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NOTES

FOR GENERAL NOTES AND NOTES REGARDING MATERIALS AND CORROSION PROTECTION, SEE GENERAL DRAWINGS.

FOR CONCRETE SHEET PILE DESIGN PARAMETERS, SEE SHEET 6 OF 11.

FOR CONCRETE SHEET PILE FOUNDATION NOTES, SEE SHEET 6 OF 11.

THE SHEET PILE WIDTH DIMENSIONS ARE NOMINAL, THESE DIMENSIONS MAY BE SHORTENED BY THE MANUFACTURER UP TO 1/2" TO ALLOW FOR SHEET PILE FIT-UP IN ITS FINAL POSITION. NO CHANGES SHALL BE MADE TO THE TONGUES OR GROOVES.

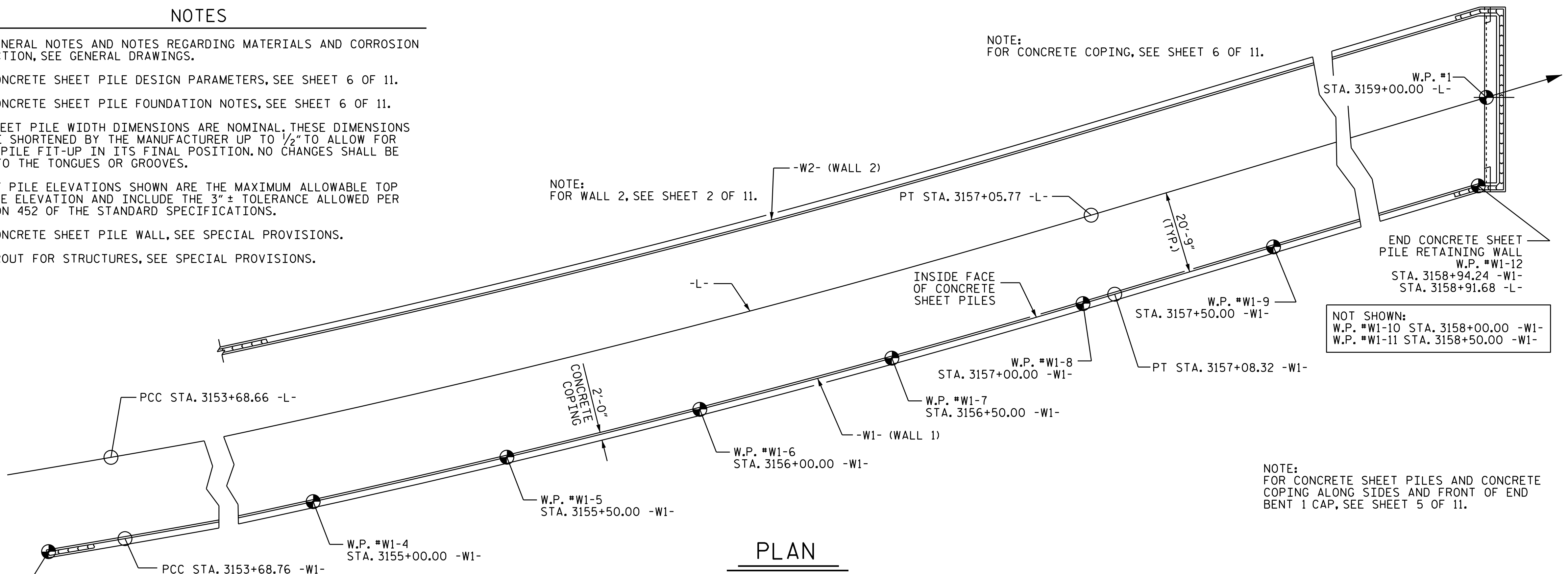
TOP OF PILE ELEVATIONS SHOWN ARE THE MAXIMUM ALLOWABLE TOP OF PILE ELEVATION AND INCLUDE THE 3" ± TOLERANCE ALLOWED PER SECTION 452 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE SHEET PILE WALL, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NOTE:
FOR CONCRETE COPING, SEE SHEET 6 OF 11.

NOTE:
FOR WALL 2, SEE SHEET 2 OF 11.



PLAN

VERTICAL CURVE DATA -L-

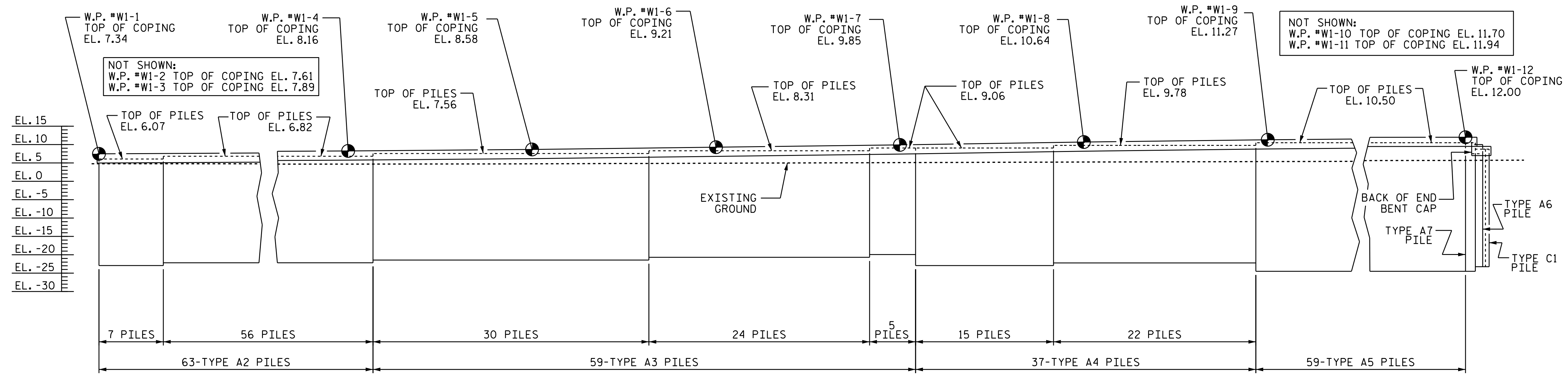
+0.5500%	△	+2.1000%
PI = 3155+80.00 -L-		
EL. = 7.86'		
VC = 180'		
+2.1000%	△	+0.5000%
PI = 3157+70.00 -L-		
EL. = 11.85'		
VC = 200'		

HORIZ. CURVE DATA -W1-

PI = 3153+59.00
Δ = 0°-15'-40.5" (LT)
D = 1°-20'-18.4"
L = 19.52'
T = 9.76'
R = 4,280.75'
PI = 3155+38.74
Δ = 6°-48'-03.2" (LT)
D = 2°-00'-10.2"
L = 339.56'
T = 169.98'
R = 2,860.75'

NOT SHOWN:
W.P. #W1-10 STA. 3158+00.00 -W1-
W.P. #W1-11 STA. 3158+50.00 -W1-

NOTE:
FOR CONCRETE SHEET PILES AND CONCRETE COPING ALONG SIDES AND FRONT OF END BENT 1 CAP, SEE SHEET 5 OF 11.



WALL 1 ELEVATION

NOTE:
CAST-IN-PLACE CONCRETE COPING SHALL EXTEND 6" BEYOND FIRST PILE AT W.P. #W1-1.

NOTE:
INDIVIDUAL PILES WITHIN PILE GROUPS NOT SHOWN FOR CLARITY



PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

SHEET 1 OF 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE SHEET PILE RETAINING WALL WALL 1

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

DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
CHECKED BY: M. A. ALLEN DATE: 6/15
DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

NOTES

FOR GENERAL NOTES AND NOTES REGARDING MATERIALS AND CORROSION PROTECTION, SEE GENERAL DRAWINGS.

FOR CONCRETE SHEET PILE DESIGN PARAMETERS, SEE SHEET 6 OF 11.

FOR CONCRETE SHEET PILE FOUNDATION NOTES, SEE SHEET 6 OF 11.

THE SHEET PILE WIDTH DIMENSIONS ARE NOMINAL, THESE DIMENSIONS MAY BE SHORTENED BY THE MANUFACTURER UP TO 1/2" TO ALLOW FOR SHEET PILE FIT-UP IN ITS FINAL POSITION. NO CHANGES SHALL BE MADE TO THE TONGUES OR GROOVES.

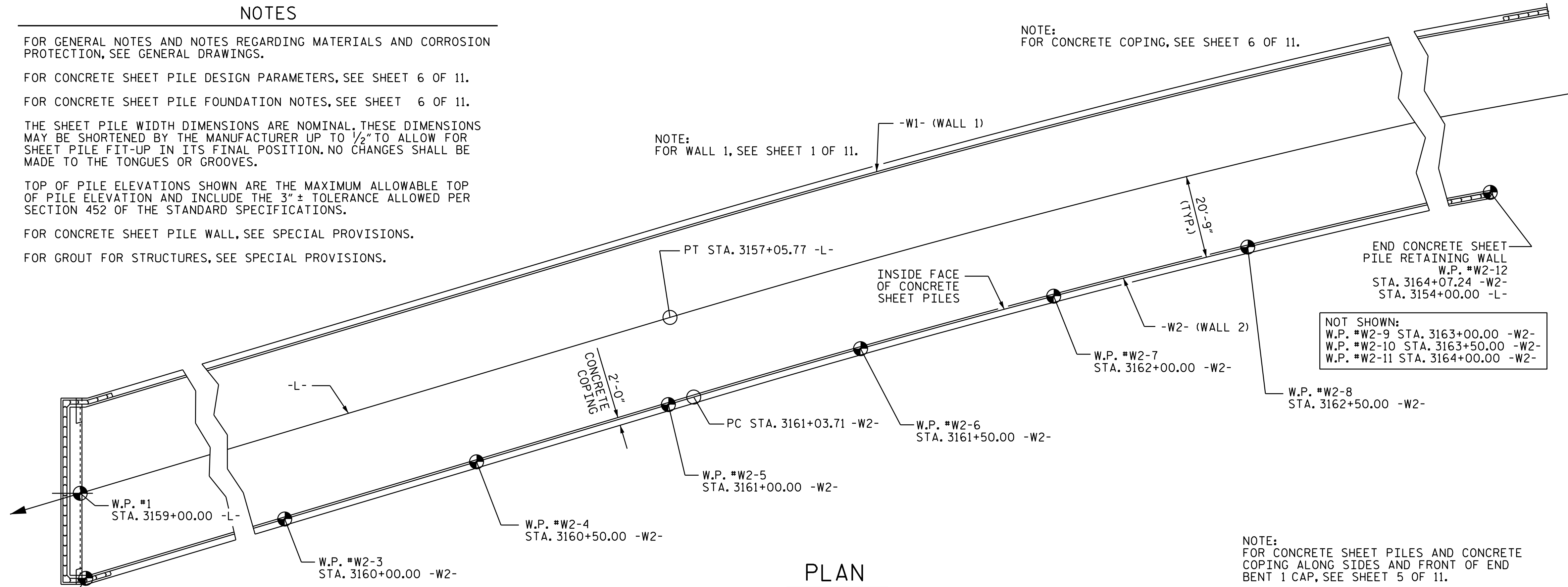
TOP OF PILE ELEVATIONS SHOWN ARE THE MAXIMUM ALLOWABLE TOP OF PILE ELEVATION AND INCLUDE THE 3" ± TOLERANCE ALLOWED PER SECTION 452 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE SHEET PILE WALL, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NOTE:
FOR CONCRETE COPING, SEE SHEET 6 OF 11.

NOTE:
FOR WALL 1, SEE SHEET 1 OF 11.



VERTICAL CURVE DATA -L-

+0.5500% Δ +2.1000%

PI = 3155+80.00 -L-
EL. = 7.86'
VC = 180'

+2.1000% Δ +0.5000%

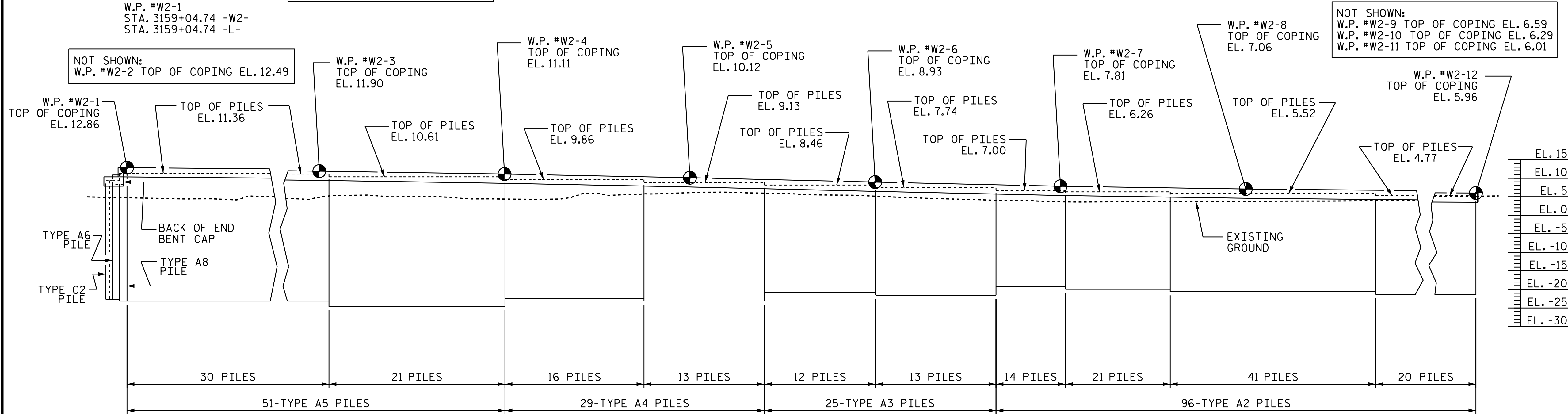
PI = 3157+70.00 -L-
EL. = 11.85'
VC = 200'

HORIZ. CURVE DATA -W2-

PI = 3162+55.63
 Δ = 6°-10'-07.4" (RT)
D = 2°-01'-56.3"
L = 303.53'
T = 151.91'
R = 2,819.25'

NOT SHOWN:
W.P. #W2-9 STA. 3163+00.00 -W2-
W.P. #W2-10 STA. 3163+50.00 -W2-
W.P. #W2-11 STA. 3164+00.00 -W2-

NOTE:
FOR CONCRETE SHEET PILES AND CONCRETE COPING ALONG SIDES AND FRONT OF END BENT 1 CAP, SEE SHEET 5 OF 11.



NOTE:
INDIVIDUAL PILES WITHIN PILE GROUPS NOT SHOWN FOR CLARITY

NOTE:
CAST-IN-PLACE CONCRETE COPING SHALL EXTEND 6" BEYOND LAST PILE AT W.P. #W2-12.



PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

SHEET 2 OF 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**CONCRETE SHEET PILE
RETAINING WALL
WALL 2**

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

DRAWN BY : T. M. GARRISON, P.E. DATE : 6/15
CHECKED BY : M. A. ALLEN DATE : 6/15
DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE : 6/15

DocuSigned by:
61EAF75239A5456E
8/3/2015

NOTES

FOR GENERAL NOTES AND NOTES REGARDING MATERIALS AND CORROSION PROTECTION, SEE GENERAL DRAWINGS.

FOR CONCRETE SHEET PILE DESIGN PARAMETERS, SEE SHEET 6 OF 11.

FOR CONCRETE SHEET PILE FOUNDATION NOTES, SEE SHEET 6 OF 11.

THE SHEET PILE WIDTH DIMENSIONS ARE NOMINAL, THESE DIMENSIONS MAY BE SHORTENED BY THE MANUFACTURER UP TO 1/2" TO ALLOW FOR SHEET PILE FIT-UP IN ITS FINAL POSITION. NO CHANGES SHALL BE MADE TO THE TONGUES OR GROOVES.

TOP OF PILE ELEVATIONS SHOWN ARE THE MAXIMUM ALLOWABLE TOP OF PILE ELEVATION AND INCLUDE THE 3" ± TOLERANCE ALLOWED PER SECTION 452 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE SHEET PILE WALL, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

VERTICAL CURVE DATA -L-

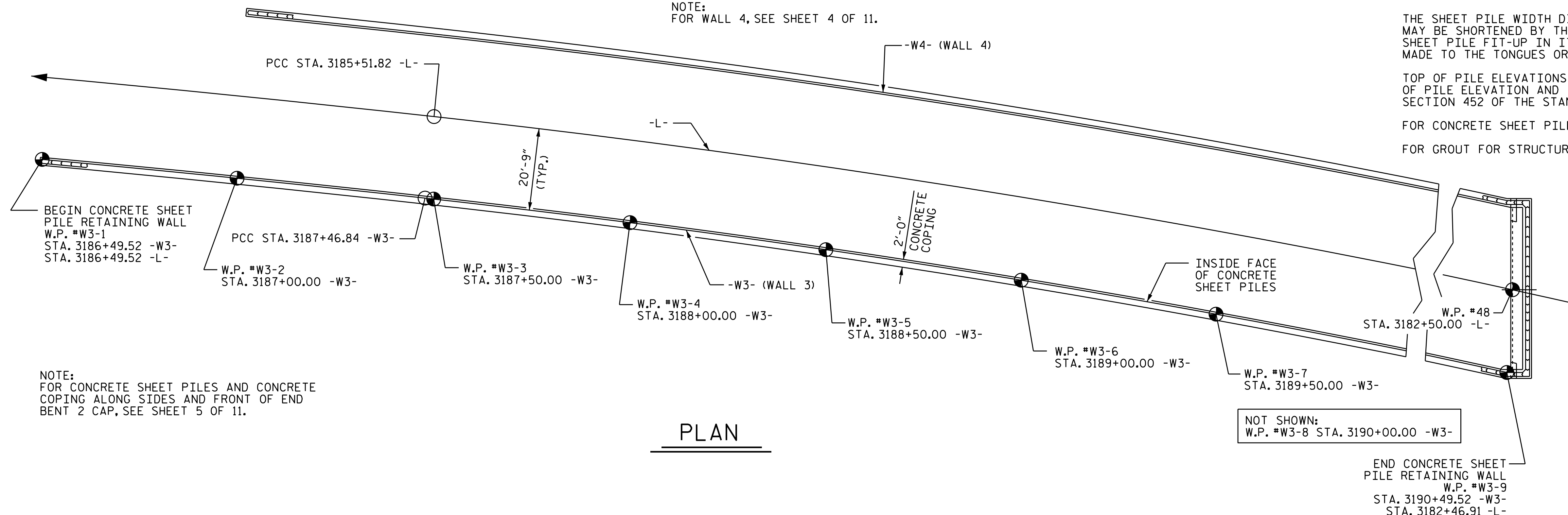
-0.7000%	△	-2.3500%
PI = 3183+80.00 -L-		
EL. = 10.99'		
VC = 200'		
-2.3500%	△	+0.2500%
PI = 3186+40.00 -L-		
EL. = 4.88'		
VC = 320'		

HORIZ. CURVE DATA -W3-

PI = 3186+98.18
Δ = 1°-02'-46.7" (RT)
D = 1°-04'-30.4"
L = 97.32'
T = 48.66'
R = 5,329.25'
PI = 3188+98.33
Δ = 6°-09'-05.2" (RT)
D = 2°-01'-56.3"
L = 302.68'
T = 151.49'
R = 2,819.25'

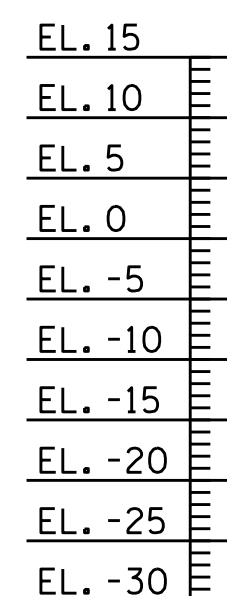
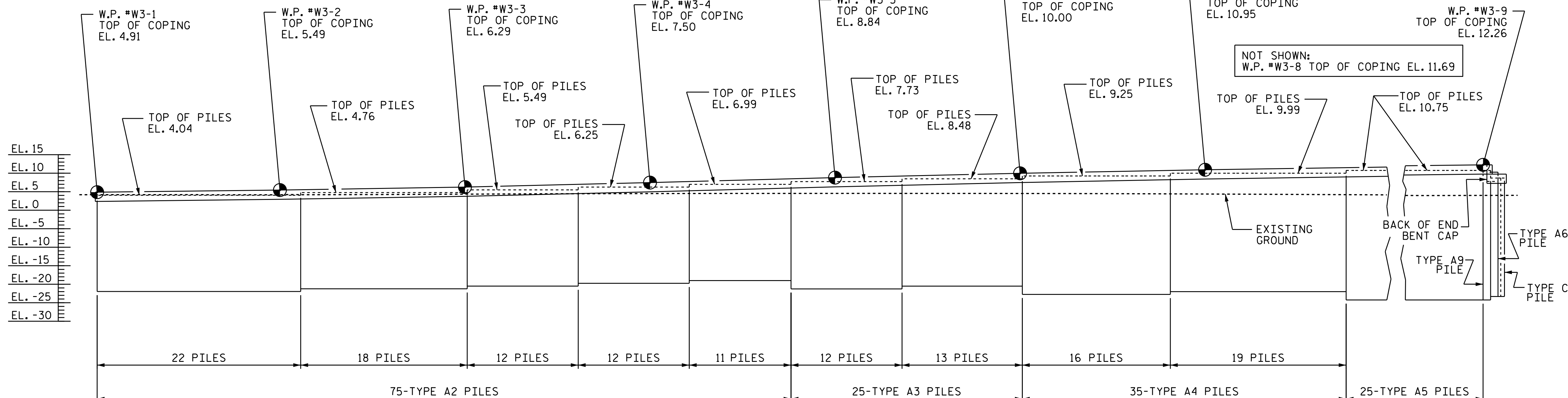
NOTE:
FOR CONCRETE COPING, SEE SHEET 6 OF 11.

NOTE:
FOR WALL 4, SEE SHEET 4 OF 11.



NOTE:
FOR CONCRETE SHEET PILES AND CONCRETE COPING ALONG SIDES AND FRONT OF END BENT 2 CAP, SEE SHEET 5 OF 11.

PLAN



NOTE:
CAST-IN-PLACE CONCRETE COPING SHALL EXTEND 6" BEYOND FIRST PILE AT W.P. #W3-1.

NOTE:
INDIVIDUAL PILES WITHIN PILE GROUPS NOT SHOWN FOR CLARITY

WALL 3 ELEVATION



PROJECT NO. B-2500AB
DARE COUNTY
 STATION: 3170+75.00 -L-

SHEET 3 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**CONCRETE SHEET PILE
 RETAINING WALL
 WALL 3**

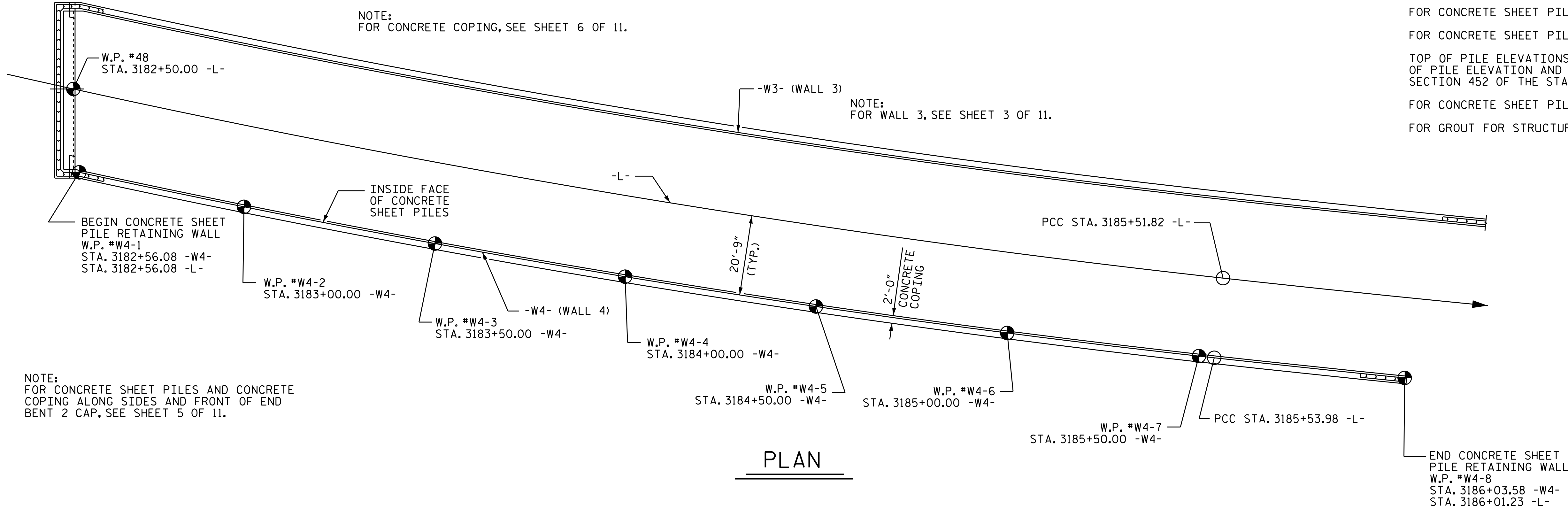
DRAWN BY : T. M. GARRISON, P.E. DATE : 6/15
 CHECKED BY : M. A. ALLEN DATE : 6/15
 DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE : 6/15

DocuSigned by:
 61EAF7529B4566
 8/3/2015

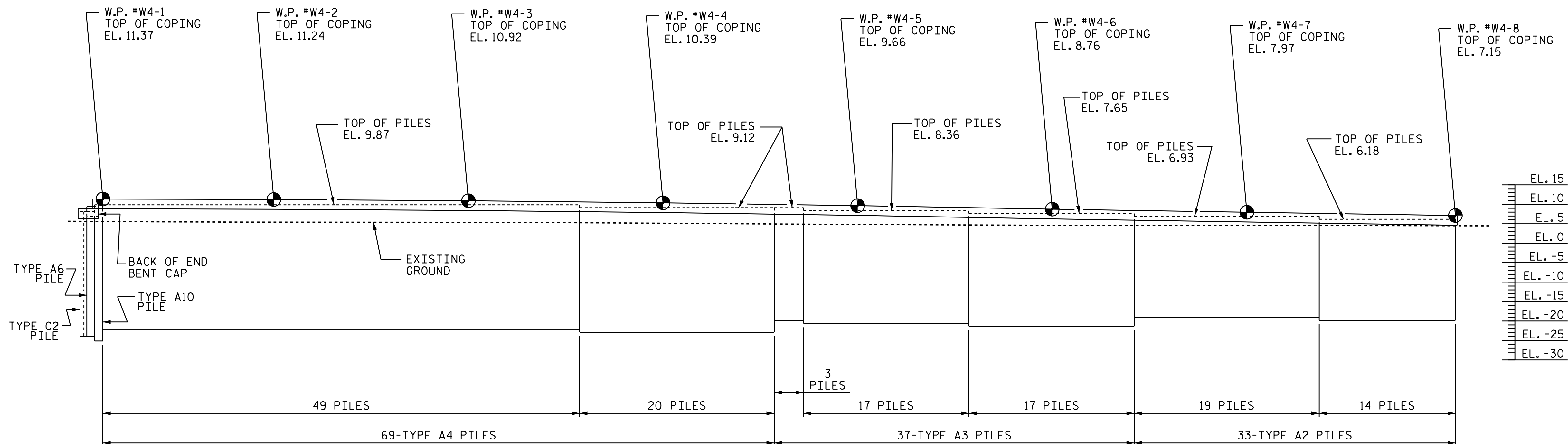
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-3
1			3			TOTAL SHEETS
2			4			13

NOTES

FOR GENERAL NOTES AND NOTES REGARDING MATERIALS AND CORROSION PROTECTION, SEE GENERAL DRAWINGS.
 FOR CONCRETE SHEET PILE DESIGN PARAMETERS, SEE SHEET 6 OF 11.
 FOR CONCRETE SHEET PILE FOUNDATION NOTES, SEE SHEET 6 OF 11.
 TOP OF PILE ELEVATIONS SHOWN ARE THE MAXIMUM ALLOWABLE TOP OF SECTION 452 OF THE STANDARD SPECIFICATIONS.
 FOR CONCRETE SHEET PILE WALL, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



PLAN



WALL 4 ELEVATION

NOTE: INDIVIDUAL PILES WITHIN PILE GROUPS NOT SHOWN FOR CLARITY

NOTE: CAST-IN-PLACE CONCRETE COPING SHALL EXTEND 6" BEYOND LAST PILE AT W.P. #W4-8.



PROJECT NO. B-2500AB
DARE COUNTY
 STATION: 3170+75.00 -L-

SHEET 4 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE SHEET PILE
 RETAINING WALL
 WALL 4

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

DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
 CHECKED BY: M. A. ALLEN DATE: 6/15
 DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

NOTES

A 1/2" EXPANSION JOINT SHALL BE LOCATED IN THE COPING AT THE CENTERLINE OF THE FIRST TYPE A4 OR A5 PILES ADJACENT TO W.P. #W1-12 IN WALL 1, #W2-1 IN WALL 2, #W3-9 IN WALL 3 AND #W4-1 IN WALL 4. ADDITIONAL 1/2" EXPANSION JOINTS SHALL BE LOCATED ALONG THE LENGTH OF THE COPING FOR EACH WALL AT 30'-0" MAXIMUM CENTERS. SEE "PLAN OF EXPANSION JOINTS IN COPING", SHEET 6 OF 11.

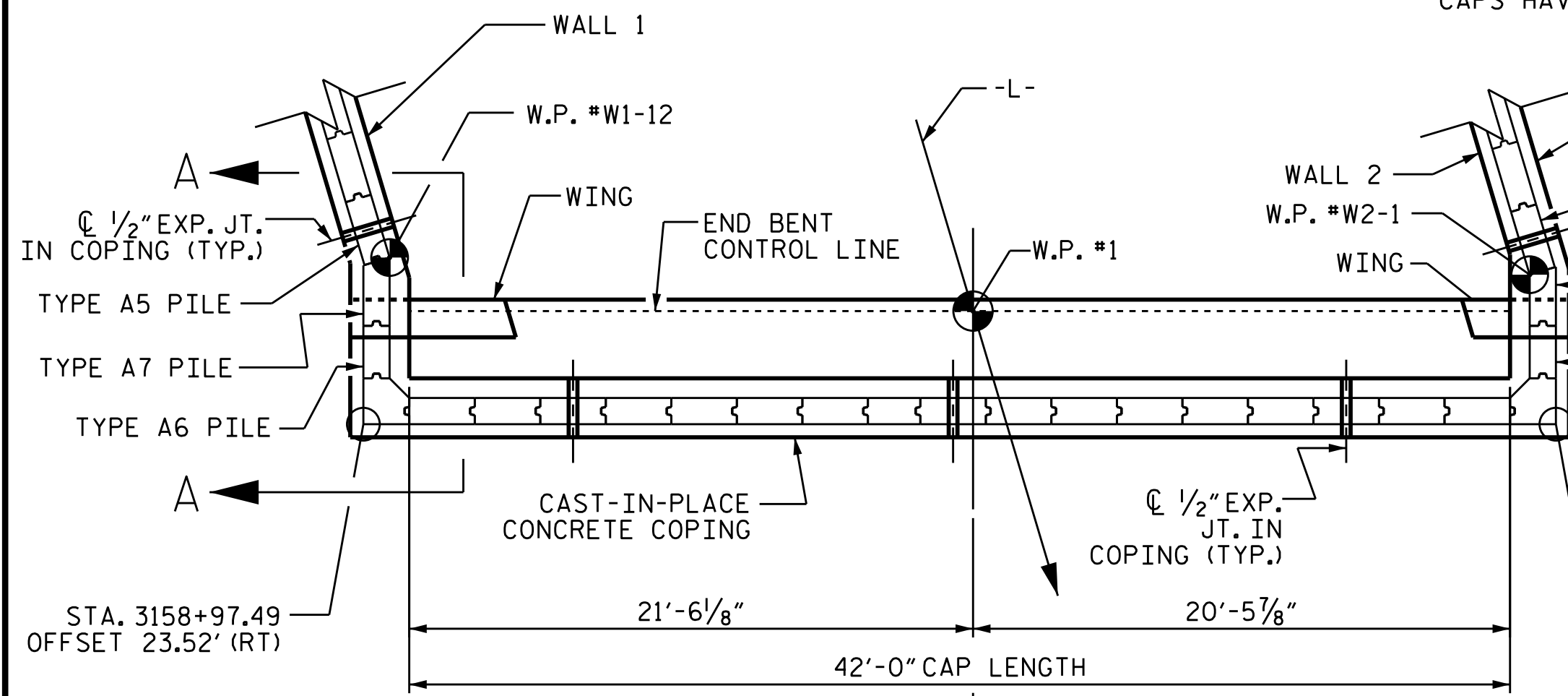
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE COPING AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN COPING EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF COPING SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE PRESTRESSED CONCRETE SHEET PILES SHALL BE DRIVEN PRIOR TO PLACEMENT OF THE PRESTRESSED END BENT CAPS. THE CAST-IN-PLACE CONCRETE FOR THE COPING SHALL NOT BE POURED UNTIL THE END BENT CAPS HAVE BEEN PLACED.

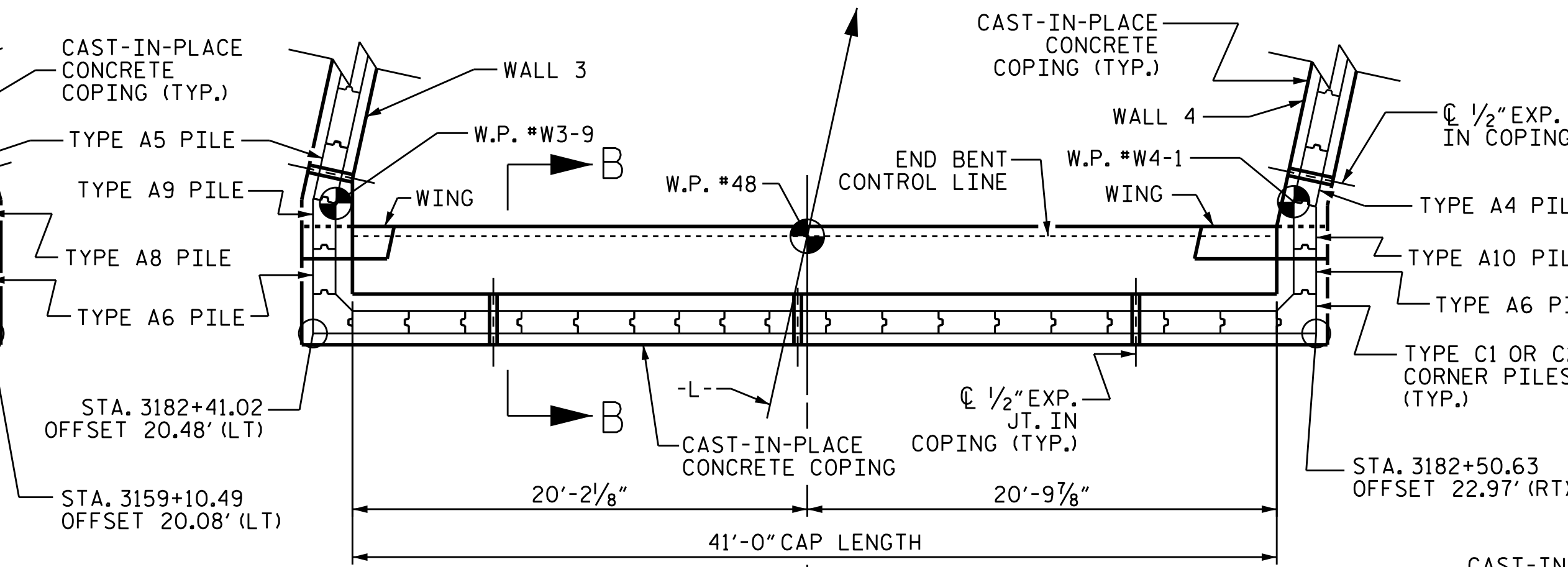
TWO LAYERS OF 30 LB. ROOFING FELT SHALL BE PROVIDED BETWEEN WINGS AND ADJACENT COPING TO PREVENT BONDING.

TWO LAYERS OF 30 LB. ROOFING FELT SHALL BE PROVIDED BETWEEN SIDES AND FRONT FACES OF END BENT CAPS AND ADJACENT COPING TO PREVENT BONDING.

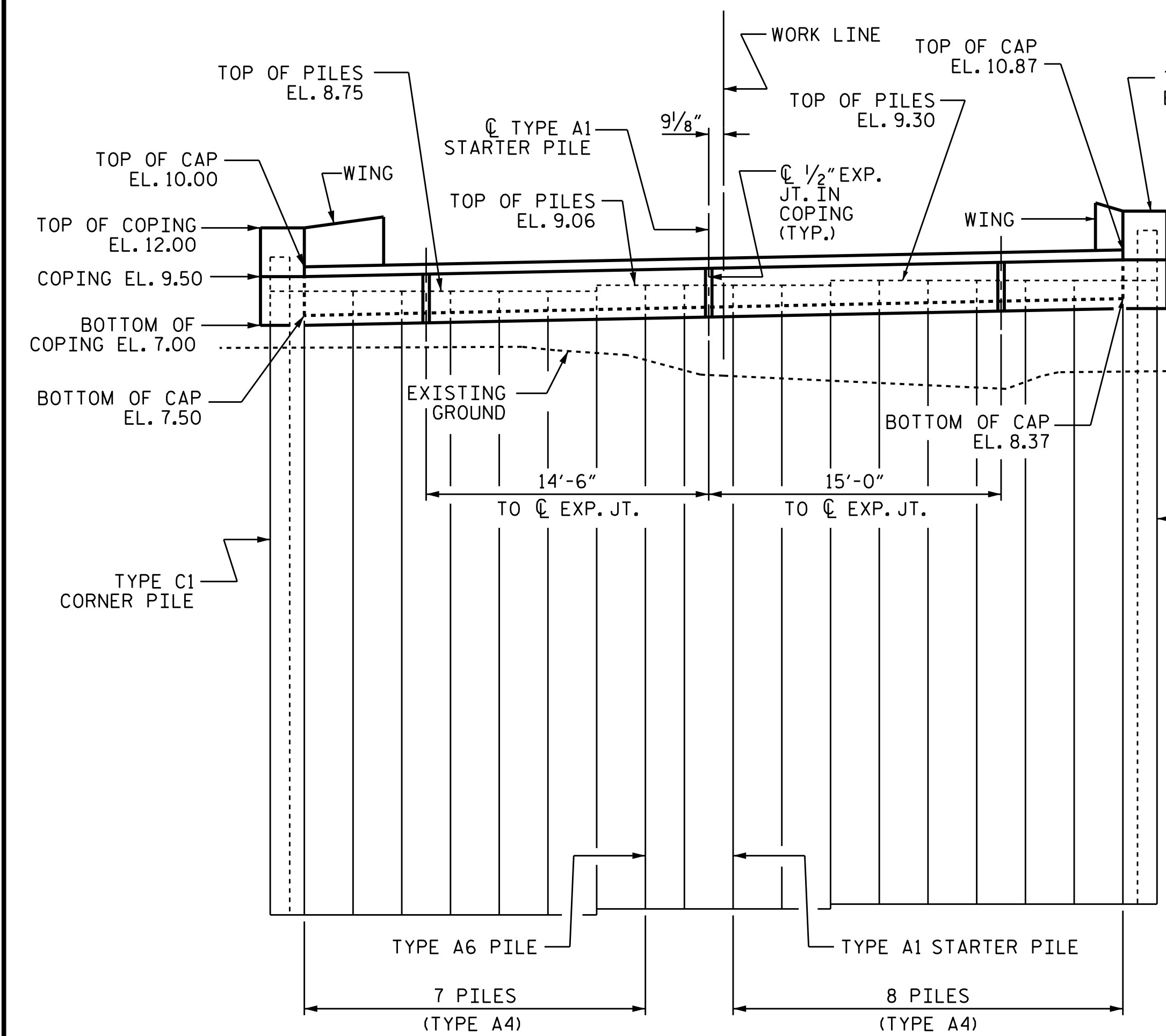
THE CONCRETE IN CAST-IN-PLACE END BENT WINGS SHALL BE CLASS AA CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE CONCRETE (APPROX. 1.4 CU. YDS.) SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE CONCRETE SHEET PILE WALL.



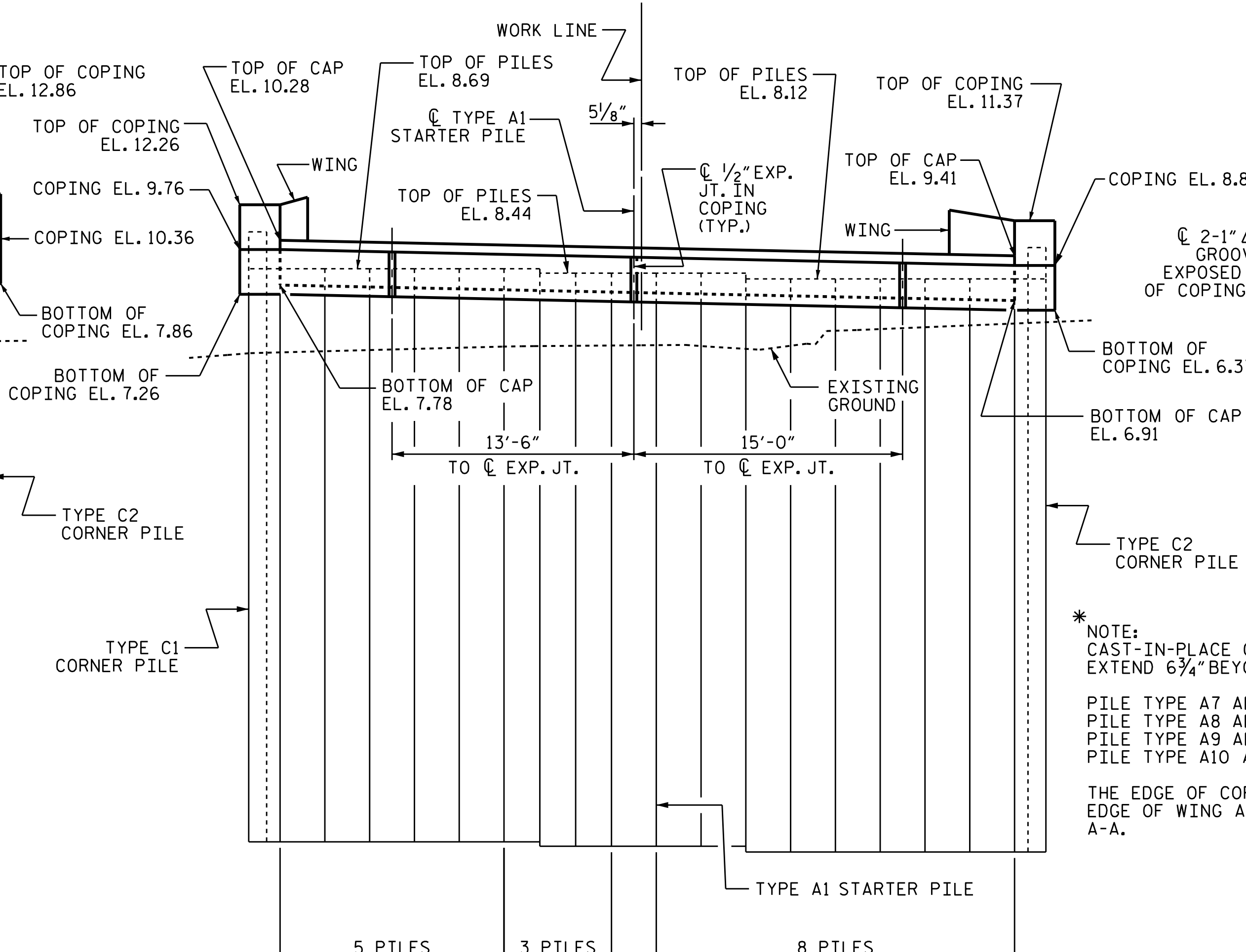
END BENT 1 PLAN



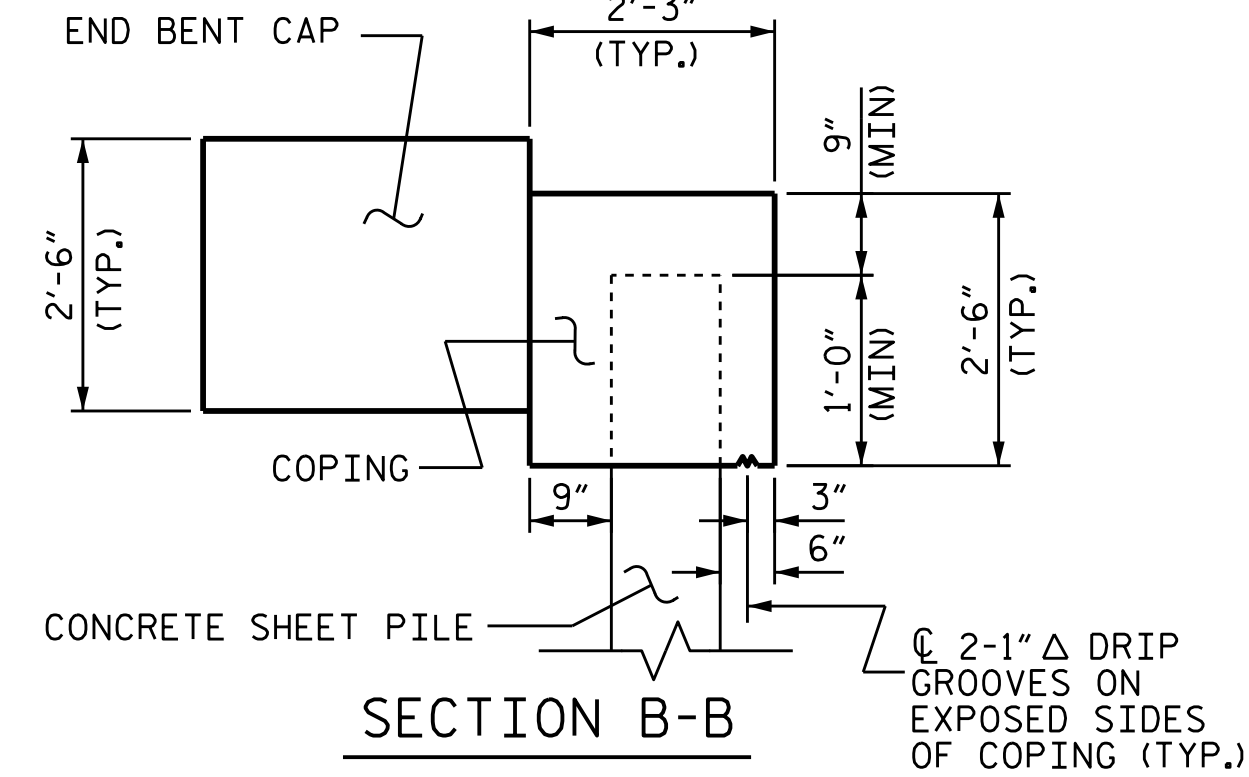
END BENT 2 PLAN



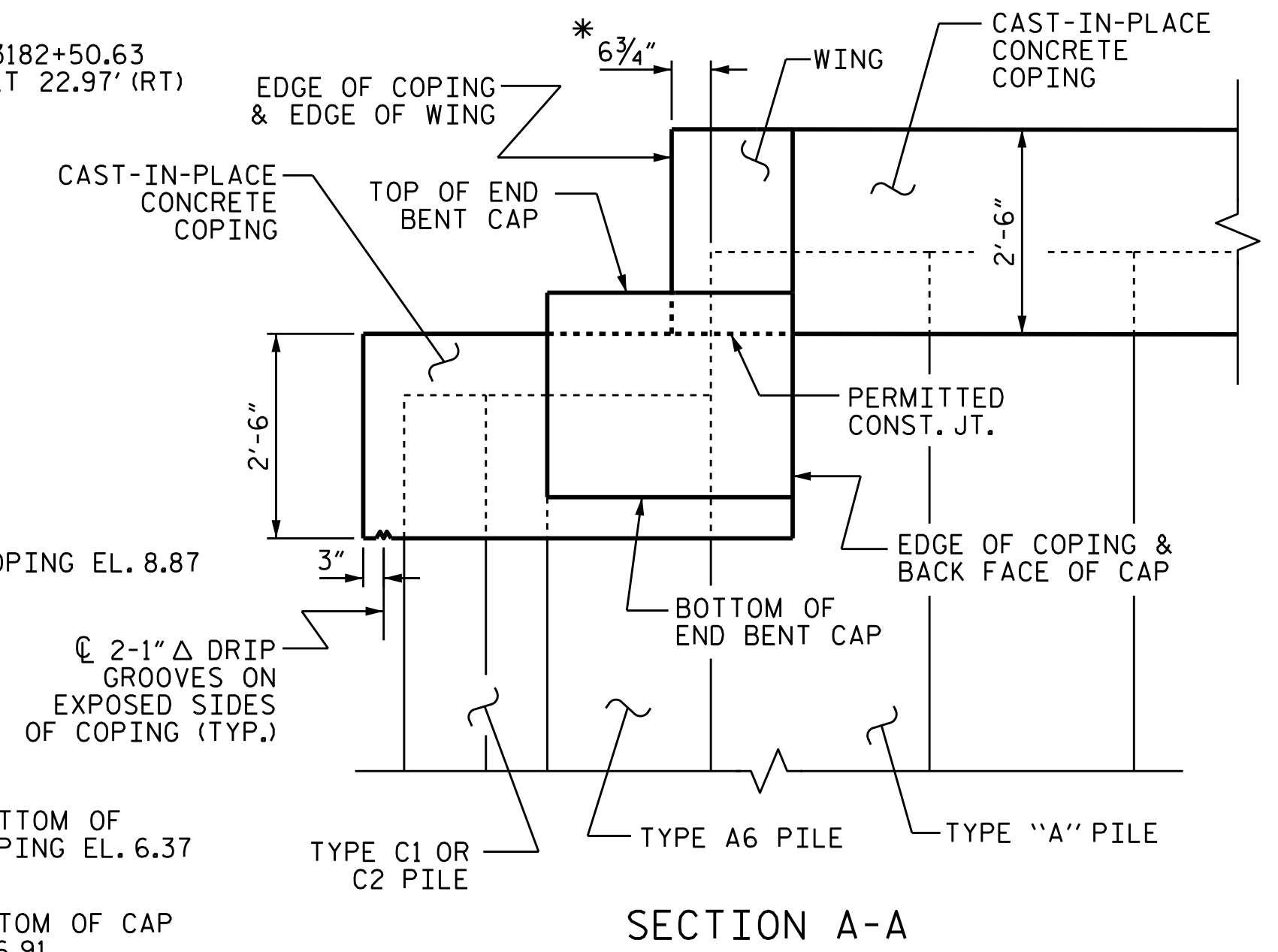
END BENT 1 ELEVATION
(LOOKING TOWARD FRONT FACE OF CAP)



END BENT 2 ELEVATION
(LOOKING TOWARD FRONT FACE OF CAP)



SECTION B-B



SECTION A-A

NOTE: SEE "CONCRETE SHEET PILE RETAINING WALL, SHEET PILE DETAILS", SHEETS 7 THRU 11 OF 11, FOR PILE TYPES.

* NOTE: CAST-IN-PLACE CONCRETE COPING SHALL EXTEND 6 3/4" BEYOND:

PILE TYPE A7 ADJACENT TO W.P. #W1-12, PILE TYPE A8 ADJACENT TO W.P. #W2-1, PILE TYPE A9 ADJACENT TO W.P. #W3-9, PILE TYPE A10 ADJACENT TO W.P. #W4-1.

THE EDGE OF COPING SHALL MATCH THE EDGE OF WING AS SHOWN IN SECTION A-A.

PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

SHEET 5 OF 11



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CONCRETE SHEET PILE
WALL AND COPING
DETAILS AT END BENTS

DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
CHECKED BY: M. A. ALLEN DATE: 6/15
DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

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

CONCRETE SHEET PILE DATA						
PILE TYPE	TOTAL NO. REQUIRED	NO. OF PILES IN STORED INVENTORY	REMAINING NUMBER REQUIRED	L (FT.)	X (FT.)	TOTAL LIN. FT.
A1	2	---	2	32'-0"	7'-6"	64
A2	267	---	267	26'-0"	5'-0"	6,942
A3	146	134	12	29'-0"	6'-0"	348
A4	198	---	198	32'-0"	7'-6"	6,336
A5	135	55	80	35'-0"	9'-0"	2,800
A6	8	---	8	32'-0"	7'-6"	256
A7	1	---	1	35'-0"	9'-0"	35
A8	1	---	1	35'-0"	9'-0"	35
A9	1	---	1	35'-0"	9'-0"	35
A10	1	---	1	35'-0"	9'-0"	35
C1	2	---	2	32'-0"	7'-6"	64
C2	2	---	2	32'-0"	7'-6"	64

SEE "CONCRETE SHEET PILE RETAINING WALL, SHEET PILE DETAILS", SHEETS 7 THRU 11 OF 11, FOR PILE TYPES.

A TOTAL OF 189 PRESTRESSED CONCRETE SHEET PILES WERE FABRICATED FOR ANOTHER PROJECT THAT HAS BEEN TERMINATED. THESE PILES WHICH ARE LISTED IN THE ABOVE TABLE HAVE BEEN STORED AND SHALL BE USED ON THIS PROJECT. SEE SPECIAL PROVISION FOR CONCRETE SHEET PILE WALL FOR THE STORAGE LOCATIONS AND REQUIRED COORDINATION TO OBTAIN THE STORED CONCRETE SHEET PILES.

DESIGN PARAMETERS

CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:
8000 PSI (MIN.)

CONCRETE COMPRESSIVE STRENGTH AT RELEASE OF PRESTRESSING:
5600 PSI (MIN.)

UNIFORM COMPRESSION AFTER PRESTRESSED LOSSES:
1000 PSI (MIN.)

PICK-UP, STORAGE, AND TRANSPORTATION:
0.0 PSI TENSION WITH 1.5 TIMES SELF WEIGHT

ALL PRESTRESSING STRANDS SHALL BE 0.6" DIA, 7-WIRE LOW RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

INSTALL PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

ALL CORNERS TO BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.

PICK-UP OF PILE MAY BE EITHER A SINGLE POINT PICK-UP OR A TWO POINT PICK-UP AS SHOWN.

FOUNDATION NOTES

CONSTRUCT CONCRETE SHEET PILE RETAINING WALLS IN ACCORDANCE WITH SECTION 452 OF THE STANDARD SPECIFICATIONS EXCEPT USE CONCRETE SHEET PILES IN LIEU OF STEEL SHEET PILES.

INSTALL CONCRETE SHEET PILES TO TIP ELEVATIONS NO HIGHER THAN AS SHOWN ON THE PLANS.

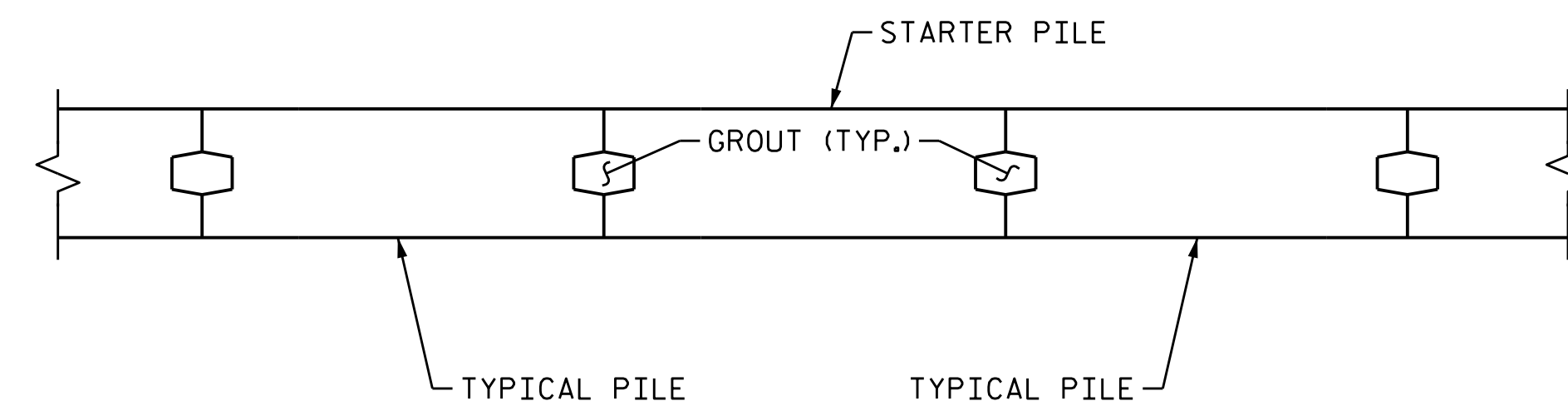
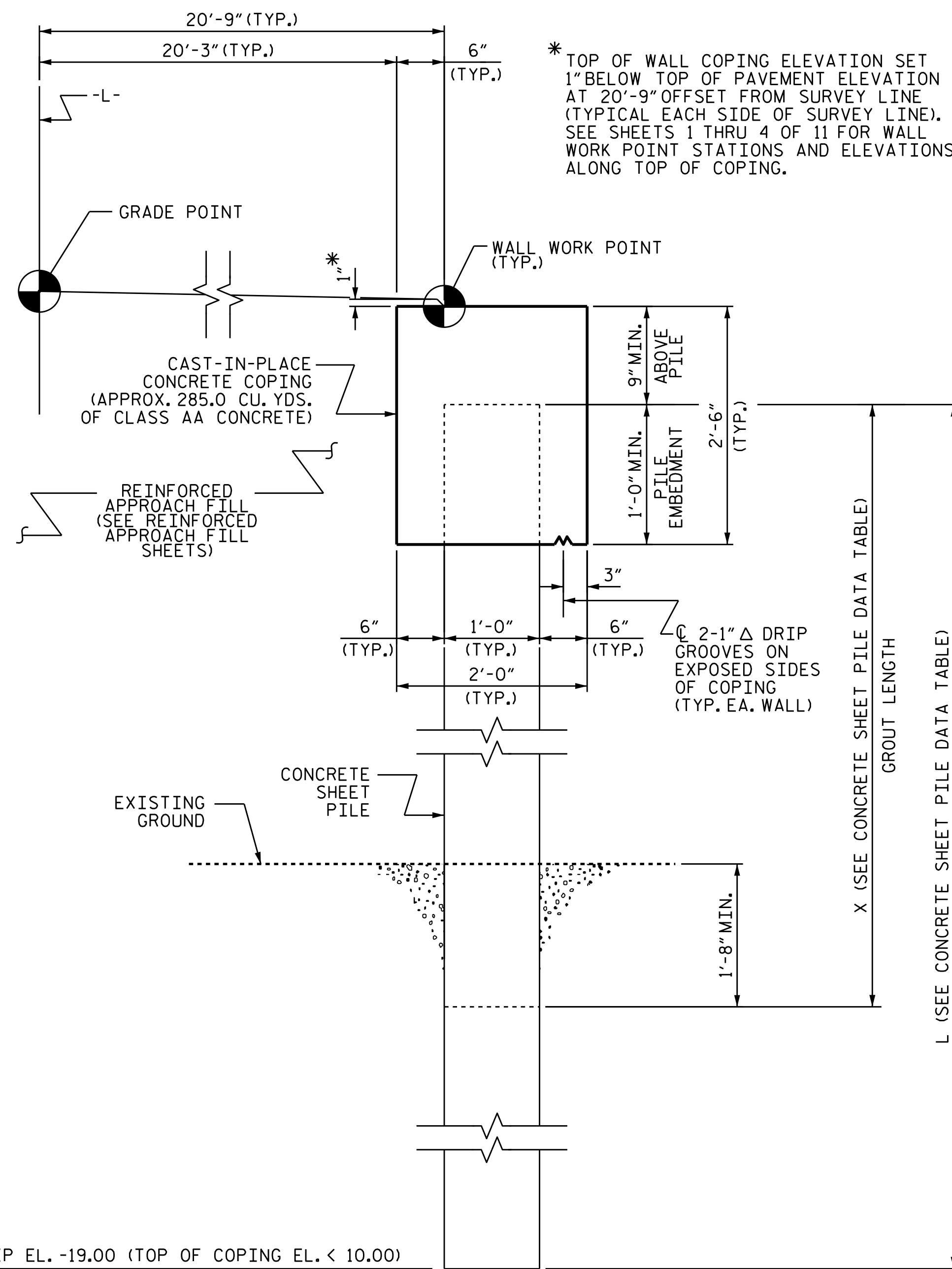
USE JETTING, DRIVING, OR A COMBINATION OF JETTING AND DRIVING TO ATTAIN THE MINIMUM TIP ELEVATION NO HIGHER THAN REQUIREMENTS. SEE PILE JETTING SPECIAL PROVISION FOR JETTING REQUIREMENTS AND RESTRICTIONS.

IF USING IMPACT HAMMERS FOR CONCRETE SHEET PILE INSTALLATION, SUBMIT DRIVING EQUIPMENT AS OUTLINED IN SECTION 450-3 OF THE STANDARD SPECIFICATIONS.

FOR JETTING AND OFF-SITE JETTING SPOIL DISPOSAL, SEE PILE JETTING SPECIAL PROVISION.

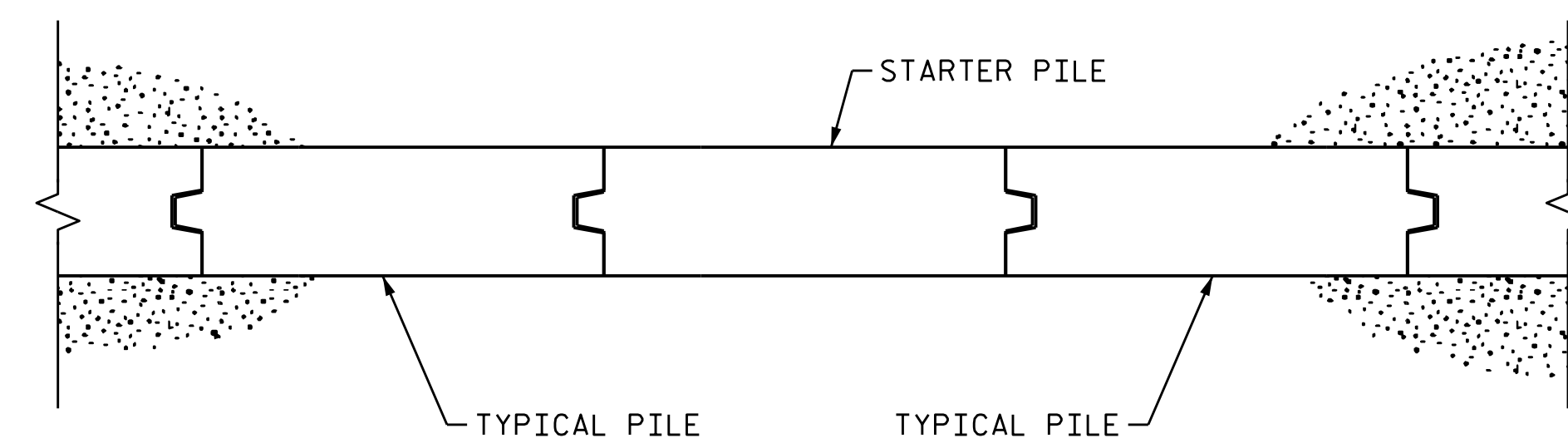
FOR CONCRETE SHEET PILE RETAINING WALLS AND BRIDGE END BENT CONSTRUCTION SEQUENCE, SEE BRIDGE FOUNDATION NOTES ON PLANS.

THE SCOUR CRITICAL ELEVATIONS FOR ALL CONCRETE SHEET PILE WALLS ARE ELEVATION -3.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

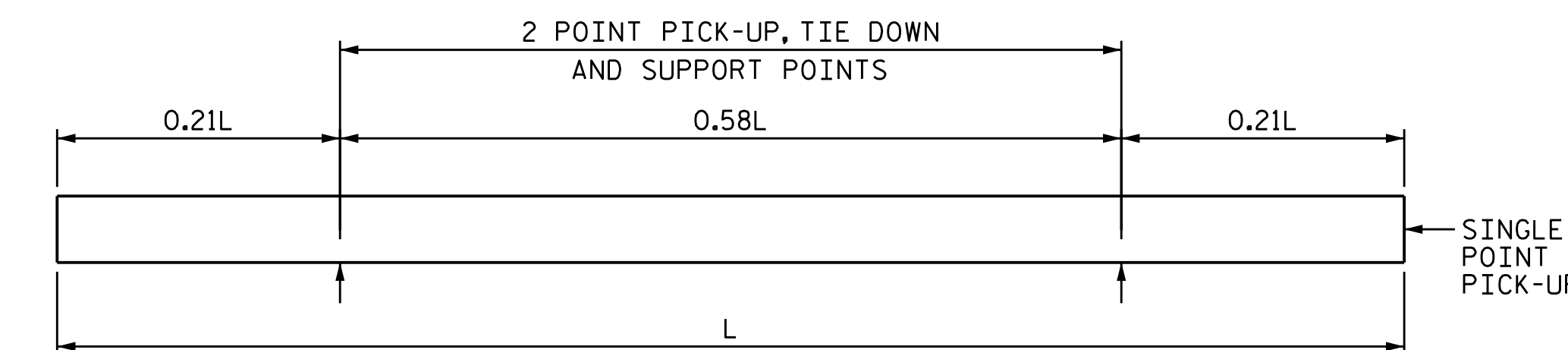


SECTION TAKEN ABOVE DIMENSION "X"

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



SECTION TAKEN BELOW DIMENSION "X"

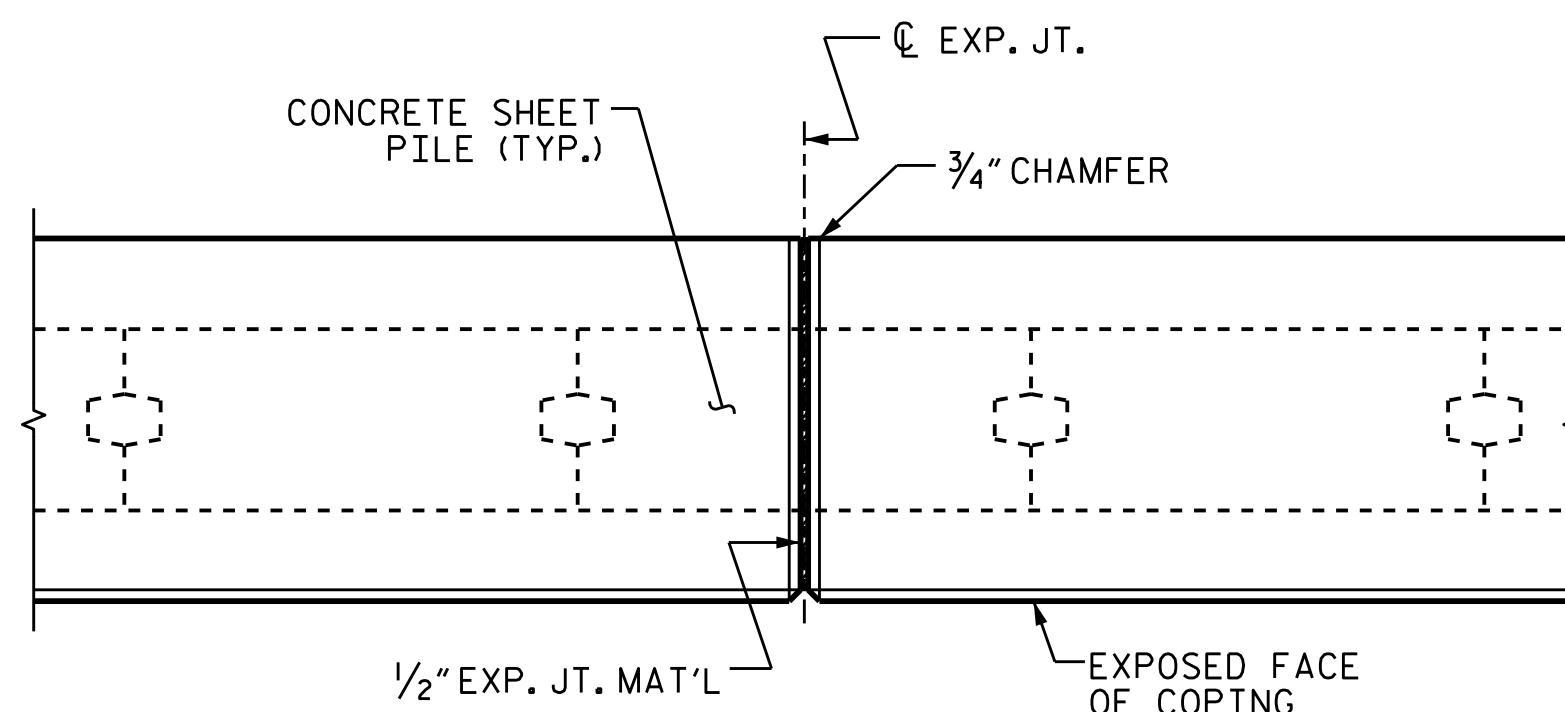


PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS

MIN. TIP EL. -19.00 (TOP OF COPING EL. < 10.00)
MIN. TIP EL. -22.00 (TOP OF COPING EL. > 10.00)

TYPICAL SECTION

CONCRETE SHEET PILE WALL
TOTAL LENGTH = 1,908.67 LIN. FT.



PLAN OF EXPANSION JOINTS IN COPING

NOTE:
JOINT LOCATION IN COPING MAY BE SHIFTED TO AVOID PLACING COPING JOINT IN THE SAME LOCATION AS A JOINT BETWEEN ADJACENT CONCRETE SHEET PILES.



DocuSigned by:
8/3/2015

PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

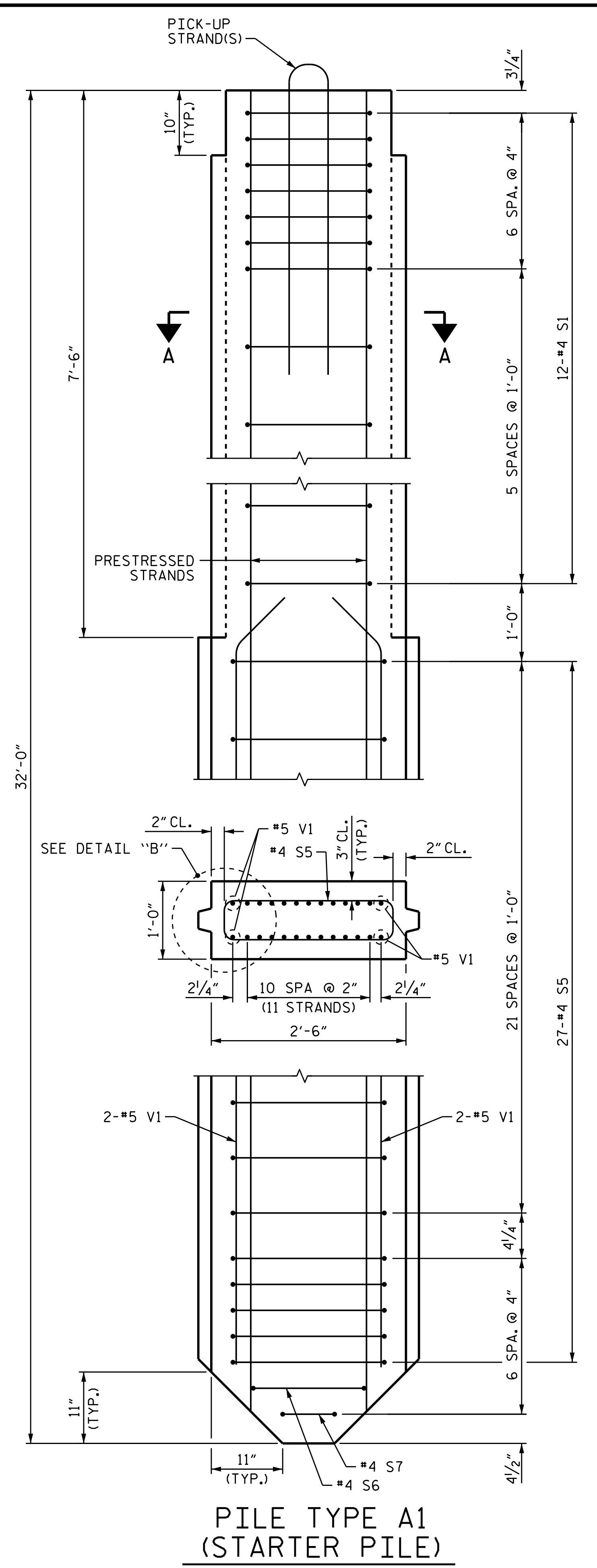
SHEET 6 OF 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

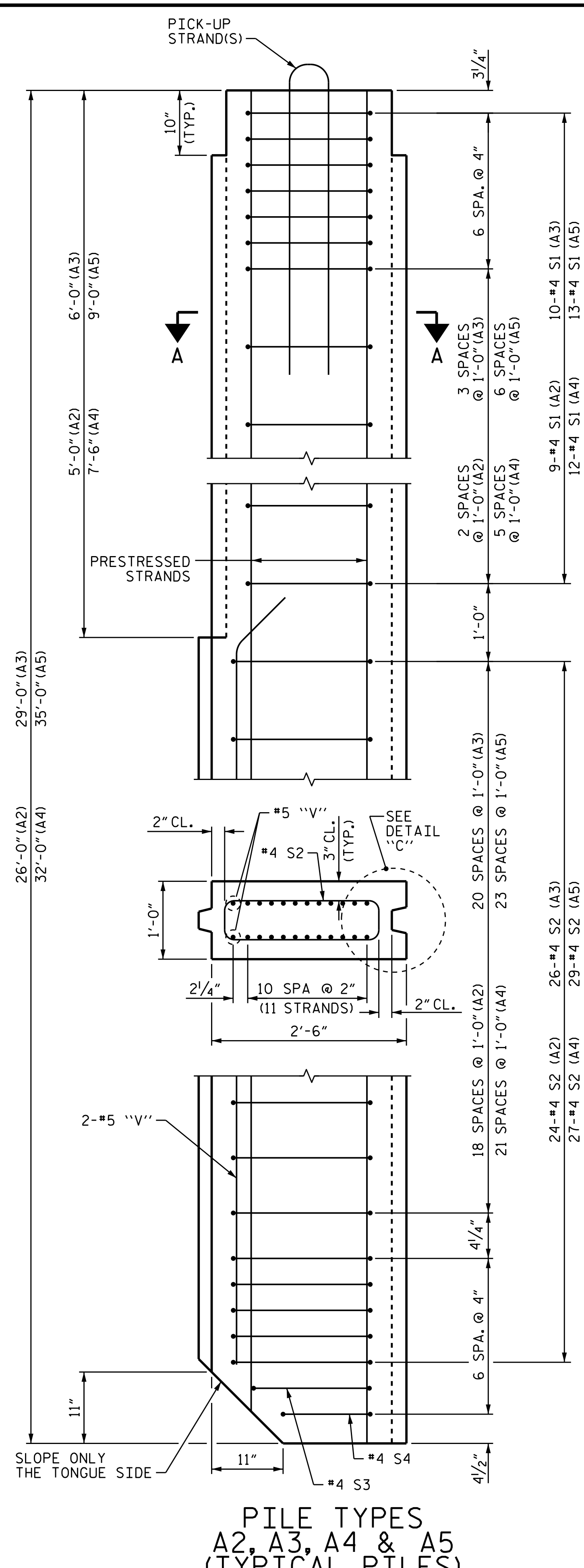
CONCRETE SHEET PILE RETAINING WALL DETAILS

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

DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
CHECKED BY: M. A. ALLEN DATE: 6/15
DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

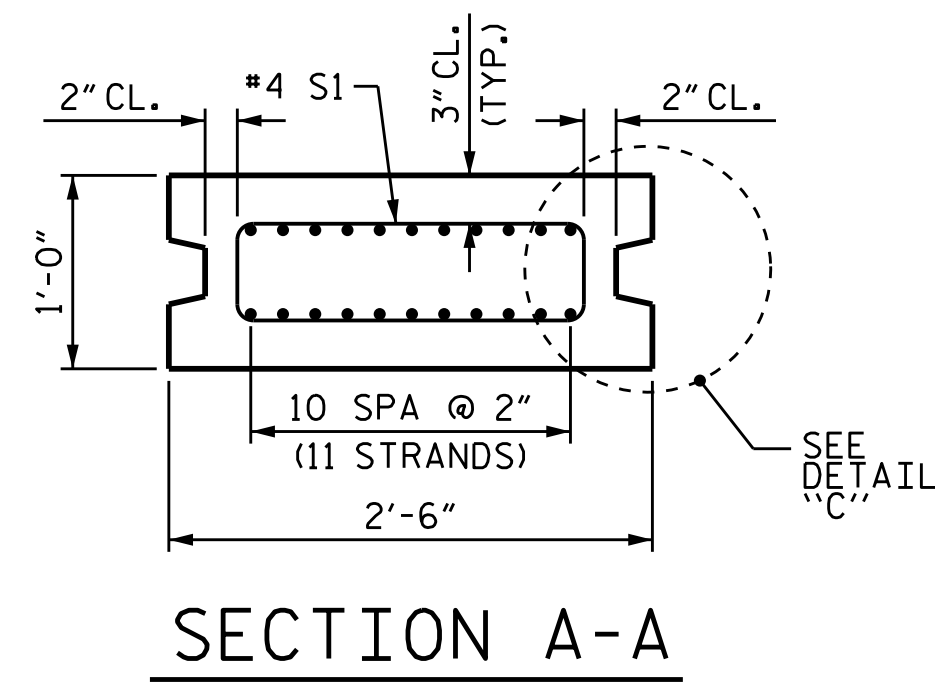


**PILE TYPE A1
(STARTER PILE)**

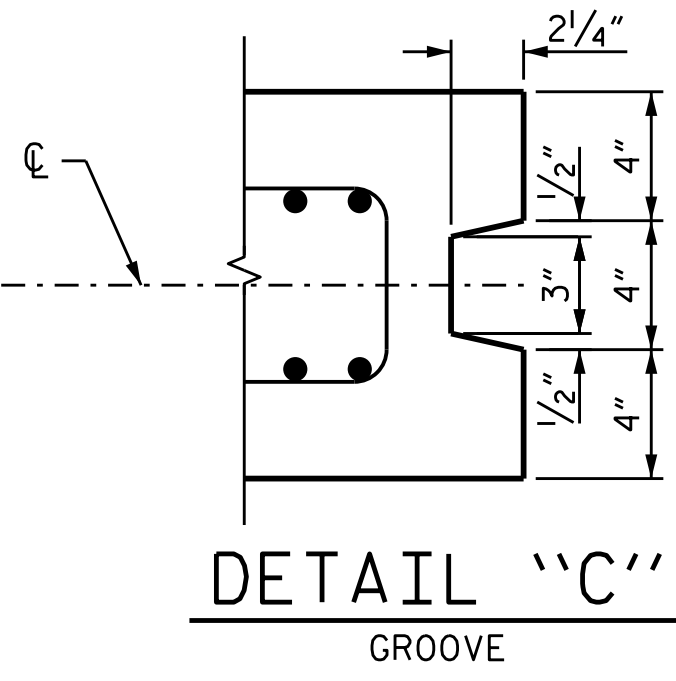


**PILE TYPES
A2, A3, A4 & A5
(TYPICAL PILES)**

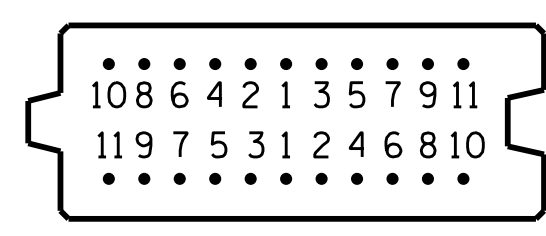
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950



**DETAIL "B"
TONGUE**



**DETAIL "C"
GROOVE**



PATTERN FOR BURNING

NOTES

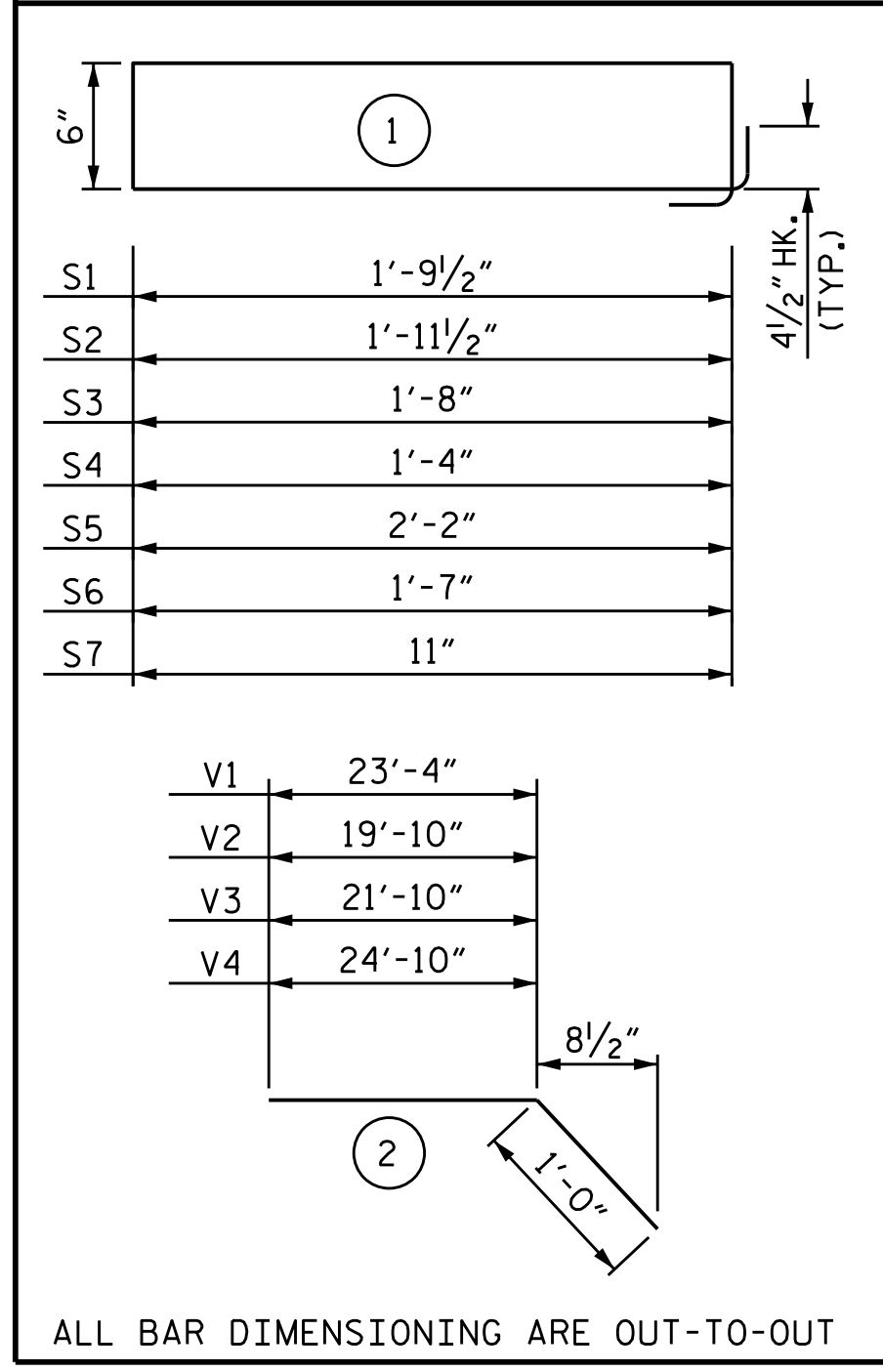
THE SHEET PILE WIDTH DIMENSIONS ARE NOMINAL. THESE DIMENSIONS MAY BE SHORTENED BY THE MANUFACTURER UP TO 1/2" TO ALLOW FOR SHEET PILE FIT-UP IN ITS FINAL POSITION. NO CHANGES SHALL BE MADE TO THE TONGUES OR GROOVES.

THE WATER/CEMENT RATIO FOR PRESTRESSED CONCRETE SHEET PILES SHALL NOT EXCEED 0.40.

PRESTRESSED CONCRETE SHEET PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE INHIBITOR SHALL BE APPLIED AT A RATE OF 4.0 GALLONS PER CUBIC YARD. NO SEPARATE PAYMENT WILL BE MADE FOR THE ADDITION OF CALCIUM NITRITE, AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

PRESTRESSED CONCRETE SHEET PILES SHALL CONTAIN A MINIMUM OF 25% FLY ASH CLASS F OR A MINIMUM OF 40% GROUND GRANULATED BLAST FURNACE SLAG (GGBFS). ADDITIONALLY, SILICA FUME SHALL BE SUBSTITUTED FOR A MINIMUM 5% OF THE PORTLAND CEMENT BY WEIGHT IN THE PRESTRESSED CONCRETE SHEET PILES. MINERAL ADMIXTURES SHALL REPLACE THE CEMENT CONTENT AT A 1:1 RATIO BY WEIGHT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION, AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

BAR TYPES



BILL OF MATERIAL

A1 (STARTER PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	12	#4	1	5'-4"	43
S5	27	#4	1	6'-1"	110
S6	1	#4	1	4'-11"	3
S7	1	#4	1	3'-7"	2
V1	4	#5	2	24'-4"	102
A2 (TYPICAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	9	#4	1	5'-4"	32
S2	24	#4	1	5'-8"	91
S3	1	#4	1	5'-1"	3
S4	1	#4	1	4'-5"	3
V2	2	#5	2	20'-10"	43
A3 (TYPICAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	10	#4	1	5'-4"	36
S2	26	#4	1	5'-8"	98
S3	1	#4	1	5'-1"	3
S4	1	#4	1	4'-5"	3
V3	2	#5	2	22'-10"	48
A4 (TYPICAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	12	#4	1	5'-4"	43
S2	27	#4	1	5'-8"	102
S3	1	#4	1	5'-1"	3
S4	1	#4	1	4'-5"	3
V1	2	#5	2	24'-4"	51
A5 (TYPICAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	13	#4	1	5'-4"	46
S2	29	#4	1	5'-8"	110
S3	1	#4	1	5'-1"	3
S4	1	#4	1	4'-5"	3
V4	2	#5	2	25'-10"	54

QUANTITIES FOR ONE PILE

PILE	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
A1 (STARTER PILE)	260	3.0	22
A2 (TYPICAL PILE)	172	2.4	22
A3 (TYPICAL PILE)	188	2.7	22
A4 (TYPICAL PILE)	202	3.0	22
A5 (TYPICAL PILE)	216	3.2	22

PROJECT NO. B-2500AB
 DARE COUNTY
 STATION: 3170+75.00 -L-

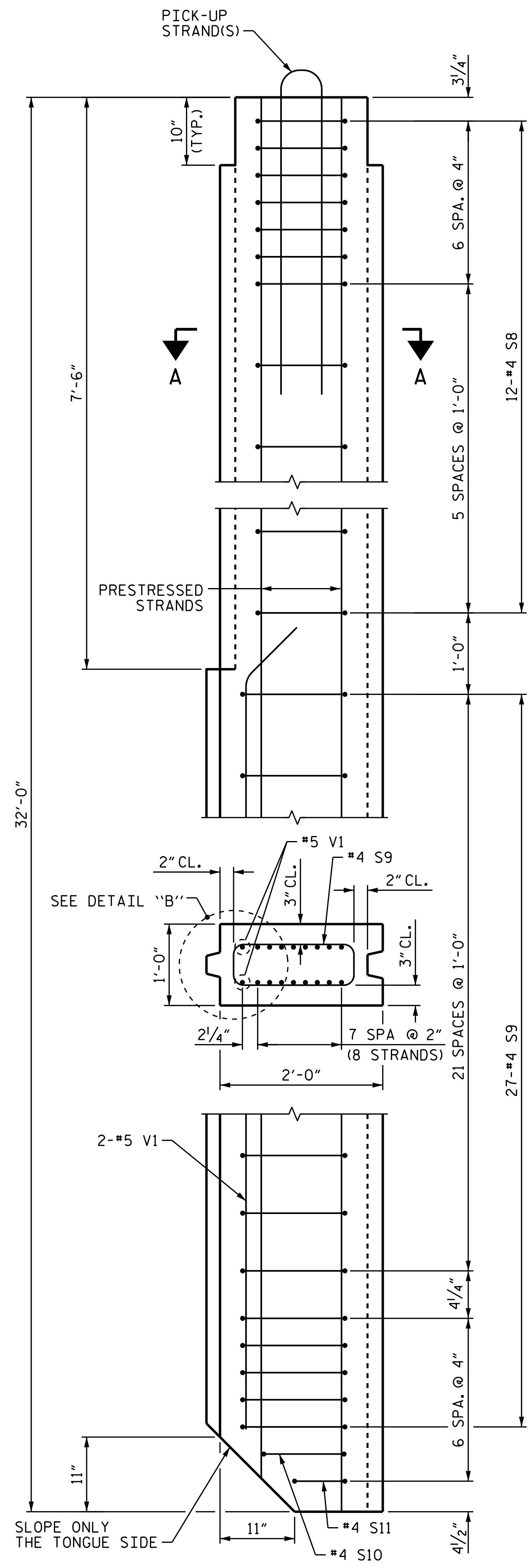
SHEET 7 OF 11



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**CONCRETE SHEET PILE
 RETAINING WALL
 SHEET PILE DETAILS**

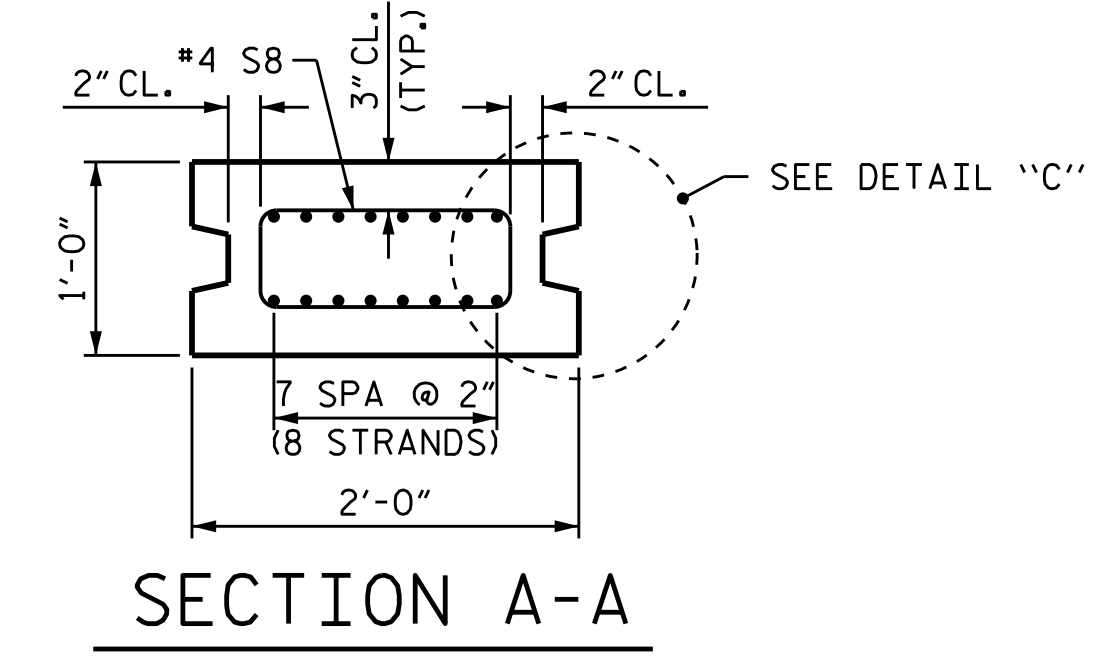
REVISIONS						SHEET NO. W-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 13
2			4			

DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
 CHECKED BY: M. A. ALLEN DATE: 6/15
 DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

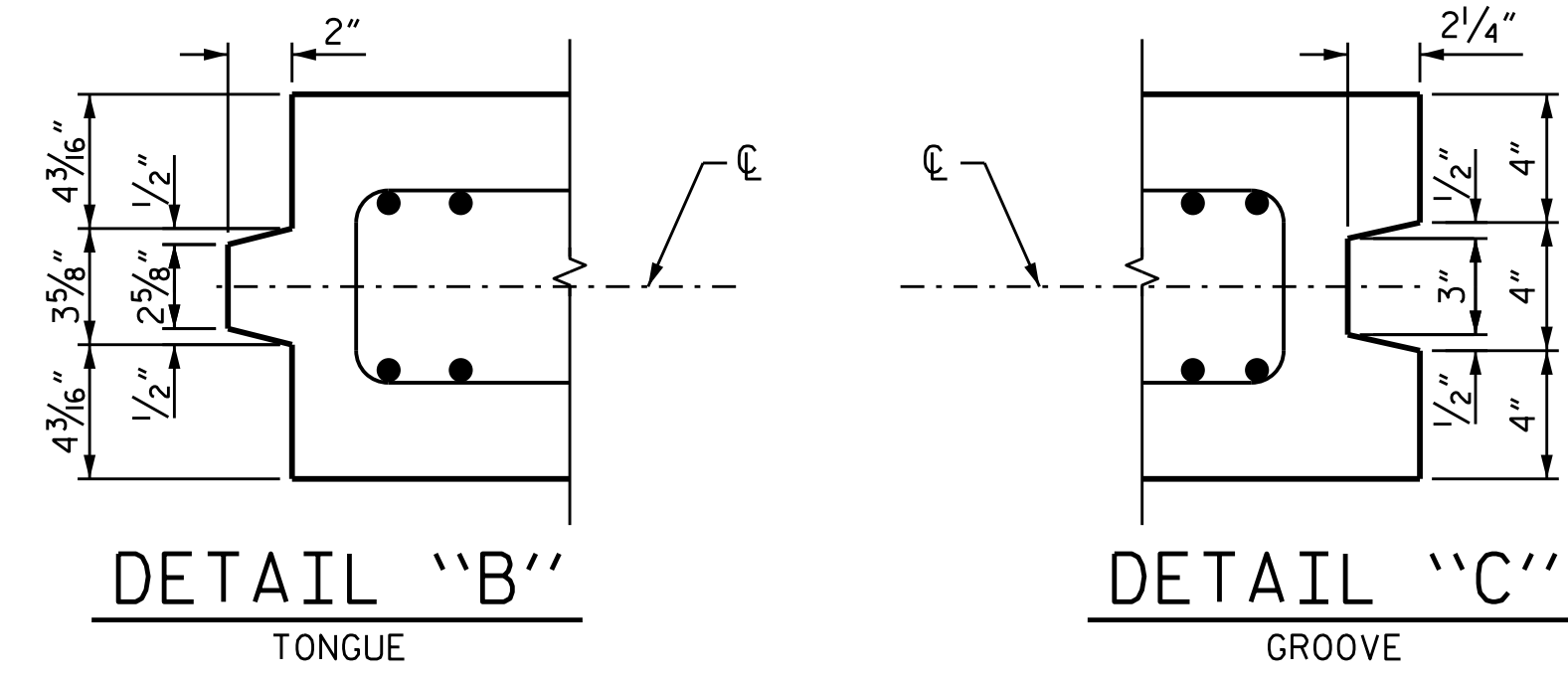


PILE TYPE A6
(MODIFIED A4 PILE, 2'-0")

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

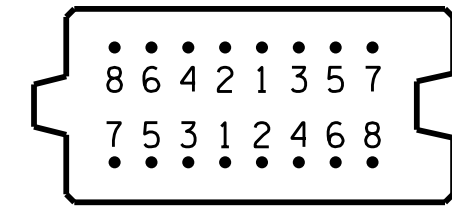


SECTION A-A



DETAIL "B"
TONGUE

DETAIL "C"
GROOVE



PATTERN FOR BURNING

SEE CONCRETE SHEET PILE RETAINING WALL SHEET PILE DETAILS, SHEET 7 OF 11, FOR NOTES.

BILL OF MATERIAL					
A6 (MODIFIED A4, 2'-0")					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S8	12	#4	1	4'-4"	35
S9	27	#4	1	4'-8"	84
S10	1	#4	1	4'-1"	3
S11	1	#4	1	3'-5"	2
V1	2	#5	2	24'-4"	51

BAR TYPES	
1	6"
S8	1'-3 1/2"
S9	1'-5 1/2"
S10	1'-2"
S11	10"
2	23'-4" 8 1/2" 1'-0"

ALL BAR DIMENSIONING ARE OUT-TO-OUT

QUANTITIES FOR ONE PILE			
PILE	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
A6 (MODIFIED A4)	175	2.4	16

DRAWN BY : T. M. GARRISON, P.E. DATE : 6/15
 CHECKED BY : M. A. ALLEN DATE : 6/15
 DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE : 6/15

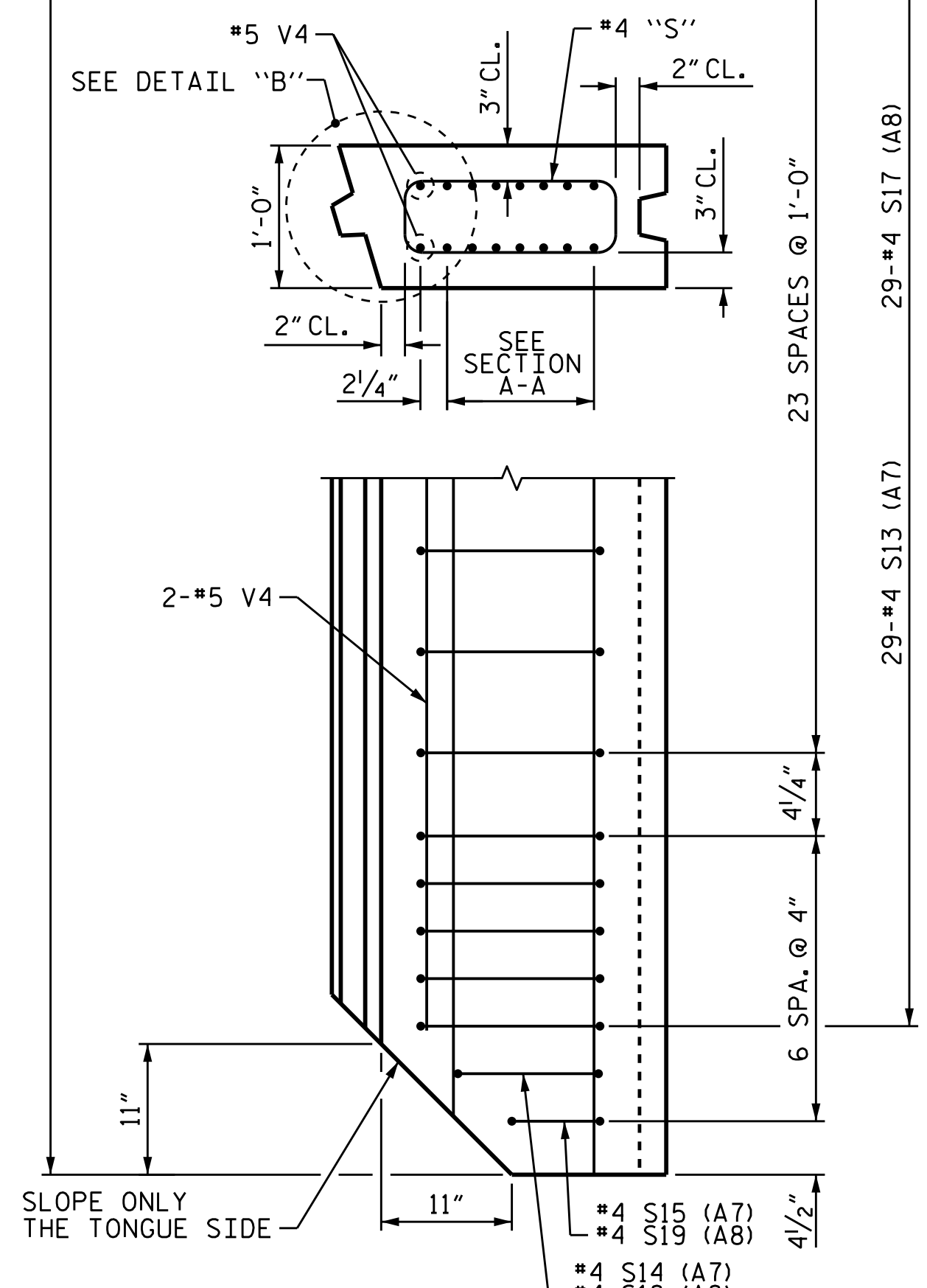
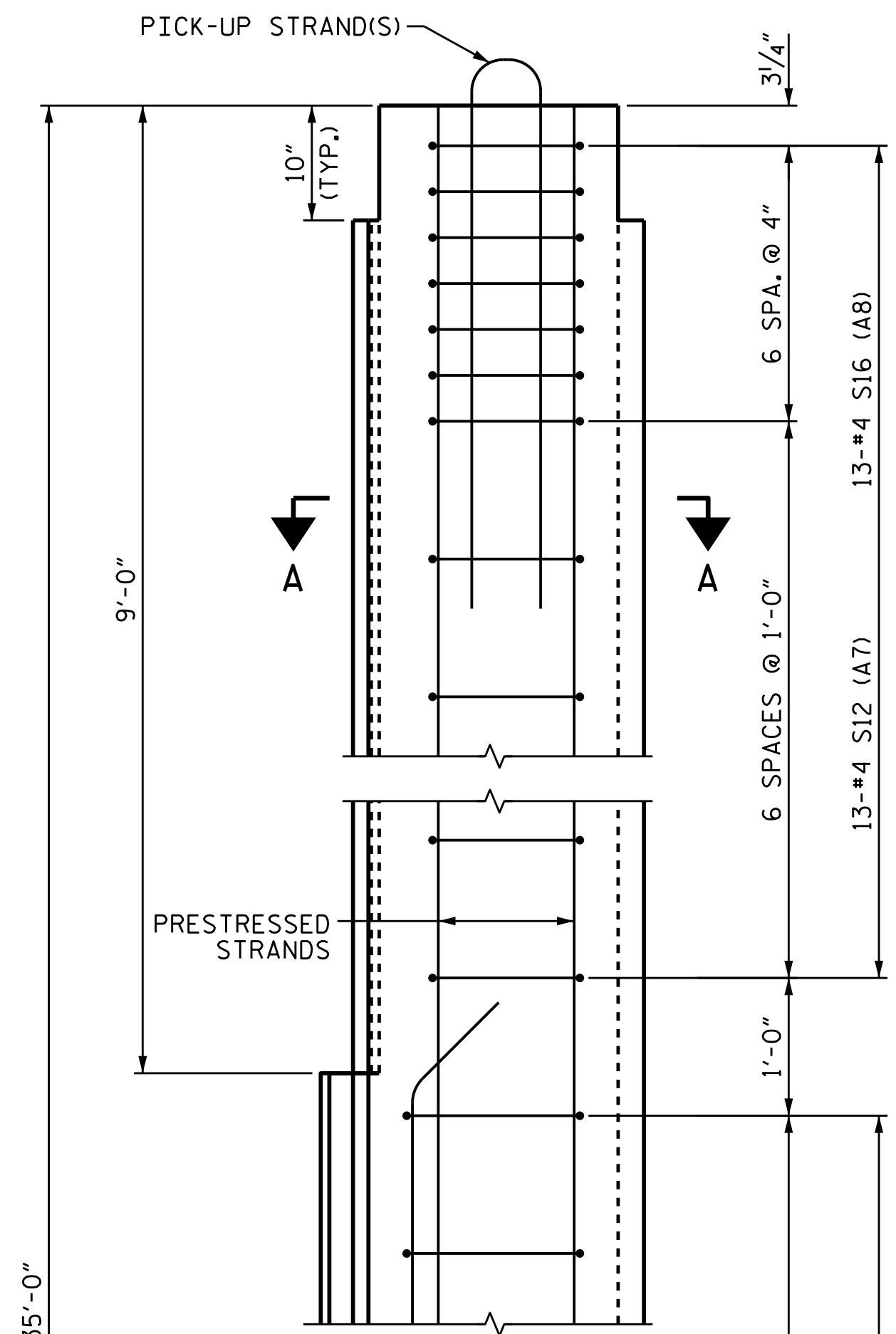


DocuSigned by:
61EAF7523945456
8/3/2015

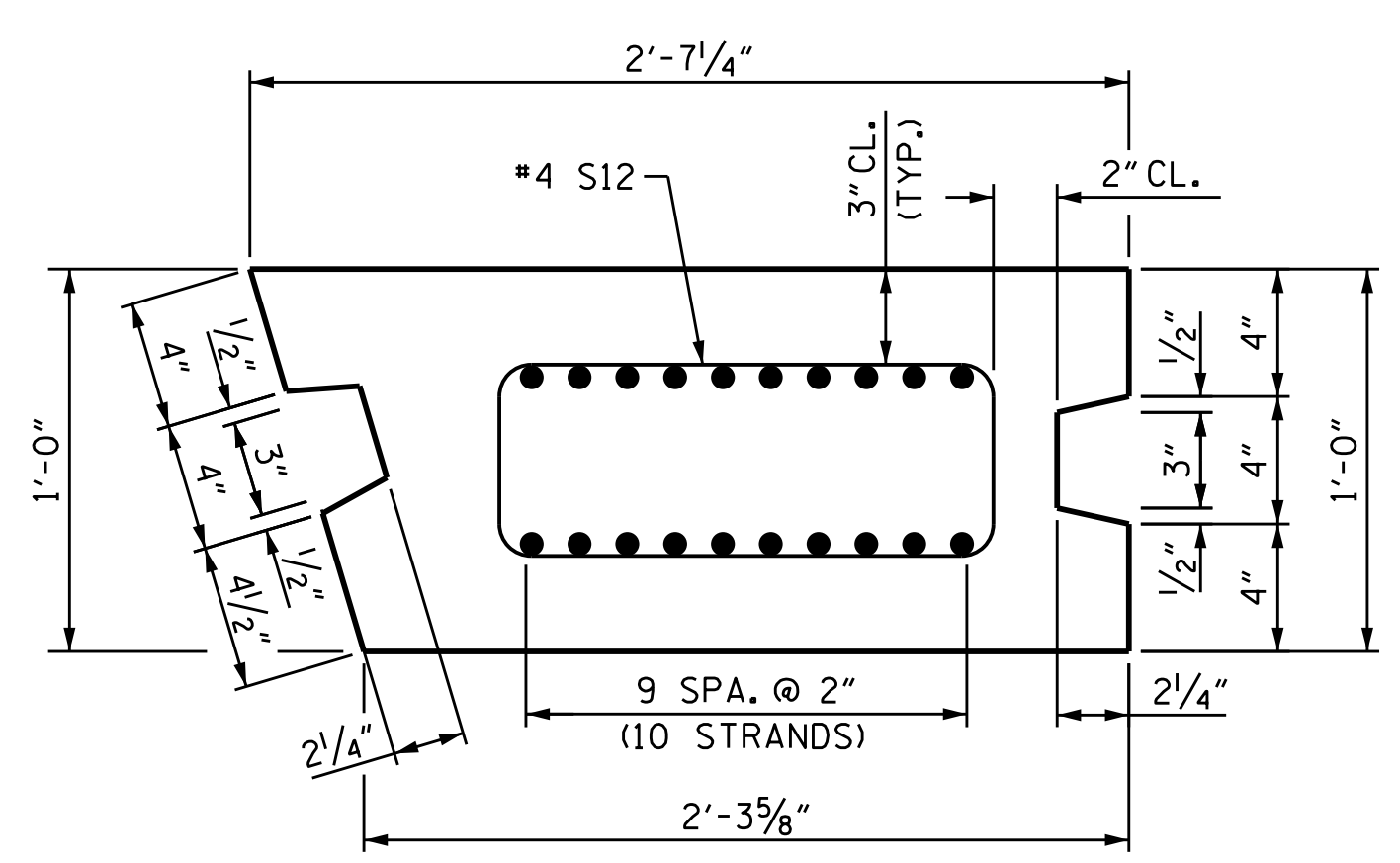
PROJECT NO. B-2500AB
 DARE COUNTY
 STATION: 3170+75.00 -L-

SHEET 8 OF 11

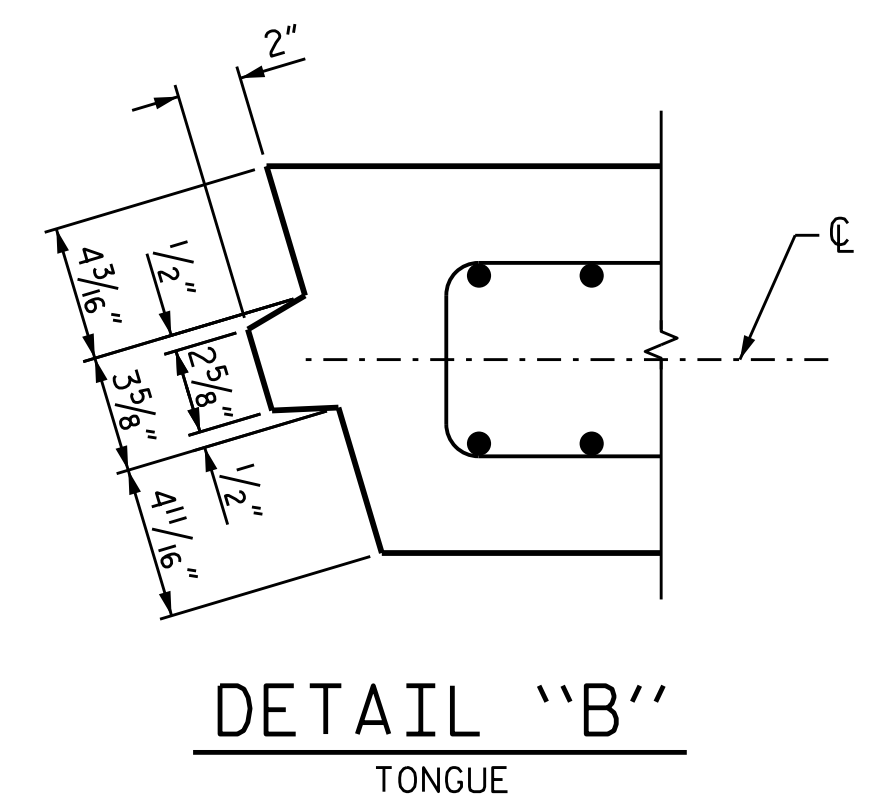
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-8
1			3			TOTAL SHEETS
2			4			13



PILE TYPES A7 & A8 (SPECIAL PILES)

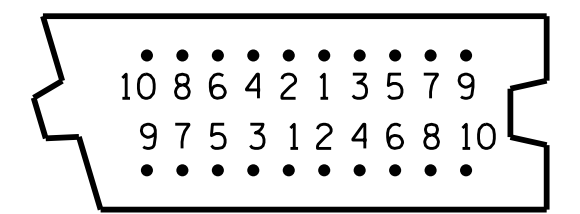


SECTION A-A
PILE DIMENSIONS AND GROOVES

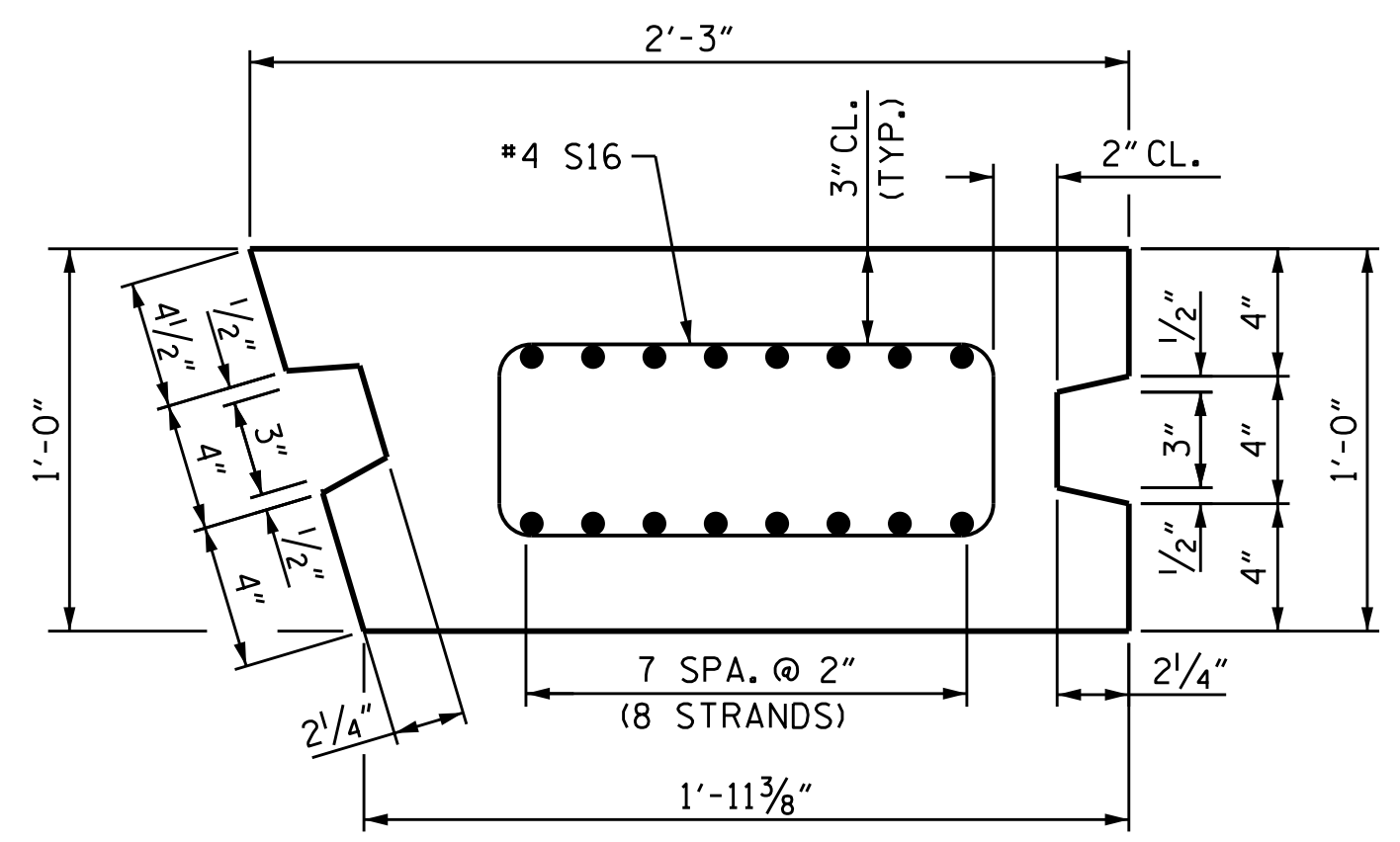


DETAIL "B"
TONGUE

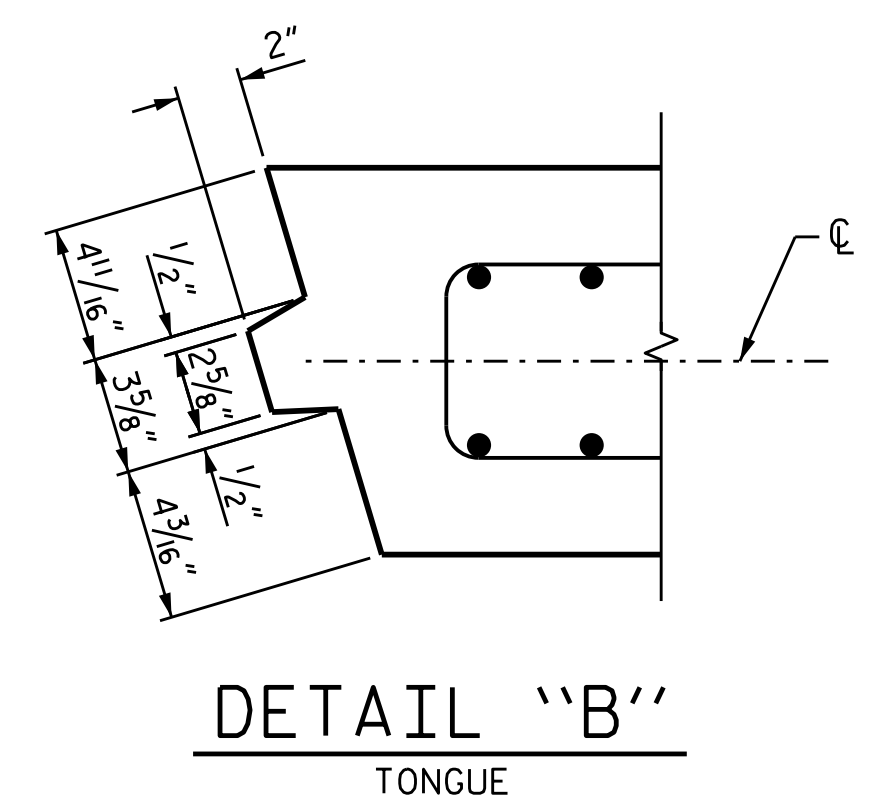
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950



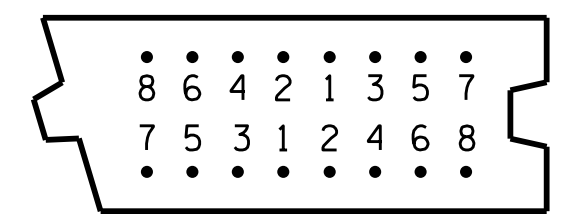
PATTERN FOR BURNING



SECTION A-A
PILE DIMENSIONS AND GROOVES



DETAIL "B"
TONGUE



PATTERN FOR BURNING

PILE TYPE A7 DETAILS

PILE TYPE A8 DETAILS

SEE CONCRETE SHEET PILE RETAINING WALL SHEET PILE DETAILS, SHEET 7 OF 11, FOR NOTES.

BILL OF MATERIAL

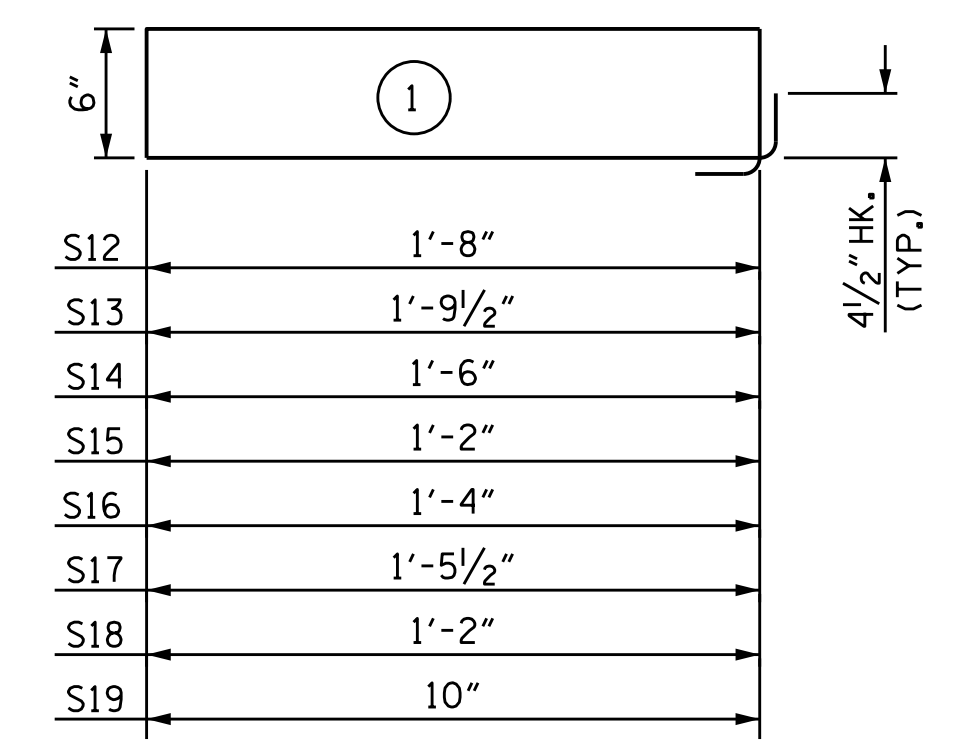
A7 (SPECIAL PILE)

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S12	13	#4	1	5'-1"	44
S13	29	#4	1	5'-4"	103
S14	1	#4	1	4'-9"	3
S15	1	#4	1	4'-1"	3
V4	2	#5	2	25'-10"	54

A8 (SPECIAL PILE)

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S16	13	#4	1	4'-5"	38
S17	29	#4	1	4'-8"	90
S18	1	#4	1	4'-1"	3
S19	1	#4	1	3'-5"	2
V4	2	#5	2	25'-10"	54

BAR TYPES



QUANTITIES FOR ONE PILE

PILE	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
A7 (SPECIAL PILE)	207	3.2	20
A8 (SPECIAL PILE)	187	2.7	16

PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

SHEET 9 OF 11

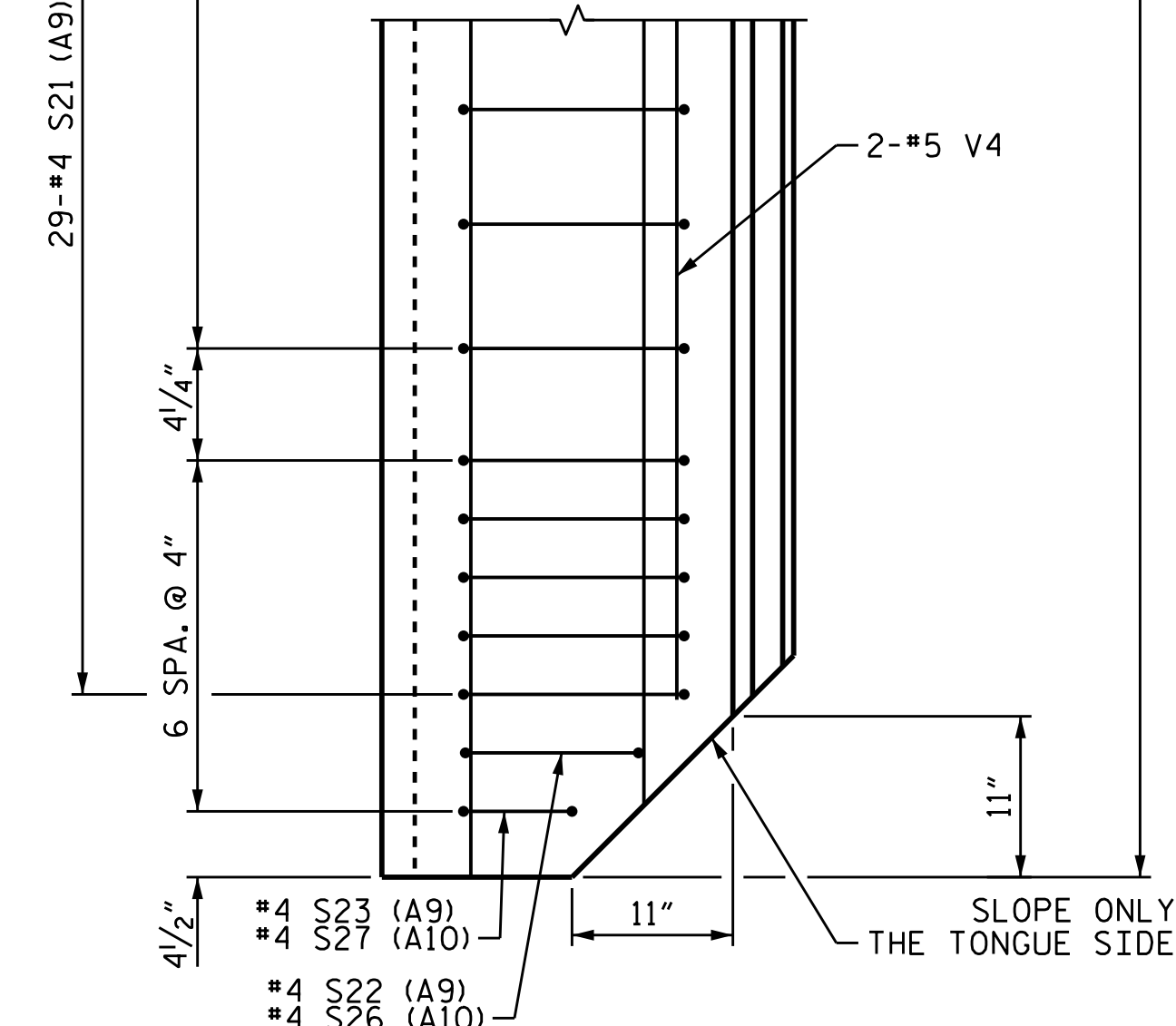
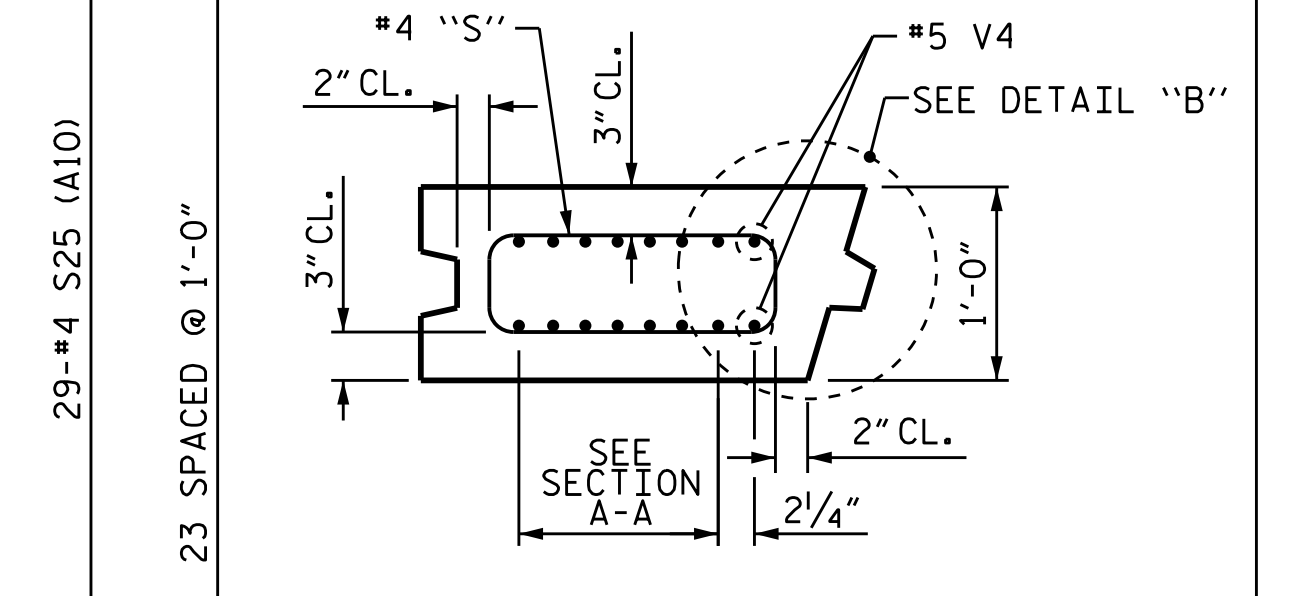
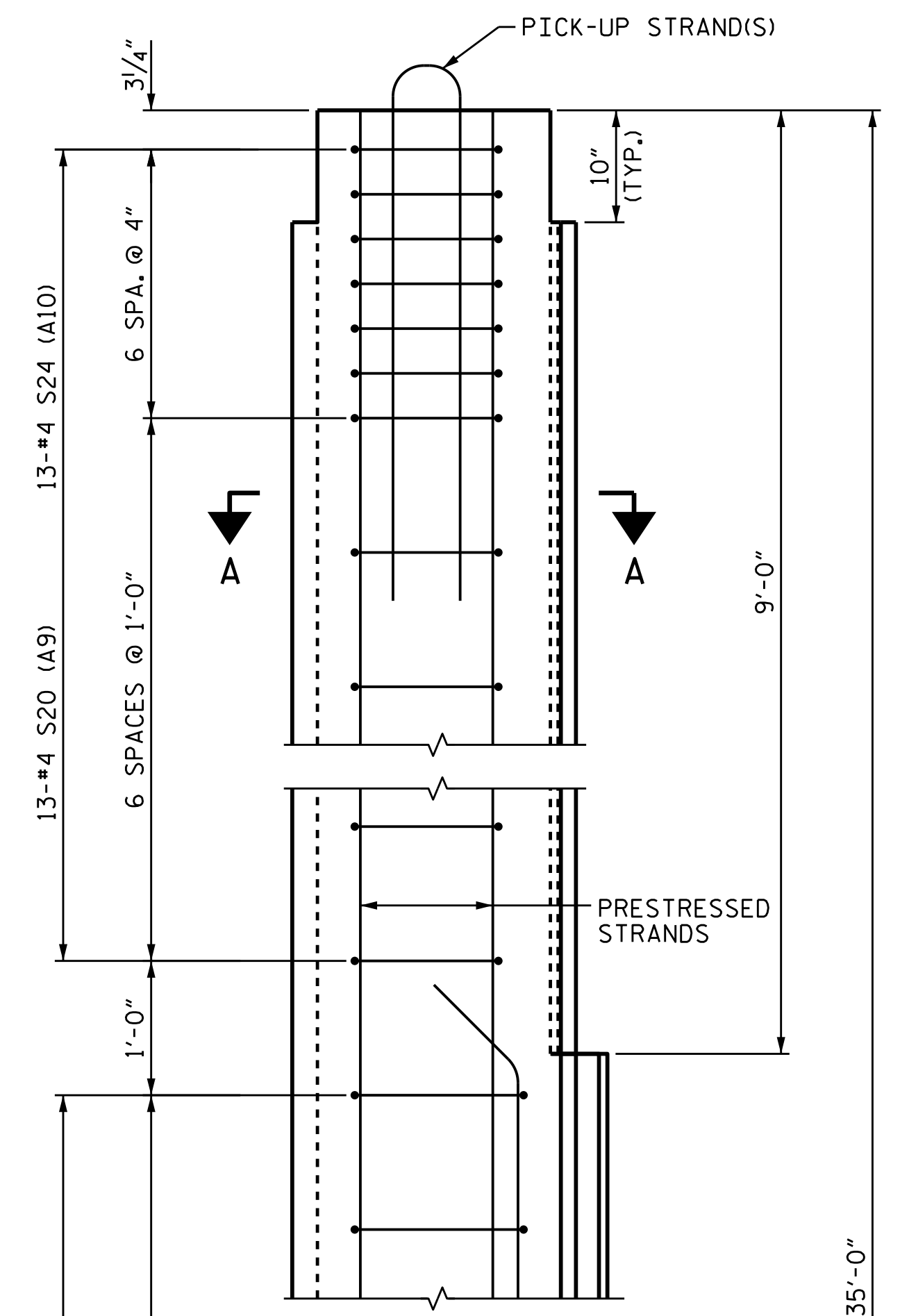


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CONCRETE SHEET PILE
RETAINING WALL
SHEET PILE DETAILS

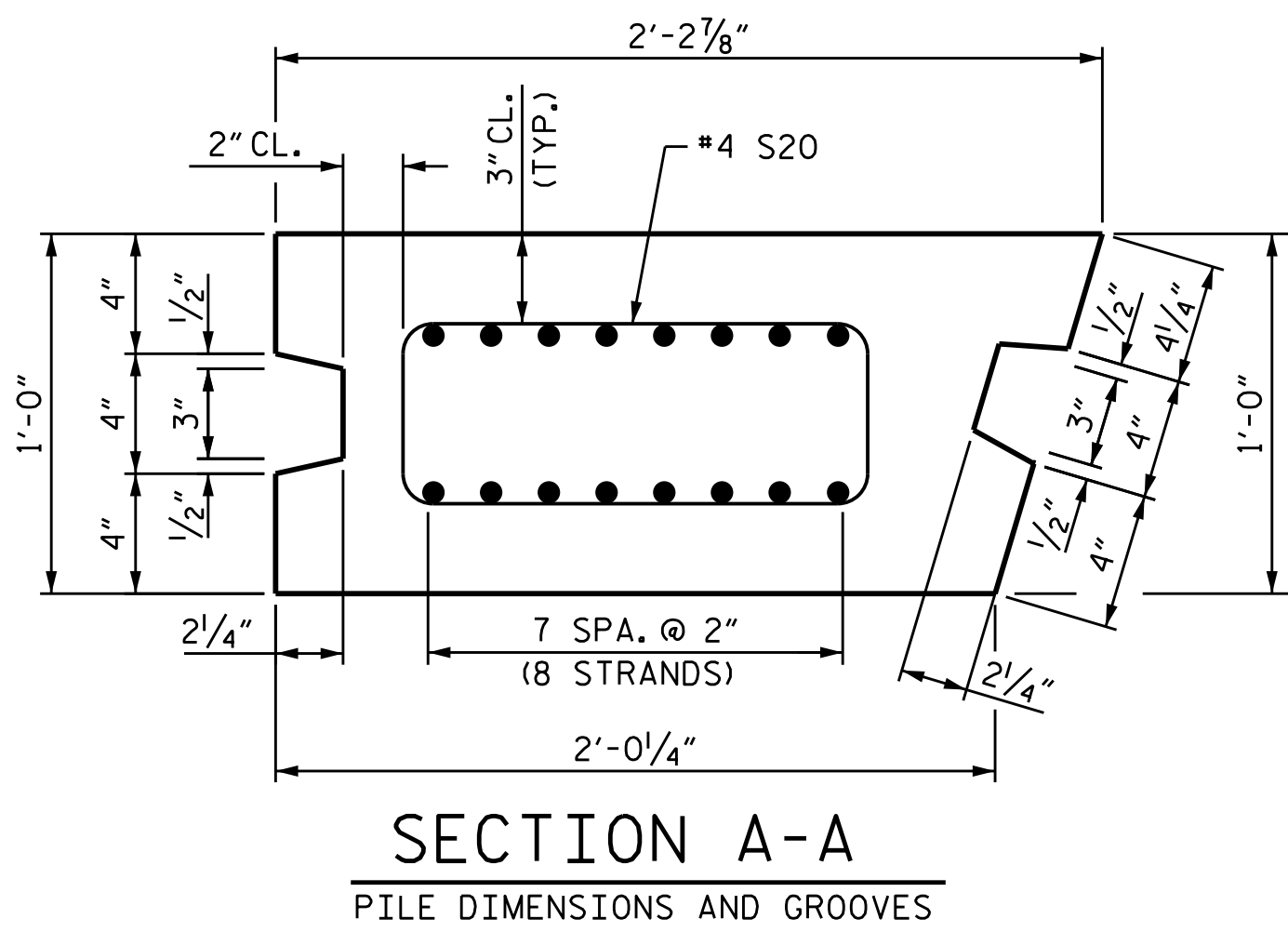
DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
CHECKED BY: M. A. ALLEN DATE: 6/15
DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15

DocuSigned by:
61EAF7523945456
8/3/2015

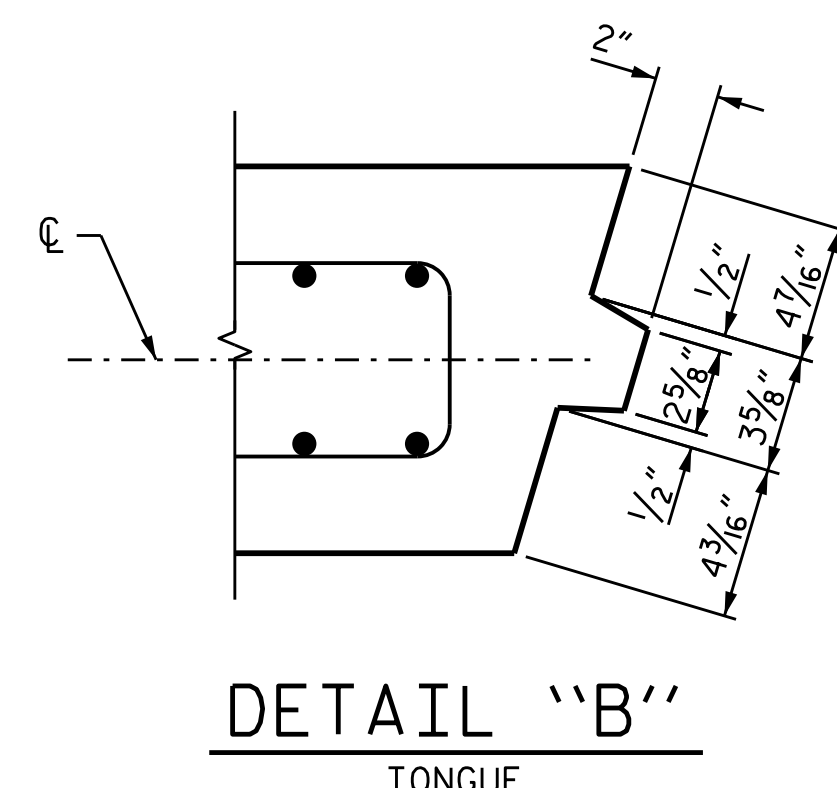
REVISIONS						SHEET NO. W-9 TOTAL SHEETS 13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



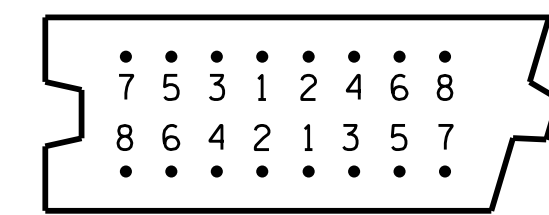
PILE TYPES A9 & A10 (SPECIAL PILES)



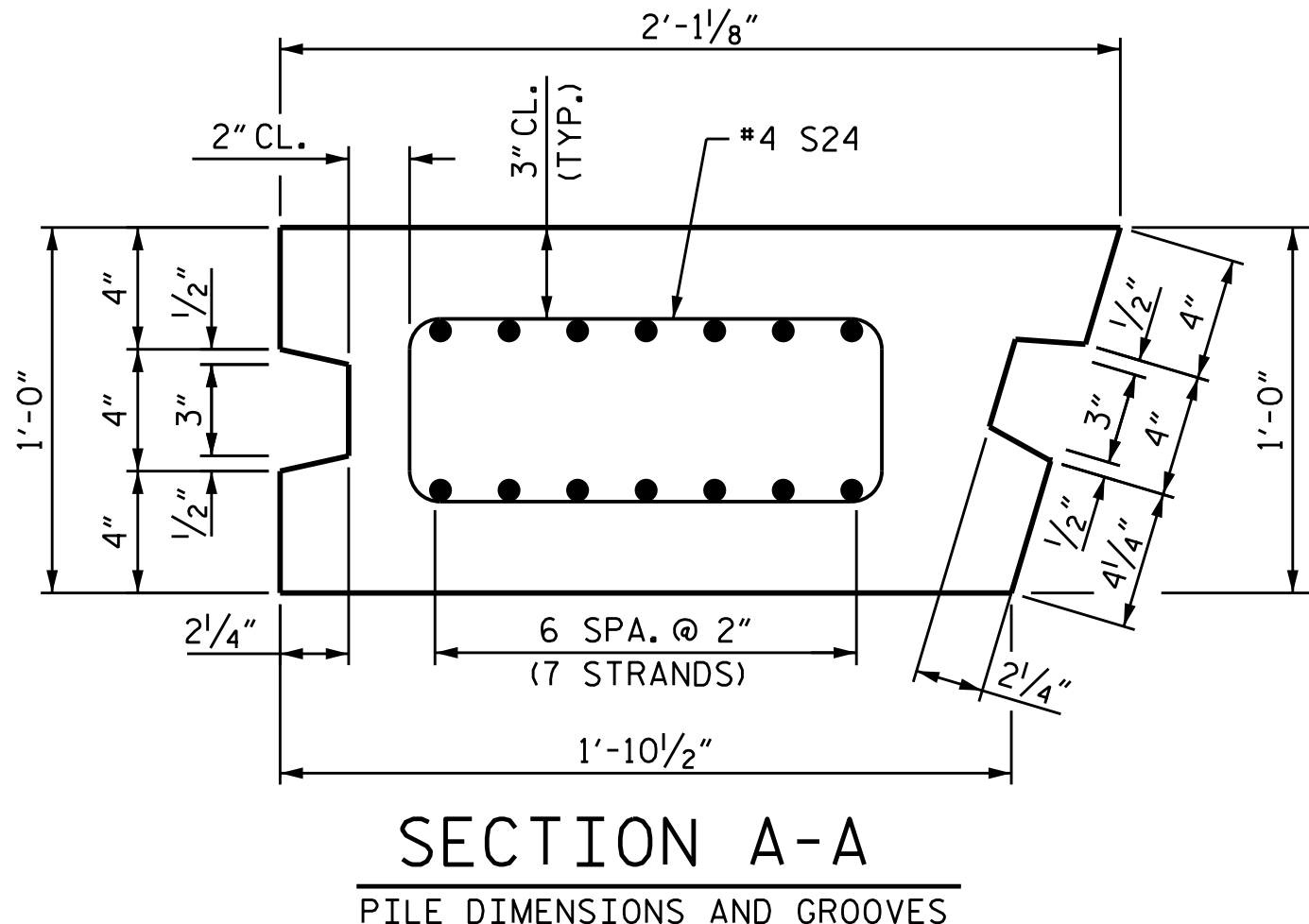
**SECTION A-A
PILE DIMENSIONS AND GROOVES**



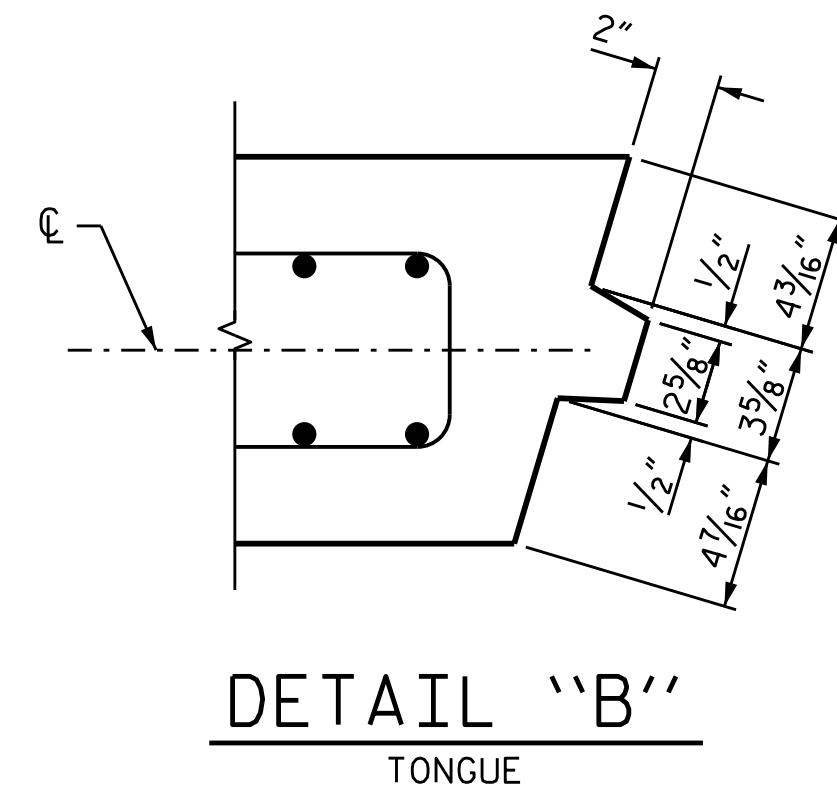
**DETAIL "B"
TONGUE**



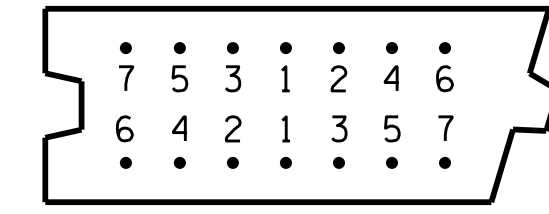
PATTERN FOR BURNING



**SECTION A-A
PILE DIMENSIONS AND GROOVES**



**DETAIL "B"
TONGUE**



PATTERN FOR BURNING

PILE TYPE A9 DETAILS

PILE TYPE A10 DETAILS

SEE CONCRETE SHEET PILE RETAINING WALL SHEET PILE DETAILS, SHEET 7 OF 11, FOR NOTES.

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

BILL OF MATERIAL					
A9 (SPECIAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S20	13	#4	1	4'-6"	39
S21	29	#4	1	4'-10"	94
S22	1	#4	1	4'-1"	3
S23	1	#4	1	3'-5"	2
V4	2	#5	2	25'-10"	54

A10 (SPECIAL PILE)					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S24	13	#4	1	4'-3"	37
S25	29	#4	1	4'-7"	89
S26	1	#4	1	3'-9"	3
S27	1	#4	1	3'-1"	2
V4	2	#5	2	25'-10"	54

BAR TYPES	
①	6"
S20	1'-4 1/2"
S21	1'-6 1/2"
S22	1'-2"
S23	10"
S24	1'-3"
S25	1'-5"
S26	1'-0"
S27	8"
②	24'-10" x 8 1/2" x 1'-0"

ALL BAR DIMENSIONING ARE OUT-TO-OUT

QUANTITIES FOR ONE PILE			
PILE	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
A9 (SPECIAL PILE)	192	2.8	16
A10 (SPECIAL PILE)	185	2.6	14

PROJECT NO. B-2500AB
DARE COUNTY
 STATION: 3170+75.00 -L-

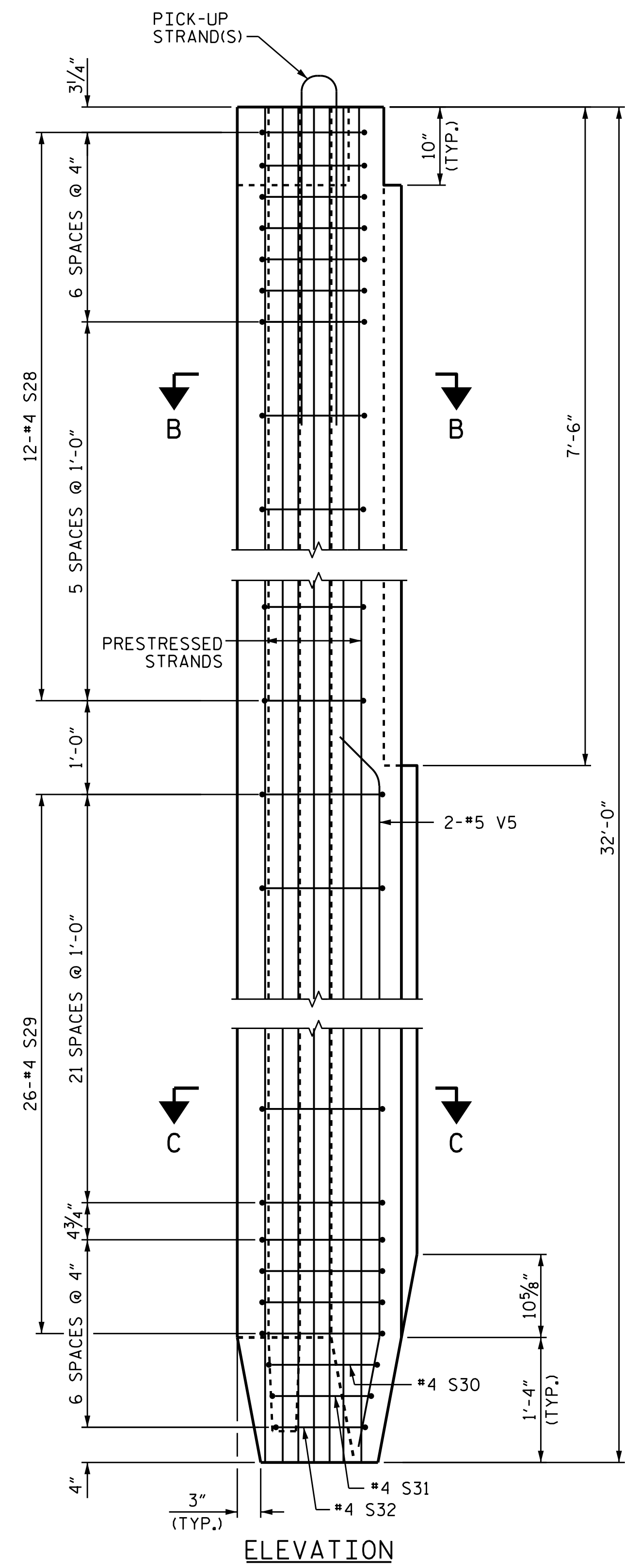
SHEET 10 OF 11



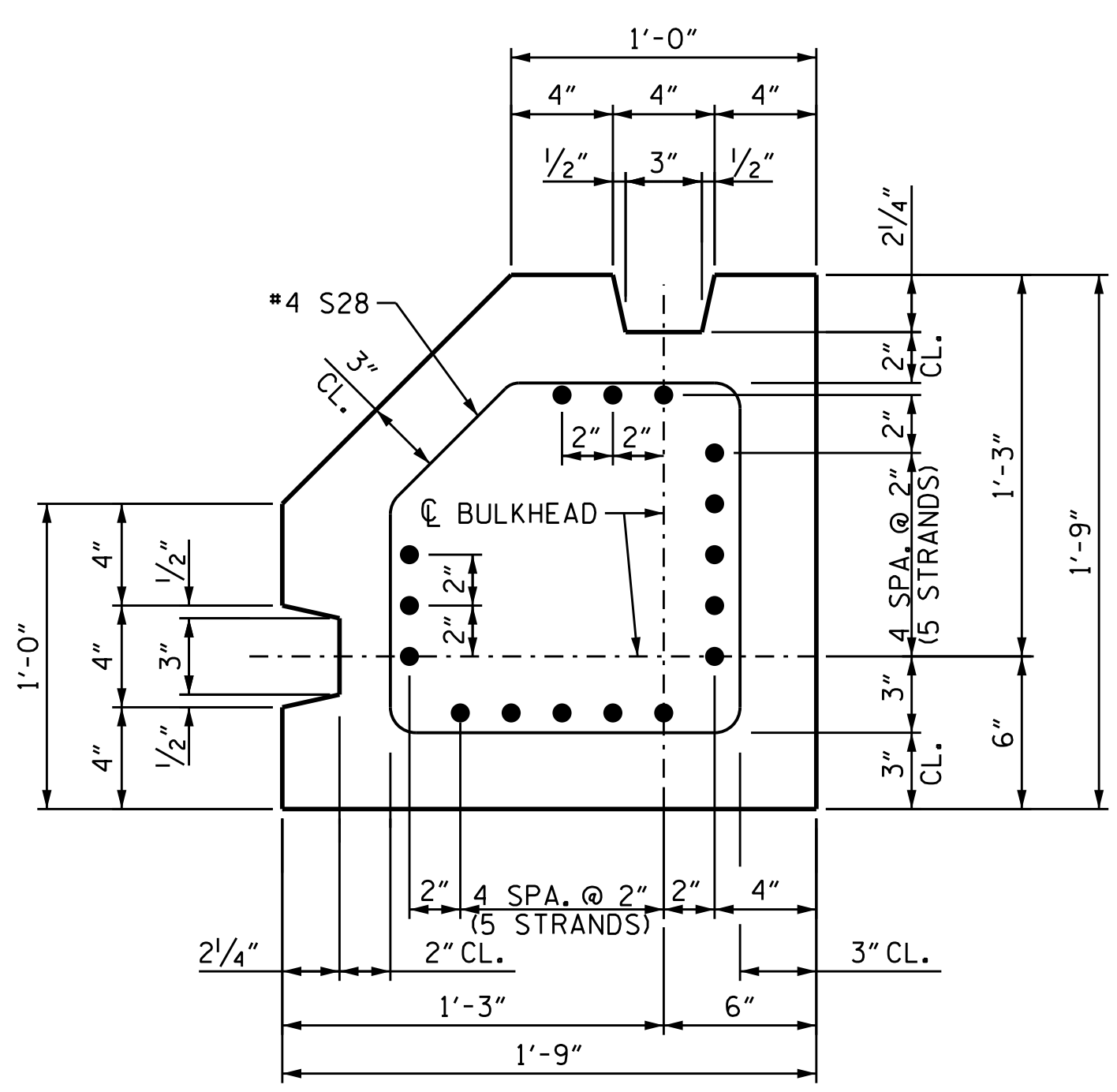
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**CONCRETE SHEET PILE
 RETAINING WALL
 SHEET PILE DETAILS**

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

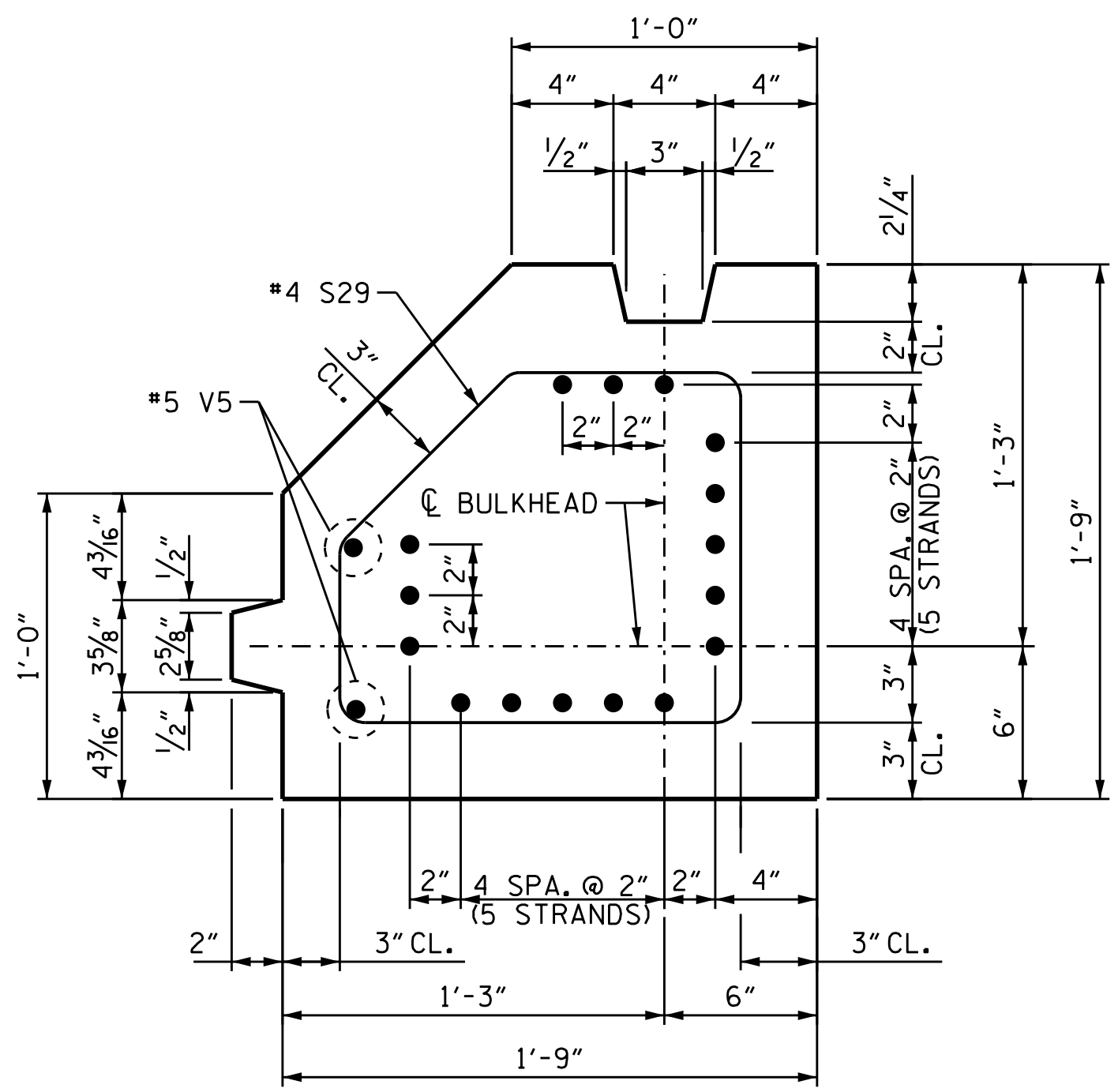
DRAWN BY: T. M. GARRISON, P.E. DATE: 6/15
 CHECKED BY: M. A. ALLEN DATE: 6/15
 DESIGN ENGINEER OF RECORD: T. M. GARRISON, P.E. DATE: 6/15



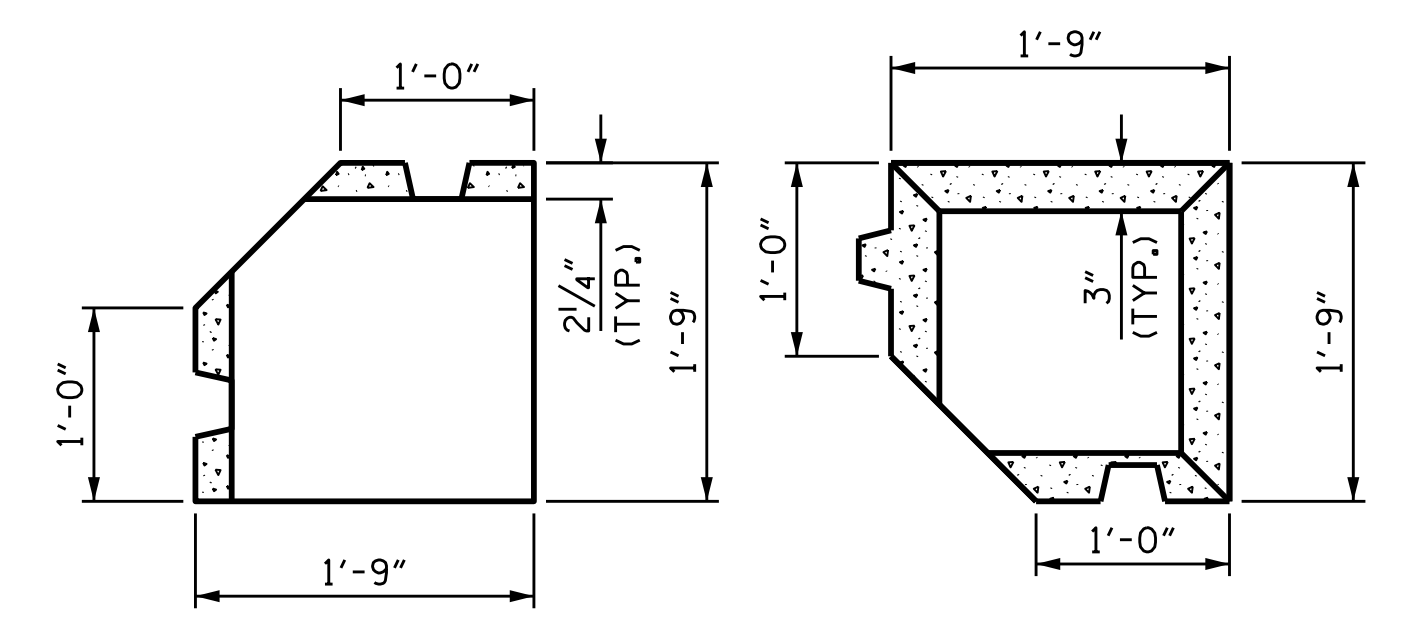
PILE TYPES C1 & C2 (CORNER PILES)
(PILE TYPE C2 SHOWN, PILE TYPE C1 SIM.)



SECTION B-B



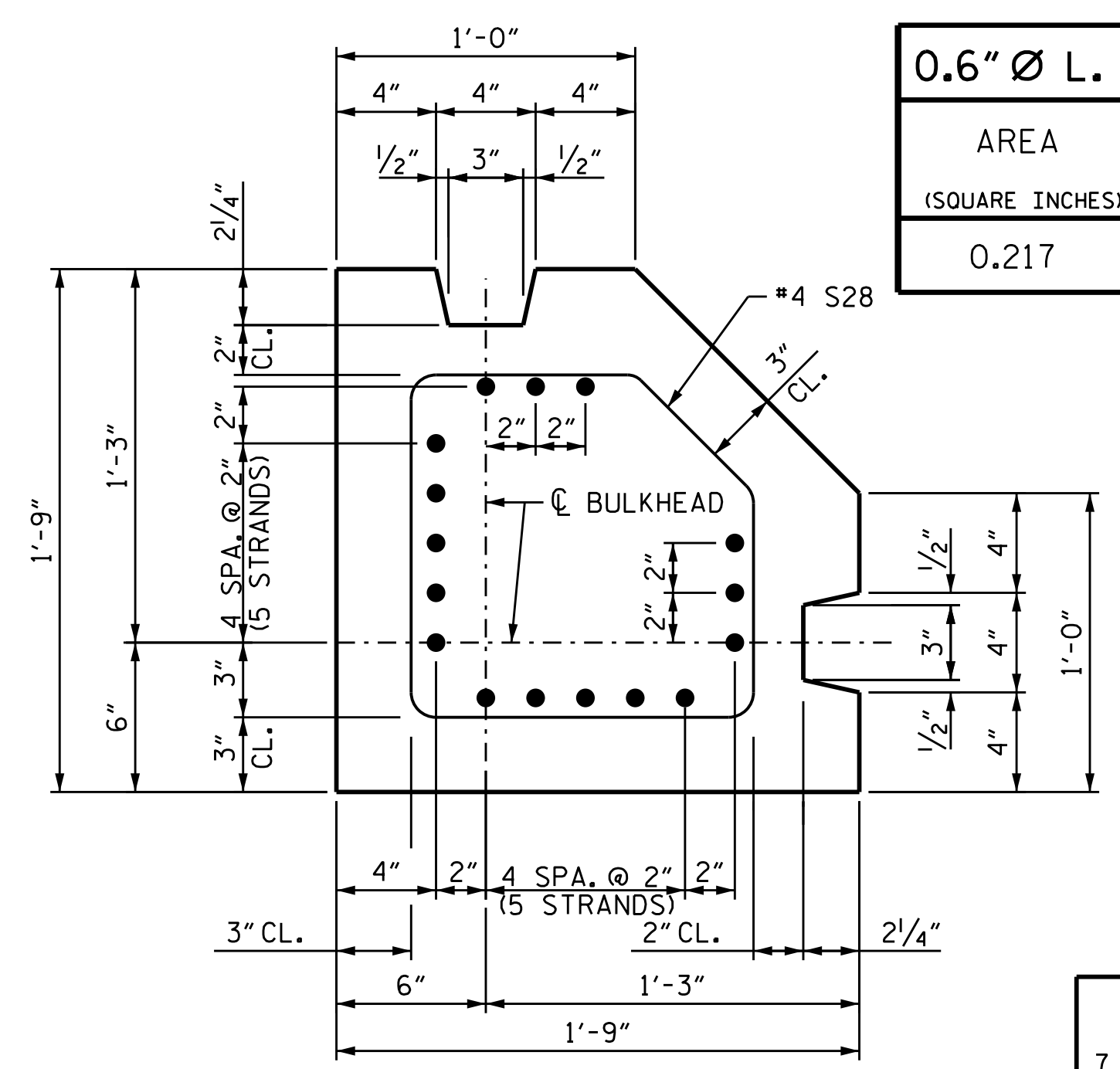
SECTION B-B



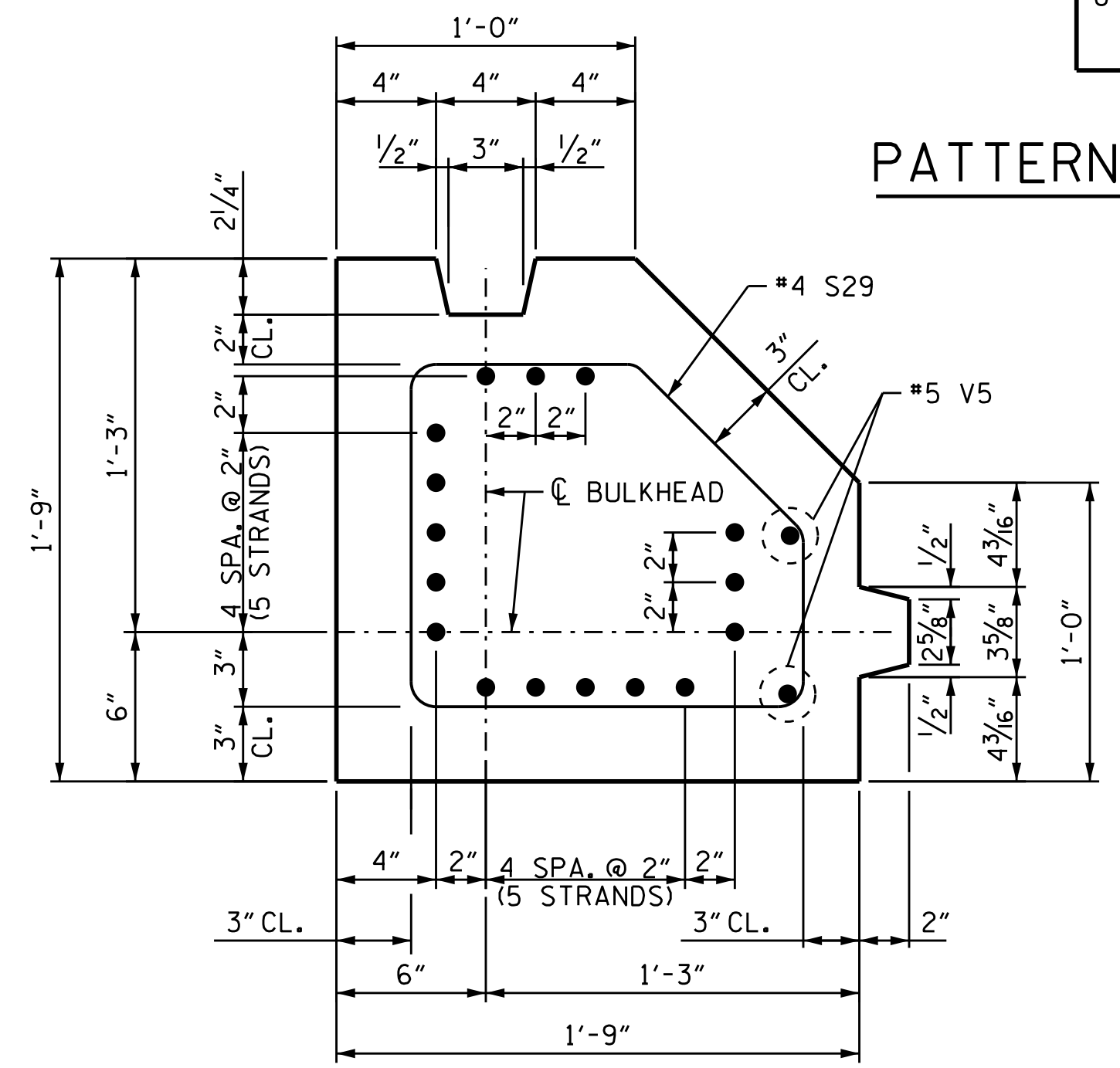
SECTION C-C



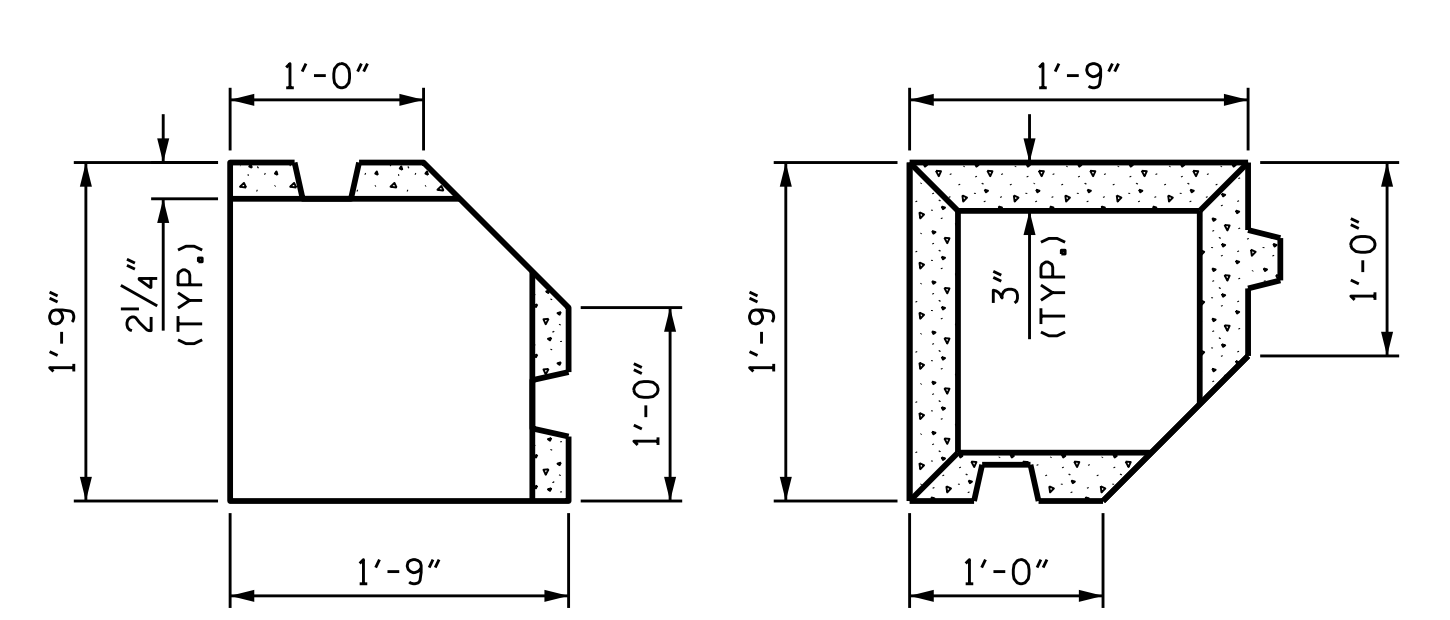
C1 CORNER PILES
(2 REQ'D)



SECTION B-B



SECTION B-B

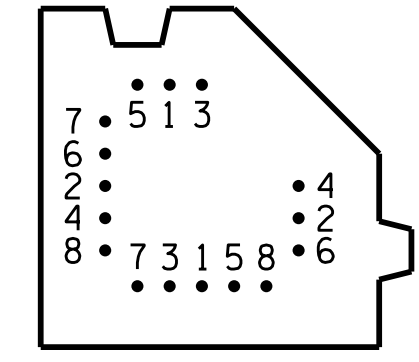


SECTION C-C



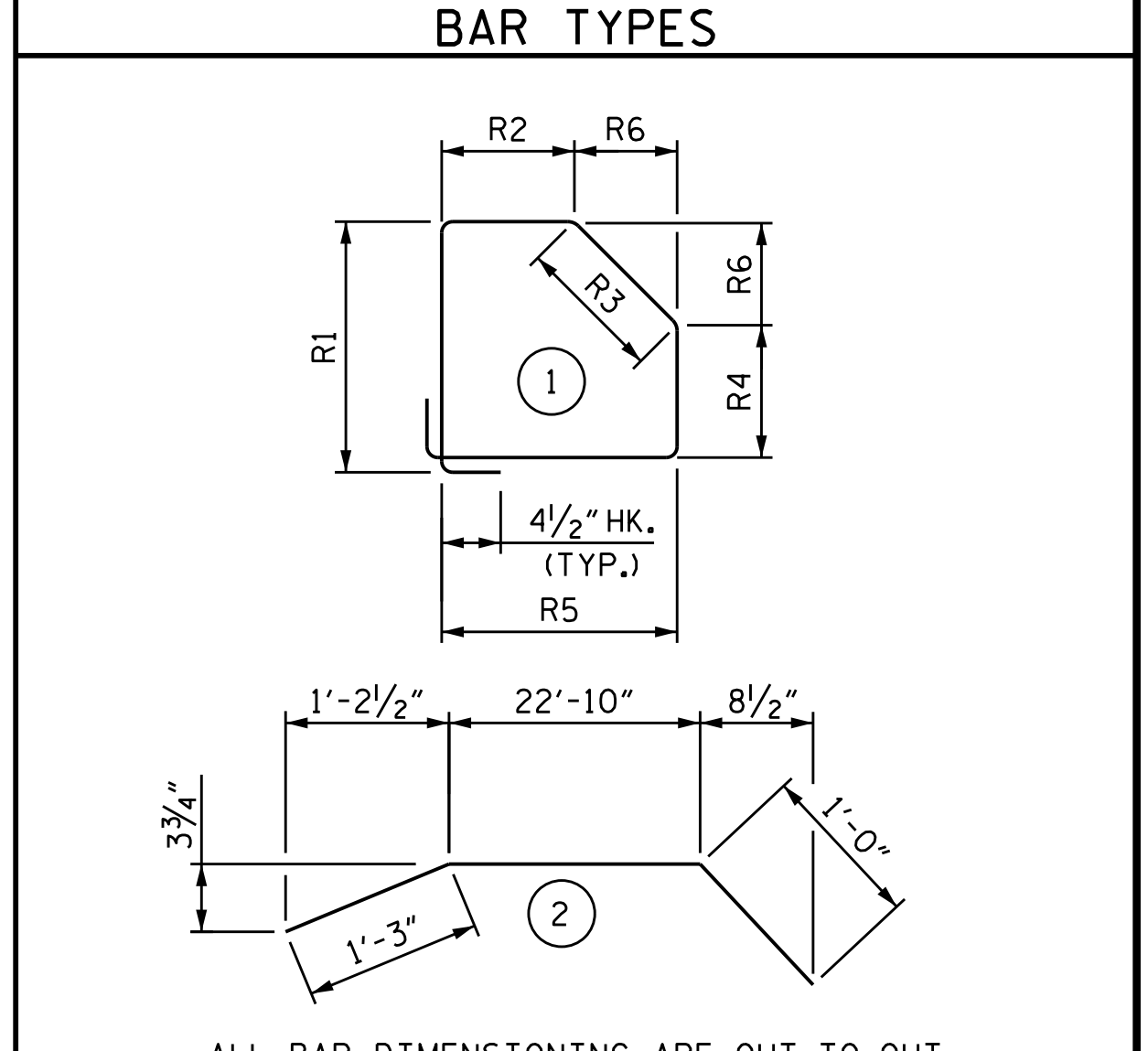
C2 CORNER PILES
(2 REQ'D)

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950



PATTERN FOR BURNING

BILL OF MATERIAL ONE PILE					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S28	12	#4	1	5'-1"	41
S29	26	#4	1	5'-3"	91
S30	1	#4	1	4'-9"	3
S31	1	#4	1	4'-5"	3
S32	1	#4	1	4'-1"	3
V5	2	#5	2	25'-1"	52



ALL BAR DIMENSIONING ARE OUT-TO-OUT

CORNER PILE BAR TYPE 1 DIMENSIONS						
BAR	R1	R2	R3	R4	R5	R6
S28	1'-1 3/4"	8 3/4"	7"	8 3/4"	1'-1 3/4"	5"
S29	1'-1 3/4"	9"	8 1/2"	7 3/4"	1'-3"	6"
S30	1'-0 1/2"	7 1/2"	7 1/2"	7 1/4"	1'-0 3/4"	5 1/4"
S31	1'-0 1/4"	7 1/4"	5 1/4"	8 1/2"	11"	3 3/4"
S32	10 1/4"	7 3/4"	3 1/2"	7 3/4"	10 1/4"	2 1/2"

QUANTITIES FOR ONE PILE			
PILE	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
C1 (CORNER PILE)	193	3.3	16
C2 (CORNER PILE)	193	3.3	16

SEE CONCRETE SHEET PILE RETAINING WALL SHEET PILE DETAILS, SHEET 7 OF 11, FOR NOTES.



PROJECT NO. B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-

SHEET 11 OF 11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-11
1			3			TOTAL SHEETS
2			4			13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE SHEET PILE RETAINING WALL SHEET PILE DETAILS

DRAWN BY: M.A. ALLEN DATE: 6/15
CHECKED BY: T.M. GARRISON, P.E. DATE: 6/15
DESIGN ENGINEER OF RECORD: T.M. GARRISON, P.E. DATE: 6/15

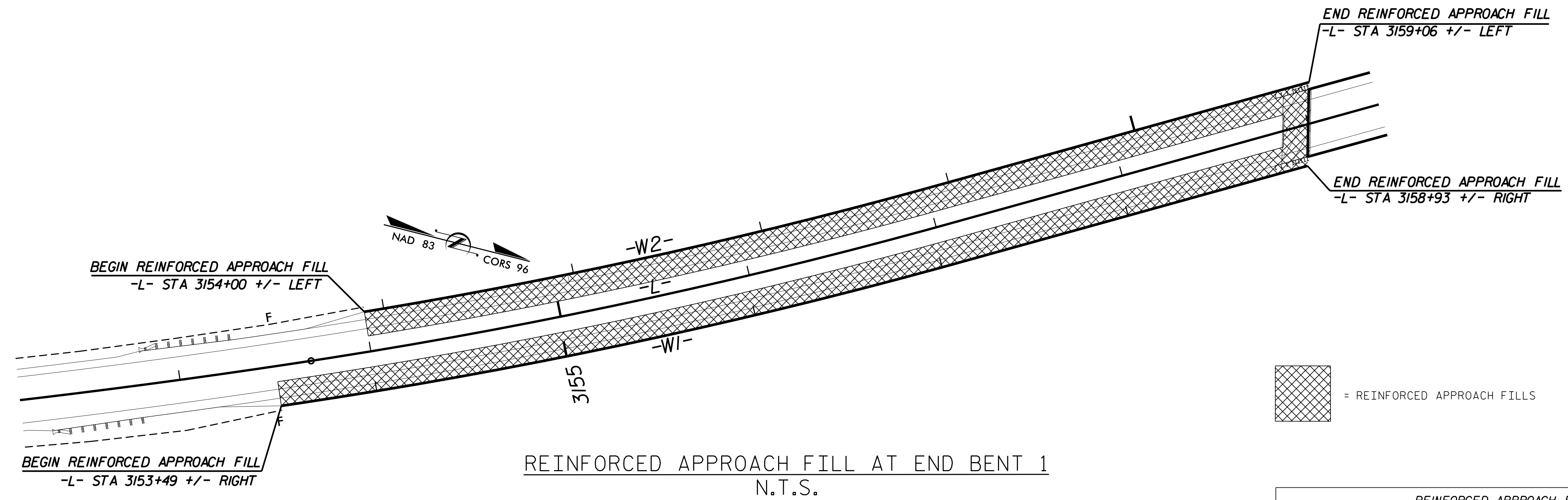
GEOTECHNICAL ENGINEER

ENGINEER

SEAL 032672

Michael V. Vignette 7/15/2015

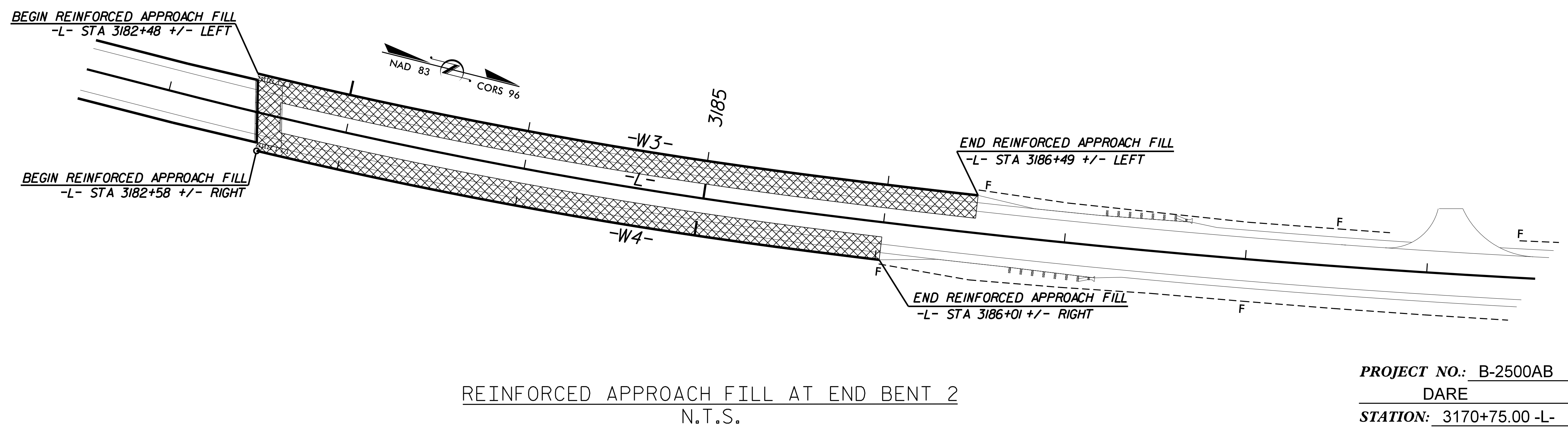
SIGNATURE DATE SIGNATURE DATE



 = REINFORCED APPROACH FILLS

REINFORCED APPROACH FILLS ESTIMATED QUANTITIES

"REINFORCED APPROACH FILLS" AT EB1.....8,335 SQ.FT.
 "REINFORCED APPROACH FILLS" AT EB2.....5,590 SQ.FT.
 TOTAL "REINFORCED APPROACH FILLS".....13,925 SQ.FT.



PROJECT NO.: B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-
 SHEET 1 OF 2

PREPARED BY: MDV DATE: 7/15
 REVIEWED BY: CAK DATE: 7/15

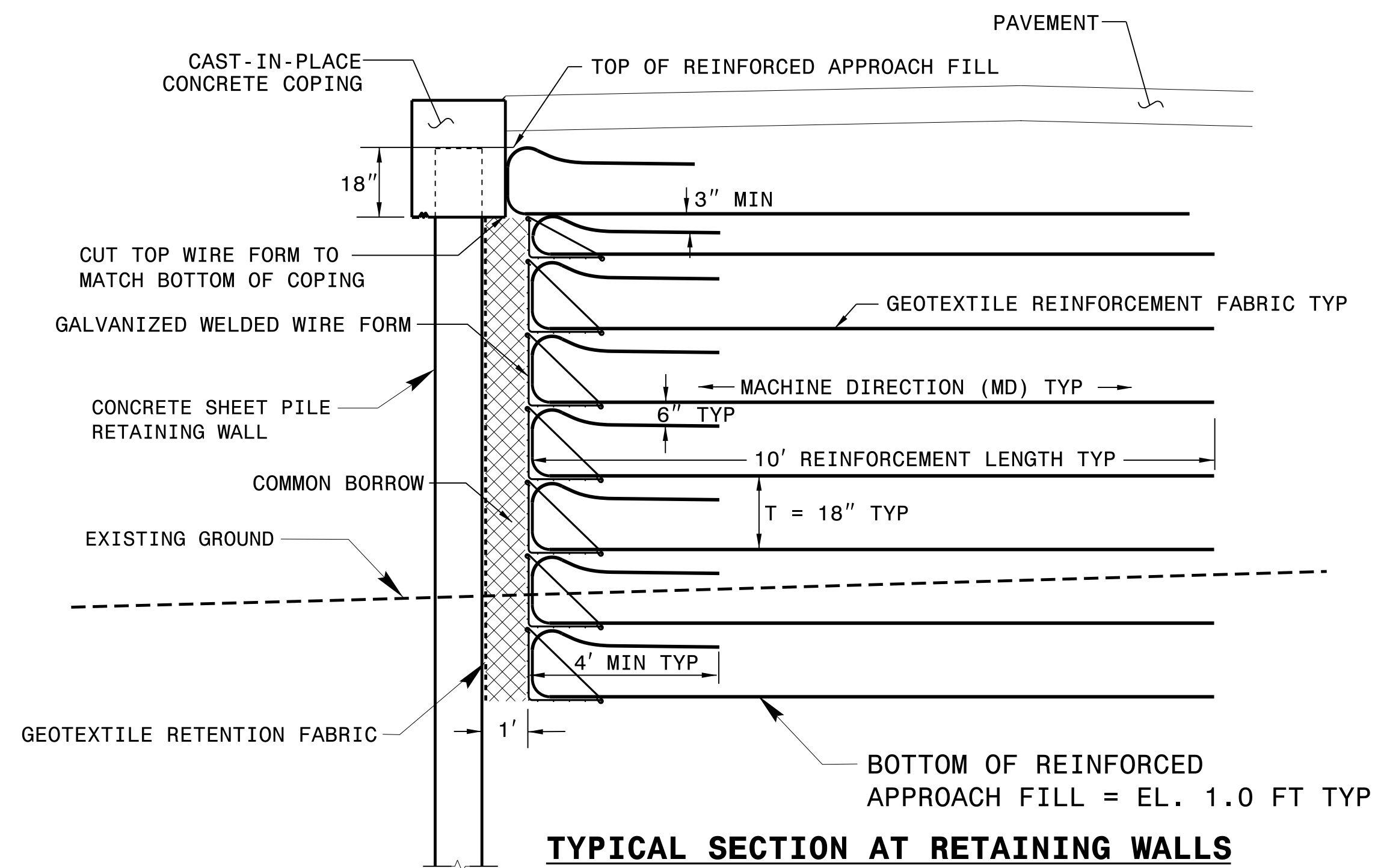
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

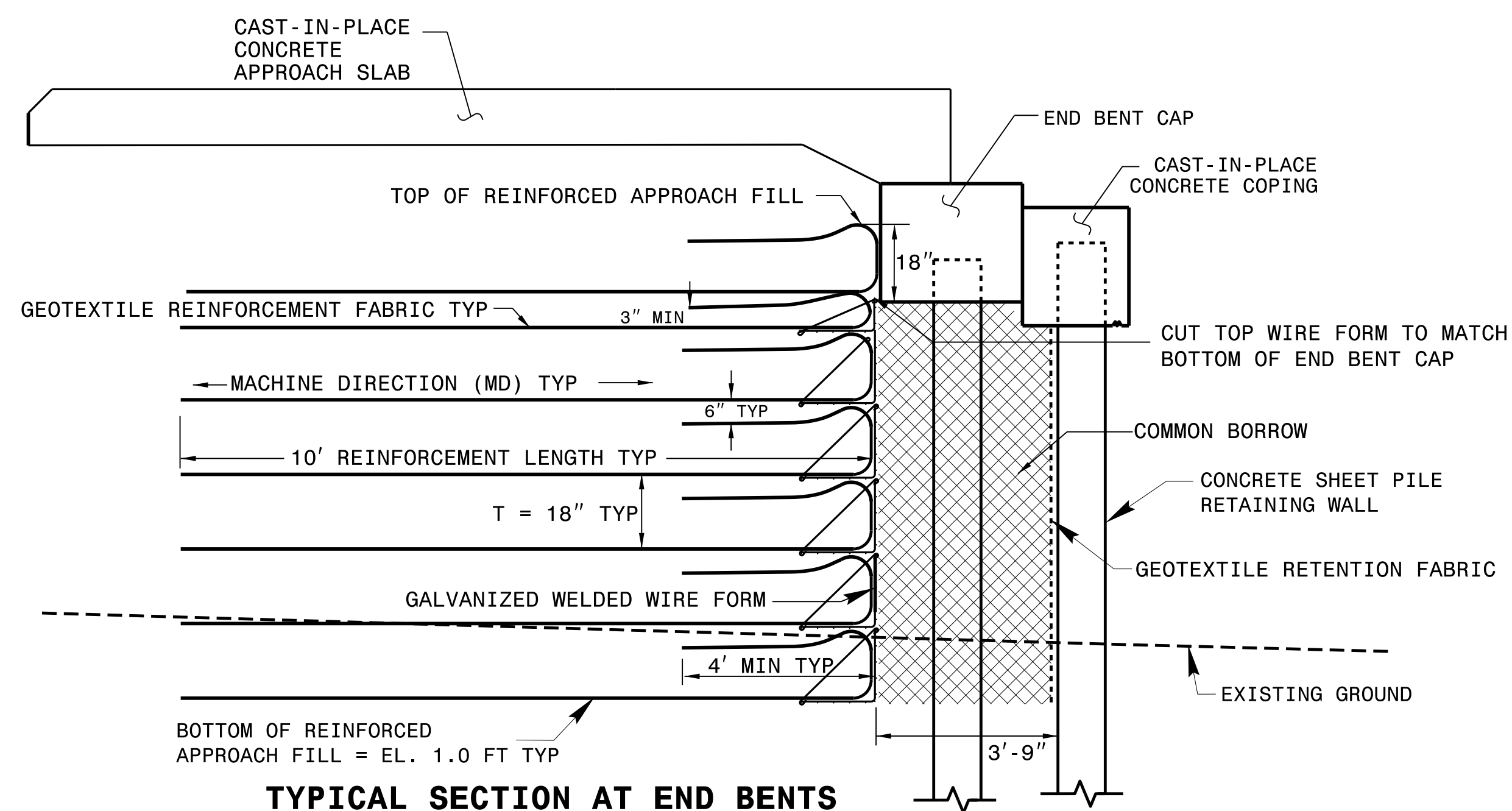
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REINFORCED APPROACH FILLS

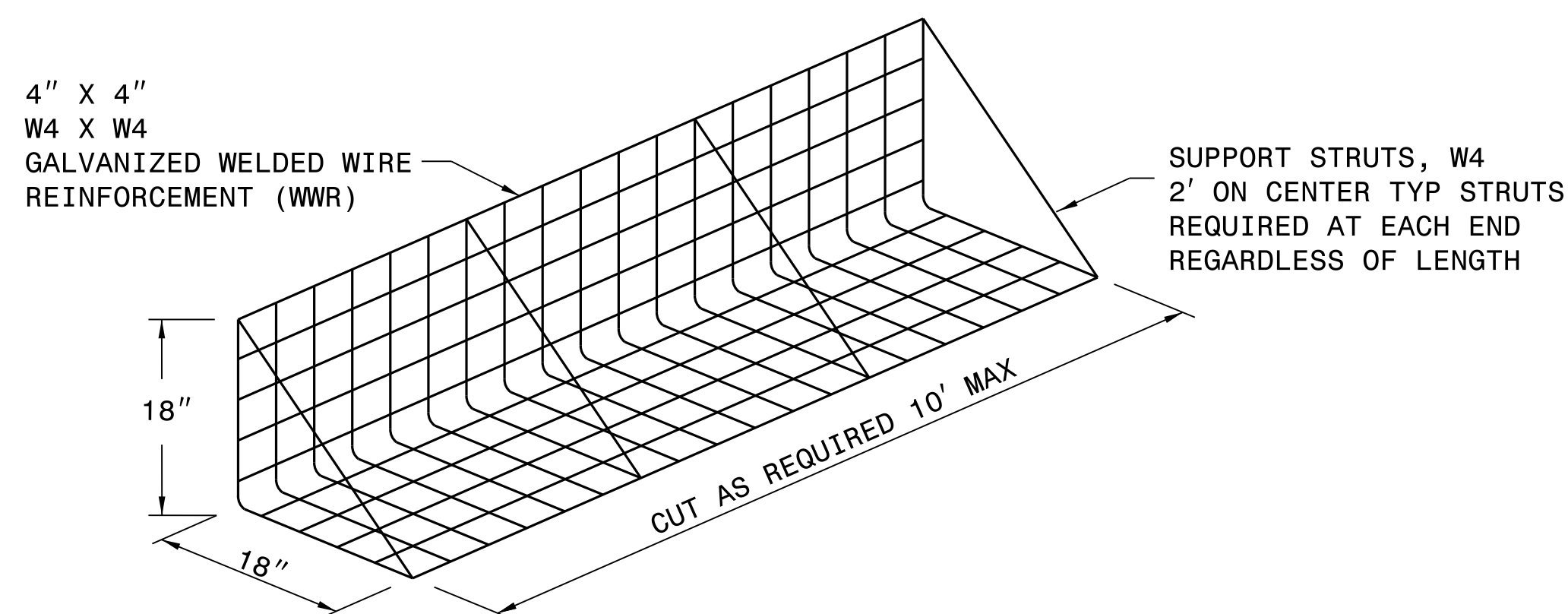
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-12
1			3			TOTAL SHEETS
2			4			13



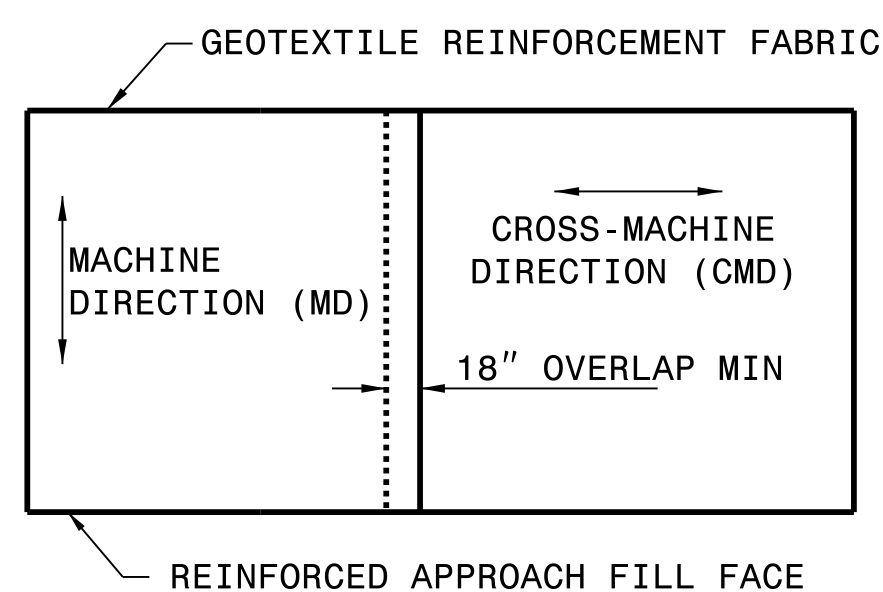
TYPICAL SECTION AT RETAINING WALLS



TYPICAL SECTION AT END BENTS



WELDED WIRE FORM



PLAN VIEW OF REINFORCEMENT GEOTEXTILE OVERLAP

NOTES

- FOR REINFORCED APPROACH FILLS, SEE REINFORCED APPROACH FILLS SPECIAL PROVISION.
- CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF REINFORCED APPROACH FILLS.
- COLLECT AND DIRECT RUNOFF AWAY FROM REINFORCED APPROACH BACKFILL.
- INSTALL CONCRETE SHEET PILES AND END BENT PILES PRIOR TO CONSTRUCTING REINFORCED APPROACH FILLS.
- EXCAVATE AS NECESSARY TO CONSTRUCT BOTTOM OF REINFORCED APPROACH FILLS TO THE ELEVATION SHOWN ON THE PLANS.
- INSTALL GEOTEXTILE RETENTION FABRIC UP BACK FACE OF CONCRETE SHEET PILES AS SHOWN ON TYPICAL SECTION. SUBMIT CONSTRUCTION ADHESIVE TO THE ENGINEER FOR REVIEW AND APPROVAL TO HOLD GEOTEXTILE RETENTION FABRIC IN PLACE UNTIL SPACE BETWEEN APPROACH FILL FACING AND CONCRETE SHEET PILE RETAINING WALLS HAS BEEN BACKFILLED.
- OVERLAP GEOTEXTILE RETENTION FABRIC A MINIMUM OF 18".
- GEOTEXTILE RETENTION FABRIC SHALL MEET THE REQUIREMENTS OF TYPE 1 GEOTEXTILE AS SHOWN IN TABLE 1056-1 OF THE STANDARD SPECIFICATIONS.
- PLACE GEOTEXTILE REINFORCEMENT FABRIC AT LOCATIONS AND ELEVATIONS SHOWN ON THIS PLAN SHEET AND IN SLIGHT TENSION FREE OF KINKS, FOLDS, WRINKLES OR CREASES.
- ERECT WELDED WIRE FORMS AS SHOWN ON THIS PLAN SHEET.
- STAGGER VERTICAL JOINTS OF WELDED WIRE FORMS TO CREATE A RUNNING BOND.
- PLACE WELDED WIRE FORMS AS NEAR TO VERTICAL AS POSSIBLE WITH NO NEGATIVE BATTER. CONSTRUCT REINFORCED APPROACH FILLS WITH A MAXIMUM VERTICAL AND HORIZONTAL TOLERANCE OF 3" WHEN MEASURED WITH A 10'-0" STRAIGHT EDGE AND AN OVERALL VERTICAL PLUMBNESS (BATTER) AND HORIZONTAL ALIGNMENT OF LESS THAN 6".
- DO NOT SPLICE OR OVERLAP GEOTEXTILE REINFORCEMENT FABRIC IN THE MACHINE DIRECTION (MD), i.e., PARALLEL TO THE REINFORCED APPROACH FILL FACE. OVERLAPS ONLY ARE ALLOWED IN THE CROSS-MACHINE DIRECTION (CMD).
- PLACE BACKFILL WITHIN REINFORCED APPROACH FILLS IN 8" TO 10" THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-3(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" OF THE REINFORCED APPROACH FILL FACE.
- WRAP GEOTEXTILE REINFORCEMENT FABRIC AT VERTICAL CORNERS AS DIRECTED BY THE ENGINEER.
- DO NOT DAMAGE GEOTEXTILE REINFORCEMENT FABRIC OR WELDED WIRE FORMS WHEN PLACING AND COMPACTING BACKFILL. DO NOT OPERATE HEAVY EQUIPMENT ON GEOTEXTILE REINFORCEMENT FABRIC UNTIL IT IS COVERED WITH AT LEAST 8" OF BACKFILL. DO NOT USE SHEEPSFOOT, GRID ROLLERS OR OTHER TYPES OF COMPACTION EQUIPMENT WITH FEET.
- CONSTRUCT REINFORCED APPROACH FILLS TO BOTTOM OF COPING AND BOTTOM OF END BENT CAP ELEVATIONS PRIOR TO FILLING SPACE BETWEEN FACE OF REINFORCED APPROACH FILL AND BACK OF CONCRETE SHEET PILING WITH COMMON BORROW.
- BACKFILL SPACE WITH COMMON BORROW BETWEEN FACE OF REINFORCED APPROACH FILL AND BACK OF CONCRETE SHEET PILING PRIOR TO PLACING FINAL FABRIC LIFT AS SHOWN IN DETAILS. ADD LIMITED AMOUNTS OF WATER AS DIRECTED BY THE ENGINEER TO AIDE COMMON BORROW PLACEMENT.
- COMPACT TOP OF COMMON BORROW PLACED BETWEEN FACE OF REINFORCED APPROACH FILL AND BACK OF CONCRETE SHEET PILING PRIOR TO PLACING FINAL FABRIC LIFT USING HAND OPERATED COMPACTION EQUIPMENT TO THE SATISFACTION OF THE ENGINEER.
- CONSTRUCT RETAINING WALL COPINGS AND END BENT CAPS PRIOR TO PLACING FINAL GEOTEXTILE REINFORCING FABRIC LIFT. PLACE FINAL GEOTEXTILE REINFORCING FABRIC LIFT DIRECTLY AGAINST IN PLACE RETAINING WALL COPINGS AND END BENT CAPS WITHOUT USING WELDED WIRE FORMS.

PROJECT NO.: B-2500AB
DARE COUNTY
STATION: 3170+75.00 -L-
SHEET 2 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REINFORCED APPROACH FILLS

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

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