



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. R. "JOEY" HOPKINS
SECRETARY

April 12, 2024

MEMORANDUM TO: Shihai Zhang, PE
State Pavement Design Engineer

Tatia L. White, PE, P.L.S., C.P.M.
State Roadway Design Engineer

David B. Leonard, PE
Assistant Project Development Engineer

FROM: Matthew J. Alexander PE
State Geotechnical Engineer  DocuSigned by:
DC6858AD2A2C474...

STATE PROJECT: 44849.1.3 (W-5703C)

COUNTY: New Hanover

DESCRIPTION: US 421 (Carolina Beach Road) from Antoinette Drive to
Approximately 200 feet North of Willoughby Park Road

SUBJECT: Pavement and Subgrade Investigation Report

The Geotechnical Engineering Unit has completed the evaluation of the pavement and subgrade investigation for this project and presents the following.

The proposed work consists of widening the existing roadway and adding curb and gutter.

The subgrade beneath the existing roadway consists of roadway embankment and Coastal Plain soils. Soil types encountered were fine sand (A-3), silty sand (A-2-4) and lesser amounts of sandy silt (A-4) and sandy clay (A-6).

Anticipated borrow will likely consist of fine sand (A-3) and silty sand (A-2-4).

The length of this project is 0.492.

The existing pavement is generally in good condition with low severity longitudinal and transverse cracking present.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

Telephone: 919-707-6850
Fax: 919-250-4237
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

AREAS OF SPECIAL GEOTECHNICAL INTEREST

A. Highly Plastic Clays:

Soils with a Plasticity Index (PI) of 16 or greater were not encountered during this investigation. Locations of clays with a PI of 26 or greater

B. Trapped Water within the Pavement:

Trapped water within the pavement was not observed during this investigation.

C. Soils with a High Moisture Content:

All soils were classified as moist for this investigation.

D. Ground Water:

Groundwater was not encountered during this investigation.

MJA/JBB

| | | |
|---------------|---------------------------------|----|
| ATTACHMENT 1: | Pavement and Subgrade Inventory | 23 |
| ATTACHMENT 2: | DCP Graphs | 11 |
| ATTACHMENT 3: | Pavement Core Evaluation | 2 |



DocuSigned by:

Jeffrey Brian Barfield 04/12/2024

09B33DEB8C824D1...

REFERENCE: W-5703C

PROJECT: 44849

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY NEW HANOVER
PROJECT DESCRIPTION US 421 (CAROLINA BEACH
ROAD) FROM US 117/NC 132 (COLLEGE ROAD) TO
200 FEET NORTH OF WILLOUGHBY PARK

PAVEMENT AND SUBGRADE INVESTIGATION

CONTENTS

| <u>SHEET NO.</u> | <u>DESCRIPTION</u> |
|------------------|------------------------------------|
| 1 | TITLE SHEET |
| 2 | LEGEND |
| 3 | ROADWAY TITLE SHEET |
| 4 - 7 | PLAN SHEETS |
| 8 - 10 | PAVEMENT INVESTIGATION DATA SHEETS |
| 11 - 16 | DUAL MASS DCP DATA SHEETS |
| 17 - 18 | PAVEMENT CORE PHOTOS |
| 19 - 20 | LABORATORY SUMMARY SHEETS |

APPENDICES

| <u>APPENDIX</u> | <u>TITLE</u> | <u>SHEETS</u> |
|---|-------------------------------|---------------|
| CULVERT EXTENSION | FOUNDATION RECOMMENDATIONS | 21 |
| | BORING LOG | 22 |
| BULK SAMPLE LABORATORY TEST RESULTS | SINGLE POINT CBR TEST | 23 - 25 |

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | W-5703C | 1 | |

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

T. PARK
C. STRATTON
A. FOWLER, CWD
E. SWAIN

INVESTIGATED BY CATLIN
DRAWN BY S. V. HUDSON
CHECKED BY J. LEE STONE, LG
SUBMITTED BY S. V. HUDSON, LG
DATE APRIL 2024



DocuSigned by:
Steve V. Hudson 04/12/2024
01DB23BB746D468
SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

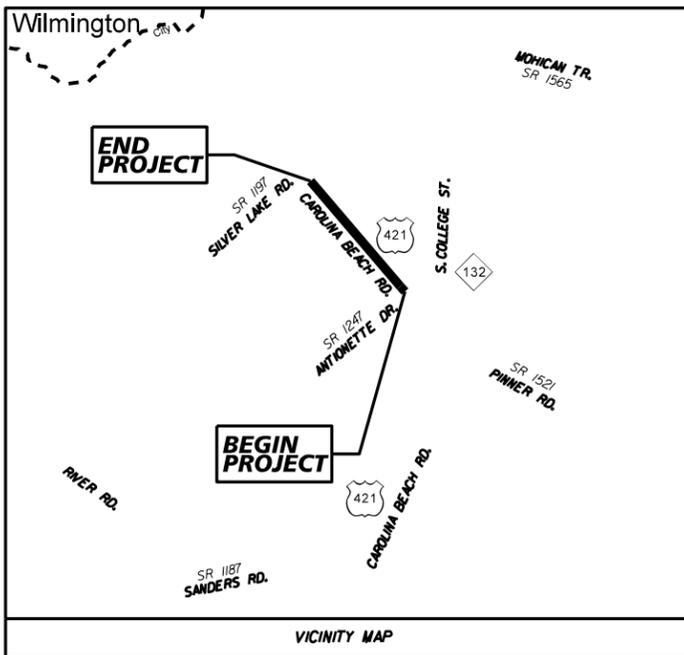
09/28/19

CONTRACT: W-5703C

TIP PROJECT:

CONTRACT:

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL PLAN SHEET SYMBOLS



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

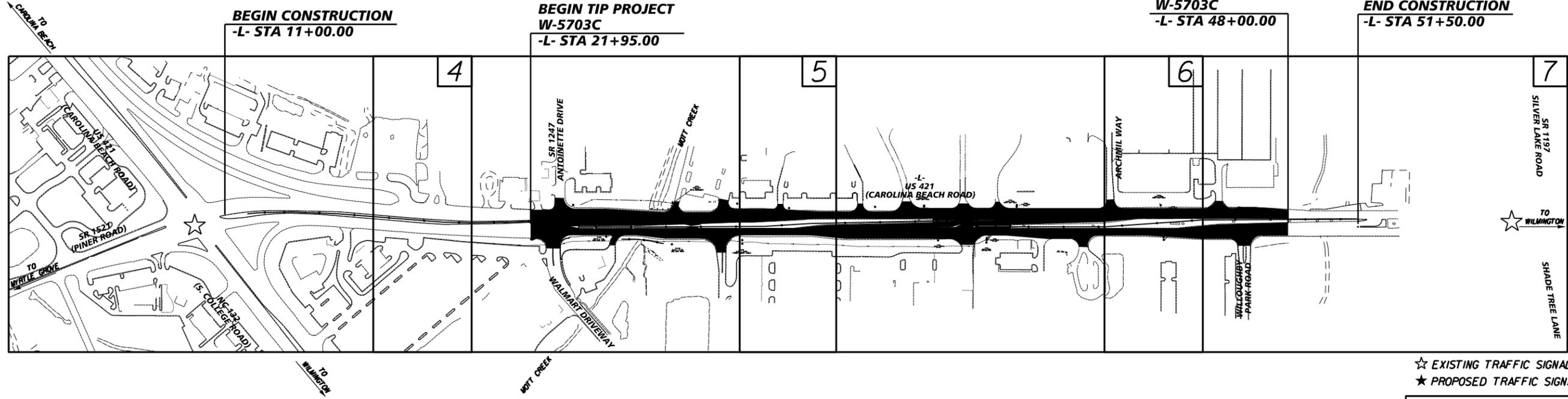
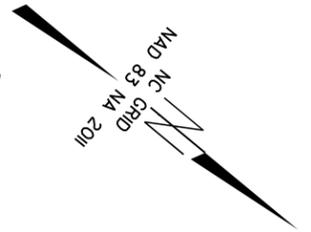
LOCATION: US 421 (CAROLINA BEACH ROAD) FROM ANTOINETTE DR TO APPROXIMATELY 200' NORTH OF WILLOUGHBY PARK ROAD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT EXTENSION, AND SIGNALS

| | | | |
|-----------------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | W-5703C | 3 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 44849.1.3 | HSIP-0421(091) | PE | |
| 44849.2.3 | HSIP-0421(091) | RW & UTIL | |
| 44849.3.3 | HSIP-0421(091) | CONSTR | |

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

75% PLANS

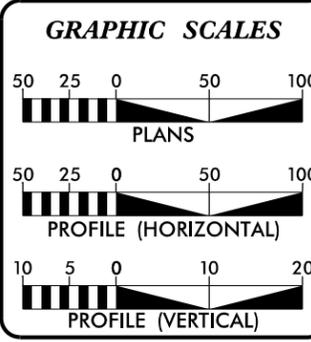


THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF WILMINGTON
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
 NCDOT CONTACT: BRIAN HARDING, PE
 DIVISION 3, DIVISION PROJECT MANAGER
 (910) 341-2000

☆ EXISTING TRAFFIC SIGNAL
 ★ PROPOSED TRAFFIC SIGNAL

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

SUBMITTAL:
DATE: MARCH 8, 2023



DESIGN DATA

| | | |
|----------|---|--------|
| ADT 2024 | = | 35,400 |
| ADT 2040 | = | 45,000 |
| K | = | 8% |
| D | = | 55% |
| T | = | 3%* |
| V | = | 50 MPH |

CLASSIFICATION:
 URBAN COLLECTOR
 * 1% TTST 2% DUAL STATEWIDE TIER

PROJECT LENGTH

| | | |
|------------------------------------|---|-------------|
| LENGTH ROADWAY TIP PROJECT W-5703C | = | 0.492 MILES |
| TOTAL LENGTH TIP PROJECT W-5703C | = | 0.492 MILES |

PLANS PREPARED FOR THE NCDOT BY:

| | |
|--------------------------------------|---|
| 2018 STANDARD SPECIFICATIONS | |
| RIGHT OF WAY DATE: MARCH 13, 2023 | GREGORY BREW, P.E. PROJECT ENGINEER |
| LETTING DATE: MARCH 19, 2024 | TYLER SPRING, P.E. PROJECT DESIGN ENGINEER |

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



\$DATE\$

5/14/99

L-
PI Sta 11+71.28
 $\Delta = 23^{\circ}14'15.7"$ (RT)
D = 6'52" 41.7"
L = 337.84'
T = 171.28'
R = 833.00'

Kimley Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

| | |
|---|---------------------|
| PROJECT REFERENCE NO. W-5703C | SHEET NO. 4 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

REVISIONS

\$DATE\$



MATCHLINE -L- STA 19+00.00
SEE PLAN SHEET 5

5/14/99

-L-
PI Sta 19+43.27
Δ = 4' 31" 110° (LT)
D = 2' 29' 28.0"
L = 181.43'
T = 90.76'
R = 2,300.00'

Kimley Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

| | |
|---|---------------------|
| PROJECT REFERENCE NO. W-5703C | SHEET NO. 5 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

REVISIONS

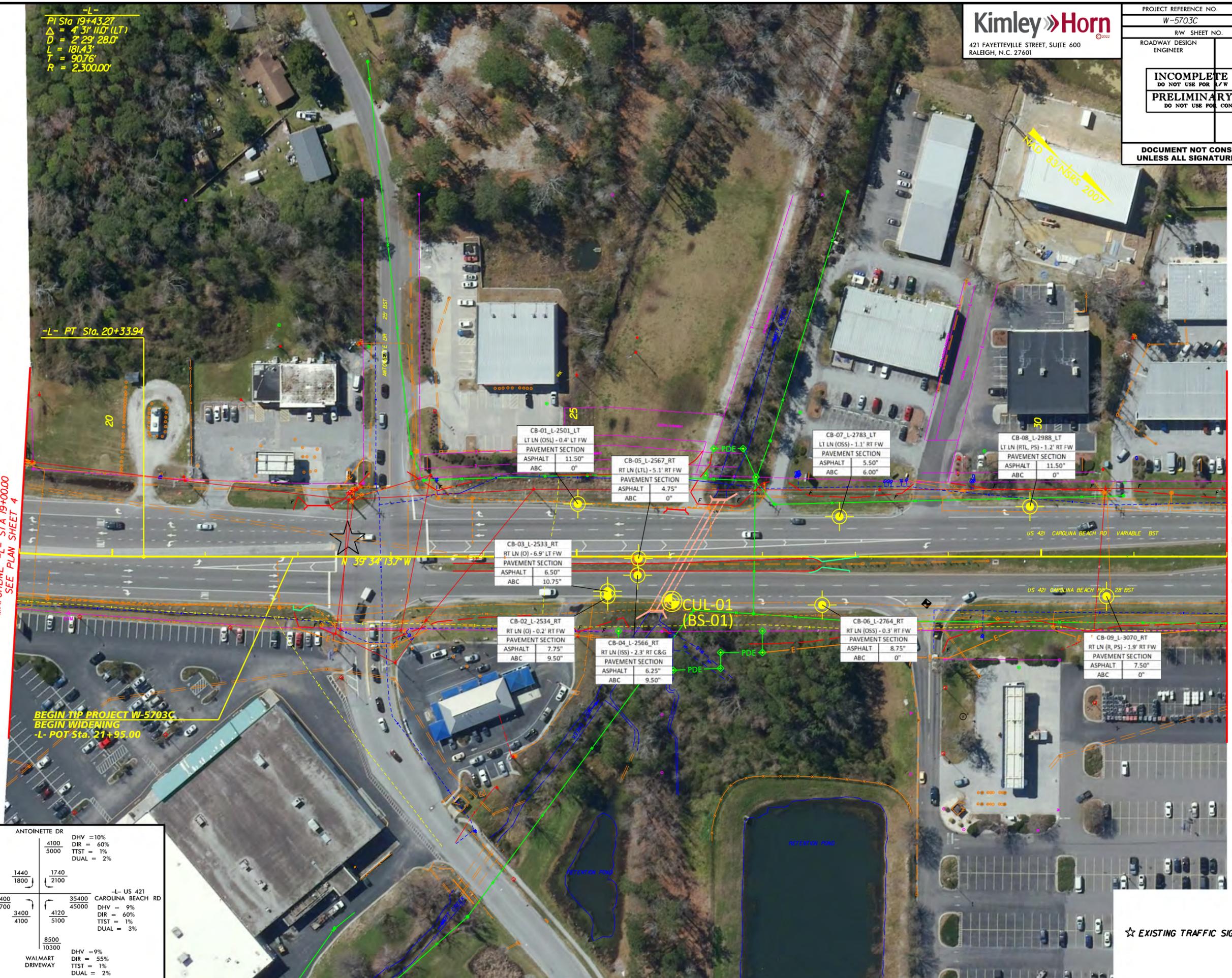
MATCHLINE -L- STA 19+00.00
SEE PLAN SHEET 4

MATCHLINE -L- STA 39+00.00
SEE PLAN SHEET 6

-L- PT Sta. 20+33.94

BEGIN TIP PROJECT W-5703C
BEGIN WIDENING
-L- POT Sta. 21+95.00

| | | |
|---|-------------------------------|--|
| 2024 ADT 2040 ADT | ANTOINETTE DR 4100 5000 | DHV = 10% DIR = 60% TTST = 1% DUAL = 2% |
| 1440 1800 | 1740 2100 | |
| -L- US 421 CAROLINA BEACH RD | 34400 43700 | 35400 45000 |
| DHV = 9% DIR = 60% TTST = 1% DUAL = 3% | 3400 4100 | DHV = 9% DIR = 60% TTST = 1% DUAL = 3% |
| | 8500 10300 | |
| | WALMART DRIVEWAY | DHV = 9% DIR = 55% TTST = 1% DUAL = 2% |



★ EXISTING TRAFFIC SIGNAL

| | |
|--|---------------------|
| PROJECT REFERENCE NO. W-5703C | SHEET NO. 6 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

MATCHLINE -L- STA 32+00.00
SEE PLAN SHEET 5

MATCHLINE -L- STA 45+00.00
SEE PLAN SHEET 7



| | |
|-----------------------------|-------|
| CB-10_L-3316_LT | |
| LT LN (LT, PS) - 0.3' LT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 7.00" |
| ABC | 0" |

| | |
|------------------------------|--------|
| CB-11_L-3317_LT | |
| LT LN (LT, OSU) - 6.2' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 14.50" |
| ABC | 0" |

| | |
|-------------------------|-------|
| CB-12_L-3318_LT | |
| LT LN (ISU) - 0.2 LT FY | |
| PAVEMENT SECTION | |
| ASPHALT | 6.50" |
| ABC | 0" |

| | |
|------------------------------|--------|
| CB-13_L-3614_RT | |
| RT LN (RTL, PS) - 0.8' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 10.50" |
| ABC | 0" |

| | |
|------------------------------|--------|
| CB-14_L-3809_LT | |
| LT LN (RTL, PS) - 0.9' LT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 12.00" |
| ABC | 0" |

| | |
|------------------------------|--------|
| CB-15_L-3944_RT | |
| RT LN (RTL, PS) - 0.5' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 10.00" |
| ABC | 0" |

| | |
|--------------------------|--------|
| CB-16_L-4101_RT | |
| RT LN (RTL) - 0.8' LT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 12.00" |
| ABC | 0" |

| | |
|----------------------------|--------|
| CB-17_L-4176_LT | |
| LT LN (L, PS) - 1.1' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 14.50" |
| ABC | 0" |

| | |
|----------------------------|-------|
| CB-18_L-4337_RT | |
| RT LN (R, PS) - 1.7' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 8.75" |
| ABC | 0" |

| | |
|------------------------------|-------|
| CB-19_L-4481_LT | |
| LT LN (RTL, PS) - 1.2' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 7.50" |
| ABC | 0" |

UNDER CONSTRUCTION

NAD 83 REAS 700'

5/14/99

REVISIONS

\$DATE\$

MATCHLINE -L- STA. 45+00.00
SEE PLAN SHEET 6



| | |
|-----------------------------|--------|
| CB-21_L-4652_RT | |
| RT LN (R, OSL) - 0.5' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 9.75" |
| ABC | 14.50" |

| | |
|--------------------------|-------|
| CB-20_L-4652_RT | |
| RT LN (RTL) - 2.5' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 9.00" |
| ABC | 4.50" |

| | |
|----------------------------|-------|
| CB-22_L-4847_RT | |
| RT LN (R, PS) - 1.5' RT FW | |
| PAVEMENT SECTION | |
| ASPHALT | 9.25" |
| ABC | 0" |

END TIP PROJECT W-5703C
END WIDENING
-L- POT Sta. 49+00.00

END CONSTRUCTION
-L- POT Sta. 51+50.00

Kimley Horn
 421 FAYETTEVILLE STREET, SUITE 600
 RALEIGH, N.C. 27601

| | |
|--|---------------------|
| PROJECT REFERENCE NO. W-5703C | SHEET NO. 7 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

NAD 83 N/SRS 2007

-L- POT Sta. 53+40.00

N 39° 34' 13" W

50



PAVEMENT INVESTIGATION DATA SHEET

ROUTE: US 421 (Carolina Beach Rd) from US 117/132 (College Rd) to 200' North of Wiloughby Park

TIP #: **W-5703C**
 WBS: **44849.1.3**
 COUNTY: **NEW HANOVER**

| Boring Identification and Position (Station, Lane, Shoulder) | Cut/Fill (Inches) (Est. Amount) | WIDTH | | Offset Distances (Feet) (See Notes) | Crown "C" or Super "S" | THICKNESS (Inches) | | | | | PAVEMENT LAYERING | SUBGRADE | | | | | | ASPHALT NOTES | GPS COORDINATES | | |
|---|------------------------------------|------------|----------------|--|------------------------|----------------------|---------|----------|-------|-------------------------|-------------------|--------------|--------------------|--------------------------------------|---------------|-----------------------|---------------|---------------|--|----------|-----------|
| | | Lane(s) ft | Shoulder(s) ft | | | Gross to Top of Soil | ASPHALT | CONCRETE | ABC | Stabilized Soil / Other | | Depth (Feet) | Origin (See Notes) | Material Description | Sample Number | AASHTO Classification | Soil Moisture | | Probe / Bore Depth (Feet) | NORTHING | EASTING |
| CB-01 -L- 25+01 57 LT LT LN (OSL) | 18.00 Fill | 11.6 | 1.8 | 0.4 LT FW | | 11.50 | 11.50 | | | | Asphalt | 1.0 1.5 | RE | Dark Gray, Silty SAND w/tr. Org. | S-04 | A-2-4 | W | 5.0 | Low severity longitudinal joint cracking. Runs 1.1' parallel to inside of the white line | 144,950 | 2,333,834 |
| | | | | | | | | | | | | 1.5 5.0 | CP | Tan, Silty, f. SAND | S-03 | A-2-4 | M | | | | |
| CB-02 -L- 25+34 42 RT RT LN (O) | 17.25 Fill | 11.4 | 1.0 | 0.2 RT FW | | 17.25 | 7.75 | | 9.50 | | Asphalt ABC | 0.6 1.4 | RE | Tan, Limestone Gravel w/Sand (ABC) | | A-1 | M | 5.0 | Low severity longitudinal cracking along joint on white dashed lines | 145,035 | 2,333,886 |
| | | | | | | | | | | | | 1.4 5.0 | CP | Tan, f. SAND | S-05 | A-3 | M | | | | |
| CB-03 -L- 25+33 37 RT RT LN (O) | 17.25 Fill | 11.4 | 1.0 | 6.9 LT FW | | 17.25 | 6.50 | | 10.75 | | Asphalt ABC | 0.5 1.4 | RE | Tan, Limestone Gravel w/Sand (ABC) | | A-1 | M | 5.0 | Low severity longitudinal cracking along joint on white dashed lines | 145,035 | 2,333,886 |
| | | | | | | | | | | | | 1.4 5.0 | CP | Tan, f. SAND | | A-3 | M | | | | |
| CB-04 -L- 25+66 20RT RT LN (ISS) | 15.75 Fill | 13.2 | 0.0 | 2.3 RT C&G | | 15.75 | 6.25 | | 9.50 | | Asphalt ABC | 0.5 1.3 | RE | Tan, Limestone Gravel w/Sand (ABC) | | A-1 | M | 5.0 | Moderate severity longitudinal crack 2.1' off gutter. Slight dip around gutter area | 145,049 | 2,333,852 |
| | | | | | | | | | | | | 1.3 5.0 | CP | Tan, f. SAND | | A-3 | M | | | | |
| CB-05 -L- 25+67 2 RT RT LN (LTL) | 0.0 Grade | 10.6 | 1.0 curb | 5.1 RT FW | | 4.75 | 4.75 | | | | Asphalt | 0.4 5.0 | CP | Tan brown, f. SAND | S-06 | A-3 | M | 5.0 | Low severity longitudinal stress & cracking on middle lane around manhole | 145,038 | 2,333,837 |
| | | | | | | | | | | | | | | | | | | | | | |
| CB-06 -L- 27+64 52 RT RT LN (RTL, PS) | 0.0 Grade | 11.2 | 2.1 | 0.3 RT FW | | 8.75 | 8.75 | | | | Asphalt | 0.7 5.0 | CP | Dark brown, Silty, f. SAND w.tr Clay | S-07 | A-2-4 | M | 5.0 | Low severity longitudinal cracking on joint along solid white line 1.0' off shoulder | 145,222 | 2,333,750 |
| | | | | | | | | | | | | | | | | | | | | | |
| CB-07 -L- 27+83 43 LT LT LN (OSS) | 11.5 Fill | 11.0 | 1.5 | 1.1 RT FW | | 11.50 | 5.50 | | 6.00 | | Asphalt ABC | 0.5 1.0 | RE | Tan, Limestone Gravel w/Sand (ABC) | | A-1 | M | 5.0 | Moderate severity longitudinal cracking 0.9' & 2.0' FWL Low severity transverse cracks | 145,176 | 2,333,665 |
| | | | | | | | | | | | | 1.0 5.0 | CP | Tan, f. SAND | | A-3 | M | | | | |
| CB-08 -L- 29+88 54 LT LT LN (RTL, PS) | 0.0 Grade | 10.6 | 1.0 | 1.1 RT FW | | 11.50 | 11.50 | | | | Asphalt | 1.0 1.8 | CP | Brown, Silty SAND | | A-2-4 | M | 5.0 | Low severity longitudinal crack along joint. 0.8' parallel to dashed line. Low sev. transverse crack | 145,327 | 2,333,526 |
| | | | | | | | | | | | | 1.8 5.0 | CP | Tan, Sandy CLAY | | A-6 | M | | | | |
| CB-09 -L- 30+70 43 RT RT LN (R, PS) | 0.0 Grade | 11.5 | 3.5 | 1.9 RT FW | | 7.50 | 7.50 | | | | Asphalt | 0.6 3.3 | CP | Tan, Silty, f. SAND | S-08 | A-2-4 | M | 5.0 | Low severity longitudinal cracking along joint on white dashed line | 145,452 | 2,333,548 |
| | | | | | | | | | | | | 3.3 5.0 | CP | Brown, f. and cse. SAND w/gravel | | A-3 | M | | | | |
| CB-10 -L- 33+16 44 LT LT LN (LT, PS) | 0.0 Grade | 12.2 | 3.1 | 0.3 LT FW | | 7.00 | 7.00 | | | | Asphalt | 0.6 5.0 | CP | Dark gray, Sandy CLAY w/tr. Org. | S-09 | A-6 | M | 5.0 | Low severity longitudinal imprint on asphalt running 4.5' FW of dash line toward shoulder | 145,587 | 2,333,325 |
| | | | | | | | | | | | | | | | | | | | | | |

Notes: OSL = Outside Lane CTL = Center Turn Lane OSS = Outside Shoulder DECEL = Deceleration Lane COL = Collector Lane RT = Right I = Inside Origin: RE = Roadway Embankment
 ISL = Inside Lane LTL = Left Turn Lane ISS = Inside Shoulder IGM = Inside Grass Median FW = From White LT = Left C&G = Curb and Gutter AF = Artificial Fill
 RTL = Right Lane PS = Paved Shoulder ACCEL = Acceleration Lane OGS = Outside Grass Median FY = From Yellow O = Outside CF = Curb Face CP = Coastal Plain



CATLIN #: 223210

PAVEMENT INVESTIGATION DATA SHEET

ROUTE: US 421 (Carolina Beach Rd) from US 117/132 (College Rd) to 200' North of Wiloughby Park

TIP #: **W-5703C**
 WBS: **44849.1.3**
 COUNTY: **NEW HANOVER**

| Boring Identification and Position (Station, Lane, Shoulder) | Cut/Fill (Inches) (Est. Amount) | WIDTH | | Offset Distances (Feet) (See Notes) | Crown "C" or Super "S" | THICKNESS (Inches) | | | | PAVEMENT LAYERING | SUBGRADE | | | | | | ASPHALT NOTES | GPS COORDINATES | | | |
|---|------------------------------------|------------|----------------|--|------------------------|----------------------|---------|----------|------|-------------------|-------------------------|--------------|--------------------|---|---------------|-----------------------|---------------|-----------------|--|----------|-----------|
| | | Lane(s) ft | Shoulder(s) ft | | | Gross to Top of Soil | ASPHALT | CONCRETE | ABC | | Stabilized Soil / Other | Depth (Feet) | Origin (See Notes) | Material Description | Sample Number | AASHTO Classification | | Soil Moisture | Probe / Bore Depth (Feet) | NORTHING | EASTING |
| CB-11 -L- 33+17 -40 LT LT LN (LT, OSL) | 0.0 Grade | 12.2 | 3.1 | 6.2 RT FW | | 14.50 | 14.50 | | | | Asphalt | 1.2 - 2.5 | CP | Brown, Silty SAND | | A-2-4 | M | 5.0 | No visible distress | 145,590 | 2,333,327 |
| | | | | | | | | | | | | 2.5 - 5.0 | CP | Tan gray, Sandy CLAY | | A-6 | M | | | | |
| CB-12 -L- 33+18 20 LT LT LN (ISL) | 0.0 Grade | 11.7 | 2.5 | 0.2 RT FY | | 6.50 | 6.50 | | | | Asphalt | 0.5 - 3.6 | CP | Brown, f. SAND tr. Gravel | | A-3 | M | 5.0 | Low severity longitudinal cracking along white dashed line | 145,603 | 2,333,341 |
| | | | | | | | | | | | | 3.6 - 5.0 | CP | Dark brown, Sandy SILT | S-11 | A-4 | M | | | | |
| CB-13 -L- 36+14 53 RT RT LN (RTL, PS) | 0.0 Grade | 10.6 | 3.1 | 0.8 RT FW | | 10.50 | 10.50 | | | | Asphalt | 0.9 - 4.3 | CP | Brown, f. SAND | | A-3 | M | 5.0 | Low severity longitudinal crack along solid white line | 145,878 | 2,333,209 |
| | | | | | | | | | | | | 4.3 - 5.0 | CP | Dark brown, Silty, f. SAND | S-12 | A-2-4 | M | | | | |
| CB-14 -L- 38+09 54 LT LT LN (RTL, PS) | 0.0 Grade | 11.0 | 1.0 | 0.9 LT FW | | 12.00 | 12.00 | | | | Asphalt | 1.0 - 4.5 | CP | Dark brown, f. SAND | | A-3 | M | 5.0 | Low severity longitudinal cracking on joint parallel white dashed line & 4.1' from shoulder | 145,960 | 2,333,003 |
| | | | | | | | | | | | | 4.5 - 5.0 | CP | Tan, Sandy SILT | S-14 | A-4 | M | | | | |
| CB-15 -L- 39+44 52 RT RT LN (RTL, PS) | 0.0 Grade | 13.0 | 4.0 | 0.5 RT FW | | 10.00 | 10.00 | | | | Asphalt | 0.8 - 5.0 | CP | Dark brown, Sandy SILT | S-13 | A-4 | M | 5.0 | Asphalt patch 5.5' x 11' on shoulder. Low severity longitudinal cracking along solid line | 146,132 | 2,333,998 |
| | | | | | | | | | | | | | | | | | | | | | |
| CB-16 -L- 41+01 50 RT RT LN (RTL) | 0.0 Grade | 10.5 | 0.3 | 0.8 LT FW | | 12.00 | 12.00 | | | | Asphalt | 1.0 - 2.5 | CP | Dark Brown, Silty f. SAND | S-15 | A-2-4 | M | 5.0 | Low severity longitudinal crack along joint parallel to solid white line towards inside lane | 146,251 | 2,332,897 |
| | | | | | | | | | | | | 2.5 - 4.0 | CP | Dark Brown, Sandy SILT | | A-4 | M | | | | |
| | | | | | | | | | | | | 4.0 - 5.0 | CP | Brown, f. SAND | | A-3 | M | | | | |
| CB-17 -L- 41+76 42 LT LT LN (L, PS) | 0.0 Grade | 11.1 | 3.0 | 1.1 RT FW | | 14.50 | 14.50 | | | | Asphalt | 1.2 - 2.8 | CP | Dark brown, f. SAND tr. Clay | | A-3 | M | 5.0 | Low severity longitudinal cracking 1.8' from right white dashed lines | 146,250 | 2,333,778 |
| | | | | | | | | | | | | 2.8 - 5.0 | CP | Tan brown, Silty, f. SAND | S-16 | A-2-4 | M | | | | |
| CB-18 -L- 43+37 42RT RT LN (R, PS) | 0.0 Grade | 11.1 | 3.1 | 1.7 RT FW | | 8.75 | 8.75 | | | | Asphalt | 0.7 - 5.0 | CP | Dark brown, f. SAND | S-18 | A-2-4 | M | 5.0 | Low severity longitudinal cracking along dashed white line | 146,429 | 2,332,740 |
| | | | | | | | | | | | | | | | | | | | | | |
| CB-19 -L- 44+81 52 LT LT LN (RTL, PS) | 0.0 Grade | 10.5 | 3.2 | 1.2 RT FW | | 7.50 | 7.50 | | | | Asphalt | 0.6 - 1.8 | CP | Dark brown, Silty, f. SAND w/tr. Gravel | S-17 | A-2-4 | M | 5.0 | No visible distress | 146,479 | 2,332,576 |
| | | | | | | | | | | | | 1.8 - 5.0 | CP | Dark brown, Silty, f. SAND w/tr. Gravel and little Org. | S-19 | A-2-4 | M | | | | |
| CB-20 -L- 46+52 54 RT RT LN (RTL) | 13.5 Fill | 12.3 | 0.7 | 2.5 RT FW | | 13.50 | 9.00 | | 4.50 | | Asphalt ABC | 0.8 - 1.1 | RE | Tan, Limestone Gravel w/Sand (ABC) | | A-1 | M | 5.0 | Low severity longitudinal cracking along joint on white dashed lane | 146,678 | 2,332,549 |
| | | | | | | | | | | | | 1.1 - 4.0 | CP | Brown, Silty SAND | | A-2-4 | M | | | | |
| | | | | | | | | | | | | 4.0 - 5.0 | CP | Blue gray, f. Sandy SILT | S-20 | A-4 | M | | | | |

Notes: OSL = Outside Lane CTL = Center Turn Lane OSS = Outside Shoulder DECEL = Deceleration Lane COL = Collector Lane RT = Right I = Inside Origin: RE = Roadway Embankment
 ISL = Inside Lane LTL = Left Turn Lane ISS = Inside Shoulder IGM = Inside Grass Median FW = From White LT = Left C&G = Curb and Gutter AF = Artificial Fill
 RTL = Right Lane PS = Paved Shoulder ACCEL = Acceleration Lane OGS = Outside Grass Median FY = From Yellow O = Outside CF = Curb Face CP = Coastal Plain

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|-------|----------|-------------|-----------------------------|--|----------|------|------------------------|-------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| | | | | New Hanover | Thomas Park | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 25+01 - LT LN, 0.4' LT FW | | | | 10/9/2023 | -L- 25+34 RT LN, 0.2' RT FW | | | | 10/10/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | ABC | Fill | DCP | Cumulative cm per blow | ABC | Fill | DCP | Cumulative cm per blow | ABC | Fill |
| 1.6 | | | | 1.8 | 18.1 | 35.3 | 53.3 | 70.8 | 89.0 | 108.6 | |
| 2.7 | | | | 2.7 | 18.3 | 35.6 | 53.6 | 71.1 | 89.3 | 108.9 | |
| 4.5 | | | | 3.4 | 18.5 | 35.9 | 53.9 | 71.4 | 89.6 | 109.2 | |
| 6.0 | | | | 4.1 | 18.7 | 36.3 | 54.1 | 71.6 | 89.9 | 109.5 | |
| 7.3 | | | | 4.7 | 18.9 | 36.6 | 54.4 | 71.9 | 90.2 | 109.8 | |
| 8.7 | | | | 5.4 | 19.1 | 37.0 | 54.6 | 72.1 | 90.5 | 110.1 | |
| 10.0 | | | | 6.0 | 19.3 | 37.3 | 54.9 | 72.4 | 90.8 | 110.4 | |
| 11.1 | | | | 6.7 | 19.5 | 37.6 | 55.2 | 72.7 | 91.1 | | |
| 12.1 | | | | 7.1 | 19.8 | 37.9 | 55.5 | 72.9 | 91.4 | | |
| 13.1 | | | | 7.4 | 20.0 | 38.3 | 55.7 | 73.2 | 91.7 | | |
| 14.2 | | | | 7.8 | 20.3 | 38.6 | 56.0 | 73.4 | 92.0 | | |
| 15.4 | | | | 8.0 | 20.5 | 38.9 | 56.3 | 73.7 | 92.3 | | |
| 16.4 | | | | 8.3 | 20.7 | 39.2 | 56.6 | 74.0 | 92.6 | | |
| 17.5 | | | | 8.4 | 21.0 | 39.5 | 56.8 | 74.2 | 92.9 | | |
| 18.6 | | | | 8.6 | 21.2 | 39.9 | 57.1 | 74.5 | 93.2 | | |
| 20.0 | | | | 8.7 | 21.5 | 40.2 | 57.3 | 74.7 | 93.5 | | |
| 21.7 | | | | 8.9 | 21.7 | 40.5 | 57.6 | 75.0 | 93.8 | | |
| 23.1 | | | | 9.0 | 21.9 | 40.7 | 57.9 | 75.3 | 94.1 | | |
| 24.5 | | | | 9.2 | 22.2 | 40.9 | 58.2 | 75.5 | 94.4 | | |
| 25.8 | | | | 9.4 | 22.4 | 41.0 | 58.4 | 75.8 | 94.7 | | |
| 26.9 | | | | 9.5 | 22.7 | 41.2 | 58.7 | 76.0 | 95.0 | | |
| 28.0 | | | | 9.7 | 22.9 | 41.4 | 59.0 | 76.3 | 95.3 | | |
| 29.1 | | | | 9.8 | 23.2 | 41.6 | 59.3 | 76.6 | 95.6 | | |
| 30.2 | | | | 9.9 | 23.4 | 41.8 | 59.5 | 76.8 | 95.9 | | |
| 31.5 | | | | 10.1 | 23.7 | 41.9 | 59.8 | 77.1 | 96.2 | | |
| 32.8 | | | | 10.3 | 23.9 | 42.1 | 60.0 | 77.3 | 96.5 | | |
| 34.4 | | | | 10.5 | 24.2 | 42.3 | 60.3 | 77.6 | 96.8 | | |
| 36.9 | | | | 10.7 | 24.4 | 42.5 | 60.5 | 77.9 | 97.1 | | |
| 39.0 | | | | 10.8 | 24.6 | 42.6 | 60.7 | 78.2 | 97.4 | | |
| 40.7 | | | | 11.0 | 24.9 | 42.8 | 61.0 | 78.4 | 97.8 | | |
| 42.7 | | | | 11.2 | 25.1 | 42.9 | 61.2 | 78.7 | 98.1 | | |
| 45.1 | | | | 11.3 | 25.3 | 43.1 | 61.4 | 79.0 | 98.4 | | |
| 48.0 | | | | 11.5 | 25.5 | 43.2 | 61.6 | 79.3 | 98.7 | | |
| 52.1 | | | | 11.8 | 25.8 | 43.4 | 61.9 | 79.6 | 99.0 | | |
| 58.1 | | | | 11.9 | 26.0 | 43.5 | 62.1 | 79.9 | 99.2 | | |
| 64.6 | | | | 12.1 | 26.3 | 43.7 | 62.4 | 80.2 | 99.5 | | |
| 69.7 | | | | 12.2 | 26.5 | 43.8 | 62.6 | 80.5 | 99.8 | | |
| 74.0 | | | | 12.3 | 26.7 | 44.0 | 62.9 | 80.8 | 100.1 | | |
| 79.6 | | | | 12.5 | 27.0 | 44.1 | 63.1 | 81.1 | 100.4 | | |
| 87.1 | | | | 12.6 | 27.2 | 44.3 | 63.4 | 81.3 | 100.7 | | |
| 95.0 | | | | 12.7 | 27.5 | 44.4 | 63.6 | 81.6 | 101.0 | | |
| 102.1 | | | | 12.9 | 27.7 | 44.6 | 63.9 | 81.9 | 101.3 | | |
| | | | | 13.0 | 28.0 | 45.1 | 64.3 | 82.2 | 101.6 | | |
| | | | | 13.4 | 28.3 | 45.6 | 64.7 | 82.5 | 101.9 | | |
| | | | | 13.7 | 28.7 | 46.1 | 65.0 | 82.8 | 102.3 | | |
| | | | | 13.9 | 29.0 | 46.6 | 65.4 | 83.1 | 102.6 | | |
| | | | | 14.1 | 29.3 | 47.1 | 65.8 | 83.4 | 102.9 | | |
| | | | | 14.2 | 29.6 | 47.4 | 66.1 | 83.7 | 103.2 | | |
| | | | | 14.4 | 29.9 | 47.7 | 66.3 | 84.0 | 103.5 | | |
| | | | | 14.6 | 30.2 | 47.9 | 66.6 | 84.3 | 103.7 | | |
| | | | | 14.8 | 30.5 | 48.2 | 66.8 | 84.6 | 104.0 | | |
| | | | | 15.0 | 30.8 | 48.5 | 67.1 | 84.9 | 104.3 | | |
| | | | | 15.2 | 31.1 | 48.9 | 67.4 | 85.2 | 104.6 | | |
| | | | | 15.6 | 31.5 | 49.2 | 67.7 | 85.5 | 104.9 | | |
| | | | | 15.9 | 31.8 | 49.6 | 67.9 | 85.7 | 105.2 | | |
| | | | | 16.1 | 32.2 | 49.9 | 68.2 | 86.0 | 105.5 | | |
| | | | | 16.3 | 32.5 | 50.3 | 68.5 | 86.3 | 105.8 | | |
| | | | | 16.5 | 32.8 | 50.7 | 68.8 | 86.6 | 106.1 | | |
| | | | | 16.7 | 33.1 | 51.1 | 69.0 | 86.9 | 106.4 | | |
| | | | | 16.9 | 33.4 | 51.4 | 69.3 | 87.2 | 106.7 | | |
| | | | | 17.1 | 33.7 | 51.8 | 69.5 | 87.5 | 107.0 | | |
| | | | | 17.3 | 34.0 | 52.2 | 69.8 | 87.8 | 107.3 | | |
| | | | | 17.5 | 34.3 | 52.5 | 70.1 | 88.1 | 107.6 | | |
| | | | | 17.7 | 34.6 | 52.8 | 70.3 | 88.4 | 107.9 | | |
| | | | | 17.9 | 35.0 | 53.0 | 70.6 | 88.7 | 108.3 | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | | | |
|---|------------------------|-------|----------|-------------|------------------------------|--|----------|------|------------------------|-------|----------|------|-------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | | | |
| | | | | New Hanover | Thomas Park | Andrew Dunivan | | | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | | | |
| -L- 25+33 RT LN, 6.9' LT FW | | | | 10/10/2023 | -L- 25+66 RT LN, 2.3' RT C&G | | | | 10/10/2023 | | | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | | |
| DCP | Cumulative cm per blow | ABC | Fill | DCP | Cumulative cm per blow | ABC | Fill | DCP | Cumulative cm per blow | ABC | Fill | | |
| 0.4 | 10.6 | 15.9 | 21.6 | 39.1 | 50.5 | 61.4 | 73.9 | 87.1 | 1.0 | 30.9 | 48.7 | 69.1 | 92.0 |
| 0.8 | 10.7 | 16.0 | 21.7 | 39.3 | 50.7 | 61.6 | 74.1 | 87.3 | 1.6 | 31.2 | 48.9 | 69.5 | 92.4 |
| 1.2 | 10.8 | 16.1 | 21.8 | 39.5 | 50.8 | 61.8 | 74.3 | 87.5 | 5.6 | 31.5 | 49.2 | 69.8 | 92.7 |
| 1.5 | 10.9 | 16.1 | 22.0 | 39.6 | 51.0 | 61.9 | 74.4 | 87.8 | 6.1 | 31.8 | 49.5 | 70.1 | 93.0 |
| 1.8 | 11.0 | 16.2 | 22.1 | 39.8 | 51.1 | 62.1 | 74.6 | 88.0 | 6.5 | 32.1 | 49.8 | 70.4 | 93.3 |
| 2.0 | 11.1 | 16.3 | 22.2 | 40.0 | 51.3 | 62.3 | 74.8 | 88.2 | 6.9 | 32.4 | 50.1 | 70.7 | 93.6 |
| 2.1 | 11.2 | 16.4 | 22.3 | 40.2 | 51.5 | 62.5 | 75.0 | 88.4 | 7.3 | 32.7 | 50.4 | 70.9 | 93.9 |
| 2.4 | 11.4 | 16.4 | 22.5 | 40.4 | 51.7 | 62.7 | 75.2 | 88.7 | 7.7 | 33.0 | 50.7 | 71.2 | 94.2 |
| 2.6 | 11.5 | 16.5 | 22.6 | 40.5 | 51.8 | 62.9 | 75.4 | 88.9 | 8.1 | 33.3 | 51.0 | 71.5 | 94.5 |
| 2.8 | 11.7 | 16.5 | 22.8 | 40.7 | 52.0 | 63.1 | 75.6 | 89.2 | 8.5 | 33.6 | 51.3 | 71.8 | 94.8 |
| 2.9 | 11.8 | 16.6 | 22.9 | 40.9 | 52.2 | 63.3 | 75.8 | 89.4 | 9.0 | 33.9 | 51.6 | 72.1 | 95.1 |
| 3.0 | 11.9 | 16.7 | 23.0 | 41.1 | 52.4 | 63.5 | 76.0 | 89.6 | 9.4 | 34.2 | 51.9 | 72.5 | 95.5 |
| 3.3 | 12.1 | 16.7 | 23.2 | 41.3 | 52.5 | 63.7 | 76.2 | 89.8 | 9.9 | 34.5 | 52.2 | 72.8 | 95.8 |
| 3.4 | 12.2 | 16.8 | 23.3 | 41.4 | 52.7 | 64.0 | 76.5 | 90.0 | 10.3 | 34.8 | 52.5 | 73.1 | 96.1 |
| 3.6 | 12.4 | 16.8 | 23.5 | 41.6 | 52.8 | 64.2 | 76.7 | 90.2 | 10.7 | 35.0 | 52.8 | 73.4 | 96.5 |
| 3.9 | 12.5 | 16.9 | 23.6 | 41.8 | 53.0 | 64.4 | 76.9 | 90.4 | 11.1 | 35.3 | 53.1 | 73.7 | 96.9 |
| 4.1 | 12.6 | 17.0 | 23.7 | 41.9 | 53.2 | 64.6 | 77.1 | 90.6 | 11.6 | 35.5 | 53.4 | 74.0 | 97.2 |
| 4.3 | 12.7 | 17.1 | 23.9 | 42.1 | 53.3 | 64.8 | 77.3 | 90.8 | 12.0 | 35.8 | 53.7 | 74.3 | 97.6 |
| 4.6 | 12.7 | 17.1 | 24.0 | 42.2 | 53.5 | 64.9 | 77.5 | 91.1 | 12.6 | 36.0 | 54.0 | 74.6 | 98.0 |
| 4.8 | 12.8 | 17.2 | 24.2 | 42.4 | 53.6 | 65.1 | 77.7 | 91.3 | 13.1 | 36.3 | 54.3 | 74.9 | 98.3 |
| 5.0 | 12.9 | 17.3 | 24.3 | 42.5 | 53.8 | 65.3 | 77.9 | 91.5 | 13.6 | 36.5 | 54.7 | 75.2 | 98.7 |
| 5.1 | 13.0 | 17.4 | 24.4 | 42.6 | 54.0 | 65.5 | 78.1 | 91.7 | 14.2 | 36.8 | 55.0 | 75.5 | 99.0 |
| 5.3 | 13.1 | 17.5 | 24.5 | 42.7 | 54.2 | 65.7 | 78.3 | 92.0 | 14.8 | 37.0 | 55.4 | 75.8 | 99.4 |
| 5.4 | 13.1 | 17.5 | 24.6 | 42.7 | 54.3 | 65.9 | 78.5 | 92.2 | 15.4 | 37.3 | 55.7 | 76.1 | 99.7 |
| 5.6 | 13.2 | 17.6 | 24.7 | 42.8 | 54.5 | 66.1 | 78.7 | 92.5 | 16.0 | 37.6 | 56.0 | 76.4 | 100.1 |
| 5.7 | 13.3 | 17.7 | 24.8 | 42.9 | 54.7 | 66.3 | 78.9 | 92.7 | 16.7 | 37.8 | 56.3 | 76.7 | 100.5 |
| 5.8 | 13.4 | 17.8 | 25.2 | 43.1 | 54.9 | 66.5 | 79.1 | 93.0 | 17.2 | 38.1 | 56.7 | 77.1 | 101.0 |
| 5.9 | 13.5 | 17.9 | 25.5 | 43.3 | 55.0 | 66.7 | 79.3 | 93.2 | 17.8 | 38.3 | 57.0 | 77.4 | 101.4 |
| 6.1 | 13.5 | 18.0 | 25.9 | 43.4 | 55.2 | 66.8 | 79.5 | 93.5 | 18.3 | 38.6 | 57.3 | 77.7 | 101.8 |
| 6.2 | 13.6 | 18.1 | 26.2 | 43.6 | 55.3 | 67.0 | 79.7 | 93.7 | 18.7 | 38.9 | 57.6 | 78.0 | 102.3 |
| 6.3 | 13.7 | 18.2 | 26.6 | 43.8 | 55.5 | 67.2 | 79.9 | 94.0 | 19.2 | 39.1 | 57.9 | 78.3 | 102.7 |
| 6.4 | 13.7 | 18.3 | 27.0 | 44.0 | 55.7 | 67.4 | 80.1 | 94.3 | 19.6 | 39.4 | 58.3 | 78.7 | 103.2 |
| 6.5 | 13.8 | 18.4 | 27.3 | 44.2 | 55.8 | 67.6 | 80.3 | 94.6 | 20.0 | 39.6 | 58.6 | 79.0 | 103.6 |
| 6.7 | 13.8 | 18.4 | 27.7 | 44.4 | 56.0 | 67.7 | 80.5 | 95.0 | 20.4 | 39.9 | 58.9 | 79.3 | 104.1 |
| 6.8 | 13.9 | 18.5 | 28.0 | 44.6 | 56.1 | 67.9 | 80.7 | 95.3 | 20.8 | 40.2 | 59.3 | 79.7 | 104.6 |
| 6.9 | 13.9 | 18.6 | 28.4 | 44.8 | 56.3 | 68.1 | 80.9 | 95.6 | 21.2 | 40.5 | 59.6 | 80.0 | 105.1 |
| 7.0 | 14.0 | 18.7 | 28.8 | 45.0 | 56.4 | 68.3 | 81.1 | 95.9 | 21.6 | 40.7 | 60.0 | 80.4 | 105.5 |
| 7.1 | 14.0 | 18.8 | 29.1 | 45.2 | 56.6 | 68.5 | 81.3 | 96.3 | 22.0 | 41.0 | 60.3 | 80.7 | 106.0 |
| 7.3 | 14.1 | 18.8 | 29.5 | 45.4 | 56.7 | 68.8 | 81.5 | 96.6 | 22.3 | 41.3 | 60.7 | 81.1 | 106.5 |
| 7.4 | 14.1 | 18.9 | 29.8 | 45.6 | 56.9 | 69.0 | 81.7 | 97.0 | 22.7 | 41.5 | 61.0 | 81.5 | |
| 7.5 | 14.2 | 19.0 | 30.2 | 45.8 | 57.0 | 69.2 | 81.9 | 97.3 | 23.1 | 41.7 | 61.4 | 81.8 | |
| 7.6 | 14.2 | 19.1 | 30.6 | 46.0 | 57.2 | 69.4 | 82.1 | 97.7 | 23.4 | 42.0 | 61.7 | 82.2 | |
| 7.7 | 14.3 | 19.2 | | | | | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | |
|---|------------------------|----------|--|-------------|-----------------------------|---|----------|--|------------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run |
| -L- 25+67 RT LN, 5.1' RT FW | | | | 10/9/2023 | -L- 27+64 RT LN, 0.3' RT FW | | | | 10/10/2023 |
| Type | Test Interval | Datum | | Cut/Fill | Type | Test Interval | Datum | | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | | Grade | DCP | Cumulative cm per blow | Subgrade | | Grade |
| 2.6 | 47.1 | | | | 1.5 | 57.2 | | | |
| 3.6 | 48.0 | | | | 2.9 | 58.2 | | | |
| 4.4 | 49.6 | | | | 4.5 | 59.2 | | | |
| 5.0 | 51.1 | | | | 5.5 | 60.3 | | | |
| 5.6 | 52.7 | | | | 6.3 | 61.3 | | | |
| 6.2 | 54.2 | | | | 7.0 | 62.3 | | | |
| 6.8 | 56.2 | | | | 7.7 | 63.4 | | | |
| 7.4 | 58.2 | | | | 8.4 | 64.5 | | | |
| 8.0 | 59.9 | | | | 9.0 | 65.6 | | | |
| 8.5 | 61.3 | | | | 9.7 | 66.8 | | | |
| 8.9 | 63.3 | | | | 10.4 | 67.9 | | | |
| 9.4 | 64.8 | | | | 11.1 | 69.1 | | | |
| 9.9 | 66.5 | | | | 11.9 | 70.4 | | | |
| 10.3 | 67.7 | | | | 12.5 | 71.8 | | | |
| 10.9 | 69.7 | | | | 13.3 | 73.1 | | | |
| 11.3 | 72.7 | | | | 14.0 | 74.4 | | | |
| 11.8 | 75.2 | | | | 14.7 | 75.6 | | | |
| 12.4 | 78.6 | | | | 15.5 | 76.9 | | | |
| 13.0 | 82.3 | | | | 16.2 | 78.3 | | | |
| 13.5 | 86.9 | | | | 17.0 | 79.8 | | | |
| 14.1 | 90.0 | | | | 17.8 | 81.4 | | | |
| 14.6 | 93.7 | | | | 18.6 | 83.0 | | | |
| 15.2 | 97.7 | | | | 19.3 | 84.7 | | | |
| 15.8 | 102.2 | | | | 20.0 | 86.6 | | | |
| 16.3 | 105.7 | | | | 20.8 | 88.6 | | | |
| 17.1 | | | | | 21.5 | 90.8 | | | |
| 17.6 | | | | | 22.2 | 92.8 | | | |
| 18.3 | | | | | 23.0 | 94.6 | | | |
| 19.0 | | | | | 23.8 | 98.3 | | | |
| 19.8 | | | | | 24.6 | 102.4 | | | |
| 20.5 | | | | | 25.5 | 105.6 | | | |
| 21.1 | | | | | 26.4 | | | | |
| 21.7 | | | | | 27.3 | | | | |
| 22.3 | | | | | 28.4 | | | | |
| 22.9 | | | | | 29.5 | | | | |
| 23.4 | | | | | 30.4 | | | | |
| 24.0 | | | | | 31.3 | | | | |
| 24.6 | | | | | 32.0 | | | | |
| 25.2 | | | | | 32.8 | | | | |
| 25.7 | | | | | 33.5 | | | | |
| 26.2 | | | | | 34.2 | | | | |
| 26.8 | | | | | 35.1 | | | | |
| 27.4 | | | | | 35.8 | | | | |
| 28.0 | | | | | 36.7 | | | | |
| 28.6 | | | | | 37.6 | | | | |
| 29.2 | | | | | 38.3 | | | | |
| 29.8 | | | | | 39.1 | | | | |
| 30.4 | | | | | 39.9 | | | | |
| 31.1 | | | | | 40.7 | | | | |
| 31.8 | | | | | 41.5 | | | | |
| 32.6 | | | | | 42.5 | | | | |
| 33.2 | | | | | 43.5 | | | | |
| 33.8 | | | | | 44.3 | | | | |
| 34.6 | | | | | 45.2 | | | | |
| 35.4 | | | | | 46.2 | | | | |
| 36.3 | | | | | 47.2 | | | | |
| 37.2 | | | | | 48.2 | | | | |
| 38.2 | | | | | 49.1 | | | | |
| 39.2 | | | | | 50.1 | | | | |
| 40.3 | | | | | 51.1 | | | | |
| 41.4 | | | | | 52.0 | | | | |
| 42.7 | | | | | 53.0 | | | | |
| 44.1 | | | | | 54.0 | | | | |
| 45.1 | | | | | 55.1 | | | | |
| 46.1 | | | | | 56.2 | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | |
|---|------------------------|-------|-------|-------------|-----------------------------|---|----------|--|-----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run |
| -L- 27+83 LT LN, 1.1' RT FW | | | | 10/9/2023 | -L- 29+88 LT LN, 1.1' RT FW | | | | 10/9/2023 |
| Type | Test Interval | Datum | | Cut/Fill | Type | Test Interval | Datum | | Cut/Fill |
| DCP | Cumulative cm per blow | ABC | | Fill | DCP | Cumulative cm per blow | Subgrade | | Grade |
| 1.1 | 23.2 | 44.4 | 89.2 | | 3.0 | | | | |
| 1.9 | 23.5 | 44.7 | 89.7 | | 5.4 | | | | |
| 2.5 | 23.8 | 45.0 | 90.3 | | 7.8 | | | | |
| 2.9 | 24.1 | 45.4 | 90.9 | | 10.3 | | | | |
| 3.3 | 24.4 | 45.7 | 91.5 | | 12.6 | | | | |
| 3.7 | 24.7 | 46.0 | 92.1 | | 14.4 | | | | |
| 4.1 | 25.0 | 46.4 | 92.7 | | 16.0 | | | | |
| 4.5 | 25.3 | 46.8 | 93.4 | | 17.5 | | | | |
| 4.9 | 25.6 | 47.1 | 94.1 | | 19.3 | | | | |
| 5.3 | 25.9 | 47.5 | 94.8 | | 20.7 | | | | |
| 5.7 | 26.2 | 47.9 | 95.6 | | 22.1 | | | | |
| 6.2 | 26.6 | 48.3 | 96.5 | | 23.8 | | | | |
| 6.6 | 26.9 | 48.8 | 97.1 | | 25.6 | | | | |
| 7.0 | 27.2 | 49.3 | 97.7 | | 27.4 | | | | |
| 7.4 | 27.6 | 49.7 | 98.2 | | 29.4 | | | | |
| 7.7 | 27.9 | 50.2 | 98.8 | | 31.3 | | | | |
| 7.9 | 28.2 | 50.6 | 99.3 | | 33.2 | | | | |
| 8.2 | 28.6 | 51.0 | 99.8 | | 35.1 | | | | |
| 8.5 | 28.9 | 51.5 | 100.3 | | 36.9 | | | | |
| 8.9 | 29.2 | 52.0 | | | 38.9 | | | | |
| 9.3 | 29.6 | 52.5 | | | 41.0 | | | | |
| 9.7 | 29.9 | 53.0 | | | 42.9 | | | | |
| 10.1 | 30.3 | 53.5 | | | 44.8 | | | | |
| 10.5 | 30.7 | 54.0 | | | 46.6 | | | | |
| 10.8 | 31.0 | 54.6 | | | 48.4 | | | | |
| 11.2 | 31.4 | 55.1 | | | 50.3 | | | | |
| 11.5 | 31.7 | 55.7 | | | 52.2 | | | | |
| 11.9 | 32.0 | 56.3 | | | 54.0 | | | | |
| 12.3 | 32.4 | 56.9 | | | 56.0 | | | | |
| 12.6 | 32.7 | 57.5 | | | 57.8 | | | | |
| 13.0 | 33.0 | 58.2 | | | 59.9 | | | | |
| 13.3 | 33.4 | 59.0 | | | 62.0 | | | | |
| 13.7 | 33.7 | 59.8 | | | 64.1 | | | | |
| 14.0 | 34.0 | 60.6 | | | 67.0 | | | | |
| 14.4 | 34.3 | 61.4 | | | 71.0 | | | | |
| 14.7 | 34.6 | 62.2 | | | 75.1 | | | | |
| 15.0 | 34.9 | 63.1 | | | 79.7 | | | | |
| 15.4 | 35.2 | 64.1 | | | 83.8 | | | | |
| 15.7 | 35.6 | 65.2 | | | 87.2 | | | | |
| 16.0 | 35.9 | 66.4 | | | 90.3 | | | | |
| 16.3 | 36.2 | 67.9 | | | 93.5 | | | | |
| 16.6 | 36.5 | 69.7 | | | 96.9 | | | | |
| 16.9 | 36.8 | 72.0 | | | 100.6 | | | | |
| 17.1 | 37.1 | 73.7 | | | 104.1 | | | | |
| 17.4 | 37.5 | 74.8 | | | | | | | |
| 17.6 | 37.8 | 75.6 | | | | | | | |
| 17.9 | 38.1 | 76.3 | | | | | | | |
| 18.2 | 38.5 | 77.1 | | | | | | | |
| 18.5 | 38.8 | 77.8 | | | | | | | |
| 18.8 | 39.1 | 78.4 | | | | | | | |
| 19.0 | 39.4 | 79.1 | | | | | | | |
| 19.2 | 39.8 | 79.6 | | | | | | | |
| 19.6 | 40.1 | 80.2 | | | | | | | |
| 19.9 | 40.4 | 80.8 | | | | | | | |
| 20.2 | 40.7 | 81.4 | | | | | | | |
| 20.5 | 41.0 | 82.0 | | | | | | | |
| 20.7 | 41.4 | 82.7 | | | | | | | |
| 21.0 | 41.7 | 83.4 | | | | | | | |
| 21.3 | 42.1 | 84.2 | | | | | | | |
| 21.6 | 42.4 | 85.0 | | | | | | | |
| 21.9 | 42.7 | 85.8 | | | | | | | |
| 22.2 | 43.1 | 86.5 | | | | | | | |
| 22.4 | 43.4 | 87.2 | | | | | | | |
| 22.7 | 43.8 | 87.9 | | | | | | | |
| 22.9 | 44.1 | 88.6 | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|----------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 30+70 RT LN, 1.9' RT FW | | | | 10/10/2023 | -L- 33+16 LT LN, 0.3' LT FW | | | | 10/9/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade |
| 2.6 | 57.0 | | | 3.8 | | | | | | | |
| 4.6 | 58.2 | | | 5.5 | | | | | | | |
| 5.5 | 59.3 | | | 7.5 | | | | | | | |
| 6.2 | 60.6 | | | 10.6 | | | | | | | |
| 7.0 | 61.9 | | | 16.7 | | | | | | | |
| 7.7 | 63.3 | | | 26.3 | | | | | | | |
| 8.3 | 64.6 | | | 30.4 | | | | | | | |
| 9.1 | 66.0 | | | 42.4 | | | | | | | |
| 9.9 | 67.4 | | | 48.3 | | | | | | | |
| 10.4 | 68.9 | | | 58.6 | | | | | | | |
| 11.0 | 70.5 | | | 65.6 | | | | | | | |
| 12.0 | 72.2 | | | 72.6 | | | | | | | |
| 12.7 | 74.2 | | | 79.7 | | | | | | | |
| 13.7 | 75.7 | | | 87.6 | | | | | | | |
| 14.6 | 77.0 | | | 95.5 | | | | | | | |
| 15.4 | 78.4 | | | 103.6 | | | | | | | |
| 16.3 | 80.0 | | | 111.4 | | | | | | | |
| 17.2 | 81.6 | | | | | | | | | | |
| 18.8 | 83.1 | | | | | | | | | | |
| 20.2 | 84.6 | | | | | | | | | | |
| 21.0 | 86.0 | | | | | | | | | | |
| 21.6 | 87.3 | | | | | | | | | | |
| 22.2 | 88.7 | | | | | | | | | | |
| 22.9 | 90.0 | | | | | | | | | | |
| 23.5 | 91.2 | | | | | | | | | | |
| 24.1 | 92.3 | | | | | | | | | | |
| 24.7 | 93.5 | | | | | | | | | | |
| 25.4 | 94.5 | | | | | | | | | | |
| 26.1 | 95.6 | | | | | | | | | | |
| 26.6 | 96.6 | | | | | | | | | | |
| 27.4 | 97.5 | | | | | | | | | | |
| 28.0 | 98.7 | | | | | | | | | | |
| 28.7 | 99.8 | | | | | | | | | | |
| 29.4 | 101.1 | | | | | | | | | | |
| 30.0 | | | | | | | | | | | |
| 30.8 | | | | | | | | | | | |
| 31.5 | | | | | | | | | | | |
| 32.1 | | | | | | | | | | | |
| 32.8 | | | | | | | | | | | |
| 33.5 | | | | | | | | | | | |
| 34.3 | | | | | | | | | | | |
| 35.0 | | | | | | | | | | | |
| 35.8 | | | | | | | | | | | |
| 36.5 | | | | | | | | | | | |
| 37.3 | | | | | | | | | | | |
| 38.1 | | | | | | | | | | | |
| 38.9 | | | | | | | | | | | |
| 39.7 | | | | | | | | | | | |
| 40.5 | | | | | | | | | | | |
| 41.3 | | | | | | | | | | | |
| 42.2 | | | | | | | | | | | |
| 43.1 | | | | | | | | | | | |
| 44.1 | | | | | | | | | | | |
| 45.2 | | | | | | | | | | | |
| 46.2 | | | | | | | | | | | |
| 47.2 | | | | | | | | | | | |
| 48.0 | | | | | | | | | | | |
| 49.0 | | | | | | | | | | | |
| 50.0 | | | | | | | | | | | |
| 50.9 | | | | | | | | | | | |
| 51.9 | | | | | | | | | | | |
| 52.9 | | | | | | | | | | | |
| 53.9 | | | | | | | | | | | |
| 54.9 | | | | | | | | | | | |
| 55.9 | | | | | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|----------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 33+17 LT LN, 6.2' RT FW | | | | 10/9/2023 | -L- 33+18 LT LN, 0.2' LT FY | | | | 10/9/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade |
| 1.8 | | | | 3.2 | | | | | | | |
| 3.6 | | | | 5.9 | | | | | | | |
| 5.3 | | | | 6.8 | | | | | | | |
| 6.3 | | | | 7.7 | | | | | | | |
| 7.2 | | | | 8.6 | | | | | | | |
| 8.1 | | | | 9.4 | | | | | | | |
| 8.9 | | | | 10.1 | | | | | | | |
| 9.9 | | | | 10.8 | | | | | | | |
| 10.8 | | | | 11.4 | | | | | | | |
| 11.8 | | | | 12.0 | | | | | | | |
| 13.0 | | | | 12.5 | | | | | | | |
| 14.5 | | | | 12.9 | | | | | | | |
| 16.5 | | | | 13.3 | | | | | | | |
| 19.8 | | | | 13.8 | | | | | | | |
| 24.6 | | | | 14.3 | | | | | | | |
| 31.1 | | | | 14.7 | | | | | | | |
| 39.3 | | | | 15.2 | | | | | | | |
| 46.6 | | | | 15.7 | | | | | | | |
| 52.1 | | | | 16.3 | | | | | | | |
| 57.8 | | | | 16.8 | | | | | | | |
| 64.1 | | | | 17.5 | | | | | | | |
| 69.3 | | | | 18.3 | | | | | | | |
| 73.7 | | | | 19.1 | | | | | | | |
| 78.7 | | | | 19.8 | | | | | | | |
| 83.8 | | | | 20.5 | | | | | | | |
| 89.8 | | | | 21.1 | | | | | | | |
| 95.0 | | | | 21.8 | | | | | | | |
| 99.8 | | | | 22.4 | | | | | | | |
| 104.3 | | | | 23.2 | | | | | | | |
| 109.4 | | | | 23.9 | | | | | | | |
| | | | | 24.5 | | | | | | | |
| | | | | 25.1 | | | | | | | |
| | | | | 25.7 | | | | | | | |
| | | | | 26.4 | | | | | | | |
| | | | | 27.0 | | | | | | | |
| | | | | 27.8 | | | | | | | |
| | | | | 28.5 | | | | | | | |
| | | | | 29.1 | | | | | | | |
| | | | | 30.0 | | | | | | | |
| | | | | 30.7 | | | | | | | |
| | | | | 31.6 | | | | | | | |
| | | | | 32.4 | | | | | | | |
| | | | | 33.3 | | | | | | | |
| | | | | 34.1 | | | | | | | |
| | | | | 35.0 | | | | | | | |
| | | | | 36.0 | | | | | | | |
| | | | | 37.1 | | | | | | | |
| | | | | 38.1 | | | | | | | |
| | | | | 39.3 | | | | | | | |
| | | | | 40.6 | | | | | | | |
| | | | | 42.0 | | | | | | | |
| | | | | 43.5 | | | | | | | |
| | | | | 45.1 | | | | | | | |
| | | | | 46.8 | | | | | | | |
| | | | | 48.6 | | | | | | | |
| | | | | 50.8 | | | | | | | |
| | | | | 53.4 | | | | | | | |
| | | | | 56.3 | | | | | | | |
| | | | | 60.3 | | | | | | | |
| | | | | 71.6 | | | | | | | |
| | | | | 78.8 | | | | | | | |
| | | | | 88.5 | | | | | | | |
| | | | | 96.7 | | | | | | | |
| | | | | 104.7 | | | | | | | |

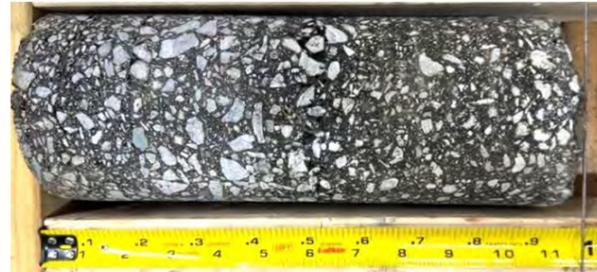
| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|----------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 36+14 RT LN, 0.8' RT FW | | | | 10/10/2023 | -L- 38+09 LT LN, 0.9' LT FW | | | | 10/10/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade |
| 3.6 | 93.5 | | | 4.1 | | | | | | | |
| 5.2 | 95.1 | | | 6.4 | | | | | | | |
| 6.3 | 96.0 | | | 27.4 | | | | | | | |
| 7.4 | 97.6 | | | 29.4 | | | | | | | |
| 8.5 | 99.0 | | | 30.4 | | | | | | | |
| 9.8 | 100.4 | | | 32.1 | | | | | | | |
| 11.2 | 102.0 | | | 33.7 | | | | | | | |
| 12.8 | 103.8 | | | 35.1 | | | | | | | |
| 14.6 | 105.1 | | | 36.6 | | | | | | | |
| 16.6 | | | | 38.1 | | | | | | | |
| 18.1 | | | | 39.8 | | | | | | | |
| 19.5 | | | | 41.6 | | | | | | | |
| 20.9 | | | | 43.7 | | | | | | | |
| 22.3 | | | | 46.8 | | | | | | | |
| 24.0 | | | | 53.3 | | | | | | | |
| 25.8 | | | | 58.7 | | | | | | | |
| 27.4 | | | | 63.4 | | | | | | | |
| 28.9 | | | | 68.0 | | | | | | | |
| 30.3 | | | | 72.0 | | | | | | | |
| 32.0 | | | | 75.6 | | | | | | | |
| 33.7 | | | | 79.1 | | | | | | | |
| 35.3 | | | | 82.6 | | | | | | | |
| 37.0 | | | | 86.4 | | | | | | | |
| 38.0 | | | | 90.1 | | | | | | | |
| 39.6 | | | | 93.5 | | | | | | | |
| 41.0 | | | | 97.0 | | | | | | | |
| 42.3 | | | | 100.5 | | | | | | | |
| 43.7 | | | | 103.0 | | | | | | | |
| 44.8 | | | | 106.0 | | | | | | | |
| 45.9 | | | | 109.3 | | | | | | | |
| 47.1 | | | | 112.9 | | | | | | | |
| 48.3 | | | | 116.6 | | | | | | | |
| 49.6 | | | | 119.6 | | | | | | | |
| 51.1 | | | | 123.0 | | | | | | | |
| 52.6 | | | | 126.6 | | | | | | | |
| 54.1 | | | | 129.8 | | | | | | | |
| 55.6 | | | | | | | | | | | |
| 57.0 | | | | | | | | | | | |
| 58.1 | | | | | | | | | | | |
| 59.4 | | | | | | | | | | | |
| 60.6 | | | | | | | | | | | |
| 61.7 | | | | | | | | | | | |
| 62.9 | | | | | | | | | | | |
| 64.2 | | | | | | | | | | | |
| 65.7 | | | | | | | | | | | |
| 67.2 | | | | | | | | | | | |
| 68.5 | | | | | | | | | | | |
| 69.9 | | | | | | | | | | | |
| 70.4 | | | | | | | | | | | |
| 71.8 | | | | | | | | | | | |
| 73.2 | | | | | | | | | | | |
| 74.8 | | | | | | | | | | | |
| 76.1 | | | | | | | | | | | |
| 77.6 | | | | | | | | | | | |
| 79.1 | | | | | | | | | | | |
| 80.6 | | | | | | | | | | | |
| 82.1 | | | | | | | | | | | |
| 83.4 | | | | | | | | | | | |
| 84.8 | | | | | | | | | | | |
| 86.0 | | | | | | | | | | | |
| 87.3 | | | | | | | | | | | |
| 88.2 | | | | | | | | | | | |
| 89.8 | | | | | | | | | | | |
| 91.5 | | | | | | | | | | | |
| 91.9 | | | | | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|----------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 39+44 RT LN, 0.5' RT FW | | | | 10/10/2023 | -L- 41+01 RT LN, 0.8' LT FW | | | | 10/10/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade |
| 2.1 | | | | 1.8 | 95.2 | | | | | | |
| 3.7 | | | | 2.9 | 96.7 | | | | | | |
| 5.1 | | | | 3.6 | 97.8 | | | | | | |
| 6.7 | | | | 4.3 | 98.9 | | | | | | |
| 8.4 | | | | 4.9 | 100.2 | | | | | | |
| 11.2 | | | | 5.3 | 101.9 | | | | | | |
| 13.4 | | | | 5.7 | | | | | | | |
| 15.1 | | | | 6.4 | | | | | | | |
| 16.5 | | | | 7.2 | | | | | | | |
| 18.0 | | | | 8.1 | | | | | | | |
| 19.9 | | | | 8.9 | | | | | | | |
| 22.3 | | | | 9.7 | | | | | | | |
| 24.5 | | | | 10.5 | | | | | | | |
| 26.6 | | | | 11.3 | | | | | | | |
| 28.9 | | | | 12.1 | | | | | | | |
| 32.3 | | | | 13.0 | | | | | | | |
| 37.6 | | | | 13.8 | | | | | | | |
| 40.2 | | | | 14.7 | | | | | | | |
| 42.6 | | | | 15.6 | | | | | | | |
| 47.3 | | | | 16.7 | | | | | | | |
| 49.4 | | | | 17.7 | | | | | | | |
| 51.1 | | | | 18.6 | | | | | | | |
| 53.0 | | | | 19.5 | | | | | | | |
| 54.8 | | | | 20.4 | | | | | | | |
| 56.9 | | | | 21.4 | | | | | | | |
| 60.0 | | | | 22.4 | | | | | | | |
| 64.5 | | | | 23.4 | | | | | | | |
| 68.0 | | | | 24.4 | | | | | | | |
| 70.7 | | | | 25.5 | | | | | | | |
| 73.8 | | | | 26.6 | | | | | | | |
| 75.9 | | | | 27.6 | | | | | | | |
| 77.5 | | | | 28.7 | | | | | | | |
| 78.9 | | | | 30.2 | | | | | | | |
| 80.3 | | | | 31.4 | | | | | | | |
| 81.8 | | | | 32.8 | | | | | | | |
| 83.3 | | | | 34.3 | | | | | | | |
| 84.6 | | | | 36.0 | | | | | | | |
| 85.9 | | | | 38.7 | | | | | | | |
| 87.2 | | | | 43.6 | | | | | | | |
| 88.3 | | | | 46.4 | | | | | | | |
| 89.5 | | | | 48.3 | | | | | | | |
| 91.0 | | | | 50.4 | | | | | | | |
| 92.3 | | | | 52.6 | | | | | | | |
| 93.7 | | | | 55.0 | | | | | | | |
| 95.4 | | | | 60.2 | | | | | | | |
| 96.7 | | | | 64.3 | | | | | | | |
| 97.9 | | | | 66.5 | | | | | | | |
| | | | | 68.1 | | | | | | | |
| | | | | 69.4 | | | | | | | |
| | | | | 70.8 | | | | | | | |
| | | | | 72.2 | | | | | | | |
| | | | | 73.8 | | | | | | | |
| | | | | 75.1 | | | | | | | |
| | | | | 76.4 | | | | | | | |
| | | | | 78.1 | | | | | | | |
| | | | | 79.5 | | | | | | | |
| | | | | 81.2 | | | | | | | |
| | | | | 83.1 | | | | | | | |
| | | | | 84.5 | | | | | | | |
| | | | | 85.9 | | | | | | | |
| | | | | 87.6 | | | | | | | |
| | | | | 89.2 | | | | | | | |
| | | | | 91.1 | | | | | | | |
| | | | | 92.4 | | | | | | | |
| | | | | 93.8 | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|----------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 41+76 LT LN, 1.1' RT FW | | | | 10/9/2023 | -L- 43+37 RT LN, 1.7' RT FW | | | | 10/10/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | Subgrade | Grade |
| 3.8 | 87.8 | | | 1.1 | 46.9 | | | | | | |
| 5.4 | 89.4 | | | 2.1 | 48.4 | | | | | | |
| 6.3 | 91.1 | | | 3.1 | 50.0 | | | | | | |
| 7.1 | 92.9 | | | 3.9 | 51.7 | | | | | | |
| 7.8 | 94.5 | | | 4.6 | 53.7 | | | | | | |
| 8.4 | 95.6 | | | 5.2 | 55.8 | | | | | | |
| 8.9 | | | | 5.6 | 57.9 | | | | | | |
| 9.4 | | | | 6.1 | 59.8 | | | | | | |
| 9.9 | | | | 6.4 | 61.3 | | | | | | |
| 10.4 | | | | 6.7 | 62.8 | | | | | | |
| 10.8 | | | | 7.0 | 64.4 | | | | | | |
| 11.3 | | | | 7.5 | 65.9 | | | | | | |
| 11.7 | | | | 7.8 | 67.5 | | | | | | |
| 12.1 | | | | 8.4 | 69.1 | | | | | | |
| 12.7 | | | | 9.0 | 70.6 | | | | | | |
| 13.2 | | | | 9.6 | 72.0 | | | | | | |
| 13.8 | | | | 10.1 | 73.5 | | | | | | |
| 14.4 | | | | 10.7 | 75.0 | | | | | | |
| 15.0 | | | | 11.3 | 76.6 | | | | | | |
| 15.7 | | | | 11.9 | 78.3 | | | | | | |
| 16.7 | | | | 12.3 | 79.0 | | | | | | |
| 18.1 | | | | 12.8 | 79.6 | | | | | | |
| 20.3 | | | | 13.3 | 80.4 | | | | | | |
| 23.7 | | | | 13.8 | 81.3 | | | | | | |
| 28.8 | | | | 14.2 | 82.4 | | | | | | |
| 32.8 | | | | 14.6 | 83.3 | | | | | | |
| 35.5 | | | | 15.2 | 84.5 | | | | | | |
| 37.9 | | | | 15.6 | | | | | | | |
| 39.9 | | | | 16.1 | | | | | | | |
| 41.7 | | | | 16.6 | | | | | | | |
| 43.4 | | | | 17.0 | | | | | | | |
| 45.1 | | | | 17.4 | | | | | | | |
| 46.5 | | | | 17.9 | | | | | | | |
| 48.1 | | | | 18.5 | | | | | | | |
| 49.7 | | | | 19.1 | | | | | | | |
| 51.3 | | | | 19.5 | | | | | | | |
| 52.7 | | | | 20.1 | | | | | | | |
| 54.1 | | | | 20.2 | | | | | | | |
| 55.6 | | | | 20.3 | | | | | | | |
| 57.0 | | | | 20.9 | | | | | | | |
| 58.6 | | | | 21.4 | | | | | | | |
| 60.0 | | | | 21.8 | | | | | | | |
| 61.4 | | | | 22.5 | | | | | | | |
| 62.7 | | | | 23.3 | | | | | | | |
| 63.9 | | | | 24.0 | | | | | | | |
| 65.2 | | | | 24.5 | | | | | | | |
| 66.4 | | | | 25.3 | | | | | | | |
| 67.7 | | | | 26.2 | | | | | | | |
| 68.7 | | | | 27.0 | | | | | | | |
| 69.8 | | | | 27.9 | | | | | | | |
| 70.8 | | | | 29.0 | | | | | | | |
| 72.0 | | | | 30.2 | | | | | | | |
| 73.1 | | | | 31.3 | | | | | | | |
| 74.2 | | | | 32.4 | | | | | | | |
| 75.3 | | | | 33.5 | | | | | | | |
| 76.2 | | | | 34.5 | | | | | | | |
| 77.5 | | | | 35.6 | | | | | | | |
| 78.6 | | | | 36.8 | | | | | | | |
| 79.7 | | | | 37.8 | | | | | | | |
| 80.4 | | | | 38.9 | | | | | | | |
| 81.2 | | | | 40.3 | | | | | | | |
| 81.8 | | | | 41.9 | | | | | | | |
| 83.1 | | | | 43.0 | | | | | | | |
| 84.6 | | | | 44.3 | | | | | | | |
| 86.2 | | | | 45.5 | | | | | | | |

| DUAL MASS DYNAMIC CONE PENETROMETER DATA SHEET | | | | WBS NO. | PROJECT TIP I.D. | ROUTE | | | | | |
|---|------------------------|----------|----------|-------------|-----------------------------|---|----------|------|------------------------|-------|----------|
| | | | | 44849.1.3 | W-5703C | US 421 (Carolina Beach Rd.) from US 117/NC 132 (College Rd.) to 200 feet North of Wiloughby Park | | | | | |
| | | | | COUNTY | FIELD PROFESSIONAL | FIELD CREW | | | | | |
| New Hanover | | | | Thomas Park | | Andrew Dunivan | | | | | |
| Test Location | | | | Date Run | Test Location | | | | Date Run | | |
| -L- 44+81 LT LN, 1.2' RT FW | | | | 10/9/2023 | -L- 46+52 RT LN, 2.5' RT FW | | | | 10/11/2023 | | |
| Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill | Type | Test Interval | Datum | Cut/Fill |
| DCP | Cumulative cm per blow | Subgrade | Grade | DCP | Cumulative cm per blow | ABC | Fill | DCP | Cumulative cm per blow | ABC | Fill |
| 3.9 | 60.0 | | | 0.4 | 65.5 | | | | | | |
| 5.5 | 60.4 | | | 0.7 | 66.9 | | | | | | |
| 6.7 | 61.0 | | | 1.0 | 68.4 | | | | | | |
| 7.8 | 62.1 | | | 1.3 | 70.0 | | | | | | |
| 8.7 | 63.9 | | | 1.7 | 71.5 | | | | | | |
| 9.3 | 65.3 | | | 2.2 | 73.1 | | | | | | |
| 9.9 | 66.2 | | | 2.6 | 74.7 | | | | | | |
| 10.5 | 66.8 | | | 2.9 | 76.3 | | | | | | |
| 11.2 | 67.1 | | | 3.2 | 77.9 | | | | | | |
| 11.8 | 67.4 | | | 3.6 | 80.0 | | | | | | |
| 12.5 | 67.7 | | | 4.1 | 82.0 | | | | | | |
| 13.5 | 68.0 | | | 4.5 | 84.2 | | | | | | |
| 14.0 | 68.2 | | | 4.9 | 86.3 | | | | | | |
| 14.4 | 68.6 | | | 5.3 | 88.3 | | | | | | |
| 14.9 | 69.1 | | | 5.4 | 90.8 | | | | | | |
| 15.4 | 69.6 | | | 5.7 | 93.4 | | | | | | |
| 15.9 | 70.3 | | | 6.0 | 96.5 | | | | | | |
| 16.3 | 71.3 | | | 6.4 | 99.8 | | | | | | |
| 16.9 | 73.0 | | | 6.8 | 103.2 | | | | | | |
| 17.4 | 74.4 | | | 7.0 | 106.7 | | | | | | |
| 17.9 | 75.6 | | | 7.2 | | | | | | | |
| 18.4 | 76.9 | | | 7.5 | | | | | | | |
| 18.9 | 78.4 | | | 7.9 | | | | | | | |
| 19.3 | 79.7 | | | 8.3 | | | | | | | |
| 19.8 | 81.1 | | | 8.6 | | | | | | | |
| 20.4 | 82.5 | | | 9.0 | | | | | | | |
| 21.0 | 84.0 | | | 9.2 | | | | | | | |
| 21.5 | 85.6 | | | 9.5 | | | | | | | |
| 22.1 | 87.0 | | | 9.8 | | | | | | | |
| 22.5 | 88.8 | | | 10.9 | | | | | | | |
| 23.3 | 90.7 | | | 11.9 | | | | | | | |
| 23.9 | 92.5 | | | 12.8 | | | | | | | |
| 24.7 | 94.1 | | | 14.0 | | | | | | | |
| 25.5 | | | | 14.8 | | | | | | | |
| 26.4 | | | | 16.1 | | | | | | | |
| 27.3 | | | | 17.6 | | | | | | | |
| 28.2 | | | | 19.4 | | | | | | | |
| 30.2 | | | | 20.8 | | | | | | | |
| 31.7 | | | | 22.5 | | | | | | | |
| 33.9 | | | | 24.4 | | | | | | | |
| 35.5 | | | | 26.1 | | | | | | | |
| 38.4 | | | | 28.0 | | | | | | | |
| 43.3 | | | | 29.8 | | | | | | | |
| 49.0 | | | | 31.3 | | | | | | | |
| 51.7 | | | | 32.8 | | | | | | | |
| 52.7 | | | | 34.4 | | | | | | | |
| 53.8 | | | | 36.0 | | | | | | | |
| 54.9 | | | | 37.4 | | | | | | | |
| 55.6 | | | | 38.9 | | | | | | | |
| 56.0 | | | | 40.3 | | | | | | | |
| 56.3 | | | | 41.7 | | | | | | | |
| 56.4 | | | | 43.3 | | | | | | | |
| 56.5 | | | | 44.7 | | | | | | | |
| 56.6 | | | | 46.3 | | | | | | | |
| 56.7 | | | | 47.9 | | | | | | | |
| 56.8 | | | | 49.5 | | | | | | | |
| 56.9 | | | | 51.2 | | | | | | | |
| 57.1 | | | | 53.0 | | | | | | | |
| 57.2 | | | | 54.8 | | | | | | | |
| 57.4 | | | | 56.3 | | | | | | | |
| 57.5 | | | | 58.0 | | | | | | | |
| 58.0 | | | | 59.3 | | | | | | | |
| 58.5 | | | | 60.7 | | | | | | | |
| 59.0 | | | | 62.2 | | | | | | | |
| 59.5 | | | | 63.9 | | | | | | | |

| | | |
|---|--|------------------------------|
|  | PROJECT DESCRIPTION: | TIP NUMBER: W-5703C |
| | US 421 (Carolina Beach Road) from US 117/NC 132 (College Road) to 200 feet North of Wiloughby Park | WBS NUMBER: 44847.1.3 |
| CATLIN PROJECT NUMBER: 223210 | PAVEMENT CORE PHOTOGRAPHS | |
| | | COUNTY: NEW HANOVER |



CB-01_L-2501_LT
LT OSL - 0.4' LT FW



CB-02_L-2534_RT
RT LN (O) - 0.2' RT FW



CB-03_L-2533_RT
RT LN (O) - 6.9' LT FW



CB-04_L-2566_RT
RT ISS - 2.3' RT C&G



CB-05_L-2567_RT
LTL (RT) - 5.1' RT FW



CB-06_L-2764_RT
RTL PS (RT) - 0.3' RT FW



CB-07_L-2783_LT
LT OSS - 1.1' RT FW



CB-08_L-2988_LT
RTL PS (LT) - 1.1' RT FW



CB-09_L-3070_RT
RT PS - 1.9' RT FW



CB-10_L-3316_LT
LT PS - 0.3' LT FW



CB-11_L-3317_LT
LT OSL - 6.2' RT FW



CB-12_L-3318_LT
LT ISL - 0.2' LT FY



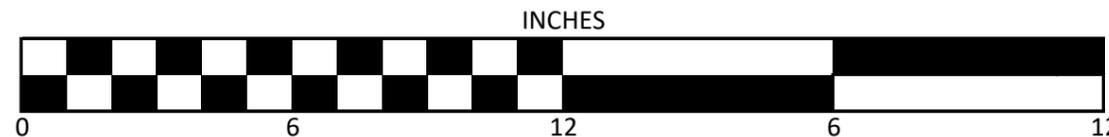
CB-13_L-3614_RT
RTL PS (RT) - 0.8' RT FW



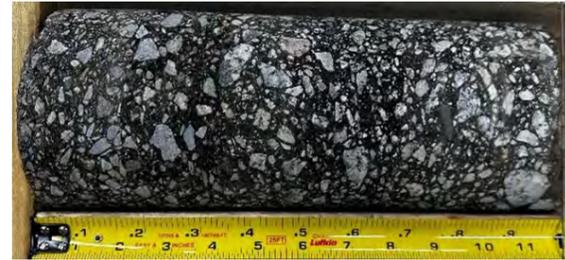
CB-14_L-3809_LT
RTL PS (LT) - 0.9' LT FW



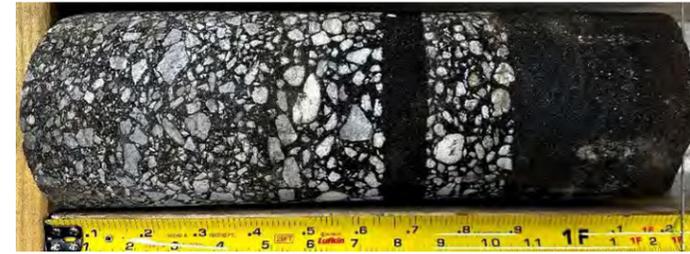
CB-15_L-3944_RT
RTL PS (RT) - 0.5' RT FW



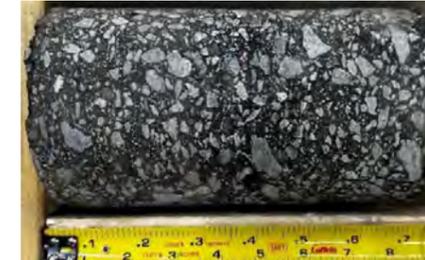
| | | |
|---|--|------------------------------|
|  | PROJECT DESCRIPTION: | TIP NUMBER: W-5703C |
| | US 421 (Carolina Beach Road) from US 117/NC 132 (College Road) to 200 feet North of Wiloughby Park | WBS NUMBER: 44847.1.3 |
| CATLIN PROJECT NUMBER: 223210 | PAVEMENT CORE PHOTOGRAPHS | |
| | | COUNTY: NEW HANOVER |



CB-16_L-4101_RT
RTL (RT) - 0.8' LT FW



CB-17_L-4176_LT
LT PS - 1.1' RT FW



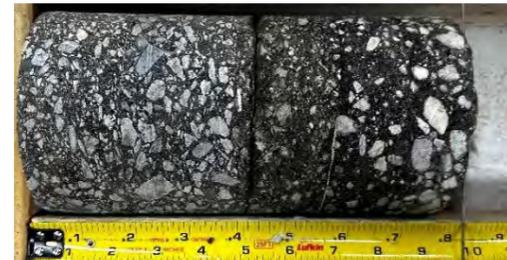
CB-18_L-4337_RT
RT PS - 1.7' RT FW



CB-19_L-4481_LT
RTL PS (LT) - 1.2' RT FW



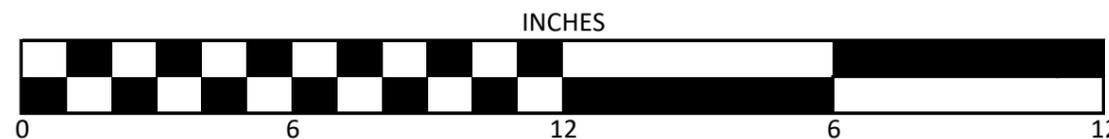
CB-20_L-4652_RT
RTL (RT) - 2.5' RT FW



CB-21_L-4652_RT
RT OSL - 0.5' LT FW



CB-22_L-4847_RT
RT PS - 1.5' RT FW



LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS

| Proj. Sample Number | S-04 | S-03 | S-05 | S-06 | S-07 | S-08 | S-09 | S-11 | S-12 | S-14 | S-13 | S-15 | S-16 | S-18 | S-17 |
|------------------------------------|-----------------|-----------------|---------------|---------------|-----------------|-----------------|---------------|---------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|-----------------|
| Lab Sample Number | S-04 | S-03 | S-05 | S-06 | S-07 | S-08 | S-09 | S-11 | S-12 | S-14 | S-13 | S-15 | S-16 | S-18 | S-17 |
| Retained #4 Sieve % | 2.9 | 0.5 | 6 | 9.9 | 1.3 | 0.2 | 1.1 | 0 | 0.1 | 0 | 4.2 | 8.7 | 0 | 0.3 | 9.9 |
| Passing #10 Sieve % | 96.3 | 99.3 | 90.4 | 87.2 | 98.5 | 99.7 | 98.8 | 100 | 99.8 | 100 | 95.0 | 89.3 | 100 | 99.0 | 88.6 |
| Passing #40 Sieve % | 85 | 88 | 79 | 76 | 95 | 98 | 98 | 99 | 99 | 100 | 89 | 75 | 99 | 97 | 81 |
| Passing #200 Sieve % | 16 | 25 | 7 | 7 | 23 | 12 | 53 | 47 | 34 | 49 | 35 | 16 | 18 | 17 | 14 |
| MINUS NUMBER 10 FRACTION | | | | | | | | | | | | | | | |
| SOIL MORTAR - 100% | | | | | | | | | | | | | | | |
| Coarse Sand Ret.-#60 % | 35.5 | 33.6 | 48.2 | 46.7 | 16.3 | 14.2 | 4.7 | 4.8 | 4.5 | 1.9 | 18.2 | 36.1 | 10.3 | 12.1 | 22.0 |
| Fine Sand Ret.-#270 % | 49.3 | 43.0 | 45.1 | 45.5 | 64.3 | 75.4 | 48.7 | 53.5 | 65.5 | 55.7 | 49.7 | 48.2 | 73.9 | 72.5 | 64.8 |
| Silt 0.05 - 0.005mm % | 6.9 | 17.0 | 1.7 | 3.0 | 10.0 | 4.2 | 20.0 | 18.0 | 11.5 | 17.6 | 14.6 | 8.4 | 5.4 | 6.1 | 4.9 |
| Clay <0.005mm % | 8.3 | 6.5 | 5.0 | 4.8 | 9.4 | 6.2 | 26.5 | 23.7 | 18.4 | 24.8 | 17.5 | 7.4 | 10.4 | 9.3 | 8.3 |
| Liquid Limit (LL) | NP | NP | NP | NP | NP | NP | 25 | 22 | 17 | 23 | 21 | 17 | NP | NP | NP |
| Plasticity Index (PI) | NP | NP | NP | NP | NP | NP | 12 | 7 | 3 | 8 | 9 | 1 | NP | NP | NP |
| AASHTO Classification /Group Index | A-2-4(0) | A-2-4(0) | A-3(0) | A-3(0) | A-2-4(0) | A-2-4(0) | A-6(3) | A-4(0) | A-2-4(0) | A-4(1) | A-4(0) | A-2-4(0) | A-2-4(0) | A-2-4(0) | A-2-4(0) |
| Organic Content % | 2.9 | N/A | N/A | N/A | N/A | N/A | 3.2 | N/A | N/A | N/A | 2.7 | 2.2 | N/A | 0.9 | N/A |
| Station | 25+01 | 25+01 | 25+34 | 25+67 | 27+64 | 30+70 | 33+16 | 33+18 | 36+14 | 38+09 | 39+44 | 41+01 | 41+76 | 43+37 | 44+81 |
| Offset | 57ft LT | 57ft LT | 42ft RT | 2ft RT | 52ft RT | 43ft RT | 44ft LT | 20ft LT | 53ft RT | 54ft LT | 52ft RT | 50ft RT | 42ft LT | 42ft RT | 52ft LT |
| Alignment | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- | -L- |
| Boring Identification | CB-01 | CB-01 | CB-02 | CB-05 | CB-06 | CB-09 | CB-10 | CB-12 | CB-13 | CB-14 | CB-15 | CB-16 | CB-17 | CB-18 | CB-19 |
| Depth (FT) | 1.1 | 1.5 | 1.5 | 1.7 | 0.7 | 0.6 | 1.3 | 3.6 | 4.3 | 4.2 | 0.9 | 1.1 | 2.8 | 0.7 | 0.6 |
| to | 1.5 | 2.7 | 5.0 | 5.0 | 5.0 | 3.3 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 2.5 | 4.0 | 5.0 | 1.8 |
| Field Moist. Content % | | | | | | | 26 | 27 | | 30 | 19 | | | | |
| Tested By | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON |
| Submitted By | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK |
| Date Submitted | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 |

NP = Non-Plastic
NEM = Not Enough Material for Analysis
N/A = Not Applicable / Not Analyzed


Laboratory Manager

Report Date: 11/29/2023
Laboratory Report Page 1 of 2

LABORATORY SUMMARY SHEET

AASHTO Standard Specifications
(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS

| Proj. Sample Number | S-19 | S-20 | S-21 | SS-03 | SS-01 | SS-02 | | | | | | | | |
|------------------------------------|-----------------|---------------|-----------------|-----------------|---------------|-----------------|--|--|--|--|--|--|--|--|
| Lab Sample Number | S-19 | S-20 | S-21 | SS-03 | SS-01 | SS-02 | | | | | | | | |
| Retained #4 Sieve % | 14.5 | 0 | 4.8 | 0 | 0.2 | 7.2 | | | | | | | | |
| Passing #10 Sieve % | 84.8 | 100 | 94.9 | 99.2 | 99.7 | 86.7 | | | | | | | | |
| Passing #40 Sieve % | 81 | 99 | 88 | 78 | 83 | 50 | | | | | | | | |
| Passing #200 Sieve % | 12 | 36 | 11 | 14 | 4 | 13 | | | | | | | | |
| MINUS NUMBER 10 FRACTION | | | | | | | | | | | | | | |
| SOIL MORTAR - 100% | | | | | | | | | | | | | | |
| Coarse Sand Ret.-#60 % | 18.1 | 5.9 | 32.3 | 37.8 | 51.5 | 64.4 | | | | | | | | |
| Fine Sand Ret.-#270 % | 70.0 | 60.5 | 57.8 | 53.3 | 45.3 | 21.6 | | | | | | | | |
| Silt 0.05 - 0.005mm % | 4.8 | 10.0 | 2.0 | 3.2 | 1.7 | 6.6 | | | | | | | | |
| Clay <0.005mm % | 7.1 | 23.6 | 7.9 | 5.7 | 1.5 | 7.4 | | | | | | | | |
| Liquid Limit (LL) | NP | 19 | NP | NP | NP | NP | | | | | | | | |
| Plasticity Index (PI) | NP | 5 | NP | NP | NP | NP | | | | | | | | |
| AASHTO Classification /Group Index | A-2-4(0) | A-4(0) | A-2-4(0) | A-2-4(0) | A-3(0) | A-2-4(0) | | | | | | | | |
| Organic Content % | 4.3 | 2.4 | N/A | 28.6 | 0.6 | 1.0 | | | | | | | | |
| Station | 44+81 | 46+52 | 48+47 | 25+98 | 25+98 | 25+98 | | | | | | | | |
| Offset | 52ft LT | 54ft RT | 42ft RT | 54ft RT | 54ft RT | 54ft RT | | | | | | | | |
| Alignment | -L- | -L- | -L- | -L- | -L- | -L- | | | | | | | | |
| Boring Identification | CB-19 | CB-20 | CB-22 | CUL-01 | CUL-01 | CUL-01 | | | | | | | | |
| Depth (FT) | 1.8 | 4.0 | 0.8 | 13.5 | 18.5 | 23.5 | | | | | | | | |
| to | 5.0 | 5.0 | 5.0 | 15.0 | 20.0 | 25.0 | | | | | | | | |
| Field Moist. Content % | | 18 | | | | | | | | | | | | |
| Tested By | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | MDMASON | | | | | | | | |
| Submitted By | TPARK | TPARK | TPARK | TPARK | TPARK | TPARK | | | | | | | | |
| Date Submitted | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | 10/16/23 | | | | | | | | |

NP = Non-Plastic
NEM = Not Enough Material for Analysis
N/A = Not Applicable / Not Analyzed

Michael D. Mason

Laboratory Manager

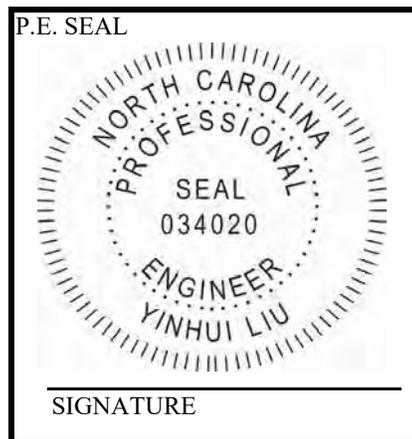
Report Date: 11/29/2023
Laboratory Report Page 2 of 2

FOUNDATION RECOMMENDATIONS

PROJECT 42623/44849.1.3
 TIP NO. W-5703C
 COUNTY New Hanover
 STATION Sta. 26+19 -L-

DESCRIPTION US 421 from US 117/NC 132 to 200 feet North of Wilmington Park - Culvert Extension

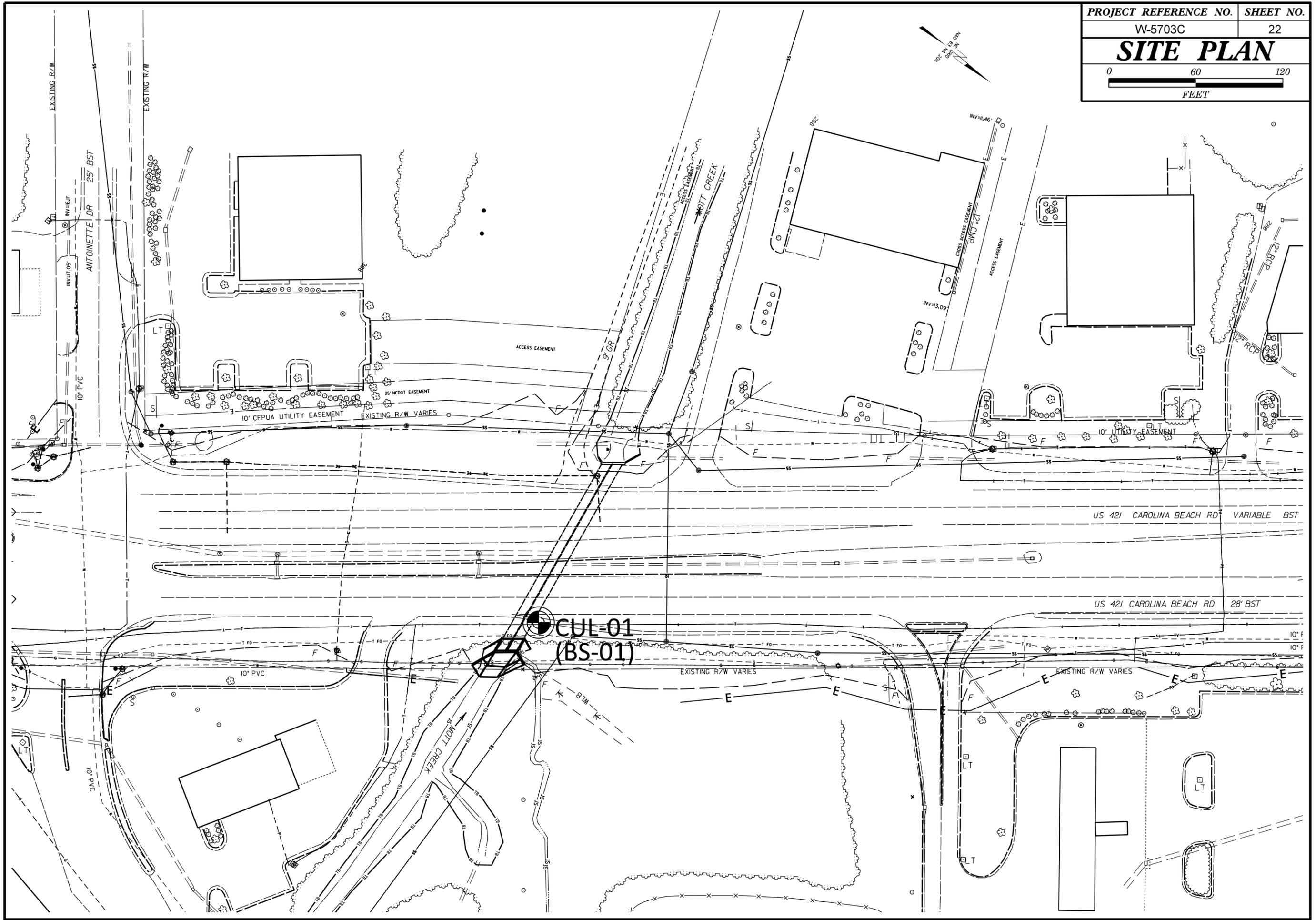
| | INITIALS | DATE |
|--------|----------|---------|
| DESIGN | YL | 4/10/24 |
| CHECK | BDLJR | 4/10/24 |



| STATION | CULVERT SIZE | FOUNDATION TYPE | MISCELLANEOUS DETAILS |
|-----------|-------------------|--|---|
| 26+19 -L- | 2@6' x 8' RCBC | Min. 12" of Foundation Conditioning Material | Approximate Culvert Length = 9' Upstream Extension Culvert Skew = -L- 119° 37' 54" Culvert Invert Elevation at CL = 5.12' Slope = 0.36% Buried 0.0' |

FOUNDATION RECOMMENDATIONS NOTES ON PLANS

- EXCAVATE A MINIMUM OF 12" BELOW THE BOTTOM OF BOX CULVERT AND REPLACE THE EXCAVATED MATERIAL WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.
- EXCAVATE ADDITIONAL LOOSE/SOFT OR ORGANIC MATERIAL IF PRESENT TO SUITABLE BEARING MATERIALS AND REPLACE WITH ADDITIONAL FOUNDATION CONDITIONING MATERIAL.



GEOTECHNICAL BORING REPORT BORE LOG



223210

| | | | |
|---|----------------------|---------------------------|--------------------------|
| WBS: 44849.1.3 | TIP: W-5703C | COUNTY: NEW HANOVER | GEOLOGIST: Thomas Park |
| SITE DESCRIPTION: US 421 (Carolina Beach Road) from US 117/NC 132 (College Road) to 200 feet North of Willoughby Park | | | GROUND WTR (ft) |
| BORING NO.: CUL-01 | STATION: 25+98 | OFFSET: 54 ft RT | ALIGNMENT: -L- |
| COLLAR ELEV.: 20.7 ft | TOTAL DEPTH: 25.0 ft | NORTHING: 154,095 | EASTING: 2,333,850 |
| DRILL RIG/HAMMER EFF./DATE: CAT1303 CME-550 94.5% 02/23/2023 | | DRILL METHOD: H.S. AUGERS | HAMMER TYPE: N/A |
| DRILLER: Austin Fowler | START DATE: 10/11/23 | COMP. DATE: 10/11/23 | SURFACE WATER DEPTH: N/A |

| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. # RESULT | MOI | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
|---|-----------------|------------|------------|-------|-------|----------------|----|----|----|-----|-------------------|-----|-----|---------------------------|------------|--|------|
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 20.7 | 20.7 | 0.0 | 9 | 4 | 5 | | | | | | | | | | 20.7 | LAND SURFACE | 0.0 |
| 17.2 | 17.2 | 3.5 | 4 | 4 | 3 | | | | | | | | | | | ROADWAY EMBANKMENT DARK BROWN, F. SAND | |
| 12.2 | 12.2 | 8.5 | 1 | 2 | 1 | | | | | | | | | | | | |
| 7.2 | 7.2 | 13.5 | 2 | 2 | 5 | | | | | | | | | | 7.7 | ALLUVIAL DARK BROWN, HIGHLY ORGANIC (28.6%) SILTY, F. SAND | 13.0 |
| 5.7 | | | | | | | | | | | | | | | 5.7 | UNDIVIDED COASTAL PLAIN BROWN, F. SAND W/0.6% ORG. | 15.0 |
| 2.2 | 2.2 | 18.5 | 1 | 1 | 1 | | | | | | | | | | | | |
| -2.8 | -2.8 | 23.5 | 1 | 3 | 2 | | | | | | | | | | -1.8 | GRAY BLUE, SILTY, F. SAND W/1.0% ORG. | 22.5 |
| | | | | | | | | | | | | | | | -4.3 | | 25.0 |
| Boring Terminated at Elevation -4.3 ft in Silty, f. SAND (Undivided Coastal Plain) (Bulk sample BS-01 collected 0-10 feet from auger cuttings) FIAD = Filled Immediately After Drilling | | | | | | | | | | | | | | | | | |

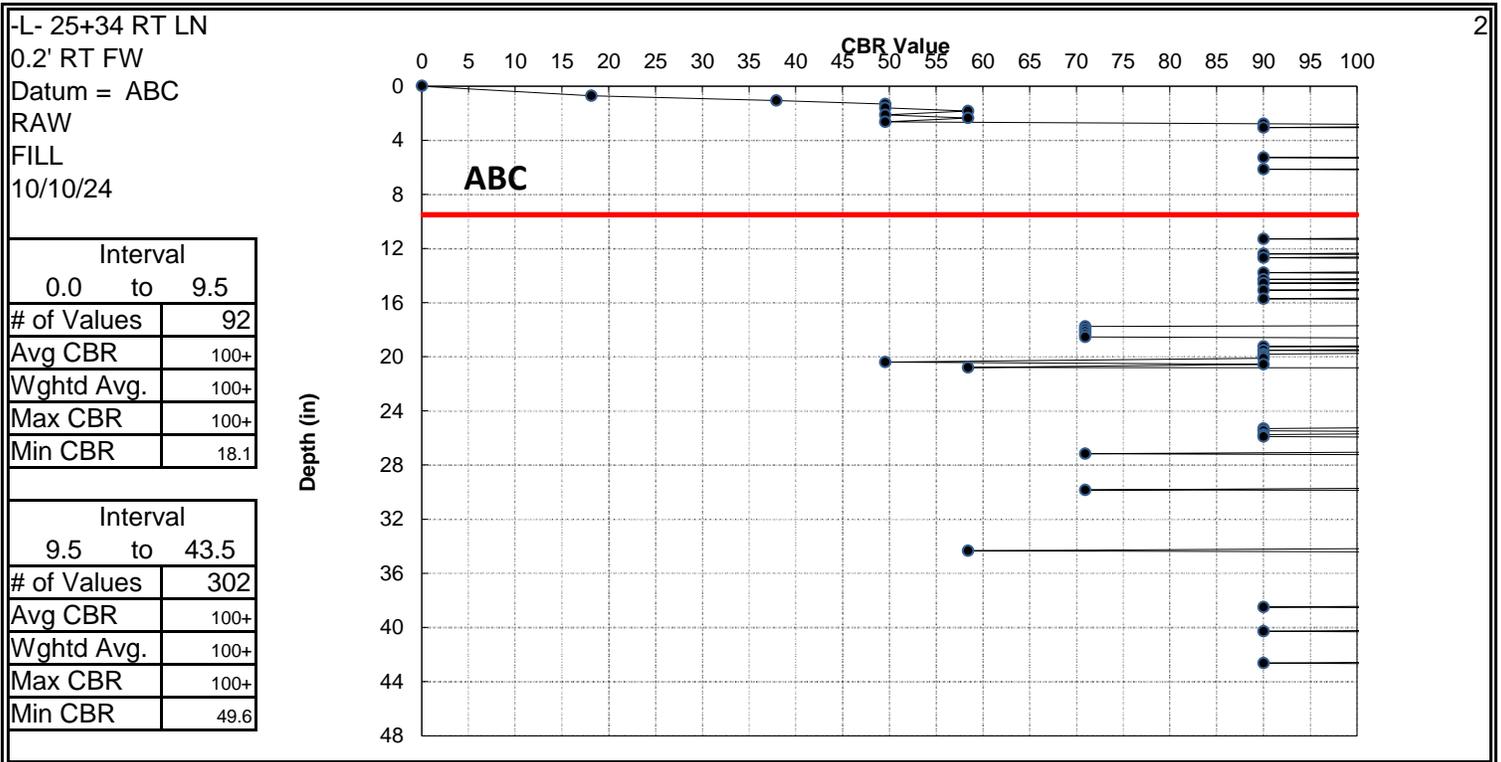
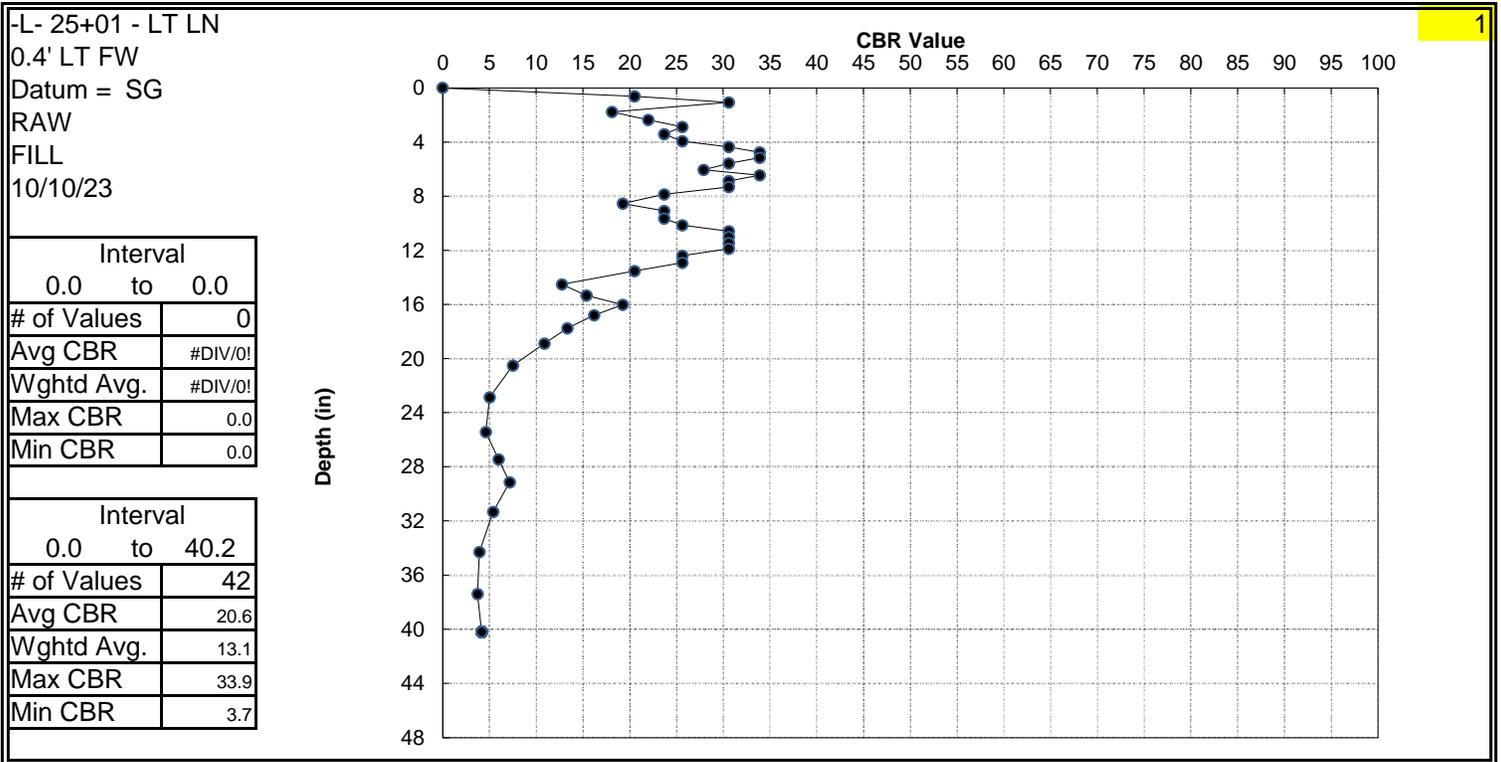
NCDOT BORE SINGLE W5703C_GEO_PDL_CATLIN.GPJ_CATLIN.GDT 01/10/24

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

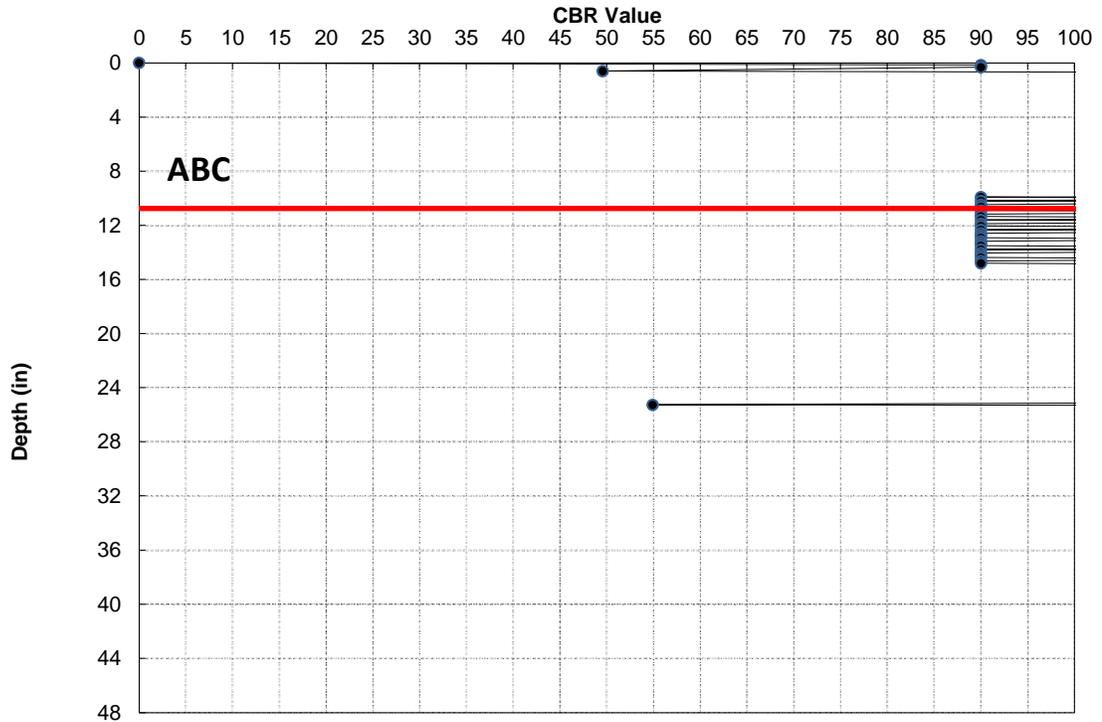
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|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 25+33 RT LN

6.9' LT FW
Datum = ABC
RAW
FILL
10/10/23

| Interval | |
|-------------|---------|
| 0.0 | to 10.7 |
| # of Values | 203 |
| Avg CBR | 100+ |
| Wghtd Avg. | 100+ |
| Max CBR | 100+ |
| Min CBR | 49.6 |

| Interval | |
|-------------|---------|
| 10.7 | to 35.1 |
| # of Values | 299 |
| Avg CBR | 100+ |
| Wghtd Avg. | 100+ |
| Max CBR | 100+ |
| Min CBR | 54.9 |



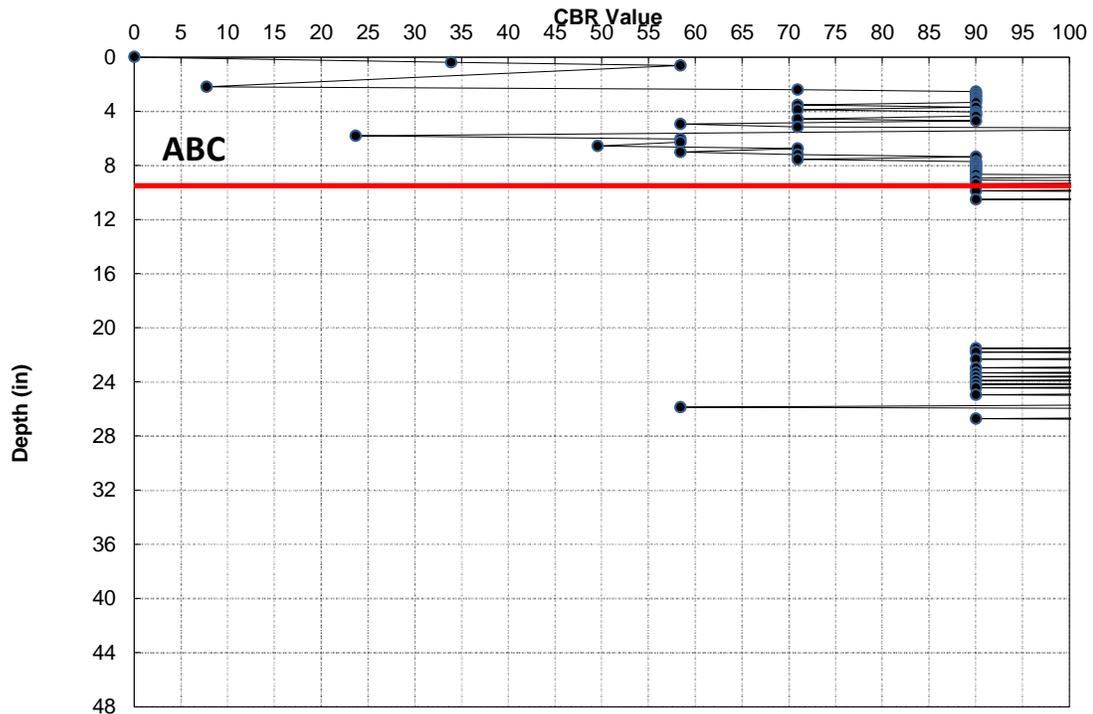
3

-L- 25+66 RT LN

2.3' RT C&G
Datum = ABC
RAW
FILL
10/10/23

| Interval | |
|-------------|--------|
| 0.0 | to 9.5 |
| # of Values | 43 |
| Avg CBR | 80.1 |
| Wghtd Avg. | 62.8 |
| Max CBR | 100+ |
| Min CBR | 7.7 |

| Interval | |
|-------------|---------|
| 9.5 | to 27.1 |
| # of Values | 151 |
| Avg CBR | 100+ |
| Wghtd Avg. | 100+ |
| Max CBR | 100+ |
| Min CBR | 58.4 |



4

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

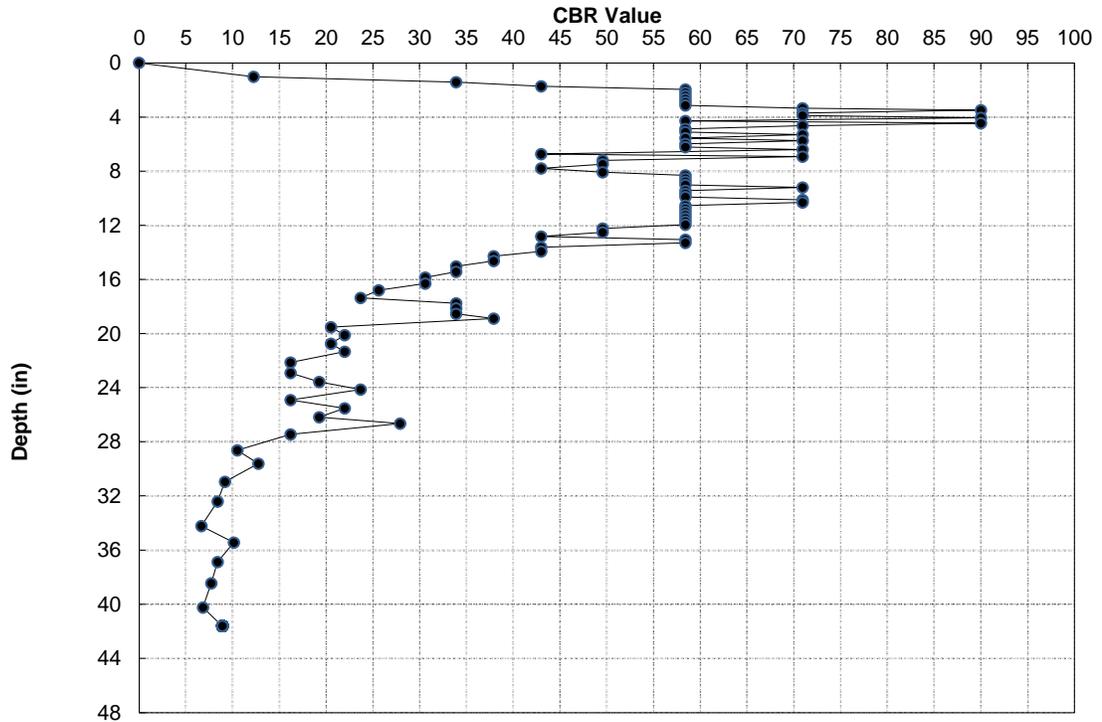
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|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 25+67 RT LN

5.1' RT FW
Datum = SG
RAW
GRADE
01/00/00

| Interval | |
|-------------|---------|
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| Interval | |
|-------------|---------|
| 0.0 | to 41.6 |
| # of Values | 90 |
| Avg CBR | 44.3 |
| Wghtd Avg. | 28.5 |
| Max CBR | 90.0 |
| Min CBR | 6.7 |

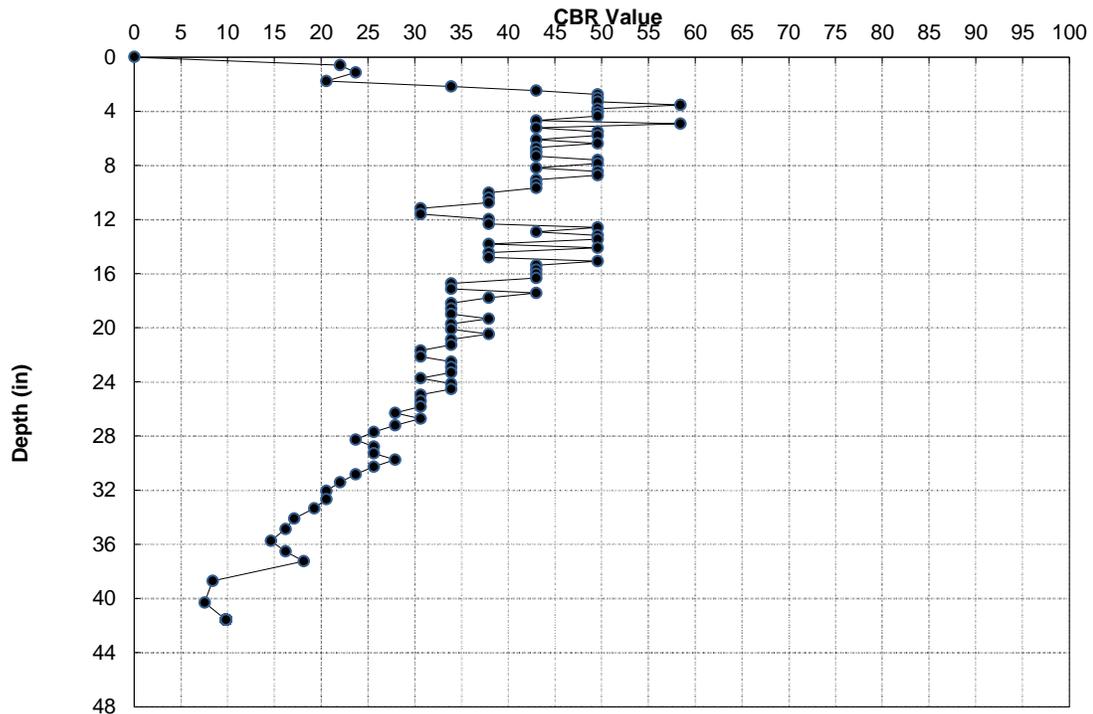


-L- 27+64 RT LN

0.3' RT FW
Datum = SG
RAW
GRADE
10/10/23

| Interval | |
|-------------|---------|
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| Interval | |
|-------------|---------|
| 0.0 | to 41.6 |
| # of Values | 96 |
| Avg CBR | 35.7 |
| Wghtd Avg. | 30.6 |
| Max CBR | 58.4 |
| Min CBR | 7.5 |



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

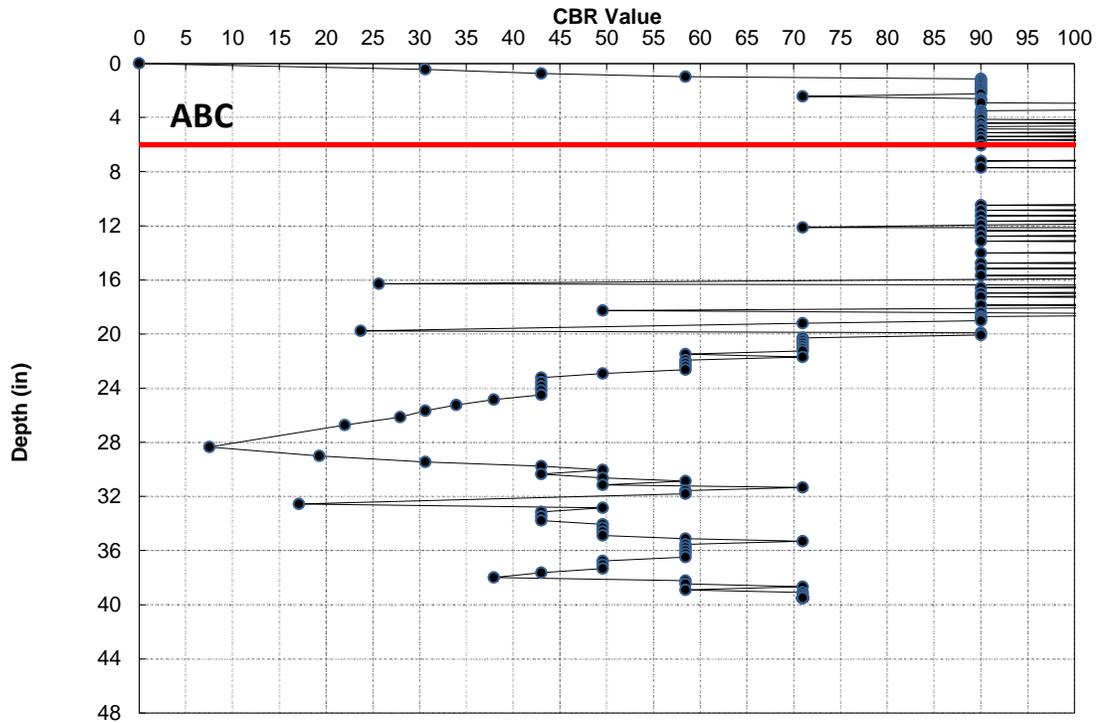
| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 27+83 LT LN
1.1' RT FW
Datum = ABC
RAW
FILL
10/09/23

| Interval | |
|-------------|--------|
| 0.0 | to 6.1 |
| # of Values | 38 |
| Avg CBR | 96.9 |
| Wghtd Avg. | 88.7 |
| Max CBR | 100+ |
| Min CBR | 30.6 |

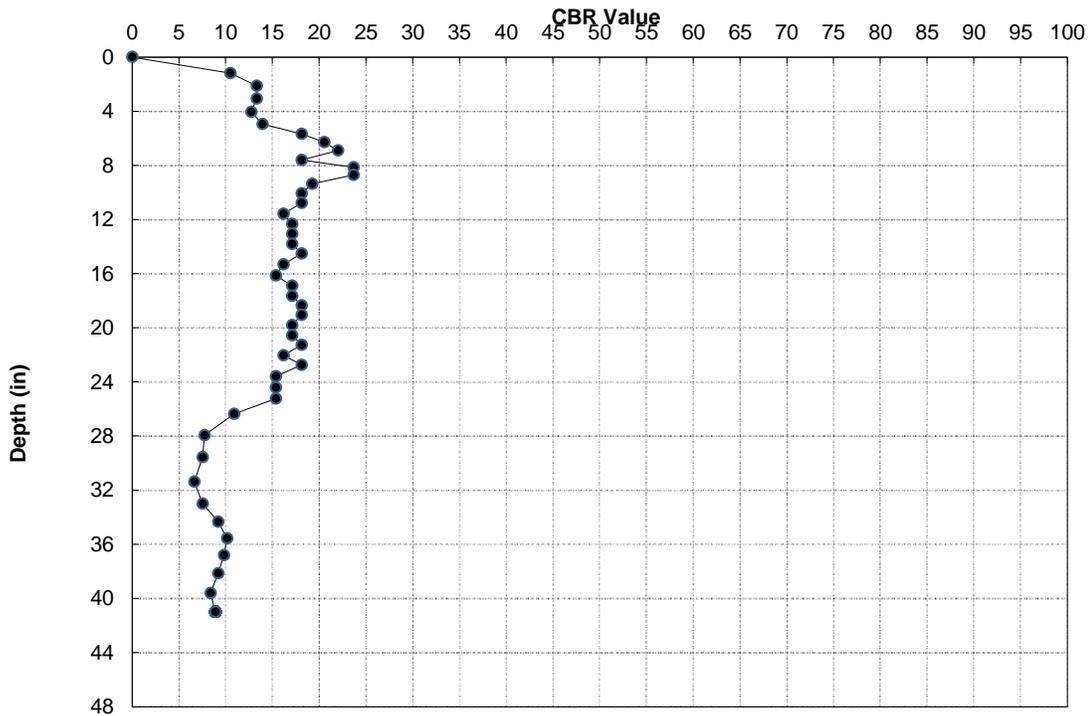
| Interval | |
|-------------|---------|
| 6.1 | to 39.5 |
| # of Values | 167 |
| Avg CBR | 92.3 |
| Wghtd Avg. | 69.7 |
| Max CBR | 100+ |
| Min CBR | 7.5 |



-L- 29+88 LT LN
1.1' RT FW
Datum = SG
RAW
GRADE
10/09/23

| Interval | |
|-------------|--------|
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | 96.9 |
| Wghtd Avg. | 88.7 |
| Max CBR | 100+ |
| Min CBR | 30.6 |

| Interval | |
|-------------|---------|
| 0.0 | to 41.0 |
| # of Values | 44 |
| Avg CBR | 15.0 |
| Wghtd Avg. | 13.5 |
| Max CBR | 23.7 |
| Min CBR | 6.7 |



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

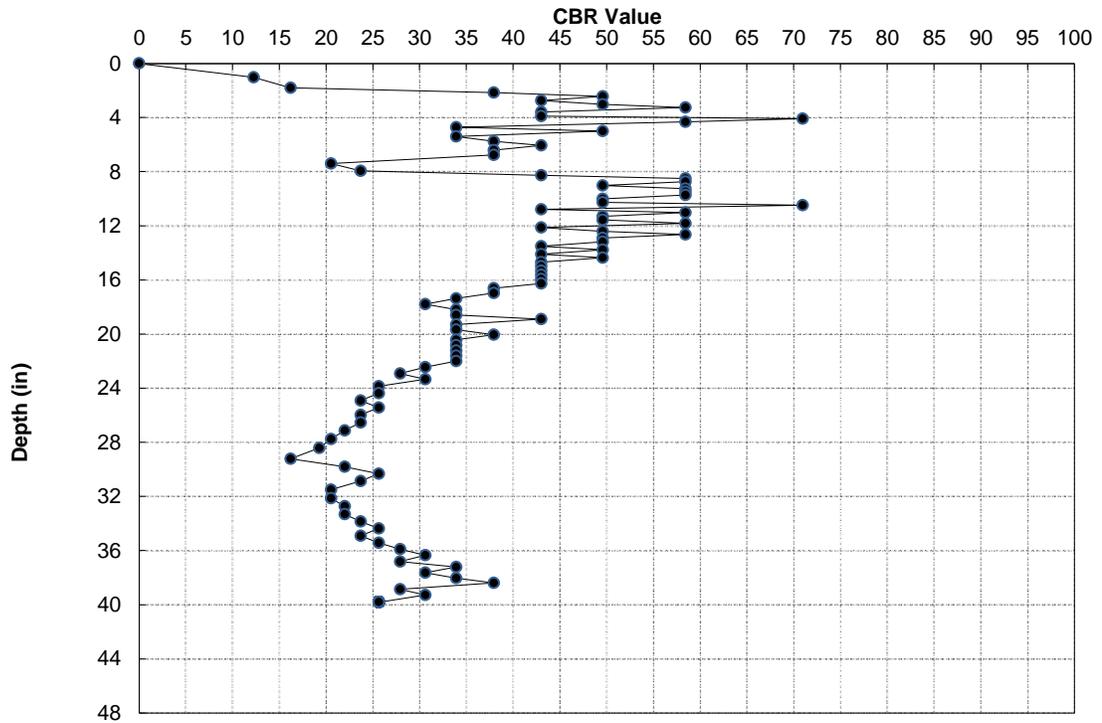
| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 30+70 RT LN
1.9' RT FW
Datum = SG
RAW
GRADE
10/10/24

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

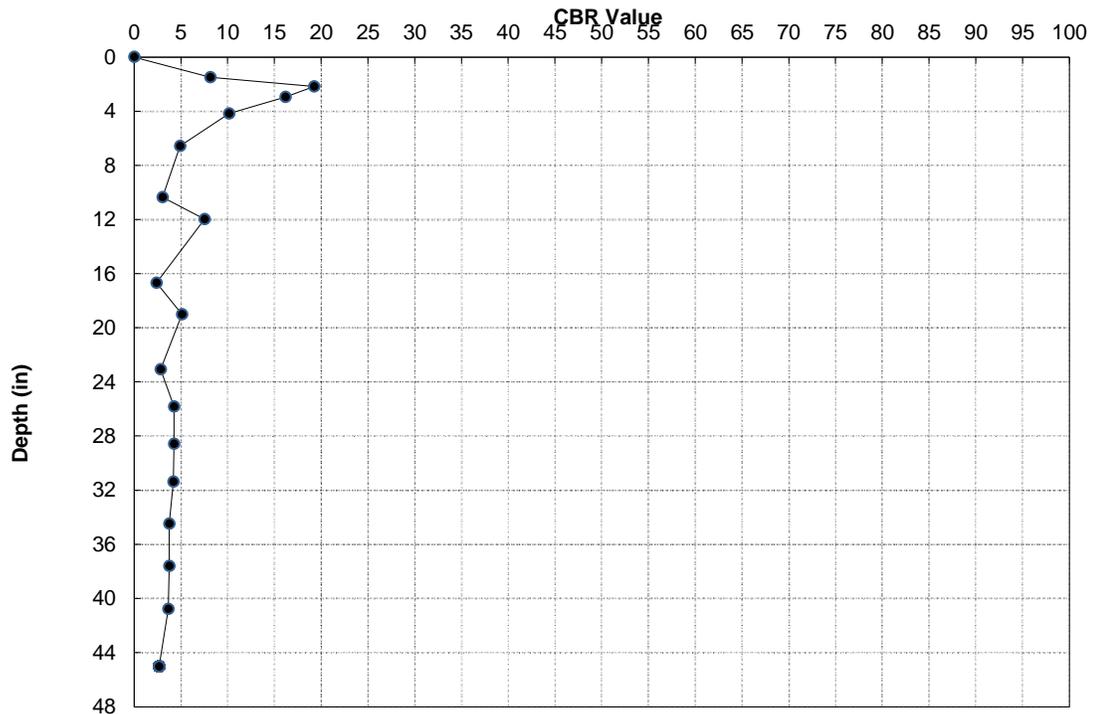
| | |
|-------------|---------|
| Interval | |
| 0.0 | to 39.8 |
| # of Values | 99 |
| Avg CBR | 37.5 |
| Wghtd Avg. | 33.1 |
| Max CBR | 70.9 |
| Min CBR | 12.2 |



-L- 33+16 LT LN
0.3' LT FW
Datum = SG
RAW
GRADE
10/9/2023

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 45.0 |
| # of Values | 17 |
| Avg CBR | 6.2 |
| Wghtd Avg. | 4.4 |
| Max CBR | 19.2 |
| Min CBR | 2.4 |



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

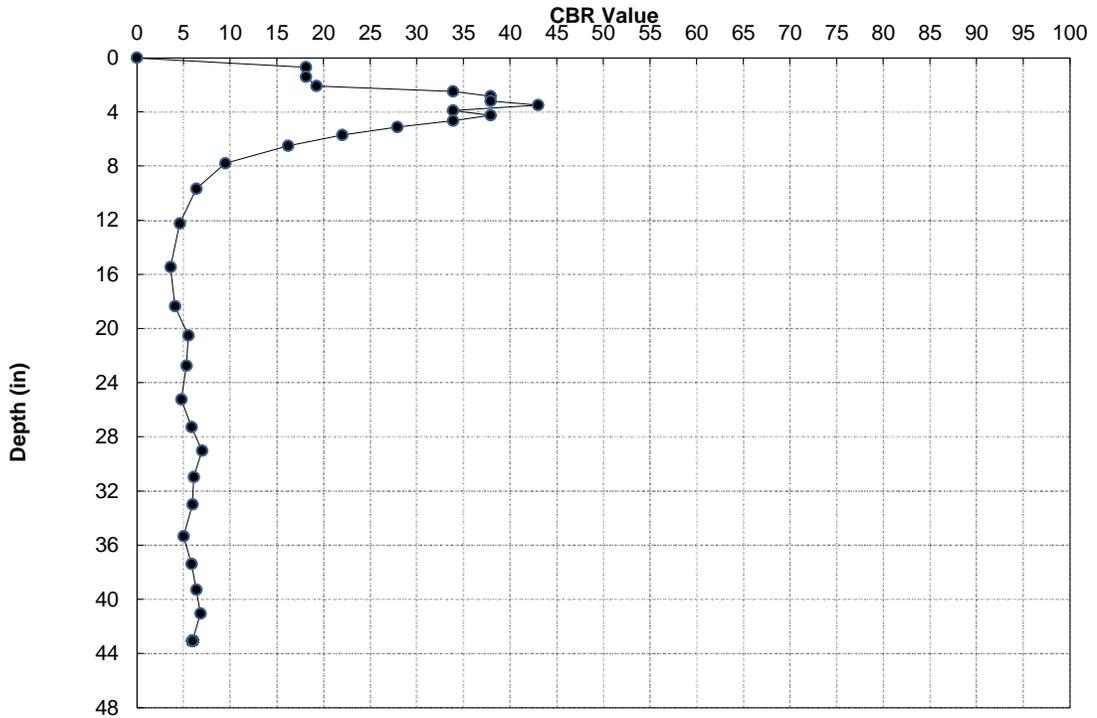
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|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 33+17 LT LN

6.2' RT FW
Datum = SG
RAW
GRADE
10/09/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 43.1 |
| # of Values | 30 |
| Avg CBR | 16.0 |
| Wghtd Avg. | 8.5 |
| Max CBR | 43.0 |
| Min CBR | 3.6 |



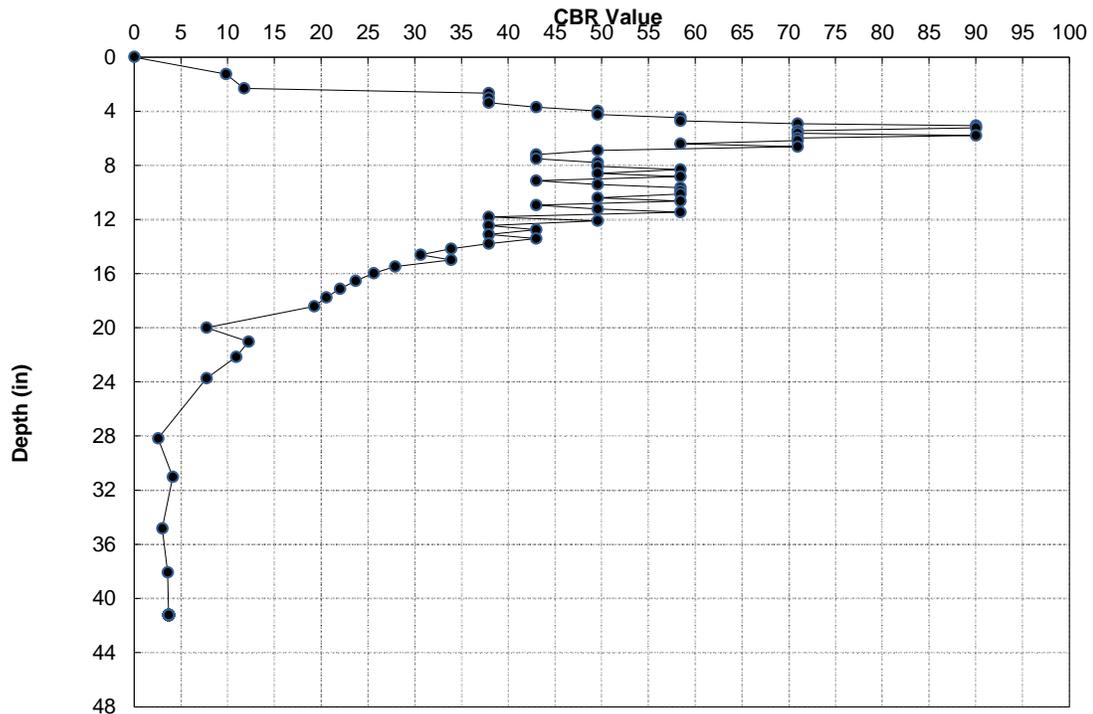
11

-L- 33+18 LT LN

0.2' LT FY
Datum = SG
RAW
GRADE
10/09/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 41.2 |
| # of Values | 63 |
| Avg CBR | 42.2 |
| Wghtd Avg. | 19.7 |
| Max CBR | 90.0 |
| Min CBR | 2.6 |



12

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

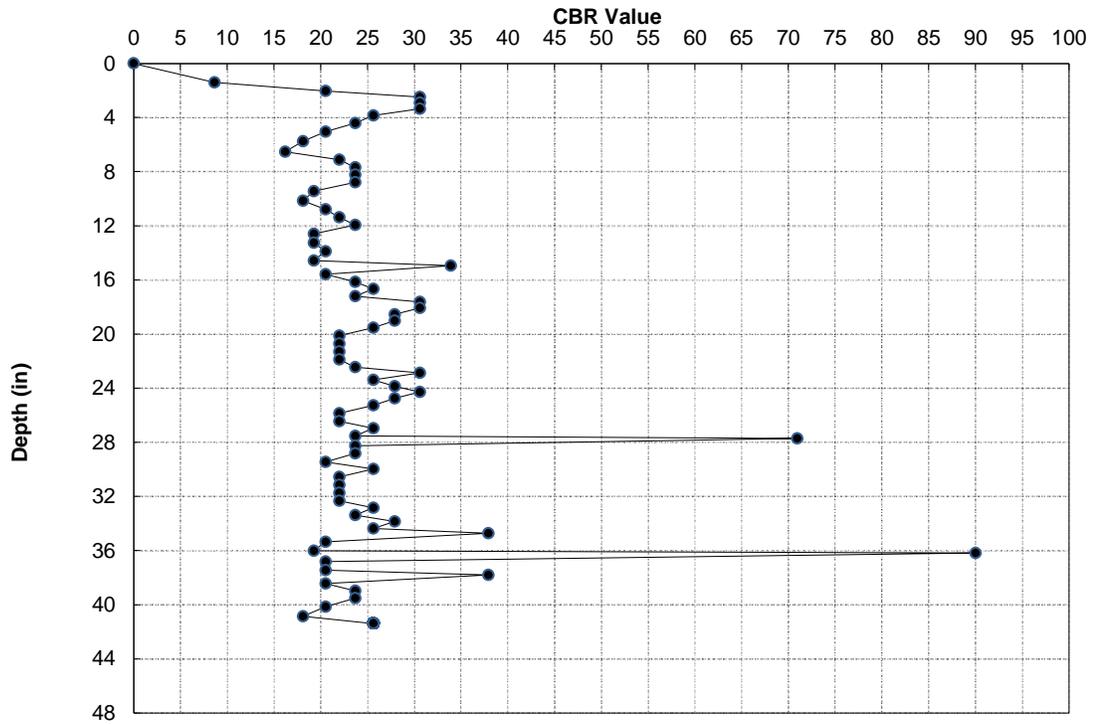
| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 36+14 RT LN

0.8' RT FW
Datum = SG
RAW
GRADE
10/10/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 41.4 |
| # of Values | 74 |
| Avg CBR | 25.4 |
| Wghtd Avg. | 23.3 |
| Max CBR | 90.0 |
| Min CBR | 8.6 |



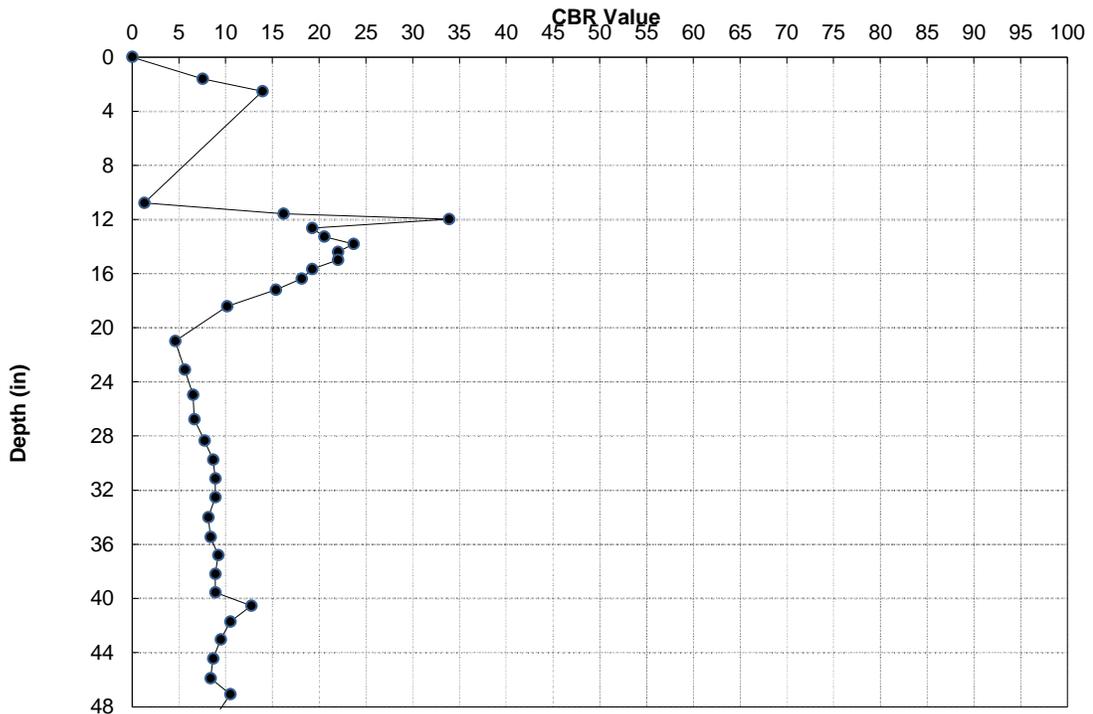
13

-L- 38+09 LT LN

0.9' LT FW
Datum = SG
RAW
GRADE
10/10/223

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 51.1 |
| # of Values | 36 |
| Avg CBR | 12.0 |
| Wghtd Avg. | 8.6 |
| Max CBR | 33.9 |
| Min CBR | 1.3 |



14

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

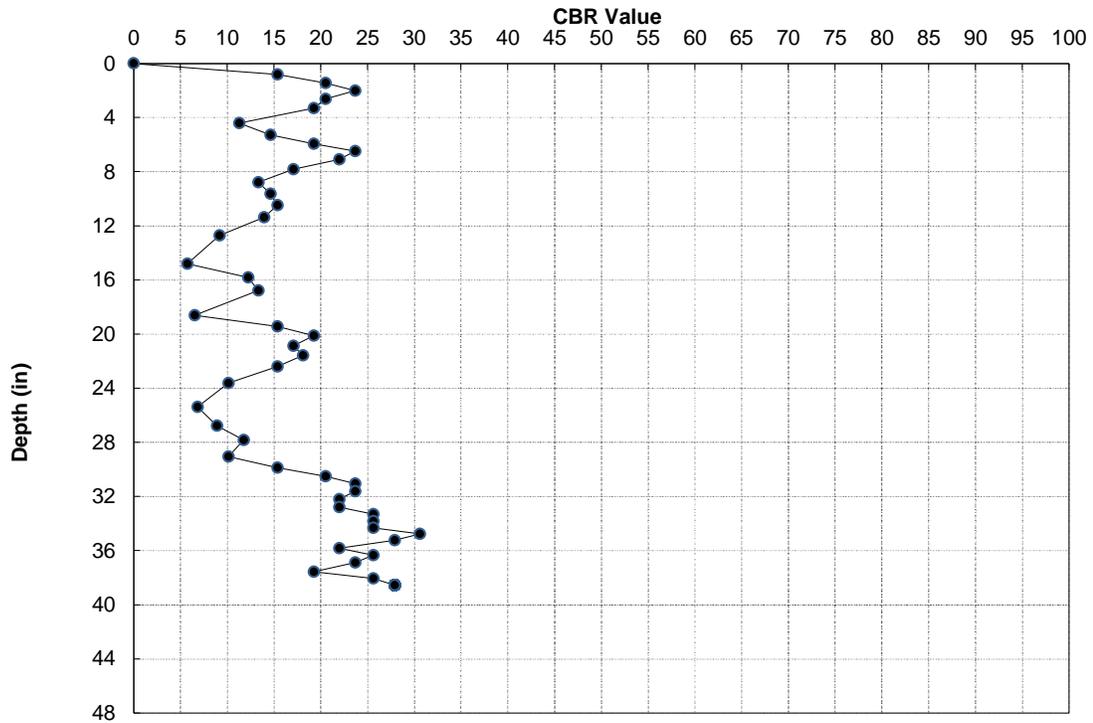
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|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 39+44 RT LN

0.5' RT FW
Datum = SG
RAW
GRADE
10/10/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 38.5 |
| # of Values | 47 |
| Avg CBR | 18.1 |
| Wghtd Avg. | 15.8 |
| Max CBR | 30.6 |
| Min CBR | 5.7 |

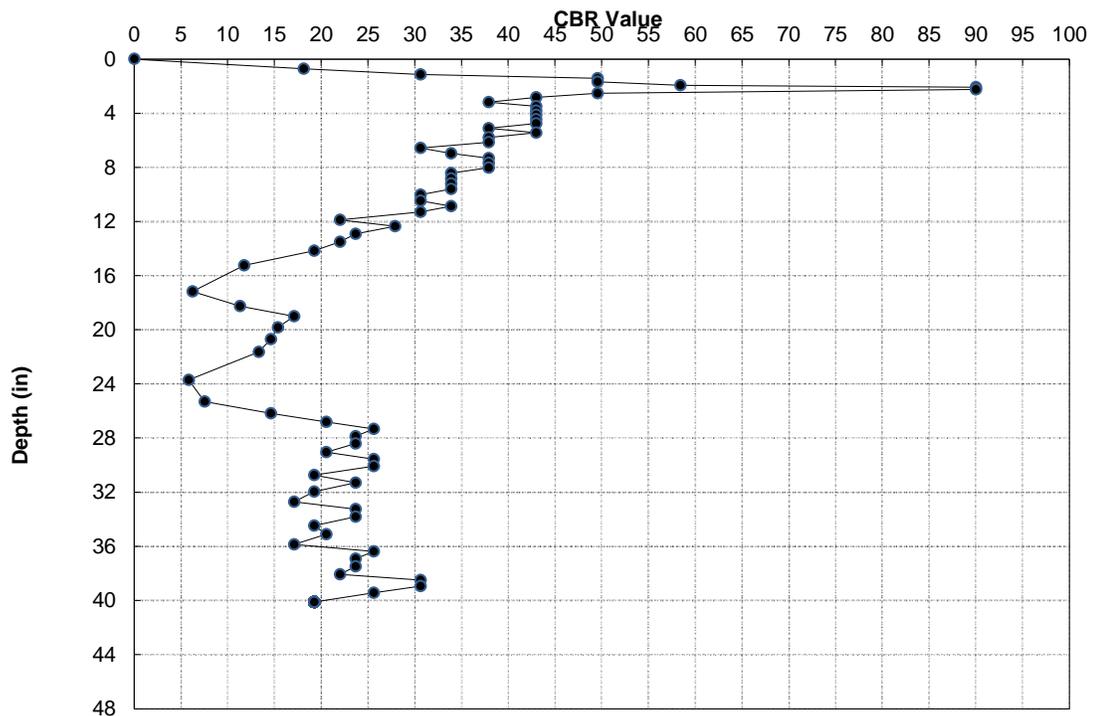


-L- 41+01 RT LN

0.8' LT FW
Datum = SG
RAW
GRADE
10/10/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 40.1 |
| # of Values | 71 |
| Avg CBR | 29.7 |
| Wghtd Avg. | 23.1 |
| Max CBR | 90.0 |
| Min CBR | 5.8 |



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

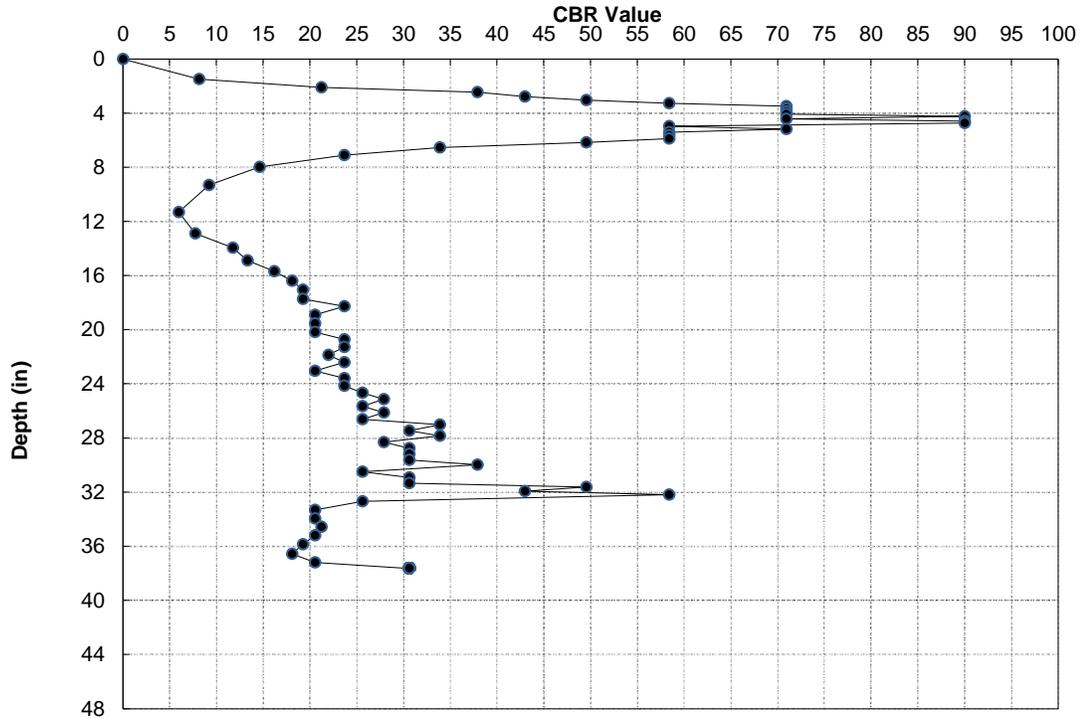
| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 41+76 LT LN
1.1' RT FW
Datum = SG
RAW
GRADE
10/09/23

| Interval | |
|-------------|---------|
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

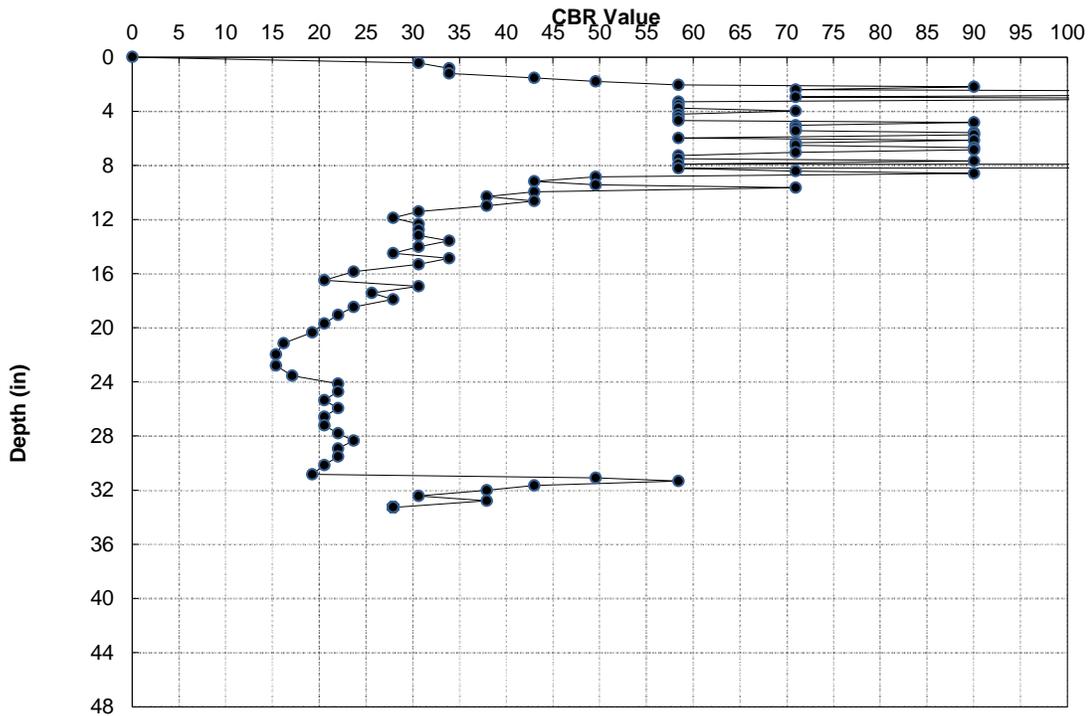
| Interval | |
|-------------|---------|
| 0.0 | to 37.6 |
| # of Values | 71 |
| Avg CBR | 34.6 |
| Wghtd Avg. | 24.7 |
| Max CBR | 90.0 |
| Min CBR | 6.0 |



-L- 43+37 RT LN
1.7' RT FW
Datum = SG
RAW
GRADE
10/10/23

| Interval | |
|-------------|---------|
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

| Interval | |
|-------------|---------|
| 0.0 | to 33.3 |
| # of Values | 92 |
| Avg CBR | 56.4 |
| Wghtd Avg. | 37.1 |
| Max CBR | 100+ |
| Min CBR | 15.4 |



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

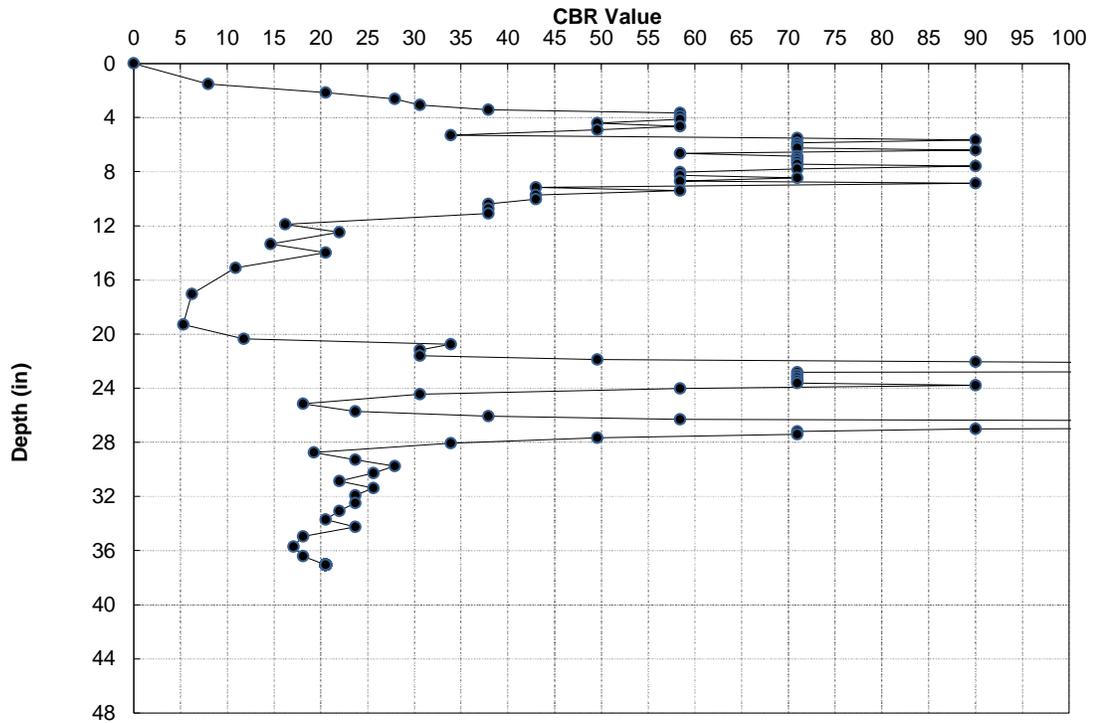
| | |
|-----------|---------------|
| GEOLOGIST | J.B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|--------------------|
| FILE | W5703C_DCP_GRAPH_1 |
|------|--------------------|

-L- 44+81 LT LN
1.2' RT FW
Datum = SG
RAW
GRADE
10/09/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 0.0 |
| # of Values | 0 |
| Avg CBR | #DIV/0! |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 0.0 |
| Min CBR | 0.0 |

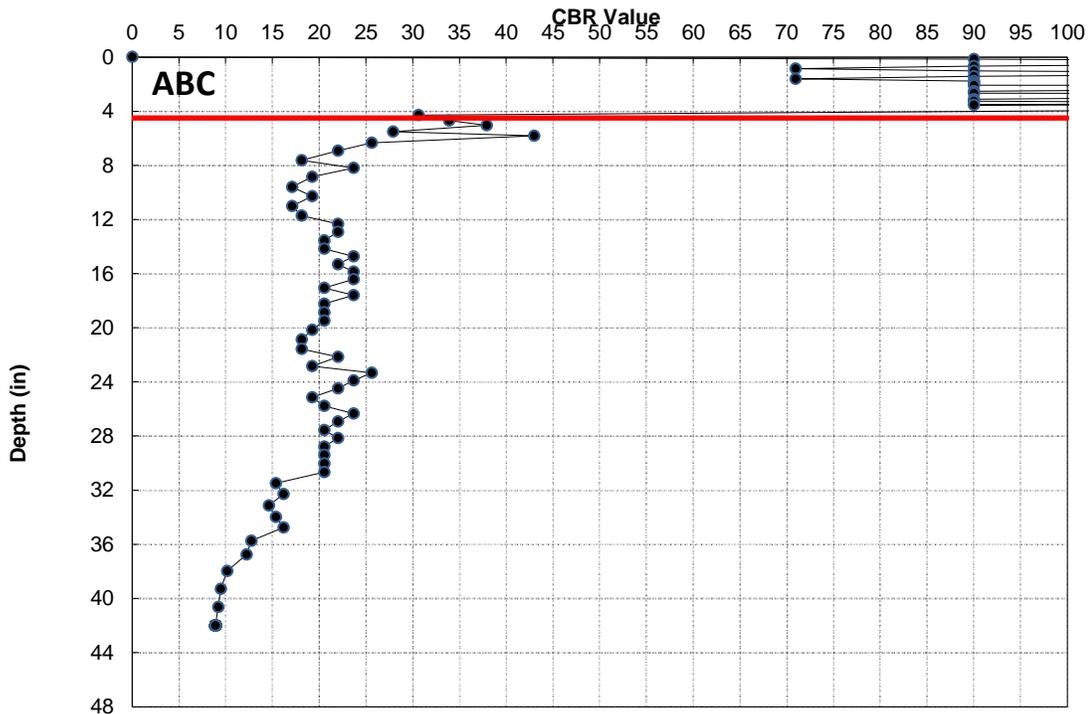
| | |
|-------------|---------|
| Interval | |
| 0.0 | to 37.0 |
| # of Values | 98 |
| Avg CBR | 80.7 |
| Wghtd Avg. | 35.4 |
| Max CBR | 100+ |
| Min CBR | 5.3 |



-L- 46+52 RT LN
2.5' RT FW
Datum = ABC
RAW
GRADE
10/11/23

| | |
|-------------|---------|
| Interval | |
| 0.0 | to 4.3 |
| # of Values | 30 |
| Avg CBR | 100+ |
| Wghtd Avg. | #DIV/0! |
| Max CBR | 100+ |
| Min CBR | 30.6 |

| | |
|-------------|---------|
| Interval | |
| 4.3 | to 42.0 |
| # of Values | 55 |
| Avg CBR | 20.5 |
| Wghtd Avg. | 18.8 |
| Max CBR | 43.0 |
| Min CBR | 8.9 |

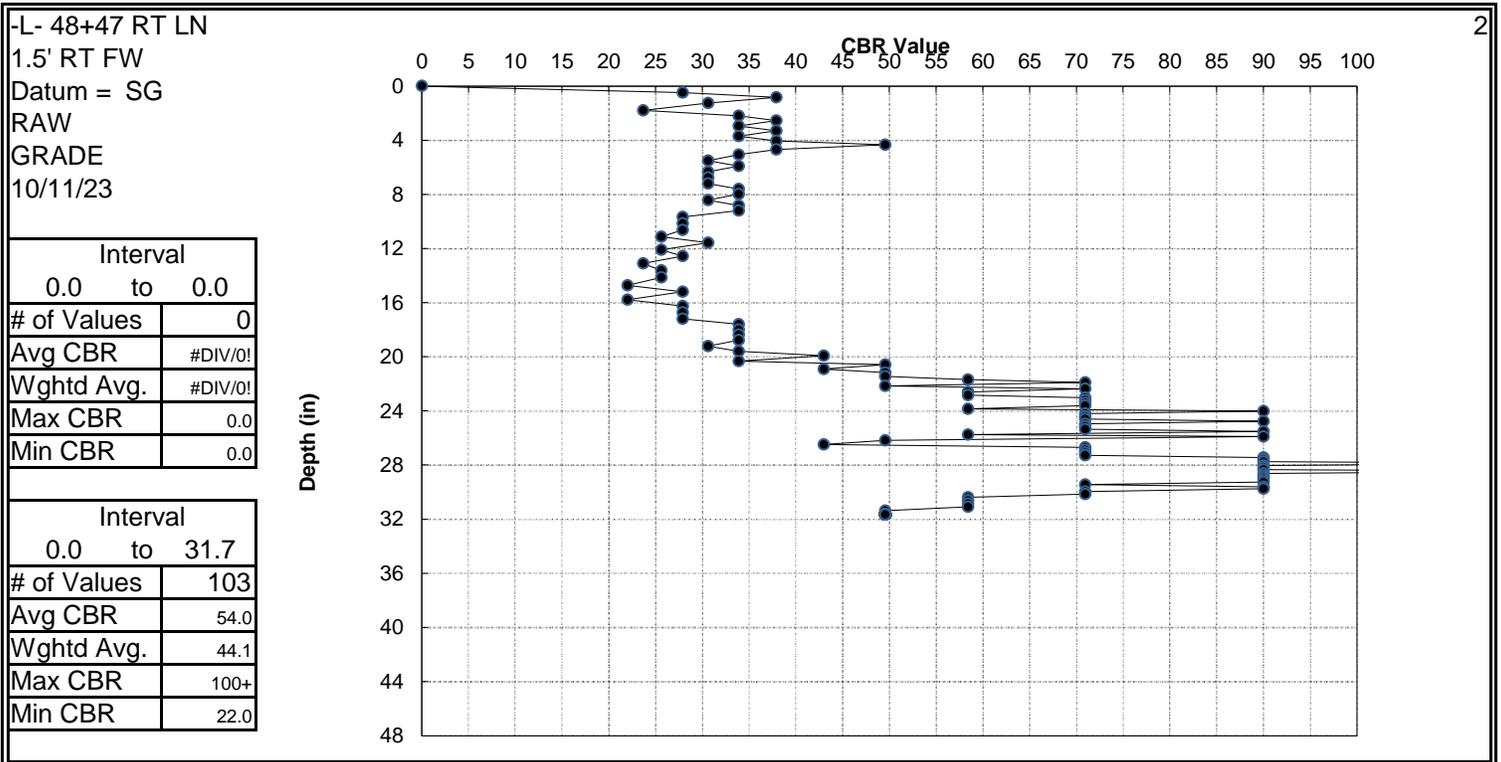
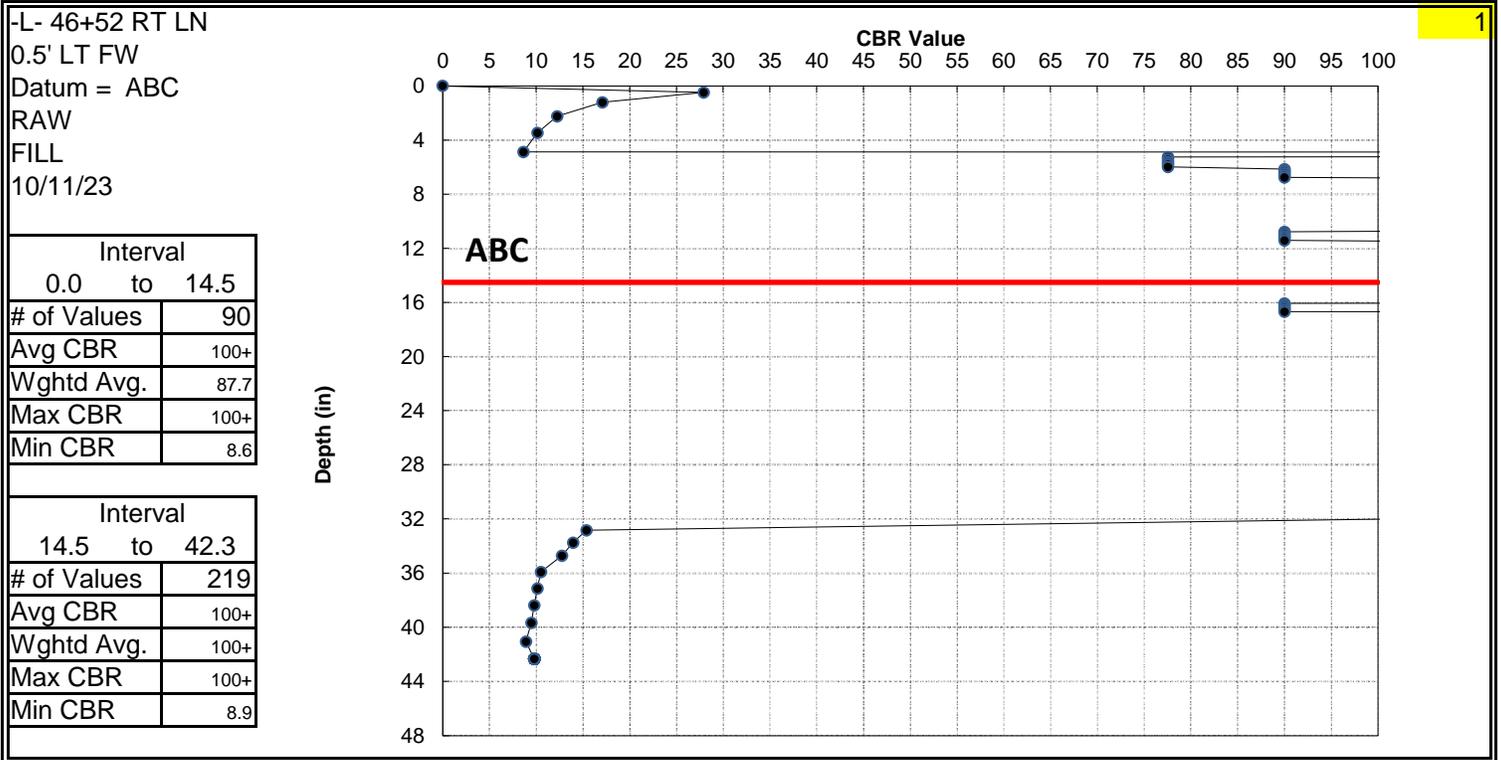


**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

| | |
|-------------|-------------|
| PROJECT NO. | 44849.1.3 |
| PROJECT ID | W-5703C |
| ROUTE | US 421 |
| COUNTY | NEW HANOVER |

| | |
|-----------|----------------|
| GEOLOGIST | J. B. BARFIELD |
| GEOTECHS | CATLIN |

| | |
|------|-------------------|
| FILE | W5703C_DCP_GRAPH2 |
|------|-------------------|



PAVEMENT CORE EVALUATION
44849.1.1 (W-5703C) New Hanover

| LINE | STATION | ABC (in) | LAYER THICKNESS (in) | LAYER | LIFT(S) | REMARKS |
|------|-----------------------|-------------|----------------------------|-------|---------|---|
| -L- | 25+01 LT LN OSL | - | 2.50 | S | 1 | low stripping and oxidation |
| | 11.5" Asphalt | | 3.50 | I/B | 2 | stripping and oxidation at boundary with lower lift |
| | | | 5.50 | I | 2-3 | lifts indistinguishable |
| -L- | 25+34 RT LN (O) | 9.50 | 2.00 | S | 1 | some stripping at boundary |
| | 7.75" Asphalt | | 5.75 | I | 2 | low to moderate stripping in lift two |
| -L- | 25+33 RT LN (O) | 10.75 | 2.00 | S | 1 | |
| | 6.5" Asphalt | | 4.50 | I | 2 | low oxidation in lift two |
| -L- | 25+66 RT LN (ISS) | 9.50 | 2.00 | S | 1 | |
| | 6.25" Asphalt | | 4.25 | I | 2 | |
| -L- | 25+67 RT LN (LTL) | - | 2.50 | S | 2 | |
| | 4.75" Asphalt | | 1.50 | I | 1 | low to moderate stripping |
| | | | 0.75 | S | 1 | |
| -L- | 27+64 RT LN (RTL PS) | - | 3.00 | S | 2 | lifts indistinguishable |
| | 8.75" Asphalt | | 5.75 | B | 1 | |
| -L- | 27+83 LT LN (OSS) | 6.00 | 2.00 | S | 1 | |
| | 5.5" Asphalt | | 3.50 | I | 2 | |
| -L- | 29+88 LT LN (RTL, PS) | - | 2.50 | S | 2 | |
| | 11.5" Asphalt | | 2.00 | I | 1 | oxidation and stripping and boundary with lower lift, low severity stripping |
| | | | 7.00 | B | 1 | |
| -L- | 30+70 RT LN | - | 2.00 | S | 1 | low oxidation at boundary with intermediate lift |
| | 7.5" Asphalt | | 2.75 | I | 1 | |
| | | | 2.75 | B | 1 | low oxidation at boundary with intermediate lift |
| -L- | 33+16 LT LN (LT, PS) | - | 7.00 | S | 3 | lift three possibly two lifts, wedged with base; moderate oxidation and stripping in base mix |
| -L- | 33+17 LT LN (LT, OSL) | | 1.50 | S | 1 | delaminated, low severity oxidation |
| | 14.5" Asphalt | | 2.25 | I | 1 | low severity oxidation |
| | | | 3.00 | S | 2 | |
| | | | 2.00 | I | 1 | delaminated from sand asphalt lift |
| | | | 1.00 | SA | 1 | |
| | | | 1.25 | S/I | 1 | |
| | | | 3.50 | SA | 1 | |
| -L- | 33+18 LT LN (ISL) | - | 1.50 | S | 1 | |
| | 6.5" Asphalt | | 2.50 | I | 1 | |
| | | | 2.50 | S | 1 | |

PAVEMENT CORE EVALUATION
44849.1.1 (W-5703C) New Hanover

| LINE | STATION | ABC (in) | LAYER THICKNESS (in) | LAYER | LIFT(S) | REMARKS |
|------|----------------------|-------------|----------------------------|-------|---------|---|
| -L- | 36+14 RT LN (RTL PS) | - | 2.00 | S | 1 | |
| | 10.5" Asphalt | | 2.25 | I | 1 | delaminated from base mix, low severity oxidation |
| | | | 6.25 | B | 2 | lift 2 beginning to delaminate, low to moderate oxidation |
| -L- | 38+09 LT LN (RTL PS) | - | 1.50 | S | 1 | low severity oxidation |
| | 12" Asphalt | | 2.00 | I | 1 | low severity oxidation |
| | | | 3.25 | S | 2 | |
| | | | 4.25 | B | 1 | low severity oxidation and stripping |
| -L- | 39+44 RT LN (RTL PS) | - | 2.00 | S | 1 | |
| | 10" Asphalt | | 8.00 | I/B | 1-2 | lifts indistinguishable |
| -L- | 41+01 RT LN (RTL) | - | 2.00 | S | 1 | |
| | 12" Asphalt | | 5.75 | I | 2 | low severity oxidation |
| | | | 4.25 | B | 1 | |
| -L- | 41+76 LT LN (L PS) | - | 1.50 | S | 1 | |
| | 14.5" Asphalt | | 3.00 | I | 1 | |
| | | | 0.75 | S | 1 | |
| | | | 2.50 | I | 1 | |
| | | | 1.00 | SA | 1 | |
| | | | 2.00 | S | 1 | |
| | | | 3.75 | SA | 1 | |
| -L- | 43+37 RT LN (R PS) | - | 2.00 | S | 1 | low oxidation at boundary with intermediate |
| | 8.75" Asphalt | | 2.50 | I | 1 | |
| | | | 4.25 | B | 1 | |
| -L- | 44+81 LT LN (RTL PS) | - | 1.75 | S | 1 | |
| | 7.5" Asphalt | | 2.00 | I | 1 | |
| | | | 3.75 | B | 1 | low severity oxidation and stripping |
| -L- | 46+52 RT LN (RTL) | 4.50 | 1.75 | S | 1 | |
| | 9" Asphalt | | 7.25 | B | 1-2 | lifts indistinguishable, low severity oxidation |
| -L- | 46+52 RT LN (R OSL) | 14.50 | 2.00 | S | 1 | |
| | 9.75" Asphalt | | 2.00 | I/B | 1 | |
| | | | 4.00 | S | 3 | |
| | | | 1.75 | I | 1 | |
| -L- | 48+47 RT LN (RT PS) | | 4.50 | S | 3 | low severity oxidation between lifts 1 and 2 |
| | 9.25" Asphalt | | 4.75 | B | 1 | |