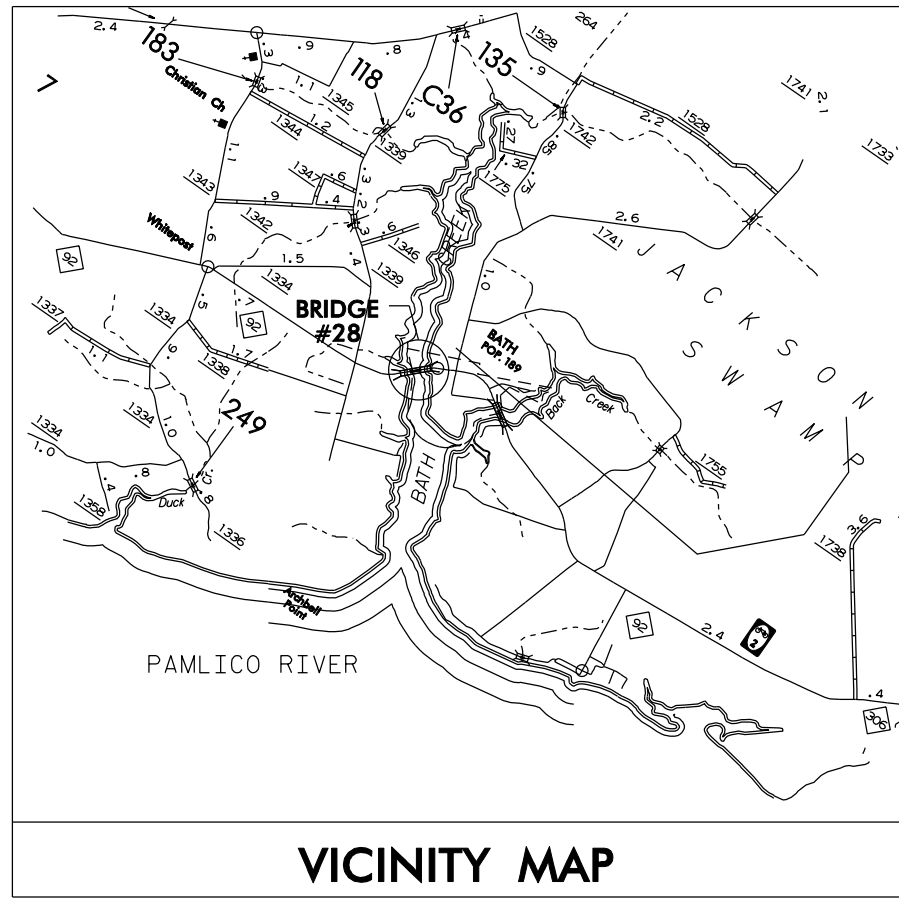


CONTRACT NO. D000061 TIP# B-4700AG

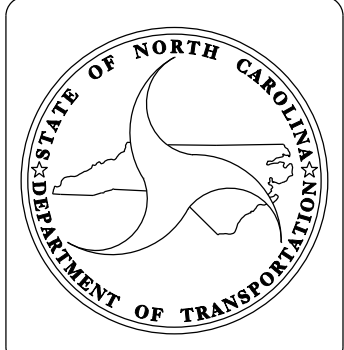
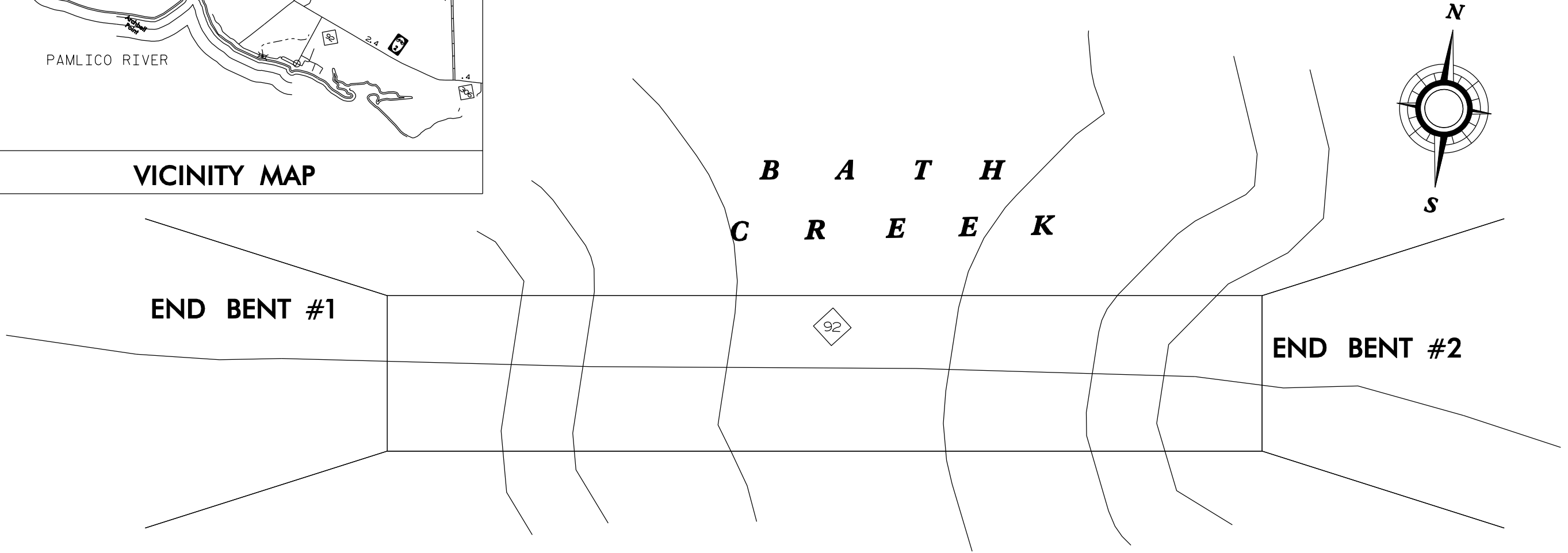


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

BEAUFORT COUNTY

LOCATION: BRIDGE #28, ON NC92, OVER BATH CREEK
TYPE OF WORK: REPAIR OF PILES AND BENT CAPS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4700AG	1	13
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
36727.1.1	BRNHS-000S(370)	P.E.	
36727.3.32	BRNHS-000S(370)	CONST	



DESIGN DATA

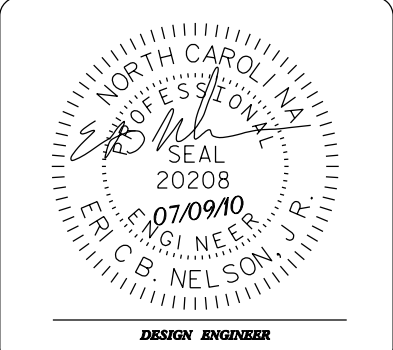
ADT 2005 =	16000
ADT 2025 =	32000

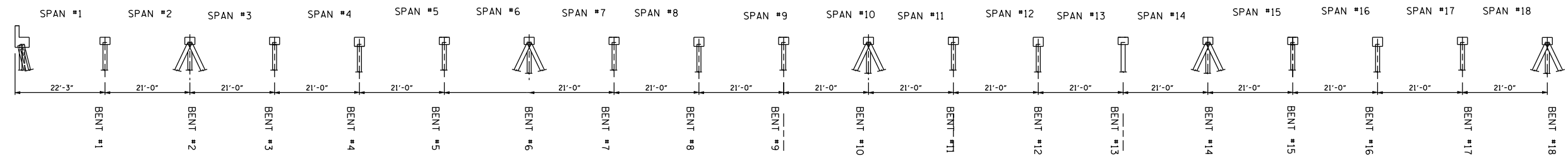
PROJECT LENGTH

LENGTH STRUCTURE PROJECT = XX MILE

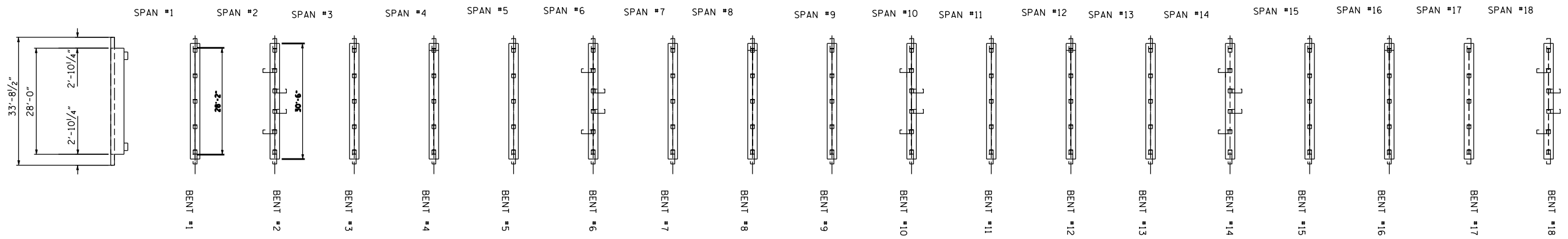
Prepared In the Office of:
BRIDGE MANAGEMENT UNIT
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 2006 STANDARD SPECIFICATIONS

LETTING DATE: AUGUST 19, 2010	DAN HOLDERMAN, PE <small>STATE BRIDGE MANAGEMENT ENGINEER</small>
MIKE SUMMERS <small>BRIDGE MANAGEMENT PROJECT MANAGER</small>	

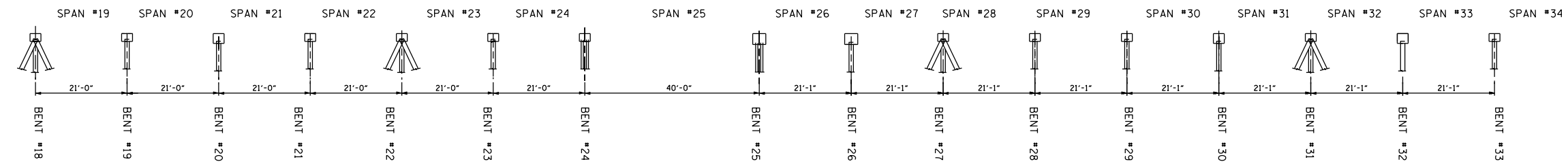




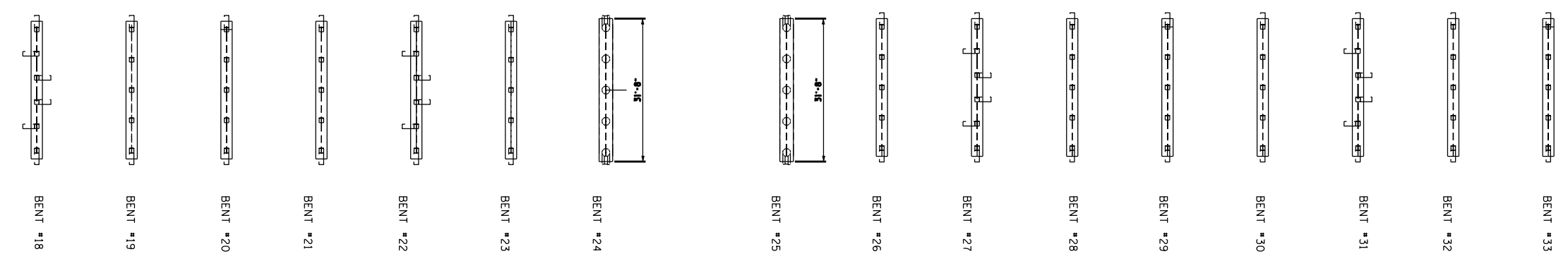
PROFILE OF BRIDGE



PLAN OF BRIDGE



PROFILE OF BRIDGE



PLAN OF BRIDGE

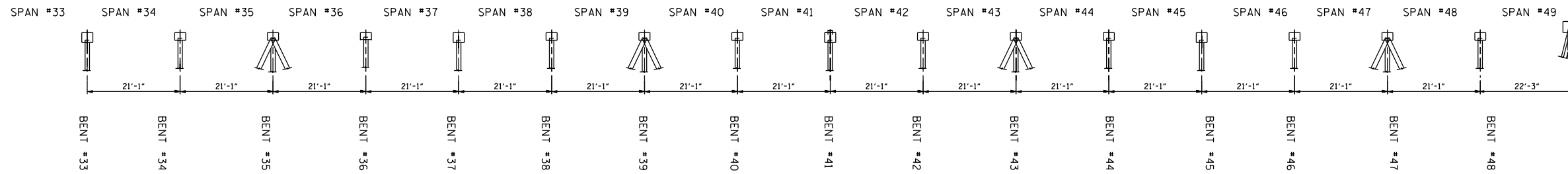
PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 STATION: _____
 BRIDGE REPAIR 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

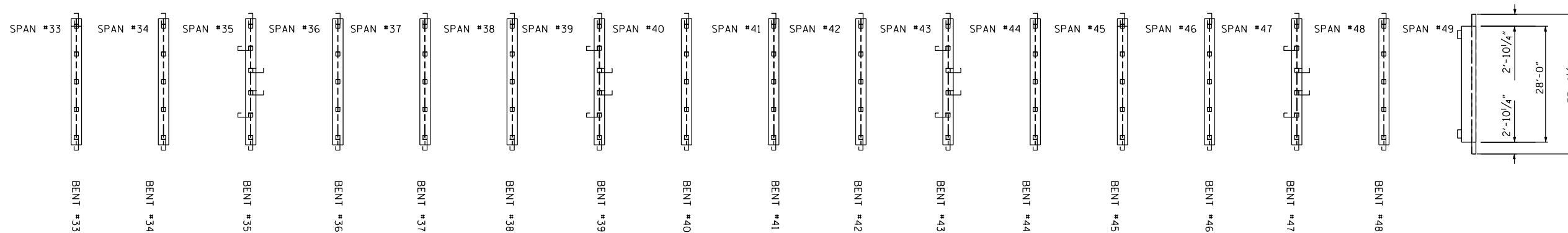
PLAN & PROFILE OF
 BRIDGE #28 ON NC92
 OVER BLACK RUN CREEK

REVISIONS					SHEET NO.
BY	DATE	NO.	BY	DATE	
		3			2
		4			13

DRAWN BY : S. T. SANDOR DATE : 1/25/10
 CHECKED BY : A. ABRAHA DATE : 1/25/10



PROFILE OF BRIDGE



PLAN OF BRIDGE

BILL OF MATERIAL				
	MOBILIZATION	CONCRETE REPAIRS TO CAPS	PILE ENCAPSULATION	PILE JACKETS
UNIT	LUMP SUM	CU. FT.	LF	LF
TOTAL	LUMP SUM	30	1106	251

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 STATION: _____
 BRIDGE REPAIR 28

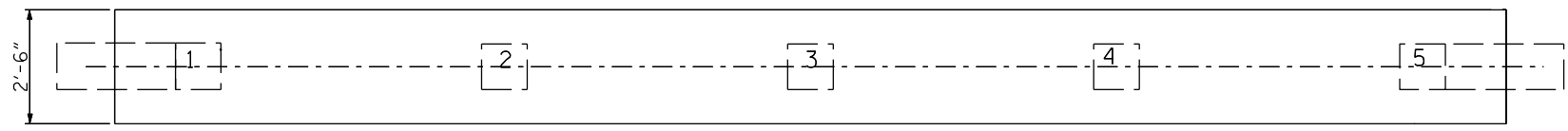
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN & PROFILE OF
 BRIDGE #28 ON NC 92
 OVER BLACK RUN CREEK

REVISIONS					SHEET NO.
BY	DATE	NO.	BY	DATE	TOTAL SHEETS
		3			3
		4			13

DRAWN BY : S. T. SANDOR DATE : 1/25/10
 CHECKED BY : A. ABRAHA DATE : 1/25/10

NOTES

1. FOR EXAMPLES OF TYPICAL CAP REPAIRS SEE SHEET #8.
2. FOR EXAMPLES OF PILE JACKETS SEE SHEETS #12 AND #13.
3. FOR EXAMPLES OF TYPICAL ENCAPSULATION OF PILES SEE SHEETS #9 AND #10.



PLAN OF BENT CAPS

BENT CAP REPAIRS

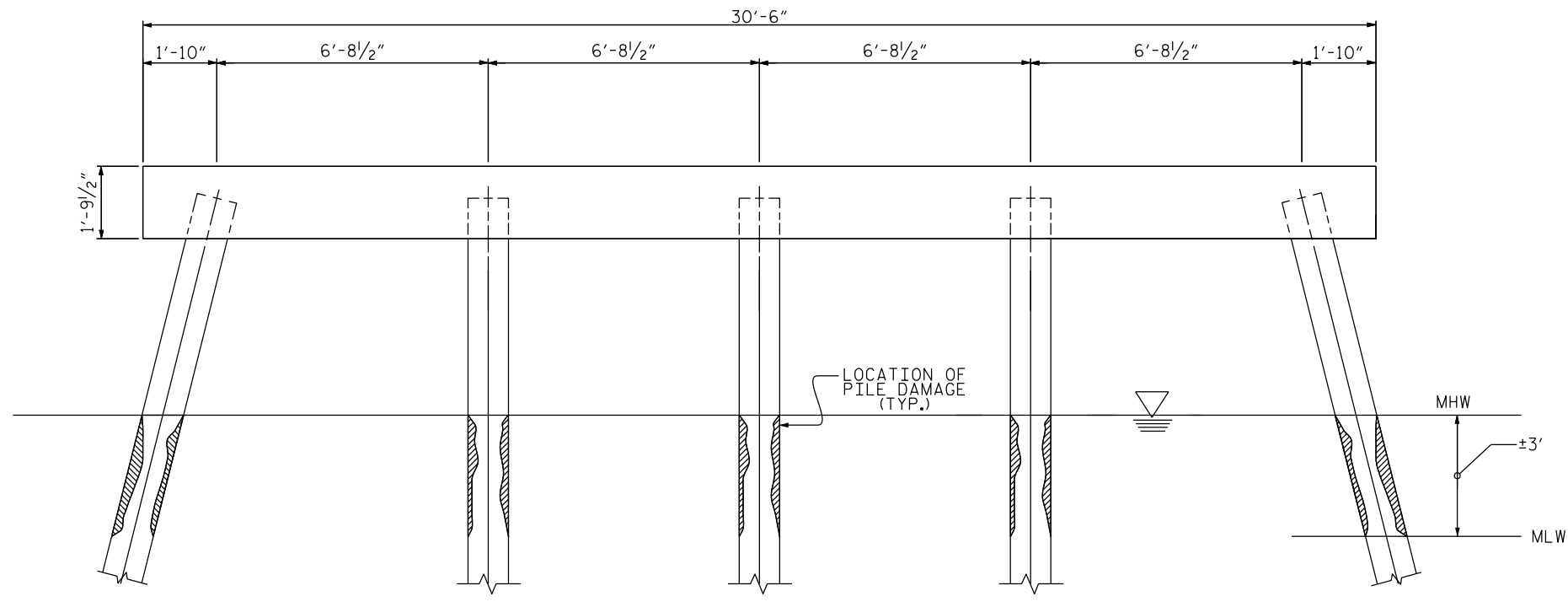
BENT	DESCRIPTION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (FEET)	VOLUME (CU.FT.)
1	SPALL ON CAP OVER PILE 2	1.00	1.00	0.167	0.167

PILE ENCAPSULATION LOCATIONS

BENT	PILE	BENT	PILE	BENT	PILE	BENT	PILE	BENT	PILE
3	3	11	4	21	3	32	3	42	1
5	2	11	5	21	4	32	4	42	1
5	4	13	3	21	5	32	5	42	3
5	5	13	4	23	ALL	34	1	42	5
7	3	13	5	26	ALL	34	2	44	ALL
7	4	15	2	28	2	34	3	46	2
9	2	15	3	28	3	34	4	46	3
9	3	15	4	28	4	36	ALL	46	4
9	4	15	5	30	1	38	ALL	46	5
9	5	17	ALL	30	4	40	3		
11	3	19	5	32	2	40	4		

PILE JACKET LOCATIONS

BENT	PILE	BENT	PILE
7	2	30	2
7	5	32	1
9	1	34	5
11	2	40	1
19	3	40	5
19	3		
21	2		
28	4		
28	5		



ELEVATION VIEW

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BENT REPAIRS

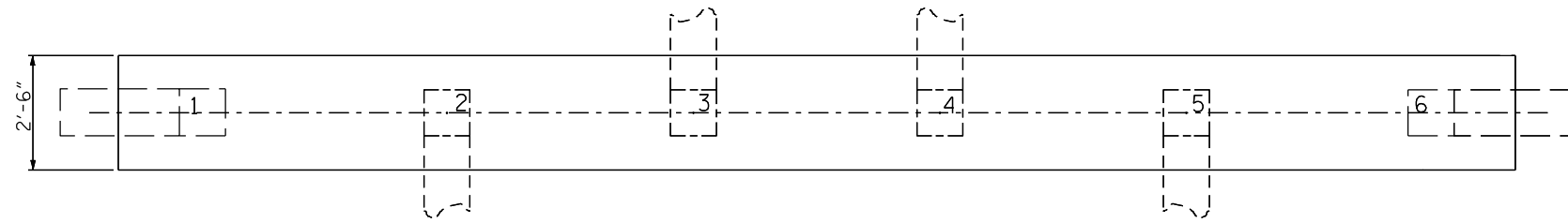
BENTS : 1, 3, 5, 7, 9,
 11, 12, 13, 15, 17, 19,
 21, 23, 26, 28, 30, 32,
 34, 36, 38, 40, 42,
 44, 46 & 48.

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	4
1			3			TOTAL SHEETS 13
2			4			

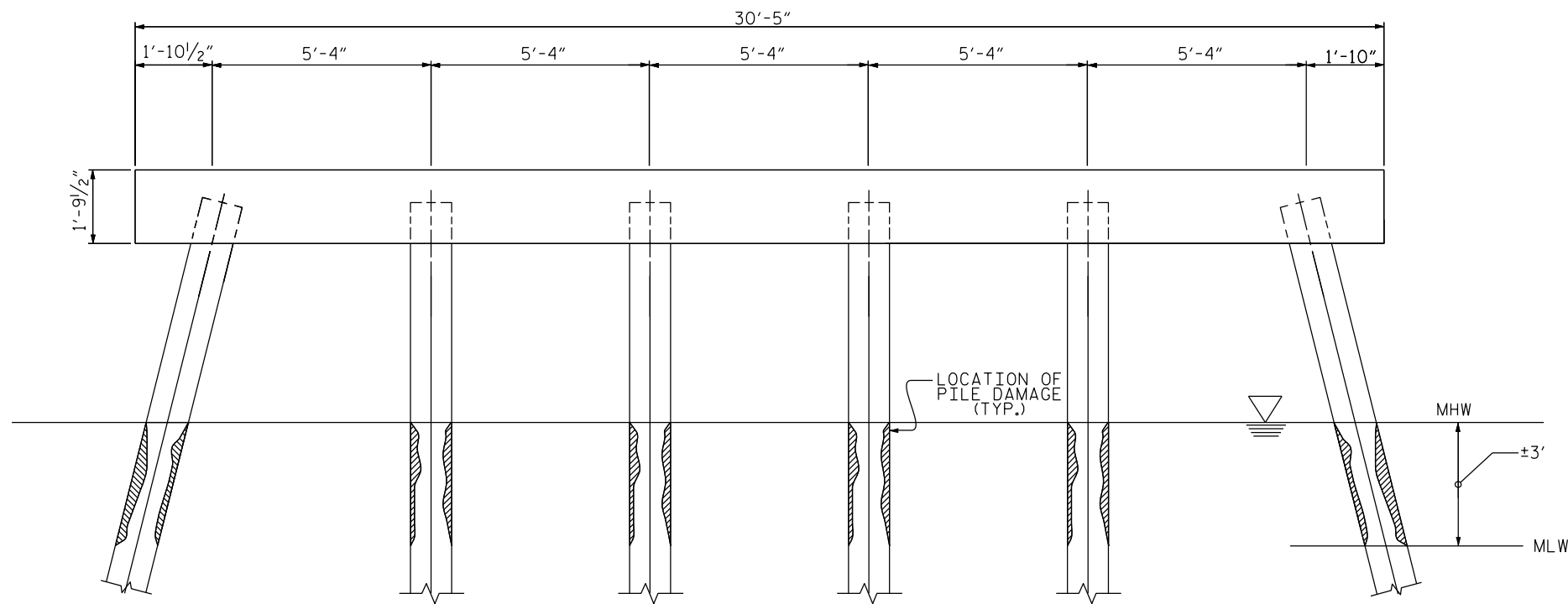
DRAWN BY: S. T. SANDOR DATE: 01/2010
 CHECKED BY: A. ABRAHA DATE: 01/2010

NOTES

1. FOR EXAMPLES OF TYPICAL CAP REPAIRS SEE SHEET #8.
2. FOR EXAMPLES OF PILE JACKETS SEE SHEETS #12 AND #13.
3. FOR EXAMPLES OF TYPICAL ENCAPSULATION OF PILES SEE SHEETS #9 AND #10.



PLAN OF BENT CAPS



ELEVATION VIEW

PILE ENCAPSULATION LOCATIONS

BENT	PILE	BENT	PILE	BENT	PILE	BENT	PILE
6	3	18	6	35	3	43	6
6	6	22	ALL	35	4	47	ALL
10	1	27	1	35	6		
10	3	27	2	39	1		
14	2	27	4	39	2		
14	4	27	5	39	4		
14	6	27	6	39	6		
18	1	31	1	43	2		
18	2	31	4	43	3		
18	4	31	6	43	4		
18	5	35	1	43	5		

PILE JACKET LOCATIONS

BENT	PILE
22	1
6	5
6	4
10	2
10	4
14	5
31	2
35	2
35	5
39	3
39	5

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BENT REPAIRS

BENTS : 2, 6, 10, 14,
 18, 22, 27, 31, 35, 39,
 43 & 47.

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5
1			3			TOTAL SHEETS
2			4			13

NOTES

1. FOR EXAMPLES OF TYPICAL CAP REPAIRS SEE SHEET #8.
2. FOR EXAMPLES OF PILE JACKETS SEE SHEETS #12 AND #13.
3. FOR EXAMPLES OF TYPICAL ENCAPSULATION OF PILES SEE SHEETS #9 AND #10.

BENT CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (FEET)	VOLUME (CU.FT.)
4	SPAN 4 OVER P1 FROM LEFT END	4.75	2.25	0.33	3.56
4	SPAN 4 OVER P2 83" FROM END	4.33	1.58	0.33	2.29
4	SPAN 4 OVER PILE 3	2.00	1.00	0.25	0.50
4	SPAN 4 OVER PILE 4	2.00	1.00	0.25	0.50
16	SPAN 16 OVER PILE 1	1.00	0.50	0.33	0.17
16	SPAN 16 OVER PILE 4	3.00	1.50	0.33	1.50
20	SPAN 20 OVER P2- 8.25' FROM END	3.33	3.25	0.33	3.61
20	SPAN 20 BETWEEN PILES 1 & 2	6.50	1.50	0.75	7.31
29	SPAN 30 OVER PILES 1 & 2	6.00	1.50	0.33	3.00
29	SPAN 30 OVER PILES 2 & 3	6.50	1.50	0.25	2.44
33	SPAN 34 BETWEEN PILES 2 & 3	1.83	1.67	0.33	1.02
TOTAL					25.90

PILE ENCAPSULATION LOCATIONS

BENT	PILE	BENT	PILE	BENT	PILE
4	5	29	3	41	3
8	2	29	4	41	5
8	3	29	5	45	2
16	1	33	1	45	3
16	3	33	3		
16	4	33	4		
16	5	37	1		
20	1	37	2		
20	3	37	4		
20	4	37	5		
20	5	41	2		

PILE JACKET LOCATIONS

BENT	PILE
8	1
8	5
20	2
29	1
33	3
33	5
37	3
41	1
41	4
45	4
45	5

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

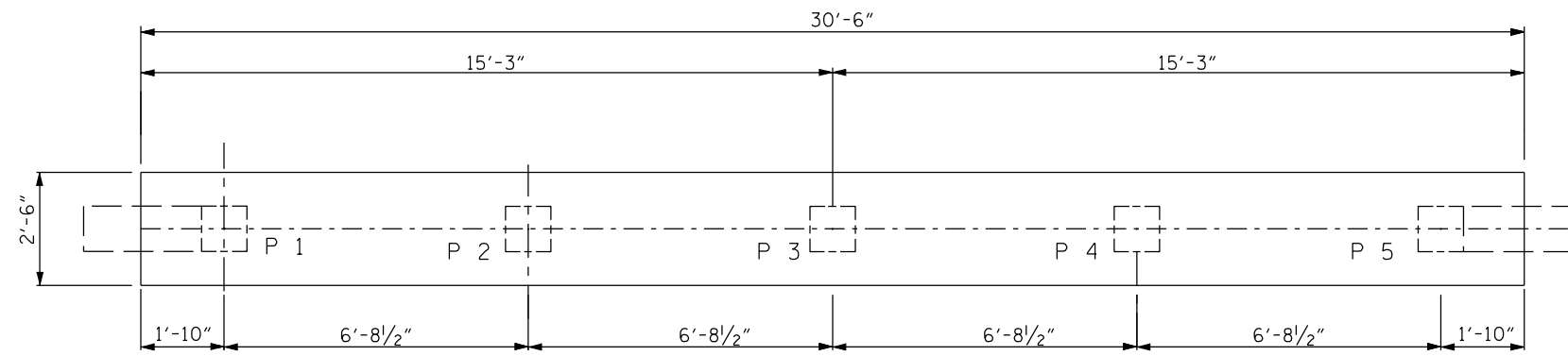
BENT REPAIRS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6
1			3			TOTAL SHEETS 13
2			4			

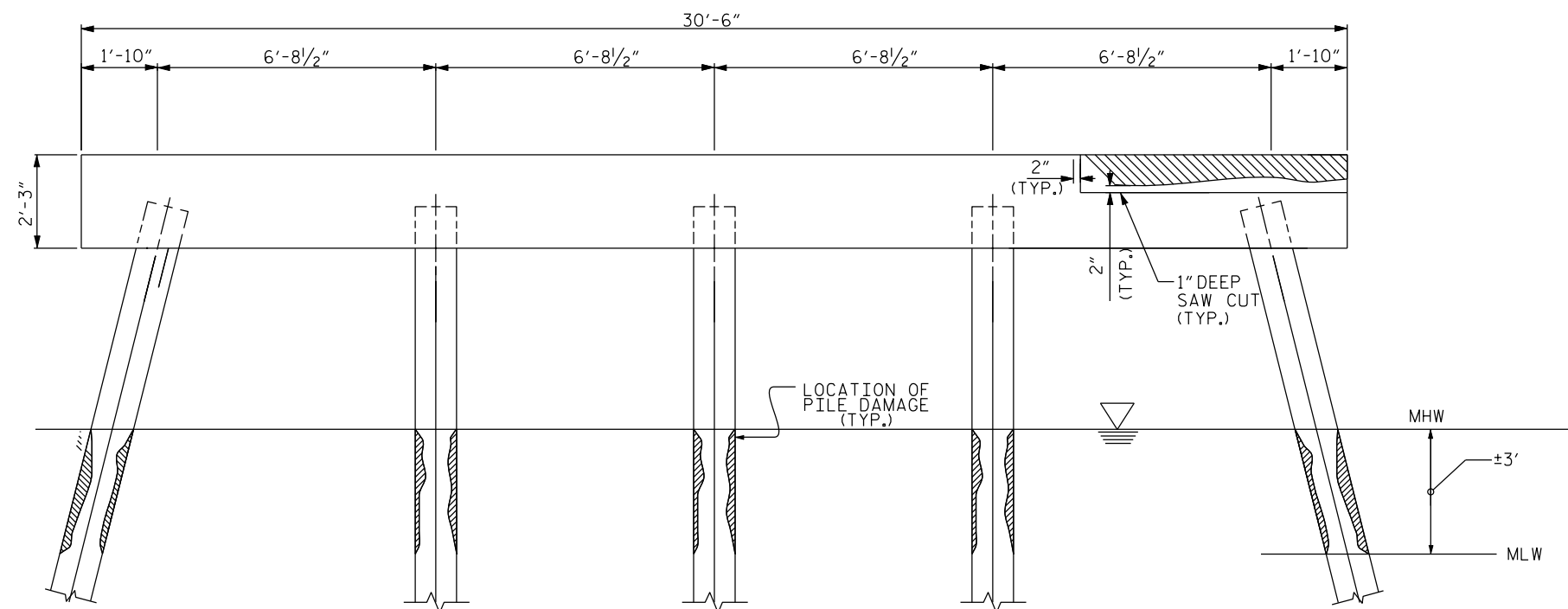
NOTES

ALL QUANTITIES ARE APPROXIMATE.

BENTS : 4, 8, 16, 20,
 29, 33, 37, 41, 45.



PLAN OF BENT CAPS



ELEVATION VIEW (BENT CAPS)

DRAWN BY: S. T. SANDOR DATE: 02/10
 CHECKED BY: A. ABRAHA DATE: 02/10

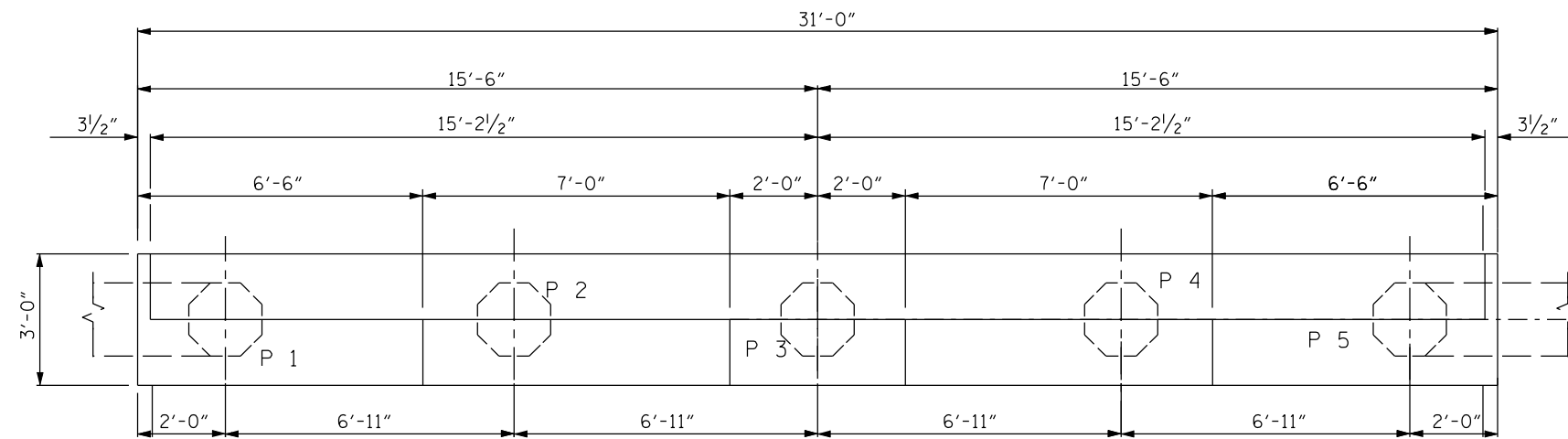
*****SYTIME***** *****USERNAME***** *****DGN*****

NOTES

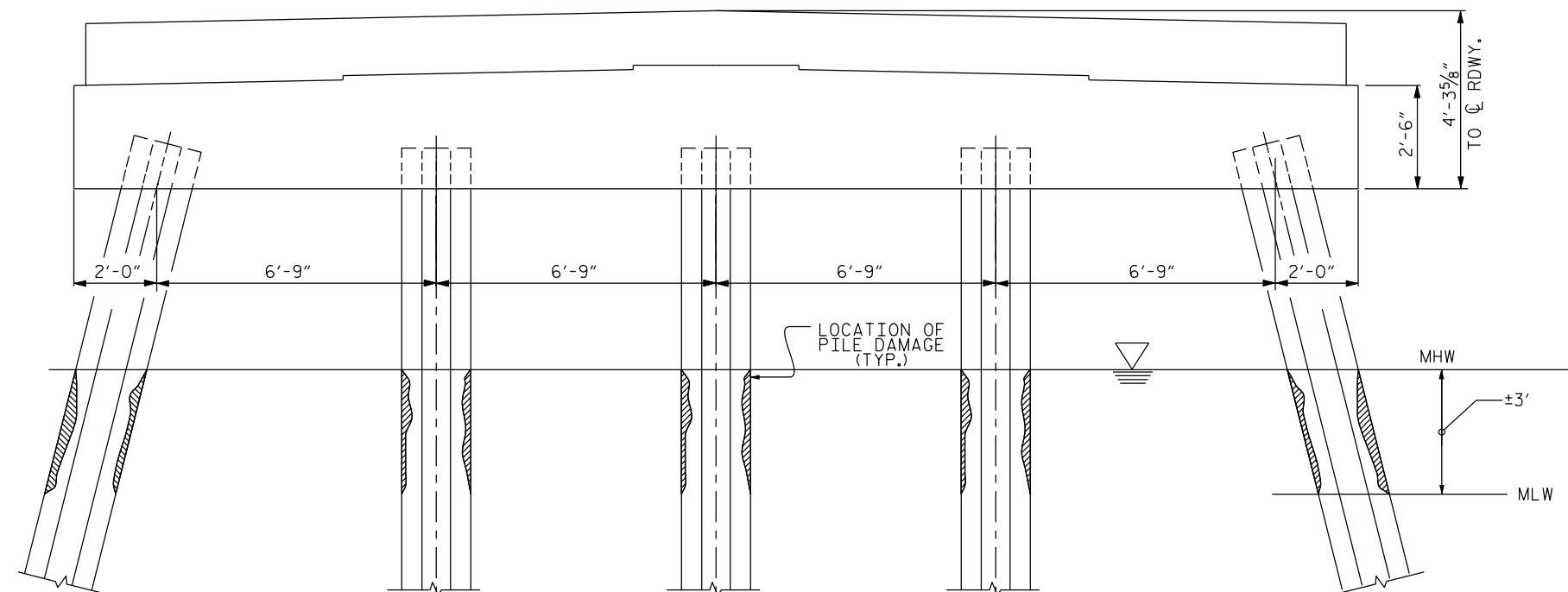
1. FOR EXAMPLES OF TYPICAL ENCAPSULATION OF PILES SEE SHEETS #9 AND #10.

PILE ENCAPSULATION LOCATIONS

BENT	PILE
24	ALL
25	ALL



PLAN OF BENT No. 25
(BENT No. 24 SIMILAR BY ROTATION)



ELEVATION VIEW BENT No. 25
(BENT No. 24 SIMILAR BY ROTATION)

PROJECT NO. B-4700AG
COUNTY: BEAUFORT
BRIDGE NO. 28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT REPAIRS

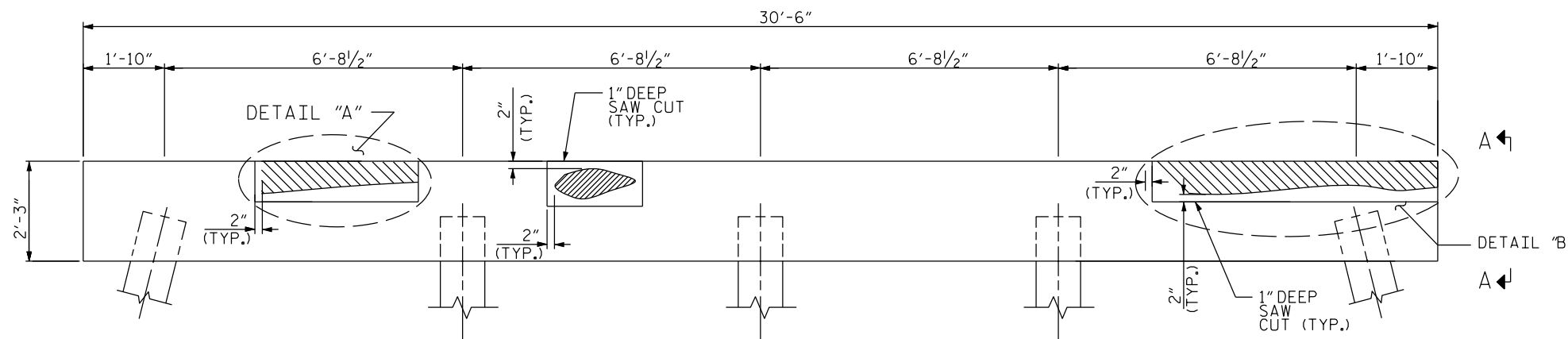
DRAWN BY: S. T. SANDOR DATE: 02/10
CHECKED BY: A. ABRAHA DATE: 02/10

BENTS #24 AND #25

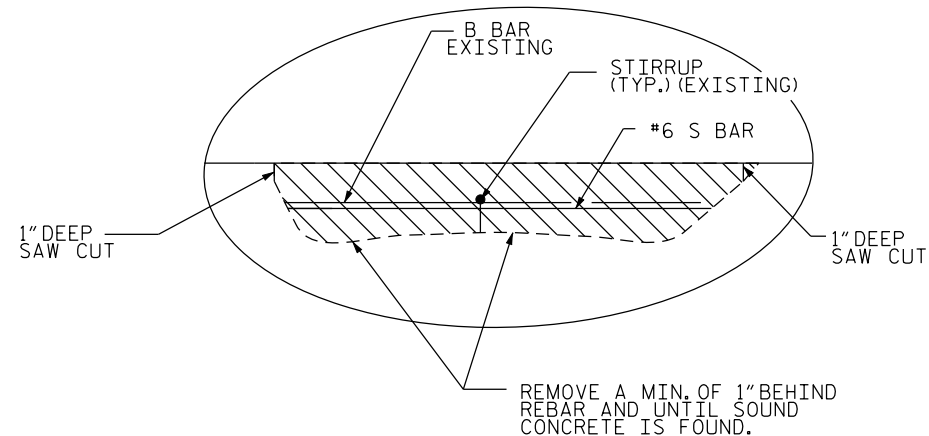
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	7
1			3			TOTAL SHEETS
2			4			13

GENERAL NOTES

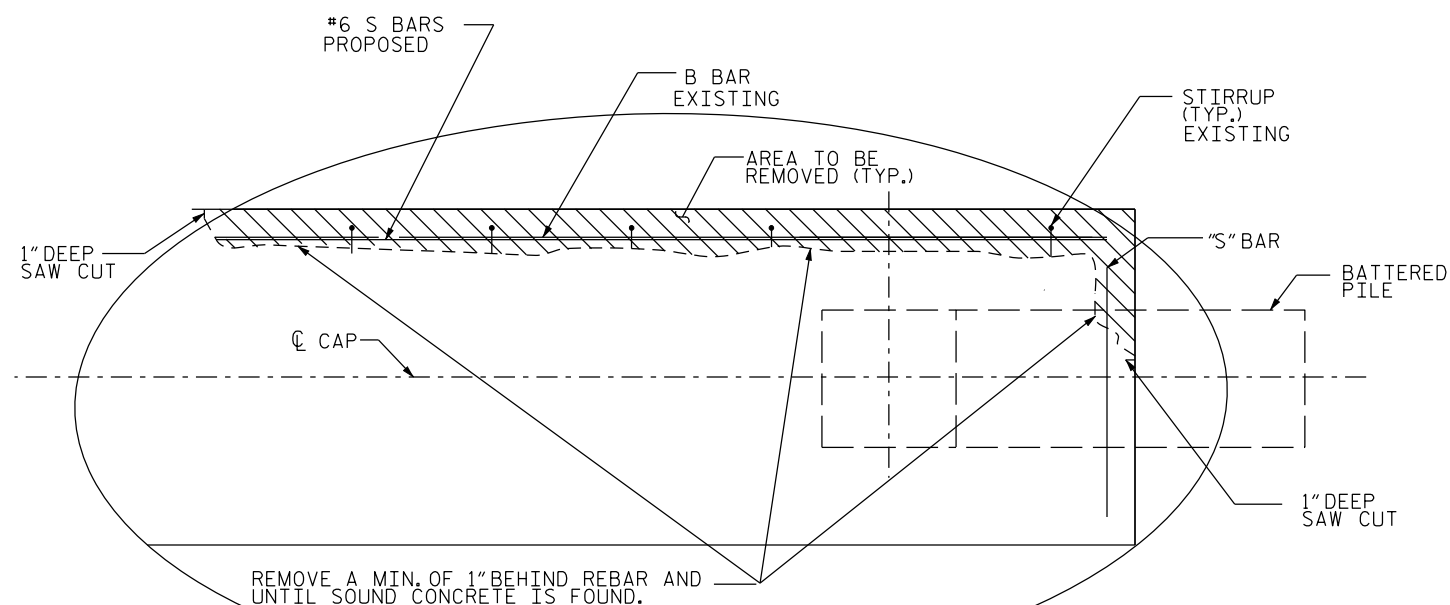
1. SPALL DIMENSIONS SHOWN ARE APPROXIMATE.
2. REINFORCING STEEL SHALL BE GRADE 60.
3. FOR ADHESIVELY ANCHORED DOWELS SEE SPECIAL PROVISIONS.
4. FIELD TESTING FOR ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
5. REPAIR MATERIAL FOR CAP SPALLS SHALL BE POLYMER MODIFIED CONCRETE OR SHOTCRETE.



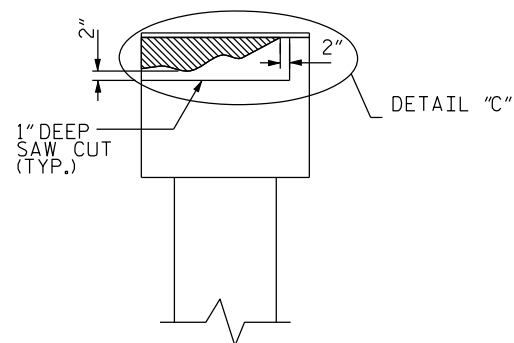
TYPICAL ELEVATION VIEW (BENT CAPS)



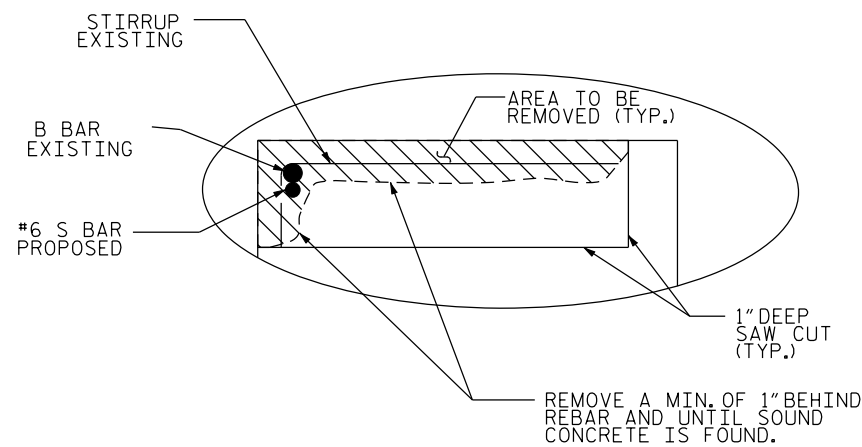
DETAIL "A"



DETAIL "B"



SECTION A-A

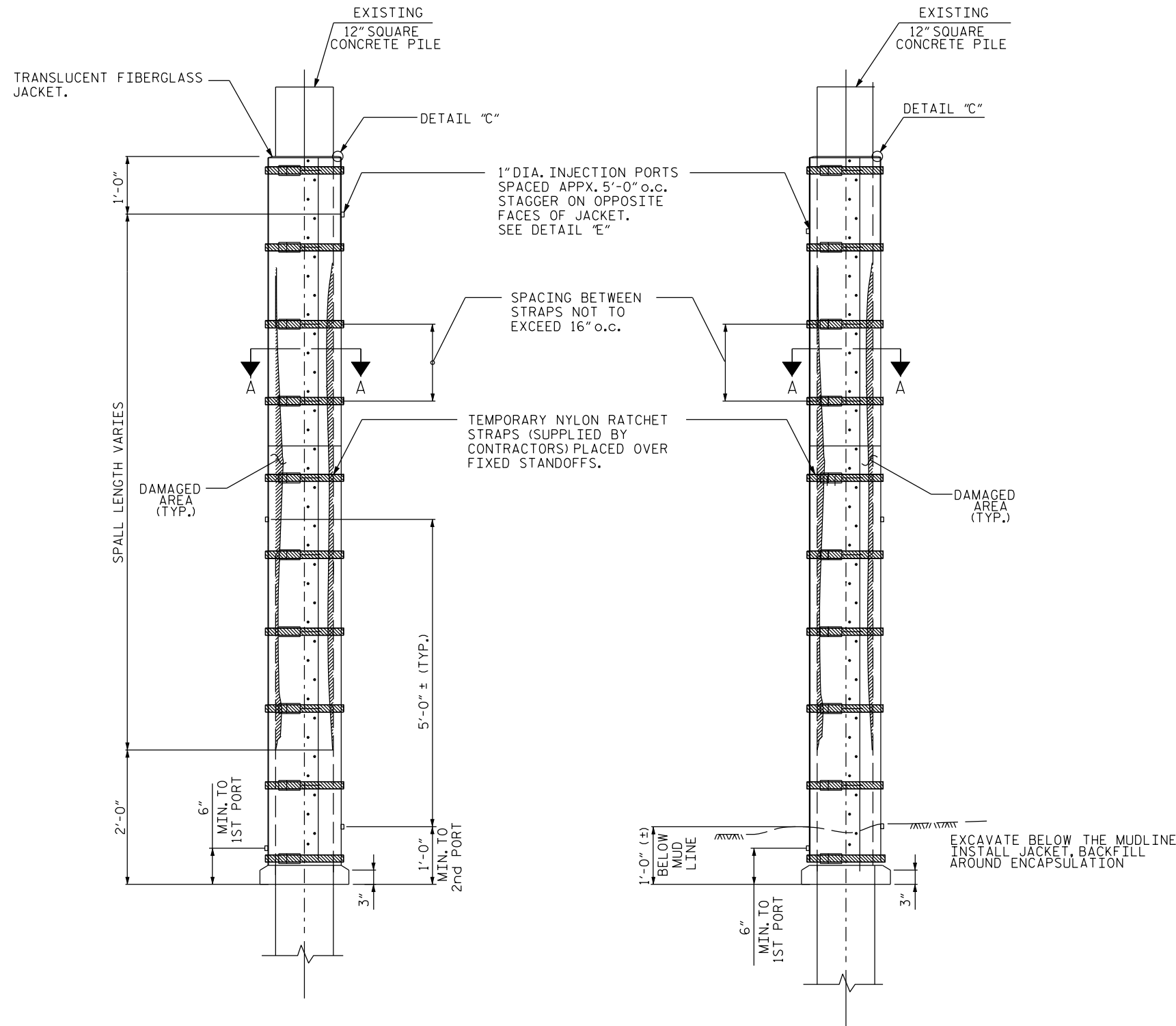


DETAIL "C"

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

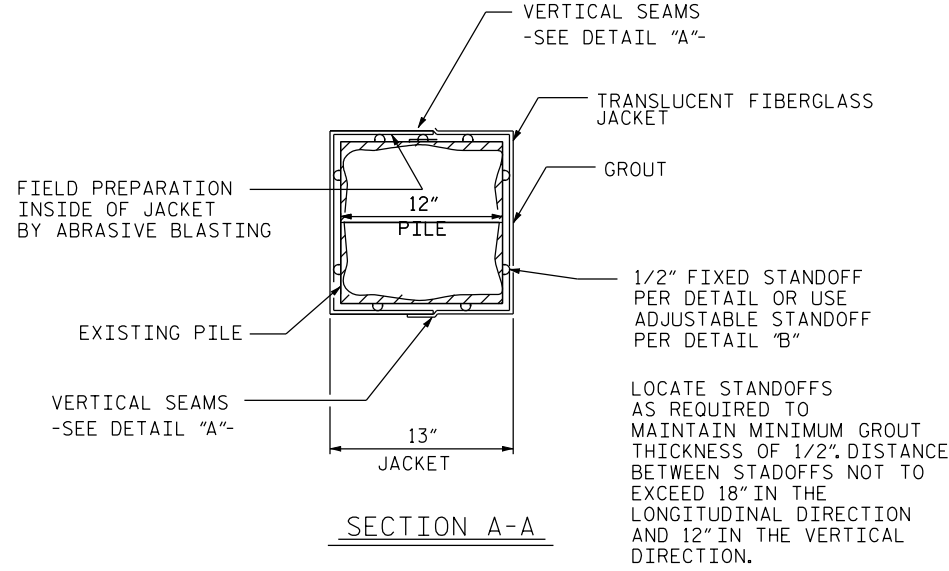
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 TYPICAL BENT CAP
 REPAIR
 DETAILS

REVISIONS						SHEET NO. 8
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 13
2			4			



PILE ELEVATION
ABOVE GRADE REPAIR

PILE ELEVATION
BELOW GRADE REPAIR



SECTION A-A

NOTES:

- ALL PILE JACKETS ARE ESTIMATED 7 FT. IN LENGTH AND START 2 FEET ABOVE MEAN WATER ELEVATION.
- APPROXIMATELY 5 FEET OF PILE JACKET WILL BE PLACED BELOW WATER ELEVATION DEPENDING ON THE WATER SURFACE ELEVATION.
- SOME PILE JACKET LOCATIONS ARE SHALLOW AND IN THOSE AREAS THE PILE JACKET WILL ONLY NEED TO EXTEND 1 FEET BELOW MUD LINE.

REPAIR SEQUENCES

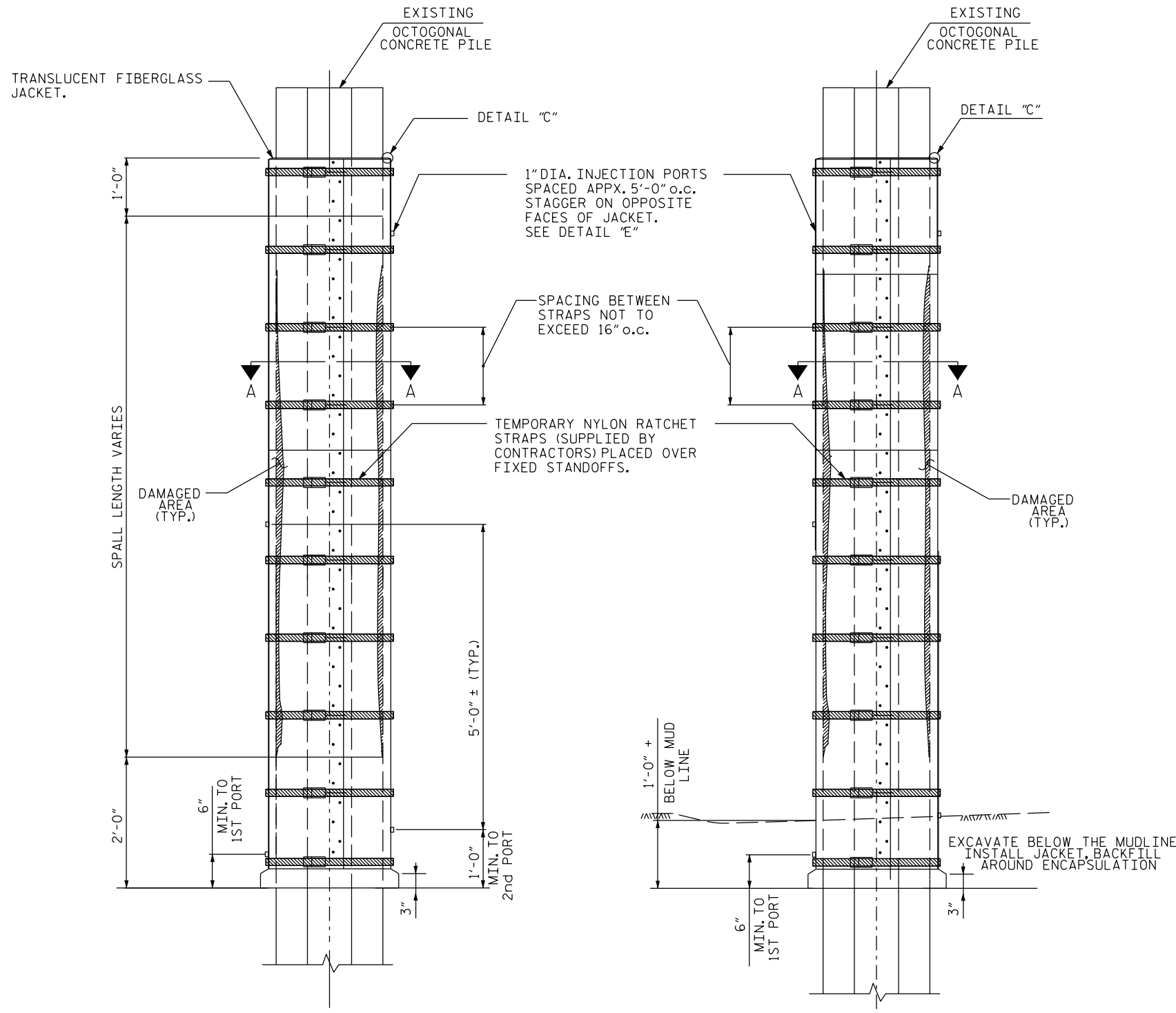
1. AFTER SURFACE PREPARATION, PLACE JACKET IN PROPER LOCATION AROUND PILE AND SEAL LONGITUDINAL SEAMS (SEE DETAIL "A"). INSTALL TEMPORARY BRACING.
2. CONFIRM SPACING BETWEEN JACKET AND PILE. INSTALL BOTTOM SEAL (SEE DETAIL "D"). ALLOW BOTTOM SEAL TO CURE APPX. 4 HOURS.
3. ATTACH GROUT HOSE TO LOWERMOST INJECTION PORT AND PUMP GROUT FOR 30-sec. CHECK FOR LEAKS ALONG SEAMS AND BOTTOM SEAL. (OPTIONALLY ALLOW THIS GROUT TO CURE AND PROCEED WITH GROUT INJECTION FROM 2ND PORT.)
4. PLUG UPPER INJECTION PORTS AND PUMP GROUT INTO LOWER PORT UNTIL GROUT REACHES TOP OF JACKET. ONLY USE UPPER PORTS IF INJECTION BECOMES DIFFICULT.

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

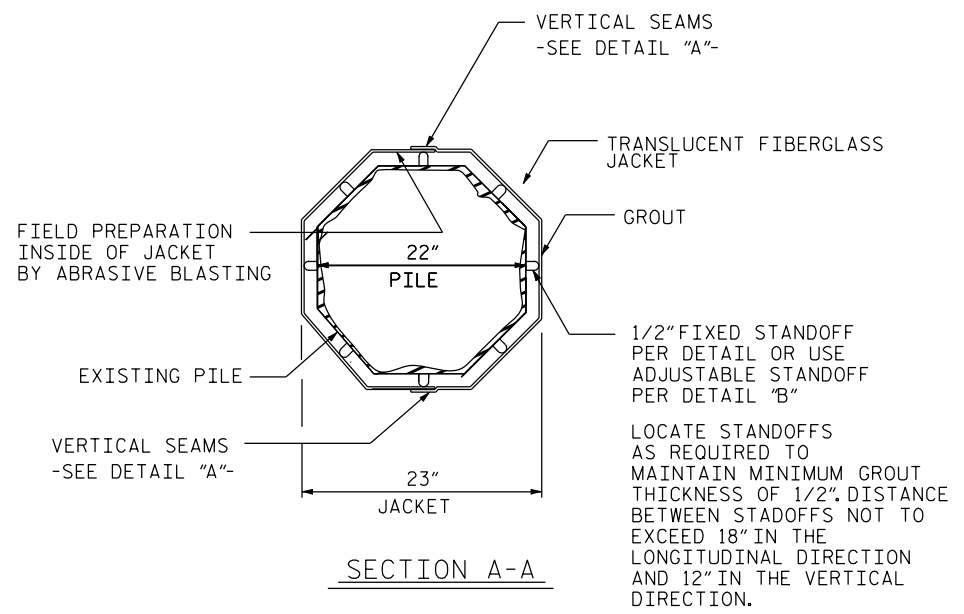
PILE ENCAPSULATION FOR
 SQUARE PILES

REVISIONS						SHEET NO. 9
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 13
2			4			



PILE ELEVATION
ABOVE GRADE REPAIR

PILE ELEVATION
BELOW GRADE REPAIR



SECTION A-A

NOTES:

- ALL PILE JACKETS ARE ESTIMATED 7 FT. IN LENGTH AND START 2 FEET ABOVE MEAN WATER ELEVATION.
- APPROXIMATELY 5 FEET OF PILE JACKET WILL BE PLACED BELOW WATER ELEVATION DEPENDING ON THE WATER SURFACE ELEVATION.
- SOME PILE JACKET LOCATIONS ARE SHALLOW AND IN THOSE AREAS THE PILE JACKET WILL ONLY NEED TO EXTEND 1 FEET BELOW MUD LINE.

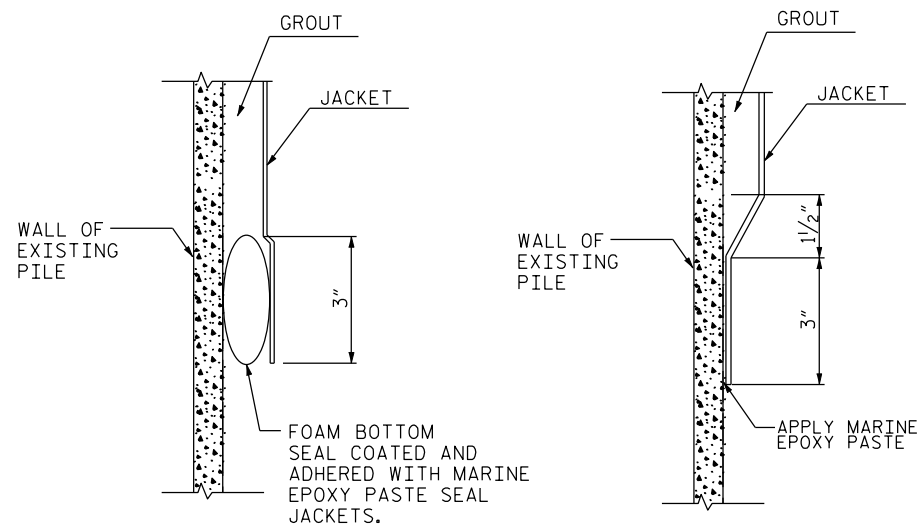
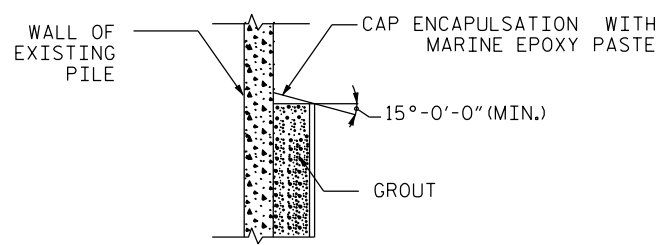
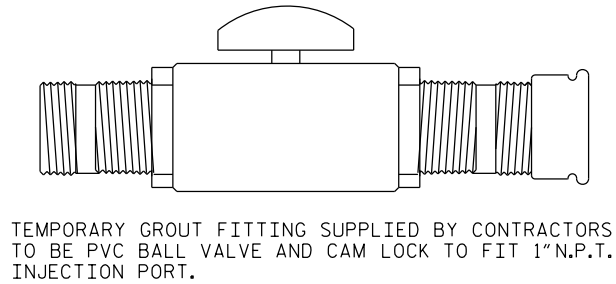
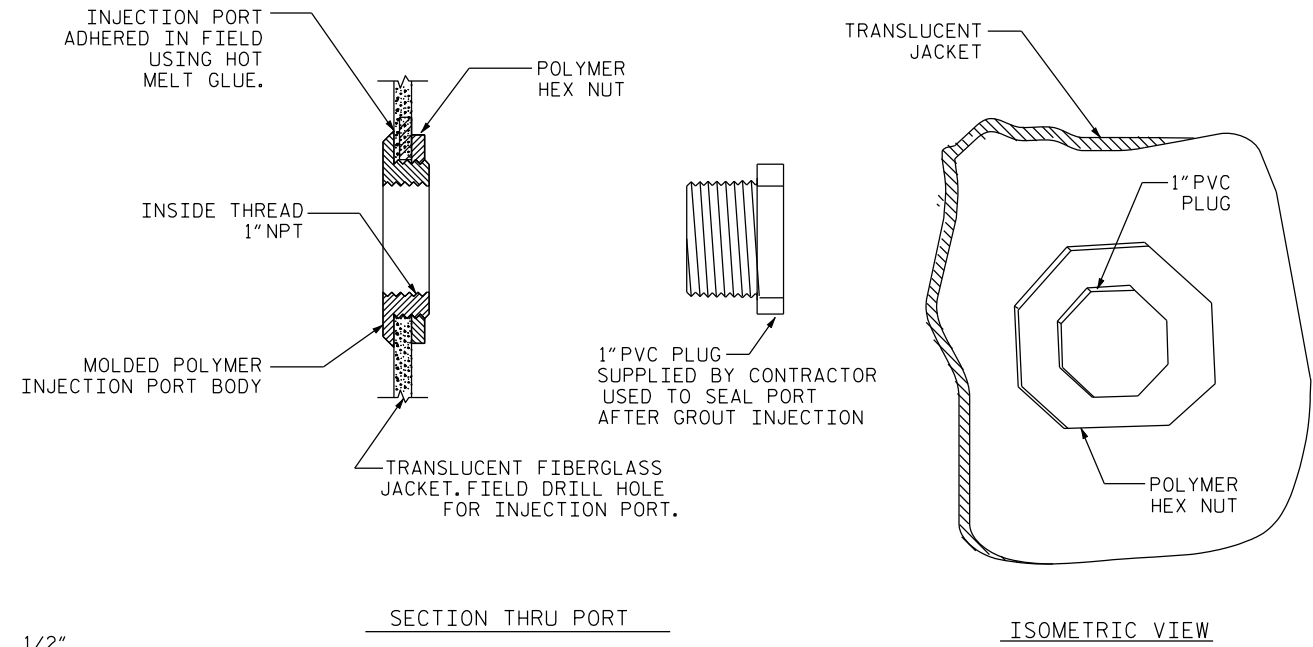
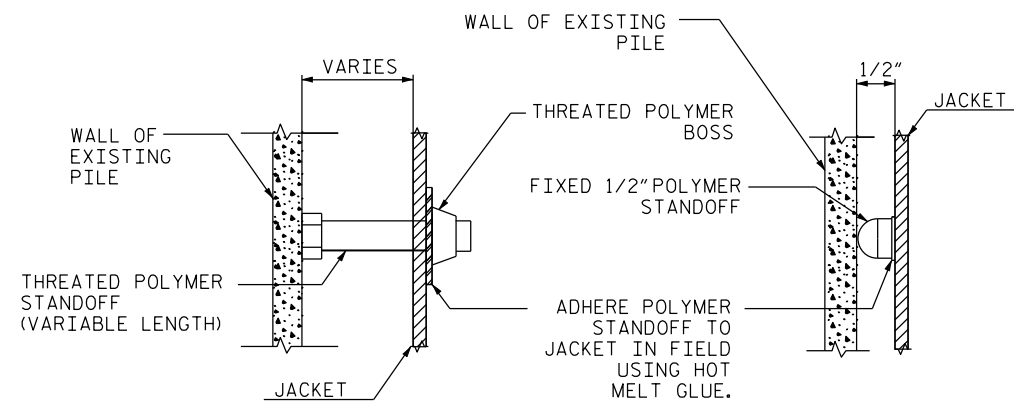
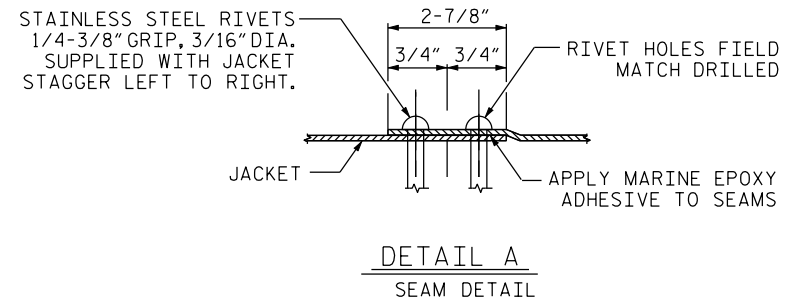
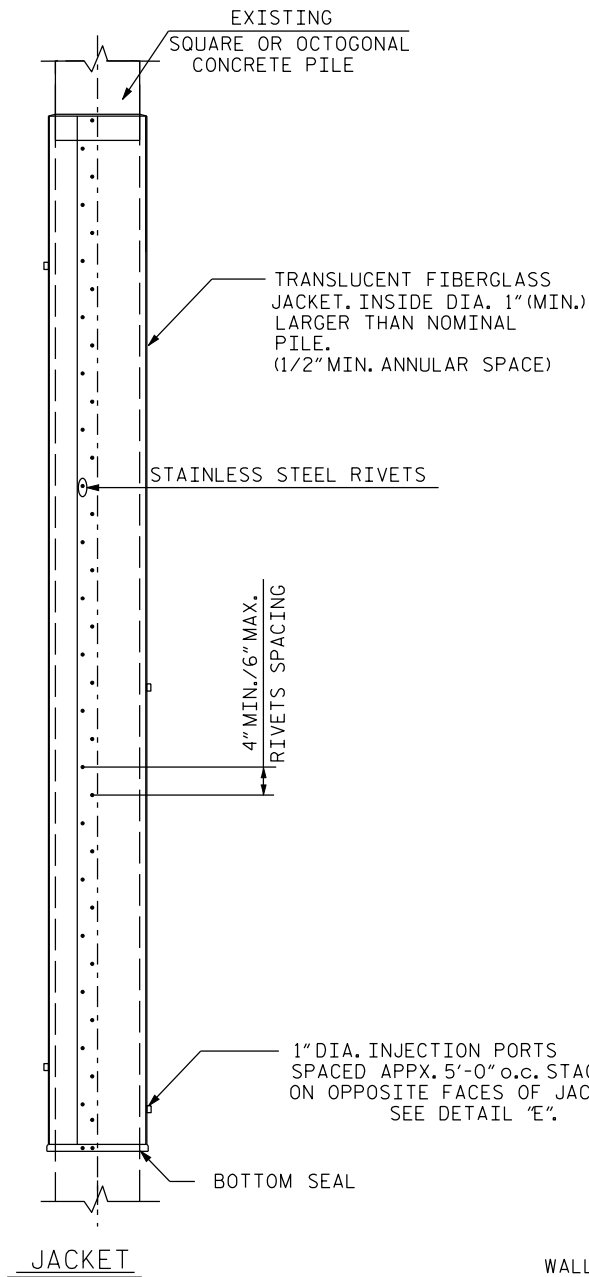
REPAIR SEQUENCES

1. AFTER SURFACE PREPARATION, PLACE JACKET IN PROPER LOCATION AROUND PILE AND SEAL LONGITUDINAL SEAMS (SEE DETAIL "A"). INSTALL TEMPORARY BRACING.
2. CONFIRM SPACING BETWEEN JACKET AND PILE. INSTALL BOTTOM SEAL (SEE DETAIL "D"). ALLOW BOTTOM SEAL TO CURE APPX. 4 HOURS.
3. ATTACH GROUT HOSE TO LOWERMOST INJECTION PORT AND PUMP A-P-E GROUT FOR 30-sec. CHECK FOR LEAKS ALONG SEAMS AND BOTTOM SEAL. (OPTIONALLY ALLOW THIS GROUT TO CURE AND PROCEED WITH GROUT INJECTION FROM 2nd PORT.)
4. PLUG UPPER INJECTION PORTS AND PUMP GROUT INTO LOWER PORT UNTIL GROUT REACHES TOP OF JACKET. ONLY USE UPPER PORTS IF INJECTION BECOMES DIFFICULT.

PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PILE ENCAPSULATION FOR
 OCTOGONAL PILES

REVISIONS						SHEET NO. 10
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 13
2			4			



PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE ENCAPSULATION DETAILS					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					11
					TOTAL SHEETS 13

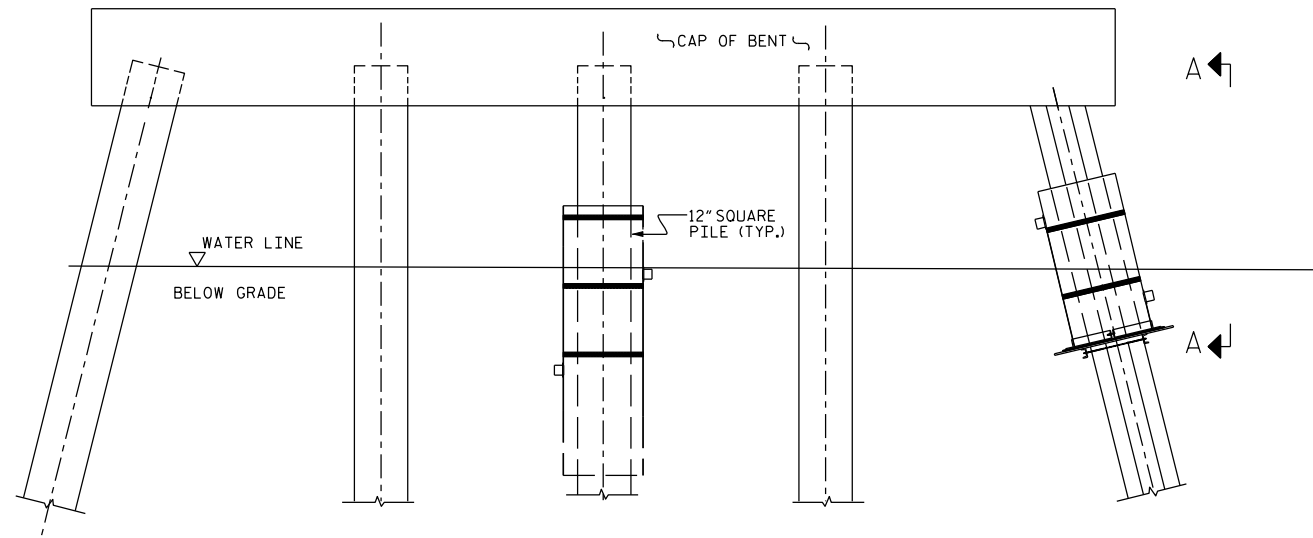
NOTES:

PILE JACKETS TO BE INSTALLED ON 12" SQUARE PILES.

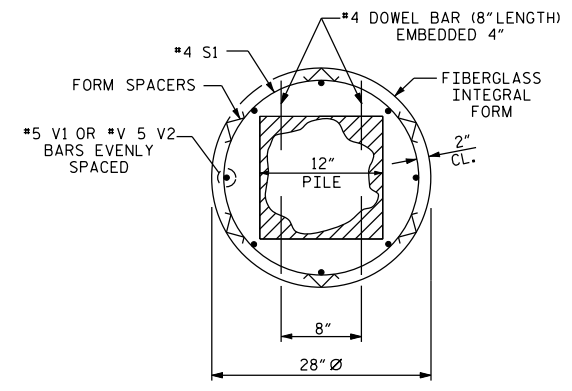
ALL PILE JACKETS ARE ESTIMATED 7 FT. IN LENGTH AND START 2 FEET ABOVE MEAN WATER ELEVATION.

APPROXIMATELY 5 FEET OF PILE JACKET WILL BE PLACED BELOW WATER ELEVATION DEPENDING ON THE ELEVATION OF RIVER.

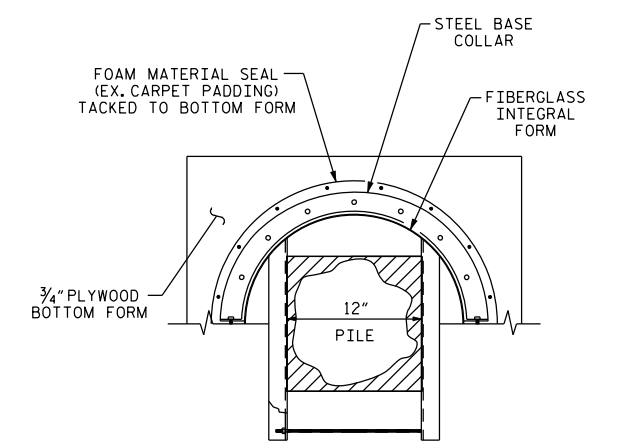
SOME PILE JACKET LOCATIONS ARE SHALLOW AND THOSE AREAS THE PILE JACKET WILL ONLY NEED TO EXTEND 1 FEET BELOW MUD LINE.



ELEVATION VIEW



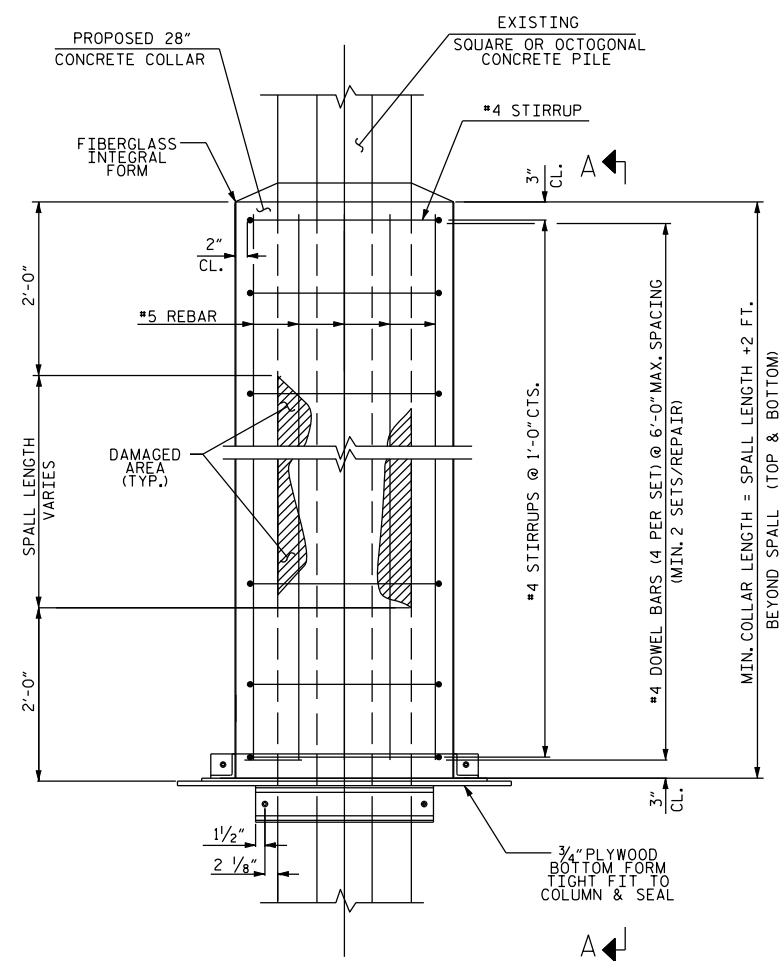
JACKET DETAIL



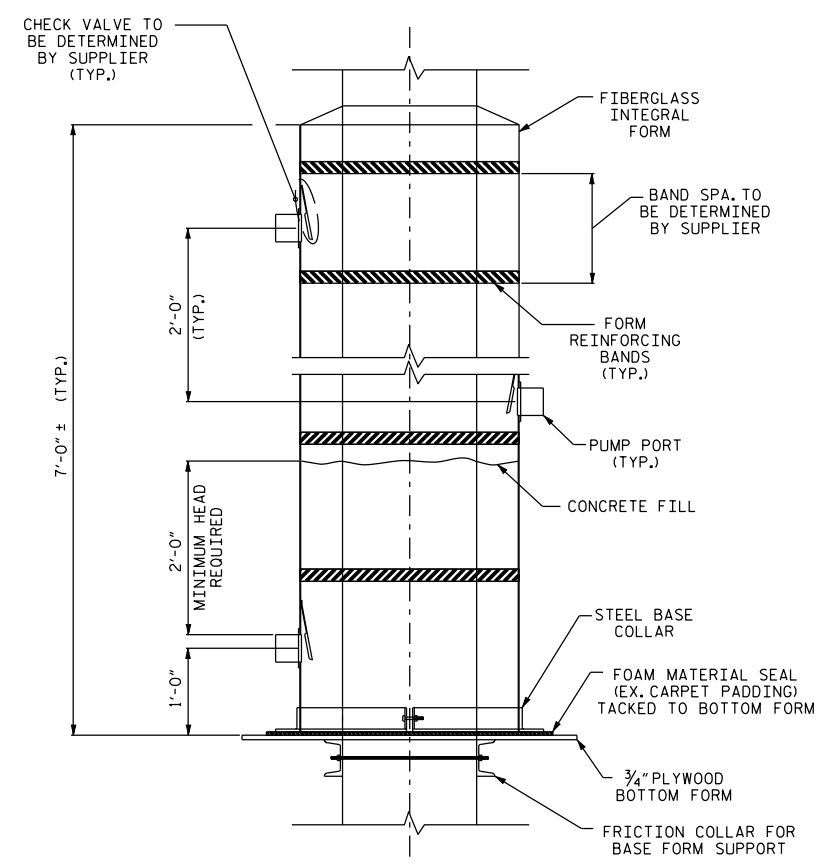
PLATFORM DETAIL

PILE JACKET W/ PUMP PORTS

(ABOVE GRADE REPAIR)



JACKET ELEVATION
(ABOVE GRADE/WATER APPLICATIONS)



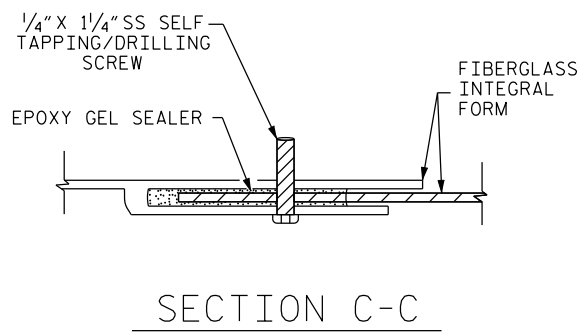
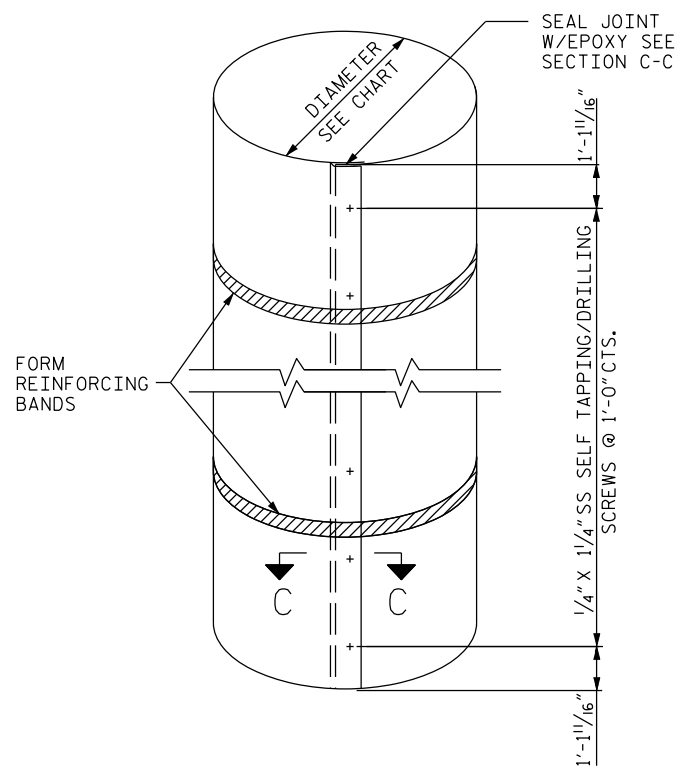
SECTION A-A

PROJECT: B-4700AG
 COUNTY: BEAUFORT
 REPLACES BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PILE JACKET
 DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			12
2			4			13

DRAWN BY: S. T. SANDOR DATE: 02/10
 CHECKED BY: A. ASTER DATE: 02/10



FIBERGLASS INTEGRAL FORM

REPAIR SEQUENCE

- 1) COMPLETELY REMOVE ALL LOOSE DELAMINATED AND WEAK CONCRETE, OIL, GREASE, LAITANCE AND OTHER CONTAMINANTS. PREPARE CONCRETE USING ACCEPTABLE MECHANICAL MEANS AND CONCRETE CLEANERS AND DEGREASERS AS NECESSARY TO OBTAIN CLEAN, SOUND AND ROUGH SURFACES. COARSE AGGREGATE SHALL BE EXPOSED. CONCRETE PILE SURFACES SHOULD BE SOUND AND FREE OF CONTAMINATION. WHERE MARINE GROWTH OR OTHER CONTAMINANTS EXIST, INCLUDING VISIBLE SIGNS OF CORROSION, A HIGH PRESSURE WATER BLAST SHOULD BE UTILIZED TO ENSURE A CLEAN, SOUND, CONTAMINANT-FREE SURFACE FOR OPTIMUM BOND.
- 2) CLEAN REINFORCING STEEL & COLUMNS OR PILE, OF ALL RUST AND FOREIGN MATERIAL.
- 3) DETERMINE FIBERGLASS INTEGRAL FORM LENGTH. MINIMUM LENGTH IS 2' ABOVE AND BELOW CLEAN, SOUND, CONTAMINANT-FREE SURFACE.
- 4) DRILL 5/8" HOLES AND PLACE #4 DOWELS W/ EPOXY GROUT.
- 5) BUILD THE REBAR CAGE BY PLACING THE #4 STIRRUPS AND VERTICAL REINFORCING STEEL IN ACCORDANCE WITH THE PROJECT DRAWING.
- 6) INSTALL FORM SPACERS TO INSURE ADEQUATE CONCRETE COVER AT ALL PARTS OF THE SLEEVE.
- 7) INSTALL THE LEAVE-IN PLACE FIBERGLASS FORM (ALSO CALLED JACKET OR COLLAR). THE DIAMETER OF THE JACKET SHOULD BE LARGE ENOUGH TO IN-CIRCLE THE PILE WHILE PROVIDING A MINIMUM OF 5" TOTAL CLEARANCE, 2" OF CLEARANCE BETWEEN THE PILE AND THE REINFORCING STEEL AND 2" OF CLEARANCE BETWEEN THE REINFORCING STEEL AND THE FORM.. (SEE JACKET SIZING CHART)
- 8) INSERT CONCRETE PUMP HOSE THRU TOP OF JACKET AND EXTEND TO JUST ABOVE THE BOTTOM AND PUMP AT A FLOW RATE TO THE DESIRED FILL ELEVATION. IF SITE CONDITIONS PROHIBIT INSERTING PUMP HOSE THRU TOP OF JACKET THEN INSTALL PUMP PORTS AND PLACE CONCRETE AS SHOWN IN THE DETAILS.
- 9) PLACE CONCRETE FILL. INSTALL PUMP PORT(S) IN JACKET FOR UNDERWATER APPLICATIONS. PORTS SHOULD HAVE A CHECK VALVE TO KEEP BACK FLOW OF CONCRETE ONCE PUMP NOZZLE IS REMOVED. FOR CONCRETE PLACEMENTS GREATER THAN 5' USE MULTIPLE PORTS SPACED 3' VERTICALLY AND ALTERNATING 180° FROM PREVIOUS PORT. A MINIMUM OF 2' OF CONCRETE HEAD, IS NEEDED ABOVE PORT PRIOR TO CHANGING PORTS.
- 10) REMOVE FORM WORK AFTER 24 HOURS.

BAR TYPES		*BILL OF MATERIAL					
		REINFORCING STEEL					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		V1	48	5	STR	7'-6"	375
		V2	232	5	STR	6'-6"	1573
		S1	239	4	1	7'-4"	1170
D1	280	4	STR	0'-9 1/2"	148		
REINFORCING STEEL TOTAL =					3266	LBS	
FIBERGLASS JACKETS							
	NO.	TYPE	LENGTH				
JACKET	6	STR	8'-0"				
JACKET	29	STR	7'-0"				
CONCRETE							
TYPE	VOLUME (Cu. FT)	VOLUME (Cu. FT)					
A	908.47	33.647					

ALL BAR DIMENSIONS ARE OUT TO OUT.

* QUANTITY SHOWN IS FOR INFORMATION ONLY.

JACKET SIZING CHART		
PILE/COLUMN SIZE	RECOMMENDED JACKET SIZE	
	ROUND	SQUARE
12" SQUARE	28" Ø	24" X 24"

PROJECT: B-4700AG
 COUNTY: BEAUFORT
 REPLACES BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PILE JACKET
 DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			13
2			4			13

DRAWN BY: S. T. SANDOR DATE: 01/10
 CHECKED BY: A. ABRAHA DATE: 01/10