

AS-BUILT REPAIR QUANTITY TABLE

BENT 287

CAP REPAIRS			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	35.5 SF	14.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	126.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 288

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	19.3 SF	7.9 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	154.0 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.

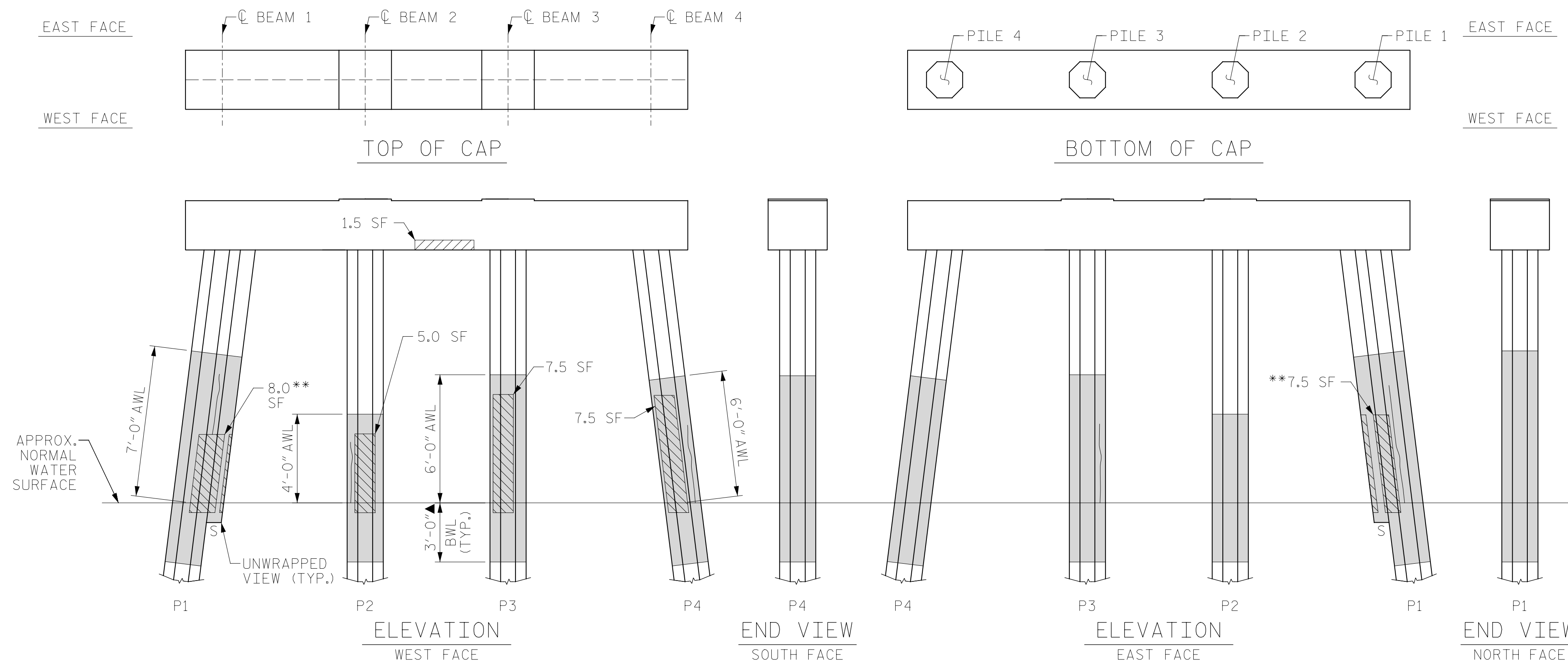
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

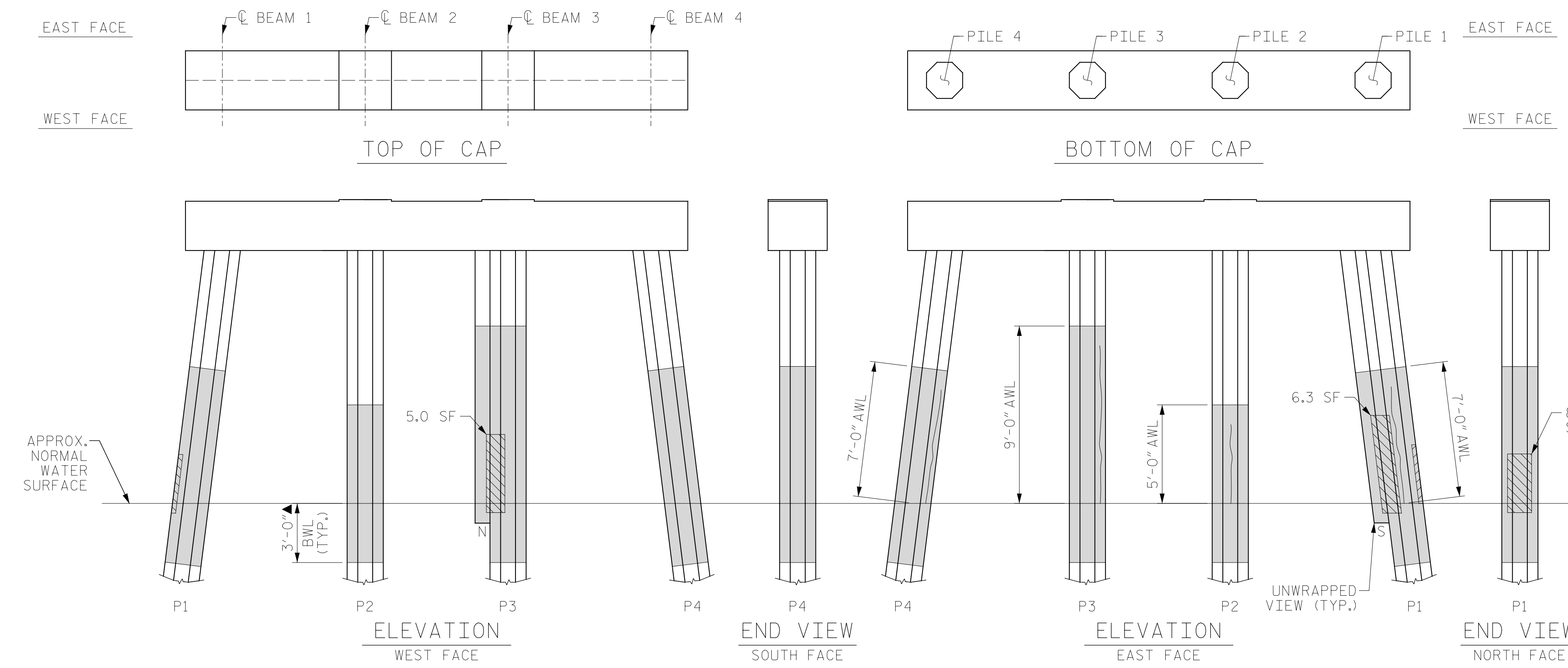
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

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



BENT 287

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



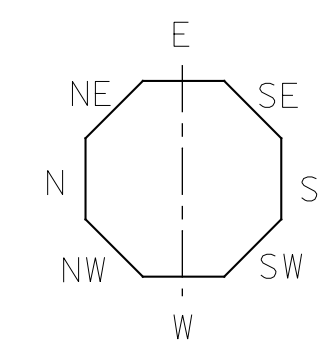
BENT 288

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

ESTIMATED PILE CRACK QTY. TABLE

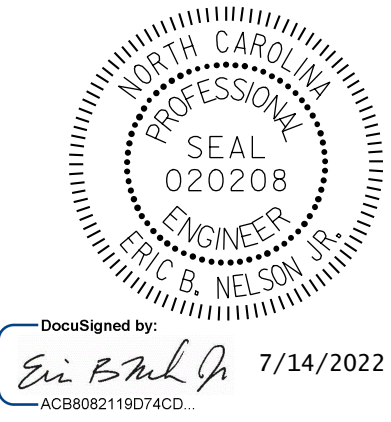
		NW	W	SW	S	SE	E	NE	N
BENT 287	PILE 1	-	-	3	3	-	6	-	-
	PILE 2	3	-	-	3	-	-	-	-
	PILE 3	-	-	-	3	-	-	-	4
	PILE 4	-	-	4	-	3	3	4	-
BENT 288	PILE 1	1	-	-	6	-	4	-	-
	PILE 2	-	-	-	2	2	4	-	4
	PILE 3	-	4	-	3	-	-	8	5
	PILE 4	3	3	-	3	3	-	6	6

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



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 287 & BENT 288

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 289

CAP REPAIRS			
SHOTCRETE REPAIRS	2.6 SF	1.3 CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	20.3 SF	8.2 CF	SF CF
FRP PROTECTIVE SYSTEM AWL	137.5 SF		
FRP PROTECTIVE SYSTEM BWL	66.0 SF		

BENT 290

CAP REPAIRS			
SHOTCRETE REPAIRS	- SF	- CF	SF CF
EPOXY RESIN INJECTION	- LF		LF
PILE REPAIRS			
PILE CONCRETE RESTORATION	28.5 SF	11.1 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.

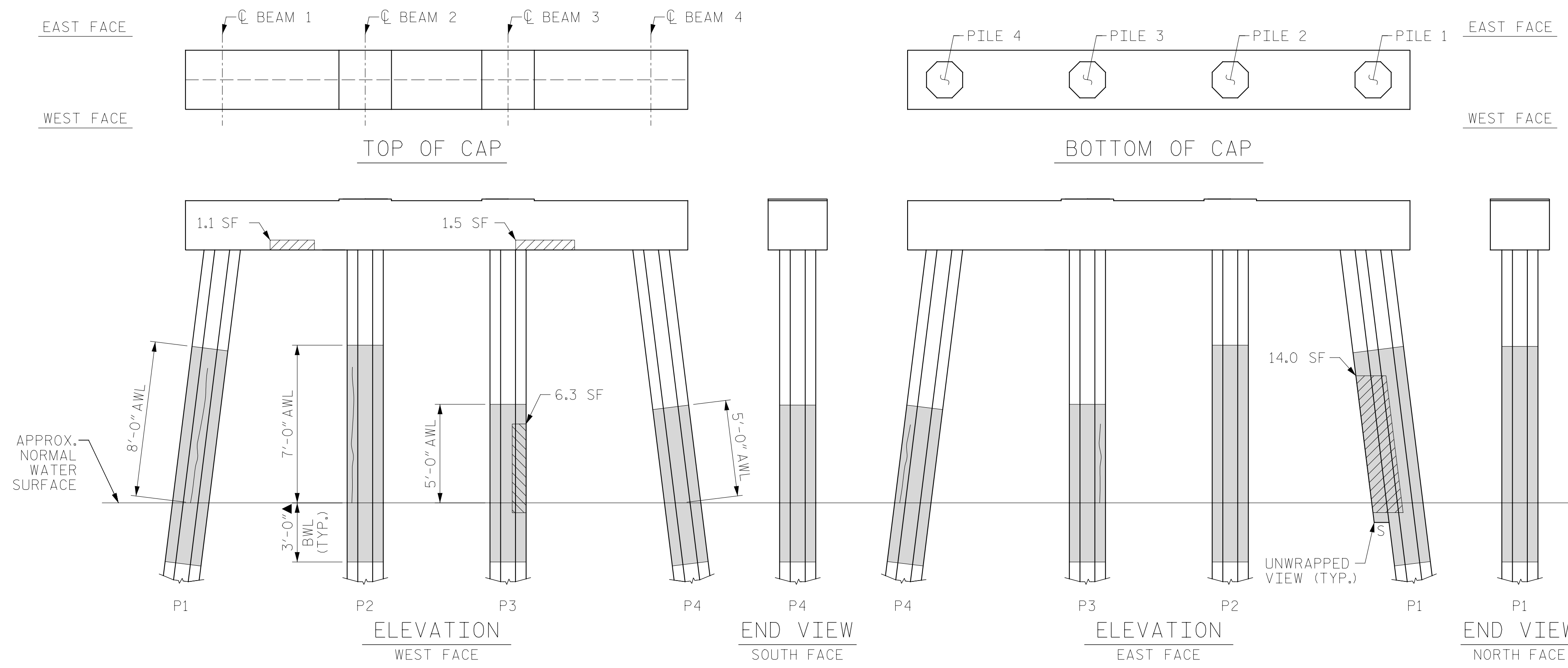
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

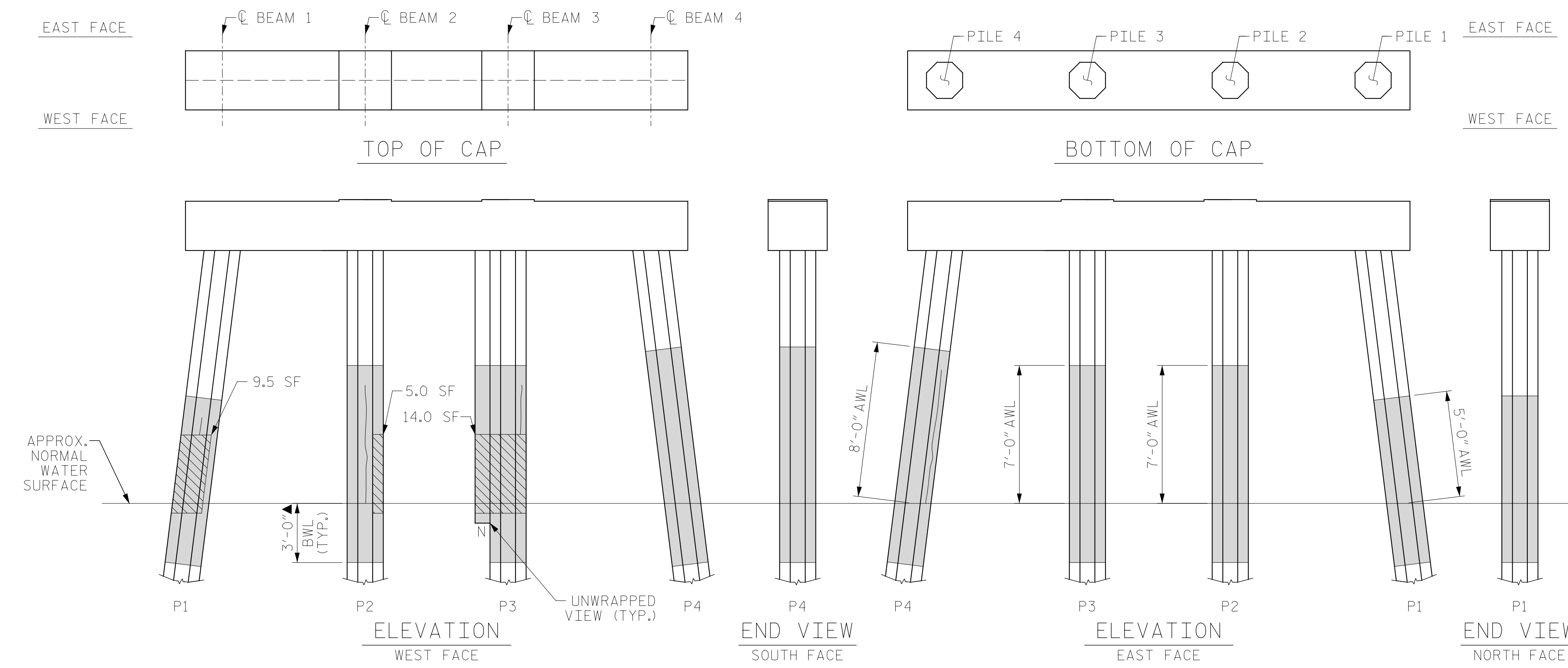
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

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



BENT 289

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



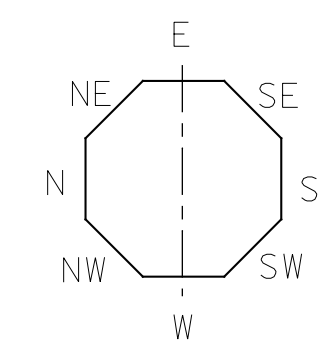
BENT 290

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

ESTIMATED PILE CRACK QTY. TABLE

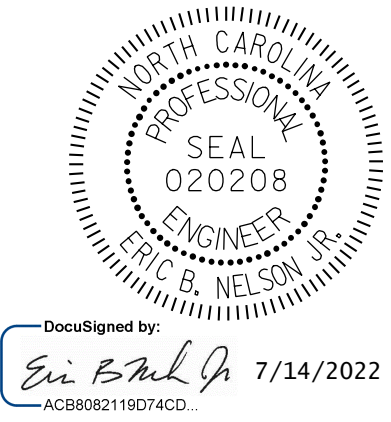
		NW	W	SW	S	SE	E	NE	N
BENT 289	PILE 1	6	7	-	-	-	-	4	4
	PILE 2	6	-	4	6	-	-	3	-
	PILE 3	-	-	-	4	-	-	2	-
	PILE 4	3	2	3	-	4	4	-	3
BENT 290	PILE 1	-	1	1	-	-	1	-	-
	PILE 2	-	6	-	-	4	3	1	-
	PILE 3	-	-	3	-	-	-	3	-
	PILE 4	5	5	4	2	-	3	7	-

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 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 289 & BENT 290

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-314
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 291

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- 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	143.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 292

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	1.5 SF	0.8 CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	28.1 SF	12.1 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	264.0 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.

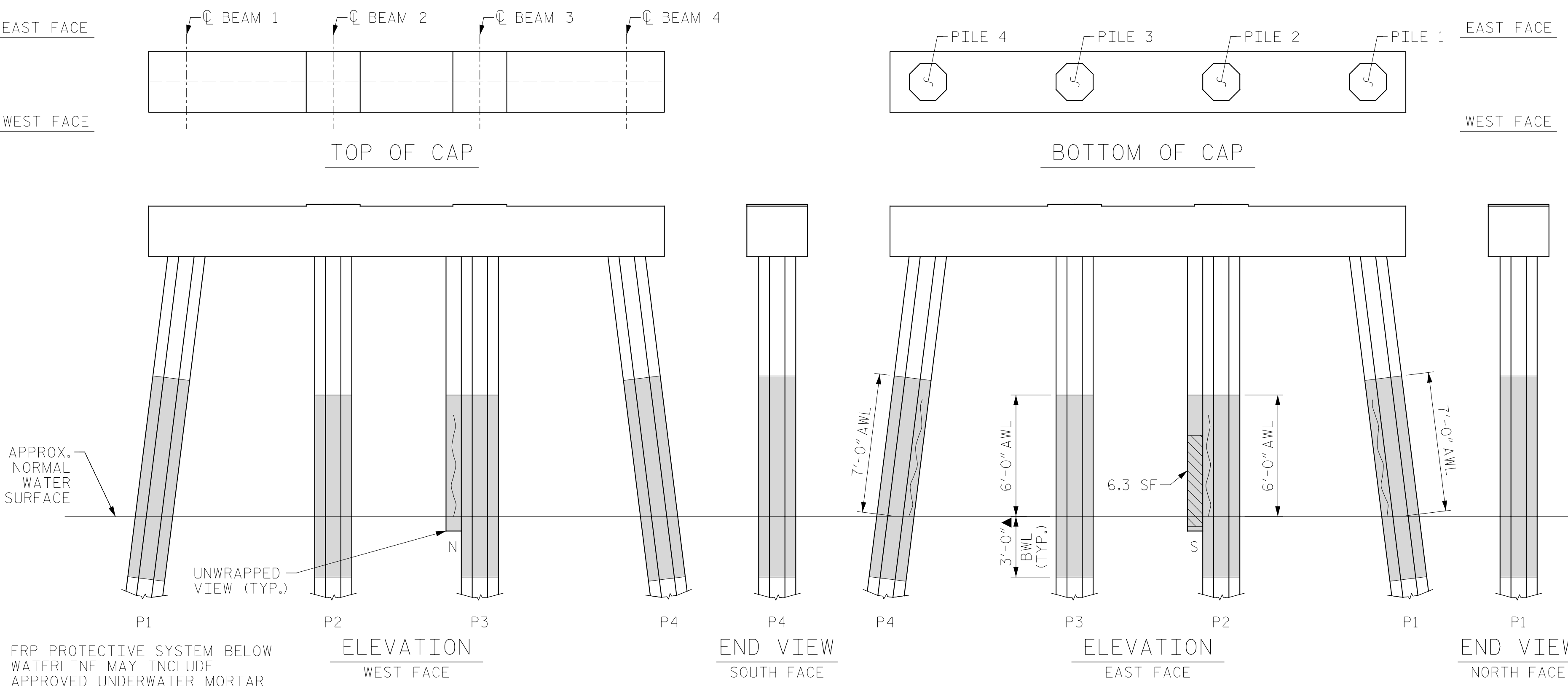
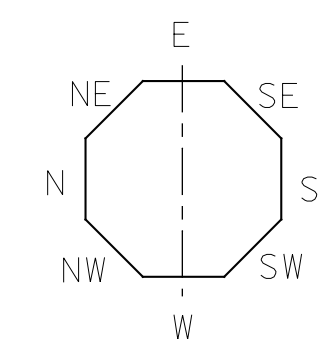
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.  
FOR CONCRETE REPAIR DETAILS, SEE "TYPICAL CAP, COLUMN & UNDERDECK REPAIR DETAILS" & "PILE CONCRETE RESTORATION DETAILS" SHEETS.  
FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.  
FOR FRP PROTECTIVE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

ESTIMATED PILE CRACK QTY. TABLE

BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 291	PILE 1	5	5	-	6	6	4	-	-
	PILE 2	-	3	-	-	5	3	-	-
	PILE 3	-	4	-	2	3	4	2	5
	PILE 4	6	4	-	4	3	3	3	6
BENT 292	PILE 1	3	3	-	2	2	4	-	4
	PILE 2	3	-	3	-	-	3	-	4
	PILE 3	-	-	4	3	-	3	7	3
	PILE 4	6	5	2	6	6	9	-	8
	PILE 5	6	7	5	4	6	8	3	-
	PILE 6	5	-	-	2	3	7	7	5

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

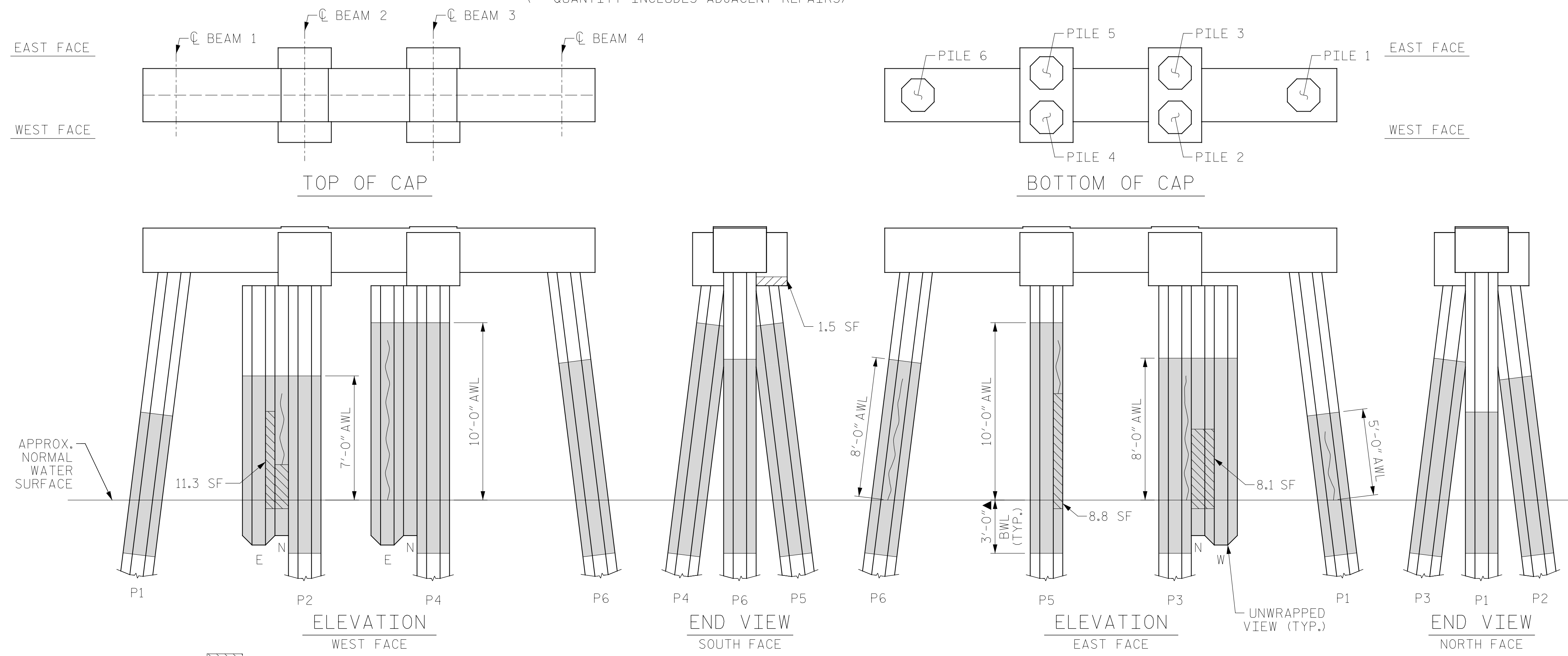
PROJECT NO. HB-0017  
DARE COUNTY  
BRIDGE NO. 270009



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

BENT 291

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



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

BENT 292

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

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



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 291 & BENT 292

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-315
1			3			TOTAL SHEETS
2			4			355

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 293

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	16.3 SF	6.8 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	170.5 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

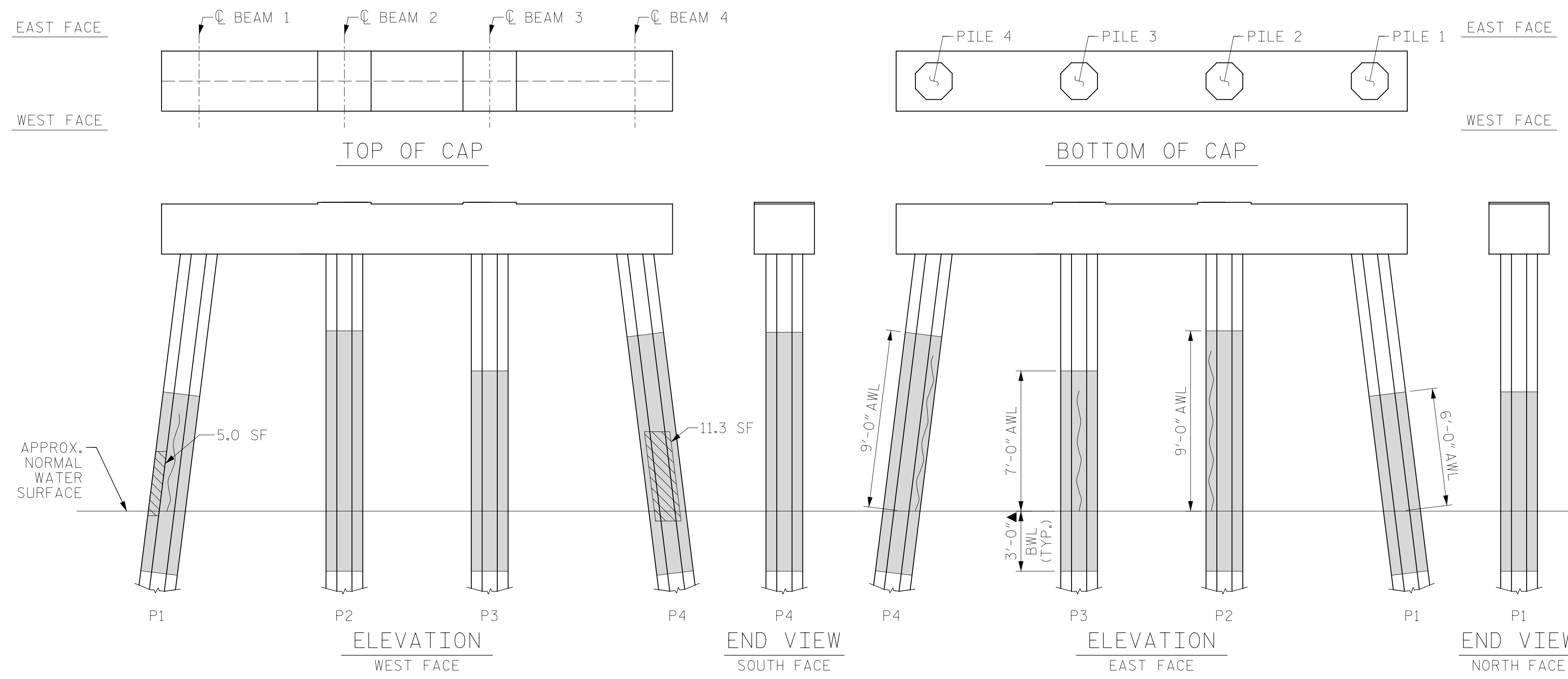
BENT 294

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	2.0 SF	1.0 CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	13.0 SF	5.2 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	137.5 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.

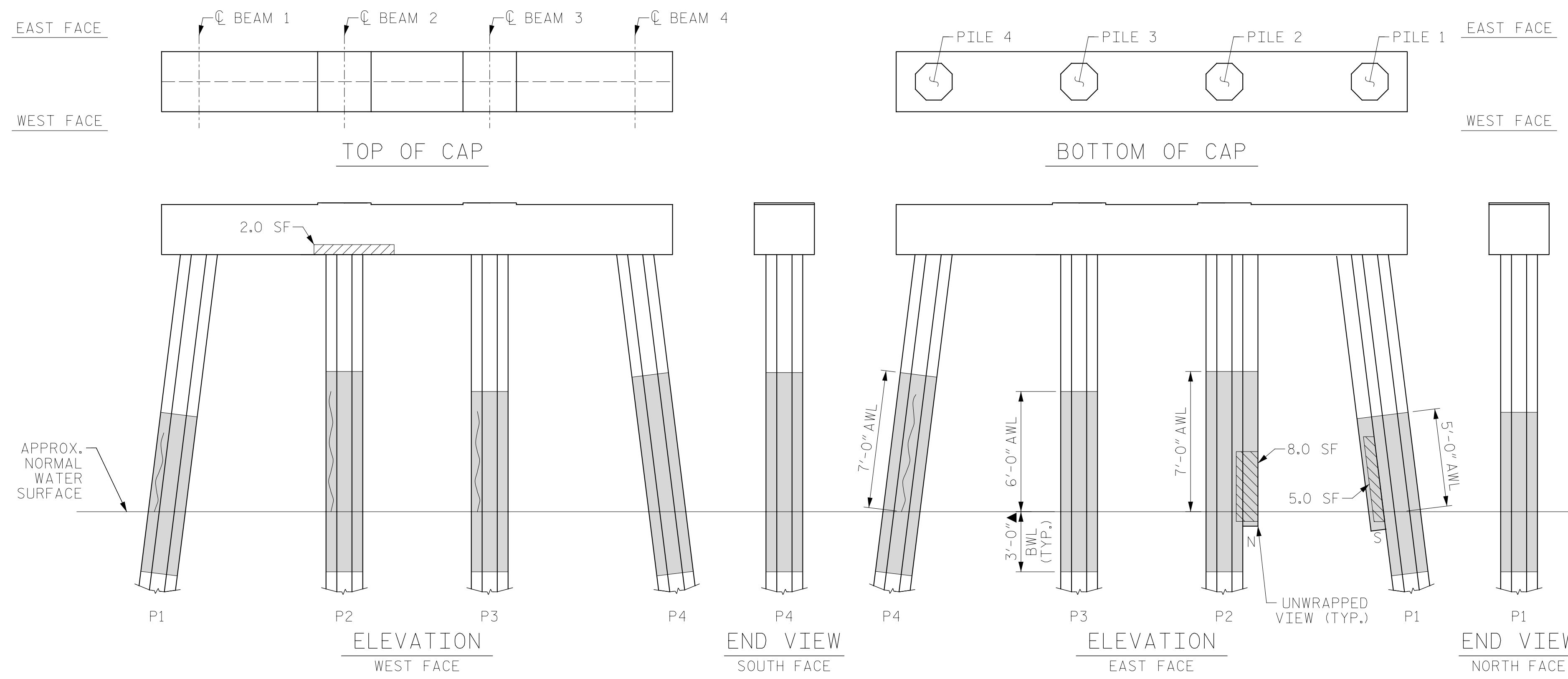
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 293

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



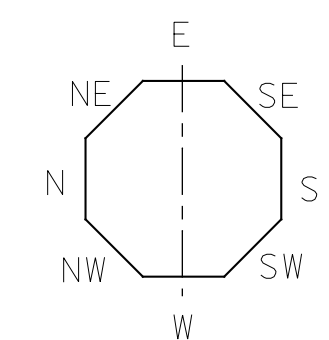
BENT 294

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

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 293	PILE 1	-	5	-	3	-	-	3	5
	PILE 2	8	-	8	-	8	-	7	-
	PILE 3	-	3	5	-	-	6	-	-
	PILE 4	2	-	-	-	-	3	8	-
BENT 294	PILE 1	4	-	3	-	-	3	-	3
	PILE 2	6	4	4	-	-	-	-	-
	PILE 3	5	-	4	5	2	2	-	-
	PILE 4	4	4	4	-	6	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



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BENT 293 & BENT 294

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 295

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	21.9 SF	9.3 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	197.1 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

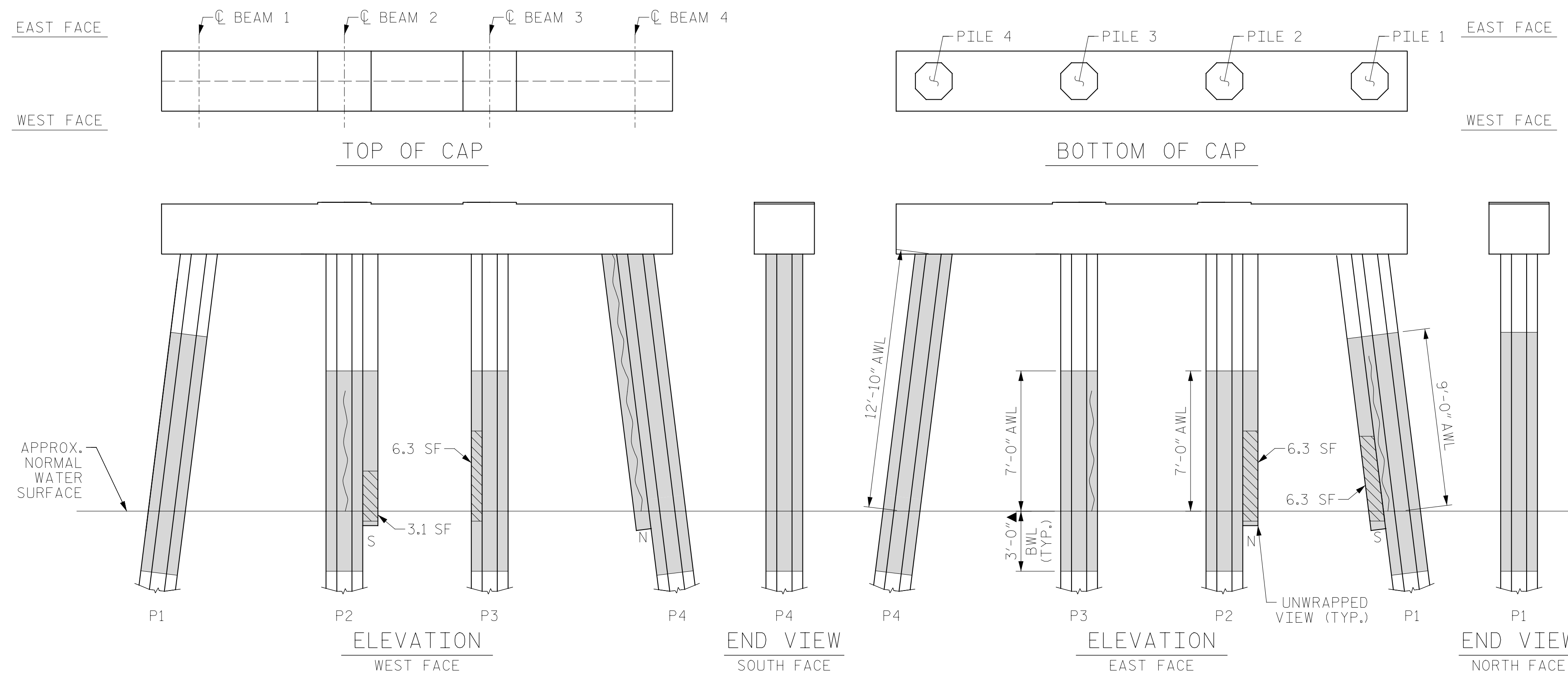
BENT 296

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	1.4 SF	0.7 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	176.0 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.

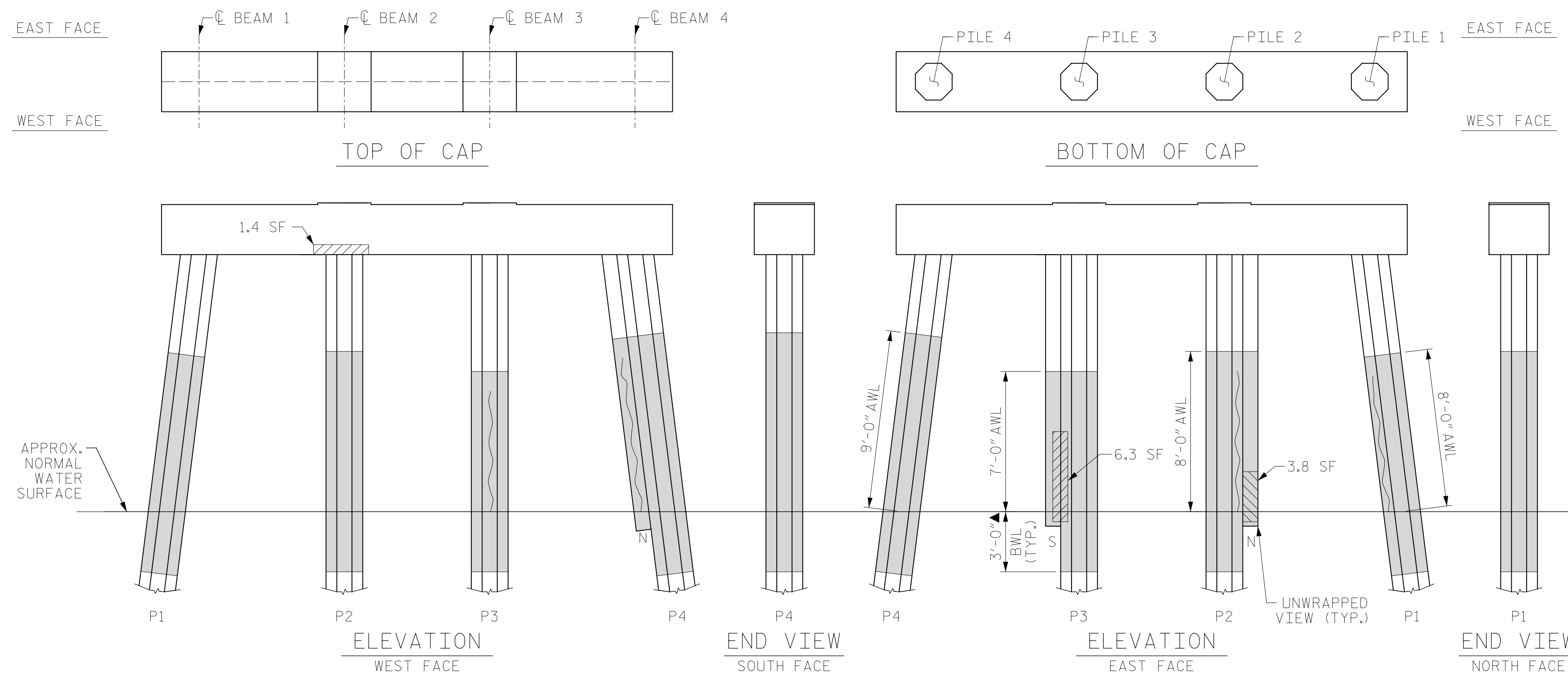
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 295

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



BENT 296

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

ESTIMATED PILE CRACK QTY. TABLE

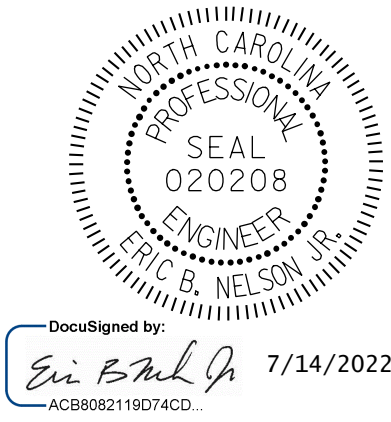
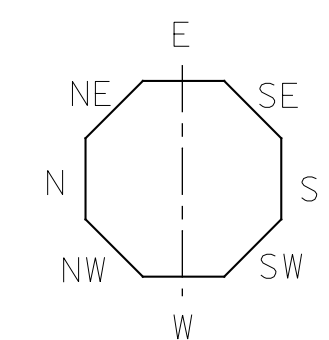
		NW	W	SW	S	SE	E	NE	N
BENT 295	PILE 1	6	8	8	-	8	-	4	-
	PILE 2	-	6	-	-	5	-	3	-
	PILE 3	-	2	2	-	3	-	6	-
	PILE 4	-	3	3	4	5	-	-	13
BENT 296	PILE 1	2	-	5	-	7	-	-	-
	PILE 2	7	-	3	-	-	-	7	5
	PILE 3	6	6	5	1	-	-	-	-
	PILE 4	6	4	-	2	4	6	-	8

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 295 & BENT 296

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 297

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	11.0 SF	4.8 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	176.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 298

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- 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	88.0 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:

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.

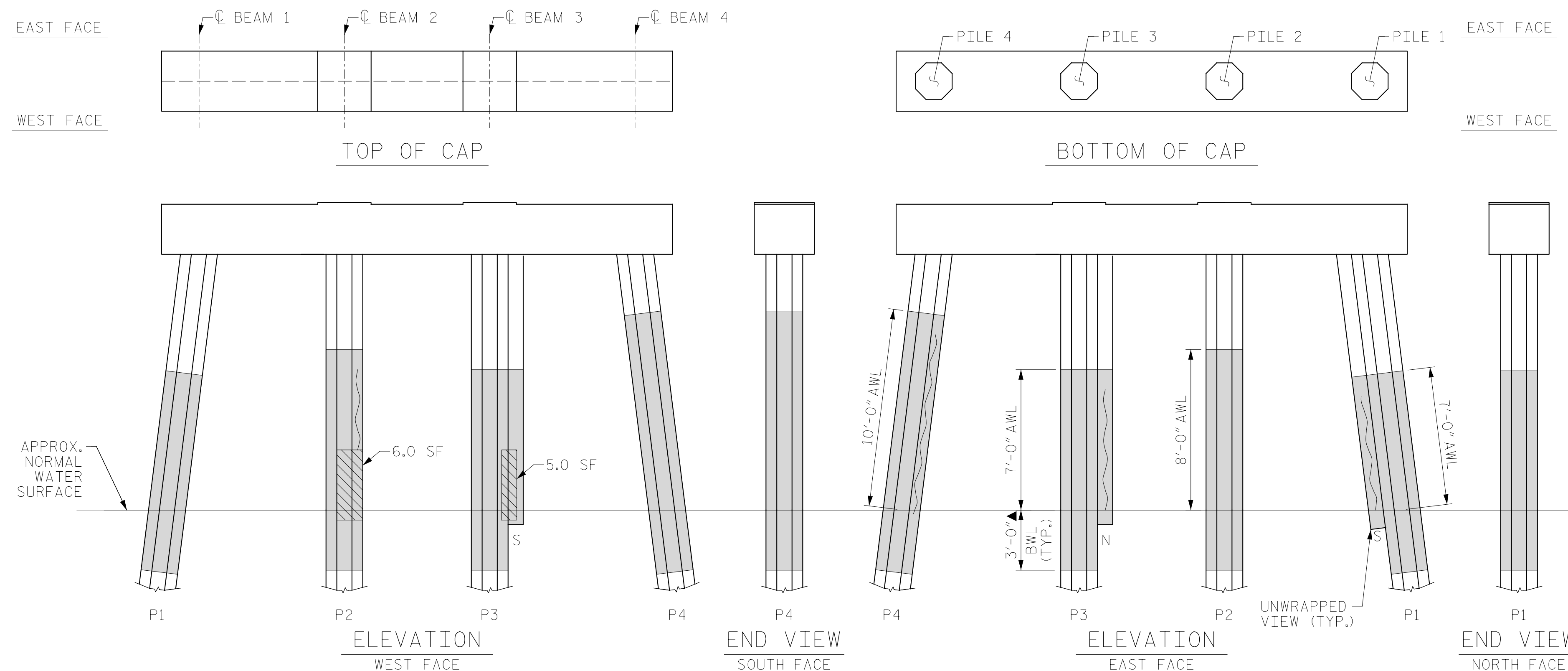
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR PILE CONCRETE RESTORATION, SEE SPECIAL PROVISIONS.

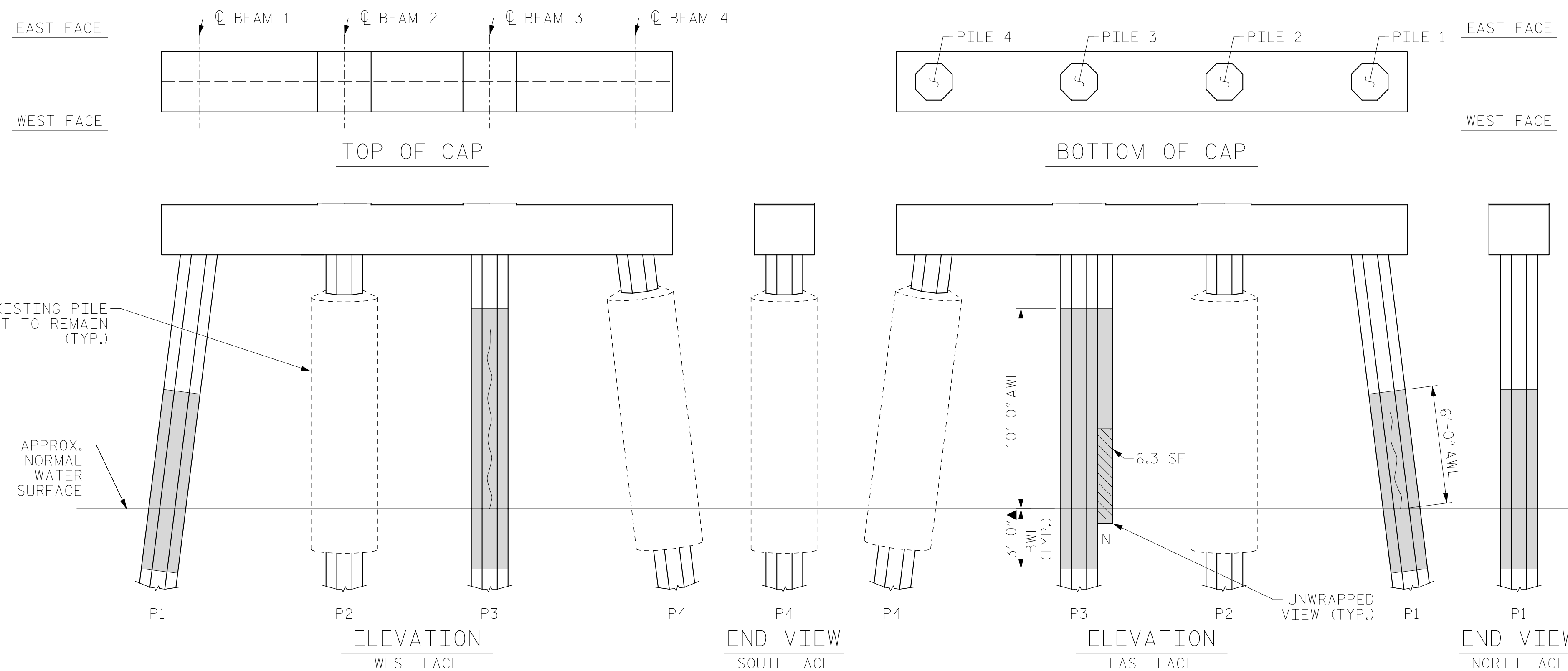
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

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



BENT 297

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



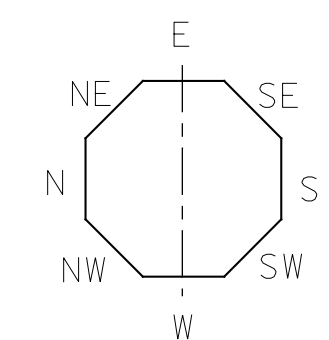
BENT 298

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

ESTIMATED PILE CRACK QTY. TABLE

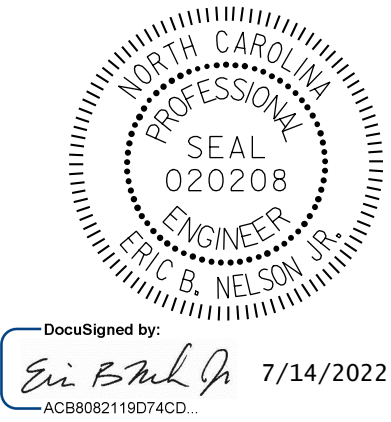
		NW	W	SW	S	SE	E	NE	N
BENT 297	PILE 1	4	4	1	6	-	-	-	3
	PILE 2	3	-	4	-	6	4	-	-
	PILE 3	-	-	2	2	-	-	-	6
	PILE 4	-	4	5	-	-	-	-	9
BENT 298	PILE 1	-	-	3	7	5	5	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	2	9	-	3	3	8	-	5
	PILE 4	-	-	-	-	-	-	-	-

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] - 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 297 & BENT 298

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 299

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	20.5 SF	8.6 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	126.5 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 300

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION		- LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	39.9 SF	15.9 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	235.6 SF				
FRP PROTECTIVE SYSTEM BWL	82.5 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.

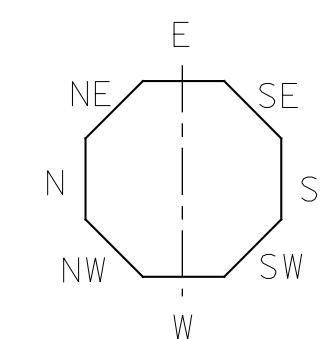
FOR FRP PROTECTIVE SYSTEM DETAILS AND UNDERWATER MORTAR REPAIRS, SEE "PILE FRP PROTECTIVE SYSTEM DETAILS" SHEET.

ESTIMATED PILE CRACK QTY. TABLE

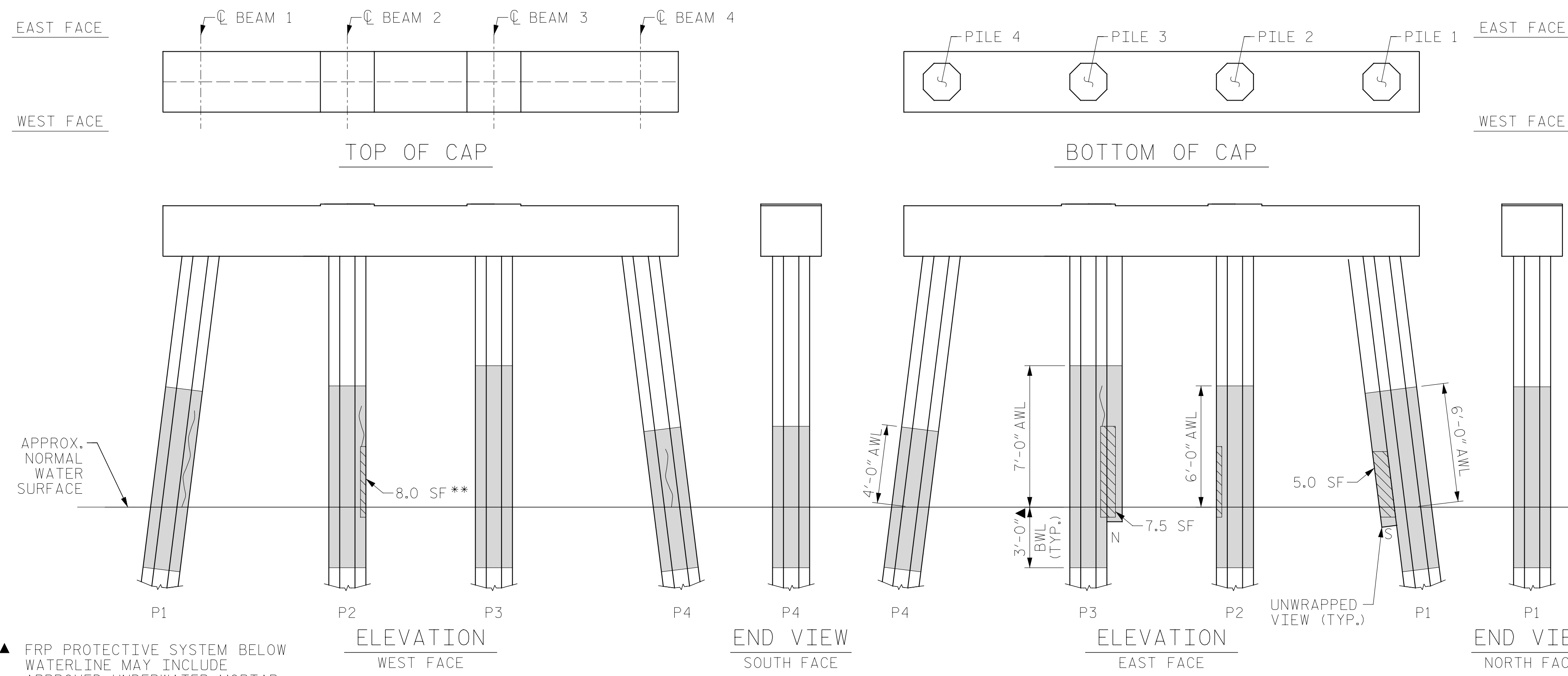
BENT	PILE	DIRECTION							
		NW	W	SW	S	SE	E	NE	N
BENT 299	PILE 1	3	4	5	-	5	-	-	-
	PILE 2	-	-	2	-	-	-	3	3
	PILE 3	2	2	2	2	-	2	2	-
	PILE 4	3	3	3	3	-	2	2	-
BENT 300	PILE 1	7	-	6	-	-	-	-	5
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	5	4	5	6	4
	PILE 4	-	-	10	10	-	12	3	-
	PILE 5	-	-	-	3	-	-	-	-
	PILE 6	-	-	-	4	4	2	-	4

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

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



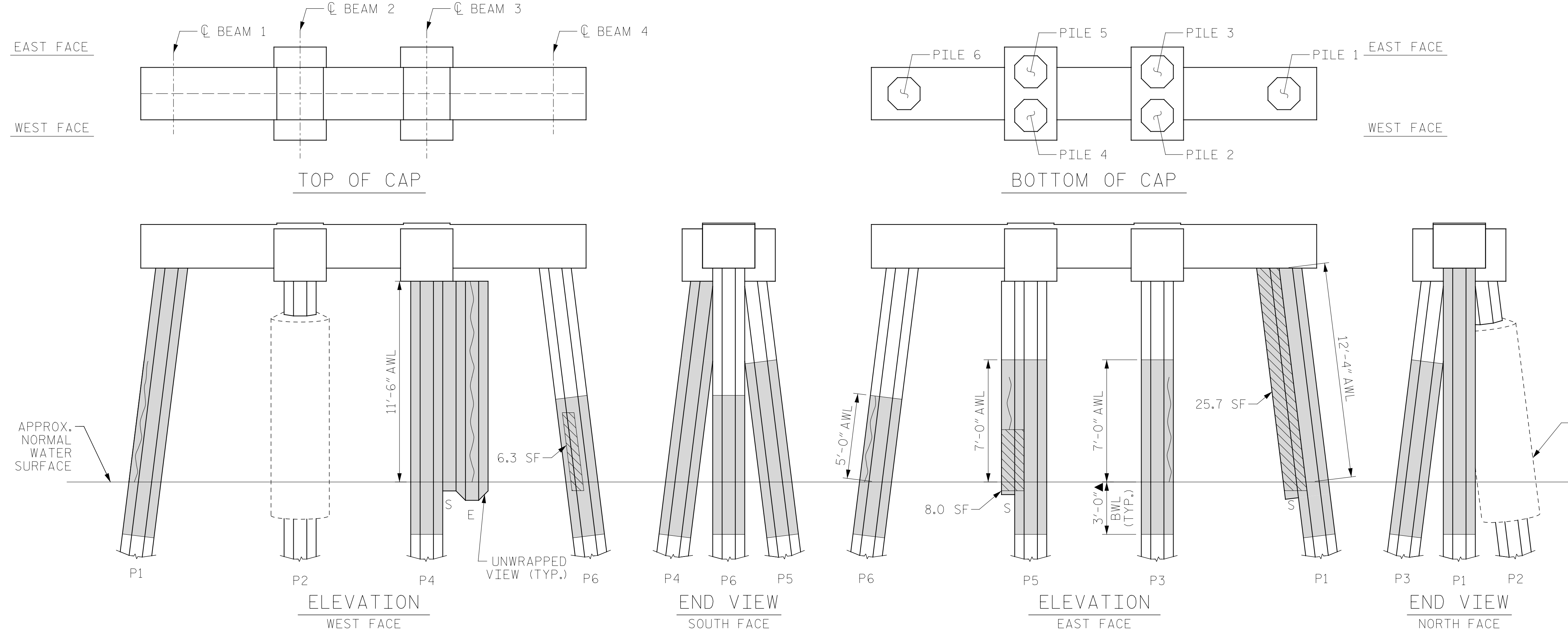
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-319
1			3			TOTAL SHEETS
2			4			355



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

BENT 299

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



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

BENT 300

(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 301

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	50.0 SF	18.5 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	66.0 SF				
FRP PROTECTIVE SYSTEM BWL	16.5 SF				

BENT 302

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	44.6 SF	18.1 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	179.7 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.

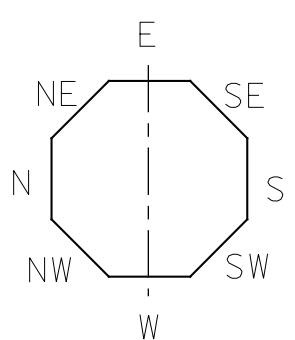
FOR FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS.

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

BENT	PILE	NW	W	SW	S	SE	E	NE	N
		BENT 301	PILE 1	-	-	-	-	-	-
	PILE 2	-	-	-	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	-	-	-	4	-	-	-
BENT 302	PILE 1	-	-	6	-	4	5	2	2
	PILE 2	-	4	6	4	-	3	3	-
	PILE 3	4	5	-	4	-	-	3	-
	PILE 4	-	-	-	3	-	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

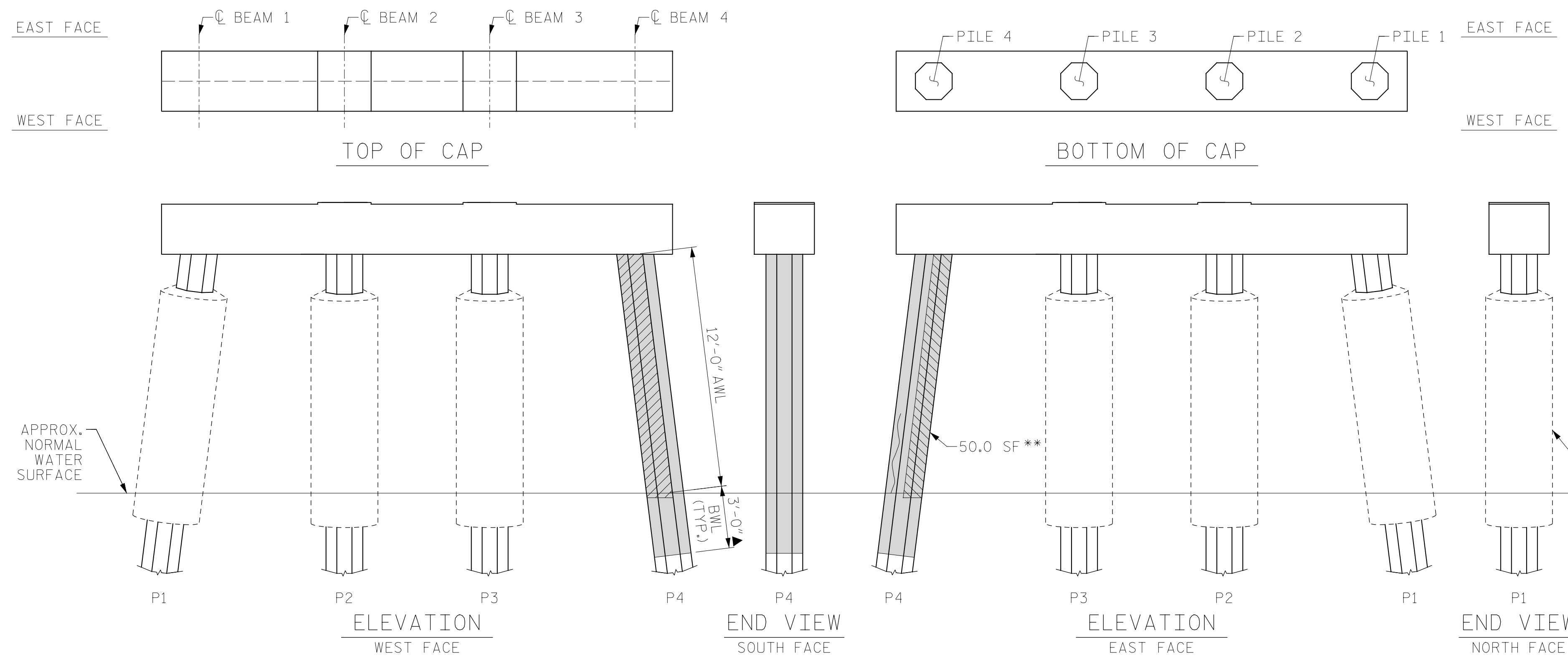
- ERI - EPOXY RESIN INJECTION
- FRP PROTECTIVE SYSTEM
- PILE CONCRETE RESTORATION
- SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

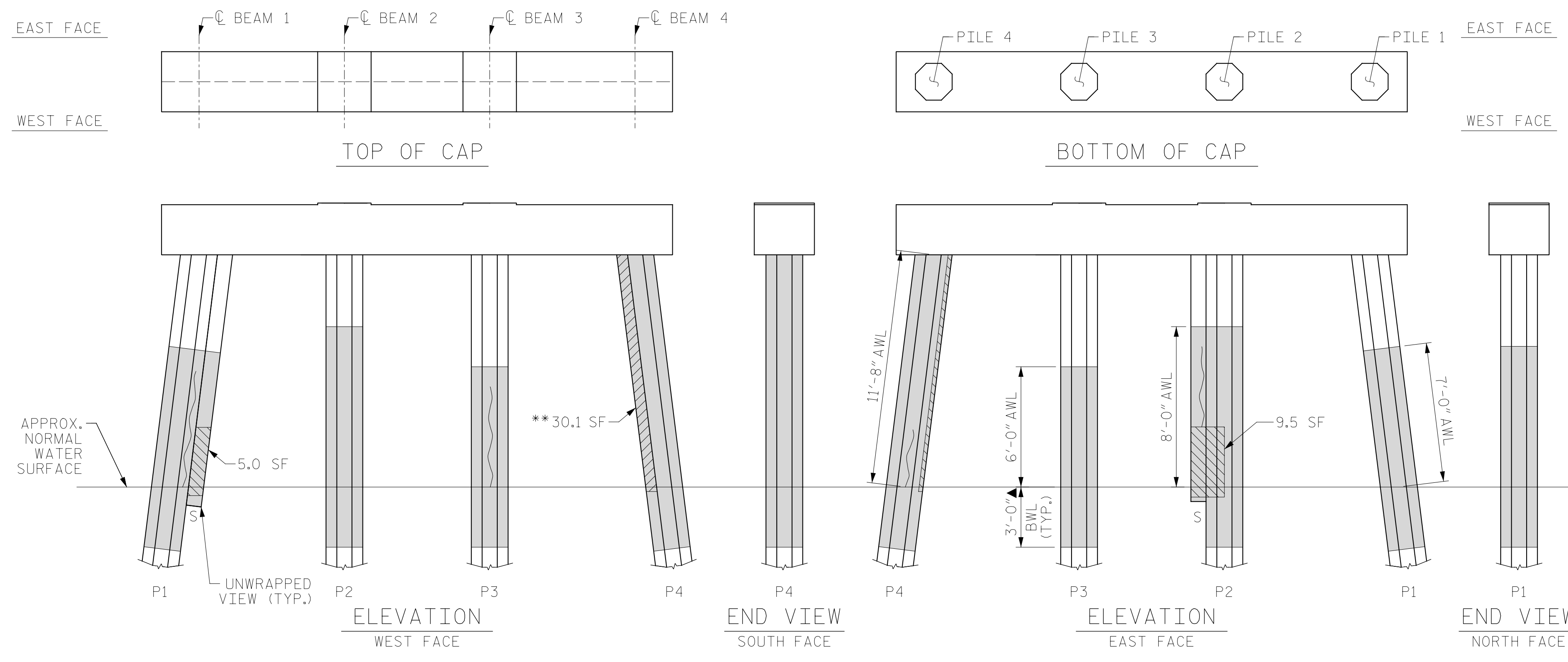
BENT 301 & BENT 302

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-320
1			3			TOTAL SHEETS
2			4			355



BENT 301

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



BENT 302

(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 303

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- 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	176.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

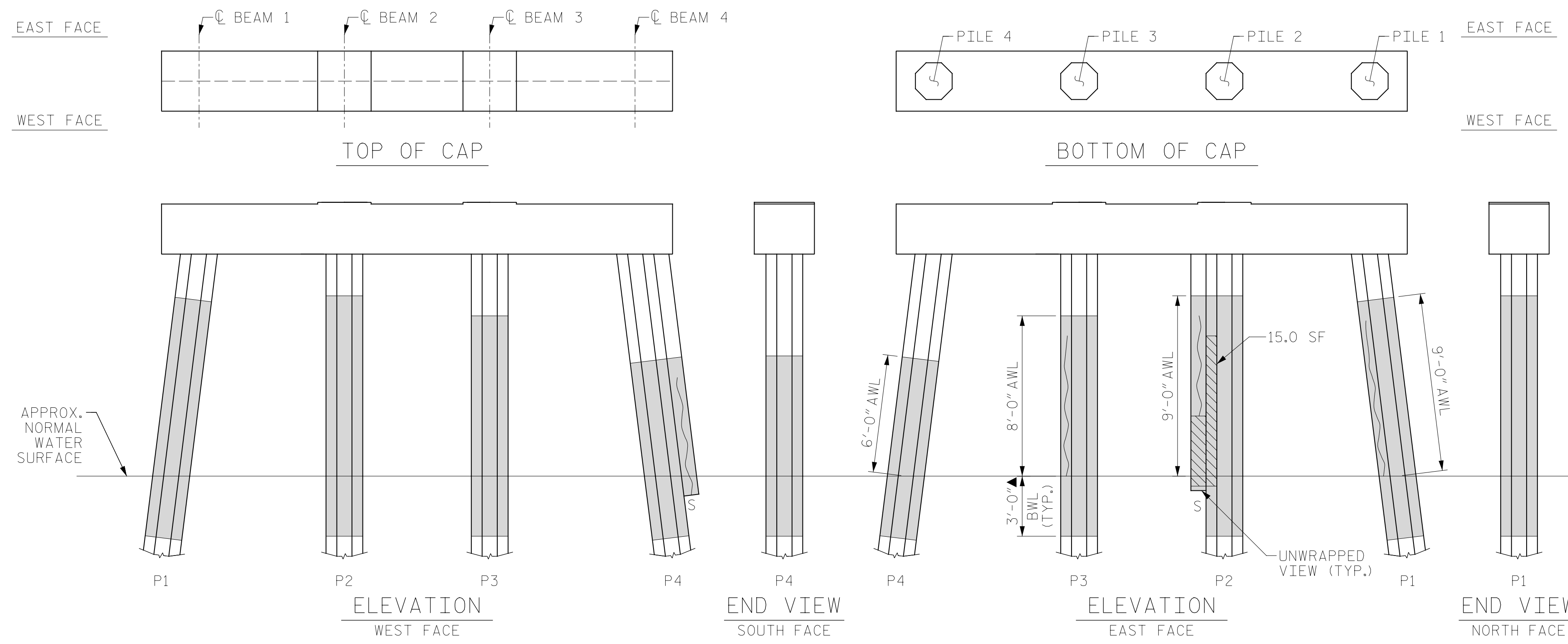
BENT 304

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	- SF	- CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	37.0 SF	15.3 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.

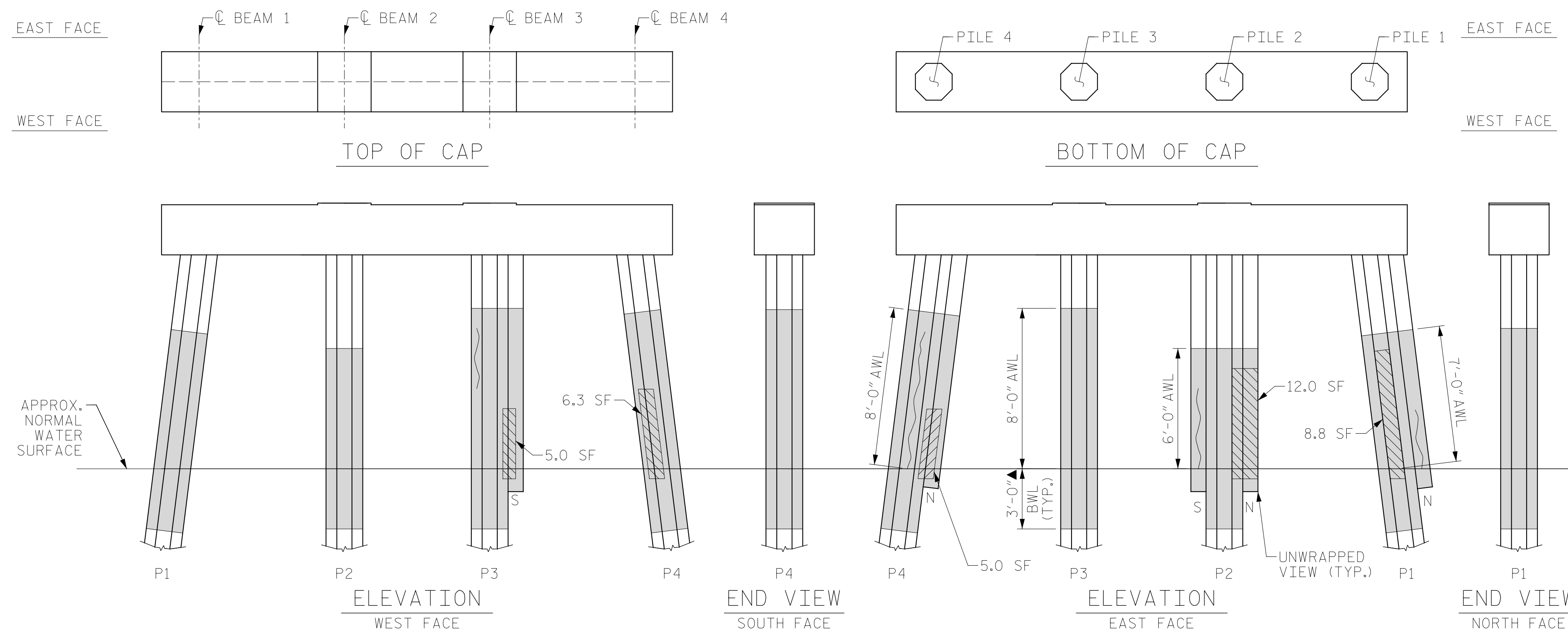
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 303

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



BENT 304

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

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 303	PILE 1	4	5	7	9	8	6	4	-
	PILE 2	-	5	-	5	-	-	6	-
	PILE 3	-	4	-	1	7	-	4	-
	PILE 4	-	-	-	5	4	4	3	-
BENT 304	PILE 1	2	-	-	-	-	-	-	3
	PILE 2	-	-	-	4	-	-	-	-
	PILE 3	3	-	-	-	3	-	-	4
	PILE 4	2	2	-	1	4	7	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
- [Wavy Box] - PILE CONCRETE RESTORATION
- [Dotted Box] - SHOTCRETE REPAIRS



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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 303 & BENT 304

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 355
2			4			S-321

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 305

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	40.5 SF	20.3 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	5.0 SF	2.1 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	88.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

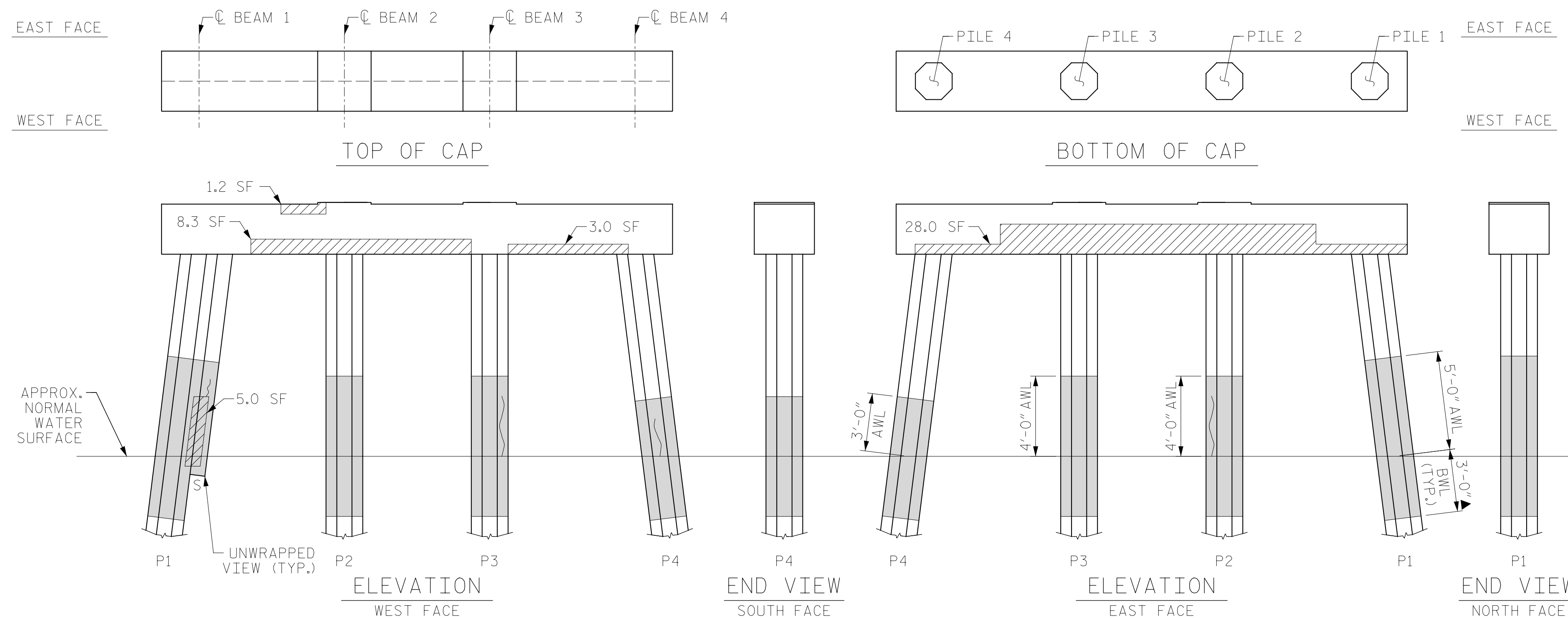
BENT 306

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	5.4 SF	2.7 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	110.0 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.

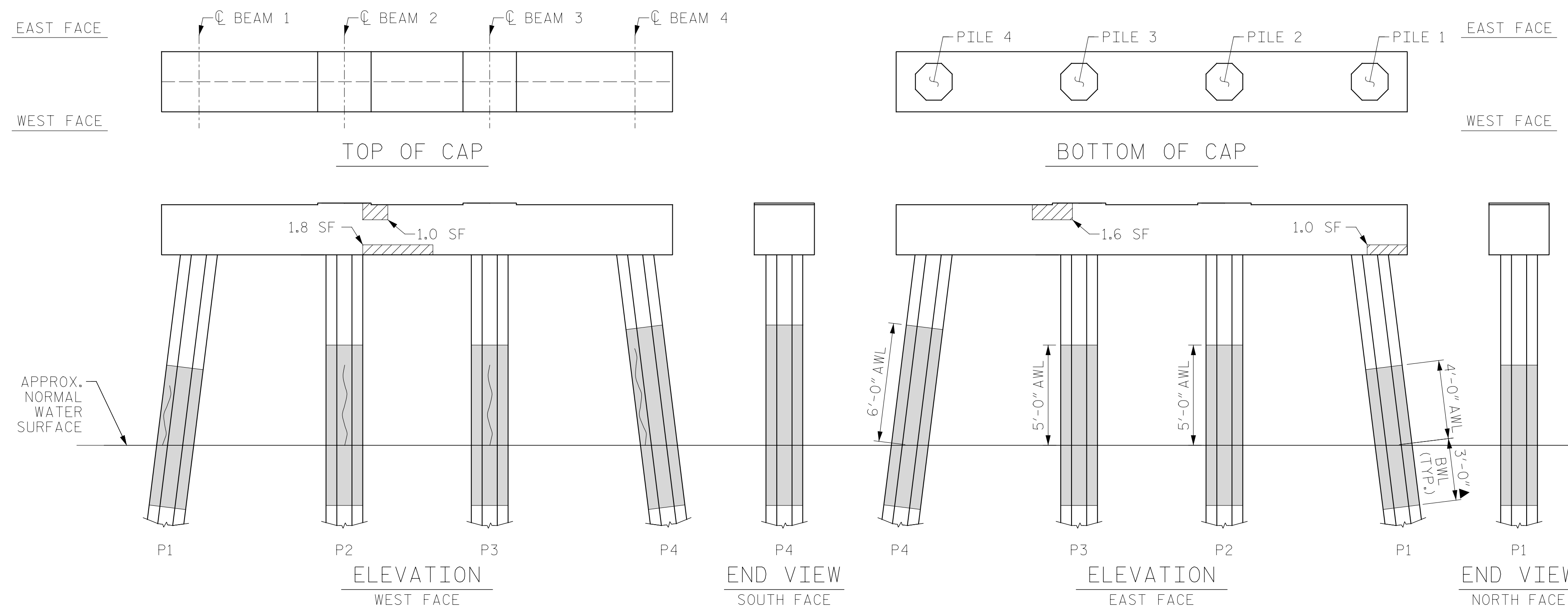
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 305

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



BENT 306

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

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 305	PILE 1	3	-	-	1	-	4	-	1
	PILE 2	2	2	-	-	3	-	-	-
	PILE 3	-	-	3	-	-	-	-	-
	PILE 4	-	2	2	-	-	-	-	2
BENT 306	PILE 1	3	-	-	-	2	-	-	1
	PILE 2	3	4	3	1	2	2	-	-
	PILE 3	4	4	-	-	2	-	-	-
	PILE 4	5	4	3	1	2	-	3	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
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BENT 305 & BENT 306

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-322
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 307

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	91.6 SF	45.8 CF	SF	CF	
EPOXY RESIN INJECTION	-	LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	12.5 SF	5.4 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	126.0 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

BENT 308

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	8.3 SF	4.2 CF	SF	CF	
EPOXY RESIN INJECTION	-	LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	18.4 SF	7.8 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	209.9 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.

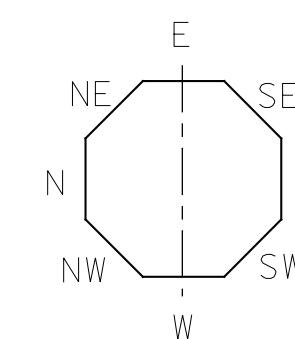
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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 307	PILE 1	4	-	9	-	5	-	-	3
	PILE 2	-	-	4	-	4	4	-	-
	PILE 3	-	1	4	-	2	2	2	-
	PILE 4	3	1	-	2	-	-	-	-
BENT 308	PILE 1	8	-	-	-	4	-	-	-
	PILE 2	-	-	-	-	4	-	-	-
	PILE 3	-	4	4	-	-	-	-	-
	PILE 4	1	-	-	-	3	-	-	-
	PILE 5	5	-	3	-	-	4	-	5
	PILE 6	-	-	4	-	-	2	-	8

NOTE: FOR INFORMATION ON PILE CONDITION ONLY.

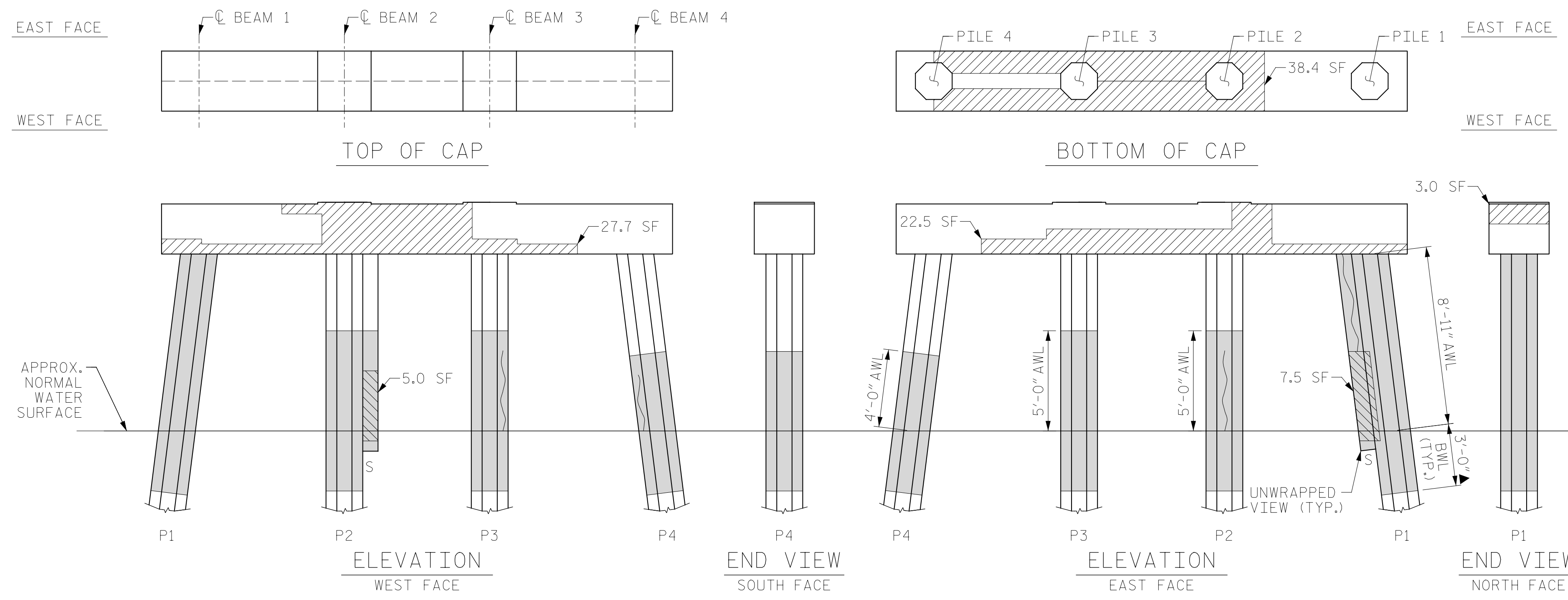
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BENT 307 & BENT 308

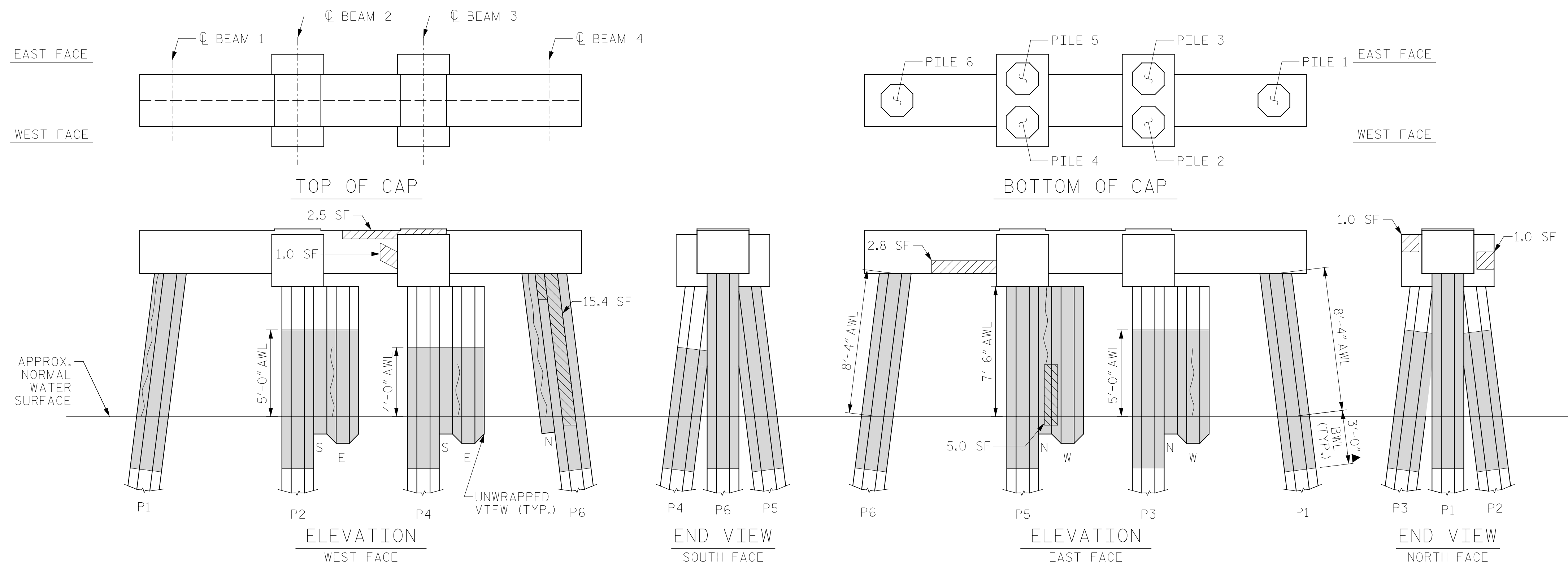
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-323
1			3			TOTAL SHEETS
2			4			355



BENT 307

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

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



BENT 308

(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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AS-BUILT REPAIR QUANTITY TABLE

BENT 309

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	33.6 SF	16.8 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	82.5 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

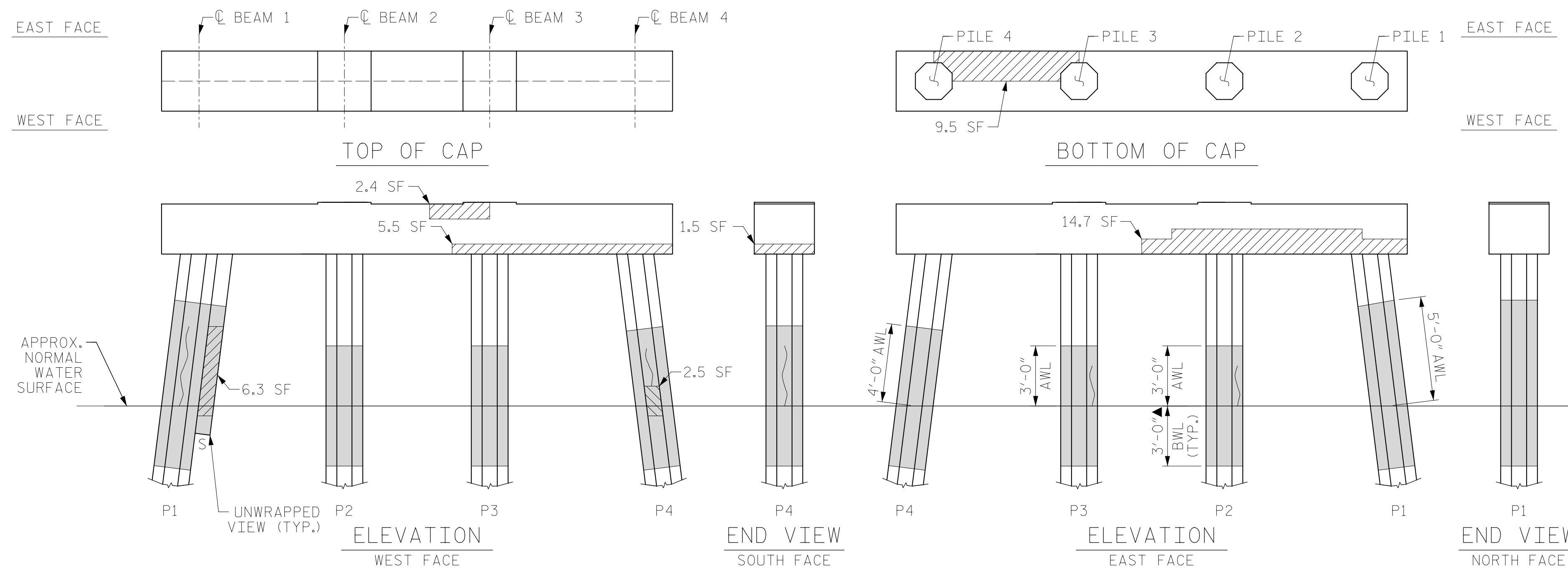
BENT 310

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	29.2 SF	14.6 CF	SF	CF	
EPOXY RESIN INJECTION	-	LF			LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	11.8 SF	4.8 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	104.5 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.

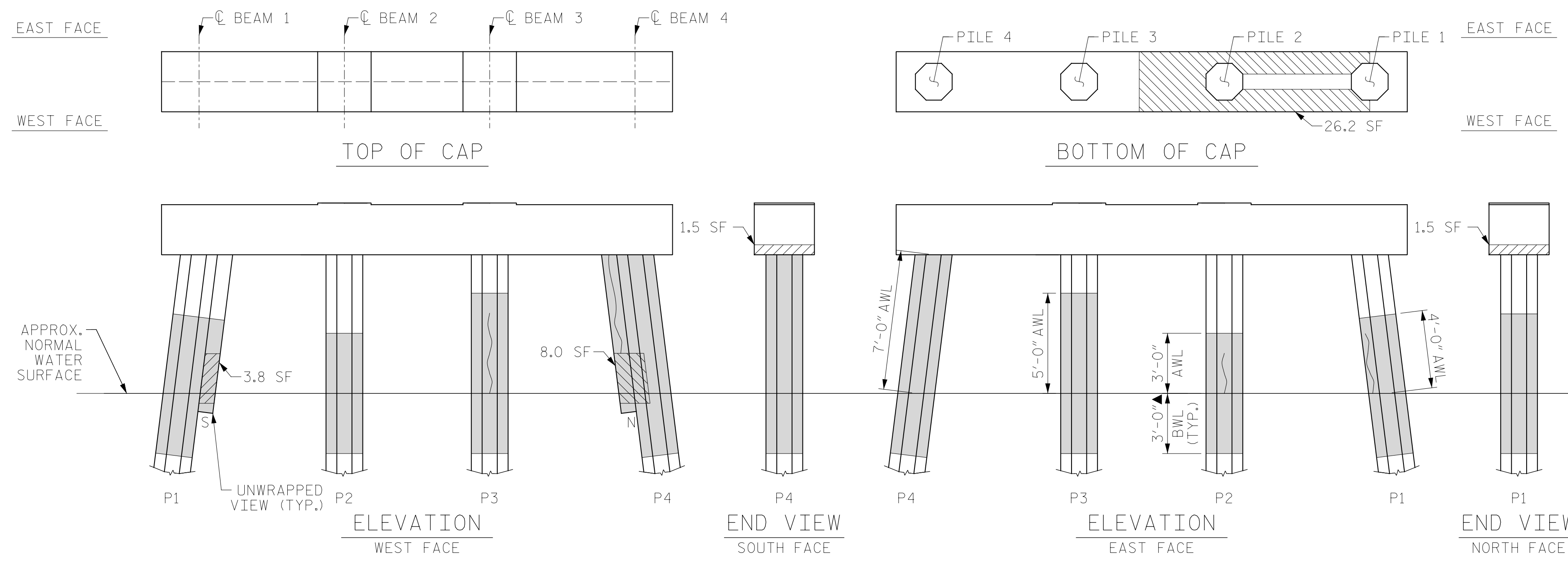
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 309

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



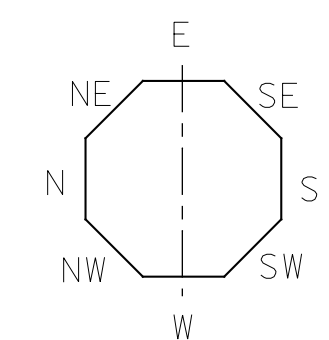
BENT 310

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

ESTIMATED PILE CRACK QTY. TABLE

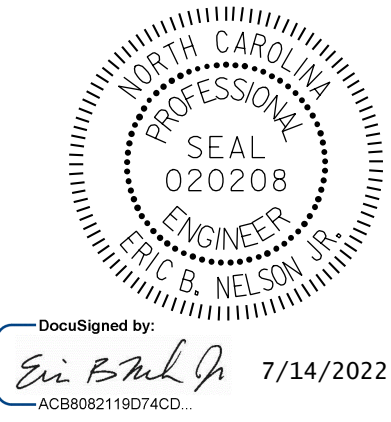
		NW	W	SW	S	SE	E	NE	N
BENT 309	PILE 1	3	4	4	-	4	-	-	-
	PILE 2	1	-	-	-	-	-	2	-
	PILE 3	2	-	-	-	-	-	2	-
	PILE 4	-	2	-	4	-	-	-	-
BENT 310	PILE 1	-	-	-	-	3	-	-	1
	PILE 2	-	-	-	2	2	2	2	2
	PILE 3	3	4	3	-	-	2	3	3
	PILE 4	-	-	-	4	3	-	-	3

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  
7/14/2022

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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BENT 309 & BENT 310

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-324
1			3			TOTAL SHEETS
2			4			355

AS-BUILT REPAIR QUANTITY TABLE

BENT 311

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	17.5 SF	8.8 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	14.4 SF	6.1 CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	90.3 SF				
FRP PROTECTIVE SYSTEM BWL	66.0 SF				

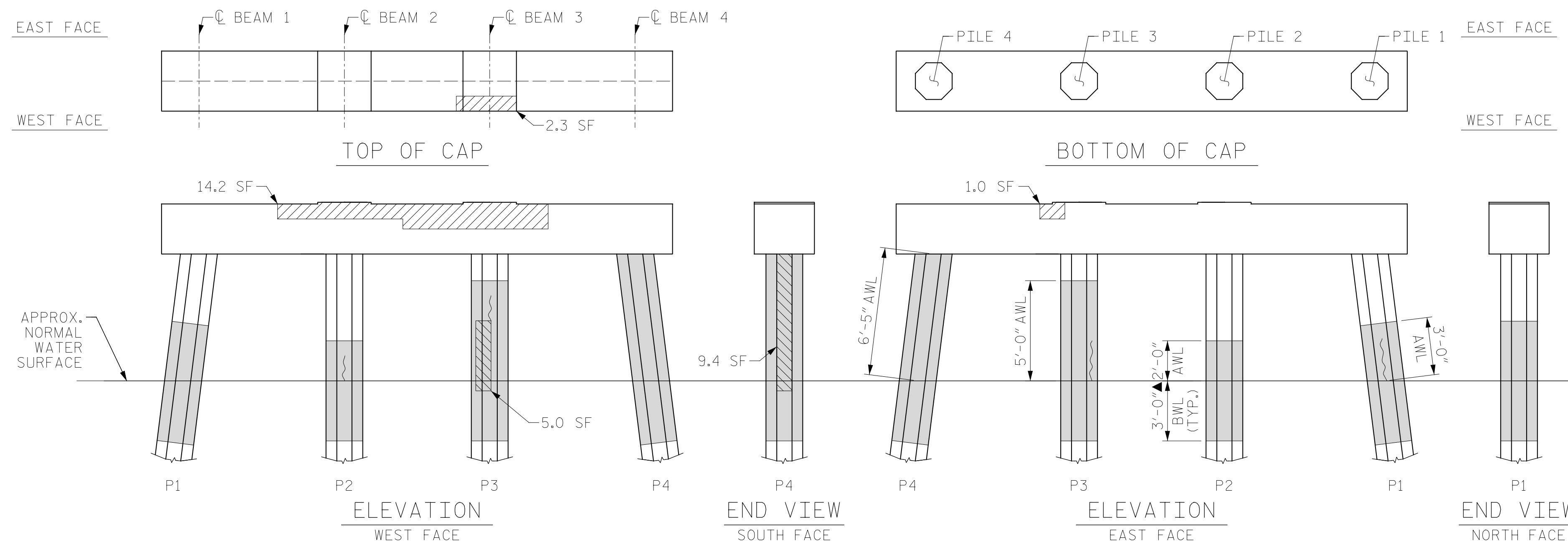
BENT 312

CAP REPAIRS		ESTIMATE			
SHOTCRETE REPAIRS	74.6 SF	37.3 CF	SF	CF	
EPOXY RESIN INJECTION	- LF				LF
PILE REPAIRS		ESTIMATE			
PILE CONCRETE RESTORATION	- SF	- CF	SF	CF	
FRP PROTECTIVE SYSTEM AWL	64.2 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.

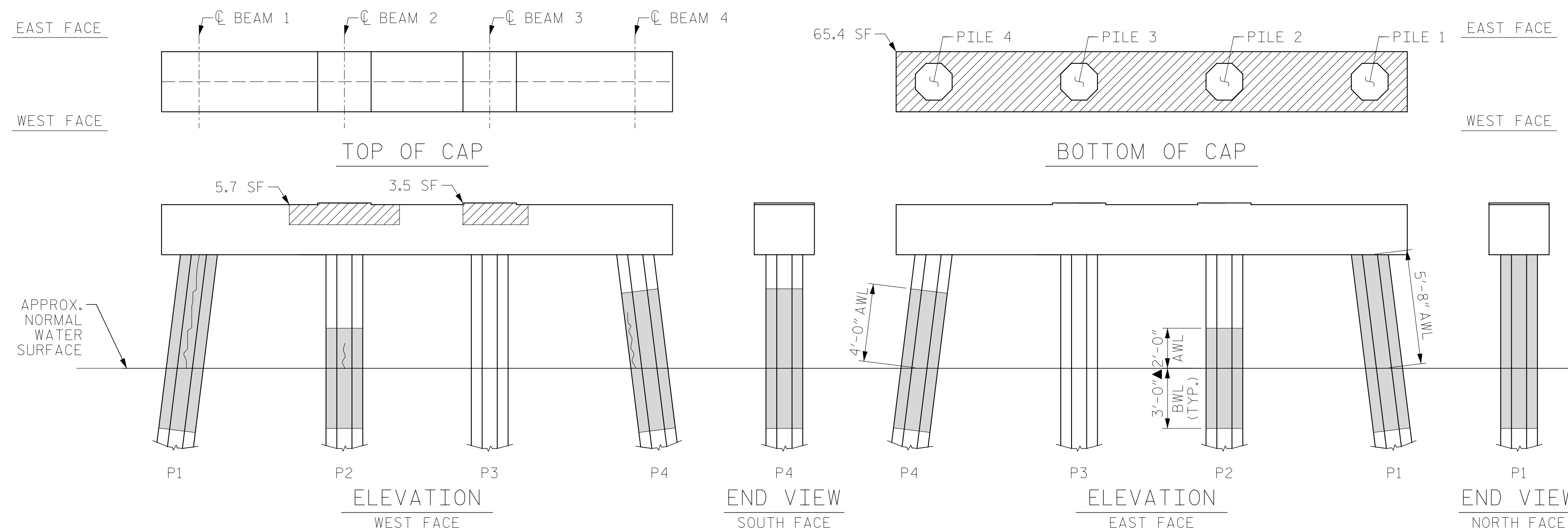
NOTES:  
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL 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 311

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



BENT 312

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

ESTIMATED PILE CRACK QTY. TABLE

		NW	W	SW	S	SE	E	NE	N
BENT 311	PILE 1	-	-	-	2	-	2	-	-
	PILE 2	1	-	-	-	-	-	-	1
	PILE 3	-	1	-	-	2	-	-	1
	PILE 4	-	-	-	-	-	-	-	-
BENT 312	PILE 1	-	6	-	-	-	-	-	-
	PILE 2	-	1	1	-	-	-	-	-
	PILE 3	-	-	-	-	-	-	-	-
	PILE 4	-	1	-	-	-	-	-	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
- - FRP PROTECTIVE SYSTEM
- ▨ - PILE CONCRETE RESTORATION
- ▩ - SHOTCRETE REPAIRS



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

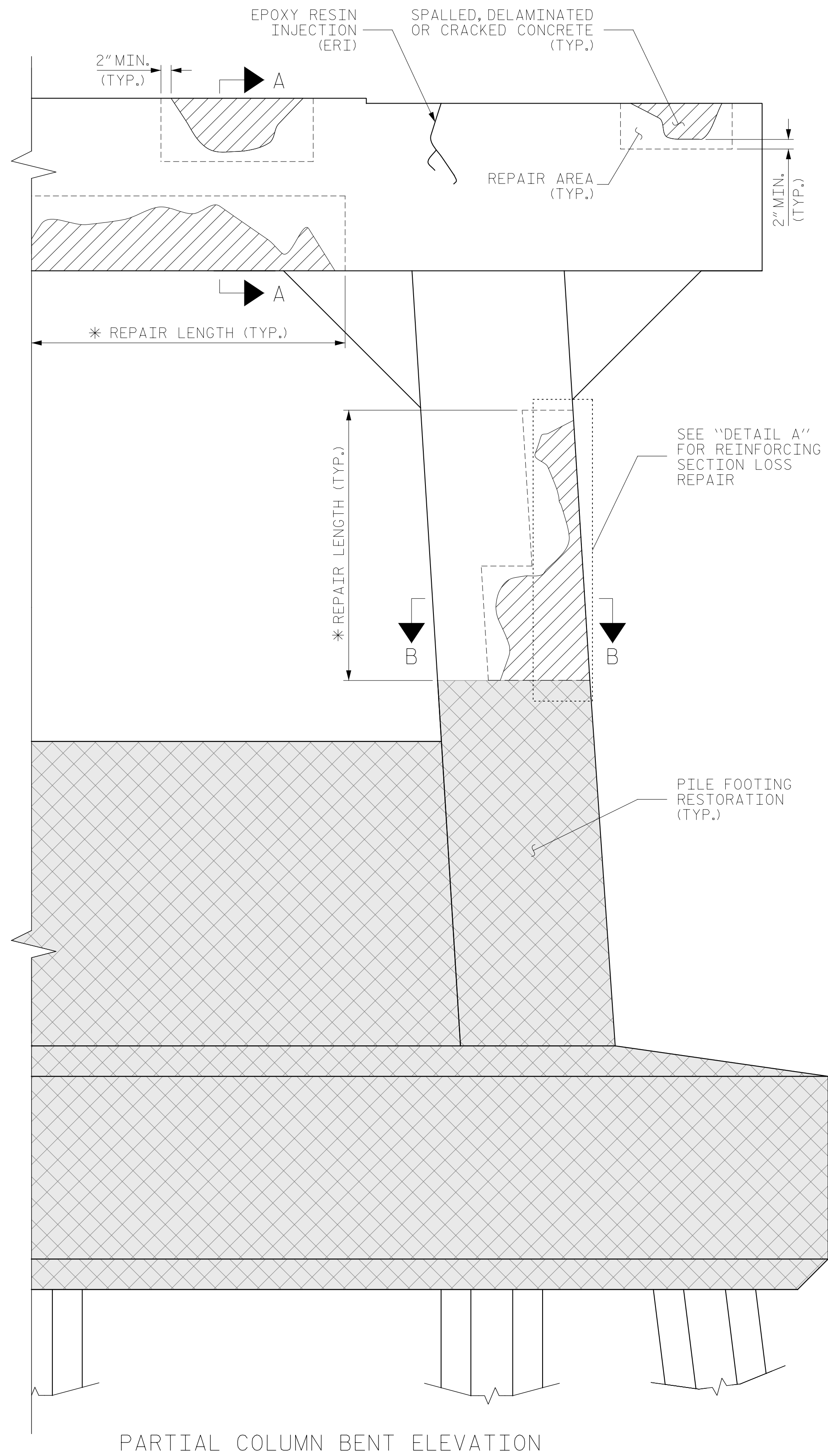
BENT 311 & BENT 312

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

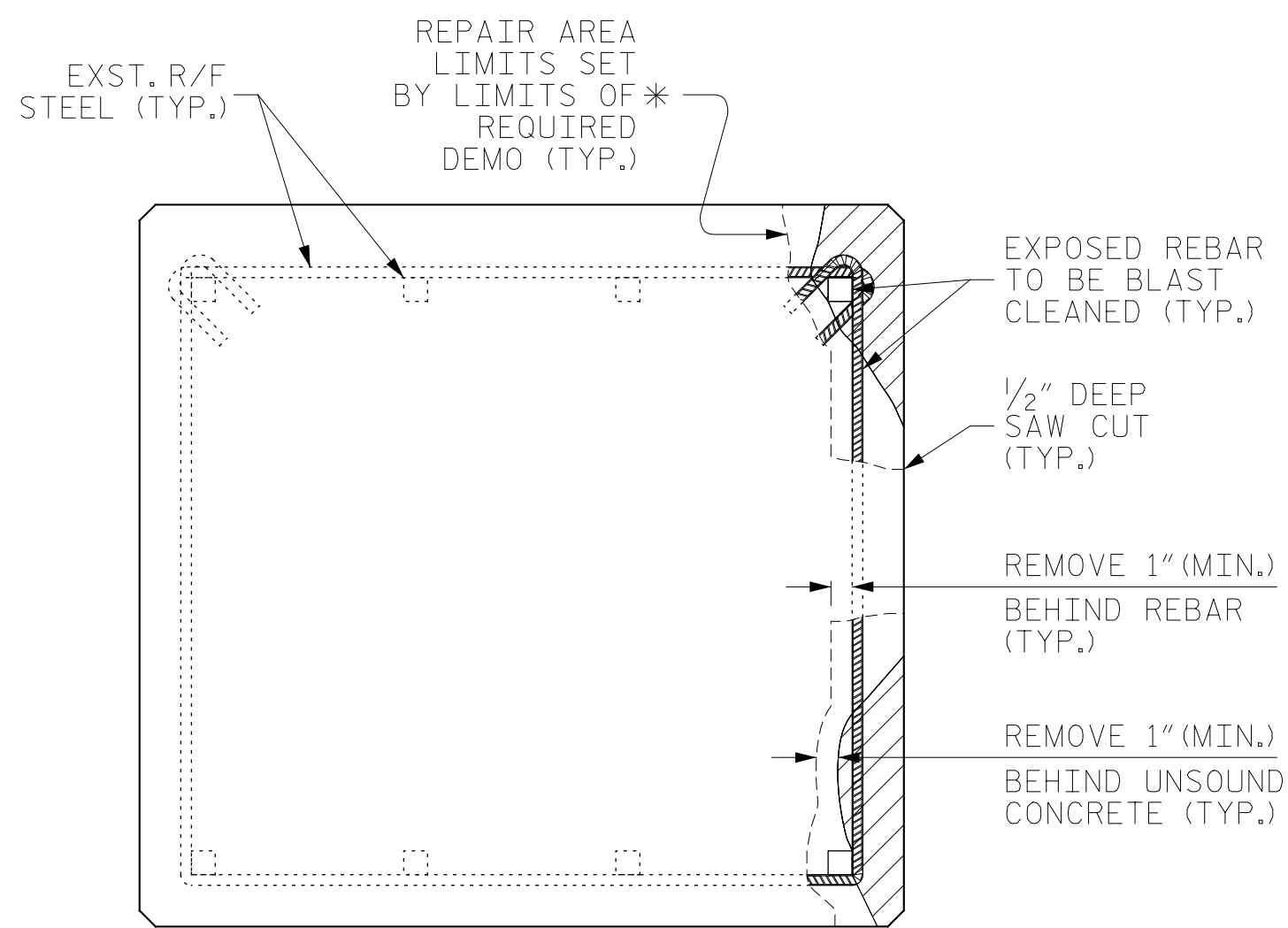


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

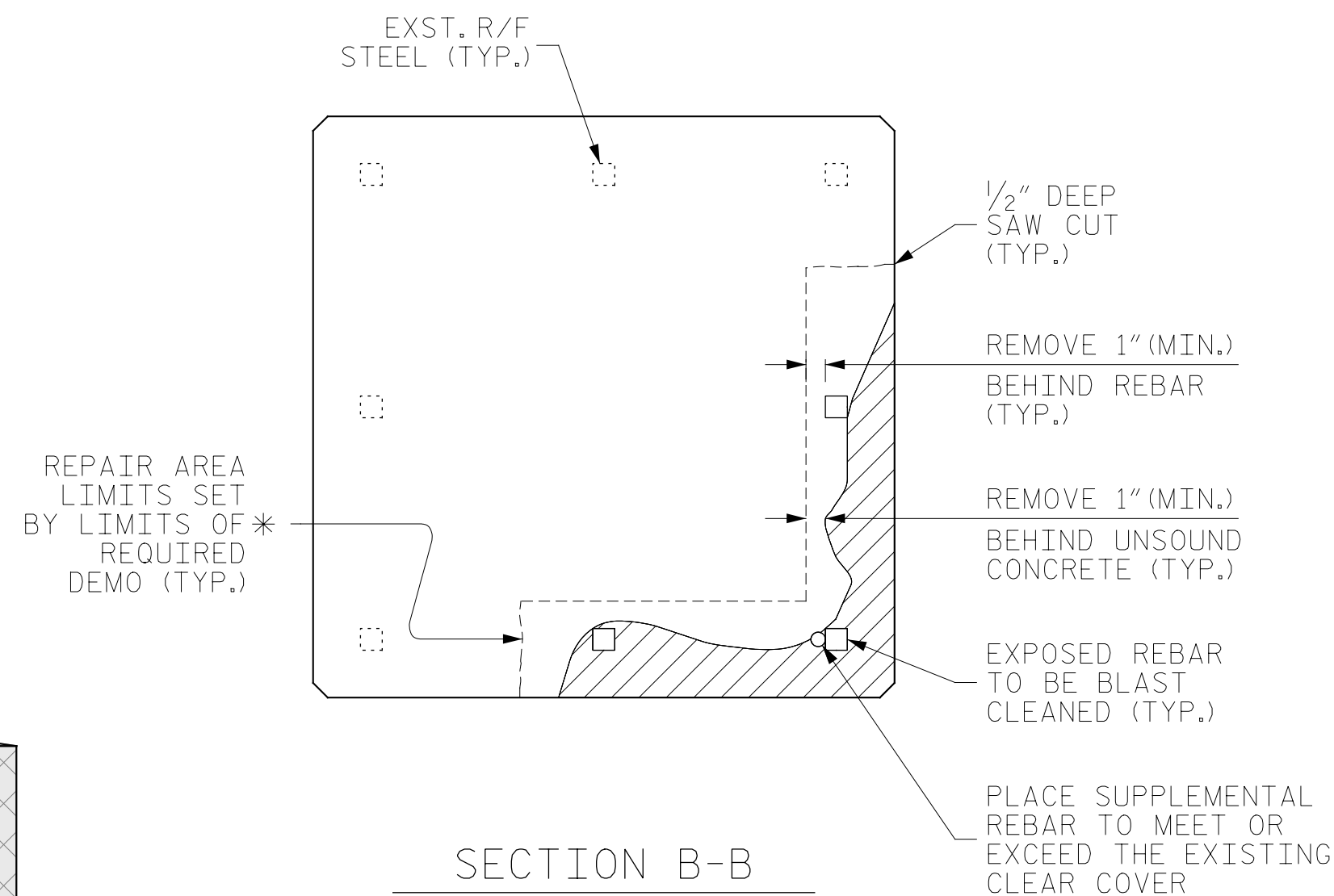
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-325
1			3			TOTAL SHEETS
2			4			355



PARTIAL COLUMN BENT ELEVATION



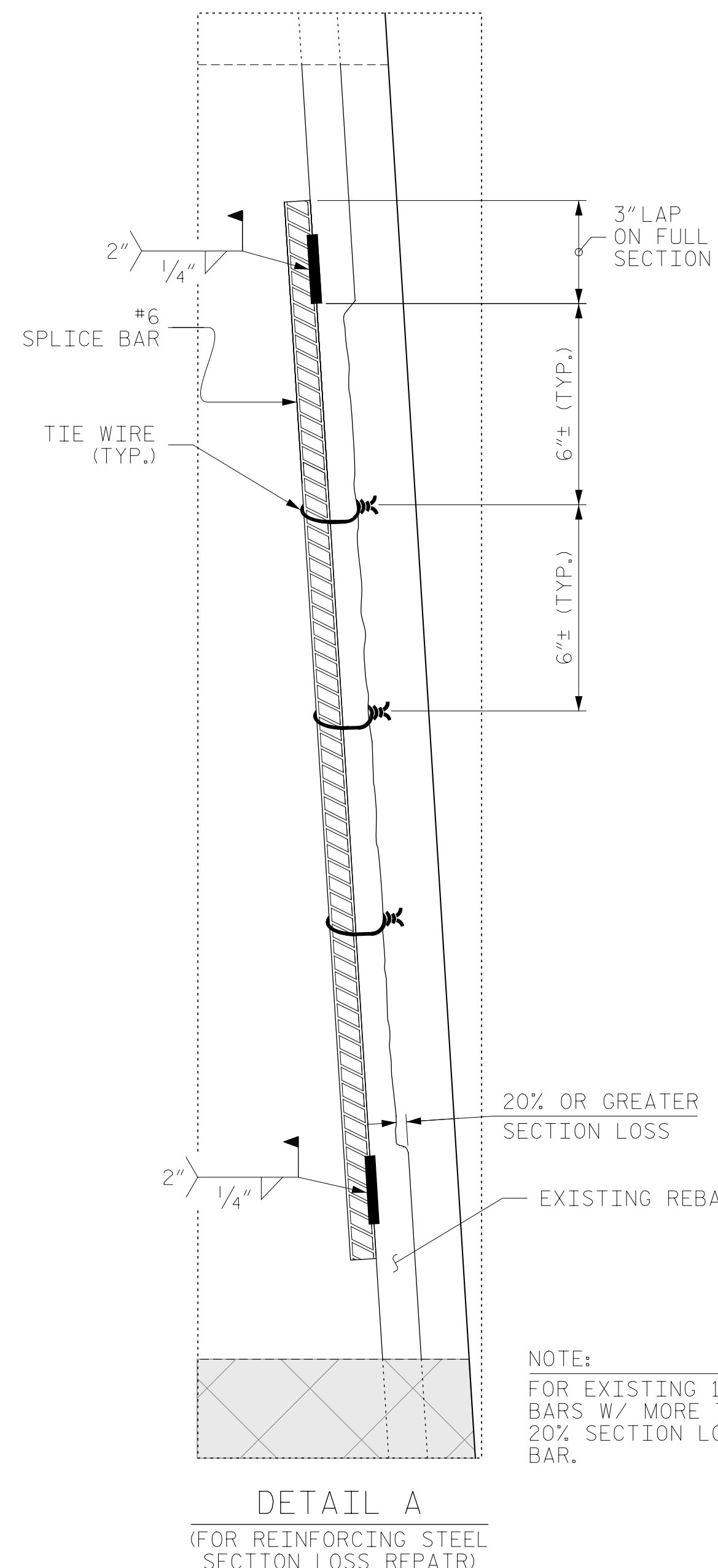
SECTION A-A  
(TYPICAL CAP REPAIRS)



SECTION B-B  
(TYPICAL COLUMN REPAIRS)

\* IF REPAIR AREA EXCEEDS 30% OF THE CROSS-SECTIONAL AREA OR EXPOSES MORE THAN 4 MAIN COLUMN BARS THEN REPAIR LENGTH SHALL NOT EXCEED 10 FEET PER REPAIR SECTION. STAGE ADDITIONAL REPAIRS AS REQUIRED.

TYPICAL COLUMN BENT REPAIRS



DETAIL A  
(FOR REINFORCING STEEL SECTION LOSS REPAIR)

NOTES:

TYPICAL BENT CAP REPAIRS ARE SHOWN, REPAIR DETAILS SIMILAR FOR END BENT CAPS AND STRUTS.

THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE DRAWINGS, IN THE SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.

REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY. MINIMUM OF 1" BEYOND ANY UNSOUND CONCRETE AND REBAR, AND A MINIMUM OF 2" CLEARANCE TO SAW CUT.

NO MORE THAN ONE-THIRD OF THE CAP OR COLUMN CIRCUMFERENCE SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF A CAP OR COLUMN CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, BUT NO MORE THAN ONE-THIRD OF THE CIRCUMFERENCE SHALL BE REMOVED AT ONE TIME. IF REMOVAL EXTENDS MORE THAN 1/2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP THE SPLICE LENGTH SPECIFIED IN THE PLANS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION (ERI), SEE SPECIAL PROVISIONS.

CLEAN ALL EXPOSED REINFORCING BARS IN ACCORDANCE WITH APPROPRIATE SPECIAL PROVISIONS, FOR BARS WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.

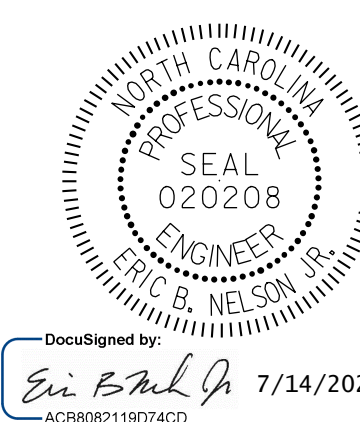
- DEFECT AREA
- PILE FOOTING RESTORATION
- DEMOLITION LIMITS

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

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TYPICAL CAP, COLUMN,  
& UNDERDECK REPAIR  
DETAILS



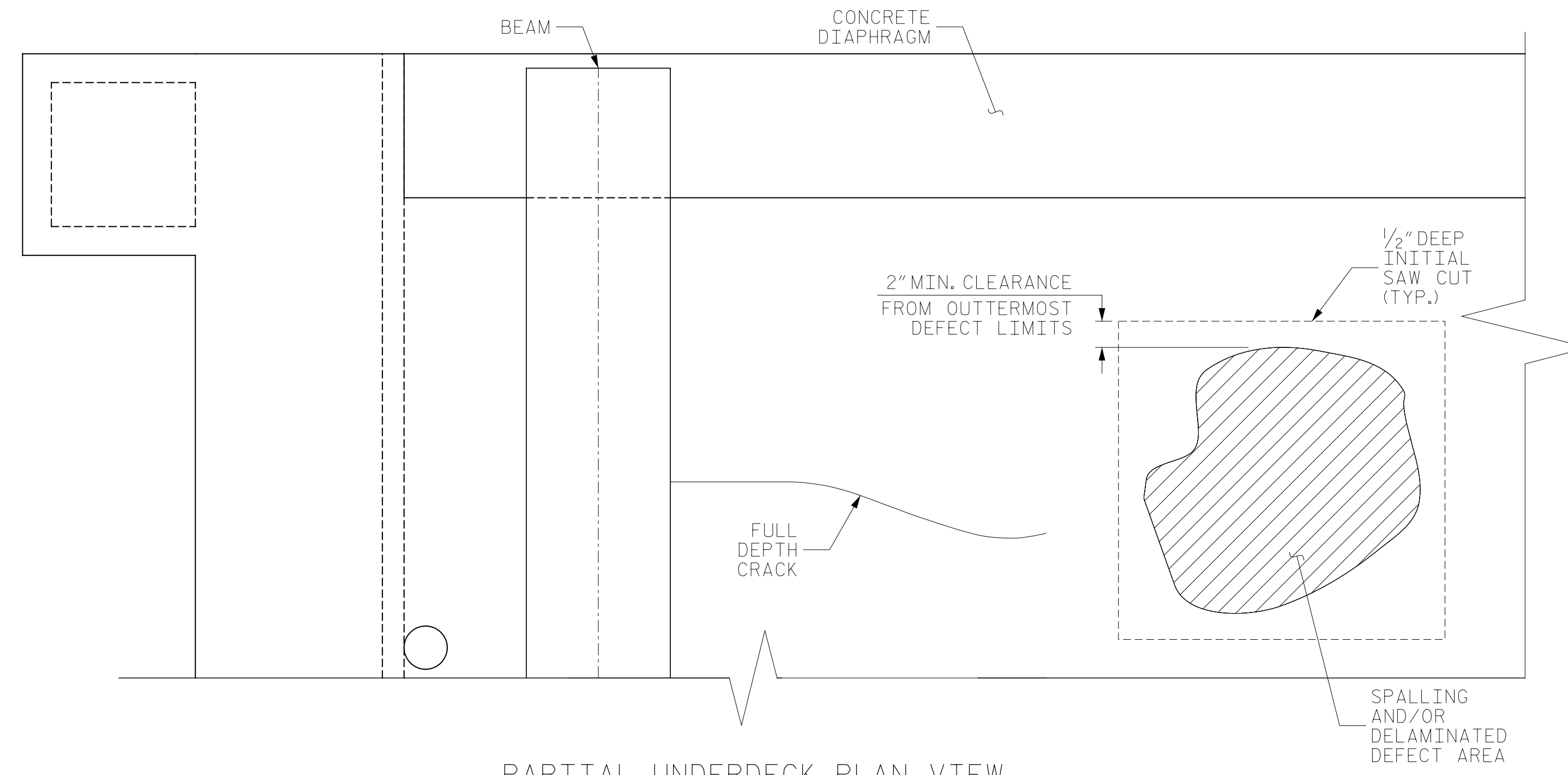
DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022  
ACB898211827ACD



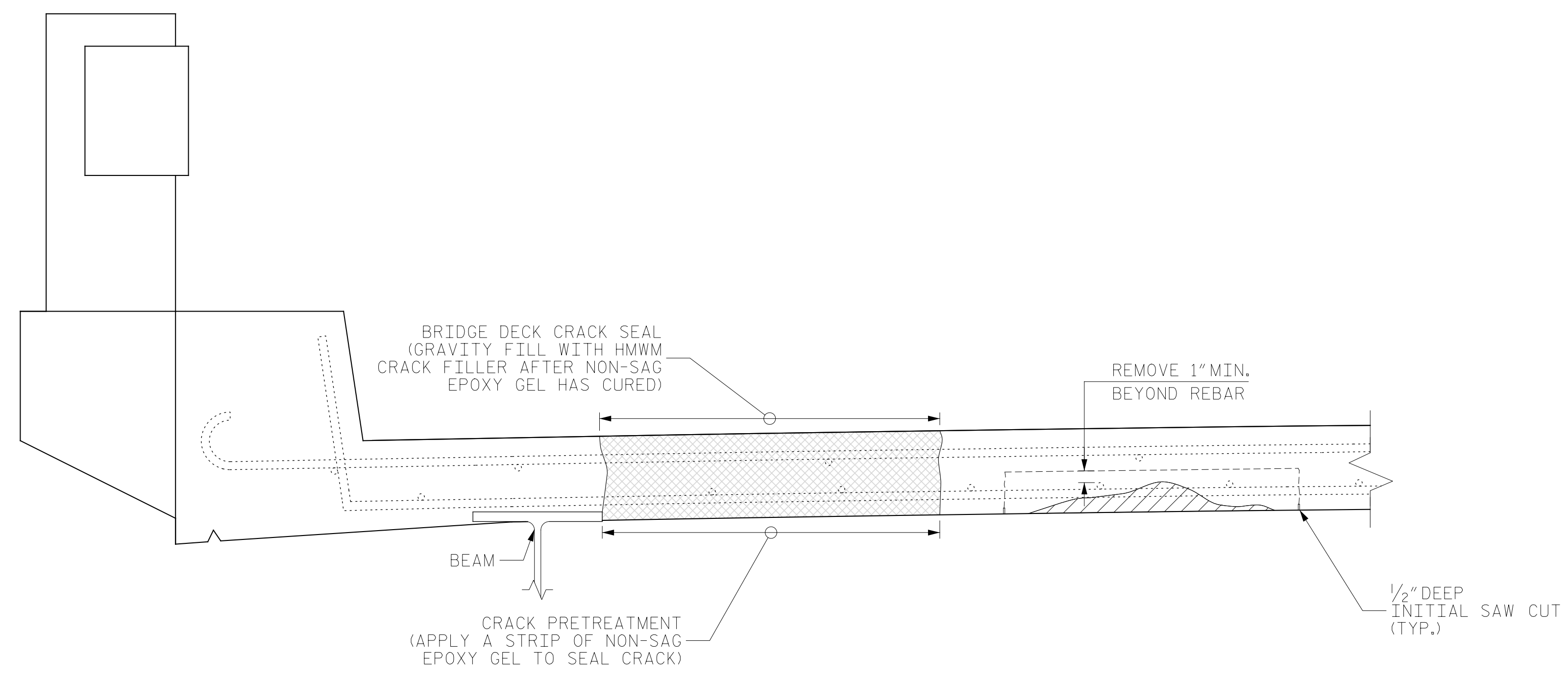
DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-326
1			3			TOTAL SHEETS
2			4			355

DRAWN BY : M. SPENCER DATE : 03/2019  
CHECKED BY : R. NELSON DATE : 03/2019



PARTIAL UNDERDECK PLAN VIEW



PARTIAL DECK ELEVATION

TYPICAL UNDERDECK REPAIRS

- DEFECT AREA
- FULL DEPTH CRACKING
- DEMOLITION LIMITS

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

SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

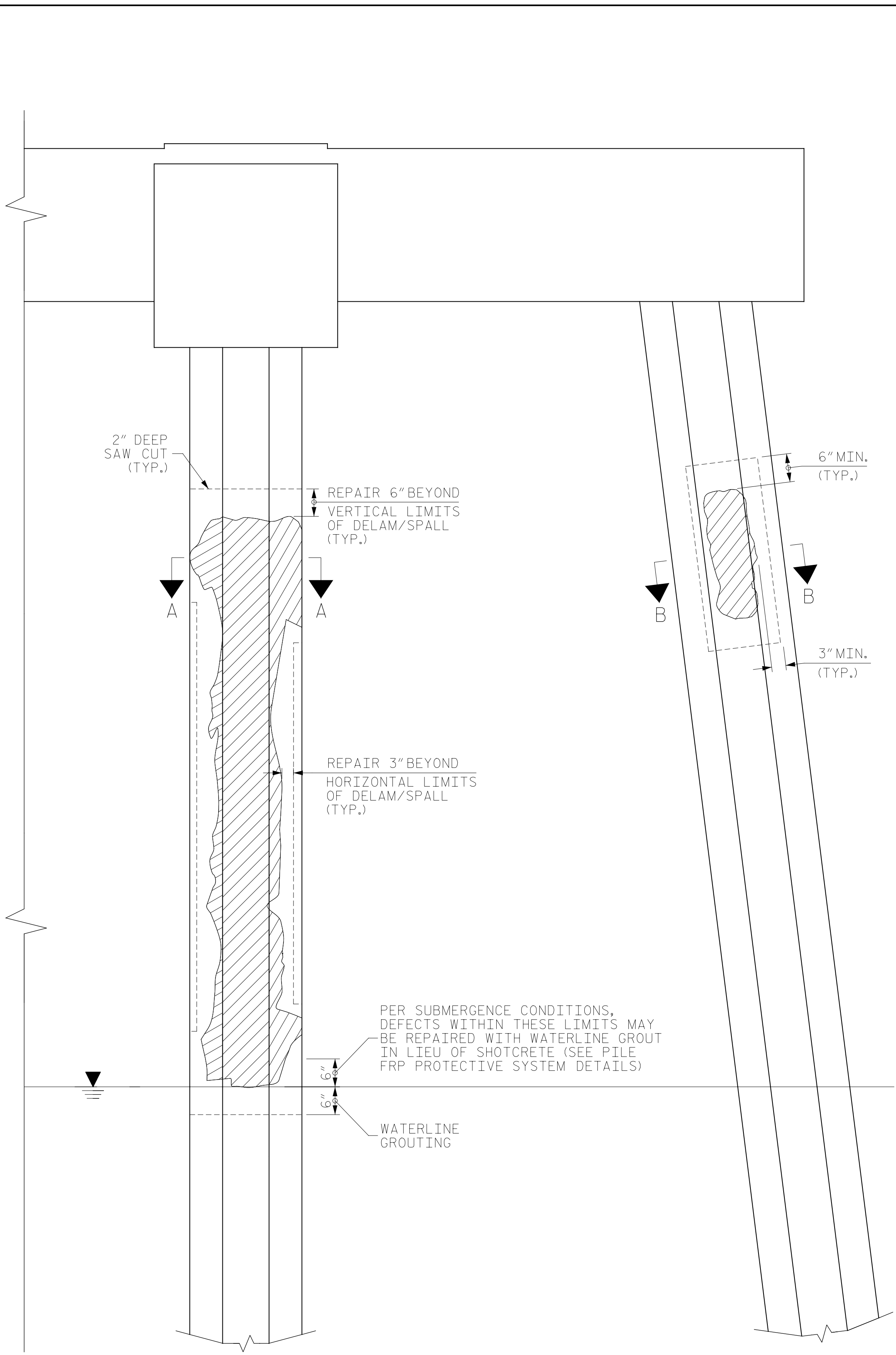
TYPICAL CAP, COLUMN,  
 & UNDERDECK REPAIR  
 DETAILS

DRAWN BY : M. SPENCER DATE : 03/2019  
 CHECKED BY : R. NELSON DATE : 03/2019

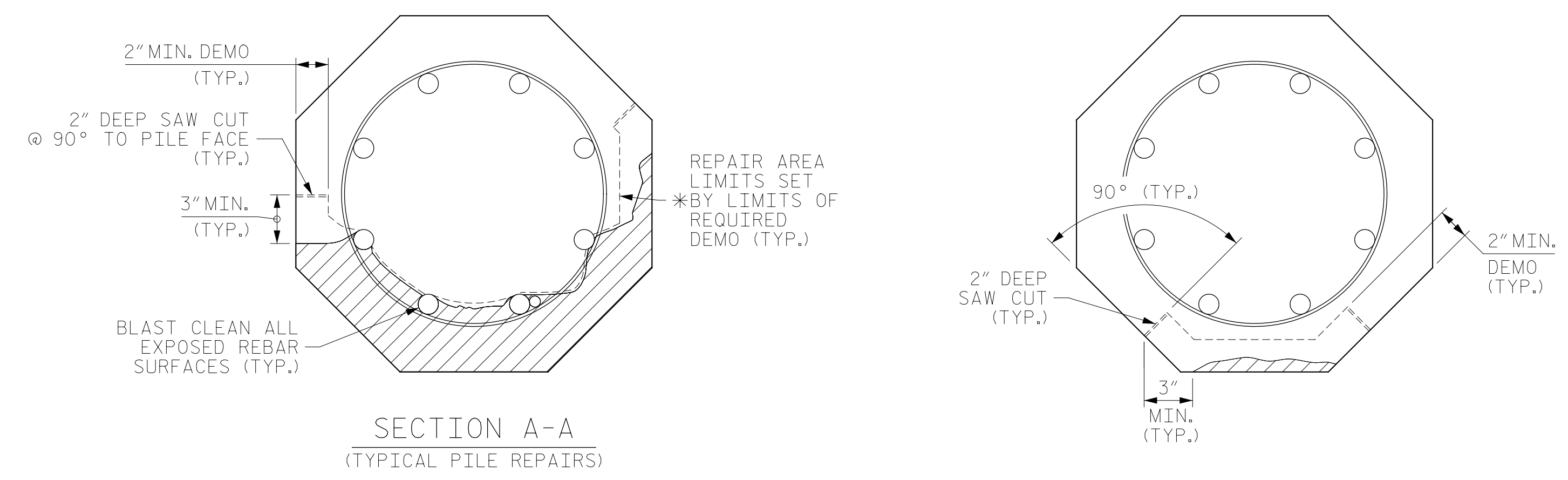


DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-327
1			3			TOTAL SHEETS
2			4			355



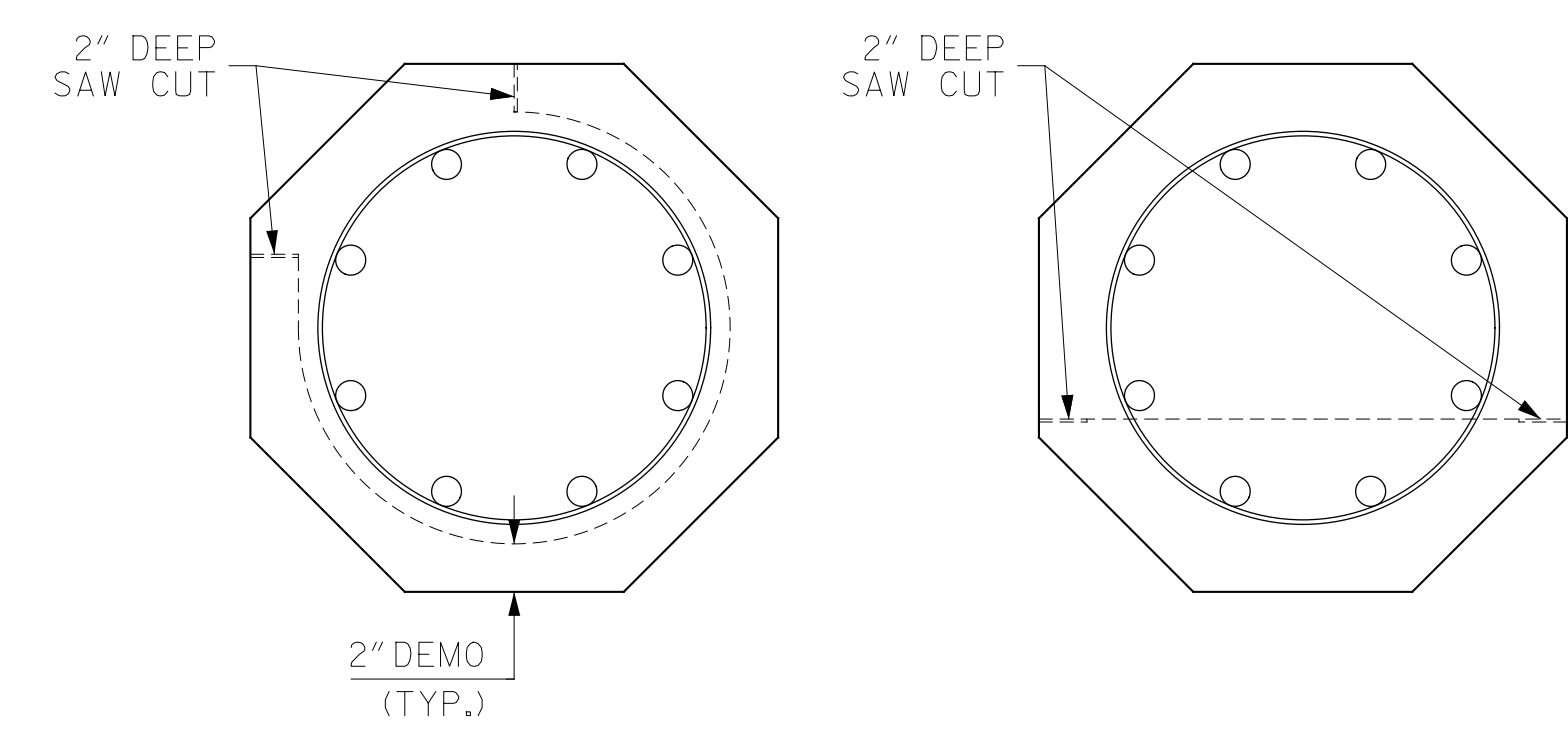
PILE BENT ELEVATION



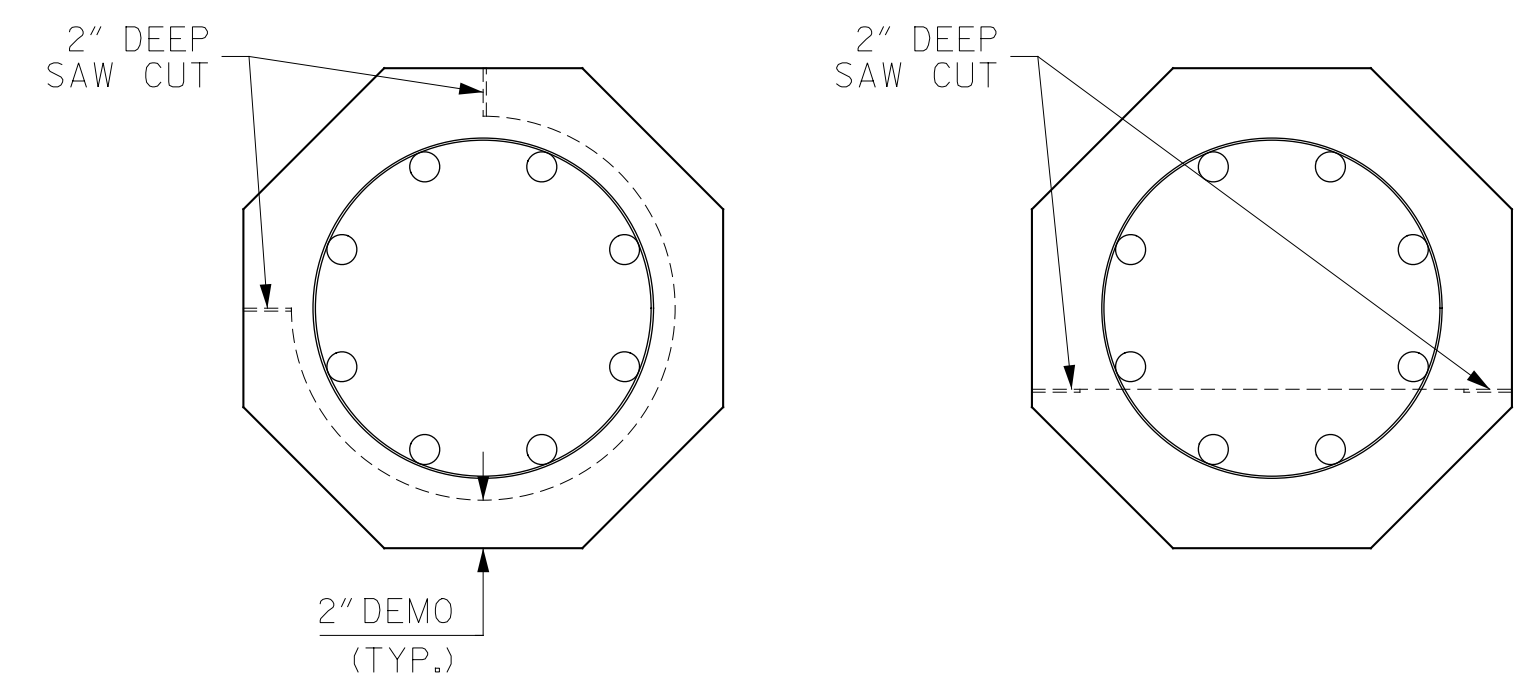
SECTION A-A  
(TYPICAL PILE REPAIRS)

SECTION B-B  
(TYPICAL PILE REPAIRS)

\* IF REPAIR AREA EXCEEDS 30% OF THE CROSS-SECTIONAL AREA OR EXPOSES MORE THAN 4 MAIN PILE BARS THEN STAGE ADDITIONAL REPAIRS AS REQUIRED.



22" PILE DEMO EXAMPLES  
(SHOWING 30% OF CROSS SECTION REMOVED)

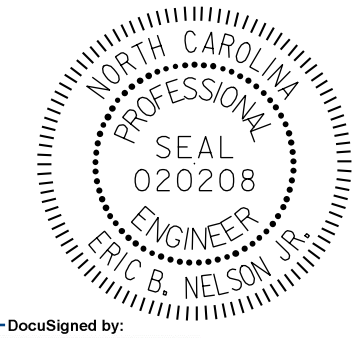


20" PILE DEMO EXAMPLES  
(SHOWING 30% OF CROSS SECTION REMOVED)

▨ - DEFECT AREA  
--- - DEMOLITION LIMITS

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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
PILE CONCRETE  
RESTORATION DETAILS



DocuSigned by:  
*Eric B. Nelson, Jr.* 7/14/2022  
AC88082118074CD...

DRAWN BY : M. SPENCER DATE : 03/2019  
CHECKED BY : R. NELSON DATE : 03/2019

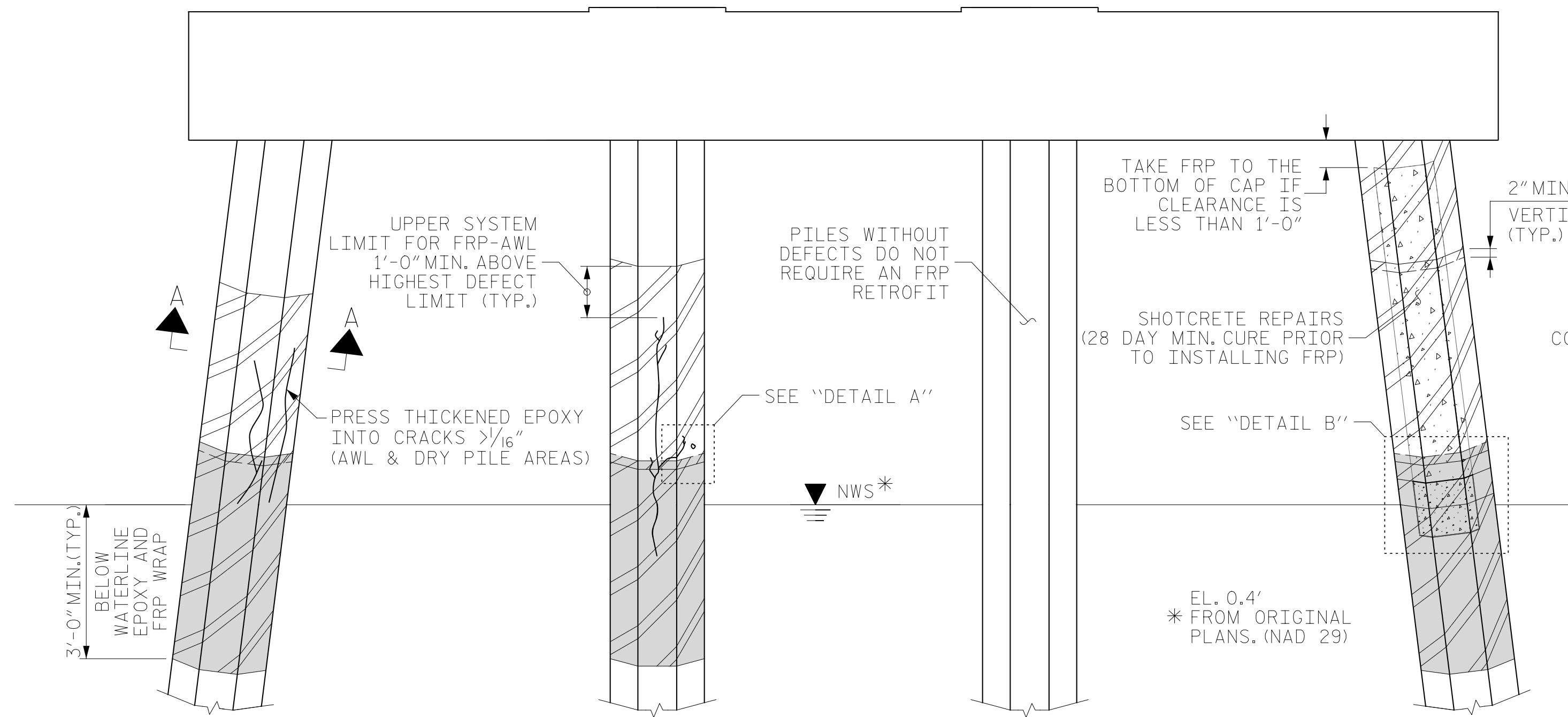
TYPICAL PILE REPAIRS



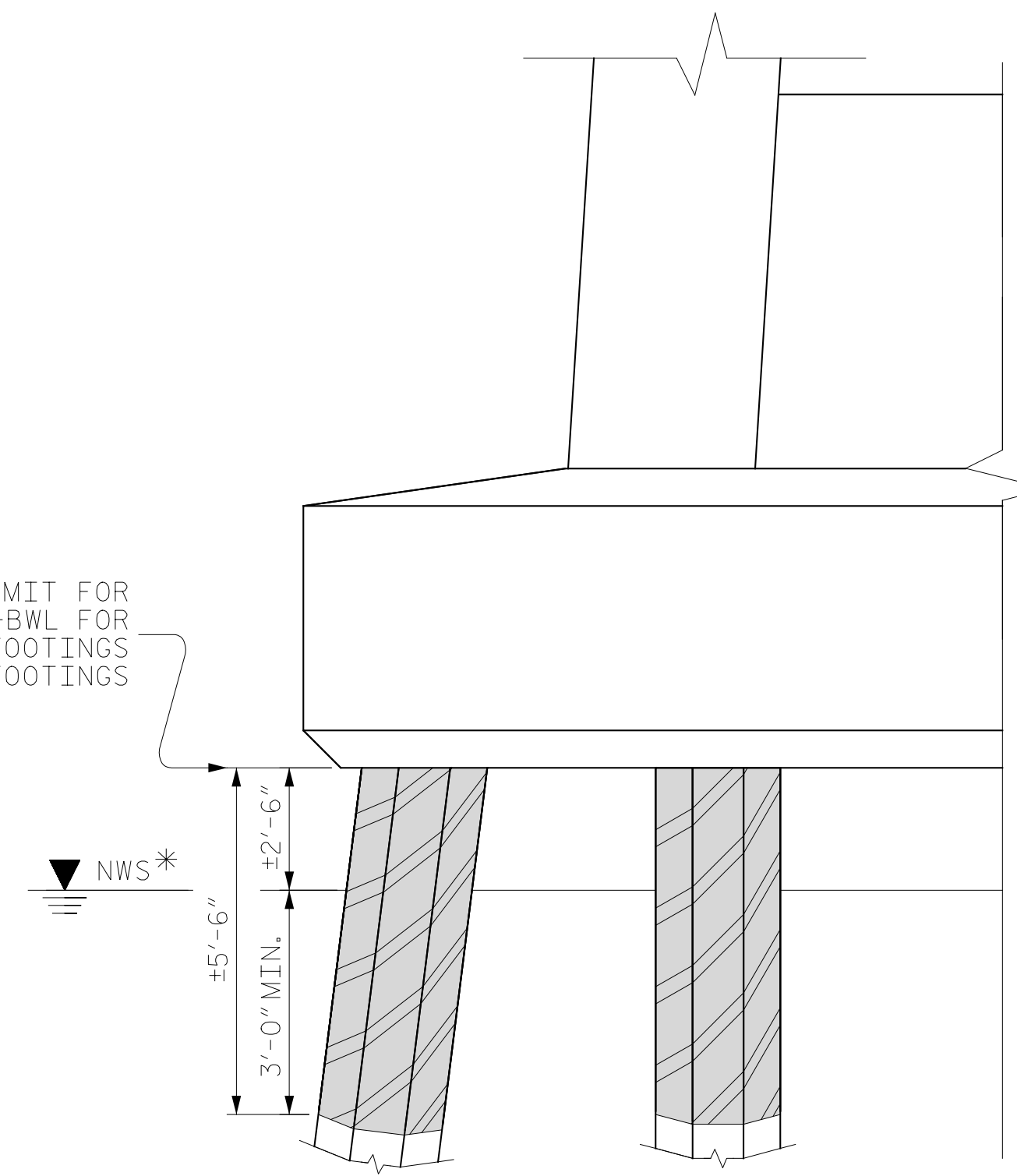
DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-328
1			3			TOTAL SHEETS
2			4			355





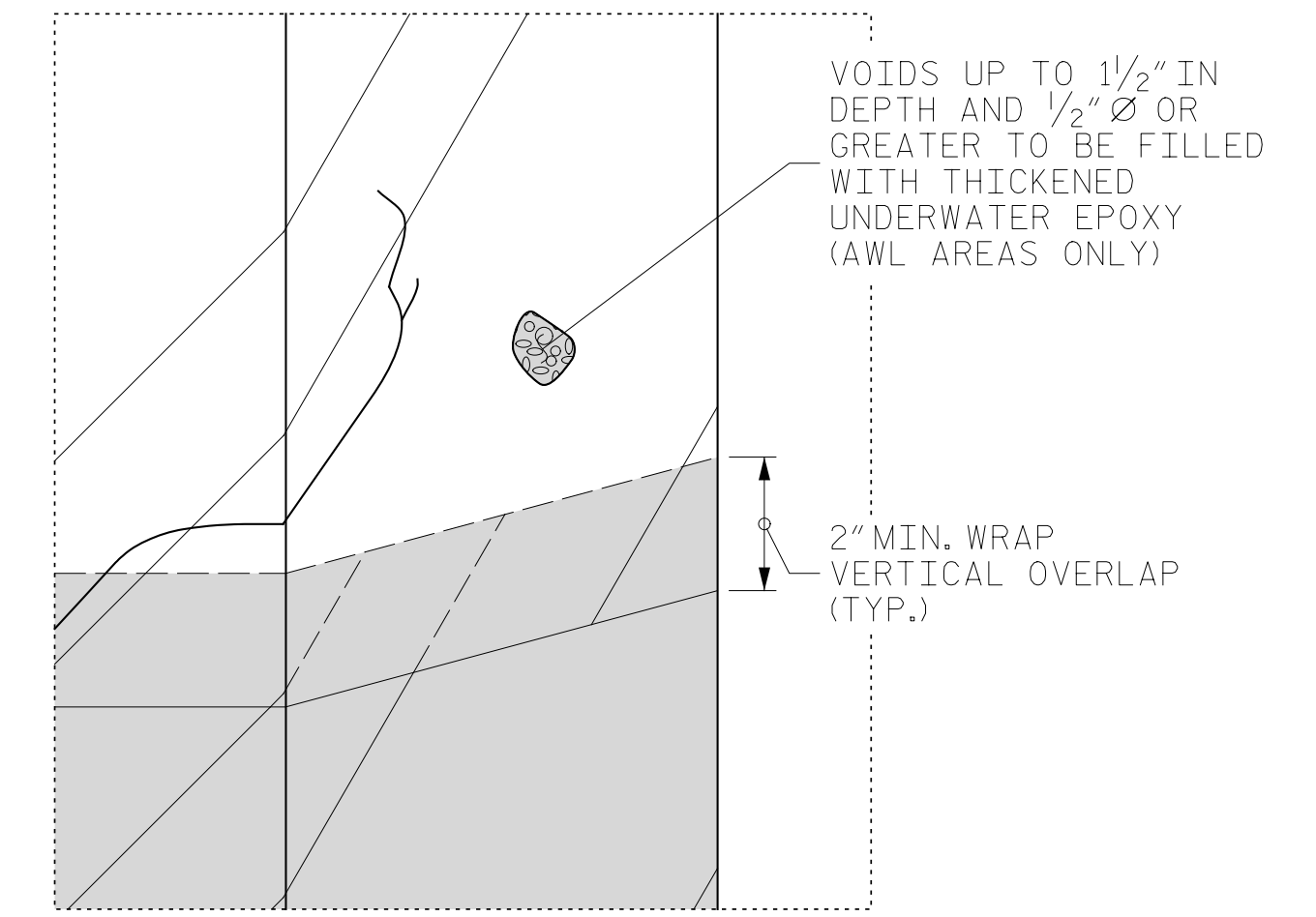
PILE BENT ELEVATION



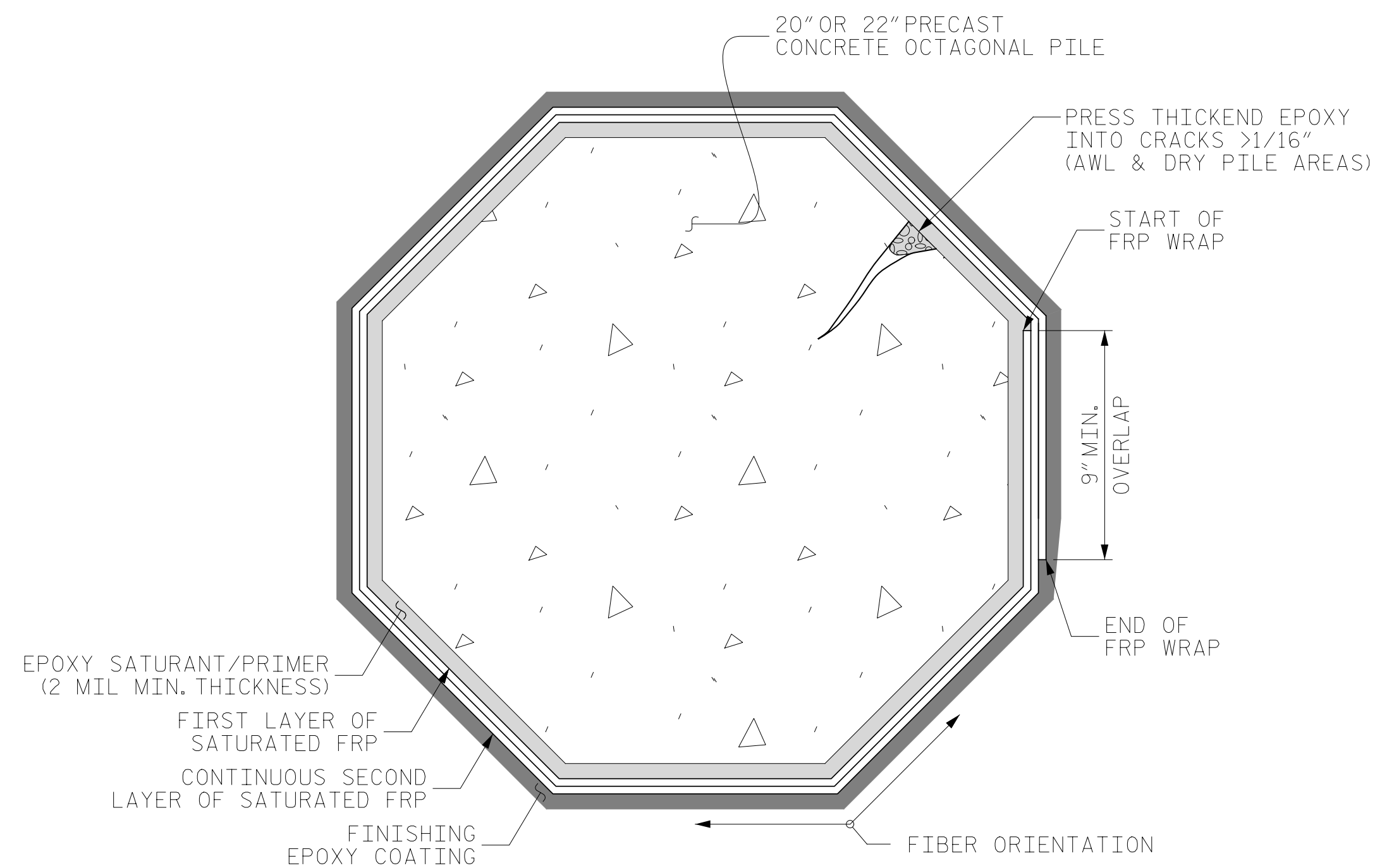
COLUMN BENT ELEVATION

NOTES:

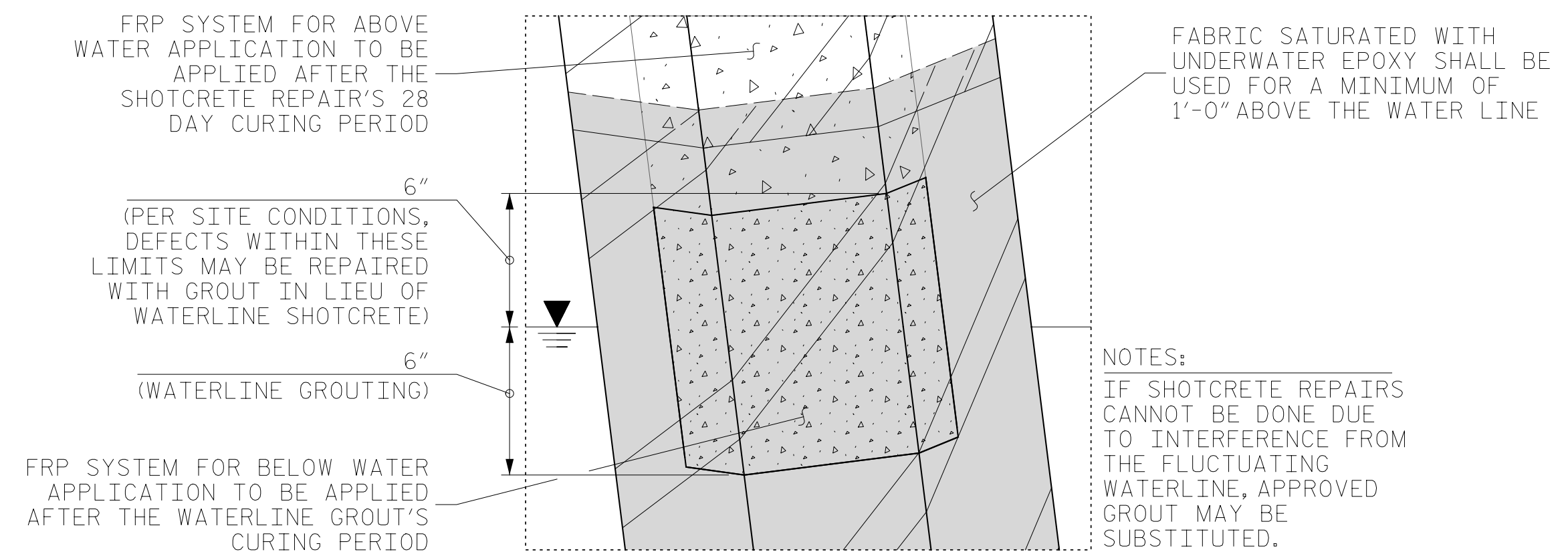
4-PILE BENTS SHOWN ON PILE BENT ELEVATION, 6-PILE BENTS SIMILAR  
 PILE FRP PROTECTIVE SYSTEM DETAILS FOR STRAP FOOTING PILES, LOCATED BENEATH THE FOOTING, SIMILAR TO COLUMN BENT ELEVATION DETAILS SHOWN  
 PILE FRP PROTECTIVE SYSTEM DETAILS FOR STRAP FOOTING PILES, LOCATED OUTSIDE OF THE FOOTING, SIMILAR TO PILE BENT ELEVATION DETAILS SHOWN  
 FOR PILE FRP PROTECTIVE SYSTEM, SEE SPECIAL PROVISIONS



DETAIL A  
(TYPICAL SHALLOW PILE REPAIRS)



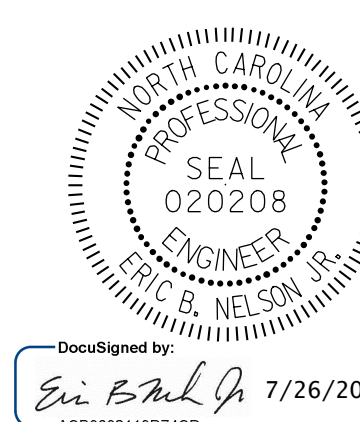
SECTION A-A  
(2 LAYERS - CONTINUOUS WRAP)



DETAIL B  
(WATERLINE GROUTING REPAIRS)

- FRP & EPOXY SATURANT/PRIMER FOR ABOVE WATER APPLICATION
- FRP & EPOXY SATURANT/PRIMER FOR UNDERWATER APPLICATION
- SHOTCRETE REPAIRS
- WATERLINE GROUTING REPAIRS
- THICKENED UNDERWATER EPOXY (HYDROPHOBIC)

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



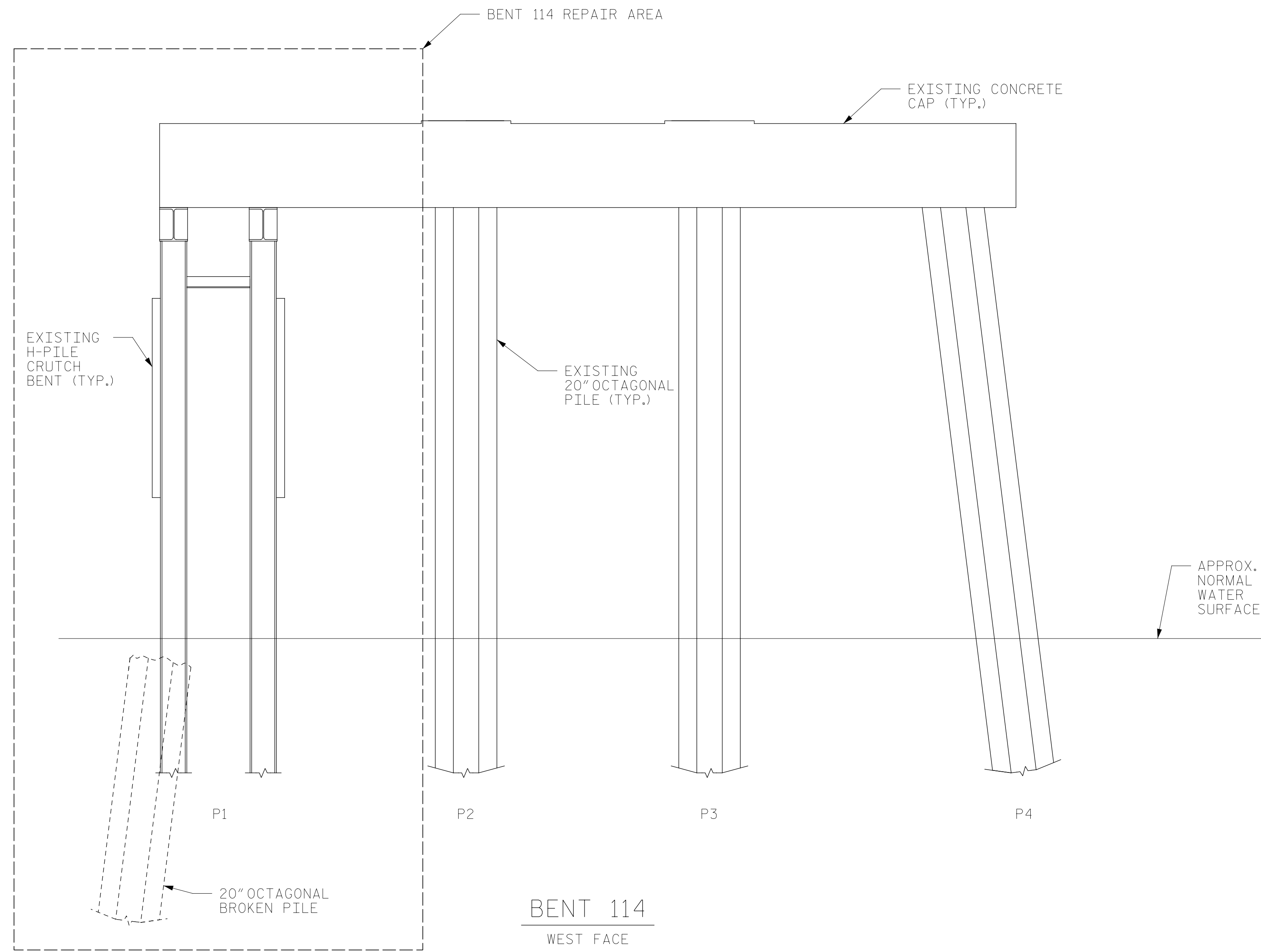
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PILE FRP PROTECTIVE SYSTEM DETAILS**

DRAWN BY : M. SPENCER DATE : 03/2019  
 CHECKED BY : R. NELSON DATE : 03/2019



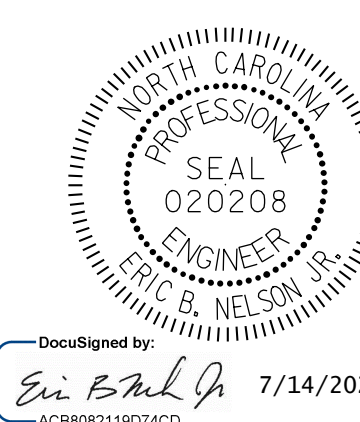
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



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

SHEET 1 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PILE SPLICE &  
 JACKET REPAIR**  
 EXISTING VIEWS AND  
 REPAIR LOCATIONS

DRAWN BY : M.A. LEE DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019

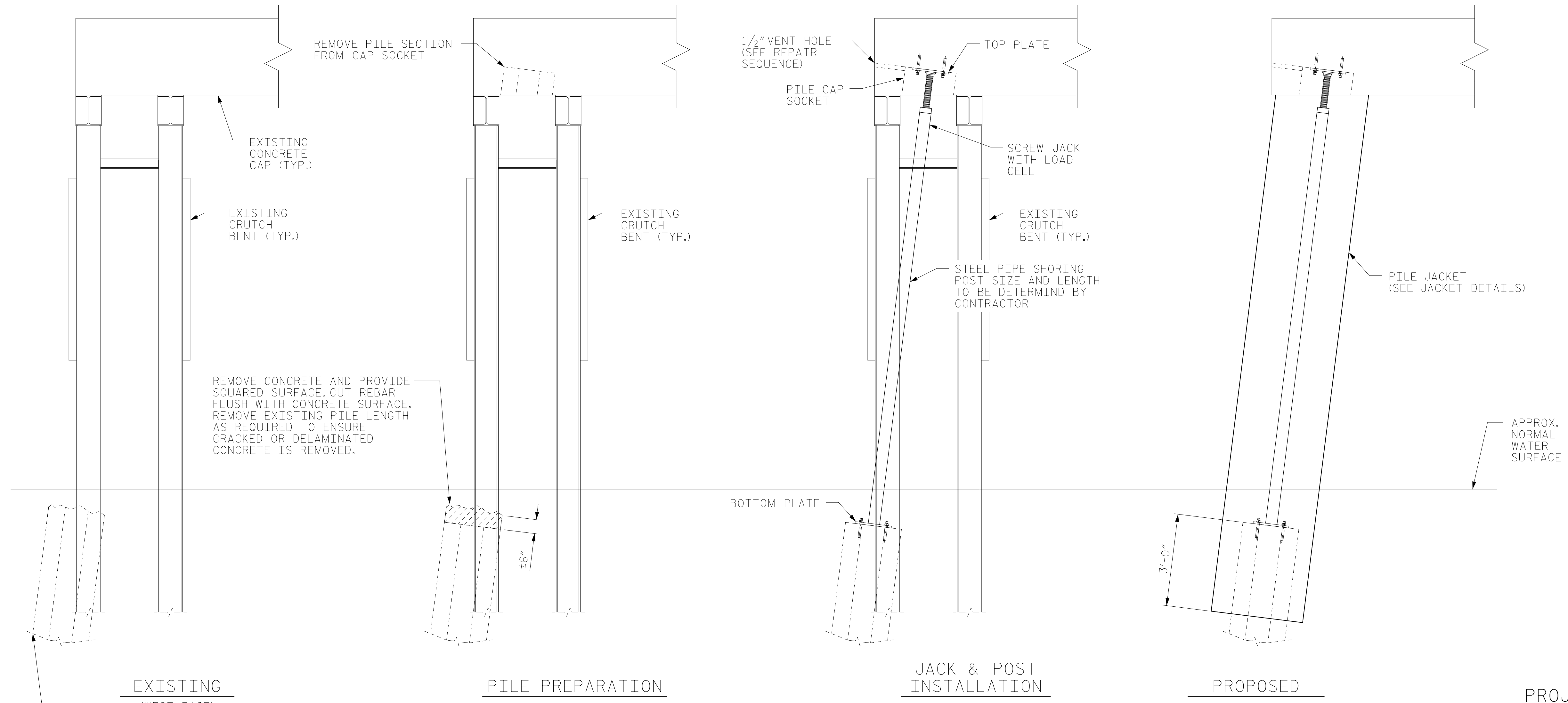


DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-330
1			3			TOTAL SHEETS
2			4			355

NOTES:  
 REMOVE THE EXISTING STEEL H-PILE CRUTCH BENT AFTER PILE JACKET CONCRETE HAS CURED FOR 28 DAYS. PILES SHALL BE CUT OFF AT THE MUD LINE.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.



BENT 114 REPAIR

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

SHEET 2 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PILE SPLICE & JACKET REPAIR**

BENT 114, PILE 1 REPAIRS

DRAWN BY : M.A. LEE DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

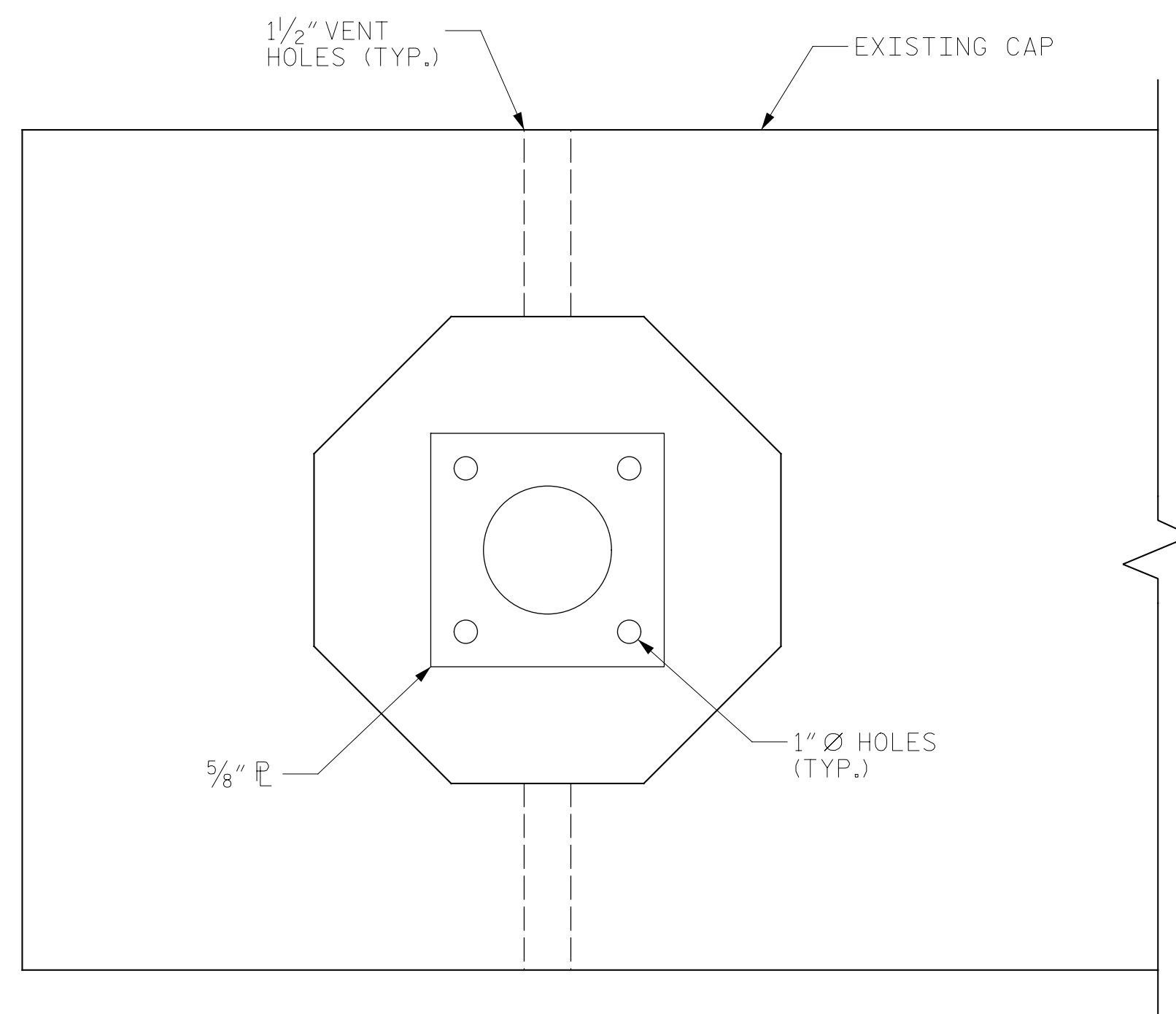
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-331
1			3			TOTAL SHEETS
2			4			355

NOTES:

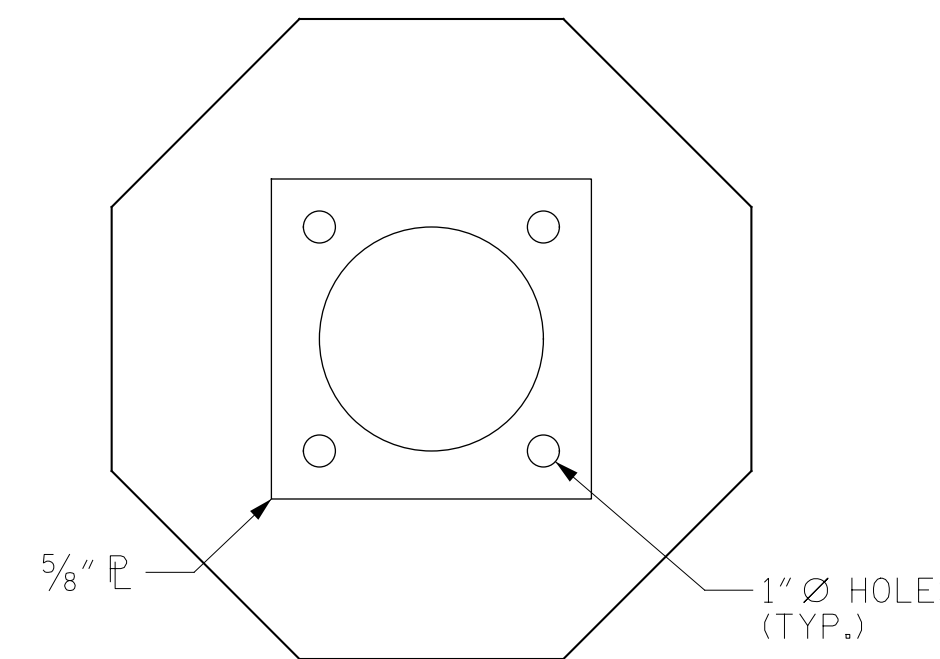
PILE SHORING POST SHALL BE SCH. 40 OR 80 STEEL AND GALVANIZED OR PAINTED WITH ONE COAT OF PRIMER IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PLATES AND OTHER JACK ASSEMBLY HARDWARE SHALL BE GALVANIZED OR PAINTED WITH ONE COAT OF PRIMER IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

MECHANICAL ANCHORS SHALL BE GALVANIZED.



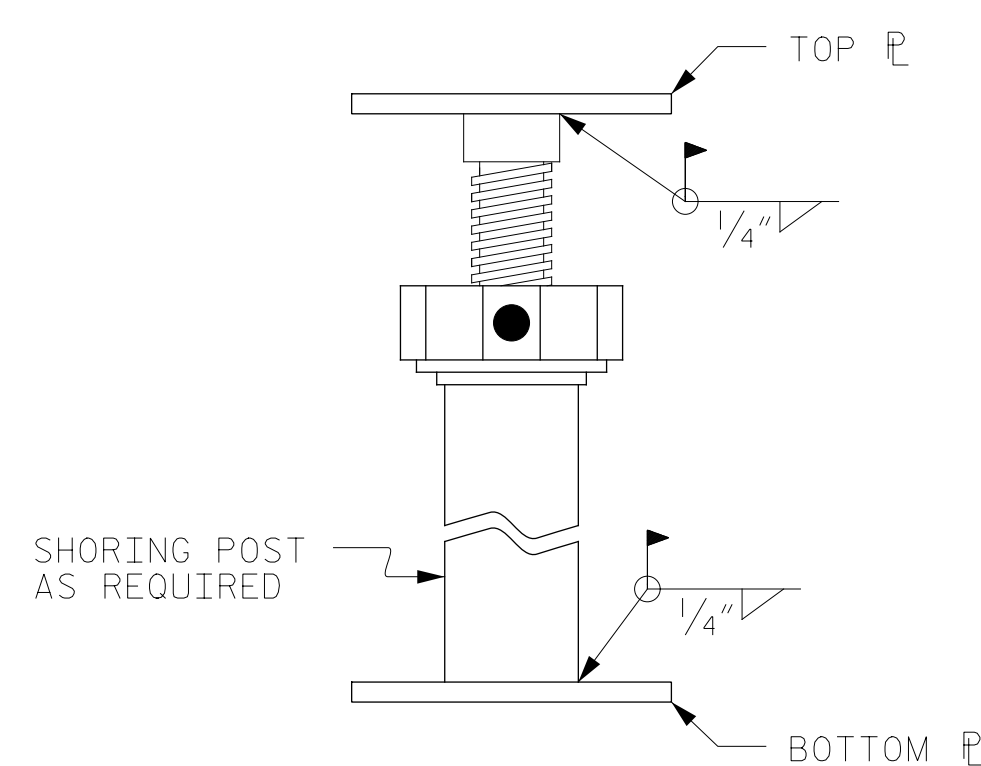
TOP PILE CAP DETAIL  
20" PILE SHOWN 22" PILE SIMILAR



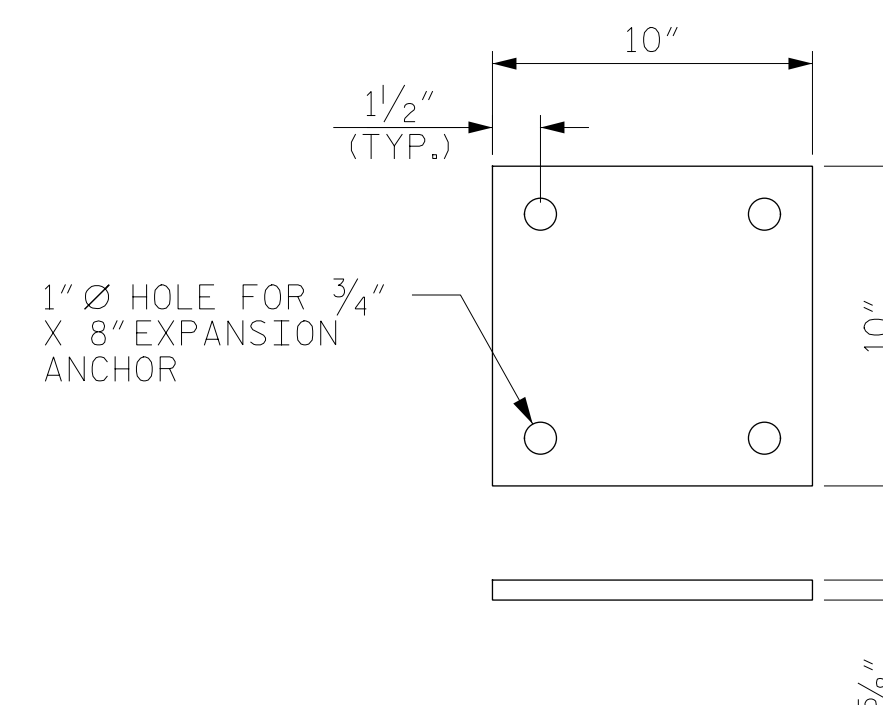
BOTTOM PILE CAP DETAIL  
20" PILE SHOWN 22" PILE SIMILAR

REPAIR SEQUENCE FOR PILE SPLICING AND PRELOAD:

- 1.) FIELD DETERMINE PILE SPLICE ELEVATION IN PILE WHERE THERE ARE NO VISIBLE DEFECTS.
- 2.) MARK AND CUT PILE PERPENDICULAR TO THE PILE SLOPE.
- 3.) REMOVE EXISTING PILE HEAD FROM PILE CAP SOCKET.
- 4.) PREPARE EXISTING OCTAGONAL PILE FOR SPLICING. PROVIDE UNIFORMLY EVEN SURFACE UNDER THE JACKING PLATE.
- 5.) CUT PILE SHORING POST SECTION TO FIT AND FIELD WELD TO JACK AND JACKING PLATE.
- 6.) INSTALL PILE SPLICE AND SCREW JACK ASSEMBLY. CUT EXPOSED VERTICAL REINFORCING AS NEEDED TO INSTALL PILE SPLICE AND SCREW JACK ASSEMBLY.
- 7.) PRELOAD PILE SPLICE BY APPLYING A LOAD AS SPECIFIED BELOW WITH THE SCREW JACK:  
- BENT 114 PILE NO. 1 - 30 KIPS
- 8.) ENCAPSULATE SPLICED PILE WITH PILE JACKET. SEE PILE JACKET DETAILS AND NOTES.
- 9.) ENSURE CONCRETE FILLS ANNUALR SPACE IN PILE CAP SOCKET. PROVIDE VENT HOLE IN PILE CAP SOCKET IF FILLED DURING JACKETING OR FILL POCKET WITH APPROVED GROUT FOR OVERHEAD APPLICATIONS.



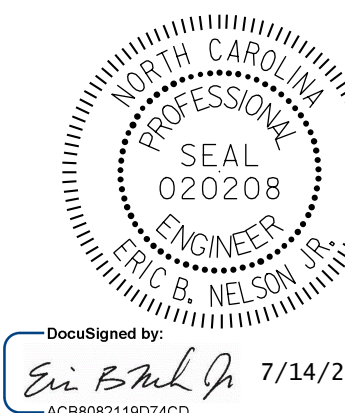
SCREW JACK DETAIL



TOP & BOTTOM PLATE

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

SHEET 3 OF 4



DocuSigned by:  
*Eric B. Nelson, Jr.* 7/14/2022  
 AC8802119214CD...

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PILE SPLICE &  
 JACKET REPAIR  
 SCREW JACK  
 DETAILS

DRAWN BY : M.A. LEE DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019



DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-332
1			3			TOTAL SHEETS
2			4			355

**REPAIR SEQUENCE FOR PILE JACKETS:**

- 1.) DETERMINE FIBERGLASS INTEGRAL FORM LENGTH. FORM SHALL EXTEND A MINIMUM OF 3' BEYOND PILE CUTOFF ELEVATIONS.
- 2.) REMOVE ALL LOOSE OR DELAMINATED CONCRETE, OIL, GREASE, LAITANCE AND OTHER CONTAMINANTS. PREPARE SURFACE USING MECHANICAL TOOLS AND WATER BLASTING AS REQUIRED TO OBTAIN CLEAN, SOUND AND ROUGH SURFACES.
- 3.) DRILL 5/8" DIA. HOLES AND INSTALL #4 DOWELS WITH EPOXY ADHESIVE GROUT.
- 4.) CLEAN EXPOSED REINFORCING STEEL OF RUST.
- 5.) INSTALL REBAR CAGE IN ACCORDANCE WITH PROJECT DETAILS.
- 6.) USE FORM SPACERS TO PROVIDE ADEQUATE CONCRETE COVER FOR THE LENGTH OF THE JACKET.
- 7.) INSTALL THE LEAVE-IN PLACE FIBERGLASS FORM (ALSO CALLED JACKET OR COLLAR). THE DIAMETER OF THE JACKET SHALL BE LARGE ENOUGH TO PROVIDE A MINIMUM OF 5" OF TOTAL CLEARANCE WITH 2" CLEARANCE FROM REBAR TO PILE SURFACE AND REBAR TO FORM SURFACE. SEE JACKET SIZING CHART FOR MINIMUM FORM DIAMETERS.
- 8.) FOR ABOVE WATER JACKETS PLACE CONCRETE WITH TREMIE WHILE PUMPING OUT AND CONTAINING ANY DISPLACED WATER. FOR BELOW WATER JACKETS UTILIZE PUMPED CONCRETE METHODS TO PLACE CONCRETE. FOR PUMPED APPLICATIONS INSTALL PUMP PORTS WITH INTEGRAL CHECK VALVE TO CONTROL BACKFLOW OF CONCRETE. FOR CONCRETE PLACEMENTS GREATER THAN 5' USE MULTIPLE PORTS SPACED 3' VERTICALLY AND ALTERNATING 180 DEG. FROM THE PREVIOUS PORT. A MINIMUM OF 2' OF CONCRETE HEAD IS REQUIRED ABOVE THE PORT PRIOR TO CHANGING PORTS.
- 9.) DO NOT REMOVE FORM SUPPORTS AND FALSEWORK UNTIL CONCRETE STRENGTH ACHIEVES 3000 PSI.

**JACKET NOTES:**

CONCRETE AND BAR REINFORCEMENT SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE STANDARD SPECIFICATION SECTIONS.

ALL REINFORCING BARS SHALL BE ASTM GRADE 60.

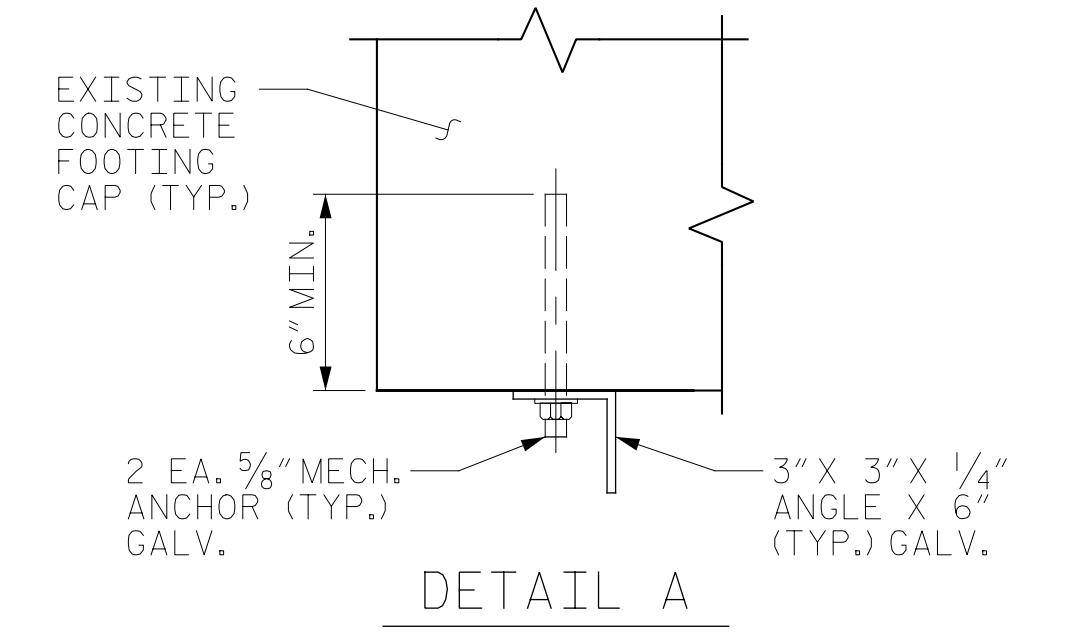
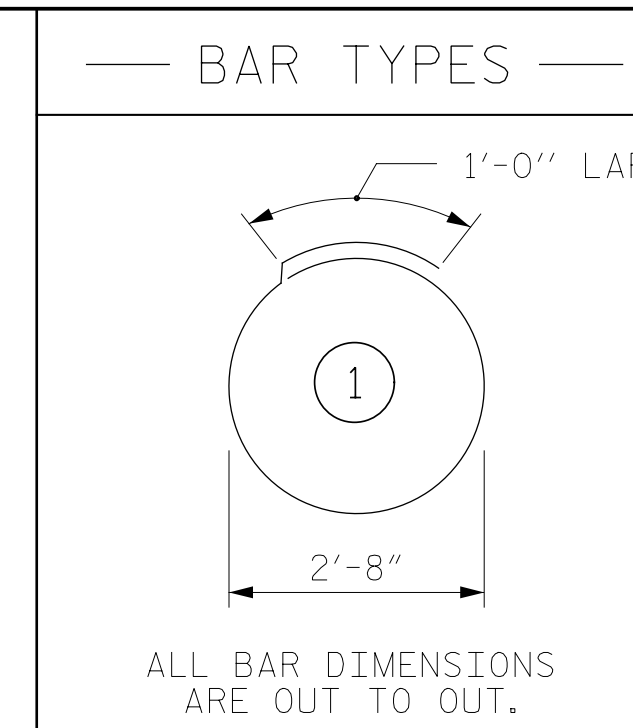
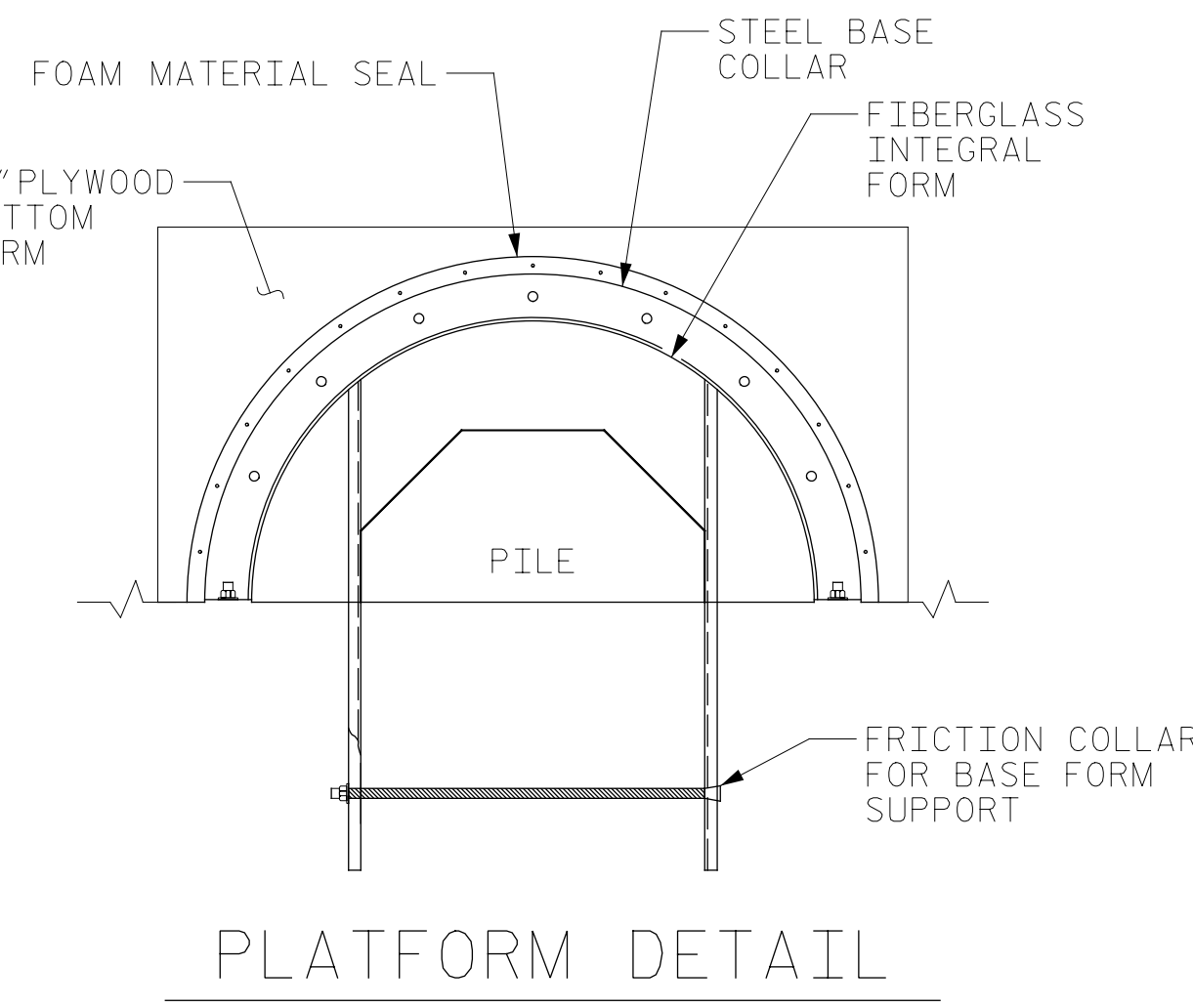
CONCRETE SHALL BE CLASS A WITH ANTI-WASHOUT ADMIXTURE.

SURFACES OF PILES TO ENCASED IN CONCRETE SHALL BE CLEANED AS DESCRIBED IN SPECIAL PROVISIONS. CLEANING TO BE DONE IMMEDIATELY BEFORE FORMS ARE INSTALLED.

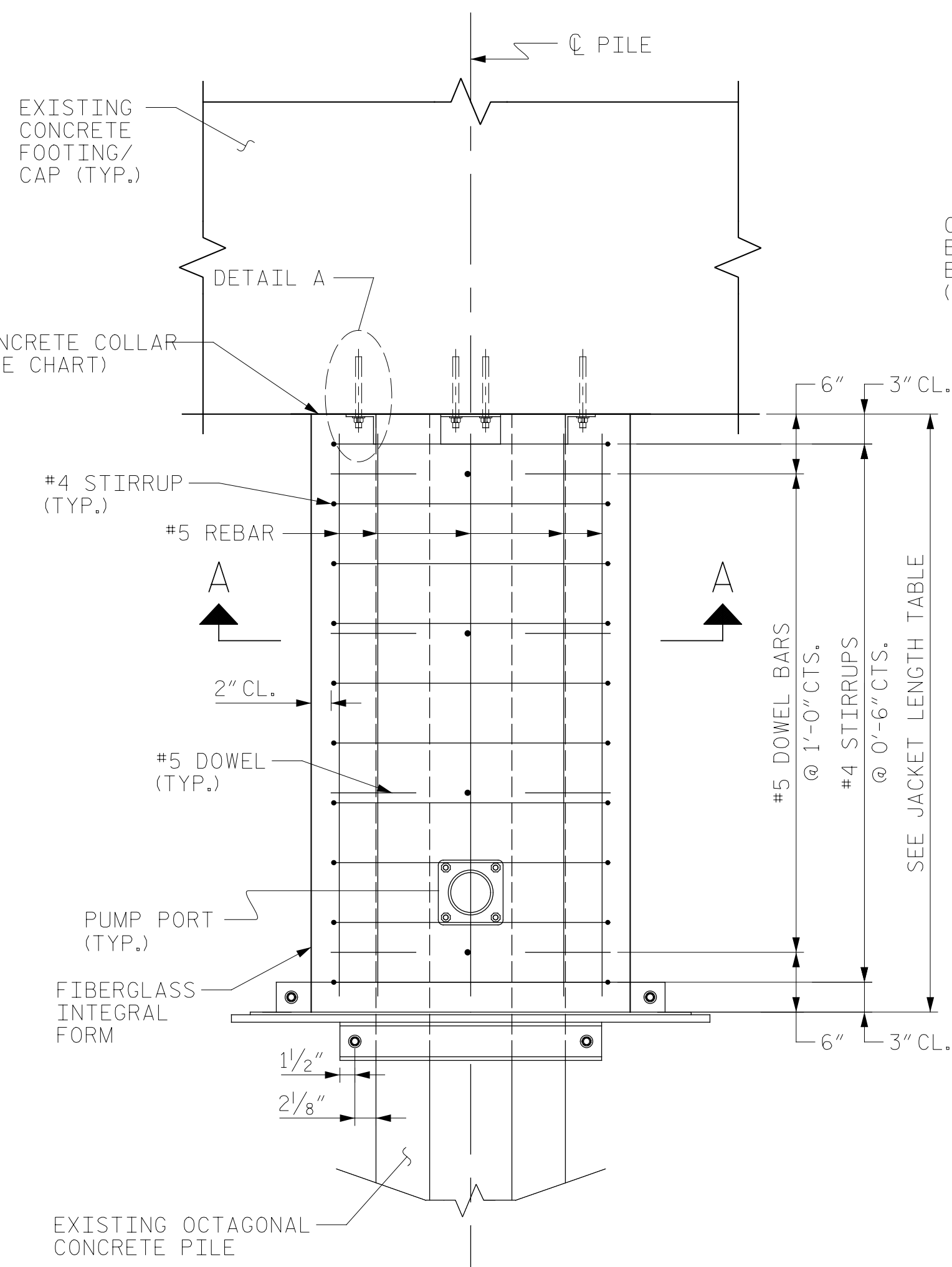
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, SHOWING ALL FASTENING DETAILS, STANDOFFS, FORMS, AND ANY OTHER DEVICES NECESSARY TO SECURE THE FORMS SO THAT CONCRETE MAY BE PLACED IN A CONTINUOUS OPERATION COMPLETELY ENCAPSULATING THE PILES.

FORMS FOR JACKET SHALL BE INSTALLED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. BOTTOM SEAL SHALL BE MORTAR TIGHT.

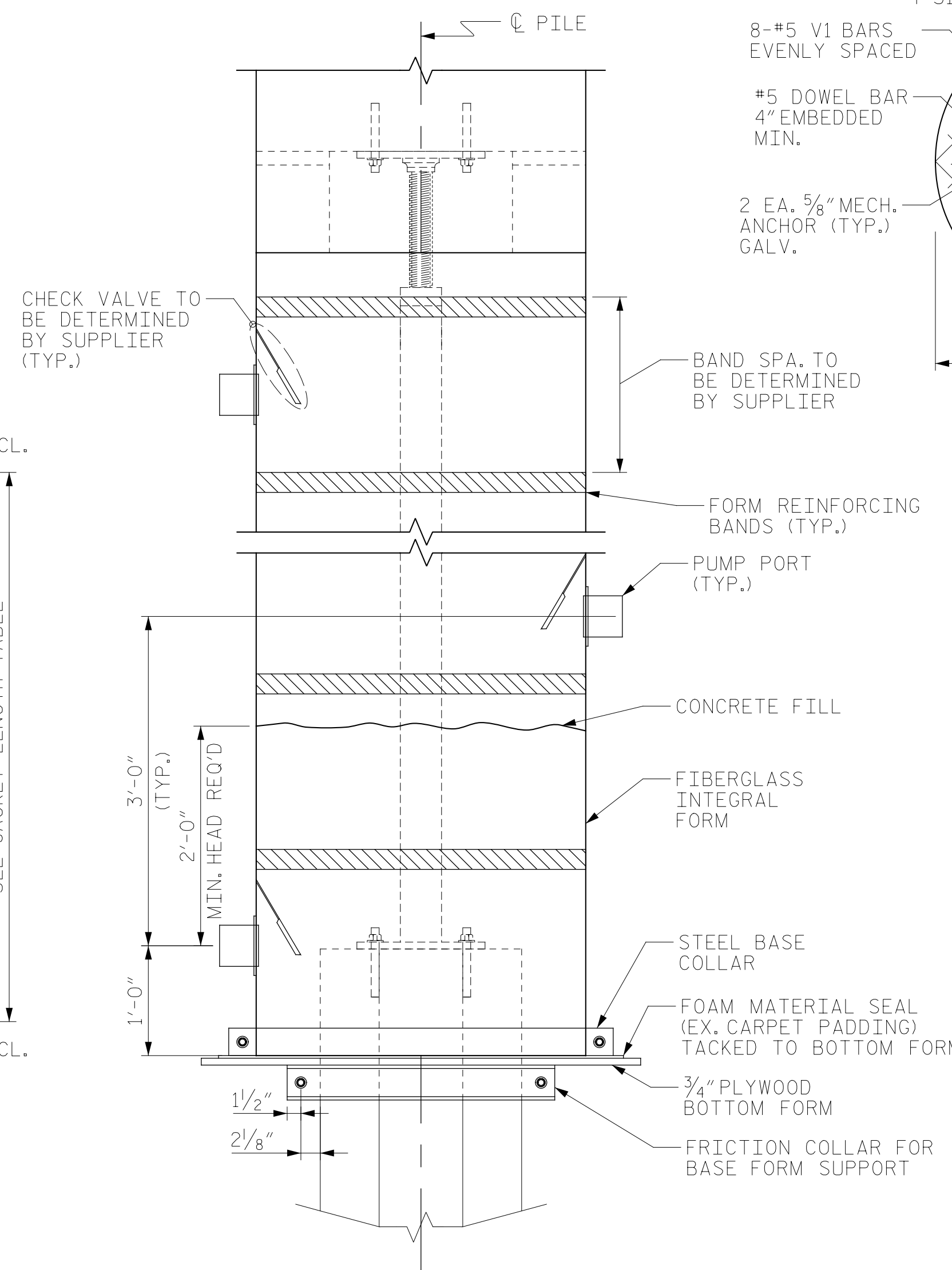
JACKET LENGTH TABLE	
BENT 114	15 L.F.
BENT 119	5 L.F.



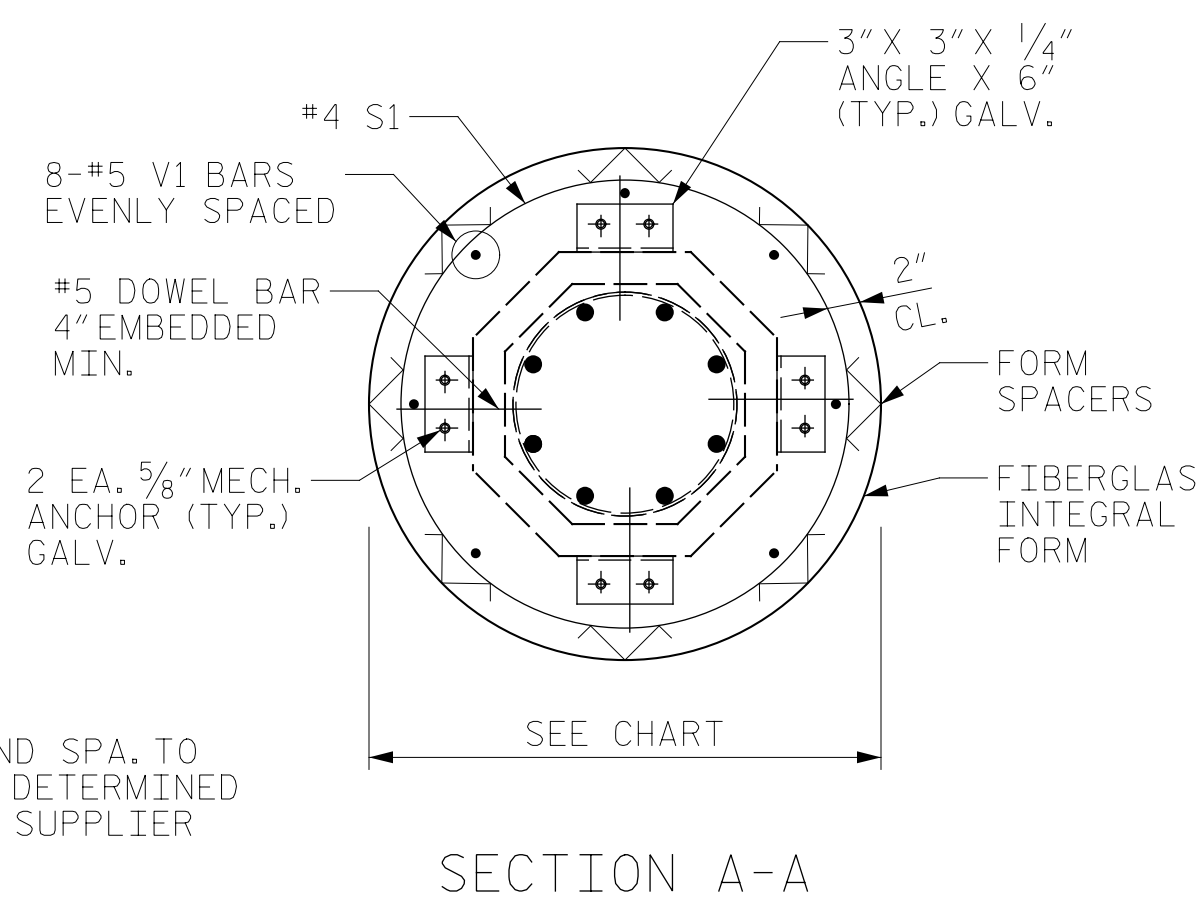
JACKET SIZING CHART	
PILE TYPE	MIN. JACKET SIZE
20" OCTAGONAL	32" Ø
22" OCTAGONAL	34" Ø



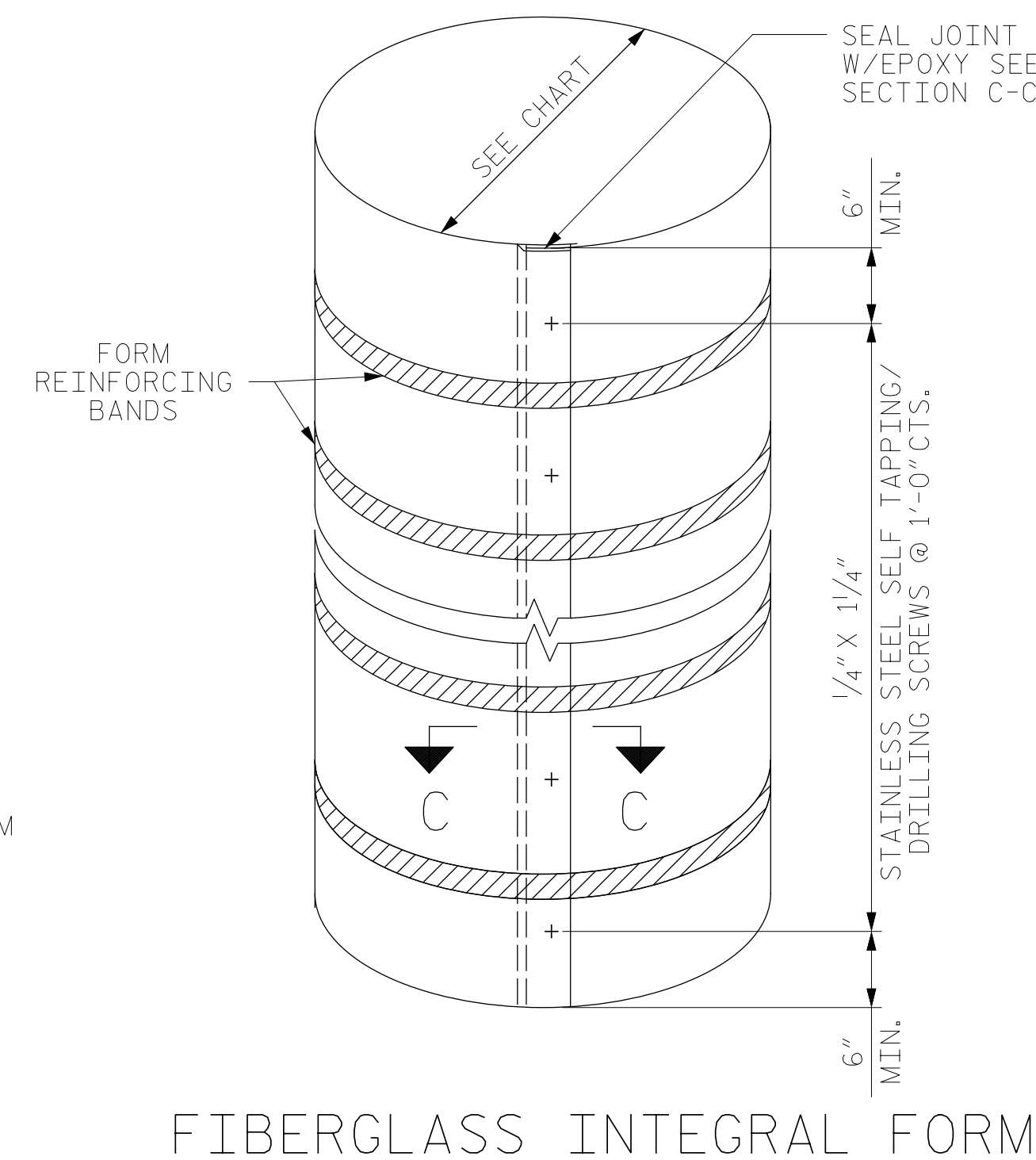
**PILE JACKET REINFORCING LAYOUT**



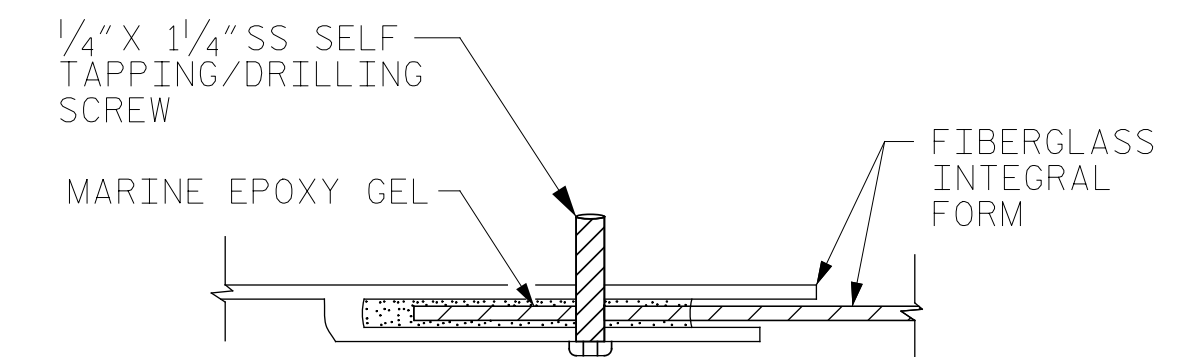
**TYPICAL PILE JACKET ELEVATION**



**SECTION A-A**



**FIBERGLASS INTEGRAL FORM**



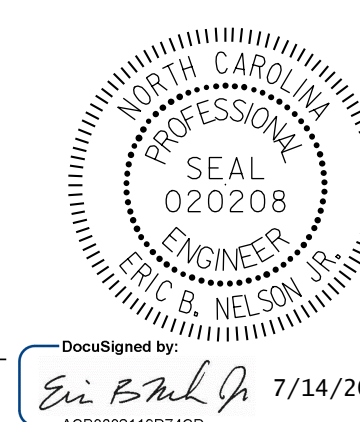
**SECTION C-C**

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

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PILE SPLICE & JACKET REPAIR**  
 JACKET DETAILS



DRAWN BY: M.A. LEE DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

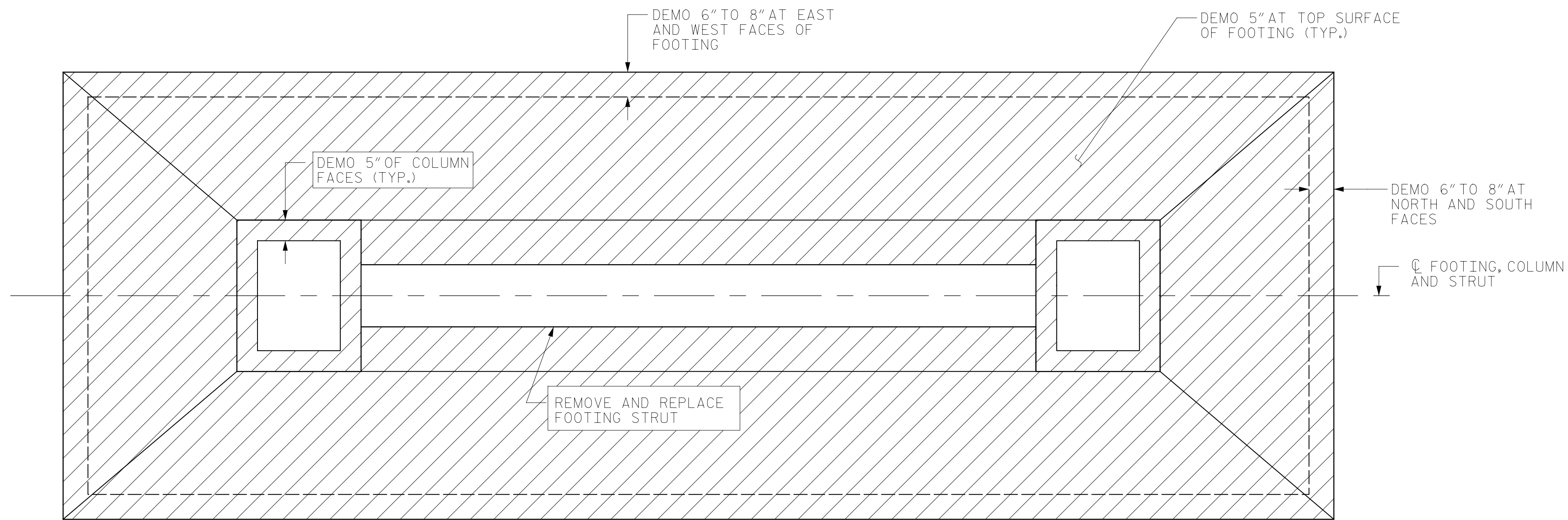


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-333
1			3			TOTAL SHEETS
2			4			355

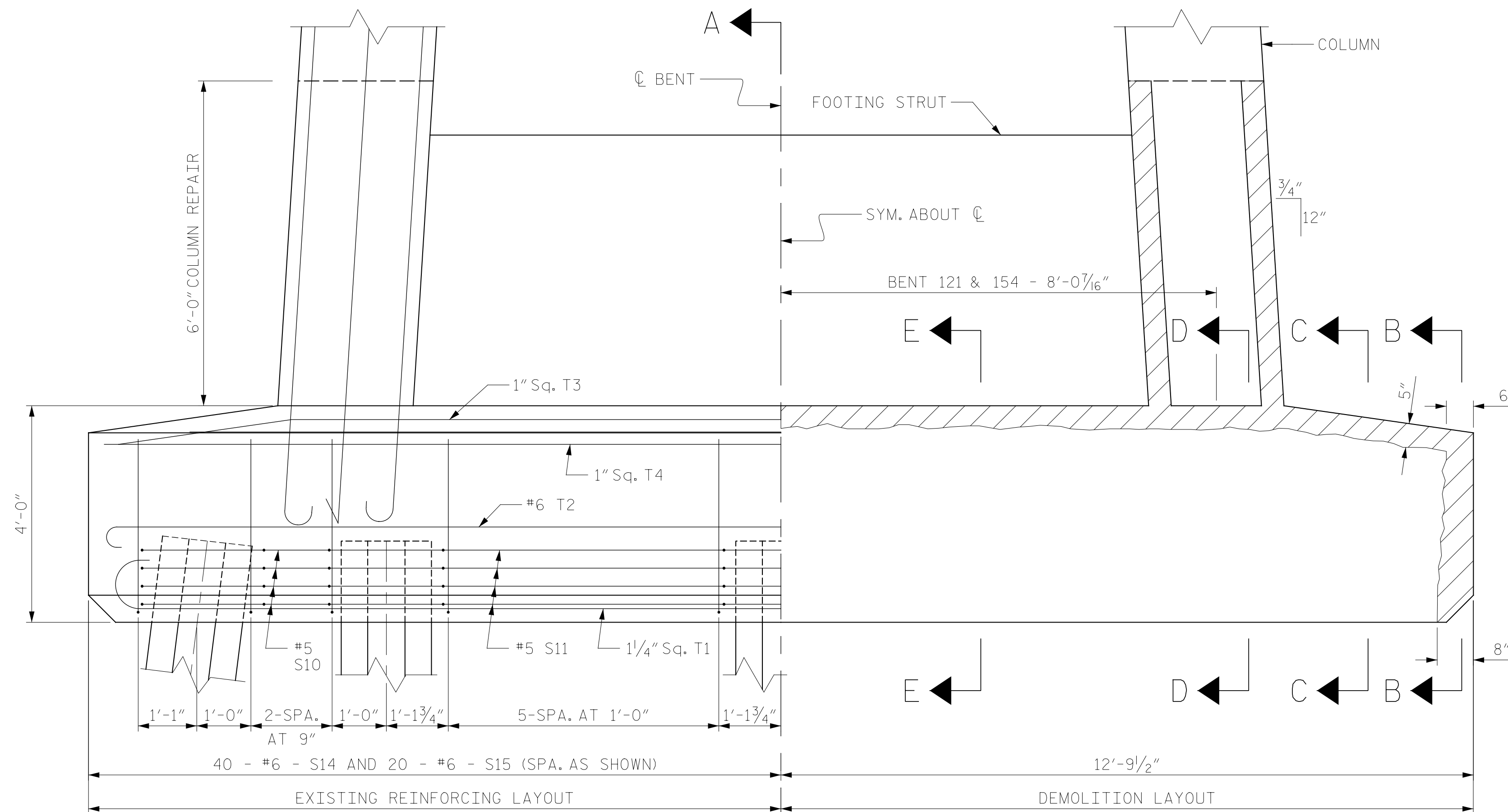
NOTES

- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
- 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUPS EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
- 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
- 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.



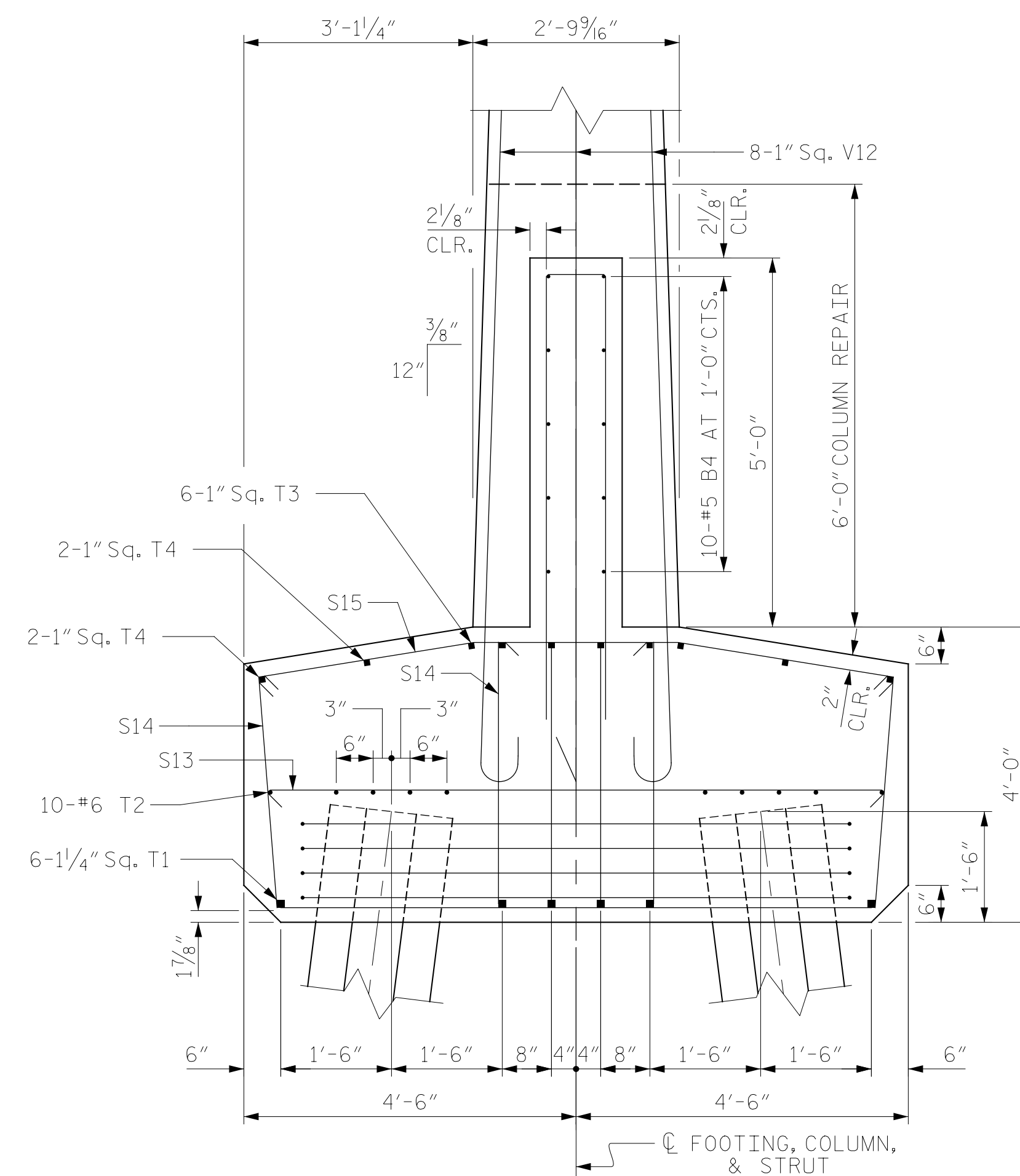
FOOTING PLAN VIEW

EXISTING CONDITIONS & PROPOSED DEMOLITION



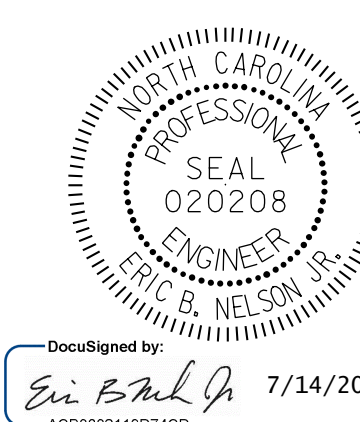
FOOTING ELEVATION VIEW

SECTION TAKEN ALONG C FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION



SECTION A-A

(EXISTING REINFORCING SHOWN,  
SEE OTHER SECTIONS FOR  
DEMOLITION AND PROPOSED  
REINFORCING)



DocuSigned by:  
Eric B. Nelson, Jr.  
7/14/2022  
AC38032116074CD

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

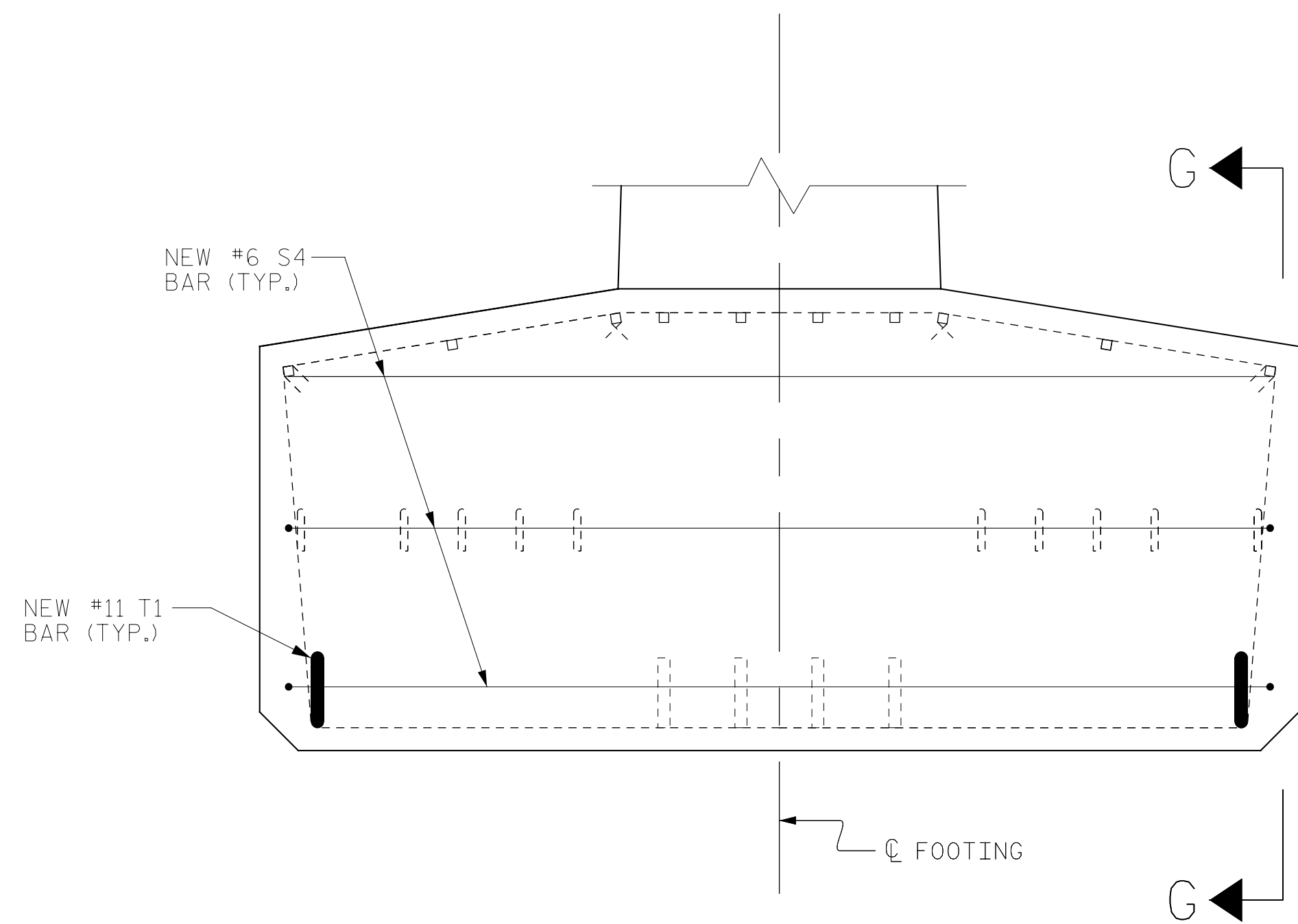
PILE FOOTING  
RESTORATION  
BENT 121 AND 154

DRAWN BY: M. LEE DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019

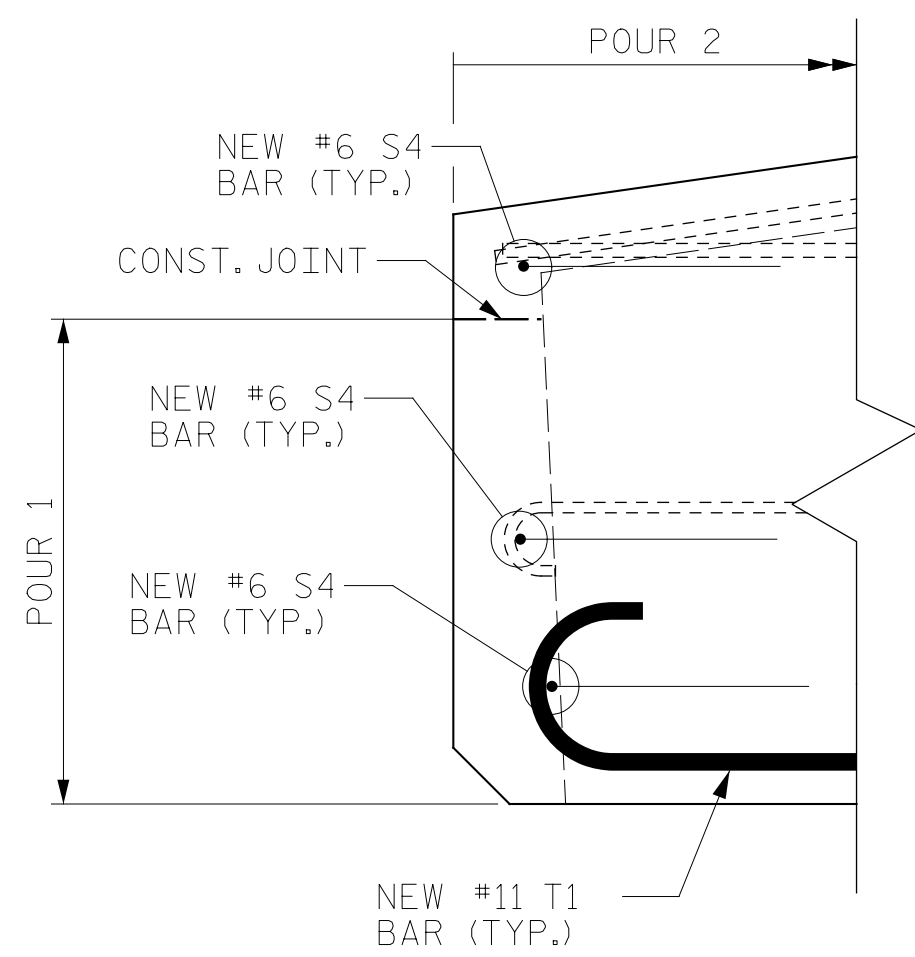


DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

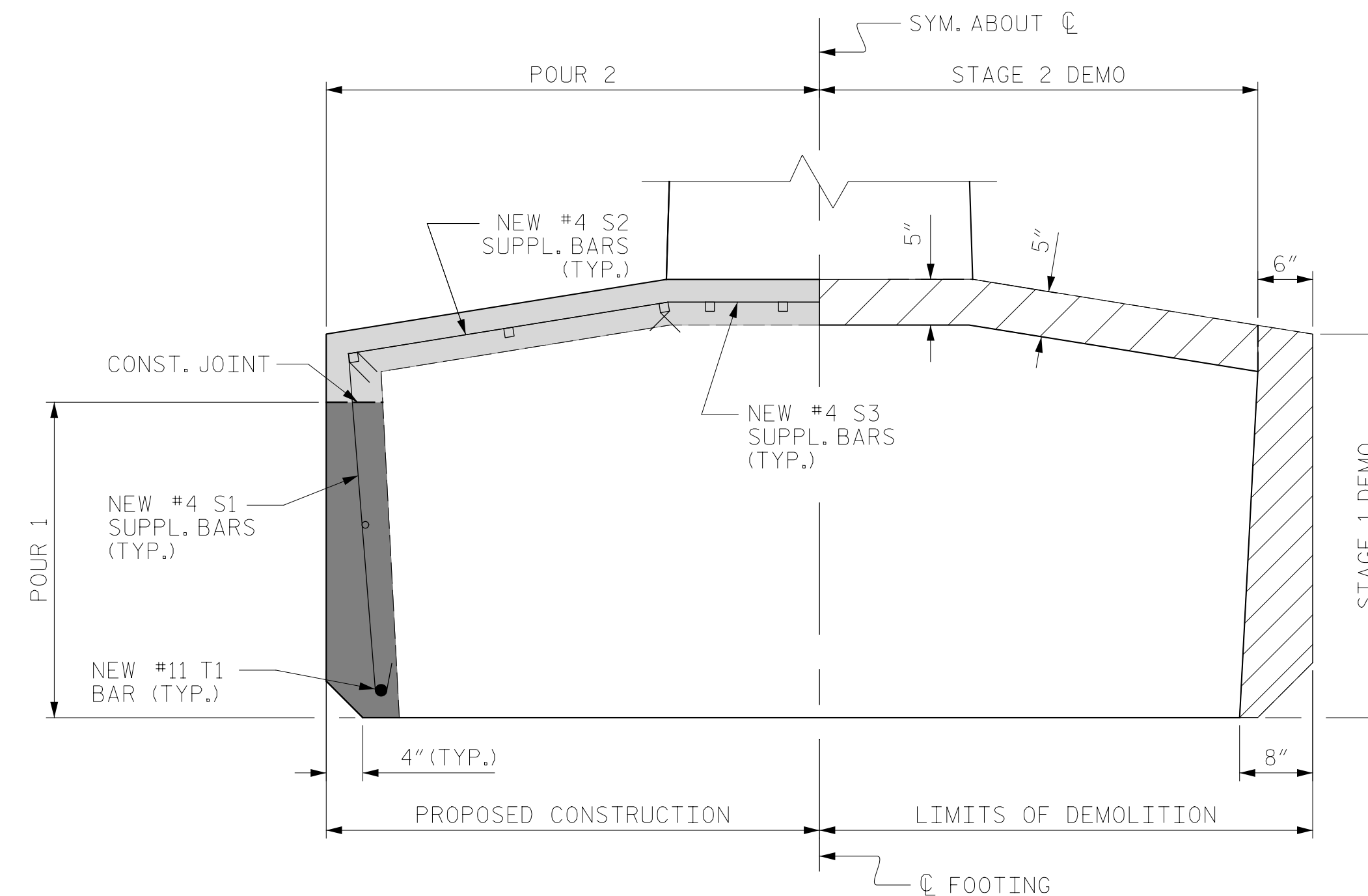
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-334
1			3			TOTAL SHEETS
2			4			355



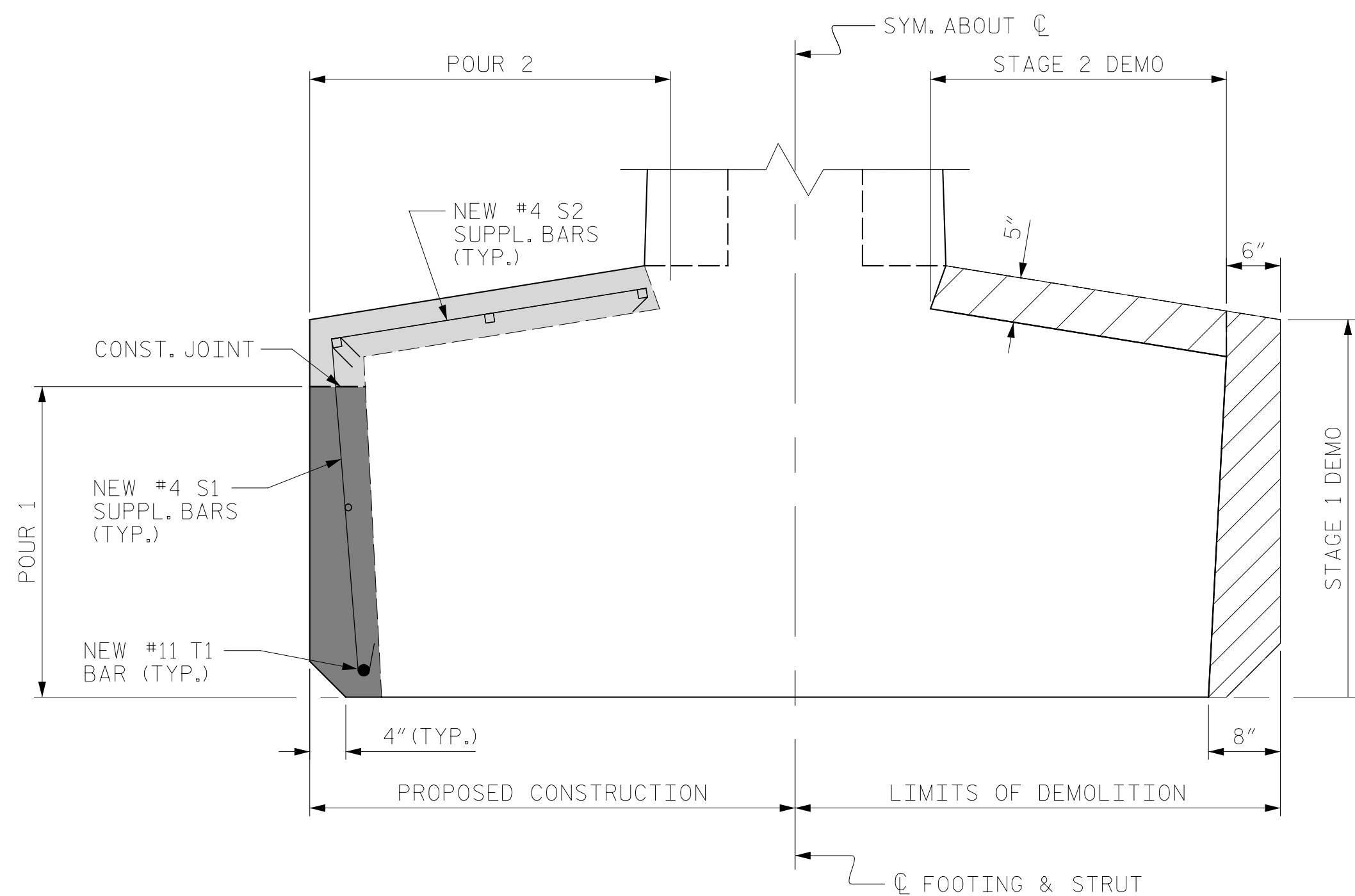
SECTION B-B  
FOOTING RESTORATION



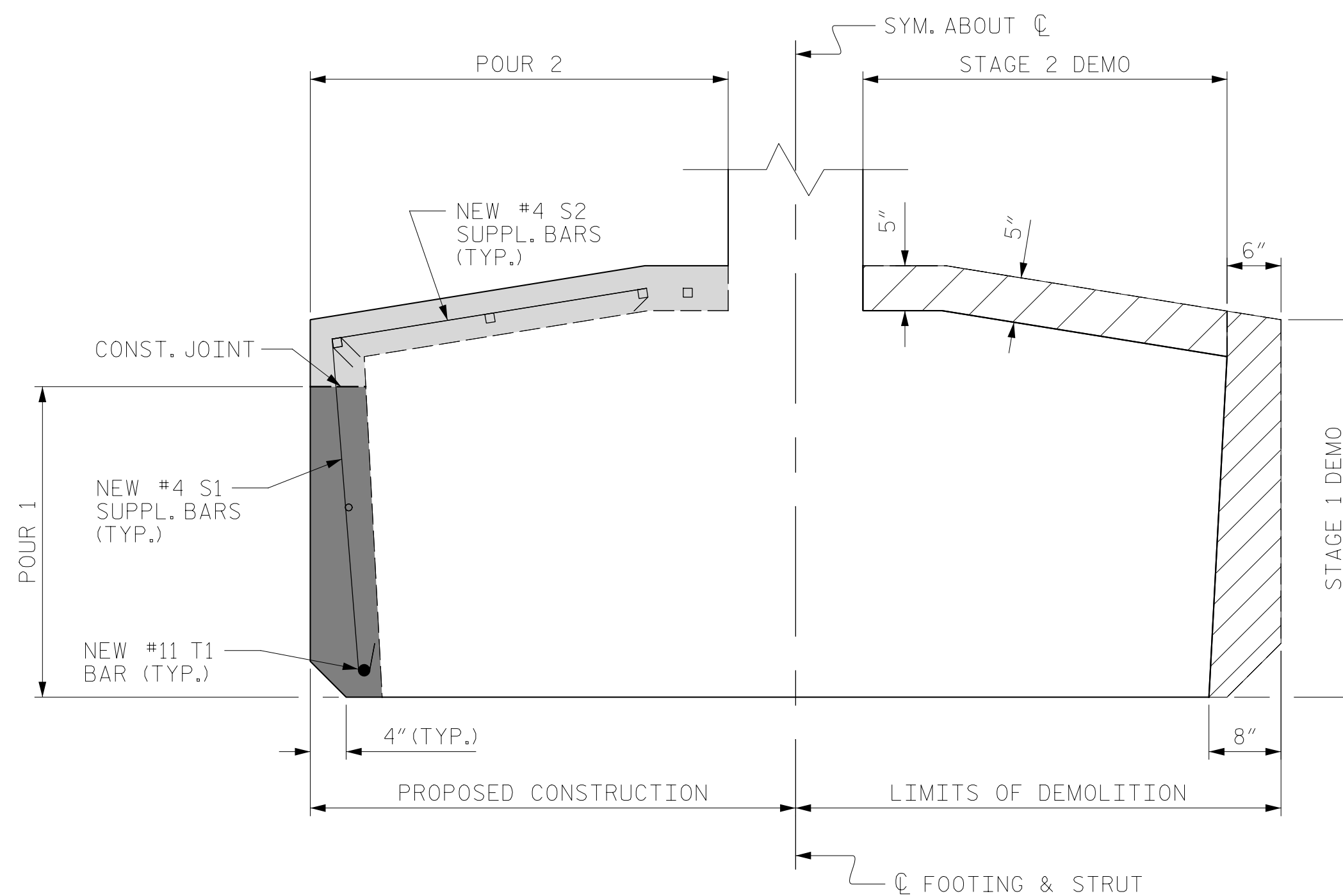
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



SECTION E-E  
FOOTING RESTORATION

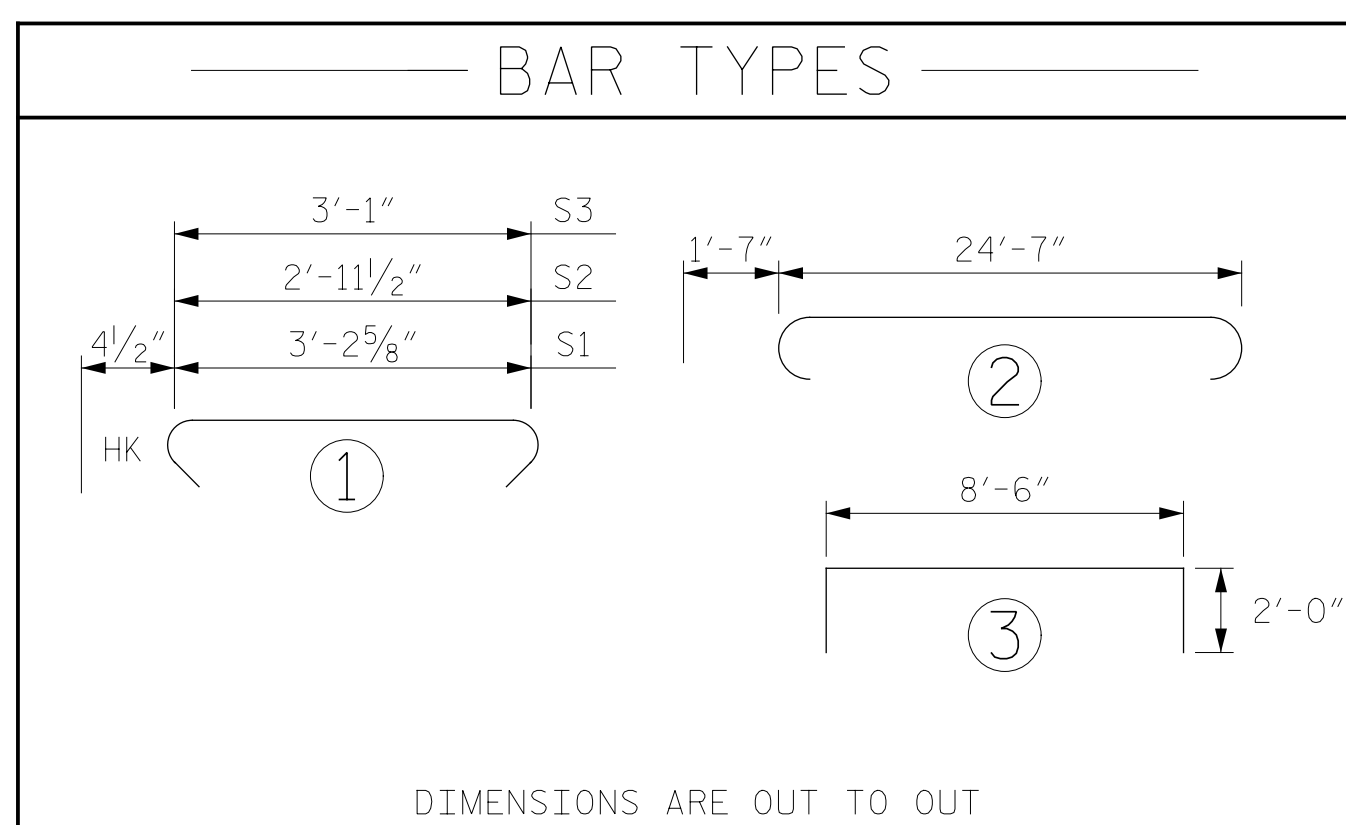
- STAGE 3 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

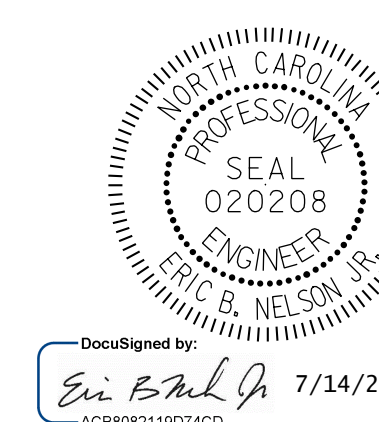
SHEET 2 OF 3

FOOTING BILL OF MATERIAL (REQUIRED PER BENT)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	40	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	107 LBS
S2	40	#4	1	3'-8 <sup>1</sup> / <sub>2</sub> "	100 LBS
S3	6	#4	1	3'-10"	16 LBS
S4	6	#6	3	12'-6"	113 LBS
T1	2	#11	2	27'-9"	295 LBS
REINFORCING STEEL					631 LBS
CLASS AA CONCRETE					8.3 C.Y.



DIMENSIONS ARE OUT TO OUT



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

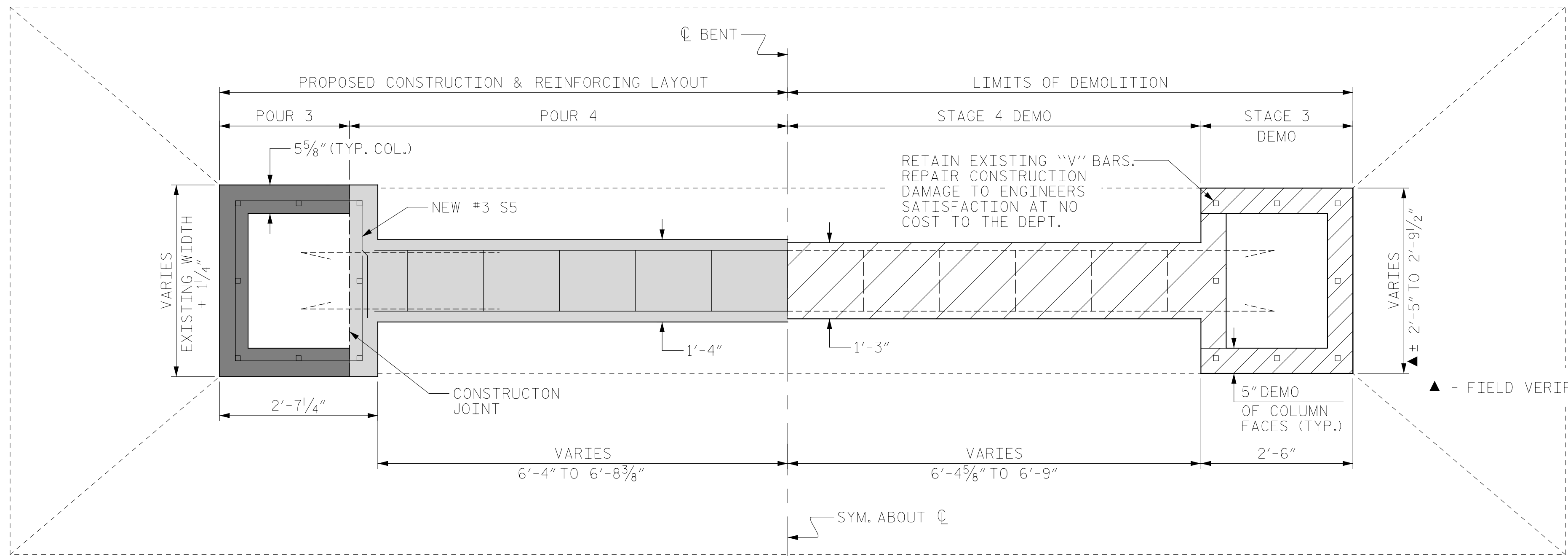
PILE FOOTING RESTORATION  
 BENT 121 AND 154

REVISIONS

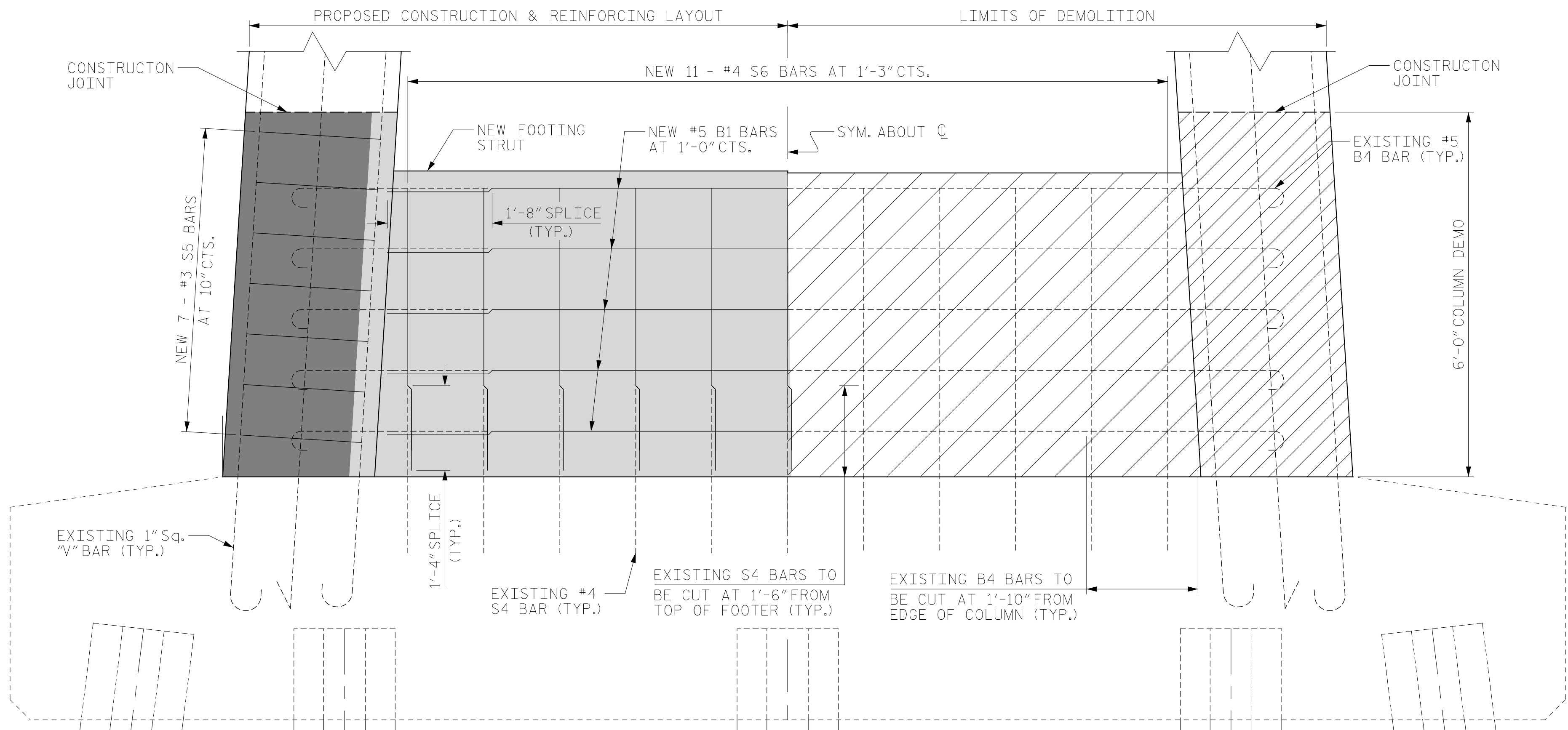
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-335  
 TOTAL SHEETS 355

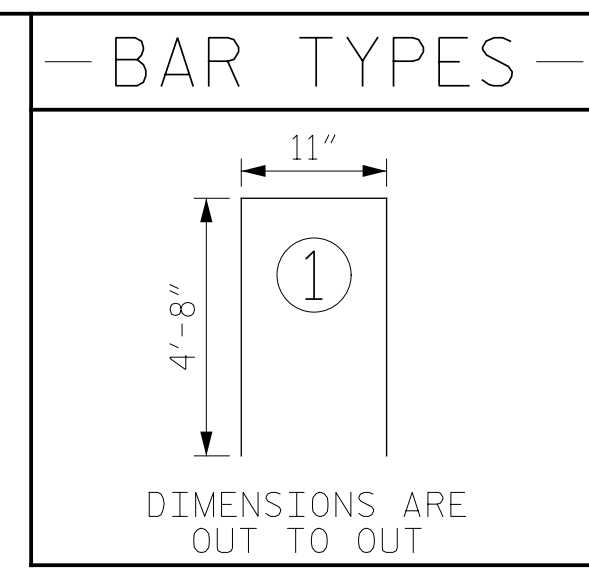
DRAWN BY: M. LEE DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019



PLAN  
COLUMN & STRUT RESTORATION



ELEVATION  
COLUMN & STRUT RESTORATION



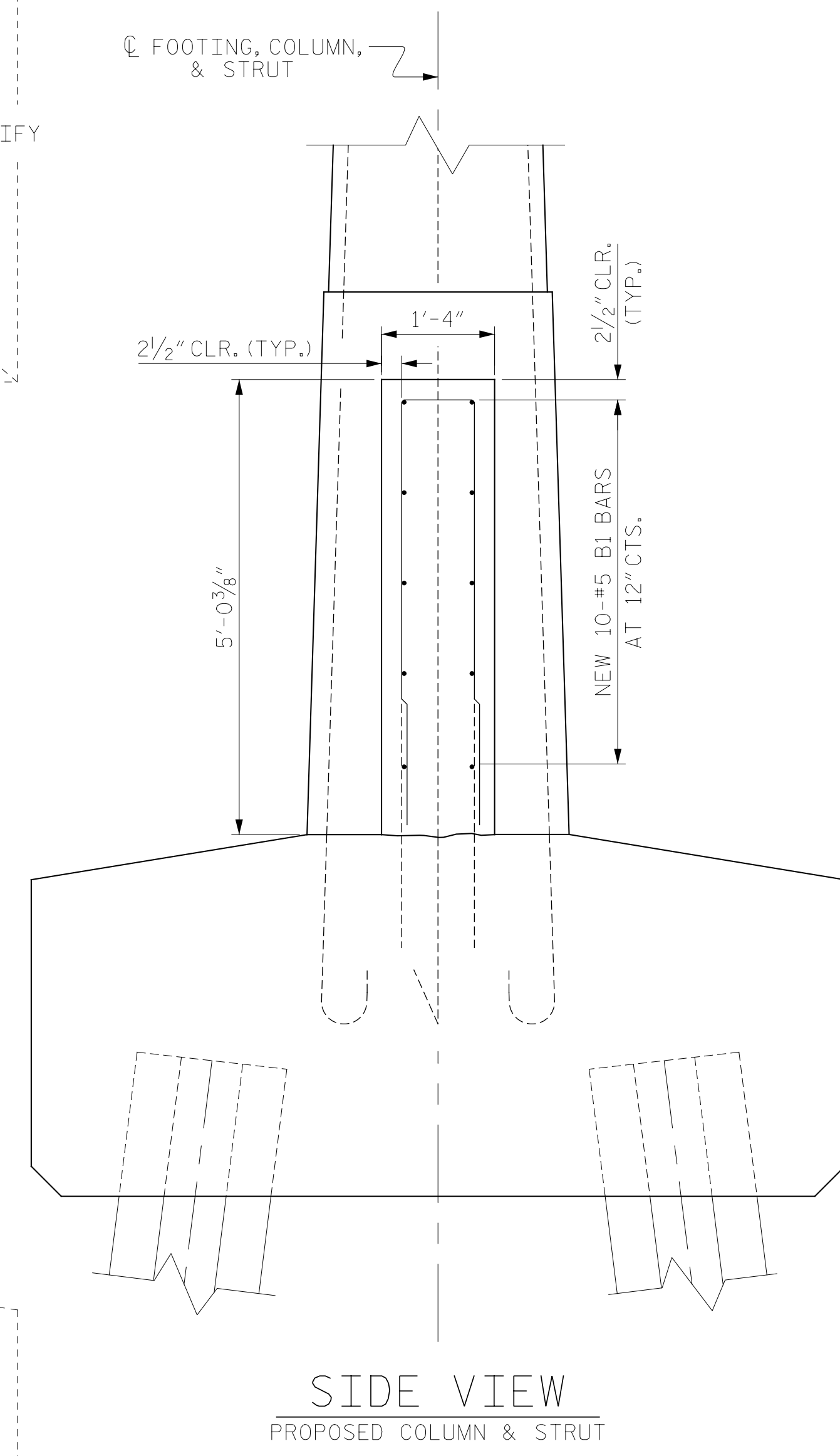
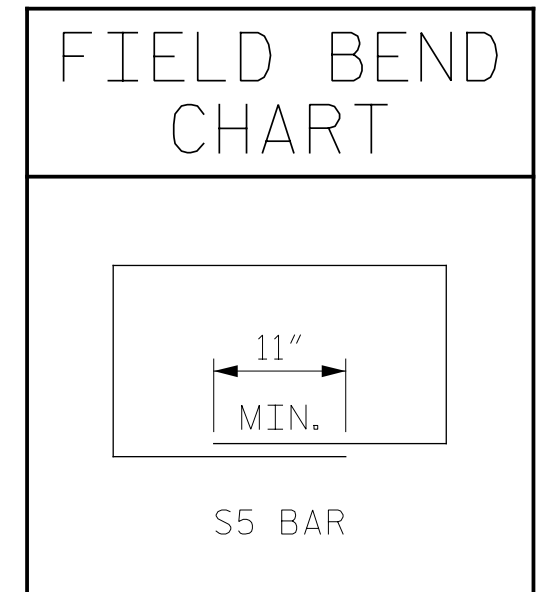
STRUT & COLUMN  
BILL OF MATERIAL  
(REQUIRED PER BENT)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	13'-2"	137 LBS
S5	14	#3	*STR.	10'-2"	54 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					296 LBS
CLASS AA CONCRETE					5.2 C.Y.

NOTES:

\*FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BEND CHART.

FIELD CUT AS REQUIRED FOR FIT.



- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4

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

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PILE FOOTING RESTORATION  
BENT 121 AND 154

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-336
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: M. LEE DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019

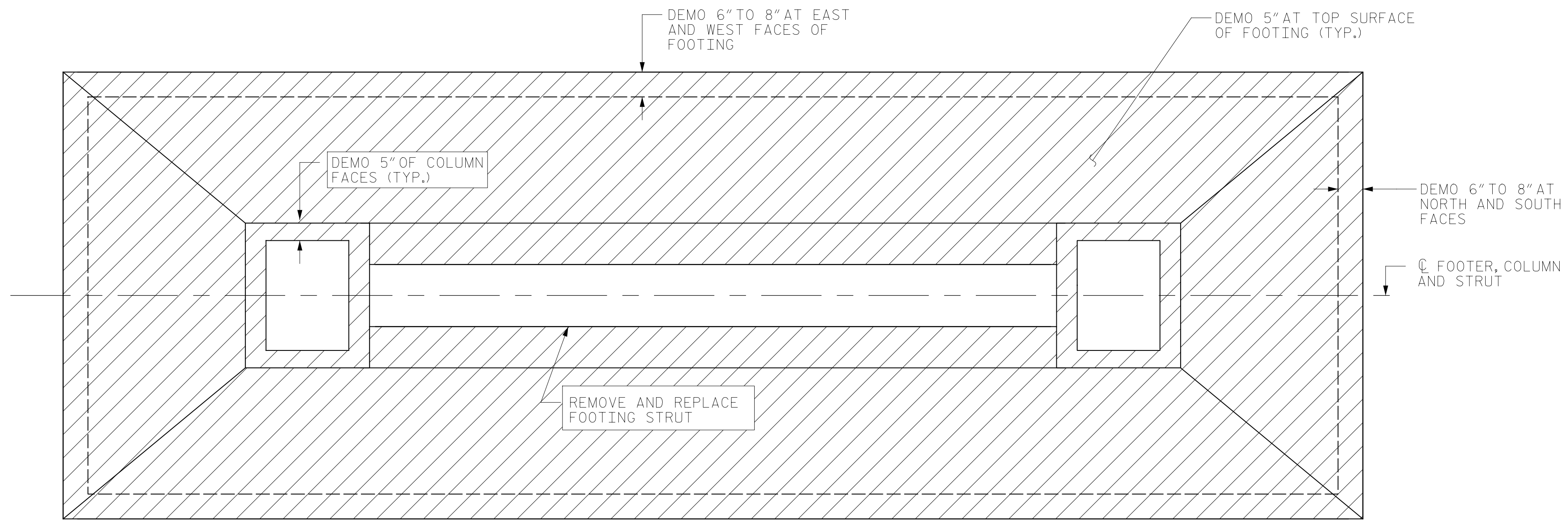


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

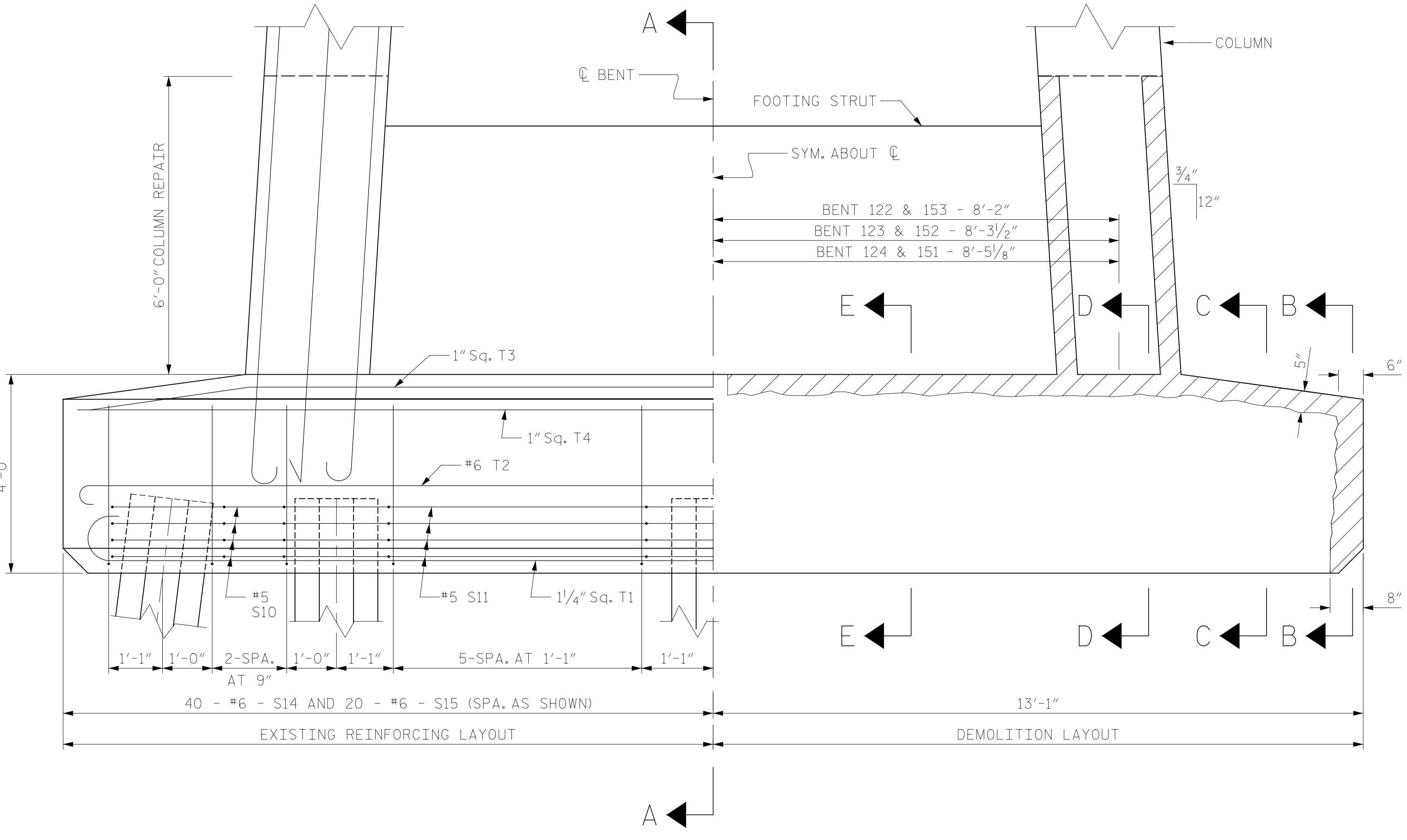


NOTES

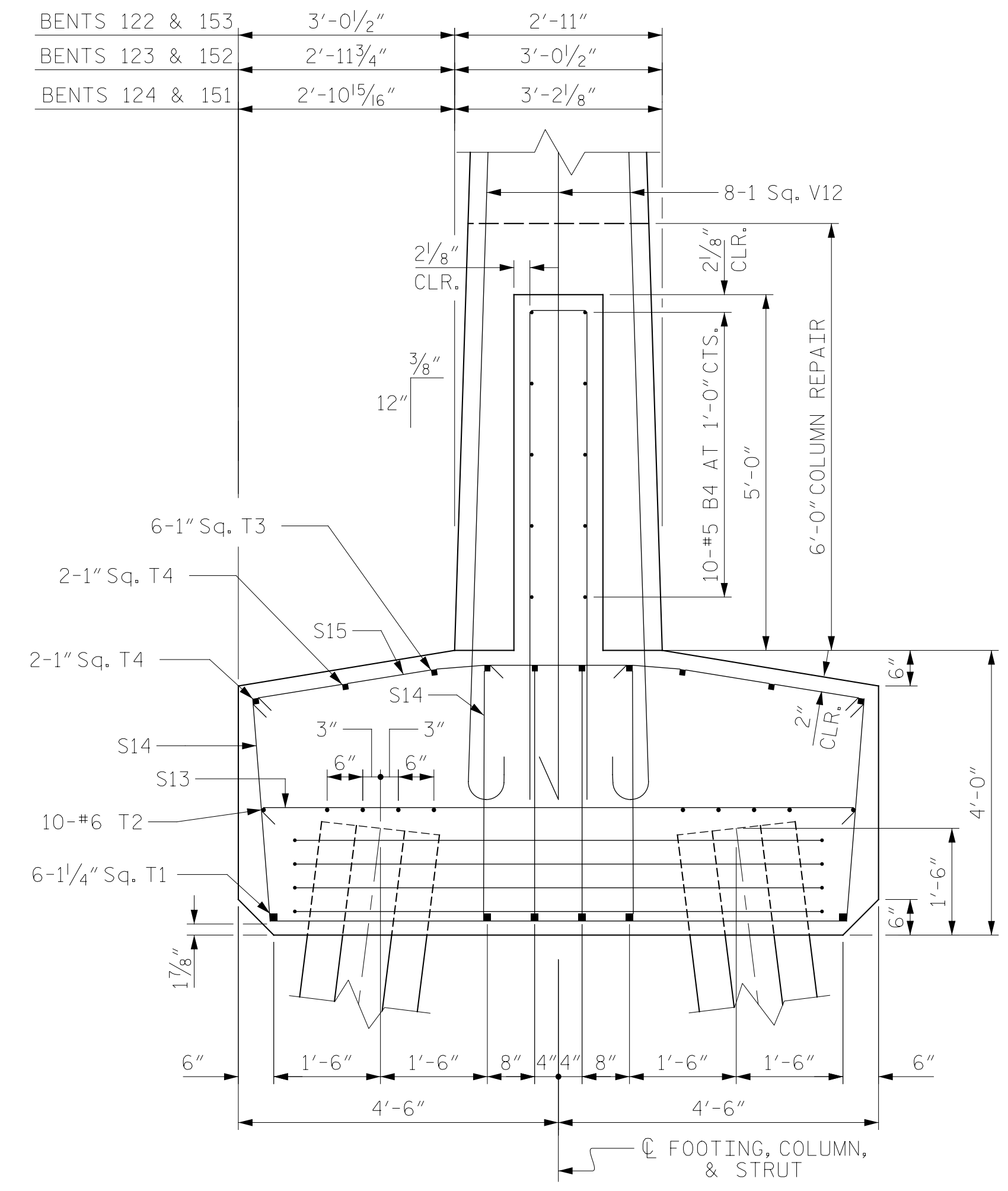
- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
- 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUPS EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #5 S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
- 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
- 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.



FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION



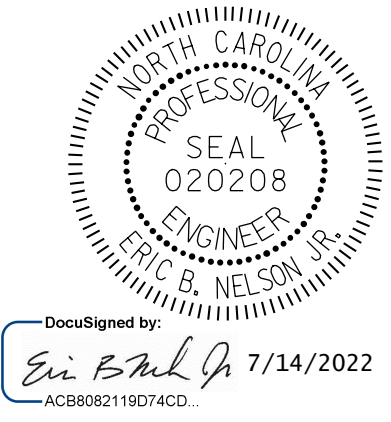
FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG C FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION



SECTION A-A  
(EXISTING REINFORCING SHOWN, SEE OTHER SECTIONS FOR DEMOLITION AND PROPOSED REINFORCING)

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

SHEET 1 OF 3



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

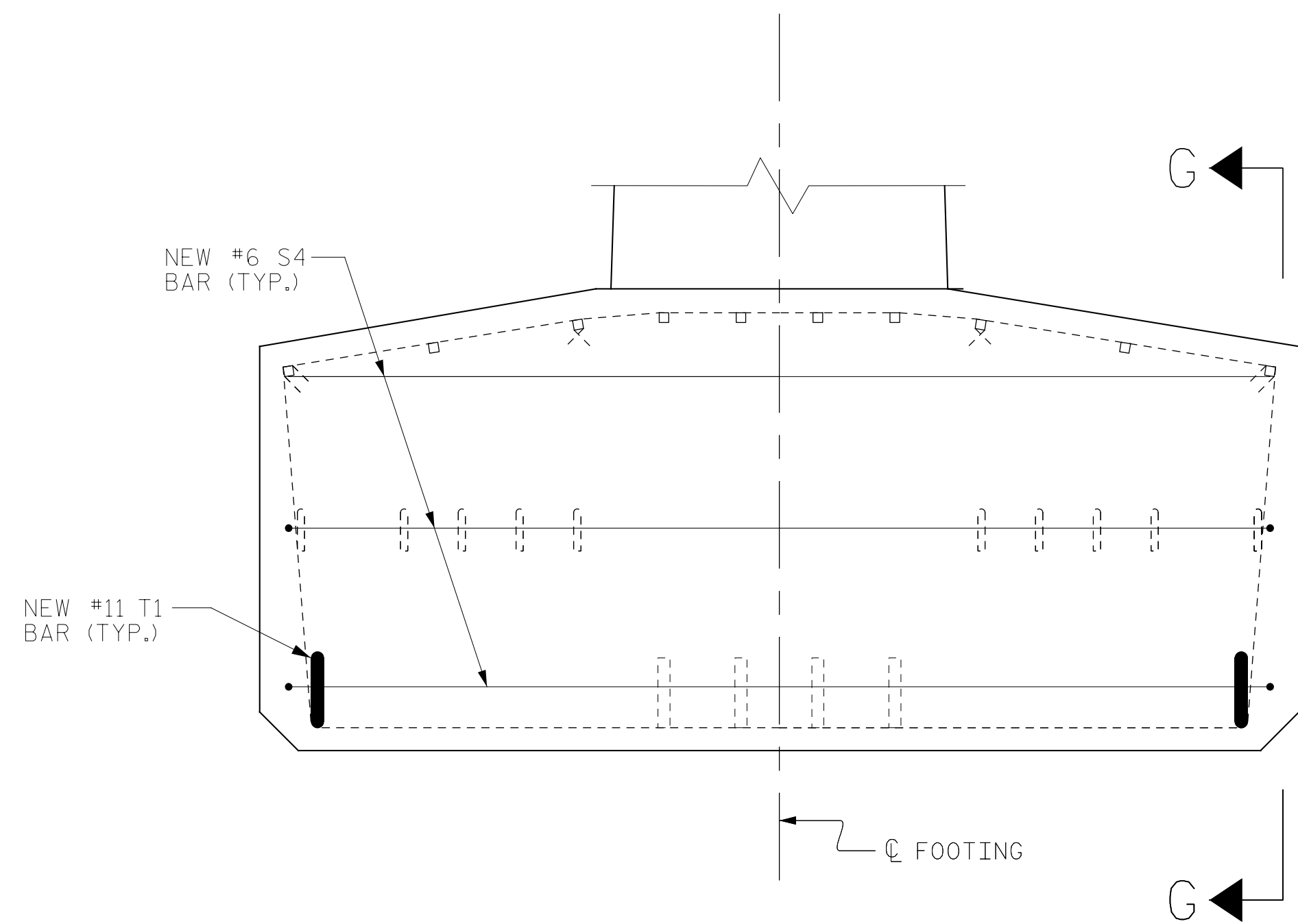
PILE FOOTING RESTORATION  
BENT 122 THRU 124 AND 151 THRU 153

DRAWN BY : T. HARTLEY DATE : 4/2019  
CHECKED BY : R. NELSON DATE : 4/2019

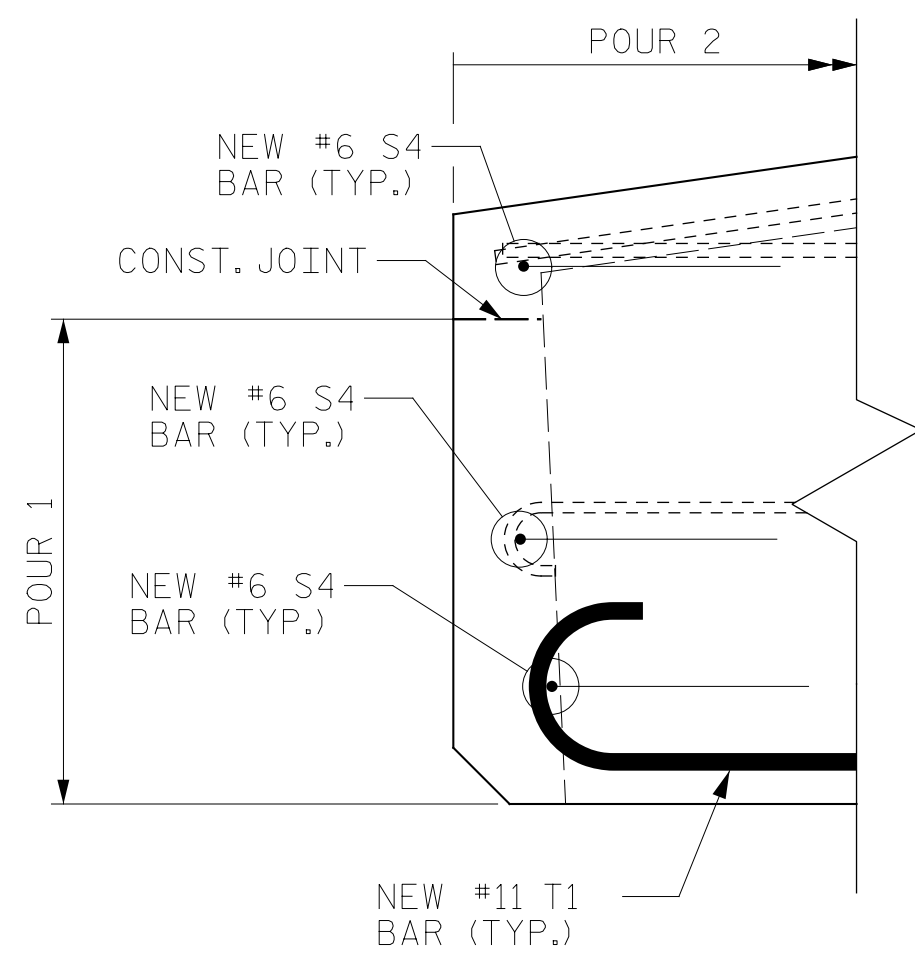


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

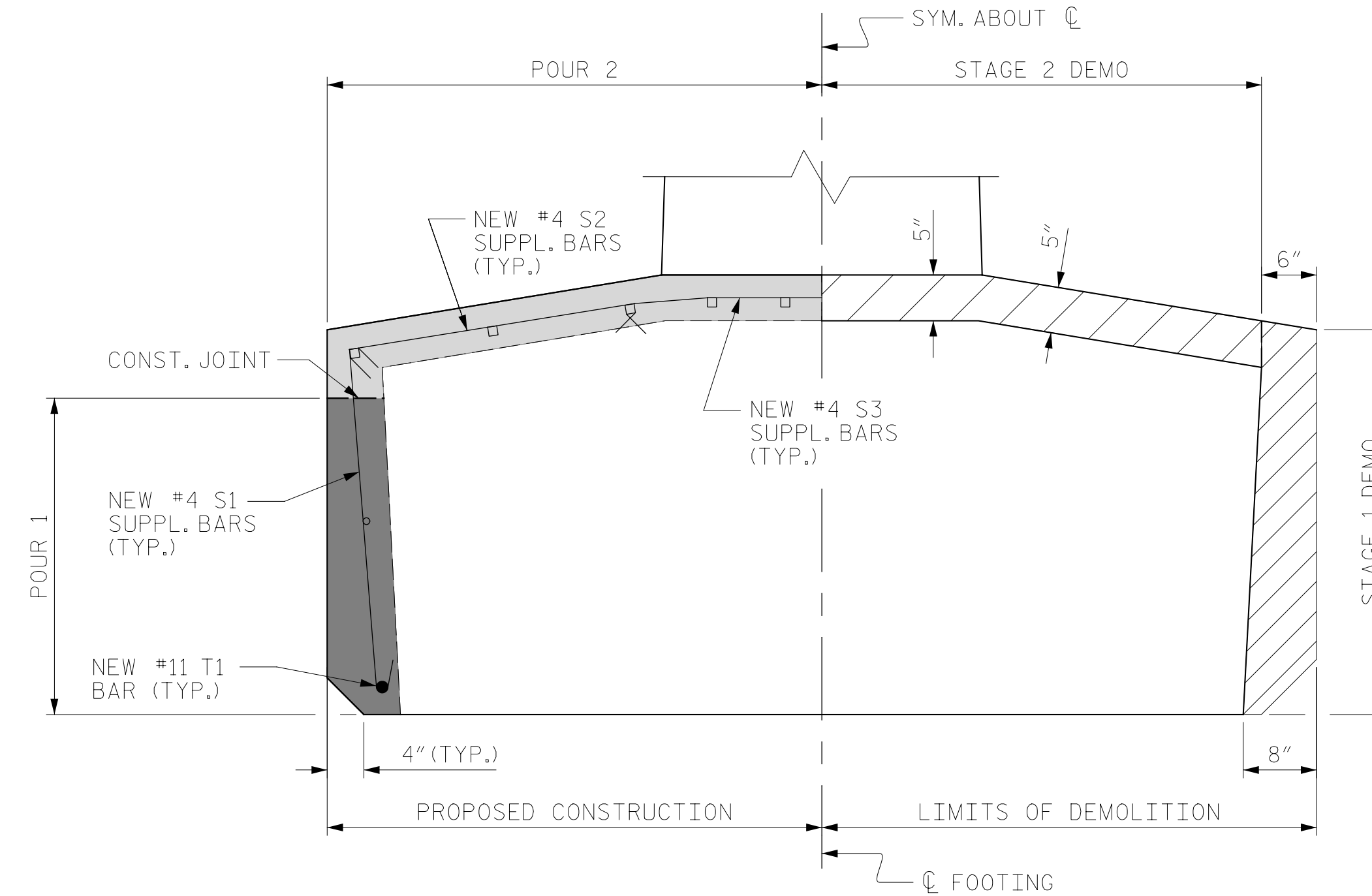
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-337
1			3			TOTAL SHEETS
2			4			355



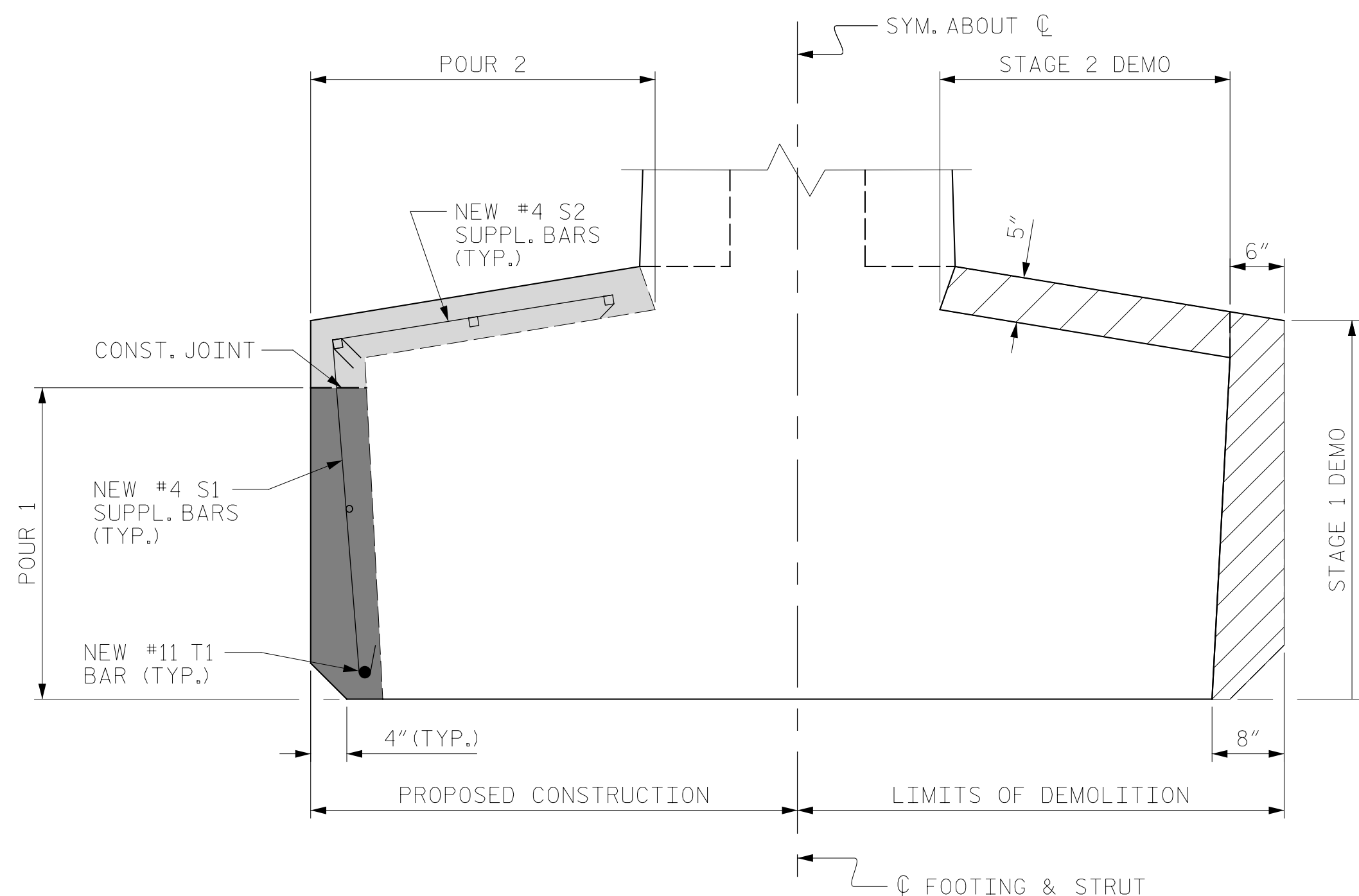
SECTION B-B  
FOOTING RESTORATION



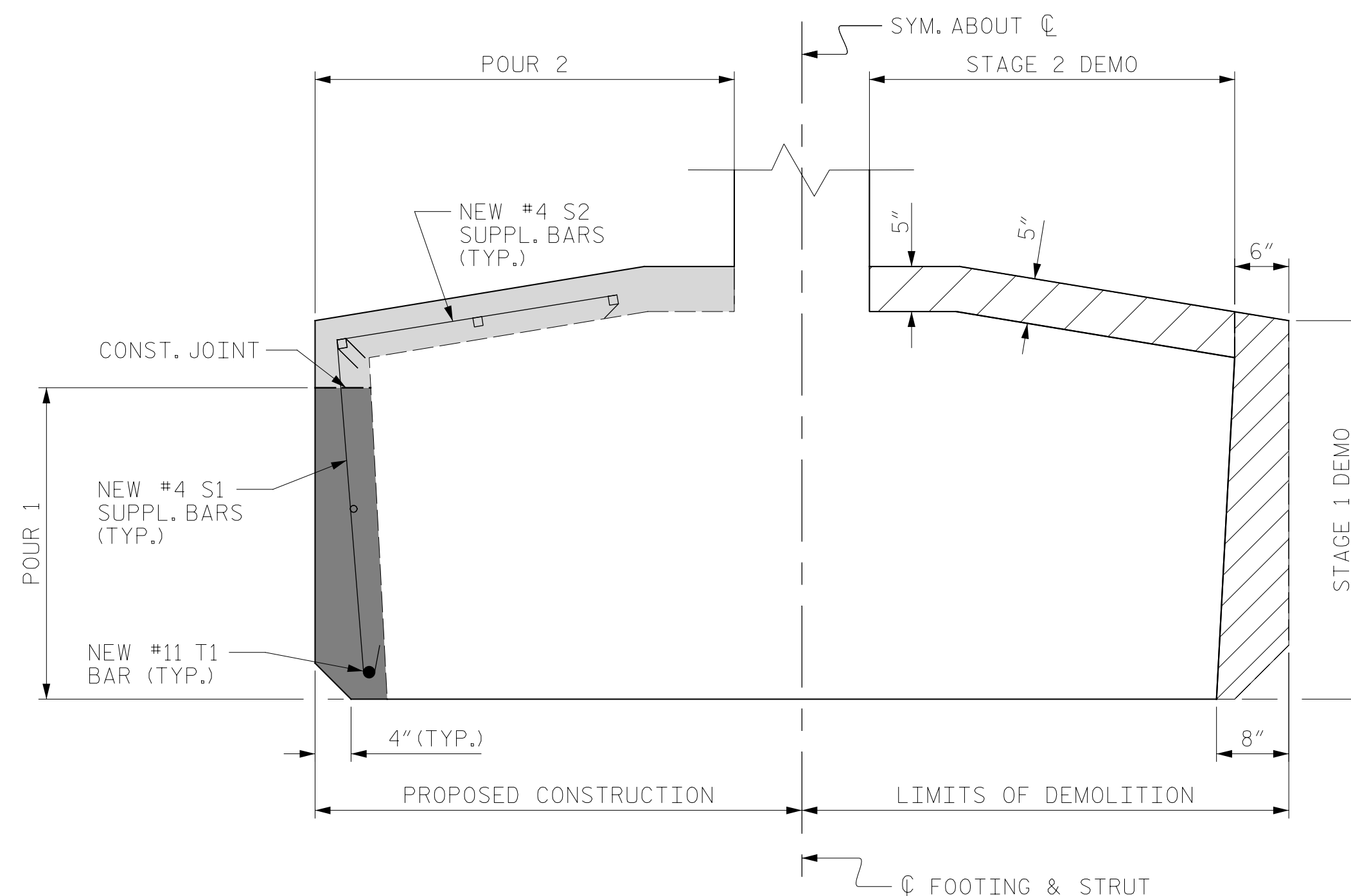
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



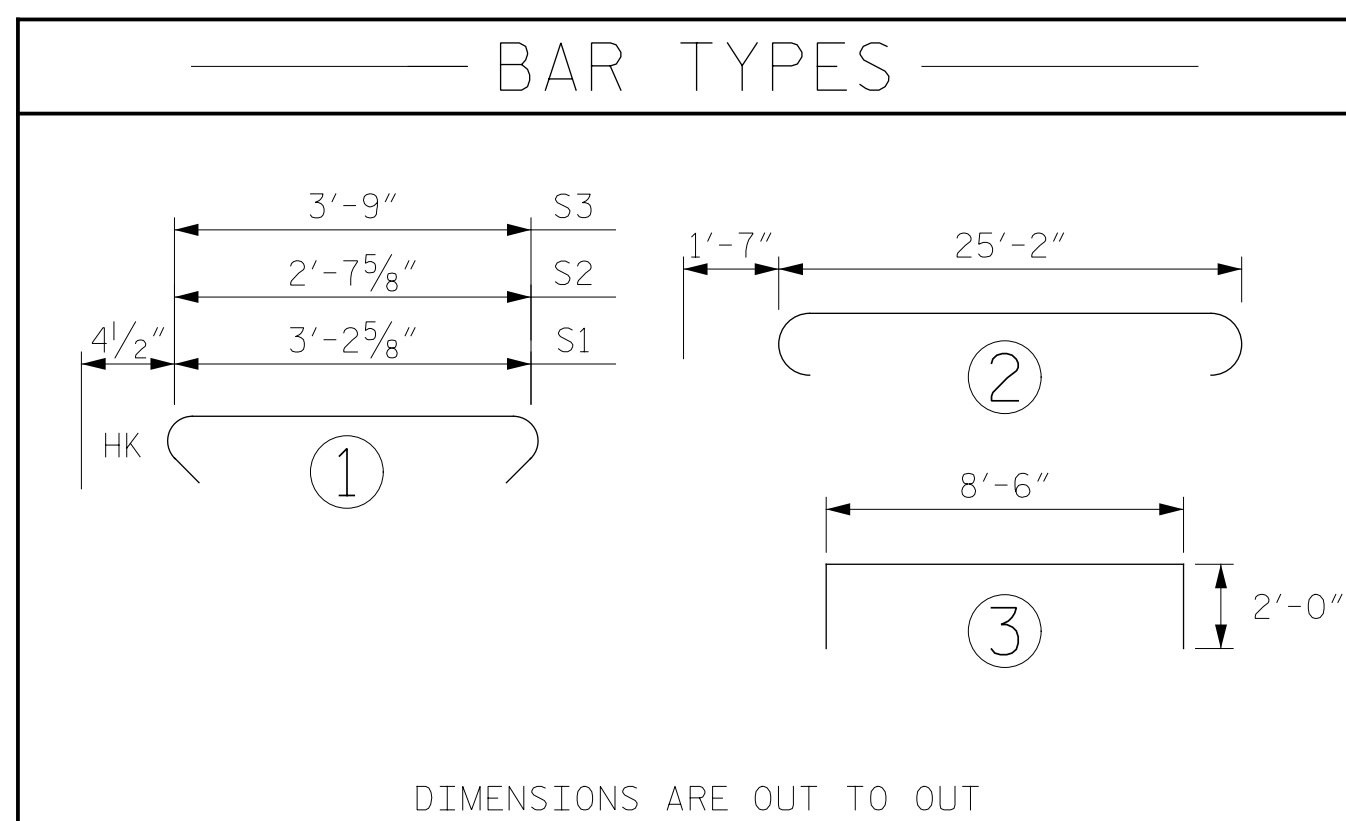
SECTION E-E  
FOOTING RESTORATION

- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

SHEET 2 OF 3

FOOTING BILL OF MATERIAL (REQUIRED PER BENT)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	40	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	107 LBS
S2	40	#4	1	3'-4 <sup>5</sup> / <sub>8</sub> "	91 LBS
S3	6	#4	1	4'-6"	19 LBS
S4	6	#6	3	12'-6"	113 LBS
T1	2	#11	2	28'-4"	302 LBS
REINFORCING STEEL					632 LBS
CLASS AA CONCRETE					8.0 C.Y.



DIMENSIONS ARE OUT TO OUT



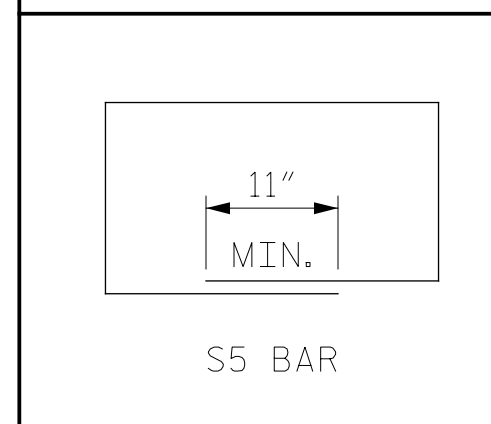
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE FOOTING RESTORATION BENT 122 THRU 124 AND 151 THRU 153					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

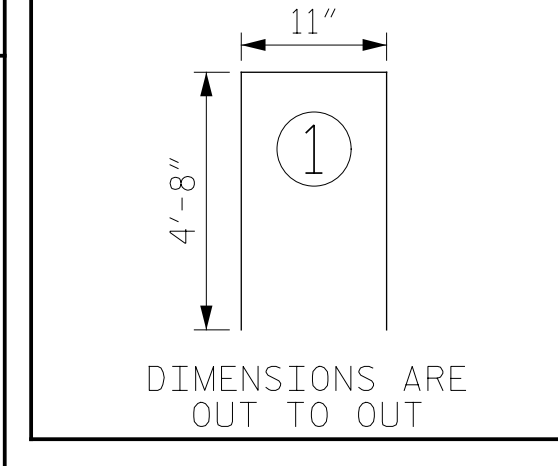
SHEET NO. S-338  
TOTAL SHEETS 355

DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

**FIELD BEND CHART**

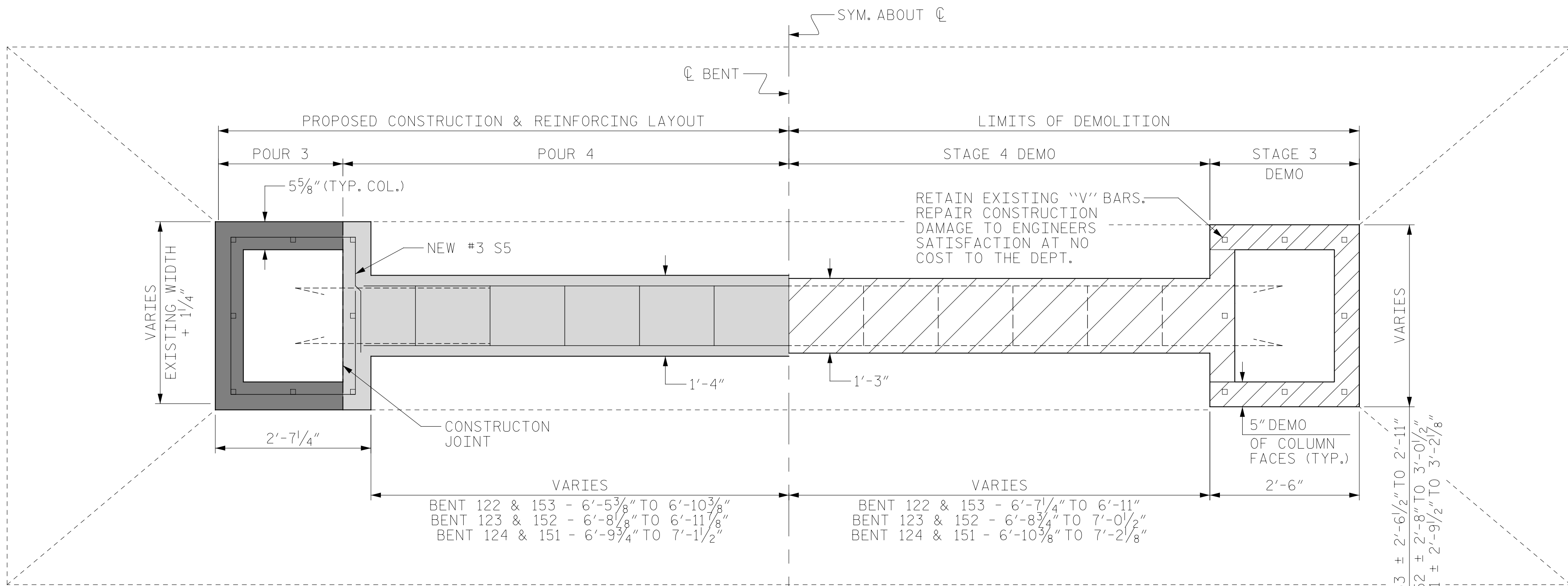


**- BAR TYPES -**

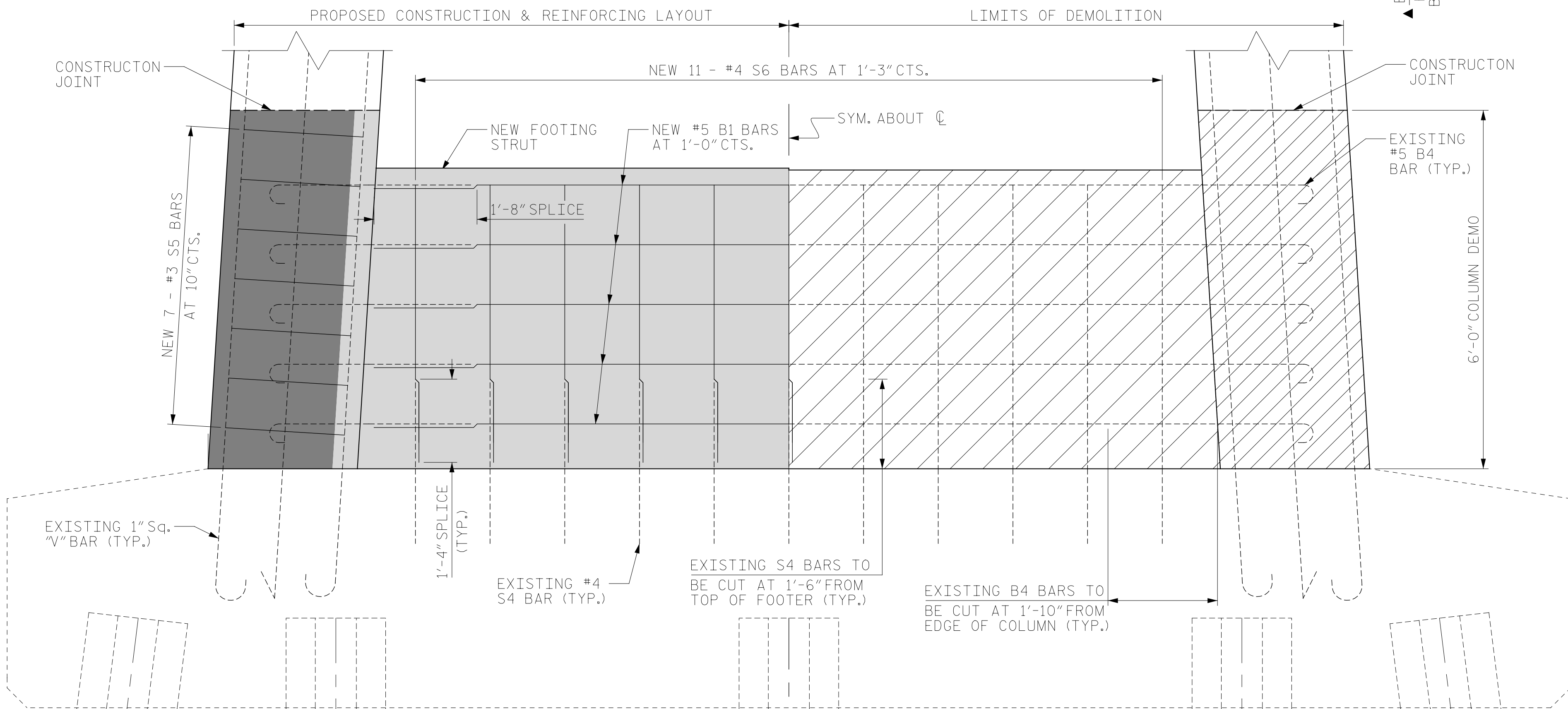


**STRUT & COLUMN BILL OF MATERIAL**

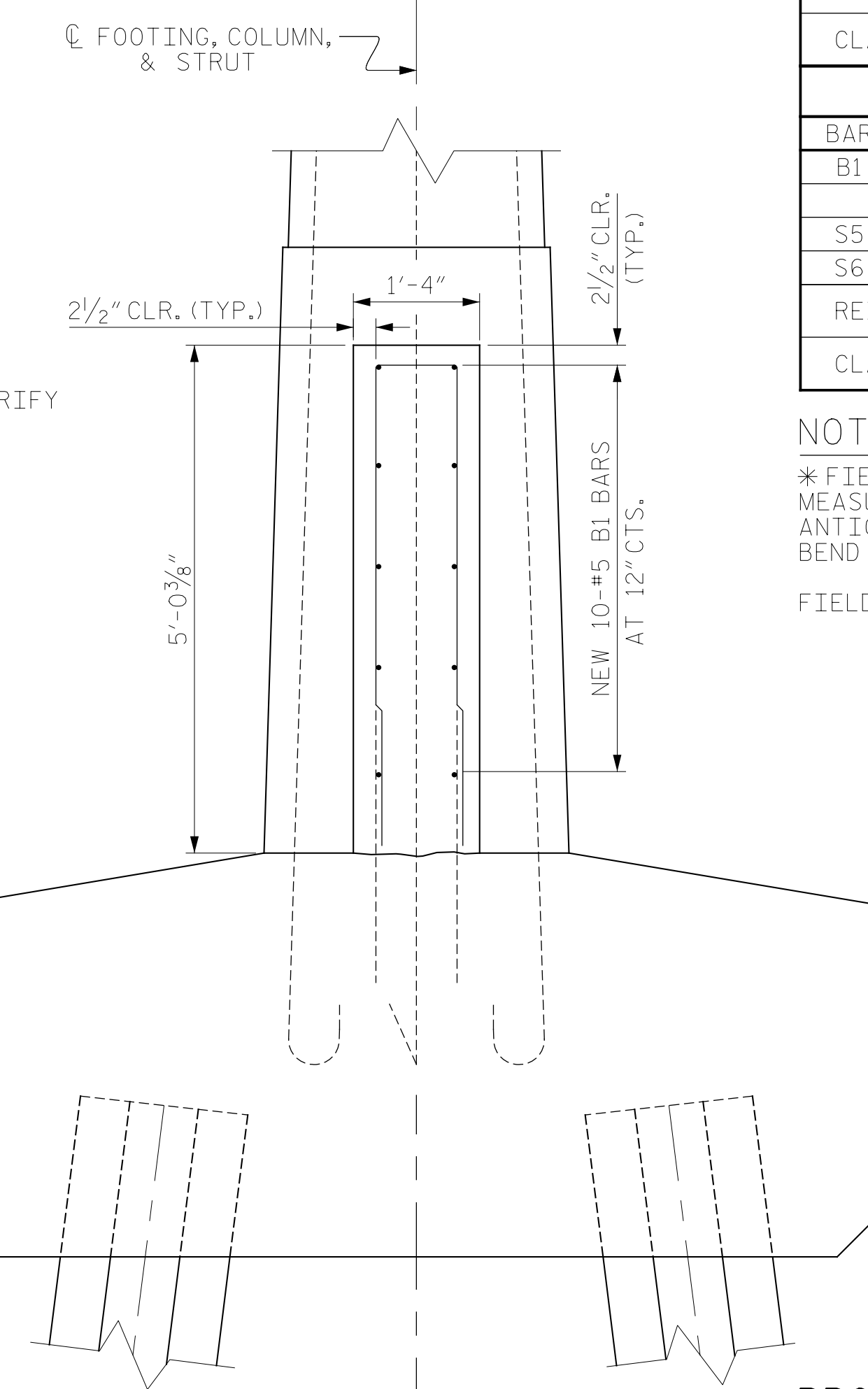
BENT 122 & 153					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	13'-6"	141 LBS
S5	14	#3	* STR.	10'-5"	56 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					302 LBS
CLASS AA CONCRETE					5.3 C.Y.
BENT 123 & 152					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	13'-10"	142 LBS
S5	14	#3	* STR.	10'-8"	57 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					305 LBS
CLASS AA CONCRETE					5.4 C.Y.
BENT 124 & 151					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	13'-10"	146 LBS
S5	14	#3	* STR.	10'-11"	58 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					309 LBS
CLASS AA CONCRETE					5.5 C.Y.



**PLAN**  
COLUMN & STRUT RESTORATION



**ELEVATION**  
COLUMN & STRUT RESTORATION



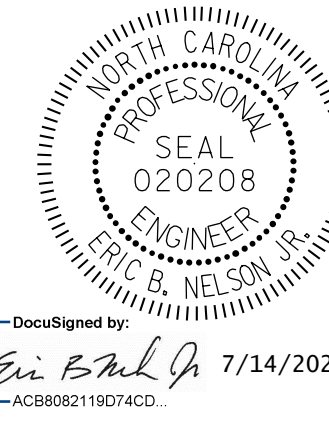
**SIDE VIEW**  
PROPOSED COLUMN & STRUT

**NOTES:**  
\* FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BEND CHART.  
FIELD CUT AS REQUIRED FOR FIT.

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4

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

SHEET 3 OF 3  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**PILE FOOTING RESTORATION**  
BENT 122 THRU 124 AND 151 THRU 153

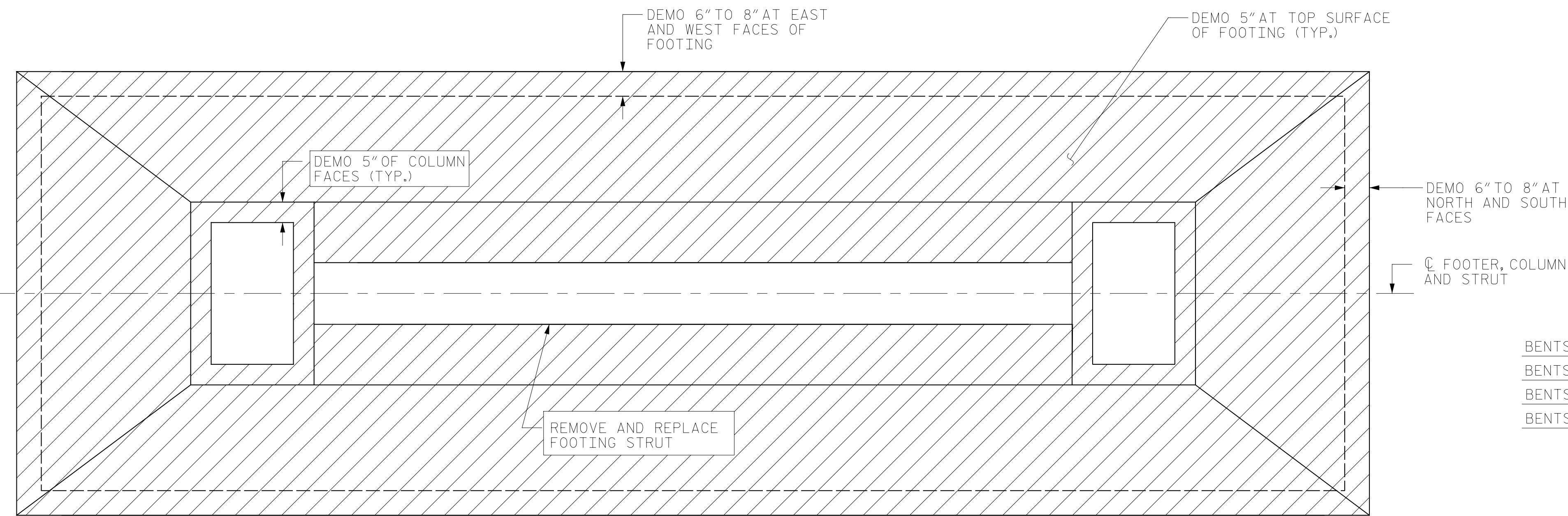


DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019

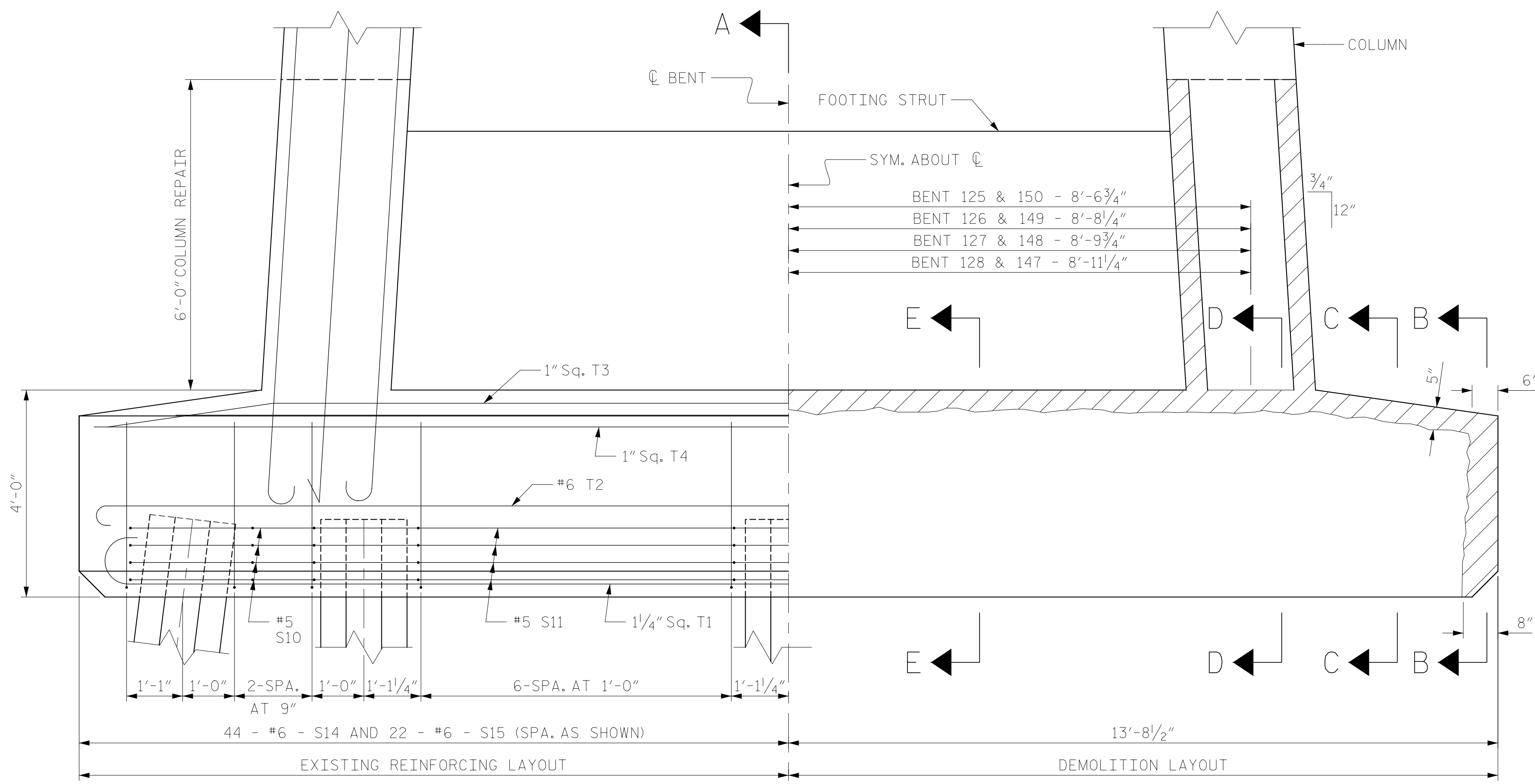


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

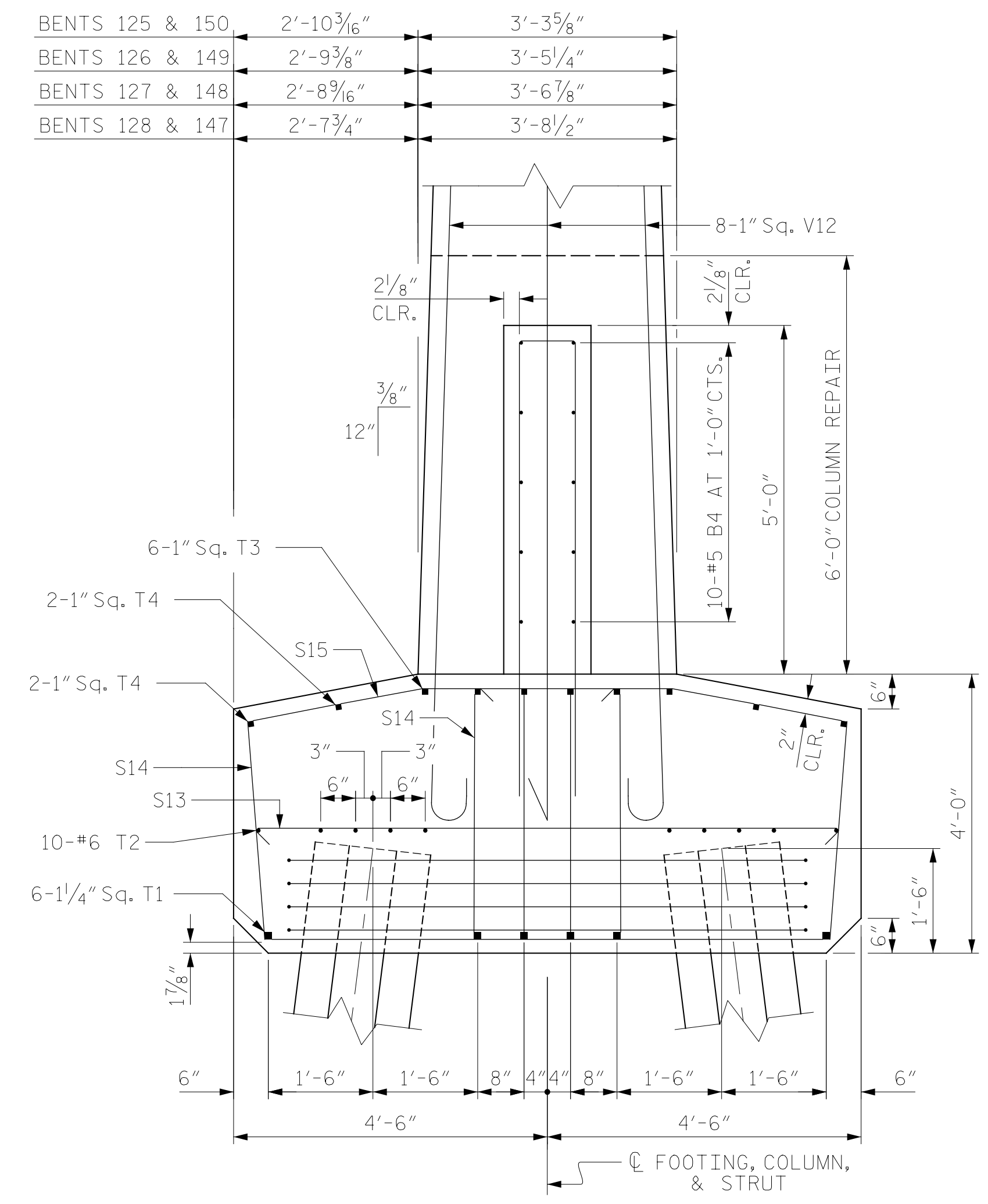
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-339
1			3			TOTAL SHEETS
2			4			355



FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION



FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG C FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION



SECTION A-A  
(EXISTING REINFORCING SHOWN, SEE OTHER SECTIONS FOR DEMOLITION AND PROPOSED REINFORCING)

- NOTES
- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
  - 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUPS EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
  - 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
  - 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

BENTS 125 & 150	2'-10 <sup>3</sup> / <sub>16</sub> "	3'-3 <sup>5</sup> / <sub>8</sub> "
BENTS 126 & 149	2'-9 <sup>3</sup> / <sub>8</sub> "	3'-5 <sup>1</sup> / <sub>4</sub> "
BENTS 127 & 148	2'-8 <sup>9</sup> / <sub>16</sub> "	3'-6 <sup>7</sup> / <sub>8</sub> "
BENTS 128 & 147	2'-7 <sup>3</sup> / <sub>4</sub> "	3'-8 <sup>1</sup> / <sub>2</sub> "

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PILE FOOTING RESTORATION  
 BENT 125 THRU 128 AND 147 THRU 150

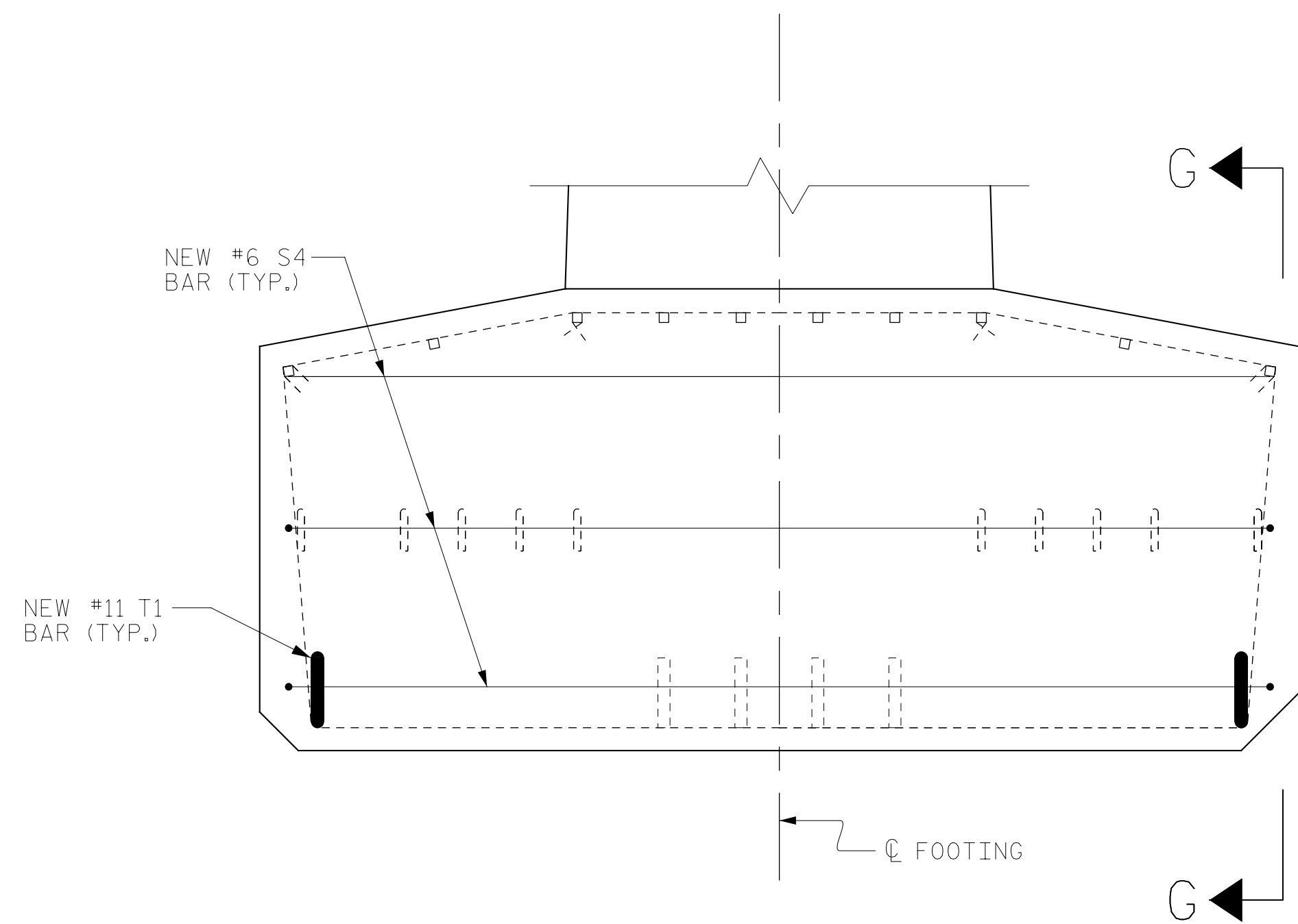


DRAWN BY : T. HARTLEY DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019

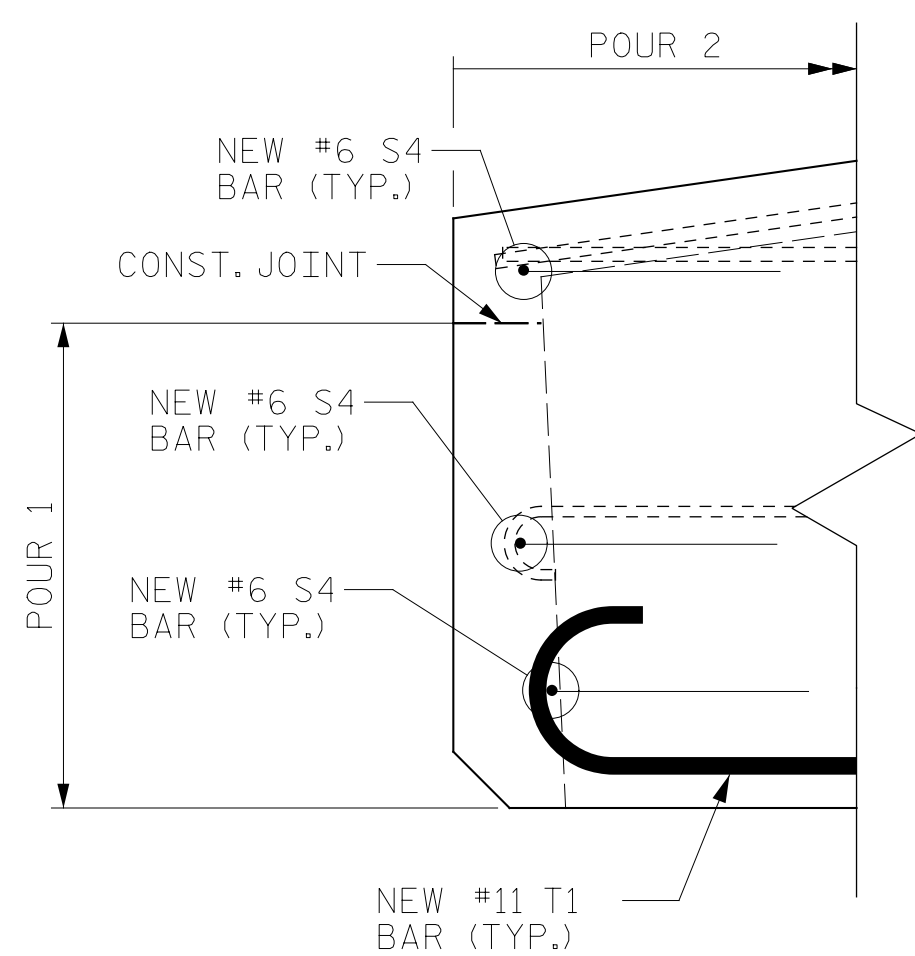


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

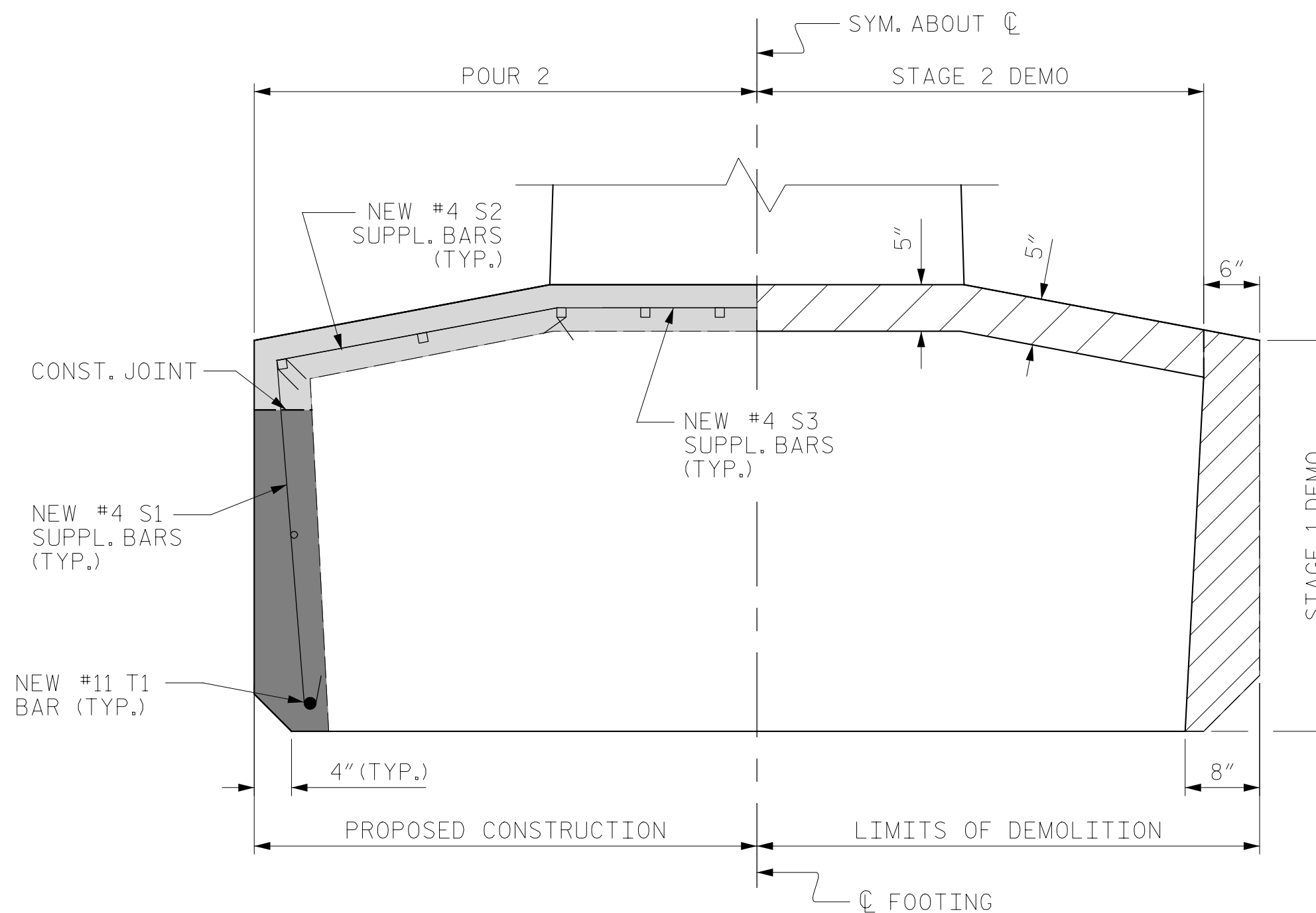
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-340
1			3			TOTAL SHEETS
2			4			355



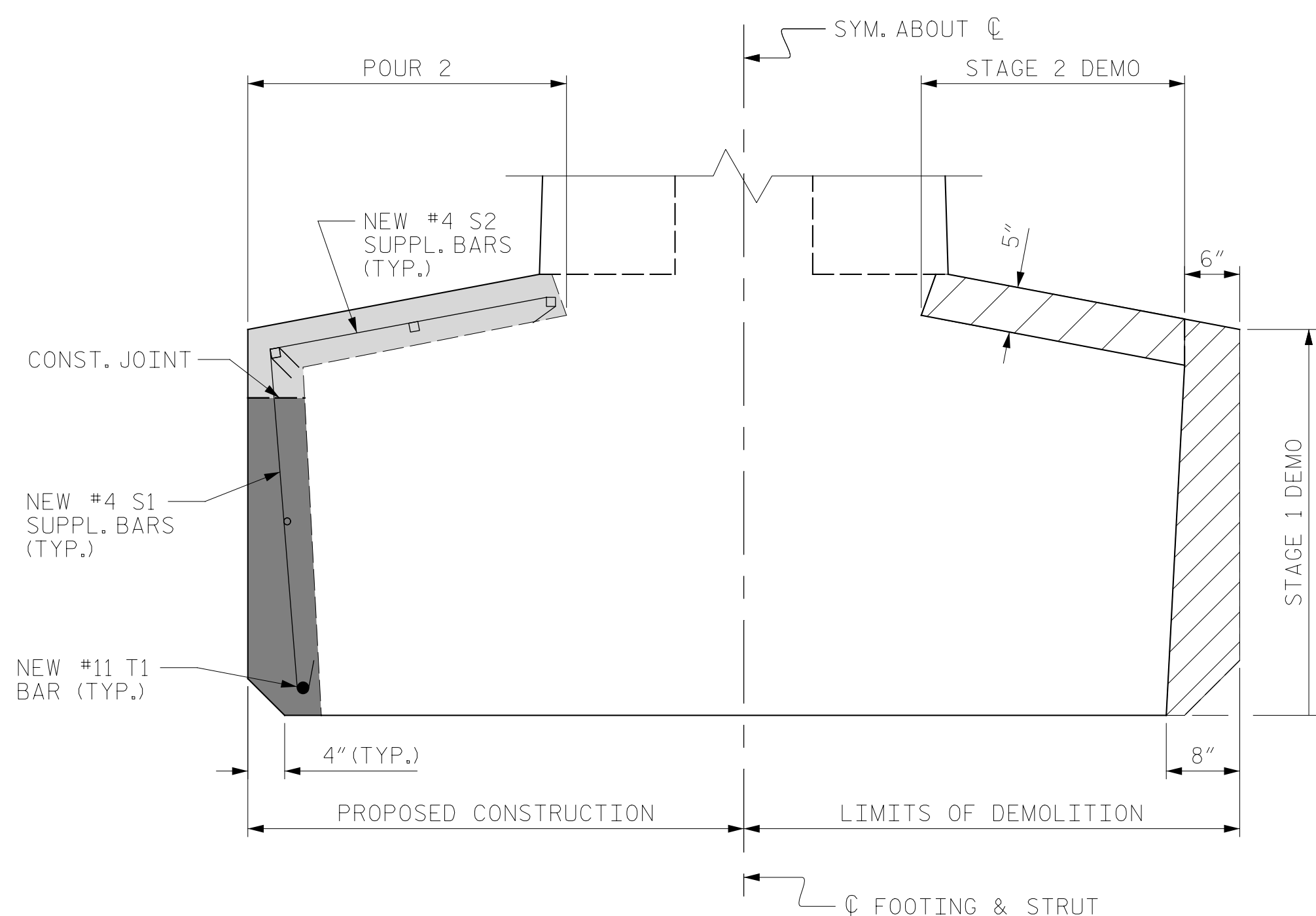
SECTION B-B  
FOOTING RESTORATION



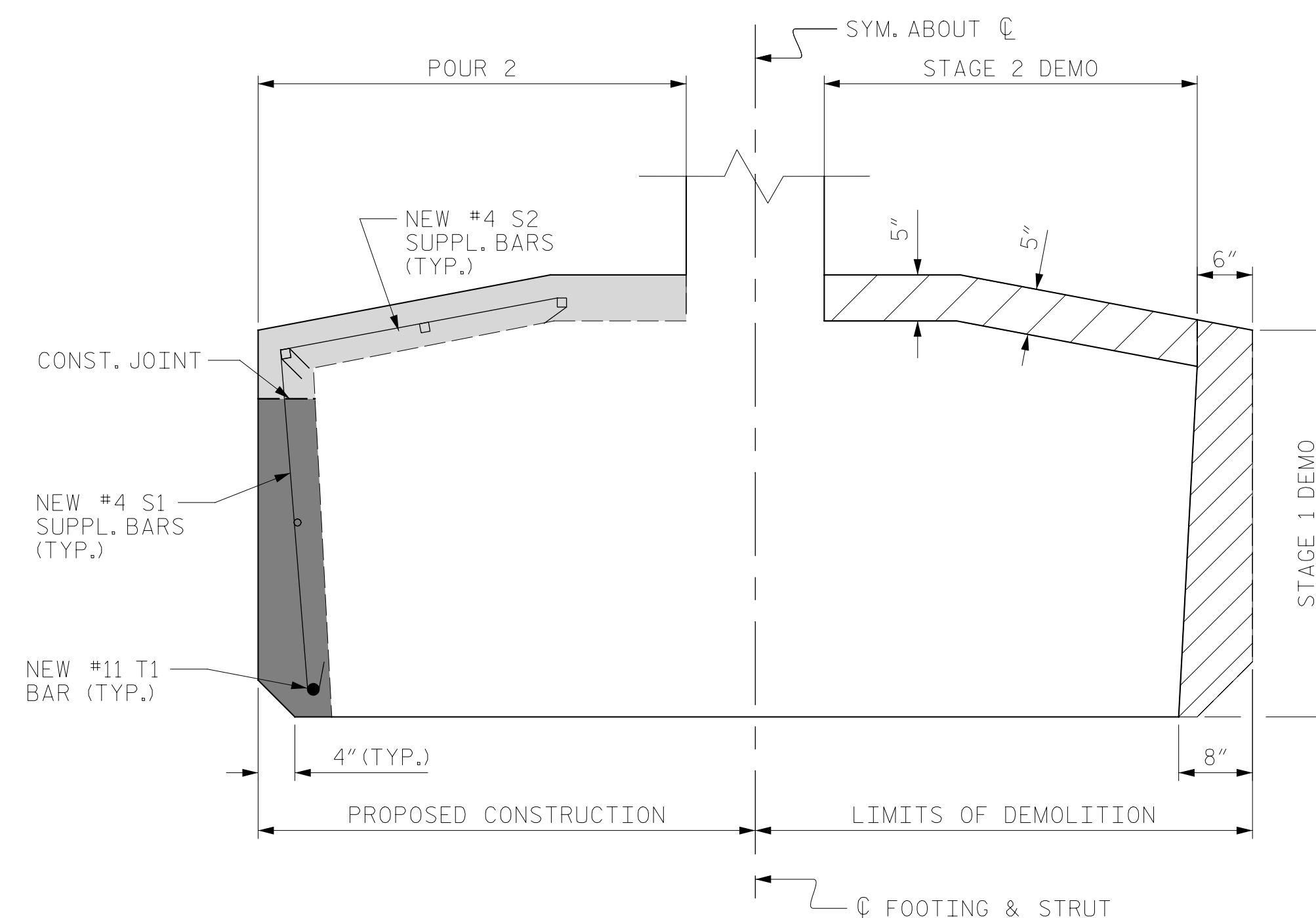
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



SECTION E-E  
FOOTING RESTORATION

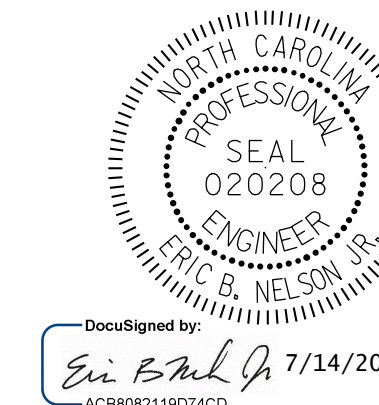
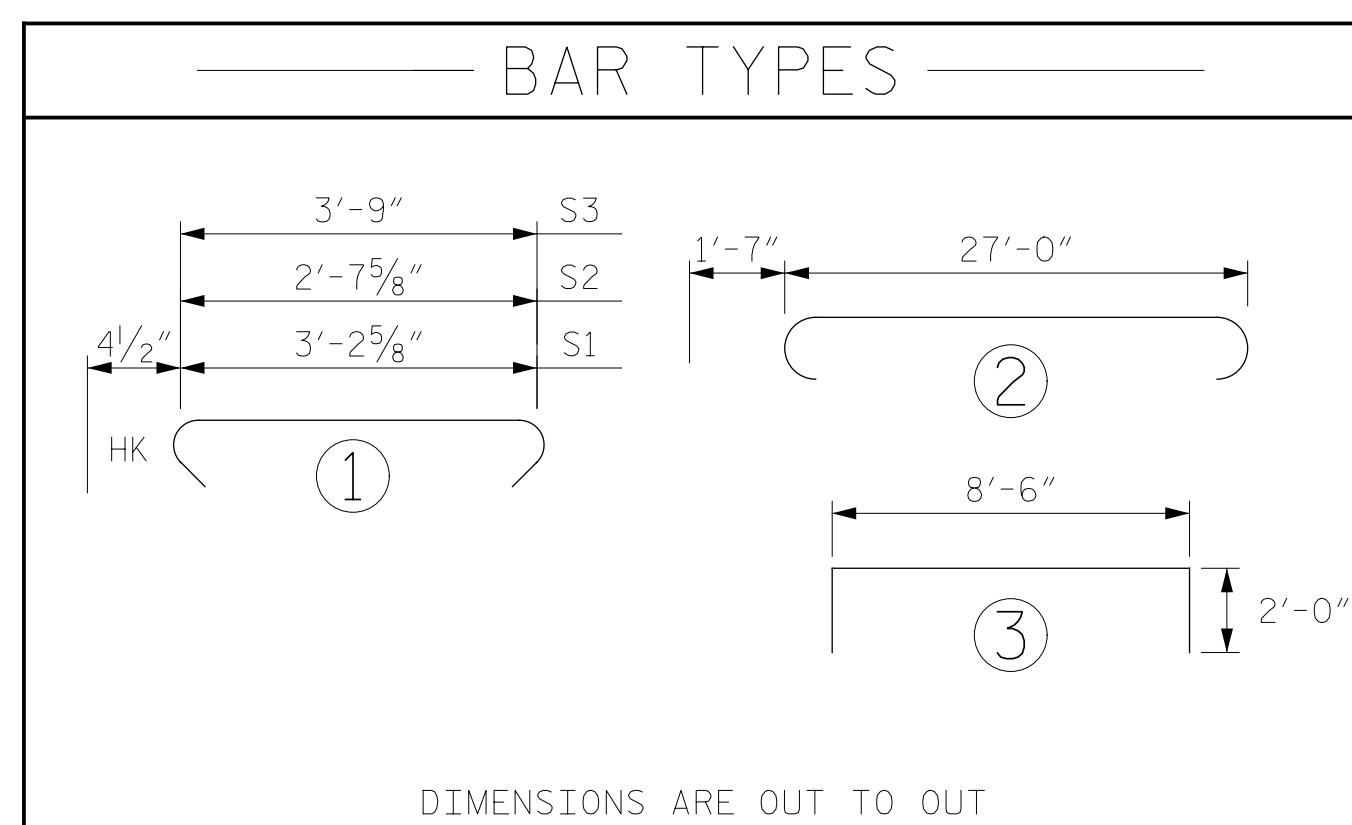
- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

SHEET 2 OF 3

**FOOTING BILL OF MATERIAL (REQUIRED PER BENT)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	44	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	117 LBS
S2	44	#4	1	3'-4 <sup>5</sup> / <sub>8</sub> "	100 LBS
S3	6	#4	1	4'-6"	19 LBS
S4	6	#6	3	12'-6"	113 LBS
T1	2	#11	2	30'-2"	312 LBS
REINFORCING STEEL					670 LBS
CLASS AA CONCRETE					8.3 C.Y.



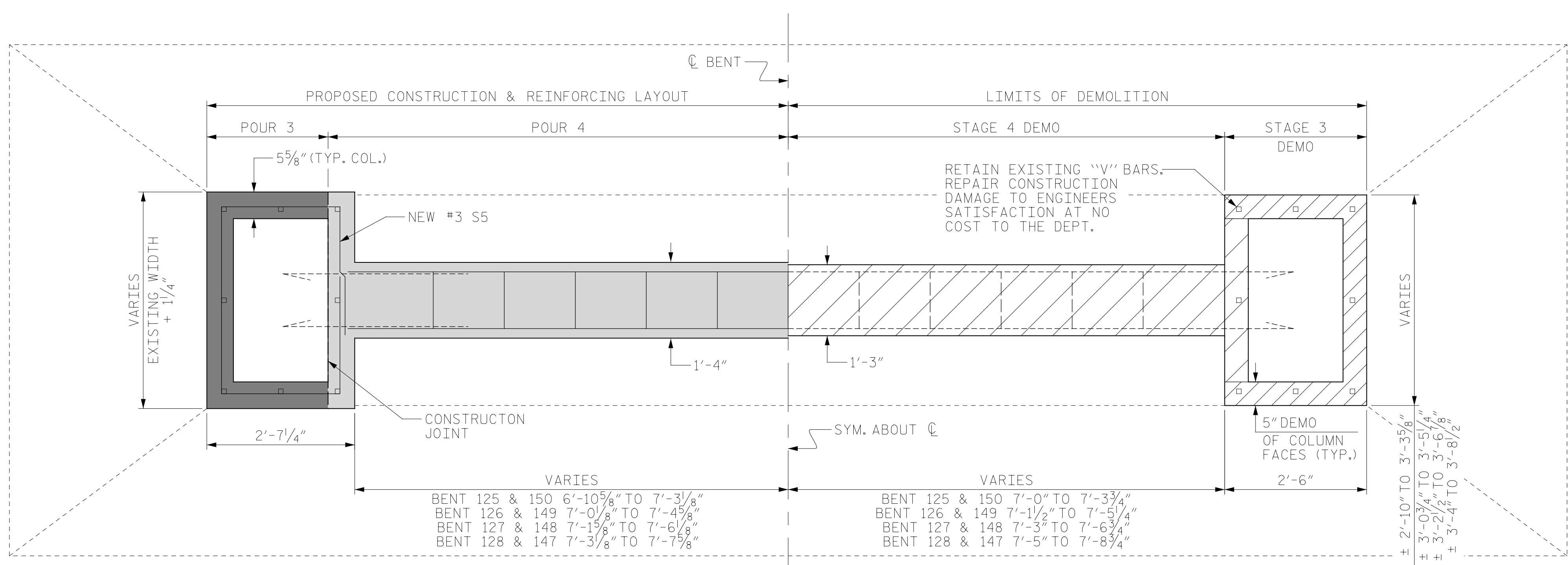
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

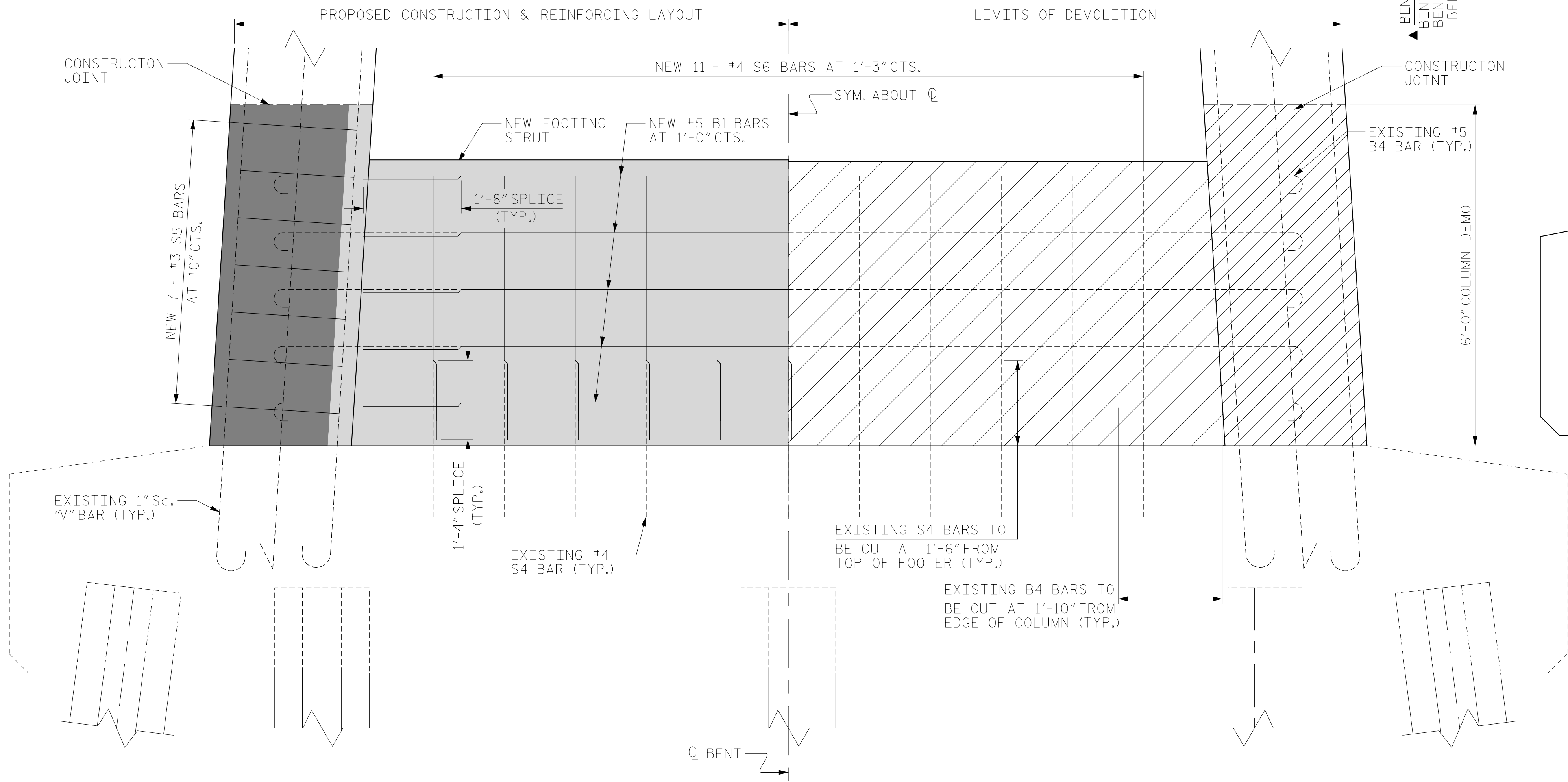
**PILE FOOTING RESTORATION**  
 BENT 125 THRU 128 AND 147 THRU 150

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-341
1			3			TOTAL SHEETS
2			4			355

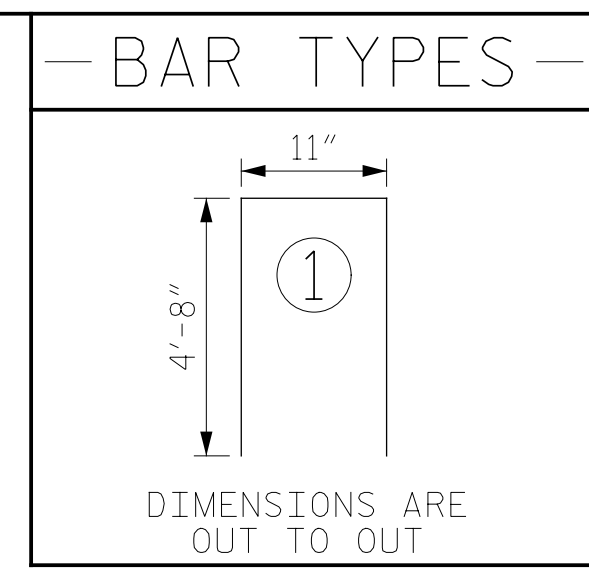
DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019



PLAN  
COLUMN & STRUT RESTORATION



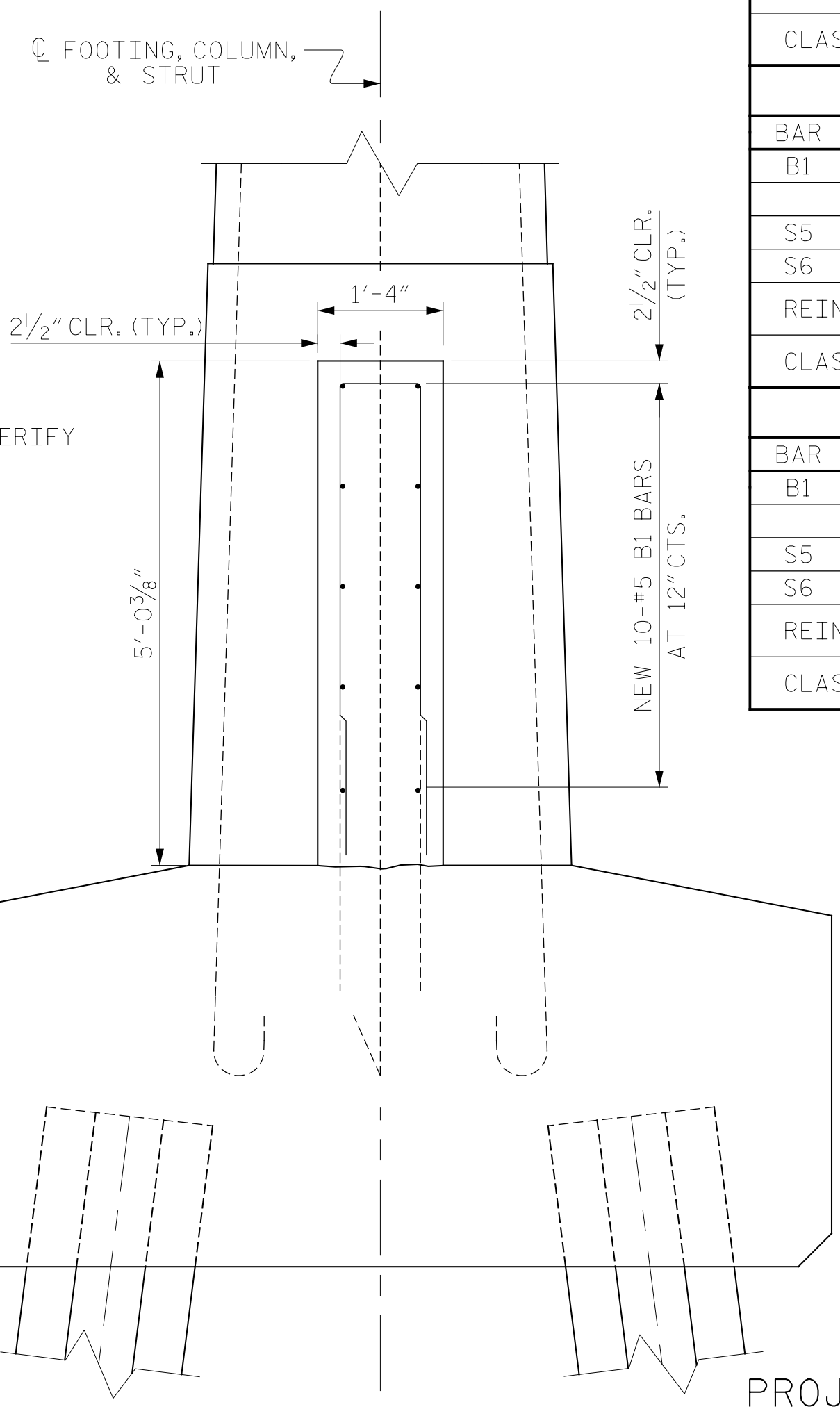
ELEVATION  
COLUMN & STRUT RESTORATION



NOTES:

\*FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BENT CHART.

FIELD CUT AS REQUIRED FOR FIT.



SIDE VIEW  
PROPOSED COLUMN & STRUT

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4



STRUT & COLUMN BILL OF MATERIAL

BENT 125 & 150

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	14'-4"	149 LBS
S5	14	#3	*STR.	11'-2"	60 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					314 LBS
CLASS AA CONCRETE					5.5 C.Y.

BENT 126 & 149

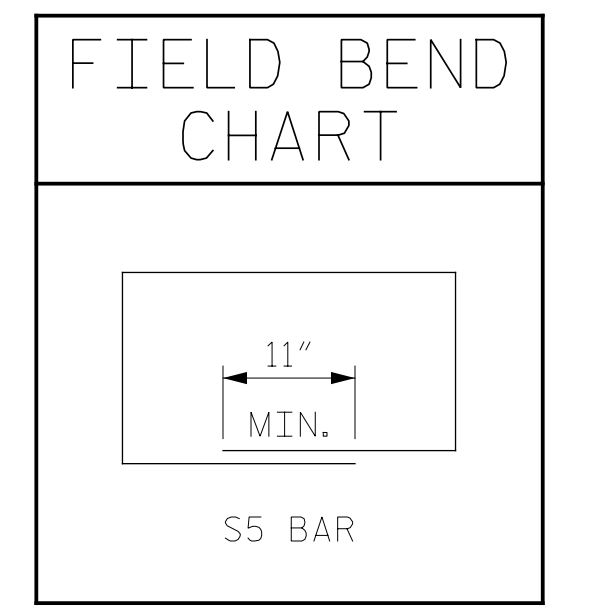
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	14'-6"	151 LBS
S5	14	#3	*STR.	11'-5"	61 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					317 LBS
CLASS AA CONCRETE					5.7 C.Y.

BENT 127 & 148

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	14'-10"	155 LBS
S5	14	#3	*STR.	11'-8"	62 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					321 LBS
CLASS AA CONCRETE					5.8 C.Y.

BENT 128 & 147

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	15'-2"	158 LBS
S5	14	#3	*STR.	11'-11"	64 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL					327 LBS
CLASS AA CONCRETE					6.0 C.Y.



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

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

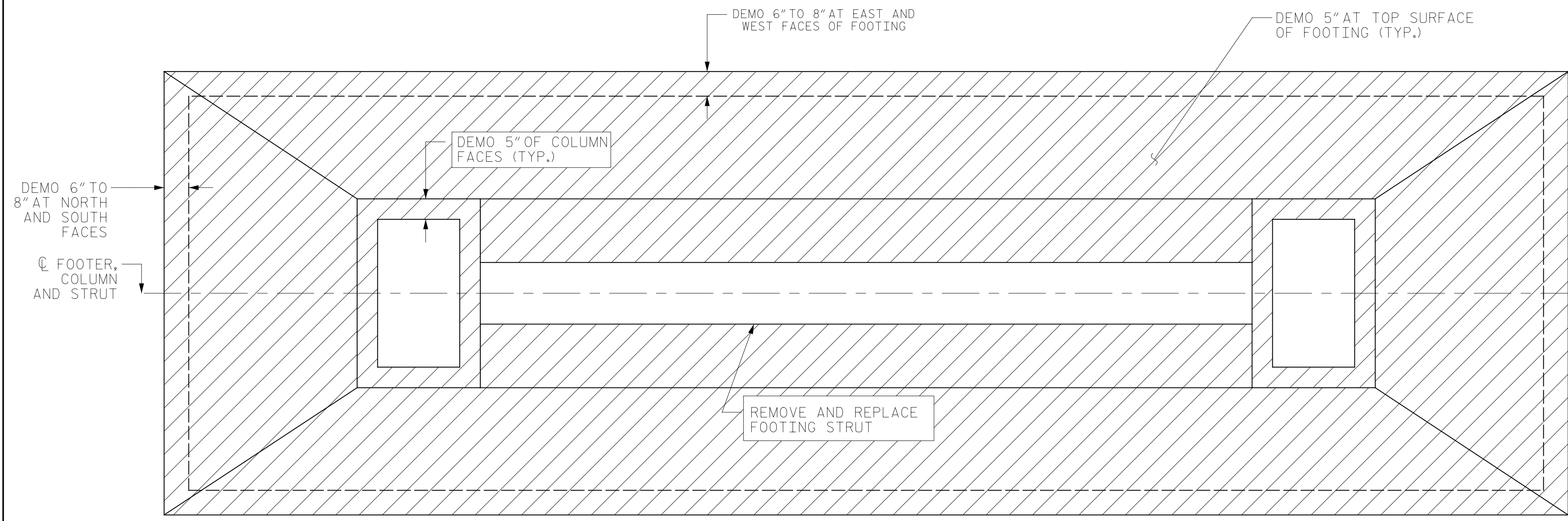
PILE FOOTING RESTORATION  
BENT 125 THRU 128 AND 147 THRU 150

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-342
1			3			TOTAL SHEETS
2			4			355

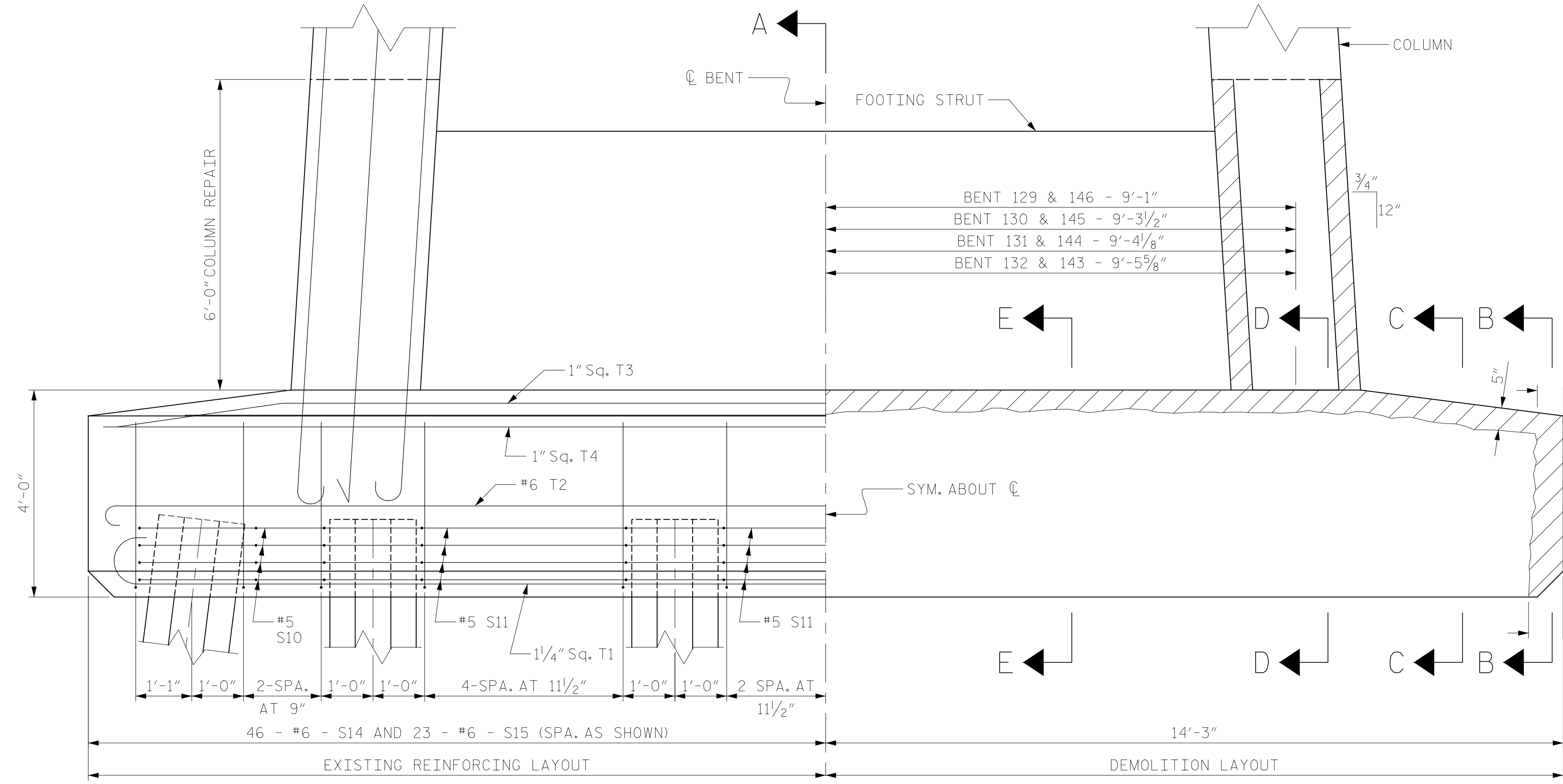
DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019



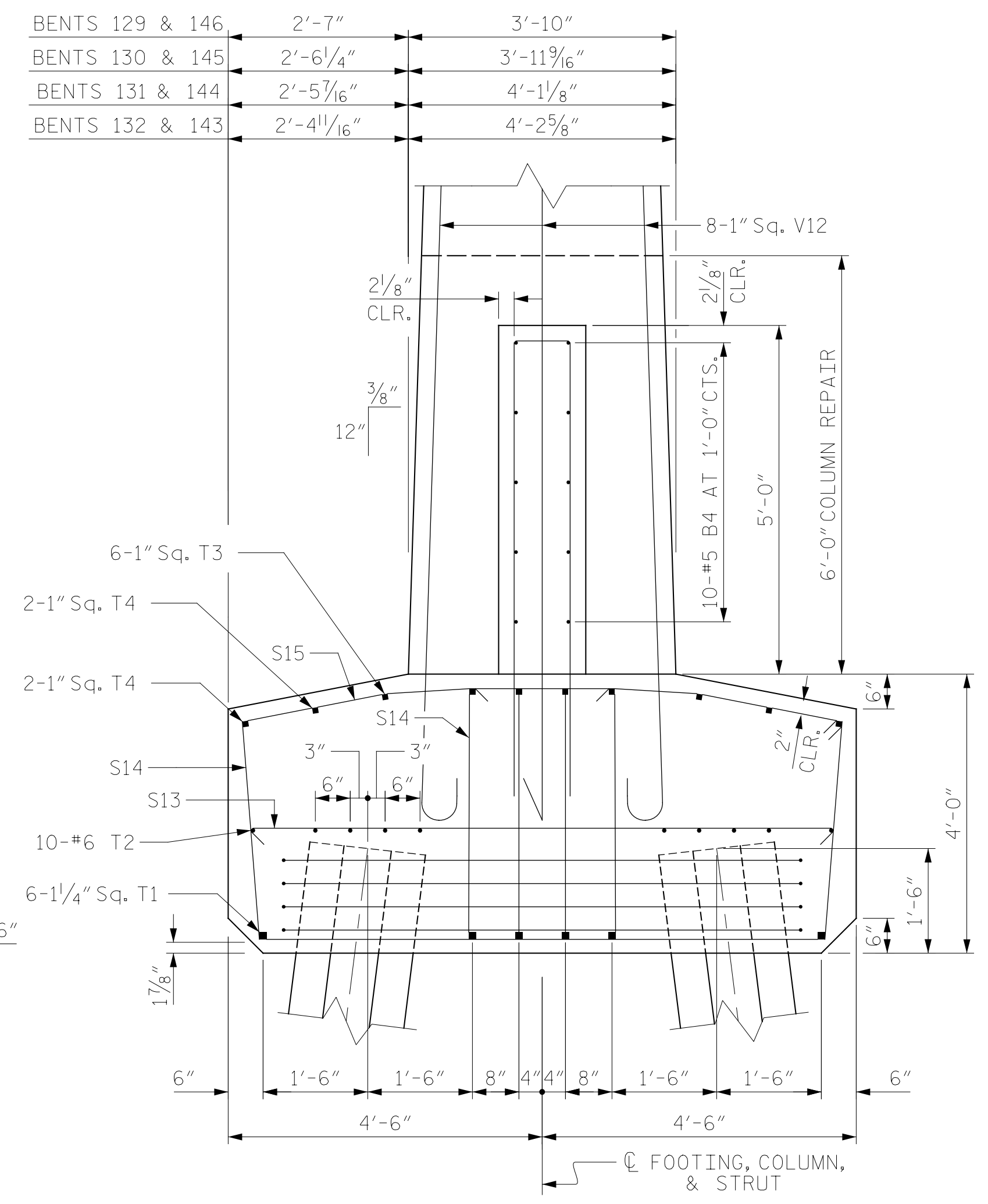
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION



FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG  $\text{\textcircled{C}}$  FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION



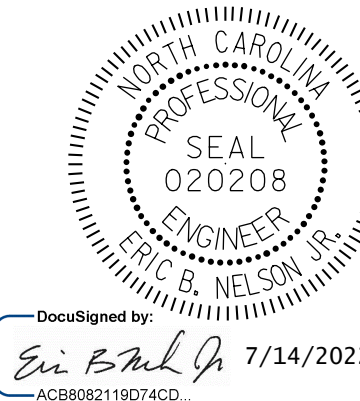
SECTION A-A  
(EXISTING REINFORCING SHOWN,  
SEE OTHER SECTIONS FOR  
DEMOLITION AND PROPOSED  
REINFORCING)

- NOTES
- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
  - 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUPS EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #5 S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
  - 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
  - 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

BENTS 129 & 146	2'-7"	3'-10"
BENTS 130 & 145	2'-6 <sup>1</sup> / <sub>4</sub> "	3'-11 <sup>9</sup> / <sub>16</sub> "
BENTS 131 & 144	2'-5 <sup>7</sup> / <sub>16</sub> "	4'-1 <sup>1</sup> / <sub>8</sub> "
BENTS 132 & 143	2'-4 <sup>11</sup> / <sub>16</sub> "	4'-2 <sup>5</sup> / <sub>8</sub> "

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

SHEET 1 OF 3



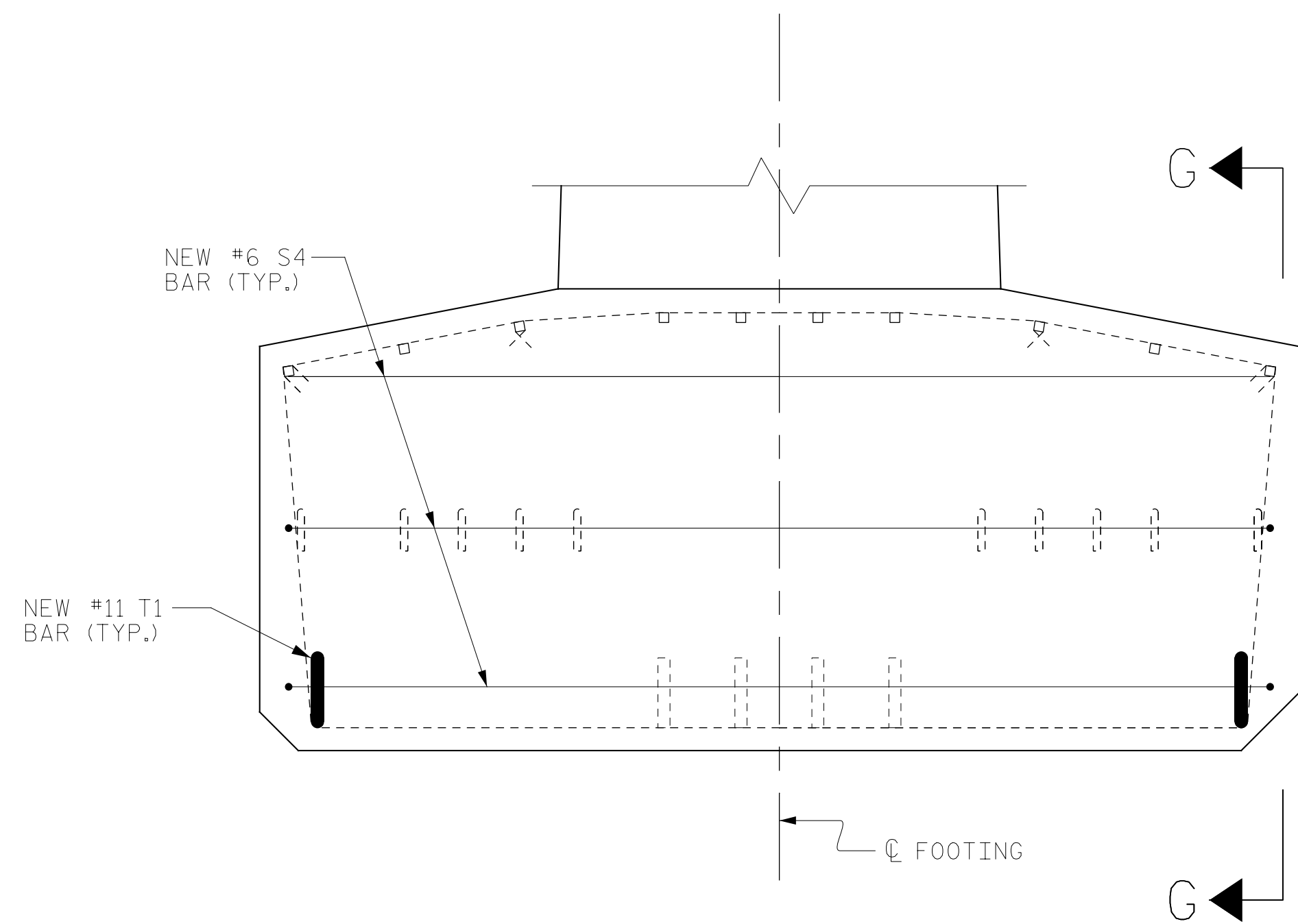
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
PILE FOOTING RESTORATION  
BENT 129 THRU 132  
AND 143 THRU 146

DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019

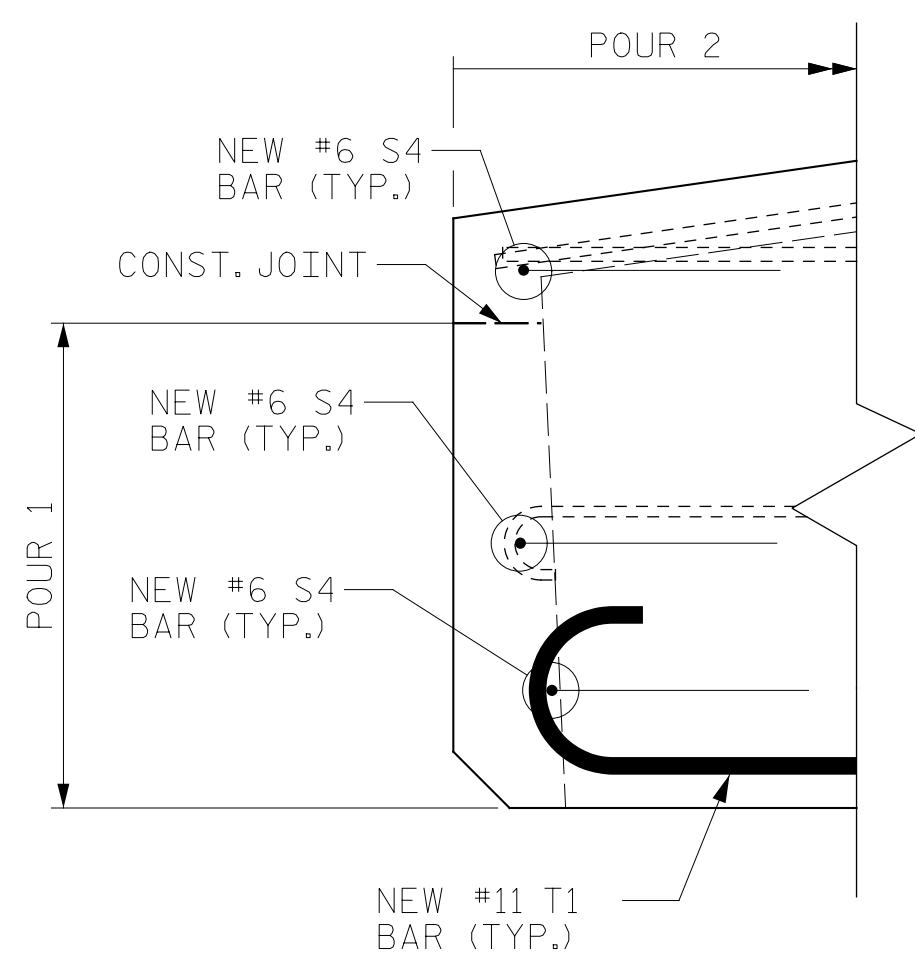


DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

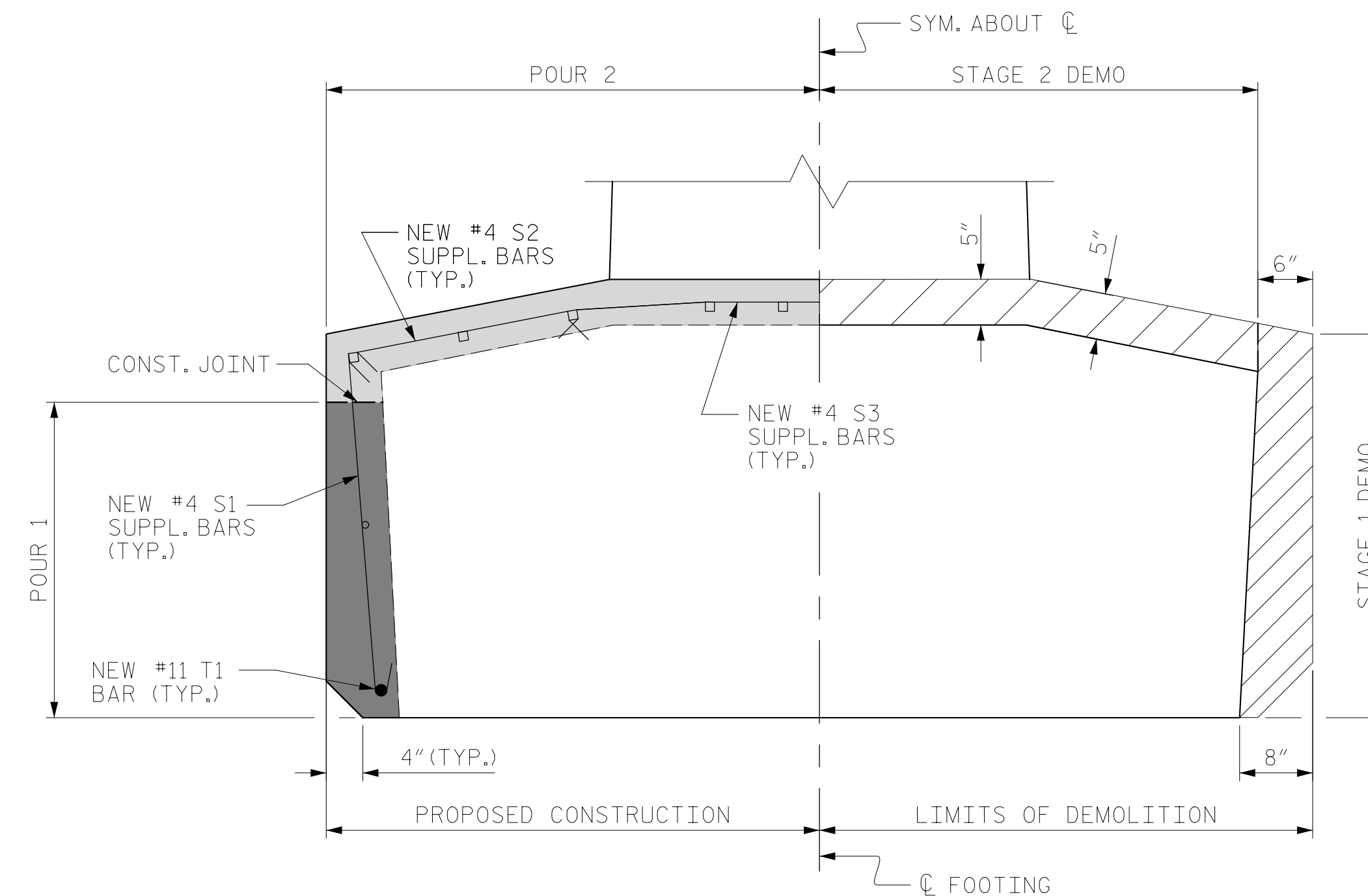
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-343
1			3			TOTAL SHEETS
2			4			355



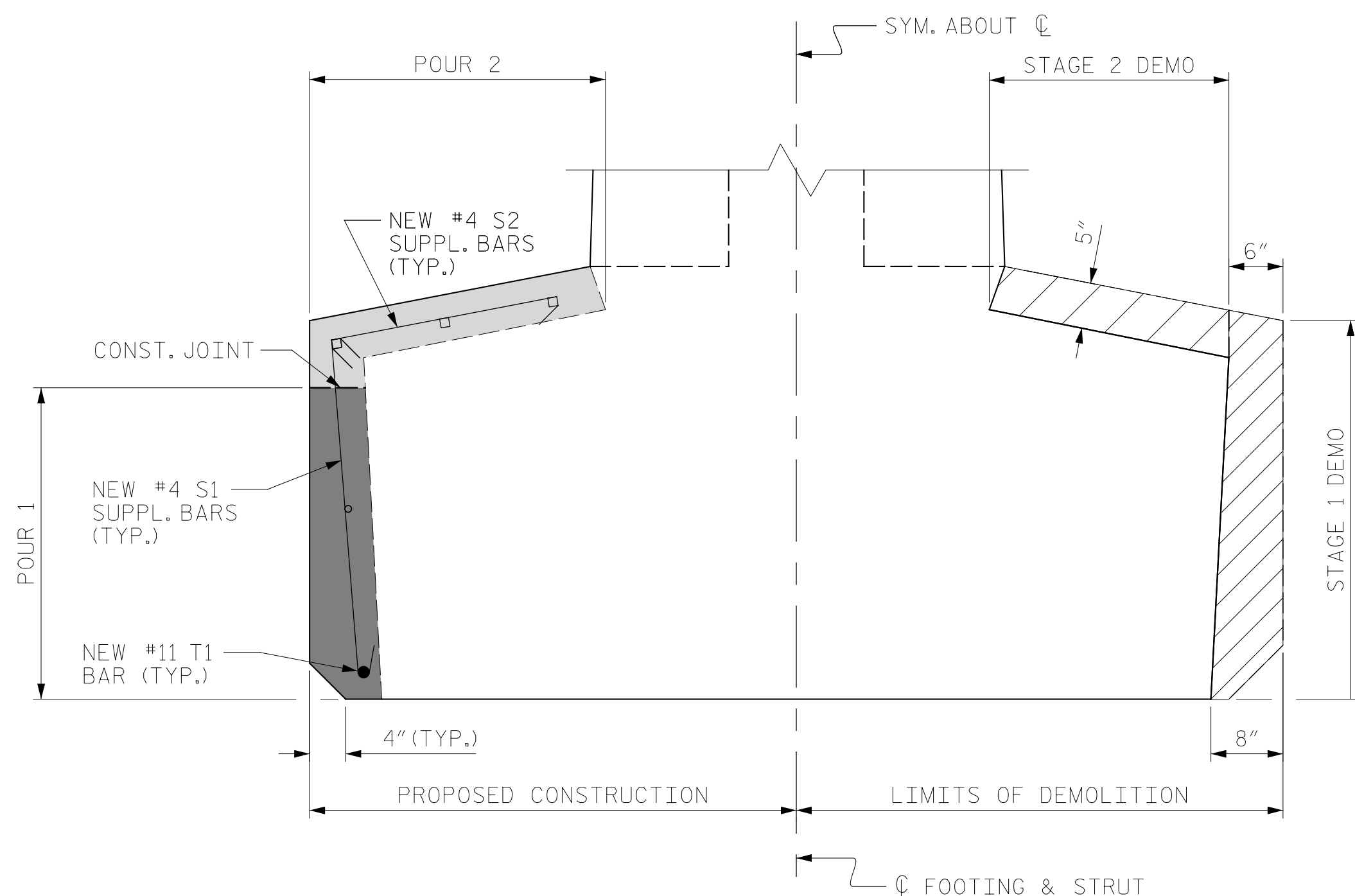
SECTION B-B  
FOOTING RESTORATION



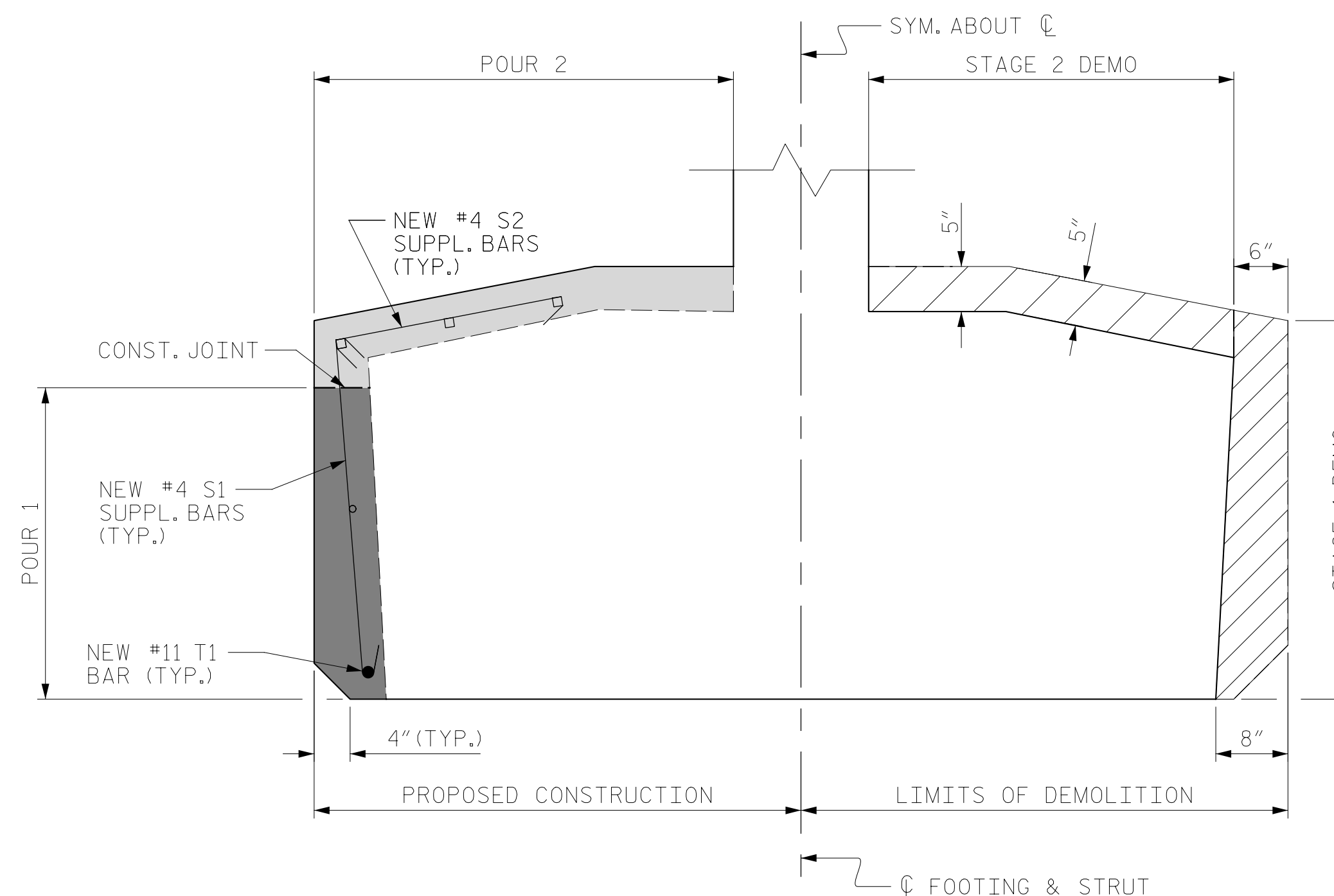
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



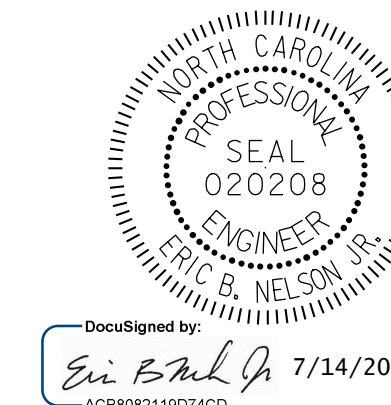
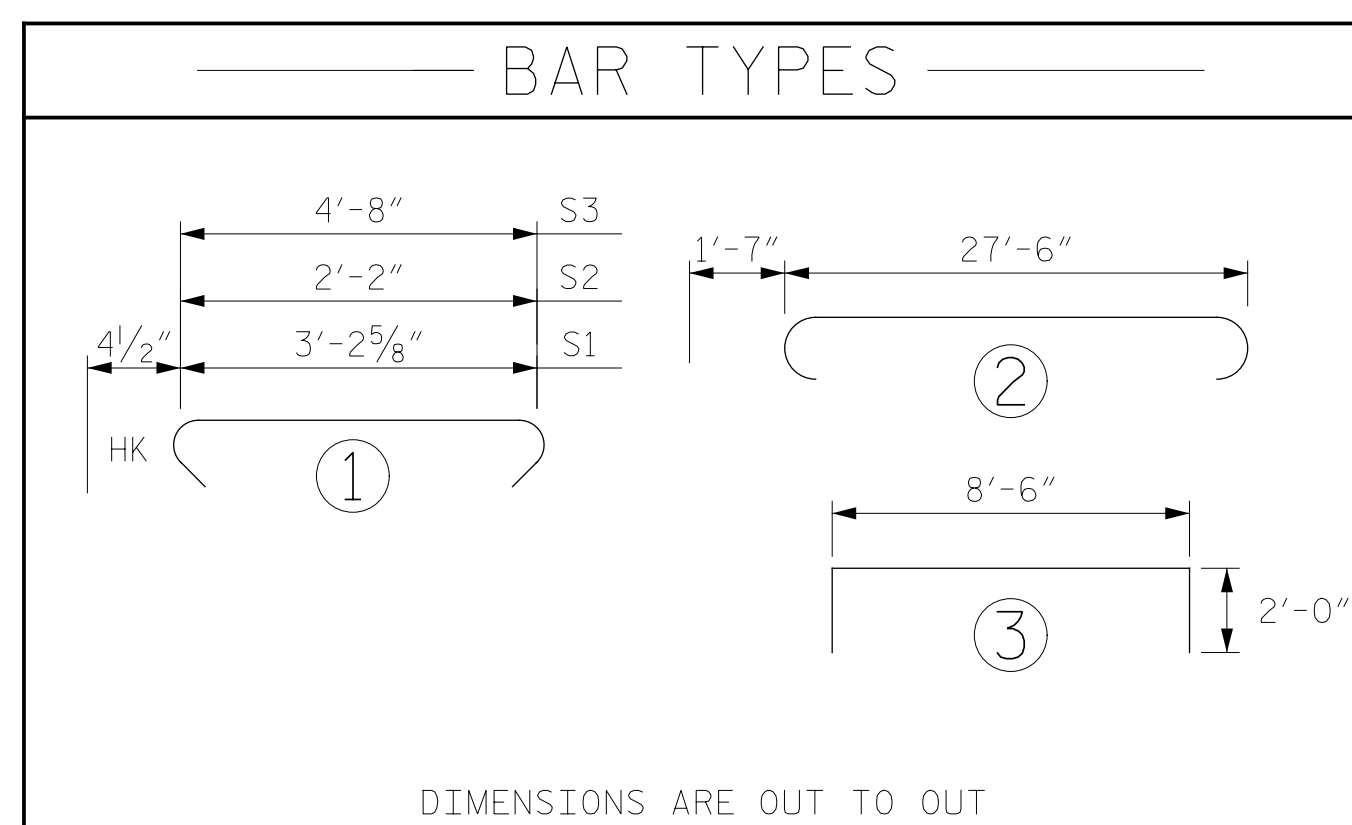
SECTION E-E  
FOOTING RESTORATION

- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

SHEET 2 OF 3

FOOTING BILL OF MATERIAL (REQUIRED PER BENT)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	46	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	123 LBS
S2	46	#4	1	3'-8"	114 LBS
S3	6	#4	1	5'-5"	22 LBS
S4	6	#6	3	12'-6"	113 LBS
T1	2	#11	2	30'-8"	326 LBS
REINFORCING STEEL					698 LBS
CLASS AA CONCRETE					8.5 C.Y.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

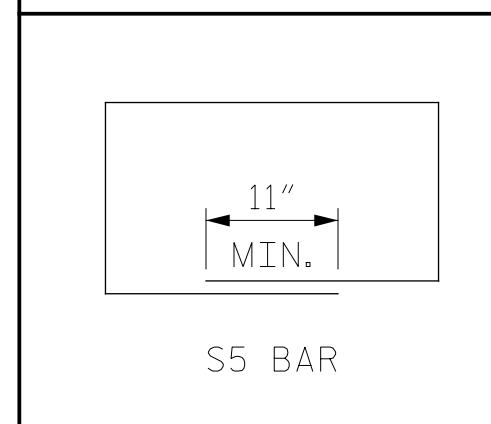
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE FOOTING RESTORATION BENT 129 THRU 132 AND 143 THRU 146					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S-344
TOTAL SHEETS	355

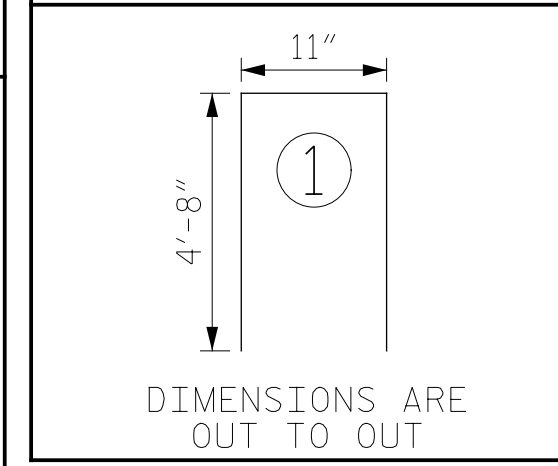
DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019



**FIELD BEND CHART**

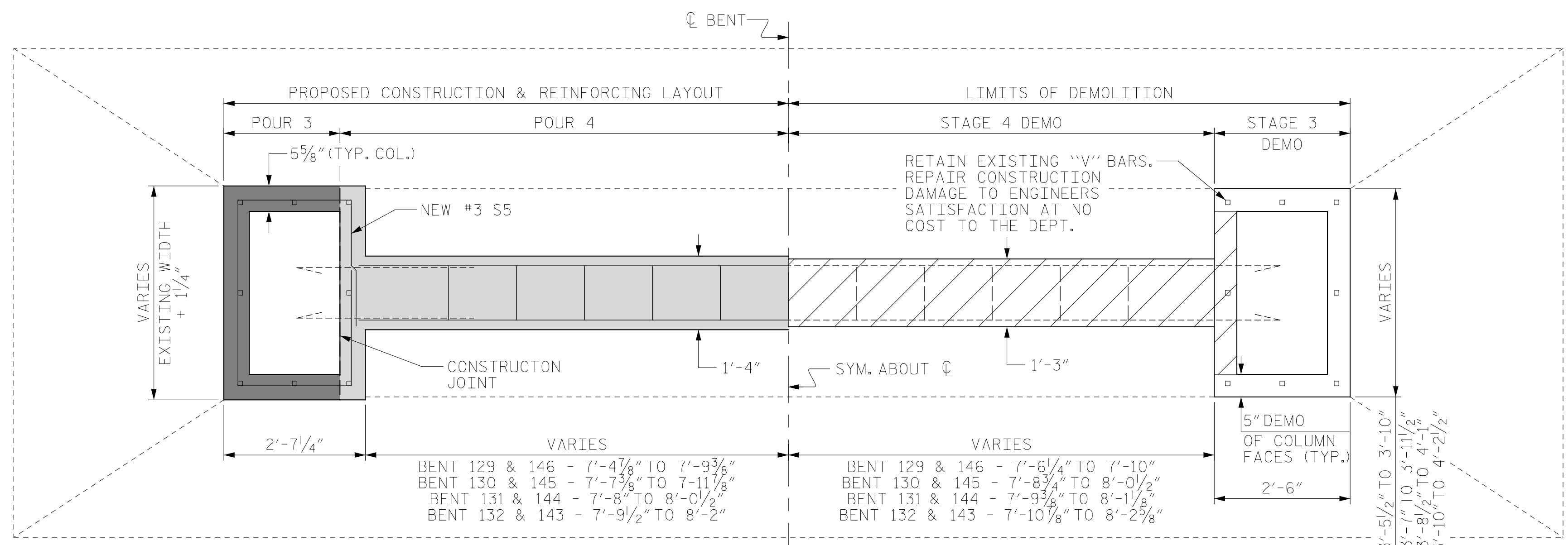


**- BAR TYPES -**

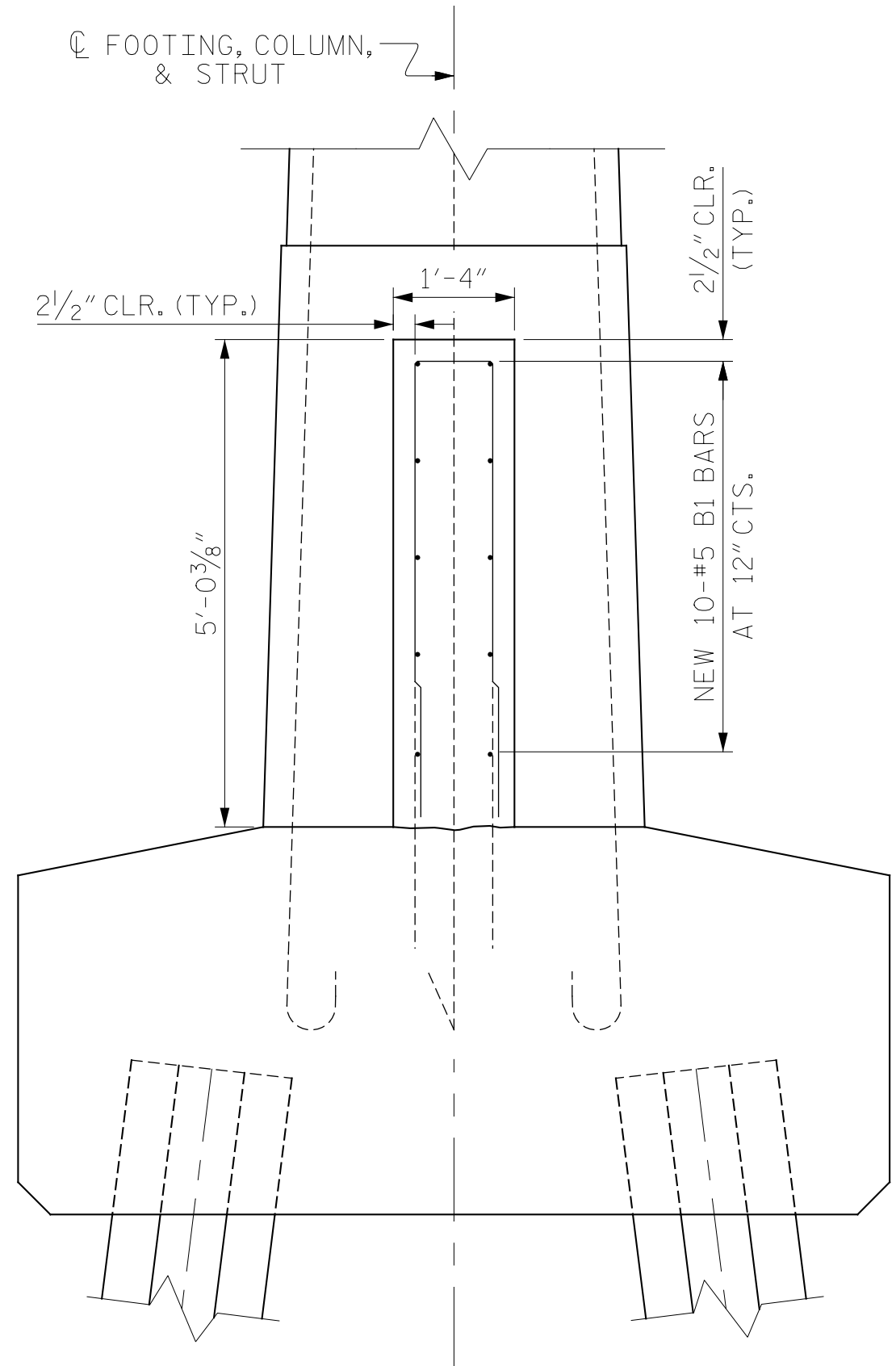


**STRUT & COLUMN BILL OF MATERIAL**

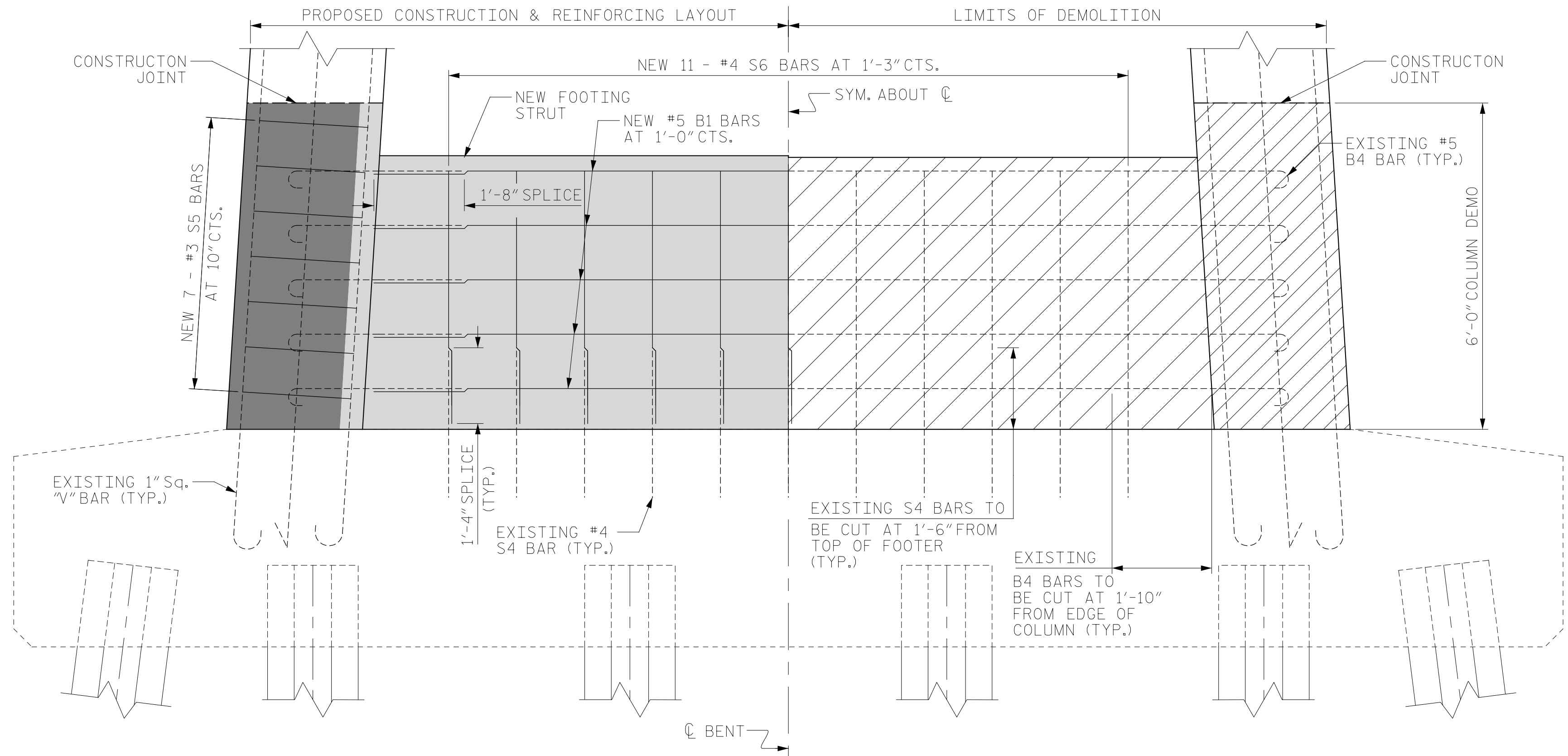
BENT 129 & 146					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#5	STR.	15'-4"	160 LBS
S5	14	#3	* STR.	12'-2"	63 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL				330 LBS	
CLASS AA CONCRETE				6.0 C.Y.	
BENT 130 & 145					
B1	10	#5	STR.	15'-8"	163 LBS
S5	14	#3	* STR.	12'-5"	66 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL				334 LBS	
CLASS AA CONCRETE				6.1 C.Y.	
BENT 131 & 144					
B1	10	#5	STR.	15'-10"	165 LBS
S5	14	#3	* STR.	12'-8"	68 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL				338 LBS	
CLASS AA CONCRETE				6.2 C.Y.	
BENT 132 & 143					
B1	10	#5	STR.	16'-2"	168 LBS
S5	14	#3	* STR.	12'-11"	69 LBS
S6	11	#4	1	14'-3"	105 LBS
REINFORCING STEEL				342 LBS	
CLASS AA CONCRETE				6.3 C.Y.	



**PLAN**  
COLUMN & STRUT RESTORATION

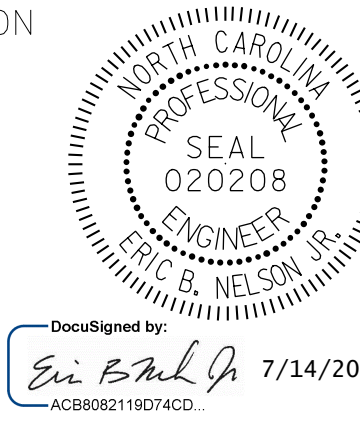


**SIDE VIEW**  
PROPOSED COLUMN & STRUT



**ELEVATION**  
COLUMN & STRUT RESTORATION

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4



**NOTES:**  
\*FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BEND CHART.  
FIELD CUT AS REQUIRED FOR FIT.

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

SHEET 3 OF 3  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**PILE FOOTING RESTORATION**  
BENT 129 THRU 132  
AND 143 THRU 146

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-345
1			3			TOTAL SHEETS
2			4			355

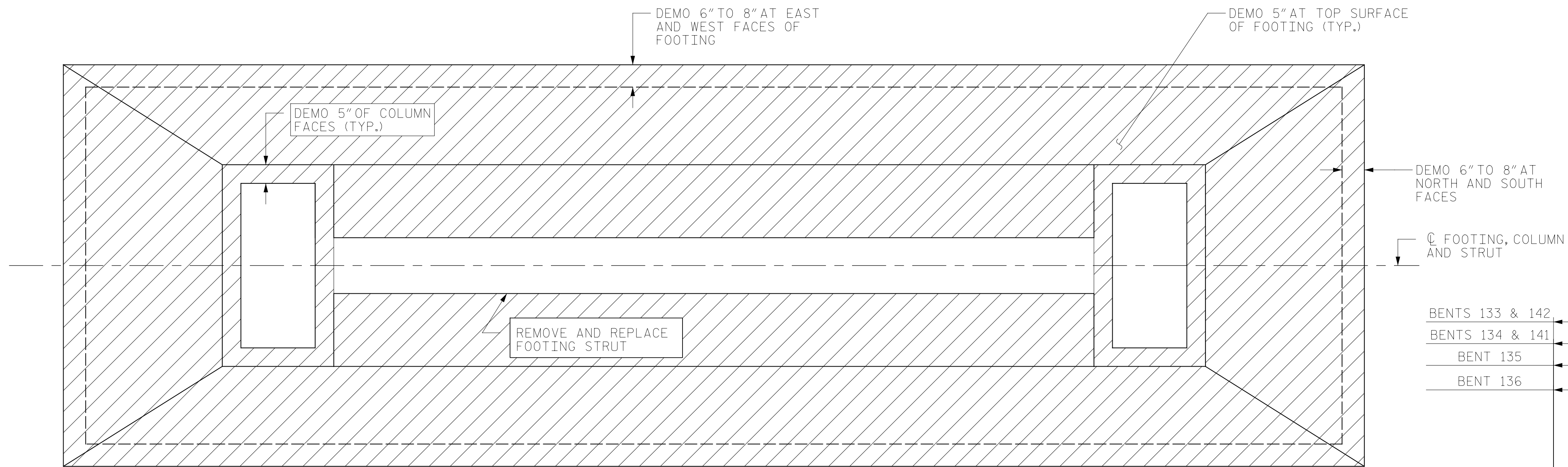
DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

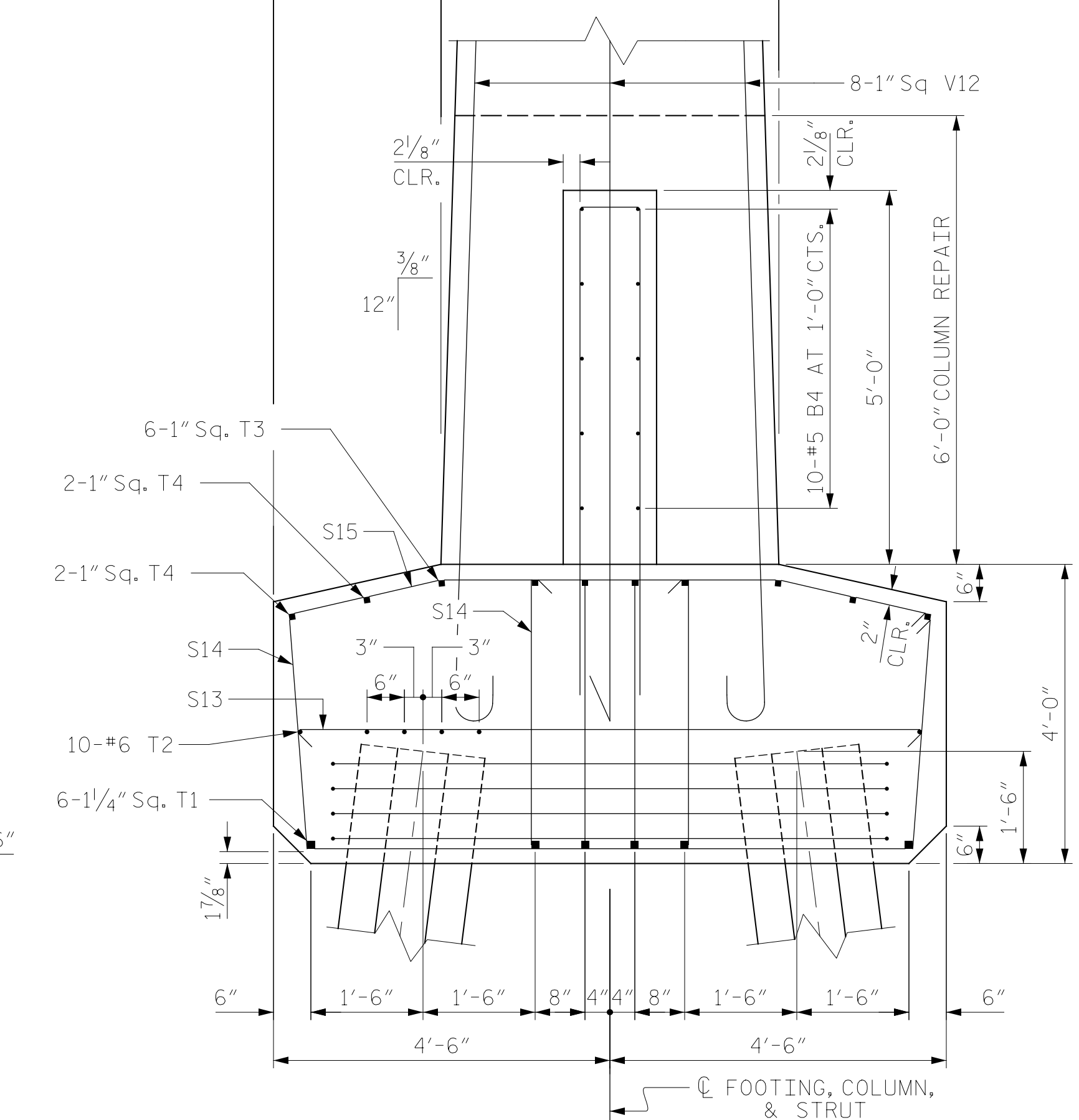
NOTES

- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
- 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUPS EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #5 S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
- 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
- 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.



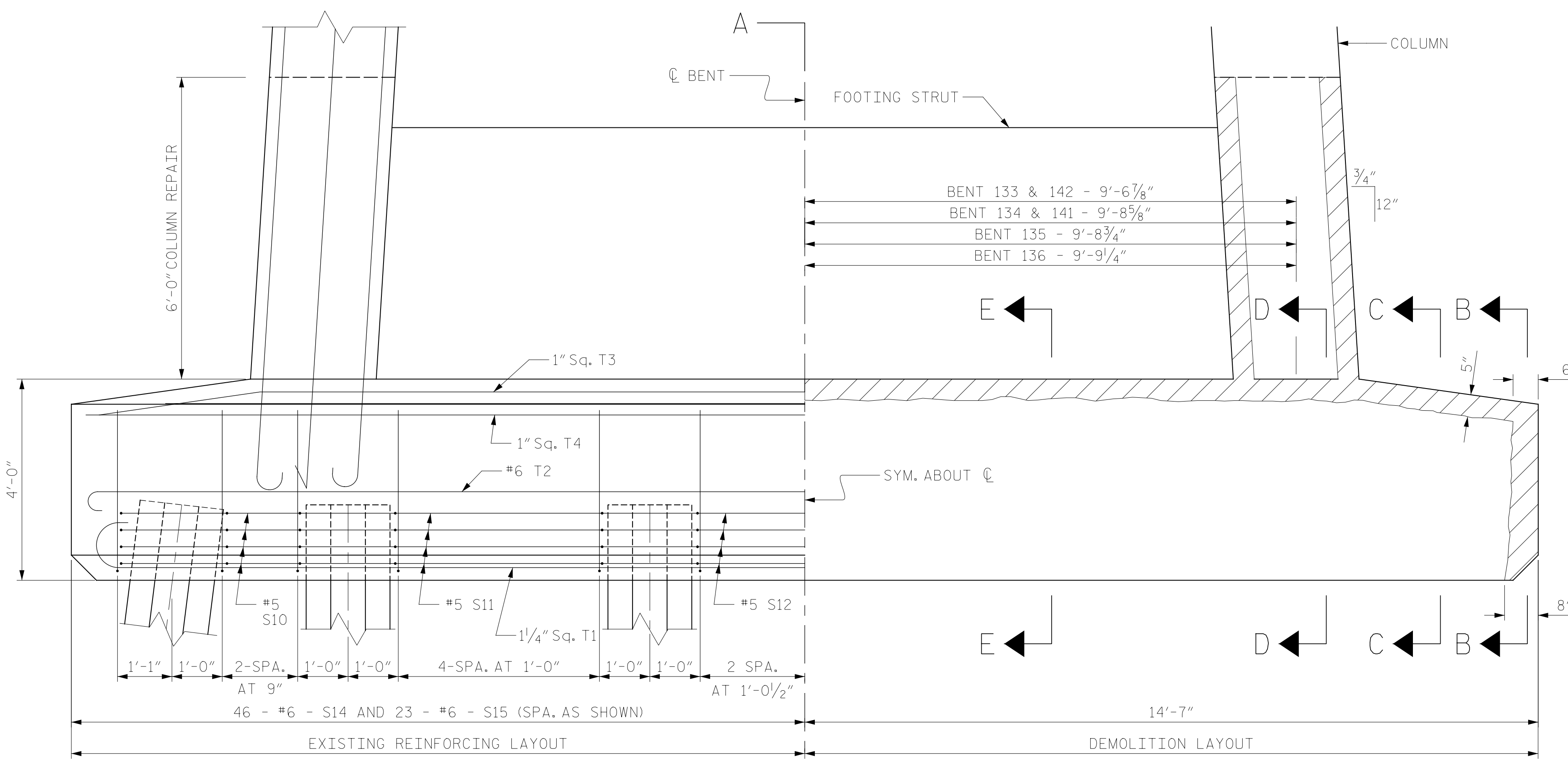
FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION

BENTS 133 & 142	2'-4 <sup>1</sup> / <sub>16</sub> "	4'-3 <sup>7</sup> / <sub>8</sub> "
BENTS 134 & 141	2'-3 <sup>3</sup> / <sub>16</sub> "	4'-5 <sup>5</sup> / <sub>8</sub> "
BENT 135	2'-3 <sup>1</sup> / <sub>8</sub> "	4'-5 <sup>3</sup> / <sub>4</sub> "
BENT 136	2'-2 <sup>7</sup> / <sub>8</sub> "	4'-6 <sup>1</sup> / <sub>4</sub> "



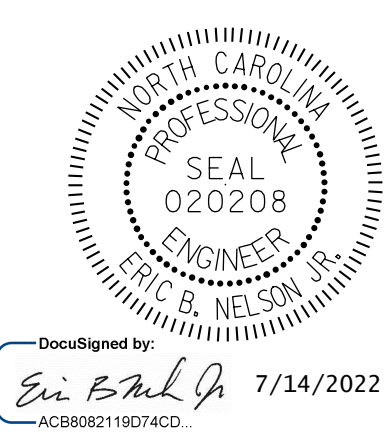
SECTION A-A  
(EXISTING REINFORCING SHOWN, SEE OTHER SECTIONS FOR DEMOLITION AND PROPOSED REINFORCING)

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



FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG C FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION

SHEET 1 OF 3



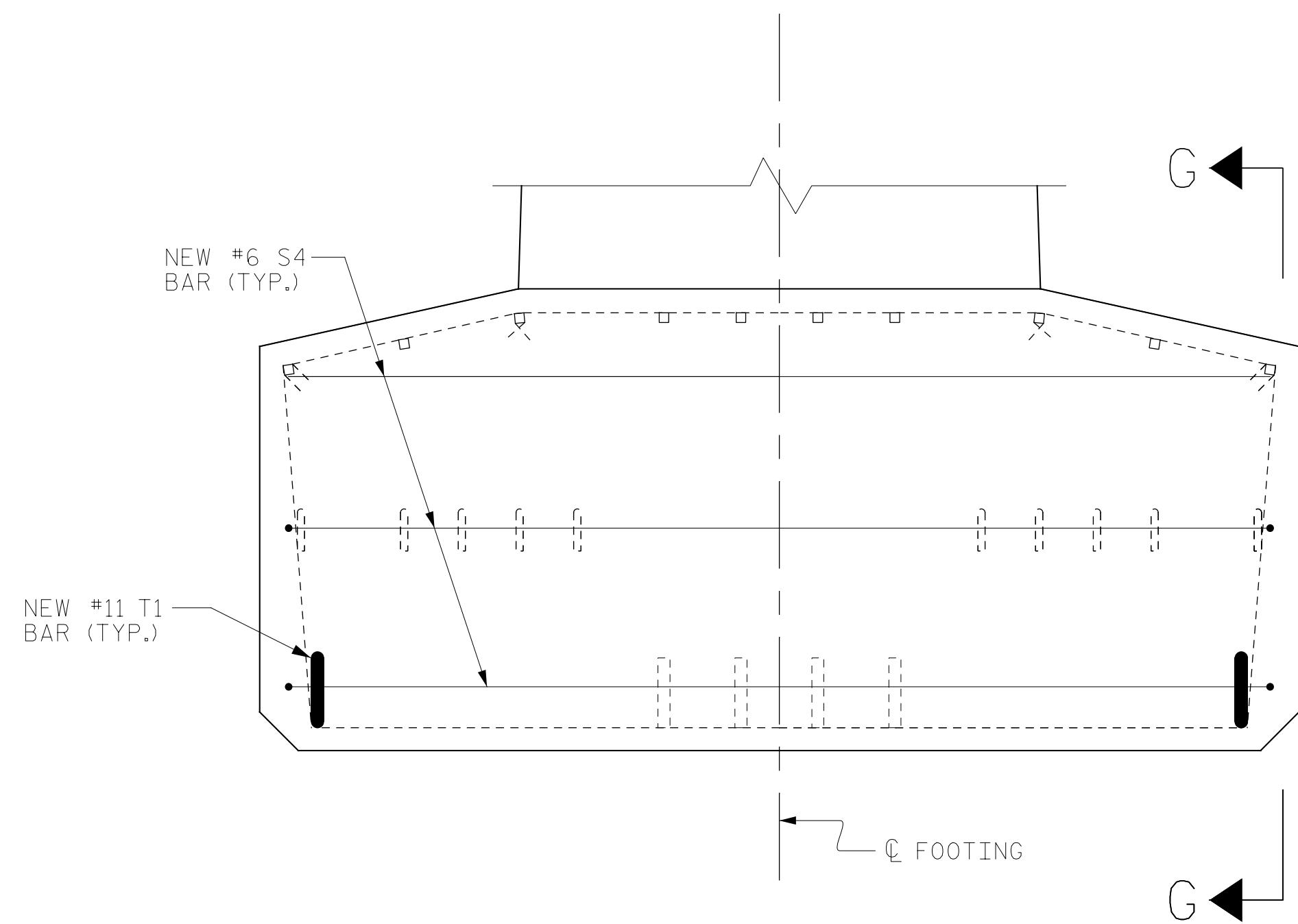
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**PILE FOOTING RESTORATION**  
BENT 133 THRU 136  
141 AND 142

DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019

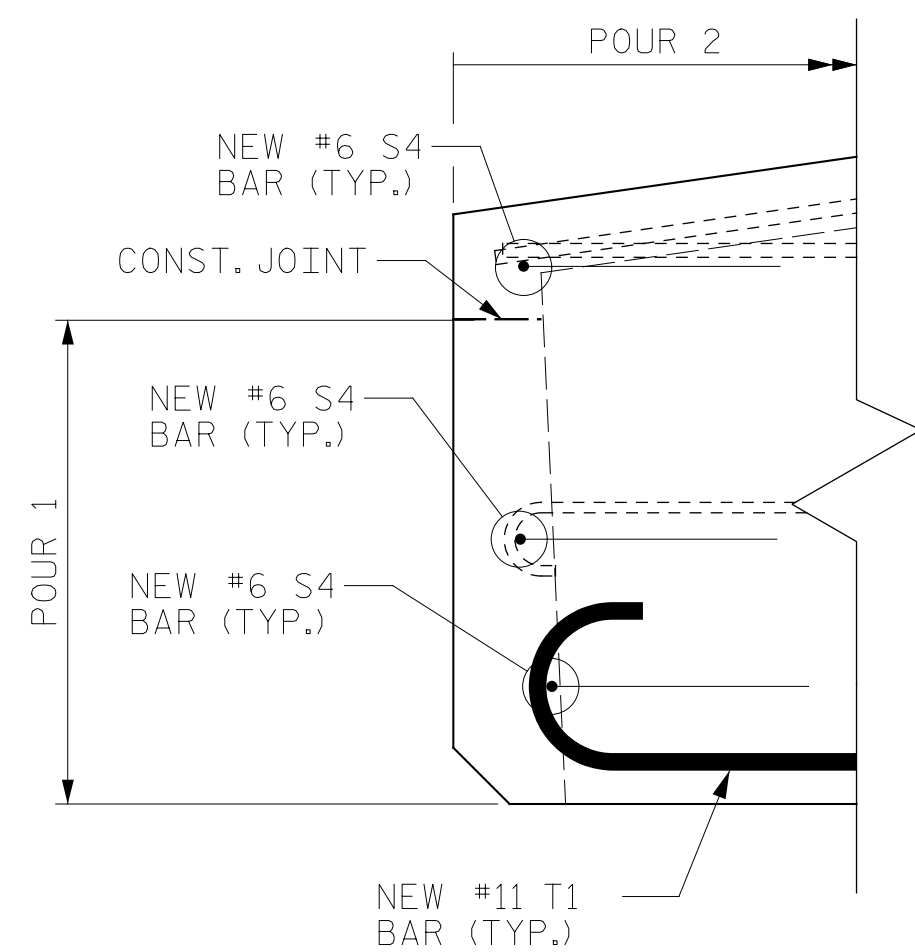


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

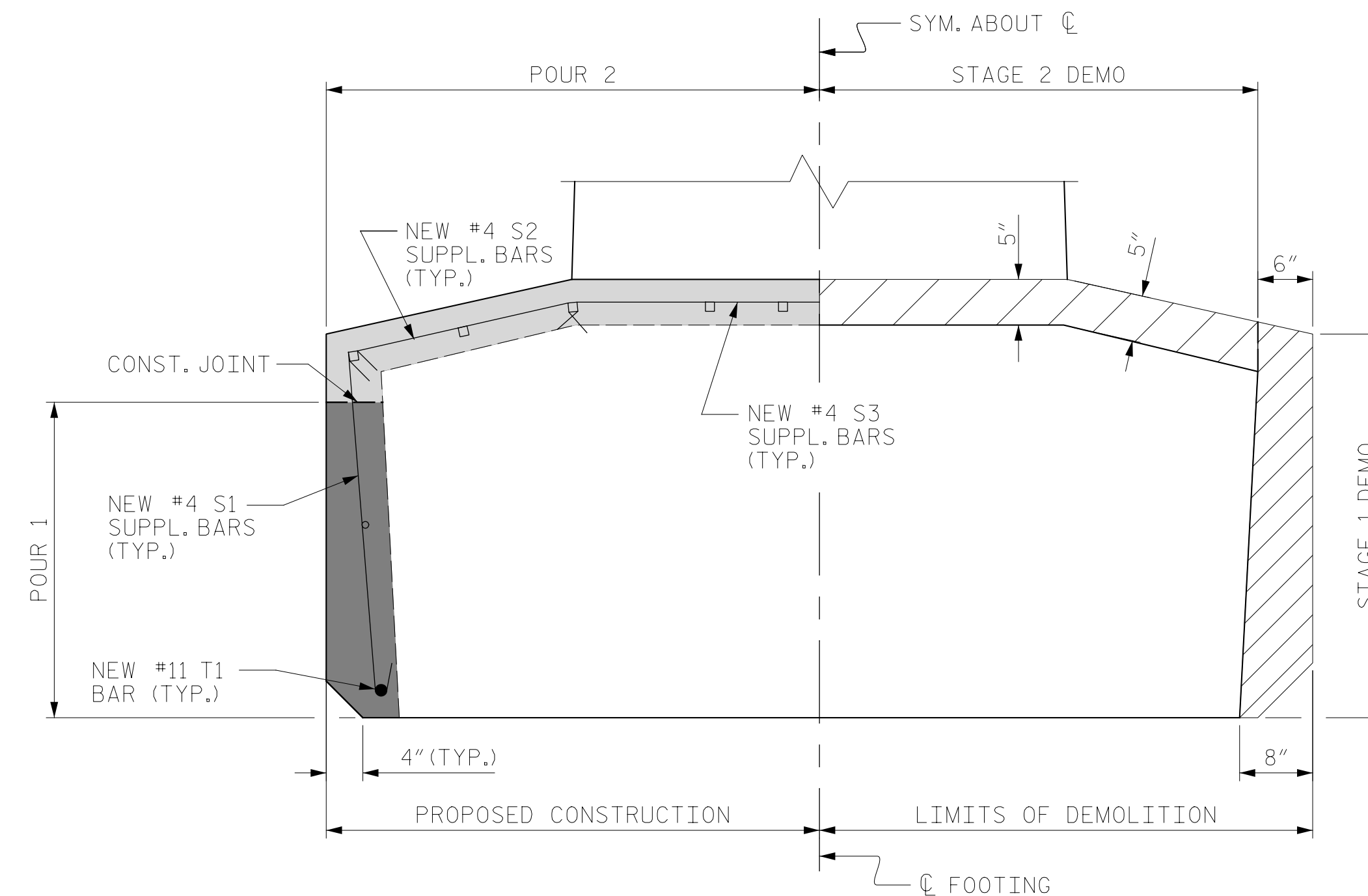
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-346
1			3			TOTAL SHEETS
2			4			355



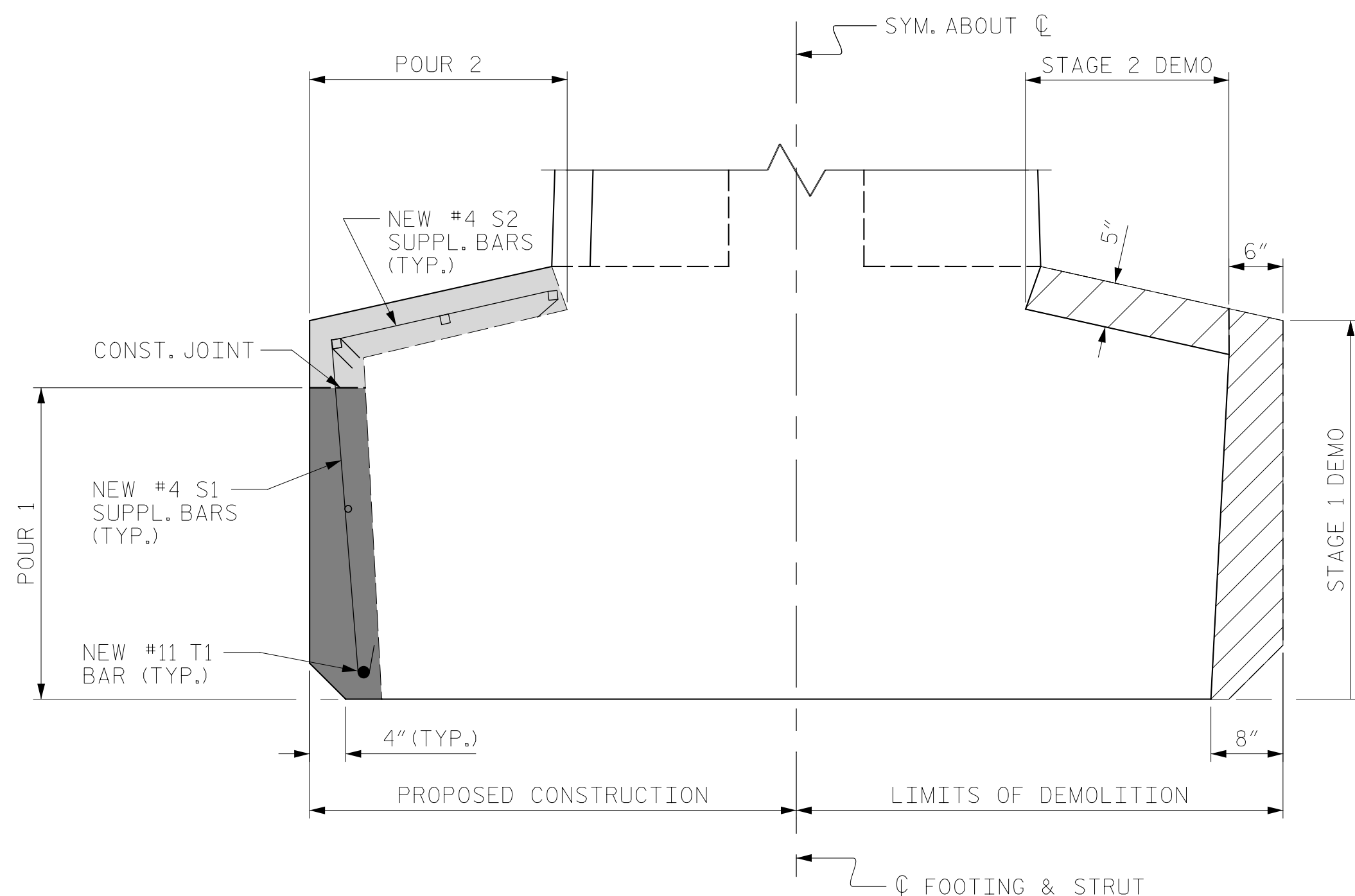
SECTION B-B  
FOOTING RESTORATION



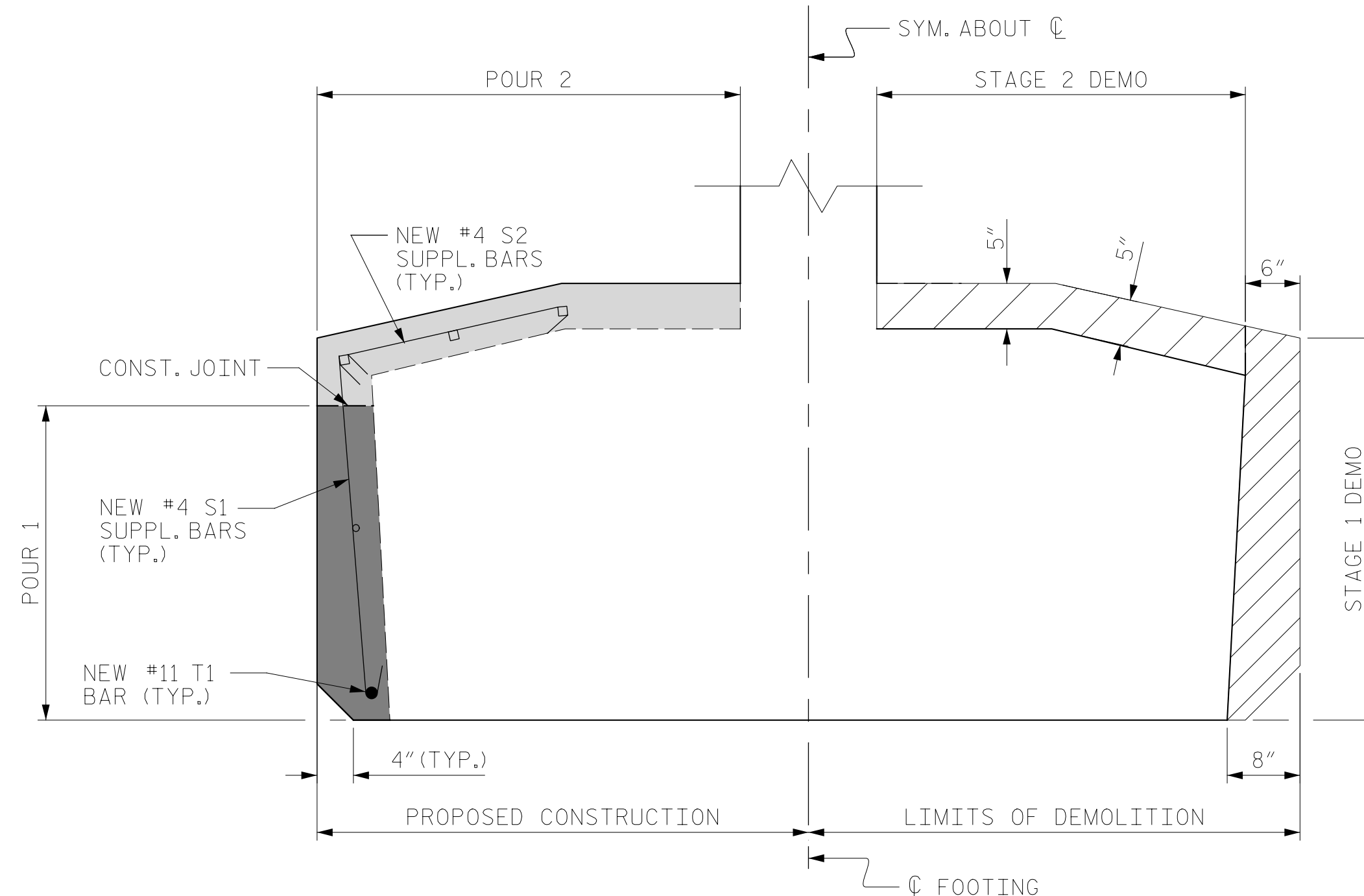
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



SECTION E-E  
FOOTING RESTORATION

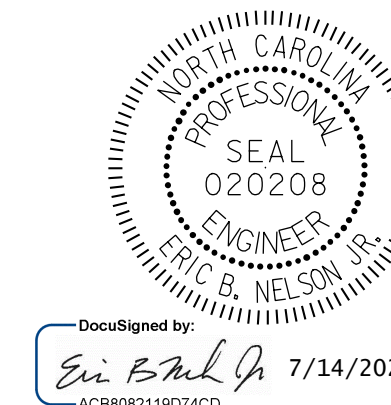
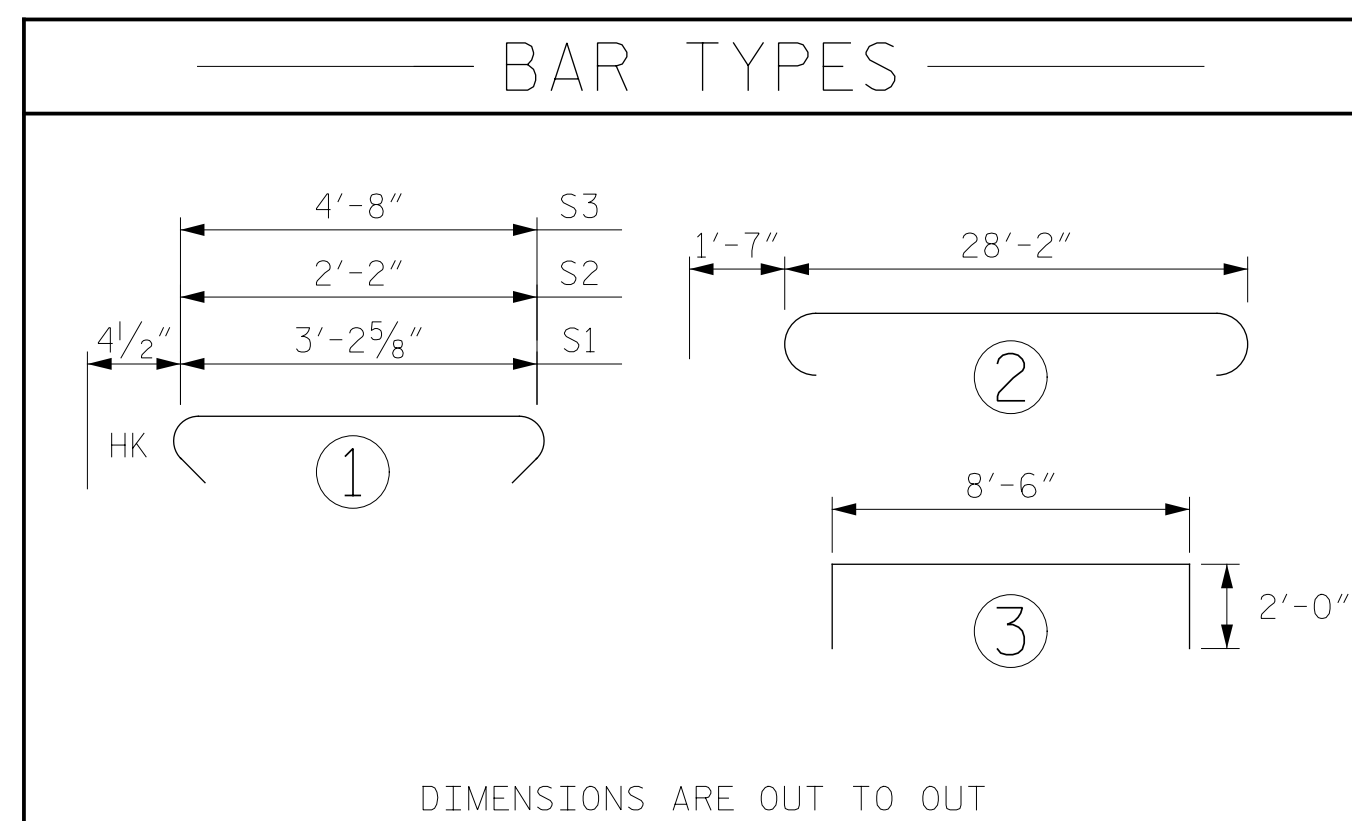
- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

SHEET 2 OF 3

**FOOTING BILL OF MATERIAL (REQUIRED PER BENT)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	46	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	123 LBS
S2	46	#4	1	3'-8"	114 LBS
S3	6	#4	1	5'-5"	22 LBS
S4	6	#6	3	12'-6"	113 LBS
T1	2	#11	2	31'-4"	333 LBS
REINFORCING STEEL					705 LBS
CLASS AA CONCRETE					9.3 C.Y.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

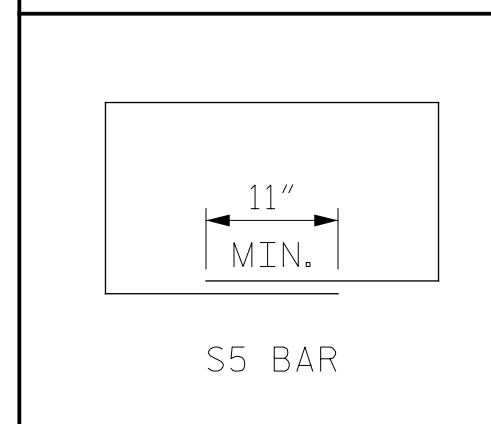
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PILE FOOTING RESTORATION**  
 BENT 133 THRU 136  
 141 AND 142

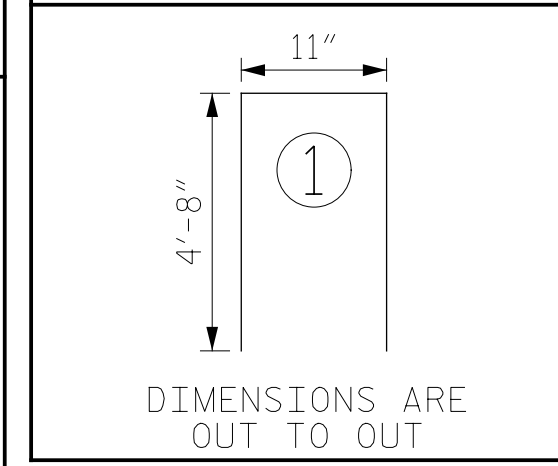
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-347
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

**FIELD BEND CHART**



**- BAR TYPES -**



**STRUT & COLUMN BILL OF MATERIAL**

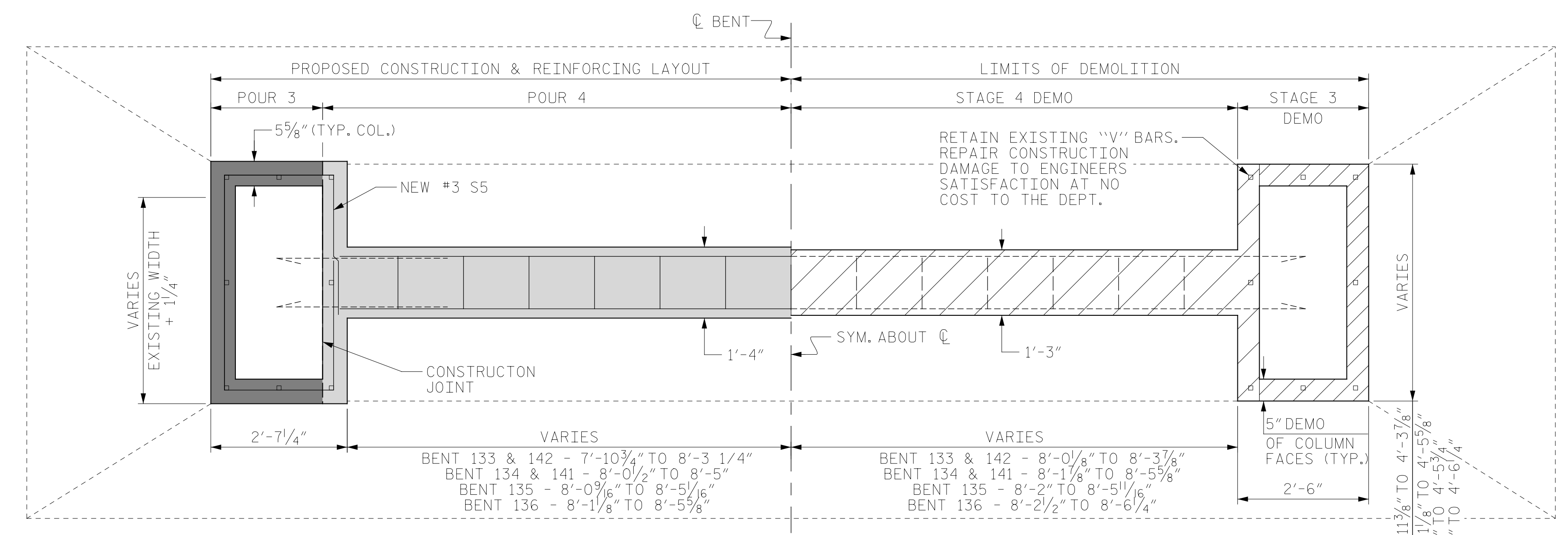
BENT 133 & 142					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#5	STR.	16'-4"	170 LBS
S5	14	#3	* STR.	13'-2"	70 LBS
S6	13	#4	1	14'-3"	125 LBS
REINFORCING STEEL					365 LBS
CLASS AA CONCRETE					6.5 C.Y.

BENT 134 & 141					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#5	STR.	16-8"	174 LBS
S5	14	#3	* STR.	13'-5"	72 LBS
S6	13	#4	1	14'-3"	125 LBS
REINFORCING STEEL					371 LBS
CLASS AA CONCRETE					6.6 C.Y.

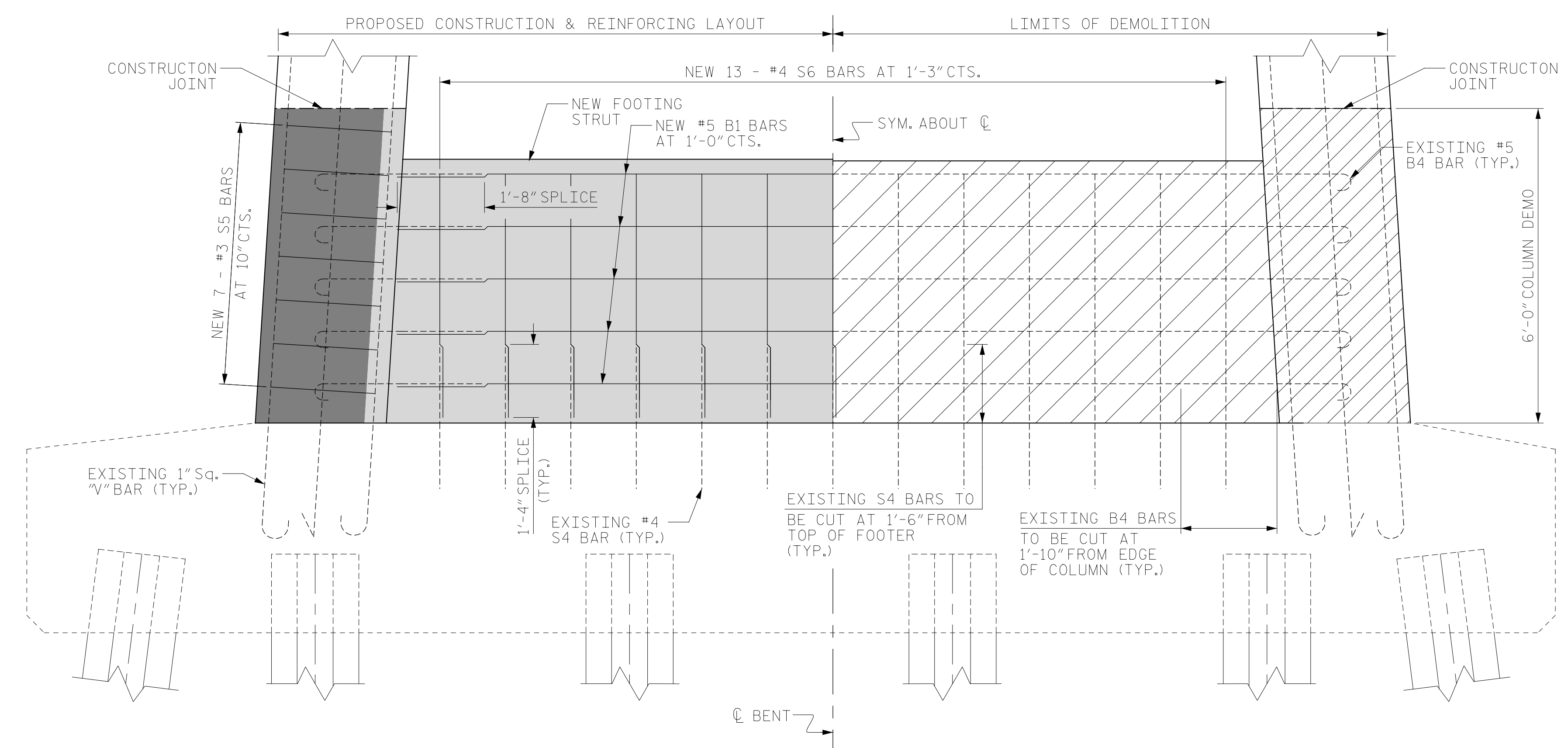
BENT 135					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#5	STR.	16'-8"	174 LBS
S5	14	#3	* STR.	13'-8"	73 LBS
S6	13	#4	1	14'-3"	125 LBS
REINFORCING STEEL					372 LBS
CLASS AA CONCRETE					6.6 C.Y.

BENT 136					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#5	STR.	16'-8"	174 LBS
S5	14	#3	* STR.	13'-11"	74 LBS
S6	13	#4	1	14'-3"	125 LBS
REINFORCING STEEL					373 LBS
CLASS AA CONCRETE					6.6 C.Y.

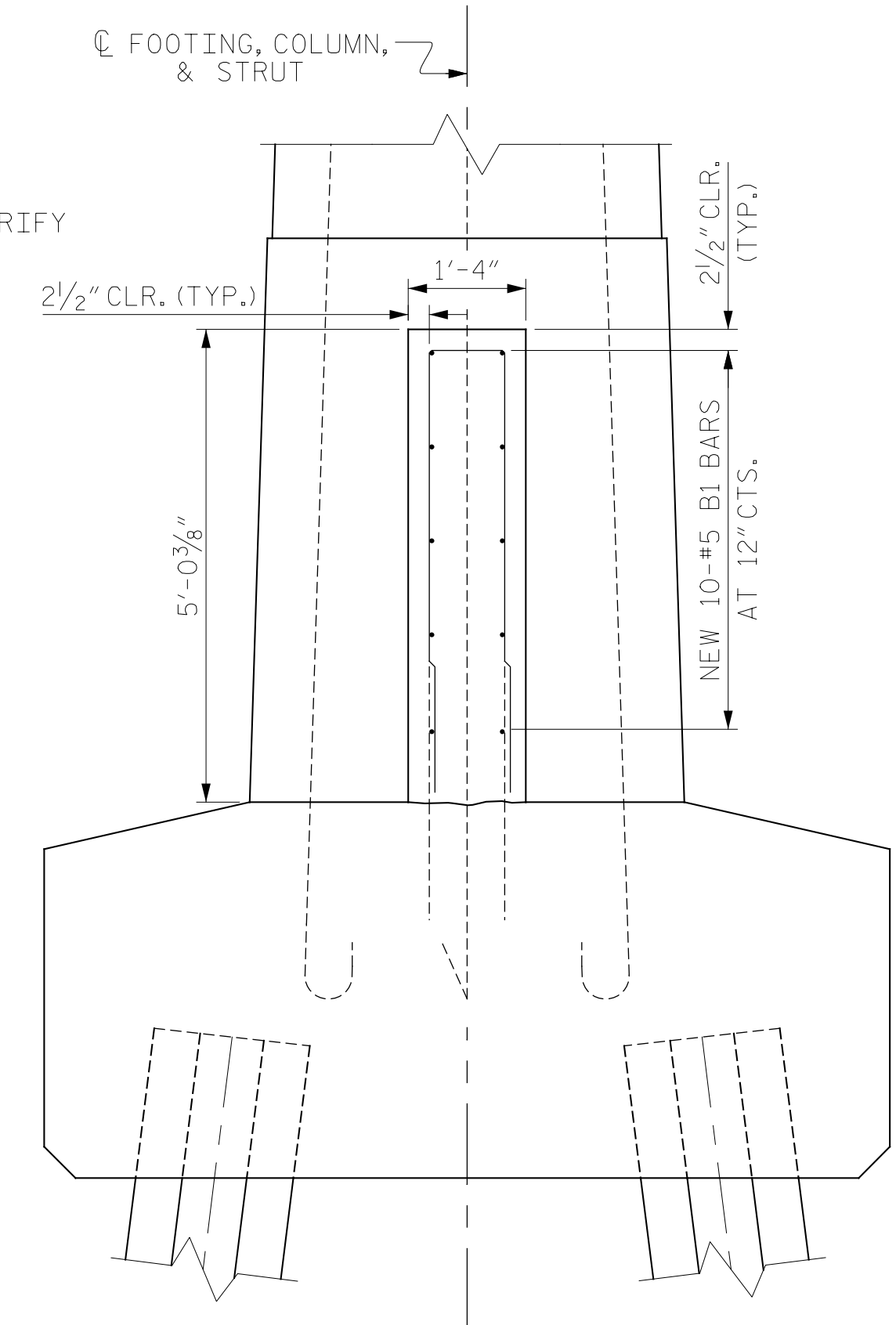
**NOTES:**  
 \*FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BEND CHART.  
 FIELD CUT AS REQUIRED FOR FIT.



**PLAN**  
COLUMN & STRUT RESTORATION

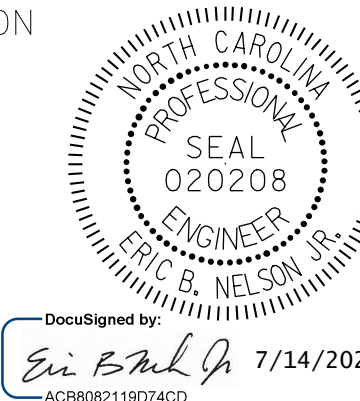


**ELEVATION**  
COLUMN & STRUT RESTORATION



**SIDE VIEW**  
PROPOSED COLUMN & STRUT

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4



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

SHEET 3 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PILE FOOTING RESTORATION**  
 BENT 133 THRU 136  
 141 AND 142

DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

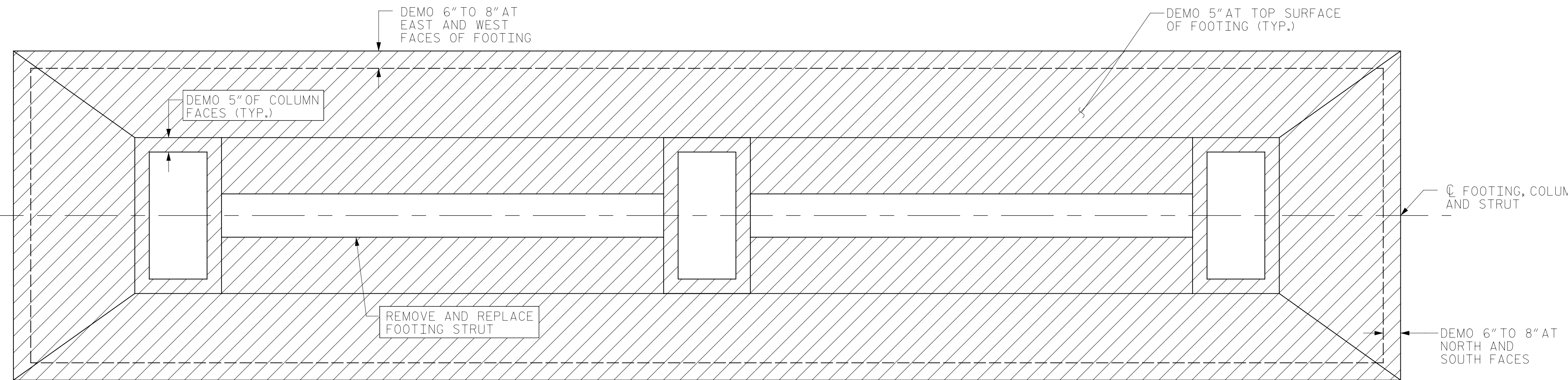


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

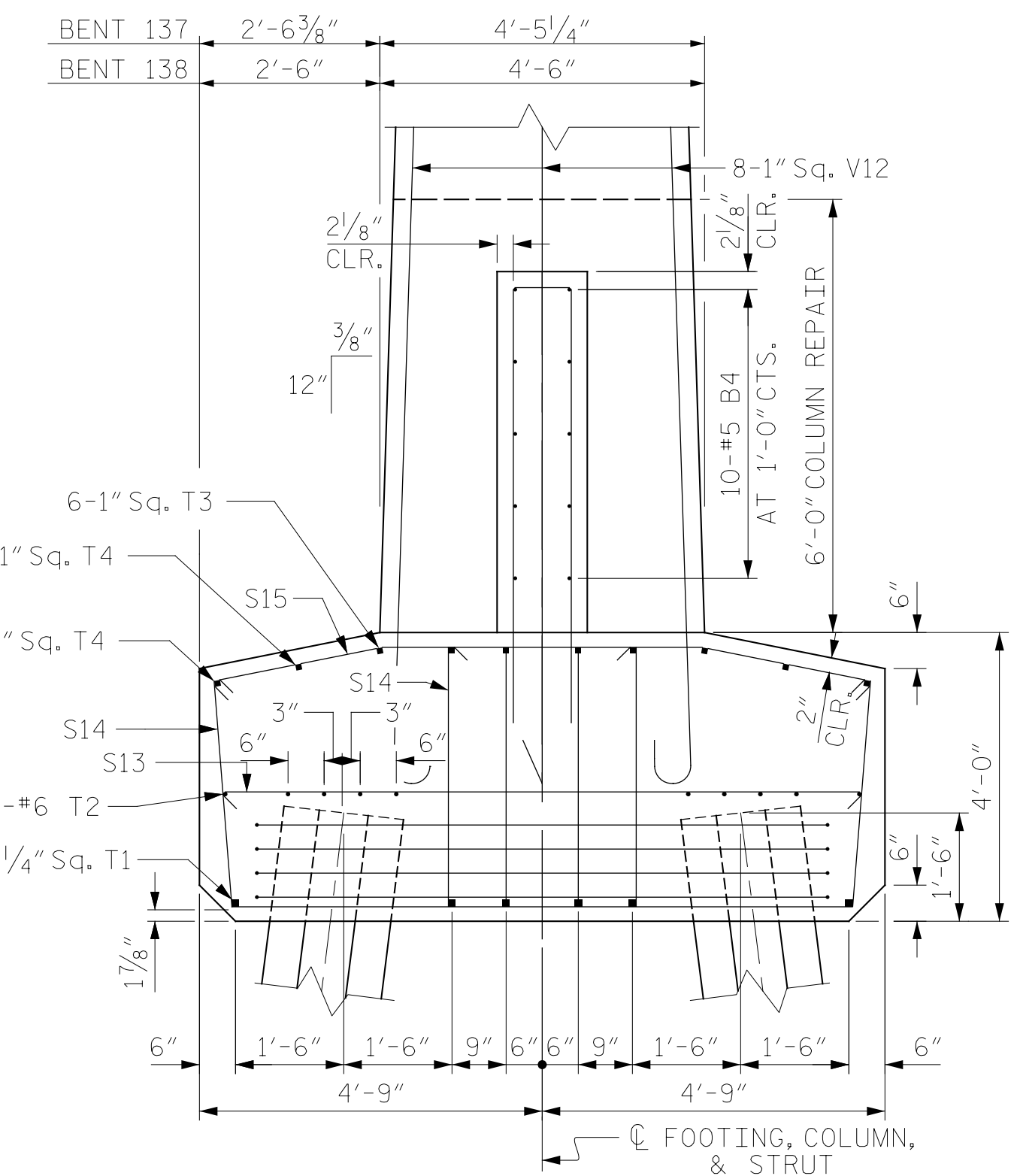
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-348
1			3			TOTAL SHEETS
2			4			355

NOTES

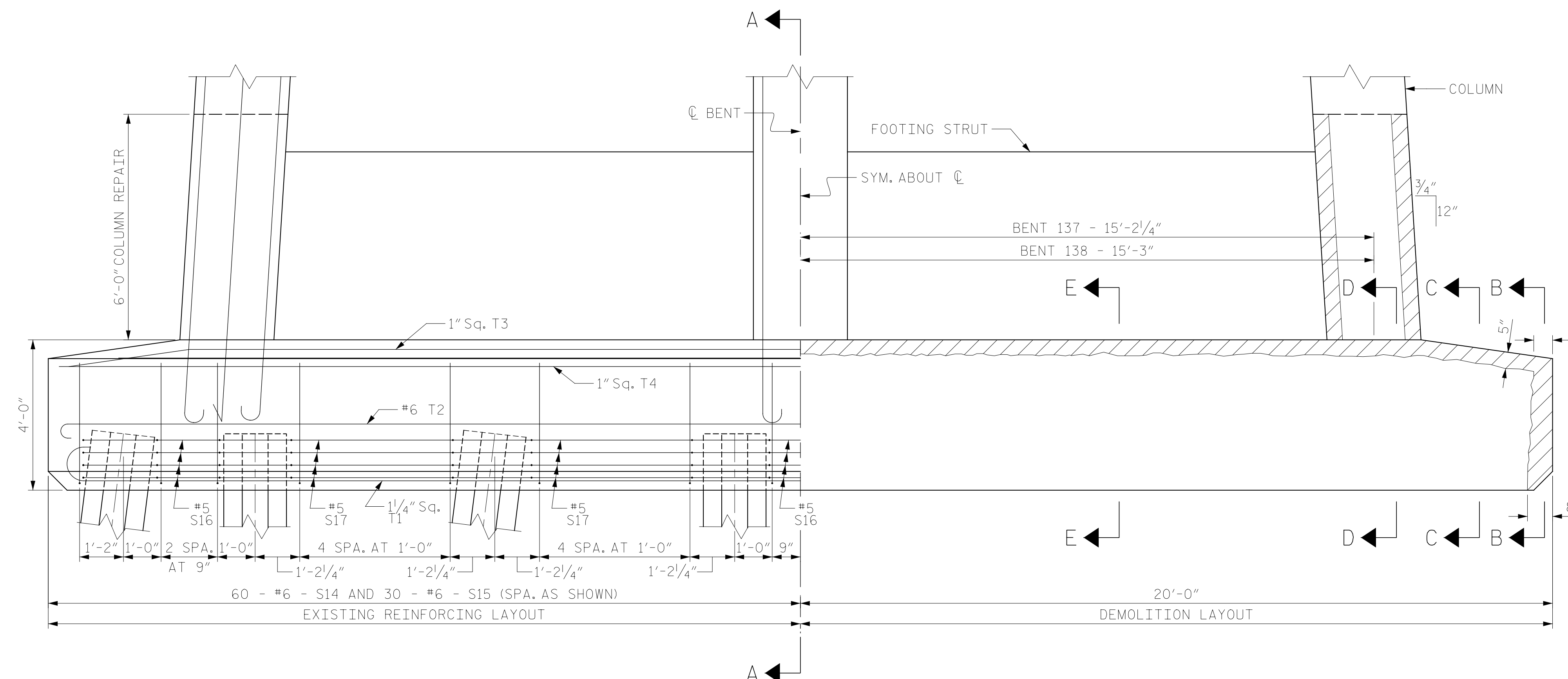
- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
- 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUP EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #5 S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
- 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL. FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
- 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.



FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION



SECTION A-A  
(EXISTING REINFORCING SHOWN, SEE OTHER SECTIONS FOR DEMOLITION AND PROPOSED REINFORCING)



FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG C/Footing, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION

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

SHEET 1 OF 3



DocuSigned by:  
Eric B. Nelson, Jr. 7/14/2022  
A22809211874C2D

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PILE FOOTING RESTORATION  
 BENT 137 AND 138

REVISIONS

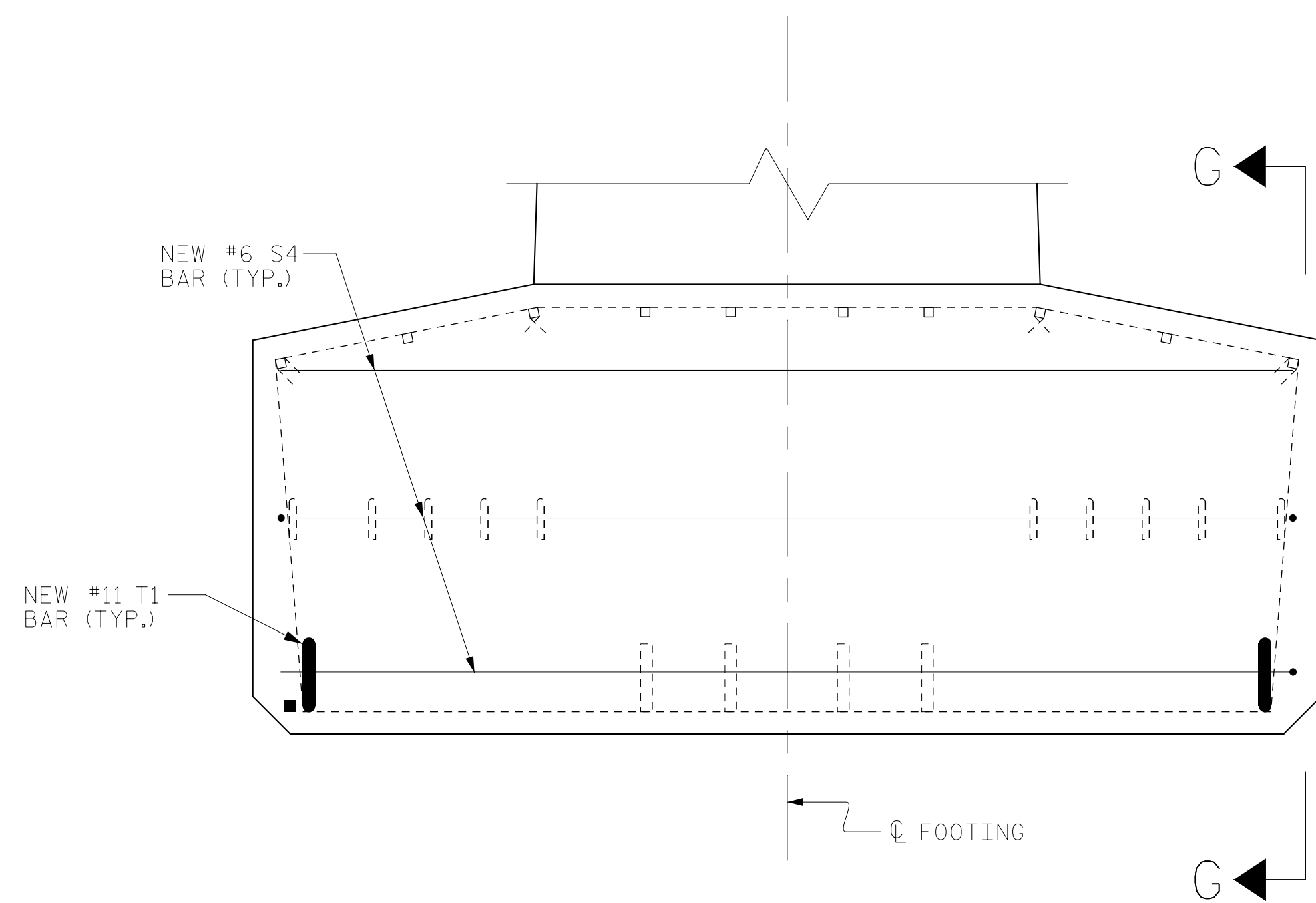
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-349	TOTAL SHEETS 355

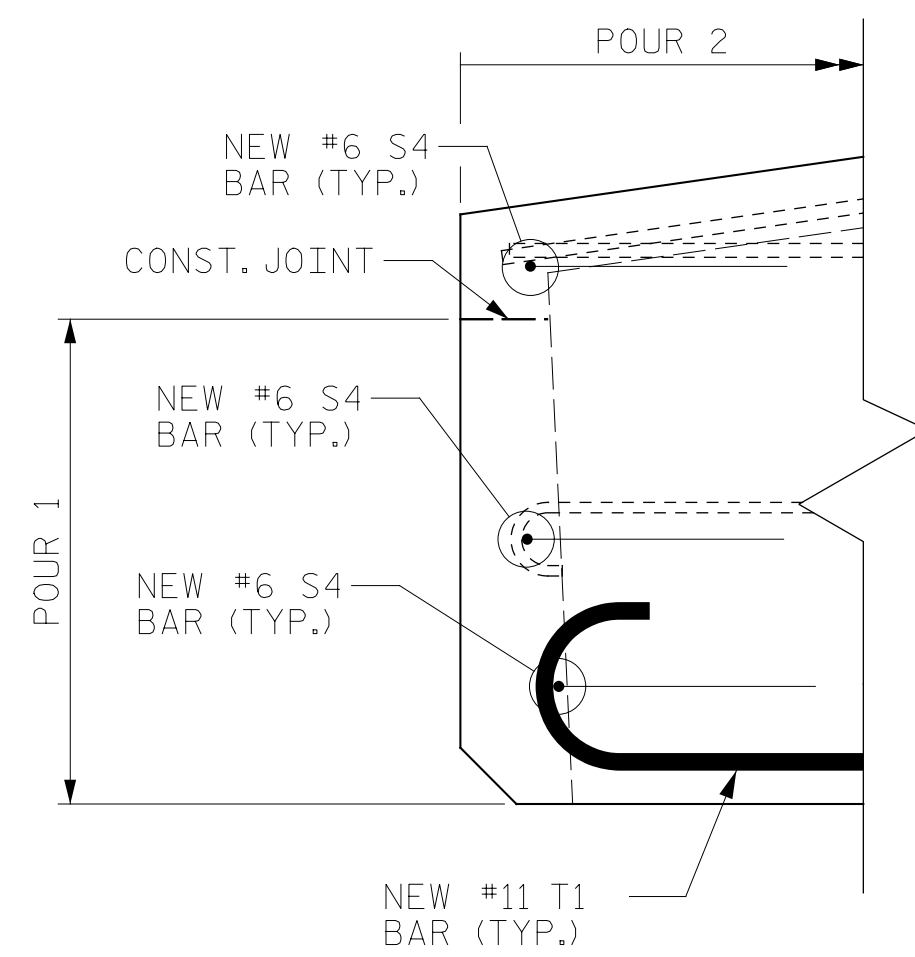
DRAWN BY : T. HARTLEY DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019



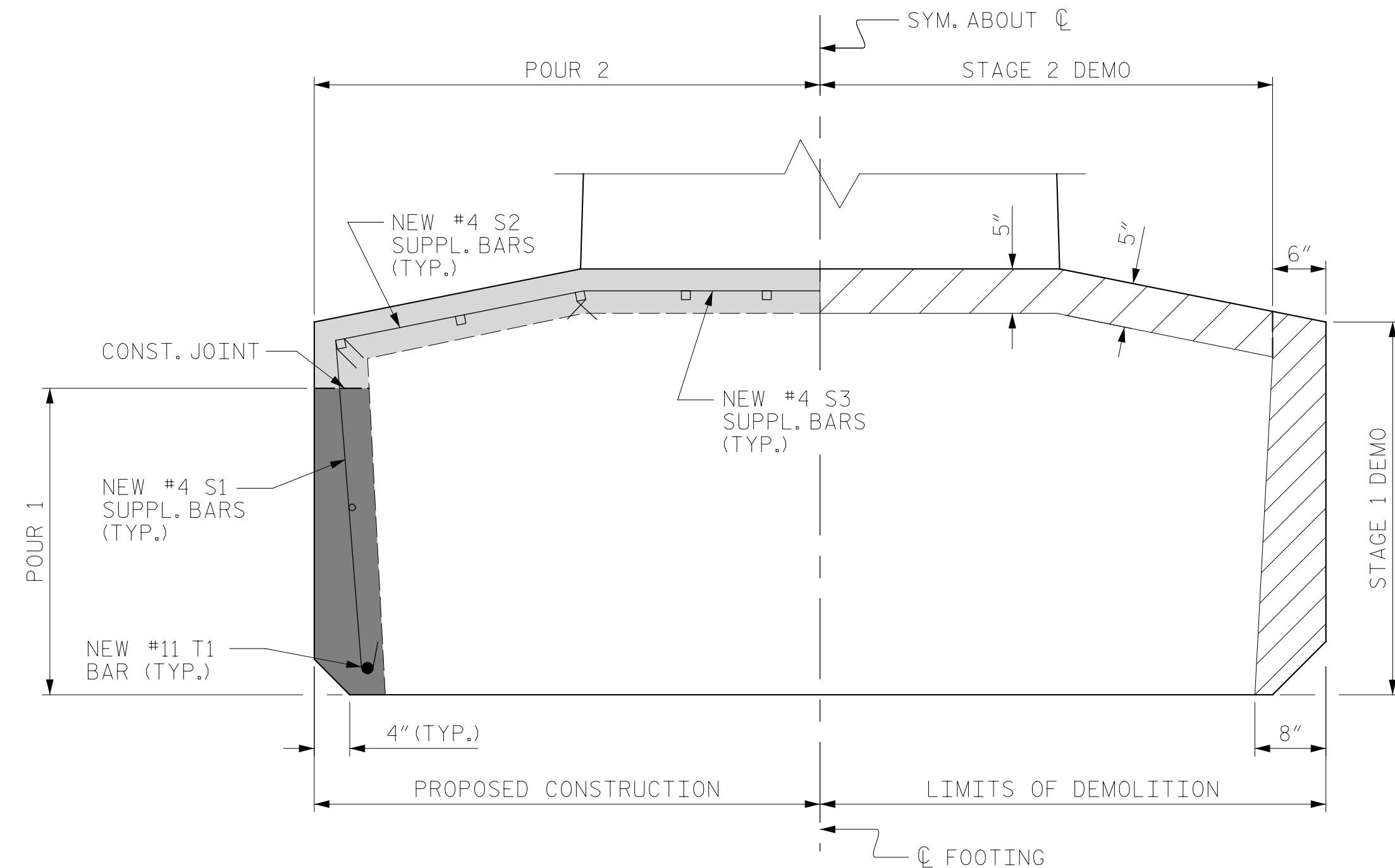
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



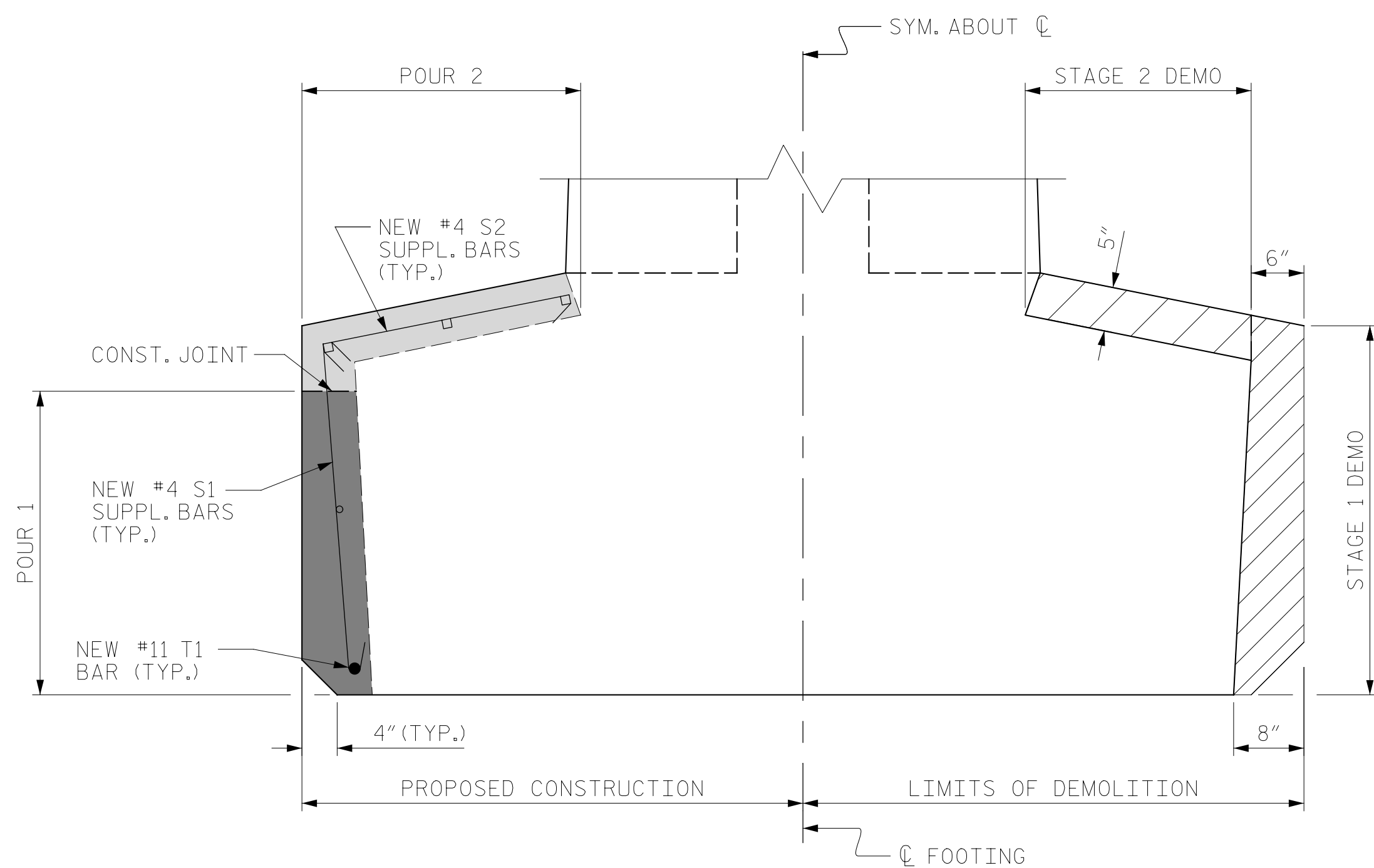
SECTION B-B  
FOOTING RESTORATION



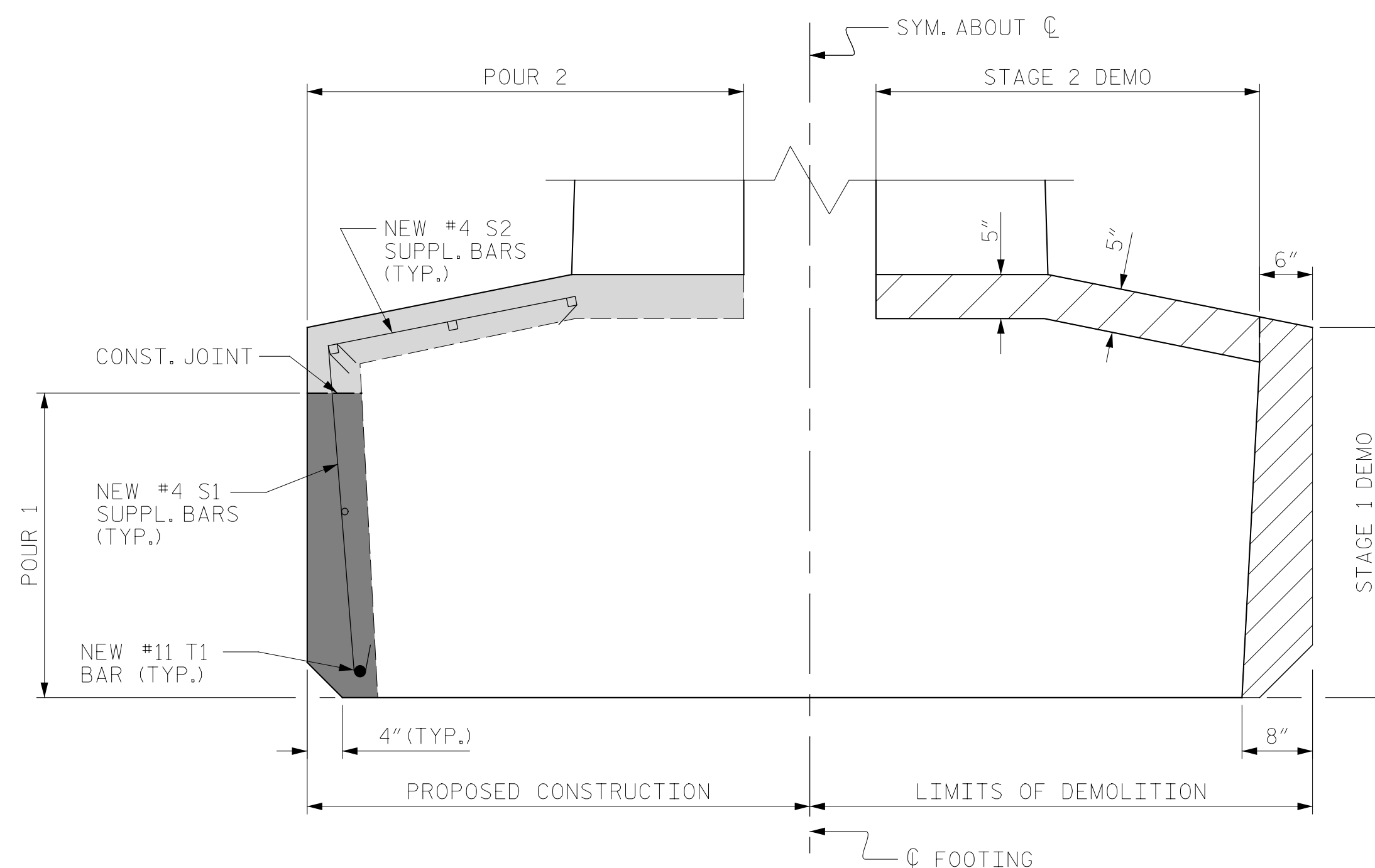
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION D-D  
FOOTING RESTORATION



SECTION E-E  
FOOTING RESTORATION

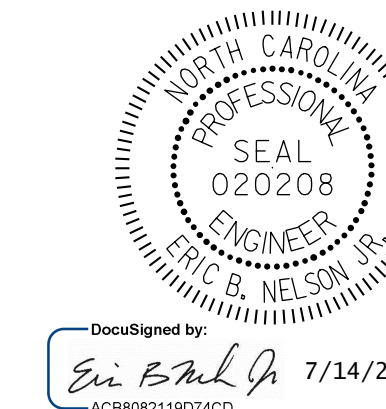
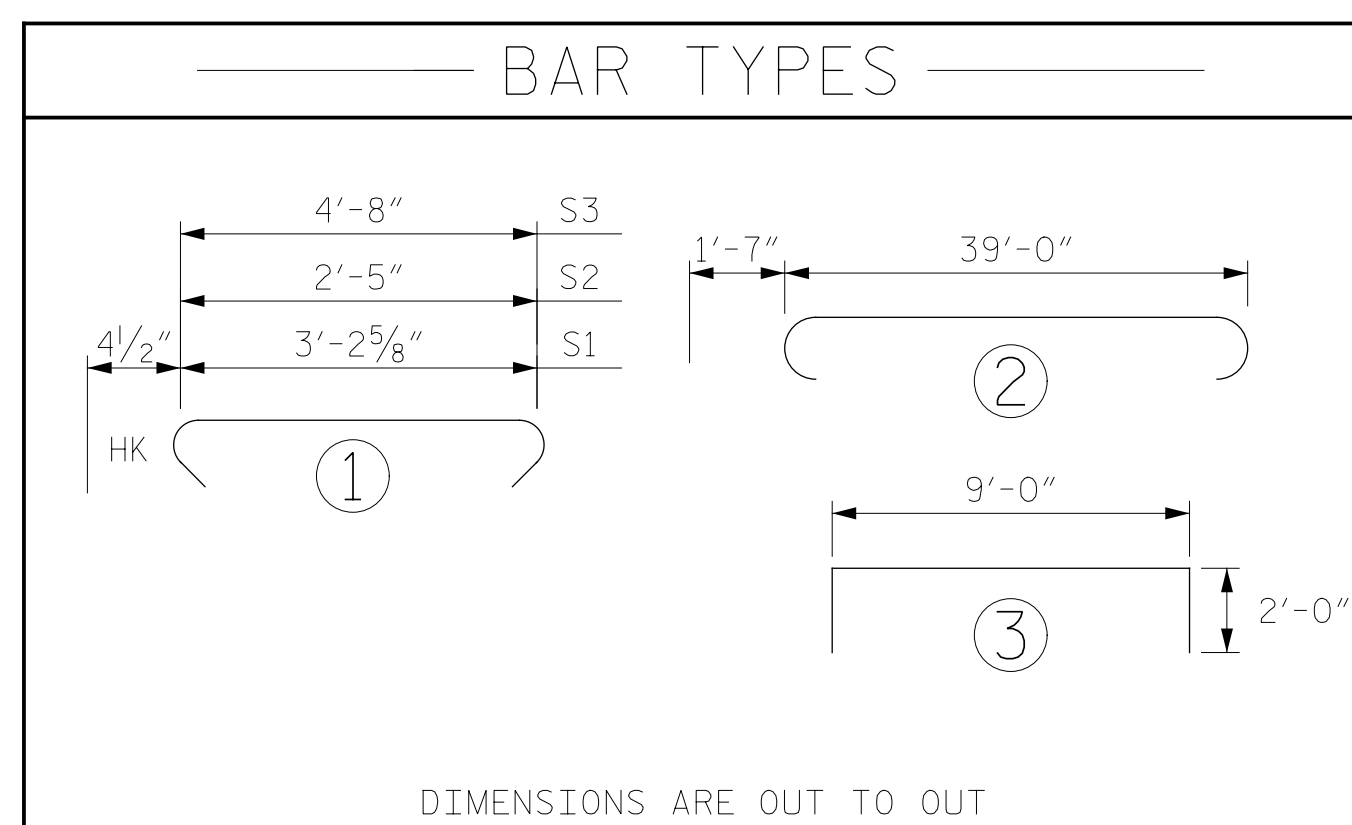
- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

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

SHEET 2 OF 3

**FOOTING BILL OF MATERIAL (REQUIRED PER BENT)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	60	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	160 LBS
S2	60	#4	1	3'-2"	128 LBS
S3	6	#4	1	5'-5"	22 LBS
S4	6	#6	3	13'-0"	117 LBS
T1	2	#11	2	42'-2"	448 LBS
REINFORCING STEEL					875 LBS
CLASS AA CONCRETE					11.8 C.Y.



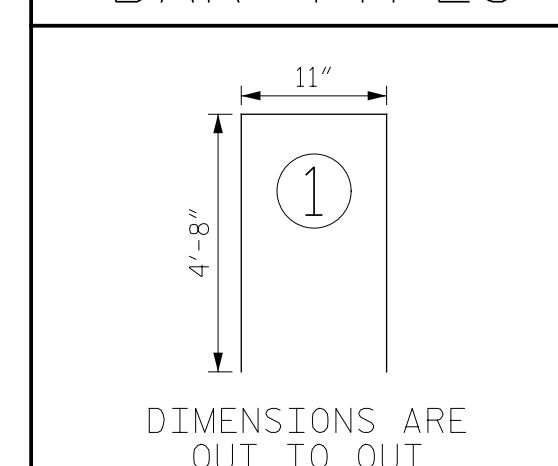
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PILE FOOTING RESTORATION**  
 BENT 137 AND 138

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-350
1			3			TOTAL SHEETS
2			4			355

DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

— BAR TYPES —

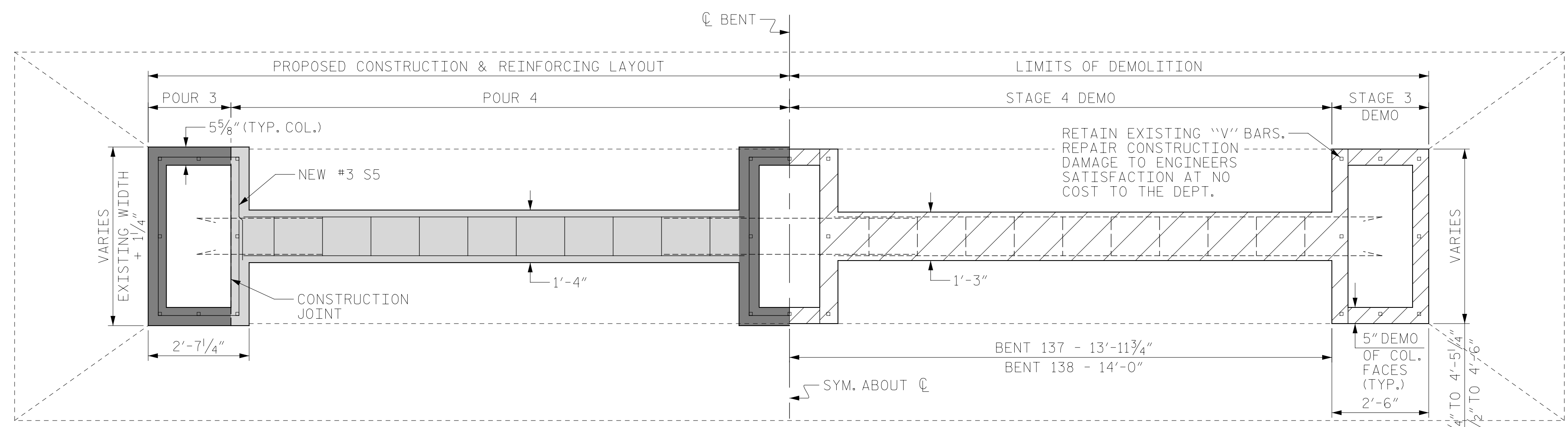


STRUT & COLUMN  
BILL OF MATERIAL

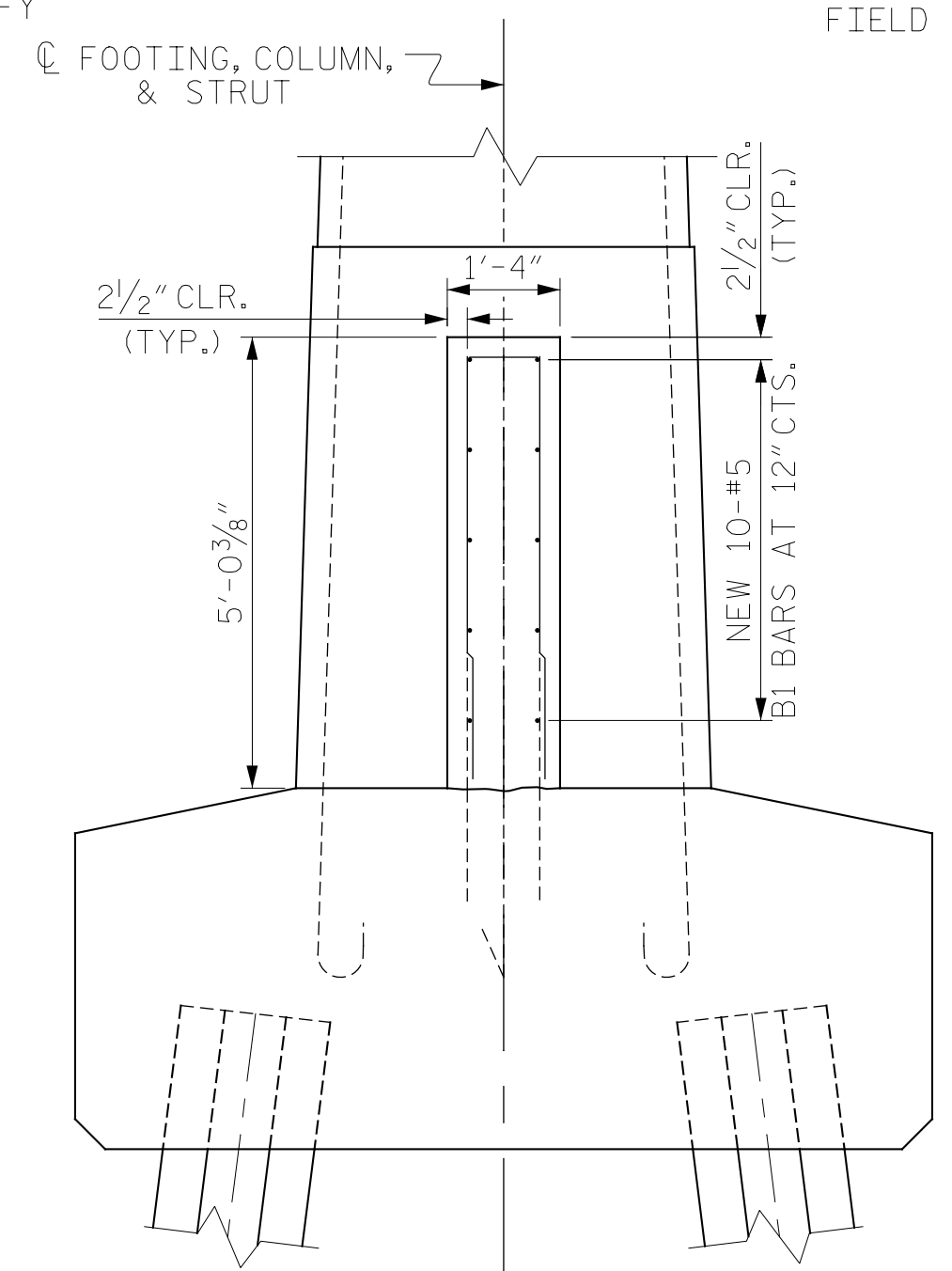
BENT 137					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR.	12'-7"	262 LBS
S5	14	#3	* STR.	13'-6"	72 LBS
S6	20	#4	1	14'-3"	105 LBS
REINFORCING STEEL				439 LBS	
CLASS AA CONCRETE				10 C.Y.	

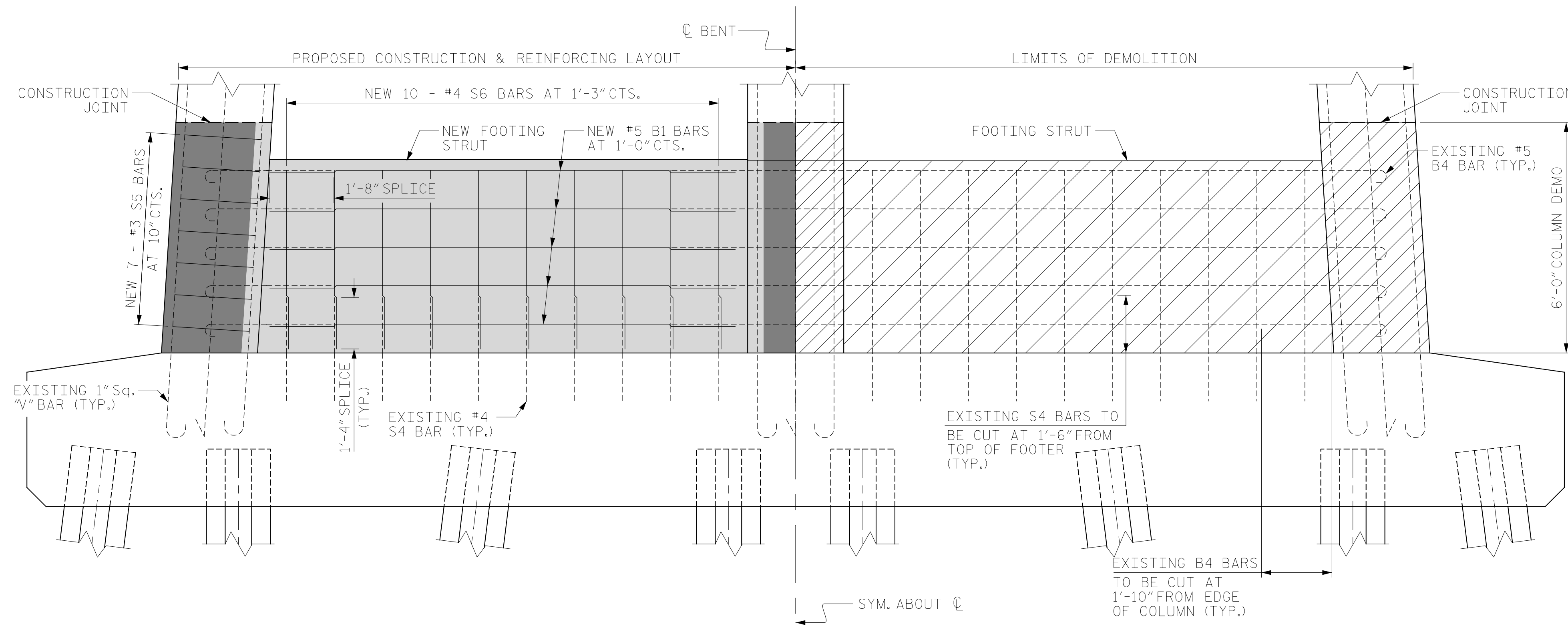
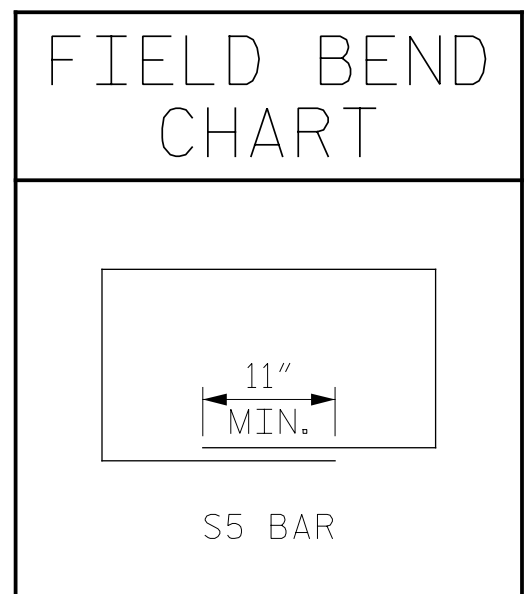
BENT 138					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR.	12'-7"	262 LBS
S5	14	#3	* STR.	13'-6"	72 LBS
S6	20	#4	1	14'-3"	105 LBS
REINFORCING STEEL				439 LBS	
CLASS AA CONCRETE				10 C.Y.	



PLAN  
COLUMN AND STRUT RESTORATION

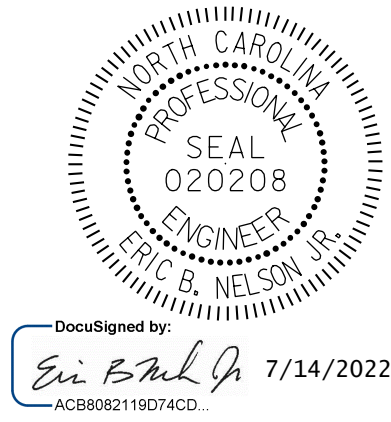


SIDE VIEW  
PROPOSED COLUMN & STRUT



ELEVATION  
COLUMN & STRUT RESTORATION

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4



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

SHEET 3 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PILE FOOTING RESTORATION**  
 BENT 137 AND 138

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-351
1			3			TOTAL SHEETS
2			4			355

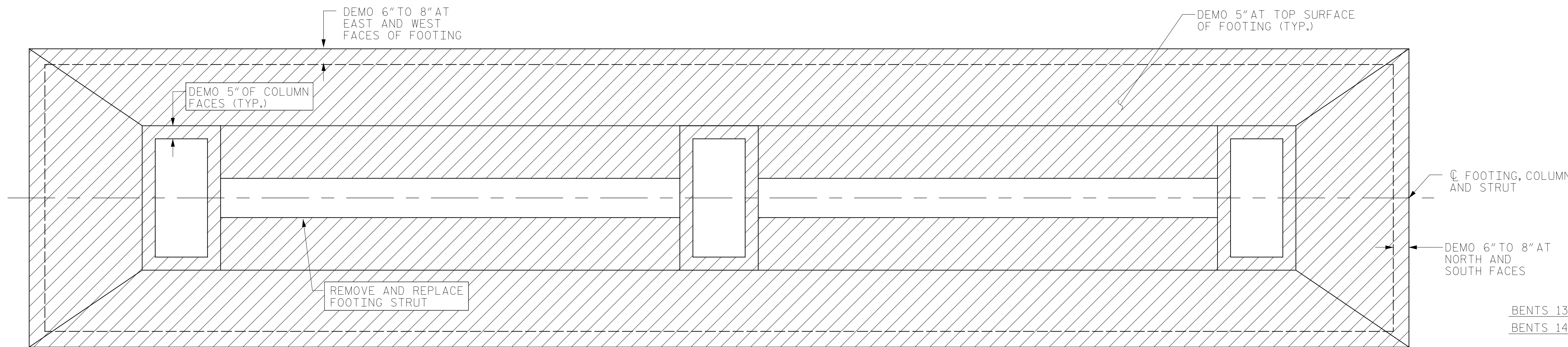
DRAWN BY : T. HARTLEY DATE : 4/2019  
 CHECKED BY : R. NELSON DATE : 4/2019



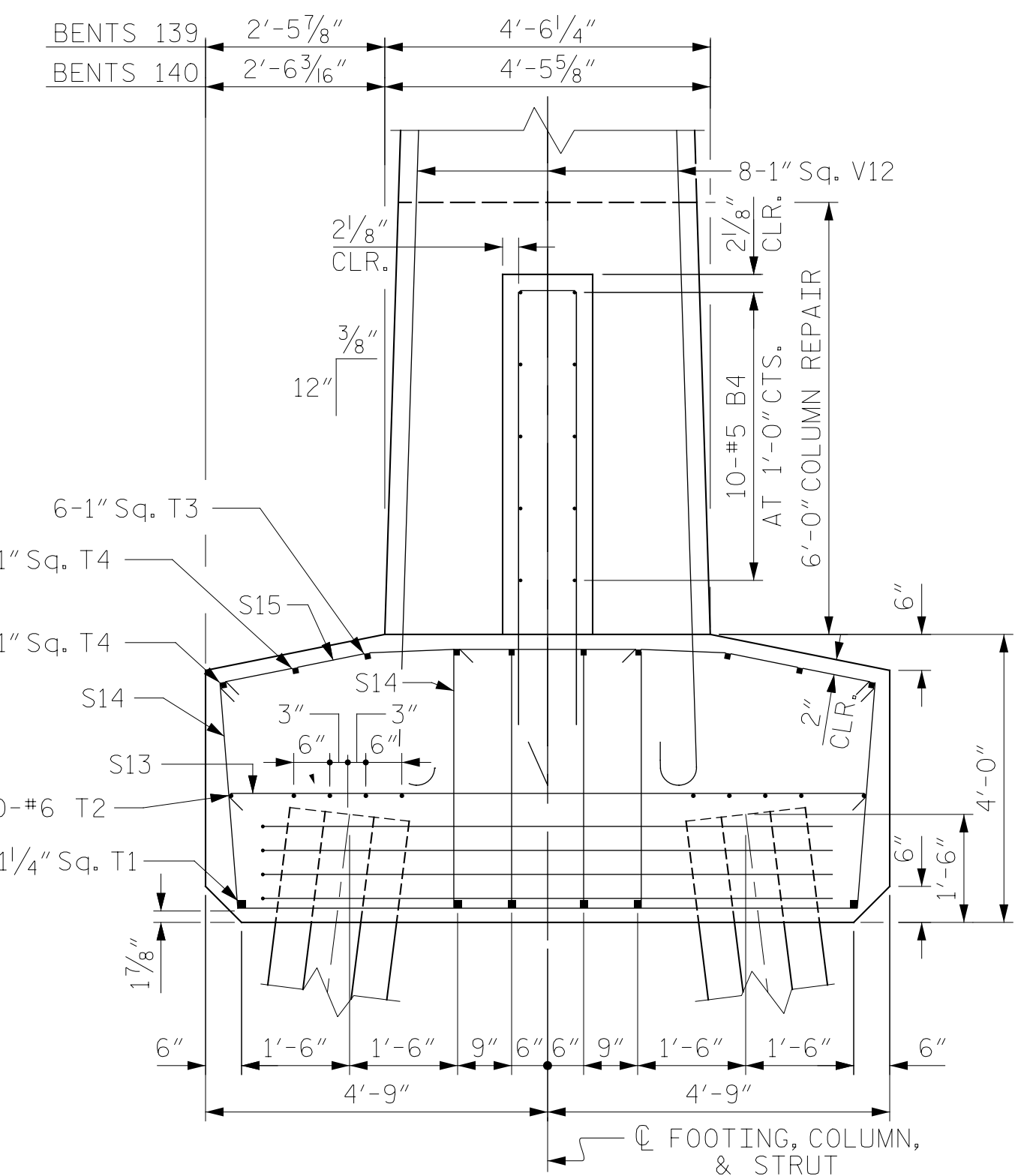
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

NOTES

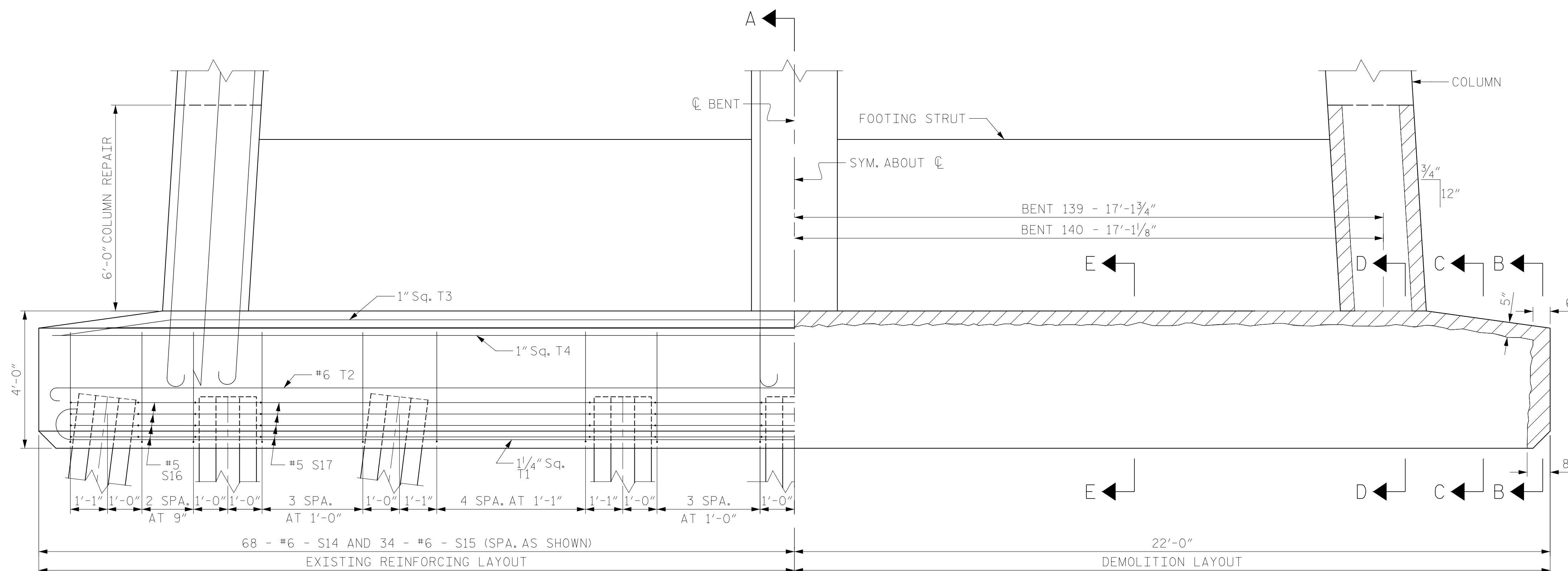
- 1.) PERFORM STAGED REMOVAL OF CONCRETE TO THE LIMITS SHOWN ON THE PROJECT DETAIL SHEETS AND PROVIDE 1" OF CLEARANCE BEHIND MAIN REINFORCING STEEL.
- 2.) EXERCISE CARE DURING CONCRETE DEMOLITION TO NOT DAMAGE THE EXISTING MAIN REINFORCING STEEL AND STIRRUP STEEL IN THE FOOTING FACES. IT IS ASSUMED THE EXISTING #6 STIRRUP EXPOSED AFTER DEMOLITION WILL HAVE SUFFICIENT BAR AREA REMAINING TO BE RETAINED AND RE-USED. THE PROPOSED #4 S1 THRU #5 S3 BARS ARE DETAILED AS SUPPLEMENTAL BARS TO BE TIED TO THE EXISTING BARS AS REQUIRED FOR SECTION LOSS REPAIR.
- 3.) BLAST CLEAN ALL EXPOSED REINFORCING STEEL FOR MAIN REINFORCING STEEL WITH MORE THAN 20% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL BARS AS REQUIRED. SEE THE PROJECT "TYPICAL CONCRETE REPAIR DETAILS" FOR SUPPLEMENTAL BAR SPLICING.
- 4.) FORM, POUR AND CURE CONCRETE AS SHOWN ON THE PROJECT DETAIL SHEETS AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.



FOOTING PLAN VIEW  
EXISTING CONDITIONS & PROPOSED DEMOLITION



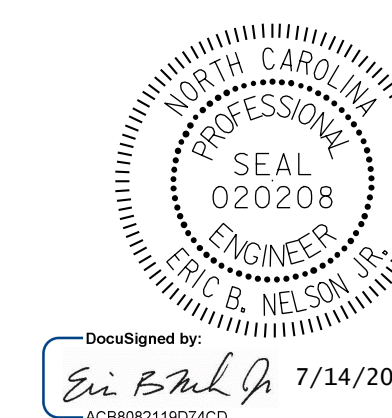
SECTION A-A  
(EXISTING REINFORCING SHOWN, SEE OTHER SECTIONS FOR DEMOLITION AND PROPOSED REINFORCING)



FOOTING ELEVATION VIEW  
SECTION TAKEN ALONG C FOOTING, COLUMN, & STRUT  
EXISTING CONDITIONS & PROPOSED DEMOLITION

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

SHEET 1 OF 3



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PILE FOOTING RESTORATION  
BENT 139 AND 140

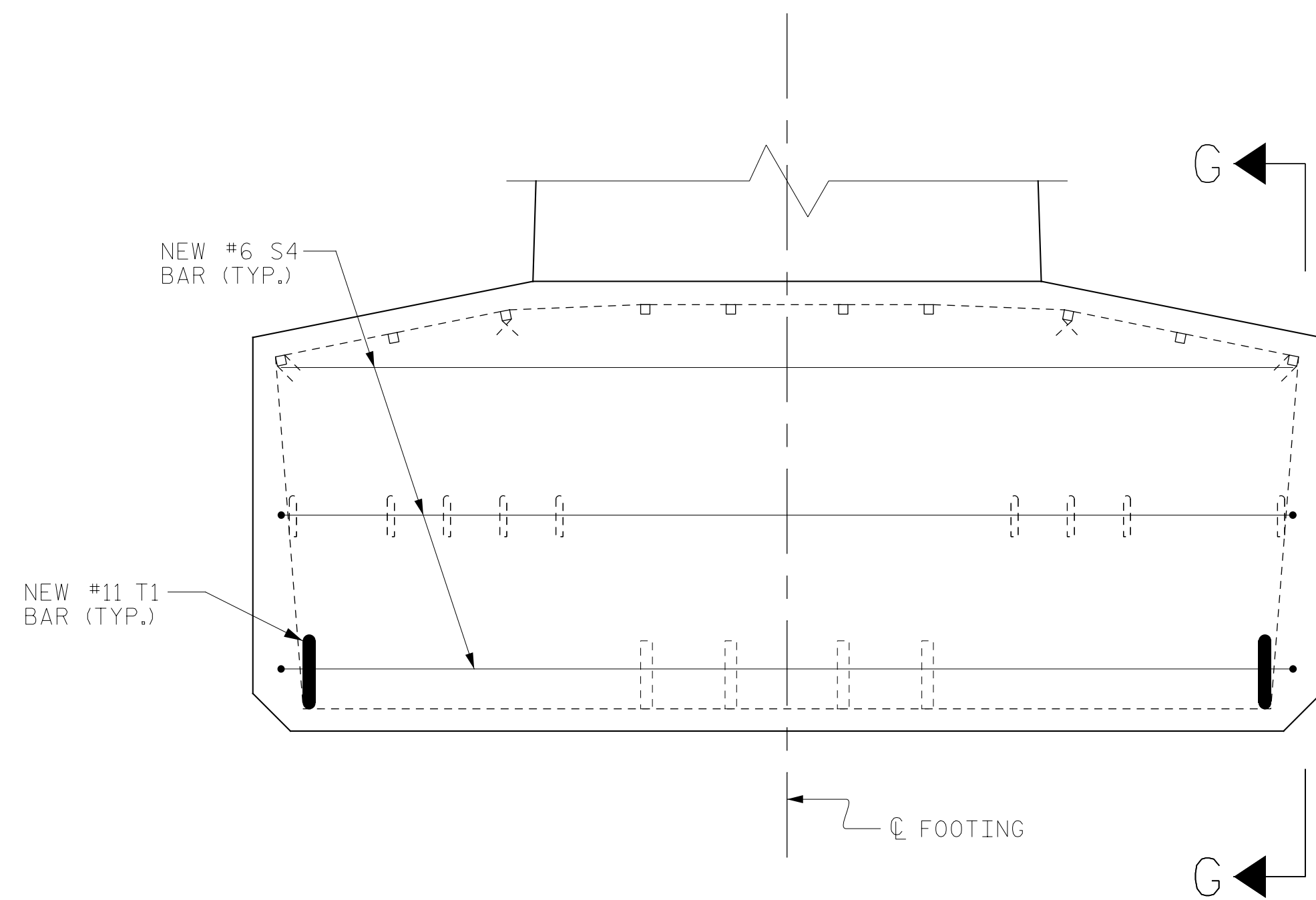
DRAWN BY: T. HARTLEY DATE: 4/2019  
CHECKED BY: R. NELSON DATE: 4/2019



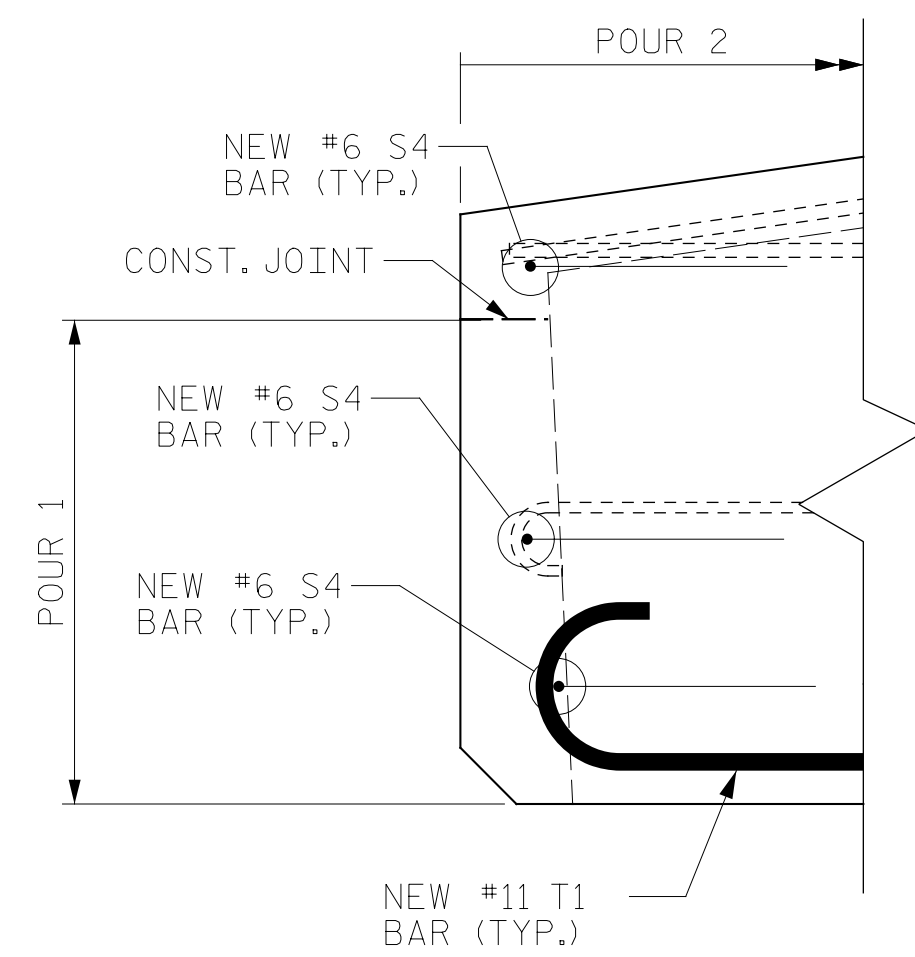
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-352
1			3			TOTAL SHEETS
2			4			355

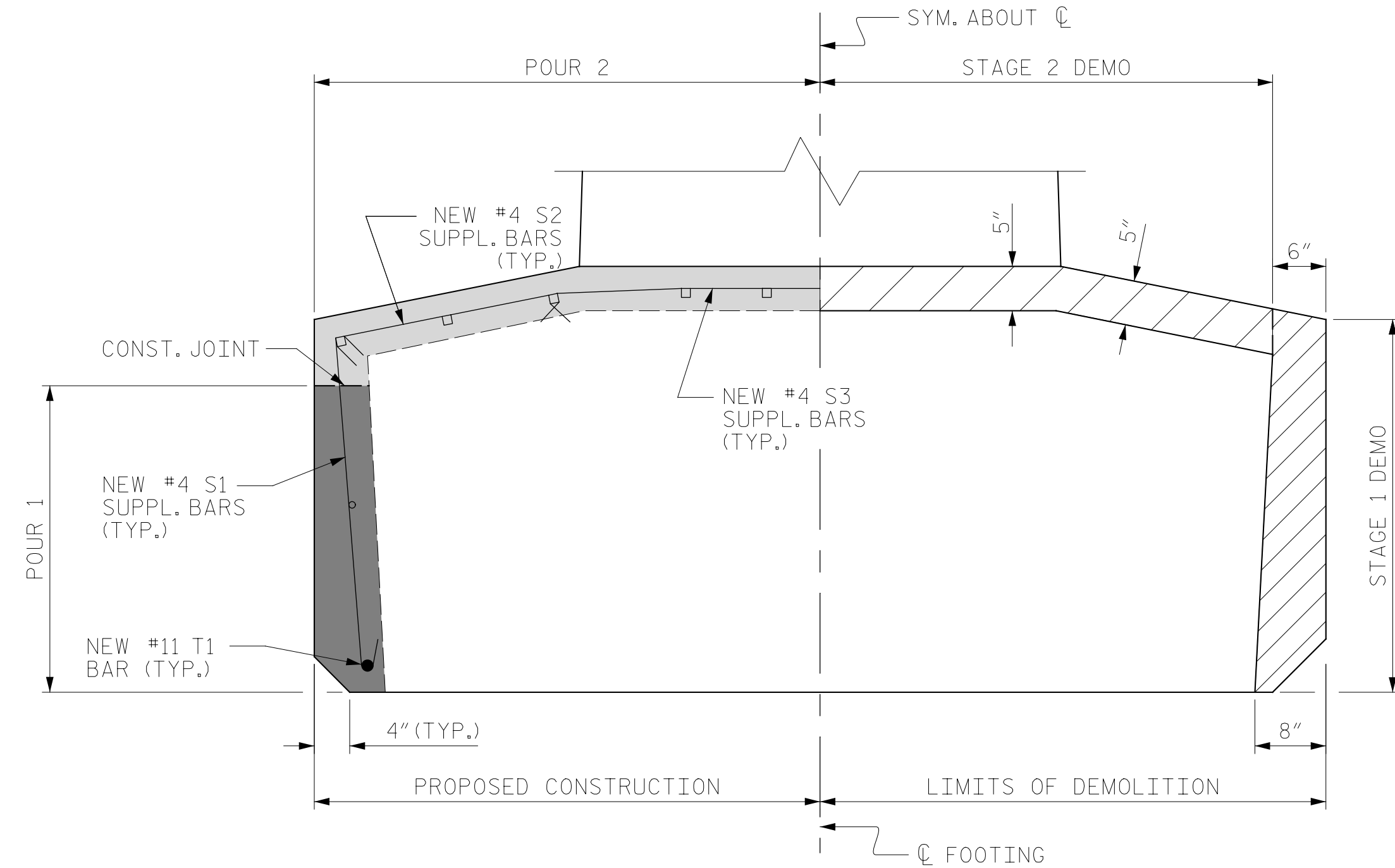




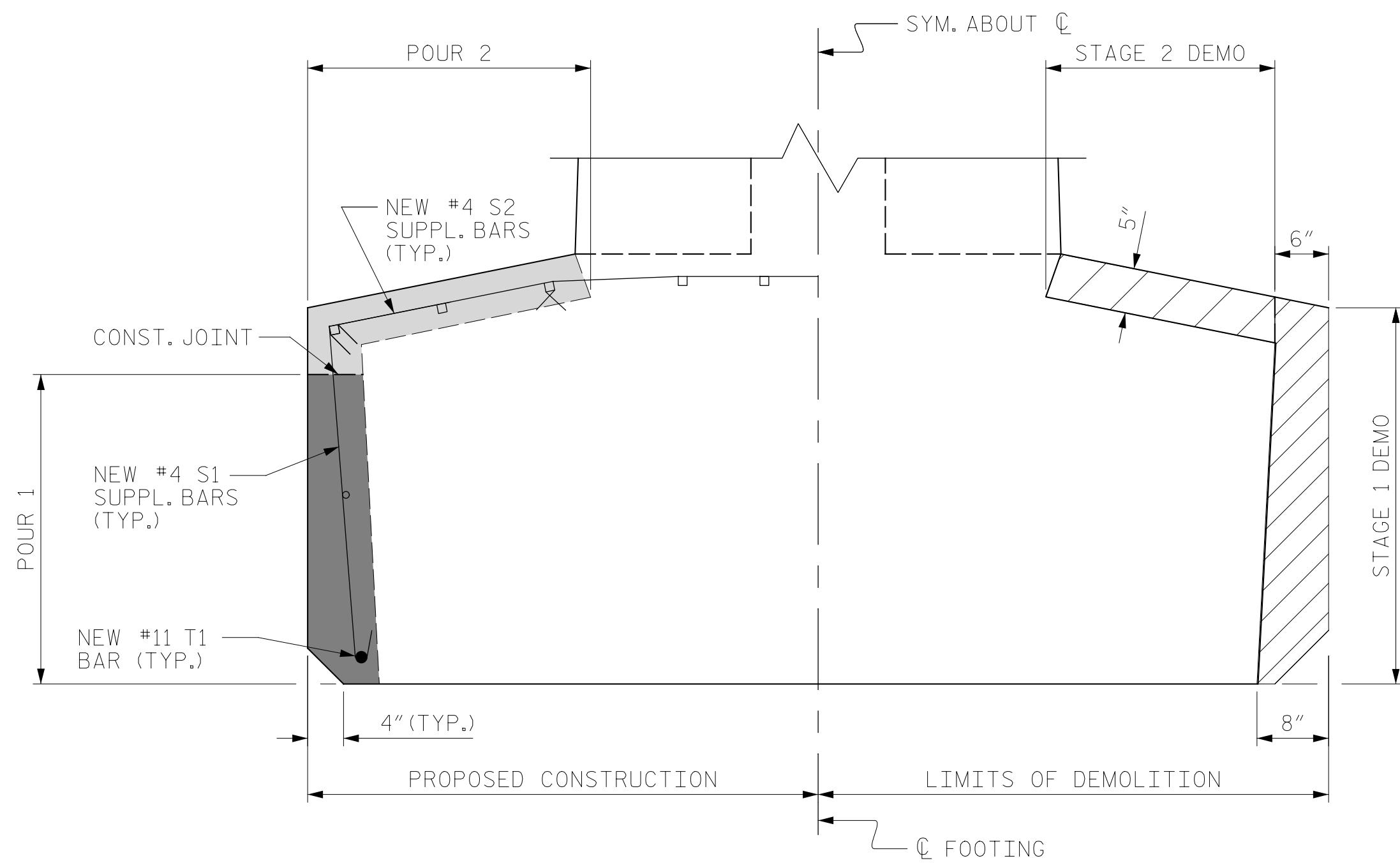
SECTION B-B  
FOOTING RESTORATION



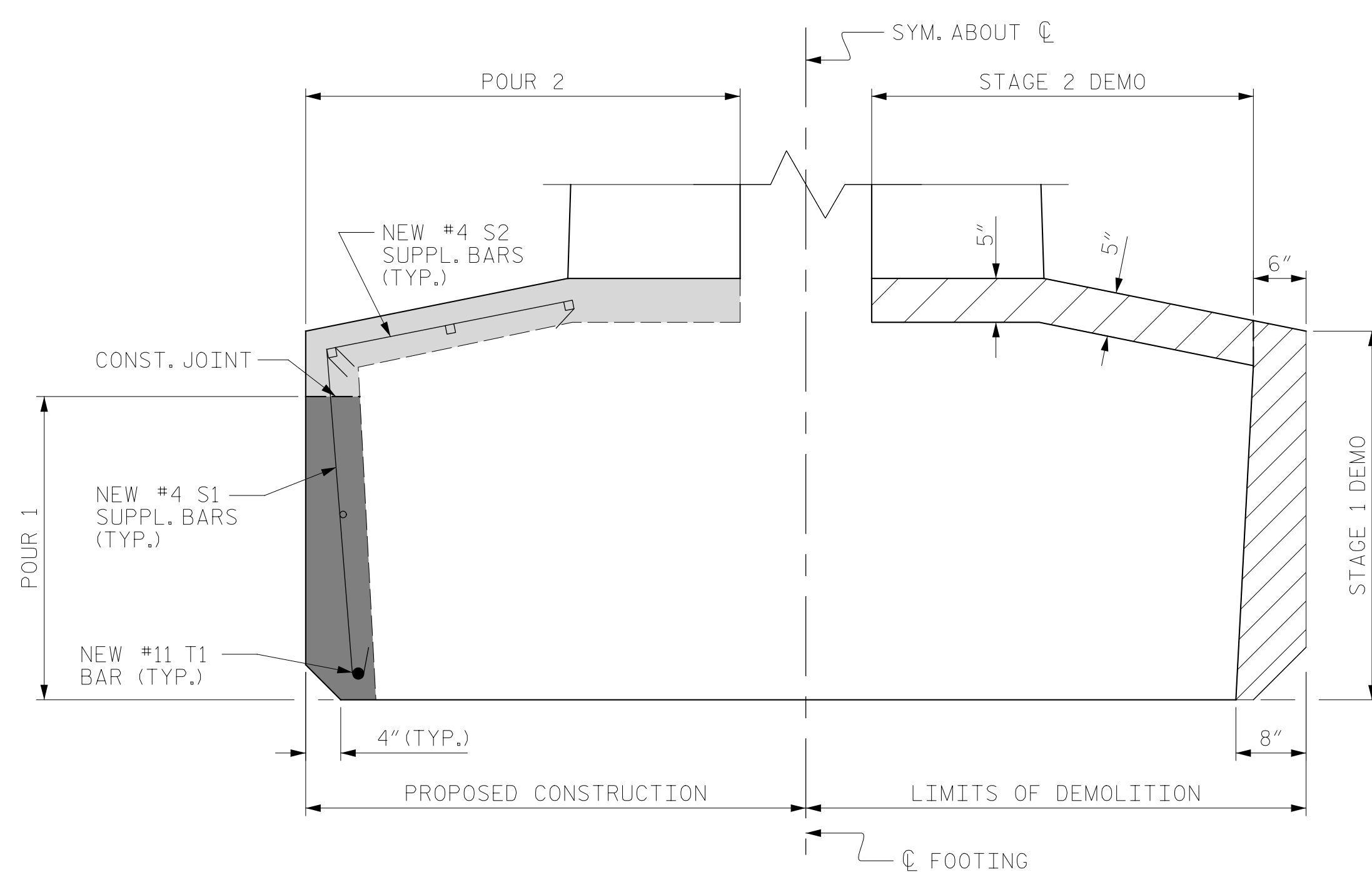
SECTION G-G  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



SECTION C-C  
FOOTING RESTORATION



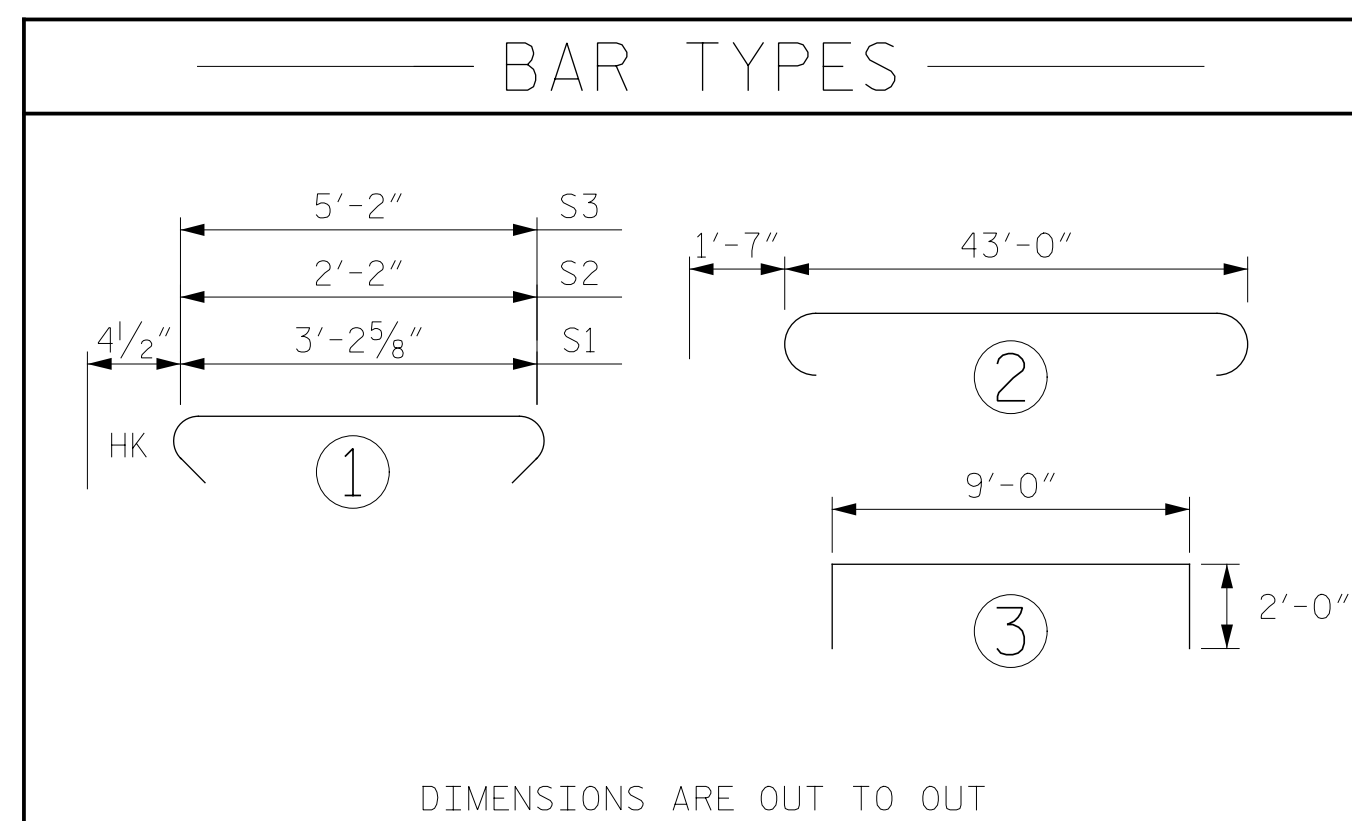
SECTION E-E  
FOOTING RESTORATION

- STAGE 1 DEMOLITION
- STAGE 2 DEMOLITION
- POUR 1
- POUR 2

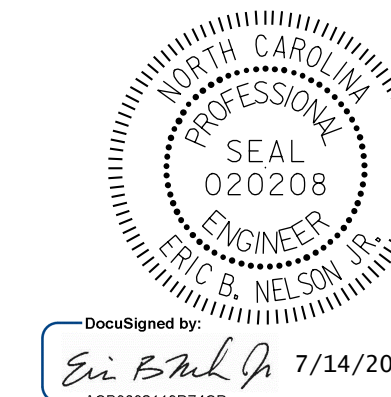
PROJECT NO. HB-0017  
DARE COUNTY  
 BRIDGE NO. 270009

SHEET 2 OF 3

FOOTING BILL OF MATERIAL (REQUIRED PER BENT)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	68	#4	1	3'-11 <sup>5</sup> / <sub>8</sub> "	181 LBS
S2	68	#4	1	2'-11"	133 LBS
S3	6	#4	1	5'-11"	24 LBS
S4	6	#6	3	13'-0"	117 LBS
T1	2	#11	2	46'-2"	491 LBS
REINFORCING STEEL					946 LBS
CLASS AA CONCRETE					12.9 C.Y.



DIMENSIONS ARE OUT TO OUT



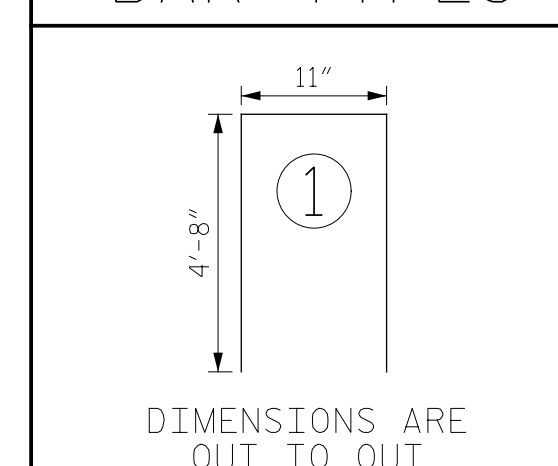
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE FOOTING RESTORATION BENT 139 AND 140					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S-353
TOTAL SHEETS	355

DRAWN BY: T. HARTLEY DATE: 4/2019  
 CHECKED BY: R. NELSON DATE: 4/2019

— BAR TYPES —



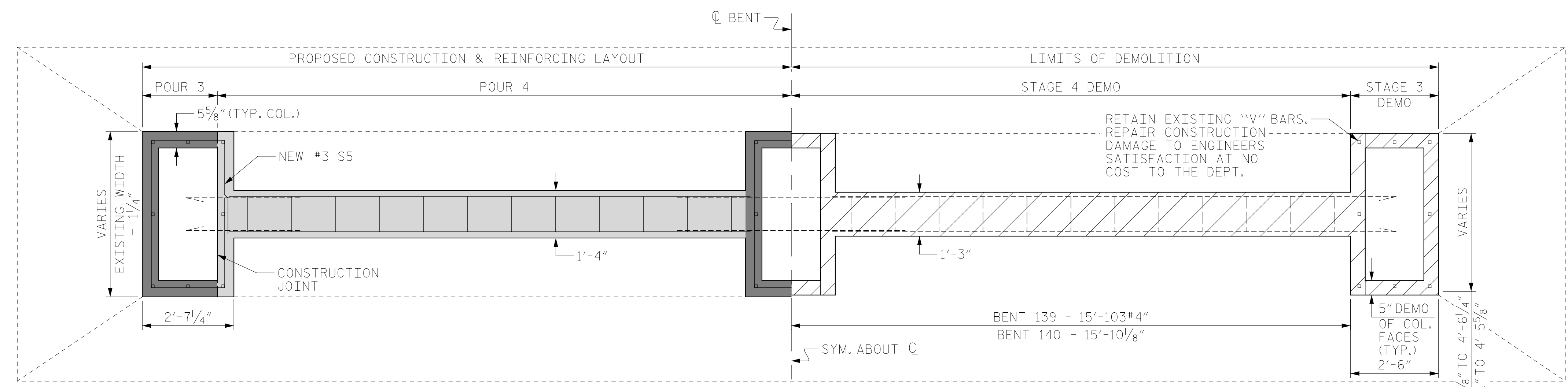
STRUT & COLUMN  
BILL OF MATERIAL

BENT 139					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR.	14'-6"	302 LBS
S5	14	#3	* STR.	13'-6"	72 LBS
S6	24	#4	1	14'-3"	105 LBS
REINFORCING STEEL				479 LBS	
CLASS AA CONCRETE				11 C.Y.	

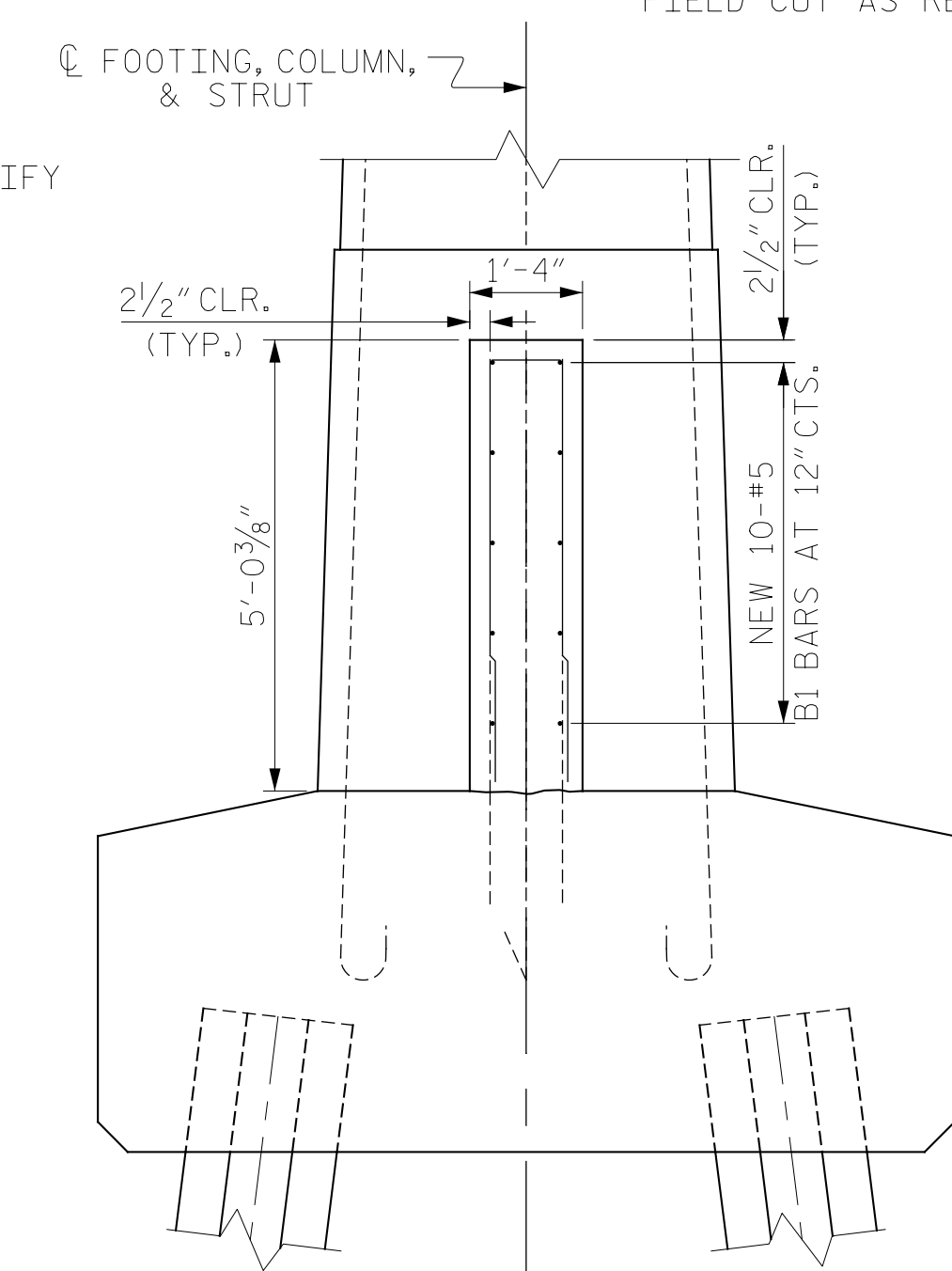
  

BENT 140					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR.	14'-6"	302 LBS
S5	14	#3	* STR.	13'-6"	72 LBS
S6	24	#4	1	14'-3"	105 LBS
REINFORCING STEEL				479 LBS	
CLASS AA CONCRETE				11 C.Y.	

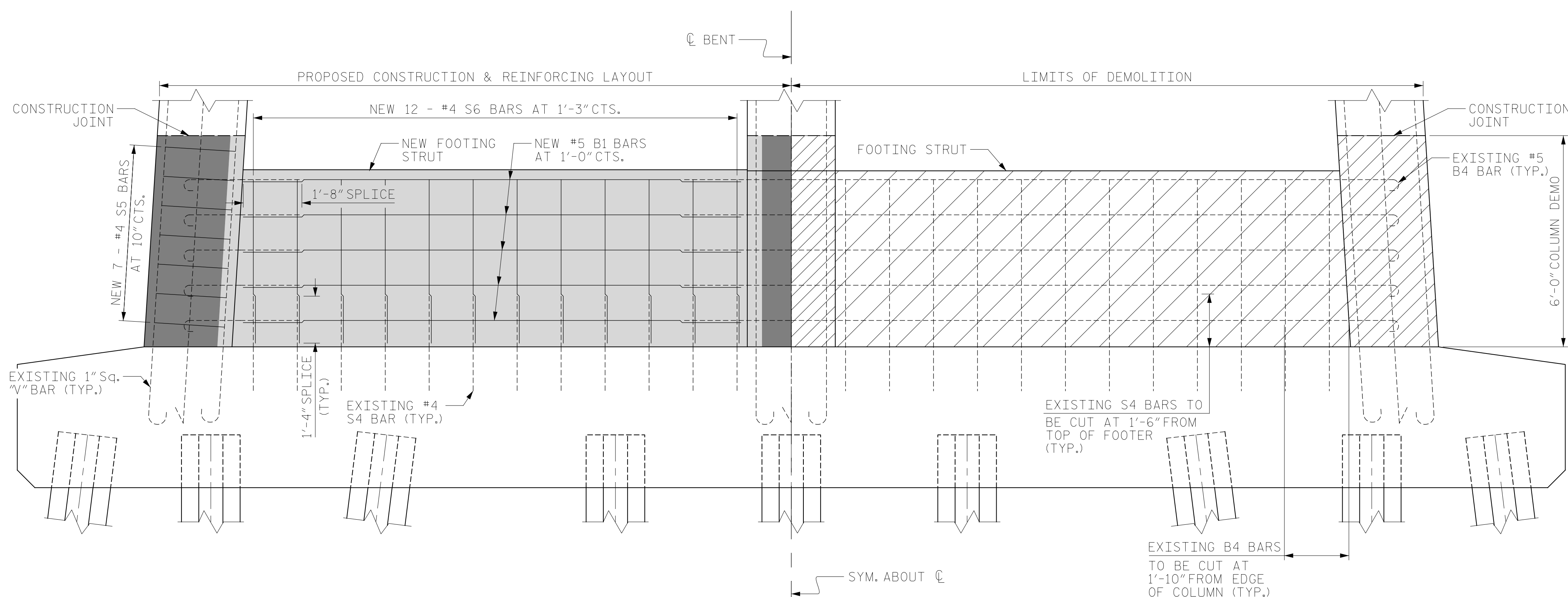
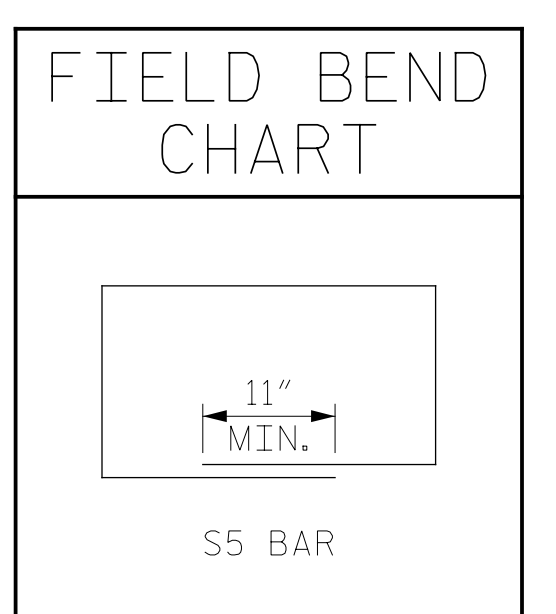
NOTES:  
\* FIELD BEND BARS BASED ON FIELD MEASUREMENTS. OVERALL LENGTH IS BASED ON ANTICIPATED MAXIMUM DIMENSIONS. SEE FIELD BEND CHART.  
FIELD CUT AS REQUIRED FOR FIT.



PLAN  
COLUMN AND STRUT RESTORATION

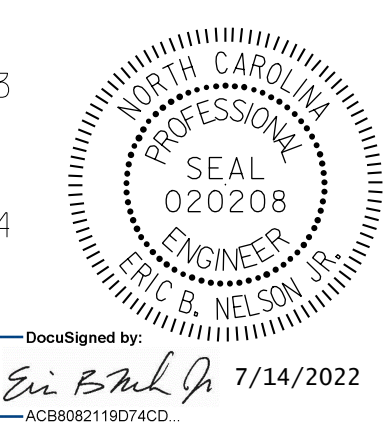


SIDE VIEW  
PROPOSED COLUMN & STRUT



ELEVATION  
COLUMN & STRUT RESTORATION

- STAGE 3 DEMOLITION
- STAGE 4 DEMOLITION
- POUR 3
- POUR 4



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

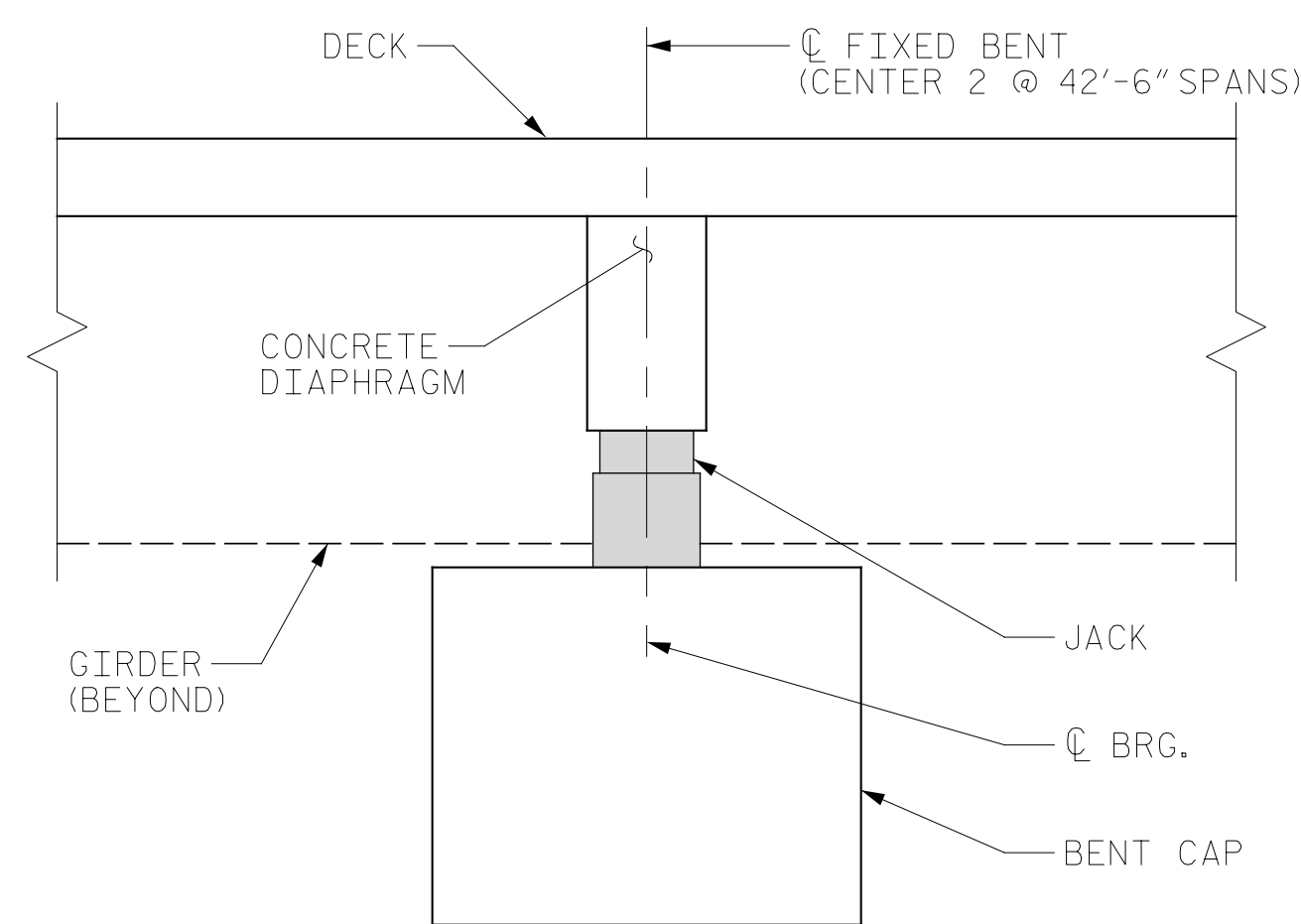
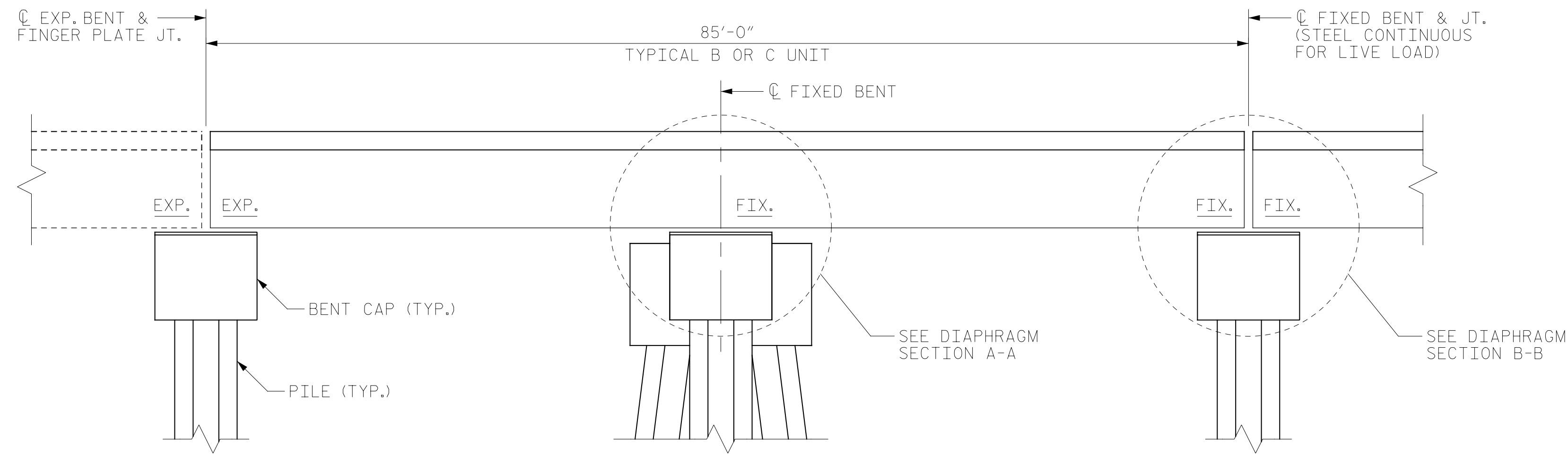
SHEET 3 OF 3  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
PILE FOOTING RESTORATION  
BENT 139 AND 140

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-354
1			3			TOTAL SHEETS
2			4			355

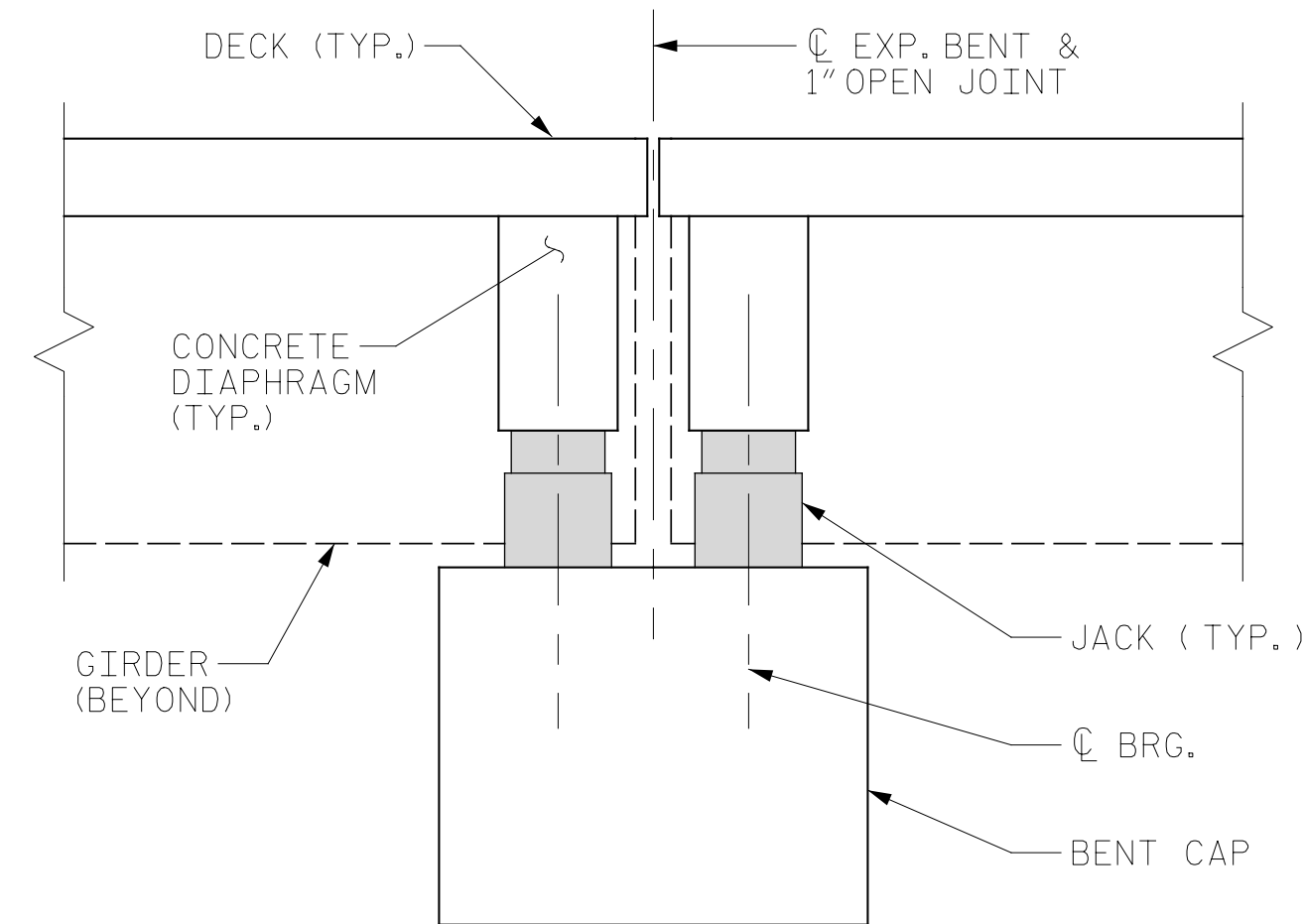
DRAWN BY : T. HARTLEY DATE : 4/2019  
CHECKED BY : R. NELSON DATE : 4/2019



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



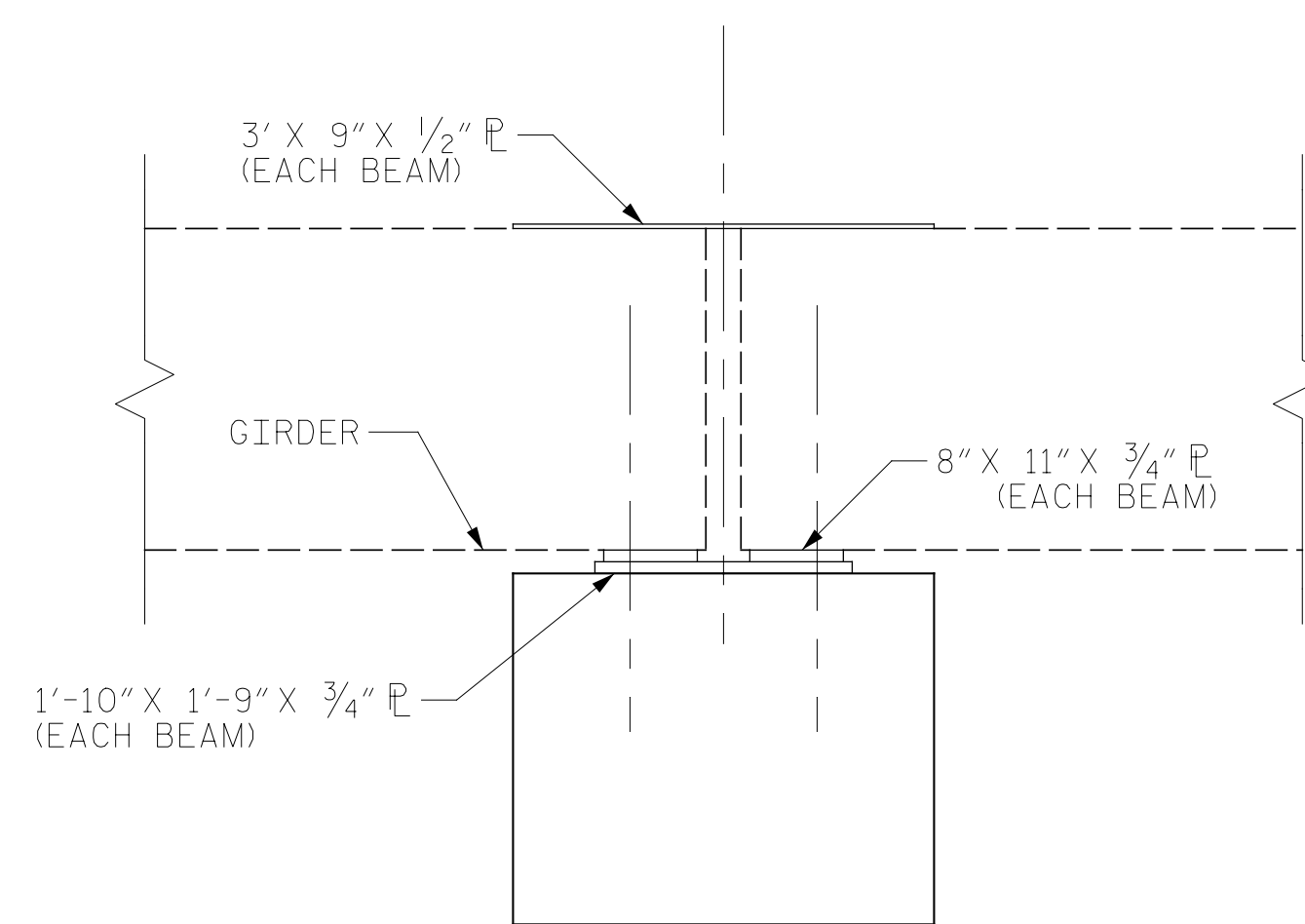
DIAPHRAGM SECTION A-A  
(AT FIXED BENT)



DIAPHRAGM SECTION B-B  
(AT STEEL CONTINUOUS FOR LIVE LOAD BENT)



DIAPHRAGM SECTION B-B  
(BEARING AT STEEL CONTINUOUS FOR LIVE LOAD BENT)



STEEL CONTINUOUS FOR LIVE LOAD DETAIL  
(EXISTING CONDITIONS)

JACKING NOTES:

THE JACKING SET-UP SHOWN IS AN EXAMPLE ONLY. THE CONTRACTOR SHALL DEVELOP JACKING PLANS SPECIFIC TO THE BRIDGE CONSTRUCTION, MATERIALS, DIMENSIONS, AND ORIENTATION. THE CONTRACTOR SHALL SUBMIT JACKING PLANS AND CALCULATIONS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA FOR REVIEW AND APPROVAL PRIOR TO MATERIAL PURCHASE OR FABRICATION OF THE JACKING SYSTEM.

THE METHOD USED FOR BRIDGE JACKING SHALL BE TYPE I OR TYPE II. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

THE SPAN SHALL BE LIFTED SUCH THAT THE BEAMS CLEAR THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE A METHOD TO SUPPORT THE SPAN FOR DEAD AND LIVE LOADS, REMOVE THE JACKS DURING REPAIR WORK, OR IF JACKS REMAIN IN PLACE DURING REPAIR WORK THEY SHALL HAVE MECHANICAL LOCK-OFF CAPABILITIES.

THE CONTRACTOR SHALL PROVIDE BLOCKING FOR ALL JACKS AS NECESSARY. A BLOCKING PLAN SHALL BE INCLUDED AS PART OF THE JACKING PLAN.

PRIOR TO BRIDGE JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING THE SPAN FROM BEING LIFTED. THIS MAY INCLUDE BUT IS NOT LIMITED TO METAL RAINLINGS AND UTILITIES.

THE CONTRACTOR MAY NEED TO REINFORCE EXISTING BRIDGE MEMBERS OR TEMPORARILY ADD MEMBERS TO WITHSTAND THE JACKING FORCES.

PROVISIONS SHALL BE MADE TO ACCOUNT FOR THERMAL MOVEMENTS OR LATERAL FORCES SUCH AS WIND LOADS DURING THE PERIOD THAT THE STRUCTURE IS TEMPORARILY SUPPORTED.

ALL JACKS AND JACKING SUPPORTS SHALL BE PLUMB.

EACH HYDRAULIC JACK SHALL HAVE A RATED CAPACITY CLEARLY SHOWN WITH MINIMUM RATED CAPACITY OF 1.3 TIMES THE CALCULATED LOAD REACTION ADJACENT TO THE POINT FOR JACKING.

JACKS WITHOUT A MECHANICAL LOAD HOLDER (LOCK-OFF) SHALL BE SECURED BY BLOCKING IF THE JACKING OPERATION IN ANY ONE LOCATION LASTS LONGER THAN 30 MINUTES.

THE HYDRAULIC SYSTEM SHALL BE CONFIGURED TO LIFT ALL JACKS SIMULTANEOUSLY.

THE CONTRACTOR SHALL SHIM THE SPAN DURING JACKING SUCH THAT THE MAXIMUM UNSHIMMED LIFT IS 1 INCH.

THE CONTRACTOR SHALL PROVIDE SPAN LIFT POINTS AS CLOSE AS POSSIBLE TO THE FACE OF THE BENT CAP.

IF DURING THE JACKING PROCESS OR WHILE THE SPAN IS BEING SUPPORTED, THE BEAMS SHIFT FROM THEIR ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE BEAMS SHALL BE STABILIZED. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY UPON OCCURRENCE.

THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING UTILITIES ADJACENT TO THE BRIDGE ARE NOT DAMAGED DURING REPAIR OPERATIONS.

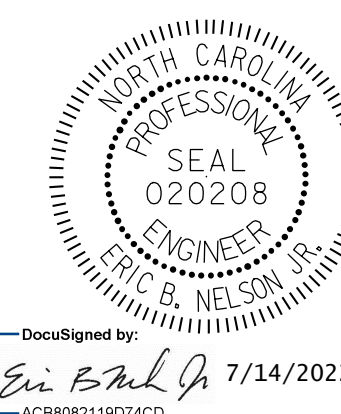
PAYMENT FOR BRIDGE JACKING WILL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS FOR EITHER TYPE I BRIDGE JACKING OR TYPE II BRIDGE JACKING.

BRIDGE JACKING TABLE  
PRELIMINARY GIRDER REACTIONS (MAXIMUM)

LOCATION	BEAMS	BRIDGE JACKING TYPE	DEAD LOAD (DC+DW) (KIPS)
BENT 5	1-4	II	50
BENT 21	1-4	II	50
BENT 48	1-4	II	50
BENT 157	1-4	II	50
BENT 175	1-4	II	50
BENT 196	1-4	II	50
BENT 206	1-4	II	50
BENT 236	1-4	II	50
BENT 252	1-4	II	50
BENT 257	1-4	II	50
BENT 311	1-4	II	50

NOTE: LOADS ARE UNFACTORED  
ALL TYPE II JACKING

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



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

JACKING DETAILS

DRAWN BY : E. TODD DATE : 4/2019  
CHECKED BY : R. NELSON DATE : 4/2019



DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

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

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	--	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	--	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	--	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	---	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A  $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{5}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990