



June 7, 2019

Jason Griscom, PE  
STV  
900 W Trade Street  
Charlotte, NC 28202

Project: DF15406.2024250 (SF-230197)  
County: Columbus  
Project Description: Emergency Bridge Replacement of Columbus County Bridge No. 197  
Site Description: Bridge No. 197 on -L- (SR 1530) Over Big Branch  
Subject: Foundation Recommendations

Dear Mr. Griscom:

As authorized, Falcon Engineering Inc. (Falcon) has completed the Structure Foundation Recommendations for the above referenced project based on current NCDOT LRFD bridge design policy and procedures.

Foundation recommendations, notes on plans, and pay item quantities are presented in the attachments. These recommendations are based on subsurface data obtained by others as presented in the Subsurface Investigation Report. Structure foundation loads considered in our analyses were based on Standard Load Tables.

Falcon appreciates the opportunity to have provided STV with geotechnical engineering services. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

Respectfully submitted:

**FALCON ENGINEERING, INC.**

A handwritten signature in black ink that reads "Stephen Crockett".

Stephen C. Crockett, PE  
Geotechnical Engineer

A handwritten signature in blue ink that reads "Jeremy R. Hamm".

Jeremy R. Hamm, PE  
Geotechnical Engineering Manager

Attachments: Foundation Recommendations  
Notes on Plans  
Pay Item Quantities

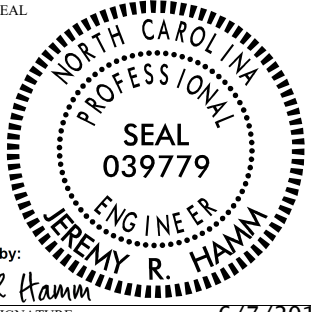
# FOUNDATION RECOMMENDATIONS

**Prepared for NCDOT by: Falcon Engineering**

WBS #	DF15406.2024250	DESCRIPTION	Bridge No. 197 on -L- (SR 1530) Over
T.I.P. NO.	SF-230197		Big Branch
COUNTY	Columbus		
STATION	13+95 -L-		

	INITIALS	DATE
DESIGN	SCC	6/6/2019
CHECK	JRH	6/7/2019
APPROVAL		

SEAL



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*Jeremy R Hamm*  
SIGNATURE  
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6/7/2019

	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT NO. 1	13+58.87 -L-	Cap on HP 12x53 Steel Piles	85 tons/pile	Average Bottom of Cap Elev. = 83.9 ft Estimated Length of Pile = 70 ft Number of Vertical Piles = 7 Pile Spacing = 6 feet 0 inches
END BENT NO. 2	14+31.13 -L-	Cap on HP 12x53 Steel Piles	85 tons/pile	Average Bottom of Cap Elev. = 84.1 ft Estimated Length of Pile = 55 ft Number of Vertical Piles = 7 Pile Spacing = 6 feet 0 inches

**TIP #** SF-230197

**County** Columbus

**FOUNDATION RECOMMENDATION NOTES ON PLANS**

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1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENTS NO. 1 AND NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.
3. DRIVE PILES AT END BENTS NO. 1 AND NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 145 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 RECOMMENDATION COMMENTS**

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1. 1.5:1 (H:V) slopes at both end bents are ok with slope protection.
2. The factored axial load at End Bents No. 1 and No. 2 is 81 tons per pile.
3. Recommend Type II - Modified Bridge Approach Fills. See 2018 Roadway Standard Drawing 422.02.

## PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT	DF15406.2024250	DATE	6/6/2019
TIP NO.	SF-230197	DESIGNED BY	SCC
COUNTY	Columbus	CHECKED BY	JRH
STATION	13+95 -L-		
DESCRIPTION	Bridge No. 197 on -L- (SR 1530) Over Big Branch		

NUMBER OF BENTS WITH PILES _____	}	Only required for "Predrilling for Piles" & "Pile Excavation" pay items
NUMBER OF PILES PER BENT _____		
NUMBER OF END BENTS WITH PILES _____		
NUMBER OF PILES PER END BENT _____		

	<b>PILE PAY ITEM QUANTITIES</b>								
	<b>Bent # or End Bent #</b>	<b>Steel Pile Points (yes/no)</b>	<b>Pipe Pile Plates (yes/no/maybe)</b>	<b>Predrilling For Piles (per linear ft)</b>	<b>Pile Redrives (per each)</b>	<b>Pile Excavation (per linear ft)</b>		<b>PDA Testing (per each)</b>	
						<b>In Soil</b>			<b>Not In Soil</b>
End Bent # 1	no			4			X		
End Bent # 2	no			4					
<b>TOTALS</b>			0	8	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.