



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL JOHNSON
SECRETARY

October 27, 2025

MEMORANDUM TO: David Leanord, P.E.
Assistant Project Development Engineer

ATTENTION: Derek Pielech, P.E.
Division Bridge Program Engineer

FROM: Tom Santee, P.E. *Tom Santee*
Assistant State Geotechnical Engineer – Eastern Region

STATE PROJECT: BP3.R011 (SF-700068)
COUNTY: Pender

DESCRIPTION: Bridge No. 700068 on SR 1306 (Old Mill Road) over Sills Creek

SUBJECT: Structure Foundation Recommendations

The Geotechnical Engineering Unit has completed and presents the subsurface investigation and foundation recommendations for the above referenced project.

- ☒ Structure Inventory (6) pages
- ☒ Foundation Design Recommendation (3) pages
- ☒ Design Scour Elevation Memo (1) pages

Please call Thein Tun Zan, P.E. at (984) 920-8907 or Jinyoung Park, Ph.D., P.E. at (984) 920-8908 if there are any questions concerning this memorandum.

Attachment

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT –
EASTERN REGIONAL OFFICE
1570 MAIL SERVICE CENTER
RALEIGH, NC 27699-1570

Telephone: (984) 920-8900
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
3301 JONES SAUSAGE RD. SUITE 100
GARNER, NC 27529

FOUNDATION RECOMMENDATIONS

PROJECT BP3.R011

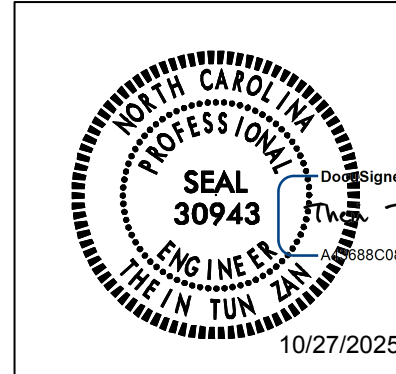
T.I.P. NO. SF-700068

COUNTY PENDER

STATION 15+52.50 -L-

DESCRIPTION: Bridge No. 700068 on SR 1306
(Old Mill Rd) over Sills Creek

	INITIALS	DATE
DESIGN	DS TTZ	10/27/2025
CHECK	DS JYP	10/27/2025



BENT NO.	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT 1	14+98.81 ± -L-	Cap on HP 12x53 Steel Piles	134 Kips/Pile	Bottom of Cap Elev. = 28.35 ft. ± Estimated Pile Length = 65 ft. Number of Piles = 7 Vertical Piles
BENT 1	15+50.00 ± -L-	Cap on HP 14x73 Steel Piles	235 Kips/Pile	Bottom of Cap Elev. = 29.48 ft. ± Point of Fixity Elevation = 5 ft. Tip No Higher Than Elevation = -20 ft. Estimated Pile Length = 85 ft. Number of Piles = 8 Vertical Piles
END BENT 2	16+06.19 ± -L-	Cap on HP 12x53 Steel Piles	142 Kips/Pile	Bottom of Cap Elev. = 28.41 ft. ± Estimated Pile Length = 65 ft. Number of Piles = 7 Vertical Piles

NOTES ON PLAN: (Continue on Following Page)

PILES

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30,000 FT-LBS TO 60,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

COMMENTS

1. USE VERTICAL PILES AT BOTH END BENTS.
2. 1.5:1 (H:V) END SLOPE WITH SLOPE PROTECTION IS OK FOR BOTH END BENTS.
3. USE TYPE 1 APPROACH FILL (NCDOT STD. DWG. NO. 423.01) FOR BOTH END BENTS.
4. NO WAITING PERIOD IS REQUIRED FOR END BENT CONSTRUCTION AFTER THE COMPLETION OF EMBANKMENT.
5. DESIGN SCOUR ELEVATION FOR BENT NO. 1 IS ELEVATION 19 FT.

(Blank entries indicate item is not applicable to structure)

$$^* RDR = \frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Drag Load Resistance} + \text{Nominal Resistance from Scourable Material}$$

(Blank entries indicate item is not applicable to structure)

* Factored Dead Load is factored weight of pile above the ground line.

(Blank entries indicate item is not applicable to structure)

EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

STATION: 15+52.50 -L-

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thein Tun Zan, #030943) on 010-27-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE FOUNDATION TABLES																										
SIGNATURE _____ DATE _____																											
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="text-align: center;">REVISIONS</th> <th style="text-align: center;">SHEET NO.</th> </tr> <tr> <th style="width: 10%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 10%;">DATE:</th> <th style="width: 10%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 10%;">DATE:</th> <th rowspan="3" style="text-align: center; vertical-align: middle;">TOTAL SHEETS</th> </tr> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td style="text-align: center;">4</td> <td></td> <td></td> </tr> </table>	REVISIONS						SHEET NO.	NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	1			3			2			4		
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