# CITY OF SOUTHPORT
## PLANNING BOARD
## REGULAR MEETING AGENDA

March 27, 2024
6:00 PM

Agenda

Please turn off all cell phones

Meetings are open to the public. Face masks and social distancing may be used at the discretion of each individual. Changes to this policy may occur, as needed to help prevent the spread of the Coronavirus.

The regular monthly meeting of the Planning Board will be held at 6:00 p.m. on the third Thursday of each month. All members are asked to attend.

**A. Call to Order**

**B. Invocation**

**C. Pledge of Allegiance**

**D. Appointment for Chair and Vice-Chair**

**E. Approval of Minutes**

1. February 15, 2024

**F. Approval of Agenda**

**G. Public Comment**

**H. Old Business**

1. Zoning Map Amendment/ PUD Turtle Bay
2. Text Amendment-Section 3.9 Setback Exceptions and Encroachments
3. Text Amendment-Section 3.19 Signs

**I. New Business**

1. Zoning Map Amendment-HC to BD at 211/87 Intersection

**J. Other Business**

1. NCDOT Update- Improvements at HWY 87 and Jabbertown Rd.
2. Comprehensive Plan Update

**K. Announcements**

**L. Member's Information**

1. Attendance Record
2. Member's Roster

**M. Adjourn**

**Planning Board Minutes**
**Community Building 223 E. Bay Street**
**February 15, 2024**
**6:00 P.M.**

| | |
|---|---|
| **Members Present:** | Sue Hodgin, Will Hewett, Fred Fiss, Roy Pender, Scott Jones, Dick Sloan, Donnie Joyner, and Kevin Locklin (remote) |
| **Members Absent**: | None |
| **Staff Present:** | Mo Meehan, City Planner<br>Tanya Shannon, Deputy Clerk<br>ChyAnn Ketchum, Director of Communications/PIO |
| **Board of Aldermen Liaisons:** | Rebecca Kelley and Frank Lai |

**A.** Chair Sue Hodgin called the meeting to order at 6:00 p.m.

**B.** Mr. Scott Jones gave the Invocation.

**C.** Chair Hodgin led the Pledge of Allegiance.

**D.** Motion to approve the January 18, 2024, Meeting Minutes by Vice-Chair Hewett and second by Mr. Sloan. ***Unanimous vote; Motion carried***.

**E.** **Approval of the Agenda**: Chair Hodgin requested a Motion to approve the agenda with an amendment requested By Mr. Fiss to include a discussion on consideration to rezone the Entrance Corridor to BD under New Business, item (2). Motion to approve by Vice-Chair Hewett and seconded by Mr. Sloan. ***Unanimous Vote; Motion Carried.***

**F.** **Public Comment**: None

**G.** **Old Business**:

1. **Southport Local Historic District Design Standards - Discussion with the Historic Preservation Commission**.

Planner Meehan provided some background on the Southport Historic Preservation Commission (HPC). The HPC was established on September 8, 2023. They have regularly met to establish the Southport Local Historic District Goals, Policy and Procedures, and Design Standards. Any development within the local historic district must comply with the Commission's standards, which the Board of Aldermen approves. The Commission's design standards ensure fairness and equality in the review of projects. Before a landmark or district can be designated, the Commission must adopt design standards, and changes to the exterior appearance of landmarks and properties in local historic districts can be regulated.

Mr. Josh Cline McGee and Ms. Joanne Wesson, members of the Historic Preservation Commission, were introduced at the meeting. They explained that much thought and time had been put into the design standards. They described the role of the Commission as one that encourages and promotes the preservation and protection of the city's historical value.

During the discussion, Mr. Pender inquired about the roof standards. Ms. Wesson responded by stating that the objective was to maintain the current standards. She explained that they had compared the standards with other areas and decided not to burden the homeowners by using expensive materials. The goal is to retain the look of the area. Mr. McGee stated that the guidelines were intended to remain unchanged, but if any applicant wished to make a change, they would have to seek approval from the committee. Scott Jones mentioned that the HPC has a maximum of 180 days to review. Ms. Meehan explained that if the application must be reviewed or changed by the state and is considered a landmark, it must be sent to the state for review, and

feedback will be given. Mr. Jones pointed out that six months seems like a long time. Ms. Meehan clarified that the average review time would not be that long. Mr. Chris Jones asked if the nine board members would continue, to which Ms. Meehan replied that it was similar to other boards with term limits. Mr. Fiss said he supports the HPC and restores many older homes in the district as a builder. He said he views it as restoration, but people often want to add more windows to his projects, and the standards may prohibit it. He said he has never restored a house where the owner may want something different. He supports the document but is concerned with hardships and affordability. He said, however, that it would be on a case-by-case basis. Mr. Chris Jones asked where the language in the ordinances came from. Mr. McGee said they had reviewed it over 12 months, looking at Beauford, Wilmington, Asheville, and other areas, and pulled relevant things to Southport. The guidelines were not copied verbatim but were used as a reference.

2. **Southport Local Historic District Design Standards- Recommendation**

Chair Hodgin expressed her appreciation for the productive discussion and thanked the members of the Historic Preservation Commission for their valuable input. She acknowledged the dedication of the Commission members, many of whom have extensive experience in preservation. Overall, Chair Hodgin emphasized the Commission's good fortune in having such committed and knowledgeable members.

Chair Hodgin mentioned that the ordinances are not absolute and can be modified as we gain knowledge of best practices and observe trending patterns in similar municipalities. Similar to the UDO, the Design Standards will require continuous advice and revision as we move forward. While changes and refinements can be made as necessary, it's crucial to start somewhere. She then asked the Board if they had any suggestions or recommendations they would like to send back to the Commission for consideration. Finally, she asked the Board if they would like to vote on a recommendation to the Board of Aldermen.

Mr. Joyner and some board members have requested additional time to review the HPC design standards and express their concerns to Ms. Meehan. The board agreed to table a recommendation to the Board of Aldermen on the standards until a further review is conducted.

3. **Text Amendment- Section 3.9.B.5 Setback Exceptions and Encroachments**

Ms. Meehan gave an overview of the proposed amendment. She explained that Cameron Smith's request to amend the Unified Development Ordinance Section 3.9.B. was submitted and presented to the Planning Board on September 21, 2023.

On November 16, 2023, the Planning Board made a decision to recommend the denial of a Unified Development Ordinance Amendment to Section 3.9.B Setback Exceptions and Encroachments. This amendment would have allowed HVAC, generators, and similar equipment to encroach up to 48 inches into a required setback. However, the staff presented another option that could be considered. This alternative allowed a 42-inch encroachment, not more than 24 inches from the property line. During the regular meeting on February 8, 2024, the Board of Aldermen voted to send the text amendment back to the Planning Board. Ms. Meehan updated the presentation and presented more options.

In the discussion, Mr. Fiss expressed his desire to hear a definitive answer from the Fire Chief or Marshall regarding safety hazards. Vice-Chair Hewett agreed that the issue of 24 inches was a safety concern. Mr. Scott Jones inquired about the number of houses with this issue, stating that most houses do not block houses on both sides. He suggested that there should be access on both sides of the house, not just one block. Chair Hodgin reiterated that the builders wanted to build a bigger house on a smaller lot, and it was the builder's responsibility to think outside the box. Ms. Hodgin requested documentation and clearance on space safety, noting that the non-conforming lots were mainly the problem. She suggested splitting the issue between the conforming and non-conforming lots and have a discussion on possibly a 4’ encroachment allowance for mechanicals (on conforming lots), but not closer than 3’ (or even

4') to the property line; this would allow for shrubbery for noise- and aesthetics-considerations. Ms. Meehan reminded everyone to be aware that some non-conforming lots have 6-foot setbacks.

Chair Hodgin proposed that the staff be provided with suggestions for rewrites and asked to prepare them for next month's meeting. She also recommended that the possibility of granting a 4-foot encroachment allowance for mechanicals on conforming lots be discussed while ensuring they are not placed closer than 3 or 4 feet to the property line. This would allow for shrubbery to be planted to address noise and aesthetic concerns.

The consensus was to establish a Review Committee for the non-conforming lots. Vice-Chair Hewett, Mr. Locklin, and Mr. Fiss volunteered.

**H. New Business**

**1. Planned Unit Development Rezoning and Master Development Plan- Turtle Bay**

Ms. Meehan stated that on behalf of Turtle Bay at Southport, Jackson Starling, the applicant is requesting approval of a Master Development Plan and Rezoning from R-20/HC to Planned Unit Development (PUD). The Master Development plan proposes 100 single-family dwelling units on an approximately 54-acre parcel of land located on NC 87. A portion of the northern boundary is within Brunswick County Jurisdiction. A petition for annexation has been submitted and will follow the affirmative recommendation to the Board of Aldermen.

Most of the property falls within the medium suitability land classification on the Land Suitability Analysis Map of the CAMA Land Use Plan. A portion is classified as low suitability due to the proximity of wetlands on site. The future land use map designation is low-density residential and heavy commercial. Low-density residential designation allows a variety of single-family uses with a density of 2/3 units per acre. Ms. Meehan said the staff also requested an amendment to the future land use map to designate the entire property as low-density residential.

Mr. Jackson Starling, PE, with East Coast Engineering, P.C., gave a PowerPoint presentation on the proposed PUD. After the presentation, the board members had some questions and expressed specific concerns.

Mr. Fiss questioned if the same builders, "Premier Homes," are the same builders building the "Home Place" development. Mr. Starling said that it was. Mr. Fiss stated that that plat was clear-cut. Mr. Starling noted that the property was in the county, that he would have a tree mitigation plan for this project, and that they intended to preserve as many trees as possible.

Vice-Chair Hewett asked about the possibility of constructing an additional roadway that would connect to the Walmart intersection. The new road would provide an alternative entrance and exit with a stoplight. Mr. Starling explained that Sandy Lane was considered an option for this project. However, it was found that some constraints made it less optimal. These constraints include the existing wetlands, the width of the existing right-of-way along Sandy Lane (which is only 30ft, so it doesn't give as much space for other utilities if needed), and it wouldn't be the best entrance for grand landscaping.

Mr. Joyner raised concerns about the traffic pattern from Jabbertown Road onto Highway 87. Mr. Starling explained that the traffic design would be changed to a right-out-only approach from Jabbertown Road. Mr. Joyner then clarified that there would also be no left turn permitted from Highway 87 onto Jabbertown Road. Mr. Starling confirmed that this was the proposed plan from the Department of Transportation. Mr. Joyner and Mr. Pender expressed their concerns that this would create problems for the residents of Jabbertown Road and Ace Hardware, as they would not be able to turn left onto Jabbertown Road. They recommended that the City discuss the design plan with the Department of Transportation immediately.

Mr. Scott Jones asked about the number of homes that would be constructed if the development remained an R-20 district. Chair Hodgin noted that with the proposal to rezone from R20 to PUD – makes sense because at R20, approx. 78 units could be built, with a requirement for only a bit over an acre of open space; with PUD rezoning, they're proposing 100 units, but TEN-plus acres of open space – way more than what's required by the R-20 zoning. Their proposed open space acreage meets our requirements for contiguous areas; it allows for walking paths and a park throughout the community, and connectivity and a sense of neighborhood are goals for the city. Chair Hodgin confirmed with Ms. Meehan that the plan meets all requirements of the Unified Development Ordinance. Mr. Starling noted that he understands the issues with the DOT traffic pattern changes. He said it is not a part of their project, and it is not related to anything that they are able to change as their entrance is proposed south of the Jabbertown Rd: entrance and exit.

It was the consensus of the Board to table the submitted Turtle Bay PUD Application, Rezoning, and Master Development Plan for additional consideration and/or Staff comments for return to us at our March 2024 Meeting. A motion was made by Mr. Scott Jones to table until the next meeting and seconded by Vice-Chair Hewett. ***Unanimous Vote; Motion Carried.***

**2. <u>Discussion of Expansion of the City's Business District</u>**

Mr. Fiss would like to consider a potential business district expansion going up to Walgreens and across the street on the Bald Head Island LLC property across from the Truist Bank. He noted that many people agree that the entry corridor of the city should be streamlined compared to highway commercial, where a potential large hotel may be built. He wants to see the Highway Commercial begin on the other side of the 211/ 87 intersection stop light.

Ms. Meehan explained that going through a potential rezoning like this would be initiated by the city and go through the same zoning process as all others. Staff would notify all the property owners in the potential areas of consideration for rezone by staff and then bring them to the Planning Board for review and recommendation to the Board of Aldermen. There will be public hearings as usual. Chair Hodgin noted there would need to be a boundary for where the proposed extended Business would end. Ms. Meehan said that she would need some direction from the Board on where it should stop and end. Ms. Meehan said she would look into the surrounding Highway Commercial area, review the property values, and bring information back to the Board. Mr. Fiss noted that these factors should also be considered with the Hwy 211 road widening project and the broad changes coming to the intersection at Robert Ruark. There will be more discussion in future meetings.

**I. Other Business:**

Chair Hodgin provided an update on the Sign Review Committee and informed everyone that they will present a complete report to the Board at the upcoming March Meeting. She also mentioned that the Steering Committee for the Comprehensive Plan has finalized the Member's Roster. The first meeting is scheduled to take place on March 15th. Additionally, Ms. Meehan shared that the city website now has a Comprehensive Plan webpage that includes information and updates.

**J. Announcements:**

Chair Hodgin expressed gratitude towards all the volunteers and presenters for their contribution towards Black History Month.

With no further business, Chair Hodgin asked for a Motion to adjourn the meeting.

**Adjourn:**

Vice-Chair Hewet made a Motion to adjourn and, seconded by Mr. Sloan. **Unanimous Vote; Motion Carried. —8:23 p.m.**

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|---|---|
| _____ | _____ |
| Chair, Sue Hodgin | Deputy Clerk, Tanya Shannon |

# STAFF REPORT FOR TURTLE BAY
# PLANNED UNIT DEVELOPMENT APPLICATION
# REZONING AND MASTER DEVELOPMENT PLAN REVIEW

| APPLICATION SUMMARY | |
|---|---|
| **Presentation Date** | March 27, 2024<br>Planning and Zoning Board |
| **Applicant** | East Coast Engineering, P.C.<br>Jackson Starling, PE |
| **Property Owner** | Turtle Bay at Southport, LLC<br>Bob Weinbach and Terrance Ando |
| **Parcel ID:** | 22100017 |
| **Project Acreage** | 54.09 acres |
| **Parcel Acreage** | 54.09 acres |
| **Zoning District** | R-20/HC |
| **Proposed Zoning** | Planned Unit Development |
| **Proposed Future Land Use Map** | Low Density Residential |

## PROJECT OVERVIEW

Jackson Starling, applicant, on behalf of Turtle Bay at Southport, is requesting approval of a Master Development Plan and Rezoning from R-20/HC to Planned Unit Development (PUD). The Master Development plan proposes 100 single-family dwelling units on an approximately 54-acre parcel of land located on NC 87.

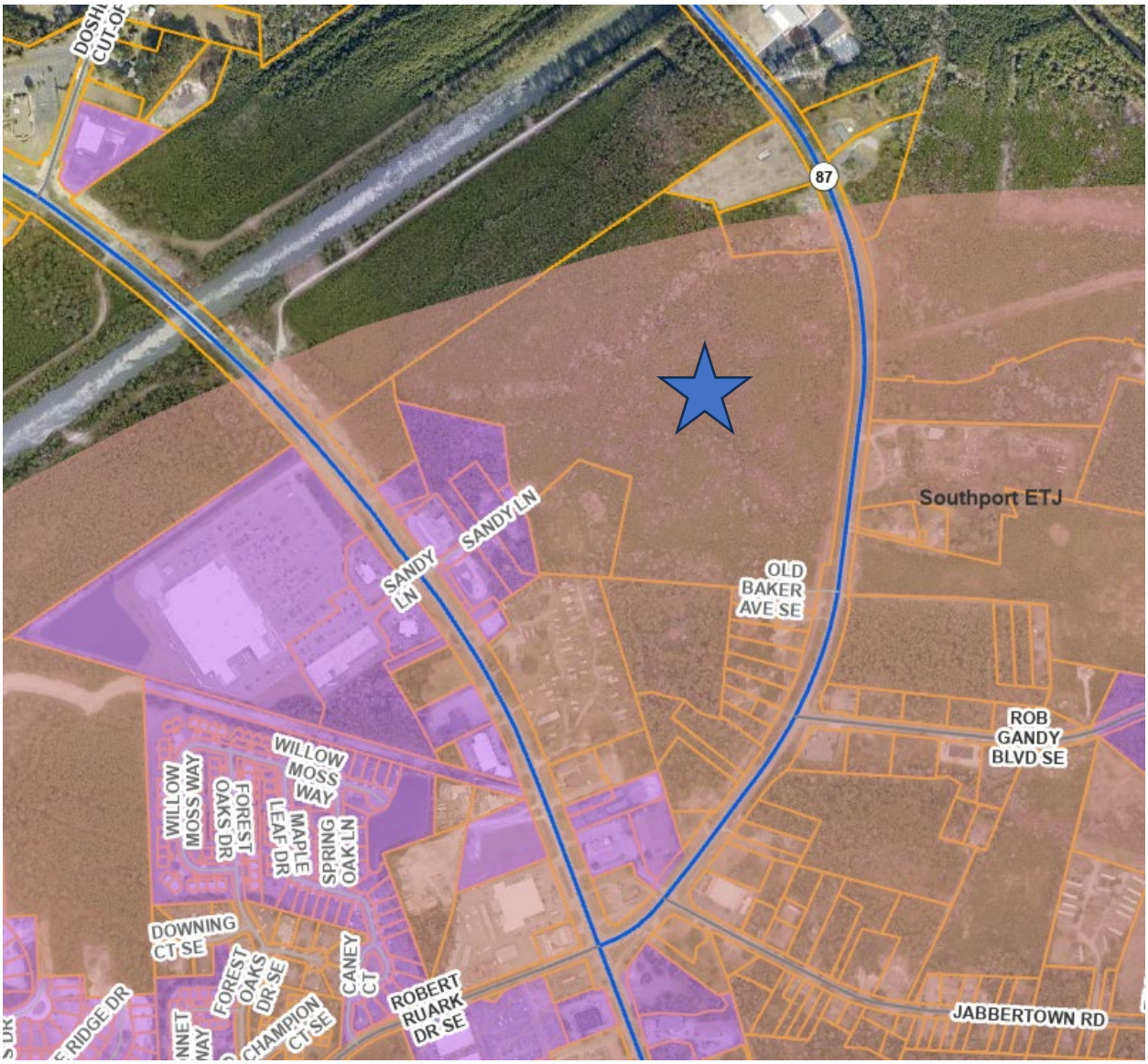
Most of the property falls within the medium suitability land classification on the Land Suitability Analysis Map of the CAMA Land Use Plan. A portion is classified as low suitability due to the proximity of wetlands on site. The future land use map designation is low-density residential and heavy commercial. Low-density residential designation allows a variety of single-family uses with a density of 2/3 units per acre.

Staff are also requesting an amendment to the future land use map to designate the entire property as low-density residential.

## LOCATION

Subject property is located on NC 87 (River Road) to the north of Rob Gandy Boulevard, south of Duke Energy, and east of Hwy 211 (N Howe Street). This property is located within the extraterritorial jurisdiction of the City and can be further identified by Brunswick County Parcel ID 22100017.

A portion of the northern boundary is within Brunswick County Jurisdiction. A petition for annexation has been submitted and will follow the affirmative recommendation to the Board of Aldermen.



## 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 property within the area 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.

A Planned Unit Development (PUD) is planned and developed as an integral unit in a single development operation or a defined series of development according to an approved master plan. Per Section 2.9 C 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 Master Development Plans within the City of Southport.

A PUD requires an amendment to the City's zoning map in conjunction with the approval of the master development plan. Applications for both the master development plan and rezoning are submitted concurrently. The master plan outlines the framework for development within the PUD, including intended uses, dimensional standards for parking, landscaping, design guidelines, and buffers. The proposal must comply with the design guidelines provided in Section 4.15 of the Unified Development Ordinance.

When evaluating the application for a PUD zoning district, the Planning Board and the 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 and adjoining properties.

The Planning Board will provide a recommendation to the Board of Aldermen.

Prior to the Board of Aldermen's consideration of a change, a public hearing must occur on 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 Board of Aldermen may adopt the approval, conditional approval, or denial of the rezoning after the duly advertised public hearing and upon the approval of a plan consistency statement and a statement of reasonableness.

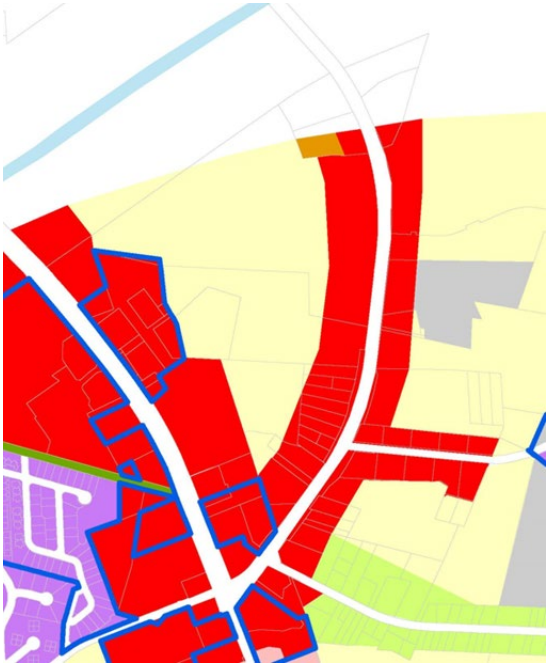
Following an affirmative decision by the Board of Aldermen, the official zoning map will be updated to PUD, and all development shall follow the approved master development

plan. The major subdivision preliminary plat process will follow the approval of the PUD prior to any development onsite.

## TECHNICAL REVIEW COMMITTEE

City of Southport Planning Staff and the applicant presented this proposal to the Technical Review Committee at their December 19, 2023, meeting. The Fire Chief and City Engineer requested updated ROW information with a paved street width of 24' for a 50' ROW. The applicant provided updated site plans that were approved in January. For clarity and transparency, many of the comments received from other Departments or outside agencies are of a nature that they are to be addressed during the preliminary plat review and/or following the issuance of zoning approval through the course of the building plan and permit review and issuance.

## CURRENT ZONING



**Zoning Map**
Grey – Light Industrial
Red – Heavy Commercial
Light Green – Mobile Home
Light Yellow – R-20
Purple – PUD

**Future Land Use Map**
Red – Heavy Commercial
Yellow – Low Density Residential

## MASTER DEVELOPMENT PLAN REVIEW

Master development plans must be prepared by and sealed by a licensed land surveyor, landscape architect, or engineer registered in North Carolina. They shall meet all the requirements listed in Appendix A of the UDO. Further, all PUD development and subsequent major subdivisions must include the required improvements found in Section 4.7.

**Dimensional Requirements**
The parcel of land has a total of 54.09 acres. The density of the proposed subdivision is 1.85 dwelling units/acre, which meets the maximum density of 6 du/acre as laid out within the Unified Development Ordinance. Further, there are 10.88 acres of open space, which meets the existing 20% requirement for all PUDS.

The following lot dimensions are proposed:
Minimum Lot Size: 12,000 SF (60% of the minimum lot area for R-20)
Minimum Lot Width: 75' (exceeds the minimum 40' width requirement)
Setbacks: Front – 10', rear – 15', side – 8' (minimum setbacks allowed)
Utility Easement: 10' along all side lot lines (provides 10' building setback for primary and accessory structures)
Periphery Boundary Setback: 25'

**Section 4.7.D lists the Required Improvements for Subdivisions. The following discussions will outline how the applicant has met the eight (8) requirements, including other provisions necessary for approval found in the UDO.**

**Transportation and Streets**
Access to the site is provided from a main gated entrance from NC 87. There is a siren-activated fire apparatus entrance located at the southern edge of the property. There are 50' Right of Ways with 24' paved roadways. The proposed right-of-way widths are less than is required by the Unified Development Ordinance. However, the reduced widths were reviewed and approved by the fire chief at the Technical Review Committee meeting on December 19, 2023. All streets will be private rights-of-way and constructed to meet the requirements of Section 4.8.

Block lengths do not exceed 1500 linear feet with intersections at nearly right angles. Proposed cul-de-sacs do not exceed 750 feet in length and meet the turn-around radius requirements. Further, a turn-around is part of the street that exceeds 150 feet in length.

A traffic impact analysis is required for any development that will generate more than 500 trips per day. The proposed subdivision will generate approximately 1000 trips per day. A traffic impact analysis was completed to show the impact of the proposal and provide recommended improvements for access to the site. The recommendations include the construction of a southbound right-hand turn lane on NC 87, the construction of a northbound left turn land on NC 87, and the construction of the driveway to applicable NCDOT standards with adequate site distance. These recommended improvements are included in the master development plan.

**Lighting**
The applicant is required to install street lighting with underground distribution along all proposed streets. Per statements made by the applicant on the site plan, a lighting plan is being prepared by Brunswick Electric Member Cooperation. A lighting plan meeting the standards of Section 3.16 of the City of Southport Unified Development Ordinance and Chapter 4 Article 5 of the City Code of Ordinances shall be required prior to final approval of the Preliminary Plat, and any installations shall be inspected for conformance to the approved lighting plan prior to final plat approval.

**Street Name Signs and Cluster Mailboxes**
The applicant will install street signs, both traffic control and name signs, and shall meet all applicable regulations.

A cluster mailbox kiosk has been identified on the site plan at the rear of the property adjacent to the open space park space. There are nine (9) parking spaces provided for the mail kiosk and open space facilities.

**Pedestrian Facilities**
Per Section 4.11, sidewalks are required on both sides of the street for subdivisions with more than 20 lots. In lieu of placing sidewalks on both sides of the street, the subdivider may install a connected multi-use path network with a minimum width of eight (8) feet along one side of the street connecting to recreation and open space area. The applicant has provided an 8' multi-path network with a delineated ten (10) foot connection at street crossings.

**Water Supply and Sewage Disposal Systems**
The county will provide both water and sewer to this subdivision. There were no comments or concerns from the county representative who had the opportunity to review the proposal prior to the December TRC meeting.

**Erosion and Sedimentation, Drainage Control Facilities, and Stormwater**
The applicant shall comply with all requirements of Article 6 of the City of Southport Unified Development Ordinance and all requirements of the North Carolina Sedimentation Pollution Control Act. The design of the system will be reviewed and approved by the City Engineer and Public Services Department. Detailed plans may be submitted after the site plan or preliminary plat approvals that will be approved prior to any ground-disturbing activities.

All permits from the N.C. Department of Environmental Quality shall be obtained prior to commencing construction.

**Recreation and Open Space**
As stated previously, the applicant has provided 10.88 acres of open space, excluding wetlands. This meets the 20% requirement for PUDs. The open space forms a single parcel, except where a connecting corridor of open space is not less than 30 feet wide. The noncontiguous areas account for less than 50% of the required open space allocation.

All open space areas will be owned and maintained by the homeowner's association.

**Landscaping and Buffers**
Per Section 3.17 of the Unified Development Ordinance, street yards are required for the proposed change in use of the property. The street yard buffer has been identified in the master development plan. The applicant has provided a preliminary landscape plan. A specific landscape plan will be included as part of the preliminary plat application.

**Tree Protection and Landscape Preservation**
A formal tree protection and mitigation plan is not required for master development plan approval. The applicant has provided a preliminary landscape plan. This information shall be required prior to approval of the Preliminary Plat.

**Signage**
Approval of a master development plan does not include sign permit approval. All future signs associated with the project shall require separate review and approval by the Planning Staff based on conformance with Section 3.19 of the City of Southport Unified Development Ordinance.

## 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.

Increasing housing demand is one of the overarching themes found in the Future Demands section of the LUP. The goals, objectives, and policies found within the plan focus on balancing the need for housing and infrastructure with the protection of the historic character and environmental resources of the City.

**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

***The proposed rezoning is partially inconsistent with the future land use map, which is proposed to be amended. The master development plan proposes a gated single-family development with high-end homes.***

The following policies and implementing actions support the proposed rezoning request.

**Recommended Action 2.1.A:** Consider requiring all rezoning approvals to 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 area of medium suitability on the Land Suitability Analysis (LSA) Map. The LSA takes many different environmental and built features into account including adjacent uses and infrastructure. The future land use map designation supports residential development.***

**Policy 2.3:** Southport supports quality development reflecting a spectrum of housing needs, from low-end (affordable) residences to high-end (luxury) residences.

**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 tract of land. Wetland areas are adjacent to dedicated open space where possible. Infrastructure improvements and extensions will be made to the property.***

## STAFF'S RECOMMENDATION

City Planning Staff submit the proposed Zoning Map Amendment, Future Land Use Map Amendment, and Master Development Plan to the Planning Board to consider a recommendation to the Board of Aldermen in accordance with the standards and

processes laid out within the City of Southport Unified Development Ordinance. The application has been deemed complete, all standards for planned unit developments have been met, and is eligible to be approved.

Staff would like to reiterate that NCDOT improvements in conjunction with the HWY 211 widening project have no bearing on the decision of this rezoning and master development plan.

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:

1) Applications – Zoning and Planned Unit Development
2) Master Development Plan
3) Consistency Statements

# Planned Unit Development Permit

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.** _____ **FEE: $** $1000 **Date Received:** RECEIVED NOV 09 2023

**Applicant's Name:** Turtle Bay At Southport, LLC.

**Mailing Address:** PO Box 4232 **City:** Wilmington

**State:** NC **Zip Code:** 28406 **Phone:** 910-443-6739

**Email:** keymarcoconsult@aol.com

**Property Owner's Name:** Turtle Bay at Southport, LLC.

**Address of Owner:** PO Box 4232 **City:** Wilmington

**State:** NC **Zip Code:** 28406 **Phone:** 910-443-6739

**Email:** keymarcoconsult@aol.com

**Property Address:** Tax Parcel # 22100017 **City:** Southport

**Parcel Size (acres):** 54.09 **Number of Dwellings:** 100

**Open Space Area:** 10.88 acres **Right-of-way Area:** 7.63 acres

**Surveyor:** Port City Land Surveying, PLLC. **License #:** P-1493

**Mailing Address:** 1144 Shipyard Blvd. **City:** Wilmington

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**State:** NC **Zip Code:** 28412 **Phone:** 910-791-0080

**Email:** portcitylandsurveying@gmail.com

Per Section 2.9 of the UDO, the purpose of 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.

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).

Application and Planned Unit Development Review Procedure is found in Section 2.9.C

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.

Signature (Owner or Authorized Applicant) — Date: 11-6-2023

**APPROVED BY:**

Maureen Meehan — Date: 12/5/2023

UDO Administrator

# Rezoning Application

City of Southport, North Carolina

RECEIVED
NOV 0 9 2023

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

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

Date: 11/9/2023

FEE: $ 6,409.00

Permit #: ZMA-24-01

Project Name (If Applicable): Turtle Bay Subdivision

**A complete application for any amendment shall contain a description of the proposed zoning regulation or zoning map amendment. The application shall state in detail whether the proposed amendment is consistent with CAMA Core Land Use Plan and any other officially adopted plan that is applicable. The application shall also give detailed evidence that the proposed amendment is in the interest and will benefit the general public and not solely be of benefit to the applicant; that the uses within the proposed zoning district are similar or comparable to the uses in the district as currently zoned, or that none of the uses permitted in the proposed zoning district may potentially adversely affect property values or the health, safety, morals, or general welfare of the residents of the surrounding area. Such application shall be filed with the Administrator to be processed in accordance with Section 12-5 of the UDO.**

**The Planning Board and Board of Aldermen may consider the following when deciding: Impact on neighbors and neighborhood, traffic, environment, utilities, suitability of land, harmony with area, schools, economic impact, tax base increase, spot zoning created, road capacity, adequate infrastructure, community opinion, property values, consistency with the Land Use Plan, future land use map, jobs, public services, buffering requirements, environmental impact, site limitations, and consistency with plans and prior decisions. The Boards cannot consider ethnicity, income, affordable housing, owner vs. renter housing, or who the owner is when deciding.**

Petitioner Name: Turtle Bay at Southport, LLC.

Mailing Address: 5106 Lancome Ct. City: Wilmington

State: NC Zip Code: 28409

Phone: 910-443-6739 Email: terrysando@gmail.com keymarcoconsult@aol.com

Street Address and/or Description of Location: 1/2 mile North of the intersection of North Howe Street (NC-211) & River Road SE (NC-87), towards Rob Gandy Blvd SE (SR-1620).

Parcel ID #: 22100017

Site Acreage: 54.09 Acres Number of Lots: 100

Current Zoning District: R-20 & HC Proposed Zoning District: PUD

C:\Users\tlloyd\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\2WJ7BDXA\RezoningApplicationJuly2018.docx

**If the proposed change would require a change in the zoning map, attach an accurate diagram of the property proposed for rezoning showing:**

1. **All property lines with dimensions and north arrow.**
2. **Adjoining streets with rights-of-way and paving widths.**
3. **The location of all existing structures on the property.**
4. **The existing land uses associated with the property.**
5. **The zoning classification of all abutting zoning districts.**
6. **A list of all abutting property owners.**

**Future Land Use Map Designation:** Low Density Residential & a small area of Heavy Commercial

**Is the proposed zoning consistent with the Land Use Plan? (Describe how it is consistent below if so)**
**(Please Circle One): Yes (No)**

**Please describe the changing conditions in the area or in the City of Southport that makes the proposed amendment necessary to the promotion of the public health, safety and general welfare, or that identifies an obvious error in the zoning map based upon the zoning classification or current land use of surrounding properties. Also include an explanation on why the proposed zoning is or is not consistent with the Land Use Plan and other adopted plans (Attach separate sheet if necessary)**

SEE ATTACHED

Project Narrative.

| Rezoning Fees as of July 1, 2018 | |
|---|---|
| Rezoning: Less than 3 Acres | $500.00 |
| Rezoning:3.01-6.00 Acres | $1,000.00 |
| Rezoning: 6.01 + Acres | $1,000.00 + $100/acre |

**In filing this Rezoning Petition, I hereby certify that I am authorized to submit this application and that all of the information presented in this application is accurate to the best of my knowledge, information, and belief.**

**Signature (Owner or Authorized Applicant)**

11-6-2023

**Date**

East Coast Engineering, P.C.
ENGINEERS•PLANNERS•CONSULTANTS

November 9, 2023

**Turtle Bay Subdivision**
**(Turtle Bay at Southport, LLC.)**

The subject 54.09 acre site is currently a forested, vacant tract of land which has some history of forest management, or thinning of trees. Both R-20 and HC zoning districts exist on the site with surrounding zoning districts of Industrial General (County) to the North, R-20 (Southport) to the south, and Highway Commercial (Southport) to the East, West, and part of the southern border along the portion of road frontage. The future land use designation for this area is low density residential and heavy commercial. Low density residential allows single family residences with a prescribed unit density of 2-3 units per acre. The low density residential land use designation makes up approximately 80% of the site. The area on the future land use map that is designated as heavy commercial is located along the frontage of Highway 87 (River Road SE). While the heavy commercial future land use designation of the strip of property sharing frontage with Highway 87 does not necessarily lend itself to promoting single family development, the CAMA core land use plan does indicate that areas currently zoned for commercial land use are not intended to be static as the land surrounding is developed. Additionally, the Town's current ETJ zoning line splits off a small portion of the northern portion of the site as shown on the master development plan. Concurrent with the request for approval of the PUD, we are requesting voluntary annexation to transfer the portion of land in Brunswick County's zoning jurisdiction into Southport's ETJ.

By using the PUD design guidelines we were able to be a little bit more flexible on the layout and impact of the proposed subdivision. Developing per the underlying zoning district, R-20, would have restricted lots to a larger size and would eliminated much of the open space, heritage trees, and natural drainage patterns of the site. Claiming the lot size reduction (maximum of 60% of the underlying zoning district), we were able to meet both our clients desired number of units as well as shape the subdivision in a manner such that it meets the open space, and preservation of natural areas (natural drainage ways, heritage trees, and minimize impacts to wetlands). At 100 proposed single family lots, this PUD proposal would be requesting a unit density of 1.85 units per acre, which is actually lower than the 2-3 units per acre prescribed by the future land use designation of low density residential. However, the future land use designation of heavy commercial would need to be amended in order to support this request. Southport is growing and availability of single family homes will continue to be in high demand. The proposed site location, on outer limits of town would provide proximity to nearby shopping needs, while being located away from the heart of Town.

Appropriate buffering between the proposed PUD and surrounding properties should alleviate concerns with the transition in land use designation as well as the shift from R-20 & HC zoning to a PUD overlay. The majority of the roadway frontage (lots 93-100) would have an 80-ft plus buffer from the R/W of Highway 87 up to the rear of the lots. Lots 5-10 abutting the R-20 zoned tracts to the south are provided with a 38-ft minimum buffer offset from the southern property line. Lots 1-4 are provided the same buffer and are proposed adjacent to an area zoned highway commercial, but is currently a single family home site (tax parcel 221LA011). The southwest portion of the site adjacent to HC zoned area is buffered to proposed lots by natural open space (Lots 29-38). The preservation of heritage trees in conjunction with the 25-ft periphery boundary setback in this area will ensure a smooth transition and buffering between zoning districts. It should also be noted that tax parcel 2210002601 is zoned HC, but is currently a single family home site. Proposed lots abutting the northern property line (lots 38-51) zoned Brunswick County industrial general are provided a 25-ft periphery boundary setback for principle structures. There is no proposed buffer for these lots, but the land to the North is currently owned by Duke Energy Progress, Inc. for the operation of the power plant outfall canal (approx. 650-ft from northern property line to outfall canal). If Duke Energy Progress, Inc. were to ever develop this area of land, they would be required by Brunswick County planning to provide a buffer opacity of 1.0 (highest standard of buffering) which would equate to a minimum buffer width of 80-ft. Lots 53/53 are adjacent to tracts zoned commercial low density (Brunswick County) and highway commercial (Southport). These lots are provided a 25-ft rear setback as well as a 25-ft buffer where existing vegetation is to remain. Lastly, lots 85-92 are buffered from the adjacent tract to the north by the proposed stormwater pond and open space areas. Many heritage trees will remain along this northeast property line.

Extensive coordination with NCDOT and draft traffic impact studies have indicated a need for a symmetrical widening of Highway 87 at the proposed entrance to the subdivision. While the final design will have to be approved by NCDOT, we are currently proposing a northbound center left turn lane, as well as a southbound right turn lane. NCDOT has indicated that this roadway improvement would alleviate any concerns with traffic congestion/safety. Additionally, we have coordinated with the local fire marshal to add a secondary emergency entrance/exit for emergency vehicle access. This gated secondary drive will not be accessible to residents, will be properly noted with signage, and will operate by emergency siren activation. Additionally, NCDOT is continuing to work on the widening of NC-211 and plans to improve the intersection of NC-211 and NC-87 to improve circulation & flow (DOT TIP #R-5021 – Map included in this submittal).

Grading of the roadways will promote runoff from lots to be directed to the street where it will be collected via valley curb and gutter. All runoff is conveyed to one large stormwater pond which has been sized to meet the pre-post runoff condition based on the 25 year peak runoff condition. Additionally, the stormwater pond has been routed to ensure that it will not overtop the banks in the 100-year peak runoff event which further protects downstream natural resources. Permits from the Town of Southport and NCDEMLR will be required prior to any final approval/final platting. The natural drainage course leading down to Clay bottom branch was maintained and runoff from offsite will be bypass the stormwater pond via existing drainage swales as shown on the grading & tree impact plans. All runoff from the natural drainage bypass as well as the stormwater pond outfall are ultimately routed to two 30-inch culverts crossing under highway 87.

**City of Southport Planning Board**
**Statement of Plan Consistency and Zoning Recommendation**
**(As per NC General Statute 160D-604)**

*When conducting a review of proposed zoning text or map amendments pursuant to this section, the planning board shall advise and comment on whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The planning board shall provide a written recommendation to the governing board that addresses plan consistency and other matters as 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 governing board.*

AMENDMENT: **ZMA 24-01**

STATEMENT OF CONSISTENCY AND RECOMMENDATION:

The City of Southport Planning Board hereby recommends **approval** of the proposed Zoning Map Amendment to the Board of Aldermen and finds that it is consistent with the City's 2014 CAMA Core Land Use Plan originally adopted Nov. 13, 2014 and subsequently amended by the Southport Board of Aldermen. More specifically, the proposed amendment is consistent with **Policy 2.3:** Southport supports quality development reflecting a spectrum of housing needs, from low-end (affordable) residences to high-end (luxury) residences. Further, the Planning Board finds that the proposed text amendment is reasonable due to the size, physical conditions, and other attributes of the area.

The statement and motion was seconded and passed _____.

_____ _____

Tanya Shannon, Deputy City Clerk Sue Hodgin, Chairman

**City of Southport Planning Board**
**Statement of Plan Consistency and Zoning Recommendation**
**(As per NC General Statute 160D-604)**

*When conducting a review of proposed zoning text or map amendments pursuant to this section, the planning board shall advise and comment on whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The planning board shall provide a written recommendation to the governing board that addresses plan consistency and other matters as 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 governing board.*

AMENDMENT: **ZMA 24-01**

STATEMENT OF CONSISTENCY AND RECOMMENDATION:

The City of Southport Planning Board hereby recommends **denial** of the proposed Zoning Map Amendment to the Board of Aldermen and finds that it is inconsistent with the City's 2014 CAMA Core Land Use Plan originally adopted Nov. 13, 2014 and subsequently amended by the Southport Board of Aldermen and not reasonable due to the size, physical conditions, and other attributes of the area.

The statement and motion was seconded and passed _____.

_____ _____

Tanya Shannon, Deputy City Clerk Sue Hodgin, Chairman

## TREET MITIGATION REQUIREMENTS:

TOTAL CALIPER OF TREES REMOVED: 2539.5" DBH
TOTAL CALIPER OF NEW TREES: 2556" DBH

RESIDENTIAL LOT PLANTINGS:
(4) 3" CALIPER TREES PER LOT
(400) 3" CALIPER TREES: 1200"

ENTRANCE PLANTINGS:
(4) 7" CALIPER: 28"
(36) 2.5" CALIPER: 90"
TOTAL: 118"

COMMON AREA PLANTINGS
(406) 3" CALIPER TREES: 1218"
**NOTED ON PLAN**

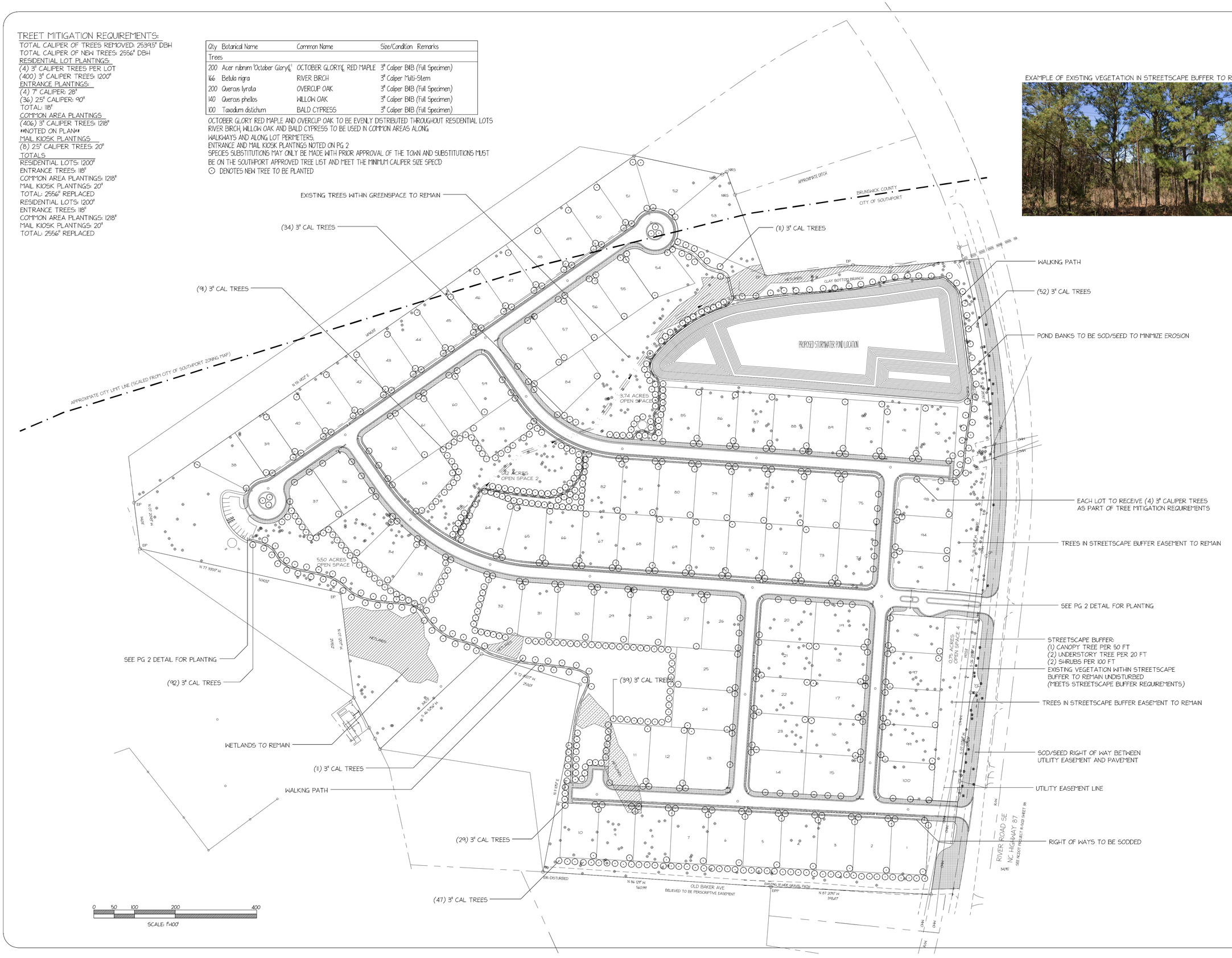
MAIL KIOSK PLANTINGS
(8) 2.5" CALIPER TREES: 20"

TOTALS
RESIDENTIAL LOTS: 1200"
ENTRANCE TREES: 118"
COMMON AREA PLANTINGS: 1218"
MAIL KIOSK PLANTINGS: 20"
TOTAL: 2556" REPLACED
RESIDENTIAL LOTS: 1200"
ENTRANCE TREES: 118"
COMMON AREA PLANTINGS: 1218"
MAIL KIOSK PLANTINGS: 20"
TOTAL: 2556" REPLACED

| Qty | Botanical Name | Common Name | Size/Condition | Remarks |
|---|---|---|---|---|
| Trees | | | | |
| 200 | Acer rubrum 'October Glory'¢ | OCTOBER GLORY¢ RED MAPLE | 3" Caliper B&B (Full Specimen) | |
| 166 | Betula nigra | RIVER BIRCH | 3" Caliper Multi-Stem | |
| 200 | Quercus lyrata | OVERCUP OAK | 3" Caliper B&B (Full Specimen) | |
| 140 | Quercus phellos | WILLOW OAK | 3" Caliper B&B (Full Specimen) | |
| 100 | Taxodium distichum | BALD CYPRESS | 3" Caliper B&B (Full Specimen) | |

OCTOBER GLORY RED MAPLE AND OVERCUP OAK TO BE EVENLY DISTRIBUTED THROUGHOUT RESIDENTIAL LOTS
RIVER BIRCH, WILLOW OAK AND BALD CYPRESS TO BE USED IN COMMON AREAS ALONG
WALKWAYS AND ALONG LOT PERIMETERS.
ENTRANCE AND MAIL KIOSK PLANTINGS NOTED ON PG. 2
SPECIES SUBSTITUTIONS MAY ONLY BE MADE WITH PRIOR APPROVAL OF THE TOWN AND SUBSTITUTIONS MUST BE ON THE SOUTHPORT APPROVED TREE LIST AND MEET THE MINIMUM CALIPER SIZE SPECD
⊙ DENOTES NEW TREE TO BE PLANTED

EXAMPLE OF EXISTING VEGETATION IN STREETSCAPE BUFFER TO REMAIN




BLD LANDSCAPE ARCHITECTURE

N
NORTH

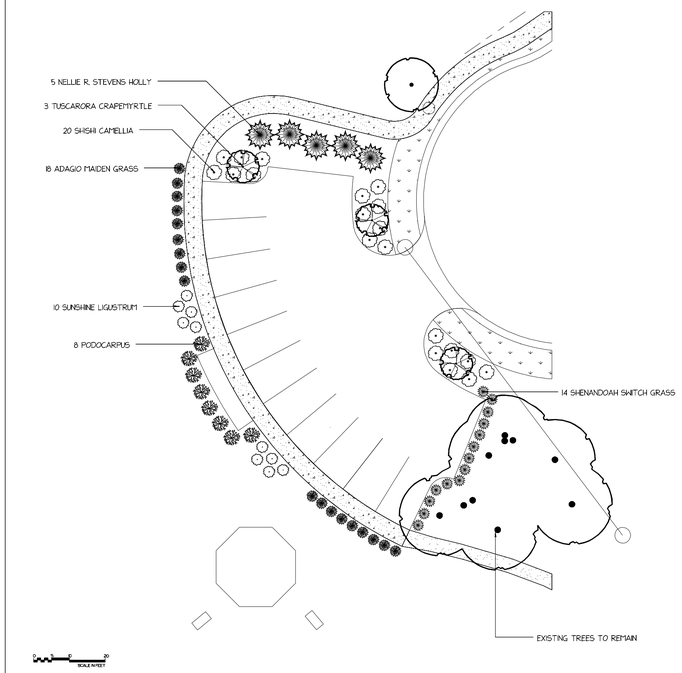
TREE PLANTING MASTER PLAN FOR:
TURTLE BAY NEIGHBORHOOD
SOUTHPORT
NORTH CAROLINA

| | |
|---|---|
| DRAWING # | 1 |
| DATE | 11/3/23 |
| SCALE | 1"=100' |

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2358 BRIAN SPENCER SIMONS

L-1

## MAILBOX KIOSK PLANTING AREA




### MAILBOX AREA PLANTING KEY

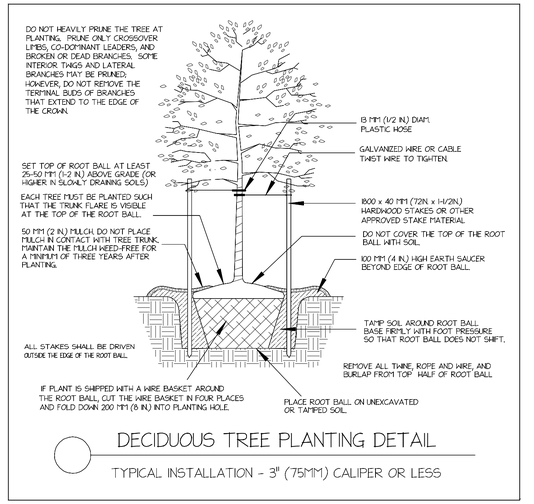
| Qty | Botanical Name | Common Name | Size/Condition Remarks |
|---|---|---|---|
| Trees | | | |
| 3 | Lagerstroemia x 'Tuscarora' | TUSCARORA CRAPEMYRTLE | 2.5" Caliper Single Stem |
| Shrubs | | | |
| 20 | Camellia sasanqua 'Shi Shi' | SHISHI CAMELLIA | 3 Gallon 16" Height |
| 5 | Ilex 'Nellie R. Stevens' | NELLIE R. STEVENS HOLLY | 2.5" Caliper |
| 10 | Ligustrum sinense 'Sunshine' | SUNSHINE LIGUSTRUM | 3 Gallon 16" Height |
| 8 | Podocarpus macrophyllus | PODOCARPUS | 7 Gallon 36" Height |
| Ornamental Grasses | | | |
| 18 | Miscanthus sinensis 'Adagio' | ADAGIO MAIDEN GRASS | 3 Gallon 12" Height |
| 14 | Panicum virgatum 'Shenandoah' | SHENANDOAH SWITCH GRASS | 3 Gallon 12" Height |

### FRONT ENTRANCE PLANTING KEY

| Qty | Botanical Name | Common Name | Size/Condition Remarks |
|---|---|---|---|
| Trees | | | |
| 4 | Quercus virginiana | SOUTHERN LIVE OAK | 7" Caliper 22' Height |
| 6 | Lagerstroemia x 'Natchez' | NATCHEZ CRAPEMYRTLE | 2.5" Caliper Single Stem |
| Palms | | | |
| 16 | Sabal minor | DWARF PALMETTO | 7 Gallon 36" Height |
| Shrubs | | | |
| 46 | Abelia x grandiflora 'Kaleidoscope' | KALEIDOSCOPE ABELIA | 3 Gallon 16" Height |
| 30 | Ilex 'Nellie R. Stevens' | NELLIE R. STEVENS HOLLY | 2.5" Caliper |
| 100 | Ilex vomitoria 'Nana' | NANA YAUPON HOLLY | 3 Gallon 12" Height |
| 12 | Ligustrum japonicum | WAXLEAF LIGUSTRUM | 15 Gallon 48" Height |
| 11 | Ligustrum sinense 'Sunshine' | SUNSHINE LIGUSTRUM | 3 Gallon 16" Height |
| 17 | Loropetalum var. 'Crimson Fire' | CRIMSON FIRE LOROPETALUM | 3 Gallon 12" Height |
| 18 | Rosa 'Radrazz Knock Out' | RED KNOCK OUT ROSE | 3 Gallon 16" Height |
| Ornamental Grasses | | | |
| 14 | Cortaderia selloana | PAMPAS GRASS | 3 Gallon 12" Height |
| 44 | Liriope muscari 'Big Blue' | BIG BLUE LILYTURF | 3 Gallon 12" Height |
| 30 | Muhlenbergia capillaris | PINK MUHLY GRASS | 3 Gallon 12" Height |

### GENERAL LANDSCAPE NOTES

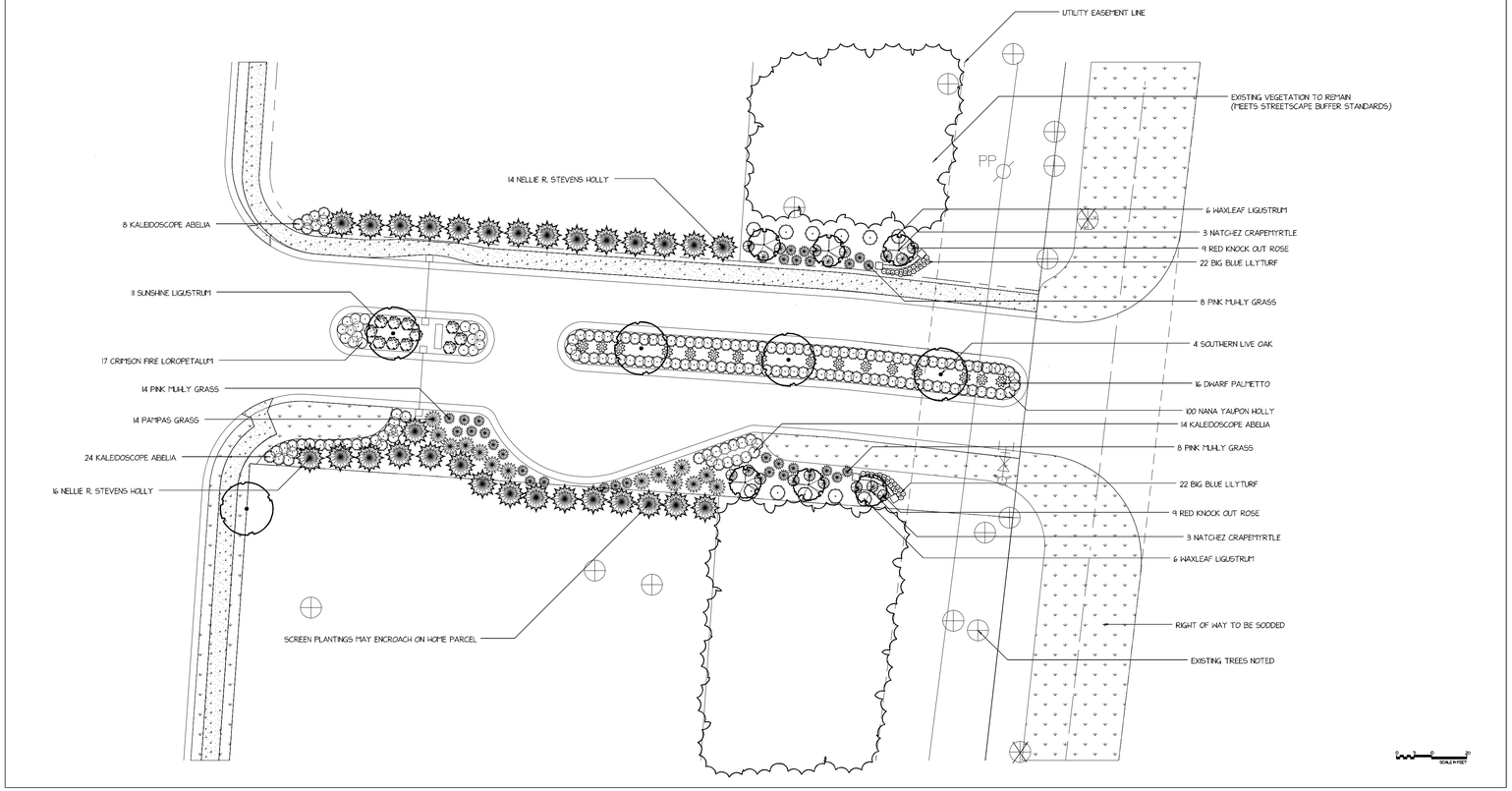
TIFWAY 419 BERMUDA SOD TO BE USED IN ALL TURF AREAS
PLANT MATERIAL SHALL MEET OR EXCEED STANDARD NURSERYMANS SPECIFICATIONS
DOWNSIZING OR SUBSTITUTIONS ARE NOT ALLOWED WITHOUT PRIOR APPROVAL
DAMAGED, ROOT BOUND, OR UNHEALTHY APPEARING, NON-SPECIMEN MATERIAL SHALL NOT BE ACCEPTED.
THIS PROJECT INCLUDES BUT IS NOT LIMITED TO SITE PREPARATION, FURNISHING OF ALL MATERIAL, LABOR, EQUIPMENT, SOIL AMENDMENTS, ETC REQUIRED FOR COMPLETE LANDSCAPE INSTALLATION.
ALL UTILITIES SHALL BE LOCATED BY CONTRACTOR PRIOR TO CONSTRUCTION
IRRIGATION PROPOSAL SHALL BE PROVIDED BY THE CONTRACTOR AND DESIGNEDBY A CERTIFIED IRRIGATION DESIGNER. ALL PLANT MATERIAL SHALL BE DRIP IRRIGATION AND SOD AREAS SPRAY IRRIGATED.
PLANTED AREAS AND DISTURBED NATURAL AREAS SHALL RECEIVE A 3" MINIMUM LAYER OF BROWN HARDWOOD MULCH
DEBRIS SHALL BE REMOVED FROM ALL NATURAL AREAS, WEEDS SHALL BE ERADICATED AND REMOVED FROM ALL NATURAL AREAS. DAMAGED AND DEAD TREE LIMBS SHALL BE REMOVED FROM ALL EXISTING TREES
EQUIPMENT ACTIVITY, FILL OR ANY DISTURBANCE IN EXISTING TREE ROOTZONE AREAS SHALL BE AVOIDED WHENEVER POSSIBLE
THIS PLANTING PLAN ILLUSTRATES THE OVERALL DESIGN INTENT BUT MAY REQUIRE PLACEMENT ADJUSTMENTS.
PLANTING PROCEDURES SHALL MEET OR EXCEED THE HIGHEST HORTICULTURAL PRACTICES IN THE LANDSCAPE INDUSTRY.
CONTRACTOR IS RESPONSIBLE FOR ASSURING ALL REQUIRED PERMITS, IF ANY ARE IN PLACE PRIOR TO COMMENCING WORK
THIS PLAN WAS DESIGNED WITH UTMOST CONSIDERATION TO MINIMIZE MAINTENANCE BUT REGULAR MAINTENANCE WILL BE REQUIRED TO PRESERVE THE APPEARANCE AND TO PROMOTE THE PROPER GROWTH OF THE PLANT MATERIAL.
THE SCHEDULED MAINTENANCE SHOULD BE PERFORMED BY EXPERIENCED AND KNOWLEDGEABLE LANDSCAPE GARDENERS.



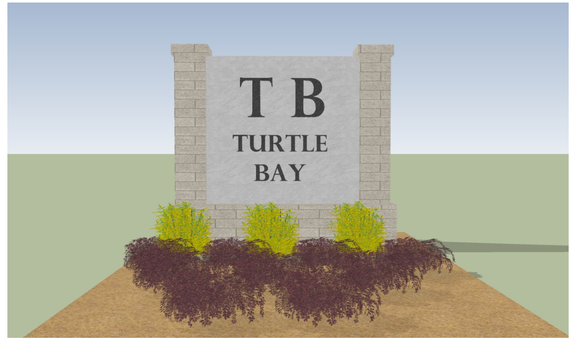

DECIDUOUS TREE PLANTING DETAIL

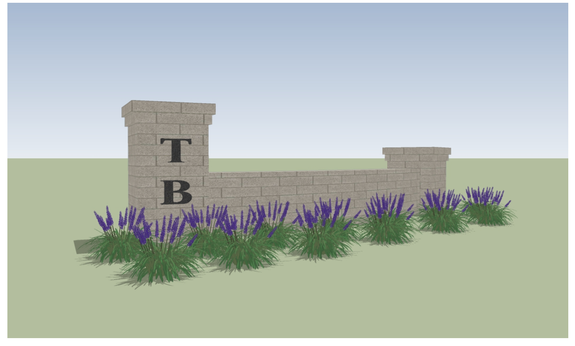
TYPICAL INSTALLATION - 3" (75MM) CALIPER OR LESS

## FRONT ENTRANCE MONUMENT/PLANTING




ENTRANCE MONUMENT CONCEPTS
(FINAL MATERIAL/DESIGN TO BE APPROVED BY TOWN OF SOUTHPORT)




BID LANDSCAPE ARCHITECTURE

N
NORTH

PLANTING DETAILS FOR:
TURTLE BAY NEIGHBORHOOD
SOUTHPORT
NORTH CAROLINA

| | |
|---|---|
| DRAWING # | 1 |
| DATE | 11/3/23 |
| SCALE | 1"=100' |

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2358 BRIAN SPENCER INIONS

L-2

# Turtle Bay at Southport

## Southport, NC

PREPARED FOR: Turtle Bay at Southport, LLC

*January 2, 2024*

**PROJECT #** 220222

TRANSPORTATION IMPACT ANALYSIS

Celebrating 20 YEARS

DAVENPORT

# Transportation Impact Analysis

## Turtle Bay at Southport
Southport, NC

Prepared for
Turtle Bay at Southport, LLC

January 2, 2024

Analysis and Graphics by: Sheheryar Shafique

Reviewed and Sealed by: Nick Liguori, PE

**SEAL**

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of, or improper reliance on, this document by others without written authorization and adaptation by DAVENPORT shall be without liability to DAVENPORT and shall be a violation of the agreement between DAVENPORT and the client.

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**Wilmington Regional Office:**
1426 Navaho Trail, #108
Wilmington, NC 28409
Main: 910.251.8912; Fax: 336.458.9377

Serving the Southeast since 2002

## EXECUTIVE SUMMARY

The Turtle Bay at Southport proposed development is located on the west side of NC 87 to the north of Rob Gandy Blvd in Southport, NC. It is planned to consist of 100 single family homes. One (1) full movement access point on NC 87 (River Road) is proposed for this development. The Site Access is located approximately 1,300 feet north of Rob Gandy Boulevard. The expected build-out year for the development is 2026. Information regarding the property was provided by Turtle Bay at Southport, LLC.

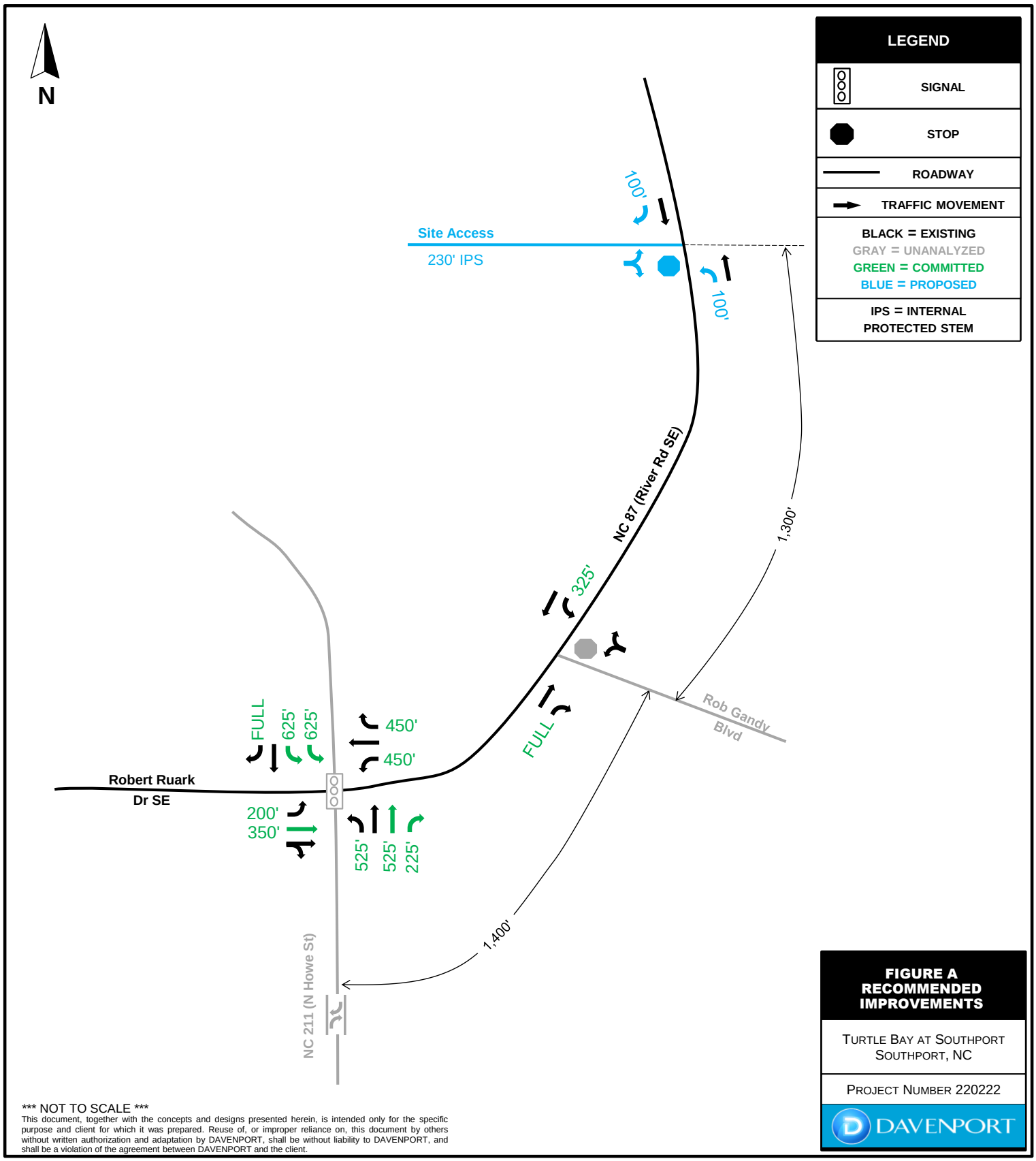
DAVENPORT was retained to determine the potential traffic impacts of this development and to identify transportation improvements that may be required to accommodate the impacts of the new development traffic.

The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with the City of Southport and North Carolina Department of Transportation (NCDOT). This site has a trip generation potential of 1,009 daily trips, 74 trips in the AM peak hour, and 99 trips in the PM peak hour.

In conclusion, this study has determined the potential traffic impacts of this development. At the site access, a northbound left turn lane with 100 feet of storage and appropriate deceleration/taper and a southbound right turn lane with 100 feet of storage and appropriate deceleration/taper is recommended. With the recommended improvements in place, the anticipated transportation impacts of the proposed development can be accommodated. The recommendations summarized in Figure A and in Table A should be constructed to comply with applicable NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and local standards.

**Table A – Summary of Recommended Improvements**

| INTERSECTION | RECOMMENDATIONS |
|---|---|
| NC 87 (River Road) at Site Access | • Construct a southbound right turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.<br>• Construct a northbound left turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.<br>• Construct the driveway according to applicable NCDOT standards and with adequate sight distance. |




*** NOT TO SCALE ***

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## 1.0 Introduction

The Turtle Bay at Southport proposed development is located on the west side of NC 87 to the north of Rob Gandy Blvd in Southport, NC. It is planned to consist of 100 single family homes. One (1) full movement access point on NC 87 (River Road) is proposed for this development. The site access is located approximately 1,300 feet north of Rob Gandy Boulevard. The expected build-out year for the development is 2026. Information regarding the property was provided by Turtle Bay at Southport, LLC.

A conceptual site plan is shown in Figure 1, and a site location map and a vicinity map are provided in Figures 2A and 2B, respectively.

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

1. NC 87 (River Road) and Site Access (unsignalized)

The signalized intersection of US 211 (North Howe Street) at NC 87 (River Road Southeast) and the unsignalized intersection of NC 87 (River Road) at Rob Gandy Boulevard were included in synchro models to account for signal platooning effects and volume balancing purposes. The study intersections were analyzed during the AM and PM peaks for the following conditions:

- 2026 Future Build Conditions
- 2026 Future Build Conditions + Improvements

The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with the City of Southport and North Carolina Department of Transportation (NCDOT). It was conducted according to the standards and best practices of the transportation engineering profession.

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ECE PROJECT NO. 2795

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FIGURE 1
SITE PLAN

Turtle Bay at Southport
Project Number 220222

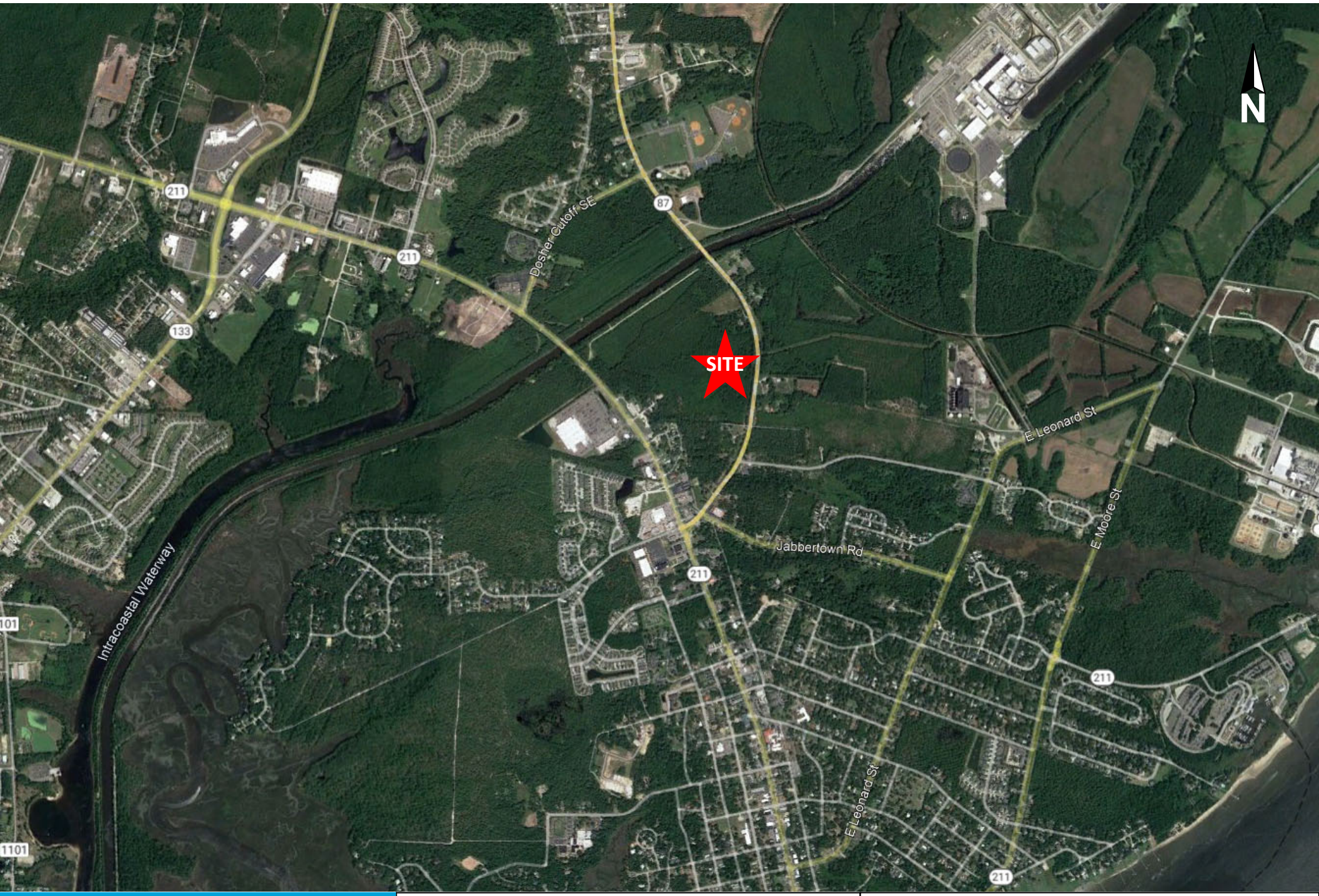


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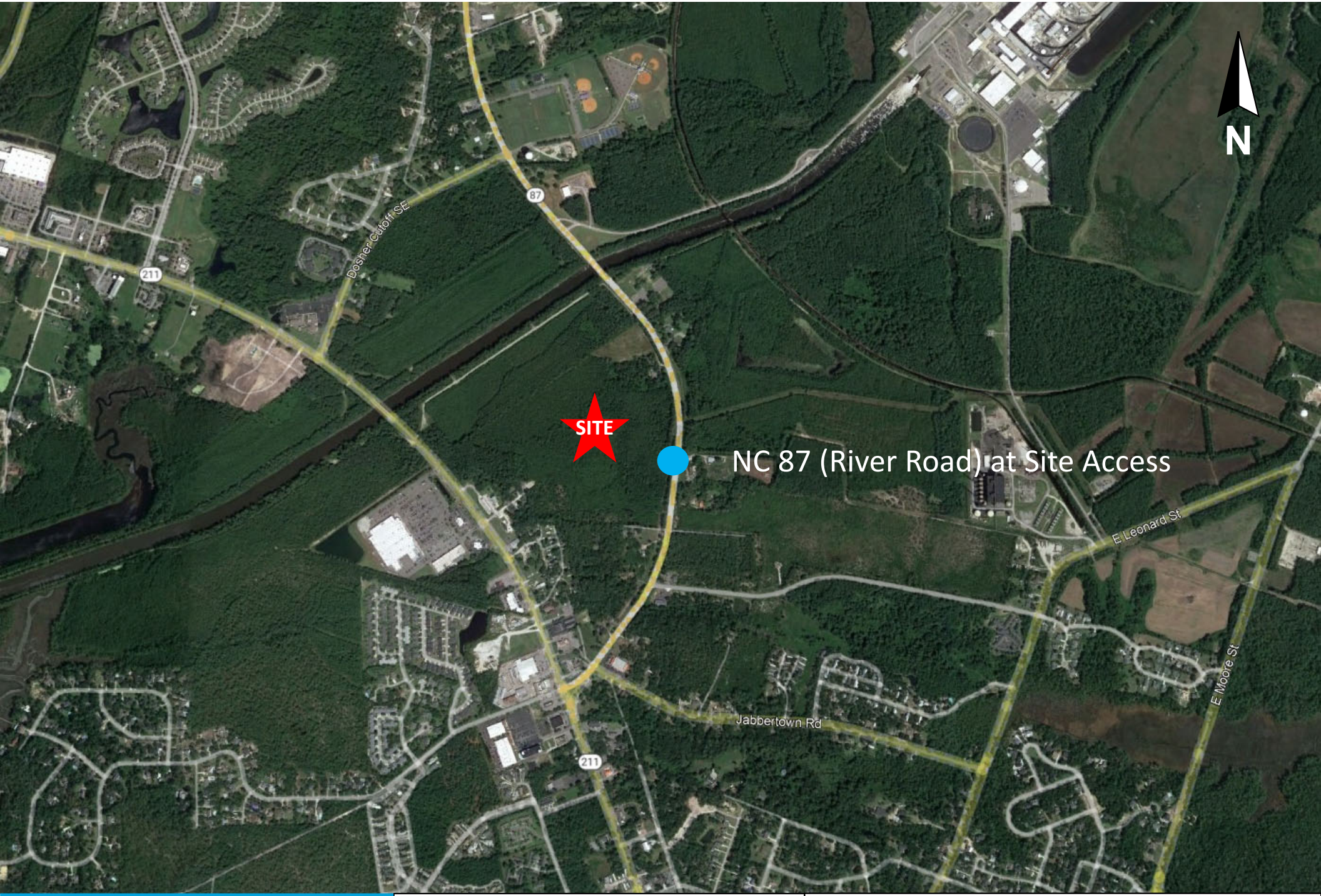
FIGURE 2A
SITE LOCATION MAP

SITE INDICATOR




DAVENPORT

FIGURE 2B
VICINITY MAP

SITE INDICATOR
STUDY INTERSECTION

## 2.0 Existing Conditions

### *2.1 Inventory*

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

| Table 2.1 - Street Inventory | | | | | | |
|---|---|---|---|---|---|---|
| **Facility Name** | **Route #** | **AADT (vpd)** | **Typical Cross Section** | **Pavement Width** | **Speed Limit (MPH)** | **Maintained By** |
| River Road | NC 87 | 6,800* | 2-lane undivided | 12-foot lanes | 45 | NCDOT |

**Based on NCDOT 2021 Data*

### *2.2 Existing Traffic Volumes*

Turning movement counts for this project were collected by Burns Services, Incorporated when schools were in session. Table 2.2 contains the location, dates, and times these counts were conducted. As noted previously, Rob Gandy Boulevard was not included in the analysis, but counts were collected at this location to establish through volumes on NC 87 (River Road) in front of the site access. An annual growth rate of one percent (1%) was applied to the 2022 counts to grow the turning movement counts to 2023 conditions. The 2023 existing AM and PM peak hour volumes are shown in Figure 4. Traffic count data are provided in the Appendix.

| Table 2.2 - Traffic Volume Data | | |
|---|---|---|
| **Count Location** | **Date Taken** | **Hours** |
| NC 87 (River Road) at Rob Gandy Boulevard (unsignalized) | Tuesday, May 10, 2022 | 7-9 AM, 4-6 PM |
| NC 211 (North Howe Street) at NC 87 (River Road) (signalized) | Thursday, January 13, 2022 | 7-9 AM, 4-6 PM |

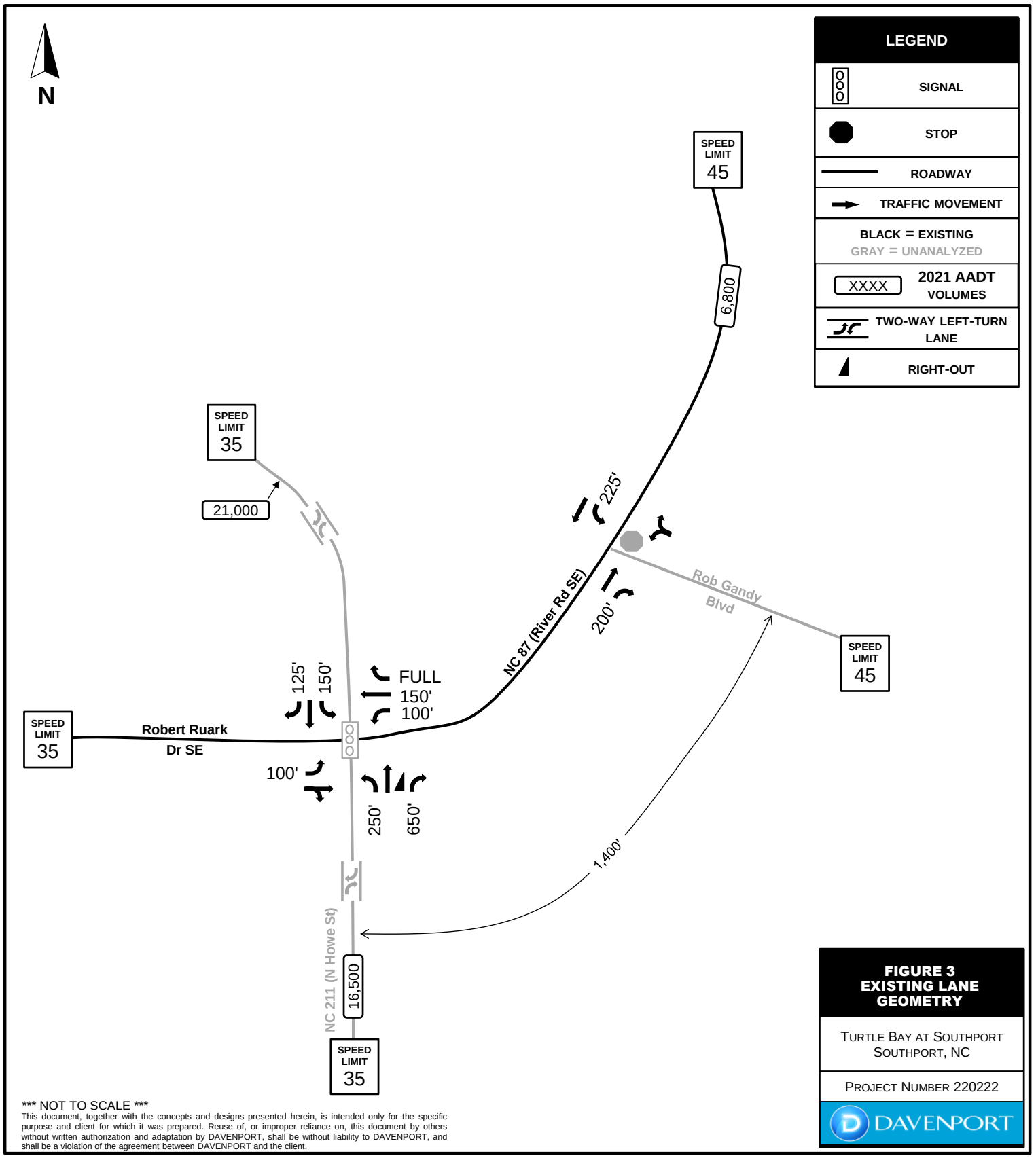

N
LEGEND
SIGNAL
STOP
ROADWAY
TRAFFIC MOVEMENT
BLACK = EXISTING
GRAY = UNANALYZED
XXXX
2021 AADT VOLUMES
TWO-WAY LEFT-TURN LANE
RIGHT-OUT
SPEED LIMIT 45
6,800
SPEED LIMIT 35
21,000
225'
NC 87 (River Rd SE)
200'
Rob Gandy Blvd
SPEED LIMIT 45
125'
150'
FULL
150'
100'
SPEED LIMIT 35
Robert Ruark Dr SE
100'
250'
650'
1,400'
NC 211 (N Howe St)
16,500
SPEED LIMIT 35
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FIGURE 3
EXISTING LANE GEOMETRY
TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC
PROJECT NUMBER 220222
DAVENPORT

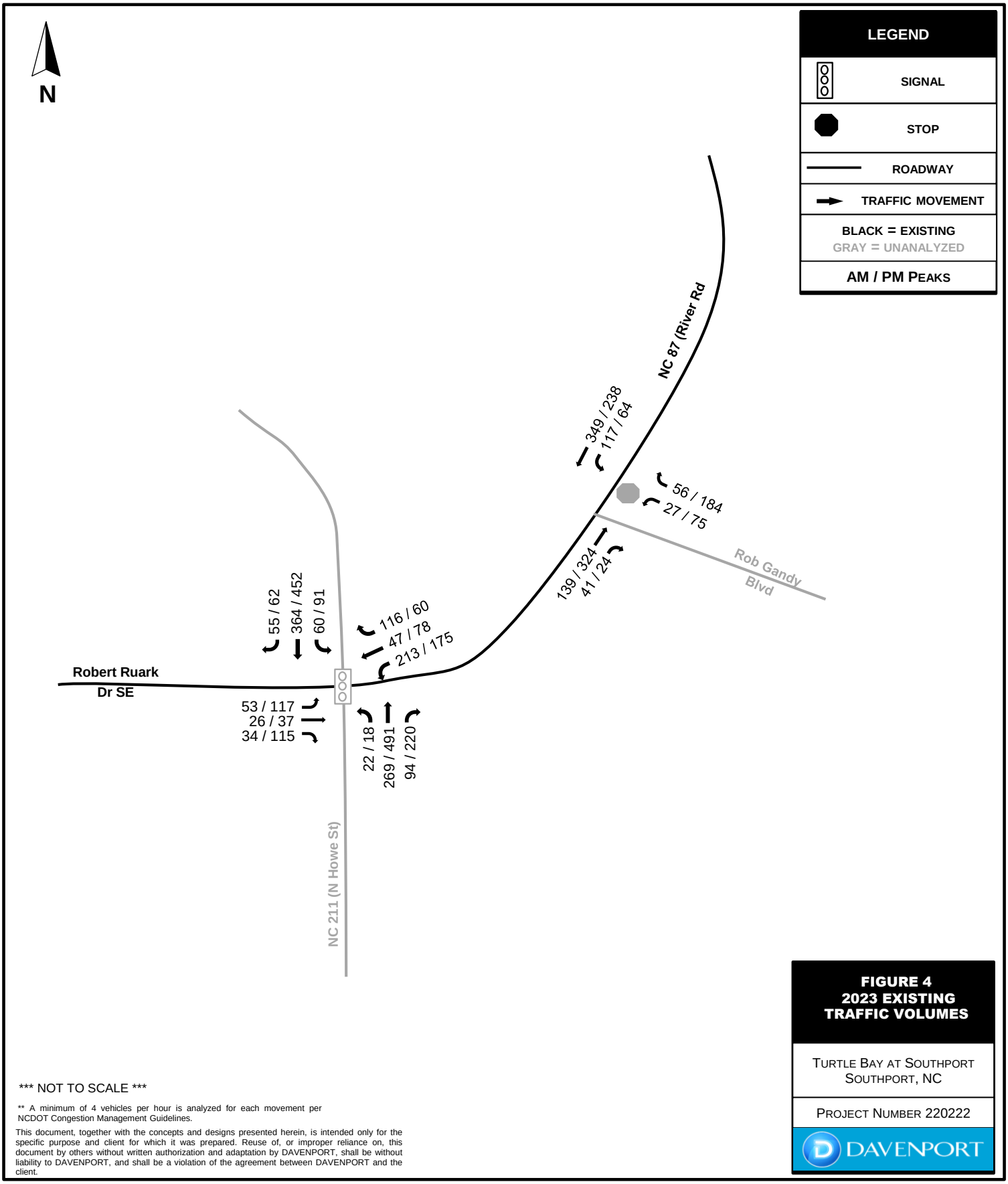


**FIGURE 4**
**2023 EXISTING TRAFFIC VOLUMES**

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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## 3.0 Approved Development and Committed Improvements

### *3.1 Approved Developments*

Approved developments are developments that have been recently approved in the area but are not yet constructed. Per the approved scoping document, there are two (2) approved developments to consider for this study site.

- **Southport Mixed-Use:** To be located in the southwest quadrant of the intersection of NC 87 (River Road) and SR 1621 (Dosher Cutoff) in Brunswick County. The proposed development is expected to consist of an approximately 50,000 sq. ft. self-storage warehouse, 264 apartments, a 4,000 sq. ft. fast-food restaurant with drive-thru, and a 5,000 sq. ft. super convenience market with gas station. A TIA was completed for this project in October 2022. Future traffic associated with the site was incorporated into the future condition analysis based on the TIA since the site is not yet built out.
- **48 Townhomes at Rob Gandy Boulevard:** To be located on Rob Gandy Boulevard east of the intersection of NC 87 (River Road) and Rob Gandy Boulevard. The site is planned to consist of 48 townhomes. No TIA was performed for this site. ITE Trip Generation Manual 11$^{th}$ Edition was used to determine the future traffic generated by the site and trips were routed based on existing patterns and engineering judgment. Future traffic associated with the site was incorporated into the future condition analysis.

Relevant information pertaining to approved developments is provided in the Appendix.

### *3.2 Committed Improvements*

Committed improvements are improvements that are planned by NCDOT, City of Southport or that are associated with a prior approved development in the area but are not yet constructed. Per the approved scoping document, there is one (1) committed improvement that is included in the study.

- **STIP Project R-5021: NC 211(North Howe Street) Widening from west of NC 906 (Midway Road) to East of NC 87 (River Road):**

  This improvement is a North Carolina Department of Transportation (NCDOT) project. It is to be done on NC 211(North Howe Street) between SR 1500 (Midway Road) and NC 87 (River Road). The improvement project is planned to widen NC 211 from a two (2) lane undivided to a four (4) lane divided facility to improve traffic flow, driver safety and traffic capacity. This improvement is also planned to add a northbound thru traffic lane on NC 87 (River Road) between SR 1526 (Jabbertown Road) and SR 1620 (Rob Gandy Boulevard) along with a dedicated right turn lane for southbound traffic at the intersection of NC 211 (North Howe Street) and NC 87 (River Road). The improvement project has been incorporated into the analysis for future conditions.

Figure 5 represents the future lane geometry. Relevant information regarding the improvement project is provided in the Appendix.

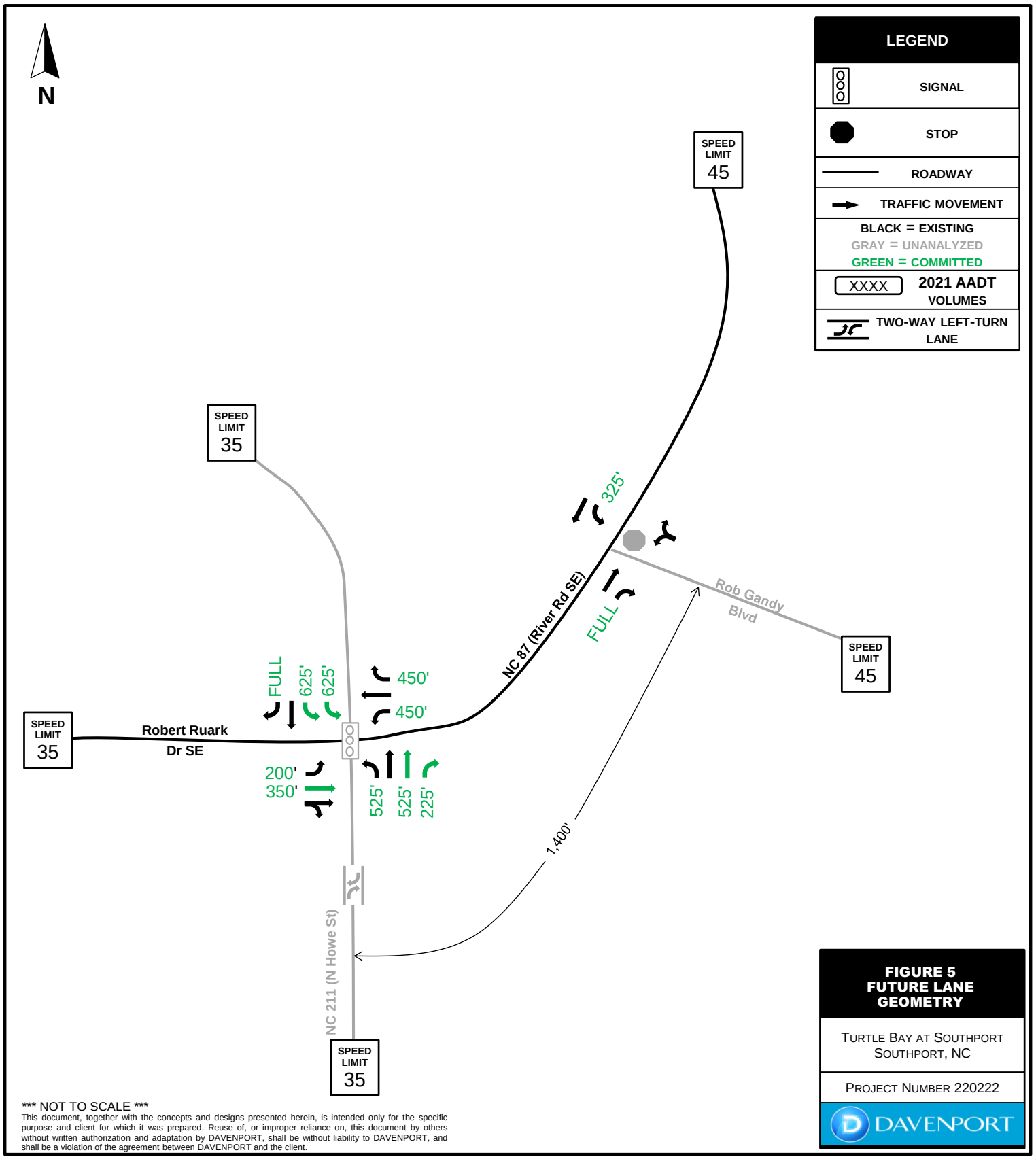


FIGURE 5
FUTURE LANE GEOMETRY

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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# 4.0 Methodology

## *4.1 Base Assumptions and Standards*

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

| Table 4.1 - Assumptions | |
|---|---|
| Annual Growth Rate | 1%, based on approved scope |
| Analysis Software | Synchro/SimTraffic Version 11.0 |
| Lane Widths | 12 feet |
| Peak Hour Factor | 0.90 |
| Truck Percentage | 2% |

## *4.2 Future No Build Volumes*

The 2026 future no build traffic volumes were computed by applying a one percent (1%) compounded annual growth rate to the 2023 existing traffic volumes and adding approved development trips. Figure 6 shows approved development trips and Figure 7 shows 2026 future no build traffic volumes for AM and PM peaks.

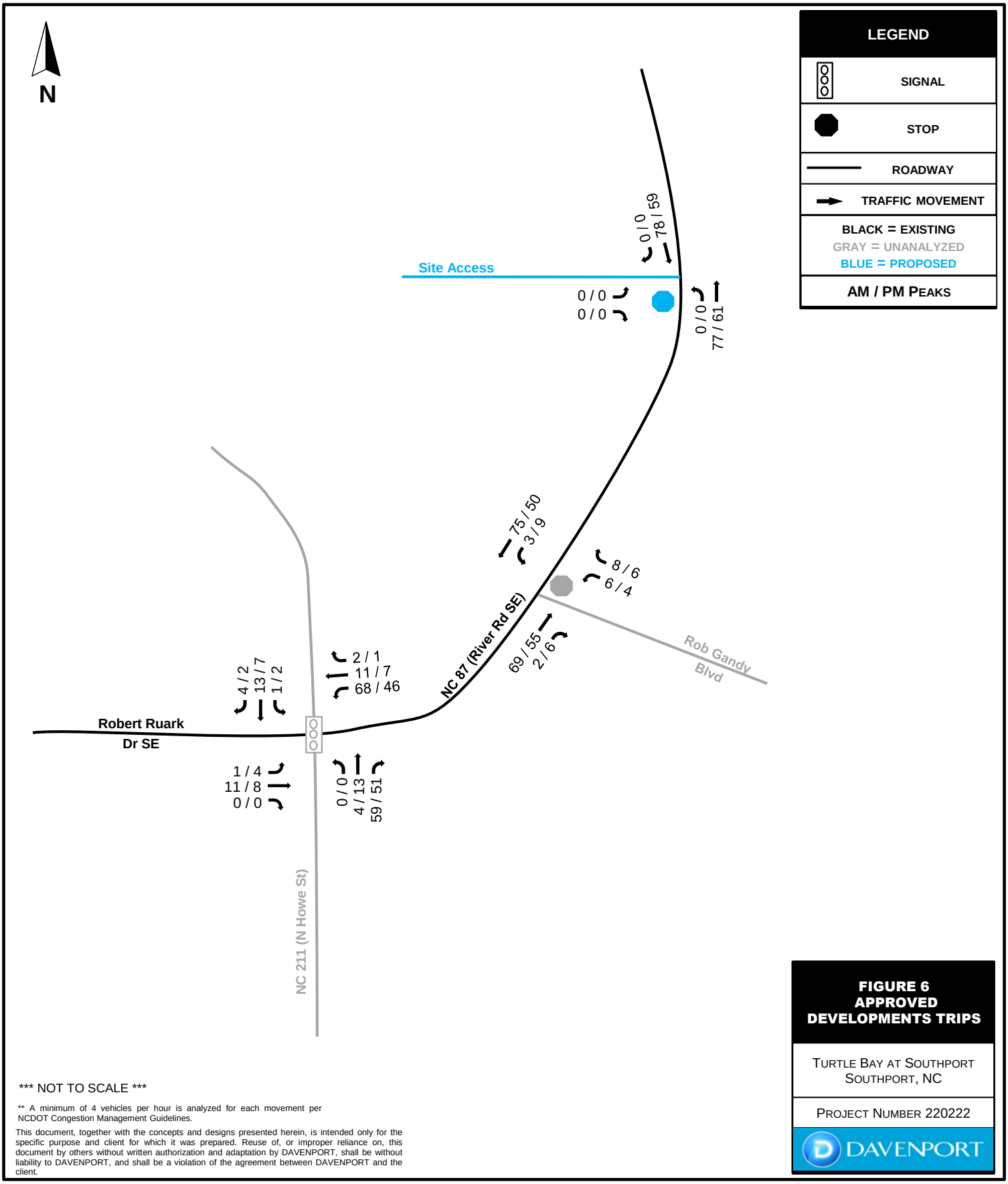


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**FIGURE 6**
**APPROVED DEVELOPMENTS TRIPS**

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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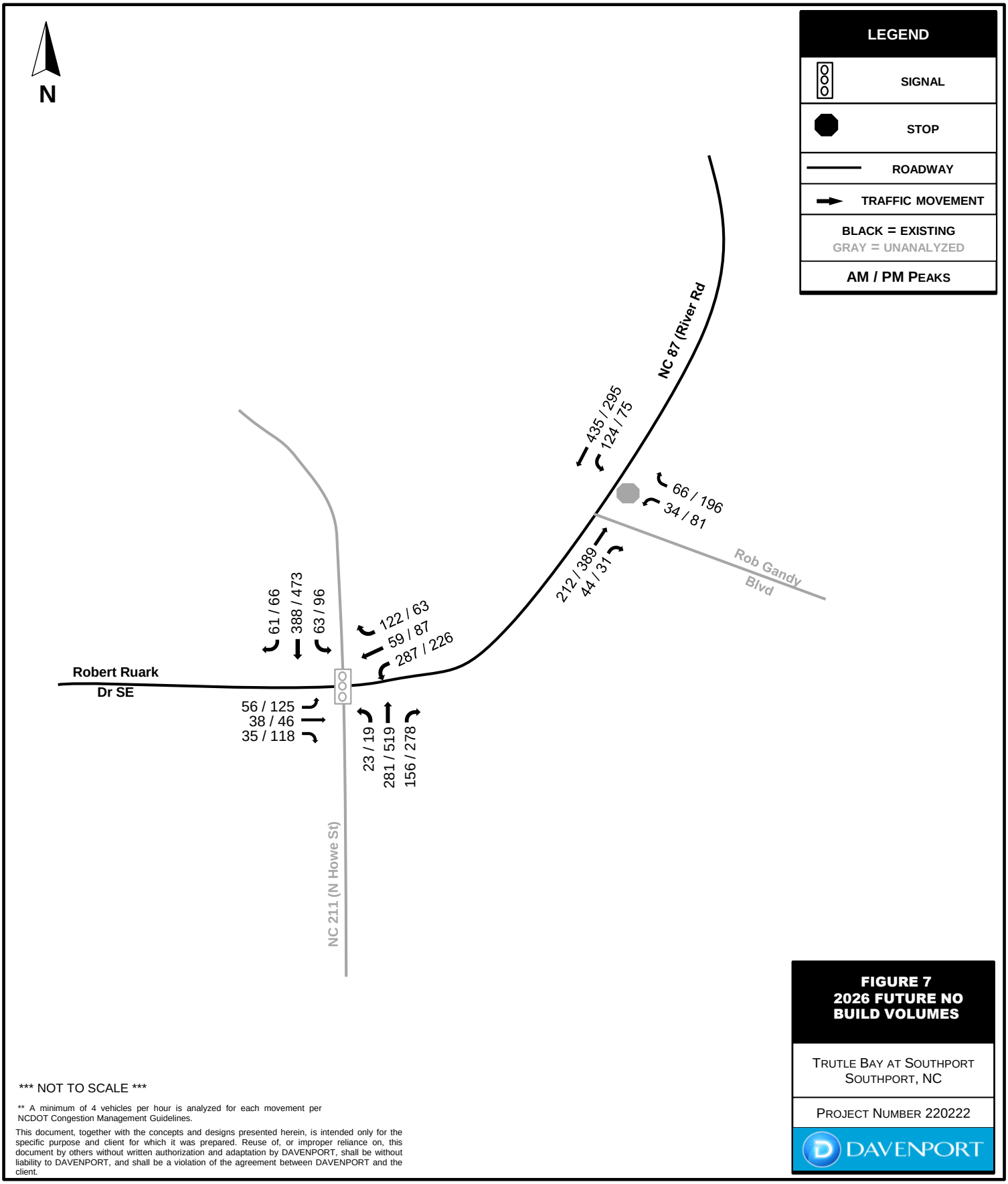


**FIGURE 7**
**2026 FUTURE NO BUILD VOLUMES**

TRUTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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### 4.3 Trip Generation

The proposed development is planned to include 100 single family homes. The trip generation potential of this site was projected based on the 11th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual* and guidance from NCDOT Congestion Management on the selection of appropriate variables. Table 4.2 presents the results.

**Table 4.2 - ITE 11th Edition Trip Generation**

| Average Weekday Driveway Volumes | | | | | 24-Hour Two-Way | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | ITE Land Use Code | Size | | Data Source | Volume | Enter | Exit | Total | Enter | Exit | Total |
| Single-Family Detached Housing | 210 | 100 | Dwelling Units | Adjacent-Equation | 1,009 | 19 | 55 | 74 | 63 | 36 | 99 |
| **Total Site Trips** | | | | | **1,009** | **19** | **55** | **74** | **63** | **36** | **99** |

### 4.4 Trip Distribution and Assignment

Site trips for this proposed development were distributed based on the existing traffic patterns and engineering judgment. The trip distribution model is shown in Figure 8. The directional distribution for new site trips is:

- 60% to/from the north on NC 87 (River Road)
- 25% to/from the south on NC 211 (North Howe Street)
- 12% to/from the west on NC 211 (North Howe Street)
- 3% to/from the west on Robert Ruark Drive

### 4.5 Future Build Volumes

Site trip volumes were added to the future no build volumes to compute the 2026 Future Build volumes. Site trips are shown in Figure 9 and Future Build volumes are shown in Figure 10.

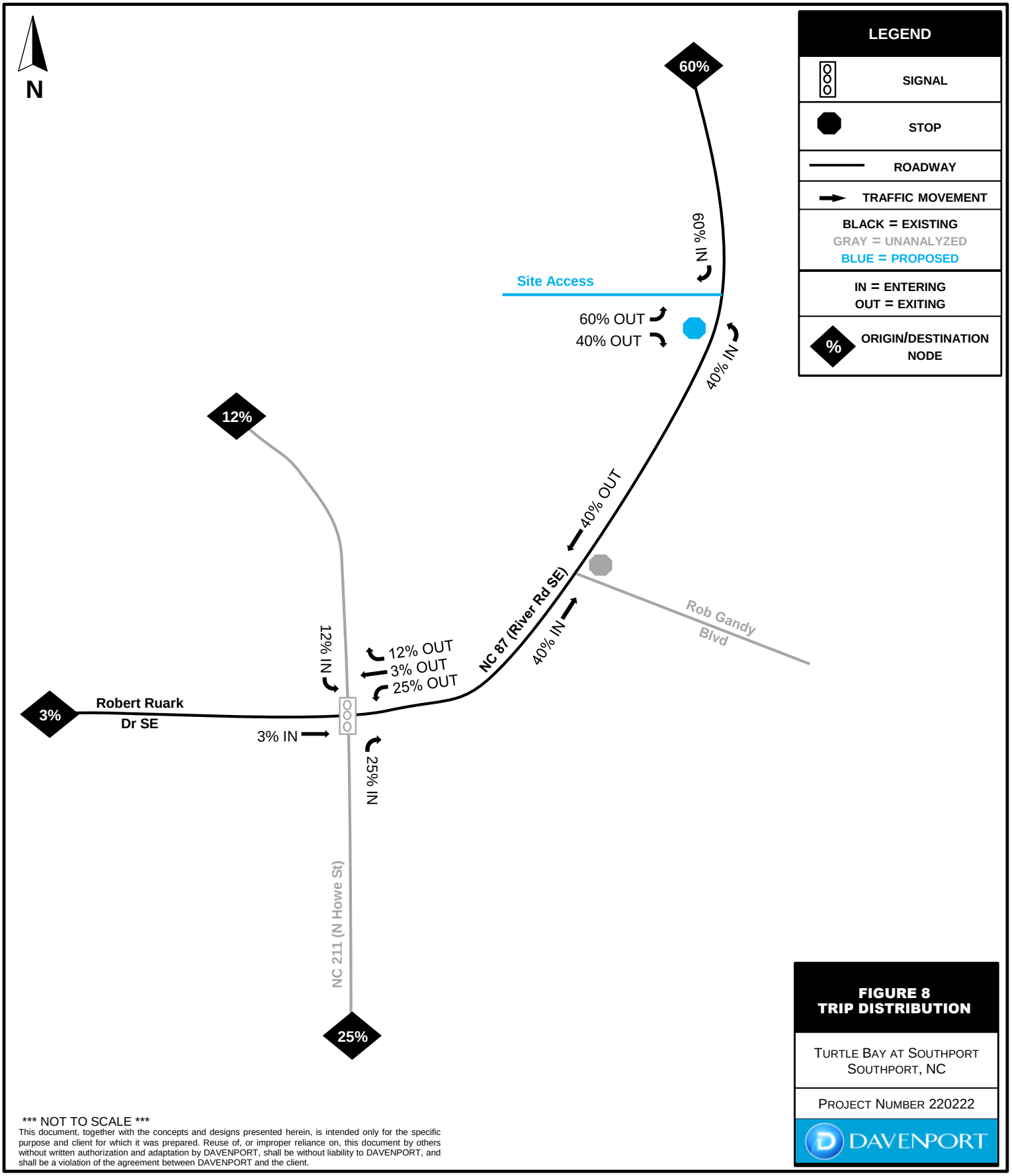


**FIGURE 8**
**TRIP DISTRIBUTION**

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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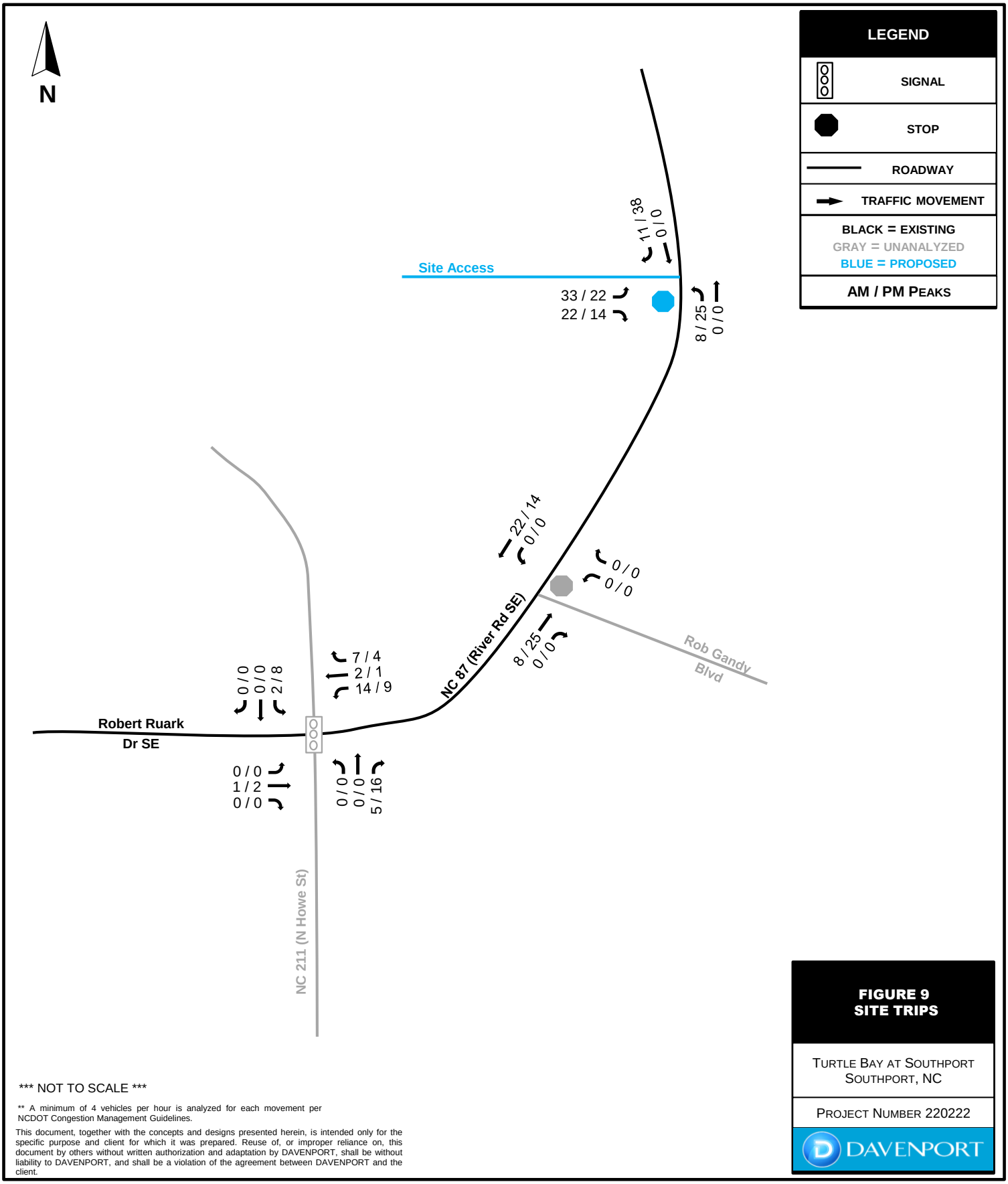


FIGURE 9
SITE TRIPS

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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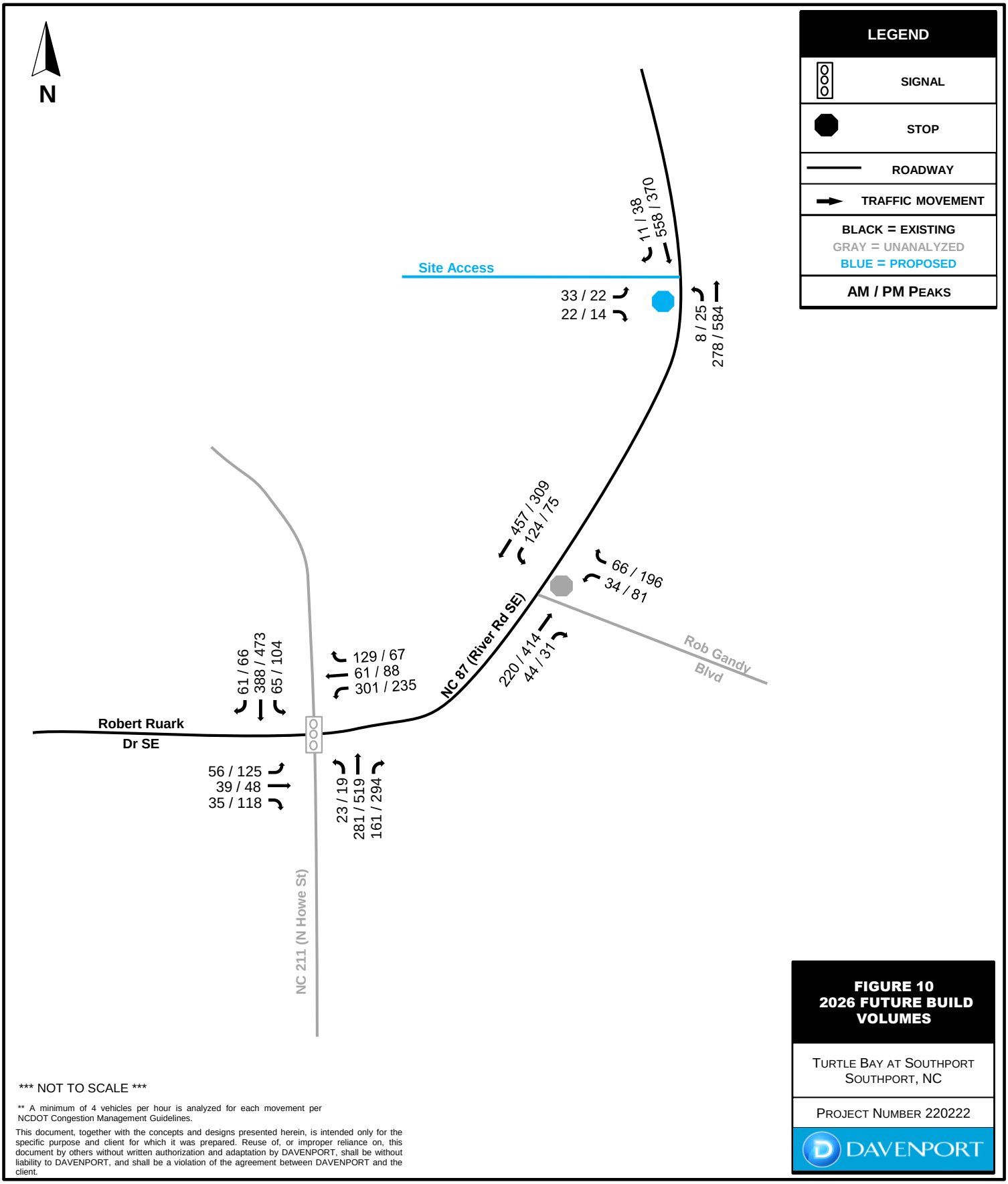


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**FIGURE 10**
**2026 FUTURE BUILD VOLUMES**

TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC

PROJECT NUMBER 220222

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# 5.0 Capacity Analysis

## *5.1 Level of Service Evaluation Criteria*

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

**Table 5.1 – Highway Capacity Manual**

| Levels of Service and Control Delay Criteria | | | |
|---|---|---|---|
| **Signalized Intersection** | | **Unsignalized Intersection** | |
| Level of Service | Control Delay Per vehicle (seconds) | Level of Service | Delay Range (seconds) |
| A | ≤ 10 | A | ≤ 10 |
| B | > 10 and ≤ 20 | B | > 10 and ≤ 15 |
| C | > 20 and ≤ 35 | C | > 15 and ≤ 25 |
| D | > 35 and ≤ 55 | D | > 25 and ≤ 35 |
| E | > 55 and ≤ 80 | E | > 35 and ≤ 50 |
| F | > 80 | F | > 50 |

## *5.2 Queueing Evaluation*

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

### *5.3 Level of Service and Queueing Results*

The results of the capacity and queue analyses are discussed by intersection in the following paragraphs. The LOS, delay, and queue results are summarized in Tables 5.2 and 5.3.

***NC 87 (River Road) at Site Access (unsignalized)***

Under the future build condition, the intersection is expected to operate at an LOS C during the AM peak hours and PM peak hours. The need for left and right turn lanes was reviewed based on the turn lane warrant nomograph from page 80 of the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. The turn lane warrant nomograph is provided in the Appendix. The results are marginally below the thresholds for turn lanes being warranted. However, the posted speed limit on NC 87 (River Road) is 45 mph and actual travel speeds are expected to be higher than 45 mph due to the rural location of the roadway. Therefore, to ensure safety of the vehicles turning onto the site access and to provide for long-term transportation needs, the following improvements are recommended:

- Provide a southbound right turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.
- Provide a northbound left turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.
- Design site access according to applicable NCDOT standards and with adequate sight distance.

Sight distance requirements are taken from page 29 of the *Policy on Street and Driveway Access to North Carolina Highways*. Based on a design speed of 50 mph (posted speed plus 5), the required sight distance is 500 feet looking left and 550 feet looking right from the site access. The site access should be designed to provide required sight distance, free from obstructions along the lines of sight.

**Table 5.2 - LOS and Queueing NC 87 (River Road) at Site Access (unsignalized)**

| Scenario | *LOS of Worst Approach | Eastbound | Northbound | | Southbound | |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **2026 Future Build** | C (17.9) EB Approach | **LR** | **L** | **T** | **T** | **R** |
| | | C (17.9) | A (8.8) | A (0.0) | A (0.0) | A (0.0) |
| | | C (17.9) | A (0.2) | | A (0.0) | |
| | Available Storage (ft) | FULL | FULL | | FULL | |
| | 95th% Queue (ft) | 15 | 0 | | 0 | |
| | Max Queue (ft) | 60 | 37 | | 0 | |
| **2026 Future Build with improvement** | C (17.7) EB Approach | **LR** | **L** | **T** | **T** | **R** |
| | | C (17.7) | A (8.8) | A (0.0) | A (0.0) | A (0.0) |
| | | C (17.7) | A (0.2) | | A (0.0) | |
| | Available Storage (ft) | FULL | 100 | FULL | FULL | 100 |
| | 95th% Queue (ft) | 15 | 0 | 0 | 0 | 0 |
| | Max Queue (ft) | 60 | 28 | 0 | 0 | 0 |

| Table 5.2 *(Continued)* - LOS and Queueing NC 87 (River Road) at Site Access (unsignalized) | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | ***LOS of Worst Approach** | **Eastbound** | **Northbound** | | **Southbound** | |
| **PM Peak Hour** | | | | | | |
| **2026 Future Build** | C (19.6) EB Approach | **LR** | **L** | **T** | **T** | **R** |
| | | C (19.6) | A (8.3) | A (0.0) | A (0.0) | A (0.0) |
| | | C (19.6) | A (0.2) | | A (0.0) | |
| | Available Storage (ft) | FULL | FULL | | FULL | |
| | 95th% Queue (ft) | 13 | 3 | | 0 | |
| | Max Queue (ft) | 44 | 92 | | 0 | |
| **2026 Future Build with improvement** | C (18.8) EB Approach | **LR** | **L** | **T** | **T** | **R** |
| | | C (18.8) | A (8.3) | A (0.0) | A (0.0) | A (0.0) |
| | | C (18.8) | A (0.3) | | A (0.0) | |
| | Available Storage (ft) | FULL | 100 | FULL | FULL | 100 |
| | 95th% Queue (ft) | 13 | 3 | 0 | 0 | 0 |
| | Max Queue (ft) | 44 | 39 | 0 | 0 | 0 |

**Represents the LOS and delay for the worst unsignalized approach or the overall signalized intersection.*
*HCM 95$^{th}$-percentile queue converted from vehicles to feet; assumes 1 vehicle = 25 feet.*

## 6.0 Internal Protected Stem

The NCDOT *Policy on Street and Driveway Access to North Carolina Highways,* or the Driveway Manual, states that the length of the internal protected stem (IPS) will be determined from the maximum vehicle storage required as measured from the right-of-way line to the nearest conflict point with a minimum recommendation of 100 feet.

Table 6 summarizes the maximum storage recorded in the analysis as compared to the estimated IPS based on the site plan. Internal protected stem for the site access exceeds 100 feet.

**Table 6 – Queue Lengths on Site Driveways**

| Site Drive | Estimated IPS (feet) | 95th-%ile Queue (feet) | | Maximum Queue (feet) | |
|---|---|---|---|---|---|
| | | AM | PM | AM | PM |
| EB Site Access Approach | 230 | 15 | 13 | 60 | 44 |

## 7.0 Summary and Conclusion

The Turtle Bay at Southport proposed development is located on the west side of NC 87 to the north of Rob Gandy Blvd in Southport, NC. It is planned to consist of 100 single family homes. One (1) full movement access point on NC 87 (River Road) is proposed for this development. The Site Access is located approximately 1,300 feet north of Rob Gandy Boulevard. The expected build-out year for the development is 2026. Information regarding the property was provided by Turtle Bay at Southport, LLC.

The Transportation Impact Analysis (TIA) was performed based on the scope agreed upon with the City of Southport and North Carolina Department of Transportation (NCDOT). This site has a trip generation potential of 1,009 daily trips, 74 trips in the AM peak hour, and 99 trips in the PM peak hour.

In conclusion, this study has determined the potential traffic impacts of this development. At the site access, a northbound left turn lane with 100 feet of storage and appropriate deceleration/taper and southbound right turn lane with 100 feet of storage and appropriate deceleration/taper is recommended. Table 7 summarizes the recommended improvements, which are also reflected in Figure 11. With the recommended improvements in place, the anticipated transportation impacts of the proposed development can be accommodated.

**Table 7 – Summary of Recommended Improvements**

| INTERSECTION | RECOMMENDATIONS |
|---|---|
| NC 87 (River Road) at Site Access | • Construct a southbound right turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.<br>• Construct a northbound left turn lane on NC 87 (River Road) with 100 feet of storage and appropriate deceleration and taper.<br>• Construct the driveway according to applicable NCDOT standards and with adequate sight distance. |

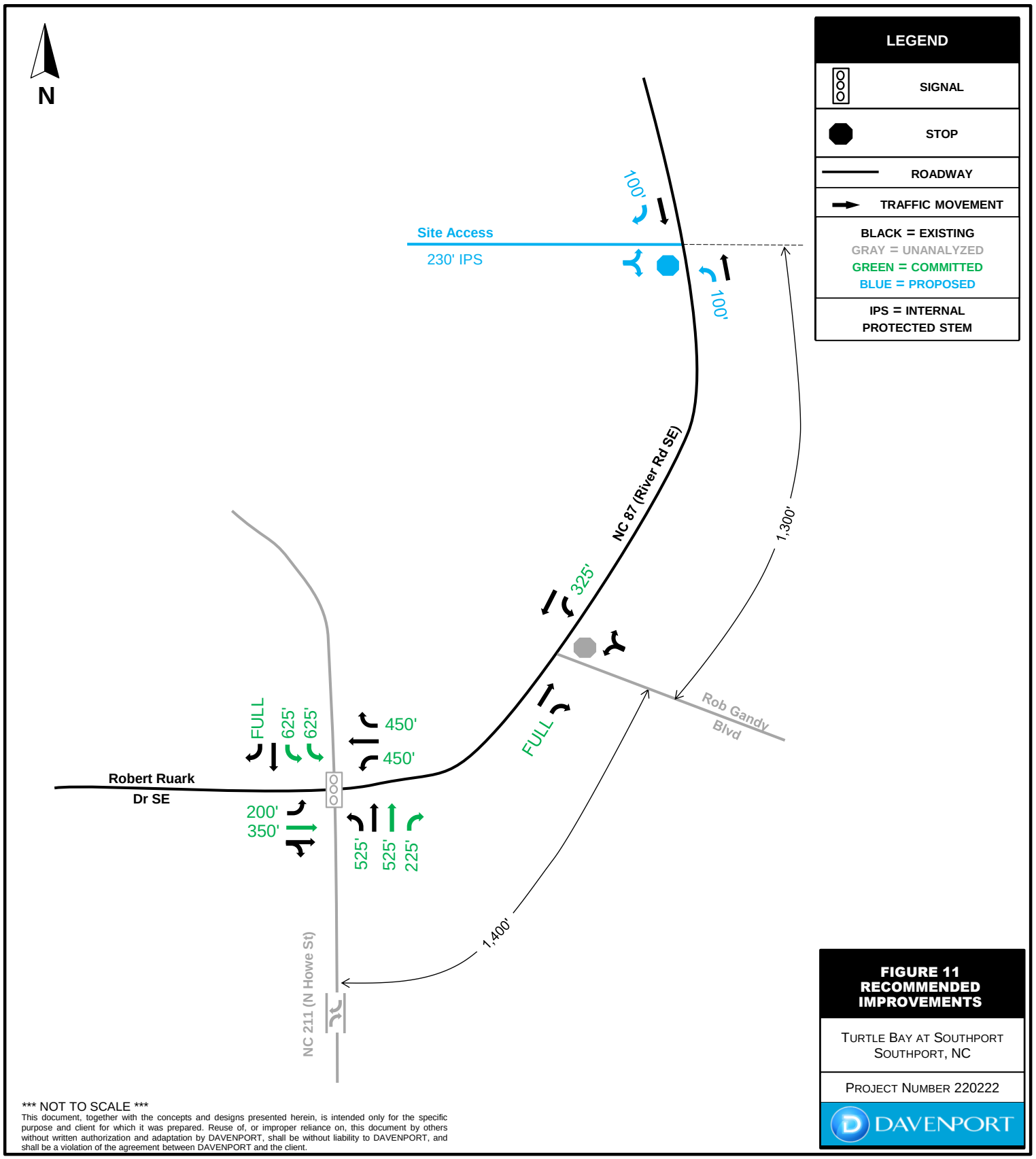
N
LEGEND
SIGNAL
STOP
ROADWAY
TRAFFIC MOVEMENT
BLACK = EXISTING
GRAY = UNANALYZED
GREEN = COMMITTED
BLUE = PROPOSED
IPS = INTERNAL PROTECTED STEM
Site Access
230' IPS
100'
100'
NC 87 (River Rd SE)
325'
1,300'
FULL
625'
625'
450'
450'
FULL
Rob Gandy Blvd
Robert Ruark Dr SE
200'
350'
525'
525'
225'
1,400'
NC 211 (N Howe St)
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FIGURE 11
RECOMMENDED IMPROVEMENTS
TURTLE BAY AT SOUTHPORT
SOUTHPORT, NC
PROJECT NUMBER 220222
DAVENPORT

# Appendix

# Approved Scoping Documents

October 18, 2023

**Transportation Impact Analysis (TIA) Scoping**
**Turtle Bay at Southport, Southport, NC**
**DAVENPORT Project Number 220222**

Proposed Land Uses: 100 single family homes

Analysis Periods – Weekday AM peak (7:00-9:00 am) and PM peak (4:00-6:00 pm)

Study Intersections:

- NC 87 (River Road) at Site Access

Access Configuration: One (1) full movement access

TIA Analysis Scenarios:

- Future Build Conditions
- Future Build with Improvements (as required)

Build-out Year / Analysis Year: Estimated at 2026

Proposed annual growth rate – 1% (plus approved developments)

Trip Generation – Based on ITE Trip Generation Manual 11th Edition. See attached.

Proposed site trip directional distribution – See attached.

Existing Traffic Counts – Adjust 2022 counts to current year using 1% growth rate.

- NC 87 (River Road) at Rob Gandy Blvd: Collected on 05/10/2022 (unanalyzed intersection)
- NC 211 (North Howe Street) at NC 87 (River Road). Collected on 01/13/2023 (unanalyzed intersection)

Measures of effectiveness for capacity analysis:

- Level of service (LOS) / delay by movement
- Queue lengths (95th % Synchro and max SimTraffic queues)

Additional Scope:

- Turn lane warrant analysis to be performed at site access.

Approved and planned developments:

- 48 Townhomes at Rob Gandy Blvd
- Southport Mixed-Use at Southwest quadrant of NC 87(River Road) and SR 1621 (Dosher Cutoff) consisting of 50,000 sq ft self-storage warehouse, 264 apartments, 4,000 sq. ft. fast-food restaurant with drive-thru and 5,000 sq. ft. super convenience market with gas station.

Committed Improvements:

- R-5021: Widening of NC 211 from SR 1500 to NC 87

**Home Office:**
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Main: 336.744.1636; Fax: 336.458.9377

**Wilmington Regional Office:**
5917 Oleander Dr, Suite 206
Wilmington, NC 28403
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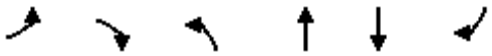
# Capacity Analysis

## *Synchro Worksheets*

# *Future Build Conditions*



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 33 | 22 | 8 | 278 | 558 | 11 |
| Future Volume (vph) | 33 | 22 | 8 | 278 | 558 | 11 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.947 | | | | 0.997 | |
| Flt Protected | 0.971 | | | 0.999 | | |
| Satd. Flow (prot) | 1713 | 0 | 0 | 1861 | 1857 | 0 |
| Flt Permitted | 0.971 | | | 0.999 | | |
| Satd. Flow (perm) | 1713 | 0 | 0 | 1861 | 1857 | 0 |
| Link Speed (mph) | 25 | | | 45 | 45 | |
| Link Distance (ft) | 1120 | | | 1790 | 1211 | |
| Travel Time (s) | 30.5 | | | 27.1 | 18.3 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 37 | 24 | 9 | 309 | 620 | 12 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 61 | 0 | 0 | 318 | 632 | 0 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 40.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 33 | 22 | 8 | 278 | 558 | 11 |
| Future Vol, veh/h | 33 | 22 | 8 | 278 | 558 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 37 | 24 | 9 | 309 | 620 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 953 | 626 | 632 | 0 | - | 0 |
| Stage 1 | 626 | - | - | - | - | - |
| Stage 2 | 327 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 287 | 484 | 951 | - | - | - |
| Stage 1 | 533 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 284 | 484 | 951 | - | - | - |
| Mov Cap-2 Maneuver | 284 | - | - | - | - | - |
| Stage 1 | 527 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.9 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 951 | - | 340 | - | - |
| HCM Lane V/C Ratio | 0.009 | - | 0.18 | - | - |
| HCM Control Delay (s) | 8.8 | 0 | 17.9 | - | - |
| HCM Lane LOS | A | A | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.6 | - | - |

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 34 | 66 | 220 | 44 | 124 | 457 |
| Future Volume (vph) | 34 | 66 | 220 | 44 | 124 | 457 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | | 0 | 325 | |
| Storage Lanes | 1 | 0 | | 1 | 1 | |
| Taper Length (ft) | 100 | | | | 100 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.911 | | | 0.850 | | |
| Flt Protected | 0.983 | | | | 0.950 | |
| Satd. Flow (prot) | 1668 | 0 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.983 | | | | 0.950 | |
| Satd. Flow (perm) | 1668 | 0 | 1863 | 1583 | 1770 | 1863 |
| Link Speed (mph) | 45 | | 45 | | | 45 |
| Link Distance (ft) | 1122 | | 1404 | | | 1790 |
| Travel Time (s) | 17.0 | | 21.3 | | | 27.1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 38 | 73 | 244 | 49 | 138 | 508 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 111 | 0 | 244 | 49 | 138 | 508 |
| Sign Control | Stop | | Free | | | Free |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 36.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

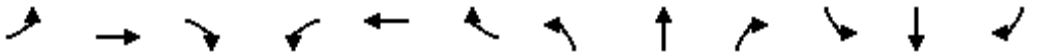
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 66 | 220 | 44 | 124 | 457 |
| Future Vol, veh/h | 34 | 66 | 220 | 44 | 124 | 457 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | 325 | - |
| 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 | 38 | 73 | 244 | 49 | 138 | 508 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1028 | 244 | 0 | 0 | 293 | 0 |
| Stage 1 | 244 | - | - | - | - | - |
| Stage 2 | 784 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 259 | 795 | - | - | 1269 | - |
| Stage 1 | 797 | - | - | - | - | - |
| Stage 2 | 450 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 231 | 795 | - | - | 1269 | - |
| Mov Cap-2 Maneuver | 231 | - | - | - | - | - |
| Stage 1 | 797 | - | - | - | - | - |
| Stage 2 | 401 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.1 | 0 | 1.7 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 434 | 1269 | - |
| HCM Lane V/C Ratio | - | - | 0.256 | 0.109 | - |
| HCM Control Delay (s) | - | - | 16.1 | 8.2 | - |
| HCM Lane LOS | - | - | C | A | - |
| HCM 95th %tile Q(veh) | - | - | 1 | 0.4 | - |

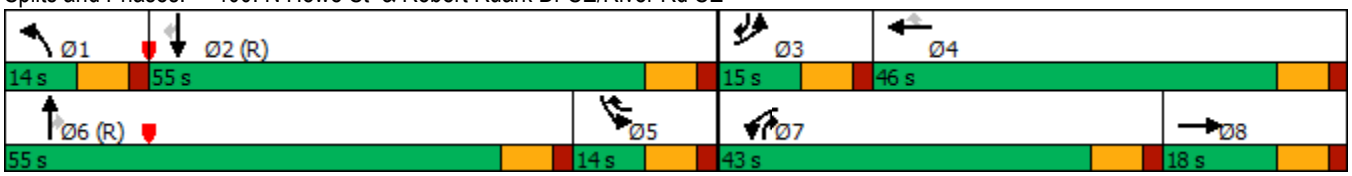


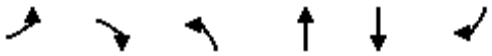
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 56 | 39 | 35 | 301 | 61 | 129 | 23 | 281 | 161 | 65 | 388 | 61 |
| Future Volume (vph) | 56 | 39 | 35 | 301 | 61 | 129 | 23 | 281 | 161 | 65 | 388 | 61 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 200 | | 0 | 450 | | 450 | 525 | | 375 | 625 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 1 | | 2 | 2 | | 1 |
| Taper Length (ft) | 100 | | | 100 | | | 0 | | | 100 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | | 0.929 | | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1770 | 1730 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 1770 | 1730 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Right Turn on Red | | | No | | | No | | | No | | | No |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | 35 | | | 45 | | | 35 | | | 35 | |
| Link Distance (ft) | | 868 | | | 1404 | | | 1137 | | | 1047 | |
| Travel Time (s) | | 16.9 | | | 21.3 | | | 22.1 | | | 20.4 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 43 | 39 | 334 | 68 | 143 | 26 | 312 | 179 | 72 | 431 | 68 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 82 | 0 | 334 | 68 | 143 | 26 | 312 | 179 | 72 | 431 | 68 |
| 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) | 14.0 | 14.0 | | 14.0 | 30.4 | 14.0 | 14.0 | 40.0 | 14.0 | 14.0 | 24.0 | 14.0 |
| Total Split (s) | 15.0 | 18.0 | | 43.0 | 46.0 | 14.0 | 14.0 | 55.0 | 43.0 | 14.0 | 55.0 | 15.0 |
| Total Split (%) | 11.5% | 13.8% | | 33.1% | 35.4% | 10.8% | 10.8% | 42.3% | 33.1% | 10.8% | 42.3% | 11.5% |
| Maximum Green (s) | 8.0 | 11.0 | | 36.0 | 39.0 | 7.0 | 7.0 | 48.0 | 36.0 | 7.0 | 48.0 | 8.0 |
| 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 |
| 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 | Lag | Lead | Lead | Lead | Lag | Lag | Lead |
| Lead-Lag Optimize? | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Minimum Gap (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 3.0 | 2.0 |
| Time Before Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 |
| Time To Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 0.0 |
| Recall Mode | None | None | | None | None | None | None | C-Max | None | None | C-Max | None |
| Walk Time (s) | | | | | 7.0 | | | 7.0 | | | 7.0 | |
| Flash Dont Walk (s) | | | | | 16.4 | | | 26.0 | | | 10.0 | |
| Pedestrian Calls (#/hr) | | | | | 0 | | | 0 | | | 0 | |
| Act Effct Green (s) | 9.7 | 11.9 | | 30.6 | 35.6 | 45.6 | 9.1 | 58.5 | 89.1 | 9.0 | 64.0 | 78.7 |
| Actuated g/C Ratio | 0.07 | 0.09 | | 0.24 | 0.27 | 0.35 | 0.07 | 0.45 | 0.69 | 0.07 | 0.49 | 0.61 |
| v/c Ratio | 0.47 | 0.52 | | 0.80 | 0.13 | 0.26 | 0.21 | 0.20 | 0.17 | 0.30 | 0.47 | 0.07 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control Delay | 69.9 | 67.9 | | 61.3 | 35.4 | 21.6 | 61.5 | 23.4 | 4.2 | 61.1 | 27.3 | 14.5 |
| 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 | 69.9 | 67.9 | | 61.3 | 35.4 | 21.6 | 61.5 | 23.4 | 4.2 | 61.1 | 27.3 | 14.5 |
| LOS | E | E | | E | D | C | E | C | A | E | C | B |
| Approach Delay | | 68.7 | | | 47.6 | | | 18.7 | | | 30.0 | |
| Approach LOS | | E | | | D | | | B | | | C | |
| Queue Length 50th (ft) | 51 | 67 | | 266 | 44 | 67 | 21 | 83 | 23 | 30 | 259 | 25 |
| Queue Length 95th (ft) | 99 | 121 | | 353 | 77 | 97 | 52 | 128 | 38 | 56 | 401 | 56 |
| Internal Link Dist (ft) | | 788 | | | 1324 | | | 1057 | | | 967 | |
| Turn Bay Length (ft) | 200 | | | 450 | | 450 | 525 | | 375 | 625 | | |
| Base Capacity (vph) | 136 | 177 | | 517 | 587 | 555 | 123 | 1592 | 1175 | 237 | 917 | 962 |
| 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 | 0.46 | 0.46 | | 0.65 | 0.12 | 0.26 | 0.21 | 0.20 | 0.15 | 0.30 | 0.47 | 0.07 |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 130 | | | |
| Actuated Cycle Length: 130 | | | |
| Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green | | | |
| Natural Cycle: 100 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.80 | | | |
| Intersection Signal Delay: 35.3 | | Intersection LOS: D | |
| Intersection Capacity Utilization 59.5% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 400: N Howe St & Robert Ruark Dr SE/River Rd SE





| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 22 | 14 | 25 | 584 | 370 | 38 |
| Future Volume (vph) | 22 | 14 | 25 | 584 | 370 | 38 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.946 | | | | 0.987 | |
| Flt Protected | 0.971 | | | 0.998 | | |
| Satd. Flow (prot) | 1711 | 0 | 0 | 1859 | 1839 | 0 |
| Flt Permitted | 0.971 | | | 0.998 | | |
| Satd. Flow (perm) | 1711 | 0 | 0 | 1859 | 1839 | 0 |
| Link Speed (mph) | 25 | | | 45 | 45 | |
| Link Distance (ft) | 1120 | | | 1786 | 1211 | |
| Travel Time (s) | 30.5 | | | 27.1 | 18.3 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 24 | 16 | 28 | 649 | 411 | 42 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 40 | 0 | 0 | 677 | 453 | 0 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 61.0% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 22 | 14 | 25 | 584 | 370 | 38 |
| Future Vol, veh/h | 22 | 14 | 25 | 584 | 370 | 38 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 24 | 16 | 28 | 649 | 411 | 42 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1137 | 432 | 453 | 0 | - | 0 |
| Stage 1 | 432 | - | - | - | - | - |
| Stage 2 | 705 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 223 | 624 | 1108 | - | - | - |
| Stage 1 | 655 | - | - | - | - | - |
| Stage 2 | 490 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 214 | 624 | 1108 | - | - | - |
| Mov Cap-2 Maneuver | 214 | - | - | - | - | - |
| Stage 1 | 629 | - | - | - | - | - |
| Stage 2 | 490 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19.6 | 0.3 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1108 | - | 287 | - | - |
| HCM Lane V/C Ratio | 0.025 | - | 0.139 | - | - |
| HCM Control Delay (s) | 8.3 | 0 | 19.6 | - | - |
| HCM Lane LOS | A | A | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.5 | - | - |

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 81 | 196 | 414 | 31 | 75 | 309 |
| Future Volume (vph) | 81 | 196 | 414 | 31 | 75 | 309 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | | 0 | 325 | |
| Storage Lanes | 1 | 0 | | 1 | 1 | |
| Taper Length (ft) | 100 | | | | 100 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.904 | | | 0.850 | | |
| Flt Protected | 0.986 | | | | 0.950 | |
| Satd. Flow (prot) | 1660 | 0 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.986 | | | | 0.950 | |
| Satd. Flow (perm) | 1660 | 0 | 1863 | 1583 | 1770 | 1863 |
| Link Speed (mph) | 45 | | 45 | | | 45 |
| Link Distance (ft) | 1122 | | 1404 | | | 1786 |
| Travel Time (s) | 17.0 | | 21.3 | | | 27.1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 218 | 460 | 34 | 83 | 343 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 308 | 0 | 460 | 34 | 83 | 343 |
| Sign Control | Stop | | Free | | | Free |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 52.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 81 | 196 | 414 | 31 | 75 | 309 |
| Future Vol, veh/h | 81 | 196 | 414 | 31 | 75 | 309 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | 325 | - |
| 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 | 90 | 218 | 460 | 34 | 83 | 343 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 969 | 460 | 0 | 0 | 494 | 0 |
| Stage 1 | 460 | - | - | - | - | - |
| Stage 2 | 509 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 281 | 601 | - | - | 1070 | - |
| Stage 1 | 636 | - | - | - | - | - |
| Stage 2 | 604 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 259 | 601 | - | - | 1070 | - |
| Mov Cap-2 Maneuver | 259 | - | - | - | - | - |
| Stage 1 | 636 | - | - | - | - | - |
| Stage 2 | 557 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 31.1 | 0 | 1.7 |
| HCM LOS | D | | |

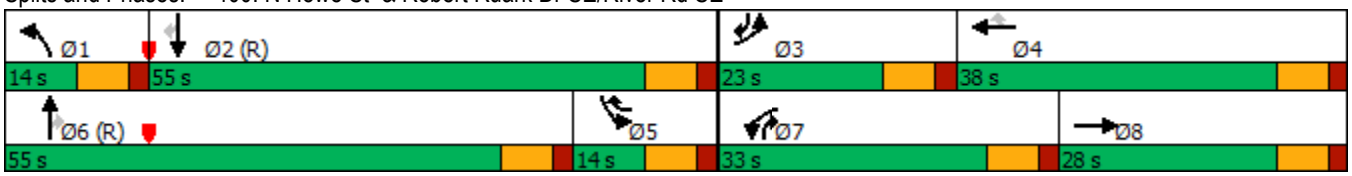
| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 434 | 1070 | - |
| HCM Lane V/C Ratio | - | - | 0.709 | 0.078 | - |
| HCM Control Delay (s) | - | - | 31.1 | 8.6 | - |
| HCM Lane LOS | - | - | D | A | - |
| HCM 95th %tile Q(veh) | - | - | 5.4 | 0.3 | - |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 125 | 48 | 118 | 235 | 88 | 67 | 19 | 519 | 294 | 104 | 473 | 66 |
| Future Volume (vph) | 125 | 48 | 118 | 235 | 88 | 67 | 19 | 519 | 294 | 104 | 473 | 66 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 200 | | 0 | 450 | | 450 | 525 | | 375 | 625 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 1 | | 2 | 2 | | 1 |
| Taper Length (ft) | 100 | | | 100 | | | 0 | | | 100 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | | 0.893 | | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1770 | 1663 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 1770 | 1663 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Right Turn on Red | | | No | | | No | | | No | | | No |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | 35 | | | 45 | | | 35 | | | 35 | |
| Link Distance (ft) | | 868 | | | 1404 | | | 1137 | | | 1047 | |
| Travel Time (s) | | 16.9 | | | 21.3 | | | 22.1 | | | 20.4 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 139 | 53 | 131 | 261 | 98 | 74 | 21 | 577 | 327 | 116 | 526 | 73 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 139 | 184 | 0 | 261 | 98 | 74 | 21 | 577 | 327 | 116 | 526 | 73 |
| 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) | 14.0 | 14.0 | | 14.0 | 30.4 | 14.0 | 14.0 | 40.0 | 14.0 | 14.0 | 24.0 | 14.0 |
| Total Split (s) | 23.0 | 28.0 | | 33.0 | 38.0 | 14.0 | 14.0 | 55.0 | 33.0 | 14.0 | 55.0 | 23.0 |
| Total Split (%) | 17.7% | 21.5% | | 25.4% | 29.2% | 10.8% | 10.8% | 42.3% | 25.4% | 10.8% | 42.3% | 17.7% |
| Maximum Green (s) | 16.0 | 21.0 | | 26.0 | 31.0 | 7.0 | 7.0 | 48.0 | 26.0 | 7.0 | 48.0 | 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 |
| 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 | Lag | Lead | Lead | Lead | Lag | Lag | Lead |
| Lead-Lag Optimize? | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Minimum Gap (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 3.0 | 2.0 |
| Time Before Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 |
| Time To Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 0.0 |
| Recall Mode | None | None | | None | None | None | None | C-Max | None | None | C-Max | None |
| Walk Time (s) | | | | | 7.0 | | | 7.0 | | | 7.0 | |
| Flash Dont Walk (s) | | | | | 16.4 | | | 26.0 | | | 10.0 | |
| Pedestrian Calls (#/hr) | | | | | 0 | | | 0 | | | 0 | |
| Act Effct Green (s) | 15.5 | 19.6 | | 24.2 | 28.4 | 37.4 | 9.0 | 57.2 | 81.4 | 9.0 | 62.8 | 83.2 |
| Actuated g/C Ratio | 0.12 | 0.15 | | 0.19 | 0.22 | 0.29 | 0.07 | 0.44 | 0.63 | 0.07 | 0.48 | 0.64 |
| v/c Ratio | 0.66 | 0.74 | | 0.79 | 0.24 | 0.16 | 0.17 | 0.37 | 0.33 | 0.49 | 0.59 | 0.07 |

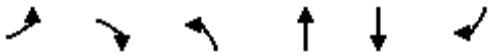
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control Delay | 69.8 | 69.7 | | 67.7 | 42.1 | 20.2 | 60.6 | 26.6 | 7.4 | 65.7 | 31.1 | 11.7 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 69.8 | 69.7 | | 67.7 | 42.1 | 20.2 | 60.6 | 26.6 | 7.4 | 65.7 | 31.1 | 11.7 |
| LOS | E | E | | E | D | C | E | C | A | E | C | B |
| Approach Delay | | 69.7 | | | 53.8 | | | 20.6 | | | 34.7 | |
| Approach LOS | | E | | | D | | | C | | | C | |
| Queue Length 50th (ft) | 113 | 148 | | 210 | 68 | 32 | 17 | 174 | 71 | 49 | 352 | 25 |
| Queue Length 95th (ft) | 182 | 227 | | 303 | 115 | 55 | 45 | 238 | 113 | 81 | 517 | 51 |
| Internal Link Dist (ft) | | 788 | | | 1324 | | | 1057 | | | 967 | |
| Turn Bay Length (ft) | 200 | | | 450 | | 450 | 525 | | 375 | 625 | | |
| Base Capacity (vph) | 245 | 294 | | 381 | 472 | 455 | 122 | 1556 | 1036 | 237 | 899 | 1044 |
| 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 | 0.57 | 0.63 | | 0.69 | 0.21 | 0.16 | 0.17 | 0.37 | 0.32 | 0.49 | 0.59 | 0.07 |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 130 | | | |
| Actuated Cycle Length: 130 | | | |
| Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green | | | |
| Natural Cycle: 100 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.79 | | | |
| Intersection Signal Delay: 37.4 | | Intersection LOS: D | |
| Intersection Capacity Utilization 70.2% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 400: N Howe St & Robert Ruark Dr SE/River Rd SE



# *Future Build Conditions with Improvements*



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 33 | 22 | 8 | 278 | 558 | 11 |
| Future Volume (vph) | 33 | 22 | 8 | 278 | 558 | 11 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | 100 | | | 100 |
| Storage Lanes | 1 | 0 | 1 | | | 1 |
| Taper Length (ft) | 100 | | 100 | | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.947 | | | | | 0.850 |
| Flt Protected | 0.971 | | 0.950 | | | |
| Satd. Flow (prot) | 1713 | 0 | 1770 | 1863 | 1863 | 1583 |
| Flt Permitted | 0.971 | | 0.950 | | | |
| Satd. Flow (perm) | 1713 | 0 | 1770 | 1863 | 1863 | 1583 |
| Link Speed (mph) | 25 | | | 45 | 45 | |
| Link Distance (ft) | 1120 | | | 1783 | 1211 | |
| Travel Time (s) | 30.5 | | | 27.0 | 18.3 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 37 | 24 | 9 | 309 | 620 | 12 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 61 | 0 | 9 | 309 | 620 | 12 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 39.4% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 33 | 22 | 8 | 278 | 558 | 11 |
| Future Vol, veh/h | 33 | 22 | 8 | 278 | 558 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 100 |
| 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 | 37 | 24 | 9 | 309 | 620 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 947 | 620 | 632 | 0 | - | 0 |
| Stage 1 | 620 | - | - | - | - | - |
| Stage 2 | 327 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 290 | 488 | 951 | - | - | - |
| Stage 1 | 536 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 287 | 488 | 951 | - | - | - |
| Mov Cap-2 Maneuver | 287 | - | - | - | - | - |
| Stage 1 | 531 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.7 | 0.2 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 951 | - | 344 | - | - |
| HCM Lane V/C Ratio | 0.009 | - | 0.178 | - | - |
| HCM Control Delay (s) | 8.8 | - | 17.7 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.6 | - | - |

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 34 | 66 | 220 | 44 | 124 | 457 |
| Future Volume (vph) | 34 | 66 | 220 | 44 | 124 | 457 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | | 0 | 325 | |
| Storage Lanes | 1 | 0 | | 1 | 1 | |
| Taper Length (ft) | 100 | | | | 100 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.911 | | | 0.850 | | |
| Flt Protected | 0.983 | | | | 0.950 | |
| Satd. Flow (prot) | 1668 | 0 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.983 | | | | 0.950 | |
| Satd. Flow (perm) | 1668 | 0 | 1863 | 1583 | 1770 | 1863 |
| Link Speed (mph) | 45 | | 45 | | | 45 |
| Link Distance (ft) | 1122 | | 1404 | | | 1783 |
| Travel Time (s) | 17.0 | | 21.3 | | | 27.0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 38 | 73 | 244 | 49 | 138 | 508 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 111 | 0 | 244 | 49 | 138 | 508 |
| Sign Control | Stop | | Free | | | Free |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 36.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

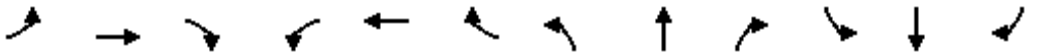
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 66 | 220 | 44 | 124 | 457 |
| Future Vol, veh/h | 34 | 66 | 220 | 44 | 124 | 457 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | 325 | - |
| 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 | 38 | 73 | 244 | 49 | 138 | 508 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1028 | 244 | 0 | 0 | 293 | 0 |
| Stage 1 | 244 | - | - | - | - | - |
| Stage 2 | 784 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 259 | 795 | - | - | 1269 | - |
| Stage 1 | 797 | - | - | - | - | - |
| Stage 2 | 450 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 231 | 795 | - | - | 1269 | - |
| Mov Cap-2 Maneuver | 231 | - | - | - | - | - |
| Stage 1 | 797 | - | - | - | - | - |
| Stage 2 | 401 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.1 | 0 | 1.7 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 434 | 1269 | - |
| HCM Lane V/C Ratio | - | - | 0.256 | 0.109 | - |
| HCM Control Delay (s) | - | - | 16.1 | 8.2 | - |
| HCM Lane LOS | - | - | C | A | - |
| HCM 95th %tile Q(veh) | - | - | 1 | 0.4 | - |

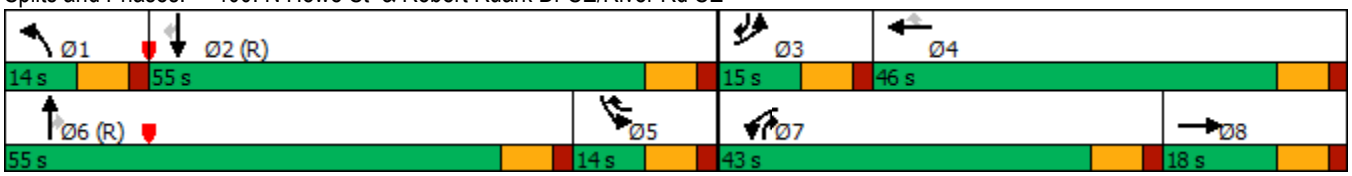


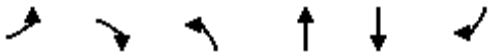
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 56 | 39 | 35 | 301 | 61 | 129 | 23 | 281 | 161 | 65 | 388 | 61 |
| Future Volume (vph) | 56 | 39 | 35 | 301 | 61 | 129 | 23 | 281 | 161 | 65 | 388 | 61 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 200 | | 0 | 450 | | 450 | 525 | | 375 | 625 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 1 | | 2 | 2 | | 1 |
| Taper Length (ft) | 100 | | | 100 | | | 0 | | | 100 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | | 0.929 | | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1770 | 1730 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 1770 | 1730 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Right Turn on Red | | | No | | | No | | | No | | | No |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | 35 | | | 45 | | | 35 | | | 35 | |
| Link Distance (ft) | | 868 | | | 1404 | | | 1137 | | | 1047 | |
| Travel Time (s) | | 16.9 | | | 21.3 | | | 22.1 | | | 20.4 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 62 | 43 | 39 | 334 | 68 | 143 | 26 | 312 | 179 | 72 | 431 | 68 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 82 | 0 | 334 | 68 | 143 | 26 | 312 | 179 | 72 | 431 | 68 |
| 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) | 14.0 | 14.0 | | 14.0 | 30.4 | 14.0 | 14.0 | 40.0 | 14.0 | 14.0 | 24.0 | 14.0 |
| Total Split (s) | 15.0 | 18.0 | | 43.0 | 46.0 | 14.0 | 14.0 | 55.0 | 43.0 | 14.0 | 55.0 | 15.0 |
| Total Split (%) | 11.5% | 13.8% | | 33.1% | 35.4% | 10.8% | 10.8% | 42.3% | 33.1% | 10.8% | 42.3% | 11.5% |
| Maximum Green (s) | 8.0 | 11.0 | | 36.0 | 39.0 | 7.0 | 7.0 | 48.0 | 36.0 | 7.0 | 48.0 | 8.0 |
| 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 |
| 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 | Lag | Lead | Lead | Lead | Lag | Lag | Lead |
| Lead-Lag Optimize? | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Minimum Gap (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 3.0 | 2.0 |
| Time Before Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 |
| Time To Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 0.0 |
| Recall Mode | None | None | | None | None | None | None | C-Max | None | None | C-Max | None |
| Walk Time (s) | | | | | 7.0 | | | 7.0 | | | 7.0 | |
| Flash Dont Walk (s) | | | | | 16.4 | | | 26.0 | | | 10.0 | |
| Pedestrian Calls (#/hr) | | | | | 0 | | | 0 | | | 0 | |
| Act Effct Green (s) | 9.7 | 11.9 | | 30.6 | 35.6 | 45.6 | 9.1 | 58.5 | 89.1 | 9.0 | 64.0 | 78.7 |
| Actuated g/C Ratio | 0.07 | 0.09 | | 0.24 | 0.27 | 0.35 | 0.07 | 0.45 | 0.69 | 0.07 | 0.49 | 0.61 |
| v/c Ratio | 0.47 | 0.52 | | 0.80 | 0.13 | 0.26 | 0.21 | 0.20 | 0.17 | 0.30 | 0.47 | 0.07 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control Delay | 69.9 | 67.9 | | 61.3 | 35.4 | 21.6 | 61.5 | 23.4 | 4.2 | 61.1 | 27.3 | 14.5 |
| 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 | 69.9 | 67.9 | | 61.3 | 35.4 | 21.6 | 61.5 | 23.4 | 4.2 | 61.1 | 27.3 | 14.5 |
| LOS | E | E | | E | D | C | E | C | A | E | C | B |
| Approach Delay | | 68.7 | | | 47.6 | | | 18.7 | | | 30.0 | |
| Approach LOS | | E | | | D | | | B | | | C | |
| Queue Length 50th (ft) | 51 | 67 | | 266 | 44 | 67 | 21 | 83 | 23 | 30 | 259 | 25 |
| Queue Length 95th (ft) | 99 | 121 | | 353 | 77 | 97 | 52 | 128 | 38 | 56 | 401 | 56 |
| Internal Link Dist (ft) | | 788 | | | 1324 | | | 1057 | | | 967 | |
| Turn Bay Length (ft) | 200 | | | 450 | | 450 | 525 | | 375 | 625 | | |
| Base Capacity (vph) | 136 | 177 | | 517 | 587 | 555 | 123 | 1592 | 1175 | 237 | 917 | 962 |
| 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 | 0.46 | 0.46 | | 0.65 | 0.12 | 0.26 | 0.21 | 0.20 | 0.15 | 0.30 | 0.47 | 0.07 |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 130 | | | |
| Actuated Cycle Length: 130 | | | |
| Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green | | | |
| Natural Cycle: 100 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.80 | | | |
| Intersection Signal Delay: 35.3 | | Intersection LOS: D | |
| Intersection Capacity Utilization 59.5% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 400: N Howe St & Robert Ruark Dr SE/River Rd SE





| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 22 | 14 | 25 | 584 | 370 | 38 |
| Future Volume (vph) | 22 | 14 | 25 | 584 | 370 | 38 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | 100 | | | 100 |
| Storage Lanes | 1 | 0 | 1 | | | 1 |
| Taper Length (ft) | 100 | | 100 | | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.946 | | | | | 0.850 |
| Flt Protected | 0.971 | | 0.950 | | | |
| Satd. Flow (prot) | 1711 | 0 | 1770 | 1863 | 1863 | 1583 |
| Flt Permitted | 0.971 | | 0.950 | | | |
| Satd. Flow (perm) | 1711 | 0 | 1770 | 1863 | 1863 | 1583 |
| Link Speed (mph) | 25 | | | 45 | 45 | |
| Link Distance (ft) | 1120 | | | 1777 | 1211 | |
| Travel Time (s) | 30.5 | | | 26.9 | 18.3 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 24 | 16 | 28 | 649 | 411 | 42 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 40 | 0 | 28 | 649 | 411 | 42 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 40.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 22 | 14 | 25 | 584 | 370 | 38 |
| Future Vol, veh/h | 22 | 14 | 25 | 584 | 370 | 38 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 100 |
| 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 | 24 | 16 | 28 | 649 | 411 | 42 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1116 | 411 | 453 | 0 | - | 0 |
| Stage 1 | 411 | - | - | - | - | - |
| Stage 2 | 705 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 230 | 641 | 1108 | - | - | - |
| Stage 1 | 669 | - | - | - | - | - |
| Stage 2 | 490 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 224 | 641 | 1108 | - | - | - |
| Mov Cap-2 Maneuver | 224 | - | - | - | - | - |
| Stage 1 | 652 | - | - | - | - | - |
| Stage 2 | 490 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 18.8 | 0.3 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1108 | - | 300 | - | - |
| HCM Lane V/C Ratio | 0.025 | - | 0.133 | - | - |
| HCM Control Delay (s) | 8.3 | - | 18.8 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.5 | - | - |

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 81 | 196 | 414 | 31 | 75 | 309 |
| Future Volume (vph) | 81 | 196 | 414 | 31 | 75 | 309 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | 0 | | 0 | 325 | |
| Storage Lanes | 1 | 0 | | 1 | 1 | |
| Taper Length (ft) | 100 | | | | 100 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.904 | | | 0.850 | | |
| Flt Protected | 0.986 | | | | 0.950 | |
| Satd. Flow (prot) | 1660 | 0 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.986 | | | | 0.950 | |
| Satd. Flow (perm) | 1660 | 0 | 1863 | 1583 | 1770 | 1863 |
| Link Speed (mph) | 45 | | 45 | | | 45 |
| Link Distance (ft) | 1122 | | 1404 | | | 1777 |
| Travel Time (s) | 17.0 | | 21.3 | | | 26.9 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 90 | 218 | 460 | 34 | 83 | 343 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 308 | 0 | 460 | 34 | 83 | 343 |
| Sign Control | Stop | | Free | | | Free |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 52.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

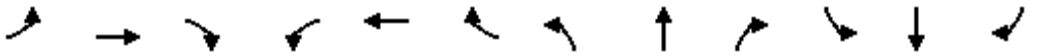
| Intersection | |
|---|---|
| Int Delay, s/veh | 8.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 81 | 196 | 414 | 31 | 75 | 309 |
| Future Vol, veh/h | 81 | 196 | 414 | 31 | 75 | 309 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | 325 | - |
| 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 | 90 | 218 | 460 | 34 | 83 | 343 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 969 | 460 | 0 | 0 | 494 | 0 |
| Stage 1 | 460 | - | - | - | - | - |
| Stage 2 | 509 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 281 | 601 | - | - | 1070 | - |
| Stage 1 | 636 | - | - | - | - | - |
| Stage 2 | 604 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 259 | 601 | - | - | 1070 | - |
| Mov Cap-2 Maneuver | 259 | - | - | - | - | - |
| Stage 1 | 636 | - | - | - | - | - |
| Stage 2 | 557 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 31.1 | 0 | 1.7 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 434 | 1070 | - |
| HCM Lane V/C Ratio | - | - | 0.709 | 0.078 | - |
| HCM Control Delay (s) | - | - | 31.1 | 8.6 | - |
| HCM Lane LOS | - | - | D | A | - |
| HCM 95th %tile Q(veh) | - | - | 5.4 | 0.3 | - |

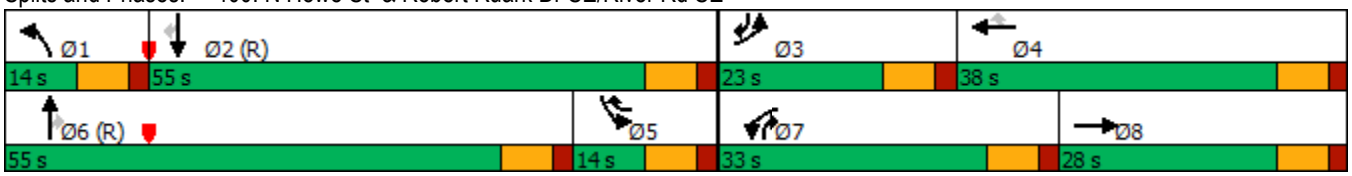


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 125 | 48 | 118 | 235 | 88 | 67 | 19 | 519 | 294 | 104 | 473 | 66 |
| Future Volume (vph) | 125 | 48 | 118 | 235 | 88 | 67 | 19 | 519 | 294 | 104 | 473 | 66 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 200 | | 0 | 450 | | 450 | 525 | | 375 | 625 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 1 | | 2 | 2 | | 1 |
| Taper Length (ft) | 100 | | | 100 | | | 0 | | | 100 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | | 0.893 | | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1770 | 1663 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 1770 | 1663 | 0 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Right Turn on Red | | | No | | | No | | | No | | | No |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | 35 | | | 45 | | | 35 | | | 35 | |
| Link Distance (ft) | | 868 | | | 1404 | | | 1137 | | | 1047 | |
| Travel Time (s) | | 16.9 | | | 21.3 | | | 22.1 | | | 20.4 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 139 | 53 | 131 | 261 | 98 | 74 | 21 | 577 | 327 | 116 | 526 | 73 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 139 | 184 | 0 | 261 | 98 | 74 | 21 | 577 | 327 | 116 | 526 | 73 |
| 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) | 14.0 | 14.0 | | 14.0 | 30.4 | 14.0 | 14.0 | 40.0 | 14.0 | 14.0 | 24.0 | 14.0 |
| Total Split (s) | 23.0 | 28.0 | | 33.0 | 38.0 | 14.0 | 14.0 | 55.0 | 33.0 | 14.0 | 55.0 | 23.0 |
| Total Split (%) | 17.7% | 21.5% | | 25.4% | 29.2% | 10.8% | 10.8% | 42.3% | 25.4% | 10.8% | 42.3% | 17.7% |
| Maximum Green (s) | 16.0 | 21.0 | | 26.0 | 31.0 | 7.0 | 7.0 | 48.0 | 26.0 | 7.0 | 48.0 | 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 |
| 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 | Lag | Lead | Lead | Lead | Lag | Lag | Lead |
| Lead-Lag Optimize? | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Minimum Gap (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 3.0 | 2.0 |
| Time Before Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 |
| Time To Reduce (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 0.0 |
| Recall Mode | None | None | | None | None | None | None | C-Max | None | None | C-Max | None |
| Walk Time (s) | | | | | 7.0 | | | 7.0 | | | 7.0 | |
| Flash Dont Walk (s) | | | | | 16.4 | | | 26.0 | | | 10.0 | |
| Pedestrian Calls (#/hr) | | | | | 0 | | | 0 | | | 0 | |
| Act Effct Green (s) | 15.5 | 19.6 | | 24.2 | 28.4 | 37.4 | 9.0 | 57.2 | 81.4 | 9.0 | 62.8 | 83.2 |
| Actuated g/C Ratio | 0.12 | 0.15 | | 0.19 | 0.22 | 0.29 | 0.07 | 0.44 | 0.63 | 0.07 | 0.48 | 0.64 |
| v/c Ratio | 0.66 | 0.74 | | 0.79 | 0.24 | 0.16 | 0.17 | 0.37 | 0.33 | 0.49 | 0.59 | 0.07 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control Delay | 69.8 | 69.7 | | 67.7 | 42.1 | 20.2 | 60.6 | 26.6 | 7.4 | 65.7 | 31.1 | 11.7 |
| 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 | 69.8 | 69.7 | | 67.7 | 42.1 | 20.2 | 60.6 | 26.6 | 7.4 | 65.7 | 31.1 | 11.7 |
| LOS | E | E | | E | D | C | E | C | A | E | C | B |
| Approach Delay | | 69.7 | | | 53.8 | | | 20.6 | | | 34.7 | |
| Approach LOS | | E | | | D | | | C | | | C | |
| Queue Length 50th (ft) | 113 | 148 | | 210 | 68 | 32 | 17 | 174 | 71 | 49 | 352 | 25 |
| Queue Length 95th (ft) | 182 | 227 | | 303 | 115 | 55 | 45 | 238 | 113 | 81 | 517 | 51 |
| Internal Link Dist (ft) | | 788 | | | 1324 | | | 1057 | | | 967 | |
| Turn Bay Length (ft) | 200 | | | 450 | | 450 | 525 | | 375 | 625 | | |
| Base Capacity (vph) | 245 | 294 | | 381 | 472 | 455 | 122 | 1556 | 1036 | 237 | 899 | 1044 |
| 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 | 0.57 | 0.63 | | 0.69 | 0.21 | 0.16 | 0.17 | 0.37 | 0.32 | 0.49 | 0.59 | 0.07 |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 130 | | | |
| Actuated Cycle Length: 130 | | | |
| Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green | | | |
| Natural Cycle: 100 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.79 | | | |
| Intersection Signal Delay: 37.4 | | Intersection LOS: D | |
| Intersection Capacity Utilization 70.2% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 400: N Howe St & Robert Ruark Dr SE/River Rd SE



# Queueing Analysis

## *SimTraffic Worksheets*

## Intersection: 100: River Rd SE & Site Access 1

| Movement | EB | NB |
|---|---|---|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 60 | 37 |
| Average Queue (ft) | 25 | 5 |
| 95th Queue (ft) | 50 | 25 |
| Link Distance (ft) | 1080 | 1733 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 300: River Rd SE & Rob Gandy Blvd

| Movement | WB | SB |
|---|---|---|
| Directions Served | LR | L |
| Maximum Queue (ft) | 81 | 64 |
| Average Queue (ft) | 34 | 19 |
| 95th Queue (ft) | 61 | 50 |
| Link Distance (ft) | 1079 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 325 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/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) | 119 | 134 | 354 | 104 | 194 | 67 | 183 | 165 | 100 | 97 | 60 | 306 |
| Average Queue (ft) | 43 | 51 | 217 | 43 | 78 | 23 | 96 | 40 | 33 | 37 | 16 | 151 |
| 95th Queue (ft) | 92 | 107 | 331 | 90 | 149 | 58 | 164 | 120 | 76 | 78 | 45 | 264 |
| Link Distance (ft) | | 814 | | 1327 | | | 1096 | | | | | 994 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 200 | | 450 | | 450 | 525 | | 375 | 375 | 625 | 625 | |
| Storage Blk Time (%) | 0 | | | | | | | | | | | |
| Queuing Penalty (veh) | 0 | | | | | | | | | | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/River Rd SE

| Movement | SB |
|---|---|
| Directions Served | R |
| Maximum Queue (ft) | 89 |
| Average Queue (ft) | 17 |
| 95th Queue (ft) | 54 |
| Link Distance (ft) | 994 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

## Network Summary

Network wide Queuing Penalty: 0

## Intersection: 100: River Rd SE & Site Access 1

| Movement | EB | NB |
|---|---|---|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 44 | 92 |
| Average Queue (ft) | 20 | 12 |
| 95th Queue (ft) | 45 | 51 |
| Link Distance (ft) | 1080 | 1726 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 300: River Rd SE & Rob Gandy Blvd

| Movement | WB | SB |
|---|---|---|
| Directions Served | LR | L |
| Maximum Queue (ft) | 188 | 56 |
| Average Queue (ft) | 79 | 20 |
| 95th Queue (ft) | 147 | 46 |
| Link Distance (ft) | 1077 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 325 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/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) | 189 | 247 | 331 | 152 | 114 | 71 | 251 | 234 | 178 | 140 | 104 | 403 |
| Average Queue (ft) | 91 | 126 | 187 | 62 | 41 | 19 | 159 | 117 | 75 | 68 | 21 | 198 |
| 95th Queue (ft) | 162 | 214 | 295 | 120 | 87 | 53 | 234 | 217 | 142 | 121 | 62 | 337 |
| Link Distance (ft) | | 814 | | 1327 | | | 1096 | | | | | 994 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 200 | | 450 | | 450 | 525 | | 375 | 375 | 625 | 625 | |
| Storage Blk Time (%) | 0 | 1 | | | | | | | | | | 0 |
| Queuing Penalty (veh) | 1 | 2 | | | | | | | | | | 0 |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/River Rd SE

| Movement | SB |
|---|---|
| Directions Served | R |
| Maximum Queue (ft) | 76 |
| Average Queue (ft) | 15 |
| 95th Queue (ft) | 48 |
| Link Distance (ft) | 994 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

## Network Summary

Network wide Queuing Penalty: 2

## Intersection: 100: River Rd SE & Site Access 1

| Movement | EB | NB |
|---|---|---|
| Directions Served | LR | L |
| Maximum Queue (ft) | 60 | 28 |
| Average Queue (ft) | 25 | 4 |
| 95th Queue (ft) | 50 | 20 |
| Link Distance (ft) | 1068 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 100 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 300: River Rd SE & Rob Gandy Blvd

| Movement | WB | SB |
|---|---|---|
| Directions Served | LR | L |
| Maximum Queue (ft) | 81 | 64 |
| Average Queue (ft) | 34 | 20 |
| 95th Queue (ft) | 59 | 50 |
| Link Distance (ft) | 1077 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 325 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/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) | 119 | 136 | 359 | 104 | 187 | 67 | 185 | 165 | 102 | 97 | 60 | 299 |
| Average Queue (ft) | 43 | 51 | 218 | 43 | 78 | 24 | 95 | 40 | 33 | 37 | 16 | 149 |
| 95th Queue (ft) | 92 | 108 | 332 | 89 | 149 | 58 | 164 | 120 | 76 | 78 | 46 | 262 |
| Link Distance (ft) | | 814 | | 1327 | | | 1096 | | | | | 994 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 200 | | 450 | | 450 | 525 | | 375 | 375 | 625 | 625 | |
| Storage Blk Time (%) | 0 | | | | | | | | | | | |
| Queuing Penalty (veh) | 0 | | | | | | | | | | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/River Rd SE

| Movement | SB |
|---|---|
| Directions Served | R |
| Maximum Queue (ft) | 91 |
| Average Queue (ft) | 17 |
| 95th Queue (ft) | 55 |
| Link Distance (ft) | 994 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

## Network Summary

Network wide Queuing Penalty: 0

## Intersection: 100: River Rd SE & Site Access 1

| Movement | EB | NB |
|---|---|---|
| Directions Served | LR | L |
| Maximum Queue (ft) | 44 | 39 |
| Average Queue (ft) | 19 | 8 |
| 95th Queue (ft) | 43 | 30 |
| Link Distance (ft) | 1068 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 100 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 300: River Rd SE & Rob Gandy Blvd

| Movement | WB | NB | SB |
|---|---|---|---|
| Directions Served | LR | T | L |
| Maximum Queue (ft) | 178 | 2 | 59 |
| Average Queue (ft) | 76 | 0 | 20 |
| 95th Queue (ft) | 139 | 2 | 48 |
| Link Distance (ft) | 1078 | 1327 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 325 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/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) | 191 | 244 | 324 | 152 | 114 | 71 | 252 | 230 | 172 | 147 | 104 | 398 |
| Average Queue (ft) | 92 | 123 | 186 | 61 | 41 | 18 | 161 | 118 | 74 | 70 | 23 | 198 |
| 95th Queue (ft) | 166 | 212 | 288 | 119 | 88 | 51 | 235 | 217 | 139 | 127 | 69 | 338 |
| Link Distance (ft) | | 814 | | 1327 | | | 1096 | | | | | 994 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 200 | | 450 | | 450 | 525 | | 375 | 375 | 625 | 625 | |
| Storage Blk Time (%) | 1 | 2 | | | | | | | | | | 0 |
| Queuing Penalty (veh) | 1 | 2 | | | | | | | | | | 0 |

## Intersection: 400: N Howe St & Robert Ruark Dr SE/River Rd SE

| Movement | SB |
|---|---|
| Directions Served | R |
| Maximum Queue (ft) | 70 |
| Average Queue (ft) | 15 |
| 95th Queue (ft) | 47 |
| Link Distance (ft) | 994 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

## Network Summary

Network wide Queuing Penalty: 3

# Turning Movement Counts

File Name : South Port-South Port(NC 87 and Rob Gandy)
Site Code :
Start Date : 5/10/2022
Page No : 1

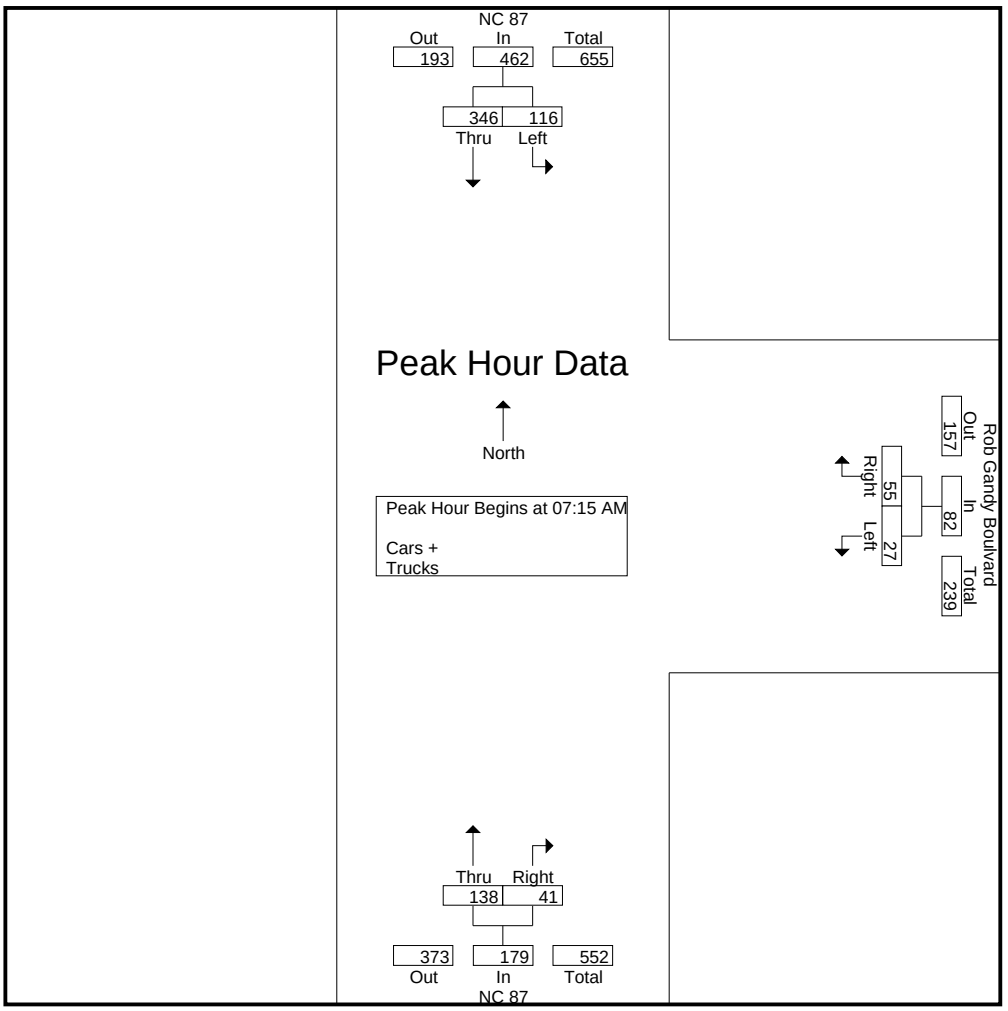
Groups Printed- Cars + - Trucks

| | NC 87 Southbound | | | Rob Gandy Boulvard Westbound | | | NC 87 Northbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 07:00 AM | 54 | 29 | 83 | 12 | 1 | 13 | 11 | 45 | 56 | 152 |
| 07:15 AM | 78 | 32 | 110 | 17 | 7 | 24 | 15 | 43 | 58 | 192 |
| 07:30 AM | 91 | 34 | 125 | 15 | 5 | 20 | 11 | 28 | 39 | 184 |
| 07:45 AM | 101 | 29 | 130 | 13 | 4 | 17 | 10 | 37 | 47 | 194 |
| Total | 324 | 124 | 448 | 57 | 17 | 74 | 47 | 153 | 200 | 722 |
| | | | | | | | | | | |
| 08:00 AM | 76 | 21 | 97 | 10 | 11 | 21 | 5 | 30 | 35 | 153 |
| 08:15 AM | 75 | 32 | 107 | 14 | 7 | 21 | 9 | 49 | 58 | 186 |
| 08:30 AM | 55 | 34 | 89 | 10 | 6 | 16 | 10 | 39 | 49 | 154 |
| 08:45 AM | 77 | 27 | 104 | 14 | 9 | 23 | 11 | 41 | 52 | 179 |
| Total | 283 | 114 | 397 | 48 | 33 | 81 | 35 | 159 | 194 | 672 |
| | | | | | | | | | | |
| Grand Total | 607 | 238 | 845 | 105 | 50 | 155 | 82 | 312 | 394 | 1394 |
| Apprch % | 71.8 | 28.2 | | 67.7 | 32.3 | | 20.8 | 79.2 | | |
| Total % | 43.5 | 17.1 | 60.6 | 7.5 | 3.6 | 11.1 | 5.9 | 22.4 | 28.3 | |
| Cars + | 583 | 219 | 802 | 93 | 43 | 136 | 72 | 294 | 366 | 1304 |
| % Cars + | 96 | 92 | 94.9 | 88.6 | 86 | 87.7 | 87.8 | 94.2 | 92.9 | 93.5 |
| Trucks | 24 | 19 | 43 | 12 | 7 | 19 | 10 | 18 | 28 | 90 |
| % Trucks | 4 | 8 | 5.1 | 11.4 | 14 | 12.3 | 12.2 | 5.8 | 7.1 | 6.5 |

TRAFFIC DATA COLLECTION

File Name : South Port-South Port(NC 87 and Rob Gandy)
Site Code :
Start Date : 5/10/2022
Page No : 2

| | NC 87 Southbound | | | Rob Gandy Boulvard Westbound | | | NC 87 Northbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | |
| 07:15 AM | 78 | 32 | 110 | **17** | 7 | **24** | **15** | **43** | **58** | 192 |
| 07:30 AM | 91 | **34** | 125 | 15 | 5 | 20 | 11 | 28 | 39 | 184 |
| 07:45 AM | **101** | 29 | **130** | 13 | 4 | 17 | 10 | 37 | 47 | **194** |
| 08:00 AM | 76 | 21 | 97 | 10 | **11** | 21 | 5 | 30 | 35 | 153 |
| Total Volume | 346 | 116 | 462 | 55 | 27 | 82 | 41 | 138 | 179 | 723 |
| % App. Total | 74.9 | 25.1 | | 67.1 | 32.9 | | 22.9 | 77.1 | | |
| PHF | .856 | .853 | .888 | .809 | .614 | .854 | .683 | .802 | .772 | .932 |



File Name : South Port-South Port(NC 87 and Rob Gandy)
Site Code :
Start Date : 5/10/2022
Page No : 1

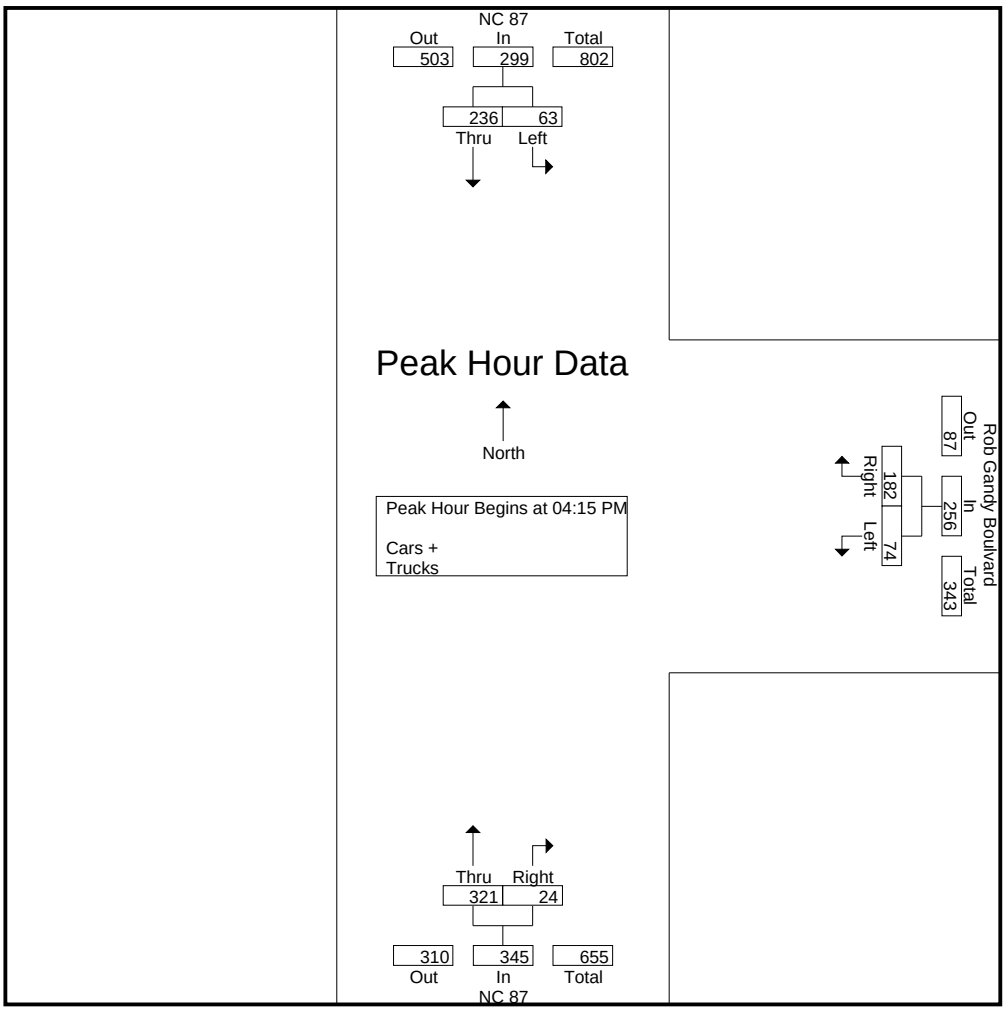
Groups Printed- Cars + - Trucks

| | NC 87 Southbound | | | Rob Gandy Boulvard Westbound | | | NC 87 Northbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| 04:00 PM | 53 | 10 | 63 | 51 | 11 | 62 | 10 | 90 | 100 | 225 |
| 04:15 PM | 54 | 17 | 71 | 19 | 11 | 30 | 14 | 86 | 100 | 201 |
| 04:30 PM | 61 | 9 | 70 | 76 | 25 | 101 | 3 | 70 | 73 | 244 |
| 04:45 PM | 65 | 19 | 84 | 31 | 9 | 40 | 3 | 76 | 79 | 203 |
| Total | 233 | 55 | 288 | 177 | 56 | 233 | 30 | 322 | 352 | 873 |
| | | | | | | | | | | |
| 05:00 PM | 56 | 18 | 74 | 56 | 29 | 85 | 4 | 89 | 93 | 252 |
| 05:15 PM | 52 | 7 | 59 | 31 | 12 | 43 | 3 | 89 | 92 | 194 |
| 05:30 PM | 53 | 12 | 65 | 44 | 14 | 58 | 4 | 73 | 77 | 200 |
| 05:45 PM | 52 | 9 | 61 | 27 | 14 | 41 | 4 | 55 | 59 | 161 |
| Total | 213 | 46 | 259 | 158 | 69 | 227 | 15 | 306 | 321 | 807 |
| | | | | | | | | | | |
| Grand Total | 446 | 101 | 547 | 335 | 125 | 460 | 45 | 628 | 673 | 1680 |
| Apprch % | 81.5 | 18.5 | | 72.8 | 27.2 | | 6.7 | 93.3 | | |
| Total % | 26.5 | 6 | 32.6 | 19.9 | 7.4 | 27.4 | 2.7 | 37.4 | 40.1 | |
| Cars + | 442 | 97 | 539 | 327 | 121 | 448 | 42 | 608 | 650 | 1637 |
| % Cars + | 99.1 | 96 | 98.5 | 97.6 | 96.8 | 97.4 | 93.3 | 96.8 | 96.6 | 97.4 |
| Trucks | 4 | 4 | 8 | 8 | 4 | 12 | 3 | 20 | 23 | 43 |
| % Trucks | 0.9 | 4 | 1.5 | 2.4 | 3.2 | 2.6 | 6.7 | 3.2 | 3.4 | 2.6 |

TRAFFIC DATA COLLECTION

File Name : South Port-South Port(NC 87 and Rob Gandy)
Site Code :
Start Date : 5/10/2022
Page No : 2

| | NC 87 Southbound | | | Rob Gandy Boulvard Westbound | | | NC 87 Northbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Thru | Left | App. Total | Right | Left | App. Total | Right | Thru | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:15 PM | | | | | | | | | | |
| 04:15 PM | 54 | 17 | 71 | 19 | 11 | 30 | **14** | 86 | **100** | 201 |
| 04:30 PM | 61 | 9 | 70 | **76** | 25 | **101** | 3 | 70 | 73 | 244 |
| 04:45 PM | **65** | **19** | **84** | 31 | 9 | 40 | 3 | 76 | 79 | 203 |
| 05:00 PM | 56 | 18 | 74 | 56 | **29** | 85 | 4 | **89** | 93 | **252** |
| Total Volume | 236 | 63 | 299 | 182 | 74 | 256 | 24 | 321 | 345 | 900 |
| % App. Total | 78.9 | 21.1 | | 71.1 | 28.9 | | 7 | 93 | | |
| PHF | .908 | .829 | .890 | .599 | .638 | .634 | .429 | .902 | .863 | .893 |



File Name : Southport(NC 211 and NC 87
Site Code :
Start Date : 1/13/2022
Page No : 1

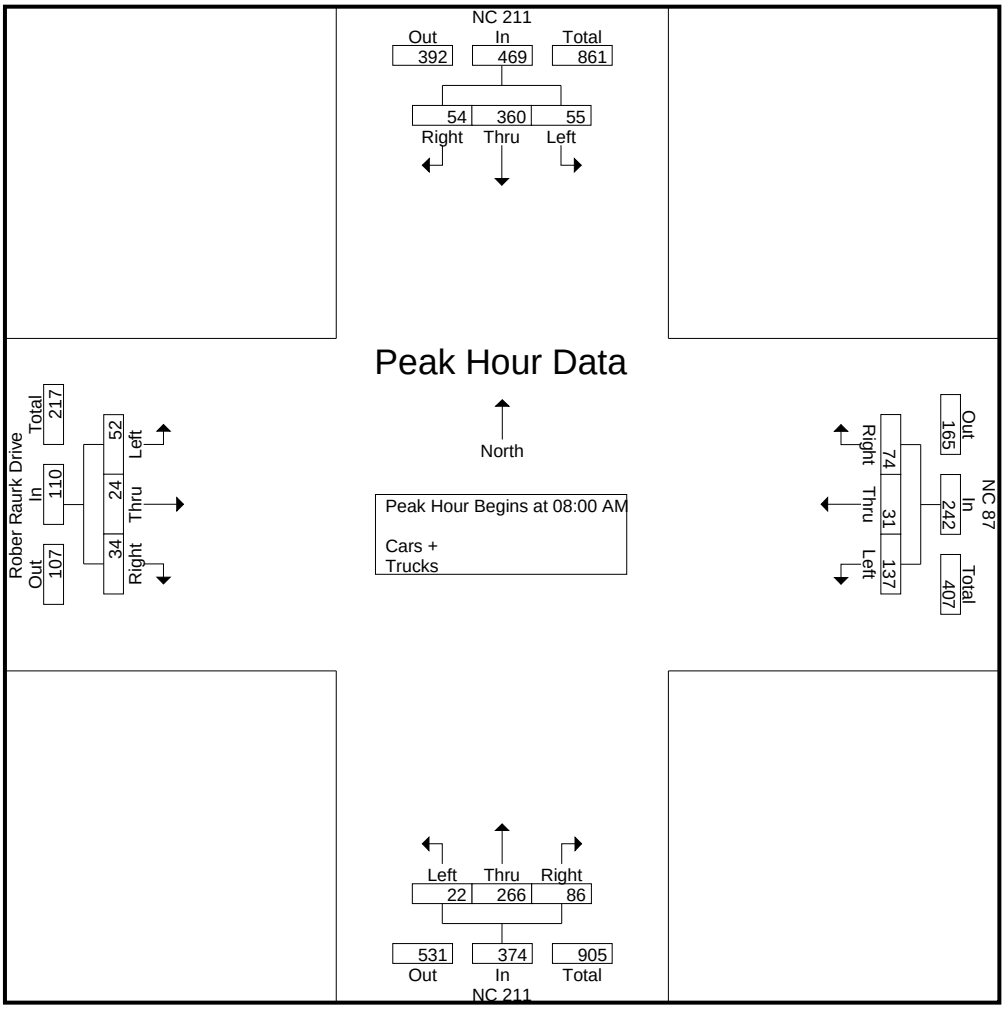
Groups Printed- Cars + - Trucks

| | NC 211 Southbound | | | | NC 87 Westbound | | | | NC 211 Northbound | | | | Rober Raurk Drive Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 07:00 AM | 5 | 43 | 22 | 70 | 15 | 2 | 23 | 40 | 11 | 35 | 1 | 47 | 6 | 3 | 11 | 20 | 177 |
| 07:15 AM | 5 | 63 | 16 | 84 | 18 | 4 | 23 | 45 | 20 | 37 | 4 | 61 | 5 | 6 | 6 | 17 | 207 |
| 07:30 AM | 5 | 75 | 16 | 96 | 13 | 5 | 31 | 49 | 14 | 49 | 3 | 66 | 3 | 5 | 18 | 26 | 237 |
| 07:45 AM | 15 | 86 | 16 | 117 | 18 | 6 | 42 | 66 | 16 | 49 | 1 | 66 | 8 | 7 | 11 | 26 | 275 |
| Total | 30 | 267 | 70 | 367 | 64 | 17 | 119 | 200 | 61 | 170 | 9 | 240 | 22 | 21 | 46 | 89 | 896 |
| | | | | | | | | | | | | | | | | | |
| 08:00 AM | 11 | 77 | 13 | 101 | 17 | 5 | 42 | 64 | 16 | 63 | 11 | 90 | 7 | 4 | 15 | 26 | 281 |
| 08:15 AM | 15 | 95 | 15 | 125 | 17 | 6 | 26 | 49 | 21 | 58 | 4 | 83 | 9 | 8 | 12 | 29 | 286 |
| 08:30 AM | 15 | 80 | 16 | 111 | 24 | 11 | 27 | 62 | 21 | 74 | 4 | 99 | 11 | 6 | 9 | 26 | 298 |
| 08:45 AM | 13 | 108 | 11 | 132 | 16 | 9 | 42 | 67 | 28 | 71 | 3 | 102 | 7 | 6 | 16 | 29 | 330 |
| Total | 54 | 360 | 55 | 469 | 74 | 31 | 137 | 242 | 86 | 266 | 22 | 374 | 34 | 24 | 52 | 110 | 1195 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 84 | 627 | 125 | 836 | 138 | 48 | 256 | 442 | 147 | 436 | 31 | 614 | 56 | 45 | 98 | 199 | 2091 |
| Apprch % | 10 | 75 | 15 | | 31.2 | 10.9 | 57.9 | | 23.9 | 71 | 5 | | 28.1 | 22.6 | 49.2 | | |
| Total % | 4 | 30 | 6 | 40 | 6.6 | 2.3 | 12.2 | 21.1 | 7 | 20.9 | 1.5 | 29.4 | 2.7 | 2.2 | 4.7 | 9.5 | |
| Cars + | 84 | 623 | 118 | 825 | 132 | 48 | 249 | 429 | 147 | 428 | 30 | 605 | 56 | 45 | 97 | 198 | 2057 |
| % Cars + | 100 | 99.4 | 94.4 | 98.7 | 95.7 | 100 | 97.3 | 97.1 | 100 | 98.2 | 96.8 | 98.5 | 100 | 100 | 99 | 99.5 | 98.4 |
| Trucks | 0 | 4 | 7 | 11 | 6 | 0 | 7 | 13 | 0 | 8 | 1 | 9 | 0 | 0 | 1 | 1 | 34 |
| % Trucks | 0 | 0.6 | 5.6 | 1.3 | 4.3 | 0 | 2.7 | 2.9 | 0 | 1.8 | 3.2 | 1.5 | 0 | 0 | 1 | 0.5 | 1.6 |

TRAFFIC DATA COLLECTION

File Name : Southport(NC 211 and NC 87
Site Code :
Start Date : 1/13/2022
Page No : 2

| | NC 211 Southbound | | | | NC 87 Westbound | | | | NC 211 Northbound | | | | Rober Raurk Drive Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | |
| 08:00 AM | 11 | 77 | 13 | 101 | 17 | 5 | **42** | 64 | 16 | 63 | **11** | 90 | 7 | 4 | 15 | 26 | 281 |
| 08:15 AM | **15** | 95 | 15 | 125 | 17 | 6 | 26 | 49 | 21 | 58 | 4 | 83 | 9 | **8** | 12 | **29** | 286 |
| 08:30 AM | 15 | 80 | **16** | 111 | **24** | **11** | 27 | 62 | 21 | **74** | 4 | 99 | **11** | 6 | 9 | 26 | 298 |
| 08:45 AM | 13 | **108** | 11 | **132** | 16 | 9 | 42 | **67** | **28** | 71 | 3 | **102** | 7 | 6 | **16** | 29 | **330** |
| Total Volume | 54 | 360 | 55 | 469 | 74 | 31 | 137 | 242 | 86 | 266 | 22 | 374 | 34 | 24 | 52 | 110 | 1195 |
| % App. Total | 11.5 | 76.8 | 11.7 | | 30.6 | 12.8 | 56.6 | | 23 | 71.1 | 5.9 | | 30.9 | 21.8 | 47.3 | | |
| PHF | .900 | .833 | .859 | .888 | .771 | .705 | .815 | .903 | .768 | .899 | .500 | .917 | .773 | .750 | .813 | .948 | .905 |



File Name : Southport(NC 211 and NC 87
Site Code :
Start Date : 1/13/2022
Page No : 1

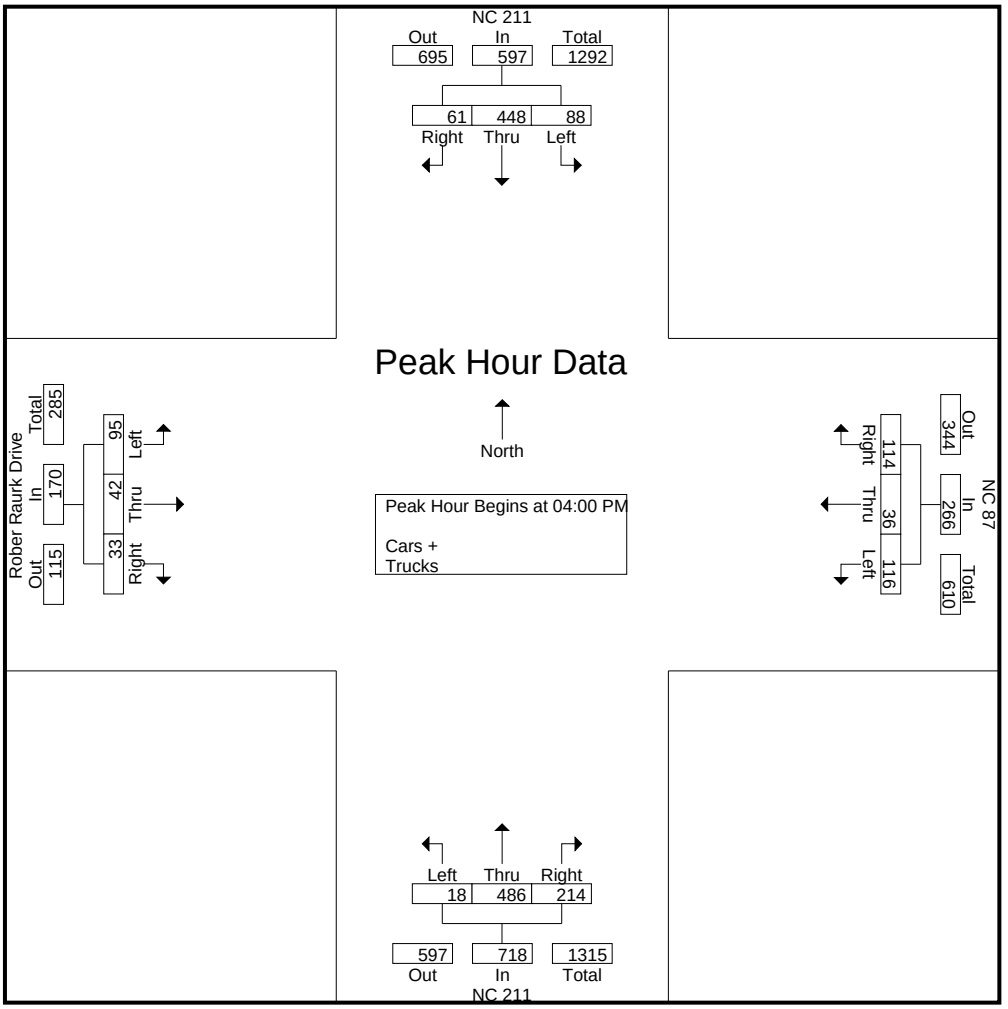
Groups Printed- Cars + - Trucks

| | NC 211 Southbound | | | | NC 87 Westbound | | | | NC 211 Northbound | | | | Rober Raurk Drive Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| 04:00 PM | 20 | 110 | 22 | 152 | 36 | 11 | 33 | 80 | 64 | 126 | 3 | 193 | 8 | 14 | 26 | 48 | 473 |
| 04:15 PM | 7 | 104 | 21 | 132 | 24 | 11 | 39 | 74 | 56 | 133 | 5 | 194 | 8 | 8 | 24 | 40 | 440 |
| 04:30 PM | 17 | 112 | 21 | 150 | 32 | 10 | 22 | 64 | 61 | 118 | 2 | 181 | 7 | 8 | 26 | 41 | 436 |
| 04:45 PM | 17 | 122 | 24 | 163 | 22 | 4 | 22 | 48 | 33 | 109 | 8 | 150 | 10 | 12 | 19 | 41 | 402 |
| Total | 61 | 448 | 88 | 597 | 114 | 36 | 116 | 266 | 214 | 486 | 18 | 718 | 33 | 42 | 95 | 170 | 1751 |
| | | | | | | | | | | | | | | | | | |
| 05:00 PM | 15 | 102 | 20 | 137 | 27 | 16 | 35 | 78 | 52 | 99 | 10 | 161 | 14 | 10 | 31 | 55 | 431 |
| 05:15 PM | 14 | 139 | 22 | 175 | 25 | 5 | 31 | 61 | 32 | 139 | 12 | 183 | 15 | 12 | 26 | 53 | 472 |
| 05:30 PM | 17 | 87 | 12 | 116 | 30 | 5 | 19 | 54 | 54 | 120 | 5 | 179 | 11 | 9 | 24 | 44 | 393 |
| 05:45 PM | 18 | 111 | 27 | 156 | 24 | 1 | 18 | 43 | 24 | 73 | 8 | 105 | 2 | 10 | 23 | 35 | 339 |
| Total | 64 | 439 | 81 | 584 | 106 | 27 | 103 | 236 | 162 | 431 | 35 | 628 | 42 | 41 | 104 | 187 | 1635 |
| | | | | | | | | | | | | | | | | | |
| Grand Total | 125 | 887 | 169 | 1181 | 220 | 63 | 219 | 502 | 376 | 917 | 53 | 1346 | 75 | 83 | 199 | 357 | 3386 |
| Apprch % | 10.6 | 75.1 | 14.3 | | 43.8 | 12.5 | 43.6 | | 27.9 | 68.1 | 3.9 | | 21 | 23.2 | 55.7 | | |
| Total % | 3.7 | 26.2 | 5 | 34.9 | 6.5 | 1.9 | 6.5 | 14.8 | 11.1 | 27.1 | 1.6 | 39.8 | 2.2 | 2.5 | 5.9 | 10.5 | |
| Cars + | 125 | 886 | 167 | 1178 | 219 | 63 | 219 | 501 | 376 | 917 | 53 | 1346 | 75 | 83 | 198 | 356 | 3381 |
| % Cars + | 100 | 99.9 | 98.8 | 99.7 | 99.5 | 100 | 100 | 99.8 | 100 | 100 | 100 | 100 | 100 | 100 | 99.5 | 99.7 | 99.9 |
| Trucks | 0 | 1 | 2 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| % Trucks | 0 | 0.1 | 1.2 | 0.3 | 0.5 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.3 | 0.1 |

TRAFFIC DATA COLLECTION

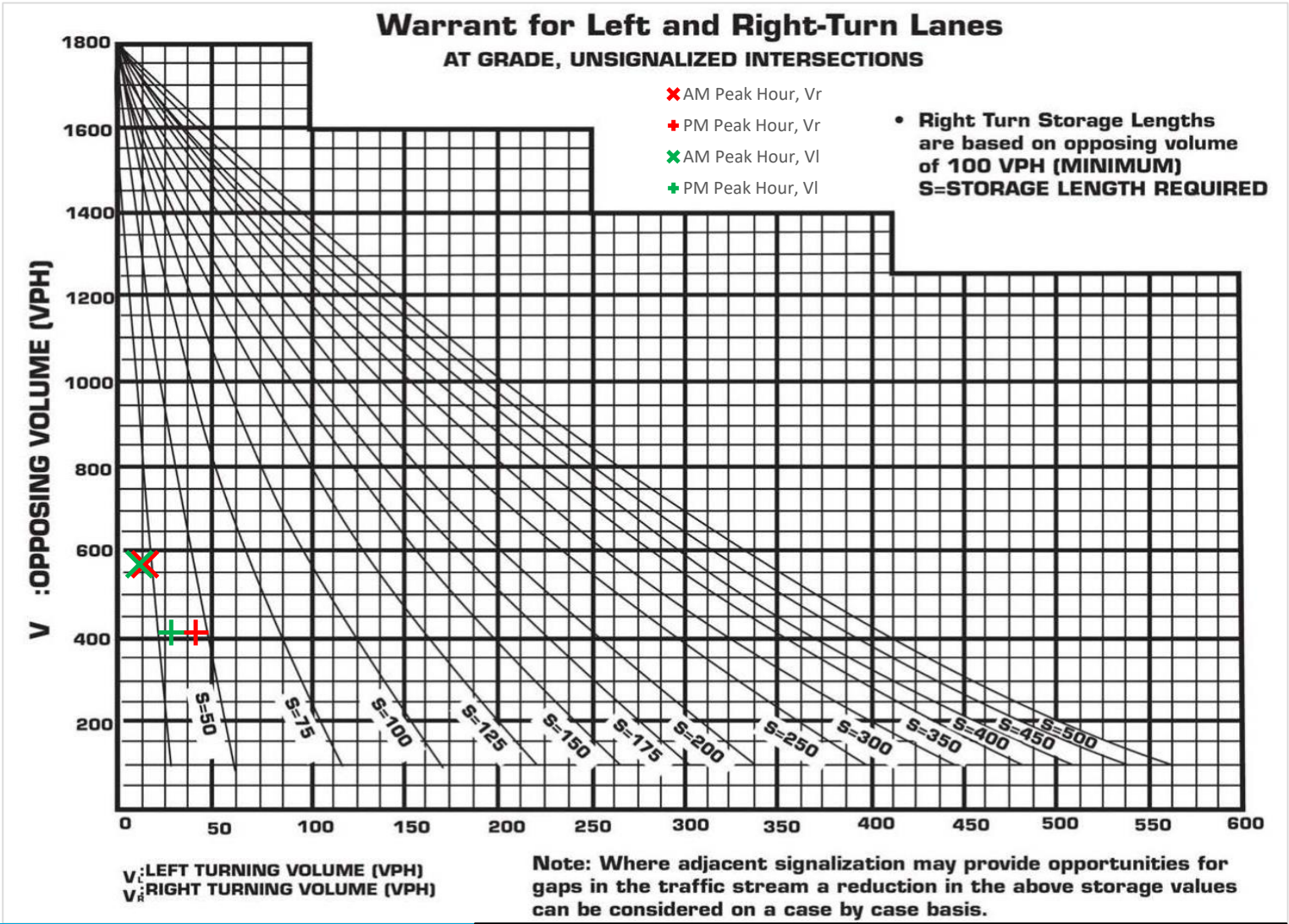
File Name : Southport(NC 211 and NC 87
Site Code :
Start Date : 1/13/2022
Page No : 2

| | NC 211 Southbound | | | | NC 87 Westbound | | | | NC 211 Northbound | | | | Rober Raurk Drive Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | |
| 04:00 PM | **20** | 110 | 22 | 152 | **36** | **11** | 33 | **80** | **64** | 126 | 3 | 193 | 8 | **14** | **26** | **48** | **473** |
| 04:15 PM | 7 | 104 | 21 | 132 | 24 | 11 | **39** | 74 | 56 | **133** | 5 | **194** | 8 | 8 | 24 | 40 | 440 |
| 04:30 PM | 17 | 112 | 21 | 150 | 32 | 10 | 22 | 64 | 61 | 118 | 2 | 181 | 7 | 8 | 26 | 41 | 436 |
| 04:45 PM | 17 | **122** | **24** | **163** | 22 | 4 | 22 | 48 | 33 | 109 | **8** | 150 | **10** | 12 | 19 | 41 | 402 |
| Total Volume | 61 | 448 | 88 | 597 | 114 | 36 | 116 | 266 | 214 | 486 | 18 | 718 | 33 | 42 | 95 | 170 | 1751 |
| % App. Total | 10.2 | 75 | 14.7 | | 42.9 | 13.5 | 43.6 | | 29.8 | 67.7 | 2.5 | | 19.4 | 24.7 | 55.9 | | |
| PHF | .763 | .918 | .917 | .916 | .792 | .818 | .744 | .831 | .836 | .914 | .563 | .925 | .825 | .750 | .913 | .885 | .925 |



# Supporting Documentation

| Peak Hour | Volumes | | Peak Hour | Volumes | |
|---|---|---|---|---|---|
| | Opposing | Lefts | | Opposing | Rights |
| AM | 569 | 8 | AM | 569 | 11 |
| PM | 408 | 25 | PM | 408 | 38 |




| DAVENPORT | TURN LANE WARRANT SUMMARY | SITE ACCESS AT NC 87 |
|---|---|---|

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE :
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

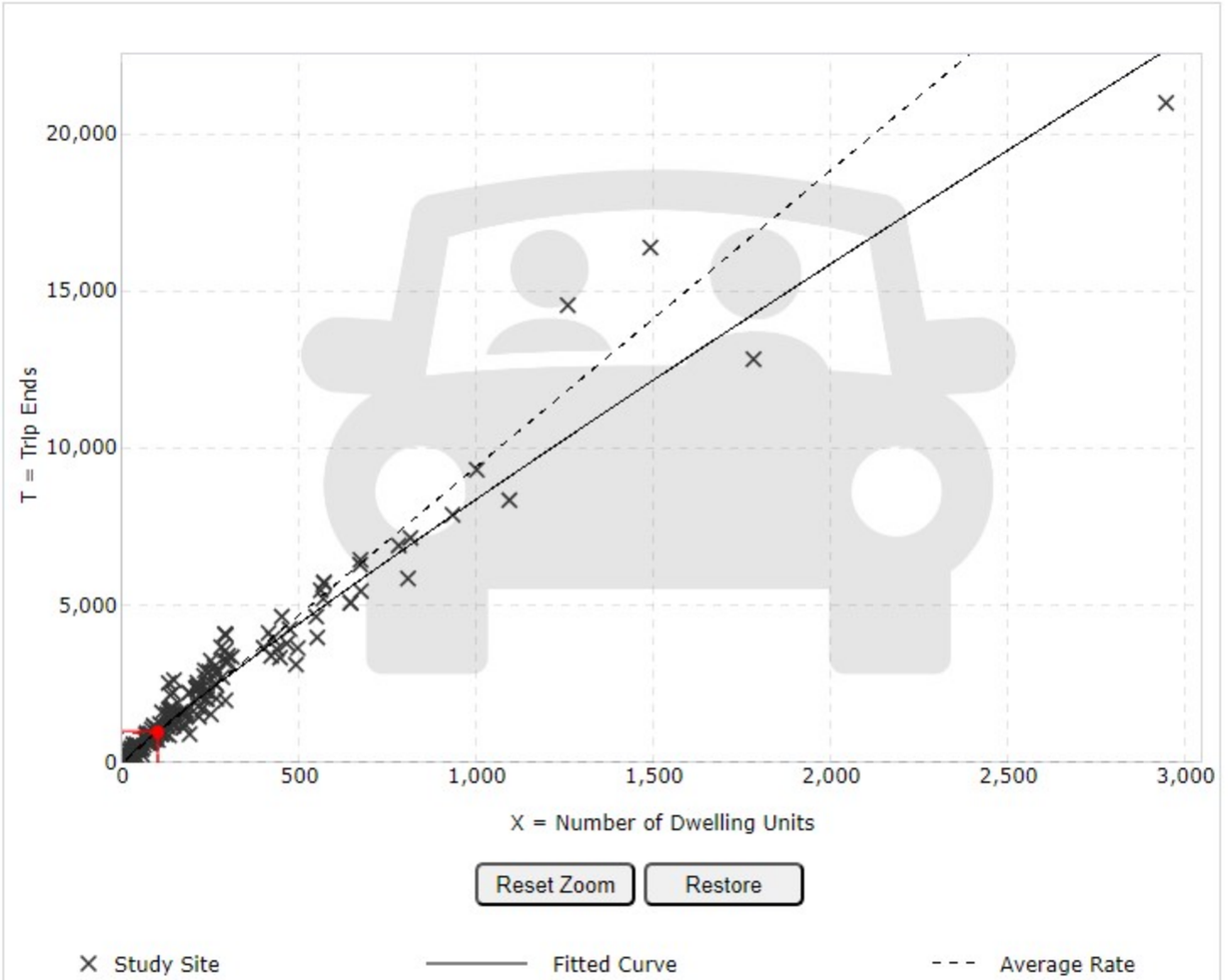
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
100 Calculate

## Data Plot and Equation




**DATA STATISTICS**

**Land Use:**
Single-Family Detached Housing (210) Click for Description and Data Plots

**Independent Variable:**
Dwelling Units

**Time Period:**
Weekday

**Setting/Location:**
General Urban/Suburban

**Trip Type:**
Vehicle

**Number of Studies:**
174

**Avg. Num. of Dwelling Units:**
246

**Average Rate:**
9.43

**Range of Rates:**
4.45 - 22.61

**Standard Deviation:**
2.13

**Fitted Curve Equation:**
Ln(T) = 0.92 Ln(X) + 2.68

**$R^2$:**
0.95

**Directional Distribution:**
50% entering, 50% exiting

**Calculated Trip Ends:**
Average Rate: 943 (Total), 472 (Entry), 471 (Exit)
Fitted Curve: 1009 (Total), 505 (Entry), 504 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE :
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

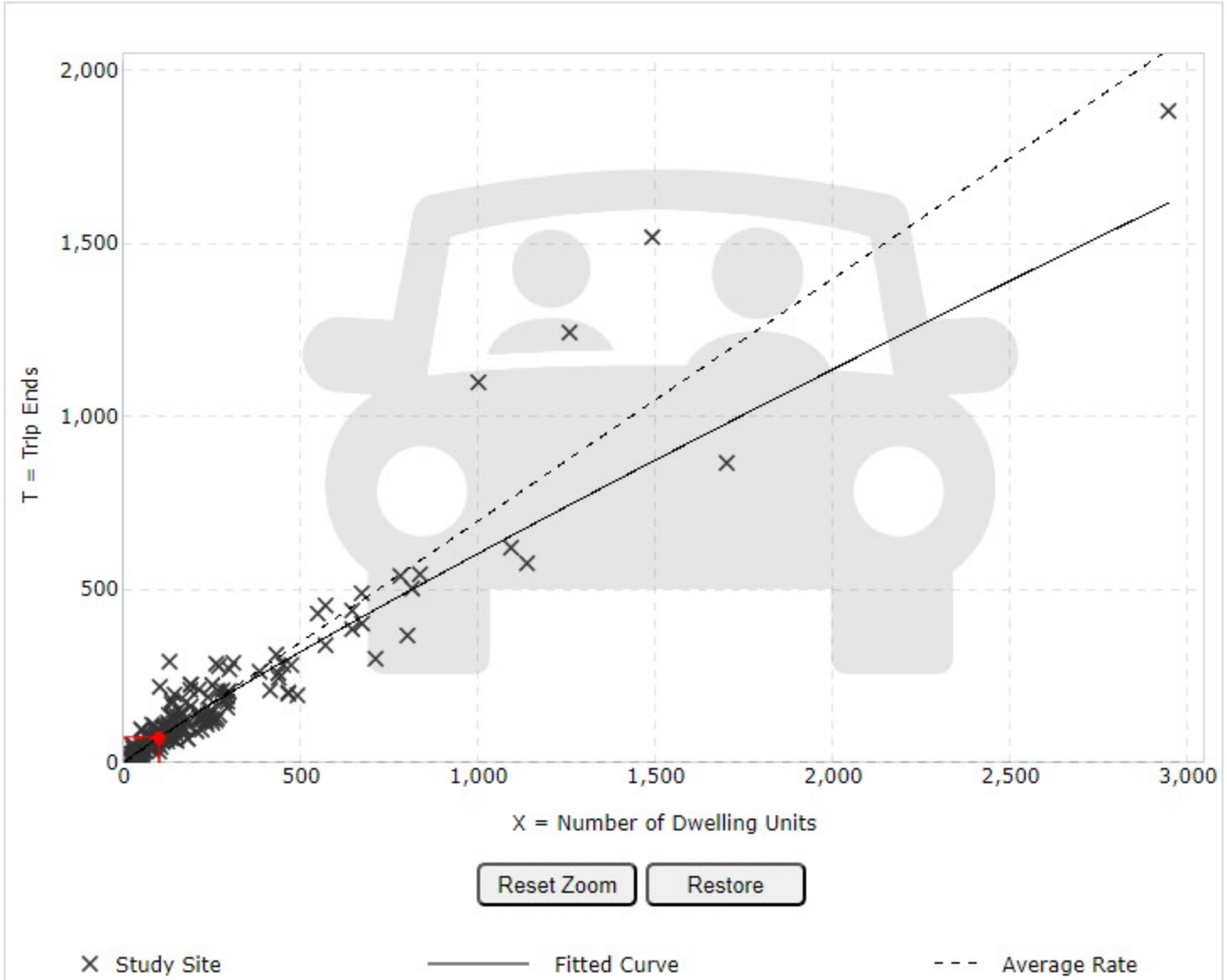
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
100 Calculate

## Data Plot and Equation




### DATA STATISTICS

**Land Use:**
Single-Family Detached Housing (210) Click for Description and Data Plots

**Independent Variable:**
Dwelling Units

**Time Period:**
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

**Setting/Location:**
General Urban/Suburban

**Trip Type:**
Vehicle

**Number of Studies:**
192

**Avg. Num. of Dwelling Units:**
226

**Average Rate:**
0.70

**Range of Rates:**
0.27 - 2.27

**Standard Deviation:**
0.24

**Fitted Curve Equation:**
Ln(T) = 0.91 Ln(X) + 0.12

**$R^2$:**
0.90

**Directional Distribution:**
25% entering, 75% exiting

**Calculated Trip Ends:**
Average Rate: 70 (Total), 18 (Entry), 52 (Exit)
Fitted Curve: 74 (Total), 19 (Entry), 55 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE :
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

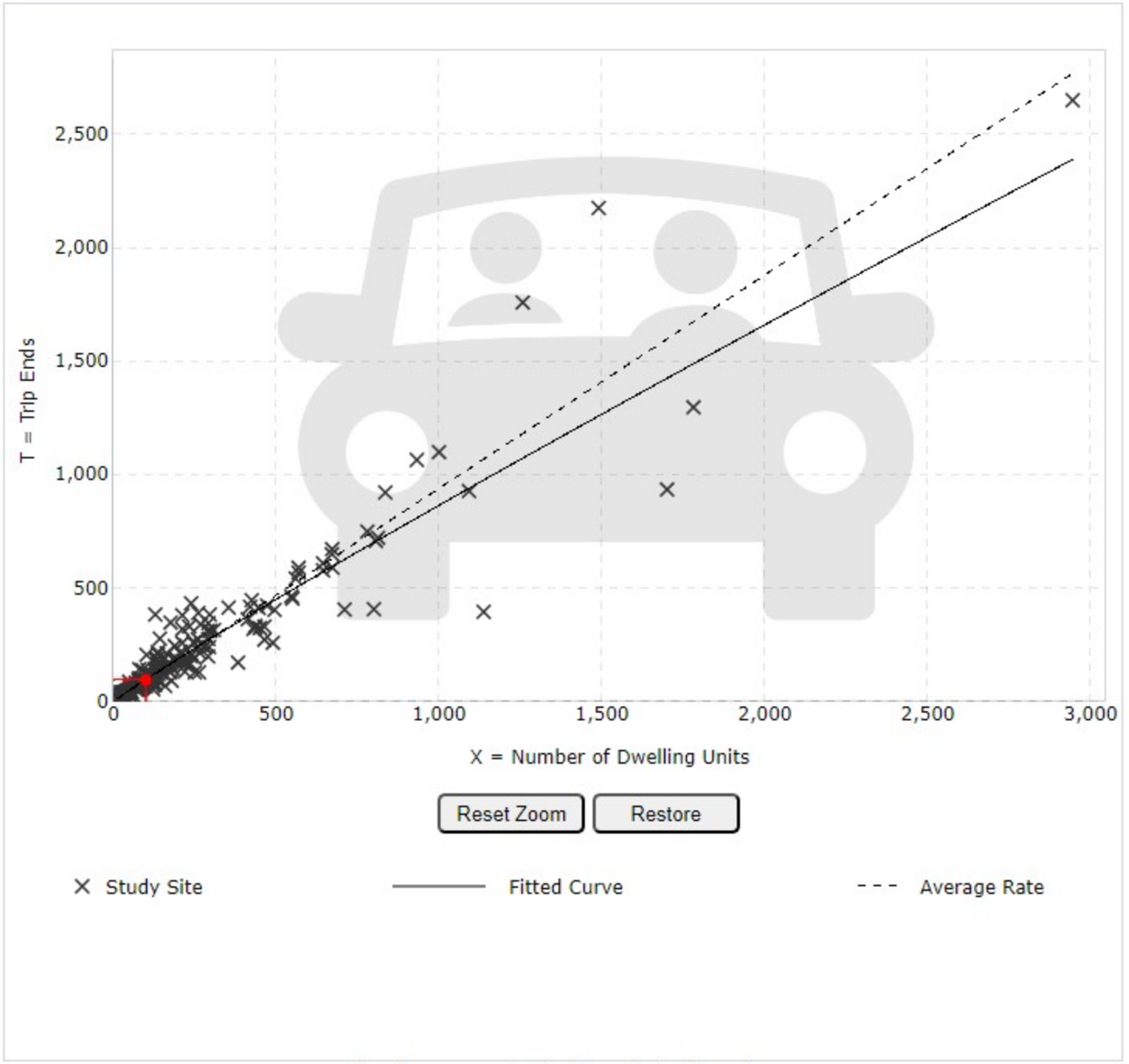
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
100 Calculate

## Data Plot and Equation




**DATA STATISTICS**

**Land Use:**
Single-Family Detached Housing (210) Click for Description and Data Plots

**Independent Variable:**
Dwelling Units

**Time Period:**
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

**Setting/Location:**
General Urban/Suburban

**Trip Type:**
Vehicle

**Number of Studies:**
208

**Avg. Num. of Dwelling Units:**
248

**Average Rate:**
0.94

**Range of Rates:**
0.35 - 2.98

**Standard Deviation:**
0.31

**Fitted Curve Equation:**
Ln(T) = 0.94 Ln(X) + 0.27

**$R^2$:**
0.92

**Directional Distribution:**
63% entering, 37% exiting

**Calculated Trip Ends:**
Average Rate: 94 (Total), 59 (Entry), 35 (Exit)
Fitted Curve: 99 (Total), 63 (Entry), 36 (Exit)

# DESIGN PUBLIC MEETING MAP

**PROJECT 41582.1.1**
**TIP PROJECT: R-5021**

## BRUNSWICK COUNTY

NC 211 WIDENING FROM WEST OF NC 906 (MIDWAY ROAD) TO EAST OF NC 87

SHEET 4 OF 4

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**DESIGN DATA**

Functional Class. = MAJOR COLLECTOR
Design Speed = 60/50/40 MPH
Max Superelev. = 0.06

(ENGLISH)

NOTE:
Special Control of Access is defined as one access point per parcel. For properties with large road frontages (for example, 2000 feet or more), an additional access point may be considered. For properties that have access, such as via a side road, access to Southport Supply Rd. NC 211 may be eliminated.

NOTE:
Special Control of Access Designation: No revision shall be made to the Control of Access without the approval of NCDOT, FHWA and NCDENR per agreement and USACE per permit condition.

## LEGEND

- BUILDINGS
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING EASEMENTS (DRAINAGE AND SIGNAGE)
- PROPOSED EASEMENTS (DRAINAGE, CONSTRUCTION AND UTILITY)
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE REMOVED
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, RETAINING WALLS, ISLANDS, CURB AND GUTTER
- EXISTING STRUCTURES, ISLANDS, CURB AND GUTTER TO BE RETAINED
- EXISTING STRUCTURES, ISLANDS, CURB AND GUTTER TO BE REMOVED
- LAKES, RIVER, STREAMS AND PONDS
- EXISTING UTILITY EASEMENT
- EXISTING CEMETERY
- PROPERTY LINES
- PRESENT ADT 2018 ADT 2040 ADT
- PROPOSED CONTROL OF ACCESS
- PROPOSED PARTIAL CONTROL OF ACCESS
- EXISTING CONTROL OF ACCESS
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL
- WETLAND
- WETLAND LIMITS BOUNDARY
- JURISDICTIONAL STREAM LINES
- CITY LIMITS

PROPOSED TYPICAL SECTION
-L- NC 211 (SOUTHPORT SUPPLY RD.)

INTERSECTION OF NC 211 SOUTHPORT SUPPLY RD (-L-) AND DAVIS LANE (-Y7-)

INTERSECTION OF NC 211 SOUTHPORT SUPPLY RD (-L-) AND DOSHER ST (-Y15-)

INTERSECTION OF NC 211 SOUTHPORT SUPPLY RD (-L-) AND NC 87 RIVER RD (-Y22-)

| PARCEL OWNER | PARCEL # |
|---|---|
| AL CLAYTON F TRUST | 01 |
| ABC BAPTHOUSE, LLC | 02 |
| BRUNNS CHURCH | 07 |
| CAMPBELL, JOHN C | 08 |
| CAMPBELL BUILDERS COMPANY | 09 |
| CAROLINA PROPERTIES OF SOUTHPORT, INC | 42 |
| CATHERINE LEWIS | 43 |
| COASTAL REAL ESTATE SERVICES, LLC | 44 |
| DAVIS, JAMES ET UX | 45 |
| DAVIS, MORGAN | 46 |
| JOHN K COBETT, TRUSTEE | 47 |
| LAWRENCE B WILLIAMS, SR | 48 |
| LAWRENCE B WILLIAMS, SR | 49 |
| PIZZO HOLDINGS, LLC | 50 |
| PULICAN, COAST, INC | 51 |
| THOMAS A NICOLAI ET UX | 52 |
| THOMAS A NICOLAI ET UX | 53 |
| TONY HEWKE | 54 |
| WILLIAM C BLAKE TRUSTEE | 55 |
| OLD MIDWAY ROAD STREET, INC | 56 |

END TIP PROJECT R-5021
END CONSTRUCTION
-L- POC 430+97.32


DESIGN PUBLIC MEETING MAP
PROJECT 41582.1.1
TIP PROJECT: R-5021
BRUNSWICK COUNTY
NC 211 WIDENING FROM WEST OF NC 906 (MIDWAY ROAD) TO EAST OF NC 87
SHEET 4 OF 4

**MEMORANDUM**
**To:** Chair Sue Hodgin, Members of the Planning Board
**From:** Maureen Meehan, City Planner
**Re:** Text Amendment – Section 3.9.B Setback Exceptions and Encroachments
**Date:** March 27, 2024

**Background**
Cameron Smith requested an amendment to the Unified Development Ordinance Section 3.9.B. and presented it to the Planning Board at the September 21, 2023 meeting.

At your November 16, 2023 meeting, there was a vote to send the Board of Aldermen a recommendation of denial for a Unified Development Ordinance Amendment to Section 3.9.B Setback Exceptions and Encroachments to allow HVAC, generators, and other similar equipment to encroach up to 48" into a required setback. Staff presented another option that you considered which allows a 42" encroachment but not more than 24" from the property line. The Board of Aldermen held a duly advertised public hearing at the regularly scheduled January 11, 2024, meeting and voted to remand the text amendment back to the Planning Board at their February 8, 2024, regular meeting.

The text amendment review committee assigned at your regular February meeting met on March 12, 2024. Attendees included committee members Vice-Chair Will Hewitt, Fred Fiss, Kevin Locklin, applicant Cameron Smith, and members of the public.

**Committee Meeting Report**
The text amendment review considers past language presented to the Board and life and safety measures. The conversation focused on nonconforming lots and smaller lots in PUDS. Mr. Hewitt brought forward encroachment language found in the Brunswick County UDO. He stated that this language is an easy way to calculate and enforce the ordinance.

After discussion, the committee agreed on the proposed language for setback exceptions and encroachment, which is partly based on standards found in the Brunswick County Unified Development Ordinance. The committee and applicant agree that consistency throughout the county will be beneficial. The proposed language is found below.

**Section 3.9.B.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.

This amendment will allow the following setbacks for residential encroachments: 4' side yards, 2' encroachment, 6' side yards, 3' encroachment, 8' side yards, 4' encroachment, and 12' side yard, 6' encroachment.

The language has been sent to Fire Chief Charles Drew for review to ensure it will provide sufficient clearance for first responders.

**Attachments**
Consistency Statement
Previous Staff Report with Attachments

**City of Southport Planning Board**
**Statement of Plan Consistency and Zoning Recommendation**
**(As per NC General Statute 160D-604)**

*When conducting a review of proposed zoning text or map amendments pursuant to this section, the planning board shall advise and comment on whether the proposed action is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The planning board shall provide a written recommendation to the governing board that addresses plan consistency and other matters as 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 governing board.*

AMENDMENT: **ZTA-23-03**

STATEMENT OF CONSISTENCY AND RECOMMENDATION:

The City of Southport Planning Board hereby recommends adoption of the proposed Zoning Text Amendment to the Board of Aldermen and finds that it is consistent with the City's 2015 CAMA Core Land Use Plan originally adopted Nov. 13, 2014 and subsequently amended by the Southport Board of Aldermen. More specifically, the proposed amendment is consistent with **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. and 2) Concurrent planning for improvements to community facilities, infrastructure, and services provided.

The statement and motion was seconded and passed _____.

Tanya Shannon, Deputy City Clerk

Sue Hodgin, Chairman

# STAFF REPORT
# ZONING TEXT AMENDMENT APPLICATION
# SECTION 3.9 DIMENSIONAL REQUIREMENTS

| APPLICATION SUMMARY | |
|---|---|
| **Presentation Date** | September 21, 2023<br>Planning and Zoning Board |
| **Applicant** | Cameron Smith |
| **Relevant Ordinance Sections** | Section 3.9.B.5 Setback Exceptions and Encroachments |

## ZONING TEXT AMENDMENT PROPOSAL

Cameron Smith, applicant, respectfully submits a Zoning Text Amendment to the City of Southport Unified Development Ordinance. Specifically, the request is to amend Section 3.9.B.5 Setback Exceptions and Encroachments to modify the maximum setback encroachment for heating and air conditioning units, generators, pool equipment, and other similar items. All proposed changes, including additions and deletions, can be found as an attachment to this report and may also be viewed in the City of Southport Development Services Department offices.

## 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. In a decision to approve or deny a legislative proposal, the Board of Aldermen shall include a statement referencing the decisions consistency with the adopted land use plan for the City of Southport. Per the City of Southport Unified Development Ordinance, the Planning and Zoning Board shall also provide a recommendation on any proposed Zoning Text Amendment to the Board of Aldermen. The Board of Aldermen shall hold a public hearing prior to voting on any Zoning Text Amendment.

## AMENDMENT DESCRIPTION AND APPLICANT PETITION

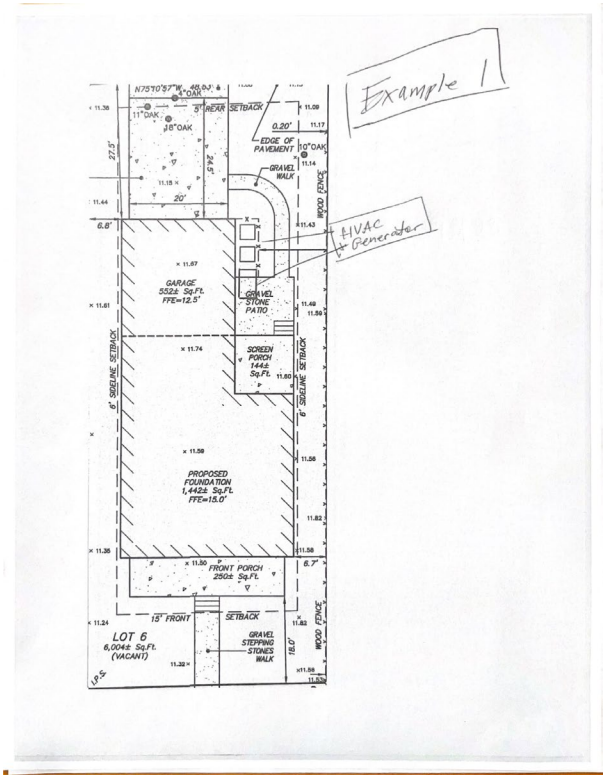
The amendment to this section would allow heating and air conditioning (HVAC) units and similar equipment to encroach into a side or rear setback no more than forty-eight (48) inches or four (4) feet.

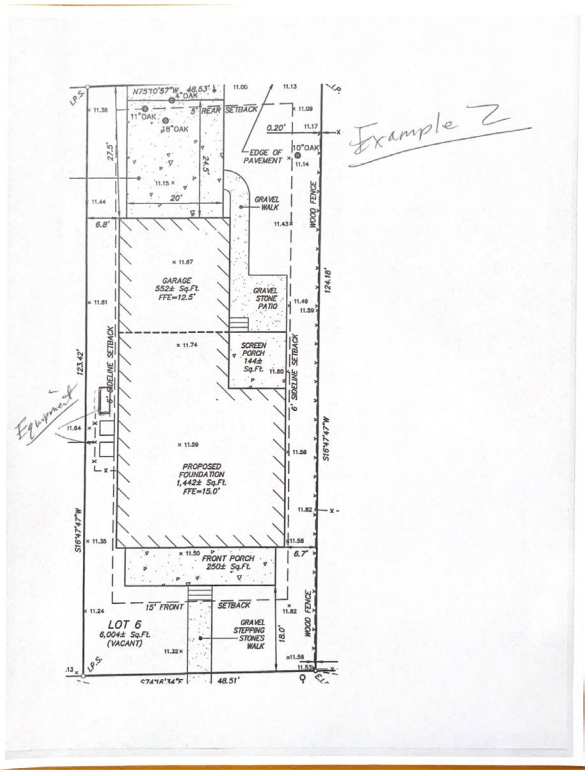
Currently, Section 3.9.B.5 of the UDO states, “Sills, cornices, buttresses, ornamental features, gutters, eaves, heating and air conditioning units and similar items may project into a required setback not more than 30 inches.”

The applicant, Cameron Smith, applied for this amendment to accommodate narrow lots approved for PUD subdivisions and nonconforming R-10 lots throughout Southport. Mr. Smith is a builder in the city and has stated that most HVAC and whole house generators need to be 48” off the main structure to meet code requirements. As homes are being built on smaller lots, using most of if not all the buildable width for desired home designs is becoming a necessity. He further states that this causes an undue hardship on homeowners since the units cannot go in the front of homes and many times the rear of the home does not work either, an example of this would be for properties that include a rear loading garage.

Specifically, the applicant has requested the following text amendment:
Sills, cornices, buttresses, ornamental features, gutters, and eaves~~, heating and air conditioning units and similar items~~ may project into a required setback not more than 30 inches. Heating and air conditioning units, generators, pool equipment, and similar items may project not more than 48 inches into a required setback.

Examples from the applicant are shown below. Example 1 is a site plan that cannot meet the 30” encroachment standards so the equipment is located near the outdoor living area. Example 2 is a site plan showing where equipment has historically been allowed and away from living areas.



## BACKGROUND AND EVALUATION

Previous editions of the UDO did not include heating and air conditioning units in the encroachment provisions. The current UDO, adopted on September 23, 2020, added these types of mechanical units. Since October 2022, this section of the UDO has been enforced. Staff encounter equipment encroachments beyond the 30" standard regularly in site plan and final as built survey review. The instances have been reduced since the standard has been enforced, although staff do have to address the issue often. Historical plan review and approvals enforcing this standard cannot be confirmed.

Justification for this text amendment is to be able to accommodate smaller lot widths within cluster subdivisions and nonconforming R-10 lots throughout the city. Nonconforming lots not located in subdivisions many times have a 4' side setback, therefore the units would be allowed to have no setbacks.

Staff consulted the Cape Fear Council of Governments (CFCOG), the Building Inspector, and the Fire Marshall during review of this proposed amendment. Each entity was able to give insight on setback requirements found throughout the region and codes that must be met.

Mr. Wes MacLeod, with the CFCOG confirmed that 30 inches is a standard encroachment throughout the region for these types of units. Further, independent research found examples that allow HVAC and other units 30 inches or a 50% encroachment of the setback, whichever is greater, that allow the encroachment of stoops for air conditioning, but the stoop can only be large enough to accommodate the unit, and there are some examples of 48" in other coastal areas.

Southport's Building Inspector stated that HVAC units must meet manufacturer listed setbacks to allow air circulation. The average is approximately 24" and some can be a close as 12" to meet the National Fire Protection Act (NFPA). Generators must have a minimum clearance of 18" per the manufacturer's installation guidelines and NFPA. The Fire Marshall did not have any issues with these types of equipment being installed in side yard setbacks.

**Unified Development Ordinance Compliance**

Zoning Text Amendments, like General Use Zoning Map Amendments (Rezonings), follow the process laid out in Section 2.10 of the City of Southport Unified Development Ordinance. Pursuant to 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 official adopted plans that are applicable and make a recommendation to the Board of Aldermen. The Board of Aldermen shall, in their final decision-making capacity, base their decision upon the same.

**2014 CAMA Core Land Use Plan Compliance**

Explicit references to specific lot layout, setbacks, and designs for single family lots are not included in the land use plan. The plan references updating the UDO and other documents to meet the needs of the residents of the city. Further, the following Policy supports consistency with the proposed text amendment and the land use plan.

**Policy 2.4**: Southport will permit residential development to occur in response to market needs provided that 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 is provided.

## STAFF'S RECOMMENDATION

City Planning Staff submit the proposed Zoning Text Amendment to the Planning Board for their consideration and recommendation to the Board of Aldermen. The proposal appears to be consistent with the 2014 CAMA Core Land Use Plan, specifically regarding residential development occurring in response to market needs.

**Attachments**

Proposed Text Amendment Language
Text Amendment Application
Consistency Statement

**Proposed Text Amendment to Section 3.9.B**

5. Sills, cornices, buttresses, ornamental features, gutters, and eaves~~, heating and air conditioning units and similar items~~ may project into a required setback not more than 30 inches. Heating and air conditioning units, generators, pool equipment, and similar items may project not more than 48 inches into a required setback.

# 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-23-03 FEE: $ 250 Date Received: 8/8/23

Applicant's Name: Cameron Smith

Mailing Address: 107 Bennetts Creek Lane City: Southport

State: NC Zip Code: 28461 Phone: 910-443-5080

Email:

Current Section Impacted by Proposed Text Amendment: 3.9.B.5

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 attached

**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.**

Signature (Applicant) 8/2/23 Date

**APPROVED BY:**

Maureen Meehan 8/8/23

**This is how the ordinance currently reads.** 3.9 B.5 Sills, cornices, buttresses, ornamental features, gutters, eaves, heating and air conditioning units and similar items may project into a required setback not more than 30 inches.

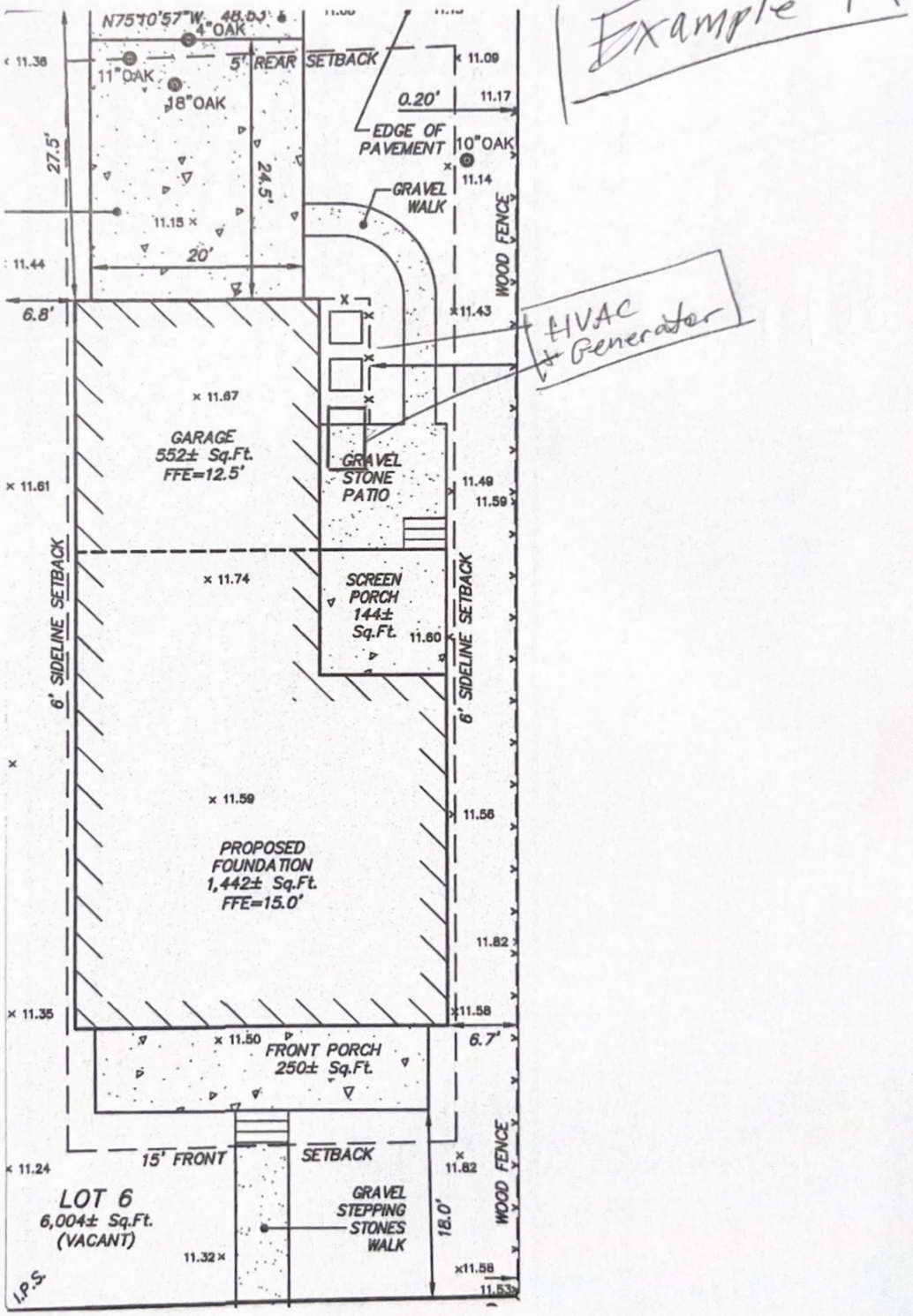
**Proposed text amendment :** 3.9 B.5 Sills, cornices, buttresses, ornamental features, gutters, eaves, ~~heating and air conditioning units~~ and similar items may project into a required setback not more than 30 inches. HVAC units, generators, pool equipment, and similar items may project not more than 48 inches into a required setback.

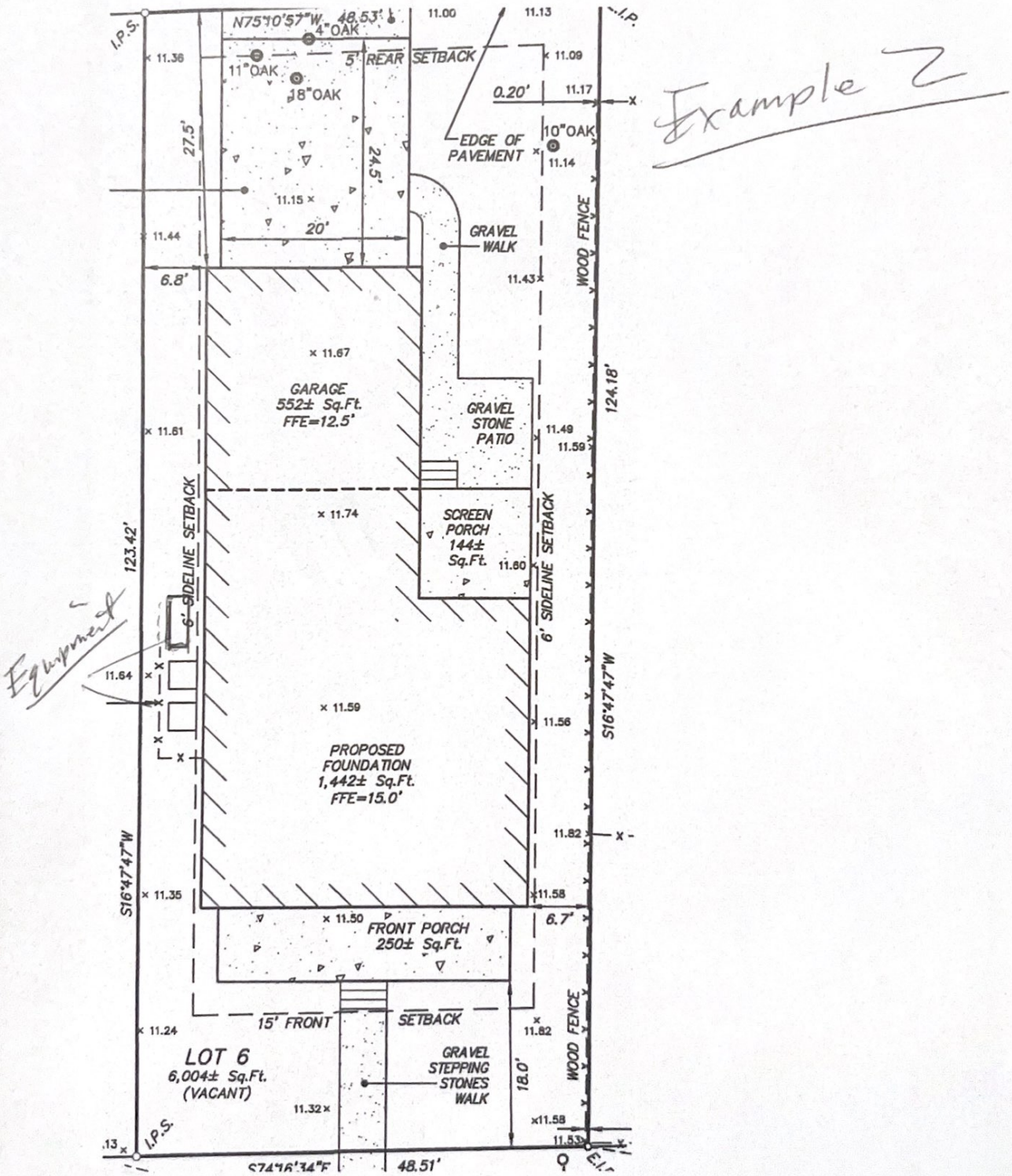
**Rationale behind revision:** In the previous 24 years I have built homes in Southport this ordinance was either not in the UDO or not enforced. Items that are fixed to the structure such as cantilevers, etc were enforced with the 30" rule but never the equipment (HVAC, generators, etc). Many of the homes I have built in communities with narrower lots have equipment on the sides of the homes that would not have met this ordinance. Most air condensing units and generators need 48" off the structure to meet codes for clearances. In my opinion, this 30" guideline creates an unnecessary hardship. Many homeowners, especially in communities with narrow lots (PUDs or some of our city lots) need to use the majority of their buildable width for their home design. The equipment cannot go in the front of the home and in many cases the rear of the home doesn't work well either. A prime example of this would be homes with rear load garages on narrow lots and I have included an example site plan.

**Example 1** shows what happens when the equipment is not allowed to go on the side of the home as it typically does due to the 30" guideline. The small rear outdoor space is adversely affected. In addition, having the equipment alongside the garage instead of the house foundation doesn't work in the construction world for a variety of reasons.

**Example 2** shows where the equipment should be placed and where it has been allowed historically speaking. Changing this 30" guideline to 48" will allow this to work.

Another point I would like to make in regards to existing homes is many people are now wanting to install whole house generators and may not be able to with the enforcement of this 30" guideline. There is really no downside to this revision that I can see and it will be permitting this equipment placement to continue as it has been allowed in the past.


Example 1
N75°10'57"W 48.03'
4" OAK
11" OAK
18" OAK
5' REAR SETBACK
0.20'
EDGE OF PAVEMENT
10" OAK
GRAVEL WALK
WOOD FENCE
27.5'
24.5'
20'
6.8'
HVAC + Generator
GARAGE 552± Sq.Ft. FFE=12.5'
GRAVEL STONE PATIO
6' SIDELINE SETBACK
SCREEN PORCH 144± Sq.Ft.
PROPOSED FOUNDATION 1,442± Sq.Ft. FFE=15.0'
FRONT PORCH 250± Sq.Ft.
6.7'
15' FRONT SETBACK
LOT 6
6,004± Sq.Ft.
(VACANT)
GRAVEL STEPPING STONES WALK
18.0'
I.P.S.


Example 2
N75°10'57"W 48.53'
4" OAK
11" OAK
18" OAK
5' REAR SETBACK
0.20'
EDGE OF PAVEMENT
10" OAK
27.5'
24.5'
20'
GRAVEL WALK
WOOD FENCE
6.8'
GARAGE
552± Sq.Ft.
FFE=12.5'
GRAVEL STONE PATIO
124.18'
SCREEN PORCH
144± Sq.Ft.
6' SIDELINE SETBACK
123.42'
Equipment
PROPOSED FOUNDATION
1,442± Sq.Ft.
FFE=15.0'
S16°47'47"W
FRONT PORCH
250± Sq.Ft.
6.7'
15' FRONT SETBACK
LOT 6
6,004± Sq.Ft.
(VACANT)
GRAVEL STEPPING STONES WALK
18.0'
I.P.S.
S74°16'34"E
48.51'

**MEMORANDUM**

**To:** Sue Hodgin, Chair and Members of the Planning Board
**From:** Maureen Meehan, City Planner
**Re:** Section 3.19 Signs – Committee Update and Text Amendment Discussion
**Date:** March 27, 2024

After an applicant-initiated text amendment to the sign ordinance, the Planning Board requested a committee to work with Staff to update the UDO Section 3.19 Signs. The committee consists of Chair, Sue Hodgin, Fred Fiss, and Kevin Locklin.

The committee met in December and early February to discuss existing signage throughout the city and changes to consider. In addition to in-person meetings, there have been email exchanges with draft text and ordinance examples from other jurisdictions. With the committee's recommendation, Staff reviewed the Warrenton, VA, Mt. Pleasant, SC, Beaufort, NC, and Key West, FL sign ordinances.

The draft changes are attached to this memo.

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 ~~and~~ 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, hall 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. Any sign proposed in the local historic district shall obtain a Certificate of Appropriateness prior to issuance of 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.

7. Any sign proposed to be constructed beyond the mean high-water line requires the issuance of a ~~Conditional Use Permit~~ 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. On private property, one (1) sign shall be permitted per lot, not exceeding eight (8) square feet in area per display face, and two (2) faces per sign. 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 sign 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 located in residential zoning districts are allowed one (1) freestanding ground sign or attached wall sign, either of which may be only a changeable copy sign, with the total area of the changeable copy sign no greater than 12 square feet per face, with two (2) sign faces per sign and a maximum of six (6) feet in height, with a minimum setback of 10 feet.~~

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 ~~three (3)~~ 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 pallet can be incorporated.
2.

Table 3.10 Freestanding Ground Sign Size

Zoning District Maximum Height Maximum Square Footage per Face

~~CBD 6 ft. 25 sq. ft.~~

HC 25 ft. 125 sq. ft.

BD/OI/PUD ~~10 ft~~. 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 50% of the window.

~~5~~. 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.

a) The EMC portion of the sign may not exceed 30% of the permitted sign face. No variations in light intensity are permitted.

b) EMC signs shall only be permitted in the HI, LI, and HC zoning districts.

~~6.~~ Inflatable Sign. One (1) inflatable sign shall be allowed once per calendar year per business.

a) 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 shall be limited to those 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.

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.

~~g~~ h) The light source color temperature for outdoor lighting shall not exceed 3,000 degrees Kelvin.

~~D~~ i) Neon, argon, or other gas tube lighting or signage shall be prohibited on the external walls of all structures. Neon, argon, or other gas tube logo signs placed inside the building and not exceeding 25% of the window area or 32 square feet whichever is less shall be permitted.

~~e~~ 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.

~~f~~ 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 facades 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.

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.

J. 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.

**MEMORANDUM**

**To:** Chair Sue Hodgin, Members of the Planning Board

**From:** Maureen Meehan, City Planner

**Re:** Zoning Map Amendment Discussion – Intersection of North Howe Street and River Road SE from Highway Commercial to Business District

**Date:** March 27, 2024

## Background

Mr. Fred Fiss, a Planning Board Member, proposed discussing a possible map amendment to the properties at the intersection of North Howe Street and River Road SE from Highway Commercial to Business District. The full scope and lots for consideration were not specified at the meeting. This memo contains the process to initiate a map amendment, current vicinity conditions, and uses allowed in the two zoning districts. There is no formal discussion or recommendation from staff, as this is a discussion item for the Planning Board.

## Map Amendment Process

NC General Statute 160D-601 enables the ability of local governments to adopt, amend, or repeal development regulations, including zoning text and map amendments.

Proposed amendments to the zoning map may be initiated by the Board of Aldermen, Planning Board, city administration, or by the owner or agent. 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.

Section 2.10.A.c) does not allow the downzoning of property without written consent of the property owners unless initiated by the City. The language is below.

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:

(1) By decreasing the development density of the land to be less dense than was allowed under its previous usage.

(2) 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.

The change from HC to BD would be a down-zoning since some uses are allowed in HC zones but not in BD zones.

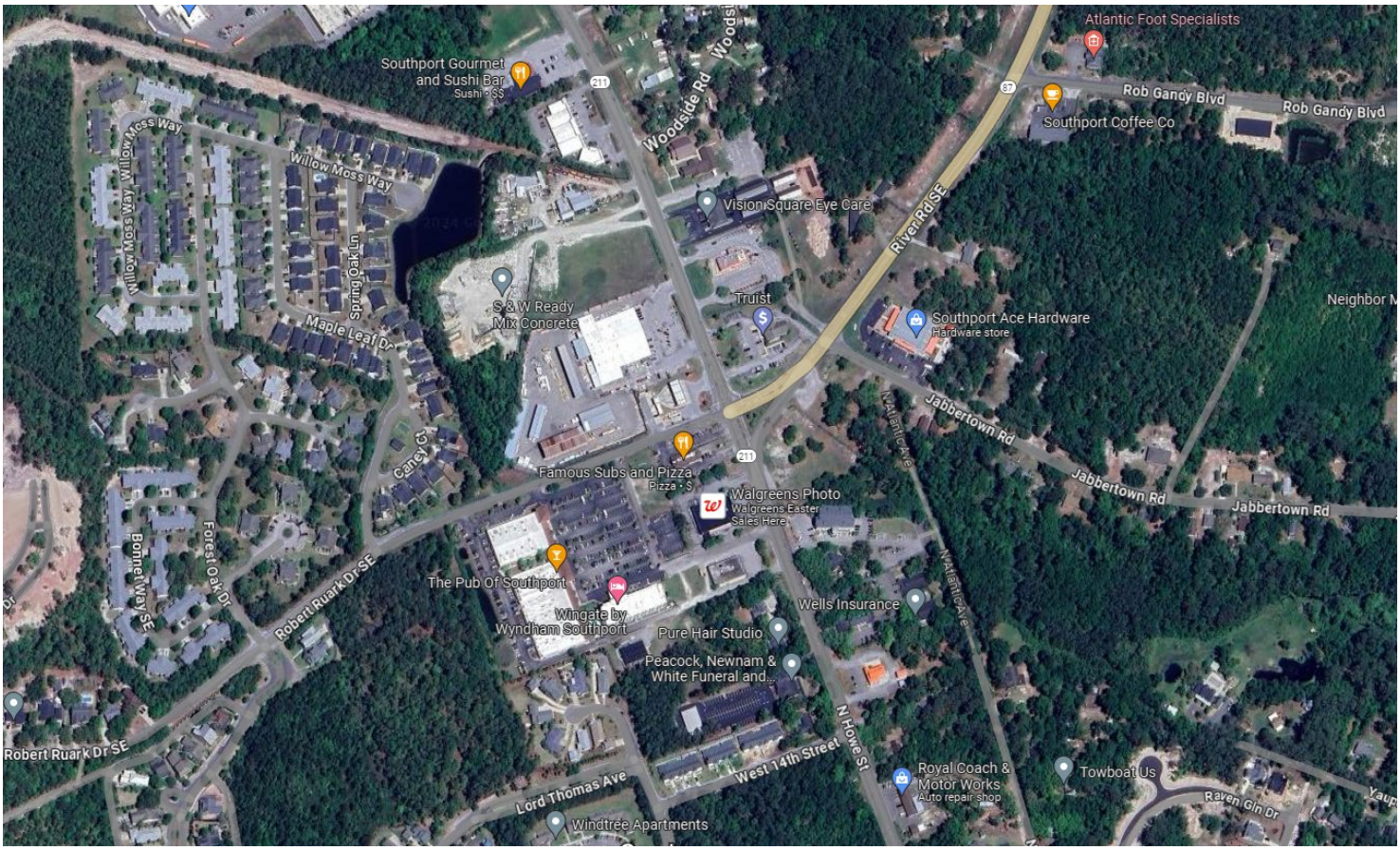
When considering a map amendment, an analysis of the existing land use patterns, the comprehensive plan, and the future land use map must be made for compatibility and reasonableness. The statement of reasonableness may consider the size and physical conditions of the area proposed to be rezoned, the benefits and detriments to the landowners, neighbors, and the surrounding community, the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be allowed under the amendment, why the action is in the public interest, and any changed conditions warranting the amendments.

**Southport Comprehensive Plan**

The City is updating the 2014 Land Use Plan. One key component of the comprehensive planning process is public input and participation to create the City's vision. Visioning workshops and input will include corridors and gateways to the City. Further, a complete analysis of land-use patterns will be undertaken.

**Existing Uses**

Below are the zoning map and aerial imagery of the vicinity.




**Existing Conditions/Uses:**
This intersection includes a variety of medium-intensity nonresidential uses. These uses include regional attractors that are larger in scale. The list of uses below consists of 2 parcels of land on each street front of the intersection.

- Builders First Source – building supply store with outdoor storage of goods
- GoGas – Self -Service gas station with vending concessions and tobacco sales
- Yummy House – full-service restaurant with drive-thru
- Truist – Banking facility with drive-thru window and drive-thru ATM
- Famous Subs – full-service restaurant with drive-thru
- Walgreens Pharmacy – retail pharmacy with drive-thru
- Vacant/Abandoned building
- Wingate Hotel – ~ 92 room hotel
- Shopping Center – multi-use commercial center including a senior center, restaurant, pharmacy, pub, bakery, furniture, print shop, physical therapy, physicians' offices, and more
- Office Center – multi-use commercial center including financial services and medical offices
- Vacant Land

**Zoning Districts**
Highway Commercial (HC) – A district established for the retailing of durable goods, provision of commercial services to industrial areas, and the provision of services to transients.

Business District (BD) – A commercial-related district with lot and setback requirements suitable for placement abutting residential areas.

Table 3.1 – Table of 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 | Section # |
| 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 |
| 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 |

| **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 | | | | | | | | | | | | | **UsStandard** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Uses | ICS | R-10 | R-20 | MF | MH | PUD | O-I | CBD | BD | HC | LI | HI | OS | Section # |
| 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 |
| FARMERS'S MARKET | 445230 | SS | | | | SS | | SS | PS | PS | | | SS | 3.8.M |
| FARM MACHINERY SALE AND SERVICE | | | | | | | | | S | 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 # |
| 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 |
| HOSPITALS | 622110 | | | | | | P | P | P | P | | | | |
| HOTEL, MOTEL, OR INN | 721110 | | | | | SS | SS | | SS | PS | | | | 3.8.R |

| **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 # |
| 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 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MICROBREWERY AND MICRODISTILLERY | | | | | | | | SS | PS | PS | PS | | | 3.8.X |
| MOBILE VENDOR OR FOOD TRUCK | | | | | | | | PS | PS | PS | PS | PS | | 3.8.Y |

| **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 # |
| 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 |
| RESTAURANT, CARRY-OUT | 722211 | | | | | S | | P | P | P | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RESTAURANT, STANDARD & FAST-FOOD | 722211 | | | | | S | | 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 # |
| 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 | | |
| VETERINARY SERVICES WITH PENS ENCLOSED IN A BUILDING | 541940 | | | | | | | | S | P | P | P | | |
| WAREHOUSING, GENERAL | 493110 | | | | | | | | | PS | PS | PS | | 3.8.OO |

| 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 # |
| 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 | | | | |

## Future Land Use – Map and Policies

HEAVY COMMERCIAL

Appropriate uses: Heavy commercial is generally associated with a variety of higher intensity retail and wholesale establishments that would include grocery stores and building supply operations that serve residential and industrial customers and that may or may not include storage of equipment. Professional offices and some service providers are also appropriate.

Inappropriate uses: Manufacturing operations and single-family residential uses.

Allowable density: Approximately 4 units per acre.

Maximum height: 40 feet.

Impervious surface threshold: Post-development runoff cannot exceed pre-development levels utilizing the 25 year storm as a base storm event.

From the 2014 CAMA Land Use Plan: No significant changes in the location of commercial land use are expected. Commercial development is anticipated to primarily occur along the Howe Street corridor and surrounding the NC 211/ NC 87 intersection. The City should rely on the Future Land

Use Map to control the amount and locations of commercial development. The City should also continue to enforce Business Planned Building Group regulations to ensure the quality of commercial development. These can be found in the City of Southport's Unified Development Ordinance.

**Commercial, Mixed Use, Office/Institutional & Industrial**

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 2.12: Southport supports commercial development along the Howe Street Corridor and other areas consistent with the City's future land use map.

Policy 2.13: Southport only supports industrial development within fragile areas and areas with low land suitability if the following conditions are met(This policy applies to both new industrial development and to expansion of existing industrial facilities):

(1) CAMA minor or major permits can be obtained.
(2) All applicable zoning ordinance provisions are met in zoned areas.
(3) Within coastal wetlands, estuarine waters, and public trust waters, no industrial use will be permitted unless such use is water related.

Policy 2.14: Southport supports the recruitment and siting of environmentally compatible light industrial and commercial establishments in areas that are already similarly developed or in public or private industrial parks

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

Policy 2.16: Southport supports the development of industrial sites that are accessible to public water and sewer services.

Policy 2.17: Southport does not support industries which are noxious by reason of the emission of smoke, dust, glare, noise, odor, and vibrations, and those which deal primarily in hazardous products such as explosives, should not be located in Southport's planning jurisdiction.

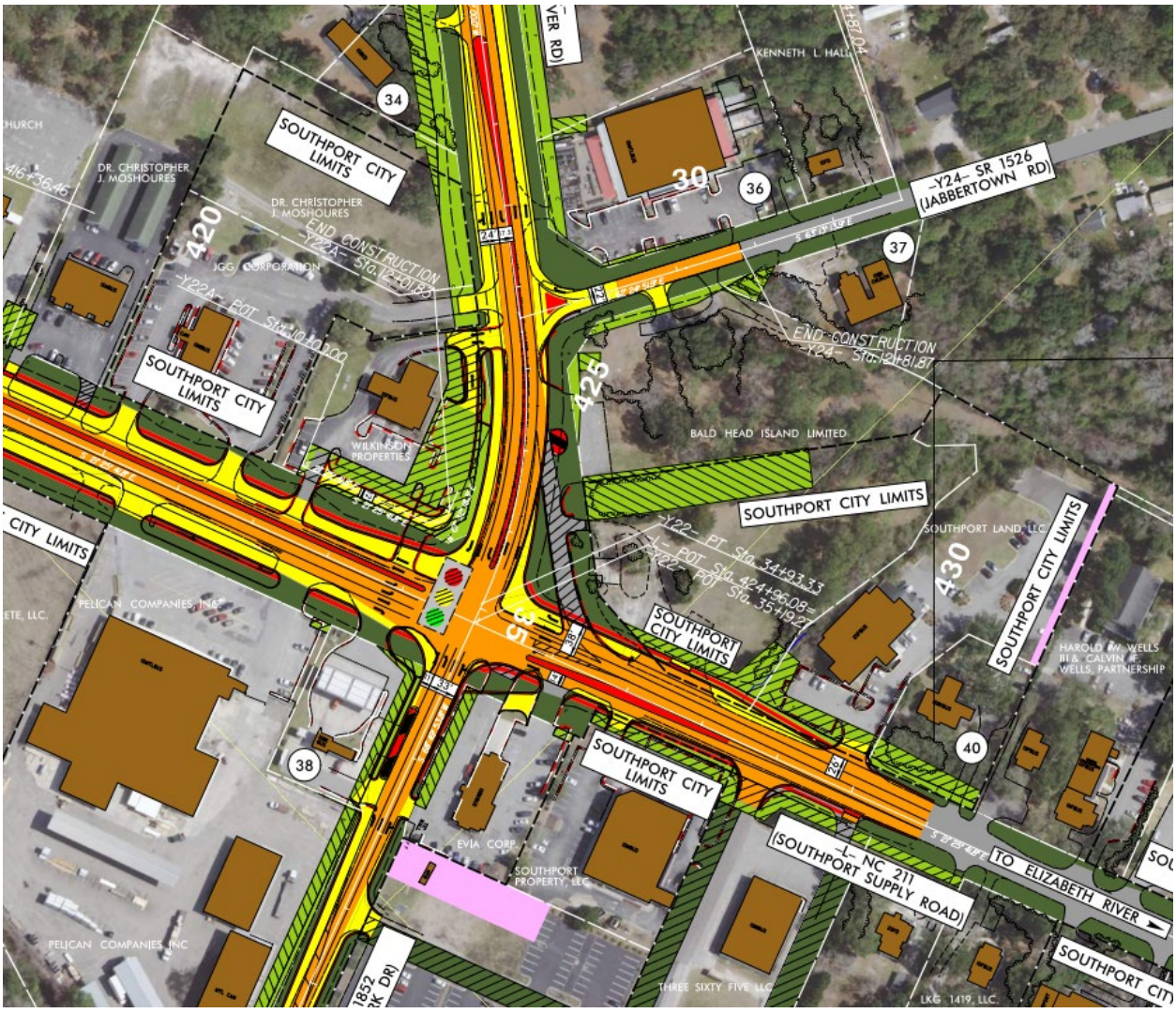
Policy 2.18: Southport will support the following in the pursuit of industrial development:

(1) Encourage placement of new heavy industrial development to have minimum adverse effect on the City's ecosystem and by encouraging areas of concentrations of such uses be considered first when suitable infrastructure is available

consistent with the growth policy of the future land use map.

(2) Re-zone additional parcels for industrial and commercial use along existing growth corridors with adequate infrastructure existing or planned and, when the need is demonstrated, provide a consistent growth policy with amendments to the future land use map when revision is needed. This will accommodate the future demand for additional industrial and commercial development in suitable areas.

**NCDOT Construction**



# 2024 PLANNING BOARD ATTENDANCE

| **NAME** | Jan. | Feb. | March | April | May | June | July | August | Sept. | Oct. | Nov. | Dec. | | | Total Absences |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sue Hodgin Chair | **P** | **P** | **P** | | | | | | | | | | | | |
| Will Hewett Vice-Chair | **P** | **P** | **P** | | | | | | | | | | | | |
| Fred Fiss | **P** | **P** | **P** | | | | | | | | | | | | |
| Christopher Jones | **A** | **P** | **P** | | | | | | | | | | | | |
| Scott Jones | **P** | **P** | **P** | | | | | | | | | | | | |
| Donnie Joyner | **P** | **P** | **P** | | | | | | | | | | | | |
| Dick Sloan | **P** | **P** | **P** | | | | | | | | | | | | |
| Roy Pender | **P** | **P** | **P** | | | | | | | | | | | | |
| Kevin Locklin | **P** | **P** | **P** | | | | | | | | | | | | |

M:\PLBFILES\2024 ATTENDANCE PB.wpd

# PLANNING BOARD MEMBER LIST SPRING 2023

| MEMBER | ADDRESS | PHONE NUMBERS | APPOINTED | EXPIRATION | |
|---|---|---|---|---|---|
| **Sue Hodgin, Chair**<br>sue.hodgin@southportnc.org | 608 Cottage Point Way | (910) 477-1808 | February 10, 2022 | June 2025 | IN |
| **Will Hewett, Vice-Chair**<br>will.hewett@southportnc.org | 129 Cape Fear Dr | (910) 520-3291 | August 11, 2022 | June 2025 | IN |
| **Fred Fiss**<br>fred.fiss@southportnc.org | 216 N. Atlantic Ave | (910) 269-6901 | February 10, 2022 | June 2024 (completing the term) | IN |
| **Christopher W. Jones**<br>chris.jones@southport.nc.org | 1008 Dutchman Cove SE | (910) 549-1407 | March 12, 2020 | June 2026 | ETJ ALT |
| **Scott Jones**<br>scott.jones@southportnc.org | 1001 Pete's Camp Rd | (910) 471-0802 | August 14, 2020 | June 2024 | ETJ |
| **Donnie Joyner**<br>donnie.joyner@southportnc.org | 635 Jabbertown Rd | (910) 368-7501 | August 14, 2020 | June 2024 | ETJ |
| **Richard Sloan**<br>dick.sloan@southport.nc.org | 509 E. Moore St | (910) 946-1771 | February 10, 2022 | June 2025 | IN |
| **Roy Pender**<br>roy.pender@southpornc.org | 102 S. Fodale | (910) 477-6057 | April 13, 2023 | June 2026 | IN |
| **Kevin Locklin**<br>kevin.locklin@southportnc.org | 209 N. Lord St. | (540) 272-0808 | April 13, 2023 | June 2025 (Completing the term) | IN ALT |
| **Mo Meehan**<br>mmeehan@cityofsouthport.com | 1029 N. Howe St | (910) 457-7900 X 1043 | Staff Planner | | |
| **Tanya Shannon**<br>tshannon@cityofsouthport.com | 1029 N. Howe St | (910) 457-7929 | Staff Deputy Clerk | | |
| **Rebecca Kelley**<br>rkelley@cityofsouthport.com | | (910) 269-9940 | Board of Aldermen Liaison | | |
| **Frank Lai**<br>flai@cityofsouthport.com | | (910) 263-9935 | Board of Aldermen Liaison | | |