

# CAROLINA BEACH

Planning and Zoning Meeting

Thursday, February 13, 2025 – 6:00 PM

Council Chambers, 1121 N. Lake Park Boulevard, Carolina Beach, NC



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## AGENDA

### CALL TO ORDER

### CONFLICT OF INTEREST

*Members of Planning and Zoning shall not vote on recommendations, permits, approvals, or other issues where the outcome of the matter being considered is reasonably likely to have a direct, substantial, and readily identifiable financial impact on the member or a member has a close familial, business, or other associational relationship. No member shall be excused from voting except upon those matters as noted, above, or upon those others involving the consideration of his own financial interest or official conduct. (160D-109)*

### APPROVAL OF MINUTES

1. January 9, 2025 – P&Z Minutes

### STAFF REPORT ON RECENT COUNCIL MEETINGS

### STAFF REPORT ON RECENT DEVELOPMENTS

### PUBLIC COMMENT

### PUBLIC HEARING

2. Zoning Map Amendment to consider a request to rezone 204 Harper Avenue from Mixed Use (MX) to Central Business District (CBD).

Applicant: STLNC, LLC

3. Consider a preliminary plat for a 9-lot subdivision located at 1215 Saint Joseph Street

Applicant: Wescott Butler

### NON-AGENDA ITEMS

### ADJOURNMENT



## AGENDA ITEM COVERSHEET

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**PREPARED BY:** Gloria Abbotts, Senior Planner

**DEPARTMENT:** Community  
Development

**MEETING:** Planning & Zoning Commission – February 13, 2025

**SUBJECT:** January 9, 2025 – P&Z Minutes

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**Action:**

Approve the January 9, 2025 Minutes

# CAROLINA BEACH

Planning and Zoning Commission

Thursday, January 9, 2025 - 6:00 PM

Council Chambers, 1121 N. Lake Park Boulevard, Carolina Beach, NC



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## MINUTES

### CALL TO ORDER

Chairman Rouse called the meeting to order at 6:00 PM.

### PRESENT

Chairman Wayne Rouse

Vice Chairman Jeff Hogan

Commissioner Melanie Boswell

Commissioner Ethan Crouch

Commissioner Todd Piper (arrived a few minutes late)

Commissioner Bill Carew

Commissioner Lynn Conto

### ALSO PRESENT

Community Development Director Jeremy Hardison

Senior Planner Gloria Abbotts

Planner Haley Moccia

### APPROVAL OF MINUTES

1. November 14, 2024 – P&Z Minutes

**ACTION:** Motion to approve the minutes as written

Motion made by Chairman Rouse, seconded by Vice Chairman Hogan

Voting Yea: Chairman Rouse, Vice Chairman Hogan, Commissioner Boswell, Commissioner Crouch, Commissioner Carew, Commissioner Conto

*Motion passed 6-0*

### STAFF REPORT ON RECENT DEVELOPMENTS

Mr. Hardison reported the following:

#### Permitting

- 58 permits (renovation, repair, grading, additions, fences)
- 6 residential new construction
- 20 certificates of occupancy

#### Code Enforcement

- 12 complaints received

- 9 resolved complaints
- 4 outstanding violations

#### Demos

- 1215 Saint Joseph Street
- 1406 Swordfish Lane
- 708 Harper Avenue

#### New Businesses – Applied

- Boombalatti’s (ice cream) – 1000 North Lake Park Boulevard at Proximity

#### Upcoming

- Dry Dock Inn pool fence variance
- Oceaneer Motel variance (front yard setback)
- 1215 Saint Joseph Street subdivision
- Glenn Avenue partial alley closure
- 2-unit Planned Unit Development (PUD) at 308 Lewis Drive

#### Project updates

- **Ocean Boulevard sidewalk:** After stormwater work is complete, overlaying of the sidewalk will start at Ocean Boulevard and work its way up to the Greenway.
- **Saint Joseph Street multi-use path:** Design will be complete this month, and then the project will go out to bid with construction planned to start in the spring.
- **Boardwalk bathroom:** Tomorrow is the pre-construction meeting with the contractor, and work should be underway soon.
- **1810 Canal Drive parking lot/Americans with Disabilities Act (ADA)/beach access:** The Town received a grant to do the work; funds will be released this month, and then the project will go to design and engineering.
- **South Lake Park Boulevard sidewalk:** The Town is trying to coordinate with the N.C. Department of Transportation (DOT) resurfacing project, which is delayed and will likely occur in October. This will give the Town a chance to put in the sidewalk first, likely in the spring. For the Spartanburg Avenue crosswalk, the Town will do concrete work for that intersection with the sidewalk, but the actual crosswalk will not be painted until after resurfacing, and then the high-visibility signal will be installed.
- **Street improvements:** The 2nd Street extension project has received bids, so staff will choose a contractor to hopefully start within a couple of months. The Spot Lane survey is complete, and the project is now in the design phase with a focus on stormwater improvements.
- **Lake pump house:** The bid opening for this project was today, and work will likely start in February.
- **Lake bathrooms:** Because this area is prone to flooding, staff is looking at various designs and options for the best way to mitigate that issue when rebuilding the facility.
- **Bike/Ped Plan:** Staff is working with the steering committee, which is finalizing a proposal to hopefully get to Council for approval in March.

Chairman Rouse asked the record to reflect that Commissioner Piper is now in attendance.

## **PUBLIC COMMENT**

None

## **PUBLIC HEARING**

2. Text amendment to amend Article 3, Section 3.49 Reconstruction, Maintenance, Full or Partial Demolition and Renovation of Nonconforming Situations  
Applicant: North Pier Holdings LLC

Chairman Rouse said the last time this applicant came before the Commission he asked to recuse himself from the matter due to any perceived conflicts, but since then the certificate of occupancy has been issued and he has no financial interest in whether this matter is voted up or down. No one objected to Chairman Rouse voting on this tonight.

Applicant North Pier Holdings LLC is applying for a text amendment to modify Article 3, Section 3.49 Reconstruction, Maintenance, Full or Partial Demolition and Renovation of Nonconforming Situations. The applicant is pursuing this text amendment because the proposed modification will assist residents in the repair, renovation, and reconstruction of existing nonconforming uses in a manner that aligns with the Town's existing Comprehensive Plan.

The applicant's proposed text amendment allows an exception to the nonconforming situation section of the ordinance. The amendment would allow a nonconforming structure to exceed the allowed zoning district lot coverage by 2% as long as certain conditions are met. These stipulations include:

- i. No additional nonconformities result from the added lot coverage.
- ii. Any additional lot coverage shall be associated with an on-site reduction in impervious area. The reduction shall be two times the size of the lot coverage area added (i.e. 100 square feet added lot coverage requires an additional 200 square feet of pervious area to be added).
- iii. Any pervious materials allowed by Town Code may be utilized for the reduction of impervious areas.
- iv. Additional lot coverage shall only be added to the principal building(s).
- v. Additional lot coverage shall not encroach any further toward a property line than the existing principal building(s).

Staff reorganized the impacted subsection to improve the readability of the ordinance and clarify the text due to the addition of the proposed text amendment.

The text amendment is in general conformity with the Coastal Area Management Act (CAMA) Land Use Plan. The proposed reduction in impervious surface reduces stormwater runoff, a strong focus of the CAMA Land Use Plan. Additionally, the amendment follows the Land Use Plan's sentiment to encourage the improvement and renovation of existing structures where a teardown/rebuild is not the best possible outcome.

The proposed text amendment has a few benefits and limitations. The amendment is intended to reduce and limit the impact of increased lot coverage on adjacent property owners. The reduction in impervious surface section of the amendment links the increase in lot coverage to a positive reduction in impervious surfaces, which reduces stormwater runoff. Allowing nonconforming structures the ability to increase their lot coverage by 2% adds flexibility for improvements and may reduce functional obsolescence. The text amendment adds specific restrictions that only allow this lot coverage exception to be implemented in very limited circumstances.

Ms. Moccia presented the details.

Vice Chairman Hogan asked if staff recommends approval of the text amendment. Ms. Moccia said because it's in general conformity with the Land Use Plan and promotes stormwater reduction, staff does recommend it.

**ACTION:** Motion to open the public hearing

Motion made by Chairman Rouse, seconded by Vice Chairman Hogan

Voting Yea: Chairman Rouse, Vice Chairman Hogan, Commissioner Boswell, Commissioner Crouch, Commissioner Piper, Commissioner Carew, Commissioner Conto

*Motion passed unanimously*

Chairman Rouse asked if the applicant wanted to speak.

Attorney Corrie Lee, representing the applicant, said the text amendment is consistent with the Land Use Plan and is reasonable and in the public interest, giving property owners flexibility when a teardown or rebuild is not the best option. She said what is being presented tonight is a direct result of the Commission in October asking the applicant to work with staff to find language to eliminate unforeseen consequences, and she added that the language was developed by staff.

No one else requested to speak.

**ACTION:** Motion to close the public hearing

Motion made by Chairman Rouse, seconded by Vice Chairman Hogan

Voting Yea: Chairman Rouse, Vice Chairman Hogan, Commissioner Boswell, Commissioner Crouch, Commissioner Piper, Commissioner Carew, Commissioner Conto

*Motion passed unanimously*

Commissioner Carew said he is in favor of this and thinks it's a good tradeoff.

Commissioner Piper said he thinks the text amendment is written in such a narrow scope that it will be used by very few property owners outside of this applicant.

Commissioner Conto said she supports the text amendment.

Commissioner Crouch said he has no discussion about the matter.

Commissioner Boswell said she doesn't think anyone else will be using the text amendment and is fine with it.

Chairman Rouse said he doesn't have a problem with the text amendment. He thanked staff for their time and the applicant for their patience and willingness to remodel older buildings.

Vice Chairman Hogan said he thinks it's a great compromise, and he is in favor of anything that can be done to help the applicant finish the project.

**ACTION:** Motion for approval where the Commission, whereas in accordance with the provisions of the North Carolina General Statutes, does hereby find and determine that the adoption of the following text amendment to Article 3, Section 3.49 Reconstruction, Maintenance, Full or Partial Demolition and Renovation of Nonconforming Situations is consistent with the goals and objectives of the adopted Land Use Plan and other long-range plans

Motion made by Chairman Rouse, seconded by Vice Chairman Hogan

Voting Yea: Chairman Rouse, Vice Chairman Hogan, Commissioner Boswell, Commissioner Crouch, Commissioner Piper, Commissioner Carew, Commissioner Conto

*Motion passed unanimously*

#### **NON-AGENDA ITEMS**

None

#### **ADJOURNMENT**

Chairman Rouse adjourned the meeting at 6:35 PM.



## AGENDA ITEM COVERSHEET

**PREPARED BY:** Gloria Abbotts, Sr Planner

**DEPARTMENT:** Community  
Development

**MEETING:** Planning & Zoning – February 13, 2025

**SUBJECT:** Zoning Map Amendment to consider a request to rezone 204 Harper Avenue from Mixed Use (MX) to Central Business District (CBD).  
Applicant: STLNC, LLC

### **BACKGROUND:**

The applicant, STLNC LLC, has submitted a petition to consider rezoning 204 Harper Avenue from Mixed Use (MX) to Central Business District (CBD) Zoning. The neighboring property to the east is under the same ownership, formally the Welcome Inn (205, 207, 209 N. Lake Park Blvd), and is currently in the CBD. The applicant has requested the rezoning to have consistent zoning and land uses for the property, they would like to see the same zoning apply to 204 Harper Ave, so all business-related decisions and operations fall under the same zoning guidelines.

For consistency and for the purpose of redevelopment it is best practice for the entirety of a property to be within the same zoning district. Redevelopment of the property would require the recombination of the property. One of the standards for creating zoning districts is to follow plotted lot lines. Guidance for the interpretation of zoning district boundaries comes from Sec. 1.7 (attachment 1) of the UDO. Previously 204 Harper Avenue had a single-family structure with the adjacent common ownership parcels was formally the Welcome Inn. The adjacent use to the west is a single-family, to the north is a multi-family structure and across the street to the south is a Hotel.

### **History:**

The property has been in the same ownership for over 50 years. The single-family house and Welcome Inn were built in the 30's. In 2023 the structures were demolished after a new hotel was approved for the site in 2022. The hotel had not started construction, and the property was recently purchased. The Permit for the hotel authorization expired September 14, 2024.

The 1984 Zoning Ordinance and Zoning Map had both properties, of 204 Harper Ave and the property where the Welcome Inn was in the B-1: Central District. In 2000, 204 Harper Ave was rezoned to MX and the Welcome Inn property was rezoned to CBD.



**District Purpose and Permitted Uses:**

The MX, Mixed Use Transitional District is established to provide for an area of transitional land uses between intensified use districts or elements and residential districts. This district includes an area of mixed land uses between the intensive, commercial, central part of Town and the quiet residential areas and may also be employed as a transitional area between busy major thoroughfares and quieter residential areas. Permitted uses include a mixture of single-family homes, two-family dwellings, and small-scale office and institutional uses. Small hotels and motels and multifamily housing of modest density and size may also be permitted in this district.

The CBD, Central Business District is established to accommodate, protect, rehabilitate, and maintain the traditional central business district and boardwalk area of the Town. This area accommodates a wide variety of pedestrian oriented, commercial and service activities, including retail, business, office, professional financial, entertainment, and tourism. The regulations of this district are intended to encourage the use of the land for concentrated development of permitted uses while maintaining a substantial relationship between land uses and the capacity of the Town’s infrastructure.

The Mixed Use District does allow for certain business uses like standard restaurants and eateries, general retail, offices, and mixed use commercial-residential but does not allow for more intense uses like bars and taverns, or commercial parking lots. A complete list of the uses allowed in both districts is shown on Attachment 2. The MX district is considered residential, and residents must abide by the standards of the noise ordinance for residential areas of a daytime level of 65dB(A) between the hours of 7:00am and 11:00pm, and the nighttime level of 55dB between the hours of 11:00pm and 7:00am. The Commercial district allows for a 75dB(A) daytime level between 7:00am and 11:00pm, and 65 dB(A) between the hours of 11:00pm and 7:00am, except on Friday and Saturday, the daytime levels shall remain in effect until midnight.

**Dimensional Standards:**

<i>Zoning District</i>	<i>Primary Permitted Uses</i>	<i>Min. Lot Size</i>	<i>Min. Lot Width<sup>5</sup></i>	<i>Min. Front Yard</i>	<i>Min. Rear Yard</i>	<i>Min. Side Yards (Corner Lot-Min 12.5 ft.)<sup>5</sup></i>	<i>Max. Density</i>	<i>Max. Height</i>	<i>Max. Lot Coverage</i>	<i>Max. Impervious Coverage</i>
MX	Mixed Use	5,000 sq. ft.	50 ft.	20 ft.	10 ft. <sup>3</sup>	7.5 ft. <sup>3</sup>	17 units/acre	50 ft.	40%	65%
CBD	Commercial Uses and Services, Entertainment	None	None	None	None, or same as abutting residential use or district	None, or same as abutting residential use or district	NA	50 ft. <sup>4</sup>	None	None

The MX Zoning District requires setbacks and has a maximum lot coverage in all areas throughout the district, and a 65% limit on impervious coverage. Much of the CBD has no setbacks, no lot coverage requirement, and no impervious coverage limit. Although the dimensional standards for both districts are different, properties in the CBD areas must have a rear and side setback that is the same as the residential zoning district it abuts. Landscaping standards are also required if a CBD parcel is adjacent to residential to mitigate the transition between the business and residential use.

### **TRC Comments**

Staff discussed the preference for zoning lines to follow contiguous property ownership but did note the expansion of the CBD into a district that allows for single-family residential. The property to the north does have a permanent 10' access easement which would create a buffer between the single-family homes and any new development. Changing the property from MX to CBD does increase the potential for increased water and sewer capacity needs because the CBD allows for higher density.

### **Land Use Plan**

The property is shown on the Future Land Use Map as Mixed Use Commercial and is described as a higher density area with a mix of uses, within the district and individual buildings. Residential uses allowed only on upper stories; ground floor encouraged to be active. 4-5 story structures possible, unless adjacent to low or medium density residential with attractive street facades. NCGS 160D states that if a zoning map amendment is adopted and the action was deemed inconsistent with the adopted plan, the zoning amendment has the effect of also amending any future land-use map in the approved plan, and no additional request or application for a plan amendment is required.

### **ACTION REQUESTED:**

Consider recommending approval or denial of a zoning map amendment to rezone 204 Harper Ave from the MX zoning district to the CBD.

Staff recommends approval of the rezoning.

### **MOTION:**

Approval - whereas in accordance with the provisions of the NCGS, Planning and Zoning does hereby find and determine that the adoption of the Zoning Map Amendment for 204 Harper Ave is consistent with the goals and objectives of the adopted Land Use Plan and other long-range plans.

A statement approving the proposed Zoning Map Amendment and declaring that this also amends the plan, to meet the vision of the community taken into consideration in the zoning amendment.

Denial - based on inconsistencies with the goals and objectives of the adopted Land Use Plan and/or other long-range planning documents and the potential impacts on the surrounding areas.

#### **ATTACHMENTS:**

1. 1.7. Interpretation of zoning district boundaries.
2. 3.4. Table of uses.

#### **ATTACHMENT 1**

##### **1.7 Interpretation of zoning district boundaries.**

The UDO Administrator shall decide the exact location of any zoning district boundary lines whenever uncertainty exists about the boundary lines shown on the official zoning maps, subject to appeal to the board of adjustment. The determination of the exact location of a zoning district boundary shall be based upon the following rules:

- (1) Boundaries indicated as approximately following or within a street, alley, or railroad right-of-way, or utilities (electrical, gas, water main, etc.) easement shall be construed to be in the center of such right-of-way easement;
- (2) Boundaries indicated as following shore lines shall be construed to follow such shorelines, and, in the event of change in the shorelines, shall be construed as moving with the actual shoreline; boundaries indicated as approximately following the centerlines of streams, rivers, creeks, or other bodies of water shall be construed as following such centerlines;
- (3) Boundaries indicated as approximately following plotted lot lines shall be construed as following such lot lines;
- (4) Boundaries indicated as approximately following Town limits shall be construed as following Town limits; and
- (5) Boundaries indicated as parallel to or extension of features indicated in subsections (1), (2), (3) and (4) of this section shall be so construed. Distances not specifically indicated on the official zoning map shall be determined by the scale of the map.
- (6) In the event that a district boundary line on the zoning map divides a platted lot held in one ownership on the date of passage of the ordinance from which this chapter is derived, each part of the lot so divided shall be used in conformity with the district in which such part is located.
- (7) Where any further uncertainty exists, the UDO Administrator shall interpret the intent of the map as to location of such boundaries.

**ATTACHMENT 2**

**3.4. Table of uses.**

P = Permitted.

CZ = May be permitted with conditional zoning

S = May be permitted by special use permit

USES OF LAND	MX	CBD
<b>Residential Uses</b>		
Two-family dwellings	P	
Manufactured home, on standard, single-family lot (See section 40-261)		
Multifamily dwellings (See section 40-260) Units <= 4	P	
Multifamily dwellings (See section 40-260) Units > 4	CZ	
Planned unit development, residential (See article XII of this chapter) Units <= 4	P	
Planned unit development, residential (See article XII of this chapter) Units > 4	CZ	
Single-family detached	P	
Attached single-family residential	P	
<b>Accessory Uses</b>		
Accessory uses and structures, including garages, carports, etc. (See sections 40-261, 40-548)	P	P

Home occupations, customary (See sections 40-261, 40-548)	P	P
Swimming pools, private (See sections 40-261, 40-548)	P	
Swimming pools, public (See sections 40-261, 40-548)	CZ	CZ
<b>Nonresidential Uses</b>		
Adult entertainment establishment (See sections 40-261, 40-548)		
Aircraft takeoff and landing zone (See sections 40-261, 40-548)	Prohibited	
Animal care facility		
Animal care facility with outdoor area (See section 40-261)		
Arcades, rides, games in enclosed buildings		P
Art galleries (See section 40-548)	P	P
Auctions sales		P
Automobile repair garages, including engine overhauls, body and paint shops and similar operations in enclosed buildings (See sections 40-261, 40-548)		
Automobile service stations and convenience stores		P
Bakeries, retail, off-premises sales		
Bakeries, retail, on-premises sales only		P

Banks/financial institutions		P
Barber shops		P
Bed and breakfast inn (See section 40-261)	CZ	CZ
Boat and personal water craft (PWC) sales and rental		P
Body piercing facility		
Bus terminal		P
Cafeteria or dining room for employees of permitted uses		
Car wash (See section 40-548)		
Cemeteries, public and private (See section 40-261)		
Churches/places of worship/parish houses	CZ	P
Commercial indoor recreation, such as bowling alleys, etc.		
Commercial outdoor recreation, such as miniature golf, golf driving ranges, par-3 golf courses, go carts and similar enterprises (See section 40-261)		
Contractors offices, no outdoor storage		P
Day nurseries, day care centers and preschools (See sections 40-261, 40-548)	CZ	CZ
Distillery		P
Drop-in child care providers (See	P	P

sections 40-261, 40-548)		
Dwelling for caretaker on premises where employed		
Drive-in/thru facility		
Dry stack storage facilities		
Ear piercing Facility		
Eating and/or drinking establishments (See section 40-261)		
Bars and taverns (See section 40-261)		CZ
Standard restaurants and eateries	P	P
Exhibition buildings		CZ
Exterminator service business offices, no outdoor storage of materials or equipment		P
Fire stations, emergency services, nonprofit	CZ	CZ
Fishing piers; public and private		P
Funeral homes		P
Furniture stores		
Gardens, arboretums and greenhouses, items for sale		P
General retail sales	P	P
Government/Public facilities and utilities (See section 40-261)	P	P
Ice-cream stores	P	P
Laundries and dry cleaning, delivered by customers		P

Laundromats, self-service		P
Libraries	P	P
Live entertainment complexes in enclosed buildings		CZ
Manufacturing incidental to retail business, sold on premises only, maximum of five manufacturing operators		P
Marinas, docks and/or piers, private		
Marinas, docks and/or piers, public or commercial		P
Medical and dental clinics	P	P
Meeting facilities	CZ	P
Mixed use commercial-residential (See section 40-261)	P	P
Motels and hotels	CZ	CZ
Motels and hotels, operated with a marina		
Multi-use facility	P	P
Municipal parking decks		P
Museums		P
Nursery, garden and landscaping, display and sales		
Offices, public, private or civic	P	P
Outdoor amusements, carnival and rides		CZ
Parking lot, commercial—		P



permanent (See section 40-261)		
Parking lot, Town operated (See section 40-261)	P	P
Private parking decks		CZ
Parking and loading areas serving uses in the same zoning district, on same or contiguous lot (See article V of this chapter)	P	P
Parking and loading areas serving uses in the same zoning district, on non-contiguous lot (See article V of this chapter)	CZ	P
Pet shops and pet supply stores		P
Photographic studio	P	P
Planned unit development, business (See article XII of this chapter)		CZ
Post offices		P
Postal mailing services, commercial		P
Printing/reprographics		P
Radio, computer, television and appliance repairs and rental service		P
Rental of any item, the sale of which is permitted in the district		P
Rental of golf carts, mopeds, and scooters (See section 40-261)*	P	P

Repair of any item, the sale of which is permitted in the district		P
Rooming house	Prohibited	
Schools, commercial for specialized training		P
Schools, public	CZ	CZ
Schools, private, general instruction	CZ	CZ
Seafood production and/or processing and/or dockage, wholesale and retail		
Shopping centers/big box	CZ	CZ
Spa health club		P
Studios, artist, designers, gymnasts, musicians, sculptures	CZ	P
Tailor shops	P	P
Tattoo studios (See sections 40-261, 40-548)		
Telephone exchange		P
Tennis courts, commercial (See section 40-261)		CZ
Tennis courts, private (See section 40-261)	CZ	CZ
Theaters, in enclosed structure		P
Theaters, open air drama		CZ
Trailer, business		CZ
Trailer park, travel (See section 40-548)		
Trailer, temporary construction (See section 40-261)	P	P
Utilities, private (See section 40-261)	CZ	P

Vehicle sales lot and rental lot (See section 40-261)		
Water oriented businesses		CZ
Wholesale sales		P
Wine and beer shops (Retail/Off-Premise)		P
Wireless telecommunications facilities	See article X of this chapter	
<b>Manufacturing, Assembly and Processing (See section 40-261)</b>		
Beverages, bottling works		
Breweries (See section 40-261)		P
Flammable liquid storage, >1,000 gallons aboveground only (See section 40-261)		
General assembly and repair		
Ice manufacture, sales and storage		
Manufacturing and assembly, processing, and packaging, except those uses identified in section 40-261		
Planned development, industrial		
Sign painting and sign fabrication		
Storage yard, outdoor (See section 40-261)		
Recreational vehicle/boat storage, yard (See section 40-261)		
Towing service impound yard		

Warehouses, storage. Large and mini		
Woodworking shops		

\* **Note:** Rental of these items may be permitted in the designated zoning districts as an accessory use to other permitted commercial uses if parking and other standards can be met.



RECEIVED  
JAN 27 2025

Amendment Number: \_\_\_\_\_

# PETITION FOR A ZONING MAP AMENDMENT

**IMPORTANT:** Supplementary information required as part of petition to be included:

**Completed rezoning petition.** For general use requests: The petition must be signed by the petitioner. Proof of compliance with GS 160A-383 regarding third party notification is required.

**Adjacent Property Owners Map.** A copy of the area as depicted on the Zoning Map which shows subject property (outlined in bold) and other surrounding properties within 100 feet of the subject property. Please label the names of the property owners directly affected by the zoning map amendment and those adjacent to or within 100 feet (excluding right-of-way) of the request.

This petition will be scheduled for the next possible meetings with the following boards: (1) Technical Review Committee, (2) Planning and Zoning Commission and (3) Town Council. The petitioner or representative should be present at all meetings to answer any questions. Contact the Department of Planning and Development for the schedule of meeting times and submittal deadlines. All meetings are held at the Municipal Administration Building, 1121 N. Lake Park Boulevard, Carolina Beach, NC 28428. Petitioners will be informed of any changes in date, time, or location of meetings. **Fee: to be submitted with application in accordance with the Town's annually adopted Rates and Fee Schedule**

- Minor Rezoning                      Rezoning of property less than 1 acre in size.
- Major Rezoning                         Rezoning of property one acre or greater in size.

### Petitioner

Petitioner's Full Name: STL NC LLC Phone #: (828)-290-3875  
 Street Address: 120 Chadwick Ave #19  
 City: Hendersonville State: NC Zip: 28792  
 Email: sallyatsns@gmail.com

### Requested Zoning Map Change

Address(s) of Requested Site: 204 Harper Ave Carolina Beach  
 Property Identification Numbers (PIN) R09006-002-006-000  
 Acreage/Sq. Ft: .17 acres Existing Zone: MX Requested Zone: CBD  
 Signature of Petitioner: Sally Sturdant Date: 1/27/25

#### PURPOSE OF ZONING DISTRICTS

The petitioner seeks to show that the fundamental purposes of zoning as set forth in the N.C. enabling legislation would be best served by changing the zoning classification of the property. Among the fundamental purposes of zoning are: (1) to lessen congestion in the streets; (2) to provide adequate light and air; (3) to prevent the overcrowding of land; (4) to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements; (5) to regulate in accordance with a comprehensive plan; (6) to avoid spot zoning; and (7) to regulate with reasonable consideration to the character of the district, the suitability of the land for particular uses, the conservation of the value of buildings within the district and the encouragement of the most appropriate use of the land throughout the Town.

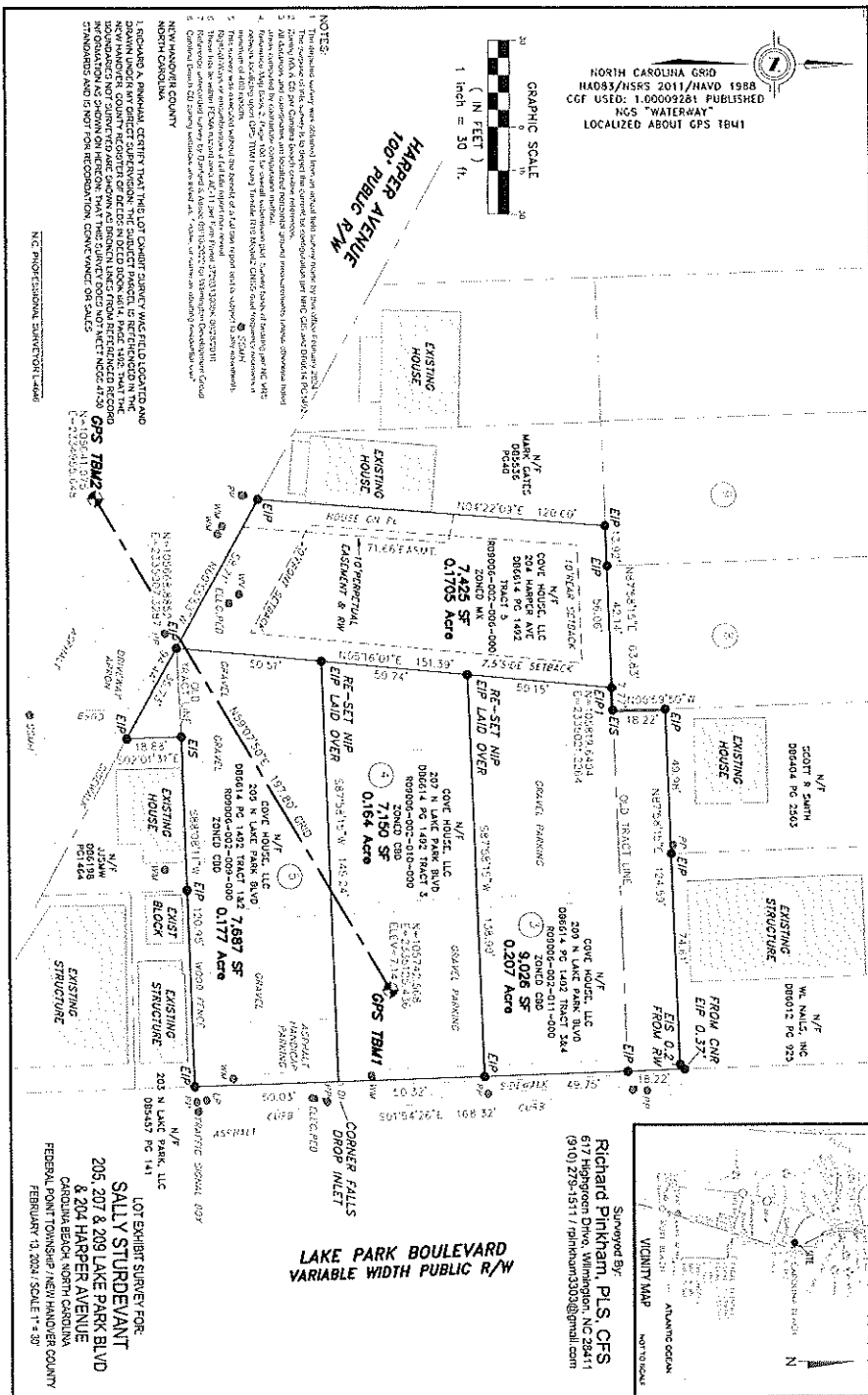
204 Harper

## Petition For A Zoning Map Amendment:

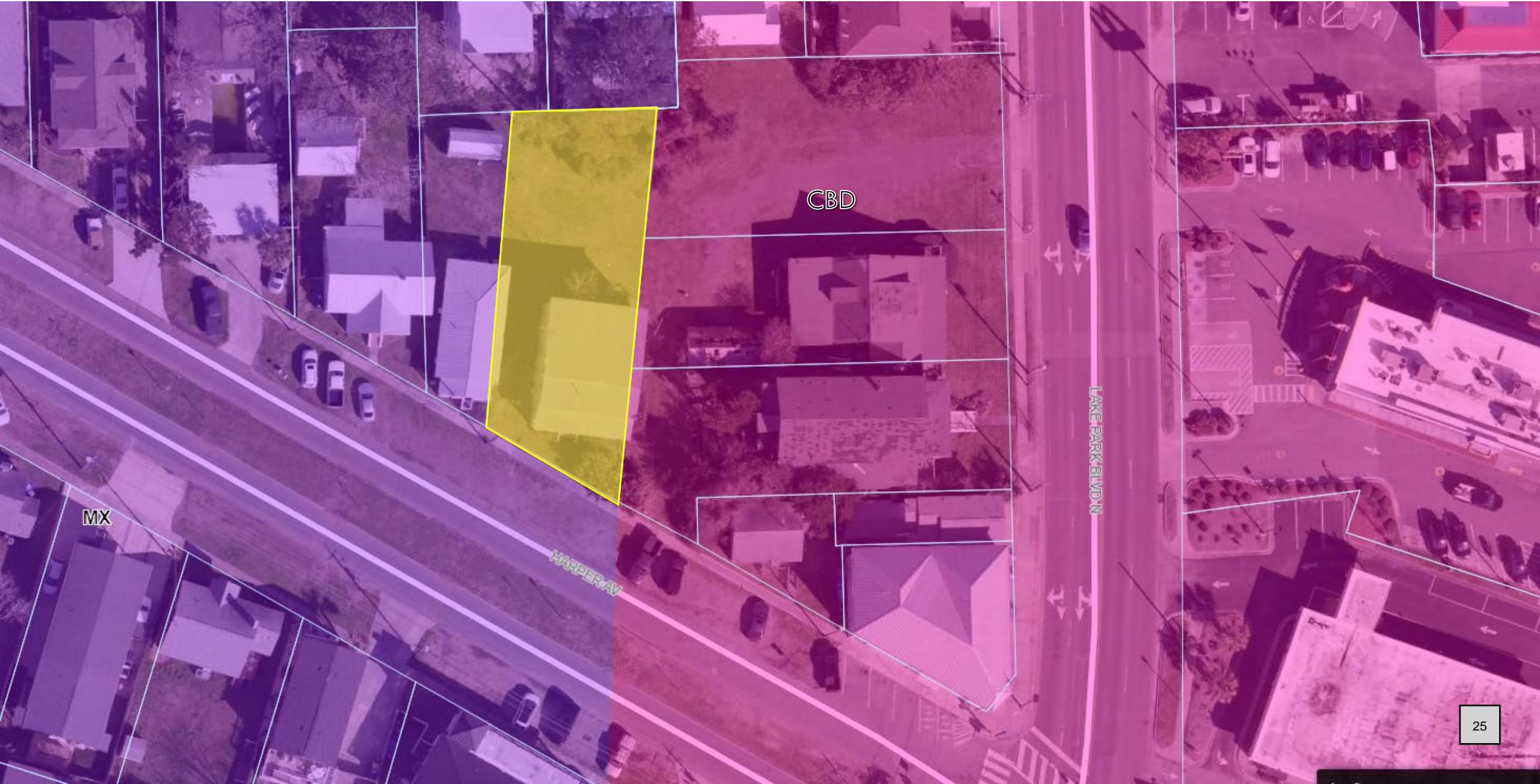
1. The four lots that connect to the east of the proposed change are all zoned CBD.
2. This will bring all four parcels of this tract into one zoning type instead of 75% of the parcel in the CBD and 25% in the Mixed Use.
3. This will consolidate the parcel as all one zoning type. There are no detriments known.
4. This will unify this tract of land and give more consistency as per the Land Use Plan.
5. No impacts due to this rezoning.
6. Two lots that touch this parcel are Mixed Use and the other 4 or 5 parcels are all CBD. This will bring more unity to the parcel and the area surrounding it.
7. This is in compliance with the Land Use Plan

204 Harper Ave













## AGENDA ITEM COVERSHEET

**PREPARED BY:** Gloria Abbotts, Sr Planner

**DEPARTMENT:** Community  
Development

**MEETING:** Planning and Zoning – 2/13/25

**SUBJECT:** Consider a preliminary plat for a 9-lot subdivision located at 1215 Saint Joseph Street

Applicant: Wescott Butler

### **BACKGROUND:**

Wescott Butler has submitted a request for a preliminary plat approval for Phase 1 of the Fisher’s Reserve subdivision at 1215 Saint Joseph Street. This is considered a Major Subdivision Preliminary Plat because there are more than 6 lots to be subdivided. The Planning and Zoning Commission shall review and take final action.

The property is 5.05 acres. This subdivision will consist of 9 lots with a minimum lot size of 7,000 square feet. The existing single-family home on the property will be demolished. The proposed 9 lots comply with the minimum standards for R-2. Single-family dwellings are permitted by right in the R-2 zoning district, which has a minimum lot size of 7,000 square feet. Setbacks for structures in this district are 25 feet from the front, 10 feet from the rear, and 7.5 feet from the side yards, and 12.5 feet required on corner lots. The maximum height for structures is 45 feet, with a maximum lot coverage of 40% and a maximum impervious coverage of 65% per lot. A portion of the subdivision is in an AE 11 flood zone. Those lots will have a finished floor elevation of 13’ to meet the BFE + 2’ of freeboard requirement.

The applicant proposes installing a 50’ right-of-way, Hooks Rd. The design of the road will be in accordance with NCDOT minimum design and construction criteria and guidelines. Per UDO section 4.12, in no case shall right-of-way widths be less than 40’ and pavement widths less than 26’, unless approved by the Fire Marshall. The applicant proposes a 24’ pavement width, which was approved by the Fire Marshal at the December 2024 TRC meeting. A fire hydrant will be installed at the compliant hammerhead turnaround at the end of the road.

A dedicated 5-foot pedestrian easement is proposed at the rear of the property for future connectivity. All subdivisions of six or more lots shall be required to install sidewalks along the street. The proposed sidewalk will be 4’ wide and meet all ADA requirements. The proposed 8’ St. Joseph multi-use path will be in the right-of-way in front of the subdivision. The subdivider will also install streetlamps in accordance with Ch. 34, Art. 5. The subdivider will also be responsible for installing street signs, stop signs, cluster mailbox units, and street trees. The subdivider shall plant at least one understory tree for each 50 feet of frontage as shown on the provided landscaping plan, existing vegetation can be used and is encouraged.

It is the policy of the US Postal Service that mail delivery to all new subdivisions is centralized delivery, through use of a cluster box unit (CBU). The location of the CBU has been approved by TRC. NC Building Code requires a handicap space for the CBU, which has been provided by the applicant.

The applicant shall obtain a state stormwater permit. There is a proposed stormwater infiltration basin to be installed at the front of the property. Utilities will be located within the right-of-way and power lines will be buried. Each lot will be serviced with a ¾" water service and meter, a 1" irrigation service and meter, and 6" PVC sewer lateral and cleanout at the public right-of-way.

The applicant has provided a report completed by Tidewater Atlantic Research Inc. This agency has concluded that the proposed development will not have an impact on any preserved Confederate earthworks or any other potentially significant archaeological features.

### **ACTION REQUESTED:**

Consider approval or denial of a 9-lot subdivision located at 1215 Saint Joseph Street.

### **STAFF RECOMMENDATION:**

Staff recommends approval of this preliminary plat subject to the following conditions. Final plat may not be submitted for approval until all conditions, revisions, changes and submissions are made. The conditions, revisions, changes and submissions to be made are as follows:

1. Street trees shall be installed according to preliminary plat submittal. Existing vegetation can be used for this requirement.
2. Permanent monuments of stone or concrete shall be placed at one or more corners of the subdivision to be designated as control corners.
3. A drainage plan that will include all portions of the development shall be submitted. This plan shall be prepared and sealed by a registered surveyor or engineer.
4. Surfacing shall be done in accordance with plans and standard specifications approved by the Planning and Zoning Commission and the state Department of Transportation.
5. The installation of a street sign, light pole, and stop sign is required.
6. Electrical lines shall be buried.
7. Lot coverage for any lot located within the subdivision shall not exceed 40%.
8. Maximum impervious coverage for any lot located within the subdivision shall not exceed 65%.
9. The plan must clearly designate the location of open space, recreation areas, and stormwater ponds, as well as ownership details.
10. Grading, surfacing, curb and gutters, sidewalks, street lighting, street trees, sewage disposal facilities, stormwater drainage facilities, and other utilities shall be installed and certified by a surveyor and/or engineer, or Performance Guarantee provided prior to recordation of the final plat.

### **MOTION:**

Motion to approve or deny the preliminary plat with the proposed conditions.



## Application for Subdivision Preliminary Plat TOWN OF CAROLINA BEACH, N.C.

Each application must be printed or typewritten and have all information answered. Incomplete or illegible applications will not be accepted. No application will be accepted unless accompanied by a drawing of the proposed lot development drawn to scale with the requirements indicated in UDO Article 4.

The Technical Review Committee and/or Planning and Zoning Commission reserves the right to require additional information if needed to assure that the use in its proposed location will be harmonious with the area in which it is proposed to be located and in accordance with the Unified Development Ordinance of the Town of Carolina Beach. Applications must be reviewed by the Community Development Department for completeness prior to acceptance. A fee payable to the Town of Carolina Beach must accompany this application. Fees are nonrefundable after review by the Technical Review Committee. The fee shall be in accordance with the Town's annually adopted Rates and Fee Schedule.

In accordance with the requirements of the Town of Carolina Beach Subdivision Ordinance, there is submitted herewith for approval a preliminary plan of the following subdivision:

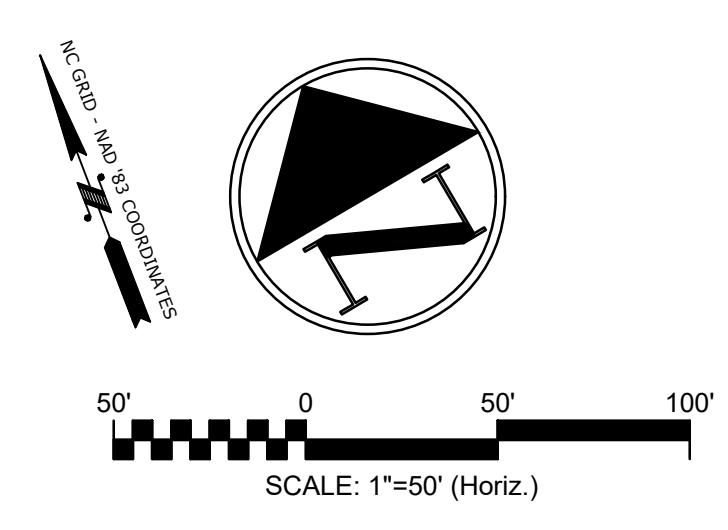
Name of Subdivision: Fisher's Reserve # of Lots Proposed: 9 - sf lots  
 Tax Parcel(s) #: R08814-003-028-000  
 Acreage and/or square footage: 5.05 acres (overall) Existing Zone: R-2 Residential  
 Name of Applicant: Wescott Butler (910) 599-5789  
 Signature of Applicant: \_\_\_\_\_  
 (Phone Number)  
 Owner Name and Address: Wescott Butler 707A St Joseph St.  
 (Print Name) (Address)  
Carolina Beach, NC 28428 butler@w3built.com  
 (City, State, Zip) (Email Address)

This preliminary plan contains all the information required by Article 4 of the UDO. I certify that this application package contains all requirements of the Town of Carolina Beach Code of Ordinances. The registered Engineer, Landscape Architect or Surveyor under whose supervision this subdivision is being developed is:

Richard M. Collier, PE  
 (Engineer, Architect, or Surveyor) (Contact Name)  
(910) 520-7754 rcollier@mckimcreed.com  
 (Telephone Number) (E-Mail Address)  
 Signature of Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Final Plat Procedure

See Article 2, 2.15 F



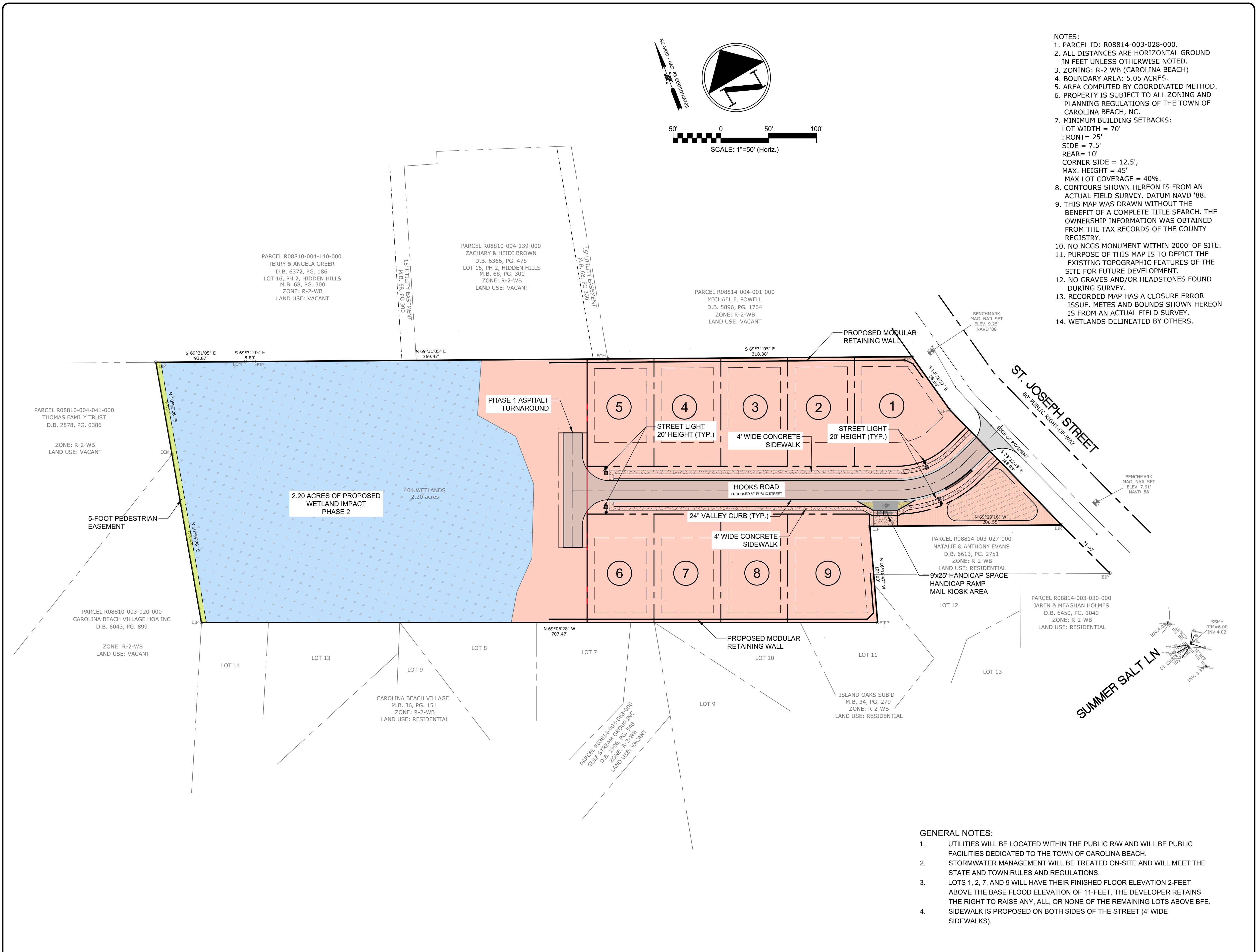
- NOTES:
1. PARCEL ID: R08814-003-028-000.
  2. ALL DISTANCES ARE HORIZONTAL GROUND IN FEET UNLESS OTHERWISE NOTED.
  3. ZONING: R-2 WB (CAROLINA BEACH)
  4. BOUNDARY AREA: 5.05 ACRES.
  5. AREA COMPUTED BY COORDINATED METHOD.
  6. PROPERTY IS SUBJECT TO ALL ZONING AND PLANNING REGULATIONS OF THE TOWN OF CAROLINA BEACH, NC.
  7. MINIMUM BUILDING SETBACKS:  
 LOT WIDTH = 70'  
 FRONT = 25'  
 SIDE = 7.5'  
 REAR = 10'  
 CORNER SIDE = 12.5',  
 MAX. HEIGHT = 45'  
 MAX LOT COVERAGE = 40%.
  8. CONTOURS SHOWN HEREON IS FROM AN ACTUAL FIELD SURVEY, DATUM NAVD '88.
  9. THIS MAP WAS DRAWN WITHOUT THE BENEFIT OF A COMPLETE TITLE SEARCH. THE OWNERSHIP INFORMATION WAS OBTAINED FROM THE TAX RECORDS OF THE COUNTY REGISTRY.
  10. NO NCGS MONUMENT WITHIN 2000' OF SITE.
  11. PURPOSE OF THIS MAP IS TO DEPICT THE EXISTING TOPOGRAPHIC FEATURES OF THE SITE FOR FUTURE DEVELOPMENT.
  12. NO GRAVES AND/OR HEADSTONES FOUND DURING SURVEY.
  13. RECORDED MAP HAS A CLOSURE ERROR ISSUE. METES AND BOUNDS SHOWN HEREON IS FROM AN ACTUAL FIELD SURVEY.
  14. WETLANDS DELINEATED BY OTHERS.

GENERAL INFORMATION	
DATA CLASS	VALUE
PARCEL ADDRESS	1215 ST JOSEPH STREET CAROLINA BEACH
TAX PARCEL IDENTIFICATION NUMBER	R08814-003-028-000
OWNER	BIG BIRD LAND DEVELOPMENT, LLC
DEVELOPER	BIG BIRD LAND DEVELOPMENT, LLC
CURRENT ZONING	R-2 RESIDENTIAL
PROPOSED USE	R-2 RESIDENTIAL
RESIDENTIAL USE (SF)	5.05 AC (220,175 SF)
TOTAL PROJECT AREA	5.05 AC (220,175 SF)
TOTAL LOTS / PROJECT DENSITY	
(124,188 SF / 2.85 AC) PHASE 1 LOTS	9 LOTS
PHASE 2 LOTS	10 LOTS

BUILDING INFORMATION		
DATA CLASS	REQUIRED	PROPOSED
LOT SIZE (R-2 ZONING)	7,000 SF	7,000 SF MIN
DENSITY	6.2 DUA MAX	3.76 DUA
BUILDING SETBACKS		
LOT WIDTH	70'	75' AND 80'
FRONT	25'	25'
REAR	10'	10'
SIDE CORNER	7.5'	7.5'
SIDE INTERIOR	7.5'	7.5'
BUILDING HEIGHT	45' MAX	45' MAX

SITE INFORMATION		
DATA CLASS	EXISTING	PROPOSED
TOTAL IMPERVIOUS SURFACE AREA	0 SF	55,931 SF
BUA TOTAL (PER LOT = 5,000 OR 4,500 SF)	0 SF	32,500 SF
ROADWAY PAVEMENT	0 SF	20,046 SF
SIDEWALKS / PLAZA	0 SF	3,385 SF
IMPERVIOUS AREA COVERAGE	0%	45.0 %

Sheet List Table	
Sheet Number	Sheet Title
C1.0	OVERALL SITE PLAN
C1.1	ENLARGED SITE PLAN
C1.2	PRELIMINARY PLAT – PHASE 1
C2.0	ENLARGED LANDSCAPE PLAN
C3.0	ENLARGED UTILITY PLAN



- GENERAL NOTES:
1. UTILITIES WILL BE LOCATED WITHIN THE PUBLIC R/W AND WILL BE PUBLIC FACILITIES DEDICATED TO THE TOWN OF CAROLINA BEACH.
  2. STORMWATER MANAGEMENT WILL BE TREATED ON-SITE AND WILL MEET THE STATE AND TOWN RULES AND REGULATIONS.
  3. LOTS 1, 2, 7, AND 9 WILL HAVE THEIR FINISHED FLOOR ELEVATION 2- FEET ABOVE THE BASE FLOOD ELEVATION OF 11- FEET. THE DEVELOPER RETAINS THE RIGHT TO RAISE ANY, ALL, OR NONE OF THE REMAINING LOTS ABOVE BFE. SIDEWALK IS PROPOSED ON BOTH SIDES OF THE STREET (4' WIDE SIDEWALKS).

OWNERS OF RECORD:  
 DONALD L. GRADY  
 17418 SPRING FOREST DRIVE  
 SPRING, TX 77379

LINDA GRADY SMITH  
 336 JOHN LEWIS GRADY ROAD  
 MOUNT OLIVE, NC 28365

BEVERLY GRADY BROWN  
 P.O. BOX 161  
 MARS HILL, NC 28754

TOPOGRAPHIC SURVEY  
 FOR:  
**HEIRS OF DONALD L. GRADY**  
 1215 ST. JOSEPH STREET  
 TOWN OF CAROLINA BEACH, FEDERAL POINT TOWNSHIP  
 NEW HANOVER COUNTY, NORTH CAROLINA 28428  
 SCALE 1"= 40' DATE: FEBRUARY 14, 2024

0 40 80 120

**PORT CITY**  
 LAND SURVEYING, PLLC  
 FIRM LICENSE No. P-1493  
 1144 SHIPYARD BOULEVARD  
 WILMINGTON, NORTH CAROLINA 28412  
 (910) 791-0088

2 OVERALL SITE PLAN SCALE: 1"=50'

1 SITE DATA TABLE SCALE: NTS

REV. NO.	DESCRIPTIONS	DATE



PRELIMINARY



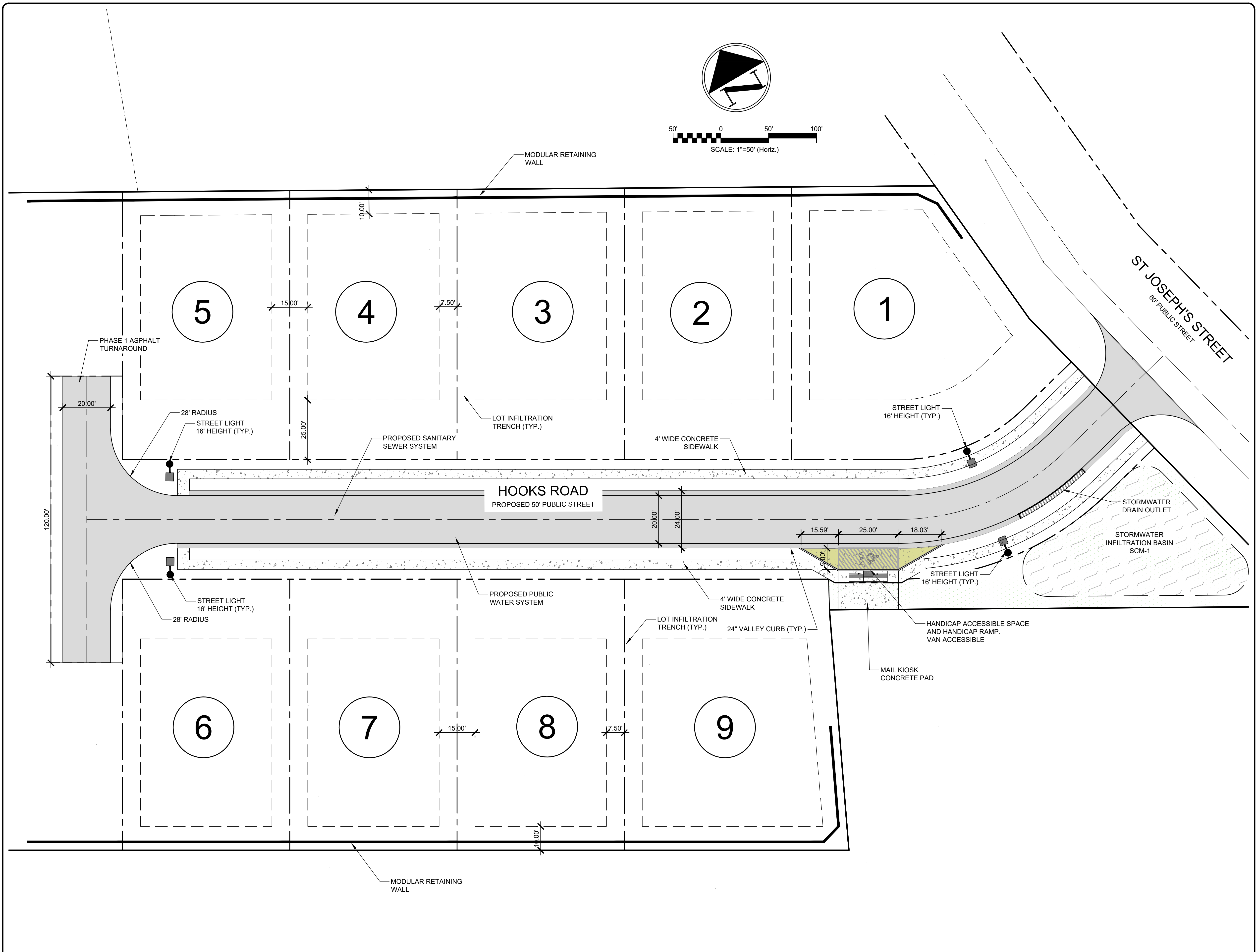
Civil Engineer:  
 Richard M. Collier, PE  
 3708 Needle Sound Way  
 Wilmington, NC  
 NC-022574

OWNER / DEVELOPER  
 BIG BIRD LAND DEVELOPMENT, LLC  
 707A ST JOSEPH ST  
 CAROLINA BEACH NC

FISHER'S RESERVE  
 1215 ST JOSEPH STREET, CAROLINA BEACH NC

OVERALL SITE PLAN  
 PHASE 1 AND FUTURE PHASE 2

DATE: 2025-02-07	SCALE: 1"=50'	C1.0 DRAWING NUMBER: ---- REVISION: ----
DRAWN: RMC	HORIZONTAL: 1"=50'	
DESIGNED:	VERTICAL: N/A	
CHECKED:		
PROJ. MGR:		
STATUS: CB TRC PLAN SET		



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DATA CLASS	VALUE
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DEVELOPER	BIG BIRD LAND DEVELOPMENT, LLC
CURRENT ZONING	R-2 RESIDENTIAL
PROPOSED USE	R-2 RESIDENTIAL
RESIDENTIAL USE (SF)	5.05 AC (220,175 SF)
TOTAL PROJECT AREA	5.05 AC (220,175 SF)
TOTAL LOTS / PROJECT DENSITY	19 LOTS / 3.76 DU/AC
(124,188 SF / 2.85 AC) PHASE 1 LOTS	9 LOTS
PHASE 2 LOTS	10 LOTS

BUILDING INFORMATION		
DATA CLASS	REQUIRED	PROPOSED
LOT SIZE (R-2 ZONING)	7,000 SF	7,000 SF MIN
DENSITY	6.2 DUA MAX	3.76 DUA
BUILDING SETBACKS		
LOT WIDTH	70'	75' AND 80'
FRONT	25'	25'
REAR	10'	10'
SIDE CORNER	7.5'	7.5'
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BUILDING HEIGHT	45' MAX	45' MAX

SITE INFORMATION		
DATA CLASS	EXISTING	PROPOSED
TOTAL IMPERVIOUS SURFACE AREA	0 SF	55,931 SF
BUA TOTAL (PER LOT = 5,000 OR 4,500 SF)	0 SF	32,500 SF
ROADWAY PAVEMENT	0 SF	20,046 SF
SIDEWALKS / PLAZA	0 SF	3,385 SF
IMPERVIOUS AREA COVERAGE	0%	45.0 %

**SURFACE MATERIAL LEGEND**

- ROADWAY ASPHALT
- 2'-0" CONCRETE VALLEY CURB
- SIDEWALK / DRIVEWAY APRON
- 24" CONCRETE FLUME
- OPEN SPACE
- HEAVY DUTY CONCRETE

- GENERAL NOTES:**
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 SCALE 1"= 40' DATE: FEBRUARY 14, 2024

0 40 80 120

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 WILMINGTON, NORTH CAROLINA 28412  
 (910) 791-0088

2 ENLARGED SITE PLAN SCALE: 1"=20'

1 SITE DATA TABLE SCALE: NTS

REV. NO.	DESCRIPTIONS / REVISIONS	DATE



**PRELIMINARY**



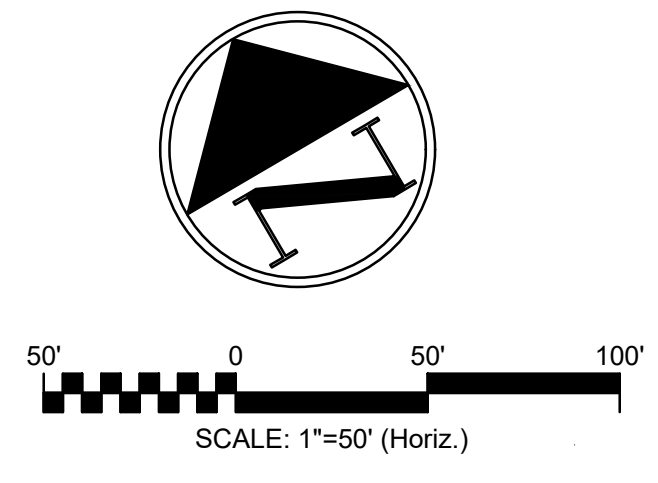
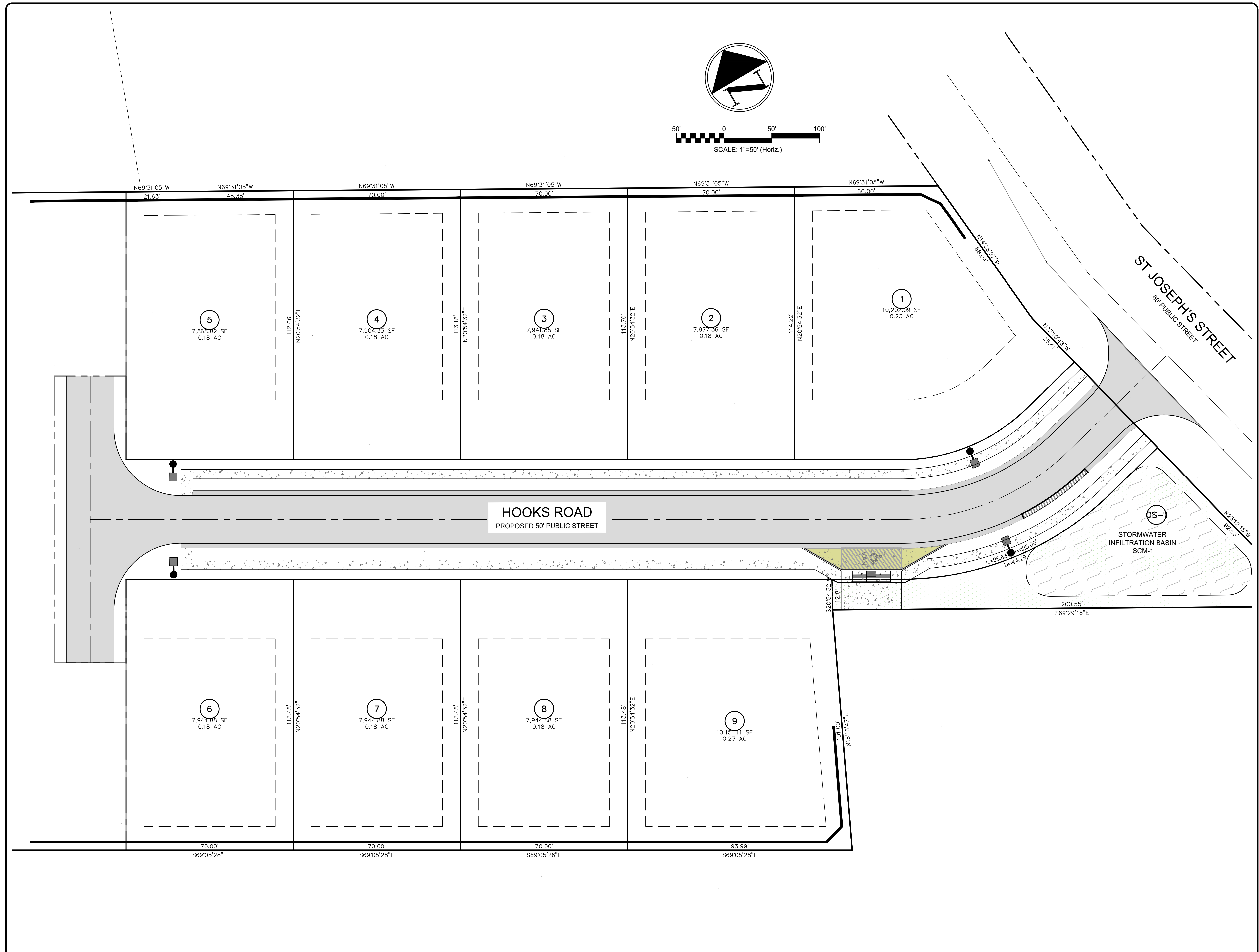
Civil Engineer:  
 Richard M. Collier, PE  
 3708 Needle Sound Way  
 Wilmington, NC  
 NC-022574

OWNER / DEVELOPER  
 BIG BIRD LAND DEVELOPMENT, LLC  
 707A ST JOSEPH ST  
 CAROLINA BEACH NC

**FISHER'S RESERVE**  
 1215 ST JOSEPH STREET, CAROLINA BEACH NC

**ENLARGED SITE PLAN**

DATE: 2025-02-07	SCALE: HORIZONTAL: 1"=20'	C1.1 DRAWING NUMBER: ----
DRAWN: RMC	VERTICAL: N/A	
DESIGNED:		
CHECKED:		
PROJ. MGR:		
STATUS: CB TRC PLAN SET		



Parcel Table				
Parcel #	Area	Perimeter	Segment Lengths	Segment Bearings
7	7943.88	366.968	113.484	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			113.484	N20° 54' 31.83"E
			70.000	S69° 05' 28.17"E
8	7943.88	366.968	113.484	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			113.484	N20° 54' 31.83"E
			70.000	S69° 05' 28.17"E
57	5712.23	459.353	92.625	S23° 12' 14.90"E
			200.548	N69° 29' 16.12"W
			12.813	N20° 54' 31.83"E
			28.199	S69° 05' 28.17"E
			96.629	N88° 45' 47.15"E
			27.998	N66° 37' 02.48"E
1	10202.09	398.335	59.999	S69° 31' 05.17"E
			68.039	S14° 28' 26.59"E
			25.407	S23° 10' 47.82"E
			28.117	S66° 37' 02.48"W
			57.977	S88° 45' 47.15"W
			44.573	N69° 05' 28.17"W
2	7977.36	367.926	70.002	S69° 31' 05.17"E
			114.223	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			113.701	N20° 54' 31.83"E
3	7940.85	366.883	70.002	S69° 31' 05.17"E
			113.701	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			113.180	N20° 54' 31.83"E
4	7904.33	365.640	70.002	S69° 31' 05.17"E
			113.180	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			112.658	N20° 54' 31.83"E
5	7867.82	364.797	70.000	N69° 05' 28.17"W
			112.137	N20° 54' 31.83"E
			21.606	S69° 31' 05.17"E
			48.375	S20° 54' 31.83"W
6	7943.88	366.968	113.484	S20° 54' 31.83"W
			70.000	N69° 05' 28.17"W
			113.484	N20° 54' 31.83"E
			70.000	S69° 05' 28.17"E
9	10151.11	407.117	12.813	S20° 54' 31.83"W
			101.000	S16° 16' 48.83"W
			93.986	N69° 05' 28.17"W
			113.484	N20° 54' 31.83"E
			85.634	S69° 05' 28.17"E

- GENERAL NOTES:**
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**TOPOGRAPHIC SURVEY**  
 OF  
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 WILMINGTON, NORTH CAROLINA 28412  
 (910) 791-0088

2 PRELIMINARY PLAT - PHASE 1

SCALE: 1"=20'

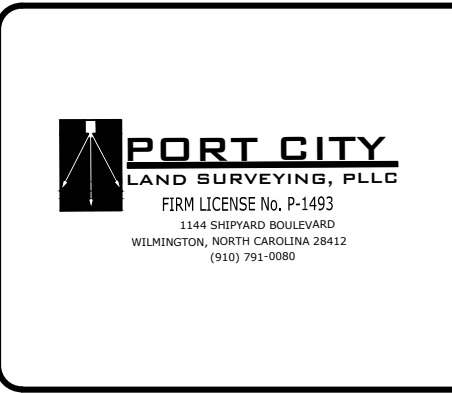
1 SITE DATA TABLE

SCALE: NTS

REV. NO.	DESCRIPTIONS	DATE



**PRELIMINARY**



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**FISHER'S RESERVE**  
 1215 ST JOSEPH STREET, CAROLINA BEACH NC

**PRELIMINARY PLAT - PHASE 1**

DATE:	2025-02-07
DRAWN:	RMC
DESIGNED:	
CHECKED:	
PROJ. MGR.	

SCALE	HORIZONTAL: 1"=20'	VERTICAL: N/A	C1.2
			DRAWING NUMBER

STATUS: CB TRC PLAN SET





PLANT SCHEDULE

SHADE TREES	BOTANICAL NAME
	(11) QUERCUS HEMISPHERICA LAUREL OAK
	(7) MAGNOLIA VIRGINIANA SWEETBAY MAGNOLIA

- A. ALL VEGETATION THAT IS USED TO MEET LANDSCAPING REQUIREMENTS SHALL BE MAINTAINED BY THE OWNER OF THE PROPERTY ON A CONTINUING BASIS. ANY PLANTED MATERIAL WHICH BECOMES DAMAGED OR DISEASED OR DIES SHALL BE REPLACED WITHIN 60 DAYS OF THE OCCURRENCE OF SUCH CONDITION.
- B. VERIFICATION OF TOTAL LANDSCAPE MATERIAL QUANTITIES AS SHOWN ON THE LANDSCAPE PLANS AND IN THE PLANT LIST SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES PRIOR TO FINAL BIDDING OR INSTALLATION.
- C. ALL PLANTING TYPES SHALL COMPLY WITH LOCAL GOVERNING CODES AND REGULATIONS, CONFORM TO REQUIREMENTS OF PLANT LIST AND TO THE AMERICAN ASSOCIATION OF NURSEYMEN "AMERICAN STANDARD OF NURSERY STOCK" AND "HORTICULTURAL STANDARDS" AS TO SPECIES, AGE, SIZE, AND PLANTING RECOMMENDATIONS.
- D. LANDSCAPE MATERIAL PLACED IN PREPARED HOLES SHALL BE PROPERLY BACKFILLED PRIOR TO THE END OF THE WORKING DAY.
- E. ALL PREPARED GROUND COVER AND ANNUAL BED INSTALLATIONS SHALL BE PROPERLY SOAKED AND MULCHED PRIOR TO THE END OF THE DAY.
- F. LANDSCAPE ARCHITECT SHALL APPROVE ANY ON-SITE PLANT STORAGE AREA FOR ACCESSIBILITY, SHADE CONDITIONS, HEALING-IN MULCH MATERIAL AND TEMPORARY WATERING METHODS.
- G. ALL ROPE AND WRAPPING TWINE SHALL BE CUT AND REMOVED FROM AROUND THE UPPER PARTS OF THE ROOT BALL. METAL BASKET WIRES AND BURLAP SHALL BE PULLED BACK AND TUCKED UNDER THE EDGES OF THE SAUCER RINGS ON ALL TREES AND LARGE SHRUBS. ALL SYNTHETIC BURLAP SHALL BE REMOVED FROM PLANT BALLS PRIOR TO BACK FILLING.
- H. ALL PLANT MATERIAL SHALL BE PLANTED AT HEIGHTS AND WIDTHS AS ILLUSTRATED IN PLANTING DETAILS.
- I. TREE GUYING SHALL BE PERFORMED WITHIN A WEEK OF PLANTING. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TREE GUYING MATERIALS AFTER THE FIRST FULL GROWING SEASON OR ONE YEAR, WHICH EVER COMES FIRST.
- J. CONTRACTOR SHALL VERIFY LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO PLANTING.
- K. ANY EXPOSED OR UNCOVERED LINES SHALL BE SHOWN TO GENERAL CONTRACTOR PRIOR TO BACKFILLING.
- L. ALL MATERIALS, PLANTING AND LANDSCAPE WORK SHALL CONFORM TO THE CURRENT MUNICIPAL AUTHORITIES STANDARD SPECIFICATIONS AND DETAILS.
- M. FIRST YEAR PRUNING OF TREE CROWN SHALL BE LIMITED TO REMOVAL OF DEAD & DAMAGED WOOD.
- N. ALL TREES TO HAVE A MINIMUM 2.5" CALIPER AT THE TIME OF PLANTING, UNLESS OTHERWISE INDICATED IN THE PLANTING SPECIFICATION. CALIPER TO BE MEASURED 48" ABOVE THE ROOT BALL.
- O. TREES SHALL BE LOCATED A MINIMUM OF 5 FEET FROM SEWERWATER CONNECTIONS OR AS OTHERWISE DICTATED BY LOCAL REGULATIONS. CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO ANY AND ALL PUBLIC OR PRIVATE UTILITIES.
- P. SUBSTITUTIONS OF PLANT MATERIALS SPECIFIED CAN ONLY OCCUR WITH PRIOR APPROVAL BY LANDSCAPE ARCHITECT.
- Q. AREAS DAMAGED BY ACTIVITIES OF CONTRACTOR SHALL BE RE-ESTABLISHED TO PRE-DISTURBANCE CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- R. USE HERBICIDES, PESTICIDES, AND FERTILIZER IN A MANNER CONSISTENT WITH THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT AND IN ACCORDANCE WITH LABEL RESTRICTIONS.
- S. LANDSCAPE ARCHITECT OR OWNER SHALL APPROVE PLACEMENT OF TREES PRIOR TO PLANTING.

2 ENLARGED LANDSCAPE PLAN SCALE: 1"=20'

1 LANDSCAPE DATA SCALE: NTS

REV. NO.	DESCRIPTIONS	DATE



PRELIMINARY

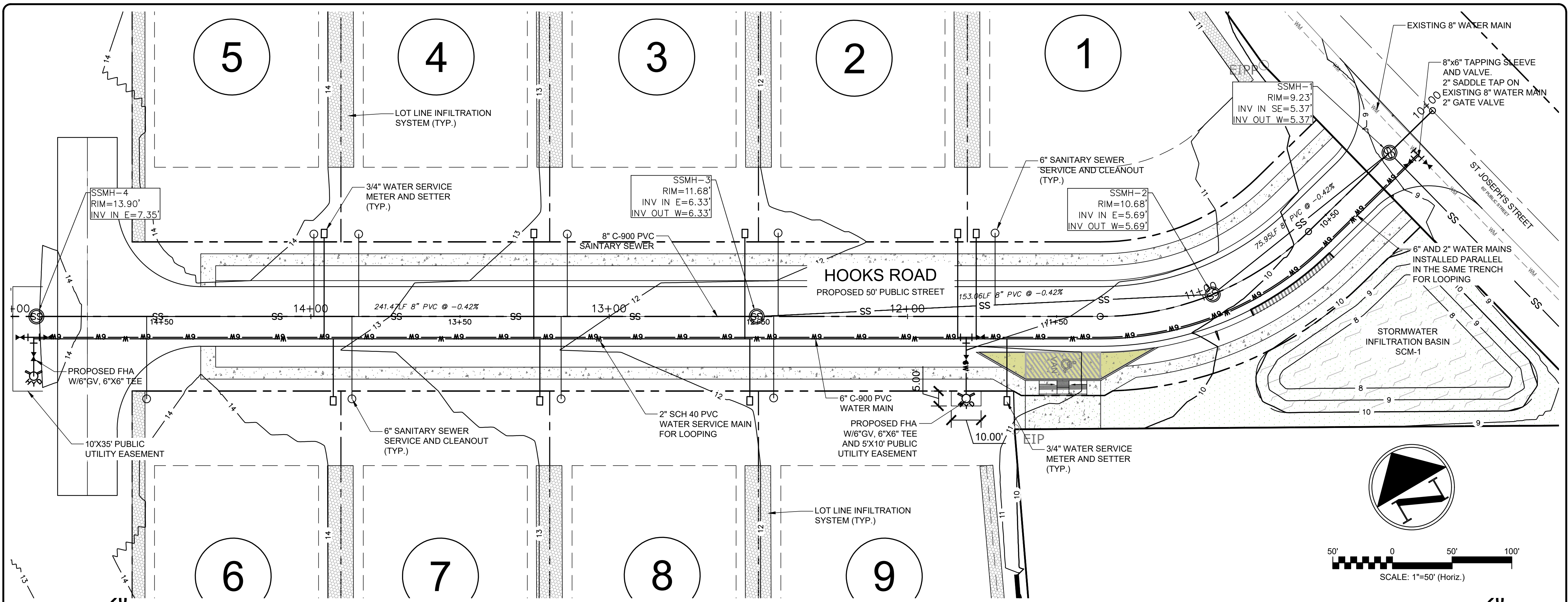


Civil Engineer:  
Richard M. Collier, PE  
3708 Needle Sound Way  
Wilmington, NC  
NC-022574

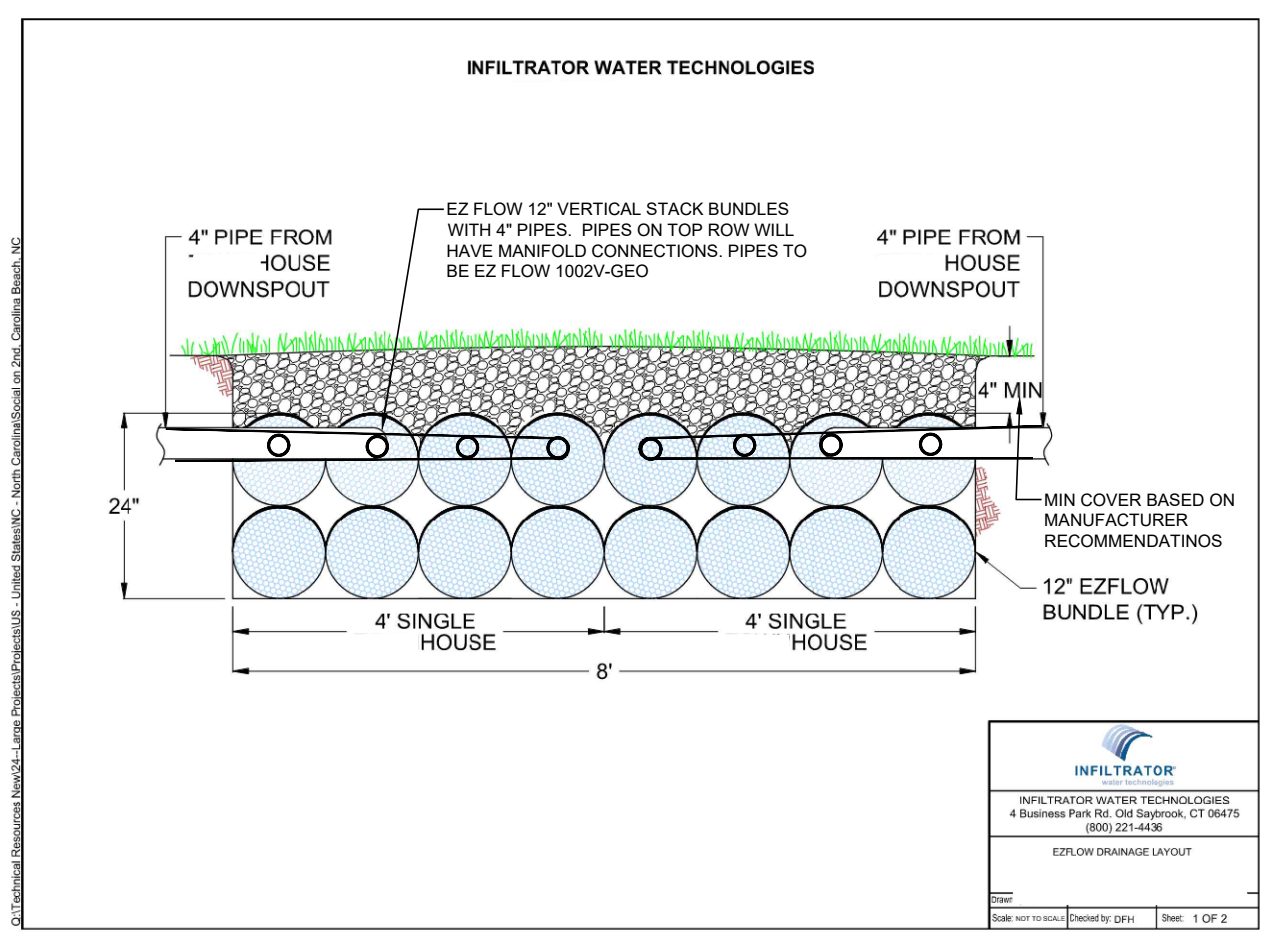
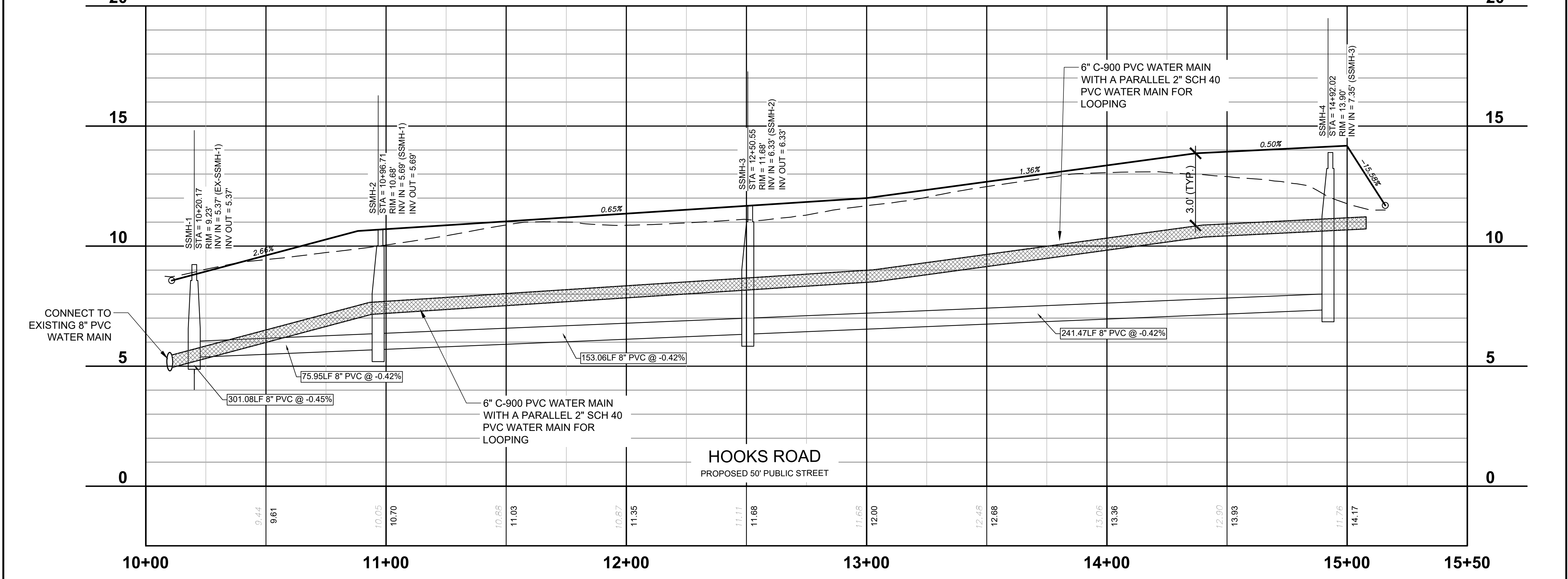
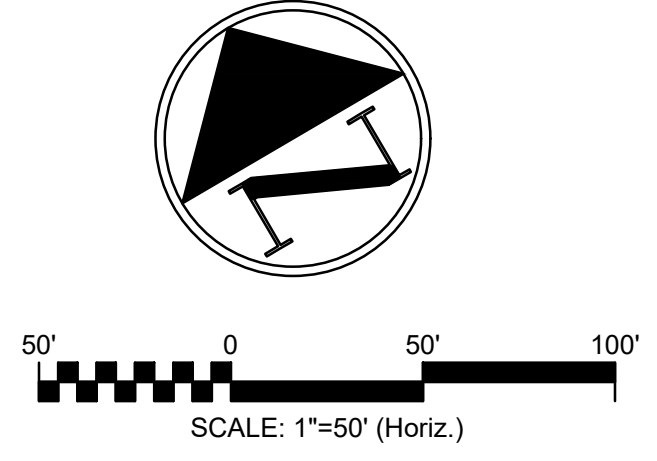
OWNER / DEVELOPER  
BIG BIRD LAND DEVELOPMENT, LLC  
707A ST JOSEPH ST  
CAROLINA BEACH NC

FISHER'S RESERVE  
1215 ST JOSEPH STREET, CAROLINA BEACH NC  
ENLARGED LANDSCAPE PLAN

DATE: 2025-02-07	SCALE: HORIZONTAL: 1"=20'	C2.0 DRAWING NUMBER
DRAWN: RMC	VERTICAL: N/A	
DESIGNED: _____		REVISION
CHECKED: _____		
PROJ. MGR: _____		
STATUS: CB TRC PLAN SET		



- GENERAL UTILITY NOTES**
1. ALL DISTANCES ARE GROUND HORIZONTAL.
  2. WATER AND SANITARY SEWER TO BE SERVED BY CAROLINA BEACH PUBLIC UTILITIES (CBPU).
  3. ELECTRIC, CABLE T.V., AND TELEPHONE SERVICE IS TO BE INSTALLED UNDERGROUND.
  4. UTILITIES IN THIS PROJECT SHALL BE PRIVATE AND ALL TO BE CONSTRUCTED IN ACCORDANCE WITH CBPU SPECIFICATIONS AND STANDARDS.
  5. CONTRACTOR SHALL BE REQUIRED TO SET FINAL GRADES AT +/- 6" OF FINAL GRADE BEFORE REQUESTING SUBSTANTIAL COMPLETION.
  6. WHEREVER SEWER OR WATER MAINS CROSS ONE ANOTHER, A MINIMUM VERTICAL CLEARANCE OF 18" SHALL BE PROVIDED BETWEEN THE BOTTOM OF THE WATER PIPE AND THE TOP OF THE SEWER PIPE.
  7. WHEREVER SEWER OR STORM CROSS ONE ANOTHER, A MINIMUM VERTICAL CLEARANCE OF 24" SHALL BE PROVIDED BETWEEN THE BOTTOM OF STORM AND TOP OF SEWER.
  8. WHEREVER SEWER OR WATER MAINS RUN PARALLEL TO EACH OTHER, A MINIMUM HORIZONTAL SEPARATION OF 10' SHALL BE PROVIDED, IF A 10' HORIZONTAL SEPARATION CAN NOT BE MAINTAINED, A MINIMUM VERTICAL CLEARANCE OF 18" SHALL BE PROVIDED BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER MAIN. IF NEITHER OF THE CONDITIONS CAN BE MET, BOTH MAINS SHALL BE CONSTRUCTED WITH CLASS 50 DIP. DIPS SHALL BE A MINIMUM OF 20 LF CENTERED AT THE CROSSING. BOTH MAINS MUST BE CONSTRUCTED IN ACCORDANCE WITH PUBLIC WATER SUPPLY STANDARDS AND TESTED TO 150 PSI TO ASSURE A WATER TIGHT CONNECTION.
  9. WHEREVER MINIMUM SEPARATIONS CANNOT BE ACHIEVED, STOP WORK AND CONTACT THE OWNER AND PROJECT ENGINEER IMMEDIATELY.
  10. CONTRACTOR SHALL CONTACT CBPU TO SCHEDULE AN INSPECTOR TO BE PRESENT ON-SITE DURING CONNECTION INSTALLATION TO EITHER SYSTEM. THE CONTRACTOR SHALL NOT MAKE ANY CONNECTION TO THE WATER OR SEWER SYSTEM WITHOUT AN INSPECTOR PRESENT.
  11. SITE ELECTRICAL AND SITE LIGHTING SHALL BE COORDINATED WITH DUKE ENERGY.
  12. EACH LOT SHALL BE SERVED WITH A 3/4" WATER SERVICE AND METER, AND A 1" IRRIGATION SERVICE AND METER.
  13. EACH LOT TO BE SERVED WITH A 6" PVC SEWER LATERAL AND CLEANOUT AT THE PUBLIC RW.



2 OVERALL UTILITY PLAN

SCALE: 1"=20'

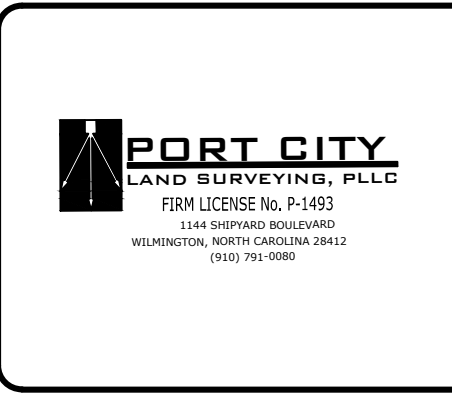
1 UTILITY NOTES

SCALE: NTS

REV. NO.	DESCRIPTIONS	DATE



PRELIMINARY



Civil Engineer:  
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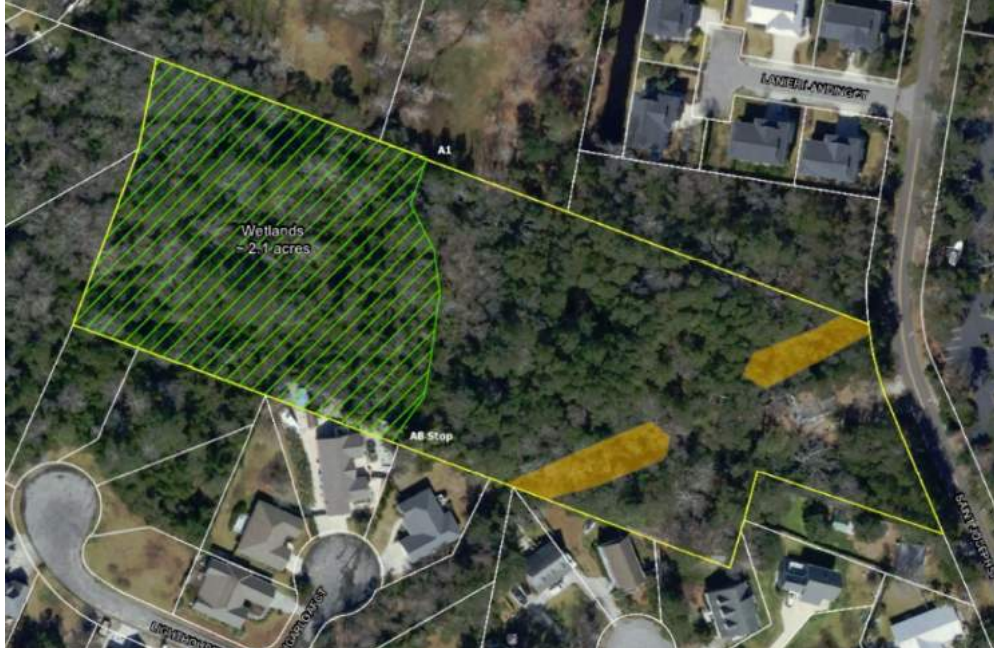
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PROJ. MGR.	

SCALE	C3.0
HORIZONTAL:	1"=20'
VERTICAL:	N/A
DRAWING NUMBER	
REVISION	

STATUS: CB TRC PLAN SET

Report Title:

***Phase I Archaeological Testing on Property at 1215 St. Joseph Street,  
Carolina Beach, New Hanover County, North Carolina***



**Volume 1: Technical Assessment**

Submitted to:

**W3 Built  
707 A St. Joseph Street  
Carolina Beach, North Carolina 28428**

Submitted by:

**Tidewater Atlantic Research, Inc,  
P.O. Box 2494  
Washington, North Carolina 27889**

Submittal Date:

**29 January 2025**

**Abstract**

Prior to developing property located at 1215 St. Joseph Street in Carolina Beach, North Carolina, W3-Built of Carolina Beach contracted with Tidewater Atlantic Research, Inc. (TAR) of Washington, North Carolina to investigate the archaeological sensitivity of the site. TAR proposed to carry out the historical, cartographical, and onsite archaeological research to support that determination. To determine the nature and extent of onsite archaeological investigation, TAR and W3-Built met with North Carolina Department of Natural and Cultural Resources (DNCR) archaeologists at the subject property on 18 October 2024. Reconnaissance survey walks over the non-wetland eastern portion of the property confirmed a high level of modern development impact associated with abandoned mid to late 20th-century structures on the site. Observable evidence indicated mid-twentieth century residential development has almost destroyed any topographic features associated with Confederate earthworks. The only surviving topographic evidence of earthworks was identified in the extreme northeast corner of the survey property, in the west St. Joseph Street right of way and east across the street. That conclusion was also supported by evidence generated by a topographic survey of the eastern non-wetland portion of the property carried out by Port City Land Surveying. Visual examinations of intact earthworks on adjacent property to the south, intact earthworks on property on the east side of St. Joseph Street and surviving earthwork features in the Joseph Ryder Lewis Jr. Civil War Park confirmed the nature of surviving characteristics of intact Confederate earthworks. Evidence at those sites confirmed that the survey area was extensively disturbed and represents a low probability for potentially significant archaeological features. Based on observations made during that initial site reconnaissance and consultation with DNCR personnel, TAR prepared a research proposal for Phase I archaeological investigation at the St. Joseph Street property. The Phase I onsite archaeology was designed to generate sufficient evidence to support a decision on feasibility to develop the property. TAR's subsequent Phase I investigation proposal was approved, and initial shovel testing field work was carried out from 29 to 31 October 2024 by Pre-Columbian Archaeological Research Group of Tallahassee, Florida. Onsite work continued 19 and 20 December that focused on test trench excavations and additional testing. Clearly, proposed development of the subject property will not impact any well preserved and Confederate earthworks or other potentially significant archaeological features. Both the reconnaissance investigation and Phase I onsite testing confirm that the only archaeological evidence that could be disturbed by development is a small section of earthworks at the extreme northeast border of the subject property. The physical integrity of that small section of the Confederate earthworks has been compromised. Clearance of the St. Joseph Street right of way and construction of power lines west of that street have both disturbed any archaeological integrity at that site. If development plans include terrestrial changes that would impact those remains, additional archaeological mitigation could document any surviving features and recover any associated cultural material. In addition to the Phase I archaeological survey (Volume 1: Technical Assessment), the TAR senior historian carried out a review of archival and literature sources in conjunction with a survey of relevant cartographical and photographic data (Volume 2: Historical Overview).

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## Introduction

To determine the feasibility to develop property located at 1215 St. Joseph Street in Carolina Beach, North Carolina, W3-Built of Carolina Beach contracted with Tidewater Atlantic Research, Inc. (TAR) of Washington, North Carolina to investigate the archaeological sensitivity of the property. Because of the potential association with Confederate earthworks several previously interested firms abandoned their plans for development. To support assessment of development feasibility, TAR proposed to carry out the historical, cartographical, and onsite archaeological research to support that determination.

To determine the nature and extent of onsite archaeological investigation, TAR director Gordon P. Watts, Jr. met with W3-Built principal Wescott Butler and North Carolina Department of Natural and Cultural Resources (DNCR) archaeological personnel (Fort Fisher office) at the subject site on 18 October 2024. Reconnaissance survey walks over the non-wetland eastern portion of the property confirmed a high level of modern development impact associated with abandoned mid to late 20<sup>th</sup>-century structures on the site. Observable evidence indicated mid-twentieth century residential development has almost destroyed any topographic features associated with Confederate earthworks.

The only surviving topographic evidence of earthworks was identified in the extreme northeast corner of the survey property, in the west St. Joseph Street right of way and east across the street. That conclusion was also supported by evidence generated by a topographic survey of the eastern non-wetland portion of the property carried out by Port City Land Surveying. Visual examinations of intact earthworks on adjacent property to the south, intact earthworks on property on the east side of St. Joseph Street and surviving earthwork features in the Joseph Ryder Lewis Jr. Civil War Park confirmed the nature of surviving characteristics of intact Confederate earthworks (Figure 1). Evidence at those sites confirmed that the survey area was extensively disturbed and represents a low probability for potentially significant archaeological features.



**Figure 1. Confederate earthworks in Joseph Ryder Lewis, Jr. Park.**



## Phase I Investigation

Based on observations made during that initial site reconnaissance and consultation with DNCR archaeological personnel, TAR prepared a research proposal for Phase I archaeological investigation at the St. Joseph Street property. The Phase I onsite archaeology was designed to generate sufficient evidence to support a decision on feasibility to develop the property. TAR's subsequent Phase I investigation proposal was approved by Wescott Butler, and initial shovel testing field work was carried out from 29 to 31 October 2024 under the direction of senior archaeologist Michael Lavender of Pre-Columbian Archaeological Research Group of Tallahassee, Florida. Onsite work continued 19 and 20 December that focused on test trench excavations and additional testing.

Shovel testing was designed and adapted around onsite vegetation and environmental alteration associated with 20<sup>th</sup>-century property development. That development was associated with construction of an abandoned house (Figure 2), an associated shed structure (Figure 3), well and water pump facility, animal pens (Figure 4) and an abandoned roadway leading west to the wetlands (Figure 5). Considerable modern 20<sup>th</sup>-century surface construction and habitation debris is associated with those features. Except for what appears to be partial remains of an earthwork in the northeast corner of the property (Figure 6) and the east St. Joseph Street right of way (Figure 7), no evidence of undisturbed Confederate earthworks was apparent. However, earthwork remains also exist on property on the south side of the survey area (Figure 8). Those remains east of Sugarloaf Court (Figure 9) and south of Lighthouse Drive (Figure 10) were identified and documented by Coastal Carolina Research (CCR) during 1995 (Lautzenheiser and Holm 1995).



**Figure 2. Abandoned house on survey property at 1215 St. Joseph Street.**



**Figure 3. Abandoned shed on the survey property.**



**Figure 4. Abandoned animal pen and structure on the survey property.**



**Figure 5. Abandoned roadway leading west to the wetlands.**



**Figure 6. Utility poles and earthworks in the northeast property corner.**



**Figure 7. Earthworks and historical marker east of St. Joseph Street.**



**Figure 8. Location of Confederate earthworks south of survey area.**



**Figure 9. Confederate earthwork features east of Sugarloaf Court.**



**Figure 10. Confederate earthwork features south of Lighthouse Drive.**

Based on archaeological evidence generated by the reconnaissance investigation only marginal pre-20<sup>th</sup>-century evidence was identified. That evidence was in the northeast corner of the property border and extends out of the property and into the St. Joseph Street right of way. That exception consists of several bricks and brick fragments that appear to potentially date to the 19th century (Figure 11). However, their association with modern cement blocks indicates that any original onsite context is questionable (Figure 12).



**Figure 11. Nineteenth-century bricks and fragments near utility poles.**



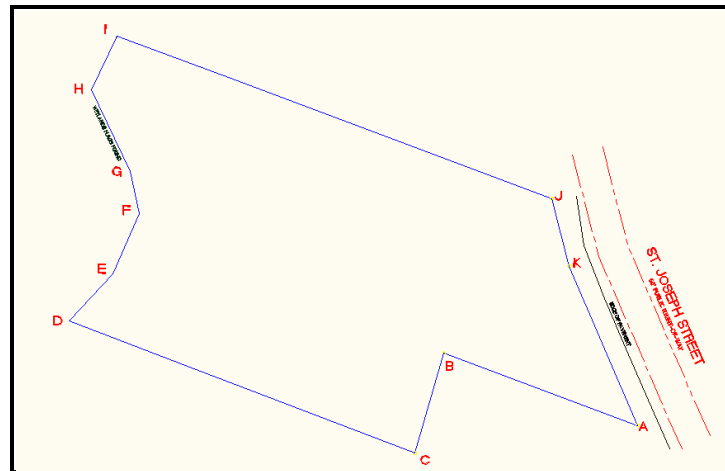
**Figure 12. Twentieth-century cement block fragments near utility poles.**

Based on those observations a plan for shovel testing was developed. Shovel testing was laid out focused on the project area east of protected wetlands. That area was inspected by Port City Land Surveying to produce a contour map of the site (Figure 13). That contour map was used as the background basis for conduct and documentation of archaeological field investigations.



### Archaeological Test Excavations

The survey test pits were laid out in relation to a global positioned electronic grid. The test pit grid was laid out north to south and east to west on 15-meter intervals. Due to heavy vegetation, disturbance associated with modern structures and extensive modern debris, test pit locations had to frequently be abandoned or relocated. All test pits were excavated in the area east of the designated wetlands in the western section of the property (Figure 14; Figure 15; Table 1). With exceptions for environmental conditions associated with dense vegetation, those test pits were approximately 25 to 50 centimeters in diameter. Where vegetation density made shovel testing impractical, posthole testing was employed. Test pit depths ranged from 20 to 95 centimeters as determined by vegetation, stratigraphy or the lack thereof, modern 20th century debris and the water table (Figure 16). Shovel and posthole digger test excavated material was sifted through 1/4-inch mesh to identify potentially significant artifacts.



**Figure 14. Survey area and border points.**

**Table 1. Border point coordinates.**

POINT	X Coordinate	Y Coordinate
A	2335273.2	109890.6
B	2335085.4	109960.9
C	2335057.1	109863.9
D	2334721.3	109992.2
E	2334764.4	110037.9
F	2334789.5	110096.4
G	2334780.9	110137.1
H	2334743.4	110215.9
I	2334767.7	110268.4
J	2335189.4	110110.9
K	2335206.9	110045.1

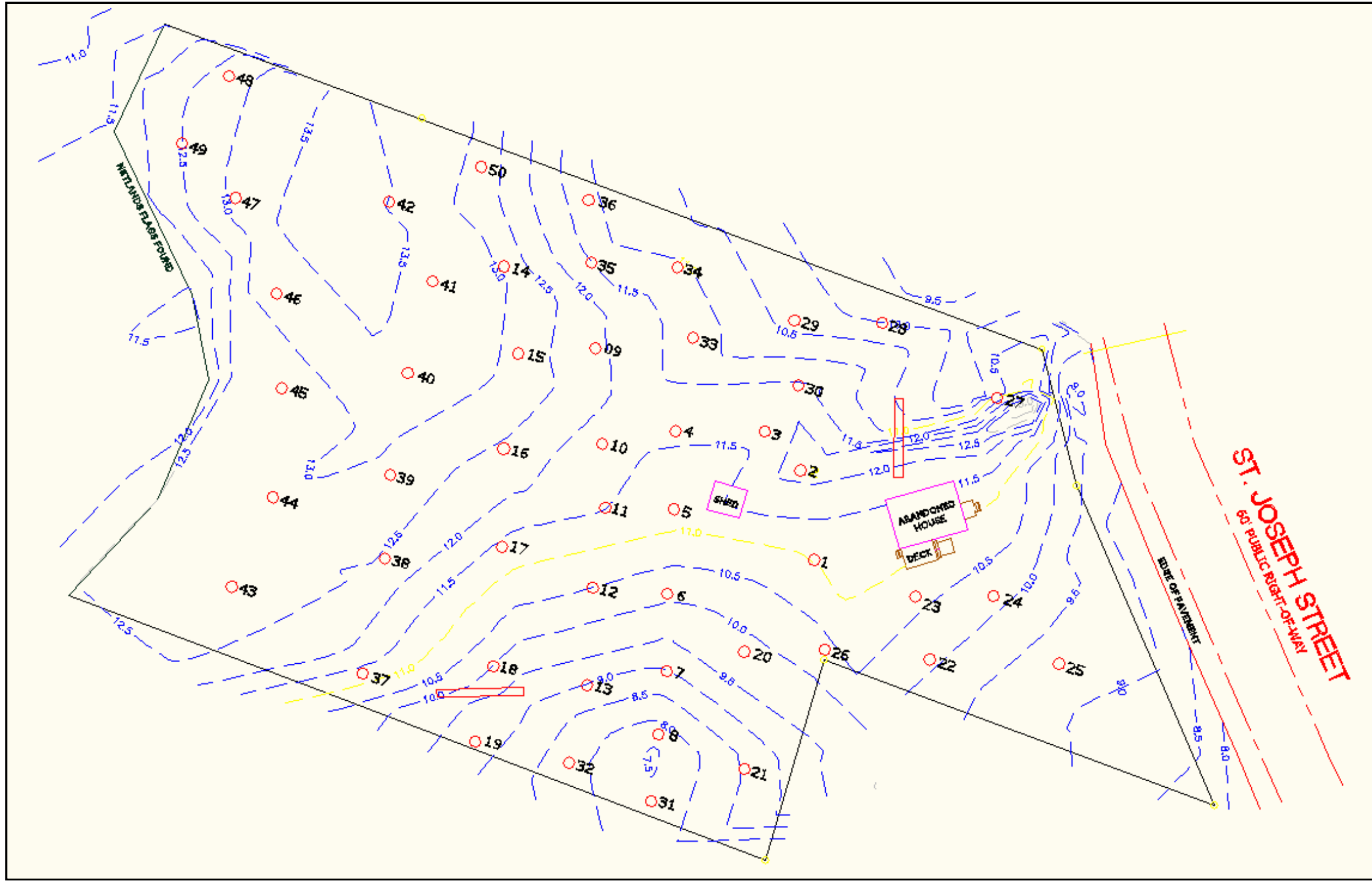


Figure 15. Detail of PCLS map with test pits and trenches.





**Figure 16. Shovel test pit excavation example and artifact screen.**

In addition to test and posthole pits, two trenches were excavated using a track hoe. Those trenches were located to provide additional insight into two sites where topography suggested there might be subsurface features associated with Confederate earthworks that did not show up in test pits. One trench was associated with topographic features adjacent to the abandoned house (Figure 17). Excavation confirmed all features, and debris are associated with twentieth century clearing and leveling for construction of the house (Figure 18).



**Figure 17. Excavating trench adjacent to the abandoned house structure.**



**Figure 18. Debris from trench adjacent to abandoned house structure.**

A second trench was excavated in association with topographic features near the southern survey area border (Figure 19). Those features were thought to be potentially associated with significantly damaged earthworks. Excavation confirmed that no stratigraphic features reinforced that supposition. Stratigraphy in the trench was all associated with mottled Newhan fine light grey sand with one small section that included a much lighter natural stratigraphic feature (Figure 20). At backhoe test depth in the trench sandy sediment was virtually black and moisture indicated the proximity of the water table (Figure 21). No artifacts were identified in the trench profiles or the excavated material.



**Figure 19. Excavating the trench adjacent to the southern site border.**



**Figure 20. Stratigraphy in the trench adjacent to the south site border.**

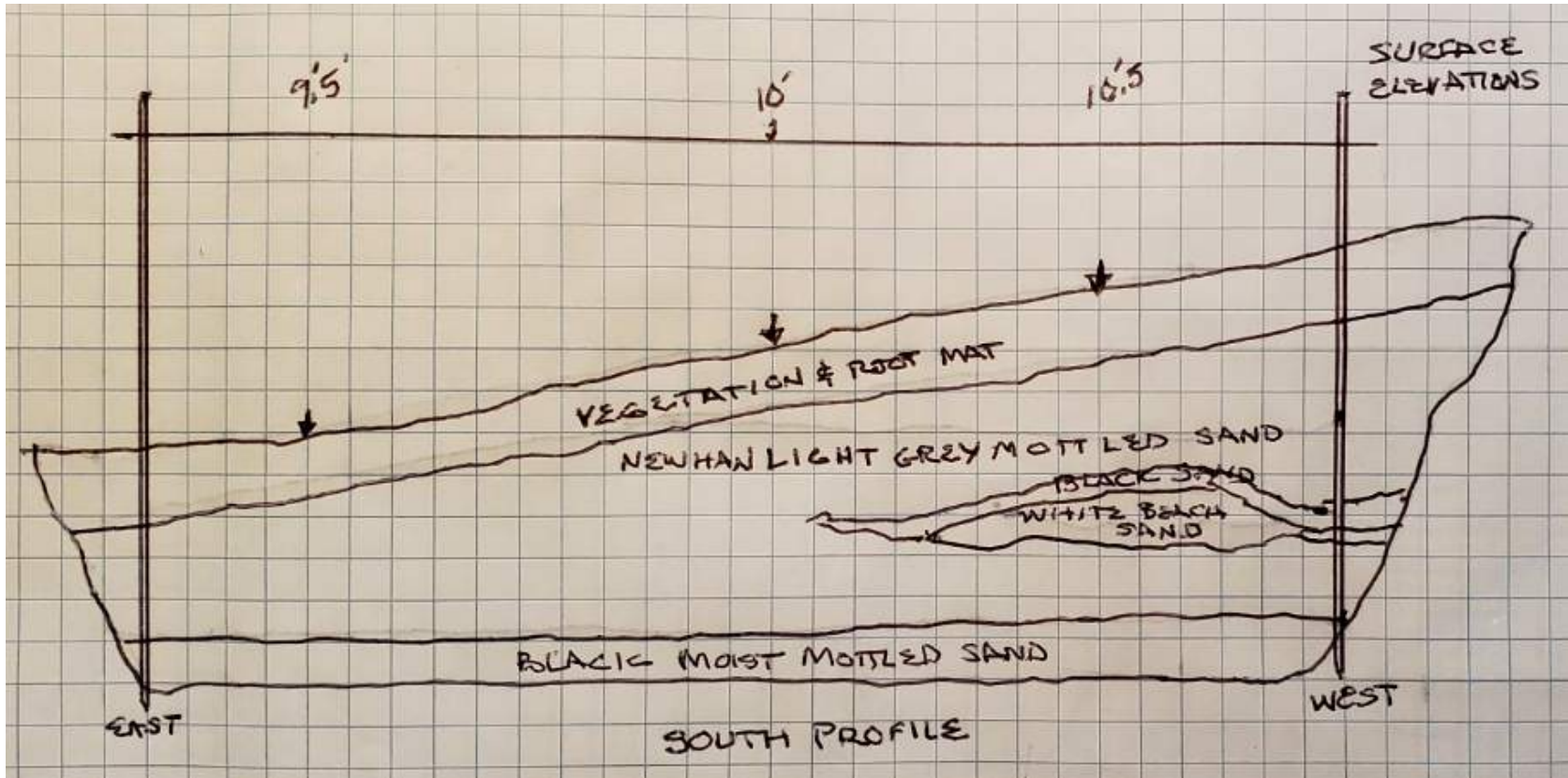


Figure 21. South profile of the trench adjacent to south site border.

## Investigation Results

Shovel and post hole testing in the project survey area produced consistent negative results. Those results were for the most part characterized by a mottled featureless Newhan fine light grey sand stratigraphy. Site No. 3 shovel test provides an example of the featureless Newhan fine light grey sand (Figure 22). Several test excavations reached levels of white beach sand, black mud and the water table.



**Figure 22. Shovel Test 3 illustrating mottled featureless stratigraphy.**

Nine shovel tests produced cultural material from the mid to late twentieth century (Appendix A). That material represents modern debris consisting of household garbage such as soft drink bottles and fragments a milk glass jar (Figure 23), ceramic and glass plate fragments and metal drink cans with pull tab lids. Examples of similar material including Natural Light and Schlitz beer cans (Figure 24) and pull tabs were discovered in association with several test excavations in the general proximity of the abandoned house, shed, well and near the two utility poles in the northeast corner of the property border.



**Figure 23. A Carolina Dairy milk bottle, soft drink bottles and fragments.**



**Figure 24. Remains of "Natural Light" and "Schlitz" beer can fragments.**

## Reconnaissance and Phase I Investigation

Based on the initial reconnaissance survey only marginal pre-20th century evidence was identified. That archaeological evidence was in a small area located in the northeast corner of the property border. From there it extends out of the property and into the St. Joseph Street right of way. The exception to modern material consists of several bricks and brick fragments that appear to potentially date to the mid or late 19th century (Figure 25). However, their association with modern cement blocks indicates that any original onsite context is questionable at best (Figure 26).



**Figure 25. Nineteenth century bricks and fragments near utility poles.**



**Figure 26. Twentieth century cement blocks and fragments near utility poles.**



That is also apparently the context case with the onsite remains of any of the Confederate earthworks. Marginal features associated with those Confederate earthworks that survive on property extend east into the St. Joseph Street right of way. On the east side of St. Joseph Street an extension of those earthworks survives. Below the south border of the project property better preserved and protected Confederate earthworks were identified by CCR in 1995. That survey identified historically and archaeologically significant earthworks east of Sugarloaf Court. Those remains extend southwest through the development to the north Lighthouse Drive right of way. South of Lighthouse Drive those Confederate earthworks extended southwest to the perimeter of the Gulfstream Development property surveyed by CCR. Although not in as good a condition as the northern earthworks, that section was also considered to be historically and archaeologically significant.

Both of those sections of earthwork were determined by CCR archaeologists to survive in good enough condition to merit preservation. CCR also determined that due to their condition and association with the Sugarloaf Line, both sections were eligible for nomination to the National Register of Historic Places. An 1865 map produced under the direction of U.S. Army Chief Engineer Bvt. Brig. Gen. C.B. Comstock indicated that the earthworks were associated with the both the Sugarloaf Line and Fort Lookout (Figure 27).



**Figure 27. Detail [northern section] of Comstock's 1865 map.**

## Previous Archaeological Investigations

Site files and cultural resource management (CRM) reports for the subject New Hanover County community were evaluated by professional archaeologist Nathan Henry on 14 January 2025 with the kind assistance of Madeline Spencer [DNCR field office]. DNCR personnel provided access to several significant reports through the agency's ShareFile account on 21 January 2025. Abstracts for relevant CRM reports follow.

**Title: Archaeological Reconnaissance of Carolina Beach and Vicinity, New Hanover County, North Carolina**

**Principal Author: Alan N. Snavely and Diana C. Gorin**

**Submittal Date: July 1974**

**Abstract:** In July 1974, Alan Snavely and Diana Gorin carried out archaeological surveys of four terrestrial borrow sites in the Carolina Beach vicinity for the U. S. Army Corps of Engineers-Wilmington District (USACE-W). Terrestrial investigations carried out by Snavely and Gorin determined that only one of the four areas identified as potential sources of borrow material was viable. That 50-acre option, identified as Area A, was located on the east bank of the Cape Fear River approximately 3/4 mile south of Snows Cut. Cultural material recovered during the investigation included both prehistoric and historic period artifacts. Investigation of the remaining three sites, identified as B, C and D produced no significant results. Site B on the north side of the western end of Snows Cut contained a small amount of prehistoric material that could be associated with deposited dredge spoil. Investigation of Site C located due east of Site B on the east side of the Atlantic Intercoastal Water Way identified no cultural material and was used as a dredge spoil deposit site. Likewise, the investigation of Site D, located north of Site C on Carolina Beach Inlet, produced no evidence of cultural material. Based on the locations of sites B, C and D and the results of the Snavely and Gorin investigation, cultural resources in Area A will have no impact on future development at the 1215 St. Joseph Street site.

**Title: An Intensive Archaeological Reconnaissance of the Carolina Beach Borrow Area, New Hanover County, North Carolina**

**Principal Author: Michael Baker**

**Submittal Date: 1981**

**Abstract:** Archaeological Research Consultants carried out an intensive archaeological reconnaissance survey on an 80-acre tract bordering the Cape Fear River west of Carolina Beach. That archaeological reconnaissance survey was carried out for the USACE-W. The survey objective was to determine the existence, character, extent and significance of cultural resources in the proposed borrow site and determine the condition and significance of two previously identified sites. The survey was designed around investigation of three transects across the site. On the transects, the Cape Fear River shoreline and jeep trails, archaeologists looked for cultural resource surface features. On the transects archaeologists also carried out shovel tests at 50-meter intervals. Shovel tests identified isolated historic mid-19th century artifacts at four sites. No site was considered potentially significant. Prehistoric artifacts and features were discovered at two sites: CBBA-1 and CBBA-2. Cultural material and features were found that identified the sites as the locations of potentially significant archaeological deposits. Mitigation was recommended at both CBBA-1 and CBBA-2 unless avoidance was possible. At the two previously identified sites 31NH107 and 31NH398 additional information was also collected. At Site 31NH107 both

prehistoric and historic cultural material was identified. At Site 31NH398 only prehistoric material was identified. Additional investigation was recommended at Site 31NH107. World War II structure foundations and features were identified on two sites in the survey area. Neither site was archaeologically significant enough to recommend additional investigation.

**Title: Investigations, the Federal Fortifications (Archaeological Reconnaissance of Federal Fortifications (Bullet Trench) at the Carolina Beach Borrow Area**

**Principal Author: Richard H. Lewis**

**Submittal Date: 5 November 1981**

**Abstract:** In late October 1981, news outlets reported that clearing operations in a Carolina Beach borrow site included the location of a Union earthwork known as the "Bullet Trench" and that the operations would impact that historic feature. Richard Lewis and Charles Wilson (Environmental Resources Branch, USACE-W) immediately investigated the site. Lewis and Wilson discovered that a contractor clearing the borrow area for material recovery had destroyed much of the "Bullet Trench" earthwork feature that lay within the borrow site. During a brief period when the contractor agreed to shift his clearing operations, Lewis and Wilson assessed the extent of damage to the earthworks and mapped the surviving elements of the structure that were located within the borrow site. Based on observations (James Legg with the Blockade Runners of the Confederacy Museum), Lewis and Keith Harris returned to the site on 30 October and resumed efforts to document the surviving structural evidence associated with the "Bullet Trench". Contact with Torrey McLean III (North Carolina Division of Archives and History) resulted in new information about the construction and occupation of the earthwork feature by the Second and Third Brigade, Third Division, 25th U. S. Army Colored Troops. While no further investigation at the site was recommended, a North Carolina site form was prepared to determine National Register of Historic Places (NRHP) eligibility.

**Title: Investigations of Civil War Era Fortifications Located at the Carolina Beach Borrow Area New Hanover County, North Carolina**

**Principal Author: Richard H. Lewis**

**Submittal Date: February 1982**

**Abstract:** Based on the Carolina Beach and Vicinity Hurricane Protection Project authorized in 1962 material was deposited on Carolina Beach to construct a berm and dune in 1964, 1965, 1967, 1970 and 1971. Completion of the beach stabilization project required an additional 3.3 million cubic yards of suitable material. The USACE-W planned to use material from an upland borrow site adjacent to the Cape Fear River. That 77-acre site was in the Military Ocean Terminal, Sunny Point blast zone south of the Carolina Beach Sewage Treatment Plant. For dredge access a channel would be dredged from the Cape Fear River to the borrow site. Beach nourishment material dredged from the borrow site would be pumped across the peninsula and placed on the beach. The Lewis report only addressed plans for utilization of the proposed borrow area.

**Title: Archaeological/Historical Survey of Ocean Dunes Development Carolina Beach North Carolina**

**Principal Author: Thomas C. Loftfield and James Legg**

**Submittal Date: 10 September 1982**

**Abstract:** The archaeological survey carried out by Loftfield and Legg focused on a 33.5-acre site at the southern end of Federal Point just north of the Fort Fisher Historical Site. The site was surveyed for L&O Investments in anticipation of developing the property. The investigation included a pedestrian survey of the entire site with test pits in areas of low surface visibility and areas determined to have a potentially high archaeological probability. Due to the proximity to Fort Fisher the area was also investigated with a metal detector to identify objects associated with fortification construction and subsequent military activities. The historical background developed by Loftfield and Legg documented significant civilian and military activity associated with Federal Point. However, the survey activities produced ... "totally negative" results. No archaeological evidence of any of the historically documented activities in the project area was discovered. World War II development at the Ocean Dunes site left the entire area ... "effectively leveled, flattened and otherwise destroyed".

**Title: Archaeological/Historical Reconnaissance at Otter Creek Subdivision New Hanover County, North Carolina**

**Principal Author: Thomas C. Loftfield and Tucker Littleton**

**Submittal Date: 1982**

**Abstract:** The archaeological survey focused on an 8-acre site associated with the Otter Creek development on the west side of Myrtle Grove Sound and south of Snows Cut at the north end of St. Joseph Street. Loftfield surveyed the site for L&O Investments in anticipation of expanding development of the Otter Creek. The archaeological reconnaissance investigation was based on excavating shovel tests located every 75 feet on corridors spaced every 50 feet. Shovel tests were excavated to subsoil or ground water and material was screened through 1/4-inch hardware cloth. The single archaeological site identified consisted of a shell midden with associated aboriginal potsherds. Evidence generated by the investigation indicated a potential for significant archaeological data and additional work on the feature was recommended. Background historical and archaeological data associated with the Otter Creek site and Carolina Beach vicinity was collected and analyzed by Tucker Littleton.

**Title: Phase I Archaeological Survey of Water and Sewer Line Extensions in Carolina Beach, New Hanover County, North Carolina**

**Principal Author: Daniel F. Cassedy**

**Submittal Date: 25 January 1994**

**Abstract:** In November and December 1993, Garrow and Associates carried out an archaeological survey associated with the construction of water and sewer line extensions in Carolina Beach. Their surface reconnaissance and shovel testing identified one archaeological site in the construction corridor alignments. This site (31NH688) was identified where Tarboro Avenue cut through a Confederate earthwork. That earthwork was a segment of a Confederate fortification that extended from the Cape Fear River across the peninsula to Battery Gatlin on Myrtle Grove Sound. Although several other alignments were identified and investigated, none were associated with archaeological sites. Consequently, construction activity was recommended for restriction to the Tarboro Avenue right of way.

**Title: Archaeological Testing and Documentation Carolina Beach Village, Carolina Beach, New Hanover County, North Carolina**

**Principal Author: Loretta Lautzenheiser and Mary Ann Holm**

**Submittal Date: 1 December 1995**

**Abstract:** Due to the immediate proximity of the 1995 survey carried out by Coastal Carolina Research (CCR) that investigation was previously discussed in this report. The CCR investigation identified historically and archaeologically significant Confederate earthworks east of Sugarloaf Court. Those earthwork remains extended north to the southern border of the 1215 St. Joseph Street property. South of Lighthouse Drive those earthworks extended southwest to the perimeter of the Gulfstream Development property surveyed by CCR. Both of those sections of earthwork were determined by CCR archaeologists to survive in good enough condition to merit preservation. Both sections of those Confederate earthworks were nominated for inclusion on the NRHP.

### **Conclusions and Recommendations**

Clearly, proposed development of the 1215 St. Joseph Street property will not impact any well-preserved Confederate earthworks or other potentially significant archaeological features. Both the reconnaissance investigation and Phase I onsite testing confirm that the only archaeological evidence that could be disturbed by development is a small section of earthworks at the extreme northeast border of the subject property. The physical integrity of that small section of the Confederate earthworks has been compromised. Clearance of the St. Joseph Street right of way and construction of power lines west of that street have both disturbed any archaeological integrity at that site. If development plans include terrestrial changes that would impact those remains, additional archaeological mitigation could document any surviving features and recover any associated cultural material.

Twentieth-century residential development and habitation at the project site has clearly had a significantly adverse impact on any prehistoric or historic archaeological integrity. Construction of the abandoned house, an associated shed and animal containment structures on the survey property likely occurred during the post World War II period. Aerial imagery dating to 1938 confirms that onsite residential development occurred after that date (Figure 28).



**Figure 28. March 1938 aerial image of survey project location.**

That image evidence is supported by the modern nature of all artifacts and other cultural material identified at the project site (Appendix A). In the final analysis, historical, cartographic, photographic and archaeological research confirms that development of the survey site will have no impact on potentially significant archaeological resources. Previous modern 20th century on site residential and possibly agricultural development has significantly and adversely impacted the remains of Confederate earthwork features that survive beyond both south and east borders of the property. Based on investigation data proposed development will not have an adverse impact on prehistoric or historical archaeological evidence and no additional research at the site is recommended.

### **Unexpected Discovery Protocol**

If any construction activities expose potential prehistoric or historic cultural material not identified during the recent investigations, the firm (or firms) under contract to W-3 Built should *immediately* shift operations away from the site (or sites) and *immediately* notify the respective Point of Contact for the North Carolina State Historic Preservation Office [Raleigh NC], DNCR [Fort Fisher NC and Raleigh NC] and W-3 Built. Notification should address the exact location (where possible), the nature of material exposed by project activities, and options for timely archaeological inspection and assessment of the site.

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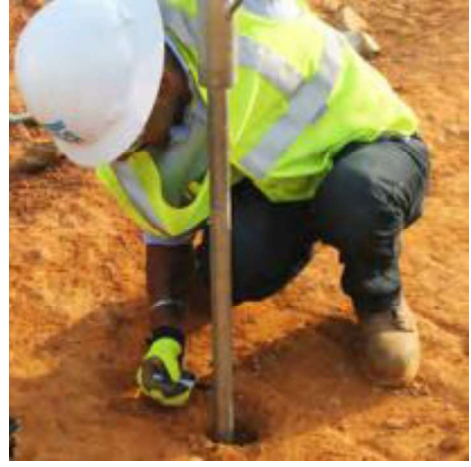
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## APPENDIX A

Test Pit	X Coordinate	Y Coordinate	Stratigraphy	Artifacts	Test Depth
1	2335055.03	110017.44	Newhan Light Grey Mottled Sand	None	90cm
2	2335073.81	110052.29	Newhan Light Grey Mottled Sand	plastic bottle and modern window glass	85cm
3	2335056.61	110071.06	Newhan Light Grey Mottled Sand	plastic wheel from 20th century toy	80cm
4	2335013.77	110071.32	Newhan Light Grey Mottled Sand	None	95cm
5	2335012.94	110033.5	Newhan Light Grey Mottled Sand	None	95cm
6	2335009.81	109992.72	Newhan Light Grey Mottled Sand	None	85cm
7	2335009.58	109955.31	Newhan Light Grey Mottled Sand	None	85cm
8	2335093.59	109880.43	Newhan Grey Over White Beach Sand	None	80cm
9	2334975.18	110111.32	Newhan Grey Over White Beach Sand	modern window pane glass,	80cm
10	2334978.42	110065.18	Newhan Grey Over White Beach Sand	coke bottle	95cm
11	2334979.92	110034.37	Newhan Light Grey Mottled Sand	aluminum pop top and beer cans	95cm
12	2334973.88	109995.59	Newhan Light Grey Mottled Sand	modern bottle glass	95cm
13	2339471.14	109948.55	Newhan Light Grey Mottled Sand	None	water @80cm
14	2334931.18	110150.93	Newhan Light Grey Mottled Sand	None	water @80cm
15	2334937.86	110108.82	Newhan Light Grey Mottled Sand	None	water @80cm
16	2334936.05	110062.77	Newhan Light Grey Mottled Sand	None	90 cm
17	2334930.19	110015.41	Newhan Light Grey Mottled Sand	None	75cm
18	2334826.11	109957.74	Newhan Light Grey Mottled Sand	None	75cm
19	2334917.26	109921.21	Newhan Grey Over White Beach Sand	broken glass, modern ceramic sherd	70cm
20	2335036.78	109964.73	Newhan Light Grey Mottled Sand	None	80cm
21	2335046.85	109908.01	Newhan Grey Over White Beach Sand	None	95cm
22	2335136.09	109960.89	Light Grey and White Beach Sand	None	85cm
23	2335131.79	109983.18	Light Grey and White Beach Sand	None	85cm
24	2335172.31	109987.04	Light Grey and White Beach Sand	plastic debris	90cm
25	2335198.34	109958.95	Light Grey and White Beach Sand	None	90cm
26	2335085.6	109965.81	Mottled White Beach Sand	None	65cm
27	2335168.62	110087.31	Mottled Dark Grey Sand And Mud	pop top beer cans soda bottle broken glass	50cm
28	2335113.26	110123.59	Newhan Light Grey Mottled Sand	None	70cm
29	2335070.97	110124.84	Newhan Light Grey Mottled Sand	None	75cm
30	2335072.77	110093.35	Newhan Light Grey Mottled Sand	None	80cm
31	2336002.05	109892.38	Newhan Grey Over White Beach Sand	None	85cm
32	2334962.47	109911.09	Newhan Grey Over White Beach Sand	None	90cm
33	2335022.09	110116.38	Newhan Light Grey Mottled Sand	None	65cm
34	2335014.63	110150.47	Newhan Light Grey Mottled Sand	None	50cm
35	2334973.23	110152.71	Newhan Light Grey Mottled Sand	None	55cm
36	2334971.81	110182.91	Newhan Light Grey Mottled Sand	None	55cm
37	2334863.21	109954.28	Newhan Light Grey Mottled Sand	None	70cm
38	2334873.79	110009.72	Newhan Light Grey Mottled Sand	None	70cm
39	2334876.35	110050.11	Newhan Light Grey Mottled Sand	None	55cm
40	2334884.76	110099.32	Newhan Light Grey Mottled Sand	None	70cm
41	2334896.77	110143.74	Newhan Light Grey Mottled Sand	None	45cm
42	2334875.75	110182.16	Newhan Light Grey Mottled Sand	None	30cm
43	2334800.08	109996.07	Newhan Light Grey Mottled Sand	None	65cm
44	2334819.91	110039.29	Newhan Light Grey Mottled Sand	None	45cm
45	2334824.11	110092.12	Newhan Light Grey Mottled Sand	None	30cm
46	2334821.7	110137.74	Newhan Light Grey Mottled Sand	None	25cm
47	2334801.88	110183.96	Newhan Light Grey Mottled Sand	None	35cm
48	2334798.88	110242.78	Newhan Light Grey Mottled Sand	None	20cm
49	2334776.06	110210.37	Newhan Dark Grey Mottled Sand	None	40cm
50	2334920.21	110198.96	Newhan Dark Grey Mottled Sand	None	40cm





# ECS Southeast, LLC

Geotechnical Engineering Report

Fishers Wynd – Phase 1

1215 Saint Joseph Street  
Carolina Beach, New Hanover County, North Carolina

ECS Project No. 22:35643

January 28, 2025



# ECS SOUTHEAST, LLC

Geotechnical • Construction Materials • Environmental • Facilities

NC Engineering License No. F-1519

Item 3.

January 28, 2025

Mr. Wescott Butler  
W3 Built, LLC  
206 Texas Ave  
Carolina Beach, NC, 28428

ECS Project No. 22:35643

Reference: Geotechnical Engineering Report  
**Fishers Wynd – Phase 1**  
1215 Saint Joseph Street  
Carolina Beach, New Hanover County, North Carolina

Dear Mr. Butler:

ECS Southeast, LLC (ECS) has completed the subsurface exploration and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration conducted and our design and construction recommendations.

It has been our pleasure to be of service during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions encountered in the exploration for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

**ECS Southeast, LLC**

**Freddie Wescott**  
Senior Project Manager  
[FWescott@ecslimited.com](mailto:FWescott@ecslimited.com)

DocuSigned by:

*Winslow Goins*

2D745DA276044AF...

**Winslow Goins, PE**  
Principal Engineer Signed by:  
[WGoins@ecslimited.com](mailto:WGoins@ecslimited.com)



1/28/2025

6714 NETHERLANDS DRIVE, WILMINGTON, NC 28405 • T: 910-686-9114 • F: 910-686-9666

ECS Florida, LLC • ECS Mid-Atlantic, LLC • ECS Midwest, LLC • ECS Pacific, Inc. • ECS Southeast, LLC • ECS Southwest, LLP  
ECS New York Engineering, PLLC - An Associate of ECS Group of Companies • [www.ecslimited.com](http://www.ecslimited.com)

"ONE FIRM. ONE MISSION."

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- Hand Auger Borings (K-1 and K-2)
- Kessler DCP Test (K-1 and K-2)

**Appendix C – Supplemental Report Documents**

- GBA Document

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## EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical exploration performed for the site included five (5) electronic cone penetration test (CPT) soundings drilled to termination depths ranging from approximately 25 to 26.4 feet. Two (2) Kessler dynamic cone penetrometer (DCP) tests with hand auger borings were performed in the proposed pavements.
- Provided the subgrades are prepared as recommended in this report and the column and wall loads do not exceed 300 kips and 9 kips per liner foot, respectively, the planned building may be supported by conventional shallow foundations consisting of column or strip footings bearing on compacted structural fill and natural soil using a net allowable soil bearing pressure of 3,000 psf.
- Alternatively, the proposed structures can be supported on a deep foundation consisting of 8-inch square timber piles. The piles in the vicinity of S-1 through S-4 can be installed to an embedment depth of 10 feet for an axial capacity of 20 kips, to an embedment depth of 18 feet for an axial capacity of 25 kips, or to an embedment depth of 24 feet for an axial capacity of 30 kips. The piles in the vicinity of S-5 can be installed to an embedment depth of 10 feet for an axial capacity of 10 kips, to an embedment depth of 18 feet for an axial capacity of 16 kips, or to an embedment depth of 24 feet for an axial capacity of 30 kips.
- Groundwater was encountered in the soundings and hand auger boring K-1 at depths ranging from approximately 1.2 feet to 6.3 feet below existing grade. Groundwater was not encountered in hand auger boring K-2 at the depths explored.
- Due to the near surface loose SANDS (SM, SP) encountered in the soundings, in-place densification may be needed prior to construction of foundations or placement of fill.

Please note this Executive Summary is an important part of this report and should be considered a **“summary”** only. The subsequent sections of this report constitute our findings, conclusions, and recommendations in their entirety.

---

## 1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for the design of foundations for the proposed new residential development located at 1215 Saint Joseph Street in Carolina Beach, North Carolina. The recommendations developed for this report are based on project information supplied by Mr. Wescott Butler of W3 Built LLC.

Our services were provided in accordance with our Proposal No. 22:29336 dated January 13, 2025, as authorized by Mr. Wescott Butler on January 13, 2025, which includes our Terms and Conditions of Service.

This report contains the procedures and results of our subsurface exploration programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

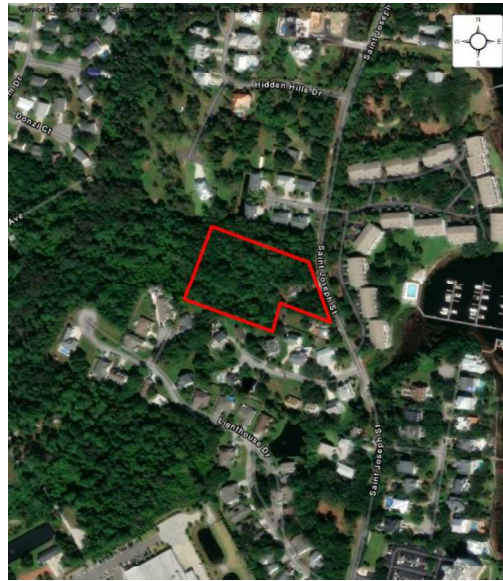
The report includes the following items.

- A brief review and description of our field test procedures and the results of testing conducted;
- A review of surface topographical features and site conditions;
- A review of subsurface soil stratigraphy with pertinent available physical properties;
- Foundation recommendations;
  - Allowable bearing pressure;
  - Settlement estimates (total and differential);
- Deep foundation recommendations;
- Pavement design recommendations;
- Site development recommendations;
- Suitability of soils for use as fill material;
- Discussion of groundwater impact;
- Compaction recommendations;
- Site vicinity map;
- Exploration location plan;
- Hand auger boring logs with Kessler DCP test results; and
- CPT sounding logs.

**2.0 PROJECT INFORMATION**

**2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE**

The proposed site is located at 1215 Saint Joseph Street in Carolina Beach, New Hanover County, North Carolina. The site is bounded on the east by Saint Joseph Street, on the south by residential development, and on the north and west by undeveloped land. Figure 2.1.1 below shows an image of where the site is located.



**Figure 2.1.1 Site Location**

The site currently consists of an existing residential structure and undeveloped land. Based on our site visit and approximate elevations from Google Earth, the topography of the site varies with typical elevations on site ranging from approximate 8 to 17 feet. According to the NC Flood Risk Information System (FRIS) website, the site is partially in the AE-11, partially in the 0.2% annual chance flood zone, and partially in the minimal risk flood zone.

**2.2 PROPOSED CONSTRUCTION**

The following information explains our understanding of the planned development, including proposed building and related infrastructure.

SUBJECT	DESIGN INFORMATION / ESTIMATIONS
Usage	Residential
Column Loads	Up to 300 kips
Wall Loads	Up to 9 klf

ECS understands the project consists of the construction of a phase 1 of a new residential development. The structures will likely be supported by a shallow foundation or a deep foundation consisting of 8-inch X 8-inch timber piles.

### 3.0 FIELD EXPLORATION

Our exploration procedures are explained in greater detail in Appendix B including the Reference Notes for Cone Penetration Soundings. Our scope of work included performing five (5) CPT soundings and two (2) hand auger borings with Kessler DCP tests. Our approximate CPT soundings and hand auger boring locations are shown on the Exploration Location Diagram in Appendix A.

#### 3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil. Please refer to the CPT sounding logs and hand auger boring logs in Appendix B.

The site is located in the Coastal Plain Physiographic Province of North Carolina. The Coastal Plain is composed of seven terraces, each representing a former level of the Atlantic Ocean. Soil in this area generally consists of sedimentary materials transported from other areas by the ocean or rivers. These deposits vary in thickness from a thin veneer along the western edge of the region to more than 10,000 feet near the coast. The sedimentary deposits of the Coastal Plain rest upon consolidated rocks similar to those underlying the Piedmont and Mountain Physiographic Provinces. In general, shallow unconfined groundwater movement within the overlying soils is largely controlled by topographic gradients. Recharge occurs primarily by infiltration along higher elevations and typically discharges into streams or other surface water bodies. The elevation of the shallow water table is transient and can vary greatly with seasonal fluctuations in precipitation.

**Table 3.1.1 Subsurface Stratigraphy**

Approximate Depth Range	Stratum	Description	Ranges of N*-Values(1) blows per foot (bpf)
0 to 0.25 (Surface cover)	N/A	Soundings and hand auger borings encountered approximately 3 inches of topsoil on-site. Deeper topsoil or organic laden soils are most likely present in wet, poorly drained areas and potentially unexplored areas of the site.	N/A
0.25 to 10	I	Very Loose to Dense, Silty, Gravely, and Clean SAND (SM, SP), and Very Soft to Stiff, Sandy SILT (ML).	1 to 73
10 to 26.4	II	Medium Dense to Very Dense, Silty, Gravely, and Clean SAND (SM, SP) and Stiff to Very Stiff, Sandy SILT (ML).	11 to 75

Notes: (1) Equivalent Corrected Standard Penetration Test Resistances

#### 3.2 GROUNDWATER OBSERVATIONS

Water levels were measured in our CPT soundings and hand auger boring K-1 and are shown in Appendix B. Groundwater depths measured at the time of drilling ranged from 1.2 to 6.3 feet below the ground surface. Groundwater was not encountered in hand auger boring K-2 at the depths explored. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

## 4.0 DESIGN RECOMMENDATIONS

### 4.1 FOUNDATIONS

Provided subgrades and structural fills are prepared as recommended in this report and in-place densification is performed by the design/build contractor, the proposed structures can be supported by shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the following parameters:

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure <sup>(1)</sup>	3,000 psf	3,000 psf
Acceptable Bearing Soil Material	Stratum I or Approved structural fill	Stratum I or Approved structural Fill
Minimum Width	24 inches	12 inches
Minimum Footing Embedment Depth (below slab or finished grade) <sup>(2)</sup>	12 inches	12 inches
Minimum Exterior Frost Depth (below final exterior grade)	6 inches	6 inches
Estimated Total Settlement <sup>(3)</sup>	Less than 1- inch	Less than 1- inch
Estimated Differential Settlement <sup>(4)</sup>	Less than ¾ inches between columns	Less than ¾ inches

Notes:

- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
- (2) For bearing considerations and frost penetration requirements.
- (3) Based on estimated structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
- (4) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

**Potential Undercuts:** Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. If soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed. Any undercut should be backfilled with approved structural fill up to the original design bottom of footing elevation; the original footing shall be constructed on top of the approved structural fill.



### 4.2 SLABS ON GRADE

The on-site natural soils are generally considered suitable for support of the lowest floor slabs. Based on the estimation that the finished floor elevation is around the current site elevations, it appears that the slabs for the structure will likely bear on the near surface Stratum I soils SAND (SM, SP) or approved structural fill. The following graphic depicts our soil-supported slab recommendations:

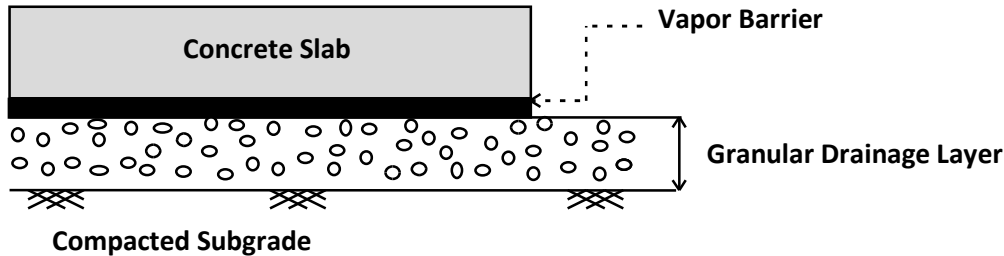


Figure 4.2.1

1. Drainage Layer Thickness: 6 inches
2. Drainage Layer Material: GRAVEL (GP, GW) or SAND containing <5% passing the #200 sieve (SP, SW)
3. Subgrade compacted to 98% maximum dry density per ASTM D698

**Subgrade Modulus:** Provided the structural fill and granular drainage layer are constructed in accordance with our recommendations, the slab may be designed estimating a modulus of subgrade reaction,  $k_1$  of 175 pci (lbs./cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

**Vapor Barrier:** Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. Surface curing of the slab should be performed in accordance with ACI recommendations to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

**Slab Isolation:** Ground-supported slabs should be isolated from the foundations and foundation-supported elements of the structures so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration (turn down slabs or post tension mats) prevents the use of a free-floating slab, the slab should be designed to avoid overstressing of the slab. Maximum differential settlement of soils supporting interior slabs is anticipated to be less than 0.5 inches in 50 feet.

### 4.3 DEEP FOUNDATIONS

Alternatively, the proposed construction can be supported on a deep foundation system consisting of driven timber piles. The following tables show the allowable pile capacity for 8-inch square timber piles at each sounding location. **The embedment depth listed is in reference to the existing grade at the time the sounding was performed.**

**Table 4.3.1: 8-Inch Square Timber Piles at Soundings S-1 through S-4**

Embedment Depth (Feet)	Axial Capacity (kips)	Uplift (kips)
10	20	0.5
18	25	3.2
24	30	5.3

**Table 4.3.2: 8-Inch Square Timber Piles at Sounding S-5**

Embedment Depth (Feet)	Axial Capacity (kips)	Uplift (kips)
10	10	1.3
18	16	2.5
24	30	4.1

In our opinion, piles installed to depths shallower than recommended depths would not provide long-term stability of the proposed structure. Piles embedded at depths between the recommended depths will likely not support axial loads. Pile capacity analyses were performed estimating a free head condition and the provided compression and tension capacities are based on a factor of safety of 2.0 and 3.0, respectively.

We recommend that the pile driving hammer used to install each timber pile have a rated energy blow of 5,000 foot-pounds or higher. Driving criteria and bearing elevations should be established prior to driving piles. Based on the subsurface conditions, **we recommend that the piles installed be limited to a pre-auger depth of approximately 6 feet below existing grades.**

It is suggested that several over length piles be driven prior to the start of production pile driving, to establish the driving criteria, pile lengths to be ordered and to evaluate if auger “pilot” holes are justified. Production piles should not be ordered until the pile lengths can be evaluated. Two over length piles are recommended for the structure.

The over length piles could be driven in production pile locations. Pile installation operations and load tests, if necessary, should be monitored by a senior soil technician working under the supervision of a Licensed Engineer. ECS would be pleased to develop driving criteria for the project once the method of installation and the contractor has been selected.

## 5.0 SITE CONSTRUCTION RECOMMENDATIONS

### 5.1 SUBGRADE PREPARATION

#### 5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping vegetation, rootmat, topsoil, existing fill, and any soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits. Soundings and hand auger borings performed on site observed 3 inches of topsoil. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. ECS should be retained to verify that topsoil and unsuitable surficial materials have been removed prior to the placement of structural fill or construction of structures.

#### 5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g., fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are unstable or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting and moisture conditioning. The situation should be discussed with ECS to evaluate the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in evaluating the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

Due to the near surface loose SANDS (SM, SP) encountered in the soundings, in-place densification may be needed prior to construction of slab on grade.

#### 5.1.3 Site Temporary Dewatering

**Temporary Dewatering:** Temporary dewatering operations can be managed by the use of conventional submersible pumps directly in the excavation or temporary trenches to direct the flow of water and to remove water from the excavation. If temporary sump pits are used, we recommend they be established at an elevation 3 to 5 feet below the bottom of the excavation subgrade or bottom of footing. A perforated 55-gallon drum or other temporary structure could be used to house the pump. We recommend continuous dewatering of the excavations using pumps during construction.

If dewater operations are performed at the site, ECS recommends that the dewatering operations be performed in accordance with Local, State and Federal Government regulatory requirements for surface water discharges. ECS would be pleased to be consulted by the client on those requirements, if requested.

## 5.2 EARTHWORK OPERATIONS

### 5.2.1 Structural Fill

Prior to placement of structural fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to evaluate if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

**Satisfactory Structural Fill Materials:** Materials satisfactory for use as structural fill should consist of inorganic soils with the following engineering properties and compaction requirements.

STRUCTURAL FILL INDEX PROPERTIES	
Subject	Property
Building and Pavement Areas	LL < 40, PI < 20
Max. Particle Size	4 inches
Fines Content	Max. 20 %
Max. organic content	5% by dry weight

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	Requirement
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction (Upper 1 foot)	98% of Max. Dry Density
Required Compaction (Depths greater than 1 foot)	95% of Max. Dry Density
Dry Unit Weight	>100 pcf
Moisture Content	-2 to +2 % points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

**On-Site Borrow Suitability:** Natural deposits of possible fill material are present on the site. The on-site near surface sands (SM, SP) with fines contents less than 20 percent and free of detritus material should meet the recommendations for re-use as structural fill.

**Fill Placement:** Fill materials should not be placed on frozen soil, on frost-heaved soil, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and frozen or frost-heaved soil should be removed prior to placement of structural fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

### 5.3 FOUNDATION AND SLAB OBSERVATIONS

**Protection of Foundation Excavations:** Exposure to the environment may weaken the soil at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed on the same day that excavations are made. If the bearing soil is softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

**Footing Subgrade Observations:** Most of the soils encountered on site at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

**Slab Subgrade Verification:** Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in **Section 5.1.2 Proofrolling**.

### 5.4 UTILITY INSTALLATIONS

**Utility Subgrades:** The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

**Utility Backfilling:** The granular bedding material (AASHTO #57 stone) should be at least 6 inches thick, but not less than that specified by the civil engineer’s project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for structural fill and fill placement.

**Excavation Safety:** Excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor’s responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS provides this information solely as a service to our client. ECS is not responsible for construction site safety or the contractor’s activities; such responsibility by ECS is not being implied and should not be inferred.

---

## 6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Mr. Wescott Butler of W3 Built, LLC. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

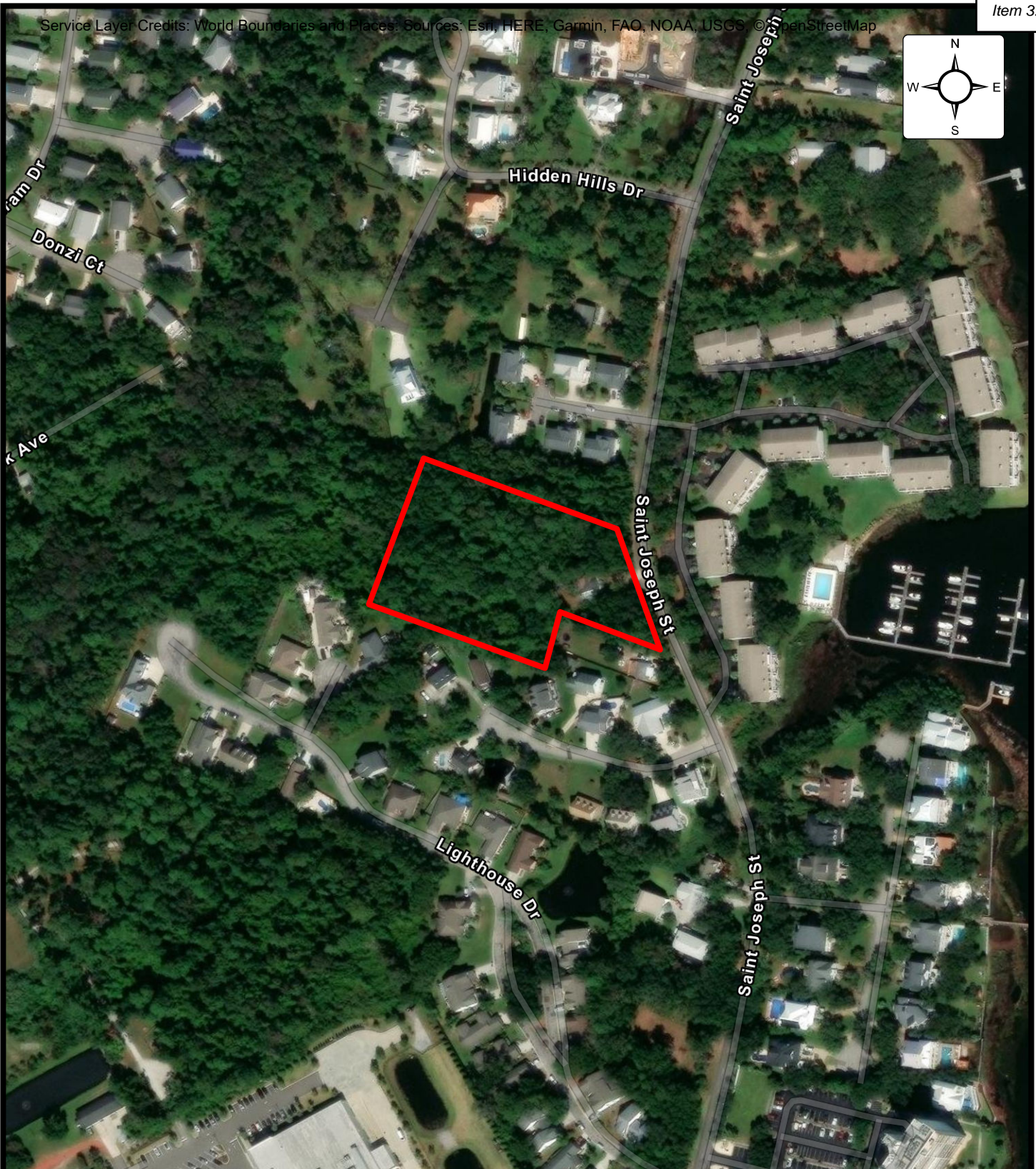
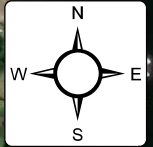
We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

## **APPENDIX A – Diagrams & Reports**

Site Location Diagram  
Exploration Location Diagram



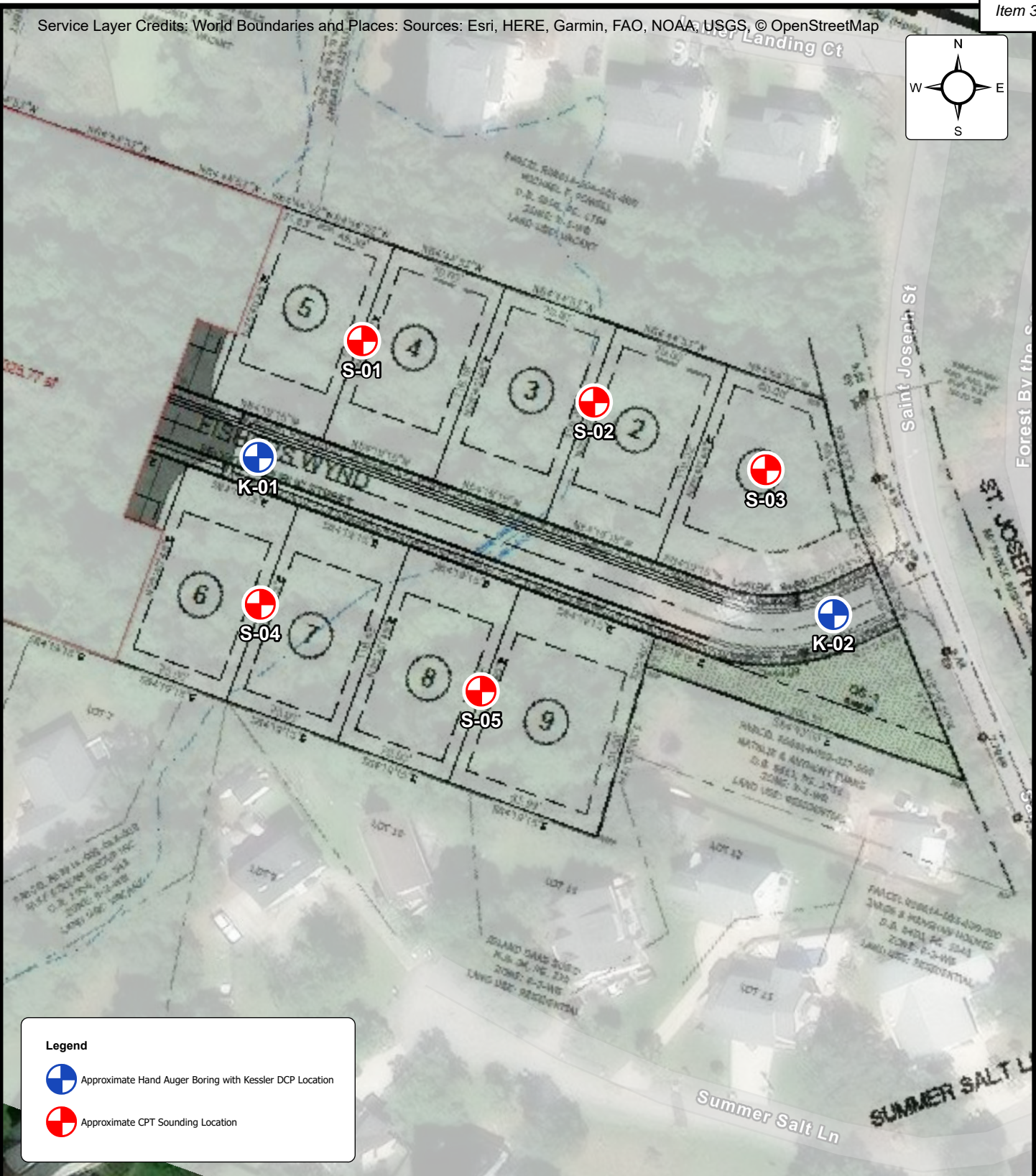
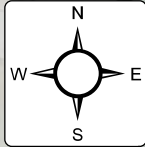
### SITE LOCATION DIAGRAM

### Fishers Wynd - Phase 1



1215 Saint Joseph Street, Carolina Beach, North  
Carolina  
W3 Built

ENGINEER WEG
SCALE 1" = 250'
PROJECT NO. 22:35643
SHEET 1 of 2
DATE 1/24/2025





**Legend**

-  Approximate Hand Auger Boring with Kessler DCP Location
-  Approximate CPT Sounding Location



# BORING LOCATION DIAGRAM

## Fishers Wynd - Phase 1

1215 Saint Joseph Street, Carolina Beach, North Carolina  
W3 Built

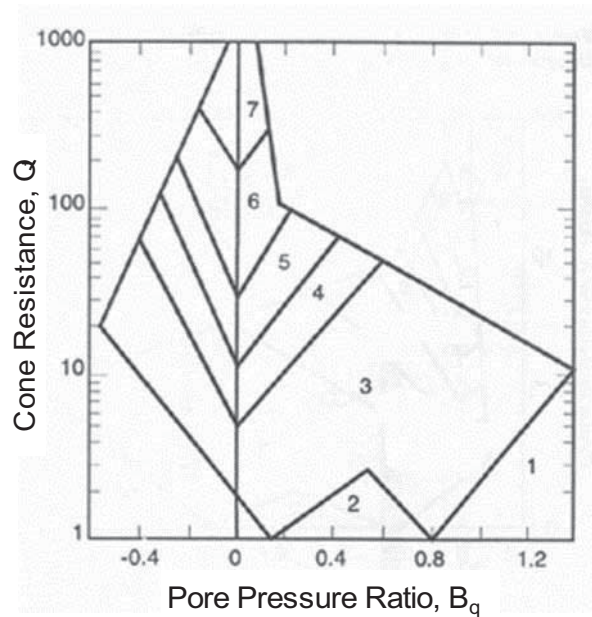
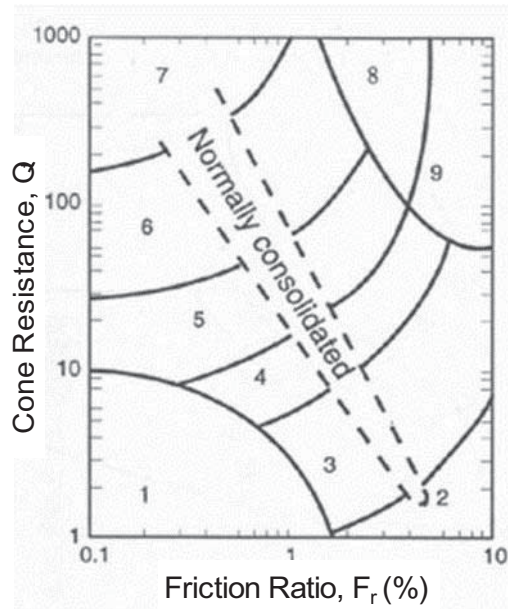
ENGINEER WEG
SCALE 1" = 80'
PROJECT NO. 22:35643
SHEET 2 of 2
DATE 1/24/2025

## **APPENDIX B – Field Operations**

Reference Notes for CPT Soundings Logs  
Cone Penetration Test Sounding Logs (S-1 through S-5)  
Reference Notes for Boring Logs  
Hand Auger Boring Logs (K-1 and K-2)  
Kessler DCP Test Data (K-1 and K-2)

### REFERENCE NOTES FOR CONE PENETRATION TEST (CPT) SOUNDINGS

In the CPT sounding procedure (ASTM-D-5778), an electronically instrumented cone penetrometer is hydraulically advanced through soil to measure point resistance ( $q_c$ ), pore water pressure ( $u_2$ ), and sleeve friction ( $f_s$ ). These values are recorded continuously as the cone is pushed to the desired depth. CPT data is corrected for depth and used to estimate soil classifications and intrinsic soil parameters such as angle of internal friction, preconsolidation pressure, and undrained shear strength. The graphs below represent one of the accepted methods of CPT soil behavior classification (Robertson, 1990).



- 1. Sensitive, Fine Grained
- 2. Organic Soils-Peats
- 3. Clays; Clay to Silty Clay
- 4. Clayey Silt to Silty Clay
- 5. Silty Sand to Sandy Silt

- 6. Clean Sands to Silty Sands
- 7. Gravelly Sand to Sand
- 8. Very Stiff Sand to Clayey Sand
- 9. Very Stiff Fine Grained

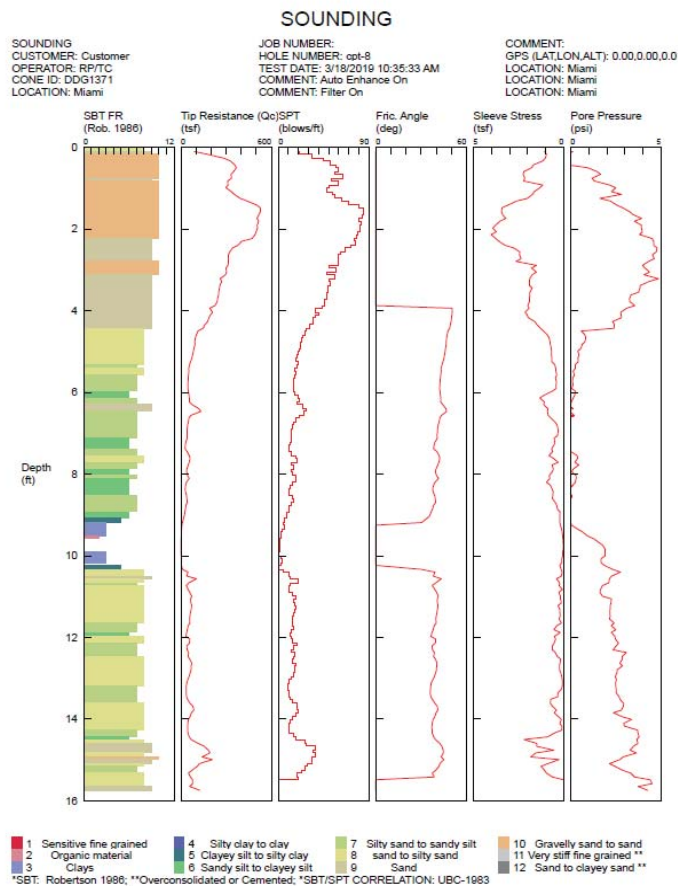
The following table presents a correlation of corrected cone tip resistance ( $q_t$ ) to soil consistency or relative density:

SAND		SILT/CLAY	
Corrected Cone Tip Resistance ( $q_t$ ) (tsf)	Relative Density	Corrected Cone Tip Resistance ( $q_t$ ) (tsf)	Relative Density
<20	Very Loose	<5	Very Soft
20-40	Loose	5-10	Soft
40-120	Medium Dense	10-15	Firm
		15-30	Stiff
120-200	Dense	30-45	Very Stiff
>200	Very Dense	45-60	Hard
		>60	Very Hard



## SUBSURFACE EXPLORATION PROCEDURE: CONE PENETRATION TESTING (CPT) ASTM D 5778

In the CPT sounding procedure, an electronically instrumented cone penetrometer is hydraulically advanced through soil to measure point resistance (qc), pore water pressure (U2), and sleeve friction (fs). These values are recorded continuously as the cone is pushed to the desired depth. CPT data is corrected for depth and used to estimate soil classifications and intrinsic soil parameters such as angle of internal friction, pre-consolidation pressure, and undrained shear strength.



### CPT Procedure:

- Involves the direct push of an electronically instrumented cone penetrometer\* through the soil
- Values are recorded continuously
- CPT data is corrected and correlated to soil parameters

\*CPT Penetrometer Size May Vary



**ECS Southeast, LLC**  
 6714 Netherlands Drive  
 Wilmington, NC 28403  
 ECS Project # 22-35643

Item 3.

**CPT: S-1**

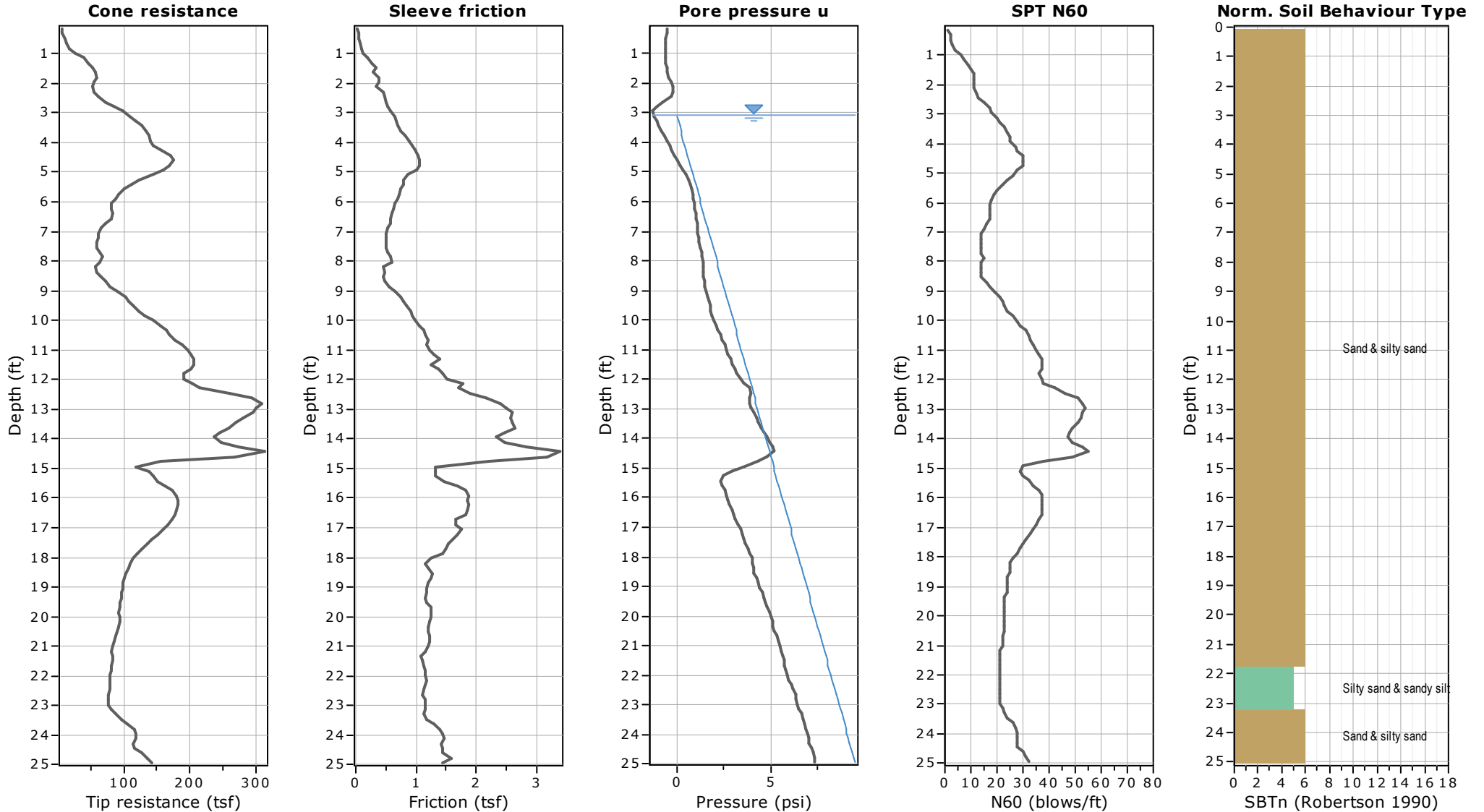
Total depth: 24.93 ft, Date: 1/24/2025

Cone Type: Unknown

Cone Operator: Jared Duffy

**Project: Fishers Wynd Phase 1**

**Location: Carolina Beach, New Hanover County, North Carolina**





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6714 Netherlands Drive  
Wilmington, NC 28403  
ECS Project # 22-35643

Item 3.

CPT: S-2

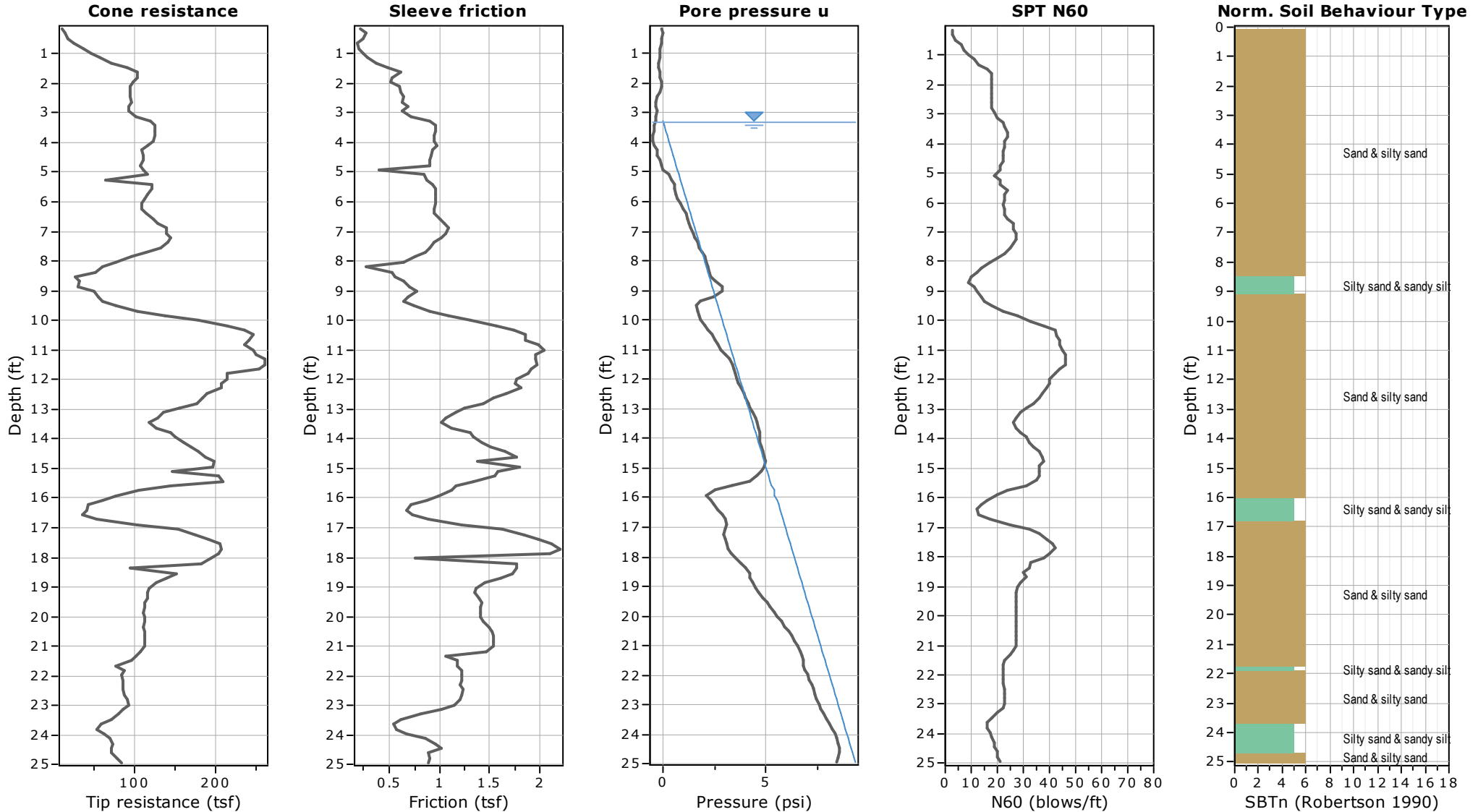
Total depth: 24.93 ft, Date: 1/24/2025

Cone Type: Unknown

Cone Operator: Jared Duffy

Project: Fishers Wynd Phase 1

Location: Carolina Beach, New Hanover County, North Carolina





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ECS Project # 22-35643

Item 3.

CPT: S-3

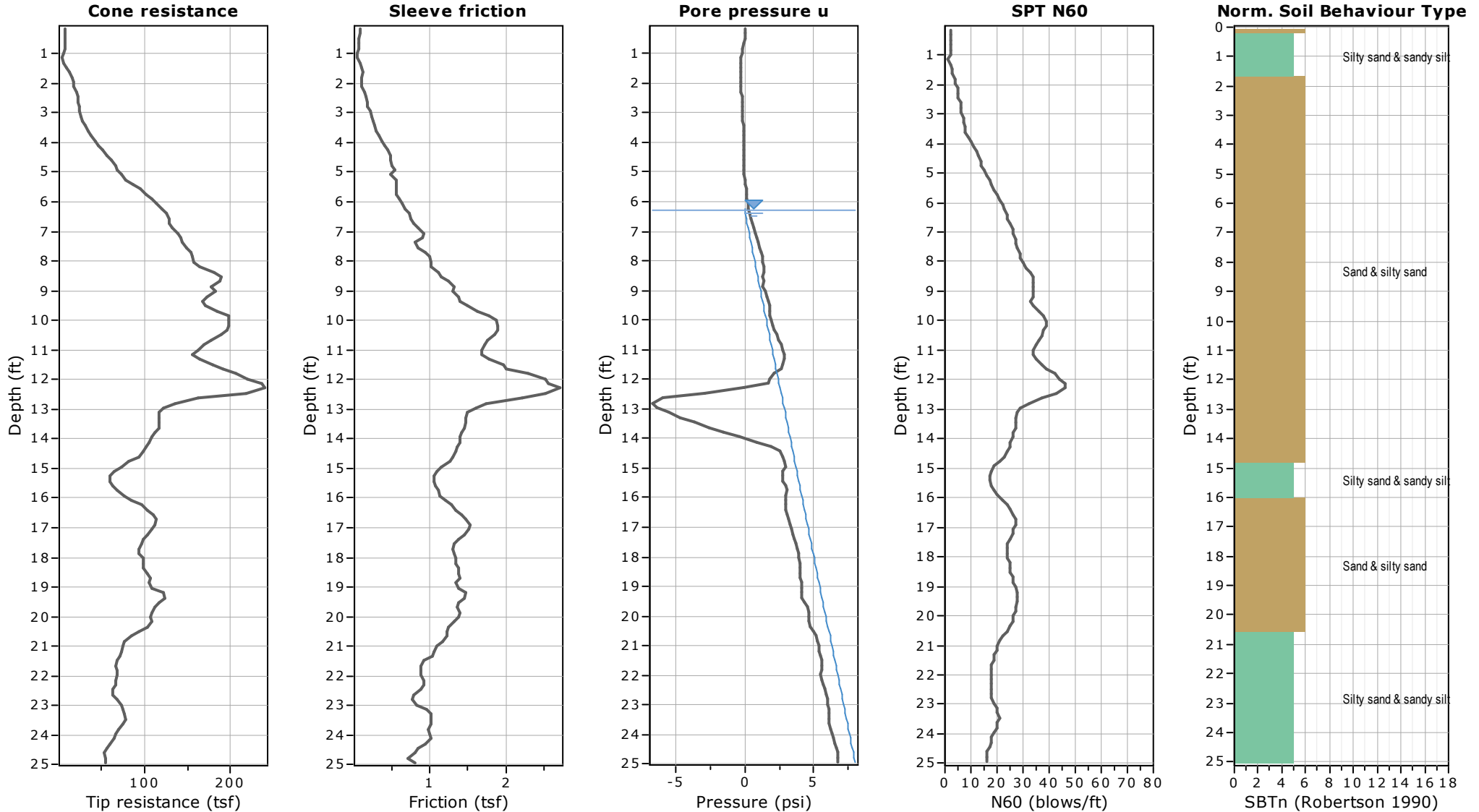
Total depth: 24.93 ft, Date: 1/24/2025

Cone Type: Unknown

Cone Operator: Jared Duffy

Project: Fishers Wynd Phase 1

Location: Carolina Beach, New Hanover County, North Carolina





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Wilmington, NC 28403  
ECS Project # 22-35643

Item 3.

CPT: S-4

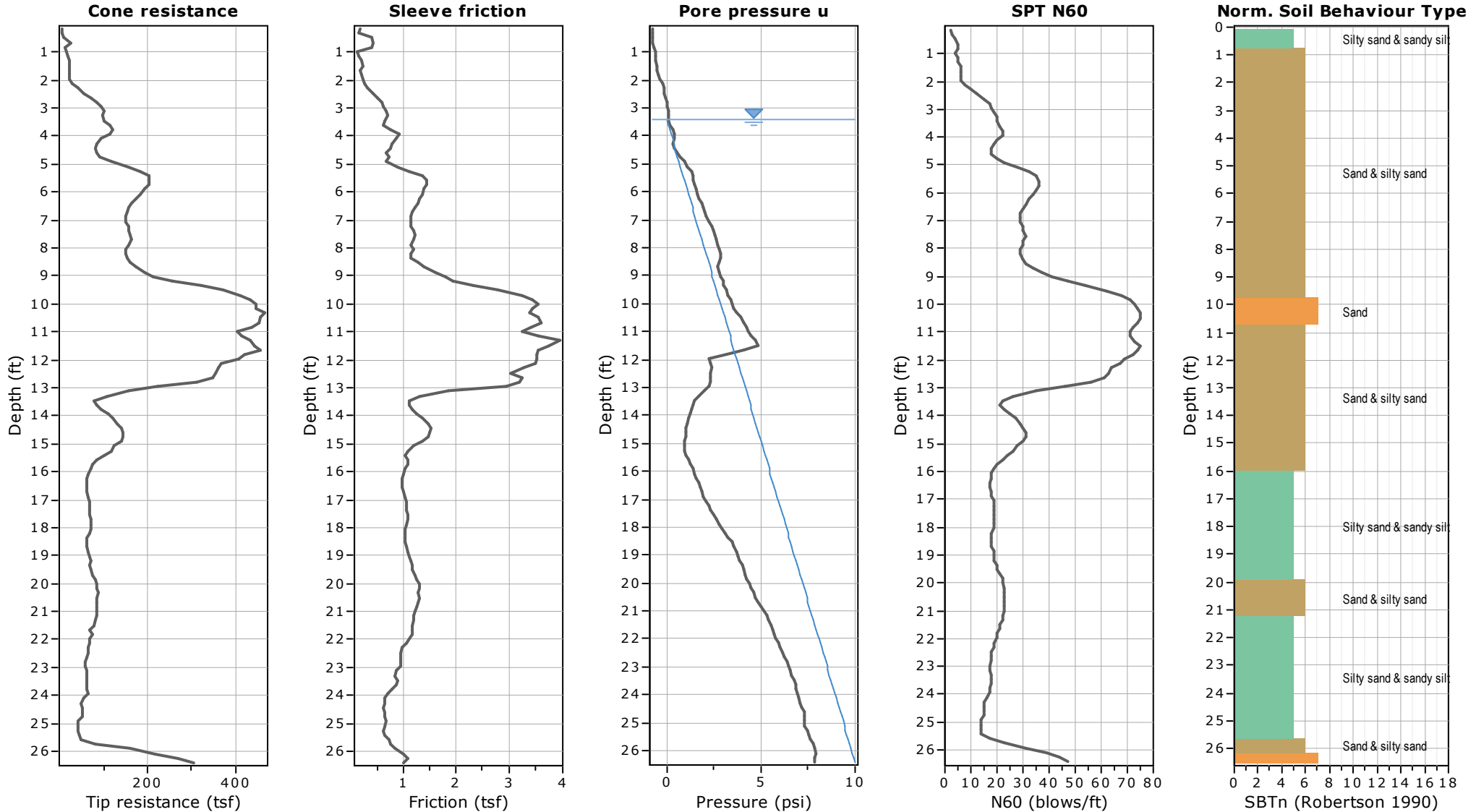
Total depth: 26.41 ft, Date: 1/24/2025

Cone Type: Unknown

Cone Operator: Jared Duffy

Project: Fishers Wynd Phase 1

Location: Carolina Beach, New Hanover County, North Carolina







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 6714 Netherlands Drive  
 Wilmington, NC 28403  
 ECS Project # 22-35643

Item 3.

**CPT: S-5**

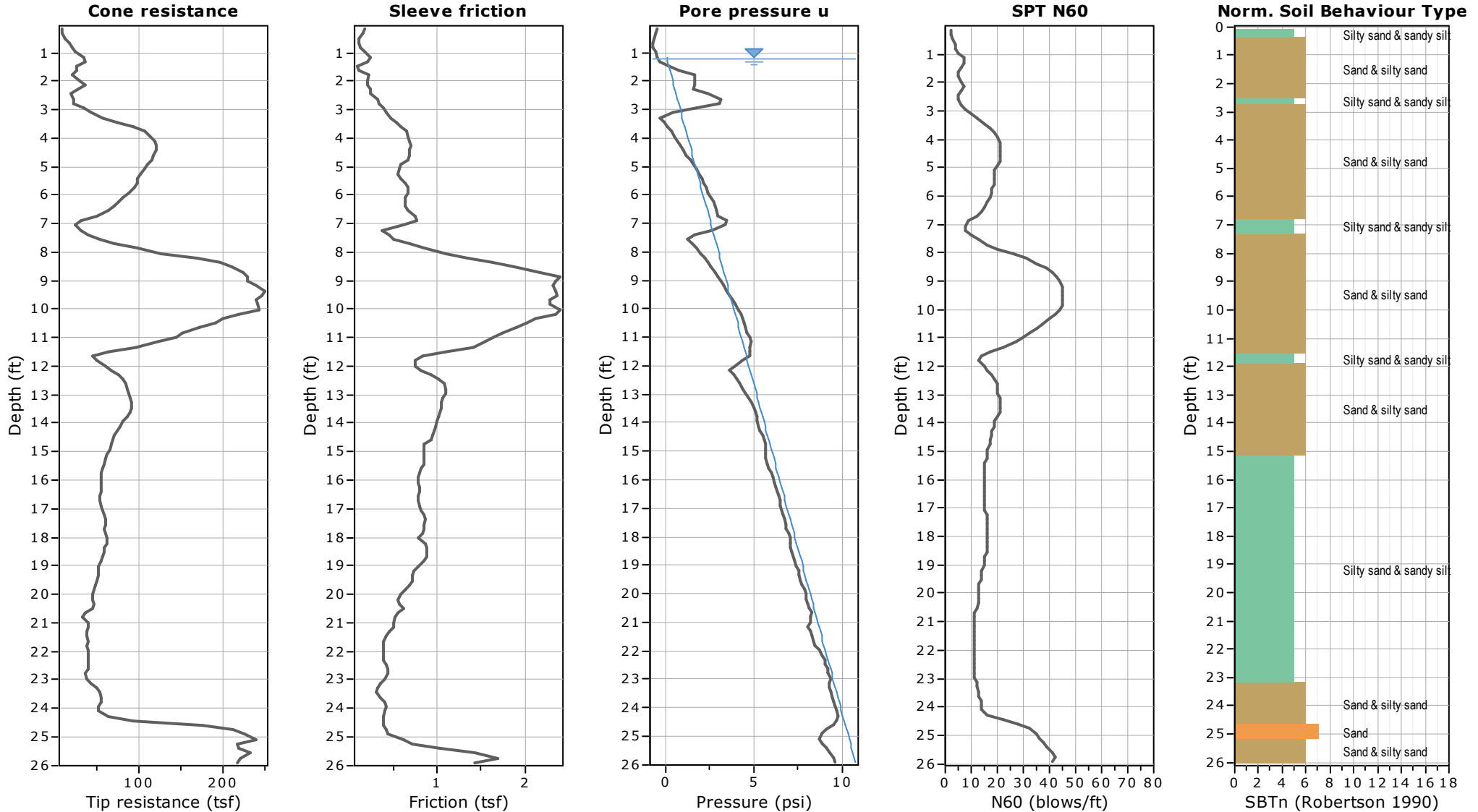
Total depth: 25.92 ft, Date: 1/24/2025

Cone Type: Unknown

Cone Operator: Jared Duffy

**Project: Fishers Wynd Phase 1**

**Location: Carolina Beach, New Hanover County, North Carolina**



MATERIAL <sup>1,2</sup>	
	<b>ASPHALT</b>
	<b>CONCRETE</b>
	<b>GRAVEL</b>
	<b>TOPSOIL</b>
	<b>VOID</b>
	<b>BRICK</b>
	<b>AGGREGATE BASE COURSE</b>
	<b>GW WELL-GRADED GRAVEL</b> gravel-sand mixtures, little or no fines
	<b>GP POORLY-GRADED GRAVEL</b> gravel-sand mixtures, little or no fines
	<b>GM SILTY GRAVEL</b> gravel-sand-silt mixtures
	<b>GC CLAYEY GRAVEL</b> gravel-sand-clay mixtures
	<b>SW WELL-GRADED SAND</b> gravelly sand, little or no fines
	<b>SP POORLY-GRADED SAND</b> gravelly sand, little or no fines
	<b>SM SILTY SAND</b> sand-silt mixtures
	<b>SC CLAYEY SAND</b> sand-clay mixtures
	<b>ML SILT</b> non-plastic to medium plasticity
	<b>MH ELASTIC SILT</b> high plasticity
	<b>CL LEAN CLAY</b> low to medium plasticity
	<b>CH FAT CLAY</b> high plasticity
	<b>OL ORGANIC SILT or CLAY</b> non-plastic to low plasticity
	<b>OH ORGANIC SILT or CLAY</b> high plasticity
	<b>PT PEAT</b> highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION	
DESIGNATION	PARTICLE SIZES
Boulders	12 inches (300 mm) or larger
Cobbles	3 inches to 12 inches (75 mm to 300 mm)
Gravel: Coarse	¾ inch to 3 inches (19 mm to 75 mm)
Gravel: Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand: Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
Sand: Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Sand: Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, QP <sup>4</sup>	SPT <sup>5</sup> (BPF)	CONSISTENCY <sup>7</sup> (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT <sup>7</sup>	COARSE GRAINED (%) <sup>8</sup>	FINE GRAINED (%) <sup>8</sup>
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT <sup>5</sup>	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS <sup>6</sup>	
	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK			
FILL	POSSIBLE FILL	PROBABLE FILL	ROCK

<sup>1</sup>Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

<sup>2</sup>To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

<sup>3</sup>Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].


<sup>4</sup>Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

<sup>5</sup>Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

<sup>6</sup>The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

<sup>7</sup>Minor deviation from ASTM D 2488-17 Note 14.

<sup>8</sup>Percentages are estimated to the nearest 5% per ASTM D 2488-17.

CLIENT: <b>W3 Built</b>	PROJECT NO.: <b>22:35643</b>	SHEET: <b>1 of 1</b>	 <b>Item 3.</b>
PROJECT NAME: <b>Fishers Wynd - Phase 1</b>	HAND AUGER NO.: <b>K-01</b>	SURFACE ELEVATION:	
SITE LOCATION: <b>1215 Saint Joseph Street, Carolina Beach, North Carolina, 28428</b>		STATION:	
LATITUDE:	LONGITUDE:		

DEPTH (FT)	WATER LEVELS	ELEVATION (FT)	DESCRIPTION OF MATERIAL	EXCAVATION EFFORT	DCP	SAMPLE NUMBER	FINES CONTENT (%)	MOISTURE CONTENT (%)
			Topsoil Thickness[3.00"]					
			(SM) SILTY FINE TO MEDIUM SAND, brown to gray, moist to wet					
			<b>END OF HAND AUGER AT 4.0 FT</b>					
5		-5						

REMARKS:


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

▽ WL (First Encountered)	▽ WL (Seasonal High)	ECS REP:	DATE COMPLETED:	UNITS:	CAVE-IN-DEPTH:
▼ WL (Completion) <b>4.00</b>			<b>Jan 27 2025</b>	<b>English</b>	

**HAND AUGER LOG**



CLIENT: <b>W3 Built</b>	PROJECT NO.: <b>22:35643</b>	SHEET: <b>1 of 1</b>	 <b>Item 3.</b>
PROJECT NAME: <b>Fishers Wynd - Phase 1</b>	HAND AUGER NO.: <b>K-02</b>	SURFACE ELEVATION:	
SITE LOCATION: <b>1215 Saint Joseph Street, Carolina Beach, North Carolina, 28428</b>		STATION:	
LATITUDE:		LONGITUDE:	

DEPTH (FT)	WATER LEVELS	ELEVATION (FT)	DESCRIPTION OF MATERIAL	EXCAVATION EFFORT	DCP	SAMPLE NUMBER	FINES CONTENT (%)	MOISTURE CONTENT (%)
			Topsoil Thickness[3.00"]					
			(SM) SILTY FINE TO MEDIUM SAND, brown to gray, moist					
			<b>END OF HAND AUGER AT 4.0 FT</b>					
5		-5						

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

<input type="checkbox"/> WL (First Encountered)	<input checked="" type="checkbox"/> WL (Seasonal High)	ECS REP:	DATE COMPLETED:	UNITS:	CAVE-IN-DEPTH:
<input checked="" type="checkbox"/> WL (Completion)			Jan 27 2025	English	

**HAND AUGER LOG**



## **APPENDIX C – Supplemental Report Documents**

GBA Document

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## This Report May Not Be Reliable

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an “apply-by” date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.



### This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

### This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

### Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

### Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

### Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

### Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

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February 7, 2025

Mr. Wescott Butler  
W3 Built  
206 Texas Avenue  
Carolina Beach, North Carolina 28428

Reference: Report of Seasonal High Water Table Estimation and Infiltration Testing  
Fishers Wynd Phase 1  
Carolina Beach, New Hanover County, North Carolina  
ECS Project No. 49.25172

Dear Mr. Butler:

ECS Southeast, LLC (ECS) recently conducted a seasonal high water table (SHWT) estimation and infiltration testing within the stormwater control measure (SCM) area(s) at 1215 Saint Joseph Street in Carolina Beach, New Hanover County, North Carolina. This letter, with attachments, is the report of our testing.

**Field Testing**

On February 6, 2024, ECS conducted an exploration of the subsurface soil and groundwater conditions, in accordance with the NCDEQ Stormwater Design Manual section A-2, at five requested locations shown on the attached Boring Location Plan (Figure 1). ECS used GPS equipment in order to determine the boring locations. The purpose of this exploration was to obtain subsurface information of the in situ soils for the SCM area(s). ECS explored the subsurface soil and groundwater conditions by advancing one hand auger boring into the existing ground surface at each of the requested boring locations. ECS visually classified the subsurface soils and obtained representative samples of each soil type encountered. ECS also recorded the SHWT and groundwater elevation observed at the time of the hand auger borings. The attached Infiltration Testing Form provides a summary of the subsurface conditions encountered at the hand auger boring locations.

The SHWT and groundwater elevation was estimated at the boring locations below the existing grade elevation. A summary of the findings are as follows:

Location	SHWT	Groundwater
S-1	24 inches	32 inches
S-2	24 inches	38 inches
S-3	44 inches	55 inches
S-4	20 inches	24 inches
S-5	4 inches	18 inches

ECS has conducted five infiltration tests utilizing a compact constant head permeameter near the hand auger borings in order to estimate the infiltration rate for the subsurface soils. Infiltration tests are typically conducted at two feet above the SHWT or in the most restrictive soil horizon

## Field Test Results

Below is a summary of the infiltration test results:

Location	Description	Depth	Inches/ hour
S-1	Gray fine to med. SAND	12 inches	21.86
S-2	Gray fine to med. SAND	12 inches	20.73
S-3	Tan/gray fine to med. SAND	20 inches	21.37
S-4	Gray fine SAND	10 inches	15.97
S-4A	Black silty SAND	22 inches	0.024
S-5	Black silty SAND	10 inches	0.043

Infiltration rates and SHWT may vary within the proposed site due to changes in elevation, soil classification and subsurface conditions. ECS conducted an additional test at S-4 in order to demonstrate the change in hydraulic conductivity with the change in soil classification. ECS recommends that a licensed surveyor provide the elevations of the boring locations.

## Closure

ECS's analysis of the site has been based on our understanding of the site, the project information provided to us, and the data obtained during our exploration. If the project information provided to us is changed, please contact us so that our recommendations can be reviewed and appropriate revisions provided, if necessary. The discovery of any site or subsurface conditions during construction which deviate from the data outlined in this exploration should be reported to us for our review, analysis and revision of our recommendations, if necessary. The assessment of site environmental conditions for the presence of pollutants in the soil and groundwater of the site is beyond the scope of this geotechnical exploration.

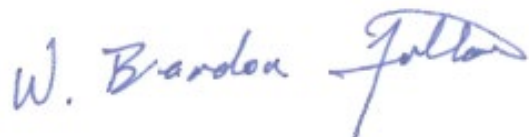
ECS appreciates the opportunity to provide our services to you on this project. If you have any questions concerning this report or this project, please contact us.

Respectfully,

## ECS SOUTHEAST, LLC



K. Brooks Wall  
Senior Project Manager  
[bwall@ecslimited.com](mailto:bwall@ecslimited.com)  
910-686-9114

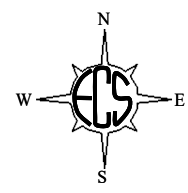


W. Brandon Fulton, PSC, PWS, LSS  
Environmental Department Manager  
[bfulton@ecslimited.com](mailto:bfulton@ecslimited.com)  
704-525-5152

Attachments: Figure 1 - Boring Location Plan  
Infiltration Testing Form  
GBA Document



 **APPROXIMATE BORING LOCATIONS**



SCALE SHOWN ABOVE

Fishers Wynd Phase 1  
 Carolina Beach, New Hanover County,  
 North Carolina

ECS Project # 49.25172  
 February 6, 2025  
 KBW



Figure 1– Boring Location Plan

Provided by: Google Earth

Infiltration Testing Form  
Fishers Wynd Phase 1  
Carolina Beach, New Hanover County, North Carolina  
ECS Project No. 49.25172  
February 6, 2025

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
S-1	0-36"	SP	Gray fine to med. SAND

Seasonal High Water Table was estimated to be at 24 inches below the existing grade elevation.

Groundwater was observed to be at 32 inches below the existing grade elevation.

Test was conducted at 12 inches below existing grade elevation

Infiltration Rate: 21.86 inches per hour

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
S-2	0-24"	SP	Gray fine to med. SAND
	24"-30"	SM	Black silty SAND
	30"-40"	SP	Brown/gray fine SAND

Seasonal High Water Table was estimated to be at 24 inches below the existing grade elevation.

Groundwater was observed to be at 38 inches below the existing grade elevation.

Test was conducted at 12 inches below existing grade elevation

Infiltration Rate: 20.73 inches per hour

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
S-3	0-24"	SP	Tan/gray fine to med. SAND
	24"-55"	SP	Brown fine SAND

Seasonal High Water Table was estimated to be at 44 inches below the existing grade elevation.

Groundwater was observed to be at 55 inches below the existing grade elevation.

Test was conducted at 20 inches below existing grade elevation

Infiltration Rate: 21.37 inches per hour

Infiltration Testing Form  
Fishers Wynd Phase 1  
Carolina Beach, New Hanover County, North Carolina  
ECS Project No. 49.25172  
February 6, 2025

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
S-4	0-20"	SP	Tan/gray fine to med. SAND
	20"-30"	SM	Black silty SAND

Seasonal High Water Table was estimated to be at 20 inches below the existing grade elevation.

Groundwater was observed to be at 24 inches below the existing grade elevation.

Test S-4 was conducted at 10 inches below existing grade elevation

Infiltration Rate: 15.97 inches per hour

Test S-4A was conducted at 22 inches below existing grade elevation

Infiltration Rate: 0.024 inches per hour

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
S-5	0-24"	SM	Black silty SAND

Seasonal High Water Table was estimated to be at 4 inches below the existing grade elevation.

Groundwater was observed to be at 18 inches below the existing grade elevation.

Test was conducted at 10 inches below existing grade elevation

Infiltration Rate: 0.043 inches per hour

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## This Report May Not Be Reliable

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an “apply-by” date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

### This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

### This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

### Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

### Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

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