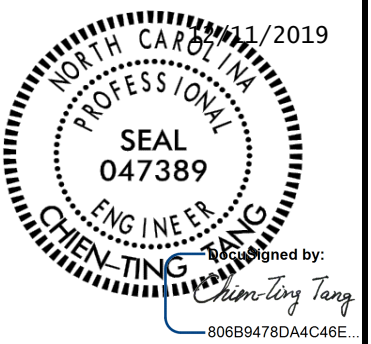
FOUNDATION RECOMMENDATIONS

PROJECT	17BP.5.R.79	DESCRIPTION	Bridge No. 216 on SR 2366
TIP NO.	SF-910216		(Old Battle Bridge Road) over Buffalo Creek
COUNTY	Wake		
STATION	11+90.50 -L-		

	INITIALS	DATE
DESIGN	CT	11/25/19
CHECK	DB	12/2/19

P.E. SEAL



SIGNATURE

Not considered final until all signatures are complete

	BENT STATION	FOUNDATION TYPE	FACTORED RESISTANCE	ADDITIONAL INFORMATION
END BENT 1	11+46.81 -L-	Cap on HP 12 x 53 Steel H-Piles	75 Tons/Pile	Bottom of Cap Elev. = 275.6 ft± Average Estimated Pile Length = 25 ft (LT) 35 ft (RT) Number of Piles/Cap = 8
BENT 1	11+98.00 -L-	Column on 36" Diameter Drilled Pier	290 Tons/Pier	Bottom of Cap Elev. = 272.0 ft± Point of Fixity Elev. = 252 ft (LT) Point of Fixity Elev. = 237 ft (RT) Tip No Higher Than Elev. = 246 ft (LT) Tip No Higher Than Elev. = 226 ft (RT) Number of Piers/Cap = 4
END BENT 2	12+34.19 -L-	Cap on HP 12 x 53 Steel H-Piles	60 Tons/Pile	Bottom of Cap Elev. = 275.1 ft± Average Estimated Pile Length = 20 ft (LT) 35 ft (RT) Number of Piles/Cap = 8

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

FOUNDATION RECOMMENDATIONS NOTES ON PLANS

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.
3. PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE.
4. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.
5. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.
6. STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
7. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
8. DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 290 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 60 TSF.
9. INSTALL DRILLED PIERS AT BENT NO. 1 (LEFT) TO A TIP ELEVATION NO HIGHER THAN 246 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 7 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
10. INSTALL DRILLED PIERS AT BENT NO. 1 (RIGHT) TO A TIP ELEVATION NO HIGHER THAN 226 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 3 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
11. PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 257 FT (LT) AND 238 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
12. INSTALL PERMANENT STEEL CASINGS AT BENT NO. 1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 254 FT.
13. SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
14. THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 252 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

Bridge No. 216 on SR 2366 (Old Battle Bridge Road) over Buffalo Creek Wake County

FOUNDATION RECOMMENDATIONS COMMENTS

1. A SINGLE ROW WITH 8 PLUMB PILES IS PLANNED FOR END BENT NO. 1 AND END BENT NO. 2.
2. PILE REDRIVES AND PDA ARE NOT REQUIRED FOR END BENTS.
3. NO WAITING PERIOD IS REQUIRED FOR END BENT CONSTRUCTION AFTER COMPLETION OF EMBANKMENT.
4. END BENT SLOPES OF 1.5H:1V ARE SATISFACTORY WITH SLOPE PROTECTION.
5. USE TYPE II BRIDGE APPROACH DETAIL.
6. A DYNAMIC RESISTANCE FACTOR OF 0.6 WAS USED FOR END BENT NO. 1 AND END BENT NO. 2.
7. THE DESIGN SCOUR ELEVATION AT BENT NO. 1 IS 254 FEET.

PILE PAY ITEMS

(Revised 8/11/15)

WBS ELEMENT 17BP.5.R.79 DATE 11/25/2019

TIP NO. SF-910216 DESIGNED BY CTT

COUNTY Wake CHECKED BY DB

STATION 11+90.50 -L-

DESCRIPTION Bridge No. 216 on SR 2366 (Old Battle Bridge Road) over Buffalo Creek

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	YES						
END BENT #2	YES						
TOTALS			0	0	0	0	0

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.

DRILLED PIER PAY ITEMS

(For LRFD Projects - Revised 8/15/12)

WBS ELEMENT 17BP.5.R.79 DATE 11/25/2019

TIP NO. SF-910216 DESIGNED BY CTT

COUNTY Wake CHECKED BY DB

STATION 11+90.50 -L-

DESCRIPTION Bridge No. 216 on SR 2366 (Old Battle Bridge Road) over Buffalo Creek

NUMBER OF BENTS WITH DRILLED PIERS 1

NUMBER OF DRILLED PIERS PER BENT 4

NUMBER OF END BENTS WITH DRILLED PIERS

NUMBER OF DRILLED PIERS PER END BENT

	DRILLED PIER PAY ITEM QUANTITIES				
Bent # or End Bent #	**Permanent Steel Casing For 36-in. Dia. Drilled Pier (yes/no/maybe)**	**36-in. Dia. Drilled Piers Not In Soil (per linear ft)**	**SID Inspections (per each)**	**SPT Testing (per each)**	**CSL Testing (per each)**
BENT 1	YES	40	1		1
TOTALS		40	1	0	1

Notes:
Blanks or "no" represent quantity of zero.

If drilled piers not in soil are required, calculate quantity of 36-inch Dia. Drilled Piers in Soil" as the difference between the total drilled pier length and the 36-inch Dia. Drilled Piers Not in Soil" from the table above. If there is none or zero quantity for drilled piers not in soil in the table above, calculate quantity of 36-inch Dia. Drilled Piers" as the total drilled pier length and do not use the 36-inch Dia. Drilled Piers in Soil" pay item.

If permanent steel casing is or may be required, calculate quantity of "Permanent Steel Casing for 36-inch Dia. Drilled Pier" as the difference between the ground line or top of drilled pier elevation, whichever is higher, and the elevation the permanent casing can not extend below from the foundation recommendations.

If "SID Inspections", "SPT Testing" or "CSL Testing" may be required, show quantities of these pay items on the plans as totals only. If "SID Inspections", "SPT Testing" or "CSL Testing" is required, show quantities of these pay items on the plans for each bent or end bent.

The number of CSL tubes required per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. Calculate the length of each CSL tube as the total drilled pier length plus 1.5 ft.