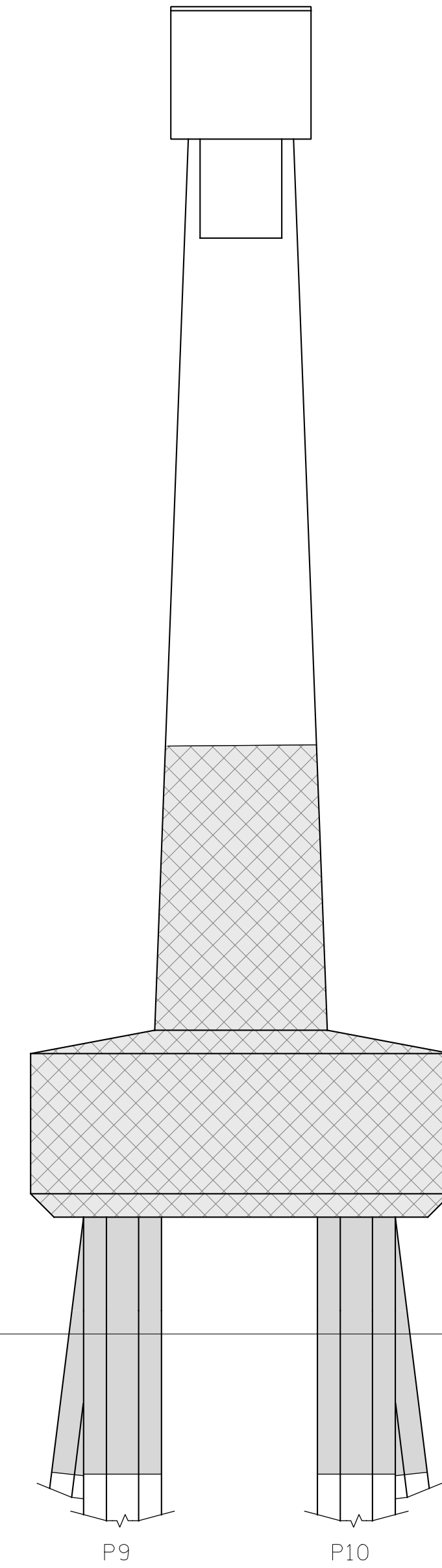
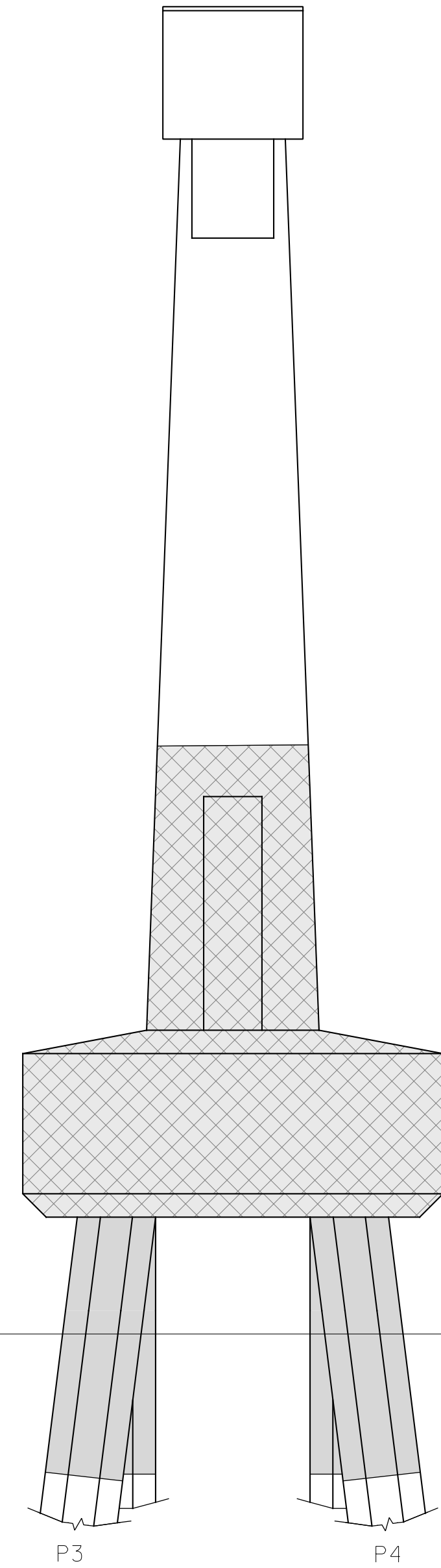
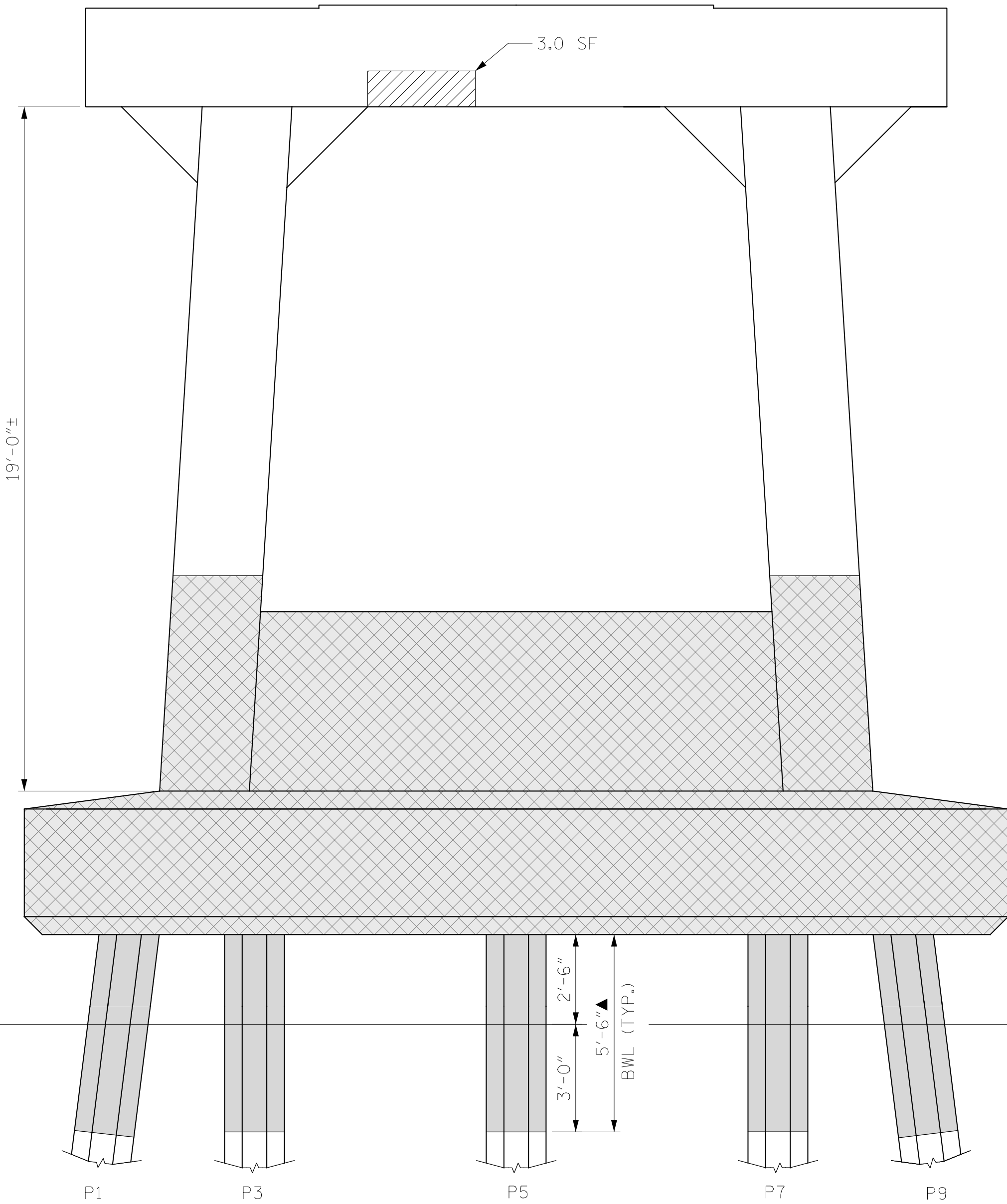


AS-BUILT REPAIR QUANTITY TABLE

BENT 149				
CAP REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	3.0 SF	1.5 CF	SF	CF
EPOXY RESIN INJECTION	3.0 LF			LF
COLUMN REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	6.1 SF	3.1 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS		ESTIMATE		ACTUAL
FRP PROTECTIVE SYSTEM AWL	- SF			SF
FRP PROTECTIVE SYSTEM BWL	302.5 SF			SF

FOR CAP REPAIRS; VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

**NOTES:**  
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.  
 FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
 FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.  
 FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 149  
 WEST FACE

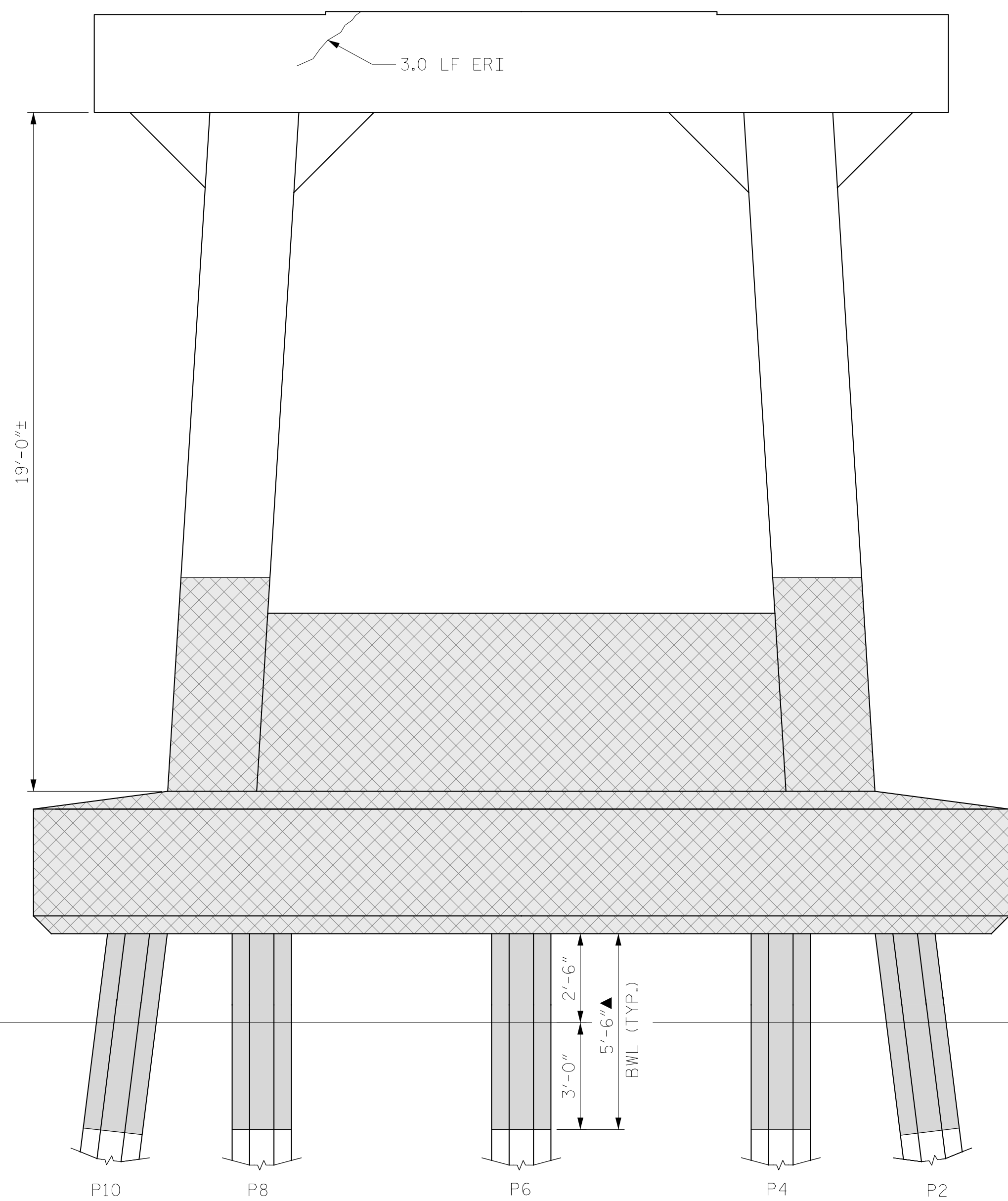
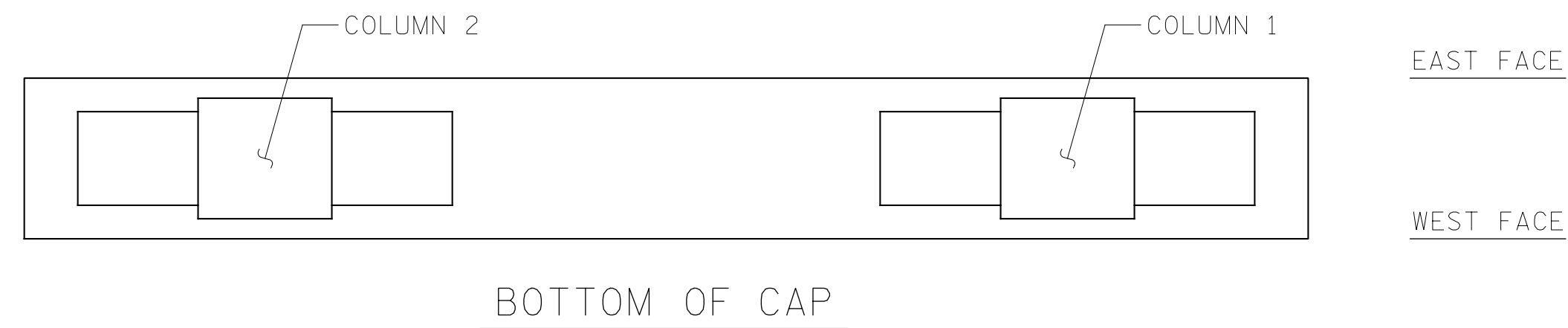
DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

BENT 149  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)

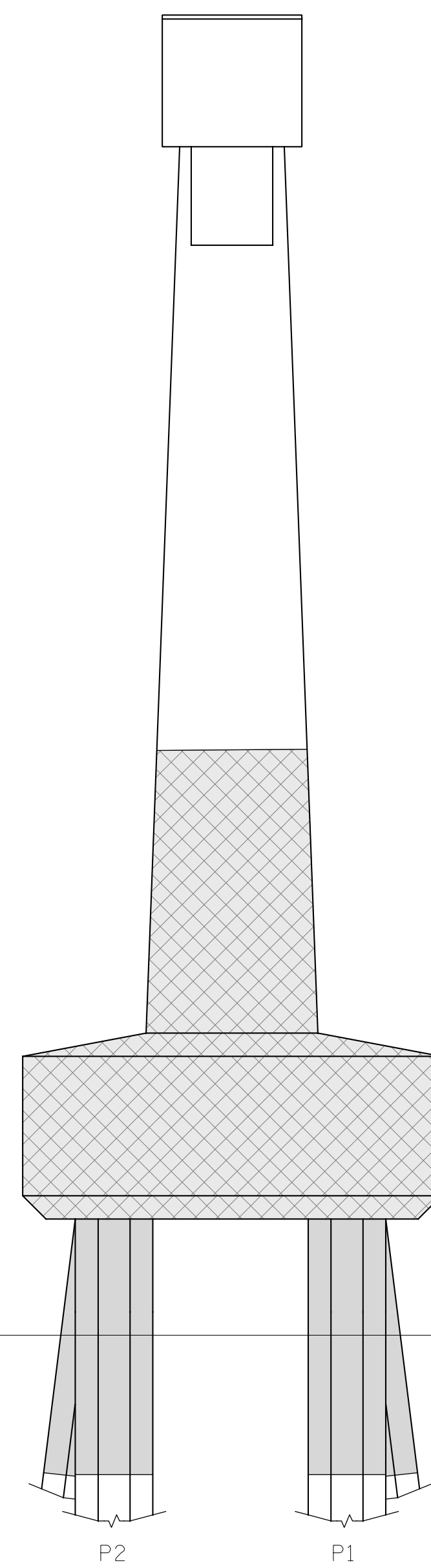


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

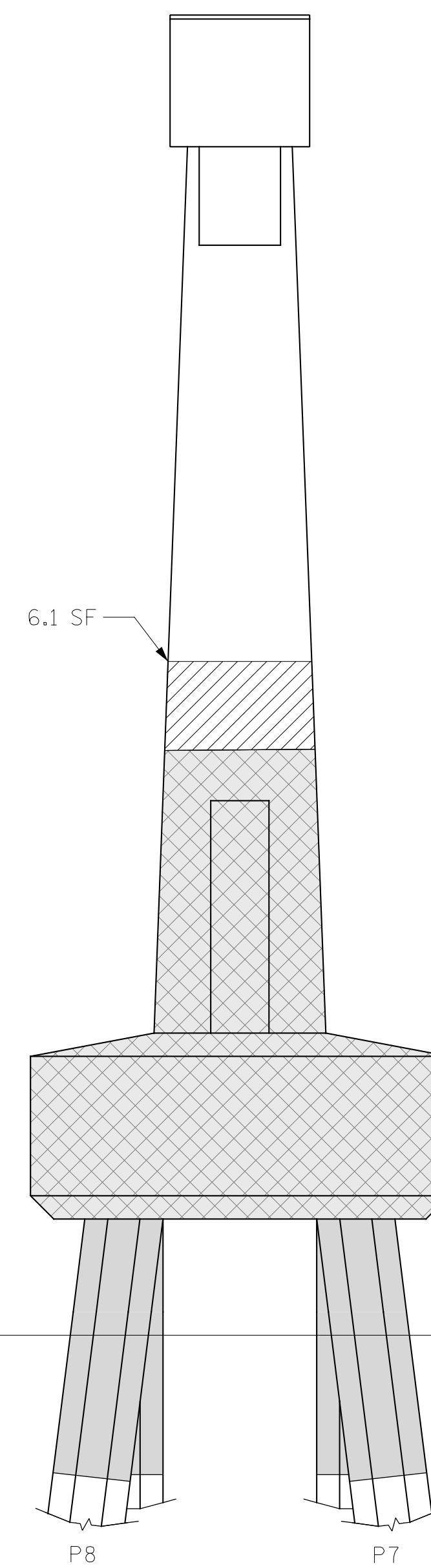
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			



ELEVATION  
EAST FACE



END VIEW  
NORTH FACE COL.1



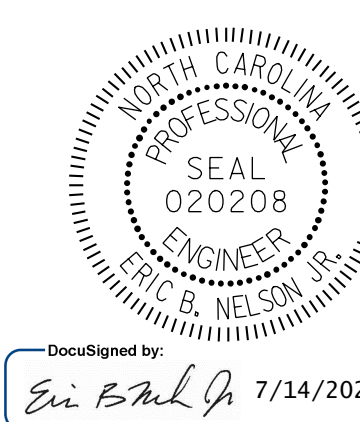
INTERIOR VIEW  
NORTH FACE COL.2

APPROX. NORMAL WATER SURFACE

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 149  
 EAST FACE

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

BENT 149  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			355

# AS-BUILT REPAIR QUANTITY TABLE BENT 150

CAP REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	2.0 LF				LF
COLUMN REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	13.7 SF	6.9 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE		ACTUAL	
FRP PROTECTIVE SYSTEM AWL	- SF				SF
FRP PROTECTIVE SYSTEM BWL	302.5 SF				SF

FOR CAP REPAIRS; VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

**NOTES:**  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

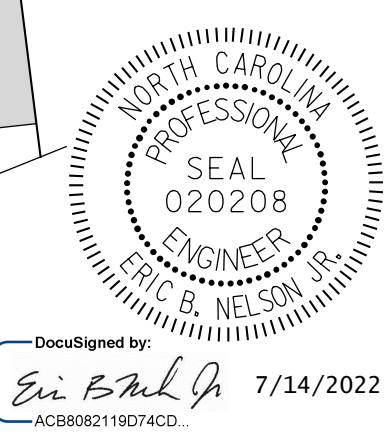
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

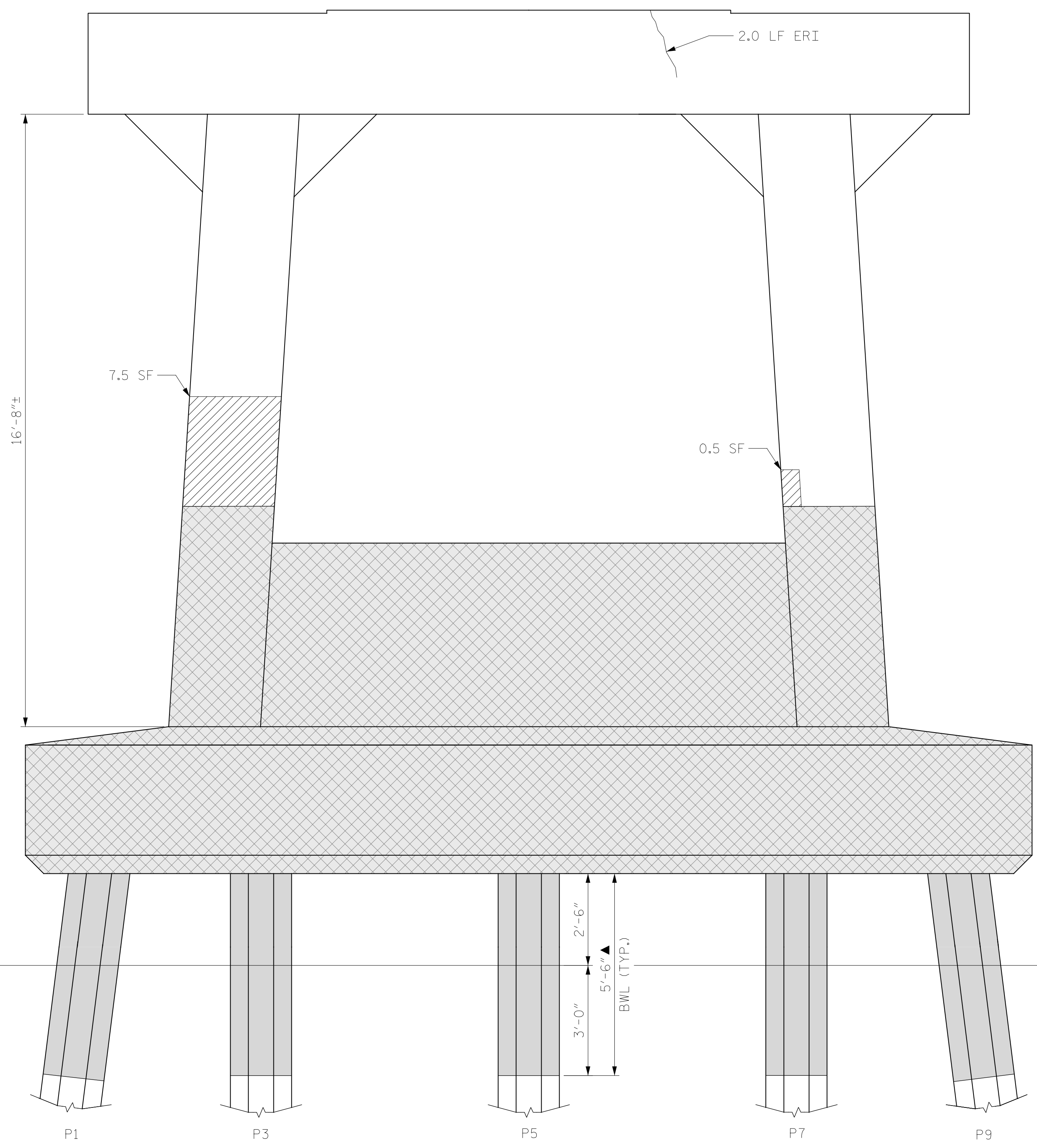
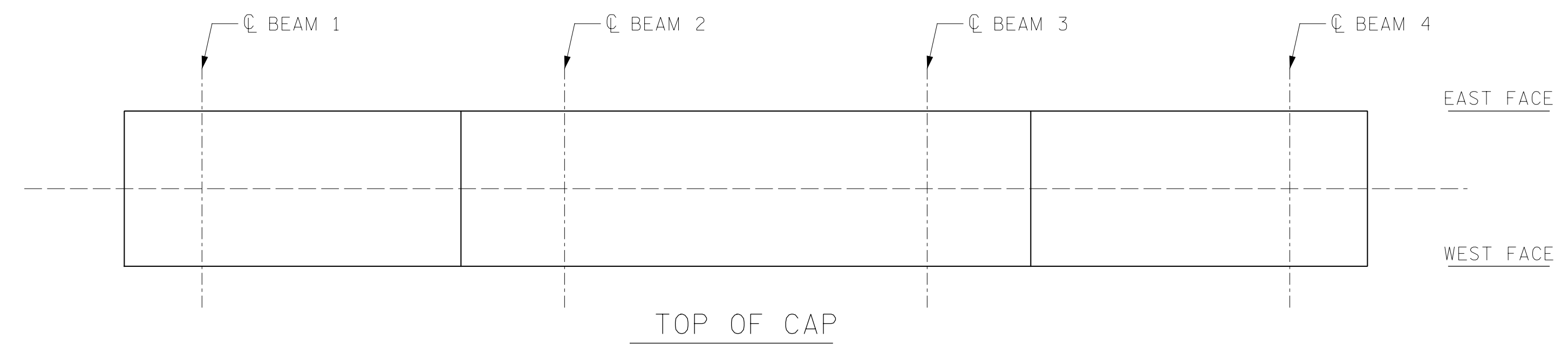
PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 150  
WEST FACE

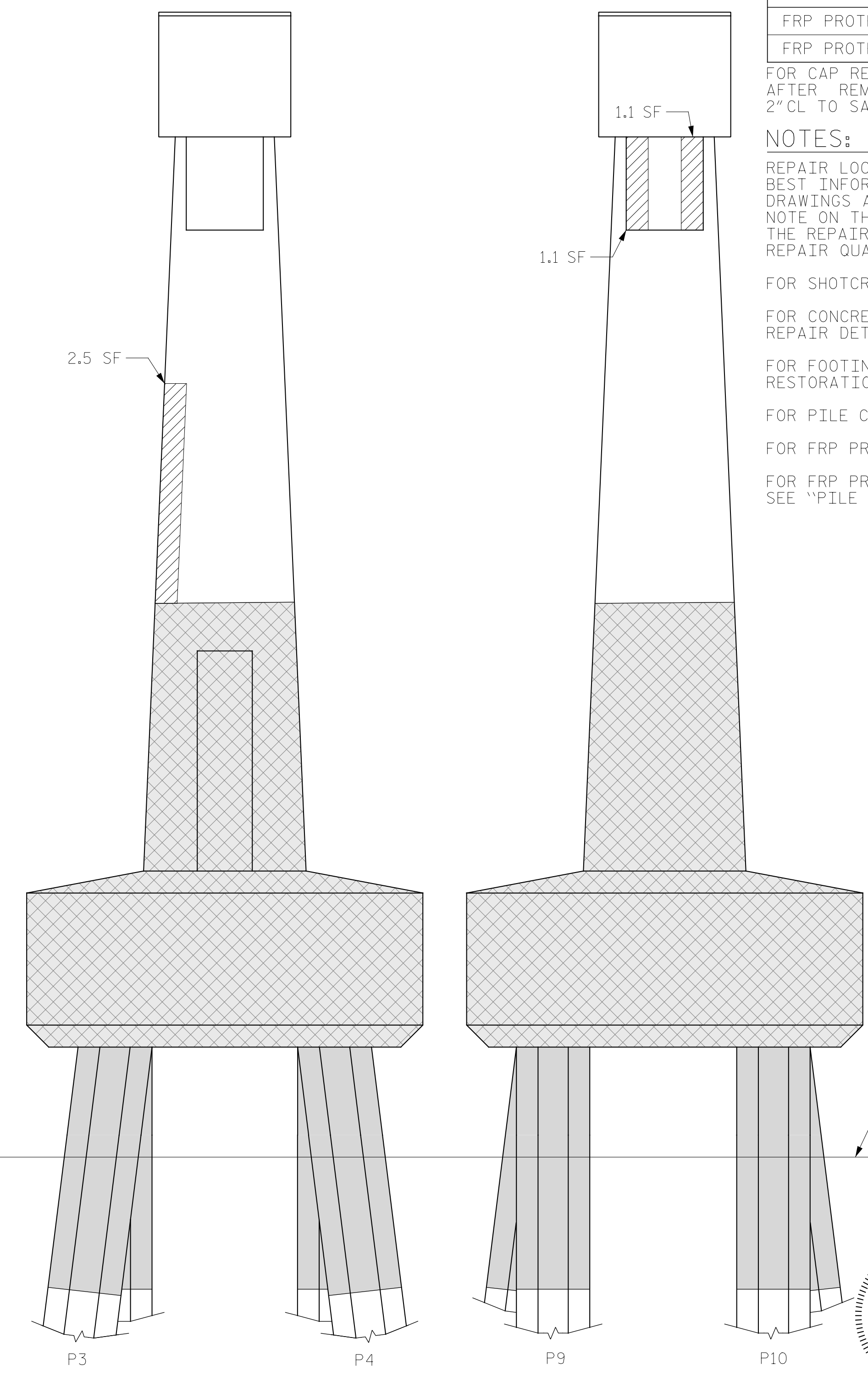


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			



ELEVATION WEST FACE  
BENT 150

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)



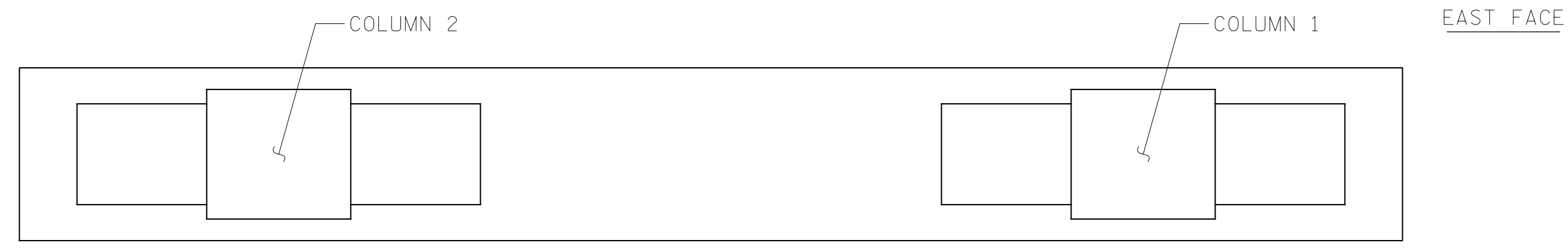
INTERIOR VIEW SOUTH FACE COL.1  
END VIEW SOUTH FACE COL.2

APPROX. NORMAL WATER SURFACE

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 5/2019

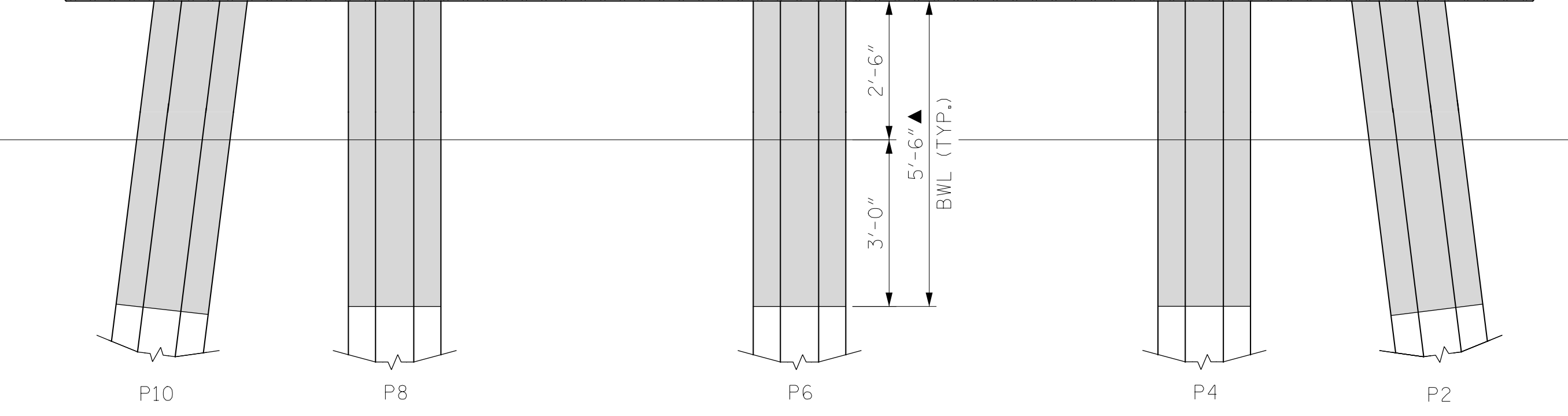
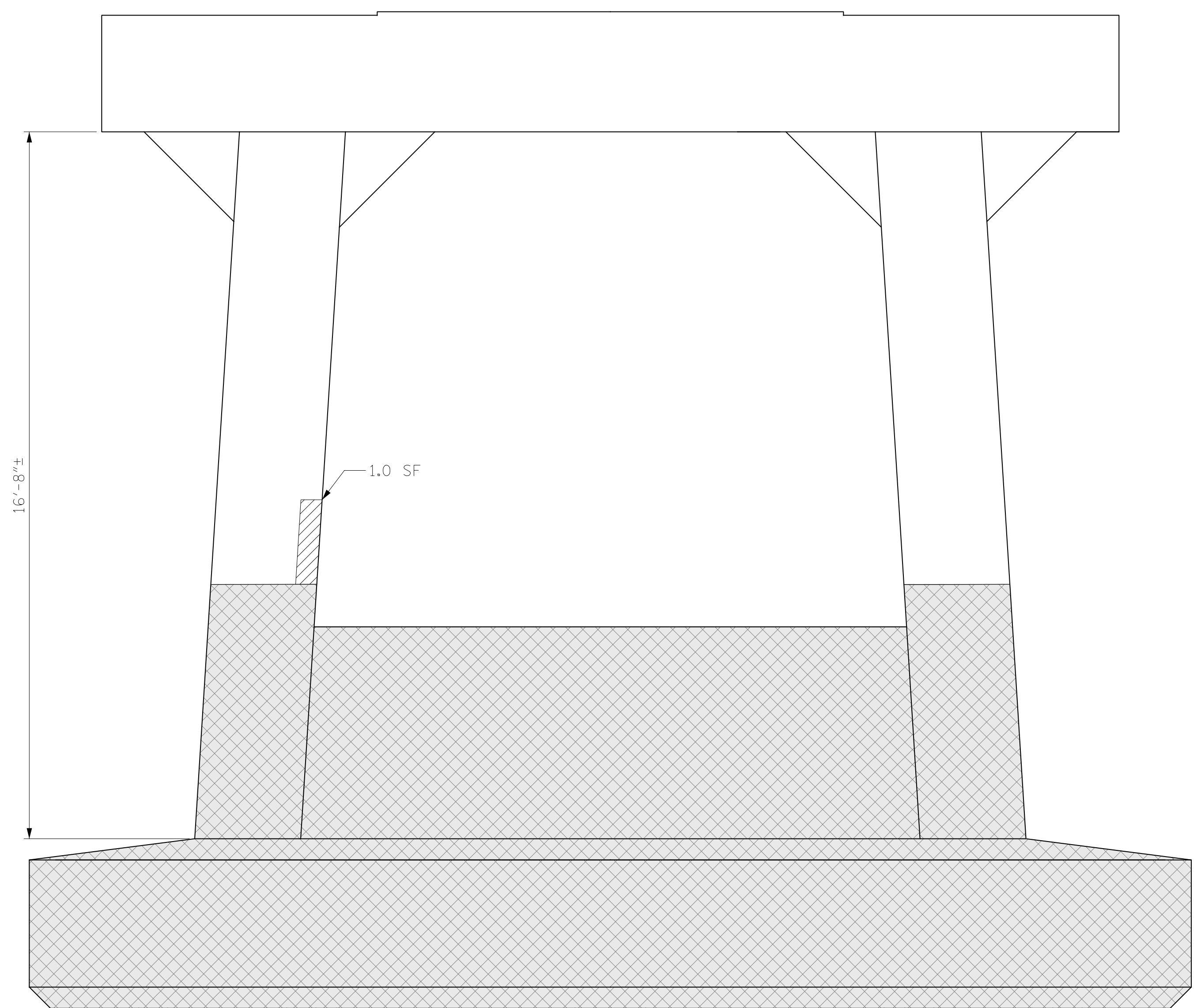


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BOTTOM OF CAP

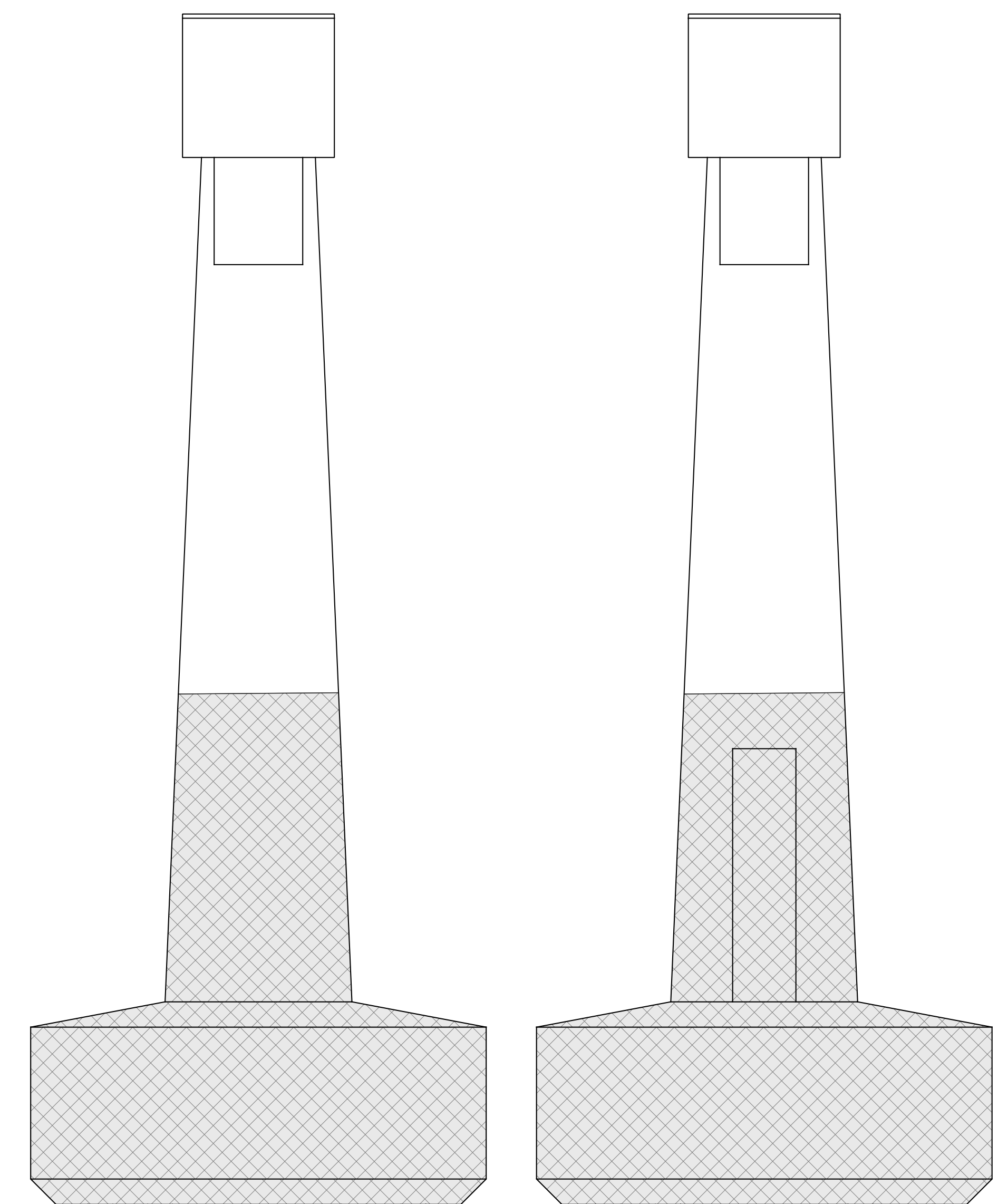
EAST FACE  
WEST FACE



ELEVATION EAST FACE

BENT 150

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)



END VIEW NORTH FACE COL. 1

INTERIOR VIEW NORTH FACE COL. 2

- ERI - EPOXY RESIN INJECTION
- FRP - FRP PROTECTIVE SYSTEM
- SHOTCRETE - SHOTCRETE REPAIRS
- PILE FOOTING - PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
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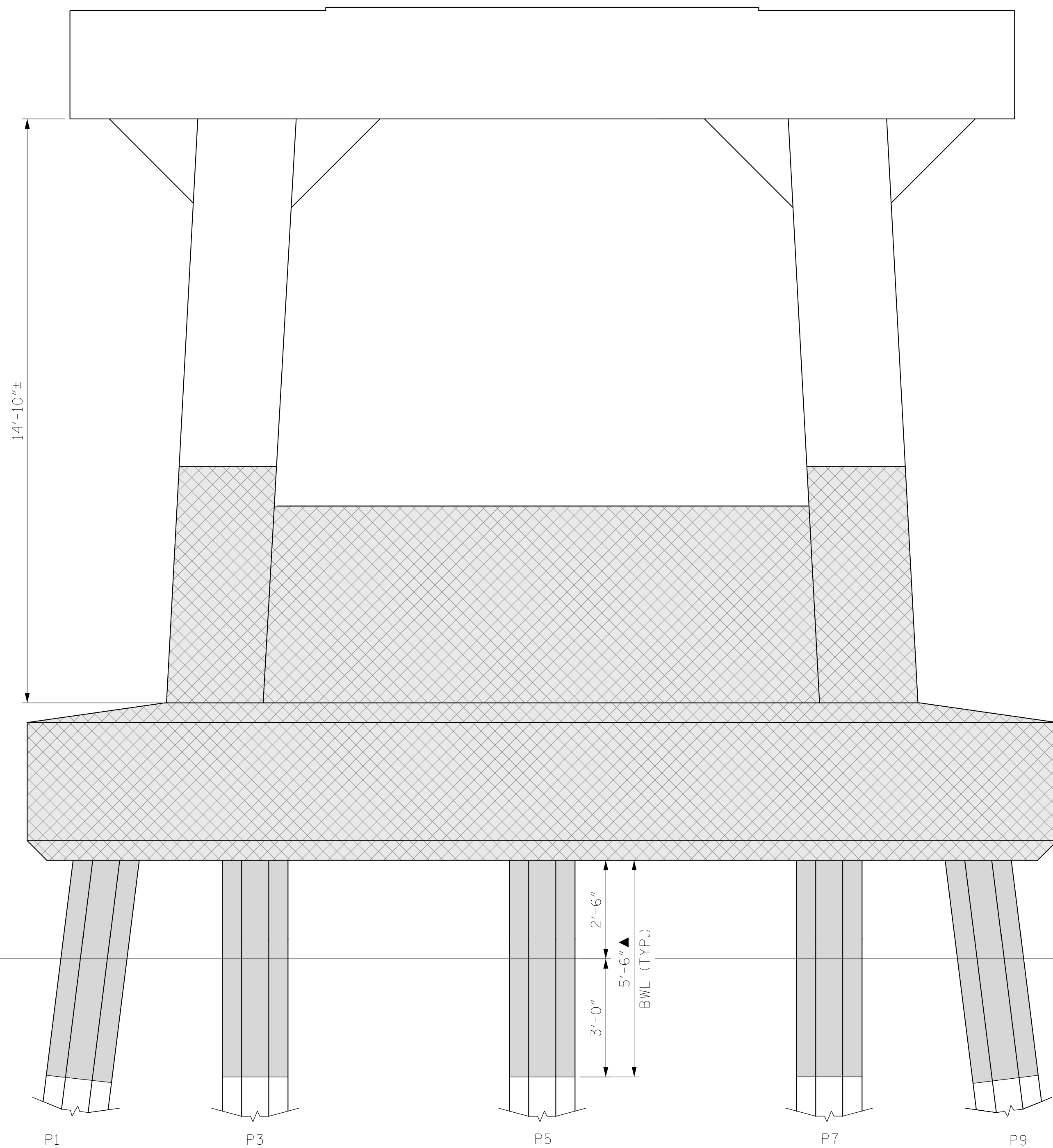
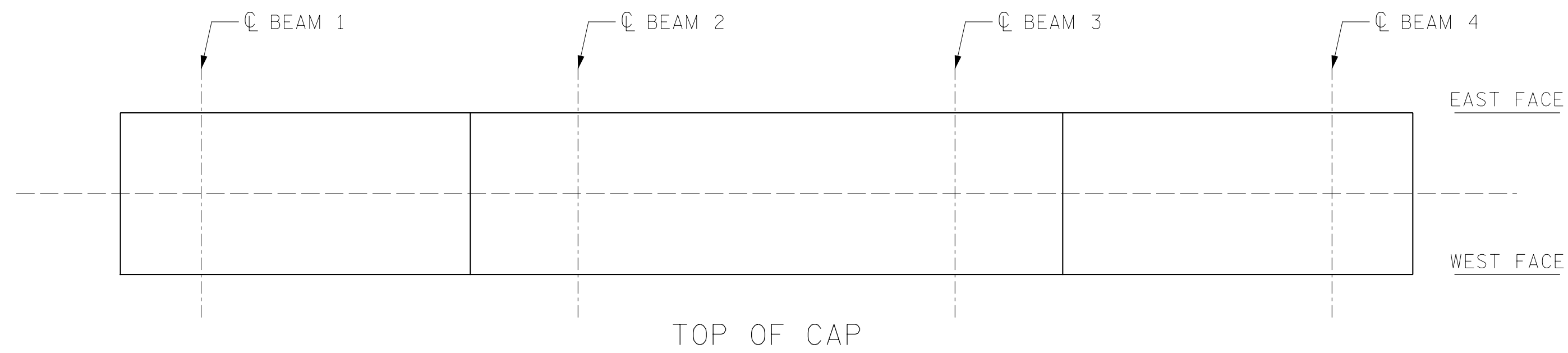
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BENT 150  
 EAST FACE

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

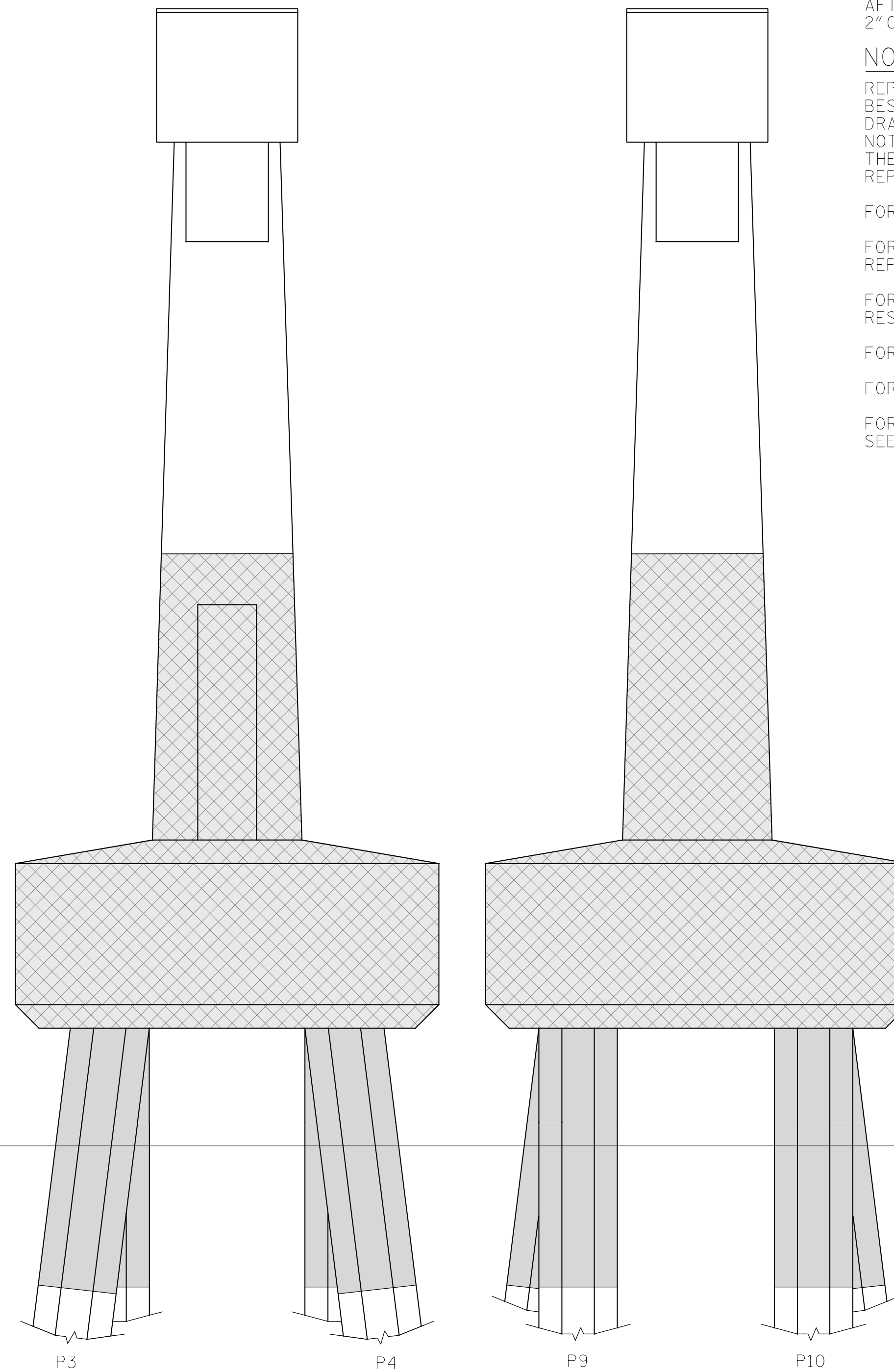


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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			355



ELEVATION  
WEST FACE



INTERIOR VIEW  
SOUTH FACE COL.1

END VIEW  
SOUTH FACE COL.2

AS-BUILT REPAIR QUANTITY TABLE				
BENT 151				
CAP REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF	CF
EPOXY RESIN INJECTION	5.0 LF		LF	
COLUMN REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF		LF	
PILE REPAIRS		ESTIMATE		ACTUAL
FRP PROTECTIVE SYSTEM AWL	- SF		SF	
FRP PROTECTIVE SYSTEM BWL	302.5 SF		SF	

FOR CAP REPAIRS; VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

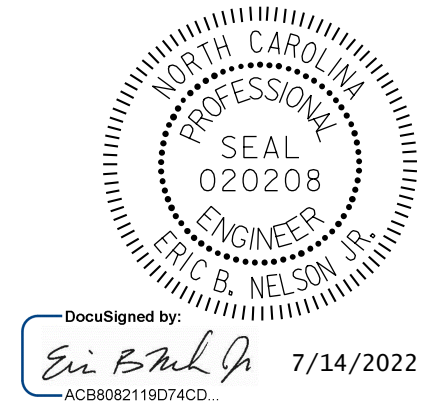
**NOTES:**  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.
- FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.
- FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.
- FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.
- FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Hatched Box] - SHOTCRETE REPAIRS
- [Cross-hatched Box] - PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENT 151  
 WEST FACE**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

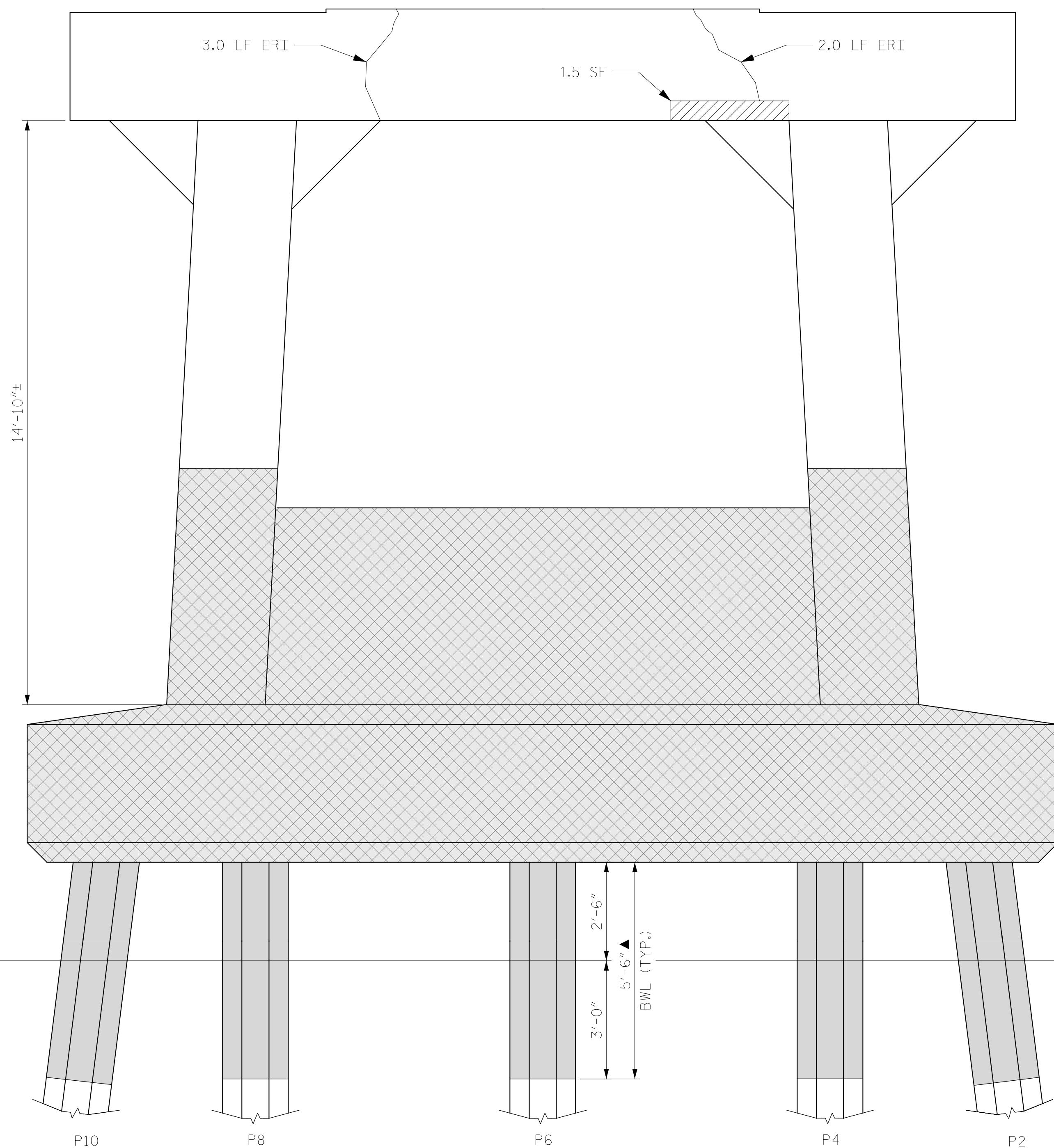
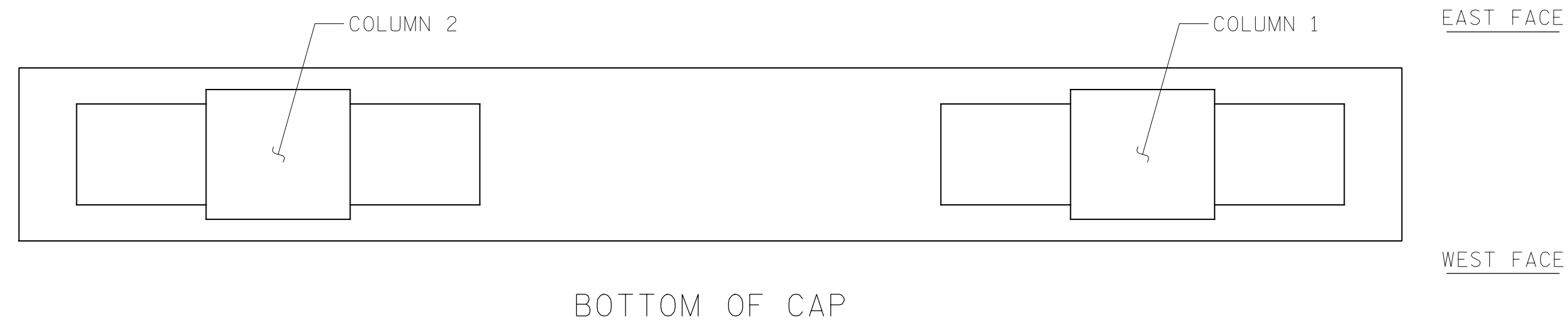
S-239

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

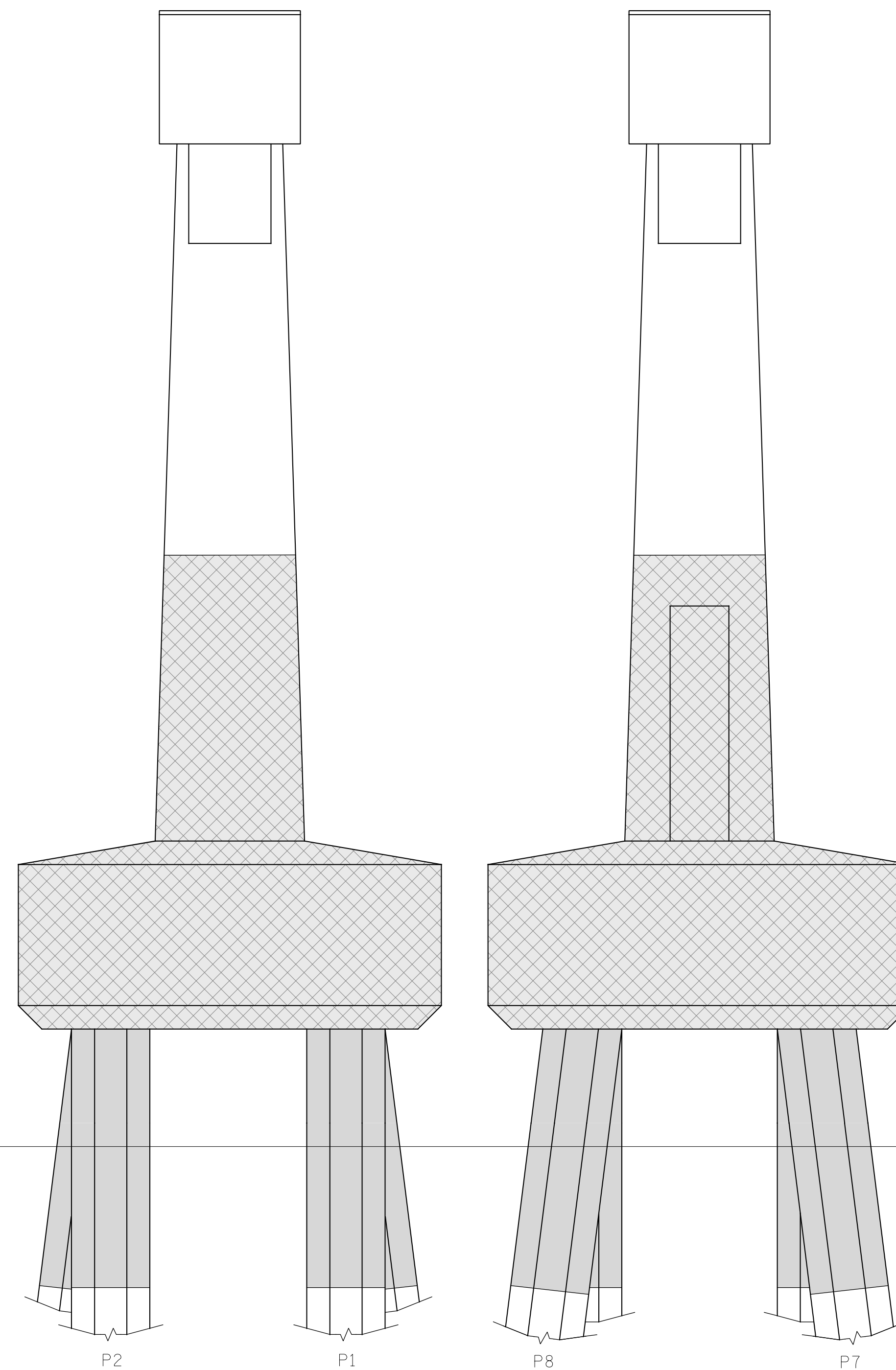
**BENT 151**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



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ELEVATION  
EAST FACE



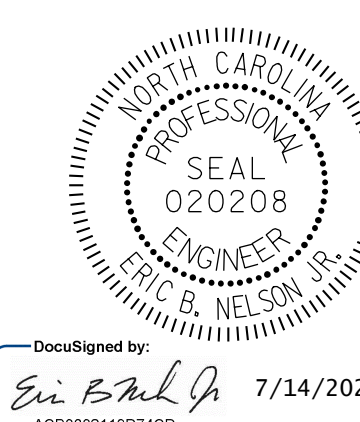
END VIEW  
NORTH FACE COL. 1

INTERIOR VIEW  
NORTH FACE COL. 2

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENT 151  
 EAST FACE**

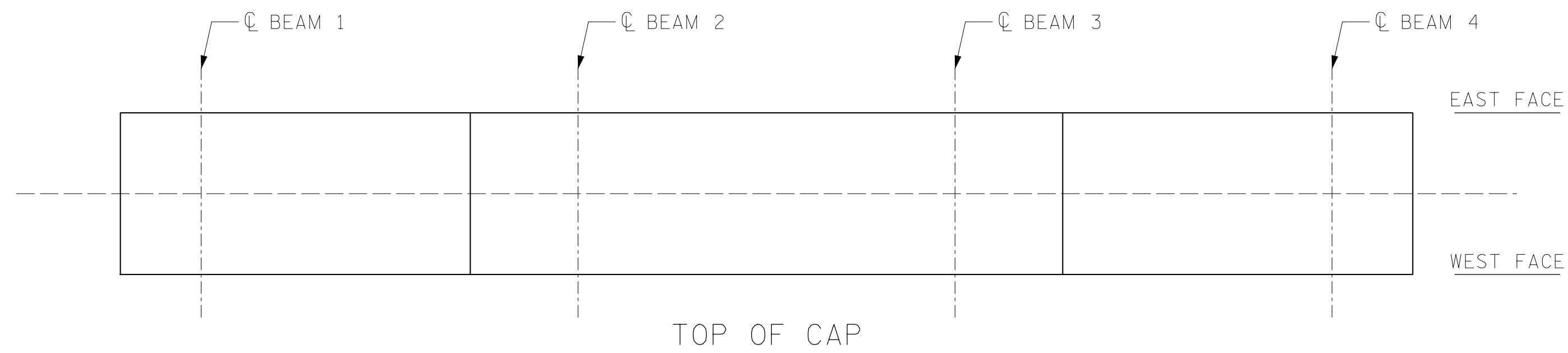
DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 5/2019

**BENT 151**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)

**GANNETT FLEMING**  
 One Glenwood Avenue  
 Suite 900  
 Raleigh, NC 27603  
 (919) 420-7660  
 NC Lic. No. F-0270

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-240
2			4			355



# AS-BUILT REPAIR QUANTITY TABLE BENT 152

CAP REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	1.6 SF	0.8 CF	SF	CF	
EPOXY RESIN INJECTION	3.0 LF				LF
COLUMN REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	11.2 SF	5.6 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE		ACTUAL	
FRP PROTECTIVE SYSTEM AWL	- SF				SF
FRP PROTECTIVE SYSTEM BWL	302.5 SF				SF

FOR CAP REPAIRS; VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

**NOTES:**

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

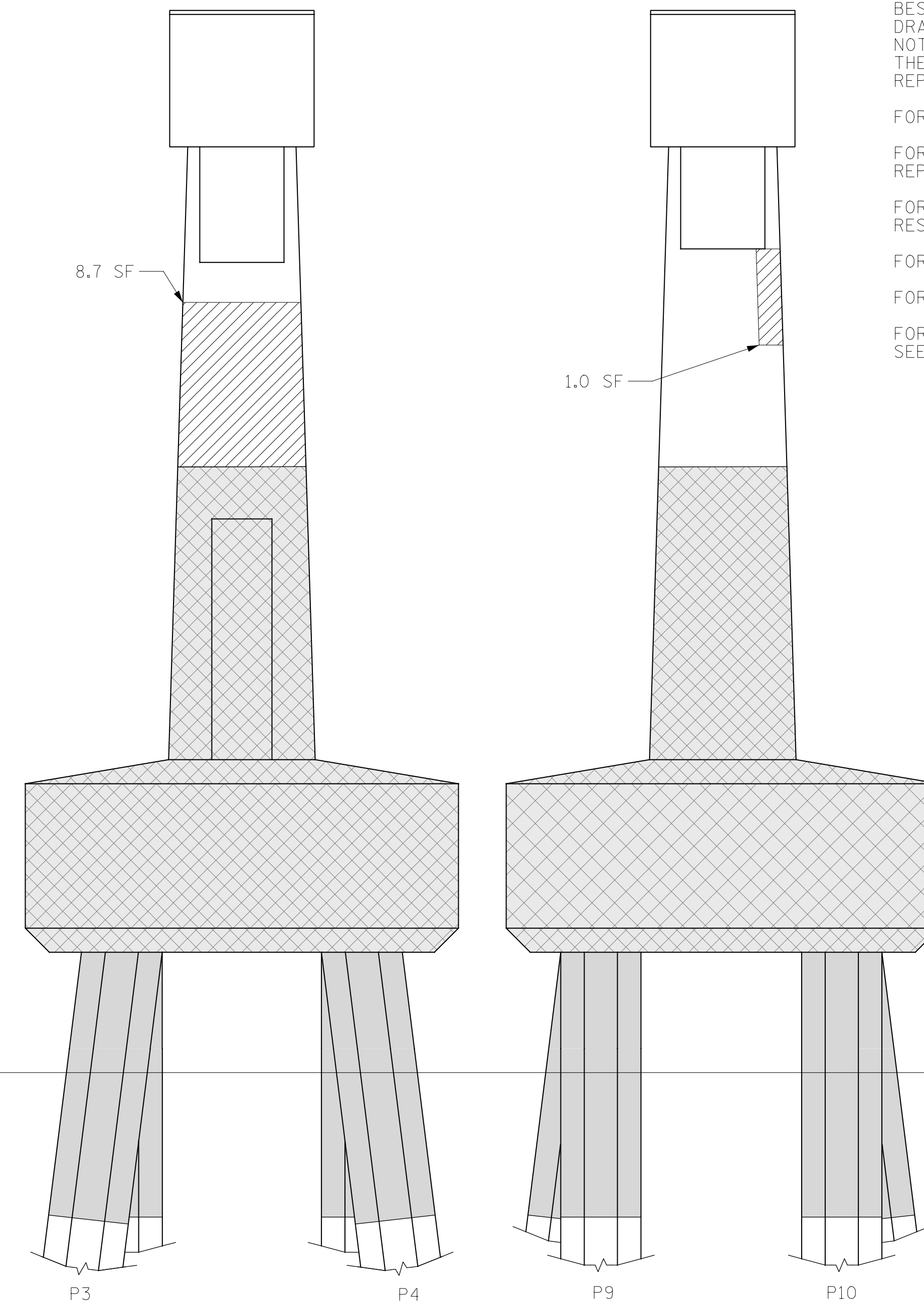
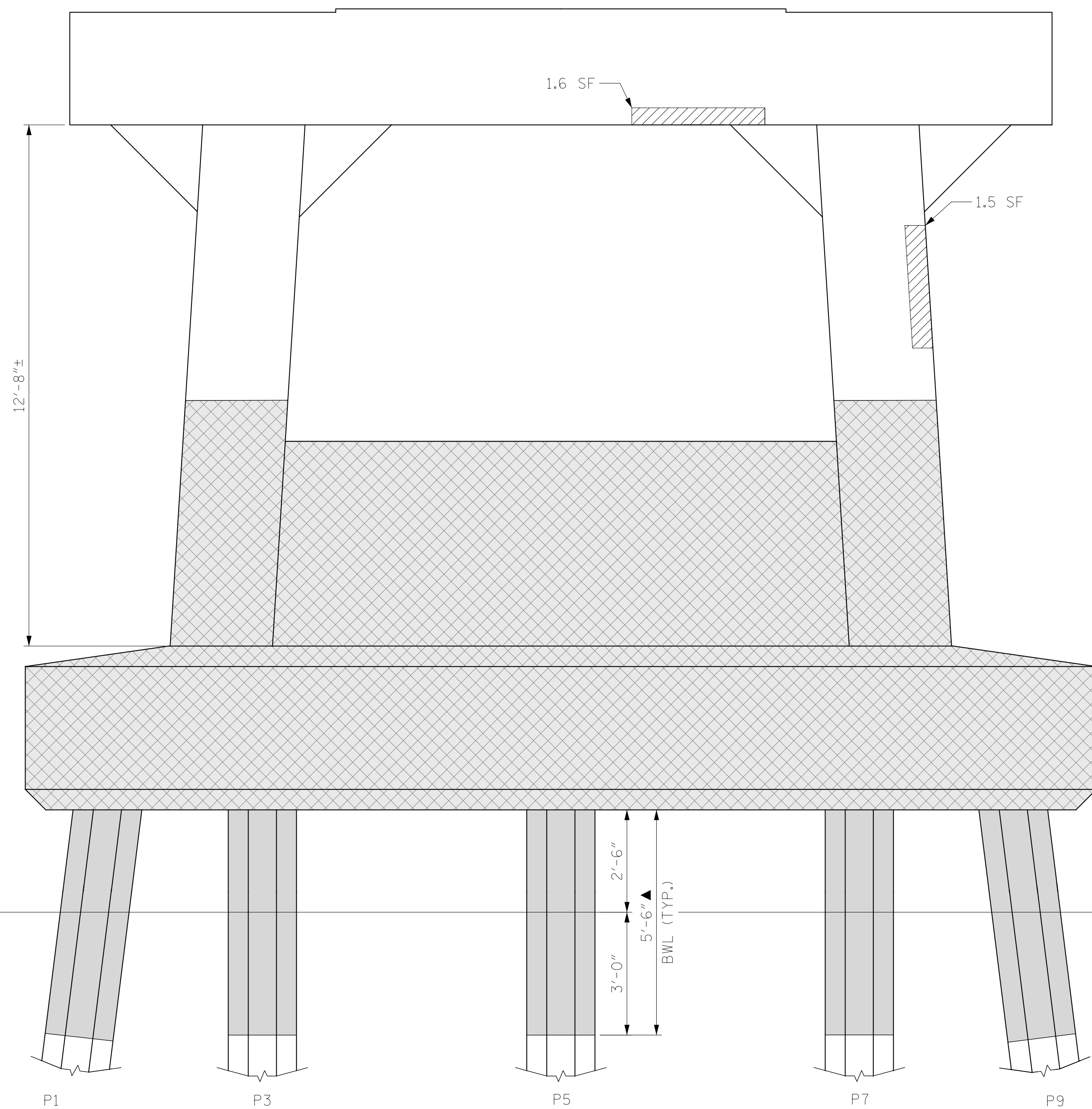
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

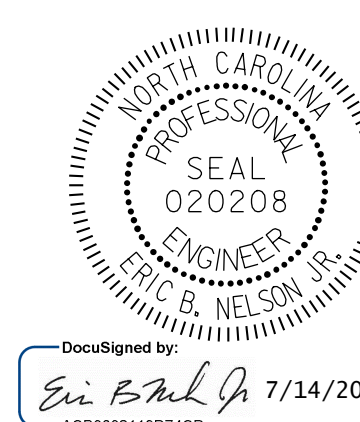


- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Hatched Box] - SHOTCRETE REPAIRS
- [Cross-hatched Box] - PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

APPROX. NORMAL WATER SURFACE



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## BENT 152 WEST FACE

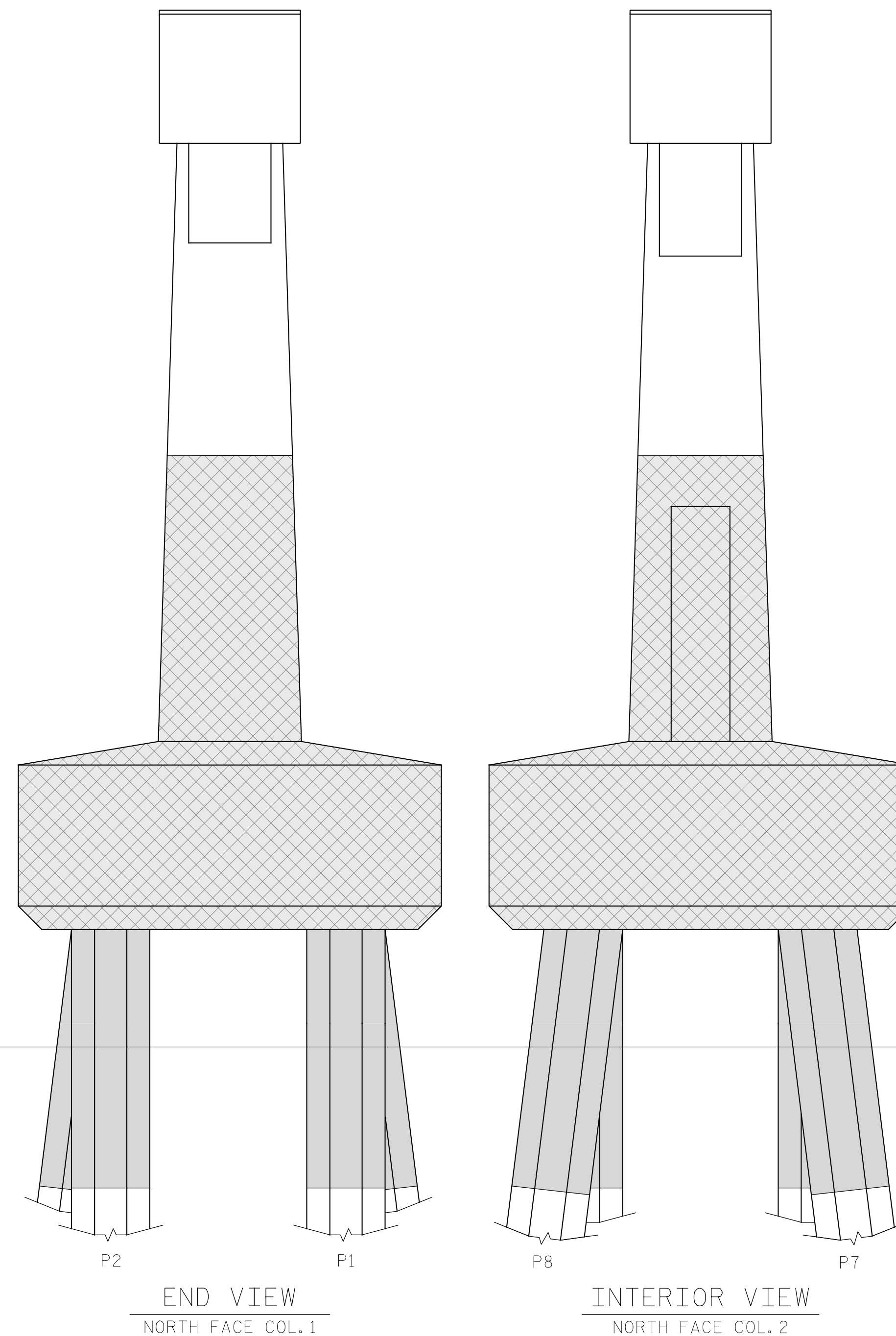
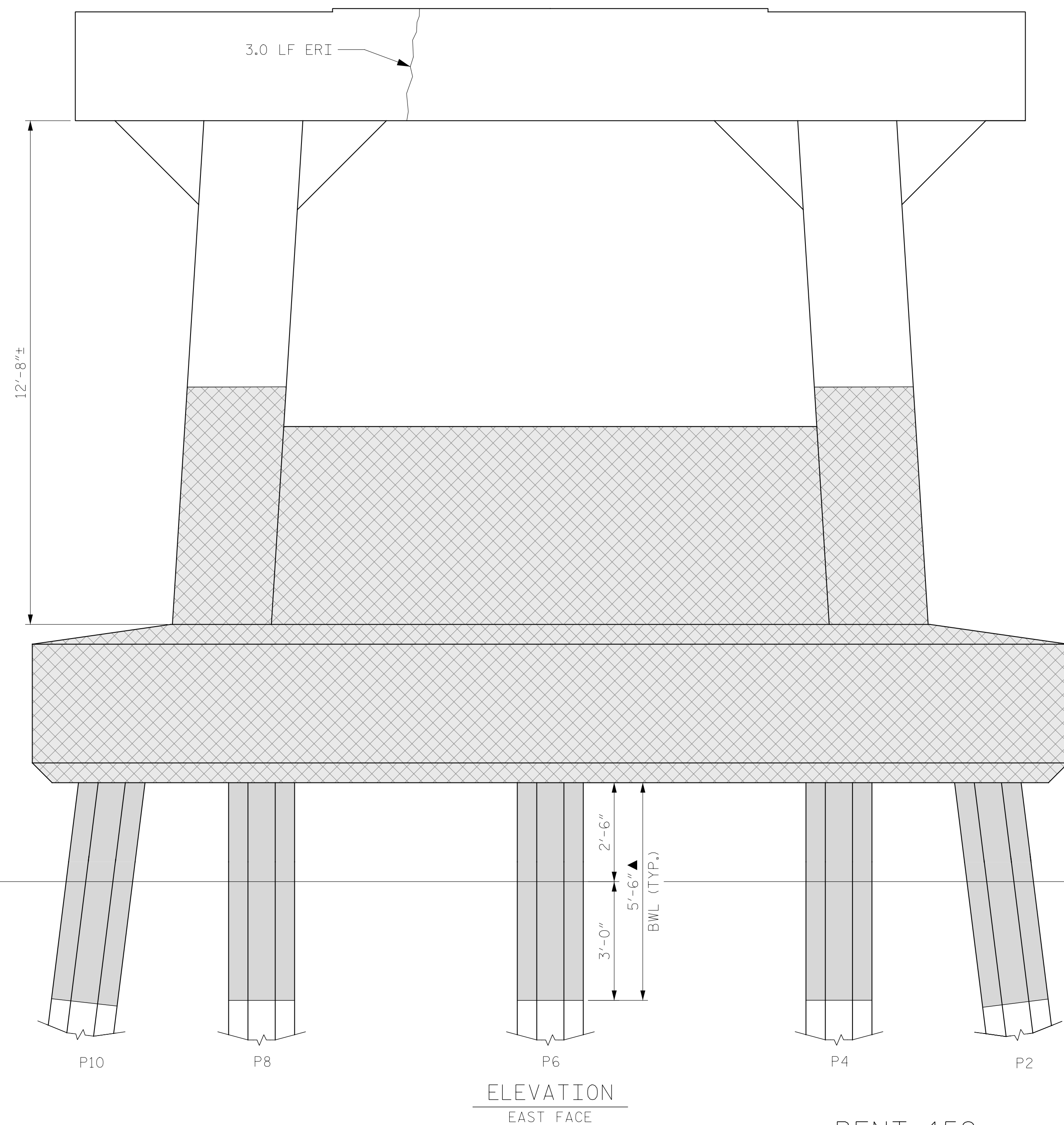
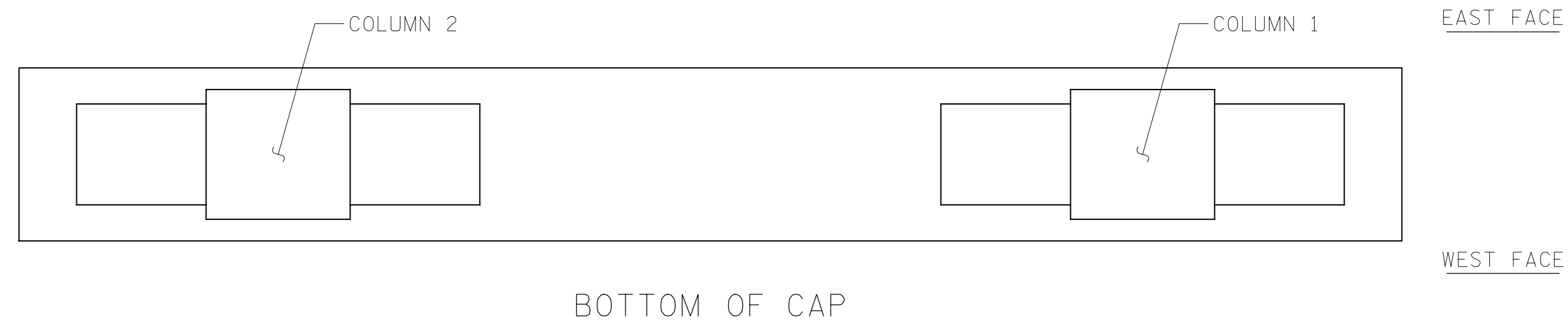
DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

**BENT 152**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

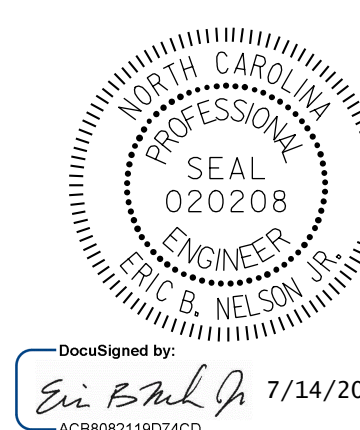


- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

APPROX. NORMAL WATER SURFACE



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 152  
 EAST FACE

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 5/2019

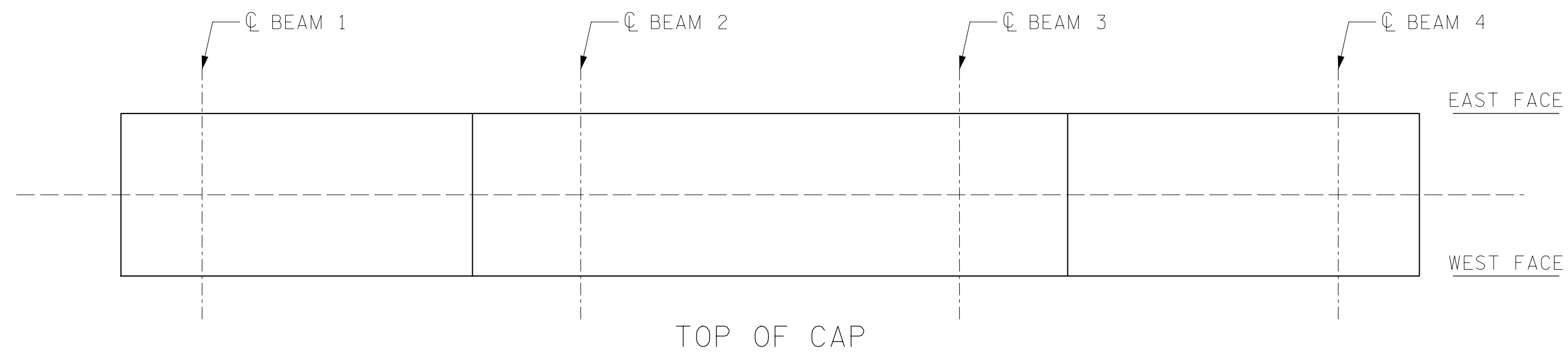
BENT 152  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			





## AS-BUILT REPAIR QUANTITY TABLE BENT 153

CAP REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	2.0 SF	1.0 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
COLUMN REPAIRS		ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	46.2 SF	23.1 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE		ACTUAL	
FRP PROTECTIVE SYSTEM AWL	- SF				SF
FRP PROTECTIVE SYSTEM BWL	302.5 SF				SF

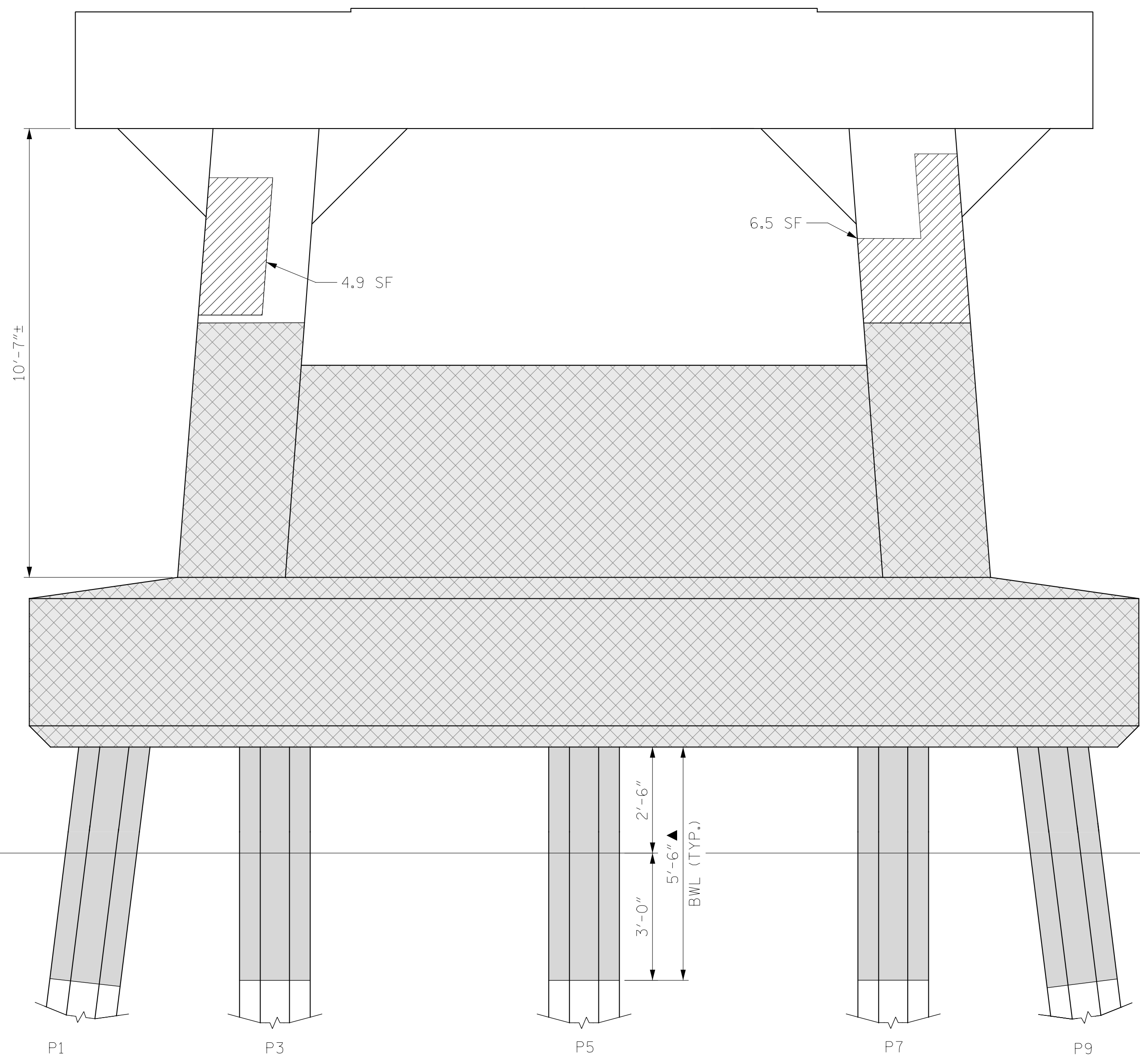
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**NOTES:**  
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

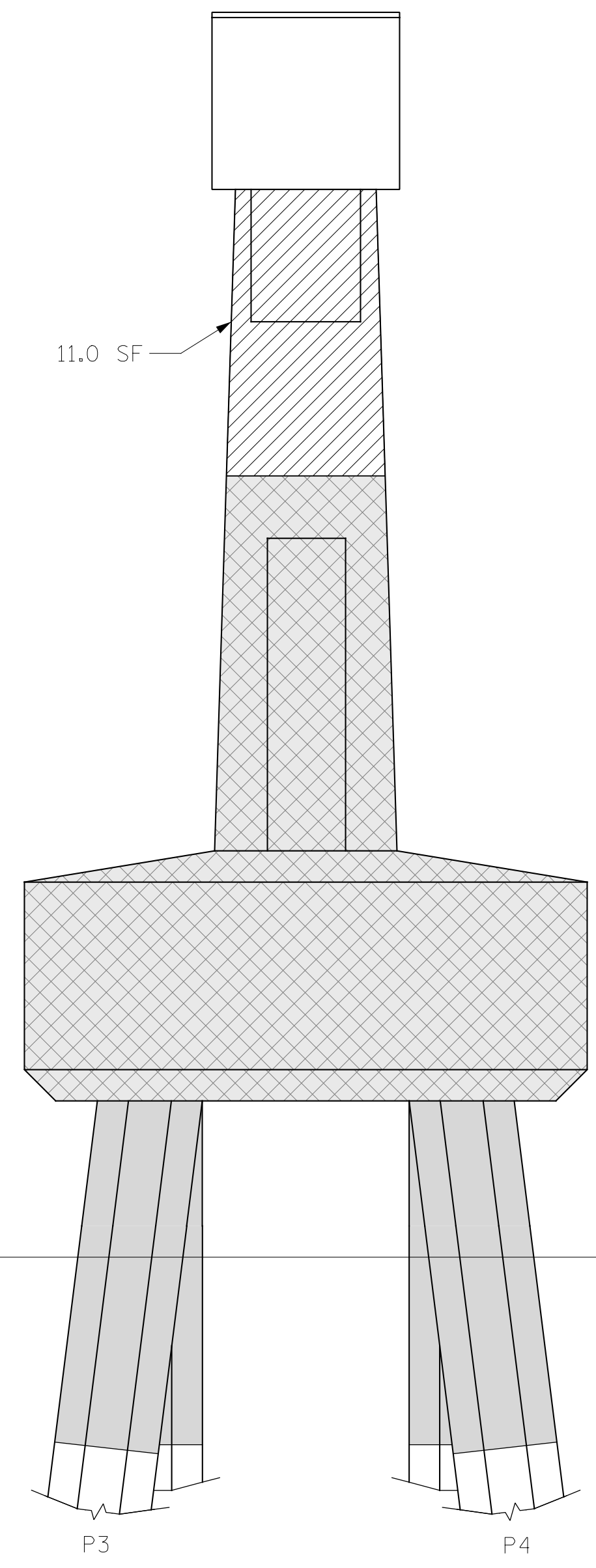
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
 FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.  
 FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

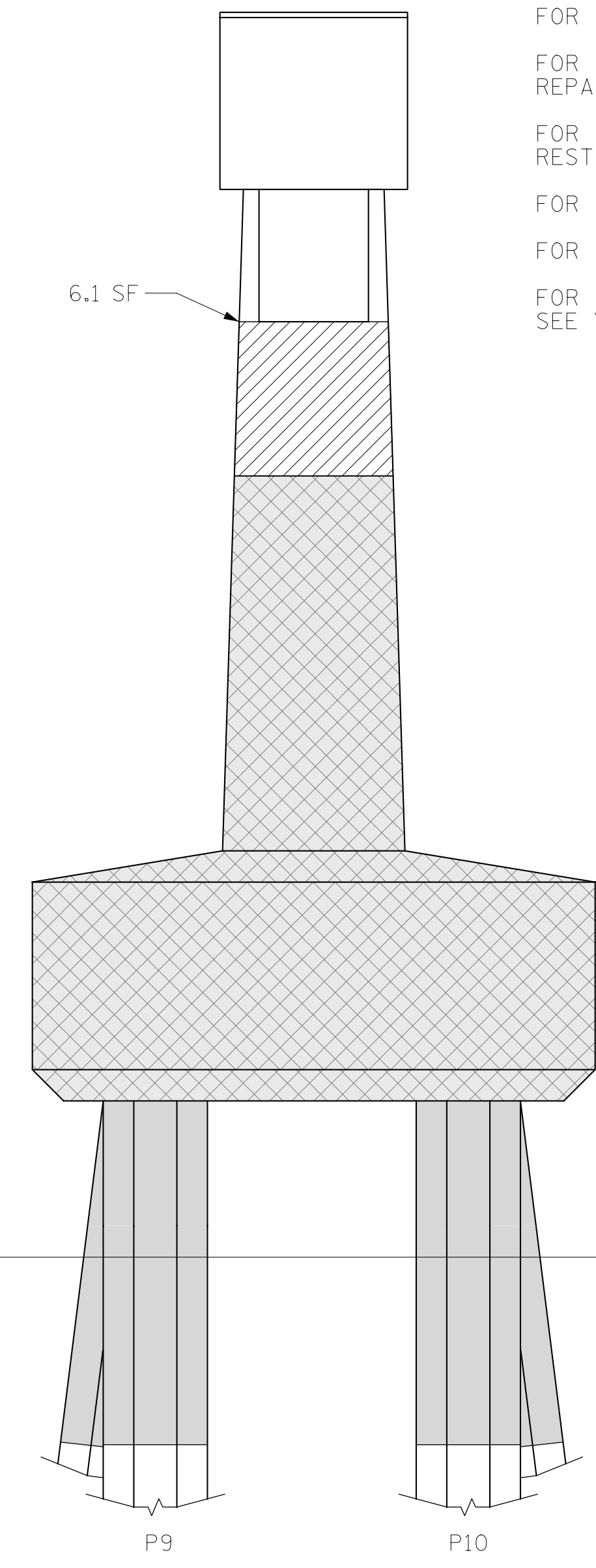
▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS



ELEVATION  
WEST FACE



INTERIOR VIEW  
SOUTH FACE COL.1



END VIEW  
SOUTH FACE COL.2

APPROX. NORMAL WATER SURFACE

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### BENT 153 WEST FACE

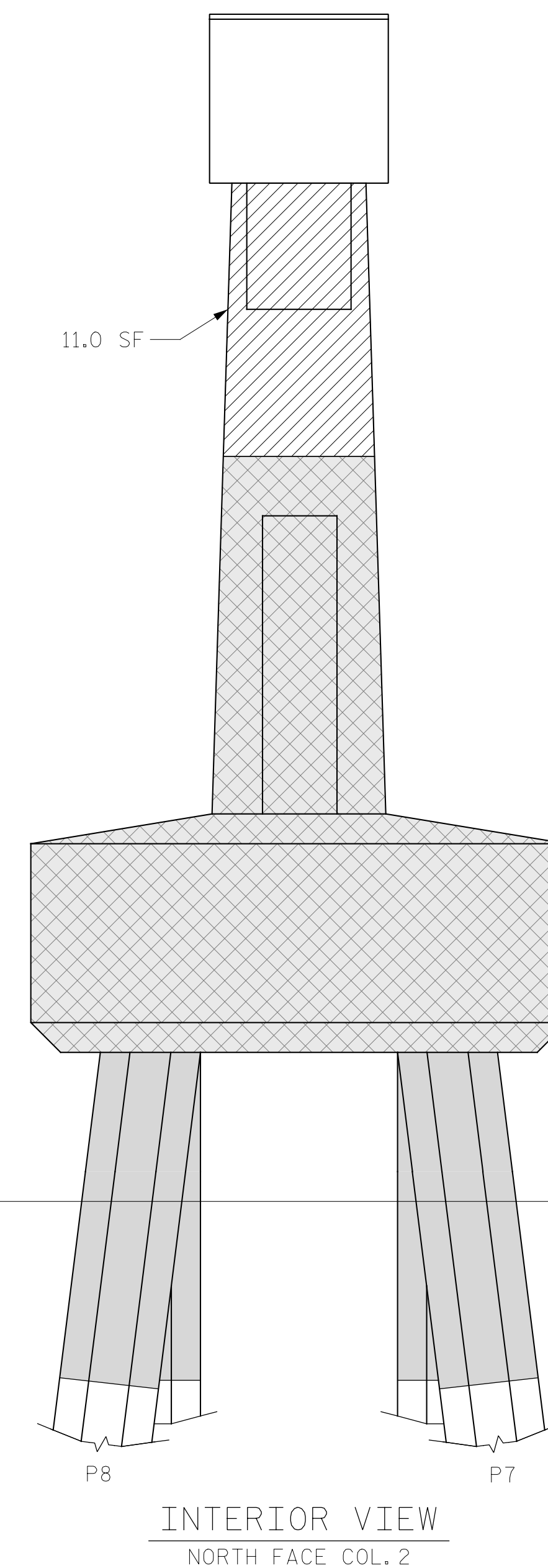
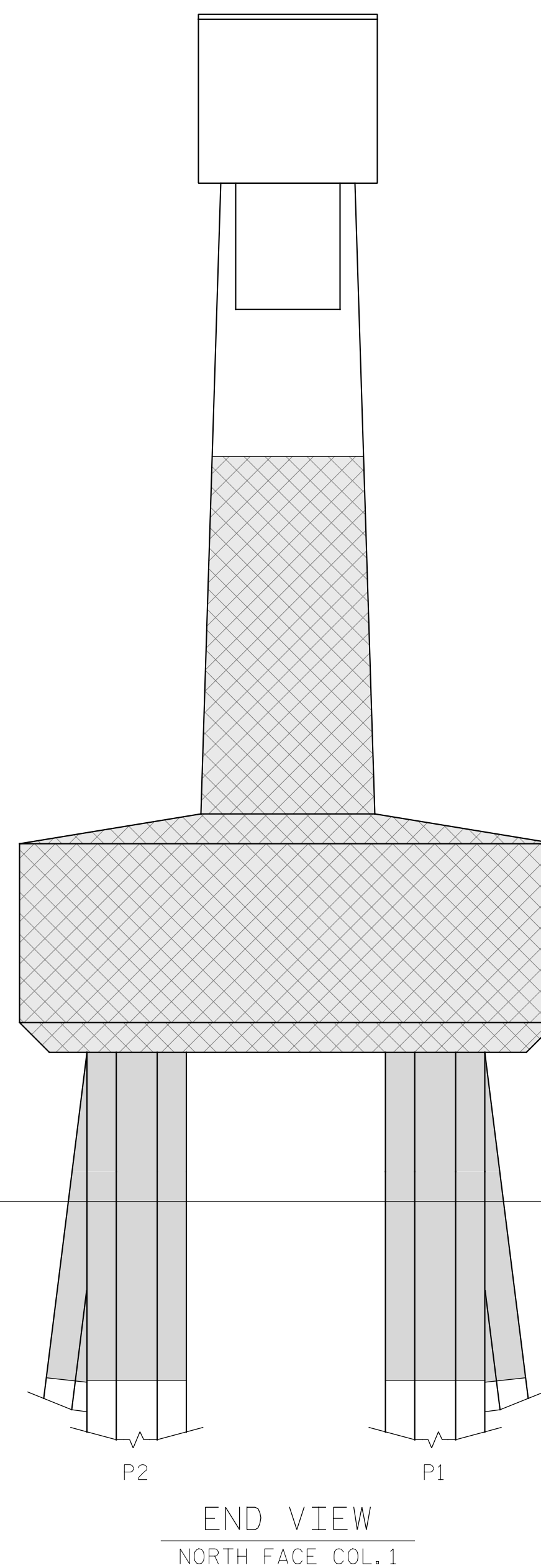
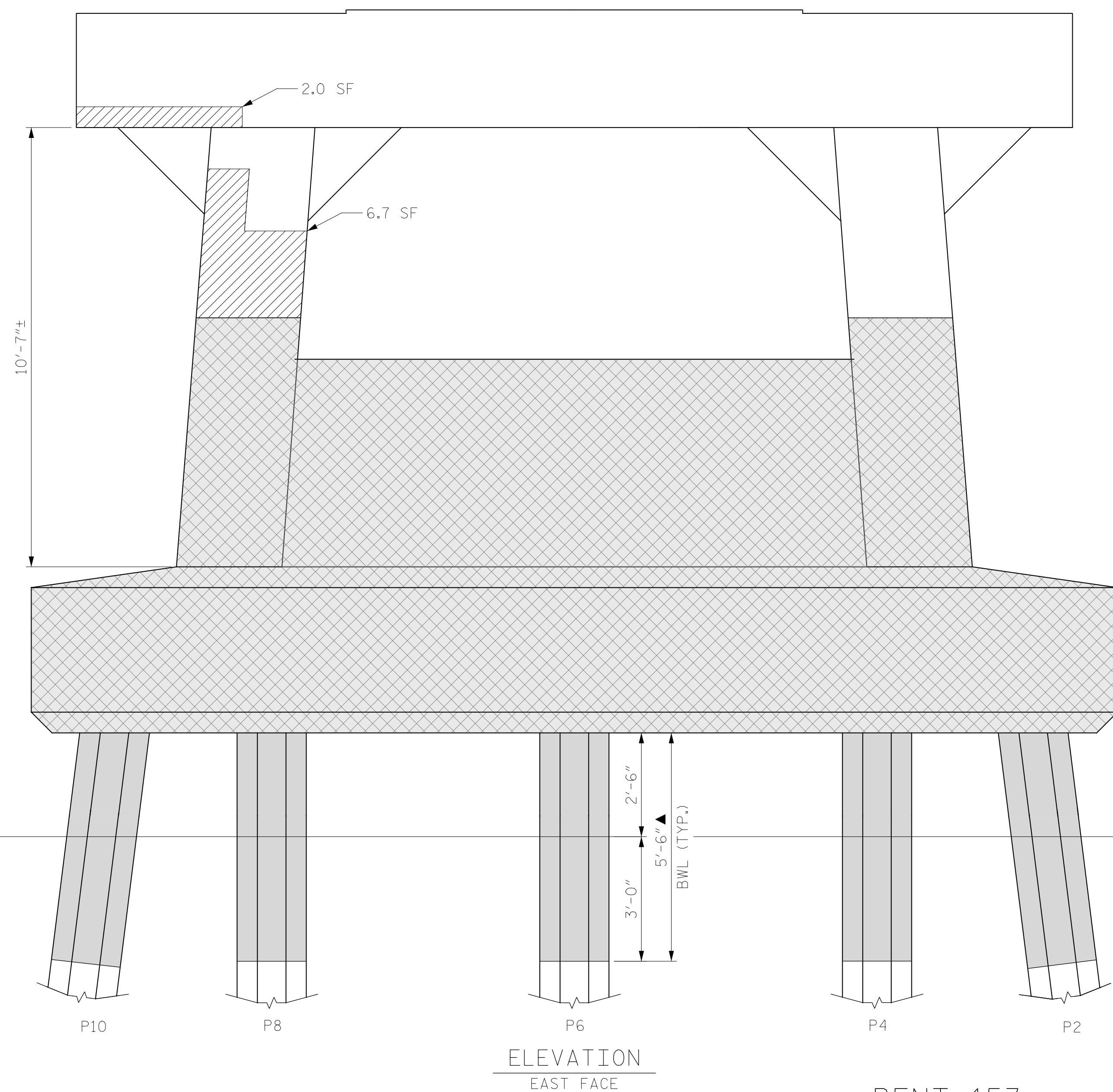
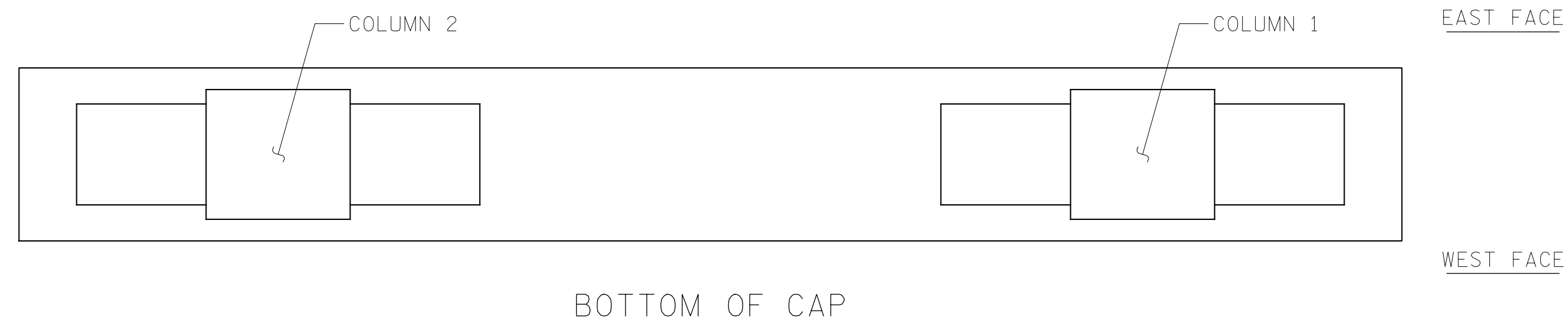
DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

**BENT 153**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

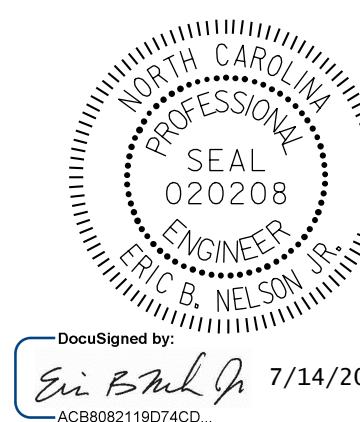


- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

APPROX. NORMAL WATER SURFACE



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENT 153  
 EAST FACE**

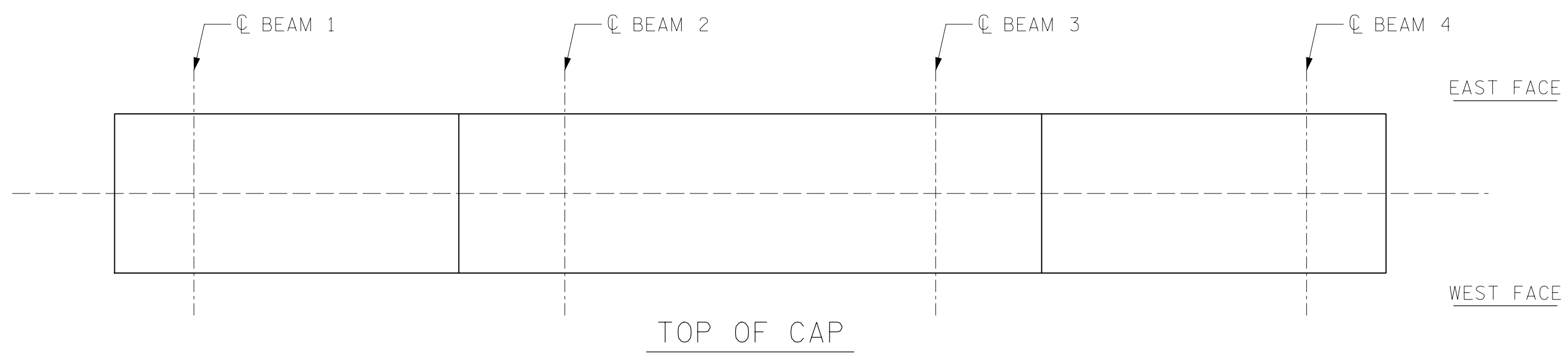
DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 5/2019

**BENT 153**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			244
2			4			355



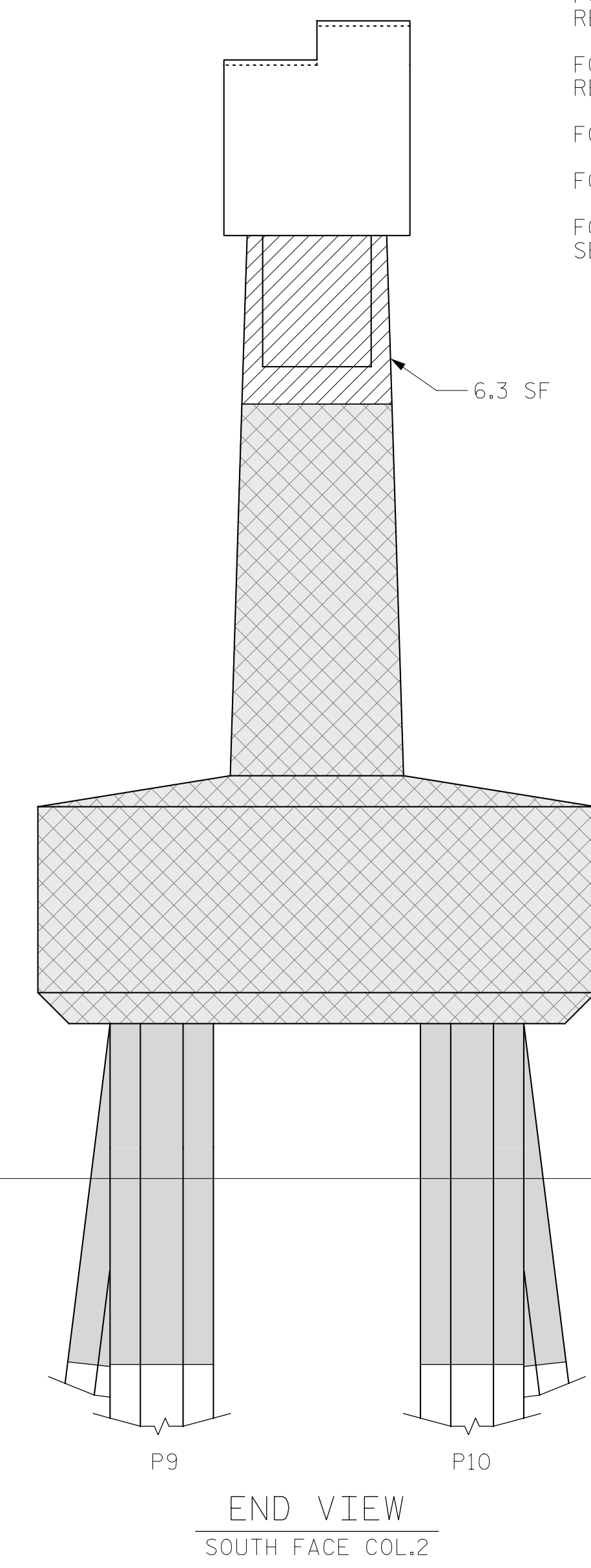
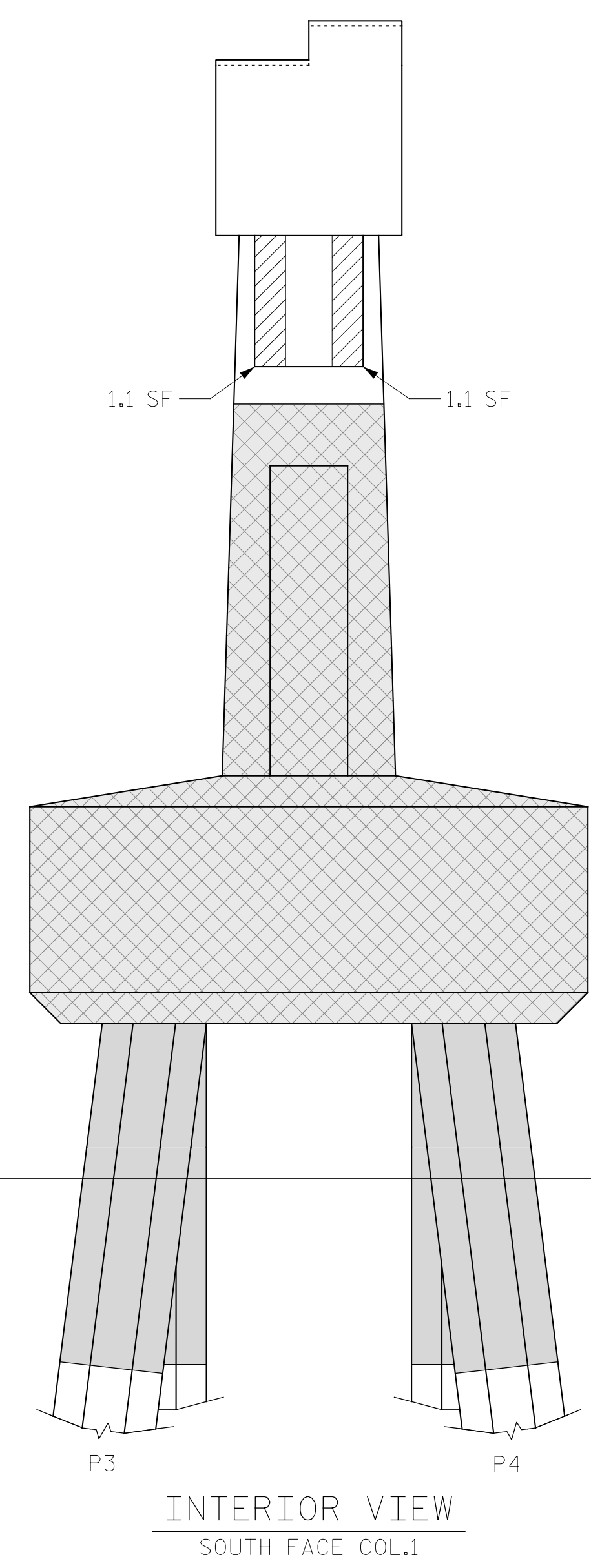
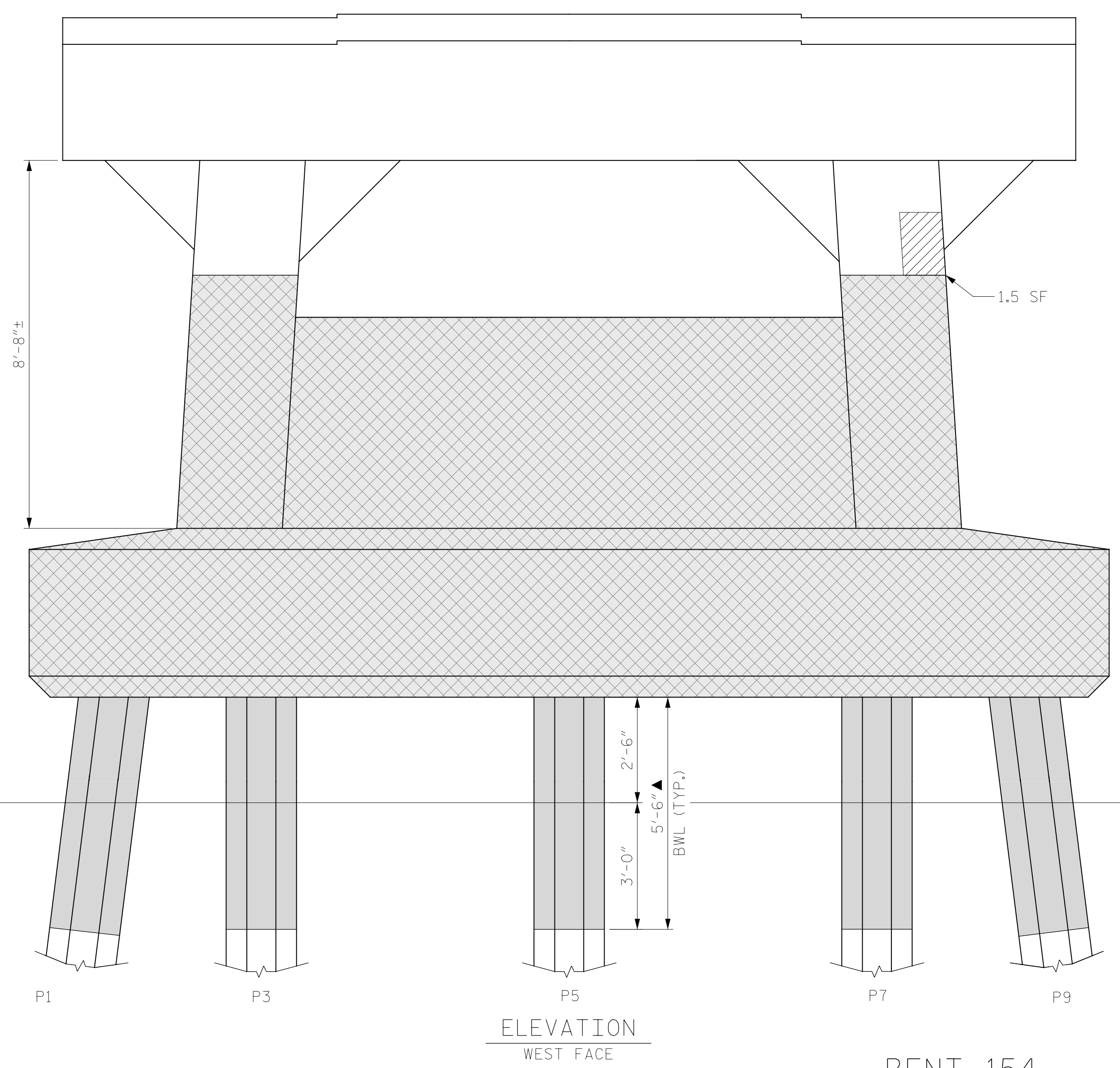
### AS-BUILT REPAIR QUANTITY TABLE

BENT 154				
CAP REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF		LF	
COLUMN REPAIRS		ESTIMATE		ACTUAL
SHOTCRETE REPAIRS	14.4 SF	7.2 CF	SF	CF
EPOXY RESIN INJECTION	- LF		LF	
PILE REPAIRS		ESTIMATE		ACTUAL
FRP PROTECTIVE SYSTEM AWL	- SF		SF	
FRP PROTECTIVE SYSTEM BWL	302.5 SF		SF	

FOR CAP REPAIRS; VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL TO SAWCUT. SEE REPAIR DETAILS.

**NOTES:**  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
 FOR FOOTING, COLUMN, AND STRUT REPAIR DETAILS, SEE "PILE FOOTING RESTORATION" SHEET.  
 FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## BENT 154 WEST FACE

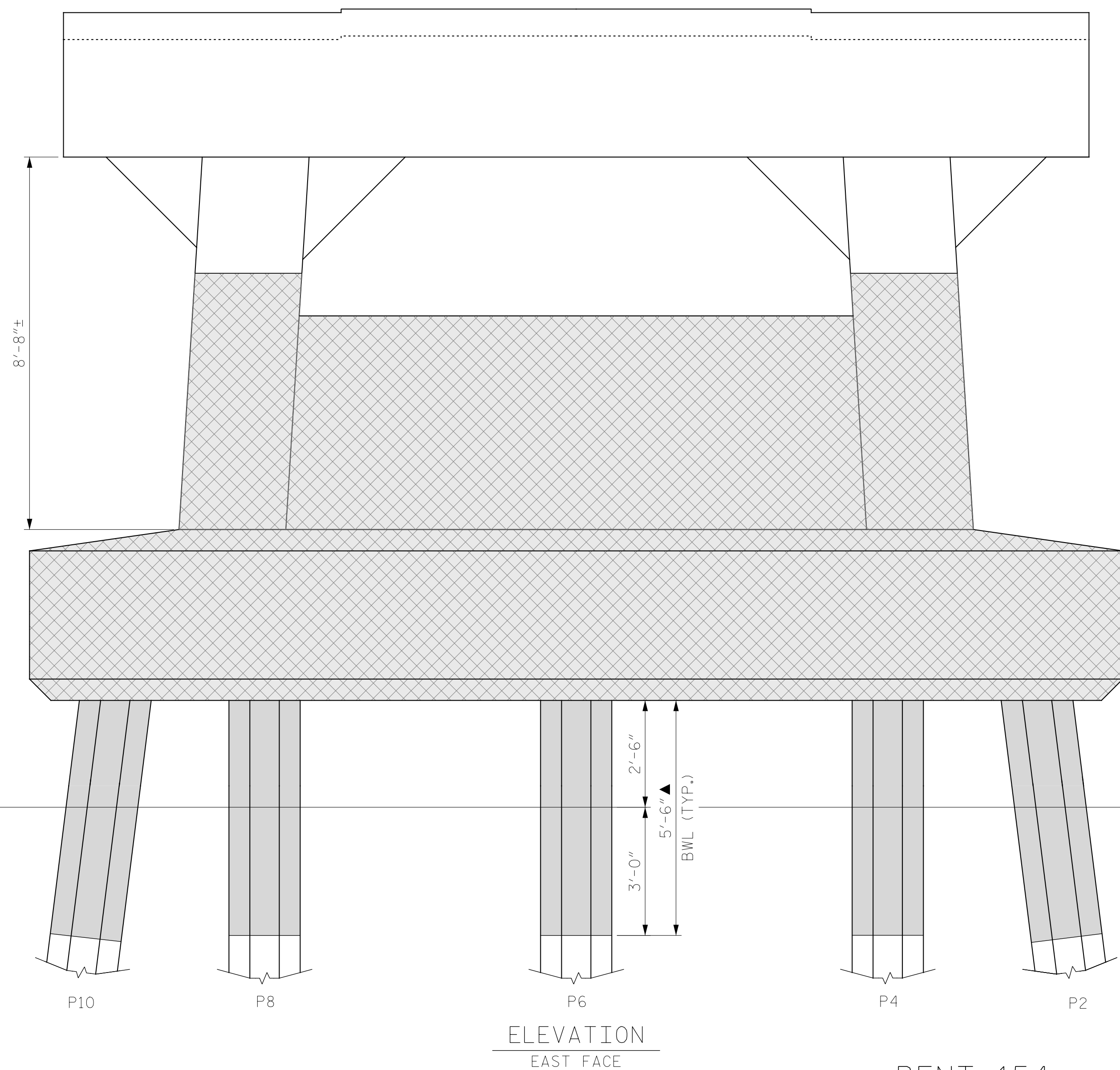
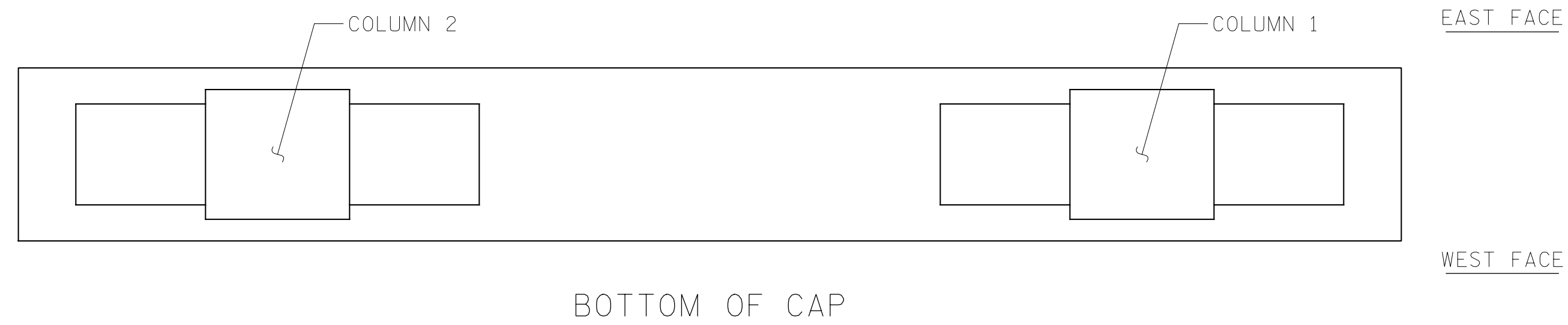
DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 5/2019

**BENT 154**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)



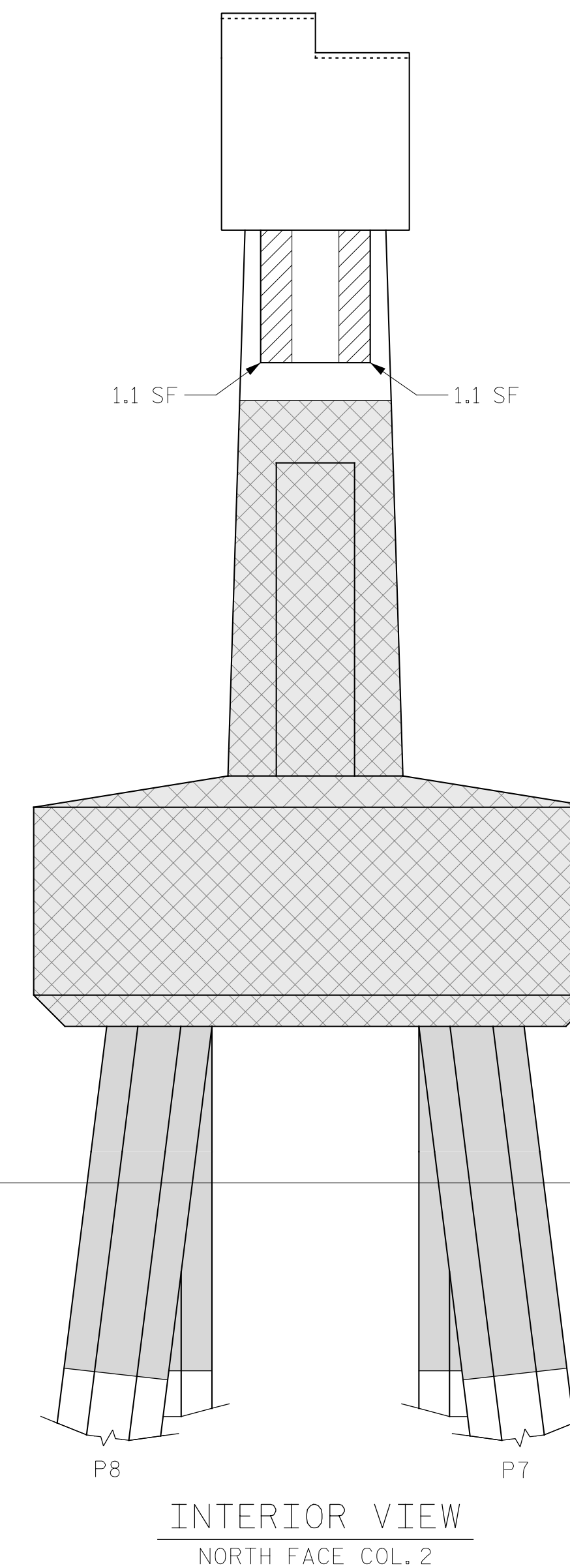
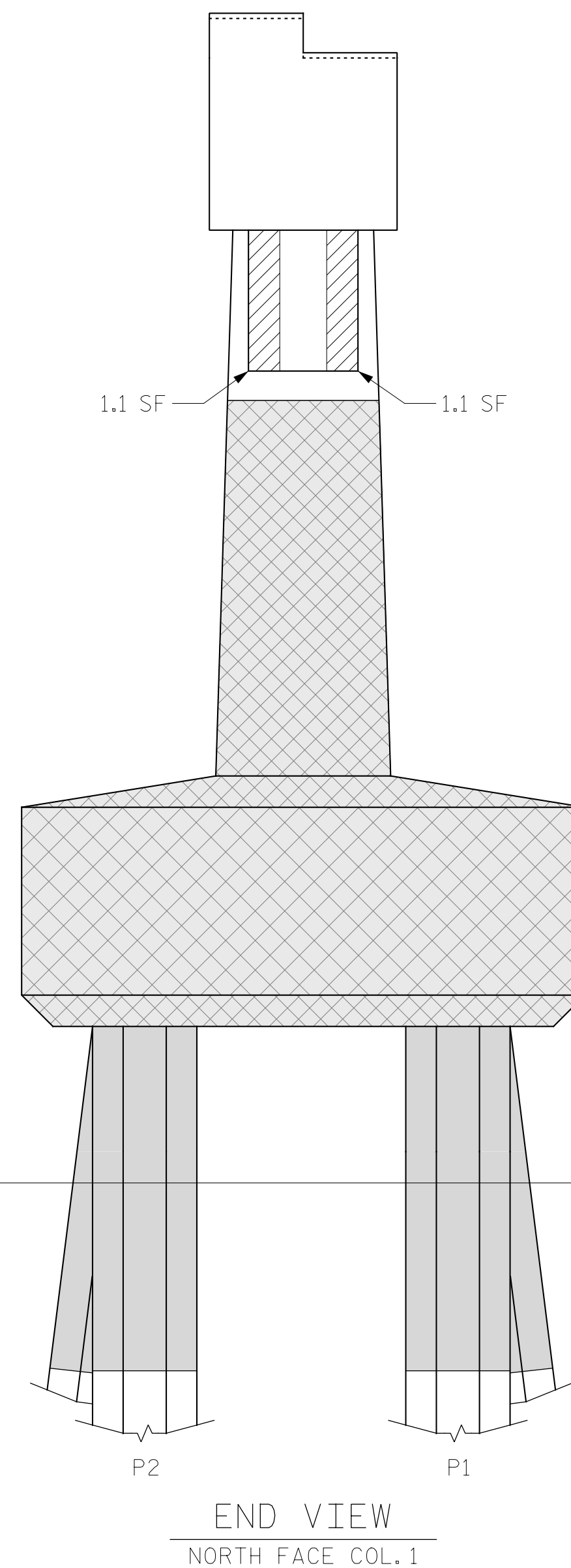
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			



**BENT 154**

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)

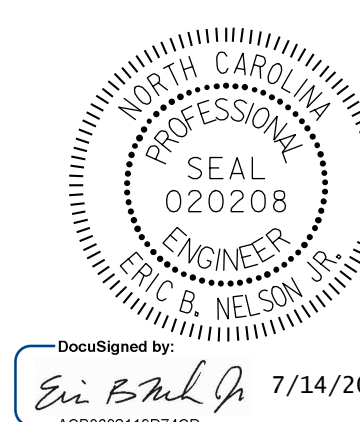


APPROX. NORMAL WATER SURFACE

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- SHOTCRETE REPAIRS
- PILE FOOTING RESTORATION

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENT 154  
 EAST FACE**

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 5/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			246
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 155

CAP REPAIRS			
SHOTCRETE REPAIRS	5.0 SF	2.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	60.8 SF	25.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	213.5 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 156

CAP REPAIRS			
SHOTCRETE REPAIRS	2.2 SF	1.1 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	10.0 SF	3.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	48.8 SF		
FRP PROTECTIVE SYSTEM BWL	18.3 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
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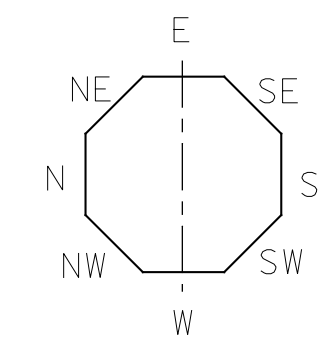
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 155	PILE 1	2	-	7	5	3	-	6	6
	PILE 2	-	-	7	-	2	6	3	-
	PILE 3	6	-	5	-	7	6	-	3
	PILE 4	-	-	7	-	6	3	-	-
BENT 156	PILE 1	-	6	3	-	-	7	6	3
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

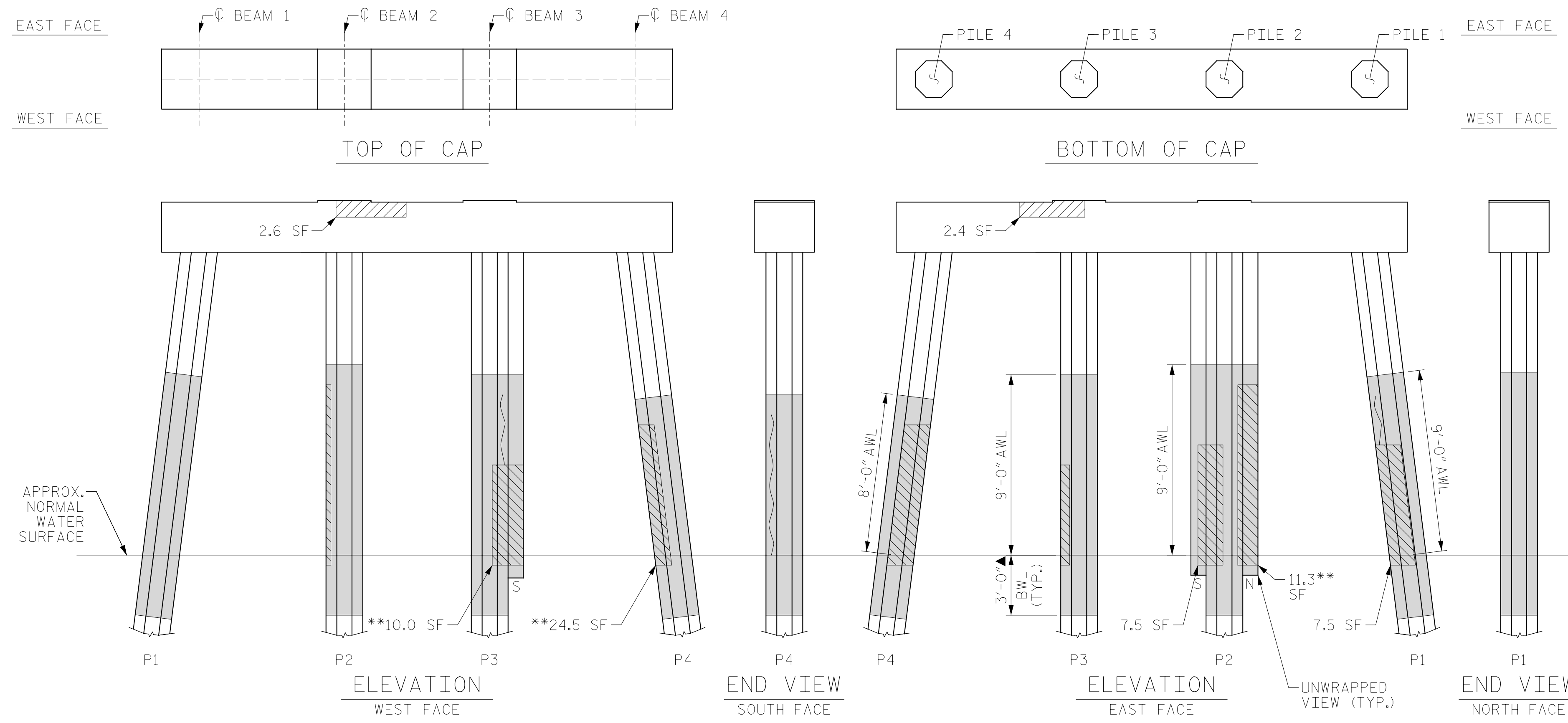


▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS

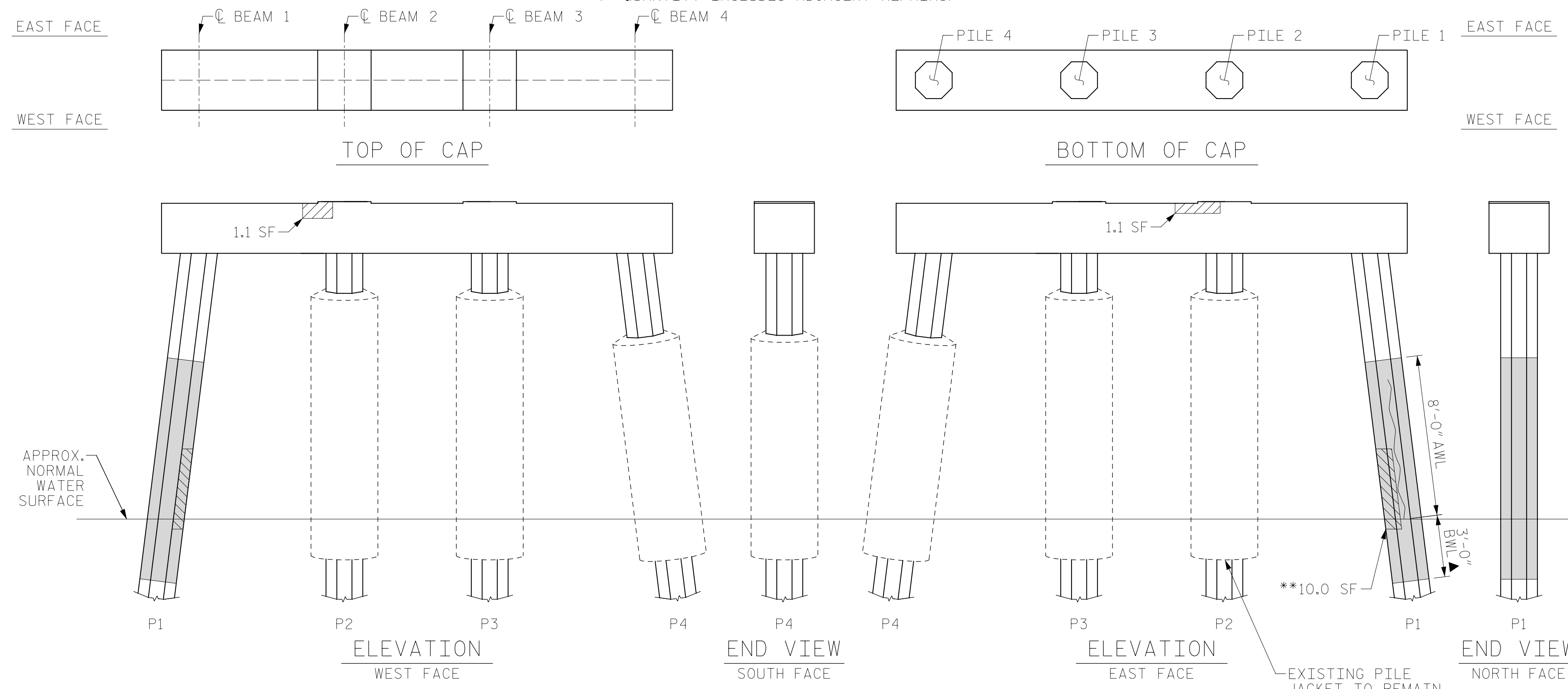


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-247
1			3			TOTAL SHEETS
2			4			355



BENT 155

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 156

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 157

CAP REPAIRS			
SHOTCRETE REPAIRS	16.6 SF	6.6 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	40.3 SF	15.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	97.6 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 158

CAP REPAIRS			
SHOTCRETE REPAIRS	8.1 SF	4.1 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	26.3 SF	10.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	103.7 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 157	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	4	5	3	-	5	-	-	4
	PILE 6	-	-	-	-	-	-	-	-
BENT 158	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	5	-	2	-	6	4	-	3
	PILE 4	3	-	3	-	3	-	-	1

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

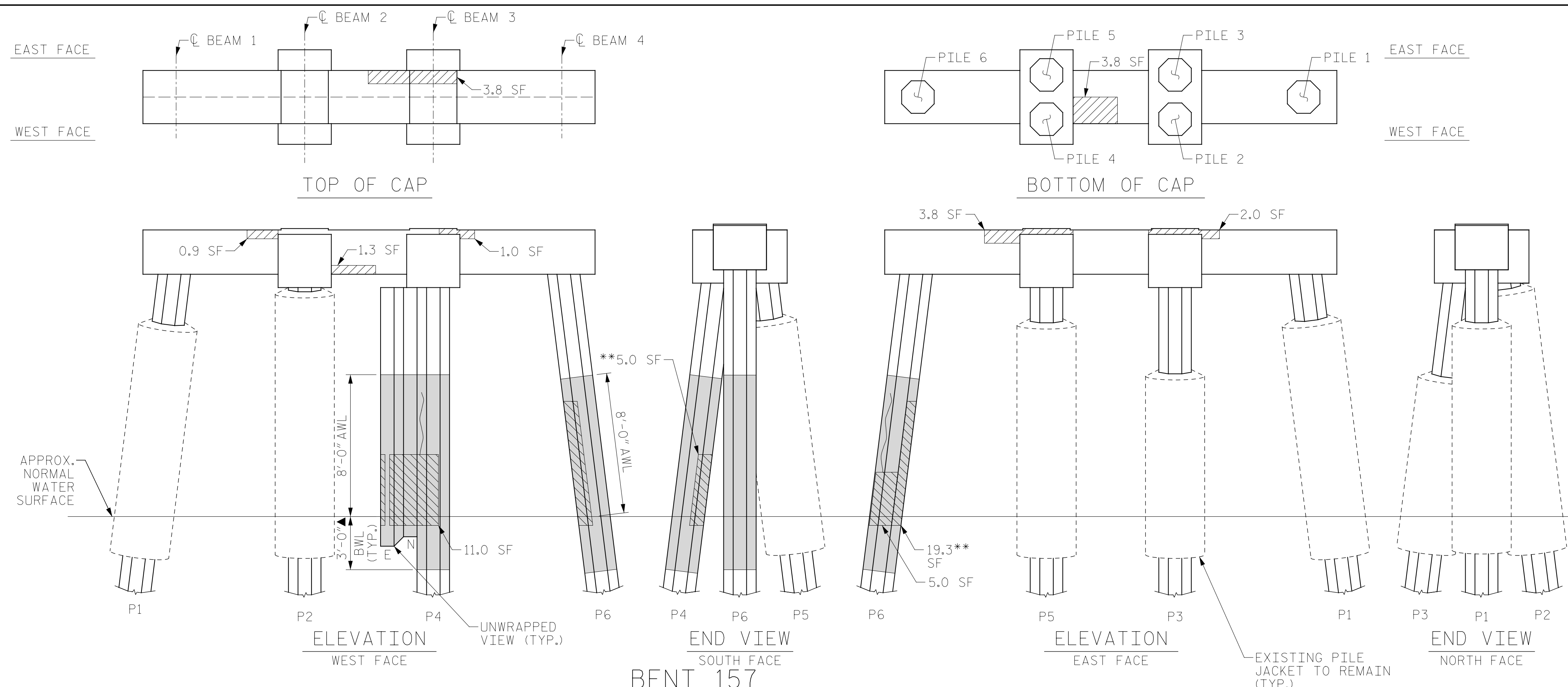


DocuSigned by:  
*Eric B. Nelson, Jr.* 7/14/2022  
 AC8808211974C2

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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

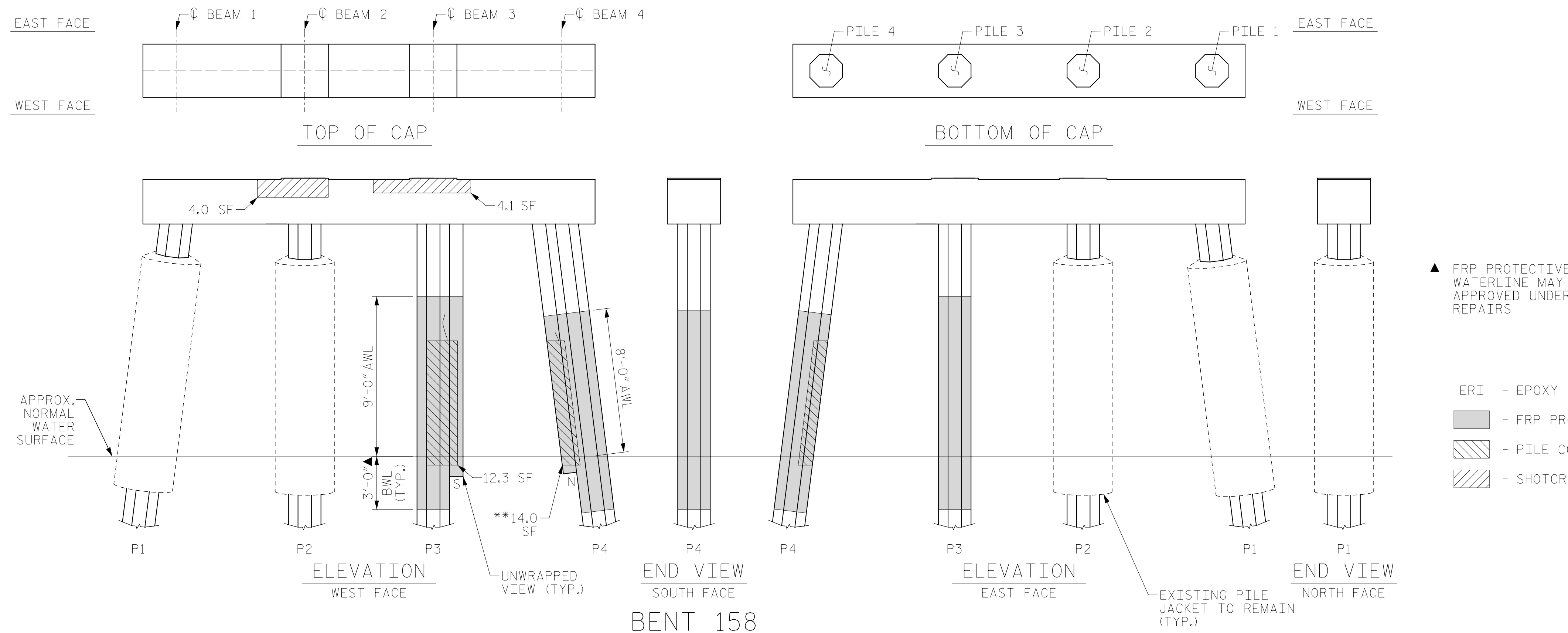
BENT 157 & BENT 158

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-248
1			3			TOTAL SHEETS
2			4			355



BENT 157

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 158

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

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AS-BUILT REPAIR QUANTITY TABLE

BENT 159

CAP REPAIRS			
SHOTCRETE REPAIRS	5.6 SF	2.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	49.1 SF	18.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	122.0 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 160

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	39.8 SF	15.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	122.0 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

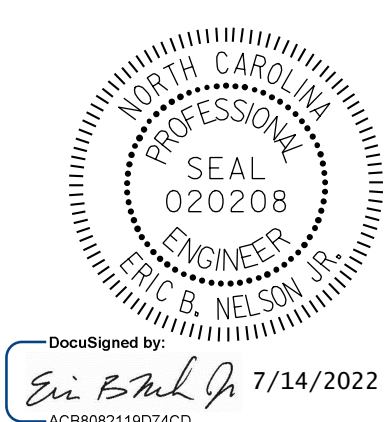
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 159	PILE 1	3	-	1	-	2	7	4	5
	PILE 2	1	5	2	3	-	2	2	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 6	-	-	-	-	-	-	-	-
BENT 160	PILE 1	2	3	3	5	1	5	4	4
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	2	2	2	-	13	6	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

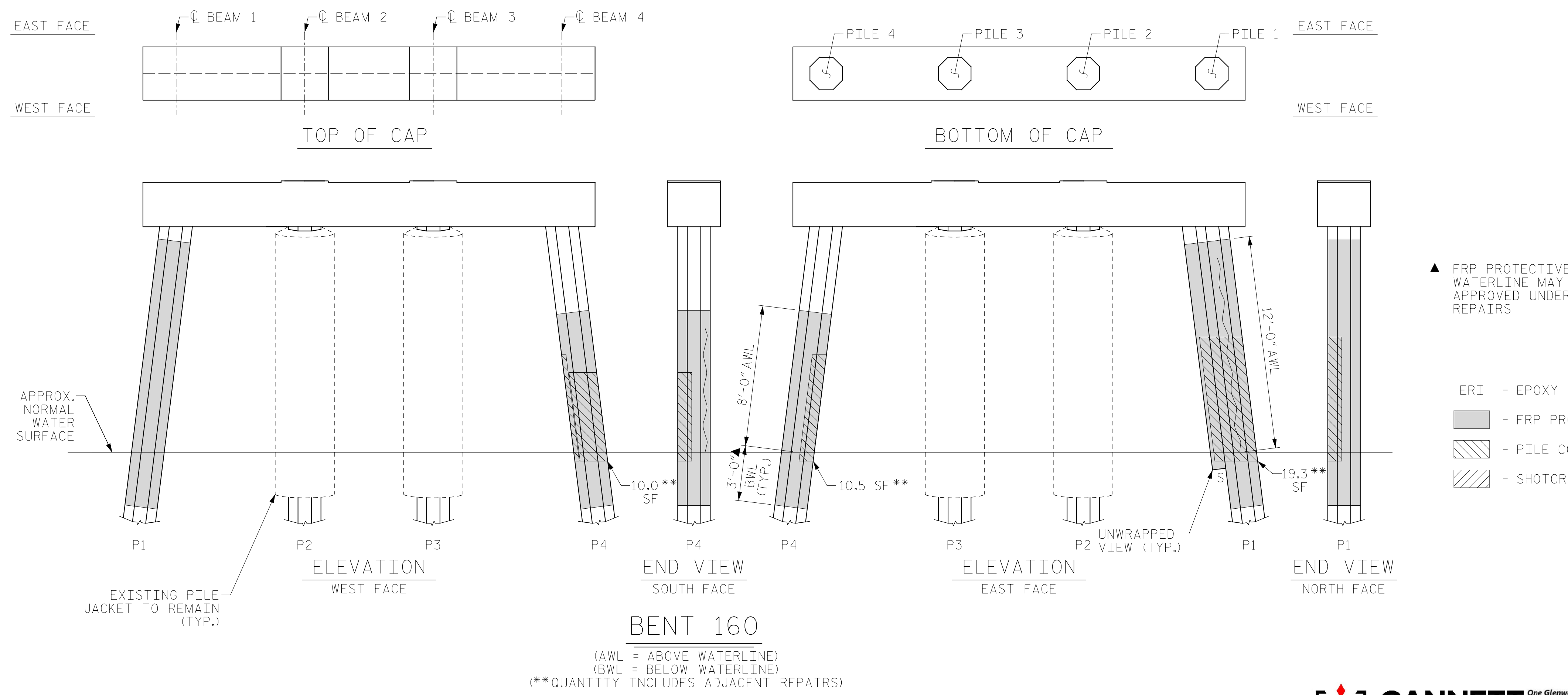
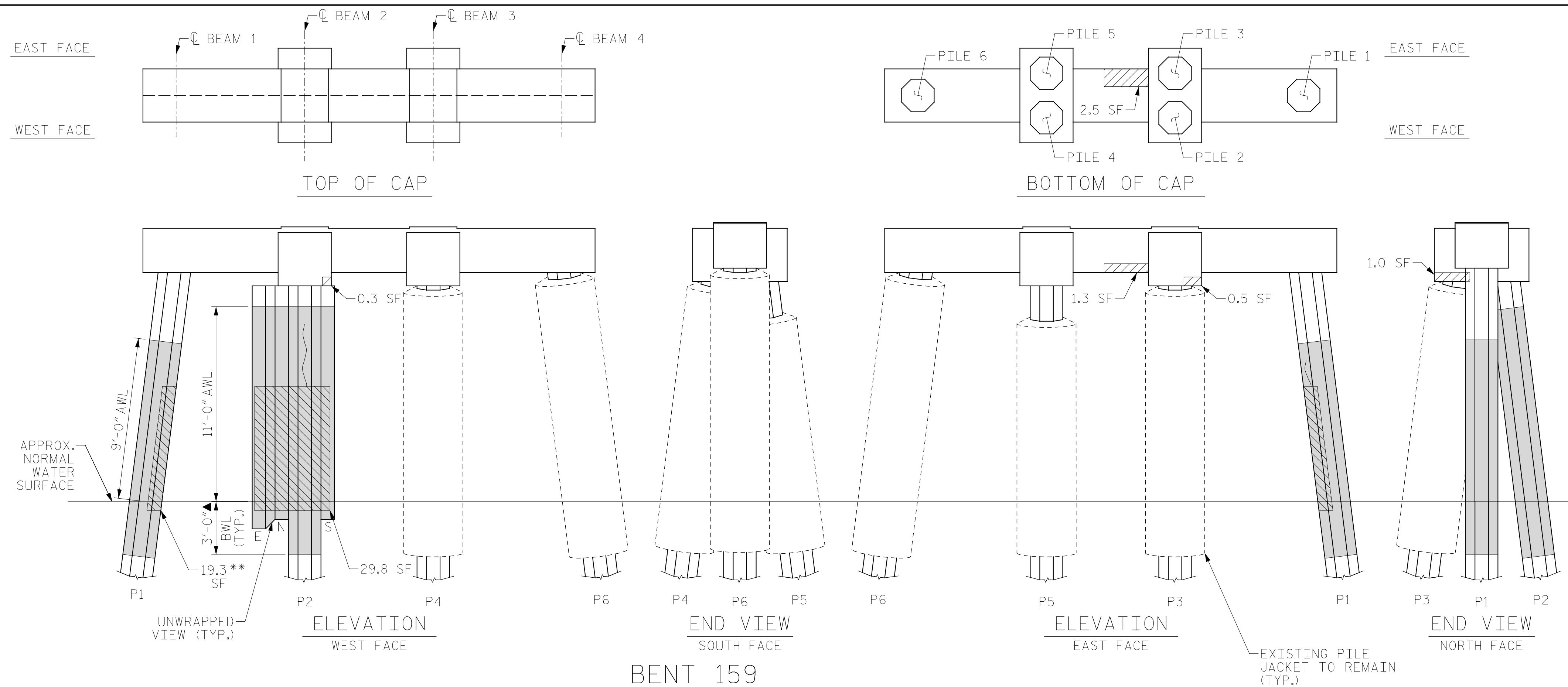
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 159 & BENT 160

REVISIONS						SHEET NO. S-249
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 161

CAP REPAIRS			
SHOTCRETE REPAIRS	9.8 SF	4.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	70.0 SF	27.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	201.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 162

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	70.0 SF	27.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	213.5 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

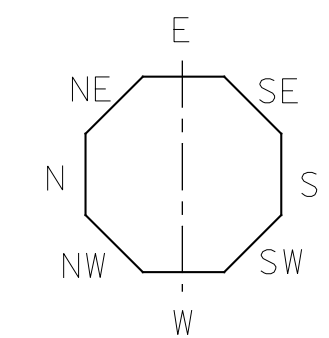
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 161	PILE 1	3	1	-	3	-	7	7	5
	PILE 2	-	-	-	-	-	4	7	-
	PILE 3	6	1	3	3	12	4	7	7
	PILE 4	-	5	1	-	-	-	2	-
BENT 162	PILE 1	5	6	4	-	3	-	6	6
	PILE 2	7	-	4	-	3	2	7	3
	PILE 3	2	3	2	6	-	-	-	1
	PILE 4	1	-	3	3	2	-	1	2

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

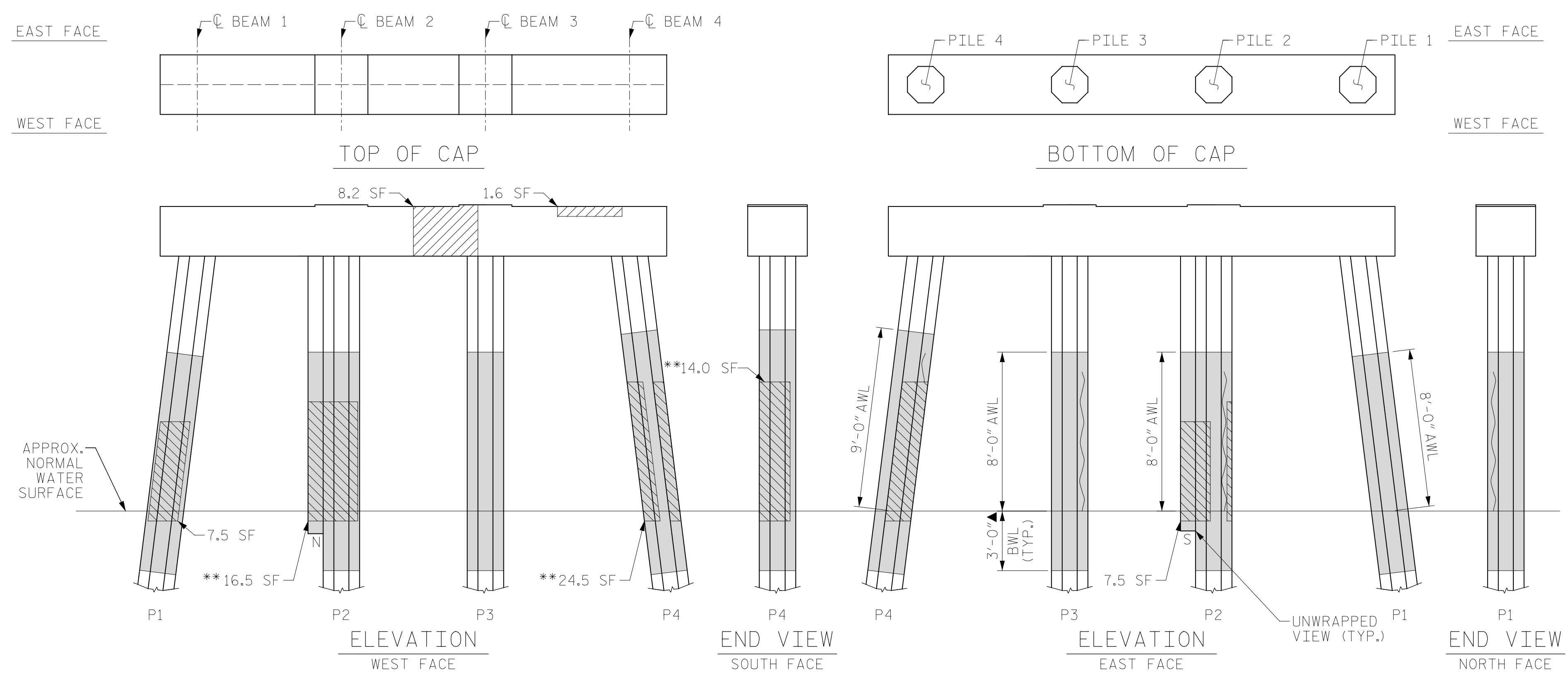
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



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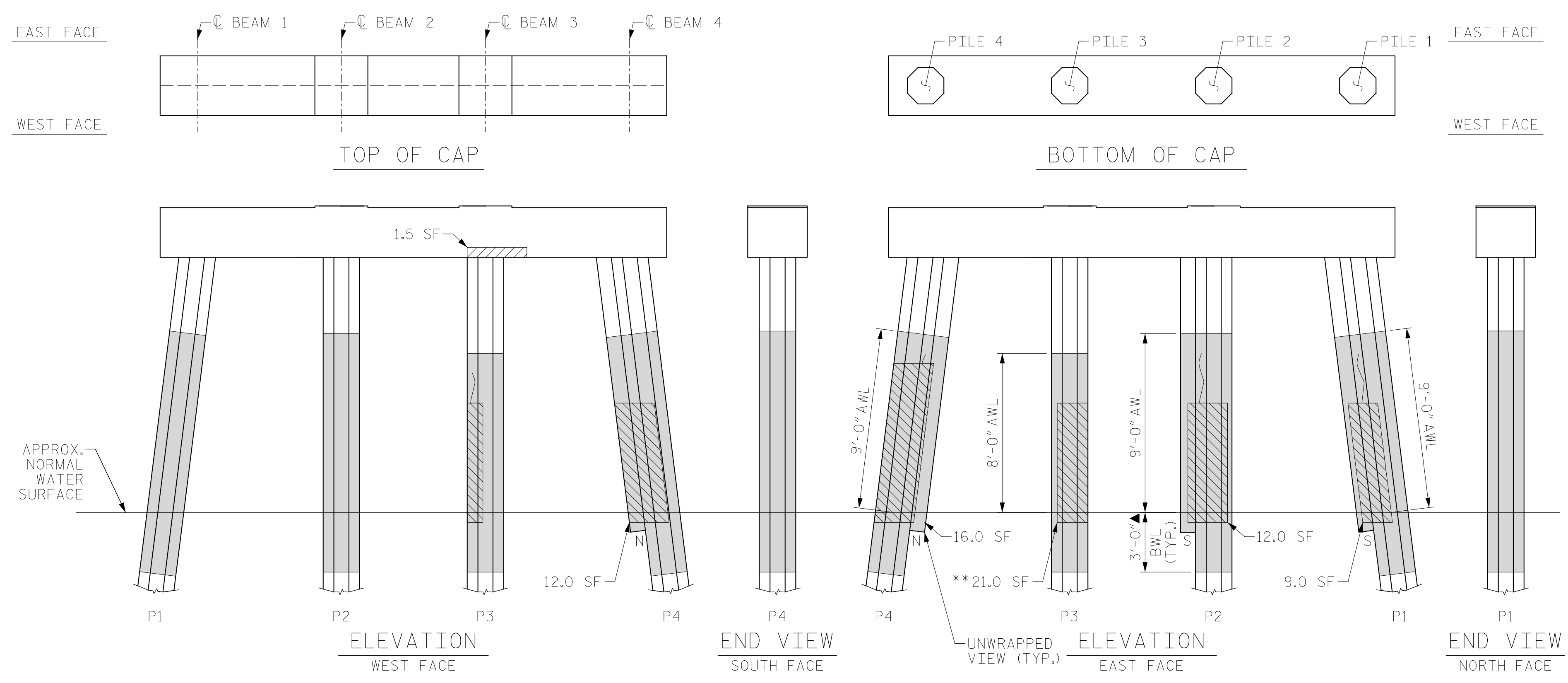
BENT 161 & BENT 162

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-250
1			3			TOTAL SHEETS
2			4			355



BENT 161

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 162

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 163

CAP REPAIRS			
SHOTCRETE REPAIRS	6.8 SF	3.4 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	42.8 SF	17.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	152.5 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 164

CAP REPAIRS			
SHOTCRETE REPAIRS	1.0 SF	0.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	71.6 SF	30.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	243.0 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 163	PILE 1	6	4	6	-	4	-	2	7
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	1	-	-	3	-	2	5
	PILE 4	1	4	4	6	-	-	-	-
BENT 164	PILE 1	-	-	-	-	-	3	3	-
	PILE 2	18	-	-	-	5	-	-	3
	PILE 3	5	-	7	-	4	7	5	-
	PILE 4	6	-	12	-	-	-	2	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

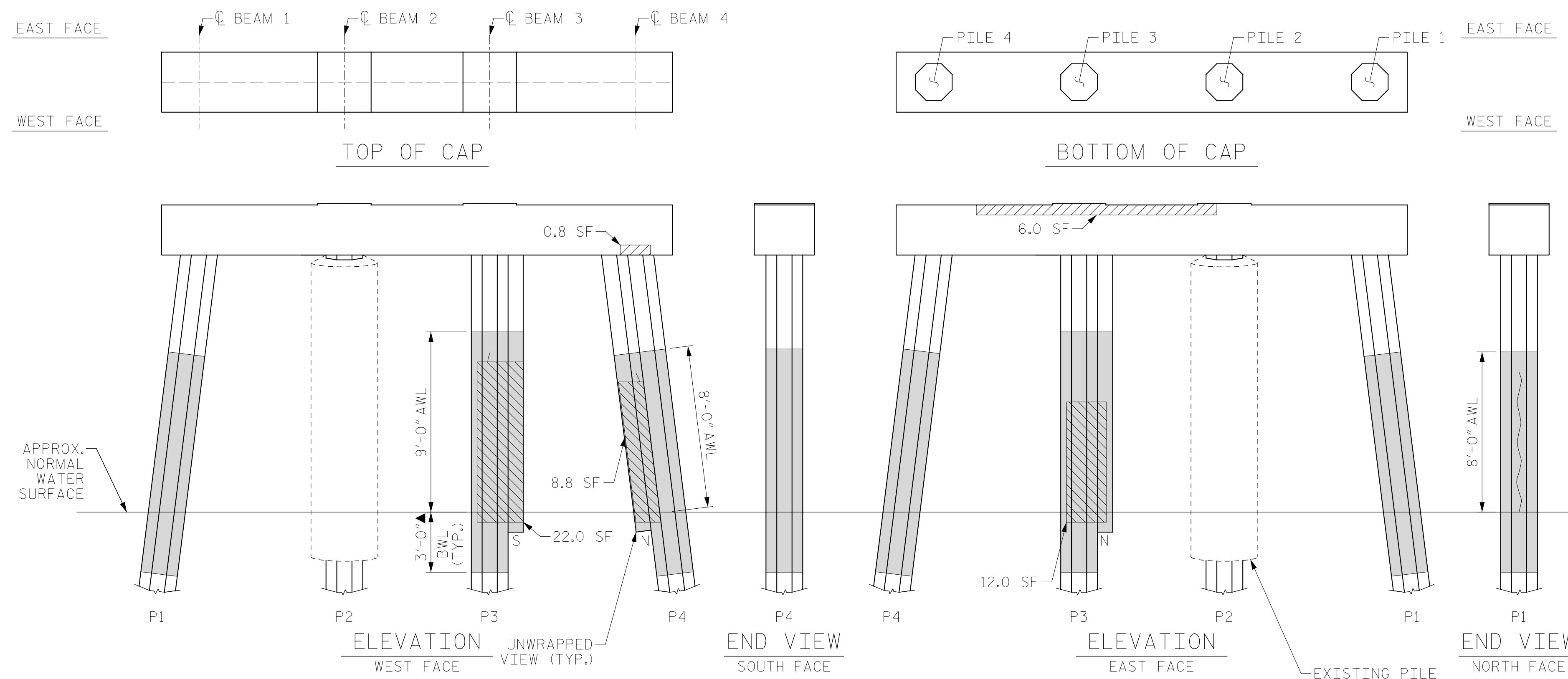
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
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 RALEIGH

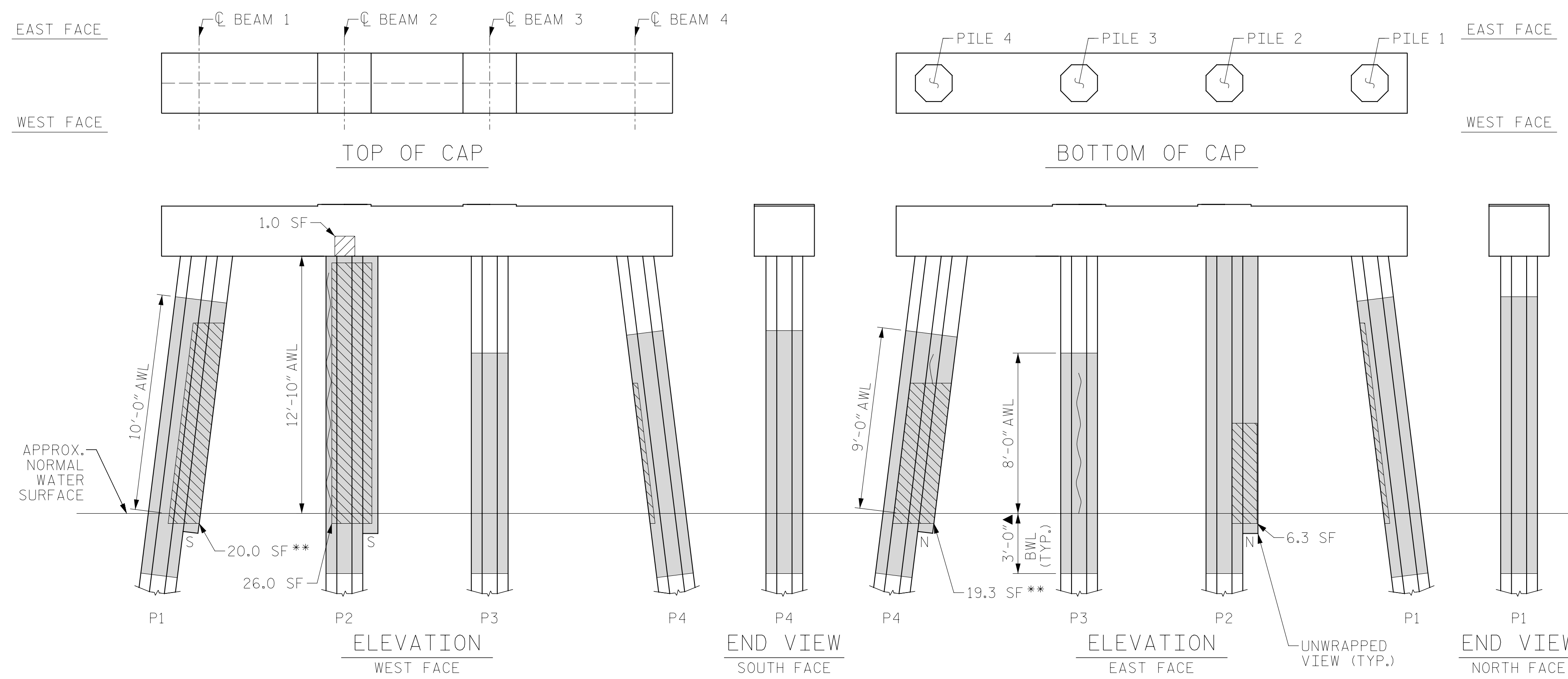
BENT 163 & BENT 164

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-251
1			3			TOTAL SHEETS
2			4			355



BENT 163

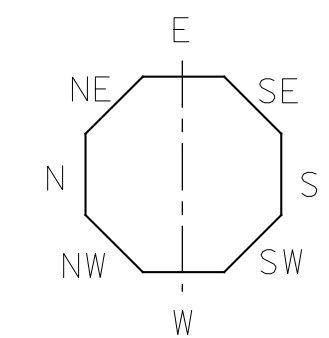
(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 164

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 165

CAP REPAIRS			
SHOTCRETE REPAIRS	2.3 SF	1.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	19.5 SF	8.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	103.7 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 166

CAP REPAIRS			
SHOTCRETE REPAIRS	3.8 SF	1.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	71.5 SF	28.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	243.0 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

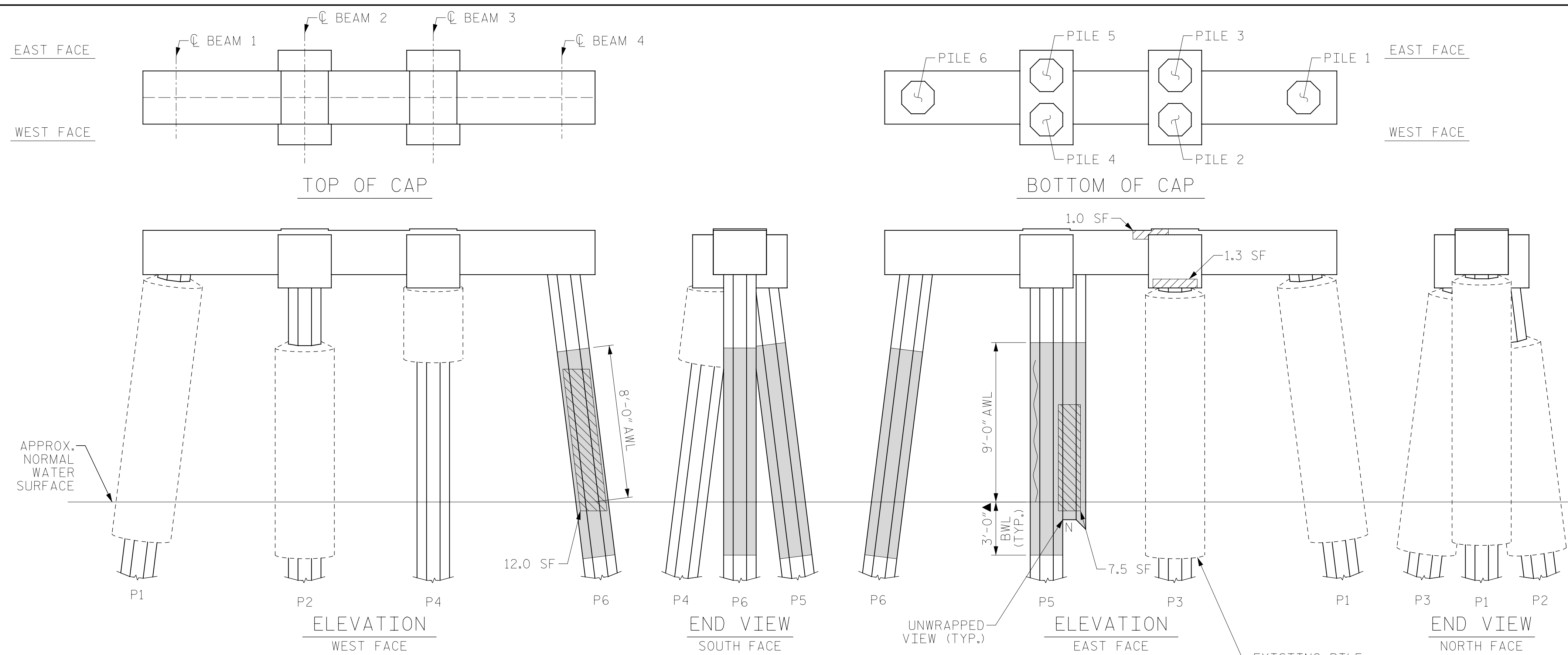
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

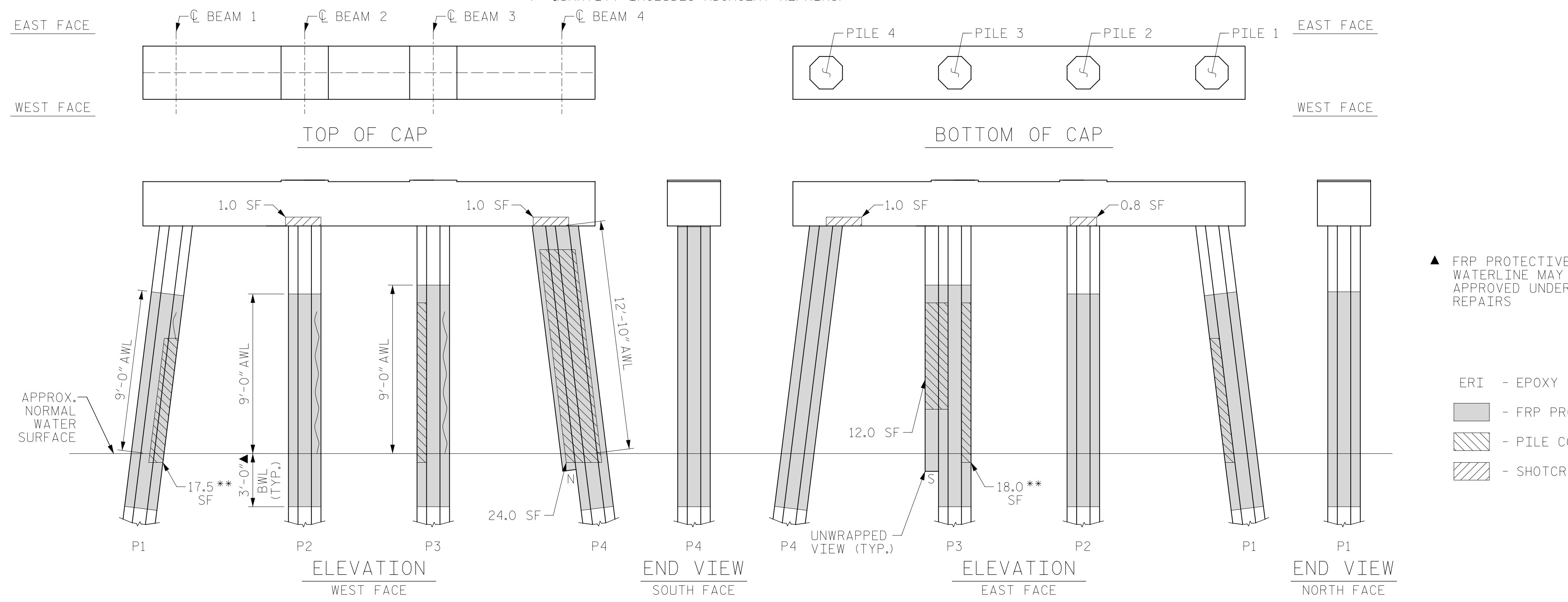
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 165

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



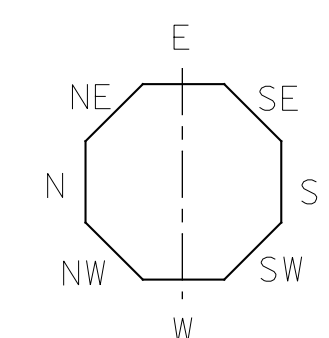
BENT 166

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 165	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
BENT 166	PILE 5	-	-	-	-	8	-	7	-
	PILE 6	6	-	8	3	-	-	6	2
	PILE 1	4	6	2	-	2	-	6	-
	PILE 2	-	6	8	7	-	7	7	-
BENT 166	PILE 3	-	-	8	-	3	2	-	-
	PILE 4	-	-	6	2	4	-	4	6

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS



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DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 165 & BENT 166

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO. S-252
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 167

CAP REPAIRS			
SHOTCRETE REPAIRS	20.8 SF	10.4 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	45.0 SF	19.1 CF	
FRP PROTECTIVE SYSTEM AWL	237.9 SF		
FRP PROTECTIVE SYSTEM BWL	91.5 SF		

BENT 168

CAP REPAIRS			
SHOTCRETE REPAIRS	8.4 SF	4.2 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.0 SF	3.7 CF	
FRP PROTECTIVE SYSTEM AWL	231.8 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 167	PILE 1	-	-	6	-	3	-	4	5
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	8	-	3	7	-
	PILE 4	-	-	-	-	-	-	-	-
BENT 168	PILE 1	-	-	9	-	9	6	5	-
	PILE 2	-	-	-	8	7	2	-	-
	PILE 3	-	-	-	-	-	9	3	9
	PILE 4	7	3	-	1	4	6	8	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

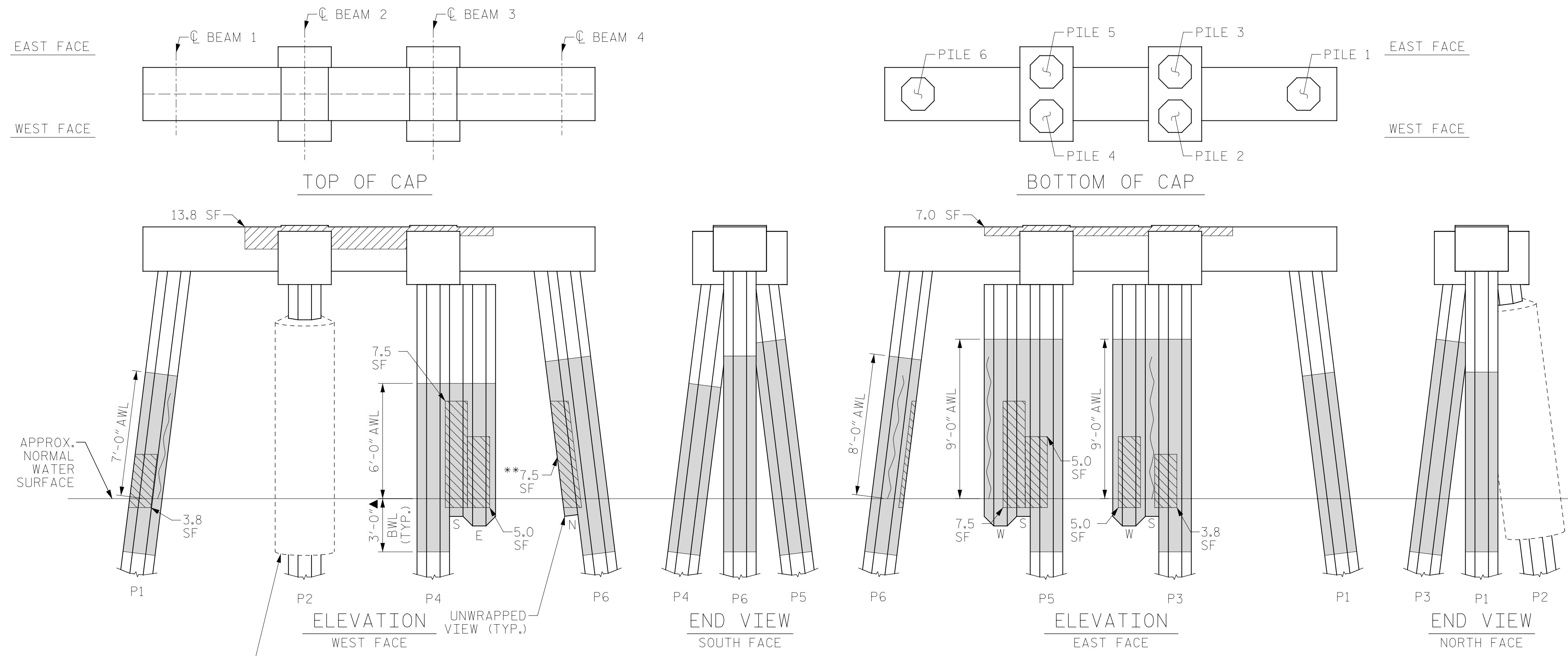
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
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 RALEIGH

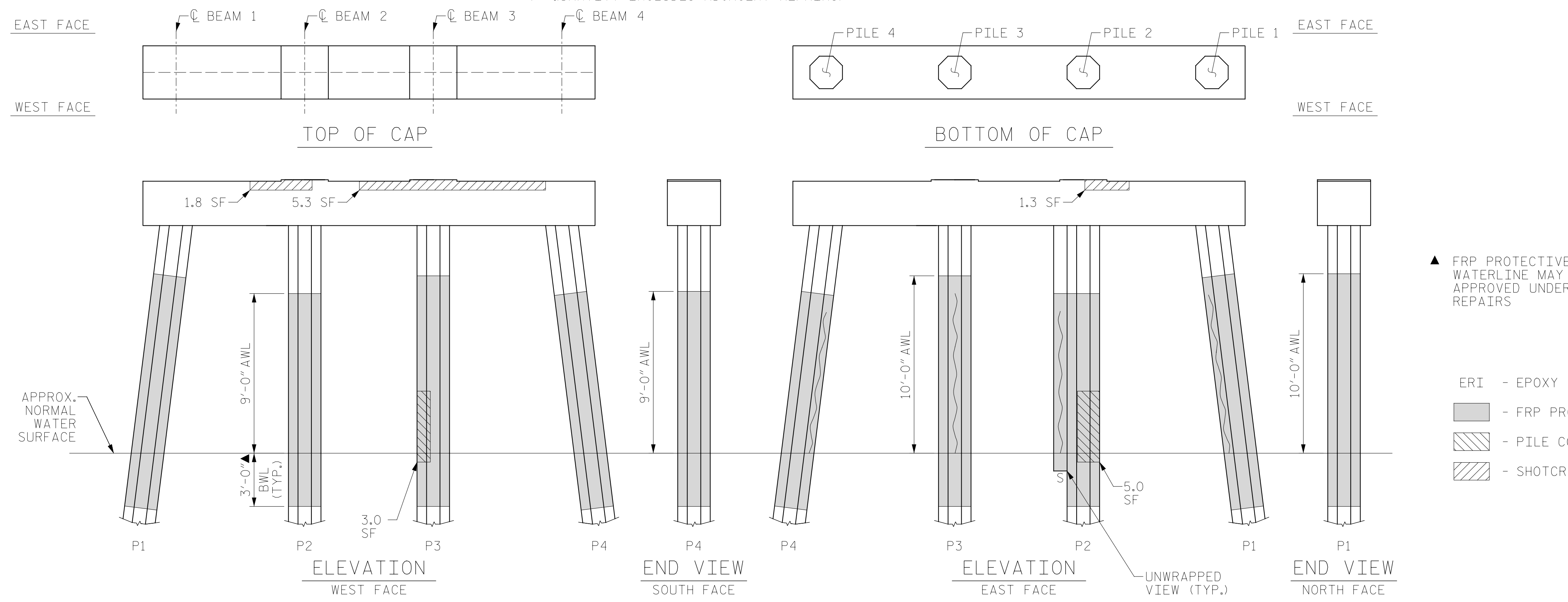
BENT 167 & BENT 168

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-253
1			3			TOTAL SHEETS
2			4			355



BENT 167

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 168

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 169

CAP REPAIRS			
SHOTCRETE REPAIRS	8.4 SF	4.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	47.4 SF	19.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	206.4 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 170

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	29.2 SF	12.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	201.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR QUANTITIES AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
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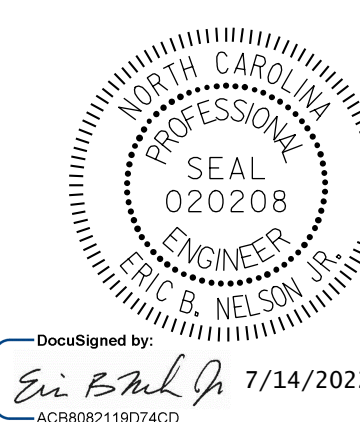
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

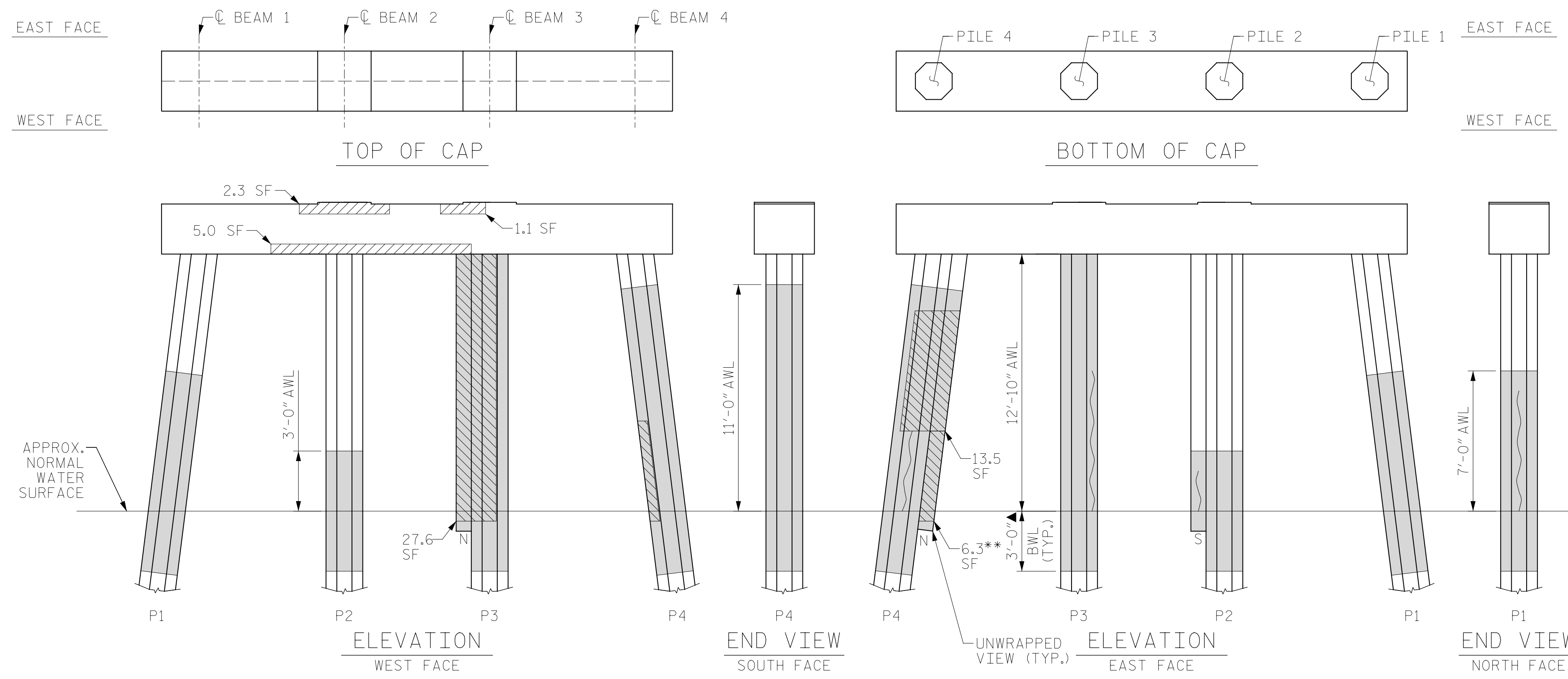
		NW	W	SW	S	SE	E	NE	N
BENT 169	PILE 1	-	-	3	-	-	-	-	6
	PILE 2	-	-	-	2	-	-	-	-
	PILE 3	-	-	2	2	-	-	7	-
	PILE 4	-	-	4	-	5	7	-	-
BENT 170	PILE 1	-	6	-	-	7	-	5	5
	PILE 2	7	7	4	-	-	-	-	-
	PILE 3	9	-	5	-	-	-	4	8
	PILE 4	-	-	2	4	-	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

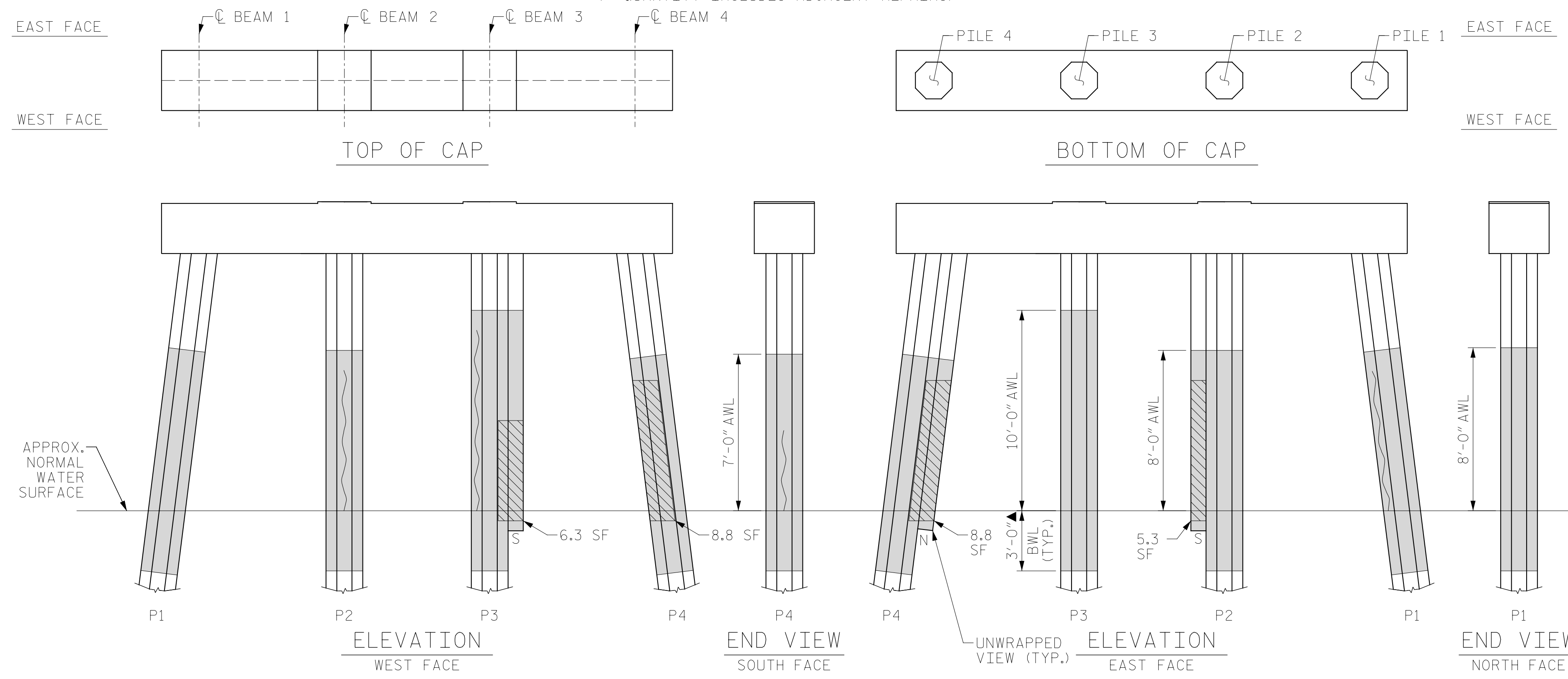


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BENT 169 & BENT 170



BENT 169

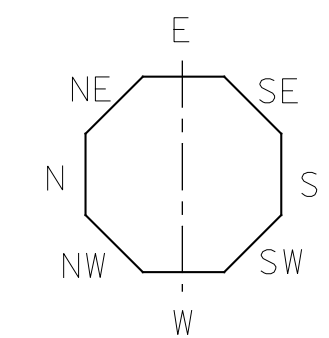
(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 170

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-254
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 171

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	38.1 SF	15.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	189.1 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 172

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	66.9 SF	26.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	230.8 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

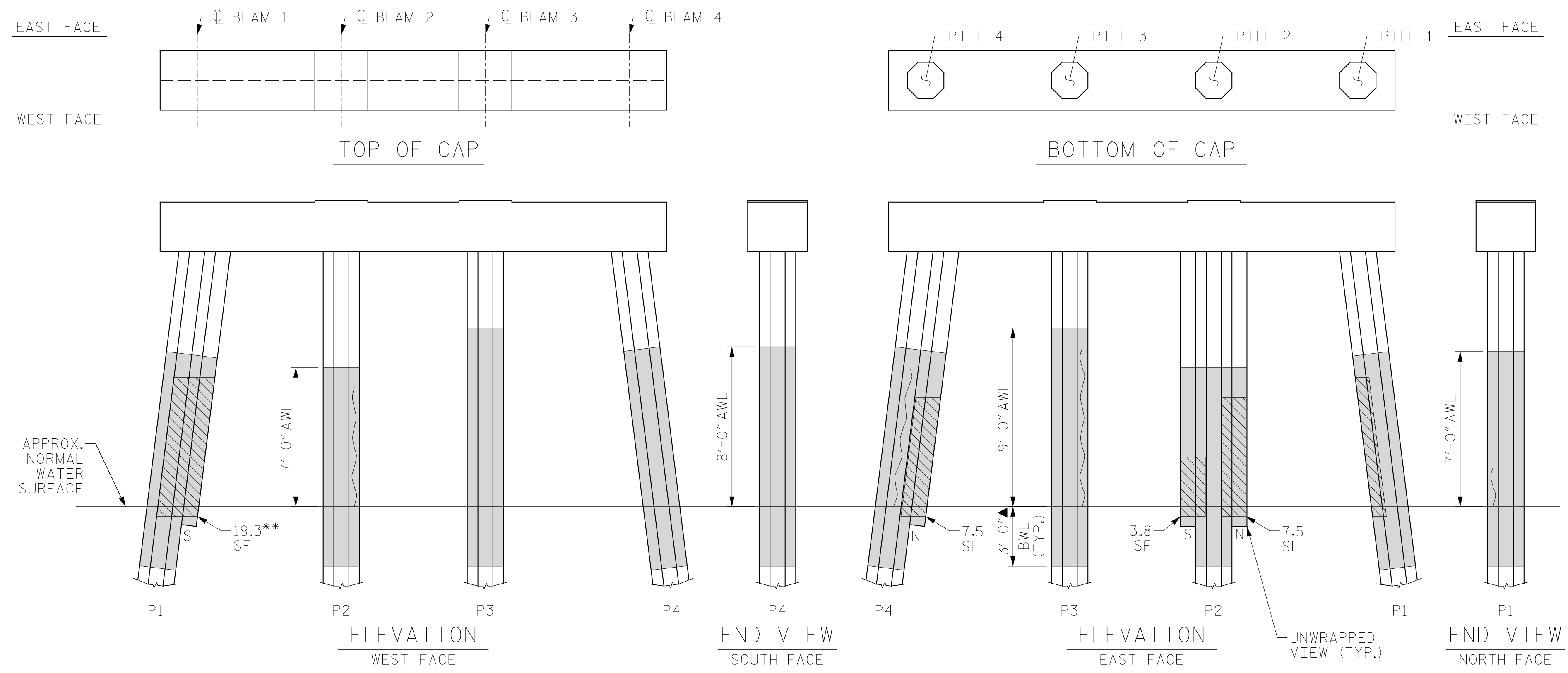
		NW	W	SW	S	SE	E	NE	N
BENT 171	PILE 1	-	-	-	-	-	-	2	-
	PILE 2	-	-	6	-	-	-	6	-
	PILE 3	5	3	3	4	-	-	8	7
	PILE 4	-	-	3	-	5	7	-	-
BENT 172	PILE 1	8	3	8	-	-	-	-	8
	PILE 2	3	8	-	-	-	-	-	-
	PILE 3	13	13	-	-	-	-	7	9
	PILE 4	-	-	3	2	-	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

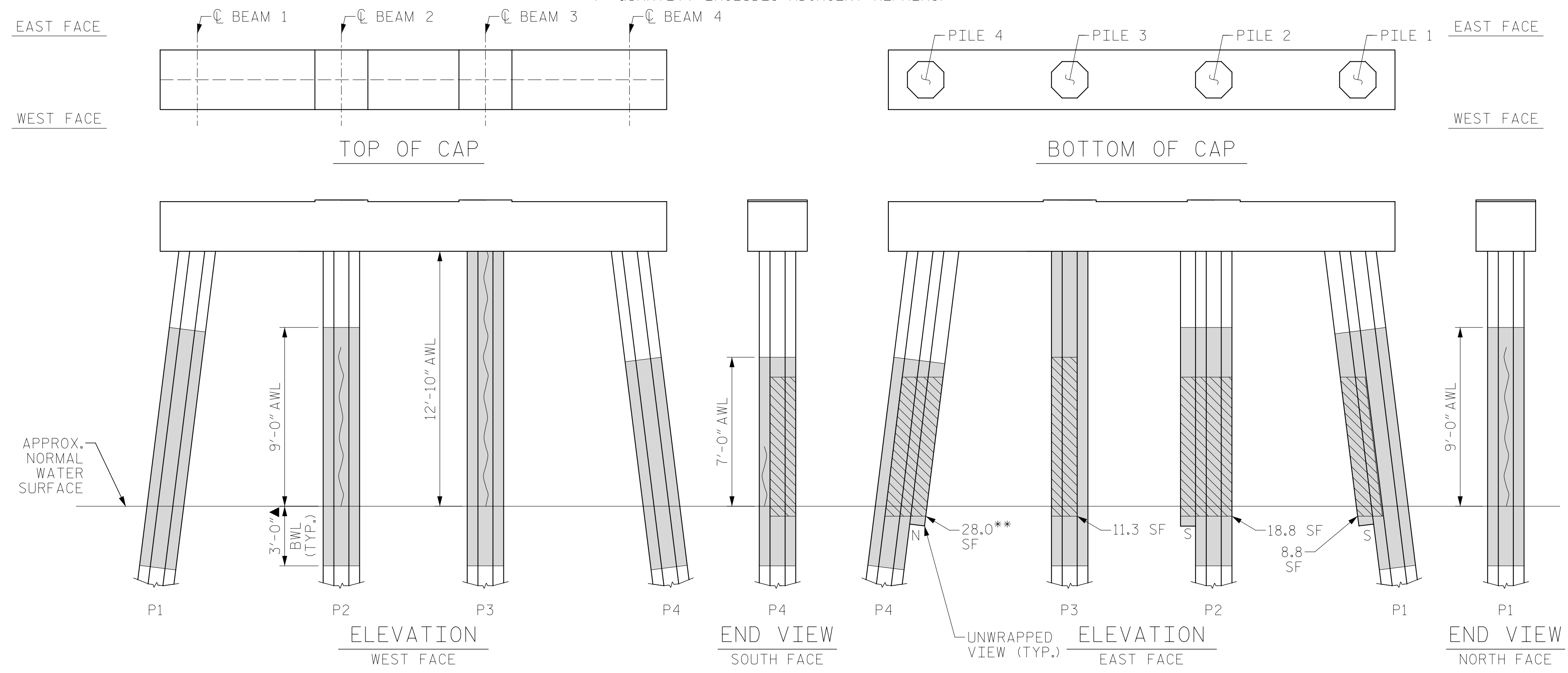


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
BENT 171 & BENT 172



BENT 171

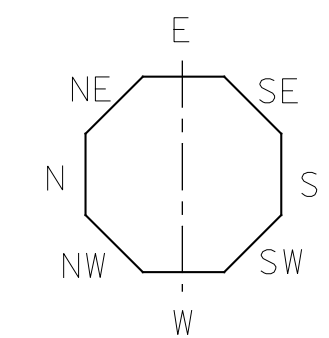
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 172

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-255
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 173

CAP REPAIRS			
SHOTCRETE REPAIRS	5.6 SF	2.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.0 SF	12.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	164.7 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 174

CAP REPAIRS			
SHOTCRETE REPAIRS	13.0 SF	6.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	36.4 SF	15.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	201.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

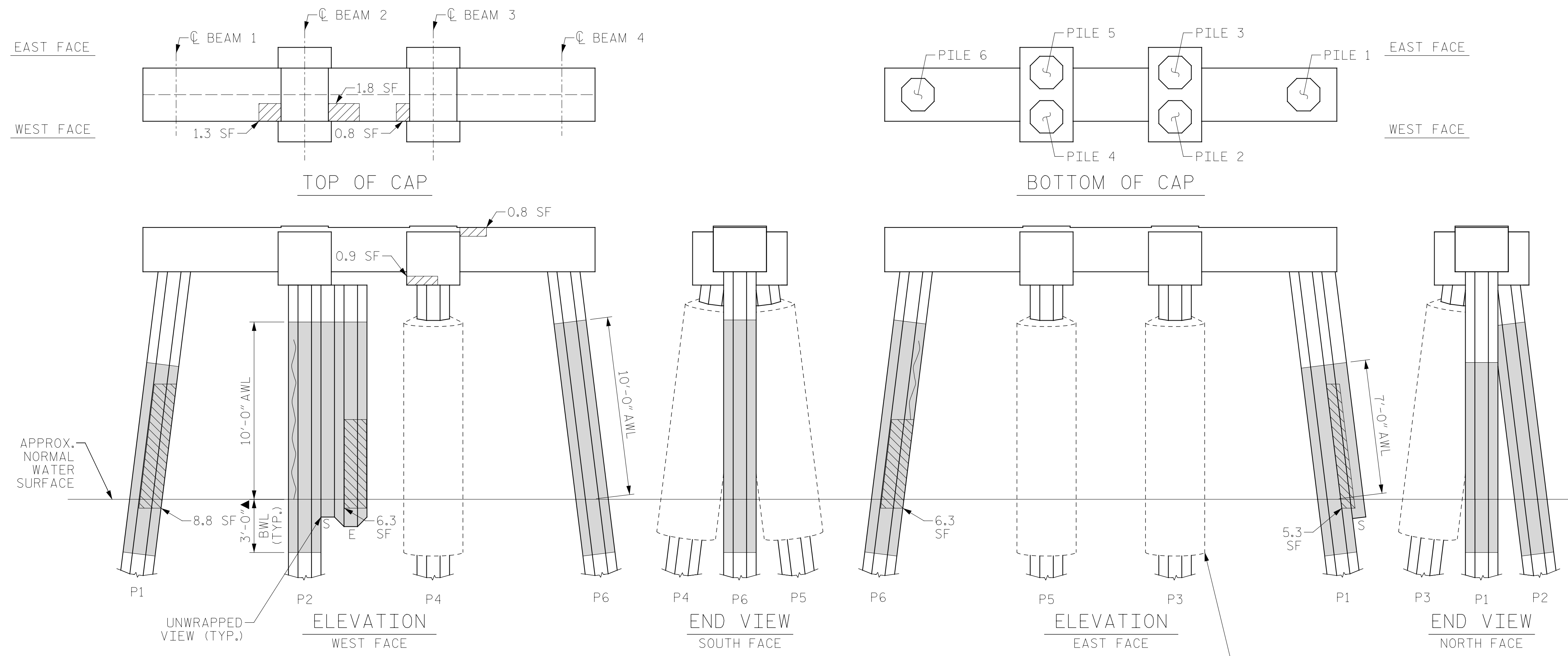
BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
173	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	9	4	8	-	4	3	6	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 6	4	6	1	-	-	-	5	4
174	PILE 1	9	6	3	-	3	9	-	9
	PILE 2	-	-	-	-	7	-	-	7
	PILE 3	7	6	4	-	-	-	-	-
	PILE 4	-	5	4	-	2	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

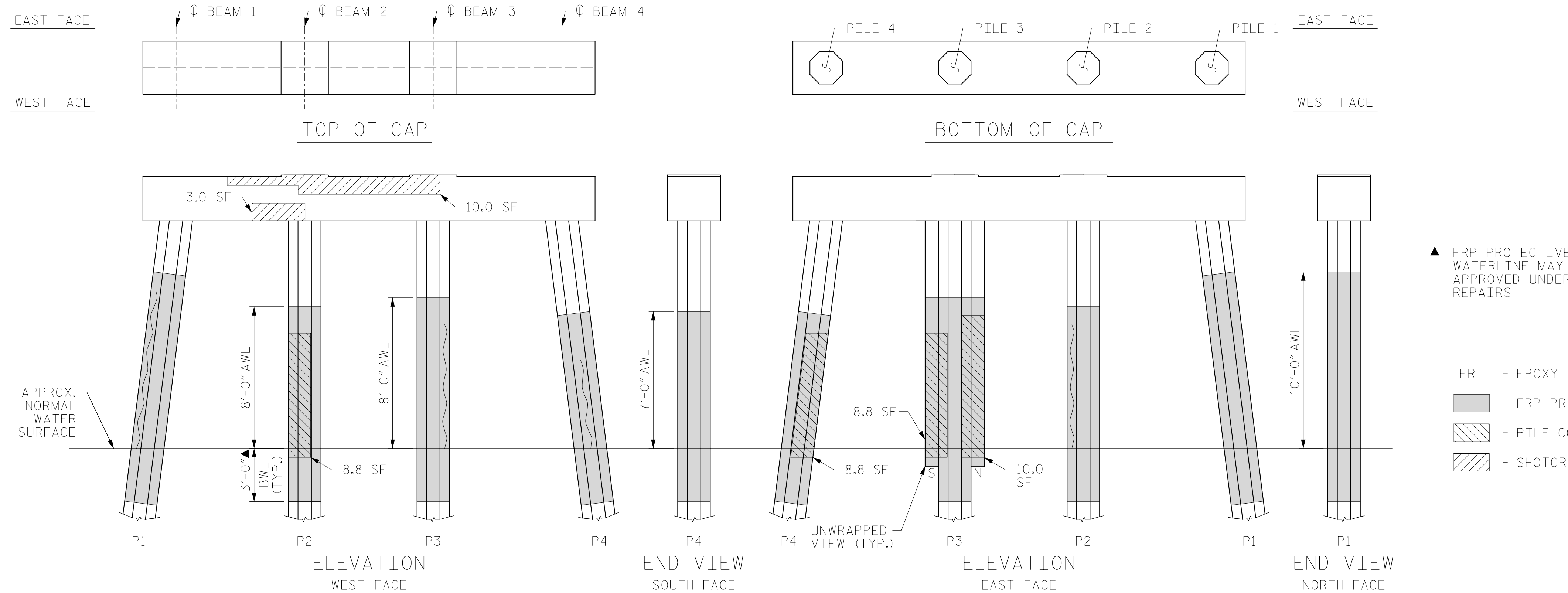


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 173 & BENT 174**



BENT 173

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 174

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-256
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 175

CAP REPAIRS			
SHOTCRETE REPAIRS	32.4 SF	16.2 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.0 SF	10.7 CF	
FRP PROTECTIVE SYSTEM AWL	91.5 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 176

CAP REPAIRS			
SHOTCRETE REPAIRS	11.5 SF	5.8 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	23.8 SF	9.4 CF	
FRP PROTECTIVE SYSTEM AWL	248.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

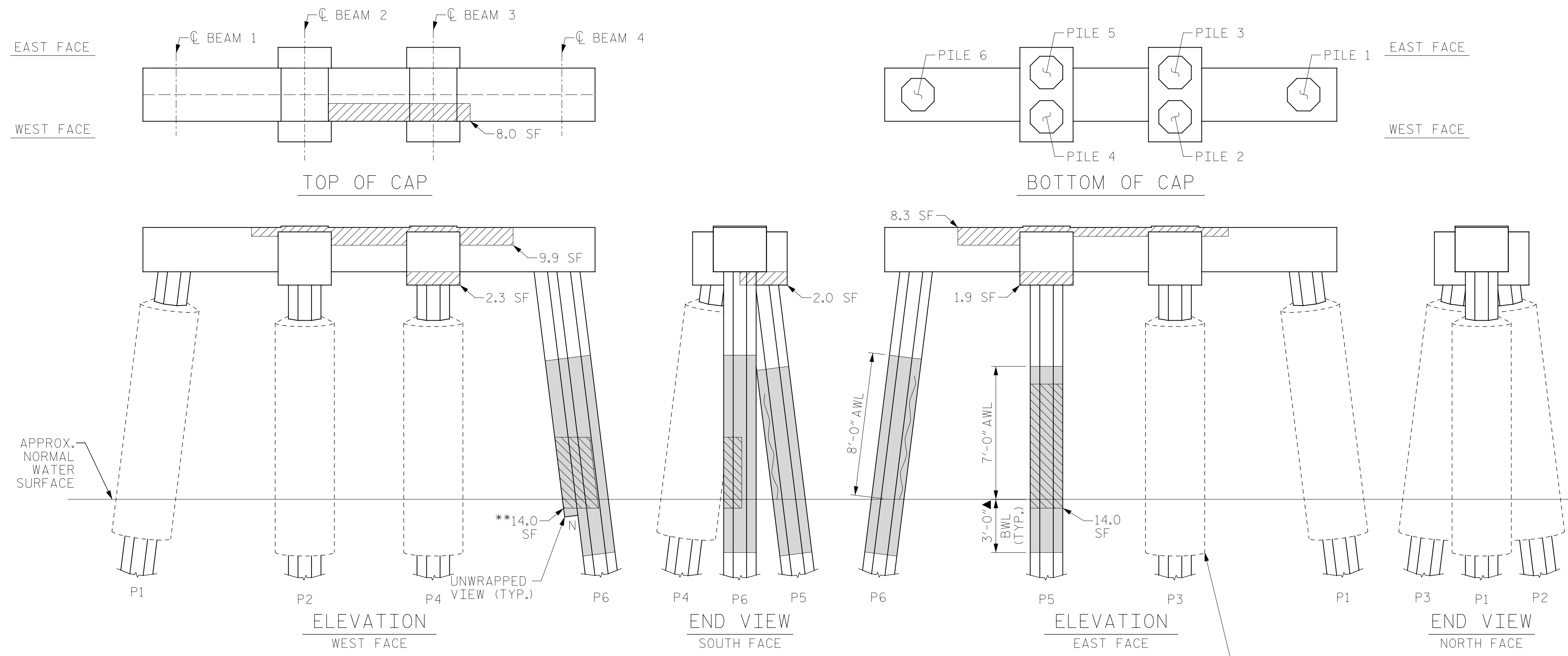
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

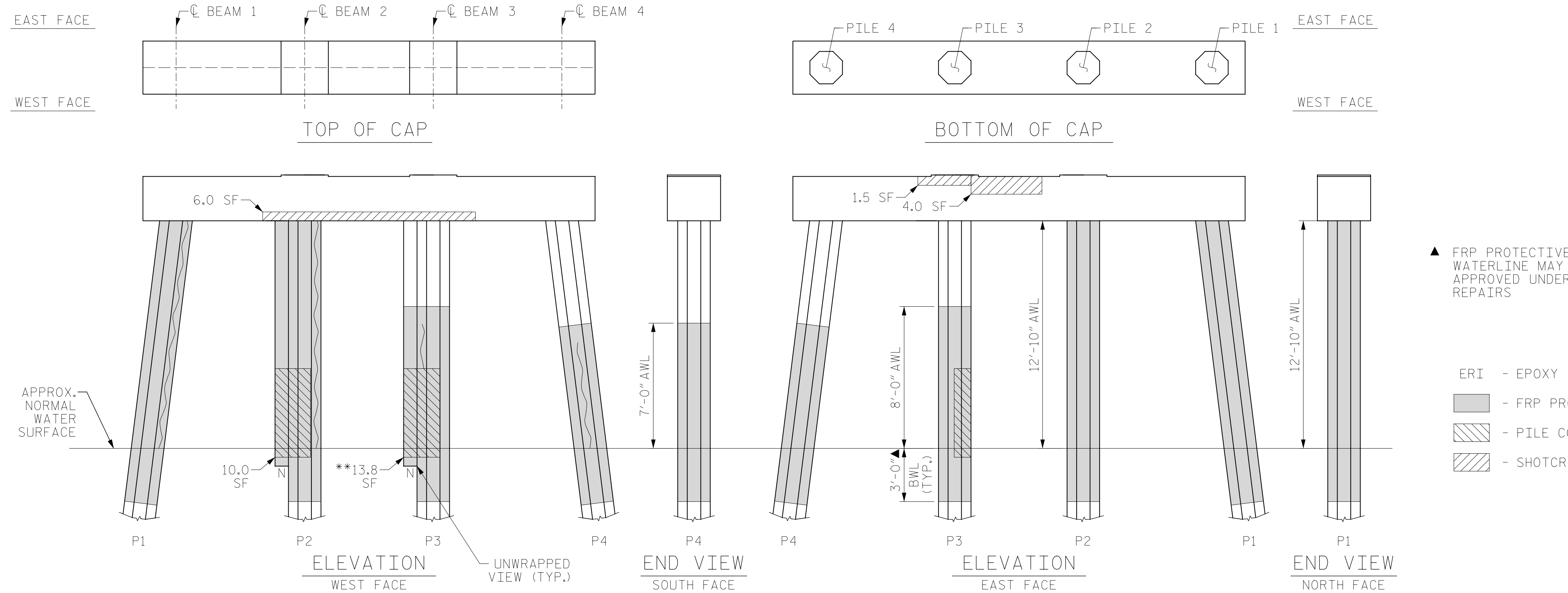
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 175

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 176

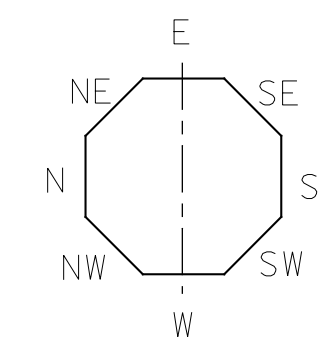
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
175	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
176	PILE 1	6	-	13	-	8	6	-	6
	PILE 2	-	-	13	9	8	-	9	-
	PILE 3	3	5	6	3	2	-	-	-
	PILE 4	3	6	-	5	3	-	6	3

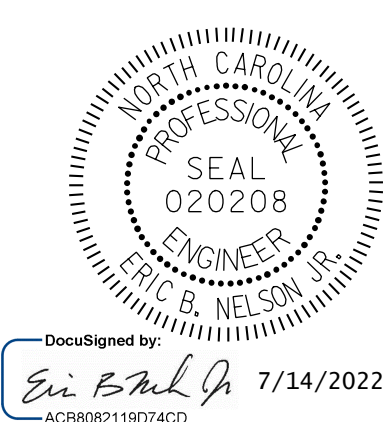
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Solid Grey] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatching] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 175 & BENT 176

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 177

CAP REPAIRS			
SHOTCRETE REPAIRS	3.0 SF	1.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	10.1 SF	4.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	236.9 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 178

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	23.1 SF	9.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	115.9 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

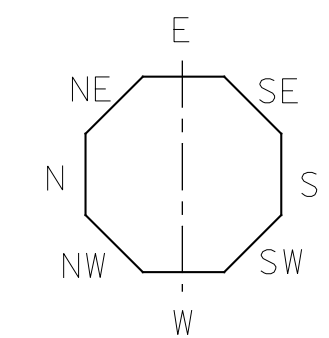
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

		NW	W	SW	S	SE	E	NE	N
BENT 177	PILE 1	5	6	-	5	7	6	5	-
	PILE 2	3	-	-	-	8	-	4	9
	PILE 3	6	13	13	-	-	-	9	-
	PILE 4	-	-	4	4	4	4	-	3
BENT 178	PILE 1	-	-	-	2	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	7	3	3	-	2	3	8	6
	PILE 4	4	-	5	5	5	2	-	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

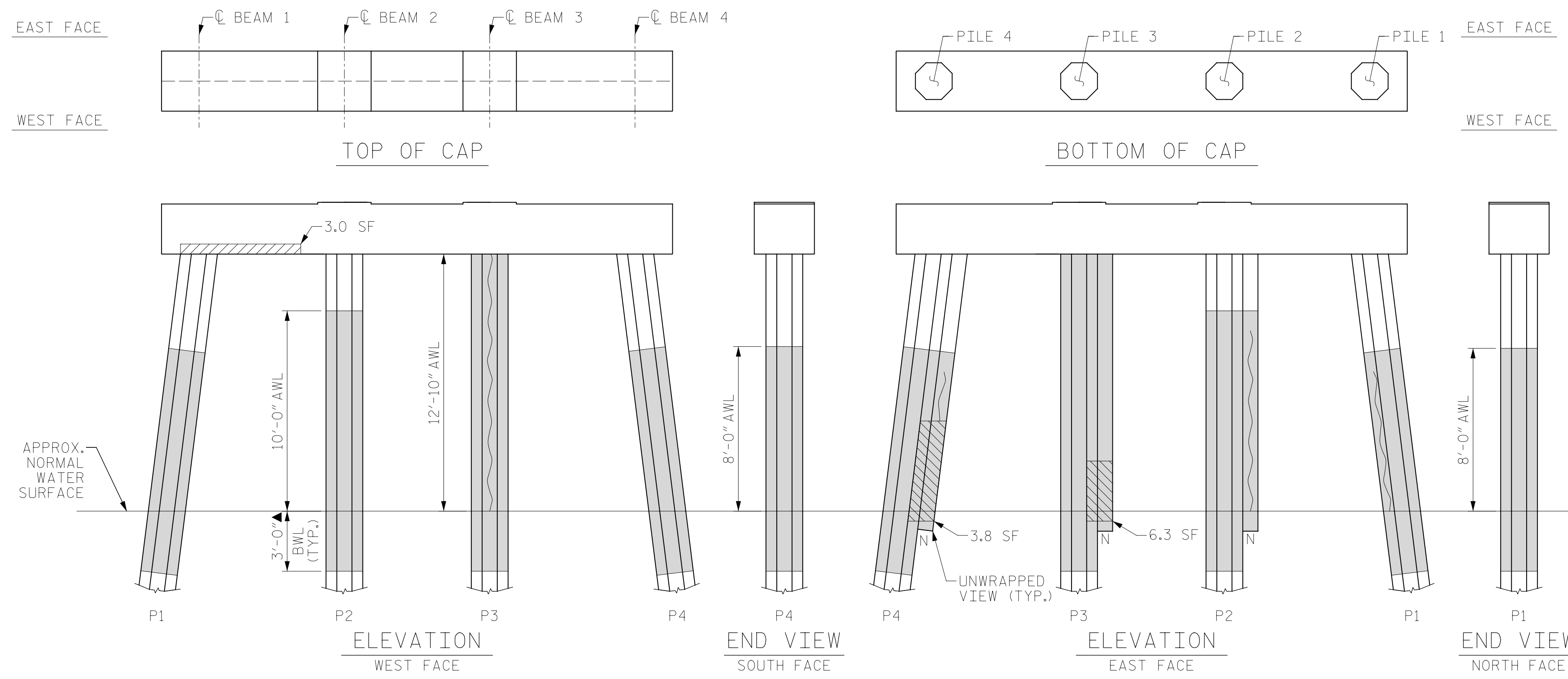
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

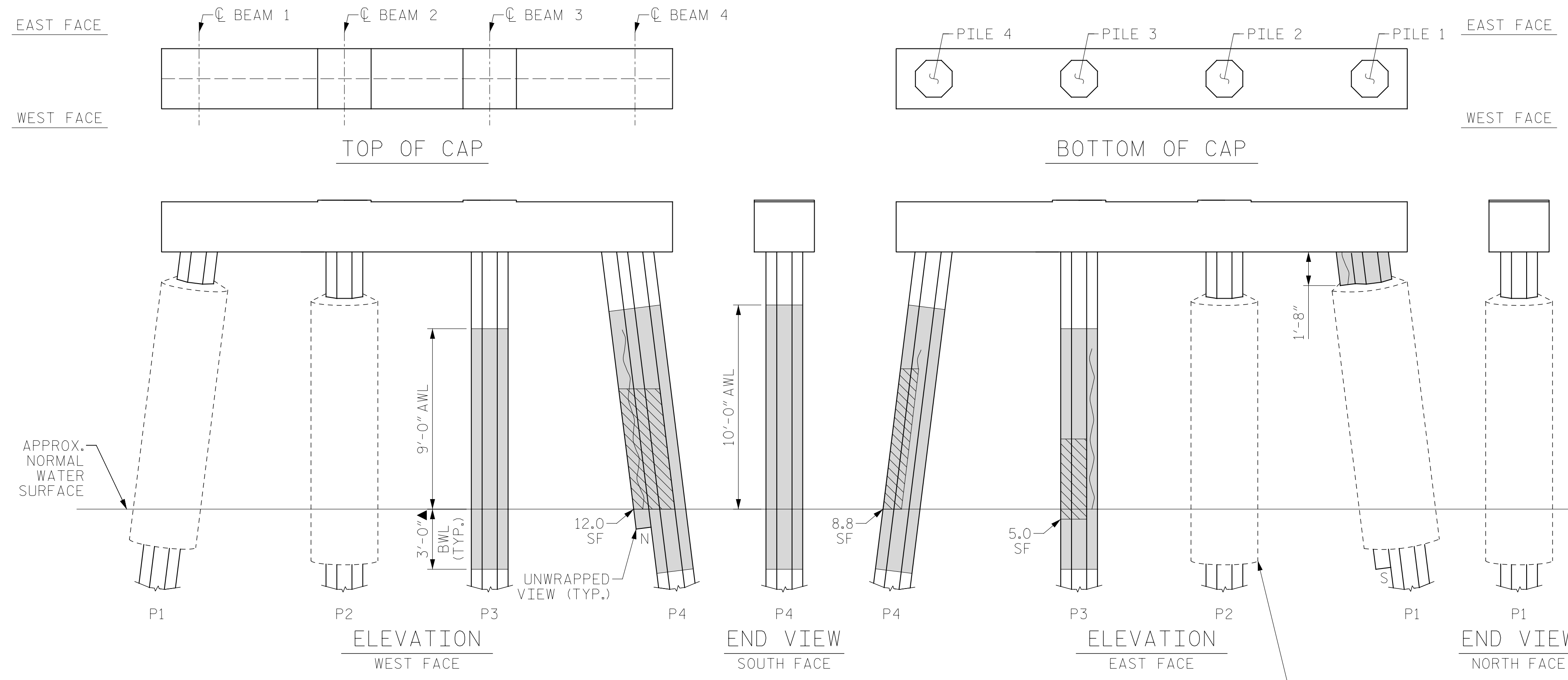
BENT 177 & BENT 178

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			



BENT 177

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 178

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 179

CAP REPAIRS			
SHOTCRETE REPAIRS	3.0 SF	1.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	35.6 SF	16.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	128.1 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 180

CAP REPAIRS			
SHOTCRETE REPAIRS	10.0 SF	5.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	43.3 SF	18.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	195.2 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

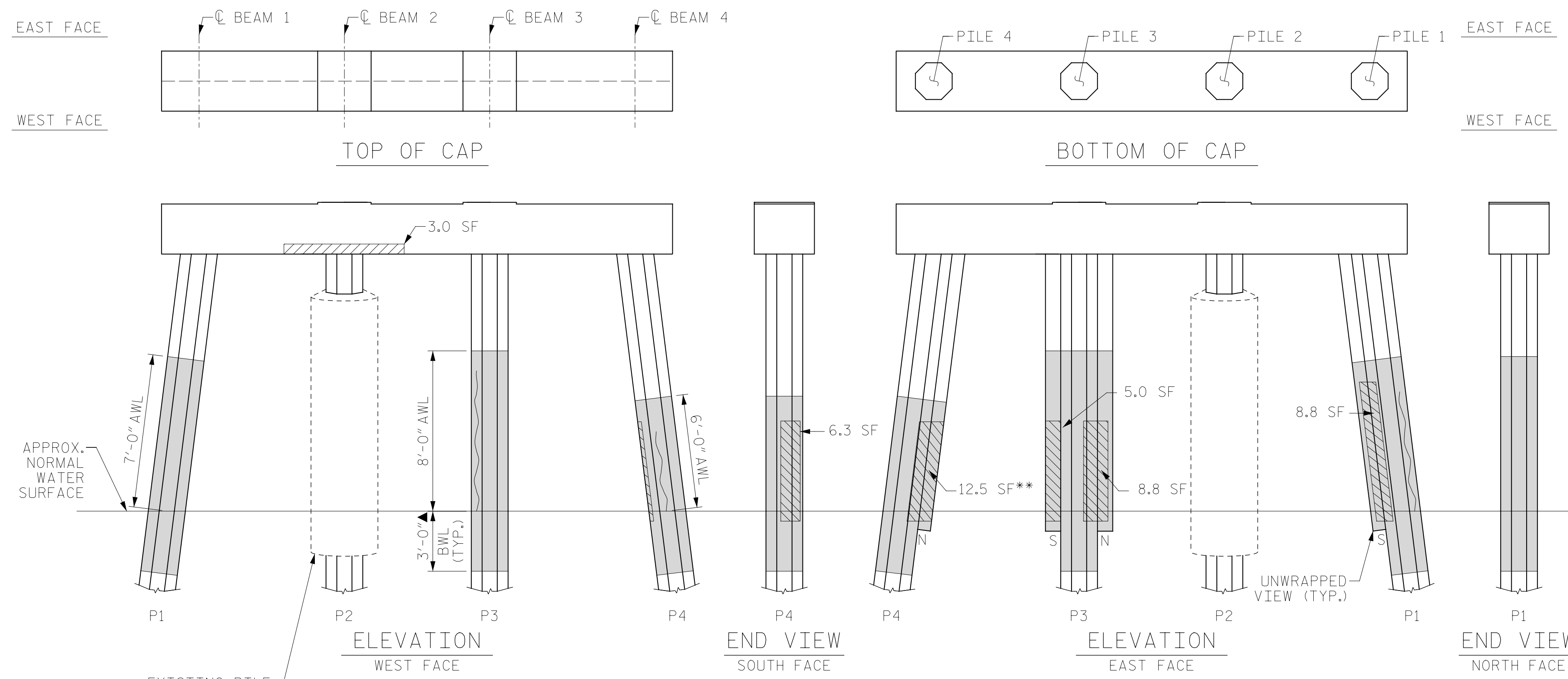
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

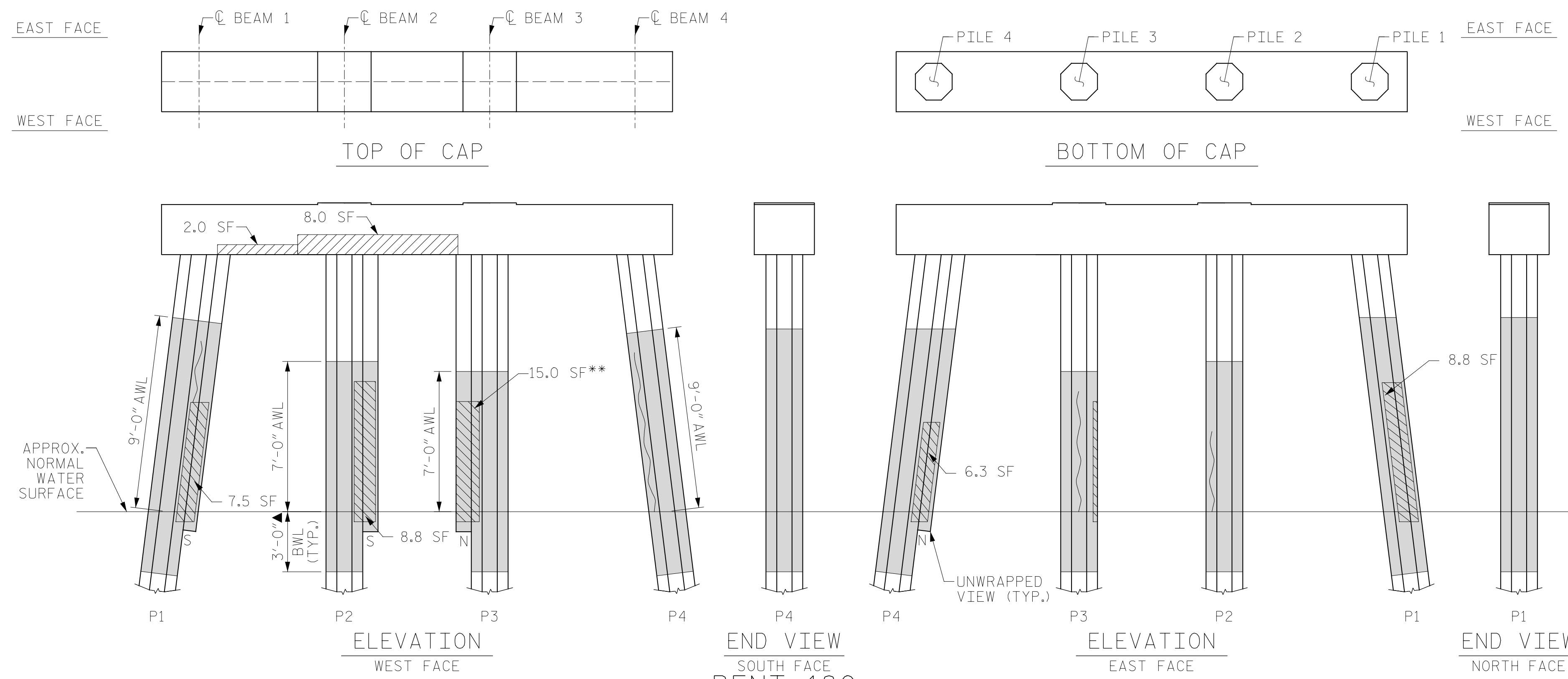
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 179

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 180

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

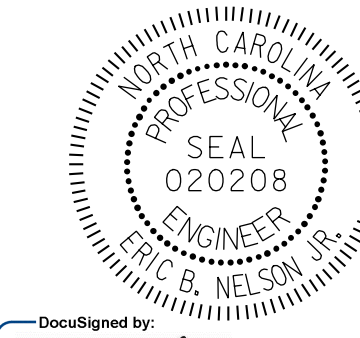
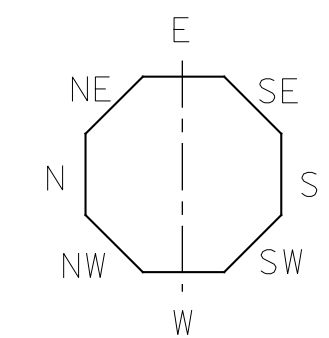
		NW	W	SW	S	SE	E	NE	N
BENT 179	PILE 1	-	3	2	-	-	-	6	3
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	7	-	4	-	4	-	-	-
	PILE 4	-	-	-	-	1	4	-	-
BENT 180	PILE 1	-	-	3	-	-	-	-	-
	PILE 2	-	-	-	-	4	-	-	-
	PILE 3	-	4	-	-	-	6	-	-
	PILE 4	8	5	2	5	-	-	-	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 179 & BENT 180

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-259
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 181

CAP REPAIRS			
SHOTCRETE REPAIRS	9.6 SF	4.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	44.5 SF	18.2 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	201.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

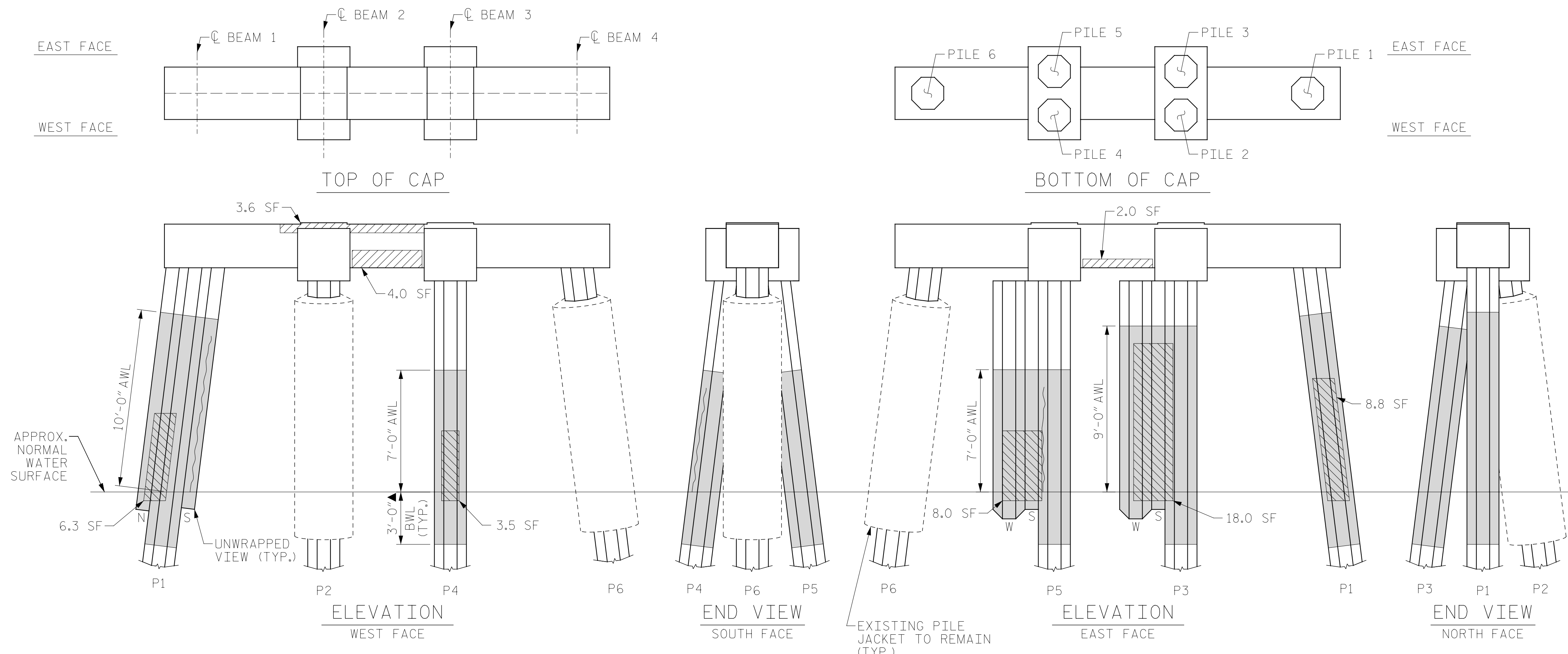
BENT 182

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	50.5 SF	20.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	175.7 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

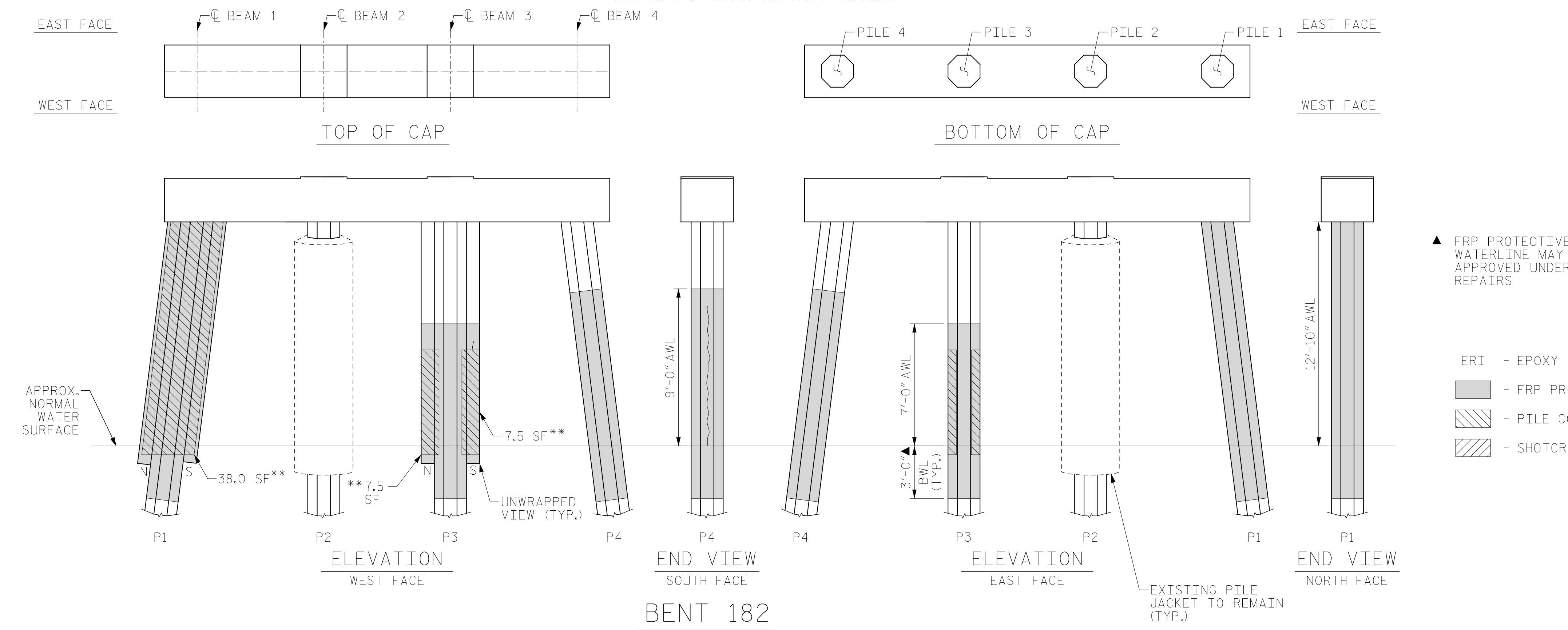
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 181

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 182

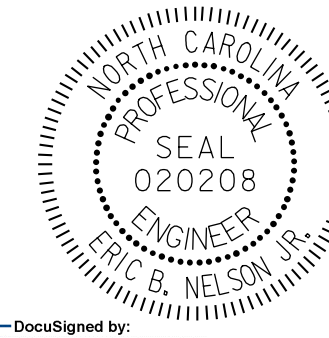
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 181	PILE 1	-	2	-	9	8	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	6	-	-	-	-	7	5	4
	PILE 4	4	-	-	5	6	6	-	5
	PILE 5	-	-	-	2	6	4	-	5
BENT 182	PILE 1	-	-	-	-	-	-	1	8
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	3	1	-	-	-	-
	PILE 4	5	4	4	8	5	-	-	7

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 181 & BENT 182

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-260
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 183

CAP REPAIRS			
SHOTCRETE REPAIRS	9.8 SF	4.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	29.2 SF	12.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	103.7 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 184

CAP REPAIRS			
SHOTCRETE REPAIRS	13.4 SF	6.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	41.1 SF	17.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	189.1 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 183	PILE 1	6	3	-	3	-	-	1	1
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 5	-	-	-	-	-	-	-	-
	PILE 6	5	3	-	5	2	-	-	4
BENT 184	PILE 1	6	-	-	-	-	-	6	-
	PILE 2	-	-	-	8	-	6	-	-
	PILE 3	-	-	4	-	5	-	-	-
	PILE 4	-	6	5	-	-	7	-	8

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

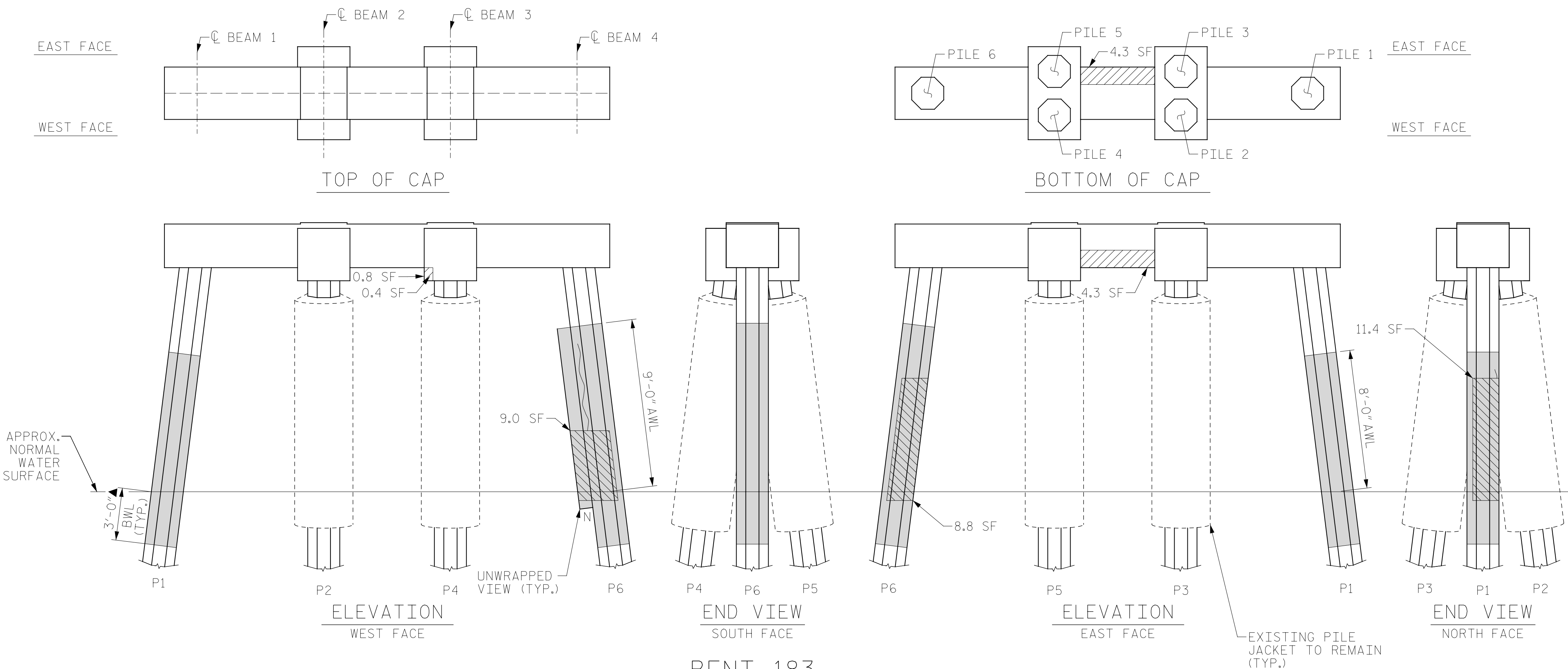
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 183 & BENT 184**

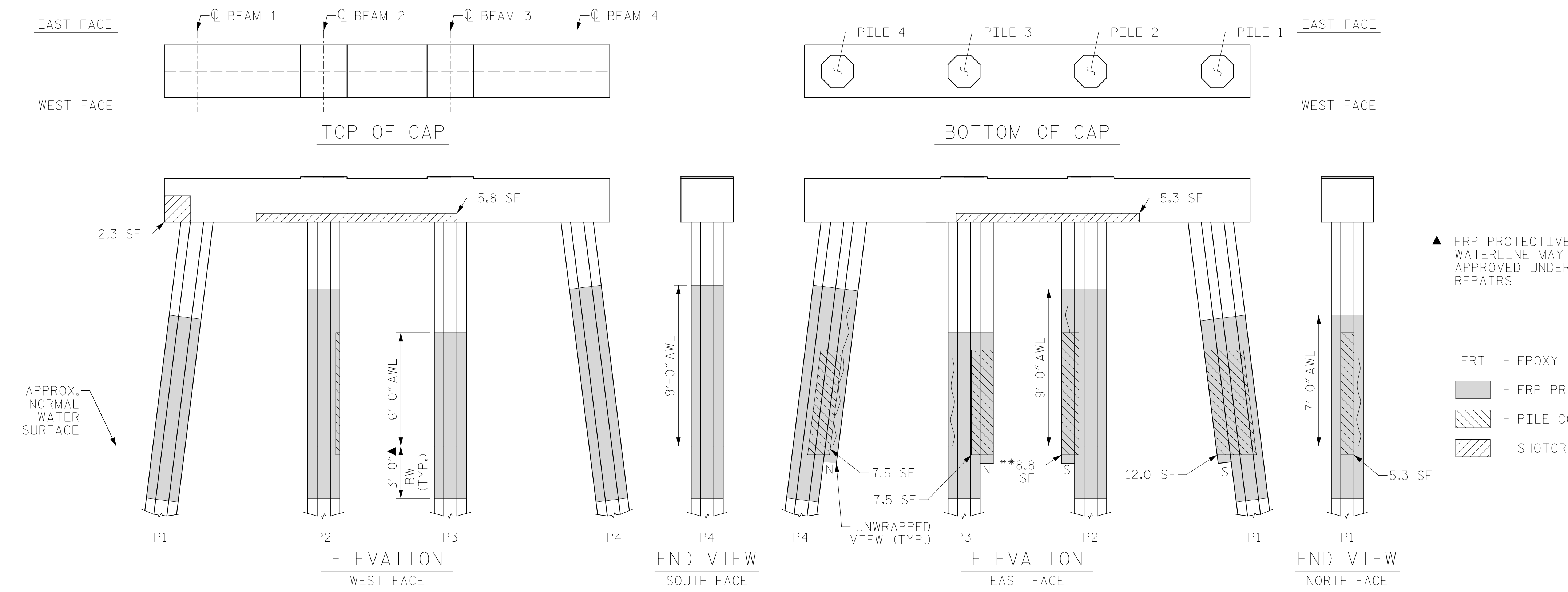
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			261
2			4			355

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BENT 183

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 184

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Hatched Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



AS-BUILT REPAIR QUANTITY TABLE

BENT 185

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.3 SF	11.2 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	158.6 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 186

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	16.3 SF	6.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	201.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

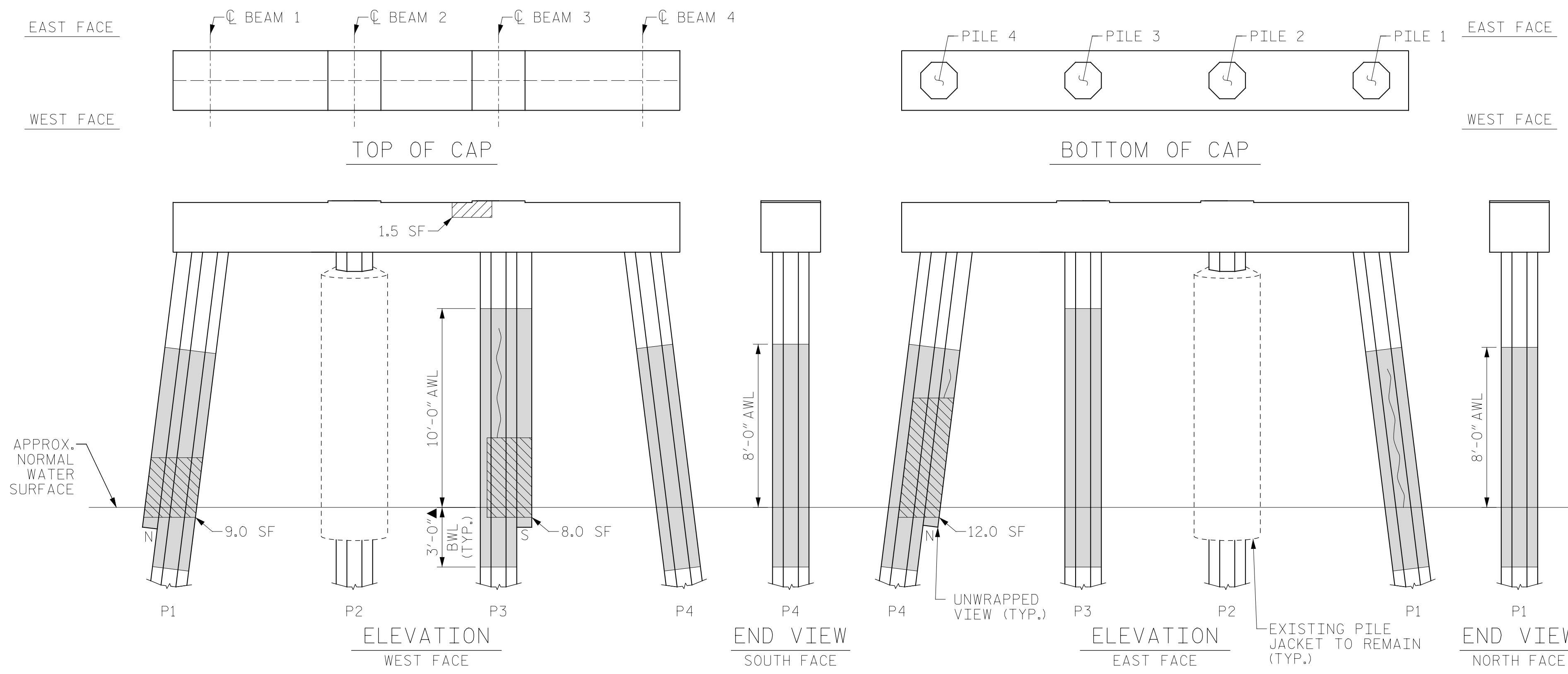
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

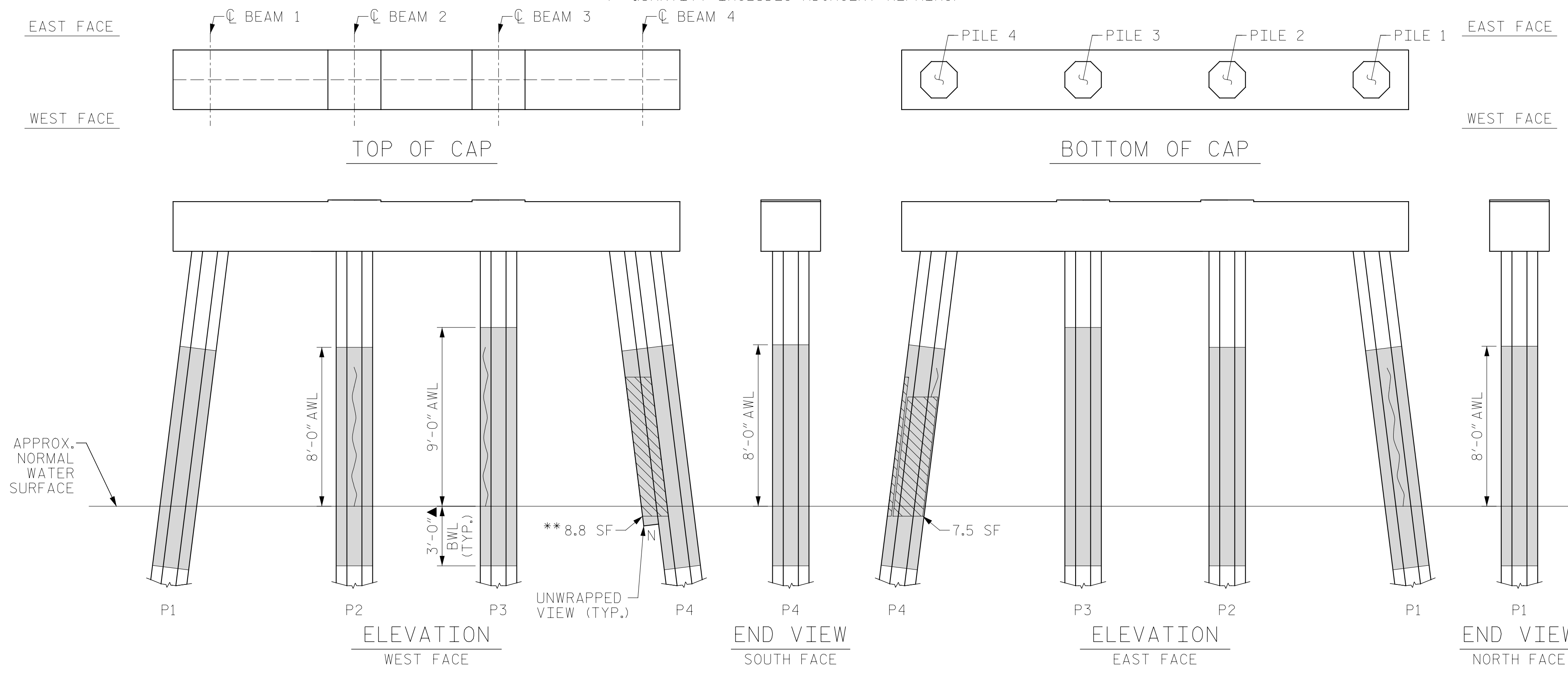
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 185

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



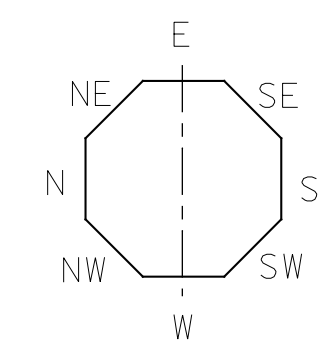
BENT 186

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	CRACK QUANTITIES							
		NW	W	SW	S	SE	E	NE	N
185	PILE 1	2	2	2	3	-	7	7	5
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	4	6	-	4	7	-	5	2
	PILE 4	6	-	-	2	-	-	-	2
186	PILE 1	7	-	-	-	5	7	7	3
	PILE 2	-	7	7	-	5	-	-	-
	PILE 3	8	-	-	8	4	-	3	6
	PILE 4	-	5	-	3	3	-	2	-

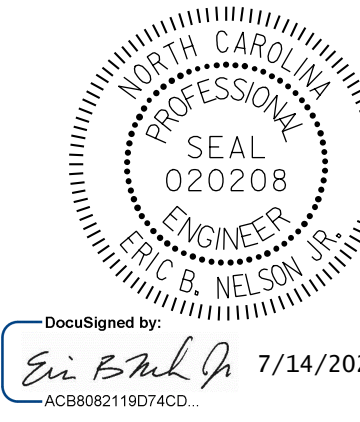
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Solid Grey] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatching] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 185 & BENT 186

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-262
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 187

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	14.8 SF	6.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	73.2 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

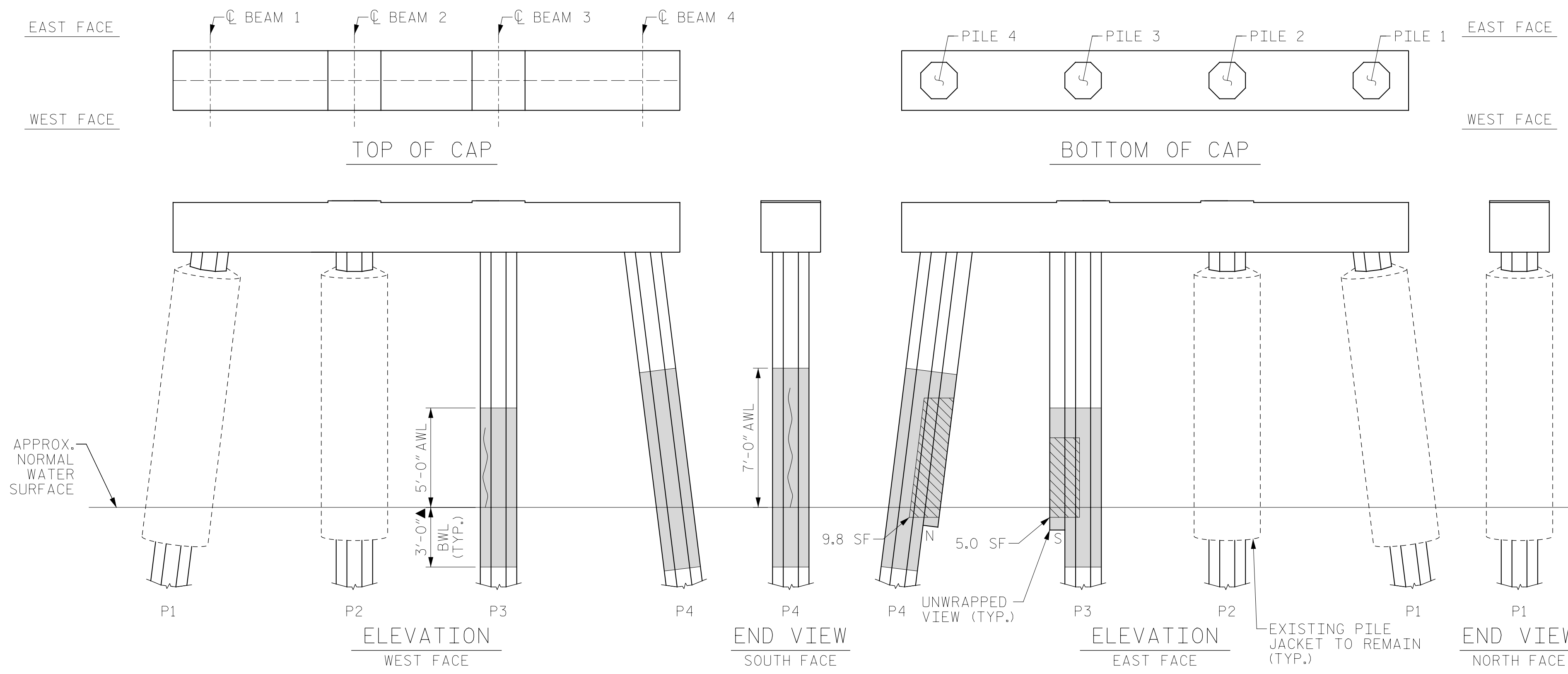
BENT 188

CAP REPAIRS			
SHOTCRETE REPAIRS	7.5 SF	3.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	15.0 SF	6.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	283.7 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

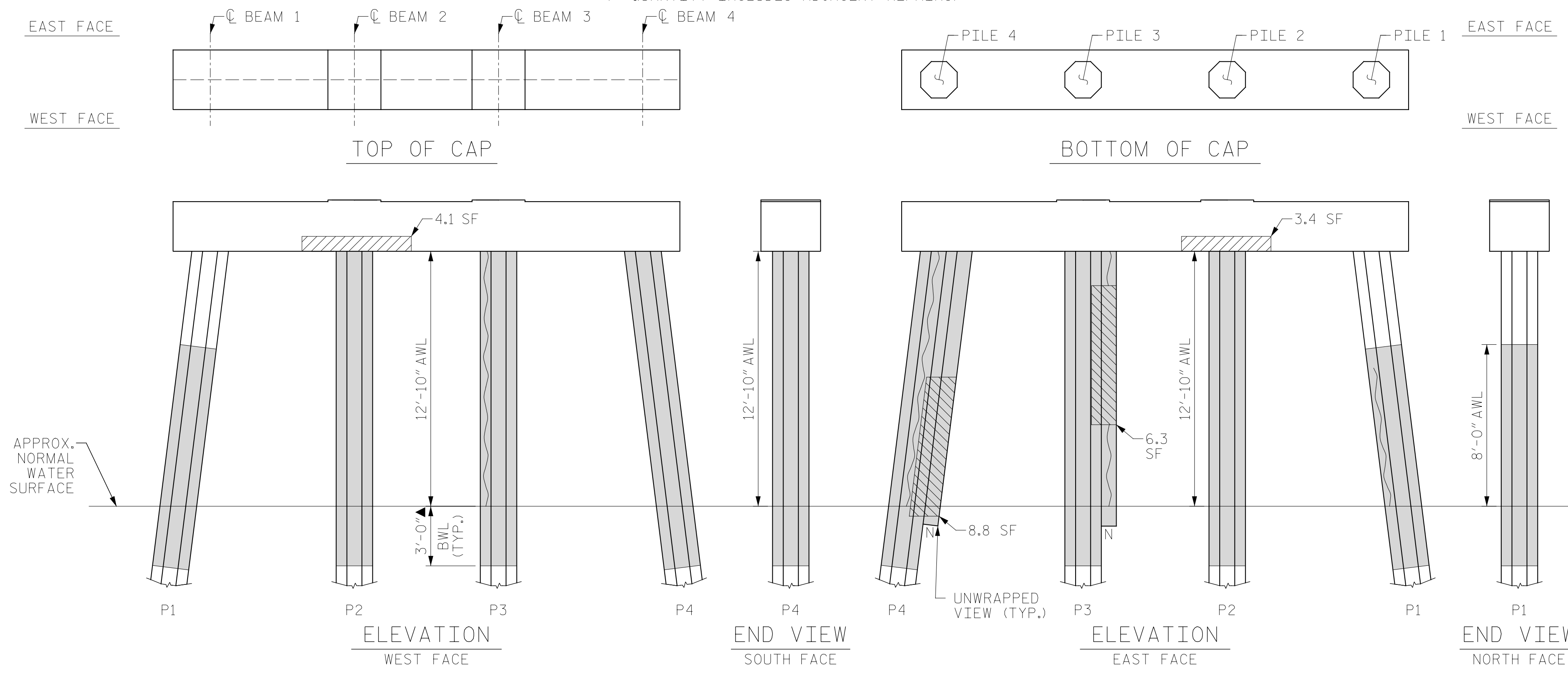
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 187

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



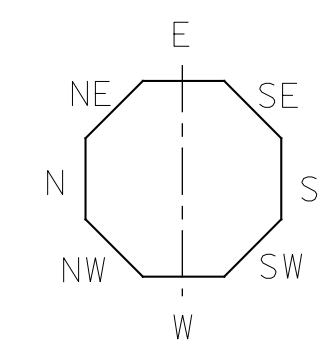
BENT 188

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

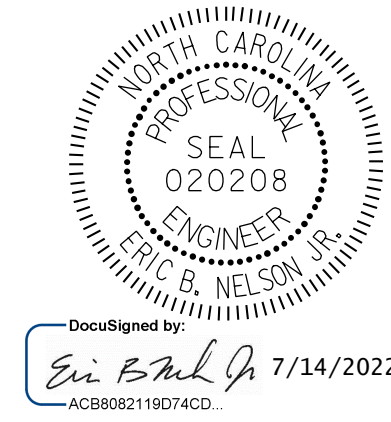
		NW	W	SW	S	SE	E	NE	N
BENT 187	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	4	3	4	1	1	-	-	-
	PILE 4	4	4	6	6	-	-	-	-
BENT 188	PILE 1	2	-	5	-	7	2	7	6
	PILE 2	13	-	-	-	-	4	13	-
	PILE 3	9	-	-	4	2	-	-	8
	PILE 4	6	4	-	-	-	13	7	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 187 & BENT 188

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-263
1			3			TOTAL SHEETS
2			4			355

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AS-BUILT REPAIR QUANTITY TABLE

BENT 189

CAP REPAIRS			
SHOTCRETE REPAIRS	1.3 SF	0.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	18.9 SF	8.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	354.3 SF		
FRP PROTECTIVE SYSTEM BWL	109.8 SF		

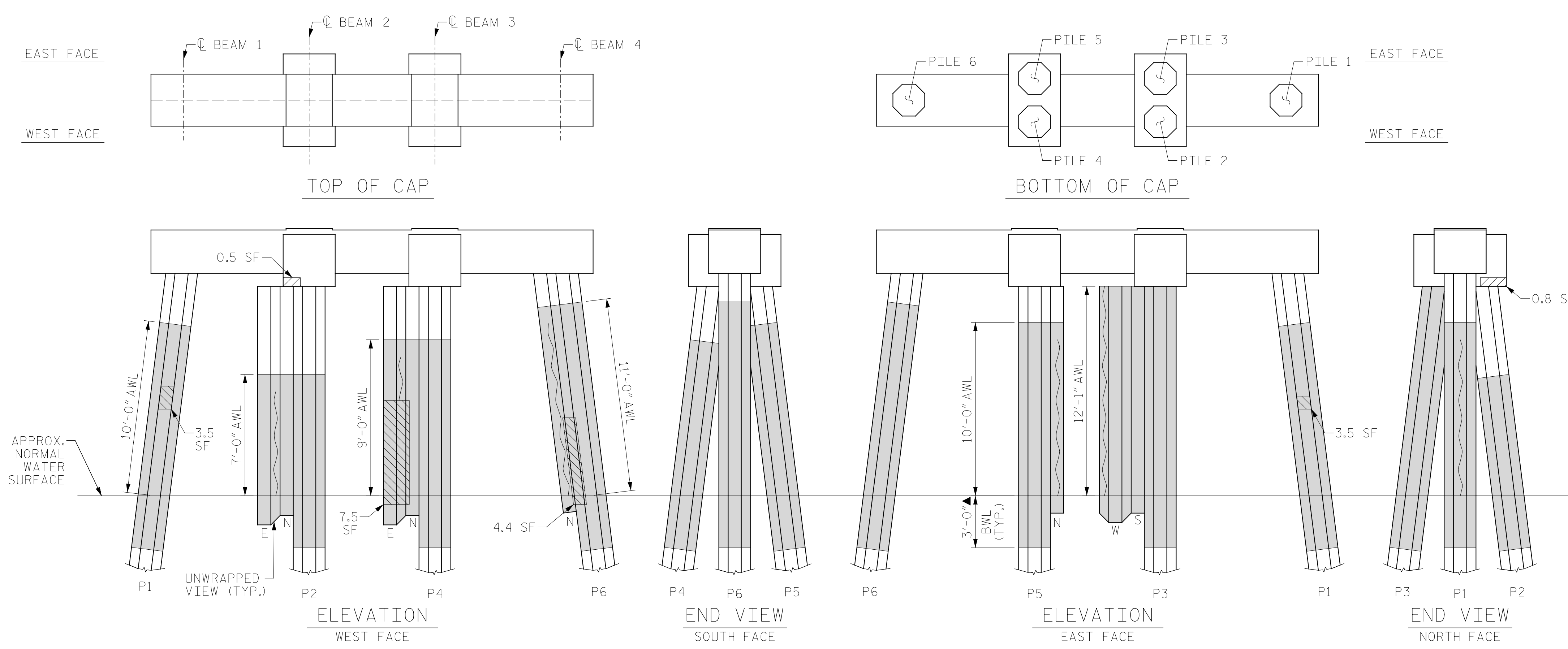
BENT 190

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	38.5 SF	16.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	254.2 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

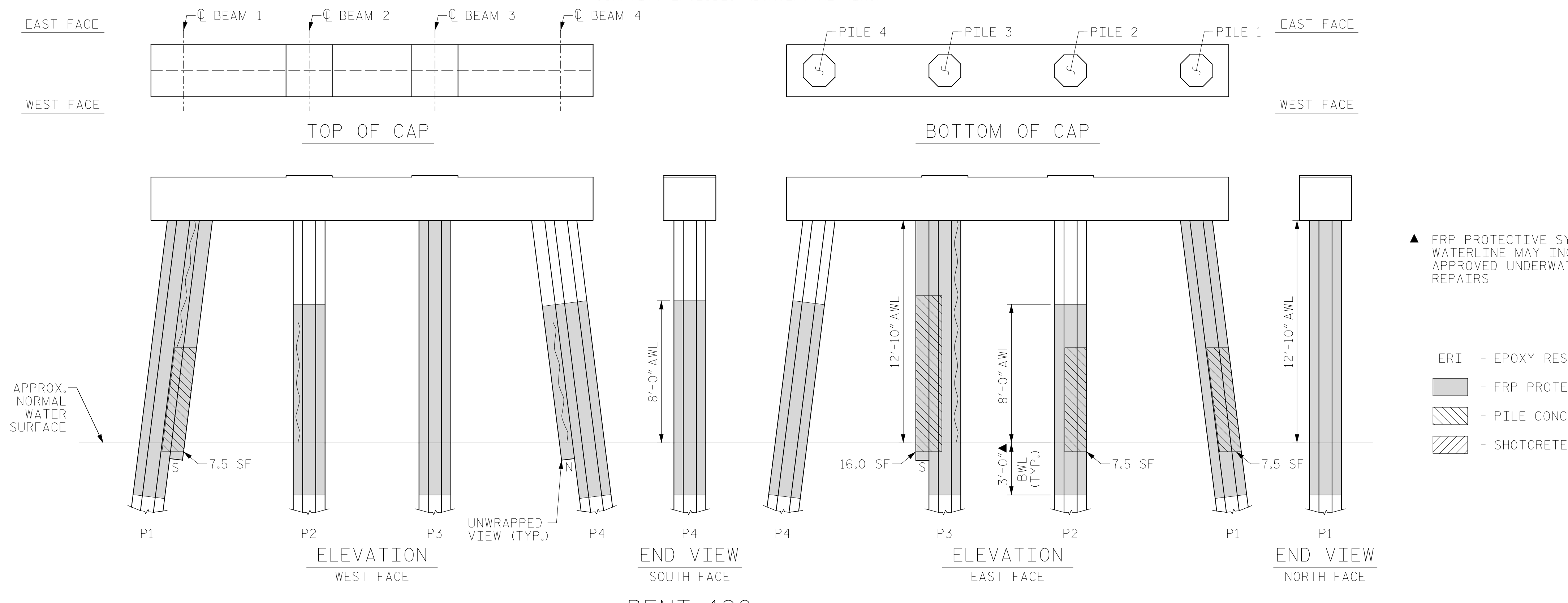
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 189

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 190

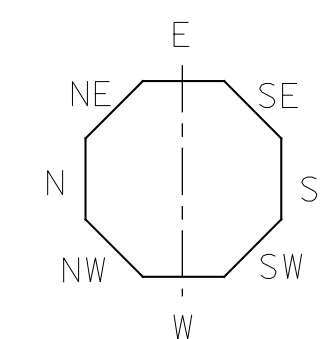
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 189	PILE 1	5	-	-	2	-	5	8	9
	PILE 2	-	-	-	-	-	2	6	4
	PILE 3	12	5	7	-	7	-	-	8
	PILE 4	7	-	-	2	-	2	2	7
	PILE 5	-	-	-	-	-	-	8	9
BENT 190	PILE 1	-	-	13	-	9	-	-	-
	PILE 2	7	2	-	-	7	2	-	7
	PILE 3	-	3	2	-	-	3	13	9
	PILE 4	-	-	-	-	2	-	6	7

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 189 & BENT 190

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 191

CAP REPAIRS			
SHOTCRETE REPAIRS	1.9 SF	1.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	- SF	- CF	SF CF
FRP PROTECTIVE SYSTEM AWL	42.7 SF		
FRP PROTECTIVE SYSTEM BWL	18.3 SF		

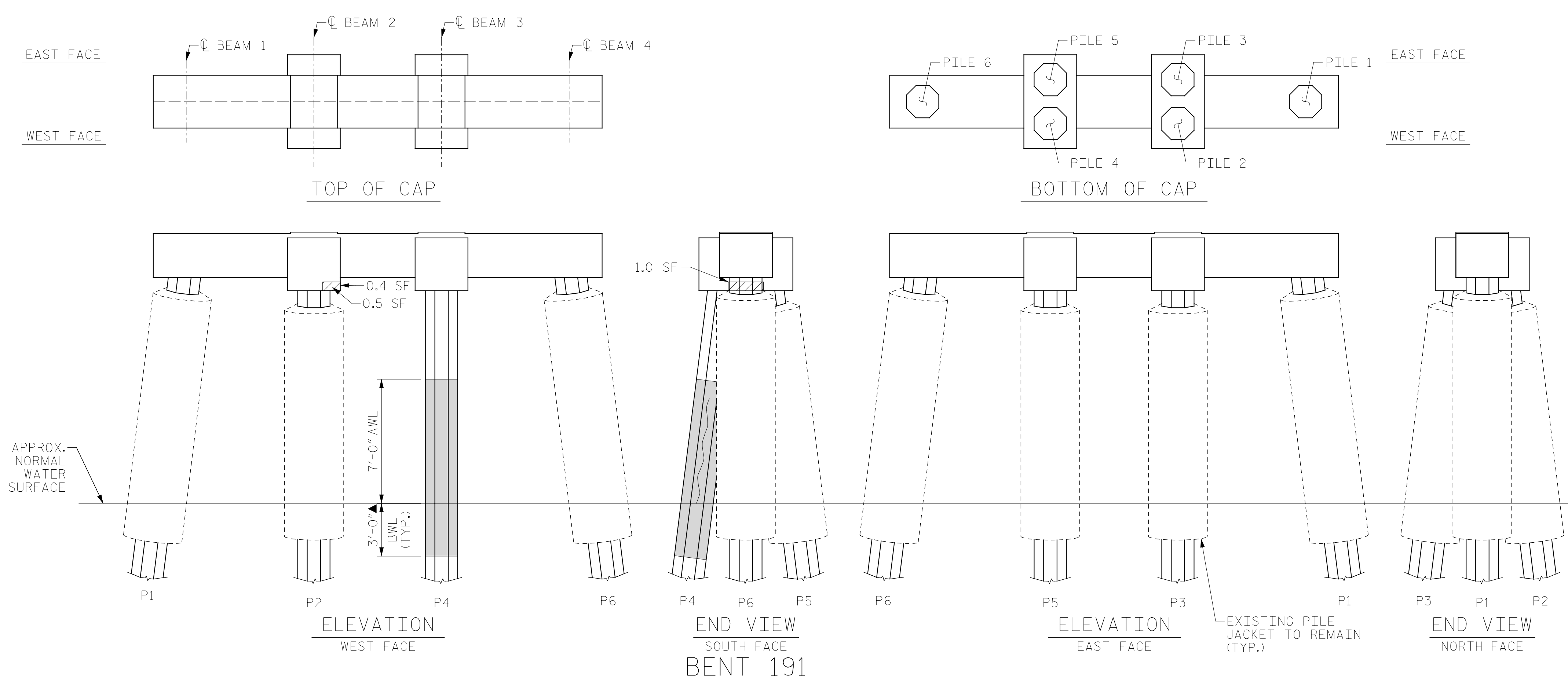
BENT 192

CAP REPAIRS			
SHOTCRETE REPAIRS	5.5 SF	2.8 CF	SF CF
EPOXY RESIN INJECTION	3.0 LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	11.3 SF	4.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	248.1 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

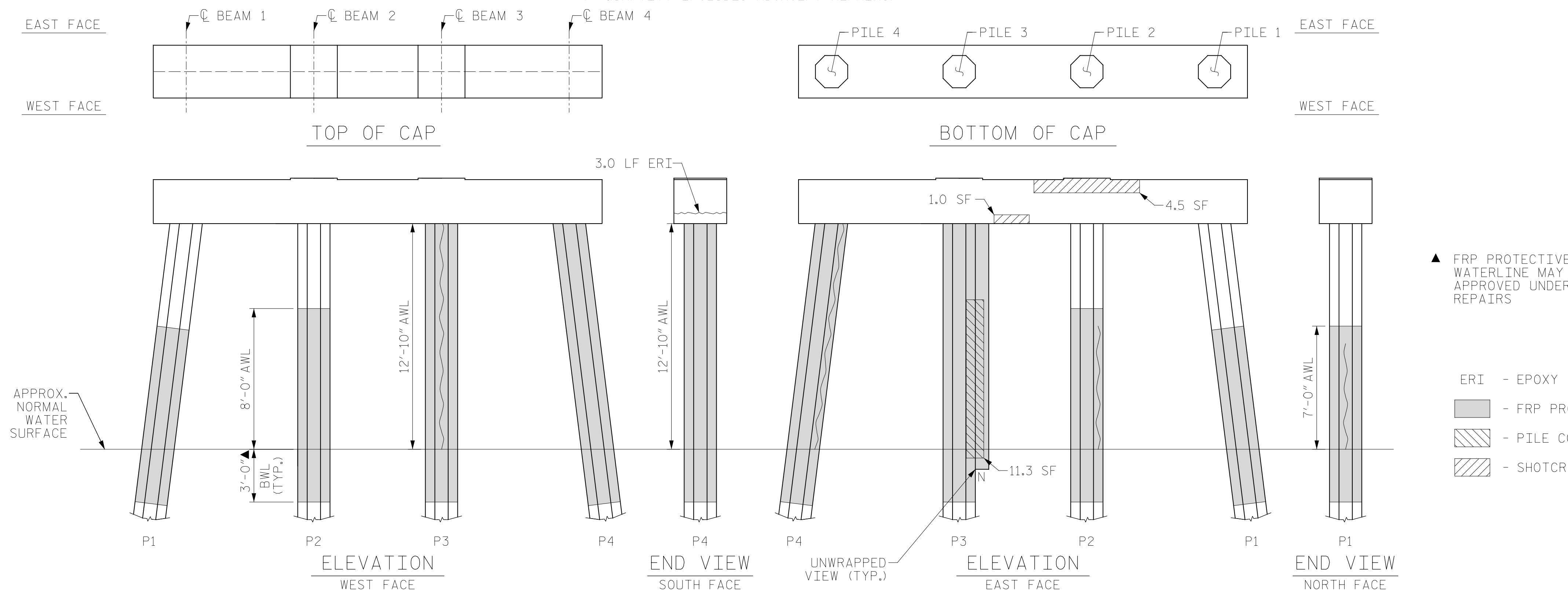
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 191

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 192

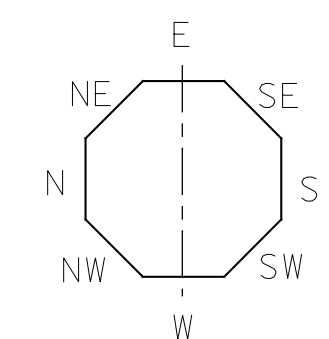
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 191	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	4	2	-	6	4	3	3	-
	PILE 5	-	-	-	-	-	-	-	-
BENT 192	PILE 1	6	-	3	-	4	-	-	6
	PILE 2	-	-	5	-	6	-	7	-
	PILE 3	13	13	13	-	-	-	-	13
	PILE 4	-	6	4	6	4	-	13	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
BENT 191 & BENT 192

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-265
1			3			TOTAL SHEETS 355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 193

CAP REPAIRS			
SHOTCRETE REPAIRS	1.9 SF	1.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	33.8 SF	14.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	195.2 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

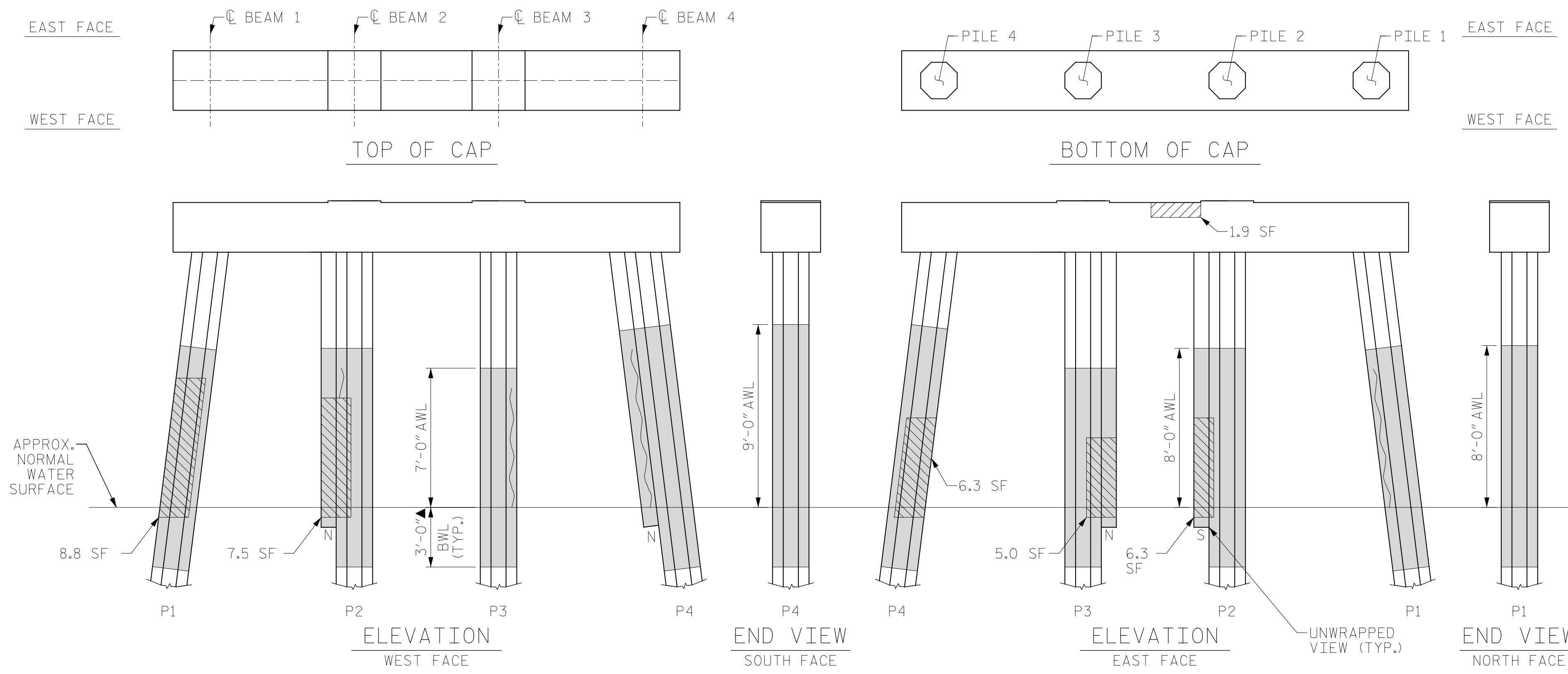
BENT 194

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.8 SF	3.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	236.9 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

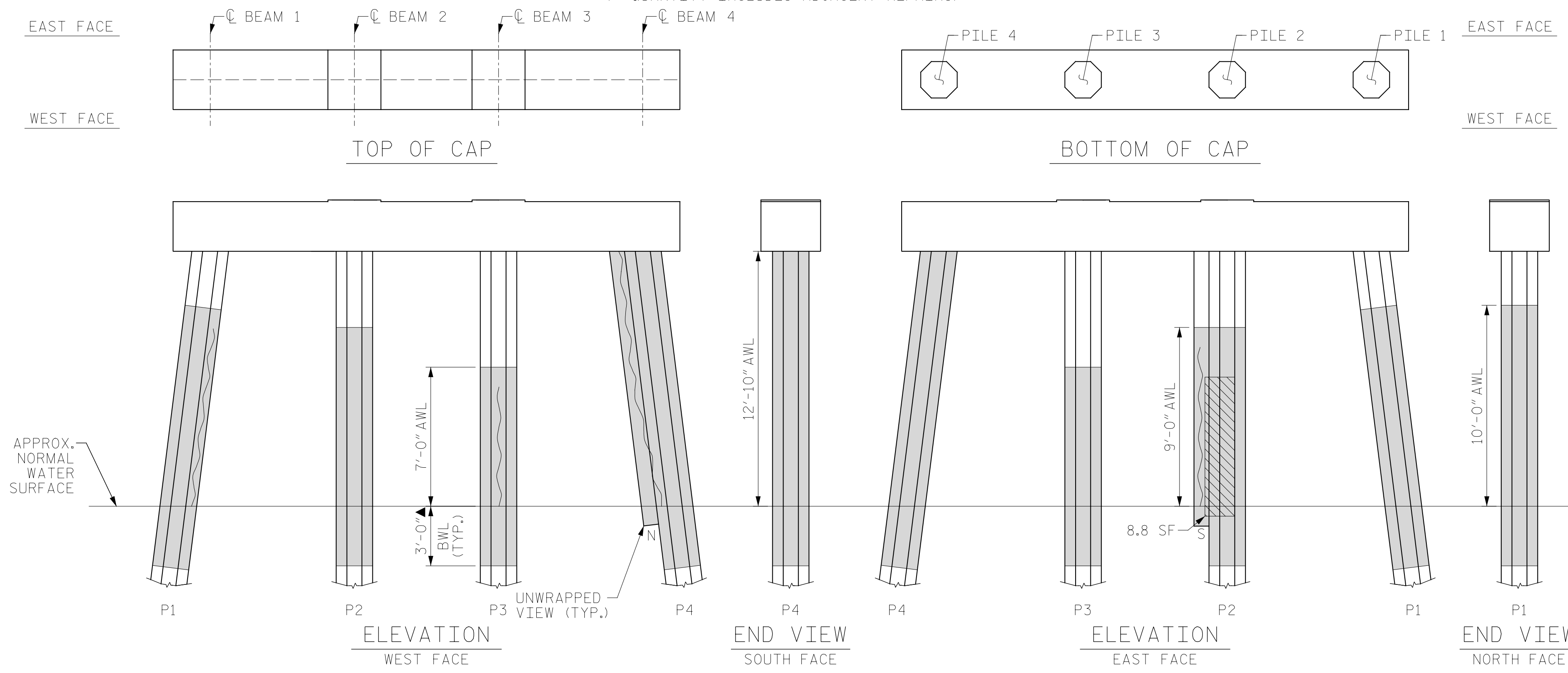
NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 193

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



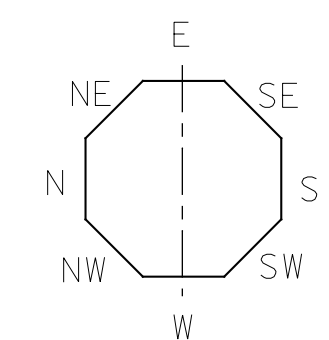
BENT 194

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

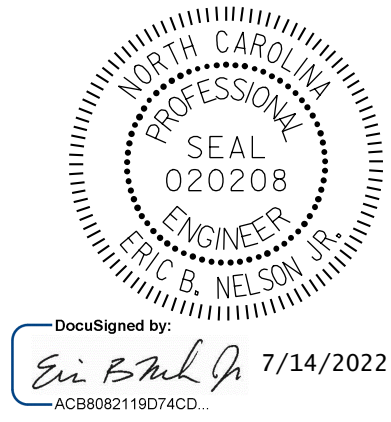
ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 193	PILE 1	-	-	-	5	7	4	6	3
	PILE 2	2	4	2	-	6	-	-	-
	PILE 3	4	-	6	-	-	2	-	-
	PILE 4	4	4	4	-	4	3	-	8
BENT 194	PILE 1	4	8	9	12	-	6	-	-
	PILE 2	4	-	8	8	-	-	-	3
	PILE 3	-	6	5	-	5	6	-	5
	PILE 4	13	7	7	3	4	5	9	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.  
PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BENT 193 & BENT 194

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-266
1			3			TOTAL SHEETS
2			4			355



AS-BUILT REPAIR QUANTITY TABLE

BENT 195

CAP REPAIRS			
SHOTCRETE REPAIRS	10.9 SF	5.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	78.3 SF	31.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	254.2 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 196

CAP REPAIRS			
SHOTCRETE REPAIRS	10.1 SF	5.1 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	46.0 SF	18.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	122.5 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

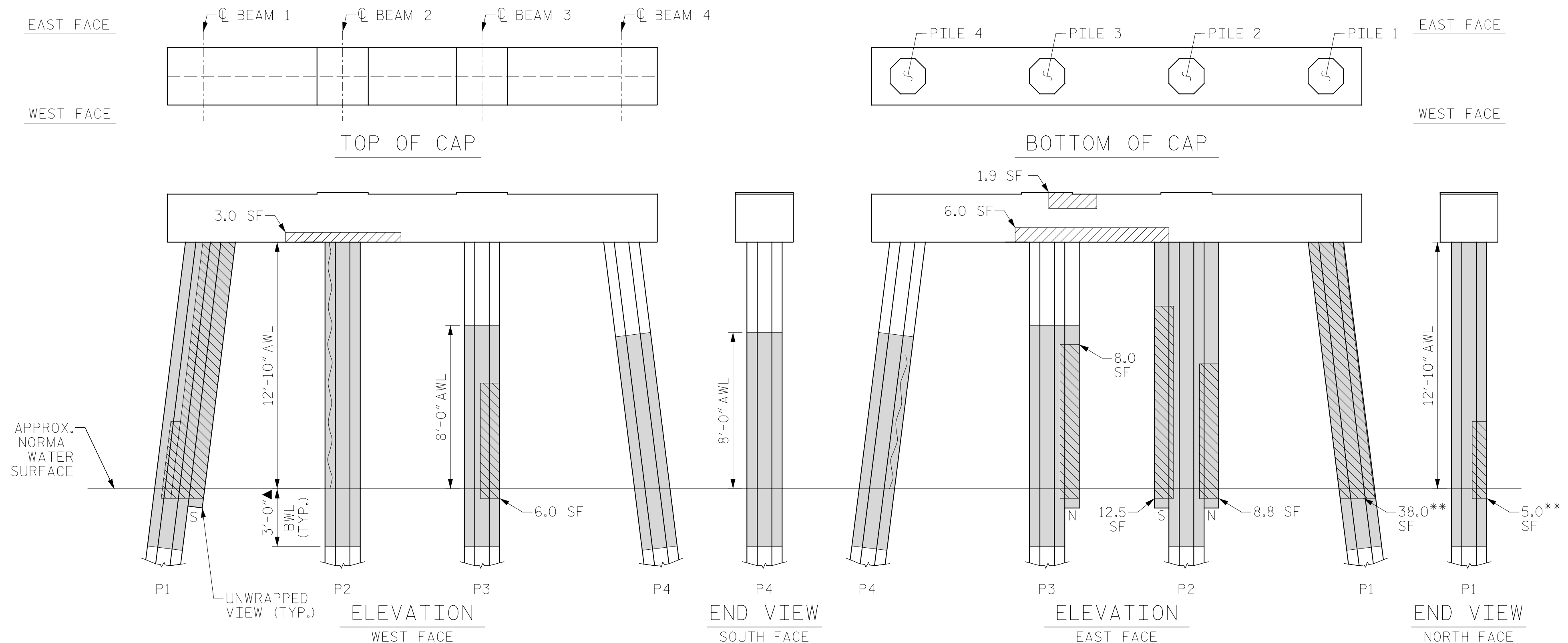
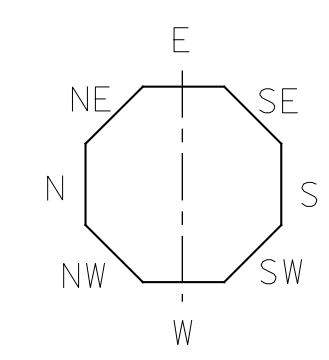
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 195	PILE 1	-	-	-	-	8	6	-	3
	PILE 2	13	9	8	-	-	6	5	4
	PILE 3	3	4	2	5	-	-	7	-
	PILE 4	-	2	3	-	5	-	7	-
BENT 196	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	8	-	-	-	-	8	8
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 5	-	-	-	-	-	-	-	-
	PILE 6	3	-	7	4	-	4	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

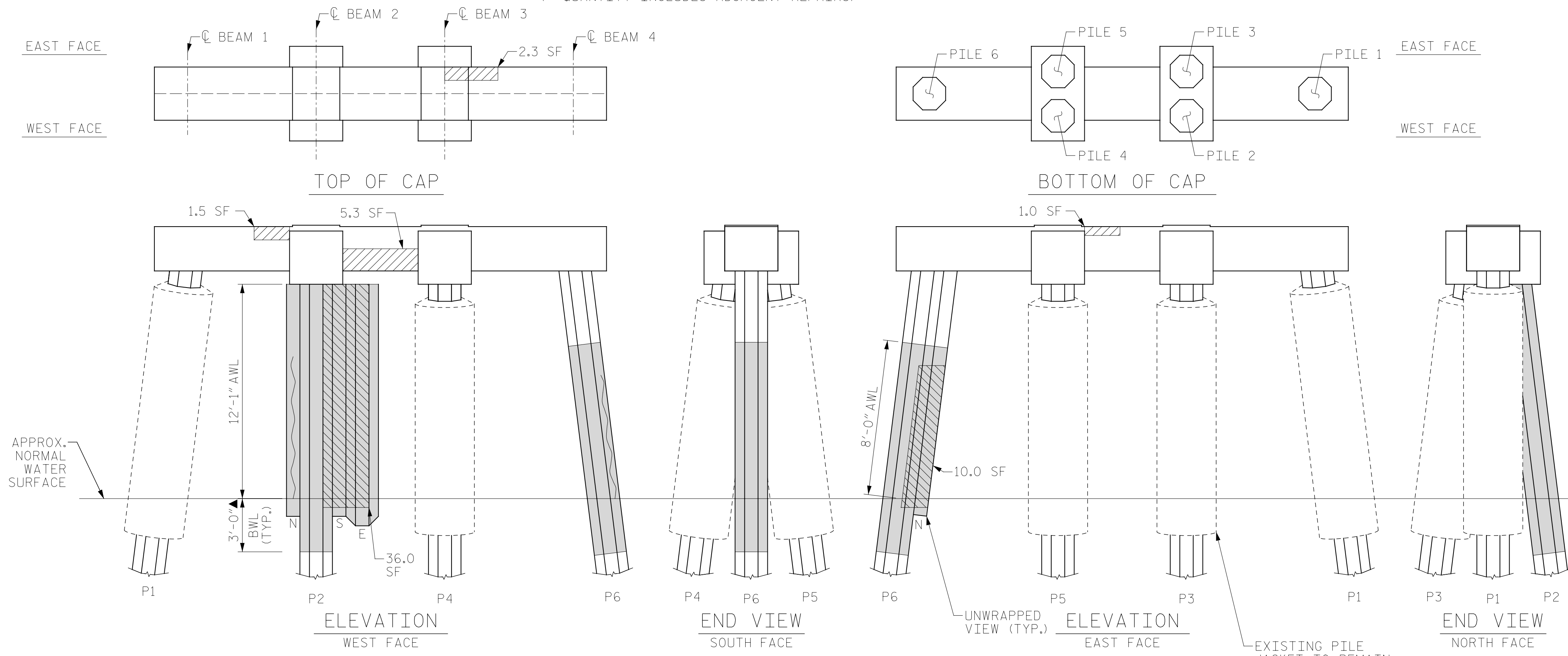
PROJECT NO. HB-0017  
 DARE COUNTY  
 BRIDGE NO. 270009



BENT 195

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

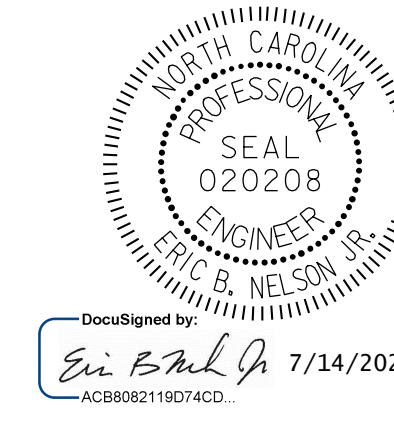


BENT 196

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ERI - EPOXY RESIN INJECTION    [Hatched] - PILE CONCRETE RESTORATION  
 [Solid Grey] - FRP PROTECTIVE SYSTEM    [Diagonal Lines] - SHOTCRETE REPAIRS

DRAWN BY: T. HARTLEY    DATE: 2/2019  
 CHECKED BY: J. FARNHAM    DATE: 4/2019



STATE OF NORTH CAROLINA  
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 RALEIGH

BENT 195 & BENT 196

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-267
1			3			TOTAL SHEETS
2			4			355

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AS-BUILT REPAIR QUANTITY TABLE

BENT 197

CAP REPAIRS			
SHOTCRETE REPAIRS	8.8 SF	4.4 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.5 SF	12.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	109.8 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

BENT 198

CAP REPAIRS			
SHOTCRETE REPAIRS	1.0 SF	0.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	141.3 SF	56.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	327.9 SF		
FRP PROTECTIVE SYSTEM BWL	91.5 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 197	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	5	-	6	-	-	-	-	7
	PILE 4	-	-	2	-	3	7	-	4
BENT 198	PILE 1	2	-	-	-	-	-	4	5
	PILE 2	5	-	-	-	-	5	2	6
	PILE 3	-	-	-	-	6	-	6	-
	PILE 4	-	-	9	-	-	-	-	-
	PILE 5	-	-	-	-	-	-	-	-
	PILE 6	-	3	5	-	3	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

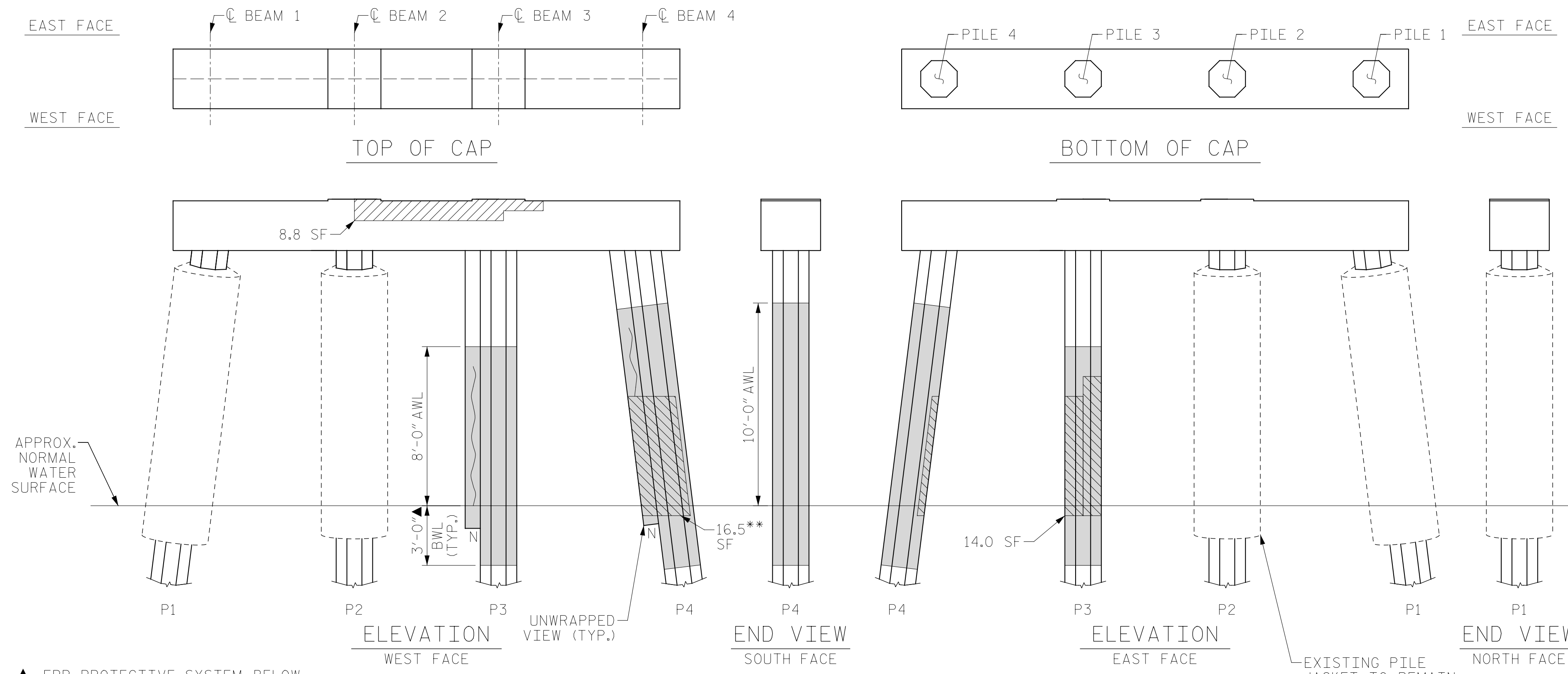
PROJECT NO. HB-0017  
 DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 197 & BENT 198

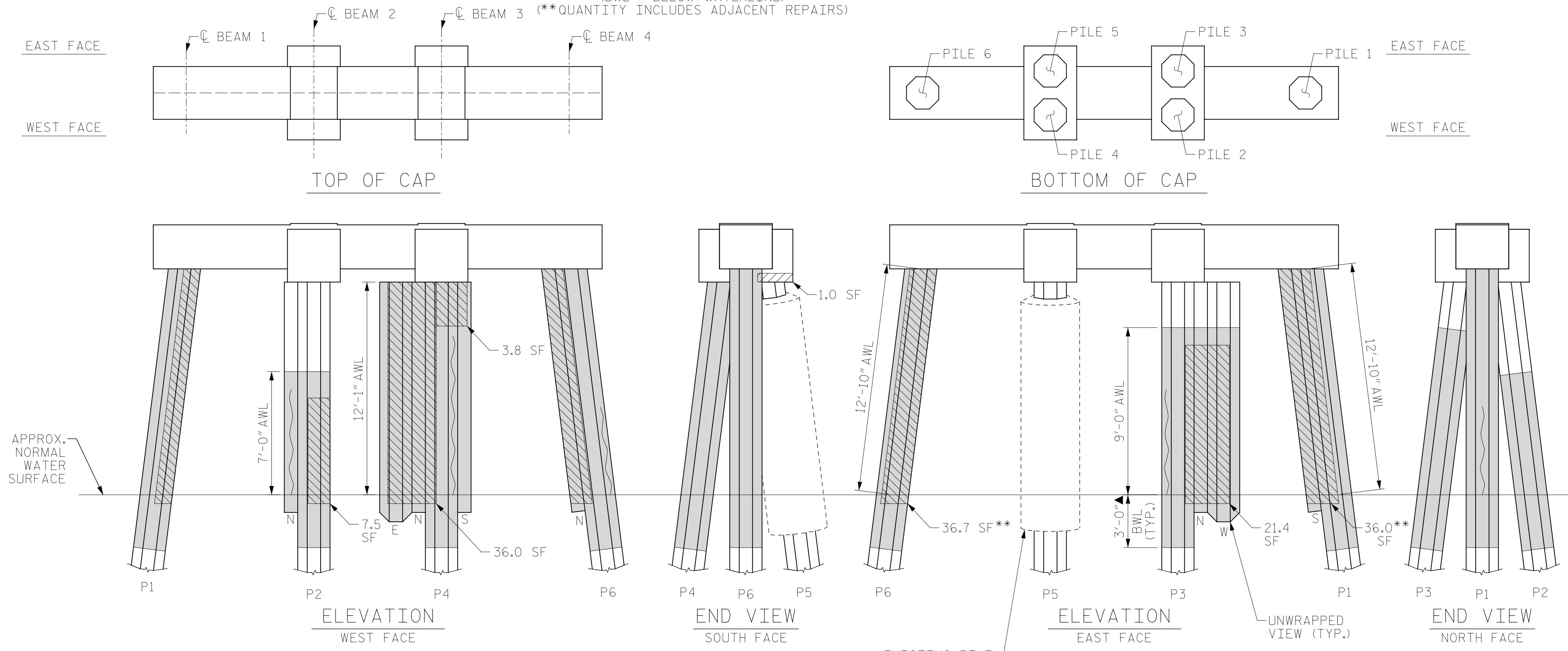
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-268
1			3			TOTAL SHEETS 355
2			4			



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

BENT 197

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 198

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

ERI - EPOXY RESIN INJECTION    [Hatched Box] - PILE CONCRETE RESTORATION  
 [Solid Box] - FRP PROTECTIVE SYSTEM    [Diagonal Lines Box] - SHOTCRETE REPAIRS

DRAWN BY: T. HARTLEY    DATE: 2/2019  
 CHECKED BY: J. FARNHAM    DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 199

CAP REPAIRS				
SHOTCRETE REPAIRS	0.5 SF	0.3 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	97.6 SF			
FRP PROTECTIVE SYSTEM BWL	36.6 SF			

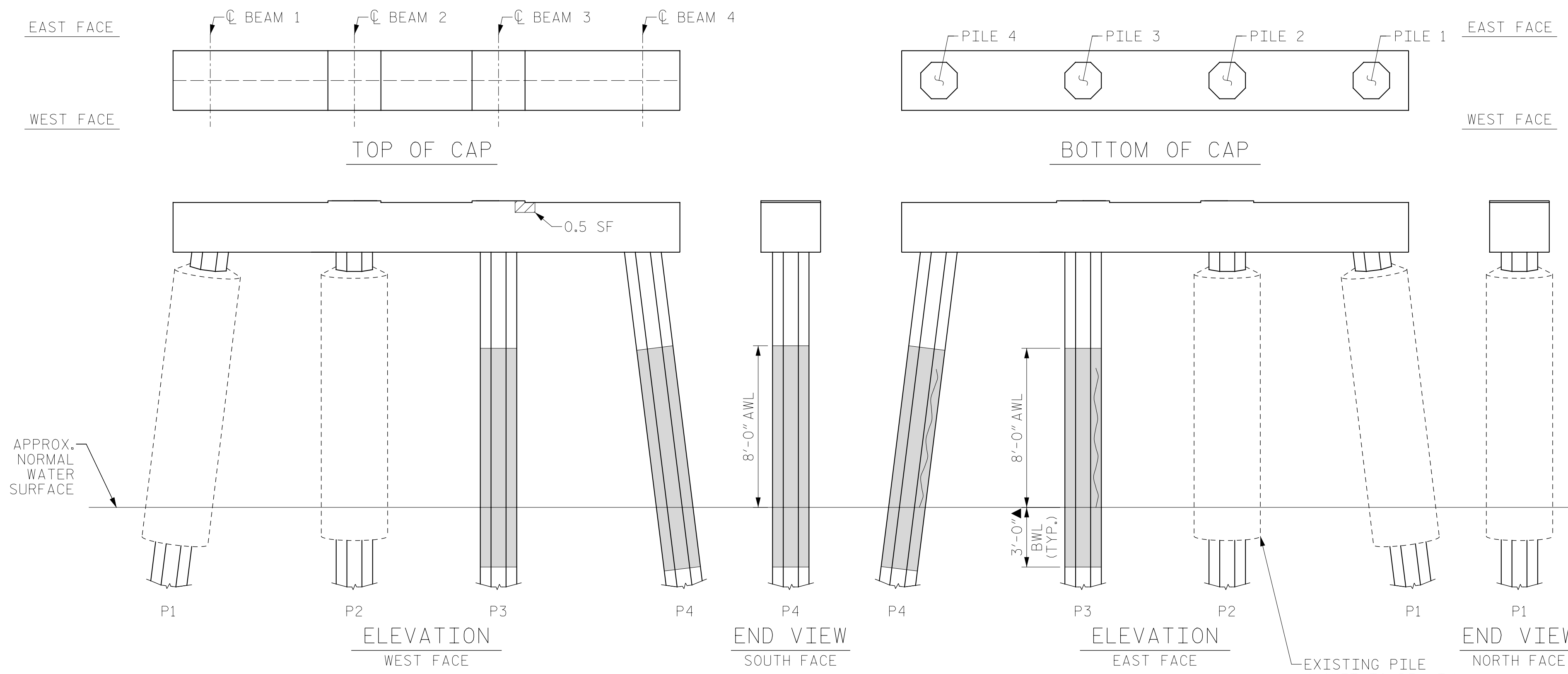
BENT 200

CAP REPAIRS				
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	9.8 SF	4.4 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	189.1 SF			
FRP PROTECTIVE SYSTEM BWL	73.2 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

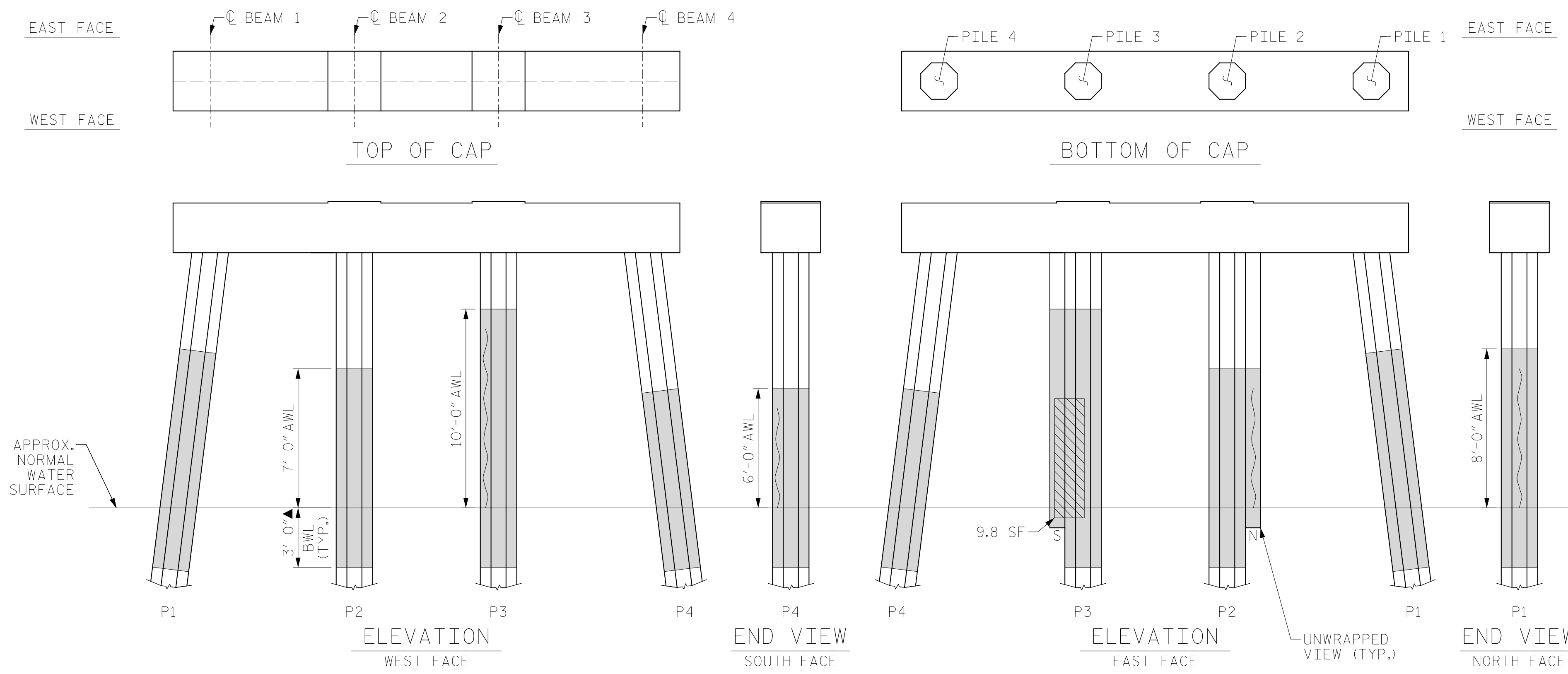
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 199

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 200

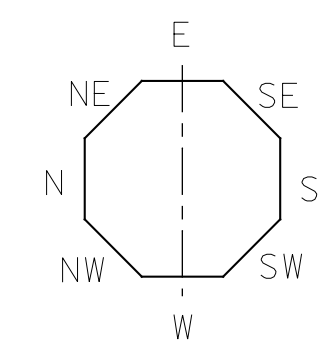
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 199	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	3	3	-	6	7	-	7	-
	PILE 4	-	4	6	5	5	-	7	-
BENT 200	PILE 1	7	5	2	-	-	6	-	7
	PILE 2	4	-	4	4	1	-	1	6
	PILE 3	9	-	-	5	-	-	7	-
	PILE 4	3	-	5	4	4	2	2	-

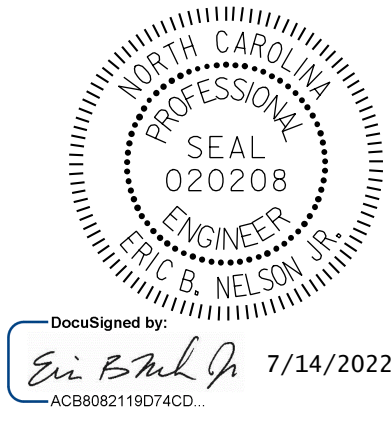
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Shaded Box] - FRP PROTECTIVE SYSTEM
- [Hatched Box] - PILE CONCRETE RESTORATION
- [Dotted Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 199 & BENT 200

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 201

CAP REPAIRS				
SHOTCRETE REPAIRS	1.0 SF	0.5 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	140.3 SF			
FRP PROTECTIVE SYSTEM BWL	54.9 SF			

BENT 202

CAP REPAIRS				
SHOTCRETE REPAIRS	2.0 SF	1.0 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	23.8 SF	10.1 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	122.0 SF			
FRP PROTECTIVE SYSTEM BWL	54.9 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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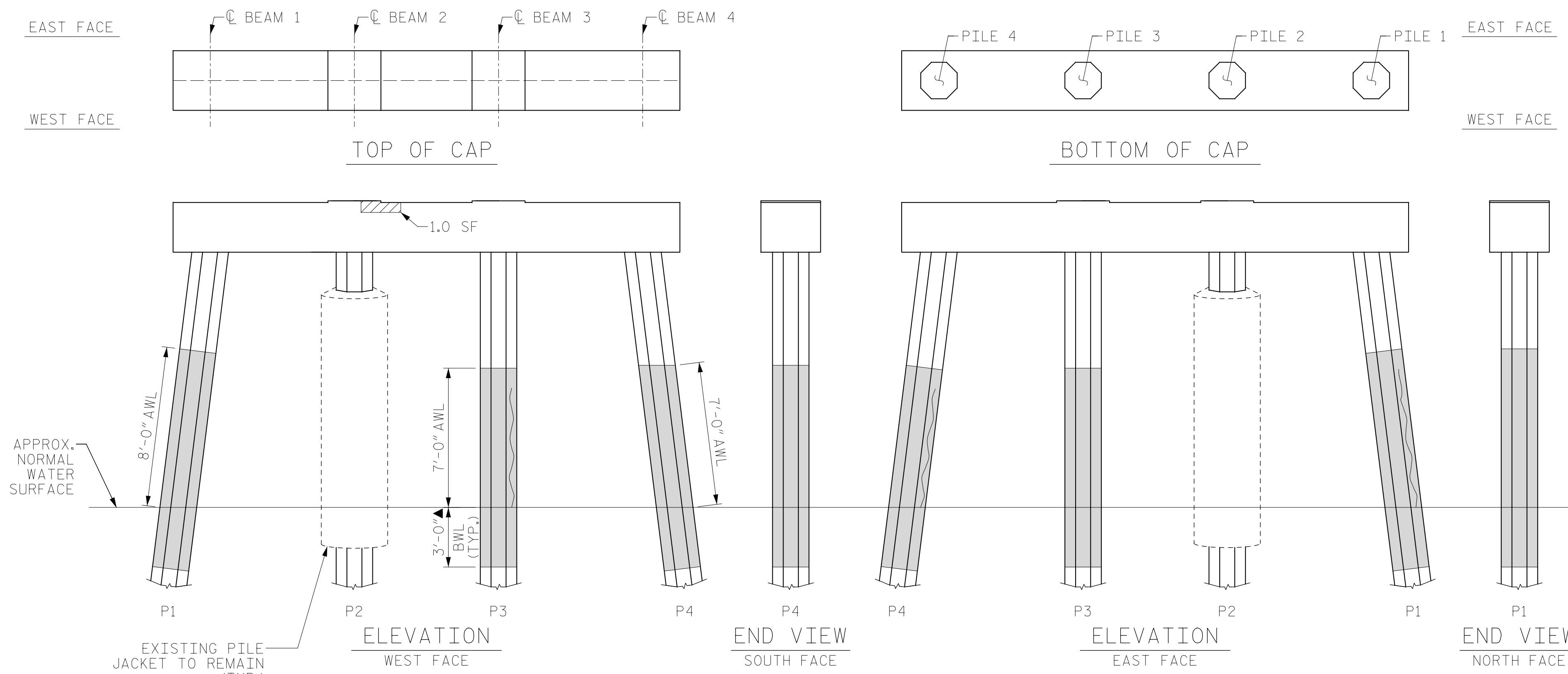
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

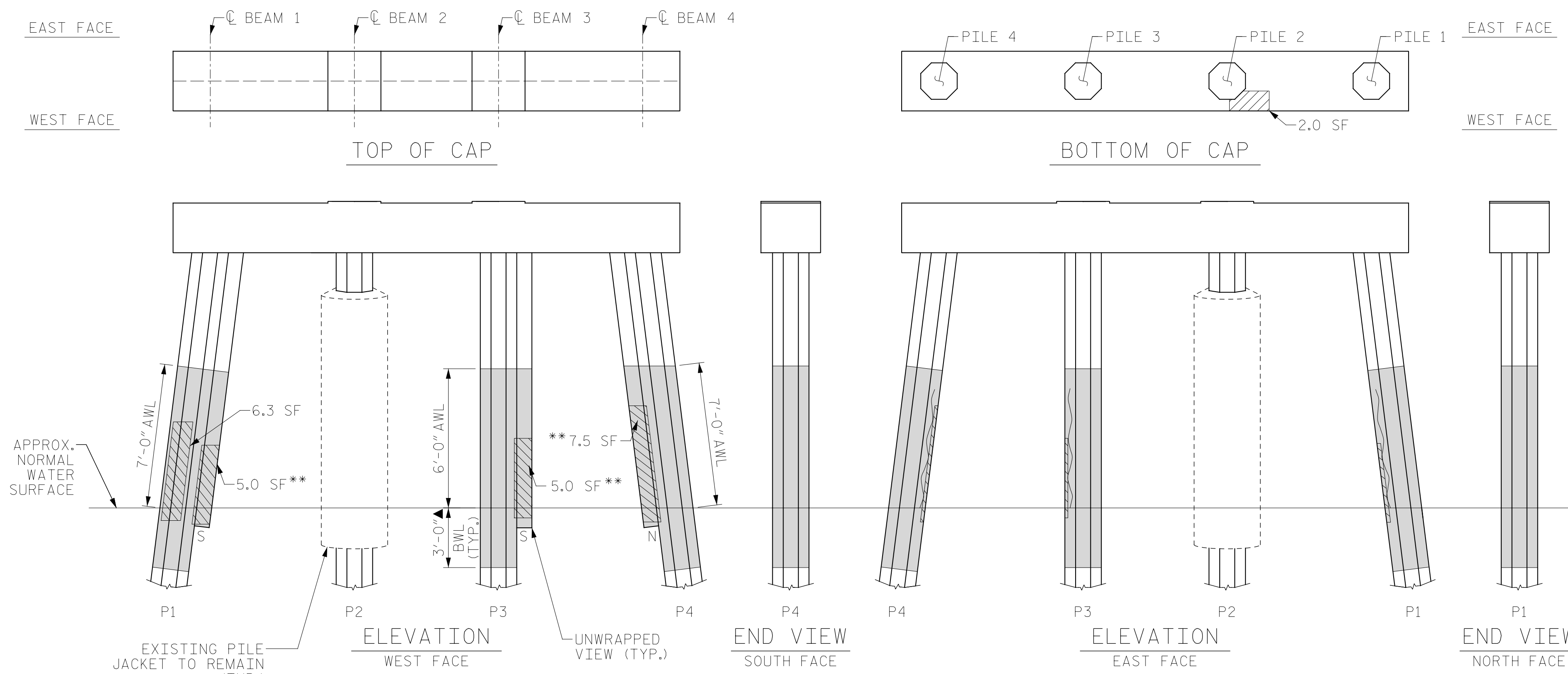
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 201

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



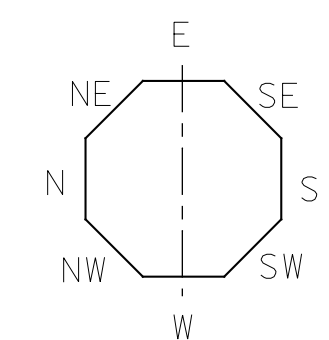
BENT 202

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	CRACK QUANTITIES							
		NW	W	SW	S	SE	E	NE	N
201	PILE 1	-	5	8	8	5	3	7	7
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	3	4	6	-	3	5	5	-
	PILE 4	-	3	-	4	3	3	6	4
202	PILE 1	-	3	-	-	6	-	-	5
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	3	3	-	-	5	-	-	3
	PILE 4	-	3	2	3	3	5	6	-

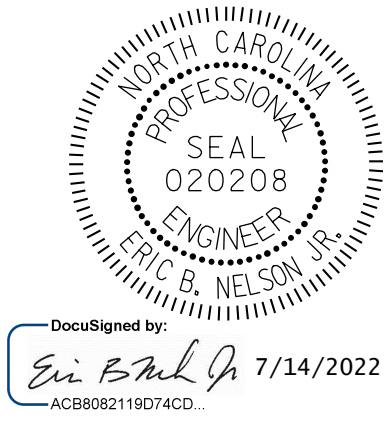
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 201 & BENT 202**

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 203

CAP REPAIRS			
SHOTCRETE REPAIRS	3.5 SF	1.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	49.5 SF	21.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	175.9 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 204

CAP REPAIRS			
SHOTCRETE REPAIRS	10.0 SF	5.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	14.0 SF	5.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	122.0 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

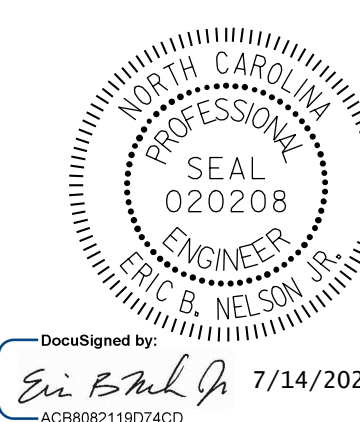
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 203	PILE 1	3	-	-	-	-	7	-	1
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	6	-	-	7	-	5	7	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 6	-	-	-	4	2	4	-	4
BENT 204	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	3	7	8	6	-	5	9	-
	PILE 4	7	-	6	-	2	-	4	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

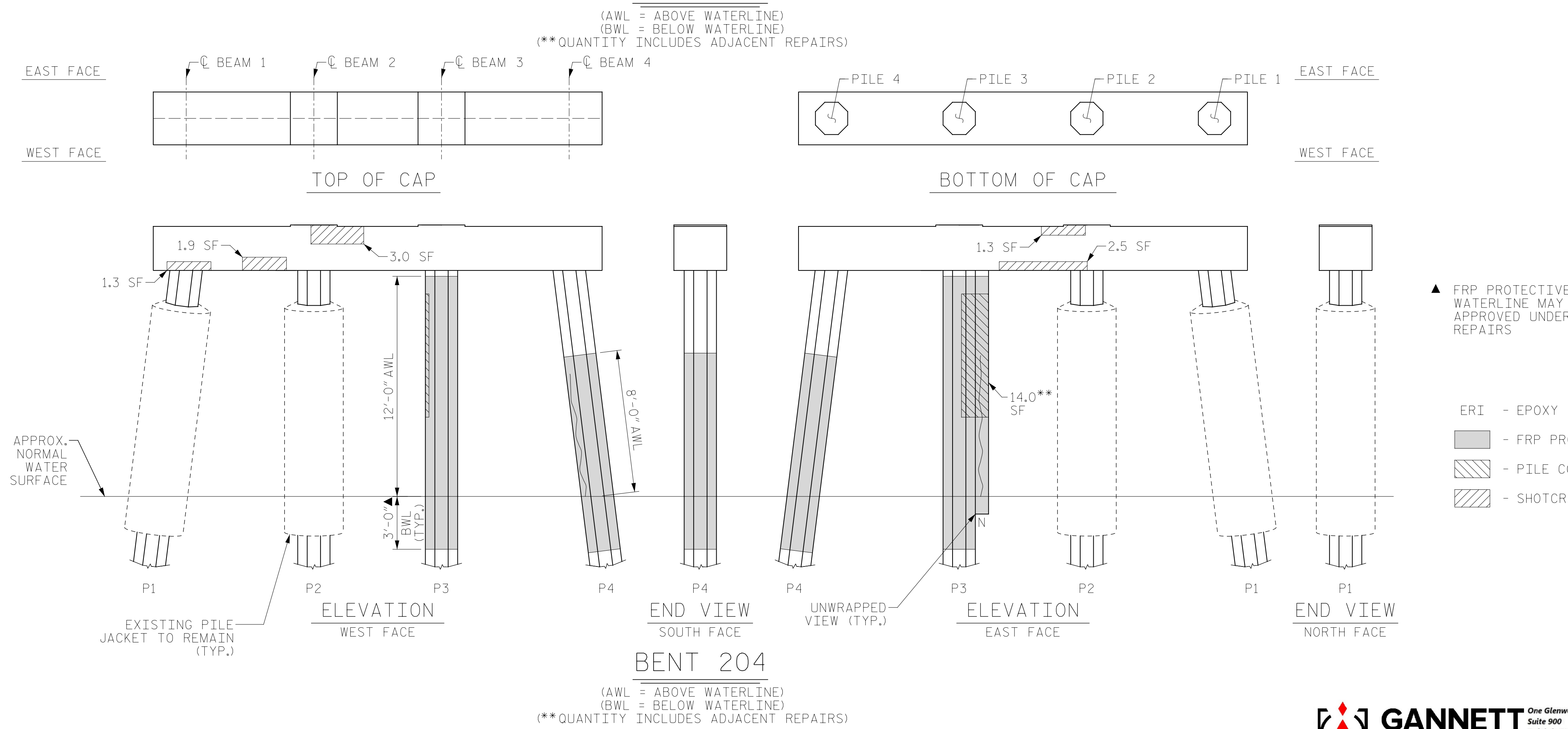
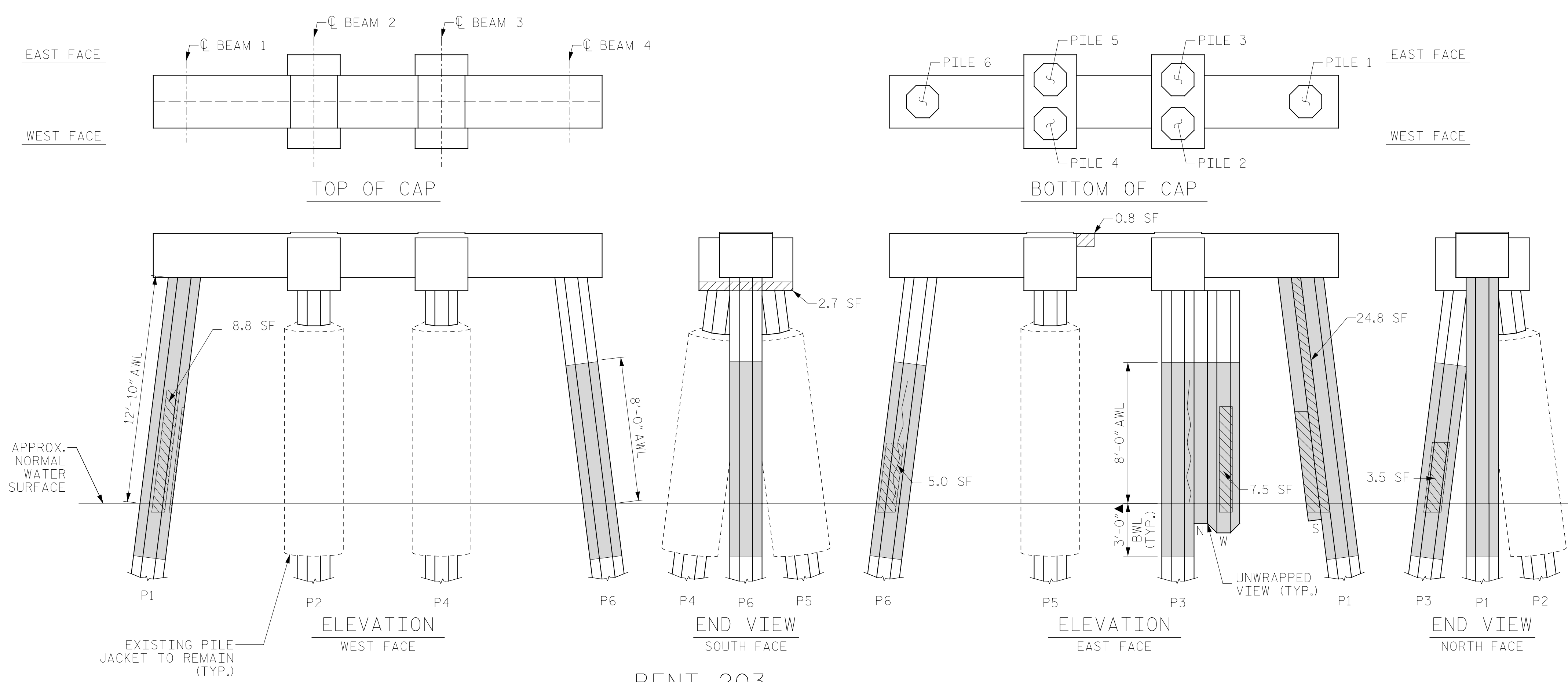
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENT 203 & BENT 204**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			271
2			4			355



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 205

CAP REPAIRS			
SHOTCRETE REPAIRS	2.3 SF	1.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	36.3 SF	15.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	311.7 SF		
FRP PROTECTIVE SYSTEM BWL	109.8 SF		

BENT 206

CAP REPAIRS			
SHOTCRETE REPAIRS	14.8 SF	7.4 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.8 SF	3.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	122.0 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

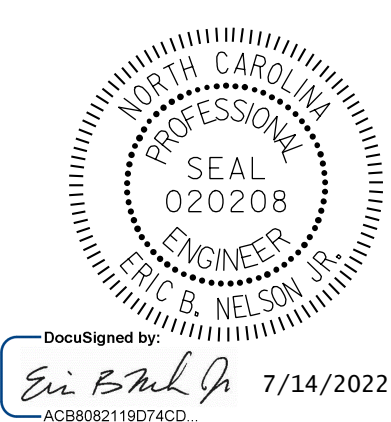
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 205	PILE 1	8	6	-	-	-	3	5	-
	PILE 2	-	-	-	-	4	6	4	-
	PILE 3	-	-	-	-	9	-	6	8
	PILE 4	-	-	-	-	8	9	9	-
	PILE 5	-	-	-	-	2	-	-	6
	PILE 6	-	-	-	-	-	-	-	-
BENT 206	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	7	-	8	3	9	9	-	-
	PILE 4	6	6	6	6	6	9	4	8

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

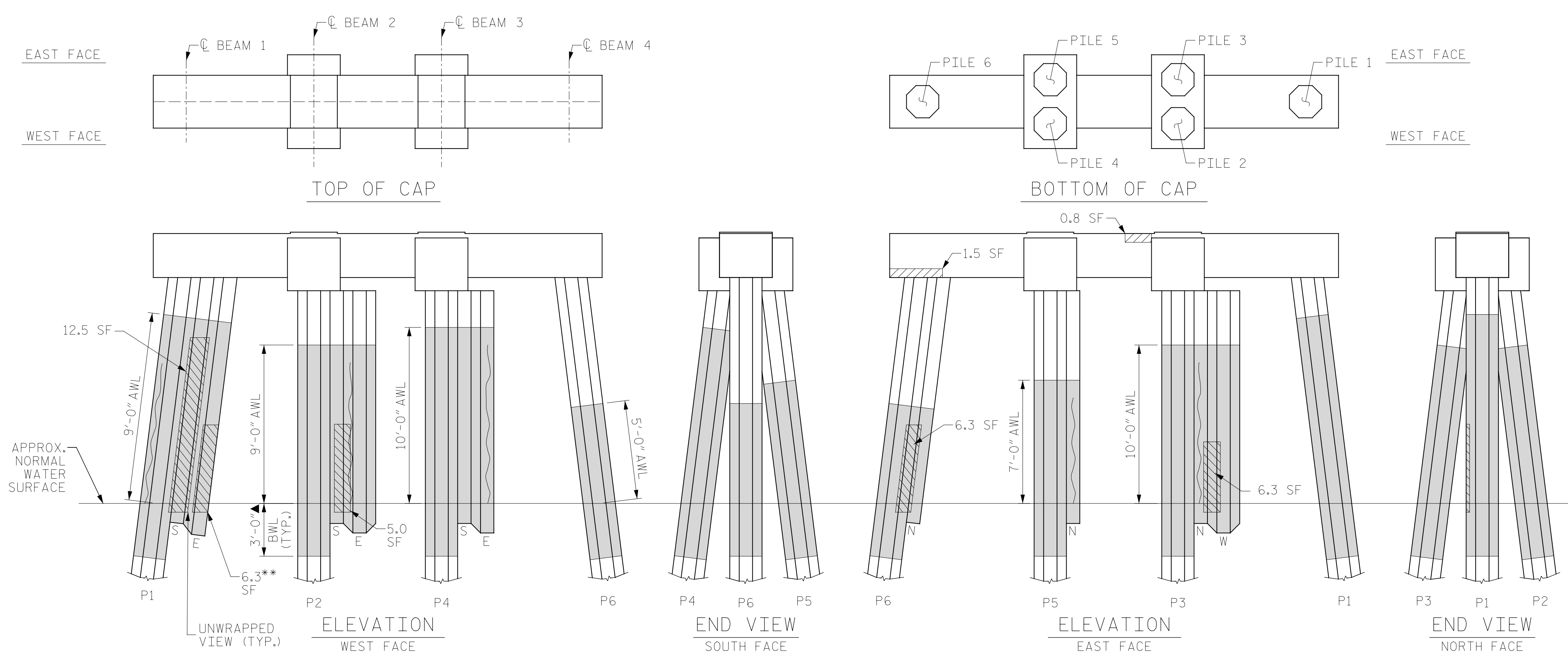
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

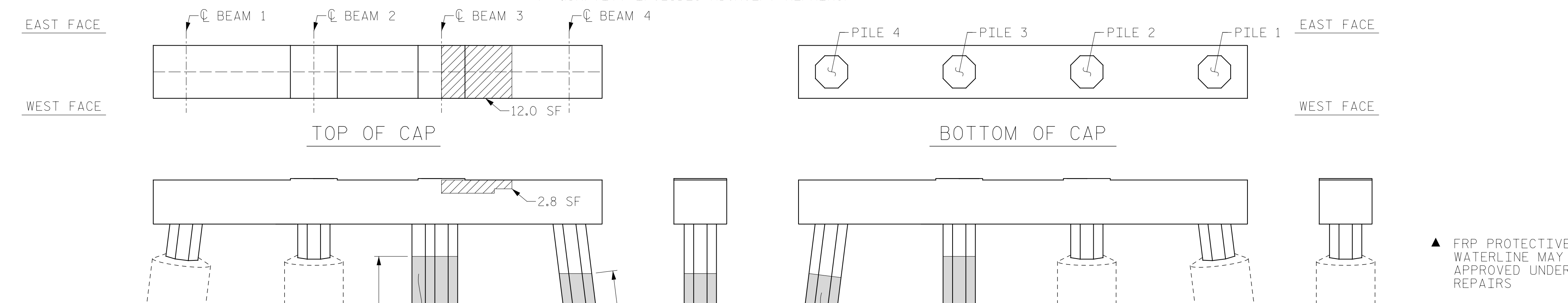
BENT 205 & BENT 206

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			



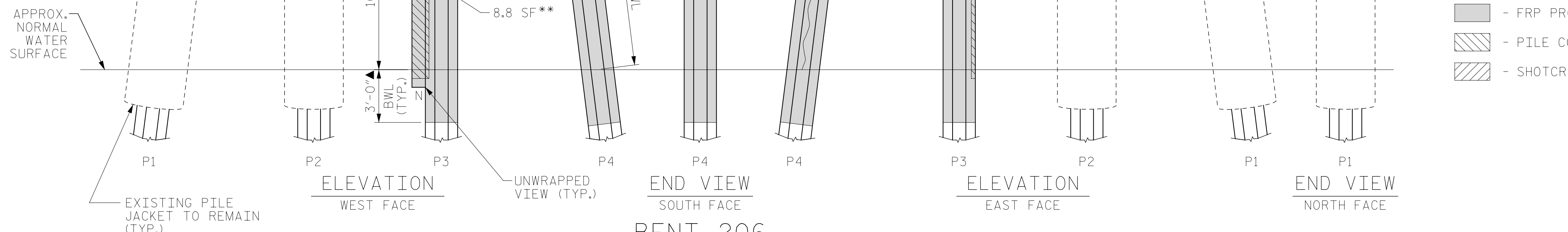
BENT 205

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 206

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 207

CAP REPAIRS			
SHOTCRETE REPAIRS	8.5 SF	4.3 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	- SF	- CF	SF CF
FRP PROTECTIVE SYSTEM AWL	164.7 SF		
FRP PROTECTIVE SYSTEM BWL	54.9 SF		

BENT 208

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	38.9 SF	15.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	261.3 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

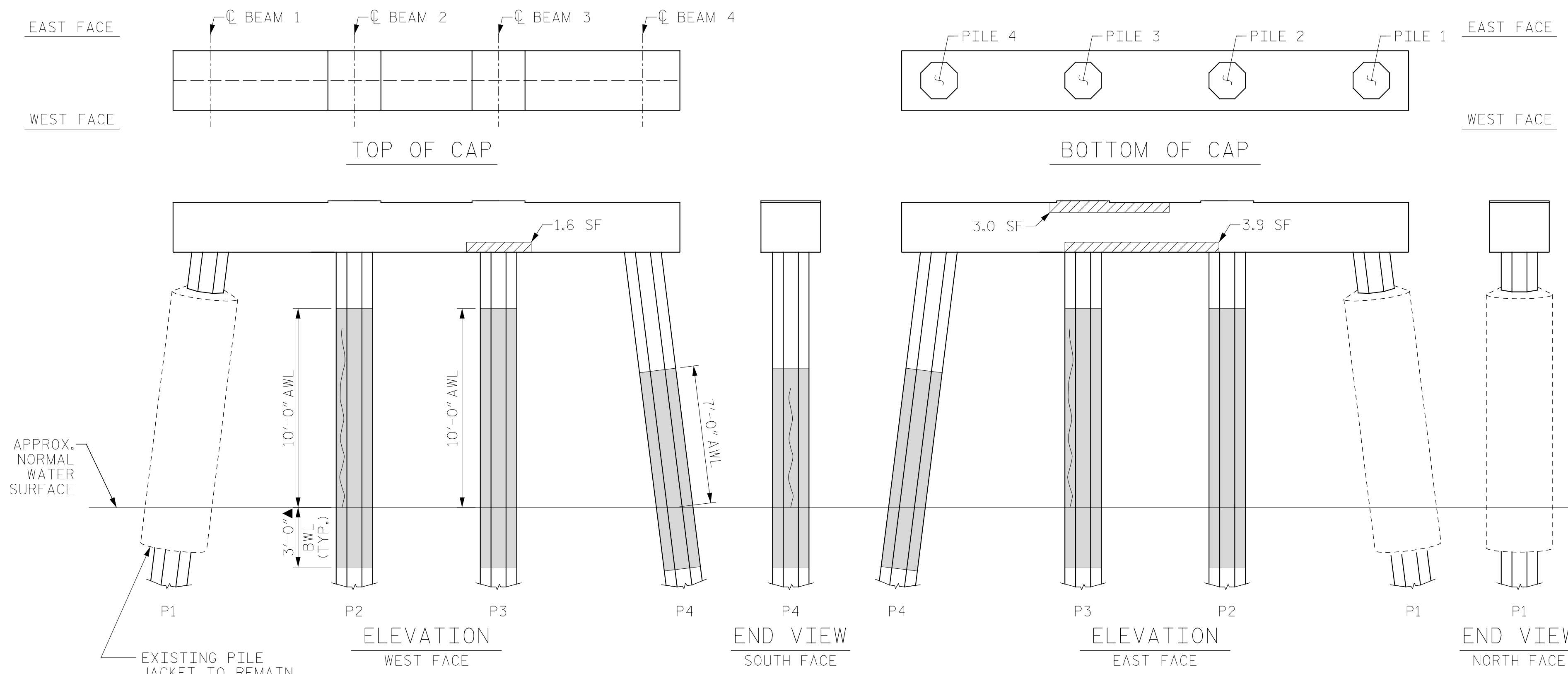
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

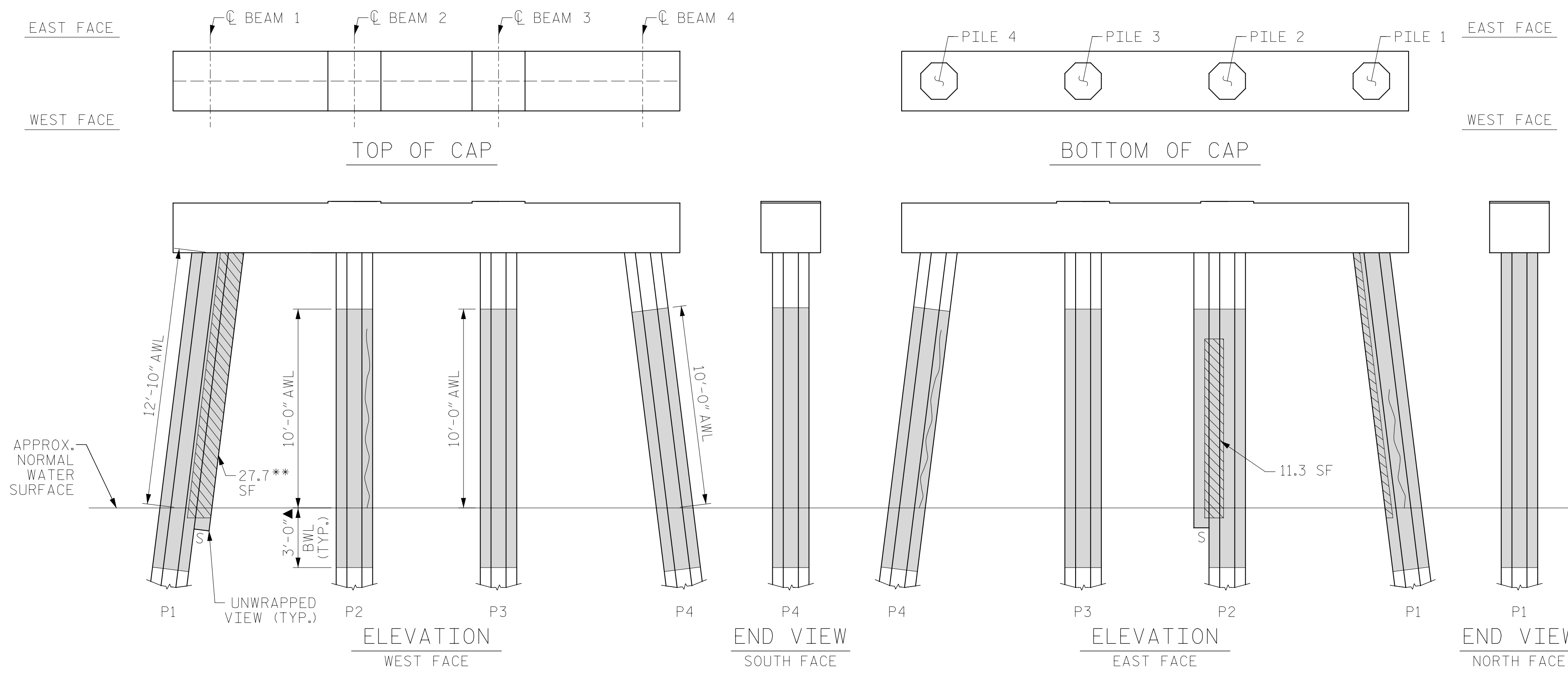
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 207

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



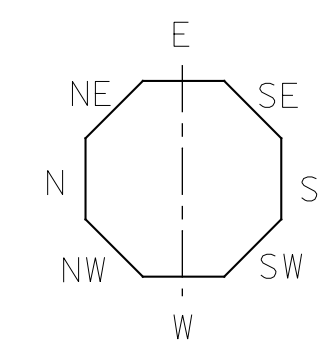
BENT 208

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 207	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	9	-	-	4	-	-	9	4
	PILE 3	-	-	-	8	9	-	9	4
	PILE 4	5	-	6	6	4	6	-	-
BENT 208	PILE 1	-	-	-	-	-	6	-	4
	PILE 2	5	-	9	-	-	4	5	6
	PILE 3	-	-	3	-	9	-	9	6
	PILE 4	6	-	3	4	5	-	9	-

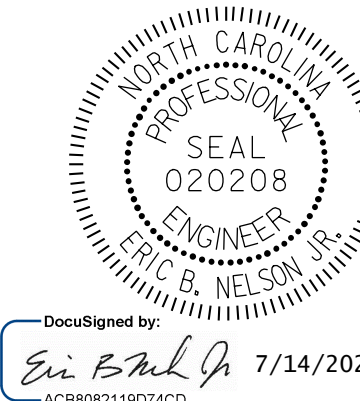
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
  
 BENT 207 & BENT 208

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-273
1			3			TOTAL SHEETS
2			4			355

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AS-BUILT REPAIR QUANTITY TABLE

BENT 209

CAP REPAIRS			
SHOTCRETE REPAIRS	3.1 SF	1.6 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	74.9 SF	31.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	289.8 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 210

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	7.5 SF	3.2 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	139.3 SF		
FRP PROTECTIVE SYSTEM BWL	36.6 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

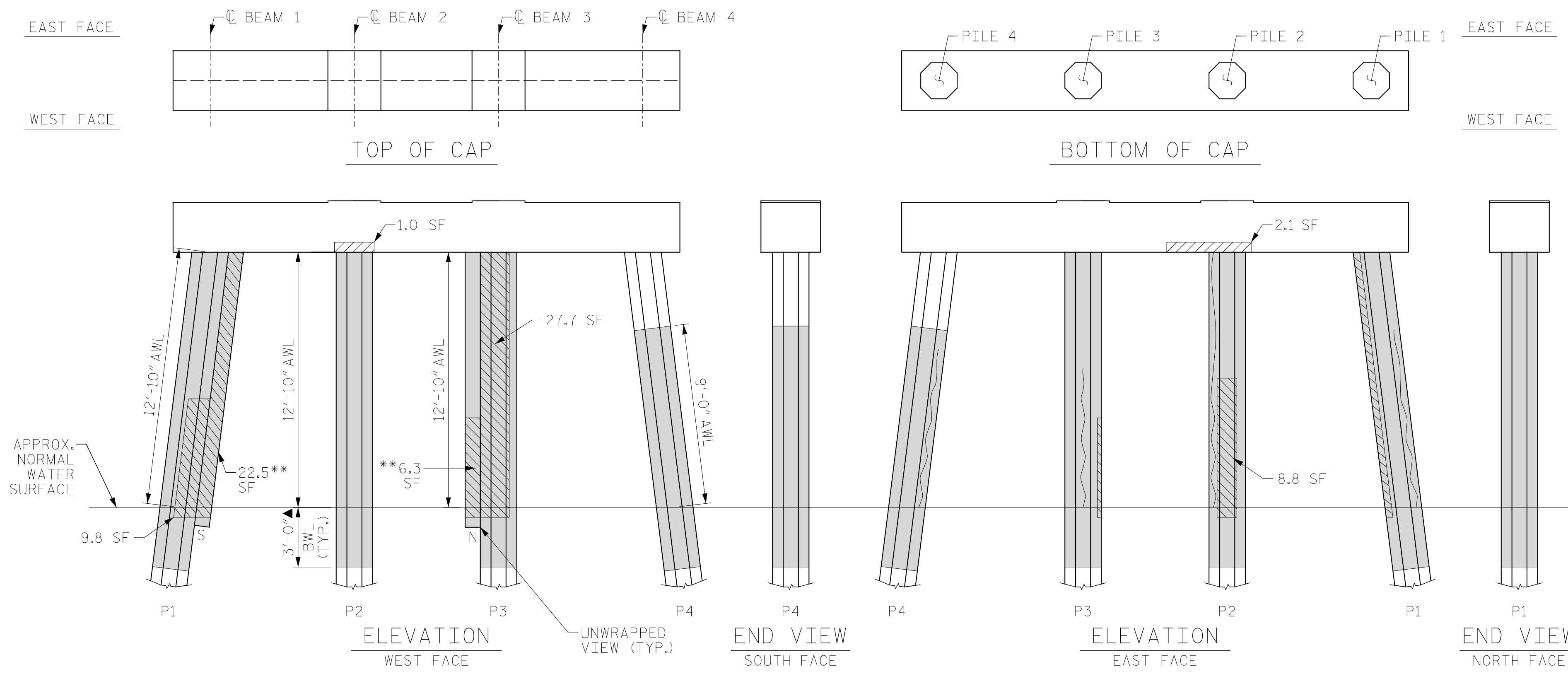
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

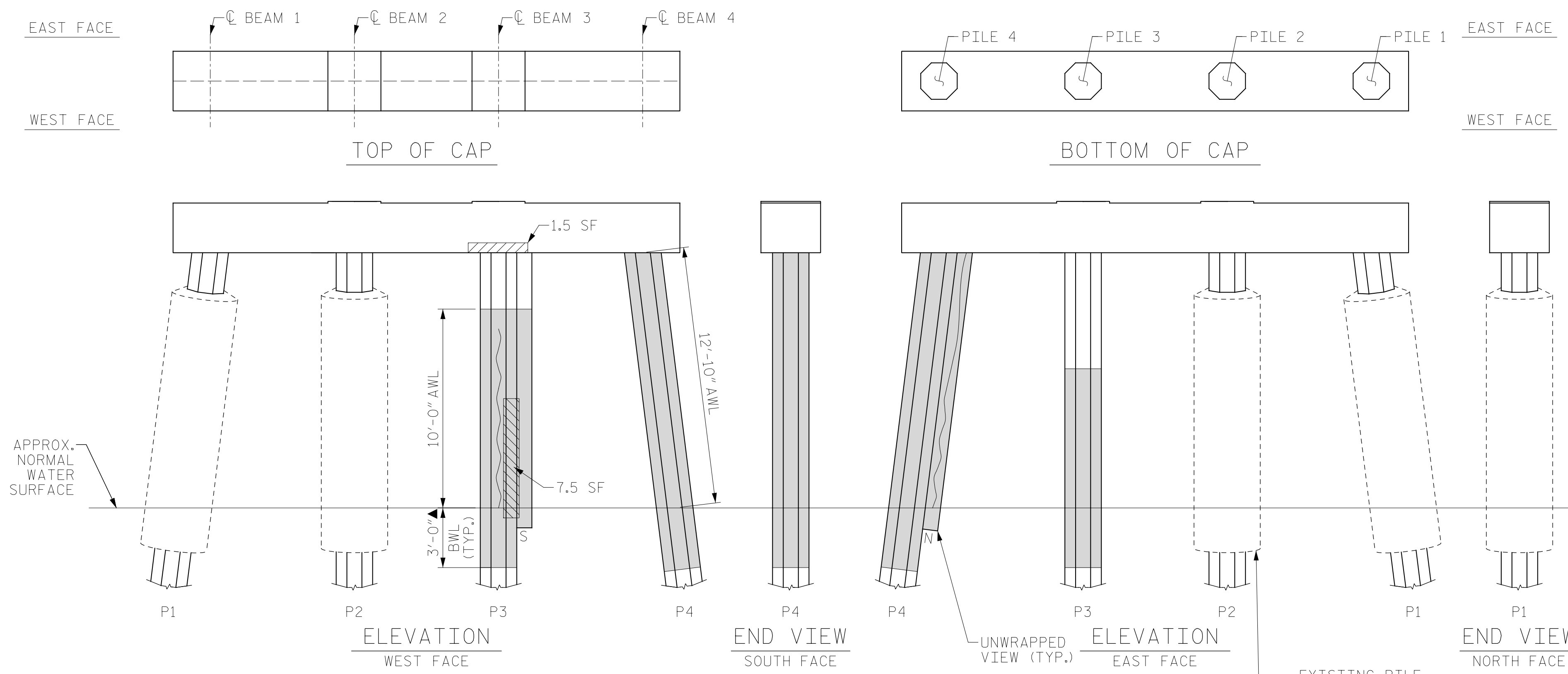
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 209

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



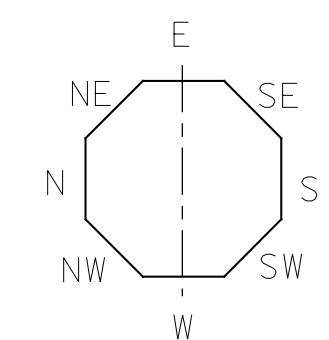
BENT 210

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 209	PILE 1	8	-	-	-	-	-	9	3
	PILE 2	8	3	3	5	12	-	-	10
	PILE 3	-	-	4	-	-	7	7	-
	PILE 4	-	-	-	5	5	4	8	7
BENT 210	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	6	9	-	-	7	7	-	-
	PILE 4	4	-	-	-	6	4	9	12

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 209 & BENT 210

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-274
1			3			TOTAL SHEETS
2			4			355



AS-BUILT REPAIR QUANTITY TABLE

BENT 211

CAP REPAIRS			
SHOTCRETE REPAIRS	3.8 SF	1.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	52.1 SF	21.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	318.2 SF		
FRP PROTECTIVE SYSTEM BWL	91.5 SF		

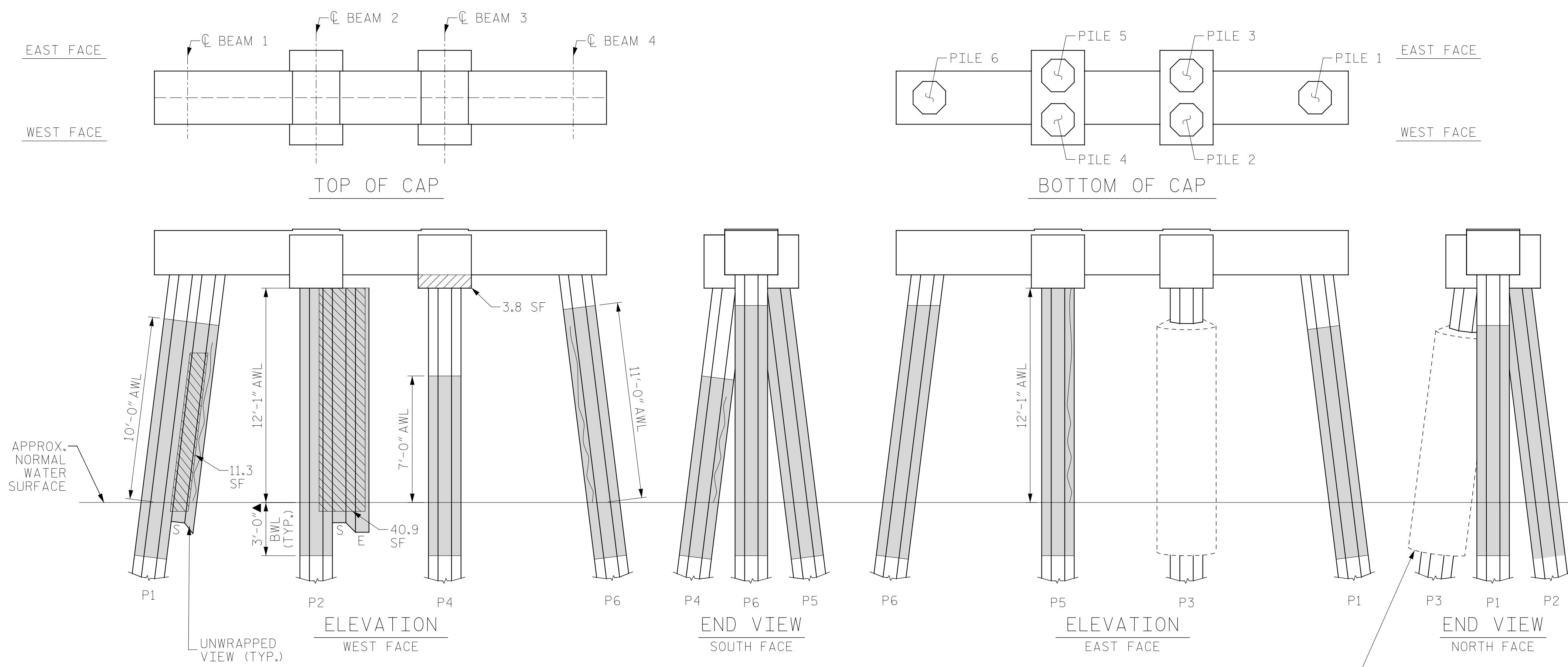
BENT 212

CAP REPAIRS			
SHOTCRETE REPAIRS	11.1 SF	5.6 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	84.8 SF	34.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	272.5 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

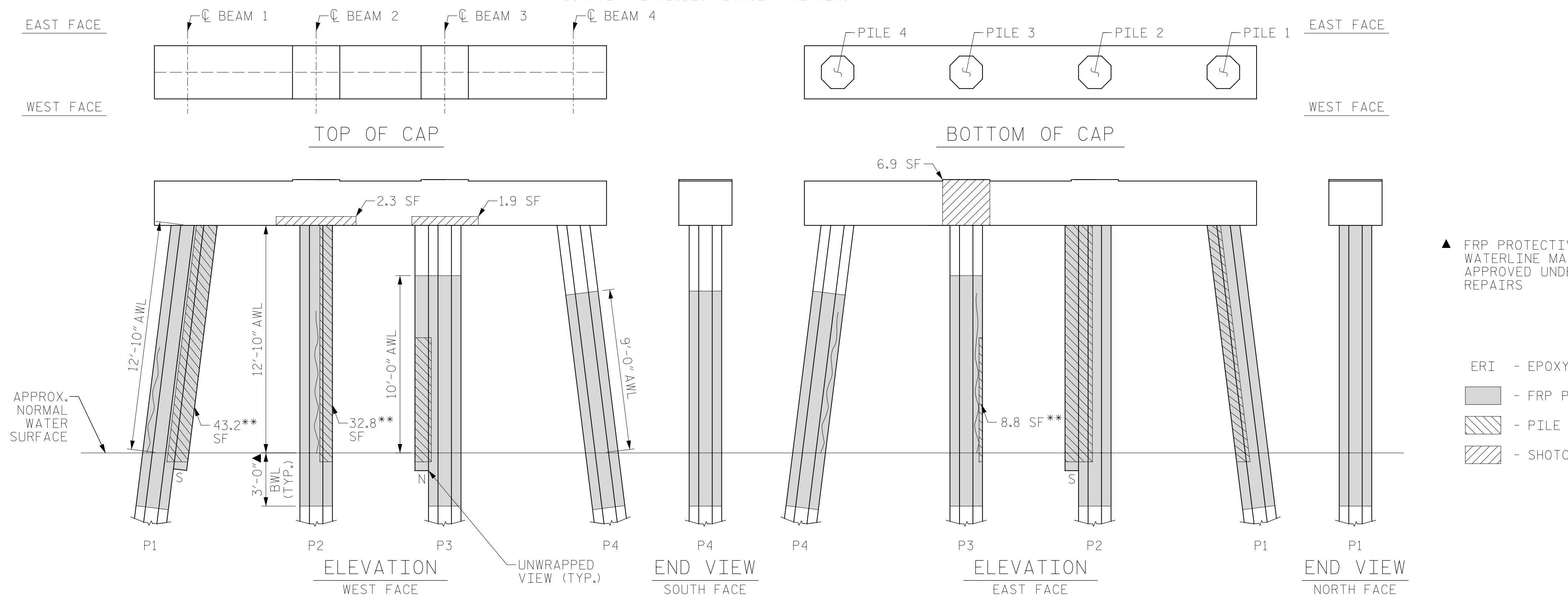
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 211

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 212

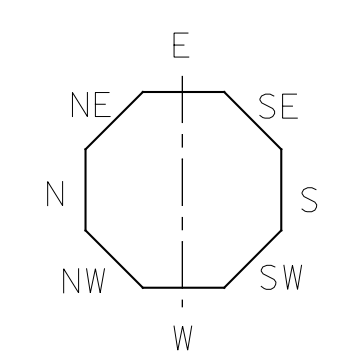
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

	NW	W	SW	S	SE	E	NE	N
BENT 211	PILE 1	-	7	9	-	9	6	7
	PILE 2	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-
	PILE 4	5	-	-	5	6	5	-
	PILE 5	-	-	12	7	-	-	12
BENT 212	PILE 1	6	-	-	-	-	4	4
	PILE 2	-	8	-	-	-	8	5
	PILE 3	4	-	3	2	7	-	9
	PILE 4	3	4	3	4	4	5	8

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 211 & BENT 212

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-275
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 213

CAP REPAIRS			
SHOTCRETE REPAIRS	2.5 SF	1.3 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.0 SF	11.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	213.5 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 214

CAP REPAIRS			
SHOTCRETE REPAIRS	12.3 SF	6.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.3 SF	11.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	170.8 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 213	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	5	-	-	-	-	-	9	9
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	7	-	-	4	6	6	7	-
	PILE 5	-	6	-	5	-	4	3	-
BENT 214	PILE 1	3	-	-	-	-	6	2	3
	PILE 2	2	4	4	3	-	-	-	-
	PILE 3	4	1	6	5	6	-	3	3
	PILE 4	-	-	-	-	2	-	7	6

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

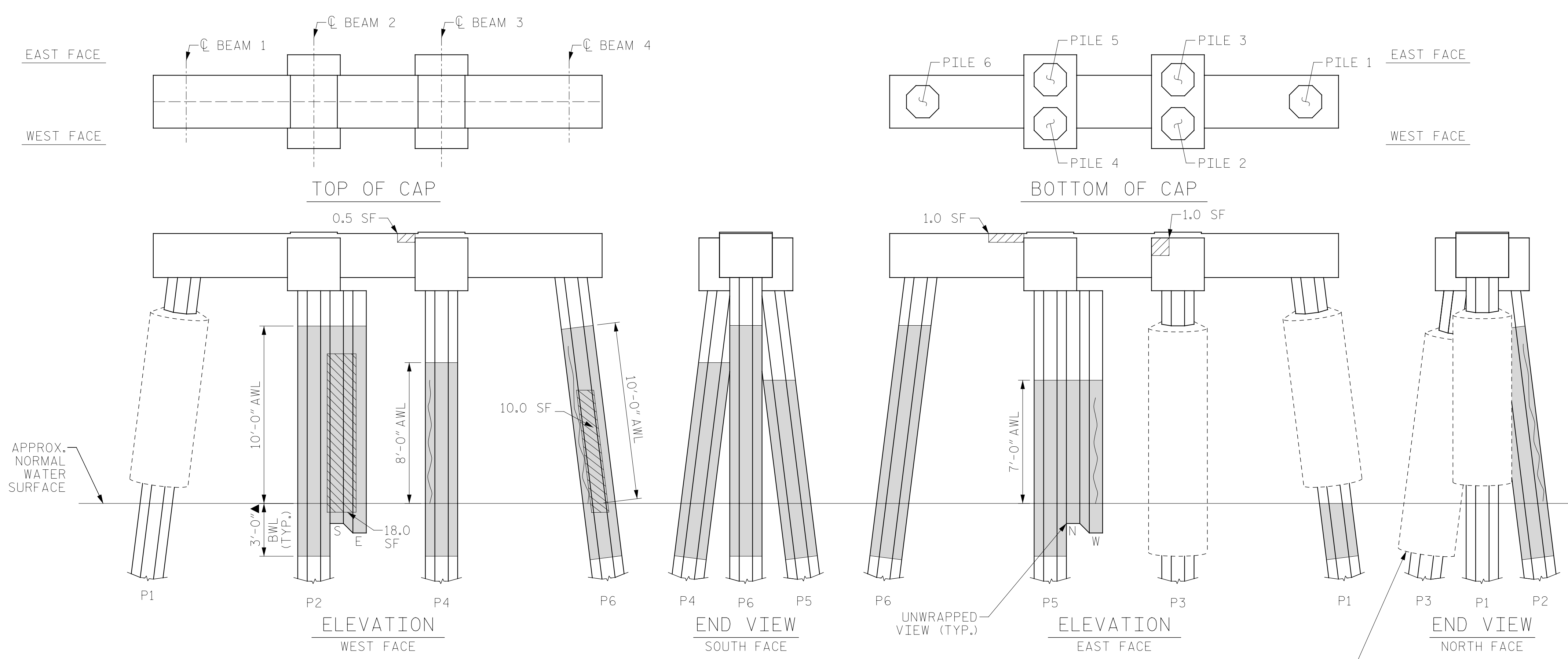
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

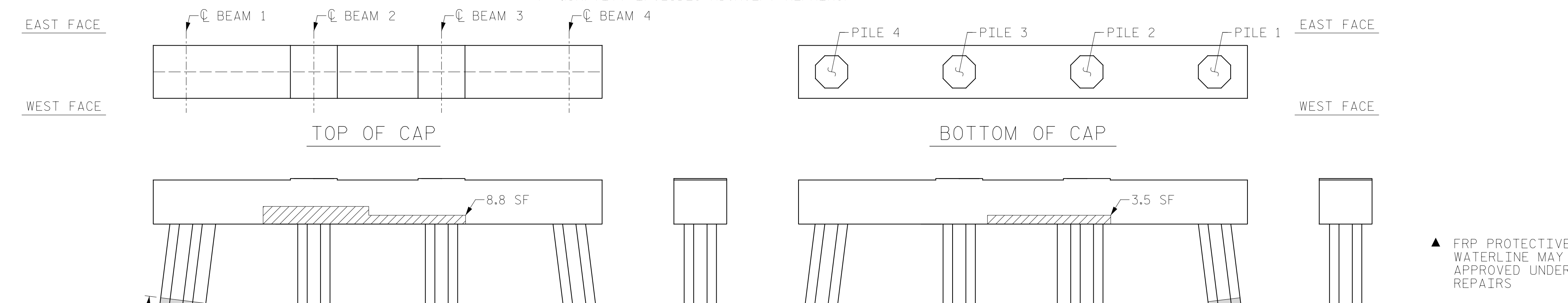
BENT 213 & BENT 214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-276
1			3			TOTAL SHEETS
2			4			355



BENT 213

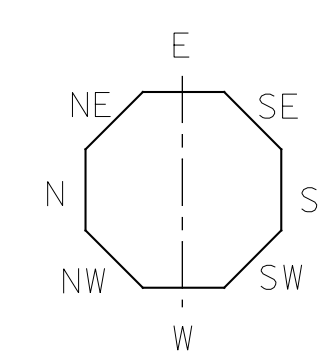
(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 214

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 215

CAP REPAIRS			
SHOTCRETE REPAIRS	10.6 SF	5.3 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	33.0 SF	14.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	206.8 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 216

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.8 SF	3.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	183.0 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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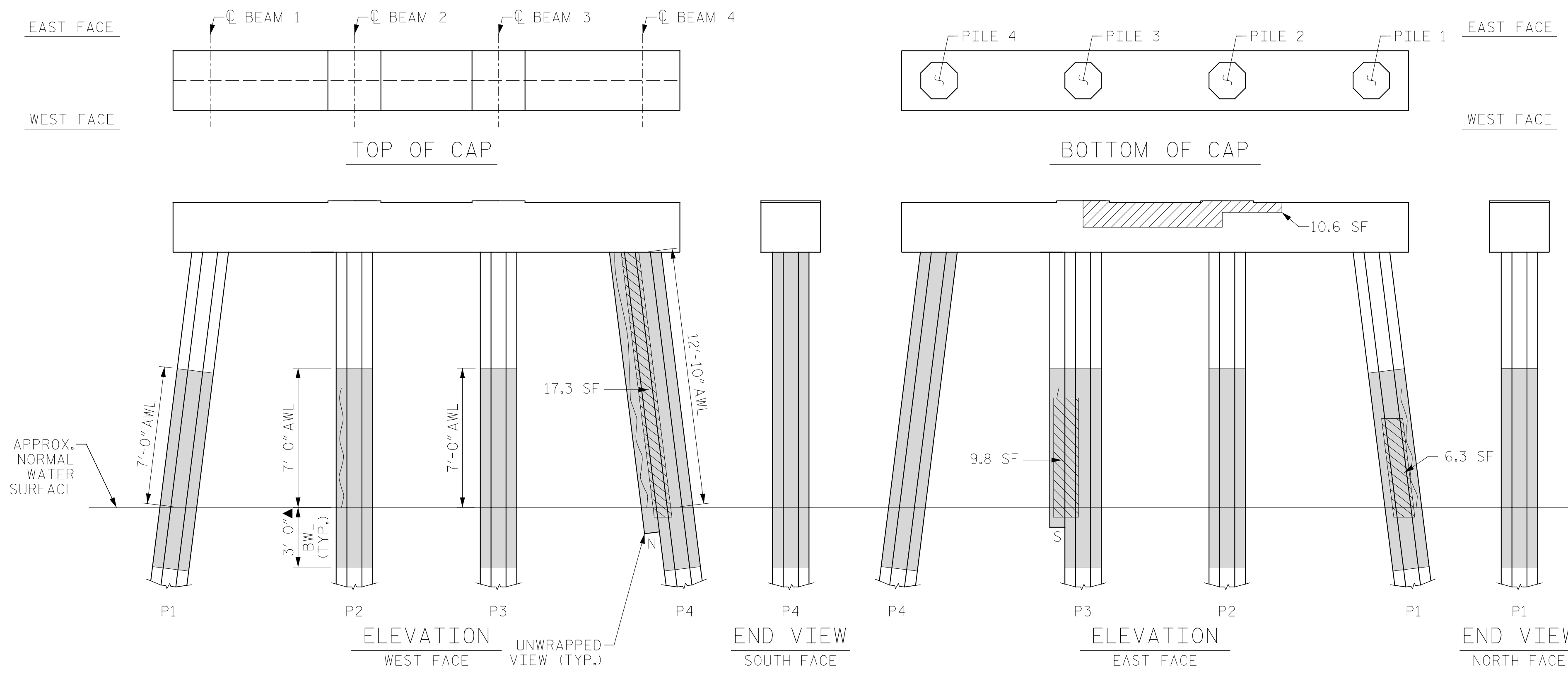
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

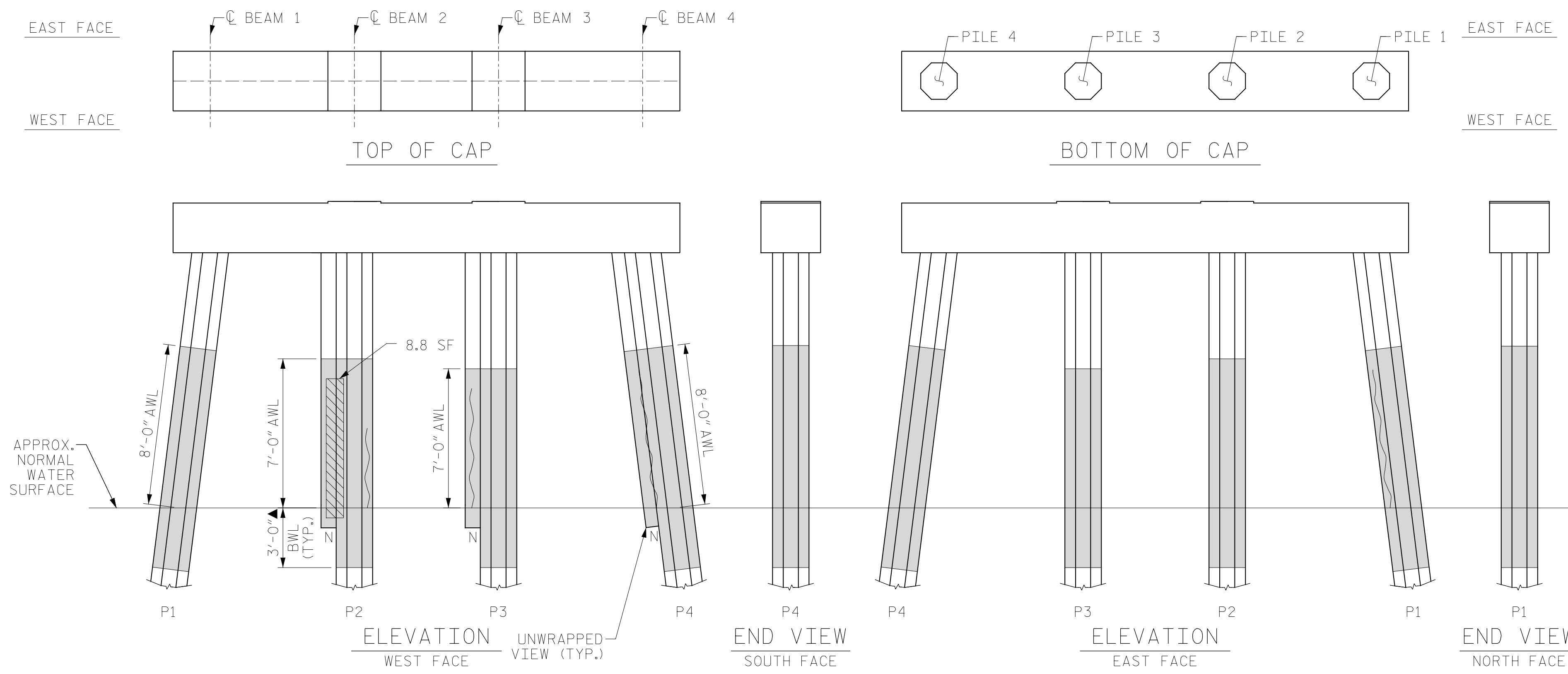
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 215

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 216

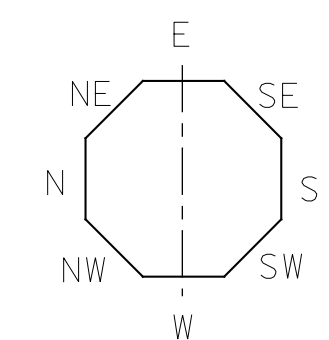
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

	NW	W	SW	S	SE	E	NE	N
BENT 215	PILE 1	-	6	-	3	6	-	6
	PILE 2	-	-	6	-	5	-	6
	PILE 3	-	-	4	6	-	-	-
	PILE 4	-	6	7	6	6	-	12
BENT 216	PILE 1	-	4	-	4	7	-	6
	PILE 2	-	2	4	3	3	2	-
	PILE 3	-	-	-	3	-	-	4
	PILE 4	-	6	-	5	-	-	3

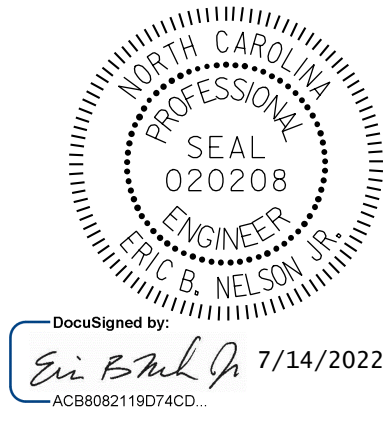
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Shaded Box] - FRP PROTECTIVE SYSTEM
- [Hatched Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 215 & BENT 216

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-277
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 217

CAP REPAIRS			
SHOTCRETE REPAIRS	11.3 SF	5.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.8 SF	12.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	207.4 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

BENT 218

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.0 SF	12.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	225.7 SF		
FRP PROTECTIVE SYSTEM BWL	73.2 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

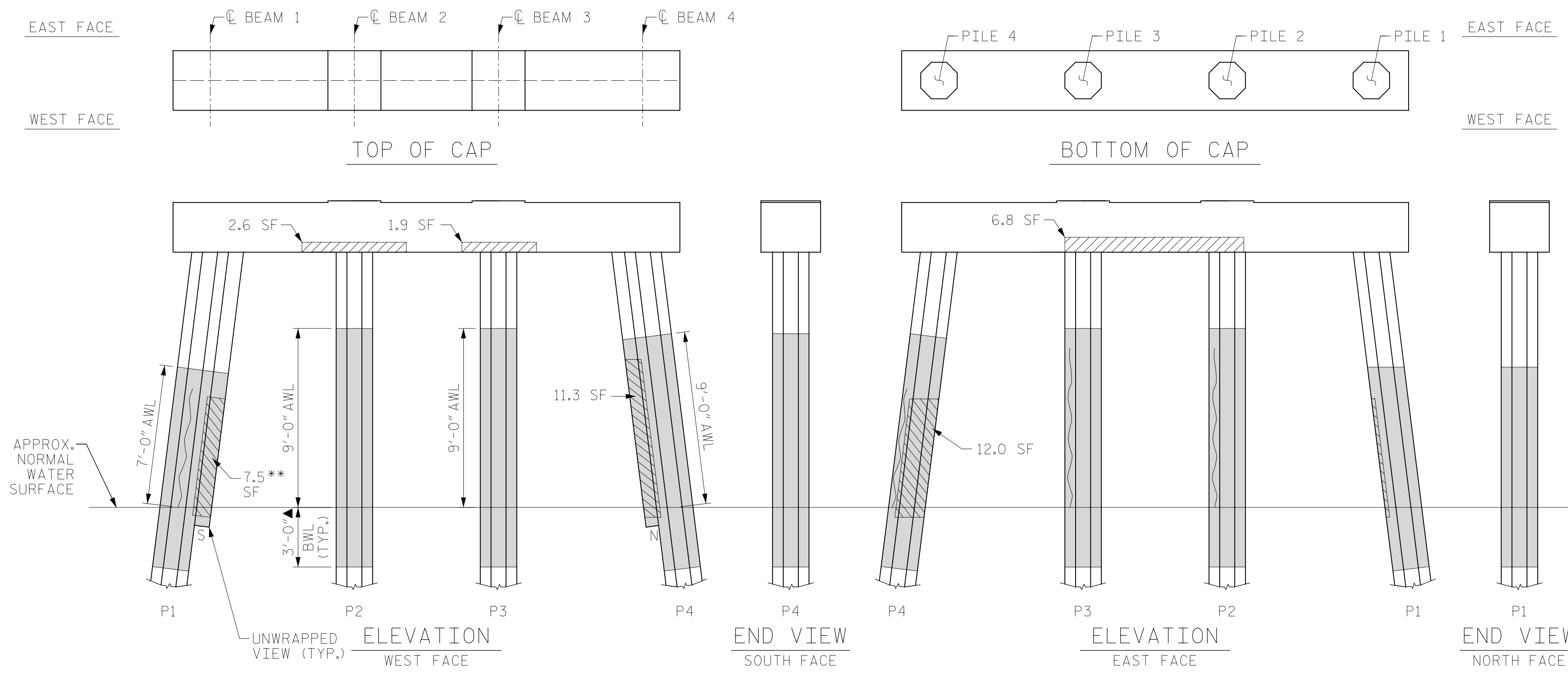
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

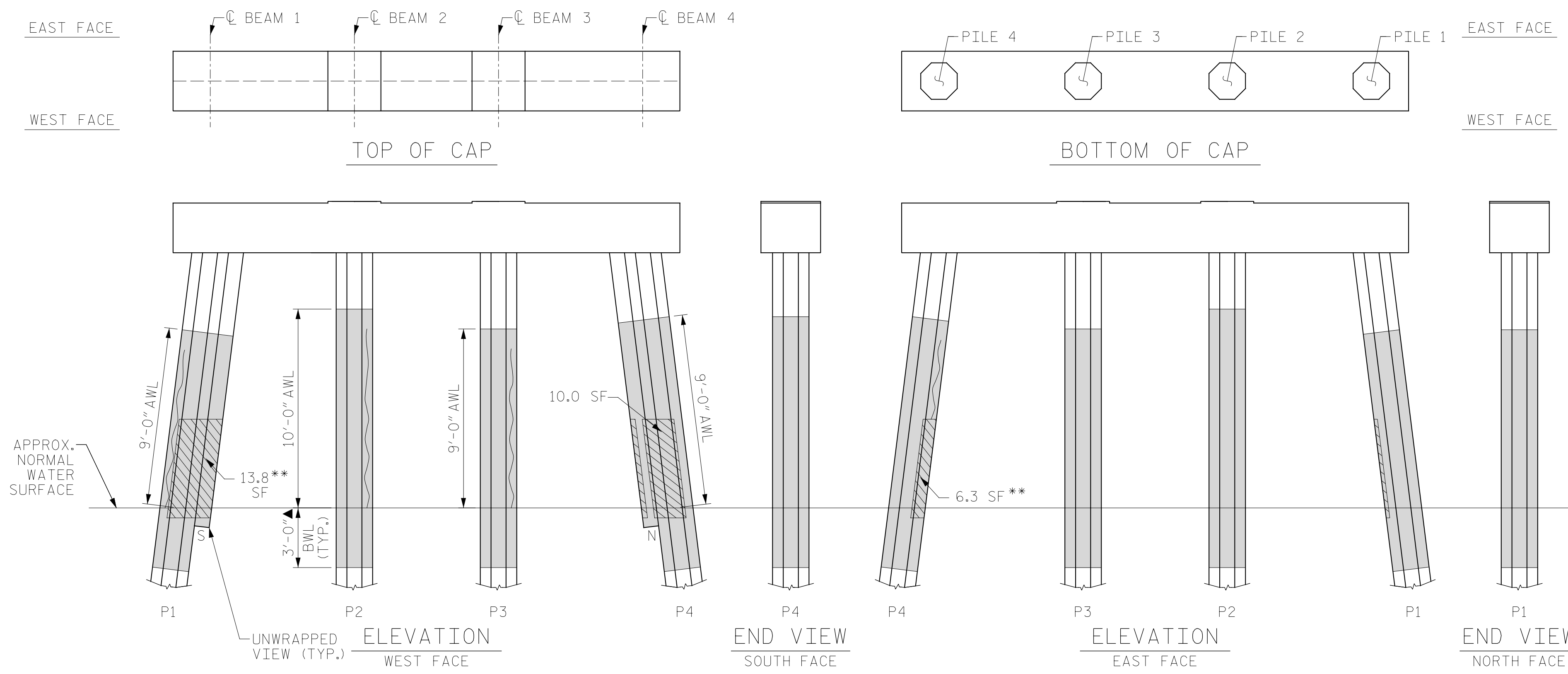
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 217

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



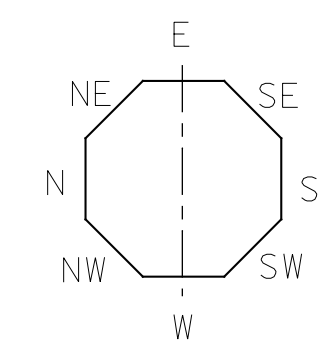
BENT 218

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
217	PILE 1	3	6	6	-	-	6	-	3
	PILE 2	-	4	-	2	8	-	7	5
	PILE 3	-	3	-	8	8	-	7	-
	PILE 4	3	-	3	5	6	-	-	-
218	PILE 1	8	-	-	-	6	5	-	-
	PILE 2	-	-	9	-	8	8	-	9
	PILE 3	-	-	8	-	7	6	-	8
	PILE 4	4	4	-	6	-	6	4	-

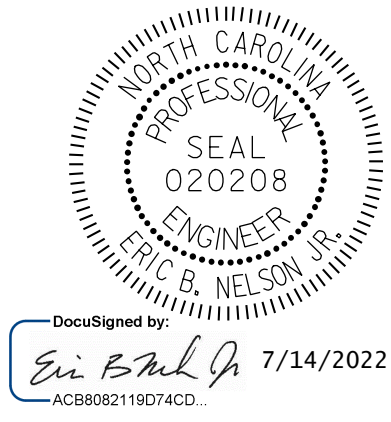
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
BENT 217 & BENT 218

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 219

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	61.5 SF	25.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	314.0 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

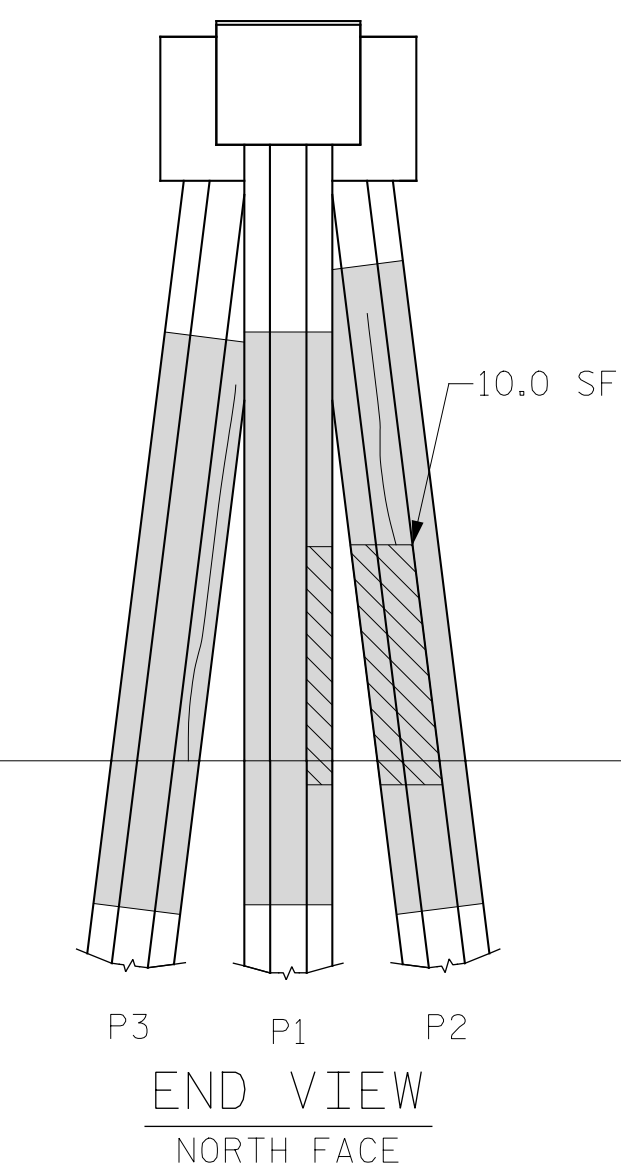
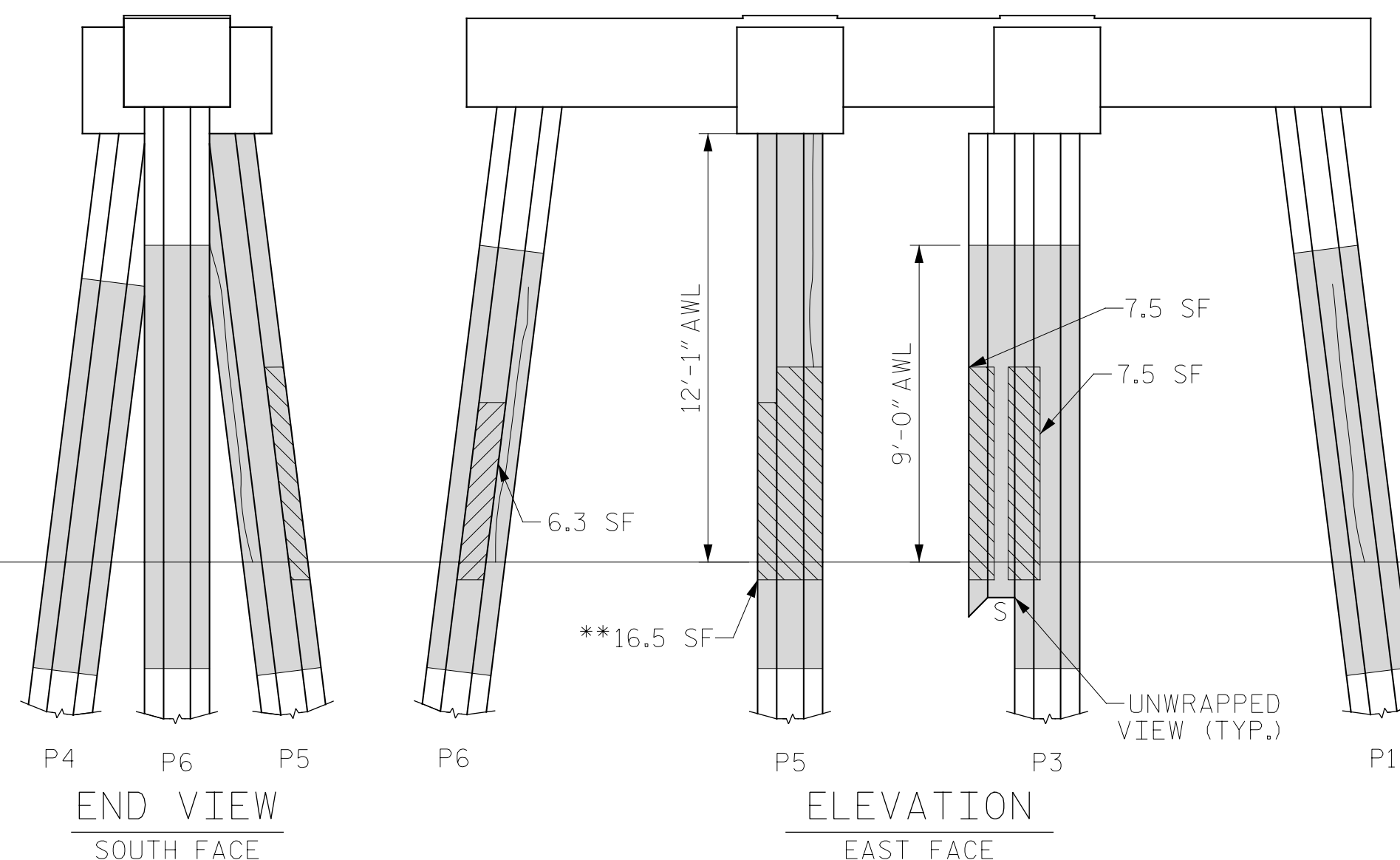
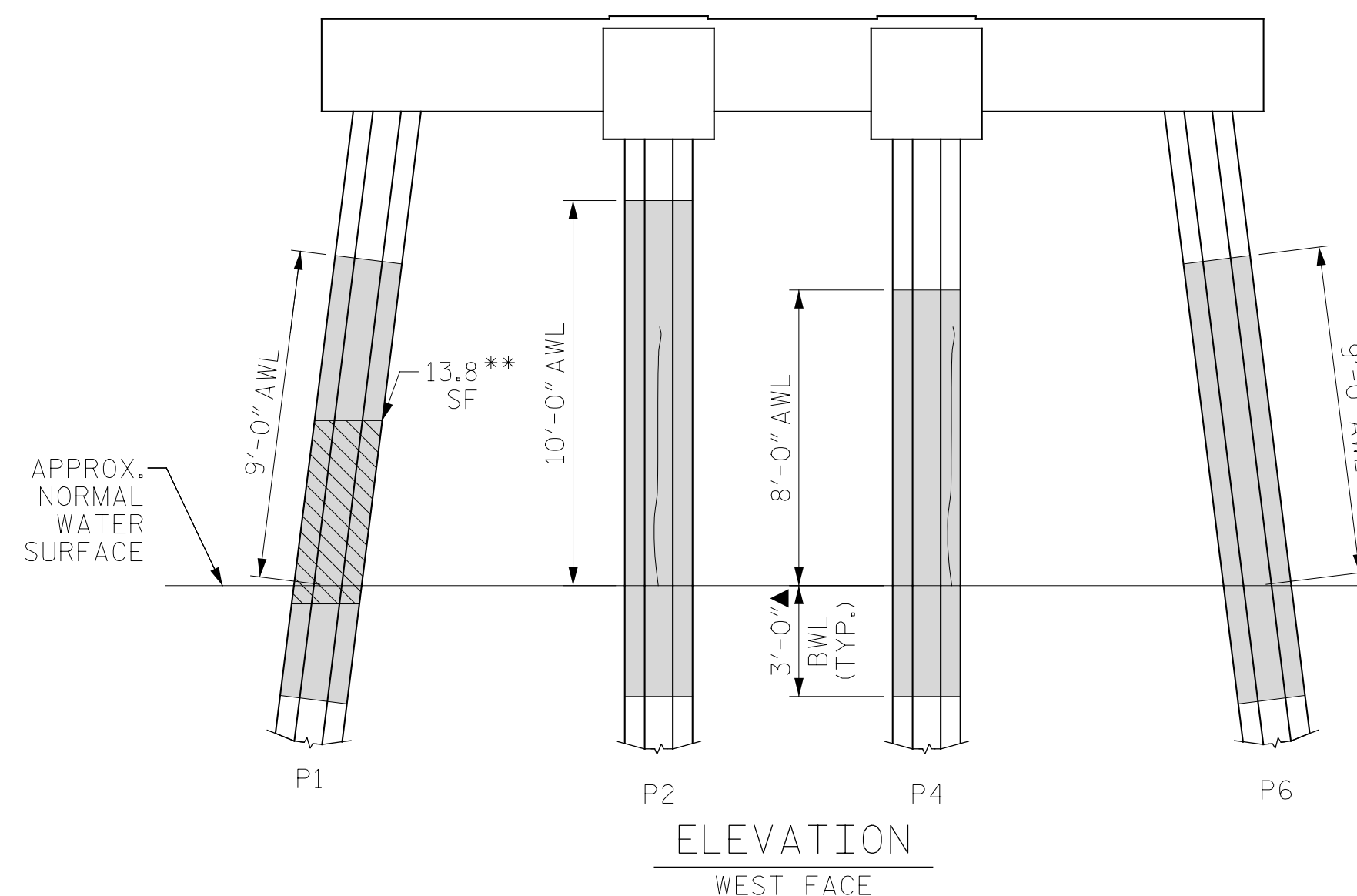
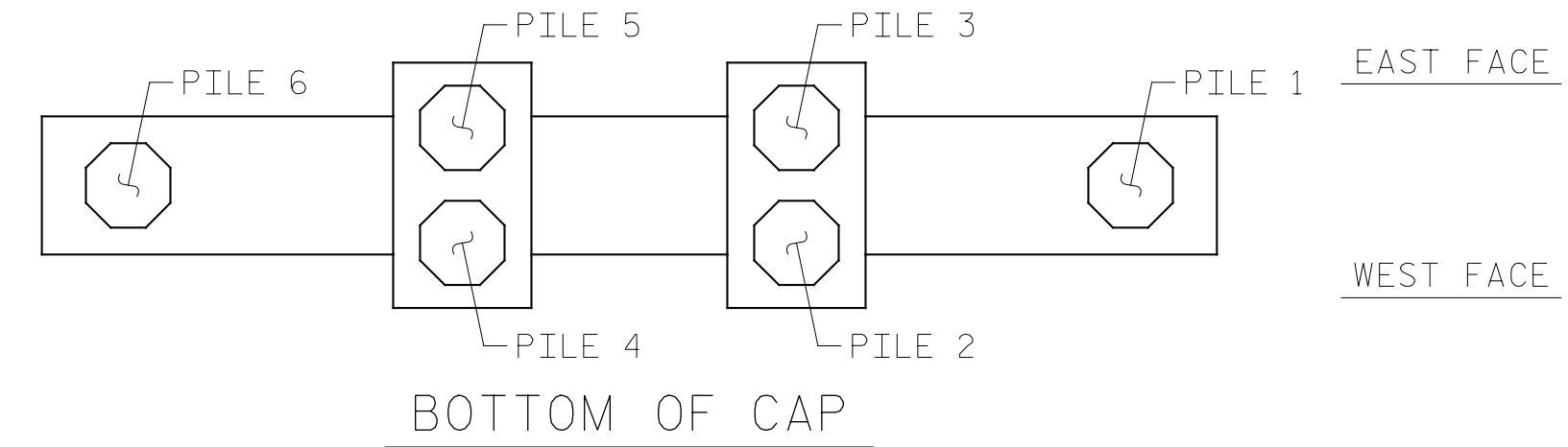
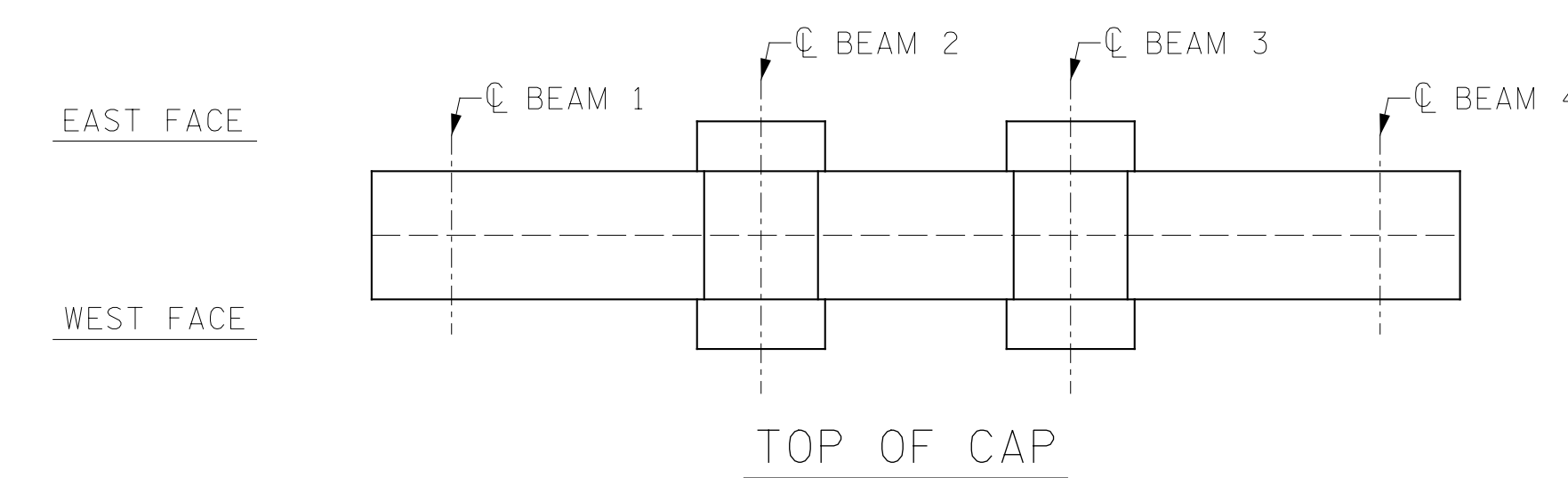
BENT 220

CAP REPAIRS			
SHOTCRETE REPAIRS	9.9 SF	5.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
ESTIMATE			
PILE CONCRETE RESTORATION	88.2 SF	33.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	282.3 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

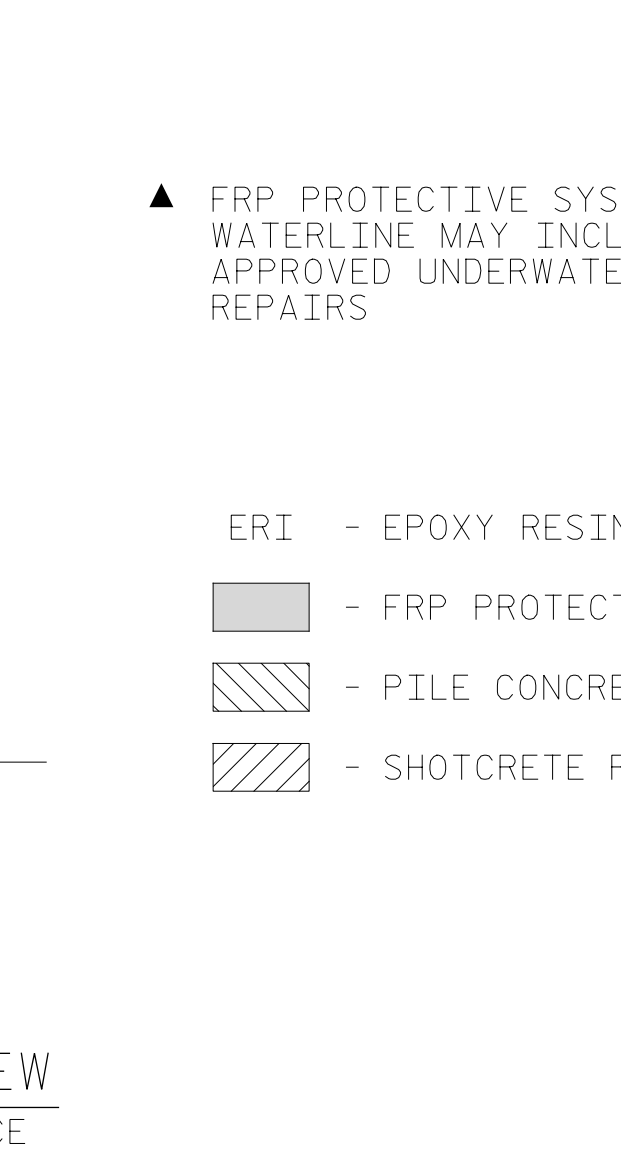
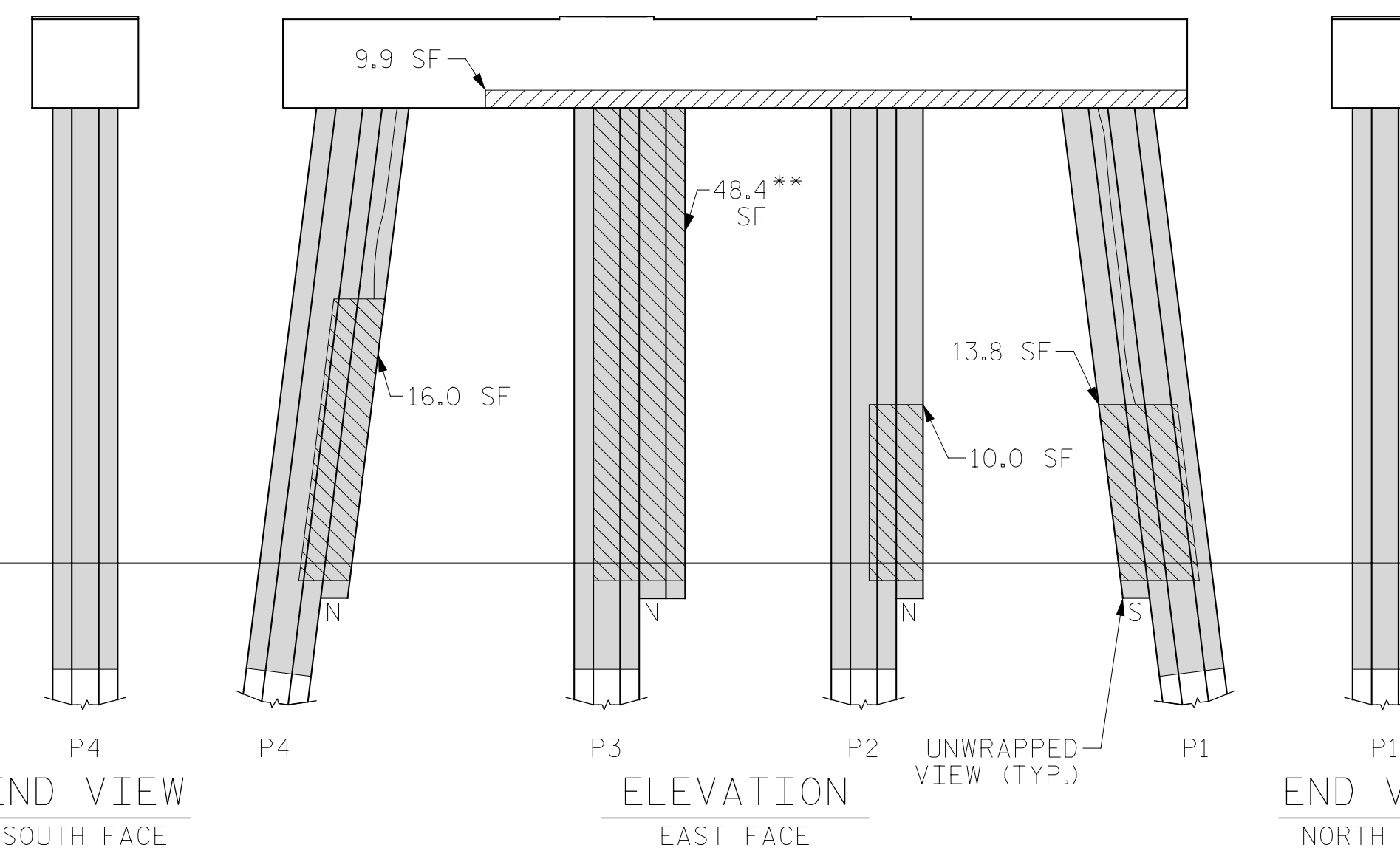
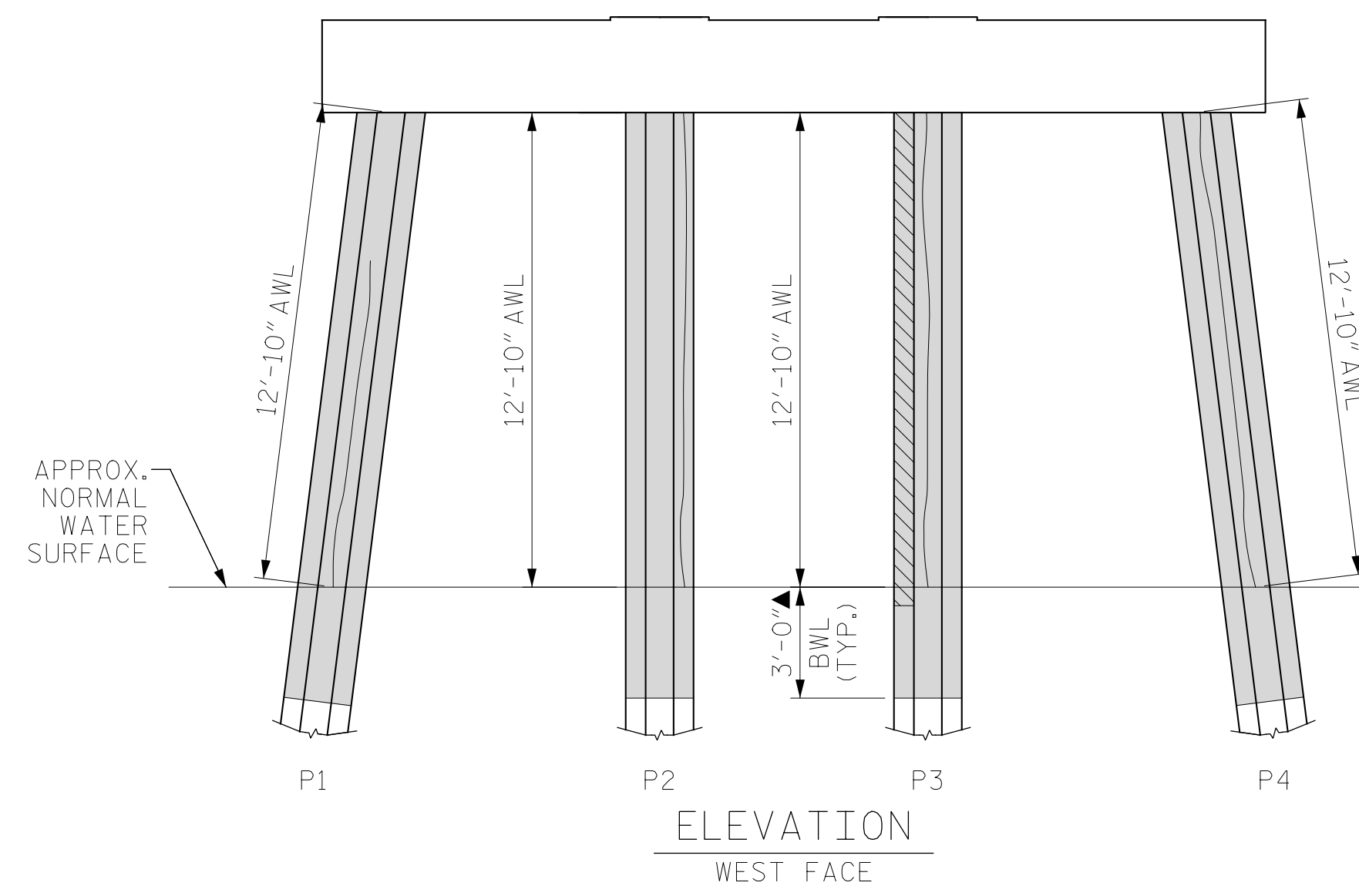
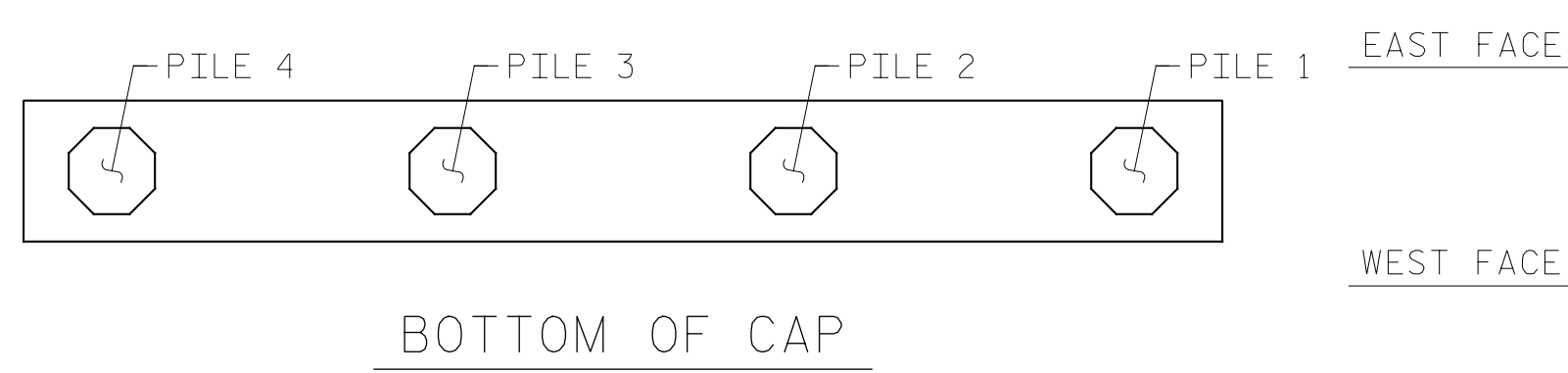
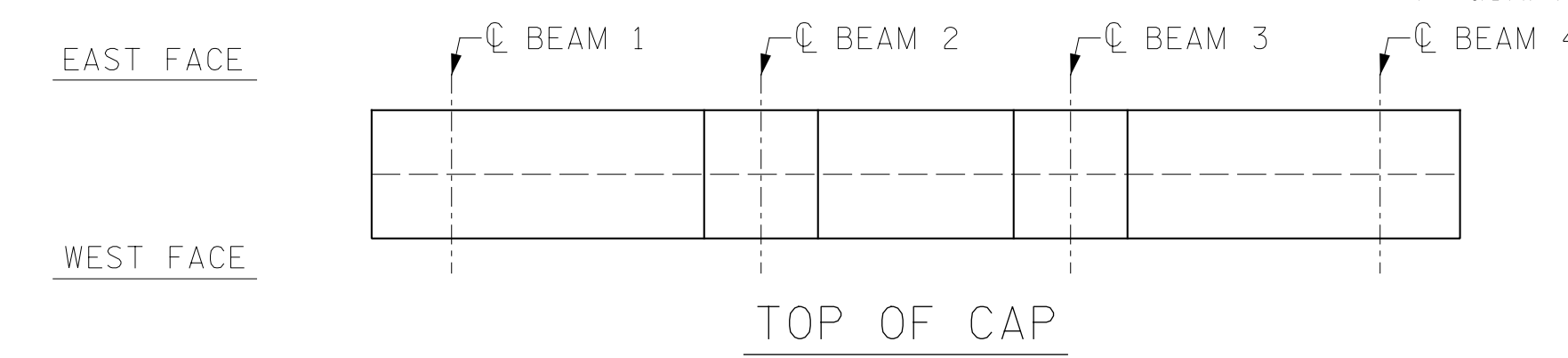
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 219

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 220

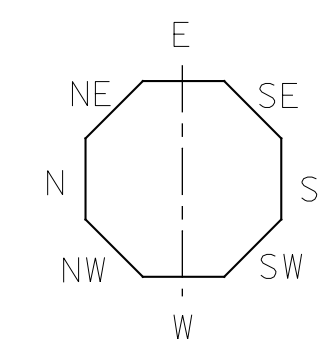
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 219	PILE 1	-	-	4	8	-	7	4	-
	PILE 2	-	7	4	-	-	-	3	5
	PILE 3	8	-	-	-	-	-	-	6
	PILE 4	-	-	6	-	-	7	4	7
	PILE 5	-	6	12	-	-	-	6	-
	PILE 6	7	-	3	4	6	2	8	-
BENT 220	PILE 1	4	9	-	-	7	4	-	2
	PILE 2	8	-	9	13	-	-	4	-
	PILE 3	-	13	13	-	-	-	-	-
	PILE 4	13	13	6	3	-	9	-	6

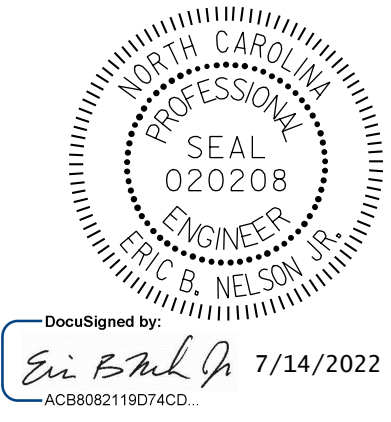
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 219 & BENT 220

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO. S-279
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

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AS-BUILT REPAIR QUANTITY TABLE

BENT 221

CAP REPAIRS			
SHOTCRETE REPAIRS	3.1 SF	1.6 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	56.2 SF	22.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	369.4 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

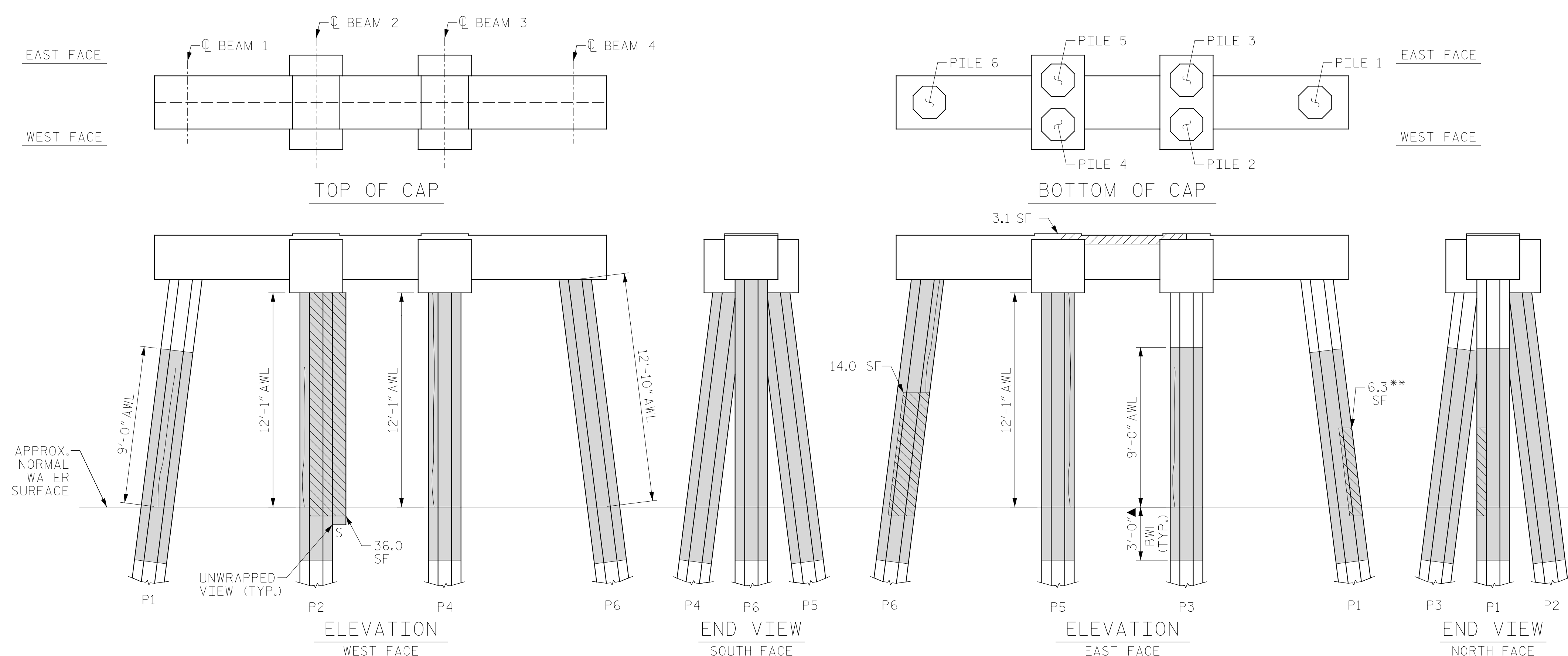
BENT 222

CAP REPAIRS			
SHOTCRETE REPAIRS	2.0 SF	1.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.0 SF	11.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	126.5 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

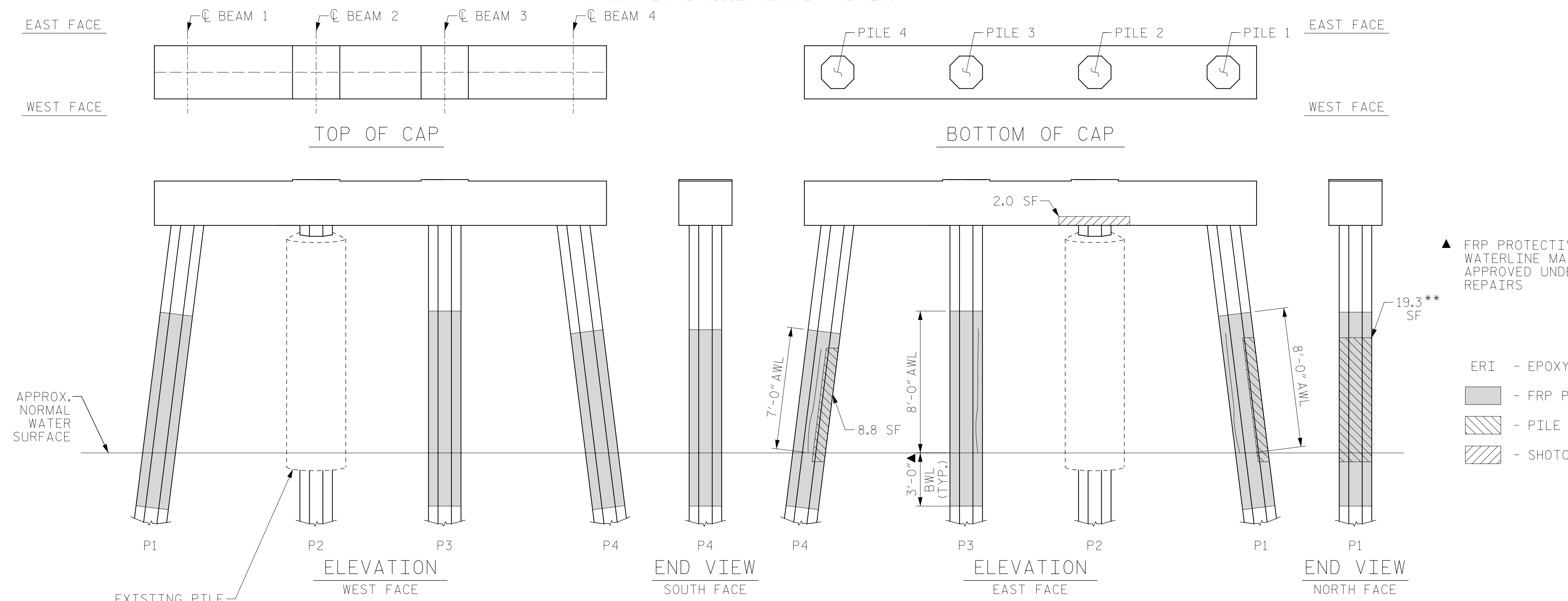
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 221

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 222

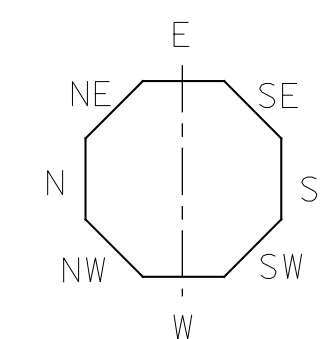
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

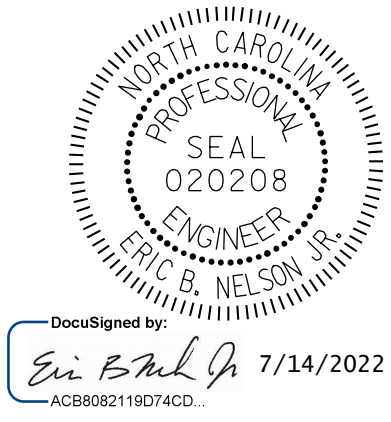
		NW	W	SW	S	SE	E	NE	N
BENT 221	PILE 1	8	-	-	-	8	7	-	8
	PILE 2	8	-	-	-	-	-	-	4
	PILE 3	-	-	-	8	6	-	-	-
	PILE 4	-	-	-	-	-	9	12	-
BENT 222	PILE 1	-	-	-	2	7	-	7	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	6	-	-	5	6	7	5
	PILE 4	4	3	-	6	-	6	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 221 & BENT 222

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-280
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 223

CAP REPAIRS			
SHOTCRETE REPAIRS	1.0 SF	0.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	11.4 SF	5.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	176.0 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

BENT 224

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.0 SF	11.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	170.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

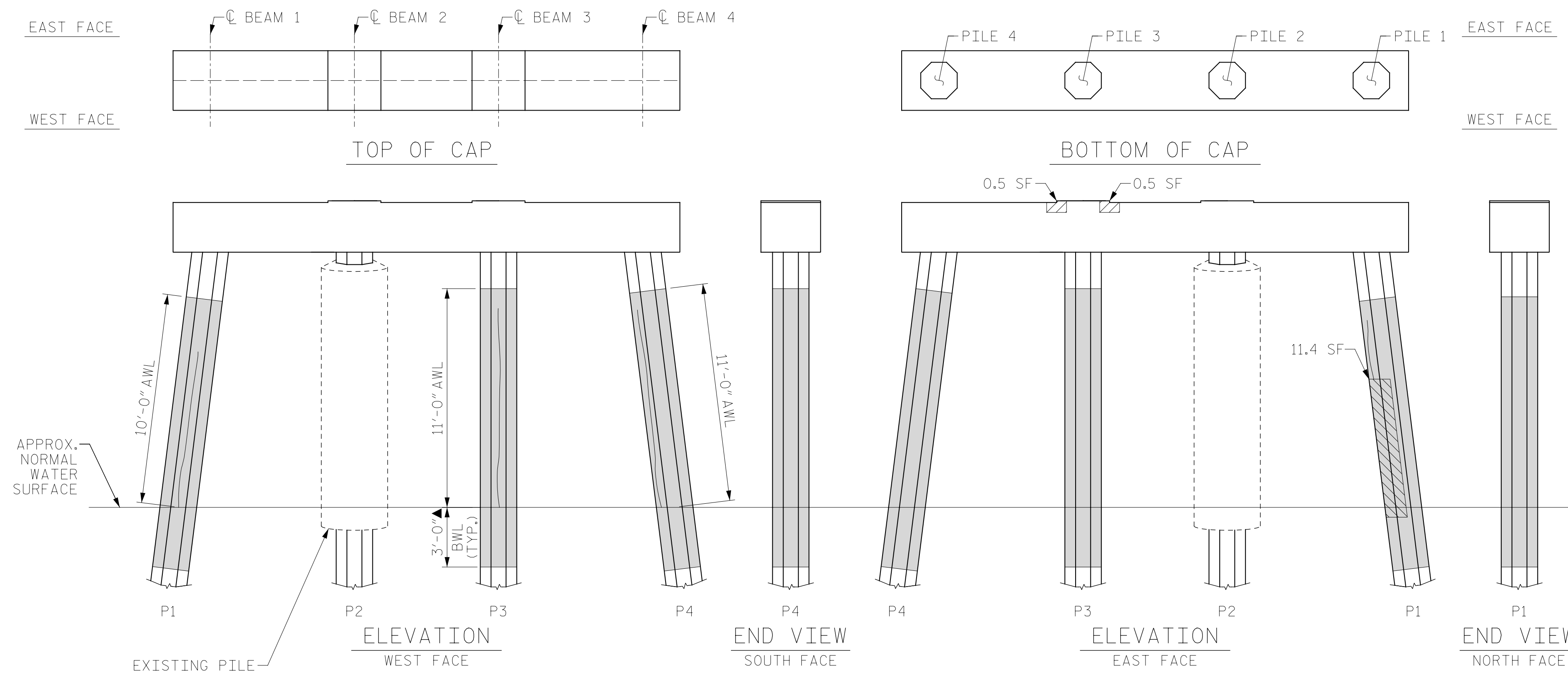
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

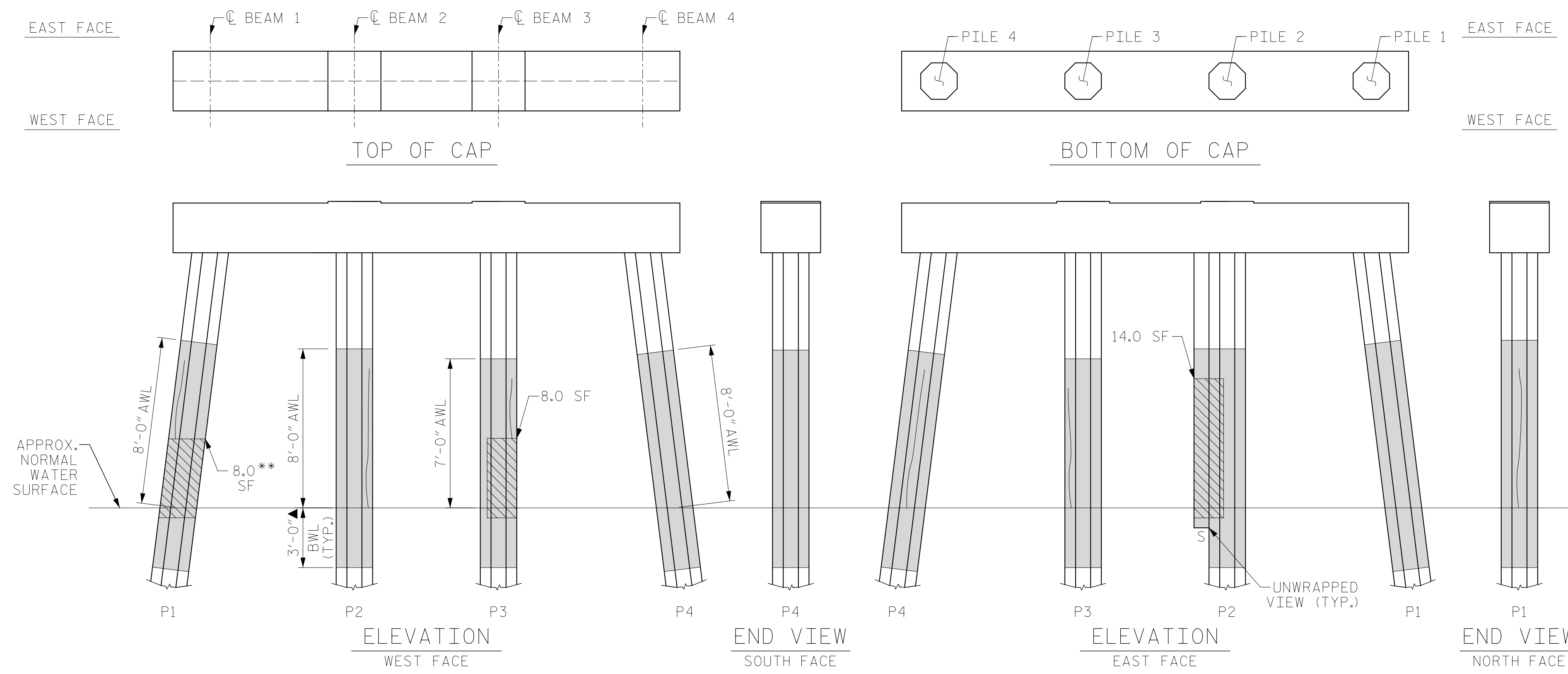
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 223

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



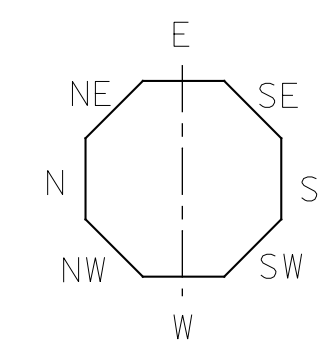
BENT 224

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 223	PILE 1	6	8	-	-	3	-	-	2
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	10	-	4	3	8	9	8
	PILE 4	10	8	4	-	9	-	-	-
BENT 224	PILE 1	4	-	4	3	-	-	-	7
	PILE 2	-	6	7	-	-	-	3	-
	PILE 3	-	-	3	-	6	3	-	-
	PILE 4	6	5	3	-	3	7	7	7

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 223 & BENT 224

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 225

CAP REPAIRS				
SHOTCRETE REPAIRS	13.6 SF	6.8 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	114.6 SF			
FRP PROTECTIVE SYSTEM BWL	33.0 SF			

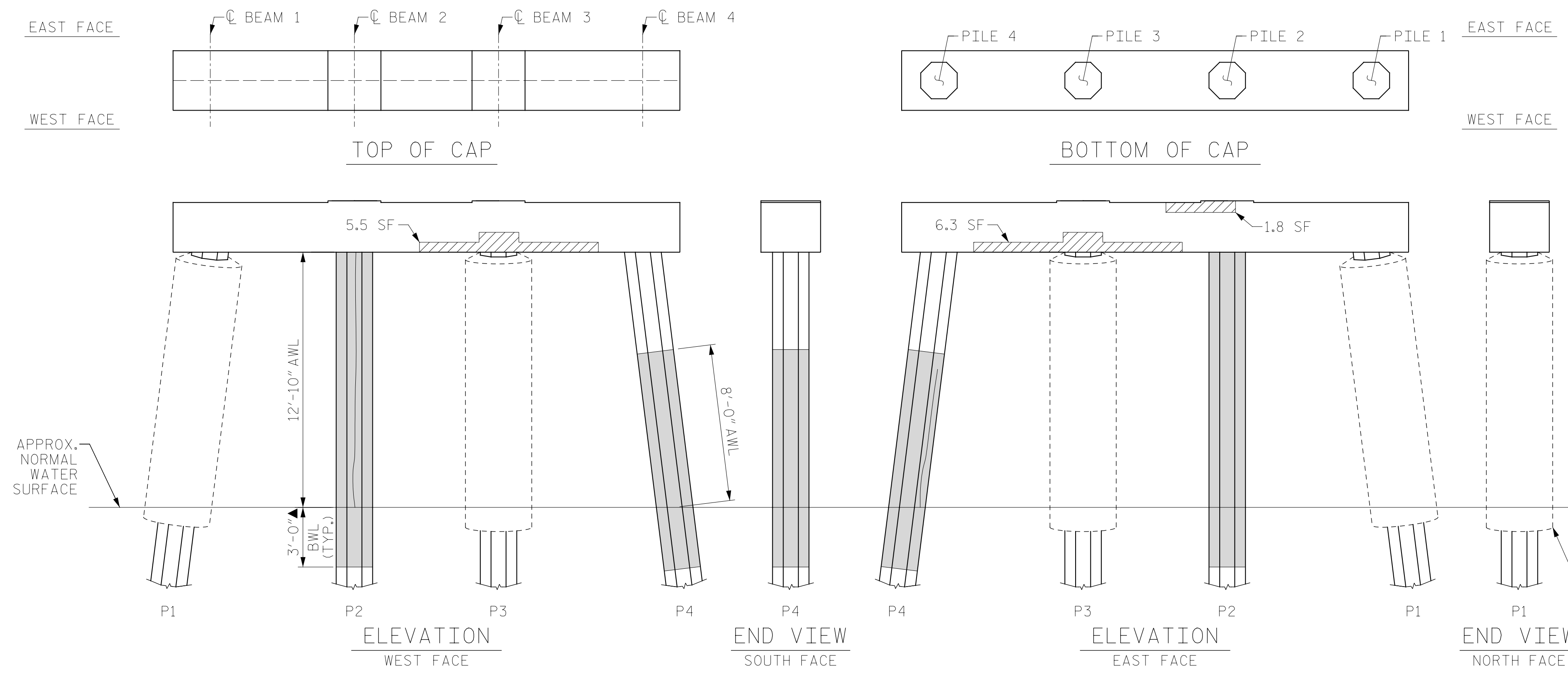
BENT 226

CAP REPAIRS				
SHOTCRETE REPAIRS	2.6 SF	1.3 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	32.3 SF	13.5 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	114.6 SF			
FRP PROTECTIVE SYSTEM BWL	33.0 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

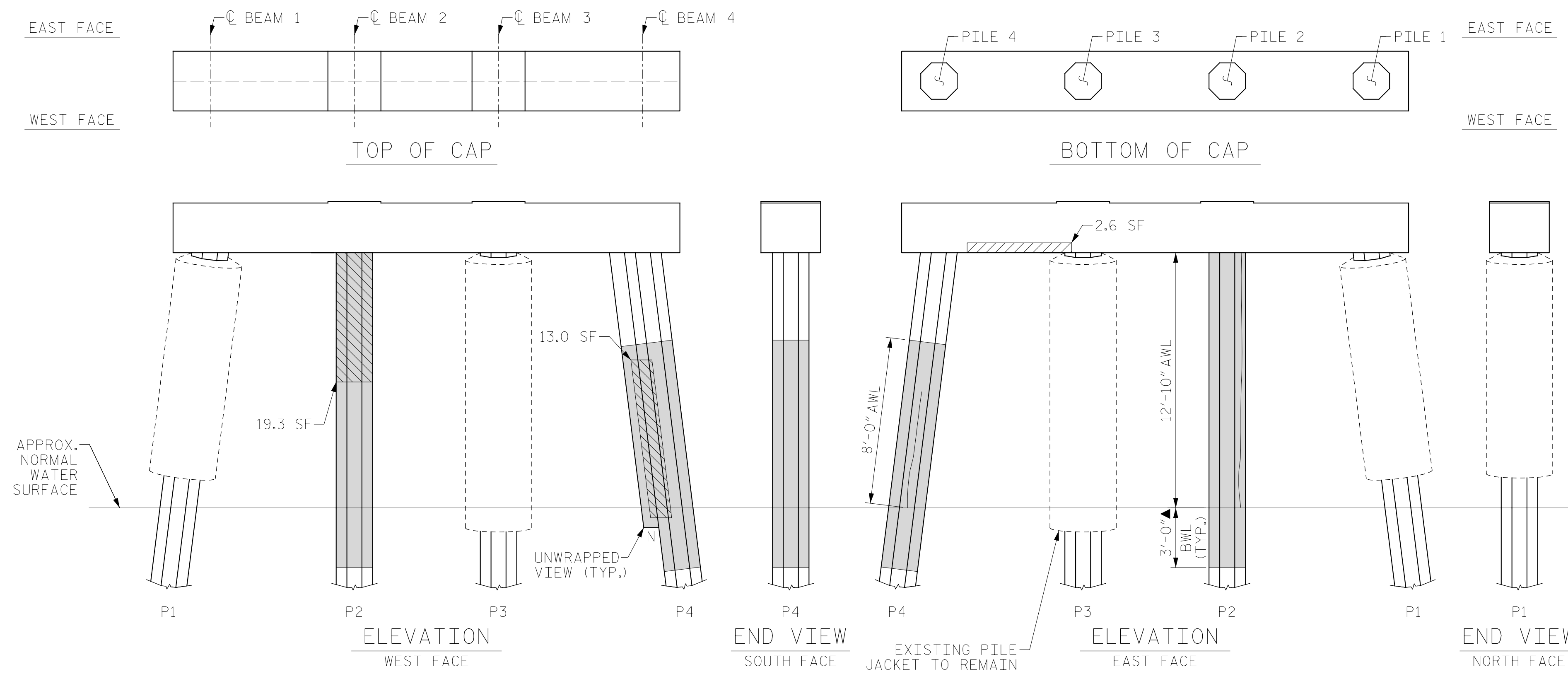
NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 225

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 226

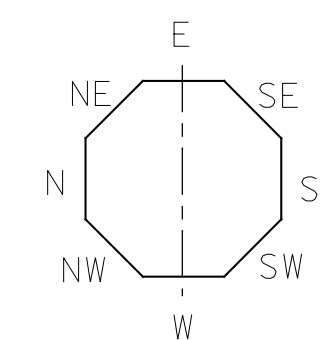
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

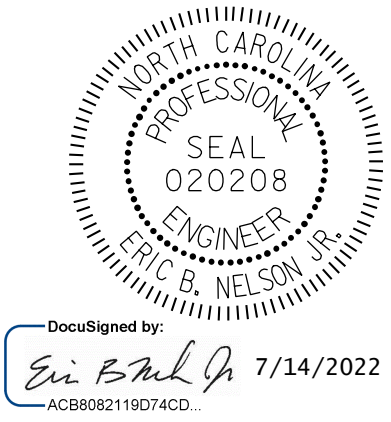
		NW	W	SW	S	SE	E	NE	N
BENT 225	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	7	13	-	6	8	3	3	4
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	6	6	5	-	3	6	7	-
BENT 226	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	6	13	8
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	6	5	2	4	6	4	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 225 & BENT 226

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-282
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



AS-BUILT REPAIR QUANTITY TABLE

BENT 227

CAP REPAIRS			
SHOTCRETE REPAIRS	1.7 SF	0.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	36.5 SF	15.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	181.0 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

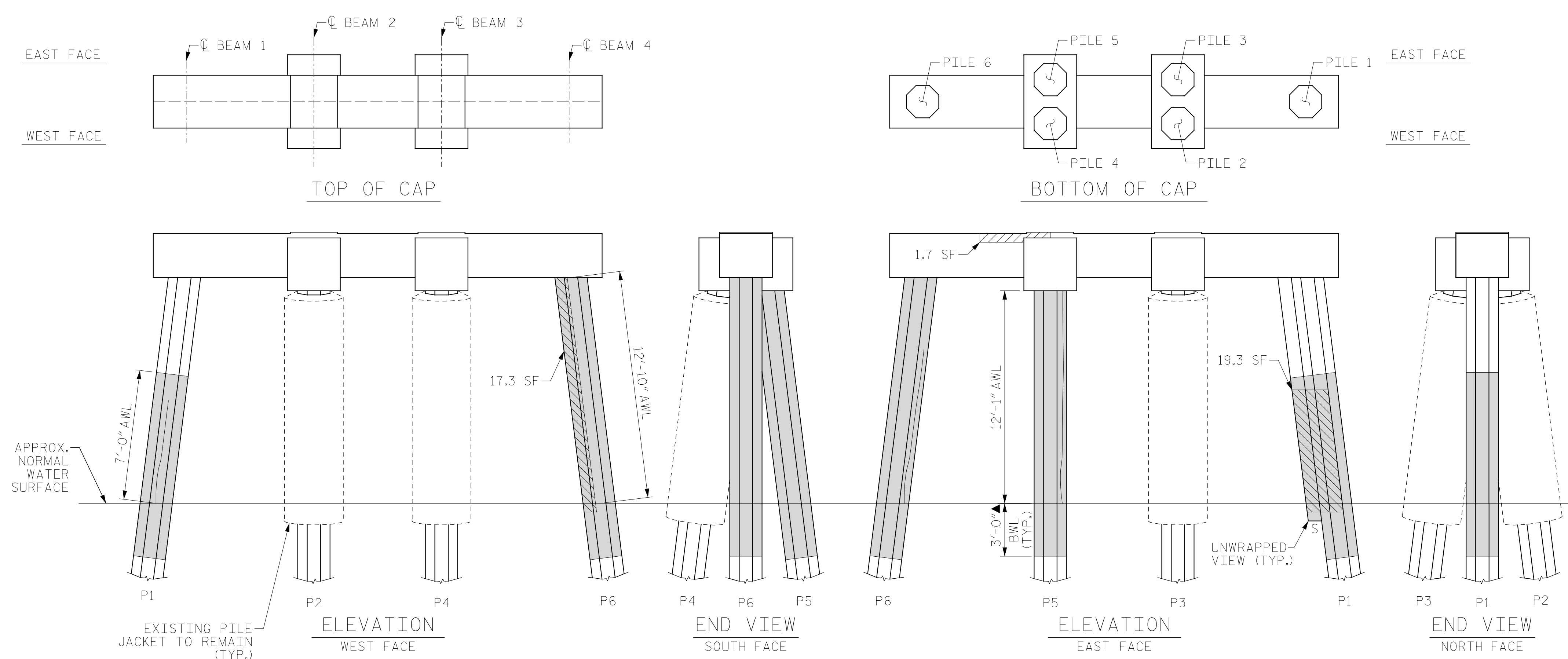
BENT 228

CAP REPAIRS			
SHOTCRETE REPAIRS	10.4 SF	5.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	35.8 SF	15.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	121.0 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

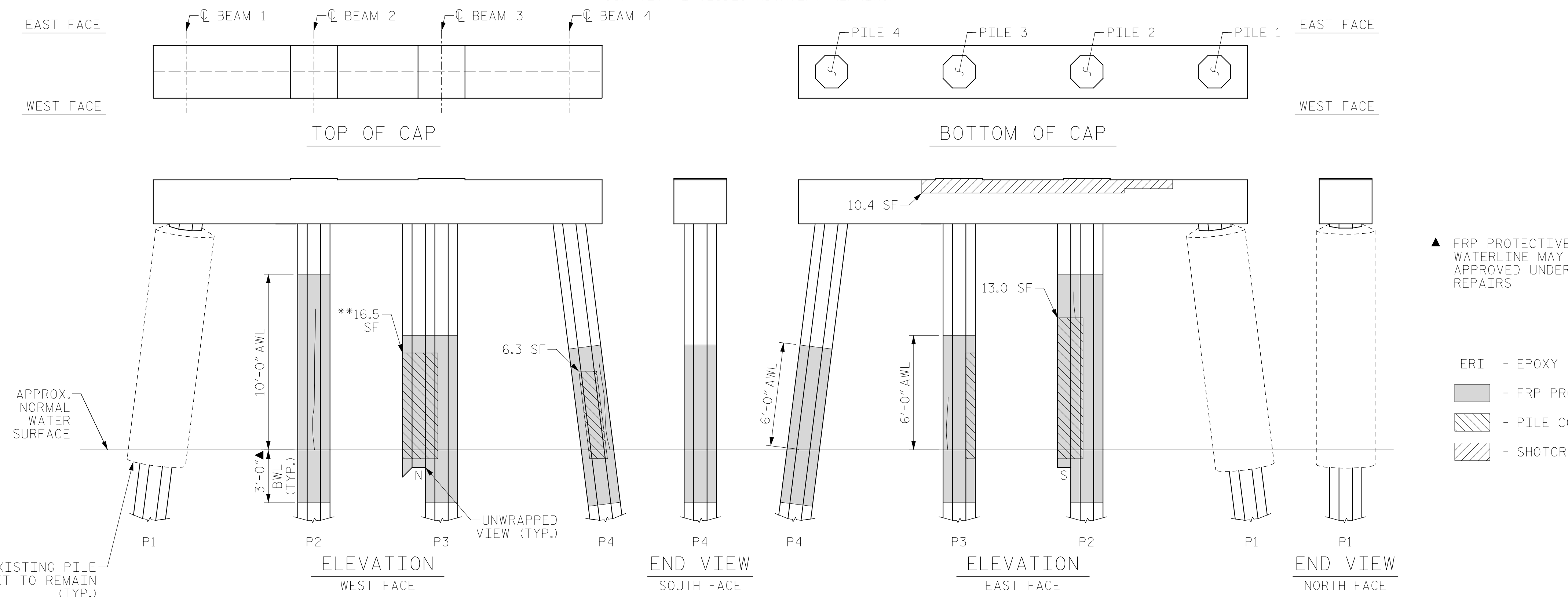
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 227

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 228

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

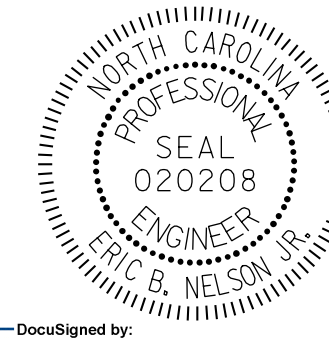
ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 227	PILE 1	-	4	6	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	-	-	-	-
	PILE 6	12	4	7	-	-	5	-	12
BENT 228	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	6	8	4	-	2	6	-	2
	PILE 3	-	-	-	3	-	-	-	-
	PILE 4	-	-	5	3	-	-	5	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



DocuSigned by: Eric B. Nelson 7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 227 & BENT 228

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-283
1			3			TOTAL SHEETS 355
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 229

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	154.1 SF	61.9 SF	SF CF
FRP PROTECTIVE SYSTEM AWL	384.5 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

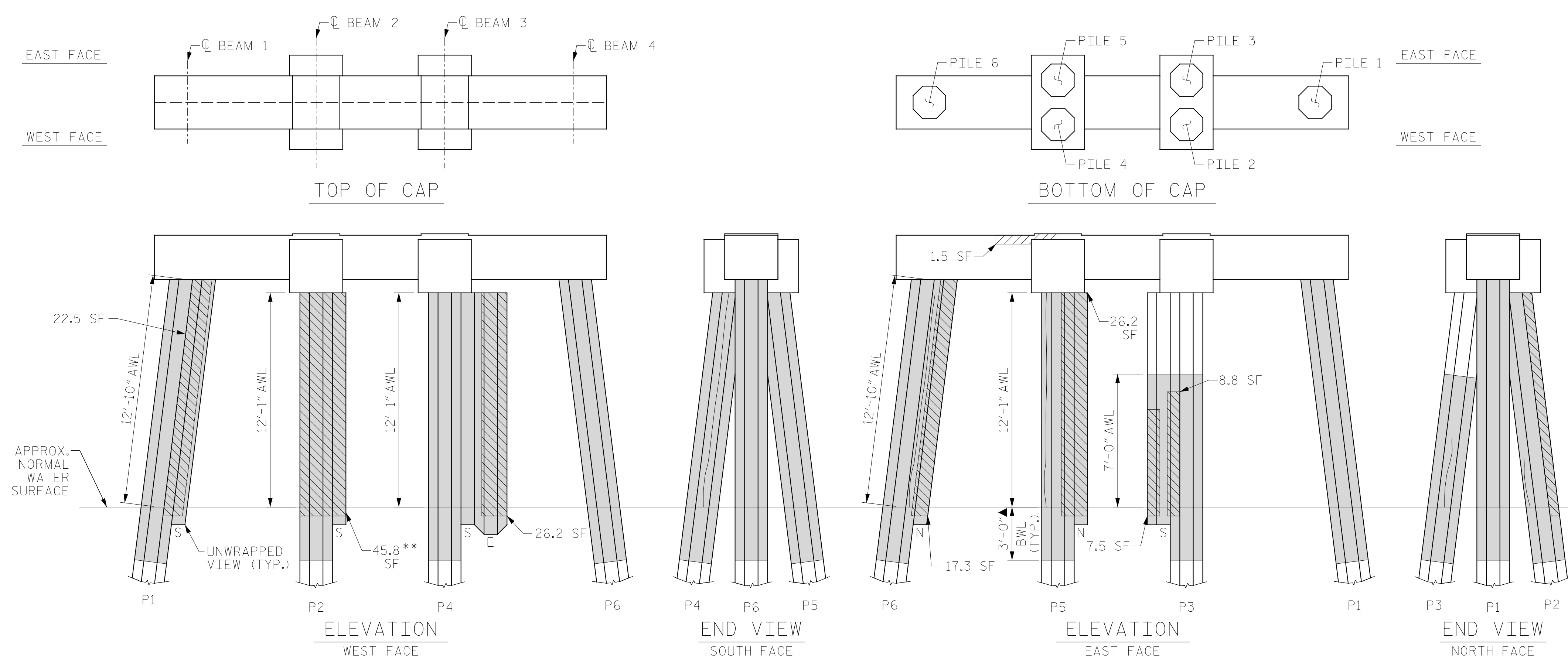
BENT 230

CAP REPAIRS			
SHOTCRETE REPAIRS	9.1 SF	4.6 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.0 SF	11.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	190.7 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

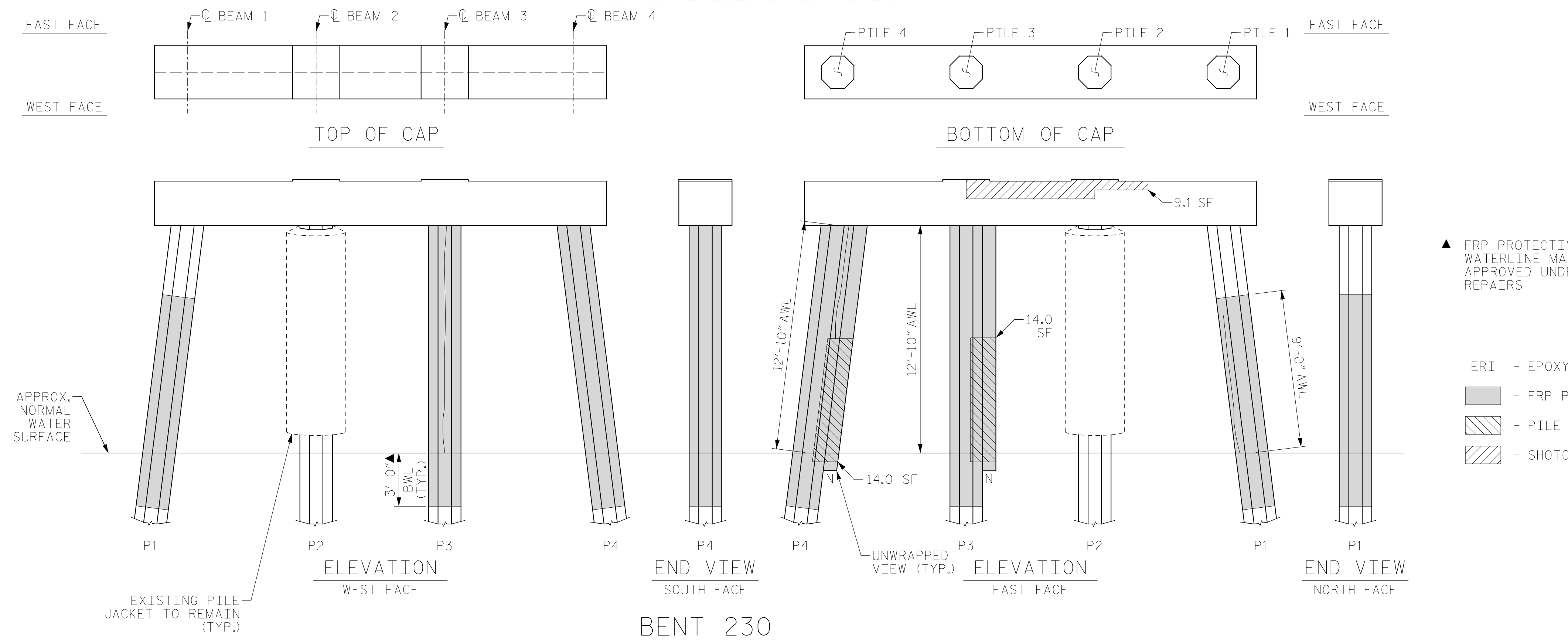
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 229

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



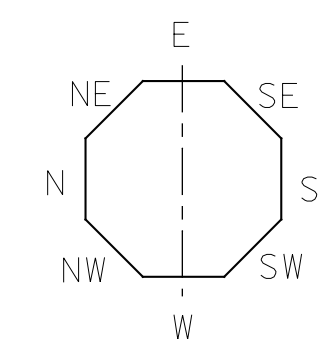
BENT 230

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

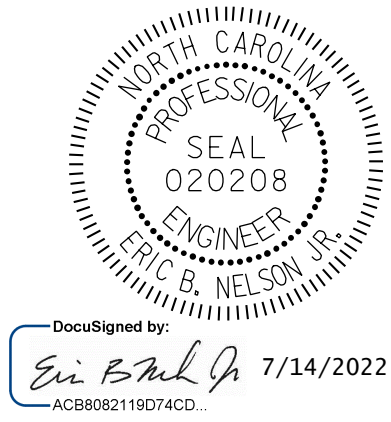
		NW	W	SW	S	SE	E	NE	N
BENT 229	PILE 1	3	6	-	-	-	-	6	3
	PILE 2	-	-	-	-	-	3	-	-
	PILE 3	-	-	-	4	-	-	3	4
	PILE 4	6	-	-	13	-	-	-	13
	PILE 5	13	13	-	-	-	13	-	13
BENT 230	PILE 1	-	4	7	8	8	-	6	6
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	3	13	-	-	-	8	-	3
	PILE 4	3	3	6	3	5	7	7	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 229 & BENT 230

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			284
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 231

CAP REPAIRS			
SHOTCRETE REPAIRS	5.7 SF	2.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	42.5 SF	17.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	213.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

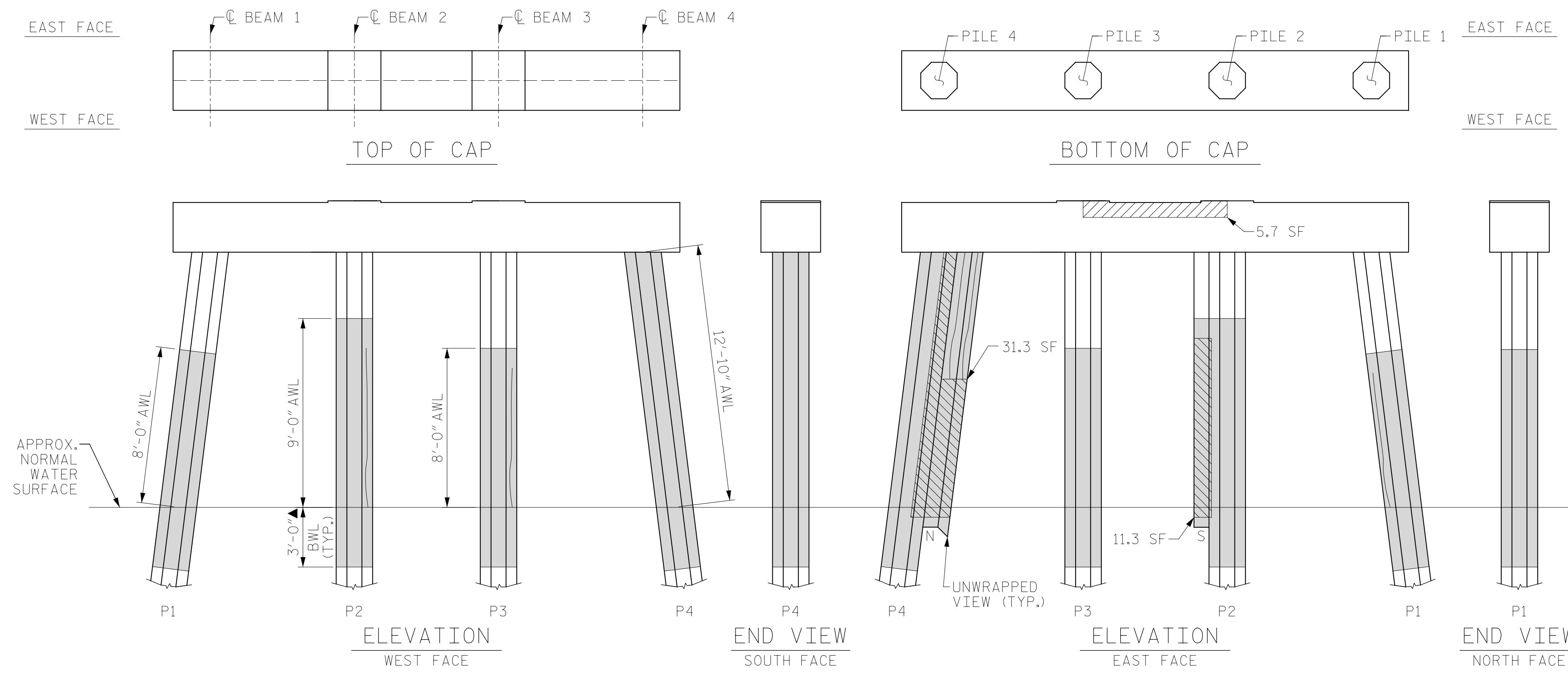
BENT 232

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	72.9 SF	29.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	255.8 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

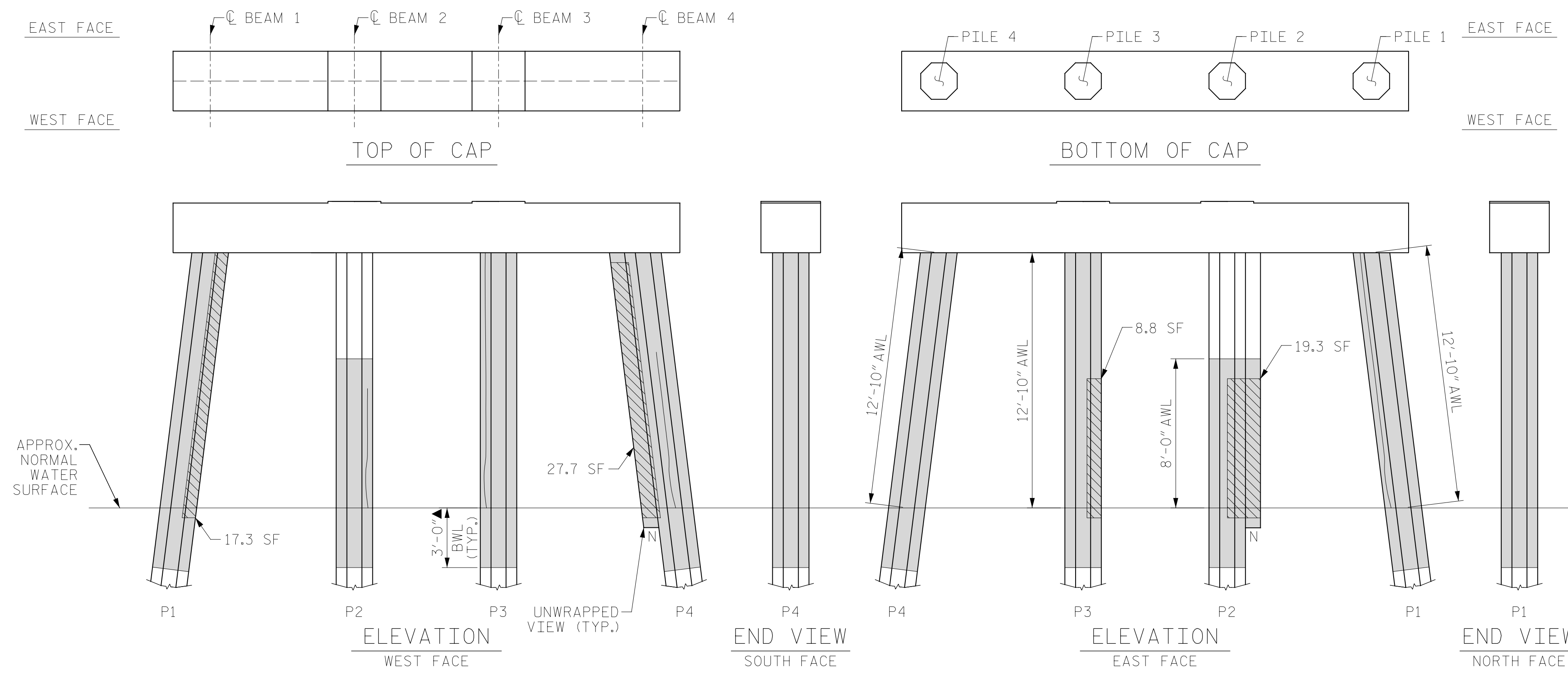
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



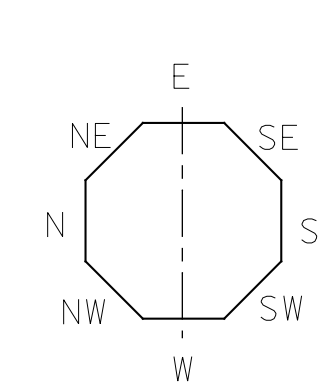
BENT 231

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 232

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



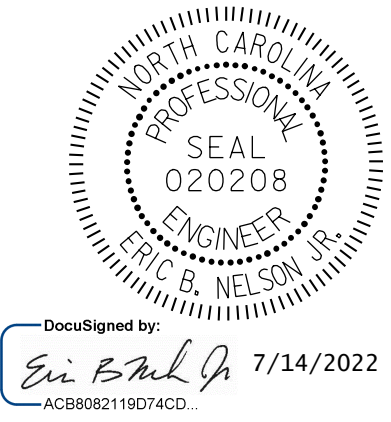
	NW	W	SW	S	SE	E	NE	N	
BENT 231	PILE 1	-	6	-	7	7	6	-	6
	PILE 2	-	-	8	-	8	7	-	5
	PILE 3	-	-	7	7	-	5	7	6
	PILE 4	6	8	6	3	-	-	-	6
BENT 232	PILE 1	-	13	-	13	13	6	-	6
	PILE 2	-	-	6	6	4	-	-	-
	PILE 3	13	8	7	7	8	8	-	8
	PILE 4	-	8	4	3	4	6	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 231 & BENT 232

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-285
1			3			TOTAL SHEETS
2			4			355

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 233

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	27.7 SF	10.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	120.1 SF		
FRP PROTECTIVE SYSTEM BWL	33.0 SF		

BENT 234

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	13.8 SF	5.8 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	170.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

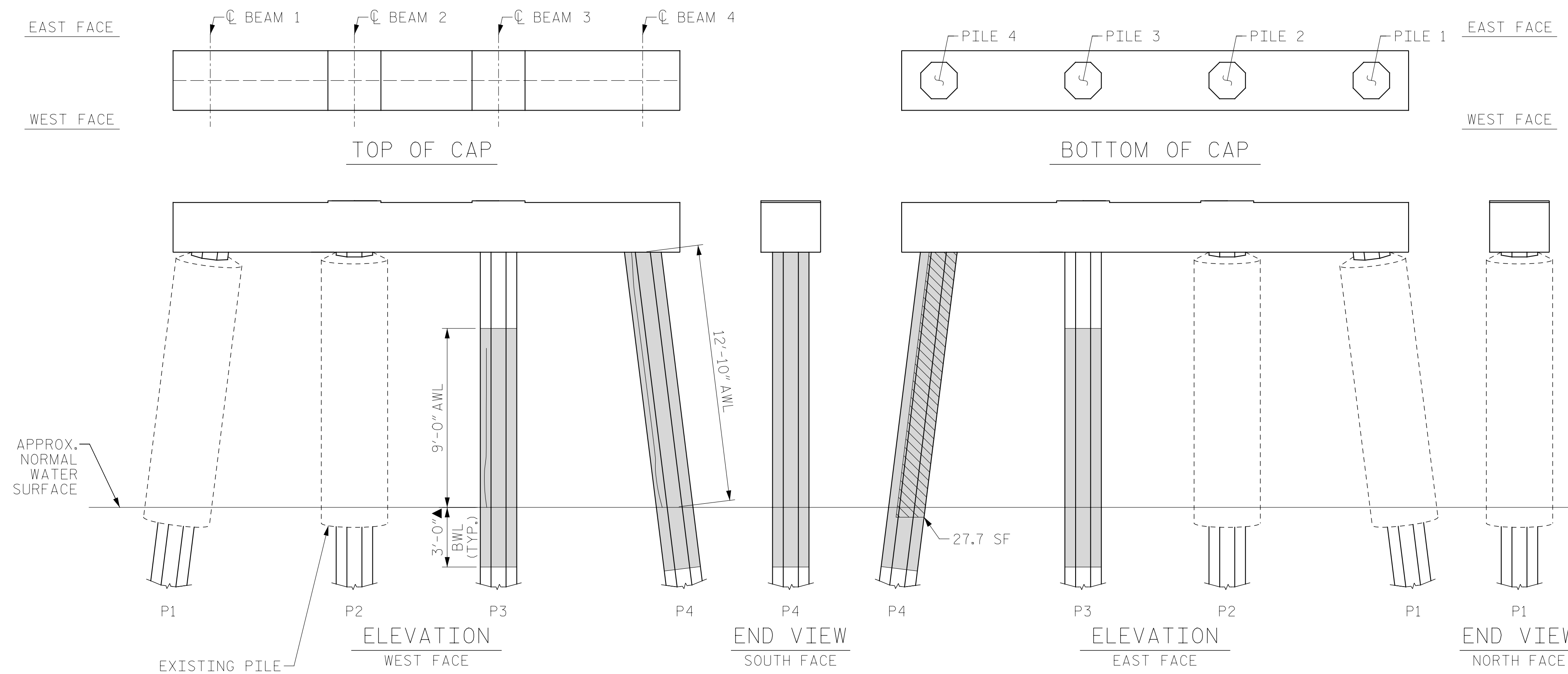
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

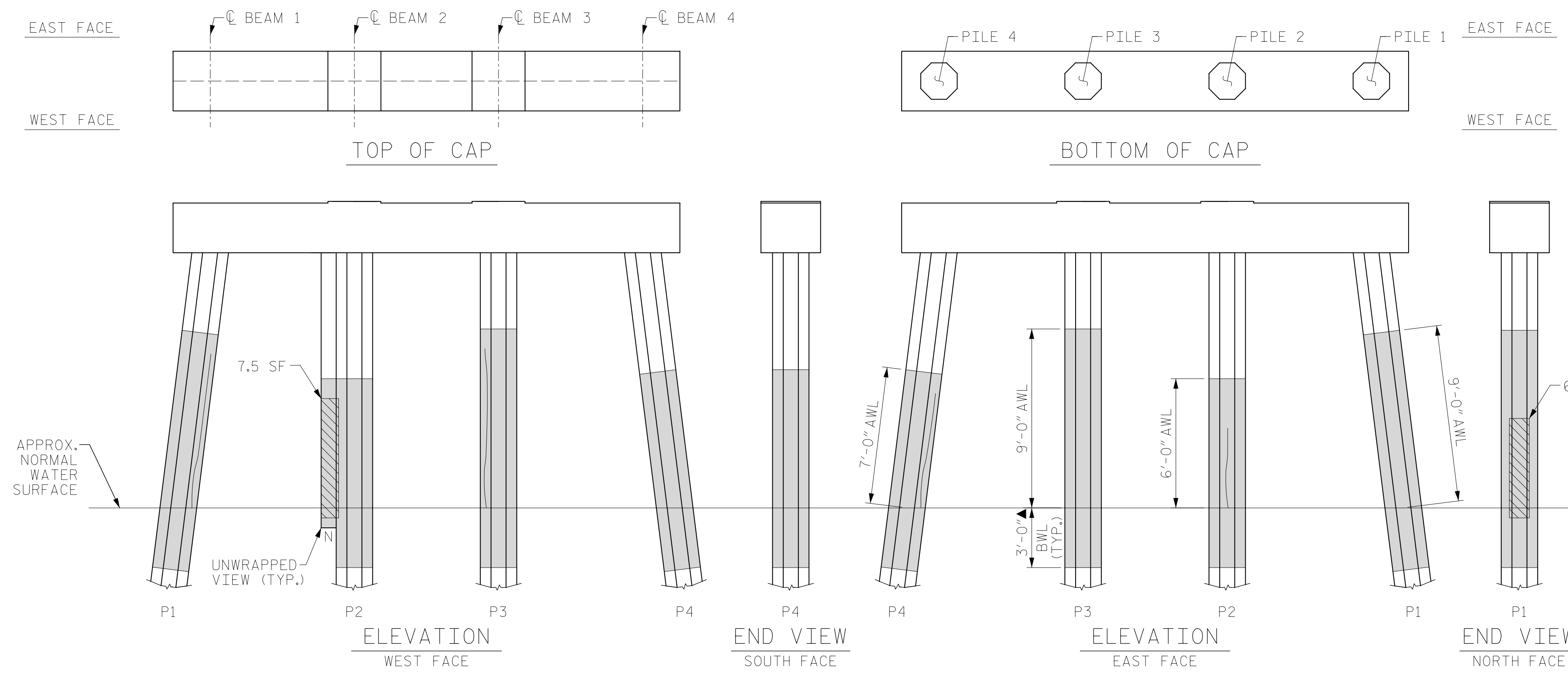
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 233

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 234

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

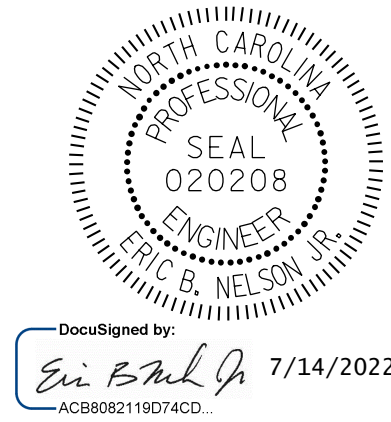
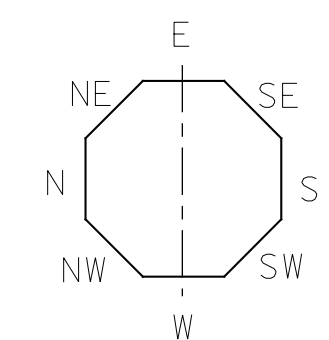
ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
233	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	8	-	4	7	3	7	8	-
	PILE 4	13	6	4	-	6	-	-	-
234	PILE 1	-	6	8	6	6	-	-	-
	PILE 2	4	4	-	-	-	4	-	-
	PILE 3	8	-	-	-	-	7	-	8
	PILE 4	-	5	-	4	-	3	6	6

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr. 7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
BENT 233 & BENT 234

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-286
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 235

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	23.8 SF	10.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	258.5 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

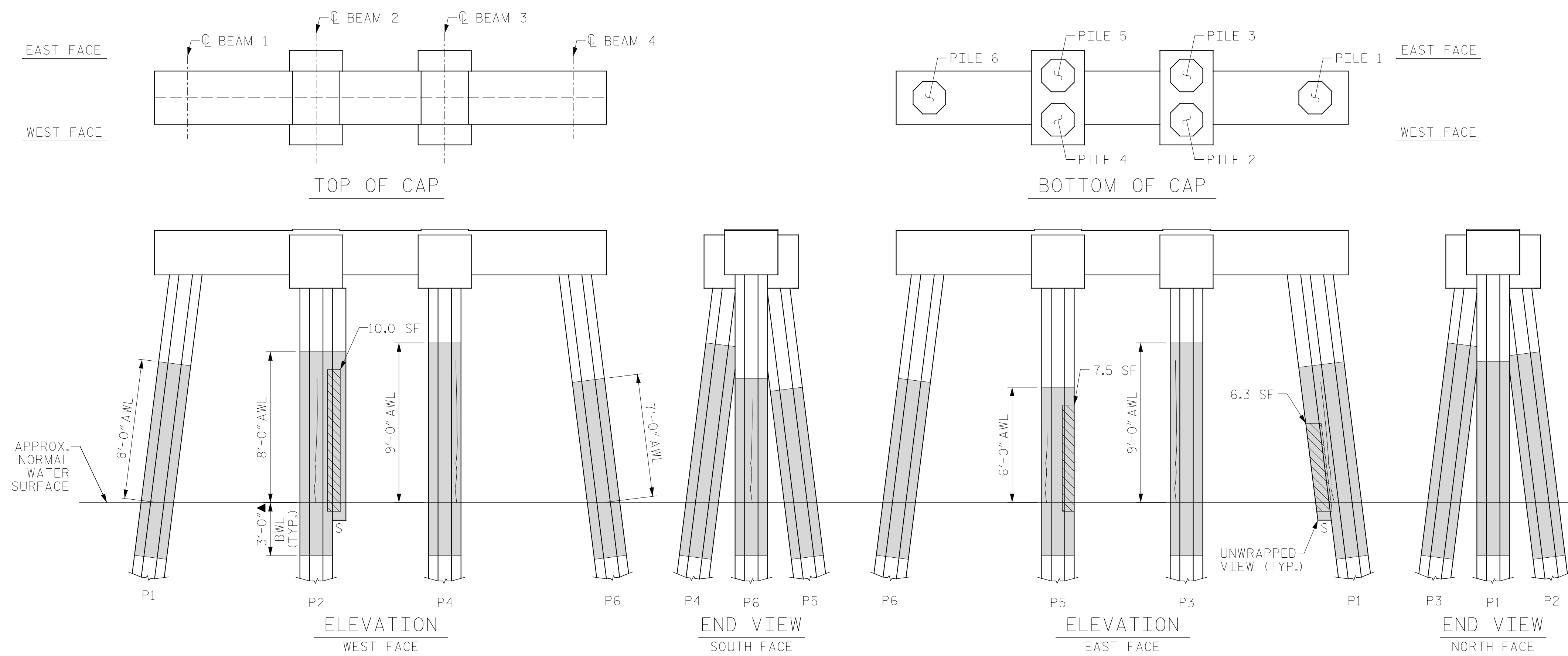
BENT 236

CAP REPAIRS			
SHOTCRETE REPAIRS	24.1 SF	12.1 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	49.4 SF	20.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	203.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

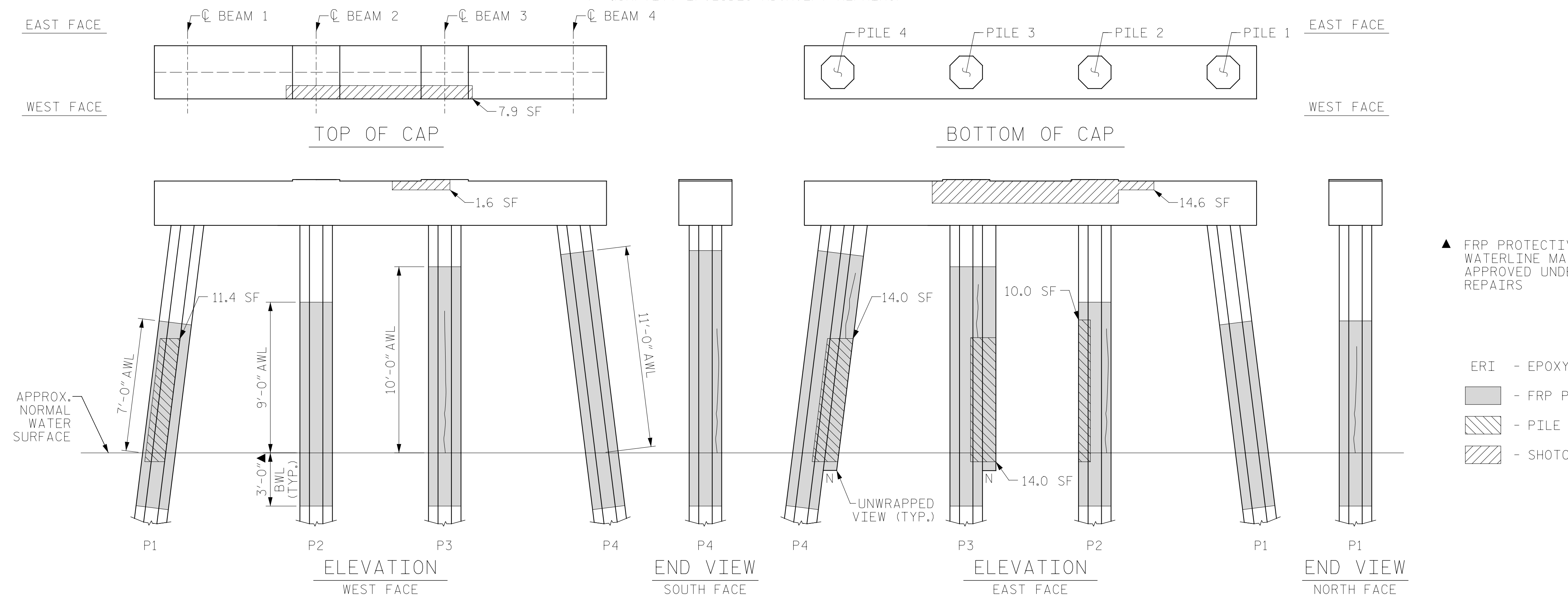
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 235

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



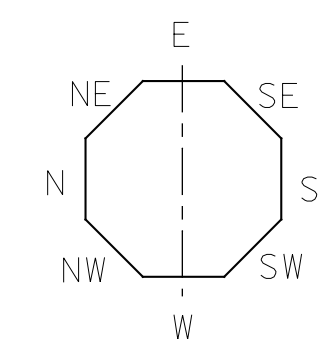
BENT 236

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 235	PILE 1	-	-	6	-	7	-	4	4
	PILE 2	-	7	-	-	-	-	5	-
	PILE 3	5	7	-	-	8	-	-	-
	PILE 4	-	7	8	-	6	8	-	8
	PILE 5	4	-	4	-	4	-	-	-
	PILE 6	4	-	-	6	-	3	3	6
BENT 236	PILE 1	-	-	-	-	-	-	-	6
	PILE 2	-	-	6	8	-	-	7	-
	PILE 3	-	8	6	3	4	-	3	-
	PILE 4	-	4	4	-	7	-	-	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 235 & BENT 236

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 237

CAP REPAIRS			
SHOTCRETE REPAIRS	19.8 SF	9.9 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	24.8 SF	10.0 CF	
FRP PROTECTIVE SYSTEM AWL	253.0 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

BENT 238

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	6.3 SF	2.7 CF	
FRP PROTECTIVE SYSTEM AWL	159.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

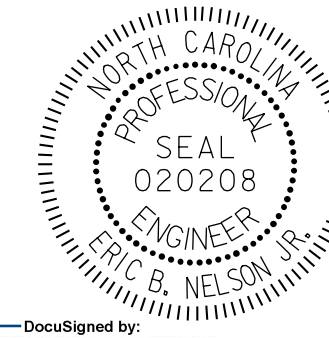
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 237	PILE 1	3	5	-	-	-	4	-	3
	PILE 2	7	-	-	7	4	3	4	-
	PILE 3	5	7	-	8	7	-	-	-
	PILE 4	-	-	4	4	7	-	-	-
	PILE 6	-	4	-	5	3	-	-	-
BENT 238	PILE 1	2	3	3	-	6	-	6	-
	PILE 2	-	4	-	2	-	-	-	-
	PILE 3	8	4	-	-	4	7	3	8
	PILE 4	-	5	4	-	4	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

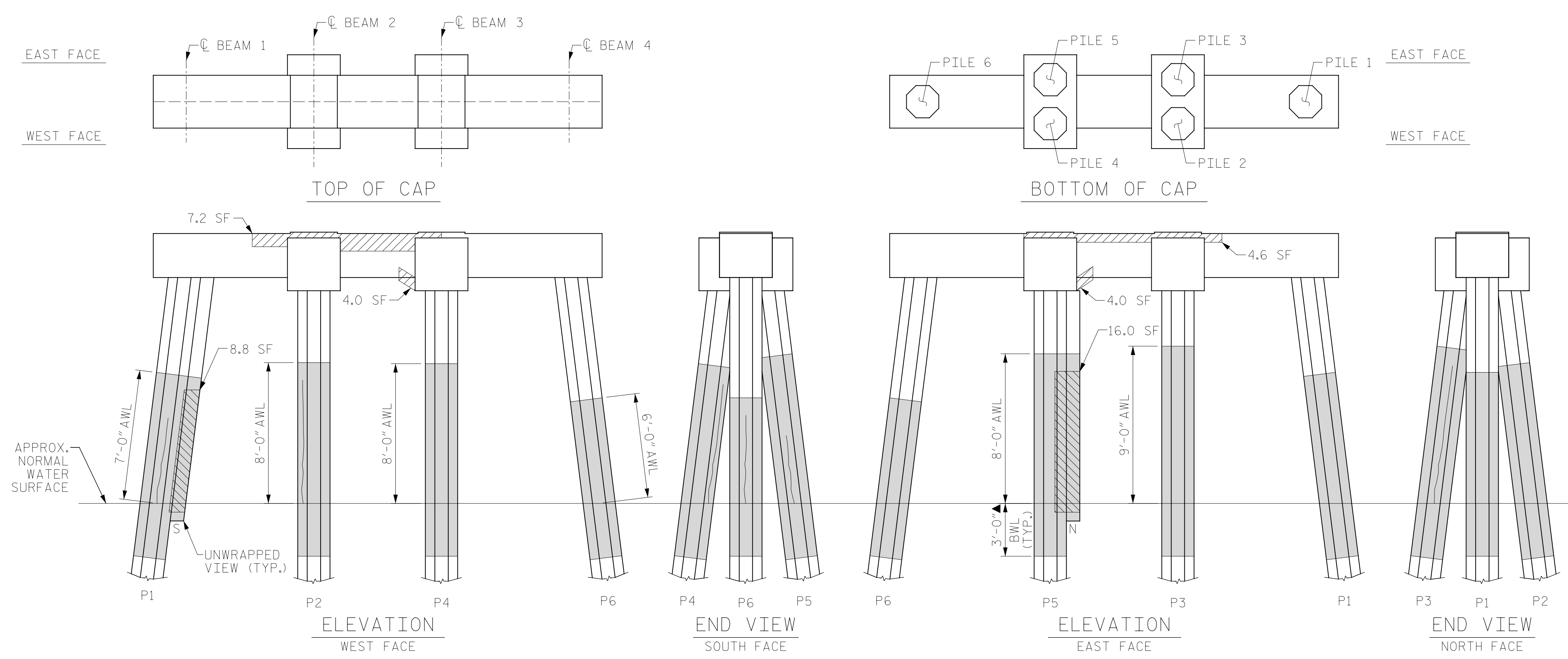


DocuSigned by:  
*Eric B. Nelson, Jr.* 7/14/2022  
 AC8892119214C0...

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

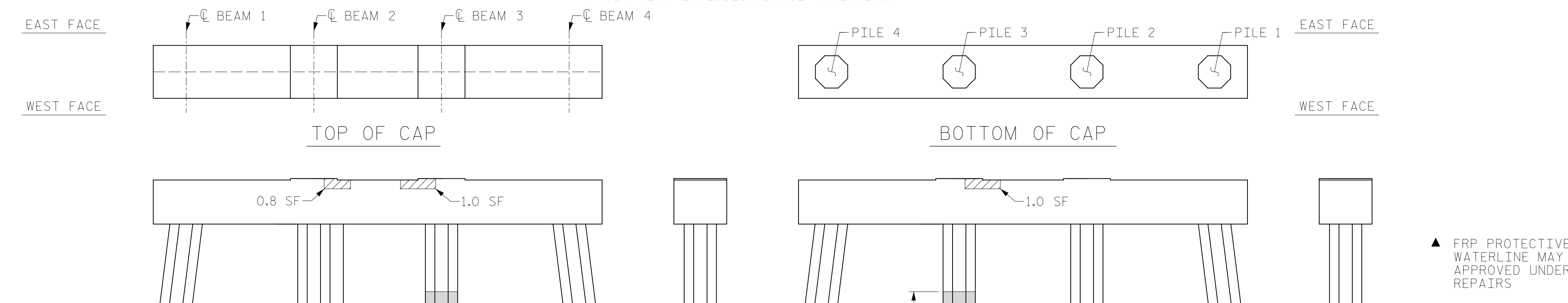
BENT 237 & BENT 238

REVISIONS						SHEET NO. S-288
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			



BENT 237

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 238

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 239

CAP REPAIRS			
SHOTCRETE REPAIRS	13.4 SF	6.7 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.8 SF	3.7 CF	
FRP PROTECTIVE SYSTEM AWL	126.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 240

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	30.1 SF	12.3 CF	
FRP PROTECTIVE SYSTEM AWL	159.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

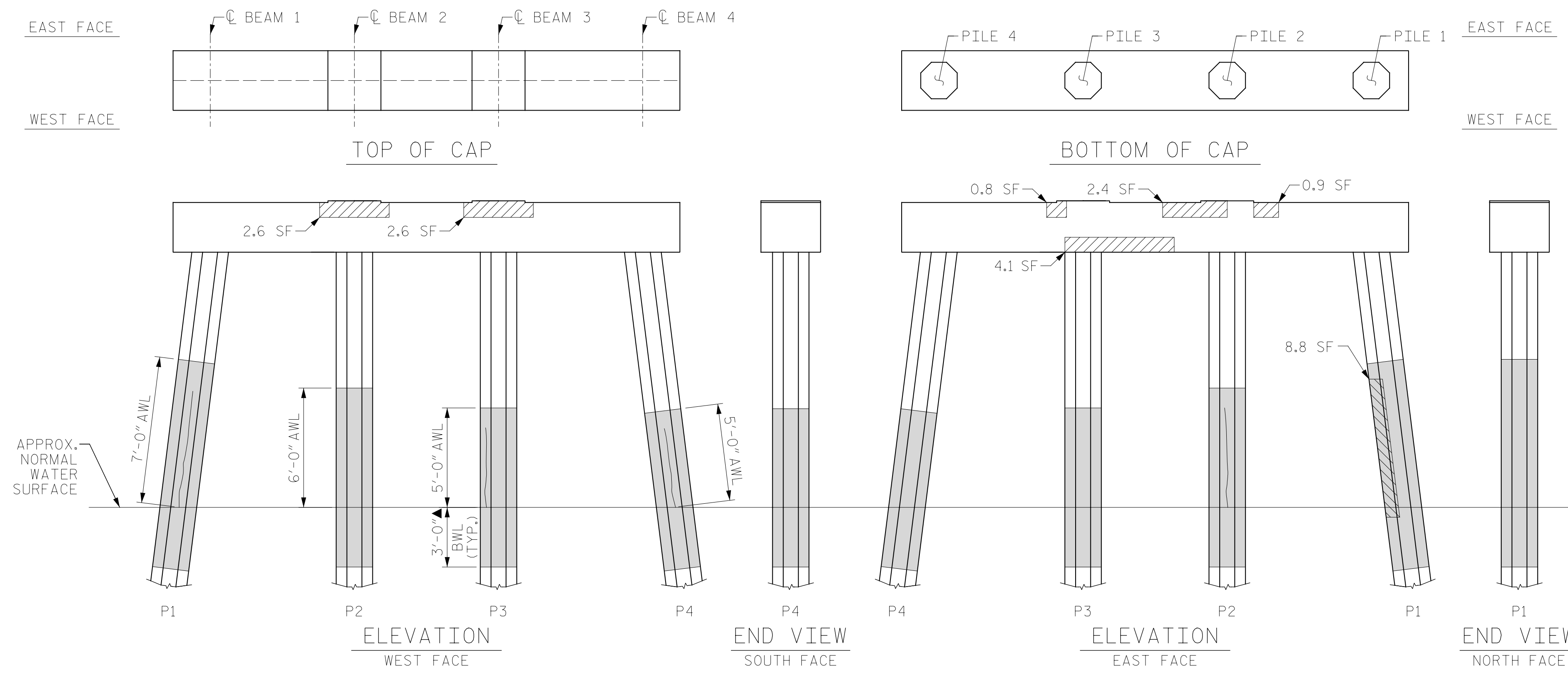
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

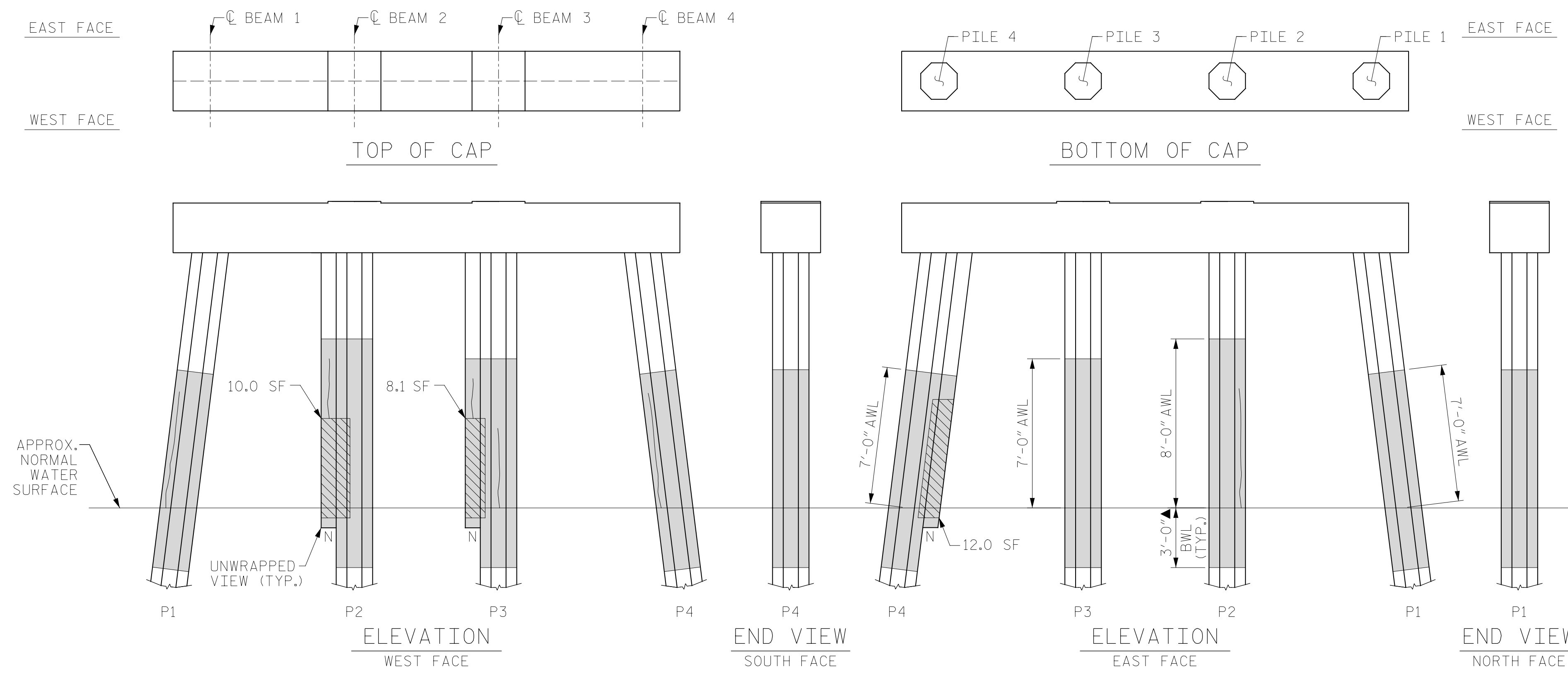
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 239

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



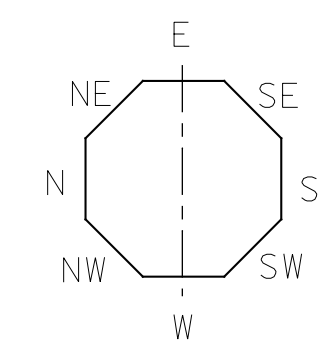
BENT 240

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

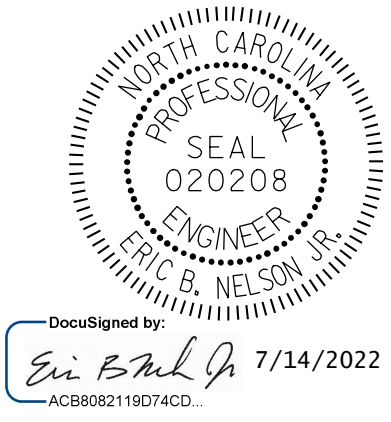
		NW	W	SW	S	SE	E	NE	N
BENT 239	PILE 1	-	6	-	6	-	-	6	-
	PILE 2	3	4	4	-	-	5	5	5
	PILE 3	4	3	-	-	-	3	3	3
	PILE 4	-	4	-	4	3	-	-	-
BENT 240	PILE 1	6	3	-	3	-	-	-	6
	PILE 2	-	4	-	3	-	-	6	3
	PILE 3	-	4	-	3	-	-	4	2
	PILE 4	6	3	3	4	-	3	-	6

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BENT 239 & BENT 240

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 241

CAP REPAIRS			
SHOTCRETE REPAIRS	2.8 SF	1.4 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	26.3 SF	10.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	137.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 242

CAP REPAIRS			
SHOTCRETE REPAIRS	3.8 SF	1.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	16.5 SF	6.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	197.1 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

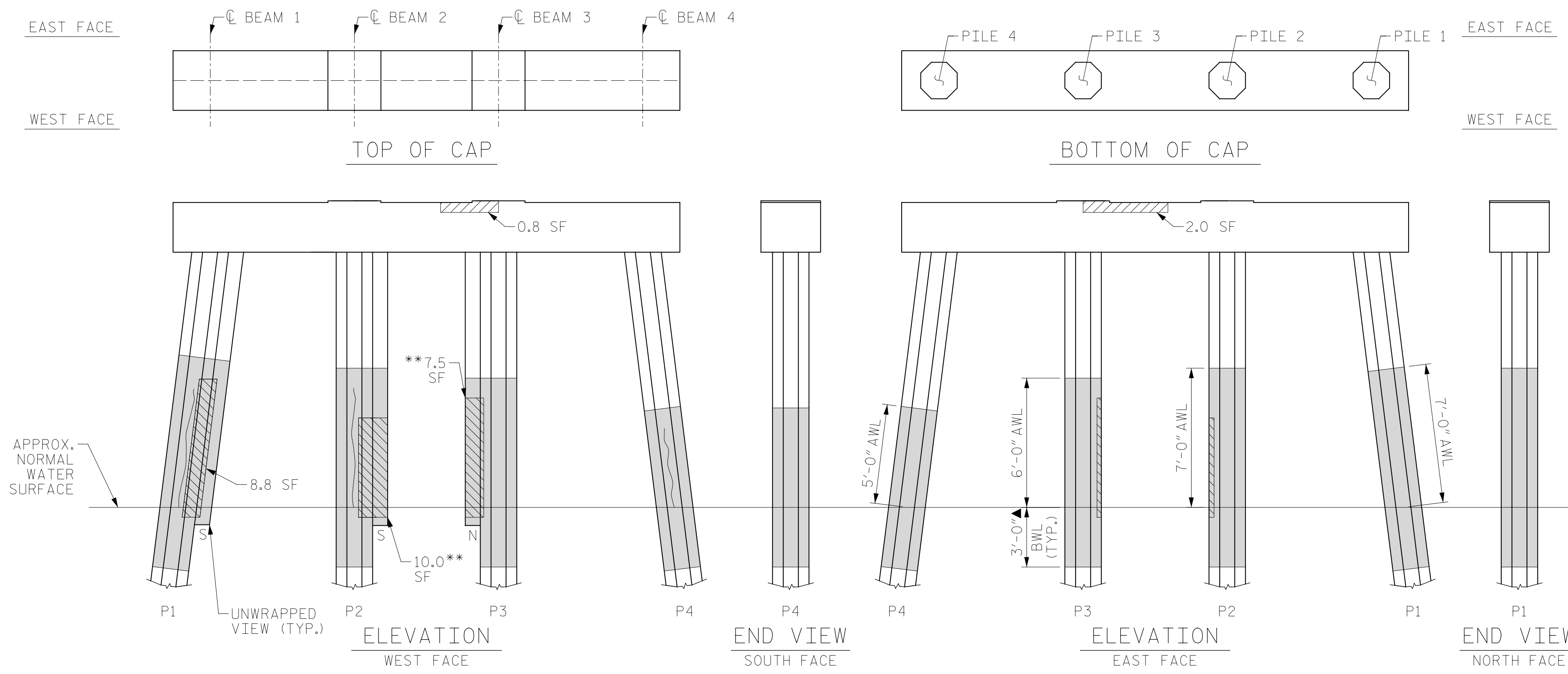
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

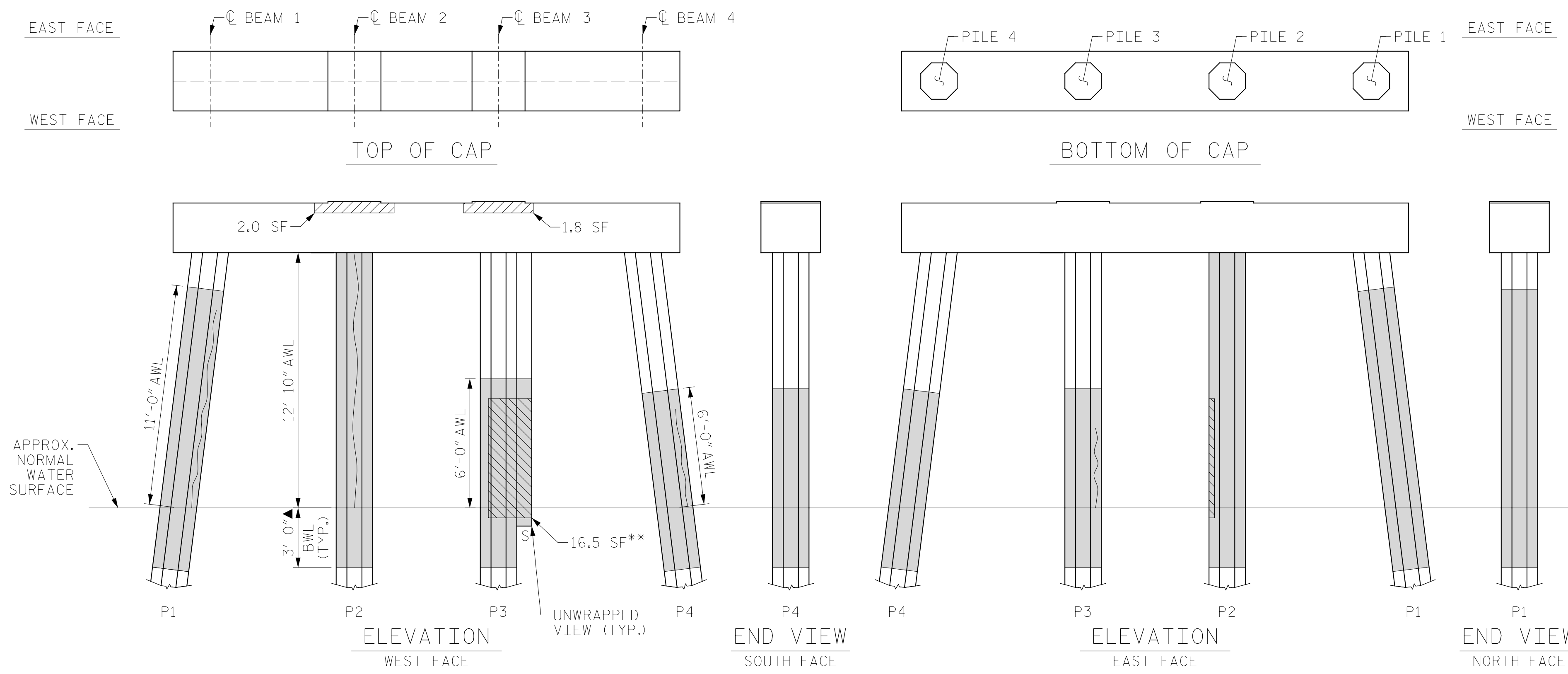
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 241

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



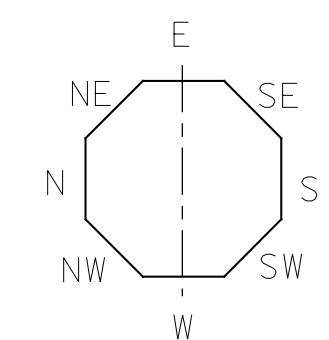
BENT 242

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 241	PILE 1	3	6	6	-	4	6	-	3
	PILE 2	-	6	-	2	-	-	-	-
	PILE 3	5	3	-	-	-	4	6	-
	PILE 4	4	4	-	-	-	4	4	4
BENT 242	PILE 1	-	9	10	-	-	8	-	-
	PILE 2	5	13	13	-	-	7	7	13
	PILE 3	-	-	-	-	3	-	4	-
	PILE 4	-	3	5	3	3	3	3	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 241 & BENT 242

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-290
1			3			TOTAL SHEETS
2			4			355

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 243

CAP REPAIRS			
SHOTCRETE REPAIRS	4.3 SF	2.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	22.3 SF	9.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	176.0 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 244

CAP REPAIRS			
SHOTCRETE REPAIRS	5.0 SF	2.5 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	21.9 SF	9.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	291.0 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

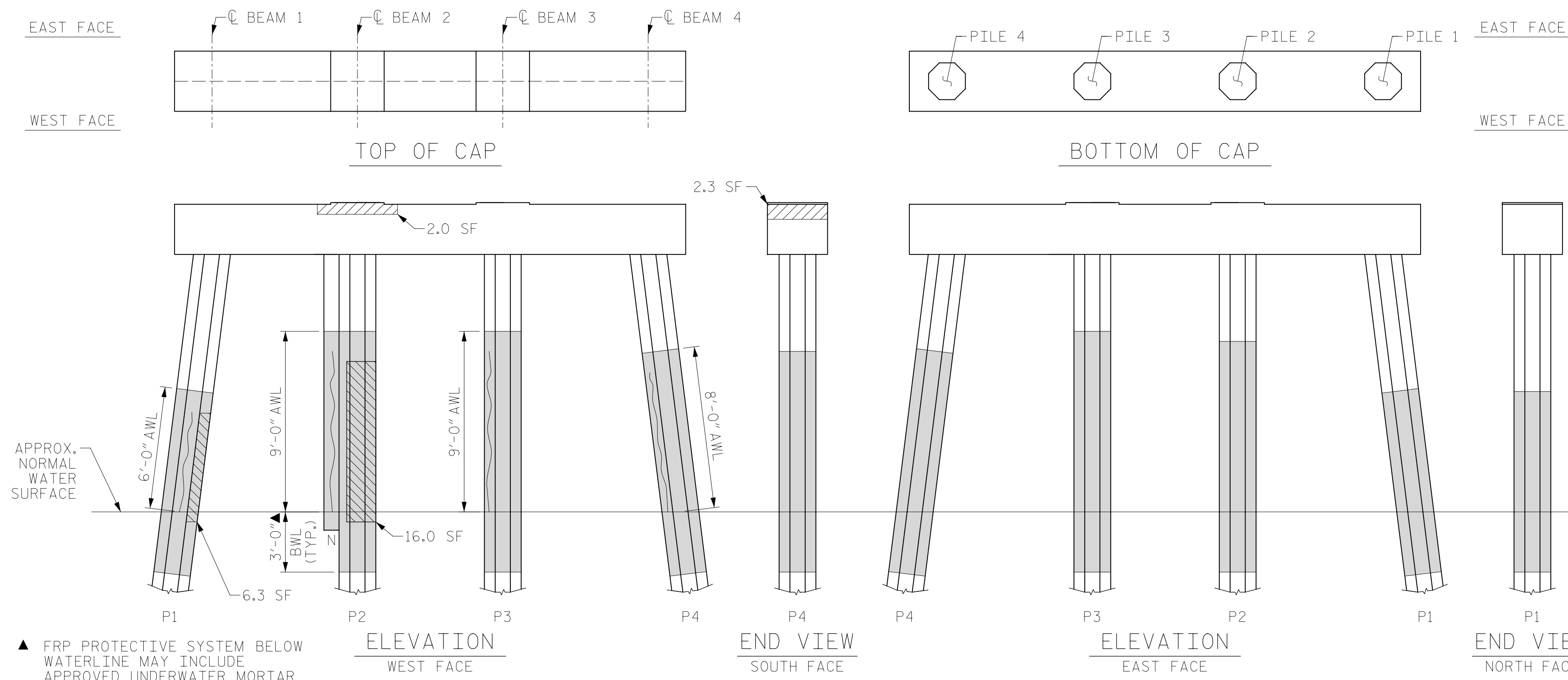
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

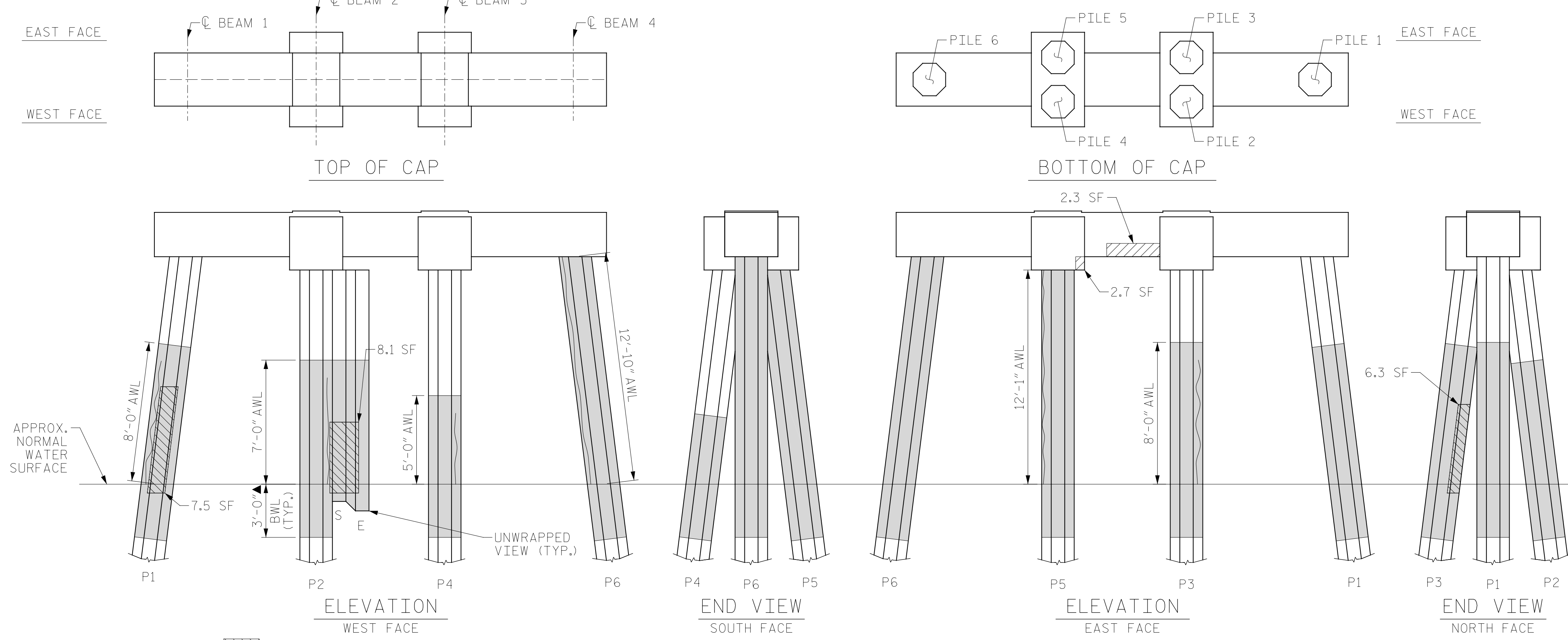
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

BENT 243

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
243	PILE 1	3	5	-	-	5	4	-	-
	PILE 2	-	-	-	3	3	-	7	8
	PILE 3	8	6	4	3	-	-	-	-
	PILE 4	6	3	4	-	-	4	-	7
244	PILE 1	6	-	-	-	7	-	-	7
	PILE 2	-	-	5	2	-	-	-	-
	PILE 3	-	4	-	-	4	-	7	7
	PILE 4	-	-	4	-	4	-	-	4
	PILE 5	3	12	3	6	-	-	-	-
	PILE 6	-	9	-	-	4	-	-	12

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BENT 243 & BENT 244

ERI - EPOXY RESIN INJECTION  
 - FRP PROTECTIVE SYSTEM  
 - PILE CONCRETE RESTORATION  
 - SHOTCRETE REPAIRS

BENT 244

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO. S-291
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

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AS-BUILT REPAIR QUANTITY TABLE

BENT 245

CAP REPAIRS			
SHOTCRETE REPAIRS	2.2 SF	1.1 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	23.7 SF	10.1 SF	SF CF
FRP PROTECTIVE SYSTEM AWL	181.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

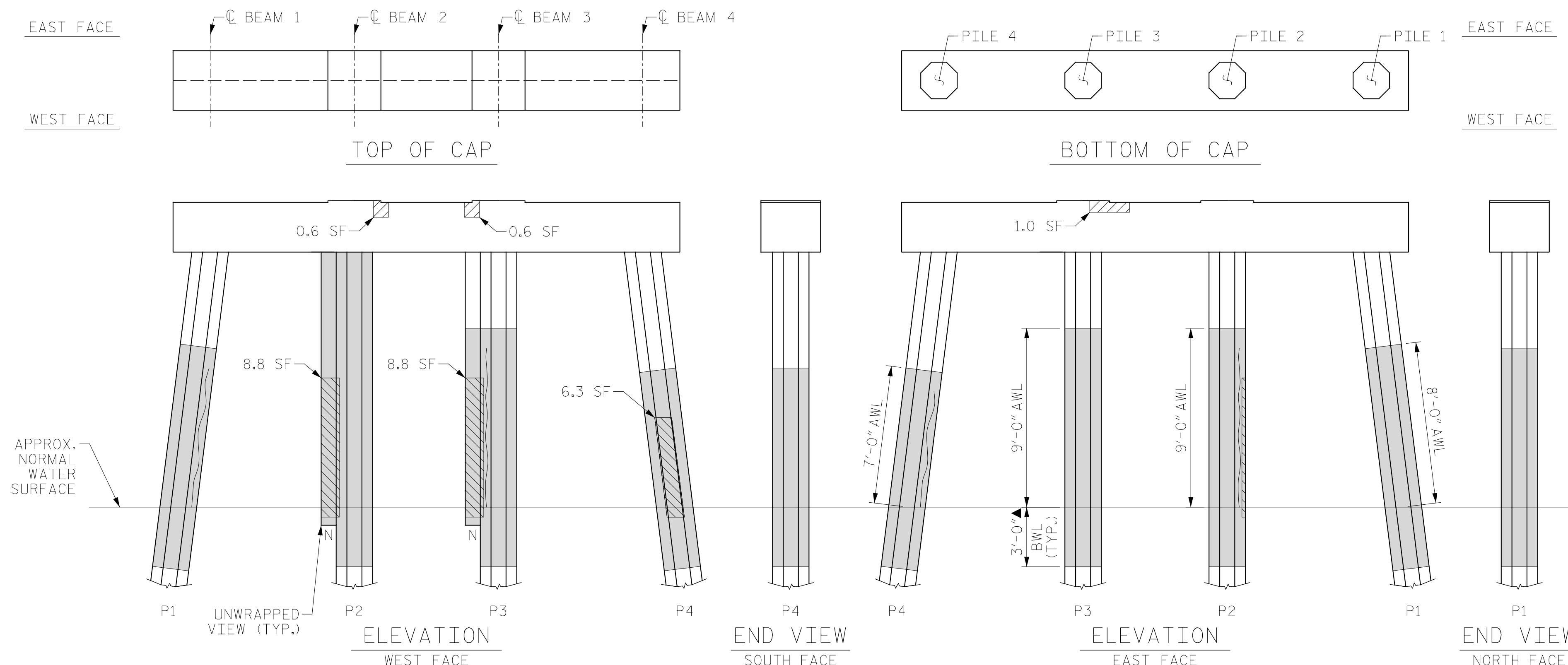
BENT 246

CAP REPAIRS			
SHOTCRETE REPAIRS	13.3 SF	6.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	42.6 SF	17.3 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	213.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

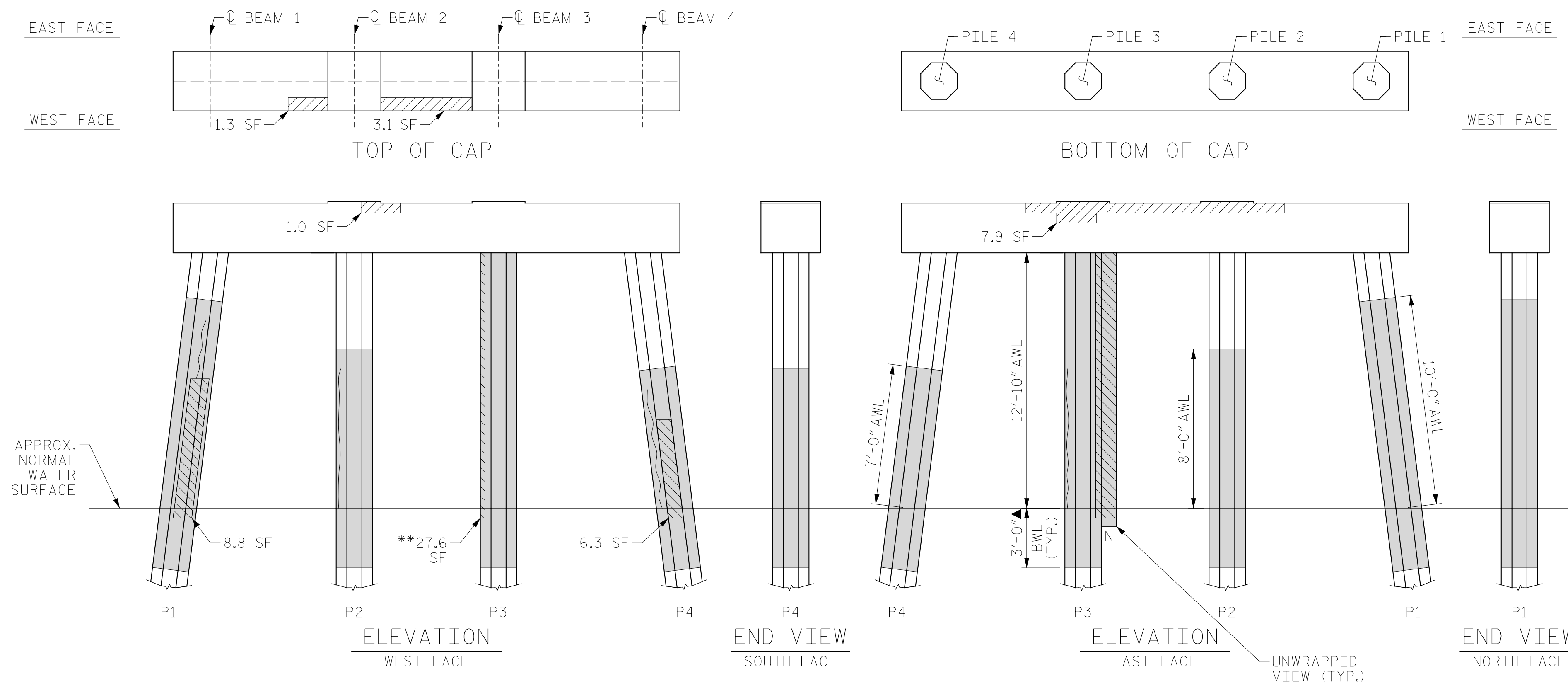
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 245

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



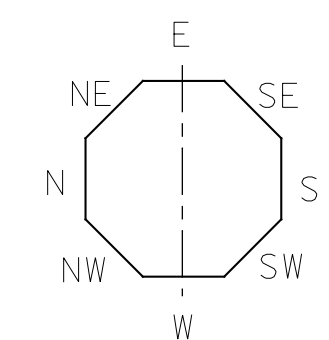
BENT 246

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

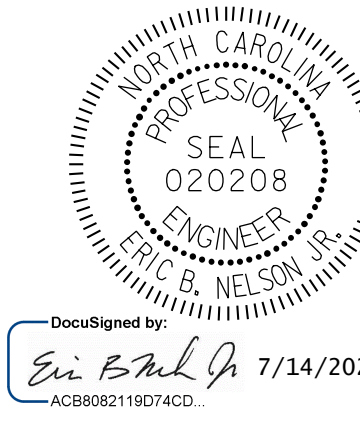
		NW	W	SW	S	SE	E	NE	N
BENT 245	PILE 1	-	-	7	6	-	6	3	-
	PILE 2	7	5	5	-	-	5	8	-
	PILE 3	8	4	-	-	3	-	7	-
	PILE 4	-	-	5	3	3	-	6	5
BENT 246	PILE 1	-	3	3	-	3	-	-	-
	PILE 2	-	4	-	4	3	-	-	7
	PILE 3	13	-	-	7	7	-	-	-
	PILE 4	6	-	5	4	3	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 245 & BENT 246

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-292
1			3			TOTAL SHEETS 355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 247

CAP REPAIRS				
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	112.5 SF	42.4 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	234.7 SF			
FRP PROTECTIVE SYSTEM BWL	66.0 SF			

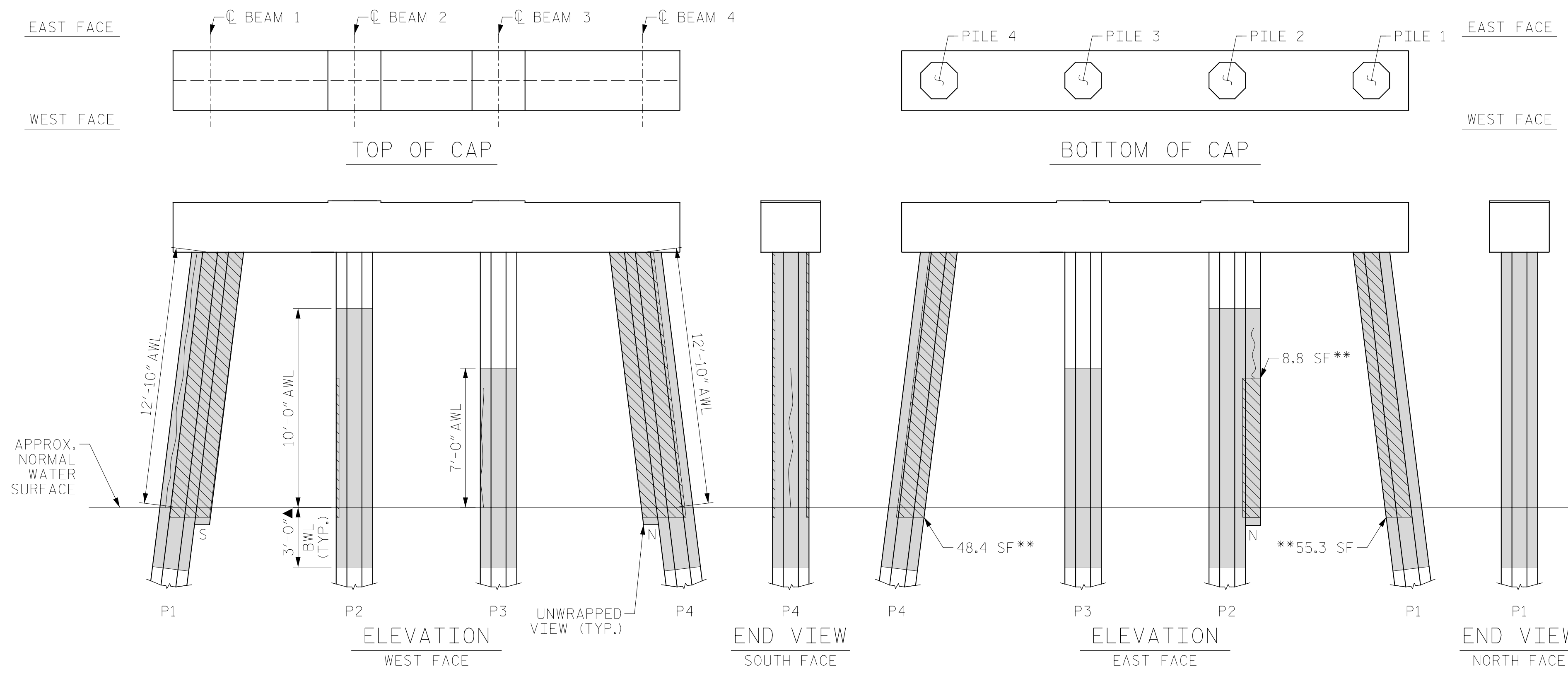
BENT 248

CAP REPAIRS				
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	37.5 SF	15.5 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	165.0 SF			
FRP PROTECTIVE SYSTEM BWL	66.0 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

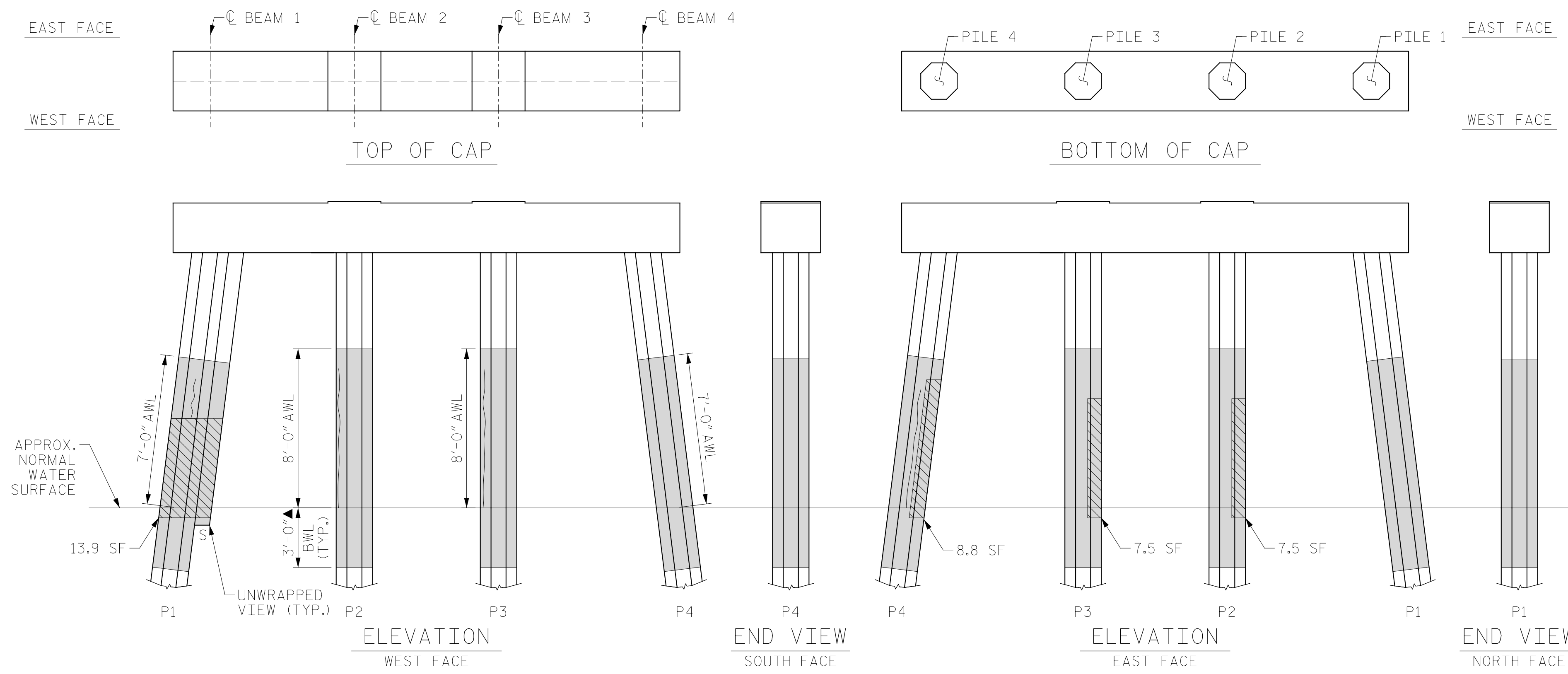
NOTES:  
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FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 247

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 248

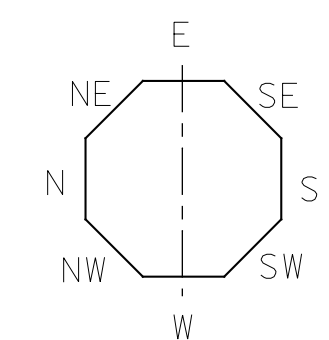
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 247	PILE 1	9	-	-	-	-	-	8	8
	PILE 2	6	8	-	4	4	5	-	3
	PILE 3	-	-	6	4	3	-	-	4
	PILE 4	-	-	-	7	-	13	-	-
BENT 248	PILE 1	-	2	-	-	3	4	-	-
	PILE 2	7	-	4	-	-	-	-	-
	PILE 3	7	-	-	4	-	-	-	-
	PILE 4	-	5	4	-	3	6	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 247 & BENT 248

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019

**GANNETT FLEMING**  
One Glenwood Avenue  
Suite 900  
Raleigh, NC 27603  
(919) 420-7660  
NC Lic. No. F-0270

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-293
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 249

CAP REPAIRS			
SHOTCRETE REPAIRS	28.4 SF	14.2 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	16.5 SF	6.5 CF	
FRP PROTECTIVE SYSTEM AWL	181.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 250

CAP REPAIRS			
SHOTCRETE REPAIRS	38.5 SF	19.3 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	29.2 SF	12.1 CF	
FRP PROTECTIVE SYSTEM AWL	213.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

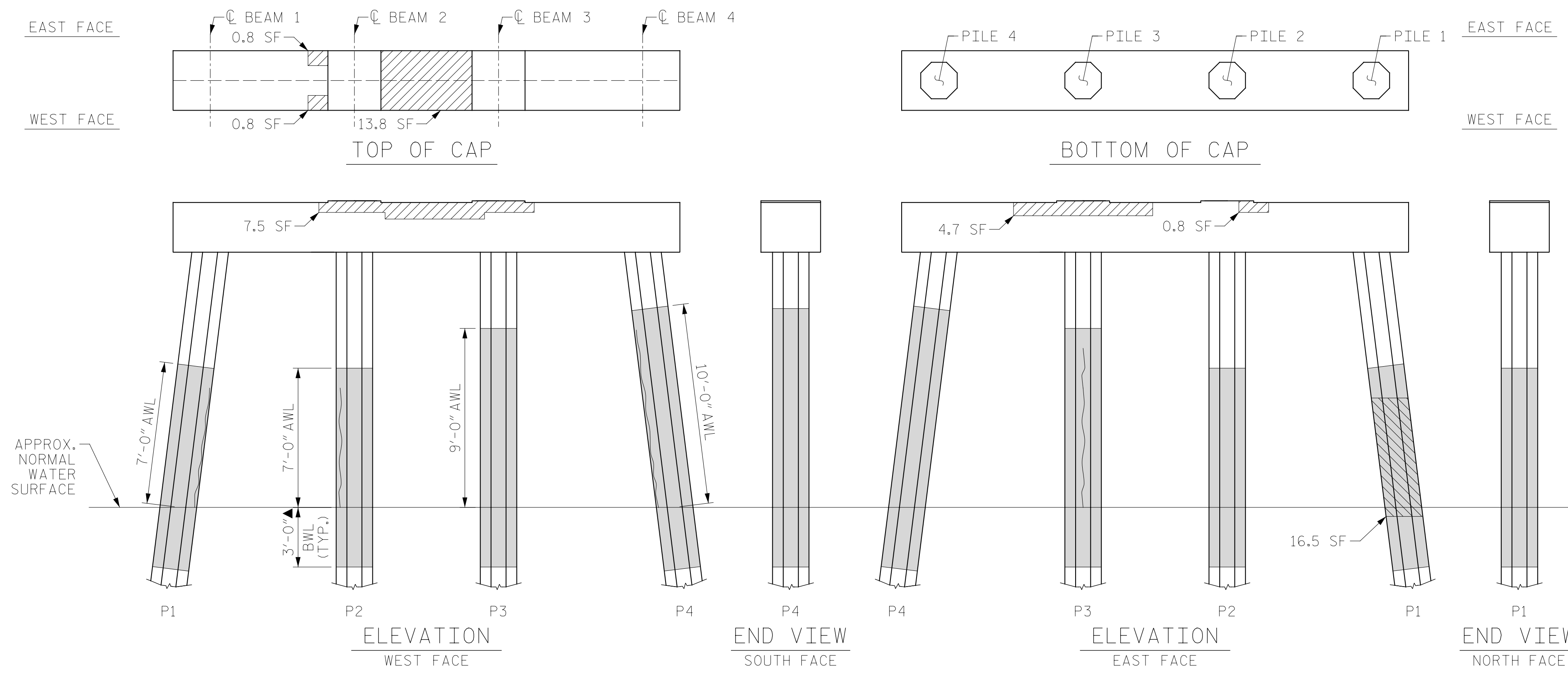
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

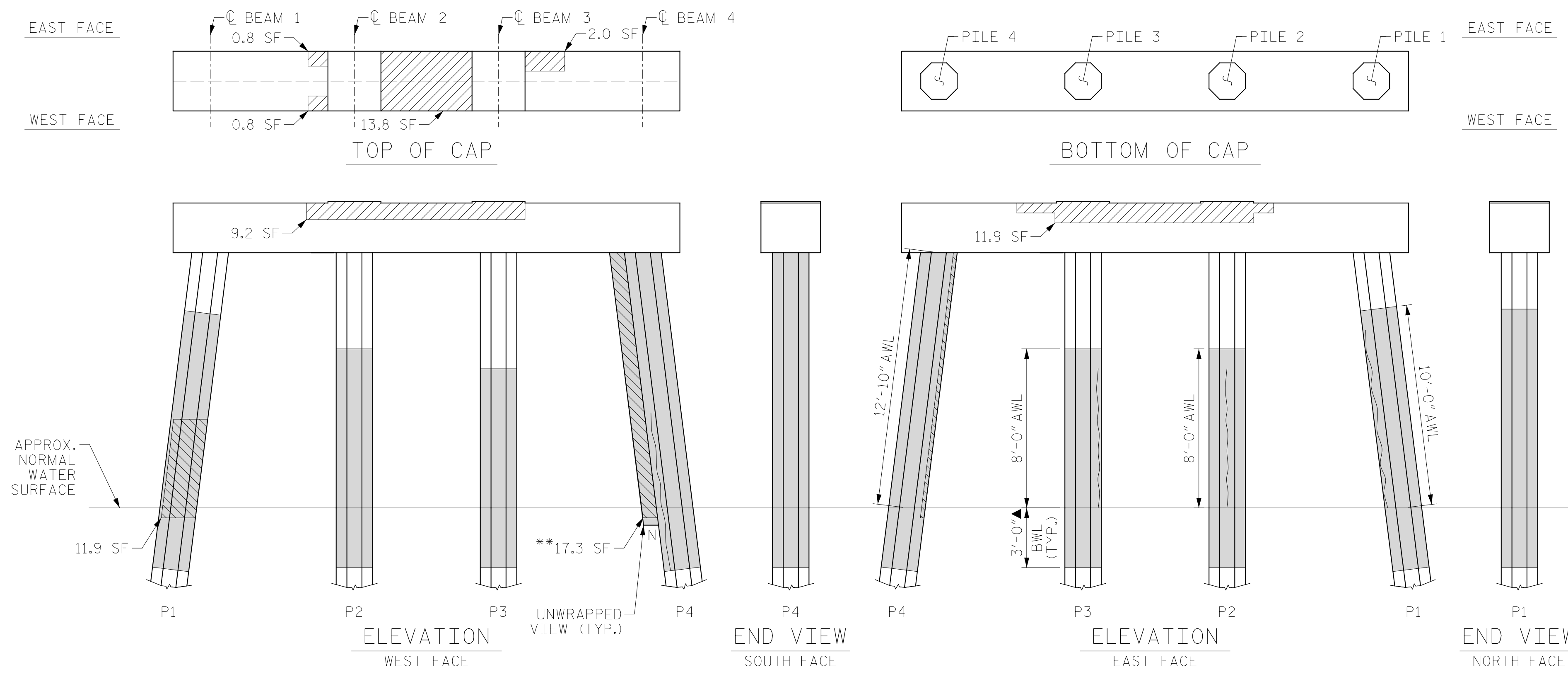
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 249

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



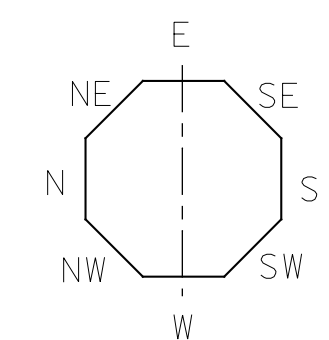
BENT 250

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 249	PILE 1	-	-	-	6	-	-	-	4
	PILE 2	6	4	6	6	-	2	2	-
	PILE 3	-	4	-	3	6	8	8	8
	PILE 4	7	5	-	8	6	7	-	9
BENT 250	PILE 1	2	-	5	-	9	6	-	-
	PILE 2	6	6	-	4	7	7	4	4
	PILE 3	-	4	-	-	2	3	4	7
	PILE 4	8	7	-	5	5	6	13	-

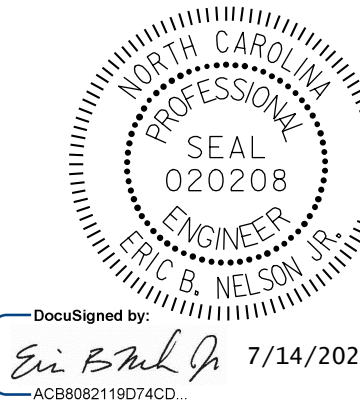
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 249 & BENT 250

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 251

CAP REPAIRS			
SHOTCRETE REPAIRS	28.3 SF	14.2 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	21.8 SF	9.1 CF	
FRP PROTECTIVE SYSTEM AWL	159.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 252

CAP REPAIRS			
SHOTCRETE REPAIRS	5.1 SF	2.6 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	8.8 SF	3.7 CF	
FRP PROTECTIVE SYSTEM AWL	214.5 CF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

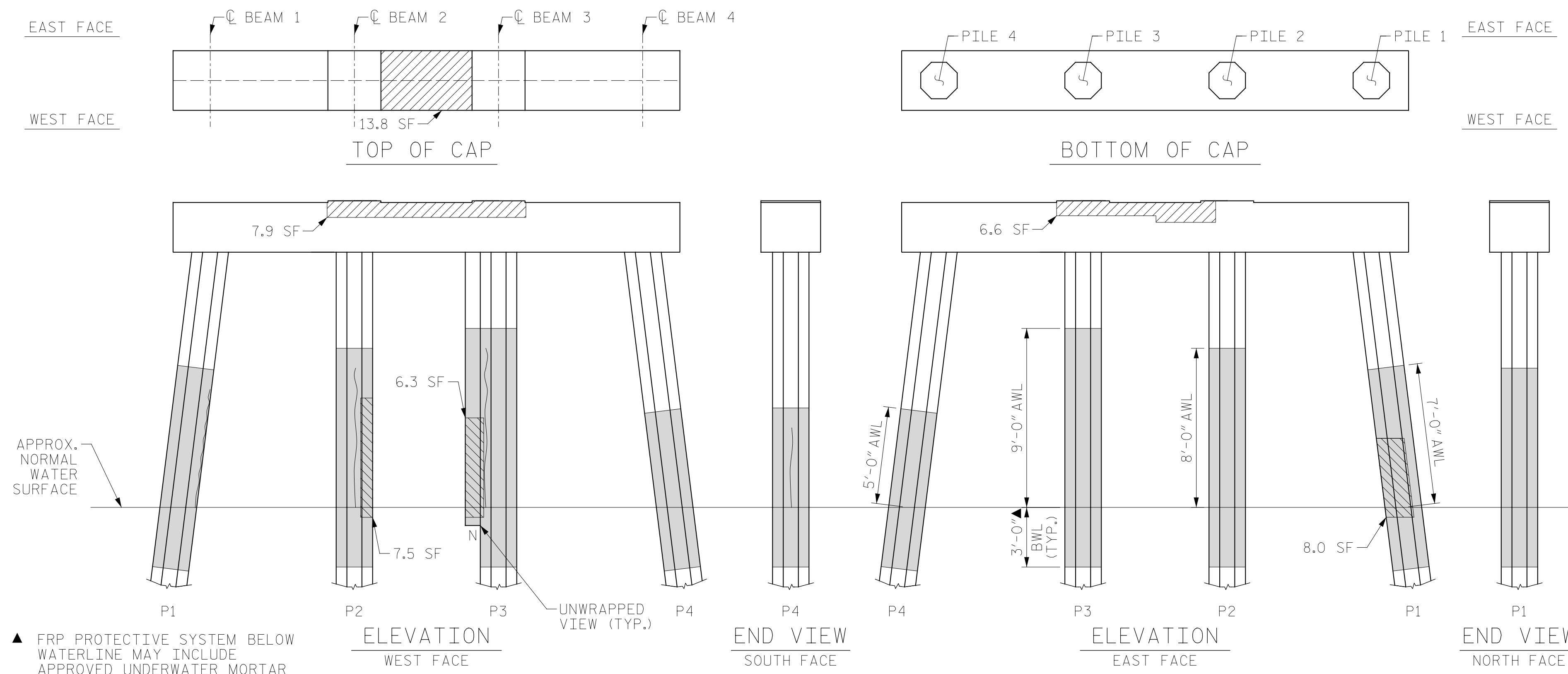
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

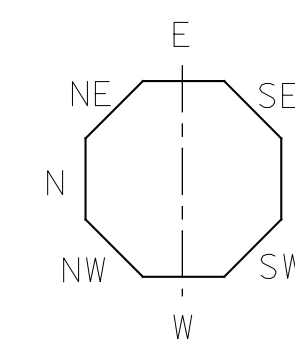
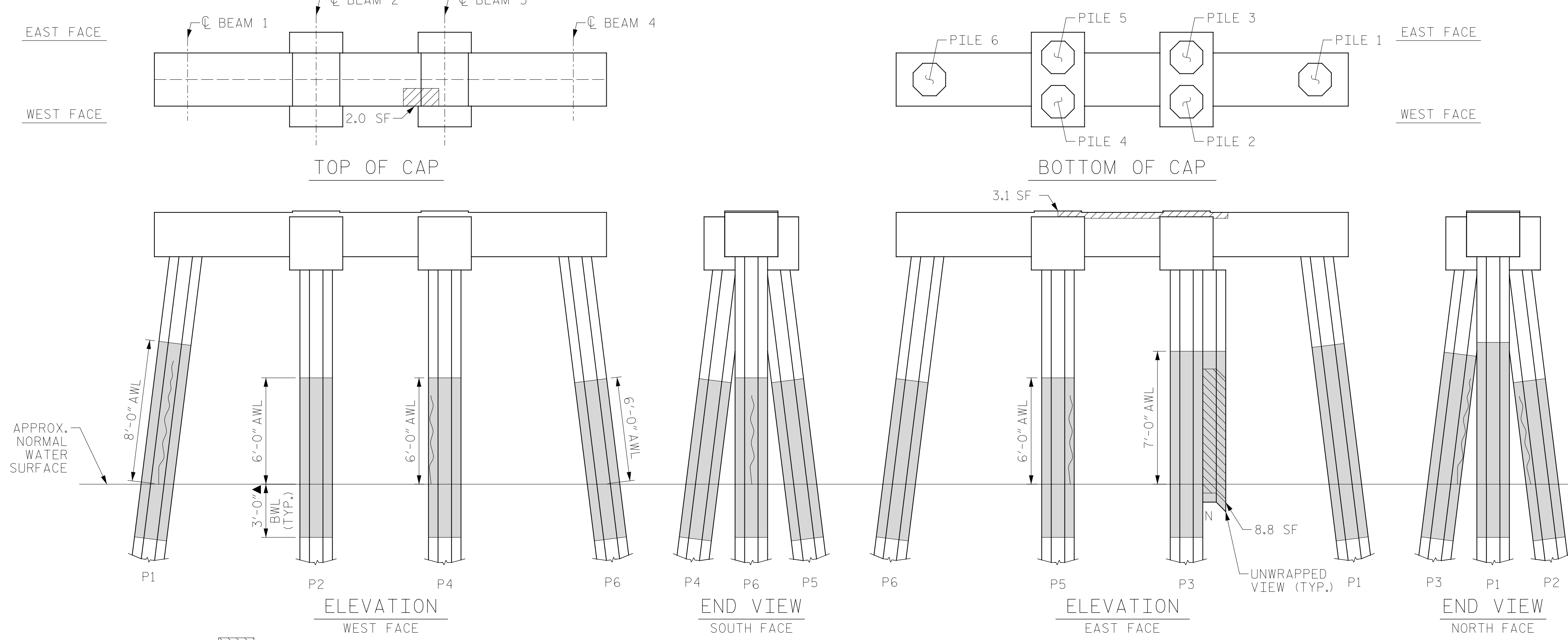
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

BENT 251

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

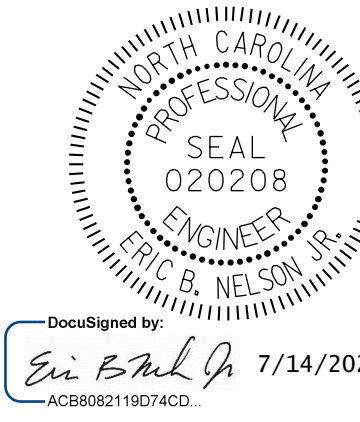


ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 251	PILE 1	3	4	4	6	-	2	-	2
	PILE 2	3	7	-	5	4	-	-	-
	PILE 3	8	-	-	-	4	7	8	-
	PILE 4	3	4	4	4	4	-	-	-
BENT 252	PILE 1	3	7	7	7	7	-	-	-
	PILE 2	-	-	3	-	5	-	5	-
	PILE 3	-	6	6	-	-	-	-	-
	PILE 4	5	-	5	-	-	-	5	-
	PILE 5	5	-	4	-	-	4	5	-
	PILE 6	-	-	-	5	4	-	-	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
 DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 251 & BENT 252

ERI - EPOXY RESIN INJECTION  
 - PILE CONCRETE RESTORATION  
 - FRP PROTECTIVE SYSTEM  
 - SHOTCRETE REPAIRS

BENT 252

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO. S-295
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			

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AS-BUILT REPAIR QUANTITY TABLE

BENT 253

CAP REPAIRS			
SHOTCRETE REPAIRS	3.5 SF	1.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	38.0 SF	15.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	153.1 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

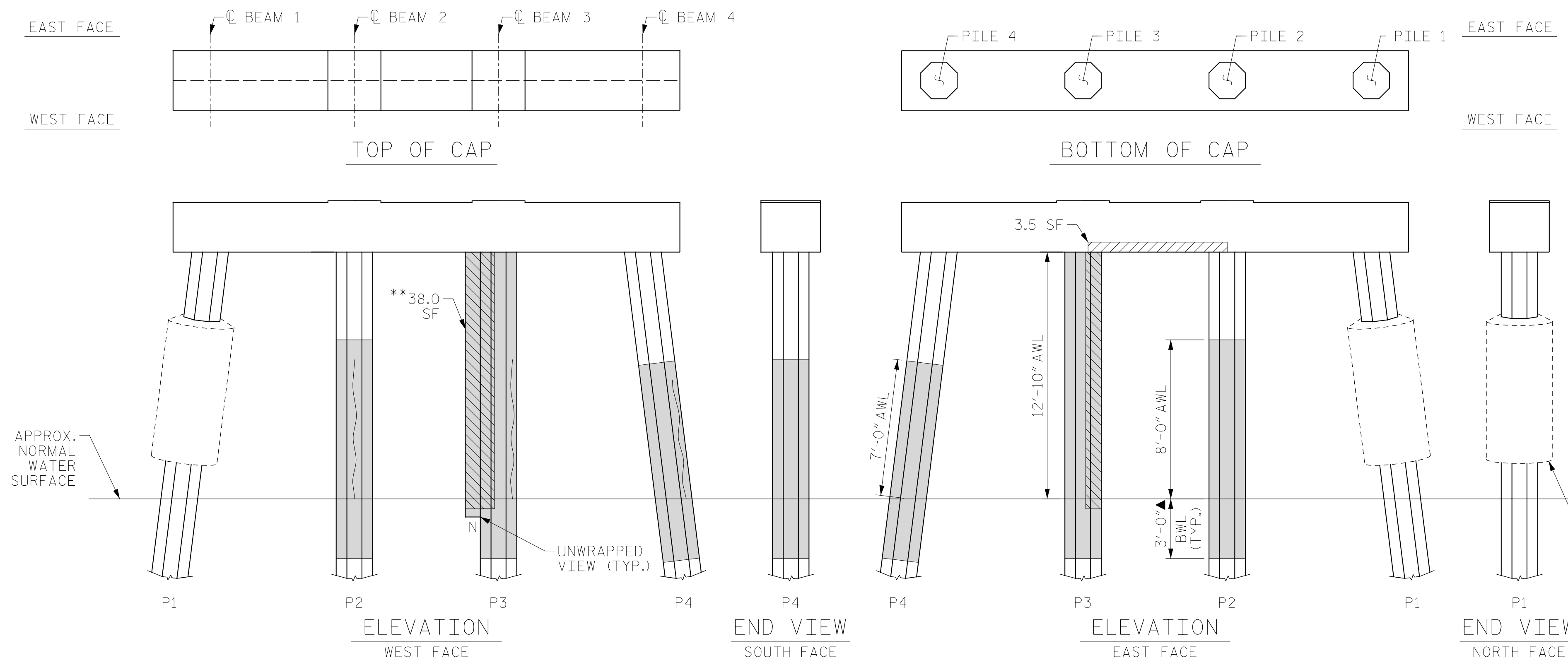
BENT 254

CAP REPAIRS			
SHOTCRETE REPAIRS	7.7 SF	3.9 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	34.8 SF	14.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	159.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

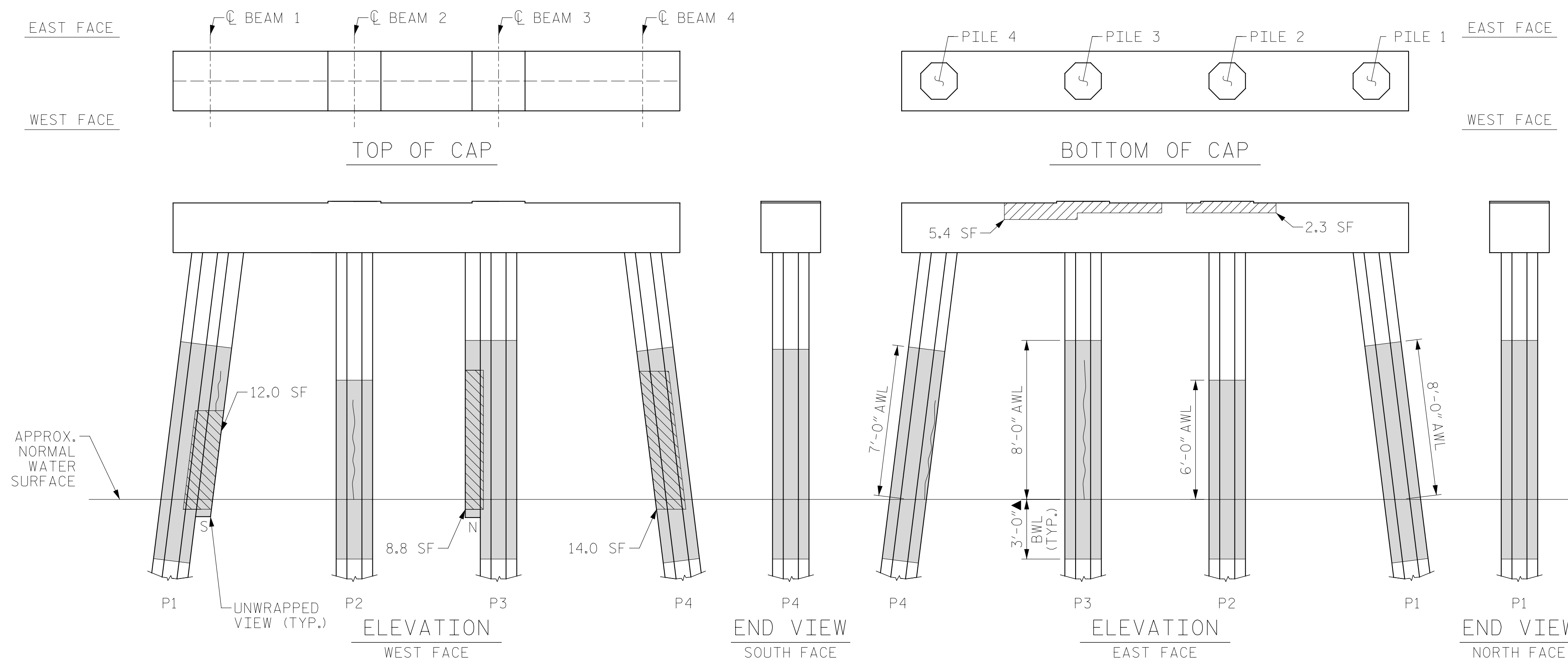
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 253

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 254

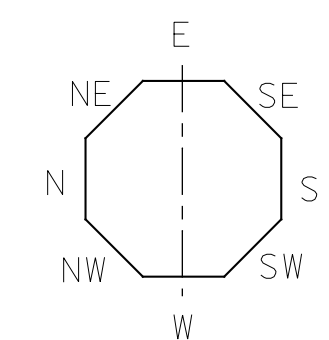
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 253	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	4	7	-	4	6	-	-	-
	PILE 3	-	-	7	-	-	4	-	-
	PILE 4	-	4	5	3	3	6	-	6
BENT 254	PILE 1	4	4	-	2	4	4	5	3
	PILE 2	5	5	-	-	-	-	-	-
	PILE 3	6	6	-	-	3	7	-	-
	PILE 4	-	-	-	3	3	3	-	6

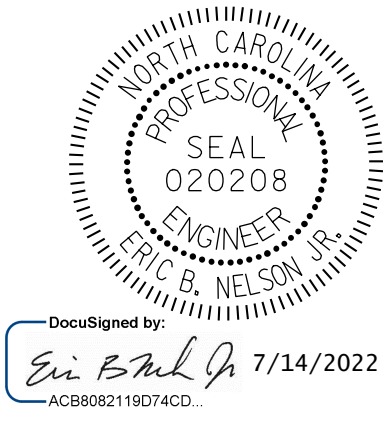
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 253 & BENT 254

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 255

CAP REPAIRS			
SHOTCRETE REPAIRS	4.0 SF	2.0 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	86.4 SF	33.1 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	255.8 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 256

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	36.5 SF	15.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	202.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

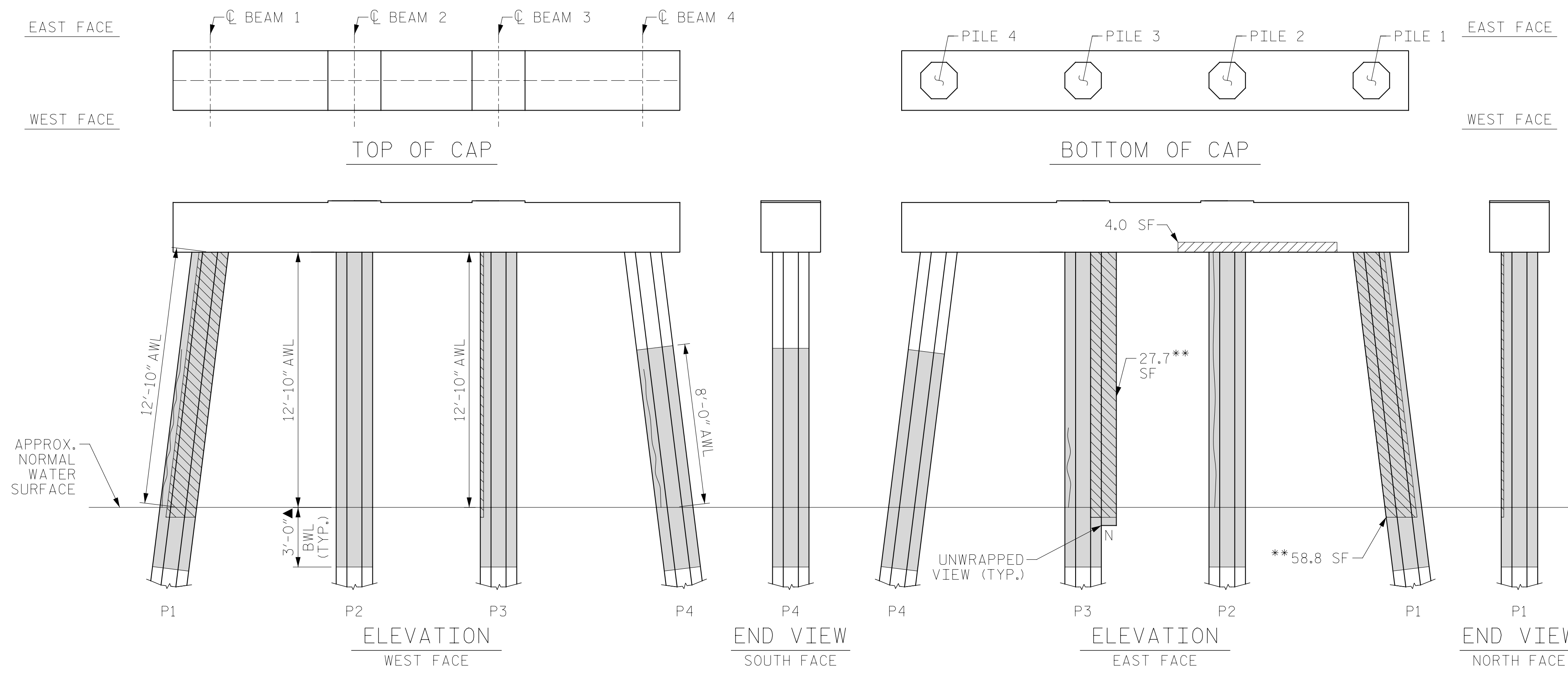
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

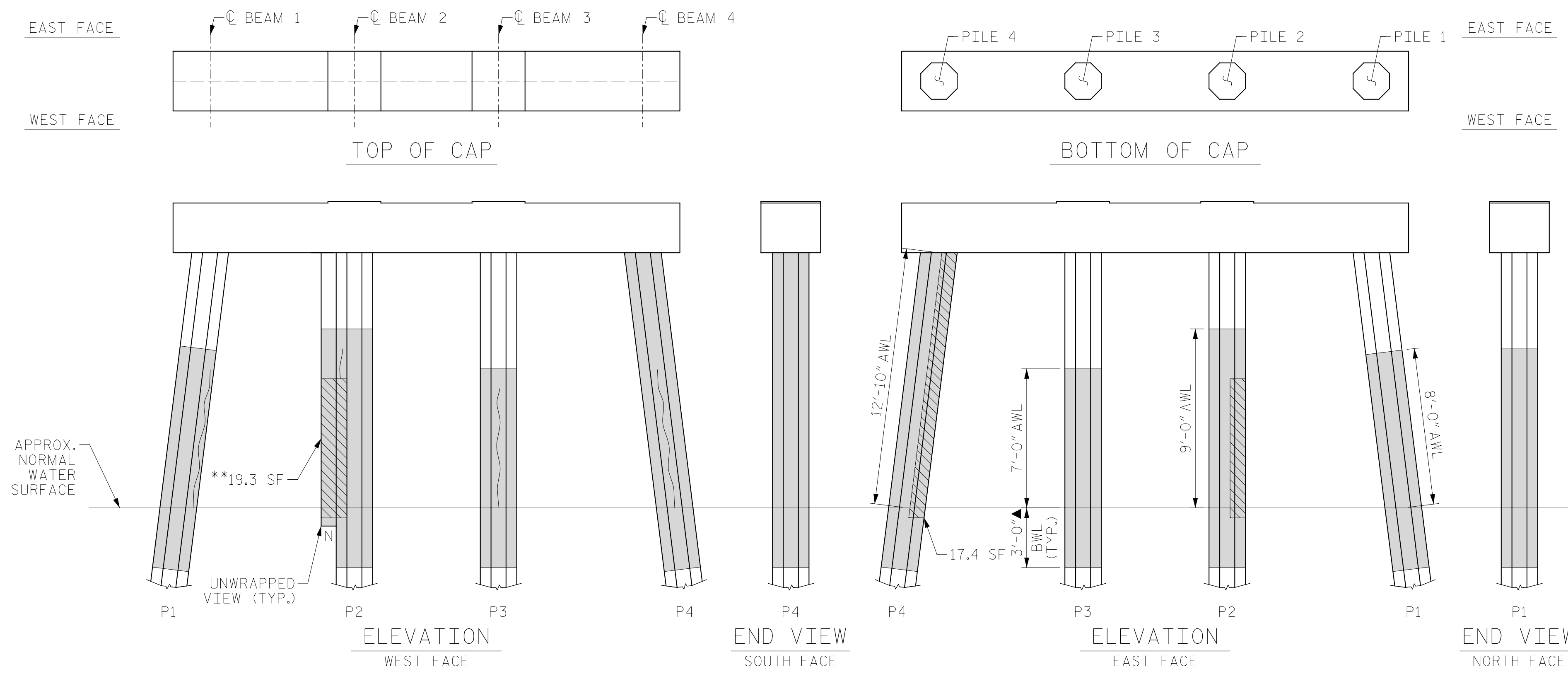
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 255

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 256

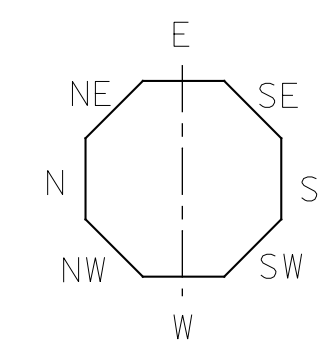
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

	NW	W	SW	S	SE	E	NE	N
BENT 255	PILE 1	8	-	-	-	-	-	-
	PILE 2	-	-	3	13	3	-	4
	PILE 3	-	-	-	-	4	-	-
	PILE 4	7	5	3	-	-	6	-
BENT 256	PILE 1	6	6	7	6	6	6	-
	PILE 2	2	6	-	6	4	-	2
	PILE 3	-	6	6	2	4	5	-
	PILE 4	-	7	5	4	4	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 255 & BENT 256

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019

**GANNETT FLEMING**  
One Glenwood Avenue  
Suite 900  
Raleigh, NC 27603  
(919) 420-7660  
NC Lic. No. F-0270

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 257

CAP REPAIRS			
SHOTCRETE REPAIRS	27.2 SF	13.6 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	74.7 SF	29.0 CF	
FRP PROTECTIVE SYSTEM AWL	208.1 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 258

CAP REPAIRS			
SHOTCRETE REPAIRS	9.2 SF	4.6 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	64.7 SF	24.7 CF	
FRP PROTECTIVE SYSTEM AWL	208.1 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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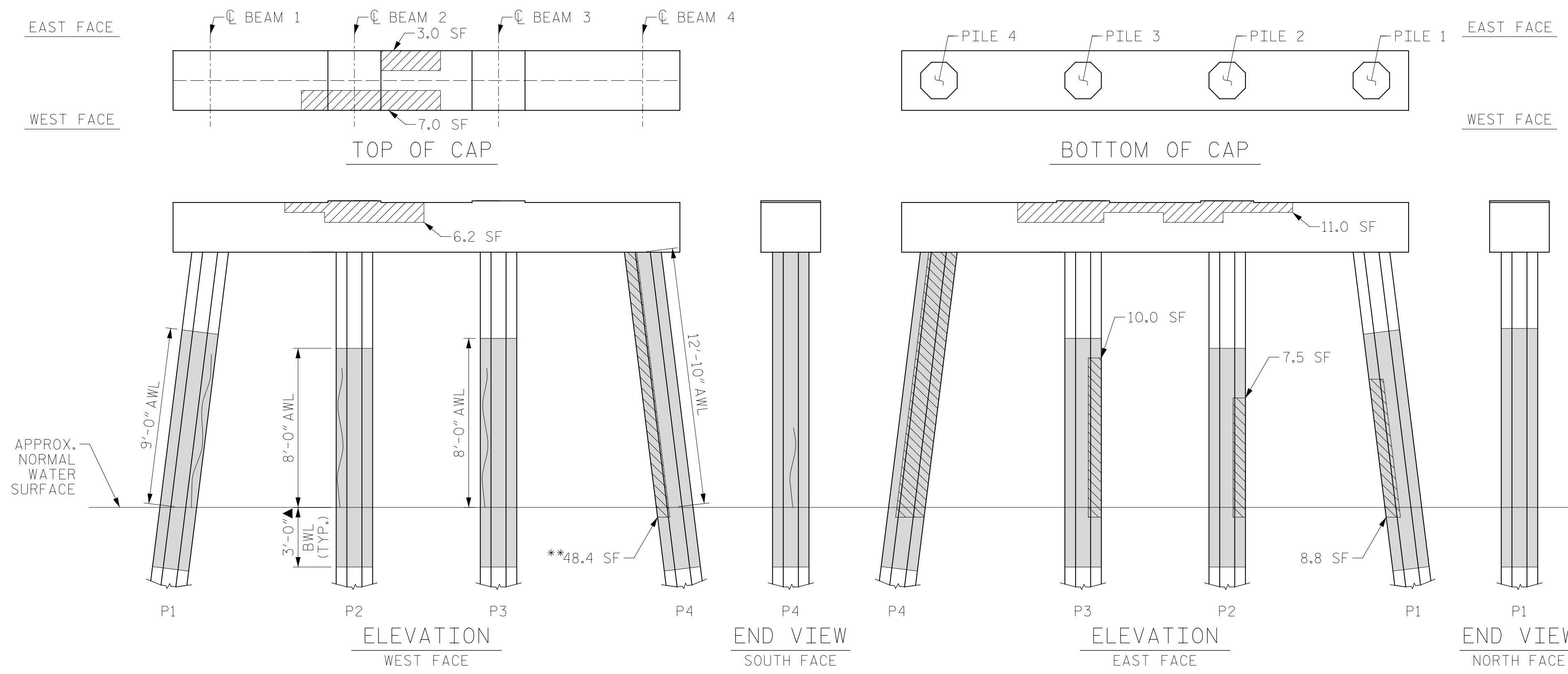
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

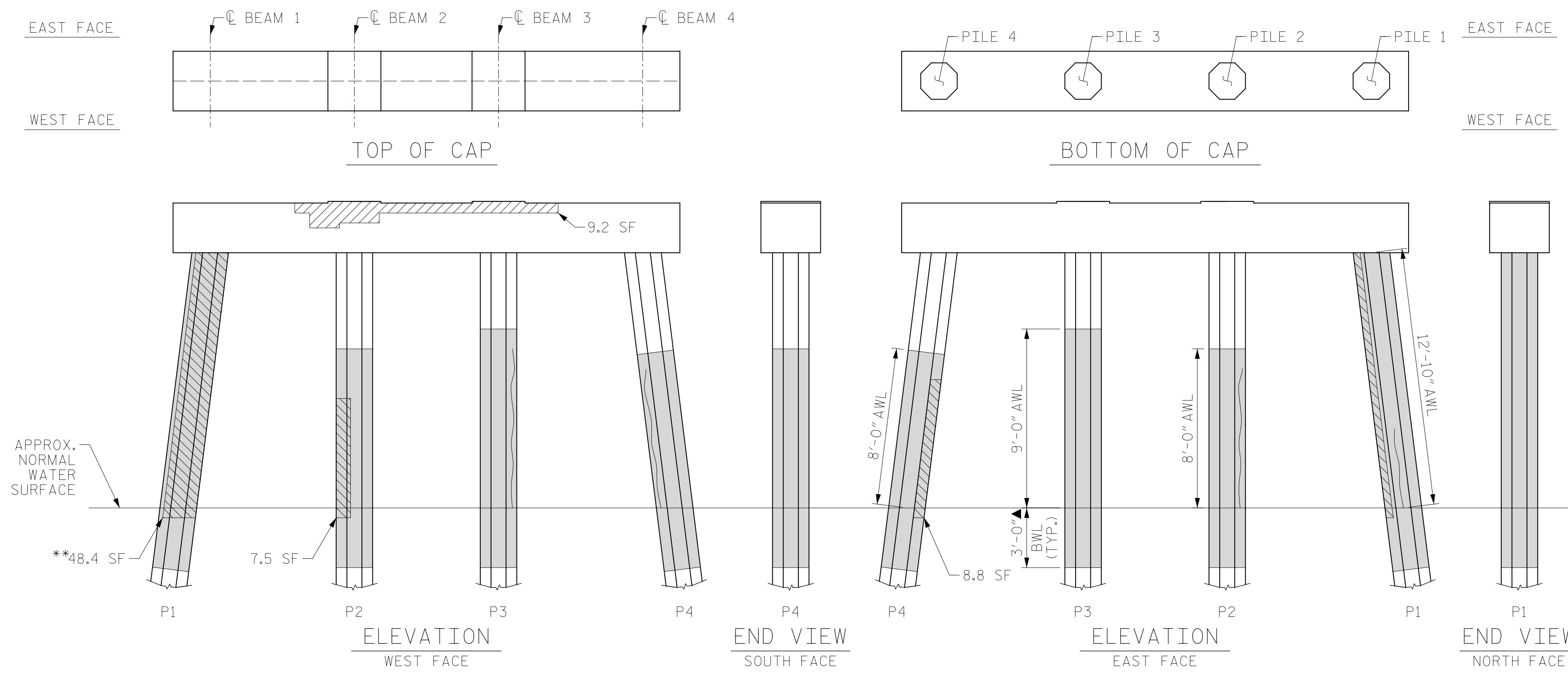
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 257

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



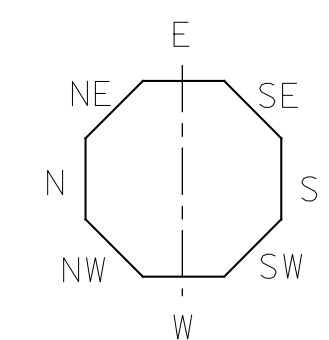
BENT 258

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

	NW	W	SW	S	SE	E	NE	N
BENT 257	PILE 1	6	7	8	6	-	8	5
	PILE 2	7	4	-	-	4	7	-
	PILE 3	7	4	-	-	-	-	-
	PILE 4	-	-	3	4	-	-	-
BENT 258	PILE 1	-	-	-	-	-	4	4
	PILE 2	-	-	-	4	4	-	7
	PILE 3	-	7	8	7	-	7	-
	PILE 4	7	3	4	-	-	6	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Hatched Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 257 & BENT 258

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 259

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	17.2 SF	8.6 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	49.3 SF	19.8 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	197.1 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 260

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	4.8 SF	2.4 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	16.3 SF	6.9 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	263.1 SF				
FRP PROTECTIVE SYSTEM BWL	99.0 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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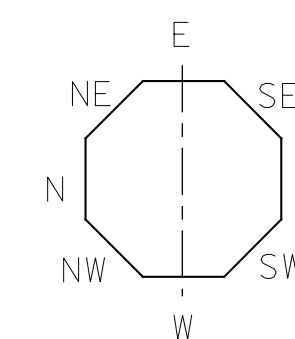
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 259	PILE 1	-	4	-	6	6	-	-	-
	PILE 2	-	6	-	3	3	6	-	-
	PILE 3	-	6	3	-	-	4	6	-
	PILE 4	-	4	4	-	4	4	-	-
BENT 260	PILE 1	-	-	6	6	-	-	-	-
	PILE 2	2	-	4	5	-	4	6	5
	PILE 3	-	6	6	-	-	-	-	7
	PILE 4	3	-	-	3	3	5	5	-
	PILE 5	6	-	5	4	-	5	6	-
	PILE 6	13	4	5	-	5	6	13	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

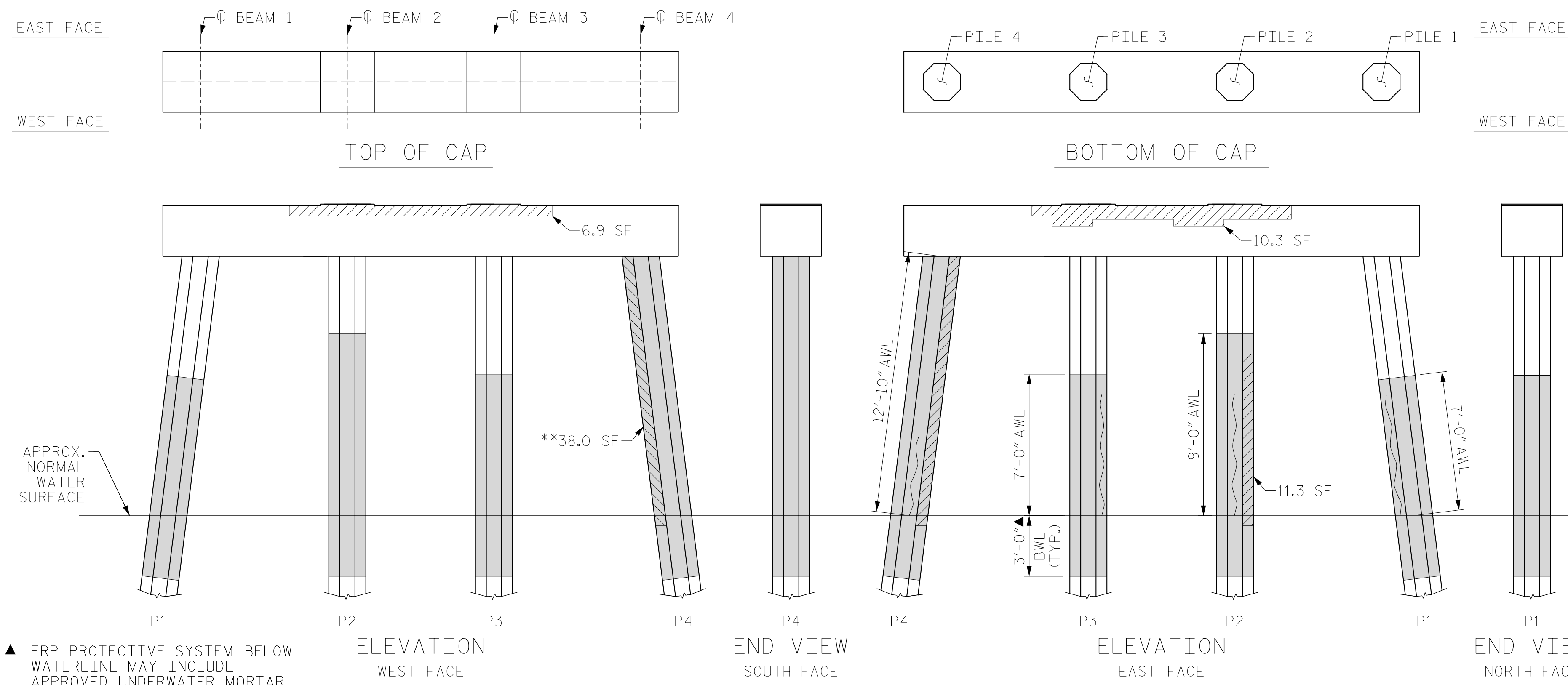
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 259 & BENT 260

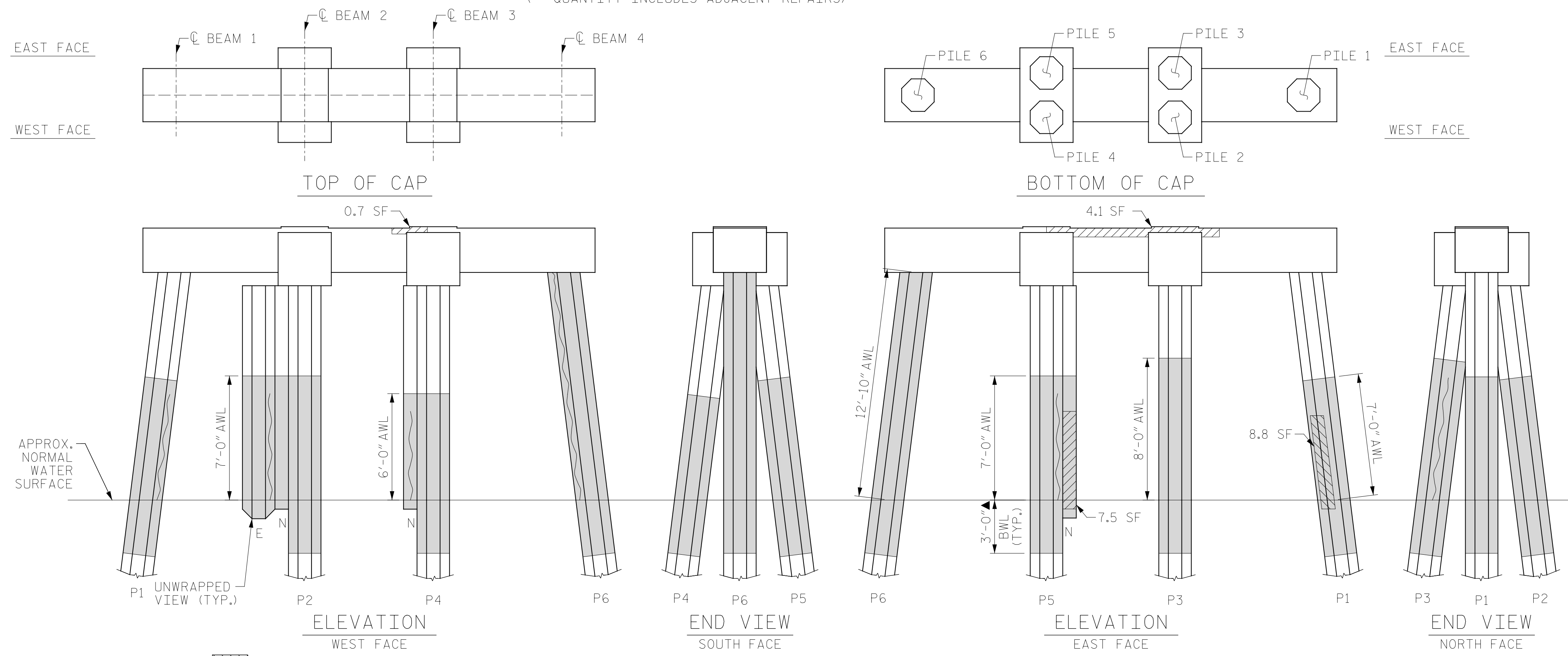
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-299
1			3			TOTAL SHEETS
2			4			355



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

BENT 259

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



ERI - EPOXY RESIN INJECTION    [Hatched Box] - PILE CONCRETE RESTORATION  
 [Solid Box] - FRP PROTECTIVE SYSTEM    [Diagonal Lines Box] - SHOTCRETE REPAIRS

BENT 260

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY    DATE: 2/2019  
 CHECKED BY: J. FARNHAM    DATE: 4/2019



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AS-BUILT REPAIR QUANTITY TABLE

BENT 261

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	7.7 SF	3.9 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	15.0 SF	6.4 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	165.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 262

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	3.8 SF	1.9 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	6.3 SF	2.7 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	148.5 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

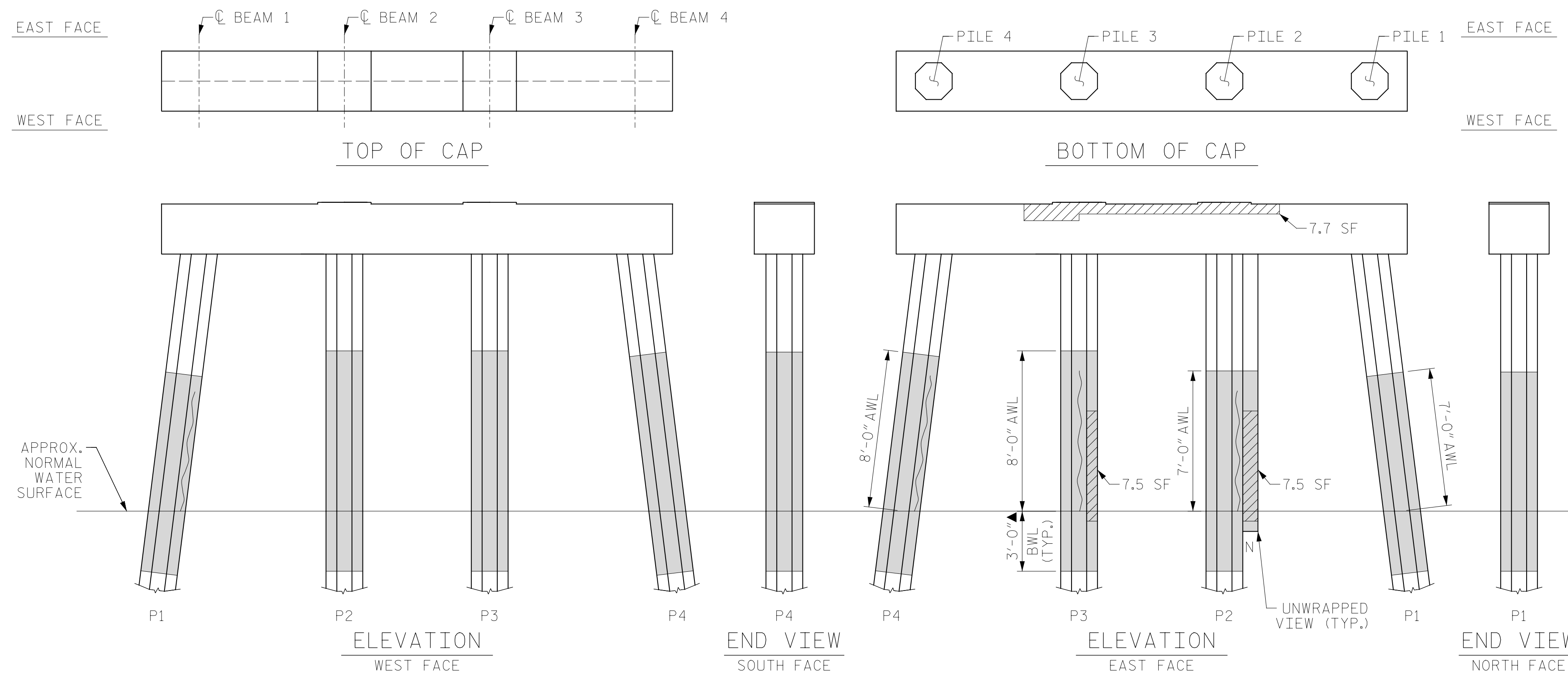
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

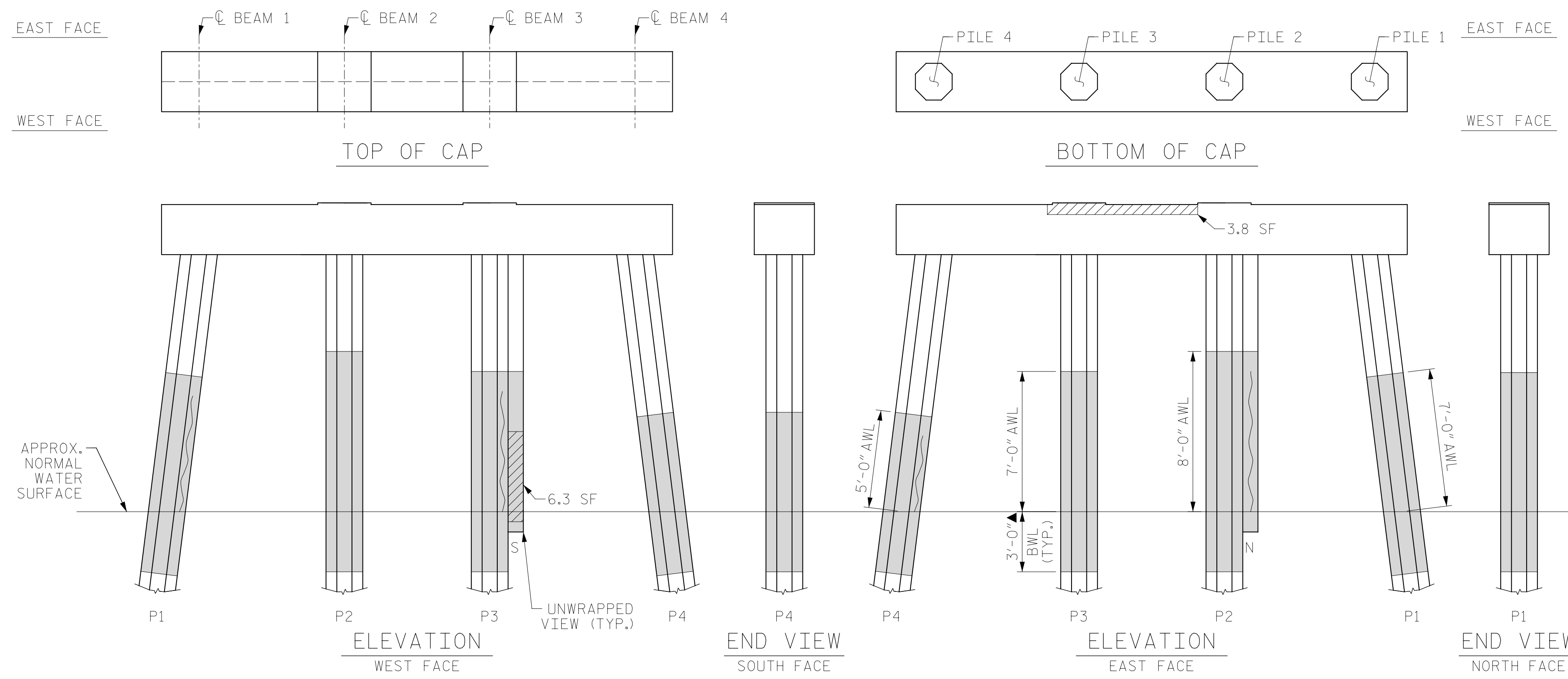
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 261

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



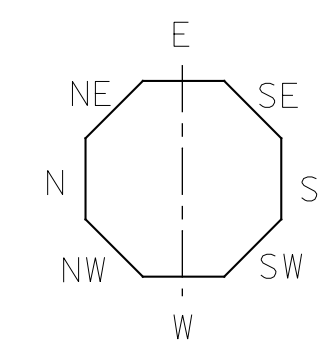
BENT 262

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

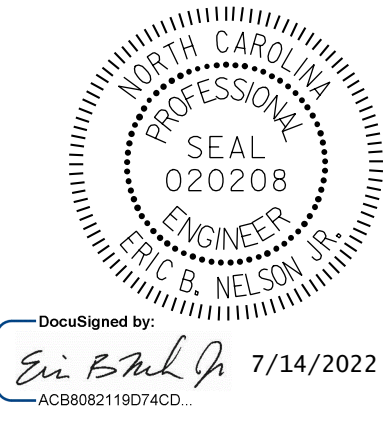
		NW	W	SW	S	SE	E	NE	N
BENT 261	PILE 1	-	-	6	-	4	4	-	-
	PILE 2	2	3	-	-	-	-	6	1
	PILE 3	7	4	-	-	4	7	-	6
	PILE 4	6	3	4	2	2	-	7	5
BENT 262	PILE 1	-	5	6	-	-	-	5	6
	PILE 2	3	4	-	2	2	-	6	7
	PILE 3	3	4	6	2	-	-	-	-
	PILE 4	-	-	-	3	-	3	4	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 261 & BENT 262

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			355

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AS-BUILT REPAIR QUANTITY TABLE

BENT 263

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	0.7 SF	0.4 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	8.8 SF	3.7 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	77.0 SF				
FRP PROTECTIVE SYSTEM BWL	33.0 SF				

BENT 264

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	10.0 SF	4.2 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	137.5 SF				
FRP PROTECTIVE SYSTEM BWL	49.5 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

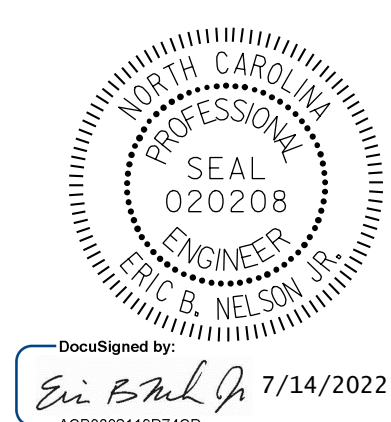
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 263	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	3	-	3	-	5	5
	PILE 4	7	4	-	2	5	-	6	-
BENT 264	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	8	-	-	6	4	4	8	-
	PILE 3	7	-	6	1	-	5	-	7
	PILE 4	7	-	2	-	3	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



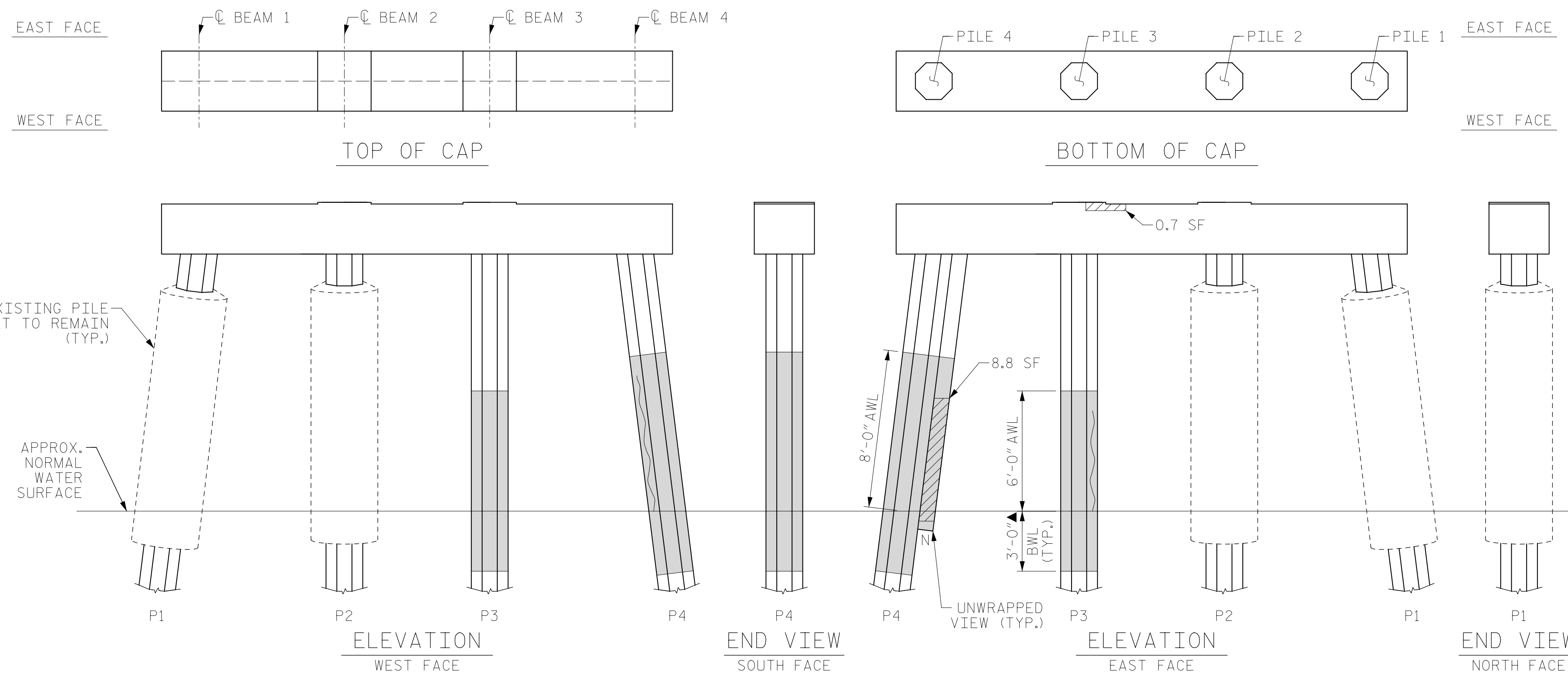
DocuSigned by:  
*Eric B. Nelson, Jr.* 7/14/2022  
 AC6892119014CD

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 263 & BENT 264

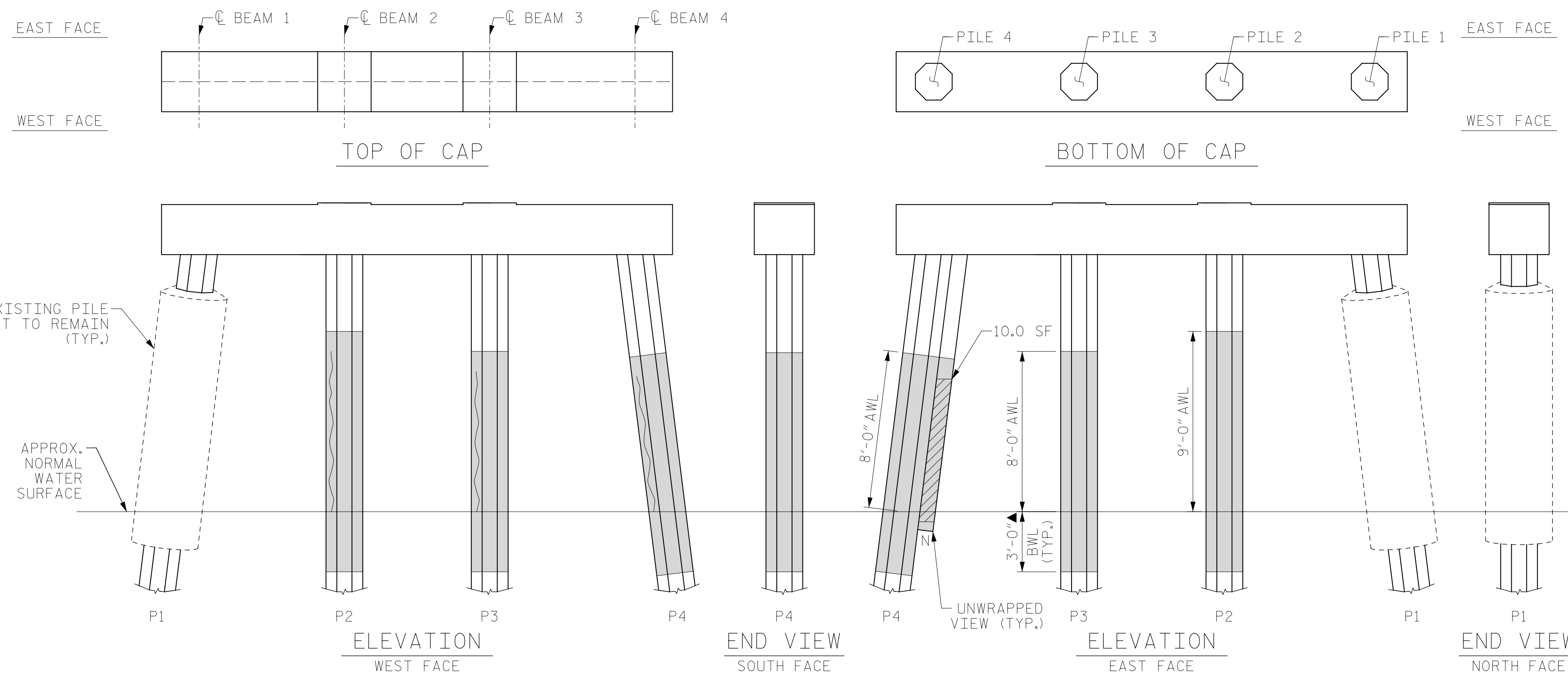
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-301
1			3			TOTAL SHEETS
2			4			355

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BENT 263

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 264

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 265

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	2.3 SF	1.2 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	7.3 SF	3.2 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	126.5 SF				
FRP PROTECTIVE SYSTEM BWL	49.5 SF				

BENT 266

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	5.2 SF	2.6 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	8.1 SF	3.7 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	143.0 SF				
FRP PROTECTIVE SYSTEM BWL	49.5 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

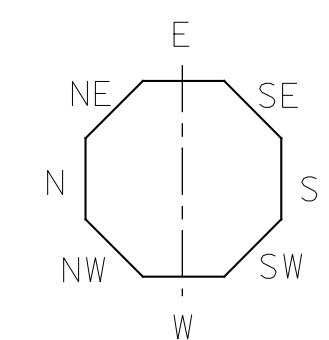
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 265	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	4	6	6	-	6	3	-
	PILE 3	-	3	4	4	-	6	4	-
	PILE 4	8	4	5	-	-	8	-	-
BENT 266	PILE 1	7	4	8	9	-	6	1	6
	PILE 2	4	-	3	-	-	-	6	1
	PILE 3	5	-	3	3	6	8	-	-
	PILE 4	-	-	-	-	-	-	-	-

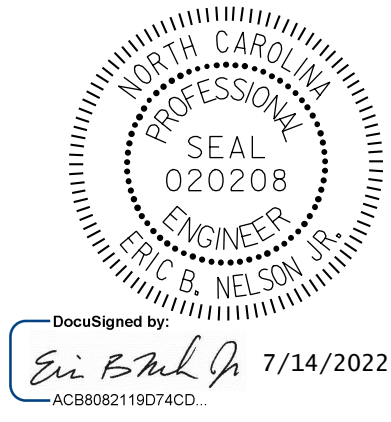
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS

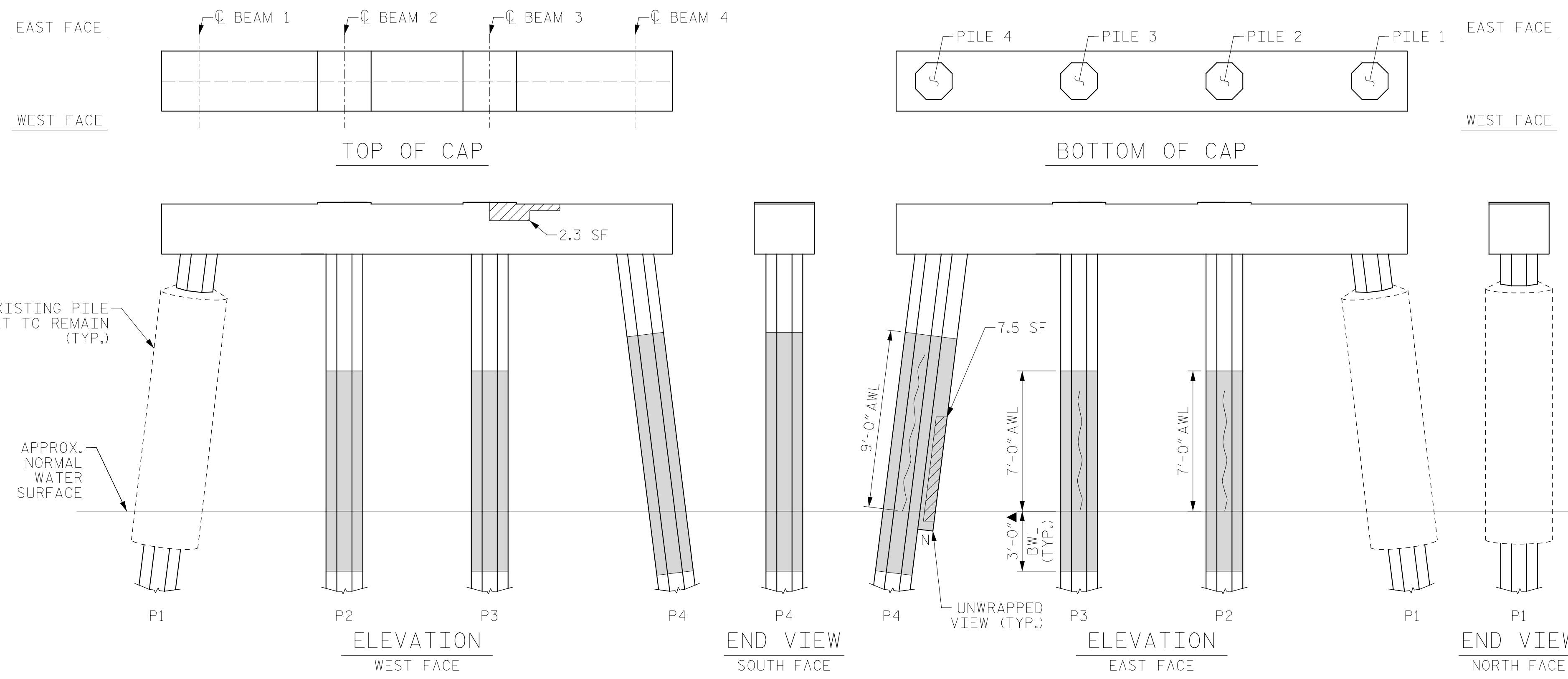


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 265 & BENT 266

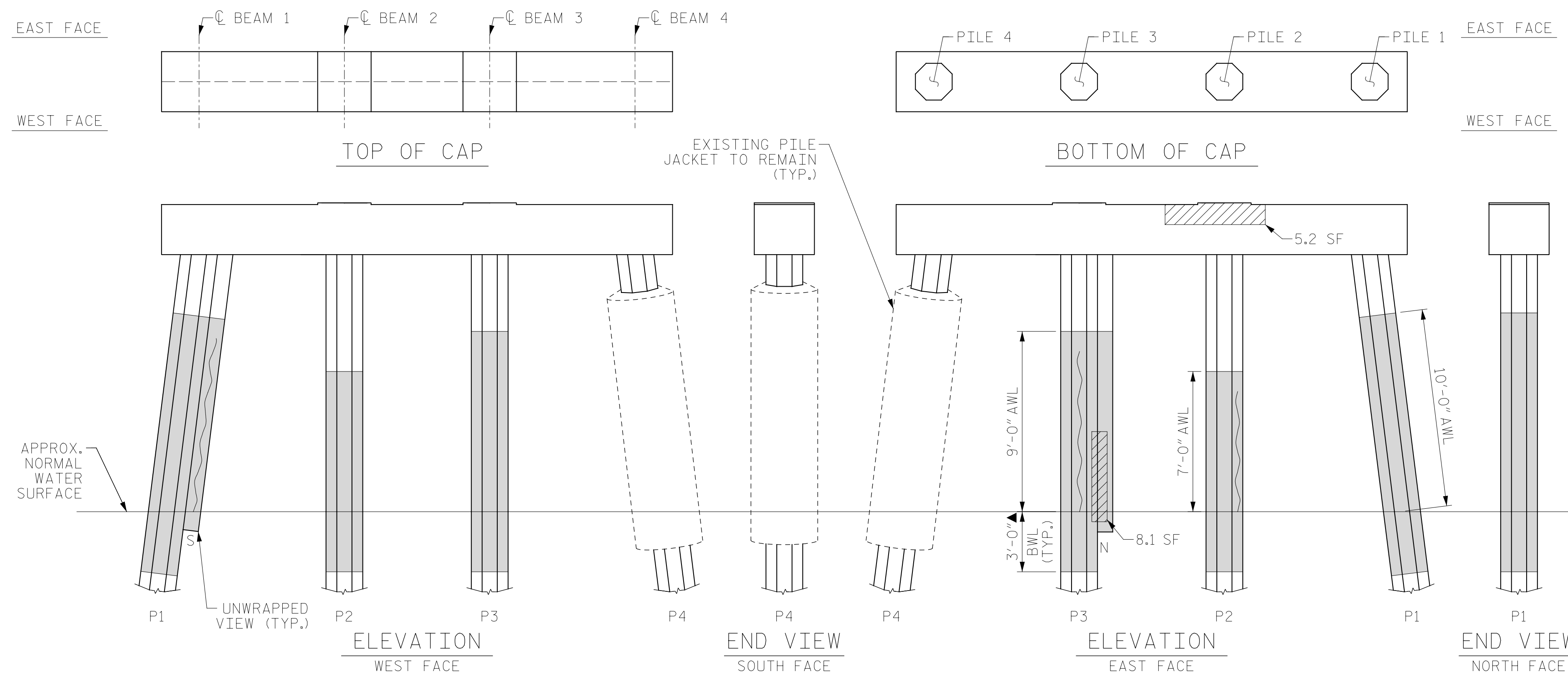
REVISIONS						SHEET NO.
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BENT 265

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 266

(AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\*QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019

AS-BUILT REPAIR QUANTITY TABLE

BENT 267

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	7.3 SF	3.2 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	224.6 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 268

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	134.9 SF	52.3 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	324.5 SF				
FRP PROTECTIVE SYSTEM BWL	99.0 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

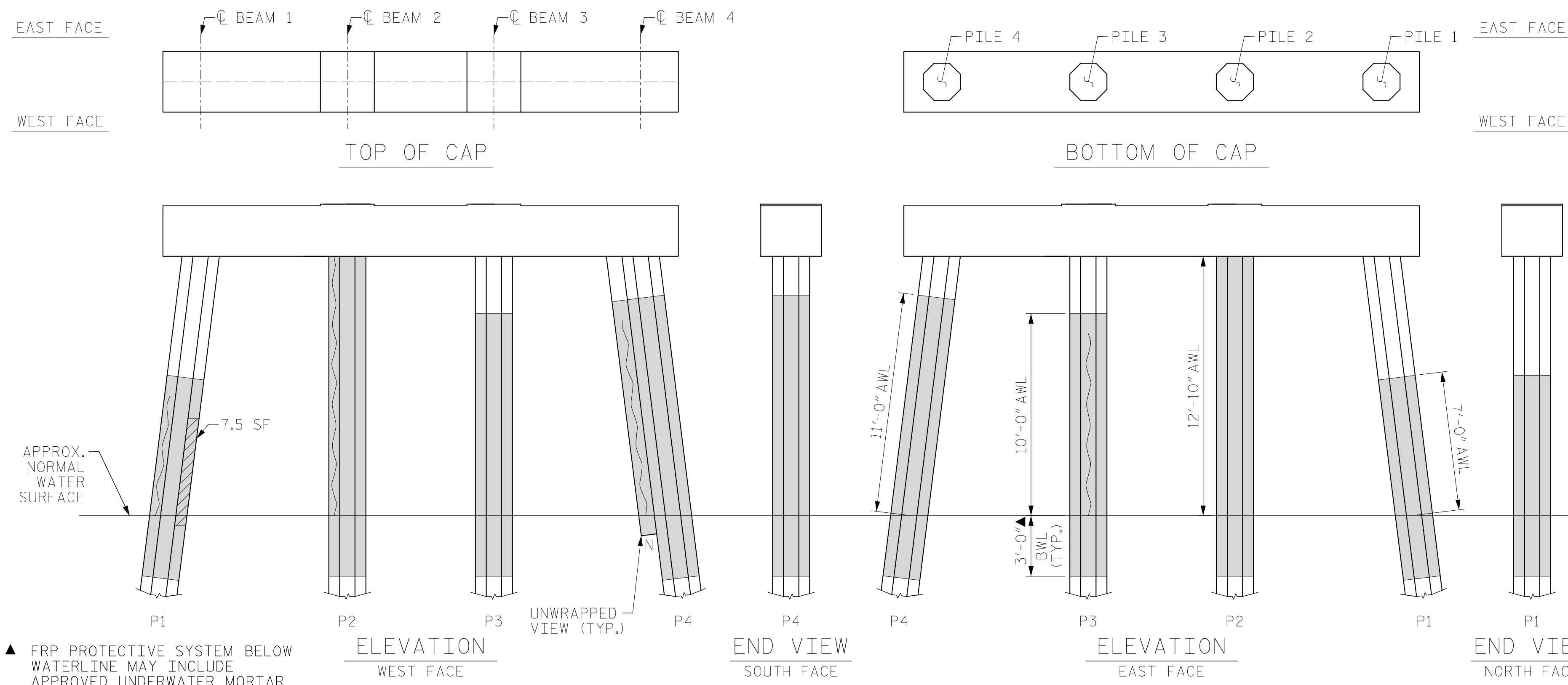
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

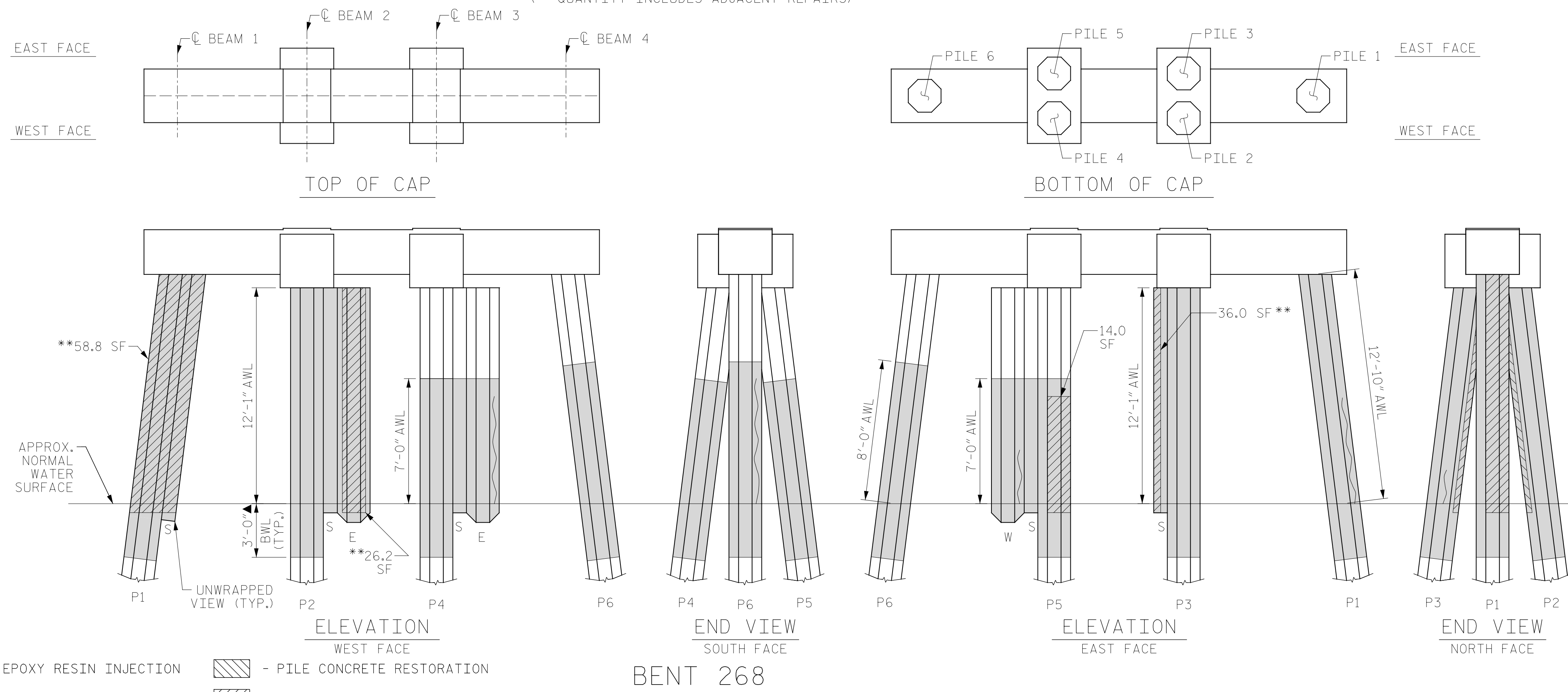
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
(\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
267	PILE 1	6	5	-	5	-	-	5	-
	PILE 2	13	3	9	-	18	8	-	-
	PILE 3	9	9	9	-	9	9	9	-
	PILE 4	-	-	-	-	6	8	9	10
268	PILE 1	-	-	-	-	-	5	7	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	2
	PILE 4	-	-	4	4	-	-	6	-
	PILE 5	-	-	3	-	-	-	-	-
	PILE 6	-	7	-	5	7	-	-	6

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BENT 267 & BENT 268

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



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1			3			TOTAL SHEETS
2			4			355

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AS-BUILT REPAIR QUANTITY TABLE

BENT 269

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	0.8 SF	0.4 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	29.3 SF	12.2 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	154.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 270

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	30.0 SF	12.4 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	170.5 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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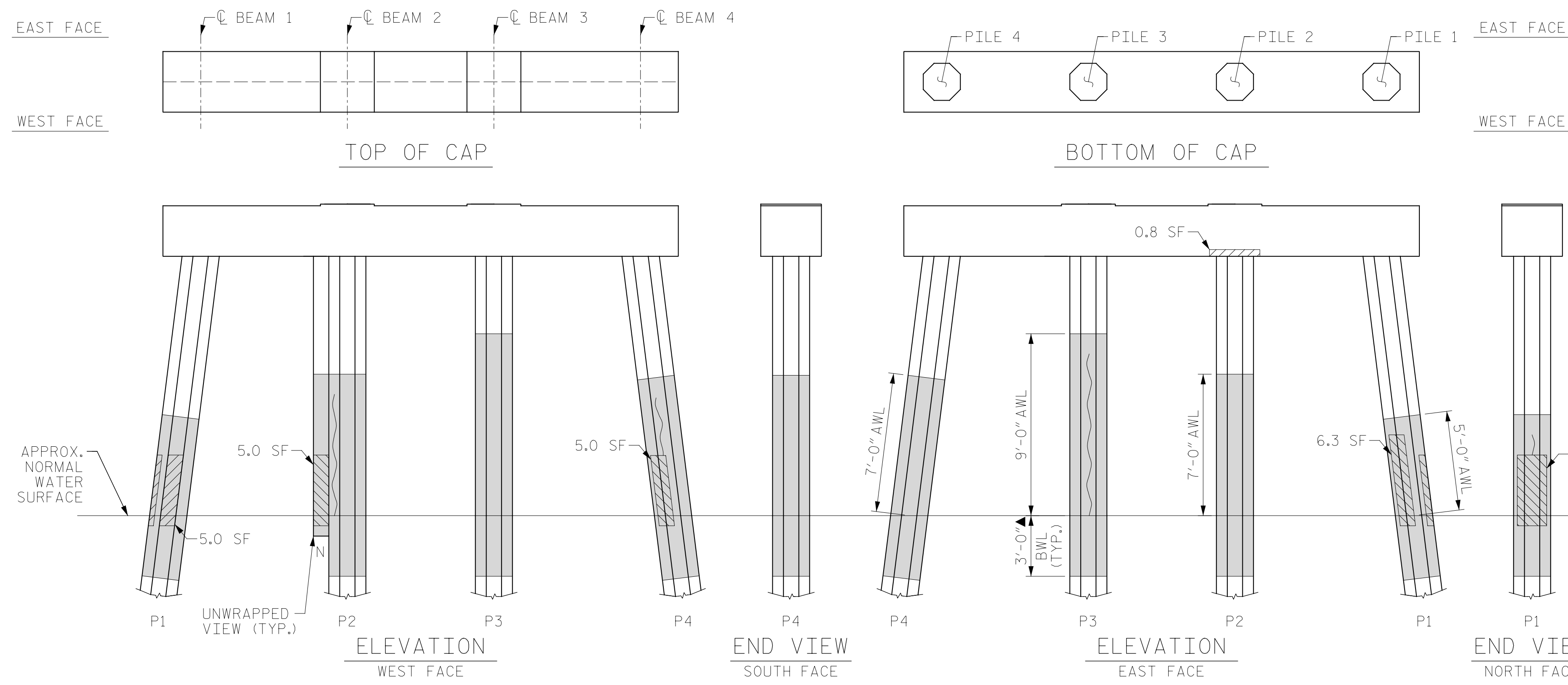
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

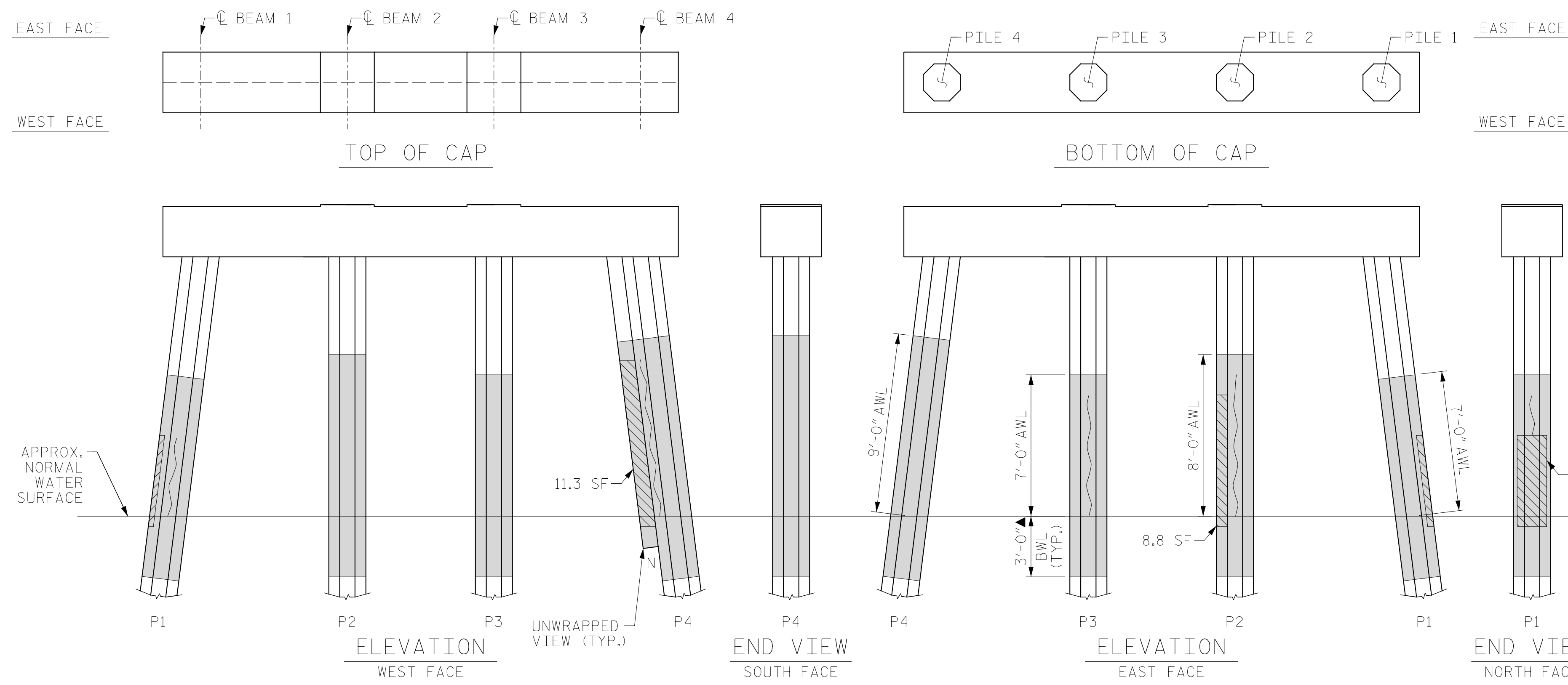
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 269

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 270

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	NW	W	SW	S	SE	E	NE	N
		269	1	-	-	-	-	-	-
	2	6	-	-	-	-	-	6	-
	3	8	-	-	-	-	8	8	8
	4	-	3	2	-	4	-	-	-
270	1	-	4	3	-	-	-	-	2
	2	-	4	-	-	-	7	7	-
	3	-	3	6	-	-	6	5	-
	4	8	-	4	-	3	7	3	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 269 & BENT 270

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



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NO.	BY:	DATE:	NO.	BY:	DATE:	S-304
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 271

CAP REPAIRS				
SHOTCRETE REPAIRS	15.4 SF	7.7 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	33.0 SF			
FRP PROTECTIVE SYSTEM BWL	16.5 SF			

BENT 272

CAP REPAIRS				
SHOTCRETE REPAIRS	- SF	- CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
PILE REPAIRS				
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	180.6 SF			
FRP PROTECTIVE SYSTEM BWL	66.0 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

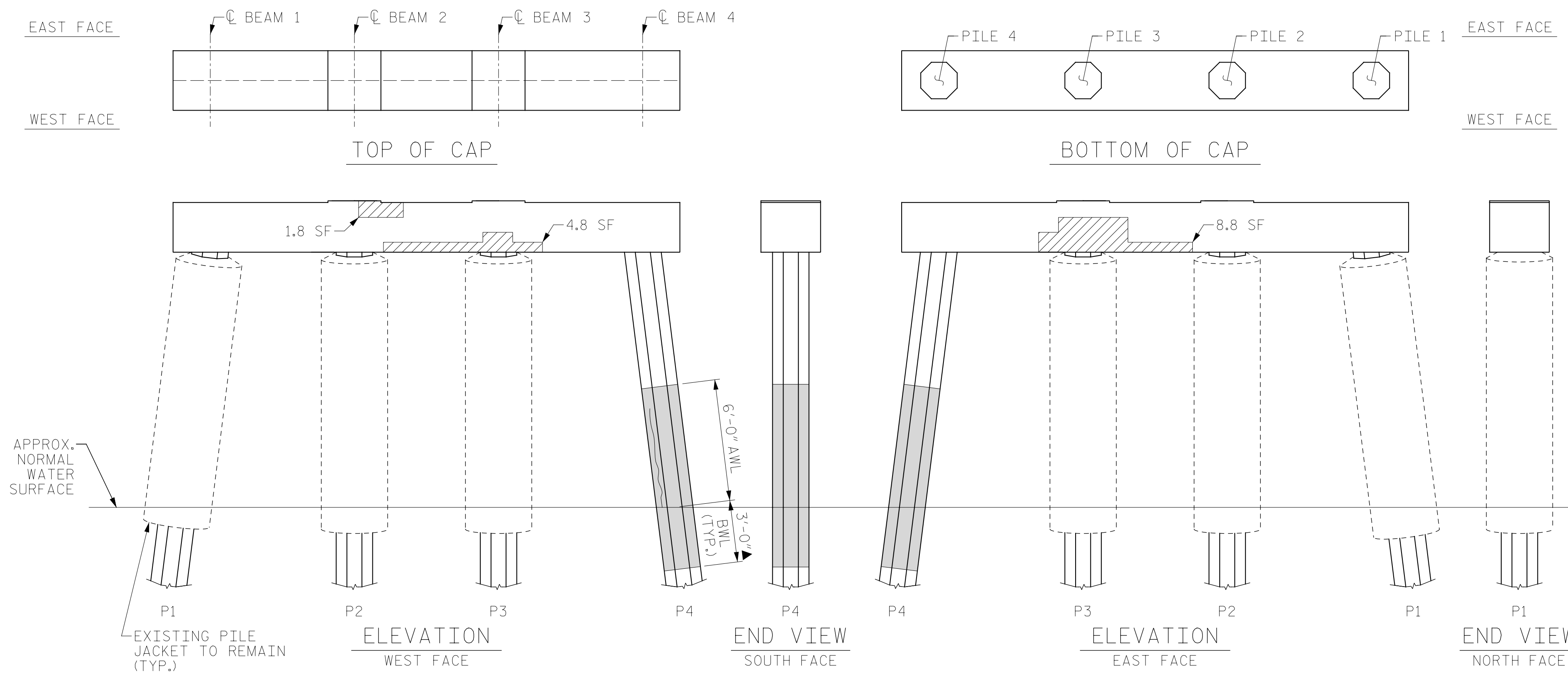
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

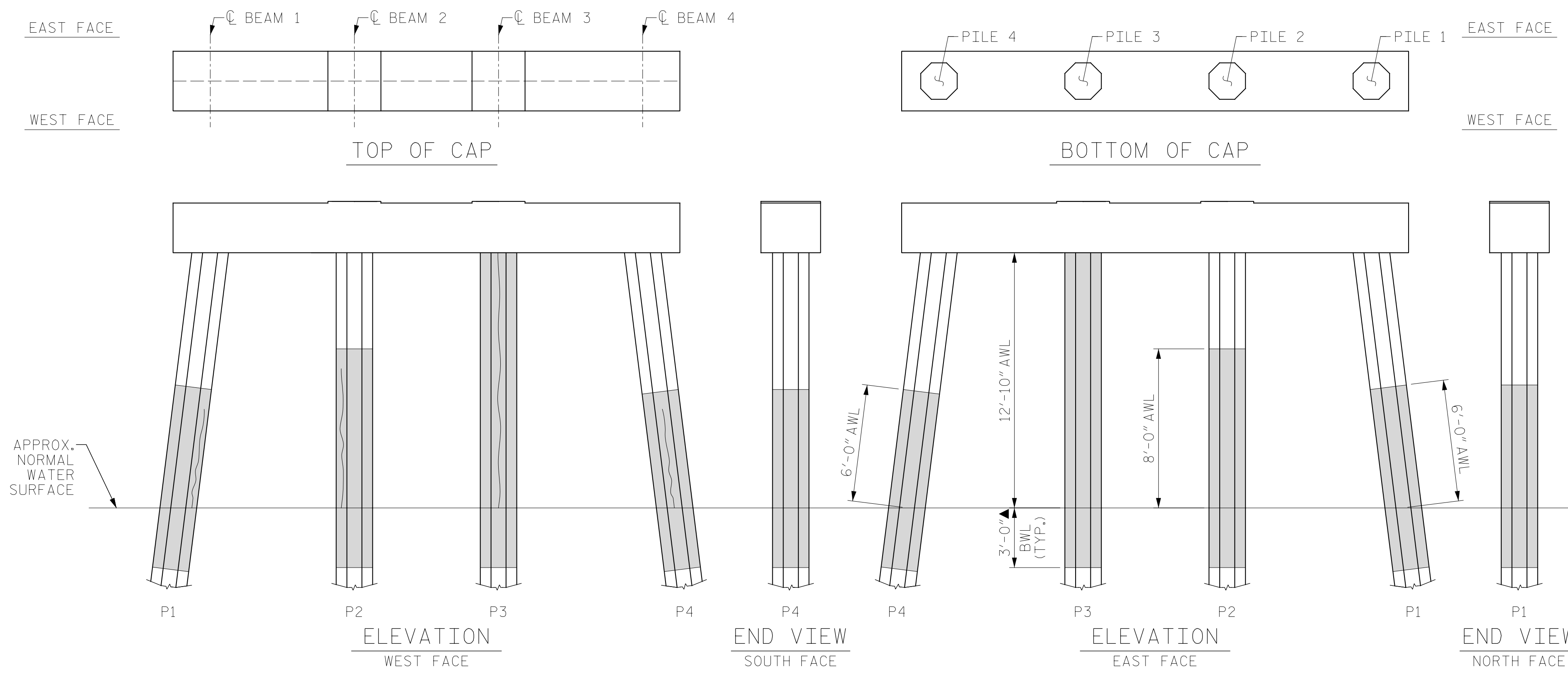
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 271

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



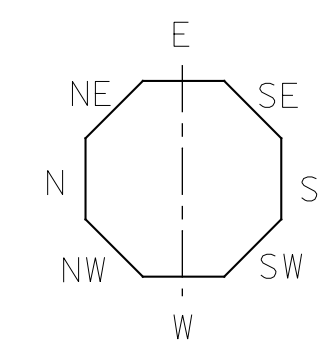
BENT 272

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

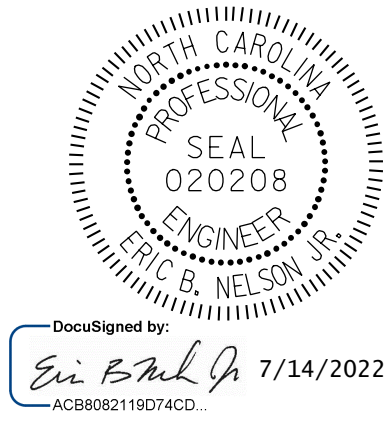
BENT	PILE	NW	W	SW	S	SE	E	NE	N
		BENT 271	PILE 1	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	5	3	2	5	3	-	-	3
BENT 272	PILE 1	3	4	5	5	4	-	-	-
	PILE 2	7	3	2	3	3	-	-	7
	PILE 3	-	13	-	-	-	-	4	8
	PILE 4	5	5	2	5	-	3	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 271 & BENT 272

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-305
1			3			TOTAL SHEETS
2			4			355

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 273

CAP REPAIRS			
SHOTCRETE REPAIRS	11.6 SF	5.8 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	25.3 SF	10.3 CF	
FRP PROTECTIVE SYSTEM AWL	192.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 274

CAP REPAIRS			
SHOTCRETE REPAIRS	1.4 SF	0.7 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	36.4 SF	14.6 CF	
FRP PROTECTIVE SYSTEM AWL	191.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

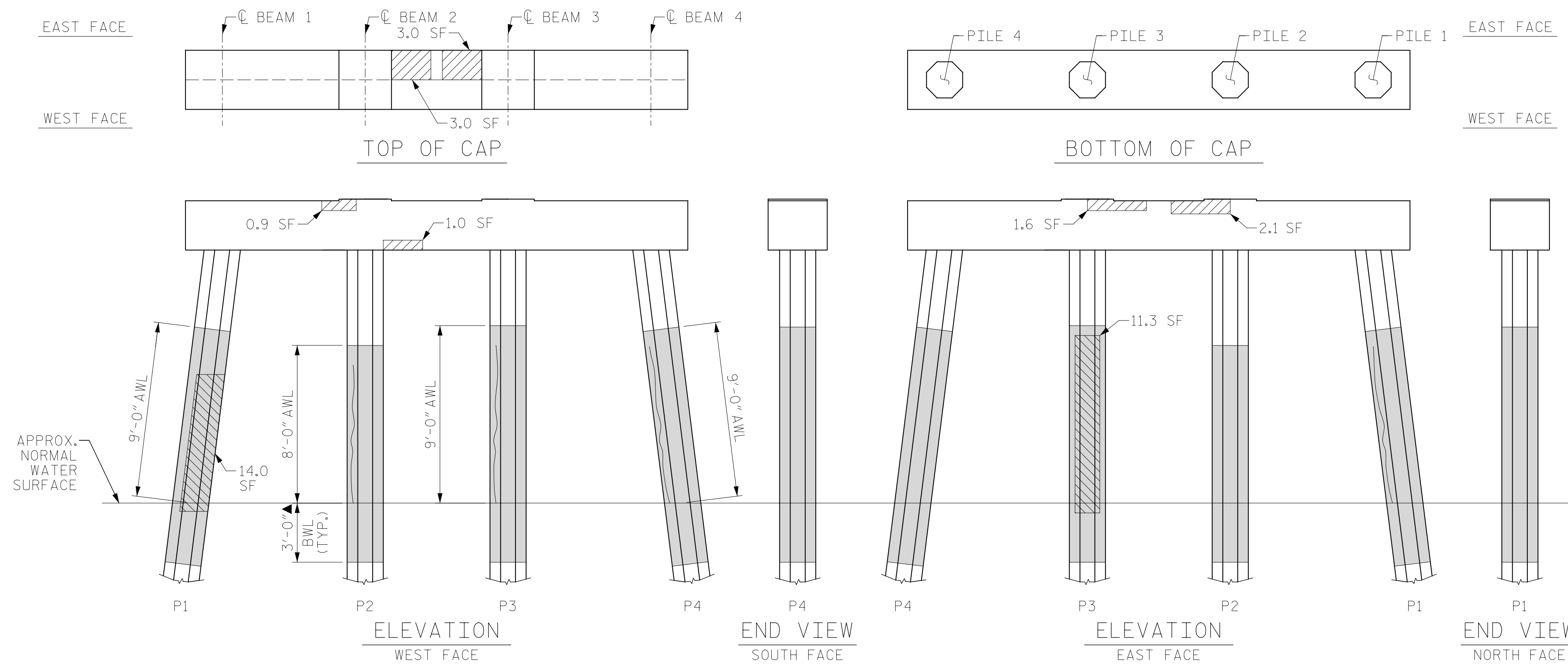
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

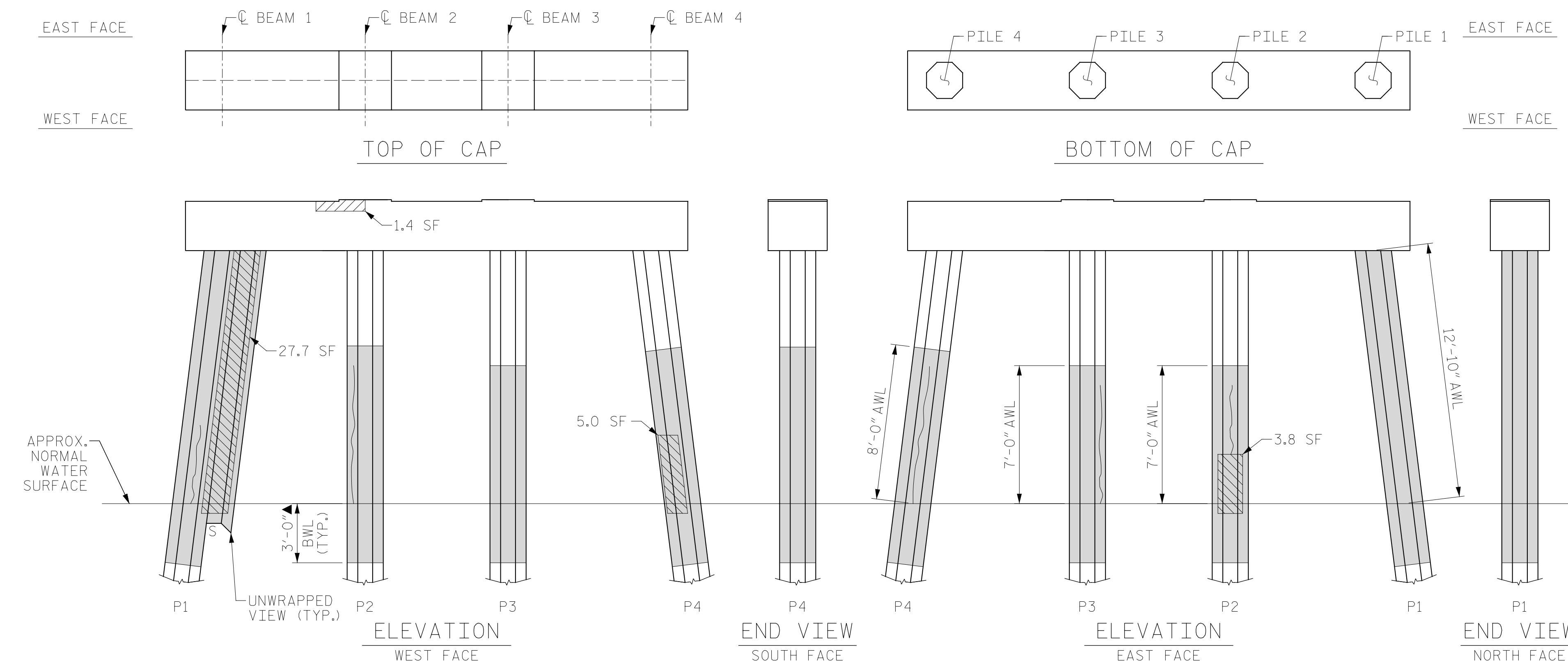
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 273

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 274

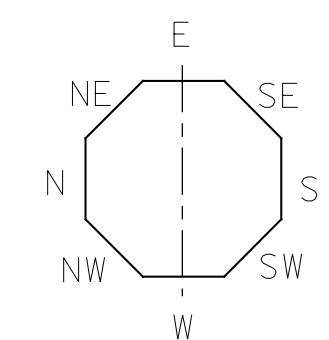
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

	NW	W	SW	S	SE	E	NE	N
BENT 273	PILE 1	-	-	-	8	-	-	4
	PILE 2	6	3	-	-	-	-	7
	PILE 3	5	6	7	-	-	-	8
	PILE 4	-	-	-	2	-	3	7
BENT 274	PILE 1	-	4	-	-	-	-	-
	PILE 2	-	-	-	-	-	4	-
	PILE 3	-	-	2	-	-	-	6
	PILE 4	-	-	-	-	3	7	5

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 273 & BENT 274

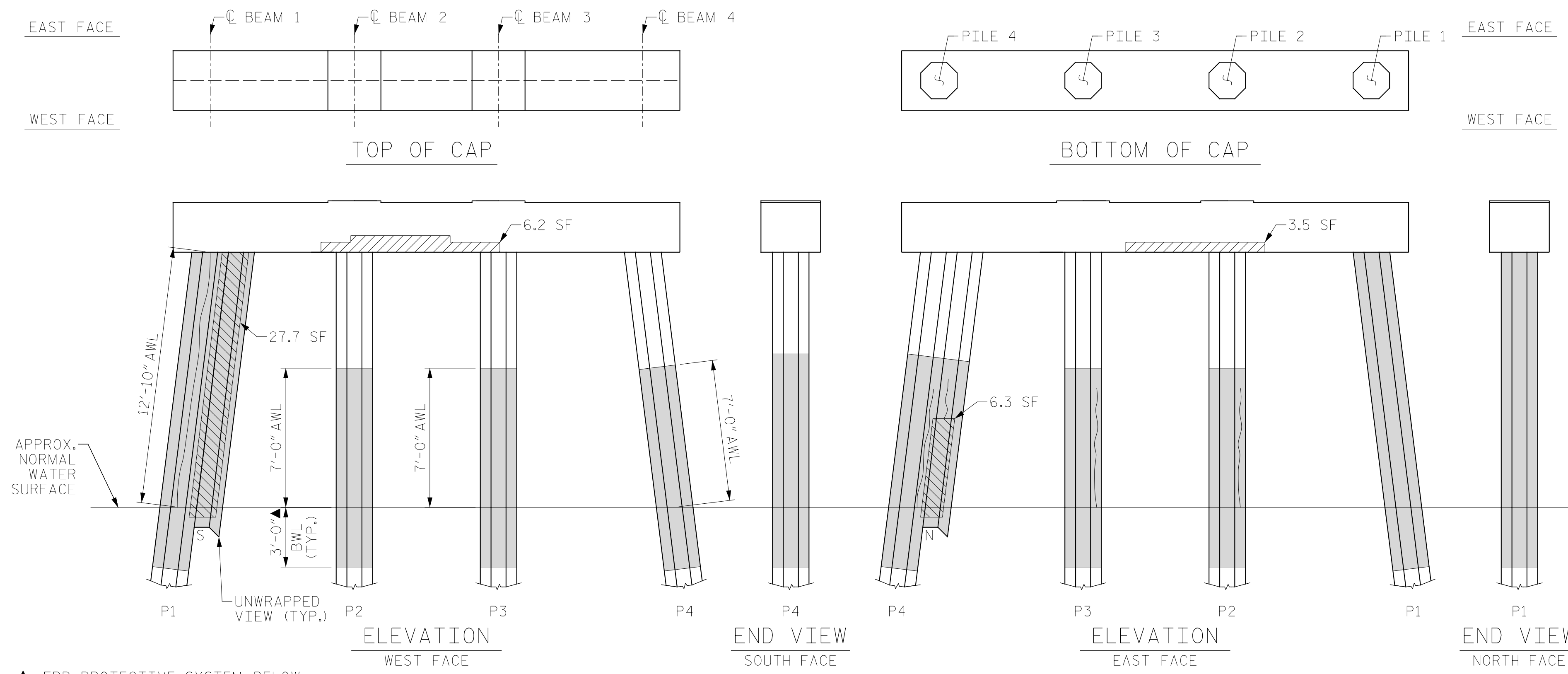
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



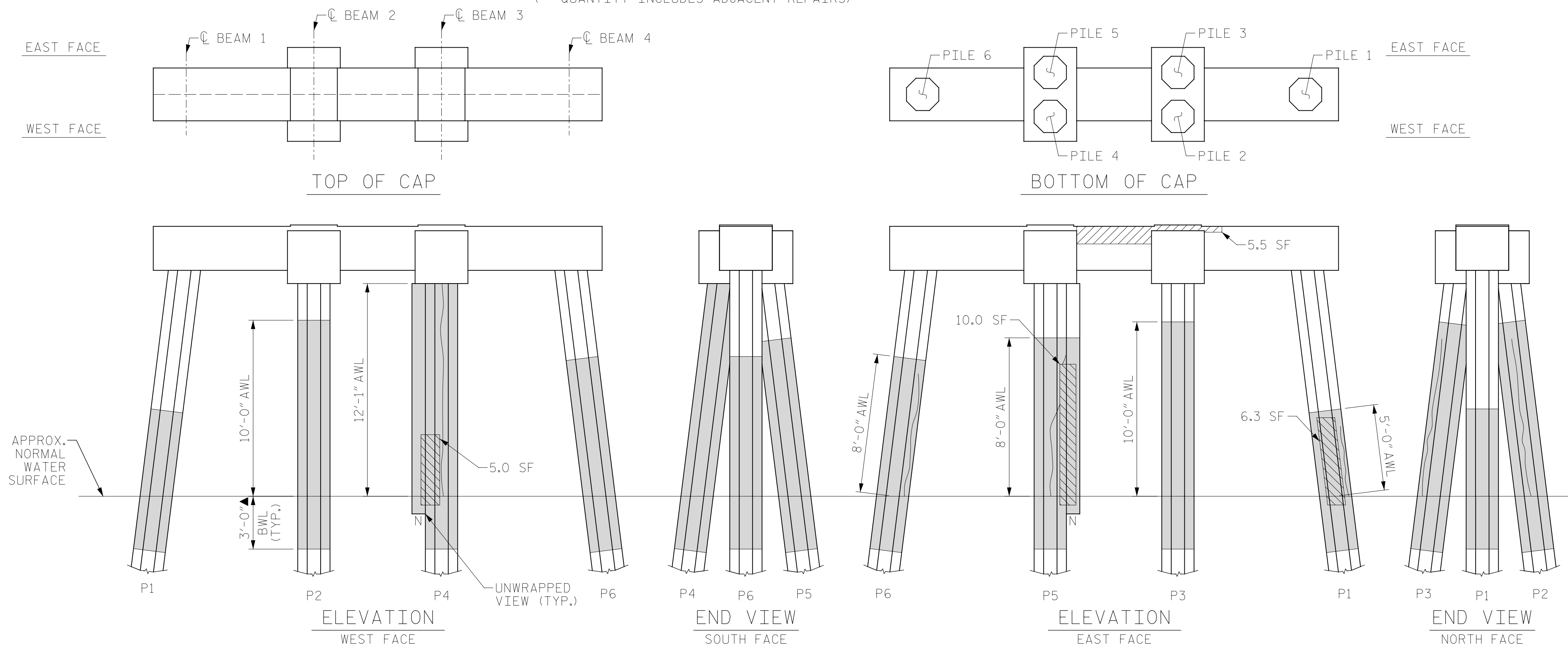
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



ERI - EPOXY RESIN INJECTION    - PILE CONCRETE RESTORATION  
 - FRP PROTECTIVE SYSTEM    - SHOTCRETE REPAIRS

**BENT 276**  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

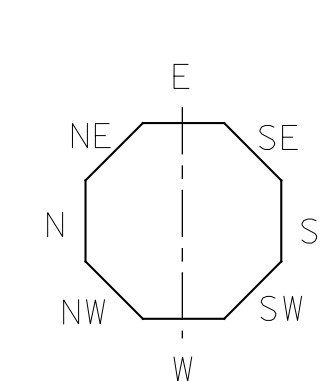
DRAWN BY : T. HARTLEY    DATE : 2/2019  
 CHECKED BY : J. FARNHAM    DATE : 4/2019

AS-BUILT REPAIR QUANTITY TABLE				
BENT 275				
<b>CAP REPAIRS</b>				
SHOTCRETE REPAIRS	9.7 SF	4.9 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
<b>PILE REPAIRS</b>				
PILE CONCRETE RESTORATION	33.9 SF	13.6 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	186.1 SF			
FRP PROTECTIVE SYSTEM BWL	66.0 SF			
BENT 276				
<b>CAP REPAIRS</b>				
SHOTCRETE REPAIRS	5.5 SF	2.8 CF	SF	CF
EPOXY RESIN INJECTION	- LF			LF
<b>PILE REPAIRS</b>				
PILE CONCRETE RESTORATION	21.3 SF	9.0 CF	SF	CF
FRP PROTECTIVE SYSTEM AWL	292.0 SF			
FRP PROTECTIVE SYSTEM BWL	99.0 SF			

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

**NOTES:**  
 REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

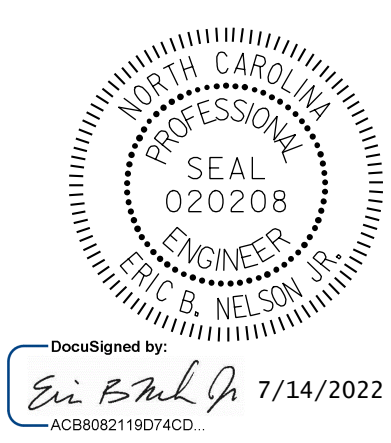
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
 FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
 FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
 FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



ESTIMATED PILE CRACK QTY. TABLE									
		NW	W	SW	S	SE	E	NE	N
BENT 275	PILE 1	2	13	-	-	-	-	-	2
	PILE 2	-	-	-	-	-	-	-	6
	PILE 3	5	4	-	-	2	-	6	-
	PILE 4	-	4	-	3	2	6	6	2
BENT 276	PILE 1	-	3	3	-	-	-	4	2
	PILE 2	-	5	-	2	-	3	4	9
	PILE 3	-	4	6	-	7	-	9	-
	PILE 4	-	12	-	2	-	-	-	-
	PILE 5	-	7	4	-	-	4	4	-
	PILE 6	6	-	3	3	-	5	7	5

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BENT 275 & BENT 276**



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			357
2			4			355

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 277

CAP REPAIRS			
SHOTCRETE REPAIRS	3.3 SF	1.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	54.7 SF	20.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	180.6 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 278

CAP REPAIRS			
SHOTCRETE REPAIRS	5.4 SF	2.7 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	26.4 SF	11.2 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	170.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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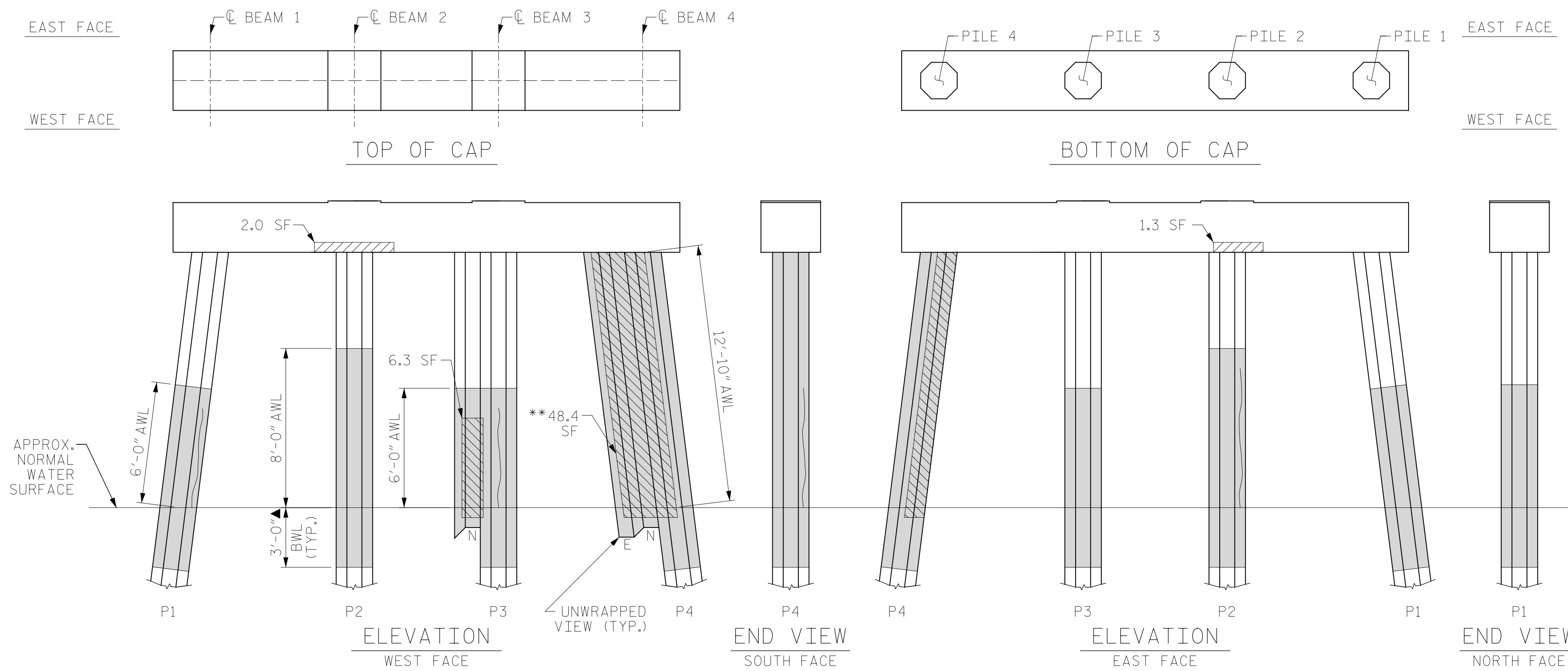
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

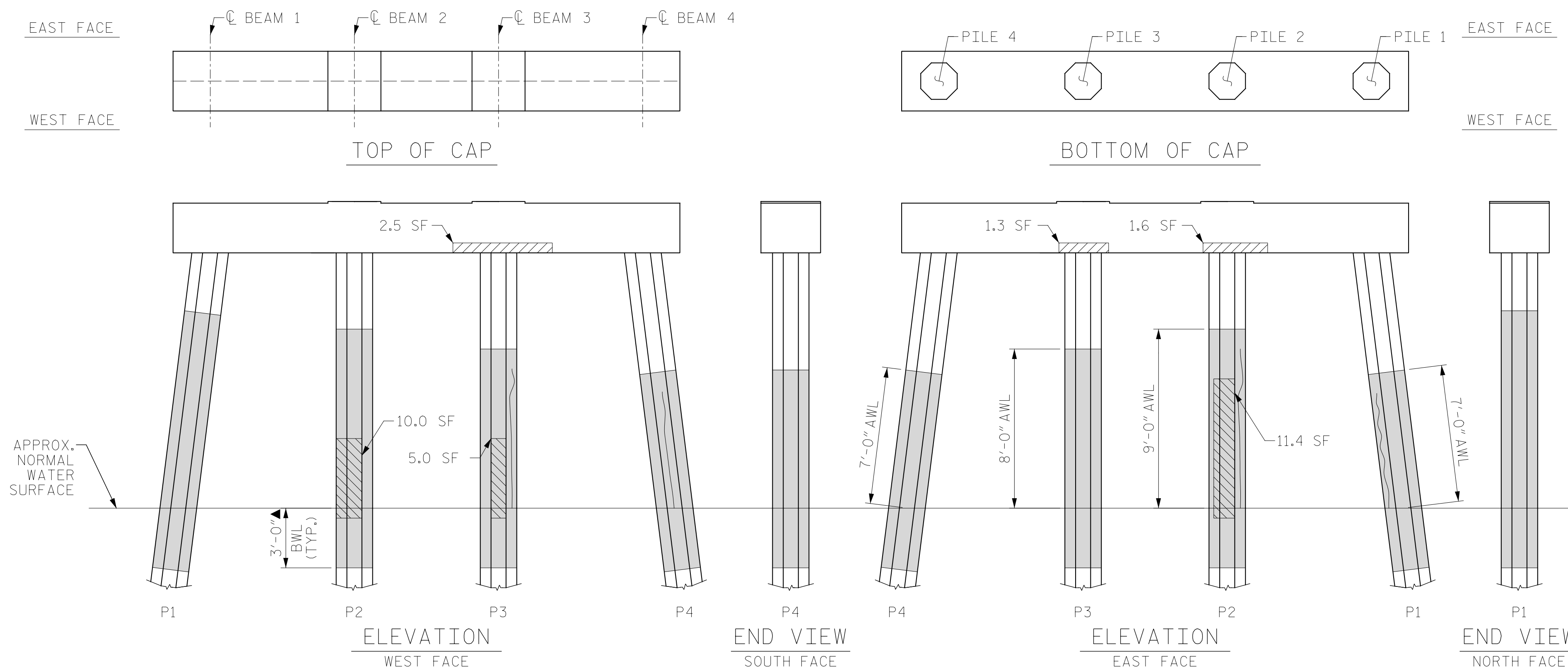
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 277

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



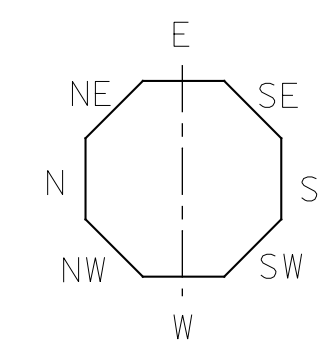
BENT 278

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 277	PILE 1	4	-	-	5	-	2	4	-
	PILE 2	6	6	2	-	-	4	7	-
	PILE 3	-	5	-	-	-	-	4	-
	PILE 4	-	-	-	-	6	-	-	-
BENT 278	PILE 1	5	6	-	3	6	3	-	4
	PILE 2	-	-	-	4	-	-	8	6
	PILE 3	-	-	7	4	-	2	-	-
	PILE 4	3	6	-	4	3	-	2	-

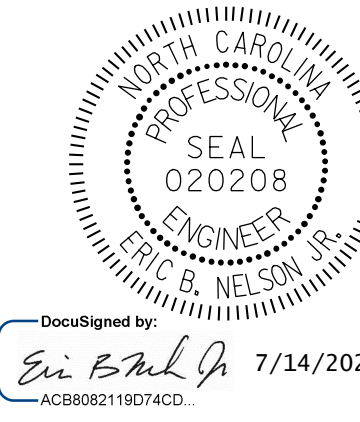
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 277 & BENT 278

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-308
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 2/2019  
 CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 279

CAP REPAIRS			
SHOTCRETE REPAIRS	3.5 SF	1.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	39.2 SF	16.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	164.1 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 280

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	14.0 SF	5.5 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	159.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR QUANTITIES AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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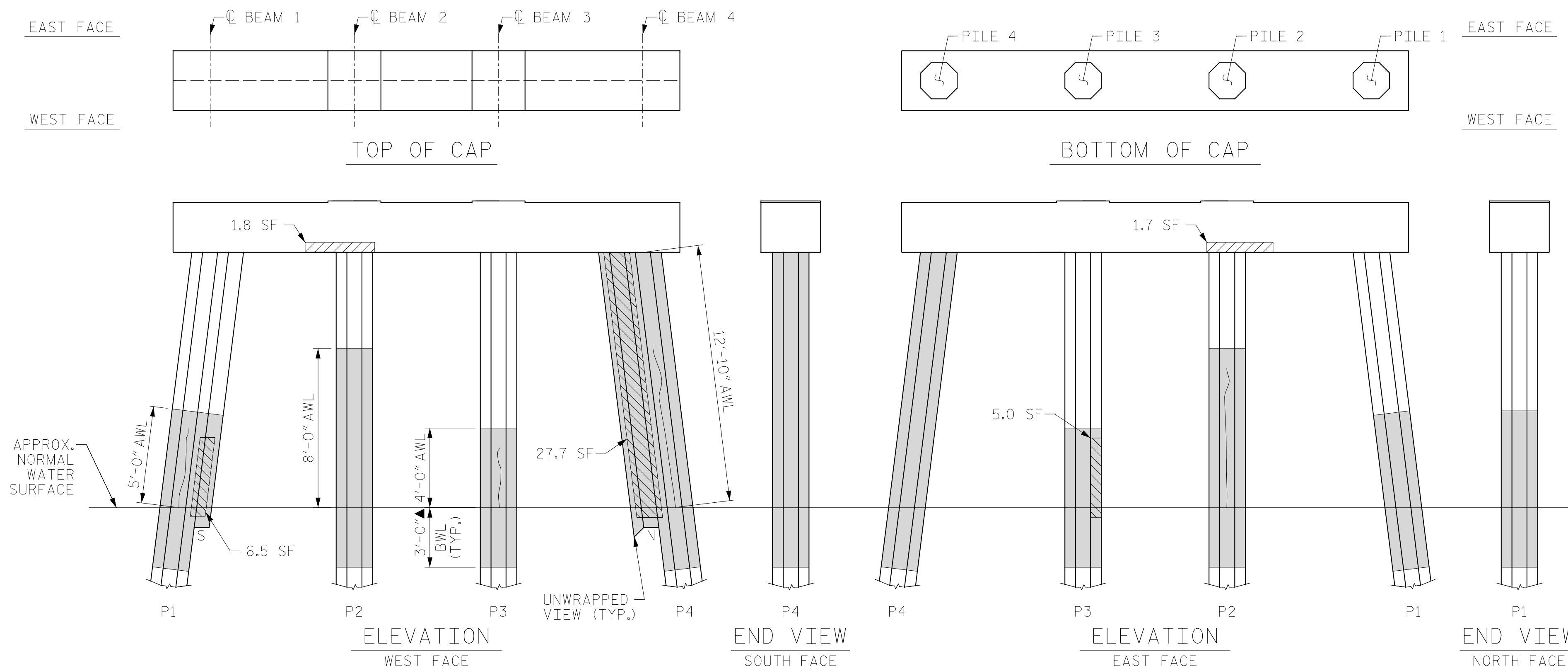
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

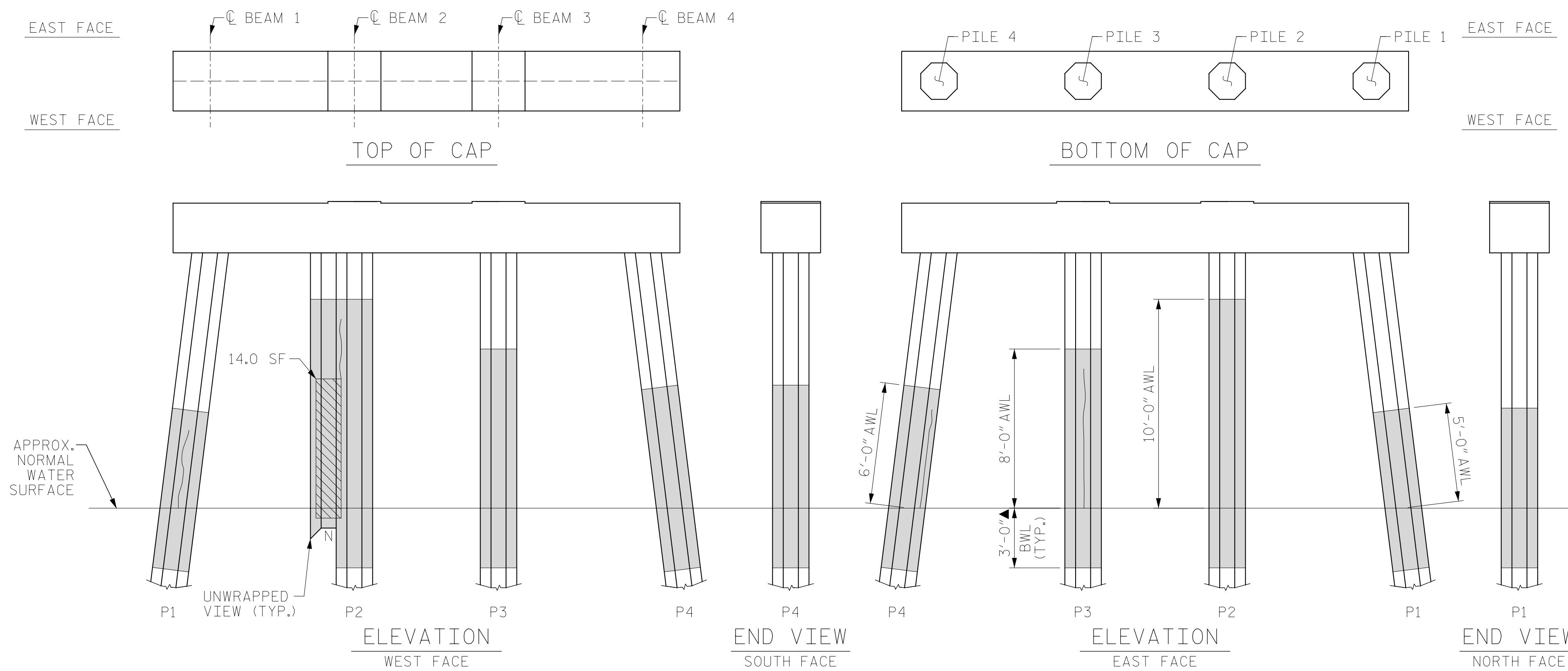
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 279

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



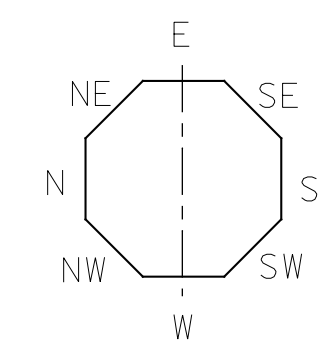
BENT 280

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

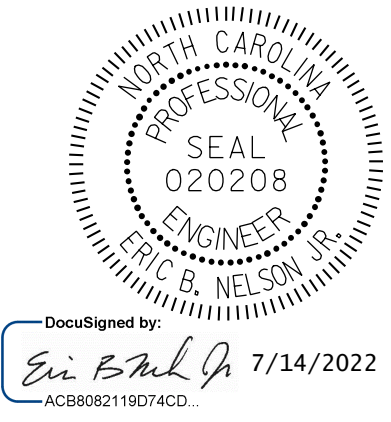
	NW	W	SW	S	SE	E	NE	N
BENT 279	PILE 1	-	4	-	-	3	-	-
	PILE 2	6	-	-	-	3	7	5
	PILE 3	-	3	-	-	-	-	3
	PILE 4	-	8	6	-	-	-	-
BENT 280	PILE 1	4	4	4	-	3	-	3
	PILE 2	3	-	-	-	-	-	-
	PILE 3	-	3	4	6	5	7	-
	PILE 4	-	-	4	4	4	-	5

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 279 & BENT 280

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 281

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	21.8 SF	9.6 CF	
FRP PROTECTIVE SYSTEM AWL	164.1 SF		
FRP PROTECTIVE SYSTEM BWL	49.5 SF		

BENT 282

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	
EPOXY RESIN INJECTION	- LF		
PILE REPAIRS			
PILE CONCRETE RESTORATION	12.6 SF	5.3 CF	
FRP PROTECTIVE SYSTEM AWL	132.0 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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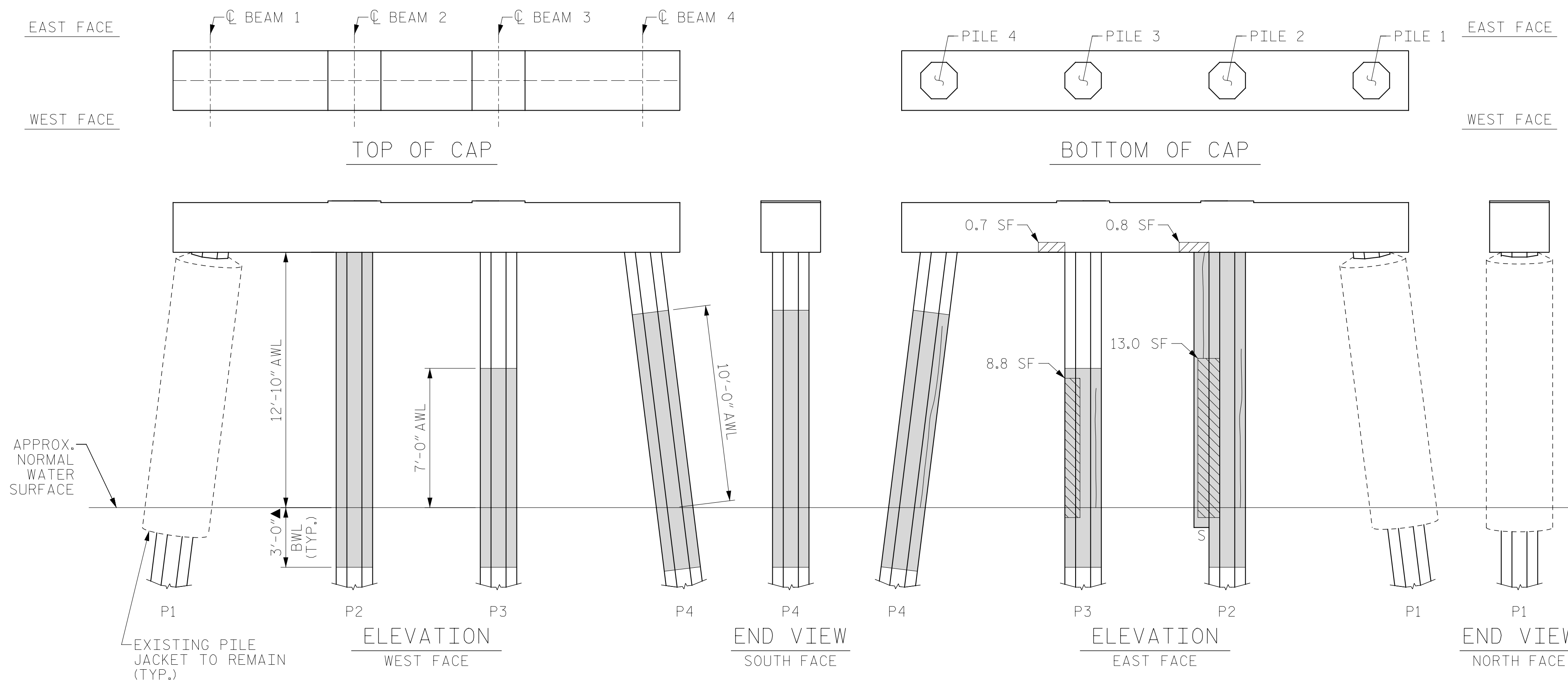
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

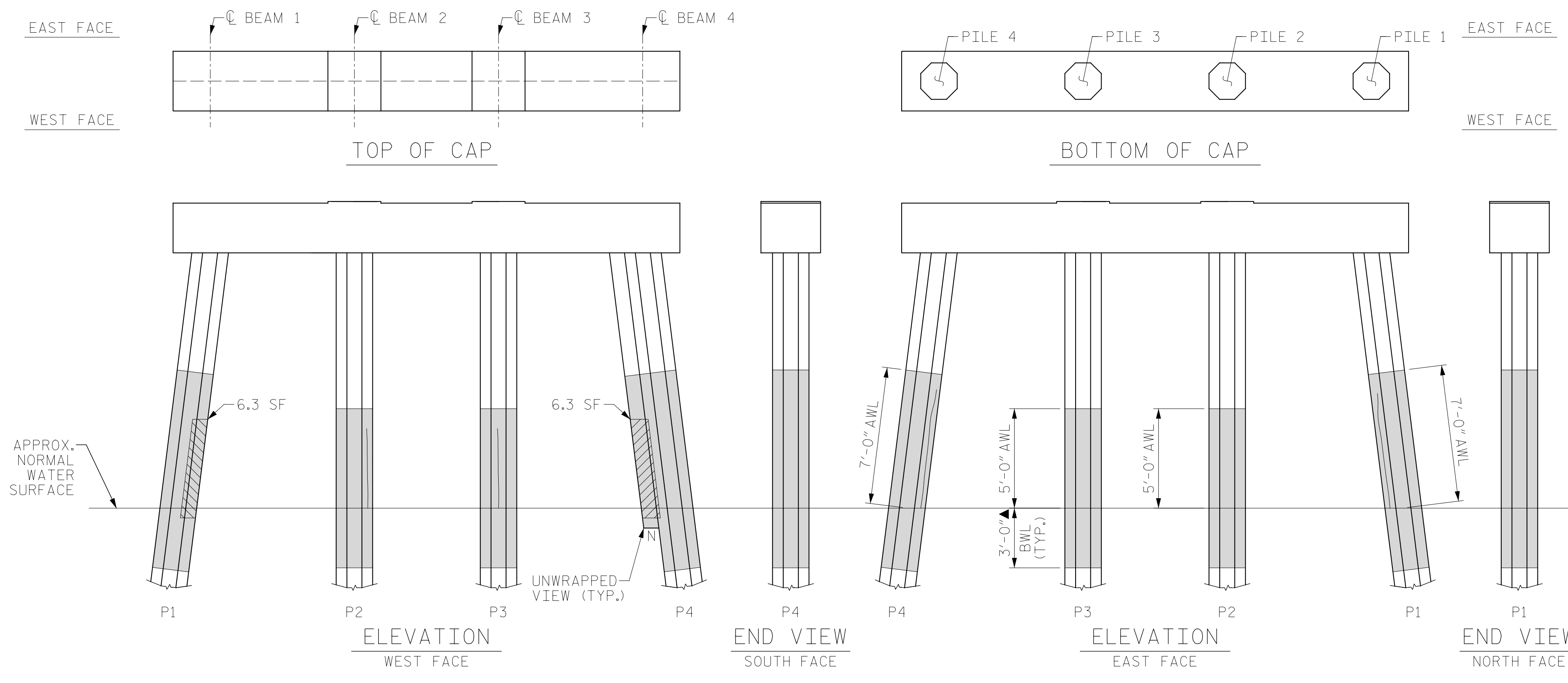
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



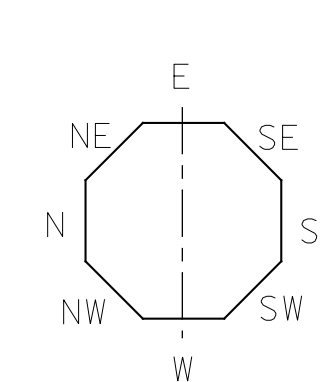
BENT 281

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 282

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 281	PILE 1	-	-	-	-	-	-	-	-
	PILE 2	-	2	4	5	-	8	8	6
	PILE 3	3	3	4	-	4	-	-	6
	PILE 4	6	7	-	-	5	7	3	9
BENT 282	PILE 1	3	4	-	6	6	4	2	1
	PILE 2	2	-	4	-	2	3	3	4
	PILE 3	4	4	3	2	-	3	-	-
	PILE 4	5	-	3	-	3	5	6	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

- ▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS
- ERI - EPOXY RESIN INJECTION
- [Grey Shaded] - FRP PROTECTIVE SYSTEM
- [Hatched] - PILE CONCRETE RESTORATION
- [Diagonal Lines] - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 281 & BENT 282

DRAWN BY : T. HARTLEY DATE : 2/2019  
 CHECKED BY : J. FARNHAM DATE : 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			

AS-BUILT REPAIR QUANTITY TABLE

BENT 283

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	9.8 SF	4.4 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	154.0 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 284

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	34.4 SF	14.6 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	263.1 SF		
FRP PROTECTIVE SYSTEM BWL	99.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

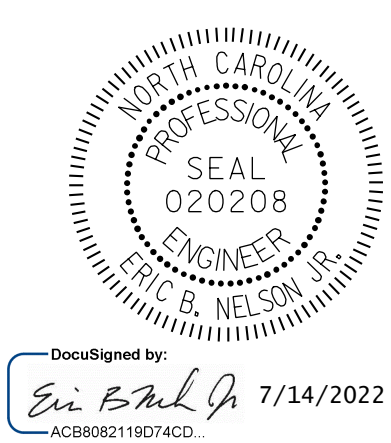
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

		DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 283	PILE 1	3	3	4	-	-	4	-	-
	PILE 2	1	-	3	-	-	2	6	4
	PILE 3	6	9	-	-	4	6	6	-
	PILE 4	-	2	-	3	4	3	-	-
BENT 284	PILE 1	2	5	-	-	-	6	4	5
	PILE 2	2	2	3	-	6	4	6	-
	PILE 3	3	-	-	3	-	-	-	-
	PILE 4	5	5	-	-	-	-	6	-
	PILE 5	6	-	-	-	4	-	6	-
	PILE 6	-	3	-	-	7	-	-	-

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

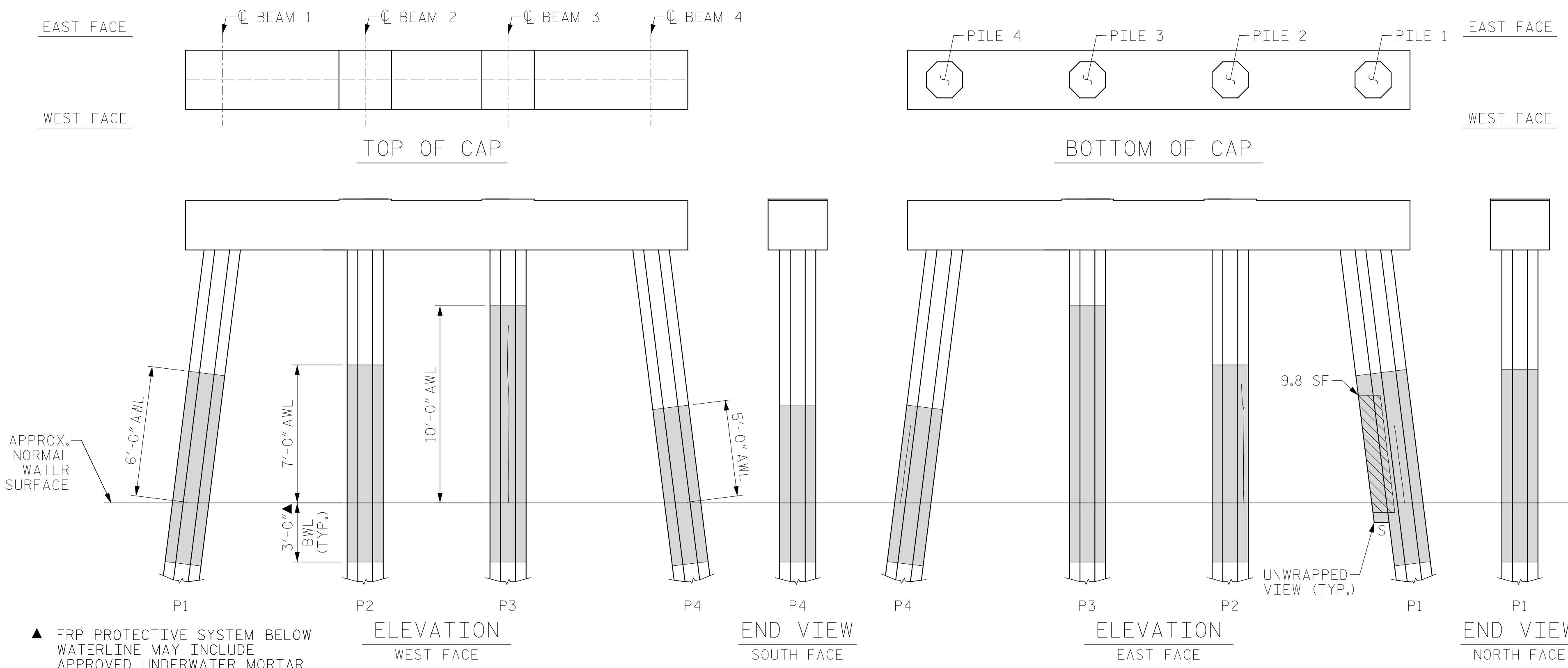


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 283 & BENT 284

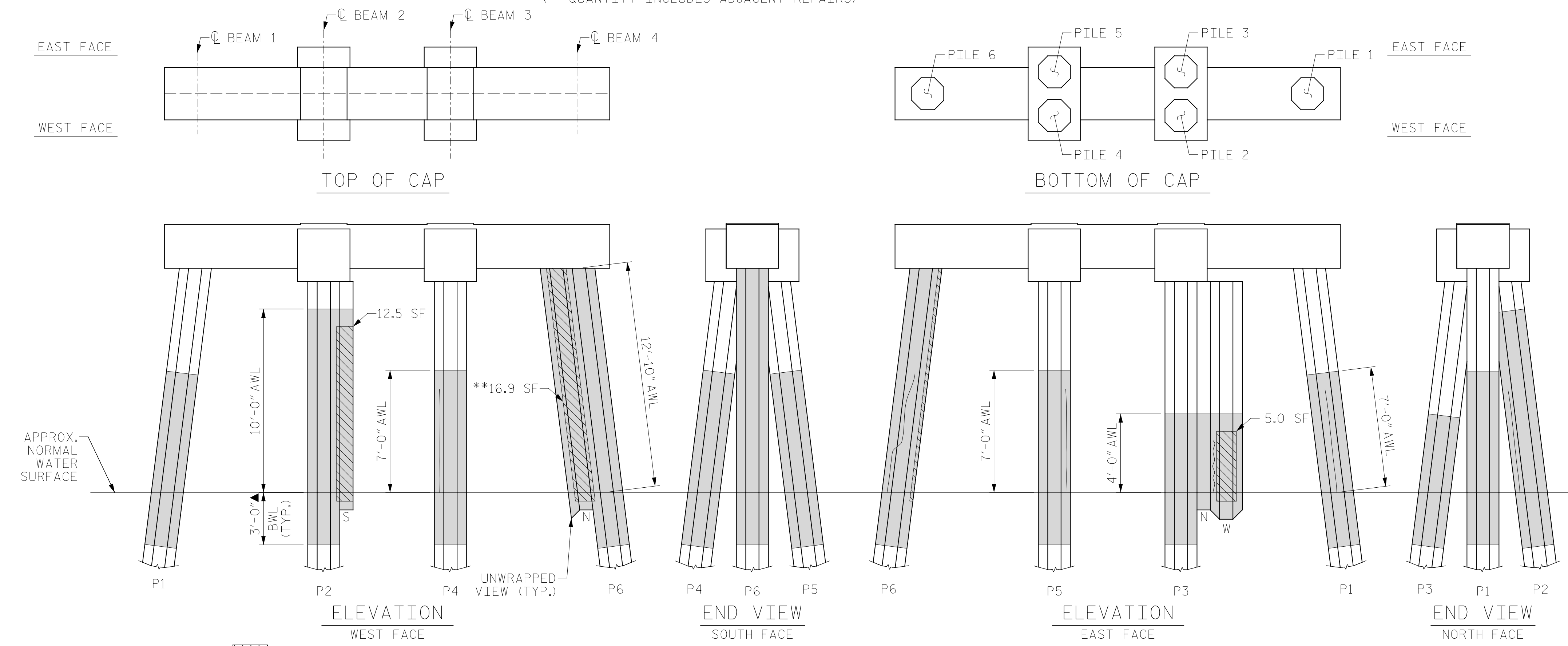
REVISIONS						SHEET NO. S-311
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1			3			TOTAL SHEETS 355
2			4			

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▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

(AWL = ABOVE WATERLINE) (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)



ERI - EPOXY RESIN INJECTION    [Hatched] - PILE CONCRETE RESTORATION  
 [Solid Grey] - FRP PROTECTIVE SYSTEM    [Diagonal Lines] - SHOTCRETE REPAIRS

BENT 284  
 (AWL = ABOVE WATERLINE)  
 (BWL = BELOW WATERLINE)  
 (\*\* QUANTITY INCLUDES ADJACENT REPAIRS)

DRAWN BY: T. HARTLEY    DATE: 2/2019  
 CHECKED BY: J. FARNHAM    DATE: 4/2019



AS-BUILT REPAIR QUANTITY TABLE

BENT 285

CAP REPAIRS			
SHOTCRETE REPAIRS	8.4 SF	4.2 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	21.3 SF	8.7 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	126.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 286

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	9.0 SF	4.0 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	165.0 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

FOR CAP REPAIRS: VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

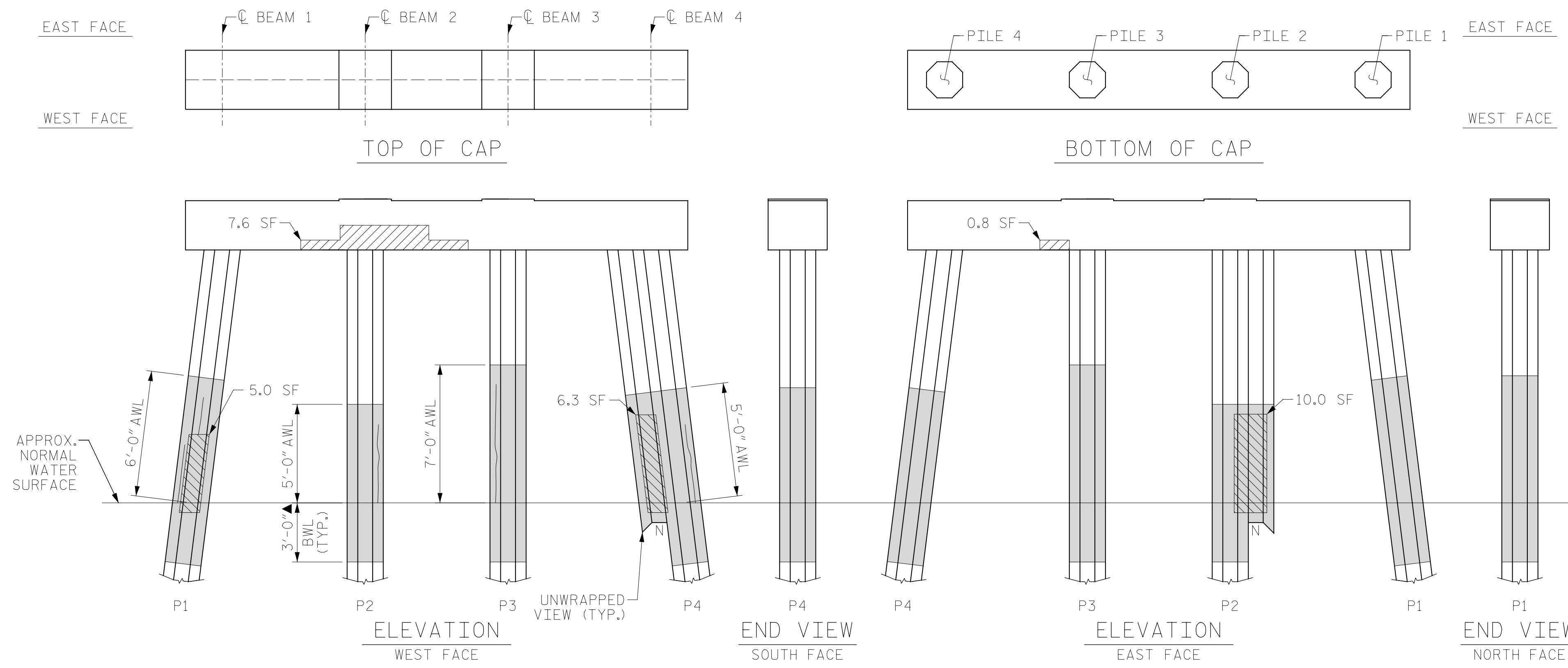
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

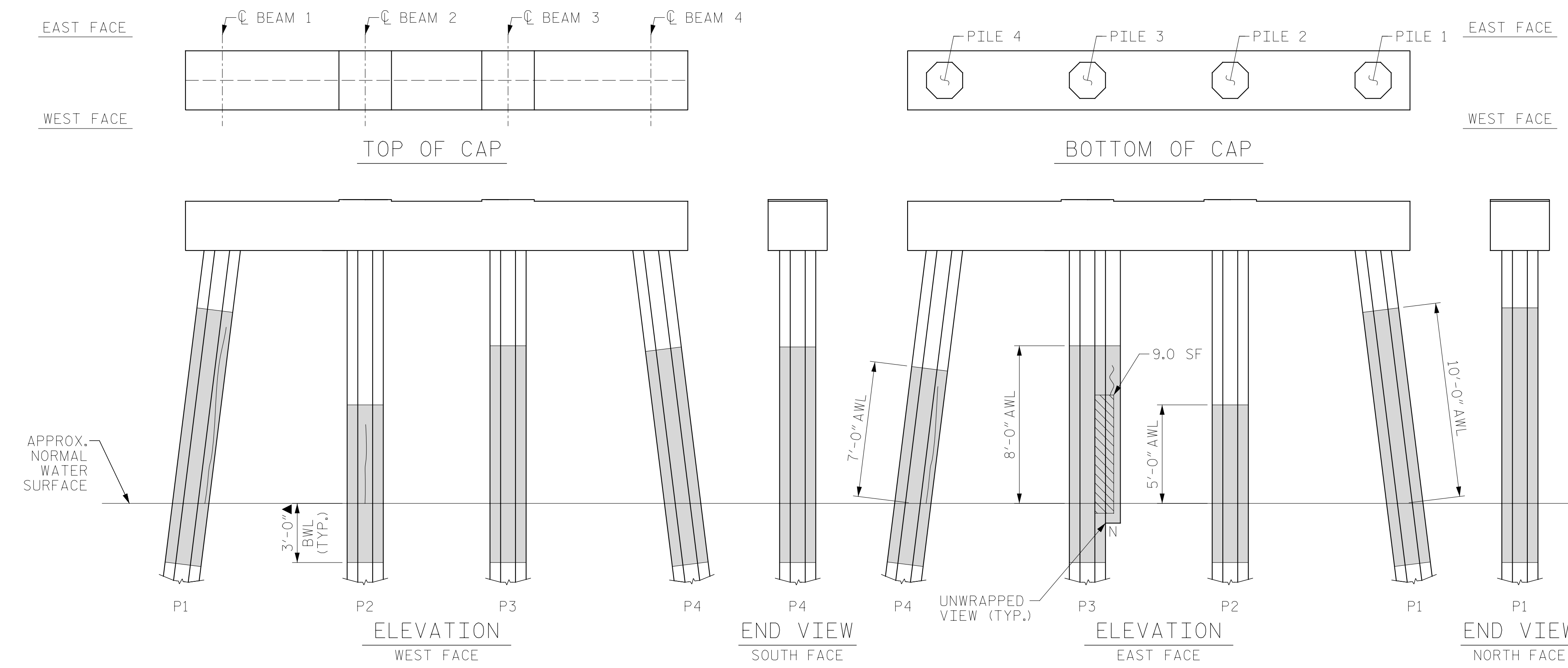
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.



BENT 285

(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)



BENT 286

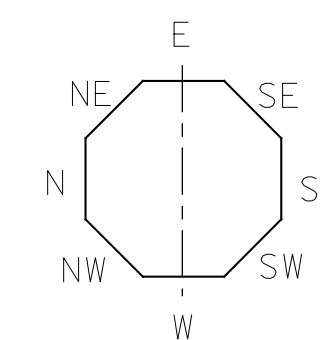
(AWL = ABOVE WATERLINE)  
(BWL = BELOW WATERLINE)  
(\*QUANTITY INCLUDES ADJACENT REPAIRS)

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 285	PILE 1	3	2	-	3	-	-	-	-
	PILE 2	4	-	4	4	-	2	-	-
	PILE 3	-	4	-	4	4	2	-	6
	PILE 4	-	3	4	-	-	4	-	-
BENT 286	PILE 1	5	6	9	3	7	6	3	-
	PILE 2	-	4	-	-	-	3	-	3
	PILE 3	-	3	-	-	-	-	4	2
	PILE 4	5	-	5	3	-	4	6	4

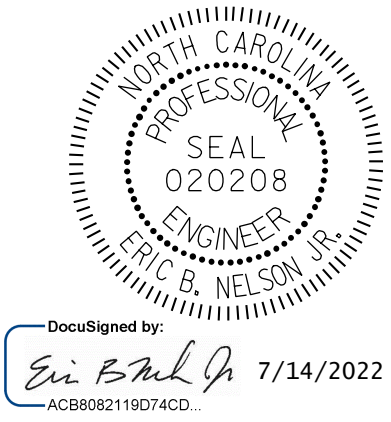
NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



▲ FRP PROTECTIVE SYSTEM BELOW WATERLINE MAY INCLUDE APPROVED UNDERWATER MORTAR REPAIRS

- ERI - EPOXY RESIN INJECTION
- [Hatched Box] - FRP PROTECTIVE SYSTEM
- [Diagonal Lines Box] - PILE CONCRETE RESTORATION
- [Cross-hatched Box] - SHOTCRETE REPAIRS



DocuSigned by:  
Eric B. Nelson  
7/14/2022

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 285 & BENT 286

DRAWN BY: T. HARTLEY DATE: 2/2019  
CHECKED BY: J. FARNHAM DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			355
2			4			