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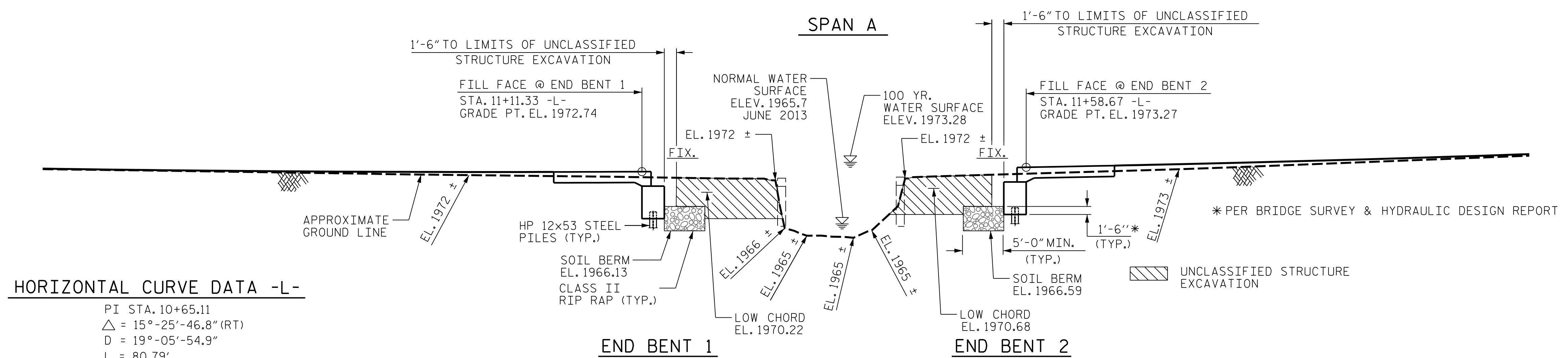
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10+50 11+00 11+50 12+00 12+50

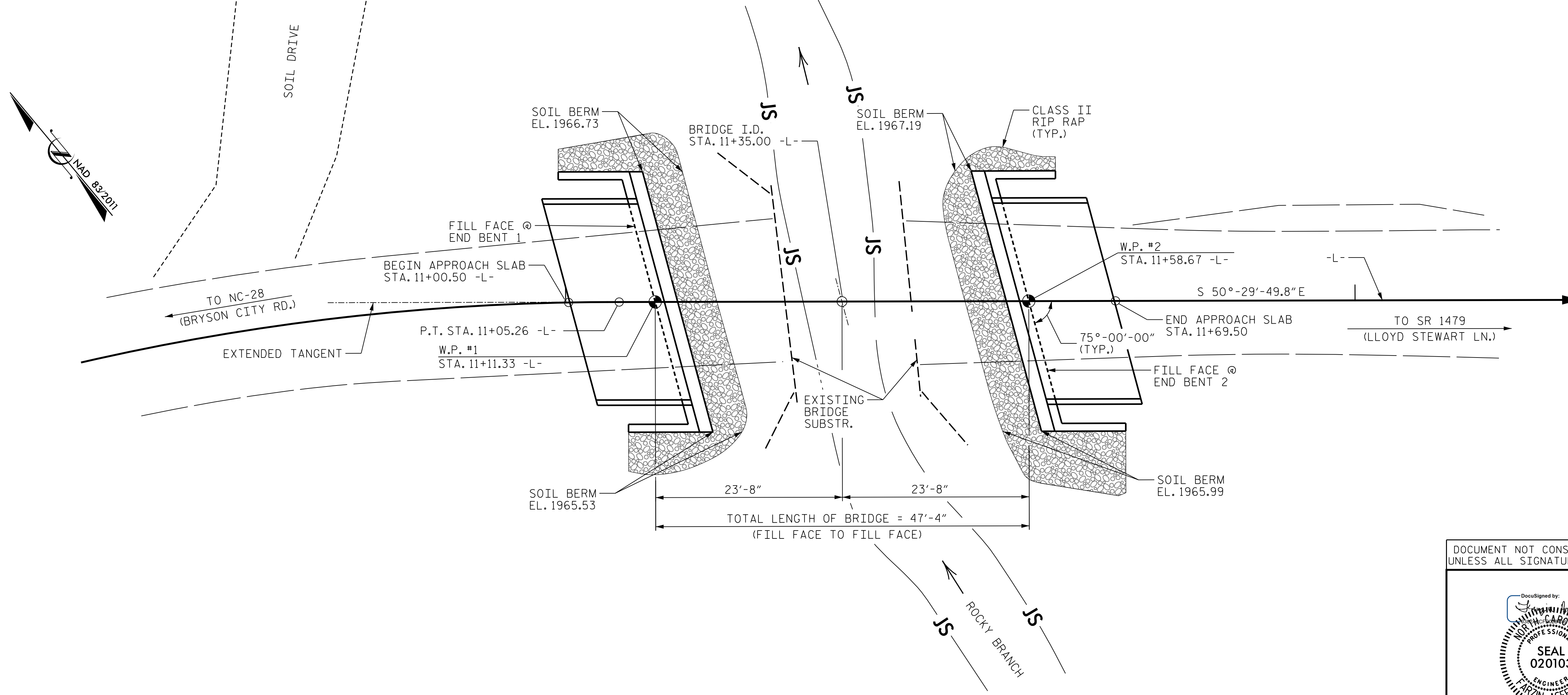
GRADE DATA  
 (-)1.5000% (+)3.5000%  
 PI = 11+30.00  
 EL = 1,971.72'  
 VC = 185'

1,980  
1,970  
1,960



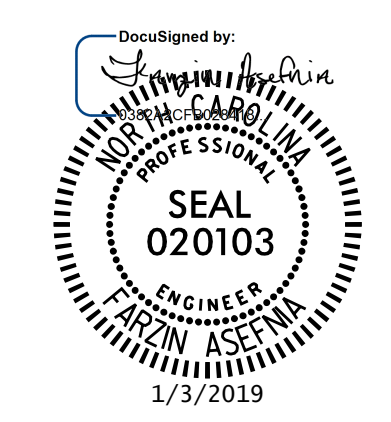
**HORIZONTAL CURVE DATA -L-**

PI STA. 10+65.11  
 $\Delta = 15^\circ - 25' - 46.8''$  (RT)  
 $D = 19^\circ - 05' - 54.9''$   
 $L = 80.79'$   
 $T = 40.64'$   
 $R = 300.00'$



PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SHEET 1 OF 3 REPLACES BRIDGE No. 120



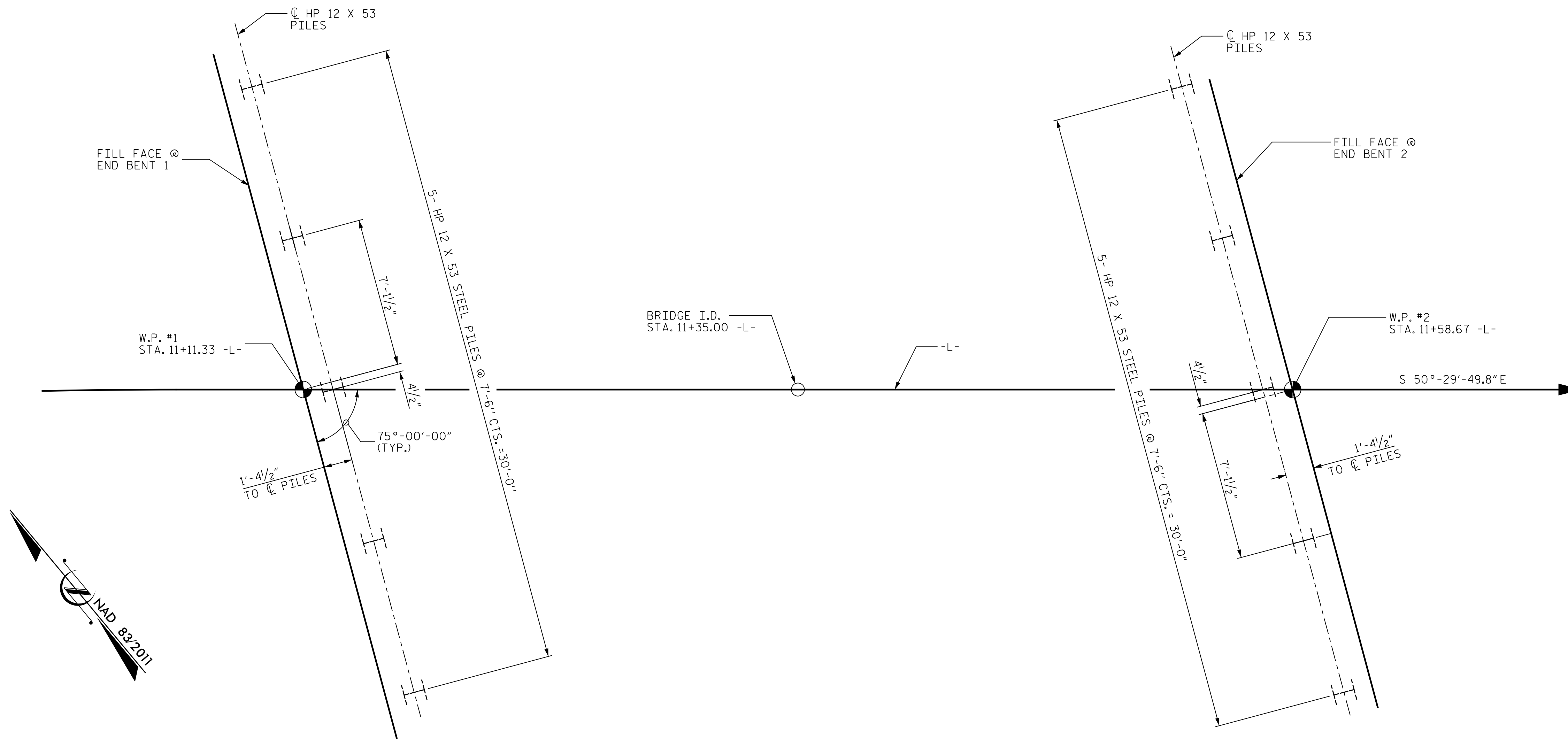
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1337  
 OVER ROCKY BRANCH  
 BETWEEN NC 28 AND SR 1479

DRAWN BY : M. HOGAN DATE : 05/14  
 CHECKED BY : P. HOLSHOUSER DATE : 05/14  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/18

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

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 1/3/2019 2:12:17 PM CKE\_R25148\_PDF\_full.plt:cf9 MACON\_315.tbl



**FOUNDATION LAYOUT**  
 (DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE)

**FOUNDATION NOTES:**

FOR PILES SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.  
 PILES AT END BENTS NO.1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.  
 DRIVE PILES AT END BENTS NO.1 & 2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILES.

PROJECT NO. 17BP.14.R.113  
MACON COUNTY  
 STATION: 11+35.00 -L-

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SHEET 2 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1337  
 OVER ROCKY BRANCH  
 BETWEEN NC 28 AND SR 1479

DRAWN BY : M. HOGAN DATE : 05/14  
 CHECKED BY : P. HOLSHOUSER DATE : 05/14  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/18

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

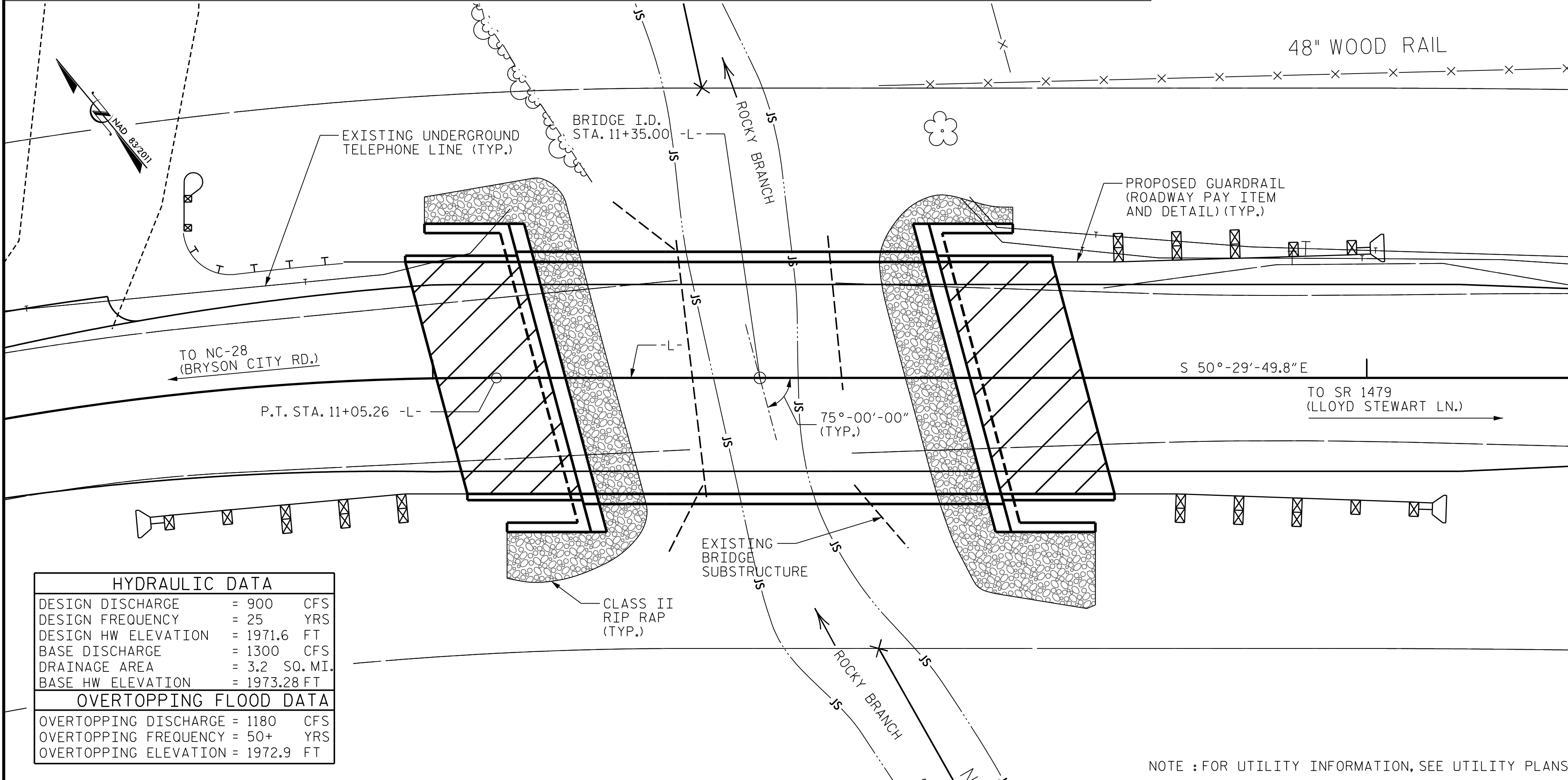
Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

LOUIS BERGER ENGINEERS  
 1/3/2019

TOTAL SHEETS: 14



BM #2: 8" SPIKE IN ROOT OF A 14" WALNUT TREE, STA. -L- 11+54.70, 24.0' LT., ELEV. = 1669.52



HYDRAULIC DATA		
DESIGN DISCHARGE	= 900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1971.6	FT
BASE DISCHARGE	= 1300	CFS
DRAINAGE AREA	= 3.2	SQ. MI.
BASE HW ELEVATION	= 1973.28	FT
OVERTOPPING FLOOD DATA		
OVERTOPPING DISCHARGE	= 1180	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 1972.9	FT

LOCATION SKETCH

NOTE : FOR UTILITY INFORMATION, SEE UTILITY PLANS.

**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 OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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 EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 16'-6" WITH A CLEAR ROADWAY OF 19'-0" ON A TIMBER DECK WITH 11 LINES OF 6 X 12 TIMBER JOISTS @ 1'-10" CTS., TIMBER END BENT CAPS, TIMBER POST & SILLS AND FOOTINGS @ VARYING CENTERS, SHALL BE REMOVED. THE EXISTING BRIDGE IS CURRENTLY POSTED BELOW THE LEGAL LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- 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.
- 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 DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.
- 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 SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

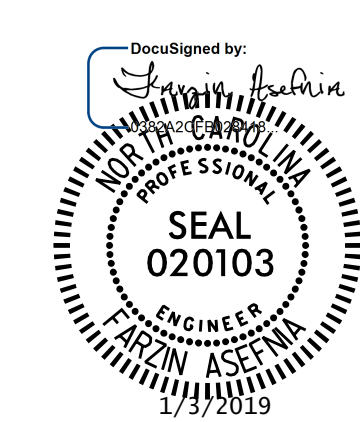
**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
						NO.	LIN. FT.					NO.	LIN. FT.
SUPERSTRUCTURE				LUMP SUM				90.00			LUMP SUM	9	405.00
END BENT NO.1			19.3		2367	5	100		82	63			
END BENT NO.2			19.3		2367	5	90		85	66			
<b>TOTAL</b>	LUMP SUM	LUMP SUM	38.6	LUMP SUM	4734	10	190	90.00	167	129	LUMP SUM	9	405.00

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1337  
 OVER ROCKY BRANCH  
 BETWEEN NC 28 AND SR 1479

DRAWN BY : M. HOGAN DATE : 05/14  
 CHECKED BY : P. HOLSHOUSER DATE : 05/14  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/18

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

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## 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			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.098	--	1.75	0.272	1.36	45'	EL	21.982	0.617	1.46	45'	EL	35.172	0.80	0.272	<b>1.10</b>	45'	EL	<b>21.982</b>		
	HL-93(Opr)	N/A	--	1.764	--	1.35	0.272	1.76	45'	EL	21.982	0.617	1.89	45'	EL	35.172	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.347	48.507	1.75	0.272	1.67	45'	EL	21.982	0.617	1.68	45'	EL	8.793	0.80	0.272	<b>1.35</b>	45'	EL	<b>21.982</b>		
	HS-20(Opr)	36.000	--	2.165	77.938	1.35	0.272	2.16	45'	EL	21.982	0.617	2.17	45'	EL	8.793	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.632	35.536	1.4	0.272	4.08	45'	EL	21.982	0.617	4.43	45'	EL	35.172	0.80	0.272	2.63	45'	EL	21.982	
		SNGARBS2	20.000	--	2.126	42.513	1.4	0.272	3.29	45'	EL	21.982	0.617	3.32	45'	EL	35.172	0.80	0.272	2.13	45'	EL	21.982	
		SNAGRIS2	22.000	--	2.085	45.877	1.4	0.272	3.19	45'	EL	17.586	0.617	3.15	45'	EL	35.172	0.80	0.272	2.09	45'	EL	21.982	
		SNCOTTS3	27.250	--	1.314	35.814	1.4	0.272	2.04	45'	EL	21.982	0.617	2.23	45'	EL	8.793	0.80	0.272	1.31	45'	EL	21.982	
		SNAGGRS4	34.925	--	1.16	40.51	1.4	0.272	1.8	45'	EL	21.982	0.617	1.97	45'	EL	35.172	0.80	0.272	1.16	45'	EL	21.982	
		SNS5A	35.550	--	1.13	40.167	1.4	0.272	1.75	45'	EL	21.982	0.617	2.06	45'	EL	8.793	0.80	0.272	1.13	45'	EL	21.982	
		SNS6A	39.950	--	1.064	42.522	1.4	0.272	1.65	45'	EL	21.982	0.617	1.94	45'	EL	35.172	0.80	0.272	1.06	45'	EL	21.982	
	SNS7B	42.000	3	1.015	42.617	1.4	0.272	1.57	45'	EL	21.982	0.617	1.98	45'	EL	35.172	0.80	0.272	<b>1.01</b>	45'	EL	<b>21.982</b>		
	TTST	TNAGRIT3	33.000	--	1.306	43.112	1.4	0.272	2.02	45'	EL	21.982	0.617	2.26	45'	EL	8.793	0.80	0.272	1.31	45'	EL	21.982	
		TNT4A	33.075	--	1.32	43.663	1.4	0.272	2.05	45'	EL	21.982	0.617	2.14	45'	EL	35.172	0.80	0.272	1.32	45'	EL	21.982	
		TNT6A	41.600	--	1.108	46.093	1.4	0.272	1.72	45'	EL	21.982	0.617	2.11	45'	EL	35.172	0.80	0.272	1.11	45'	EL	21.982	
		TNT7A	42.000	--	1.129	47.436	1.4	0.272	1.75	45'	EL	21.982	0.617	1.96	45'	EL	35.172	0.80	0.272	1.13	45'	EL	21.982	
		TNT7B	42.000	--	1.176	49.384	1.4	0.272	1.82	45'	EL	21.982	0.617	1.88	45'	EL	35.172	0.80	0.272	1.18	45'	EL	21.982	
		TNAGRIT4	43.000	--	1.12	48.157	1.4	0.272	1.74	45'	EL	21.982	0.617	1.8	45'	EL	35.172	0.80	0.272	1.12	45'	EL	21.982	
TNAGT5A		45.000	--	1.042	46.893	1.4	0.272	1.61	45'	EL	21.982	0.617	1.88	45'	EL	35.172	0.80	0.272	1.04	45'	EL	21.982		
TNAGT5B	45.000	--	1.017	45.785	1.4	0.272	1.58	45'	EL	21.982	0.617	1.7	45'	EL	35.172	0.80	0.272	1.02	45'	EL	21.982			

### LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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:

- 1.
- 2.
- 3.
- 4.

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

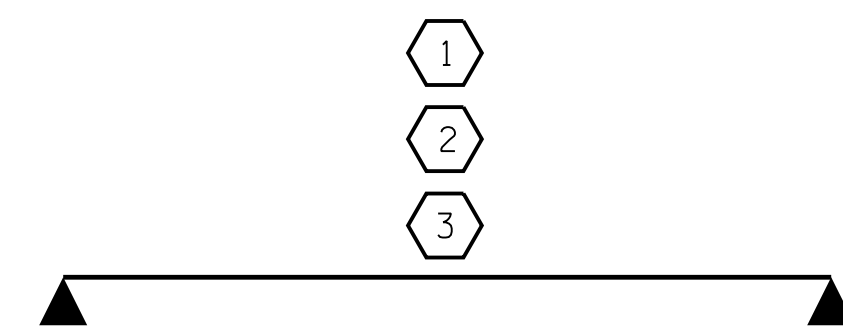
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

---

GIRDER LOCATION

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



LRFR SUMMARY  
FOR SPAN "A"

PROJECT NO. 17BP.14.R.113  
MACON COUNTY  
 STATION: 11+35.00 -L-

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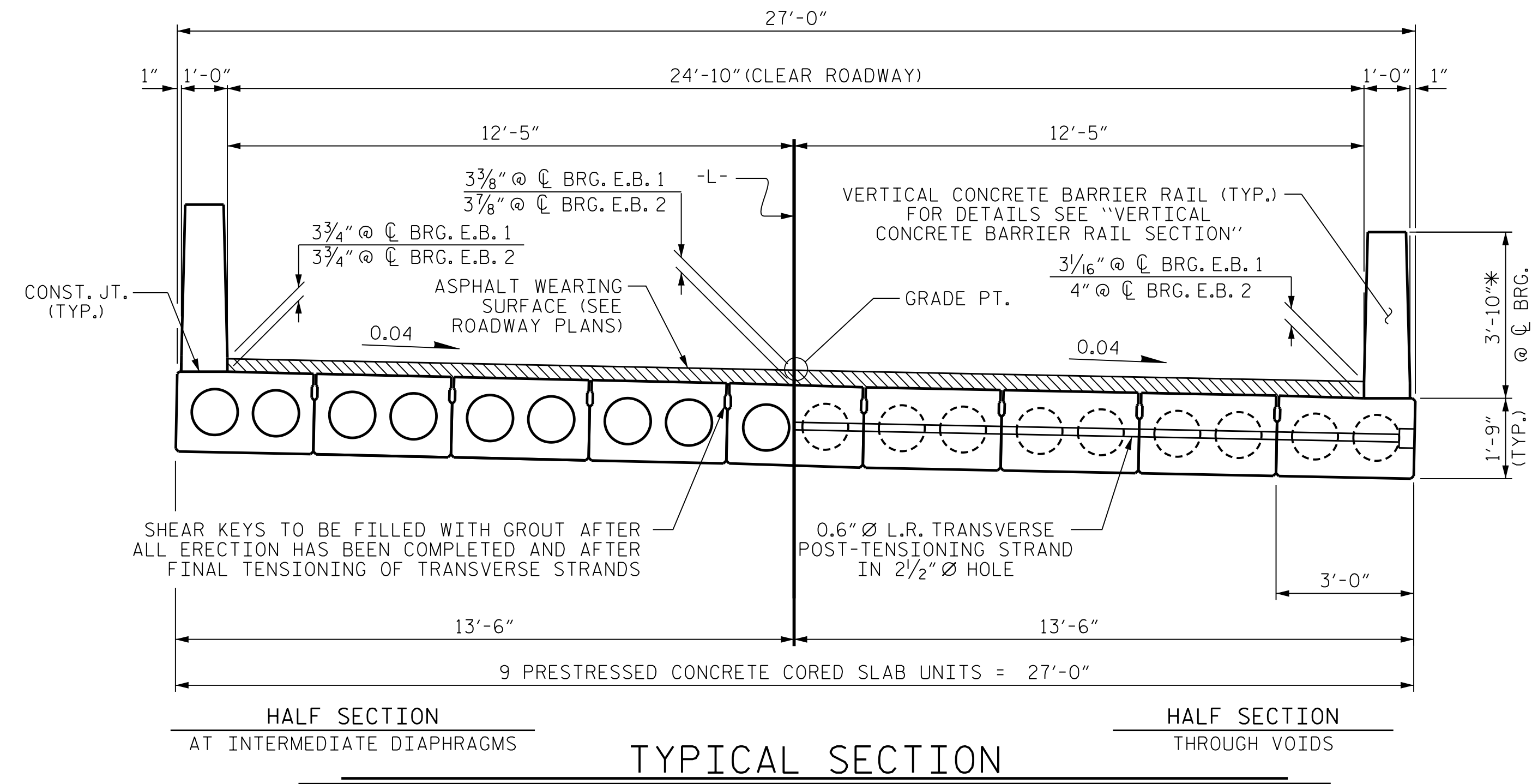
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 LRFR SUMMARY FOR  
 45' CORED SLAB UNIT  
 75° SKEW & 105° SKEW  
 (NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : R. KNIGHT	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

Prepared by:  
**LOUIS BERGER**  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

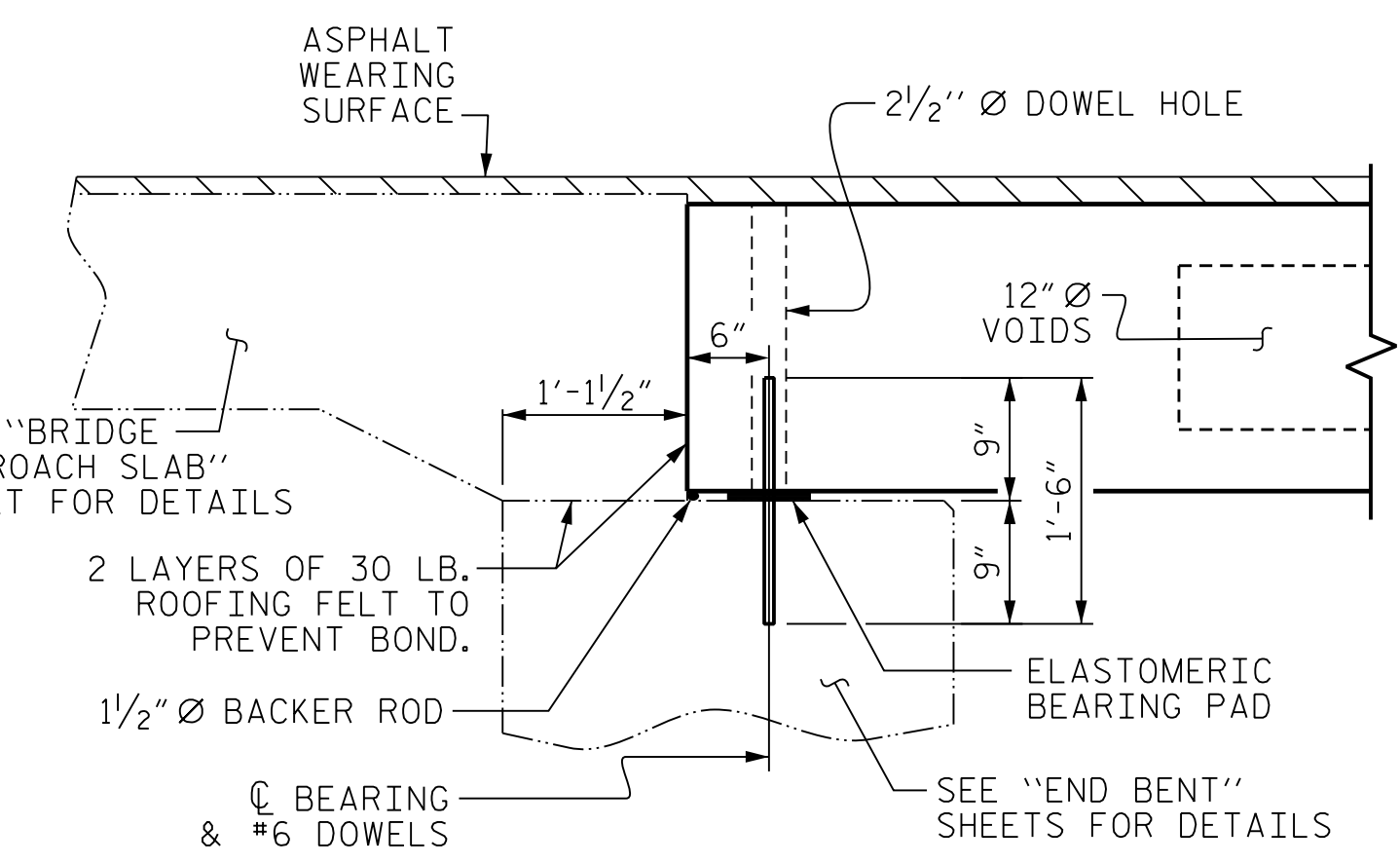
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2			4			TOTAL SHEETS 14

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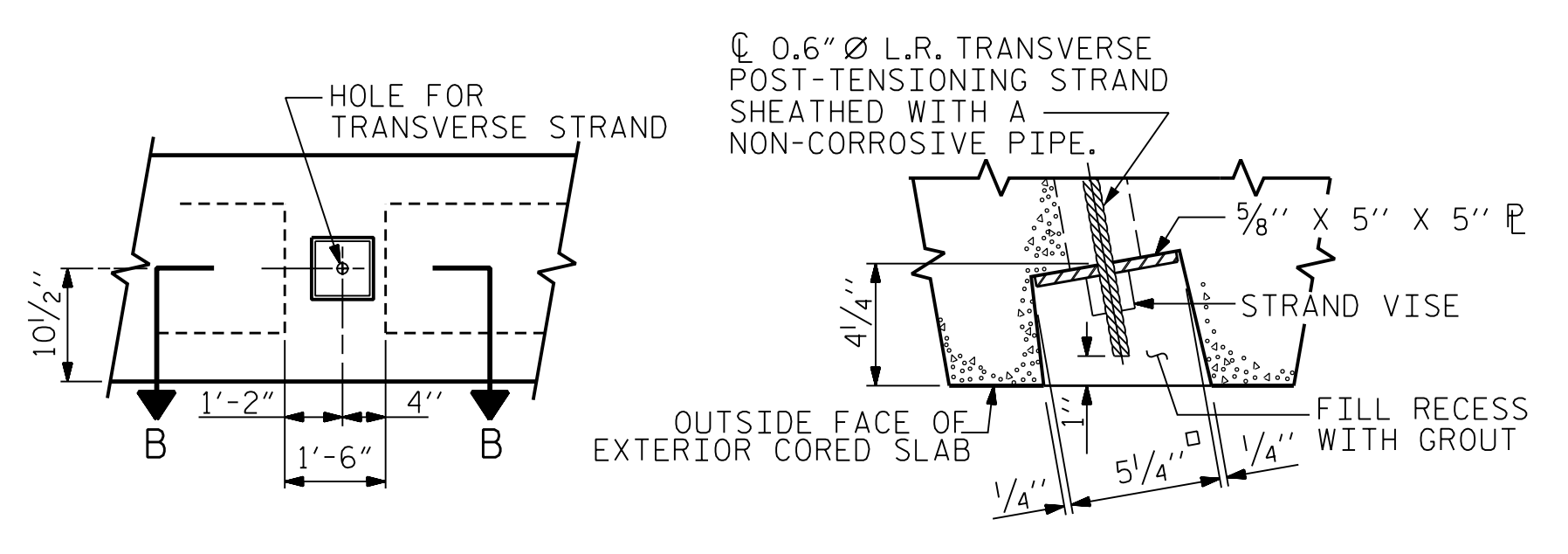


HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
 TYPICAL SECTION  
 HALF SECTION THROUGH VOIDS

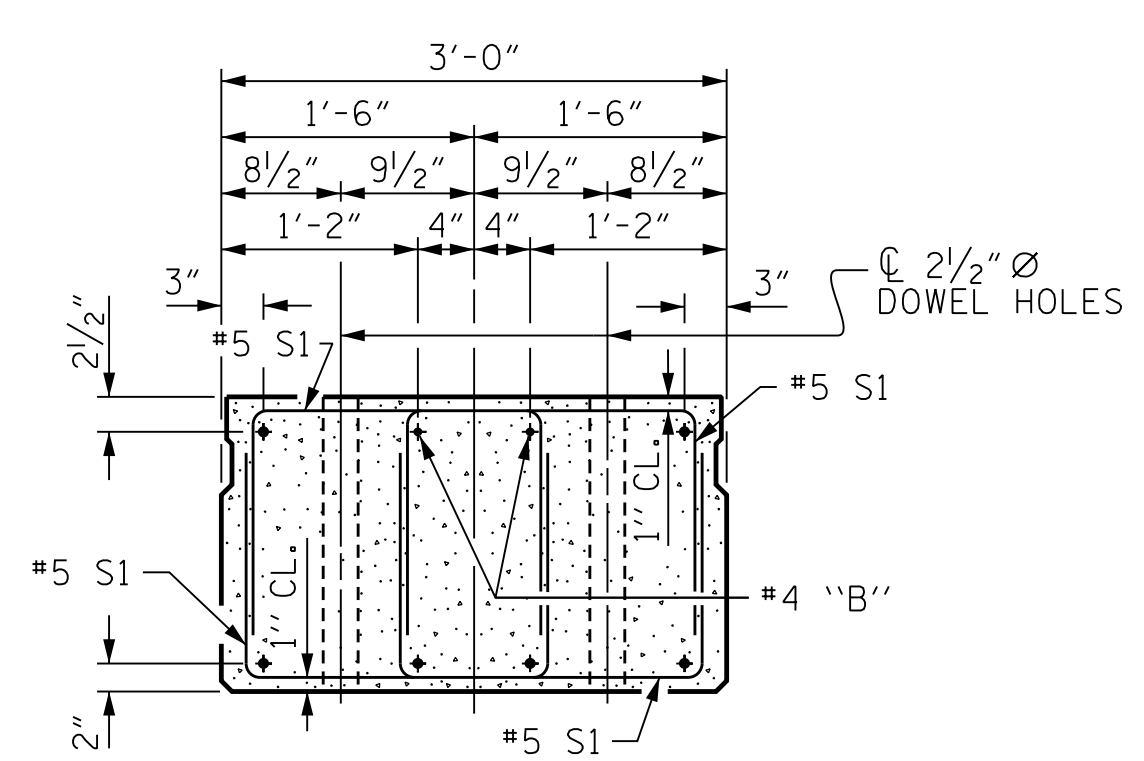
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



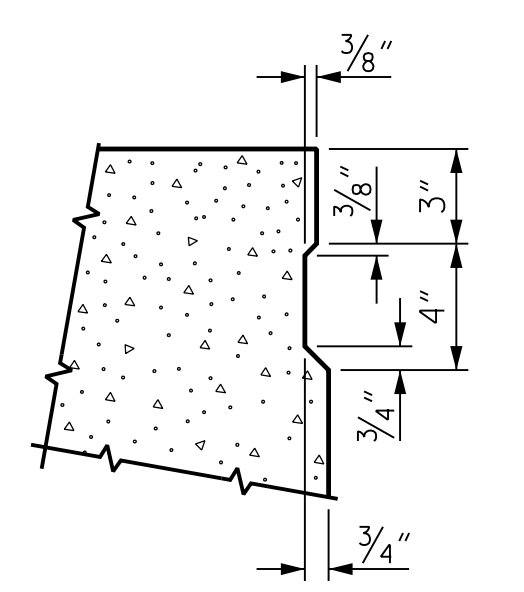
SECTION AT END BENT



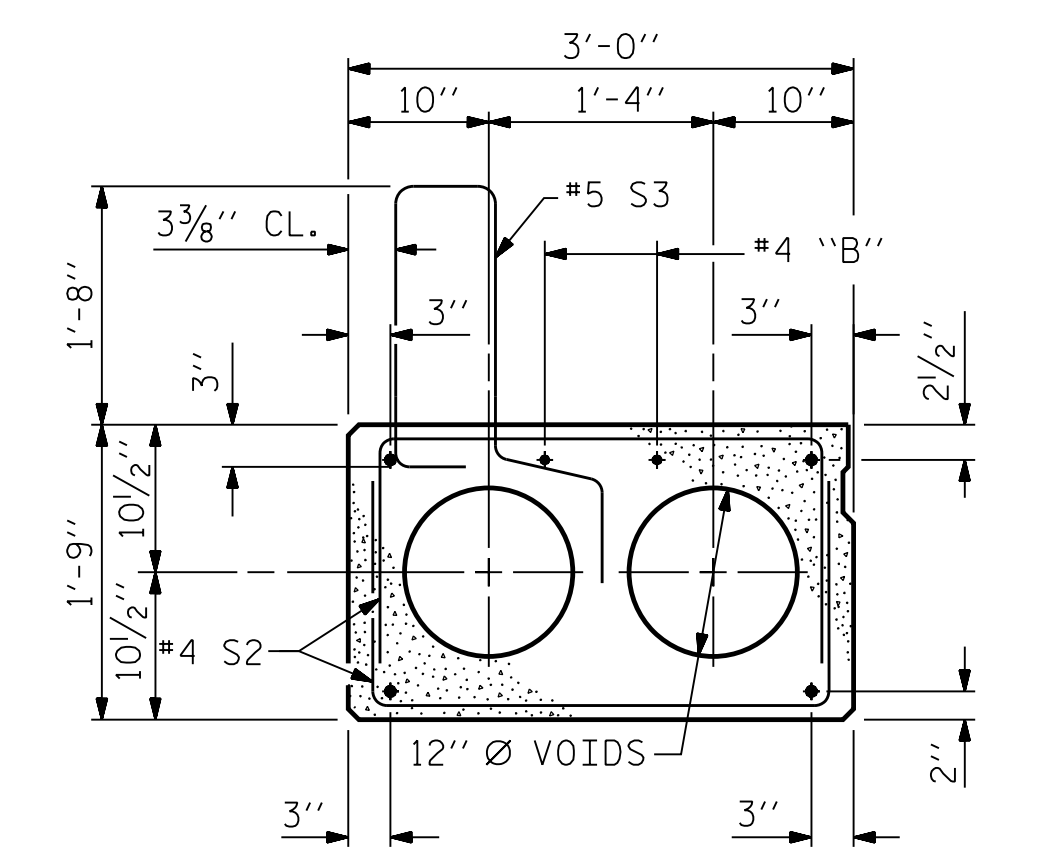
ELEVATION VIEW  
 SECTION B-B  
 GROUTED RECESS AT END OF POST-TENSIONING STRAND OF CORED SLABS



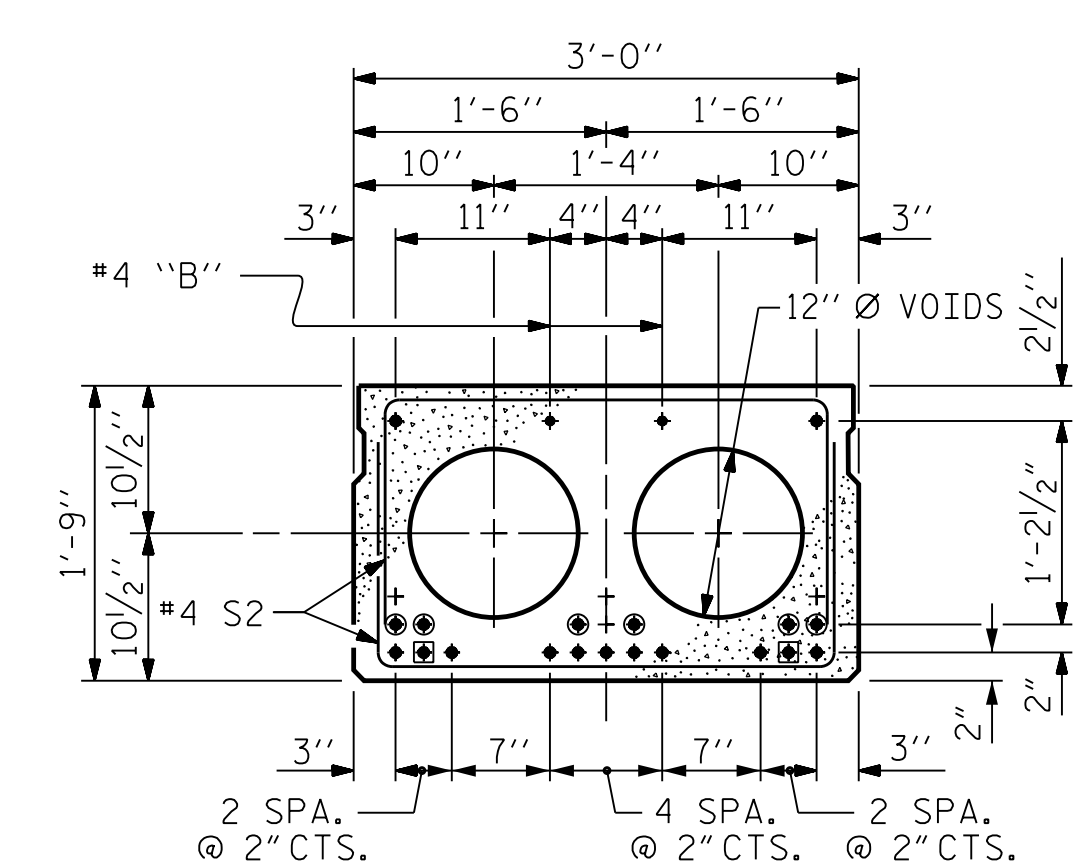
END ELEVATION  
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



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



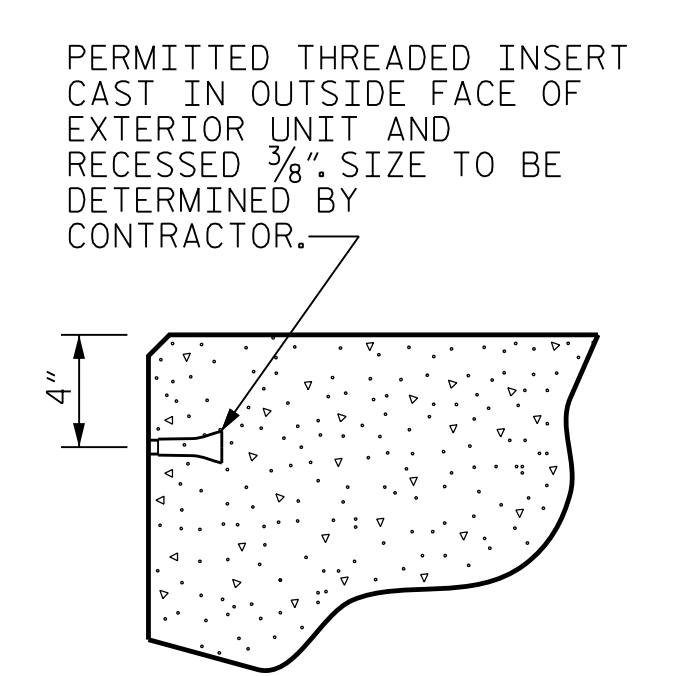
EXT. SLAB SECTION  
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (45' UNIT)  
 (13 STRANDS REQUIRED)

- 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.

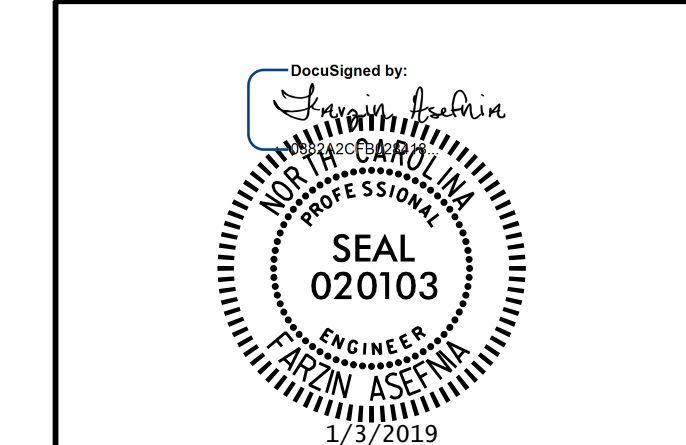
DEBONDING LEGEND



THREADED INSERT DETAIL

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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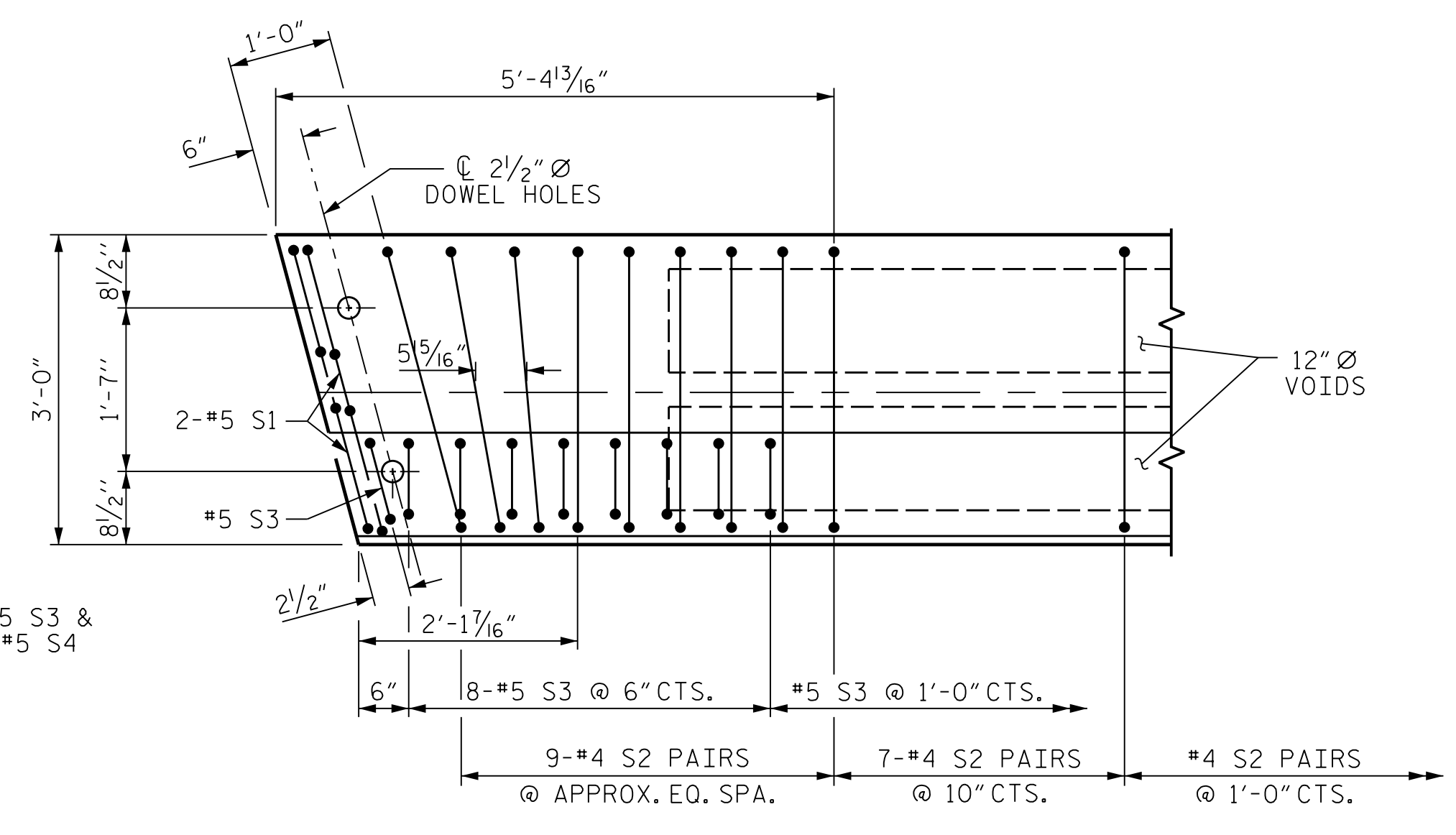
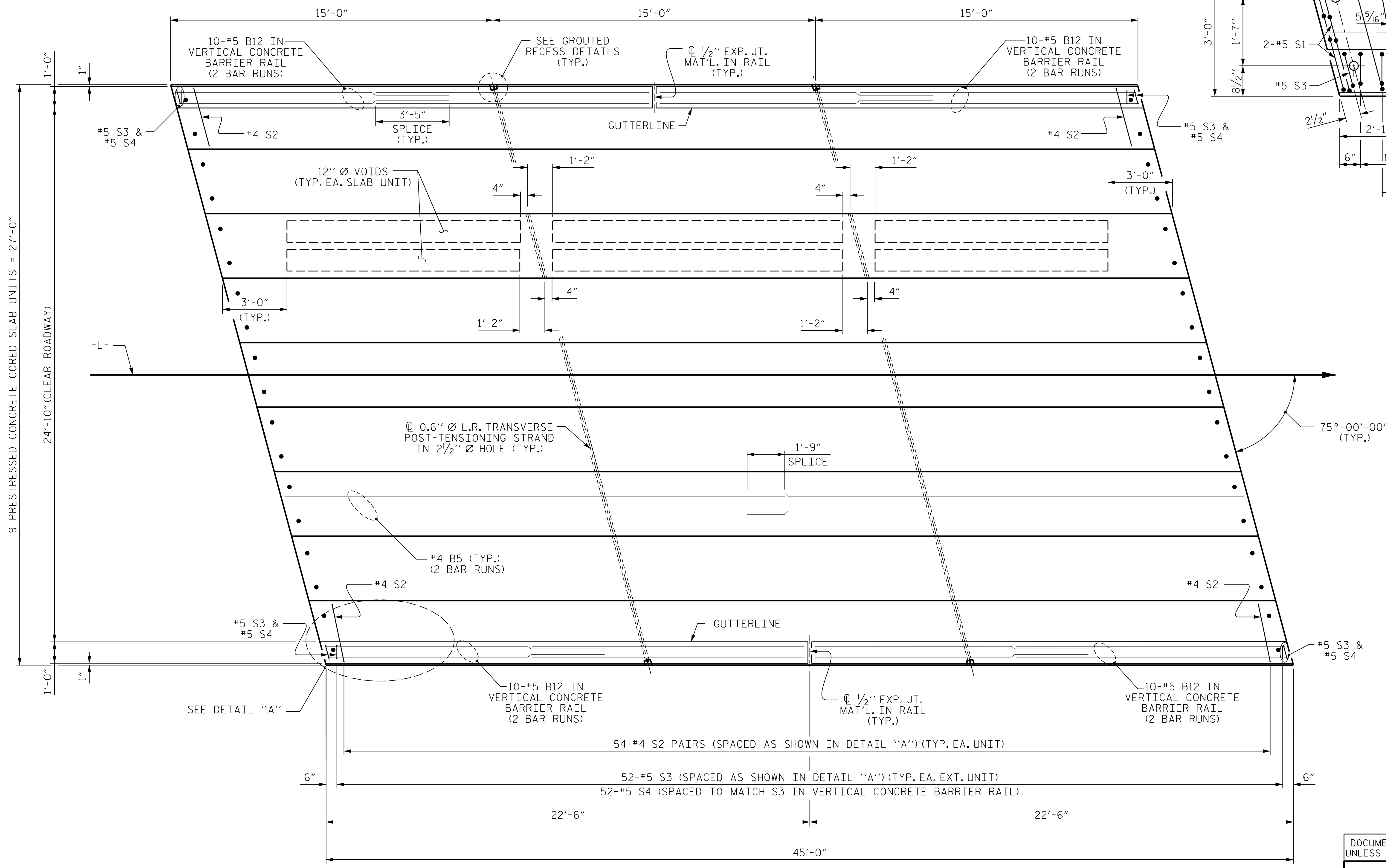
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 75° SKEW

ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : DCE 5/09	REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09	REV. 8/14 MAA/TMG

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 14
2			4			



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DETAIL "A"

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

PLAN OF UNIT

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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 UNLESS ALL SIGNATURES COMPLETED

SHEET 2 OF 3



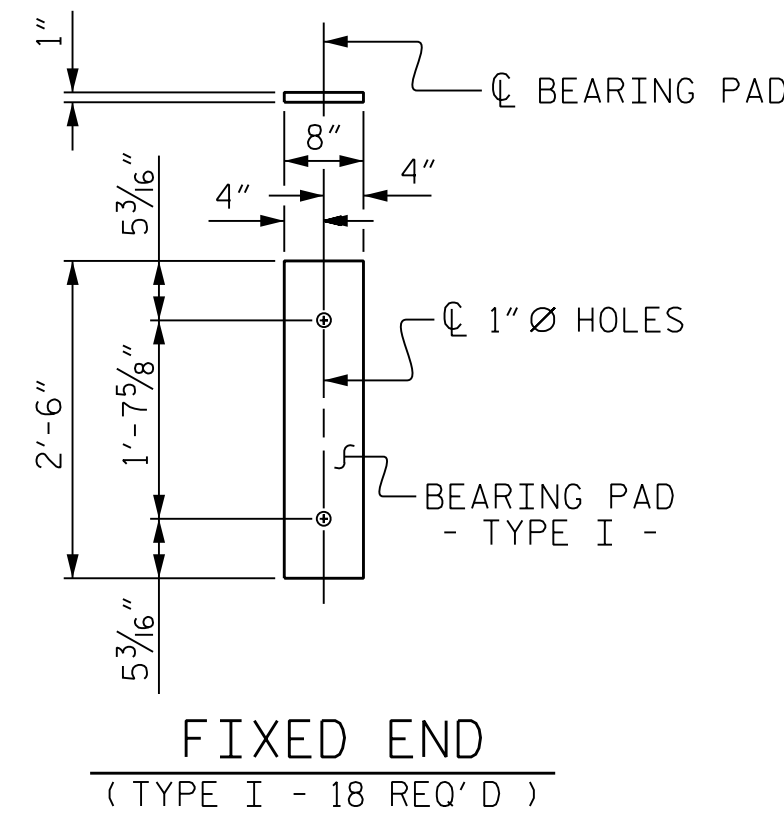
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN OF 45' UNIT  
 24'-10" CLEAR ROADWAY  
 75° SKEW

ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : DCE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 6/09	

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NO.	BY:	DATE:	SHEET NO.
1			S-6
2			TOTAL SHEETS 14

STD. NO. 21" PCS\_27\_75S\_45L

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**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
45' UNIT			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	7	45'-0"	315'-0"
TOTAL	9	45'-0"	405'-0"

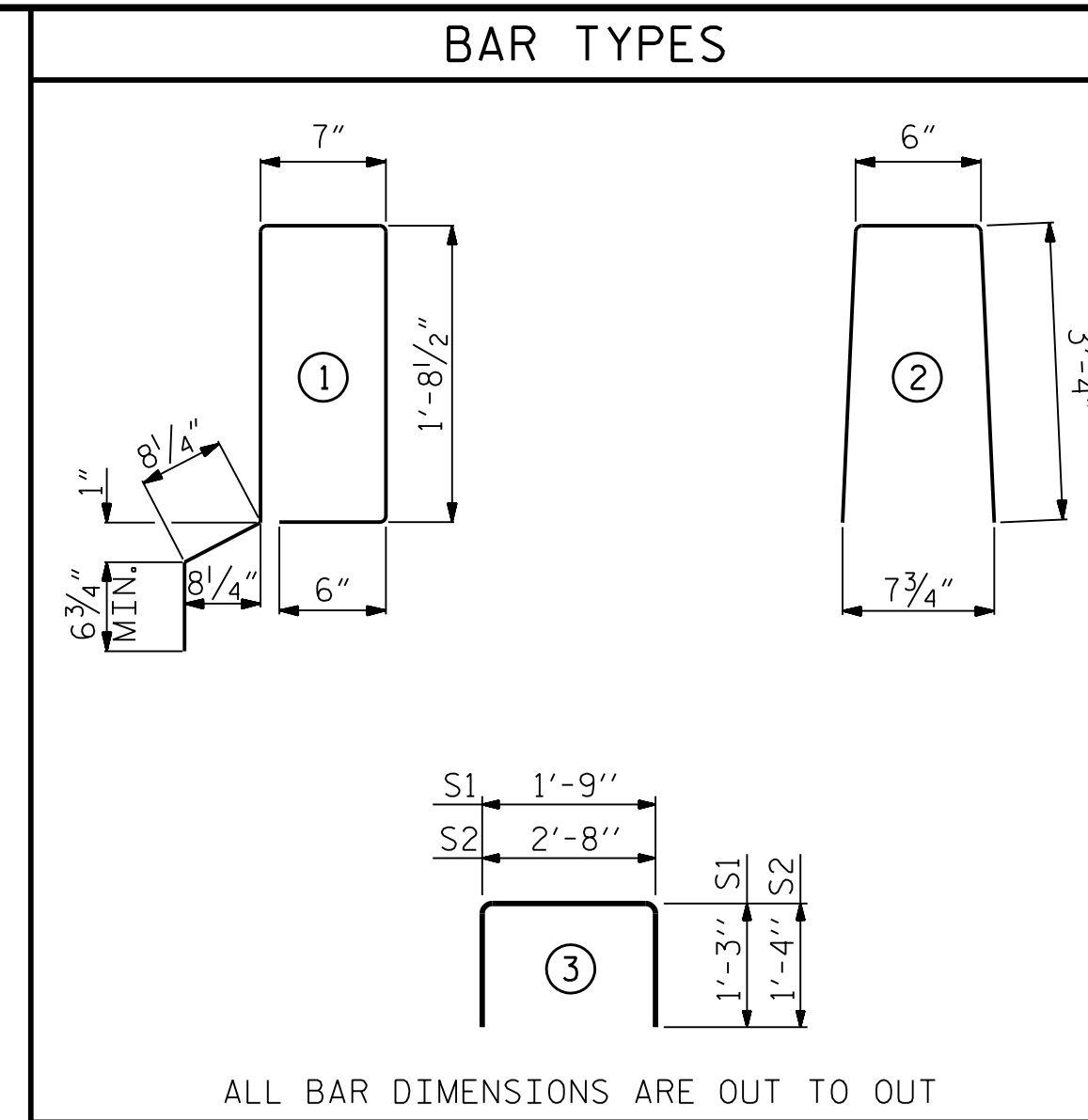
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT			
24'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS		RAIL HEIGHT
45'-0" UNITS			
	LT. GUTTERLINE	RT. GUTTERLINE	
EB1 @ CL BRG.	3 3/4"	3 1/16"	3'-9 3/4"
AT MIDSPAN	2 5/16"	2 1/8"	3'-8 5/16"
EB2 @ CL BRG.	3 3/4"	4"	3'-10"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
45' UNITS	4000

DEAD LOAD DEFLECTION AND CAMBER	
45' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND 7/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	5/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

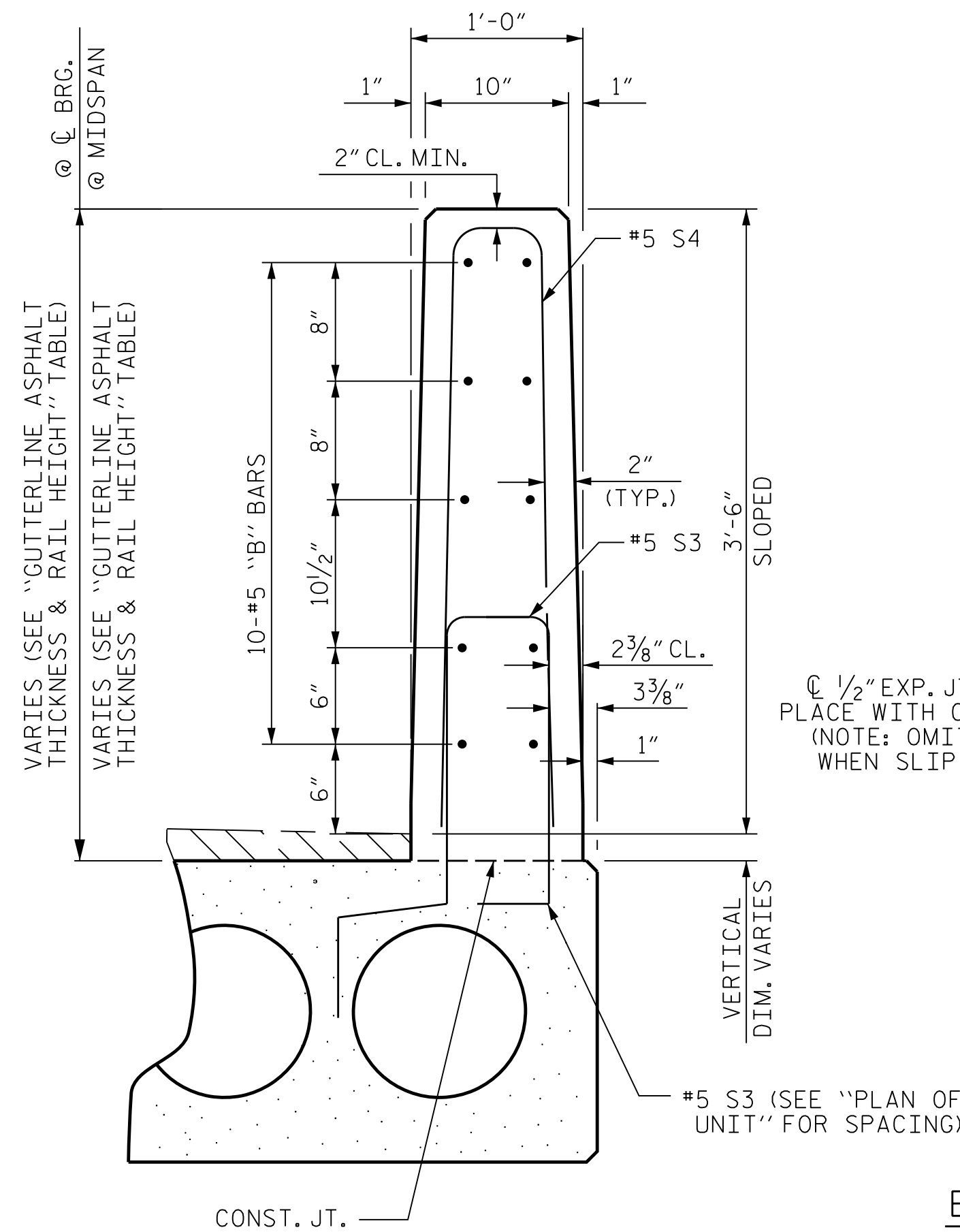
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



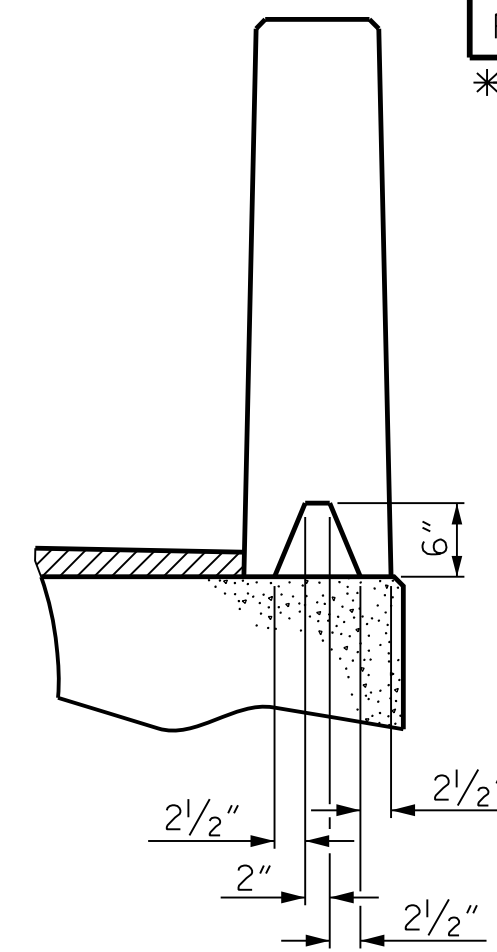
**BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B5	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	108	#4	3	5'-4"	385	5'-4"	385
*S3	54	#5	1	5'-9"	324		
REINFORCING STEEL				LBS.	482		482
* EPOXY COATED REINFORCING STEEL				LBS.	324		
6500 P.S.I. CONCRETE				CU. YDS.	6.6		6.6
0.6" Ø L.R. STRANDS				No.	13		13

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
45' UNIT						
*B12	80	80	#5	STR	12'-11"	1098
*S4	108	108	#5	2	7'-2"	807
* EPOXY COATED REINFORCING STEEL				LBS.		1905
CLASS AA CONCRETE				CU. YDS.		11.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		90.00

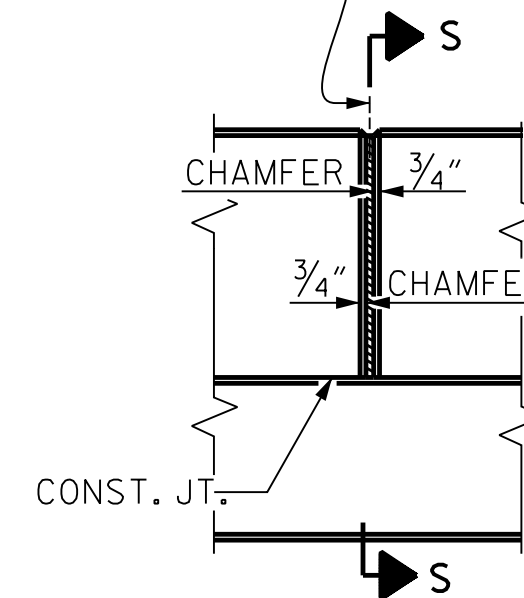


**VERTICAL CONCRETE BARRIER RAIL SECTION**

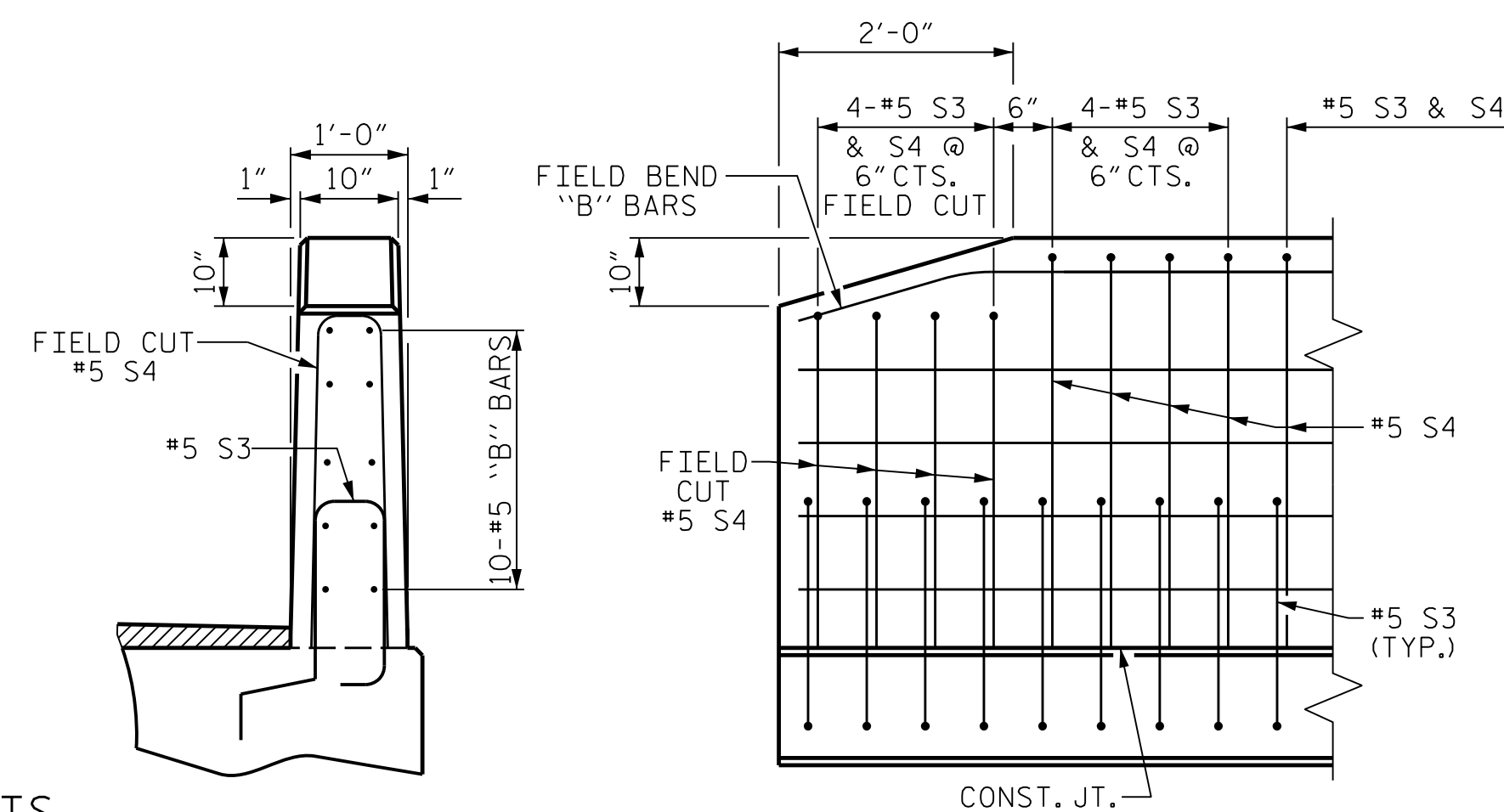


**SECTION S-S**  
 AT DAM IN OPEN JOINT  
 (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
 (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED)



**ELEVATION AT EXPANSION JOINTS**



**END VIEW**

**SIDE VIEW**

**END OF RAIL DETAILS**

**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 CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

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

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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 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.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

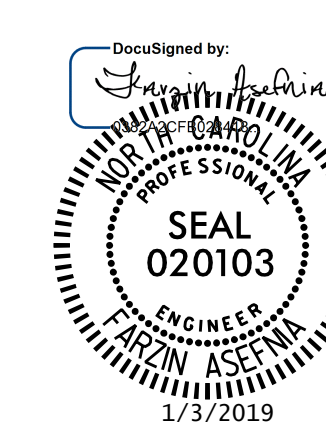
PROJECT NO. 17BP.14.R.113

MACON COUNTY

STATION: 11+35.00 -L-

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SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 75° SKEW

ASSEMBLED BY :	M. HOGAN	DATE :	05/14
CHECKED BY :	P. HOLSHOUSER	DATE :	05/14
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	11/18

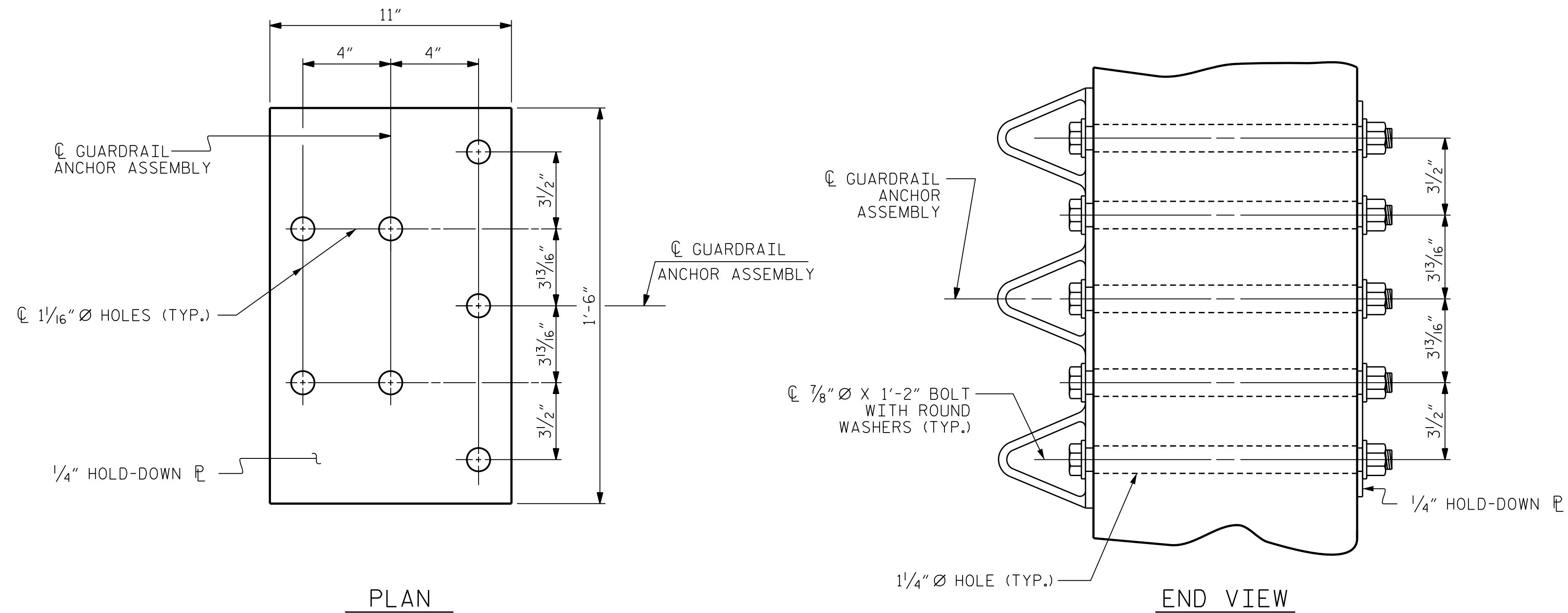
DRAWN BY :	DCE 5/09	REV. 5/18	MAA/TMG
CHECKED BY :	BCH 6/09		

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2			4		





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**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

**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.)

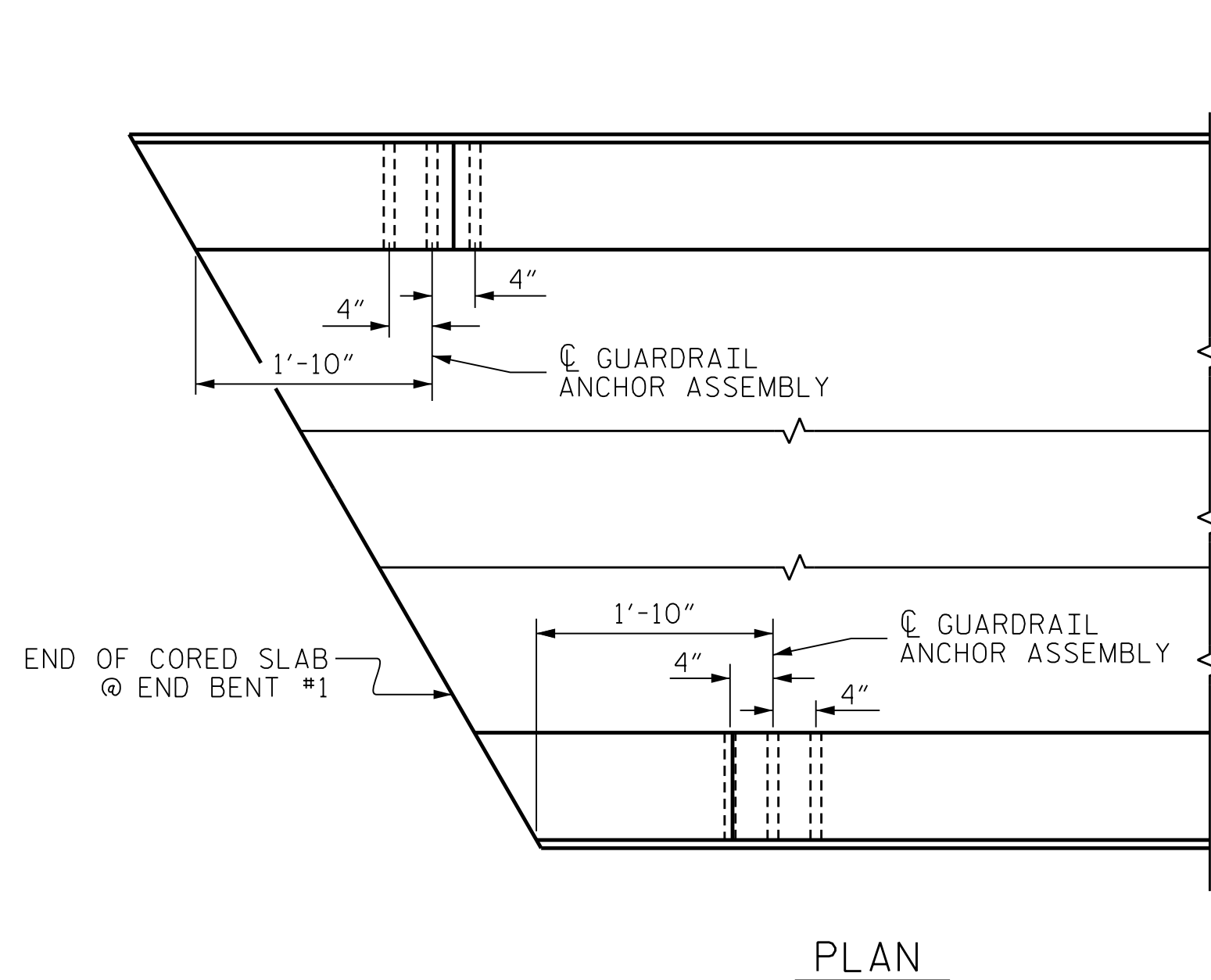
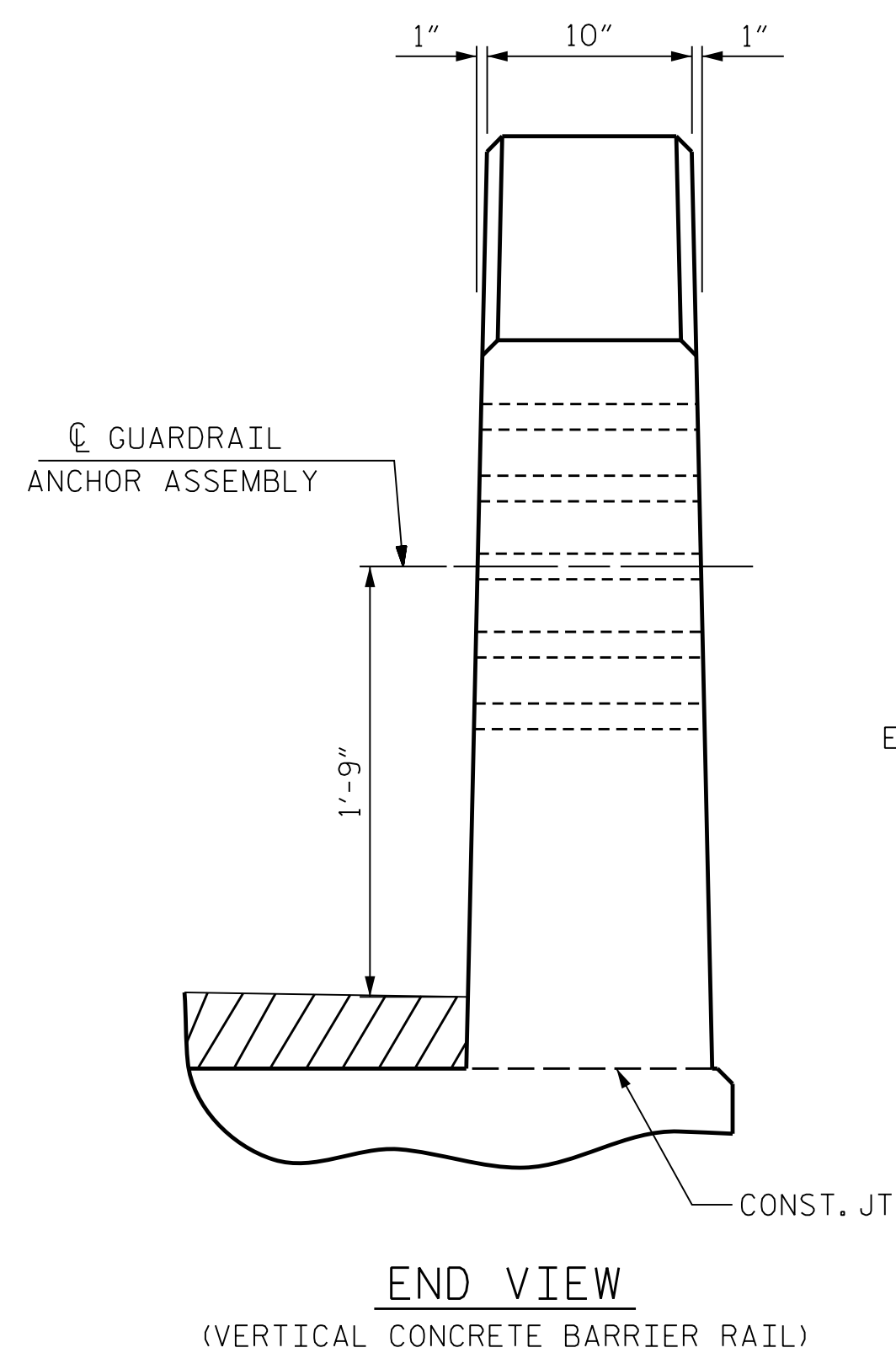
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

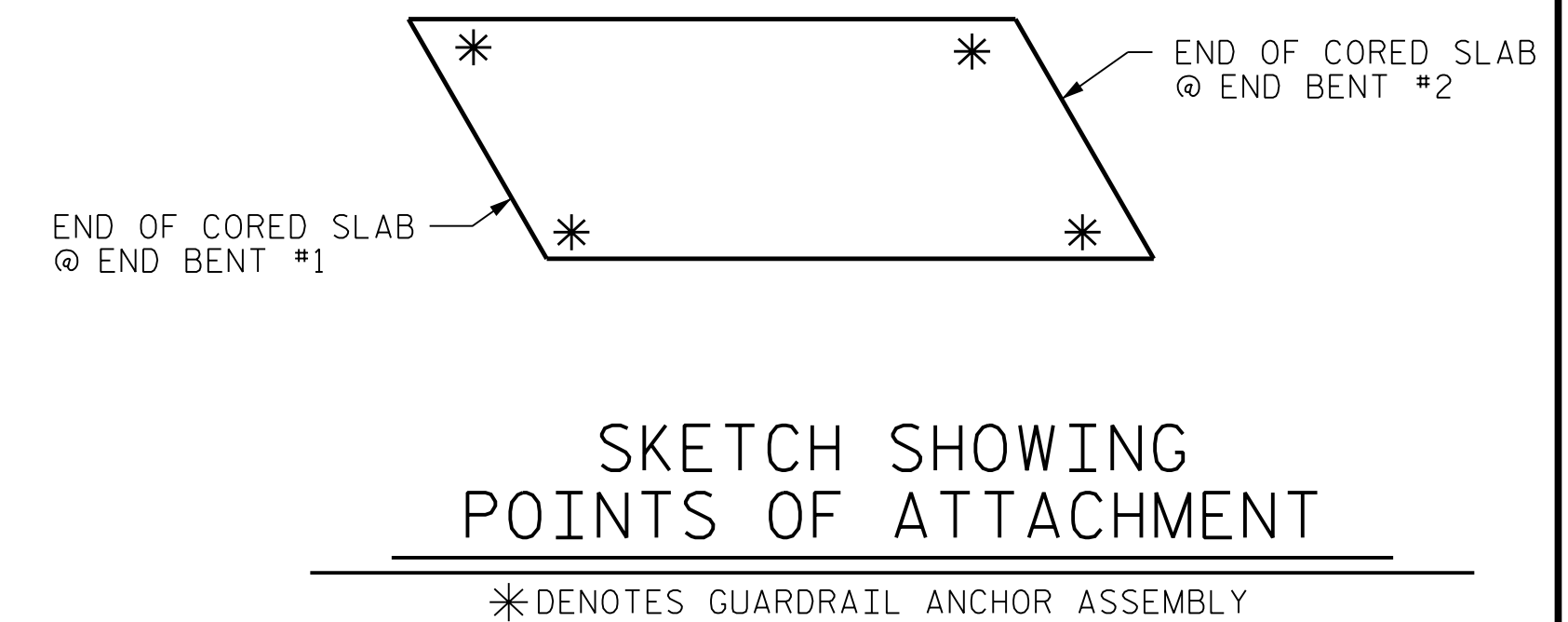
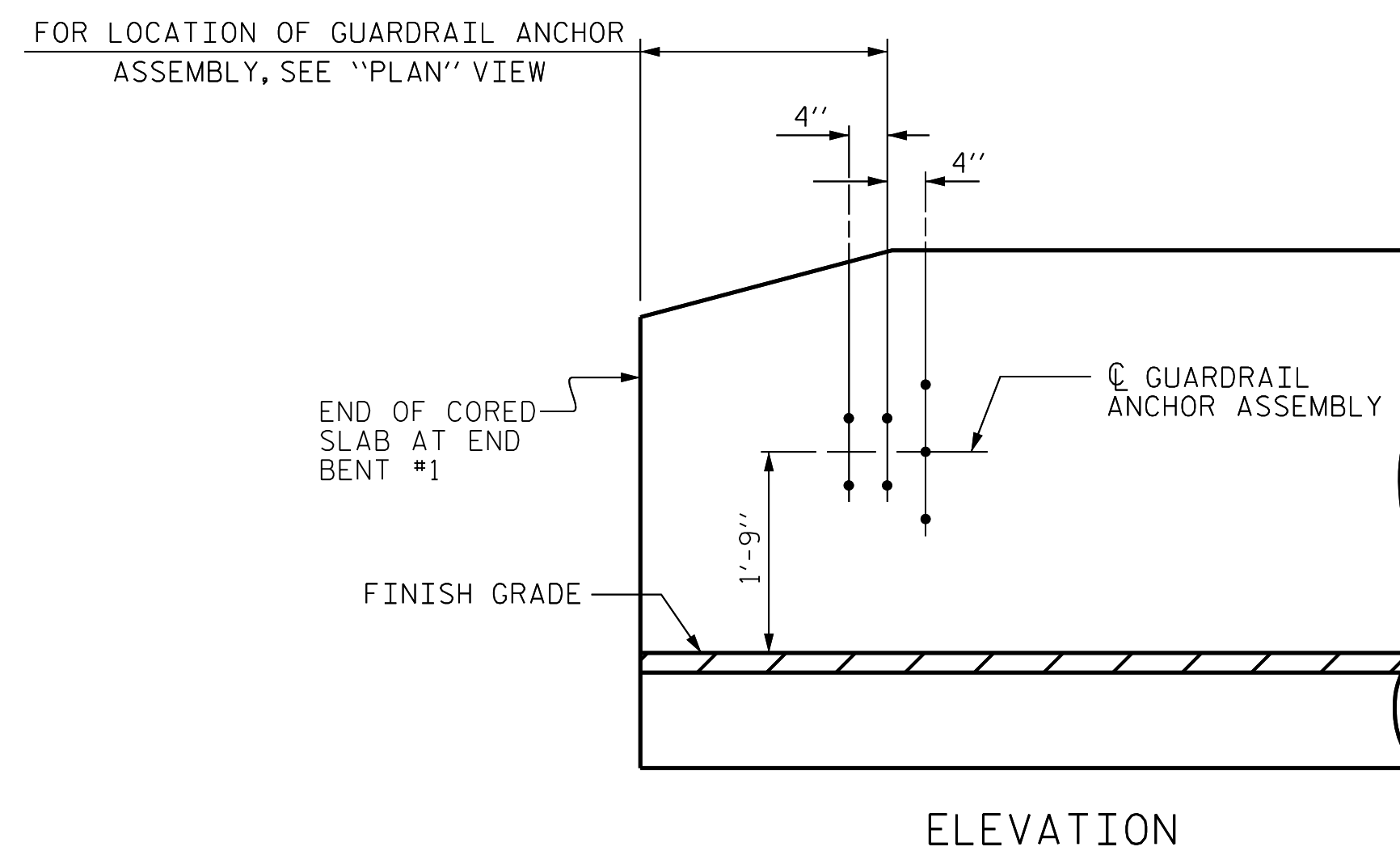
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.



**LOCATION OF ANCHORS FOR GUARDRAIL**

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



PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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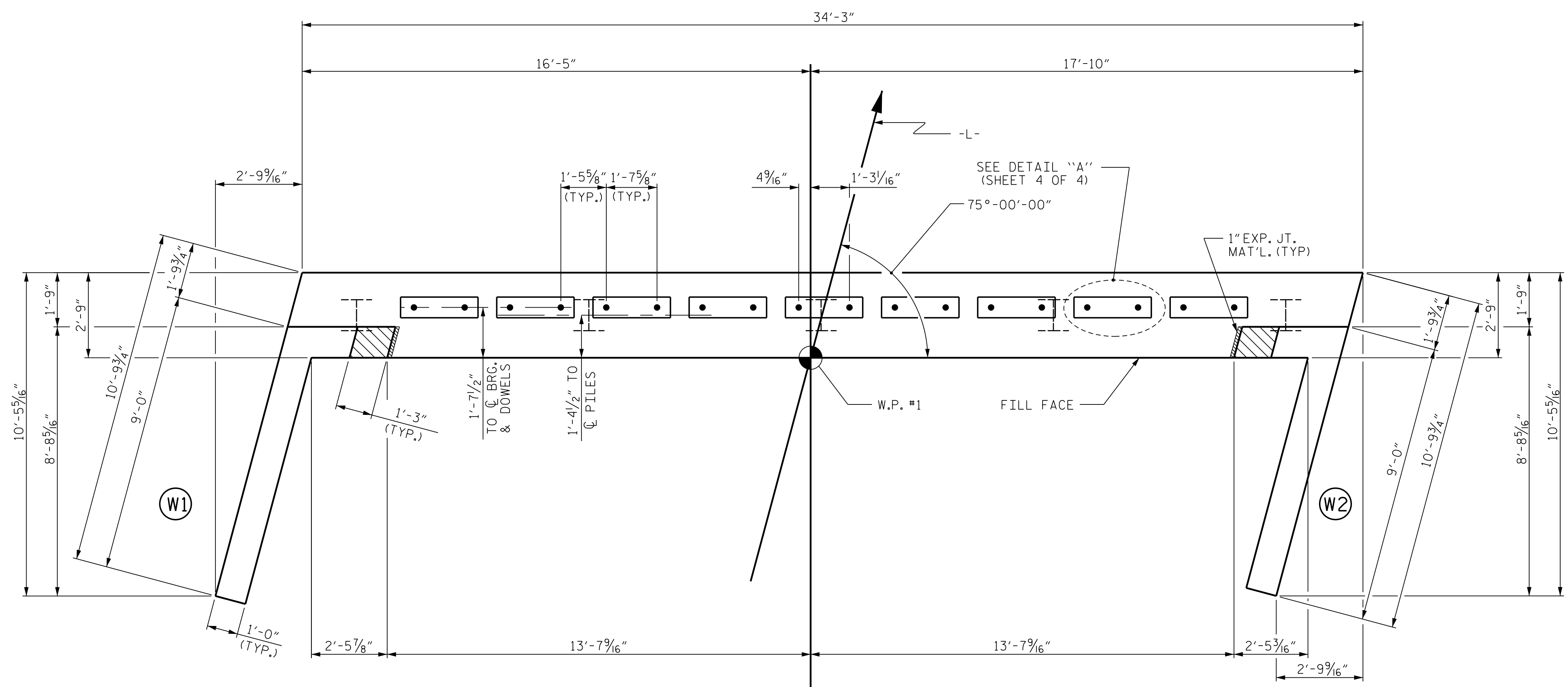


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR VERTICAL CONCRETE  
 BARRIER RAIL

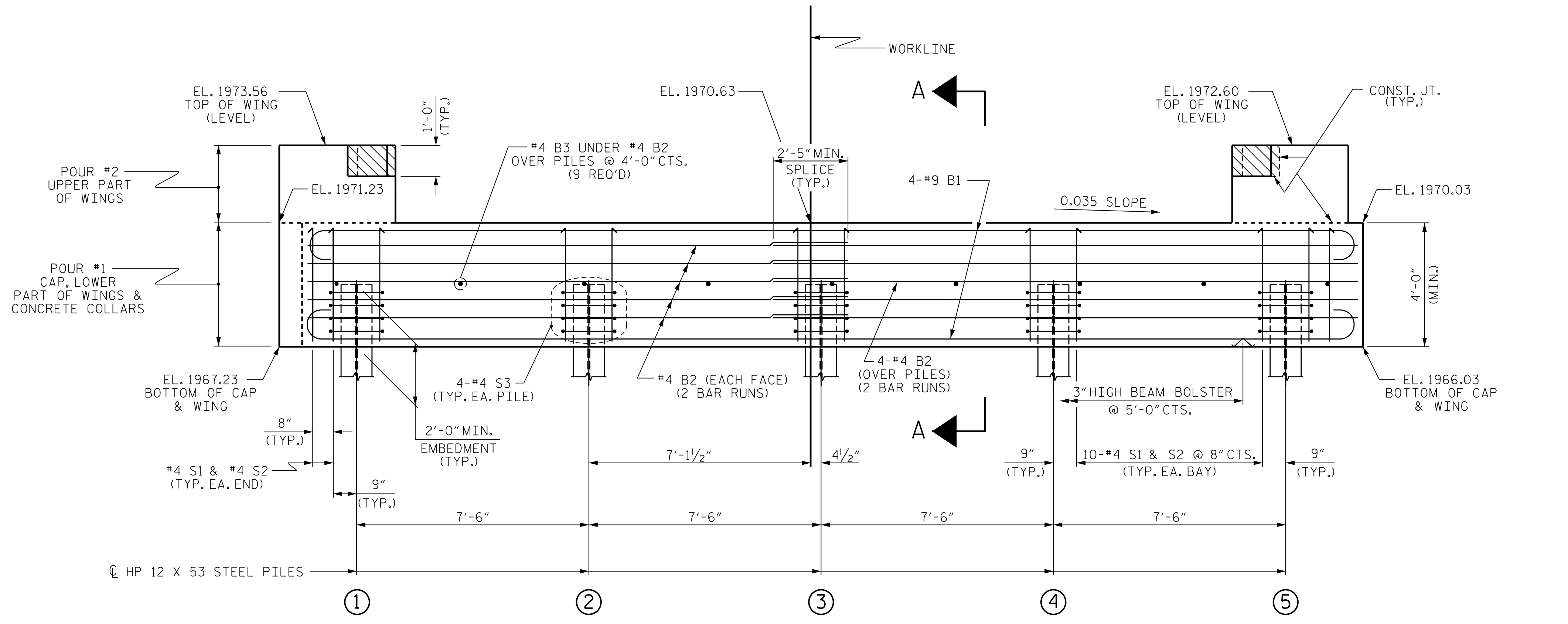
ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM

Prepared by: LOUIS BERGER 1001 Wade Avenue, Suite 400 Raleigh, NC 27605-3322 NC COA No. F-0840		REVISIONS		SHEET NO. S-8
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
TOTAL SHEETS				14

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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.

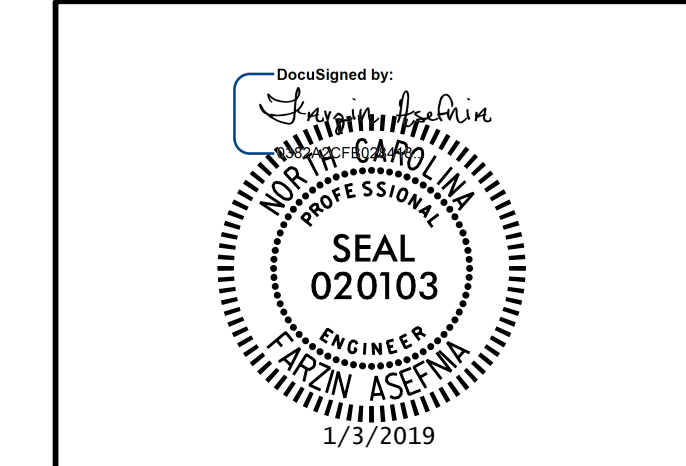
NOTES

- 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.

TOP OF PILE ELEVATIONS	
①	1965.16
②	1964.89
③	1964.63
④	1964.37
⑤	1964.11

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 1

ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

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

SHEET NO. S-9  
 TOTAL SHEETS 14



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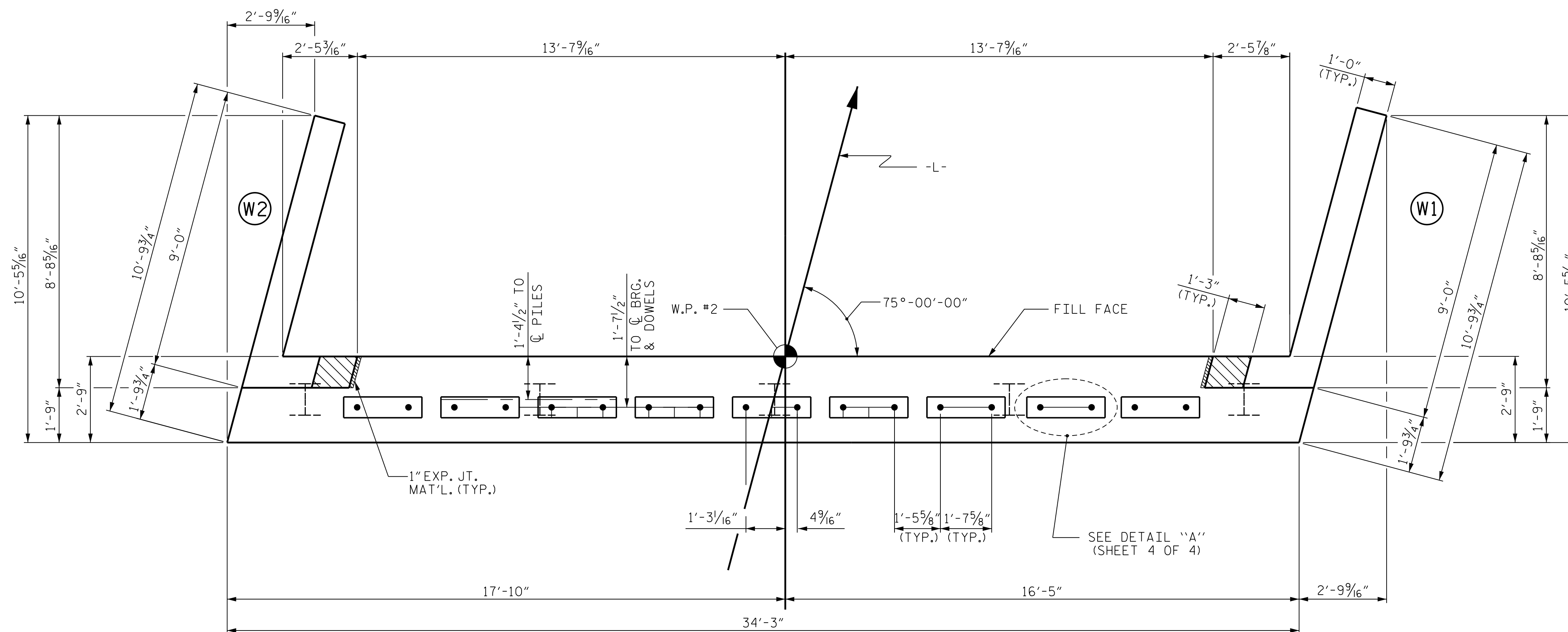
NOTES

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

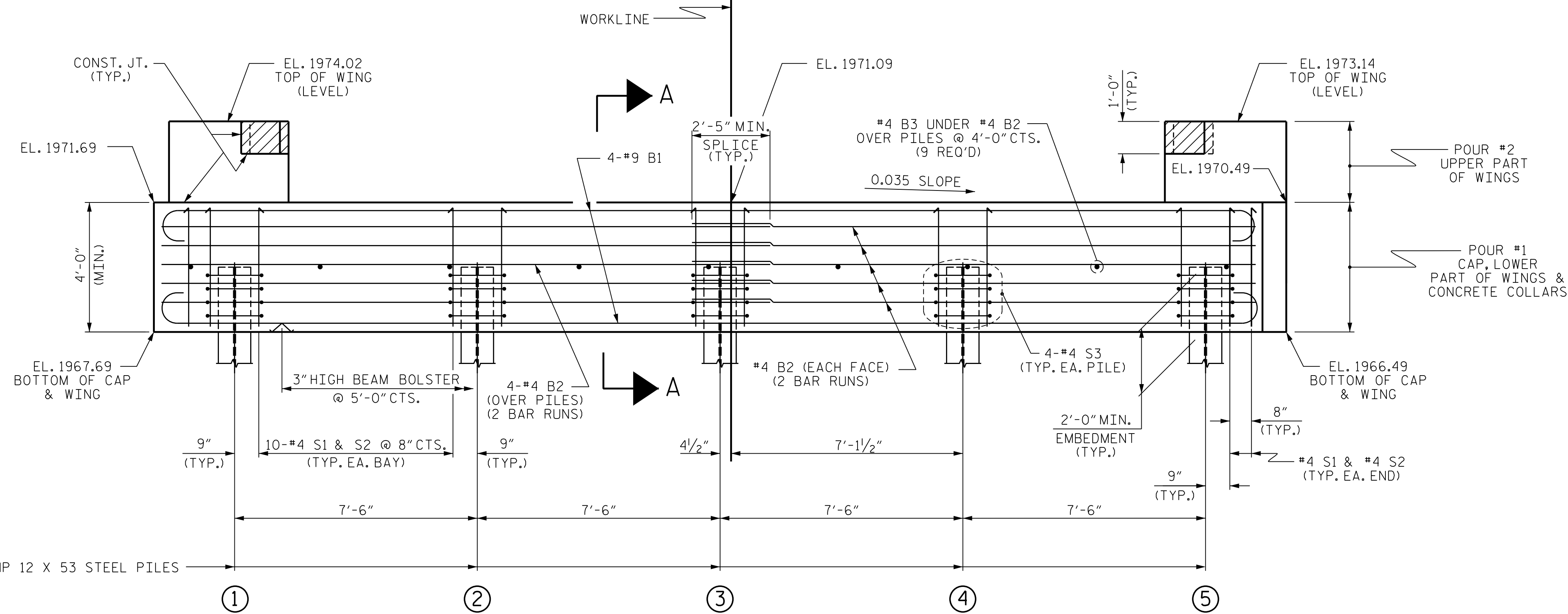
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	1969.62
②	1969.35
③	1969.09
④	1968.83
⑤	1968.57

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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SHEET 2 OF 4

Designed by: *John A. Berger*  
 PROFESSIONAL ENGINEER  
 SEAL 020103  
 ENGINEER  
 JOHN A. BERGER  
 1/3/2019

Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

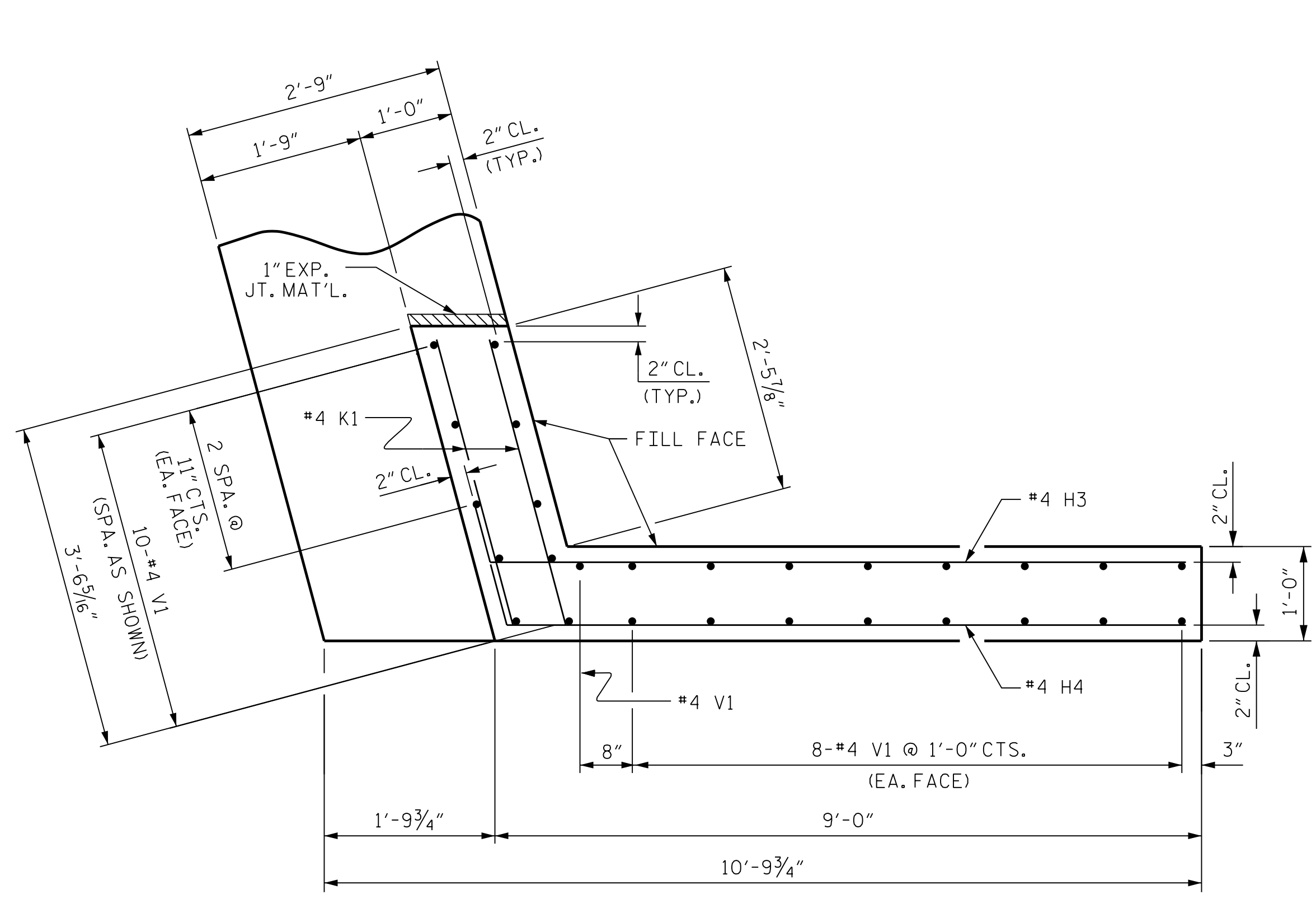
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SUBSTRUCTURE END BENT No. 2					
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S-10				
TOTAL SHEETS 14				

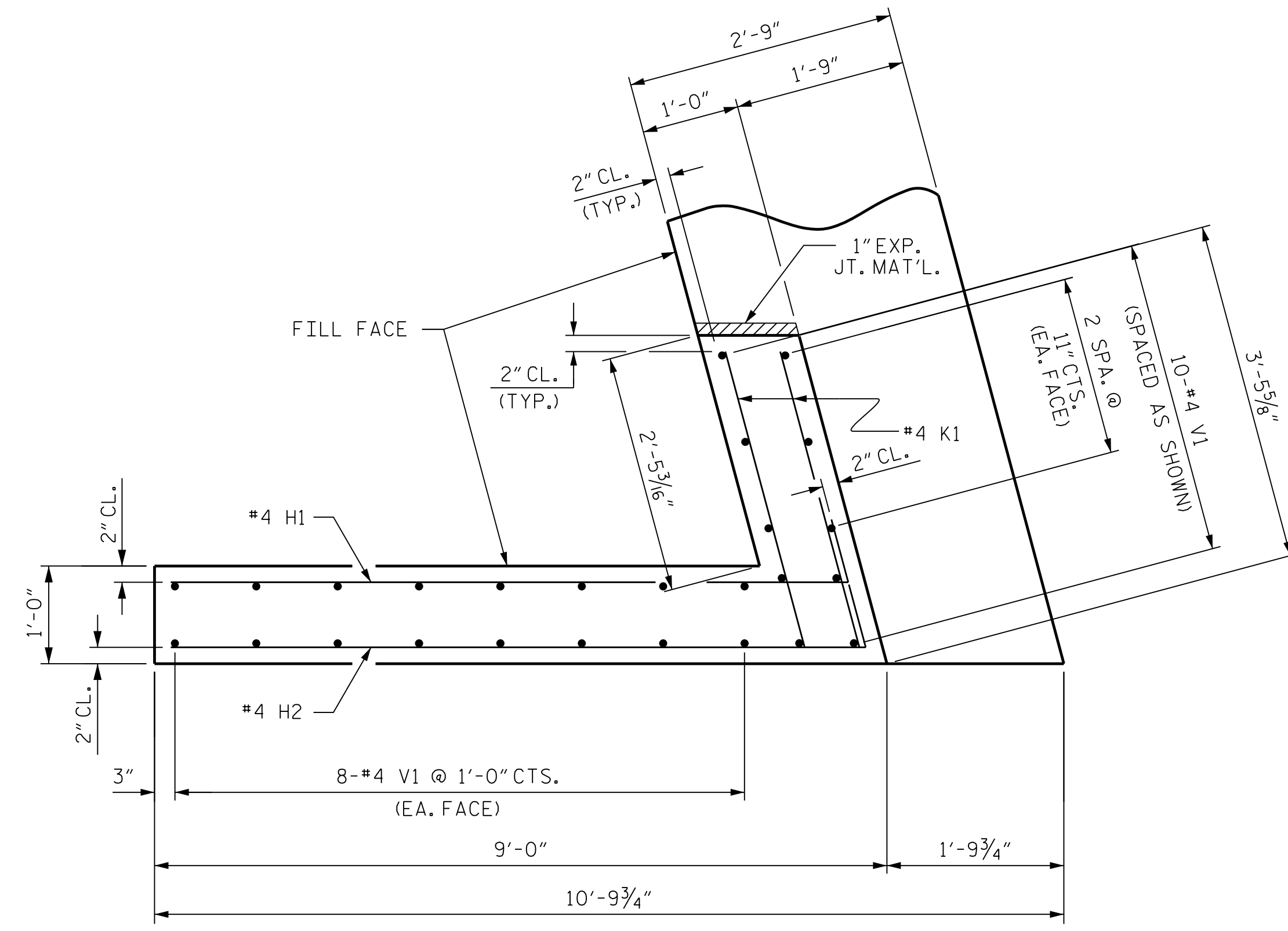
ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSE	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

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.

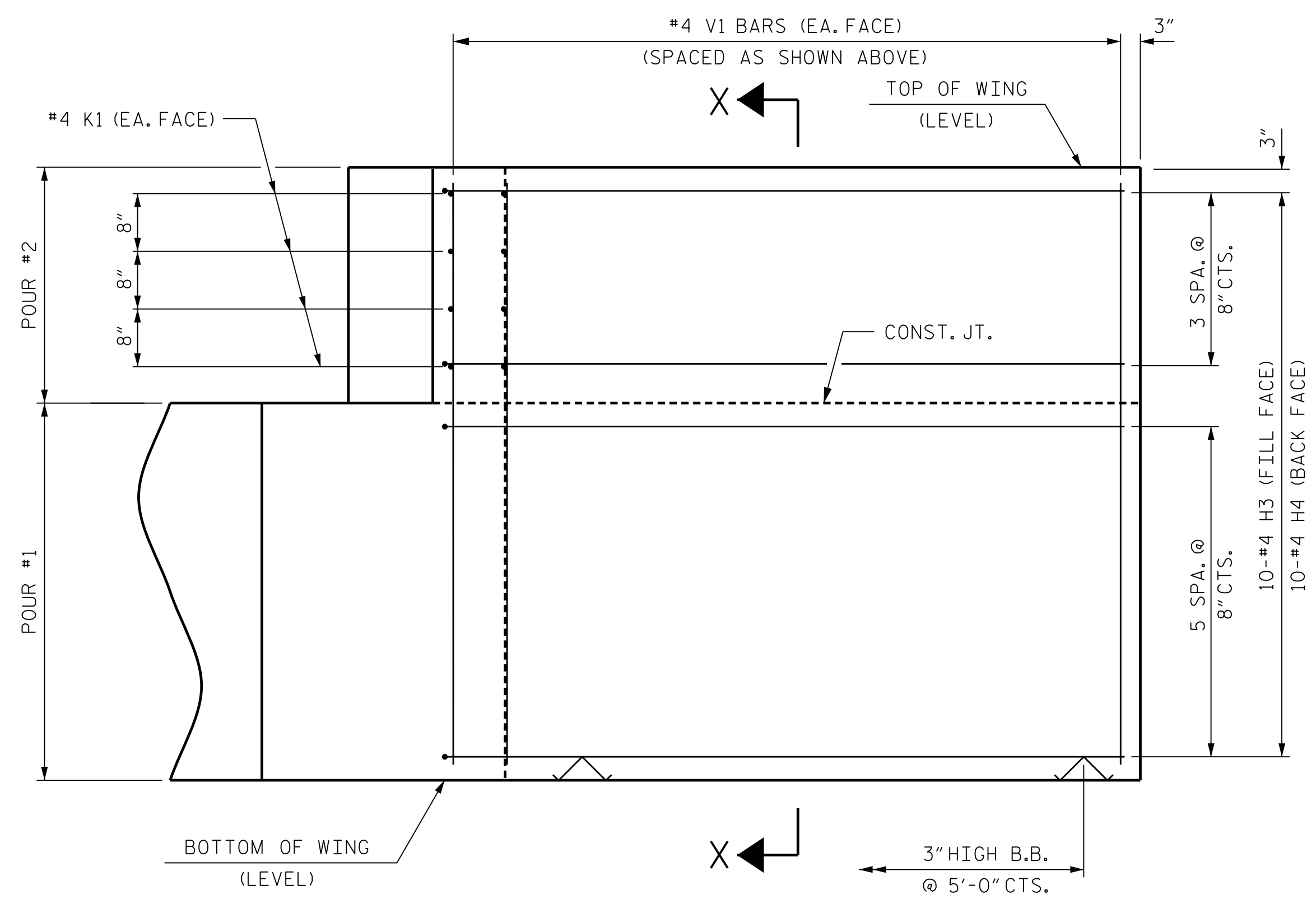
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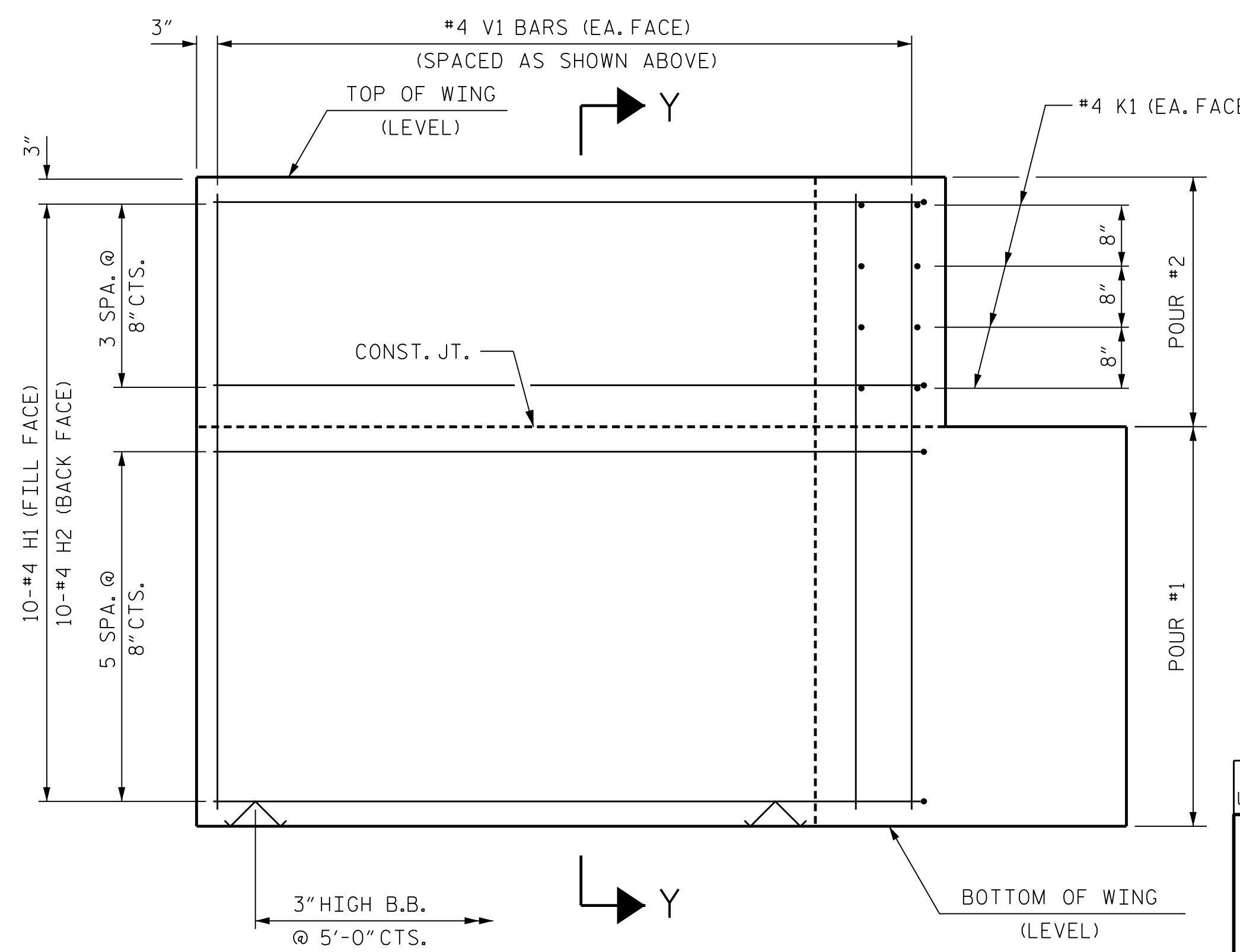
PLAN OF WING (W1)



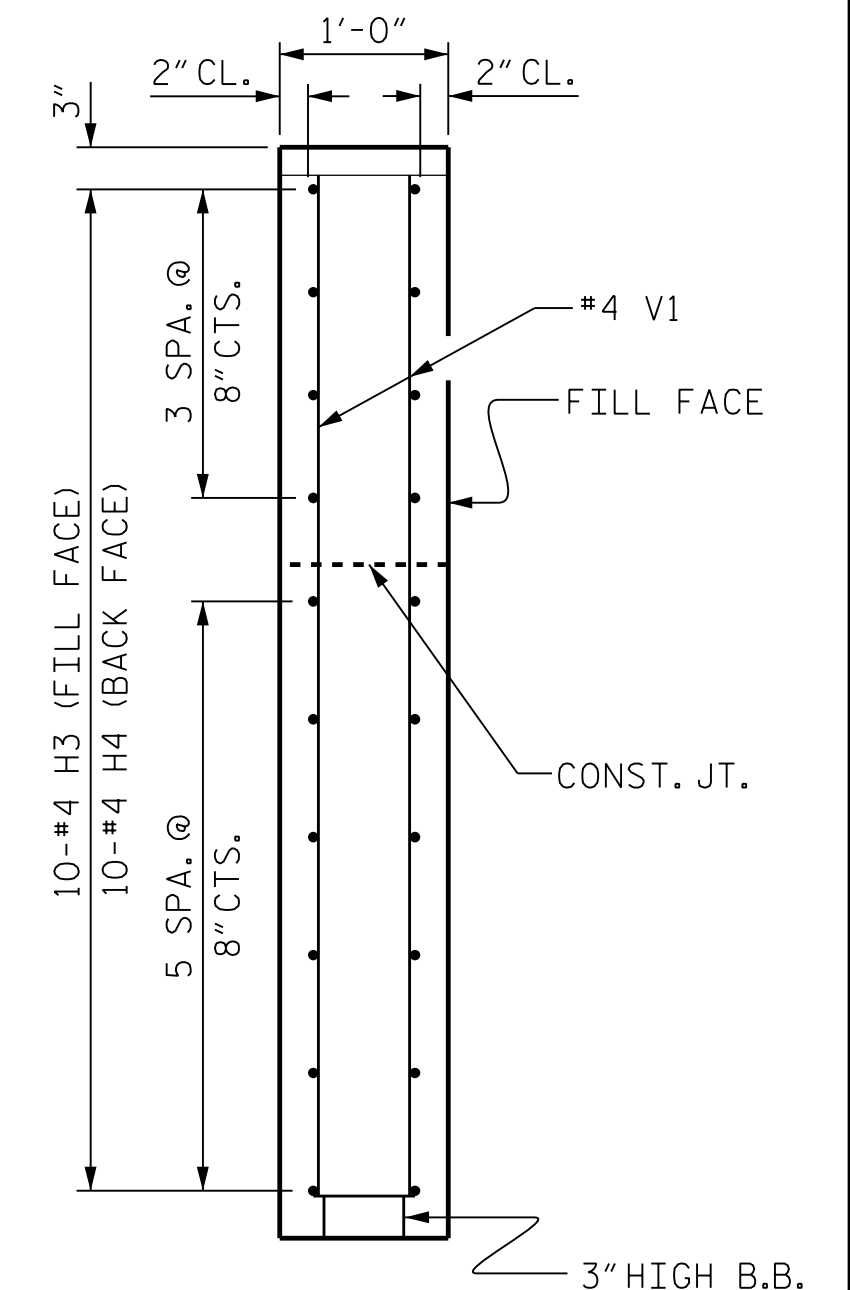
PLAN OF WING (W2)



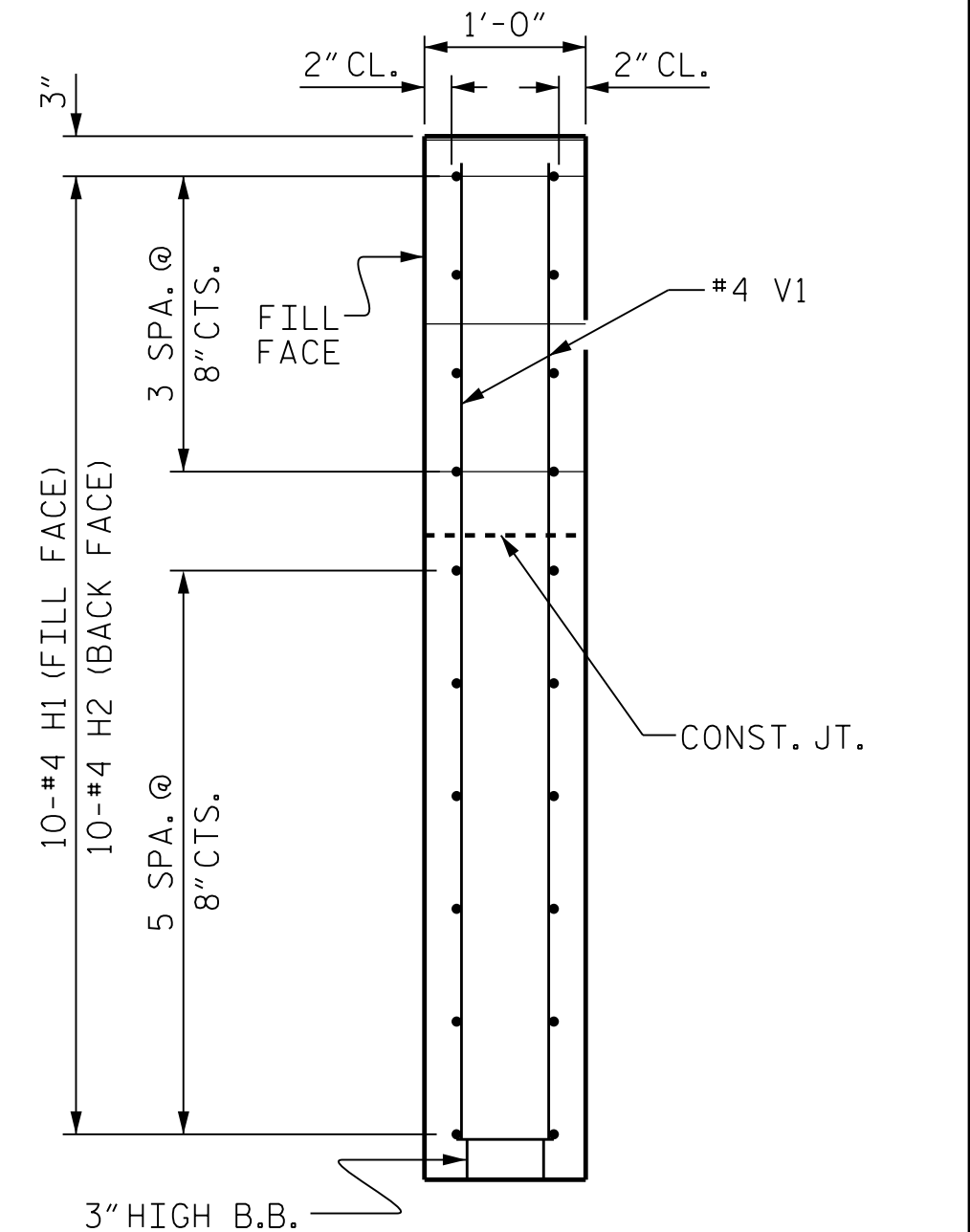
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

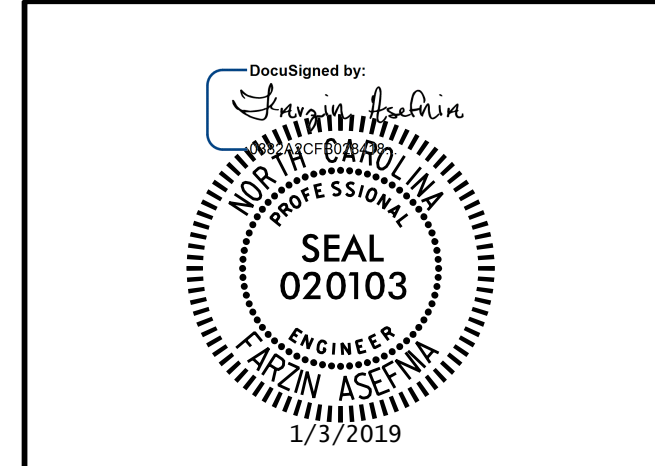


SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

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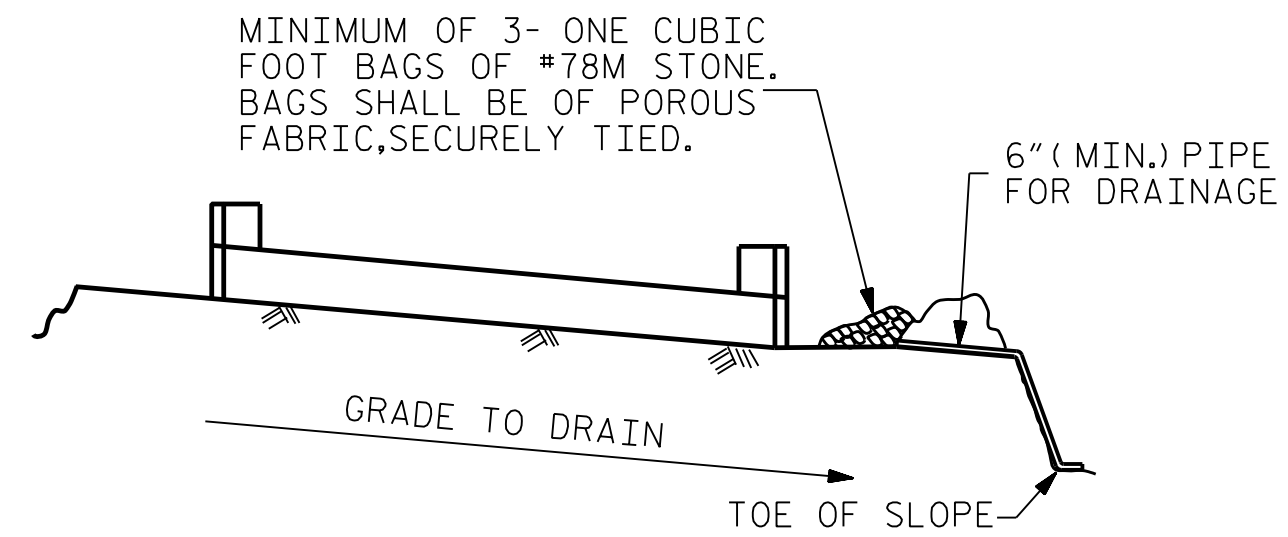


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT  
 WING DETAILS

ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
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2			4			14



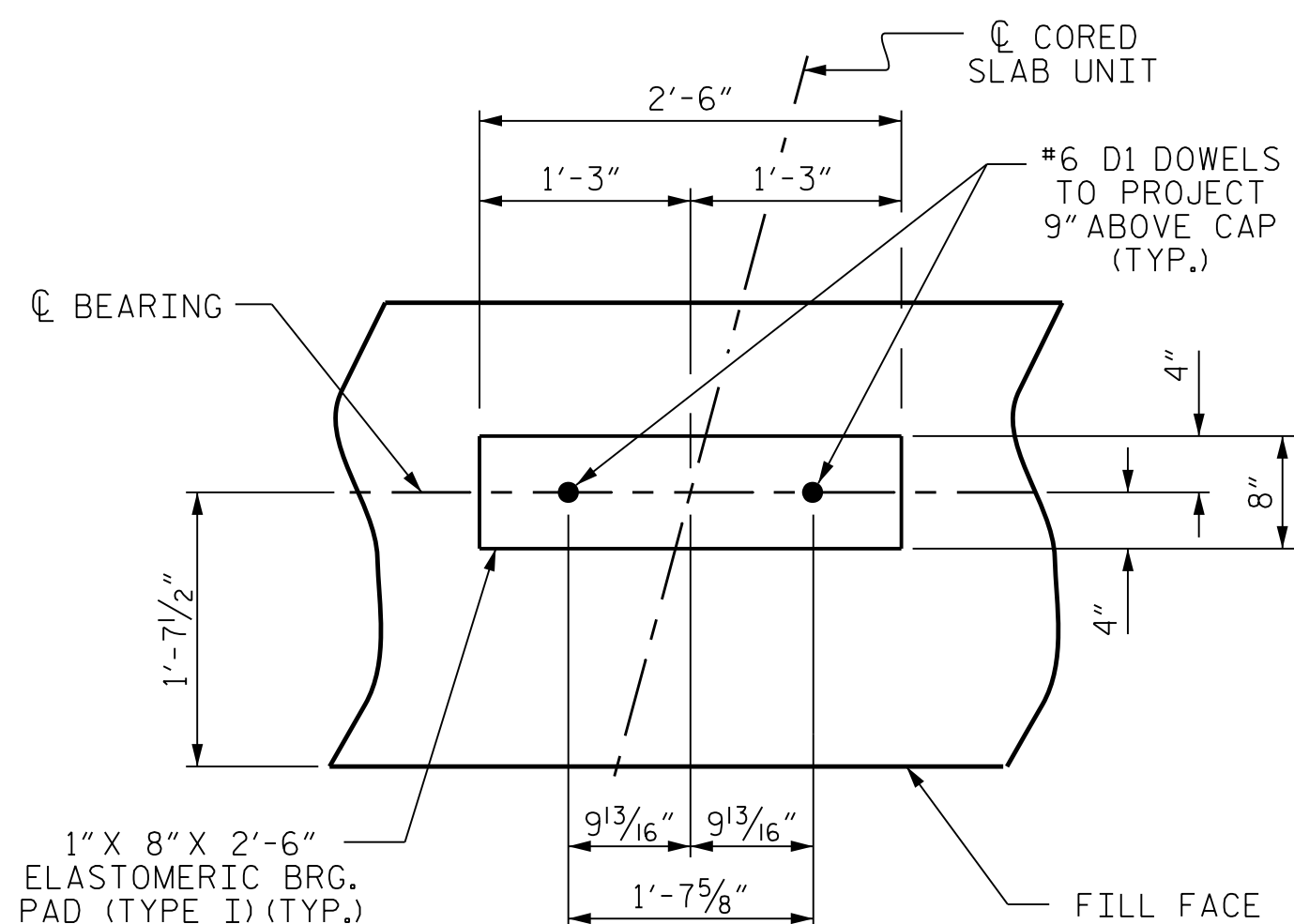


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

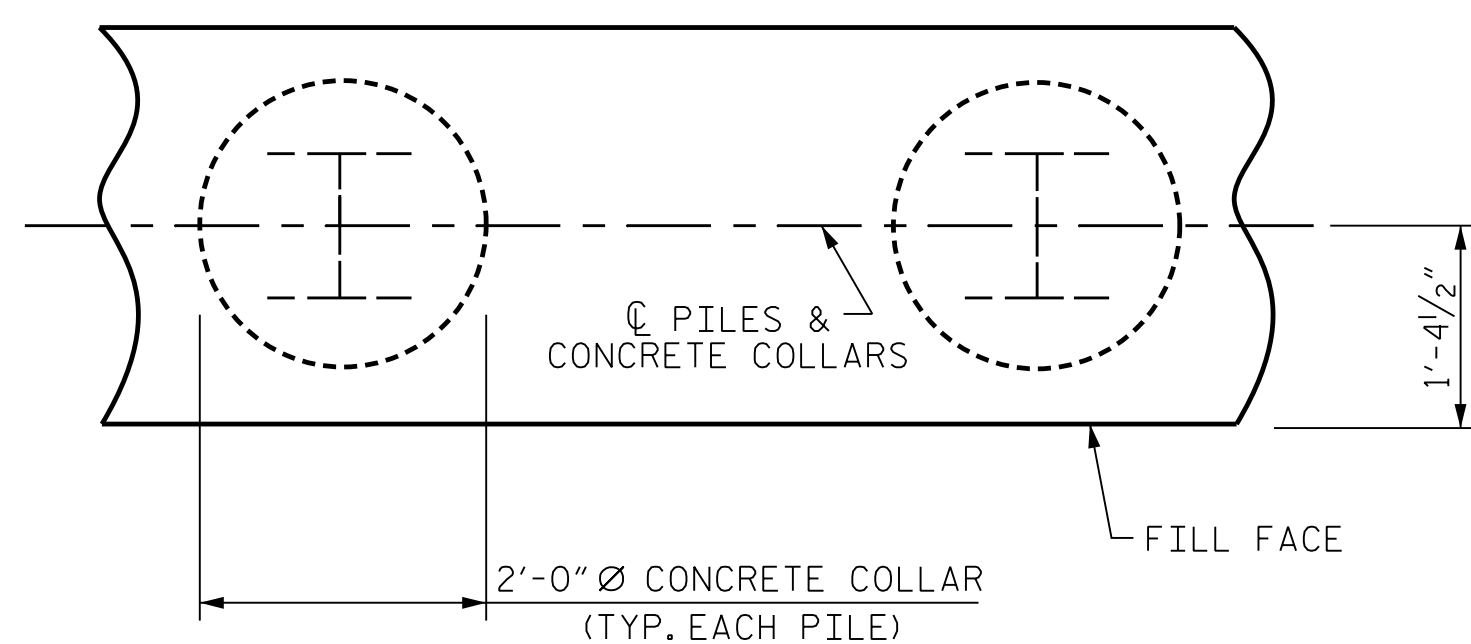
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



#### DETAIL "A"

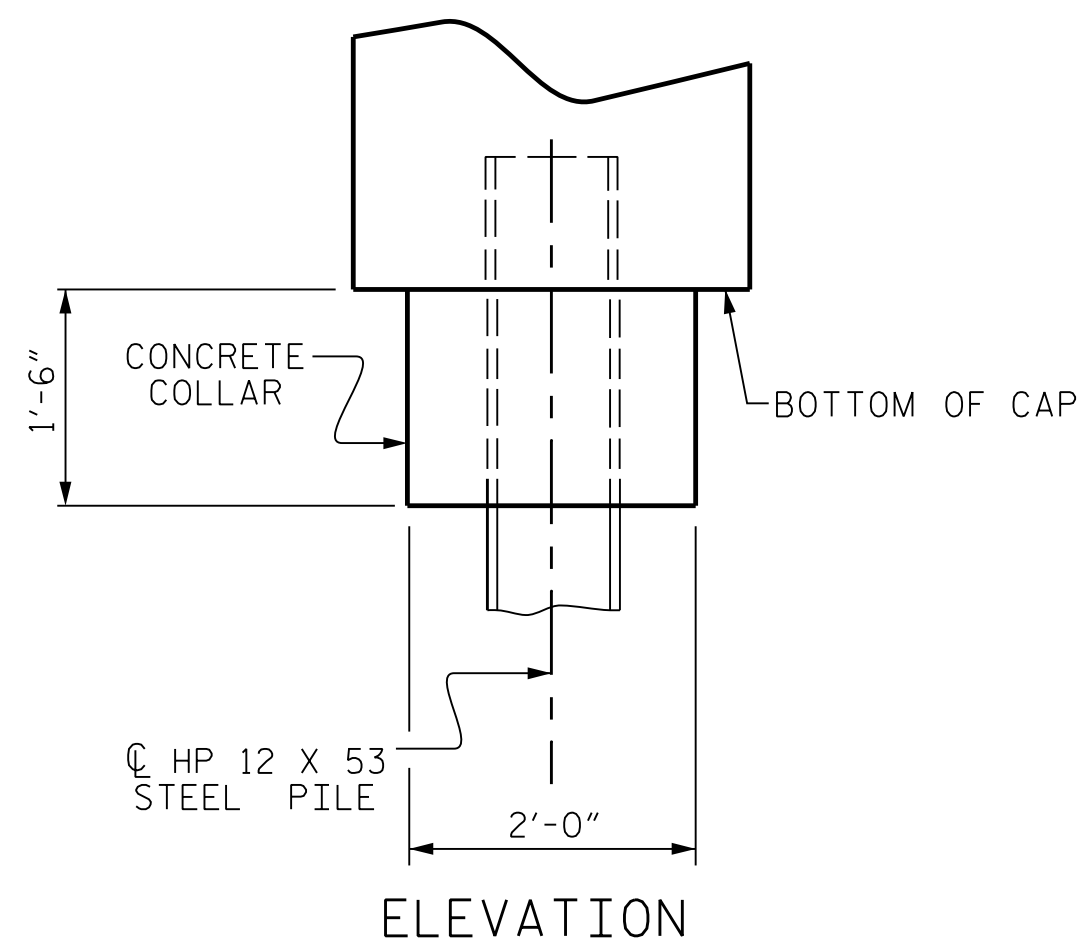
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



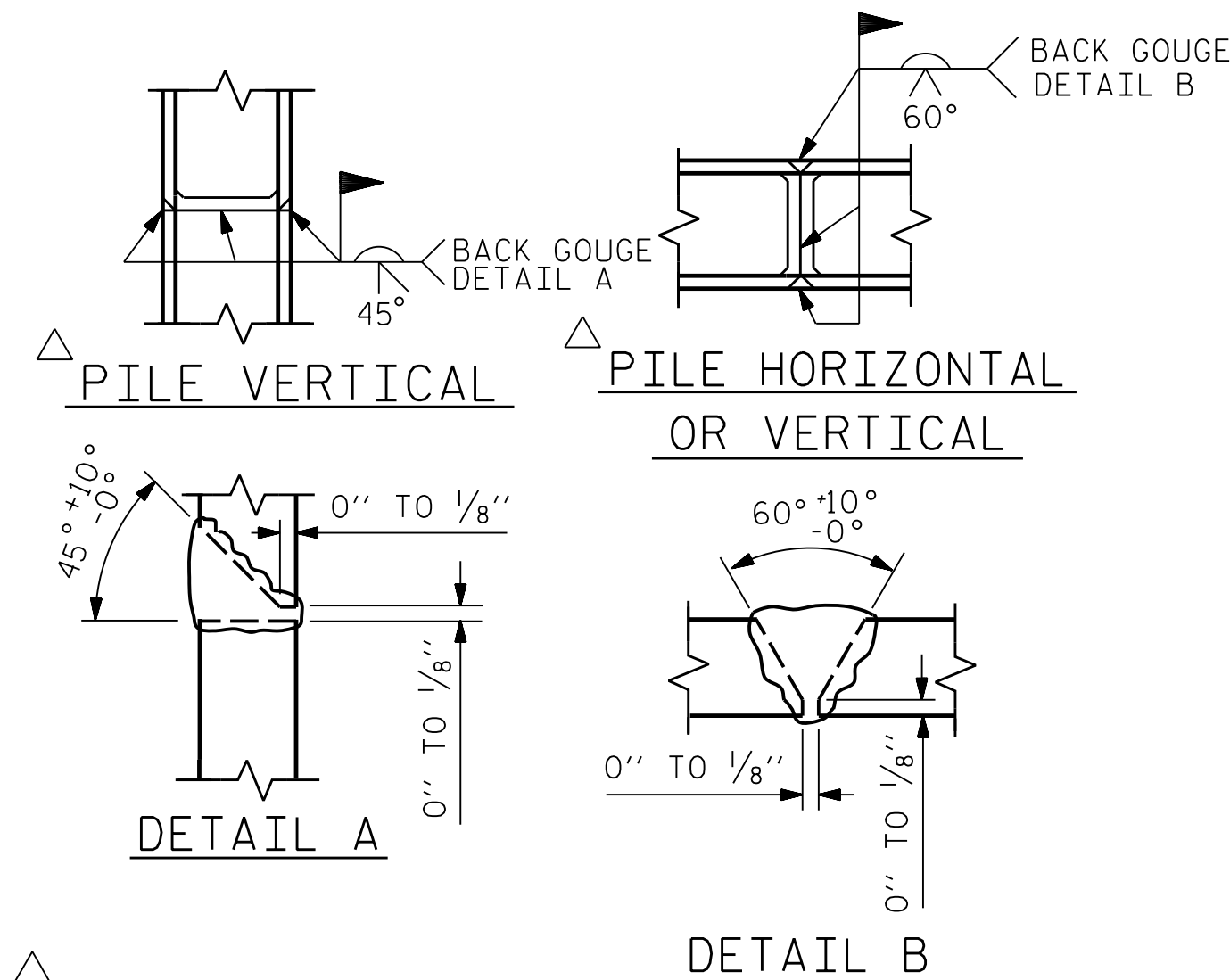
#### PLAN

### CORROSION PROTECTION FOR STEEL PILES DETAIL

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



#### ELEVATION

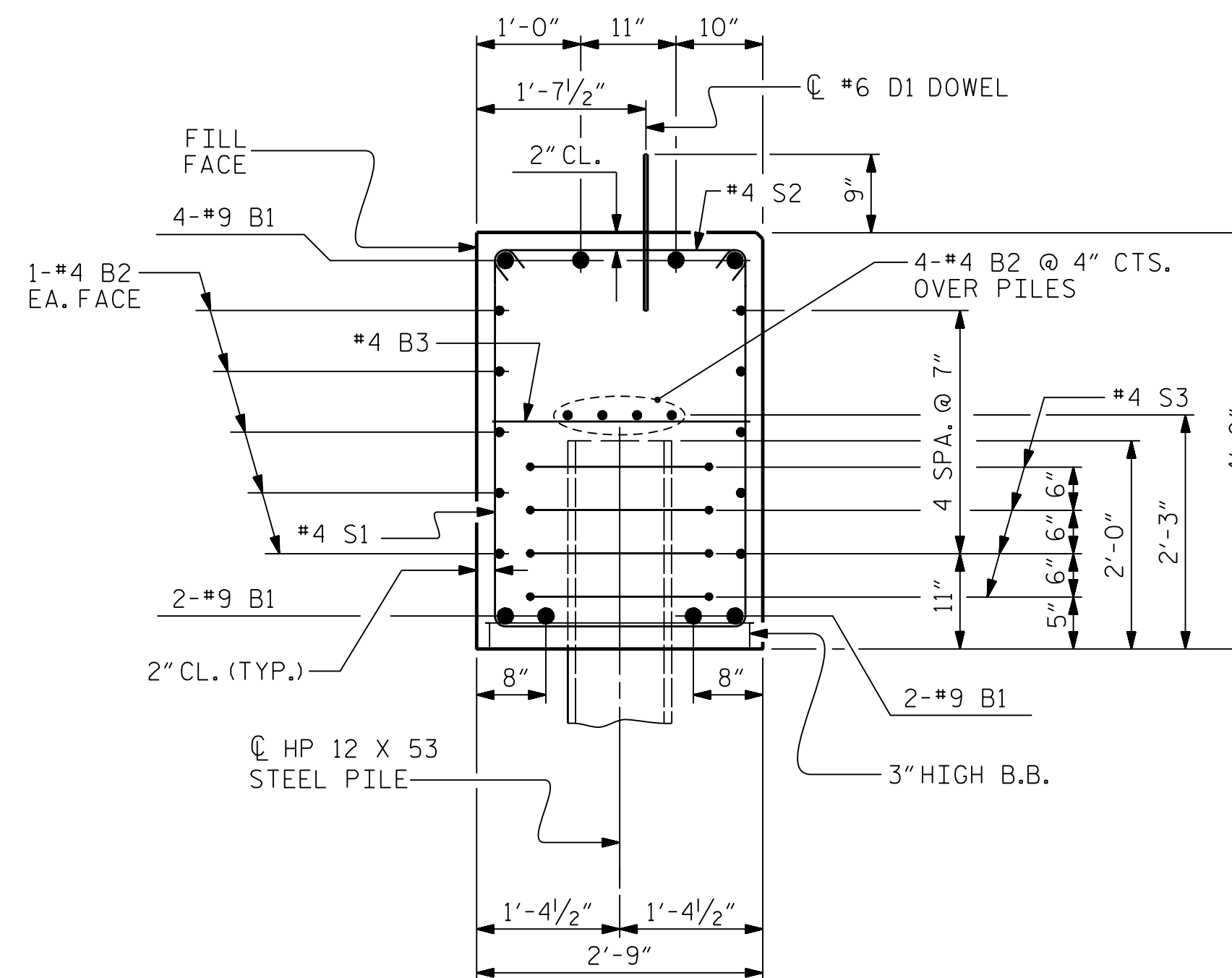


### PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.

BAR TYPES					BILL OF MATERIAL				
FOR ONE END BENT									
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT					
B1	#9		36'-3"	986					
B2	#4	STR	18'-2"	340					
B3	#4	STR	2'-5"	15					
D1	#6	STR	1'-6"	41					
H1	#4	2	9'-1"	61					
H2	#4	2	9'-3"	62					
H3	#4	3	9'-6"	63					
H4	#4	3	9'-4"	62					
K1	#4	STR	3'-1"	33					
S1	#4	4	10'-5"	306					
S2	#4	5	3'-2"	93					
S3	#4	6	6'-6"	87					
V1	#4	STR	6'-2"	218					
REINFORCING STEEL (FOR ONE END BENT)				2367 LBS.					
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)									
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				17.2 C.Y.					
POUR #2 UPPER PART OF WINGS				2.1 C.Y.					
TOTAL CLASS A CONCRETE				19.3 C.Y.					

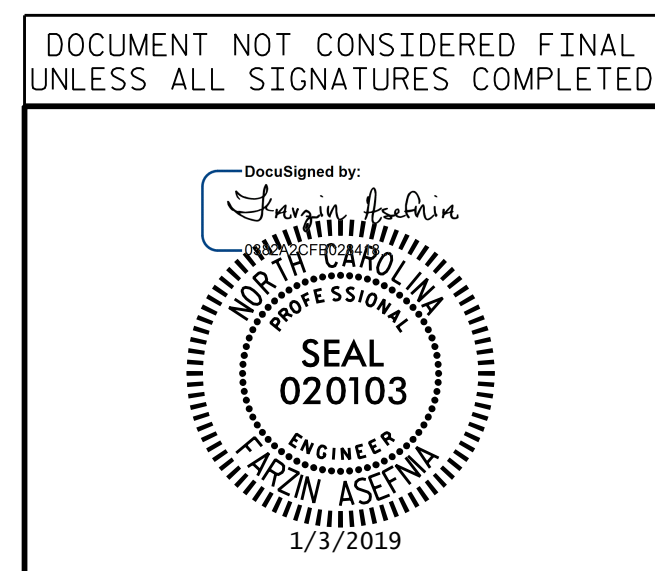
END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5	NO: 5
LIN. FT.= 100	LIN. FT.= 90



#### SECTION A-A

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

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

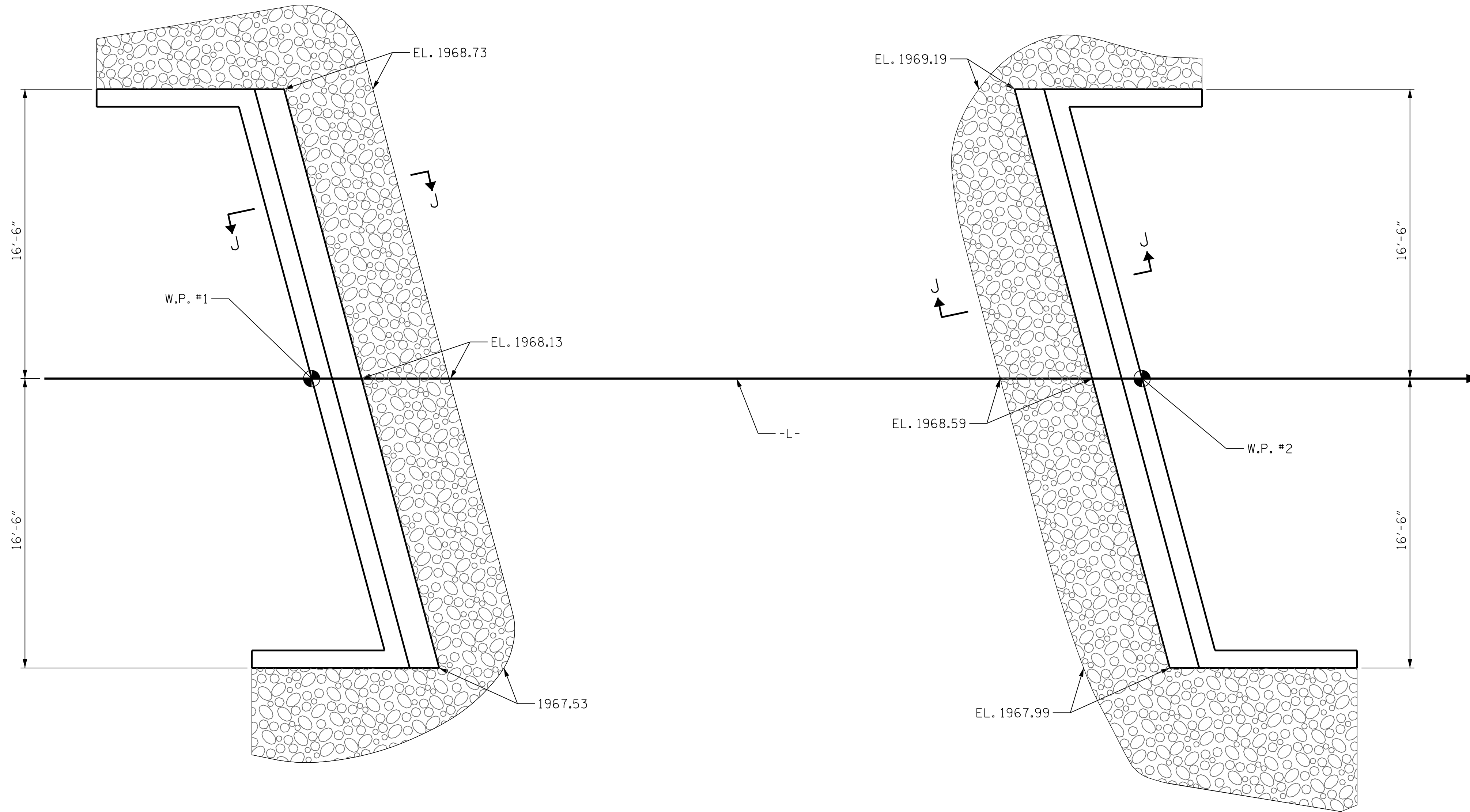


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 1 & 2  
 DETAILS

ASSEMBLED BY : M. HOGAN	DATE : 5/14
CHECKED BY : P. HOLSHOUSER	DATE : 5/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

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

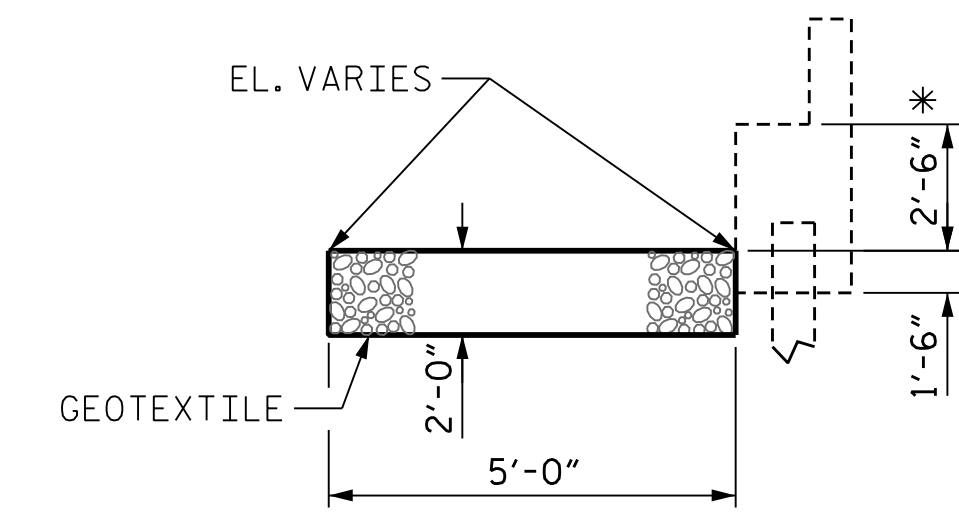
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RIP RAP @ EB1

RIP RAP @ EB2

\* PER BRIDGE SURVEY & HYDRAULIC DESIGN REPORT



SECTION J-J

ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+35.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	82	63
END BENT 2	85	66

PROJECT NO. 17BP.14.R.113  
MACON COUNTY  
 STATION: 11+35.00 -L-

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
== RIP RAP DETAILS ==

ASSEMBLED BY : M. HOGAN	DATE : 05/14
CHECKED BY : P. HOLSHOUSER	DATE : 05/14
DESIGN ENGINEER OF RECORD : F. ASEFNIA	DATE : 11/18
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/GM

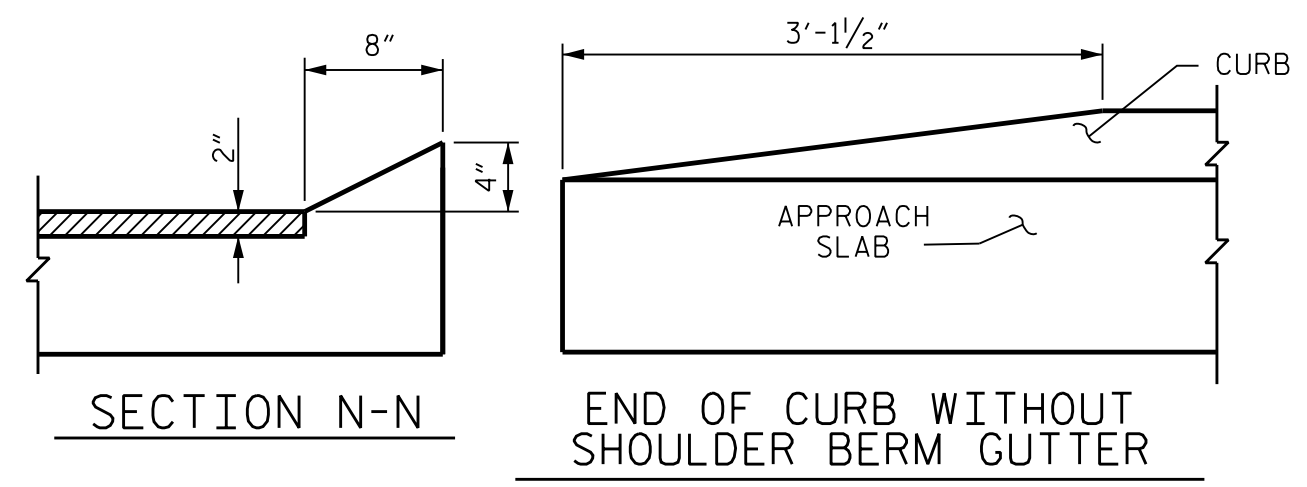
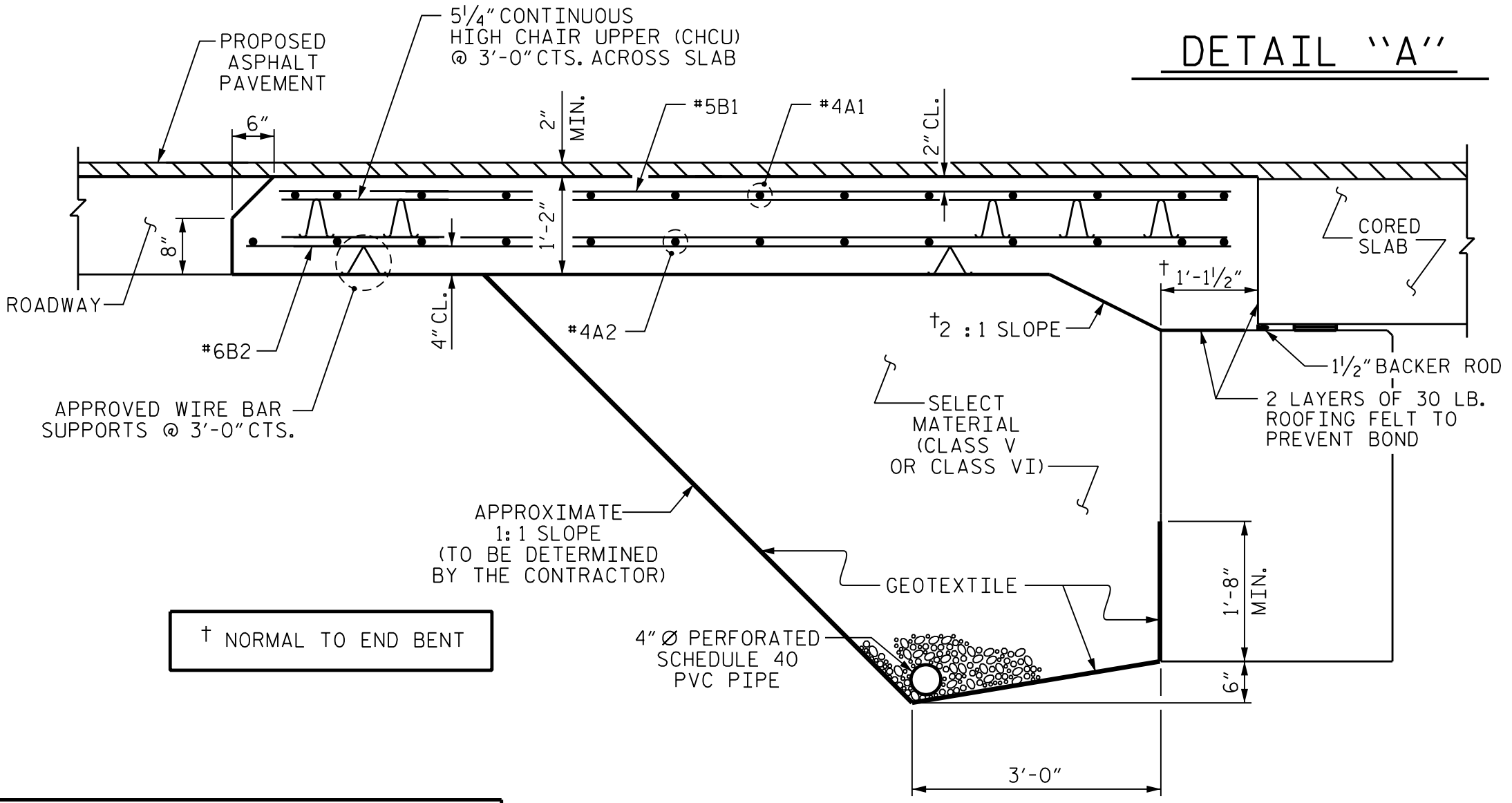
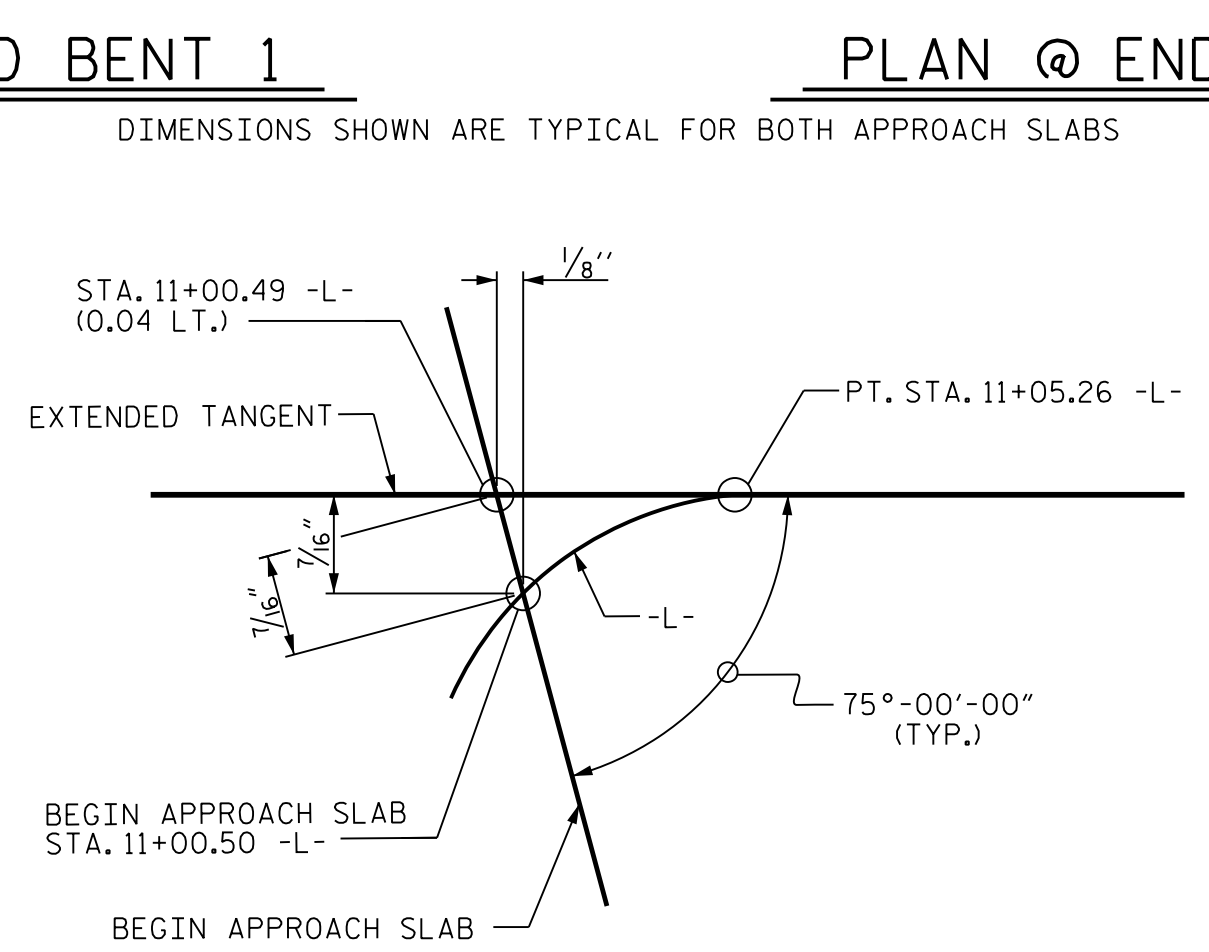
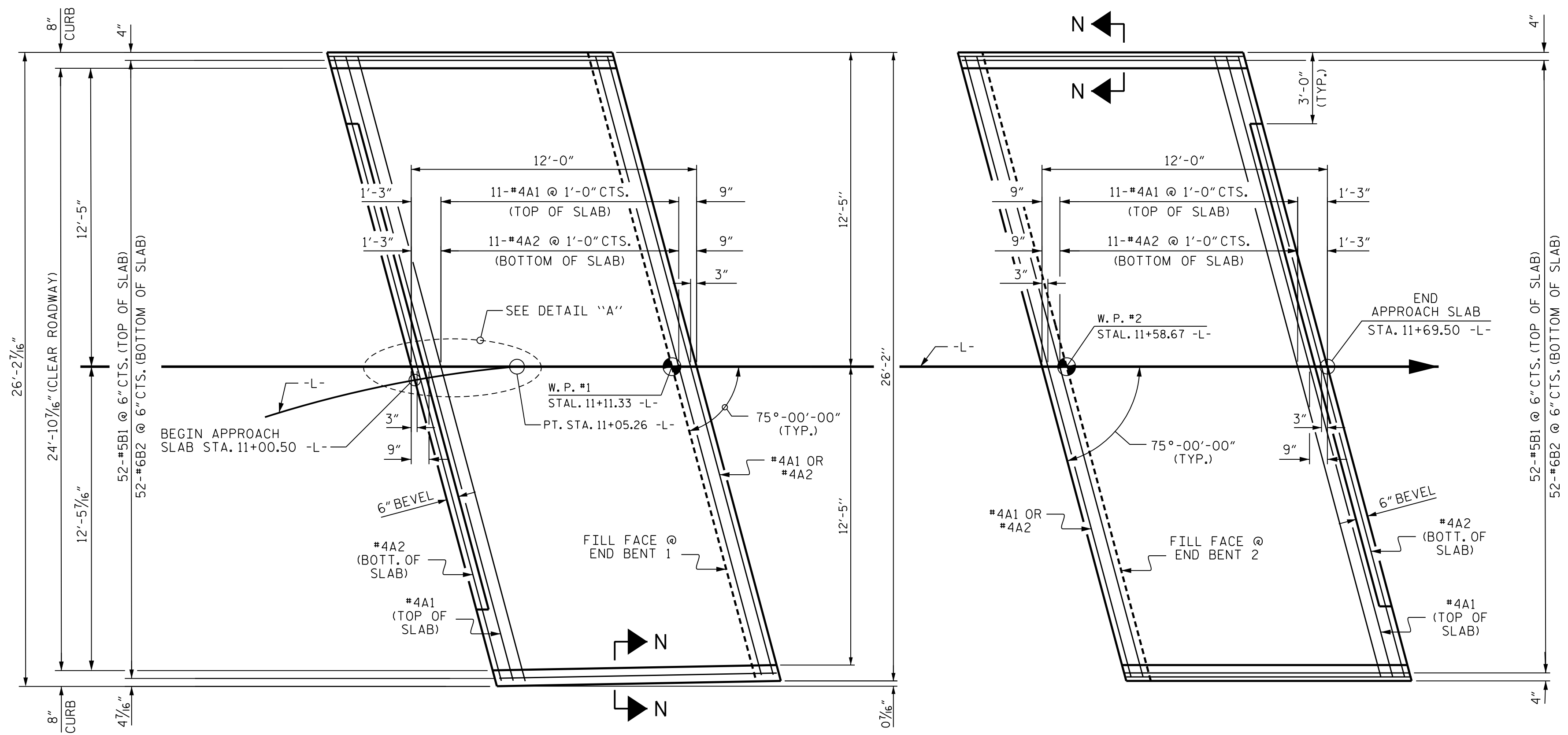
Prepared by:  
 LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			14

STD. NO. RR1



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**SPLICE LENGTHS**

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

**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

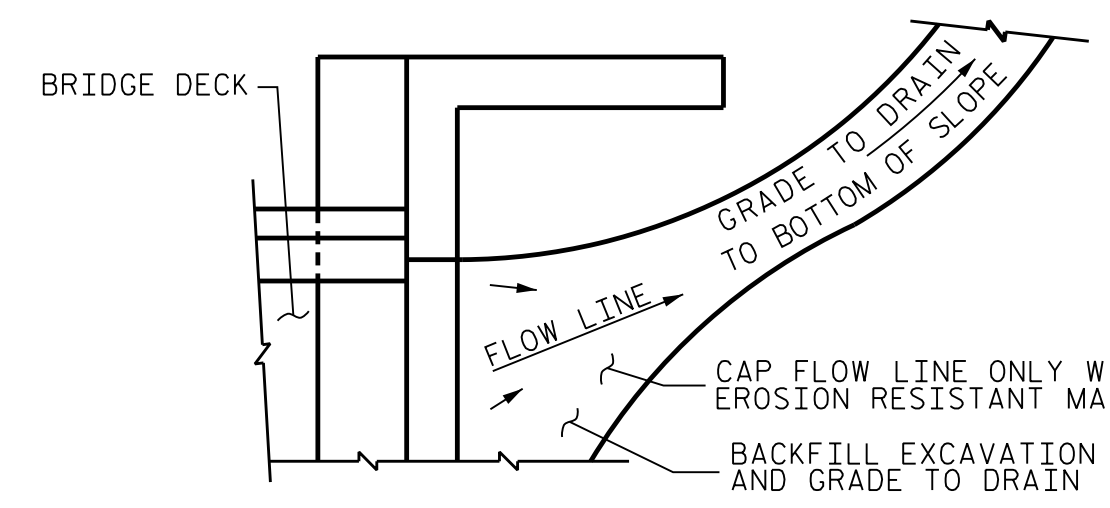
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

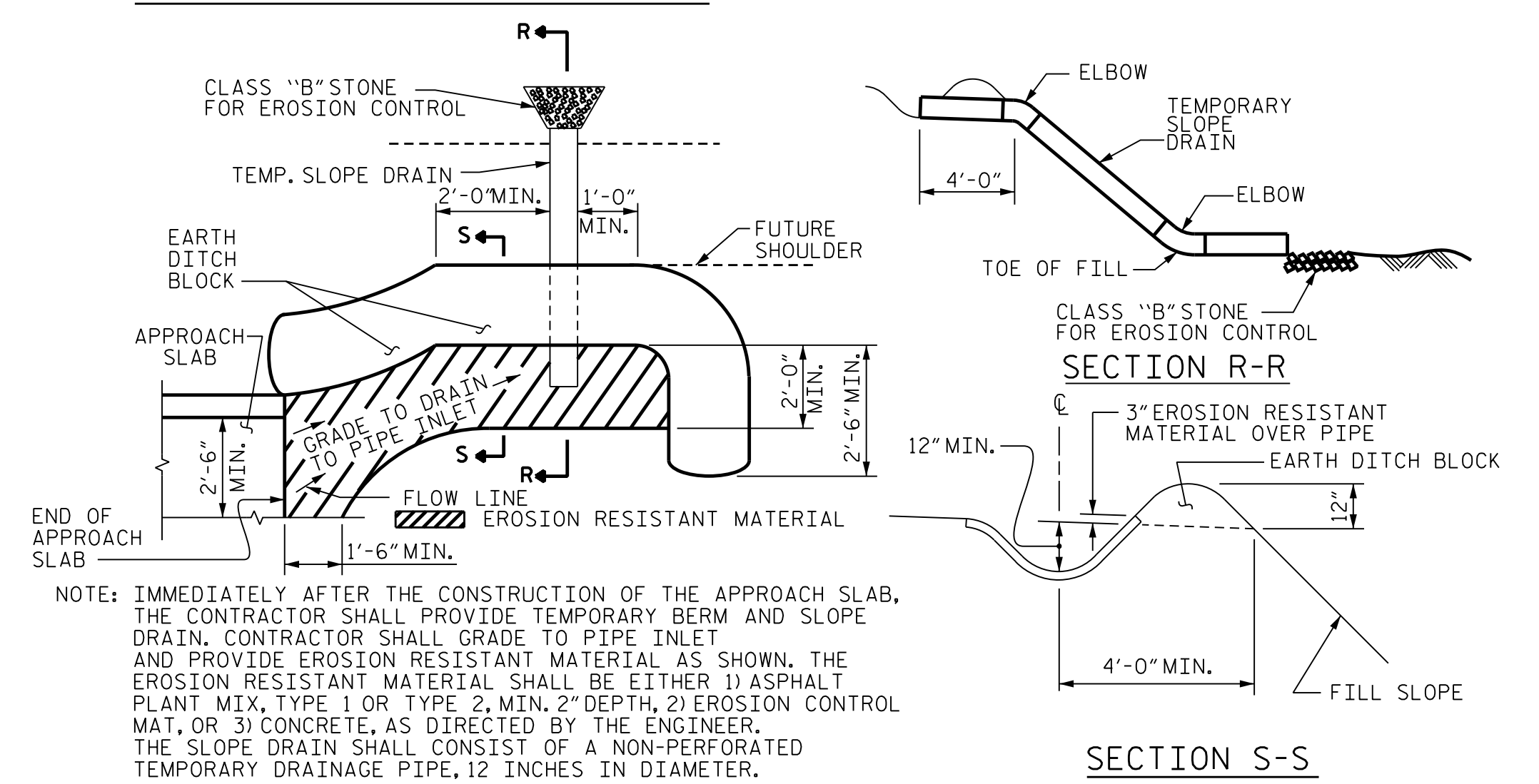
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.



**BILL OF MATERIAL**

**APPROACH SLAB AT EB #1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	26'-8"	232
A2	13	#4	STR	26'-8"	232
*B1	52	#5	STR	11'-1"	601
B2	52	#6	STR	11'-7"	905
REINFORCING STEEL				LBS.	1137
*EPOXY COATED REINFORCING STEEL				LBS.	833
CLASS AA CONCRETE				C. Y.	15.2

**APPROACH SLAB AT EB #2**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	26'-8"	232
A2	13	#4	STR	26'-8"	232
*B1	52	#5	STR	11'-1"	601
B2	52	#6	STR	11'-7"	905
REINFORCING STEEL				LBS.	1137
*EPOXY COATED REINFORCING STEEL				LBS.	833
CLASS AA CONCRETE				C. Y.	15.2

ASSEMBLED BY : R. KNIGHT DATE : 05/14  
 CHECKED BY : P. HOLSHOUSER DATE : 05/14  
 DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 11/18  
 DRAWN BY : SHS/MAA 5-09  
 CHECKED BY : BCH 5-09  
 REV. 12-17 MAA/AAC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Designed by: *Franklin*  
 PROFESSIONAL ENGINEER  
 SEAL 020103  
 1/3/2019

Prepared by: LOUIS BERGER  
 1001 Wade Avenue, Suite 400  
 Raleigh, NC 27605-3322  
 NC COA No. F-0840

PROJECT NO. 17BP.14.R.113  
 MACON COUNTY  
 STATION: 11+35.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)  
 75° SKEW

REVISIONS

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

SHEET NO. S-14  
 TOTAL SHEETS 14

## 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 2018 "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  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " 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  $\frac{1}{4}$ " 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  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  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  $\frac{5}{16}$ " 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  $\frac{1}{16}$ " 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