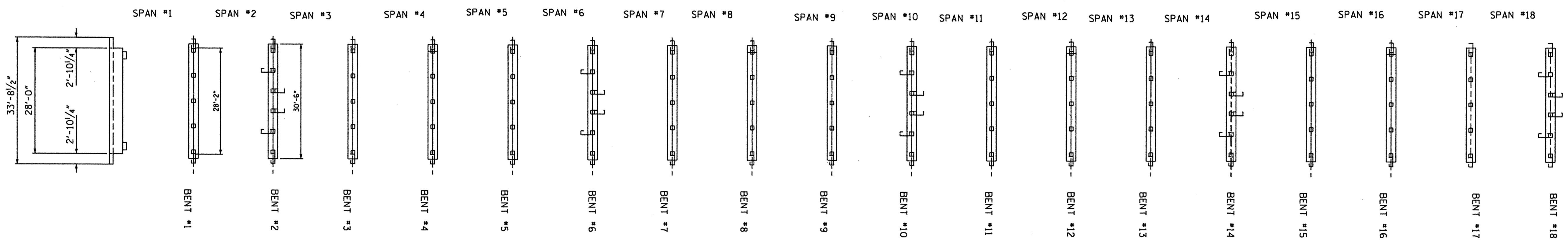
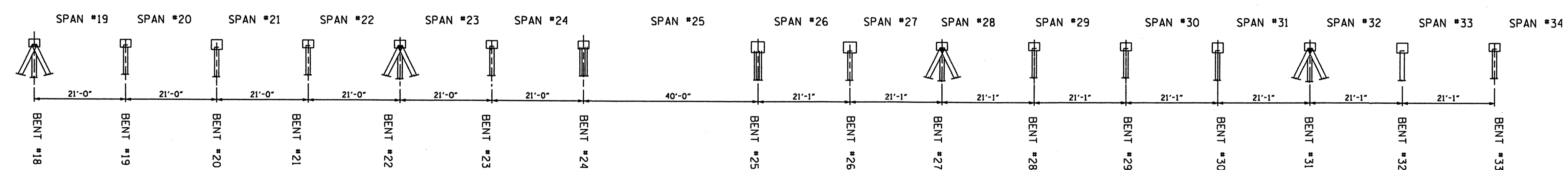


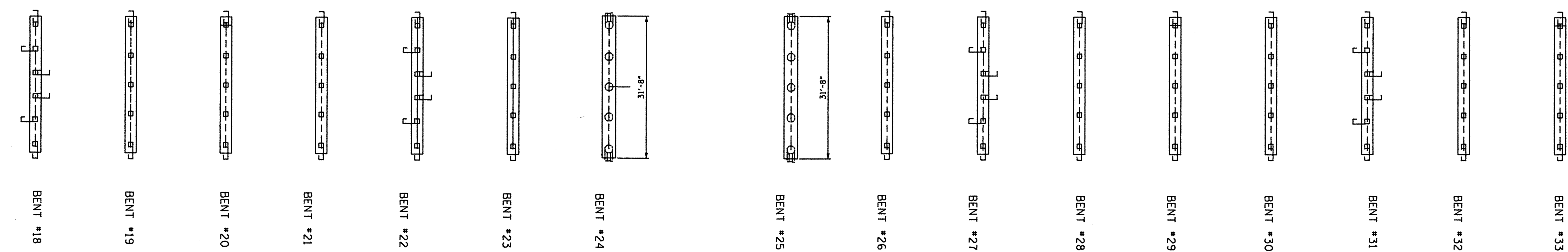
PROFILE OF BRIDGE



PLAN OF BRIDGE



PROFILE OF BRIDGE



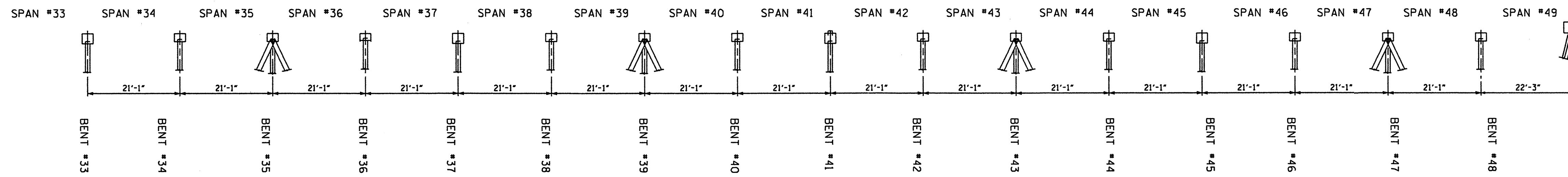
PLAN OF BRIDGE

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

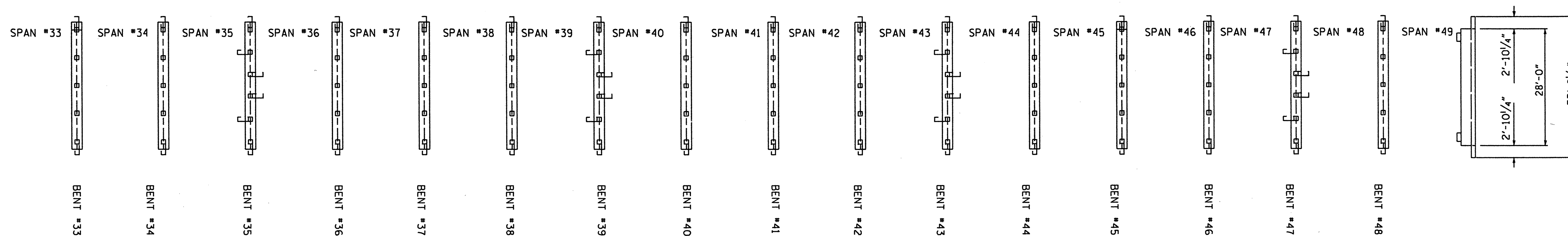
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN & PROFILE OF
 BRIDGE #28 ON NC92
 OVER BLACK RUN CREEK

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

REVISIONS					SHEET NO.
BY	DATE	NO.	BY	DATE	TOTAL SHEETS
		3			12
		4			



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

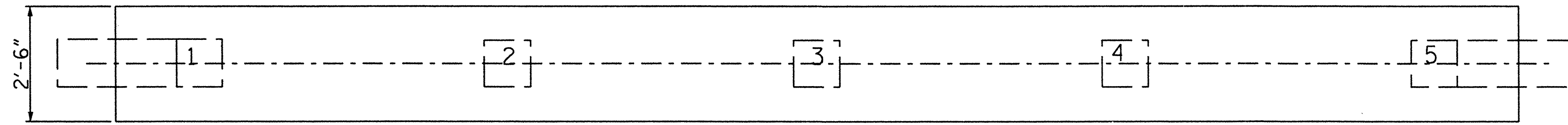
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN & PROFILE OF
 BRIDGE #28 ON NC 92
 OVER BLACK RUN CREEK

REVISIONS					SHEET NO.
BY	DATE	NO.	BY	DATE	S-2
		3			TOTAL SHEETS
		4			12

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

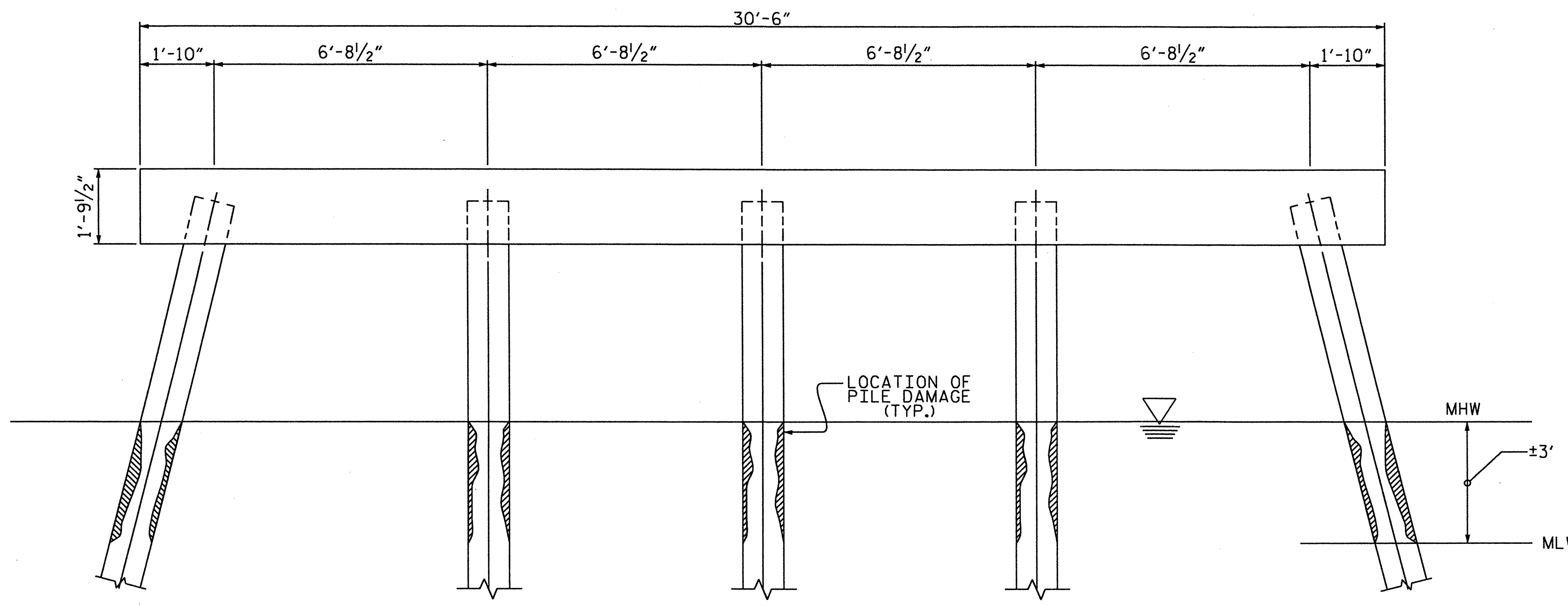
BENT	DESCRIPTION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (FEET)	VOLUME (CU.FT.)
1	SPALL ON CAP OVER PILE 2	1.00	1.00	0.167	0.167

PILE ENCAPSULATION LOCATIONS

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

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	4		
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

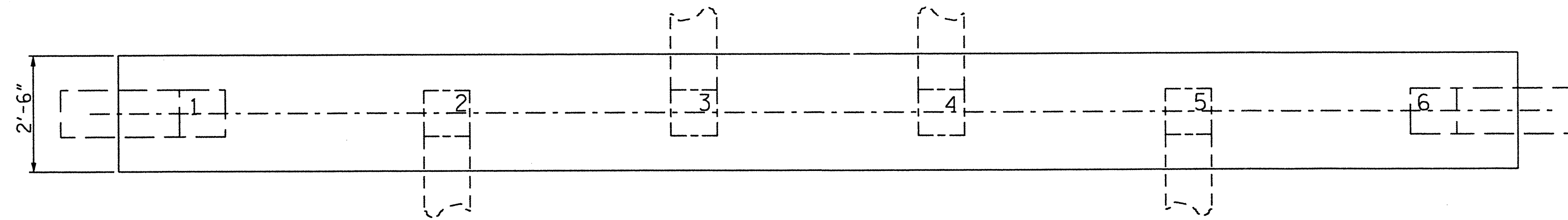
BENTS : 1, 3, 5, 7, 9,
 11, 12, 13, 15, 17, 19,
 21, 23, 26, 28, 30, 32,
 34, 36, 38, 40, 42,
 44, 46 & 48.

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-3
1			3			12
2			4			

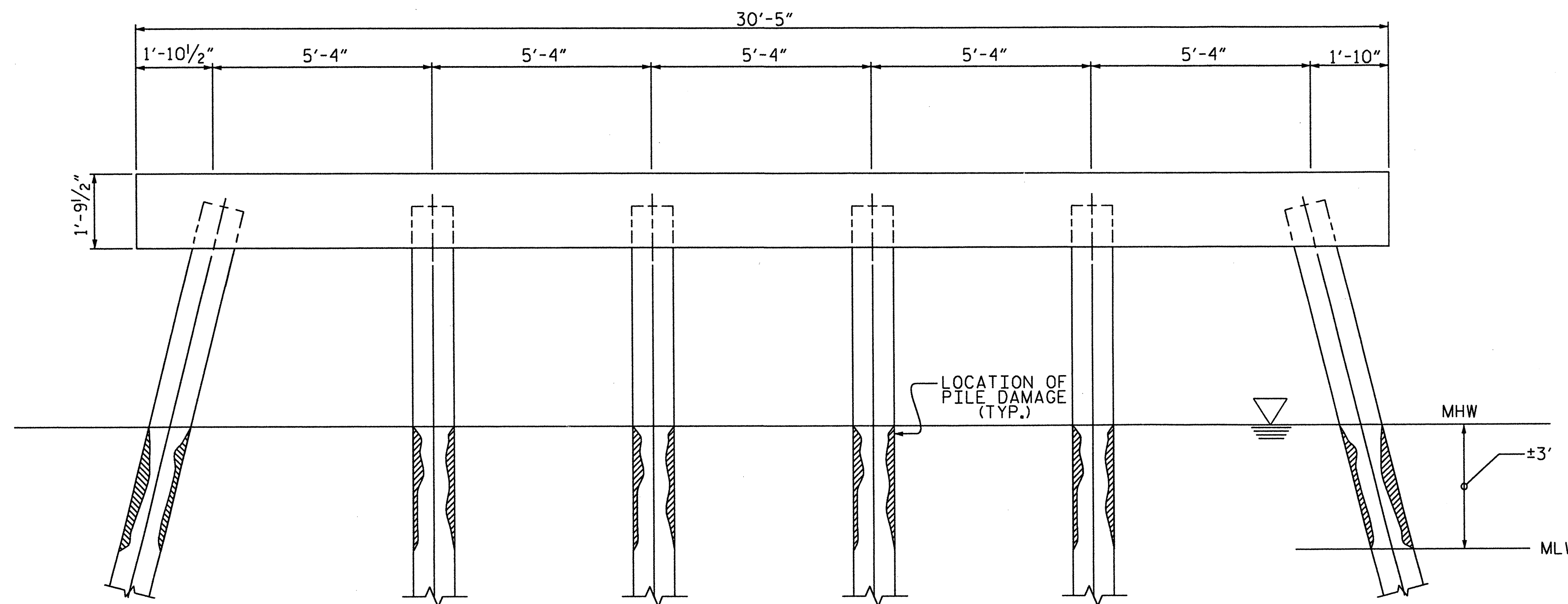
DRAWN BY: S. T. SANDOR DATE: 01/2010
 CHECKED BY: A. ABRAHA DATE: 01/2010

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
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.

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

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

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

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

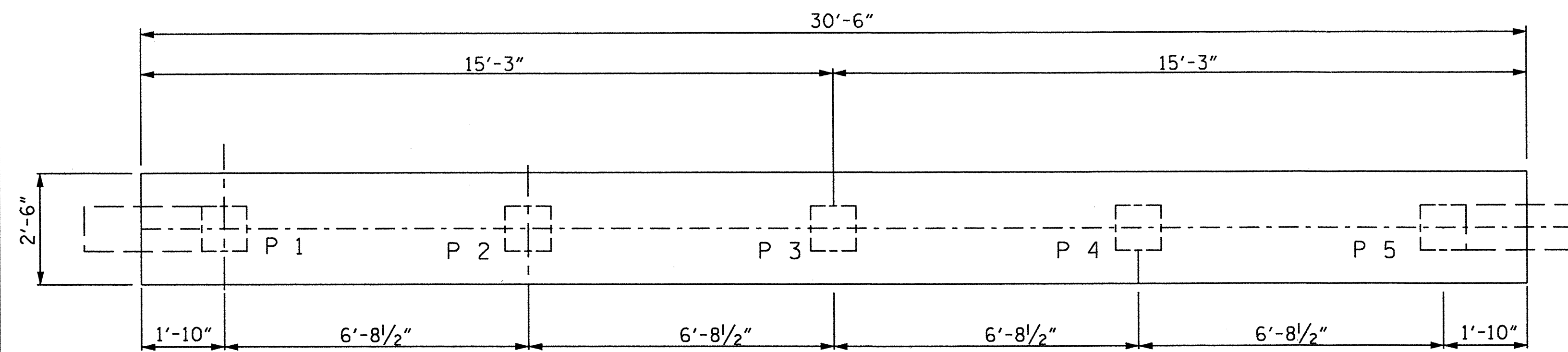
BENT REPAIRS

NOTES

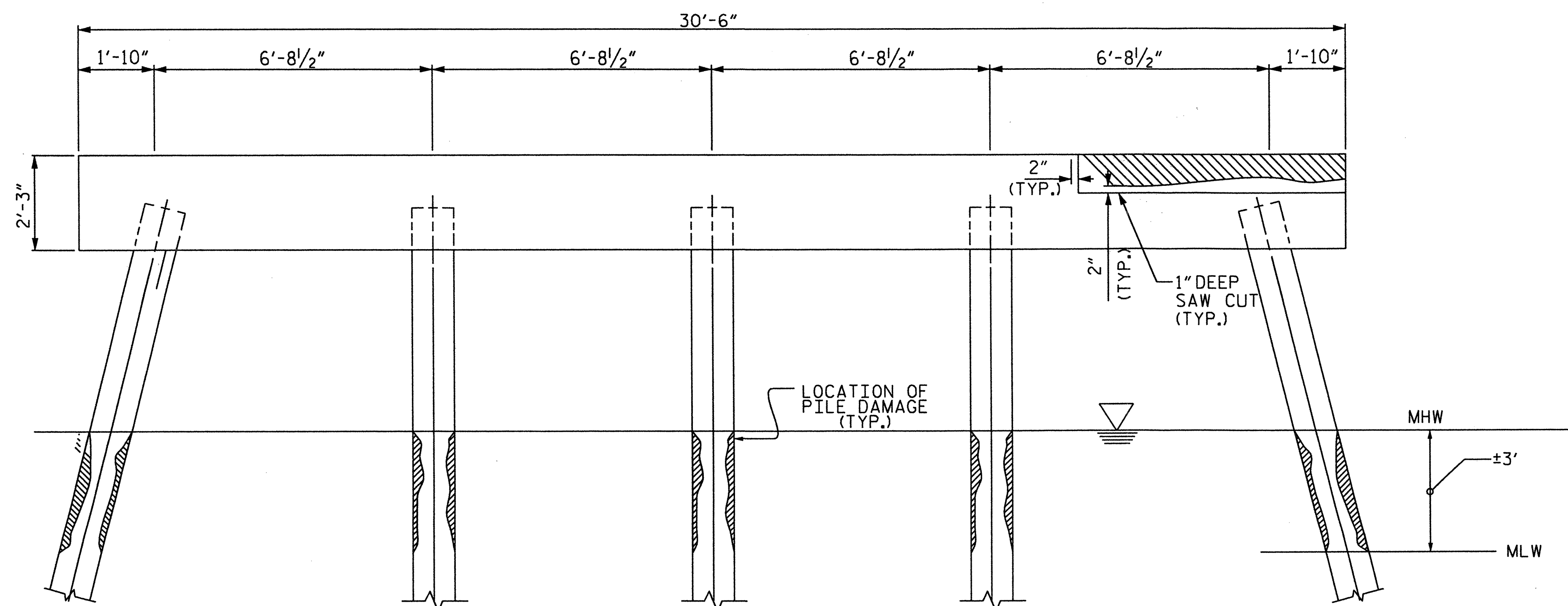
ALL QUANTITIES ARE APPROXIMATE.

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

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



PLAN OF BENT CAPS



ELEVATION VIEW (BENT CAPS)

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

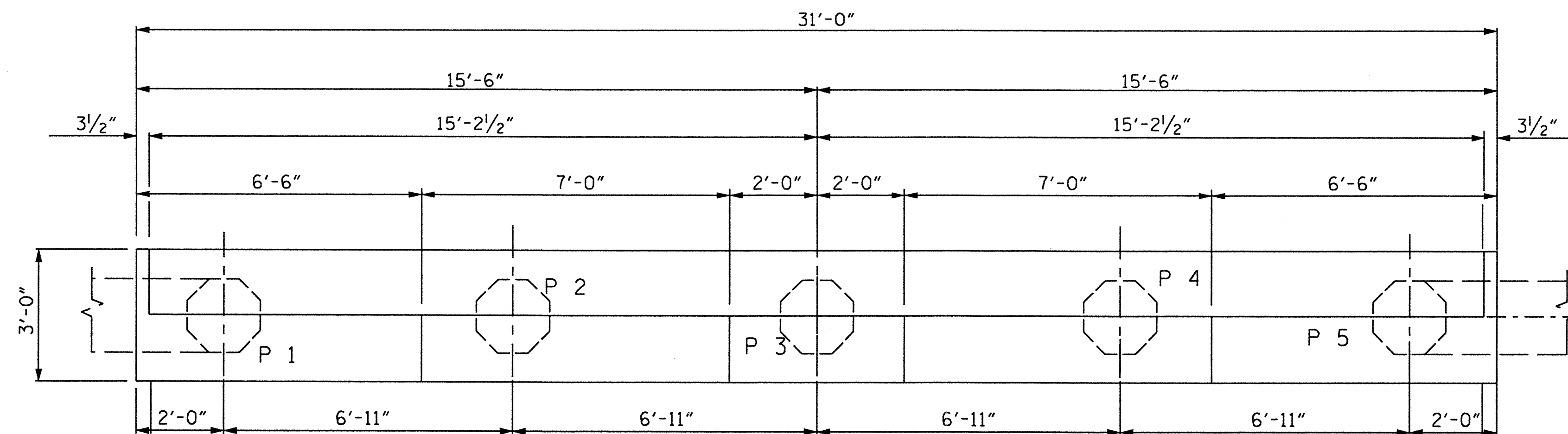
*****SYTIME***** **USERNAME**** *****DCN*****

NOTES

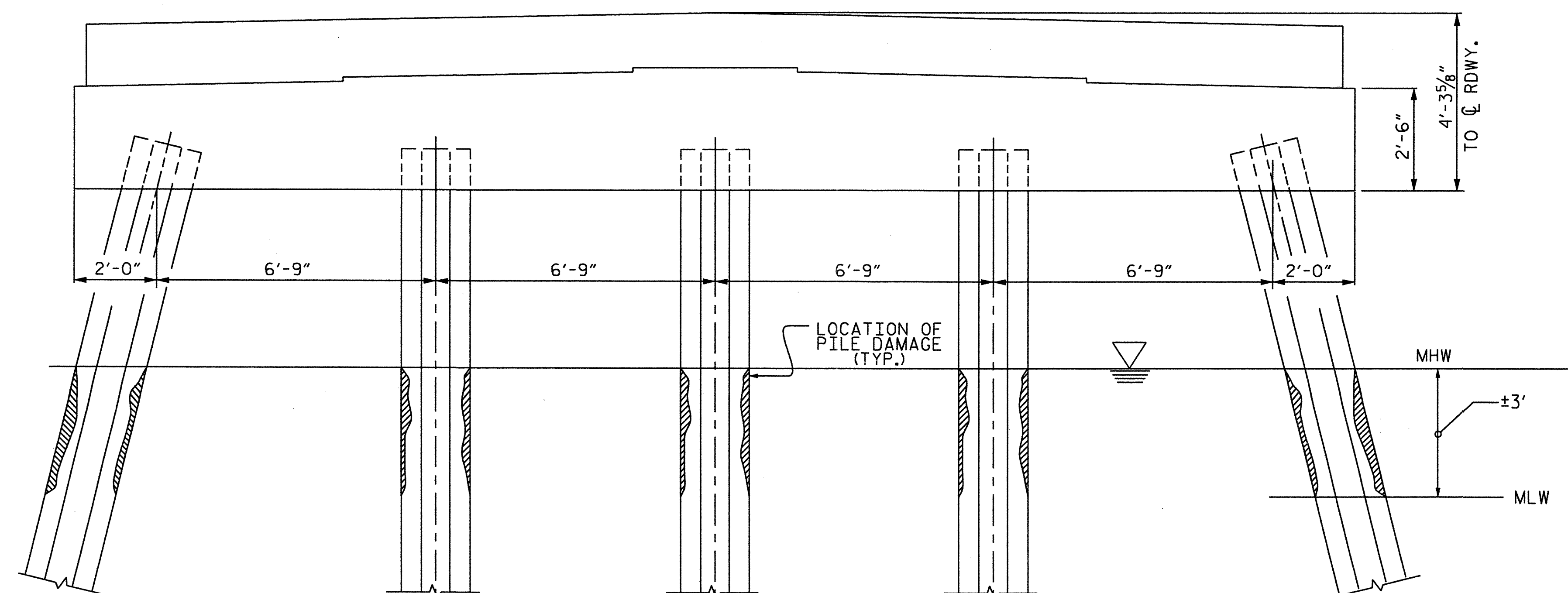
1. FOR EXAMPLES OF TYPICAL ENCAPSULATION OF PILES SEE SHEETS *9 AND *10.

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

BENTS #24 AND #25

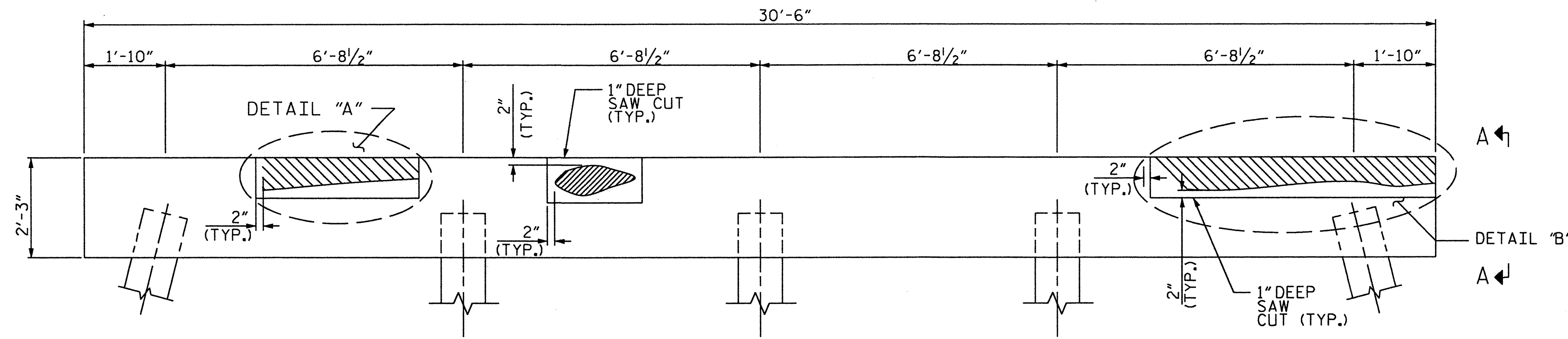
DRAWN BY: S. T. SANDOR DATE: 02/10
 CHECKED BY: A. ABRAHA DATE: 02/10

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

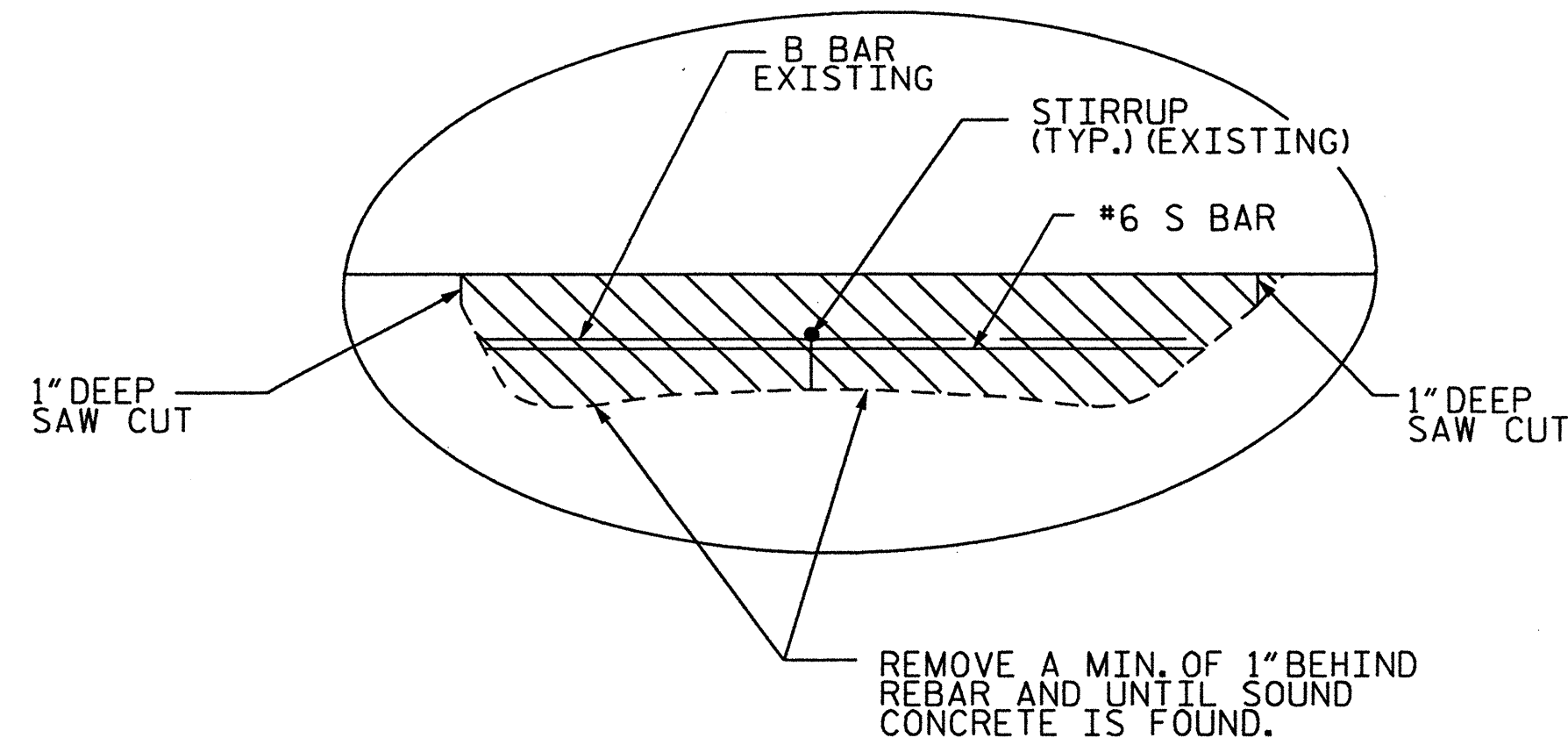
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
1			3			TOTAL SHEETS
2			4			12

GENERAL NOTES

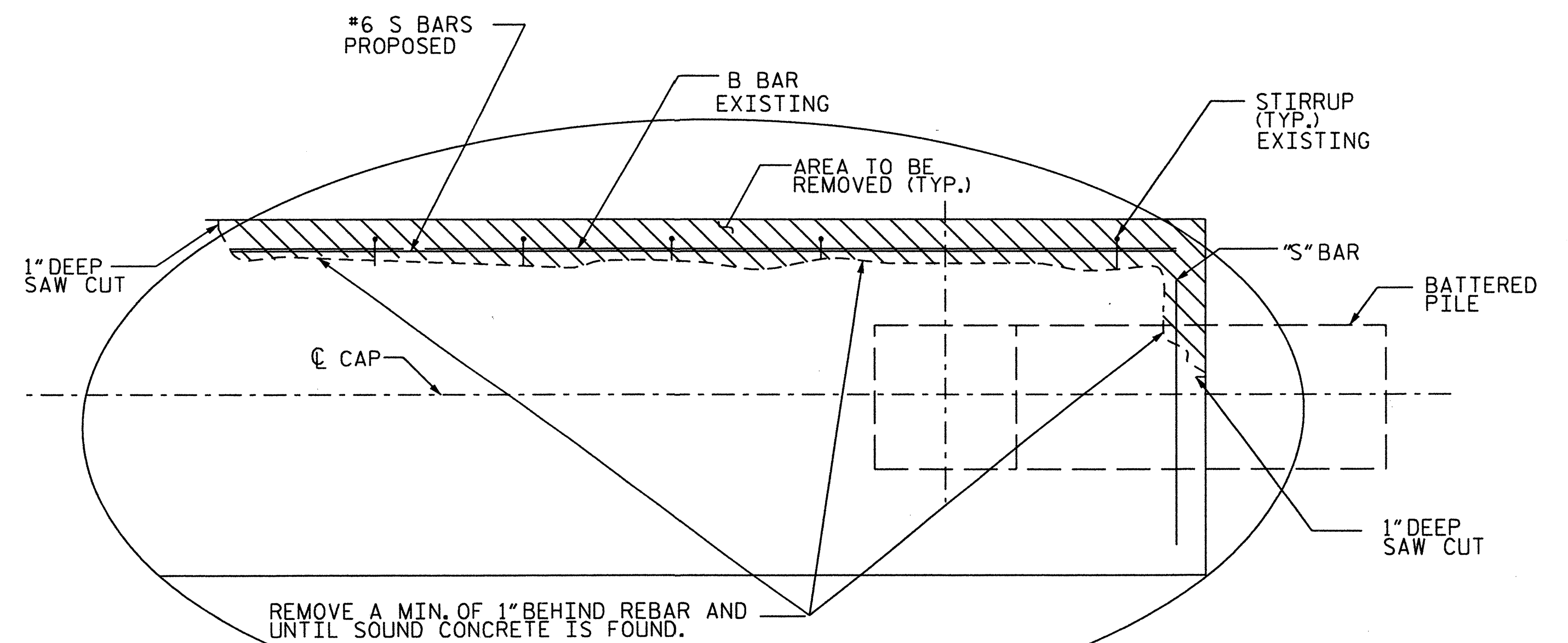
1. SPALL DIMENSIONS SHOWN ARE APPROXIMATE.
2. REINFORCING STEEL SHALL BE GRADE 60.
3. FOR ADHESIVELY ANCHORED DOWELS SEE SPECIAL PROVISIONS.
4. FIELD TESTING FOR ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
5. REPAIR MATERIAL FOR CAP SPALLS SHALL BE POLYMER MODIFIED CONCRETE OR SHOTCRETE.



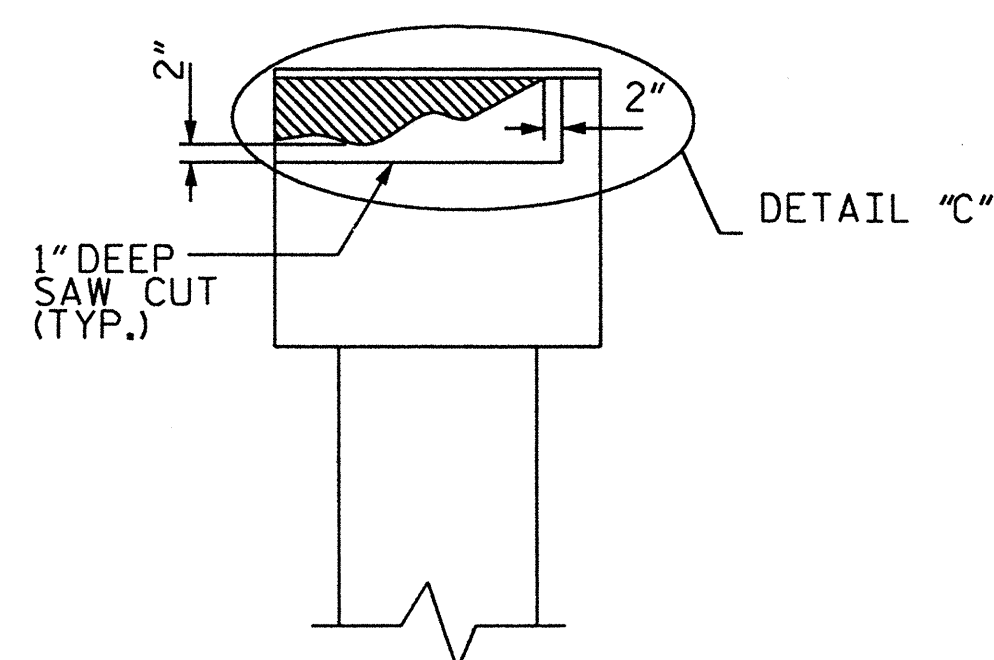
TYPICAL ELEVATION VIEW (BENT CAPS)



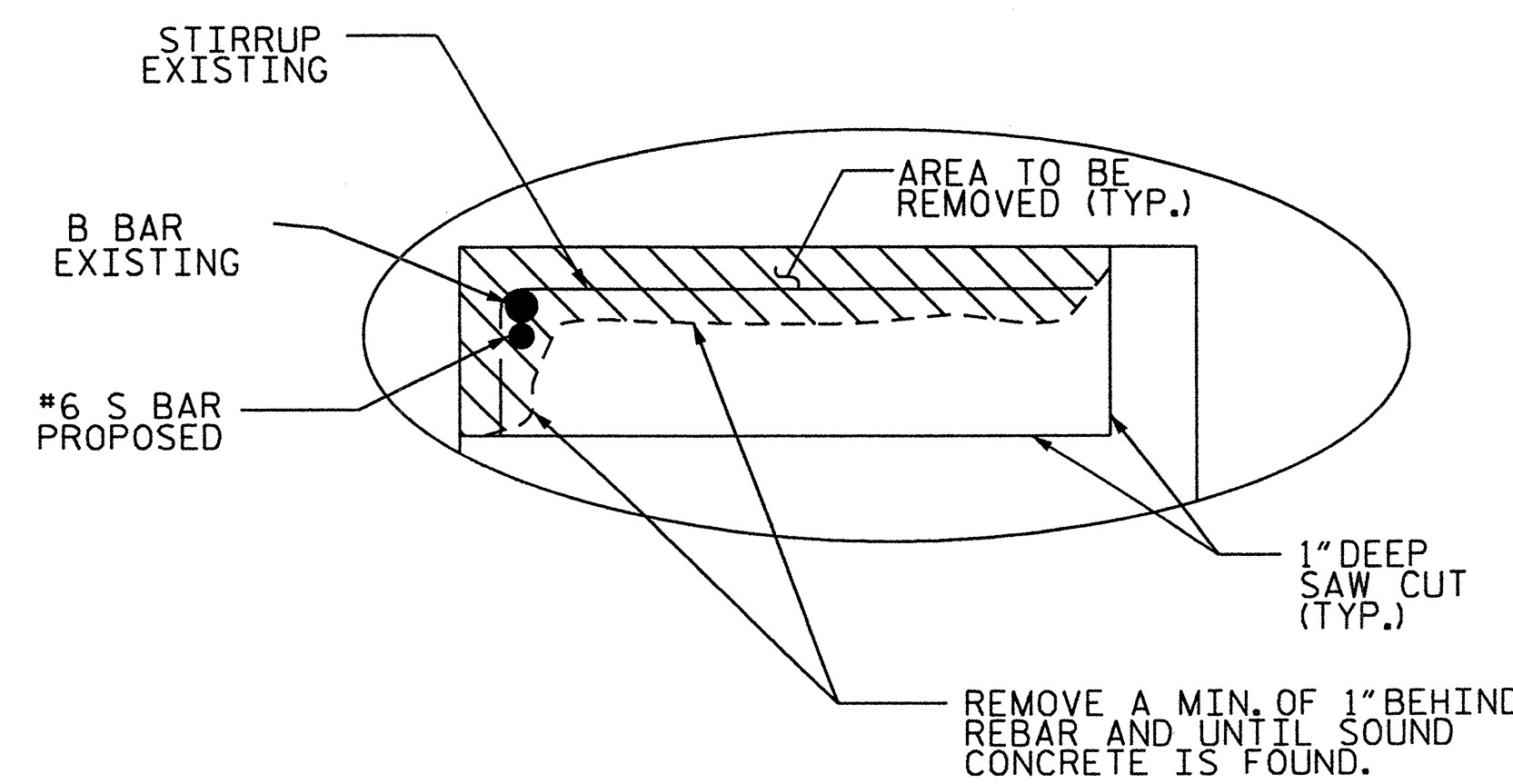
DETAIL "A"



DETAIL "B"



SECTION A-A



DETAIL "C"

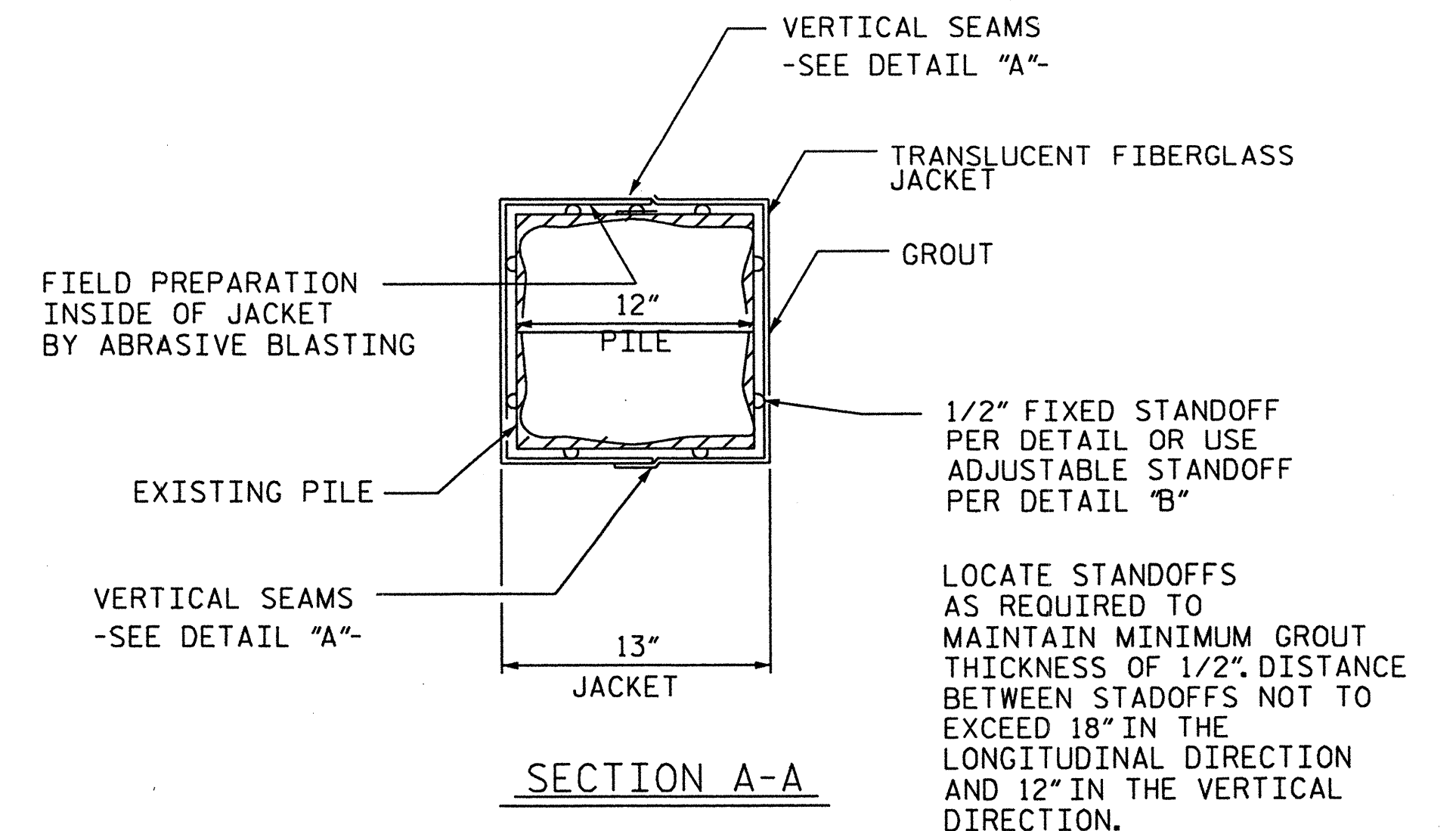
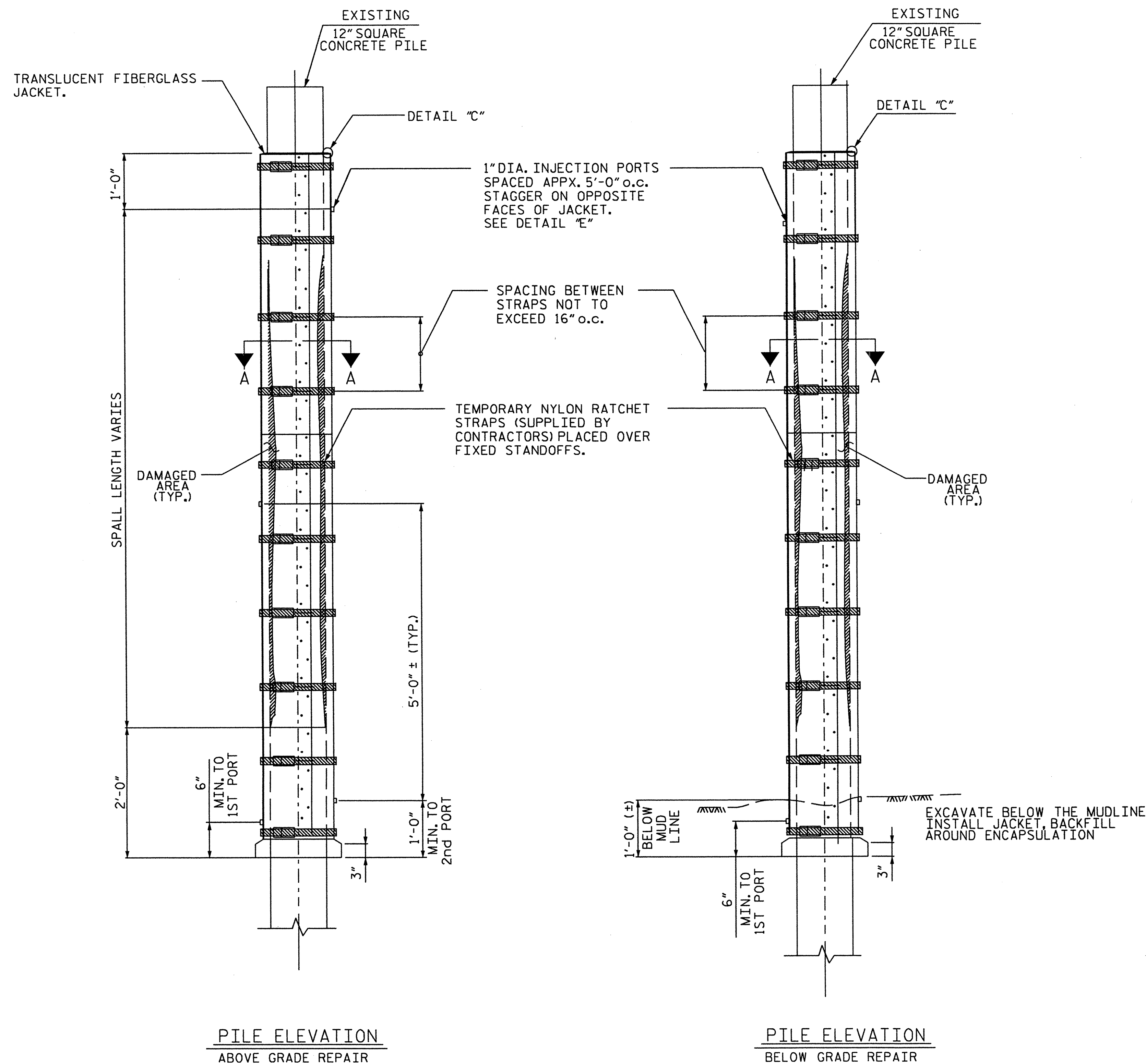
PROJECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

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

REVISIONS						SHRIT NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
1			3			TOTAL SHEETS
2			4			12

DRAWN BY: S. T. SANDOR DATE: 02/2010
 CHECKED BY: A. ABRAHA DATE: 02/2010

*****SYTIME***** **USERNAME****



NOTES:

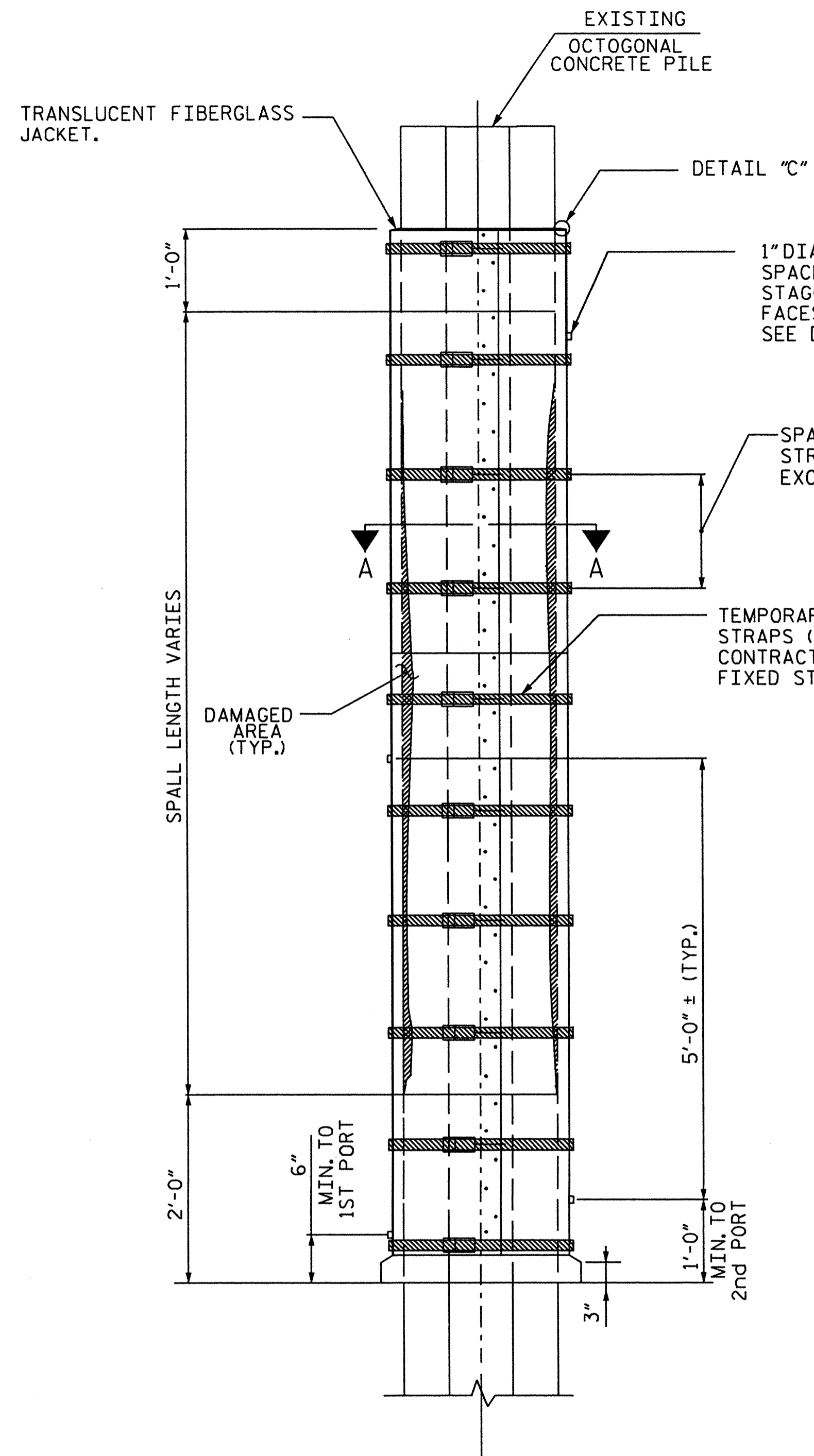
- ALL PILE JACKETS ARE ESTIMATED 7 FT. IN LENGTH AND START 2 FEET ABOVE MEAN WATER ELEVATION.
- APPROXIMATELY 5 FEET OF PILE JACKET WILL BE PLACED BELOW WATER ELEVATION DEPENDING ON THE WATER SURFACE ELEVATION.
- SOME PILE JACKET LOCATIONS ARE SHALLOW AND IN THOSE AREAS THE PILE JACKET WILL ONLY NEED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

REPAIR SEQUENCES

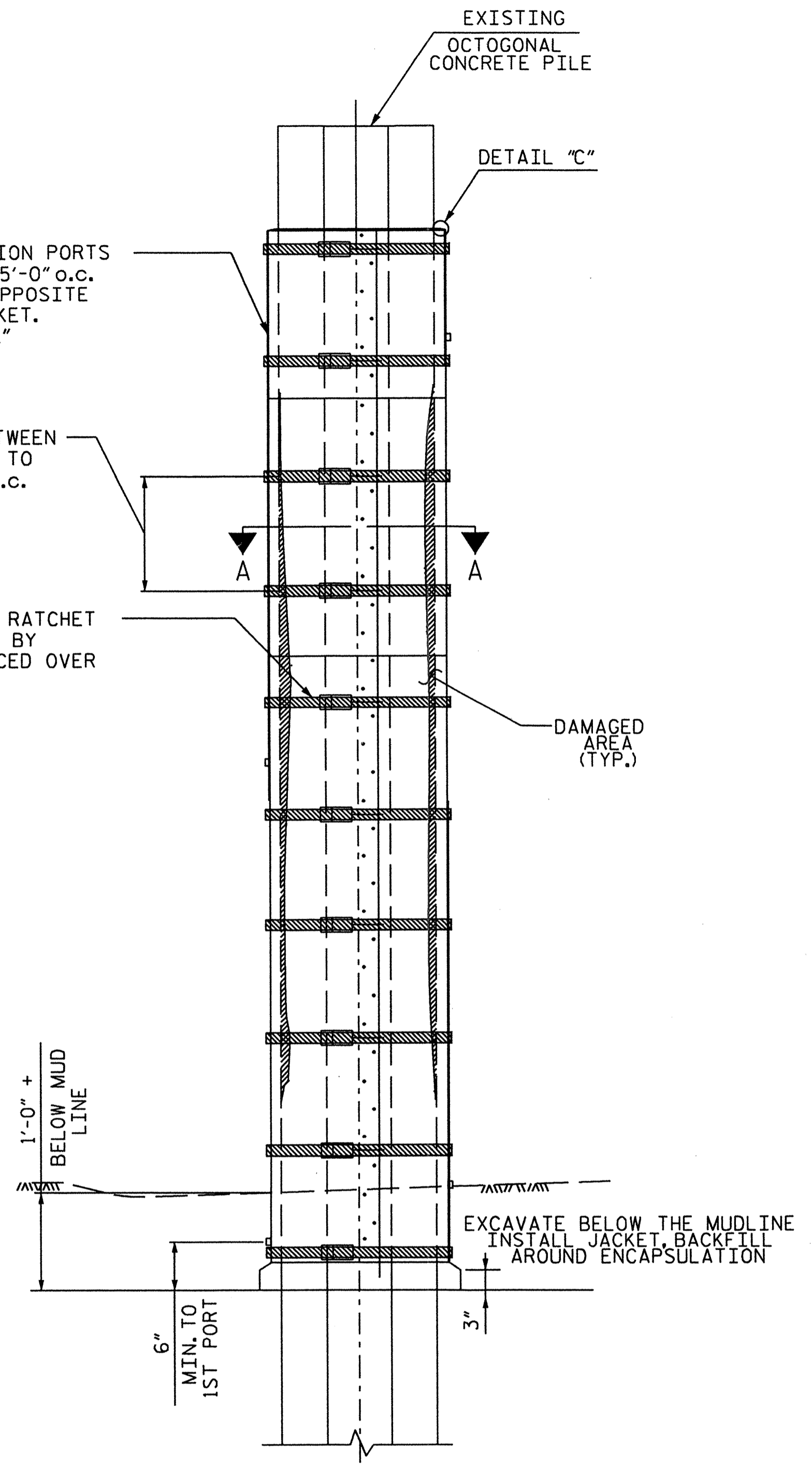
1. AFTER SURFACE PREPARATION, PLACE JACKET IN PROPER LOCATION AROUND PILE AND SEAL LONGITUDINAL SEAMS (SEE DETAIL "A"). INSTALL TEMPORARY BRACING.
2. CONFIRM SPACING BETWEEN JACKET AND PILE. INSTALL BOTTOM SEAL (SEE DETAIL "D"). ALLOW BOTTOM SEAL TO CURE APPX. 4 HOURS.
3. ATTACH GROUT HOSE TO LOWERMOST 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

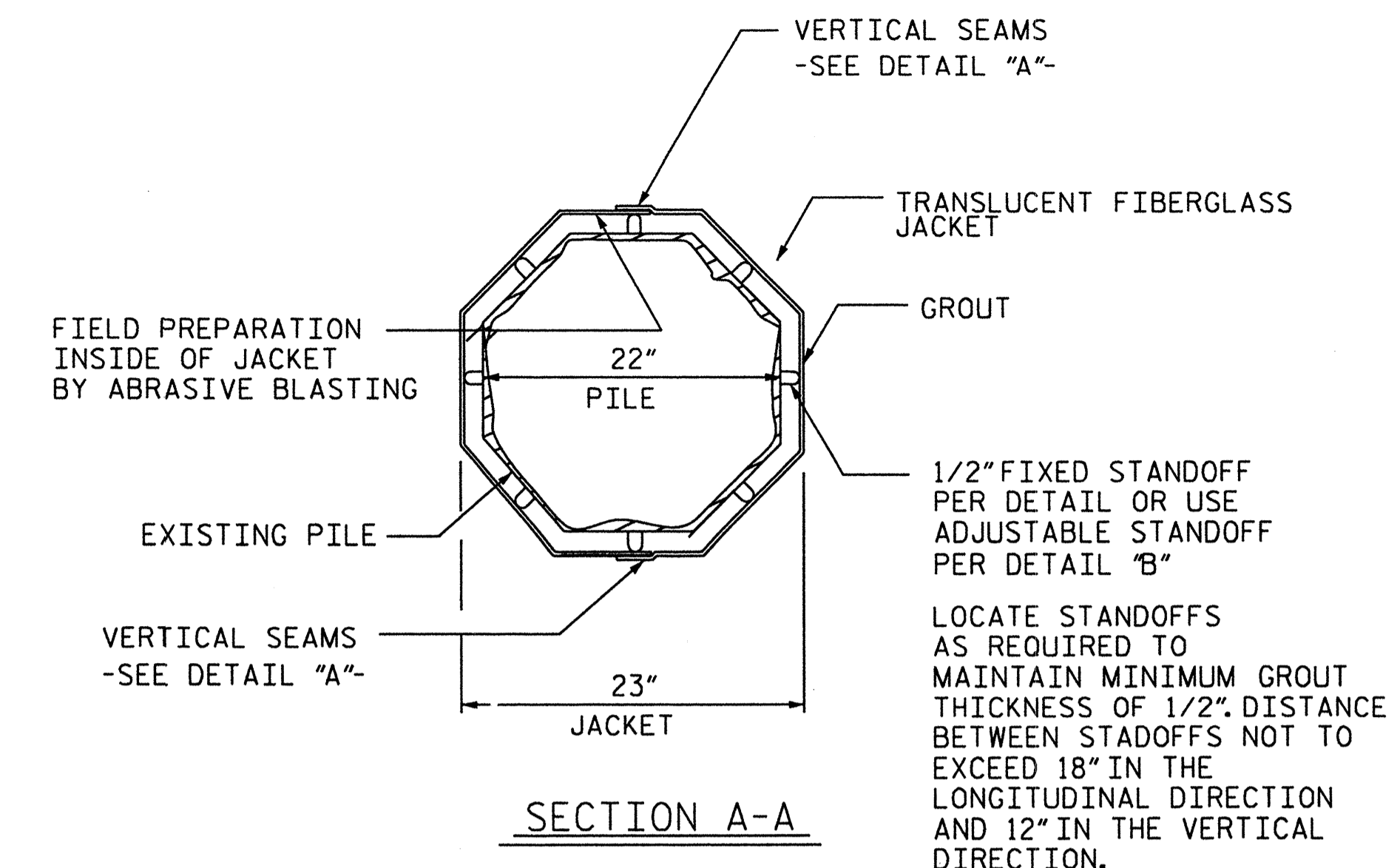
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE ENCAPSULATION FOR SQUARE PILES					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S-8 TOTAL SHEETS 12



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

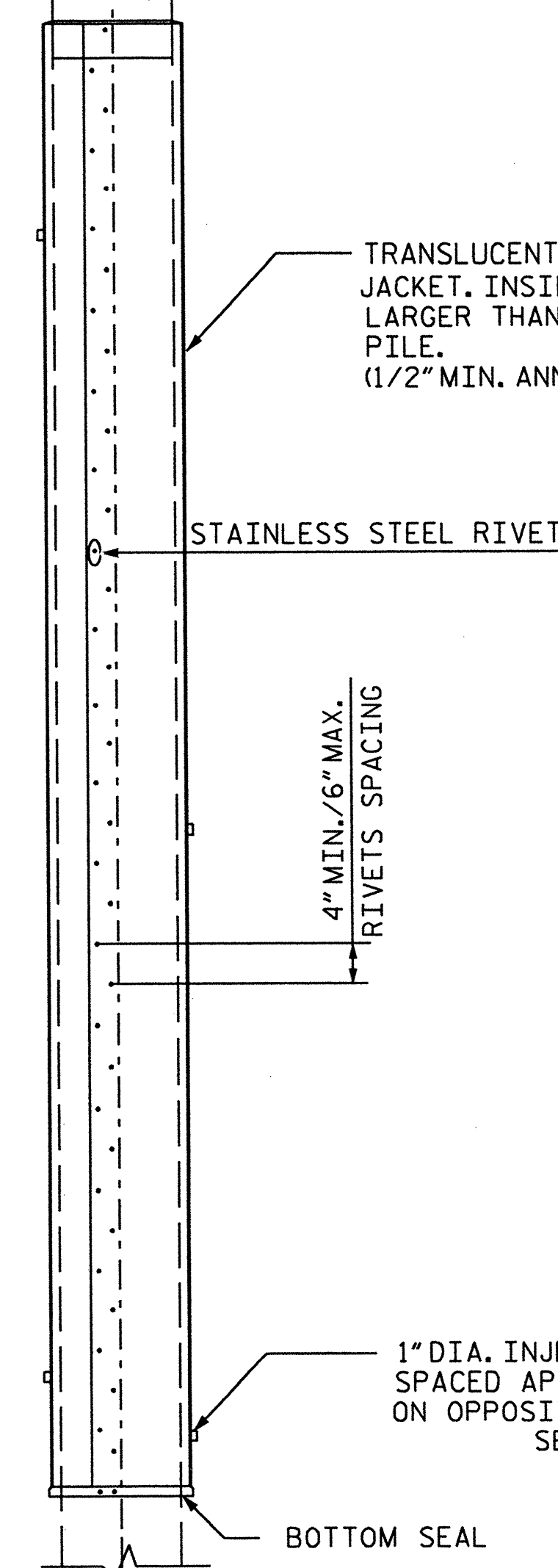
1. AFTER SURFACE PREPARATION, PLACE JACKET IN PROPER LOCATION AROUND PILE AND SEAL LONGITUDINAL SEAMS (SEE DETAIL "A"). INSTALL TEMPORARY BRACING.
2. CONFIRM SPACING BETWEEN JACKET AND PILE. INSTALL BOTTOM SEAL (SEE DETAIL "D"). ALLOW BOTTOM SEAL TO CURE APPX. 4 HOURS.
3. ATTACH GROUT HOSE TO LOWERMOST 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.

PROJ ECT NO. B-4700AG
 COUNTY: BEAUFORT
 BRIDGE NO. 28

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE ENCAPSULATION FOR OCTOGONAL PILES					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S-9 TOTAL SHEETS 12

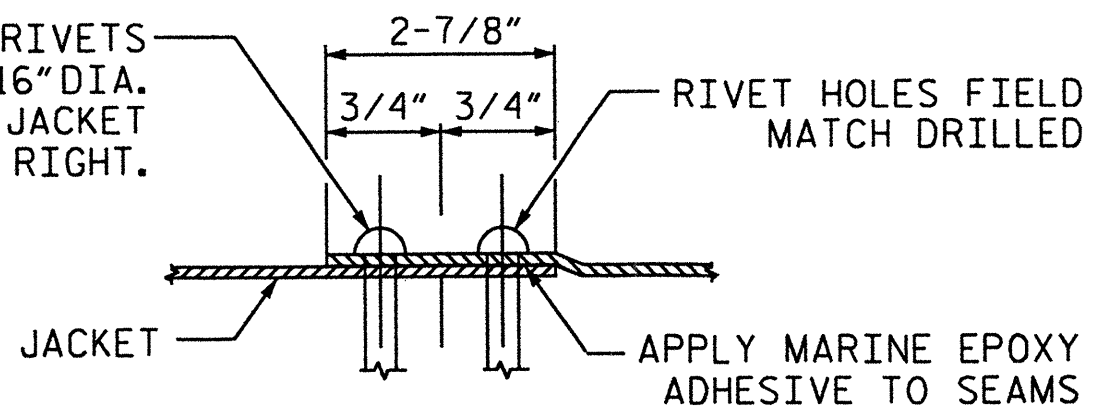
DRAWN BY: S. T. SANDOR DATE: 02/10
 CHECKED BY: A. ABRAHA DATE: 02/10

EXISTING
SQUARE OR OCTAGONAL
CONCRETE PILE

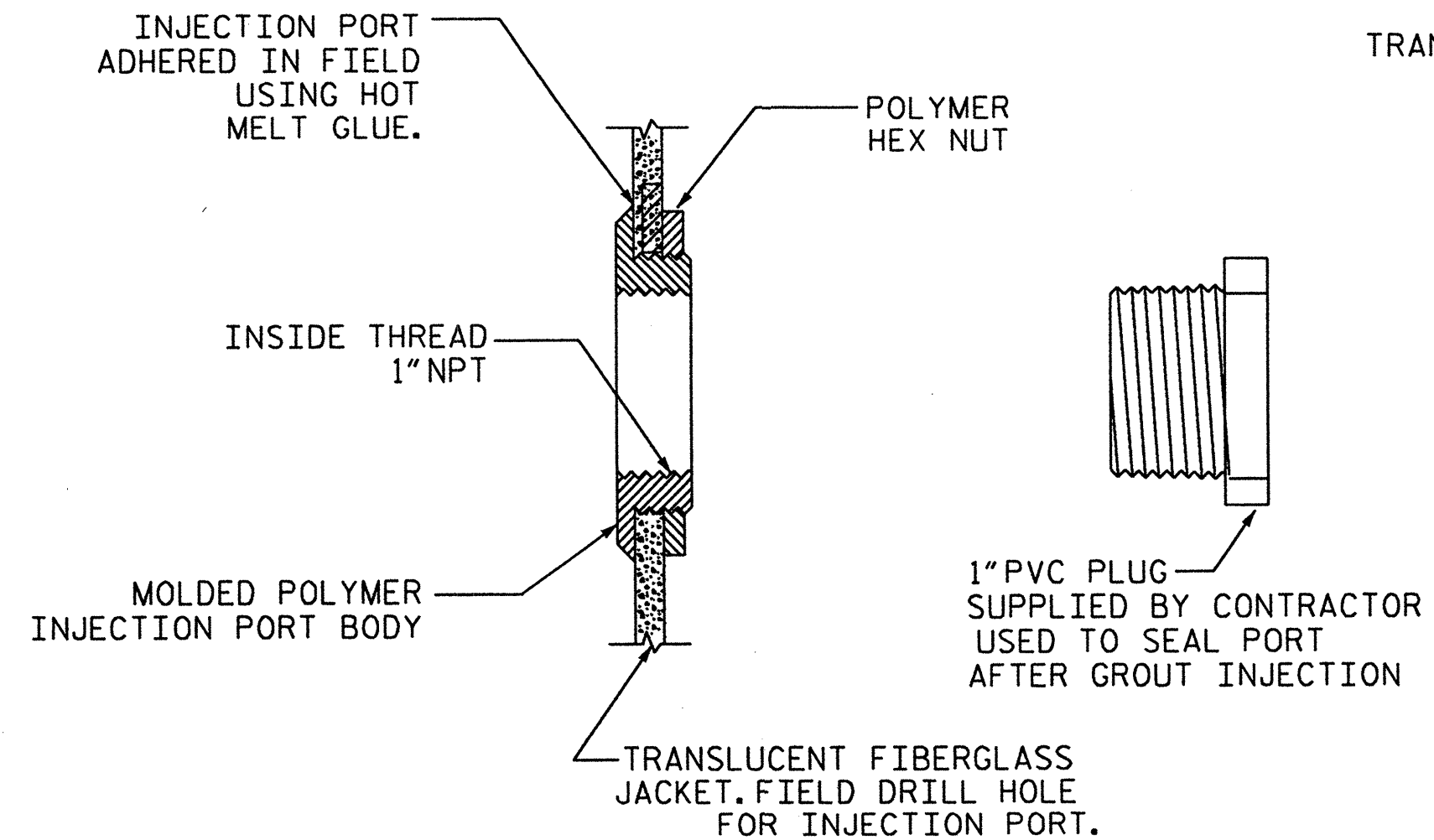


JACKET

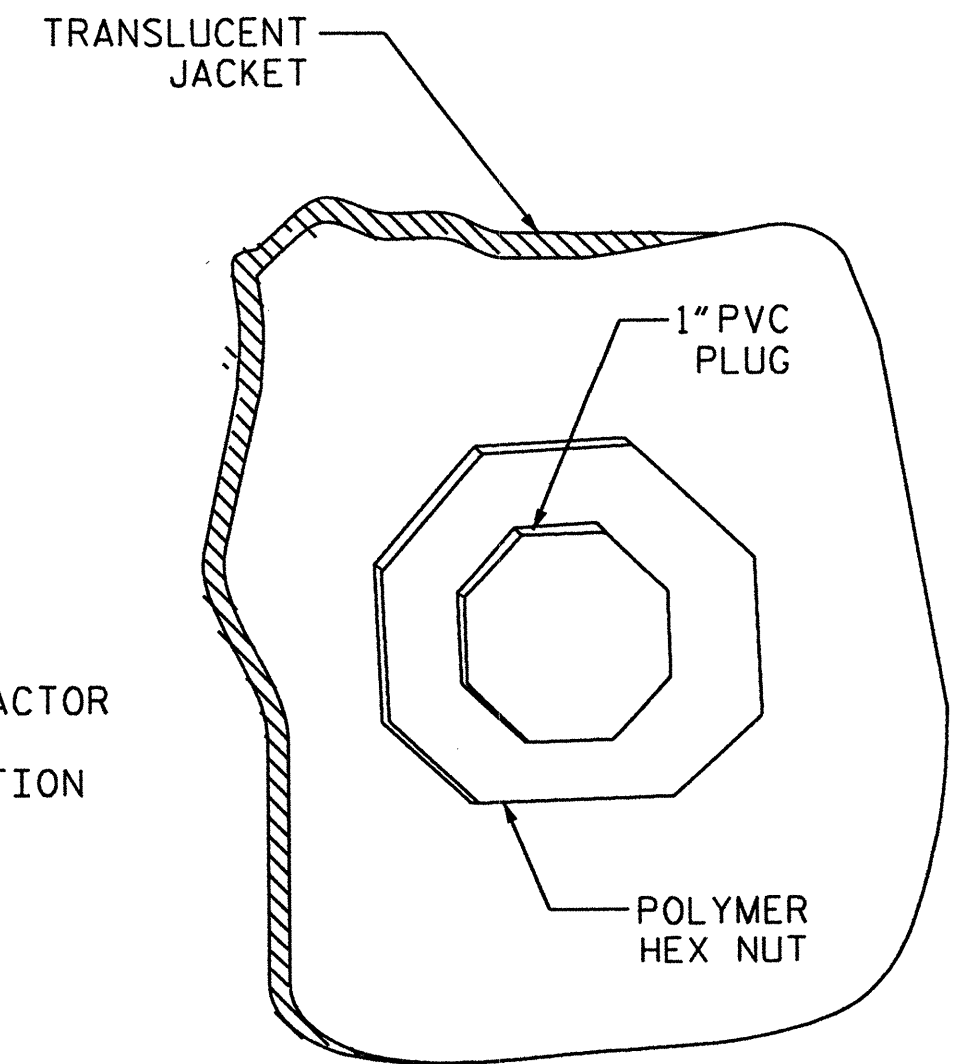
STAINLESS STEEL RIVETS
1/4-3/8" GRIP, 3/16" DIA.
SUPPLIED WITH JACKET
STAGGER LEFT TO RIGHT.



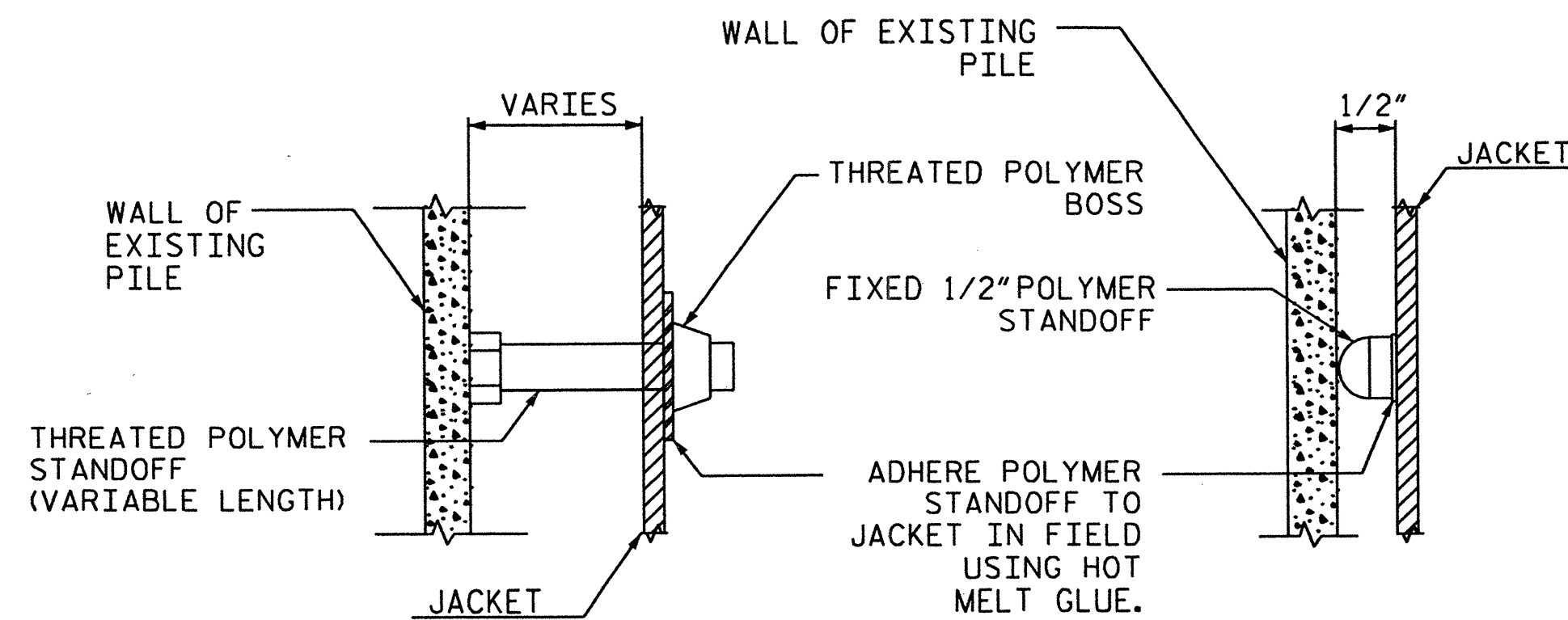
DETAIL A
SEAM DETAIL



SECTION THRU PORT



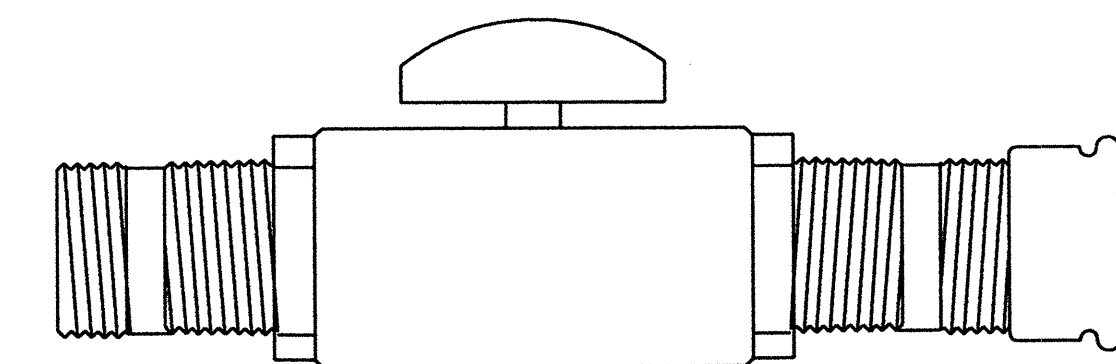
ISOMETRIC VIEW



ADJUSTABLE STANDOFF DETAIL

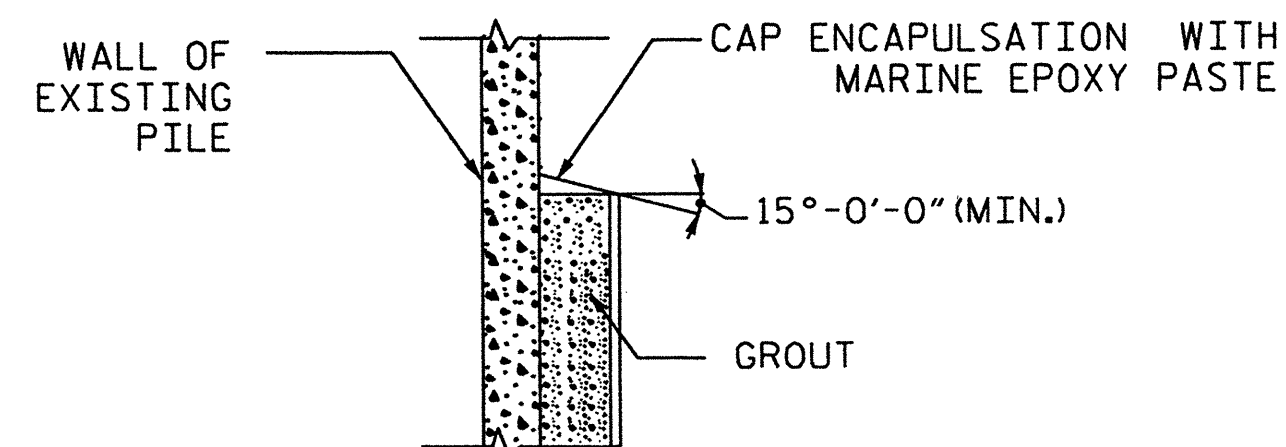
FIXED STANDOFF DETAIL

DETAIL B

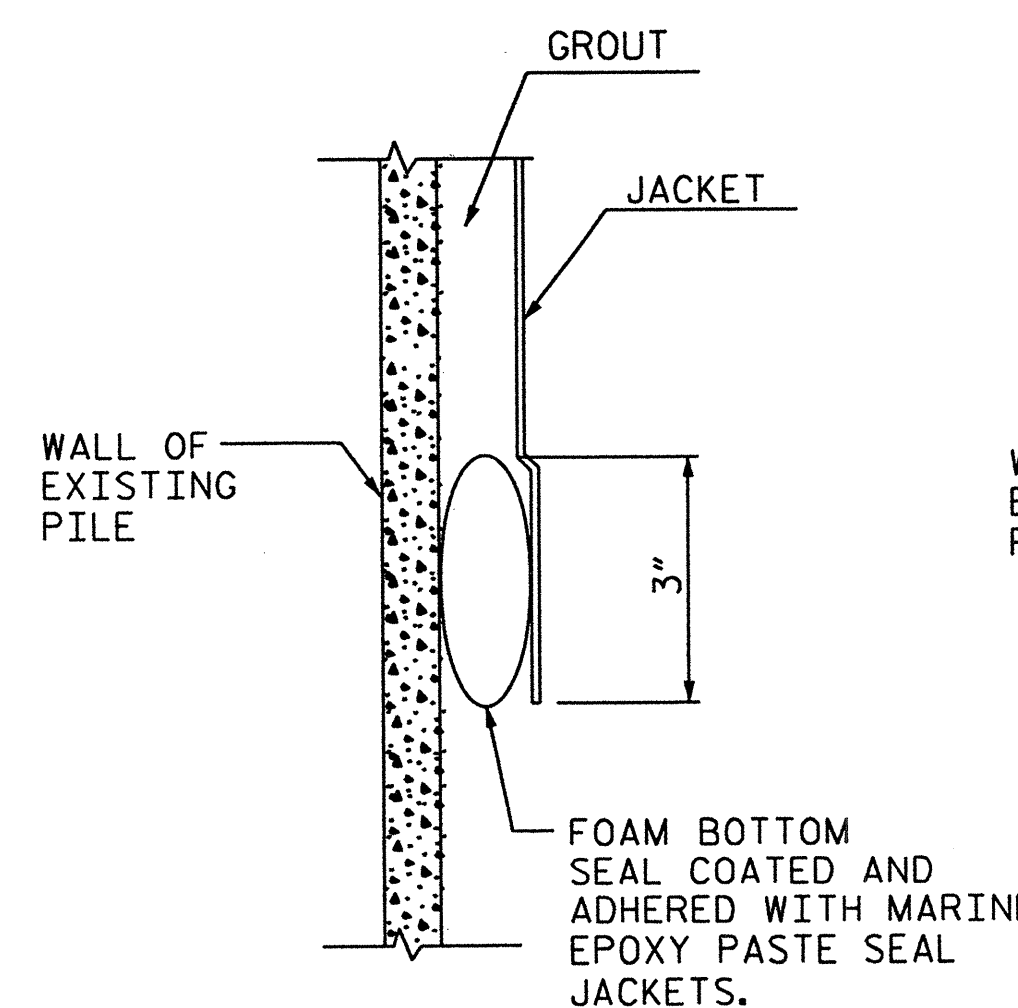


TEMPORARY GROUT FITTING SUPPLIED BY CONTRACTORS
TO BE PVC BALL VALVE AND CAM LOCK TO FIT 1" N.P.T.
INJECTION PORT.

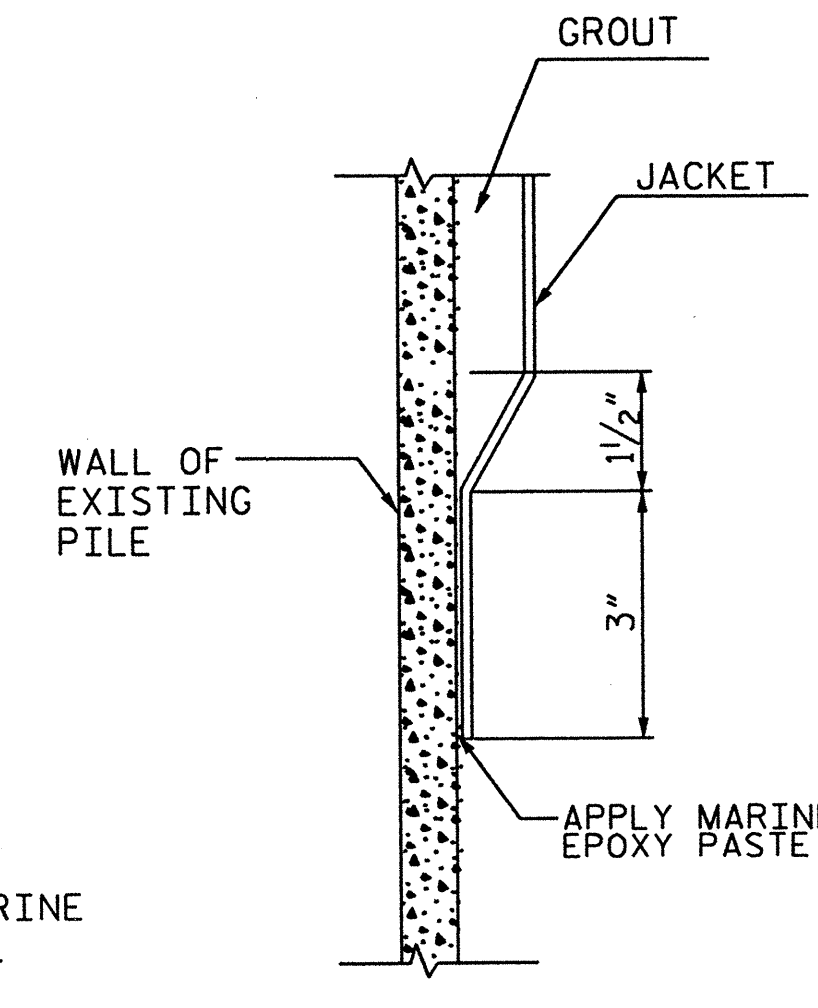
DETAIL E



DETAIL C
-TOP OF JACKET-



BOTTOM SEAL DETAIL



ALT. BOTTOM SEAL DETAIL

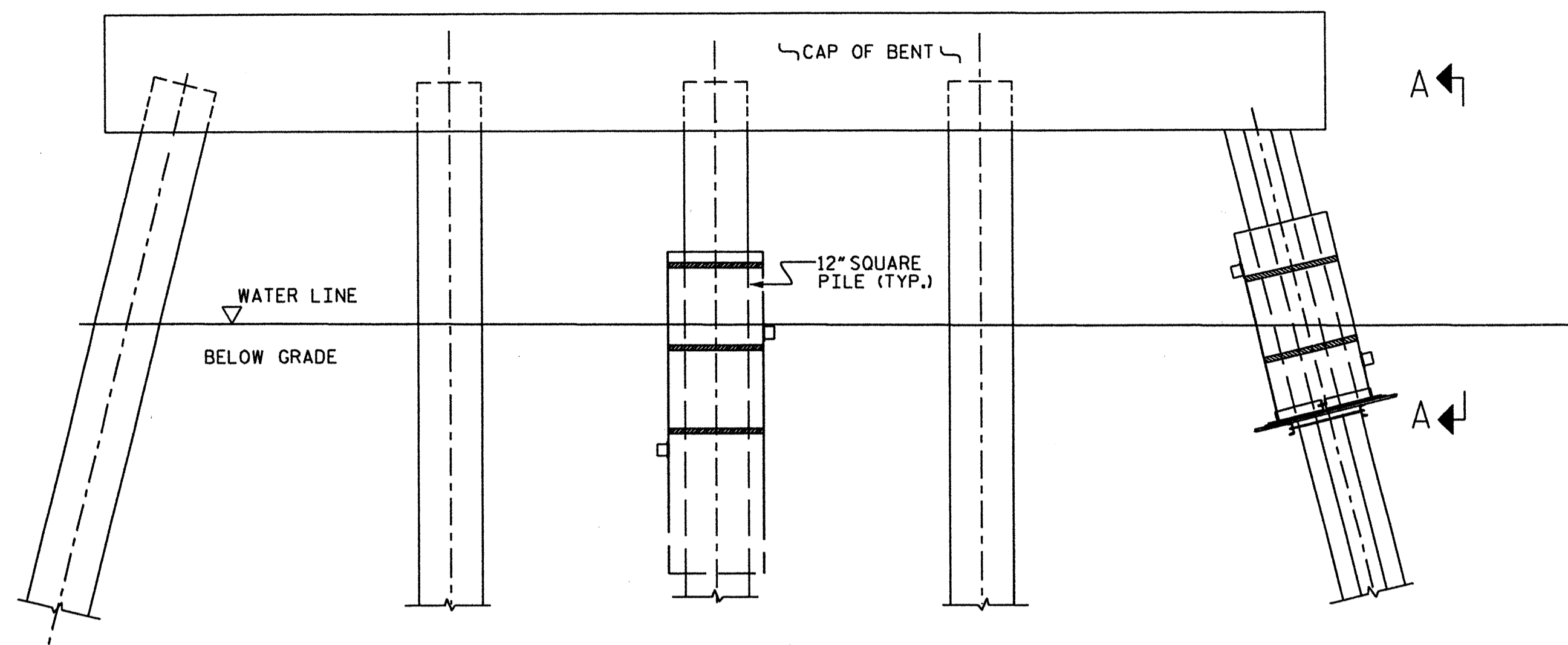
DETAIL D

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

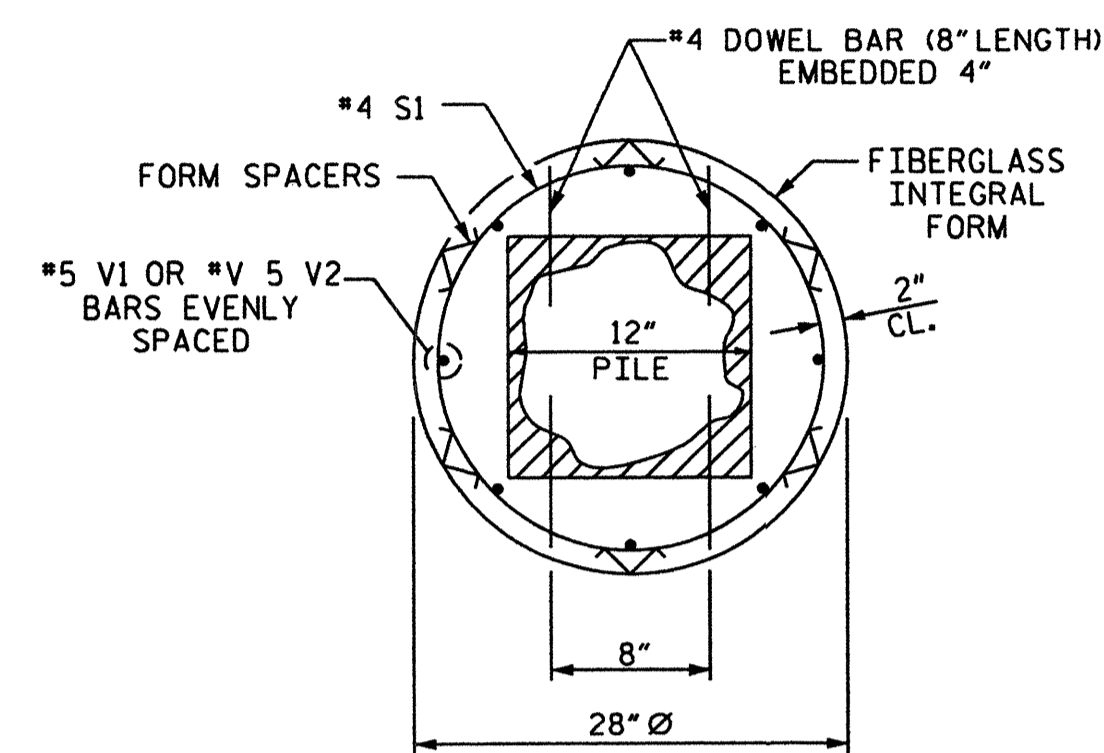
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PILE ENCAPSULATION DETAILS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S-10 TOTAL SHEETS 12

NOTES:

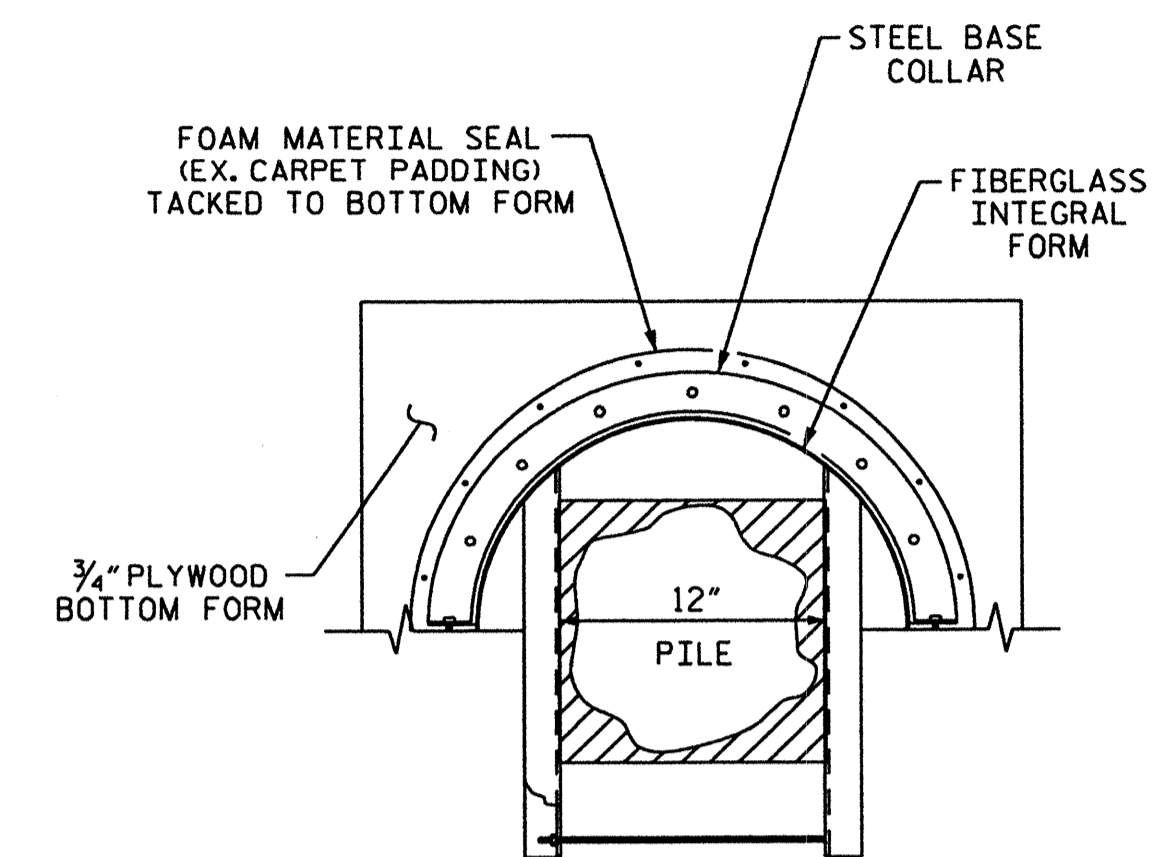
PILE JACKETS TO BE INSTALLED ON 12" SQUARE PILES.
 ALL PILE JACKETS ARE ESTIMATED 7 FT. IN LENGTH AND START 2 FEET ABOVE MEAN WATER ELEVATION.
 APPROXIMATELY 5 FEET OF PILE JACKET WILL BE PLACED BELOW WATER ELEVATION DEPENDING ON THE ELEVATION OF RIVER.
 SOME PILE JACKET LOCATIONS ARE SHALLOW AND THOSE AREAS THE PILE JACKET WILL ONLY NEED TO EXTEND 1 FEET BELOW MUD LINE.



ELEVATION VIEW



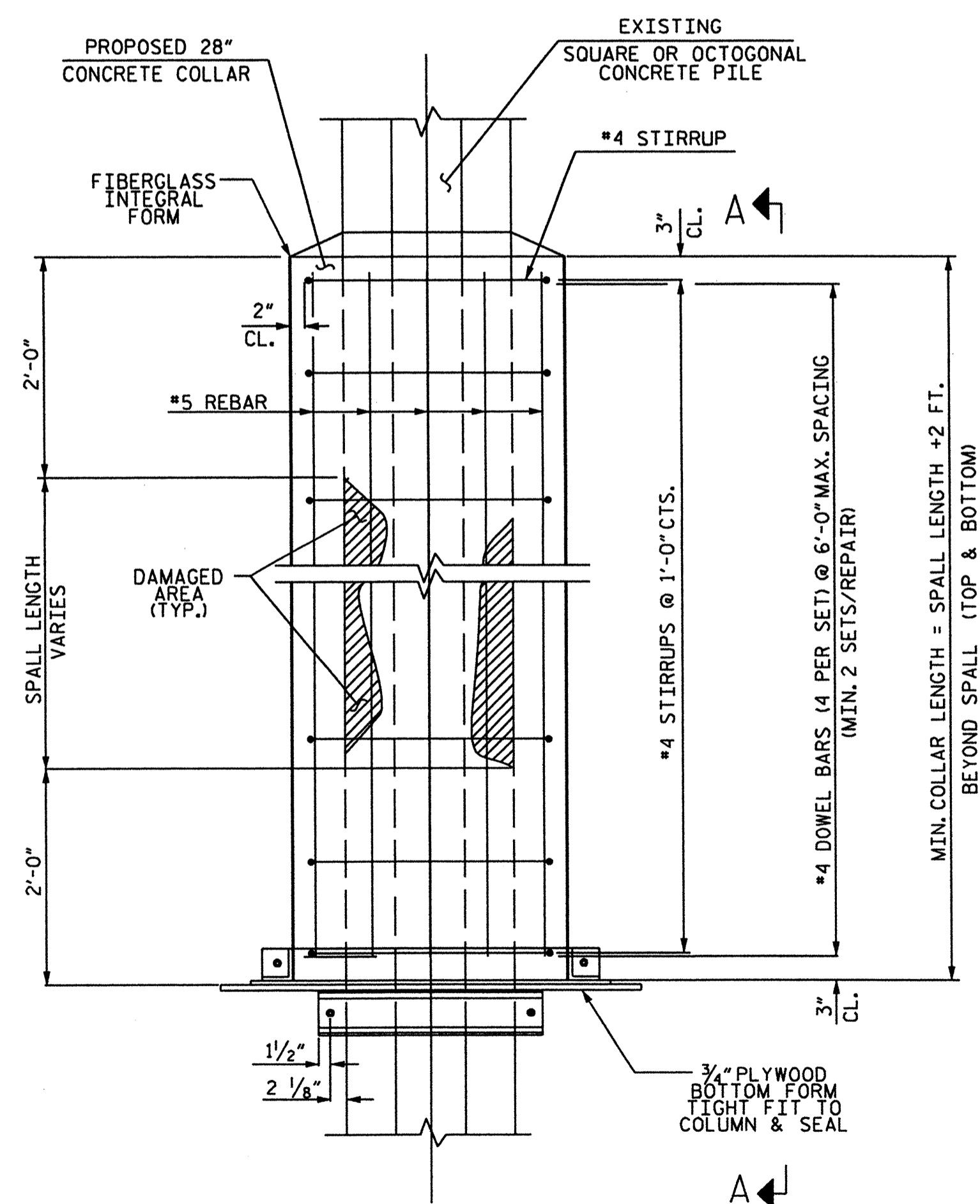
JACKET DETAIL



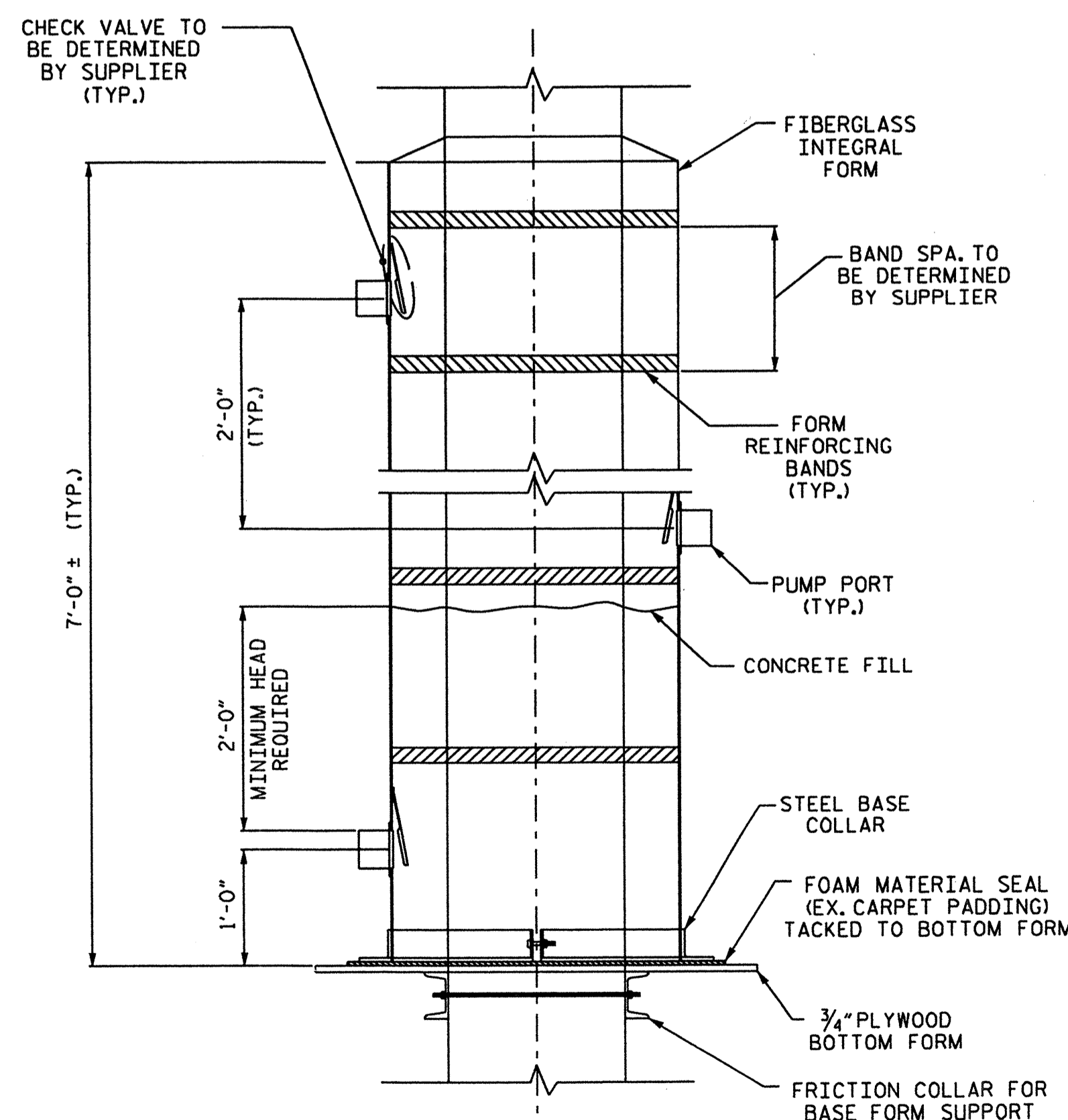
PLATFORM DETAIL

PILE JACKET W/ PUMP PORTS

(ABOVE GRADE REPAIR)



JACKET ELEVATION
(ABOVE GRADE/WATER APPLICATIONS)



SECTION A-A

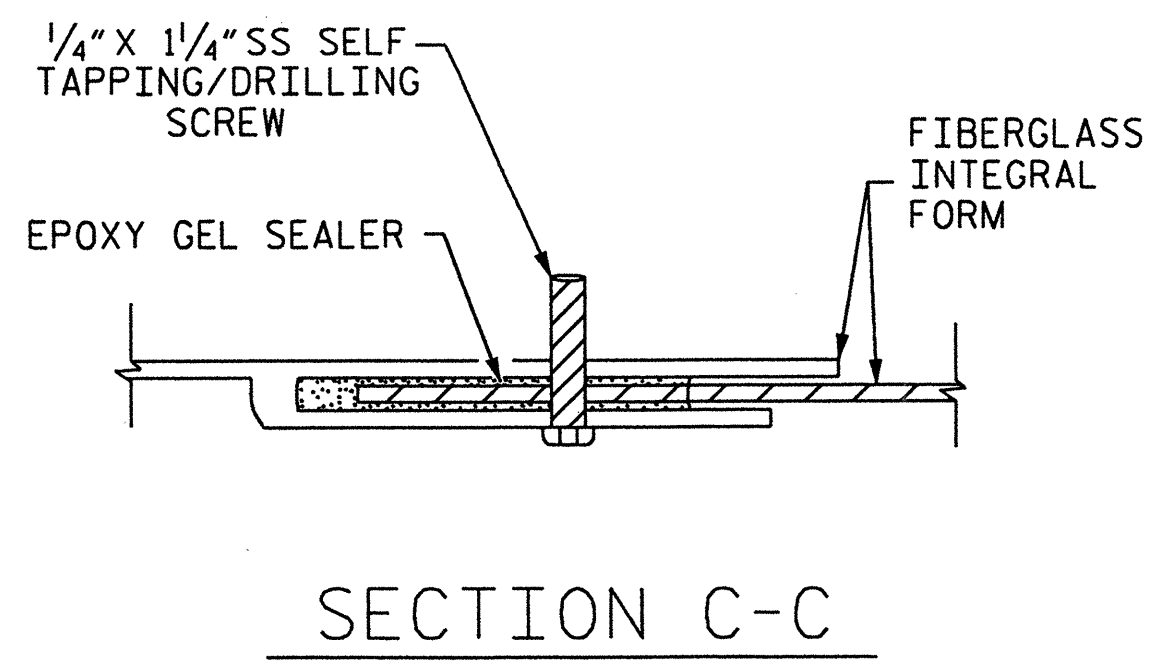
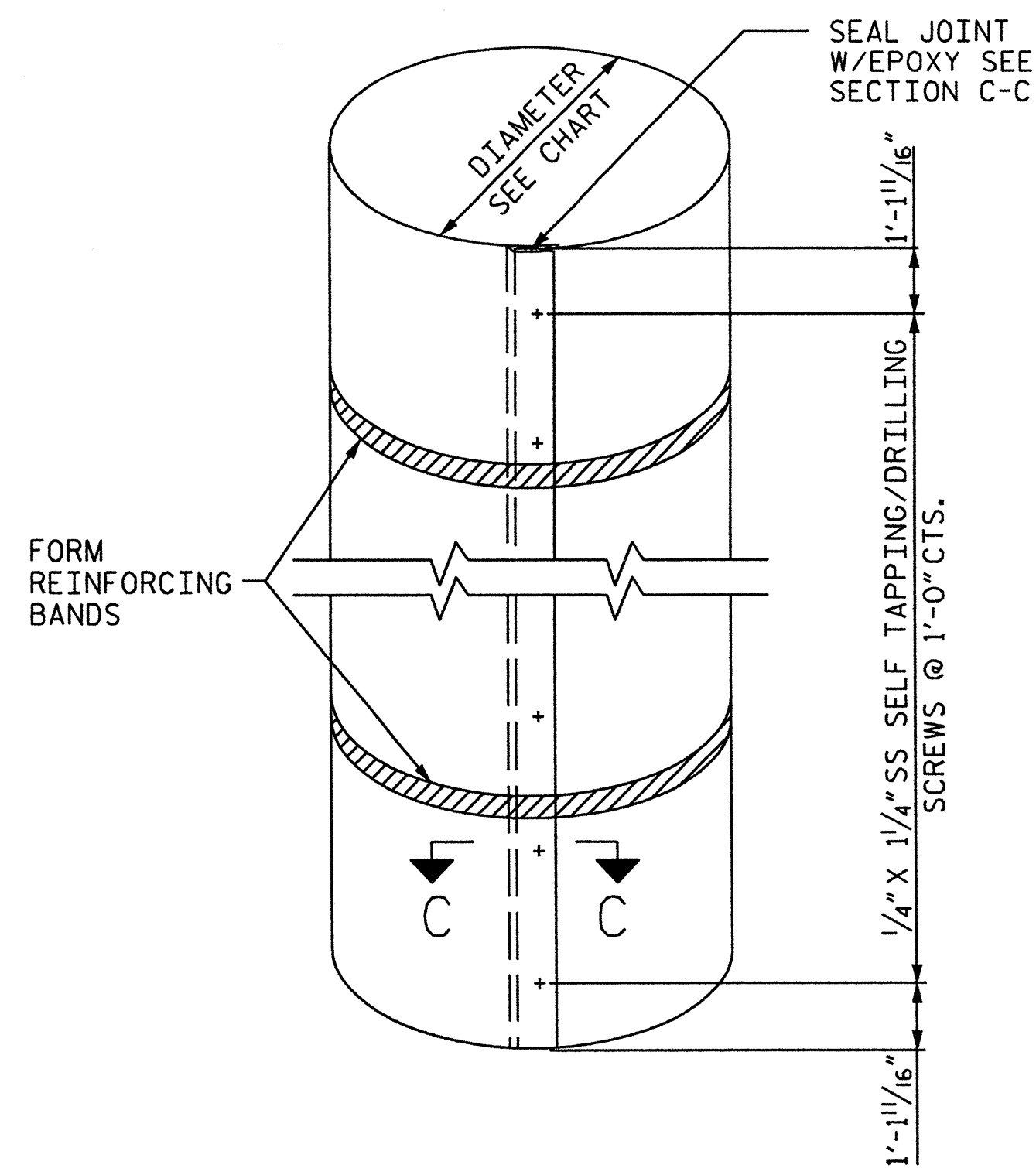
PROJECT: B-4700AG
 COUNTY: BEAUFORT
 REPLACES BRIDGE NO. 28

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			

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



FIBERGLASS INTEGRAL FORM

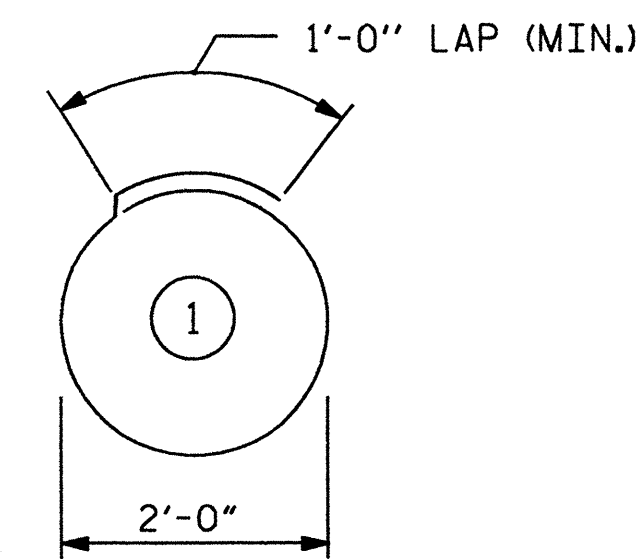
REPAIR SEQUENCE

- 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.

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

*****SYTIME***** **USERNAME****

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

*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					
JACKET	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			

* 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
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