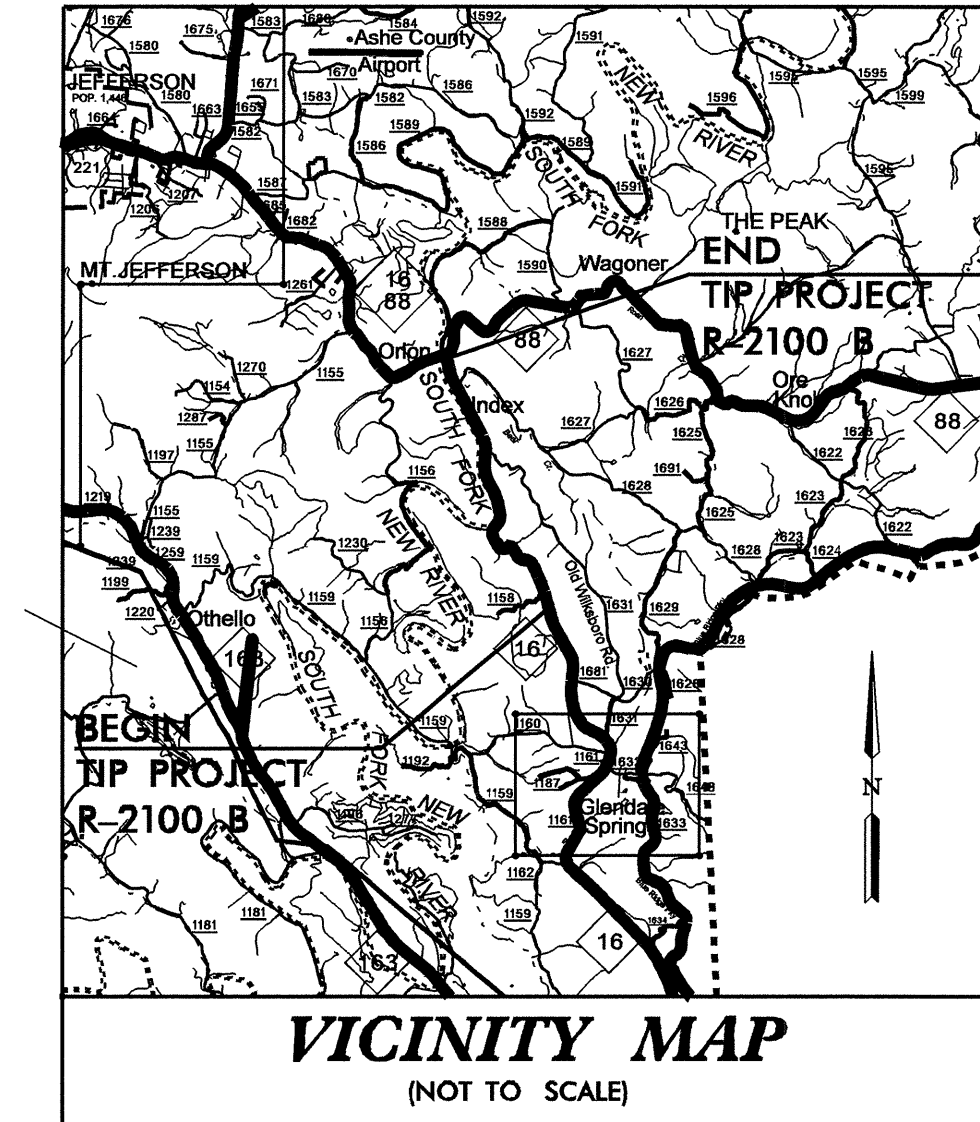


CONTRACT: C202594 TIP PROJECT: R-2100B

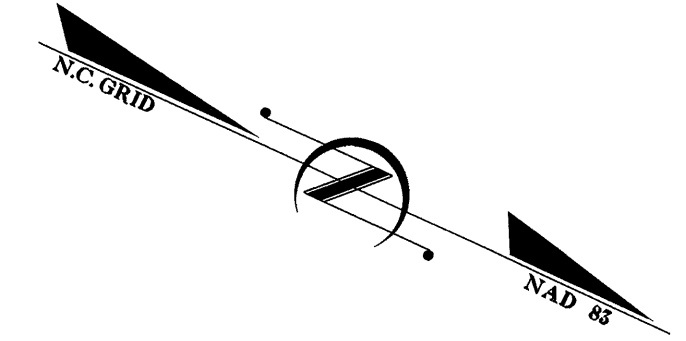


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
ASHE COUNTY

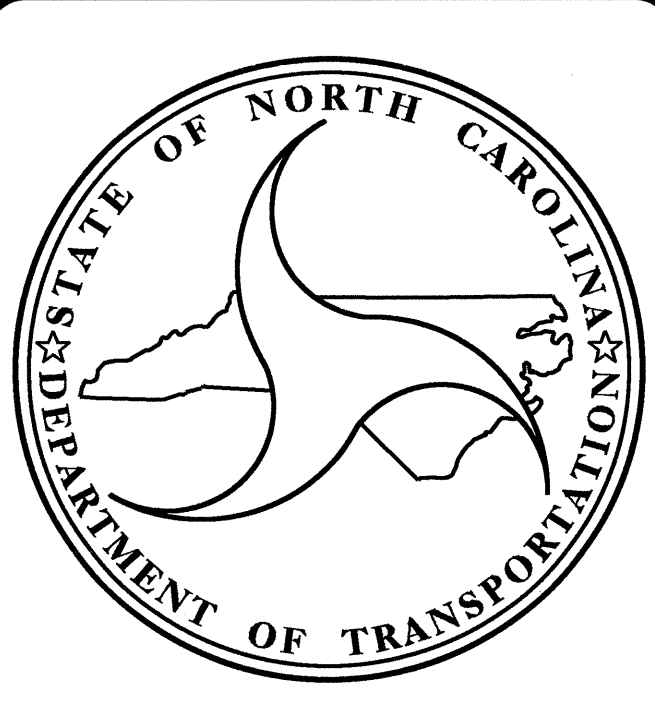
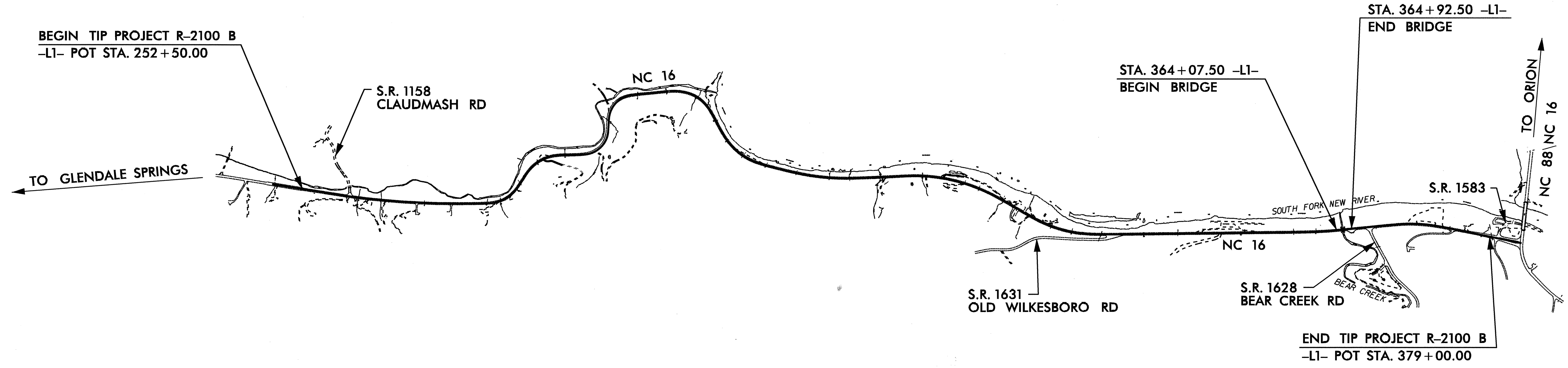
**LOCATION: NC 16 FROM SOUTHEAST OF SR 1158
 TO SOUTHEAST OF NC 88**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING,
 STRUCTURE, RETAINING WALLS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2100B		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34369.1.1	STP - 16 (1)	PE	
34369.2.4	STP - 0016 (4)	RW & UTILITIES	
34369.3.5	STP - 0016 (44)	CONST.	



STRUCTURES



DESIGN DATA

ADT 2005 =	3000
ADT 2030 =	6100
DHV =	13 %
D =	60 %
T =	9 % *
V =	60 MPH
* TTST	6% DUAL 3%

FUNCTIONAL CLASSIFICATION:
RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2100B =	2.380 MILES
LENGTH STRUCTURE TIP PROJECT R-2100B =	0.016 MILES
TOTAL LENGTH TIP PROJECT R-2100B =	2.396 MILES

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 15, 2010

Prepared in the Office of:
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
 1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610

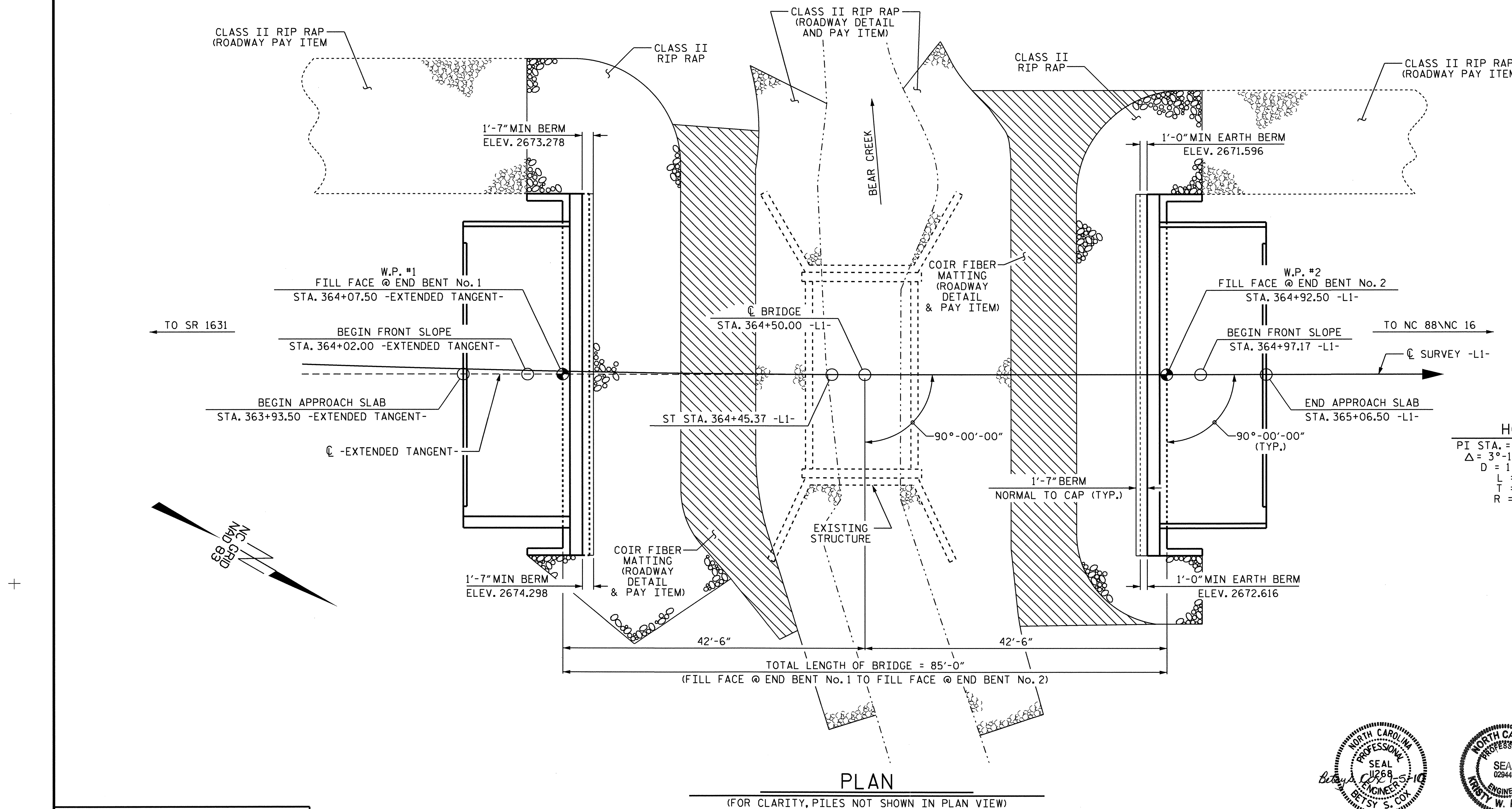
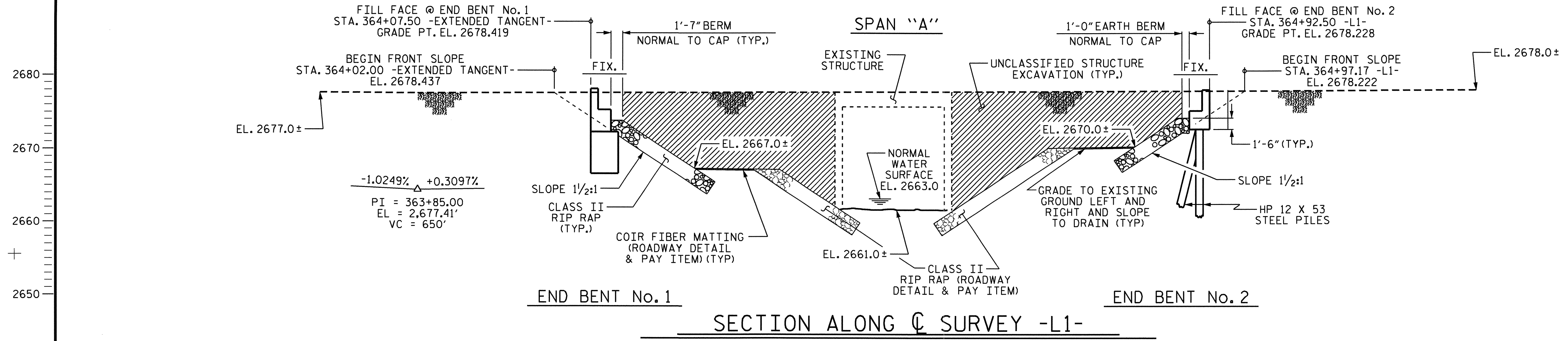
B. S. COX P. E.
 PROJECT ENGINEER

K. W. ALFORD P. E.
 PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

P.E.
 STATE DESIGN ENGINEER
 DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____
 DIVISION ADMINISTRATOR DATE



HYDROGRAPHIC DATA

DESIGN DISCHARGE-----	1200 CFS
FREQUENCY OF DESIGN FLOOD-----	50 YR.
DESIGN HIGH WATER ELEVATION-----	2668.7
DRAINAGE AREA-----	3.0 SQ.MI.
BASIC DISCHARGE (Q100)-----	1500 CFS
BASIC HIGH WATER ELEVATION-----	2669.3
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE-----	2300+ CFS
FREQUENCY OF OVERTOPPING FLOOD-----	500 YRS+
OVERTOPPING FLOOD ELEVATION-----	2678.2

HORIZONTAL CURVE DATA

PI STA. = 362+19.37 -L1-	PIS STA. = 363+65.38 -L1-
$\Delta = 3^{\circ}-10'-51.6''$ (LT.)	$\theta_s = 0^{\circ}-54'-00.0''$
$D = 1^{\circ}-30'-00.0''$	$L_s = 120.00'$
$L = 212.07'$	$LT = 80.00'$
$T = 106.06'$	$ST = 40.00'$
$R = 3819.72'$	

PROJECT NO. R-2100B
 ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE No. 9

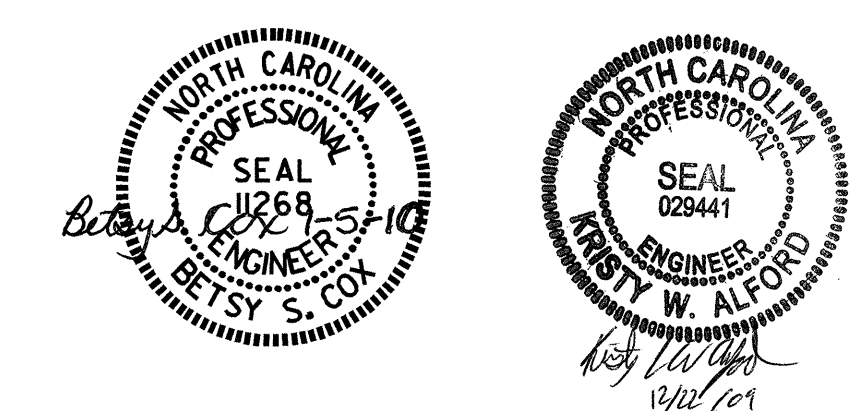
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER BEAR CREEK
 ON NC 16 BETWEEN SR 1631
 AND NC 88\NC 16

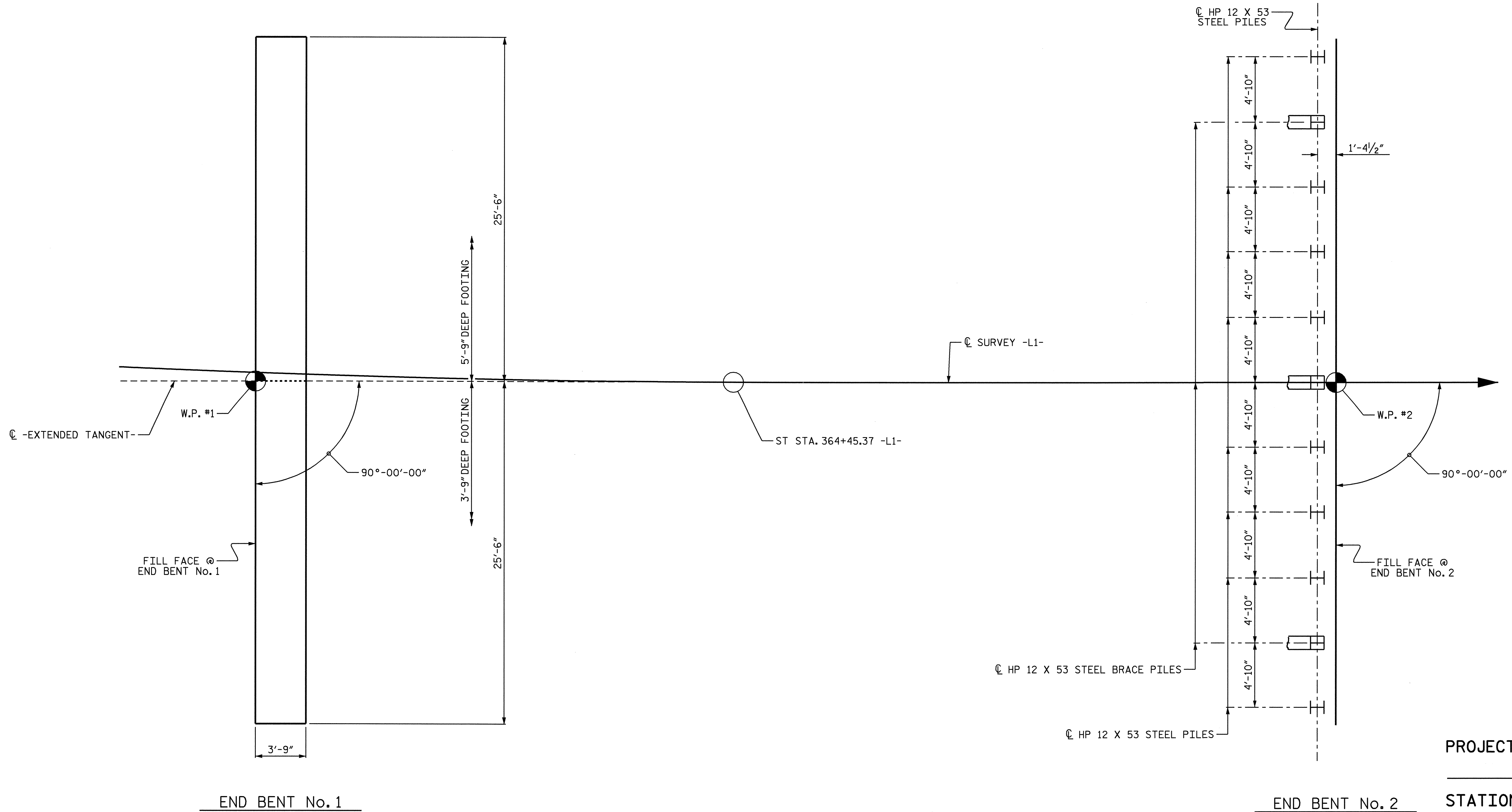
REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

DRAWN BY : T. BANKOVICH DATE : 8-2009
 CHECKED BY : K.W. ALFORD DATE : 9-2009

22-DEC-2009 09:41
 f:\structures\generaldrawings\vr-2100b.sd.gd.gdn
 kalford



PLAN
 (FOR CLARITY, PILES NOT SHOWN IN PLAN VIEW)



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILE AT THE BOTTOM OF THE CAP)

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

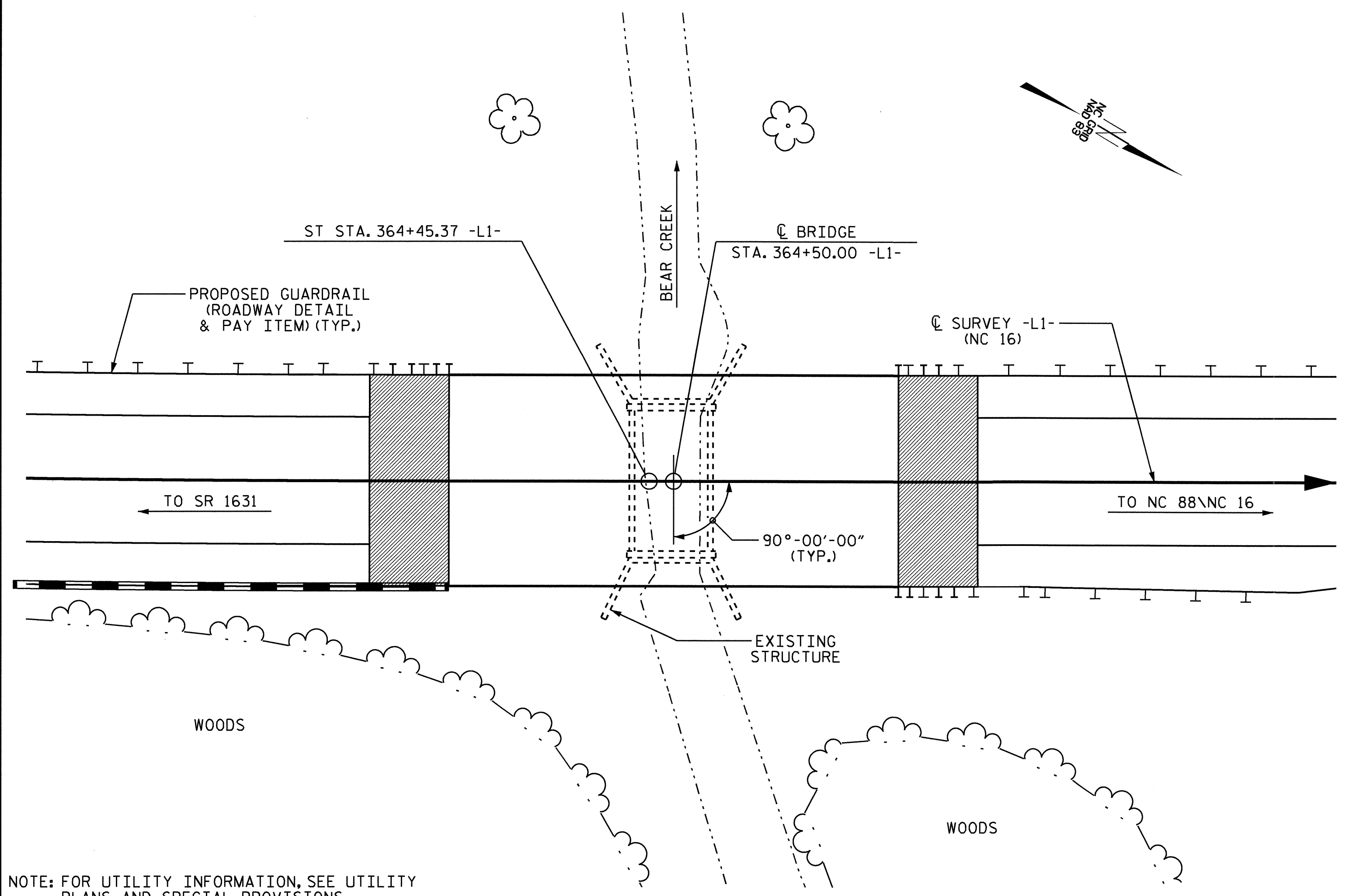
GENERAL DRAWING
 FOR BRIDGE OVER BEAR CREEK
 ON NC 16 BETWEEN SR 1631
 AND NC 88\NC 16



DRAWN BY : T. BANKOVICH DATE : 8-2009
 CHECKED BY : K.W. ALFORD DATE : 9-2009

30-OCT-2009 09:41
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			19



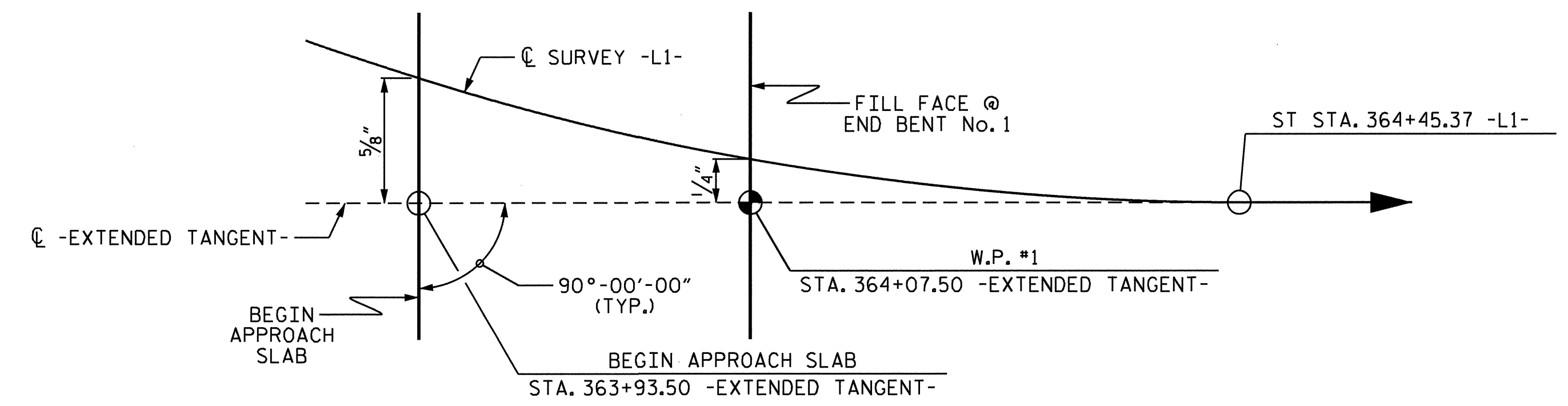
LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT BOX BEAM UNITS HAVE BEEN DESIGNED FOR HS 25.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.
 THE EXISTING STRUCTURE CONSISTING OF 1 SPAN OF 17'-3" WITH A CLEAR ROADWAY WIDTH OF 30'-0"; REINFORCED CONCRETE DECK SLAB WITH ASPHALT WEARING SURFACE WITH REINFORCED CONCRETE ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE STRUCTURE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 REMOVAL OF THE EXISTING STRUCTURE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE STRUCTURE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.
 THE SUBSTRUCTURE OF THE EXISTING STRUCTURE INDICATED 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 SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

NOTES:

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
 FOR PILES, SEE SPECIAL PROVISIONS.
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
 FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
 THE REQUIRED BEARING CAPACITY FOR THE SPREAD FOOTING AT END BENT No. 1 IS 15 tsf. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY JUST PRIOR TO PLACING CONCRETE. THE ALLOWABLE BEARING CAPACITY FOR SPREAD FOOTING AT END BENT No. 1 IS 5 tsf.
 CARRY IN SPREAD FOOTING AT END BENT No. 1 AT LEAST 1'-0" INTO ROCK WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.
 DRIVE PILES AT END BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No. 2 IS 60 TONS PER PILE.



EXTENDED TANGENT LAYOUT

THE EFFECTS OF THE HORIZONTAL CURVE SHALL BE NEGLECTED IN THE CONSTRUCTION OF THE BRIDGE.
 THE BRIDGE AND APPROACH SLABS ARE TO BE CONSTRUCTED ALONG THE EXTENDED TANGENT AND TANGENT BETWEEN WORK POINTS.

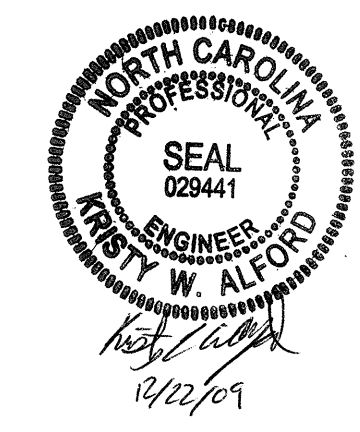
PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER BEAR CREEK
 ON NC 16 BETWEEN SR 1631
 AND NC 88\NC 16

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



TOTAL BILL OF MATERIAL														
	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP (CLASS II 2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 2'-9" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM				LUMP SUM				165.50			LUMP SUM	15	1241.25
END BENT No. 1		LUMP SUM	640	55.8		5269				144	160			
END BENT No. 2			625	21.1		3279	11	135		103	115			
TOTAL	LUMP SUM	LUMP SUM	1265	76.9	LUMP SUM	8548	11	135	165.50	247	275	LUMP SUM	15	1241.25

DRAWN BY : T. BANKOVICH DATE : 8-2009
 CHECKED BY : K.W. ALFORD DATE : 9-2009

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. THE JOINT SHALL BE FILLED WITH GROUT.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5100 PSI.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

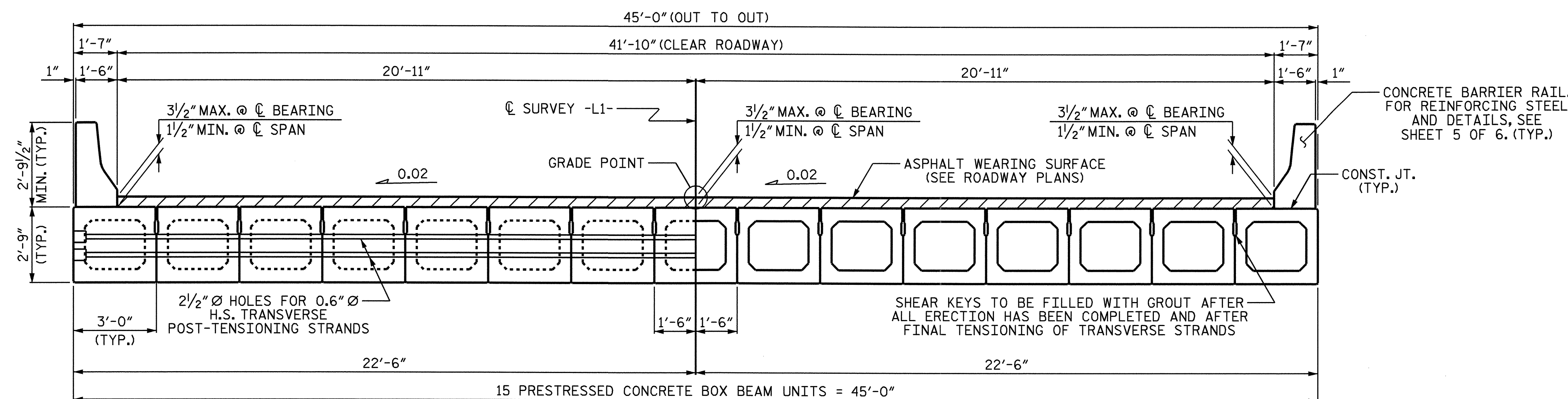
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

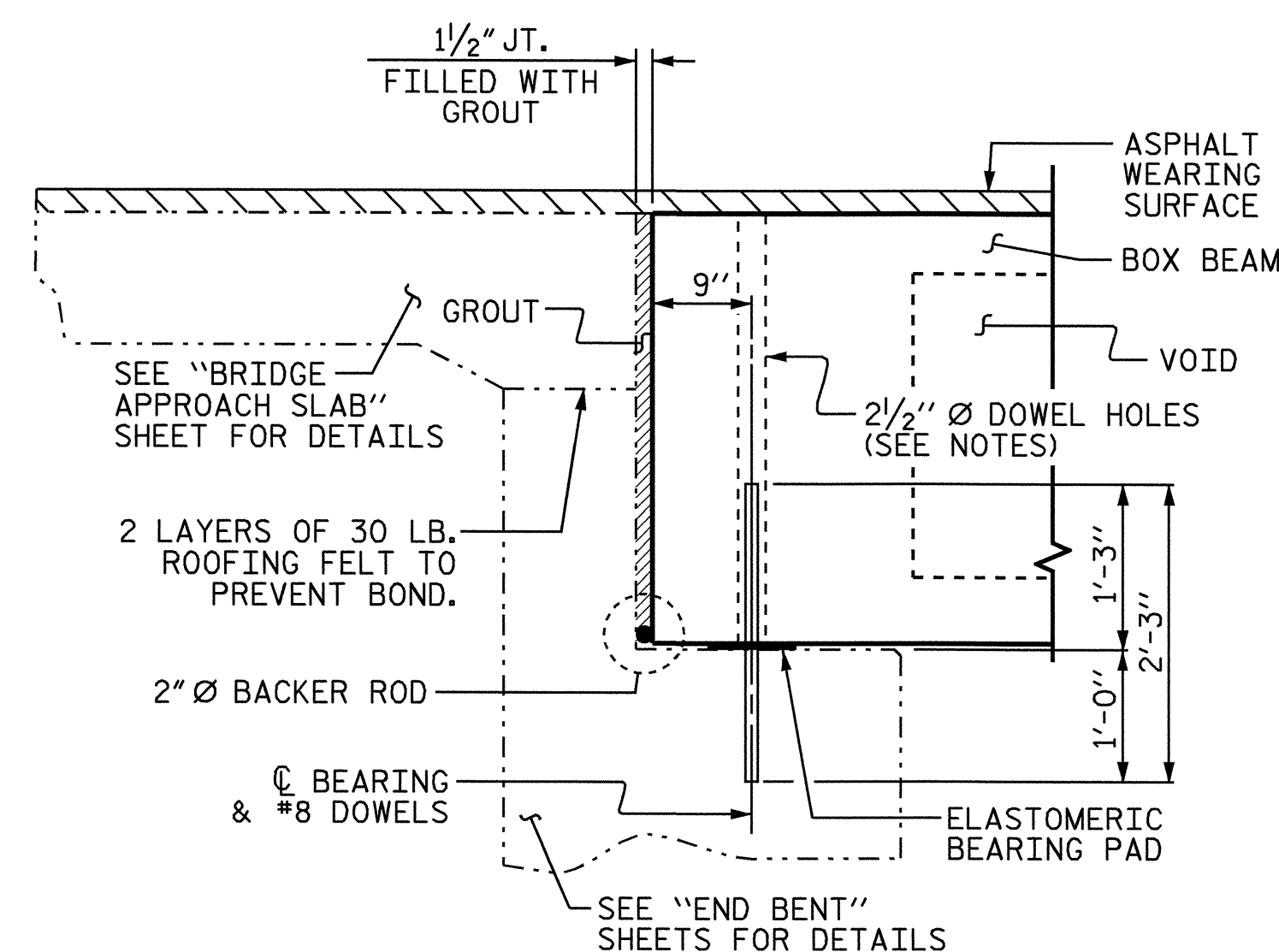
THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.



HALF SECTION @ INTERMEDIATE DIAPHRAGMS

HALF SECTION @ VOIDS

TYPICAL SECTION



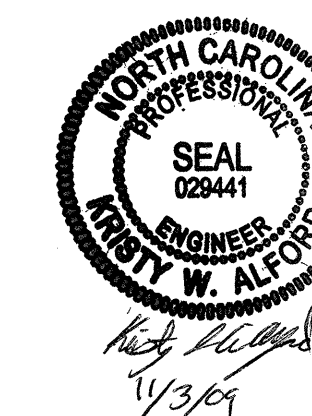
FIXED END

SECTION AT END BENT

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR)

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

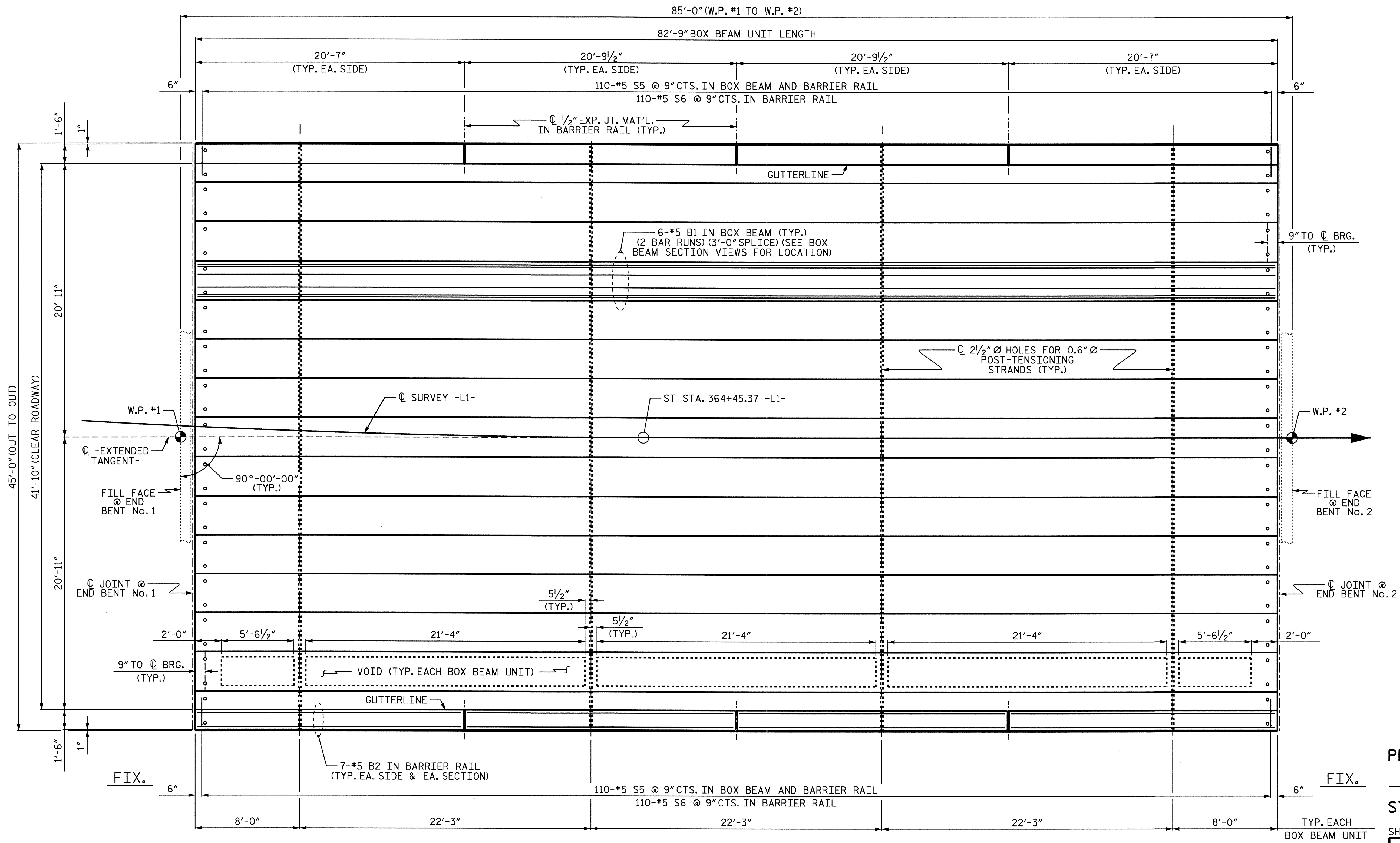
SHEET 1 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

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

ASSEMBLED BY : T. BANKOVICH	DATE : 8-2008
CHECKED BY : A.V. ROYAL	DATE : 9-2008
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06R KMM/GM



PLAN OF SPAN A

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 2 OF 6

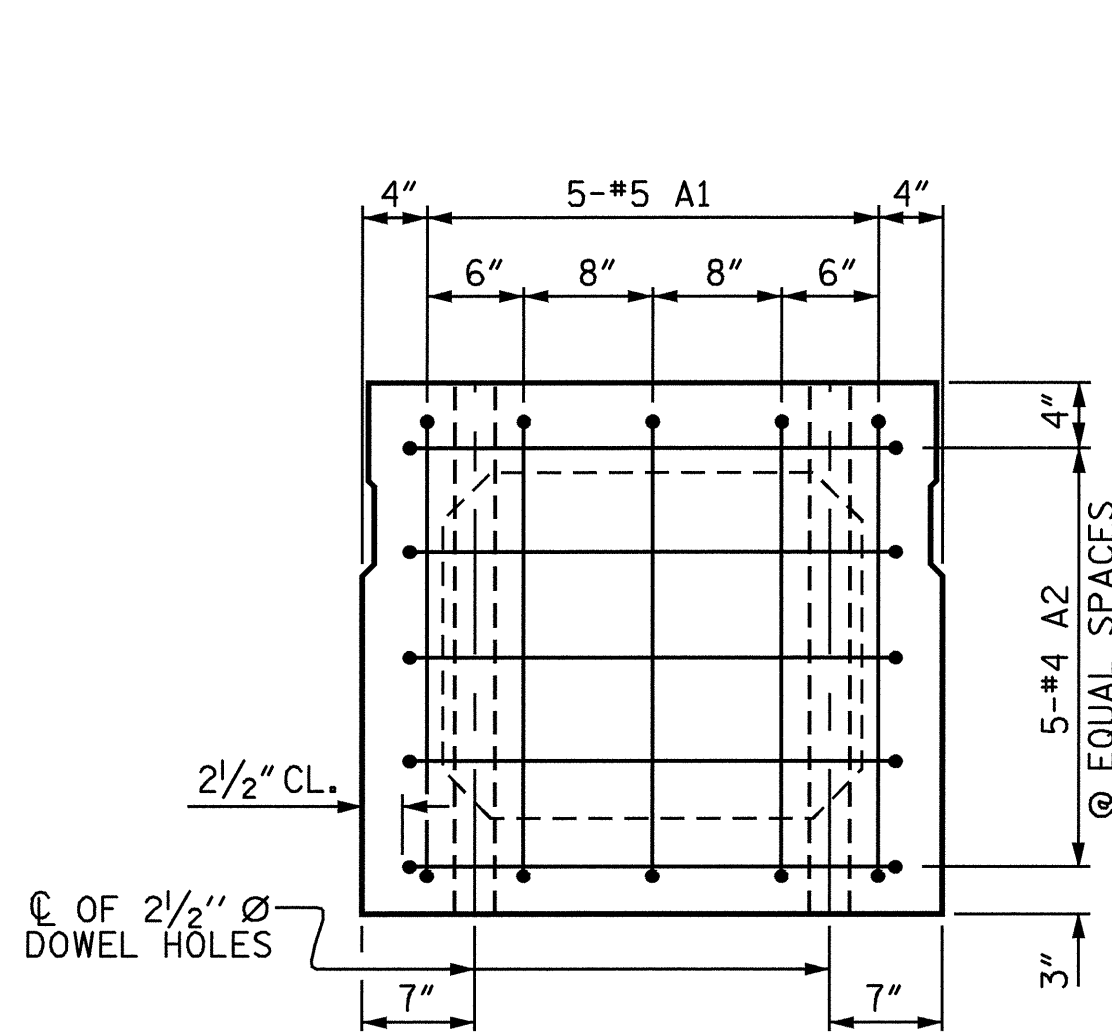


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A

DRAWN BY: T. BANKOVICH DATE: 3-2009
 CHECKED BY: A.V. ROYAL DATE: 3-2009

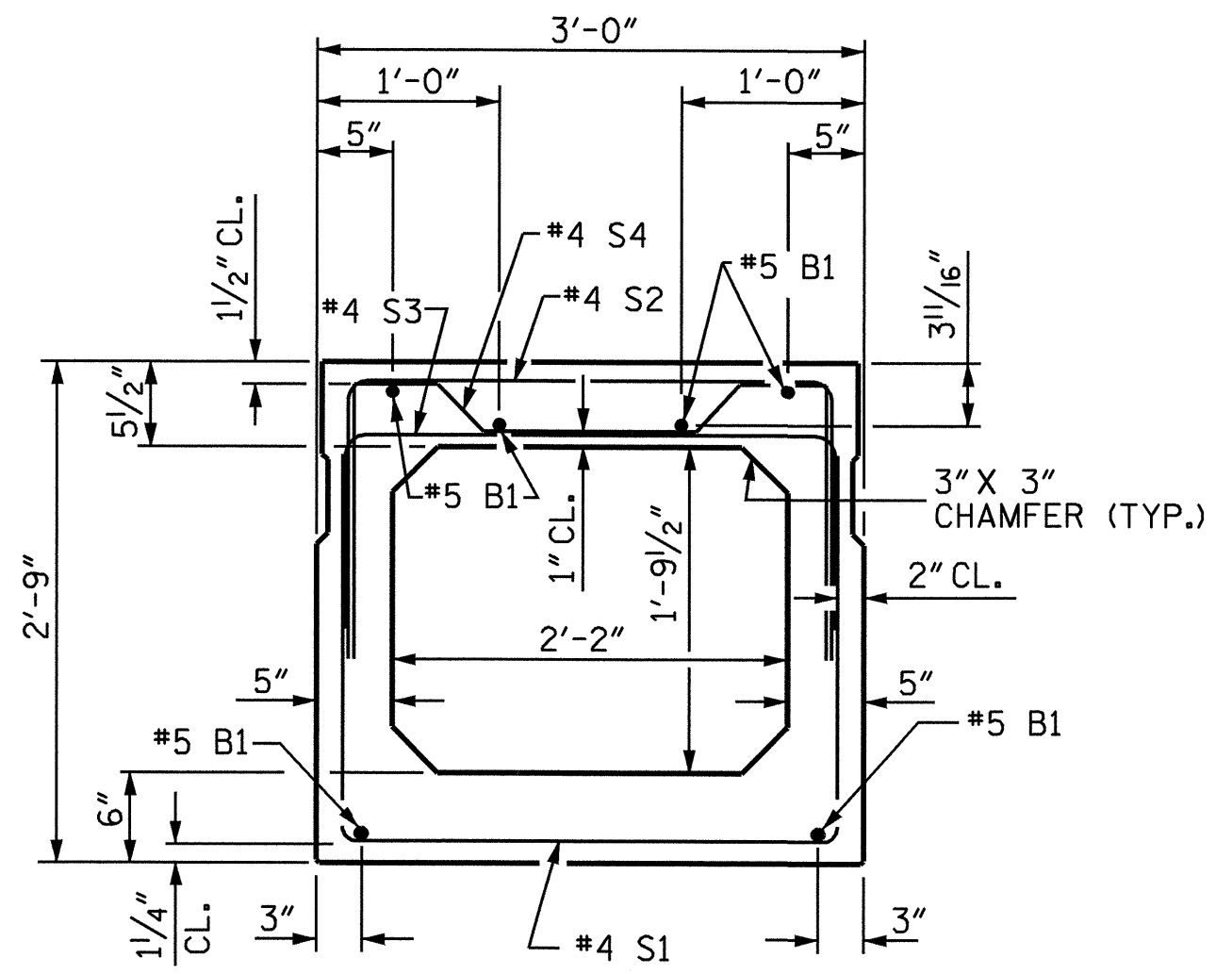
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL	19
2			4			SHEETS	

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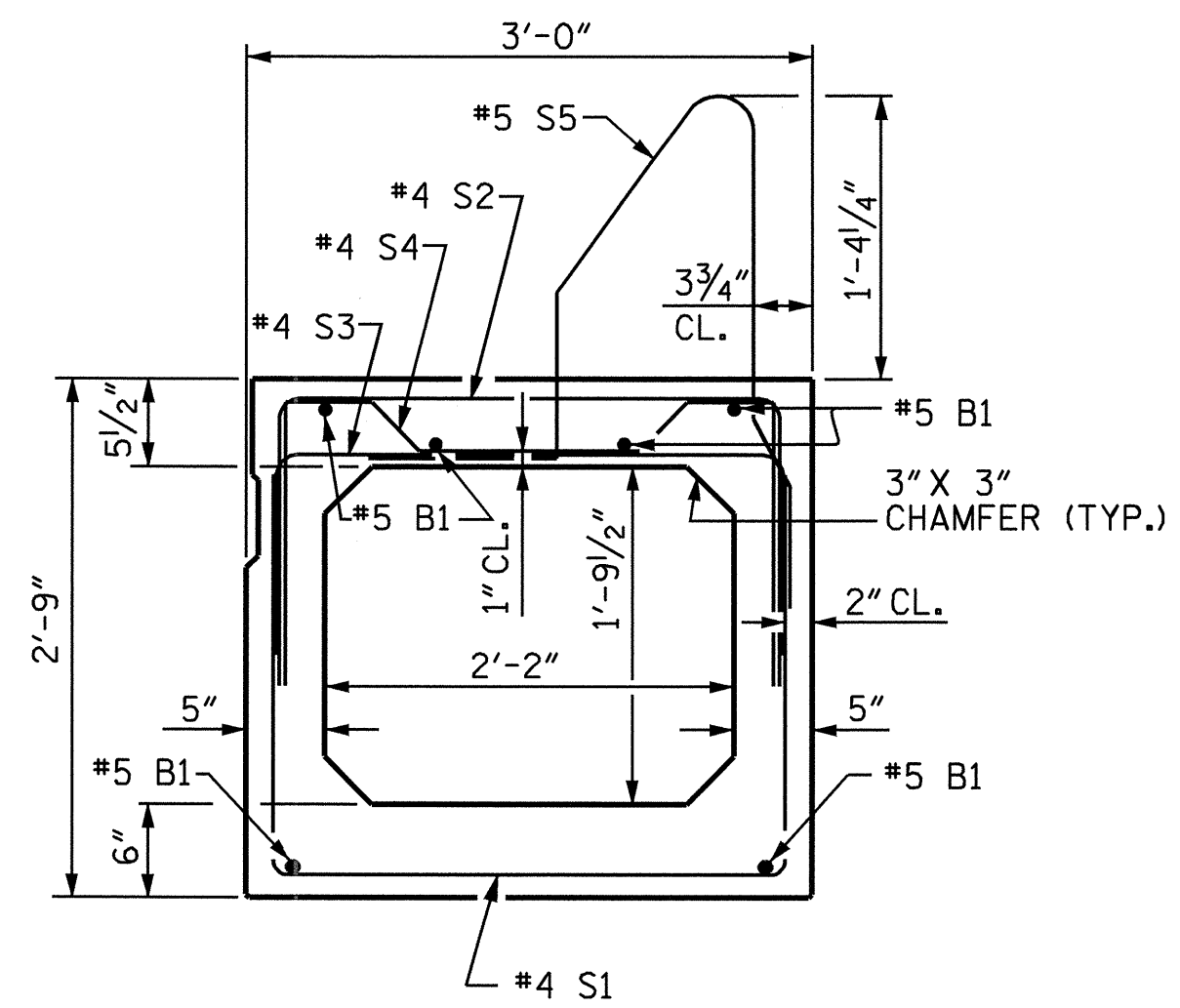
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



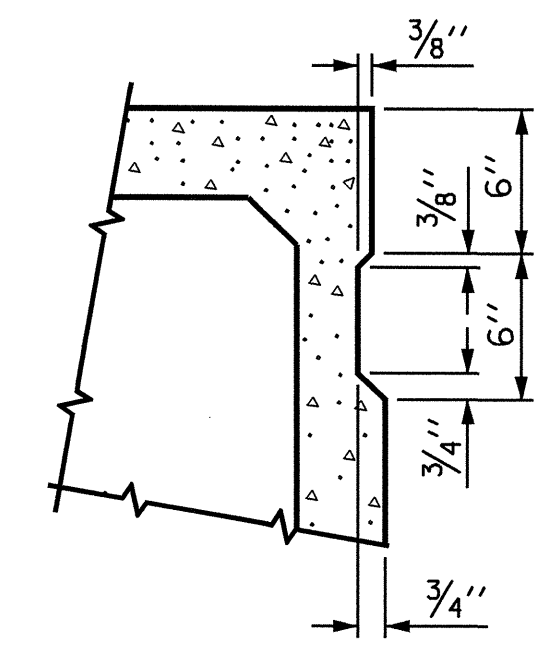
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

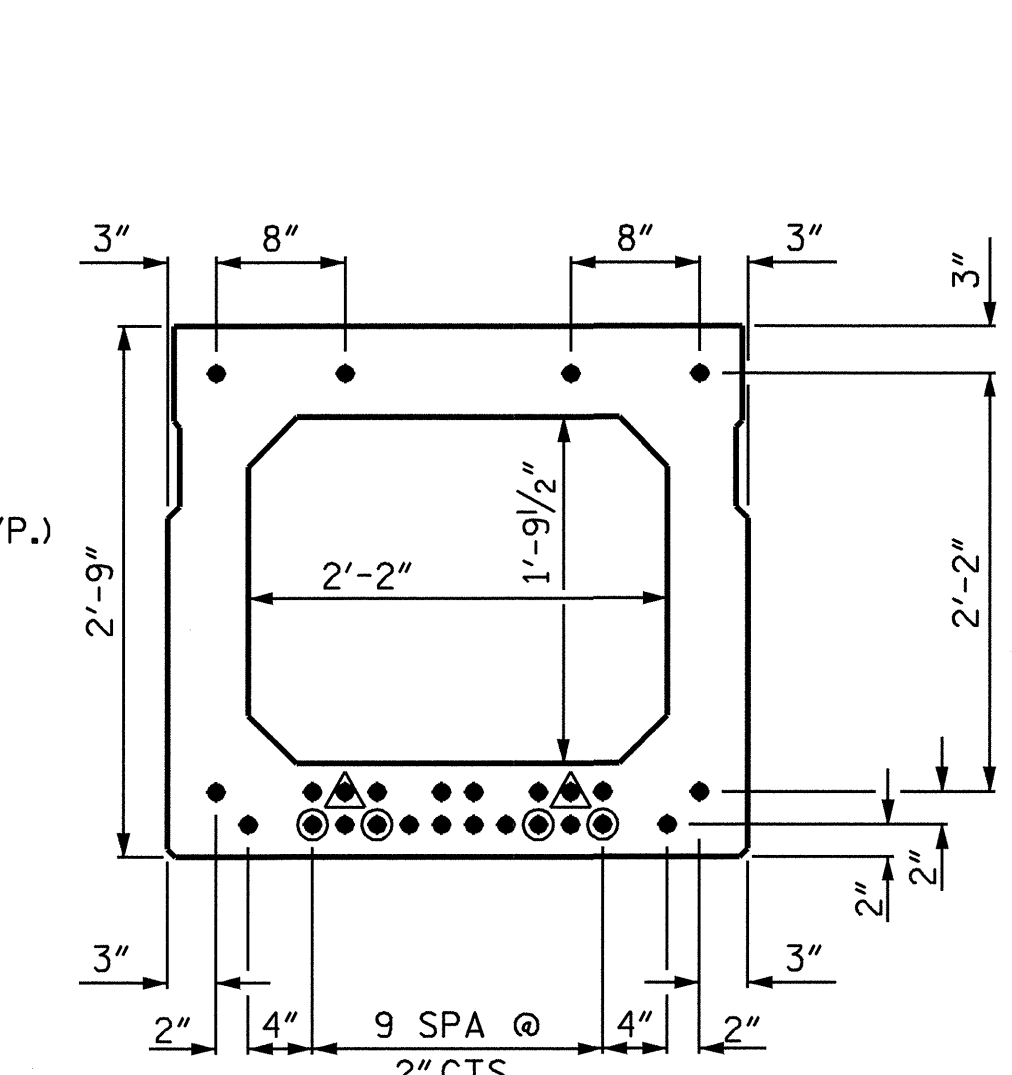
(STRAND LAYOUT NOT SHOWN)



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

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



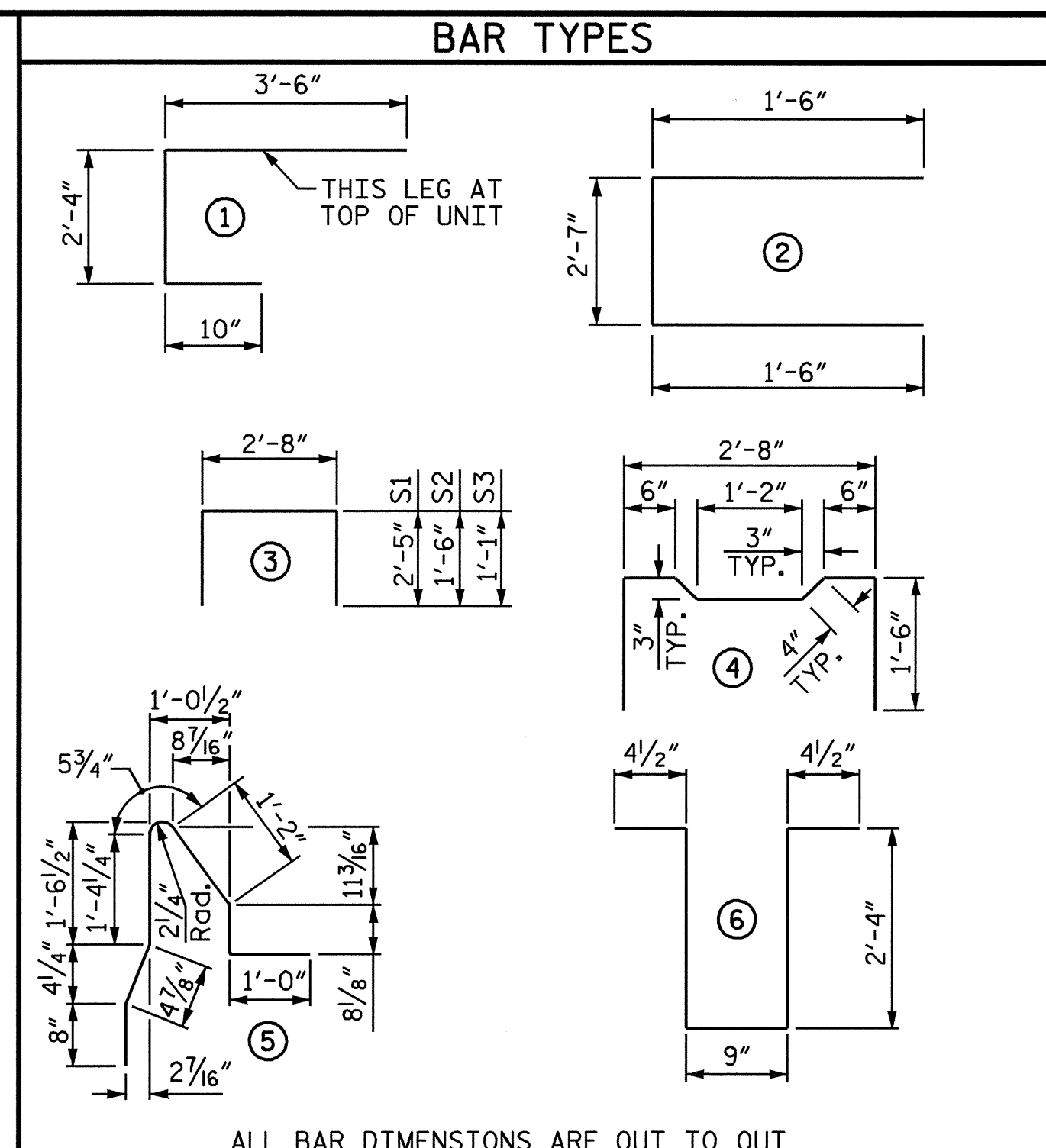
TYPICAL STRAND LOCATION

(26 STRANDS REQUIRED)
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF BOX BEAM
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF BOX BEAM

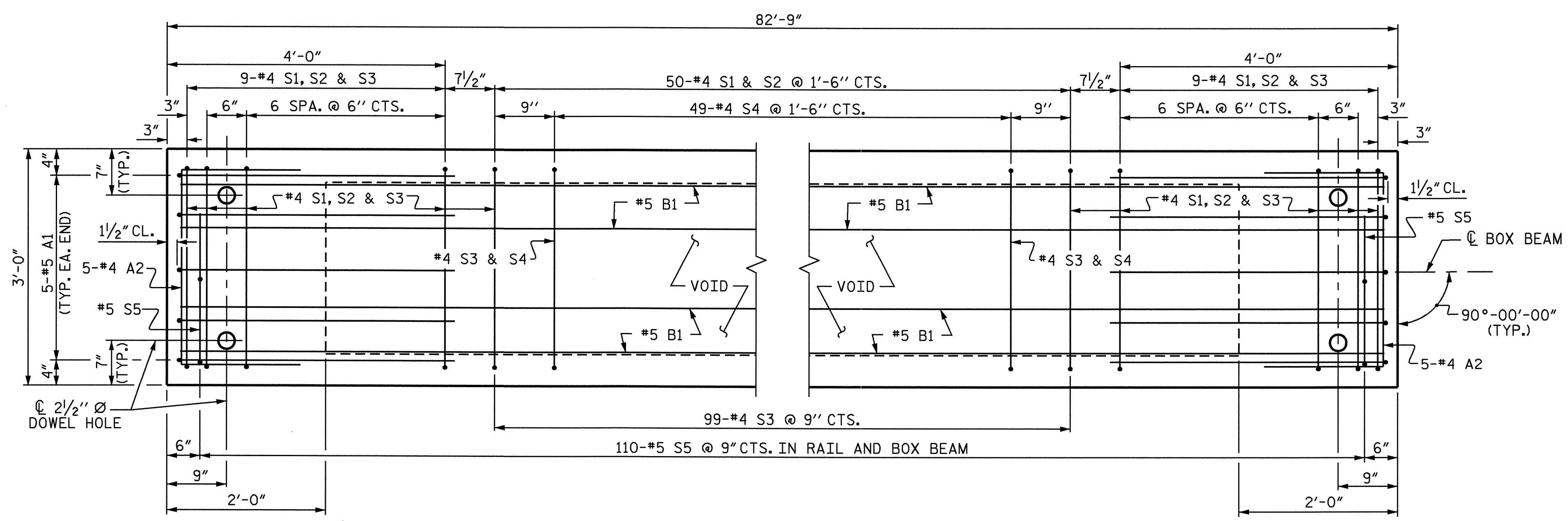
0.6" Ø LOW RELAXATION STRAND LAYOUT



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127
B1	12	#5	STR	42'-9"	535	42'-9"	535
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	68	#4	3	7'-6"	341	7'-6"	341
S2	68	#4	3	5'-8"	257	5'-8"	257
S3	117	#4	3	4'-10"	378	4'-10"	378
S4	49	#4	4	5'-10"	191	5'-10"	191
*S5	110	#5	5	5'-9"	660		
REINFORCING STEEL				1962 LBS.		1962 LBS.	
* EPOXY COATED REINF. STEEL				660 LBS.			
6500 P.S.I. CONCRETE				14.6 CU. YDS.		14.6 CU. YDS.	
0.6" Ø L.R. STRANDS				No. = 26		No. = 26	



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

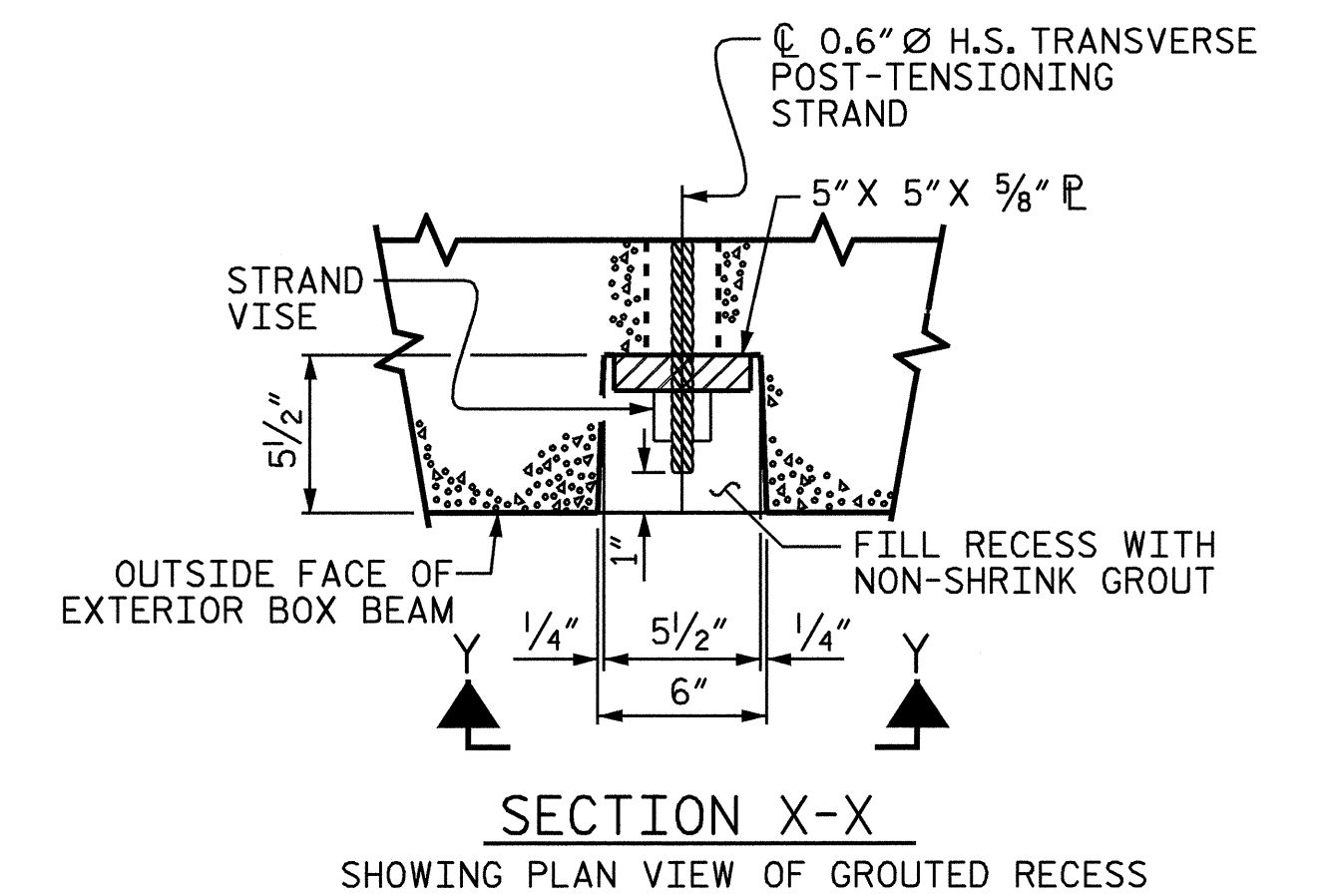
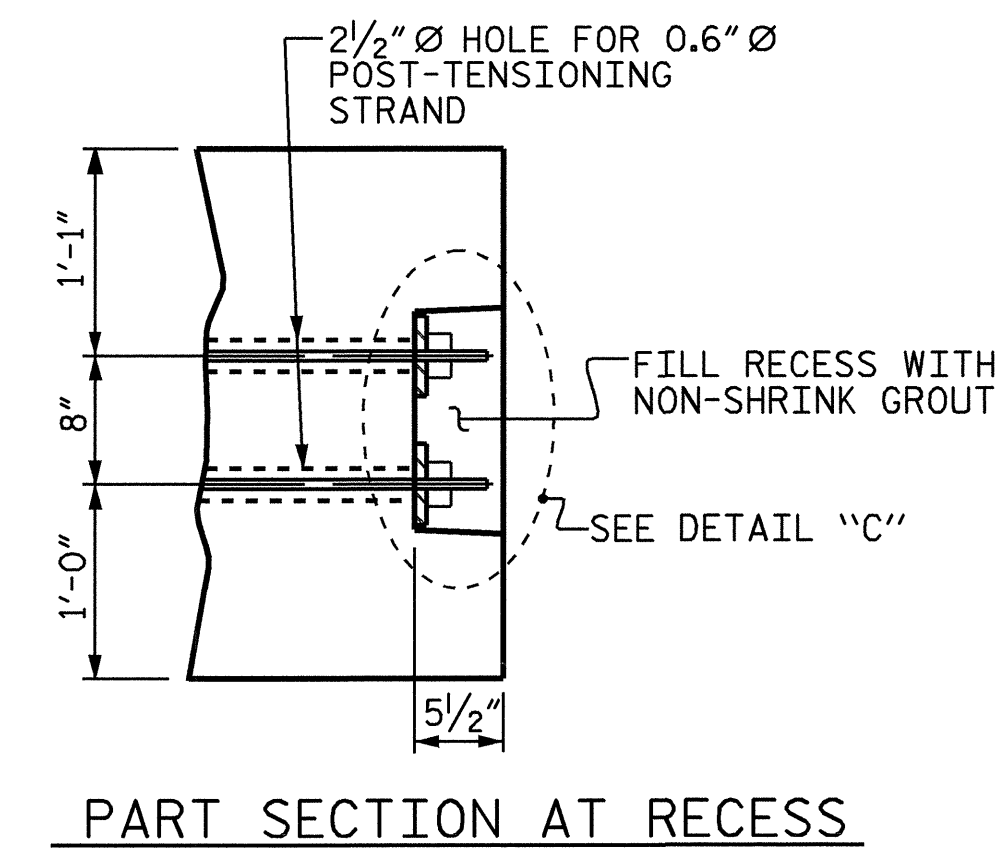
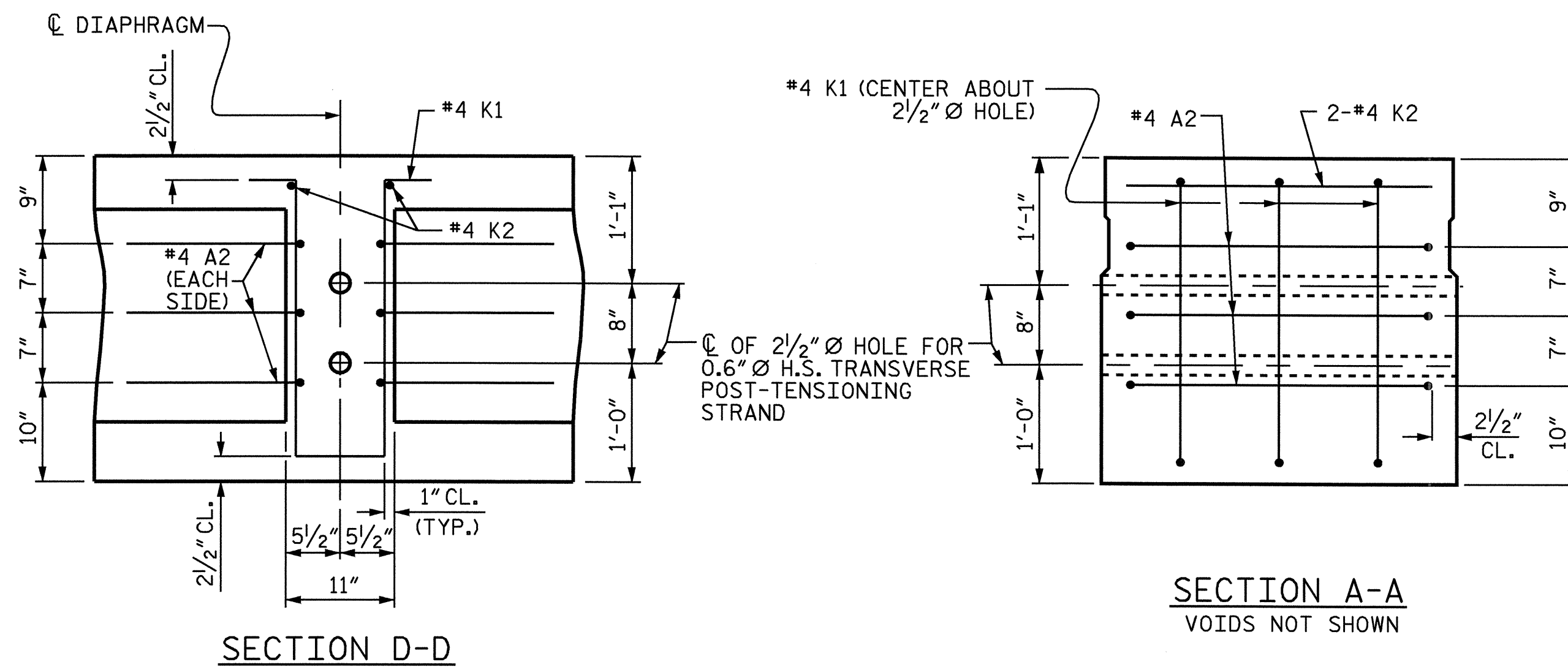
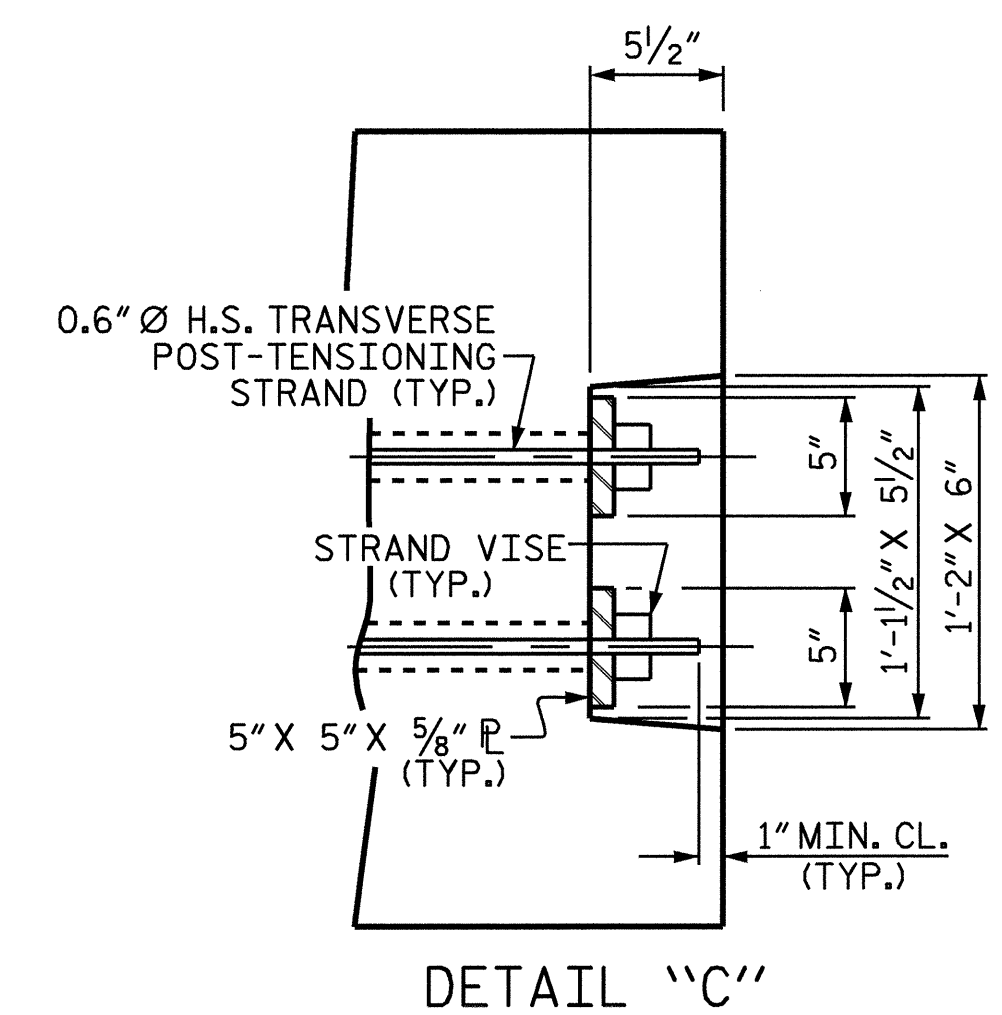
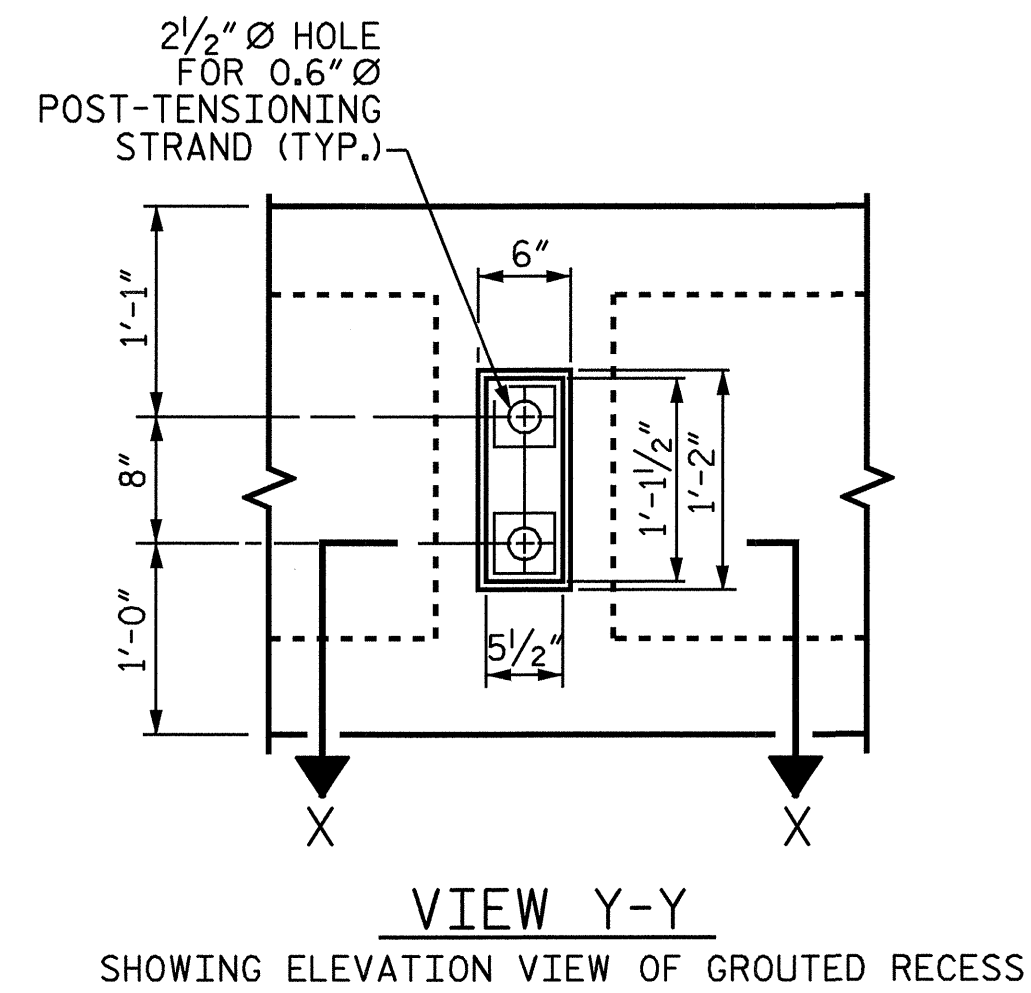
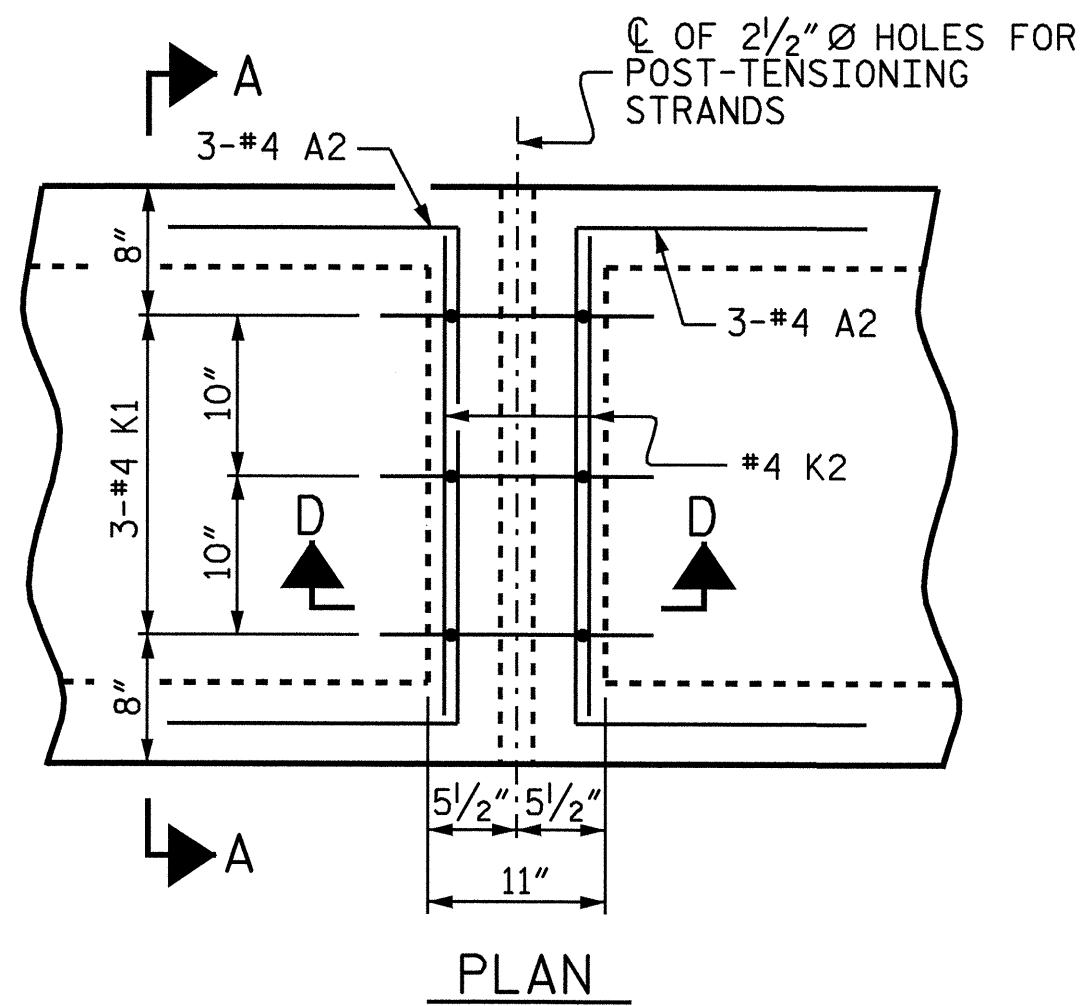
PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-
 SHEET 3 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPAN A

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

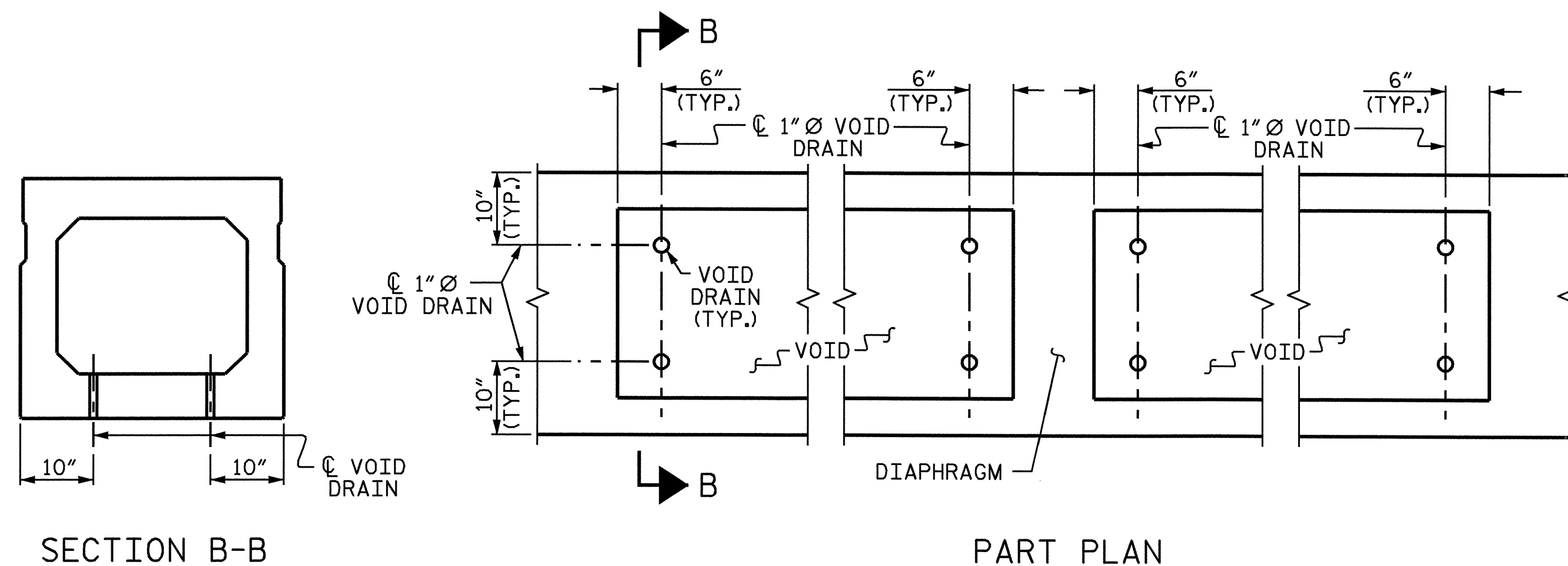
ASSEMBLED BY : T. BANKOVICH	DATE : 3-2009
CHECKED BY : A.V. ROYAL	DATE : 3-2009
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM



DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" X 2'-9"
	0.6" Ø L.R. STRAND
	SPAN "A"
CAMBER (BEAM ALONE IN PLACE)	2 15/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1 1/16"
FINAL CAMBER	2 1/4"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-
 SHEET 4 OF 6

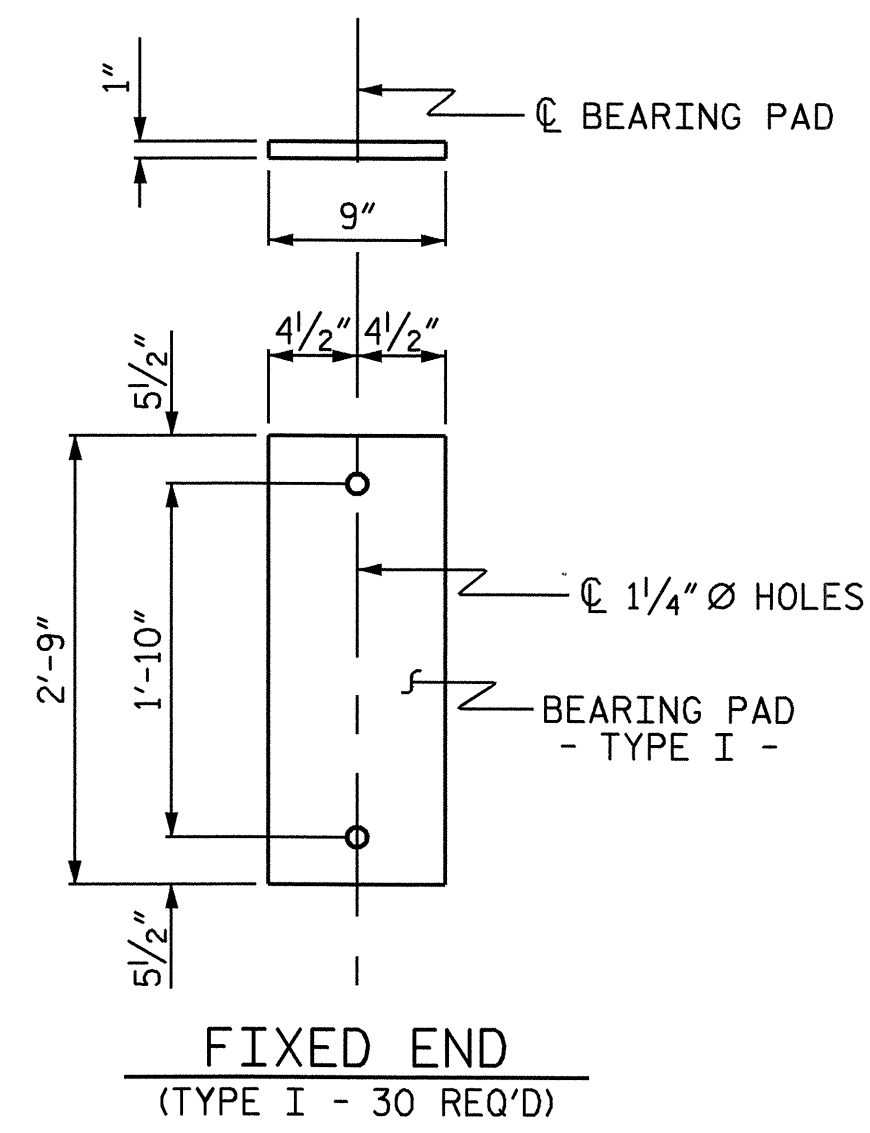


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

ASSEMBLED BY : T. BANKOVICH DATE : 3-2009
 CHECKED BY : A.V. ROYAL DATE : 3-2009
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

ADDED 7/11/05
 REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			19

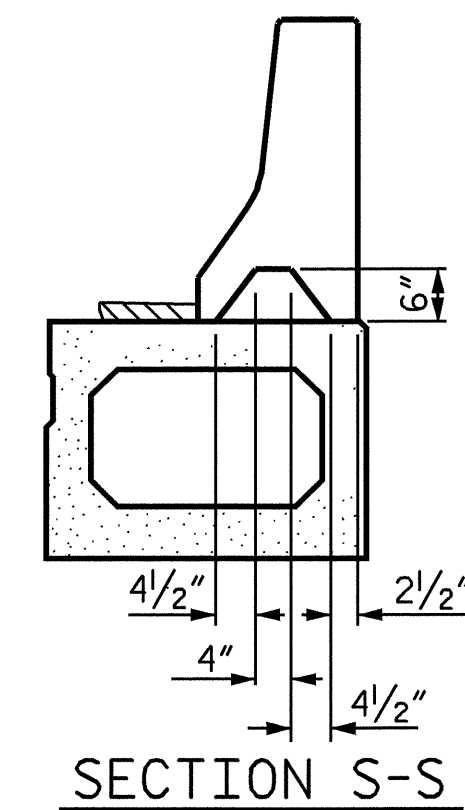
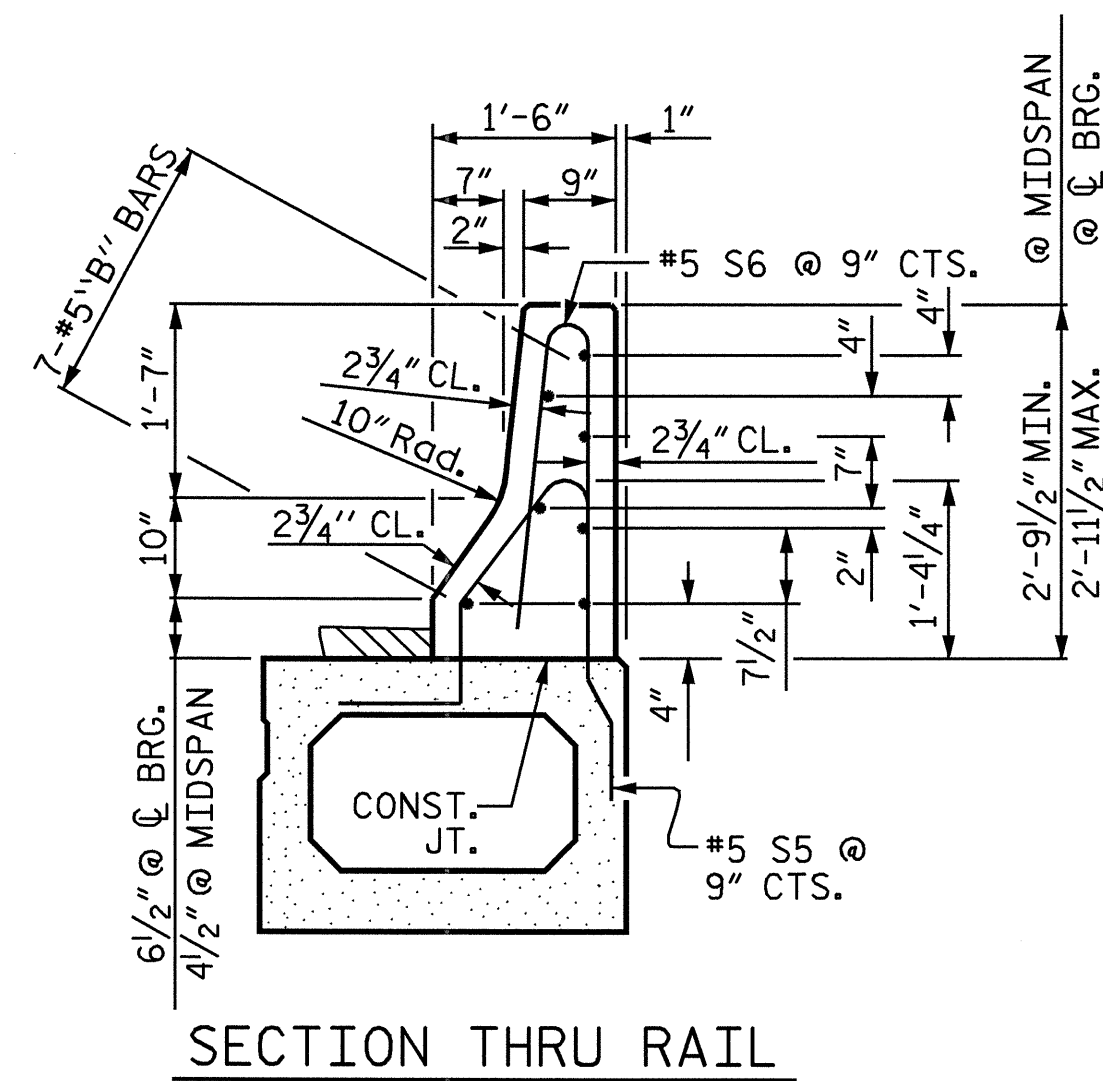
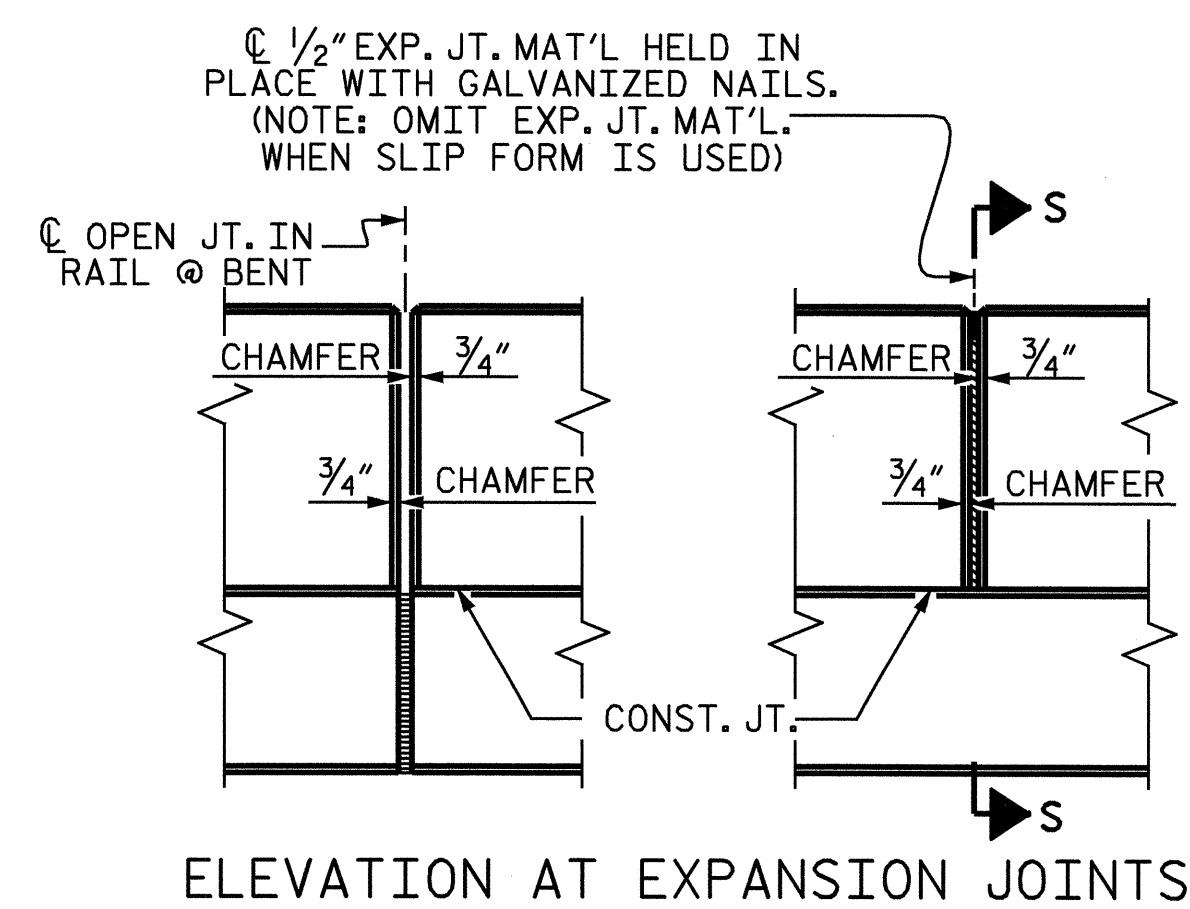
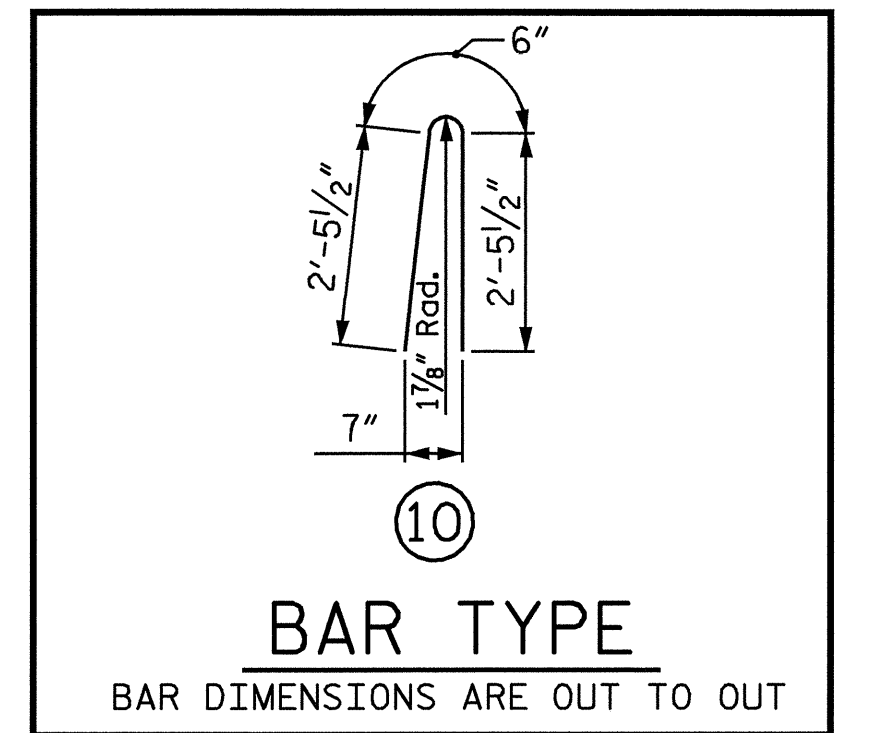


ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

BOX BEAM UNITS REQUIRED			
SPAN A	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	82'-9"	165'-6"
INTERIOR B.B.	13	82'-9"	1075'-9"
TOTAL	15		1241.25'

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL					
BAR	BARS PER SPAN	SIZE	TYPE	LENGTH	WEIGHT
SPAN A					
*B2	56	#5	STR	20'-3"	1183
*S6	220	#5	10	5'-5"	1243
* EPOXY COATED REINFORCING STEEL					2426 LBS.
CLASS AA CONCRETE					18.5 CU. YDS.
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL					165.50'



AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT DETAILS



ASSEMBLED BY : T. BANKOVICH	DATE : 3-2009
CHECKED BY : A.V. ROYAL	DATE : 3-2009
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			19	

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

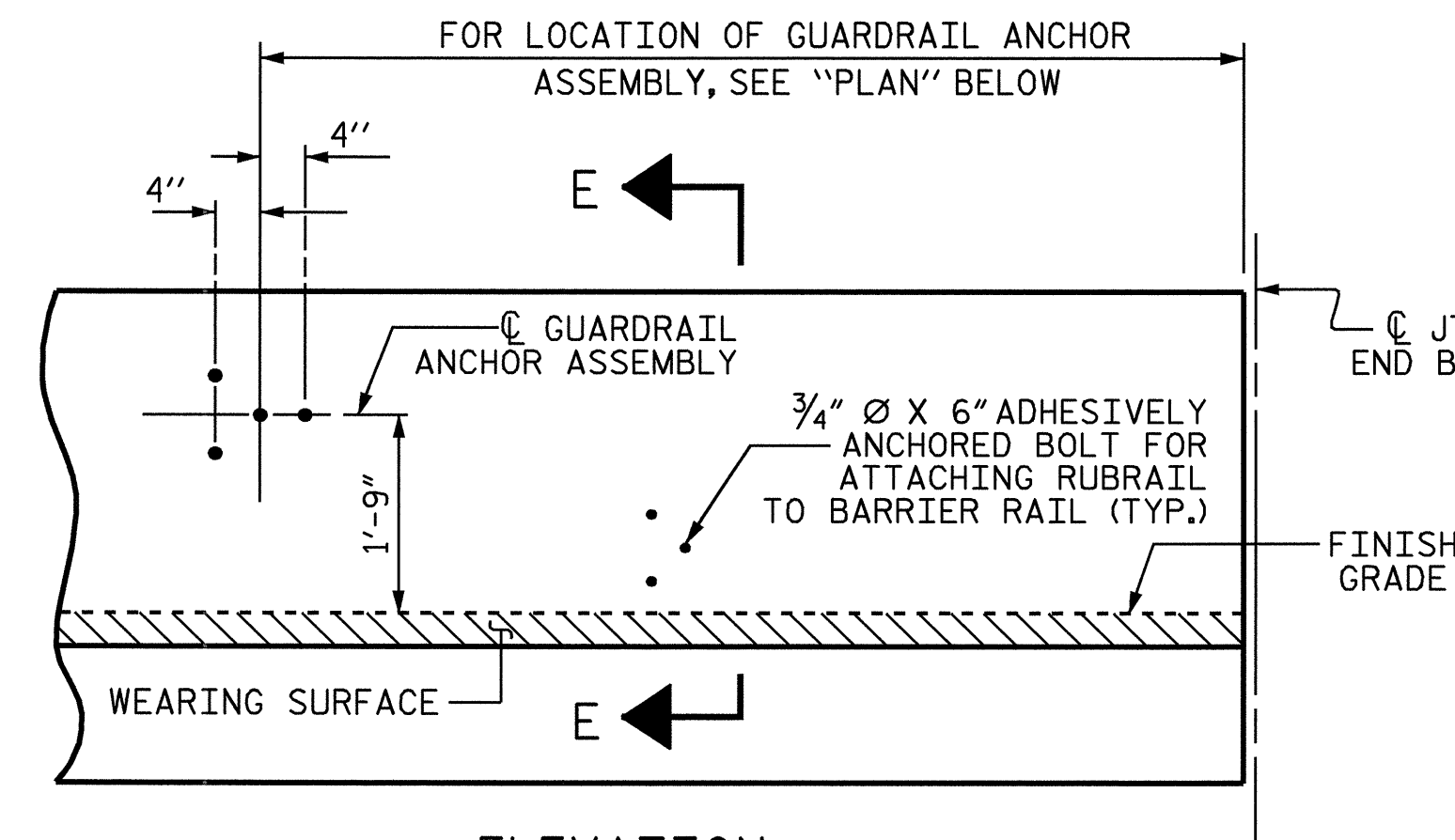
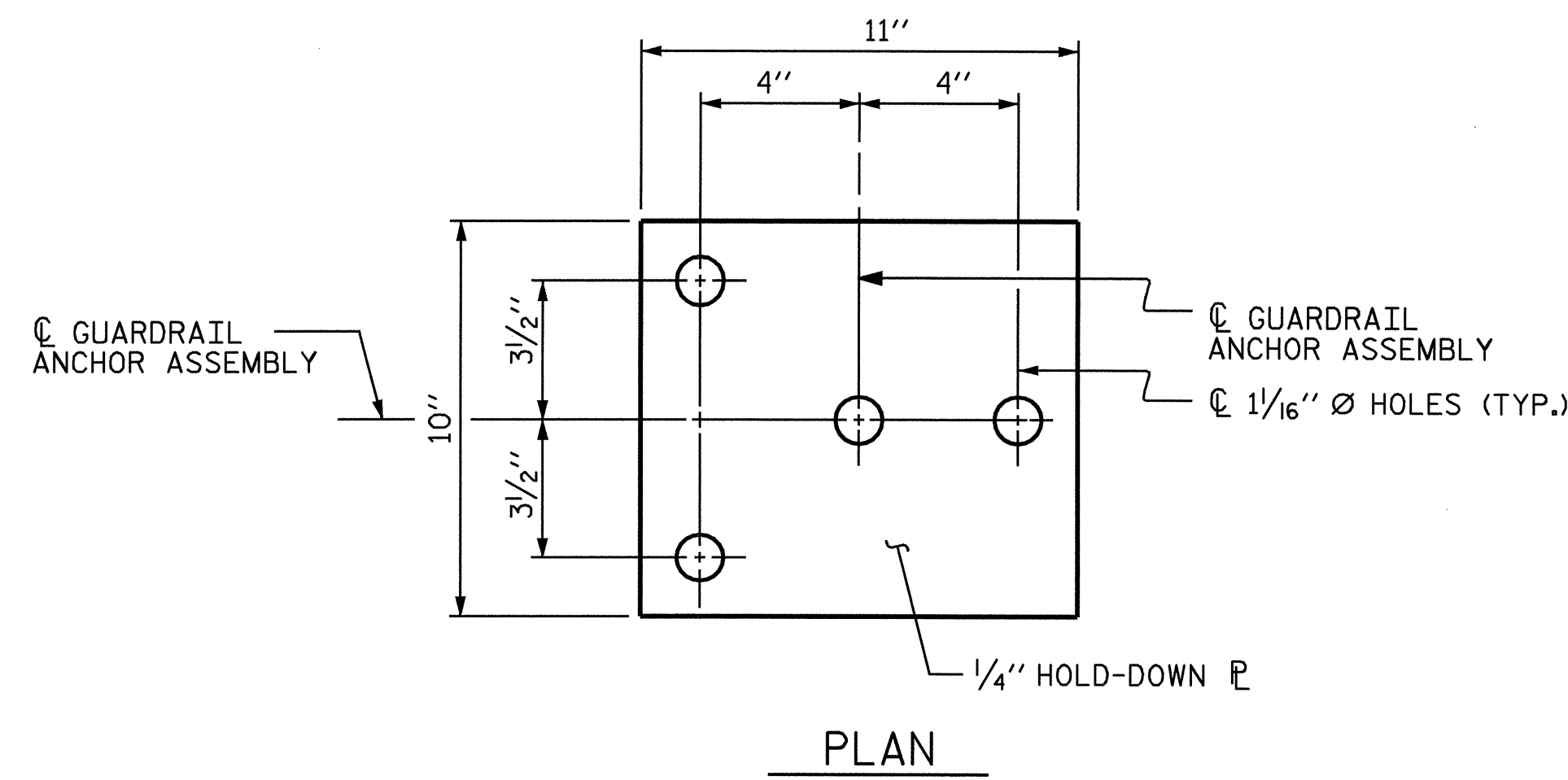
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

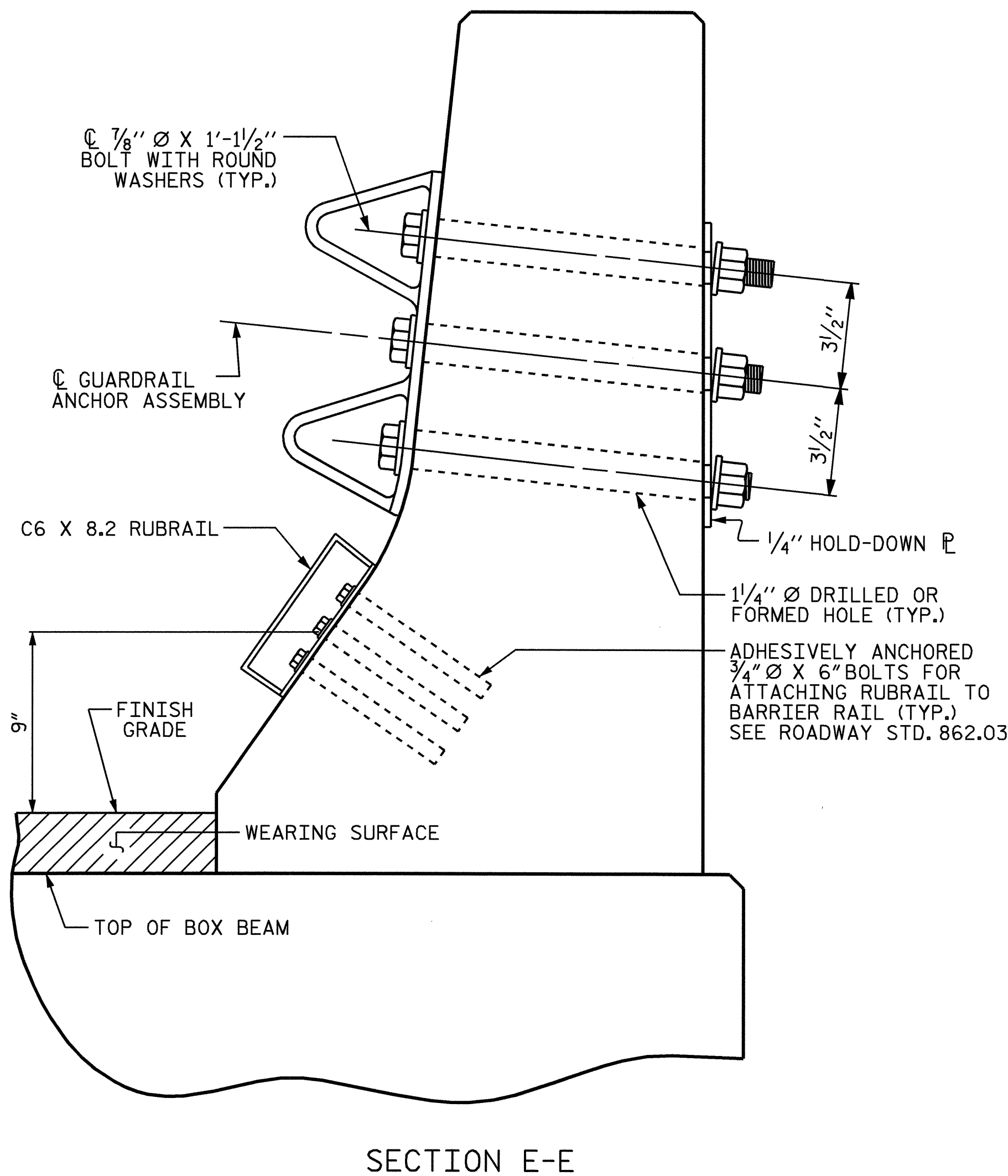
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

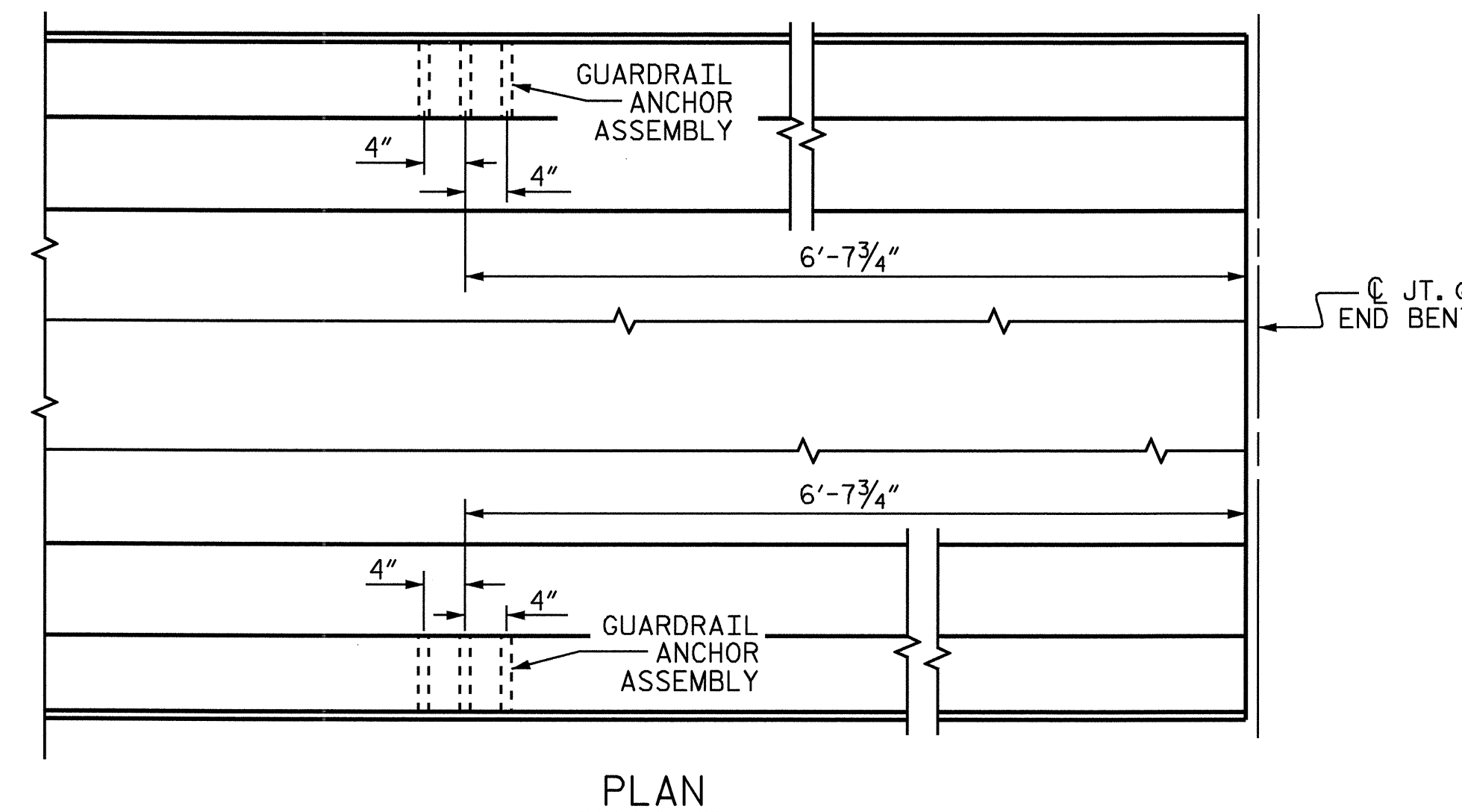
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



ELEVATION
FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

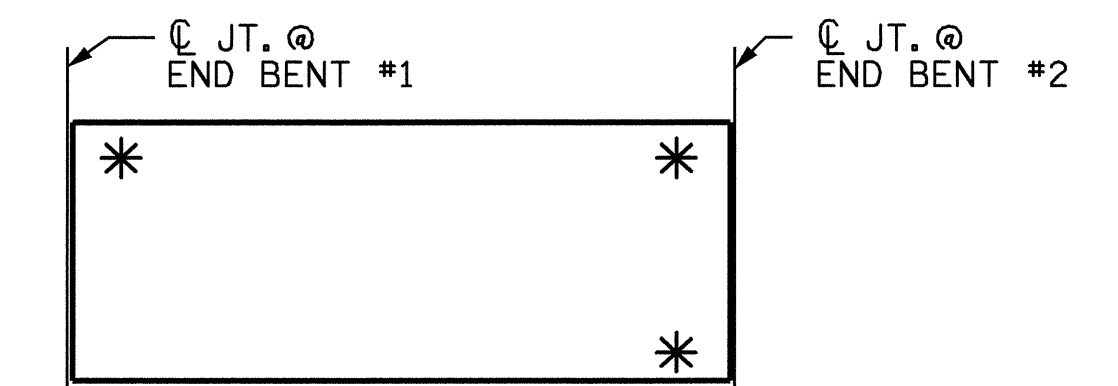


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN
LOCATION OF ANCHORS FOR GUARDRAIL

END BENT No. 2 SHOWN, END BENT No. 1 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 6 OF 6

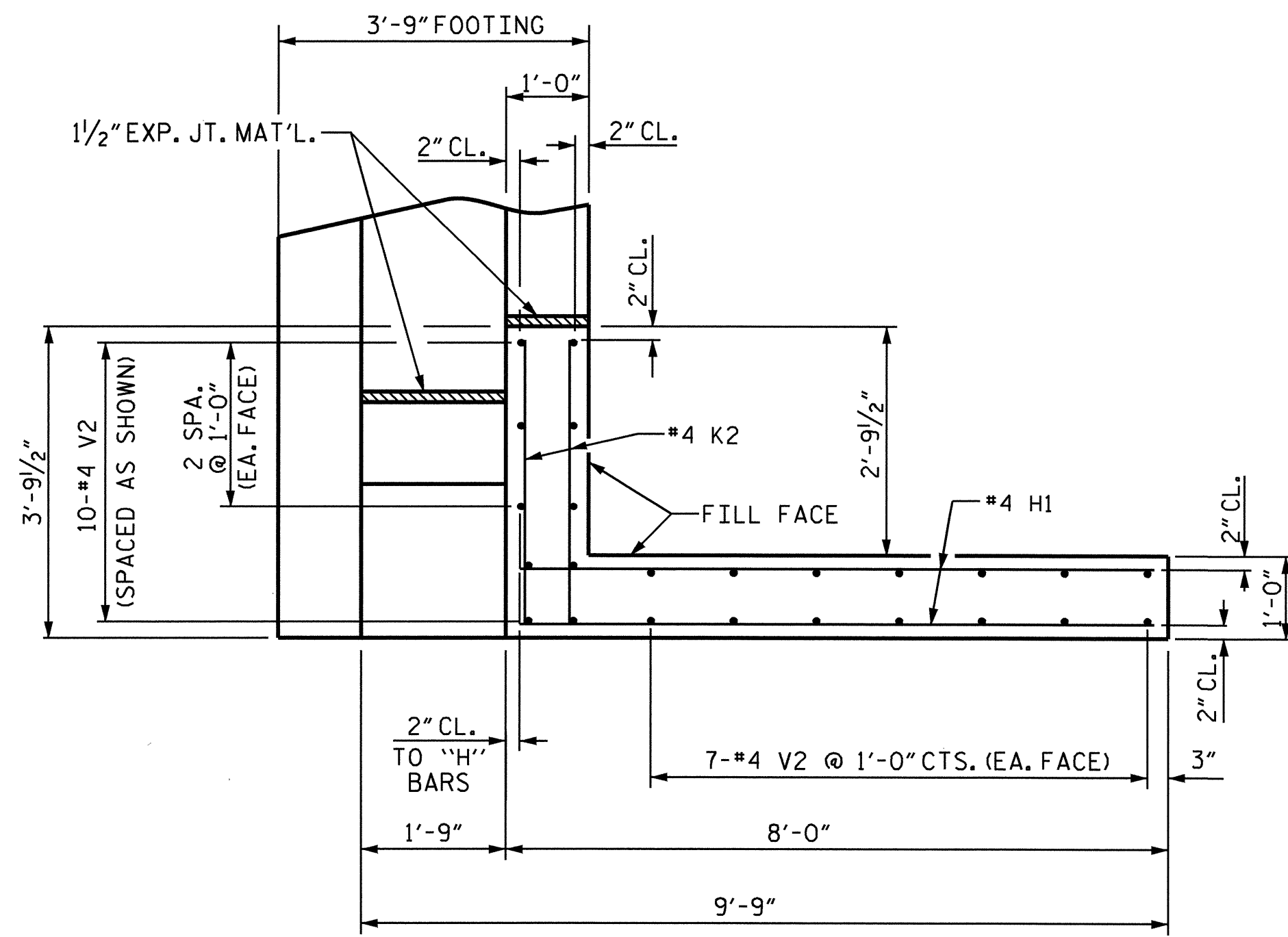
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL



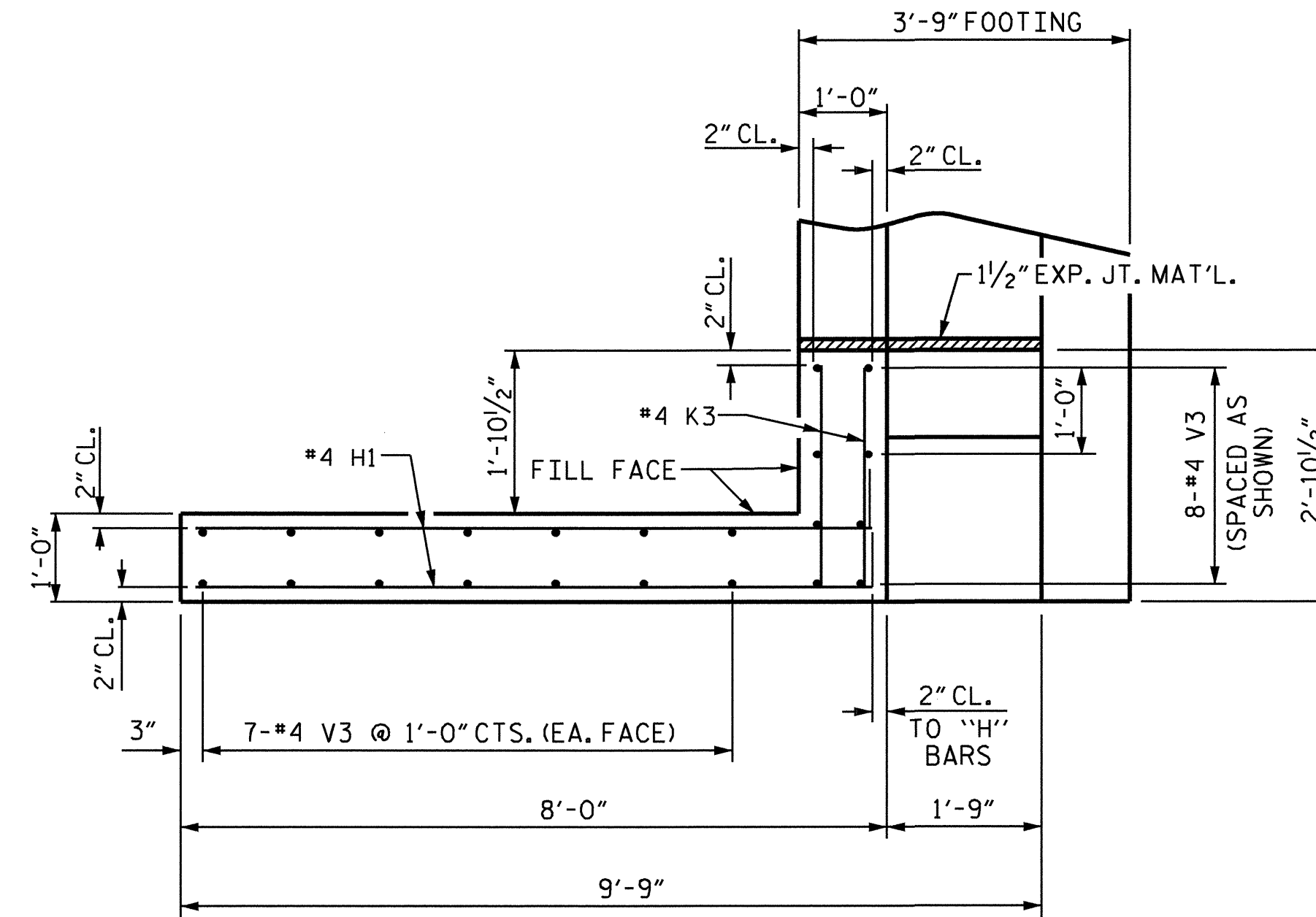
ASSEMBLED BY : T. BANKOVICH DATE : 8-2008
 CHECKED BY : A.V. ROYAL DATE : 9-2008
 DRAWN BY : TLA 5/06
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

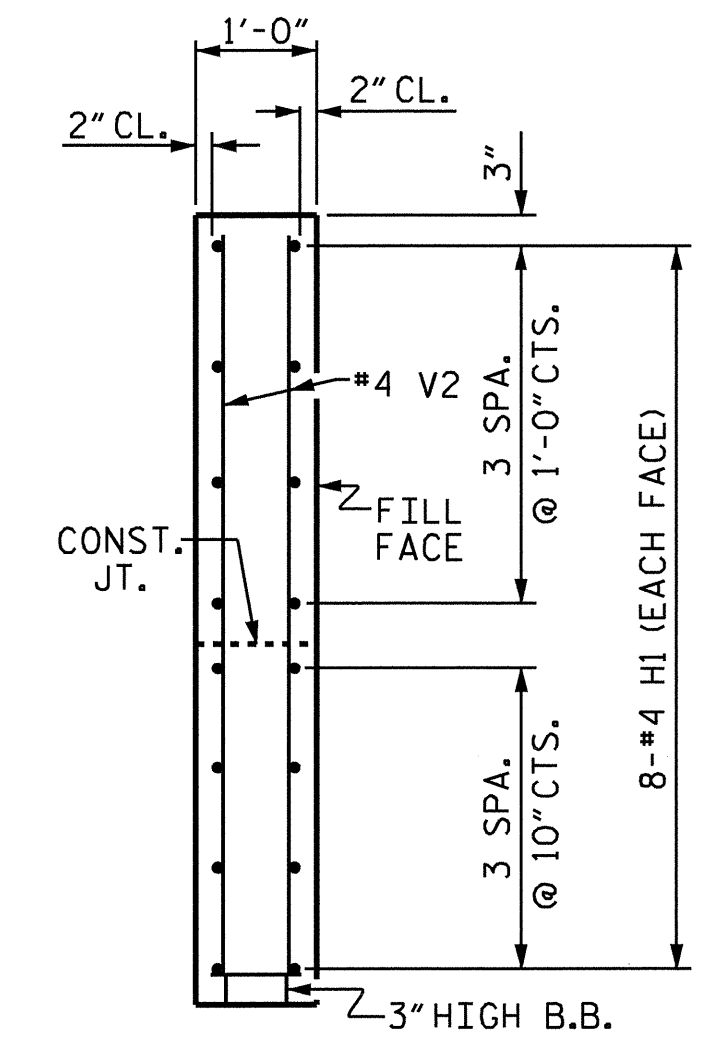
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			19



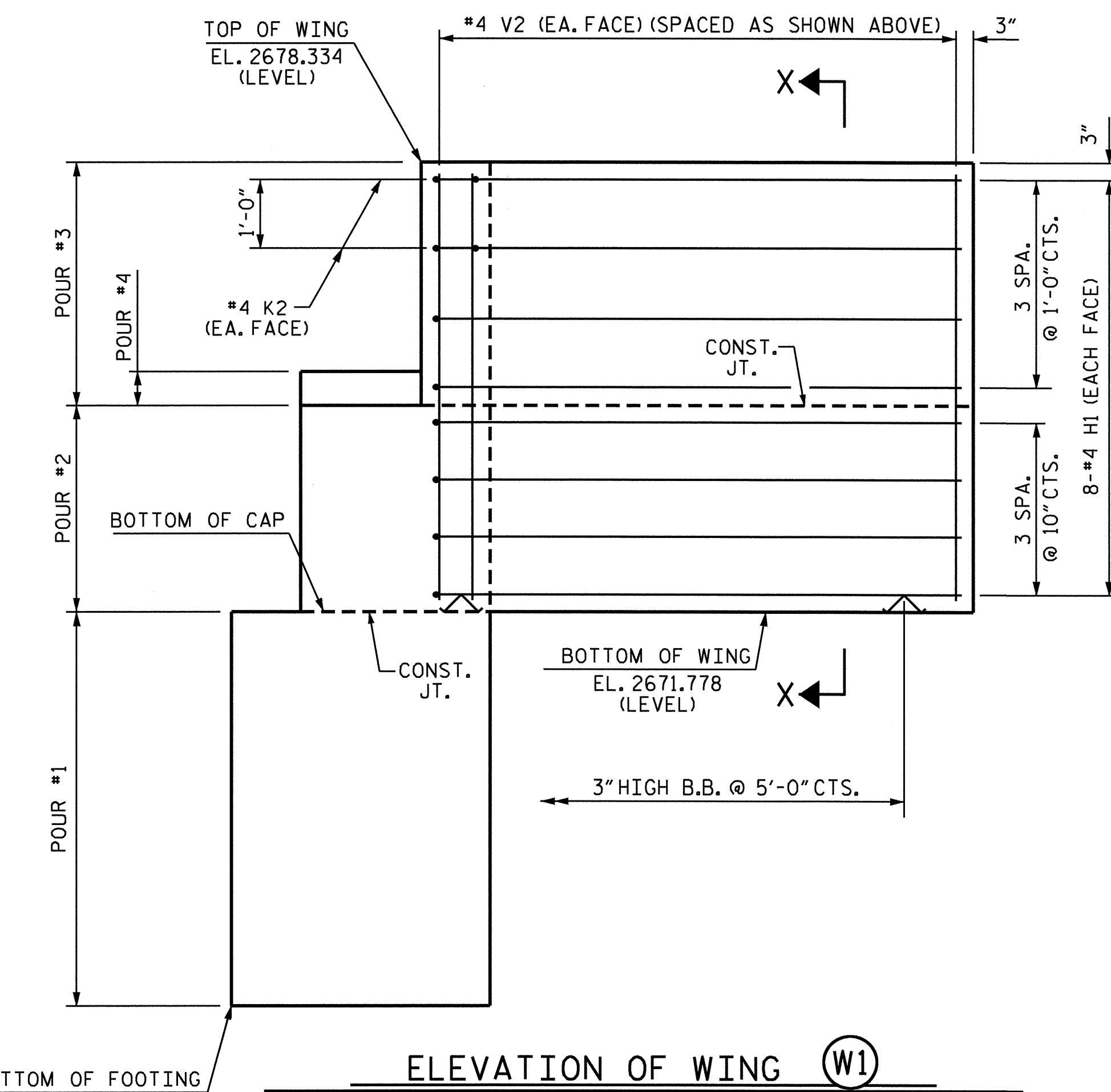
PLAN OF WING (W1)



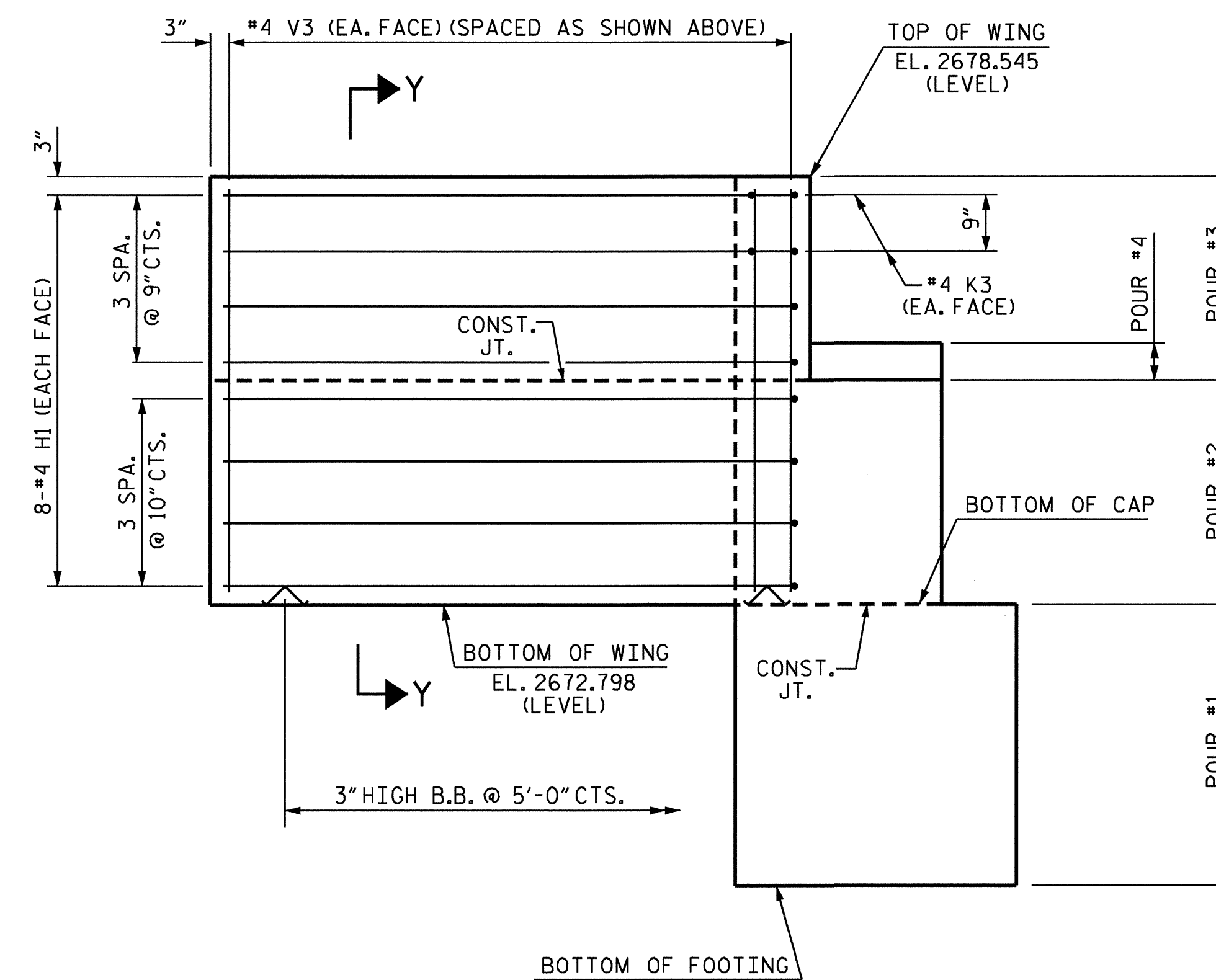
PLAN OF WING (W2)



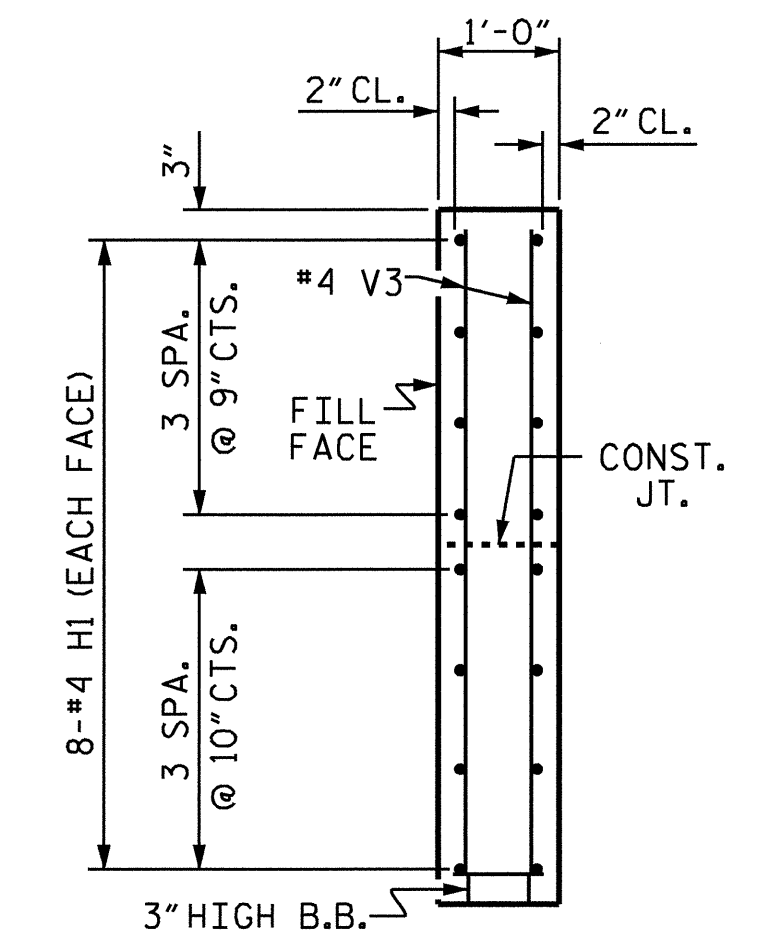
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. R-2100B
 ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 2 OF 3

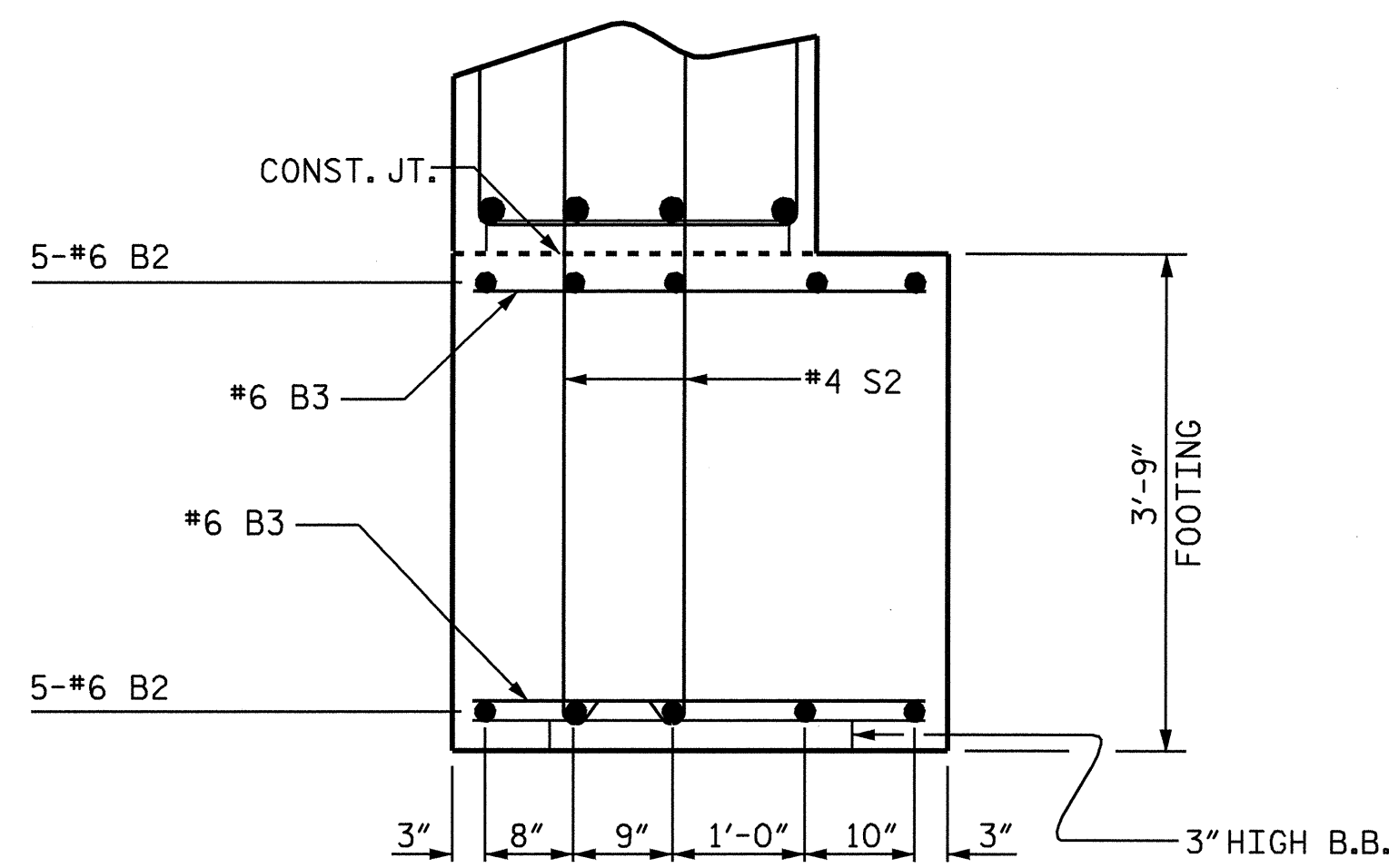
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

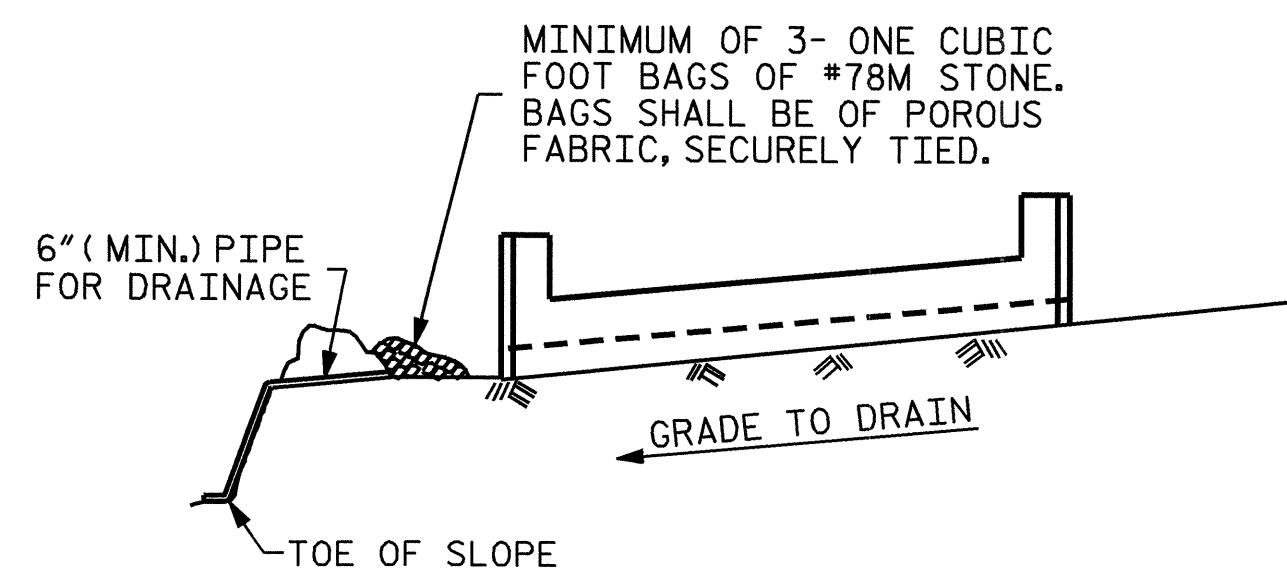
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
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2			4			19

DRAWN BY : A. V. ROYAL DATE : 05/09
 CHECKED BY : W. D. CRUTCHER DATE : 05/09

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PARTIAL SECTION B-B

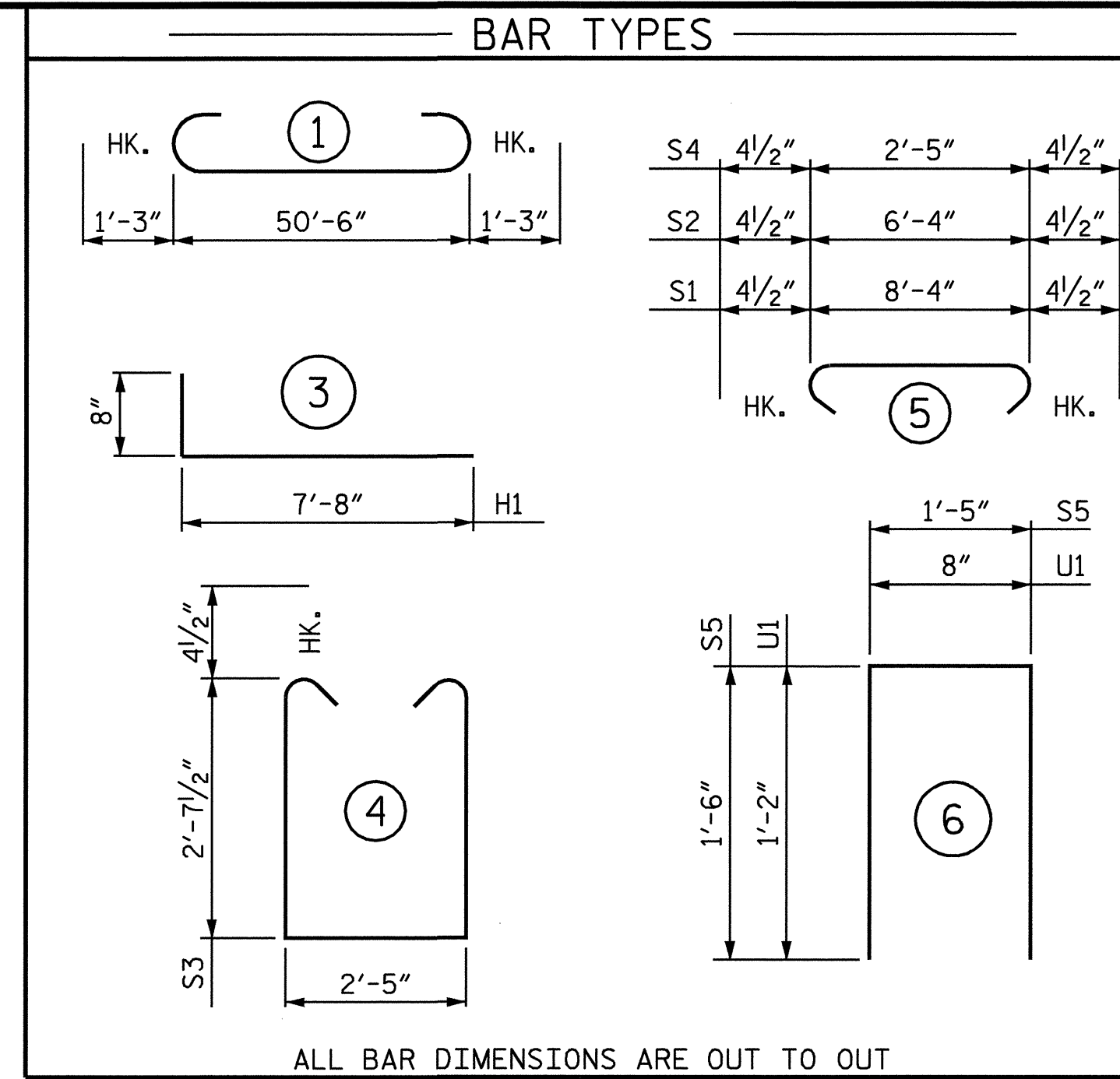


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

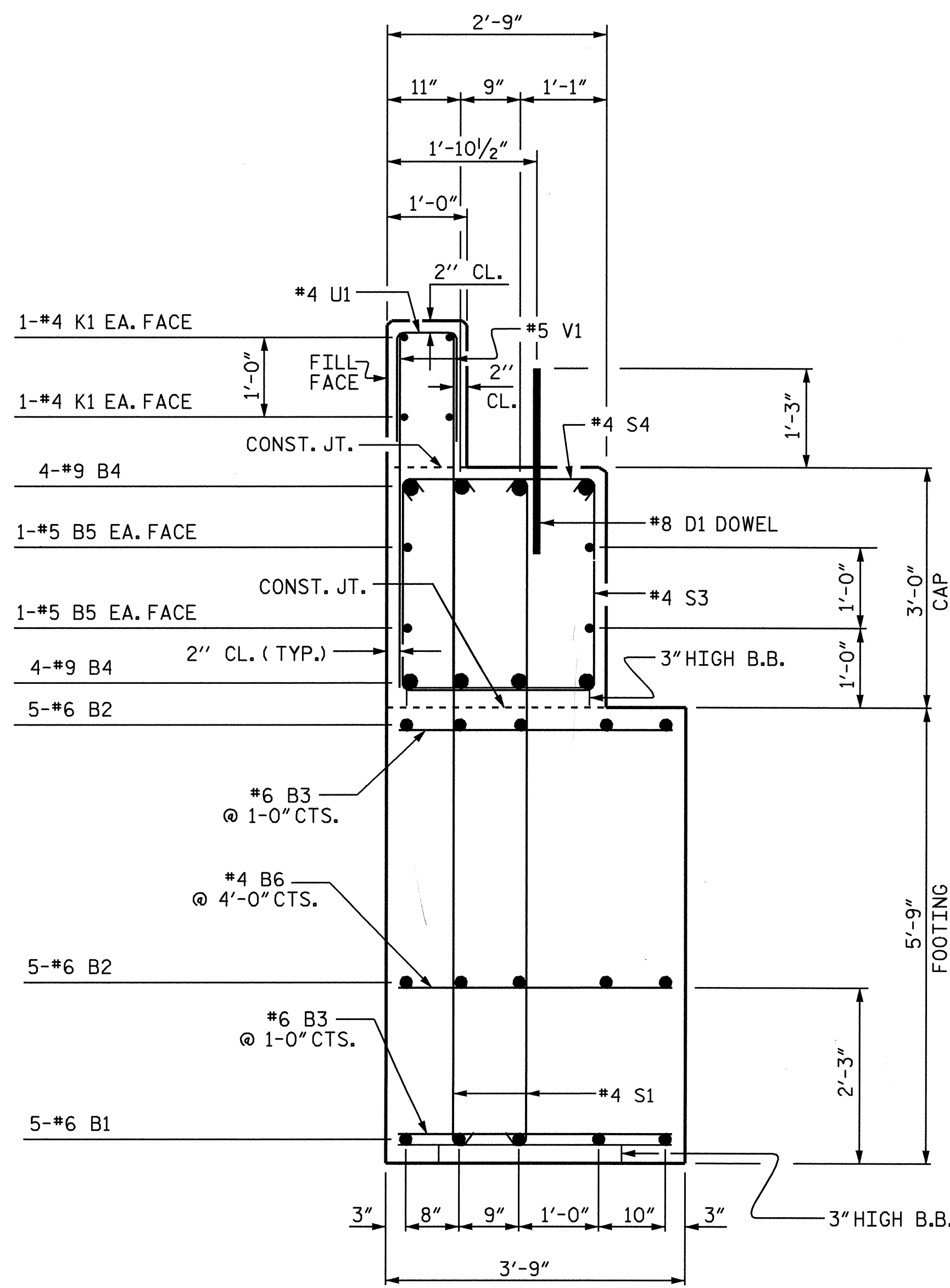
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

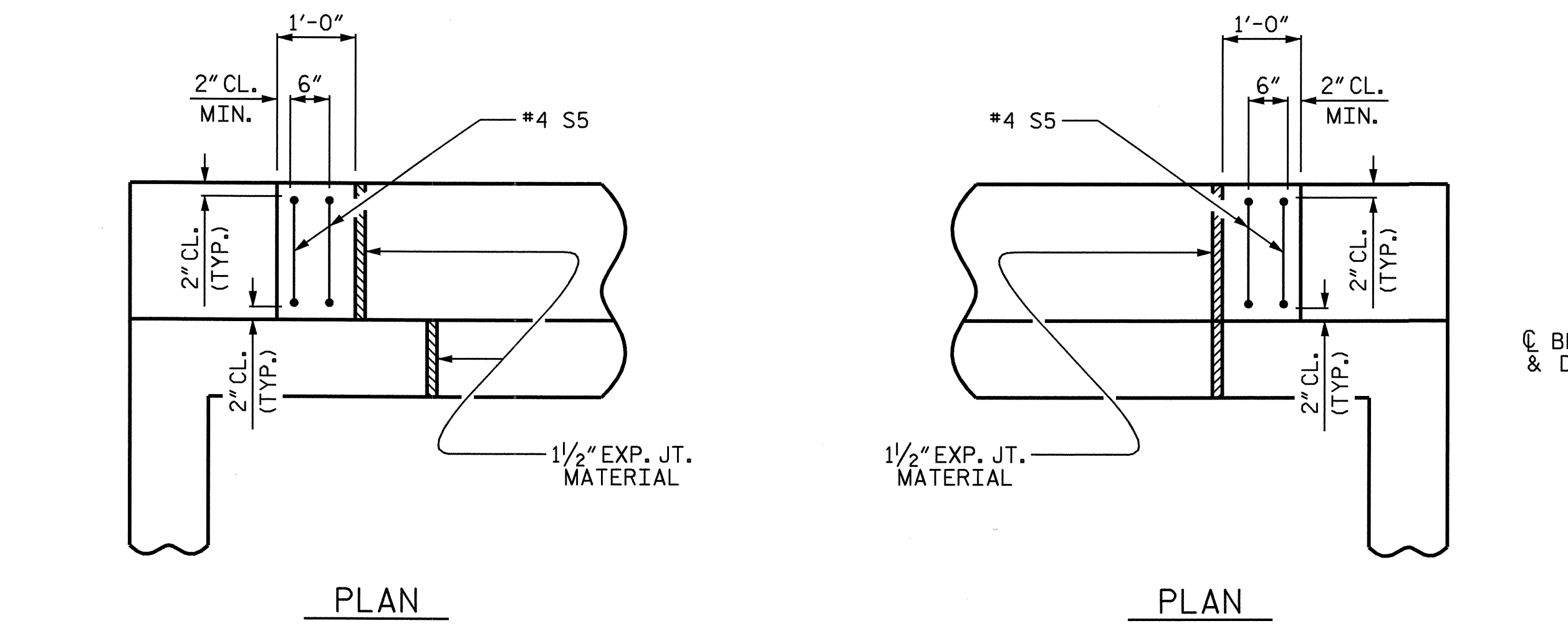


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
END BENT No. 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#6	STR	25'-0"	188
B2	10	#6	STR	50'-6"	759
B3	102	#6	STR	3'-5"	523
B4	8	#9	1	53'-0"	1442
B5	4	#5	STR	50'-7"	211
B6	7	#4	STR	3'-5"	16
D1	30	#8	STR	2'-3"	180
H1	32	#4	3	8'-4"	178
K1	8	#4	STR	26'-7"	142
K2	4	#4	STR	3'-5"	9
K3	4	#4	STR	2'-6"	7
S1	50	#4	5	9'-1"	303
S2	52	#4	5	7'-1"	246
S3	51	#4	4	8'-5"	287
S4	51	#4	5	3'-2"	108
S5	4	#4	6	4'-5"	12
U1	45	#4	6	3'-0"	90
V1	90	#5	STR	4'-2"	391
V2	24	#4	STR	6'-2"	99
V3	22	#4	STR	5'-4"	78
REINFORCING STEEL					5269 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 (FOOTING)					33.7 C.Y.
POUR #2 (CAP & LOWER WINGS)					17.1 C.Y.
POUR #3 (BACKWALL & UPPER WINGS)					4.9 C.Y.
POUR #4 (LATERAL GUIDES)					0.1 C.Y.
TOTAL CLASS A CONCRETE					55.8 C.Y.

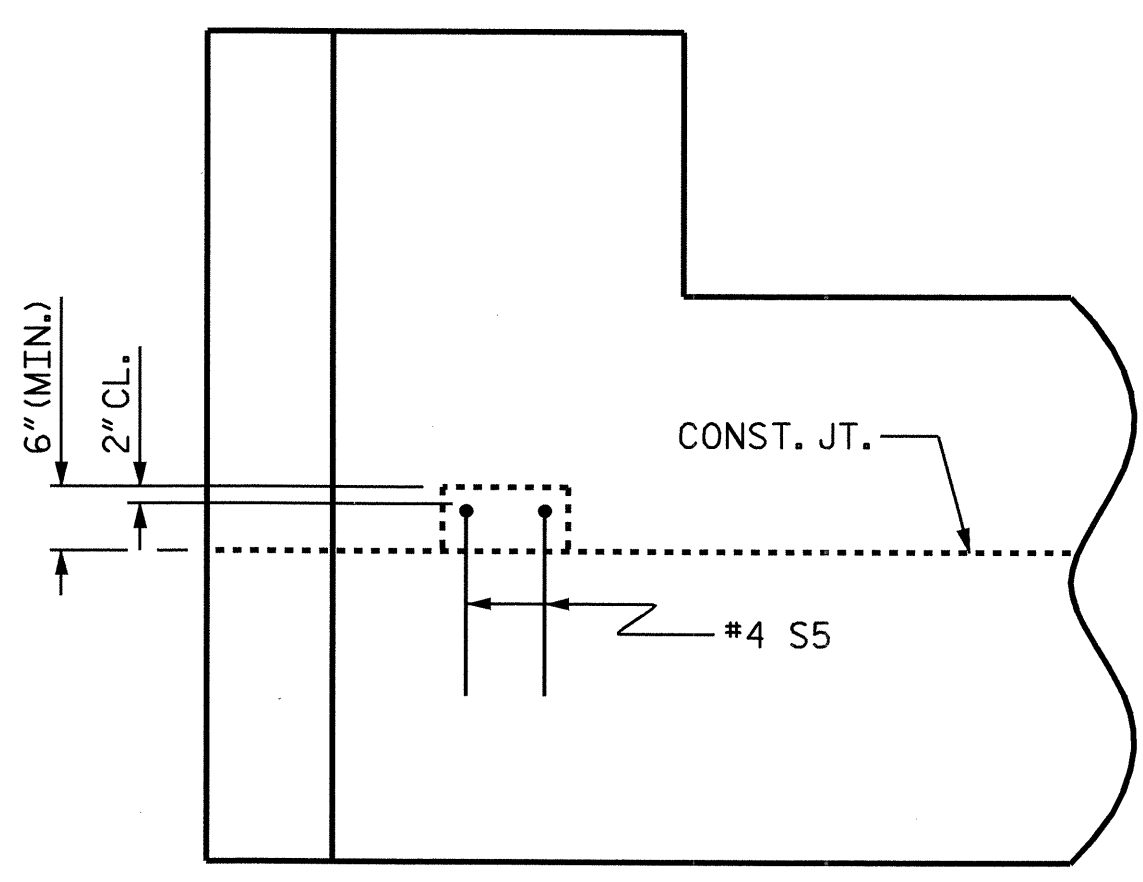


SECTION A-A

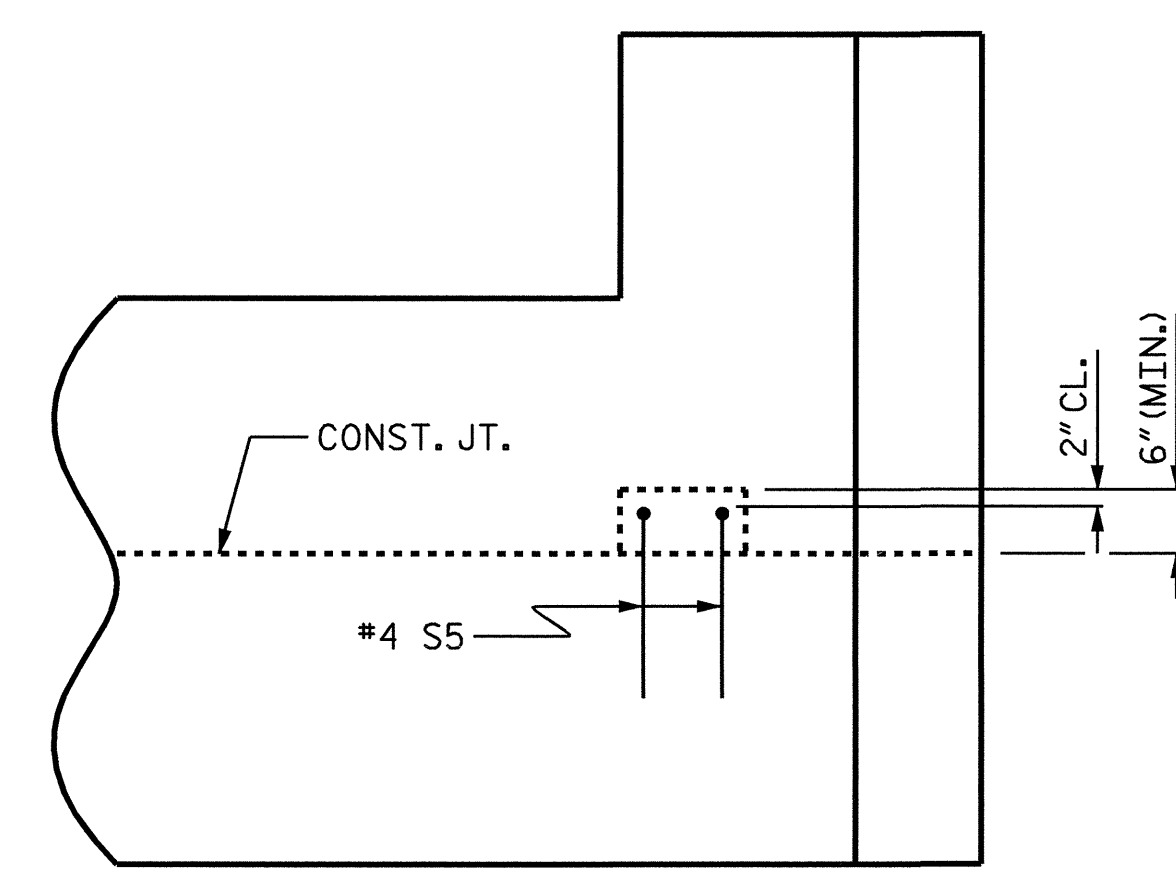


PLAN

PLAN



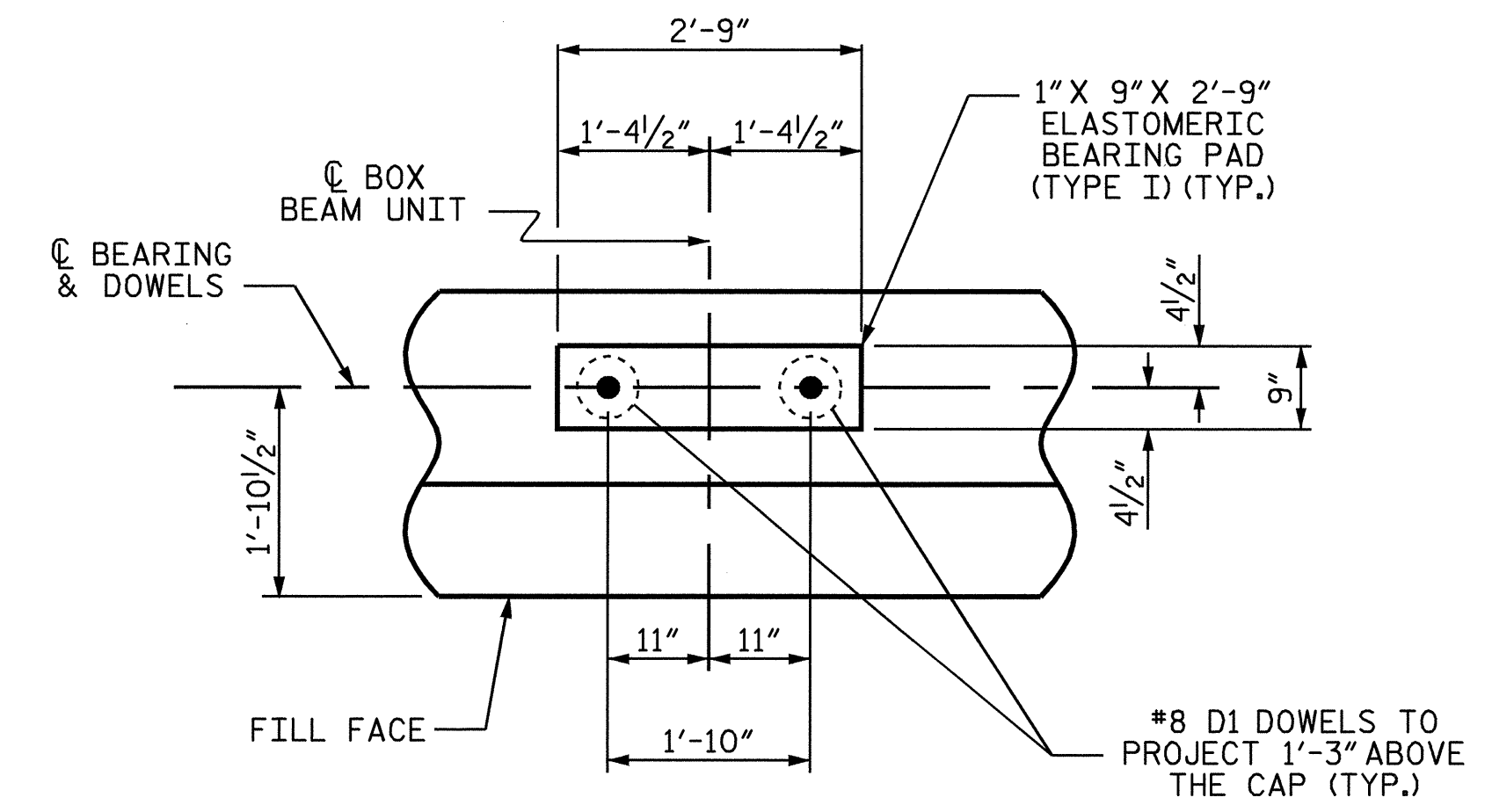
ELEVATION (LEFT LATERAL GUIDE)



ELEVATION (RIGHT LATERAL GUIDE)

LATERAL GUIDE DETAILS

(FOOTING NOT SHOWN FOR CLARITY)



DETAIL "A" (TYP. EA. BEARING)

PROJECT NO. R-2100B
 ASHE COUNTY
 STATION: 364+50.00 -L1-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT No. 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 19
					S-12



DRAWN BY: A. V. ROYAL DATE: 05/09
 CHECKED BY: W. D. CRUTCHER DATE: 05/09

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NOTES:

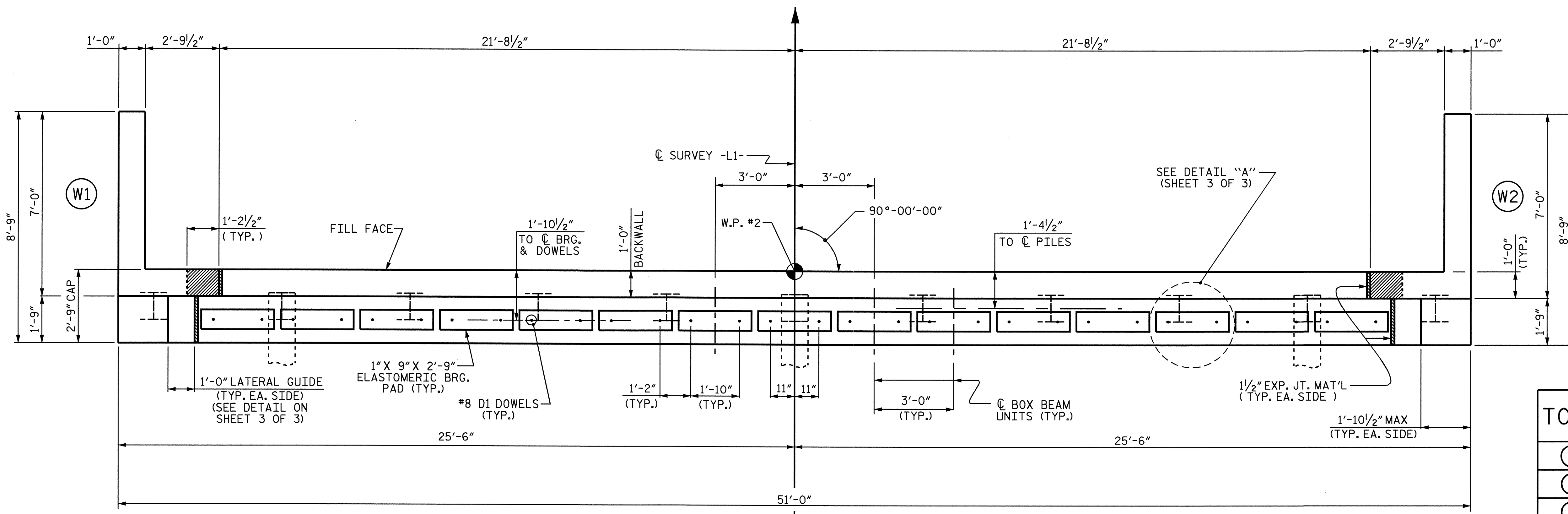
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR SECTION A-A, SEE SHEET 3 OF 3.

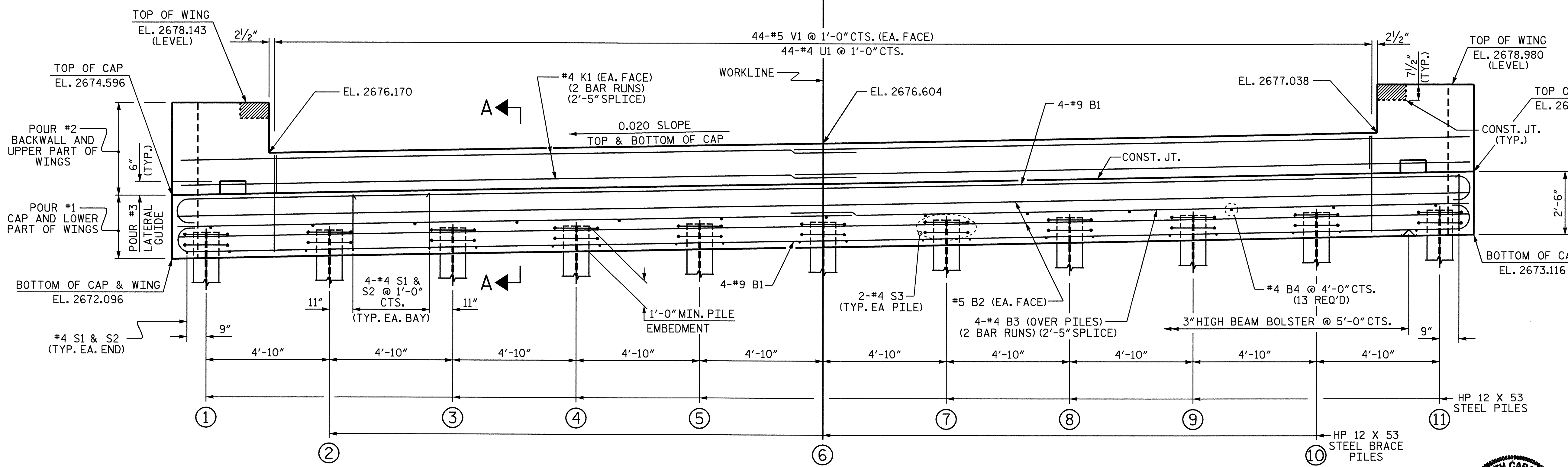
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN

TOP OF PILE ELEVATIONS			
①	2673.133	⑦	2673.713
②	2673.229	⑧	2673.809
③	2673.326	⑨	2673.906
④	2673.423	⑩	2674.003
⑤	2673.519	⑪	2674.099
⑥	2673.616		



ELEVATION

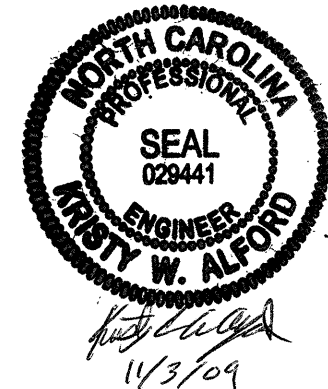
CONCRETE COLLAR FOR CORROSION PROTECTION FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. FOR "CORROSION PROTECTION FOR STEEL PILES DETAILS", SEE SHEET 3 OF 3

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-
 SHEET 1 OF 3

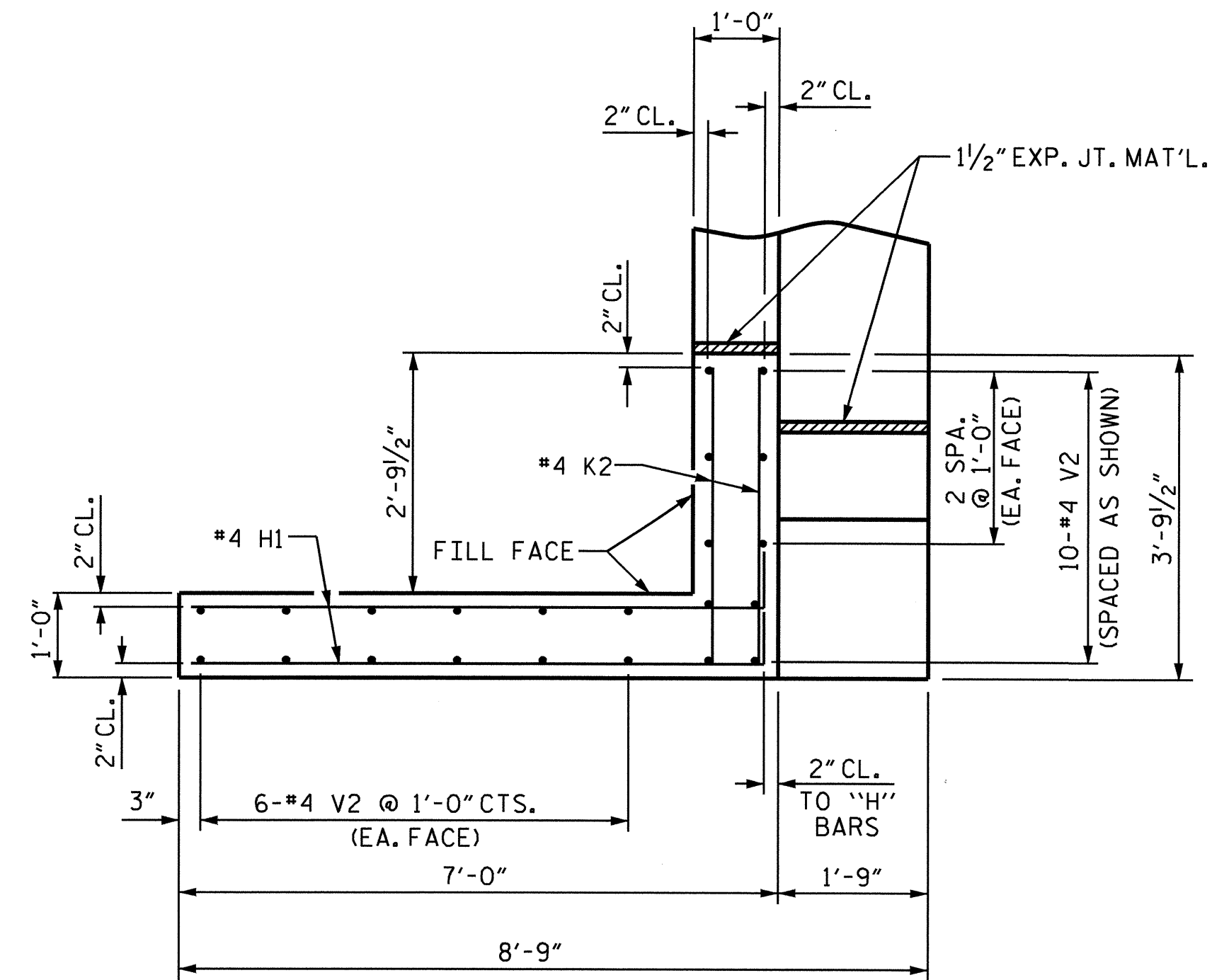
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 2**

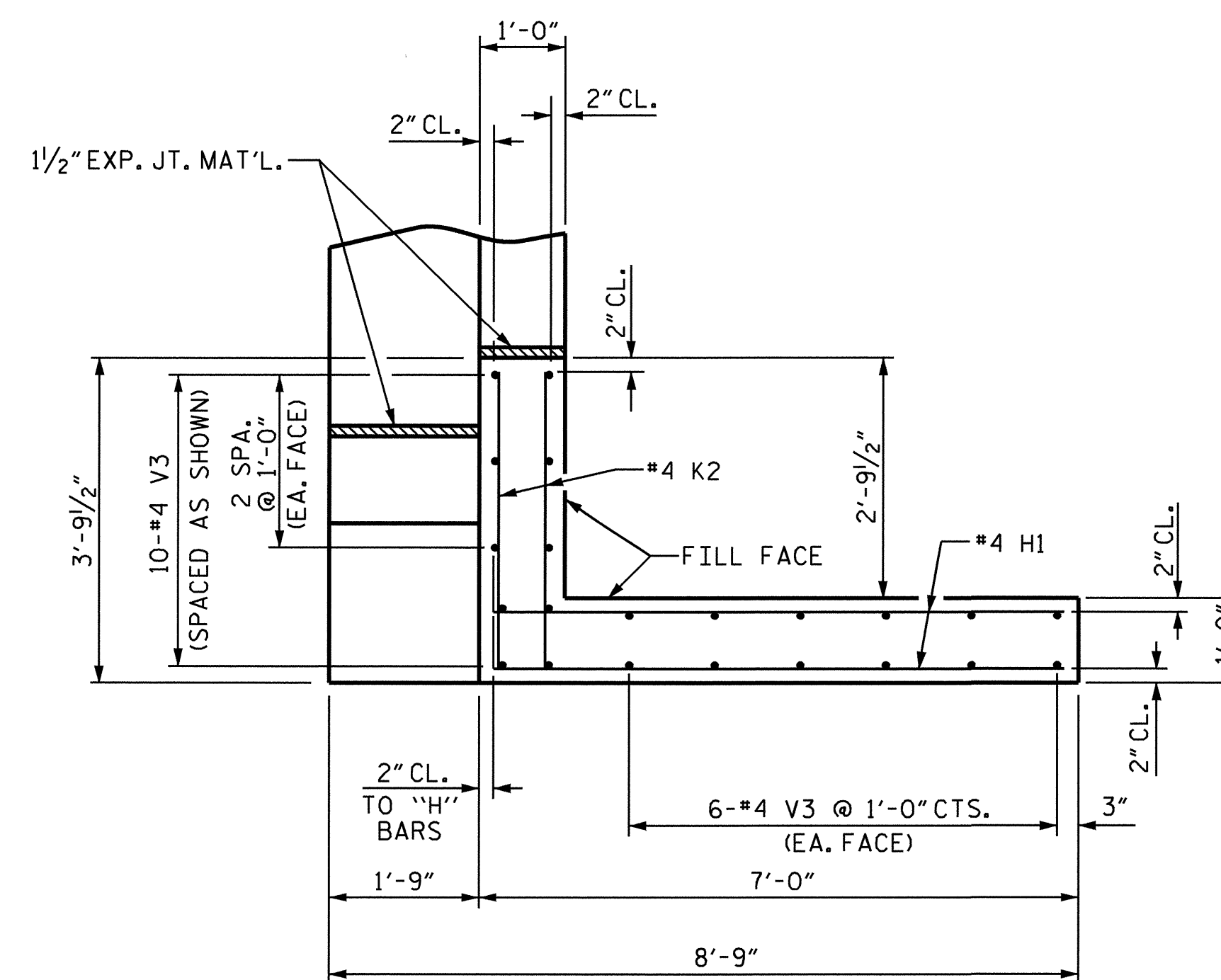
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			19



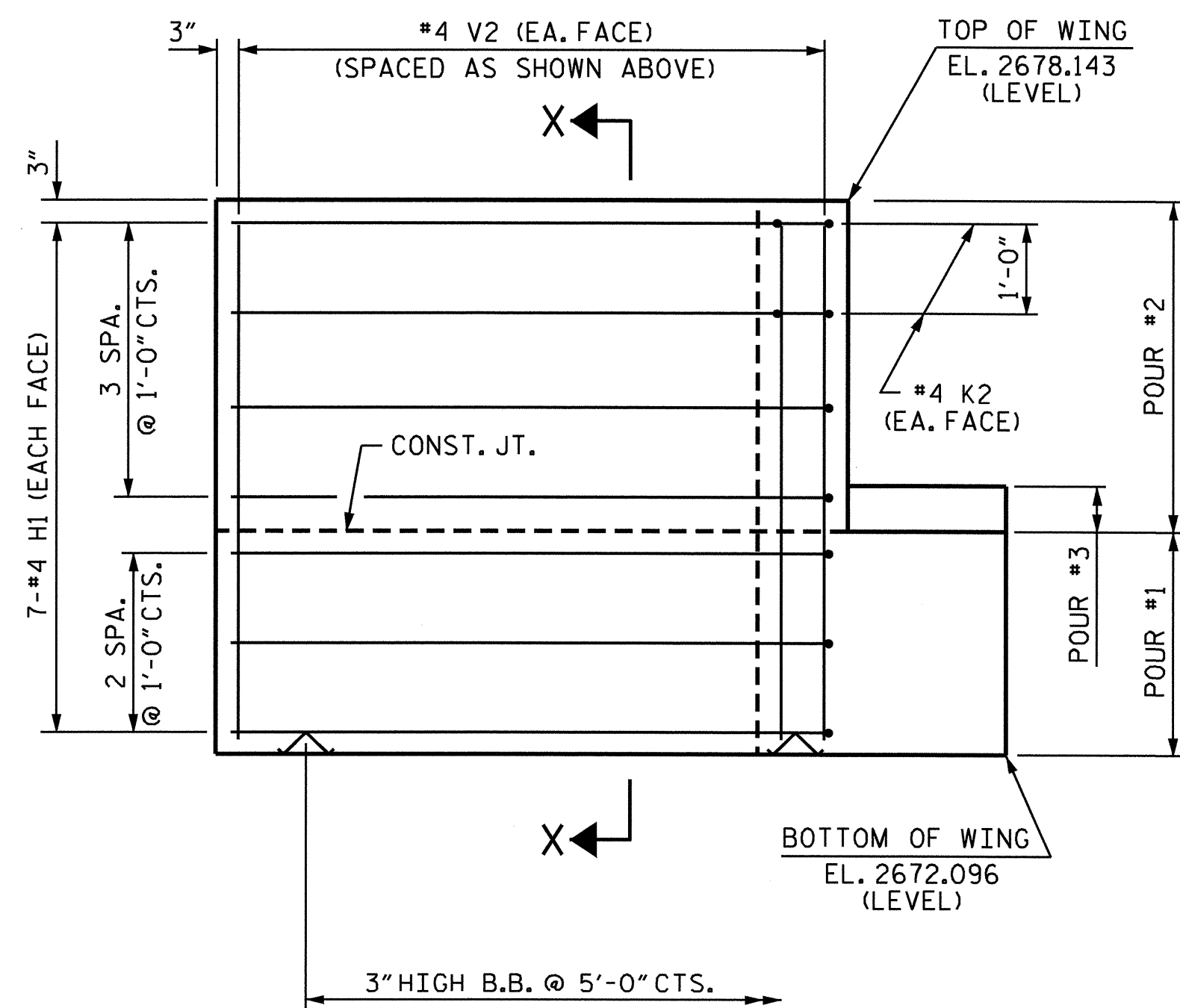
DRAWN BY: A. V. ROYAL DATE: 05/09
 CHECKED BY: W. D. CRUTCHER DATE: 05/09



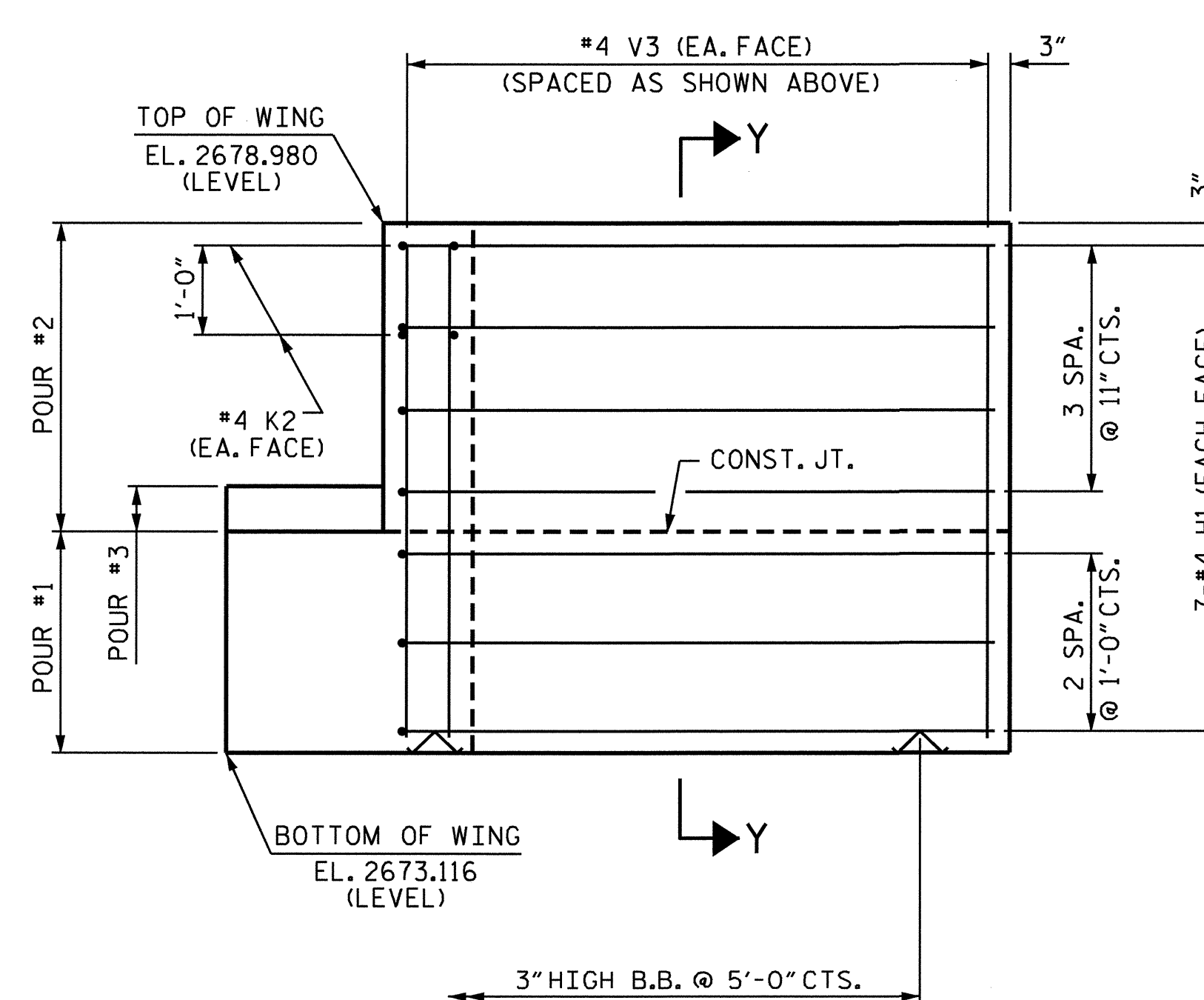
PLAN OF WING (W1)



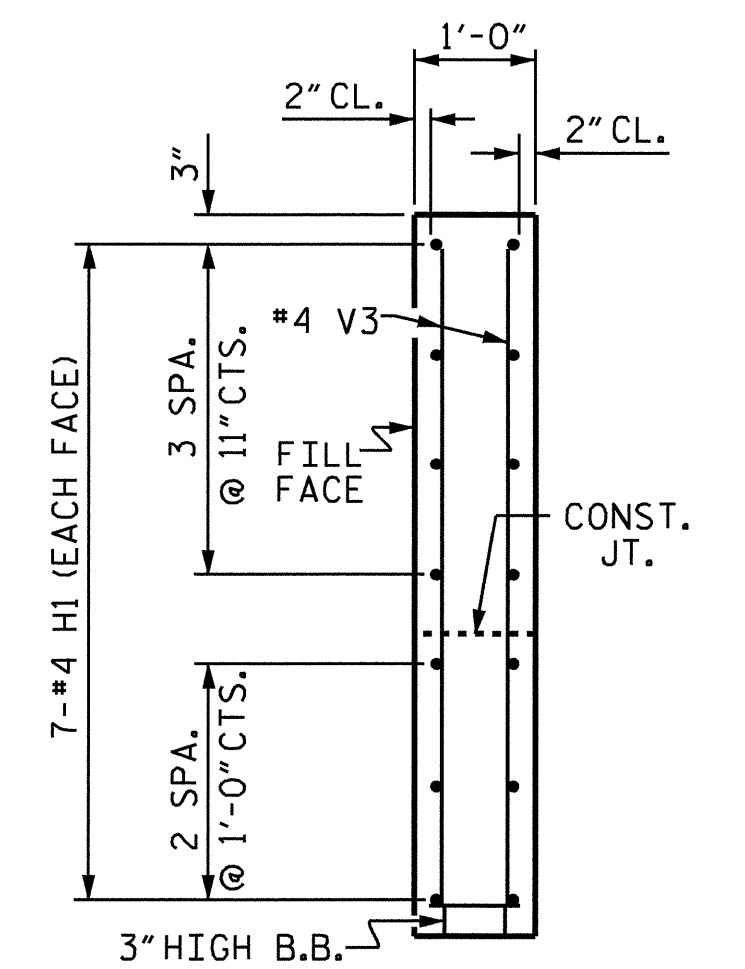
PLAN OF WING (W2)



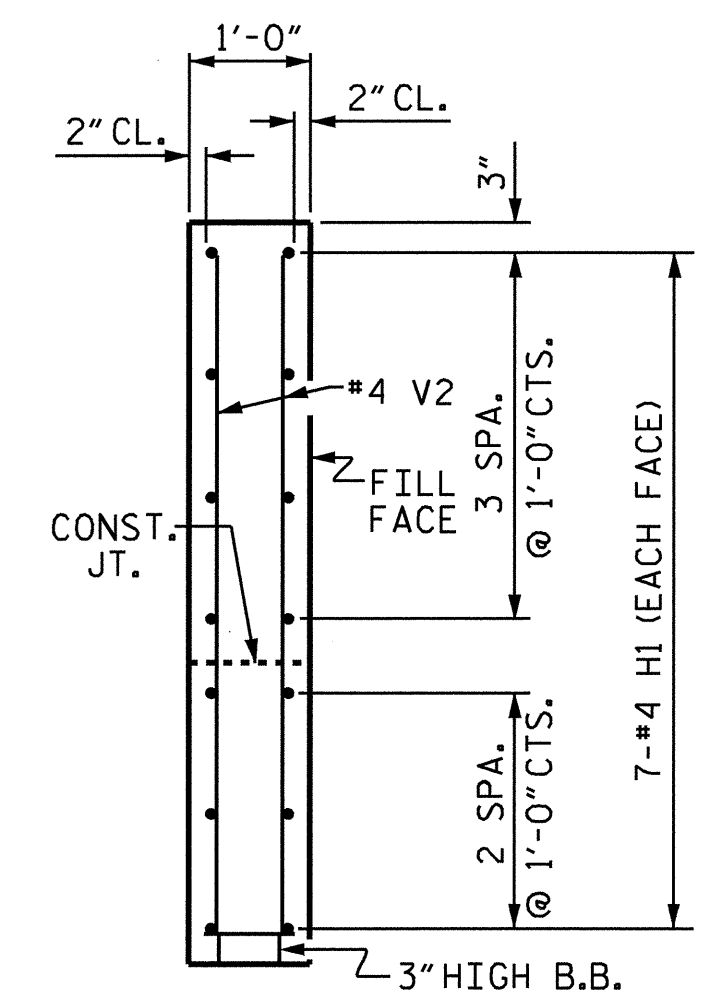
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y



SECTION X-X

PROJECT NO. R-2100B
 ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

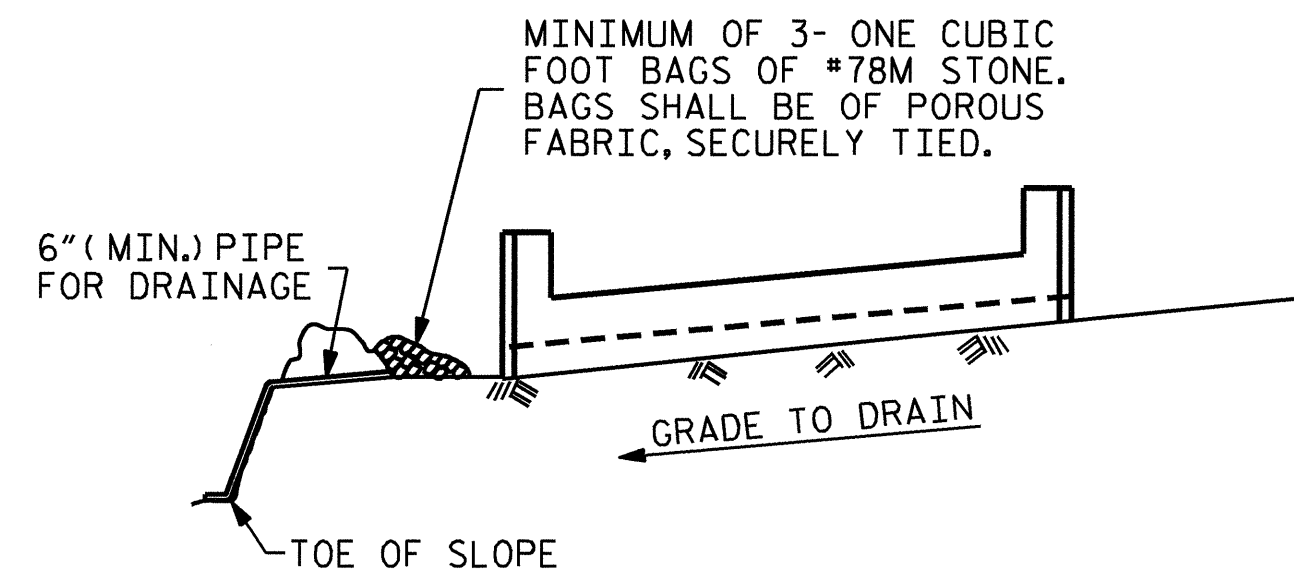
SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: A. V. ROYAL DATE: 05/09
 CHECKED BY: W. D. CRUTCHER DATE: 05/09

22-DEC-2009 08:45
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			19

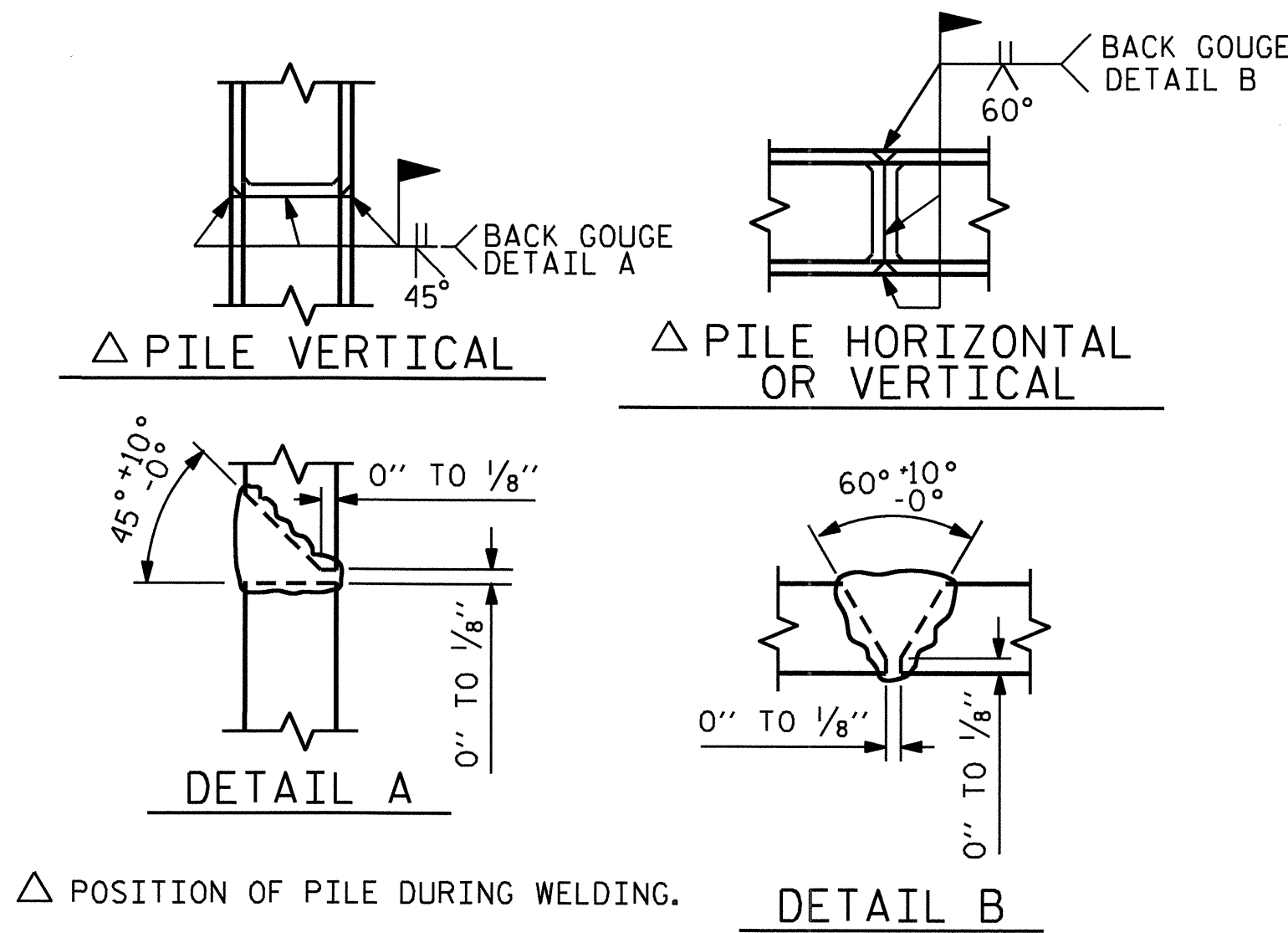


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

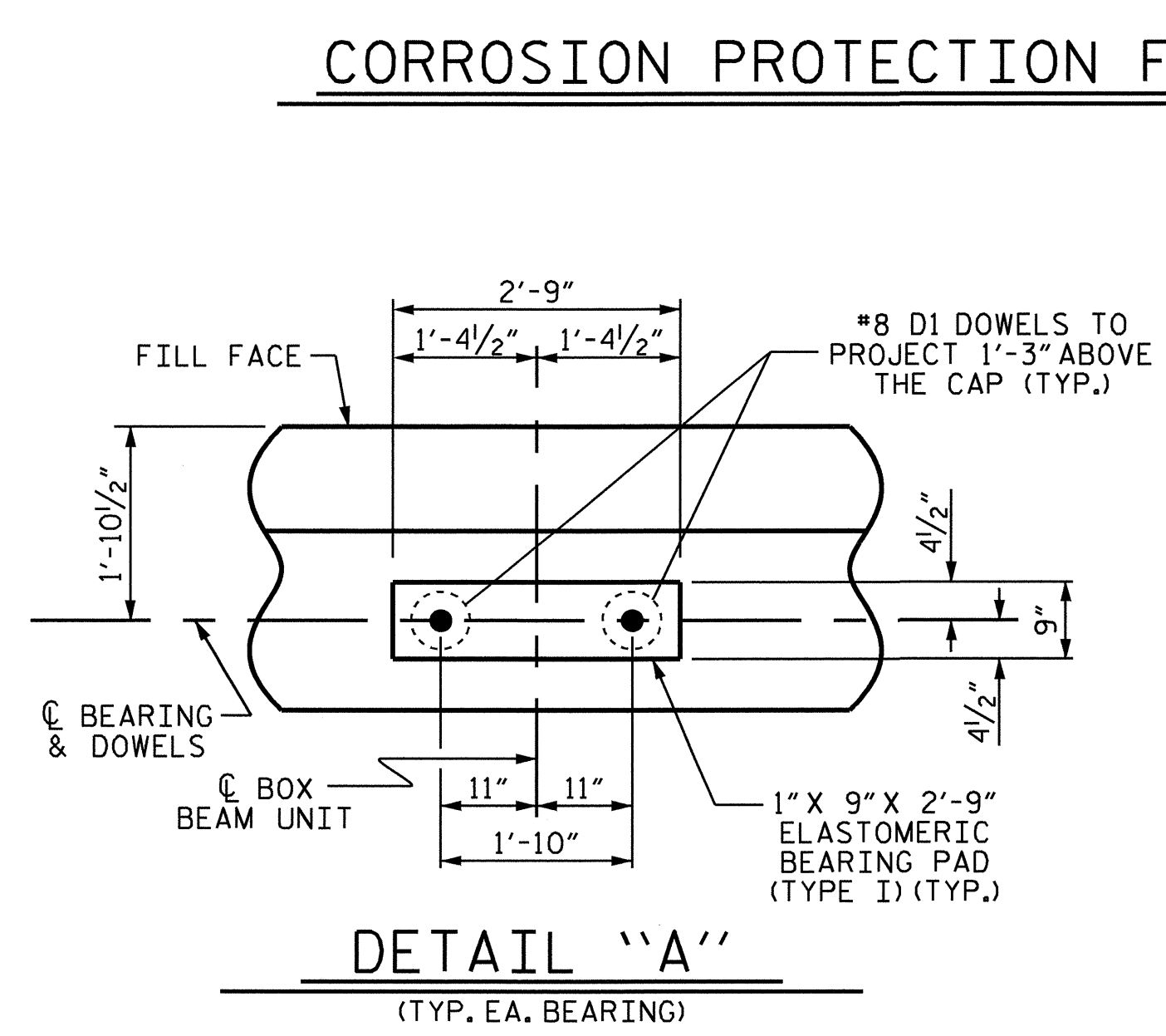
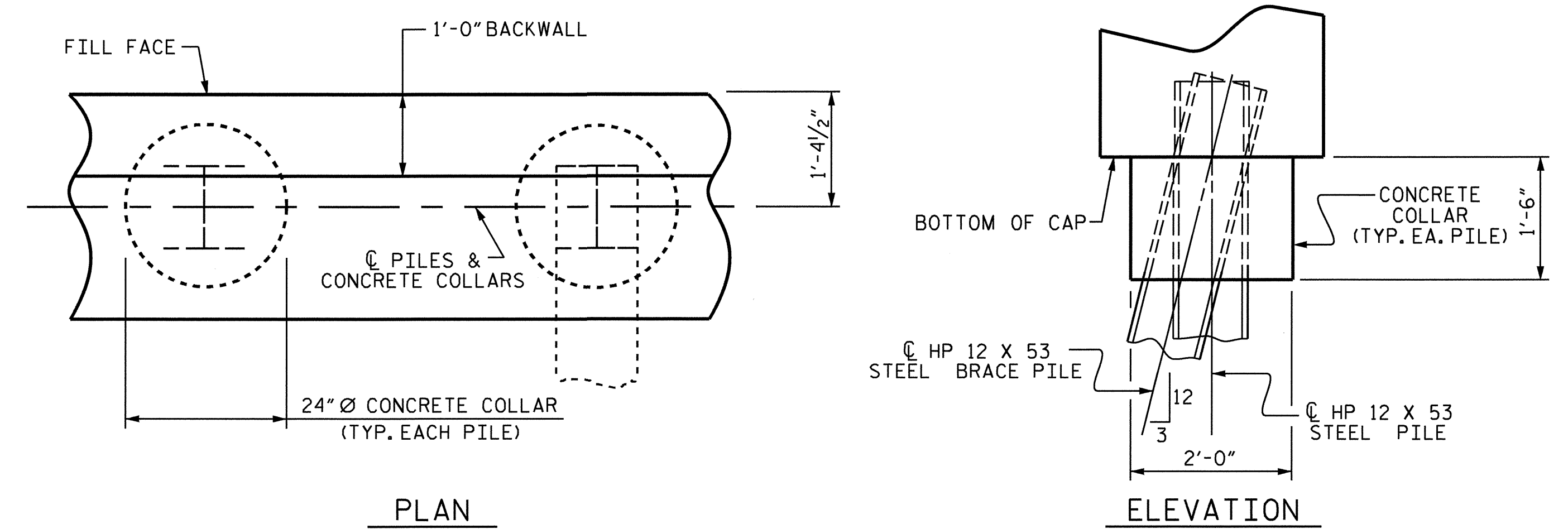
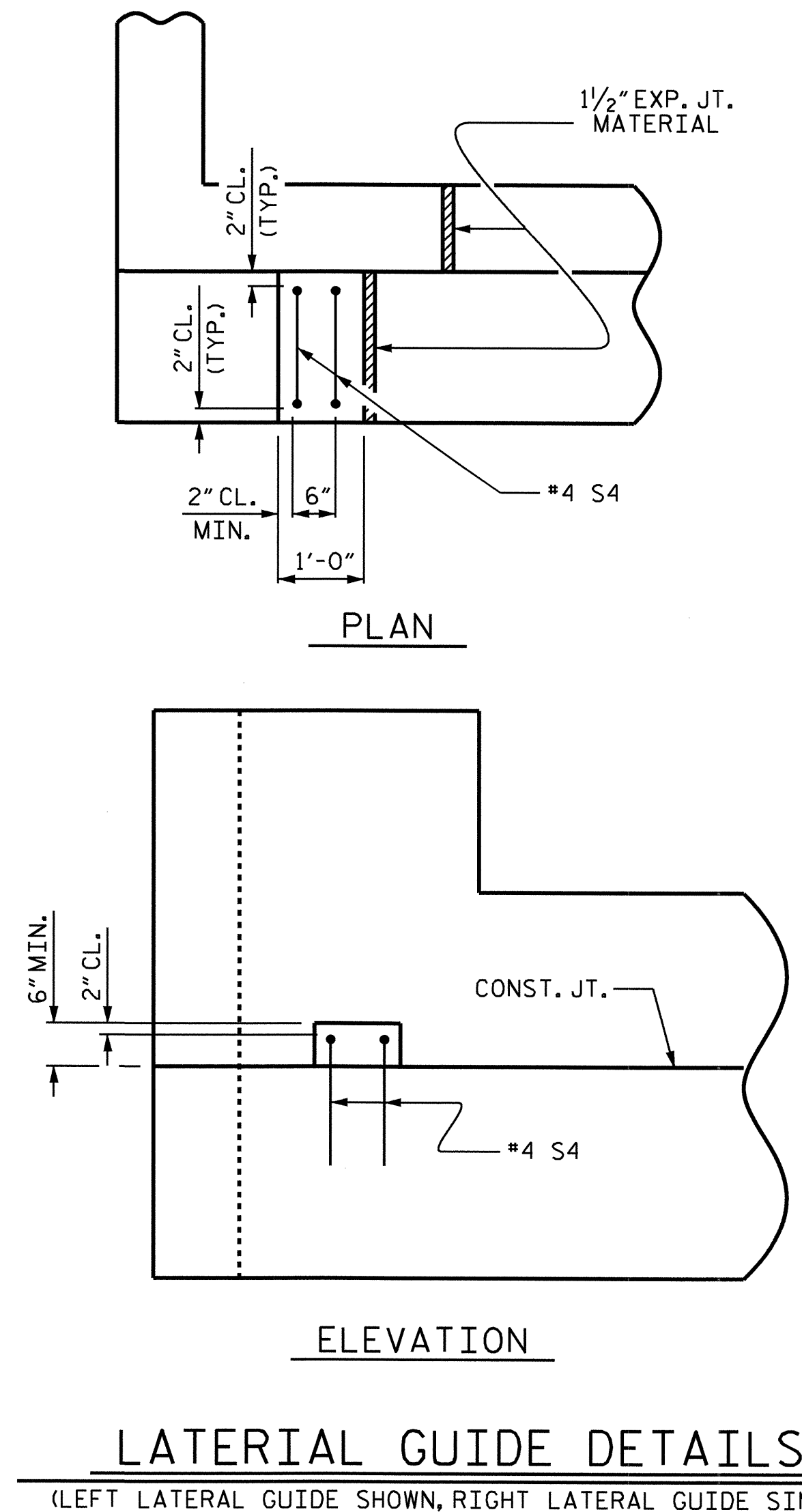
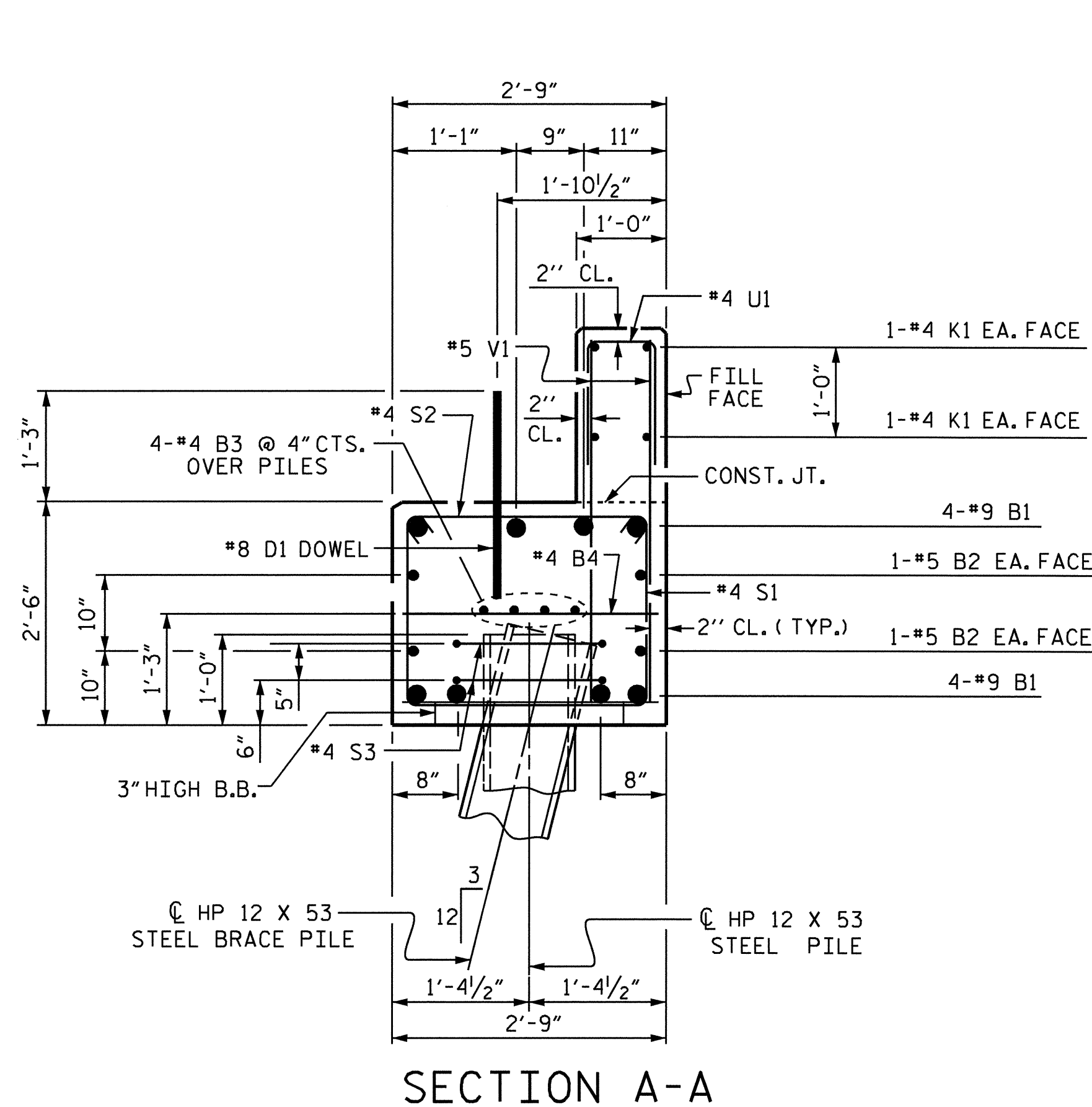
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53'-0"	1442
B2	4	#5	STR	50'-7"	211
B3	8	#4	STR	26'-7"	142
B4	13	#4	STR	2'-5"	21
D1	30	#8	STR	2'-3"	180
H1	28	#4	2	7'-4"	137
K1	8	#4	STR	26'-7"	142
K2	8	#4	STR	3'-5"	18
S1	42	#4	3	7'-5"	208
S2	42	#4	4	3'-2"	89
S3	22	#4	6	6'-6"	96
S4	4	#4	5	4'-5"	12
U1	44	#4	5	3'-0"	88
V1	88	#5	STR	3'-7"	329
V2	22	#4	STR	5'-8"	83
V3	22	#4	STR	5'-6"	81
REINFORCING STEEL					3279 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP, & LOWER WINGS & COLLARS)					16.0 C.Y.
POUR #2 (BACKWALL & UPPER WINGS)					5.0 C.Y.
POUR #3 (LATERAL GUIDES)					0.1 C.Y.
TOTAL CLASS A CONCRETE					21.1 C.Y.
HP 12 X 53 STEEL PILES					No. = 11
					135 LIN FT.

ALL BAR DIMENSIONS ARE OUT TO OUT



PROJECT NO. R-2100B

ASHE COUNTY

STATION: 364+50.00 -L-

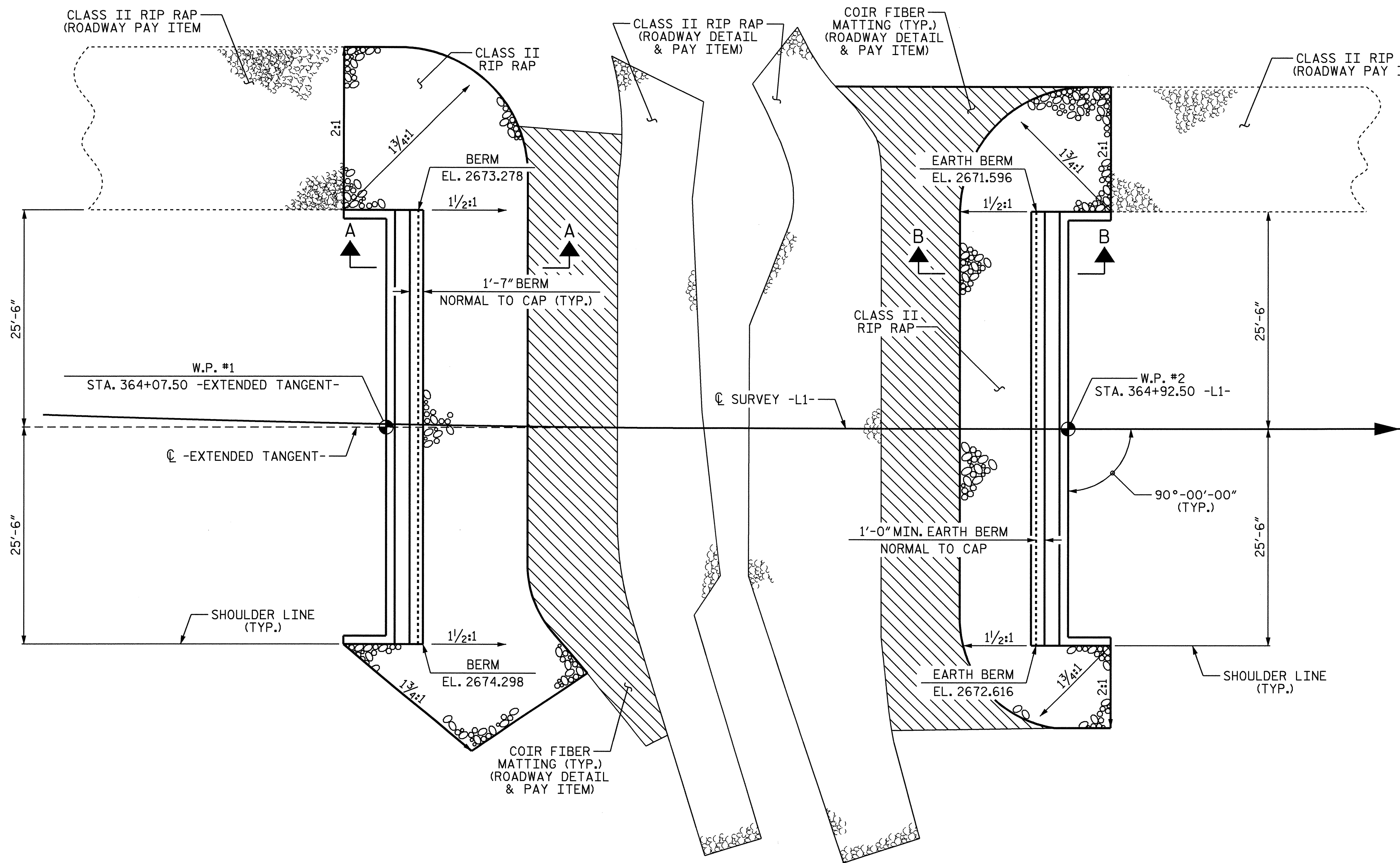
SHEET 3 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-15
					TOTAL SHEETS 19

DRAWN BY: A. V. ROYAL DATE: 05/09

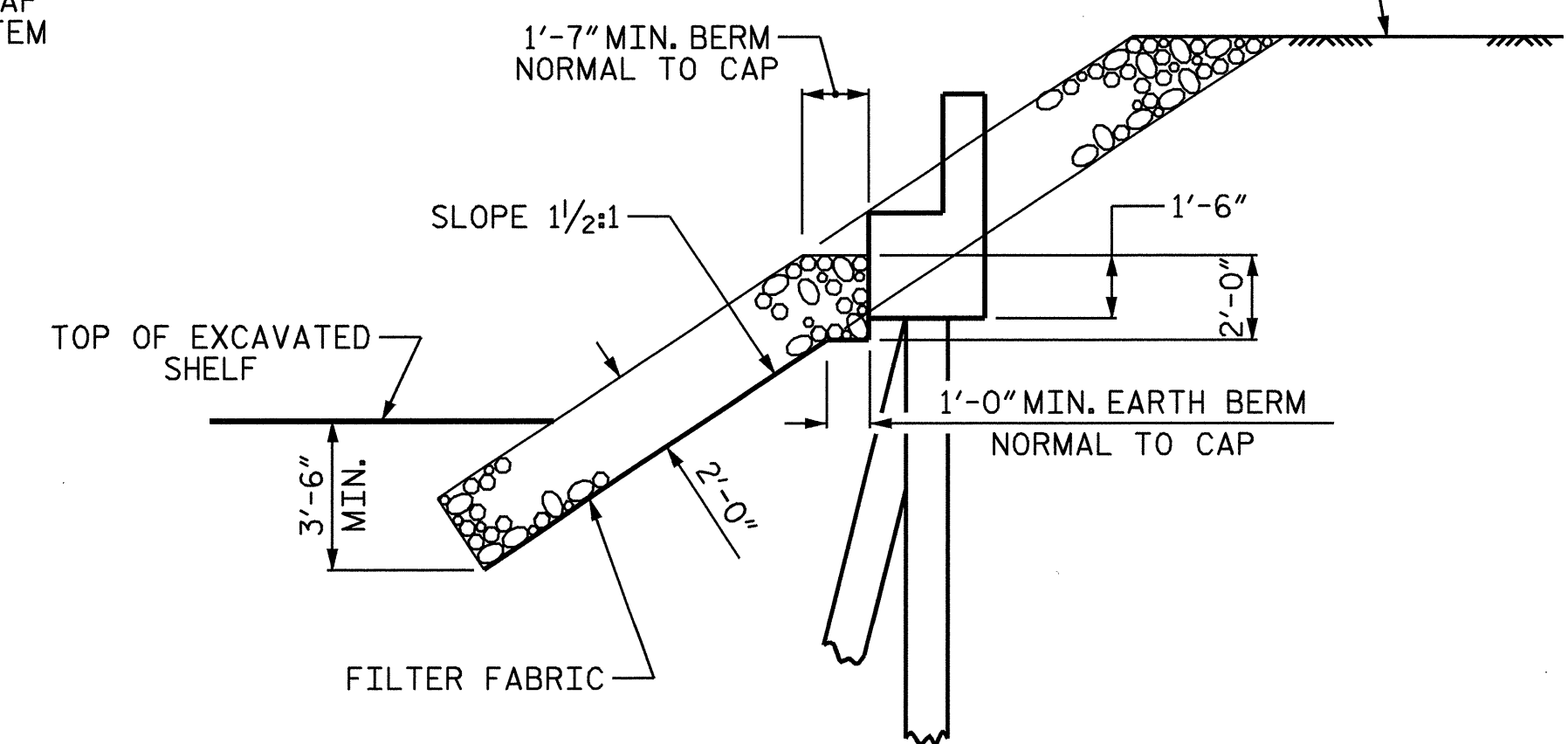
CHECKED BY: W. D. CRUTCHER DATE: 05/09



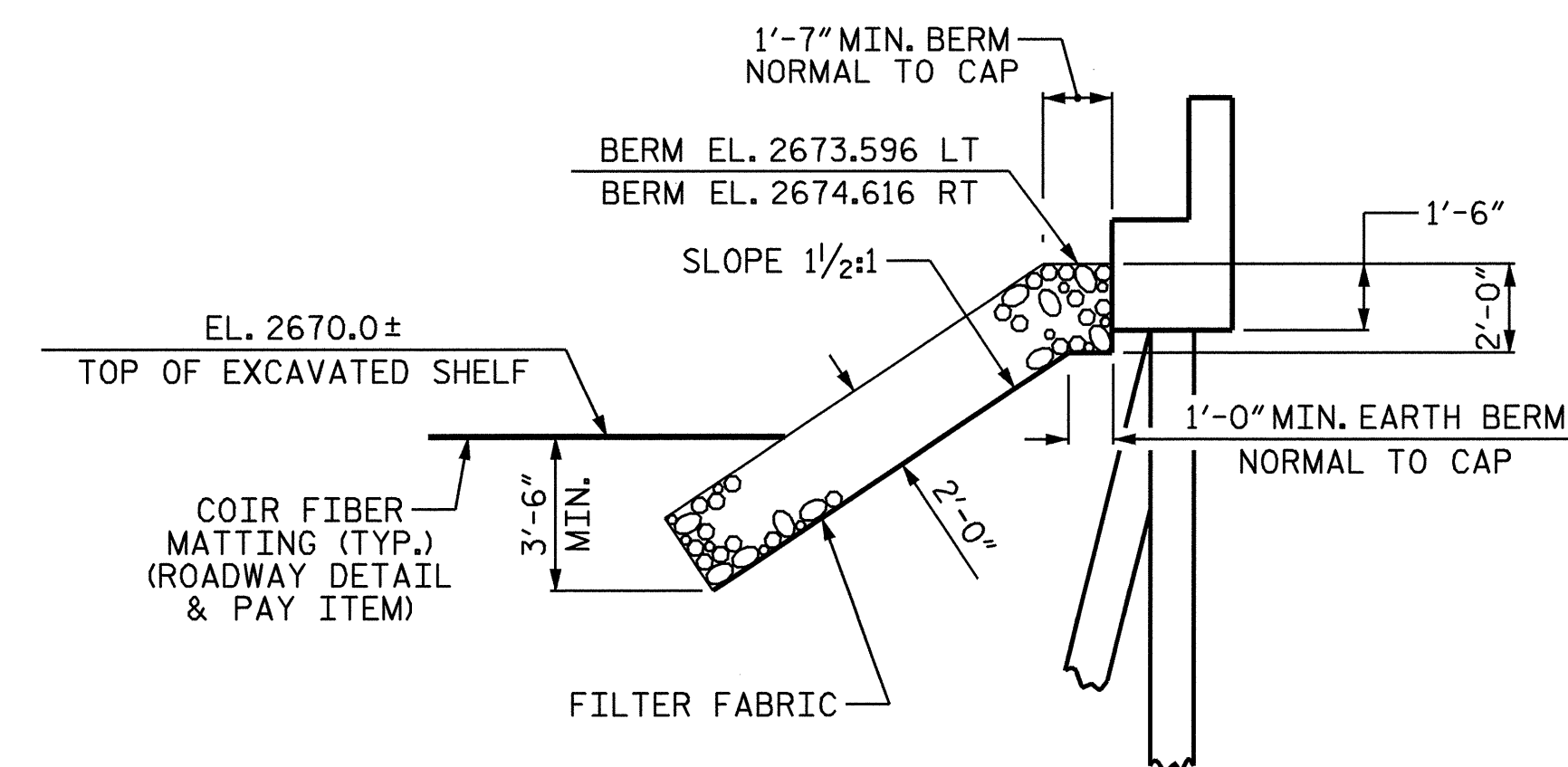
PLAN @ END BENT No. 1

PLAN @ END BENT No. 2

PLAN OF RIP RAP



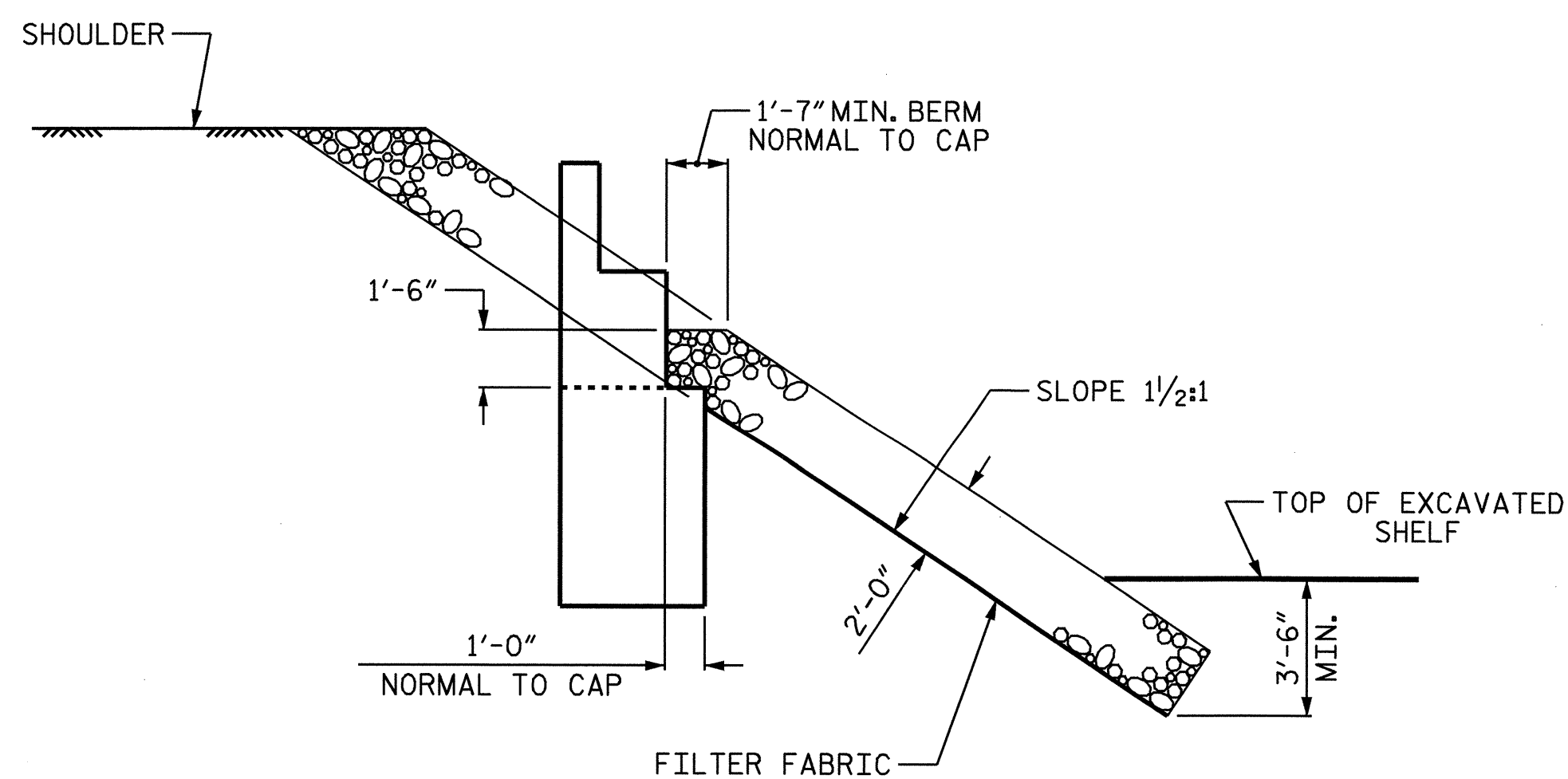
SECTION B-B @ END BENT No. 2



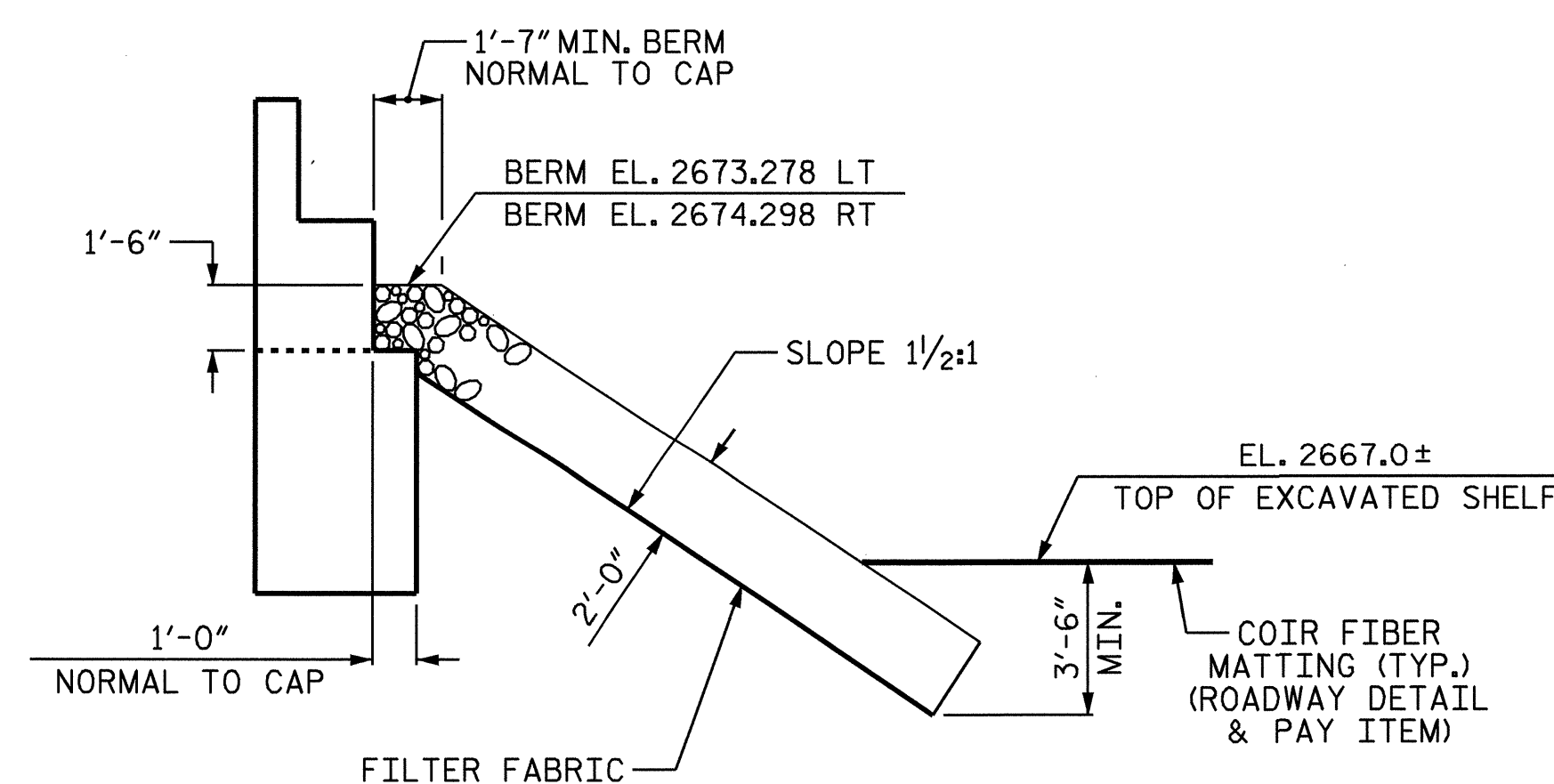
SECTION @ END BENT No. 2

ESTIMATED QUANTITIES

BRIDGE @ STA. 364+50.00 -L1-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	144	160
END BENT No. 2	103	115



SECTION A-A @ END BENT No. 1



SECTION @ END BENT No. 1

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

== RIP RAP DETAILS ==

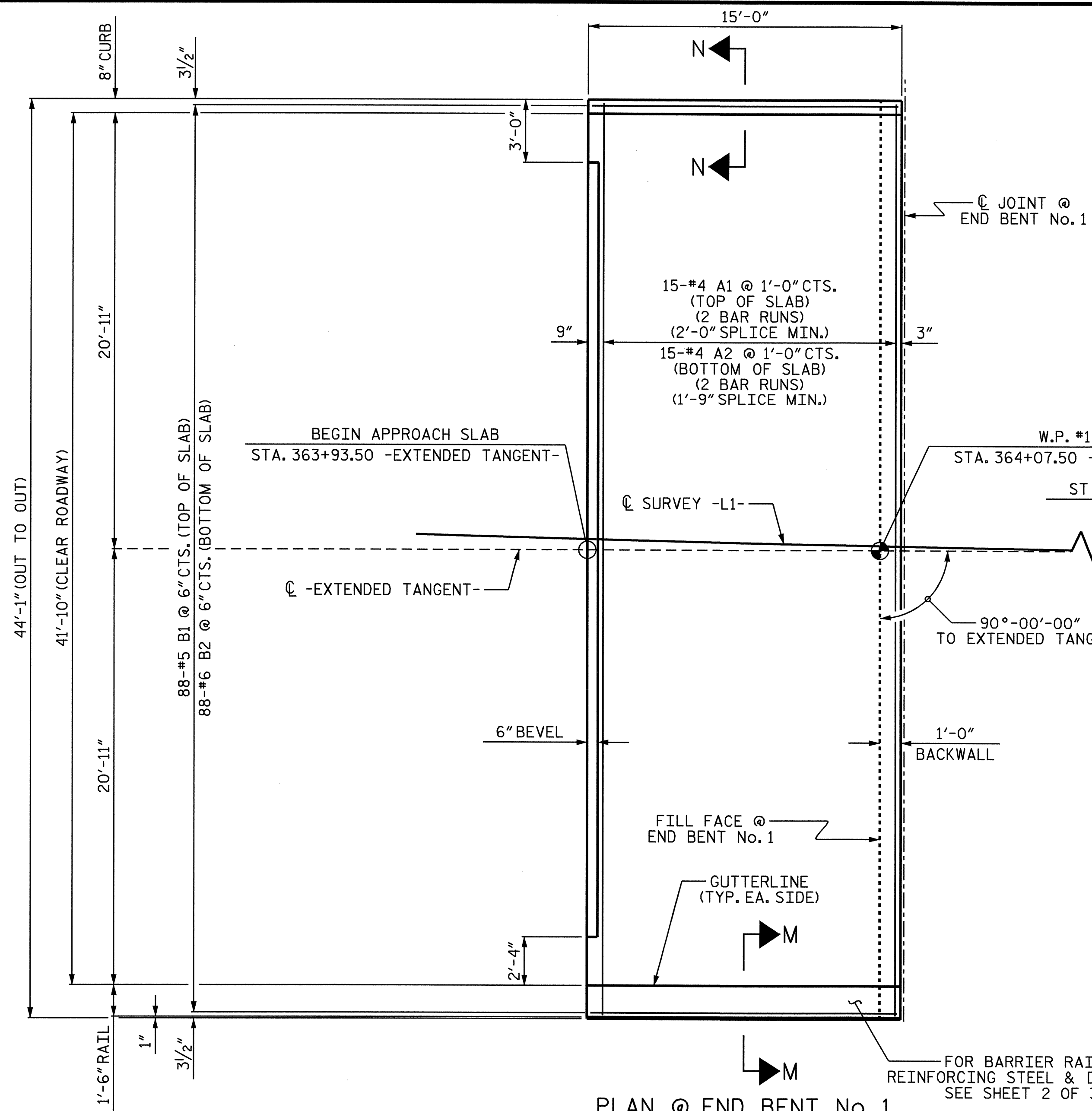


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			19

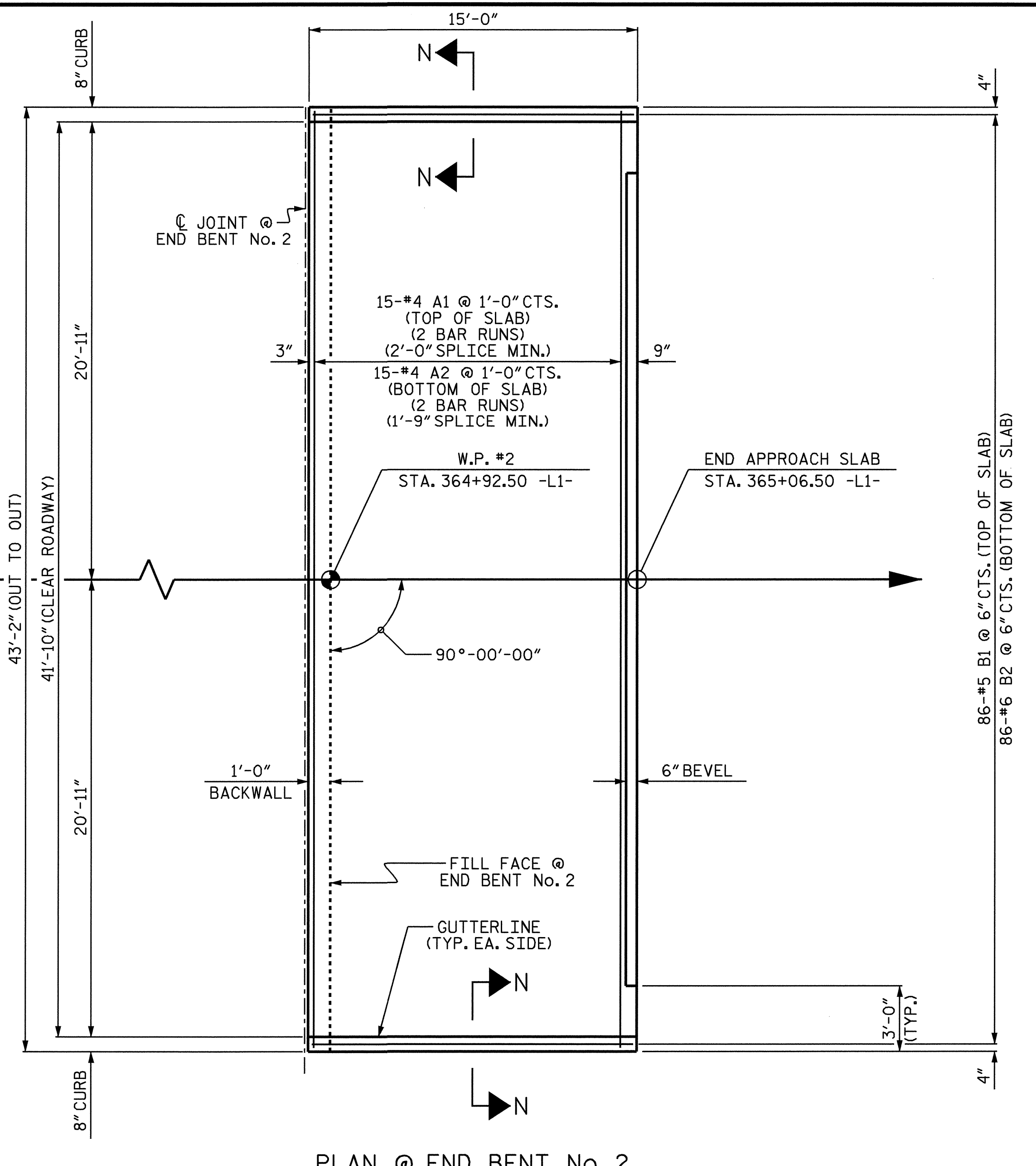
DRAWN BY : T. BANKOVICH DATE : 3-2009
 CHECKED BY : A.V. ROYAL DATE : 4-2009

02-NOV-2009 10:11
 f:\structures\m\scdrawings\R-2100B.sd,RR.dgn
 kaiford

SKREW 90° STD. NO. RR2

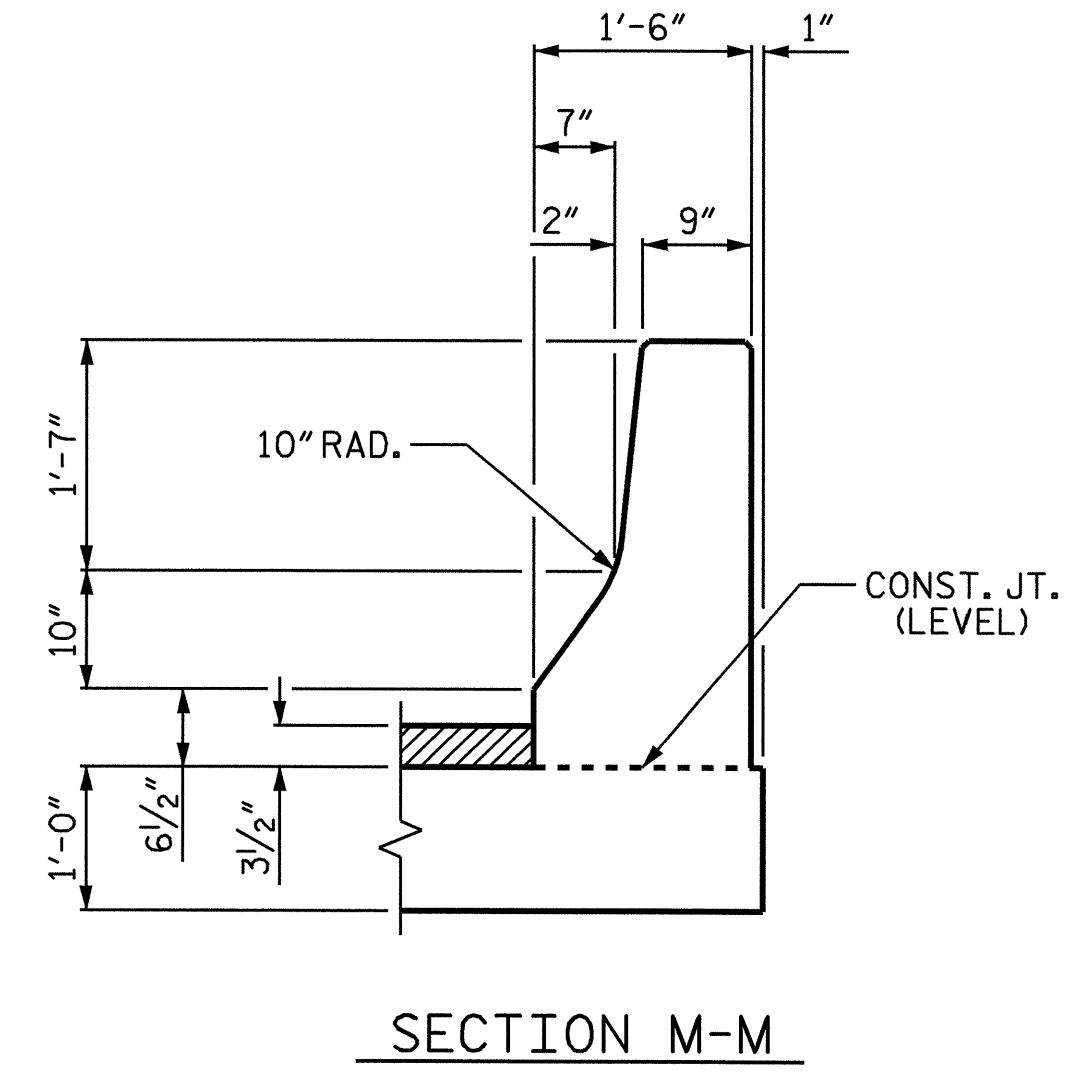


PLAN @ END BENT No. 1

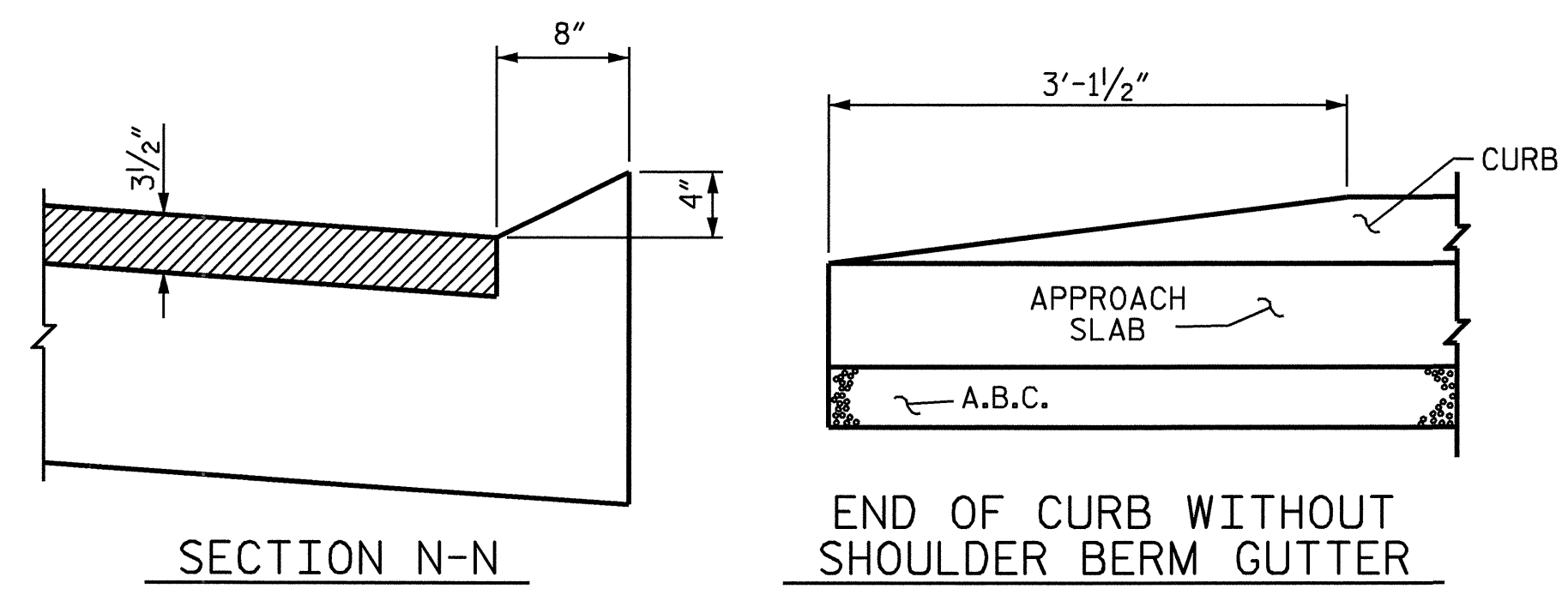


PLAN @ END BENT No. 2

PLAN OF APPROACH SLABS



SECTION M-M



CURB DETAIL

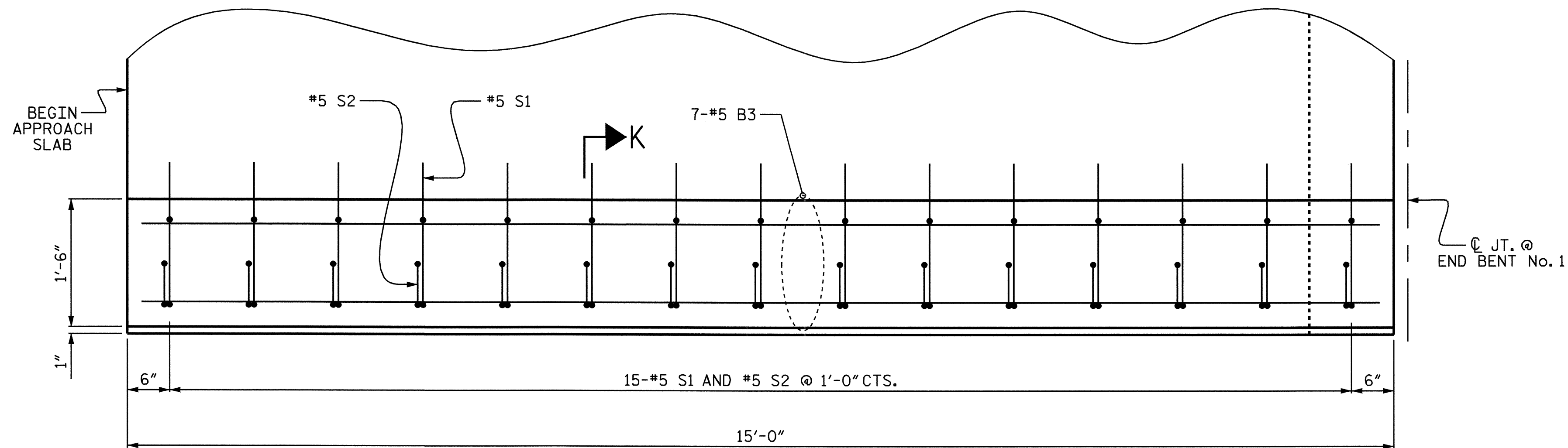
PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L1-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-17 TOTAL SHEETS 19



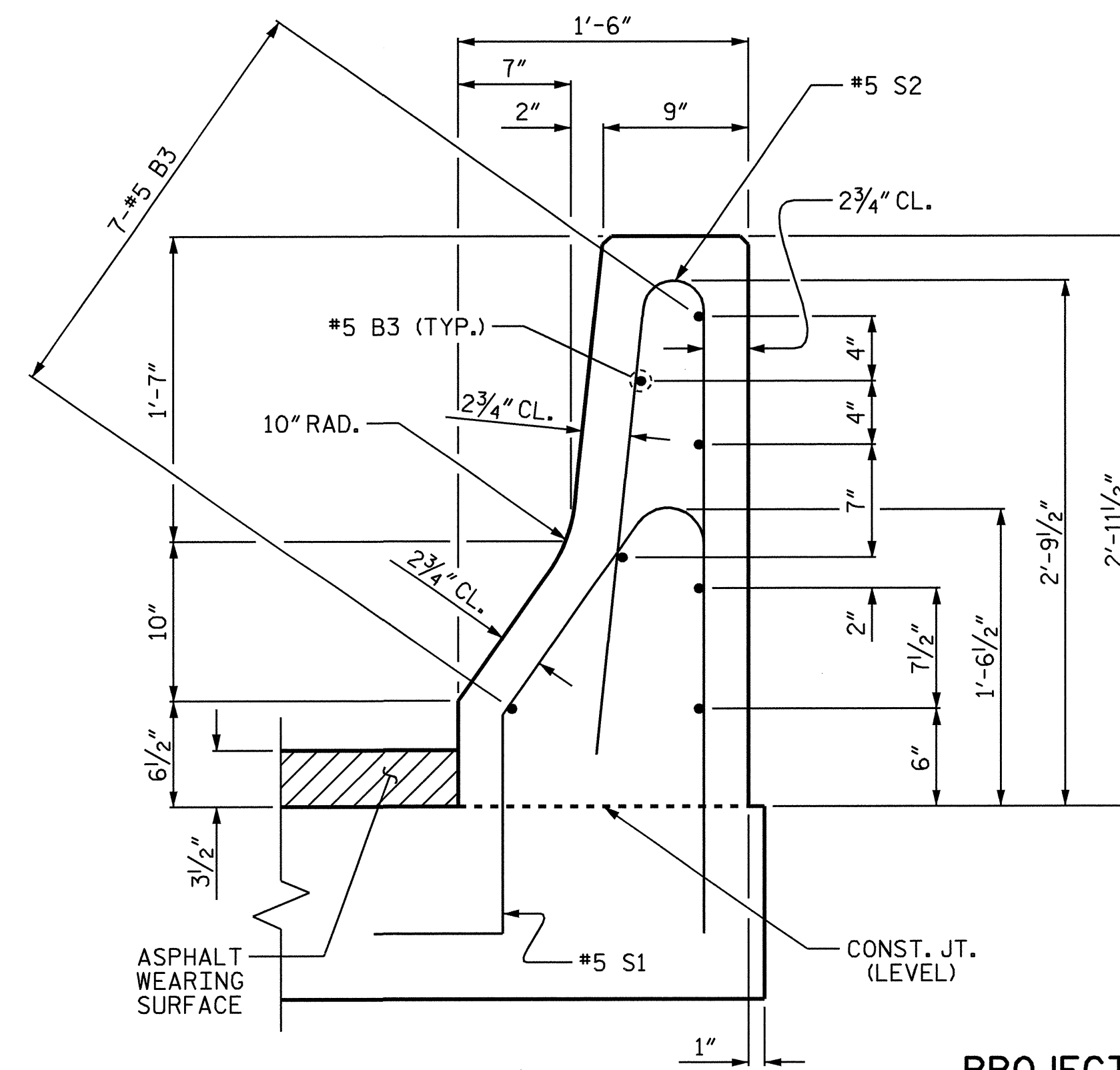
DRAWN BY : T. BANKOVICH DATE : 7-2009
 CHECKED BY : A.V. ROYAL DATE : 7-2009

02-NOV-2009 10:11
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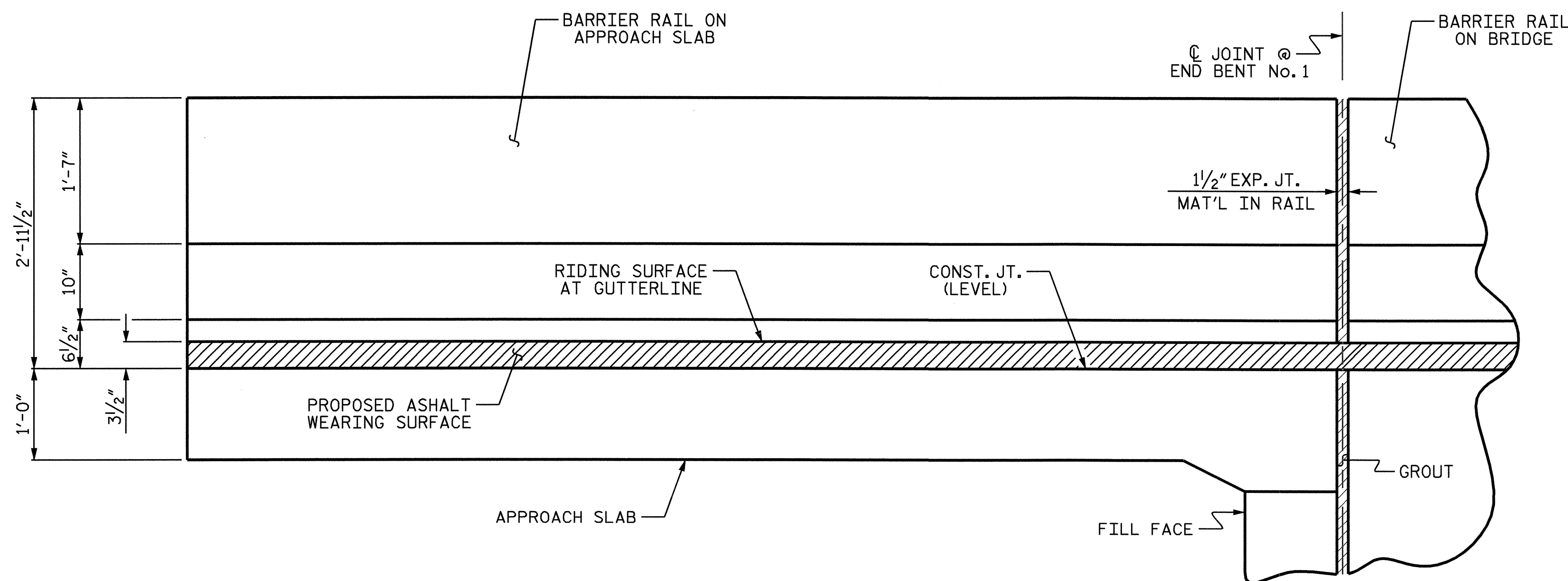


PLAN @ END BENT No. 1 RIGHT SIDE

DIMENSIONS SHOWN ARE ALONG BACK FACE OF BARRIER RAIL



SECTION K-K



ELEVATION @ END BENT No. 1 RIGHT SIDE

PROJECT NO. R-2100B
ASHE COUNTY
 STATION: 364+50.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS FOR
 FLEXIBLE PAVEMENT
 WITH BARRIER RAIL



DRAWN BY : T. BANKOVICH DATE : 7-2009
 CHECKED BY : J.M. BRITT DATE : 7-2009

02-NOV-2009 10:11
 T:\structures\miscdrawings\vr-2100b.ed.as.dgn
 Kalford

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			19

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M TONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE FOR BRIDGE APPROACH SLAB.

ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.

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

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

BILL OF MATERIAL

APPROACH SLAB AT EB No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	22'-11"	459
A2	30	#4	STR	22'-9"	456
* B1	88	#5	STR	14'-2"	1300
B2	88	#6	STR	14'-8"	1939
* B3	7	#5	STR	14'-8"	107
* S1	15	#5	1	5'-5"	85
* S2	15	#5	2	5'-9"	90

REINFORCING STEEL	2395 LBS.
* EPOXY COATED REINFORCING STEEL	2041 LBS.

CLASS AA CONCRETE	
POUR #1 SLAB & CURB	25.2 C.Y.
POUR #2 BARRIER RAIL	1.7 C.Y.
TOTAL	26.9 C.Y.

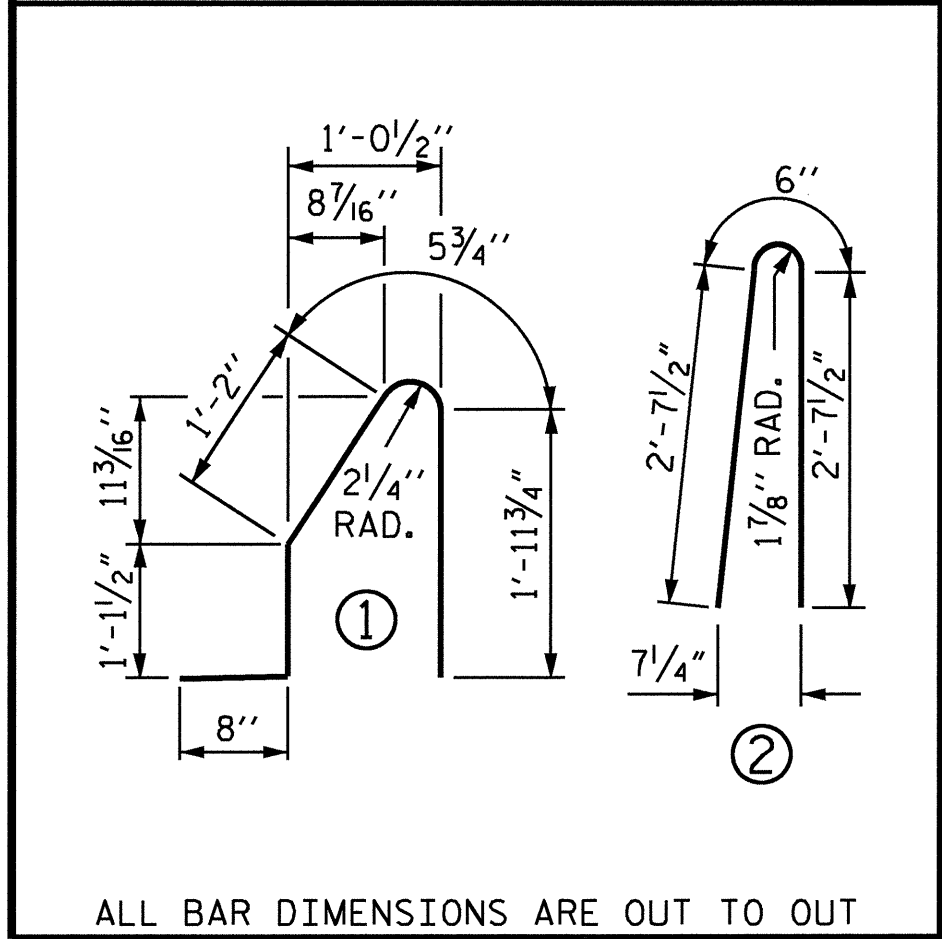
APPROACH SLAB AT EB No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#4	STR	22'-11"	459
A2	30	#4	STR	22'-9"	456
* B1	86	#5	STR	14'-2"	1271
B2	86	#6	STR	14'-8"	1895

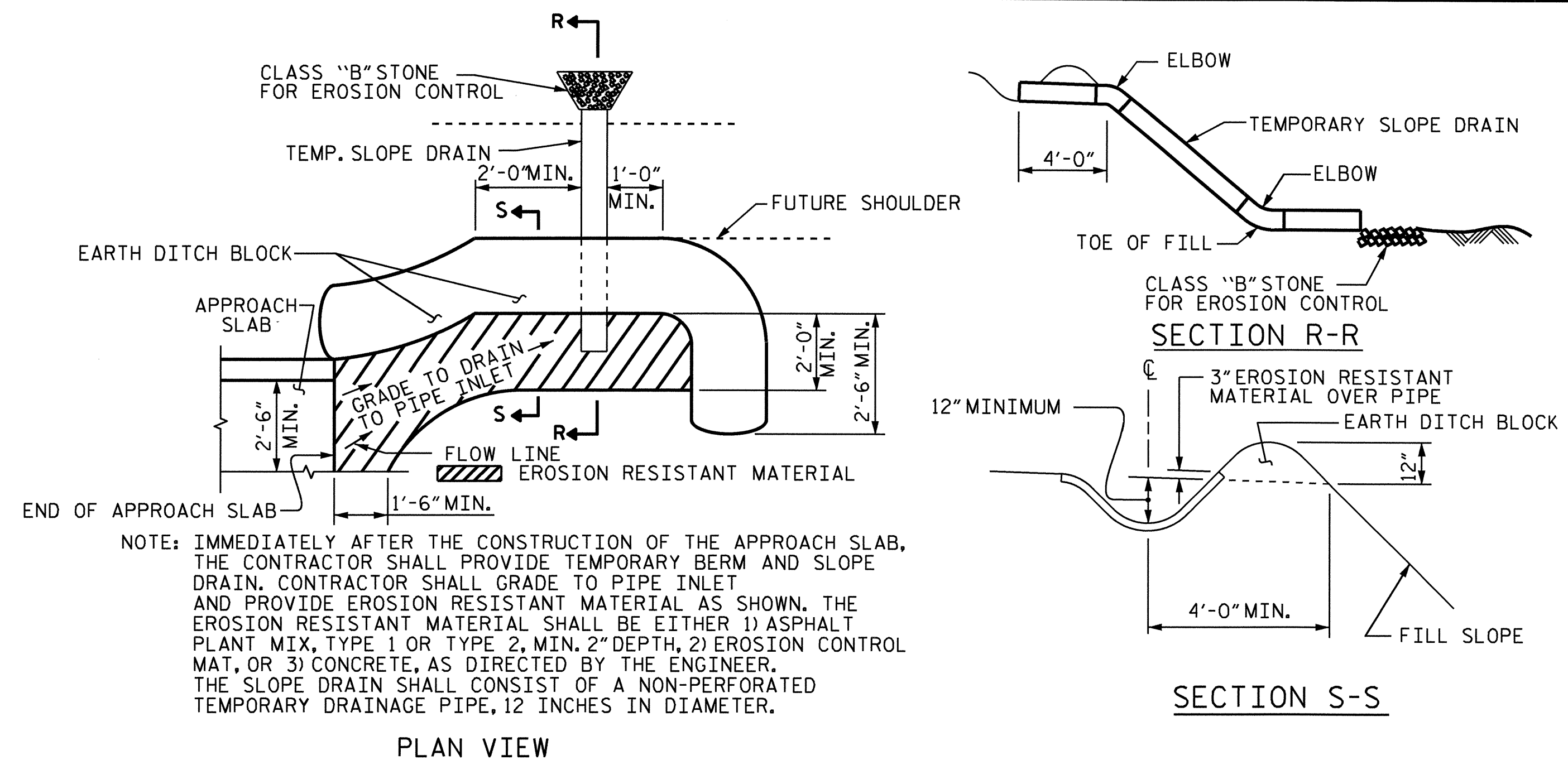
REINFORCING STEEL	2351 LBS.
* EPOXY COATED REINFORCING STEEL	1730 LBS.

CLASS AA CONCRETE	24.9 C.Y.
-------------------	-----------

BAR TYPES

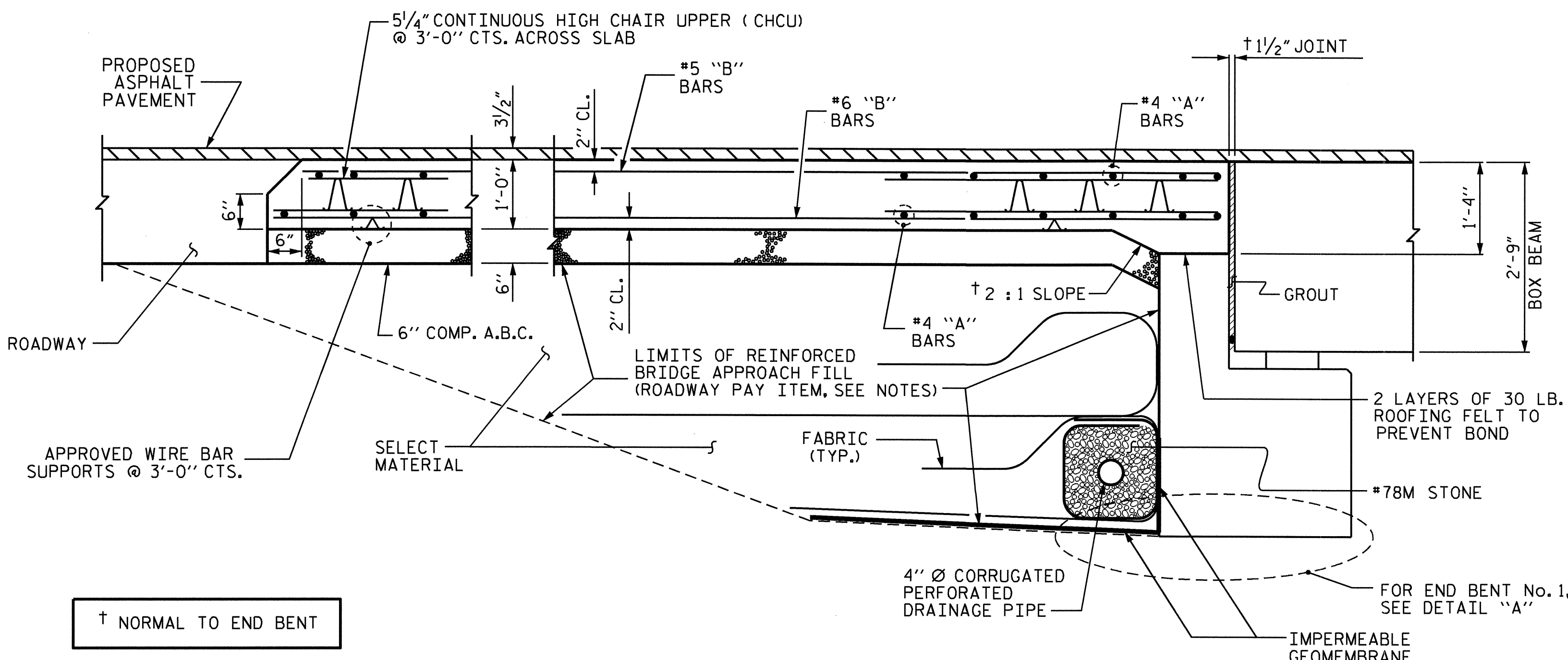


ALL BAR DIMENSIONS ARE OUT TO OUT



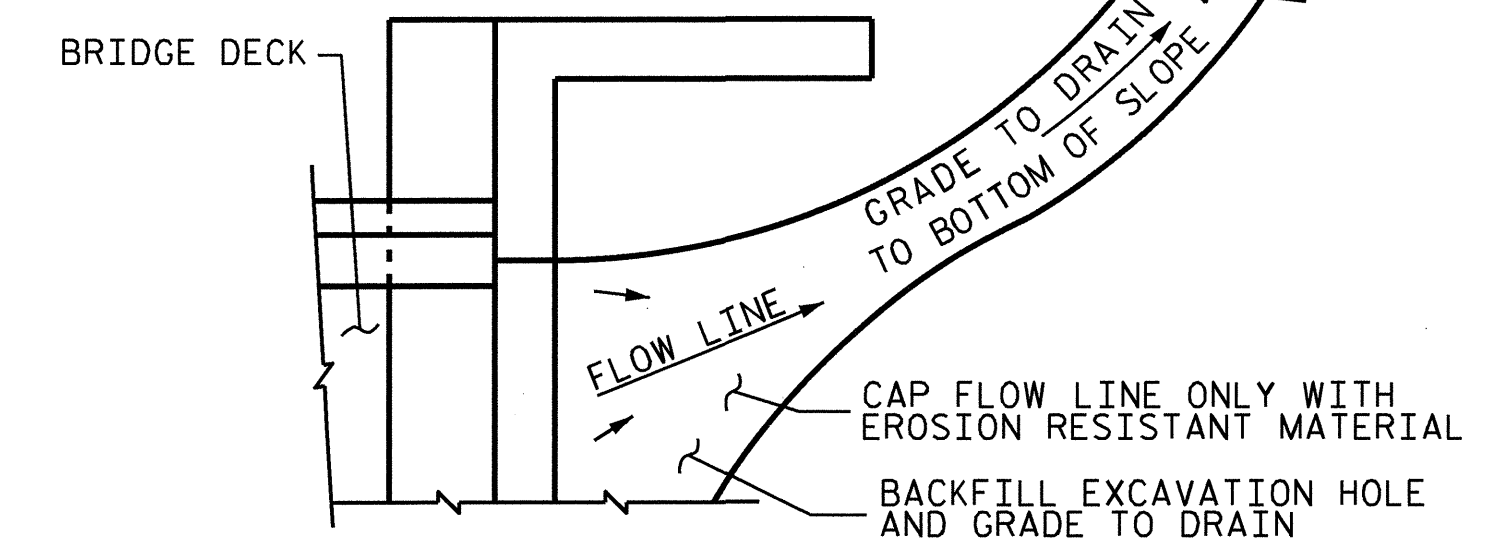
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



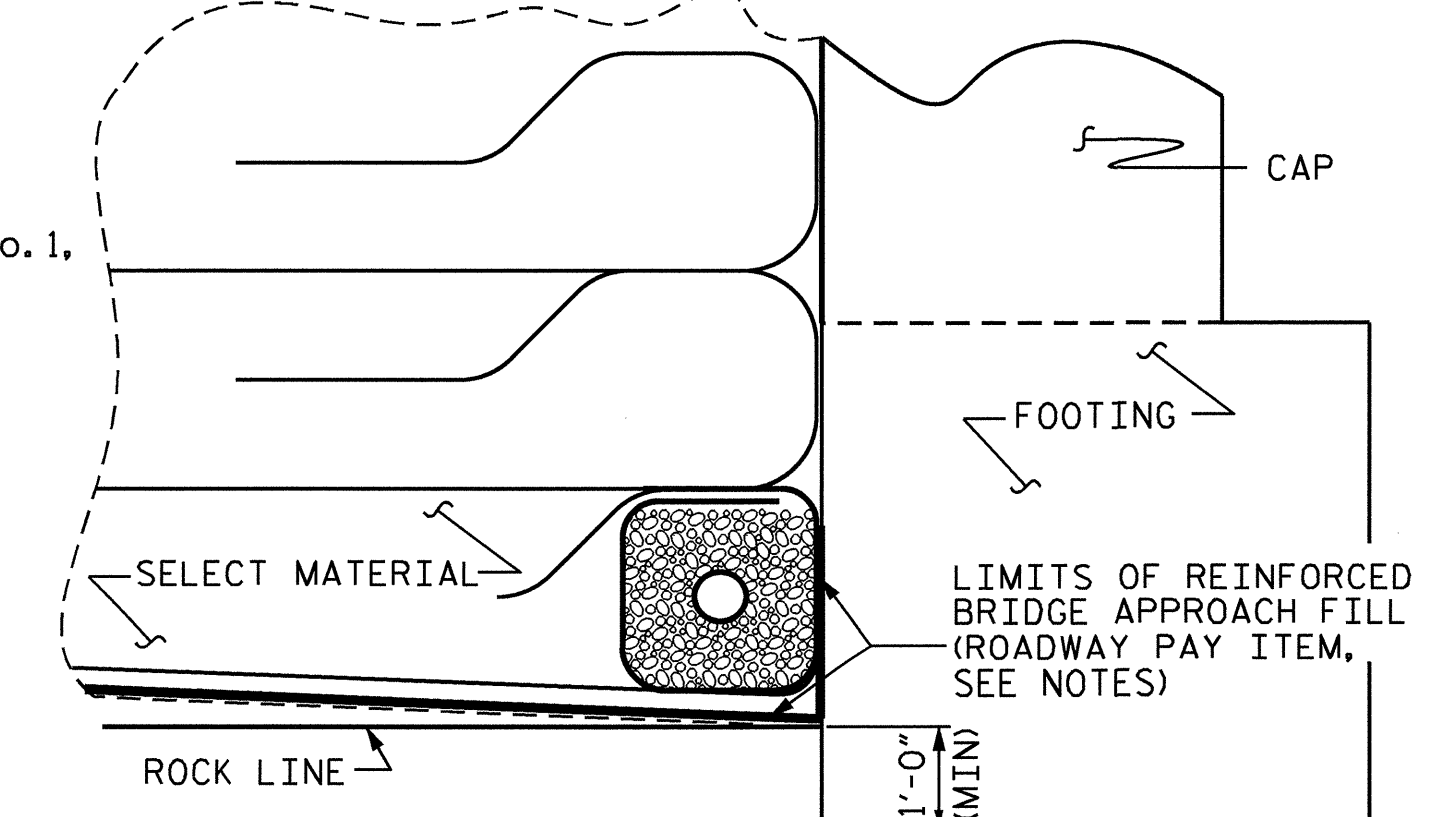
SECTION THRU SLAB

(TYPICAL AT END BENT No. 2, END BENT No. 1 SIMILAR)



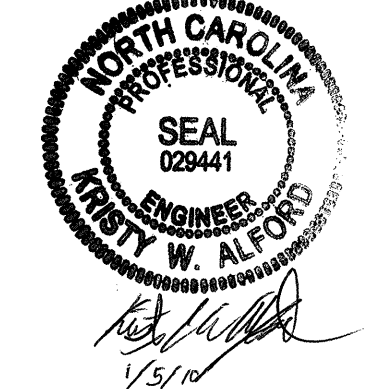
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



DETAIL "A"

@ END BENT No. 1



PROJECT NO. R-2100B
 ASHE COUNTY
 STATION: 364+50.00 -L1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM

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

DRAWN BY : T. BANKOVICH DATE : 7-2009
 CHECKED BY : A.V. ROYAL DATE : 7-2009

NOTES:

FOR COBBLE FACED RETAINING WALLS, SEE COBBLE FACED RETAINING WALL PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

BEFORE BEGINNING COBBLE FACED RETAINING WALL CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

TEMPORARY SHORING IS REQUIRED IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISIONS. SEE TRAFFIC CONTROL PLANS.

THE MINIMUM EMBEDMENT FOR THE WALL IS 2 FEET BELOW THE BERM ELEVATION.

TRANSITION ENDS OF WALL BY SPILLING ADJACENT SLOPE SOILS AROUND FACE OF WALL AS DIRECTED BY ENGINEER.

WHERE THE COBBLE FACED RETAINING WALL INTERSECTS DRAINAGE PIPES, SUBMIT PENETRATION REINFORCEMENT DETAILS FOR APPROVAL PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION. SEE DRAINAGE PLANS FOR ADDITIONAL INFORMATION.

THE MINIMUM REINFORCEMENT LENGTH IS 9.8 FEET, MEASURED FROM THE WALL FACE.

THE TOP OF WALL LOCATION, AS SHOWN IN DETAIL, CORRESPONDS TO WALL LOCATION AS SHOWN IN ROADWAY PLANS. THE CONTRACTOR/DESIGNER ARE RESPONSIBLE FOR LOCATING THE FACE OF THE BOTTOM OF WALL SO THE TOP OF WALL LINES UP WITH THE CORRECT OFFSET AS SHOWN ON PLANS.

SEE ROADWAY PLANS FOR FINISH GRADE DETAILS

BACKFILL REINFORCEMENT SHALL HAVE A MINIMUM LONG-TERM DESIGN TENSILE STRENGTH OF 2,900 LB/FT, ASSUMING 100% COVERAGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS, OR UTILITIES MAY INTERFERE WITH THE REINFORCEMENT FOR COBBLE FACED RETAINING WALLS.

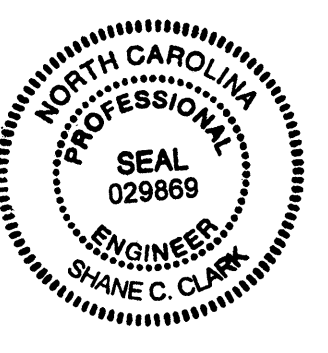
DO NOT PLACE LEVELING PAD STONE, SELECT MATERIAL OR REINFORCEMENT UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

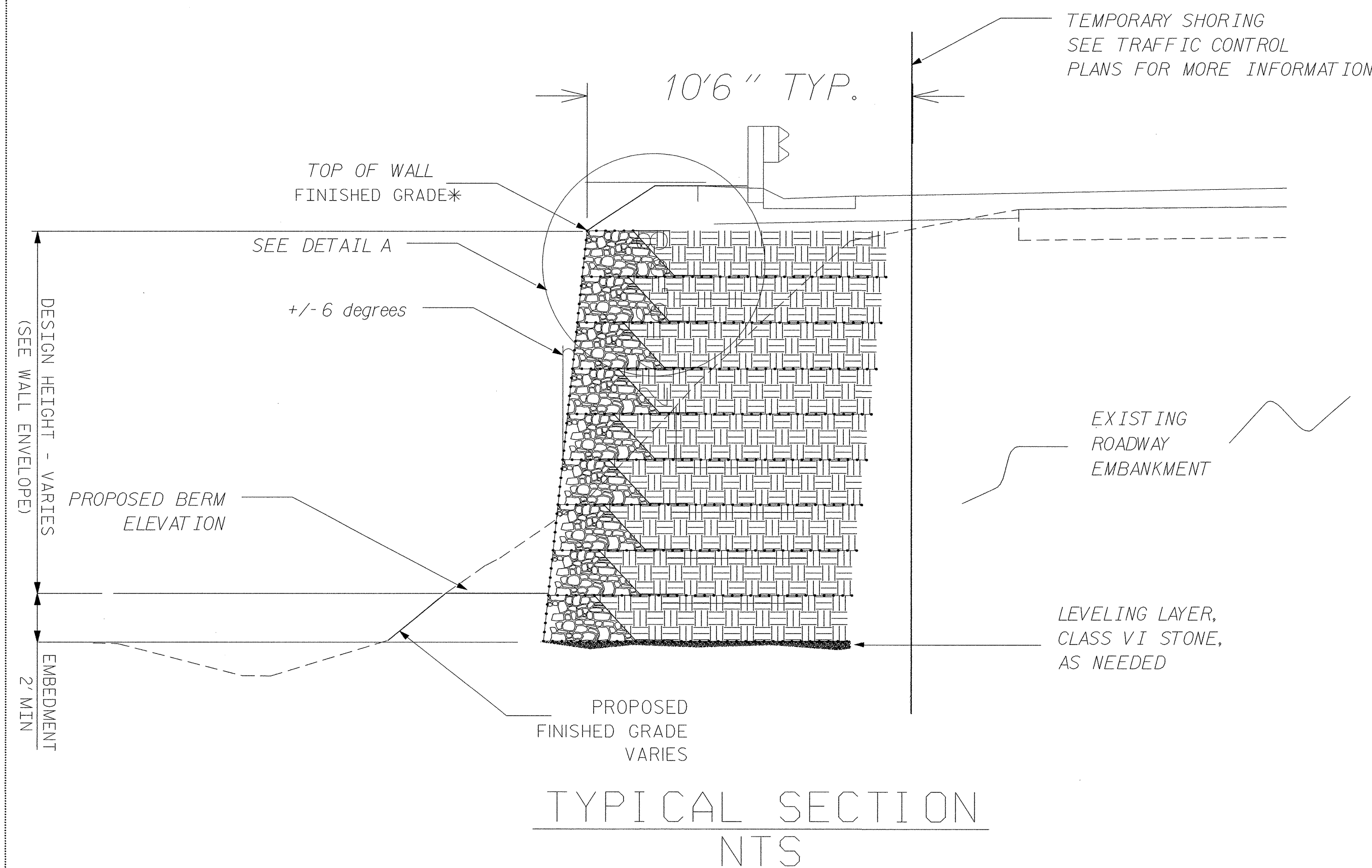
MINIMUM SERVICE LIFE = 75 YEARS

ALLOWABLE BEARING CAPACITY = 2000 PSF

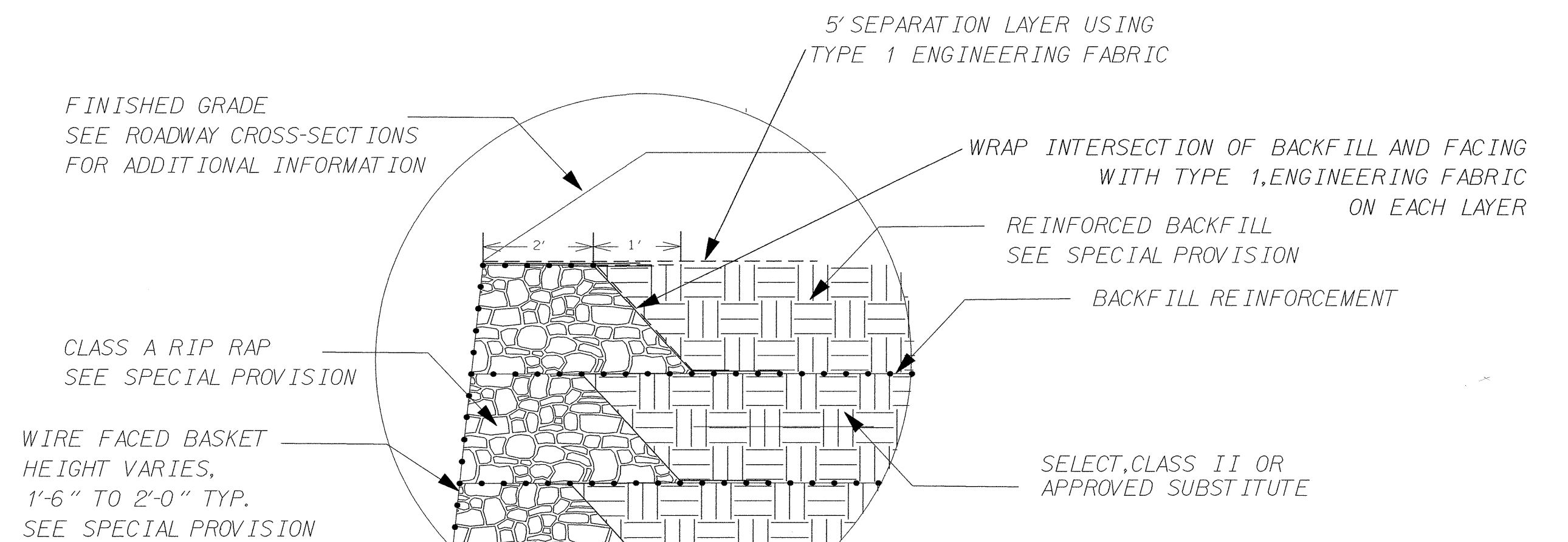
IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (GAMMA) PCF	FRICTION ANGLE (PHI) DEGREES	COHESION (C) PSF
BACKFILL	120	32	0
FOUNDATION	120	28	0

GEOTECHNICAL ENGINEER  SIGNATURE: <i>Shane C. Clark</i> DATE: 1/15/10	ENGINEER SIGNATURE: _____ DATE: _____
--	--



*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



DETAIL A
NTS

COBBLE FACED RETAINING WALL LOCATIONS	
STA. 253+00.00 -L1-	TO 256+00.00 -L1-
STA. 267+50.00 -L1-	TO 269+50.00 -L1-
STA. 272+00.00 -L1-	TO 275+00.00 -L1-
STA. 280+00.00 -L1-	TO 280+50.00 -L1-
STA. 290+50.00 -L1-	TO 295+50.00 -L1-

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: VARIES, SEE SUMMARY ABOVE

SHEET 1 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

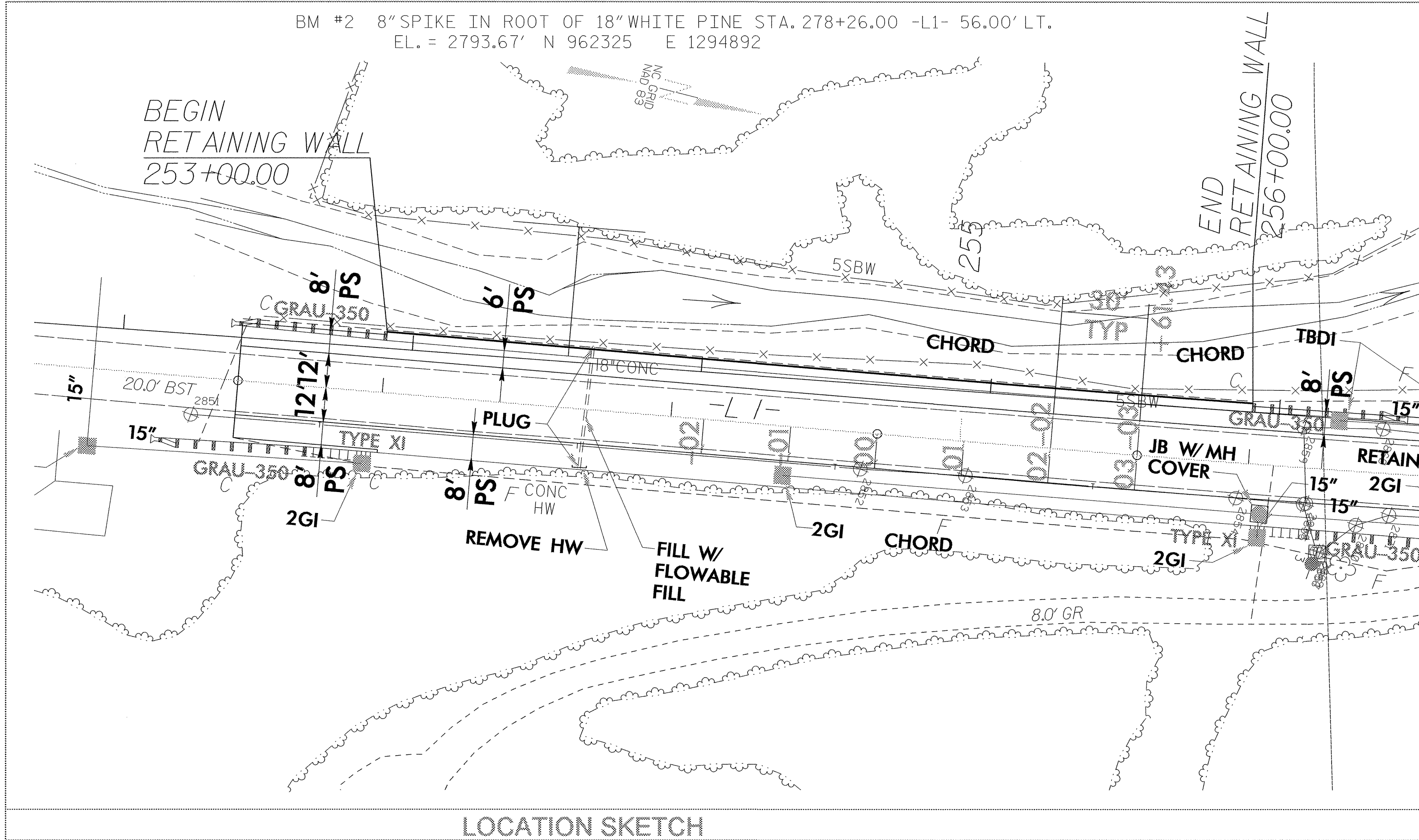
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

COBBLE FACED RETAINING WALL DETAILS

REVISIONS						SHEET NO. W-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 16
2			4			

PREPARED BY: J.T.W.	DATE: 5.15.08
REVIEWED BY: S.C.C.	DATE: 1-14-10

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

Signature: *Shane C. Clark* DATE: 1/15/10

RETAINING WALL ELEVATIONS

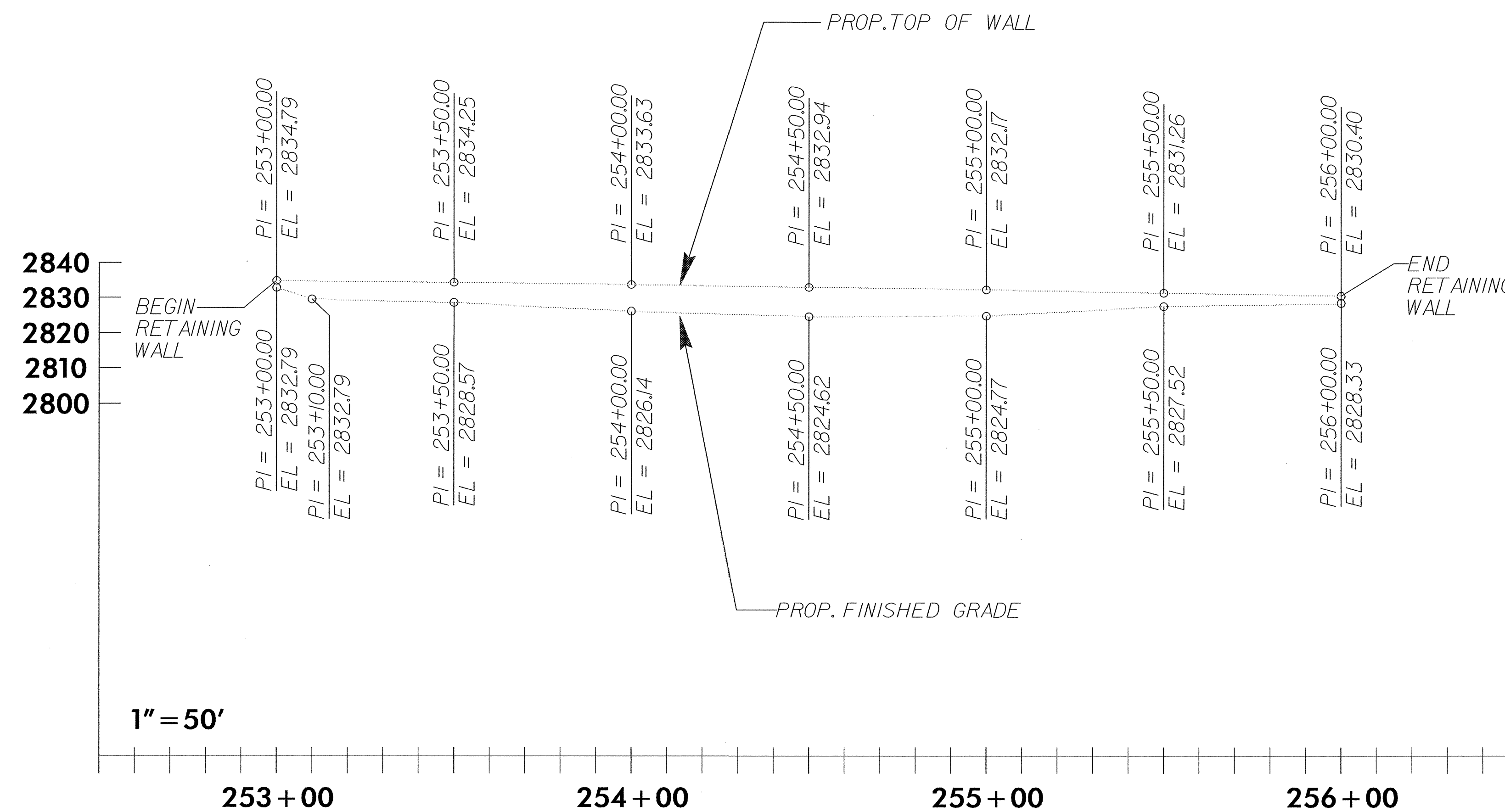
-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
253+00.00	21.00	2834.79	2832.79	2.00	1.50
253+10.00	21.00	2834.74	2829.53	5.21	4.71
253+50.00	21.00	2834.25	2828.57	5.68	5.18
254+00.00	21.00	2833.63	2826.14	7.49	6.99
254+50.00	21.00	2832.94	2824.62	8.32	7.82
255+00.00	21.00	2832.17	2824.77	7.40	6.90
255+50.00	21.00	2831.26	2827.52	3.74	3.24
256+00.00	21.00	2830.40	2828.33	2.07	1.57

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH

** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES

COBBLE FACED RETAINING WALL 1816 SQ. FT.



1" = 50'

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 253+00.00 -L1- TO 256+00.00 -L1-

SHEET 2 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

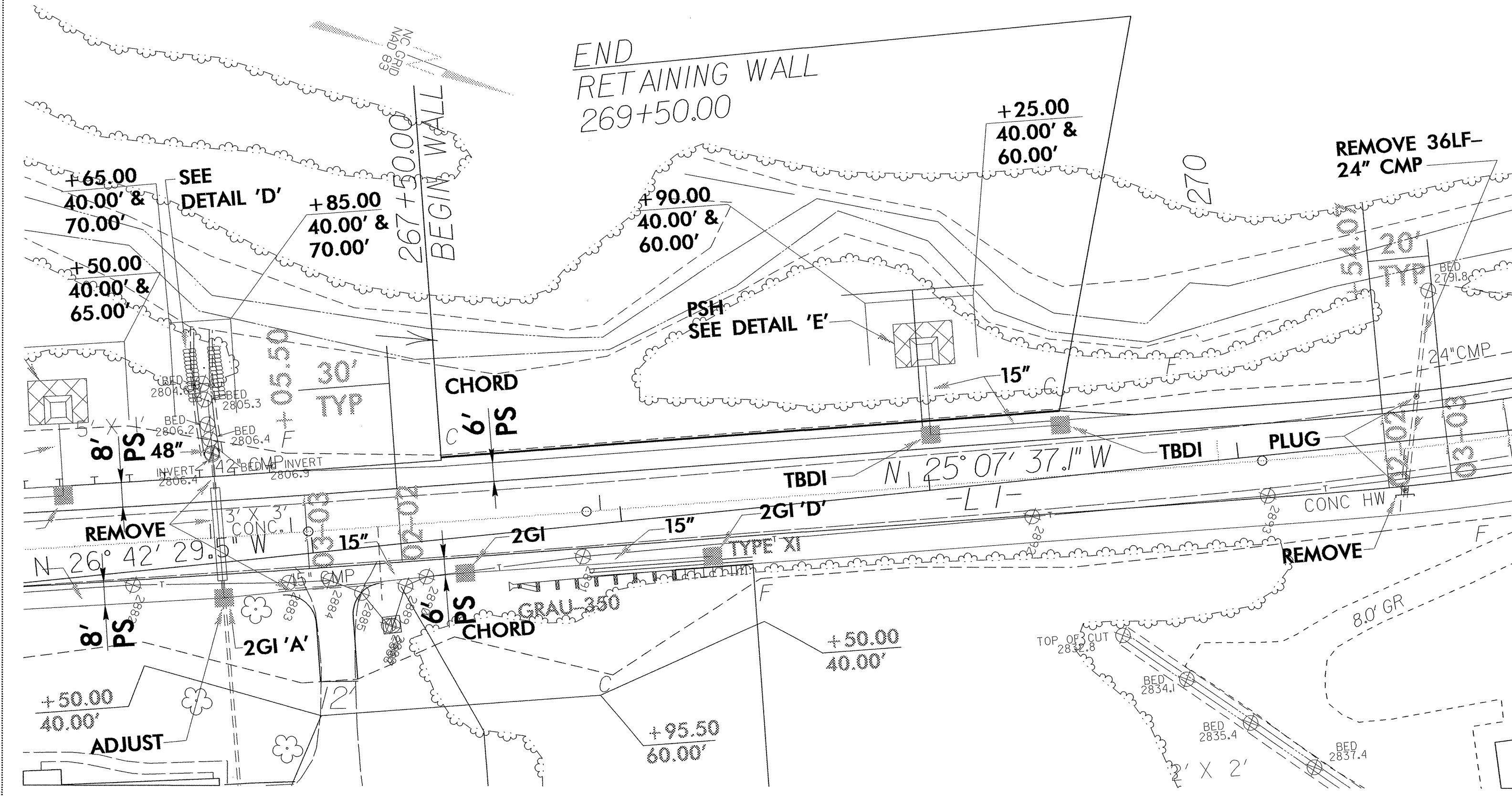
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF
 -L1- FROM STA. 253+00
 TO STA. 256+00 ON N.C. 16

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-2
2			4			16

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 1/14/10

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH

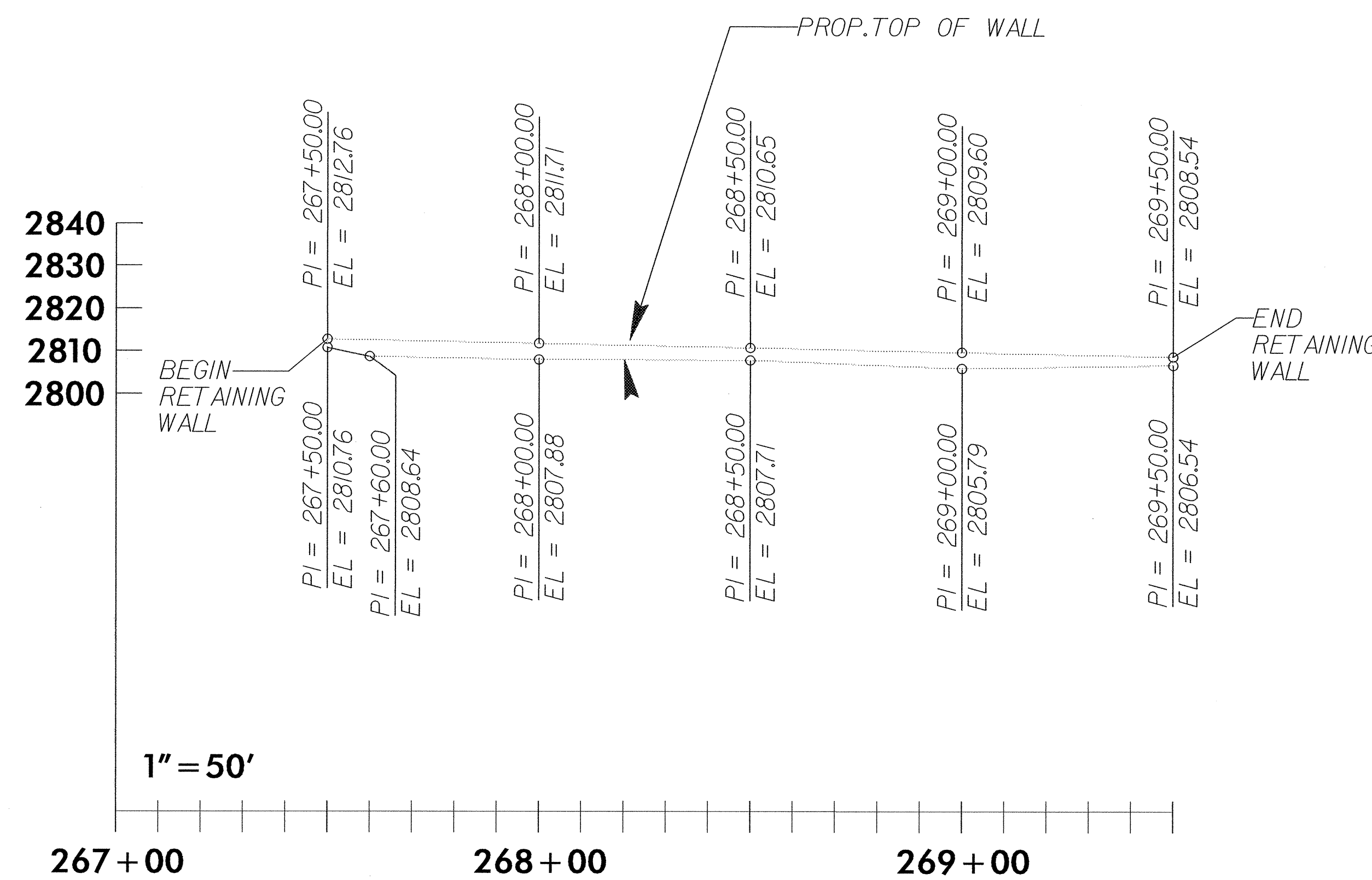
GEOTECHNICAL ENGINEER SIGNATURE: <i>S. C. Clark</i> DATE: 11/15/10	ENGINEER SIGNATURE: _____ DATE: _____
--	--

RETAINING WALL ELEVATIONS					
-L1- STA	OFFSET FROM CL (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
267+50.00	21.00	2812.76	2810.76	2.00	1.50
267+60.00	21.00	2812.66	2808.64	4.02	3.52
268+00.00	21.00	2811.71	2807.88	3.83	3.33
268+50.00	21.00	2810.65	2807.71	2.94	2.44
269+00.00	21.00	2809.60	2805.79	3.81	3.31
269+50.00	21.00	2808.54	2806.54	2.00	1.50

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH

** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES	
COBBLE FACED RETAINING WALL	667 SQ. FT.



PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 267+50.00 -L1- TO 269+50.00 -L1-
 SHEET 3 OF 6

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

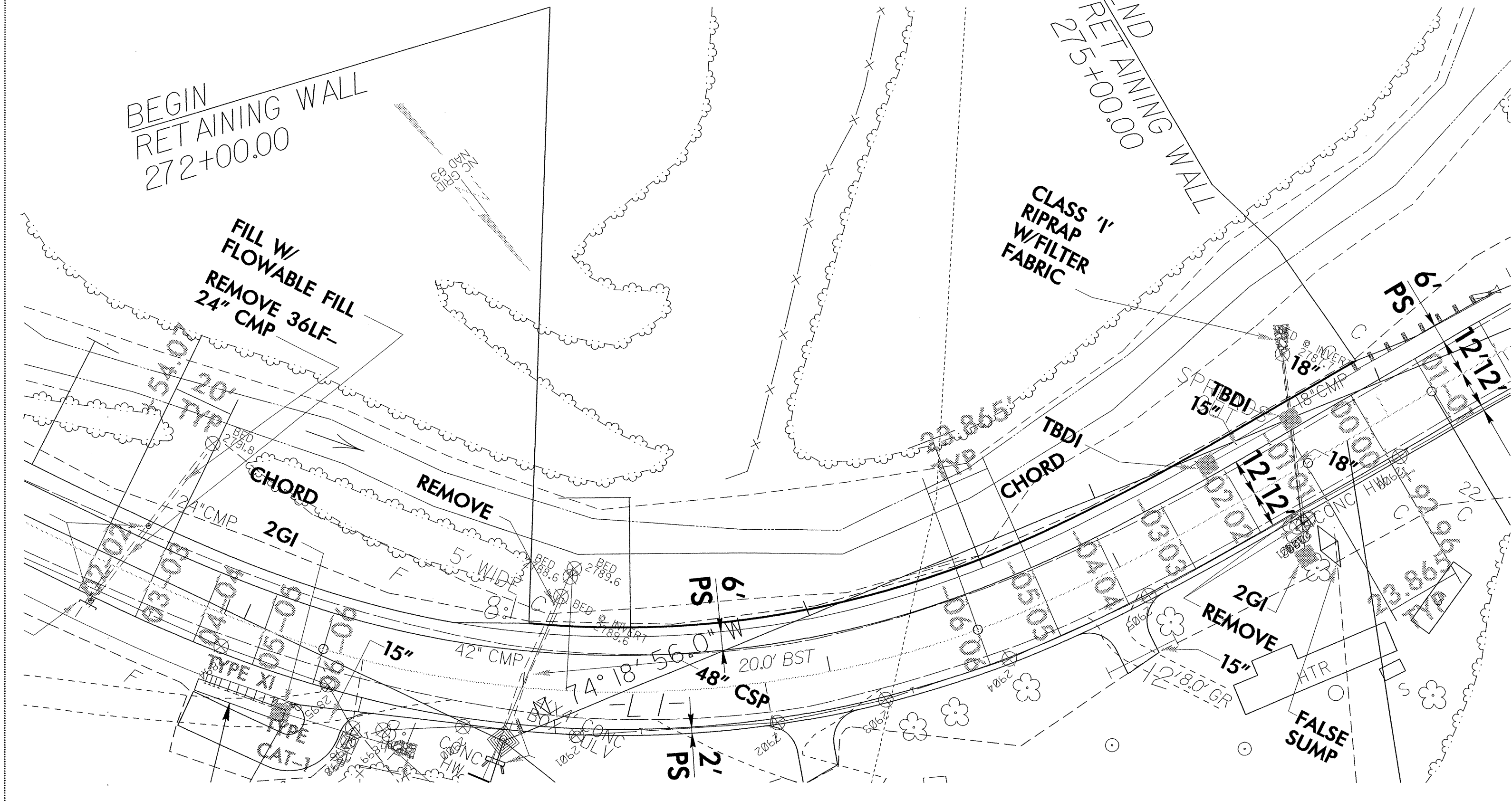
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF
 -L1- FROM STA. 267+50
 TO STA. 269+50 ON N.C. 16

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-3
1			3			TOTAL SHEETS
2			4			16

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 1/14/10

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH

GEOTECHNICAL ENGINEER

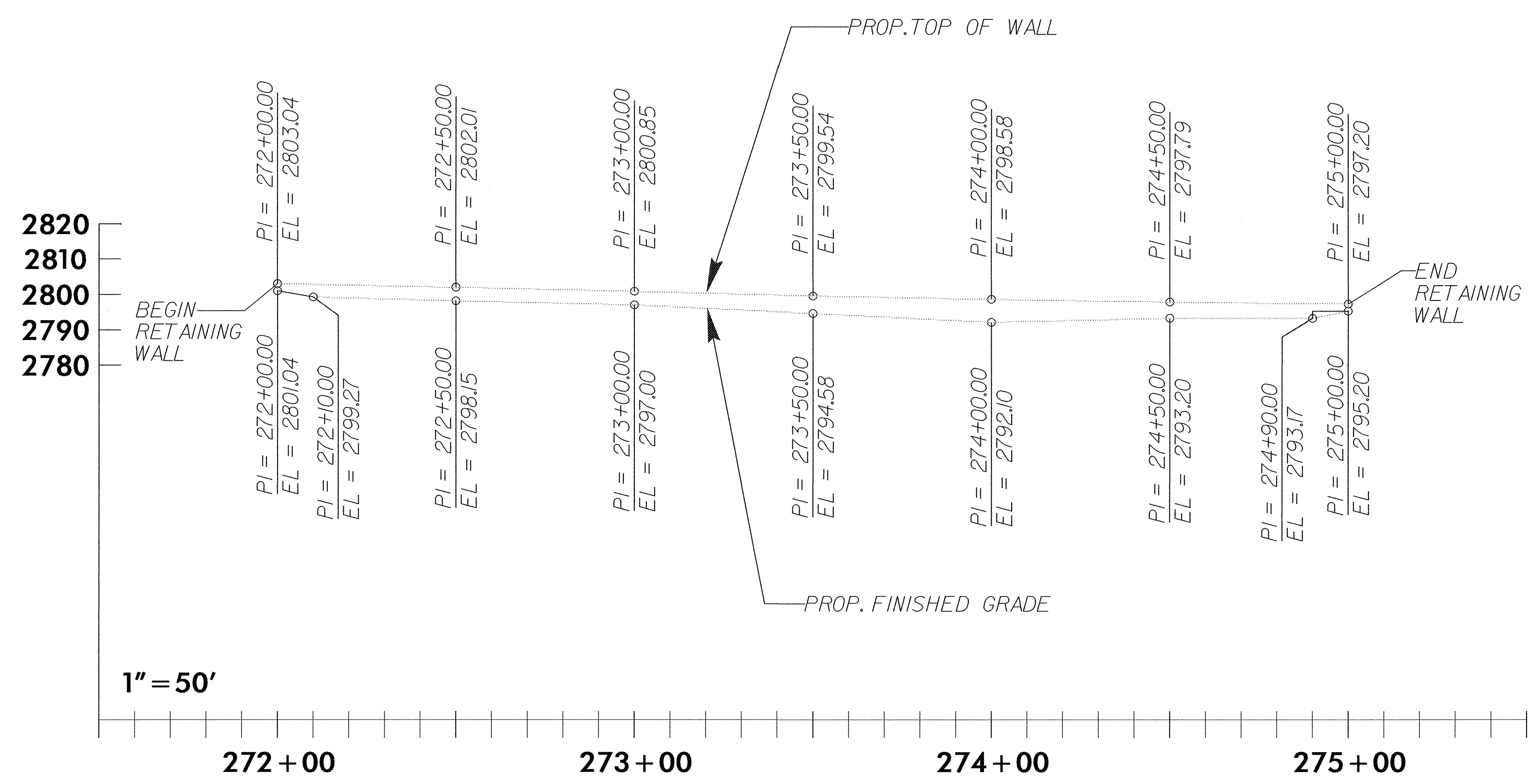
ENGINEER

SHANE C. CLARK

SIGNATURE DATE 1/14/10

RETAINING WALL ELEVATIONS

-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
272+00.00	21.00	2803.04	2801.04	2.00	1.50
272+10.00	21.00	2802.94	2799.27	3.67	3.17
272+50.00	21.00	2802.01	2798.15	3.86	3.36
273+00.00	21.00	2800.85	2797.00	3.85	3.35
273+50.00	21.00	2799.54	2794.58	4.96	4.46
274+00.00	21.00	2798.58	2792.10	6.48	5.98
274+50.00	21.00	2797.79	2793.20	4.59	4.09
274+90.00	21.00	2797.26	2793.17	4.09	3.59
275+00.00	21.00	2797.20	2795.20	2.00	1.50



* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES

COBBLE FACED RETAINING WALL 1355 SQ. FT.

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 272+00.00 -L1- TO 275+00.00 -L1-
 SHEET 4 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

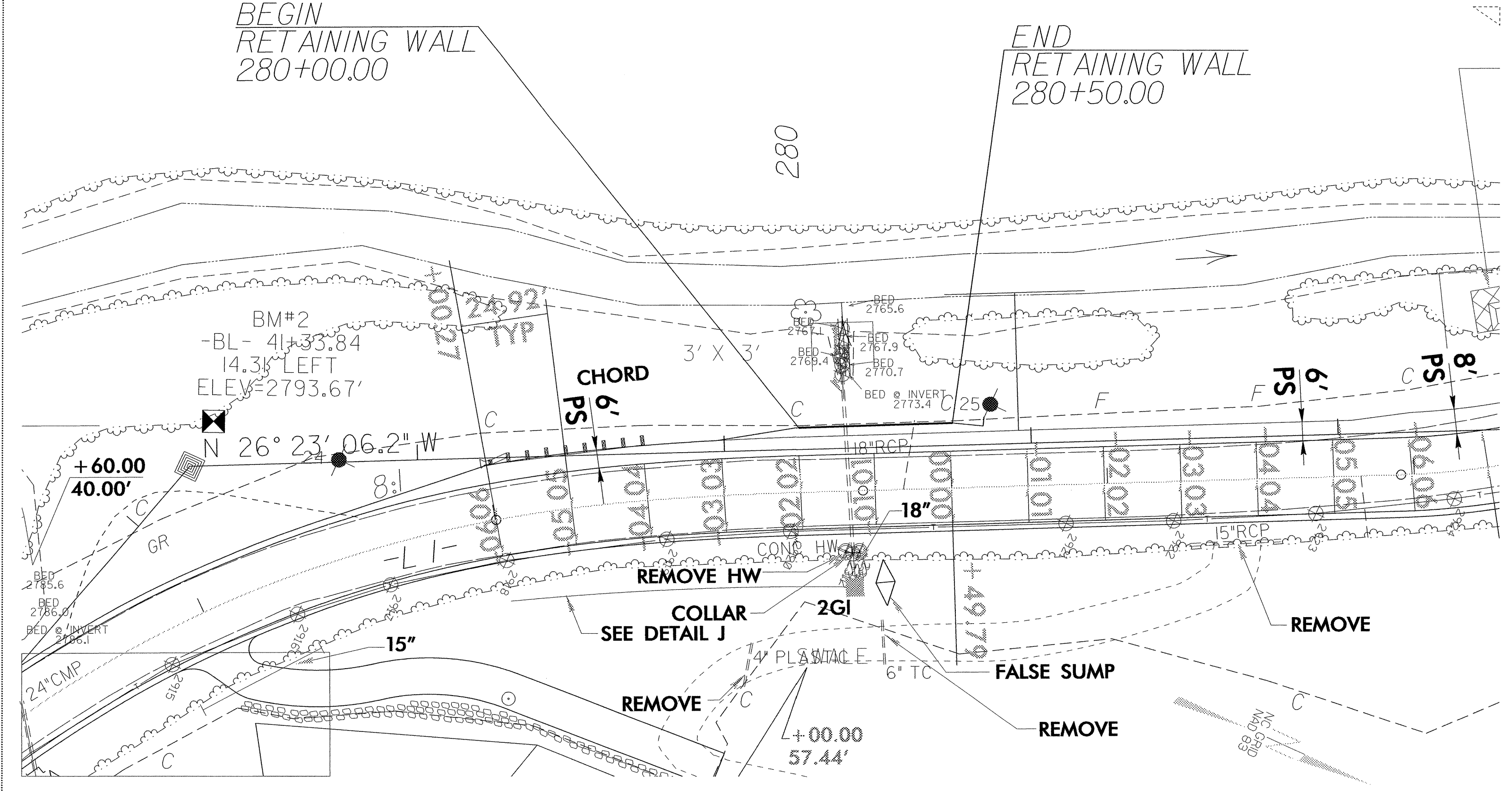
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF
 -L1- FROM STA. 272+00
 TO STA. 275+00 ON N.C. 16

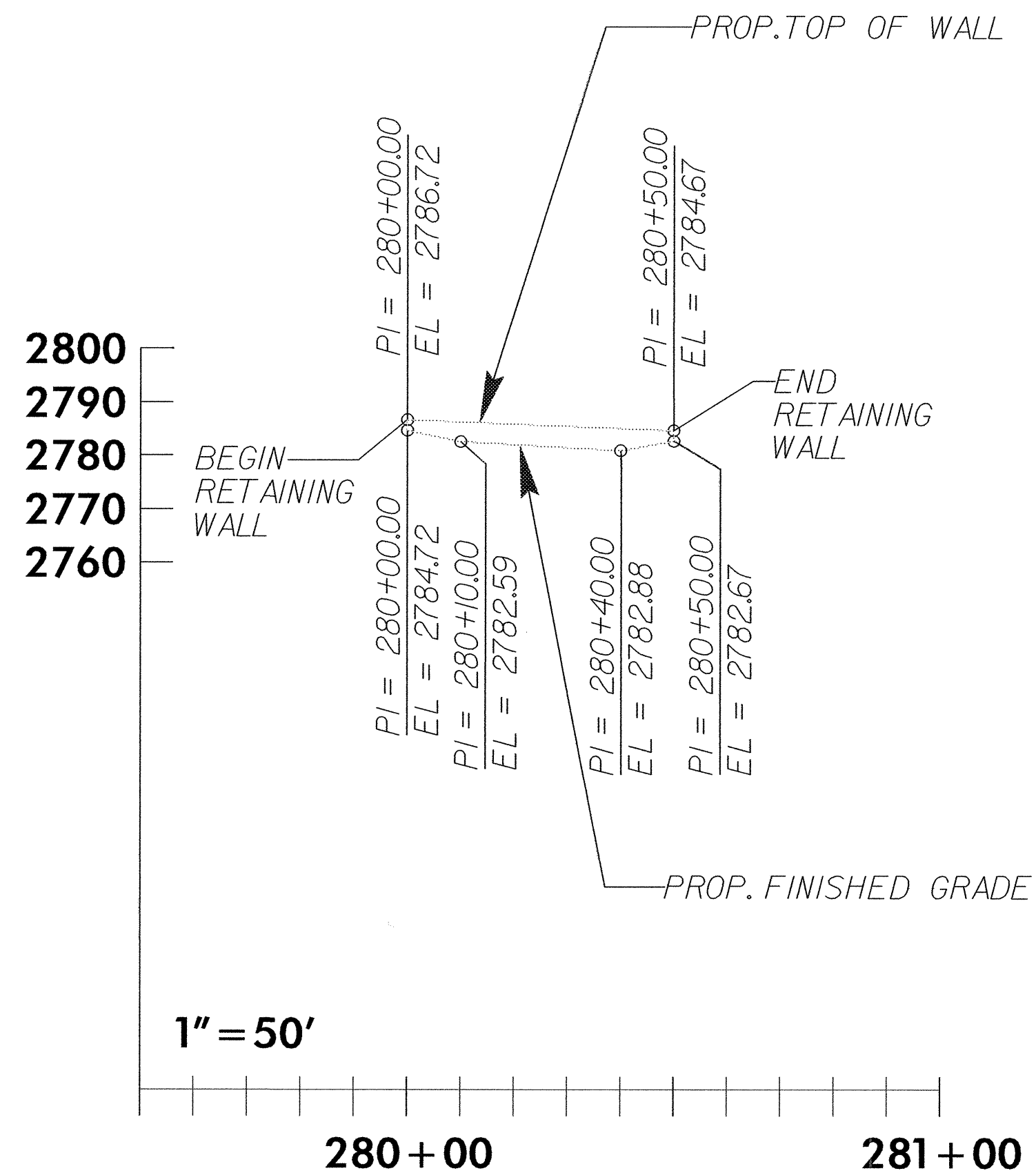
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			W-4
2			4			16

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 1/14/10

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH



1" = 50'

GEOTECHNICAL ENGINEER ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869 ENGINEER SHANE C. CLARK

SIGNATURE: *S.C.C.* DATE: 1/15/10

RETAINING WALL ELEVATIONS

-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	*PROPOSED BERM ELEVATION	*EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
280+00.00	21.00	2786.72	2784.72	2.00	1.50
280+10.00	21.00	2786.31	2782.00	4.31	3.81
280+40.00	21.00	2784.26	2779.50	4.76	4.26
280+50.00	21.00	2784.67	2780.32	2.00	1.50

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES

COBBLE FACED RETAINING WALL 178 SQ. FT.

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 280+00.00 -L1- TO 280+50.00 -L1-
 SHEET 5 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF
 -L1- FROM STA. 280+00
 TO STA. 280+50 ON N.C. 16

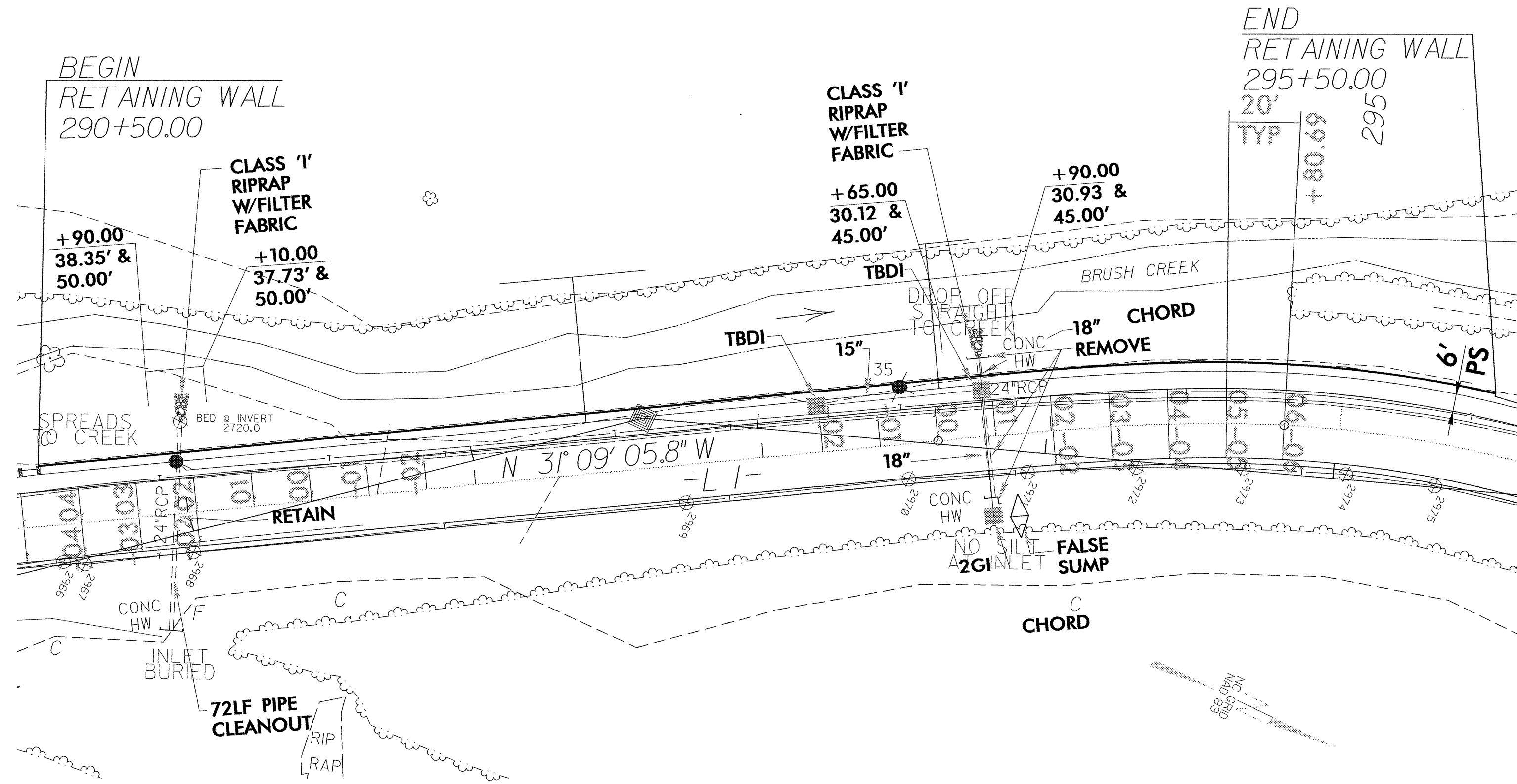
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			16
2			4			

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 1/14/10

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892

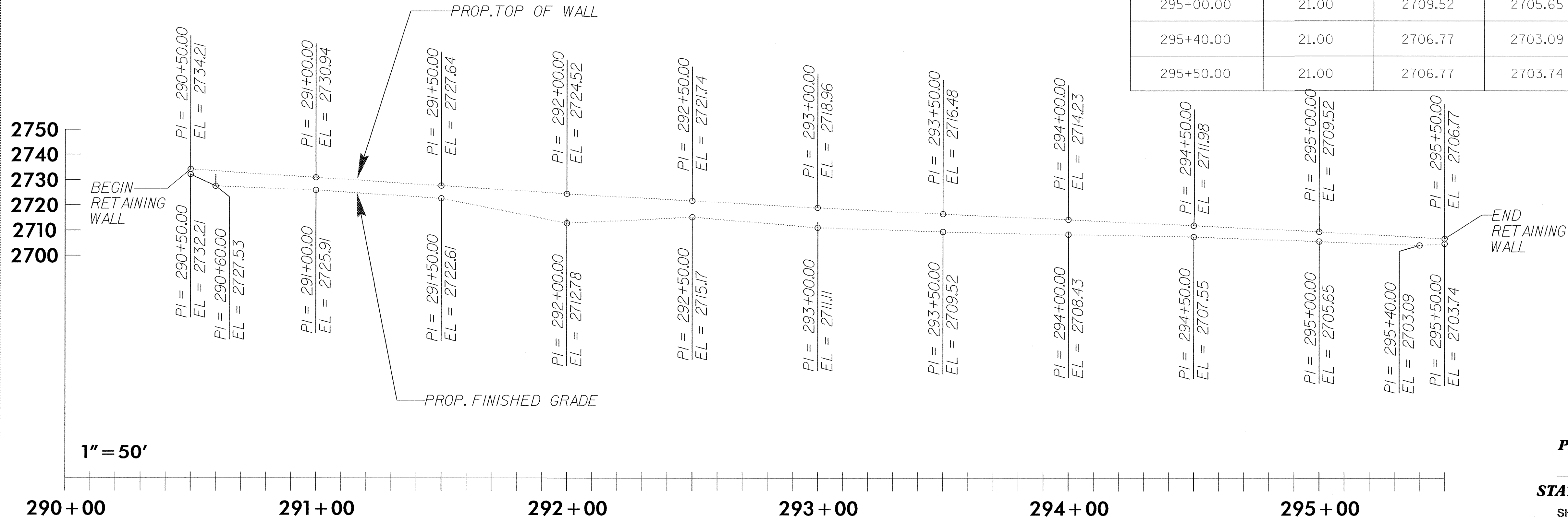
GEOTECHNICAL ENGINEER  SIGNATURE: <i>C. Clark</i> DATE: 1/15/10	ENGINEER SIGNATURE: _____ DATE: _____
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* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS



LOCATION SKETCH

-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	*PROPOSED BERM ELEVATION	*EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
290+50.00	21.00	2734.21	2732.21	2.00	1.50
290+60.00	21.00	2733.56	2727.81	5.75	5.25
291+00.00	21.00	2730.94	2725.91	5.03	4.53
291+50.00	21.00	2727.64	2722.61	5.03	4.53
292+00.00	21.00	2724.52	2712.78	11.74	11.24
292+50.00	21.00	2721.74	2715.17	6.57	6.07
293+00.00	21.00	2718.96	2711.11	7.85	7.35
293+50.00	21.00	2716.48	2709.52	6.96	6.46
294+00.00	21.00	2714.23	2708.43	5.8	5.30
294+50.00	21.00	2711.98	2707.55	4.43	3.93
295+00.00	21.00	2709.52	2705.65	3.87	3.37
295+40.00	21.00	2706.77	2703.09	3.68	3.18
295+50.00	21.00	2706.77	2703.74	3.03	2.53



1" = 50'

TOTAL STRUCTURE QUANTITIES	
COBBLE FACED RETAINING WALL	3070 SQ. FT.

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 290+50.00 -L1- TO 295+50.00 -L1-
 SHEET 6 OF 6

RETAINING WALL LEFT OF
 -L1- FROM STA. 290+50
 TO STA. 295+50 ON N.C. 16

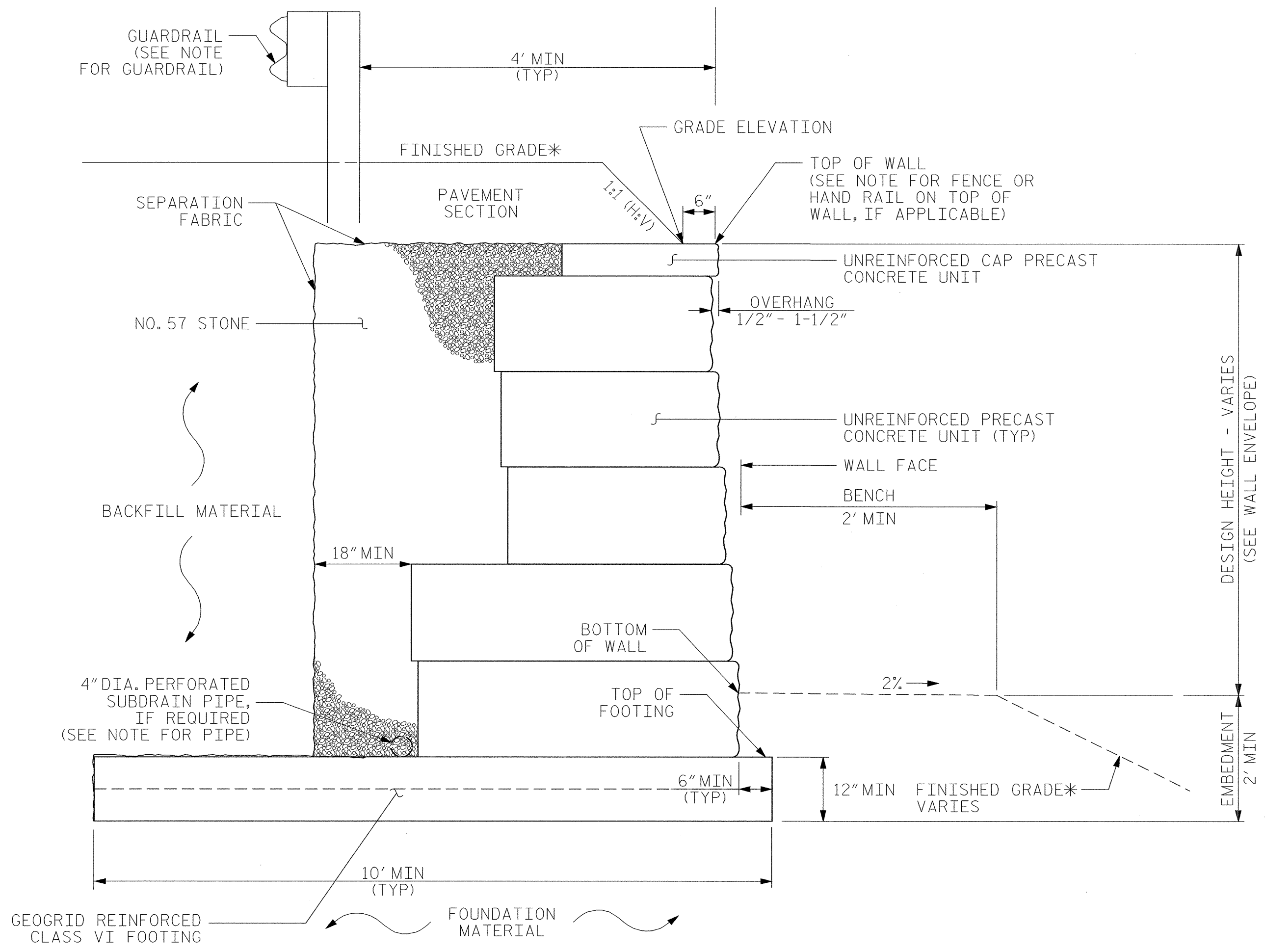
PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 1/14/10

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-6
2			4			16



PRECAST GRAVITY WALL WITH CAP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
NOTES

FOR PRECAST GRAVITY RETAINING WALLS, SEE PRECAST GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

USE PRECAST CONCRETE UNITS WITH A COBBLESTONE FACE FOR RETAINING WALLS.

USE PRECAST CONCRETE UNITS WITH A PLAIN GRAY COLOR FOR RETAINING WALLS.

A SUBDRAIN PIPE IS NOT REQUIRED FOR RETAINING WALLS.

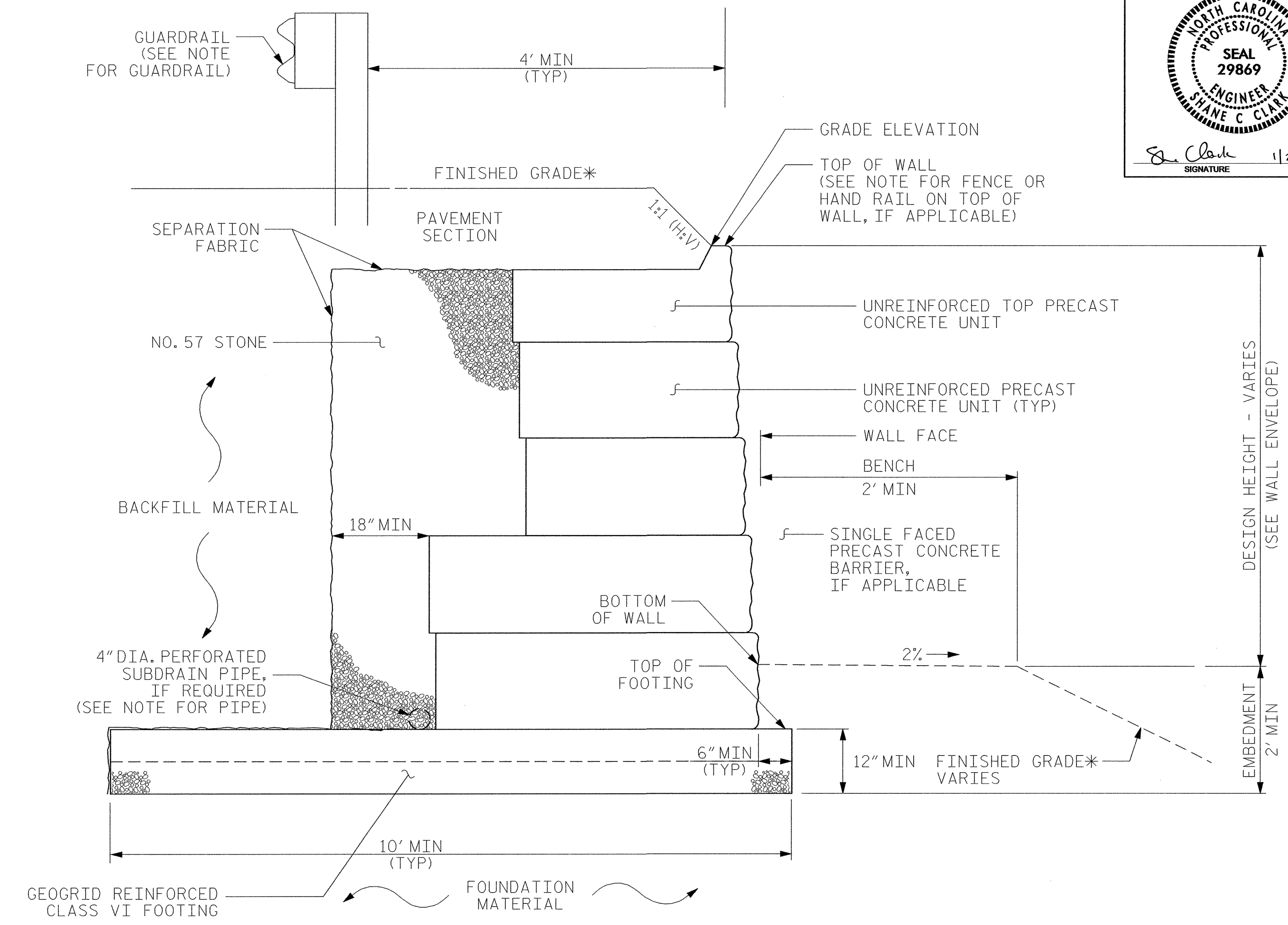
BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALLS, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALLS FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALLS FOR THE FOLLOWING:

- 1) MINIMUM SERVICE LIFE = 75 YEARS
- 2) ALLOWABLE BEARING CAPACITY = 2000 PSF
- 3) MINIMUM EMBEDMENT ELEVATION = 2.0 FT
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (gamma) PCF	FRICTION ANGLE (phi) DEGREES	COHESION (c) PSF
BACKFILL	120	32	0
FOUNDATION	120	28	0



PRECAST GRAVITY WALL WITH TOP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

DESIGN RETAINING WALLS FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

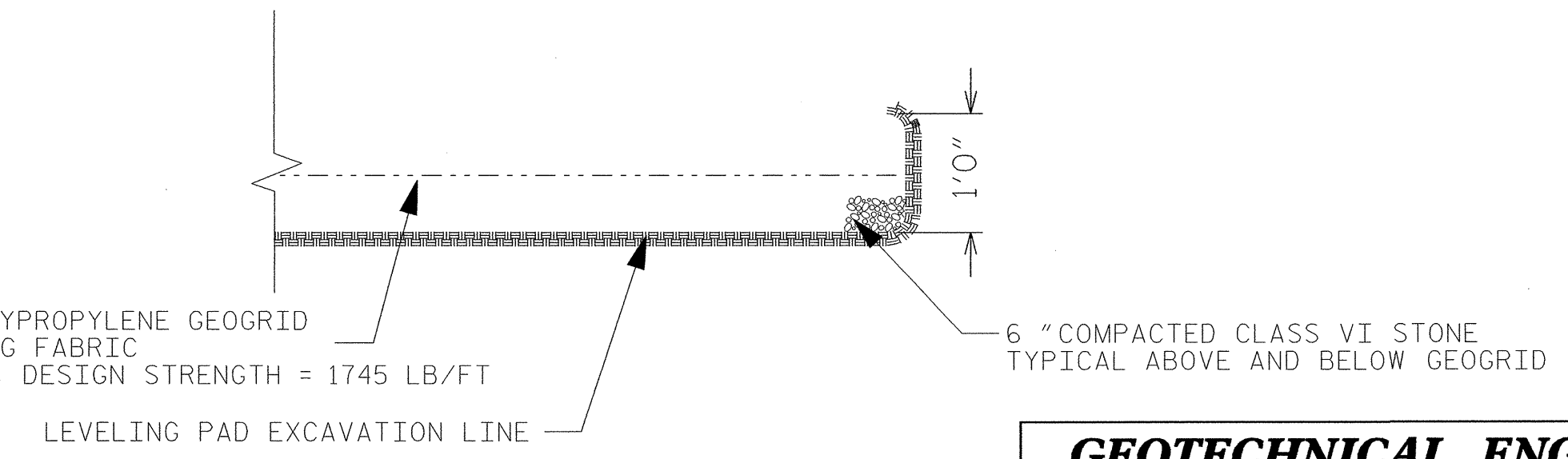
DESIGN RETAINING WALLS FOR PIPES EXTENDING THROUGH THE WALL AS NEEDED. VERIFY PIPE LOCATIONS AND ELEVATIONS BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN OR CONSTRUCTION.

DO NOT PLACE STONE FOR LEVELING PADS FOR RETAINING WALLS UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

SEE TRAFFIC CONTROL PLANS FOR SHORING OFFSET INFORMATION.

THE TOP OF WALL LOCATION, AS SHOWN IN DETAIL, CORRESPONDS TO WALL LOCATION AS SHOWN IN ROADWAY PLANS. THE CONTRACTOR/DESIGNER ARE RESPONSIBLE FOR LOCATING THE FACE OF THE BOTTOM OF WALL SO THE TOP OF WALL LINES UP WITH THE CORRECT OFFSET AS SHOWN IN PLANS.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS PIPES, INLETS, OR UTILITIES MAY INTERFERE WITH BLOCK PLACEMENT. THE CONTRACTOR/DESIGNER ARE RESPONSIBLE FOR MAKING ADJUSTMENTS AS REQUIRED AND ANY CHANGES MUST BE APPROVED BY THE ENGINEER.



LEVELING PAD DETAILS
 NTS


PRECAST GRAVITY WALL LOCATIONS	
STA. 299+00.00 -L1-	TO 302+50.00 -L1-
STA. 306+50.00 -L1-	TO 311+00.00 -L1-
STA. 339+50.00 -L1-	TO 345+50.00 -L1-
STA. 352+50.00 -L1-	TO 354+50.00 -L1-

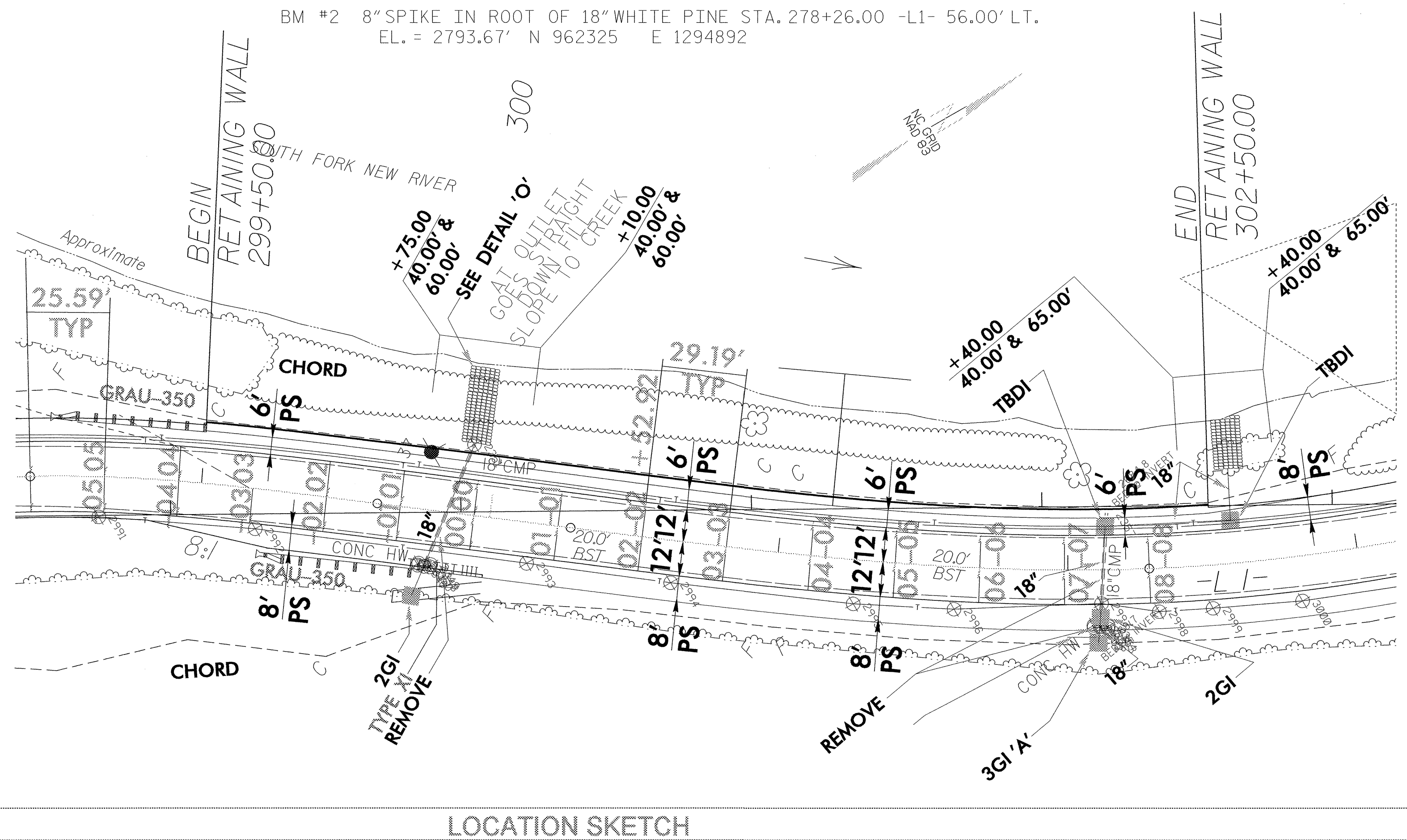
PROJECT NO.: R-2100B
ASHE COUNTY
STATION: VARIES, SEE SUMMARY ABOVE
 SHEET 1 OF 1

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

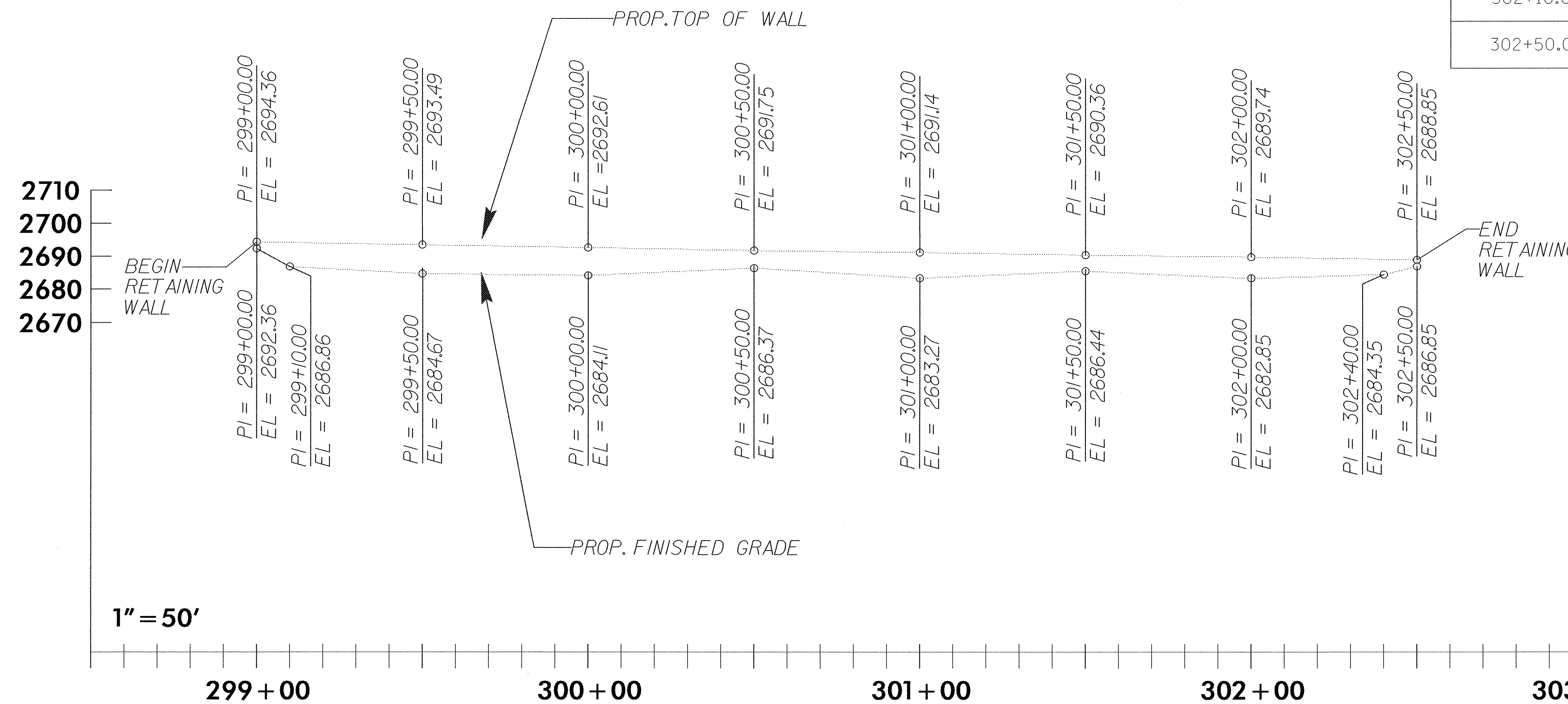
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			16
2			4			

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892

GEOTECHNICAL ENGINEER  SIGNATURE: <i>S. C. Clark</i> DATE: 11/15/09	ENGINEER SIGNATURE: _____ DATE: _____
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RETAINING WALL ELEVATIONS					
-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
299+00.00	23.00	2694.36	2692.36	2.00	1.50
299+10.00	23.00	2694.19	2686.86	7.34	6.83
299+50.00	23.00	2693.49	2684.67	8.82	8.32
300+00.00	23.00	2692.61	2684.11	8.5	8.00
300+50.00	23.00	2691.75	2686.37	5.38	4.88
301+00.00	23.00	2691.14	2683.27	7.87	7.37
301+50.00	23.00	2690.36	2686.44	3.92	3.42
302+00.00	23.00	2689.74	2682.30	6.89	6.39
302+10.00	23.00	2689.02	2684.34	4.67	4.17
302+50.00	23.00	2688.85	2686.85	2.00	1.50



* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS


TOTAL STRUCTURE QUANTITIES	
PRECAST GRAVITY RETAINING WALLS	2337 SQ. FT.

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 299+00.00 -L1- TO 302+50.00 -L1-
 SHEET 2 OF 6

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

GEOTECHNICAL ENGINEERING UNIT

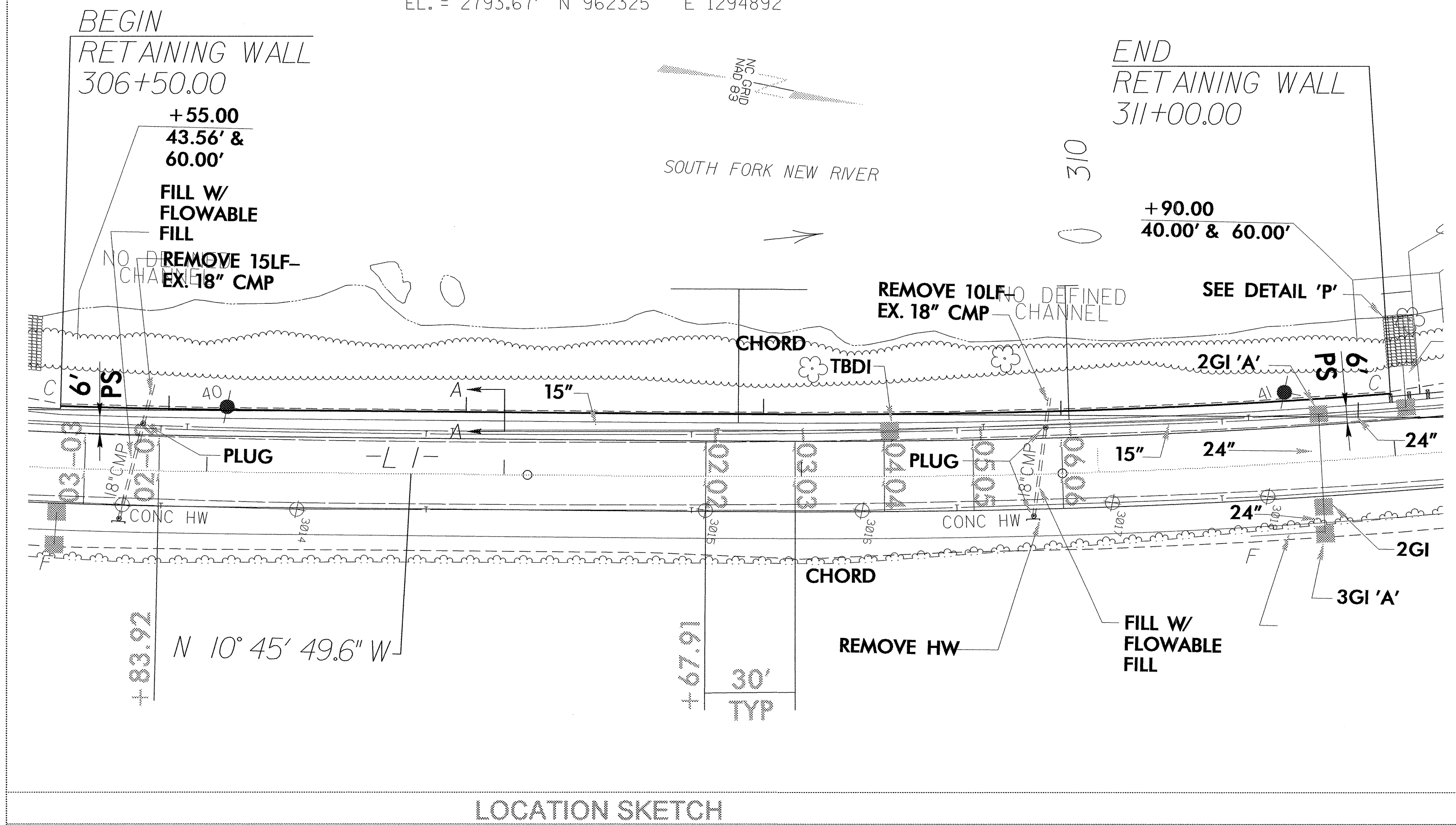
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE


 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**RETAINING WALL LEFT OF
 -L1- FROM STA. 299+00
 TO STA. 302+50 ON N.C. 16**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-8
2			4			16

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892

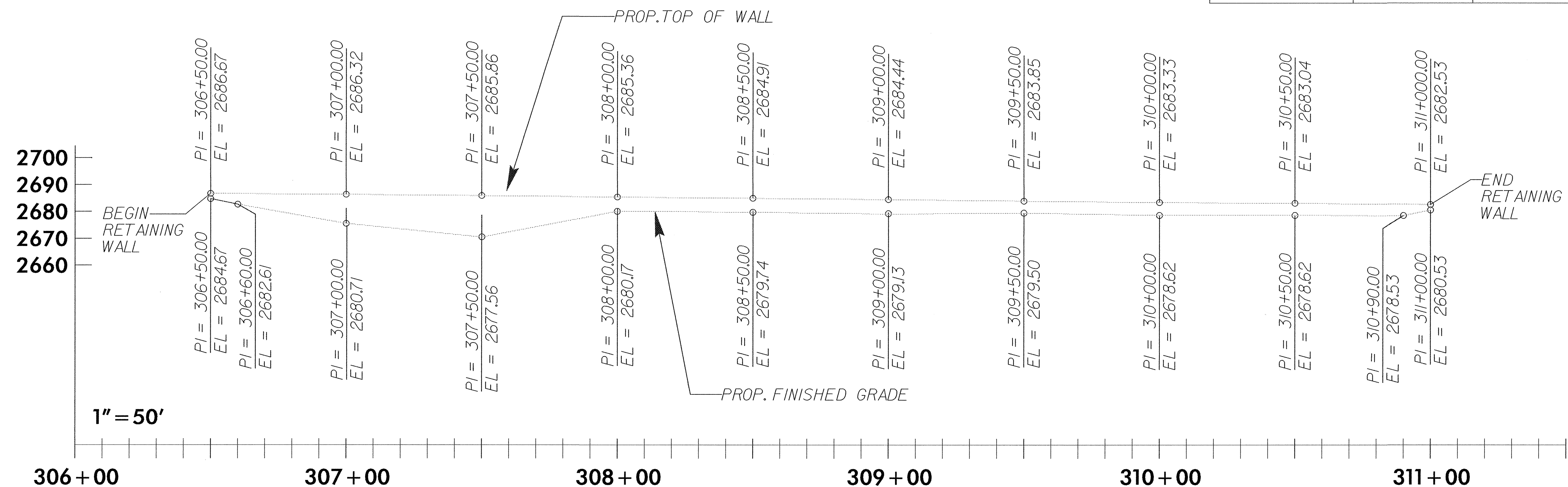


* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

GEOTECHNICAL ENGINEER ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029869
 SHANE C. CLARK
 SIGNATURE DATE SIGNATURE DATE

-L1- STA	OFFSET FROM CL (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
306+50.00	23.00	2686.67	2684.67	2.00	1.50
306+60.00	23.00	2686.60	2682.61	3.99	3.49
307+00.00	23.00	2686.32	2680.71	5.61	5.11
307+50.00	23.00	2685.86	2677.86	8.30	7.80
308+00.00	23.00	2685.36	2680.17	5.19	4.69
308+50.00	23.00	2684.91	2679.74	5.17	4.67
309+00.00	23.00	2684.44	2679.13	5.31	4.81
309+50.00	23.00	2683.85	2679.50	4.35	3.85
310+00.00	23.00	2683.33	2678.62	4.71	4.21
310+50.00	23.00	2683.04	2678.62	4.42	3.92
310+50.00	23.00	2682.63	2678.53	4.10	3.60
311+00.00	23.00	2682.53	2680.53	2.00	1.50



PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 306+50.00 -L1- TO 311+00.00 -L1-
 SHEET 3 OF 6

PRECAST GRAVITY RETAINING WALLS	2907	SQ. FT.
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GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH


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

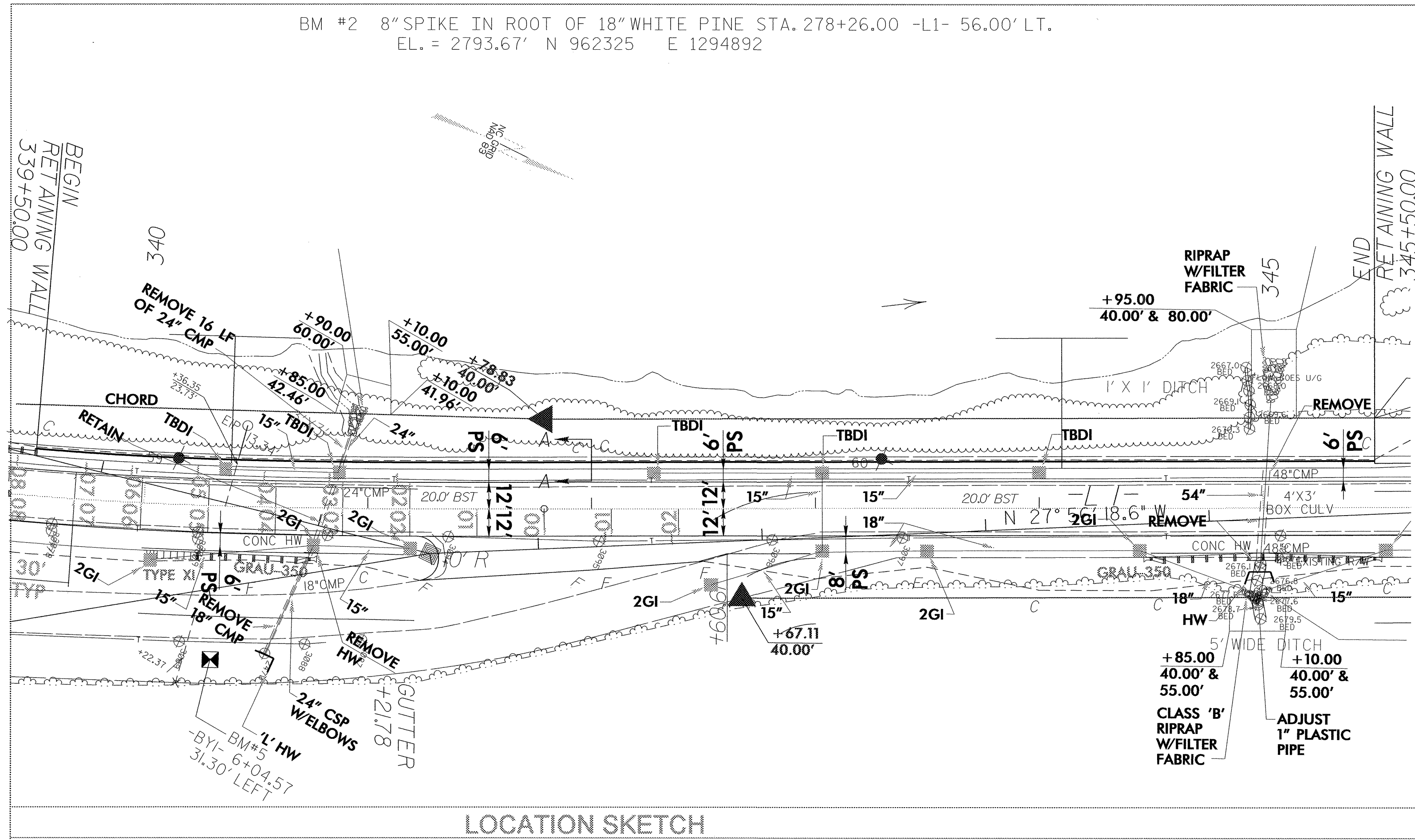
RETAINING WALL LEFT OF -L1- FROM STA. 306+50 TO STA. 311+00 ON N.C. 16

SHEET NO. 16
 TOTAL SHEETS 16

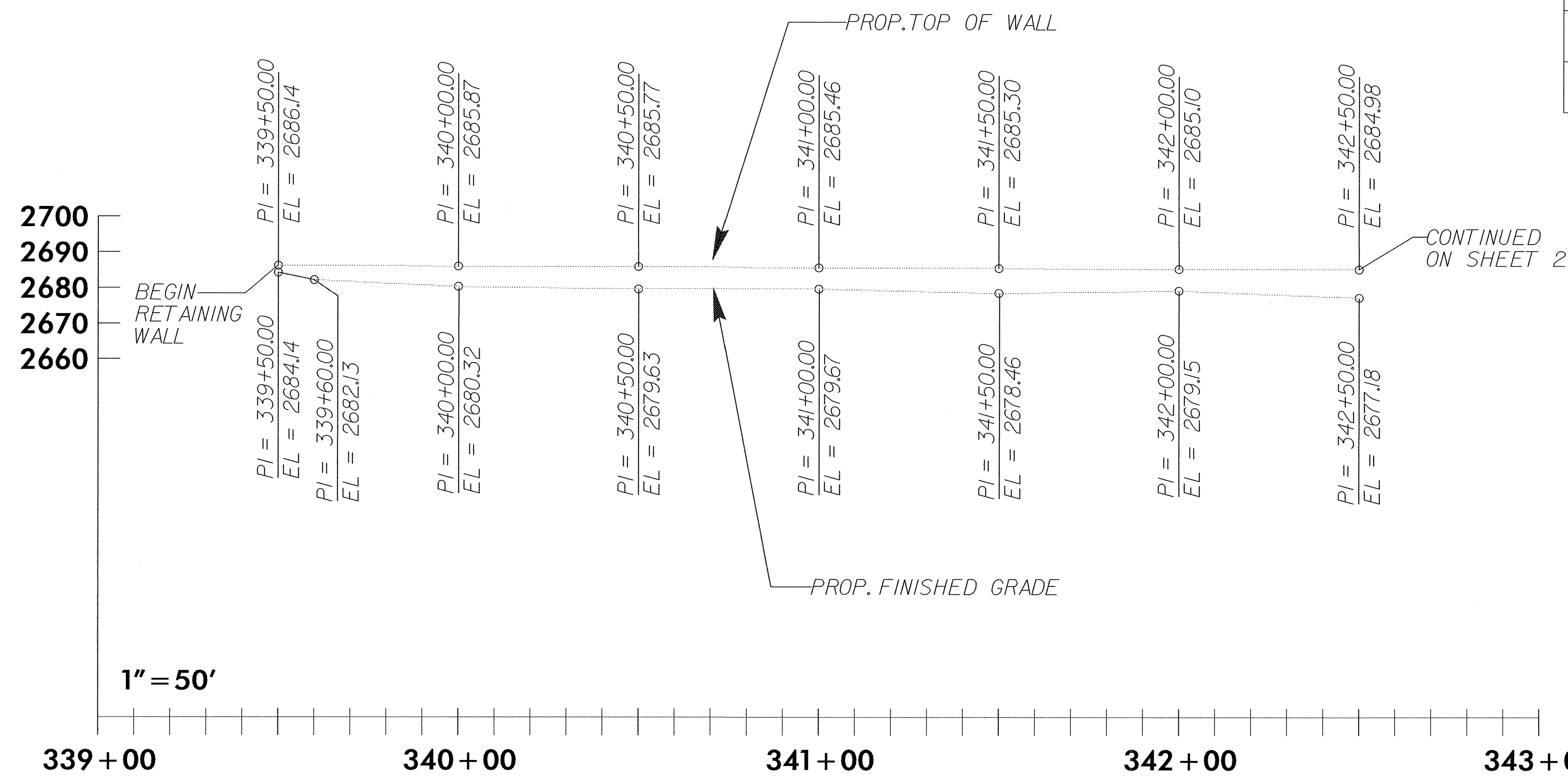
PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892

GEOTECHNICAL ENGINEER  SIGNATURE: <i>Shane C. Clark</i> DATE: 1/15/10	ENGINEER SIGNATURE: _____ DATE: _____
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-L1- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
339+50.00	23.00	2686.14	2684.14	2.00	1.50
339+60.00	23.00	2686.09	2682.13	3.96	3.46
340+00.00	23.00	2685.87	2680.32	5.55	5.05
340+50.00	23.00	2685.77	2679.63	6.14	5.64
341+00.00	23.00	2685.46	2679.67	5.79	5.29
341+50.00	23.00	2685.30	2678.46	6.84	6.34
342+00.00	23.00	2685.10	2679.15	5.95	5.45
342+50.00	23.00	2684.98	2677.18	7.80	7.30



* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 339+50.00 -L1- TO 345+50.00 -L1-
 SHEET 4 OF 6

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF -L1- FROM STA. 339+50 TO STA. 345+50 ON N.C. 16					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. W-10 TOTAL SHEETS 10

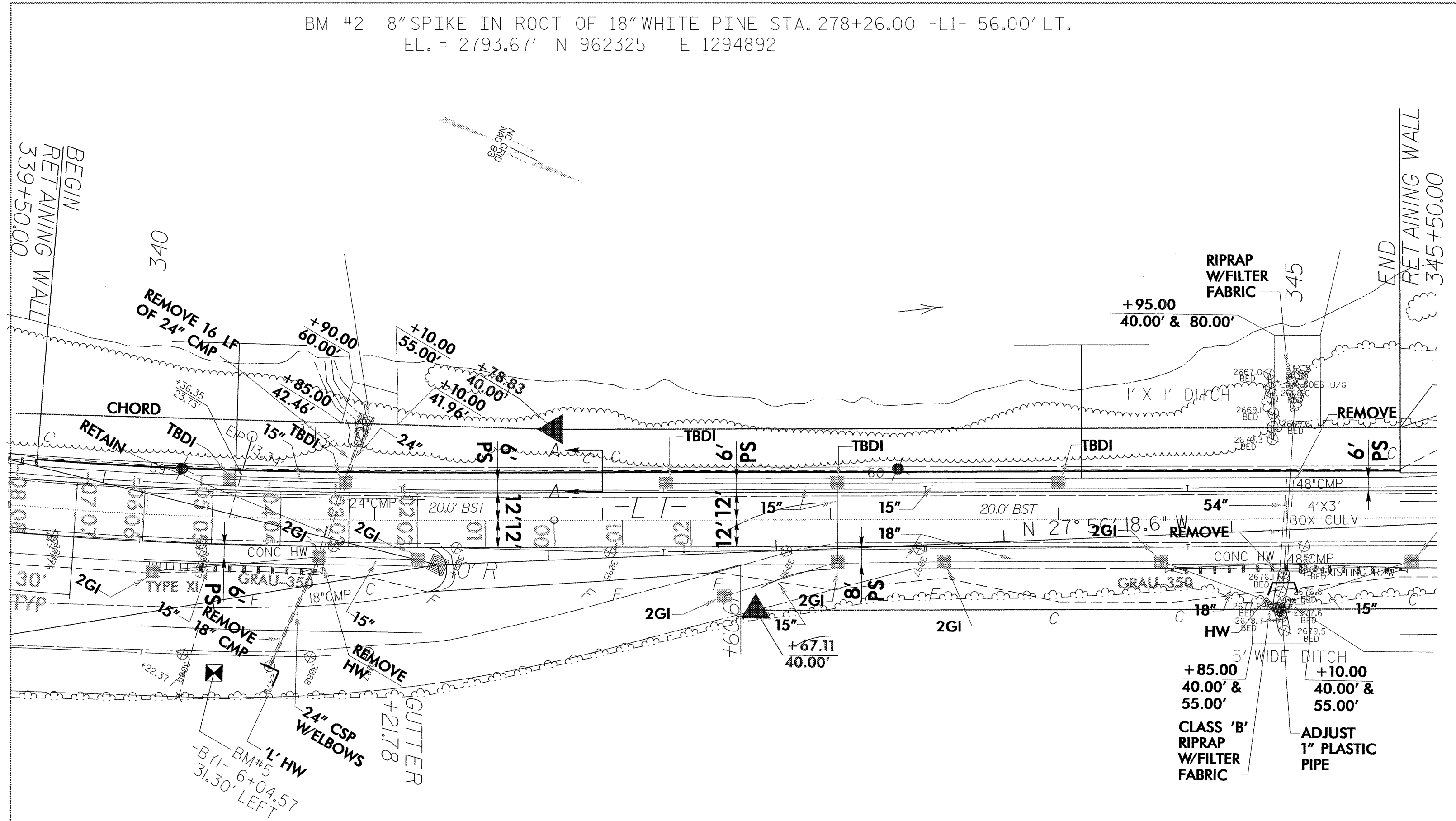
BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892

GEOTECHNICAL ENGINEER

ENGINEER

SEAL
 029869
 ENGINEER
 SHANE S. CLARK

Signature: *S. Clark* 11/24/09 DATE

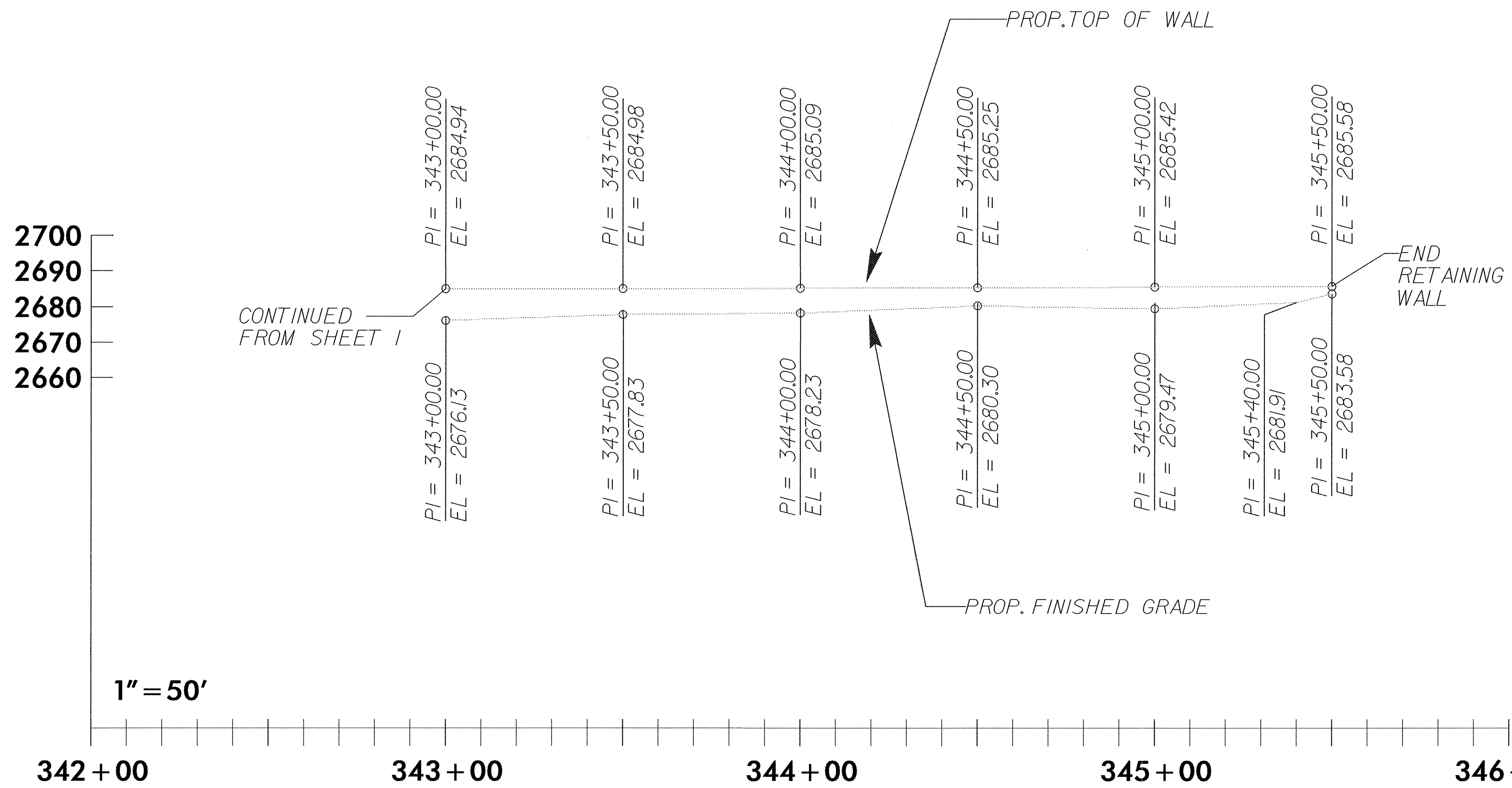


LOCATION SKETCH

RETAINING WALL ELEVATIONS					
-L1- STA	OFFSET FROM CL (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
343+00.00	23.00	2684.94	2676.13	8.81	8.31
343+50.00	23.00	2684.98	2677.83	7.15	6.65
344+00.00	23.00	2685.09	2678.23	6.86	6.36
344+50.00	23.00	2685.25	2680.30	4.95	4.45
345+00.00	23.00	2685.42	2679.47	5.95	5.45
345+50.00	23.00	2685.55	2681.91	3.65	3.15
345+50.00	23.00	2685.58	2683.58	2.00	1.50

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES	
PRECAST GRAVITY RETAINING WALLS	3773 SQ. FT.



PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 339+50.00 -L1- TO 345+50.00 -L1-

SHEET 5 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

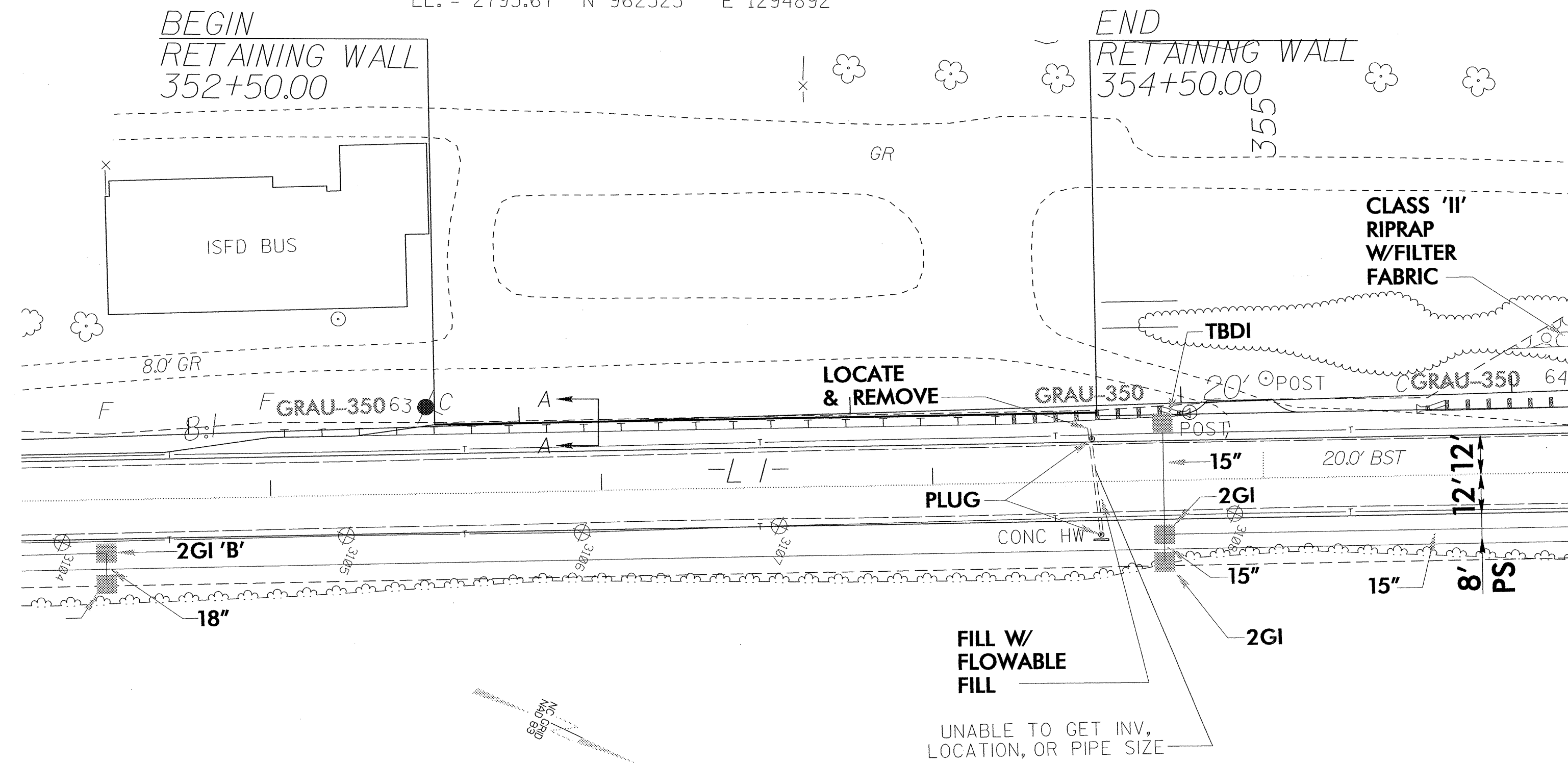
RETAINING WALL LEFT OF
 -L1- FROM STA. 339+50
 TO STA. 345+50 ON N.C. 16

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

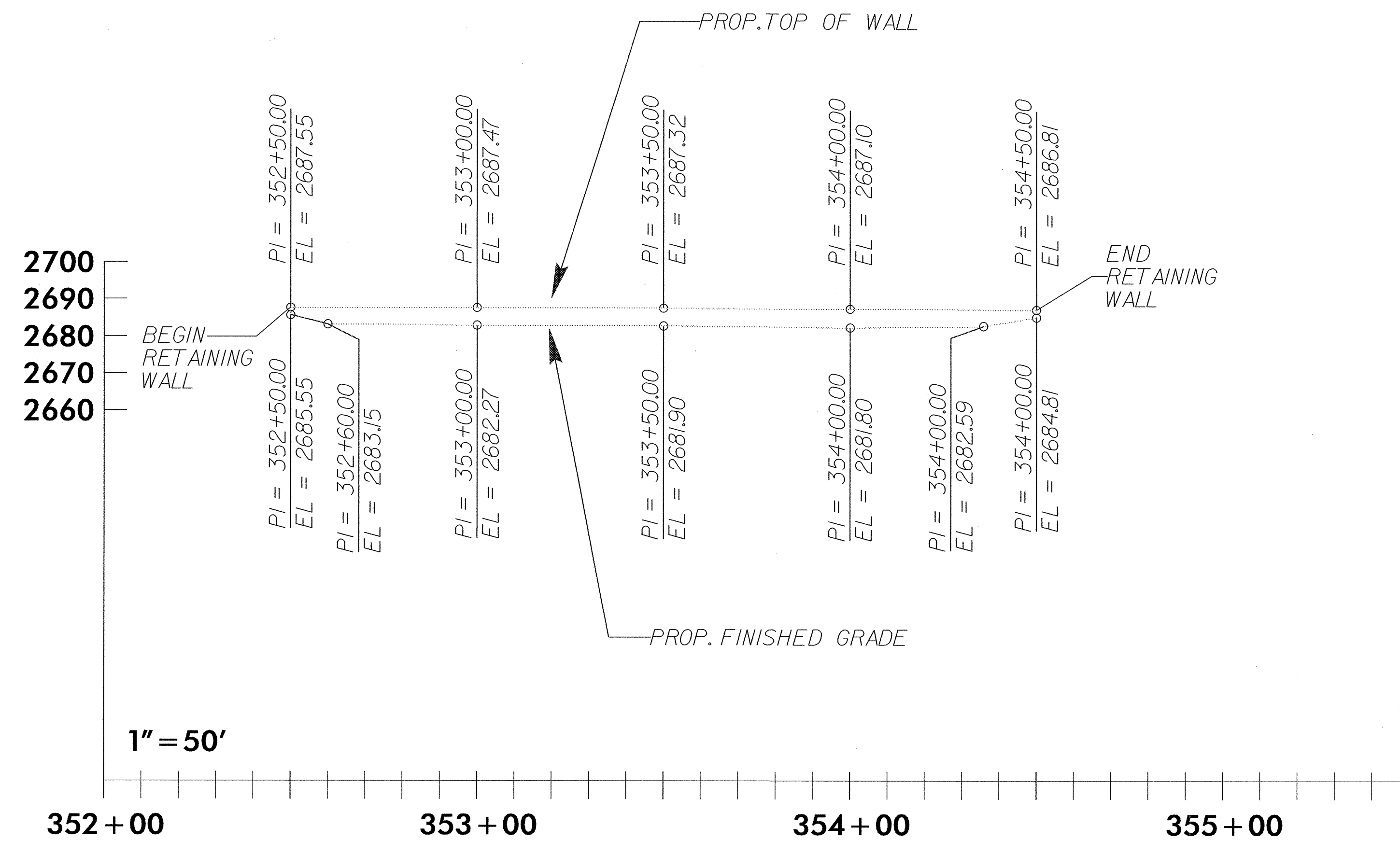
SHEET NO. W-11
 TOTAL SHEETS 16

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH



1" = 50'

RETAINING WALL ELEVATIONS

-L1- STA	OFFSET FROM CL (LEFT)	ELEV @ TOP OF WALL	* PROPOSED BERM ELEVATION	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
352+50.00	23.00	2687.55	2685.55	2.00	1.50
352+50.00	23.00	2687.53	2683.15	4.38	3.88
353+00.00	23.00	2687.47	2682.27	5.20	4.70
353+50.00	23.00	2687.32	2681.90	5.42	3.92
354+00.00	23.00	2687.10	2681.80	5.30	4.80
354+00.00	23.00	2687.04	2682.59	4.45	3.95
354+50.00	23.00	2686.81	2684.81	2.00	1.50

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES

PRECAST GRAVITY RETAINING WALLS 893 SQ. FT.

GEOTECHNICAL ENGINEER
 ENGINEER

8L Clark 1/22/10

SEAL 29869
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 352+50.00 -L1- TO 354+50.00 -L1-
 SHEET 6 OF 6

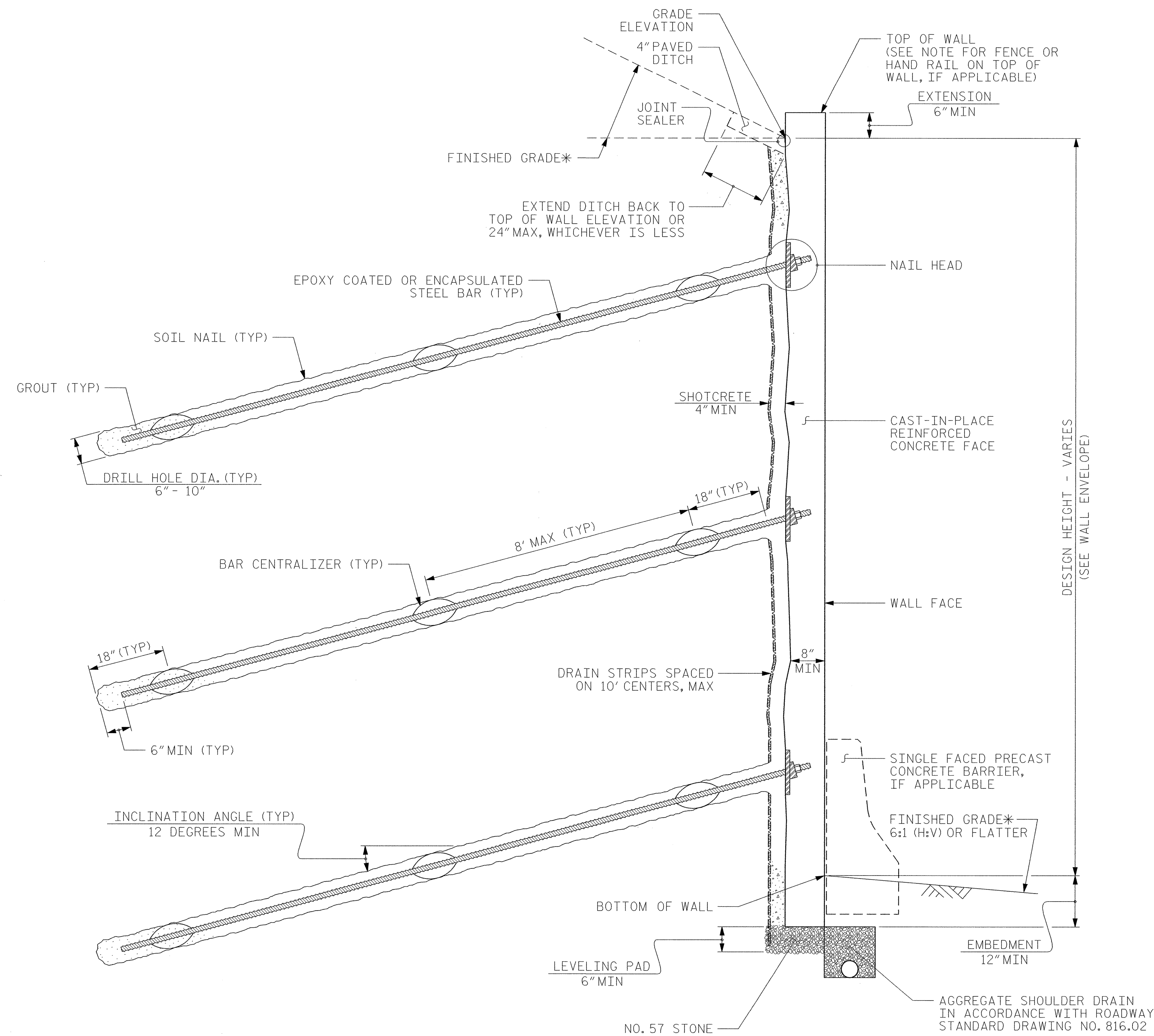
GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL LEFT OF
 -L1- FROM STA. 352+50
 TO STA. 354+50 ON N.C. 16

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			16
2			4			

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09



SOIL NAIL WALL TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

NOTES

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A FENCE OR HAND RAIL IS REQUIRED ON TOP OF RETAINING WALL. SEE ROADWAY PLANS FOR FENCE OR HAND RAIL ATTACHMENT DETAILS.

AN ASHLAR ARCHITECTURAL FINISH IS REQUIRED FOR THE CAST-IN-PLACE REINFORCED CONCRETE FACE FOR RETAINING WALL.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL FOR THE FOLLOWING:

- 1) MINIMUM SERVICE LIFE = 75 YEARS
- 2) MINIMUM EMBEDMENT ELEVATION = 1.0 FT
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 32$ DEGREES
COHESION, $c = 0$ PSF

PROJECT NO.: R-2100B
ASHE COUNTY
STATION: 271+02.00 -L1- TO 271+59.25 -L1-
SHEET 1 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

**SOIL NAIL
RETAINING WALL
DETAILS**

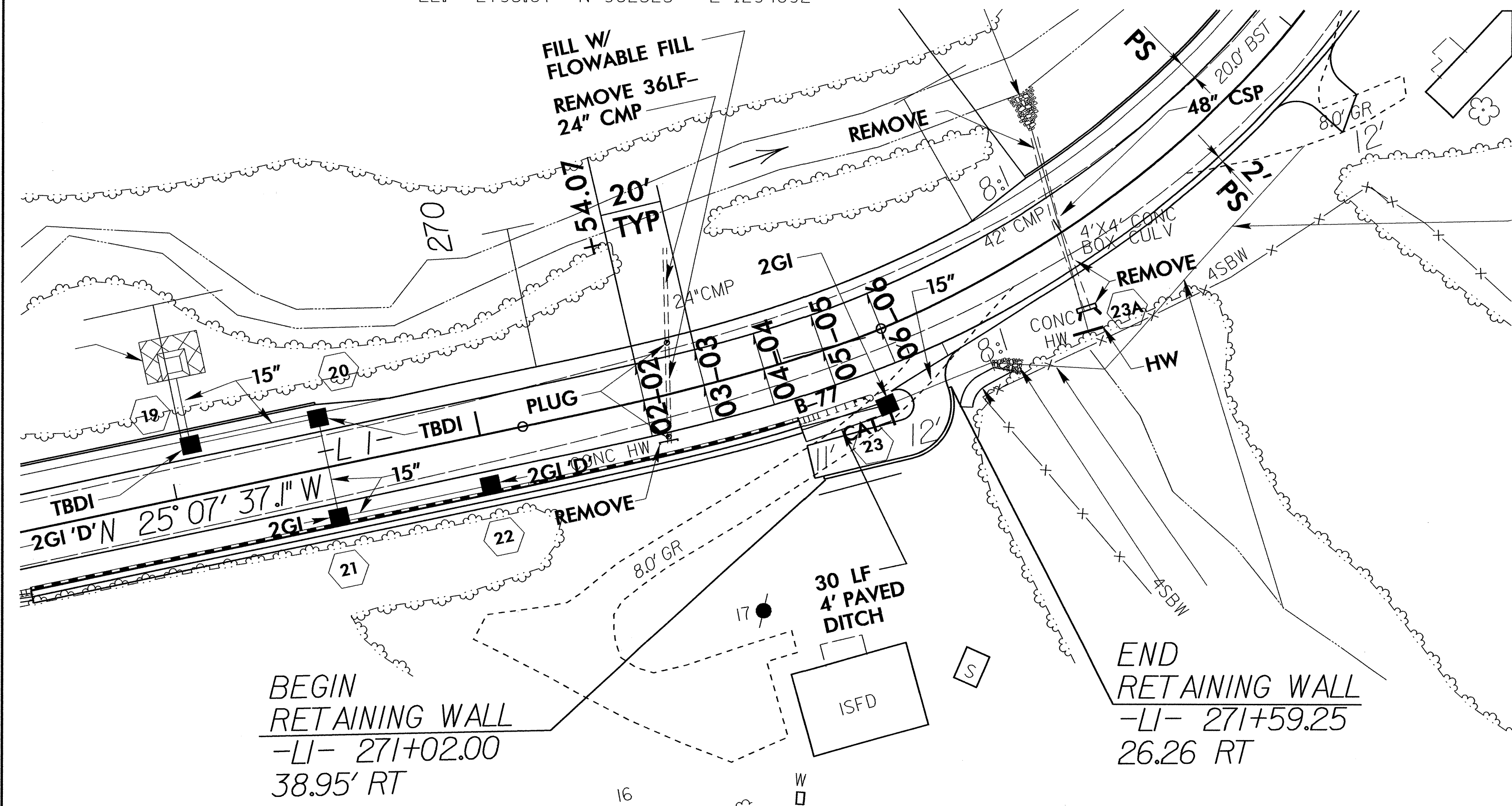
REVISIONS

NO.	BY	DATE	NO.	BY	DATE
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2			4		

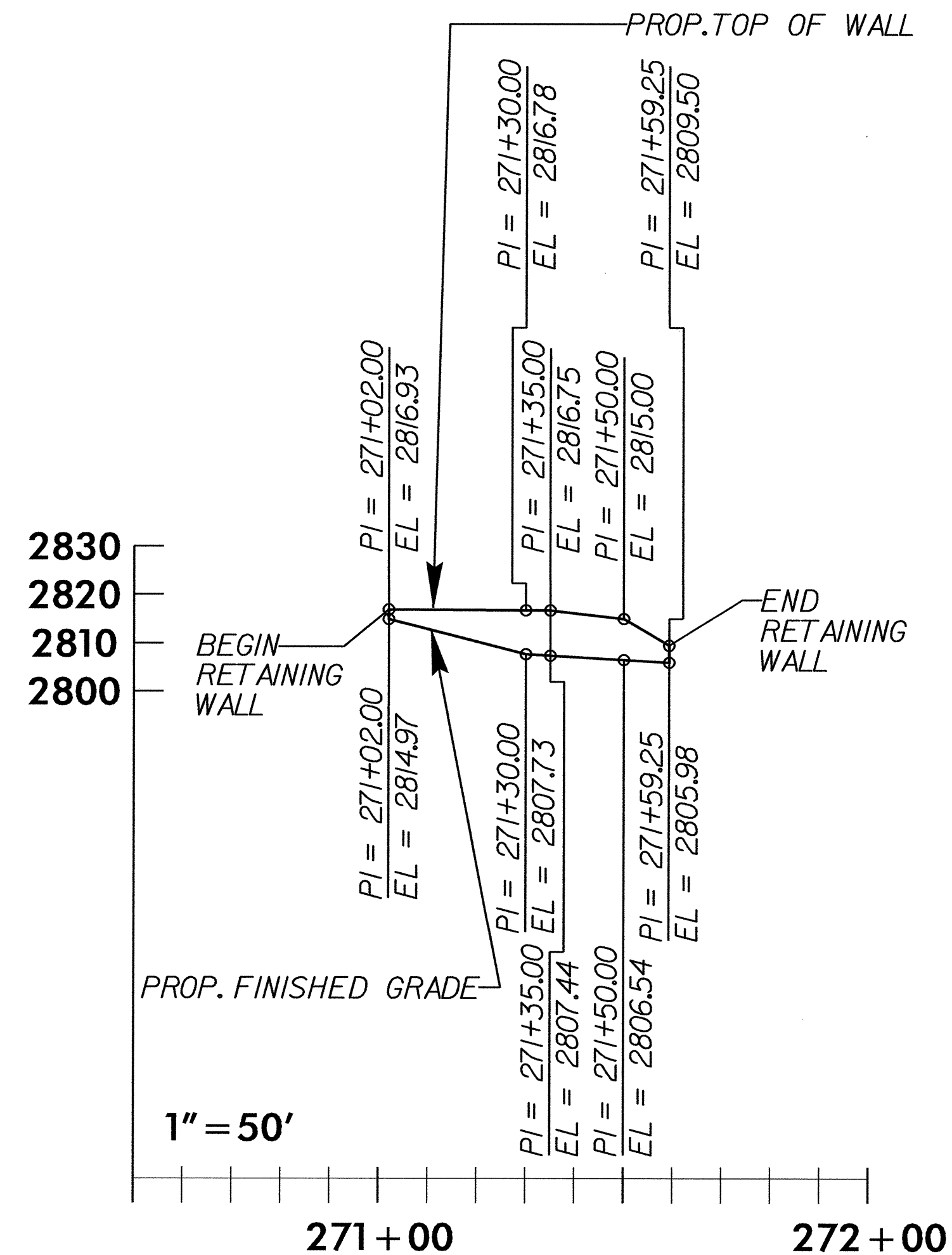
SHEET NO. W-13
TOTAL SHEETS 16

PREPARED BY: SCC	DATE: 11/09
REVIEWED BY: SCC	DATE: 11/09

BM #2 8" SPIKE IN ROOT OF 18" WHITE PINE STA. 278+26.00 -L1- 56.00' LT.
 EL. = 2793.67' N 962325 E 1294892



LOCATION SKETCH



GEOTECHNICAL ENGINEER

ENGINEER

SEAL 29869

ENGINEER WANE C CLARK

Signature: W.C. Clark Date: 11/24/09

RETAINING WALL ELEVATIONS

-L1- STA	OFFSET FROM C (RIGHT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
271+02.00	38.95	2816.93	2814.97	1.96	1.46
271+30.00	42.00	2816.78	2807.73	9.05	8.55
271+35.00	41.00	2816.75	2807.44	9.33	8.83
271+50.00	39.50	2815.00	2806.54	8.46	7.96
271+59.25	26.26	2809.50	2805.98	3.52	3.02

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH

** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS.

TOTAL STRUCTURE QUANTITIES

SOIL NAIL RETAINING WALLS	388	SQ. FT.
SOIL NAIL VERIFICATION TESTS	1	EA.
SOIL NAIL PROOF TESTS	3	EA.

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 271+02.00 -L1- TO 271+59.25 -L1-

SHEET 2 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL RIGHT OF -L1- FROM STA. 271+02.00 TO STA. 271+59.25 ON N.C. 16

REVISIONS						SHEET NO. w-14
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 16
2			4			

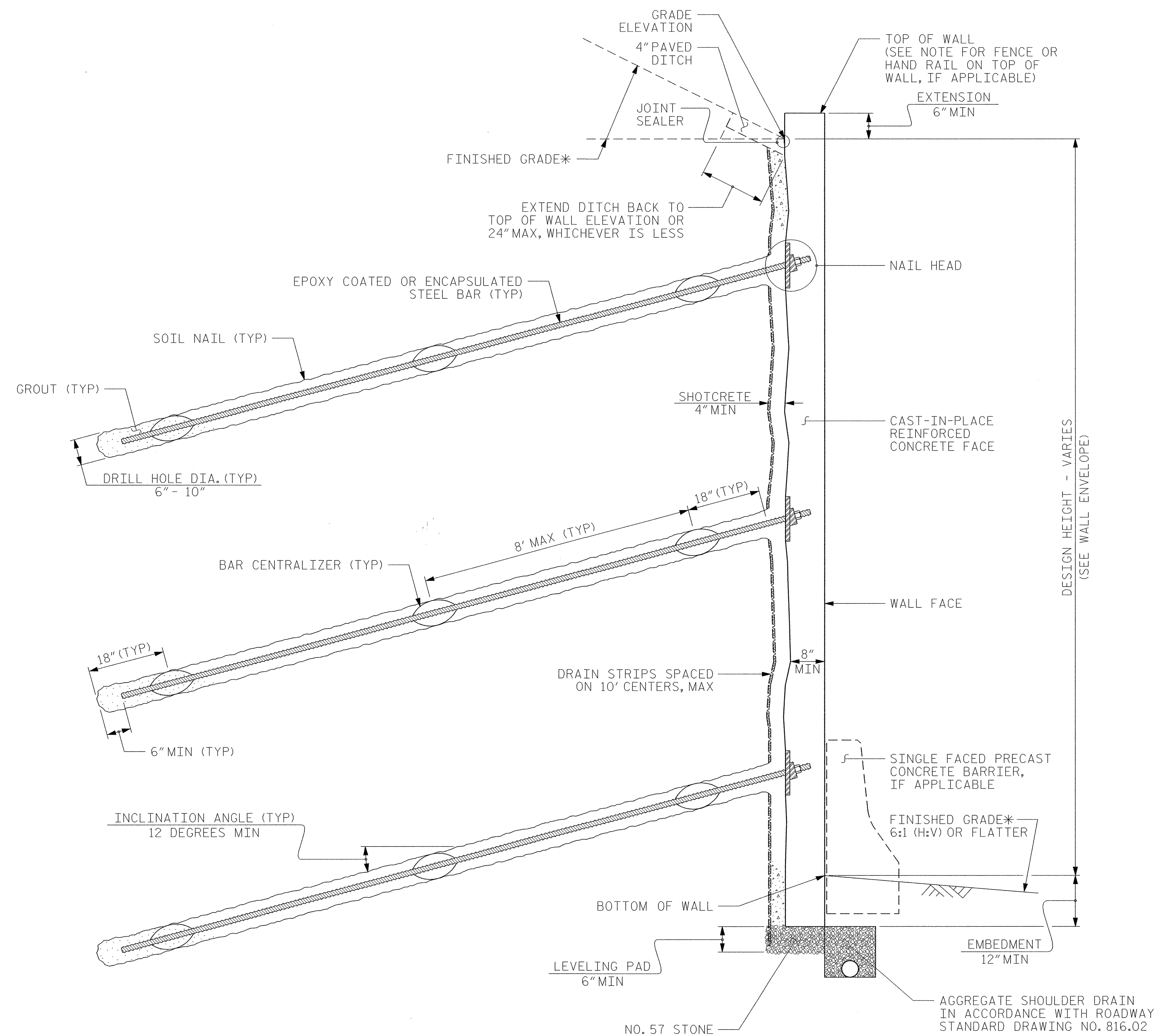
PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL
 SEAL 029869
 ENGINEER SHANE C. CLARK

S. Clark 11/15/10
 SIGNATURE DATE SIGNATURE DATE



SOIL NAIL WALL TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

NOTES

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A FENCE OR HAND RAIL IS REQUIRED ON TOP OF RETAINING WALL. SEE ROADWAY PLANS FOR FENCE OR HAND RAIL ATTACHMENT DETAILS.

AN ASHLAR ARCHITECTURAL FINISH IS REQUIRED FOR THE CAST-IN-PLACE REINFORCED CONCRETE FACE FOR RETAINING WALL.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL FOR THE FOLLOWING:
 1) MINIMUM SERVICE LIFE = 75 YEARS
 2) MINIMUM EMBEDMENT ELEVATION = 1.0 FT
 3) IN-SITU ASSUMED MATERIAL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 32$ DEGREES
 COHESION, $c = 0$ PSF

EXISTING OBSTRUCTIONS, SUCH AS A SEPTIC DRAIN FIELD, MAY INTERFERE WITH SOIL NAILS FOR RETAINING WALL.

PROJECT NO.: R-2100B
ASHE COUNTY
STATION: 325+66.65 -L1- TO 326+52.49-L1-
 SHEET 1 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH**

**SOIL NAIL
 RETAINING WALL
 DETAILS**

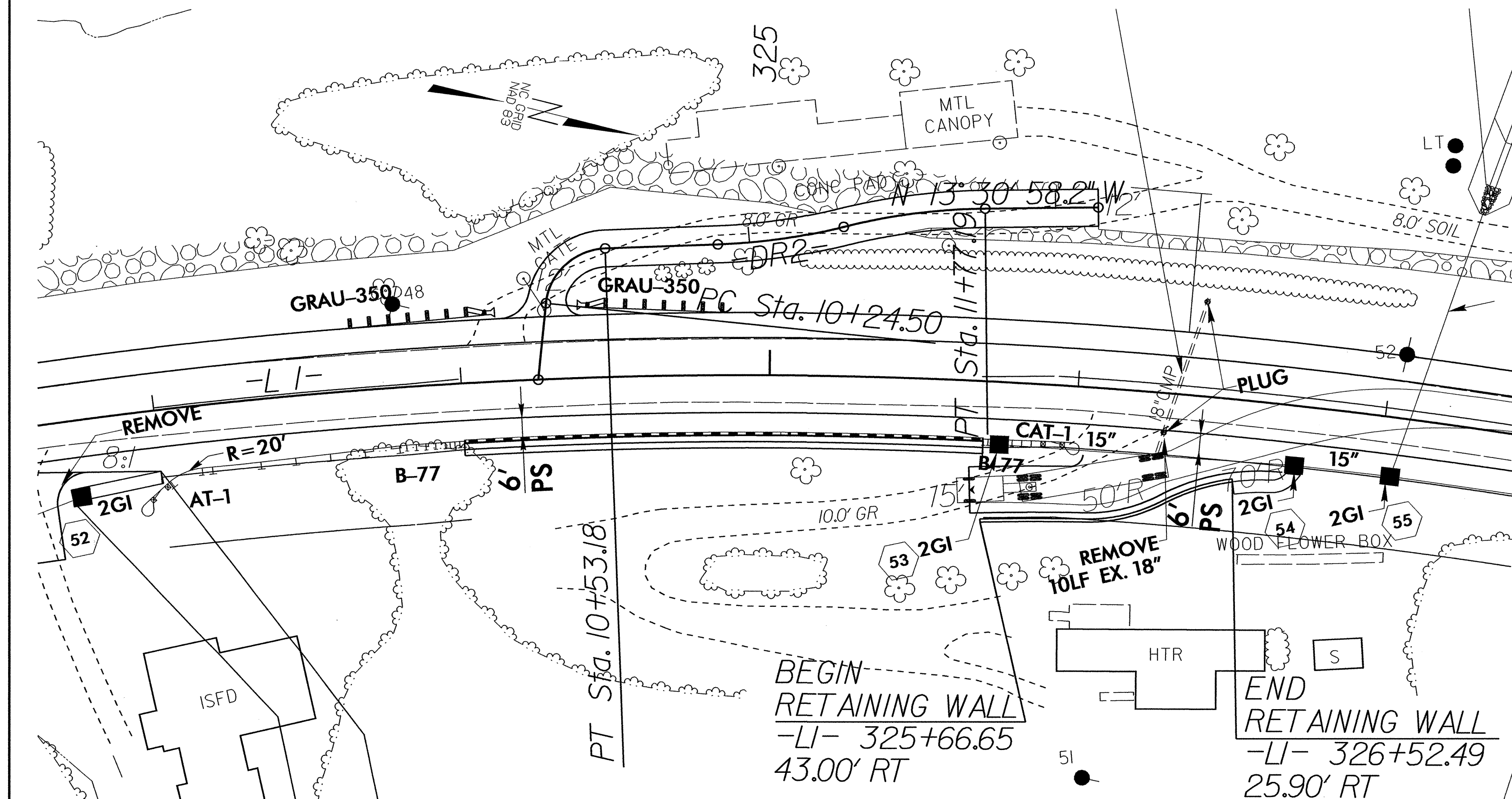
REVISIONS

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2			4		

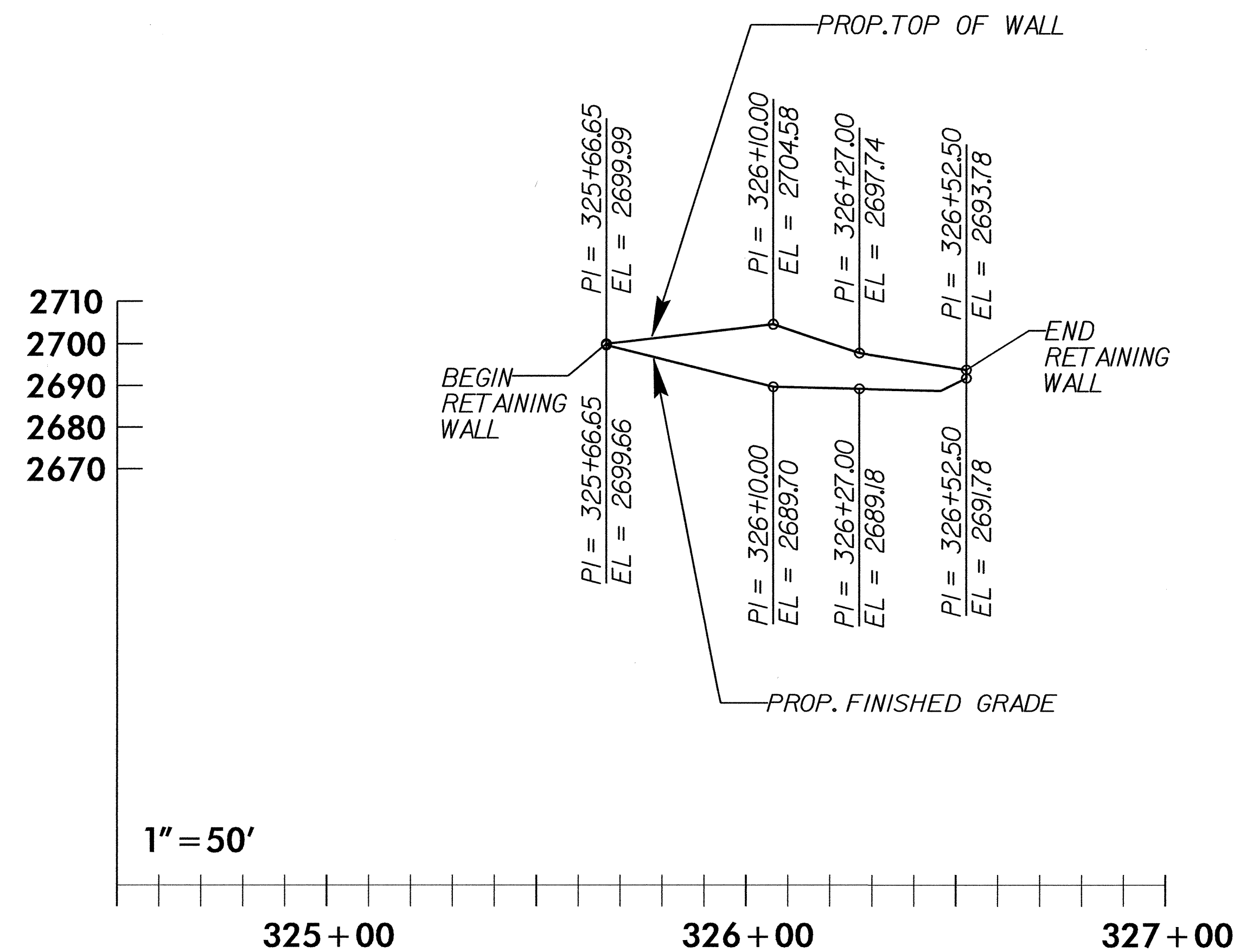
SHEET NO. W-15
 TOTAL SHEETS 16

PREPARED BY: SCC	DATE: 11/09
REVIEWED BY: SCC	DATE: 11/09

BM #4 PK NAIL IN SOUTH END OF HEAD WALL STA. 318+02.00 -L1- 20.00' LT.
 EL. = 2680.06' N 965419 E 1293742



LOCATION SKETCH



RETAINING WALL ELEVATIONS

-L1- STA	OFFSET FROM CL (RIGHT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT	** DESIGN WALL HEIGHT "H"
325+66.65	43.00	2699.99	2699.66	.33	N/A
326+10.00	42.30	2704.58	2689.70	14.88	14.38
326+27.00	36.70	2697.74	2689.18	8.56	8.06
326+52.49	25.90	2693.78	2691.78	2.00	1.50

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DOES NOT INCLUDE EMBEDMENT DEPTH
 ** FOR DESIGN WALL HEIGHT "H", SEE DESIGN DETAILS

TOTAL STRUCTURE QUANTITIES

SOIL NAIL RETAINING WALLS	710	SQ. FT.
SOIL NAIL VERIFICATION TESTS	1	EA.
SOIL NAIL PROOF TESTS	3	EA.

GEOTECHNICAL ENGINEER

ENGINEER



Signature: *Shane C. Clark* DATE: 11/5/10

PROJECT NO.: R-2100B
 ASHE COUNTY
 STATION: 325+66.65 -L1- TO 326+52.49 -L1-
 SHEET 2 OF 2

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RETAINING WALL RIGHT OF -L1- FROM STA. 325+66.65 TO STA. 326+52.49 ON N.C. 16

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			16
2			4			16

PREPARED BY: J.T.W. DATE: 11/24/09
 REVIEWED BY: S.C.C. DATE: 11/24/09

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 2006 "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