionals with signature and date.
3. For residentially zoned vacant lots or one and two-family residential uses, the tree plan to be submitted as part of the permitting process shall include a hand drawn

sketch, rendering, or copy of an existing plat or survey of the property indicating the location of those regulated or specimen trees proposed to be removed, as well as any trees proposed to be planted as mitigation (if applicable).

a) TREE RETENTION REQUIREMENTS PER LOT IN THE R10, R20, MF, AND PUD ZONING DISTRICTS

1. 3,000 sq ft - 1 broadleaf canopy tree
2. 6,500 sq ft - 2 broadleaf canopy trees
3. 11,000 sq ft - 3 broadleaf canopy trees
4. 14,000 sq ft - 4 broadleaf canopy trees
5. 20,000+ sq ft - 5 broadleaf canopy trees

b) In cases where the tree retention requirements above prohibit the development of a lot, mitigation will be required.

c) In cases where the lot does not have canopy trees, the developer must plant to the requirements in 3 a).

4. Distance from utilities. Any tree required by this section which is placed within 20 feet lateral distance from the centerline of an above ground electric utility line (the line connecting pole centers) should have a maximum expected maturity height as follows:

a) Zero (0) to 10 feet lateral distance of the centerline, 15-foot maximum expected maturity height; and

b) Zero (0) to 10 feet lateral distance of the centerline, 15-foot maximum expected maturity height; and

c) Outside 20 feet of lateral distance, trees should be placed in the most feasible manner to avoid future conflict with aboveground electric utilities and violations of the National Electric Safety Code, and to avoid conflict with any below ground utilities and drainage facilities. Variations to such distance requirements may be made with the approval of the Public Services Director.

G. CRITERIA FOR ISSUANCE OF TREE IMPACT PERMIT

1. Unless the applicant for a permit under this section is engaged in new construction, no tree impact permit shall be issued unless one (1) or more of the following criteria are met:
   a. The protected tree is dead, severely diseased, injured or in danger of falling close to existing or proposed structures.
   b. The protected tree is causing disruption of existing utility service or causing drainage or passage problems upon the rights-of-way.
   c. The protected tree is posing an identifiable threat to pedestrian or vehicular safety.
   d. The protected tree to be removed is located within 15 feet of the principal structure, within five (5) feet of detached buildings (sheds, accessory structures, garages), pools, hardscape patios, and driveways.
   e. The protected tree violates state or local safety standards.

f. Removal of the protected tree is necessary to enhance or benefit the health or condition of adjacent trees or property.

2. Any tree removed requiring mitigation shall be mitigated through the planting of new material as provided in 3.18 H Mitigation. Mitigation shall not be required for trees that are dead, severely diseased, injured or if the tree poses a threat to an existing structure due to the poor condition of the tree.

H. MITIGATION

1. The indiscriminate removal of trees is not allowed. A tree impact permit request must be accompanied by a clarification of purpose/need. Mitigation is required when it is determined that a tree may be removed. The removal of any protected regulated tree within any setback or the removal of any protected specimen tree located anywhere on site, if approved, must be mitigated in accordance with the following standards:
    a. The total diameter at breast height (DBH) of all applicable protected trees proposed for removal shall be totaled. The resultant number of DBH inches to be removed must be planted back on the site with an appropriate number of trees to replace the equivalent DBH of those trees removed. For example, if 72 inches DBH of specimen trees are proposed for removal from a site, the equivalent number of new trees required to meet the 72 inches of DBH removed shall be planted back on site (24 trees installed at three (3) inches Caliper would meet this requirement).
    b. Existing residentially zoned vacant lots or one and two-family residential uses shall only be required to mitigate 25% of the total DBH of regulated or specimen trees removed. All other development types and/or proposals for any major subdivision shall be subject to the full mitigation replacement ratio requirement provided in subsection 1 (a).
    c. A minimum of one (1) regulated or specimen tree of the same species removed shall be installed through mitigation. Where regulated or specimen canopy trees are removed, the replanting requirement shall consist of a minimum 25% heritage Live Oak (Quercus virginiana) and an overall minimum of 50% canopy trees. Where regulated or specimen Live Oak (Quercus Virginiana) trees are removed, the replanting requirement shall consist of a minimum of 50% such species.
    d. Any replanted trees shall be canopy or understory trees as provided in Tables 3.5 or 3.6.
    e. Utilization of understory trees shall not exceed 50% of the required mitigation plantings.
    f. A mitigation plan that contains between 10 to 50 understory trees shall include, with balanced representation, a minimum of three understory tree species as provided in Table 3.6.
    g. A mitigation plan that contains over 50 understory trees shall, with balanced representation, include a minimum of four understory tree species as provided in Table 3.6.
    h. Minimum sizes for mitigation plantings are canopy trees 3” diameter at breast height and understory trees 2” diameter at breast height.

2. Any mitigation trees required as a result of the removal of regulated or specimen trees may be counted to meet the requirements of the street yard, buffer, or parking facility landscaping requirements.
3. Significant Heritage Live Oak Trees retained on site will be eligible for a mitigation credit as follows:
    a. 10" to 20": Retaining and preserving Heritage Live Oaks of this size will receive credit with a multiplier of 2. For example, retaining a 10" Live Oak would equal 20" of mitigation credit.
    b. 20" to 30": Retaining and preserving Heritage Live Oaks of this size will receive credit with a multiplier of 3. For example, retaining a 20" Live Oak would equal 40" of mitigation credit.
    c. Greater than 30": Retaining and preserving Heritage Live Oaks of this size will receive credit with a multiplier of 4. For example, retaining a 30" Live Oak would equal 120" of mitigation credit.
4. Mitigation trees must be planted within a year of the tree permit being issued. Failure to do so will constitute a violation of this section.

I. LOT CLEARING AND PREPARATION

1. No alteration of vegetation, trees, or landscape material in excess of three (3) inches DBH shall occur on a lot or building site prior to the issuance of a zoning or tree impact permit. Some clearing of understory trees and shrubs may be required to prepare a site for survey, inspection by governmental agencies as part of any permitting process, or to stake the proposed building site.
2. On densely vegetated lots, a walking access trail not to exceed three (3) feet may be cleared for access purposes. Permission to clear any understory trees and shrubs less than three (3) inches DBH for said walking access trail shall be permitted following consultation with the UDO Administrator; however, clearing shall be kept to an absolute minimum.
3. Violations of the lot clearing and preparation section shall constitute a minimum (1) one-year delay in the issuance of any city issued development approval.
4. In the event that a lot has been cleared without obtaining all proper permits from the city and the UDO Administrator is unable to determine the exact number of trees which have been removed in violation of this ordinance, a civil penalty shall be levied under this subsection as follows:
    a) If the property is located within a residential district, the offender shall be subject to a civil penalty in the amount of $1.00 for each square foot of the total size of the lot that was cleared (not based on the lot area cleared). In addition, the offender shall be required to plant two (2) replacement canopy trees per 10,000 sf or fraction thereof.
    b) If the property is located within a nonresidential district, the offender shall be subject to a civil penalty in the amount of $2.00 for each square foot of the total size of the lot that was cleared (not based on the area cleared). In addition, the offender shall be required to plant four (4) replacement canopy trees per 10,000 sf or fraction thereof.

c) In addition to the civil penalties set forth in subsections 4(a) and 4(b) above, the offender shall be subject to all enforcement provisions of Section 2.15.D of this Unified Development Ordinance.

J. TREE PROTECTION DURING CONSTRUCTION

1. A major objective of this section is to encourage the preservation of existing vegetation wherever possible while allowing quality development to take place. As a result, the following measures shall be required for protected trees during the construction process.
2. Protective fencing not less than four (4) feet high or other construction barrier shall be placed at and completely encompass the critical root zone of all protected trees.
3. Any tree whose critical root zone will be affected by soil removal shall have roots cut clearly by trenching at a point at least one (1) foot outside the construction barrier installed as required above.
4. The following shall be prohibited within the critical root zone of any protected tree, except as may be necessary when constructing, repairing or replacing public utilities:
   a) Grading and excavation which involves cutting or filling to a depth of more than three (3) inches.
   b) Pouring of any material onto ground which is toxic to plants.
   c) Installing, depositing, placing, storing, or maintaining any stone, brick, sand, concrete or other materials which may impede the free unobstructed growth of or passage of water, air, and fertilizer to the roots.
   d) Storing of any construction materials within the critical root zones of the protected trees.
   e) Attaching any sign, poster, notice or other object, or fastening any guy wire, cable, rope, nail, screw, or other device to any protected tree for any reason other than that of a protective nature to the tree.
   f) Causing or encouraging any fire or burning of any kind near or around any tree.
5. In the event that a developer is unable to meet the critical root zone requirements of this section, the developer must have a Landscape Architect or ISA Certified Arborist prepare guidelines on how to protect the Critical Root Zone to the maximum extent possible during the development process.

K. DAMAGE TO TREES

1. It shall be unlawful to intentionally damage or destroy trees planted on municipally owned or controlled property except as a part of a city-authorized improvement program.
2. It shall also be a violation of this section to attach or place any rope or wire (other than one to support a young or broken tree), sign, poster, handbill, or anything to any such public tree.
3. A person damaging a tree on public property in violation of this section shall be liable to the city for such damage, including any loss of value. In the event damage is so pervasive as to result in the treatment or removal of the tree, the person damaging such tree shall also be liable for costs of treatment or removal. Values of

public trees or the amount of damages thereto will be determined by a certified arborist retained by the City of Southport.

4. The monies collected for damages and loss of value will be placed in the City of Southport Tree Mitigation Fund and are to be used solely for restitution for damages or for other costs incurred by the city for violation of this section.

L. HAZARD TREE

1. Every owner of any tree overhanging a street or sidewalk within the city is responsible for pruning the branches so that such branches shall not obstruct vehicles or pedestrians. Provided further, that all property owners within the city are hereby required to cause the removal of any dead or diseased trees on their property whenever such trees constitute a hazard to life and property or harbor insects or diseases which constitute a potential threat to other trees. Failure to take such action shall be a violation of this section.

2. The UDO Administrator or his designated representative shall give written notice to any owner violating the terms of this section of said violation and give said owner no less than 10 days to perform the duties in connection with his or her property as specified in (a). If said owner or occupant shall refuse or neglect to perform the duties hereof, the UDO Administrator or his designee may seek an injunction, order of abatement or other equitable remedy in a court of competent jurisdiction against the property owner to ensure compliance in accordance with NC GS 160A-175.

3. In case the owner(s) of any lot or other real property is unknown or their whereabouts is not known after diligent efforts to identify and locate said person, then a copy of the written notice herein above referred to shall be posted upon the premises. The City Clerk shall make an affidavit setting out the facts and circumstances justifying the posting of said property.

M. PROTECTION OF UTILITIES

Public utilities shall exercise reasonable care and utilize best management practices to avoid damage and injury to public trees during the installation and maintenance of its facilities. The City's Public Services Director or their designee will provide assistance on any utility project to see that the public utilities can be installed or repaired with minimal damage to any public tree utilizing standards outlined in the City of Southport Urban Forest Management Plan (2011).

N. NOTIFICATION FOR WORK NEAR PUBLIC TREES

1. As part of any new construction project, no person or business shall perform any grading, excavation, place any fill, compact the soil or construct any building structure, street, sidewalk, driveway, pavement or public utility within 25 feet of any public tree without first notifying and consulting with the UDO Administrator. Any such work shall be conducted in accordance with this section.
2. Any public utility constructing or maintaining any overhead wires or underground pipes or conduits within 25 feet of public trees shall consult with the Public Services Director prior to performing work which may cause injury to public trees.

O. PRUNING REQUIREMENTS

A permit is not required for the pruning of trees. However, in order to prevent excessive pruning and topping of trees and to prevent pruning that will be hazardous to the health and natural appearance to the tree, compliance with approved pruning standards is required, and failure to meet these standards is a violation of this section. The UDO Administrator shall maintain on file at all times a copy of the current edition of Pruning Standards by the American Society of Consulting Arborists and shall make copies of such standards available for the cost of reproduction upon request.

P. PENALTIES FOR VIOLATIONS OF THIS SECTION

1. Any person removing any tree in violation of this section, in addition to mitigation requirements, shall be subject to a civil penalty of one hundred dollars ($100.00) per inch diameter at breast height (DBH) of the tree.
2. Any person removing any regulated tree after notice of the requirements of this section, in addition to the mitigation requirements, shall be subject to a civil penalty of two hundred dollars ($200.00) per inch DBH of the tree.
3. Any person removing any City Owned Tree in violation of this section, in addition to the mitigation requirements, shall be subject to a civil penalty of three hundred dollars ($300.00) per inch DBH of the tree.

Q. CITY OF SOUTHPORT; RESPONSIBILTY

1. It is the responsibility of the City of Southport to maintain the City's iconic, Urban Maritime Forest. The City shall undertake a program of review, maintenance, and regulatory oversight in order to maintain the current and future health of our forest landscape.

R. FORESTRY COMMITTEE; RESPONSIBILITY.

1. The City of Southport Forestry Committee shall review and recommend actions to preserve and enhance the community's trees. The committee's actions will include protection of existing trees, tree replenishment, public education, and any other function related to the community's urban forest environment.

S. APPROVED TREE LIST

1. The City shall maintain a list of approved native trees for various applications. A copy of the approved native tree list can be found in Section 3.17.

T. DEVELOPMENT OF ANNUAL TREE PROGRAM.

1. The City Manager, in cooperation with the Forestry Committee, shall annually review its tree maintenance and installation needs including new projects, pruning of existing trees and replacement of diseased or damaged trees in conjunction with development of the City's annual budget. The City, in coordination with the Forestry Committee, will undertake an annual planting program, focusing on Southport's iconic live oaks (Quercus virginiana) on the City's public areas and rights

of way. The Forestry Committee will identify planting locations with a focus on replacing trees that have been lost/removed as well as to expand the forest canopy.

U. COMMUNITY AWARENESS

1. The City shall undertake programs, as may be determined by the Forestry Committee, Director of Tourism, and/or the Director of Parks and Recreation, which enhance the community's awareness of the value of trees and qualify for points toward the Tree City, USA Growth Award. The City shall annually hold an Arbor Day Ceremony, planned and organized by the Southport Forestry Committee, which focuses attention on the value of trees in the urban environment, and encourages public participation in tree planting or other activities supporting Southport's urban forest.

V. MAINTENANCE OF PUBLIC TREEES/PROJECTS

1. The Public Services department shall be responsible for the maintenance of trees on municipal property with the advice of the City Manager or his designee. The Public Works department and Forestry Committee will annually assess trees located on public property and identify those that require maintenance or removal. The City will undertake any required maintenance utilizing City Staff, or when required, contract the work to be completed within current ANSI standards and/or International Society of Arboriculture (ISA) Best Management Practices.
2. The City shall have the right to prune, maintain and remove any tree on public grounds which interferes with the safe flow of traffic, any traffic control device or sign.
3. It shall be unlawful for any person to top or cut back to stubs the crown of any tree on City property or ROW.
4. Trees severely damaged by storms or other causes where required pruning practices are impractical may be exempted from this section as determined by the City Manager. This also includes dead, dying, or diseases determined by the City Manager or their designee and which pose a threat to the safety of the community.
5. All other City departments shall cooperate fully with the City Manager or his designee in carrying out the responsibilities of this section.
6. The planting, maintenance, and/or removal activities of public trees shall meet current arboricultural best management practices (ANSI A300 Standards) and follow guidelines outlined in the 2011 City of Southport Urban Forest Management Plan. City departments, contractors, community organizations and individuals performing tree related activities on City-managed property are required to adhere to these standards.

3.19 SIGNS

A. GENERAL

1. It is the intent of this section to protect public interest, safety and welfare and, to that end, the purpose of this section is specifically declared to be as follows:
    a) To promote economic development and preserve the historic character while minimizing the negative impacts that signs may have on the visual appearance of the City of Southport;

b) To provide orientation and guidance to our tourists and visitors and identification of public areas, natural resources, historical and cultural landmarks and places of interest and in so doing reduce confusion and traffic congestion;
c) To inform and educate visitors and residents of opportunities and events both commercial and noncommercial occurring in the City of Southport; and
d) To permit and regulate signs in such a way as to support and compliment land use objectives.

2. Encroachment Into Right-of-Way. No part of any sign shall be located on or extended into a public right-of-way without all applicable permits except as allowed by this section.
3. Visibility. No sign or structure shall be erected or maintained to impede safe and adequate visibility from vehicles or for pedestrians.
4. Illumination. Where permitted, illuminated signs shall be subject to the following conditions:
    a) Any light used for illumination shall be shielded so that the beams or rays of light will not shine into surrounding areas or on the public roadway.
    b) Neither direct nor reflected light from any light source shall create a traffic hazard or distraction to operators of motor vehicles on public thoroughfares.
    c) Sign illumination shall be only at the minimum level required for nighttime readability.
5. Signs for Nonconforming Uses. Signs for nonconforming uses, where such uses may be continued, shall be allowed, but shall comply with all regulations for signs in the zoning district where such signs are located.

B. APPLICABILITY

1. Except as otherwise provided in subsection C, it shall be unlawful to erect or maintain any sign without first obtaining a sign permit. No permit shall be required, however, for maintenance of a sign restored back to its original condition. Failure to secure a permit shall constitute a violation of this section.
2. A scaled drawing displaying the location of the sign on the associated property, the sign dimensions, construction, height, setbacks from all property lines, lighting, electrical and all other elements associated thereto shall accompany all sign permit applications.
3. If actual work for the permitted sign on the site is not commenced within 60 days from the date of such sign permit or if substantial work for the permitted sign is suspended for a period of 60 consecutive days after issuance of the sign permit, the permit shall automatically become null and void. Provided, however, for new construction, the sign permit shall not become null and void until 60 days after the Certificate of Occupancy has been issued.
4. When any permit has been revoked under the terms of this section, the permit fees shall not be refunded. If a sign permit is denied, however, the permit fee will be refunded.
5. All permanent signs shall be designed and constructed to meet the requirements of the NC Building Code. Depending on the type of sign construction, the building inspector may require engineer certified plans.
6. Any sign proposed to be constructed beyond the mean high-water line requires the issuance of a Special Use Permit in accordance with the requirements set forth in Article

2. Any such sign shall not be located off-premise and must comply with applicable sign type provisions provided in this section.

C. SIGNS EXEMPT FROM PERMIT REQUIREMENTS

Unless otherwise prohibited hereinafter the following signs are exempt from permit requirements but subject to the provisions provided herein:

1. Signs which are not designed to be visible beyond the boundaries of the lot upon which they are located and/or from any public thoroughfare or right-of-way, except as such signs may be regulated hereinafter.
2. Official governmental notices and notices posted by governmental officers in the performance of their duties; governmental signs or signs installed under governmental authority.
3. Noncommercial Flags, pennants, or insignia of any nation, organization of nations, state, county or city, any religious, civic or fraternal organization, or any educational or cultural facility.
4. Temporary decorations or displays.
5. Temporary or permanent signs to warn of danger or hazardous conditions, including signs indicating the presence of underground cables, gas lines, and similar devices or signs providing directions around such conditions.
6. Merchandise, pictures, or models or products or services which are incorporated as an integral part of a window display.
7. Signs displayed on trucks, buses, trailers or other vehicles which are being operated in the normal course of a business which are affixed or painted onto moving vans, delivery trucks, contractors' vehicles, and equipment and the like provided that, when not being so operated, such vehicles are parked or stored in areas appropriate to their use as vehicles.
8. Trademarks or product names which are displayed as part of vending machines, dispensing machines, automatic teller machines, and gasoline pumps.
9. Signs required for or specifically authorized for a public purpose by any law, statute, or ordinance. These signs may be of any type, number, area, height above grade, location or illumination authorized by law, statute, or ordinance under which such signs are required or authorized.
10. Signs that display information pertinent to the safety or legal responsibilities of the general public with regard to a particular piece of property shall be located on the premises to which the information pertains.
11. Signs attached to buildings (integral sign) which identify buildings and which are permanently integrated by etching, embossing, and/or engraving or which are otherwise permanently made a part of building facades.
12. Special event signs are limited to up to four (4) signs per event. These signs may remain in place for up to 30 days within a calendar year. Signs shall be removed immediately following the event.
13. Signs affixed to windows of vehicles displaying information regarding the sale of said vehicles.
14. Real Estate Signs. Temporary signs advertising the sale, rental, or lease of the property on which said signs are located are allowed, provided such signs are not illuminated.

a) Residential zoned property. One (1) double faced sign per street frontage is allowed. Each sign face square footage shall not exceed six (6) square feet (excluding sign support structure).
b) All other zoned property. One (1) double faced sign per street frontage is allowed. Signs may not exceed 32 square feet per face or eight (8) feet in height.
c) Removal. All such signs shall be removed within seven (7) days after the closing of the sale, rental, or lease of the property.

15. Directional Signs. Directional signs shall be located on the premises to which directions are indicated. Directional signs shall not exceed four (4) square feet per face, two (2) faces per sign, and shall not exceed three (3) feet in height if freestanding or six (6) feet in height if attached to the principal or an accessory structure. The maximum number of signs allowed per lot shall be four (4). These signs may be internally or externally illuminated.
16. Incidental Signs. Incidental signs shall be located on the premises to which the information pertains. These signs shall be single-faced only and wholly attached to a building (including the windows or doors).
17. Copy Changes and Maintenance. No permit shall be required for copy changes made to a changeable copy sign, menu board, marquee sign, or off-premise sign; provided any such changes do not change the classification of the sign under this section. No permit shall be required for maintenance where no structural changes are made.
18. Political Signs. Multiple temporary signs with a noncommercial message and no larger than nine (9) square feet in area, may be erected by a property owner on their property for a ninety (90) day period prior to a primary or general election involving candidates for federal, state, or local offices. During this time, a property owner is allowed one larger sign, not to exceed thirty-two (32) square feet. These signs shall be removed within ten (10) days following the election.
    Within NCDOT right-of way, sign placement and duration shall be in accordance with NCGS 136-32 during the period beginning on the 30th day before the beginning date of "one-stop" early voting under NCGS 163-227.2 and ending on the 10th day after the primary or election day, subject to the following provisions. A person must obtain the permission of any property owner of a residence, business, or religious institution fronting the right-of-way where a sign would be erected. Signs must be placed in accordance with the following:
        a) No sign shall be permitted in the right-of-way of a fully controlled access highway.
        b) No sign shall be closer than three (3) feet from the edge of the pavement of the road.
        c) No sign shall obscure motorist visibility at an intersection.
        d) No sign shall be higher than 42 inches above the edge of the pavement of the road.
        e) No sign shall be larger than 864 square inches.
        f) No sign shall obscure or replace another sign.
        g) No sign shall be located in the city's right-of-way.

19. Construction Signs. Construction signs shall be allowed provided such signs do not exceed one (1) sign per street frontage with a maximum of two (2) signs per construction site. Such signs shall not exceed 32 square feet in area display face and no

more than 10 feet in height. Construction signs shall not be erected prior to the issuance of a building permit and shall be removed within seven (7) days of the issuance of a certificate of occupancy.

20. Fence-wrap signs affixed to fences surrounding a construction site may be allowed in accordance with NCGS 160D-908.
21. Temporary Signs. Each lot in a residential zoning district or each establishment within a nonresidential zoning district shall be allowed one (1) temporary sign not exceeding six (6) square feet or four (4) feet in height. Such sign shall not be constructed utilizing wood, cement, steel, or other similar structures of a permanent nature. Such signs shall be easily removed and placement thereof shall not be of a permanent fashion.
22. A-frame Sign. Any premises, including those containing multiple businesses, may place only one (1) A-frame sign per street frontage, per business.
    a) Placement: The sign must be placed directly in front of the business it promotes. Placement of the sign must be in accord with the Americans with Disabilities Act, which requires four (4) feet of sidewalk clearance in addition to the amount of space occupied by the sign. The sign shall be placed in a manner so as not to impede the line of sight for vehicular and/or pedestrian traffic. Along streets with diagonal or perpendicular parking, the sign may be placed within one (1) foot of the curb but must not obstruct a pedestrian's pathway from a parked car to the sidewalk. Along streets with parallel parking, the sign must be at least two (2) feet from the curb. No sign may be placed where the unobstructed space for the passageway of pedestrians is reduced to less than four (4) feet. No signs are allowed in driveways or on improved city streets.
    b) The sign must not exceed 48 inches in height, 24 inches in width and eight (8) square feet per side in area (which includes legs/stand/bracing).
    The sign must be constructed of materials that present a finished appearance and have locking arms on the sides that enable the sign to withstand high winds.
    c) The sign must be removed and stored inside the business after business hours or at dusk (whichever comes first) and may not be outside on days when the business is closed. A-frame signs shall not be artificially illuminated.
    d) Any person erecting an A-frame sign or a portable off-premise sign shall indemnify and hold harmless the city and its officers, agents and employees from any claim arising out of the presence of the sign on city property or rights-of-way. Any person erecting an A-frame sign must sign an indemnification agreement approved by the city attorney prior to the issuance of a permit. The indemnification agreement must be accompanied by proof of insurance covering the liability assumed in this subsection and the agreement.

D. SIGNS PROHIBITED IN ALL ZONING DISTRICTS

The following signs and/or sign features shall not be erected or maintained in any zoning district within the planning jurisdiction of the City of Southport.

1. Signs on roadside appurtenances or snipe signs. On- or off-premise signs on city owned roadside appurtenances, including, but not limited to roadside benches, planters, utility poles, trees, and refuse containers.
2. Vehicle/Trailer signs. Signs placed on vehicles or trailers which are parked or located for the primary purpose of displaying said sign.

3. Signs of illusion. Signs with optical illusion of movement by means of a design which presents a pattern capable of reversible perspective, giving the illusion of motion.
4. Signs resembling traffic signals. Signs displaying intermittent light resembling the flashing light customarily used in traffic signals, or used by police, fire, ambulance, or other emergency vehicles, nor shall any sign use the word “stop,” “danger,” or any other words, phrase, symbol, or character in a manner that might be construed as a public safety warning or traffic sign.
5. Animated signs and flashing signs.
6. Signs obstructing access. Signs which obstruct free ingress to or egress from a driveway or a required door, window, fire escape, or other required exit way.
7. Billboard Signs.
8. Any sign or outdoor advertising display which contains statements, words or pictures of an obscene character as defined in NCGS 14-190.1 such as will offend public morals or decency.
9. Feather flags.
10. Any temporary or permanent off-premise sign unless explicitly permitted by this ordinance.

E. ON-PREMISE SIGNS: RESIDENTIAL DISTRICTS R-10, R-20, MF, MH, AND PUD

The following signs may be allowed within residential zoning districts subject to the issuance of a sign permit. Within a PUD, the following signs may only be permitted in the residential portion of the development.

1. Subdivision and multi-family development signs must either be freestanding ground signs or attached wall signs. If the signs are freestanding ground signs, the height shall be limited to six (6) feet from grade and the minimum setback shall be 10 feet. Each entrance may have two (2) signs no more than 32 square feet per face.
2. Nonresidential Uses in Residential Zoning Districts.
   a) One permanent ground mounted sign may be permitted on a lot containing a nonresidential use in a residential zoning district provided the sign meets the following requirements:
      1. The sign shall be set back a minimum of 10 feet from the street right-of way and any adjacent lot lines.
      2. The maximum sign area shall be 32 square feet.
      3. The sign may include a changeable copy sign, to be included as part of the maximum sign area.
      4. No such sign or any portion of the structure shall exceed six (6) feet in height.
      5. The sign may only be illuminated through an external light source.
   b) Attached single faced wall signs shall be permitted for all nonresidential uses in a residential district in the same manner as permitted for nonresidential uses in the BD zoning district.

F. ON-PREMISE SIGNS: NON-RESIDENTIAL DISTRICTS CBD, BD, HC, O/I, LI, HI AND PUD

The following signs may be allowed within nonresidential zoning districts subject to the issuance of a sign permit. Within a PUD, the following signs may only be permitted in the nonresidential portion of the development.

1. Attached Single Face Wall Sign. Shall be allowed on all sides of a business. The total allowable tenant face signage shall not exceed 25% of the building face of 32 square feet, whichever is greater.

   a) Single tenant building. Wall area shall be total area of the applicable exterior wall.
   b) Multi-tenant building. Wall area shall be defined by that area of the exterior wall enclosed by the intersection of the interior floor, ceiling and wall(s) of the tenant's space.

2. Roof Signs. Signs on the surfaces of a mansard roof and on parapets shall be allowed provided the signs do not extend above the roof or parapet to which they are attached. The size of the sign shall be subject to the 25% allowable area for an attached single face wall sign.
3. Projecting Double Face Signs. One (1) projecting sign per street front shall be allowed.
    1. Signs shall not project more than four (4) feet from the facade of the building.
    2. Clearance over sidewalks shall be at a minimum of nine (9) feet and clearance over streets, alleys or driveways shall be a minimum of 14 feet.
    3. Signs shall not project above third story of the building or above the building soffit, eave line, or building parapet.
    4. The maximum sign area for a projecting sign shall be nine (9) square feet.
    5. Projecting signs shall not be internally illuminated.
4. Freestanding Ground Sign. One (1) freestanding ground sign shall be allowed per street front per lot. Freestanding ground signs are not allowed in the CBD zoning district.
    1. Such signs may contain signage for each establishment within a multi-tenant building subject to the height and size requirements provided in Table 3.10. See Table 3.10 for height and area requirements based on zoning district in which it is located.
        a) Each sign for multi-tenant signs shall be uniform in color and make. Individual logos using the same color palette can be incorporated.

Table 3.10 Freestanding Ground Sign Size

Zoning District	Maximum Height	Maximum Square Footage per Face
CBD	0	0
HC	25 ft.	125 sq. ft.
BD/OI/PUD	8 ft.	60 sq. ft.
LI/HI	25 ft.	187.5 sq. ft.

5. Window Signs. Window signs in all nonresidential districts do not require a sign permit provided they comply with the standards in Section 3.19 and not occupy more than 25% or 25 SF of the window, whichever is less.
6. Electronic Message Center (EMC) Signs. EMC signs which do not exceed ten (10) square feet per sign face are allowed and shall be included in the allowable sign area, provided, however, if an existing freestanding sign is located on the lot, then the EMC sign must be incorporated into the existing freestanding sign.
    1. The EMC portion of the sign may not exceed 30% of the permitted sign face. No variations in light intensity are permitted.
    2. EMC signs shall only be permitted on municipal property.

7. Inflatable Sign. One (1) inflatable sign shall be allowed once per calendar year per business.
    1. Inflatable signs are prohibited in the Central Business District (CBD) or Business District (BD)
    2. Further, inflatable signs shall not be internally illuminated; shall not be higher than 25 feet above grade; and shall not be erected or maintained on a building parapet or roof. The time allowed for these signs shall not exceed 10 days. These signs shall be located on either an attached, tethered, or freestanding structure. The sign and its structure shall not block or inhibit the visibility of vehicular traffic or in any way pose a danger to pedestrians or vehicular traffic or property.

G. MAINTENANCE

1. All signs erected must be properly permitted and inspected for compliance with the applicable codes of the State of North Carolina and the City of Southport and with other parts of this ordinance.
2. Sign in disrepair. Signs that are unsafe, or which no longer can be easily recognized for their intended purpose due to disrepair or fading.
3. The following maintenance requirements must be observed for all signs visible from any public street or highway within the jurisdiction of this article.
    a) No sign shall have more than 20% of its surface area covered with disfigured, cracked, ripped, or peeling paint or poster paper for a period of more than 30 successive days.
    b) No sign shall be allowed to stand with bent or broken sign facing, broken supports, loose appendages or struts or be allowed to stand more than 15 degrees away from the perpendicular for a period of more than 30 successive days.
    c) No sign shall be allowed to have weeds, vines, landscaping, or other vegetation growing upon it and obscuring its view from the street or highway from which it is to be viewed for a period of more than 30 successive days.
    d) No neon or internally illuminated sign may be allowed to stand with only partial illumination for a period of more than 30 successive days.
    e) If a sign or sign structure is damaged such that more than 50% of the value is lost, with such determination made by the UDO Administrator, any repair or replacement must be done in conformance with this Section.

H. ILLUMINATION

1. Where illuminated signs are permitted, they shall conform to the following requirements:

a) All signs illuminated under the provisions of this section shall be constructed to meet the requirements of the National Electrical Code.

b) Signs which contain, include, or are lighted by any flashing, intermittent, or moving lights are prohibited, except Electronic Message Center signs.

c) Illuminated signs lighted internally with glass or plastic faces bearing the advertisements and diffusing the direct rays of the light source to prevent any direct line of sight with said light source shall be no more than six (6) square feet. Exceptions include signage for municipal uses and for public health and safety.

d) Backlit and halo lighting that otherwise meet the provisions of Section 3.19 of this ordinance are allowed.

e) No sign shall be brighter than is necessary for clear and adequate visibility.

f) No sign may display light of such intensity or brilliance to cause glare or otherwise impair the vision of the driver or result in a nuisance to a driver.

g) No sign may be of such intensity or brilliance that it interferes with the effectiveness of an official traffic sign, device, or signal.

h) The light source color temperature for window and outdoor lighting shall not exceed 3,000 degrees Kelvin.

i) Neon, argon, other gas tube, or light emitting diode (LED) with the appearance of neon lighting or signage shall be prohibited on external walls or placed in the interior window. A business is allowed one (1) neon or LED open sign no larger than 11”x24”.

j) Flood and display lighting shall be shielded so as to prevent direct rays of light from being cast into a residential area or district and/or on a public right-of-way from any direction. Such lighting shall also be shielded so as to prevent view of the light source from a residence or residential district and/or vehicles approaching on a public right-of-way from any direction. In addition, no sign shall permit light to emit upwards towards the sky.

k) Flame as a source of lighting is prohibited.

I. MURALS

Decorative works of art, defined as drawings or murals that do not direct attention to an organization, a business operated for profit, a product, commodity or service for sale or lease shall be required to obtain a sign permit and meet the following guidelines:

1. Murals shall not be located on the side of a structure that is adjacent to or directly across a right-of-way across from a residential structure unless written approval from the adjacent property owners is obtained by the applicant.

2. Murals located on a primary frontage of a structure shall be subject to the wall sign area allowances for the district which they are located.
3. Murals located on rear and secondary facade of a structure shall not be subject to square footage limitations, provided such murals do not contain commercial copy, to include any tradename, trademark, or the name or logo of the establishment associated with the mural.
4. Murals may not extend beyond the eaves, parapet, or sides of a building, nor project from the surface.
5. Murals shall be maintained at all times in a state of good repair. It is the responsibility of the owner to ensure that the mural is maintained and does not suffer from extensive discoloration.
    a. Materials. The paint used for the mural shall not be reflective, neon, or fluorescent. The paint shall be of high quality and weatherproof.
    b. Colors. The overall color scheme must be selected to be harmonious with the area and blend with the historical colors of the community. Murals are to be visual aesthetics of the historic district.
    c. Theme. The theme of a mural should promote the greater community including historic and regional factors and be compatible in design with the historical character of Southport.

J. NONCONFORMING SIGNS

All nonconforming, previously unprohibited signs existing on the date of the adoption of this Ordinance shall be allowed to remain unless structurally altered or damaged greater than 50% of the value of the sign. This does not preclude changing the face of the sign with the applicable permit.

K. SIGN ENFORCEMENT

1. Notice of Violation. The UDO Administrator shall have the authority to issue a notice of violation for all violations of this section in accordance with Section 2.15 Enforcement of this ordinance. Where the owner of the sign is indicated on the sign or is otherwise apparent or known to the UDO Administrator, a copy of the notice of violation shall be delivered to the sign owner by hand delivery, or mail, or by attaching a highly visible sticker reading “VIOLATION” to the face of the sign. The letter, and/or sticker shall include the date that it was attached to the sign with instructions of the violation, and to contact the Administrator immediately.
2. Time to Remedy Violation. All sign violations shall be remedied within 15 days
3. Extension of Time for Compliance. The UDO Administrator shall have the authority to grant a single 15-day extension of time within which to remedy the violation of any sign.
4. Remedies for Failure to Comply.
    a) In addition to or in lieu of the other remedies set forth in this ordinance, the UDO Administrator shall have the authority to issue a remove order for any sign not repaired or in violation by the foregoing provisions. Remove orders shall be issued to and served upon the person(s) described in subsection (1) by the means set forth therein. The sign shall

be removed 15 days after the service of the remove order at the expense of the offender. The remove order shall describe with particularity the location of the sign to be removed and all of the reasons for issuance of the remove order, including specific reference to the provisions of this section which have been violated. In the event it is not claimed within 15 days, the administrator shall have authority to dispose of the sign.

b) The UDO Administrator shall have the authority to remove, without notice, and impound any sign that is hazardous; or attached to trees, utility poles or natural features; or abandoned signs; and/or signs erected without a permit.

5. Removal and Recovery of Expense. In the event of failure to comply with the requirements of a remove order, the UDO Administrator may cause such sign to be removed. The sign owner and property owner may be jointly and severally liable for the expense of removal. Notice of the cost of removal shall be served upon the person(s) described in subsection (1) by the means set forth therein. If said sum is not paid within 30 days thereafter, said sum shall be collected by the city in a civil action in the nature of debt, which shall not subject the offender to the penalty provisions of NCGS 14-4.

3.20 NONCONFORMITIES

A. GENERAL

There are existing uses of land, structures, lots of record, signs, and site features that were lawfully established before the effective date of this ordinance or a subsequent amendment thereto, that now do not conform to standards and requirements of this ordinance. Such uses, structures, lots, signs, and site features are collectively referred to as “nonconformities.” The purpose and intent of this section is to allow nonconformities to continue to exist, but to regulate their continued existence and limit their expansion so as to bring them into conformity to the extent that is reasonably practicable.

B. CONTINUATION – REPAIR AND MAINTENANCE

1. Continuation. Nonconformities are allowed to continue in accordance with the requirements of this section.
2. Maintenance Allowed. Nonconformities are allowed and encouraged to receive minor repairs and routine maintenance that are necessary to maintain the nonconformity and its surroundings in a safe condition and to protect against health hazards.
3. Strengthening Allowed. Nothing in this ordinance shall prevent the strengthening or restoration to a safe or lawful condition of any part of any building or structure declared unsafe or unlawful by the city’s building inspector.
4. Change of ownership/tenancy. No change of title or possession or right to possession of property involved with a nonconformity shall be construed to prevent the continuance of such nonconformity.

C. NONCONFORMING LOTS OF RECORD

1. Legal Nonconforming Lot not meeting minimum lot size requirements. Any lot of record existing as of the effective date of this ordinance that has dimensions and area requirements which are less than required by the district in which it is located, may be used as a building site for any permitted use in that district subject to compliance with all required setbacks or applicable dimensional standard exceptions, and all other applicable development standards.
2. Contiguous nonconforming lots owned by the same person, which were legally subdivided and recorded in Brunswick County prior to August of 1973, may be combined for the purpose of re-positioning lot lines as long as all of the net resulting lots are less non-conforming. No additional lots may be created through this process, as the number of lots resulting from the reconfiguration must be equal to or less than the number of lots originally in place. The resulting lots must be more conforming to all city standards than they were prior to undertaking this process. Any structure in existence on any of these contiguous lots at the time of reconfiguration cannot create new non-conformities or increase the extent of existing non- conformities with respect to yard size and setback requirements.

D. NONCONFORMING STRUCTURES (DIMENSIONAL NONCONFORMITY)

Where a lawfully established principal structure, accessory structure, fence, wall, pier, dock, deck, staircase, driveway or similar structure exists as of the effective date of this ordinance that could not be built under the terms of this ordinance by reason of restrictions on area, lot coverage, height, yards or other characteristics of the structure or its location on the lot, such structure may be continued so long as it remains otherwise lawful and compliant with all other state or federal regulations, including substantial damage/improvement flood damage prevention ordinance regulations, subject to the following provisions:

1. Nonconforming structures subject to damage by fire, explosion, tornado, earthquake, hurricane or similar uncontrollable cause may be reconstructed in the same location and with the same footprint as existed prior to damage. In no instance shall replacement of a nonconforming structure increase the nonconformity or result in a larger structure than existed prior to damage.
2. Nonconforming structures with maintenance and repair needs may be replaced in the same location and with the same footprint in accordance with a previously approved site plan or building permit, as applicable; in the same location and up to the same dimensions as originally existed; or in compliance with the current dimensional requirements.

E. NONCONFORMING USES

The lawfully established use of building or premises existing as of the effective date of this ordinance may be continued although such use does not conform to the provisions of this ordinance, and nonconforming uses therein changed are subject to the following regulations:

1. A nonconforming use may be extended throughout any portion of a completed building that, when the use was made nonconforming by this ordinance, was manifestly designed or arranged to accommodate such use. However, a nonconforming use may not be extended to additional buildings or to land outside the original building.
2. A nonconforming use of open land may not be extended to cover more land than was occupied by that use when it became nonconforming.
3. Any structure used for single-family residential purposes and maintained as a nonconforming use may be replaced with a similar structure of a larger size, so long as the replacement does not create new nonconformities or increase the extent of existing nonconformities with respect to yard size and setback requirements. In particular, a manufactured home may be replaced with a larger manufactured home, and a "single-wide" manufactured home may be replaced with a "double-wide." This paragraph is subject to the limitations stated in abandonment and discontinuance of nonconforming situations.

F. ABANDONMENT OR DISCONTINUANCE OF NONCONFORMING SITUATIONS

A. When a nonconforming use is discontinued for a consecutive period of 180 days for any reason other than destruction/repair the property involved may thereafter only be used for conforming purposes.

B. For purposes of determining whether a right to continue a nonconforming situation is lost pursuant to this subsection, all of the buildings, activities, and operations maintained on a lot are generally to be considered as a whole. For example, the failure to rent one apartment in a nonconforming apartment building or one space in a nonconforming manufactured home park for 180 days shall not result in a loss of the right to rent that apartment or space thereafter so long as the apartment building or manufactured home park as a whole is continuously maintained. But if a nonconforming use is maintained in conjunction with a conforming use, discontinuance of a nonconforming use for the required period shall terminate the right to maintain it thereafter. And so, if a manufactured home is used as a nonconforming use on a residential lot where a conforming residential structure also is located, removal of that manufactured home for 180 days terminates the right to replace it.

Article 4: Subdivision Regulations

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4.1 GENERAL

A. The purpose of this article is to support and guide the proper subdivision of land within the jurisdiction of the city in order to promote the public health, safety, and general welfare of the citizens of Southport. This article establishes standards for the division of land and creation of lots. These standards are necessary in order to:

1. Ensure proper legal description, identification, monumentation and recordation of real estate boundaries;
2. Further the orderly layout and appropriate use of the land;
3. Provide safe, convenient, and economic circulation of vehicular traffic;
4. Provide suitable building sites which are readily accessible to emergency vehicles;
5. Ensure the proper installation of streets and utilities;
6. Help conserve and protect the physical and economic resources of the city; and
7. Facilitate adequate provisions for transportation, water, sewerage, and other public requirements.

4.2 NO SUBDIVISION WITHOUT PLAT APPROVAL

A. As provided in G.S. 160D-807, no real property lying within the planning jurisdiction of the City shall be subdivided until it conforms to all applicable sections of this Article and approved pursuant to the procedures for the division of land and creation of lots provided in Article 2 of this ordinance. Violations of this Article shall be subject to the penalties set forth in Section 2.15 of this ordinance. Any sale or transfer of land in a subdivision subject to these regulations by reference to an unapproved plat or the use of a metes and bounds description shall be considered a violation of this Article.

B. In accordance with G.S. 160D-807(b), the provisions of this section shall not prohibit any owner or its agent from entering into contracts to sell or lease by reference to an approved preliminary plat for which a final plat has not yet been properly approved under the subdivision ordinance or recorded with the register of deeds, provided the contract does all of the following:

1. Incorporates as an attachment a copy of the preliminary plat referenced in the contract and obligates the owners to deliver to the buyer a copy of the recorded plat prior to closing and conveyance.
2. Plainly and conspicuously notifies the prospective buyer or lessee that a final subdivision plat has not been approved or recorded at the time of the contract, that no governmental body will incur any obligation to the prospective buyer or lessee with respect to the approval of the final subdivision plat, that changes between the preliminary and final plats are possible, and that the contract or lease may be terminated without breach by the buyer or lessee if the final recorded plat differs in any material respect from the preliminary plat.
3. Provides that if the approved and recorded final plat does not differ in any material respect from the plat referred to in the contract, the buyer or lessee may not be required by the seller or lessor to close any earlier than five days after the delivery of a copy of the final recorded plat.

4. Provides that if the approved and recorded final plat differs in any material respect from the preliminary plat referred to in the contract, the buyer or lessee may not be required by the seller or lessor to close any earlier than 15 days after the delivery of the final recorded plat, during which 15-day period the buyer or lessee may terminate the contract without breach or any further obligation and may receive a refund of all earnest money or prepaid purchase price.

C. The provisions of this section shall not prohibit any owner or its agent from entering into contracts to sell or lease land by reference to an approved preliminary plat for which a final plat has not been properly approved under Article 2 of this ordinance or recorded with the register or deeds where the buyer or lessee is any person who has contracted to acquire or lease the land for the purpose of engaging in the business of construction of residential buildings on the land, or for the purpose of resale or lease of the land to persons engaged in that kind of business, provided that no conveyance of that land may occur and no contract to lease it may become effective until after the final plat has been properly approved under the subdivision ordinance and recorded with the register of deeds in accordance with G.S. 160D-807(c).

4.3 LOT STANDARDS

A. The following standards shall apply to all lots within a proposed subdivision, except where otherwise specified for a Planned Unit Development (PUD):

1. Conformation to Zoning. All lots shall conform to the dimensional requirements of the zoning district in which the subdivision is located.
2. Minimum Dimensions. In no case shall any lot have a frontage of less than 75 feet. Lots located on the turning circle of a cul-de-sac may have individual minimum frontages of 40 feet per lot provided that the lot shall have a lot width of at least 75 feet measured 50 feet from the front property line.
3. Flag lots. Flag lots shall not be allowed except to provide access to a body of water, golf course, or similar recreational facility.
4. Lot size. No new lot shall be created for building purposes that contains an area wholly within the required setbacks of opposing lot sides.
5. Reserve strips. There shall be no reserve strips platted in any subdivision.
6. Lots Restricted to Public Streets and Approved Private Streets. Every lot shall front or abut on a public street, approved private street, or duly recorded permanent access easement.

4.4 EASEMENTS

A. Easements for underground utilities shall be provided, where necessary, across lots or centered on rear or side lot lines and shall be at least 20 feet minimum width for water lines, sanitary sewer lines, and stormwater drainage and as required by the companies involved for telephone, gas, power lines, and cable TV.

B. Where a subdivision is traversed by a stream or drainage way, an easement shall be provided conforming with the lines of the stream and of sufficient width as will be adequate for the purpose. All easements, including width, shall conform with all state and federal requirements.

4.5 HOMEOWNERS/PROPERTY OWNERS ASSOCIATION

A. No subdivision final plat for which a homeowners' association (or property owners) will exist shall be approved until all required legal instruments have been reviewed and approved by the city attorney as to legal form and effect.

B. If streets, stormwater, recreation and open space, or other commonly owned facility is deeded to a homeowners' association, the subdivider shall file a declaration of covenants, conditions, and restrictions that will govern such association. The provisions of such declaration of covenants, conditions, and restrictions shall include, but not be limited to, the following:

1. The homeowners' association must be set up before any property is sold in the subdivision.
2. Membership must be mandatory and automatic when property is purchased in the subdivision.
3. The association must be responsible for liability insurance, local taxes, and maintenance of all common facilities.
4. Property owners must pay their pro rata share of the cost; the assessment levied by the association can become a lien on the property.
5. The association must be able to adjust the assessment to meet changed needs.
6. Covenants for maintenance assessments shall run with the land.
7. All lands so conveyed shall be subject to the right of the grantee or grantees to enforce maintenance and improvement of the common facilities.

4.6 CONSTRUCTION PROCEDURES

A. No building, zoning, or other permits shall be issued for erection of a structure on any lot not of record at the time of adoption of this ordinance until the final plat has been approved and recorded.

B. No construction or installation of improvements shall commence in a proposed subdivision until the preliminary plat has been approved, and all plans and specifications have been approved by the Public Services Department. Land disturbing activities associated with a subdivision shall not take place until applicable tree removal or stormwater permits have been approved.

C. Following approval of the preliminary plat, the subdivider shall submit four (4) sets of detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow-offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm

sewers. Any such plans must be approved by the Public Services Department or by the appropriate utility where applicable. Utility plan review and approval fees shall accompany any such request.

D. Following approval of all utility plans, the subdivider is authorized to proceed with the installation or arrangement of the required improvements and the preparation of a final plat.

E. As-Built Drawings Required. Whenever a subdivider installs or causes to be installed any water, sewer, or stormwater system as required by this ordinance, the subdivider shall, as soon as practicable after installation is complete, and before approval of the associated final plat, furnish the city with a copy of a drawing that shows the exact location of such infrastructure. Such drawings must be verified as accurate by the Public Services Department or utility service provider.

4.7 REQUIRED IMPROVEMENTS

A. INSTALLATION OF IMPROVEMENTS

1. The cost of all improvements shall be at the subdivider's expense. No financial guarantee or performance bond shall be allowed for installation of required improvements. All required improvements shall be installed prior to final plat approval. Approval of subdivision final plats shall be subject to the installation of the improvements outlined herein, where specified.
2. All required improvements shall be completed by the subdivider or his or her agents.

B. ACCEPTANCE OF PUBLIC IMPROVEMENTS

1. At the time of final plat approval, the applicant shall make a formal request in writing to the UDO Administrator for acceptance of any required improvements to be dedicated to the public as indicated on the final plat. An extension may be granted by the UDO Administrator where less than 80 percent of the lots within the final plat have not been conveyed to individual ownership or issued a certificate of occupancy.
2. All required offers to dedicate or reserve for future dedication shall be made clear of all liens and encumbrances on the property prior to consideration for acceptance by the city.
3. Such acceptance shall be made through the use of a legally recorded deed or transfer of ownership which has been reviewed and approved by the city attorney.

C. INSPECTION

1. Prior to the acceptance of any public infrastructure or approval of a final plat with private infrastructure, including streets, stormwater systems, or water/sewer systems the subdivider is required to have a professional engineer perform a required inspection and prepare an accompanying sealed report demonstrating compliance with the required standards of this ordinance and any

applicable specifications manual under authority of the Public Services Department or other applicable agency.

2. Prior to the inspection, the subdivider shall contact the Public Services Department to ensure the director or his/her designee shall be present.
3. The Public Services Department requires a minimum of 48 hours' notice before construction is to begin so that the Public Services Department can schedule construction inspection for the work.
4. Any inspection report prepared without the presence of an authorized City of Southport staff member shall deem the report null and void.
5. Streets:
    a) All streets shall pass a compaction and proof roll test on the sub-grade and the stone base and shall be conducted by a professional engineer with the corresponding sealed inspection report.
    b) Prior to the final surface course of asphalt, the Public Services Department shall conduct an inspection with the installer of the base course asphalt.
    c) The subdivider shall be responsible for repairing any damages or failures identified as a result of the inspection to the satisfaction of the Public Services Department.
6. Stormwater:
    a) All stormwater infrastructure and facilities shall be designed and installed in accordance with the city's stormwater technical manual, and in accordance with the requirements in all state issued permits for the project.
7. Water and sewer systems:
    a) All water, sewer, and pump station infrastructure shall be installed in accordance with city standards, and in accordance with the requirements in all state issued permits for the project.
    b) Materials will be checked at the site of construction to verify conformance with approved materials. Any materials not in accordance with city standards, will not be assumed for use. The subdivider will be directed to remove these materials from the area before work can proceed. The subdivider may be directed to expose any work suspected of containing Inferior materials. Failure by the Public Services Department to notice faulty materials or work does not relieve the subdivider of responsibility to provide a completed final product that meets the requirements of the plans and specifications.
    c) The materials, methods of manufacture and completed pipes, fittings, valves, and appurtenances shall be subject to inspection and rejection at all times.

D. LIST OF REQUIREMENT IMPROVEMENTS

1. Streets within the subdivision per Section 4.8 and improvements to existing streets/road network required for safe and adequate access to the subdivision or

improvements required in accordance with a Traffic Impact Study per Section 3.13.

2. Street lights per Section 4.9
3. Traffic control devices, street name signs, and cluster mailbox units per Section 4.10
4. Pedestrian facilities per Section 4.11.
5. Water supply and sewage disposal systems per Section 4.12
6. Erosion and sedimentation control devices; Drainage facilities and easements, and stormwater management devices per Section 4.13 and Article 6.
7. Recreation and open space facilities per Section 4.14.
8. Any other improvement required as a condition for preliminary plat approval.

4.8 STREETS AND ROADWAY NETWORK

A. GENERAL

1. The purpose of this section is to support the creation of a highly connected transportation system within the city in order to provide choices for drivers, bicyclists, and pedestrians; promote walking and bicycling; connect neighborhoods to each other and to local destinations such as schools, parks, and shopping centers; reduce vehicle miles of travel and travel times; improve air quality; reduce emergency response times; increase effectiveness of municipal service delivery; and free up arterial capacity to better serve regional long distance travel needs.
2. Street Names. Proposed streets which are obviously in alignment with existing streets shall be given the same name. In assigning new names, duplication of existing names shall be avoided, and in no case shall the proposed name be phonetically similar to existing names irrespective of the use of a suffix such as street, road, drive, place, court, etc. Street names shall be subject to the approval of the UDO Administrator after review by the Brunswick County GIS/E-911 Department.
3. Subdivision Street Disclosure Statement. All streets shown on the final plat shall be designated in accordance with NCGS 136-102.6, and designation as public shall be conclusively presumed an offer of dedication to the public. Where streets are dedicated to the public but not accepted into a municipal or the state system, before lots are sold, a statement explaining the status of the street shall be included with the final plat.

B. STREET DESIGN

1. The design of all streets and roads, including drainage, shall be in accordance with the minimum design and construction criteria for the most recent version of the NCDOT Subdivision Roads Minimum Construction Standards and NCDOT Guidelines for Drainage Studies and Hydraulic Design, unless this ordinance establishes a stricter standard.
2. Coordination and Continuation of Streets. The proposed street layout within a subdivision shall be coordinated with the existing street system of the

surrounding area, and where possible, existing principal streets shall be extended.

3. Street Connectivity Requirements. The Board of Aldermen hereby finds and determines that an interconnected street system is necessary in order to protect the public health, safety, and welfare in order to ensure that streets will function in an interdependent manner, to provide adequate access for emergency and service vehicles, to enhance nonvehicular travel such as pedestrians and bicycles, and to provide continuous and comprehensible traffic routes. All proposed streets shall be continuous and connect to existing or platted streets without offset with the exception of cul-de-sacs as permitted and except as provided below. Whenever practicable, provisions shall be made for the continuation of planned streets into adjoining areas.
4. Cul-de-sacs. Cul-de-sacs shall not exceed 750 feet in length. Turnarounds shall be provided for any dead-end street greater than 150 feet in length. The turnaround shall have a roadway diameter of at least 90 feet and a right-of-way of at least 100 feet. Temporary turnarounds shall be paved or graveled in accordance with the NCDOT Subdivision Roads Minimum Construction Standards.
5. Fire apparatus access roads. Any subdivision of more than 30 residential units or lots, or additions to existing developments such that the total number of units exceeds 30, shall be required to provide two (2) vehicular access/fire apparatus access roads per Appendix D of the NC Building Code. Such fire apparatus access roads shall be placed at a distance apart equal to not less than one-half the length of the maximum overall diagonal dimension of the property to be served, measured in a straight-line distance between accesses.
6. Blocks. Block lengths shall not exceed 1,500 linear feet nor be less than 400 feet unless the subdivision proposed encompasses dimensions less than 400 linear feet. Block size should generally allow for two (2) tiers of lots of minimum depth.
7. Intersections. Street intersections shall be as nearly at right angles as possible and in no cases shall be less than 60 degrees.
8. Alleys. All alleys shall be constructed in accordance NCDOT Subdivision Roads Minimum Construction Standards.
9. Most streets will be constructed in accordance with standards provided for “Residential Local Subdivision Roads” as specified in the NCDOT Subdivision Roads Minimum Construction Standards manual. Alternative street designs may be approved by the UDO Administrator with plans and street specifications prepared by a licensed professional engineer in accordance with the NCDOT Complete Streets Planning and Design Guidelines and for an advisory recommendation by the Technical Review Committee and City Fire Chief. In no case shall right-of-way widths be less than 60 feet and pavement widths less than 26 feet, unless explicitly approved by the City Fire Chief.

C. STREET CONSTRUCTION STANDARDS

All streets shall be constructed in accordance with the following minimum standards:

1. The sub-grade must contain a minimum 12 inches of compacted earth.
2. The stone base must contain a minimum eight (8) inches of compacted stone.
3. The base course of asphalt must contain a minimum two (2) inches of b-25-ob.
4. When each street has 80 percent of the lots on that street with certificate of occupancies issued a minimum one and one-half (1-1/2") inches of SF9.5A final surface course shall be applied.

D. PRIVATE STREETS

1. Streets designated as private may be allowed in subdivisions when assurance is provided through a legally established homeowners' association, that the street shall be properly maintained. All such streets shall be designated a "Private Street" on the preliminary plats and final plats. Whenever a private street intersects a US or NCDOT roadway a approved NCDOT Driveway Permit, shall be submitted concurrent with the final plat.
2. All private streets must meet the minimum design and construction standards as provided in this ordinance.
3. The final plat for each such subdivision containing private streets shall contain a certificate indicating the book and page number of the homeowners' association covenants, conditions, and restrictions. The covenants, conditions, and restrictions shall specify lot owners' responsibilities for maintenance of private streets and drainage systems, and shall provide for assessments to finance all maintenance activities. Covenants shall provide that the homeowners' association will construct all stub streets prior to offering any connecting for acceptance by NCDOT or the city.
4. The recorded plat of any subdivision that includes a private street shall clearly state that such road is a private street and must be accompanied by a private street maintenance agreement that is also recorded.

4.9 STREET LIGHTING

A. APPLICABILITY

The subdivider of a major subdivision shall be required to install street lighting via underground distribution, unless an above ground line exists at the time of preliminary plat approval, along all proposed streets within the subdivision. Such street lighting shall be designed and installed in accordance with the city's street light policy.

4.10 TRAFFIC CONTROL DEVICES, STREET NAME SIGNS, AND CLUSTER MAILBOX UNITS

A. TRAFFIC CONTROL DEVICES

Traffic-control devices such as stop, yield, and speed limit signs, but not including electric or electronic traffic signals, shall be installed on public streets by the subdivider. The construction of all control devices shall be in accordance traffic control standards as designated in the Manuals on Uniform Traffic Control Devices, North Carolina Supplement to the Manual on Uniform Traffic Control Devices, and the North Carolina Highway Design Branch Roadway Standard Drawings.

B. STREET NAME SIGNS AND MAILBOXES (CLUSTER BOX UNITS)

Street name signs shall be installed by the subdivider at each street intersection as appropriate to identify all street names. Approved mailboxes will be installed before any residence can be occupied. Street name signs, poles, and brackets and mailboxes shall be subject to approval by the UDO Administrator. Where feasible and practical, street name signs and mailboxes shall be of a common design or theme throughout the subdivision or in individual phases of the subdivision. It is the policy of the U. S. Postal Service that mail delivery to all new subdivisions is centralized delivery, most often using cluster box units (CBU). It is the responsibility of the subdivider to provide the necessary mail receptacle equipment in accordance with the Postal Operations Manual.

4.11 PEDESTRIAN FACILITIES

A. Sidewalks shall be required on at least one (1) side of the street in all new major subdivisions. For subdivisions of 20 or more lots, sidewalks shall be required on both sides of the street.
   1. In lieu of placing sidewalks on both sides of the street, the subdivider may install a connected multi-use path/greenway network a minimum width of eight (8) feet along one (1) side of the street and connecting to recreation and open space areas. Such path shall not count towards the required open space requirement.

B. Sidewalks and multi-use paths shall be installed within the right-of-way and connect to adjacent facilities where applicable. Where right-of-way widths adjacent to the edge of pavement are in excess of 10 feet, sidewalks shall be separated by a minimum three (3) foot landscaped strip adjacent to the edge of pavement.

C. In all cases, sidewalks shall extend to the property line.

D. Sidewalks shall be at least five (5) feet wide and constructed of concrete at least five (5) inches thick. Sidewalks shall consist of a minimum of six (6) inches of concrete at driveway crossings or shall be adequately reinforced otherwise. All sidewalks and multi-use paths must meet ADA requirements, including where necessary to serve required cluster mailbox locations.

E. Sidewalks and multi-use paths built adjacent to an NCDOT road facility shall be built to meet NCDOT standards.

4.12 WATER AND SEWER SYSTEMS

A. All applications for major subdivisions must be accompanied by satisfactory evidence as to the proposed method and system of water supply and sanitary sewage collection and disposal. All proposed subdivisions must comply with the requirements set forth in the by the city's Public Services Department for connection and/or the Brunswick County Utility Department, where applicable.

B. Where public or community water supply and/or sewerage systems are not required to be provided, a written statement from the county health department or licensed soil scientist shall be submitted with all subdivision applications indicating that each lot has adequate land area and soil conditions suitable to accommodate the proposed methods of water supply and sewage disposal.

4.13 STORMWATER DRAINAGE & SEDIMENTATION/EROSION CONTROL

All major subdivisions shall provide an adequate drainage system for the proper drainage of all surface water. The design of such a system shall be subject to the approval of the Public Services Department in accordance with Article 6 of this ordinance. In order to prevent soil erosion and sedimentation pollution of streams, springs, flat water bodies, or other drainage networks, the subdivider shall comply with all requirements of the North Carolina Sedimentation Pollution Control Act.

4.14 RECREATION AND OPEN SPACE

A. APPLICABILITY

Every person, firm, or corporation who subdivides land for residential purposes consisting of 5 or more cumulative lots shall be required to dedicate a portion of such land for the purpose of public recreation/open space, including the preservation of natural and cultural resources, to serve the leisure needs of the residents of the subdivision and the city of Southport (if recreation area is publicly dedicated). In all cases, the Southport Parks and Recreation Director shall review and make recommendations to the Planning Board and Board of Aldermen on the provision or dedication of recreation and/or open space areas.

B. EXCLUSIVE PURPOSE OF LAND

The land dedicated in accordance with this section shall be used only for the purpose of providing parks or recreation areas and the location of the land shall bear a reasonable relationship to the use of the area by the future inhabitants of the subdivision or residential development. For this reason, dedicated open space shall not include 404 wetlands or stormwater collection facilities.

C. Amount of Land Dedicated

1. The amount of land required to be dedicated shall be computed on the basis of the following formula:
   a) Area to be dedicated (in acres) for R-10 zoned lots, exclusive of 404 wetlands and stormwater collection facilities = (.05) x (number of dwelling units or lots – whichever is greater)
   b) Area to be dedicated (in acres) for R-20 zoned lots, exclusive of 404 wetlands and stormwater collection facilities = (.1) x (number of dwelling units or lots – whichever is greater)
   c) All PUDs shall retain a minimum 20% of open space area, exclusive of 404 wetlands. Such open space shall comply with the provisions outlined within this section.

D. PUBLIC DEDICATION

1. Land dedicated for public recreation areas shall be designated on both the preliminary and final plat(s) of the subdivision and must be dedicated to an appropriate unit of local government. Determination of the appropriate unit of

local government shall be made by the Board of Aldermen, upon recommendation from the City Manager.

E. PRIVATE OWNERSHIP

1. Where land for private recreation and open space purposes is provided in a proposed subdivision and such space is to be privately owned and maintained by all of the future residents of the subdivision, such areas shall comply with the following standards:
   a) The private ownership and maintenance of the recreation areas is adequately provided for by written agreement.
   b) The use of the private recreational areas is restricted to recreational purposes by recorded covenants which run with the land in favor of the future owners of property within the tract.
   c) All land set aside for privately controlled recreational areas shall be made available to all residents of the residential development against which the site obligation was originally assumed.

F. EFFECT ON PRIVATELY-OWNED OPEN SPACE

Nothing in this division shall be construed to limit the amount of privately controlled open space land which may be included under this agreement, over and above the recreation and open space obligation.

G. CRITERIA

1. All land dedicated for recreation and open space areas shall comply with the following criteria:
   a) Unity. The dedicated land shall form a single parcel of land except where two (2) or more parcels or a connecting corridor of open space would be better serve residents in which case the corridor shall not be less than 30 feet wide for the purpose of accommodating a path or trail. Noncontiguous open space shall not account for greater than 50% of the required allocation of open space.
   b) Location. The dedicated recreation or park land shall be located so as to reasonably serve the recreation needs of the subdivision for which the dedication was made.
   c) Access. Public access to the dedicated land shall be provided either by adjoining street frontage of at least 50 feet or public easement at least 20 feet in width.
   d) Usableness. The dedicated land shall be usable for recreation or passive open space.
      i) Land provided or dedicated for active recreational purposes shall be of a character, slope, and location suitable for use as play areas, tennis courts, multi- purpose courts, picnic areas, ball fields, and other similar recreation uses. Active recreation areas shall be located on land that is relatively flat (0 to 7.5% slopes),

free of 404 wetlands, easements for public utility transmission lines, and is otherwise capable of accommodating active recreation uses.

ii) Land provided or dedicated for passive recreation and open space purposes shall be of a character, slope, and location suitable for use for walking, jogging, reading, and similar quiet activities, and the preservation of natural features and cultural resources such as steep slopes, rock outcrops, native plant life and wildlife cover, mature woodlands, and water resources.

e) Plans. Municipal and county plans shall be taken into consideration

4.15 PLANNED UNIT DEVELOPMENT

A. APPROVAL

Approval procedures for Planned Unit Developments are provided in Article 2 of this ordinance. Following approval of the PUD, an applicant may submit a site plan, subdivision plat, and/or permit for development within the PUD.

B. APPLICABILITY

The minimum amount of land (unified control to be planned and developed as a whole) required for a PUD district shall be eight (8) acres of net buildable area within the City corporate limits, on one or more contiguous parcels or 25 acres of net buildable area in the ETJ, on one (1) or more parcels (this may include parcels on both sides of a street).

C. REQUIRED IMPROVEMENTS

All PUD development and subsequent subdivision shall comply with Section 4.7 Required Improvements. This shall include provisions for recreation and open space as outlined by Section 4.14.

D. MAXIMUM DENSITY REQUIREMENTS

The maximum density shall be six (6) dwelling units per acre.

E. MINIMUM DIMENSIONAL STANDARDS

1. Lot area. Not less than 60 percent of the minimum lot area which would normally be required under the single-family standards of the prevailing zoning district.
2. Lot width. 40 feet.
3. Lot frontage. 40 feet, except on the radius of a cul-de-sac where such distance may be reduced to 20 feet.
4. Public or private street setback. No principal or accessory structure shall be closer than 10 feet to a public street right-of-way or private street easement.
5. Side yard setback. Not less than 8 feet. Dwellings which do not utilize zero lot line provisions shall maintain a minimum side setback of not less than six (6) feet.
6. Rear yard setback. Not less than 15 feet.
7. Building separations. No portion of any principal structure shall be located less than 10 feet from any accessory structure as measured to the closest point.

8. Periphery boundary setback. No principal or accessory structure shall be located less than 25 feet from the peripheral boundaries of the development.
9. Maximum height. 40 feet.
10. Detached accessory structure requirements.
    a) Shall not be located within any front yard setback;
    b) Shall not be located within five (5) feet of any other accessory structure;
    c) Shall not cover more than twenty (20) percent of any side or rear yard; and
    d) The side or rear yard requirement for detached accessory structures shall not be less than five (5) feet.
    e) Shall not be greater than 30 feet in height.

Article 5: Flood Damage Prevention Ordinance

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5.1 STATUTORY AUTHORIZATION

The Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Article 8 of Chapter 160A; and Article 7, 9, and 11 of Chapter 160D of NCGS, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

Therefore, the Board of Aldermen of the City of Southport, North Carolina, does ordain as follows:

5.2 FINDINGS OF FACT

A. The flood prone areas within the jurisdiction of the City of Southport are subject to periodic inundation which results in loss of life, property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures of flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are caused by the cumulative effect of obstructions in floodplains causing increases in flood heights and velocities and by the occupancy in flood prone areas of uses vulnerable to floods or other hazards.

5.3 STATEMENT OF PURPOSE

It is the purpose of this article to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed to:

A. Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards or that result in damaging increases in erosion, flood heights or velocities;

B. Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;

C. Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters;

D. Control filling, grading, dredging, and all other development which may increase erosion or flood damage.

E. Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or which may increase flood hazards to other lands.

5.4 OBJECTIVES

The objectives of this article are to:

A. Protect human life and health;

B. Minimize expenditure of public money for costly flood control projects;

C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

D. Minimize prolonged business losses and interruptions;

E. Minimize damage to public facilities and utilities (i.e. water and gas mains, electric, telephone, cable and sewer lines, streets and bridges) that are located in flood prone areas;
F. Minimize damage to private and public property due to flooding;
G. Make flood insurance available to the community through the National Flood Insurance Program;
H. Maintain the natural and beneficial functions of floodplains;
I. Help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
J. Ensure that potential buyers are aware that property is in a Special Flood Hazard Area.

5.5 DEFINITIONS

Unless specifically defined below, words or phrases used in this article shall be interpreted so as to give them the meaning they have in common usage and to give this article it's most reasonable application in administering the floodplain development provisions provided herein. The definitions provided herein shall apply to this article. Where conflicting terms are found in Article 8, the terms in Section 5.5 shall apply specifically to floodplain development regulations, whereas the definitions in Article 8 shall apply to the UDO in its entirety and to those terms not defined herein.

Accessory structure (appurtenant structure) means a structure located on the same parcel of property as the principal structure and the use of which is incidental to the use of the principal structure. Garages, carports and storage sheds are common urban accessory structures. Pole barns, hay sheds and the like qualify as accessory structures on farms, and may or may not be located on the same parcel as the farm dwelling or shop building.

Addition (to an existing building) means an extension or increase in the floor area or height of a building or structure.

Alteration of a watercourse means a dam, impoundment, channel relocation, change in channel alignment, channelization, or change in cross-sectional area of the channel or the channel capacity, or any other form of modification which may alter, impede, retard or change the direction and/or velocity of the riverine flow of water during conditions of the base flood.

Appeal means a request for a review of the Floodplain Administrator's interpretation of any provision of this ordinance.

Area of shallow flooding means a designated Zone AO or AH on a community's Flood Insurance Rate Map (FIRM) with base flood depths determined to be from one (1) to three (3) feet. These areas are located where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident.

Area of Special Flood Hazard see "Special Flood Hazard Area (SFHA)".

Area of future-conditions flood hazard means the land area that would be inundated by the 1-percent-annual-chance (100-year) flood based on future-conditions hydrology.

Base flood means the flood having a 1% chance of being equaled or exceeded in any given year.

Base Flood Elevation (BFE) means a determination of the water surface elevations of the base flood as published in the Flood Insurance Study. When the BFE has not been provided in a "Special Flood Hazard Area", it may be obtained from engineering studies available from a Federal, State, or other source using FEMA approved engineering methodologies. This elevation, when combined with the "Freeboard", establishes the "Regulatory Flood Protection Elevation".

Basement means any area of the building having its floor subgrade (below ground level) on all sides.

Breakaway wall means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

Building see "Structure".

Chemical storage facility means a building, portion of a building, or exterior area adjacent to a building used for the storage of any chemical or chemically reactive products.

Coastal Area Management Act (CAMA) means North Carolina's Coastal Area Management Act, this act, along with the Dredge and Fill Law and the Federal Coastal Zone Management Act, is managed through North Carolina Department of Environment and Natural Resources' (NCDENR's) Division of Coastal Management (DCM).

Coastal A Zone (CAZ) means an area within a special flood hazard area, landward of a V zone or landward of an open coast without mapped V zones; in a Coastal A Zone, the principal source of flooding must be astronomical tides, storm surges, seiches, or tsunamis, not riverine flooding. During the base flood conditions, the potential for wave heights shall be greater than or equal to 1.5 feet. Coastal A Zones are not normally designated on FIRMs. (see Limit of Moderate Wave Action (LiMWA))

Coastal Barrier Resources System (CBRS) consists of undeveloped portions of coastal and adjoining areas established by the Coastal Barrier Resources Act (CoBRA) of 1982, the Coastal Barrier Improvement Act (CBIA) of 1990, and subsequent revisions, and includes areas owned by Federal or State governments or private conservation organizations identified as Otherwise Protected Areas (OPA).

Coastal high hazard area means a Special Flood Hazard Area extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on a FIRM, or other adopted flood map as determined in Section 5.24, as Zone VE.

Design flood see "Regulatory Flood Protection Elevation."

Development means any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

Development activity means any activity defined as Development which will necessitate a Floodplain Development Permit. This includes buildings, structures, and non- structural items, including (but not limited to) fill, bulkheads, piers, pools, docks, landings, ramps, and erosion control/stabilization measures.

Digital Flood Insurance Rate Map (DFIRM) means the digital official map of a community, issued by the Federal Emergency Management Agency (FEMA), on which both the Special Flood Hazard Areas and the risk premium zones applicable to the community are delineated.

Disposal means, as defined in NCGS 130A-290(a)(6), the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

Elevated building means a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

Encroachment means the advance or infringement of uses, fill, excavation, buildings, structures or development into a special flood hazard area, which may impede or alter the flow capacity of a floodplain.

Existing building and existing structure means any building and/or structure for which the "start of construction" commenced before May 24, 1974, the date the community's first floodplain management ordinance was adopted.

Existing manufactured home park or manufactured home subdivision means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed before May 24, 1974, the initial effective date of the floodplain management regulations adopted by the community.

Flood or flooding means a general and temporary condition of partial or complete inundation of normally dry land areas from:

A. The overflow of inland or tidal waters; and/or
B. The unusual and rapid accumulation or runoff of surface waters from any source.

Flood Boundary and Floodway Map (FBFM) means an official map of a community, issued by the FEMA, on which the Special Flood Hazard Areas and the floodways are delineated. This official map is a supplement to and shall be used in conjunction with the Flood Insurance Rate Map (FIRM).

Flood Hazard Boundary Map (FHBM) means an official map of a community, issued by the FEMA, where the boundaries of the Special Flood Hazard Areas have been defined as Zone A.

Flood insurance means the insurance coverage provided under the National Flood Insurance Program.

Flood Insurance Rate Map (FIRM) means an official map of a community, issued by the FEMA, on which both the Special Flood Hazard Areas and the risk premium zones applicable to the community are delineated. (see also DFIRM)

Flood Insurance Study (FIS) means an examination, evaluation, and determination of flood hazards, corresponding water surface elevations (if appropriate), flood hazard risk zones, and other flood data in a community issued by the FEMA. The Flood Insurance Study report includes Flood Insurance Rate Maps (FIRMs) and Flood Boundary and Floodway Maps (FBFMs), if published.

Flood prone area see Floodplain.

Flood zone means a geographical area shown on a Flood Hazard Boundary Map or Flood Insurance Rate Map that reflects the severity or type of flooding in the area.

Floodplain means any land area susceptible to being inundated by water from any source.

Floodplain administrator is the individual appointed to administer and enforce the floodplain management regulations.

Floodplain development permit means any type of permit that is required in conformance with the provisions of this article, prior to the commencement of any development activity.

Floodplain management means the operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including, but not limited to, emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.

Floodplain management regulations means this ordinance and other zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances, and other applications of police power. This term describes federal, state or local regulations, in any combination thereof, which provide standards for preventing and reducing flood loss and damage.

Floodproofing means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitation facilities, structures, and their contents.

Flood-resistant material means any building product [material, component or system] capable of withstanding direct and prolonged contact (minimum 72 hours) with floodwaters without sustaining damage that requires more than low-cost cosmetic repair. Any material that is water-soluble or is not resistant to alkali or acid in water, including normal adhesives for above-grade use, is not flood-resistant. Pressure- treated lumber or naturally decay-resistant lumbers are acceptable flooring materials. Sheet-type flooring coverings that restrict evaporation from below and materials that are impervious, but dimensionally unstable are not acceptable. Materials that absorb or retain water excessively after submergence are not flood-resistant. Please refer to Technical Bulletin 2, Flood Damage-Resistant Materials Requirements, and available from the FEMA. Class 4 and 5 materials, referenced therein, are acceptable flood-resistant materials.

Floodway means the channel of a river or other watercourse, including the area above a bridge or culvert when applicable, and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

Floodway encroachment analysis means an engineering analysis of the impact that a proposed encroachment into a floodway or non-encroachment area is expected to have on the floodway boundaries and flood levels during the occurrence of the base flood discharge. The evaluation shall be prepared by a qualified North Carolina licensed engineer using standard engineering methods and models.

Freeboard means the height added to the BFE to account for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, blockage of bridge or culvert openings, and the hydrological effect of urbanization of the watershed. The BFE plus the freeboard establishes the "Regulatory Flood Protection Elevation."

Functionally dependent facility means a facility which cannot be used for its intended purpose unless it is located in close proximity to water, limited to a docking or port facility necessary for the loading and unloading of cargo or passengers, shipbuilding, or ship repair. The term does not include long-term storage, manufacture, sales, or service facilities.

Hazardous waste management facility means, as defined in NCGS 130A, Article 9, a facility for the collection, storage, processing, treatment, recycling, recovery, or disposal of hazardous waste.

Highest Adjacent Grade (HAG) means the highest natural elevation of the ground surface, prior to construction, immediately next to the proposed walls of the structure.

Historic structure means any structure that is:

A. Listed individually in the National Register of Historic Places (a listing maintained by the US Department of Interior) or preliminarily determined by the Secretary of Interior as meeting the requirements for individual listing on the National Register;
B. Certified or preliminarily determined by the Secretary of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
C. Individually listed on a local inventory of historic landmarks in communities with a "Certified Local Government (CLG) Program"; or
D. Certified as contributing to the historical significance of a historic district designated by a community with a "Certified Local Government (CLG) Program."

Certified Local Government (CLG) Programs are approved by the US Department of the Interior in cooperation with the North Carolina Department of Cultural Resources through the State Historic Preservation Officer as having met the requirements of the National Historic Preservation Act of 1966 as amended in 1980.

Letter of Map Change (LOMC) means an official determination issued by FEMA that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of Map Change include:

A. Letter of Map Amendment (LOMA): An official amendment, by letter, to an effective National Flood Insurance Program map. A LOMA is based on technical data showing that a property had been inadvertently mapped as being in the floodplain, but is actually on natural high ground above the base flood elevation. A LOMA amends the current effective Flood Insurance Rate Map and establishes that a specific property, portion of a property, or structure is not located in a special flood hazard area.
B. Letter of Map Revision (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, special flood hazard area boundaries and floodway delineations, and other planimetric features.
C. Letter of Map Revision Based on Fill (LOMR-F): A determination that a structure or parcel of land has been elevated by fill above the BFE and is, therefore, no longer located within the special flood hazard area. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.
D. Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study; upon submission and approval of certified as- built documentation, a Letter of Map Revision may be issued by FEMA to revise the effective FIRM.

Light duty truck means any motor vehicle rated at 8,500 pounds Gross Vehicular Weight Rating or less which has a vehicular curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of 45 square feet or less as defined in 40 CFR 86.082-2 and is:

A. Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or
B. Designed primarily for transportation of persons and has a capacity of more than 12 persons; or
C. Available with special features enabling off-street or off-highway operation and use.

Limit of Moderate Wave Action (LiMWA) means the boundary line given by FEMA on coastal map studies marking the extents of Coastal A Zones (CAZ).

Lowest Adjacent Grade (LAG) means the lowest elevation of the ground, sidewalk or patio slab immediately next to the building, or deck support, after completion of the building.

Lowest floor means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or limited storage in an area other than a basement area is not considered a building's lowest floor, provided that such an enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance.

Manufactured home means a structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

Manufactured home park or subdivision means a parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

Market value means the building value, not including the land value and that of any accessory structures or other improvements on the lot. Market value may be established by independent certified appraisal; replacement cost depreciated for age of building and quality of construction (Actual Cash Value); or adjusted tax assessed values.

New construction means structures for which the "start of construction" commenced on or after the effective date of the initial floodplain management regulations and includes any subsequent improvements to such structures.

Non-conversion agreement means a document stating that the owner will not convert or alter what has been constructed and approved. Violation of the agreement is considered a violation of the article and, therefore, subject to the same enforcement procedures and penalties. The agreement must be filed with the recorded deed for the property. The agreement must show the clerk's or recorder's stamps and/or notations that the filing has been completed.

Non-Encroachment Area (NEA) means the channel of a river or other watercourse, including the area above a bridge or culvert when applicable, and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot as designated in the Flood Insurance Study report.

Otherwise Protected Area (OPA) see "Coastal Barrier Resources System (CBRS)."

Post-FIRM means construction or other development for which the "start of construction" occurred on or after April 15, 1977, the effective date of the initial Flood Insurance Rate Map.

Pre-FIRM means construction or other development for which the "start of construction" occurred before April 15, 1977, the effective date of the initial Flood Insurance Rate Map.

Principally above ground means that at least 51% of the actual cash value of the structure is above ground.

Public safety and/or nuisance means anything which is injurious to the safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

Recreational Vehicle (RV) means a vehicle, which is:

A. Built on a single chassis;
B. 400 square feet or less when measured at the largest horizontal projection;
C. Designed to be self-propelled or permanently towable by a light duty truck;

D. Designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use, and
E. Is fully licensed and ready for highway use.

(For the purpose of this article, "Tiny Homes/Houses" and Park Models that do not meet the items listed above are not considered Recreational Vehicles and should meet the standards of and be permitted as Residential Structures.)

Reference level is the top of the lowest floor for structures within Special Flood Hazard Areas designated as Zones A, AE, AH, AO, A99. The reference level is the bottom of the lowest horizontal structural member of the lowest floor for structures within Special Flood Hazard Areas designated as Zone VE.

(Alternative acceptable language for Reference Level) "Reference Level" is the bottom of the lowest horizontal structural member of the lowest floor for structures within all Special Flood Hazard Areas.

Regulatory flood protection elevation means the "Base Flood Elevation" plus the "Freeboard". In "Special Flood Hazard Areas" where Base Flood Elevations (BFEs) have been determined, this elevation shall be the BFE plus three (3) feet freeboard. In "Special Flood Hazard Areas" where no BFE has been established, this elevation shall be at least three (3) feet above the highest adjacent grade.

Remedy a violation means to bring the structure or other development into compliance with state and community floodplain management regulations, or, if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the ordinance or otherwise deterring future similar violations, or reducing federal financial exposure with regard to the structure or other development.

Riverine means relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

Salvage yard means any nonresidential property used for the storage, collection, and/or recycling of any type of equipment, and including but not limited to vehicles, appliances and related machinery.

Shear wall means walls used for structural support but not structurally joined or enclosed at the end (except by breakaway walls). Shear walls are parallel or nearly parallel to the flow of the water.

Solid waste disposal facility means any facility involved in the disposal of solid waste, as defined in NCGS 130A-290(a)(35).

Solid waste disposal site means, as defined in NCGS 130A-290(a)(36), any place at which solid wastes are disposed of by incineration, sanitary landfill, or any other method.

Special Flood Hazard Area (SFHA) means the land in the floodplain subject to a 1% or greater chance of being flooded in any given year.

Start of construction includes substantial improvement, and means the date the building permit was issued provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of the building, whether or not that alteration affects the external dimensions of the building.

Structure means a walled and roofed building, a manufactured home, or a gas, liquid, or liquefied gas storage tank that is principally above ground.

Substantial damage means damage of any origin sustained by a structure during any one (1) year period whereby the cost of restoring the structure to it's before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred. See definition of "substantial improvement".

Substantial improvement means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any one-year period for which the cost equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either:

A. Any correction of existing violations of state or community health, sanitary, or safety code specifications which have been identified by the community code enforcement official and which are the minimum necessary to assure safe living conditions; or
B. Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure and the alteration is approved by variance issued pursuant to Section 5.18.

Technical bulletin and Technical fact sheet means a FEMA publication that provides guidance concerning the building performance standards of the NFIP, which are contained in Title 44 of the U.S. Code of Federal Regulations at Section 60.3. The bulletins and fact sheets are intended for use primarily by State and local officials responsible for interpreting and enforcing NFIP regulations and by members of the development community, such as design professionals and builders. New bulletins, as well as updates of existing bulletins, are issued periodically as needed. The bulletins do not create regulations; rather they provide specific guidance for complying with the minimum requirements of existing NFIP regulations.

It should be noted that Technical Bulletins and Technical Fact Sheets provide guidance on the minimum requirements of the NFIP regulations. State or community requirements that exceed those of the NFIP take precedence. Design professionals should contact the community officials to determine whether more restrictive State or local regulations apply to the building or site in question. All applicable standards of the State or local building code must also be met for any building in a flood hazard area.

Temperature controlled means having the temperature regulated by a heating and/or cooling system, built-in or appliance.

Variance (floodplain development) is a grant of relief from the requirements of this article.

Violation means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this article is presumed to be in violation until such time as that documentation is provided.

Water Surface Elevation (WSE) means the height, in relation to NAVD 1988, of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

Watercourse means a lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

5.6 APPLICATION OF ARTICLE

This ordinance shall apply to all Special Flood Hazard Areas within the City of Southport, including the Extra-Territorial Jurisdiction (ETJ), of the City of Southport.

5.7 BASIS FOR ESTABLISHING THE SPECIAL FLOOD HAZARD AREAS

The Special Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS), dated August 28, 2018 for Brunswick County and associated DFIRM panels, including any digital data developed as part of the FIS, which are adopted by reference and declared a part of this article. Future revisions to the FIS and DFIRM panels that do not change flood hazard data within the jurisdictional authority of the City of Southport are also adopted by reference and declared a part of this article. Subsequent Letter of Map Revisions (LOMRs) and/or Physical Map Revisions (PMRs) shall be adopted within three (3) months.

5.8 ESTABLISHMENT OF DEVELOPMENT PERMIT

A Floodplain Development Permit shall be required in conformance with the provisions of this article prior to the commencement of any development activities within Special Flood Hazard Areas determined in accordance with Section 5.6.

5.9 COMPLIANCE

No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this article and other applicable regulations.

5.10 ABROGATION AND GREATER RESTRICTIONS

This article is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this article and another conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

5.11 INTERPRETATION

In the interpretation and application of this article all provisions shall be:

A. Considered as minimum requirements;
B. Liberally construed in favor of the Board of Aldermen; and
C. Deemed neither to limit nor repeal any other powers granted under State statutes.

5.12 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this article is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Larger floods can and will occur. Actual flood heights may be increased by man-made or natural causes. This article does not imply that land outside the Special Flood Hazard Areas or uses permitted within such areas will be free from flooding or flood damages. This article shall not create liability on the part of the City of Southport or by any officer or employee thereof for any flood damages that result from reliance on this article or any administrative decision lawfully made hereunder.

5.13 PENALITIES FOR VIOLATION

Violation of the provisions of this article or failure to comply with any of its requirements shall be subject to Section 2.15.D and Section 5.17 of this article. Nothing herein contained shall prevent the City of Southport from taking such other lawful action as is necessary to prevent or remedy any violation.

5.14 DESIGNATION OF FLOODPLAIN ADMINISTRATOR

The UDO Administrator, hereinafter referred to as the Floodplain Administrator, is hereby appointed to administer and implement the provisions of this article. In instances where the Floodplain Administrator receives assistance from others to complete tasks to administer and implement this ordinance, the Floodplain Administrator shall be responsible for the coordination and community's overall compliance with the National Flood Insurance Program and the provisions of this ordinance.

5.15 FLOODPLAIN DEVELOPMENT APPLICATION, PERMIT AND CERTIFICATION REQUIREMENTS

A. APPLICATION REQUIREMENTS

Application for a Floodplain Development Permit shall be made to the Floodplain Administrator prior to any development activities located within Special Flood Hazard Areas. The following items shall be presented to the floodplain administrator to apply for a floodplain development permit:

1. A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

a) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;
b) The boundary of the Special Flood Hazard Area as delineated on the FIRM or other flood map as determined in Section 5.7, or a statement that the entire lot is within the Special Flood Hazard Area;
c) Flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in Section 5.7;
d) The boundary of the floodway(s) or non-encroachment area(s) as determined in Section 5.7;
e) The Base Flood Elevation (BFE) where provided as set forth in Section 5.7; Section 5.16.K-L; or Section 5.21;
f) The old and new location of any watercourse that will be altered or relocated as a result of proposed development;
g) The boundary and designation date of the Coastal Barrier Resource System (CBRS) area or Otherwise Protected Areas (OPA), if applicable; and
h) Certification of the plot plan by a registered land surveyor or professional engineer.

2. Proposed elevation, and method thereof, of all development within a Special Flood Hazard Area including but not limited to:
   a) Elevation in relation to NAVD 1988 of the proposed reference level (including basement) of all structures;
   b) Elevation in relation to NAVD 1988 to which any nonresidential structure in Zone AE, A or AO will be flood-proofed; and
   c) Elevation in relation to NAVD 1988 to which any proposed utility systems will be elevated or floodproofed;
3. If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-34) with supporting data and an operational plan that includes, but is not limited to, installation, exercise, and maintenance of floodproofing measures.
4. A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this ordinance are met. These details include but are not limited to:
   a) The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation on columns/posts/piers/piles/shear walls);
   b) Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with Section 5.20.D, when solid foundation perimeter walls are used in Zones A, AO, AE, AH and A99;
   c) The following, in Coastal High Hazard Areas, in accordance with Section 5.20.D and Section 5.24;

i) V-Zone Certification with accompanying plans and specifications verifying the engineered structure and any breakaway wall designs; In addition, prior to the Certificate of Compliance/Occupancy issuance, a registered professional engineer or architect shall certify the finished construction is compliant with the design, specifications, and plans for VE Zone construction.

ii) Plans for open wood latticework or insect screening, if applicable;

iii) Plans for non-structural fill, if applicable. If non-structural fill is proposed, it must be demonstrated through coastal engineering analysis that the proposed fill would not result in any increase in the Base Flood Elevation or otherwise cause adverse impacts by wave ramping and deflection on to the subject structure or adjacent properties.

5. Usage details of any enclosed areas below the regulatory flood protection elevation.
6. Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.
7. Copies of all other Local, State and Federal permits required prior to floodplain development permit issuance (Wetlands, Endangered Species, Erosion and Sedimentation Control, CAMA, Riparian Buffers, Mining, etc.)
8. Documentation for placement of Recreational Vehicles and/or Temporary Structures, when applicable, to ensure Section 5.20.F-G of this article are met.
9. A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation.

B. PERMIT REQUIREMENTS

The Floodplain Development Permit shall include, but not be limited to:

1. A complete description of all the development to be permitted under the floodplain development permit (e.g. house, garage, pool, septic, bulkhead, cabana, pier, bridge, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials, etc.).
2. The Special Flood Hazard Area determination for the proposed development per available data specified in Section 5.7.
3. The regulatory flood protection elevation required for the reference level and all attendant utilities.
4. The regulatory flood protection elevation required for the protection of all public utilities.
5. All certification submittal requirements with timelines.

6. A statement that no fill material or other development shall encroach into the floodway or non-encroachment area of any watercourse, as applicable.
7. The flood openings requirements, if in Zones A, AO, AE AH or A 99.
8. Limitations of use of the enclosures below the lowest floor (if applicable). (i.e., Parking, Building Access and Limited Storage only).
9. A statement, if in Zone VE, that there shall be no alteration of sand dunes which would increase potential flood damage.
10. A statement, if in Zone VE, that there shall be no fill used for structural support.
11. A statement, that all materials below BFE/RFPE must be flood resistant materials.

C. CERTIFICATION REQUIREMENTS

1. Elevation Certificates
   a) An Elevation Certificate (FEMA Form 086-0-33) is required prior to the actual start of any new construction. It shall be the duty of the permit holder to submit to the floodplain administrator a certificate of the elevation of the reference level, in relation to NAVD 1988. The floodplain administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder prior to the beginning of construction. Failure to submit the certification or failure to make required corrections shall be cause to deny a floodplain development permit.
   b) An Elevation Certificate (FEMA Form 086-0-33) is required after the reference level is established. Within seven (7) calendar days of establishment of the reference level elevation, it shall be the duty of the permit holder to submit to the floodplain administrator a certification of the elevation of the reference level, in relation to mean sea level. Any work done within the seven (7) day calendar period and prior to submission of the certification shall be at the permit holder's risk. The floodplain administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further work being permitted to proceed. Failure to submit the certification or failure to make required corrections shall be cause to issue a stop-work order for the project.
   c) A final as-built Elevation Certificate (FEMA Form 086-0-33) is required after construction is completed and prior to Certificate of Compliance/Occupancy issuance. It shall be the duty of the permit holder to submit to the floodplain administrator a certification of final as-built construction of the elevation of the reference level and all attendant utilities. The floodplain administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to Certificate of Compliance/Occupancy issuance. In some instances, another certification may be required to certify corrected as-built construction. Failure to submit the certification or failure to make required corrections

shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy.

2. Floodproofing Certificate
   a) If nonresidential floodproofing is used to meet the regulatory flood protection elevation requirements, a Floodproofing Certificate (FEMA Form 086-0-34), with supporting data and an operational plan, is required prior to the actual start of any construction. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the floodproofed design elevation of the reference level and all attendant utilities, in relation to NAVD 1988. Floodproofing certification shall be prepared by or under the direct supervision of a professional engineer or architect and certified by same. The Floodplain Administrator shall review the certificate data and plan. Deficiencies detected by such review shall be corrected by the applicant prior to permit approval. Failure to submit the certification or failure to make required corrections shall be cause to deny a floodplain development permit. Failure to construct in accordance with the certified design shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy.
   b) A final Finished Construction Floodproofing Certificate (FEMA Form 086-0-34), with supporting data, an operational plan, and an inspection and maintenance plan are required prior to the issuance of a Certificate of Compliance/Occupancy. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the floodproofed design elevation of the reference level and all attendant utilities, in relation to NAVD 1988. Floodproofing certificate shall be prepared by or under the direct supervision of a professional engineer or architect and certified by same. The Floodplain Administrator shall review the certificate data, the operational plan, and the inspection and maintenance plan. Deficiencies detected by such review shall be corrected by the applicant prior to Certificate of Occupancy. Failure to submit the certification or failure to make required corrections shall be cause to deny a Floodplain Development Permit. Failure to construct in accordance with the certified design shall be cause to deny a Certificate of Compliance/Occupancy.
3. If a manufactured home is placed within Zone A, AO, AE, AH or A 99 and the elevation of the chassis is more than 36 inches in height above grade, an engineered foundation certification is required per Section 5.20.C.
4. If a watercourse is to be altered or relocated, a description of the extent of watercourse alteration or relocation; a professional engineer's certified report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map showing the location of the proposed watercourse

alteration or relocation shall all be submitted by the permit applicant prior to issuance of a floodplain development permit. (See also Article 6)

5. Certification Exemptions. The following structures, if located within Zone A, AO, AE, AH or A 99, are exempt from the elevation/floodproofing certification requirements specified in Items 1 and 2 of this subsection:
   a) Recreational Vehicles meeting requirements of Section 5.20.F.1;
   b) Temporary Structures meeting requirements of Section 5.20.G; and
   c) Accessory Structures less than 150 square feet meeting requirements of Section 5.20.H.
6. A V-Zone Certification with accompanying design plans and specifications is required prior to issuance of a Floodplain Development permit within coastal high hazard areas. It shall be the duty of the permit applicant to submit to the floodplain administrator said certification to ensure the design standards of this article are met. A registered professional engineer or architect shall develop or review the structural design, plans, and specifications for construction and certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of this article. This certification is not a substitute for an Elevation Certificate.

D. DETERMINATIONS FOR EXISTING BUILDINGS AND STRUCTURES

For applications for building permits to improve buildings and structures, including alterations, movement, enlargement, replacement, repair, change of occupancy, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the Floodplain Administrator, in coordination with the Building Official, shall:

A. Estimate the market value, or require the applicant to obtain an appraisal of the market value prepared by a qualified independent appraiser, of the building or structure before the start of construction of the proposed work; in the case of repair, the market value of the building or structure shall be the market value before the damage occurred and before any repairs are made;
B. Compare the cost to perform the improvement, the cost to repair a damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, if applicable, to the market value of the building or structure;
C. Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage; and
D. Notify the applicant if it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the NC Building Code and this ordinance is required.

5.16 DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR

The Floodplain Administrator shall perform, but not be limited to, the following duties:

A. Review all floodplain development applications and issue permits for all proposed development within Special Flood Hazard Areas to assure that the requirements of this article have been satisfied.
B. Advise permittee that additional Federal or State permits (Wetlands, Endangered Species, Erosion and Sedimentation Control, CAMA, Riparian Buffers, Mining, etc.) may be required, and require that copies of such permits be provided and maintained on file with the floodplain development permit.
C. Notify adjacent communities and the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management, State Coordinator for the National Flood Insurance Program prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA).
D. Assure that maintenance is provided within the altered or relocated portion of said watercourse so that the flood-carrying capacity is not diminished.
E. Prevent encroachments into floodways and non-encroachment areas unless the certification and flood hazard reduction provisions of Section 5.23 are met.
F. Obtain actual elevation (in relation to NAVD 1988) of the reference level (including basement) and all attendant utilities of all new or substantially improved structures, in accordance with Section 5.15.C.
G. Obtain actual elevation (in relation to NAVD 1988) to which all new and substantially improved structures and utilities have been floodproofed, in accordance with Section 5.15.C.
H. Obtain actual elevation (in relation to NAVD 1988) of all public utilities in accordance with Section 5.15.C.
I. When flood proofing is utilized for a particular structure, obtain certifications from a registered professional engineer or architect in accordance with Section 5.15.C and Section 5.20.B.
J. Where interpretation is needed as to the exact location of boundaries of the Special Flood Hazard Areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), make the necessary interpretation. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in this article.
K. When Base Flood Elevation (BFE) data has not been provided in accordance with Section 5.7, obtain, review, and reasonably utilize any Base Flood Elevation (BFE) data, along with floodway data or non- encroachment area data available from a Federal, State, or other source, including data developed pursuant to Section 5.21.B.2 in order to administer the provisions of this article.
L. When Base Flood Elevation (BFE) data is provided but no floodway nor non-encroachment area data has been provided in accordance with Section 5.7, obtain, review, and reasonably utilize any floodway data or non-encroachment area data available from a Federal, State, or other source in order to administer the provisions of this article.
M. When the lowest ground elevation of a parcel or structure in a Special Flood Hazard Area is above the Base Flood Elevation, advise the property owner of the option to apply for a

Letter of Map Amendment (LOMA) from FEMA. Maintain a copy of the Letter of Map Amendment (LOMA) issued by FEMA in the floodplain development permit file.

N. Permanently maintain all records that pertain to the administration of this article and make these records available for public inspection.

O. Make on-site inspections of work in progress. As the work pursuant to a floodplain development permit progresses, the floodplain administrator shall make as many inspections of the work as may be necessary to ensure that the work is being done according to the provisions of the local ordinance and the terms of the permit. In exercising this power, the floodplain administrator has a right, upon presentation of proper credentials, to enter on any premises within the jurisdiction of the community at any reasonable hour for the purposes of inspection or other enforcement action.

P. Issue stop-work orders as required. Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this article, the floodplain administrator may order the work to be immediately stopped. The stop-work order shall state the specific work to be stopped, the specific reason(s) for the stoppage, and the condition(s) under which the work may be resumed. Violation of a stop-work order constitutes a misdemeanor.

Q. Revoke floodplain development permits as required. The floodplain administrator may revoke and require the return of the floodplain development permit by notifying the permit holder in writing stating the reason(s) for the revocation. Permits shall be revoked for any substantial departure from the approved application, plans, or specifications; for refusal or failure to comply with the requirements of State or local laws; or for false statements or misrepresentations made in securing the permit. Any floodplain development permit mistakenly issued in violation of an applicable State or local law may also be revoked.

R. Make periodic inspections throughout all special flood hazard areas within the jurisdiction of this article. The floodplain administrator and each member of his or her inspections department shall have a right, upon presentation of proper credentials, to enter on any premises within the territorial jurisdiction of the department at any reasonable hour for the purposes of inspection or other enforcement action.

S. Follow through with corrective procedures of Section 5.17.

T. Review, provide input, and make recommendations for variance requests.

U. Maintain a current map repository to include, but not limited to, the FIS Report, FIRM and other official flood maps and studies adopted in accordance with Section 5.7 of this ordinance, including any revisions thereto including Letters of Map Change, issued by FEMA. Notify State and FEMA of mapping needs.

V. Coordinate revisions to FIS reports and FIRMs, including Letters of Map Revision Based on Fill (LOMR-F) and Letters of Map Revisions (LOMR).

5.17 CORRECTIVE PROCEDURES

A. VIOLATIONS TO BE CORRECTED

When the Floodplain Administrator finds violations of applicable State and local laws, it shall be his or her duty to notify the owner or occupant of the building of the violation. The owner or occupant shall immediately remedy each of the violations of law cited in such notification.

B. ACTIONS IN EVENT OF FAILURE TO TAKE CORRECTIVE ACTION

If the owner of a building or property shall fail to take prompt corrective action, the Floodplain Administrator shall give the owner written notice, by certified or registered mail to the owner's last known address or by personal service, stating:

1. That the building or property is in violation of the Flood Damage Prevention Ordinance;
2. That a hearing will be held before the Floodplain Administrator at a designated place and time, not later than 10 days after the date of the notice, at which time the owner shall be entitled to be heard in person or by counsel and to present arguments and evidence pertaining to the matter; and,
3. That following the hearing, the Floodplain Administrator may issue such an order to alter, vacate, or demolish the building; or to remove fill as appears appropriate.

C. ORDER TO TAKE CORRECTIVE ACTION

If, upon a hearing held pursuant to the notice prescribed above, the floodplain administrator shall find that the building or development is in violation of the Flood Damage Prevention Ordinance, the administrator shall issue an order in writing to the owner, requiring the owner to remedy the violation within a specified time period, not less than 60 calendar days, nor more than 180 calendar days. Where the floodplain administrator finds that there is imminent danger to life or other property, the administrator may order that corrective action be taken in such lesser period as may be feasible.

D. APPEAL

Any owner who has received an order to take corrective action may appeal from the order to the Board of Adjustment by giving notice of appeal in writing to the floodplain administrator and the clerk within 10 days following issuance of the final order. In the absence of an appeal, the order of the floodplain administrator shall be final. The Board of Adjustment shall hear an appeal within a reasonable time and may affirm, modify and affirm, or revoke the order.

E. FAILURE TO COMPLY WITH ORDER

If the owner of a building or property fails to comply with an order to take corrective action from which no appeal has been made or fails to comply with an order of the governing body following an appeal, the owner shall be guilty of a misdemeanor and shall be punished at the discretion of the court.

5.18 FLOODPLAIN DEVELOPMENT VARIANCE PROCEDURES

A. The Board of Adjustment as established by the Board of Aldermen, shall hear and decide requests for variances from the requirements of this ordinance.

B. Any person aggrieved by the decision of the Board of Adjustment may appeal such decision to the Superior Court as provided in Section 2.7.D.11.

C. Variances may be issued for:

1. The repair or rehabilitation of historic structures upon the determination that the proposed repair or rehabilitation will not preclude the structure's continued

designation as a historic structure and that the variance is the minimum necessary to preserve the historic character and design of the structure.

2. Functionally dependent facilities if determined to meet the definition as stated in Section 5.5, provided provisions of Section 5.18.I.2-3;5 have been satisfied, and such facilities are protected by methods that minimize flood damages.
3. Any other type of development provided it meets the requirements stated in this section.

D. In passing upon variances, the Board of Adjustment shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this ordinance, and:

1. The danger that materials may be swept onto other lands to the injury of others;
2. The danger to life and property due to flooding or erosion damage;
3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
4. The importance of the services provided by the proposed facility to the community;
5. The necessity to the facility of a waterfront location as defined as a functionally dependent facility, where applicable;
6. The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
7. The compatibility of the proposed use with existing and anticipated development;
8. The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
9. The safety of access to the property in times of flood for ordinary and emergency vehicles;
10. The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and
11. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

E. A written report addressing each of the above factors shall be submitted with the application for a variance.

F. Upon consideration of the factors listed above and the purposes of this ordinance, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this ordinance.

G. Any applicant to whom a variance is granted shall be given written notice specifying the difference between the Base Flood Elevation (BFE) and the elevation to which the structure is to be built and that such construction below the Base Flood Elevation increases risks to life and property, and that the issuance of a variance to construct a structure below the Base Flood Elevation will result in increased premium rates for flood insurance up to $25 per $100 of insurance coverage. Such notification shall be maintained with a record of all variance actions, including justification for their issuance.

H. The floodplain administrator shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency (FEMA) and the State of North Carolina upon request.

I. Conditions for Variances:

1. Variances shall not be issued when the variance will make the structure in violation of other Federal, State, or local laws, regulations, or ordinances.
2. Variances shall not be issued within any designated floodway or non-encroachment area if the variance would result in any increase in flood levels during the base flood discharge.
3. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
4. Variances shall only be issued prior to development permit approval.
5. Variances shall only be issued upon an affirmative vote (by a four-fifths majority) on each of the three (3) findings below. Insofar as practicable, a motion to make an affirmative finding on each of the requirements set forth herein shall include a statement of the specific reasons or findings of fact supporting such motion:
   a) A showing of good and sufficient cause;
   b) A determination that failure to grant the variance would result in exceptional hardship; and
   c) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense, create nuisance, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

J. A variance may be issued for solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities that are located in Special Flood Hazard Areas provided that all of the following conditions are met.

1. The use serves a critical need in the community.
2. No feasible location exists for the use outside the Special Flood Hazard Area.
3. The reference level of any structure is elevated or floodproofed to at least the regulatory flood protection elevation.
4. The use complies with all other applicable Federal, State and local laws.

K. The City of Southport shall notify the Secretary of the North Carolina Department of Crime Control and Public Safety of its intention to grant a variance at least 30 calendar days prior to granting the variance.

5.19 GENERAL STANDARDS

A. SPECIAL FLOOD HAZARD AREAS

In all Special Flood Hazard Areas the following provisions are required:

1. All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure.
2. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

3. All new construction and substantial improvements shall be constructed by methods and practices that minimize flood damages.
4. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. These include, but are not limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, appliances (washers, dryers, refrigerators, freezers, etc.), hot water heaters, and electric outlets/switches.
    a) Replacements part of a substantial improvement, electrical, heating, ventilation, plumbing, air conditioning equipment, and other service equipment shall also meet the above provisions.
    b) Replacements that are for maintenance and not part of a substantial improvement may be installed at the original location provided the addition and/or improvements only comply with the standards for new construction consistent with the code and requirements for the original structure.
5. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
6. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into flood waters.
7. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
8. Nothing in this ordinance shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this ordinance and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the regulatory flood protection elevation in the floodway, non-encroachment area, or stream setback, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this ordinance.
9. New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted, except by variance as specified in Section 5.16.J. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a Special Flood Hazard Area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified according to Section 5.13.C of this ordinance.
10. All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.

11. All subdivision proposals and other development proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
12. All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
13. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.
14. When a structure is partially located in a Special Flood Hazard Area, the entire structure shall meet the requirements for new construction and substantial improvements.
15. When a structure is in multiple flood hazard zones or in a flood hazard risk zone with multiple base flood elevations, the provisions for the more restrictive flood hazard risk zone and the highest BFE shall apply.
16. In “Special Flood Hazard Areas” where Base Flood Elevations (BFEs) have been determined, this elevation shall be the BFE plus three (3) feet freeboard. In “Special Flood Hazard Areas” where no BFE has been established, this elevation shall be at least three (3) feet above the highest adjacent grade

5.20 SPECIFIC STANDARDS

In all Special Flood Hazard Areas where Base Flood Elevation (BFE) data has been provided, as set forth in Section 5.6 or Section 5.16.K-L the following provisions, in addition to Section 5.17, are required:

A. RESIDENTIAL CONSTRUCTION

New construction and substantial improvement of any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation, as defined in Section 5.5.

B. NONRESIDENTIAL CONSTRUCTION

New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation, as defined in Section 5.5.

Structures located in A, AE, AH, AO and A99 Zones may be floodproofed to the Regulatory Flood Protection Elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the regulatory flood protection elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.

For AO Zones, the floodproofing elevation shall be in accordance with Section 5.15.C. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator official as set forth in Section 5.15.C along with the operational and maintenance plans.

C. MANUFACTURED HOMES

1. New or replacement manufactured homes shall be elevated so that the reference level of the manufactured home is no lower than the regulatory flood protection elevation, as defined in Section 5.5.
2. Manufactured homes shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement, either by engineer certification, or in accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes, adopted by the Commissioner of Insurance pursuant to NCGS 143-143.15 or a certified engineered foundation. Additionally, when the elevation would be met by an elevation of the chassis 36 inches or less above the grade at the site, the chassis shall be supported by reinforced piers or engineered foundation. When the elevation of the chassis is above 36 inches in height, an engineering certification is required.
3. All enclosures or skirting below the lowest floor shall meet the requirements of Section 5.20.D.1-3.
4. An evacuation plan must be developed for evacuation of all residents of all new, substantially improved or substantially damaged manufactured home parks or subdivisions located within flood prone areas. This plan shall be filed with and approved by the floodplain administrator and the local Emergency Management coordinator.

D. ELEVATED BUILDINGS

Fully enclosed areas of new construction and substantially improved structures, which are below the lowest floor:

1. Shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas;
2. Shall be constructed entirely of flood resistant materials, up to the regulatory flood protection elevation;
3. Shall include, in Zones A, AO, AE, AO and A99, flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the following minimum design criteria;
    a) A minimum of two (2) flood openings on different sides of each enclosed area subject to flooding;

b) The total net area of all flood openings must be at least one square inch for each square foot of enclosed area subject to flooding;
c) If a building has more than one (1) enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;
d) The bottom of all required flood openings shall be no higher than (1) foot above the adjacent grade;
e) Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and
f) Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.

4. Shall allow, in Coastal High Hazard Areas (Zones VE), either be free of obstruction or constructed with breakaway walls, open wood latticework or insect screening, provided it is not part of the structural support of the building and is designed so as to breakaway, under abnormally high tides or wave action, without causing damage to the structural integrity of the building, provided the following design specifications are met:
   a) Material shall consist of open wood latticework or insect screening; or
   b) Breakaway walls shall meet the following design specifications:
   c) Breakaway walls shall have flood openings that allow for the automatic entry and exit of floodwaters to minimize damage caused by hydrostatic loads, per Section 5.20.D.3;
      i) Design safe loading resistance of each wall shall be not less than 10 nor more than 20 pounds per square foot; or
      ii) Breakaway walls that exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by State or local codes) shall be certified by a registered professional engineer or architect that the breakaway wall will collapse from a water load less than that which would occur during the base flood event, and the elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). The water loading values used shall be those associated with the base flood. The wind loading values

used shall be those required by the North Carolina State Building Code.

d) Concrete pads, including patios, decks, parking pads, walkways, driveways, pool decks, etc. the following is required:
   i) Shall be structurally independent of the primary structural foundation system of the structure and shall not adversely affect structures through redirection of floodwaters or debris; and
   ii) Shall be constructed to breakaway cleanly during design flood conditions, shall be frangible, and shall not produce debris capable of causing damage to any structure. (The installation of concrete in small segments (approximately 4 feet x 4 feet) that will easily break up during the base flood event, or score concrete in 4 feet x 4 feet maximum segments is acceptable to meet this standard); and
   iii) Reinforcing, including welded wire fabric, shall not be used in order to minimize the potential for concreted pads being a source of debris; and
   iv) Pad thickness shall not exceed 4 inches; or
   v) Provide a Design Professional's certification stating the design and method of construction to be used meet the applicable criteria of this section.

e) Property Owners shall be required to execute and record a non-conversion agreement prior to issuance of a building permit declaring that the area below the lowest floor shall not be improved, finished, or otherwise converted to habitable space. The City of Southport will have the right to inspect the enclosed area.

E. ADDITIONS/IMPROVEMENTS

1. Additions and/or improvements to pre-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:
   a) Not a substantial improvement, the addition and/or improvements must be designed to minimize flood damages and must not be any more non-conforming than the existing structure.
   b) A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
2. Additions to pre-FIRM or post-FIRM structures that are a substantial improvement with no modifications to the existing structure other than a standard door in the common wall shall require only the addition to comply with the standards for new construction.

3. Additions and/or improvements to post-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:
   a) Not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction.
   b) A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
4. When an independent perimeter load-bearing wall is provided between the addition and the existing building, the addition(s) shall be considered a separate building and only the addition must comply with the standards for new construction.
5. Any combination of repair, reconstruction, rehabilitation, addition or improvement of a building or structure taking place during a one (1) year period, the cumulative cost of which equals or exceeds 50% of the market value of the structure before the improvement or repair is started must comply with the standards for new construction. For each building or structure, the one (1) year period begins on the date of the first improvement or repair of that building or structure subsequent to the effective date of this ordinance. Substantial damage also means flood-related damage sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds 25% of the market value of the structure before the damage occurred. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The requirement does not, however, include either:
   a) Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assume safe living conditions.
   b) Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

F. RECREATIONAL VEHICLES

Recreational vehicles shall either:

1. Be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities, and has no permanently attached additions); or
2. Meet all the requirements for new construction.

G. TEMPORARY NONRESIDENTIAL STRUCTURES

Prior to the issuance of a floodplain development permit for a temporary structure, the applicant must submit to the floodplain administrator a plan for the removal of such structure(s)

in the event of a hurricane, flash flood or other type of flood warning notification. The following information shall be submitted in writing to the floodplain administrator for review and written approval;

1. A specified time period for which the temporary use will be permitted. Time specified should not exceed three (3) months, renewable up to one (1) year;
2. The name, address, and phone number of the individual responsible for the removal of the temporary structure;
3. The time frame prior to the event at which a structure will be removed (i.e., minimum of 72 hours before landfall of a hurricane or immediately upon flood warning notification);
4. A copy of the contract or other suitable instrument with the entity responsible for physical removal of the structure; and
5. Designation, accompanied by documentation, of a location outside the Special Flood Hazard Area, to which the temporary structure will be moved.

H. ACCESSORY STRUCTURES

When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area, the following criteria shall be met:

1. Accessory structures shall not be used for human habitation (including working, sleeping, living, cooking, or restroom areas);
2. Accessory structures shall not be temperature-controlled;
3. Accessory structures shall be designed to have low flood damage potential;
4. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;
5. Accessory structures shall be firmly anchored in accordance with Section 5.19.A;
6. All service facilities such as electrical shall be installed in accordance with Section 5.19.D; and
7. Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below regulatory flood protection elevation in conformance with Section 5.20.D.3.
8. An accessory structure with a footprint less than 150 square feet that satisfied the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with Section 5.15.C.

I. TANKS

When gas and liquid storage tanks are to be placed within a Special Flood Hazard Area, the following criteria shall be met:

1. Underground tanks. Underground tanks in flood hazard areas shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads during conditions of the design flood, including the effects of buoyancy assuming the tank is empty;

2. Above-groundtanks, elevated. Above-ground tanks in flood hazard areas shall be elevated to or above the Regulatory Flood Protection Elevation on a supporting structure that is designed to prevent flotation, collapse or lateral movement during conditions of the design flood. Tank-supporting structures shall meet the foundation requirements of the applicable flood hazard area;
3. Above-ground tanks, not elevated. Above-ground tanks that do not meet the elevation requirements of Section 5.20.B of this article shall be permitted in flood hazard areas provided the tanks are designed, constructed, installed, and anchored to resist all flood-related and other loads, including the effects of buoyancy, during conditions of the design flood and without release of contents in the floodwaters or infiltration by floodwaters into the tanks. Tanks shall be designed, constructed, installed, and anchored to resist the potential buoyant and other flood forces acting on an empty tank during design flood conditions.
4. Tank inlets and vents. Tank inlets, fill openings, outlets and vents shall be:
    a) At or above the Regulatory Flood Protection Elevation or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the design flood; and
    b) Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the design flood.

J. OTHER DEVELOPMENT

1. Fences in regulated floodways and NEAS that have the potential to block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the limitations of Section 5.23 of this article.
2. Roads and watercourse crossings in regulated floodways and NEAS. Roads and watercourse crossings, including roads, bridges, culverts, low-water crossings and similar means for vehicles or pedestrians to travel from one side of a watercourse to the other side, that encroach into regulated floodways shall meet the limitations of Section 5.23 of this article.

5.21 STANDARDS FOR FLOODPLAINS WITHOUT ESTABLISHED BASE FLOOD ELEVATIONS

Within the Special Flood Hazard Areas designated as Approximate Zone A and established in Section 5.7, where no Base Flood Elevation (BFE) data is available, the following provisions, in addition to Section 5.19 and 5.20, shall apply:

A. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of 20 feet each side from top of bank or five (5) times the width of the stream, whichever is greater, unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
B. The BFE used in determining the regulatory flood protection elevation shall be determined based on one of the following criteria set in priority order:

1. If Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this ordinance and shall be elevated or floodproofed in accordance with standards in Section 5.16.K-L.
2. All subdivision, manufactured home park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than (5) acres or has more than 50 lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference per Section 5.7 to be utilized in implementing this ordinance.
3. When Base Flood Elevation (BFE) data is not available from a Federal, State, or other source as outlined above, the reference level shall be elevated to or above the regulatory flood protection elevation, as defined in Section 5.5.

5.22 STANDARDS FOR RIVERINE FLOODPLAINS WITH BFE BUT WITHOUT ESTABLISHED FLOODWAYS OR NON-ENCROACHMENT AREAS

Along rivers and streams where BFE data is provided but neither floodway nor non-encroachment areas are identified for a Special Flood Hazard Area on the FIRM or in the FIS report, the following requirements shall apply to all development within such areas:

A. Standards outlined in Sections 5.19 and 5.20; and
B. Until a regulatory floodway or non-encroachment area is designated, no encroachments, including fill, new construction, substantial improvements, or other development, shall be permitted unless certification with supporting technical data by a registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the community.

5.23 FLOODWAYS OR NON-ENCROACHMENT AREAS

Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas established in Section 5.7. The floodways and non- encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The following provisions, in addition to standards outlined in Sections 5.19 and 5.20, shall apply to all development within such areas:

A. No encroachments, including fill, new construction, substantial improvements and other developments shall be permitted unless:
   1. The proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the floodplain administrator prior to issuance of floodplain development permit, or
   2. A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment.

B. If Section 5.23.A is satisfied, all development shall comply with all applicable flood hazard reduction provisions of this ordinance.

C. No manufactured homes shall be permitted, except replacement manufactured homes in an existing manufactured home park or subdivision, provided the following provisions are met:

1. The anchoring and the elevation standards of Section 5.20.C; and
2. The no encroachment standard of Section 5.23.A.

5.24 COASTAL HIGH HAZARD AREAS (ZONES VE)

Coastal High Hazard Areas are Special Flood Hazard Areas established in Section 5.7, and designated as Zones VE. These areas have special flood hazards associated with high velocity waters from storm surges or seismic activity and, therefore, in addition to meeting all requirements of this article with the exception of floodway and non-encroachment area provisions (Section 5.23), the following provisions shall apply:

A. All new construction and substantial improvement shall:

1. Be located landward of the reach of mean high tide;
2. Be located landward of the first line of stable natural vegetation; and
3. Comply with all applicable CAMA setback requirements.

B. All new construction and substantial improvements shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings or columns) is no lower than the regulatory flood protection elevation. Floodproofing shall not be utilized on any structures in Coastal High Hazard Areas to satisfy the regulatory flood protection elevation requirements.

C. All new construction and substantial improvements shall have the space below the lowest floor free of obstruction so as not to impede the flow of flood waters, with the following exceptions:

1. Open wood latticework or insect screening may be permitted below the regulatory flood protection elevation for aesthetic purposes only and must be designed to wash away in the event of abnormal wave action and in accordance with Section 5.20.D.4.A. Design plans shall be submitted in accordance with Section 5.15.A.4.C; or
2. Breakaway walls may be permitted provided they meet the criteria set forth in Section 5.20.D.2. Design plans shall be submitted in accordance with Section 5.15.A.4.C.

D. All new construction and substantial improvements shall be securely anchored to pile or column foundations. All pilings and columns and the structures attached thereto shall be anchored to resist flotation, collapse, and lateral movement due to the effect of wind and water loads acting simultaneously on all building components.

1. Water loading values used shall be those associated with the base flood.
2. Wind loading values used shall be those required by the current edition of the North Carolina State Building Code.

E. For concrete pads, including patios, decks, parking pads, walkways, driveways, pool decks, etc. the following is required:

1. Shall be structurally independent of the primary structural foundation system of the structure and shall not adversely affect structures through redirection of floodwaters or debris; and
2. Shall be constructed to breakaway cleanly during design flood conditions, shall be frangible, and shall not produce debris capable of damage to any structure. (The installation of concrete in small segments (approximately 4 feet x 4 feet) that will easily break up during the base flood event, or score concrete in 4 feet x 4 feet maximum segments is acceptable to meet this standard); and
3. Reinforcing, including welded wire fabric, shall not be used in order to minimize the potential for concreted pads being a source of debris; and
4. Pad thickness shall not exceed four (4) inches; or
5. Provide a Design Professional's certification stating the design and method of construction to be used meet the applicable criteria of this section.

F. For swimming pools and spas, the following is required:
1. Be designed to withstand all flood-related loads and load combinations.
2. Be designed and constructed to break away during design flood conditions without producing debris capable of causing damage to any structure; or
3. Be elevated so that the lowest horizontal structural member is elevated above the RFPE; or
4. Be sited to remain in the ground during design flood conditions without obstructing flow that results in damage to any structure
5. Registered design professionals must certify to local officials that a pool or spa beneath or near a VE Zone building will not be subject to flotation or displacement that will damage building foundations or elevated portions of the building or any nearby buildings during a coastal flood.
6. Pool equipment must be located above the RFPE whenever practicable. Pool equipment shall not be located beneath an elevated structure.

G. All elevators, vertical platform lifts, chair lifts, etc. the following is required:
1. Elevator enclosures must be designed to resist hydrodynamic and hydrostatic forces as well as erosion, scour, and waves.
2. Utility equipment in Coastal High Hazard Areas (VE Zones) must not be mounted on, pass through, or be located along breakaway walls.
3. The cab, machine/equipment room, hydraulic pump, hydraulic reservoir, counter weight and roller guides, hoist cable, limit switches, electric hoist motor, electrical junction box, circuit panel, and electrical control panel are all required to be above RFPE. When this equipment cannot be located above the RFPE, it must be constructed using flood damage-resistant components.
4. Elevator shafts/enclosures that extend below the RFPE shall be constructed of reinforced masonry block or reinforced concrete walls and located on the landward side of the building to provide increased protection from flood damage. Drainage must be provided for the elevator pit.
5. Flood damage-resistant materials can also be used inside and outside the elevator cab to reduce flood damage. Use only stainless steel doors and door frames below the BFE. Grouting in of door frames and sills is recommended.

6. If an elevator is designed to provide access to areas below the BFE, it shall be equipped with a float switch system that will activate during a flood and send the elevator cab to a floor above the RFPE.

H. Property owners shall be required to execute and record a non-conversion agreement prior to issuance of a building permit declaring that the area below the lowest floor, or the detached accessory building shall not be improved, or otherwise converted; the City of Southport will have the right to inspect the enclosed area. This agreement shall be recorded with the Brunswick County Register of Deeds and shall transfer with the property in perpetuity.

I. A registered professional engineer or architect shall certify that the design, specifications and plans for construction are in compliance with the provisions contained in Section 5.15; Section 5.23.C.1-2; Section 5.24.D; and Section 5.24.J of this ordinance on the current version of the North Carolina "National Flood Insurance Program V-Zone Certification" form.

J. Fill shall not be used for structural support. Limited non-compacted and non-stabilized fill may be used around the perimeter of a building for landscaping/aesthetic purposes provided it is demonstrated through coastal engineering analysis that the proposed fill would not result in any increase in the Base Flood Elevation and not cause any adverse impacts by wave ramping and deflection to the subject structure or adjacent properties. In determining the potential for an increase in the Base Flood Elevation, the applicant shall include a quantitative coastal engineering analysis with supporting calculations and information prepared by a licensed and registered North Carolina coastal geologist or engineer demonstrating no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent elevated buildings and structures. The analysis shall be submitted under the applicable professional seal with accompanying third-party review fee.

K. There shall be no alteration of sand dunes which would increase potential flood damage. In determining the potential for an increase in flood damage, the applicant shall include a quantitative coastal engineering analysis with supporting calculations and information prepared by a licensed and registered North Carolina coastal geologist or engineer demonstrating no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent elevated buildings and structures. The analysis shall be submitted under the applicable professional seal with accompanying third-party review fee.

L. No manufactured homes shall be permitted except in an existing manufactured home park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring and elevation standards of this section have been satisfied.

M. Recreational vehicles may be permitted in Coastal High Hazard Areas provided that they meet the Recreational Vehicle criteria of Section 5.20.F and the Temporary Structure provisions of Section 5.20.G.

N. A deck that is structurally attached to a building or structure shall have the bottom of the lowest horizontal structural member at or above the Regulatory Flood Protection Elevation and any supporting members that extend below the Regulatory Flood

Protection Elevation shall comply with the foundation requirements that apply to the building or structure, which shall be designed to accommodate any increased loads resulting from the attached deck. The increased loads must be considered in the design of the primary structure and included in the V-Zone Certification required under Section 5.15.C.

O. A deck or patio that is located below the Regulatory Flood Protection Elevation shall be structurally independent from buildings or structures and their foundation systems, and shall be designed and constructed either to remain intact and in place during design flood conditions or to break apart into small pieces to minimize debris during flooding that is capable of causing structural damage to the building or structure or to adjacent buildings and structures.

P. In coastal high hazard areas, development activities other than buildings and structures shall be permitted only if also authorized by the appropriate state or local authority; if located outside the footprint of, and not structurally attached to, buildings and structures; and if analyses prepared by qualified registered design professionals demonstrate no harmful diversion of floodwaters or wave runup and wave reflection that would increase damage to adjacent buildings and structures. Such other development activities include but are not limited to:

1. Bulkheads, seawalls, retaining walls, revetments, and similar erosion control structures;
2. Solid fences and privacy walls, and fences prone to trapping debris, unless designed and constructed to fail under flood conditions less than the design flood or otherwise function to avoid obstruction of floodwaters.

Q. No more than four (4) electrical outlets and no more than four (4) electrical switches may be permitted below RFPE unless required by building code.

5.25 STANDARDS FOR COASTAL A ZONES (ZONE CAZ) LIMWA

Structures in CAZs shall be designed and constructed to meet V Zone requirements, including requirements for breakaway walls. However, the NFIP regulations also require flood openings in walls surrounding enclosures below elevated buildings in CAZs (see Technical Bulletin 1, Openings in Foundation Walls and Walls of Enclosures). Breakaway walls used in CAZs must have flood openings that allow for the automatic entry and exit of floodwaters to minimize damage caused by hydrostatic loads. Openings also function during smaller storms or if anticipated wave loading does not occur with the base flood.

A. All new construction and substantial improvements shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings or columns) is no lower than the regulatory flood protection elevation. Floodproofing shall not be utilized on any structures in Coastal A Zones to satisfy the regulatory flood protection elevation requirements

B. All new construction and substantial improvements shall have the space below the lowest horizontal structural member free of obstruction so as not to impede the flow of flood waters, with the following exceptions:

1. Open wood latticework or insect screening may be permitted below the lowest floor for aesthetic purposes only and must be designed to wash away in the

event of wave impact and in accordance with the provisions of Section 5.20.D.4. Design plans shall be submitted in accordance with the provisions of Section 5.15.A.4.C; or

2. Breakaway walls may be permitted provided they meet the criteria set forth in Section 5.20.D.4. Design plans shall be submitted in accordance with the provisions of Section 5.15.A.4.C;

C. All new construction and substantial improvements shall include, in Zones CAZ, flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the design criteria in Section 5.20.D.3.C.

D. All new construction and substantial improvements shall meet the provisions of Section 5.24.C.

E. A registered professional engineer or architect shall certify that the design, specifications and plans for construction are in compliance with the provisions of Section 5.20 and Section 5.24.C-D, on the current version of the North Carolina V-Zone Certification form or a locally developed V-Zone Certification form.

F. Recreational vehicles may be permitted in Coastal A Zones provided that they meet the Recreational Vehicle criteria Section 5.20.F.

G. Fill/Grading must meet the provisions of Section 5.24.J.

H. Decks and patios must meet the provisions of Section 5.24.N-O.

I. In coastal high hazard areas, development activities other than buildings and structures must meet the provisions of Section 5.24.M.

5.26 STANDARDS FOR AREAS OF SHALLOW FLOODING (ZONE AO)

Located within the Special Flood Hazard Areas established in Section 5.7, are areas designated as shallow flooding areas. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate. In addition to Section 5.19, all new construction and substantial improvements shall meet the following requirements:

A. The reference level shall be elevated at least as high as the depth number specified on the Flood Insurance Rate Map (FIRM), in feet, plus a freeboard of three (3) feet, above the highest adjacent grade; or at least two (2) feet above the highest adjacent grade plus a freeboard of three (3) feet if no depth number is specified.

B. Nonresidential structures may, in lieu of elevation, be floodproofed to the same level as required in Section 5.25.A so that the structure, together with attendant utility and sanitary facilities, below that level shall be watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Certification is required as per Sections 5.15.C and 5.20.B.

C. Adequate drainage paths shall be provided around structures on slopes, to guide floodwaters around and away from proposed structures.

5.27 EFFECTS ON RIGHTS AND LIABILITIES UNDER THE EXISTING FLOOD DAMAGE PREVENTION ORDINANCE

This article in part comes forward by re-enactment of some of the provisions of the flood damage prevention ordinance enacted May 24, 1974 as amended, and it is not the intention to repeal but rather to re-enact and continue to enforce without interruption of such existing provisions, so that all rights and liabilities that have accrued there under are reserved and may be enforced. The enactment of this article shall not affect any action, suit or proceeding instituted or pending. All provisions of the flood damage prevention ordinance of the City of Southport enacted on May 24, 1974, as amended, which are not reenacted herein are repealed.

5.28 EFFECT UPON OUTSTANDING FLOODPLAIN DEVELOPMENT PERMITS

Nothing herein contained shall require any change in the plans, construction, size, or designated use of any development or any part thereof for which a floodplain development permit has been granted by the floodplain administrator or his or her authorized agents before the time of passage of this article; provided, however, that when construction is not begun under such outstanding permit within a period of six (6) months subsequent to the date of issuance of the outstanding permit, construction or use shall be in conformity with the provisions of this article.

5.29 EFFECTIVE DATE

This article shall become effective August 28, 2018.

5.30 ADOPTION CERTIFICATION

This is a true and correct copy of the flood damage prevention ordinance (Article 5 of the Southport Unified Development Ordinance) as adopted by the Board of Aldermen of the City of Southport, North Carolina, on the 10th day of May, 2018.

Article 6: Stormwater Regulations

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6.1 GENERAL PROVISIONS

A. TITLE, PURPOSE

1. This article shall constitute and be known, and may be cited as the "Stormwater Discharge Control Regulations of the City of Southport, North Carolina."
2. The purpose of this article is to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased stormwater associated with future land development within the City of Southport. Proper management of stormwater runoff will include the following beneficial effects: (a) will minimize damage to public and private property; (b) ensure a functional drainage system; (c) reduce the effects of development on land and stream channel erosion; (d) assist in the attainment and maintenance of water quality standards; (e) reduce local flooding and drainage problems; (f) maintain as nearly as possible the pre- developed runoff characteristics of the area; and (g) facilitate economic development by mitigating associated flooding and drainage impacts.
3. The application of this article and the provisions expressed herein shall be the minimum stormwater discharge control requirements and shall not be deemed a limitation or repeal of any other obligations imposed by state statute or judicial decisions. The City Public Services Director or designee shall be responsible for the coordination and enforcement of the provisions of this article.

B. SCOPE OF ARTICLE

1. No person shall develop any land without having provided for appropriate stormwater discharge control measures to control or manage stormwater runoff, in compliance with this ordinance and North Carolina Department of Environmental Quality (NCDEQ) requirements, unless included in the exemptions of Section C below.
2. No land owner or land operator shall receive any of the building, grading, or other land development permits required for land disturbance activities without first meeting the requirements of this ordinance prior to commencing the proposed activity.

C. EXEMPTIONS FROM REQUIREMENTS

The following activities shall be exempt from these stormwater performance criteria:

1. Any logging and bona fide farm activity which is consistent with an approved soil conservation plan or timber management plan approved by the City, as applicable.
2. Additions or modifications to existing single-family or duplex structures that cumulatively propose to add less than 10,000 square feet of impervious surfaces.
3. Residential development of a single-family dwelling or a duplex on a single existing lot, provided the issuance of a state stormwater permit is not required (i.e. less than 10,000 square feet of impervious surfaces or not more than one (1) acre of land disturbance).

4. Repairs to any stormwater treatment practice deemed necessary by the City of Southport.

D. PERMITS

1. Except where provided elsewhere, development shall not commence without obtaining a Stormwater Permit pursuant to the provisions of this article.
2. The Stormwater Permit Application shall be made by, or on behalf of, the owner(s) or developer(s) of the site for which the permit is sought. The application shall be filed with the City on a form supplied by the City and shall be accompanied with the information identified in the Stormwater Technical Manual.
3. A Stormwater Permit shall not be issued until the following conditions are met:
   a) Approval by the UDO Administrator of the supporting information.
   b) Submission and approval of any required easements.
   c) Submission and approval of any required inspection and maintenance agreements.
   d) Payment of all fees.
4. If the development requires a Sediment and Erosion Control Permit, the Stormwater Permit will be conditional upon the owner receiving such sediment and erosion permit and upon the filing of a copy of the approved Sediment and Erosion Control Plan and associated Permit to the UDO Administrator.
5. The Stormwater Permit will be valid for one (1) year from the date of issuance or if significant changes in the development are made that change the intent of the permit. Significant changes shall be determined by the UDO Administrator. If significant changes are made, the original Stormwater Permit shall not be valid and a new permit shall be required.

E. REGULATORY CONSISTENCY

This article shall be construed to assure consistency with the requirements of the Clean Water Act and acts amendatory thereof or supplementary thereto, or any applicable implementing regulations.

F. ILLEGAL DISCHARGES

No person shall cause or allow the discharge, emission, disposal, pouring or pumping directly or indirectly to any stormwater conveyance, the waters of the State or upon the land in manner and amount that the substance is likely to reach a stormwater conveyance or the waters of the State or, any liquid, solid, gas, or other substance, other than stormwater; provided that non-stormwater discharges associated with the following activities are allowed on the condition that they do not contain potential pollutants, create erosion, cause sedimentation or impact the existing water quality of the conveyance or of the waters of the State:

1. Potable water line flushing;
2. Landscape irrigation and lawn watering;
3. Uncontaminated pumped groundwater (not including construction dewatering);
4. Diverted stream flows;

5. Naturally rising groundwater and springs;
6. Discharges from potable water sources;
7. Air conditioning condensation;
8. Uncontaminated foundation and footing drains;
9. Uncontaminated water from crawl space pumps;
10. Flows from riparian habitats and wetlands;
11. Dechlorinated (less than 1 ppm total chlorine) swimming pool discharges;
12. Street wash waters;
13. Flows from fire-fighting;
14. Other non-stormwater discharges for which a valid NPDES discharge permit has been approved and issued by the State of North Carolina, provided that any such discharges to the municipal waste water system shall be authorized by the City of Southport.
15. Discharges of hazardous materials released, or having the potential to reach a stormwater conveyance system, shall be contained, controlled, collected and properly disposed. All affected areas shall be restored to their condition pre-existing the discharge event.
16. Persons in control of the hazardous materials immediately prior to their release or discharge, and persons owning the property on which the materials were released or discharged, shall immediately notify the City Fire Chief of the release or discharge, as well as making any required notifications under State and federal law. Notification shall not relieve any person of any expenses related to the restoration, loss, damage, or any other liability which may be incurred as a result of said release, nor shall such notification relieve any person from other liability which may be imposed by State or federal law.

G. ILLICIT CONNECTIONS

1. Any drain or conveyance, whether surface or subsurface, which allows an illegal discharge to enter the storm water conveyance system, is unlawful. Prohibited connections include, but are not limited to, any conveyances which allow any storm water discharge containing sewage, process waste water, commercial washing machine wastewater including commercial vehicle washing, to enter the storm water conveyance system. Any connection thereto from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by a governmental agency is prohibited. Any drain or conveyance from a commercial, residential or industrial land use to the storm water conveyance system which has not been documented in plans, maps or equivalent records and approved by the City is prohibited. The construction, use, maintenance or continued existence of illicit connections to the storm water conveyance system is prohibited.
2. Where such connections exist in violation of this section and said connections were made prior to the adoption of this provision or any other ordinance prohibiting such connections, the property owner or the person using said connection shall remove the connection within one (1) year following the

effective date of this ordinance. However, the one (1) year grace period shall not apply to connections which may result in the discharge of hazardous materials or other discharges which may pose an immediate threat to health and safety, or are likely to result in an immediate injury and harm to real or personal property, natural resources, wildlife, or habitat.

3. Where it is determined that said connection:
   a) May result in the discharge of hazardous materials, or may pose an immediate threat to health and safety, or is likely to result in immediate injury and harm to real and personal property, natural resources, wildlife, or habitat, or
   b) Was made in violation of any applicable regulation or ordinance other than this article, the Public Services Director shall designate the time within which the connection shall be removed. In setting the time limit for compliance, the
      i) The quantity and complexity of the work,
      ii) The consequences of delay,
      iii) The potential harm to the environment, to the public health, and to public and private property, and
      iv) The cost of remedying the damage.

6.2 STORMWATER DISCHARGE CONTROL PRELIMINARY AND DESIGN PLANS

A. STORMWATER DISCHARGE CONTROL PRELIMINARY AND DESIGN PLANS

1. A permit application on the form provided in the Technical Manual accompanied by a Preliminary Stormwater Discharge Control Plan, a maintenance agreement, and a non-refundable permit review fee for each development shall be submitted to the Public Services Director and the UDO Administrator for review and approval by the City of Southport prior to preliminary plan or subdivision approval, unless exempted by Section 6.1.C above. The preliminary stormwater discharge control plan shall contain information as required by the City of Southport Stormwater Management Plan Technical Manual (see Appendix II). Where applicable, the plan must also be submitted to NCDEQ prior to submission to the City.
2. The purpose of the preliminary stormwater discharge control plan is to provide enough information, including engineering calculations, to determine if stormwater discharge control facilities will be needed to control runoff from the proposed development.
3. The City of Southport shall review the preliminary stormwater discharge plan within 45 days after receipt of the plan, and shall recommend:
   a) Approval of the preliminary stormwater discharge control plan as submitted which calls for construction of stormwater discharge control facilities that comply with this ordinance, or
   b) Disapproval of the preliminary stormwater discharge control plan.

4. If the preliminary stormwater discharge control plan is disapproved, the City of Southport shall instruct the applicant on the resubmission of a revised plan, and the applicant may make such changes and resubmit same for reconsideration. The City shall review the revised plan within 30 days after receipt of the plan and recommend approval of the changes in the plan or maintenance agreement.
5. Upon approval of the preliminary stormwater discharge control plan, the applicant shall submit a final stormwater discharge control plan (as part of the construction plans) to the City of Southport for review and approval, if stormwater discharge control facilities will be required. If the stormwater discharge control preliminary plan is submitted in sufficient detail and identifies the location and type of facilities needed, the City of Southport can accept the preliminary plan as the final stormwater discharge control design plan.

B. MINIMUM RUNOFF CONTROL REQUIREMENTS AND WAIVER OF REQUIREMENTS

1. The minimum stormwater control requirements shall provide measures necessary to control velocities of flow from stormwater discharge control facilities to a level which will comply with both the North Carolina Soil Erosion Act and North Carolina Administrative Code Section 15A NCAC 2H.1000, Stormwater Management.
2. In addition, stormwater discharge control measures shall be provided to limit the 25-year developed peak discharge rates to existing peak discharge rates for unimproved land (land not having been improved) such as pasture, grassland, meadow, brush, secondary (old field) growth or forest.
3. Improved property (property that has the soil surface exposed or a disturbance to the vegetative cover or topography) that is proposed for redevelopment, whether or not to be paved, containing or to contain structures, or be regraded, shall include stormwater discharge control measures to limit the two-year, ten-year and 25-year design storm discharge rates from exceeding that amount discharged in an unimproved state.
4. For the purposes of this ordinance, the design storm is the storm of 3-hour duration as shown on Chart E-6 in the City of Southport Stormwater Management Plan Technical Manual. The design of these facilities shall be based on procedures contained in the City of Southport Stormwater Management Technical Manual or procedures approved by the City of Southport. The Stormwater Best Management Practices by the NC Department of Environmental Quality (NCDEQ) should also be complied with where applicable.

C. STORMWATER DISCHARGE CONTROL FACILITIES

1. Stormwater discharge control facilities may include both structural and nonstructural elements. Natural swales and other natural runoff conduits shall be retained where practicable.
2. Where additional stormwater discharge control facilities are required to satisfy the minimum control requirements, the following measures are examples of what may be used:

a) Stormwater detention structures (dry ponds).
b) Facilities designed to encourage overland flow, slow velocities of flow, and flow through buffer zones.
c) On-site infiltration practices used to control runoff from small areas.
d) Reduction of impervious surfaces directly connected to the drainage system.
e) Off-site channel improvements designed to contain a 25-year design storm under developed land use conditions (the analysis for the channel improvement shall extend downstream to where the proposed development represents 10 % of the total watershed).
f) Other methods acceptable to the City of Southport which assure no harm to downstream properties.

3. Where detention and retention structures are used, designs which consolidate these facilities into a limited number of large structures will be preferred over designs which utilize a large number of small structures.
4. The stormwater discharge control facilities within the City (including both public and private facilities) will be designed to the same engineering and technical criteria and standards. The City's review will be the same whether the facilities will be under public or private control or ownership.
5. All stormwater discharge control facilities shall be designed using the Stormwater Best Management Practices developed by the NC Department of Environment and Natural Resources, and in accordance with the design criteria contained in the City of Southport Stormwater Management Technical Manual, or other procedures approved by the City of Southport.
6. The post-development discharge for the two-year, ten-year and 25-year design storm shall not exceed pre-development discharge including runoff from all upstream flows entering the site under existing conditions.

D. STORMWATER DISCHARGE CONTROL DESIGN PLAN REQUIREMENTS

Stormwater discharge control design plans shall include the following:

1. A determination that no proposed stormwater discharge control facility will create flooding or drainage problems for the 25- and 100-year flood events.
2. Stormwater discharge control design plans shall include designation of all easements needed for inspection and maintenance of the stormwater discharge control facilities. The location of all stormwater management facilities shall be specified prior to recording of easements.
3. A plan for maintenance of all stormwater discharge control facilities shall be included as part of the stormwater discharge control design plan. Maintenance must be the responsibility of the developer, and ultimately, the development owners or homeowners' association. The maintenance plan should be signed and notarized by the developer and/or owner, and a copy provided to the City Public Services Director and UDO Administrator. This agreement will include any and all maintenance easements required to access and inspect the stormwater

discharge practices, and to perform routine maintenance as necessary to ensure proper functioning of the stormwater discharge practice.

4. In determining downstream effects from stormwater discharge control structures and the development, hydrologic-hydraulic engineering studies using the 25-year design storm shall extend downstream to a point where the proposed development represents 10 % of the total watershed. If the discharge calculations indicate that adjacent properties, between the exit of the proposed development and the "10 % downstream point," might be adversely impacted by the proposed development, then the City will require backwater calculations and the determination of flood elevations for the areas impacted.

E. PLAN CRITERIA FOR THE STORMWATER DISCHARGE CONTROL PRELIMINARY PLAN AND THE STORMWATER DISCHARGE CONTROL DESIGN PLAN

The hydrologic criteria to be used for the stormwater discharge control preliminary and stormwater discharge control design plans shall be as follows:

1. 25-year design storms for all detention and retention basins, and
2. All stormwater discharge control designs shall be checked to ensure that no increase in local flooding and flood hazards to adjacent structures and/or property occurs, using the 100-year storm.

F. CITY PARTICIPATION

When the City of Southport determines that additional storage capacity beyond that required by the applicant for on-site stormwater discharge control is desirable to correct unacceptable or undesirable existing conditions or to provide protection in a more desirable fashion for future development, the City, with approval from Board of Aldermen, may:

1. Develop an agreement with the applicant to enlarge the required stormwater discharge control facility, and
2. Participate financially in the construction of such a facility to the extent that such a facility exceeds the required on-site stormwater discharge control required of this ordinance.

G. PERMIT REQUIREMENTS

No building or zoning permits for improvements or plat recordation for a subdivision, for which a stormwater discharge control plan is required, shall be approved or modified by the City without the approval of the following discharge control regulatory items.

1. Right of entry for emergency maintenance.
2. Any recorded off-site easements needed.
3. An approved stormwater discharge control design plan.
4. A maintenance agreement.
5. Recorded easements for stormwater discharge control facilities.

H. PERMIT SUSPENSION AND REVOCATION

1. Notice of Violation. When the City determines that an activity is not being carried out in accordance with the requirements of this ordinance, it shall issue a written notice of violation to the owner of the property. The notice of violation shall contain:
   a) The name and address of the owner or applicant.
   b) The address when available or a description of the building, structure, or land upon which the violation is occurring.
   c) A statement specifying the nature of the violation.
   d) A description of the remedial measures necessary to bring the development activity into compliance with this ordinance and a time schedule for the completion of such remedial action.
   e) A statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed.
2. Stop Work Orders. Persons receiving a notice of violation will be required to halt all construction activities. This "stop work order" will be in effect until the City confirms that the development activity is in compliance and the violation has been satisfactorily addressed. Failure to address a notice of violation in a timely manner can result in civil, criminal, or monetary penalties in accordance with the enforcement measures authorized in this ordinance.
3. Restoration of Lands. Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the City may take necessary corrective action, the cost of which shall become a lien upon the property until paid.

I. PROFESSIONAL REGISTRATION REQUIREMENTS

1. Stormwater discharge control preliminary and discharge control design plans that are incidental to the design of a residential subdivision shall be prepared by a qualified registered North Carolina Professional Engineer, Surveyor, or Landscape Architect, using acceptable engineering standards and practices. All other stormwater discharge control preliminary and design plans shall be prepared by a qualified registered North Carolina Professional Engineer, using acceptable engineering standards and practices.
2. The engineer, surveyor, or landscape architect shall perform services only in areas of his/her competence, shall undertake to perform engineering, landscape architecture, or land surveying assignments only when qualified by education and/or experience in the specific technical field.

6.3 OWNERSHIP, INSPECTION, AND MAINTENANCE

A. OWNERSHIP AND MAINTENANCE OF STORMWATER DISCHARGE CONTROL FACILITIES

1. Any stormwater discharge control facility required by this article shall be privately-owned and maintained; provided, however, the owner thereof shall grant to the City, a perpetual, nonexclusive easement which allows for public

inspection and emergency repair, in accordance with the terms of the maintenance agreement set forth in Section 6.3.C.

2. Stormwater discharge control facilities shall be publicly owned and/or maintained only if accepted for maintenance by the City. If a stormwater discharge control facility is not accepted by the City, the property owner has the maintenance responsibility for this facility.
3. Private maintenance requirements shall be a part of the deed to the affected property.
4. Should be in compliance with Section K of the City of Southport Stormwater Management Technical Manual.

B. INSPECTION SCHEDULE

1. Prior to the approval of the stormwater discharge control design plan, the applicant shall submit a proposed inspection schedule. The stormwater discharge control design plan shall indicate a phase line for approval otherwise the inspection schedule will be for the entire development. The City may make additional inspections during and after construction if deemed necessary by the City.
2. If a responsible party fails or refuses to meet the requirements of the maintenance covenant, the City, after reasonable notice, may correct a violation of the design standards or the maintenance needs by performing all necessary work to place the facility in proper working condition. If, after an inspection, the condition of a facility presents an immediate danger to the public health, safety, or general welfare due to unsafe conditions or improper maintenance, the City shall have the right, but not the duty, to take such action as may be necessary to protect the public and make the facility safe. Any cost incurred by the City shall be paid by the owner. In addition, the City shall notify the owner(s) in writing of the facility of any violation, deficiency, or failure to comply with this article within 10 days of the discovery of the violation. Upon a failure to correct violations requiring maintenance work within 10 days after, notice thereof, the City may provide for all necessary work to place the facility in proper working condition. The owner(s) of the facility shall be assessed the costs of the work performed by the City.
3. The permittee shall provide the City of Southport actual “as-built” plans for any stormwater management practice or facility located on the site after final construction certified by a professional engineer (as outlined in Section 6.3.I).
4. The professional engineer shall certify to the City that:
   a) The facility has been constructed as shown on the as-built plan, and
   b) The facility meets the approved stormwater discharge control design plan and specifications or achieves the function for which it was designed.

C. MAINTENANCE AGREEMENT (PRIVATELY-OWNED FACILITIES ONLY)

1. A proposed maintenance agreement shall be submitted to the City for all private on-site stormwater discharge control facilities prior to the approval of the stormwater discharge control design plan and recordation of lots in a subdivision to be served by the discharge control facility. Such agreement shall be in a form and content acceptable to the City and shall be the responsibility of the private owner. The agreement shall identify who will have the maintenance responsibility and shall be recorded by the landowner in the Brunswick County Register of Deeds prior to subdivision recording and/or building permit, and shall be binding on all subsequent owners of land served by the discharge control facility.
2. The maintenance agreement shall specify how proper maintenance of the facilities will be accomplished, and identify a financial arrangement which will assure the long-term financial capability to implement perpetual maintenance procedures. The agreement shall specify the type of security that will be used within the financial arrangement (escrow, letter of credit, etc.).
3. The maintenance agreement shall provide for access to the facility by virtue of a non-exclusive perpetual easement in favor of the City, at reasonable times for inspection by the City to ensure that the discharge control facilities are maintained in proper design working condition.

D. ACCEPTANCE OF CERTIFICATION IN LIEU OF INSPECTIONS

The City of Southport, at its sole discretion, may accept the certification of a registered engineer in lieu of any inspection required by this article.

E. MAINTENANCE RECORDS

The parties responsible for the operation and maintenance of the stormwater facilities should make records of the installation and of all maintenance and repairs of the facility. Such records shall be maintained for a period of five (5) years and shall be made available to the City during inspection of the facilities and upon request at other times.

6.4 MISCELLANEOUS PROVISIONS

A. STORMWATER MANAGEMENT VARIANCE

1. Every applicant shall provide for stormwater management, unless they file a written request to waive this requirement through a formal variance procedure. Request to for a variance from the stormwater management plan requirements shall be submitted to the UDO Administrator for consideration by the Board of Adjustment in accordance with Section 2.7.D.
2. The minimum requirements for stormwater management may be waived in whole or in part upon written request of the applicant, provided that the applicant must demonstrate through a sealed certification by a professional engineer that the immediately downstream waterways will not be subject to: deterioration of existing culverts, bridges, dams, and other structures; deterioration of biological functions or habitat; accelerated streambank or

streambed erosion or siltation; or increased threat of flood damage to public health, life, and property and a finding that at least one (1) of the following conditions applies after satisfaction of the minimum criteria for issuance of a variance as provided in Section 2.7.D.3:

a) It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this ordinance.

b) Alternative minimum requirements for on-site management of stormwater discharges have been established in a stormwater management plan that has been approved by the City of Southport and that is required to be implemented by local ordinance.

c) Provisions are made to manage stormwater by an off-site facility. The off-site facility is required to be in place, to be designed, and adequately sized to provide a level of stormwater control that is equal to or greater than that which would be afforded by on-site practices and has a legally obligated entity responsible for long- term operation and maintenance of the stormwater practice.

d) It can be demonstrated that meeting the minimum on-site management requirements is not feasible due to the natural or existing physical characteristics of a site.

e) Non-structural practices are provided that reduce the generation of stormwater from the site, the size and cost of stormwater storage and provide partial removal of many pollutants are to be used at the site.

3. .

B. FEE IN LIEU OF STORMWATER MANAGEMENT PRACTICES

1. The City may waive all or part of the minimum stormwater management requirements, in lieu of receipt of a fee in an amount as determined by the City. When an applicant obtains a waiver of the required stormwater management, the monetary contribution required shall be in accordance with a fee schedule (unless the developer and the City agree on a greater alternate contribution) established by the City, and based on the cubic feet of storage required for stormwater management of the development in question. All of the monetary contributions shall be credited to an appropriate capital improvements program project and shall be made by the developer prior to the issuance of any building permit for the development.

C. DEDICATION OF LAND

1. In lieu of a monetary contribution, an applicant may obtain a waiver of the required stormwater management by entering into an agreement with the City for the granting of an easement or the dedication of land by the applicant, to be used for the construction of an off-site stormwater management facility. The agreement shall be entered into by the applicant and the City prior to the recording of plats or, if no record plat is required, prior to the issuance of the building permit.

D. APPEALS

The disapproval or required modification of any proposed preliminary stormwater discharge control plans or design plans or the determination of noncompliance or failure to maintain by the City shall entitle the aggrieved person to appeal this decision or lack of action to the Board of Adjustment in accordance with Section2.7.E. Such appeal must be made in writing to the city clerk and the UDO Administrator within 30 days of written notice of disapproval, or modification of a preliminary or design stormwater discharge control plan, or determination of noncompliance or failure to maintain.

E. PENALTIES

Civil penalties imposed for illegal discharge shall be as follows:

1. First time offenders will be assessed a civil penalty of $100 per violation or per day for a continuing violation if the quantity of the discharge is less than or equal to five (5) gallons and consists of domestic or household products. If the quantity of the discharge is greater than five (5) gallons or contains non-domestic substances, the offending party shall be assessed a civil penalty of $1,000 per violation or per day for a continuing violation.
2. Penalties imposed upon repeat offenders willfully committing violations which are identical or substantially similar to previous violations shall be double the amount assessed for the prior violation or per day for a continuing violation, but shall in no event exceed $10,000 per violation or per day for a continuing violation.
3. All other acts or conditions constituting a violation of this article shall subject the offender to a civil penalty of $500 per violation or per day for any continuing violation.

6.5 STORMWATER DRAINAGE

Applicants for a major subdivision shall provide an adequate drainage system for the proper drainage of all surface water. The design of such a system shall be subject to the approval of the proposed subdivision in accordance with the procedures outlined in Article 2 in addition to the following:

A. No surface water shall be channeled or directed into a sanitary sewer.
B. Where feasible, the subdivider shall connect to an existing storm drainage system.
C. Where an existing storm drainage system cannot feasibly be extended to the subdivision, a surface drainage system shall be designed to protect the proposed development from water damage.
D. Surface drainage courses shall have side slopes of at least three (3) feet of horizontal distance for each one (1) foot of vertical distance, and courses shall be of sufficient size to accommodate the drainage area without flooding, and designed to comply with the current State of North Carolina standards and specifications for erosion control, and any locally adopted erosion and sedimentation control ordinances.
E. Unless necessitated by exceptional topography, and subject to the approval of the Planning Board, street grades shall be not more than 8% nor less than 0.5 %. Grades

approaching intersections shall not exceed 5% for a distance of not less than 100 feet from the centerline of said intersection.

F. Stream banks and channels downstream from any land disturbing activity shall be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land disturbing activity in accordance with current State of North Carolina sedimentation pollution control requirements.

G. Anyone constructing a dam or impoundment within the subdivision must comply with current State of North Carolina dam construction standards.

H. In all areas of special flood hazards, all subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

6.6 RETENTION POND OR SUBSURFACE FACILITY REQUIREMENTS

Within areas zoned for commercial, industrial, or multi-family uses (CBD, BD, HC, LI, HI, MF, PUD, and O/I), retention pond facilities or subsurface drainage facilities shall be required as follows:

A. For all development which exceeds 40% impervious surface coverage on a parcel or tract of land whose land area is less than one (1) acre in size.

B. For all development which exceeds 25% impervious surface coverage on parcels or tracts of land whose land area is one (1) acre or more in size.

NOTE: The designer should refer to the NCDEQ, “Erosion and Sediment Control Planning and Design Manual” for supplemental information.

6.7 DETENTION AND WET RETENTION FACILITIES

The City encourages the use of innovative techniques and designs which will provide the necessary protection for the receiving watercourse. These facilities shall be designed for the run-off produced by the 25-year storm and checked for the 100-year storm. The 100-year storm check is to verify that no structures become flooded. Detailed drawings, substantiating data, calculations, and specifications shall be submitted for designs of this nature. The use of open ponds has been utilized most frequently for stormwater control and, therefore, design standards and procedures for this approach have been included in this design guide. However, the City suggests that the developer or owner incorporate stormwater controls into the overall site as an amenity and/or visual enhancement. The following are minimum requirements for detention/retention facilities:

A. MINIMUM SLOPES

Side slopes where vegetation is used for stabilization shall be 2.5 (horizontal) to 1 (vertical) or flatter. The side slopes should be a minimum of 3 to 1 where mowing will be necessary. Where the side slopes are protected with riprap, fabric form, or other approved armoring, side slopes of 2 to 1 will be permitted. Steeper slopes may be approved by the City on a case-by-case basis.

B. VEGETATION

1. Vegetation for stabilization of side slopes shall be a hearty ground cover such as the following, listed in order of best overall suitability:

a) Tall Fescue
b) Bermuda Grass
c) Pensacola Bahia grass
d) Reed Canary Grass

2. All of these are well suited for flooding tolerance and waterways and channels. The bahia grass is excellent for sandy sites. The others spread by rootstocks, making a well anchored and stable ground covering.
3. The designer shall consult with the Public Services Department regarding landscape standards such as selection, spacing, location, and planting requirements of all grasses and plants which are to be incorporated in the system. Approval of a landscaping plan by the Public Services Department will be required prior to issuance of a construction permit.

C. RISERS

Risers shall be a minimum of 12 inches in diameter and pipes shall be a minimum of 12 inches in diameter to reduce the potential for clogging the outlet system. A trash rack with 4-inch maximum openings shall be provided to avoid pipe clogging. The design shall include consideration of anti-vortex measures were deemed necessary for stability of the outlet structure.

D. DRAIN

The design of the pond should incorporate a method of draining all water by use of a valve assembly. Where this is determined not possible by the reviewing engineer, a well-defined low point shall be constructed to allow for pumping out the facility.

E. OVERFLOW

An emergency outlet or overflow designed for the 100-year storm shall be provided for all detention/retention facilities. This overflow should be designed assuming the principal spillway is obstructed and cannot convey any water.

F. OTHER UTILITIES

No other utilities shall be constructed within five (5) feet of the stormwater detention/retention pond unless specifically approved by the City.

G. LANDSCAPING

Open basins shall be provided with a minimum 5-foot landscaped zone around the periphery of the ponds which have a surface area up to 0.5 acres as measured at the top bank. A minimum 10-foot landscaped zone as measured outward from the top of the bank shall be provided for ponds larger than 0.5 acres.

H. ACCESS

A stable access and maintenance shoulder with a minimum width of 10 feet measured from the top of bank shall be provided, sufficient to allow the periodic removal of sediment from the system. This access shall be coordinated with the landscaping zone around the basin. The landscaping zone shall not be incorporated into the access/maintenance way.

I. FENCING

Fencing for private facilities shall be at the option of the developer.

Article 7: Wireless Communication

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7.1 PURPOSE AND LEGISLATIVE INTENT

A. The Telecommunications Act of 1996 affirmed the city of Southport's authority concerning the placement, construction and modification of Wireless Telecommunications Facilities. This ordinance provides for the safe and efficient integration of Wireless Facilities. Necessary for the provision of advanced wireless telecommunications services throughout the community and to ensure the ready availability of reliable wireless services to the public, government agencies and first responders, with the intention of furthering the public safety and general welfare.

B. The City of Southport finds that Wireless Telecommunications Facilities (Facilities) and Complexes may pose significant concerns to the health, safety, public welfare, character and environment of the city and its inhabitants. The city also recognizes that facilitating the development of wireless service technology can be an economic development asset to the city and of significant benefit to the city and its residents. To assure that the placement, construction or modification of a facility is consistent with the city's land use policies, the city is adopting a single, comprehensive, Wireless Telecommunications facility application and permitting process. The intent of this article is to minimize the physical impact of Wireless Telecommunications Facilities on the community, protect the character of the community to the extent reasonably possible, establish a fair and efficient process for review and approval of applications, assure an integrated, comprehensive review of environmental impacts of such facilities, and protect the health, safety and welfare of the city.

7.2 SEVERABILITY

A. If any word, phrase, sentence, part, section, subsection, or other portion of this article or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the proscribed application thereof, shall be severable, and the remaining provisions of this article, and all applications thereof, not having been declared void, unconstitutional, or invalid, shall remain in full force and effect.

B. Any special use permit issued under this article shall be comprehensive and not severable. If part of a permit is deemed or ruled to be invalid or unenforceable in any material respect, by a competent authority, or is overturned by a competent authority, the permit shall be void in total.

7.3 DEFINITIONS

Unless specifically defined below, words or phrases used in this article shall be interpreted so as to give them the meaning they have in common usage and to give this article it's most reasonable application in administering the wireless communication provisions provided herein. The definitions provided herein shall apply to this article. Where conflicting terms are found in Article 8, the terms in Section 7.3 shall apply specifically to wireless communication facility regulations, whereas the definitions in Article 8 shall apply to the UDO in its entirety and to those terms not defined herein.

Accessory facility or structure means an accessory facility or structure serving or being used in conjunction with wireless telecommunication facilities and located on the same property or lot

as the wireless telecommunications facilities, including but not limited to utility or transmission equipment storage sheds or cabinets.

Applicable codes means The North Carolina State Building Code and any other uniform building, fire, electrical, plumbing, or mechanical codes adopted by a recognized national code organization together with State or local amendments to those codes enacted solely to address imminent threats of destruction of property or injury to persons

Antenna means a system of electrical conductors that transmit or receive electromagnetic waves or radio frequency or other wireless signals.

applicant means any wireless service provider submitting an application for a special use permit for wireless telecommunications facilities.

Application means all necessary and appropriate documentation that an applicant submits in order to receive a special use permit for a wireless telecommunications facility.

Base station means a station at a specific site authorized to communicate with mobile stations, generally consisting of radio receivers, antennas, coaxial cables, power supplies, and other associated electronics.

Building permit means an official administrative authorization issued by the city prior to beginning construction consistent with the provisions of G.S. 160D-1110.

City means the City of Southport, North Carolina.

City right of way means a right of way owned, leased, or operated by a city, including any public street or alley that is not a part of the State highway system.

City utility pole means a pole owned by a town in the City right of way that provides lighting, traffic control, or a similar function.

Collocation means the placement, installation, maintenance, modification, operation, or replacement of wireless facilities on, under, within, or on the surface of the earth adjacent to existing structures, including utility poles, city utility poles, water towers, buildings, and other structures capable of structurally supporting the attachment of wireless facilities in compliance with applicable codes. The term "collocation" does not include the installation of new utility poles, city utility poles, or wireless support structures.

Commercial impracticability or commercially impracticable means the inability to perform an act on terms that are reasonable in commerce; the cause or occurrence of which could not have been reasonably anticipated or foreseen and that jeopardizes the financial efficacy of the project. The inability to achieve a satisfactory financial return on investment or profit, standing alone, shall not deem a situation to be commercial impracticable and shall not render an act or the terms of an agreement commercially impracticable.

Communications facility means the set of equipment and network components, including wires and cables and associated facilities used by a communications service provider to provide communications service.

Communications service means cable service as defined in 47 U.S.C. § 522(6), information service as defined in 47 U.S.C. § 153(24), telecommunications service as defined in 47 U.S.C. § 153(53), or wireless services.

Communications service provider means cable operator as defined in 47 U.S.C. § 522(5); a provider of information service, as defined in 47 U.S.C. § 153(24); a telecommunications carrier, as defined in 47 U.S.C. § 153(51); or a wireless provider.

Completed application means an application that contains all information and/or data necessary to enable an informed decision to be made with respect to an application.

DAS or distributive access system means a technique using antenna combining that allows for multiple carriers or wireless service providers to use the same set of antennas.

Eligible facilities request means a request for modification of an existing wireless tower or base station that involves collocation of new transmission equipment or replacement of transmission equipment and does not include a substantial modification or new tower. This includes a small wireless facility.

Facilities, unless the term is otherwise modified or limited in context of a particular provision in which the term appears in this article, means all and any forms of wireless telecommunications-related equipment, devices, buildings, structures and accessories in the broad sense of those terms and includes and is not necessarily limited to the terms "wireless telecommunications facility," "accessory facility or structure" and "wireless facility" and "wireless support structure" as defined in NCGS 160D-931.

FAA means the Federal Aviation Administration, or its duly designated and authorized successor agency.

FCC means the Federal Communications Commission, or its duly designated and authorized successor agency.

Height means, when referring to a tower or structure, the distance measured from the pre-existing grade level to the highest point on the tower or structure, even if said highest point is an antenna or lightening protection device.

Micro wireless facility means a small wireless facility that is no larger in dimension than 24 inches in length, 15 inches in width, and 12 inches in height and that has an exterior antenna, if any, no longer than 11 inches.

Modification or modify means the addition, removal or change of any of the physical and visually discernable components or aspects of a wireless facility, such as antennas, cabling, equipment shelters, landscaping, fencing, utility feeds, changing the color or materials of any visually discernable components, vehicular access, parking and/or an upgrade or change-out of equipment for better or more modern equipment. Adding a new wireless carrier or service provider to a telecommunications tower or telecommunications site as a collocation is a modification. A modification shall not include the replacement of any components of a wireless facility where the replacement is identical to the component being replaced or for any matters

that involve the normal repair and maintenance of a wireless facility without adding, removing or changing anything.

Need means anything that is technically required for the wireless service to be provided primarily and essentially within the city and creates the least physical and visual impact. This does not necessarily mean the internal design standards of the applicant, as companies' standards can vary greatly and normally reflect preferences. Rather, the term "need" relates to the ability of the user-equipment to function as designed.

NIER means non-ionizing electromagnetic radiation.

Person means any individual, corporation, estate, trust, partnership, joint stock company, association of two or more persons having a joint common interest, or any other entity.

Personal wireless services or *PWS* or *personal telecommunications service* or *PTS* shall have the same meaning as defined and used in the 1996 Telecommunications Act.

Repairs and maintenance means the repair or replacement of any component of a wireless facility where the component is effectively identical to the component being replaced or for any matters that involve the normal repair and maintenance of a wireless facility without the addition, removal or change of any of the physical or visually discernable components or aspects of a wireless facility that will add to the visible appearance of the facility as originally permitted.

Search ring means the area within which a wireless support facility or wireless facility must be located in order to meet service objectives of the wireless service provider using the wireless facility or wireless support structure.

Small wireless facility means a wireless facility that meets both of the following qualifications:

A. Each antenna is located inside an enclosure of no more than six (6) cubic feet in volume or, in the case of an antenna that has exposed elements, the antenna and all of its exposed elements, if enclosed, could fit within an enclosure of no more than six (6) cubic feet.
B. All other wireless equipment associated with the facility has a cumulative volume of no more than 28 cubic feet. For purposes of this sub-subdivision, the following types of ancillary equipment are not included in the calculation of equipment volume: electric meters, concealment elements, telecommunications demarcation boxes, ground-based enclosures, grounding equipment, power transfer switches, cut-off switches, vertical cable runs for the connection of power and other services, or other support structures.

Special use permit means the official document or permit by which an applicant is allowed to file for a building permit to construct and use wireless telecommunications facilities as granted or issued by the city in the course of the city's quasi-judicial process.

State means the State of North Carolina.

Stealth or **stealth techniques** means to minimize adverse aesthetic and visual impacts on the land, property, buildings and other facilities adjacent to, surrounding, and in generally the same area as the requested location of a wireless telecommunications facility, which shall mean using

the least visually and physically intrusive facility that is not technologically or commercially impracticable under the facts and circumstances. The term "stealth techniques" expressly includes such techniques as DAS or its functional equivalent.

Substantial modification means the mounting of a proposed wireless facility on a wireless support structure that substantially changes the physical dimensions of the support structure. A mounting is presumed to be a substantial modification if it meets any one or more of the criteria listed below. The burden is on the local government to demonstrate that a mounting that does not meet the listed criteria constitutes a substantial change to the physical dimensions of the wireless support structure.

A. Increasing the existing vertical height of the structure by the greater of (i) more than 10% or (ii) the height of one (1) additional antenna array with separation from the nearest existing antenna not to exceed 20 feet.
B. Except where necessary to shelter the antenna from inclement weather or to connect the antenna to the tower via cable, adding an appurtenance to the body of a wireless support structure that protrudes horizontally from the edge of the wireless support structure the greater of (i) more than 20 feet or (ii) more than the width of the wireless support structure at the level of the appurtenance.
C. Increasing the square footage of the existing equipment compound by more than 2,500 square feet.

Telecommunications means the transmission and/or reception of audio, video, data, and other information by wire, radio frequency, light, and other electronic or electromagnetic systems.

Temporary means temporary in relation to all aspects and components of this article, something intended to, or that does, exist for fewer than 90 days.

Tower means any monopole or self-supporting structure designed primarily to support an antenna for receiving and/or transmitting a wireless signal. Guyed towers shall not be permitted anywhere in the city.

Utility pole means a structure that is designed for and used to carry lines, cables, wires, lighting facilities, or small wireless facilities for telephone, cable television, or electricity, lighting, or wireless services.

Wireless facility means equipment at a fixed location that enables wireless communications between user equipment and a communications network, including (i) equipment associated with wireless communications and (ii) radio transceivers, antennas, wires, coaxial or fiber-optic cable, regular and backup power supplies, and comparable equipment, regardless of technological configuration. The term includes small wireless facilities. The term shall not include any of the following:

A. The structure or improvements on, under, within, or adjacent to which the equipment is collocated.
B. Wireline backhaul facilities.

C. Coaxial or fiber-optic cable that is between wireless structures or utility poles or city utility poles or that is otherwise not immediately adjacent to or directly associated with a particular antenna.

Wireless infrastructure provider means any person with a certificate to provide telecommunications service in the State who builds or installs wireless communication transmission equipment, wireless facilities, or wireless support structures for small wireless facilities but that does not provide wireless services.

Wireless provider means a wireless infrastructure provider or a wireless services provider.

Wireless services means any services, using licensed or unlicensed wireless spectrum, including the use of Wi-Fi, whether at a fixed location or mobile, provided to the public using wireless facilities.

Wireless services provider means a person who provides wireless services.

Wireless support structure means a new or existing structure, such as a monopole, lattice tower, or guyed tower that is designed to support or capable of supporting wireless facilities. A utility pole or a city utility pole is not a wireless support structure.

Wireless telecommunications facilities means and includes without limitation the following in connection with wireless telecommunications:

A. A telecommunications site;

B. A personal wireless facility and any facility in connection with personal wireless services or PWS or personal telecommunications service (PTS);

C. A primary or accessory structure, facility or location of all types and kinds designed, or intended to be used as, or used to support antennas or other transmitting or receiving devices, including, but not limited to towers, buildings, church steeples, silos, water towers, and signs.

7.4 GENERAL POLICIES AND PROCEDURES FOR APPLICATIONS UNDER THIS ORDINANCE

A. In order to ensure that the location, placement, construction and modification of a facility or the components of a Complex do not endanger or jeopardize the city's health, safety, public welfare, environmental features, the nature and character of the community or neighborhood and other aspects of the quality of life specifically listed elsewhere in this ordinance, the city hereby adopts an overall policy and related procedures with respect to the submittal, review, approval and issuance of permits or administrative approval granted authority for Wireless Facilities for the express purpose of achieving the following outcomes:
   1. The city shall not be required to issue a permit for a carrier to achieve its goal from a single location and facility only, and instead may require that multiple smaller and less intrusive facilities be used to achieve the applicant's goal.
   2. Requiring a special use permit for any new complex, facility or any substantial modification of a facility;

3. Requiring administrative approval and a properly issued building permit for any collocation or modification of a facility that is not a substantial modification or substantial collocation.
4. Implementing an application process and requirements;
5. Establishing a policy for examining an application and issuing a special use permit or administrative approval that are fair and consistent;
6. Promoting, and requiring wherever possible, the sharing and/or collocation of support structures among service providers;
7. Requiring, promoting and encouraging, wherever possible, the placement, height and quantity of attachments to a facility in such a manner as to minimize the physical and visual impact on the community, including but not limited to the use of stealth siting techniques.
8. Requiring that the facility and complex shall be the least visually intrusive among those options that are not technologically impracticable given the facts and circumstances.
9. If the proposed site is within one half (1/2) mile of another jurisdiction, written notification of the application shall be provided to the legislative body of all such adjacent jurisdictions as applicable and/or requested.
10. The owner(s) of the support structure to which antennas or related equipment are to be attached must be an official applicant of record, unless the owner is the city, in which case, to prevent a conflict of interest, the city shall not be a party to the application.
11. Within 30 days of the date of submission of an application the applicant shall be notified in writing of any deficiencies related to the completeness of the application. Remediation of deficiencies in an application shall be deemed an amendment of the application that was received.
12. No work of any kind on or at a facility shall be started until the application is reviewed and approved and the special use permit or administrative approval, as applicable, has been issued, and a building permit has been issued in accordance with the city's code.
13. Other than to remediate non-compliant situations related to matters of safety or the conditions of a permit, no permits for work at a facility shall be issued where the facility is not in full compliance with all applicable local, state and federal laws, rules, regulations and orders. A facility not in full compliance with this ordinance shall be required to be brought into full compliance before any permit of any kind will be issued.
14. Where a certification is called for in this ordinance, such certification shall bear the signature and seal of a professional engineer licensed in the state.
15. A support structure and any and all accessory or associated structures shall maximize the use of building materials, colors and textures designed to blend with the structure to which it may be affixed and to harmonize with the natural surroundings. This shall include the utilization of stealth or camouflage or concealment technique as may be required by the city.

16. At a facility needing vehicular access, an access road, parking and turn around space for emergency vehicles shall be provided to assure adequate emergency and service access. The use of existing roads, whether public or private, shall be made to the extent practicable. Road construction shall at all times minimize ground disturbance and the cutting of vegetation. Road grades shall closely follow natural contours to assure minimal visual disturbance and reduce soil erosion. If the current access road or turn around space is deemed in disrepair or in need of remedial work to make it serviceable and safe and in compliance with any applicable regulations as determined at a site visit, the Application shall contain a commitment to remedy or restore the road or turn around space so that it is serviceable and safe and in compliance with applicable regulations.
17. All work at a facility shall be done in strict compliance with all current applicable technical, safety and safety-related codes adopted by the city, state, or United States, including but not limited to the most recent edition of the TIA ANSI Code, National Electric Safety Code, the National Electrical Code, the Occupational and Safety and Health Administration (OSHA) regulations, recommended practices of the National Association of Tower Erectors and accepted and responsible workmanlike industry practices. The codes referred to are codes that include, but are not limited to, construction, building, electrical, fire, safety, health, and land use codes. In the event of a conflict between or among any of the preceding the more stringent shall apply.
18. Unless such is proven to be technologically impracticable, the city requires the collocation of new antenna arrays on existing structures, as opposed to the construction of a new complex or support structure or increasing the height, footprint or profile of a facility beyond the conditions of the approved special use permit for an existing facility. In instances not qualifying as an eligible facility, the applicant shall submit a comprehensive report inventorying all existing structures more than 50 feet in height within one-half (1/2) mile of the location of any proposed new facility.
19. Collocated equipment shall consist only of the minimum antenna array technologically needed to provide service primarily and essentially within the city, to the extent practicable, unless good cause is shown in the form of clear and convincing evidence.
20. A DAS system that is owned or operated by a commercial carrier and is part of a commercial wireless system, or are used for commercial purposes, is expressly included in the context of this ordinance, regardless of the location or whether the facility or any of its components is located inside or outside a structure or building.
21. The existence of a lease or an option to lease shall not be deemed justification for not complying with the siting priorities set forth in this ordinance, as well as other applicable land use and zoning regulations. An applicant may not by-pass sites of higher siting priority than the priority chosen solely because the site proposed is under lease or an option to lease exists. If a site other than the number one (1) priority, or attaching to an existing structure is proposed, the

applicant must demonstrate and explain to the reasonable satisfaction of the city why collocation is technically or commercially impracticable. Contractual or build-to-suit agreements between carriers and a proposed tower owner shall not be a valid basis for any claim of exemption, exception or waiver from compliance with the siting priorities.

22. All costs associated with the preparation and submission of an application and/or necessitated by the requirements for obtaining and maintaining any and all city permits shall be borne by the applicant or permittee.
23. Any new wireless facility shall be designed and constructed so as to be the least visually intrusive, create the least visual impact reasonably possible and have the least negative impact on nearby property values, provided that pursuant to 47 U.S.C. 332(c)(7)(B)(II) compliance with this requirement does prohibit or effectively serve to prohibit the provision of the intended service from one or more facilities.
24. No new facility or antenna array shall be identifiable, recognizable or discernable as a wireless facility or antenna by a typical lay-person from a distance of 250 feet or more.
25. Vegetative buffering of the site shall be installed to screen and/or mitigate the impacts of the wireless facility on surrounding areas, properties, or rights-of-way. In order to provide spatial separation and create a visual block from adjacent properties and streets, a vegetative buffer shall be installed around the outside of all improvements on the site, including the tower, any ground buildings or equipment, and security fencing. Depending upon the specific situation for the location involved and the impact of such, ground-mounted equipment cabinets and buildings may be located outside the buffered area if they are constructed so the exterior appearance of the equipment cabinet or building has the appearance of surrounding structures. The applicant shall submit scaled elevations of such buildings to assist in the evaluation of compliance with this appearance criteria. For situations involving new support structures and/or above ground equipment in the public rights-of-way, if above-ground location is allowed, the screening requirements shall be determined at the time of the pre-application meeting or site visit and determined as appropriate for the situation at the location.
26. Given that wireless service is deemed primarily an essential service, all new towers or other vertical support structures containing wireless antennas shall be designed to an EIA-TIA 222 G Class III standard or any subsequently adopted more stringent standard.

7.5 RESPONSIBLE PARTY(S)

With the exception of the city itself, the owner(s) of a facility, any support structure used to accommodate wireless facilities, and of the land upon which a facility support structure is located, shall at all times be jointly and individually responsible for:

1. The clean, neat, non-littered and safe condition of the facility, support structure and all components on the site related to the facility;

2. Assuring that all activities of owners, users, or lessees occurring on the site, and all components on the site related to the facility, are at all times in compliance with all applicable laws, ordinances, rules, regulations, orders, and permits related to the facility; and
3. Assuring the proper permitting as required by this article and other city regulations by all lessees and users of the facility, including but not limited to any upgrades and/or modifications of equipment. Said owner(s) shall regularly and diligently monitor activities at the site to assure that the facility is operated in compliance with this ordinance, other city regulations and any special use permit.

7.6 FEES

A. All fees and charges, including but not limited to application fees, expert assistance fees, inspection fees and permit fees, shall be as set forth in the city's schedule of fees and charges. For new towers or other support structures or for substantial modifications, the expert assistance fee shall be as set forth in the city's fee schedule. The city may choose to waive their application fee if the applicant locates on city-owned property, not including in the city's public rights-of-ways.

B. For collocated small wireless facilities, the city may charge an application fee that shall not exceed the lesser of
   1. The actual, direct, and reasonable costs to process
   2. The amount charged by the city for permitting of any similar activity; or
   3. $100 per facility for the first five (5) small wireless facilities addressed in an application, plus $50 for each additional small wireless facility addressed in the application. In any dispute concerning the appropriateness of a fee, the city has the burden of proving that the fee meets the requirements of this subsection.

7.7 EXISTING FACILITIES AND COMPLEXES

A. Any legally permitted facility, tower or other support structure that exists on the effective date of this ordinance of the city's codes shall be allowed to continue as it presently exists, provided that
   1. All work was properly permitted;
   2. The facility is in compliance with all applicable local, state and federal laws, rules regulations, orders and permit conditions; and
   3. The site is in compliance with the latest version of TIA ANSI 222 as regards the physical condition of the site.

B. Any work not properly previously permitted prior to the adoption of this ordinance must be properly permitted within 90 days of the effective date of this ordinance or prior to any modification of, on or at the site or facility.

C. Any new collocation and/or modification of a facility, Tower or other support structure or a carrier's equipment located on the tower or facility, must be permitted under this ordinance and the entire facility and any new collocation or modification shall comply with all applicable laws, rules and regulations, including obtaining a valid COC.

7.8 CERTIFICATE OF COMPLETION

No work shall be allowed to be done at or on any facility, excepting normal repair and maintenance work as defined in this ordinance, for which the owner cannot produce the COC for the most recent work, until a final inspection has been conducted and a COC has been issued. The owner of the facility, tower or other support structure shall pay for the actual cost of the required final inspection prior to the inspection being conducted. If the facility does not pass the initial final inspection, the owner shall be required to pay for any subsequent re-inspection prior to the re-inspection being conducted. A passing final inspection is required prior to the issuance of a COC.

7.9 EXCLUSIONS

A. The following shall be exempt from this ordinance:
   1. Any facilities expressly exempt from the city's zoning, land use, siting, building and permitting authority.
   2. Any reception or transmission devises expressly exempted under the Telecommunications Act of 1996.
   3. A facility used exclusively for private, non-commercial radio and television reception and private citizen's bands, licensed amateur radio and other similar non-commercial Telecommunications that is less than 50 feet above ground level.
   4. Facilities used exclusively for providing wireless service(s) or technologies where
      a) There is no charge for the use of the wireless service;
      b) The facility does not require a new tower or increase the height or profile of the structure being attached to; and
      c) The service is not intended to be useable more than 75 feet from the antenna.

7.10 NEW TOWER, NEW SUPPORT STRUCTURE, OR SUBSTANTIAL MODIFICATION - APPLICATION REQUIREMENTS

A. All applicants for a special use permit for a new wireless facility, including for a new tower or other new support structure or that constitutes a substantial modification, shall comply with the requirements set forth in this section. In addition to the required information set forth in this section, all applications involving the construction of a new support structure or a substantial modification shall contain the information hereinafter set forth prior to the issuance of a building permit. Any technical information must be provided in such a manner, form and with such content that it is able to be verified by a third party using the information used and provided by the applicant. The requirements for submission of a special use permit as provided in Appendix A shall be met in addition to the following:
   1. Ownership and Management.
      a) The name, address, phone number and e-mail address of the property owner and the applicant, including the legal name of the applicant. If the owner of the structure is different than the applicant, the name, e-mail address and all necessary contact information shall be provided;

b) A copy of the FCC license(s) applicable for the intended use(s) of the Wireless Telecommunications Facilities, including all FCC licensed frequency bands to be used;

c) The applicant shall disclose in writing any agreement in existence that would limit or preclude the ability of the applicant to share any new telecommunication tower or support structure that it constructs or has constructed for it;

2. Zoning and Planning.

a) The location, size of the footprint and height of all existing and proposed structures, enclosures and cabinets on the property on which the structure is located and that are related to the subject of the application;

b) A site plan to scale, not a hand drawn sketch, showing the footprint of the support structure and the type, location and dimensions of access drives, proposed landscaping and buffers in compliance with the city's building or development code, including but not limited to fencing and any other requirements of site plans;

c) Elevation drawings showing the profile or the vertical rendition of the tower or support structure at the facility and identifying all existing and proposed attachments, including the height above the existing grade of each attachment and the owner or operator of each, as well as all lighting;

d) The type of tower or support structure, the number of antenna arrays proposed to be able to be accommodated and the basis for the calculations of the tower's or support structure's capability to accommodate the required number of antenna arrays for which the structure must be designed;

e) Pre-construction photos of the existing facility and post construction landscaped photo simulations, both as directed at the time of pre-application meeting.

f) Disclosure in writing of any agreement in existence prior to the submission of the application that would limit or preclude the ability of the applicant to share any new telecommunication tower that it constructs.

g) A certified statement of i) the total cost of construction for the work associated with the application; and ii) the total cost of all equipment of the applicant at the facility. To verify the accuracy of the information, the city reserves the right to require copies of applicable invoices or other clear and convincing corroborating evidence.

3. Safety.

a) The age of the tower or support structure and complex stated in years, including the date of the grant of the original permit;

b) A description of the type of tower, e.g. guyed, self-supporting lattice or monopole, or other type of support structure;

c) For a tower, the make, model, type and manufacturer of the tower and the structural design analysis and report, including the calculations, certified by a professional engineer licensed in the state, proving the tower or support structure's capability to safely accommodate the facilities of the applicant without change or modification.

d) If a substantial modification of a facility is needed, a detailed narrative explaining what changes are needed and why they are needed;

e) A complete, unredacted copy of the foundation design and report for the Tower or other structure, including a geotechnical sub-surface soils investigation report and foundation design for the facility;

f) If substantially modifying an existing tower or other support structure, a complete, unredacted and certified TIA ANSI 222 Report regarding the physical condition of the complex and all of its components done within the previous six (6) months. If such report has not been done within the previous six (6) months, one shall be done and submitted as part of the application. No building permit shall be issued for any wireless facility or related equipment where the structure being attached to is in need of remediation to comply with the requirements of this subsection and other adopted standards of the city regarding the physical condition and/or safety of the facility, unless and until all remediation work that is deemed needed has been completed, or a schedule for the remediation work has been approved by the UDO Administrator;

g) In an instance involving a tower with only a single array of antennas, or for the first antenna array to be attached to a tower where the array will be 33 feet or more above ground level, and not within 100 feet of areas to which the public has or could reasonably have or gain access to, in lieu of a full RF emissions study, if deemed appropriate by the city, signed documentation in the form of the FCC's "Checklist to Determine whether a facility may be Categorically Excluded" may in certain cases be allowed to be used and shall be provided to verify that the facility and complex with the proposed installation will be in full compliance with the current FCC's RF Emissions regulations;

h) In certain instances, the city may deem it appropriate to have a post-construction on-site RF survey of the facility done after the construction or modification and activation of the facility, such to be done under the direction of the city or its designee, and an un-redacted copy of the survey results provided, along with all calculations, prior to issuance of a Certificate of Compliance. Such study shall reflect the cumulative effects, readings or levels of all active RF equipment at the Site;

i) In the event the city deems it necessary to determine compliance with the FCC's Maximum Permitted Exposure (MPE) rules, and in lieu of the procedure contained in the preceding Subsection g of this section, the city expressly reserves the right to request the involvement of the FCC and/or OSHA (Occupational Safety and Health Administration) to

determine or verify compliance with federal standards and guidelines that the city, itself, may be prohibited from determining.

j) If not submitted in a previous application, a signed statement that the applicant will expeditiously remedy any physical or RF interference with other telecommunications or wireless devices or services.

4. A written copy of an analysis completed by a qualified individual or organization to determine if the proposed wireless telecommunications facility is in compliance with Federal Aviation Administration Regulation Part 77, and if it requires lighting, including any facility where the application proposes to increase the height of the existing tower or support structure.
5. New towers shall be prohibited in areas deemed to be visual or sensitive scenic areas within the city's corporate limits. The burden of proof in determining the town shall not obstruct visual or sensitive scenic areas within the city shall be on the applicant.
6. All applications for a proposed facility applicable to this section shall contain clear and convincing evidence that the facility is sited and designed so as to create the least visual intrusiveness reasonably possible given the facts and circumstances involved. To achieve this goal the city expressly reserves the right to require the use of stealth or camouflage siting techniques such as, but not limited to, DAS (Distributive Antenna System), a small cell facility or a functional equivalent as regards size, and such shall be subject to approval by the city.
7. If proposing a new tower or support structure, or a substantial collocation or modification of an existing structure, the applicant shall be required to submit clear and convincing evidence that there is no alternative solution within the search ring of the proposed site that would be less visually intrusive and that not to permit the proposed new tower or support structure, or a substantial collocation or modification would result in the prohibition of service or the perpetuation of a significant gap in service.
8. An applicant proposing a new tower or support structure shall use the largest search ring technically possible and may be required to prove with certified technical/engineering documentation that the search ring used is the largest that could be used.
9. In order to better inform the public, in the case of a new tower or support structure or substantial modification, the applicant shall hold a "balloon test" prior to the initial public hearing on the application. The applicant shall arrange to fly, or raise upon a temporary mast, a minimum of a 10 foot in length brightly colored balloon with horizontal stabilizers, at the maximum height of the proposed new tower or support structure or substantial modification. Unless conditions at the time preclude it for reasons of instability vis-à-vis wind speed, the use of spherical balloons shall not be permitted.
10. At least 14 days prior to the conduct of the balloon test, a sign shall be erected so as to be clearly visible from the road nearest the proposed site and shall be removed no later than 14 days after the conduct of the balloon test. The sign

shall be at least four feet (4) by eight feet (8) in size and shall be readable from the road by a person with 20/20 vision.

a) Such sign shall be placed off, but as near to, the public right-of-way as is possible.

b) Such sign shall contain the times and date(s) of the balloon test and contact information.

c) The dates, (including a second date, in case of poor visibility or wind in excess of 15 mph on the initial date) times and location of this balloon test shall be advertised by the applicant seven (7) and 14 days in advance of the first test date in a newspaper with a general circulation in the city and as agreed to by the city. The applicant shall inform the city in writing, of the dates and times of the test, at least 14 days in advance. The balloon shall be flown for at least four (4) consecutive hours between 10:00 am and 2:00 p.m. on the dates chosen. The primary date shall be on a week-end, but the second date, in case of poor visibility on the initial date, may be on a week day. A report with pictures from various locations of the balloon shall be provided with the application.

d) The applicant shall notify all property owners and residents located within 1,500 feet of the nearest property line of the subject property of the proposed construction of the tower and facility and of the date(s) and time(s) of the balloon test. Such notice shall be provided at least 14 days prior to the conduct of the balloon test and shall be delivered by first-class mail. The UDO Administrator shall be provided an attested copy of the list of addresses to which notification is provided. The wireless telecommunications facility shall be structurally designed to accommodate at least four (4) antenna arrays, with each array to be flush mounted or as close to flush-mounted as is reasonable possible.

11. The applicant shall provide certified documentation in the form of a structural analysis and report certified by a licensed professional engineer, including all calculations, showing that the facility will be constructed to meet all local, state and federal structural requirements for loads, including wind and ice loads and including, but not limited to all applicable ANSI (American National Standards Institute) TIA 222 guidelines. In the event of a conflict the more stringent standards shall apply.

12. The applicant shall furnish a Visual Impact Assessment, which may be required to include:

a) A computer generated “Zone of Visibility Map” at a minimum of a one (1) mile radius from the proposed structure shall be provided to illustrate locations from which the proposed installation may be seen, with and without foliage; and

b) To-scale photo simulations of “before and after” views from key viewpoints inside of the city as may be appropriate and required, including but not limited to state highways and other major roads, state and local parks, other public lands, historic districts, preserves and

historic sites normally open to the public, and from any other location where the site is visible to a large number of visitors, travelers or residents. Guidance will be provided concerning the appropriate key viewpoints at the pre-application meeting. In addition to photographic simulations to scale showing the visual impact, the applicant shall provide a map showing the locations of where the pictures were taken and the distance(s) of each location from the proposed structure;

13. The applicant shall provide a written description and a visual rendering demonstrating how it shall effectively screen from view at least the bottom 15 feet of the facility and all related equipment and structures associated with the facility not located in the public rights-of-way. For situations involving new support structures and/or above ground equipment in the public rights-of-way, if above-ground location is allowed, the screening requirements shall be determined at the time of the pre-application site visit and determined based on the situation at any given location.
14. A building permit shall not be issued for the construction of a new tower or other support structure until i) there is an application filed for or by a specific carrier that documents with verifiable technical evidence that the facility is necessary for that carrier to serve the community and that collocation on an existing structure is not feasible, or ii) that no owner of an existing structure within the applicant's search ring will allow attachment to the owner's building or other type of structure.

7.11 SMALL FACILITIES - ELIGIBLE FACILITIES AND OTHER SMALL FACILITY INSTALLATIONS OR MODIFICATIONS – APPLICATION REQUIREMENTS

A. For a wireless facility that qualifies as an Eligible Facilities request under applicable law, the following information shall be contained in an application. Any technical information must be provided in such a manner, form and with such content that it is able to be verified by a third party using the information used and provided by the applicant.

1. Safety.
   a) Pre-construction photos of the existing facility from at least two (2) directions, and post construction landscaped photo simulations from at least two (2) directions from a distance no further than 50 feet;
   b) the age of the Tower or other non-utility pole support structure in years, including the date of the grant of the original permit;
   c) a description of the type of tower, e.g. guyed, self-supporting lattice or monopole, or a description of another other type of support structure;
   d) if attaching to a tower or any type of non-utility pole structure, certified documentation in the form of a structural analysis and report done by a professional engineer licensed in the State of North Carolina. Said analysis and report shall include all supporting calculations, showing that the facility, as it exists, will meet all local, state and federal structural requirements for loads, including wind and ice loads and including, but not limited to, the North Carolina Building Code and all applicable ANSI

(American National Standards Institute) TIA 222 guidelines. In the event of a conflict, the more stringent shall apply.

e) If attaching to a utility pole in the public right-of-way, written evidence or certification by the pole owner that the pole is structurally rated to accommodate the new loading;

f) a copy of i) the installed foundation design, including a geotechnical sub-surface soils investigation report; and if necessary ii) a foundation remediation design and recommendation for the tower or other structure;

g) for an existing wireless facility, a certified, unredacted report and supporting documentation, including photographs, regarding the physical situation and physical condition of all equipment and facilities at the site in the form of a report based on an on-site inspection done pursuant to and in compliance with the latest version of TIA/ANSI 222. The inspection shall be done by a qualified individual experienced in performing such inspections and the report shall be signed by an individual with authority to order any needed remediation or resolution of issues.

h) a copy of the FCC licenses for each frequency band applicable for the intended use of the wireless telecommunications transmission and/or receive equipment;

i) a list of all frequencies, to be used at the facility;

j) the number, type and model of the antenna(s) proposed, along with a copy of the manufacturer's specification sheet(s), i.e. cut sheet(s), for the antennas;

k) certification from the owner of the facility certifying that the facility and all attachments thereto are currently in compliance with the conditions of the approved special use permit or administrative approval or identifying any non-compliant situation.

2. Ownership and Management.

a) the name, address and phone number of the person preparing the application;

b) the name, address, and phone number of the property owner and of the applicant, including the legal name of the applicant. If the owner of the structure is different than the applicant, the name and all necessary contact information shall be provided;

c) the postal address and tax map parcel number of the property;

d) a copy of the FCC license(s) applicable for the intended use of the Wireless Telecommunications Facilities.

3. Construction.

a) A certified statement of i) the total cost of construction for the work associated with the application; and ii) the total cost of all labor and equipment of the applicant at the facility. To verify the accuracy of the

information, the city reserves the right to require copies of applicable invoices or other clear and convincing corroborating evidence.

4. In certain instances, the city may deem it appropriate to have an on-site RF survey of the facility performed after the construction and activation or modification and activation of the facility, such to be done under the observation and supervision of the city or its designee, and an un-redacted copy of the survey results provided, along with all calculations, prior to issuance of a Certificate of Compliance. Such study shall reflect the cumulative effects, readings or levels of all active RF equipment at the site;
5. In the event the city deems it necessary to determine compliance with the FCC's Maximum Permitted Exposure (MPE) rules, the city expressly reserves the right to seek the involvement of the FCC and/or OSHA (Occupational Safety and Health Administration) to determine or verify compliance with federal standards and guidelines that the city, itself, may be prohibited from determining.
6. Attachments to Existing Structures Other Than Towers
    a) Attachments to Buildings: To preserve and protect the nature and character of the area and create the least visually intrusive impact reasonably possible under the facts and circumstances, any attachment to a building or other structure with a facie, the antennas shall be mounted on the facie without increasing the height of the building or other structure, unless it can be proven that such will prohibit or have the effect of prohibiting the provision of service, and all such attachments and exposed cabling shall use camouflage or stealth techniques to match as closely as possible the color and texture of the structure.
    b) Utility poles and light standards: If attaching to a utility pole or light standard, no equipment may extend more than 10% of the existing height beyond the top of the structure as originally permitted and no equipment other than cabling shall be lower than 15 feet above the ground. Only one (1) increase of the height of a utility pole or light standard shall be allowed.
    c) Attachments to Water Tanks: If attaching to a water tank, in order to maintain the current profile and height, mounting on the top of the tank or the use of a corral shall only be permitted if the applicant can prove that to locate elsewhere less visually intrusive on the tank will prohibit or have the effect of prohibiting the provision of service or that to do so would be technologically impracticable.
    d) Profile: So as to be the least visually intrusive and create the smallest profile reasonably possible under the facts and circumstances involved, and thereby have the least adverse visual effect, all antennas attached shall be flush mounted or as near to flush mounted as is possible, unless it can be proven that such would prohibit or serve to prohibit the provision of service or be technologically impracticable.

7.12 LOCATION OF WIRELESS TELECOMMUNICATIONS FACILITIES

A. For structures not located in the public right-of-way, no new tower or other new support structure taller than 50 feet shall be permitted in any existing or planned (i.e. platted) residential neighborhood, nor within one-half mile of any existing or planned (i.e. platted) residential neighborhood. Said height limit shall not be as-of-right and shall be the maximum permissible height subject to the independently verifiable proof of technical need for height information submitted.

B. If a new telecommunications support structure is proposed to be located within one-half mile of an existing or planned residential neighborhood and is proven by verifiable clear and convincing technical information to be a technical necessity for the applicant's service to be provided in the intended service area of the proposed facility, the support structure shall not be taller than the shorter of i) 10 feet above the tallest obstruction between the proposed support structure and a residential neighborhood; or ii) the shortest height that will not effectively serve to prohibit the provision of service to a substantial portion of the intended area.

C. applicants shall locate, site and erect all facilities and associated equipment in accordance with the following order of priority:
   1. On existing structures outside the public right-of-way without increasing the dimensions or size of the structure;
   2. On existing structures, more than 1,000 feet from the nearest boundary of the public right-of-way without increasing the height or size of the profile of the tower or structure by more than is allowed for an eligible facility.
   3. On existing structures in the public right-of-way;
   4. On existing structures outside the public right-of-way without increasing the height of the structure by more than is technically needed, as such need can be proven by clear and convincing verifiable technical evidence using information provided by the applicant.
   5. On properties in areas zoned for commercial use.
   6. In historic districts or sensitive viewshed areas in the public right-of-way without increasing the height or size of the profile of the support structure, and if camouflaged or stealthed to the satisfaction of the UDO Administrator.
   7. In areas zoned for residential use in the public right-of-way, but without increasing the height of the size or dimensions of the support structure, and only if camouflaged or stealthed to the satisfaction of the UDO Administrator.
   8. In areas zoned for residential use, in the public right-of-way if camouflaged or stealthed to the satisfaction of the city.

D. Notwithstanding that a potential site may be situated in an area of highest priority or highest available priority, the city may disapprove an application for any of the following reasons:
   1. Conflict with safety and safety-related codes and requirements, including but not limited to setback and fall zone requirements;
   2. Non-compliance with zoning, land use or safety regulations;

3. The placement and location of a facility would create an unacceptable risk, or the reasonable possibility of such, for physical or financial damage to any person or entity, or of trespass on private property;
4. The placement and location of a facility would not be harmonious with or would result in a negative change in the nature or character of the adjacent and surrounding area, expressly including but not limited to loss in value of property as measured over the 12 months preceding the application having been filed;

E. Notwithstanding anything to the contrary in this ordinance, for good cause shown such as the ability to utilize one or more shorter, smaller or less intrusive facilities elsewhere and still serve a substantial portion of the intended service area, the city may require the relocation of a proposed site if relocation could result in a less intrusive facility singly or in combination with other locations, including allowing for the fact that relocating the site chosen by the applicant may require the use of more than one (1) facility to serve substantially the same area.

7.13 TYPE AND HEIGHT OF TOWERS

A. No new towers of a lattice or guyed type shall be permitted.

B. Except in the public rights-of-way and in residentially zoned areas, the maximum permitted total height of a new tower or other proposed support structure, shall be 50 feet above pre-construction ground level, unless it can be shown by clear and convincing verifiable technical evidence from a carrier who has committed to use the tower that such height would prohibit or have the effect of prohibiting the provision of service to at least a substantial portion of the intended service area within the city. The maximum permitted height is permissive and is expressly not as-of-right.

C. If the applicant chooses to provide evidence in the form of propagation studies, to enable verification of the need for the requested height or location, such must include all modeling information and support data used to produce the studies at the requested height and at a minimum of 10 feet lower.

D. The city reserves the right to require a drive test to be conducted under the supervision of the city or its designee to verify the technical need for what is requested.

E. At no time shall a tower or other support structure be of a height that requires lighting by the FAA.

F. The height can be increased if needed, towers shall be structurally designed to support a minimum of four (4) carriers using functionally equivalent equipment to that used by the first carrier attaching to a tower or other support structure.

G. New Structures within Rights-of-Ways – Required Design Characteristics. The following shall govern new poles and other support structures in the rights-of-way.
1. Wireless installations shall be consistent throughout the city limits and any extraterritorial jurisdiction (ETJ);
2. Wireless installations shall be on non-conductive poles or structures;
3. All antennas shall be unrecognizable as such by an average person;
4. Wireless installations shall utilize a “concealed” design, including all cabling being inside a hollow pole;

5. All radios, network equipment and batteries will be enclosed in a pedestal cabinet near the pole, in a pole-mounted cabinet or under a pole-mounted shroud;
6. Cabinets should be consistent in size and no larger than standard DOT streetlight signal cabinets;
7. Unless proven unfeasible by clear and convincing evidence, in lieu of installing new additional poles, any wireless installation in the public right-of-way shall replace a pre-existing utility pole or light standard;
8. Wireless installations in the public right-of-way shall be on poles that meet or exceed current NESC standards and wind and ice loading requirements of the latest version of ANSI 222;
9. Any new poles installed shall be environmentally "green" and not leach any volatile organic compounds or toxic materials into the ground; and
10. To avoid unsightly rust and corrosion, any new or replacement pole installed shall not be of a corrodible type of metal or concrete.

7.14 VISIBILITY AND AESTHETICS

A. No tower, nor any support structure that is not a building and is constructed after the effective date of this section, shall be tall enough to require lighting by the Federal Aviation Agency (FAA).

B. Stealth: All new facilities, including but not limited to towers, shall utilize stealth or camouflage siting techniques that are acceptable to the city, unless such can be shown to be either commercially or technologically impracticable.

C. Finish/Color: Towers and other non-building support structures shall be of an appropriate color to harmonize with the surroundings.

D. Lighting: Notwithstanding the prohibition against lighting, in the event lighting is subsequently required by the Federal Aviation Agency (FAA), the applicant shall provide a detailed plan for lighting of as unobtrusive and inoffensive an effect as is permissible under State and federal regulations. For any facility for which lighting is required under the FAA's regulations, or that for any reason has lights attached, all such lighting shall be of the minimum wattage needed, and if required to be lighted by the FAA shall be affixed with equipment that enables the light to be seen as intended from the air, but that minimizes the ground scatter effect so that it is not able to be seen from the ground to a height of at least 20 degrees vertical for a distance of at least one (1) mile in a level terrain situation. Such device shall be compliant with or not expressly in conflict with FAA regulations. A physical shield may be used, as long as the light is able to be seen from the air, as intended by the FAA.

E. Retrofitting: In the event a tower or other support structure that is lighted as of the effective date of this ordinance is modified, at the time of the first modification of the facility the city reserves the right to require that the tower be retrofitted so as to comply with the lighting requirements of the preceding Subsection D of this section or be reduced to a height that does not require lighting.

F. Flush Mounting: Except for omni-directional antennas, all new or replacement antennas, shall be flush-mounted, or as close to flush-mounted on the support structure as is

functionally possible, unless it can be demonstrated by clear and convincing technical evidence that such would have the effect of prohibiting the provision of service to a substantial portion of the intended service area alone or in combination with another site(s), or unless the applicant can prove that it is technologically impracticable.

G. Placement on Building: If attached to a building, all antennas shall be mounted on the fascia of the building, camouflaged to match the color and, if possible, the texture of the building, or in a manner that makes the antennas as visually innocuous and undetectable as is reasonably possible given the facts and circumstances involved. A false façade on the roof that is acceptable to the city may be used to camouflage roof-mounted antennas and equipment.

7.15 SECURITY

A. All facilities shall be located, fenced or otherwise secured in a manner that prevents unauthorized access. Specifically:
   1. All facilities, including antennas, towers and other supporting structures, such as guy anchor points and guy wires, shall be made inaccessible to unauthorized individuals and shall be constructed or shielded in such a manner that they cannot be easily climbed or collided with and shall expressly include removing the climbing steps for the first 10 feet from the ground on a monopole; and
   2. Transmitters and telecommunications control points shall be installed so that they are readily accessible only to persons authorized to operate or service them.

7.16 SIGNAGE

A. Facilities shall contain a sign no larger than four (4) square feet and no smaller than one (1) foot square in order to provide adequate warning to persons in the immediate area of the presence of RF radiation. A sign of at least two (2) square feet shall also to be installed bearing the name(s) of the owner(s) and operator(s) of the antenna(s) as well as emergency phone number(s).

B. The contact information sign shall be located on the equipment shelter or cabinet of the applicant, must be visible from the access point of the facility and must identify the equipment owner of the shelter or cabinet and contain a 24 hour/365 day emergency contact phone number. On tower sites, an FCC registration sign, as applicable, is also to be present. The signs shall not be lighted, unless applicable law, rule or regulation requires lighting. No other signage, including advertising, shall be permitted.

C. For wireless facilities in the public rights-of-way the RF Radiation Warning sign may be
   1. The standard warning symbol for RF Radiation;
   2. Be of a size no smaller than 6” x 6” and
   3. Placed no less than four feet (4) nor more than six feet (6) from ground level.

7.17 SETBACK AND FALL ZONE

A. All proposed towers and any other proposed wireless support structures not located in the public rights-of-way shall be set back from abutting parcels, recorded rights-of-way and roads and streets by the greater of the following distances:

1. A distance equal to the height of the proposed tower or support structure plus 10%, otherwise known as the fall zone; or
2. The existing setback requirement of the underlying zoning district.

B. For new support structures in the public right-of-way, the setback shall be determined at the time of the pre-application site visit and determined based on the situation at the location.

C. For any facility located within a fenced compound, any accessory structure shall be located within the compound as approved in the special use permit and so as to comply with the applicable minimum setback requirements for the property on which it is situated. The fall zone or setback shall be measured from the nearest portion of the tower to the nearest portion of the public right-of-way and any occupied building or domicile and any property boundary lines.

D. The nearest portion of any private access road leading to a facility shall be no less than 10 feet from the nearest property line.

E. There shall be no development of habitable buildings within the setback area or fall zone.

7.18 RETENTION OF EXPERT ASSISTANCE COST TO BE BORNE BY APPLICANT

A. The city may hire any consultant of its choice to assist the city in reviewing and evaluating applications and negotiating leases, provided the consultant has at least five (5) years of experience working exclusively for the public sector regulating towers and wireless facilities and negotiating leases, and has not had a recommendation successfully legally challenged.

B. Since retail subscriber rates reflect all capital costs, including costs of permitting such as but not limited to payment of the cost of the city's expert assistance, and to prevent taxpayers from having to bear the cost related to the issue of permitting and regulating a commercially used wireless telecommunications facilities or negotiating agreements to lease or amend or modify a lease for any city-owned property or structure, an applicant shall pay to the city fees as set forth in the city's fee schedule. The fees are intended to cover all reasonable costs of the expert assistance needed by the city in connection with the review of any application, including both the technical and non-technical review, and the permitting, inspection, construction or modification requested, any application pre-approval evaluation requested by the applicant and any lease negotiations. The payment of the expert assistance fees to the city shall precede any work being done that is related to the intended application or lease, including a pre-application meeting or site visit.

C. The total amount of the funds needed for expert assistance for substantial modifications and new support structures may vary with the scope and complexity of the application, the completeness of the application and other information as may be needed to complete the necessary technical and non-technical reviews, analysis and inspection of any construction or modification or the amount of time spent responding to an applicant's requests, questions, assertions or arguments as regards its application with respect to the requirements of this ordinance or applicable state or federal law, rule or regulation.

D. For a new tower or other support structure or a substantial modification, to prevent taxpayer subsidization, the expert assistance fee shall be no less than $7,500. For eligible facilities, the consulting fee shall not exceed $500 per application.
E. The city will maintain an accounting record for the expenditure of all such funds.
F. If an application is amended, or a waiver or relief is requested from any regulations at any time prior to the grant of the Certificate of Completion required under this ordinance, the city reserves the right to require additional payment for the review and analysis equal to, but not exceeding, the cost created for the city by the applicant or its application. Such amount shall be paid to the city prior to the issuance of the special use permit or administrative approval or the Certificate of Completion, whichever is procedurally needed next.

7.19 PROCEDURAL REQUIREMENTS FOR A GRANTING A SPECIAL USE PERMIT

A. Prior to issuance of a special use permit, all requirements and procedures as provided in Section 2.7.C shall be met in addition to all applicable provisions of this article.
B. The city shall schedule any required hearing(s) once it finds the application is complete and there are no issues of non-compliance or conflict with applicable law, rule or regulation. The city shall not be required to set a date for a hearing if the application is not complete or if there are unresolved issues of non-compliance by the applicant or a party to the application. The city may, at any stage prior to issuing a special use permit, require such additional information as it deems necessary and that is not expressly prohibited from being required by applicable law as relates to the issues of the siting, construction or modification of or at a wireless telecommunications facility.
C. Upon Board of Adjustment approval, a special use permit shall be issued for a new tower or substantially modified facility. Notwithstanding the preceding, the building permit for such shall not be issued until an applicant has provided clear and convincing substantiating documentation governing the placement of the first antenna array of a carrier who has committed to use the structure prior to its construction and that carrier has been properly permitted under this ordinance.

7.20 ACTION ON AN APPLICATION

A. The city will undertake, or have undertaken, a review of an application pursuant to this article in a timely fashion, consistent with its responsibilities and applicable law, and shall act within the time required by applicable law.
B. The city may refer any application or part thereof to any advisory committee and/or consultant for a non-binding recommendation.
C. Either after the public hearing if a hearing is required, or after administrative review for a non-substantial modification or an eligible facility application, the city may
    1. Approve;
    2. Approve with conditions; or
    3. Deny for cause a permit or administrative approval application. Any decision shall be in writing. Throughout the application and permitting process, the burden of proof with respect to compliance with this article shall always be upon the applicant.

7.21 TRANSFER OR ASSIGNMENT

A. The extent and parameters of a special use permit or administrative authorization for a facility shall be as follows:
   1. Such special use permit or administrative authorization shall not be assigned, transferred or conveyed without the express prior written notification to the city, such notice to be not fewer than 60 business days prior to the intended assignment, transfer or conveyance.
   2. A transfer, assignment or other conveyance of the special use permit or administrative authorization shall require the written commitment of the proposed new holder of the special use permit or administrative authorization to abide by all applicable laws, rules and regulations, including but not limited to this ordinance.

7.22 VIOLATIONS

Violations of this article shall be subject to Section 2.15.

7.23 REMOVAL AND PERFORMANCE SECURITY

A. Removal and Performance: The applicant and the owner of record of any proposed new tower or other support structure shall, at its sole cost and expense, be required to execute and file with the city a bond or other form of security that is acceptable to the city as to the type of security and the form and manner of execution, in an amount of at least $75,000.00 for a tower or other support structure and with such sureties as are deemed adequate by the city to assure the faithful performance of the terms and conditions of this ordinance and the conditions of any special use permit issued pursuant to this ordinance. The full amount of the bond or security shall remain in full force and effect throughout the term of the special use permit and/or, if abandoned, until any necessary site restoration is completed to restore the site to a condition comparable to that, which existed prior to the issuance of the original special use permit. The amount of the bond is, in part, determined by the current cost of demolition, removal and site restoration multiplied by the compounding or cumulative effect of a 3% annual cost escalator over a 30-year projected useful life of the structure.

B. Performance: The owner of any equipment attached to a support structure or located in a complex shall be required to execute and file with the city a performance bond or other form of performance security that is acceptable to the city as to the type of security and the form and manner of execution, in the amount of $25,000.

7.24 RESERVATION OF AUTHORITY TO INSPECT WIRELESS TELECOMMUNICATIONS FACILITIES

A. In order to verify that the holder of a special use permit for a facility and any and all lessees, renters, and/or licensees of wireless telecommunications facilities, places, constructs and maintains such facility in accordance with all applicable technical, safety, fire, building codes, zoning codes, laws, ordinances and regulations and conditions of any permit granted under this ordinance, the city or its designee shall have the right to inspect all facets of said permit holder's, renter's, lessee's or licensee's placement, construction, modification and maintenance of such facilities, including, but not limited

to, towers, antennas, buildings and equipment and connections contained therein, or other structures constructed or located on the permitted site.

B. Refusal to allow or grant access to the city's representative upon reasonable notice shall be deemed a violation of this ordinance.

7.25 LIABILITY INSURANCE

A. A holder of a special use permit for a wireless telecommunications support structure shall secure and at all times maintain public liability insurance for personal injuries, death and property damage, and umbrella insurance coverage, for the duration of the special use permit in amounts as set forth below:
   1. Commercial General Liability covering personal injuries, death and property damage: $2,000,000 per occurrence/$5,000,000 aggregate; and
   2. Automobile Coverage: $1,000,000.00 per occurrence/ $3,000,000 aggregate; and
   3. A $5,000,000 Umbrella coverage; and
   4. Workers Compensation and Disability: Statutory amounts.

B. For a facility located on city property, the Commercial General Liability insurance policy shall specifically name the City and its officers, Boards, employees, committee members, attorneys, agents and consultants as additional insureds.

C. The insurance policies shall be issued by an agent or representative of an insurance company licensed to do business in the state and with an AM Best's rating of at least A.

D. The insurance policies shall contain an endorsement obligating the insurance company to furnish the city with at least 30 days prior written notice in advance of the cancellation of the insurance.

E. Renewal or replacement policies or certificates shall be delivered to the city at least 15 days prior to the expiration of the insurance that such policies are intended to renew or replace.

F. Before construction of a permitted wireless telecommunications facility is initiated, but in no case later than 15 days prior to the grant of the building permit, the holder of the special use permit shall deliver to the city a copy of each of the policies or certificates representing the required insurance in the required amounts.

G. A Certificate of Insurance that states that it is for informational purposes only and does not confer rights upon the city shall not be deemed to comply with this section.

7.26 INDEMNIFICATION

A. Any application for wireless telecommunication facilities that is proposed to be located on city property or in the city-owned or managed right-of-way shall contain a signed statement fully and completely indemnifying the city and to at all times defend, indemnify, protect, save, hold harmless and exempt the city and its officers, Boards, employees, committee members, attorneys, agents, and consultants from any and all penalties, damages, costs, or charges arising out of any and all claims, suits, demands, causes of action, or award of damages, whether compensatory or punitive, or expenses arising there from, either at law or in equity, which might arise out of, or are caused by, the placement, construction, erection, modification, location, product performance, use, operation, maintenance, repair, installation, replacement, removal, or restoration of said facility. Notwithstanding the preceding, there shall be no claim of indemnification with

respect to any act attributable to the negligent or intentional acts or omissions of the city, or its servants or agents. With respect to the penalties, damages or charges referenced herein, reasonable attorneys' fees, consultants' fees, and expert witness fees are included in those costs that are recoverable by the city.

B. Notwithstanding the requirements noted in Subsection A of this section, an indemnification provision will not be required in those instances where the city itself, or an agency or department of the city, applies for and secures a special use permit for a wireless telecommunications facility.

7.27 MOVING OR REMOVAL OF COLLOCATED FACILITIES AND EQUIPMENT

A. If attached to an existing tower or other support structure, unless the city deems doing so to be in the public interest, it shall be impermissible for a wireless service provider's or carrier's equipment to be relocated from one structure to another without verifiable clear and convincing evidence that not to do so would, for technical reasons, prohibit or serve to prohibit the provision of service in a substantial portion of the intended service area.

B. If the lease for the existing attachment and use expires and is not renewed, thereby forcing the facility to be moved, such move shall be allowed upon i) the provision of clear and convincing evidence satisfactory to the city of the need to move or relocate the facility; and ii) clear and convincing evidence satisfactory to the city of the lack of impact on the neighborhood or area of the intended new location. Cancellation or abandonment of a lease by a lessee or refusal to agree to terms of a lease that are not commercially impracticable shall not be deemed a permissible reason for relocating.

C. The owner of any facility shall be required to provide a minimum of 30 days written notice to the city clerk prior to abandoning any facility.

D. Under the following circumstances, the city may determine that the health, safety, and welfare interests of the city warrant and require the removal of facilities.

1. A facility that has been abandoned (i.e. not used as wireless telecommunications facilities) for a period exceeding 90 consecutive days or a cumulative total of 180 non-consecutive days in any 365 day period, except for periods caused by force majeure or Acts of God, in which case, repair or removal shall be completed within 90 days of abandonment;
2. A support structure, facility falls into such a state of disrepair that it creates a health or safety hazard or is deemed an attractive nuisance or a visual blight;
3. A support structure or facility has been located, constructed, or modified without first obtaining, or in a manner not authorized by, the required special use permit, or administrative approval, and the special permit or administrative approval may be revoked.

E. If the city makes a determination as noted in Subsection D.2 or D.3 of this section, then the city shall notify the holder of the permit for the facility that said facility is to be removed.

F. The holder of the special use permit or administrative approval, or its successors or assigns, shall dismantle and remove the facility and all associated structures and equipment from the site and restore the site to as close to its original condition as is

reasonably possible, such restoration being limited only by physical or commercial impracticability. Restoration shall be completed within 90 days of the receipt of a written notice from the city. However, if the owner of the property upon which the facility is located wishes to retain any access roadway to the facility, the owner may do so with the approval of the city.

G. If a facility has not been removed, or substantial progress has not been made to remove the facility, within 90 days after the permit holder has received notice, then the city may order officials or representatives of the city to remove or have removed the facility at the sole expense of the owner or special use permit holder.

H. If the city removes, or causes a facility to be removed, and the owner of the facility does not claim and remove it from the site to a lawful location within 10 days, the city may take steps to declare the facility abandoned and sell all remaining equipment and materials.

I. Notwithstanding anything in this section to the contrary, the city may approve a temporary use permit/agreement for the facility, but for no more than 90 days duration, during which time a suitable plan for removal, conversion, or re-location of the affected facility shall be developed by the holder of the special use permit, subject to the approval of the city, and an agreement to such plan shall be executed by the holder of the special use permit or administrative approval and the city. If such a plan is not developed, approved and executed within the 90 day time period, then the city may take possession and dispose of the affected facility in the manner provided in this section and may utilize the bond in Section 7.23 of this ordinance.

7.28 RF EMISSIONS

A. As may be deemed appropriate from time to time, to assure the protection of the public health and safety, the city expressly reserves the right under its police powers to require i) that a user of a facility or the owner of the facility, verify compliance with the FCC's regulations regarding cumulative RF emissions at the site under the observation of a qualified staff member or the city's consultant; and ii) that all users of the facility cooperate in a prompt and timely manner with the party responsible for such testing or verification. Failure to cooperate shall be deemed a violation of this section and subject the non-cooperating party to all applicable and permissible fines and penalties.

B. In the event the city deems it necessary to determine compliance with the FCC's Maximum Permitted Exposure (MPE) rules, and in lieu of the procedure contained in the preceding Subsection A of this section, the city expressly reserves the right to request the involvement of the FCC and/or OSHA (Occupational Safety and Health Administration) to determine or verify compliance with federal standards and guidelines that the city, itself, may be prohibited from determining.

C. With respect to support structures other than towers, if any section or portion of the structure attached to or to be attached to is not in compliance with the FCC's regulations regarding RF radiation, that section or portion must be barricaded with a suitable barrier to discourage approaching into the area in excess of the FCC's regulations, and be marked off with brightly colored plastic chain or striped warning tape, as appropriate, as well as placing RF Radiation signs as needed and appropriate to warn individuals of the

potential danger. As deemed warranted by the city at any time, the right of the city is expressly reserved to do itself, or order done, an on-site RF emissions survey.

7.29 ADHERENCE TO STATE AND/OR FEDERAL RULES AND REGULATIONS

A. To the extent that applicable rules, regulations, standards, and provisions of any state or federal agency, including but not limited to, the FAA and the FCC, and specifically including any rules and regulations regarding height, lighting, and security are changed and/or are modified during the duration of a special use permit or administrative approval for wireless telecommunications facilities, then the holder of such a special use permit or administrative approval shall conform the permitted facility to the applicable changed and/or modified rule, regulation, standard, or provision within a maximum of 24 months of the effective date of the applicable changed and/or modified rule, regulation, standard, or provision, or sooner as may be required by the issuing entity.

7.30 CONFLICT WITH OTHER LAWS

Where this article differs or conflicts with other local Laws, rules and regulations, unless the right to do so is preempted or prohibited by the City, state or federal government, the more stringent shall apply.

ARTICLE 8: DEFINITIONS AND MEASUREMENT

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Section 8.1 Rules of Measurement

Straight Lines. Unless otherwise stated in this ordinance, distances specified in this ordinance are to be measured as the length of an imaginary straight line joining two points.

Rounding. All calculations that result in part of a whole number shall be rounded up to the next highest whole number, unless otherwise provided in this section or elsewhere in this ordinance.

Irregular Shapes. In cases where an irregular shape complicates the application of these standards, the UDO Administrator shall determine the applicable dimensional, setback, or bulk standards.

Section 8.2 Word Interpretation

For the purposes of this ordinance, certain words shall be interpreted as follows. If a term used in this ordinance is not defined, the UDO Administrator is to interpret the term in accordance with professionally accepted sources.

A. As used in this ordinance, words importing the masculine gender include the feminine and neuter.
B. Words used in the singular in this ordinance include the plural and words used in the plural include the singular.
C. Words used in the present tense include future tense.
D. The word “person” includes a firm, association, organization, corporation, company, trust, and partnership as well as an individual.
E. The words “may” and “should” are permissive.
F. The words “shall” and “will” are always mandatory and not merely directive.
G. The word “used for” shall include the meaning “designed for.”
H. The words “used” or “occupied” shall mean “intended, designed, and arranged to be used or occupied.”
I. The word “lot” shall include the words “plot,” “parcel,” and “tract.”
J. The word “structure” shall include the word “building.”
K. The word “street” includes the word “alley,” “road,” “cul-de-sac,” “highway” or “thoroughfare,” whether designated as public or private.
L. The word “includes” shall not limit the term to specified examples, but is intended to extend its meaning to all other instances or circumstances of like kind or character.
M. The word “City Aldermen” shall include “Board of Aldermen” of the City of Southport, North Carolina.
N. The words “Planning Board,” “Zoning Commission,” or “Planning Commission” shall mean the “City of Southport Planning Board.”
O. The word “city” shall mean the “City of Southport,” a municipal corporation of the State of North Carolina.
P. The words “map,” “zoning map,” and “Southport Zoning Map” shall mean the “Official Zoning Map for the City of Southport, North Carolina.”
Q. The words “Board of Adjustment” shall mean the “City of Southport Board of Adjustment.”

Section 8.3 Definitions of Basic Terms

Unless otherwise specifically provided, or unless clearly required by the context, the words and phrases defined in this section shall have the meaning indicated when used in this ordinance. Specific

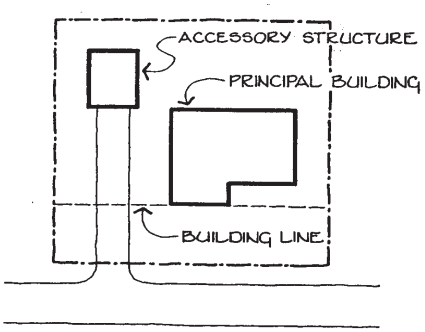
definitions relating to floodplain development and wireless communication are included in Articles 5 and 7 of this ordinance, respectively.

Abandoned vehicle. A motor vehicle that:

A. Has been left upon a street or highway in violation of a law or ordinance prohibiting parking; or
B. Is left on property owned or operated by the city for longer than 24 hours; or
C. Is left on private property without the consent of the owner, occupant, or lessee thereof longer than two hours; or
D. Is left on any public street or highway for longer than seven (7) days.

Accessory dwelling. A dwelling unit either added within an existing single family detached dwelling or in a separate accessory structure on the same lot as the principal dwelling, or within a commercial building for use as a complete, independent living facility with provision within the accessory dwelling unit for cooking, eating, sanitation and sleeping.

Accessory structure. A structure located on the same parcel of property as the principal structure and the use of which is incidental to the use of the principal structure.



Accessory use. A use incidental to, and the same lot as, a principal use.

Addition (to an existing building). Any walled and roofed expansion to the perimeter of a building in which the addition is connected by a common load-bearing wall other than a fire wall. Any walled and roofed addition which is connected by a fire wall or is separated by independent perimeter load-bearing walls is new construction. Any extension or increase in the floor area or height of a building or structure.

Administrative decision. Decisions made in the implementation, administration, or enforcement of development regulations that involve the determination of facts and the application of objective standards set forth in this UDO. These are sometimes referred to as ministerial decisions or administrative determinations.

Adult Establishment. Retail or service establishments as defined per NCGS 14-202.10 and/or those which are characterized by an emphasis on sexual activity and/or specified anatomical areas, including, but not limited to:

A. Any bookstore, video store or other establishment in which a substantial portion of its stock in trade is devoted to printed matter or visual representation of specified sexual activities or specified anatomical areas;
B. Any movie theater offering movies or other displays or any establishments offering coin-operated devices, which emphasize specified sexual activities or specified anatomical areas;
C. Any cabaret, club, tavern, theater or other establishment which offers entertainment emphasizing specified sexual activities or specified anatomical areas; or
D. Any establishment offering massage or similar manipulation of the human body, unless such manipulation is administered by a medical practitioner, chiropractor, acupuncturist, physical therapist or similar professional licensed by the state.
E. The term "adult entertainment" does not include massages or similar manipulation offered at an athletic club, health club, school, gymnasium, spa or similar establishments.

Agriculture. The use of land for agricultural purposes, including farming, dairying, pasturage, agriculture, horticulture, floriculture, viticulture, forestry, and animal and poultry husbandry and the necessary accessory uses for packing, treating, or storing the produce; provided, however, that the operation of any such accessory uses shall be secondary to that of normal agricultural activities and provided further that the above uses shall not include the commercial feeding of garbage or offal to swine or other animals.

Alley. A strip of land, owned publicly or privately, set aside only for secondary vehicular service access to the back or side of properties otherwise abutting on a street.

Alterations. The word “alteration” shall include any of the following:

A. Any addition to the height or depth of a building or structure;
B. Any change in the location of any of the exterior walls of a building or structure;
C. Any increase in the interior accommodations of a building or structure.

Antenna. Equipment designed to transmit or receive electronic signals.

Apartment. A room or suite of one (1) or more rooms, each of which has kitchen facilities and is designed or intended to be used, as an independent unit, on a rental basis.

Appeal. A request for review of the final decision of any provision of this ordinance.

Approval Authority. The Board of Aldermen of the City of Southport, the Board of Adjustment or other board or official designated by ordinance as authorized to grant the specific zoning or land use permit or approval in accordance with the provisions of this ordinance.

Arborist. An arborist shall be an individual trained in arboriculture, horticulture, forestry, ornamental horticulture or urban forestry, who possesses the technical competence through demonstrated experience to provide plans for and supervise the protection, maintenance and

management of trees and other woody plants in relation to land development and construction. In addition, the arborist shall hold current certification and membership in good standing with the ISA (International Society of Arboriculture) or ASCA (American Society of Consulting Arborists).

Articulation. An emphasis given to architectural elements (including windows, balconies, porches, entries, etc.) to create a complementary rhythm or pattern; modulation of building facades, massing and detail to create variety.

As-built Plan. Plans reflecting actual field conditions which may include the construction plans with any changes identified and shown on the plan.

Assembly. A joining together of completely fabricated parts to create a finished product.

Automotive, Major. Establishments engaged in vehicle sales (including motorcycles, RVs, and other consumer motor vehicles), rental, towing, and major repair such as transmission, engine repair, bodywork, and repainting.

Automotive, Minor. Establishments that are primarily engaged in washing cars, tire sales, gasoline sales, minor repair such as diagnostic work, lubricating, wheel alignment and inspections, but no vehicle sales or rental.

Bed and Breakfast. A house, or portion thereof,where short-term lodging rooms and meals are provided. The operator of the inn shall live on the premises or in adjacent premises.

Block. A piece of land bounded on one (1) or more sides by streets or roads.

Board of Adjustment. A quasi-judicial body, composed of representatives from the City of Southport, which is given certain powers under and relative to this ordinance.

Board of Aldermen. The Board of Aldermen of the City of Southport.

Bona Fide Farm. A property that is located in the city's extraterritorial jurisdiction that is used for bona fide farm purposes in accordance with G.S. 160D-903(a) and is exempt from zoning regulation to the same extent bona fide farming activities are exempt from county zoning pursuant to G.S. 160D-903A.

Bottle Shop or Wine Bar. An establishment primarily devoted to the sale of alcoholic beverages for on-site consumption, where the sale of food is incidental or does not take place. Sale of spiritous liquor or mixed beverages not permitted.

Buffer. Any visual buffer or screening required by this ordinance.

Building Envelope. The portion of a lot remaining after required yards have been made and setbacks met.

Building. Any structure built for support, shelter, or enclosure for any occupancy or

storage.

Building, Accessory. See accessory structure.

Building, Detached. A building having no party or common wall with another building except an accessory building or structure.

Building Inspector. The person, officer, and his authorized representatives, whom the City Manager has designated as their agent for the administration and enforcement of the City building codes and minimum housing code.

Building Line Minimum. A line parallel to the property line which establishes the minimum allowable distance between the nearest portion of any building.

Building Permit. An official administrative authorization issued by the city prior to beginning construction consistent with the provisions of NCGS 160D-1110.

Building, Principal. A building in which the principal use of the lot on which the building is situated is conducted.

Building Site. Any lot, or portion thereof, or two (2) or more contiguous lots, or portions thereof, of a parcel of land upon which a building or buildings may be erected in conformance with the requirements of this ordinance.

Bulk Storage System. A facility containing storage tanks, pipe network, power, and control systems which allow dry bulk materials to be aerated and handled as required. Normally used to store materials which are consumed in relatively large quantities (i.e., barite, bentonite, and cement).

CAMA. North Carolina's Coastal Area Management Act. This act, along with the Dredge and Fill Law and the Federal Coastal Zone Management Act, is managed through North Carolina Department of Environmental Quality (NCDEQ)Division of Coastal Management (DCM).

Certificate of Occupancy. Official certification that a premises conforms to provisions of this ordinance and the Building Code and may be used or occupied. Such a certificate is granted for new construction or for alterations or additions to existing structures or a change in use. Unless such a certificate is issued, a structure cannot be occupied.

Certiorari. An appellate proceeding which brings into Superior Court or other appropriate forum the record of administrative, judicial, or quasi- judicial actions for the purposes of either reexamining the action taken by the inferior body to determine the appropriateness of said action or to obtain further information in the pending case.

Certify. Whenever this ordinance requires that some agency certify the existence of some fact or circumstance to the City, the City may require that such certification be made in any manner that provides reasonable assurance of the accuracy of the certification. By way of illustration, and without limiting the foregoing, the City may accept certification by telephone

from some agency when the circumstances warrant it, or the City may require that the certification be in the form of a letter or other document.

Change of Use. A lot, structure, or property where the zoning use has been modified or altered in accordance with the uses permitted in this ordinance.

Chemical Storage Facility. A building, portion of a building, or exterior area adjacent to a building used for the storage of any chemical or chemically reactive products.

Church or Place of Religious Worship. An institution that people regularly attend to participate in or hold religious services, meetings, and other activities. The term "church" shall not carry a secular connotation and shall include buildings in which the religious services of any denomination are held in addition to other associated activities and offices.

Circulation Area. That portion of the vehicle accommodation area used for access to parking or loading areas or other facilities on the lot. Essentially, driveways and other maneuvering areas (other than parking aisles) comprise the circulation area.

City. The City of Southport, North Carolina.

Clearing, Lot. Clearing means any activity which removes part or all of the vegetation and/or trees including, but not limited to, root mat removal and/or topsoil removal. Some vegetation and/or trees may remain on a lot that has been cleared.

Club or Lodge. An incorporated or unincorporated association for civic, social, cultural, fraternal, literary, political, recreational or like activities operated on a nonprofit basis for the exclusive benefit of its members, and recognized as a nonprofit organization by the State of North Carolina.

Coastal Barrier Resources System (CBRS). Undeveloped portions of coastal and adjoining areas established by the Coastal Barrier Resources Act (CBRA) of 1982, the Coastal Barrier Improvement Act (CBIA) of 1990, and subsequent revisions, and includes areas owned by federal or state governments or private conservation organizations identified as Otherwise Protected Areas (OPA).

Commercial Parking Lot. Any building or premises, except a building or premises described as a private garage, used for the storage of motor vehicles for the public or private businesses.

Commercial Recreation, Indoor. A commercial use that is typically indoors and that provides recreational, amusement, and entertainment opportunities. Examples include billiards, bowling, dinner theaters, fortune tellers, skating rinks, pickleball, and coin-operated games.

Commercial Recreation, Outdoor. A commercial facility that is typically outdoors and that provides entertainment, recreational, and amusement opportunities. Examples include water parks, mazes, and miniature golf.

Communications Tower. A tower, pole, or similar structure which supports a telecommunications antenna operated for commercial purposes above ground in a fixed

location, free standing, guyed, or on another structure.

Condominium. A dwelling unit in which the ownership of the occupancy rights to the dwelling unit is individually owned or for sale to an individual and such ownership is not inclusive of any land.

County Commission. The Board of Commissioners of Brunswick County, North Carolina.

Critical Root Zone. The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one and one-half foot per inch of trunk diameter (Diameter at Breast Height).

Crown. The totality of branches, twigs, and leaves extending from the trunk or main stem(s).

Curb. A structural element at the edge of an existing or proposed street or other way, generally at a higher elevation than the adjacent edge of roadway, installed to deter vehicles and water from leaving the roadway, to otherwise control drainage, to delineate the edge of existing or future roadways or driveways, to present a more finished appearance to the street, to assist in the orderly development of the roadside, and to contribute to the stability and structural integrity of the pavement.

Curtain Wall. A continuous, uniform foundation enclosure constructed of brick or concrete blocks and that is unpierced except for required ventilation and access.

Daycare, Child. Any child care arrangement that provides day care on a regular basis for more than four (4) hours per day for more than five (5) children of preschool age.

Daycare, Adult. The provision of group care and supervision on a less than 24-hour basis to adults who may be physically or mentally disabled. The following are exempt from this definition: (1) those that care for three (3) people or less; (2) those that care for two (2) or more persons, all of whom are related by blood or marriage to the operator of the facility; and (3) those that are required by other statutes to be licensed by the Department of Health and Human Services.

Dedication. A gift by the owner, or a right to use of land for a specified purpose or purposes. Because a transfer of property rights is entailed, dedication must be made by written instrument, and is completed with an acceptance.

Designated Responsible Party. The local contact person responsible for responding to complaints or issues stemming from the use of the dwelling unit as a short-term rental.

Detention Facility. A structure designed and constructed for the collection and storage of surface water for subsequent gradual discharge.

Determination. A written, final, and binding order, requirement, or determination regarding an administrative decision of the UDO Administrator. Such determinations shall be provided to interested parties in accordance with NCGS 160D-403(b).

Developed Peak Discharge Rates. The peak discharge rates, in cubic feet per second, calculated using developed land use conditions.

Developer. A person, including a governmental agency or redevelopment authority, who undertakes any development and who is the landowner of the property to be developed or who has been authorized by the landowner to undertake development on that property.

Development. Unless the context clearly indicates otherwise, the term means any of the following:

A. The construction, erection, alteration, enlargement, renovation, substantial repair, movement to another site, or demolition of any structure.
B. The excavation, grading, filling, clearing, or alteration of land.
C. The subdivision of land as defined in NCGS 160D-802.
D. The initiation or substantial change in the use of land or the intensity of use of land.

Development approval. An administrative or quasi-judicial approval made pursuant to this UDO that is written and that is required prior to commencing development or undertaking a specific activity, project, or development proposal. Development approvals include, but are not limited to, zoning permits, site plan approvals, special use permits, and variances. The term also includes all other regulatory approvals required by regulations adopted pursuant to this UDO, including plat approvals, permits issued, and building permits issued. Unless provided otherwise by law, all rights, privileges, benefits, burdens, and obligations created by development approvals made pursuant to this UDO attach to and run with the land.

Diameter at Breast Height (DBH). The diameter or width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs. Trees consisting of two (2) or more stems in which the fork is below DBH are considered as separate trees and the diameter is measured for each stem separately. If a fork occurs exactly at DBH, the diameter measurement is taken immediately below the enlargement caused by the fork.

Dimensional Nonconformity. A nonconforming situation that occurs when the height, size, or minimum floor space of a structure or the relationship between an existing building or buildings and other buildings or lot lines does not conform to the regulations applicable to the district in which the property is located.

Disposal. As defined in NCGS 130A-290(a)(6), the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

Dock. A structure, typically comprised of wood, that extends alongshore or outwards from the shore into a body of water that allows access to the water or to moored boats or watercraft. A dock may include the placing of piling, dolphins of any type, fender, ramp, floating dock, boat

lift, gazebo, or other structure occupying the area beyond the high-water line. Docks may be utilized as a principal or accessory structure where permitted.

Drainage facilities. See storm drainage facilities.

Drip Line. A vertical line running through the outermost portion of the crown of a tree and extending to the ground.

Drive-in Facility. An establishment at which employees provide curb service to customers and at which the customer does not customarily leave his vehicle; or accommodations through special equipment or construction from which a person may receive a service or place an order. Self-service gas pumps are excluded from this definition.

Driveway. That portion of the vehicle accommodation area that consists of a travel lane bounded on either side by an area that is not part of the vehicle accommodation area.

Dwelling. Any building, structure, or part thereof, used and occupied for human habitation or intended to be so used. This term does not include a manufactured home, mobile home, recreational vehicle, or travel trailer.

Dwelling, Multi-family. A single structure comprised of three (3) or more dwelling units, with the number of families in residence not exceeding the number of dwelling units provided.

Dwelling, Single-family. A detached building designed for or occupied exclusively by one (1) family.

Dwelling, Two-family (duplex).
A detached residential building containing two (2) dwelling units, designed for occupancy by not more than two families. Units must share a common wall. A duplex dwelling structure shall be located on a single lot and dwelling units may be sold separately from the land they are located on provided that each unit possess a separate entrance.

Dwelling Unit. A room or group of rooms within a dwelling forming a single, independent, habitable unit; containing an independent kitchen, sanitary, and sleeping facilities; and provided such dwelling unit complies with local minimum housing standards.

Easement. A grant by the property owner of a strip of land for a specified purpose and use by the public, a corporation, or persons.

Electronic Gaming Operations. Any business or enterprise where persons utilize electronic machines, including but not limited to computers and gaming terminals, to conduct games of chance, including but not limited to sweepstakes, and where cash, merchandise or other items of value are redeemed or otherwise distributed, whether or not the value of such distribution is determined by electronic games played or by predetermined odds. Such businesses or enterprises have as a part of its operation the running of one or more games or processes with any of the following characteristics: (1) payment, directly or as an intended addition to the purchase of a product, whereby the customer receives one or more electronic

sweepstakes tickets, cards, tokens or similar items entitling or empowering the customer to enter a sweepstakes, and without which item the customer would be unable to enter the sweepstakes; or, (2) payment, directly or an intended addition to the purchase of a product, whereby the customer can request a no purchase necessary free entry of one or more sweepstakes tickets or other item entitling the customer to enter a sweepstakes. The term electronic gaming operations includes, but is not limited to, cyber-gaming establishments, internet cafes, internet sweepstakes, beach sweepstakes, video sweepstakes or cyber-cafes, who have a finite pool of winners. This does not include any lottery endorsed or permitted by the State of North Carolina.

Erect. Build, construct, rebuild, or reconstruct, as the same are commonly defined.

Essential Site Improvements. Any construction or reconstruction of site development feature required by local, state, or federal regulations, ordinances, or laws, such as underground drainage, off-street parking, driveways, retention areas or similar improvements required for the intended use of the site.

Existing Land Use Conditions. The land use conditions existing at the time the design plans are submitted for approval, including previously approved upstream developments.

Expansion to an Existing Manufactured Home Park. The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete slabs).

Extraterritorial Jurisdiction. The area beyond the corporate limits within which the planning and zoning regulations of the city apply in accordance with state law. Such area is delineated on the official zoning map for the City of Southport.

Fabrication. The process and/or assemblage of various components into a complete or partially completed commodity. Fabrication relates to stamping, cutting or otherwise shaping the processed materials into useful objects. The refining aspects of manufacturing and other initial processing of basic raw material such as metal ores, lumber and rubber, etc., are excluded.

Familial Relationship. For purposes of conflicts of interest, a "close familial relationship" means a spouse, parent, child, brother, sister, grandparent, or grandchild. The term includes the step, half, and in-law relationships.

Family. One (1) or more persons occupying a dwelling unit and living as a single, nonprofit housekeeping unit; provided that a group of five (5) or more persons who are not within the second degree of kinship shall not be deemed to constitute a family.

Family Care Home. An adult care home having two (2) to six (6) residents. The structure of a family care home may be no more than two (2) stories high and none of the aged or physically disabled persons being served there may be housed in the upper story without provision for two (2) direct exterior ground level accesses to the upper story.

Farmers Market. An establishment primarily engaged in the retail sale of fresh fruits and vegetables. Such uses are typically found in public or municipal markets.

FAR (Floor Area Ratio). The maximum square foot amount of total floor area including all stories and all uses permitted for each square foot of land area.

Fence. A continuous barrier constructed of wood, stone, steel, or wire or other similar material.

Fishing Pier and Docks. The placing of piling, dolphins of any type, fender, ramp, floating dock, boat lift or other structure occupying the area beyond the high-water line.

Flag. Sign of flexible materials such as cloth, paper, or plastic and typically displayed on a flagpole, or structure. Windsocks are interpreted to represent permitted flagging.

Patriotic and/or decorative flags. Flags and insignia of governmental subdivisions, agencies, or bodies when displayed for patriotic purposes and/or flags with designs that are not promoting commercial businesses.

Commercial flags. Flags intended for commercial promotion and/or advertisement.

Fill. Any material used to raise the elevation of the surface of the land, excluding a grade base and paving.

Flea Market. A commercial operation held on a regular periodic basis and patronized by individual entrepreneurs who transport a variety of merchandise to a common geographical area for the purpose of sale or trade to the general public. This definition does not include sporadic and infrequent yard sales held in residential areas. Flea markets differ from traditional retail operations due to the open-air retailing of goods.

Floor. The top surface of an enclosed area in a building (including basement), i.e., top of slab in concrete slab construction or top of wood flooring in wood frame construction. The term does not include the floor of a garage used solely for parking vehicles.

Floor Area (for determining off-street parking). The term "floor area" means the sum of the gross horizontal areas of the several floors of the building, or portion thereof, devoted to such use, including outdoor seating or retail areas. Where multiple uses occupy a structure each applicable parking ratio shall apply. However, the term "floor area," for the purposes of measurement for off-street parking spaces, shall not include:

1. Floor area devoted to primarily storage purposes (except for those uses principally involved in the storage of goods); or
2. Basement floors other than area devoted to retailing activities, to the production or processing of goods, or to business or professional offices.

Floor area, gross. The sum of the enclosed area on all floors of a building measured from the outside faces of the exterior walls. It includes any below grade floor areas used for habitation or storage.

Food Truck. A motorized or trailered vehicle with power on board, refrigeration, food preparation facilities, and usually room for two (2) or four (4) employees. Food trucks shall also be considered a mobile vendor for the purposes of this ordinance.

Forestry. A woodland area where all of the following occur:

A. the growing of trees;
B. the harvesting of timber, leaves, or seeds;
C. the regeneration of either timely replanting of trees or natural generation in accordance with a forest management plan acceptable to the Division of North Carolina Forest Resources;
D. the application of "Best Management Practices," including the NC Department of Environment and Natural Resources, "Forest Practice Guidelines Related to Water Quality," and all successor documents.

Frontage. All property abutting on one side of a street measured along the street line.

Fuel Pump Island. Any device or group of devices used for dispensing motor fuel or similar petroleum products to the general public.

Functionally Dependent Facility. A facility which cannot be used for its intended purpose unless it is located in close proximity to water, such as a docking or port facility necessary for the loading and unloading of cargo or passengers, shipbuilding, or ship repair or seafood processing facilities. The term does not include long-term storage, manufacture, sales, or service facilities.

Funeral Home. An establishment that provides human funeral services, including embalming and memorial services. Crematories are permitted accessory uses to a funeral home.

Furrier and Fur Storage. A person who prepares or deals in furs. Tannery operations not included.

G.S. North Carolina General Statute.

Garage, Private. A building or space used as an accessory to or a part of the main building permitted in any residential district, that provides storage space for motor vehicles and in which no business, occupation or service for profit is in any way conducted.

Gate. A door or other device attached to a fence which, when opened, provides a means of ingress and egress of persons and things for which it was intended, and which, when closed, forms a continuous barrier and screen as a part of the fence in which it is attached.

Grading. Altering the shape of the ground surface to a predetermined condition; this includes stripping, cutting, filling, stockpiling and shaping or any combination thereof and shall include the land in its cut or filled condition.

Gross Site Area. The total square footage of the proposed development as determined by actual on-site survey.

Guest room. An individually secured sleeping room or a suite, with or without sanitation facilities, but does not contain a kitchen.

Guideline. An objective.

Habitable Floor. Any floor for living purposes, which includes working, sleeping, eating, cooking, or recreation, or any combination thereof. A floor used only for storage is not a habitable floor.

Half Street. A street whose centerline coincides with a subdivision plat boundary, with one-half (½) the street right-of-way width being contained within the subdivision plat. Also, any existing street to which the parcel of land to be subdivided abuts on only one side.

Handicapped Person. A person with a temporary or permanent physical, emotional or mental disability including but not limited to mental retardation, cerebral palsy, epilepsy, autism, hearing and sight impairments, emotional disturbances, or orthopedic impairments, but not including mentally ill persons who are dangerous to others as defined in G.S. Section 122-58.2(1)b.

Hazard Tree. A tree can be considered a potential hazard if it is situated in an area frequented by people or is located adjacent to valuable facilities and has structural defects which predispose it to mechanical failure in whole, or in part, that may result in property damage, personal injury or death, and the likelihood of this failure exceeds an acceptable level of risk as determined by the UDO Administrator or certified arborist.

Hazard Waste Facility. As defined in NCGS 130, Article 9, a facility for the collection, storage, processing, treatment, recycling, recovery, or disposal of hazardous waste.

Health Services. This use type provides medical or surgical care and treatment to patients as well as laboratory services. Accessory uses may include offices, laboratories, laundry facilities, teaching facilities, and meeting areas. Hospitals are not included.

Height. The vertical distance from the average finished grade (prior to the addition of any fill) of the lot to the highest point of the structure. The average grade will be based on the condition of the lot prior to the date of adoption of this ordinance.

Highest Adjacent Grade (HAG). The highest natural elevation of the ground surface, prior to construction, immediately next to the proposed walls of the structure.

Historic Structure. Means any structure that is:

A. listed individually in the National Register of Historic Places (a listing maintained by the US Department of Interior) or preliminarily determined by the Secretary of Interior as meeting the requirements for individual listing on the National Register;

B. certified or preliminarily determined by the Secretary of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
C. individually listed on a local inventory of historic landmarks in communities with a "Certified Local Government (CLG) Program;" or
D. certified as contributing to the historical significance of a historic district designated by a community with a "Certified Local Government (CLG) Program"
E. Certified Local Government (CLG) Programs are approved by the US Department of the Interior in cooperation with the North Carolina Department of Cultural Resources through the State Historic Preservation Officer as having met the requirements of the National Historic Preservation Act of 1966 as amended in 1980.

Home Occupation. A business, profession, occupation, or trade conducted for gain or support and located entirely within a residential building or a structure accessory thereto, which use is accessory, incidental and secondary to the use of the building for dwelling purposes and does not change the essential residential character or appearance of such building.

Homestay. A private, resident-occupied dwelling unit, with up to two guest rooms where overnight lodging accommodations are provided to transients for compensation and where the use is subordinate and incidental to the primary residential use of the building. A homestay is considered an accessory "Lodging" use under this UDO. The permanent resident is present during the rental stay.

Homestay and short-term vacation rental property owner. The person, persons, or entity whose name appears on the recorded deed of the property or unit being used as a homestay or short-term vacation rental.

Homestay permit. The required zoning permit to allow the rental of up to two (2) guest rooms within a home as a homestay rental. The City of Southport issues the homestay permit to the applicant after successfully completing the homestay permit application requirements.

Hotel, Motel or Inn. A building providing sleeping accommodations commonly available on a daily basis for pay to transient or permanent guests or tenants, in six (6) or more rooms. Dining rooms, restaurants or cafes, if existing, shall be conducted in the same building or buildings in connection therewith.

Hotel, Residential or Boutique. A building or group of buildings, limited to a maximum of 10 rooms total, providing lodging for persons, with or without meals, and intended and use for the accommodation of transient lodgers in suites designed in such a fashion that reflects the intended use for transient lodgers and not for permanent residential accommodation. Suites may have one or more rooms in addition to bathrooms, water closet compartments, laundry, pantry, foyer, communicating corridor, closets, or any dining alcove. Kitchen area separate from the living or sleeping areas may be provided and cooking may be done only in the kitchen area. The definition of residential or boutique hotels shall not include dwelling units as defined in this ordinance, but may include services ordinarily provided by hotels, such as maid, desk, and laundry services. These hotels may differentiate themselves from larger chain/branded hotels and motels by providing personalized accommodation and services/facilities. Sometimes known as "design hotels" or "lifestyle hotels".

Hospital Emergency Air Ambulance Helipad. The word helipad is short for helicopter landing pad, a landing area for helicopters. While helicopters are able to operate on a variety of relatively flat surfaces, a fabricated helipad provides a clearly marked hard surface away from obstacles where a helicopter can land. Helipads are usually constructed out of concrete and are marked with a circle and/or a letter "H", so as to be visible from the air. A helipad does not have fuel and service facilities and does not maintain an air traffic controller. A helipad is for the sole purpose of facilitating emergency medical transport via air ambulance.

Impervious Surface. Any material that significantly reduces and prevents natural infiltration of water into the soil. Impervious surfaces include, but are not limited to, roof, patios, balconies, decks, streets, parking areas, driveways, sidewalks, and any concrete, stone, brick, asphalt, or compacted gravel surface. Soils compacted by urban development are also highly impervious. Unwashed crushed stone containing fines is impervious. Impervious surface does not include a slatted deck; the water area of a swimming pool; a surface of number 57 stone, as designated by the American Society for Testing and Materials, laid at least four (4) inches thick over a geotextile fabric; or a trail as defined in NCGS 113A-85 that is either unpaved or paved as long as the pavement is porous with a hydraulic conductivity greater than 0.001 centimeters per second (1.41 inches per hour).

Impervious Surface Ratio. The ratio of the total area of impervious surface as defined in definition.

Infiltration. The passage or movement of water into the soil sub-surface.

Improved Landscape. Gardens, parks, parking lots, or any other proposed outside improvements including any planned vegetation, public street furniture, masonry walls, fences, light fixtures, steps and pavements, or other appurtenant features.

Improvements. The addition of any building, accessory building, parking area, loading area, fence, wall, hedge, lawn or mass planting (except to prevent soil erosion) to a lot or parcel of property.

Inspector. The building inspector for the City of Southport.

Institutional Care Facility, Adult. A home for not more than nine (9) persons who have demonstrated a tendency toward alcoholism, drug abuse, mental illness, or antisocial or criminal conduct, together with not more than two (2) persons providing supervision and other services to such persons, 11 of whom live together as a single housing unit.

Institutional Care Facility, Child and Handicapped. An institutional facility housing more than nine (9) orphaned, abandoned, dependent, abused, or neglected children. An institutional facility housing and providing care or assistance for more than nine (9) persons who are physically or mentally handicapped or infirm.

Intensive Livestock Operations. Any enclosure, pen, feedlot, building, or group of buildings intended to be used or actually used to feed, confine, maintain or stable cattle, horses, sheep,

goats, turkeys, chickens, swine, or any combination thereof, with at any time a total of 100 animal units or more present, where their dietary needs are met primarily by means other than grazing.

Introduced Tree. Any non-existing tree that is planted during the development of a property.

Jail. A municipal or county operated facility designed for the holding of individuals for trial, contempt, or punishment when the period is not to exceed 180 days.

Junk. Pre-used or unusable metallic parts and other nonmetallic manufactured products that are worn, deteriorated or obsolete, making them unusable in their existing condition, but are subject to being dismantled and salvaged.

Junk Yard. Any land or area used, in whole or in part, for commercial storage and/or sale of waste paper, rags, scrap metal, or other junk, and including storage of scrapped vehicles or machinery and dismantling of such vehicles or machinery.

Junked Vehicle. A motor vehicle that (1) is partially dismantled or wrecked; (2) cannot be self-propelled or moved in the manner in which it was originally intended to move; (3) is more than five (5) years-old and appears to be worth less than $500.00; or (4) does not display a current license plate, unless stored within an enclosed structure.

Kennel. A commercial operation that: (a) provides food and shelter and care of animals for purposes not primarily related to medical care (a kennel may or may not be run by or associated with a veterinarian), or (b) engages in the breeding of animals for sale.

Levee. A manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.

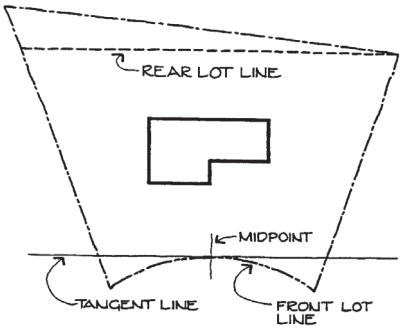
Levee System. A flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound and engineering practices.

Loading and Unloading Area. That portion of the vehicle accommodation area used for bulk pickups and deliveries, scaled to delivery vehicles and accessible to such vehicles at all times even when required off-street parking spaces are filled. Off-street loading space is not to be included as off-street parking space in computation of required off-street parking space.

Lodging. A premises available for short-term human habitation, including daily and weekly rentals for intervals of less than 30 days.

Lot. A legally described piece of contiguous land that has been or may be developed as a unit. The term lot include the words plot, parcel, and tract.

Lot, Area. The parcel of land enclosed within the boundaries formed by the property lines.



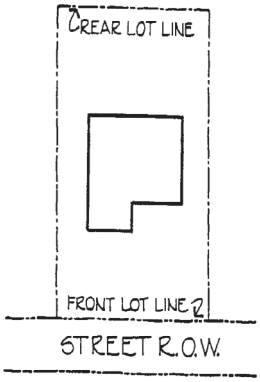
Lot, Corner. A parcel of land having frontage on more than one (1) street (road) which abuts an intersection of those streets (roads). For a corner lot adjoining a side lot line, there shall be a side yard on the street side of a corner lot, which shall have a width of not less than fifty percent (50%) of the front yard depth required for the adjacent lot to the rear of such corner lot when such adjacent lot fronts on the side street of the corner lot. No such side yard shall be less than eight (8) feet, except on lots having a width of less than 50 feet, for which lots the minimum side yard on the street side of the lot shall be four (4) feet.

Lot, Coverage. That portion of a lot occupied by a structure or impervious surface, either at ground level or the equivalent thereto when a structure is elevated on pilings.

Lot, Depth. The depth of a lot is the distance measured in the mean direction of the side lines of the lot from the midpoint of the front line to the midpoint of the opposite lot line.

Lot, Flag. Lots or parcels with less frontage on a public street than is normally required. The panhandle is an access corridor to lots or parcels located behind lots or parcels with normally required street frontage.

Lot, interior. A lot other than a corner lot with only one (1) frontage on a street.



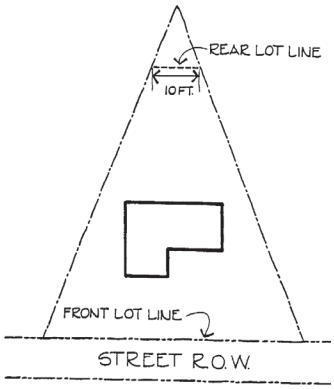
Lot line. Any boundary of a parcel of land.

Lot Line, Front.

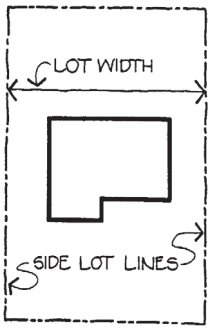
A. If a lot has one property line which is coterminous with a street right-of-way line, such line shall constitute the front lot line;

B. If a lot has two (2) property lines which are also street right-of-way lines abutting different streets and those two (2) property (street right-of-way) lines form an angle between 80 degrees and 100 degrees, then the shorter of those two (2) lines shall constitute the front property line; if both lines are equal, the front property line shall be determined by the property owner if a front property line has not been designated on the final plat (minimum building lines are construed to designate the front lot line);

C. If a lot is not encompassed by Provision A or B and no front property line is designated on the final plat, the front property line shall hall be designated by UDO Administrator.



Lot line, Rear. The property line(s) which is (are) opposite the front property line. If no property line is deemed to be opposite the front property line and no minimum building line exists on the final plat to establish a rear lot line, then there shall be no rear lot line; however, the rear yard setback shall be maintained from the point (apex) on the property's perimeter which is the furthest removed from the mid-point of the front line. The rear yard minimum building line shall be a line perpendicular to a straight line connecting said apex and the mid-point front lot line.



Lot Line, Side. A boundary line which is not defined as front or rear lot line.

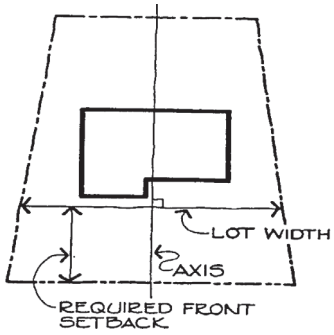
Lot, Nonconforming. A lot or parcel of land that has less than the required minimum lot size or width as established by the zone in which it is located and provided that such lot or parcel was of record as a legally created lot on the effective date of this ordinance.

Lot of Record. A lot which has been recorded in the office of the Registrar of Deeds of Brunswick County, or a lot described by metes and bounds, the description of which has been recorded in the aforementioned office.

Lot, Single-tier. A lot which backs upon a limited access highway, a railroad, a physical barrier, or another type of land use and to which access from the rear is usually prohibited.

Lot, Through or Double Frontage. A lot other than a corner lot with frontage on one (1) or more streets. Through lots abutting two (2) streets may be referred to as double frontage lots.

Lot Width. The straight-line distance between the points where the building front yard setback line intersects the two side lot lines.



Low Impact Development (LID). LID is an ecologically friendly approach to site development and storm water management that aims to mitigate development impacts to land, water, and air. The approach emphasizes the integration of site design and planning techniques that conserve natural systems and hydrologic functions on a site. Specifically, LID aims to:

A. Preserve Open Space and Minimize Land Disturbance;
B. Protect Natural Systems and Processes (drainage ways, vegetation, soils, sensitive areas);
C. Reexamine the Use and Sizing of Traditional Site Infrastructure (lots, streets, curbs, gutters, sidewalks) and Customize Site Design to Each Site;
D. Incorporate Natural Site Considerations/Concerns (wetlands, stream corridors, mature forests) as Design Elements; and
E. Decentralize and Micromanage Storm Water at its Source.

Manufactured Home. A structure, transportable in one (1) or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities and meets or exceeds the construction standards promulgated by the U.S. Department of Housing and Urban Development. The term manufactured home does not include a recreational vehicle or travel trailer and satisfies each of the following criteria:

A. The home has a length not exceeding four (4) times its width;
B. The pitch of the home's roof has a minimum vertical rise of one (1) foot for each five (5) feet of horizontal run, and the roof is finished with a type of shingle that is commonly used in standard residential construction;
C. The exterior siding consists of wood, hardboard, or aluminum (vinyl covered or painted, but in no case exceeding the reflectivity of gloss white paint) comparable in composition, appearance, and durability to the exterior siding commonly used in standard residential construction;
D. A continuous, permanent masonry foundation, unpierced except for required ventilation and access, is installed under the home; and
E. The tongue, axles, transporting lights, and removable towing apparatus are removed after placement on the lot and before occupancy.

Manufactured Home Lot. A manufactured home lot is a piece of land within a manufactured home park whose boundaries are delineated in accordance with the requirements of the ordinance.

Manufactured Housing Park. A parcel (or contiguous parcels) of land consisting of two (2) or more manufactured home lots for rent or sale.

Manufacturing, Artisan. On-site production of goods by hand manufacturing involving the use of hand tools and small-scale light mechanical equipment. Typical uses include woodworking and cabinet shops, ceramic studios, jewelry manufacturing and similar types of arts and crafts or very small-scale manufacturing uses that have very limited, if any, negative external impacts on surrounding properties, water resources, air quality and/or public health.

Manufacturing, General. Manufacturing, bulk storage, and/or handling of finished or unfinished products primarily from extracted, raw, recycled, or secondary materials. Typical uses include boiler shops, textile mills; textile product mills; apparel manufacturing; leather and allied product manufacturing; wood product manufacturing; nonmetallic mineral product manufacturing; transportation equipment manufacturing; and food packing, canning, and manufacturing. Industrial service firms engaged in the repair or servicing of industrial or commercial machinery, equipment, products, or by-products.

Manufacturing, Intensive. Manufacturing and processing of products and chemicals including but not limited to: gypsum or plaster-of- Paris, stone, clay, glass, cement, concrete, fertilizer, insecticides, disinfectants, petroleum products, coal, and synthetic resins. This group also includes primary metal manufacturing, fabricated metal product manufacturing, smelting, paper manufacturing, oil refining, fuel bulk storage facilities, and electricity generating facilities, as well as any manufacturing or processing facility which has a high

potential for significant negative external impacts on surrounding properties, water resources, air quality and/or public health.

Manufacturing, Limited. Manufacturing of finished parts or products, primarily from previously prepared materials. Typical uses include: printing and related support activities; machinery manufacturing; computer and electronic product manufacturing; electrical equipment, appliance, component manufacturing/assembly; furniture and related product manufacturing/assembly; and other manufacturing and production establishments.

Marina, commercial. Any waterfront structure or development commercially providing permanent or temporary harboring or storing for two (2) or more boats (pleasure and/or commercial) and providing marina sales including but not limited to retail sales for fuel, repairs, convenient foodstuffs, boats, engines, and accessories. Commercial marina includes dry stack boat storage facilities with vertical storage of boats in a rack system, to be accessed by a high-capacity forklift and stashed on a rack, ready for quick retrieval.

Maritime Sales, Rental, and Service. Uses involved in the sales, rental, service, repair, cleaning, and temporary storage of boats, watercraft (including non-motorized watercraft), and trailering devices.

Market value. The building value, not including the land value and that of any accessory structures or other improvements on the lot. Market value may be established by independent certified appraisal, replacement cost depreciated for age of building and quality of construction (Actual Cash Value), or adjusted tax assessed values.

Mean sea level. For purposes of this ordinance, the National Geodetic Vertical Datum (NGVD) as corrected in 1929, the North American Vertical Datum (NAVD) as corrected in 1988, or other vertical control datum used as a reference for establishing various elevations within the floodplain, to which Base Flood Elevations (BFEs) shown on a FIRM are referenced. Refer to each FIRM panel to determine datum used.

Microbrewery. A microbrewery as permitted by NCGS 18B-1104 is an enterprise which engages in one or more of the following: (1) Manufacture, purchase, import, possess and transport ingredients and equipment used in the manufacturing of malt beverages; (2) Sell, deliver and ship malt beverages in closed containers at wholesale to exporters and local boards within the State, and, subject to the laws of other jurisdictions, at wholesale or retail to private or public agencies or establishments of other states or nations; (3) Give its products to its employees and guests for consumption on its premises.

Microdistillery. A distillery as permitted by NCGS 18B-1105 is an enterprise which engages in one or more of the following: (1) Manufacture, purchase, import, possess and transport ingredients and equipment used in the distillation of spirituous liquor; (2) Sell, deliver and ship spirituous liquor in closed containers at wholesale to exporters and local boards within the State, and, subject to the laws of other jurisdictions, at wholesale or retail to private or public agencies or establishments of other states or nations; (3) Transport into or out of the distillery the maximum amount of liquor allowed under federal law, if the transportation is related to the distilling process.

Mixed-use. One or more dwellings located on an upper floor over a non-residential use(s) located on a lower floor or ground level.

Mobile Vendor. A readily movable trailer or motorized wheeled vehicle, currently registered with the NC Division of Motor Vehicles, designed and equipped to serve food and/or sell merchandise.

Modular Home. A factory-built structure that is designed to be used as a dwelling, is manufactured in accordance with the specifications for modular homes under the North Carolina State Residential Building Code, bears a seal or label issued by the Department of Insurance pursuant to NCGS 143- 139.1, and is placed on a permanent foundation and used for residential purposes.

Modular Unit. A factory-built structure that is designed and built in one (1) or more components or sections that are transported to a site. Plans and specifications shall bear an engineer's seal and a third-party inspection certification and/or meet any successor regulations as may be established under the State Building Code.

More Intensive Use. A use that will have a greater impact on the surrounding area than the previous use, including activities which generate more traffic, require more employees or service deliveries, or utilize more square footage than the previous use existing on the site.

Motor Vehicle. All machines designed or intended to travel over land or water by self-propulsion or while attached to any self-propelled vehicle.

Multi-phased development. A development containing 25 acres or more that is submitted for development permit approval to occur in more than one phase and subject to a master development plan with committed elements showing the type and intensity of use of each phase.

NAICS Code. The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. For the purposes of the UDO, the NAICS code may assist the UDO Administrator in interpretation of particular uses in accordance with other professionally accepted sources.

National Geodetic Vertical Datum (NGVD). As corrected in 1929, a vertical control used as a reference for establishing varying elevations within the floodplain.

Natural feature. Any outside landscape feature on the site such as trees, shrubs, or rock formations.

NCGS. North Carolina General Statute.

Net Buildable Area. The total area within the project property boundary less:

A. sediment basins and water retention ponds wetlands (404/jurisdictional), defined by CAMA and/or US Corps of Engineers;

B. water and wastewater treatment facilities;
C. local or state designated historic sites; and
D. water areas including seasonal ponds.

New Construction. Structures and development activity that occurs on a previously vacant lot. For the purposes of this ordinance, new construction does not include redevelopment except where otherwise defined within Article 5.

Nightclub. An establishment in which alcoholic beverages are served for on-site consumption and which may offer recorded or live music performance.

Nonconforming Structure or Use. Any legally existing structure or use which fails to comply with the provisions of the ordinance.

Nonresidential Use or District. When referring to a use, it shall be those uses in the "nonresidential" section of the Table of uses. When referring to a zoning district or "district," it shall be the following zoning districts: O-I, CBD, BD, HC, LI, and HI. However, it should be noted that within a PUD nonresidential uses may be included.

Nursing and Personal Care Facility. A facility, however named, which is advertised, announced, or maintained for the express or implied purpose of providing nursing or convalescent care for three (3) or more persons unrelated to the licensee. A nursing home is a home for chronic or convalescent patients, who, on admission, are not as a rule, acutely ill and who do not usually require special facilities such as an operating room, X-ray facilities, laboratory facilities, and obstetrical facilities. A nursing home provides care for persons who have remedial ailments or other ailments, for which medical and nursing care are indicated; who, however, are not sick enough to require general hospital care. Nursing care is their primary need, but they will require continuing medical supervision. The term nursing and personal care facility includes an assisted living residence and multiunit assisted housing with services as defined in NCGS 131D-2.1.

Office, General. Use types that provide for activities that are conducted in an office setting and generally focus on business, professional, or financial services. Examples include offices for conducting the affairs of a general business establishment, financial services or sales of real estate or other personal property, banking, stock brokerage, investment services, real estate sales, offices for lawyers, accountants, engineers, and similar professions. Accessory uses may include cafeterias, day care facilities, recreational or fitness facilities, parking, or other amenities primarily for the use of employees in the office.

Official Maps or Plans. Any maps or plans officially adopted by the City of Southport Board of Aldermen.

Outdoor Display. The placement of products or materials and associated appurtenances for sale or rent outside the entrance of a retail establishment.

Outdoor Vending Machine. A machine or other mechanical device or container that dispenses a product or service through a self-service method of payment, but not including a news rack; a

machine dispensing fuel, compressed air, or water at an automobile service station; or a public telephone. Self-service ice vending machines shall not be included within this definition.

Overhead Canopy. Any structure placed over, around, or near a fuel pump island, drive-up bank teller facility, or similar use, and intended to provide lighting and/or protection from the elements for facility users.

Parking Area, Aisles. A portion of the vehicle accommodation area consisting of lanes providing access to parking spaces.

Parking Lot. An open area, outside of the public right-of-way, for the storage of a vehicle or vehicles. The term "parking area" shall be included in this definition. Each parking lot shall have an approved means of ingress and egress.

Parking Space, Off-street. For the purpose of this ordinance, an off-street parking space shall consist of a space adequate for parking an automobile with room for opening doors on both sides, together with properly related access to a public street or alley and maneuvering room. No required off- street parking shall be located on any public right-of-way.

Parks and Recreation Area, Municipal. Government established community parks and recreation areas.

Permanent resident. A person who resides year-round in the dwelling unit and has declared the dwelling as their permanent residence. Only one dwelling unit at a time may be identified as a permanent residence.

Permeable Paving. Any paving which, due to its inherent nature or construction, allows fluids and gases to penetrate through it in at least some areas.

Personal Property. Property owned, utilized, and maintained by an individual or members of his or her residence, and acquired in the normal course of living in or maintaining a residence. It does not include merchandise which was purchased for resale or obtained on consignment.

Personal Service Establishment. Use types related to the provision of services or product repair for consumers. Personal services use types meet frequent or recurrent service needs of a personal nature, including the repair of small personal items such as shoes, watches, jewelry, and clothing. Examples include banks, credit unions, print shops, massage therapy and day spas, gymnasiums, fitness centers, photography studios, photocopy services, barber/beauty shops, and tanning and nail salons.

Planned Unit Development (PUD). A development constructed, planned, and developed as an integral unit.

Planning Board. A commission appointed by the City Board of Aldermen and by the Brunswick County Board of Commissioners.

Planting Strip or Area. A ground surface free of concrete, asphalt, stone, gravel, brick, or other paving material, aside from walkways, which is required or used for landscaping purposes.

Plat. A map or plan of a parcel of land which is to be, or has been, subdivided.

Portable Storage Containers. A container designed to store personal property which are typically rented and intended to be delivered and removed by truck. Portable storage containers shall not be used as a dwelling and shall not impede public vehicular or pedestrian access or create a public safety hazard. This definition includes shipping containers and other portable self-storage units.

Pre-construction Activity. Any action taken to disturb land or vegetation for a site prior to the completion of application review, or other site preparation, including but not limited to the storage of construction materials, stockpiles, containers, vehicles or similar items prior to the start of construction permitted thereunder.

Predevelopment. The conditions that existed prior to the proposed project, site plan, or subdivision being in place.

Preserved Tree(s). Any tree or groups of trees existing prior to development of a property that is protected so that it remains after the development has been completed.

Private Driveway. A roadway serving two (2) or fewer lots, building sites, or other division of land, and not intended to be public ingress or egress.

Processing. Any operation changing the nature of material or material's chemical composition or physical properties; does not include operations described as fabrication.

Protected Trees. Regulated or specimen trees as defined in this ordinance.

Pruning. The elimination of part of the branching structure of a tree's crown to improve tree structure, enhance vigor and/or maintain safety.

Pruning Standards. Generally accepted standards for pruning as defined in the current edition of Pruning Standards by the American Society of Consulting Arborists.

Public Tree. Any tree on public lands, which are City-owned property and/or located within City right of way (ROW).

Quasi-judicial Decision. A decision involving the finding of facts regarding a specific application of a development regulation and that requires the exercise of discretion when applying the standards of the regulation. The term includes, but is not limited to, decisions involving variances, special use permits, and appeals of administrative determinations.

Quasi-judicial Hearing. A hearing to gather competent, material, and substantial evidence in

order to make findings for a quasi-judicial decision required by a development regulation adopted under this UDO.

Recreational Vehicle (RV) means a vehicle, which is:

A. built on a single chassis;
B. 400 square feet or less when measured at the largest horizontal projection;
C. designed to be self-propelled or permanently towable by a light duty truck; and
D. designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational camping, travel, or seasonal use.

Recreational Vehicle Parks. Any single parcel of land upon which two (2) or more recreational vehicles, occupied for sleeping purposes, are located regardless of whether or not a charge is made for such purposes.

Redevelopment. Any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure or lot, including demolition and replacement of a structure, taking place during any one-year period. Redevelopment may also be associated with a change of use.

Regulated Tree. The subsurface roots, crown and trunk of any self-supporting woody perennial plant such as a large shade tree, which usually has one (1) main stem or trunk, and has a measured DBH as follows:

A. A hardwood tree, having a single trunk at least eight (8) inches in DBH. Trees may have single or multiple trunks but at least one trunk must measure eight (8) inches in diameter.
B. A coniferous tree, having a single trunk at least 12 inches in DBH.
C. Any tree, of any species, with a DBH of 30" or more. (Specimen tree)

Remove (including removing and removal). The cutting down of any live or dead regulated tree and all other acts which cause the death or destruction of any regulated tree.

Reservation. A reservation of land does not involve any transfer of property rights. It simply constitutes an obligation to keep property free from development for a stated period of time.

Reserve Strip. A strip of land created for the purpose of controlling the access to streets or other public rights-of-way from adjoining property.

Residential Care. Establishments primarily engaged in the provision of residential, social, and personal care for children, the aged, and special categories of persons with some limits on ability for self-care, but where medical care is not a major element; such as adult day care facility, home for the aged and infirm, and other similar residential care uses not otherwise defined in this section.

Residential Use or District. When referring to a use, it shall be those uses in the "residential" section of the Table of uses. When referring to a zoning district or "district," it shall be the

following zoning districts: R-10, R-20, MF, PUD, and OS.

Restaurant. An establishment whose principal business is the sale of foods, frozen desserts, or beverages to a customer in a ready-to-consume state, and whose design and principal method of operation determines its classification as follows:

A. Carry-out: (a) Foods and/or beverages are usually served in edible containers or in paper, plastic, or other disposable containers by an employee at a standing counter or drive-in window; and (b) consumption is normally off the premises, but may be allowed within a motor vehicle parked on the premises, or at other facilities on the premises outside the principal building.
B. Fast Food: Same as "carry-out," but includes allowing consumption within the principal building.
C. Standard: Customers are provided with an individual menu and served by an employee at the same table or counter at which their food and/or beverages generally are consumed within the restaurant.

Retail sales. Use types involved in the sale or lease of new or used products to the general public. Accessory uses may include offices, display of goods, limited assembly, processing, or repackaging of goods for on-site sale. Retail sales does not include the following:

A. Repair and service establishments.
B. Bars, nightclubs, restaurants, and similar eating establishments.
C. An establishment that provides financial, professional, or business services in an office setting.
D. An establishment that involves the sale, distribution, or presentation of materials or activities emphasizing sexually explicit content.

Retail Sales, Major. A retail sales establishment that has more than 5,000 square feet of floor area.

Retail Sales, Minor. A retail sales establishment that does not include a drive-through and is less than 3,000 square feet in floor area.

Retail Sales, Moderate. A retail sales establishment that is between 3,000 and 5,000 square feet in floor area.

Retention Pond Facilities. A permanent structure that provides for the storage of runoff and is designed to maintain a permanent pool of water.

Right-of-Way. The property located within and adjoining the streets, roads, and highways within the city which rights-of-way are owned by the city or state or otherwise maintained by the city or the state. Right-of-way may be in an improved or unimproved state.

Sales Office, Temporary. An office established within the boundaries of a subdivision or development which is used for the promotion and sales of real property solely within that subdivision or development.

Salvage operations. Any non-residential property used for the storage, collection, and/or recycling of any type of equipment, and including but not limited to vehicles, appliances and related machinery.

Screening. The method by which a view of one site from another adjacent site is shielded, concealed, or hidden. Screening techniques include fences, walls, hedges, berms, vegetation, or other natural or man-made visual barriers.

Self-service Ice Vending Machine. A stand-alone ice production machine that may operate without full time service personnel. These units are activated by the insertion of money, credit cards, check cards, token, or similar means; ice is bagged automatically or dispensed in bulk outside to the consumer. Such vending machines and similar detached accessory uses are larger in scale and footprint than an outdoor vending machine, which is typically accessible to a pedestrian rather than a vehicle.

Setback. The required distance between a structure and the lot lines of the lot on which it is located.

Setback, Front. The setback measured from the front lot line(s).

Setback, Rear. A setback from an interior lot line lying or rear lot line on the opposite side of the lot from the front setback.

Setback, Side. The side yard setback shall extend from the required front yard setback line(s) to the required rear yard setback line and shall be measured from the side lot line.

Short-term vacation rental. A dwelling unit with up to six guest rooms that is used and/or advertised through an online platform, or other media, for transient occupancy for a period of less than 30 days. A short-term vacation rental is considered a non-residential "Lodging" use under this UDO. The owner is not required to be present during the rental stay.

Short-term vacation rental operator/manager. Any agency or individual other than the property owner that is operating or managing a short-term vacation rental.

Short-term vacation rental permit. The required zoning permit to rent a dwelling unit or guest rooms within a dwelling unit as a short-term vacation rental. The City of Southport issues the short-term vacation rental permit to the property owner after the successful completion of the short-term vacation rental application requirements. See additional standards and regulations that apply to different zoning districts.

Shopping Center. A total of three (3) or more commercial establishments, planned and constructed as a single unit, with off-street parking and loading facilities provided on the property. Shopping centers are related in location, size, and type of use to the trade area which they serve and are considered as such at the owner's discretion. This definition includes malls, commercial plazas, and community shopping areas.

Sign. Any surface, fabric, device, or display which bears lettered, pictorial, or sculptured

matter, including forms shaped to resemble any human, animal, or product, designed to convey information visually and which is exposed to public view. The term "sign" shall include all structural members. A sign shall be constructed to be a display surface or device containing organized and related elements composed to form a single unit.

Sign, "A" Frame. Sign consisting of two (2) sign faces attached back-to-back by top hinges.

Sign, Animated. Sign that uses movement or change of lighting to depict action or create a special effect or scene.

Sign, Area. The surface area of a sign shall be computed as including the entire area visible from any one point, within a regular geometric form or combinations of regular geometric forms comprising all of the display area of the sign including lattice work, wall work, and individual letters and spaces between letters comprising part(s) of the sign. Computations of sign area shall include only one side of a double-faced sign structure. If a sign has two (2) sides joined at an angle of greater than 60 degrees, the surface of both sides of the sign shall be included in the computation of area.

Sign, Attached. Sign painted on, attached to and erected parallel to the face of, or erected and confined within the limits of, the outside facade of any building and supported by such building facade.

Sign, Billboard. Sign that is greater than 32 square feet and which is located off-premises from the place of the information contained on the sign.

Sign, Business Identification. Any sign which contains information regarding the premises where such sign is located.

Sign, Changeable Copy. Sign on which informational content can be changed or altered by manual or electronic means.

Sign, Construction. Sign that is on-premise and associated with a site with an active building permit.

Sign, Directional. Sign for public direction or information. Typically, these signs consist of directional arrows, business names or logos, the words "entrance", "exit", "parking", etc.

Sign, Electronic Message Center. An electrically activated changeable sign whose variable message and/or graphic presentation capability can be electronically programmed by computer from a remote location. Also known as an EMC. EMCs typically use light emitting diodes (LEDs) as a lighting source.

Sign, Feather Flag. A narrow, tall, flag-like banner sign often made of flexible material that moves with wind. These signs have different names such as flutter flags, swooper flags, blade flags, and teardrop flags.

Sign, Flashing. Sign, which contains or uses, for illustration, any lights or lighting devices,

which change color, flashes or alternates, shows movement or motion, or changes the appearance of said sign or part thereof automatically.

Sign, Freestanding. Sign supported by structures or supports that are anchored in the ground and that is independent from any building or other structure(s).

Sign, Governmental. Sign provided and erected by a governmental entity.

Sign, Height. Sign height shall be computed as the distance from the base ground level to the top of the highest vertical attached component of the sign prior to the placement of any fill.

Sign, Incidental. Sign containing information necessary or convenient for persons coming onto a premises such as "hours of operation," location of restrooms, etc.

Sign, Integral. Memorial signs or tablets, names of buildings, and date of erection when cut into any masonry surface or when constructed of bronze or other incombustible materials mounted on the face of a building.

Sign, Legal Nonconforming. A sign that met all legal requirements when constructed, but that is not in compliance with this ordinance. An illegal sign is not a legal nonconforming sign.

Sign, Nonconforming. Sign that does not conform to the regulations of this ordinance.

Sign, Noncommercial. Sign associated with noncommercial institutions.

Sign, Off-premises. Sign containing information which does not occur on the site at which the sign is located.

Sign, Open. Sign with a specific designated purpose of stating that a business is open or closed.

Sign, Outdoor Advertising. Any sign which contains information about an establishment other than that on which such sign is located.

Sign, Permanent. Sign not designated as temporary.

Sign, Political. Sign displaying political candidacy and/or messages as related to an election date.

Sign, Portable. Sign attached on a moveable support frame without lighting.

Sign, Projecting. Sign attached and placed at a right angle to the facade of the associated structure.

Sign, Real Estate. Sign utilized by properties for sale, lease, or rent located on the property upon which it is placed.

Sign, Snipe. Sign of any material whatsoever that is attached in any way to a utility pole, tree,

street sign or pole.

Sign, Subdivision Entrance. Sign located on- site and at the major entrance point(s) to such development.

Sign, Special Event. Sign advertising a l community-wide event.

Sign, Temporary. Sign that is not permanently affixed, placed, attached or erected, and may have time limitations.

Sign, Vehicle/trailer. Sign mounted on a vehicle, boat, or trailer.

Sign, Wind. Signs composed of nylon, canvas, or plastic material which are decorative. These signs may include wind socks, wind vanes, banners, pennants, and flags.

Site Plan, Major. A plan for residential development of four (4) or more dwelling units on a lot; nonresidential development whereby 10,000 square feet or more of impervious surfaces are proposed; or all other development not subject to minor site plan approval.

Site Plan, Minor. A plan prepared for single-family residential uses, duplexes, and attached residential units consisting of three (3) or fewer dwelling units or for renovation/rehabilitation projects that will modify an existing structure's footprint. A minor site plan is not required for changes of use whereby no increase in impervious square footage or an enlargement in an existing structure's footprint is proposed. Nonresidential development projects whereby less than 10,000 square feet of impervious surfaces are proposed and accessory structures, construction/installation of fences/walls, piers, docks, decks, stairs, signs, and driveways must prepare a minor site plan.

Site-specific Vesting Plan. A plan of development submitted to the city to obtain one (1) of the following approvals for statutory vested rights in accordance with the procedures outlined in this ordinance:

A. Final Subdivision Plat,
B. Special Use Permit, or
C. Planned Unit Development Plan.

Notwithstanding the foregoing, a document that fails to describe with reasonable certainty the type and intensity of use for a specified parcel or parcels of property shall not constitute a site-specific development plan.

Skirting. A continuous, uniform foundation enclosure constructed of vinyl, or metal fabricated for such purpose and that is unpierced except for required ventilation or access.

Solar Farm. The components and subsystems required to convert solar energy into electric or thermal energy suitable for use. The area of the system includes all the land inside the perimeter of the system, which extends to any fencing. The term applies, but is not limited to, solar photovoltaic (PV) systems, solar thermal systems, and solar hot water systems.

Solid Waste Disposal Facility. As defined in NCGS 130A-290(a)(35), any facility involved in the disposal of solid waste.

Solid Waste Disposal Site. As defined in NCGS 130A-290(a)(36), any place at which solid wastes are disposed of by incineration, sanitary landfill, or any other method.

Special Use. A use permitted in a particular zoning district in a specified location that complies with certain findings of fact and other conditions as specified in this ordinance.

Special Use Permit. A permit issued to authorize development or land uses in a particular zoning district upon presentation of competent, material, and substantial evidence establishing compliance with one or more general standards requiring that judgment and discretion be exercised as well as compliance with specific standards. This term includes permits previously referred to as conditional use permits.

Specimen Tree. Any tree, of any species, with a DBH of 30" or trunk circumference of 8' or more. A tree which grows to such maturity provides significant aesthetic as well as practical benefits to the community at large.

Spotlight. An unshielded artificial light source or lamp designed to produce a narrow, well directed beam of light upon a small area.

Standard. A mandatory requirement.

Start of Construction. The date the building permit was issued.

Storage. A deposition of commodities or items for the purpose of future use or safekeeping.

Storage, Dry. The keeping of boats, watercraft, and other recreational vehicles to be accessed by the owner.

Storage, Outdoor. The keeping, in an unroofed area, of any goods, junk, material, or merchandise in the same place for more than 24 hours.

Storage, Self-service. A building consisting of individual, small, self- contained units that are leased or owned for the storage of goods and wares. No outdoor or dry storage shall be allowed in conjunction with the facility with the following exceptions: boats, cars; motorcycles; trailers; motor homes, pick-up trucks and similar-type and size vehicles; and building materials, which shall be an accessory to the principal use of self-service storage and subject to the required use standards.

Storm Drainage Facilities. The man-made system of inlets, conduits, or other such facilities, and appurtenances which collect, store, and convey stormwater.

Stormwater Discharge Control Design Plan. The set of drawings and other documents that comprise all of the information and specifications for the drainage systems, structures,

concepts, and techniques that will be used to control stormwater discharges as required by the City of Southport Stormwater Management Technical Manual. Also included are the supporting engineering calculations, input data for any computer analysis, and results of any computer analysis.

Stormwater Discharge Control Facilities, Off-site. The design and construction of a facility necessary to control stormwater runoff for multiple sites.

Stormwater Discharge Control Facilities, On-site. The design and construction of a facilities necessary to control stormwater runoff within and for a single development.

Stormwater Discharge Control Plan, Preliminary. The overall proposal to control discharges from the proposed development. Also included are the supporting engineering calculations, input data for any computer analysis, and results of any computer analysis needed for preliminary design of any stormwater discharge control facilities. This plan shall be in enough detail to determine if stormwater discharge control facilities will be needed.

Stormwater Management Technical Manual, City of Southport. Manual approved by the Board of Aldermen, which presents recommended design procedures and criteria for conducting hydrologic and hydraulic evaluations.

Story. That portion of a building between the surface of any floor and the floor or roof above it.

Street. A right-of-way which affords access to abutting property and constructed in accordance with the requirements of this ordinance.

Street Line. The right-of-way boundary of a street.

Street Types.

A. **Public Street**. A right-of-way for vehicular traffic dedicated and accepted by the North Carolina Department of Transportation or the City of Southport for public use.
B. **Private Street**. A right-of-way for vehicular traffic which is constructed to the Technical Standards and Specifications of the City of Southport Subdivision Regulations and dedicated to a select portion of the public. The responsibility for the maintenance of a private street shall be by an established owners' association or other private property owner legal agreements.

Street Yard. The area of a parcel immediately adjacent to a street right-of- way and reserved for planting.

Structure. Anything constructed or erected, the use of which requires location in or on the land, or attachment to something having a permanent location in or on the land. For floodplain purposes, a walled and roofed building, a manufactured home, or a gas, liquid, or liquefied gas storage tank that is principally above ground, or other manmade facilities or infrastructures.

Subdivider. Any person, firm, or corporation who proposes to subdivide or create a new lot.

Subdivision. All divisions of a tract or parcel of land into two (2) or more lots, building sites, or other divisions when any one or more of those divisions is created for the purpose of sale or building development (whether immediate or future) and shall include all divisions of land involving the dedication of a new street or a change in existing streets; but the following shall not be included within this definition nor be subject to the regulations contained herein:

A. the combination or recombination of portions of previously subdivided and recorded lots where the total number of lots is not increased and the resultant lots are equal to or exceed the standards contained herein;
B. the divisions of land into parcels greater than 10 acres where no street right-of-way dedication is involved;
C. the public acquisition by purchase of strips of land for the widening or openings of streets or for public transportation system corridors;
D. the division of a tract in single ownership whose entire area is no greater than two (2) acres into not more than three (3) lots, where no street right-of-way dedication is involved and where the resultant lots are equal to or exceed the standards of this ordinance.
E. The division of a tract into parcels in accordance with the terms of a probated will or in accordance with intestate succession under Chapter 29 of the General Statutes.

Subdivision, Major. All subdivisions shall be considered major subdivision except those defined as minor subdivisions.

Subdivision, Minor. A minor subdivision is a tract to be subdivided which is five (5) acres or less in size or meets the criteria as provided in NCGS 160D-802(c):

A. Fronts on an existing approved street;
B. Does not involve any new public streets, right-of-way dedication, or prospectively requiring any new street for access to interior property;
C. Does not require drainage improvements or easements to serve the applicant's property or interior properties;
D. Does not involve any utility extensions; and
E. Does not require any easements, other than rear and side lot line easements.
F. However, if the subdivider owns, leases, holds an option on, or holds any legal or equitable interest in any property adjacent to or located directly across a street, easement, road, or right-of-way from the property to be subdivided, the subdivision shall not qualify under the minor subdivision procedure. Furthermore, the minor subdivision procedure may not be used a second time within three (3) years on any property less than 1,500 feet from the original property boundaries by anyone who owned, had an option on, or any legal interest in the original subdivision at the time the subdivision received preliminary or final plat approval.

Substantially Improved Existing Manufactured Home Park. Repair, reconstruction,

rehabilitation, or improvement of the streets, utilities, and pads which equals or exceeds 50% of the value of the streets, utilities, and pads before the repair, construction, or improvement commenced.

Tattoo and Piercing Establishment. An establishment whose principal business activity is the inserting of permanent markings or coloration, or the producing of scars, upon or under human skin or the creation of an opening in the body of a person so as to create a permanent hole for the purpose of inserting jewelry or other decoration.

Temporary Healthcare Structure. A temporary structure no more than 300 gross square feet that will house a single mentally or physically impaired person. Structure must be assembled off-site and meet the standards of the State Building Code. It must not be placed on a permanent foundation and may be required to connect to water, sewer and electric utilities. Only one such structure is permitted per lot. Subject to all requirements of North Carolina General Statute 160D-915.

Telephone Communication Facility, Unattended. A windowless structure containing electronic telephone equipment that does not require regular employee attendance for operating.

Ten (10)-year, 25-year, 50-year, and 100-year Storms. Rainfall intensity with a probability of being equaled or exceeded, on the average, in any given year 10%, 4%, 2%, and 1% of the time, respectively. The selected duration should produce the maximum peak rate of runoff for the watershed of interest, under average antecedent wetness conditions.

Tower. Any structure whose principal function is to support antenna.

Towing Service, Automotive or Truck. A commercial enterprise, business or company established to tow or remove motor vehicles from one location to another. A towing service includes the temporary storage or motor vehicles at its site, but under no circumstances shall any motor vehicle remain on the premises of a towing service for more than 24 hours unless stored within an enclosed structure or the tow service is located in an industrial district. Such establishments are considered a Major Automotive use.

Townhouse. A principal structure containing three (3) or more single-family attached dwelling units with each unit on its own individual lot. All townhouse developments shall be subject to multiple family dwelling provisions of this ordinance, with the following exceptions:

A. All townhouse developments shall comply with the multi-family density requirements of this ordinance; this standard can be met by individual lot area, by provision of common open space, or by a combination of lot area and common open space.
B. No unit shall be connected on more than two (2) sides by common walls.
C. All yard dimensional requirements shall apply to the property lines of the entire development. No individual unit shall be required to meet the yard dimensions.

Tract. A tract is a piece of land whose boundaries have been described or delineated by a legal instrument or map recorded in the office of the Brunswick County Registrar of Deeds.

Tract Area. The total acreage/square footage of the entire tract being developed.

Transitional Housing Facility. A facility configured as a multifamily development but operated and funded by a nonprofit, charitable, religious, or governmental organization to provide temporary housing and appropriate supportive services to families or individuals to facilitate movement to independent living over a 3 to 24-month period. A transitional housing facility may provide social services, counseling, and other programs to assist residents in the transition to permanent housing This classification shall not be construed to include uses licensed or supervised by any federal, state, or county health/welfare agency, such as group homes, halfway houses, boarding homes for children, and convalescent nursing homes.

Travel Trailer. A recreational vehicle designed to be towed by a light duty truck.

Tree. Any species of self-supporting, perennial, woody plant normally capable of attaining a height of twenty (20) feet at maturity.

Tree Mitigation Fund. A fund established to receive money for compensation for damage to or removal of public trees, or for fees-in-lieu of preservation or replanting on a construction site. The funds will be utilized specifically to replant, maintain, or improve the health of the City's urban forest. Expenditure of these funds will be incorporated into the annual city budgeting process and follow the guidelines outlined in the City of Southport Urban Forest Management Plan (2011).

Tree Plan. A scaled site plan and other documentation that identifies preserved trees, newly planted trees, and other information as required by this ordinance.

Tree Removal Zones. The area designated on a preliminary plat of a minor or major subdivision or PUD for road, site drainage, and utility rights-of-way plus the area, not protected by building setback requirements, or individual lots or other building sites thus constituting the portions of a proposed development from which protected trees may be removed pursuant to a tree impact permit.

Tree Safe Zones. The area designated on a preliminary plat of a minor or major subdivision or PUD that makes up the individual lots where trees are to be left untouched. These zones will constitute at least 80% of each individual platted lot.

Tree Value. The value of a Regulated tree that is unlawfully removed, destroyed, or altered in such a way that it has a deleterious effect on continued viability shall be determined at a rate of like kind replacement by a certified arborist retained by the City.

UDO Administrator. A person, or his or her designee, appointed by the City Manager to administer the regulations contained in this ordinance.

Use. The purpose for which land or structure thereon is designed, arranged or intended to be occupied or used, or for which it is occupied, maintained, rented or leased.

Use, Nonconforming. A use of building or land that does not conform with the regulations of the district in which the building or land is situated.

Utility Plan. Detailed plans for the construction of utilities, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow-offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. The type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers.

Variance. A grant of relief from the requirements of this ordinance that permits construction in a manner otherwise prohibited by this ordinance.

Violation. Failure of a structure, use, lot, situation, or other development to be fully compliant with the requirements of this ordinance.

Visible. Capable of being seen without visual aid by a person of normal visual acuity.

Warehousing, General. A building or compartment in a building used and appropriated by the occupant for the deposit and safekeeping or selling of his own goods at wholesale and/or for the purpose of storing the goods of others placed there in the regular course of commercial dealing and trade to be again removed or reshipped. General warehousing includes the wholesale of durable and non-durable goods.

Water Transportation. Water dependent uses such as docks, wharves, fishing piers, ferries, tugboats, barges, charter operations, and excursions. Such facilities may be used for nonresidential, residential, or public purposes.

Wholesale. Sale of a commodity for resale to the public for direct consumption, whether durable or non-durable. Non-durable goods include products that are consumed or are only usable for a short period, such as food, apparel, or fabrics.

Yard. A required open space unoccupied and unobstructed by a structure or portion of a structure; provided, however, that fences, walls, poles, posts, and other customary yard accessories, ornaments, and furniture may be permitted in any yard subject to height limitations and requirements limiting obstruction of visibility.

Yard, Front. The space on the same lot with the principal building between the building and the front property or street right-of-way line and extending across the full width of the lot.

Yard, Rear. An area extending across the full width of the lot and lying between the rear lot line and a line parallel thereto at a distance therefrom as required in the applicable district.

Yard, Side. An area extending along the length of the lot between the required front yard and the required rear yard, and between the side lot line and a line parallel thereto and a distance therefrom as required in the various districts.

Yard Sale. The sporadic and infrequent sale of used personal items within residential areas. Such sales shall be temporary and limited to not more than twice per calendar year per property.

Zero Lot Line Structure. A structure placed on a lot such that a windowless common wall is placed on one side property line with no side setback and the remaining dimensional requirements of the zoning district are complied with.

Zoning Permit. A permit issued by the City conferring the right to undertake and complete the development or the use of property subject to the provisions outlined in this ordinance.

Zoning Vested Right. A right pursuant to NCGS 160D-108 or 160D-108.1 to undertake and complete the development and use of property under the terms and conditions of an approved site-specific vesting plan in accordance with the procedures outlined by this ordinance.

Appendix A: Submission Requirements

A.1 SUBMISSION REQUIREMENTS

Applications submitted to the City of Southport for the following approval types shall include the required information as provided in Table A.1 where marked by an "x".

Table A.1: Submission Requirements

Information Required	Minor Site Plan	Major Site Plan or Special Use Permit	Minor Final Plat	Major Subdivision Preliminary	Major Subdivision Final Plat	Master Development Plan
Proposed or approved name of development, project, subdivision, and/or phase.	x	x	x	x	x	x
Developer/applicant name(s), including mailing address(es) and telephone number(s). (If Applicable).	x	x	x	x	x	x
Property owner name(s), including mailing address(es) and telephone number(s).	x	x	x	x	x	x
Name, registration number, and seal of a professional Land Surveyor, Engineer, Landscape Architect, and/or Architect. (If Applicable).	x	x	x	x	x	x
Date of plat/plan preparation and of surveys; North arrow and orientation; Map scale, denoted graphically and numerically.	x	x	x	x	x	x
Sketch vicinity map showing the relationship between the proposed property or properties and the surrounding area.		x	x	x		x
Tax parcel numbers, owners, zoning classifications, and book and page numbers of the site tract and adjacent tracts.	x	x	x	x	x	x
Exact existing and proposed or pending property boundary lines by bearings and distances and the location of intersecting boundary lines of adjacent lands.			x		x	
Lots numbered consecutively throughout the subdivision.			x	x	x	
Boundaries of any proposed or pending zoning districts on site. Boundaries must be described by bearing and distance where they do not follow described boundaries.		x				x
Sufficient engineering data to determine readily, and to be reproducible on the ground, every straight or curved boundary line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings or deflection angles, radii, central angles, and tangent distances for the center line of curved streets and curved property lines that are not the boundary of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.	x[1]	x	x	x	x	

Table A.1: Submission Requirements						
Information Required	**Minor Site Plan**	**Major Site Plan or Special Use Permit**	**Minor Final Plat**	**Major Subdivision Preliminary**	**Major Subdivision Final Plat**	**Master Development Plan**
Accurate locations and descriptions of all monuments, markets, and control points.			x	x	x	
Location, dimensions, density, and description of proposed land use(s) on each tract or parcel, including single-family residential, multi-family residential, commercial, office, institutional, industrial, and recreational. Recreational uses shall specify type and future ownership.	x	x				x[2]
Location and dimensions of existing and proposed buildings or structures on the site and all adjacent tracts, including existing buildings or structures to be removed. Total number of stories of all multi-story buildings and height of all building must be indicated.	x	x				x[3]
Location, direction, dimensions, name, and surface type of existing or proposed rights-of-way and easements, including those being vacated and those on adjacent properties.	x	x	x	x	x	x[2]
Location of roads appearing on officially adopted plans.	x	x	x	x	x	x
Location of roads, streets, and circulation patterns; including any proposed or required bicycle or pedestrian facilities.	x	x		x		x[2]
Total square footage of existing and proposed impervious surfaces.	x	x		x		x[2]
Names, cross sections, approximate grades, and pavement widths of proposed road rights-of-way, including design engineering data for all corners and curves.		x		x		
Type of street dedication, either public or private.			x	x	x	
Location and dimensions of parking and loading spaces and drive aisles, including handicapped parking.	x	x				x[3]
Location and dimensions of existing and proposed sidewalks and accessible accessways.	x	x		x		x[3]
Location and dimensions of all trash containers and required screening.	x	x		x		x[3]
FEMA-designated flood hazard areas, including flood zone designations and map panels.	x	x	x	x	x	x
Location and description of CAMA Areas of Environmental Concern, including 404 wetland areas as determined by the Army Corps of Engineers and coastal wetlands as determined by NCDEQ.	x	x	x	x	x	x

Table A.1: Submission Requirements						
Information Required	**Minor Site Plan**	**Major Site Plan or Special Use Permit**	**Minor Final Plat**	**Major Subdivision Preliminary**	**Major Subdivision Final Plat**	**Master Development Plan**
Location and description of environmental features such as wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or streambeds, and any other natural features affecting the site.	x	x	x	x	x	x
Existing and proposed topography.	x	x		x		
Location, dimensions, and description of all areas to be dedicated to the public or to a property owners association.			x	x	x	
Location, size, and flow direction of existing and proposed drainage courses within or immediately adjacent to the site, including culverts and storm drains.	x	x		x		x[3]
Location and size of stormwater basins or other comparable stormwater management mechanisms.	x	x		x		x[3]
Location and labeling of minimum building setback lines.	x	x	x	x	x	x[3]
Detailed utility plans, including water, sewer, and stormwater, and showing connections to existing systems or plans for individual water supply systems and sewage disposal systems. Plans must show line sizes, the location of fire hydrants, blow- offs, manholes, pumps, force mains, gate valves, utility and maintenance easements, and daily estimated sewer flow figures. Type of construction materials and brand of appurtenances may require approval from the City of Southport, Brunswick County Utilities, and/or NCDOT. Plans shall include profiles based on mean sea level datum for gravity sanitary and storm sewers. NOTE: Detailed plans may be submitted after site plan or preliminary plat are approved and must be approved by the City's Public Services Department prior to construction of improvements or the issuance of building permits or approval of a final plat.		x		x		
Total number and type of dwelling units, by development phase.	x	x				x[2]
For residential uses, the number of units, heights and a generalized location. For non-residential uses, the height, approximate footprint and location of all structures.						x[3]
Signage.	x	x		x		x[3]
Outdoor Lighting Plan.	x	x		x		x[3]
Locations, dimensions, and size of required buffers, street yards, foundation planting, parking facility planting areas.	x	x		x		x[3]

Table A.1: Submission Requirements						
Information Required	**Minor Site Plan**	**Major Site Plan or Speciaal Use Permit**	**Minor Final Plat**	**Major Subdivision Preliminary**	**Major Subdivision Final Plat**	**Master Development Plan**
Location, species, and size of all regulated and specimen trees as defined by this ordinance.	x	x		x		x[3]
Location and size of all groves of trees to be protected, including the approximate number and species of protected trees.	x	x		x		x[3]
Location, species, dimensions, and spacing of all required landscaping materials clearly labeled and numbered and a legend.	x	x		x		x[3]
Note on plan stating that prior to any clearing, grading, or construction activity tree protection fencing will be installed around protected plants, trees or groves of trees. No construction workers, tools, materials, or vehicles are permitted within the tree protection fencing.	x	x		x		x
Any other information considered pertinent by the applicant, UDO Administrator, Planning Board, or Board of Aldermen.	x	x	x	x	x	x

[1] Only required where prepared by a licensed professional.
[2] Approximation acceptable.
[3] Conditional rezoning only, not applicable to Planned Unit Development proposal.

A.2 CERTIFICATES REQUIRED

Plats submitted to the City of Southport shall include the required certificates in accordance with Table A.2 where marked by an “x”.

Table A.2 Required Certificates				
Certificate	**Exempt Division Plat**	**Minor Final Plat**	**Major Preliminary Plat**	**Major Final Plat**
Certificate of Ownership (A)	x	x		
Certificate of Ownership and Dedication (B)				x
Certificate of Survey and Accuracy (C)	x	x	x	x
Certification of Board of Aldermen Approval (D)			x	x
Certificate of Approval of the Design and Installation of Streets, Utilities, and Other Required Improvements (E)				x

Table A.2 Required Certificates				
Certificate	**Exempt Division Plat**	**Minor Final Plat**	**Major Preliminary Plat**	**Major Final Plat**
Certification of Septic and Water Supplies (F)	x	x		x
Certificate of Disclosure; 404 Wetlands (G)	x	x		x
Certificate of Disclosure; City of Southport Floodplain Management Regulations (H)	x	x		x
Acknowledgment of Compliance (Private Developments) (I)		x		x
Certificate of Purpose of Plat (J)	x	x	x	x
Certificate of Approval for Recording (K)	x	x		x

A. Certificate of Ownership

I hereby certify that I am the owner of the property shown and described hereon, which is located in the subdivision jurisdiction of the City of Southport and that I hereby adopt this plan of subdivision with my free consent and establish minimum building setback lines as noted.

_____ _____
Owner Date

B. Certificate of Ownership and Dedication

I hereby certify that I am the owner of the property shown and described hereon, which is located in the subdivision jurisdiction of the City of Southport and that I hereby adopt this plat of subdivision with my free consent, establish minimum building setback lines, and dedicate all streets, alleys, walks, parks, open space, utilities, and other sites and easements to public or private use as noted.

_____ _____
Owner Date

C. Certificate of Survey and Accuracy.

In accordance with NCGS 47-30: There shall appear on each plat a certificate by the person under whose supervision such survey or such plat was made, stating the origin of the information shown on the plat, including recorded deed and plat references shown thereon. The ratio of precision as calculated by latitudes and departures before any adjustments must be shown. Any lines on the plat that were not actually surveyed must be clearly indicated

and a statement included revealing the source of information. The execution of such certificate shall be acknowledged before any officer authorized to take acknowledgments by the registered land surveyor preparing the plat. All plats to be recorded shall be probated as required by law for the registration of deeds. Where a plat consists of more than one sheet, only the first sheet must contain the certification and all subsequent sheets must be signed and sealed.

The certificate shall include the source of information for the survey and data indicating the accuracy of closure of the plat before adjustments, and shall be in substantially the following form:

I,_____, certify that this plat was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book___, Page___ , etc.) (other); that the boundaries not surveyed are clearly indicated as drawn from information found in Book___, Page___; that the ratio of precision as calculated is 1:_____; that this plat was prepared in accordance with NCGS 47-30 as amended. Witness my original signature, registration number and seal this____ day of__, A.D. 20__.

_____
Surveyor

_____
Seal or Stamp Registration Number

D. Certification of Approval of the Preliminary/Final Plat by the Southport Board of Aldermen

The Southport Board of Aldermen hereby approves or approves conditionally the (preliminary or final plat) of _____ Subdivision. If approved conditionally, the specific conditions shall be listed.

_____ _____
Mayor, City of Southport Date

E. Certificate of Approval of the Design and Installation of Streets, Utilities, and Other Required Improvements, if applicable, to be signed by owner and City:

The undersigned hereby certifies that the required improvements (list all improvements that have been installed and approved by appropriate agency)

(_____) have been installed in an acceptable manner and in accordance with the regulations of the City of Southport Unified Development Ordinance.

_____ _____
Developer or Authorized Agent Signature(s) Date

Professional Engineer(s) [seal included] Date

UDO Administrator Date

F. Certification of Suitability for Septic Tank Systems and Water Supplies, if applicable, to be signed by appropriate authority/representative:

I hereby certify that this subdivision, entitled _____, is generally suitable for individual septic tank systems and individual water supplies. However, this certification does not constitute "blanket issued subject to the approval of each individual lot by the Brunswick County Health Department and the issuance of an improvements permit for each lot as required by the General Statutes of North Carolina." Any artificial drainage measures installed or proposed for installation in this subdivision to control water table must be properly maintained. Lots must be properly landscaped to control surface water in order to decrease the changes in septic tank system malfunctions.

Brunswick County Heath Director or Licensed Soil Scientist Date

G. Certificate of Disclosure, 404 Wetlands, if applicable, to be signed by owner:

This tract is not subject to 404 wetlands.

Owner's Signature Date

- Or -

Wetlands Caution: Prospective buyers are cautioned that portions of the lots shown on this plat are restricted in use by wetlands and waters jurisdiction pursuant to the US Army Corps of Engineers Section 404 regulations. Individual lot reviews to ensure compliance with their Federal laws and regulations are encouraged. Verification of location and restrictions should be made prior to individual lot development.

Owner's Signature Date

H. Certificate of Disclosure, City of Southport Floodplain Management Regulations, if applicable, to be signed by owner:

I (we) hereby certify that prior to entering any agreement or any conveyance with a prospective buyer, I (we) shall prepare and sign, and the buyer of the subject real estate shall receive and sign a statement which fully and accurately discloses that the subject real estate, or a portion of the subject real estate, is located within a flood hazard area and that the buyer must satisfy the requirements of City of Southport floodplain management regulations prior to the issuance of building permits.

_____ _____
Owner's Signature Date

I. Acknowledgment of Compliance (Private Developments), if applicable, to be signed by owner:

I,_____, (name of developer and/or seller) hereby certify that the streets, parks, open space, or other areas delineated hereon and dedicated to private use, and all maintenance and upkeep of private facilities, including traffic marking and control devices, shall not be the responsibility of the public or the municipality, acting on behalf of the public, to maintain. Furthermore, prior to entering any agreement or any conveyance with any prospective buyer, I shall prepare and sign, and the buyer of the subject real estate shall receive and sign, an acknowledgment of receipt of a disclosure statement. The disclosure statement shall fully and completely disclose the private areas and include an examination of the consequences and responsibility as to the maintenance of the private areas, and shall fully and accurately disclose the party or parties upon whom the responsibility for construction and maintenance of such private areas shall rest.

_____ _____
Signature of Developer and/or Seller Date

J. Certificate of Purpose of Plat. Notwithstanding any other provision contained in this section, it is the duty of the surveyor, by a certificate on the face of the plat, to certify to one of the following:

1) This survey creates a subdivision of land within the area of a county or municipality that has an ordinance that regulates parcels of land;
2) This survey is of an existing parcel or parcels of land and does not create a new road or change an existing road;
3) This survey is of any existing building, or other structure, or natural feature, such as a water course;
4) This survey is a control survey;
5) That the survey is of another category, such as the recombination of existing parcels, a court-ordered survey, or other exception to the definition of a subdivision; or
6) That the information available to the surveyor is such that the surveyor is unable to make a determination to the best of his or her professional ability as to provisions contained in items (1) through (6) above.

Note: Certain activities may be eligible for an exemption/waiver from the subdivision standards. If the activity being submitted meets one of the activities eligible for an exemption/waiver, item 5 above should be the selected certification.

K. Certificate of Approval for Recording.

I hereby certify that the subdivision plat shown hereon has been found to comply with the

Subdivision Regulations of the City of Southport, North Carolina, and that this plat has been approved by an authorized representative of the Southport for recording in the Office of the Register of Deeds of Brunswick County.

_____
UDO Administrator

_____
Date

Seal or Stamp

Summary report: Litera Compare for Word 11.8.0.56 Document comparison done on 6/5/2025 2:48:46 PM	
Style name: Default Style	
Intelligent Table Comparison: Active	
Original DMS: nd://4935-2011-5214/15/Development Agreement.docx	
Modified DMS: nd://4935-2011-5214/16/Development Agreement.docx	
Changes:	
Add	4
~~Delete~~	4
~~Move From~~	0
Move To	0
Table Insert	0
~~Table Delete~~	0
Table moves to	0
~~Table moves from~~	0
Embedded Graphics (Visio, ChemDraw, Images etc.)	0
Embedded Excel	0
Format changes	0
Total Changes:	8

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Development Services for Applicant East West Partners and Bald Head Island Limited

ITEM/TOPIC: Conditional Rezoning Map Amendment and Master Development Plan for Waterway Community

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: At their May 15, 2025, meeting, the Planning Board voted to send a recommendation of approval to the Board of Aldermen for a conditional approval of this application for conditional rezoning. A duly advertised public hearing must be held prior to the consideration of the proposal by the Board of Aldermen. The proposed project is 19 parcels zoned Single Family Residential - R-10 and Planned Unit Development - PUD adjacent to W 9th Street and Indigo Plantation Drive. The proposed conditional zoning map amendment is a mixed-use development on approximately 48 acres and includes 199 multifamily, two-family, and single-family homes and 10,000 SF of nonresidential uses at the existing marina.

IMPACT IF NOT APPROVED: This application is a legislative decision as defined by North Carolina General Statutes. The Board of Aldermen is under no obligation to approve the Zoning Map Amendment. In accordance with North Carolina General Statutes, in a motion to approve or deny a Zoning Map Amendment, the Board shall adopt a corresponding consistency statement explaining the chosen decision's consistency with the adopted Land Use Plan of the City as well as a statement of appropriateness.

DEPARTMENT HEAD COMMENTS: The attached proposed Zoning Map Amendment has been reviewed by staff for consistency with the land use plan and surrounding neighborhood. Staff find the proposal consistent and reasonable and forwarded it to the Planning Board for a recommendation.

ATTACHMENTS: Staff Report, Master Development Plan, Consistency Statement, Application

REQUESTED ACTION: Hold a public hearing and consider adoption of the amendment to the city's official zoning map.

PROPOSED MOTION: Motion to hold a public hearing.

Motion to adopt the conditional zoning map and master development plan as proposed by the applicant, attached consistency statement, and statement of appropriateness.

OR

Motion to adopt the conditional zoning map and master development plan as proposed by the Planning Board limiting heights for residential uses to 40 feet and 30 feet for nonresidential uses.

STAFF REPORT
CASE NUMBER CZ-25-01 - WATERWAY COMMUNITY
CONDITIONAL REZONING APPLICATION

APPLICATION SUMMARY	
Presentation Date	June 12, 2025 Board of Aldermen
Applicant	East West Partners Management Company, Inc.
Property Owner	Bald Head Limited, LLC
Parcel ID:	19 Separate Parcels in and adjacent to Indigo Plantation Listed in Exhibit A of the Application
Property Size	47.61 acres
Zoning District	PUD & R-10
Proposed Zoning District	CZ-01

REZONING OVERVIEW

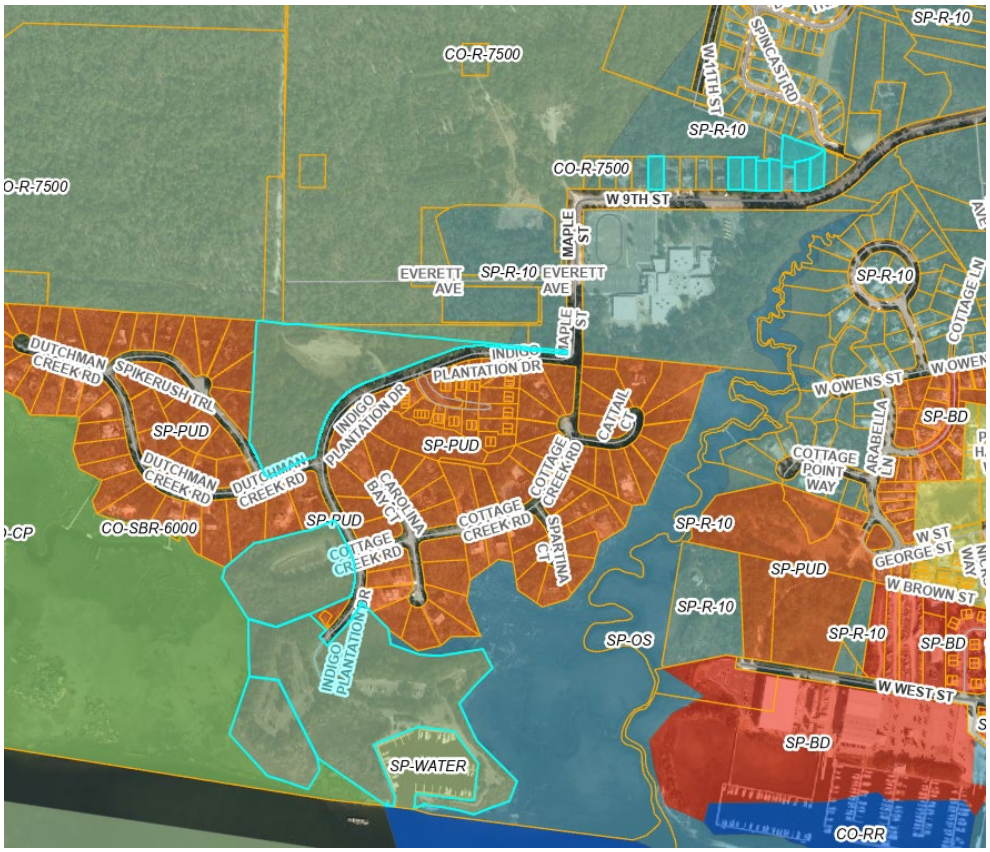
McKay Siegle for East West Partners Management Company, Inc., is requesting a conditional rezoning map amendment for 19 parcels zoned R-10 and PUD to CZ-01. The rezoning request is for a unique conditional zoning district with permitted uses and dimensional requirements included in the application, per Section 2.11 of the UDO. A development agreement is included as part of the conditional rezoning request. Per NCGS 160D-1005 a development agreement approval must follow the same process of a zoning map or text amendment.

Property

Tax ID	Address	Owner	Current Zoning
Marina and Parking Lots Land			
237KA004	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA003	6099 Indigo Plantation Drive	BALD HEAD ISLAND LIMITED LLC	PUD
237KA006	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA00302	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA00501	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
City Land – South			
2370000301	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
2370000423	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000420	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000416	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
237FB002	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
City Land – North			
237FD001	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD002	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD003	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000305	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
237FD004	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD005	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD006	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000424	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000401	810 W. 9th Street County	BALD HEAD ISLAND LTD LLC	R-10

LOCATION AND SITE CONDITIONS

The subject properties are adjacent to Indigo Plantation Subdivision off 9th Street and Indigo Plantation Drive and are located within the corporate limits of the City of Southport.



A majority of the property falls within the high suitability land classification and the remaining in the medium suitability land classification on the Land Suitability Analysis Map of the CAMA Land Use Plan.

Zoning Map

The surrounding and adjacent properties to the subject property are zoned highway commercial and PUD - residential.

Yellow – R-10
Purple – PUD
Pale Yellow – R-20
Green – Open Space

Future Land Use Map

The future land use map classifies the parcels as medium density residential.

Orange – Medium Density Residential
Yellow – Low Density Residential
Red – Heavy Commercial
Brown – High Density Residential

REVIEW PROCESS

Proposed amendments to the zoning map may be initiated by the Board of Aldermen, Planning Board, city administration, or by the owner, or his or her agent of the property proposed to be changed. Every amendment, supplement, change, modification, or repeal of the zoning map/ordinance shall be referred to the Planning Board for its recommendation and report to the Board of Aldermen.

Prior to the Board of Aldermen consideration of a change, a public hearing must occur at a set day and time. The hearing is notified to adjacent property owners by mail, published in a local newspaper of general circulation and posted on the property, for two (2) consecutive weeks not less than 10 days and not more than 25 days before the hearing.

The approval of the rezoning may be adopted by the Board of Aldermen after the duly advertised public hearing and upon the approval of a plan consistency statement and a statement of reasonableness.

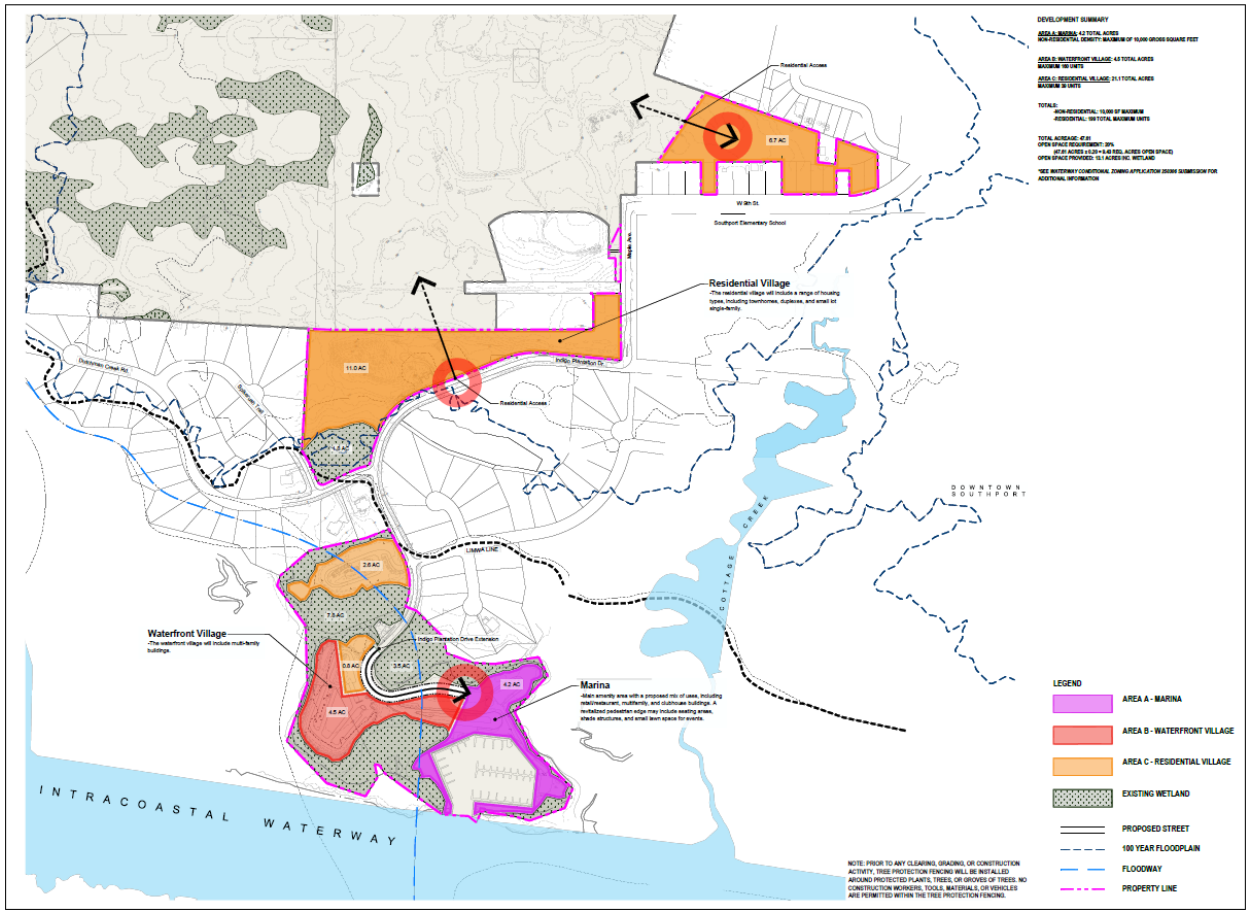
BOARD OF ALDERMEN REVIEW

Conditional rezonings include a master development plan and a narrative that includes supporting information and text which specifies the use or uses intended for the property and provides an overview of the project, dimensional standards, and any development standards to be approved concurrently with the rezoning application. The following section includes the proposed uses, dimensional requirements, and development standards including parking, pedestrian facilities, landscaping and buffers, lot standards, streets and roadway network, and recreation and open space for the new conditional zoning district.

If approved, a major subdivision preliminary plat designed using these standards will be required prior to any infrastructure or other development is permitted.

Master Development Plan

The master development plan proposes three distinct areas of development. Area A – Marina Village, which will consist of nonresidential uses, Area B – Waterfront Village, which will consist of multi-family dwelling units, and Area C – Residential Village, which will consist of single-family, two-family, and townhome style dwelling units utilizing cluster development patterns and small lots where appropriate. There are a total of 199 dwelling units and 10,000 SF of non-residential uses. The dimensional standards and conditions are outlined in the following sections of the report.



Permitted Uses

Unlike conventional zoning amendments conditional rezoning requests require that the applicant include all primary and accessory uses that are unique to the property and future development. The table below includes the proposed CZ-01 zoning district with all allowable uses listed with standards where applicable.

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
Accessory Uses															
ACCESSORY STRUCTURES OR USES, GENERAL		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.A
ACCESSORY DWELLING, COMMERCIAL						SS	SS	SS	SS	SS	SS	SS		SS	3.6.B
ACCESSORY DWELLING, RESIDENTIAL		SS	SS	SS	SS	SS	SS							SS	3.6.C
CEMETERIES AND MAUSOLEUMS		SS	SS	SS	SS	SS	SS	PS	PS	PS				SS	3.6.D
DOCKS, , PIERS, GAZEBOS, BULKEADS, AND LIVING SHORELINES		PS	PS	PS	PS	PS	PS	PS	PS				SS	PS	3.6.E
HOME DAYCARE, ADULT AND CHILD		SS	SS	SS	SS	SS								SS	3.6.F
HOME OCCUPATION		SS	SS	SS	SS	SS								SS	3.6.G
HOMESTAY		PS	PS	PS		PS								PS	3.6.H
MODULAR UNIT					PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.I
OUTDOOR DISPLAY								PS	PS	PS					3.6.J
OUTDOOR STORAGE									PS	PS	PS	PS			3.6.K
OUTDOOR VENDING MACHINE					PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.L
PORTABLE STORAGE CONTAINERS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.M

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
RECREATIONAL VEHICLE OR TRAVEL TRAILER		PS	PS		PS	PS	PS							PS	3.6.N
SELF-SERVICE ICE VENDING MACHINES									SS	SS					3.6.O
SOLAR ENERGY SYSTEMS		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.P
SWIMMING POOLS		PS	PS	PS	PS	PS	PS	PS						PS	3.6.Q
TEMPORARY SALES OFFICES		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	3.6.R
TEMPORARY HEALTHCARE STRUCTURES		PS	PS	PS	PS	PS								PS	3.6.S
Residential Uses															
DWELLING, SINGLE-FAMILY		P	P	P	P	P	P							P	
DWELLING, TWO-FAMILY (DUPLEX)		S	S	P	P	P	P							P	
DWELLING, MULTI-FAMILY				PS		SS	SS							PS	3.7.A
DWELLING, TRIPLEX OR QUADRAPLEX				PS	SS	SS	SS							PS	3.7.B
FAMILY CARE HOME		PS	PS	PS	PS	PS								PS	3.7.C
MANUFACTURED HOME ON SINGLE LOT					PS										3.7.D

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
MANUFACTURED HOME PARK					PS										3.7.E
MIXED USES						PS	PS	PS	PS					PS	3.7.F
MODULAR HOMES		PS	PS	PS	PS	PS	PS								3.7.G
Nonresidential Uses															
ADULT ESTABLISHMENT												SS			3.8.A
ALCOHOLIC BEVERAGES, PACKAGED, RETAIL SALES								P	P	P					
AUTOMOTIVE, MAJOR									SS	P	P	P			3.8.B
AUTOMOTIVE, MINOR								SS	P	P	P				3.8.B
BED & BREAKFAST	721191	SS	SS	SS	SS	SS	SS	SS	SS	SS					3.8.C
BOTTLE SHOP AND WINE BAR						P		P	P	P				P	
BUILDING MATERIAL DEALERS	444190								S	P	P	P			
BUSINESS,COMMERCIAL, OR OTHER NON-RESIDENTIAL USE NOT ELSEWHERE CLASSIFIED	561						SS	SS	SS	SS				SS	3.8.D
BUS TERMINALS AND RAILROAD STATIONS									P	P					

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
CHURCHES, SYNAGOGUES & OTHER ASSOC. ACTIVITIES, INCL. OFFICES, ACTIVITY CENTER, ETC.	813110	SS	SS	SS	SS	SS	SS	PS	PS	PS				SS	3.8.E
CLUBS OR LODGE		SS	SS			SS		SS	PS	PS				SS	3.8.F
COMMERCIAL PARKING LOTS	812930						SS	SS	SS	PS	SS				3.8.G
COMMERCIAL RECREATION, INDOOR						S		S	P	P				S	
COMMERCIAL RECREATION, OUTDOOR										P				S	
CONTRACTORS, EQUIPMENT & SUPPLY DEALERS & SERVICE	811310									P	P	P			
CONTRACTORS, HEAVY CONSTRUCTION; GRADING, PAVING, MARINE, ETC.	234										P	P			
CULTURAL ARTS CENTER, INCL. THEATERS, OFFICES, CLASSROOMS, ETC.						P	P	P	P	P				P	
DANCE STUDIOS	611610					P	P	P	P	P				P	
DAYCARE, ADULT AND CHILD	624120						SS	SS	PS	PS				SS	3.8.H

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
DIVERS, COMMERCIAL								P	P	P	P	P			
DRY CLEANERS	812320					SS		PS	PS	PS				SS	3.8.I
DRY STORAGE										PS	PS	PS			3.8.J
EDUCATIONAL FACILITY		S	S	S	S	S	P	P	P	P				S	
ELECTRONIC GAMING OPERATIONS										SS					3.8.K
EXTERMINATING SERVICES	561710							PS	PS	P	P	P			3.8.L
FARMERS'S MARKET	445230	SS				SS		SS	PS	PS			SS	SS	3.8.M
FARM MACHINERY SALE AND SERVICE									S	P	P				
FEED, SEED, AND FERTILIZER SALES, RETAIL									S	P	P				
FISHING, COMMERCIAL	11411							P	P	P					
FLEA MARKET										SS					3.8.N
FRUIT & VEGETABLE MARKET, WHOLESALE WITH INCIDENTAL RETAIL	445230							SS	SS	PS	PS	SS			3.8.O
FUEL & ICE DEALERS	422710								P	P	P	P			
FUNERAL HOMES	812210						P	P	P	P					

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
FURRIERS AND FUR STORAGE									P	P					
GARBAGE COLLECTION, PRIVATE (NO LANDFILLS)	562111											P			
GAS COMPANIES (LP- BOTTLED & BULK STORAGE)	324110										P	P			
GOLF COURSE, PRIVATE OR PUBLIC, W/RELATED SERVICES INCL. PRO SHOP	713910	P	P	P		P									
GOVERNMENT USE, CITY OF SOUTHPORT		P	P	P	P	P	P	P	P	P	P	P	P	P	
GOVERNMENT USES WITH BUILDINGS, NON-CITY OF SOUTHPORT		SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS		SS	3.8.P
GROCERY STORES	445110					P		P	P	P				P	
HARDWARE, LAWN, OR GARDEN STORE	444130							P	P	P	P	P			
HEALTH SERVICES,						P	P	P	P	P				P	
HELIPAD							SS								3.8.Q
HOSPITALS	622110						P	P	P	P				P	

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
HOTEL, MOTEL, OR INN	721110					SS	SS		SS	PS					3.8.R
HOTEL, RESIDENTIAL OR BOUTIQUE						SS	SS	PS	PS	PS					3.8.S
INSTITUTIONAL CARE FACILITY, ADULT										S				S	
INSTITUTIONAL CARE FACILITY, CHILD HANDICAPPED									S	S				S	
JAIL	922140									PS	PS	PS			3.8.T
KENNEL	812910									SS	PS	PS			3.8.U
LAUNDRY, INDUSTRIAL	812332									P	P	P			
LAUNDRY, COIN-OPERATED									P	P					
LIBRARY	514120					P	P	P	P	P				P	
LIQUOR STORES	445310							P	P	P					
MANUFACTURED HOME DEALERS	453930									P	P				
MANUFACTURED HOME (INDIVIDUAL) FOR OFFICE AND/OR EXHIBITION					S	S	S	S	S	S	S	S		S	
MANUFACTURING, ARTISAN									P	P	P	P			

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
MANUFACTURING, GENERAL											C	P			
MANUFACTURING, INTENSIVE												CS			3.8.V
MANUFACTURING, LIMITED										P	P	P			
MARINA, COMMERCIAL	713930					PS		PS	PS	PS	PS	PS		PS	3.8.W
MARITIME SALES, RENTAL, AND SERVICE									P	P				P	
MICROBREWERY AND MICRODISTILLERY								SS	PS	PS	PS			PS	3.8.X
MOBILE VENDOR OR FOOD TRUCK								PS	PS	PS	PS	PS		PS	3.8.Y
MOTION PICTURE PRODUCTION & DISTRIBUTION	512110										P	P			
MOTOR FREIGHT COMPANIES, MOVERS, VAN LINES, AND STORAGE										P	P	P			
MUSEUMS, ART GALLERIES	712110						P	P	P	P					
NIGHTCLUB	722410							SS	SS	SS					3.8.Z
NURSING & PERSONAL CARE FACILITY	623110					SS	SS		SS	PS				PS	3.8.AA

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
OFFICE, GENERAL						P	P	P	P	P				P	
PACKAGE DELIVERY SERVICES, COMMERCIAL	492210						SS	SS	SS	PS	PS	PS			3.8.BB
PARKS & RECREATION AREAS, MUNICIPAL	924120	P	P	P	P	P	P	P	P	P			P	P	
PERSONAL SERVICE ESTABLISHMENT						P	P	P	P	P				P	
RADIO & TELEVISION STATIONS, STUDIOS, AND OFFICES							SS		PS	PS					3.8.CC
RECREATION FACILITY PRIVATE, INCL. CLUBS & RECREATION FACILITIES ASSOC. WITH MULTIPLE FAMILY COMPLEXES, GOLF COURSES, TENNIS FACILITIES, COUNTRY CLUBS, ETC.		SS	SS	SS	SS	SS	SS	SS	SS	SS				SS	3.8.F
RECREATIONAL VEHICLE PARK										SS					3.8.DD
RESEARCH & DEVELOPMENT							SS	SS		PS	PS	PS		SS	3.8.EE
RESTAURANT, CARRY-OUT	722211					S		P	P	P				P	

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
RESTAURANT, STANDARD & FAST-FOOD	722211					S		P	P	P				P	
RETAIL SALES, MAJOR										P					
RETAIL SALES, MINOR						P		P	P	P				P	
RETAIL SALES, MODERATE									P	P					
SALVAGE OPERATIONS												SS			3.8.FF
SHOPPING CENTER	233320					SS		SS	PS	PS				SS	3.8.GG
SHOOTING RANGE, INDOOR										PS	PS	PS			3.8.HH
SHOOTING RANGE, OUTDOOR												SS			3.8.HH
SHORT- TERM VACATION RENTALS						PS		PS	PS						3.8II
SOLAR FARM												SS			3.8.JJ
STORAGE, SELF-SERVICE										PS	PS	PS			3.8.KK
TATTOO AND PIERCING ESTABLISHMENT												S			
TAXICAB STANDS								SS	PS	PS					3.8.LL
TELEPHONE COMMUNICATION FACILITY, UNATTENDED	513340	SS	SS	SS	SS	SS	SS	SS	SS	SS	PS	PS		SS	3.8.M M
TRANSITIONAL HOUSING FACILITIES							S								3.8.NN

Table 3.1: Table of Uses	**Districts** P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														**Use Standard**
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
US POSTAL SERVICE	491110					P	P	P	P	P	P	P		P	
UTILITY STATIONS & PLANTS (PUBLIC & PRIVATE) INCL. LIFT STATIONS, SUBSTATIONS, ETC.		P	P	P	P	P	P	P	P	P	P	P	P	P	
VETERINARY SERVICES WITH OPEN PENS	541940									P	P	P			
VETERINARY SERVICES WITH PENS ENCLOSED IN A BUILDING	541940								S	P	P	P			
WAREHOUSING, GENERAL	493110									PS	PS	PS			3.8.OO
WATER TRANSPORTATION INCL. DOCKS, TUGBOATS, BARGES, AND EXCURSIONS									P	P	P	P		P	
WELDING, REPAIR	811310								P	P	P	P			
WIRELESS TELECOMMUNICATION FACILITY OR COMPLEX, FREESTANDING AND SUBSTANTIAL MODIFICATIONS										SS	SS	SS		SS	See Article 7

Table 3.1: Table of Uses	Districts P = Permitted by Right; S = Special Use; PS or SS = Permitted or Special Use with a Use Standard														Use Standard
Uses	ICS	R-10	R- 20	MF	MH	PUD	O-I	CBD	BD	HC	LI	HI	OS	CZ-1	Section #
WIRELESS TELECOMMUNICATION FACILITY, COLLOCATION OR COLLOCATED SMALL/MICRO-WIRELESS FACILITY		PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS		PS	See Article 7
YARD SALES		P	P	P	P	P	P	P	P	P				P	

Dimensional Requirements

A. Density Definition. Density refers to the number of dwelling units per unit of land area. The entirety of the Property is included in the calculation including, but not limited to, wetlands, ponds and marshes.

B. Residential Density. A maximum average of 4.2 dwelling units per acre (199 dwelling units) are permitted on the Property, and accessory dwelling units shall not be counted toward this maximum density nor toward the maximum number of dwelling units permitted.

C. Non-Residential Intensity. A maximum of 10,000 gross square feet of non-residential primary uses within a building are permitted on the Property.

DIMENSIONAL REQUIREMENTS

Required dimensional standards will vary by primary use as set forth in Table 1 or Table 2 below. The standards in Table 1 and Table 2 supersede any inconsistent requirements found in the UDO. Maximum floor area ratio, minimum open space ration, and maximum impervious coverage ratio requirements shall not be applicable to the Property.

LOT STANDARDS

Individual lots may front open space areas not less than 20’ in depth in lieu of having frontage on a public or private street.

TABLE 1: Traditional Design

USE	MIN. LOT AREA (SF)	MIN. LOT WIDTH (FT)	MAX. LOT COVERAGE	MAX. DENSITY (GROSS UNITS PER ACRE)	PRIMARY STRUCTURE MAX. HEIGHT (FT)	PRIMARY STRUCTURE MINIMUM SETBACKS (FT)
Dwelling, Single-Family (accessed from street)	3,200	40	75%	N/A	40*	Front: 10 Side: 5 Rear: 10
Dwelling, Single-Family (alley loaded)	1,800	30	75%	N/A	40*	Front: 10 Side: 5 Rear: 0
Dwelling, Two-Family (Duplex)	5,000 minimum overall project size	18	80% for overall project	8	40	Front: 10 Side: 5 (on end of buildings); 0 (if attached to another unit on the side) Rear: 5 Rear (Garage): None
Dwelling, Multi-Family	10,000	50	85%	30 max units is 250	45**	Front: 10 Side: 10 Rear: 10
Non-Residential Uses and Mixed Use	None	None	75%	N/A	45	Front: 1 Side: 10 Rear: 10

*Maximum primary structure height for all Dwelling, Single-Family uses located in the AE Zones, Coastal A, V-Zones, and/or Ocean Hazard Areas, as defined by the Coastal Resources Commission, shall be 45'.

**A Dwelling, Multi-Family having a pitched roof may be a maximum of 55' in height.

As an exception to the chart above, small lot/cluster design will be permitted in areas identified on Exhibit C.

TABLE 2: Cluster Design

USE	MIN. LOT AREA (SF)	MIN. LOT WIDTH (FT)	MAX. LOT COVERAGE	MAX. DENSITY (GROSS UNITS PER ACRE)	PRIMARY STRUCTURE MAX. HEIGHT (FT)	PRIMARY STRUCTURE MINIMUM SETBACKS (FT)	MAXIMUM FLOOR AREA PER DWELLING UNIT (SF)
Dwelling	n/a	n/a	75%	N/A	35	Front: 10 Side: 5 Rear: 10	2,500

TRAFFIC IMPACT STUDY
The provisions of UDO 3.13 shall not apply to the property, as a traffic impact analysis (TIA) has been performed, and recommendations and comments from NCDOT are attached here as Exhibit D. The recommendations to mitigate traffic impact in Exhibit D will be addressed by the developer consistent with NCDOT recommendations as they may be updated from time to time.

PARKING
Minimum parking requirements are as set forth in Table 3 below, subject to the provisions, below:

Table 3 Minimum Parking Requirements

Use	Minimum Parking Spaces
Dwelling, Single-Family	2 spaces
Dwelling, Two-Family (Duplex)	1 space per 1 bedroom 2 spaces per 2- or greater bedroom unit
Accessory Dwelling, Residential (non-junior)	1
Accessory Dwelling, Residential (junior)	0
Dwelling, Multi-Family	1 space per 1-bedroom unit; 1.4 spaces per 2+ bedroom unit
Retail Sales	3 per 1,000 sq. ft.
Office, General	3 per 1,000 sq. ft.
Restaurant	4 per 1,000 sq. ft.

Within the Marina Parcel described on Exhibit E, a parking study conducted by a qualified engineering firm may be submitted, and its recommended parking requirements may be substituted for the above prescribed parking requirements. The purpose of this is to more accurately determine cross parking between uses which may have different requirements depending on time of day or end user.

For residential lots, any required parking space may be located either on such lot, within the right-of-way adjacent to such lot, or in a shared off-street parking area. In lieu of paving, an alternative material may be used, including, without limitation, decorative stone with perimeter trim, and permeable systems.

PEDESTRIAN FACILITIES

A. Sidewalks, whether required or in excess of requirements, may be located outside of the public right-of-way.

B. Sidewalks may be of impervious or pervious materials, with final material selection to be approved with submitted plans.

C. Sidewalks shall be required on only one side of each street:

1. As set forth in UDO 4.11.A;
2. Where a greenway or multi-use path is located parallel to such street; and
3. Where permanent open space is located on one side of the street as shown on any approved plan.

LANDSCAPING AND BUFFERS

No bufferyard is required along common boundaries between parcels within the Property, however a perimeter bufferyard is required in the locations depicted on Exhibit F. The width of such perimeter bufferyards shall depend only on the use of the Property:

A. Minimum 30-foot-wide bufferyard, with 0.6 opacity, shall be provided on the locations shown on Exhibit F.

B. Minimum 5-foot-wide bufferyard, with a minimum average width of 20 feet, shall be provided adjacent to jurisdictional wetlands.

STREETS AND ROADWAY NETWORK

A. Cul-de-sacs may be a maximum of 1,500’ in length if environmental and property constraints limit block development.

B. Block length shall not exceed 1,200 feet.

C. Low Impact Design features are permitted within the streetscape for purposes of stormwater management including but not limited to porous pavements such as permeable pavers, and landscaped swales instead of typical curb and gutter.

RECREATION AND OPEN SPACE

A. A minimum of 20% open space will be provided, and open space areas will be calculated to include wetlands and floodplain areas, as well as the marina basin. The requirements will be evaluated for the overall Project, not by individual lots or phases.

B. Open space required by this section shall be privately owned, either pursuant to UDO 4.14.E or by a property owners’ association. No publicly dedicated open space shall be required within the Project.

C. Except as described in this Section, the provisions of UDO 4.14 shall not be applicable to the Property.

LAND USE PLAN CONSISTENCY

The 2014 CAMA Land Use Plan (LUP), along with subsequent updates is the plan that is used for policy decisions in the City. The Planning Board and Board of Aldermen shall consult the plan's policies when considering a zoning change. Further, each rezoning must be recommended and ultimately adopted with a statement describing if the action is consistent or inconsistent with the adopted land use plan.

Themes found in the 2014 CAMA LUP include smart growth principles and increased demand for housing. The goals, objectives, and policies found within the plan focus on balancing the need for housing and infrastructure with protection of the historic character and environmental resources of the City.

Map amendment considerations must include the specific neighborhood or district and its suitability for proposed uses. Land Use Plan objectives and policies direct future development to areas that are most appropriate for the type of use.

The subject development proposes a mixed-use neighborhood with multiple different housing densities and types, including small lot single-family homes and multi-family units.

The following policies and implementing actions support the proposed rezoning request.

Policy 2.1 "….rezonings and amendments in classifications to the future land use map should be carefully balanced with a demonstrated need for such proposed development".

Recommended Action 2.1.A: Consider requiring all rezoning approvals be compared to the land suitability map and analysis, included in this plan, for consistency. This consistency review will be presented to the Planning Board and Board of Aldermen……

The subject property is in an areas of medium and high suitability on the Land Suitability Map. The future land use map designation supports medium density residential development including single family and multi-family units.

Policy 2.4: Southport will permit residential development to occur in response to market needs provided the following criteria are met:

1) Due respect is offered to all aspects of the environment.
2) Concurrent planning for improvements to community facilities, infrastructure, and services provided.

These policies are appropriate for the site due to the unique characteristics of the neighborhood and the size of the property. Community facilities and infrastructure are planned and available for the future development needs.

Policy 2.11: Southport supports development that blends a mix of uses at a reasonable scale offering convenient retail facilities to nearby residents in an effort to reduce traffic flow on main thoroughfares.

The proposed mixed-use development will offer facilities to residents of the adjacent neighborhoods that can reduce traffic flow to retail, grocery, and other amenities outside of the Waterway community.

PLANNING BOARD RECOMMENDATION

The Planning Board recommends approval of the conditional zoning map amendment and the master development plan with the condition that the height limit does not exceed the existing residential (40 feet) and non-residential (30 feet) height limits per the Unified Development Ordinance.

The proposal appears to be consistent with the 2014 CAMA Core Land Use Plan and is reasonable due to the size, physical conditions, and other attributes of the area.

Attachments:
Master Development Plan
Consistency Statement
Rezoning Application

CITY REZONING

WATERWAY

CITY REZONING

SOUTHPORT, NC

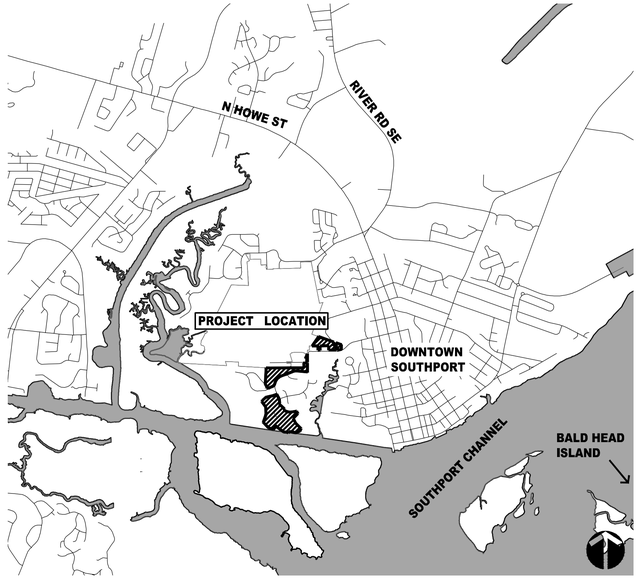
DATE: 04.14.2025

SHEET INDEX

Sheet List Table

Sheet Number	Sheet Title
RZ-0	COVER
RZ-1	SURVEY
RZ-2	EXISTING CONDITIONS
RZ-3	REZONING SUBMITTAL

VICINITY MAP



PROJECT TEAM

OWNER/DEVELOPER
INDIGO
EAST WEST PARTNERS
226 N FRONT ST
WILMINGTON, NC 28401
910.386.8683

LANDSCAPE ARCHITECT
LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT NAME: ERIC POHLMANN

SURVEYOR
MICHAEL UNDERWOOD & ASSOCIATES, P.A.
102 CINEMA DR, SUITE A
WILMINGTON, NC 28403
910.815.0650

CIVIL ENGINEER
NORRIS & TUNSTALL CONSULTING ENGINEERS, P.C.
2602 IRON GATE DR. SUITE 102
WILMINGTON, NC 28412
910.343.9653

WATERWAY

LD PN 1021180

COVER

LandDesign.

LandDesign.

223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
WWW.LANDDESIGN.COM

east west partners

NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.

KEY MAP

SEAL

NORTH CAROLINA LANDSCAPE ARCHITECTURAL CORPORATION C-015 LandDesign, Inc.

PROJECT

WATERWAY

BALD HEAD ISLAND, LLC.

SOUTHPORT, NC

28461

LANDDESIGN PROJ.#
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE

NORTH

VERT: N/A
HORZ: 1" = 200'

0 100 200 400

SHEET TITLE

SURVEY

SHEET NUMBER

RZ-1

4/11/2025 12:59 PM

ORIGINAL SHEET SIZE: 24" X 36"

LEGEND:

- EXISTING WETLAND
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

LandDesign.
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
WWW.LANDDESIGN.COM

east west partners

NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.

KEY MAP

SEAL

NORTH CAROLINA LANDSCAPE ARCHITECTURAL CORPORATION C-015 LandDesign, Inc.

PROJECT

WATERWAY

BALD HEAD ISLAND, LLC.
SOUTHPORT, NC
28461

LANDDESIGN PROJ.#
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 200'
0 100 200 400

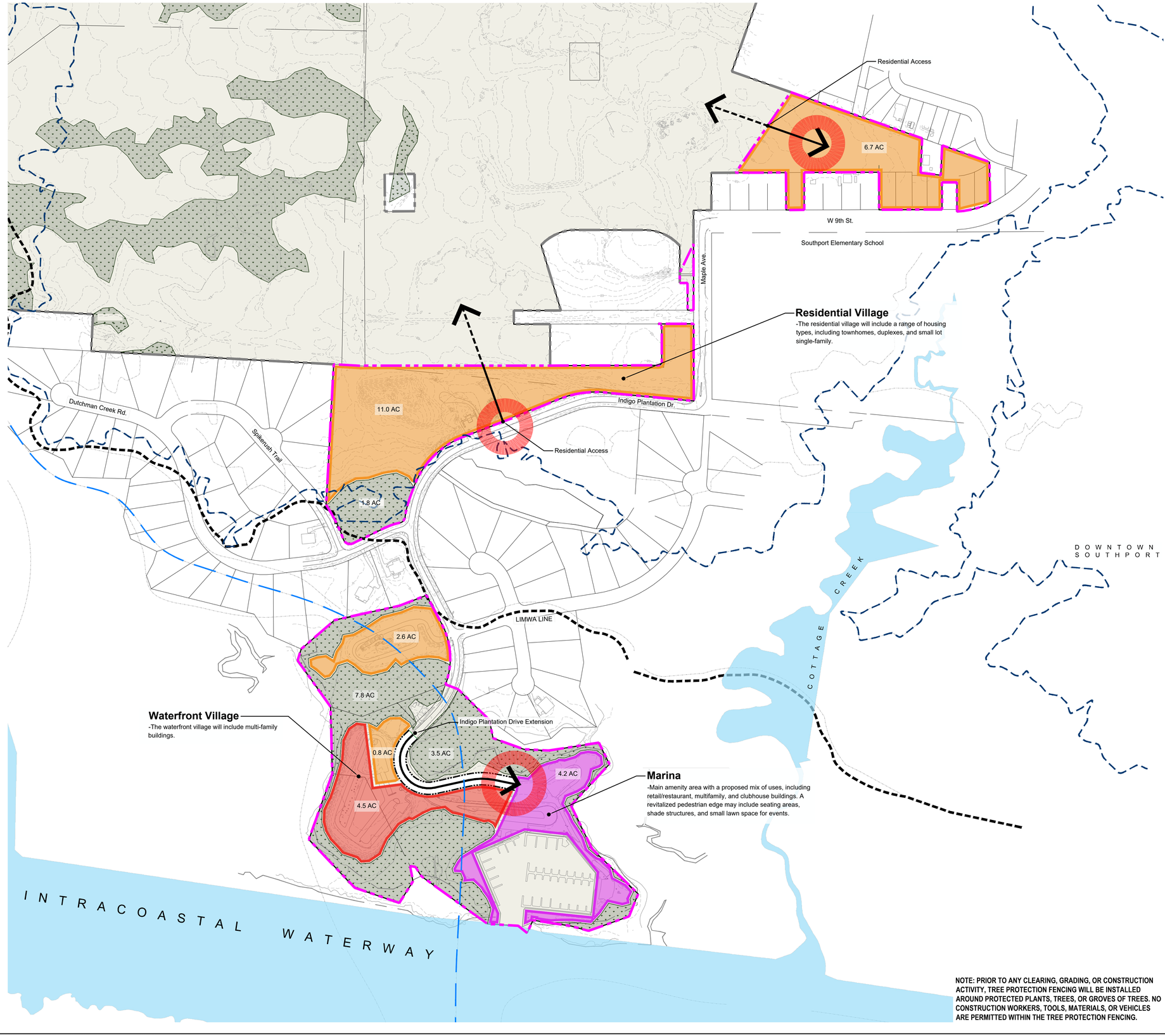
NORTH

SHEET TITLE
EXISTING CONDITIONS

SHEET NUMBER
RZ-2

4/11/2025 12:59 PM

ORIGINAL SHEET SIZE: 24" X 36"



DEVELOPMENT SUMMARY

AREA A: MARINA: 4.2 TOTAL ACRES
NON-RESIDENTIAL DENSITY: MAXIMUM OF 10,000 GROSS SQUARE FEET

AREA B: WATERFRONT VILLAGE: 4.5 TOTAL ACRES
MAXIMUM 160 UNITS

AREA C: RESIDENTIAL VILLAGE: 21.1 TOTAL ACRES
MAXIMUM 39 UNITS

TOTALS:
-NON-RESIDENTIAL: 10,000 SF MAXIMUM
-RESIDENTIAL: 199 TOTAL MAXIMUM UNITS

TOTAL ACREAGE: 47.61
OPEN SPACE REQUIREMENT: 20%
(47.61 ACRES x 0.20 = 9.43 REQ. ACRES OPEN SPACE)
OPEN SPACE PROVIDED: 13.1 ACRES INC. WETLAND

*SEE *WATERWAY CONDITIONAL ZONING APPLICATION 250306 SUBMISSION* FOR ADDITIONAL INFORMATION

LEGEND

- AREA A - MARINA
- AREA B - WATERFRONT VILLAGE
- AREA C - RESIDENTIAL VILLAGE
- EXISTING WETLAND
- PROPOSED STREET
- 100 YEAR FLOODPLAIN
- FLOODWAY
- PROPERTY LINE

NOTE: PRIOR TO ANY CLEARING, GRADING, OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED PLANTS, TREES, OR GROVES OF TREES. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.

LandDesign.
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
WWW.LANDDESIGN.COM

east west partners

NORRIS & TUNSTALL
CONSULTING ENGINEERS P.C.

KEY MAP

SEAL

NORTH CAROLINA LANDSCAPE ARCHITECTURAL CORPORATION C-015 LandDesign, Inc.

PROJECT

WATERWAY

BALD HEAD ISLAND, LLC.
SOUTHPORT, NC
28461

LANDDESIGN PROJ.#
1021180

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	04.14.2025

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1" = 200'
0 100 200 400

NORTH

SHEET TITLE
REZONING SUBMITTAL

SHEET NUMBER
RZ-3

4/11/2025 12:58 PM

ORIGINAL SHEET SIZE: 24" X 36"

City of Southport Board of Aldermen
Resolution and Statement of Plan Consistency and Reasonableness
(As per NC General Statute 160D-605)

When conducting a review of proposed zoning text or map amendments pursuant to this section, the Board of Aldermen shall approve a statement describing whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable.

AMENDMENT**:** **CZ-25-01 Conditional Zoning Map Amendment**

STATEMENT OF PLAN CONSISTENCY:

The City of Southport Board of Aldermen, after consideration of the Planning Board recommendation and all relevant portions of the adopted and CRC-certified land use plan, hereby **ADOPT** the proposed zoning map amendment. The amendment is consistent with the City's 2014 CAMA Core Land Use Plan, adopted initially on Nov. 13, 2014, and subsequently amended by the Southport Board of Aldermen in 2020. Specifically, the proposed Zoning Text Amendment is consistent with the Plan due to its allowance for development patterns that are explicitly identified as desirable by the Plan but are not currently possible under the Unified Development Ordinance, the inclusion of the public within the development process, and **Policy 2.11:** Southport supports development that blends a mix of uses at a reasonable scale offering convenient retail facilities to nearby residents in an effort to reduce traffic flow on main thoroughfares. Further the proposed amendment is reasonable in the size and physical conditions of the area being rezoned and in the relationship between the current actual and permissible development on the tract and adjoining areas and the development allowed under the proposed amendment.

NOW THEREFORE, be it resolved by the City of Southport Board of Alderman, that the foregoing statement, having been submitted to a vote by a motion and seconded, received the following vote and was duly adopted this the ___ day of June, 2025.

Ayes: _____
Noes: _____
Absent or Excused: _____

_____
Richard Alt, Mayor

Attest:

_____
Tori Deviney, Deputy City Clerk

City of Southport Board of Aldermen
Resolution and Statement of Plan Consistency and Reasonableness
(As per NC General Statute 160D-605)

When conducting a review of proposed zoning text or map amendments pursuant to this section, the Board of Aldermen shall approve a statement describing whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable.

AMENDMENT**:** **CZ-25-01 Conditional Zoning Map Amendment**

STATEMENT OF PLAN CONSISTENCY:

The City of Southport Board of Aldermen, after consideration of the Planning Board recommendation and all relevant portions of the adopted and CRC-certified land use plan, hereby **DENY** the proposed zoning map amendment. The amendment appears consistent with the City's 2014 CAMA Core Land Use Plan, adopted initially on Nov. 13, 2014, and subsequently amended by the Southport Board of Aldermen in 2020 although it is not reasonable in the size and physical conditions of the area being rezoned and in the relationship between the current actual and permissible development on the tract and adjoining areas and the development allowed under the proposed amendment.

NOW THEREFORE, be it resolved by the City of Southport Board of Alderman, that the foregoing statement, having been submitted to a vote by a motion and seconded, received the following vote and was duly adopted this the ___ day of June, 2025.

Ayes: _____
Noes: _____
Absent or Excused: _____

_____
Richard Alt, Mayor

Attest:

_____
Tori Deviney, Deputy City Clerk

Conditional Rezoning Application

Property Data

Petitioner Name: East West Partners Management Company, Inc.

Mailing Address: 1460 Environ Way

City: Chapel Hill State: NC Zip Code: 27517

Phone: 919-929-0660

Email: msiegel@ewpnc.com

Street Address and/or Description of Location: See Exhibit A

Parcel ID #: See Exhibit A

Site Acreage: 47.61

Number of Lots: 19

Current Zoning District: See Exhibit A

Proposed Zoning District: CZ-1

RECEIVED
MAR 06 2025
BY: MLK

City Of Southport
1029 N. Howe St
Southport, NC 28461
(910) 457-7900

Receipt: 00200991
Date: 04/28/2025 09:04 AM
ktooley

BALD HEAD ISLAND LIMITED LLC,

Planning Zoning Planning Zonin g Fees cz-25-0		
1		5,761.00
Total		5,761.00
Check	122704	5,761.00
Change		0.00

Balance Remaining:
$0.00

- check received 3/6/25
- check processed 4/17/25

Have a nice day!
Visit us at cityofsouthport.com

east west partners

East West Partners, in conjunction with Bald Head Island, ltd., is proud to present this plan for the Waterway Community to the City of Southport for consideration. This is the result not only of five years on this project, but fifty years in the business. We invite any and all to evaluate us on the merits of what we have produced in the past, and as always are open and eager to begin a constructive dialogue.

The purpose of this letter is to directly address the five key values identified in the city's CAMA Core Land Use Plan.

Sincerely,

Roger Perry and McKay Siegel, East West Partners

rperry@ewpnc.com msiegel@ewpnc.com

Charles A. Paul, III, Chief Executive Officer & Manager

cpaul@bhisland.com

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

Preserve the city's historic character.

Founded in 1792, the City of Southport's built environment represents hundreds of years of architectural realities and preferences; a tree canopy which has had time and curation to mature, and; features of organic community growth such as winding sidewalks, a front porch culture, and a charming, useful, and accessible downtown.

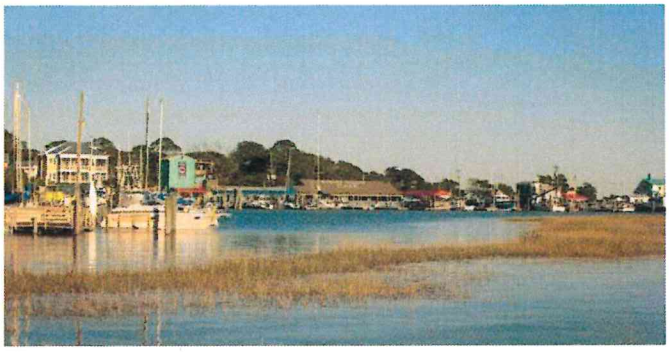
As it is currently written, municipalities are given extremely limited input or control over the architectural character of future projects. The result of this is development which does not pay homage to history but the present, utilizing building materials and styles that are en vogue, cheaper, or both.

The Waterway Community will submit itself to an Architectural Review Board, the guidelines for which are attached to our Development Agreement. The context of the architecture for Waterway is defined in the appendix of that document, using exclusively the styles which are prominent in the cozy and historic streets surrounding downtown. We earnestly invite the reader of this application to review and make suggestions to that document.

Both East West Partners and Bald Head Island, Ltd. have a successful track record of implementing architectural guidelines which are evident in our communities, however please be assured that this is not the norm for new development today.

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

Protect the city's shoreline vista.



The above photos are of Southport's shoreline – most notably, there are buildings on it. It is visually interesting from the waterway, and provides a lifestyle not only for people travelling along the adjacent waterways but from people walking along, dining on, and relaxing on the waterfront.

What makes Southport's waterfront unique in this region is its extreme *tranquility*. Other waterfront communities – from Holden Beach to, say, Surf City, are subject to wave action. Similarly, Downtown Wilmington has the Cape Fear River, which is constantly in motion and visibly a threat (it is not relaxing so much as awe-inspiringly powerful). Southport is on a sound. The tides are calm, and the waves are not in motion. The water is often calm, and, therefore, peaceful.

Southport's unique local charm is directly a result of its proximity to this natural feature, and we as the developers of Waterway understand that to the full.

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

Continue to support a vibrant Central Business District.

Southport's Central Business District is sorely in need of two things:

1) Infrastructure improvements. As it concerns roadway infrastructure, sewer and water improvements have been handed over to the county and are in progress, but the city is still responsible for stormwater and road maintenance. The CBD also needs sidewalks, bike lanes, parks, maintenance, and FREE public amenities. To build public amenities requires public funding, and for that there are two options: raise taxes on the existing tax base or increase the tax base (allow new development).

   There is plenty of new development happening within Brunswick County, to include St. James and Oak Island as only the closest municipal neighbors. These communities will continue to utilize Southport's urban core as welcomed visitors in increasing numbers. However, it should be fully understood that new development which is not within Southport City Limits **does not pay taxes** to Southport.

   It should also be understood that 327 of Waterway's 375 acres (87%) are currently outside of Southport City Limits. By agreeing to annex the bulk of the property into the City, we are voluntarily subjecting that property to nearly double the amount of taxes, which can be used to restore, improve, and maintain public infrastructure and quality of life for this and future generations of Southport residents.

2) Southport's CBD needs off-season visitors. During the summer, as is typical in coastal towns, restaurants are full and business is booming. In the off-season, the opposite is true, and businesses struggle. This, of course, is due to an influx of tourism. Waterway Community will not allow for short-term rentals, therefore residents of the community will be either primary or second home owners, spending more time and money to provide much-needed year round revenue for CBD restaurants, retailers, and services, and allow for a stabilized vibrance in that small and charming part of the City.

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

Preserve the city's residential areas.

Within the context of Waterway, we take preservation of residential areas to mean our immediate neighbors, namely: Indigo Plantation, Cade's Cove, and Smithville Woods.

To accomplish this, we are including a minimum 30' buffer with an increased opacity, and beyond that have committed to having backyards facing those neighborhoods.

Waterway will also for the first time connect Robert Ruark to 9th Street, wherein people from the northern communities might not have to exit Ruark to go down Howe to get to the hospital, school, or CBD, but instead could ride a bike or golf cart to those places. Likewise, residents of Indigo Plantation can bypass Howe to get out to the grocery stores and beyond.

More than that, Waterway will have extensive parks and recreational amenities, which will be paid for and maintained by the HOA but accessible to all residents of the surrounding community – Waterway will not be gated. Similarly, Waterway will include a clubhouse and pool amenity offering memberships to the community and build a lap pool large enough to hold swim meets.

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

Protect the city's Areas of Environmental Concern consistent with 15A NCAC 7H

It is our belief, as is evidenced in a long history of both East West Partners and Bald Head Island, Ltd. communities, that a deep respect for the environment is what will set this community apart from others. We have committed to a twenty-foot average wetland buffer and over 100 acres of open space, which includes +/-63 acres of undisturbed wetland and a 16-acre nature park which will be curated and revitalized.

Additionally, our architectural guidelines and HOA restrictions will allow us to require coastal North-Carolina appropriate native and well-heeled plantings and restrict the use of invasive non-native plantings.

Finally, Waterway has always committed to not clear-cutting the land. Roads will be cut and laid intentionally, with each lot and future owner having to submit a tree removal plan directly to the City of Southport and the Architectural Review Board for approval. We recognize that this is not the same as preserving the land as it is, but we believe strongly that this is the best form of environmentally sensitive community development.

1460 environ way
chapel hill, nc 27517
919-929-0660 919-967-0959 (fax)
www.ewpnc.com

OWNER'S AFFIDAVIT

STATE OF NORTH CAROLINA

COUNTY OF BRUNSWICK

Bald Head Island Limited LLC, a Texas limited liability company ("Owner"), the Owner of the premises listed on Exhibits A and B (the "Property"), hereby authorizes East West Partners Management Company, Inc., a North Carolina corporation, as represented by Morningstar Law Group, to negotiate a Development Agreement with the City of Southport, North Carolina for the Property listed on Exhibit A, and rezone the City Property listed on Exhibit B and to offer zoning conditions to restrict the City Property.

AFFIANT:

Bald Head Island Limited LLC, a Texas limited liability company

Name: Charles A. Paul, III
Title: Chief Executive Offecer & Manager

State of North Carolina
County of Brunswick

I, Kariann Groome, a _____ certify that **CHARLES A. PAUL, III** personally came before me this day and acknowledged that he/she is **CHIEF EXECUTIVE OFFICER & MANAGER** of **Bald Head Island Limited LLC**, a Texas limited liability company, and that he/she, as **CHIEF EXECUTIVE OFFICER & MANAGER**, being authorized to do so, executed the foregoing on behalf of the corporation.

Witness my hand and official seal this 6 day of March, 2025.

(Official Seal)

KARIANN GROOME
My Commission Expires
NOTARY PUBLIC
February 16, 2028
BRUNSWICK COUNTY, NC

Kariann Groome
(Notary Public)

February 16th, 2028
Commission Expires

Exhibit A

Property

Tax ID	Address	Owner
Marina and Parking Lots Land		
237KA004	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA003	6099 Indigo Plantation Drive	BALD HEAD ISLAND LIMITED LLC
237KA006	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA00302	No address listed	BALD HEAD ISLAND LIMITED LLC
237KA00501	No address listed	BALD HEAD ISLAND LIMITED LLC
City Land		
2370000301	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000423	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000420	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000416	No address listed	BALD HEAD ISLAND LIMITED LLC
237FB002	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD001	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD002	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD003	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000305	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD004	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD005	No address listed	BALD HEAD ISLAND LIMITED LLC
237FD006	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000424	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000401	810 W. 9th Street County	BALD HEAD ISLAND LIMITED LLC
County Land		
22100027	No address listed	BALD HEAD ISLAND LIMITED LLC

CAP 3/6/25

Tax ID	Address	Owner
2210002901	No address listed	BALD HEAD ISLAND LIMITED LLC
221OA001	4017 Robert Ruark Dr SE	BALD HEAD ISLAND LIMITED LLC
23700015	No address listed	BALD HEAD ISLAND LIMITED LLC
23700016	No address listed	BALD HEAD ISLAND LIMITED LLC
2370001601	No address listed	BALD HEAD ISLAND LIMITED LLC
23700018	No address listed	BALD HEAD ISLAND LIMITED LLC
23700020	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000401	810 W. 9th ST	BALD HEAD ISLAND LIMITED LLC
2370000419	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000417	No address listed	BALD HEAD ISLAND LIMITED LLC
23700005	No address listed	BALD HEAD ISLAND LIMITED LLC
2370000502	712 W. 11th ST	BALD HEAD ISLAND LIMITED LLC
23700005	No address listed	BALD HEAD ISLAND LIMITED LLC

3/6/25

Exhibit B

City Property

Tax ID	Address	Owner	Current Zoning
Marina and Parking Lots Land			
237KA004	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA003	6099 Indigo Plantation Drive	BALD HEAD ISLAND LIMITED LLC	PUD
237KA006	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA00302	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
237KA00501	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
City Land – South			
2370000301	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
2370000423	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000420	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000416	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
237FB002	No address listed	BALD HEAD ISLAND LIMITED LLC	PUD
City Land – North			
237FD001	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD002	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD003	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000305	No address listed	BALD HEAD ISLAND LIMITED LLC	R-10
237FD004	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD005	No address listed	BALD HEAD ISLAND LTD LLC	R-10
237FD006	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000424	No address listed	BALD HEAD ISLAND LTD LLC	R-10
2370000401	810 W. 9th Street County	BALD HEAD ISLAND LTD LLC	R-10

CMP 3/6/25

City Of Southport
1029 N. Howe St
Southport, NC 28461
(910) 457-7900

Receipt: 00200991
bate: 4/17/2025 09:04 AM
ktooley

BALD HEAD ISLAND LIMITED LLC,

Planning Zoning Planning Zonin g Fees cz-25-0		
1		5,761.00
Total		5,761.00
Check	122704	5,761.00
Change		0.00

Balance Remaining:
$0.00

Have a nice day!
Visit us at city6fsouthport.com

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Pelican Real Property, LLC

ITEM/TOPIC: Deep Point Marina Major Subdivision Preliminary Plat SUB-25-01

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: At their May 15, 2025 meeting the Planning Board voted to send the Board of Aldermen a recommendation of approval for the Deep Point Marina major subdivision preliminary plat. The subject property is located at 1301 Ferry Road and is adjacent to the NCDOT Southport-Fort Fisher Ferry terminal and the Landing Subdivision. This is a subdivision of 18.93 acres into three (3) separate parcels. This proposal is for the subdivision of land with existing infrastructure, there is no other development proposed with this request.

IMPACT IF NOT APPROVED: This is an administrative development decision. General statutes state that decisions are based on the determination of facts and the application of objective standards. If the plat is disapproved, the reasons shall be set forth in writing and refer specifically to those parts of the UDO or other land development ordinances with which the plat does not comply.

DEPARTMENT HEAD COMMENTS: The attached preliminary plat has been reviewed by staff for compliance with the unified development ordinance (UDO). Staff find that the subdivision as proposed meets the standards of the UDO.

ATTACHMENTS: Staff Report, Preliminary Plat Application, Site Plan

REQUESTED ACTION: Approve the Major Subdivision Preliminary Plat.

PROPOSED MOTION: Motion to approve Deep Point Major Subdivision Preliminary Plat

SUB-25-01

STAFF REPORT
DEEP POINT MARINA
MAJOR SUBDIVISION SUB-25-01
PRELIMINARY PLAT APPLICATION

REVIEW PROCESS	
Presentation Date	June 12, 2025 Board of Aldermen
Applicant	Pelican Real Property, LLC
Property Owner	Pelican Real Property, LLC
Parcel ID:	2380000301
Project Acreage	18.93 acres
Parcel Acreage	18.93 acres
Zoning District	BD- Business District

PRELIMINARY PLAT OVERVIEW AND PROCESS

Pelican Real Property, LLC owner and applicant, requests approval of a Major Subdivision Preliminary Plat for Deep Point Marina, an existing marina with infrastructure and access. This application is for the division of land only and does not include any proposed development. Per Section 2.8 of the UDO, no land within the city's jurisdiction shall be subdivided, combined, or re-subdivided until a plat thereof has been approved.

A major subdivision preliminary plat review is required for this proposed division of land since it does not meet the definition of either an exempt plat or minor subdivision per NCGS 160D-802 or as outlined in the city's UDO.

Per Section 2.8.E of the City of Southport Unified Development Ordinance, the Planning Board shall review the proposal and transmit a formal recommendation to the Board of Aldermen. The Board of Aldermen is the final decision maker on all Preliminary Plat Subdivisions within the City of Southport.

LOCATION AND SITE DESCRIPTION

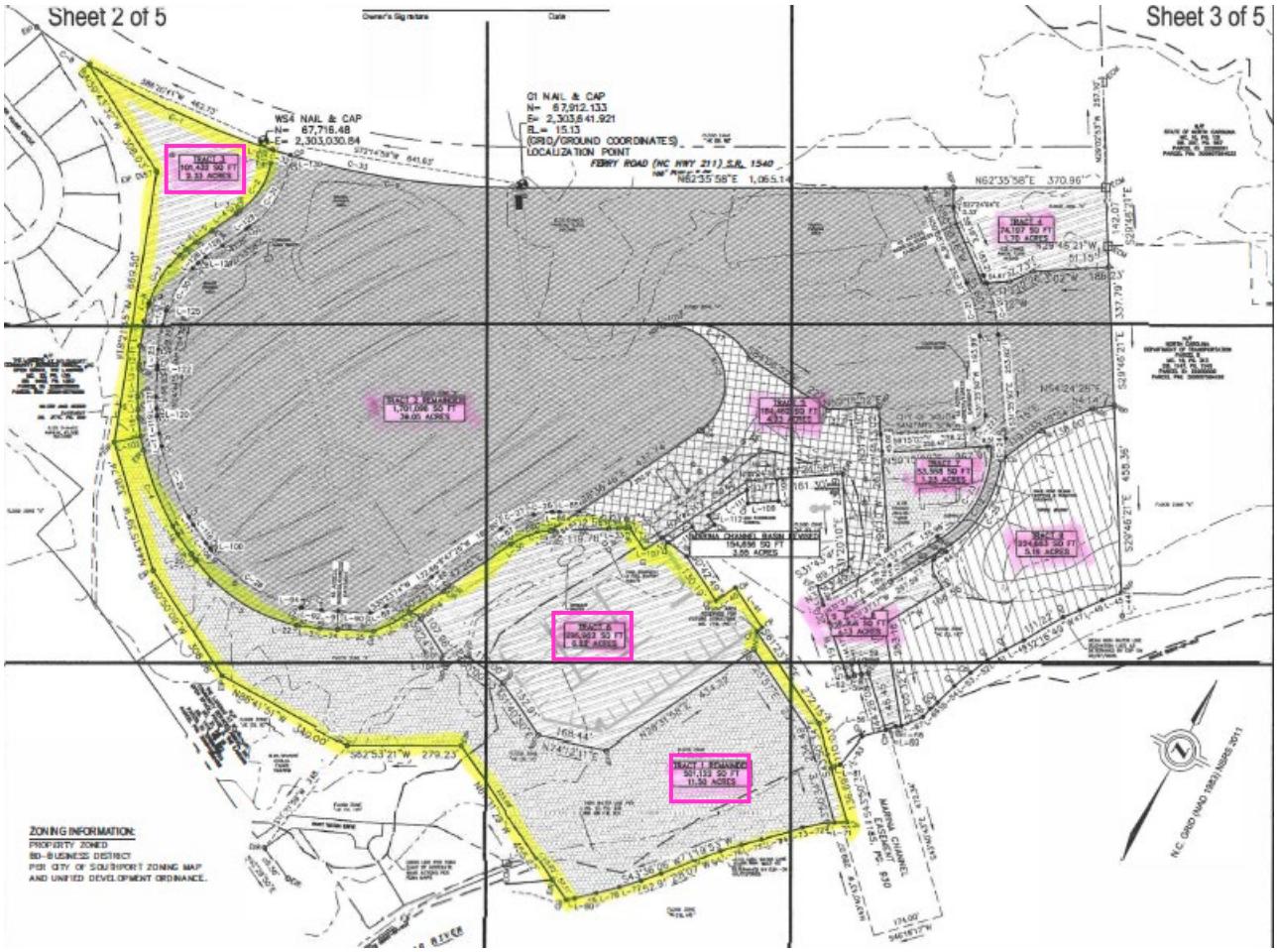
The subject property is located at 1301 Ferry Road and is adjacent to the NCDOT Southport-Fort Fisher Ferry terminal and the Landing Subdivision. The Property is zoned Business District (BD) and further identified by Brunswick County Parcel ID 2380000301.

SUB-25-01

PRELIMINARY PLAT PROPOSAL

Deep Point Marina received Planned Building Group development approval in 2007 to combine the Bald Head Island passenger and contractor facilities into one main ferry terminal. The development approval includes all required UDO standards and site improvements: setbacks, height, parking, ingress, egress, utilities, sewer/water, stormwater, signage, landscaping, etc. The infrastructure and facilities exist today. There was also an exempt plat review in 2020 to separate the parcel into two (2) parcels considered in separate preliminary plat applications.

As mentioned previously, the subdivision request is only for land, as all infrastructure and required improvements are already installed. Any future development will require an amendment to a major site plan as outlined in the UDO. This proposal is to subdivide Parcel Number 2380000301 into three (3) separate parcels. The proposed parcels are within the yellow highlighted area on the diagram below, labeled Tract 1, Tract 3, and Tract 6.



SUB-25-01

PLANNING BOARD RECOMMENDATION

The Planning Board recommends **approval** of the major subdivision preliminary plat in accordance with the standards and processes laid out within the City of Southport Unified Development Ordinance.

Attachments:

1) Application
2) Preliminary Plat

SUB-25-01

Major Subdivision Preliminary Plat Application

City of Southport, North Carolina

1029 N. Howe St, Southport NC 28461
www.southportnc.org

Planning & Inspections
Phone 910-457-7961 Fax 910-457-7957

For Staff Use Only

PERMIT No. SUB-25-01 **FEE: $** 1300 — **Date Received:** 4/16/25

Proposed/Approved Name of Development: Deep Point Ferry Terminal - Deep Point Marina

Applicant's Name: Pelican Real Property, LLC

Mailing Address: PO Box 10637 **City:** Southport

State: NC **Zip Code:** 28461 **Phone:** (910) 457-7358

Email: cpaul@bhisland.com and jbiggs@bhisland.com

Location of the property: 1301 Ferry Road, Southport, NC 28461

Parcel No.: 2380000301 **Overall Acreage:** 18.93 **Number of lots (include remnant):** 3

Tracts: 3 – 6 - 1 on subdivision map 1 of 5

Property Owner's Name: Pelican Real Property, LLC

Address of Owner: PO Box 10637 **Phone:** (910) 457-7358

City: Southport **State:** NC **Zip Code:** 28461

Email: cpaul@bhisland.com and jbiggs@bhisland.com

Surveyor: Kenneth Knott **Registration #:** L-5353

Mailing Address: 211 Racine Drive, Suite 101 **City:** Wilmington

State: NC **Zip Code:** 28403

Phone: (434) 546-6337 **Email:** kknott@espassociates.com

A Major Subdivision Preliminary Plat Application is required for Subdivisions and/or divisions of land not qualifying as exempt or as a minor subdivision.

Submission Requirements for a Major Subdivision Preliminary Plat Application are found in Appendix A.1 of the Southport UDO.

A Major Preliminary Plat submitted to the city of Southport shall include the following required certificates:

- [x] Certificate of Survey and Accuracy
- [x] Certification of Board of Aldermen Approval
- [x] Certificate of Purpose of Plat

Pelican Real Property, LLC

Signature (Owner or Authorized Applicant) — Date: April 16, 2025

Charles A. Paul, III
Chief Executive Officer & Manager

APPROVED BY:

Maureen Meehan — Date: 5/8/2025

UDO Administrator

City Of Southport
1029 N. Howe St
Southport, NC 28461
(910) 457-7900

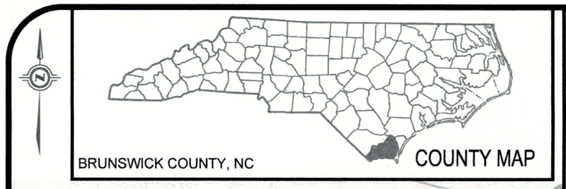
Receipt: 00201181
Date: 05/09/2025 04:48 PM
ktooley

PELICAN REAL PROPERTY LLC,

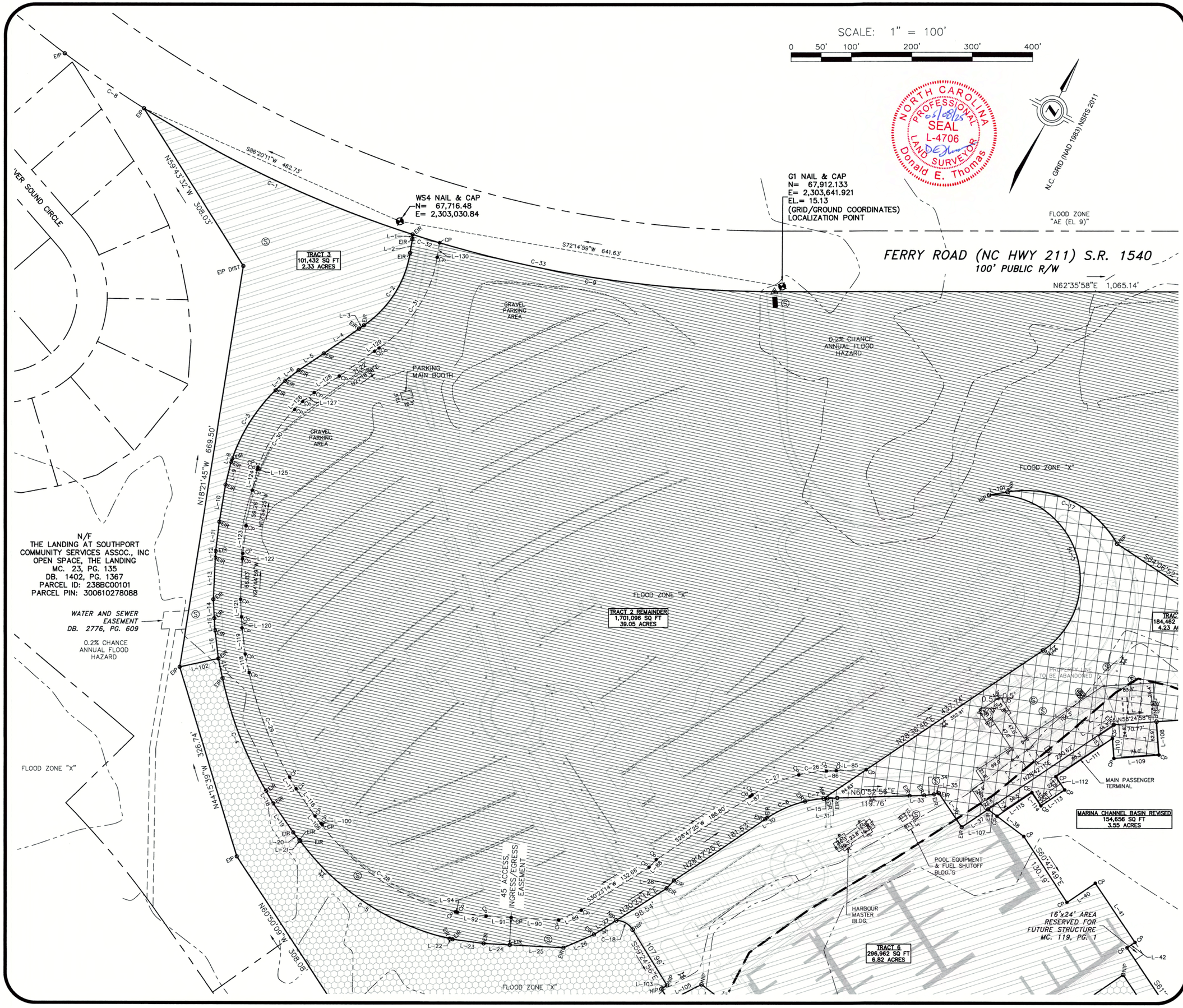
Planning Zoning Planning Zoning Fees SUB-25-01		1,300.00
Total		1,300.00
Check	010023	1,300.00
Change		0.00

Balance Remaining:
$0.00

Have a nice day!
Visit us at cityofsouthport.com



SITE
Ferry Rd SW
Brunswick River
Brunswick R
Fields Woods Ln
Fields Woods Ln
Hampton Pl
Hampton Pl
Hampton Pl



PROFESSIONAL LAND SURVEYING SERVICES BY:

ESP ASSOCIATES, INC

SUBSURFACE . HYDROGRAPHIC . MOBILE . GEOMATICS

211 Racine Drive, Suite 101
Wilmington, North Carolina 28403
(910) 444-3899 / www.espassociates.com / License # F-1407

SUBDIVISION MAP OF:

DEEP POINT MARINA,

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PARCEL ID: 2380000301, PARCEL PIN: 300610463960, (1299 FERRY ROAD),
TRACT 2 - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000302, PARCEL PIN: 300610375277, (1301 FERRY ROAD),
& MARINA CHANNEL BASIN - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 23800003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

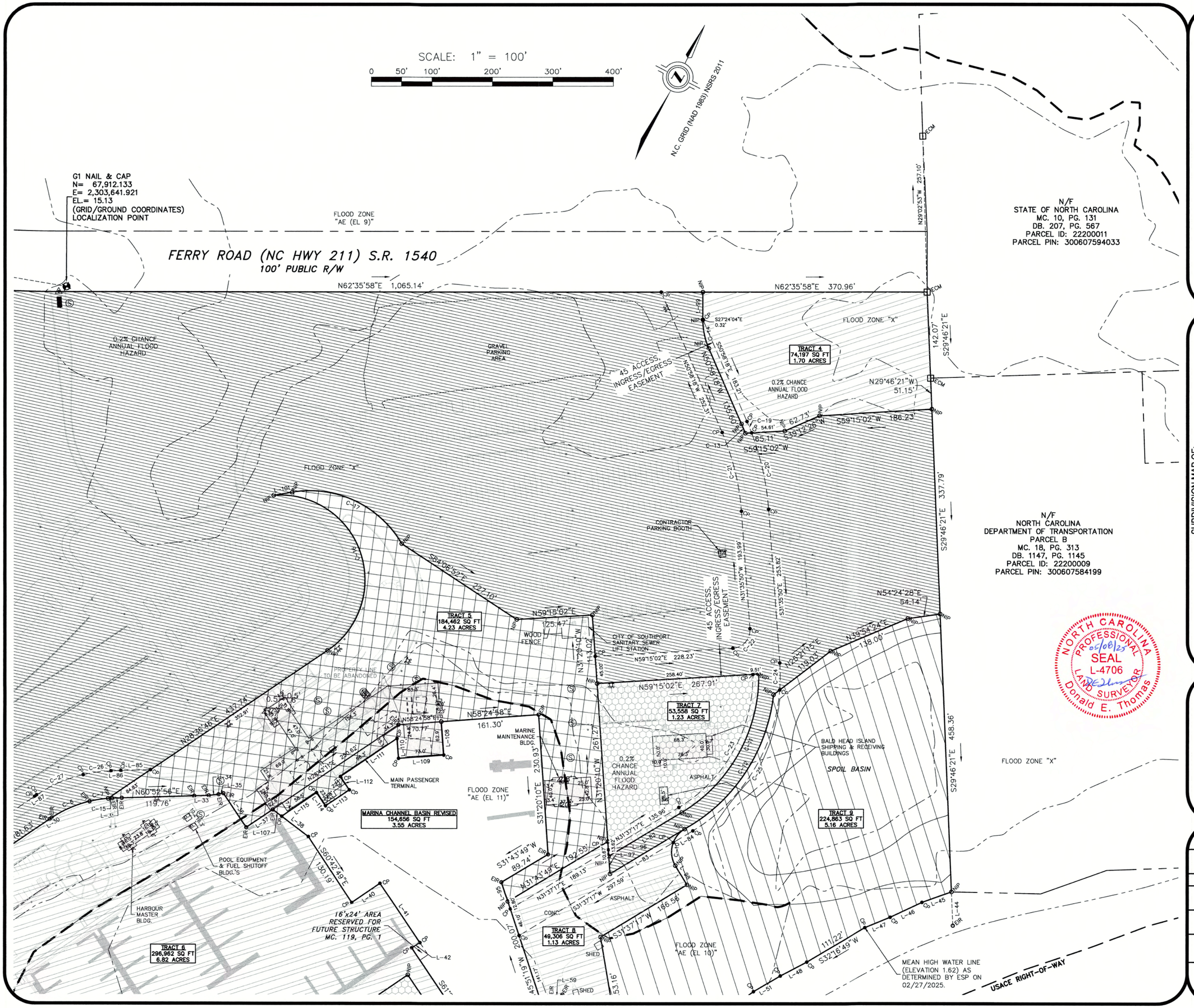
DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
2 of 5

Recorded in the Brunswick County Registry at Map Book _____ , Page _____



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DATE	SCALE
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D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
3 of 5

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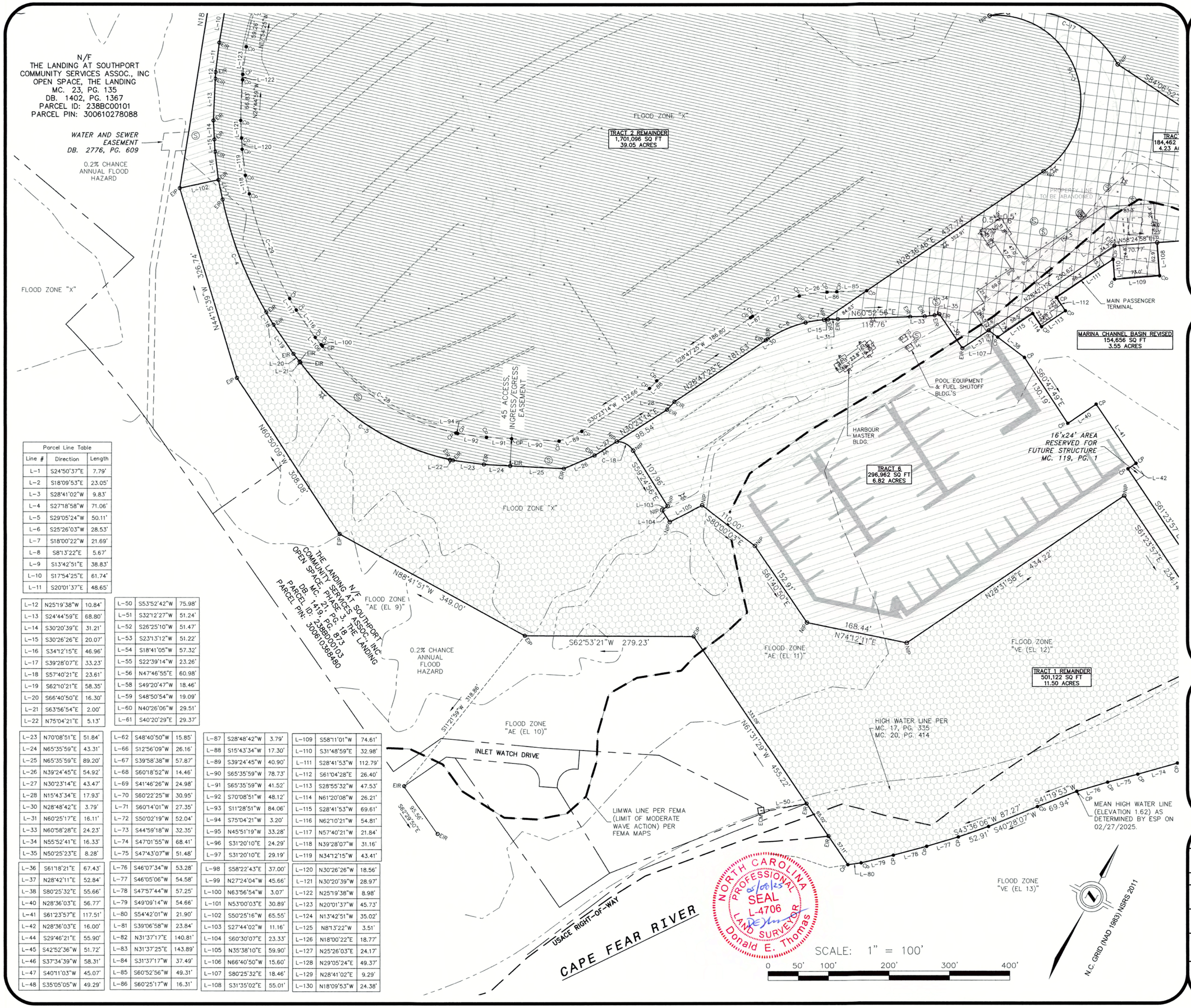

Parcel Line Table		
Line #	Direction	Length
L-1	S24°50'37"E	7.79'
L-2	S18°09'53"E	23.05'
L-3	S28°41'02"W	9.83'
L-4	S27°18'58"W	71.06'
L-5	S29°05'24"W	50.11'
L-6	S25°26'03"W	28.53'
L-7	S18°00'22"W	21.69'
L-8	S8°13'22"E	5.67'
L-9	S13°42'51"E	38.83'
L-10	S17°54'25"E	61.74'
L-11	S20°01'37"E	48.65'
L-12	N25°19'38"W	10.84'
L-13	S24°44'59"E	68.80'
L-14	S30°20'39"E	31.21'
L-15	S30°26'26"E	20.07'
L-16	S34°12'15"E	46.96'
L-17	S39°28'07"E	33.23'
L-18	S57°40'21"E	23.61'
L-19	S62°10'21"E	58.35'
L-20	S66°40'50"E	16.30'
L-21	S63°56'54"E	2.00'
L-22	N75°04'21"E	5.13'
L-23	N70°08'51"E	51.84'
L-24	N65°35'59"E	43.31'
L-25	N65°35'59"E	89.20'
L-26	N39°24'45"E	54.92'
L-27	N30°23'14"E	43.47'
L-28	N15°43'34"E	17.93'
L-30	N28°48'42"E	3.79'
L-31	N60°25'17"E	16.11'
L-33	N60°58'28"E	24.23'
L-34	N55°52'41"E	16.33'
L-35	N50°25'23"E	8.28'
L-36	S61°18'21"E	67.43'
L-37	N28°42'11"E	52.84'
L-38	S80°25'32"E	55.66'
L-40	N28°36'03"E	56.77'
L-41	S61°23'57"E	117.51'
L-42	N28°36'03"E	16.00'
L-44	S29°46'21"E	55.90'
L-45	S42°52'36"W	51.72'
L-46	S37°34'39"W	58.31'
L-47	S40°11'03"W	45.07'
L-48	S35°05'05"W	49.29'
L-50	S53°52'42"W	75.98'
L-51	S32°12'27"W	51.24'
L-52	S26°25'10"W	51.47'
L-53	S23°13'12"W	51.22'
L-54	S18°41'05"W	57.32'
L-55	S22°39'14"W	23.26'
L-56	N47°46'55"E	60.98'
L-58	S49°20'47"W	18.46'
L-59	S48°50'54"W	19.09'
L-60	N40°26'06"W	29.51'
L-61	S40°20'29"E	29.37'
L-62	S48°40'50"W	15.85'
L-66	S12°56'09"W	26.16'
L-67	S39°58'38"W	57.87'
L-68	S60°18'52"W	14.46'
L-69	S41°46'26"W	24.98'
L-70	S60°22'25"W	30.95'
L-71	S60°14'01"W	27.35'
L-72	S50°02'19"W	52.04'
L-73	S44°59'18"W	32.35'
L-74	S47°01'55"W	68.41'
L-75	S47°43'07"W	51.48'
L-76	S46°07'34"W	53.28'
L-77	S46°05'06"W	54.58'
L-78	S47°57'44"W	57.25'
L-79	S49°09'14"W	54.66'
L-80	S54°42'01"W	21.90'
L-81	S39°06'58"W	23.84'
L-82	N31°37'17"E	140.81'
L-83	N31°37'25"E	143.89'
L-84	S31°37'17"W	37.49'
L-85	S60°52'56"W	49.31'
L-86	S60°25'17"W	16.31'
L-87	S28°48'42"W	3.79'
L-88	S15°43'34"W	17.30'
L-89	S39°24'45"W	40.90'
L-90	S65°35'59"W	78.73'
L-91	S65°35'59"W	41.52'
L-92	S70°08'51"W	48.12'
L-93	S11°28'51"W	84.06'
L-94	S75°04'21"W	3.20'
L-95	N45°51'19"W	33.28'
L-96	S31°20'10"E	24.29'
L-97	S31°20'10"E	29.19'
L-98	S58°22'43"E	37.00'
L-99	N27°24'04"W	45.66'
L-100	N63°56'54"W	3.07'
L-101	N53°00'03"E	30.89'
L-102	S50°25'16"W	65.55'
L-103	S27°44'02"W	11.16'
L-104	S60°30'07"E	23.33'
L-105	N35°38'10"E	59.90'
L-106	N66°40'50"W	15.60'
L-107	S80°25'32"E	18.46'
L-108	S31°35'02"E	55.01'
L-109	S58°11'01"W	74.61'
L-110	S31°48'59"E	32.98'
L-111	S28°41'53"W	112.79'
L-112	S61°04'28"E	26.40'
L-113	S28°55'32"W	47.53'
L-114	N61°20'08"W	26.21'
L-115	S28°41'53"W	69.61'
L-116	N62°10'21"W	54.81'
L-117	N57°40'21"W	21.84'
L-118	N39°28'07"W	31.16'
L-119	N34°12'15"W	43.41'
L-120	N30°26'26"W	18.56'
L-121	N30°20'39"W	28.97'
L-122	N25°19'38"W	8.98'
L-123	N20°01'37"W	45.73'
L-124	N13°42'51"W	35.02'
L-125	N8°13'22"W	3.51'
L-126	N18°00'22"E	18.77'
L-127	N25°26'03"E	24.17'
L-128	N29°05'24"E	49.37'
L-129	N28°41'02"E	9.29'
L-130	N18°09'53"W	24.38'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 05/08/25

PROFESSIONAL LAND SURVEYING SERVICES BY:

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& MARINA CHANNEL BASIN - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

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SUBDIVISION MAP

SHEET
4 of 5

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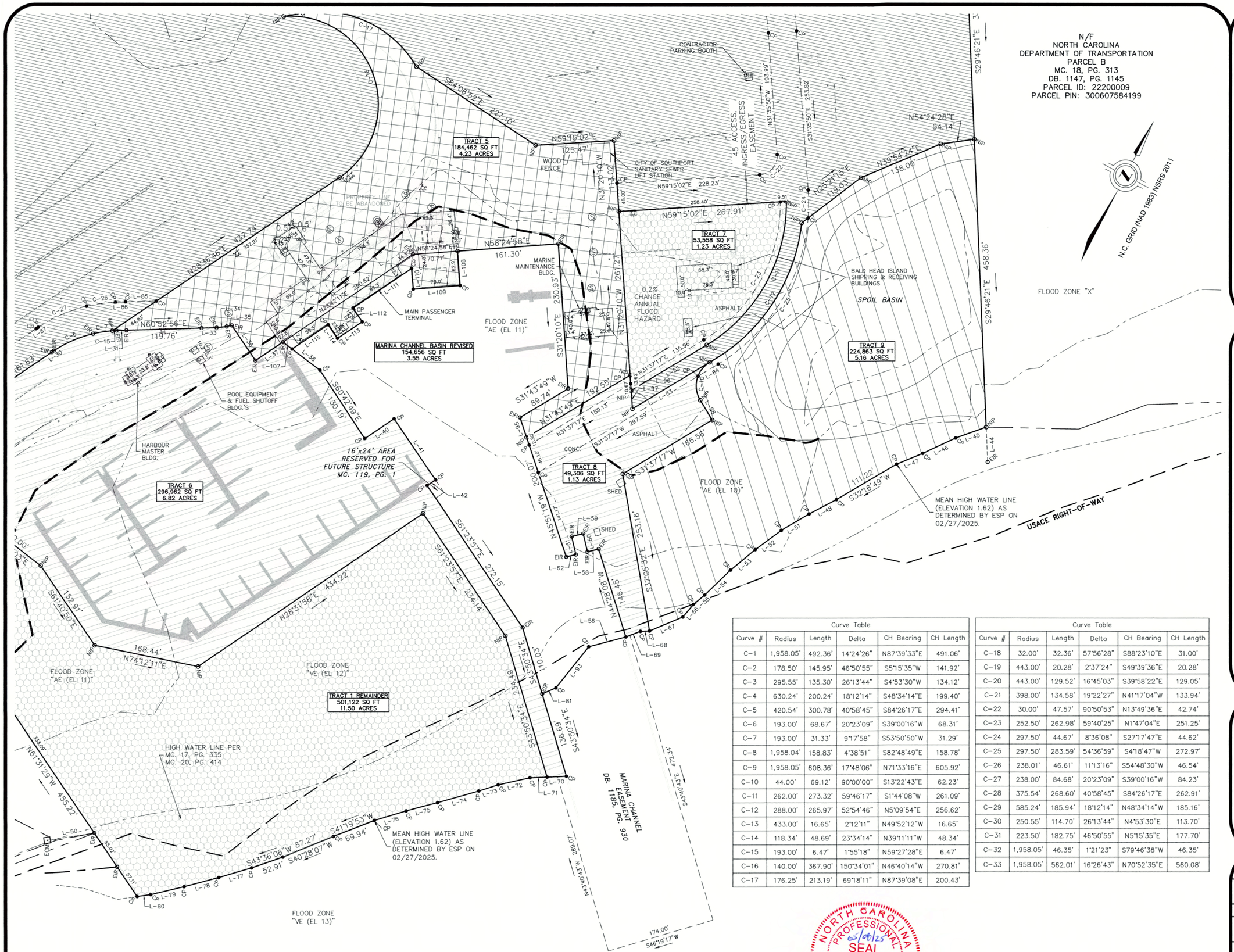

Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-1	1,958.05'	492.36'	14°24'26"	N87°39'33"E	491.06'
C-2	178.50'	145.95'	46°50'55"	S5°15'35"W	141.92'
C-3	295.55'	135.30'	26°13'44"	S4°53'30"W	134.12'
C-4	630.24'	200.24'	18°12'14"	S48°34'14"E	199.40'
C-5	420.54'	300.78'	40°58'45"	S84°26'17"E	294.41'
C-6	193.00'	68.67'	20°23'09"	S39°00'16"W	68.31'
C-7	193.00'	31.33'	9°17'58"	S53°50'50"W	31.29'
C-8	1,958.04'	158.83'	4°38'51"	S82°48'49"E	158.78'
C-9	1,958.05'	608.36'	17°48'06"	N71°33'16"E	605.92'
C-10	44.00'	69.12'	90°00'00"	S13°22'43"E	62.23'
C-11	262.00'	273.32'	59°46'17"	S1°44'08"W	261.09'
C-12	288.00'	265.97'	52°54'46"	N5°09'54"E	256.62'
C-13	433.00'	16.65'	2°12'11"	N49°52'12"W	16.65'
C-14	118.34'	48.69'	23°34'14"	N39°11'11"W	48.34'
C-15	193.00'	6.47'	1°55'18"	N59°27'28"E	6.47'
C-16	140.00'	367.90'	150°34'01"	N46°40'14"W	270.81'
C-17	176.25'	213.19'	69°18'11"	N87°39'08"E	200.43'

Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-18	32.00'	32.36'	57°56'28"	S88°23'10"E	31.00'
C-19	443.00'	20.28'	2°37'24"	S49°39'36"E	20.28'
C-20	443.00'	129.52'	16°45'03"	S39°58'22"E	129.05'
C-21	398.00'	134.58'	19°22'27"	N41°17'04"W	133.94'
C-22	30.00'	47.57'	90°50'53"	N13°49'36"E	42.74'
C-23	252.50'	262.98'	59°40'25"	N1°47'04"E	251.25'
C-24	297.50'	44.67'	8°36'08"	S27°17'47"E	44.62'
C-25	297.50'	283.59'	54°36'59"	S4°18'47"W	272.97'
C-26	238.01'	46.61'	11°13'16"	S54°48'30"W	46.54'
C-27	238.00'	84.68'	20°23'09"	S39°00'16"W	84.23'
C-28	375.54'	268.60'	40°58'45"	S84°26'17"E	262.91'
C-29	585.24'	185.94'	18°12'14"	N48°34'14"W	185.16'
C-30	250.55'	114.70'	26°13'44"	N4°53'30"E	113.70'
C-31	223.50'	182.75'	46°50'55"	N5°15'35"E	177.70'
C-32	1,958.05'	46.35'	1°21'23"	S79°46'38"W	46.35'
C-33	1,958.05'	562.01'	16°26'43"	N70°52'35"E	560.08'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 05/09/25

SCALE: 1" = 100'

0 50' 100' 200' 300' 400'

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MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
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DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
5 of 5

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BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Bald Head Limited, LLC and Bald Head Transportation, Inc.

ITEM/TOPIC: Deep Point Marina Major Subdivision Preliminary Plat SUB-25-02

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: At their May 15, 2025, meeting the Planning Board voted to send the Board of Aldermen a recommendation of approval for the Deep Point Marina major subdivision preliminary plat. The subject property is located at 1301 Ferry Road and is adjacent to the NCDOT Southport-Fort Fisher Ferry terminal and the Landing Subdivision. This is a subdivision of 52.6 acres into six (6) separate parcels. This proposal is for the subdivision of land with existing infrastructure, there is no other development proposed with this request.

IMPACT IF NOT APPROVED: This is an administrative development decision. General statutes state that decisions are based on the determination of facts and the application of objective standards. If the plat is disapproved, the reasons shall be set forth in writing and refer specifically to those parts of the UDO or other land development ordinances with which the plat does not comply.

DEPARTMENT HEAD COMMENTS: The attached preliminary plat has been reviewed by staff for compliance with the unified development ordinance (UDO). Staff find that the subdivision as proposed meets all required standards of the UDO.

ATTACHMENTS: Staff Report, Preliminary Plat Application, Site Plan

REQUESTED ACTION: Approve the Major Subdivision Preliminary Plat.

PROPOSED MOTION: Motion to approve Deep Point Major Subdivision Preliminary Plat

SUB-25-02

STAFF REPORT
DEEP POINT MARINA
MAJOR SUBDIVISION SUB-25-02
PRELIMINARY PLAT APPLICATION

REVIEW PROCESS	
Presentation Date	June 12, 2025 Board of Aldermen
Applicant	Bald Head Limited, LLC Bald Head Transportation, Inc.
Property Owner	Bald Head Limited, LLC
Parcel ID:	2380000302
Project Acreage	52.6 acres
Parcel Acreage	52.6 acres
Zoning District	BD- Business District

PRELIMINARY PLAT OVERVIEW AND PROCESS

Bald Head Limited, LLC and Bald Head Transportation, Inc., applicants, for owner, Bald Head Limited, LLC request approval of a Major Subdivision Preliminary Plat for Parcel 2380000302 of Deep Point Marina, an existing marina with infrastructure and access. This application is for the division of land only and does not include any proposed development. Per Section 2.8 of the UDO, no land within the city's jurisdiction shall be subdivided, combined, or re-subdivided until a plat thereof has been approved.

A major subdivision preliminary plat review is required for this proposed division of land since it does not meet the definition of either an exempt plat or minor subdivision per NCGS 160D-802 or as outlined in the city's UDO.

Per Section 2.8.E of the City of Southport Unified Development Ordinance, the Planning Board shall review the proposal and transmit a formal recommendation to the Board of Aldermen. The Board of Aldermen is the final decision maker on all Preliminary Plat Subdivisions within the City of Southport.

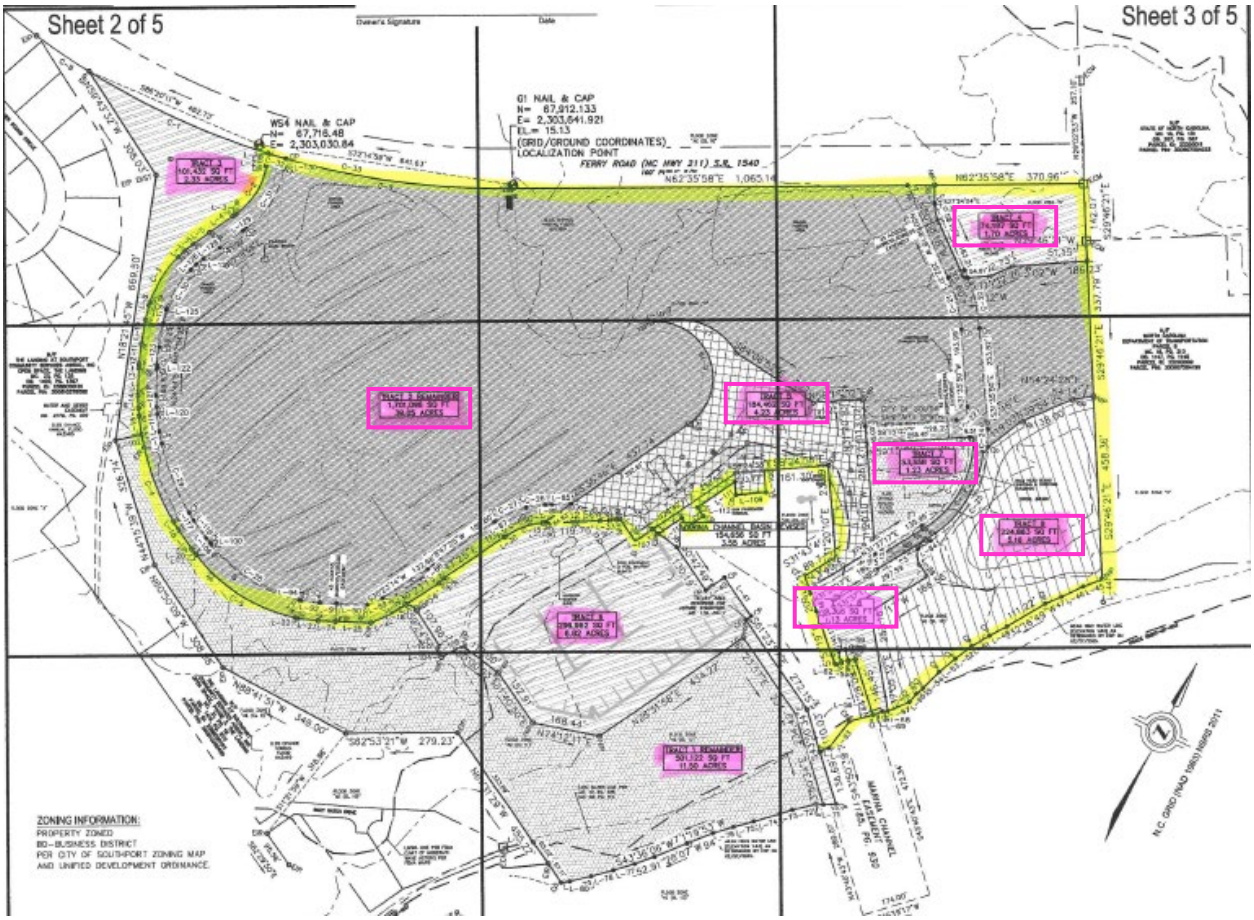
LOCATION AND SITE DESCRIPTION

The subject property is located at 1301 Ferry Road and is adjacent to the NCDOT Southport-Fort Fisher Ferry terminal and the Landing Subdivision. The Property is zoned Business District (BD) and further identified by Brunswick County Parcel ID 2380000302.

PRELIMINARY PLAT PROPOSAL

Deep Point Marina received Planned Building Group development approval in 2007 to combine the Bald Head Island passenger and contractor facilities into one main ferry terminal. The development approval includes all required UDO standards and site improvements: setbacks, height, parking, ingress, egress, utilities, sewer/water, stormwater, signage, landscaping, etc. The infrastructure and facilities exist today. There was also an exempt plat review in 2020 to separate the parcel into two (2) parcels considered in separate preliminary plat applications.

As mentioned previously, the subdivision request is only for land, as all infrastructure and required improvements are already installed. Any future development will require an amendment to a major site plan as outlined in the UDO. This proposal is to subdivide Parcel Number 2380000302 into six (6) separate parcels. The proposed parcels are within the yellow highlighted area on the diagram below, labeled Tract 2, Tract 4, Tract 5, Tract 7, Tract 8, and Tract 9.



PLANNING BOARD RECOMMENDATION

The Planning Board recommends **approval** of the major subdivision preliminary plat in accordance with the standards and processes laid out within the City of Southport Unified Development Ordinance.

Attachments:

1) Application
2) Preliminary Plat

Major Subdivision Preliminary Plat Application

City of Southport, North Carolina

1029 N. Howe St, Southport NC 28461
www.southportnc.org

Planning & Inspections
Phone 910-457-7961 Fax 910-457-7957

For Staff Use Only

PERMIT No. SUB-25-02 FEE: $ 1600 Date Received: 4/14/25

Proposed/Approved Name of Development: Deep Point Ferry Terminal - Deep Point Marina

Applicant's Name: Bald Head Island Limited, LLC (and sub. Bald Head Island Transportation, Inc.)

Mailing Address: PO Box 10637 City: Southport

State: NC Zip Code: 28461 Phone: (910) 457-7358

Email: cpaul@bhisland.com and jbiggs@bhisland.com

Location of the property: 1301 Ferry Road, Southport, NC 28461

Parcel No.: 2380000302 Overall Acreage: 52.6 Number of lots (include remnant): 6

Tracts - 2-4-5-7-8-9

Property Owner's Name: Bald Head Island Limited, LLC

Address of Owner: PO Box 10637 Phone: (910) 457-7358

City: Southport State: NC Zip Code: 28461

Email: cpaul@bhisland.com and jbiggs@bhisland.com

Surveyor: Kenneth Knott Registration #: L-5353

Mailing Address: 211 Racine Drive, Suite 101 City: Wilmington

State: NC Zip Code: 28403

Phone: (434) 546-6337 Email: kknott@espassociates.com

A Major Subdivision Preliminary Plat Application is required for Subdivisions and/or divisions of land not qualifying as exempt or as a minor subdivision.

Submission Requirements for a Major Subdivision Preliminary Plat Application are found in Appendix A.1 of the Southport UDO.

A Major Preliminary Plat submitted to the city of Southport shall include the following required certificates:

- [x] Certificate of Survey and Accuracy
- [x] Certification of Board of Aldermen Approval
- [x] Certificate of Purpose of Plat

Bald Head Island Limited, LLC

Signature (Owner or Authorized Applicant) — Date: April 16, 2025

Charles A. Paul, III
Chief Executive Officer & Manager

APPROVED BY:

UDO Administrator — Date: 5/8/2025

City Of Southport
1029 N. Howe St
Southport, NC 28461
(910) 457-7900

Receipt: 00201180
Date: 05/09/2025 04:47 PM
ktooley

BHI LIMITED LLC,

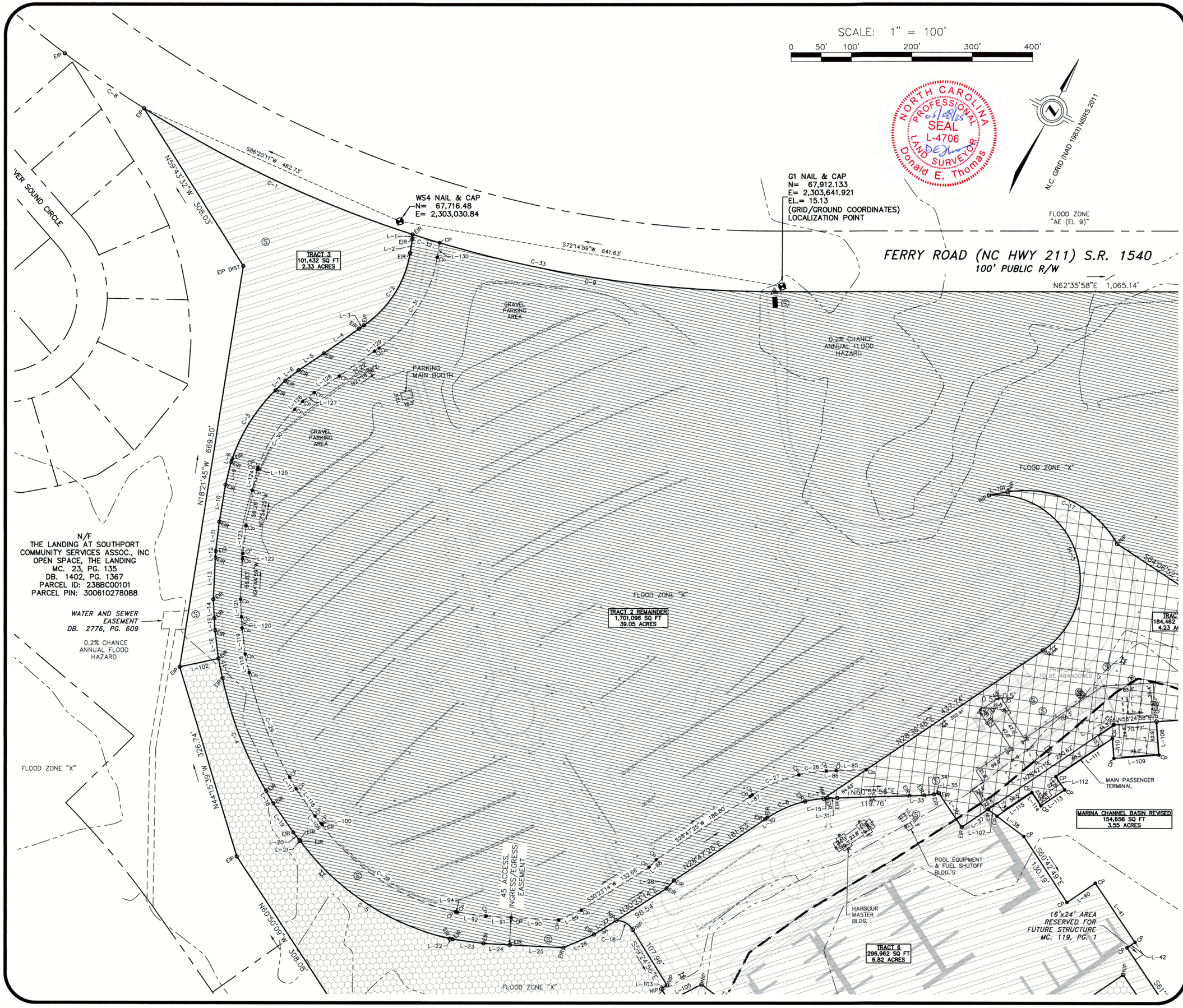
Planning Zoning Planning Zoning Fees SUB-25-02		1,600.00
Total		1,600.00
Check	122863	1,600.00
Change		0.00

Balance Remaining:
$0.00

DP SUBDIVISION

Have a nice day!
Visit us at cityofsouthport.com

SITE
Ferry Rd SW
Brunswick Forest Pkwy
Brunswick Forest Cir
Fields Woods Ln
Hedgerow Ln
Fields Woods Ln
Fields Woods Ln
Hedgerow Ln
Hedgerow Ln
Hedgerow



PROFESSIONAL LAND SURVEYING SERVICES BY:

ESP ASSOCIATES, INC

SUBSURFACE . HYDROGRAPHIC . MOBILE . GEOMATICS

211 Racine Drive, Suite 101
Wilmington, North Carolina 28403
(910) 444-3899 / www.espassociates.com / License # F-1407

SUBDIVISION MAP OF:

DEEP POINT MARINA,

TRACT 1 - PROPERTY OF "PELICAN REAL PROPERTY, LLC" (DB 5155, PG 34)
PARCEL ID: 2380000301, PARCEL PIN: 300610463960, (1299 FERRY ROAD),
TRACT 2 - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000302, PARCEL PIN: 300610375277, (1301 FERRY ROAD),
& MARINA CHANNEL BASIN - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 23800003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
2 of 5

Recorded in the Brunswick County Registry at Map Book _____ , Page _____

SCALE: 1" = 100'

0 50' 100' 200' 300' 400'

N.C. GRID (NAD 1983) NSRS 2011

G1 NAIL & CAP
N= 67,912.133
E= 2,303,641.921
EL.= 15.13
(GRID/GROUND COORDINATES)
LOCALIZATION POINT

FERRY ROAD (NC HWY 211) S.R. 1540
100' PUBLIC R/W

FLOOD ZONE "AE (EL 9)"

N62°35'58"E 1,065.14'

N62°35'58"E 370.96'

N/F
STATE OF NORTH CAROLINA
MC. 10, PG. 131
DB. 207, PG. 567
PARCEL ID: 22200011
PARCEL PIN: 300607594033

N29°02'53"W 257.10'

S29°46'21"E 142.07'

N29°46'21"W 51.15'

S59°15'02"W 186.23'

S29°46'21"E 337.79'

0.2% CHANCE ANNUAL FLOOD HAZARD

GRAVEL PARKING AREA

45' ACCESS, INGRESS/EGRESS EASEMENT

FLOOD ZONE "X"

TRACT 4
74,197 SQ FT
1.70 ACRES

S27°24'04"E 0.32'

S50°56'18"E 183.21'

N50°56'18"W 252.51'

N60°58'18"W 135.50'

N59°12'26"W 62.73'

S59°15'02"W 65.11'

C-19 54.61'

FLOOD ZONE "X"

CONTRACTOR PARKING BOOTH

N/F
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PARCEL B
MC. 18, PG. 313
DB. 1147, PG. 1145
PARCEL ID: 22200009
PARCEL PIN: 300607584199

N54°24'28"E 54.14'

N39°54'54"E 138.00'

N25°21'15"E 119.01'

S64°06'52"E 297.10'

N59°15'02"E 125.47'

TRACT 5
184,462 SQ FT
4.23 ACRES

WOOD FENCE

CITY OF SOUTHPORT SANITARY SEWER LIFT STATION

45' ACCESS, INGRESS/EGRESS EASEMENT

N31°35'50"W 193.99'

S31°35'50"E 253.82'

N31°26'10"W 143.02'

N59°15'02"E 228.23'

N59°15'02"E 258.40'

N59°15'02"E 267.91'

TRACT 7
53,558 SQ FT
1.23 ACRES

PROPERTY LINE TO BE ABANDONED

N28°36'46"E 437.74'

N58°24'58"E 161.30'

N58°24'58"E 70.77'

MARINE MAINTENANCE BLDG.

N31°26'10"W 261.27'

S31°20'10"E 230.93'

0.2% CHANCE ANNUAL FLOOD HAZARD

BALD HEAD ISLAND SHIPPING & RECEIVING BUILDINGS

SPOIL BASIN

ASPHALT

FLOOD ZONE "X"

S29°46'21"E 458.36'

N60°52'56"E 119.76'

MAIN PASSENGER TERMINAL

FLOOD ZONE "AE (EL 11)"

MARINA CHANNEL BASIN REVISED
154,656 SQ FT
3.55 ACRES

TRACT 9
224,863 SQ FT
5.16 ACRES

S31°43'49"W 89.74'

N31°43'49"E 189.13'

N31°37'17"E 135.96'

S31°37'17"W 297.59'

S31°37'17"W 166.56'

POOL EQUIPMENT & FUEL SHUTOFF BLDG.'S

HARBOUR MASTER BLDG.

S60°42'49"E 150.19'

16'x24' AREA RESERVED FOR FUTURE STRUCTURE MC. 119, PG. 1

TRACT 6
296,962 SQ FT
6.82 ACRES

TRACT 8
49,306 SQ FT
1.13 ACRES

CONC.

SHED

FLOOD ZONE "AE (EL 10)"

S22°16'49"W 111.22'

MEAN HIGH WATER LINE (ELEVATION 1.62) AS DETERMINED BY ESP ON 02/27/2025.

USACE RIGHT-OF-WAY

S31°37'17"W 53.16'

S45°19'W 200.07'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 05/08/25

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CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
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REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
3 of 5

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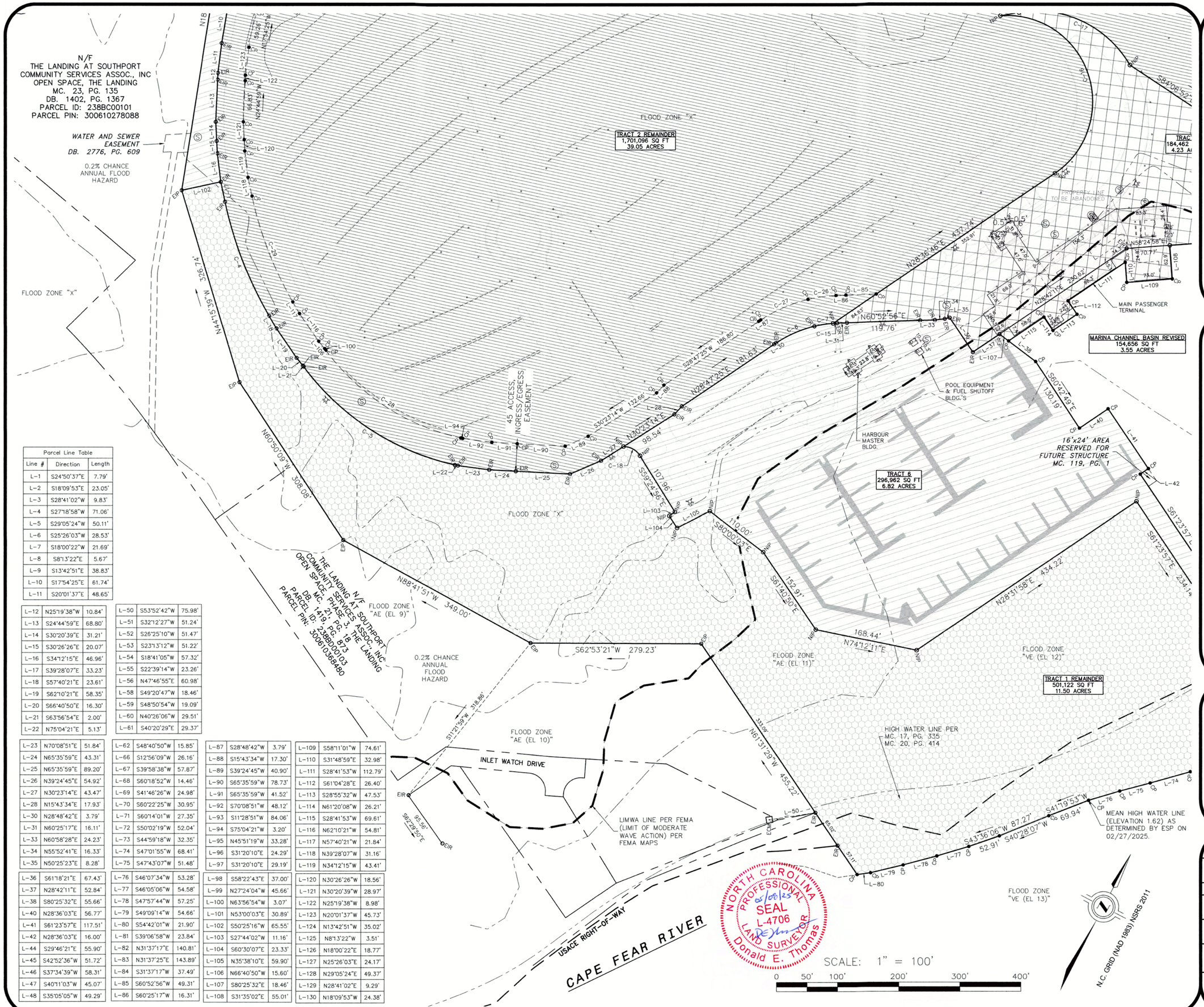

Parcel Line Table		
Line #	Direction	Length
L-1	S24°50'37"E	7.79'
L-2	S18°09'53"E	23.05'
L-3	S28°41'02"W	9.83'
L-4	S27°18'58"W	71.06'
L-5	S29°05'24"W	50.11'
L-6	S25°26'03"W	28.53'
L-7	S18°00'22"W	21.69'
L-8	S8°13'22"E	5.67'
L-9	S13°42'51"E	38.83'
L-10	S17°54'25"E	61.74'
L-11	S20°01'37"E	48.65'
L-12	N25°19'38"W	10.84'
L-13	S24°44'59"E	68.80'
L-14	S30°20'39"E	31.21'
L-15	S30°26'26"E	20.07'
L-16	S34°12'15"E	46.96'
L-17	S39°28'07"E	33.23'
L-18	S57°40'21"E	23.61'
L-19	S62°10'21"E	58.35'
L-20	S66°40'50"E	16.30'
L-21	S63°56'54"E	2.00'
L-22	N75°04'21"E	5.13'
L-23	N70°08'51"E	51.84'
L-24	N65°35'59"E	43.31'
L-25	N65°35'59"E	89.20'
L-26	N39°24'45"E	54.92'
L-27	N30°23'14"E	43.47'
L-28	N15°43'34"E	17.93'
L-30	N28°48'42"E	3.79'
L-31	N60°25'17"E	16.11'
L-33	N60°58'28"E	24.23'
L-34	N55°52'41"E	16.33'
L-35	N50°25'23"E	8.28'
L-36	S61°18'21"E	67.43'
L-37	N28°42'11"E	52.84'
L-38	S80°25'32"E	55.66'
L-40	N28°36'03"E	56.77'
L-41	S61°23'57"E	117.51'
L-42	N28°36'03"E	16.00'
L-44	S29°46'21"E	55.90'
L-45	S42°52'36"W	51.72'
L-46	S37°34'39"W	58.31'
L-47	S40°11'03"W	45.07'
L-48	S35°05'05"W	49.29'
L-50	S53°52'42"W	75.98'
L-51	S32°12'27"W	51.24'
L-52	S26°25'10"W	51.47'
L-53	S23°13'12"W	51.22'
L-54	S18°41'05"W	57.32'
L-55	S22°39'14"W	23.26'
L-56	N47°46'55"E	60.98'
L-58	S49°20'47"W	18.46'
L-59	S48°50'54"W	19.09'
L-60	N40°26'06"W	29.51'
L-61	S40°20'29"E	29.37'
L-62	S48°40'50"W	15.85'
L-66	S12°56'09"W	26.16'
L-67	S39°58'38"W	57.87'
L-68	S60°18'52"W	14.46'
L-69	S41°46'26"W	24.98'
L-70	S60°22'25"W	30.95'
L-71	S60°14'01"W	27.35'
L-72	S50°02'19"W	52.04'
L-73	S44°59'18"W	32.35'
L-74	S47°01'55"W	68.41'
L-75	S47°43'07"W	51.48'
L-76	S46°07'34"W	53.28'
L-77	S46°05'06"W	54.58'
L-78	S47°57'44"W	57.25'
L-79	S49°09'14"W	54.66'
L-80	S54°42'01"W	21.90'
L-81	S39°06'58"W	23.84'
L-82	N31°37'17"E	140.81'
L-83	N31°37'25"E	143.89'
L-84	S31°37'17"W	37.49'
L-85	S60°52'56"W	49.31'
L-86	S60°25'17"W	16.31'
L-87	S28°48'42"W	3.79'
L-88	S15°43'34"W	17.30'
L-89	S39°24'45"W	40.90'
L-90	S65°35'59"W	78.73'
L-91	S65°35'59"W	41.52'
L-92	S70°08'51"W	48.12'
L-93	S11°28'51"W	84.06'
L-94	S75°04'21"W	3.20'
L-95	N45°51'19"W	33.28'
L-96	S31°20'10"E	24.29'
L-97	S31°20'10"E	29.19'
L-98	S58°22'43"E	37.00'
L-99	N27°24'04"W	45.66'
L-100	N63°56'54"W	3.07'
L-101	N53°00'03"E	30.89'
L-102	S50°25'16"W	65.55'
L-103	S27°44'02"W	11.16'
L-104	S60°30'07"E	23.33'
L-105	N35°38'10"E	59.90'
L-106	N66°40'50"W	15.60'
L-107	S80°25'32"E	18.46'
L-108	S31°35'02"E	55.01'
L-109	S58°11'01"W	74.61'
L-110	S31°48'59"E	32.98'
L-111	S28°41'53"W	112.79'
L-112	S61°04'28"E	26.40'
L-113	S28°55'32"W	47.53'
L-114	N61°20'08"W	26.21'
L-115	S28°41'53"W	69.61'
L-116	N62°10'21"W	54.81'
L-117	N57°40'21"W	21.84'
L-118	N39°28'07"W	31.16'
L-119	N34°12'15"W	43.41'
L-120	N30°26'26"W	18.56'
L-121	N30°20'39"W	28.97'
L-122	N25°19'38"W	8.98'
L-123	N20°01'37"W	45.73'
L-124	N13°42'51"W	35.02'
L-125	N8°13'22"W	3.51'
L-126	N18°00'22"E	18.77'
L-127	N25°26'03"E	24.17'
L-128	N29°05'24"E	49.37'
L-129	N28°41'02"E	9.29'
L-130	N18°09'53"W	24.38'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 05/08/25

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PARCEL ID: 2380000003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
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BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
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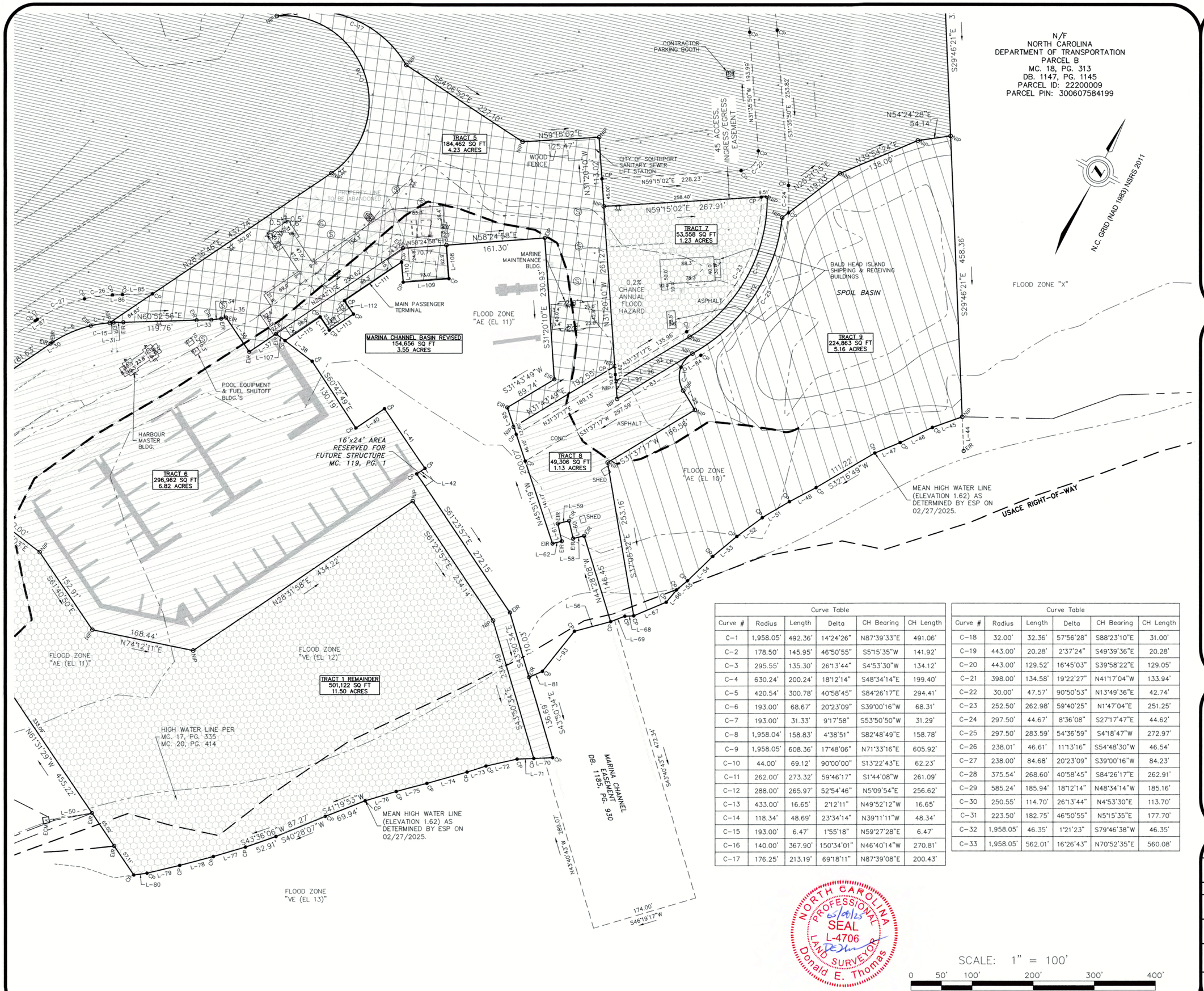

Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-1	1,958.05'	492.36'	14°24'26"	N87°39'33"E	491.06'
C-2	178.50'	145.95'	46°50'55"	S5°15'35"W	141.92'
C-3	295.55'	135.30'	26°13'44"	S4°53'30"W	134.12'
C-4	630.24'	200.24'	18°12'14"	S48°34'14"E	199.40'
C-5	420.54'	300.78'	40°58'45"	S84°26'17"E	294.41'
C-6	193.00'	68.67'	20°23'09"	S39°00'16"W	68.31'
C-7	193.00'	31.33'	9°17'58"	S53°50'50"W	31.29'
C-8	1,958.04'	158.83'	4°38'51"	S82°48'49"E	158.78'
C-9	1,958.05'	608.36'	17°48'06"	N71°33'16"E	605.92'
C-10	44.00'	69.12'	90°00'00"	S13°22'43"E	62.23'
C-11	262.00'	273.32'	59°46'17"	S1°44'08"W	261.09'
C-12	288.00'	265.97'	52°54'46"	N5°09'54"E	256.62'
C-13	433.00'	16.65'	2°12'11"	N49°52'12"W	16.65'
C-14	118.34'	48.69'	23°34'14"	N39°11'11"W	48.34'
C-15	193.00'	6.47'	1°55'18"	N59°27'28"E	6.47'
C-16	140.00'	367.90'	150°34'01"	N46°40'14"W	270.81'
C-17	176.25'	213.19'	69°18'11"	N87°39'08"E	200.43'

Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-18	32.00'	32.36'	57°56'28"	S88°23'10"E	31.00'
C-19	443.00'	20.28'	2°37'24"	S49°39'36"E	20.28'
C-20	443.00'	129.52'	16°45'03"	S39°58'22"E	129.05'
C-21	398.00'	134.58'	19°22'27"	N41°17'04"W	133.94'
C-22	30.00'	47.57'	90°50'53"	N13°49'36"E	42.74'
C-23	252.50'	262.98'	59°40'25"	N1°47'04"E	251.25'
C-24	297.50'	44.67'	8°36'08"	S27°17'47"E	44.62'
C-25	297.50'	283.59'	54°36'59"	S4°18'47"W	272.97'
C-26	238.01'	46.61'	11°13'16"	S54°48'30"W	46.54'
C-27	238.00'	84.68'	20°23'09"	S39°00'16"W	84.23'
C-28	375.54'	268.60'	40°58'45"	S84°26'17"E	262.91'
C-29	585.24'	185.94'	18°12'14"	N48°34'14"W	185.16'
C-30	250.55'	114.70'	26°13'44"	N4°53'30"E	113.70'
C-31	223.50'	182.75'	46°50'55"	N5°15'35"E	177.70'
C-32	1,958.05'	46.35'	1°21'23"	S79°46'38"W	46.35'
C-33	1,958.05'	562.01'	16°26'43"	N70°52'35"E	560.08'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 05/09/25

SCALE: 1" = 100'

0 50' 100' 200' 300' 400'

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PARCEL ID: 23800003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
5 of 5

Recorded in the Brunswick County Registry at Map Book _____ , Page _____

BOARD OF ALDERMEN
AGENDA ITEM SUMMARY

DATE: 06/12/2025 **DEPARTMENT: Development Services**

PRESENTED BY: Maureen Meehan, Planning Services Director

ITEM SPONSORED BY: Development Services Department

ITEM/TOPIC: Final Plat – Deep Point Marina SUB-25-01 & SUB-25-02

COST: N/A **BUDGET LINE ITEM: N/A**

JUSTIFICATION: In accordance with the Unified Development Ordinance and the adopted major subdivision process, Deep Point Marina is requesting the approval of a Final Plat for Tracts 1-9 on existing Parcels 2380000301 and 2380000302.

IMPACT IF NOT APPROVED: A Final Plat is an administrative approval, and the request is in conformance with all applicable standards as well as the approved Preliminary Plat. If not approved, the applicant could reapply for Final Plat or appeal to Superior Court.

DEPARTMENT HEAD COMMENTS: The preliminary plats for SUB-25-01 and SUB-25-02 are the subdivision of existing developed parcels. All the infrastructure is installed, and the property is open to the public. The request conforms to all applicable standards, and it is deserving of approval.

ATTACHMENTS: Memorandum, Proposed Final Plat

REQUESTED ACTION: Review and approval of the Final Plat for Deep Point Marina.

PROPOSED MOTION: A motion to approve the Final Plat for Deep Point Marina SUB-25-01 and SUB-25-02 based on conformance with the approved Preliminary Plats and with the applicable standards of the City of Southport Unified Development Ordinance.

MEMORANDUM

To: Mayor Richard Alt and Members of the Board of Aldermen
From: Maureen Meehan, Planning Services Director
Date: June 12, 2025
Re: Major Subdivision Final Plat, Deep Point Marina SUB-25-01 & SUB-25-02

Project Overview

Pelican Properties, LLC, Bald Head Limited, LLC, and Bald Head Transportation, Inc., applicants, and owners, request approval of a Final Plat for Deep Point Marina Tracts 1-9. The properties are located at 1301 Ferry Road and zoned Business District, BD. Unlike most other reviews of a final plat, these nonresidential properties include existing developed parcels and all properties have existing infrastructure. There is no proposed development with this subdivision. Any future development will be reviewed separately as a major site plan. The proposed final plat is in conformance with the Preliminary Plat and the applicable standards of the Unified Development Ordinance.

Request & Staff Recommendation

A motion to approve the Final Plat Deep Point Marina based on conformance with the previously approved Preliminary Plats and with the applicable standards of the City of Southport Unified Development Ordinance.

SITE
Ferry Rd SW
Brunswick Forest Pkwy
Brunswick Forest Circle
Fiddlers Grove Ln
Fiddlers Knoll Ln
Hedgerow Way
Hemlock Ln
Hickory Dr
Hickory Ln
Hickory Nut Gap
Hickory Nut Gap Ln
Hickory Pl
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SCALE: 1" = 100'

0 50' 100' 200' 300' 400'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas 5/08/25

N.C. GRID (NAD 1983) NSRS 2011

G1 NAIL & CAP
N= 67,912.133
E= 2,303,641.921
EL.= 15.13
(GRID/GROUND COORDINATES)
LOCALIZATION POINT

WS4 NAIL & CAP
N= 67,716.48
E= 2,303,030.84

FERRY ROAD (NC HWY 211) S.R. 1540
100' PUBLIC R/W

N62°35'58"E 1,065.14'

S72°14'59"W 641.63'

S86°20'11"W 462.73'

N59°43'32"W 308.03'

N18°21'45"W 669.50'

N44°15'59"W 326.74'

N60°50'09"W 308.08'

TRACT 3
101,432 SQ FT
2.33 ACRES

TRACT 2 REMAINDER
1,701,096 SQ FT
39.05 ACRES

TRACT 6
296,962 SQ FT
6.82 ACRES

MARINA CHANNEL BASIN REVISED
154,656 SQ FT
3.55 ACRES

N/F
THE LANDING AT SOUTHPORT COMMUNITY SERVICES ASSOC., INC
OPEN SPACE, THE LANDING
MC. 23, PG. 135
DB. 1402, PG. 1367
PARCEL ID: 238BC00101
PARCEL PIN: 300610278088

WATER AND SEWER EASEMENT
DB. 2776, PG. 609

45' ACCESS, INGRESS/EGRESS EASEMENT

0.2% CHANCE ANNUAL FLOOD HAZARD

FLOOD ZONE "AE (EL 9)"

FLOOD ZONE "X"

GRAVEL PARKING AREA

PARKING MAIN BOOTH

MAIN PASSENGER TERMINAL

POOL EQUIPMENT & FUEL SHUTOFF BLDG.'S

HARBOUR MASTER BLDG.

16'x24' AREA RESERVED FOR FUTURE STRUCTURE MC. 119, PG. 1

PROPERTY LINE TO BE ABANDONED

VER SOUND CIRCLE

EIP DIST

PROFESSIONAL LAND SURVEYING SERVICES BY:
ESP ASSOCIATES, INC
SUBSURFACE . HYDROGRAPHIC . MOBILE . GEOMATICS
211 Racine Drive, Suite 101
Wilmington, North Carolina 28403
(910) 444-3899 / www.espassociates.com / License # F-1407

SUBDIVISION MAP OF:
DEEP POINT MARINA,

TRACT 1 - PROPERTY OF "PELICAN REAL PROPERTY, LLC" (DB 5155, PG 34)
PARCEL ID: 2380000301, PARCEL PIN: 300610463960, (1299 FERRY ROAD),
TRACT 2 - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000302, PARCEL PIN: 300610375277, (1301 FERRY ROAD),
& MARINA CHANNEL BASIN - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 23800003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
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DRAWN BY D.E.T.	CHECKED BY K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
2 of 5

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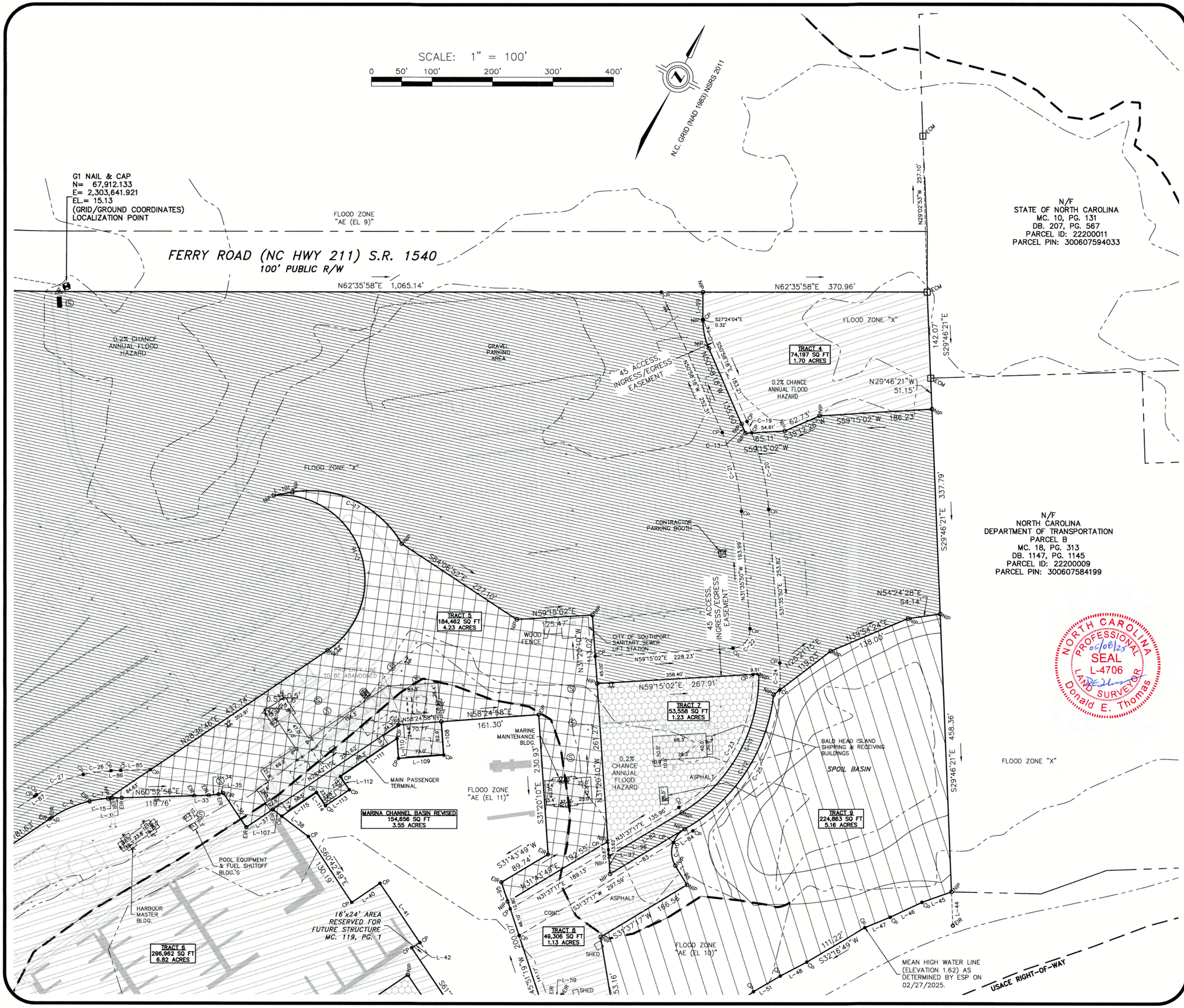

PROFESSIONAL LAND SURVEYING SERVICES BY:

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PARCEL ID: 2380000301, PARCEL PIN: 300610463960, (1299 FERRY ROAD),
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PARCEL ID: 2380000302, PARCEL PIN: 300610375277, (1301 FERRY ROAD),
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REVISIONS

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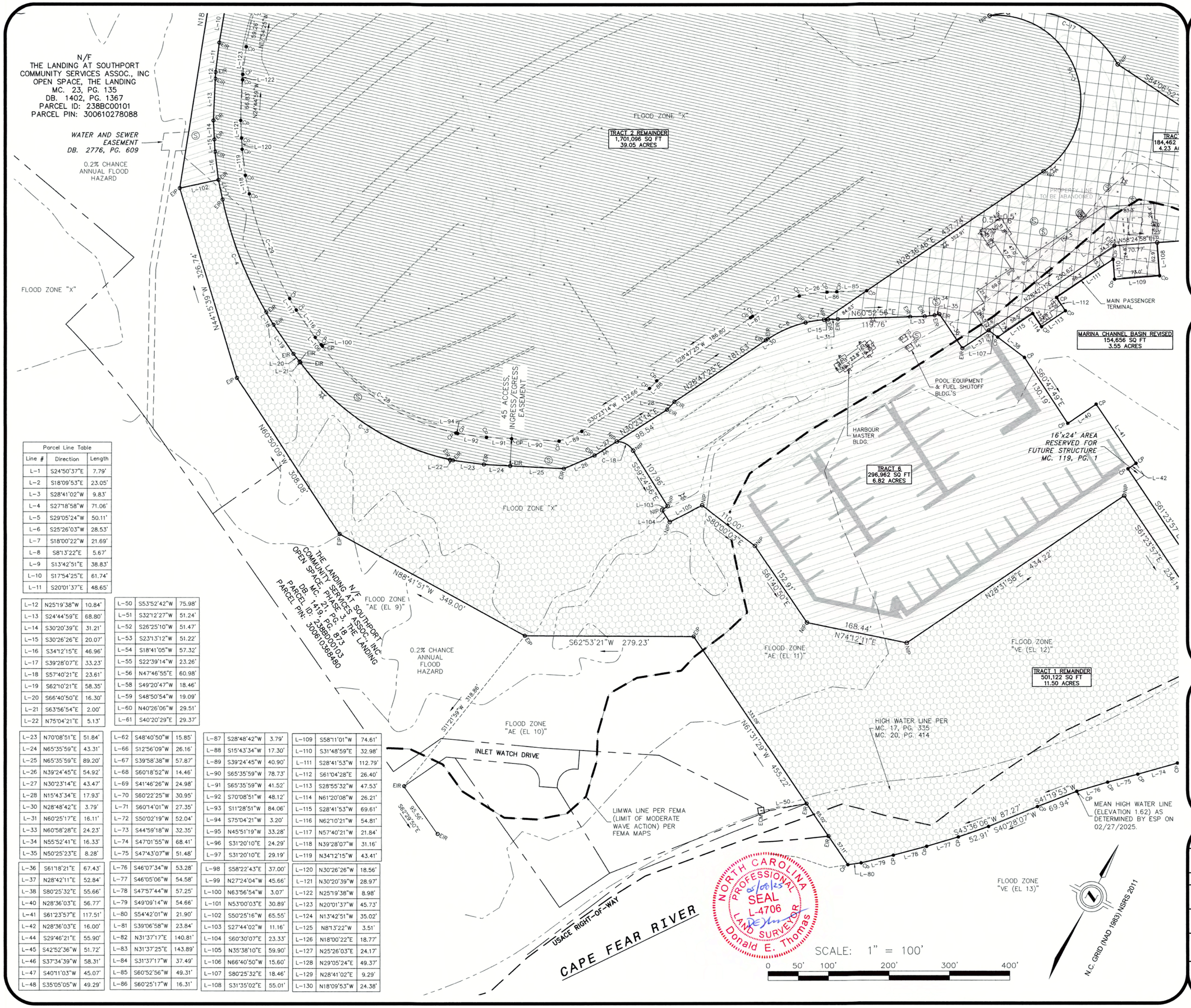

Parcel Line Table		
Line #	Direction	Length
L-1	S24°50'37"E	7.79'
L-2	S18°09'53"E	23.05'
L-3	S28°41'02"W	9.83'
L-4	S27°18'58"W	71.06'
L-5	S29°05'24"W	50.11'
L-6	S25°26'03"W	28.53'
L-7	S18°00'22"W	21.69'
L-8	S8°13'22"E	5.67'
L-9	S13°42'51"E	38.83'
L-10	S17°54'25"E	61.74'
L-11	S20°01'37"E	48.65'
L-12	N25°19'38"W	10.84'
L-13	S24°44'59"E	68.80'
L-14	S30°20'39"E	31.21'
L-15	S30°26'26"E	20.07'
L-16	S34°12'15"E	46.96'
L-17	S39°28'07"E	33.23'
L-18	S57°40'21"E	23.61'
L-19	S62°10'21"E	58.35'
L-20	S66°40'50"E	16.30'
L-21	S63°56'54"E	2.00'
L-22	N75°04'21"E	5.13'
L-23	N70°08'51"E	51.84'
L-24	N65°35'59"E	43.31'
L-25	N65°35'59"E	89.20'
L-26	N39°24'45"E	54.92'
L-27	N30°23'14"E	43.47'
L-28	N15°43'34"E	17.93'
L-30	N28°48'42"E	3.79'
L-31	N60°25'17"E	16.11'
L-33	N60°58'28"E	24.23'
L-34	N55°52'41"E	16.33'
L-35	N50°25'23"E	8.28'
L-36	S61°18'21"E	67.43'
L-37	N28°42'11"E	52.84'
L-38	S80°25'32"E	55.66'
L-40	N28°36'03"E	56.77'
L-41	S61°23'57"E	117.51'
L-42	N28°36'03"E	16.00'
L-44	S29°46'21"E	55.90'
L-45	S42°52'36"W	51.72'
L-46	S37°34'39"W	58.31'
L-47	S40°11'03"W	45.07'
L-48	S35°05'05"W	49.29'
L-50	S53°52'42"W	75.98'
L-51	S32°12'27"W	51.24'
L-52	S26°25'10"W	51.47'
L-53	S23°13'12"W	51.22'
L-54	S18°41'05"W	57.32'
L-55	S22°39'14"W	23.26'
L-56	N47°46'55"E	60.98'
L-58	S49°20'47"W	18.46'
L-59	S48°50'54"W	19.09'
L-60	N40°26'06"W	29.51'
L-61	S40°20'29"E	29.37'
L-62	S48°40'50"W	15.85'
L-66	S12°56'09"W	26.16'
L-67	S39°58'38"W	57.87'
L-68	S60°18'52"W	14.46'
L-69	S41°46'26"W	24.98'
L-70	S60°22'25"W	30.95'
L-71	S60°14'01"W	27.35'
L-72	S50°02'19"W	52.04'
L-73	S44°59'18"W	32.35'
L-74	S47°01'55"W	68.41'
L-75	S47°43'07"W	51.48'
L-76	S46°07'34"W	53.28'
L-77	S46°05'06"W	54.58'
L-78	S47°57'44"W	57.25'
L-79	S49°09'14"W	54.66'
L-80	S54°42'01"W	21.90'
L-81	S39°06'58"W	23.84'
L-82	N31°37'17"E	140.81'
L-83	N31°37'25"E	143.89'
L-84	S31°37'17"W	37.49'
L-85	S60°52'56"W	49.31'
L-86	S60°25'17"W	16.31'
L-87	S28°48'42"W	3.79'
L-88	S15°43'34"W	17.30'
L-89	S39°24'45"W	40.90'
L-90	S65°35'59"W	78.73'
L-91	S65°35'59"W	41.52'
L-92	S70°08'51"W	48.12'
L-93	S11°28'51"W	84.06'
L-94	S75°04'21"W	3.20'
L-95	N45°51'19"W	33.28'
L-96	S31°20'10"E	24.29'
L-97	S31°20'10"E	29.19'
L-98	S58°22'43"E	37.00'
L-99	N27°24'04"W	45.66'
L-100	N63°56'54"W	3.07'
L-101	N53°00'03"E	30.89'
L-102	S50°25'16"W	65.55'
L-103	S27°44'02"W	11.16'
L-104	S60°30'07"E	23.33'
L-105	N35°38'10"E	59.90'
L-106	N66°40'50"W	15.60'
L-107	S80°25'32"E	18.46'
L-108	S31°35'02"E	55.01'
L-109	S58°11'01"W	74.61'
L-110	S31°48'59"E	32.98'
L-111	S28°41'53"W	112.79'
L-112	S61°04'28"E	26.40'
L-113	S28°55'32"W	47.53'
L-114	N61°20'08"W	26.21'
L-115	S28°41'53"W	69.61'
L-116	N62°10'21"W	54.81'
L-117	N57°40'21"W	21.84'
L-118	N39°28'07"W	31.16'
L-119	N34°12'15"W	43.41'
L-120	N30°26'26"W	18.56'
L-121	N30°20'39"W	28.97'
L-122	N25°19'38"W	8.98'
L-123	N20°01'37"W	45.73'
L-124	N13°42'51"W	35.02'
L-125	N8°13'22"W	3.51'
L-126	N18°00'22"E	18.77'
L-127	N25°26'03"E	24.17'
L-128	N29°05'24"E	49.37'
L-129	N28°41'02"E	9.29'
L-130	N18°09'53"W	24.38'

PROFESSIONAL LAND SURVEYING SERVICES BY:
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Wilmington, North Carolina 28403
(910) 444-3899 / www.espassociates.com / License # F-1407

SUBDIVISION MAP OF:

DEEP POINT MARINA,

TRACT 1 - PROPERTY OF "PELICAN REAL PROPERTY, LLC" (DB 5155, PG 34)
PARCEL ID: 2380000301, PARCEL PIN: 300610463960, (1299 FERRY ROAD),
TRACT 2 - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000302, PARCEL PIN: 300610375277, (1301 FERRY ROAD),
& MARINA CHANNEL BASIN - PROPERTY OF "BALD HEAD ISLAND LIMITED, LLC" (DB 1083, PG 879)
PARCEL ID: 2380000003, PARCEL PIN: 300610379261
MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

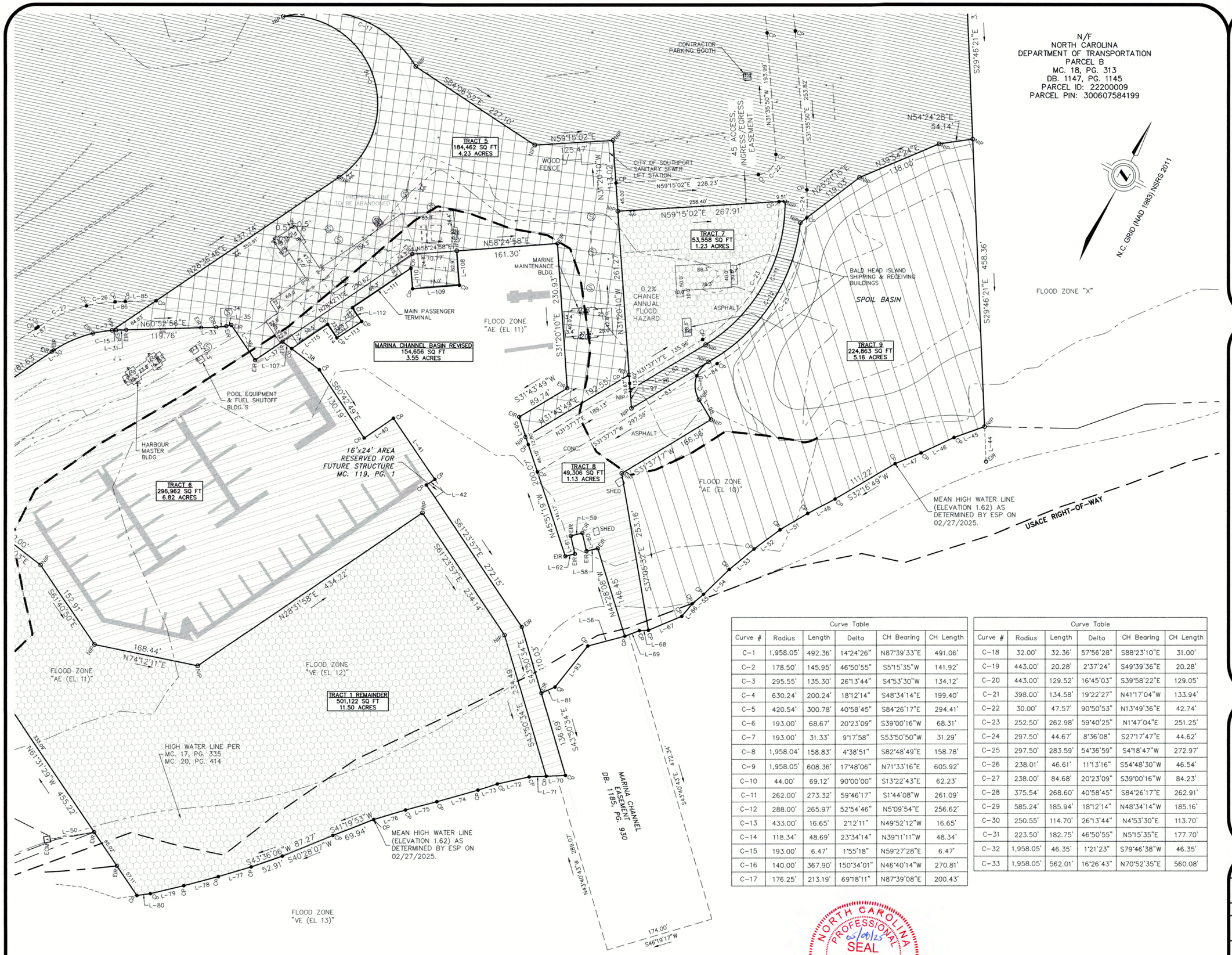
DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
4 of 5

Recorded in the Brunswick County Registry at Map Book _____ , Page _____



Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-1	1,958.05'	492.36'	14°24'26"	N87°39'33"E	491.06'
C-2	178.50'	145.95'	46°50'55"	S5°15'35"W	141.92'
C-3	295.55'	135.30'	26°13'44"	S4°53'30"W	134.12'
C-4	630.24'	200.24'	18°12'14"	S48°34'14"E	199.40'
C-5	420.54'	300.78'	40°58'45"	S84°26'17"E	294.41'
C-6	193.00'	68.67'	20°23'09"	S39°00'16"W	68.31'
C-7	193.00'	31.33'	9°17'58"	S53°50'50"W	31.29'
C-8	1,958.04'	158.83'	4°38'51"	S82°48'49"E	158.78'
C-9	1,958.05'	608.36'	17°48'06"	N71°33'16"E	605.92'
C-10	44.00'	69.12'	90°00'00"	S13°22'43"E	62.23'
C-11	262.00'	273.32'	59°46'17"	S1°44'08"W	261.09'
C-12	288.00'	265.97'	52°54'46"	N5°09'54"E	256.62'
C-13	433.00'	16.65'	2°12'11"	N49°52'12"W	16.65'
C-14	118.34'	48.69'	23°34'14"	N39°11'11"W	48.34'
C-15	193.00'	6.47'	1°55'18"	N59°27'28"E	6.47'
C-16	140.00'	367.90'	150°34'01"	N46°40'14"W	270.81'
C-17	176.25'	213.19'	69°18'11"	N87°39'08"E	200.43'

Curve Table					
Curve #	Radius	Length	Delta	CH Bearing	CH Length
C-18	32.00'	32.36'	57°56'28"	S88°23'10"E	31.00'
C-19	443.00'	20.28'	2°37'24"	S49°39'36"E	20.28'
C-20	443.00'	129.52'	16°45'03"	S39°58'22"E	129.05'
C-21	398.00'	134.58'	19°22'27"	N41°17'04"W	133.94'
C-22	30.00'	47.57'	90°50'53"	N13°49'36"E	42.74'
C-23	252.50'	262.98'	59°40'25"	N1°47'04"E	251.25'
C-24	297.50'	44.67'	8°36'08"	S27°17'47"E	44.62'
C-25	297.50'	283.59'	54°36'59"	S4°18'47"W	272.97'
C-26	238.01'	46.61'	11°13'16"	S54°48'30"W	46.54'
C-27	238.00'	84.68'	20°23'09"	S39°00'16"W	84.23'
C-28	375.54'	268.60'	40°58'45"	S84°26'17"E	262.91'
C-29	585.24'	185.94'	18°12'14"	N48°34'14"W	185.16'
C-30	250.55'	114.70'	26°13'44"	N4°53'30"E	113.70'
C-31	223.50'	182.75'	46°50'55"	N5°15'35"E	177.70'
C-32	1,958.05'	46.35'	1°21'23"	S79°46'38"W	46.35'
C-33	1,958.05'	562.01'	16°26'43"	N70°52'35"E	560.08'

NORTH CAROLINA PROFESSIONAL SEAL L-4706 LAND SURVEYOR Donald E. Thomas
05/09/25

PROFESSIONAL LAND SURVEYING SERVICES BY:
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MAP CABINET 119, PAGES 1-4
CITY OF SOUTHPORT, SMITHVILLE TOWNSHIP, BRUNSWICK COUNTY, NORTH CAROLINA

BALD HEAD ISLAND

DATE	SCALE
05/08/2025	1" = 100'
DRAWN BY	CHECKED BY
D.E.T.	K.W.K.

REVISIONS

-DESCRIPTION-
SUBDIVISION MAP

SHEET
5 of 5

Recorded in the Brunswick County Registry at Map Book _____ , Page _____

City of Southport ABC Board Minutes

Date: April 7 2024, Minutes taken by: Harold Todd Dunn

Location: Southport ABC Store

Quorum determined: Meeting called to order by Chairman Davis at: 4pm

No Conflict of interest

In Attendance: Board Chairman- William Davis, Board Members – Zach Zuehlke , Adam Steadman, Jim Poppe GM – Harold Todd Dunn , Assistant Manager – Nadine Del Pezzo ABC Liaison -Frank Lai

Absent: None

Open Comment and Discussion – None

Approval of 3/12/25 Minutes: Minutes amended, approved by Zach and seconded by Angela

1. **Old Business**

   A. Discussed that we are still searching and getting quotes for new Health Insurance
   B. Discussed and approved to go with Wade Greene to be our new auditor

2. **New Business**

   A. Discussed Bourbon Drop
   B. Discussed and approved new Plants and landscaping for front of the store

3. **Business Reports**

   Presented Monthly Sales Report

4. **Employee Issues.**

   No Employee Issues

Adjourned: Motion was made and seconded to adjourn the meeting

Next Regular meeting: May 20th 2025 at 2pm at Southport ABC Store

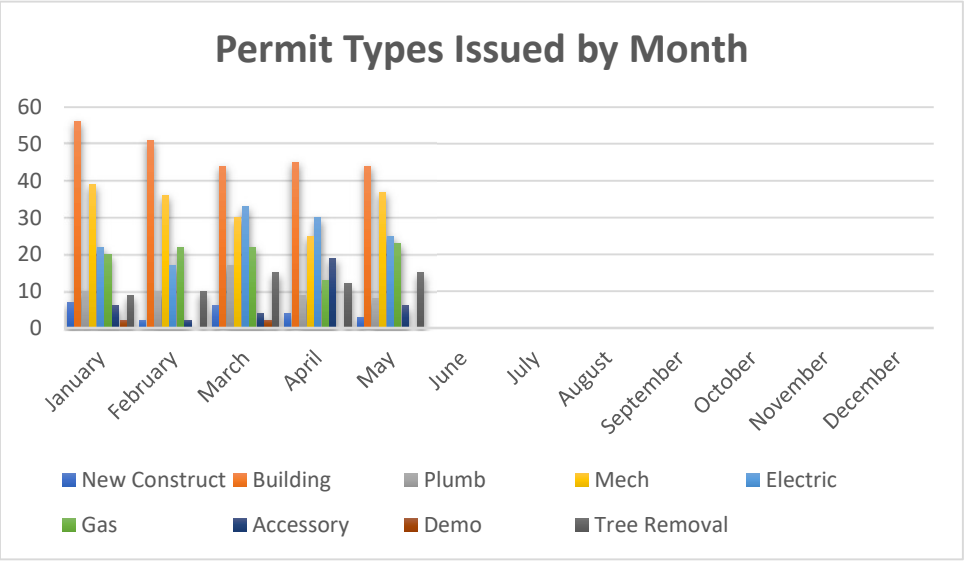
APPROVED BY AND DATE

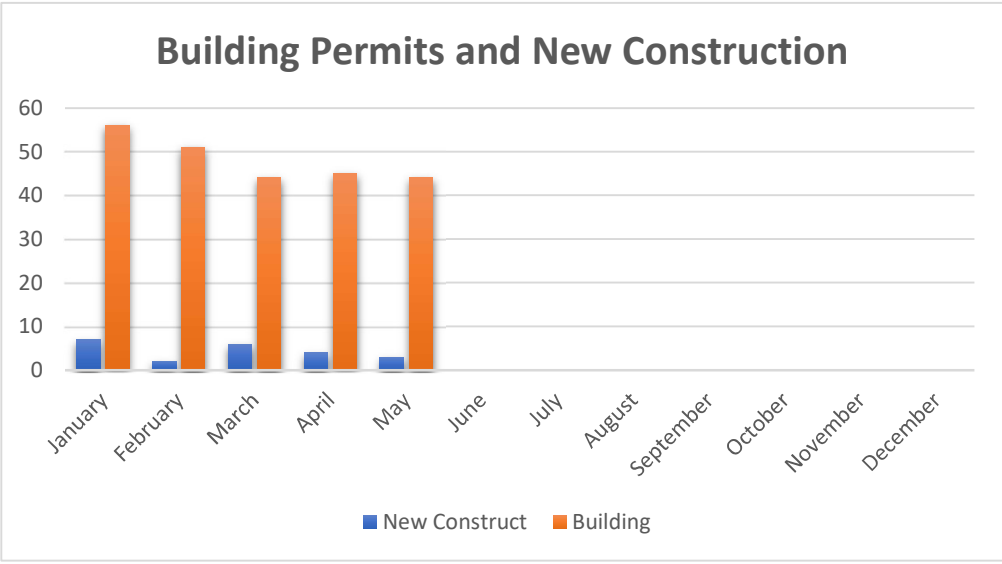
May 2025 SALES DATA COMPARISON AND SAVINGS

SALES TYPE	2024 Sales	2025 Sales	DIFFERENCE	% CHANGE
RETAIL	$ 423,412.30	$ 389,333.65	$ (34,078.65)	-8.05
MXB SALES	$ 213,566.34	$ 186,827.53	$ (26,738.81)	-12.52
TOTAL	$ 636,978.64	$ 576,161.18	$ (60,817.46)	-9.55
Customers	9836	8956	-880	-8.95
		$ -		
Bottles Sold	30,578	27,388	(3,190)	-10.43
PAYROLL EXPENSES	$ -	$ -	$0	#DIV/0!
		$ -		
Credit Cards	$ -	$ 357,410.48		
		$ -		
TOTAL SALES INC. TAX	$ -	$ 416,595.39		
	2019 Sales	2025 Sales	Difference	
Retail 2019	$ 266,985.10	$ 389,333.65	122,348.55	45.83
MXB 2019	$ 117,287.38	$ 186,827.53	69,540.15	59.29
	$ 384,272.48	$ 576,161.18	191,888.70	49.94
SALES TYPE	2020 SALES	2025 Sales	DIFFERENCE	% CHANGE
RETAIL	$ 354,760.10	$ 389,333.65	$ 34,573.55	9.75
MXB SALES	$ 18,858.81	$ 186,827.53	$ 167,968.72	890.66
TOTAL	$ 373,618.91	$ 576,161.18	$ 202,542.27	54.21
SALES TYPE	2021 Sales	2025 Sales	DIFFERENCE	% CHANGE
RETAIL	$ 305,675.20	$ 389,333.65	$ 83,658.45	27.37
MXB SALES	$ 168,139.66	$ 186,827.53	$ 18,687.87	11.11
TOTAL	$ 473,814.86	$ 576,161.18	$ 102,346.32	21.60
SALES TYPE	2022 Sales	2025 Sales	DIFFERENCE	% CHANGE
RETAIL	$ 322,107.10	$ 389,333.65	$ 67,226.55	20.87
MXB SALES	$ 173,382.29	$ 186,827.53	$ 13,445.24	7.75
TOTAL	$ 495,489.39	$ 576,161.18	$ 80,671.79	16.28
SALES TYPE	2023 Sales	2025 Sales	DIFFERENCE	% CHANGE
RETAIL	$ 399,112.85	$ 389,333.65	$ (9,779.20)	-2.45
MXB SALES	$ 195,938.15	$ 186,827.53	$ (9,110.62)	-4.65
TOTAL	$ 595,051.00	$ 576,161.18	$ (18,889.82)	-3.17

Permits and Inspections
2025

Month	New Construct	Building	Plumb	Mech	Electric	Gas	Accessory	Demo	Tree Removal	Inspections	Permits Issued
January	7	56	10	39	22	20	6	2	9	393	178
February	2	51	10	36	17	22	2	0	10	389	186
March	6	44	17	30	33	22	4	2	15	465	182
April	4	45	9	25	30	13	19	0	12	514	186
May	3	44	8	37	25	23	6	0	15	434	176
June											
July											
August											
September											
October											
November											
December											





PROTECTING QUALITY OF LIFE

Alliance Code Enforcement LLC

Monthly Report for May
City of Southport

Updated
June 5, 2025

ADDRESS	VIOLATION	STATUS
416 E Bay St	ZV	OPEN
724 N Lord St	MH/JP	OPEN
712 N Lord St	JV	OPEN
806 Clarendon Ave	MH/JV/JP	OPEN
803 Clarendon Ave	JV	OPEN
813 Clarendon Ave	MH	OPEN
801 N Caswell Ave	MH	HOLD
306 W 9th St	MH/OL	OPEN
926 Hankinsville Rd	MH/JP/OL	OPEN
913 Hankinsville Rd	MH	OPEN
1105 N Caswell Ave	JV	OPEN
301 W 11th St	MH	OPEN
1105 N Howe St	MH	ABATED
712 Clarendon Ave	JV	OPEN
409 N Lord St	MH	OPEN
410 N Lord St	MH	OPEN
812 N Caswell Ave	OL	ABATED
910 N Lord St	JV	OPEN
410 E Bay St	ZV	OPEN
305 Yaupon Dr Ext	JP/OL	OPEN
202 W 8th St	JV	OPEN
503 Clarendon Ave	JP	OPEN
401 N Fodale Ave	OL	OPEN
202 N Fodale Ave	JV	OPEN
605 Clarendon Ave	MH/JP	OPEN
129 Park Ave	JV	OPEN
111 Park Ave	JP	OPEN
603 N Fodale Ave	JP	OPEN
713 Cottage Ln	JP	OPEN
315 W 8th St	JV/JP	OPEN
825 N Caswell Ave	OL/JP/MH	OPEN
829 N Caswell Ave	MH/OL	OPEN
228 W 9th St	JP	OPEN

PROTECTING QUALITY OF LIFE

Alliance Code Enforcement LLC

Monthly Report for May
City of Southport

Updated
June 5, 2025

913 N Caswell Ave	JV	OPEN
313 W 11th St	JV	OPEN
504 W 11th St	MH	ABATED
511 W 11th St	JP	OPEN
609 W 11th St	ZV	OPEN
514 W 11th St	JV/JP	OPEN
PID 237DF01412 W 9TH ST	OL	OPEN
1012 N Caswell Ave	JP	OPEN
211 E Leonard St	OL	OPEN
412 E Leonard St	JP	OPEN
414 E Leonard St	JP	OPEN
202 W 8th St	JP	OPEN
PID 221MD016 Park Ave Ext	JV	OPEN
210 N Fodale Ave	JP	OPEN
210 E Brown St	JV	OPEN
807 N Howe St	JV	OPEN
1211 N Caswell Ave Apt 3C	MH	OPEN
1211 N Caswell Ave Apt 2A	MH	OPEN
1211 N Caswell Ave Apt 2D	MH	OPEN
1211 N Caswell Ave Apt 5A	MH	OPEN
1211 N Caswell Ave Apt 6C	MH	OPEN
1211 N Caswell Ave Apt 6D	MH/JP	OPEN
1105 N Howe St	OL	ABATED
PID 237EC036	OL/JV	OPEN
718 Clarendon Ave	OL/JP	OPEN
PID 237EC015	OL	OPEN
607 Burrington Ave	OL	OPEN
609 Burrington Ave	OL	OPEN
514 W West St	MH	ABATED
520 N Caswell Ave	OL	OPEN
205 W Leonard St	OL	OPEN
PID 237EF028	OL	OPEN
403 N Howe St	OL	OPEN
724 N Howe St	OL	OPEN

PROTECTING QUALITY OF LIFE

Alliance Code Enforcement LLC

Monthly Report for May
City of Southport

Updated
June 5, 2025

115 E Howe St	OL	**OPEN**
620 N Howe St	OL	**OPEN**
PID 237EA013 N Caswell Ave	OL/JP	**OPEN**
616 N Caswell Ave	OL/JP	**OPEN**
620 N Caswell Ave	OL	**OPEN**
PID 237EC026 N Caswell Ave	OL	**OPEN**
PID 237EC02601 N Caswell Ave	OL	**OPEN**
409 N Lord St	OL	**OPEN**
217 N Fodale Ave	JP	**OPEN**
306 N Fodale Ave	OL	**OPEN**
PID 238AC01102 N Fodale Ave	OL	**OPEN**
206 Frink Dr	OL	**OPEN**
311 Herring Dr	JV	**OPEN**
305 Herring Dr	JV/JP	**OPEN**
318 Herring Dr	JP	**OPEN**
314 Herring Dr	JP	**ABATED**
PID 238AD025 Mitchell St	OL	**OPEN**
PID 237DD006 E Cape Harbor Dr	OL/JV/JP	**ABATED**
814 Memory Ln	OL	**OPEN**
PID 238HB00702 E. Nash St.	OL	**ABATED**
PID 237EG009 Clarendon Ave.	OL	**OPEN**
PID 237EG00901 Clarendon Ave	OL	**OPEN**
507 N Caswell Ave	JV	**OPEN**
606 N Lord St	JV	**OPEN**

PROTECTING QUALITY OF LIFE

Alliance Code Enforcement LLC	Monthly Report for May City of Southport	Updated June 5, 2025

HIGHLIGHTS

- During the month of May, we focused on previously opened cases and opened 22 new cases. After contacting property owners, we successfully ABATED and CLOSED 7 cases.

- **1105 N Howe St.** – Property was placed in violation for Minimum Housing for open areas in the foundation and decayed window frames. After contacting the owner, the required repairs were made. This Case is Abated and Closed.

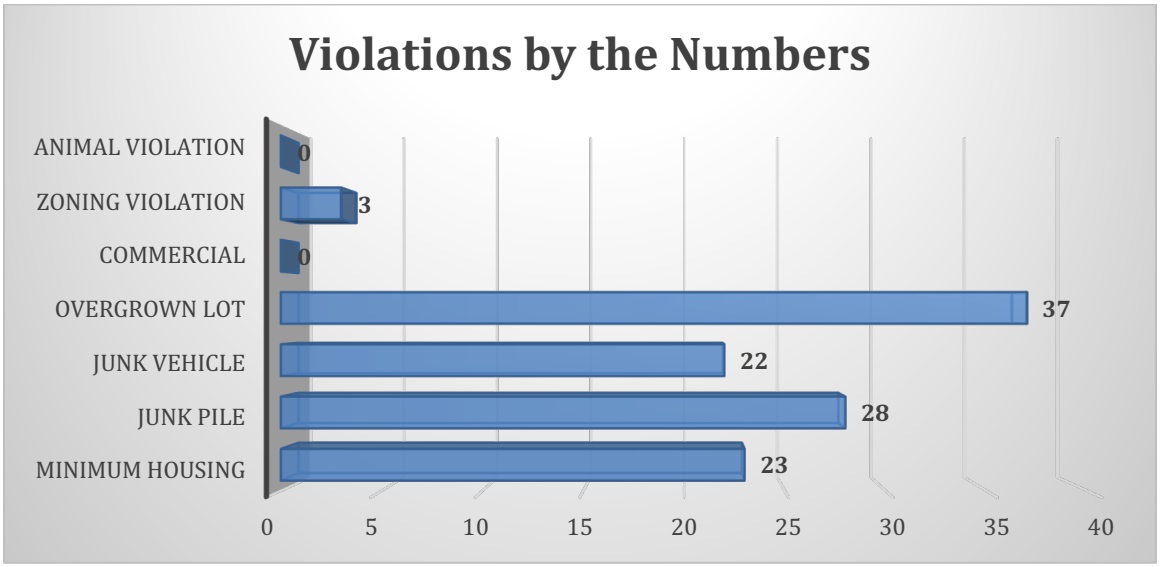
- **514 W. West St.** – Property was placed in violation for Minimum Housing in reference to fence damage and/or deterioration. After contacting the property owner, the damaged sections were removed. This Case is Abated and Closed.

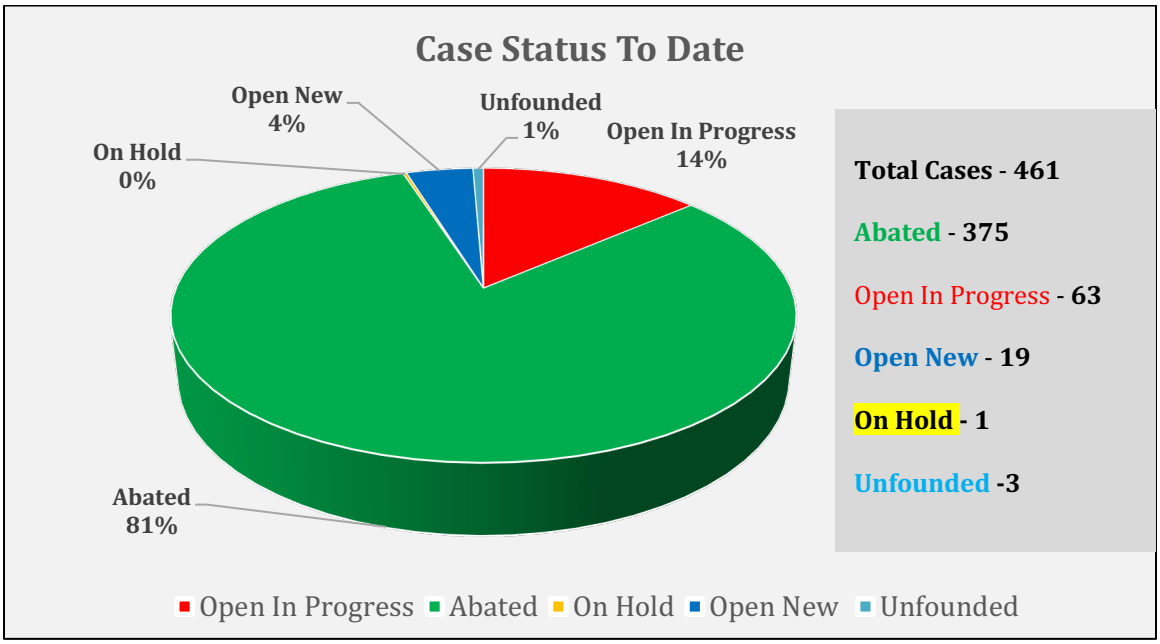
- **PID 237DD006 E. Cape Harbor Dr.** – Property was placed in violation in reference to multiple trailers that had been setting for an extended period surrounded by overgrowth, being used for open storage of various items. After contacting the owner, the open storage and trailers were removed, and the overgrowth was cut. This Case is Abated and Closed.

- **314 Herring Dr.** – Property was placed in violation for a Nuisance/Junk Pile of a dozen five-gallon buckets at the rear of the property. After contacting the property owner, the buckets were removed. This Case is Abated and Closed.

PROTECTING QUALITY OF LIFE

Alliance Code Enforcement LLC	Monthly Report for May City of Southport	Updated June 5, 2025





Development Services Highlights – June 2025

Planning Board: The Southport Planning Board met for their regularly scheduled meeting on May 15, 2025.

Items covered:

- Applicant initiated zoning text amendment to update Section 2.11 Conditional Zoning of the UDO. This amendment allows conditional zoning for residentially zoned properties and allows more flexibility of uses and dimensional standards for new conditionally zoned property.
- Applicant initiated zoning amendment for a property currently zoned R-10 and PUD to CZ-01. The property is part of the existing Indigo Plantation Subdivision which includes property adjacent to the marina and vacant parking lots.
- Major Subdivision Preliminary Plat for Deep Point Marina

The next regular meeting of the Planning Board is June 19, 2025. No new development applications are scheduled for the Planning Board's agenda. To date, the agenda will include a text amendment to Article 6 Stormwater Regulations and a zoning map amendment to establish the Local Historic District Zoning Overlay.

Zoning Board of Adjustment: The Board of Adjustment did not meet in May and will not meet in June due to lack of cases. There will be a meeting in July for two appeal cases, 1) 416 E Bay Street and 2) Property located on the corner of S Caswell Avenue and W Bay Street.

Historic Preservation Commission:
The HPC's regular meeting was held on June 4, 2025. The local designation report review by the State is complete. The HPC voted to forward the final report, district map, and design standards to the Board of Aldermen for approval. The local historic district will be a zoning overly district and must follow the procedure for all map amendments. The zoning map amendment for the local historic district will be presented at the June 19, 2025, Planning Board meeting.

Forestry Committee:
The Forestry Committee met on May 13, 2025, for their regularly scheduled meeting. The agenda included an update on Franklin Square Park, continuing tree care on newly planted city trees, consultations the committee members conducted, and a tree donation from JD Tree Pros.

The city received a donation of 20 live oak trees from Penderlea Farms. In the upcoming months, the forestry committee will collaborate with the public works department to plant these trees. Currently, the trees are being cared for and watered behind the Parks and Recreation building, where they are being maintained and watered.

Code Enforcement:
Staff sent a second round of rights-of-way hardened structure encroachment courtesy letters on May 12 in preparation of the upcoming deadline for compliance. The letters were only sent to those properties, still not meeting the ordinance requirements. These letters are not violations, and property owners have until June 12, 2025 (6 months from the day of adoption) to remove identified structures. Staff are monitoring the ROW encroachments daily.

Code enforcement and planning staff field calls and meet with concerned citizens on site to review ROW questions for compliance. ROW permits are being issued daily for existing allowable encroachments and new encroachments that meet development standards.

Code enforcement officers continue to proactively correct violations prior to sending formal notices of violation. To assist, literature and other courtesy notifications outlining code references for issues observed on properties throughout the city are distributed to citizens. These notifications are not violations. If issues are not remedied after initial contact, a case is opened, and a formal notice of violation is issued to the property owner.

Other Notes:
In May, staff received comments from the Division of Coastal Management regarding the comprehensive plan. Stewart Consultants is currently updating the plan to incorporate the minor suggestions made by the district planner. Once staff complete their review of the final document, it will be presented to the Board of Aldermen for formal adoption.

The Multimodal Acceleration Plan held a steering committee meeting on May 6, 2025, at the community center at 9 a.m. with key members of the community, Staff, Kittleson and Associates, and NCDOT representatives. The existing conditions portion of the plan is being finalized, and a community survey will be posted on the website this summer. There is a dedicated page on the Development Services webpage for the multimodal acceleration plan. https://cityofsouthport.com/development-services/#multimodal-project-acceleration-plan The plan is funded by a multimodal grant from NCDOT will help create a comprehensive and connected multimodal network with project-ready opportunities.

Staff continue to assist citizens with questions regarding signs, zoning, minor subdivisions, minor and major site plans, CAMA Minor Permits, tree permits, special flood hazard areas, text and map amendments, and any other items that come to the Department.