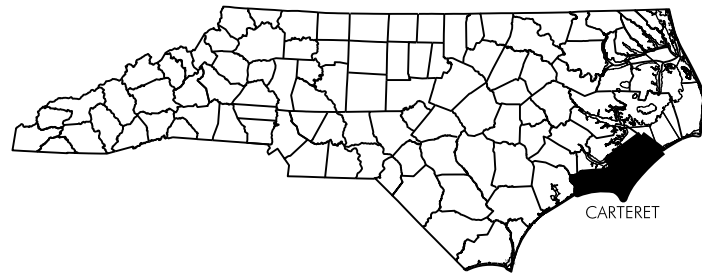


TIP PROJECT: 17BP.2.P.11

CONTRACT:



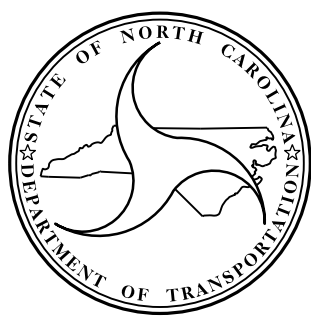
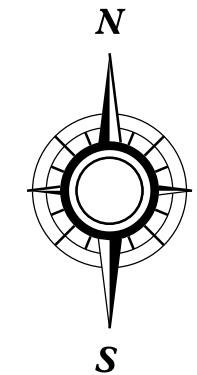
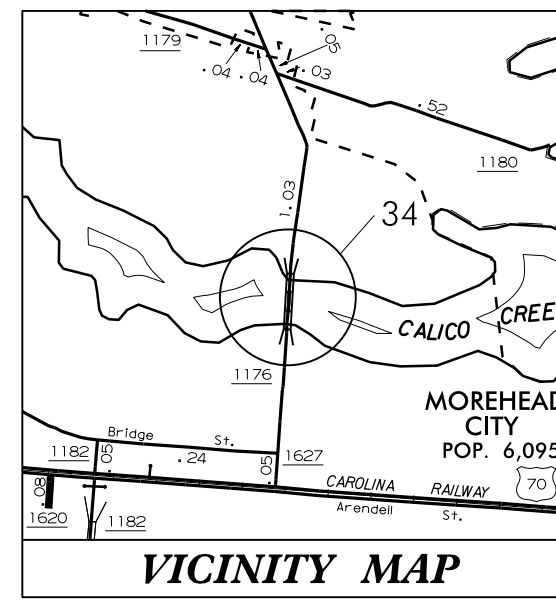
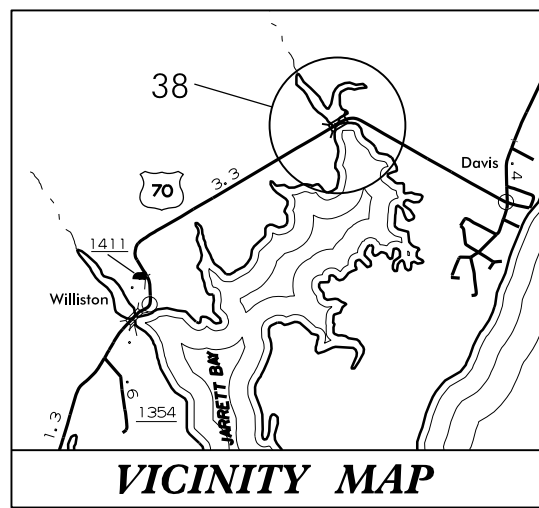
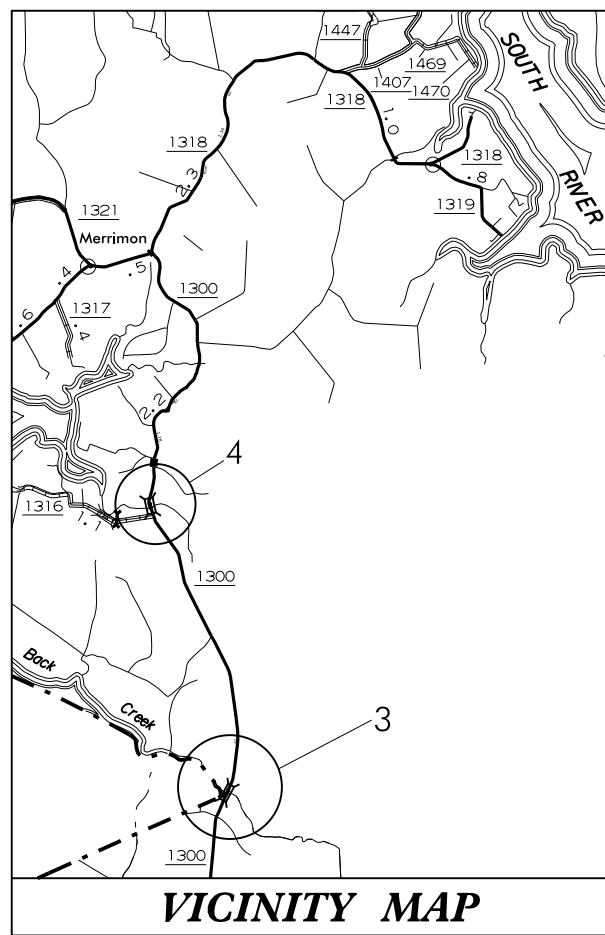
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.P.11	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.P.11	N/A	P.E.	
17BP.2.P.11	N/A	CONSTRUCTION	

LOCATION: BRIDGE #3 ON SR 1300 OVER BACK CREEK
 BRIDGE #4 SR 1300 OVER BRANCH OF ADAMS CREEK
 BRIDGE #34 ON SR 1176 OVER CALICO CREEK
 BRIDGE #38 ON US 70 OVER SMYRNA CREEK

TYPE OF WORK: BRIDGE PRESERVATION-ENCAPSULATION OF HP PILES AND INJECTION OF EPOXY GROUT, SUBSTRUCTURE REPAIRS, CORED SLAB SPALL REPAIR AND SEA WALL REPAIRS



Prepared In the Office of:
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT - PRESERVATION & REPAIR GROUP
 1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610

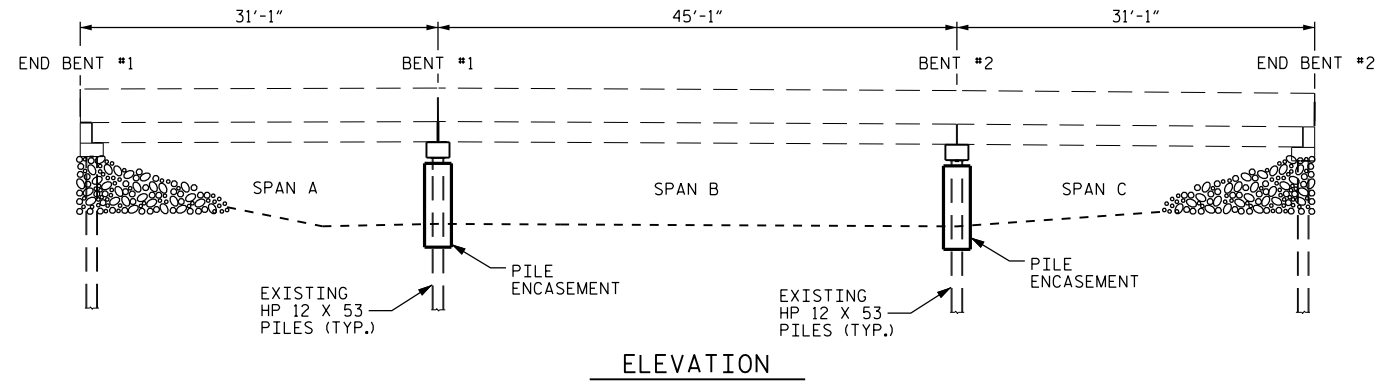
ROY GIROLAMI, P.E.
 PROJECT ENGINEER

2012 STANDARD SPECIFICATIONS

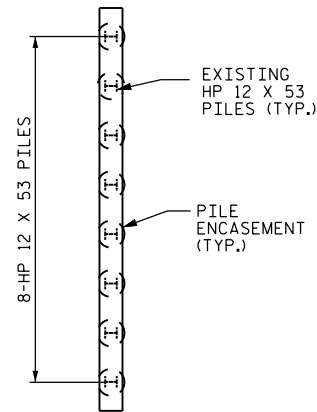
LETTING DATE:
JUNE 27, 2012

ENGINEER

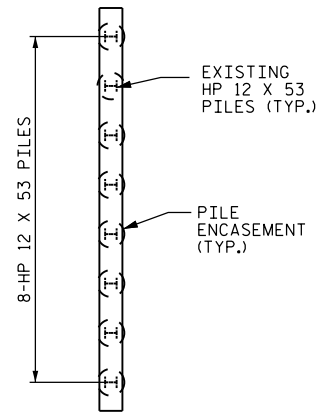
THEO J. BEACH, P.E.
 PROJECT DESIGN ENGINEER



ELEVATION

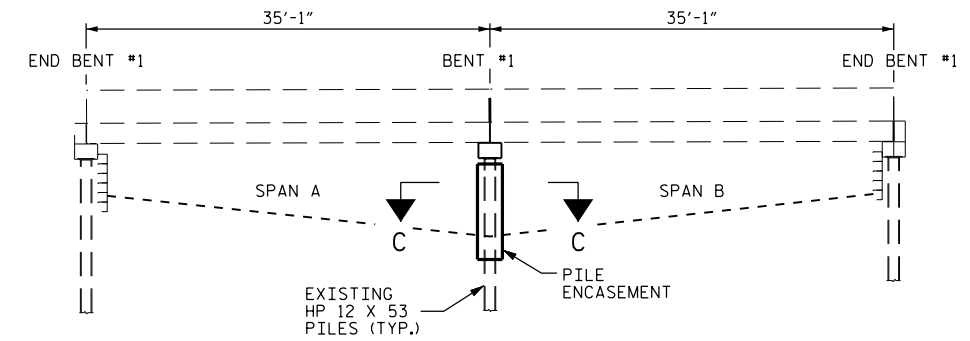


PLAN OF BENT #1

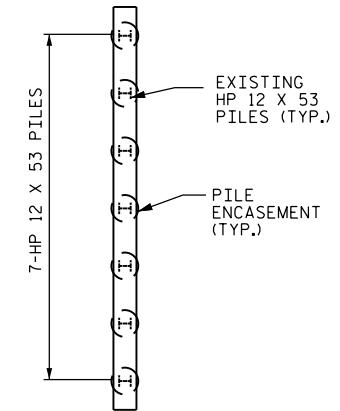


PLAN OF BENT #2

BRIDGE NO. 3



ELEVATION



PLAN OF BENT #1

BRIDGE NO. 4

TOTAL BILL OF MATERIAL - BRIDGES #3 & #4				
	MOBILIZATION	PILE JACKETS	CONCRETE REPAIRS	*STRUCTURAL STEEL
BRIDGE	LUMP SUM	LF	CF	LBS.
NO. 3	LUMP SUM	128.0	0.0	0.0
NO. 4	LUMP SUM	62.0	1.0	414.0
TOTAL	LUMP SUM	190.0	1.0	414.0

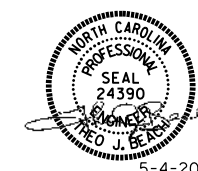
*STRUCTURAL STEEL QUANTITY BASED ON AN ASSUMED LENGTH OF 20FT. OF C12X20.7 CHANNEL. QUANTITY WILL HAVE TO BE DETERMINED BASED ON ACTUAL FIELD CONDITIONS. SEE SHEET S-4

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 3 & 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN & ELEVATION OF
 BRIDGE #3 & #4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS 19
2			4			



DRAWN BY : R.W.W/AGA DATE : 03/12
 CHECKED BY : T.J.J.BEACH DATE : 4/2012

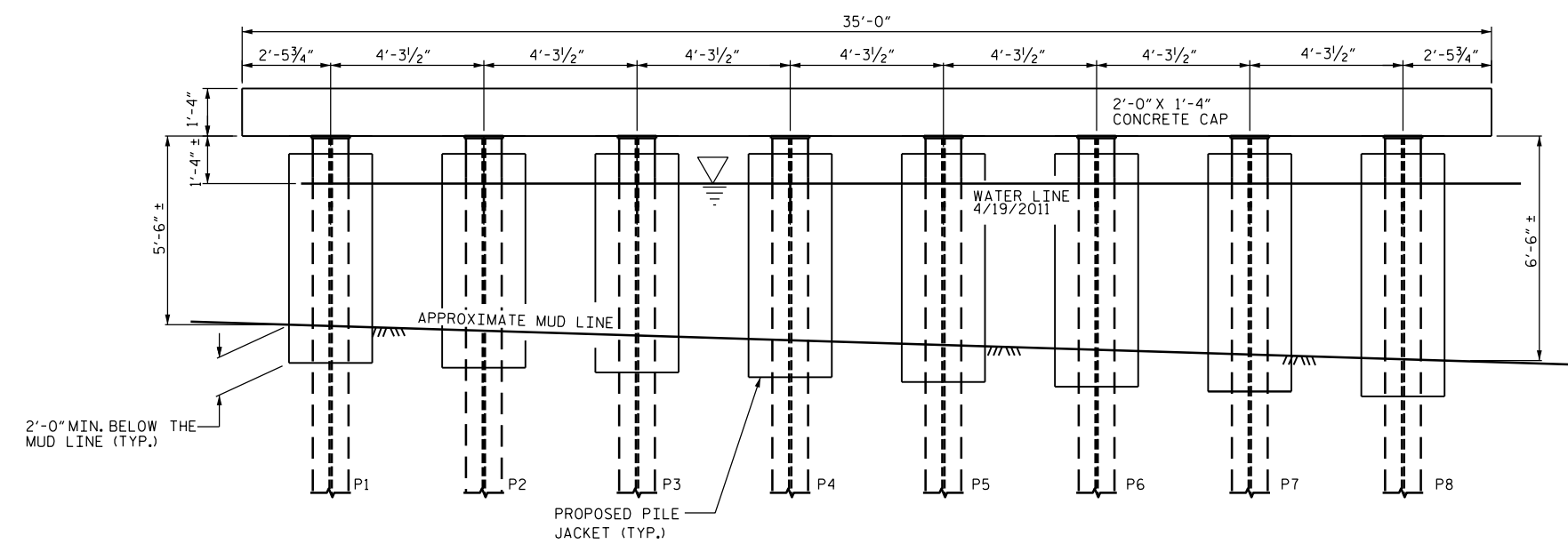
NOTES

ENCAPSULATE PILES FROM BOTTOM OF BENT CAP TO A MINIMUM OF 2'-0" BELOW THE MUD LINE.
 FOR 'PILE JACKETS', SEE SPECIAL PROVISIONS.
 REPAIR OF BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER.
 PILE JACKET QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.

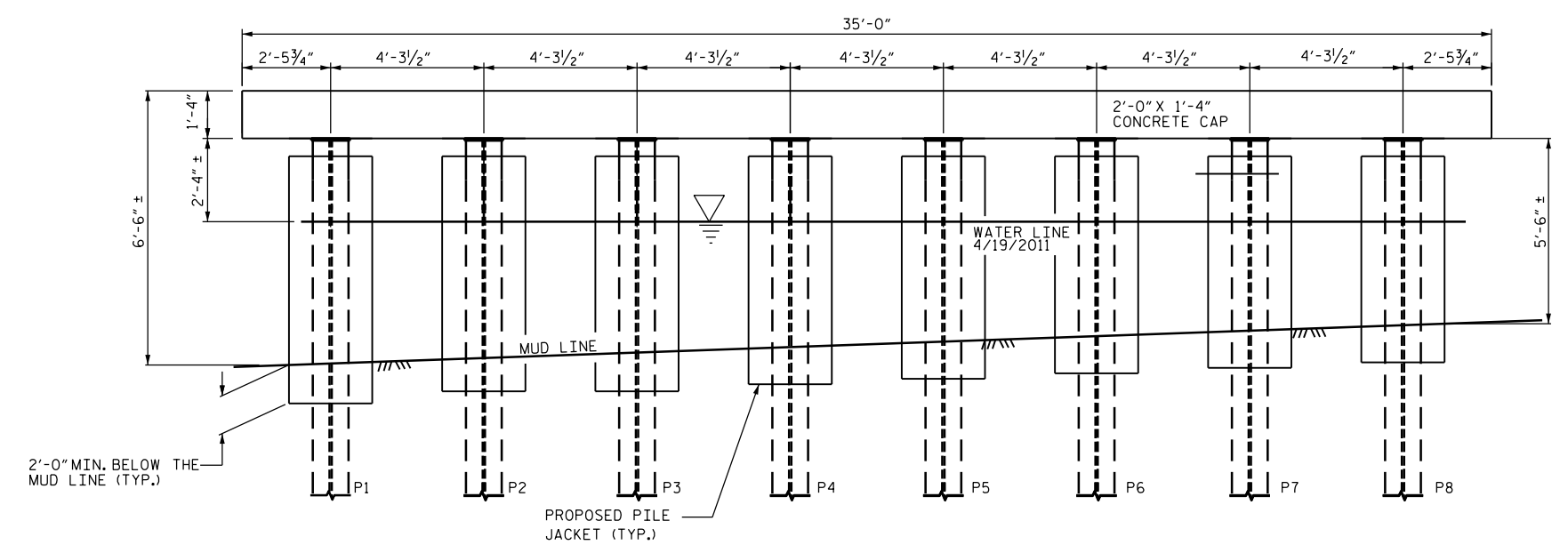
PILE JACKET LOCATIONS

BENT	PILE	BENT	PILE
#1	P1*	#2	P1*
#1	P2*	#2	P2*
#1	P3*	#2	P3*
#1	P4*	#2	P4*
#1	P5*	#2	P5*
#1	P6*	#2	P6*
#1	P7*	#2	P7*
#1	P8*	#2	P8*

*PILE JACKET LENGTHS VARY BETWEEN 7'-6" ± AND 8'-6" ± LENGTHS AND REPAIR LIMITS SHALL BE FIELD VERIFIED.



BENT #1



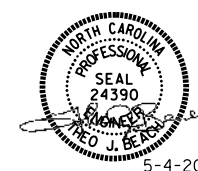
BENT #2

ELEVATION VIEW OF EXISTING BENTS

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO: 3

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PILE JACKET
 REPAIR

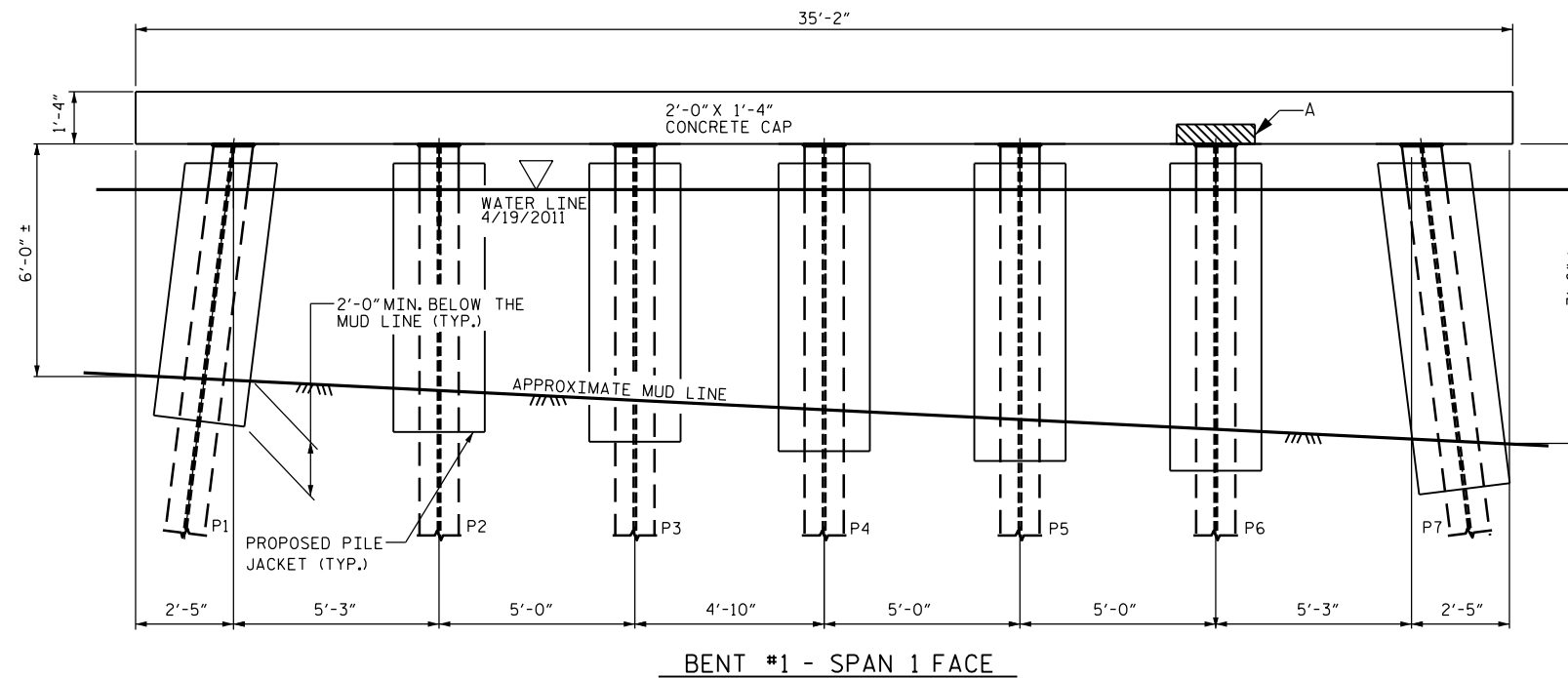


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2	
1			3			TOTAL SHEETS	19
2			4				

DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012

NOTES

- ENCAPSULATE PILES TO A MINIMUM OF 2'-0" MIN. BELOW THE MUD LINE.
- FOR "PILE JACKETS", SEE SPECIAL PROVISIONS.
- REPAIR OF BRIDGE SHALL BE PERFORMED SO AS TO NOT ALLOW DEBRIS TO FALL INTO THE WATER.
- PILE JACKET QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.
- REPAIR AREA DIMENSIONS AND LOCATIONS ARE APPROXIMATE.
- REMOVAL OF EXISTING CONCRETE AT REPAIR AREAS SHALL BE EXTENDED 2" BEYOND REPAIR AREA WITH A NOMINAL 1/2" SAW CUT AT THE LIMITS OF REMOVAL. IF EXISTING REINFORCING STEEL IS EXPOSED THEN CHIP CONCRETE BACK AT LEAST 1/2" BEHIND THE BARS.
- ALL EXPOSED REBAR SHALL BE CLEANED OF LOOSE RUST AND CONTAMINATION, THE CONDITION OF THE REINFORCING STEEL WILL BE INSPECTED BY THE ENGINEER BEFORE APPLICATION OF THE CONCRETE REPAIR.
- IF REINFORCING STEEL IS DAMAGED THEN SPLICE DAMAGED BAR WITH SIMILAR SIZE BAR AND A MINIMUM OVERLAP LENGTH OF THIRTY BAR DIAMETERS. STEEL REINFORCEMENT, IF REQUIRED, SHALL BE ASTM GRADE 60.
- REPAIR MATERIAL SHALL BE PREPACKAGED SHRINKAGE -COMPENSATING POLYMER MODIFIED CONCRETE REPAIR MORTAR WITH CORROSIVE INHIBITOR AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI. SUBMIT PROPOSED REPAIR MORTAR TO ENGINEER FOR APPROVAL PRIOR TO WORK.
- FOR POLYMER MODIFIED CONCRETE REPAIR SEE SPECIAL PROVISIONS UNDER "CONCRETE REPAIRS".
- MIXING AND PLACEMENT OF PATCHING MATERIAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS WHERE USE OF CONCRETE PATCHING MATERIAL IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SELECT FROM NCDOT APPROVED PRODUCTS.
- REPAIR AREAS SHALL BE CURED USING A WATER BASED CURING MEMBRANE OR AN APPROVED WET CURING PROCEDURE.
- ALL ORIGINAL FEATURES OF THE AREA REQUIRING CONCRETE REPAIRS, SUCH AS GROOVES AND CHAMFERS SHALL BE RESTORED.



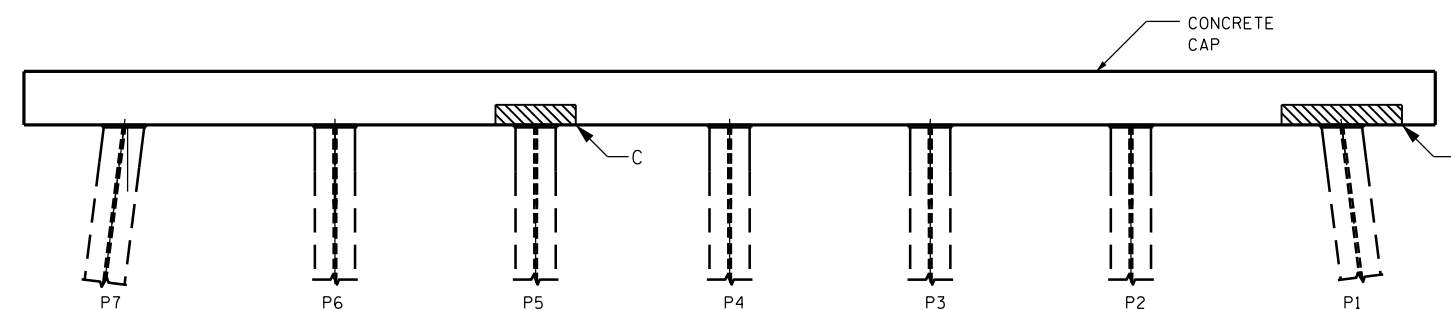
BENT CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.F.T.)
1	SPAN 1 FACE AREA A	2.0	.5	3"	0.3
1	SPAN 2 FACE AREA B	3.0	.5	3"	0.4
1	SPAN 2 FACE AREA C	2.0	.5	3"	0.3
TOTAL					1.0

PILE JACKET LOCATIONS

BENT	PILE
#1	P1*
#1	P2*
#1	P3*
#1	P4*
#1	P5*
#1	P6*
#1	P7*

*PILE JACKET LENGTHS VARY BETWEEN 8'-0" ± AND 9'-6" ±. LENGTHS AND REPAIR LIMITS SHALL BE FIELD VERIFIED.



ELEVATION VIEW OF BENT 1

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 4

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

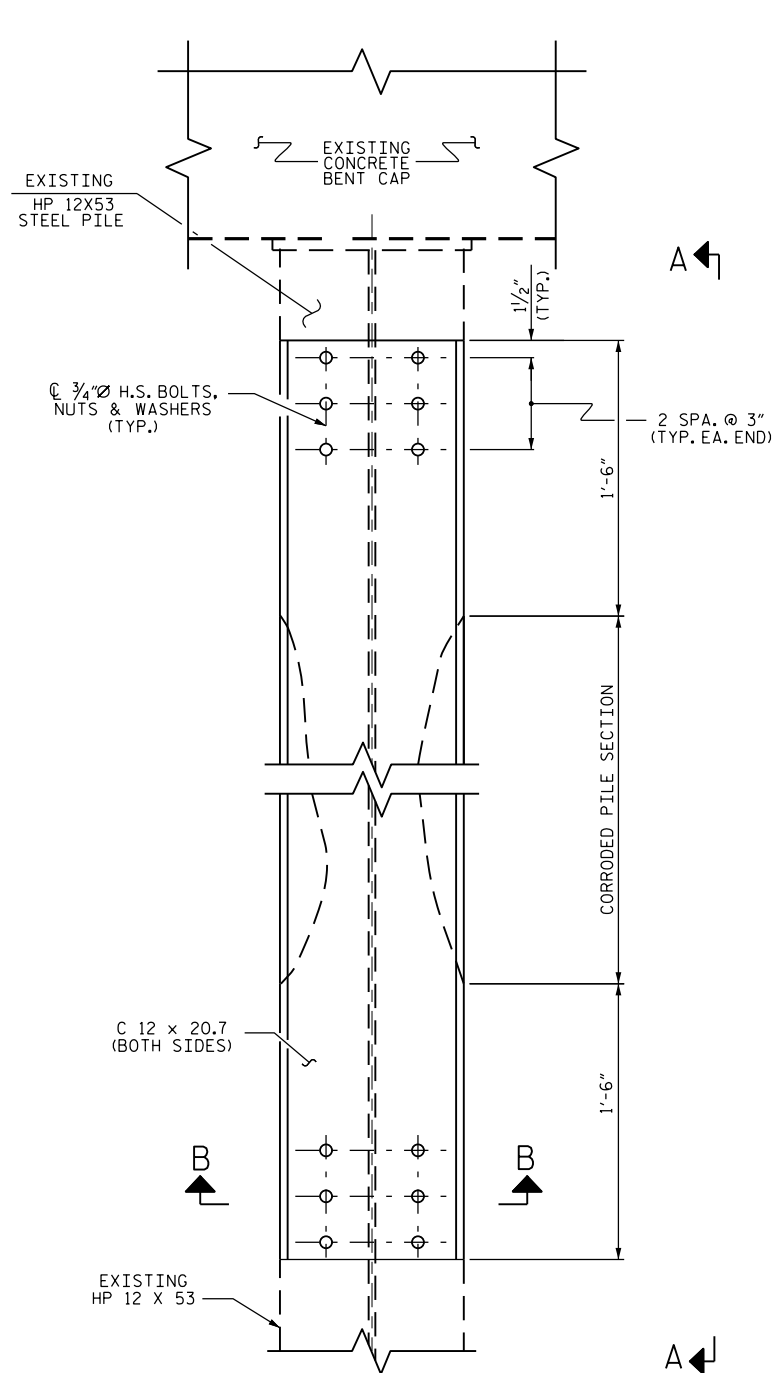
SUBSTRUCTURE

PILE JACKET REPAIR

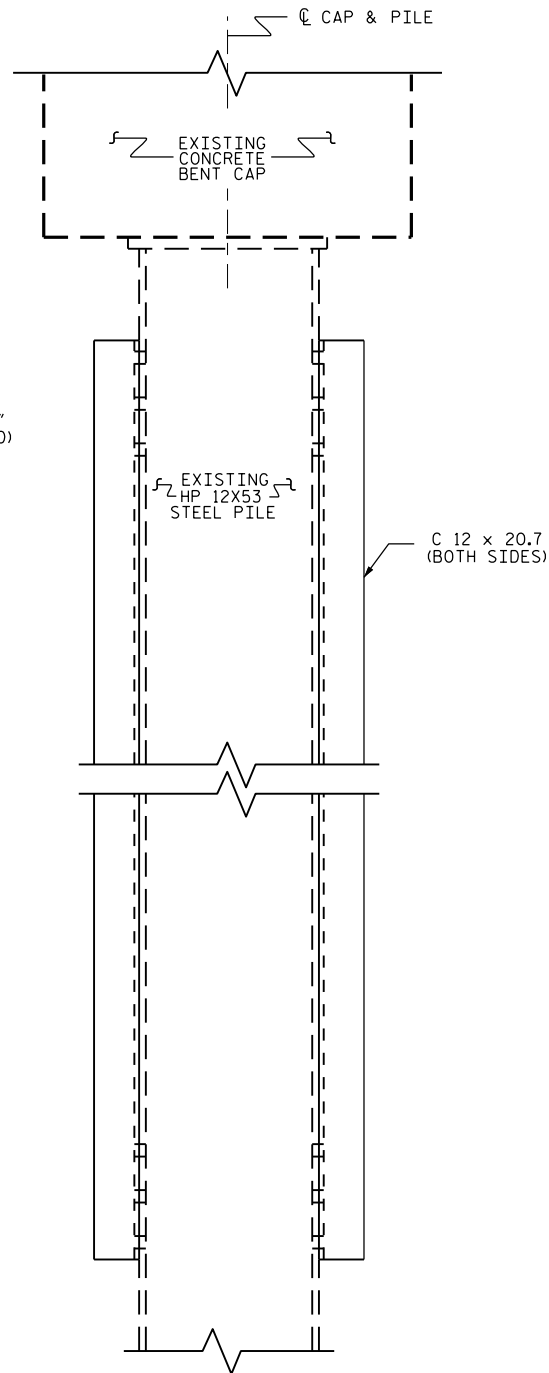
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			19



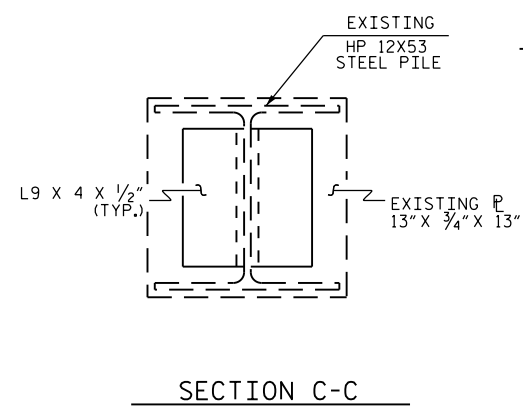
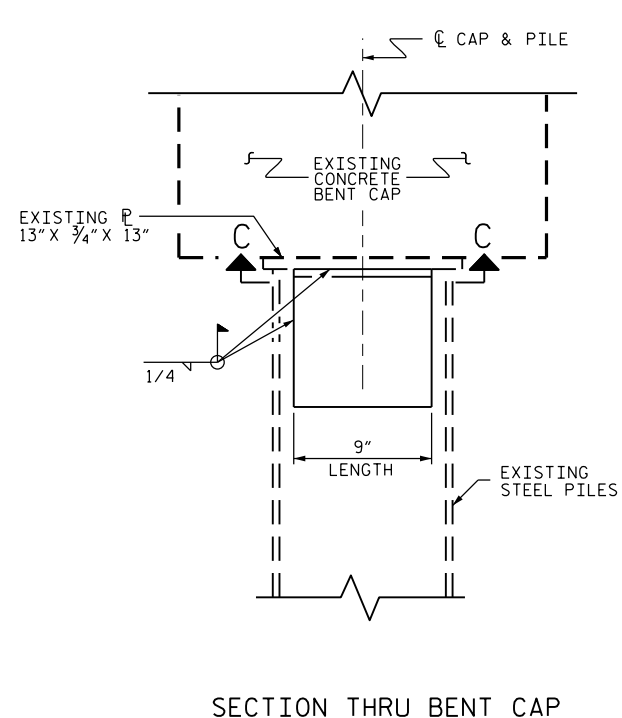
DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012



ELEVATION

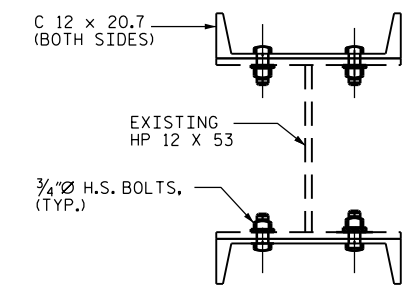


SECTION A-A



UPPER WEB REPAIR

PILE #5



SECTION B-B

* OPTIONAL PILE REPAIR, SEE STRUCTURAL STEEL NOTES.

STRUCTURAL STEEL NOTES:

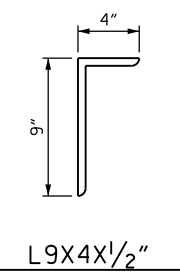
* IF ANY PILE HAS A SECTION LOSS OF 50% OR GREATER, IT SHALL BE PLATED USING THE CHANNEL SECTION SHOWN. THE AMOUNT OF SECTION LOSS SHALL BE DETERMINED BY THE ENGINEER.

STRUCTURAL STEEL SHAPES SHALL CONFORM TO ASTM A36.

FIELD CONNECTIONS SHALL BE BOLTED WITH ASTM HIGH STRENGTH BOLTS USING STANDARD OVERSIZE HOLES. BOLTS SHALL BE FULLY PRE-TENSIONED WITH OVERSIZE WASHERS UNDER THE NUTS. HOLES IN EXISTING PILES SHALL BE DRILLED. THE EQUIPMENT FOR TIGHTENING THE BOLTS SHALL BE SUITABLE FOR UNDERWATER OPERATION AND OF ADEQUATE CAPACITY TO PERFORM THE REQUIRED TIGHTENING OF EACH BOLT.

PRIOR TO WELDING, SURFACES OF PILES SHALL BE CLEANED TO BARE METAL IN ORDER TO PRESENT A PROPER WELD SURFACE. ALL OTHER SURFACE CONTAMINANTS SHALL BE REMOVED WITH BRUSH, SCRAPER OR POWER TOOLS. SURFACES OF PILES WHICH WILL BE IN CONTACT WITH SPLICE ANGLES SHALL BE CLEANED OF ALL RUST, SCALE, BURRS, PAINT, CHALK, OIL, DIRT, AND OTHER FOREIGN MATERIAL. CLEANED AREA ON PILES SHALL EXTEND TO A MINIMUM OF SIX INCHES BEYOND LIMITS OF THE REPAIR.

SEE SECTION 1072-18 OF THE STANDARD SPECIFICATIONS FOR WELDING.



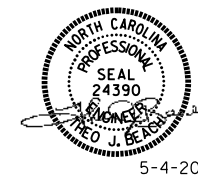
FLANGE REPAIR SEQUENCE

1. CLEAN DAMAGED PILE.
2. LOCATE EXTREME LIMITS OF DETERIORATED SECTION.
3. THOROUGHLY CLEAN AREA TO WHICH CHANNEL IS TO BE BOLTED IN & AREAS SURROUNDING IT IN ACCORDANCE WITH THE SUB ARTICLE 442-7(B) OF THE STANDARD SPECIFICATIONS.
4. CLAMP CHANNEL SECTION IN PLACE AGAINST PILE.
5. LOCATE AND DRILL HOLES THROUGH CHANNEL AND PILE FOR HIGH STRENGTH BOLTS.
6. PLACE BOLTS AND SECURE USING TURN OF THE NUT TIGHTENING METHOD.
7. REMOVE CLAMPS.
8. APPLY A TOUCH UP COAT OF NATURAL COLOR ORGANIC ZINC REPAIR PAINT.

PROJECT NO. 17BP.2.P.11
 CARTERET COUNTY
 BRIDGE NO.: 4

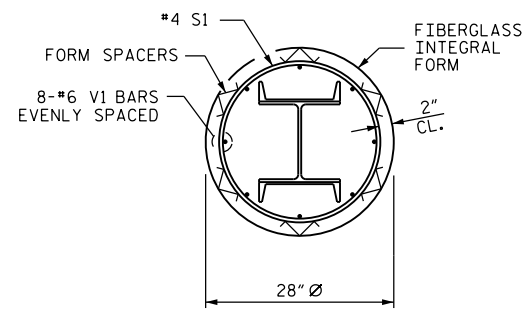
SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PILE REPAIR DETAILS

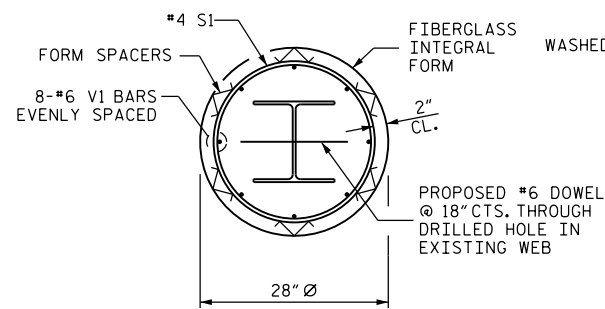


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4	
1			3			TOTAL SHEETS	
2			4			19	

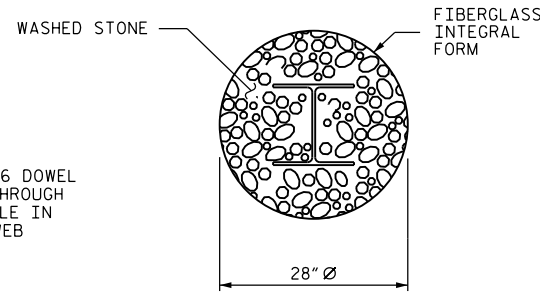
DRAWN BY : A. ABRAHA DATE : 02/2012
 CHECKED BY : T. J. BEACH DATE : 04/2012



JACKET DETAIL
OPTIONAL DETAIL, SEE SHEET S-4



JACKET DETAIL



BOTTOM DETAIL

JACKET NOTES:

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

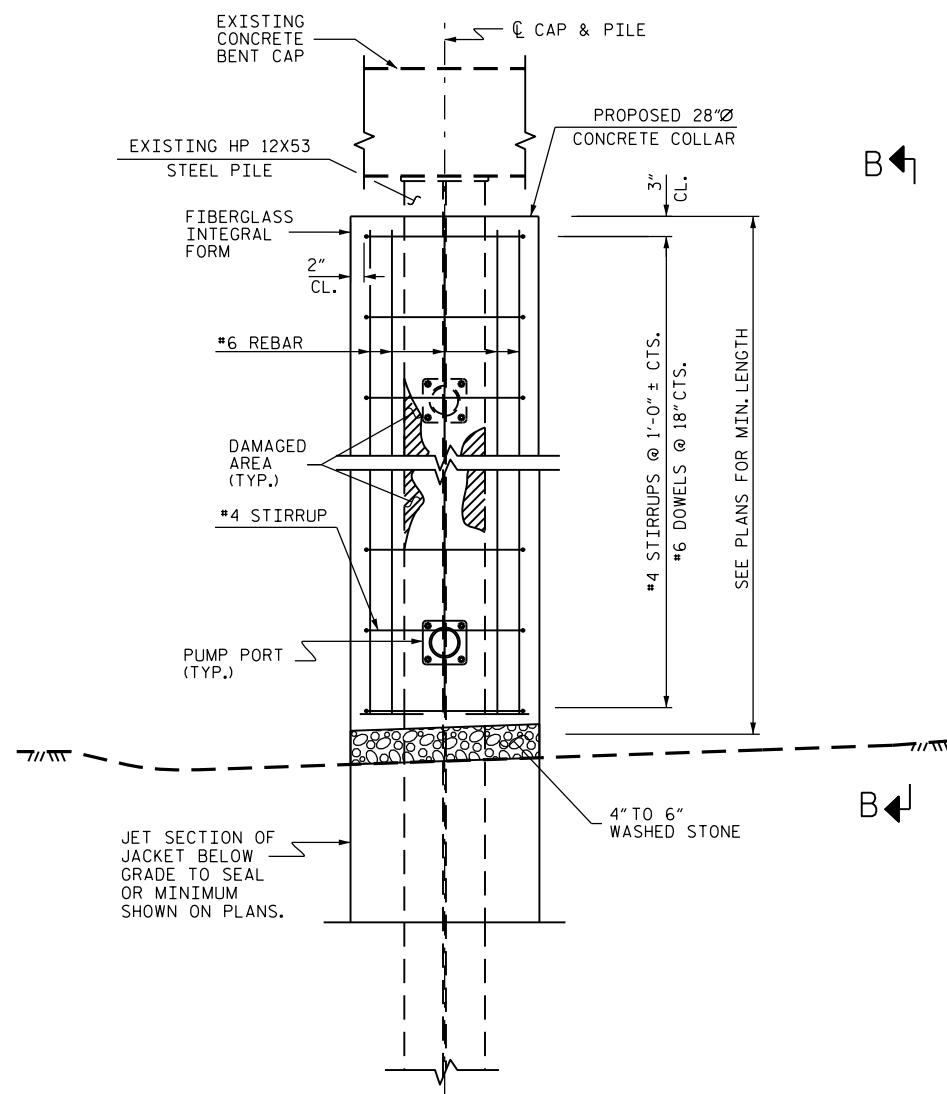
ALL REINFORCING BARS SHALL BE ASTM GRADE 60.

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

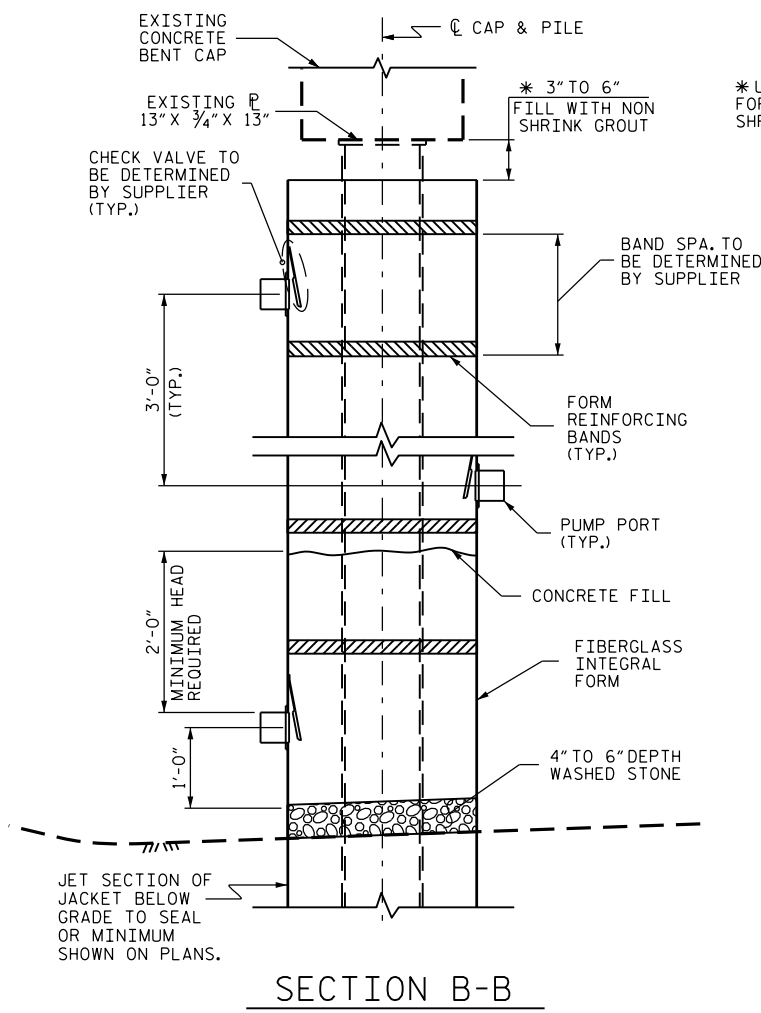
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, SHOWING ALL FASTENING DETAILS, STANDOFFS, FORMS, AND ANY OTHER DEVICES NECESSARY TO SECURE THE FORMS SO THAT CONCRETE MAY BE PLACED IN A CONTINUOUS OPERATION COMPLETELY ENCAPSULATING THE PILES.

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

EXCESS CONCRETE AT THE TOP OF THE FORM SHALL BE REMOVED SEVEN DAYS AFTER POURING CONCRETE. THE GAP BETWEEN CONCRETE ENCASEMENT AND PILE CAP SHALL BE FILLED WITH NON SHRINK GROUT IN ORDER TO PROVIDE FULL BEARING.



COLLAR ELEVATION



SECTION B-B

*USE JACKET PROVIDERS RECOMMENDATION FOR DIMENSIONS AND TYPE OF NON SHRINK GROUT. SLOPE TOP AT 45°.

JET SECTION OF JACKET BELOW GRADE TO SEAL OR MINIMUM SHOWN ON PLANS.

JET SECTION OF JACKET BELOW GRADE TO SEAL OR MINIMUM SHOWN ON PLANS.

PILE JACKET W/ PUMP PORTS
(BELOW GRADE REPAIR)

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
BRIDGE NO.: 3 & 4

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**PILE JACKET
REPAIR BELOW GRADE**



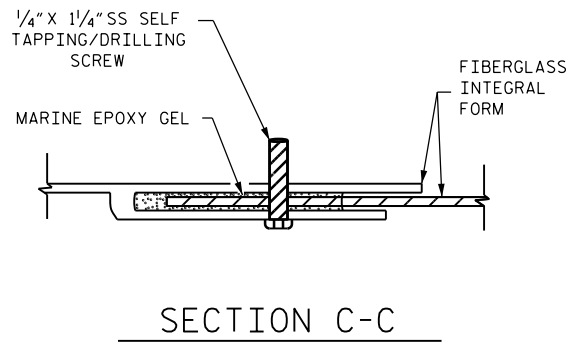
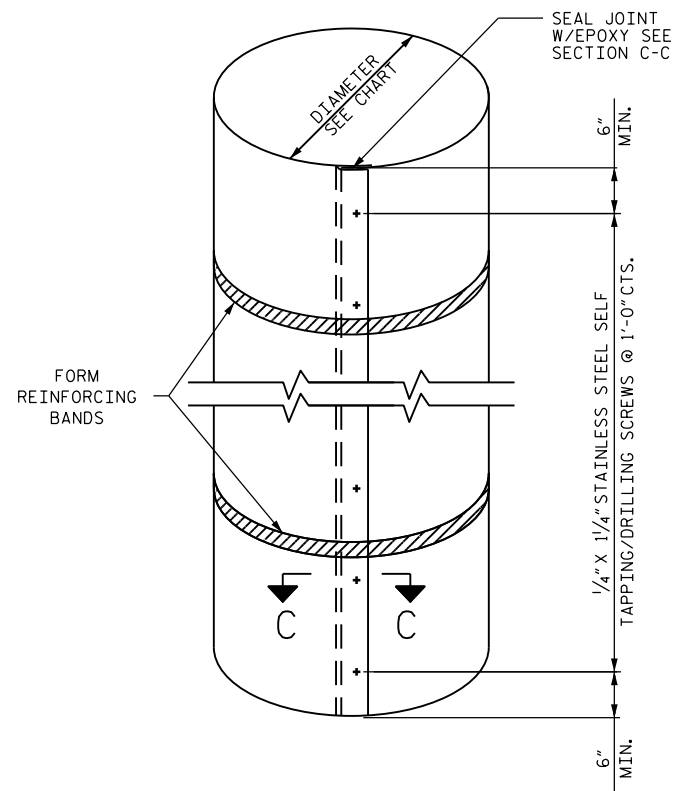
5-4-2012

DRAWN BY : A. ABRAHA DATE : 03/2012
CHECKED BY : T. J. BEACH DATE : 04/2012

04-MAY-2012 13:41
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tbeach

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS	
2			4			19	

NC005



FIBERGLASS INTEGRAL FORM

REPAIR SEQUENCE

- 1) COMPLETELY REMOVE ALL RUST, OIL, GREASE, AND OTHER CONTAMINANTS. PREPARE STEEL USING ACCEPTABLE MECHANICAL MEANS AND STEEL CLEANERS AND DEGREASERS AS NECESSARY TO OBTAIN CLEAN, SOUND SURFACES. STEEL 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.
- 2) COMPLETE REPAIRS AS INDICATED IN SHEET NO. S-5.
- 3) DETERMINE FIBERGLASS INTEGRAL FORM LENGTH. MINIMUM LENGTH IS 2' ABOVE AND BELOW CLEAN, SOUND, CONTAMINANT-FREE SURFACE.
- 4) BUILD THE REBAR CAGE BY PLACING THE #4 STIRRUPS AND VERTICAL REINFORCING STEEL IN ACCORDANCE WITH THE PROJECT DRAWING.
- 5) INSTALL FORM SPACERS TO INSURE ADEQUATE CONCRETE COVER AT ALL PARTS OF THE SLEEVE.
- 6) INSTALL THE SLEEVE- 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)
- 7) 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.
- 8) 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.
- 9) REMOVE FORM WORK AFTER 24 HOURS.

BAR TYPES		BILL OF MATERIAL					
		REINFORCING STEEL					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		V1	64	#6	STR	±7'-0"	673
		V2	64	#6	STR	±8'-0"	769
		V3	24	#6	STR	±7'-6"	270
		V4	32	#6	STR	±8'-3"	397
		S1	180	#4	1	7'-4"	882
		S2	112	#6	STR	1'-4"	224
ALL BAR DIMENSIONS ARE OUT TO OUT. REINFORCING STEEL AND CLASS A CONCRETE ARE PAID FOR IN THE PAY ITEM - PILE JACKETS		REINFORCING STEEL TOTAL = 3215 LBS					
		CONCRETE					
CLASS		VOLUME (CU. YDS)					
A		30.0					

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

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 3 & 4

SHEET 5 OF 5

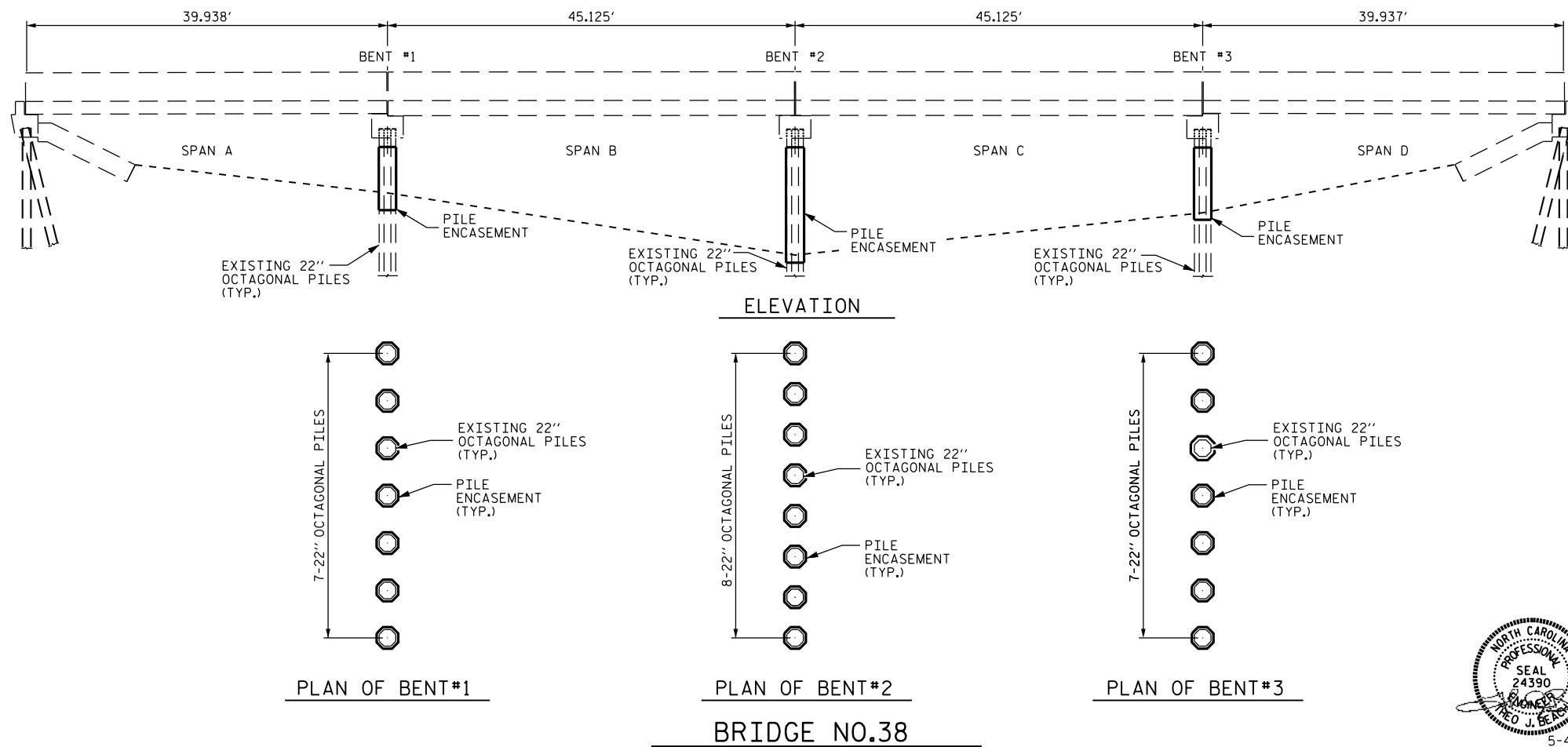
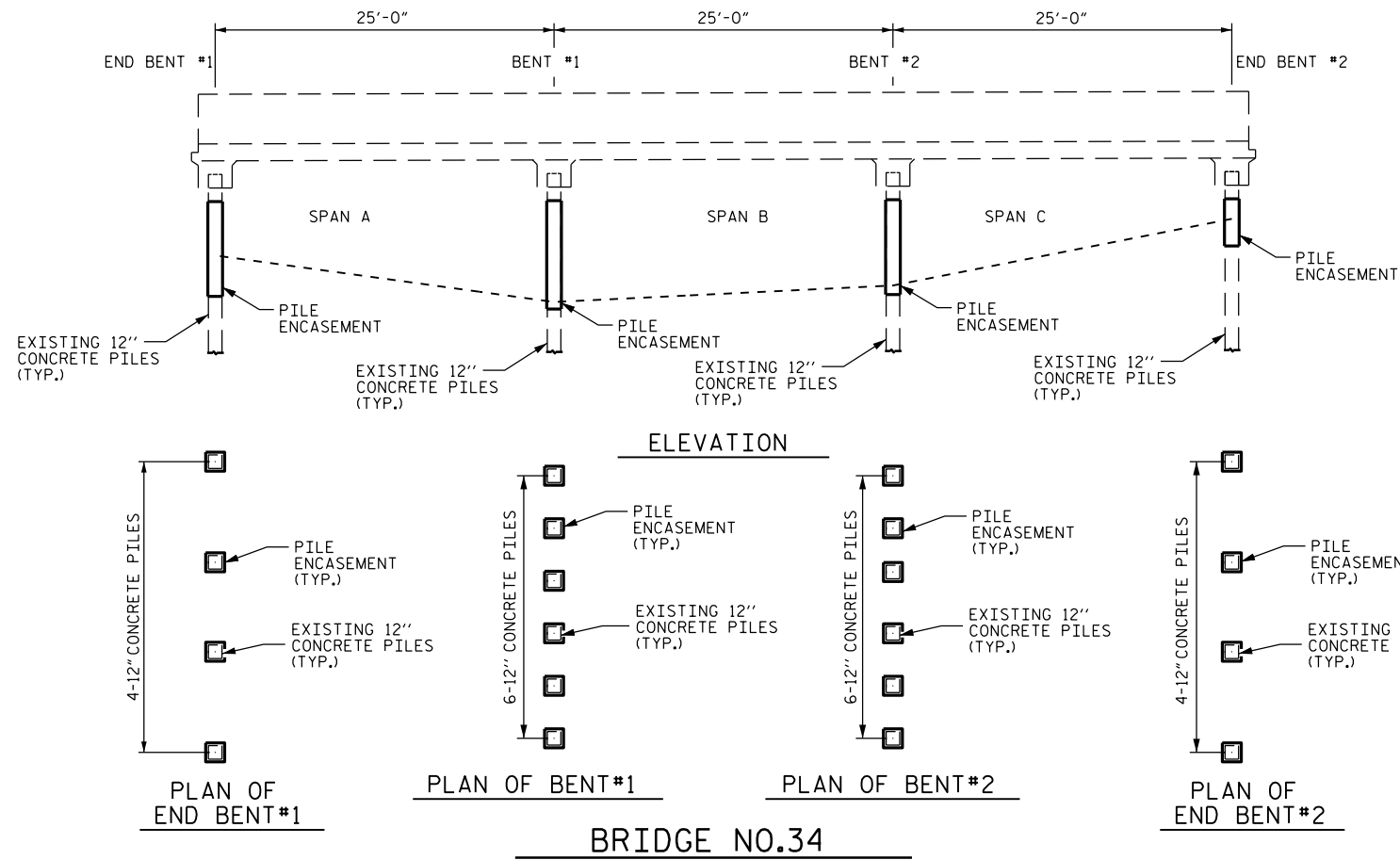
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PILE JACKET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			19



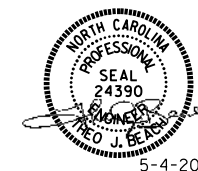
DRAWN BY : A. ABRAHA DATE : 03/2012
 CHECKED BY : _____ DATE : _____



PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 34 & 38

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-7
PLAN & ELEVATION OF BRIDGE #34 & BRIDGE #38						TOTAL SHEETS 19
REVISIONS						NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-4-2012
2			4			



DRAWN BY : R.W.W/AGA DATE : 03/2012
 CHECKED BY : T.J.BEACH DATE : 04/2012

03-MAY-2012 16:26
 S:\PRG\POC\Squad C\Preservation\Projects\17BP.2.P.11\Final\17BP.2.P.11.SD.GD.dgn
 tbeach

NC005

NOTES:

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

THE REPAIRS SHOWN ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE THE ACTUAL CONDITIONS AT THE PROJECT SITE.

EPOXY MORTAR MAY BE SUBSTITUTED FOR "CONCRETE REPAIRS" AT NO ADDITIONAL COST TO THE DEPARTMENT OF TRANSPORTATION.

FOR "EPOXY MORTAR REPAIRS", SEE SPECIAL PROVISIONS.

FOR "SECURING OF VESSELS", SEE SPECIAL PROVISIONS.

FOR "SUBMITTAL OF WORKING DRAWINGS", SEE SPECIAL PROVISIONS.

FOR "FALSEWORK AND FORMWORK", SEE SPECIAL PROVISIONS.

FOR "CRANE SAFETY", SEE SPECIAL PROVISIONS.

FOR "GROUT FOR STRUCTURES", SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL - BRIDGES #34 & #38			
	MOBILIZATION	PILE ENCAPSULATION	CONCRETE REPAIRS
BRIDGE	LUMP SUM	LF	CF
NO. 34	LUMP SUM	130.0	109.8
NO. 38	LUMP SUM	234.0	148.6
TOTAL	LUMP SUM	364.0	258.4

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 34 & 38

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
TOTAL BILL OF MATERIAL & NOTES					
REVISIONS					SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 19



DRAWN BY : R.W.W/AGA DATE : 03/12
 CHECKED BY : T.J.J.BEACH DATE : 4/2012

NOTES:

REPAIR AREA DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

REMOVAL OF EXISTING CONCRETE AT REPAIR AREAS SHALL BE EXTENDED 2" BEYOND REPAIR AREA WITH A NOMINAL 1/2" SAW CUT AT THE LIMITS OF REMOVAL. IF EXISTING REINFORCING STEEL IS EXPOSED THEN CHIP CONCRETE BACK AT LEAST 1/2" BEHIND THE BARS.

ALL EXPOSED REBAR SHALL BE CLEANED OF LOOSE RUST AND CONTAMINATION. THE CONDITION OF THE REINFORCING STEEL WILL BE INSPECTED BY THE ENGINEER BEFORE APPLICATION OF THE CONCRETE REPAIR.

IF REINFORCING STEEL IS DAMAGED THEN SPLICE DAMAGED BAR WITH SIMILAR SIZE BAR AND A MINIMUM OVERLAP LENGTH OF THIRTY BAR DIAMETERS. STEEL REINFORCEMENT, IF REQUIRED, SHALL BE ASTM GRADE 60.

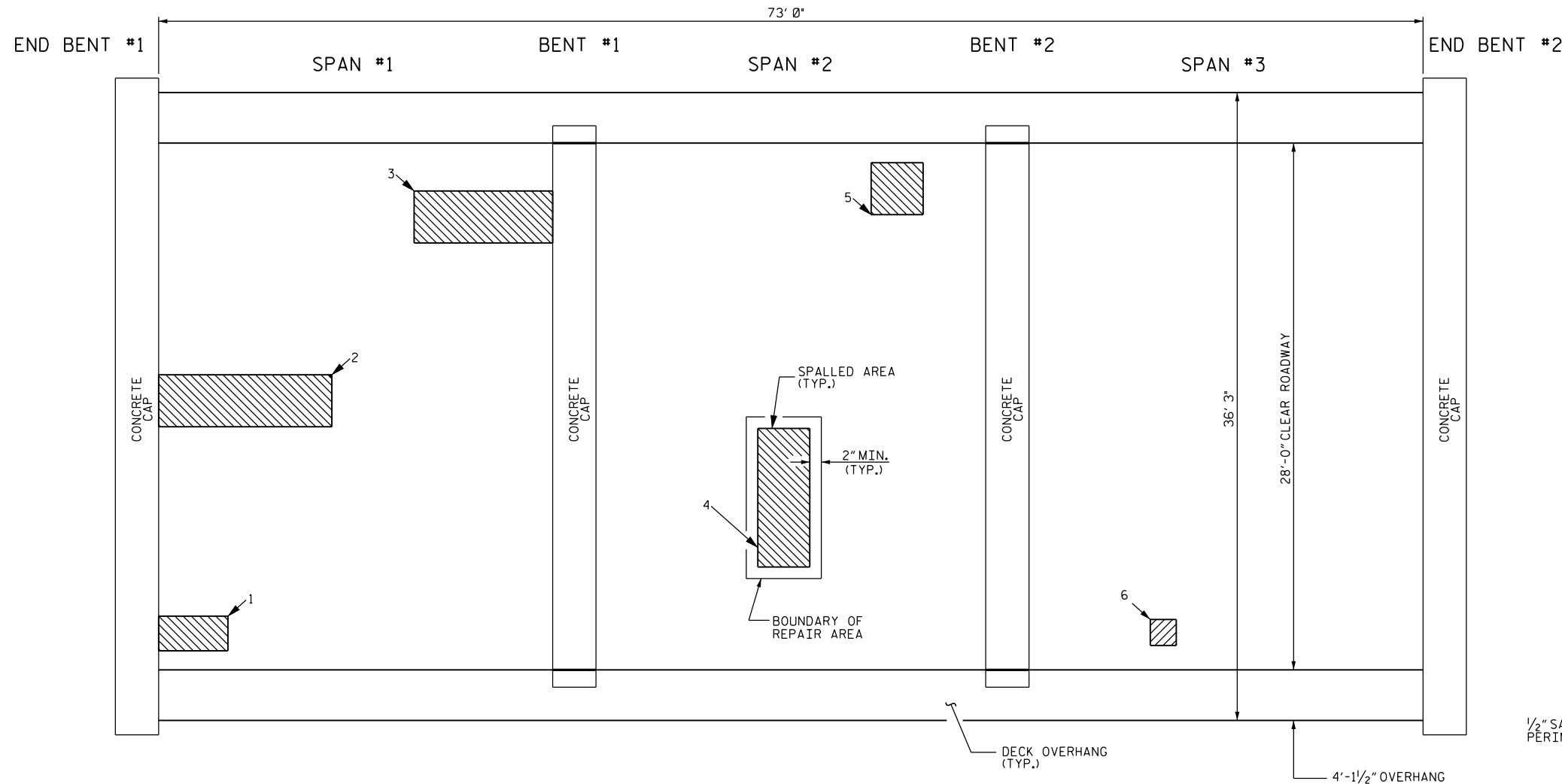
REPAIR MATERIAL SHALL BE PREPACKAGED SHRINKAGE -COMPENSATING POLYMER MODIFIED CONCRETE REPAIR MORTAR WITH CORROSION INHIBITOR AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI. SUBMIT PROPOSED REPAIR MORTAR TO ENGINEER FOR APPROVAL PRIOR TO WORK.

FOR POLYMER MODIFIED CONCRETE REPAIR SEE SPECIAL PROVISIONS UNDER "CONCRETE REPAIRS".

MIXING AND PLACEMENT OF PATCHING MATERIAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS WHERE USE OF CONCRETE PATCHING MATERIAL IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SELECT FROM NCDOT APPROVED PRODUCTS.

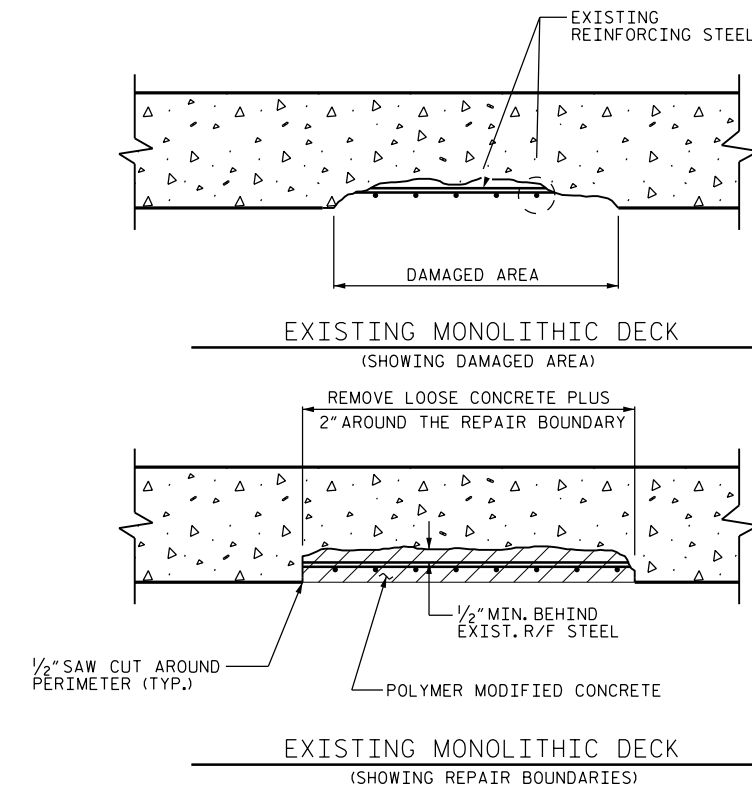
FINISH CONCRETE REPAIRS SHALL BE FLUSH TO THE EXISTING DECK.

NO DEBRIS SHALL FALL INTO THE WATER WHILE PERFORMING THE UNDERSIDE DECK REPAIRS.



PLAN VIEW OF REINFORCED CONCRETE MONOLITHIC DECK

AREAS REQUIRING REPAIR



UNDERSIDE SPALL AREAS

DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (IN.)	CONCRETE REPAIR* VOLUME (CU.F.T.)
SPAN 1 - AREA 1	4.0	2.0	2.0	1.7
SPAN 1 - AREA 2	10.0	3.0	2.0	5.7
SPAN 1 - AREA 3	8.0	3.0	2.0	4.6
SPAN 2 - AREA 4	3.0	8.0	2.0	4.6
SPAN 2 - AREA 5	3.0	3.0	2.0	1.9
SPAN 3 - AREA 6	1.5	1.5	2.0	0.6
TOTAL				19.1

REPAIR VOLUME = SPALL AREA PLUS 4" BEYOND REPAIR AREA

* CONCRETE REPAIR VOLUME BASED ON A MIN. DEPTH OF 2"

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO. 34

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 UNDERSIDE DECK REPAIR

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	19
2			4				

5-4-2012

DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012

NOTES

REPAIR AREA DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

REMOVAL OF EXISTING CONCRETE AT REPAIR AREAS SHALL BE EXTENDED 2" BEYOND REPAIR AREA WITH A NOMINAL 1/2" SAW CUT AT THE LIMITS OF REMOVAL. IF EXISTING REINFORCING STEEL IS EXPOSED THEN CHIP CONCRETE BACK AT LEAST 1/2" BEHIND THE BARS.

ALL EXPOSED REBAR SHALL BE CLEANED OF LOOSE RUST AND CONTAMINATION, THE CONDITION OF THE REINFORCING STEEL WILL BE INSPECTED BY THE ENGINEER BEFORE APPLICATION OF THE CONCRETE REPAIR.

IF REINFORCING STEEL IS DAMAGED THEN SPLICE DAMAGED BAR WITH SIMILAR SIZE BAR AND A MINIMUM OVERLAP LENGTH OF THIRTY BAR DIAMETERS. STEEL REINFORCEMENT, IF REQUIRED, SHALL BE ASTM GRADE 60.

REPAIR MATERIAL SHALL BE PREPACKAGED SHRINKAGE -COMPENSATING POLYMER MODIFIED CONCRETE REPAIR MORTAR WITH CORROSIVE INHIBITOR AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI. SUBMIT PROPOSED REPAIR MORTAR TO ENGINEER FOR APPROVAL PRIOR TO WORK.

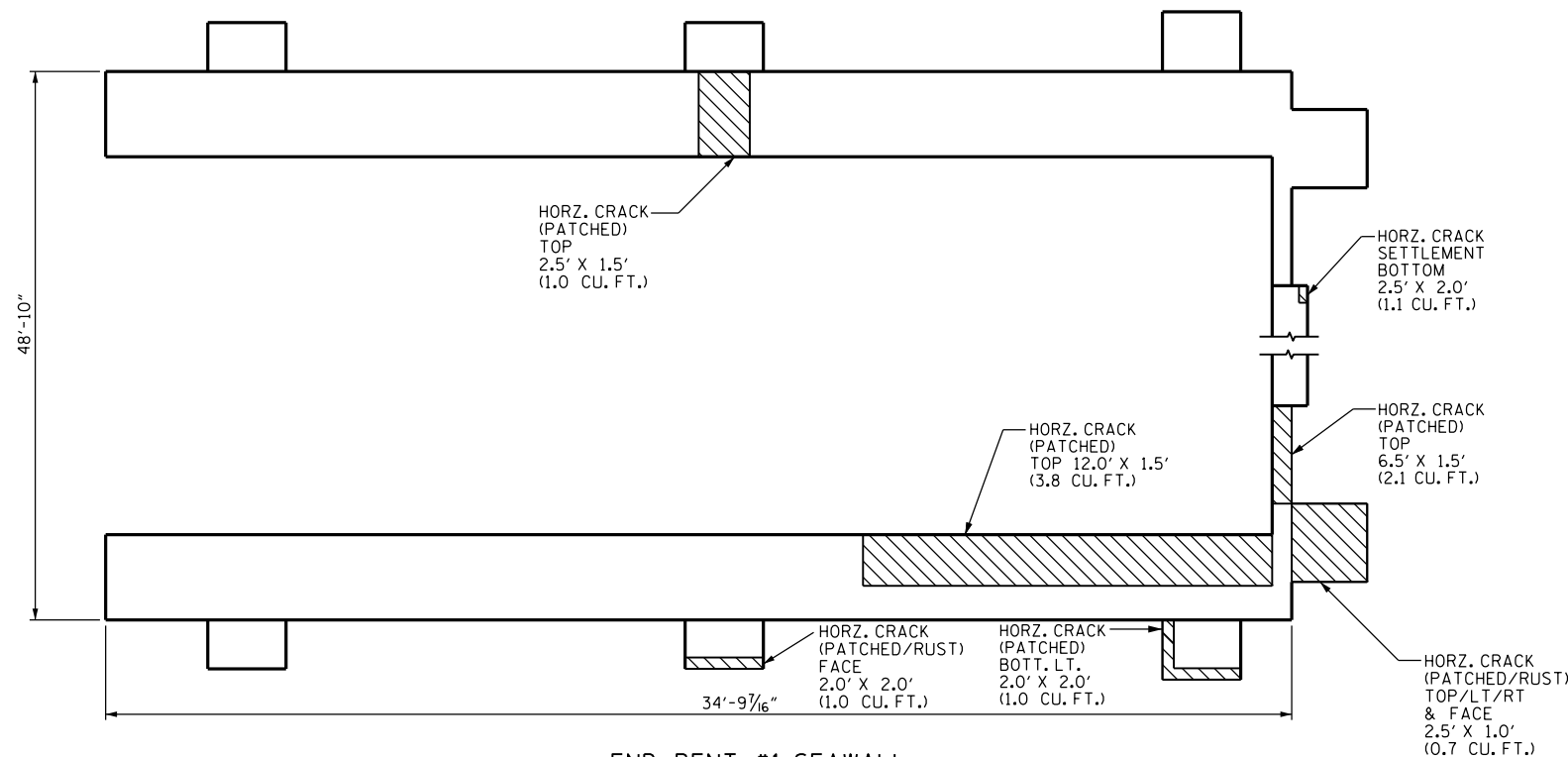
FOR POLYMER MODIFIED CONCRETE REPAIR SEE SPECIAL PROVISIONS UNDER "CONCRETE REPAIRS".

FINISH CONCRETE REPAIRS SHALL BE FLUSH TO THE EXISTING DECK.

REPAIR OF BRIDGE SHALL BE PERFORMED SO AS TO NOT TO ALLOW DEBRIS TO FALL INTO THE WATER.

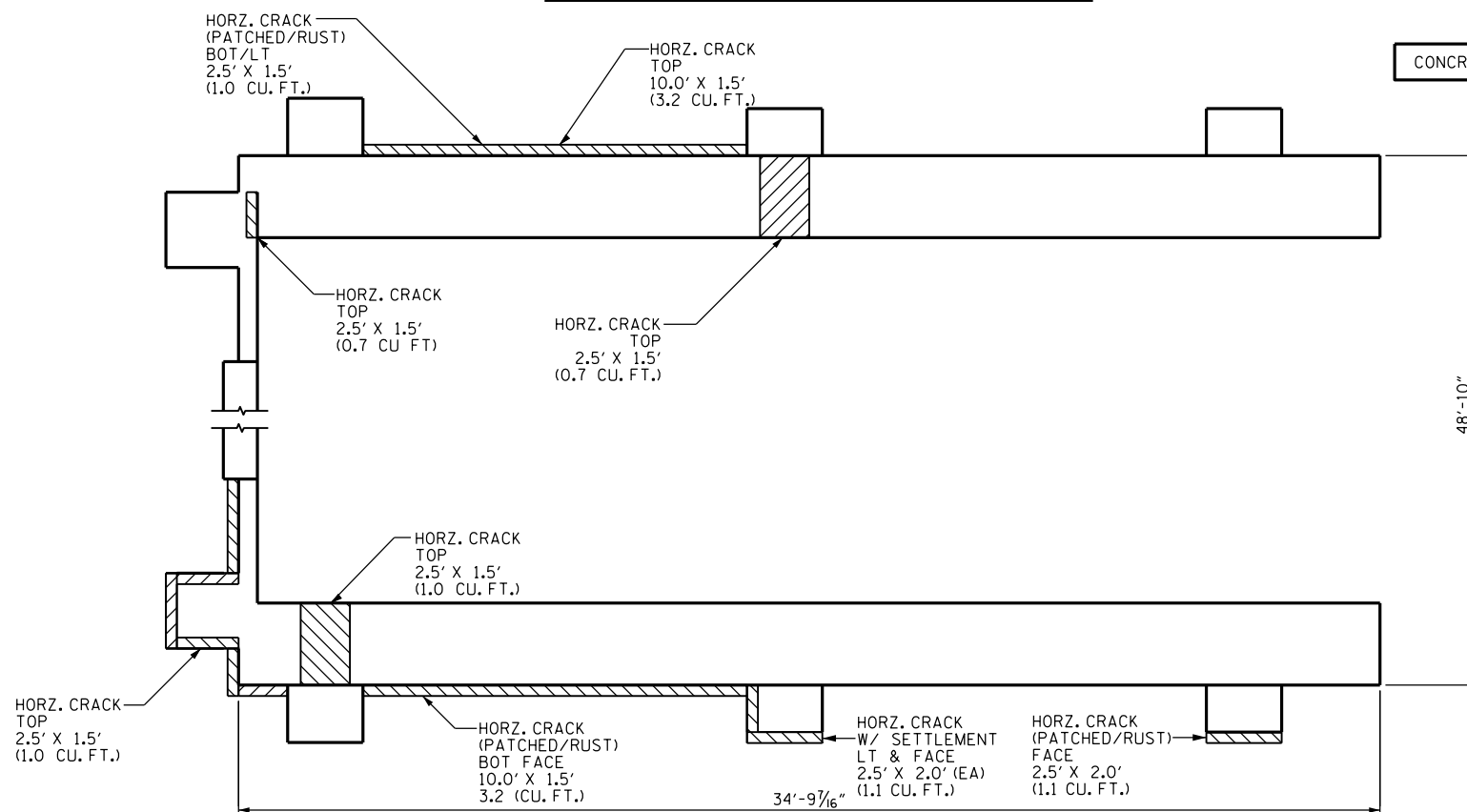
ALL ORIGINAL FEATURES OF THE AREA REQUIRING CONCRETE REPAIRS, SUCH AS GROOVES AND CHAMFERS SHALL BE RESTORED.

MIXING AND PLACEMENT OF PATCHING MATERIAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS WHERE USE OF CONCRETE PATCHING MATERIAL IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SELECT FROM NCDOT APPROVED PRODUCTS.



END BENT #1 SEAWALL

CONCRETE REPAIR VOLUME (CU. FT.) = 23.7



END BENT #2 SEAWALL

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE: 34

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT SEAWALL
 REPAIR



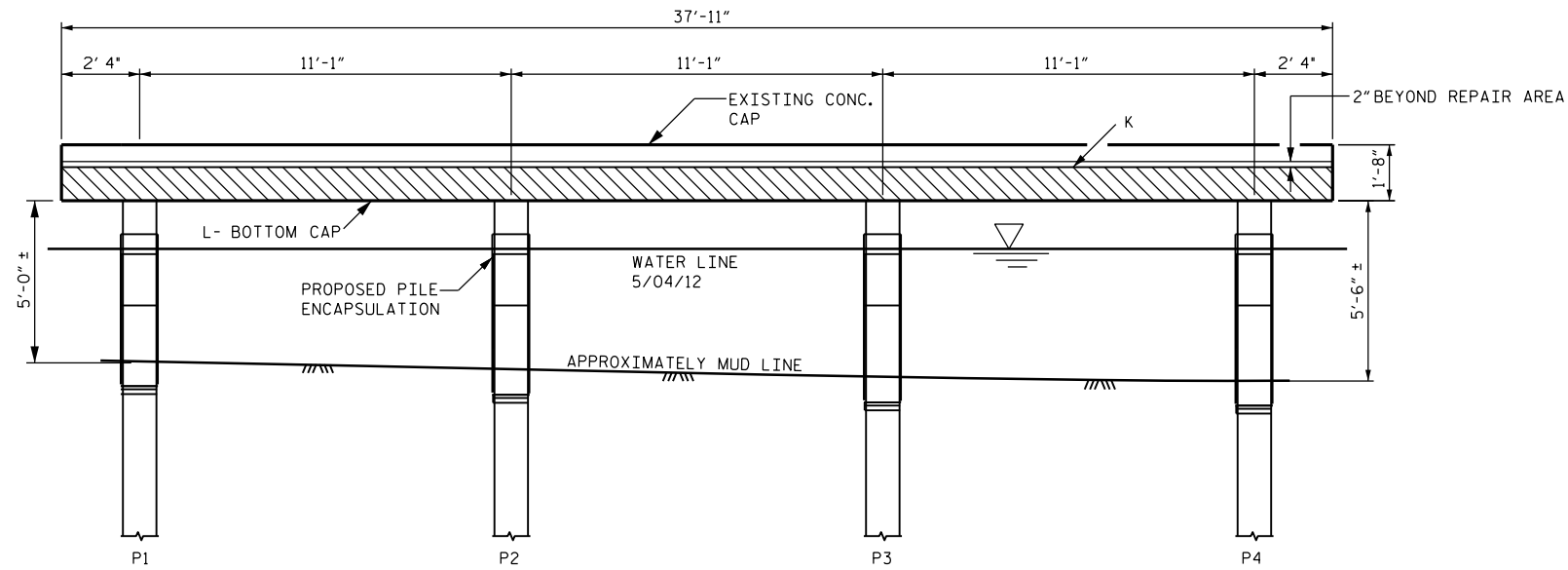
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			19
2			4			

DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012

5-4-2012

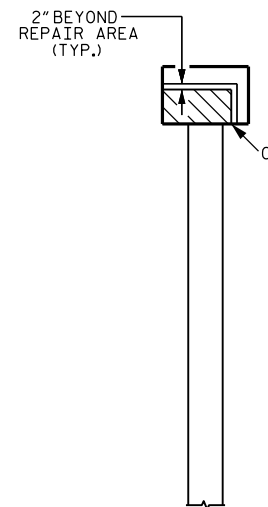
NOTES:

- EXISTING PILES ARE 12" SQUARE PRESTRESSED CONCRETE.
- ENCAPSULATE PILES TO A MINIMUM OF 1'-0" BELOW THE BENT CAP AND 1'-0" BELOW THE MUD LINE.
- FOR "PILE ENCAPSULATION", SEE SPECIAL PROVISIONS.
- PILE ENCAPSULATION LENGTHS VARY BETWEEN 5'-0" ± AND 5'-6" ± AT END BENT NO. 1.
- PILE ENCAPSULATION LENGTHS ARE 9'-0" ± AT BENT NO. 1.
- FOR PILE ENCAPSULATION DETAILS SEE SHEETS S-18 AND S-19.
- PILE ENCAPSULATION QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.
- FOR CAP REPAIR NOTES SEE SHEET S-3.

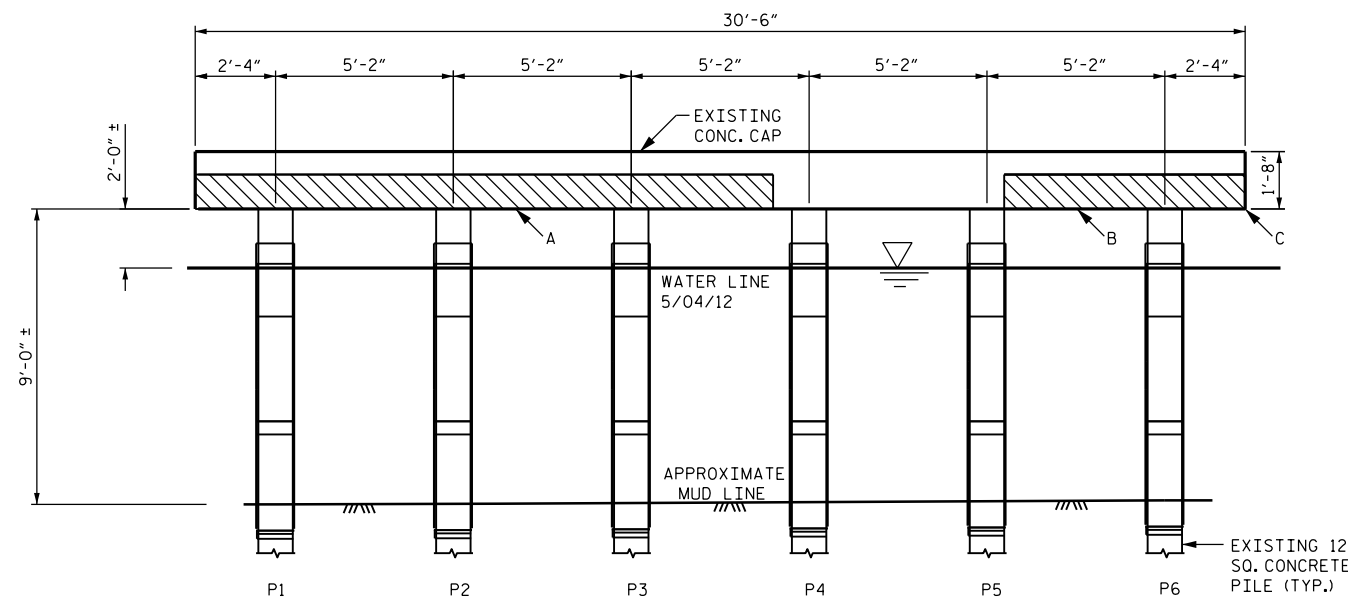


END BENT #1 - SPAN 1 FACE

AREAS REQUIRING REPAIRS



END VIEW BENT #1



BENT #1 - SPAN 1 FACE

END BENT #1 CAP REPAIRS

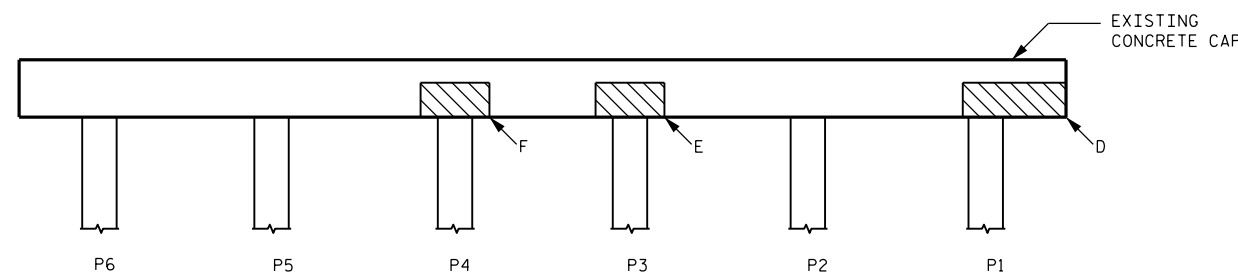
END BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.FT.)
#1	SPAN 1 FACE - AREA K	37.9	1.0	3.0	9.5
#1	SPAN 1 FACE - AREA L	12.5	2.5	3.0	7.8
TOTAL					17.3

BENT #1 CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.FT.)
#1	SPAN 1 FACE - AREA A	16.7	1.0	3.0	3.8
#1	SPAN 1 FACE - AREA B	7.0	1.0	3.0	1.6
#1	SPAN 1 FACE - AREA C	2.0	1.0	3.0	0.5
#1	SPAN 2 FACE - AREA D	3.0	1.0	3.0	0.8
#1	SPAN 2 FACE - AREA E	2.0	1.0	3.0	0.6
#1	SPAN 2 FACE - AREA F	2.0	1.0	3.0	0.6
TOTAL					7.9

PILE ENCAPSULATION LOCATIONS

BENT	PILE
#1	P1*
#1	P2*
#1	P3*
#1	P4*
#1	P5*
#1	P6*



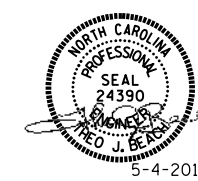
BENT #1 - SPAN 2 FACE

ELEVATION VIEW OF BENTS

PROJECT NO. 17BP.2.P.11
 CARTERET COUNTY
 STATION: 34

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PILE
 ENCAPSULATION & CAP
 REPAIR

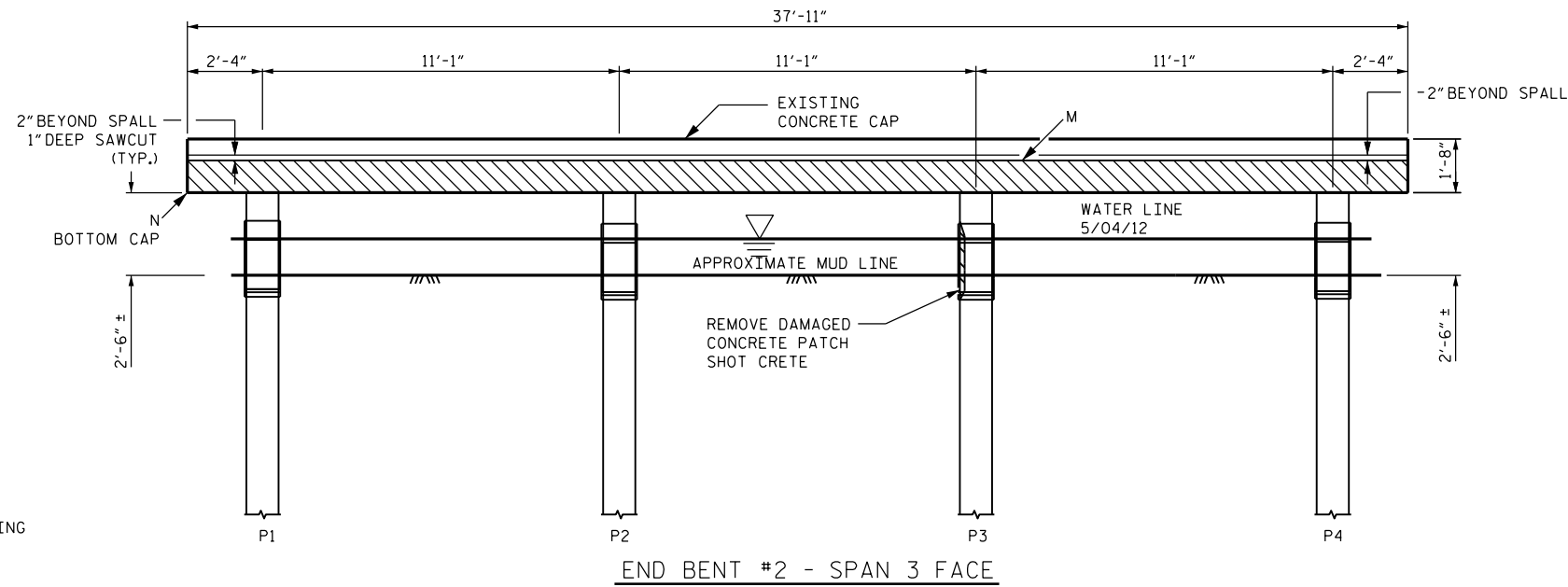


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	19
2			4				

DRAWN BY : M.J. WELDON DATE : 02/2012
 CHECKED BY : A.G. ABRAHA DATE : 02/2012

NOTES:

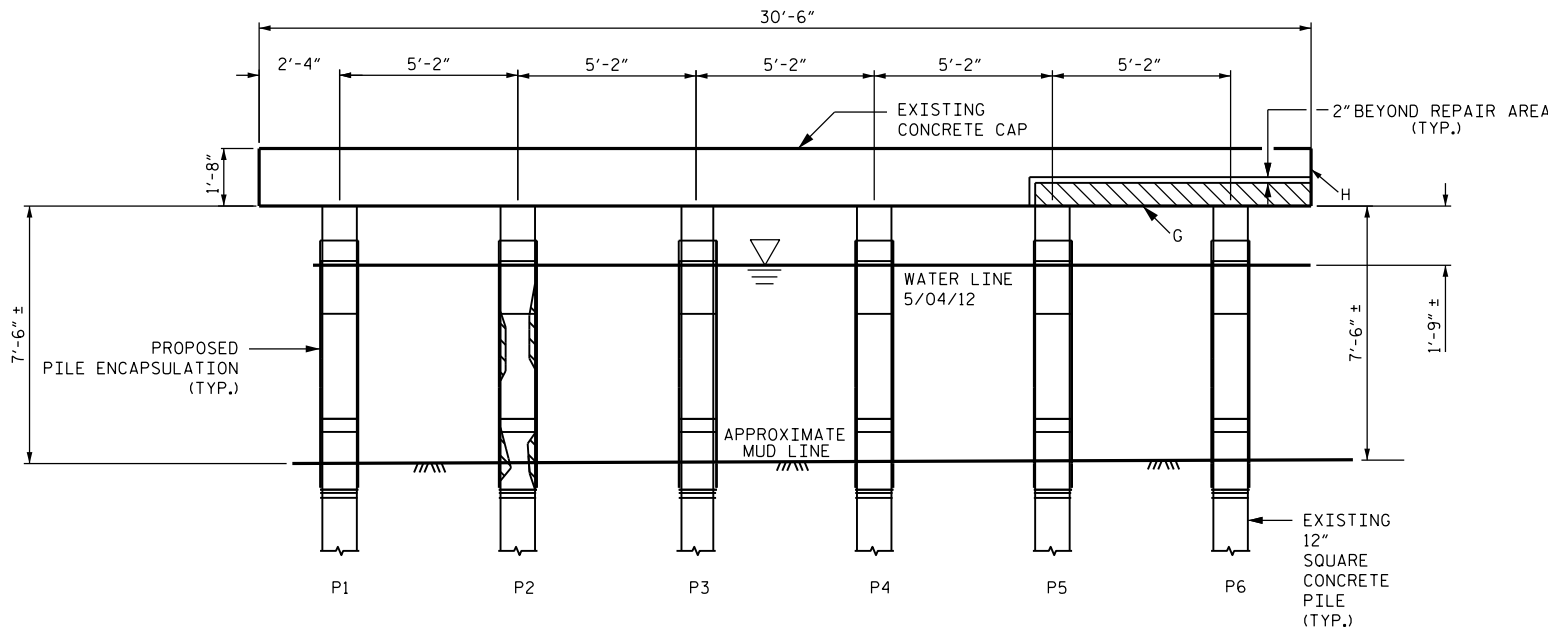
EXISTING PILES ARE 12" SQUARE PRESTRESSED CONCRETE.
 ENCAPSULATE PILES TO A MINIMUM OF 1'-0" BELOW THE BENT CAP AND 1'-0" BELOW THE MUD LINE.
 FOR "PILE ENCAPSULATION", SEE SPECIAL PROVISIONS.
 PILE ENCAPSULATION LENGTHS ARE 2'-6" ± AT END BENT NO. 1.
 PILE ENCAPSULATION LENGTHS ARE 7'-6" ± AT BENT NO. 1.
 FOR PILE ENCAPSULATION DETAILS SEE SHEETS S-18 AND S-19.
 PILE ENCAPSULATION QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.
 FOR CAP REPAIR NOTES SEE SHEET S-14.



END BENT #2 - SPAN 3 FACE

END BENT #2 CAP REPAIRS

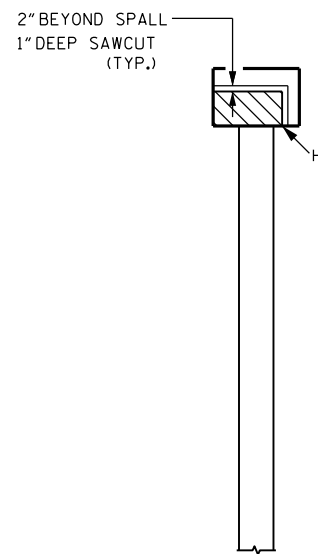
END BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.FT.)
#2	SPAN 3 FACE - AREA M	37.9	1.0	3.0	9.5
#2	SPAN 3 FACE - AREA N	37.9	2.5	3.0	23.7
TOTAL					33.2



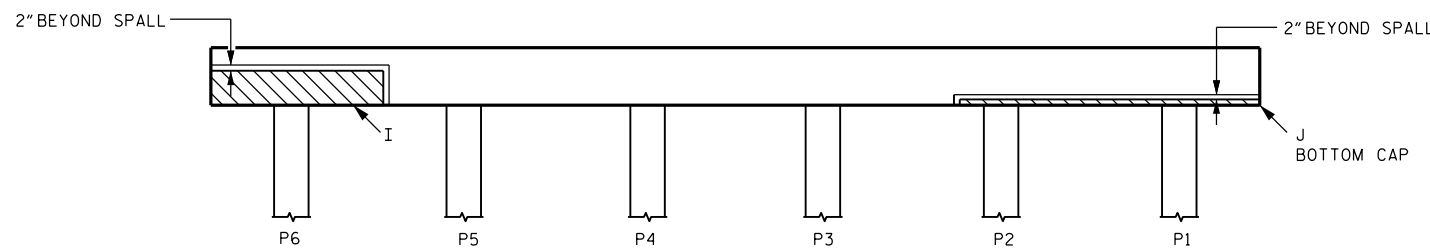
BENT #2 - SPAN 2 FACE

BENT #2 CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.FT.)
#2	SPAN 2 FACE - AREA G	8.0	0.67	3.0	1.4
#2	SPAN 2 FACE - AREA H	2.0	1.0	3.0	0.5
#2	SPAN 3 FACE - AREA I	5.0	1.0	3.0	1.3
#2	SPAN 3 FACE - AREA J	8.7	2.5	3.0	5.4
TOTAL					8.6



END VIEW BENT #2 - SPAN 2 FACE



BENT #2 - SPAN 3 FACE

ELEVATION VIEW OF BENT

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 STATION: 34

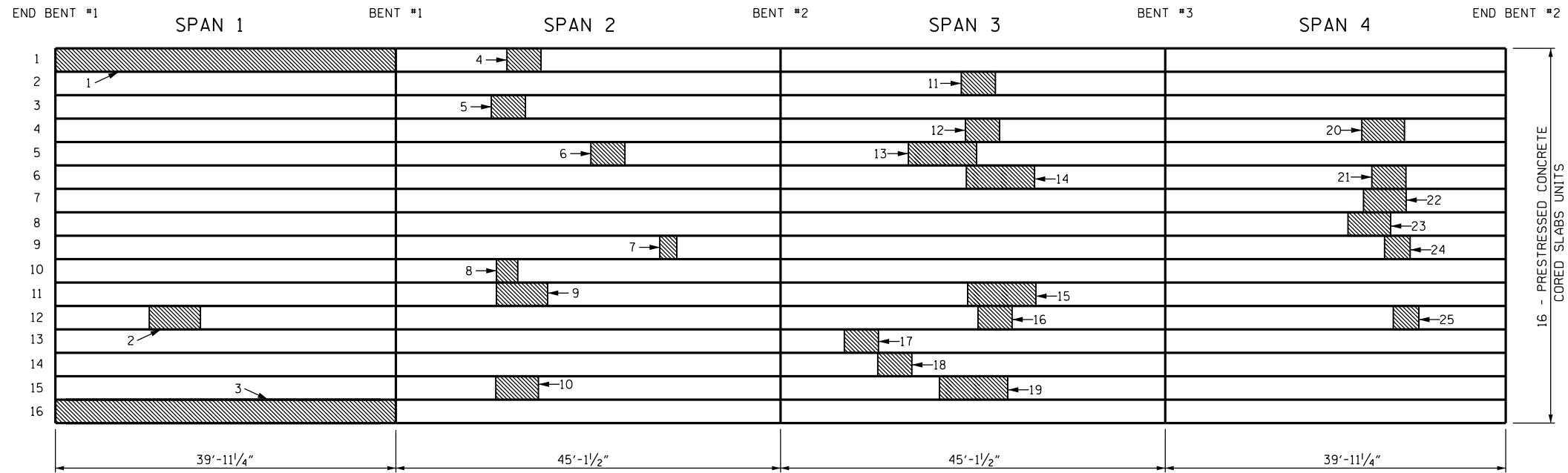
SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PILE ENCAPSULATION & CAP REPAIR

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

DRAWN BY : M.J. WELDON DATE : 02/2012
 CHECKED BY : A.G. ABRAHA DATE : 02/2012



PLAN VIEW OF UNDERSIDE CORED SLAB UNITS

CONCRETE PATCHING NOTES:

THE CONTRACTOR SHALL PREVENT CONCRETE MATERIALS OR DEBRIS FROM FALLING INTO THE WATER.

REMOVAL OF EXISTING CONCRETE AT REPAIR AREAS SHALL BE EXTENDED 2" BEYOND REPAIR AREA WITH A NOMINAL 1/2" SAW CUT AT THE LIMITS OF REMOVAL.

CONCRETE REMOVAL WORK SHALL BE PERFORMED IN A MANNER THAT WILL NOT DAMAGE CONCRETE, STRAND OR REBAR THAT ARE TO REMAIN. HAND TOOLS SHALL BE USED SO AS TO PROTECT THE STRUCTURAL MEMBERS THAT ARE TO REMAIN. CARE SHALL BE TAKEN SO AS NOT TO FRACTURE THE CONCRETE BEYOND THE AREA TO BE REPAIRED. AREAS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT NO COST TO NCDOT. ALL EXPOSED STRANDS AND REBAR SHALL BE CLEANED OF LOOSE RUST AND CONTAMINATION. THE CONDITION OF THE REINFORCING STEEL AND PRESTRESSING TENDONS WILL BE INSPECTED BY THE ENGINEER BEFORE APPLICATION OF THE CONCRETE REPAIR. REPAIR WORK SHALL BE SUSPENDED IF DAMAGE TO THE PRESTRESSING TENDONS IS ENCOUNTERED.

STEEL REINFORCEMENT, IF REQUIRED, SHALL BE ASTM GRADE 60.

REPAIR MATERIAL SHALL BE PREPACKAGED SHRINKAGE-COMPENSATING POLYMER MODIFIED CONCRETE REPAIR MORTAR WITH CORROSIVE INHIBITOR AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI. SUBMIT PROPOSED REPAIR MORTAR TO ENGINEER FOR APPROVAL PRIOR TO WORK.

FOR POLYMER MODIFIED CONCRETE REPAIR SEE SPECIAL PROVISIONS UNDER "CONCRETE REPAIRS".

MIXING AND PLACEMENT OF PATCHING MATERIAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS WHERE USE OF CONCRETE PATCHING MATERIAL IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SELECT FROM NCDOT APPROVED PRODUCTS.

FINISH CONCRETE REPAIRS SHALL BE FLUSH TO THE EXISTING DECK.

UNDERSIDE SPALL AREAS

DESCRIPTION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (IN.)	REPAIR VOLUME* (CU.FT.)
SPAN 1 - AREA 1	39.9	2.8	1.0	9.3
SPAN 1 - AREA 2	6.0	2.8	1.0	1.4
SPAN 1 - AREA 3	39.9	2.8	1.0	9.3
SPAN 2 - AREA 4	4.0	2.8	1.0	1.0
SPAN 2 - AREA 5	4.0	2.8	1.0	1.0
SPAN 2 - AREA 6	4.0	2.8	1.0	1.0
SPAN 2 - AREA 7	2.0	2.8	1.0	0.5
SPAN 2 - AREA 8	2.5	2.8	1.0	0.6
SPAN 2 - AREA 9	6.0	2.8	1.0	1.4
SPAN 2 - AREA 10	5.0	2.8	1.0	1.2
SPAN 3 - AREA 11	4.0	2.8	1.0	1.0
SPAN 3 - AREA 12	4.0	2.8	1.0	1.0
SPAN 3 - AREA 13	8.0	2.8	1.0	1.9
SPAN 3 - AREA 14	8.0	2.8	1.0	1.9
SPAN 3 - AREA 15	8.0	2.8	1.0	1.9
SPAN 3 - AREA 16	4.0	2.8	1.0	1.0
SPAN 3 - AREA 17	4.0	2.8	1.0	1.0
SPAN 3 - AREA 18	4.0	2.8	1.0	1.0
SPAN 3 - AREA 19	8.0	2.8	1.0	1.9
SPAN 4 - AREA 20	5.0	2.8	1.0	1.2
SPAN 4 - AREA 21	4.0	2.8	1.0	1.0
SPAN 4 - AREA 22	5.0	2.8	1.0	1.2
SPAN 4 - AREA 23	5.0	2.8	1.0	1.2
SPAN 4 - AREA 24	3.0	2.8	1.0	0.7
SPAN 4 - AREA 25	3.0	2.8	1.0	0.7
TOTAL				45.3

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO: 38

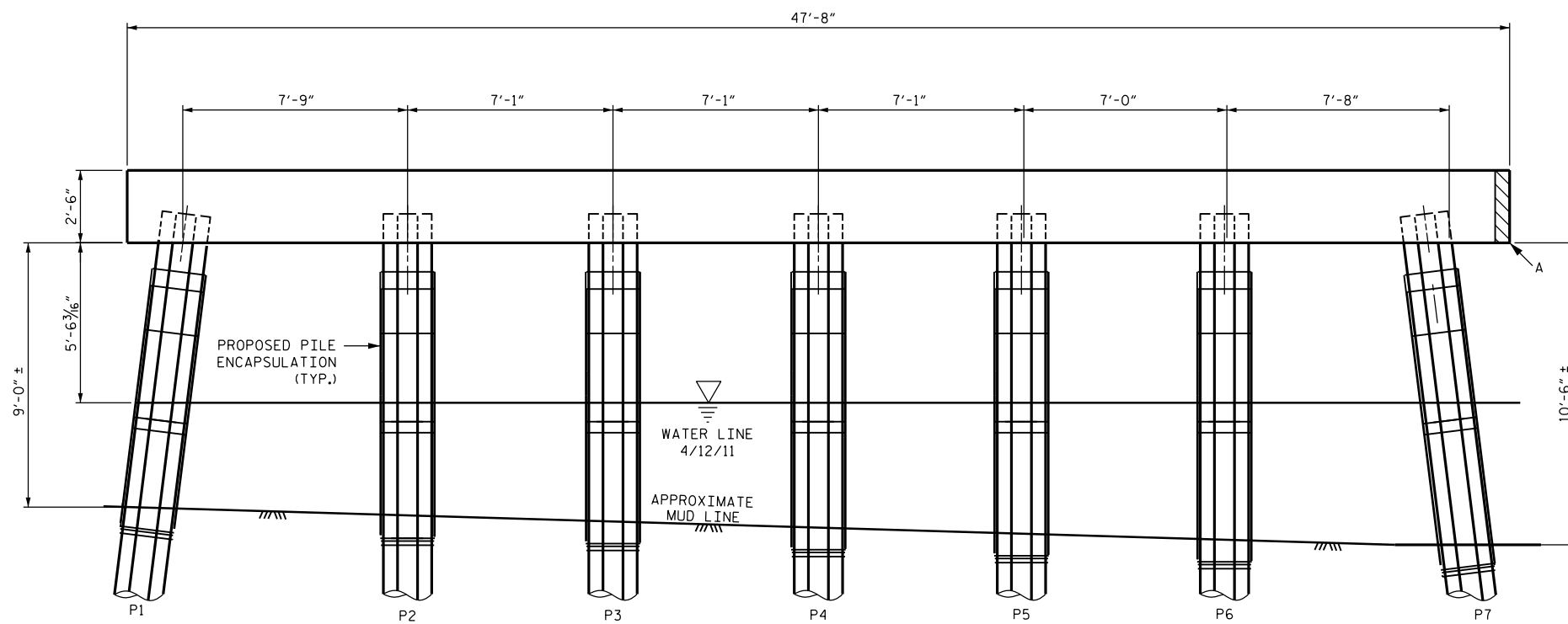
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 UNDERSIDE SPALL AND
 DELAMINATIONS

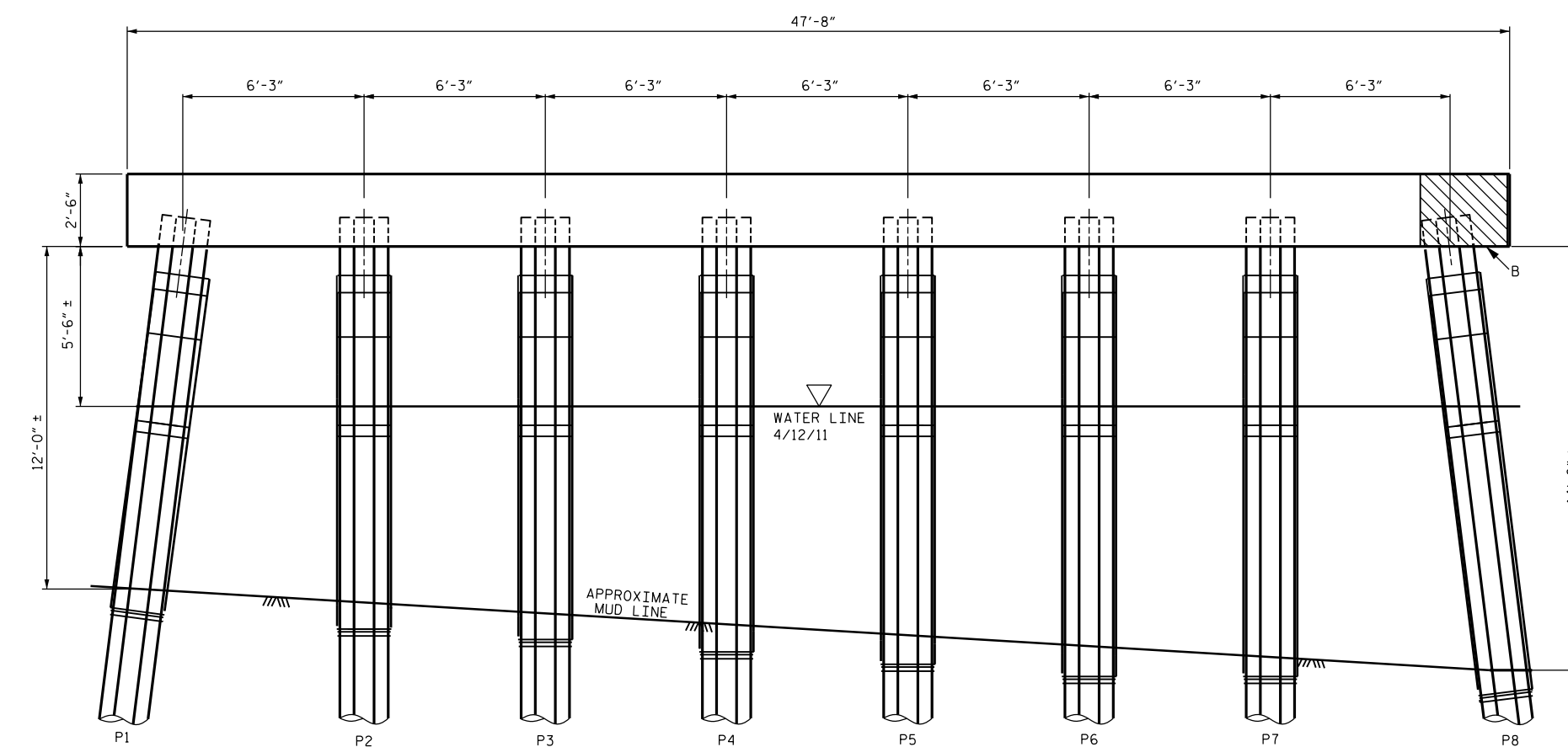
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			19
2			4			



DRAWN BY : M. J. WELDON DATE : 2/20/12
 CHECKED BY : A. G. ABRAHA DATE : 2/20/12



BENT #1 - SPAN 1 FACE



BENT #2 - SPAN 2 FACE

NOTES

EXISTING PILES ARE 22" OCTAGONAL PRESTRESSED PILES.
 ENCAPSULATE PILES TO A MINIMUM OF 1'-0" BELOW THE BENT CAP AND 1'-0" BELOW THE MUD LINE.
 FOR "PILE ENCAPSULATION", SEE SPECIAL PROVISIONS.
 PILE ENCAPSULATION LENGTHS VARY BETWEEN 9'-0" ± TO 10'-6" ± AT BENT #1.
 PILE ENCAPSULATION LENGTHS VARY BETWEEN 12'-0" ± TO 14'-6" ± AT BENT #2.
 FOR PILE ENCAPSULATION DETAILS SEE SHEETS S-18 AND S-19.
 PILE ENCAPSULATION QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.
 FOR CAP REPAIR NOTES SEE SHEET S-3.

BENT CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.F.T.)
1	SPAN 1 FACE - AREA A	2.5	3.5	3.0	2.2
2	SPAN 2 FACE - AREA B	3.0	2.5	3.0	1.9
TOTAL					4.1

PROJECT NO. 17.BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 38

SHEET 1 OF 2

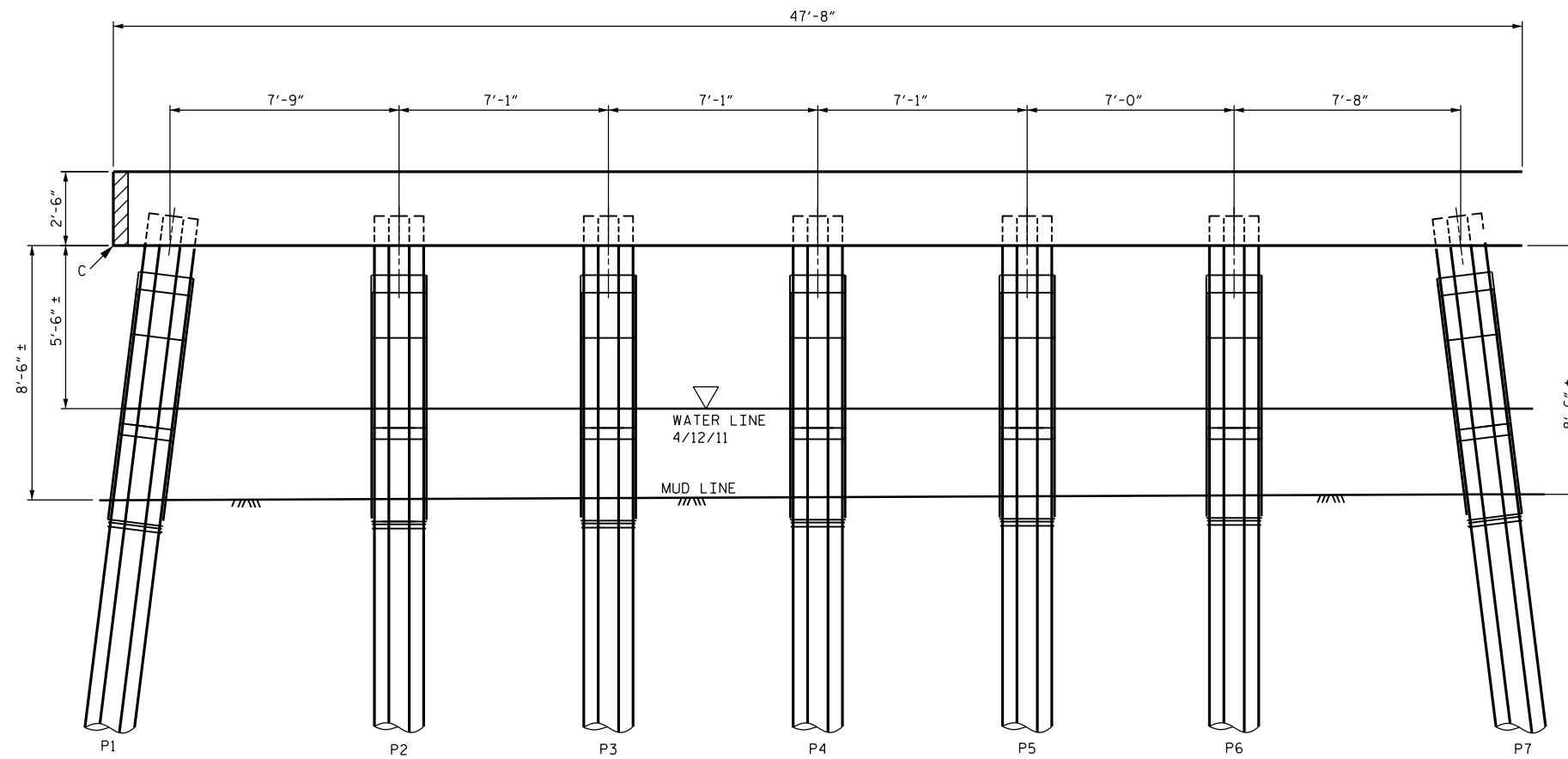
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1 & BENT #2
 PILE ENCAPSULATION &
 CAP REPAIR



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012



BENT #3 - SPAN 3 FACE

NOTES

EXISTING PILES ARE 22" OCTAGONAL PRESTRESSED PILES.
 ENCAPSULATE PILES TO A MINIMUM OF 1'-0" BELOW THE BENT CAP AND 1'-0" BELOW THE MUD LINE.
 FOR "PILE ENCAPSULATION", SEE SPECIAL PROVISIONS.
 PILE ENCAPSULATION LENGTH IS 8'-6" ±.
 FOR PILE ENCAPSULATION DETAILS SEE SHEETS S-18 AND S-19.
 PILE ENCAPSULATION QUANTITY IS BASED ON THE BEST INFORMATION AVAILABLE.
 FOR CAP REPAIR NOTES SEE SHEET S-3.

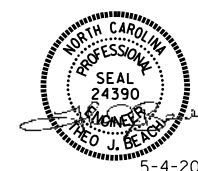
BENT CAP REPAIRS

BENT	DESCRIPTION	LENGTH (FEET)	HEIGHT (FEET)	DEPTH (INCH)	VOLUME (CU.FT.)
3	SPAN 3 FACE - AREA C	2.5	3.5	3.0	2.2
TOTAL					2.2

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO.: 38

SHEET 2 OF 2

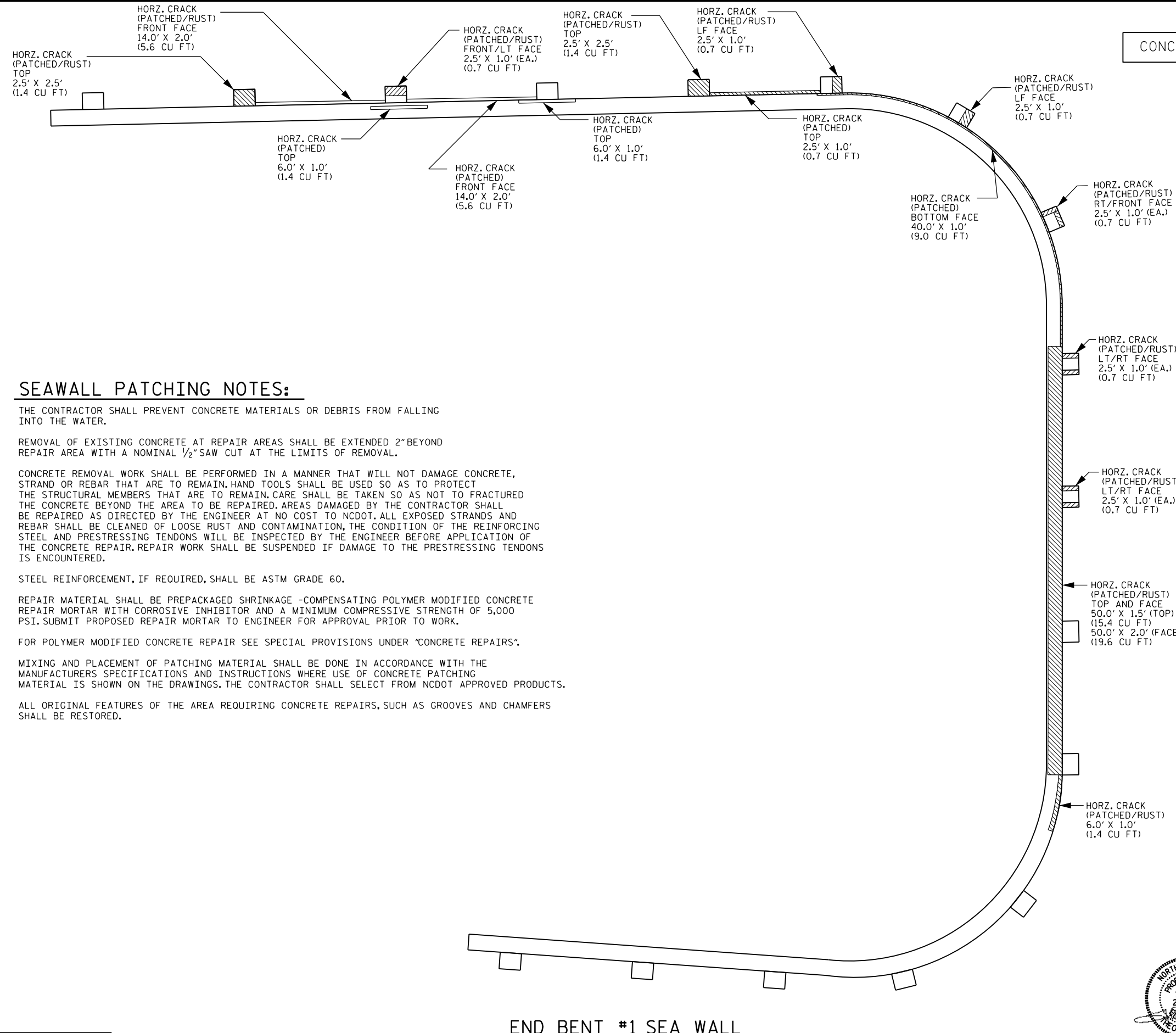
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #3
 PILE ENCAPSULATION &
 CAP REPAIR



5-4-2012

DRAWN BY : M. J. WELDON DATE : 02/2012
 CHECKED BY : A. G. ABRAHA DATE : 02/2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-15
2			4			TOTAL SHEETS 19



CONCRETE REPAIR VOLUME (CU. FT.) = 51.7

SEAWALL PATCHING NOTES:

THE CONTRACTOR SHALL PREVENT CONCRETE MATERIALS OR DEBRIS FROM FALLING INTO THE WATER.

REMOVAL OF EXISTING CONCRETE AT REPAIR AREAS SHALL BE EXTENDED 2" BEYOND REPAIR AREA WITH A NOMINAL 1/2" SAW CUT AT THE LIMITS OF REMOVAL.

CONCRETE REMOVAL WORK SHALL BE PERFORMED IN A MANNER THAT WILL NOT DAMAGE CONCRETE, STRAND OR REBAR THAT ARE TO REMAIN. HAND TOOLS SHALL BE USED SO AS TO PROTECT THE STRUCTURAL MEMBERS THAT ARE TO REMAIN. CARE SHALL BE TAKEN SO AS NOT TO FRACTURE THE CONCRETE BEYOND THE AREA TO BE REPAIRED. AREAS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT NO COST TO NCDOT. ALL EXPOSED STRANDS AND REBAR SHALL BE CLEANED OF LOOSE RUST AND CONTAMINATION, THE CONDITION OF THE REINFORCING STEEL AND PRESTRESSING TENDONS WILL BE INSPECTED BY THE ENGINEER BEFORE APPLICATION OF THE CONCRETE REPAIR. REPAIR WORK SHALL BE SUSPENDED IF DAMAGE TO THE PRESTRESSING TENDONS IS ENCOUNTERED.

STEEL REINFORCEMENT, IF REQUIRED, SHALL BE ASTM GRADE 60.

REPAIR MATERIAL SHALL BE PREPACKAGED SHRINKAGE -COMPENSATING POLYMER MODIFIED CONCRETE REPAIR MORTAR WITH CORROSIVE INHIBITOR AND A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI. SUBMIT PROPOSED REPAIR MORTAR TO ENGINEER FOR APPROVAL PRIOR TO WORK.

FOR POLYMER MODIFIED CONCRETE REPAIR SEE SPECIAL PROVISIONS UNDER "CONCRETE REPAIRS".

MIXING AND PLACEMENT OF PATCHING MATERIAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND INSTRUCTIONS WHERE USE OF CONCRETE PATCHING MATERIAL IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SELECT FROM NCDOT APPROVED PRODUCTS.

ALL ORIGINAL FEATURES OF THE AREA REQUIRING CONCRETE REPAIRS, SUCH AS GROOVES AND CHAMFERS SHALL BE RESTORED.

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
BRIDGE NO: 38

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT #1
SEA WALL REPAIR

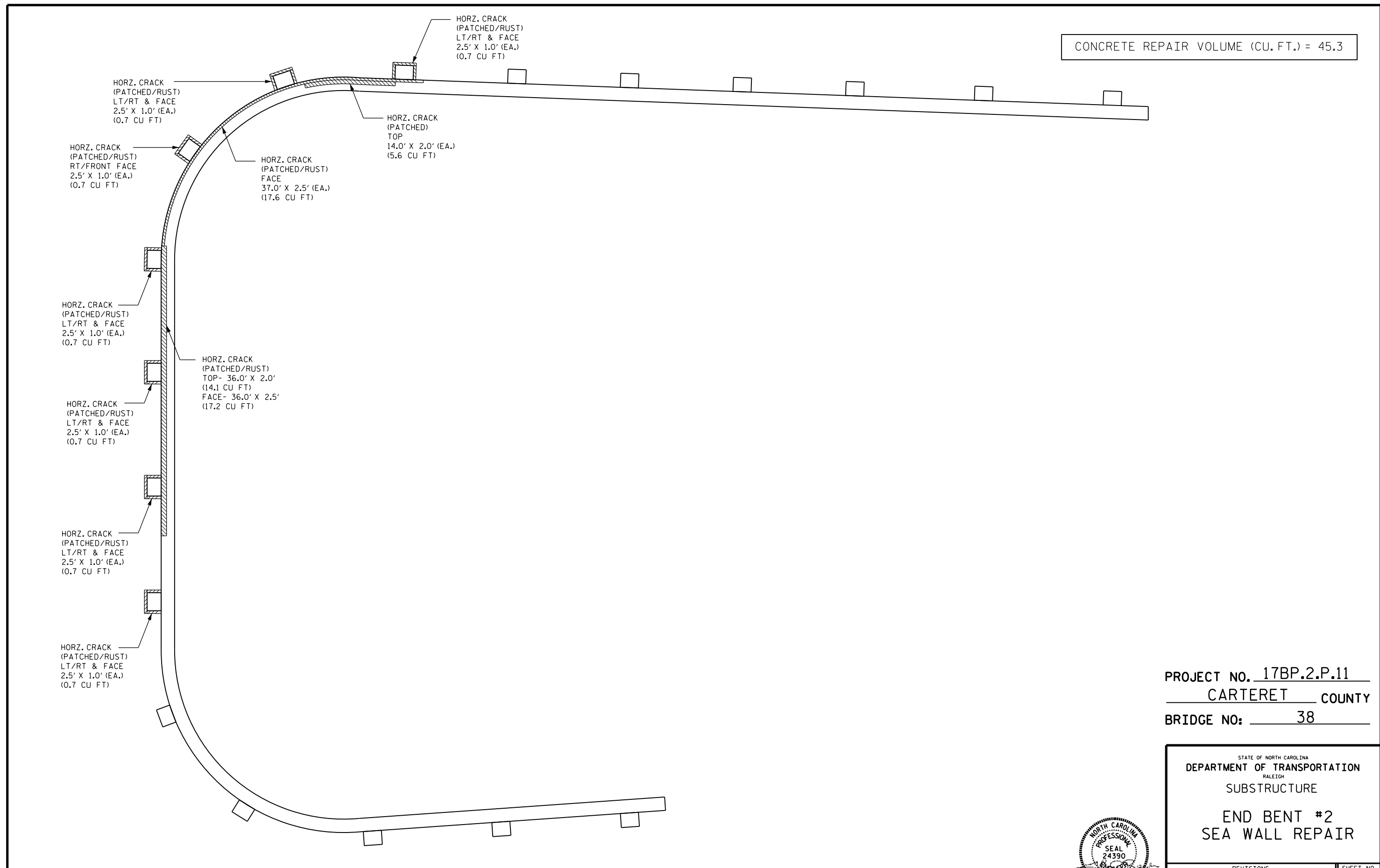


DRAWN BY : M. J. WELDON DATE : 02/2012
CHECKED BY : A. G. ABRAHA DATE : 02/2012

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			19	
2			4				

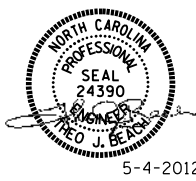
END BENT #1 SEA WALL

CONCRETE REPAIR VOLUME (CU. FT.) = 45.3



END BENT #2 SEA WALL

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
 BRIDGE NO: 38



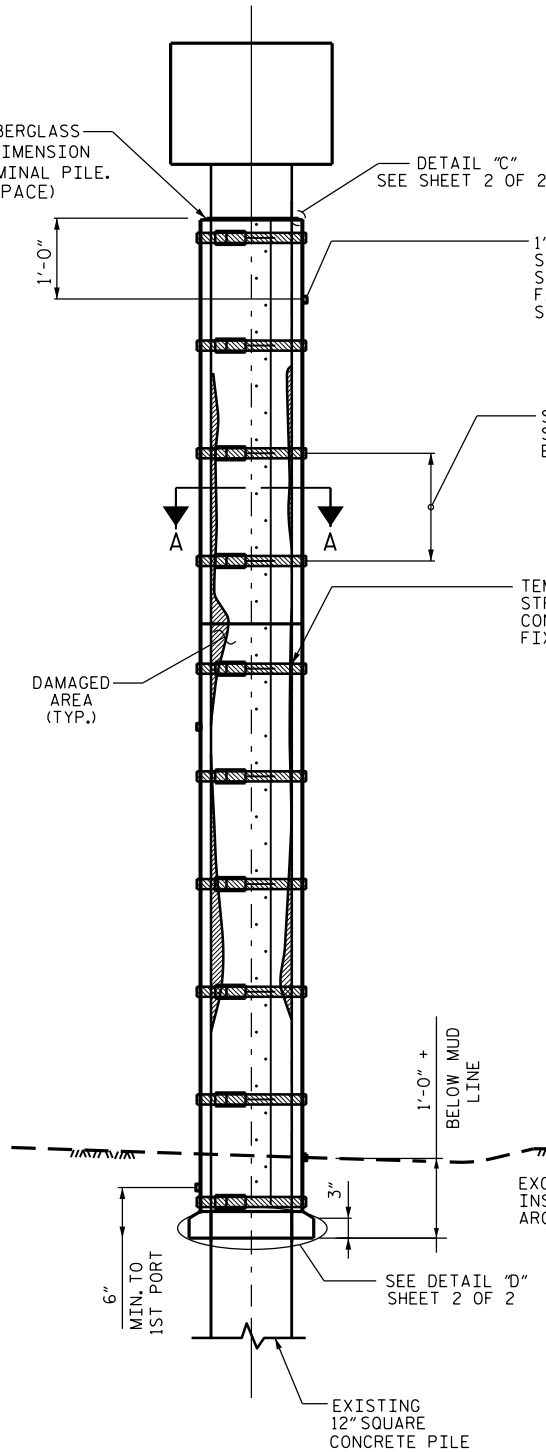
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 SEA WALL REPAIR

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5-4-2012

TRANSLUCENT FIBERGLASS JACKET. INSIDE DIMENSION LARGER THAN NOMINAL PILE. (1/2" ANNULAR SPACE)



PILE ELEVATION

BELOW GRADE REPAIR
SQUARE PILE ENCAPSULATION (20 REQ'D)

DETAIL "C"
SEE SHEET 2 OF 2

1" DIA. INJECTION PORTS
SPACED APPX. 5'-0" O.C.
STAGGER ON OPPOSITE
FACES OF JACKET.
SEE DETAIL "E"

SPACING BETWEEN
STRAPS NOT TO
EXCEED 16" O.C.

TEMPORARY NYLON RATCHET
STRAPS (SUPPLIED BY
CONTRACTORS) PLACED OVER
FIXED STANDOFFS.

DAMAGED
AREA
(TYP.)

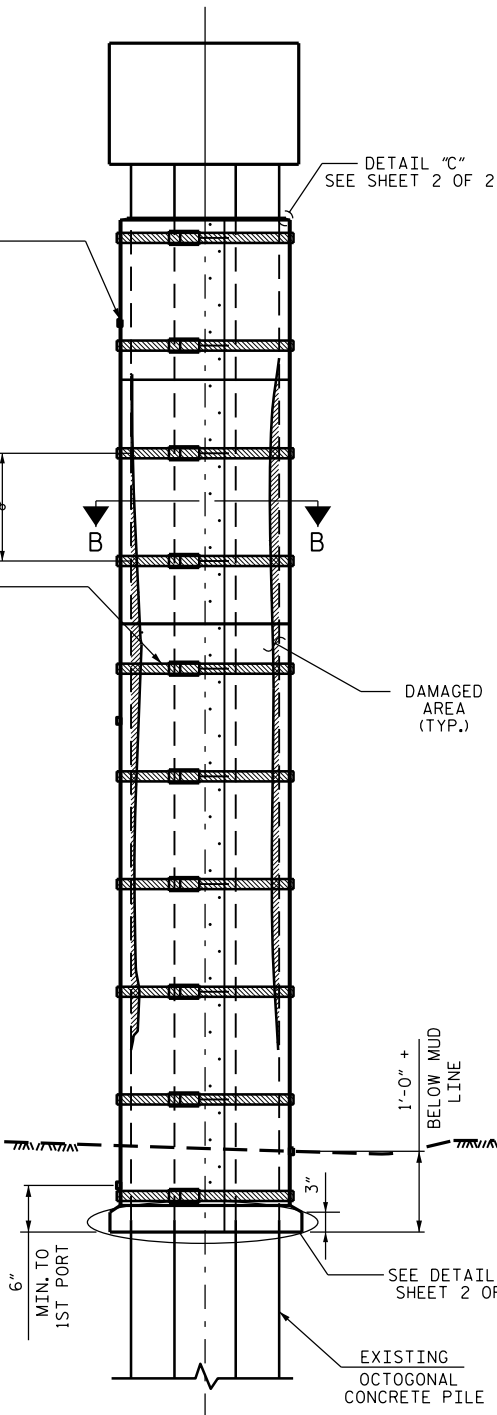
1'-0" +
BELOW MUD
LINE

EXCAVATE BELOW THE MUDLINE
INSTALL JACKET, BACKFILL
AROUND ENCAPSULATION

SEE DETAIL "D"
SHEET 2 OF 2

EXISTING
12" SQUARE
CONCRETE PILE

6"
MIN. TO
1ST PORT



PILE ELEVATION

BELOW GRADE REPAIR
OCTAGONAL PILE ENCAPSULATION (22 REQ'D)

DETAIL "C"
SEE SHEET 2 OF 2

EXISTING
OCTAGONAL
CONCRETE PILE

6"
MIN. TO
1ST PORT

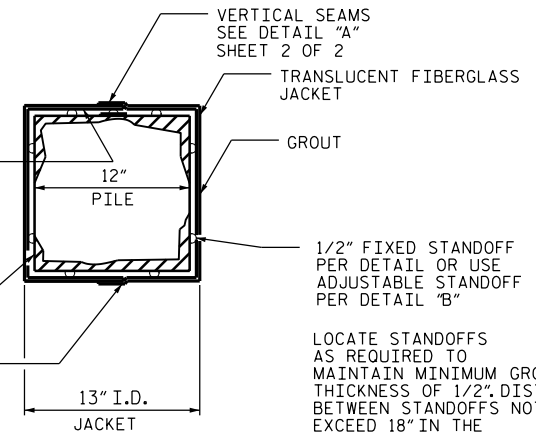
SEE DETAIL "D"
SHEET 2 OF 2

1'-0" +
BELOW MUD
LINE

FIELD PREPARATION
INSIDE OF JACKET
BY ABRASIVE BLASTING

EXISTING PILE

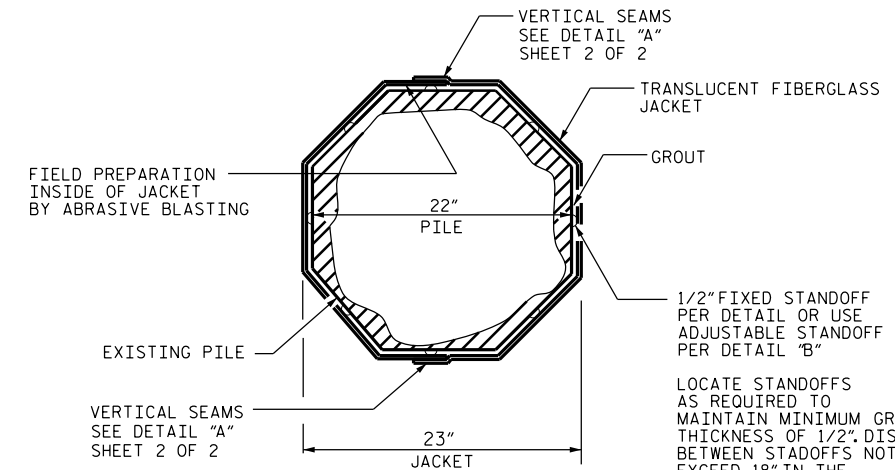
VERTICAL SEAMS
SEE DETAIL "A"
SHEET 2 OF 2



SECTION A-A

NOTES:

EXISTING PILES ARE 12" SQUARE
PRESTRESSED CONCRETE FOR BRIDGE
#34 & 22" OCTAGONAL PRESTRESSED
CONCRETE FOR BRIDGE #38.



SECTION B-B

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. 17BP.2.P.11
CARTERET COUNTY
BRIDGE NO.: 34 & 38

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SQUARE AND OCTAGONAL PILE ENCAPSULATION DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 19



5-4-2012

NCBDS

DRAWN BY : A. G. ABRAHA DATE : 02/2012
CHECKED BY : T. J. BEACH DATE : 05/2012

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

2-7/8"
3/4" 3/4"
RIVET HOLES FIELD
MATCH DRILLED

JACKET

APPLY MARINE EPOXY
ADHESIVE TO SEAMS

DETAIL A
SEAM REPAIR

INJECTION PORT
ADHERED IN FIELD
USING HOT
MELT GLUE.

POLYMER
HEX NUT

INSIDE THREAD
1" NPT

MOLDED POLYMER
INJECTION PORT BODY

TRANSLUCENT FIBERGLASS
JACKET, FIELD DRILL HOLE
FOR INJECTION PORT.

SECTION THRU PORT

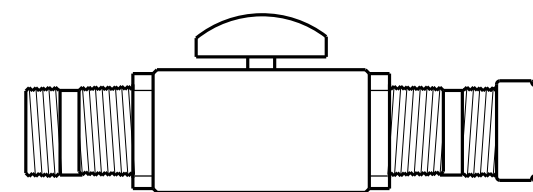
TRANSLUCENT
JACKET

1" PVC
PLUG

POLYMER
HEX NUT

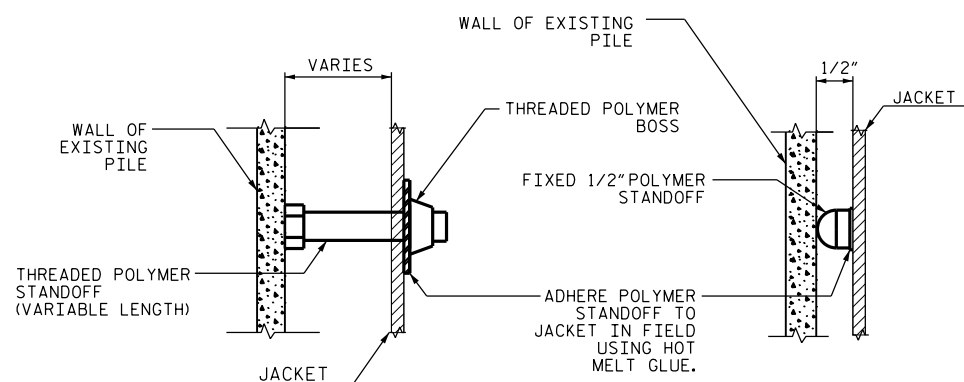
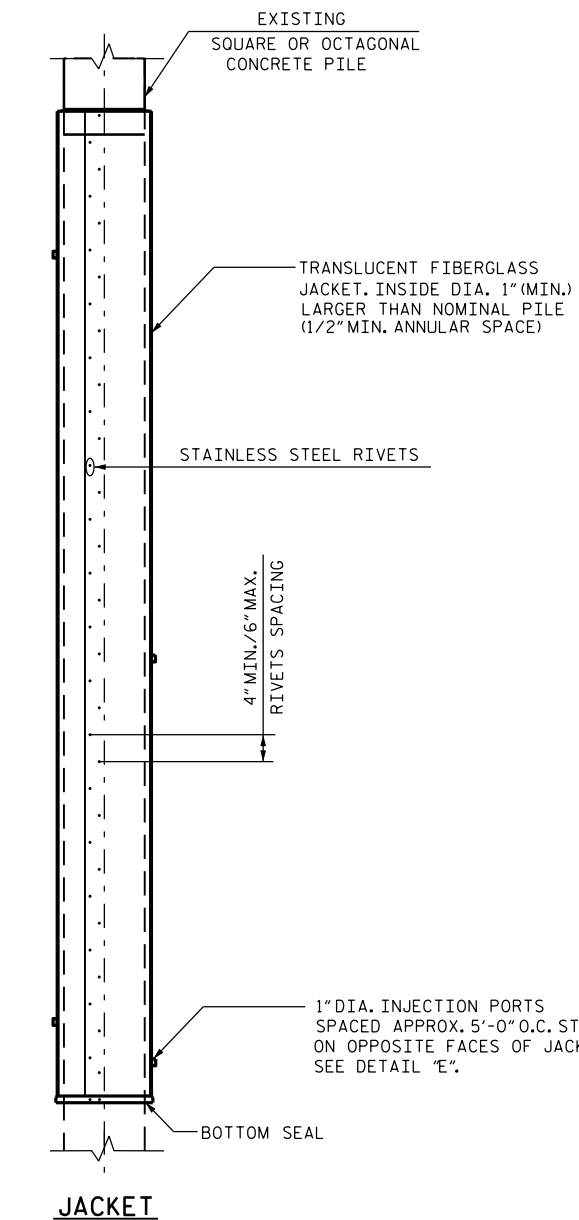
ISOMETRIC VIEW

1" PVC PLUG
SUPPLIED BY CONTRACTOR
USED TO SEAL PORT
AFTER GROUT INJECTION



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

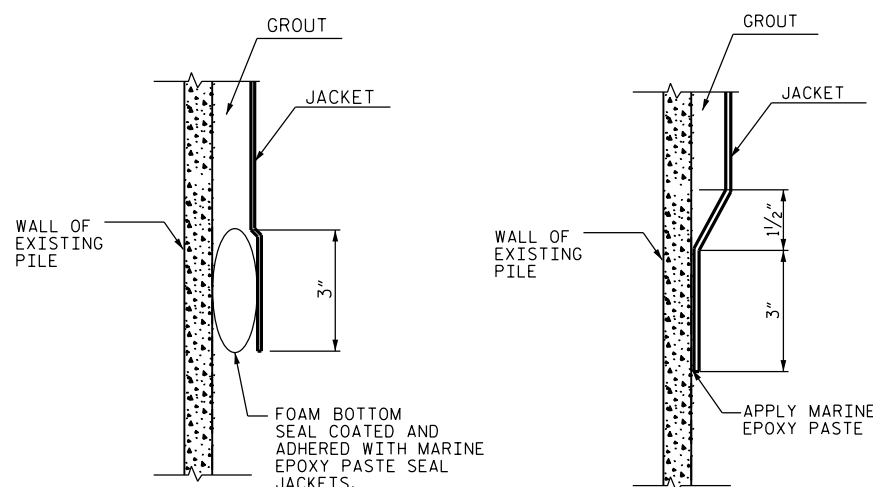
DETAIL E



ADJUSTABLE STANDOFF DETAIL

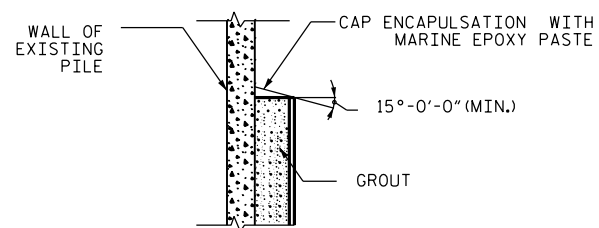
FIXED STANDOFF DETAIL

DETAIL B



BOTTOM SEAL DETAIL

ALT. BOTTOM SEAL DETAIL



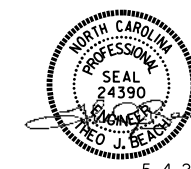
DETAIL C

-TOP OF JACKET-

DETAIL D

DRAWN BY : A. G. ABRAHA DATE : 02/2012
CHECKED BY : T.J. BEACH DATE : 05/2012

04-MAY-2012 14:38
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tbeach



5-4-2012

PROJECT NO. 17BP.2.P.11
CARTERET COUNTY
BRIDGE NO: 34 & 38

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SQUARE AND OCTAGONAL
PILE ENCAPSULATION
DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS 19	
2			4				

NCBDS

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 2012 "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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 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 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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø 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 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 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

STD. NO. SN