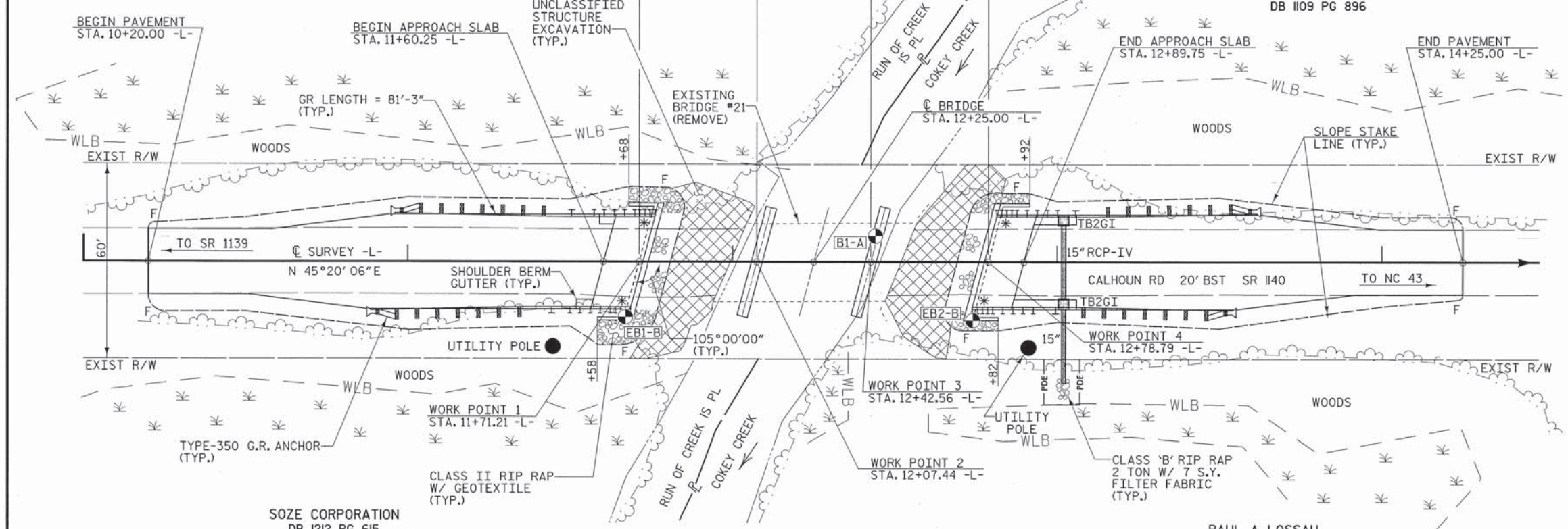


EXISTING BRIDGE No. 21
24'-1" CLEAR ROADWAY
SPANS: 1 @ 17'-6", 1 @ 16'-6", 1 @ 17'-9"
REINF. CONC. FLOOR ON TIMBER JOISTS
END BENTS & INT. BENT-
TIMBER CAPS ON TIMBER PILES

SOZE CORPORATION
DB 1212 PG 615

EXISTING UTILITIES TO BE
RELOCATED BY OTHERS.

BM: BM#1
8" SPIKE IN 30" GUM TREE
35.24' RIGHT OF -L- STA. 11+62.07
ELEV. 87.40



SOZE CORPORATION
DB 1212 PG 615

PAUL A LOSSAU
DB 1513 PG 1196

PLAN
SCALE: 1" = 20'

PI = 11+00.00
EL = 89.15'
VC = 150'
K = 121
D.S. = 55 mph

(-)1.7293% (-)0.4934%

GRADE DATA
-L- (SR 1140)

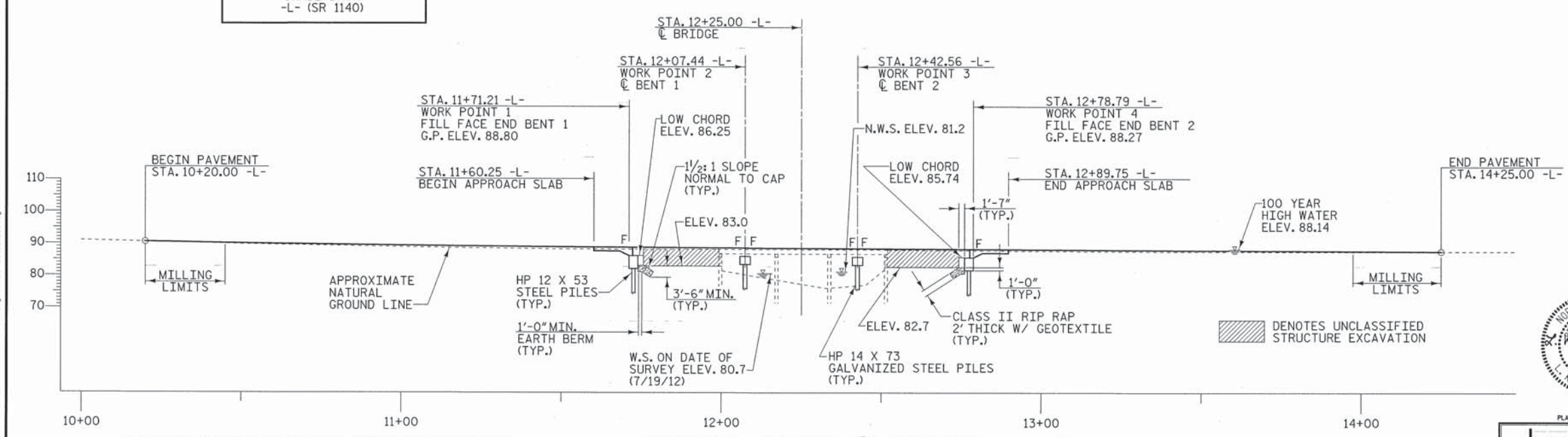
● DENOTES GEO-TECH BORE HOLE LOCATIONS.
* DENOTES TYPE III GUARDRAIL CONNECTION REQ'D.
SEE "GUARDRAIL ANCHORAGE FOR VERTICAL
CONCRETE BARRIER RAIL" SHEET.

NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE
ANCHOR UNITS.

FOR PAVEMENT LAYOUT SEE "ROADWAY DETAILS" SHEET.

RIP RAP CLASS II (2'-0" THICK)	
END BENT No. 1	50 TONS
END BENT No. 2	40 TONS
TOTAL	90 TONS
GEOTEXTILE FOR DRAINAGE	
END BENT No. 1	56 SQ. YARDS
END BENT No. 2	44 SQ. YARDS
TOTAL	100 SQ. YARDS

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS



NOTE: THE APPROXIMATE NATURAL GROUND ELEVATIONS ARE
ALONG THE EDGE OF THE BRIDGE ON THE UPSTREAM SIDE.

PROFILE ALONG C SURVEY
SCALE: 1" = 20'
F = FIXED END

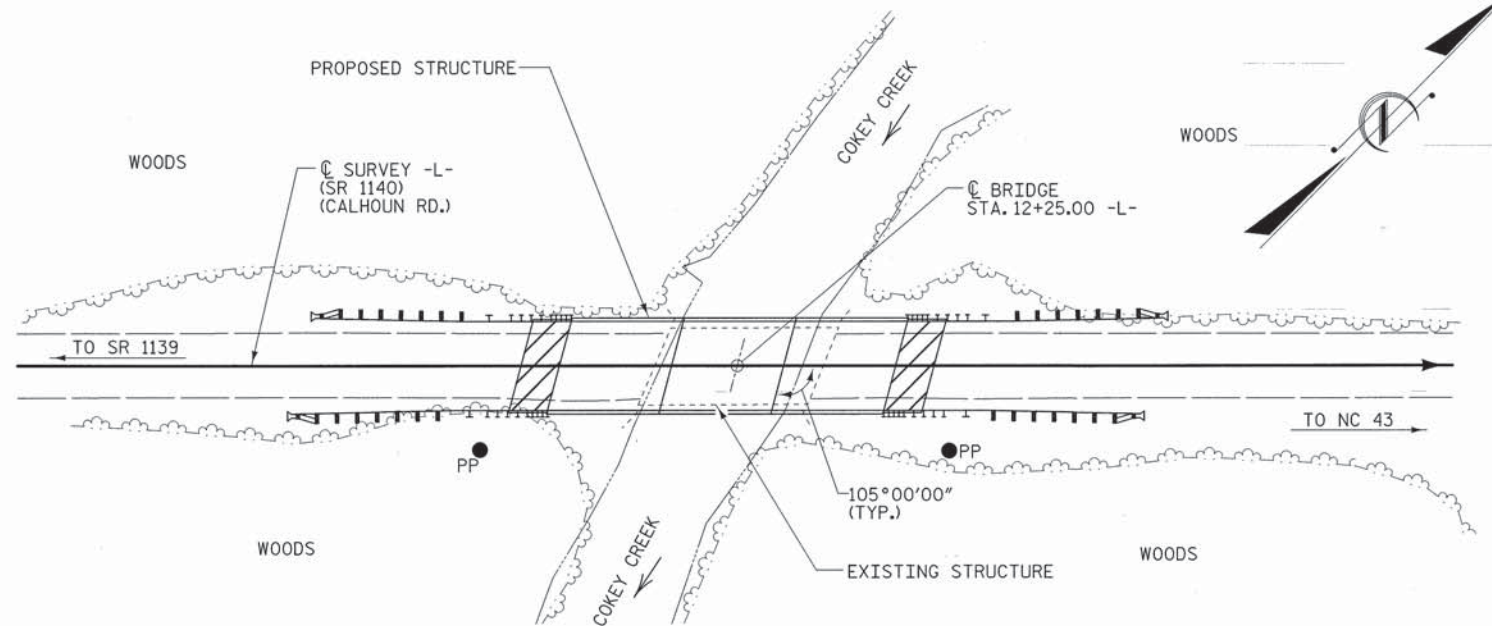
DRAWN BY: W.B. ALLEN DATE: 10/12
CHECKED BY: W.A. DAVIS DATE: 12/12

PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, NC 27636
(919) 851-1912
(919) 851-1913 FAX
WWW.MULKEYINC.COM
NC LICENSE NO. C-1021

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-
REPLACES BRIDGE NO. 21 SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE ON SR 1140
OVER COKEY CREEK
BETWEEN SR 1139 & NC 43
27'-10" CLEAR ROADWAY - 105° SKEW

REVISIONS						SHEET NO. 1 TOTAL SHEETS 24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES
	LUMP SUM	EACH	LUMP SUM	CU. YARDS	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE	LUMP SUM				LUMP SUM						
END BENT 1			LUMP SUM	20.5		2522	5	300			3
BENT 1				10.6		2102			7	420	4
BENT 2				10.6		2102			7	420	4
END BENT 2			LUMP SUM	20.5		2522	5	300			3
TOTAL	LUMP SUM	1	LUMP SUM	62.2	LUMP SUM	9248	10	600	14	840	14

TOTAL BILL OF MATERIAL

	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	210.75			LUMP SUM	30	1050.00
END BENT 1		50	56			
BENT 1						
BENT 2						
END BENT 2		40	44			
TOTAL	210.75	90	100	LUMP SUM	30	1050.00

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR THE DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN ON SHEET 1 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 PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE 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 BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".

FOR PILES SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

PILES AT BENT NO.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT BENT NO.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

FOR INTERIOR BENTS NO.1 & 2 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

INSTALL PILES AT BENT NO.1 AND 2 TO A TIP ELEVATION NO HIGHER THAN 46.0 FT.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.1 AND 2 IS ELEVATION 69.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 35 TO 50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BOTH END BENT NO.1 AND 2 AND BENT NO.1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PILE DRIVING ANALYZER TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

ADT = 890 FOR YEAR 2009.

ROADWAY APPROACH EMBANKMENT SHALL BE WIDENED AS NECESSARY FOR GUARDRAIL INSTALLATION.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NO DECK DRAINS REQUIRED.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

HYDROGRAPHIC DATA:

DESIGN DISCHARGE -	2066 CFS
FREQUENCY OF DESIGN FLOOD -	25 YEAR
DESIGN HIGH WATER ELEVATION -	86.6
DRAINAGE AREA -	7.9 SQ. MI.
BASE DISCHARGE (Q 100) -	2960 CFS
BASE HIGH WATER ELEVATION -	88.14

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE -	2522 CFS
FREQUENCY OF OVERTOPPING FLOOD -	50 YEAR (+)
OVERTOPPING FLOOD ELEVATION -	87.4

OVERTOPPING OCCURS AT C STA. 14+25.00 -L-

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

REPLACES BRIDGE NO. 21 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1140
OVER COKEY CREEK
BETWEEN SR 1139 & NC 43
27'-10" CLEAR ROADWAY - 105° SKEW



REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	2
2			4	
				TOTAL SHEETS
				24

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
							LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT					
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.06	--	1.75	0.275	1.38	35'	EL	16.982	0.623	1.2	35'	EL	1.698	0.80	0.275	1.06	35'	EL	16.982	
		HL-93(0pr)	N/A	--	1.549	--	1.35	0.275	1.79	35'	EL	16.982	0.623	1.55	35'	EL	1.698	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.377	49.573	1.75	0.275	1.82	35'	EL	13.586	0.623	1.38	35'	EL	1.698	0.80	0.275	1.41	35'	EL	16.982	
		HS-20(0pr)	36.000	--	1.785	64.262	1.35	0.275	2.36	35'	EL	13.586	0.623	1.79	35'	EL	1.698	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.424	32.72	1.4	0.275	3.95	35'	EL	16.982	0.623	3.55	35'	EL	1.698	0.80	0.275	2.42	35'	EL	16.982	
		SNGARBS2	20.000	--	2.082	41.635	1.4	0.275	3.34	35'	EL	13.586	0.623	2.68	35'	EL	1.698	0.80	0.275	2.08	35'	EL	13.586	
		SNAGRIS2	22.000	--	2.076	45.668	1.4	0.275	3.31	35'	EL	13.586	0.623	2.56	35'	EL	1.698	0.80	0.275	2.08	35'	EL	13.586	
		SNCOTTS3	27.250	--	1.213	33.066	1.4	0.275	1.98	35'	EL	16.982	0.623	1.79	35'	EL	1.698	0.80	0.275	1.21	35'	EL	16.982	
		SNAGGRS4	34.925	--	1.123	39.207	1.4	0.275	1.83	35'	EL	16.982	0.623	1.6	35'	EL	1.698	0.80	0.275	1.12	35'	EL	16.982	
		SNS5A	35.550	--	1.09	38.739	1.4	0.275	1.77	35'	EL	16.982	0.623	1.69	35'	EL	1.698	0.80	0.275	1.09	35'	EL	16.982	
		SNS6A	39.950	--	1.052	42.014	1.4	0.275	1.71	35'	EL	16.982	0.623	1.58	35'	EL	1.698	0.80	0.275	1.05	35'	EL	16.982	
		SNS7B	42.000	3	1.004	42.153	1.4	0.275	1.63	35'	EL	16.982	0.623	1.62	35'	EL	1.698	0.80	0.275	1.00	35'	EL	16.982	
	TTST	TNAGRIT3	33.000	--	1.299	42.872	1.4	0.275	2.11	35'	EL	16.982	0.623	1.85	35'	EL	1.698	0.80	0.275	1.30	35'	EL	16.982	
		TNT4A	33.075	--	1.298	42.933	1.4	0.275	2.11	35'	EL	16.982	0.623	1.75	35'	EL	1.698	0.80	0.275	1.30	35'	EL	16.982	
		TNT6A	41.600	--	1.137	47.314	1.4	0.275	1.85	35'	EL	16.982	0.623	1.71	35'	EL	1.698	0.80	0.275	1.14	35'	EL	16.982	
		TNT7A	42.000	--	1.175	49.358	1.4	0.275	1.92	35'	EL	16.982	0.623	1.59	35'	EL	1.698	0.80	0.275	1.18	35'	EL	16.982	
		TNT7B	42.000	--	1.156	48.536	1.4	0.275	1.88	35'	EL	16.982	0.623	1.54	35'	EL	1.698	0.80	0.275	1.16	35'	EL	16.982	
		TNAGRIT4	43.000	--	1.17	50.308	1.4	0.275	1.89	35'	EL	13.586	0.623	1.48	35'	EL	1.698	0.80	0.275	1.17	35'	EL	16.982	
TNAGT5A		45.000	--	1.079	48.572	1.4	0.275	1.76	35'	EL	16.982	0.623	1.56	35'	EL	1.698	0.80	0.275	1.08	35'	EL	16.982		
TNAGT5B	45.000	--	1.041	46.853	1.4	0.275	1.69	35'	EL	16.982	0.623	1.4	35'	EL	1.698	0.80	0.275	1.04	35'	EL	16.982			

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

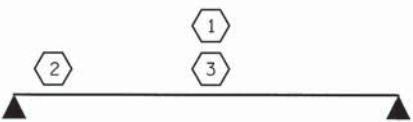
3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-



LRFR SUMMARY
FOR SPAN ALL SPANS

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



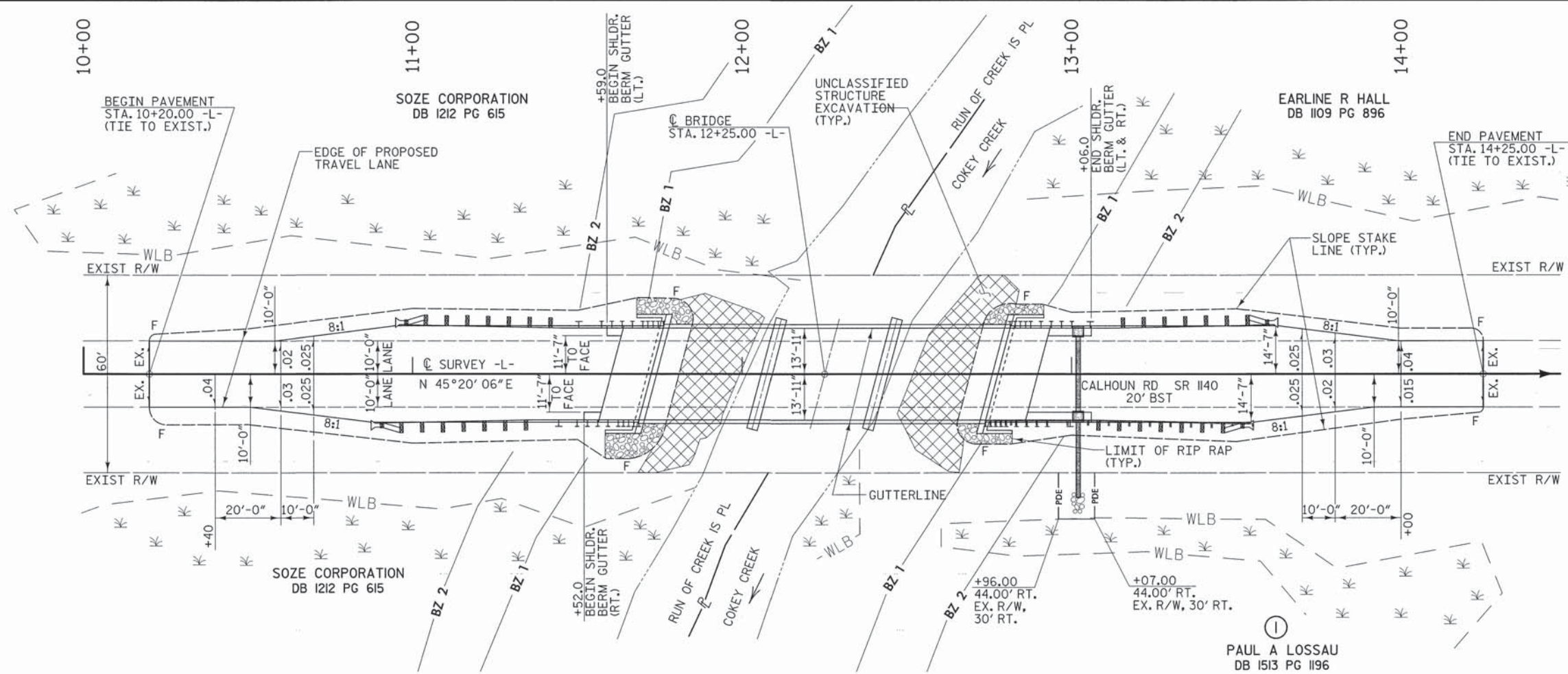
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
35' CORED SLAB UNIT
75° SKEW & 105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	3
2			4	
				TOTAL SHEETS
				24

STD. NO. 21LRFR1_75&105S_35L

ASSEMBLED BY :	Z. H. BROWN	DATE :	3/13
CHECKED BY :	W. A. DAVIS	DATE :	7/13
DRAWN BY :	CVC	6/10	
CHECKED BY :	DNS	6/10	

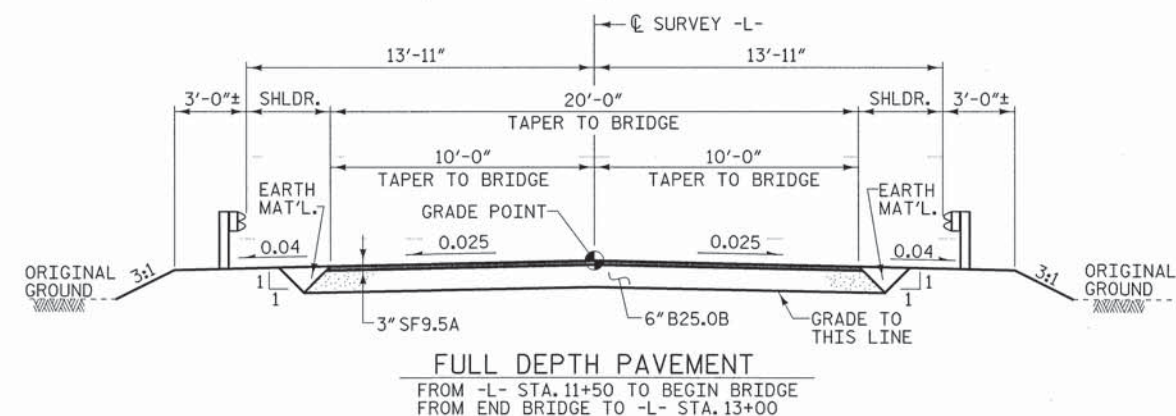


PAVEMENT LAYOUT DETAIL

SCALE: 1" = 20'

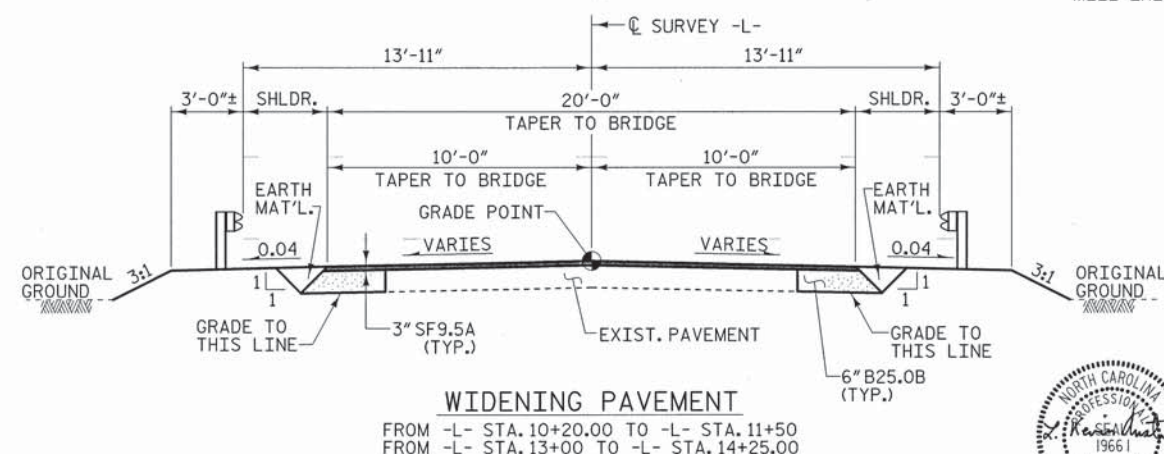
RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL AREA	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	PAUL A. LOSSAU	7.42 AC					154 SF	



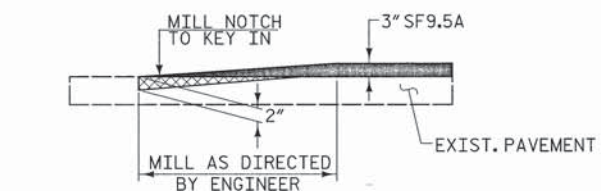
TYPICAL ROADWAY SECTION

WITHIN CONSTRUCTION LIMITS



WIDENING PAVEMENT

FROM -L- STA. 10+20.00 TO -L- STA. 11+50
FROM -L- STA. 13+00 TO -L- STA. 14+25.00



MILLING DETAIL

MILL EXISTING PAVEMENT AT THE FOLLOWING LOCATIONS
-L- STA. 10+20.00 TO STA. 10+45+/-
-L- STA. 13+97+/- TO STA. 14+25.00

PROJECT NO. 17BP.4.R.23

EDGEcombe COUNTY

STATION: 12+25.00 -L-

REPLACES BRIDGE NO. 21

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY DETAILS

27'-10" CLEAR ROADWAY - 105°SKEW



8/7/13

PLANS PREPARED BY:

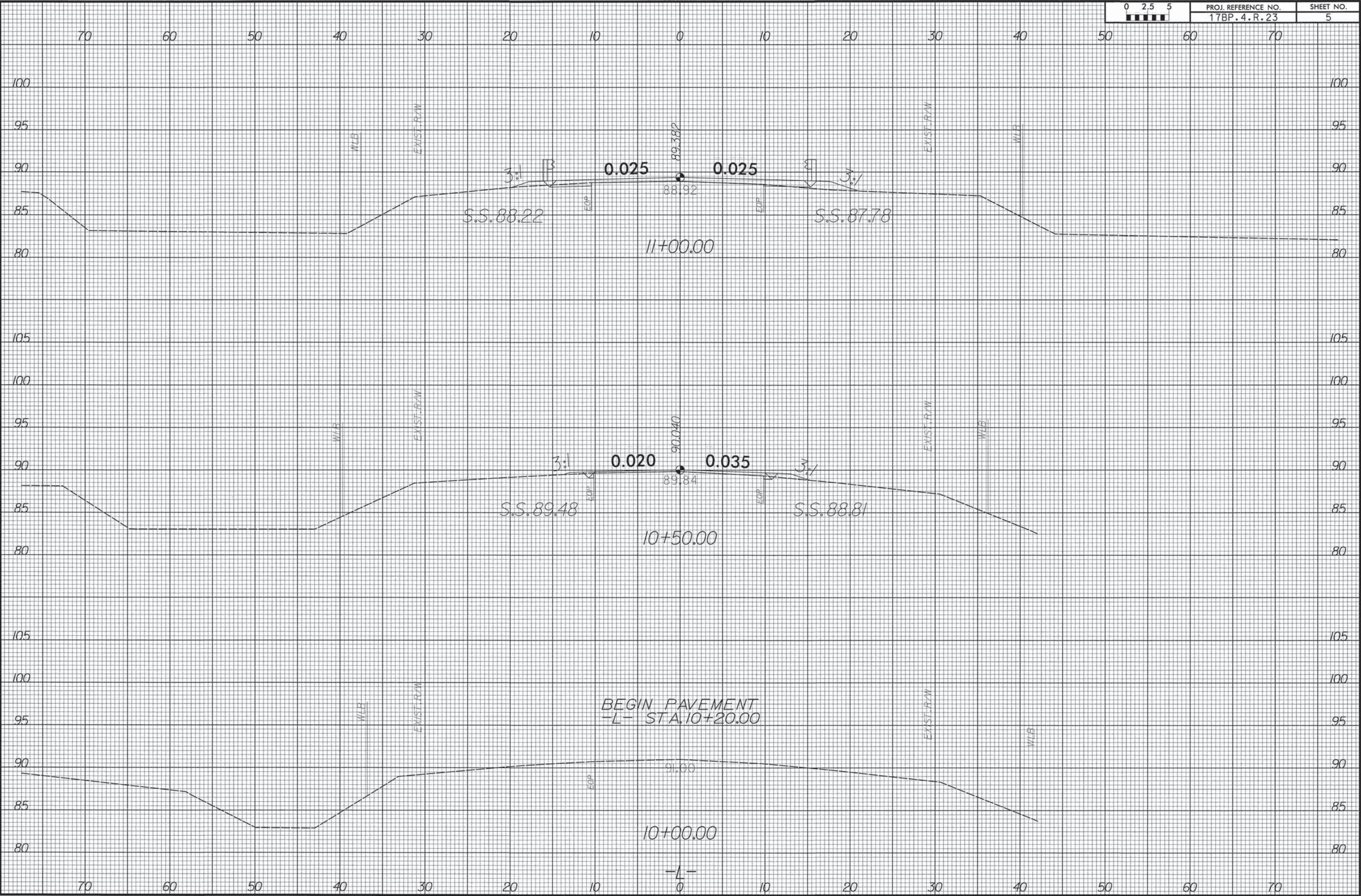


DRAWN BY: W. B. ALLEN DATE: 10/12
CHECKED BY: W. A. DAVIS DATE: 12/12

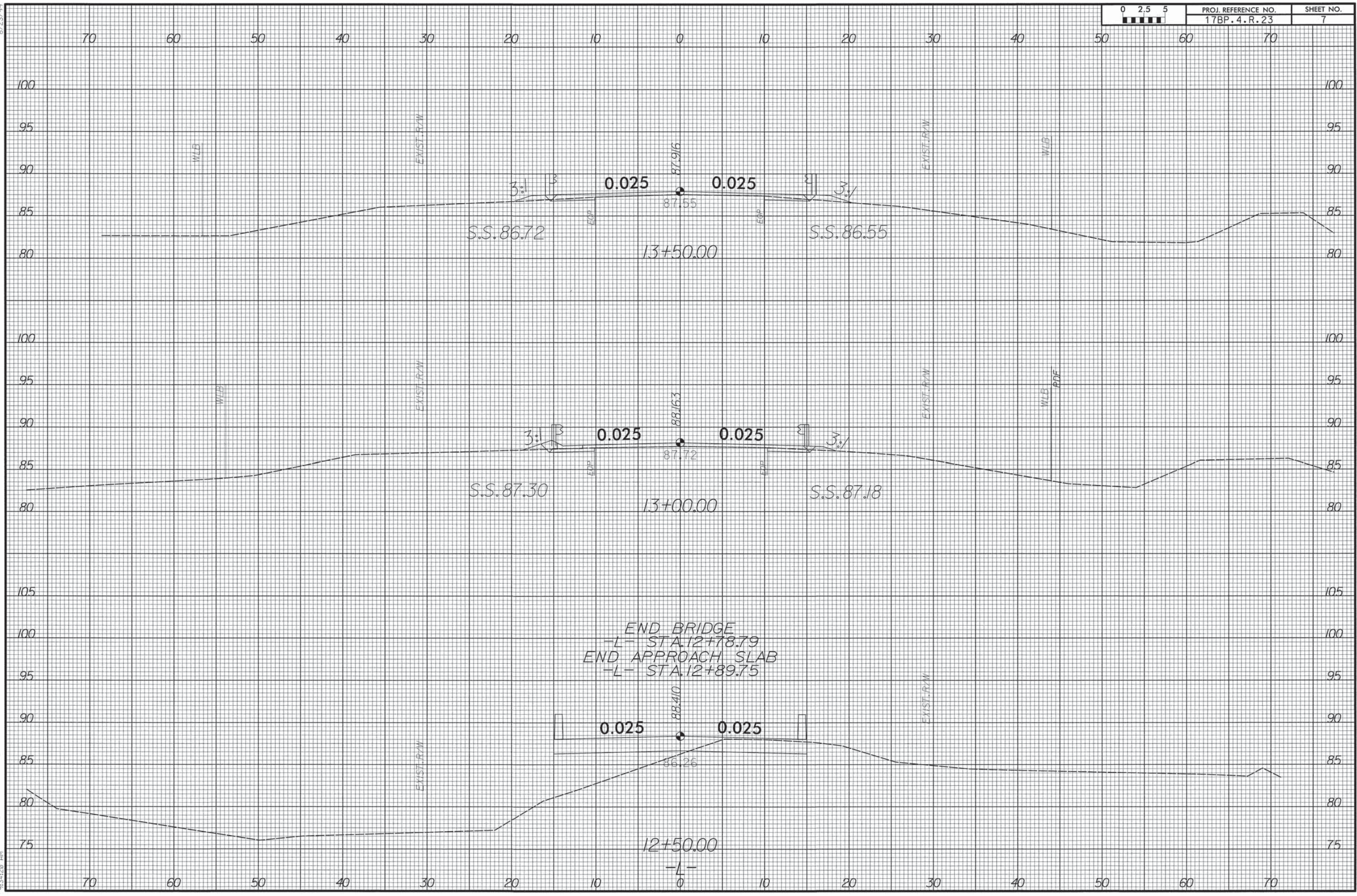
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	4
2			4	

TOTAL SHEETS
24

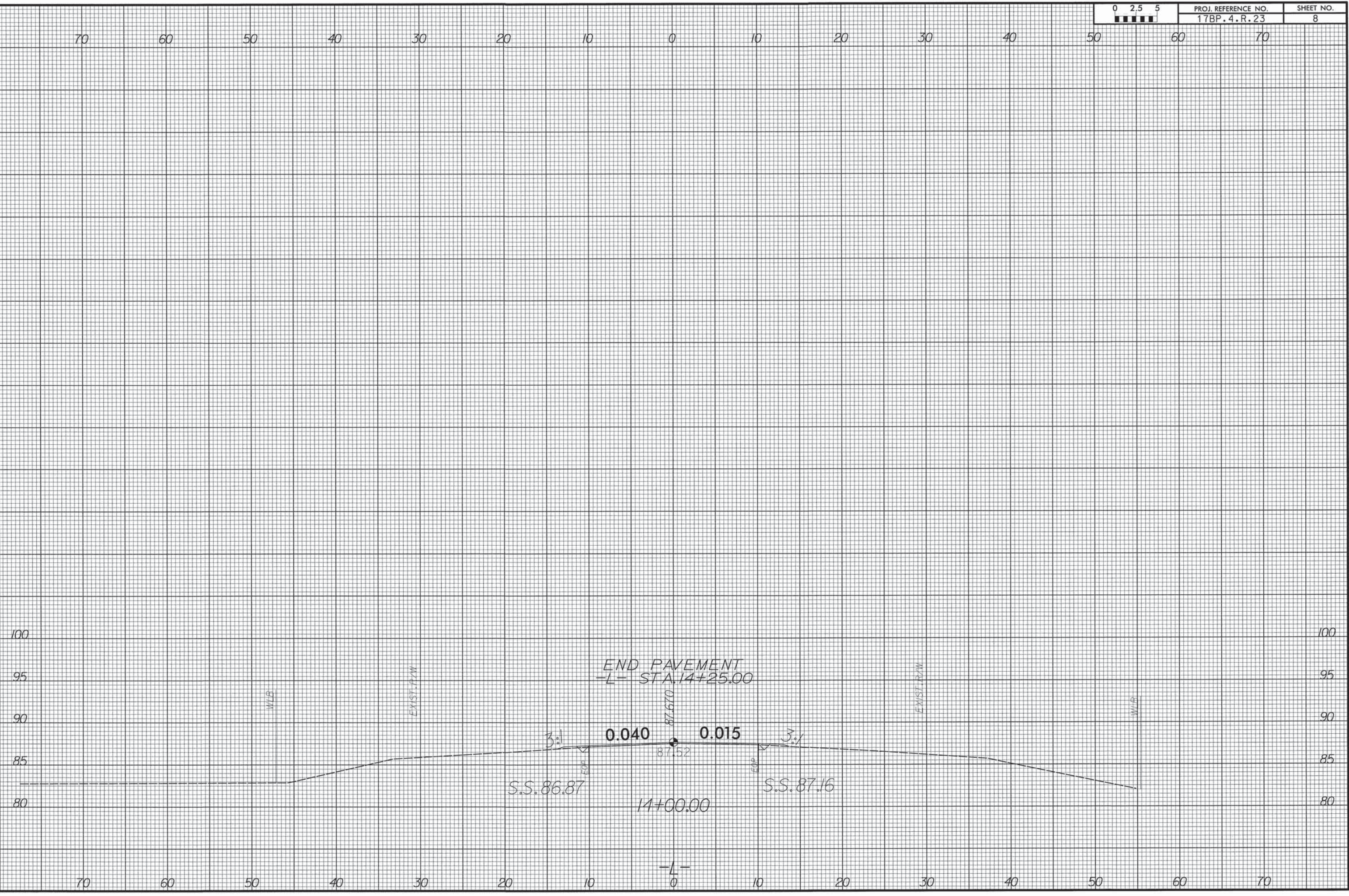
8/23/99

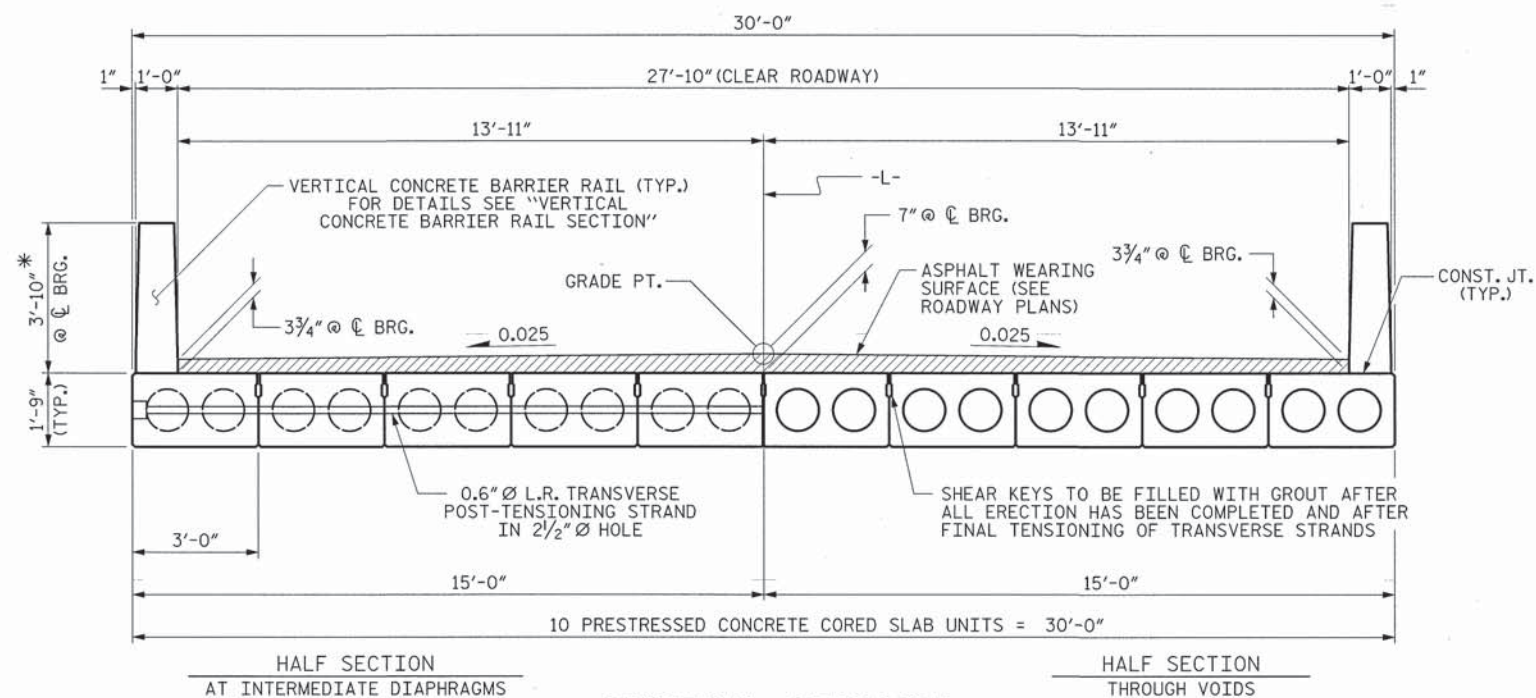


8/23/99



8/7/2013 13:34:09 W:\VSC\Edgecombe 21.xpl.dgn





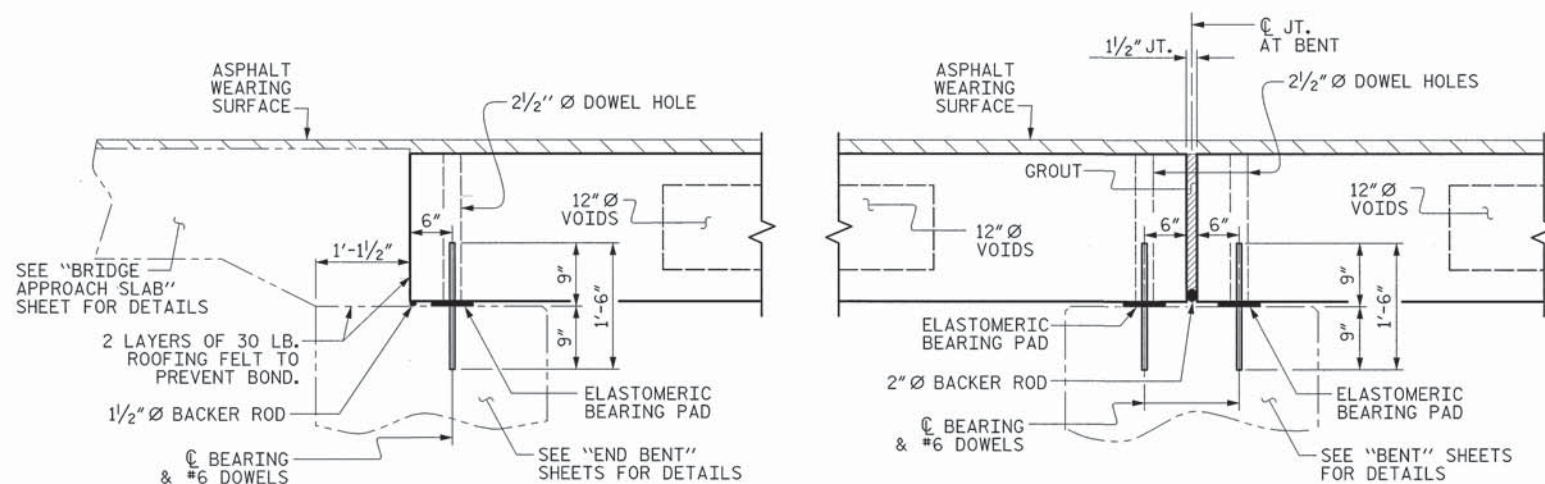
TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

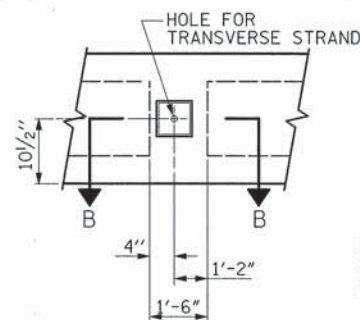
FIXED END

FIXED END

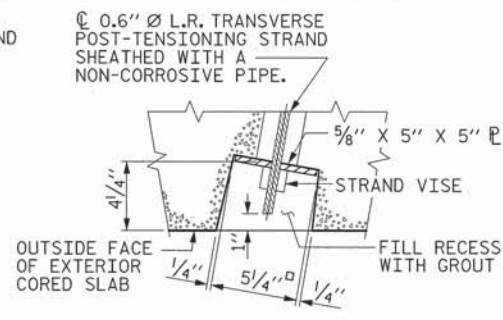


SECTION AT END BENT

SECTION AT BENT

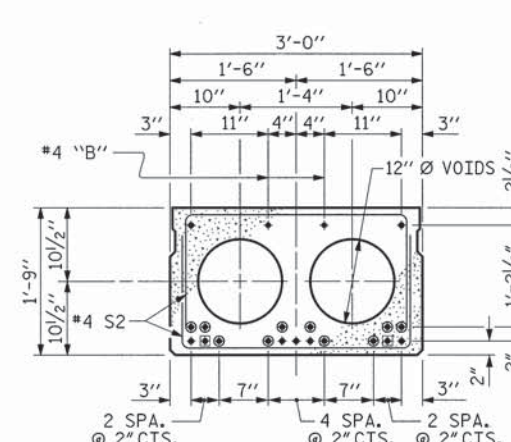


ELEVATION VIEW

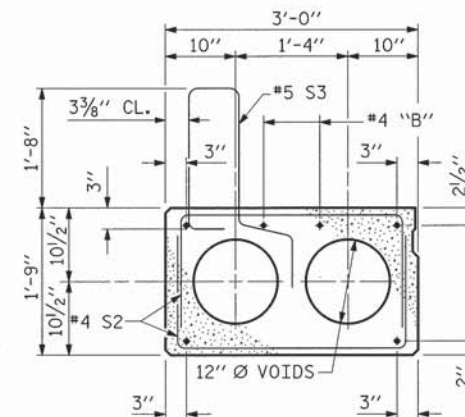


SECTION B-B

GRAUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



INTERIOR SLAB SECTION
(35' UNIT)
(9 STRANDS REQUIRED)



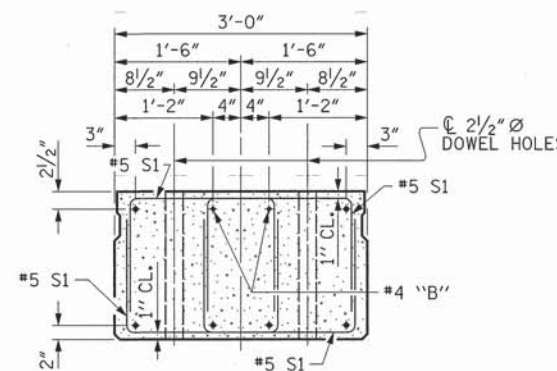
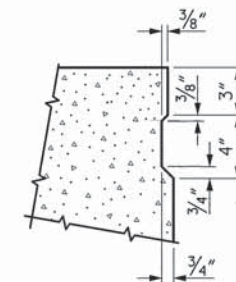
EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

0.6" Ø LOW RELAXATION STRAND LAYOUT

- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.4.R.23
EDGECOMBE COUNTY
STATION: 12+25.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	9
2			4	24

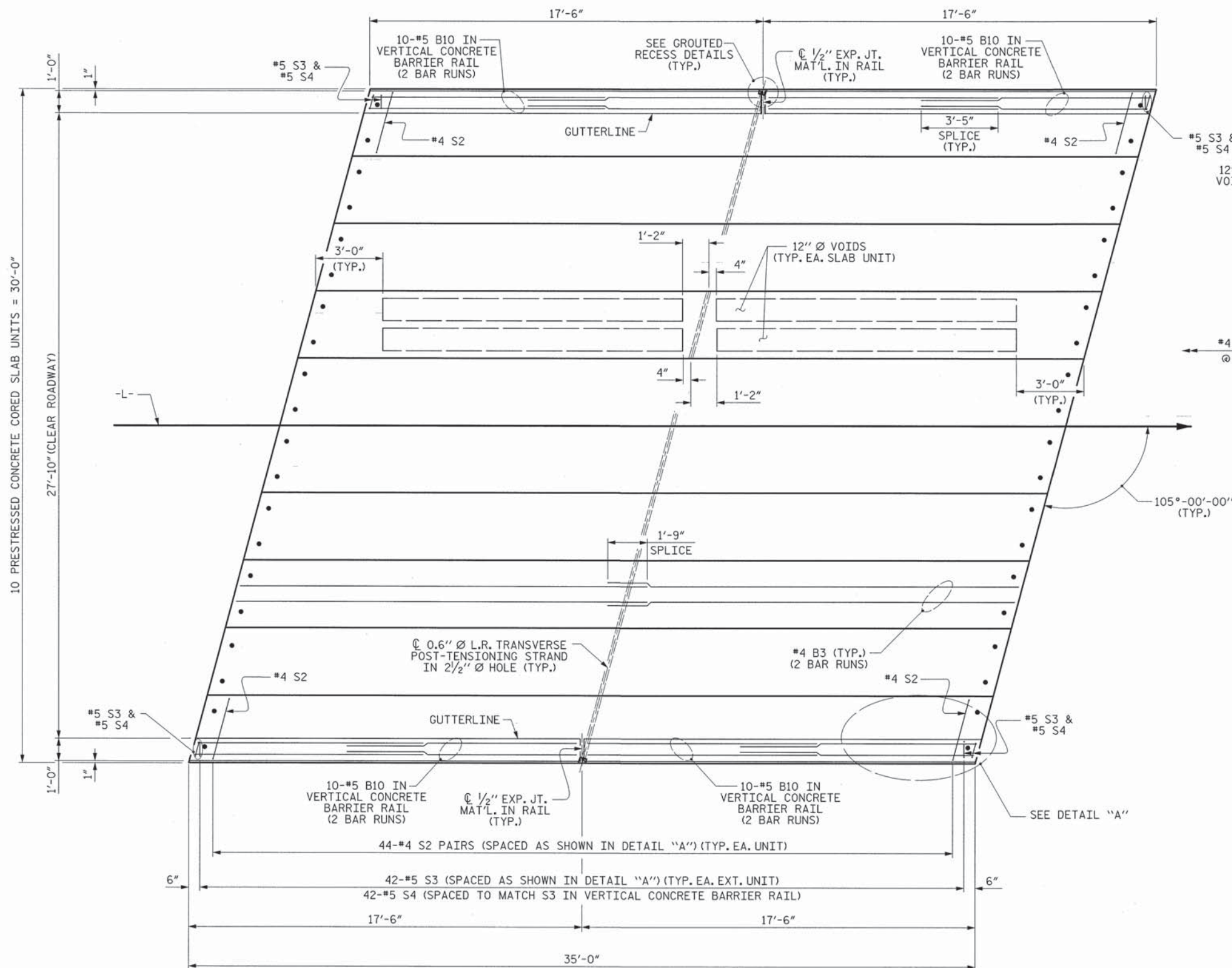
STD. NO. 21" PCS2-30.105S

ASSEMBLED BY: Z. H. BROWN DATE: 3/13
CHECKED BY: W. A. DAVIS DATE: 7/13
DRAWN BY: DGE 5/09 REV. 12/11 MAA/AAC
CHECKED BY: BCH 6/09

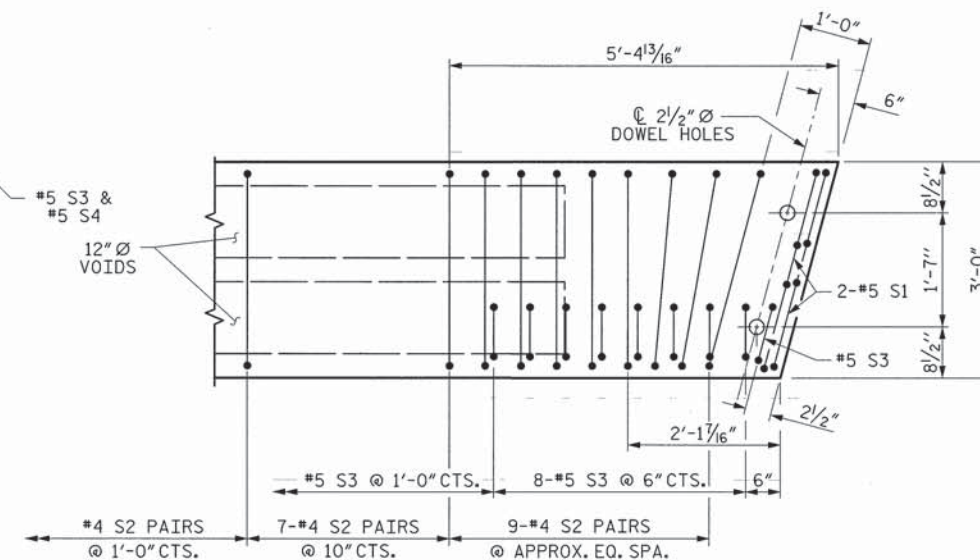
PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO BOX 23127
RALEIGH, N.C. 27606
(919) 831-1912
(919) 831-1913 FAX
WWW.MULKEY-NC.COM
NC LICENSE NO. C-1021

NORTH CAROLINA
PROFESSIONAL
ENGINEER
KEVIN AUSTIN
8/7/13

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 35' UNIT
27'-10" CLEAR ROADWAY
105° SKEW

REVISIONS				SHEET NO.
NO.	BY	DATE	REVISION	
1				10
2				24

STD. NO. 21"PCS_30-105S_30L

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



8/7/13



ASSEMBLED BY: Z. H. BROWN DATE: 3/13
CHECKED BY: W. A. DAVIS DATE: 7/13
DRAWN BY: DGE 3/09 REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 3/09

NOTES

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

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.)

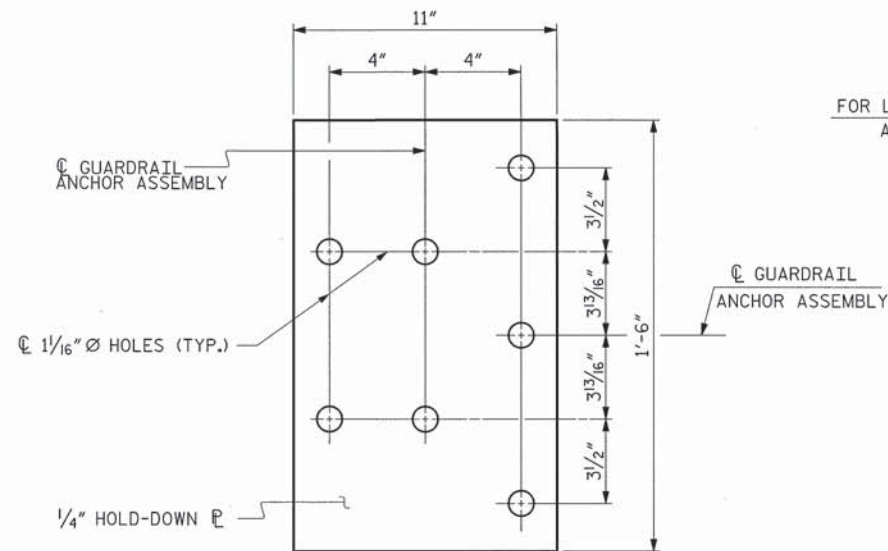
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 VERTICAL CONCRETE BARRIER RAIL.

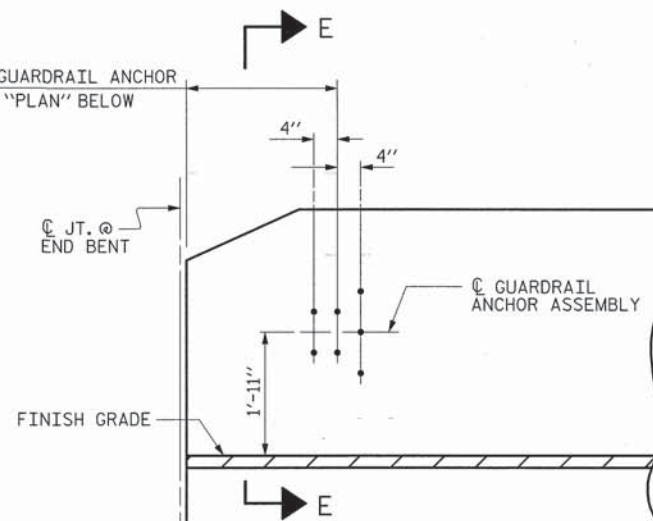
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 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.

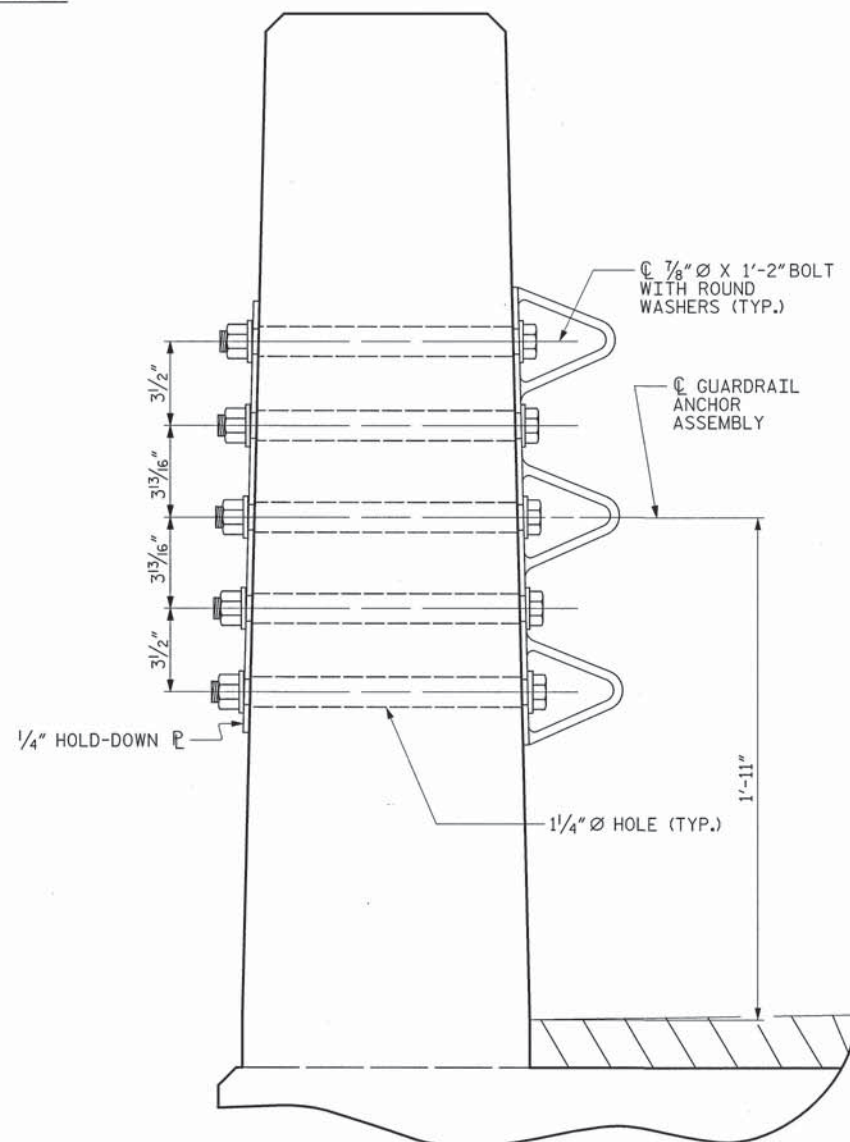


PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

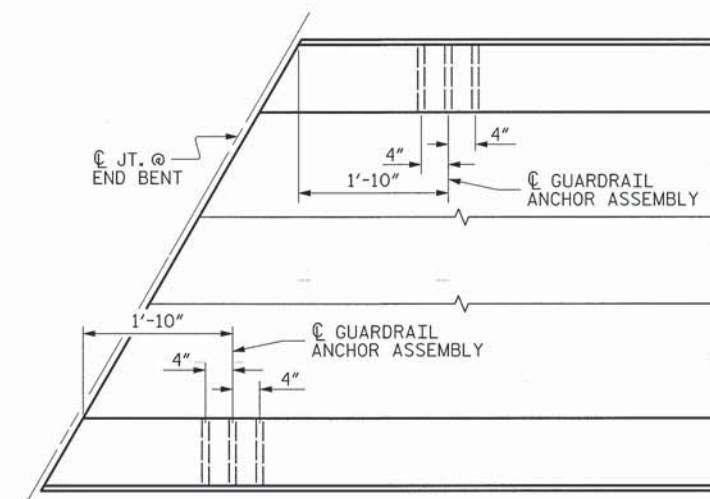


ELEVATION



SECTION E-E

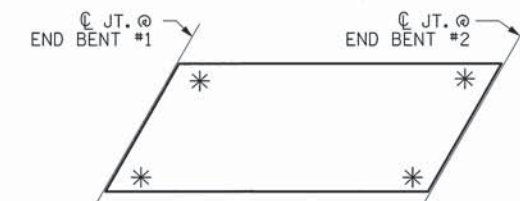
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	12
2			4	24

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



8/7/13



ASSEMBLED BY: Z. H. BROWN	DATE: 7/13
CHECKED BY: W. A. DAVIS	DATE: 7/13
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: GM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM

STD. NO. GRA3

FOR WING DETAILS, SEE SHEET 3 OF 4.

PLAN

ELEVATION

REVISIONS						SHEET NO. 13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

9/7/2013 9:26:33 AM R:\Structures\Edgecombe 2L-SO_EL-01.dgn

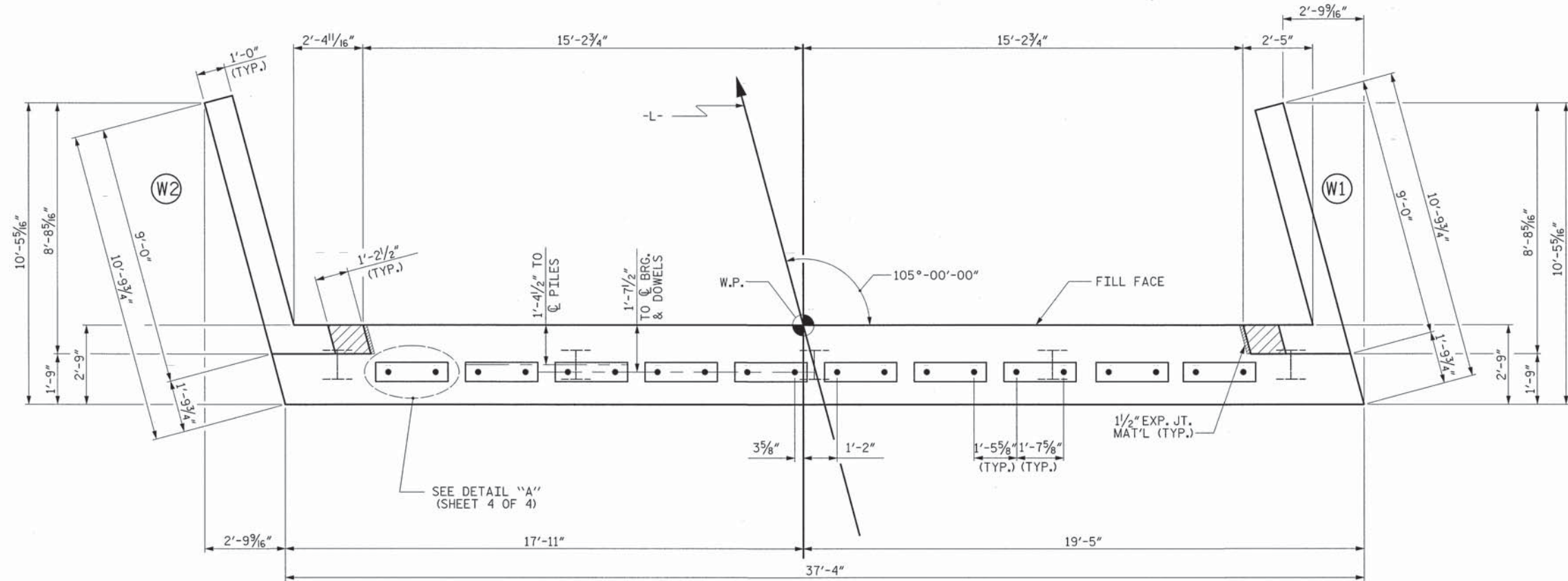
NOTES

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

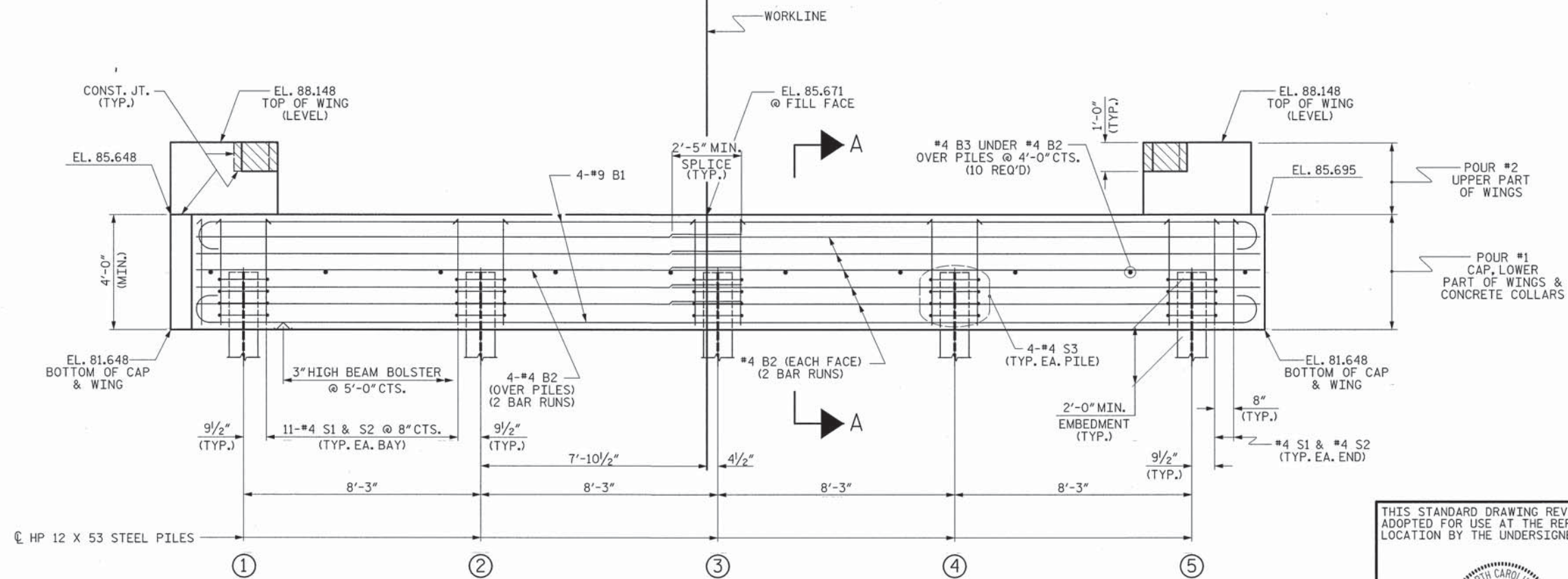
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.



PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

SHEET 2 OF 4

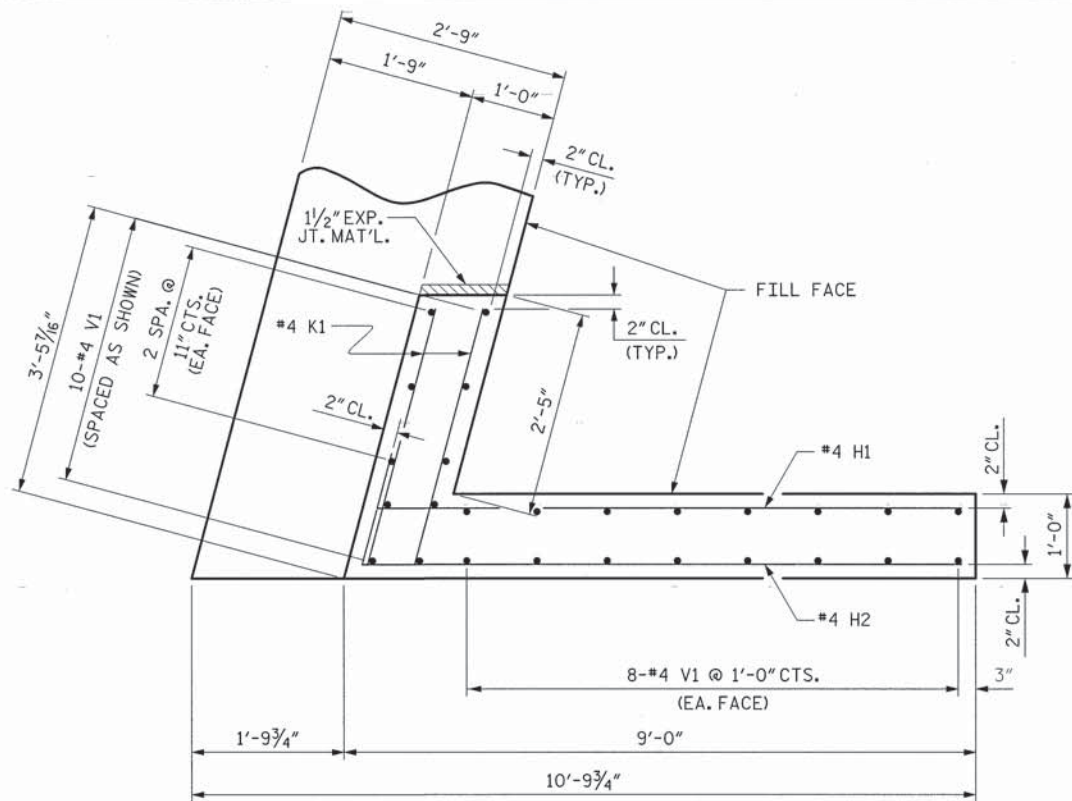
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

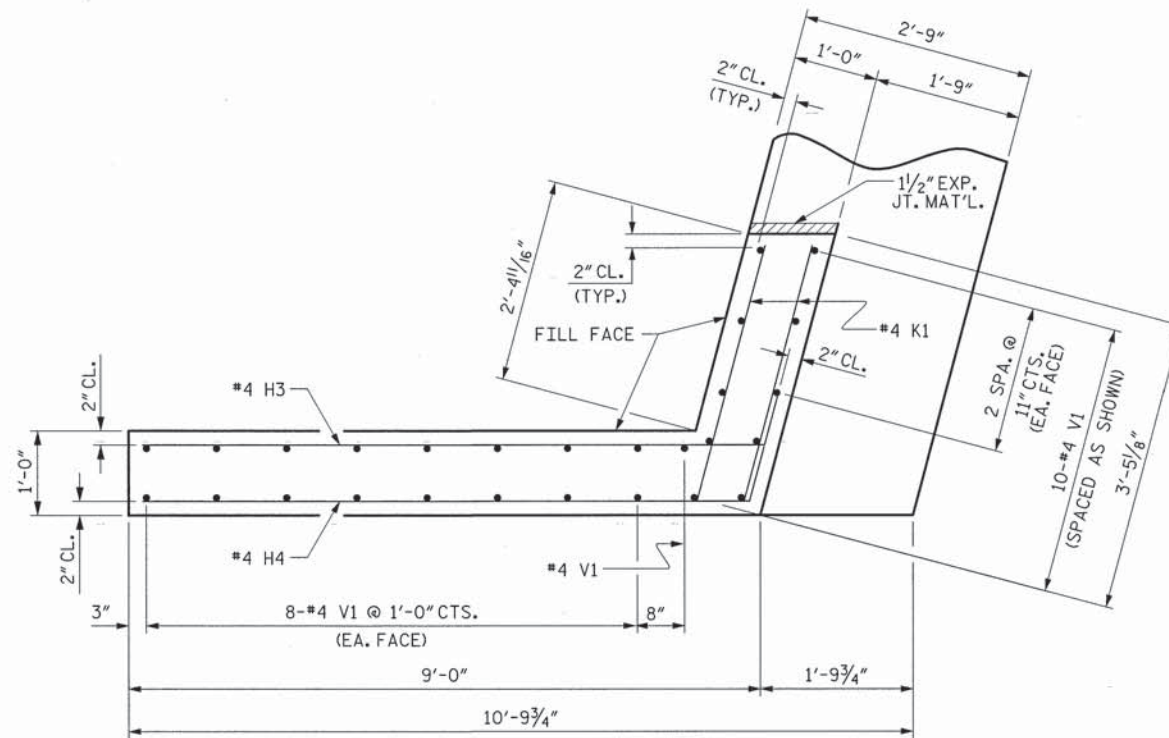
REVISIONS				SHEET NO.
NO.	BY:	DATE:	DATE:	
1				14
2				TOTAL SHEETS 24

STD. NO. EB_30-105S4

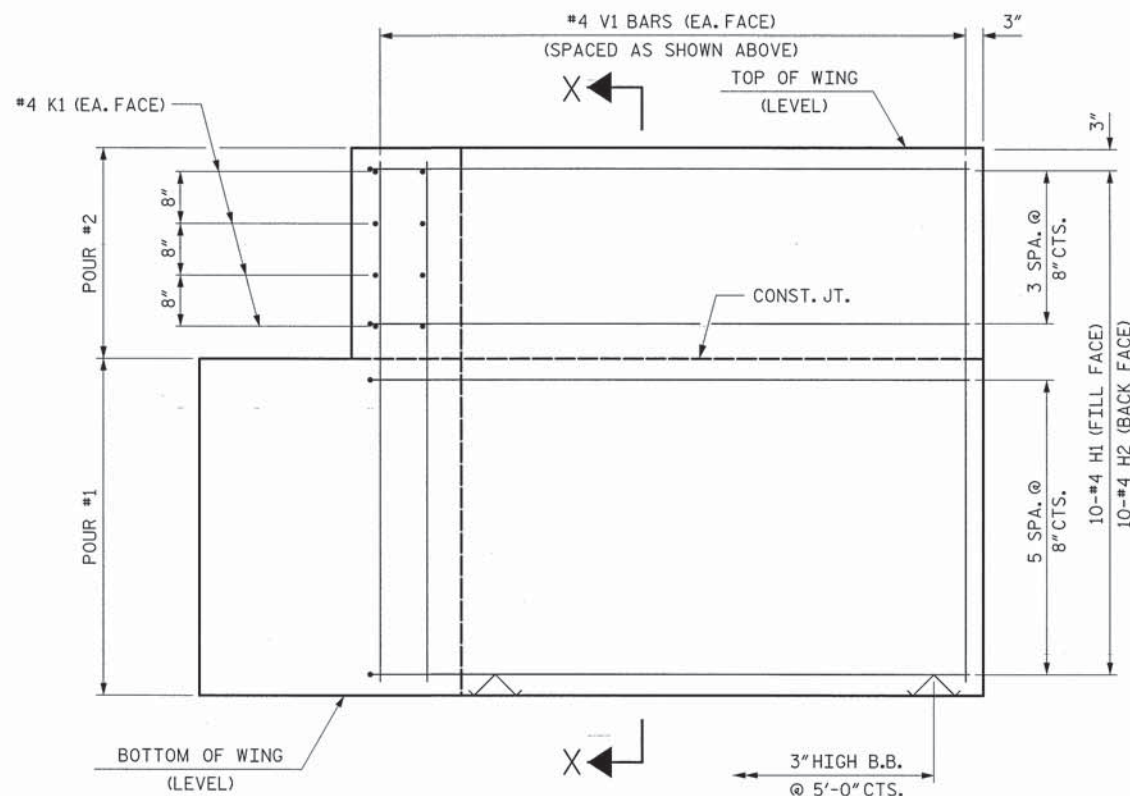
ASSEMBLED BY: Z. H. BROWN	DATE: 7/13
CHECKED BY: W. A. DAVIS	DATE: 7/13
DRAWN BY: WJH	12/11
CHECKED BY: AAC	12/11



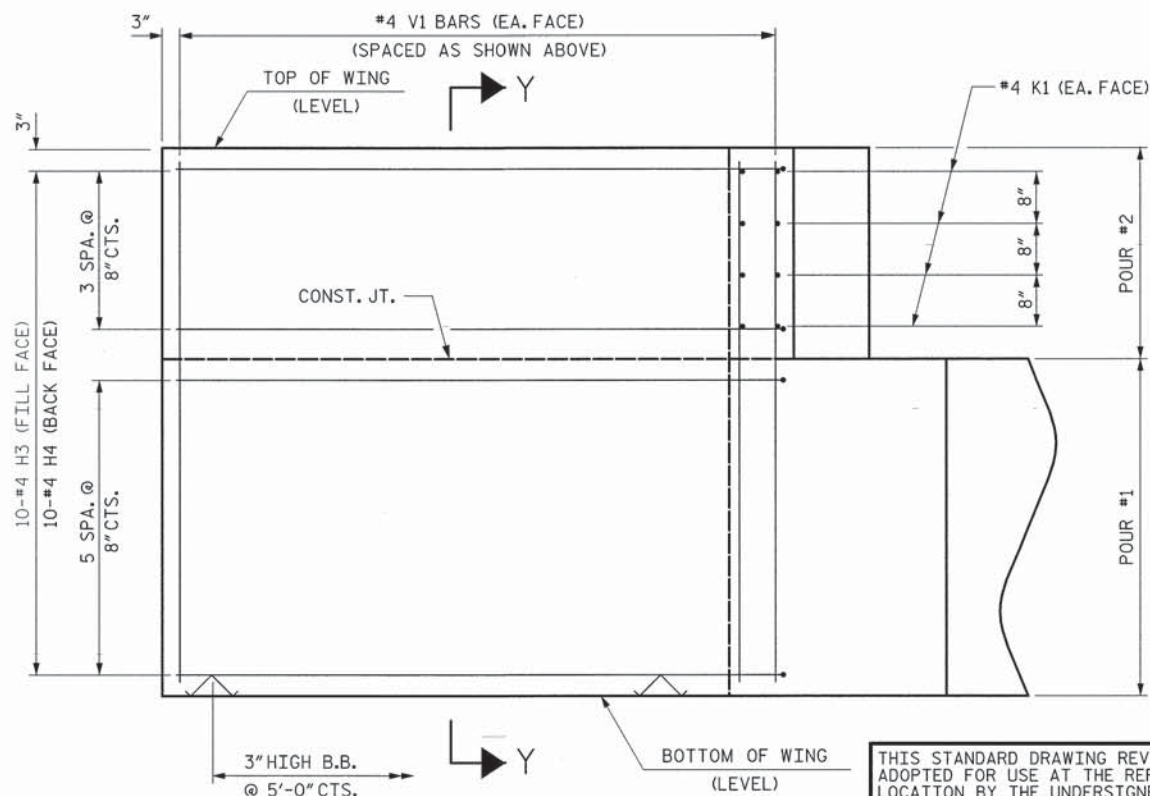
PLAN OF WING (W1)



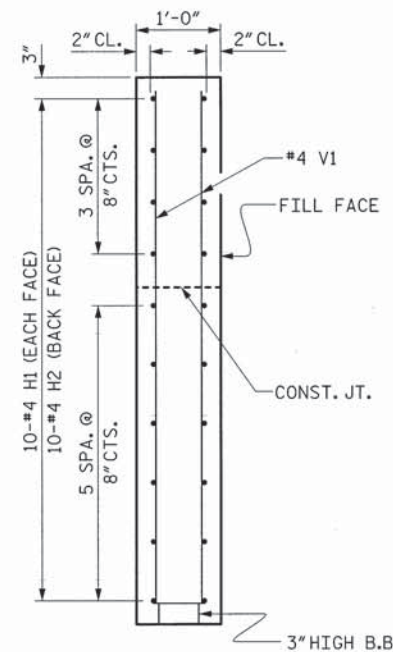
PLAN OF WING (W2)



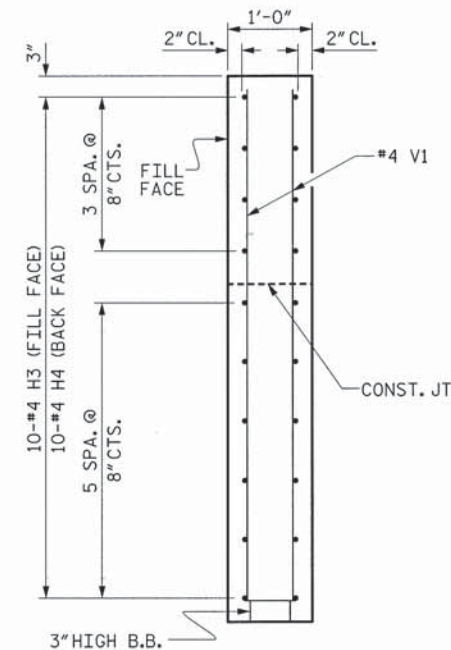
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS				SHEET NO.
NO.	BY	DATE	NO.	
1			3	15
2			4	24

STD. NO. EB_30_105S4

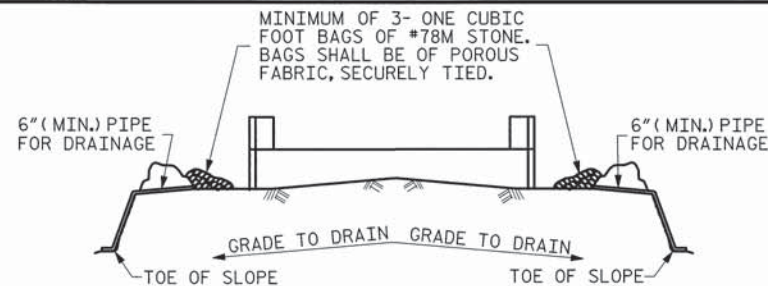
ASSEMBLED BY: Z. H. BROWN DATE: 7/13
CHECKED BY: W. A. DAVIS DATE: 7/13
DRAWN BY: WJH 12/11
CHECKED BY: AAC 12/11

WING DETAILS



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8/7/13

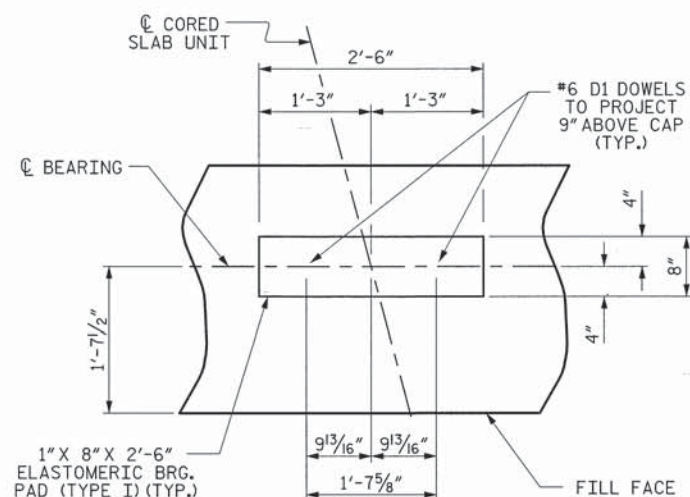


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

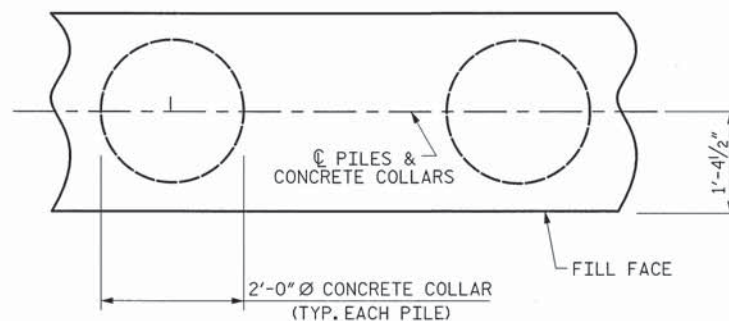
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

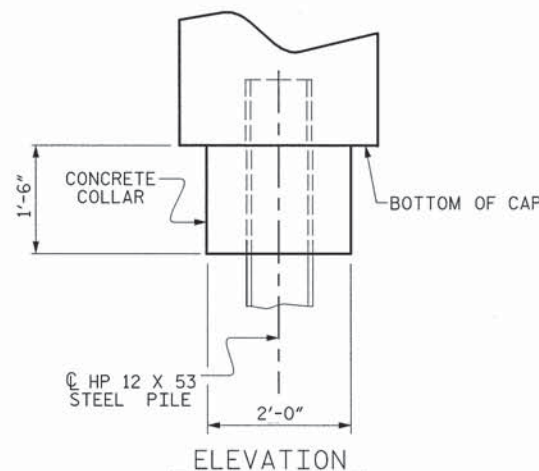


DETAIL "A"

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



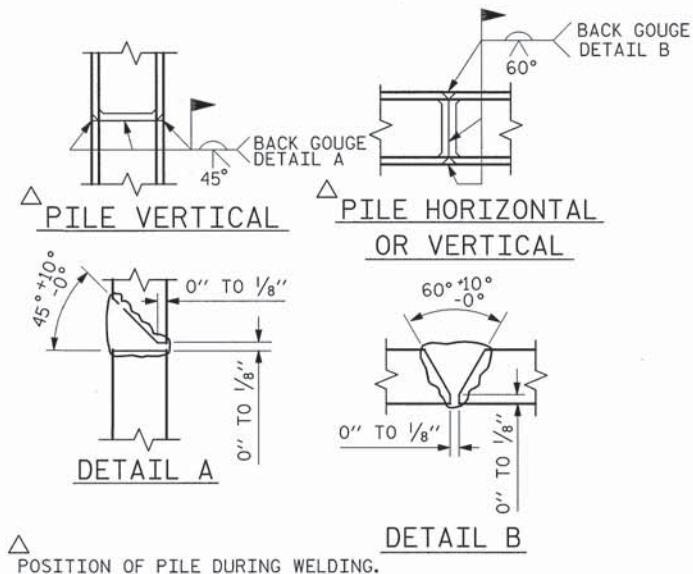
PLAN



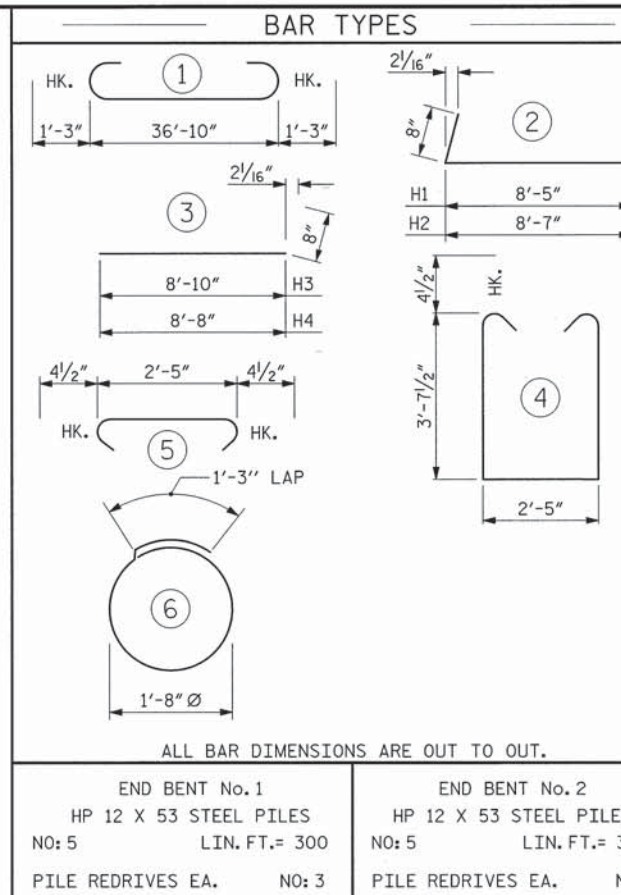
ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

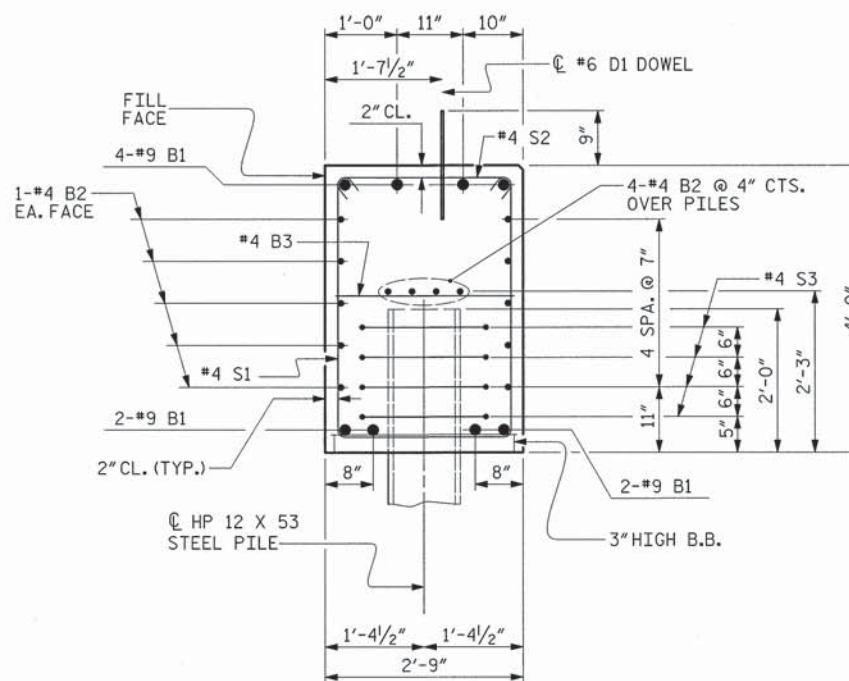
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PILE SPLICE DETAILS



BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		39'-4"	1070
B2	28	#4	STR	19'-9"	369
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	10	#4		9'-1"	61
H2	10	#4		9'-3"	62
H3	10	#4		9'-6"	63
H4	10	#4		9'-4"	62
K1	16	#4	STR	3'-1"	33
S1	48	#4		10'-5"	334
S2	48	#4		3'-2"	102
S3	20	#4		6'-6"	87
V1	53	#4	STR	6'-2"	218
REINFORCING STEEL (FOR ONE END BENT)					2522 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					18.4 C.Y.
POUR #2 UPPER PART OF WINGS					2.1 C.Y.
TOTAL CLASS A CONCRETE					20.5 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



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PROJECT NO. 17BP.4.R.23
EDGEcombe COUNTY
STATION: 12+25.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2
DETAILS

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	16
2			4	24

STD. NO. EB_30_105S4

ASSEMBLED BY: Z. H. BROWN DATE: 7/13
CHECKED BY: W. A. DAVIS DATE: 7/13

DRAWN BY: WJH 12/II
CHECKED BY: AAC 12/II

NOTES

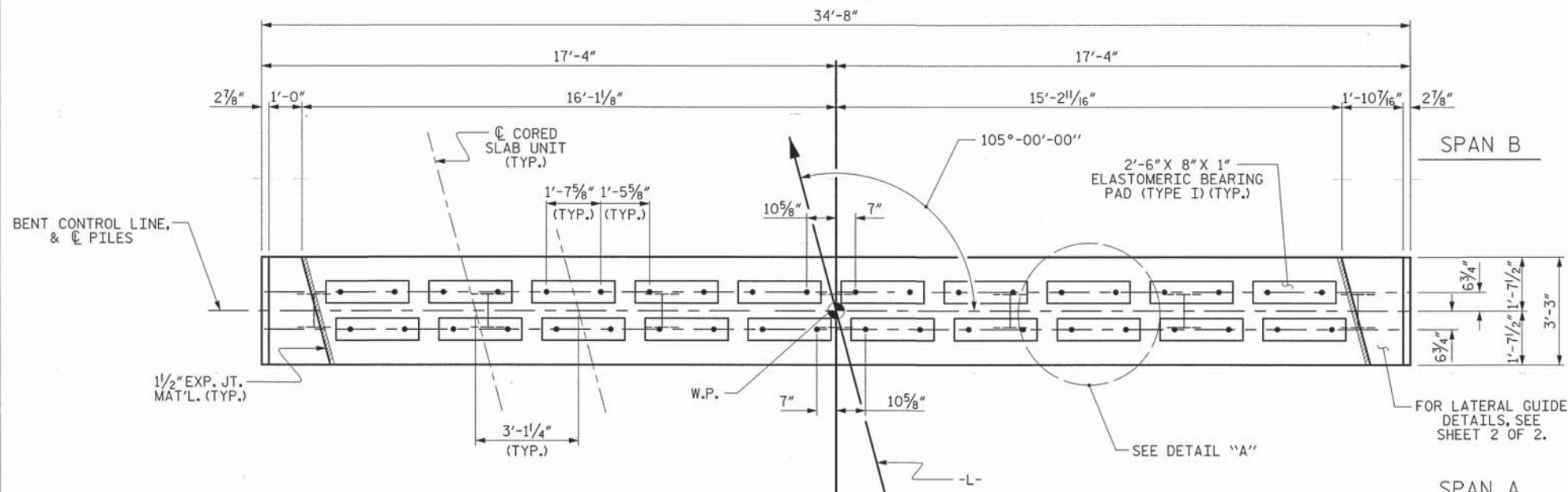
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

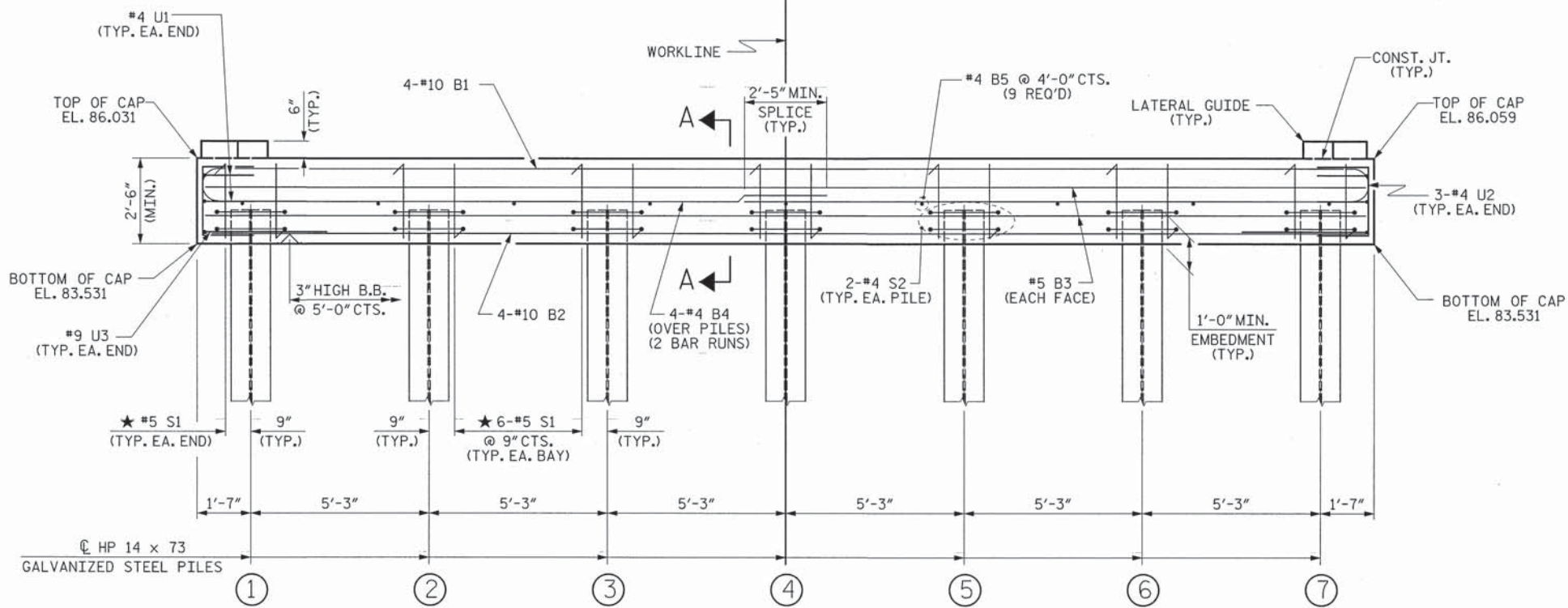
★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 30 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

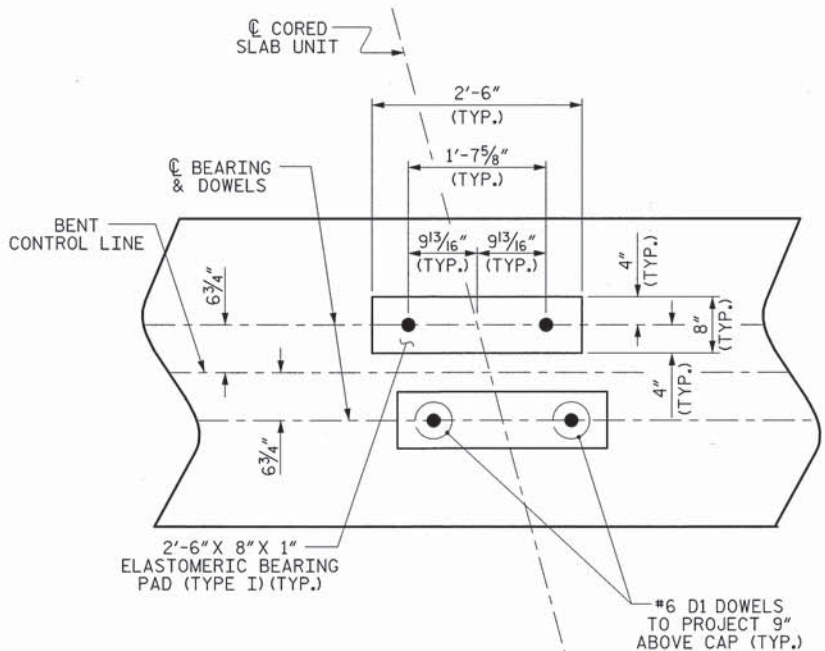


PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.4.R.23

EDGEcombe COUNTY

STATION: 12+25.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	17
2			4	TOTAL SHEETS 24

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ASSEMBLED BY: Z. H. BROWN	DATE: 7/13
CHECKED BY: W. A. DAVIS	DATE: 7/13
DRAWN BY: DGE 5/10	
CHECKED BY: MKT 5/10	

STD. NO. 14" HP_BT_30-105S-<60'

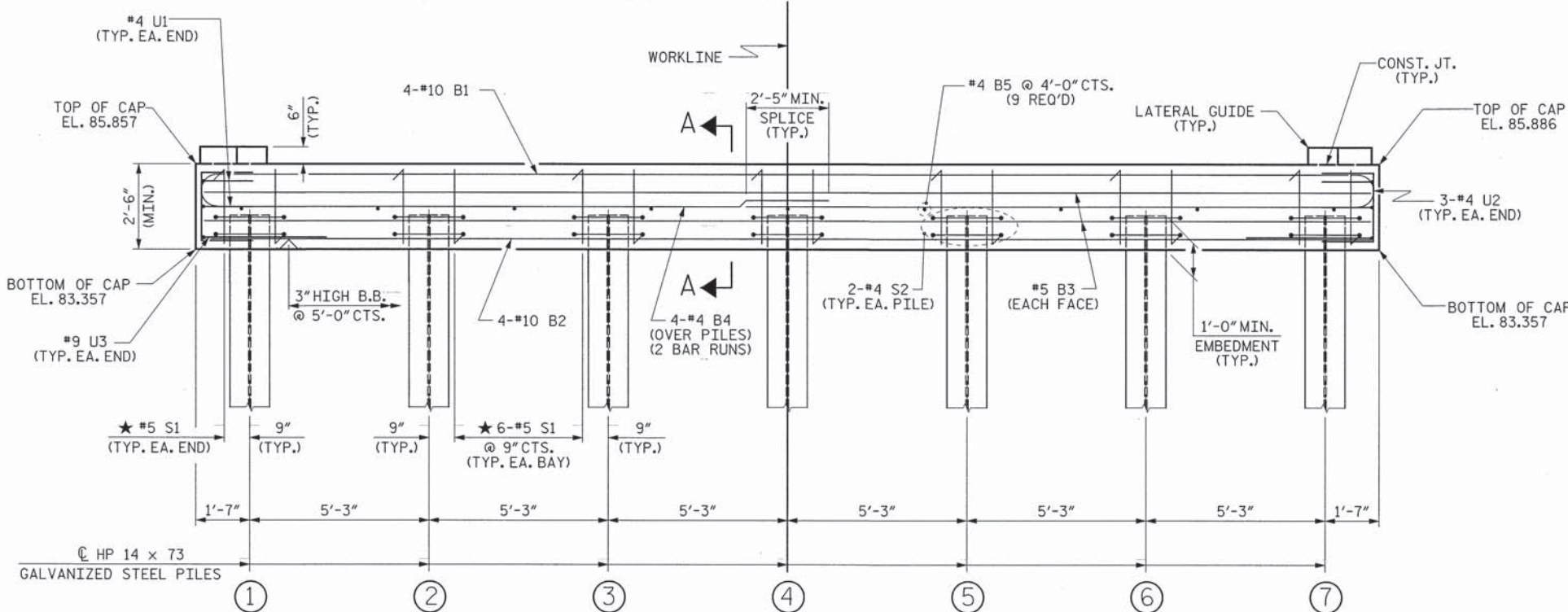
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY
TO CLEAR DOWELS.

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL
AFTER THE CORED SLAB UNITS ARE IN PLACE.

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE
A MINIMUM OF 30 FEET. GALVANIZE IN ACCORDANCE
WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR HAS THE OPTION TO OMIT THE
LATERAL GUIDE IF APPROVED BY THE ENGINEER.



Technical drawing of a bent control line showing dimensions and components:

- CL CORED SLAB UNIT**: Indicated by a dashed line pointing to the top section.
- CL BEARING & DOWELS**: Indicated by a dashed line pointing to the central bearing area.
- BENT CONTROL LINE**: Indicated by a dashed line pointing to the bent portion of the control line.
- 2'-6" (TYP.)**: Dimension for the width of the cored slab unit.
- 1'-7⁵/₈" (TYP.)**: Dimension for the width of the bearing area.
- 9¹³/₁₆" (TYP.)**: Dimension for the width of the bearing area (two locations).
- 6³/₄"**: Dimension for the height of the bent control line (two locations).
- 4" (TYP.)**: Dimension for the height of the bearing area (two locations).
- 8" (TYP.)**: Dimension for the height of the bearing area (one location).
- 2'-6" X 8" X 1" ELASTOMERIC BEARING PAD (TYPE I) (TYP.)**: Dimension for the bearing pad.
- #6 D1 DOWELS TO PROJECT 9" ABOVE CAP (TYP.)**: Dimension for the dowels.

PROJECT NO. 17BP.4.R.23
EDGECOMBE COUNTY
 STATION: 12+25.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REVISIONS						SHEET NO. 18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

THIS STANDARD DRAWING REVIEWED &
ADOPTED FOR USE AT THE REFERENCED
LOCATION BY THE UNDERSIGNED:



PLANS PREPARED BY:

 **MULKEY**
ENGINEERS & CONSULTANTS

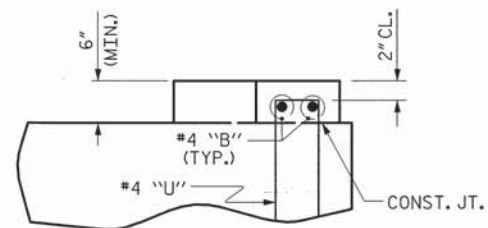
PO BOX 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

NC LICENSE NO. C-1021

ASSEMBLED BY :	Z. H. BROWN	DATE :	7/13
CHECKED BY :	W. A. DAVIS	DATE :	7/13
DRAWN BY :	DGE	5/10	
CHECKED BY :	MKT	5/10	

STD. NO. 14" HP_BT_30_105S_<60'

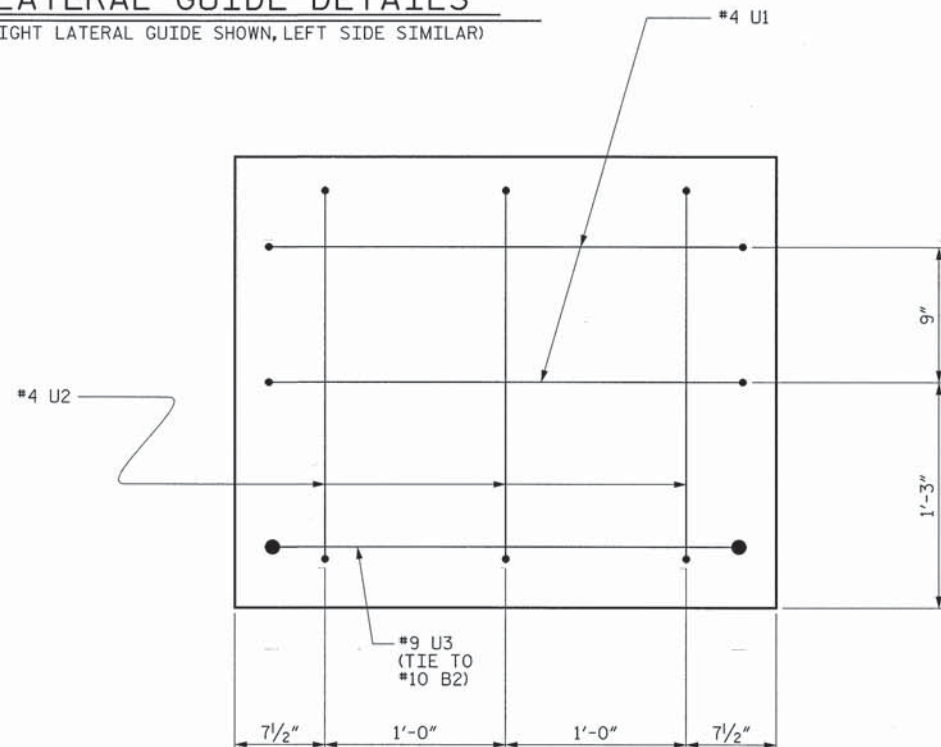
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ELEVATION

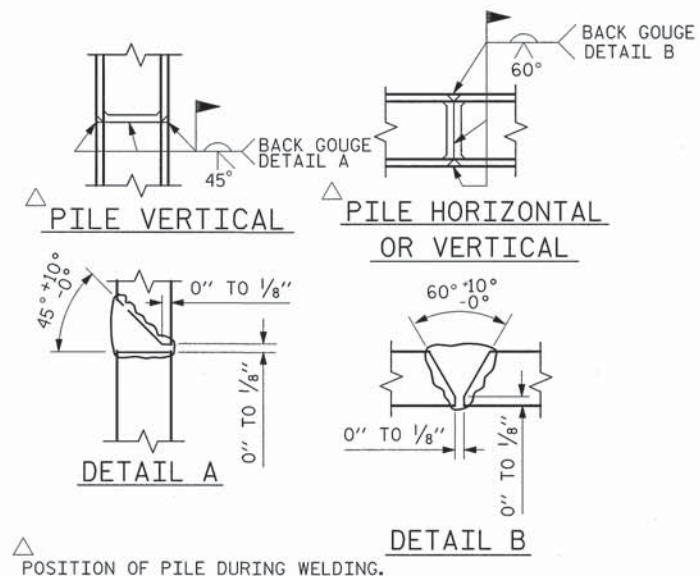
LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT SIDE SIMILAR)

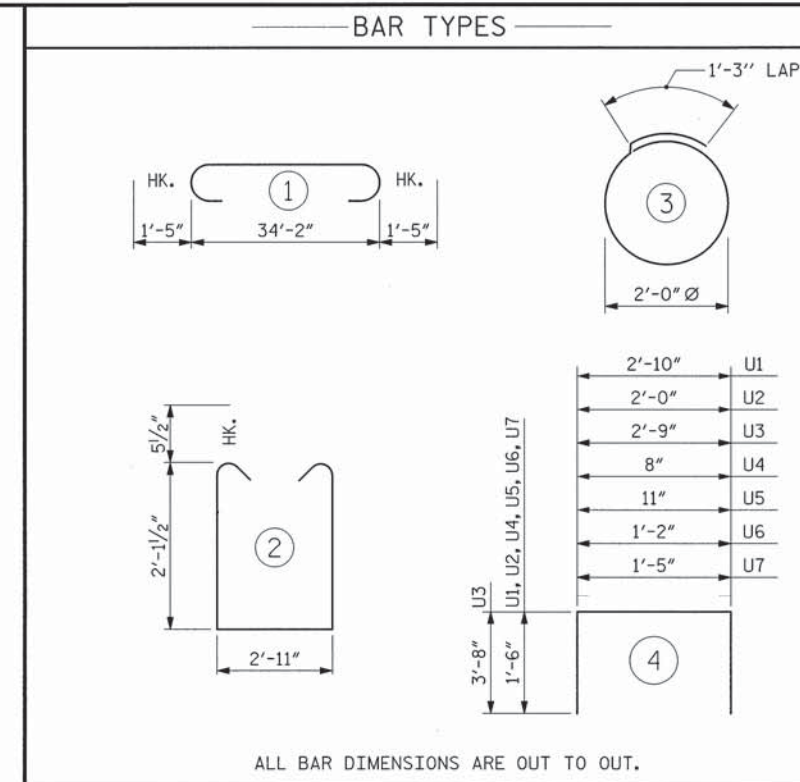


END OF CAP VIEW

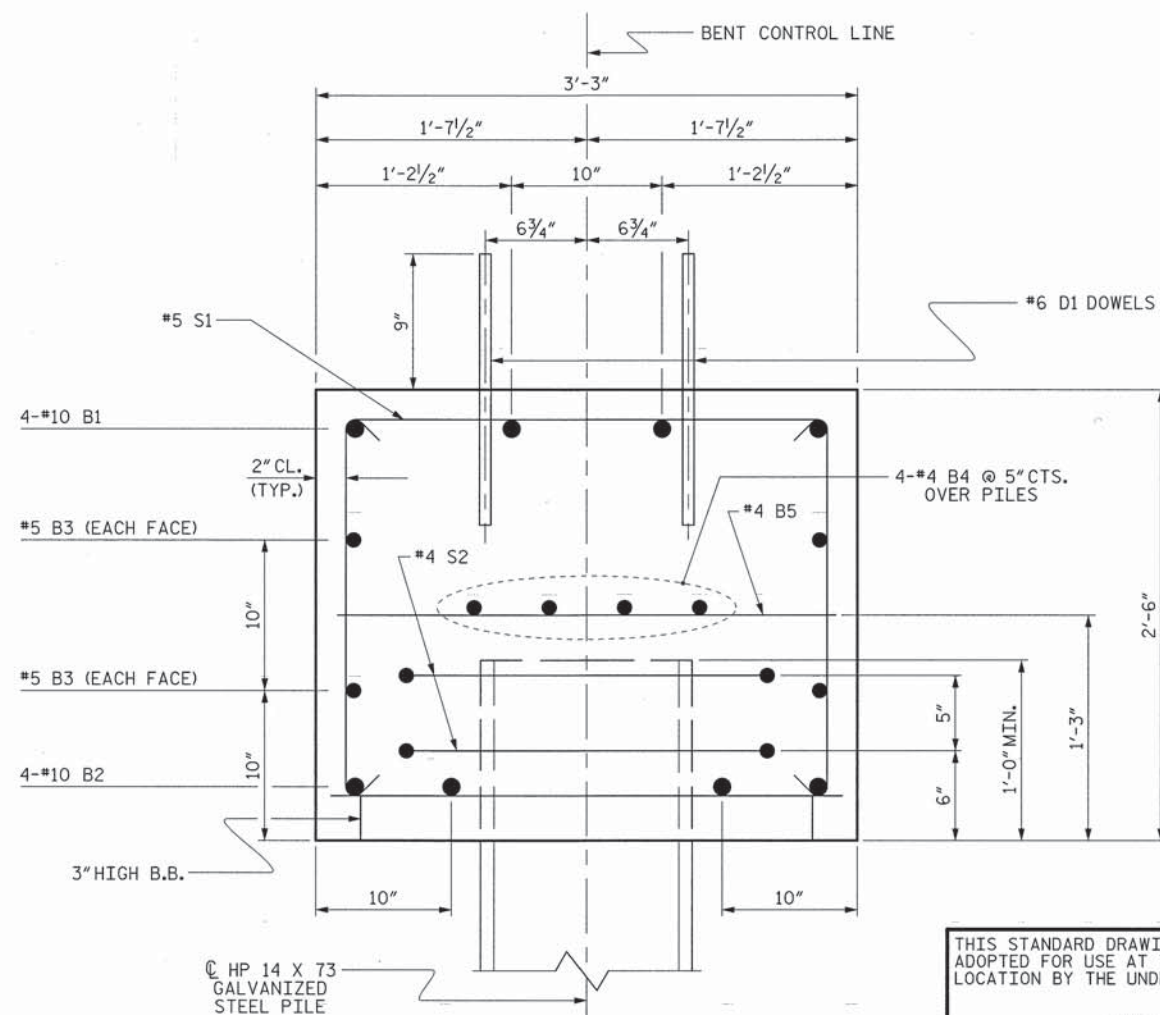
(TYPICAL BOTH ENDS)



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A

THIS STANDARD DRAWING REVIEWED &
ADOPTED FOR USE AT THE REFERENCED
LOCATION BY THE UNDERSIGNED:



BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-0"	637
B2	4	#10	STR	34'-4"	591
B3	4	#5	STR	34'-4"	143
B4	8	#4	STR	18'-5"	98
B5	11	#4	STR	2'-11"	21
B6	2	#4	STR	3'-0"	4
D1	40	#6	STR	1'-6"	90
S1	38	#5	2	8'-1"	320
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	2	#4	4	3'-8"	5
U5	2	#4	4	3'-11"	5
U6	2	#4	4	4'-2"	6
U7	2	#4	4	4'-5"	6

REINFORCING STEEL (FOR ONE BENT)	2102 LBS
-------------------------------------	----------

CLASS A CONCRETE BREAKDOWN
(FOR ONE BENT)

POUR #1 (CAP)	10.4 C.Y.
POUR #2 (LATERAL GUIDES)	0.2 C.Y.

TOTAL CLASS A CONCRETE	10.6 C.Y.
------------------------	-----------

HP 14 X 73 GALVANIZED STEEL PILES
(FOR ONE BENT)

No. 7 LIN. FT. 420
PILE REDRIVES EA. No. 4

PLANS PREPARED BY:



PROJECT NO. 17BP.4.R.23
EDGECOMBE COUNTY
 STATION: 12+25.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1 & 2

REVISIONS						SHEET NO. 19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

STD. NO. 14" HP_BT_30_105S_<60'

DRAWN BY : Z. H. BROWN DATE : 7/13
CHECKED BY : W. A. DAVIS DATE : 7/13

DRAWN BY : DGE 05/10
CHECKED BY : MKT 05/10

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 11N ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

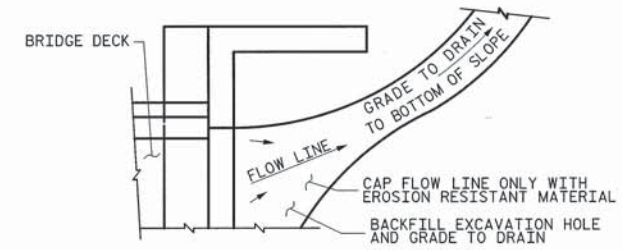
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

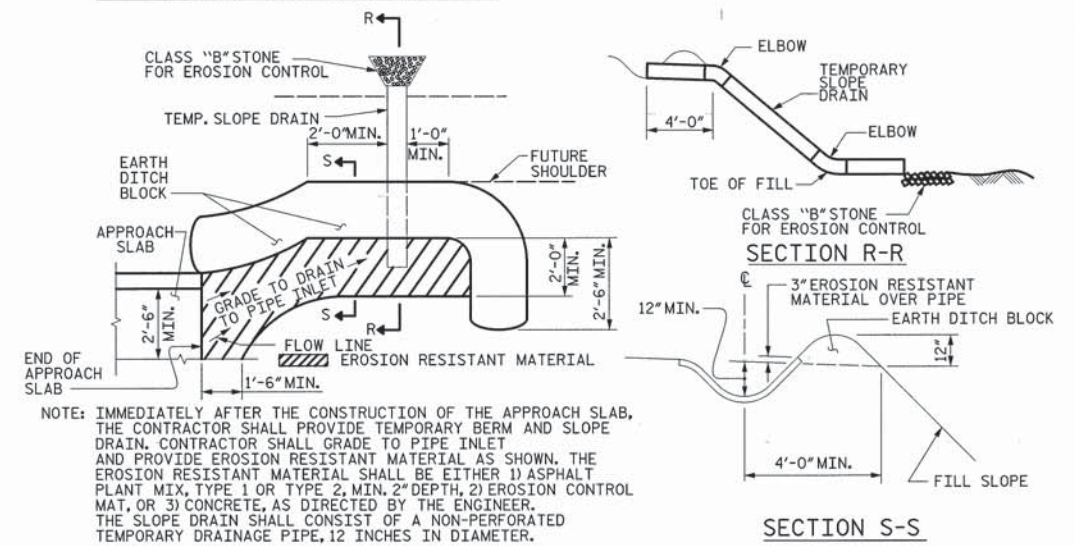
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



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



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH; 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.4.R.23

EDGEcombe COUNTY

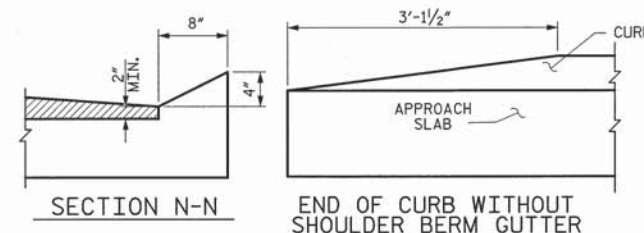
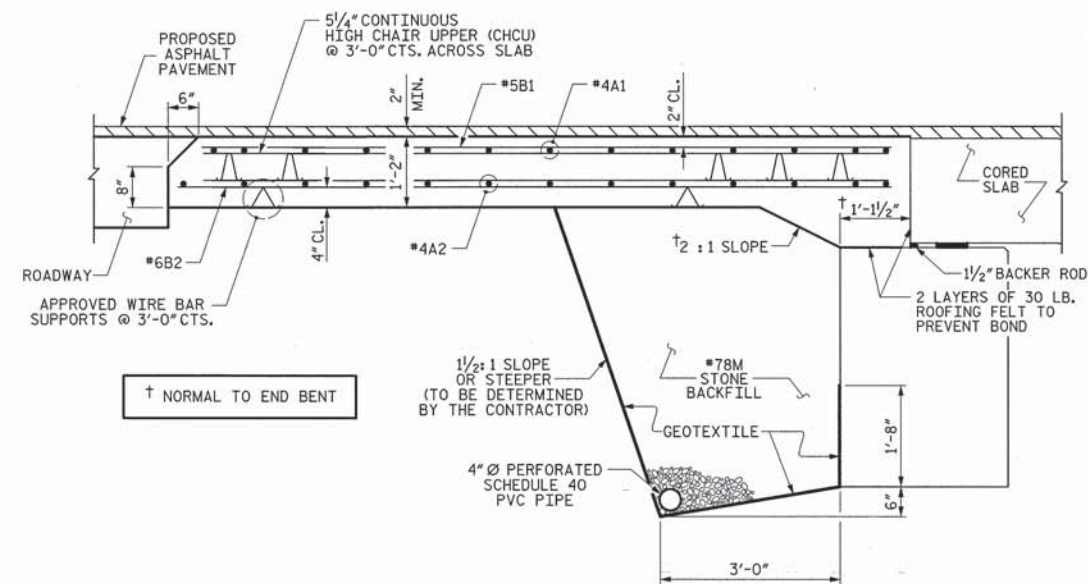
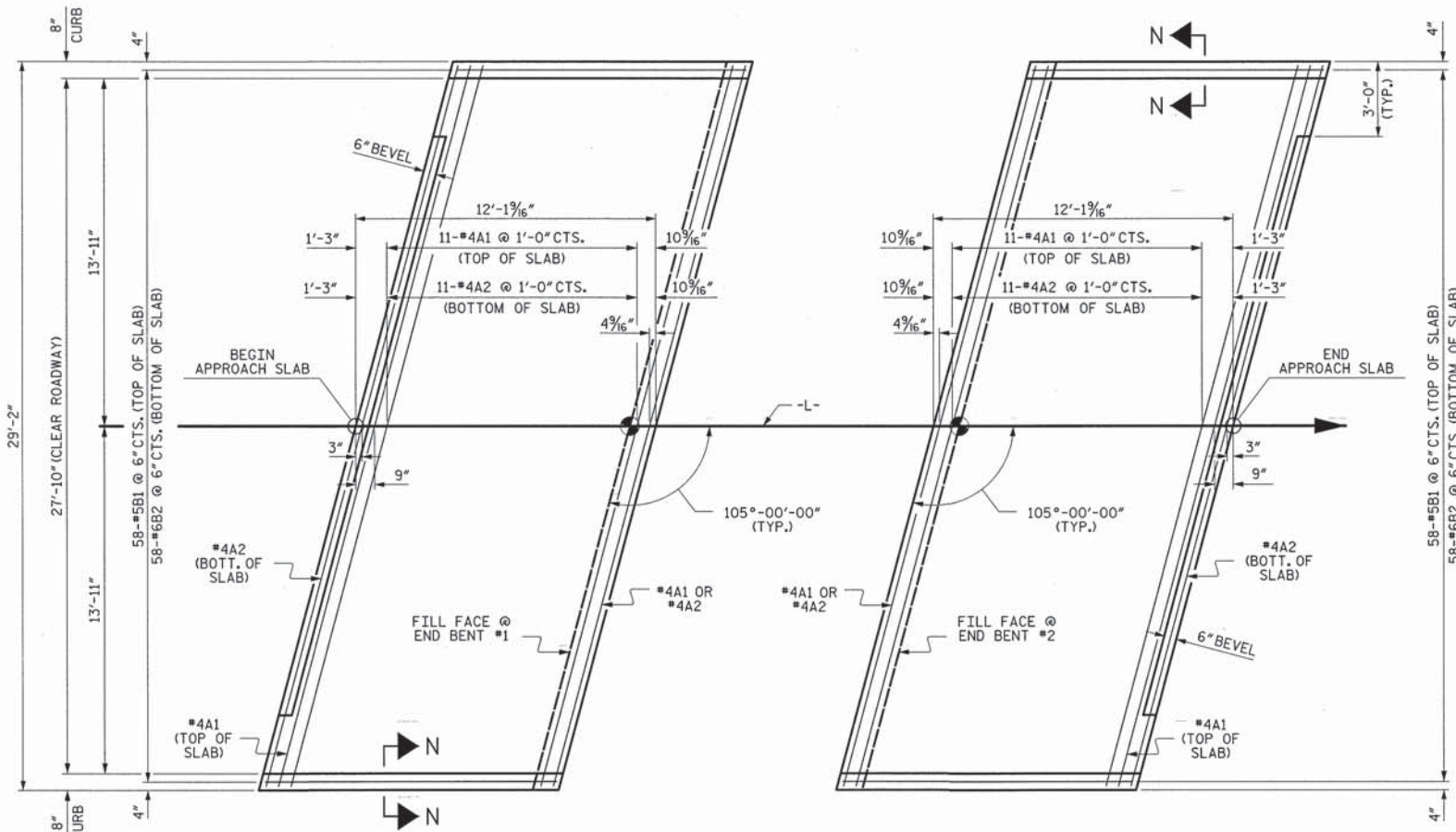
STATION: 12+25.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
105° SKEW

REVISONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	20
2			4	24

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

ASSEMBLED BY: Z. H. BROWN DATE: 3/13
CHECKED BY: W. A. DAVIS DATE: 7/13
DRAWN BY: SHS/MAA 5-09
CHECKED BY: BCH 5-09

REV. 12-11 MAA/AAC

STD. NO. BAS_30-105S

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.

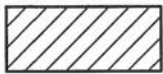
HANDRAILS AND POSTS:

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.

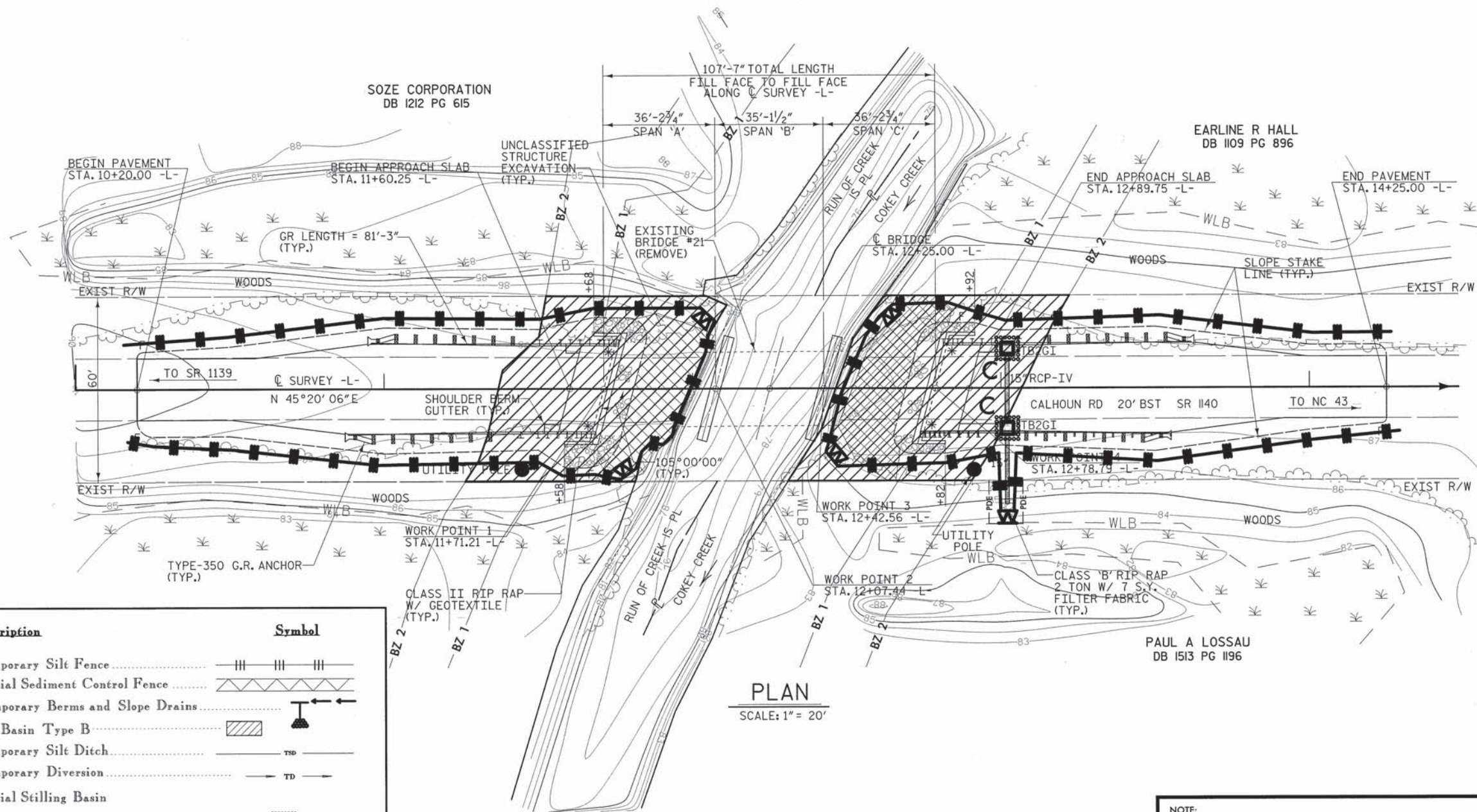
SPECIAL NOTES:

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.

EROSION CONTROL PLAN



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

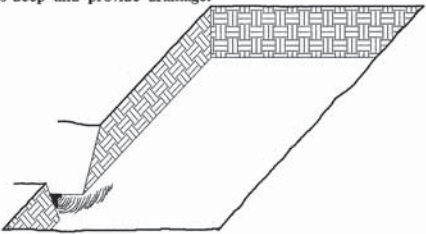
ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

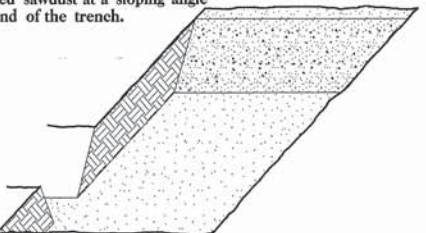
PLANTING DETAILS
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

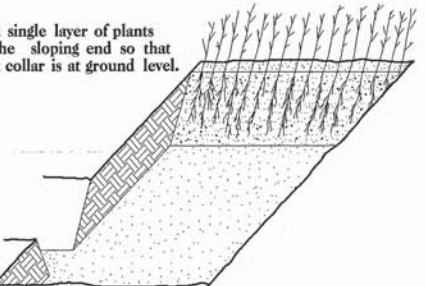
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



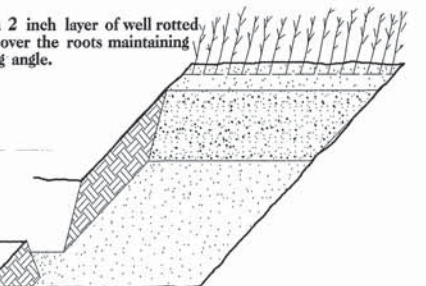
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

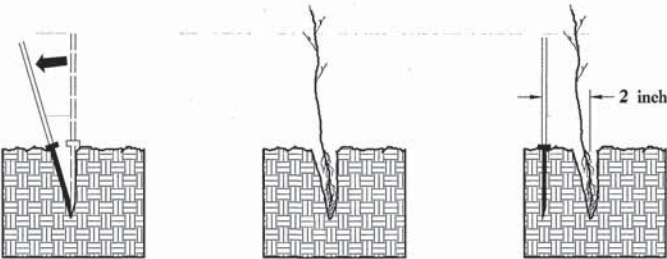


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.



6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% LIRIODENDRON TULIPIFERA	YELLOW POPLAR	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25% QUERCUS ALBA	WHITE OAK	12 in - 18 in BR

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

REFORESTATION DETAIL SHEET

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