STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

February 20, 2017

MEMORANDUM TO:	Rick Nelson, P.E. Assistant State Structures Engineer
ATTENTION:	Kristy Alford, P.E. Project Engineer
FROM:	John L. Pilipchuk, L.G., P.E. State Geotechnical Engineer
STATE PROJECT:	38406.1.2 (B-4544)
COUNTY:	HARNETT
F.A. PROJECT:	BRZ-1722(7)
DESCRIPTION:	Bridge No. 133 on SR 1722 over Black River
SUBJECT:	Structure Foundation Recommendations

DS KK

DocuSigned by: John Pilipchuk 52C44B94B8BE444...

The Geotechnical Engineering Unit has reviewed and presents the subsurface investigation and foundation recommendations prepared by Stewart Engineering, Inc. for the above referenced project.

- ☒ Structure Inventory (7) pages
- ☒ Foundation Design Recommendation (3) pages
- ☐ Design Calculations ( ) pages
- ☐ Special Provisions ( ) pages

Please call Thein T. Zan, P.E. or James R. Batts, P.E. at (919) 662-4710 if there are any questions concerning this memorandum.

Attachment

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

Telephone: (919) 707-6850
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

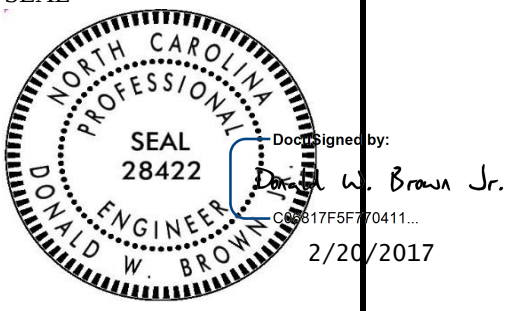
Location:
1020 BIRCH RIDGE
RALEIGH, NC 27610

FOUNDATION RECOMMENDATIONS

PROJECT	38406.1.2	DESCRIPTION	Bridge No. 133 on SR 1722
TIP NO.	B-4544		(Three Bridge Road) over Black River
COUNTY	Harnett		
STATION	19+65.00 -L-		

	INITIALS	DATE
DESIGN	CT	1/13/17
CHECK	DB	1/31/17

P.E. SEAL



Not considered final until all signatures are complete

SIGNATURE

	BENT STATION	FOUNDATION TYPE	FACTORED RESISTANCE	ADDITIONAL INFORMATION
END BENT 1	19+23.88 -L-	Cap on HP 12 x 53 Steel H-Piles	100 Tons/Pile	Bottom of Cap Elev. = 176.5 ft± Average Estimated Pile Length = 60 ft Number of Piles/Cap = 7
END BENT 2	20+06.13 -L-	Cap on HP 12 x 53 Steel H-Piles	100 Tons/Pile	Bottom of Cap Elev. = 176.0 ft± Average Estimated Pile Length = 60 ft Number of Piles/Cap = 7

(SEE NOTES ON PLANS AND COMMENTS ON FOLLOWING PAGES.)

Bridge No. 133 on SR 1722 (Three Bridge Road) over Black River Harnett County

FOUNDATION RECOMMENDATIONS NOTES ON PLANS

1. FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

2. PILES AT END BENT NO. 1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

3. DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

4. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOUNDATION RECOMMENDATIONS COMMENTS

1. A SINGLE ROW WITH 5 PLUMB PILES AND 2 BRACE PILES IS PLANNED FOR END BENT NO. 1 AND END BENT NO. 2.

2. REINFORCED BRIDGE APPROACH FILL IS REQUIRED AT END BENT NO. 1 AND END BENT NO. 2.

3. NO WAITING PERIOD IS REQUIRED FOR END BENT CONSTRUCTION AFTER COMPLETION OF EMBANKMENT.

4. DYNAMIC RESISTANCE FACTOR OF 0.60 WAS USED FOR PILES AT ALL BENTS.

5. END BENT SLOPES OF 1.5H:1V ARE SATISFACTORY WITH SLOPE PROTECTION.

PILE PAY ITEMS

(Revised 8/11/15)

WBS ELEMENT 38406.1.2 DATE 1/31/2017

TIP NO. B-4544 DESIGNED BY CT

COUNTY Harnett CHECKED BY DB

STATION 19+65.00 -L-

DESCRIPTION Bridge No. 133 on SR 1722 (Three Bridge Road) over Black River

NUMBER OF BENTS WITH PILES

NUMBER OF PILES PER BENT

NUMBER OF END BENTS WITH PILES

NUMBER OF PILES PER END BENT

Only required for "Predrilling for Piles" & "Pile Excavation" pay items

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	Pile Excavation (per linear ft)		PDA Testing (per each)
					In Soil	Not In Soil	
END BENT #1				7			
END BENT #2				7			
TOTALS			0	14	0	0	1

Notes:

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.