


- 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 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.
 - THE ELEVATION AND CLEARANCE SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
 - REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 - NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
 - FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
 - FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL															
	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		5,212	6,572		LUMP SUM		5	520.00				208.33		LUMP SUM	
END BENT No. 1				42.5		6,186			9	9	540	9	325		
END BENT No. 2				42.3		6,160			9	9	675	9	265		
TOTAL	1	5,212	6,572	84.8	LUMP SUM	12,346	5	520.00	18	18	1,215	18	590	LUMP SUM	

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 3 OF 3

ENGINEER OF RECORD:
3/26/2019



Discussed by:
Gregory M. Gilland
ETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LEFT LANE BRIDGE ON
 US 158 OVER US 301
 BETWEEN NC 46 & SR 1311

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-3
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

DOCUMENT NOT CONSIDERED FINAL
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LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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			
						LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ_{LL})	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 (INVENTORY)	N/A	①	1.07	--	1.75	0.890	1.28	A	E	51.290	0.990	1.14	A	I	72.090	0.80	0.890	1.07	A	E	51.290		
	HL-93 (OPERATING)	N/A		1.66	--	1.35	0.890	1.66	A	E	51.290	0.990	1.76	A	I	82.490	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.50	54.000	1.75	0.890	1.80	A	E	51.290	0.990	1.78	A	I	82.490	0.80	0.890	1.50	A	E	51.290		
	HS-20 (OPERATING)	36.000		2.34	84.240	1.35	0.890	2.34	A	E	51.290	0.990	2.35	A	I	82.490	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.58	48.330	1.40	0.890	5.37	A	E	51.290	0.990	5.72	A	I	82.490	0.80	0.890	3.58	A	E	51.290	
		SNGARBS2	20.000		2.58	51.600	1.40	0.890	3.88	A	E	51.290	0.990	3.98	A	I	82.490	0.80	0.890	2.58	A	E	51.290	
		SNAGRIS2	22.000		2.41	53.020	1.40	0.890	3.62	A	E	51.290	0.990	3.66	A	I	82.490	0.80	0.890	2.41	A	E	51.290	
		SNCOTTS3	27.250		1.78	48.505	1.40	0.890	2.67	A	E	51.290	0.990	2.78	A	I	82.490	0.80	0.890	1.78	A	E	51.290	
		SNAGGRS4	34.925		1.45	50.641	1.40	0.890	2.18	A	E	51.290	0.990	2.25	A	I	82.490	0.80	0.890	1.45	A	E	51.290	
		SNS5A	35.550		1.42	50.481	1.40	0.890	2.14	A	E	51.290	0.990	2.26	A	I	82.490	0.80	0.890	1.42	A	E	51.290	
		SNS6A	39.950		1.29	51.536	1.40	0.890	1.94	A	E	51.290	0.990	2.04	A	I	82.490	0.80	0.890	1.29	A	E	51.290	
		SNS7B	42.000		1.23	51.660	1.40	0.890	1.85	A	E	51.290	0.990	1.98	A	I	82.490	0.80	0.890	1.23	A	E	51.290	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.57	51.810	1.40	0.890	2.36	A	E	51.290	0.990	2.46	A	I	82.490	0.80	0.890	1.57	A	E	51.290	
		TNT4A	33.075		1.58	52.259	1.40	0.890	2.37	A	E	51.290	0.990	2.41	A	I	82.490	0.80	0.890	1.58	A	E	51.290	
		TNT6A	41.600		1.28	53.248	1.40	0.890	1.92	A	E	51.290	0.990	2.09	A	I	82.490	0.80	0.890	1.28	A	E	51.290	
		TNT7A	42.000		1.28	53.760	1.40	0.890	1.92	A	E	51.290	0.990	2.05	A	I	82.490	0.80	0.890	1.28	A	E	51.290	
		TNT7B	42.000		1.31	55.020	1.40	0.890	1.96	A	E	51.290	0.990	1.94	A	I	82.490	0.80	0.890	1.31	A	E	51.290	
		TNAGRIT4	43.000		1.25	53.750	1.40	0.890	1.88	A	E	51.290	0.990	1.88	A	I	82.490	0.80	0.890	1.25	A	E	51.290	
TNAGT5A	45.000		1.19	53.550	1.40	0.890	1.78	A	E	51.290	0.990	1.85	A	I	82.490	0.80	0.890	1.19	A	E	51.290			
TNAGT5B	45.000		③	1.18	53.100	1.40	0.890	1.77	A	E	51.290	0.990	1.79	A	I	82.490	0.80	0.890	1.18	A	E	51.290		

NOTES:

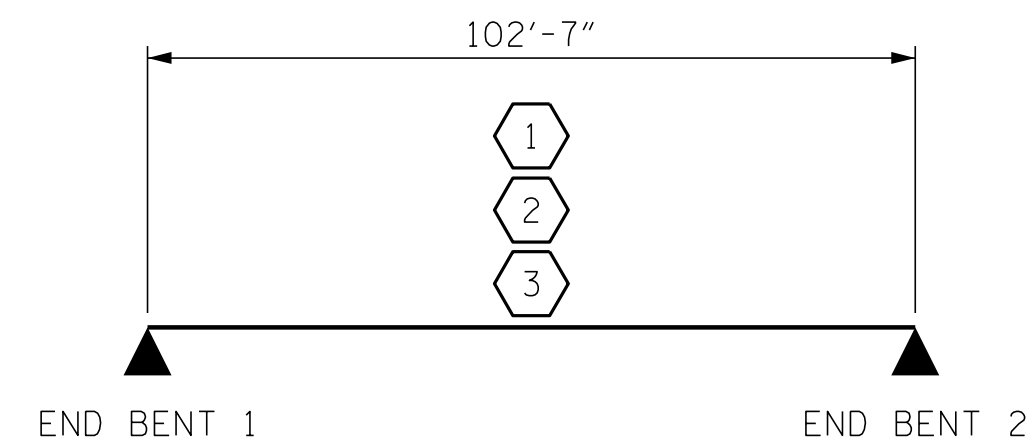
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

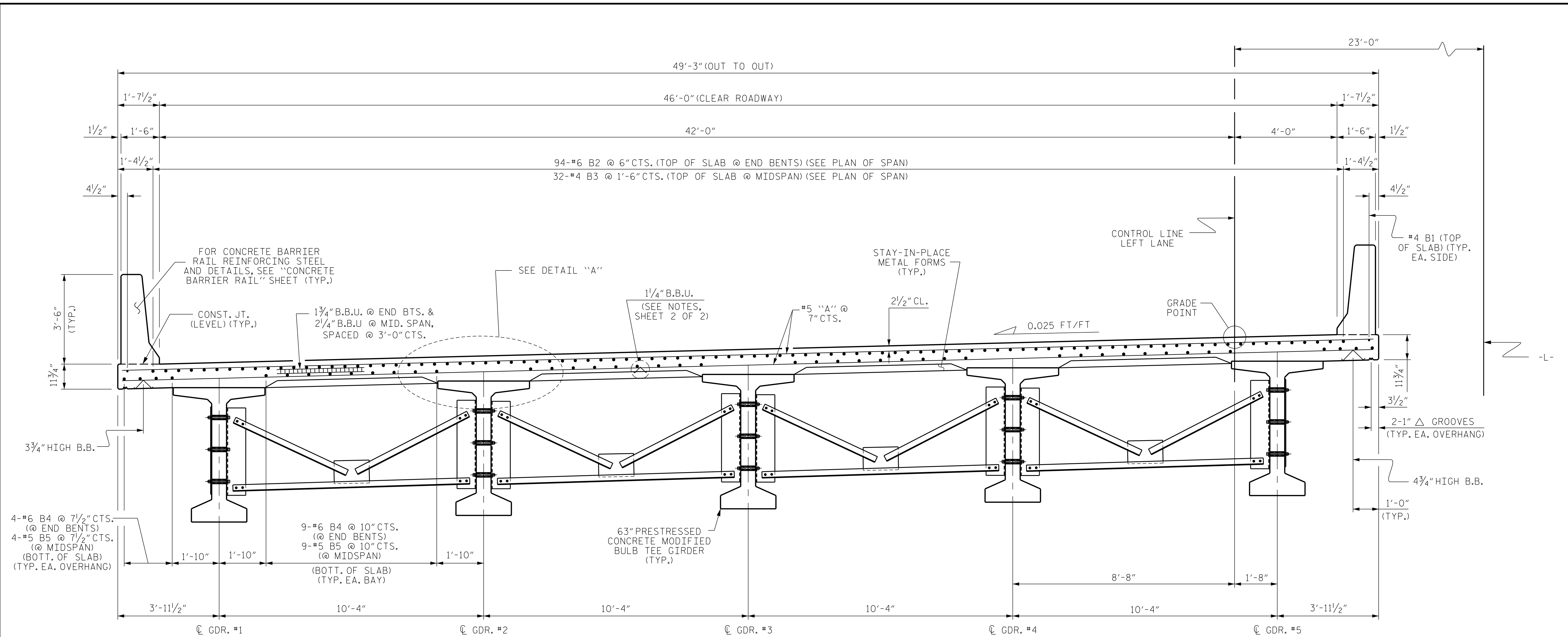
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ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

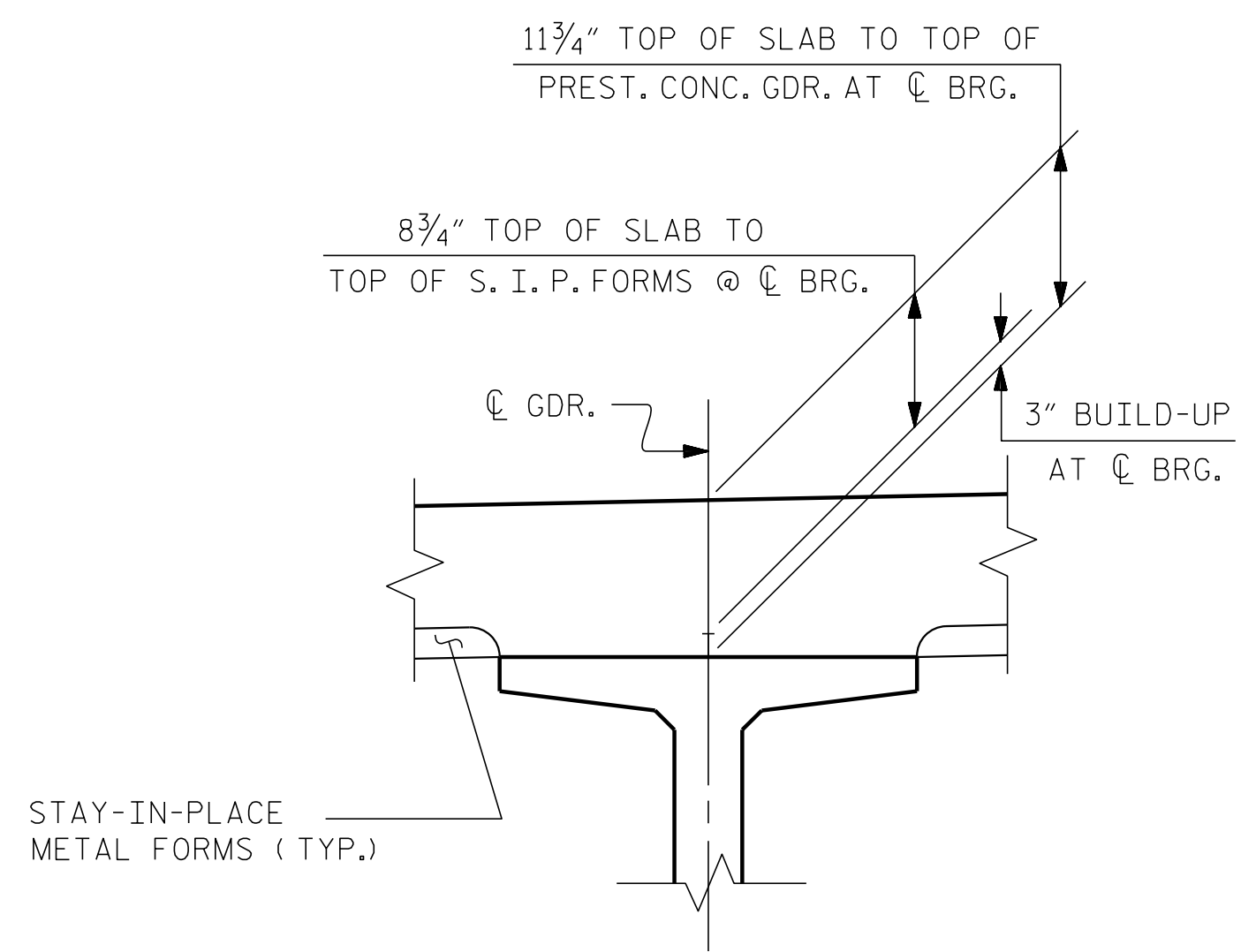
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 8/29/2018
 WETHERILL ENGINEERING
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 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
①			③		
②			④		
SHEET NO. S5-4					TOTAL SHEETS 26



TYPICAL SECTION



DETAIL "A"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2

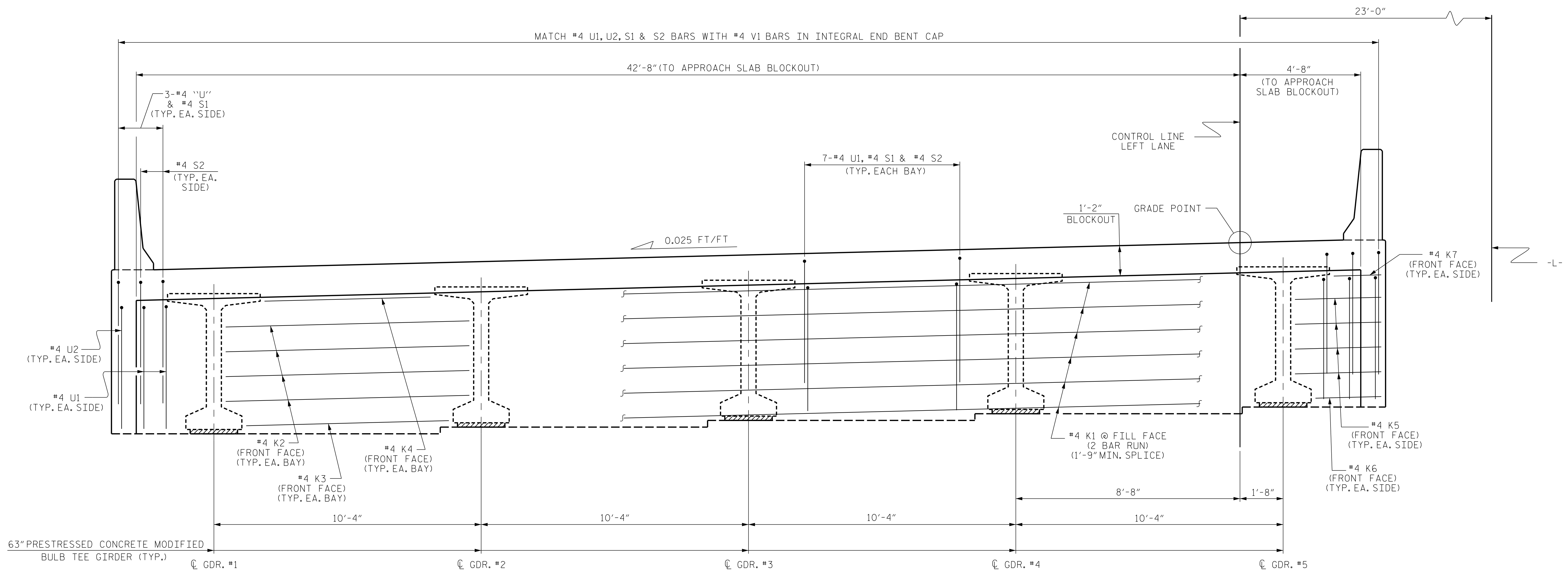
ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S5-5
TOTAL SHEETS					26

DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 4/18

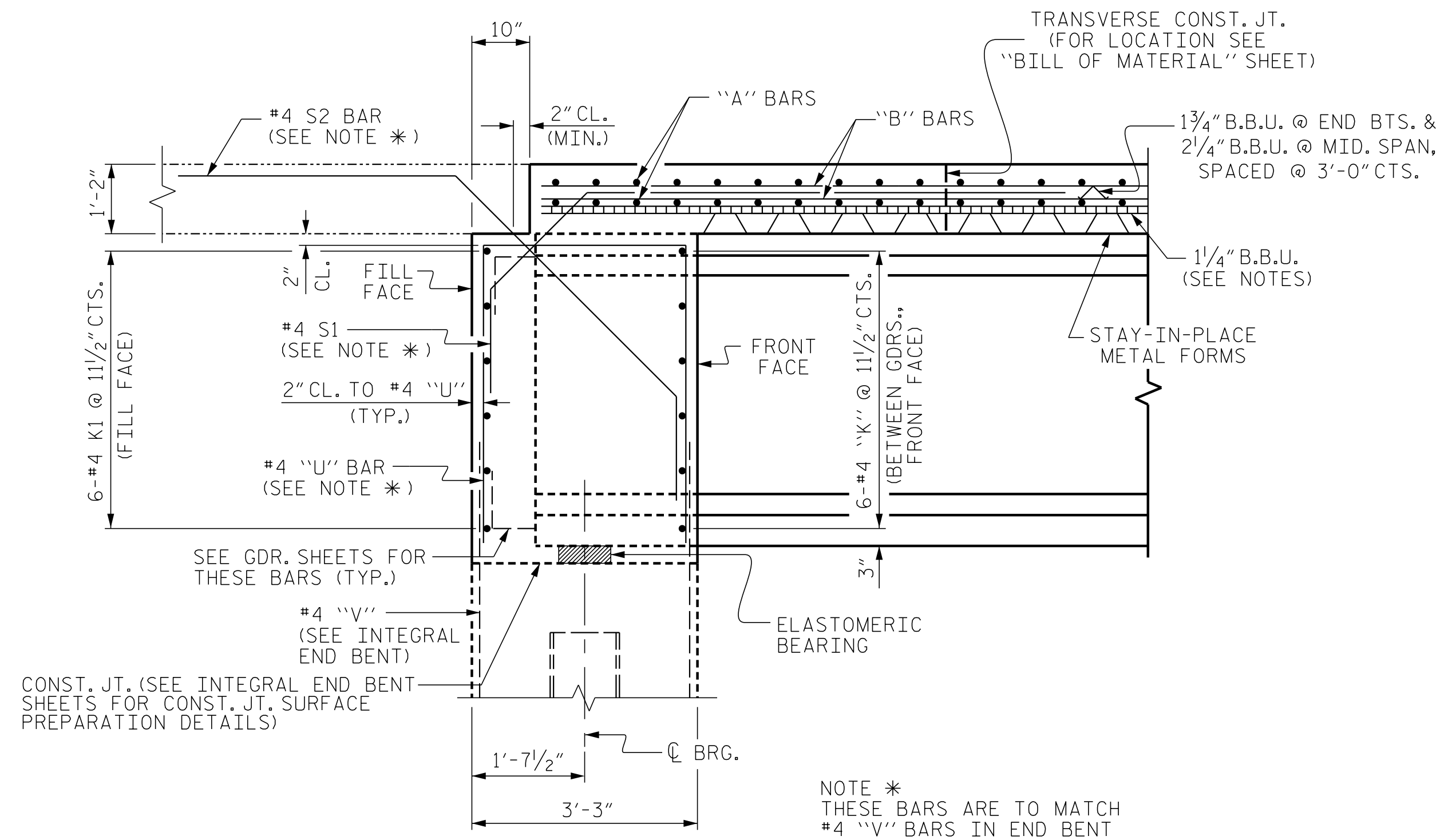
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TYPICAL SECTION THROUGH INTEGRAL END BENT

DECK REINFORCEMENT NOT SHOWN FOR CLARITY, SEE SHEET 1 OF 2



SECTION THRU INTEGRAL END BENT

NOTES

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SLAB.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

SHEET 2 OF 2

ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 (LEFT LANE)

REVISIONS

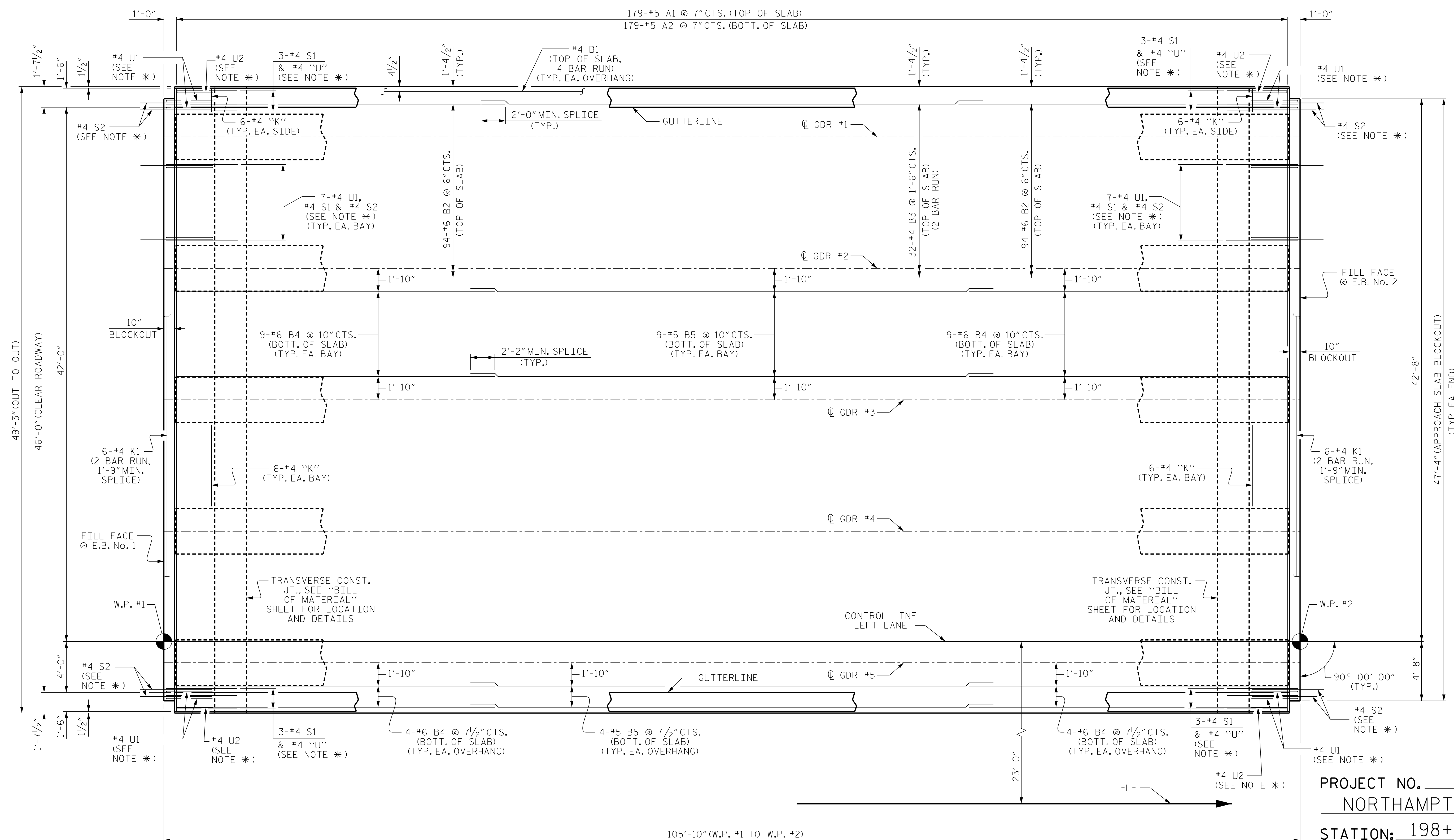
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S5-6
2			4			TOTAL SHEETS 26

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DRAWN BY : D. HODGE DATE : 3/18
 CHECKED BY : B.C. HUNT DATE : 4/18

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PLAN OF SPAN A

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET.

FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

DRAWN BY : D. HODGE DATE : 3/18
 CHECKED BY : B.C. HUNT DATE : 4/18

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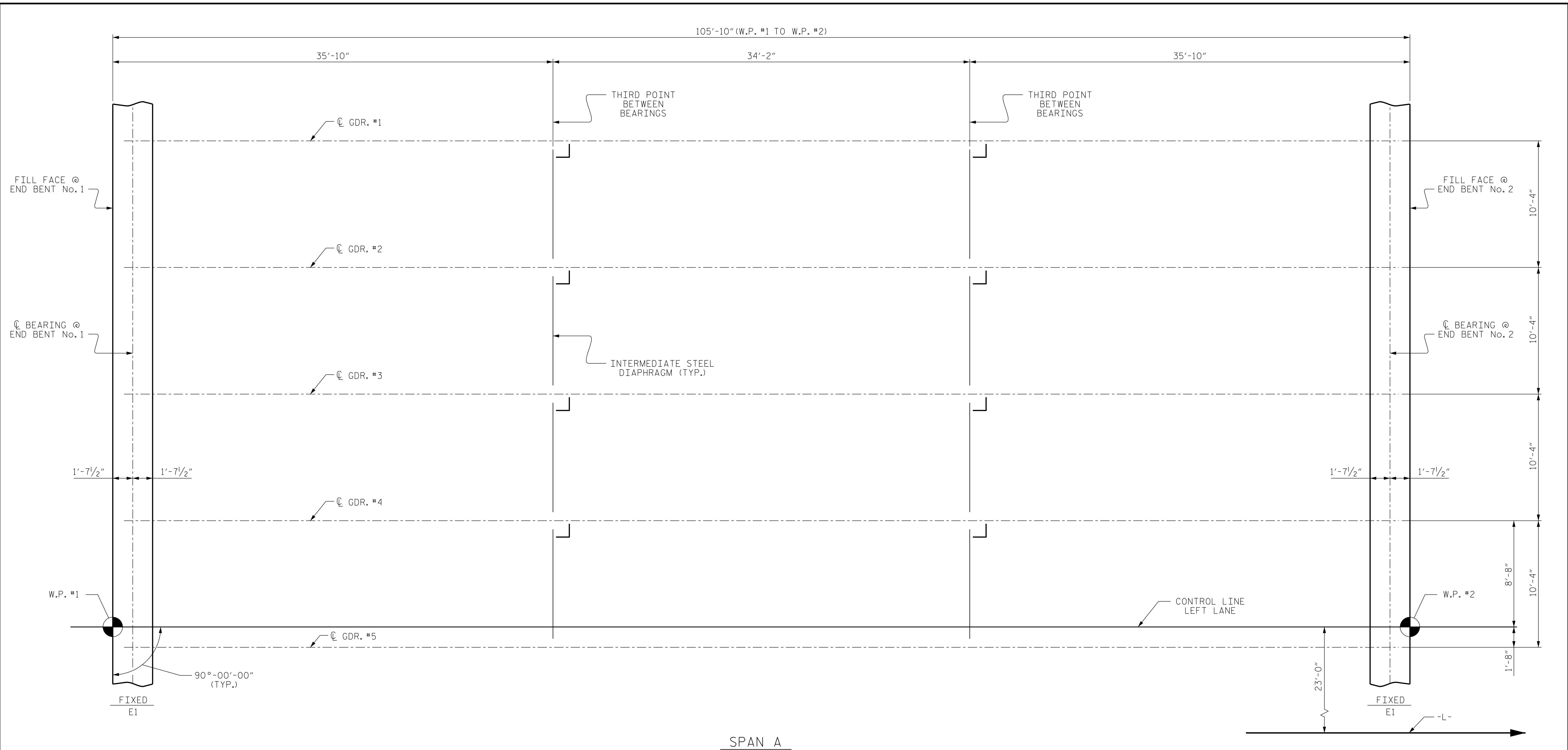
ENGINEER OF RECORD:
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 PROFESSIONAL
 SEAL
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 ENGINEER
 GREGORY M. OLLAND
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 (LEFT LANE)

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

SHEET NO.
 S5-7
 TOTAL SHEETS
 26



SPAN A
FRAMING PLAN

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-

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CHECKED BY: B.C. HUNT DATE: 4/18

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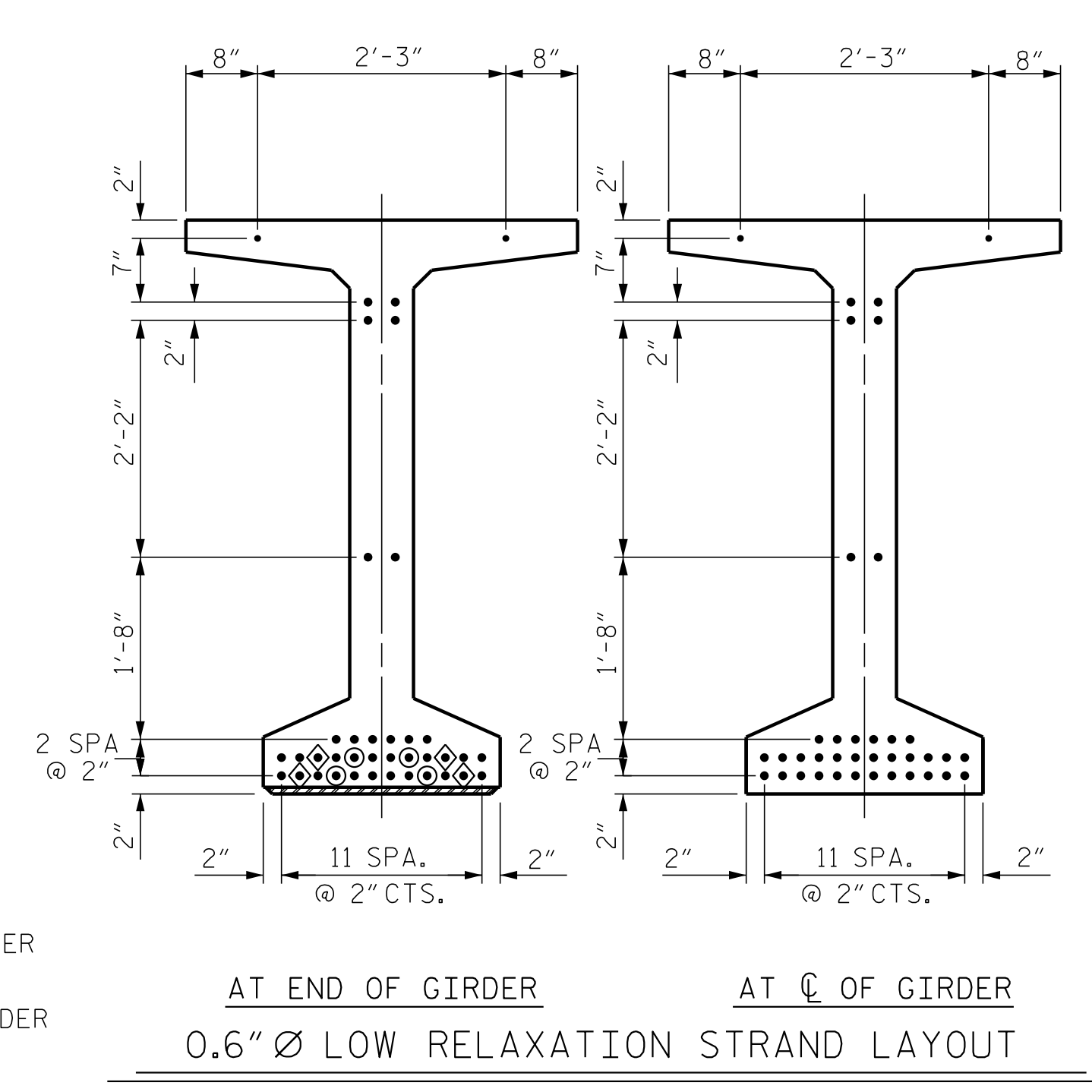
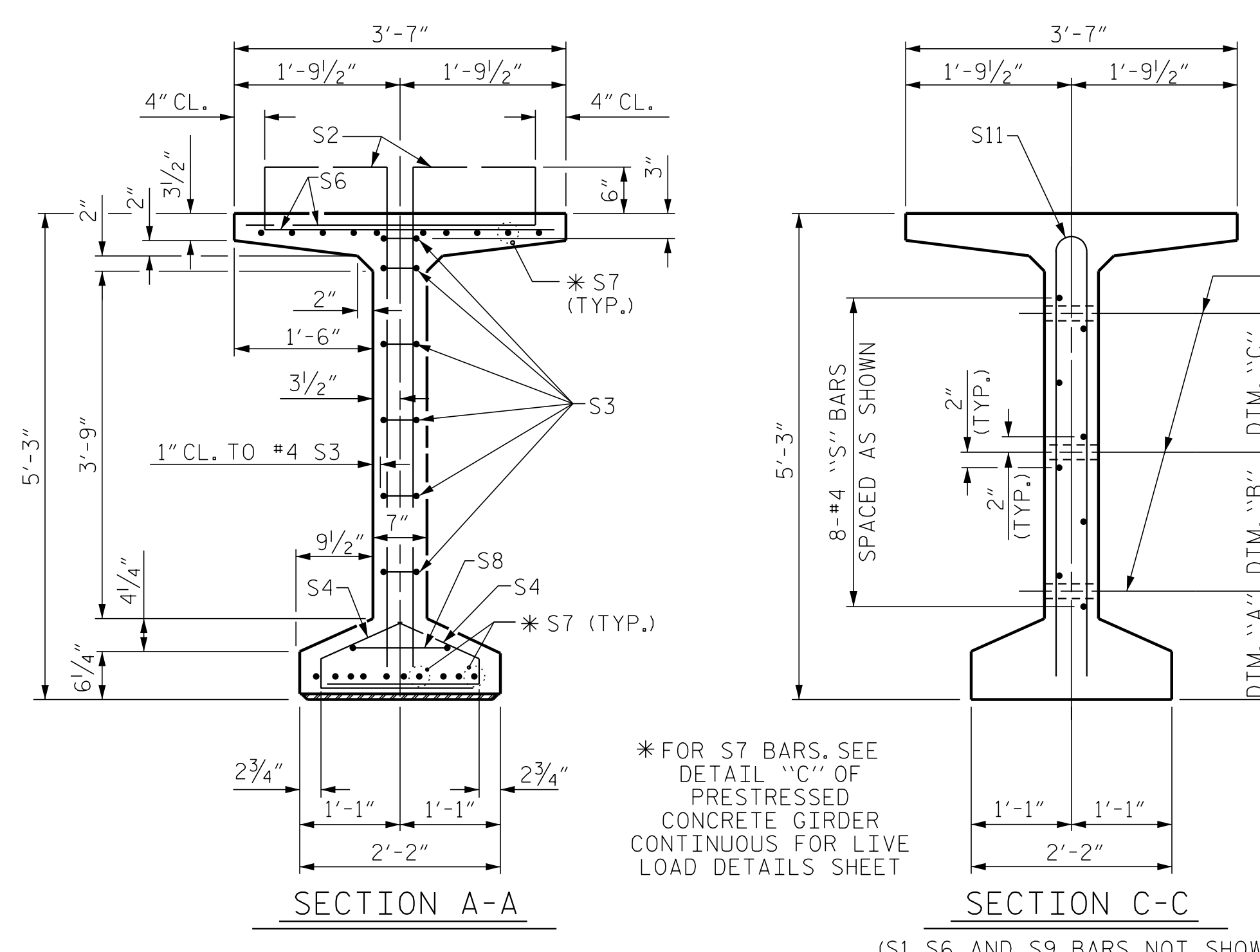
ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 (LEFT LANE)

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

SHEET NO. S5-8
TOTAL SHEETS 26



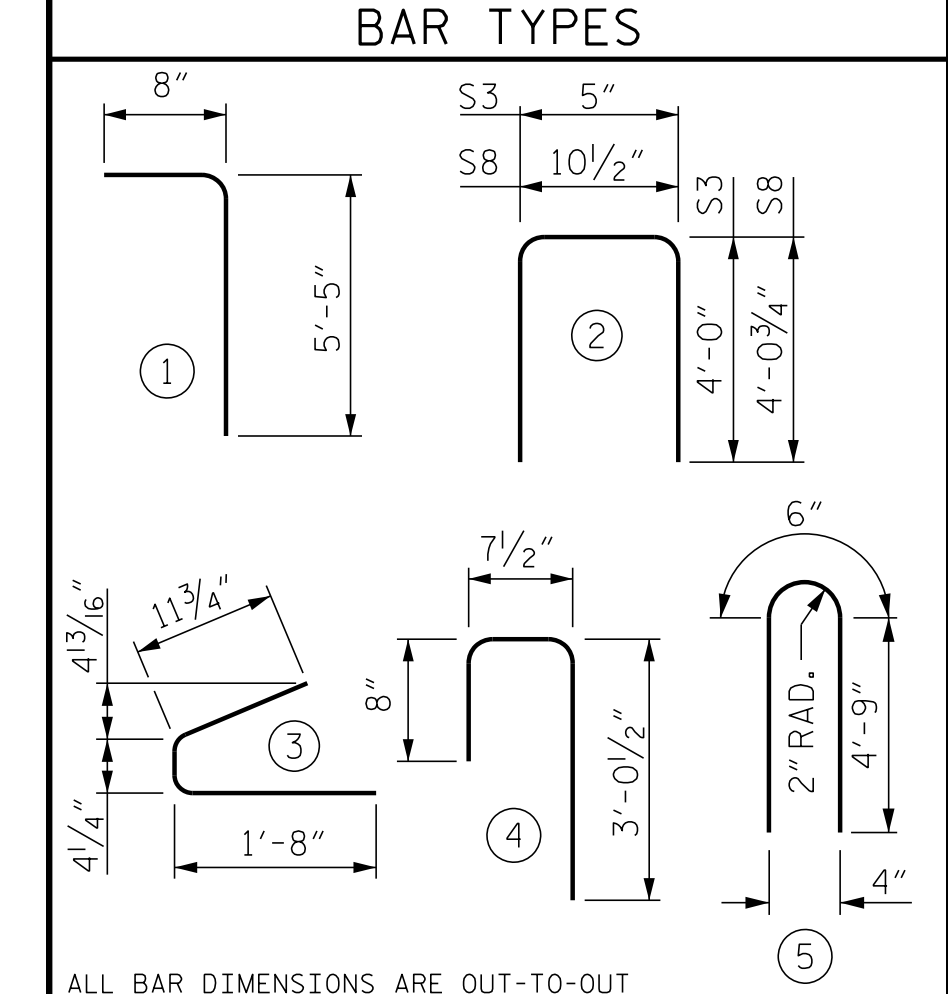
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ◇ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

* FOR S7 BARS. SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET
 (S1, S6 AND S9 BARS NOT SHOWN)

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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	176	#4	1	6'-1"	715
S2	24	#6	1	6'-1"	219
S3	12	#4	2	8'-5"	67
S4	88	#4	3	3'-0"	176
S6	200	#5	4	4'-4"	904
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	55	#5	STR	3'-3"	186
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

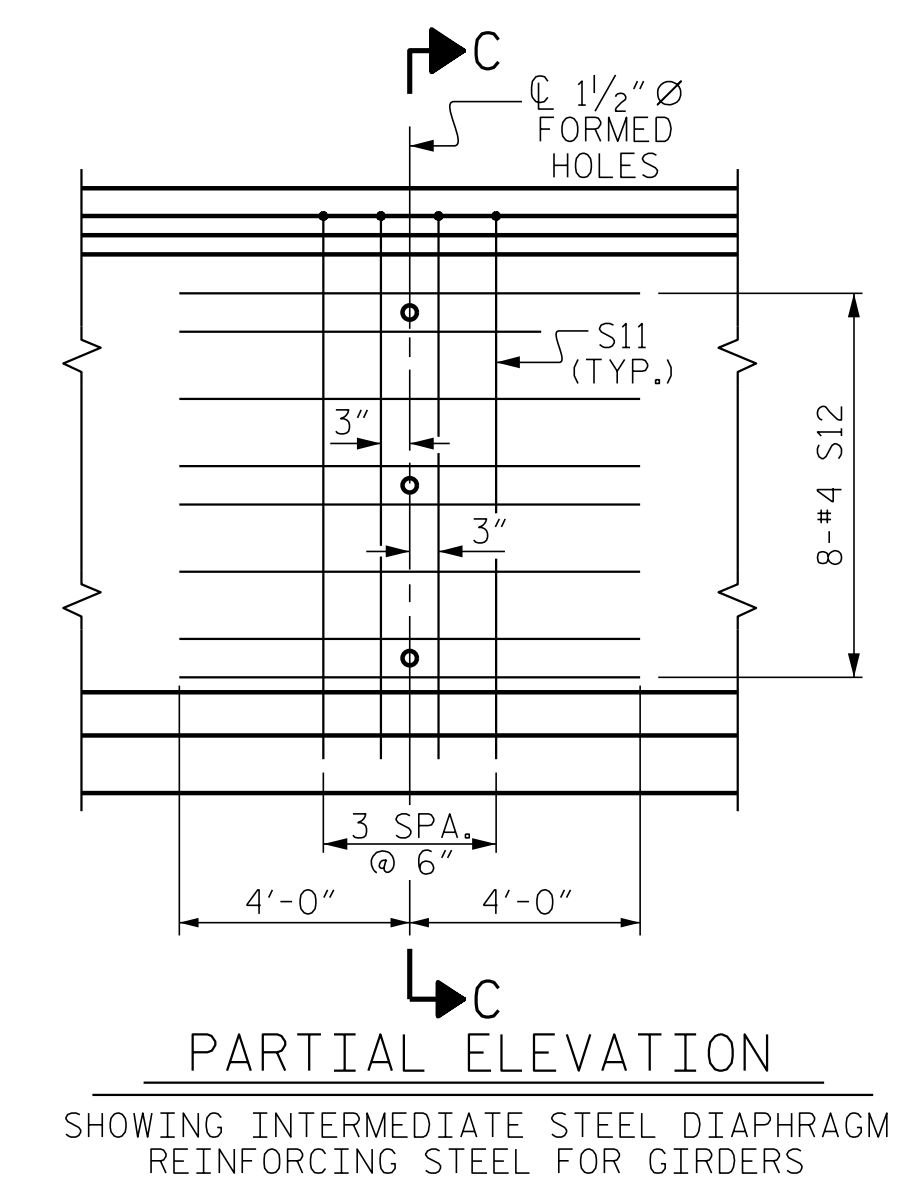
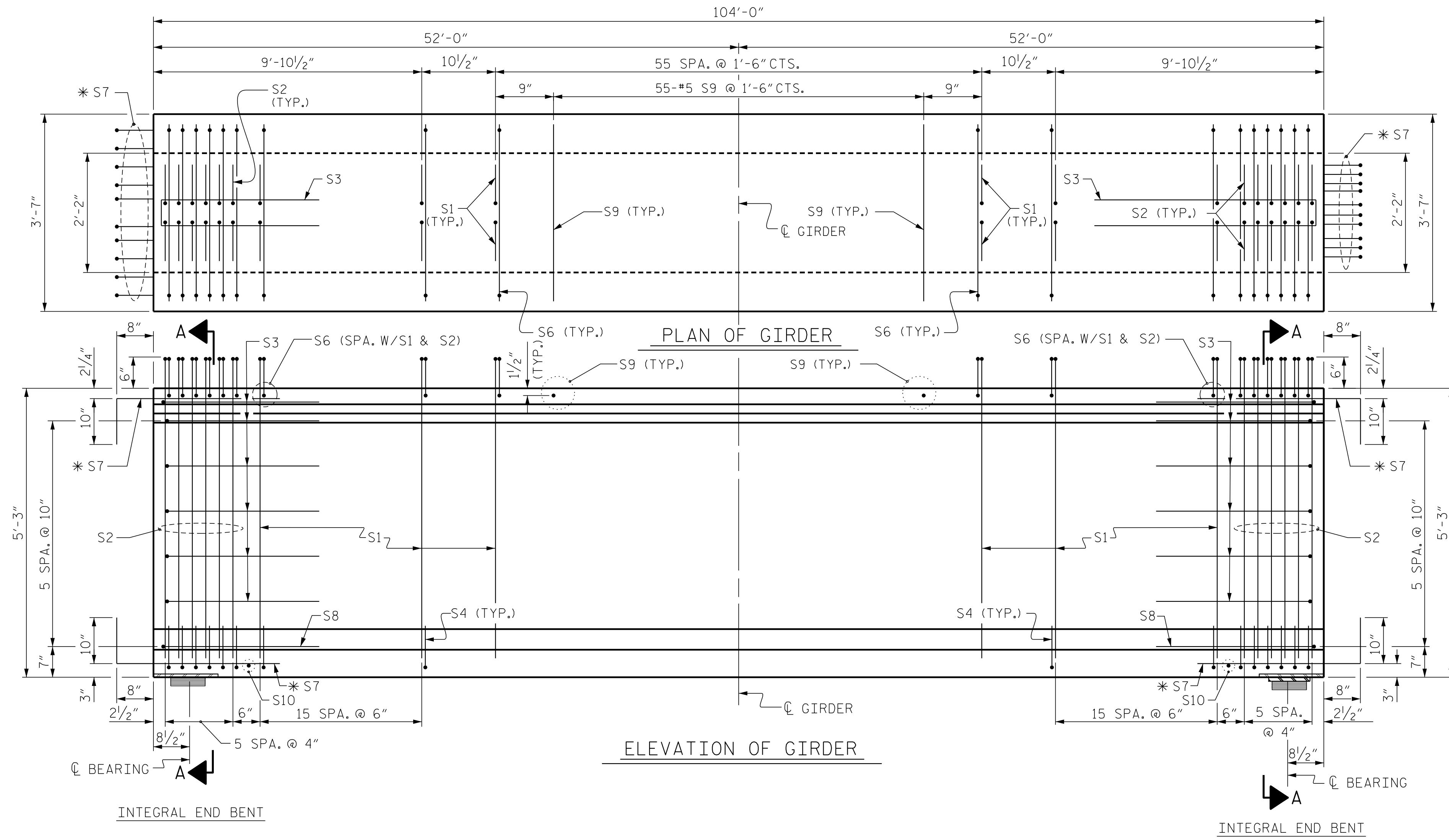
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2609	20.6	38

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	104'-0"	520'-0"



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 3

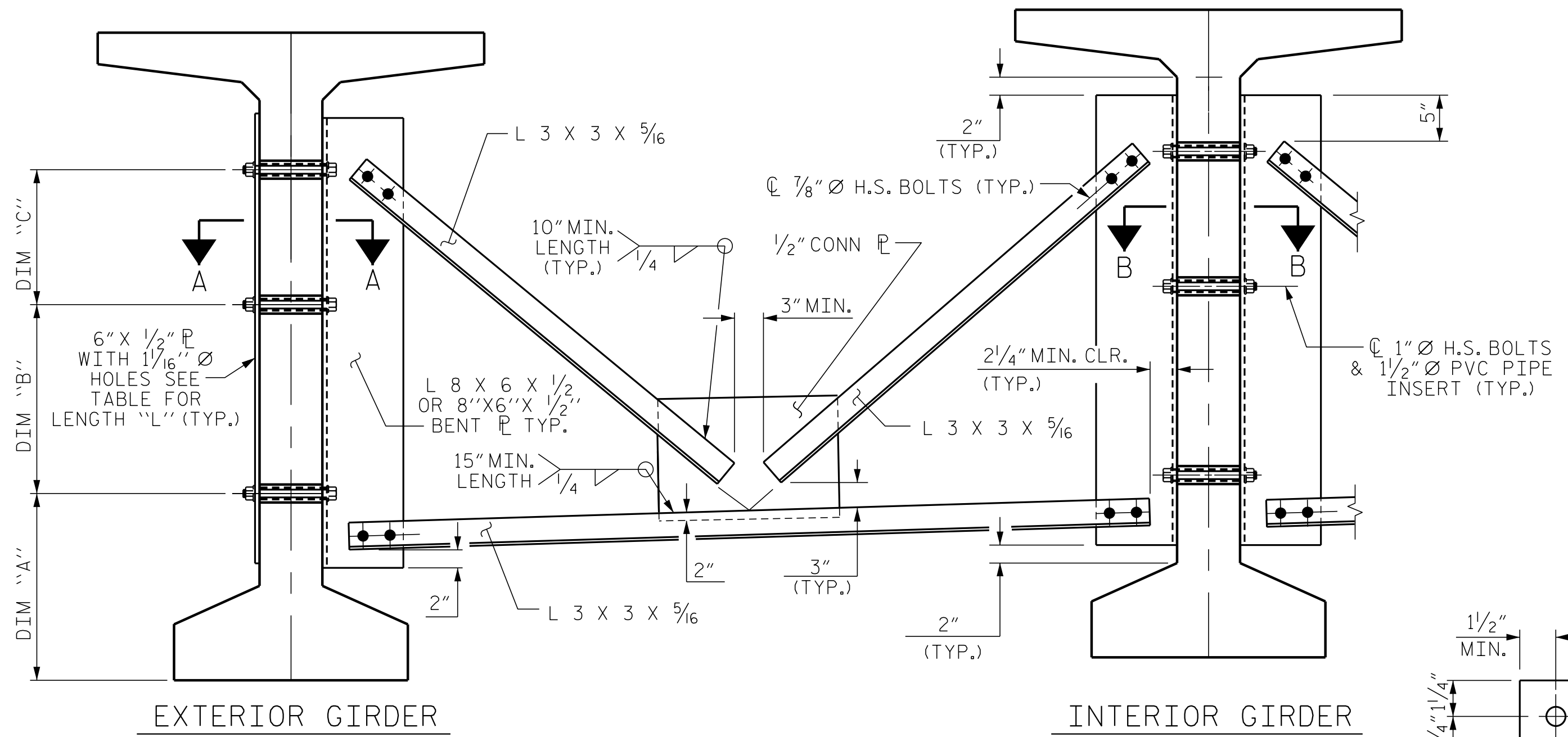
ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
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 GREGORY M. OLLAND
 8/29/2018
 WETHERILL ENGINEERING
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-9	
1			3			TOTAL SHEETS	
2			4			26	

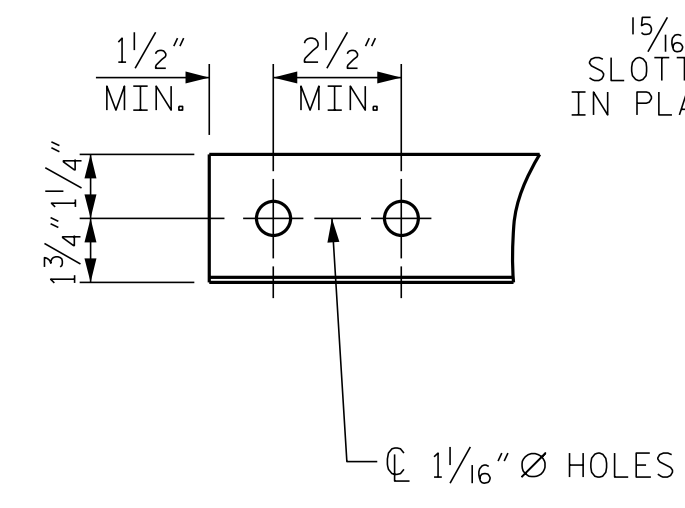
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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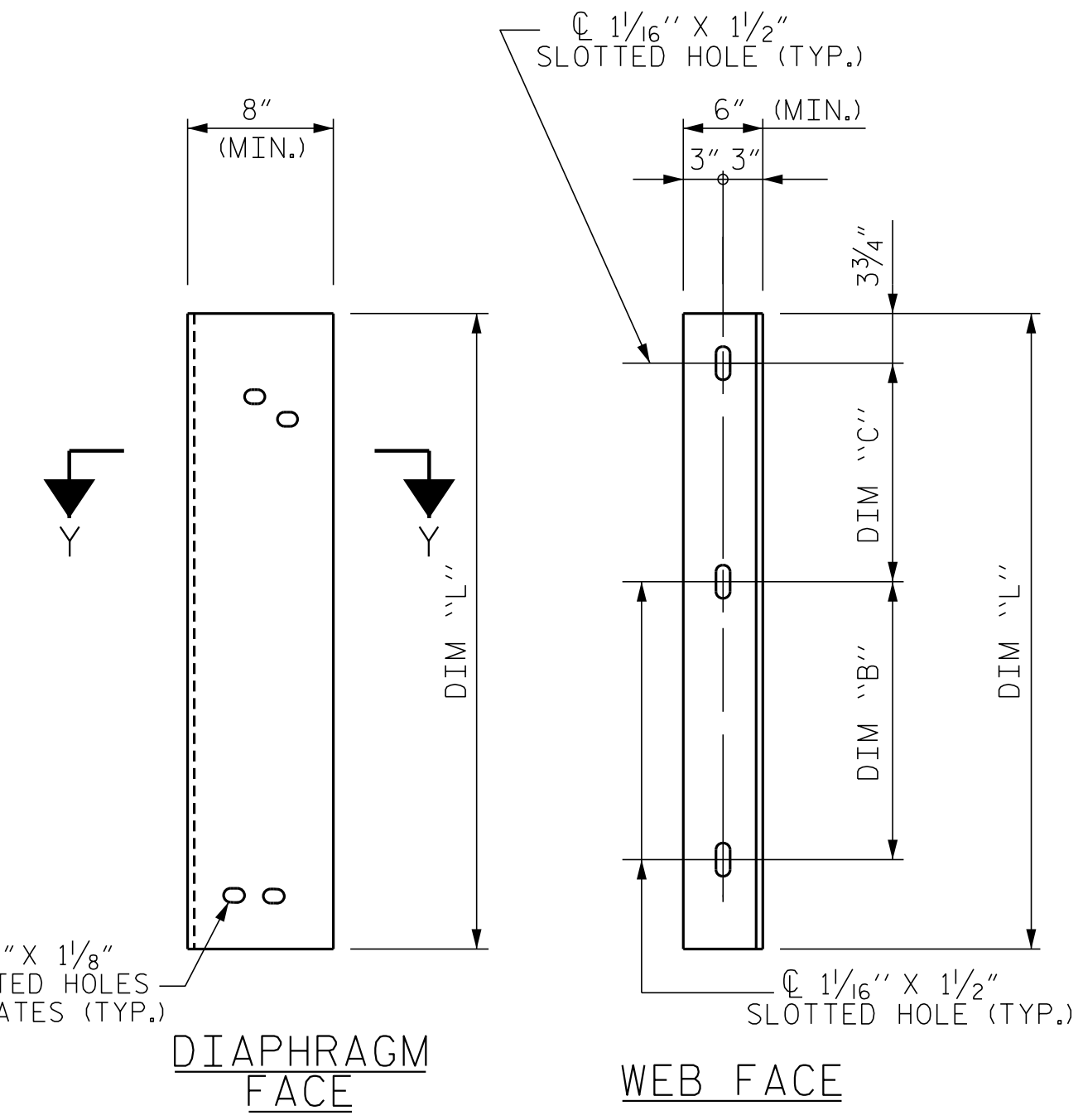
ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC



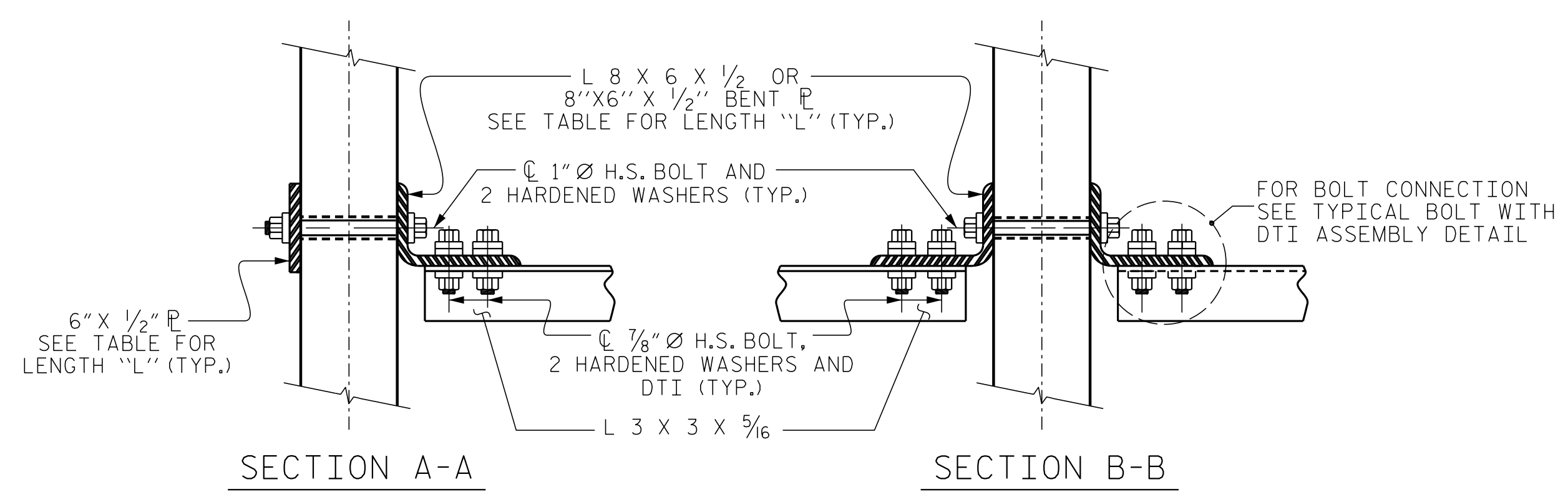
PART SECTION AT INTERMEDIATE DIAPHRAGM
(63' BULB TEE GIRDER SHOWN)



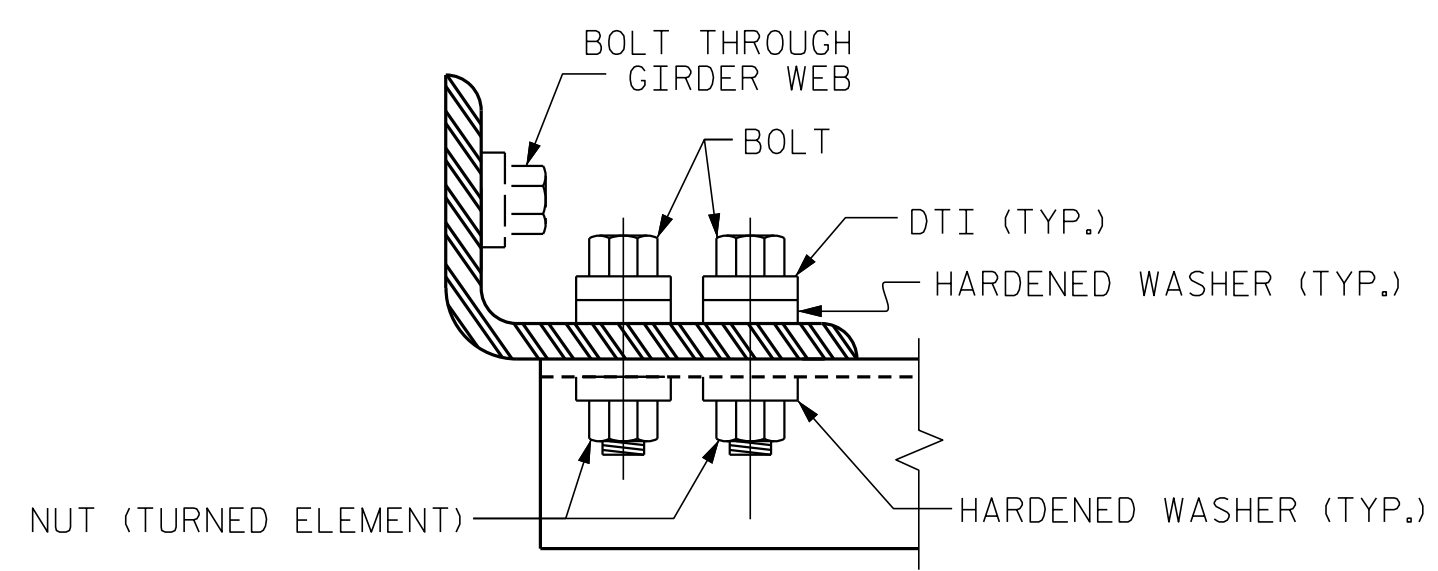
ANGLE END
(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-7"	1'-3"	1'-3"	3'-5"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 3

ENGINEER OF RECORD:
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE STEEL
 DIAPHRAGMS
 FOR 63" MODIFIED BULB TEE
 PRESTRESSED CONCRETE
 GIRDERS
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-10
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : RWW 11/09	REV. 10/11/11 MAA/GM
CHECKED BY : GM 11/09	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
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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 SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

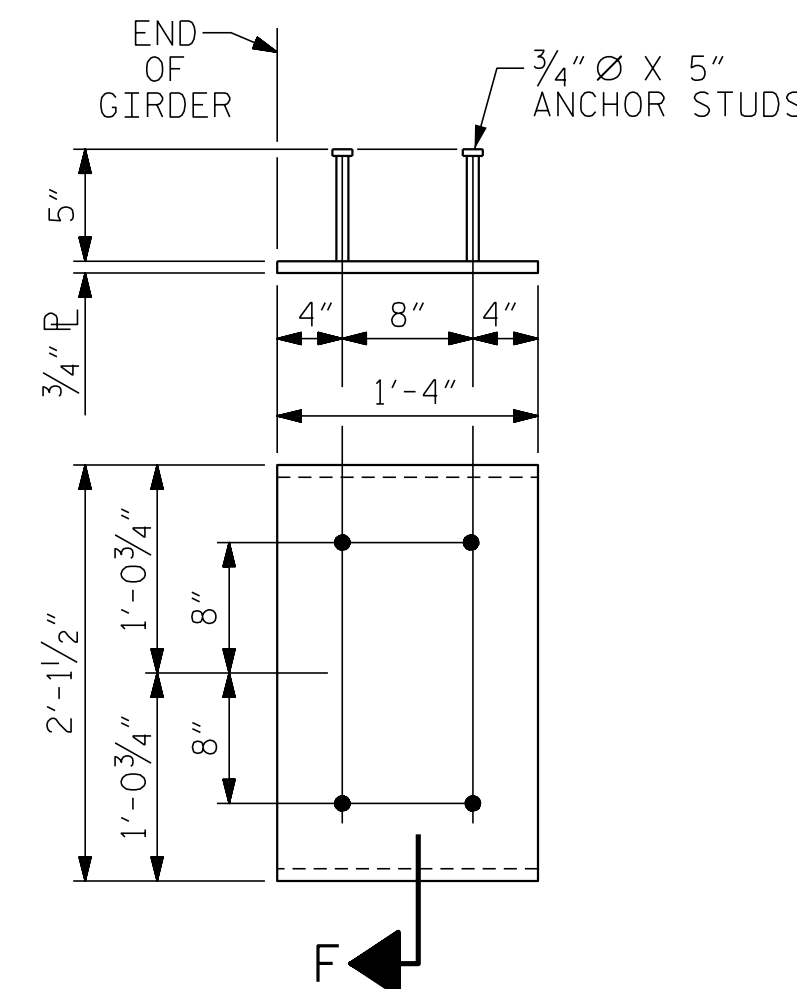
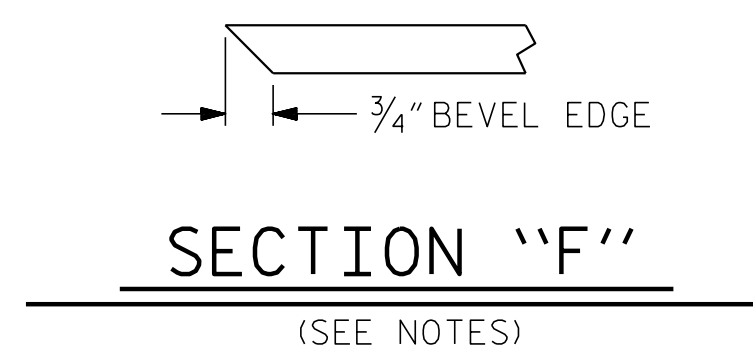
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6200 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" MODIFIED BULB TEES ONLY.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



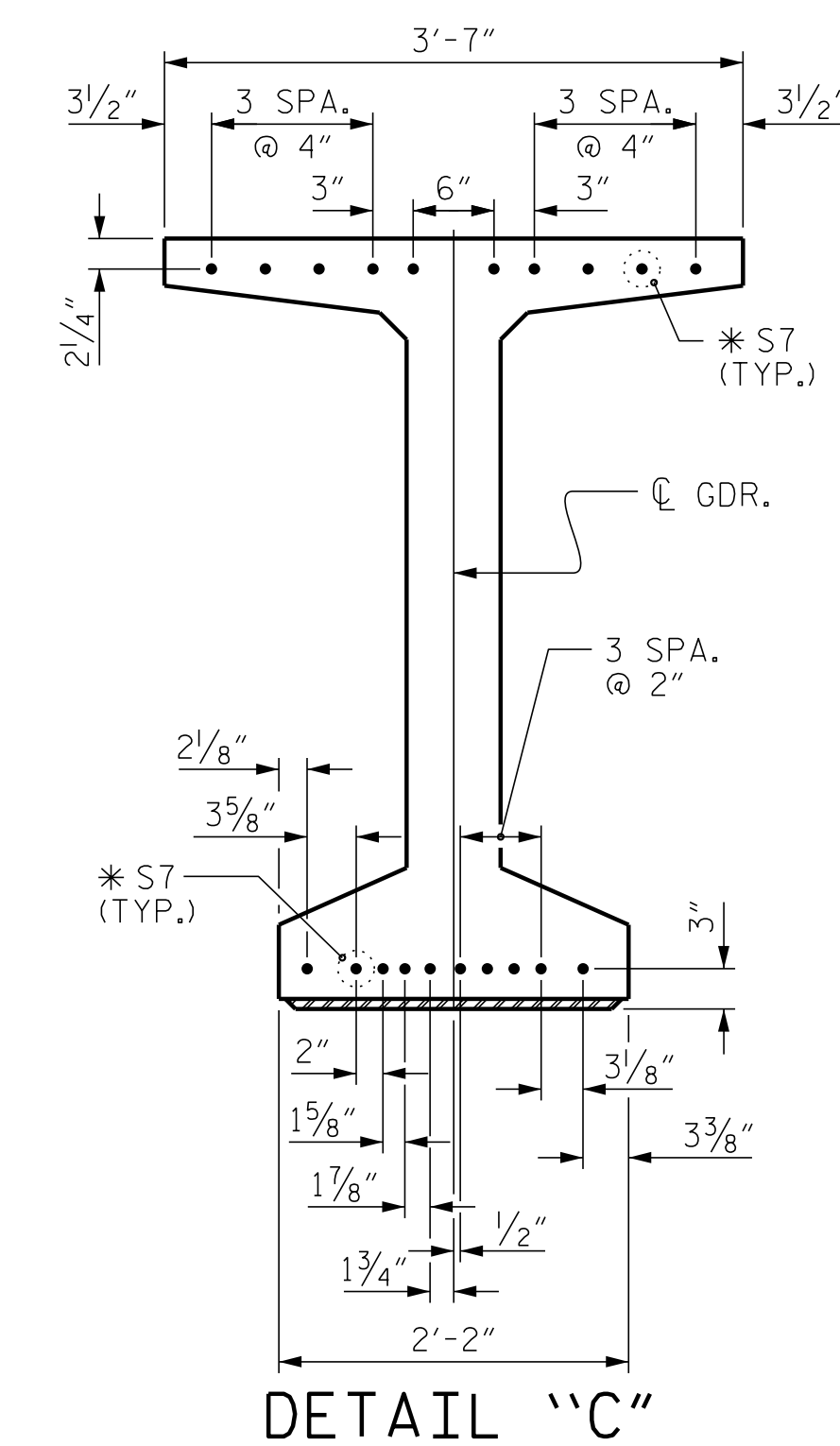
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #1 & #5																					
	TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.033	0.065	0.095	0.122	0.147	0.167	0.184	0.196	0.203	0.205	0.203	0.196	0.184	0.167	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.021	0.043	0.063	0.084	0.100	0.116	0.126	0.136	0.140	0.143	0.140	0.136	0.126	0.116	0.100	0.084	0.063	0.043	0.021	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	11/16"	3/4"	3/4"	3/4"	11/16"	11/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0

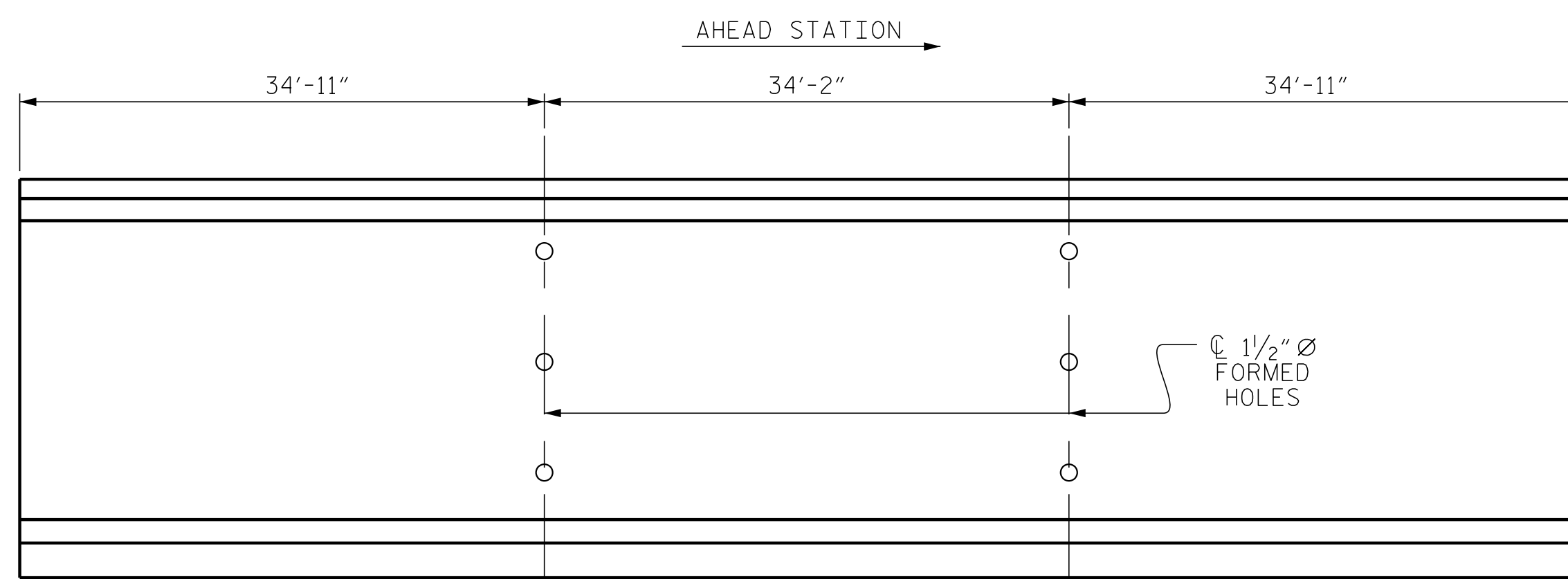
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #2, #3 & #4																					
	TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.033	0.065	0.095	0.122	0.147	0.167	0.184	0.196	0.203	0.205	0.203	0.196	0.184	0.167	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.023	0.047	0.069	0.091	0.109	0.126	0.138	0.149	0.153	0.156	0.153	0.149	0.138	0.126	0.109	0.091	0.069	0.047	0.023	0.000
FINAL CAMBER	↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).



DETAIL "C"
(FOR 63" MODIFIED BULB TEES)



LOCATION OF BOLT HOLES IN GIRDERS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-

SHEET 3 OF 3

ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : ELR 11/91	REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15 MAA/TMG
	REV. 12/17 MAA/THC

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UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
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LICENSE NO. F-0377

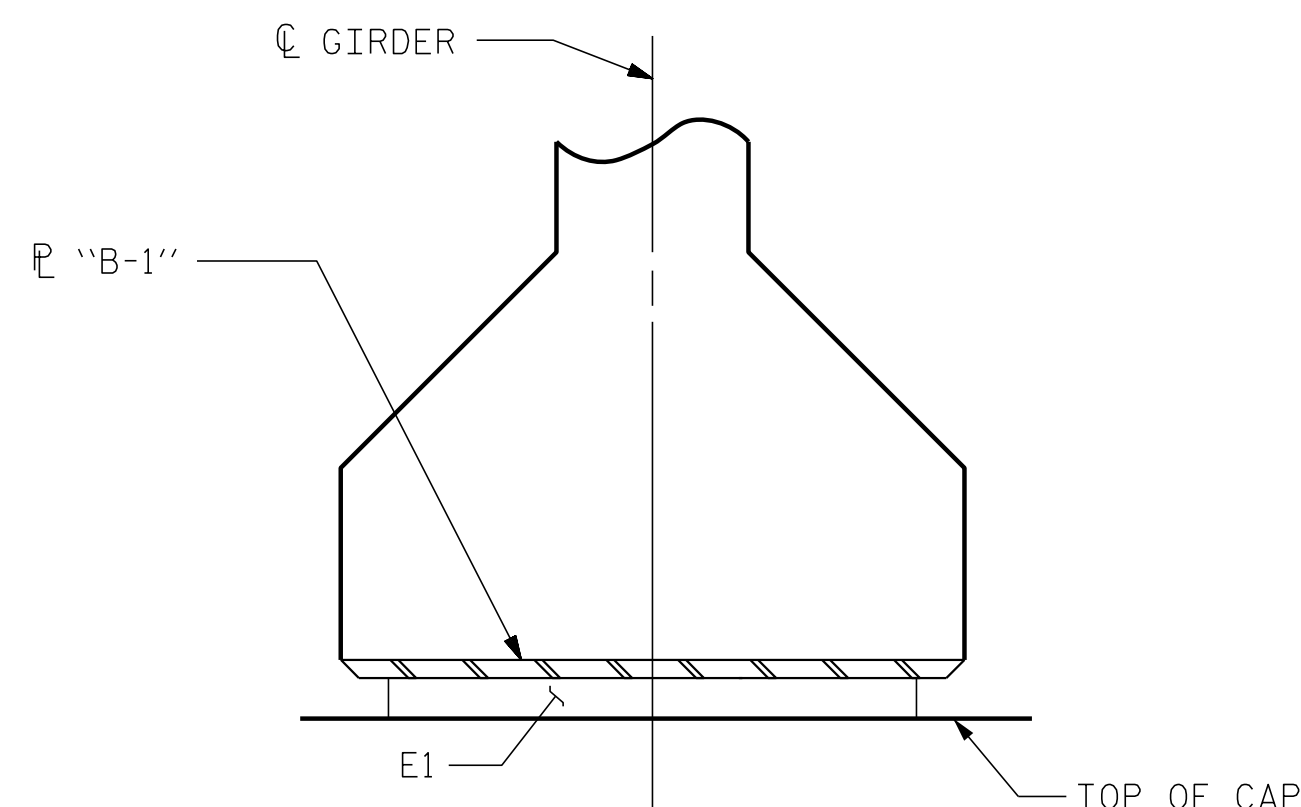
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		STANDARD PRESTRESSED CONCRETE GIRDER (LEFT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S5-11
2			TOTAL SHEETS 26

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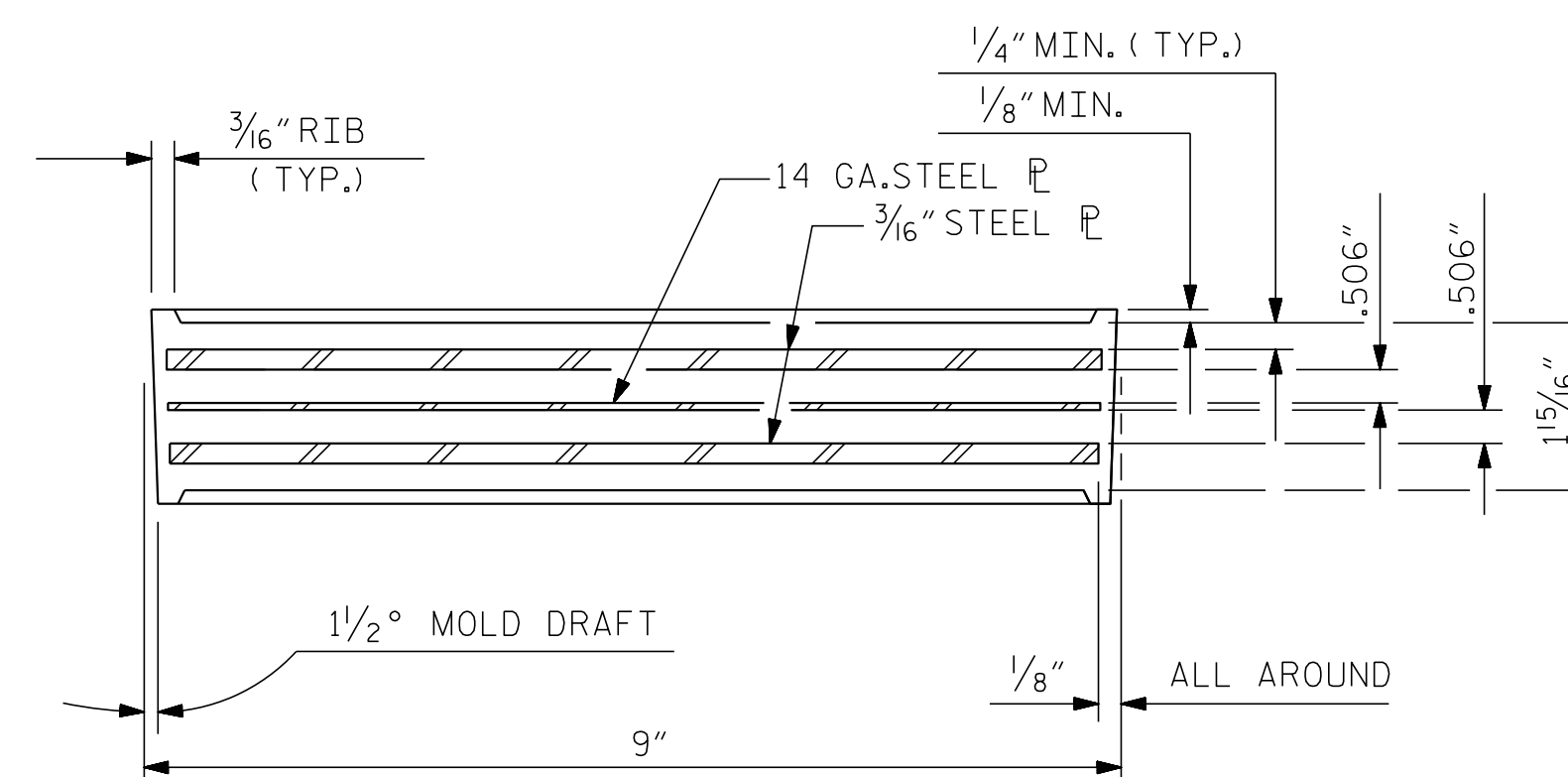
NOTES

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

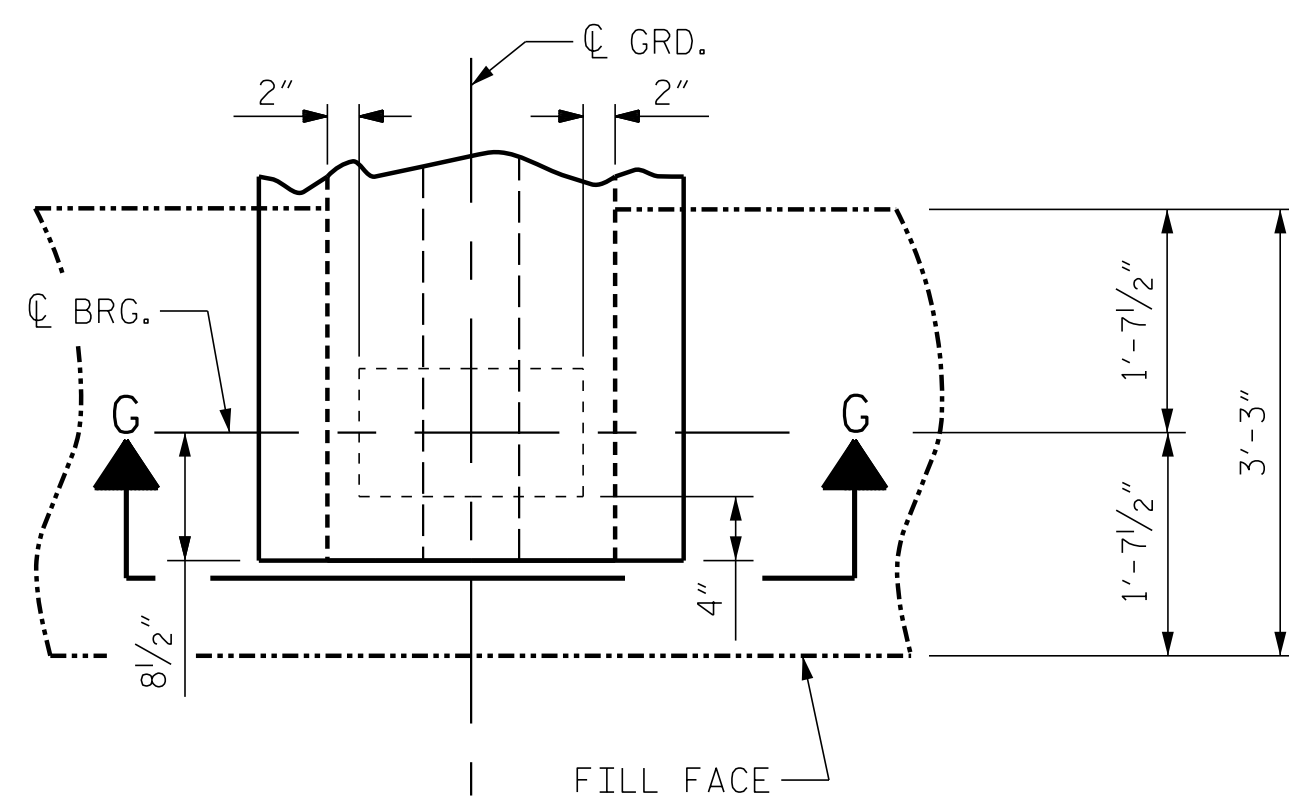
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



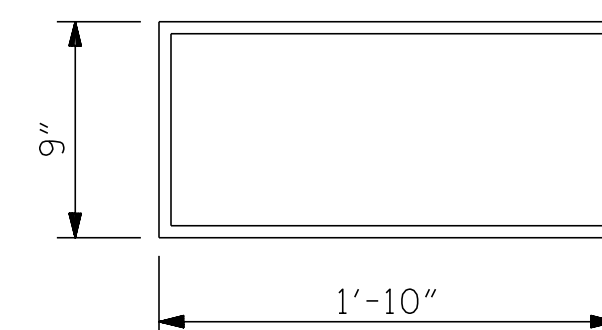
SECTION G-G



TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL PLAN @ END BENT



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

ENGINEER OF RECORD:
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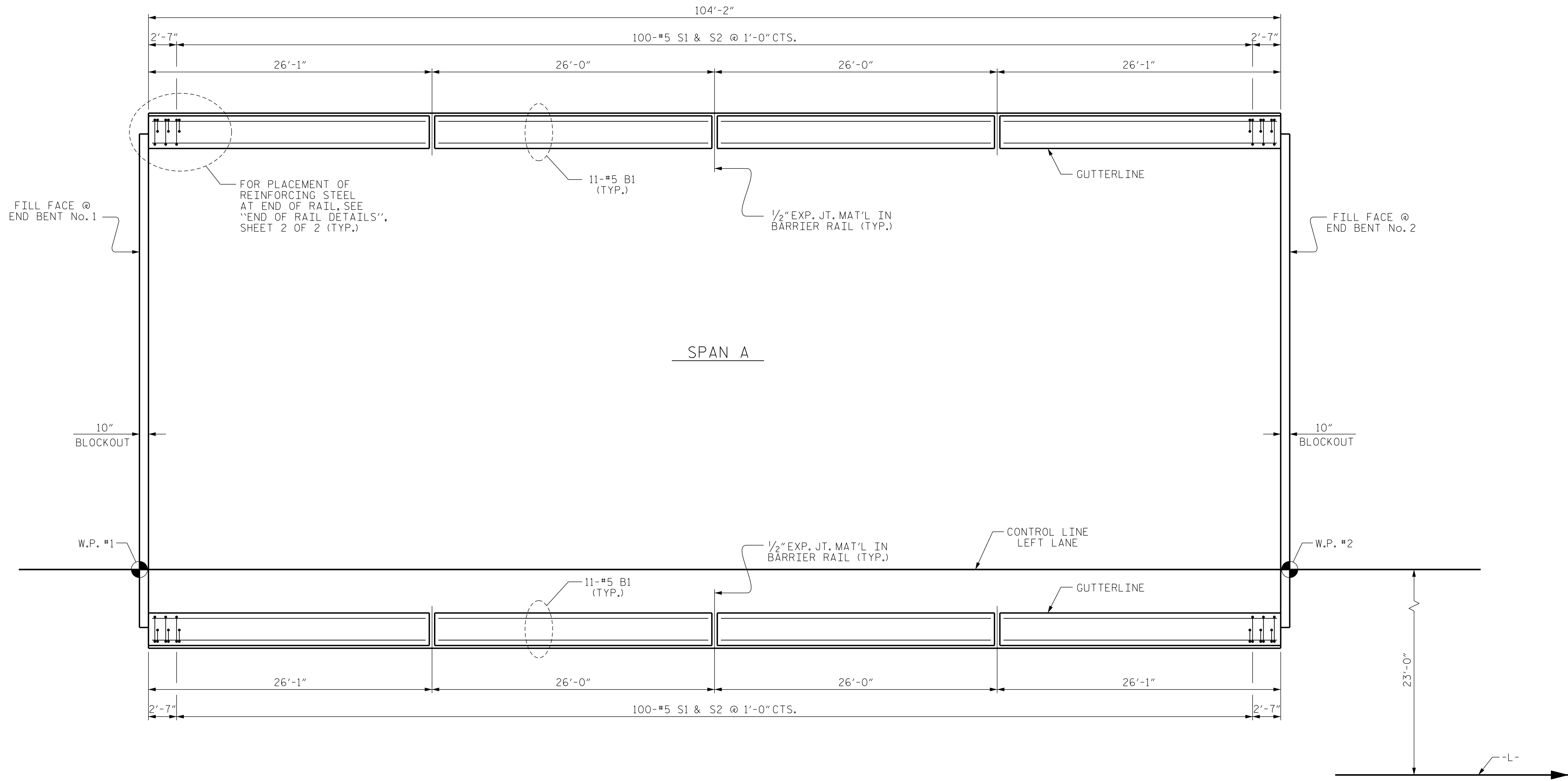
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

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DRAWN BY : D. HODGE DATE : 3/18
 CHECKED BY : B.C. HUNT DATE : 4/18

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PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2

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DRAWN BY : D. HODGE DATE : 3/18
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

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NOTES

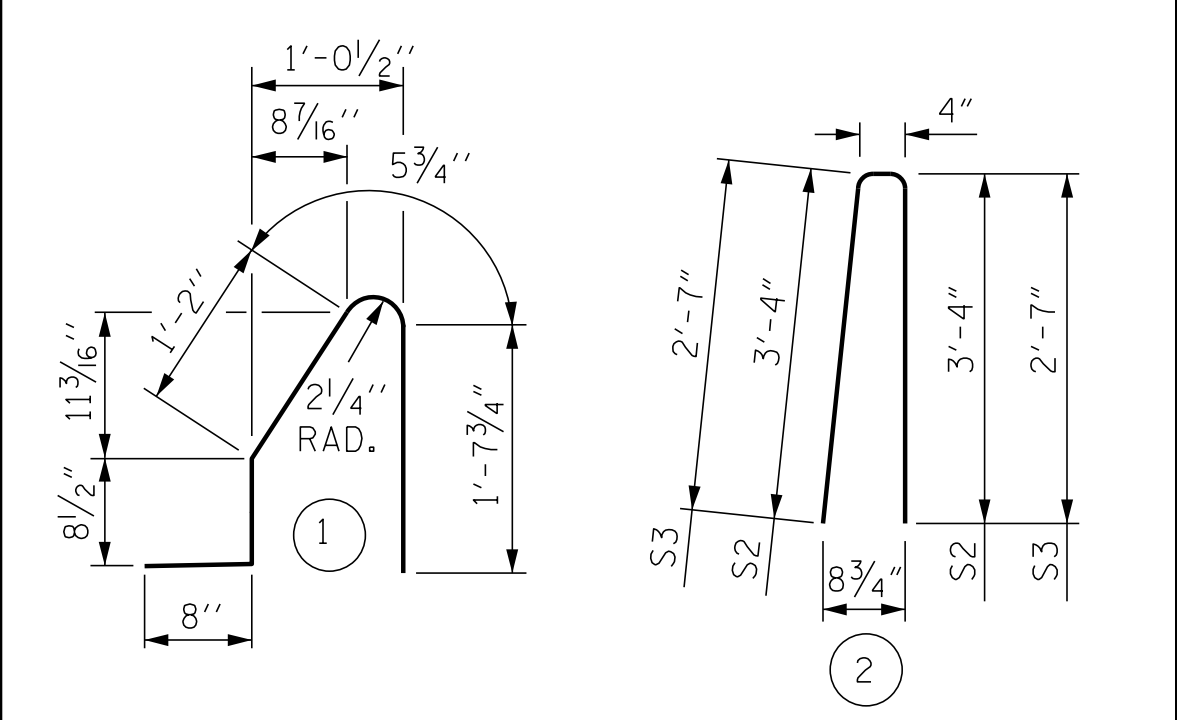
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

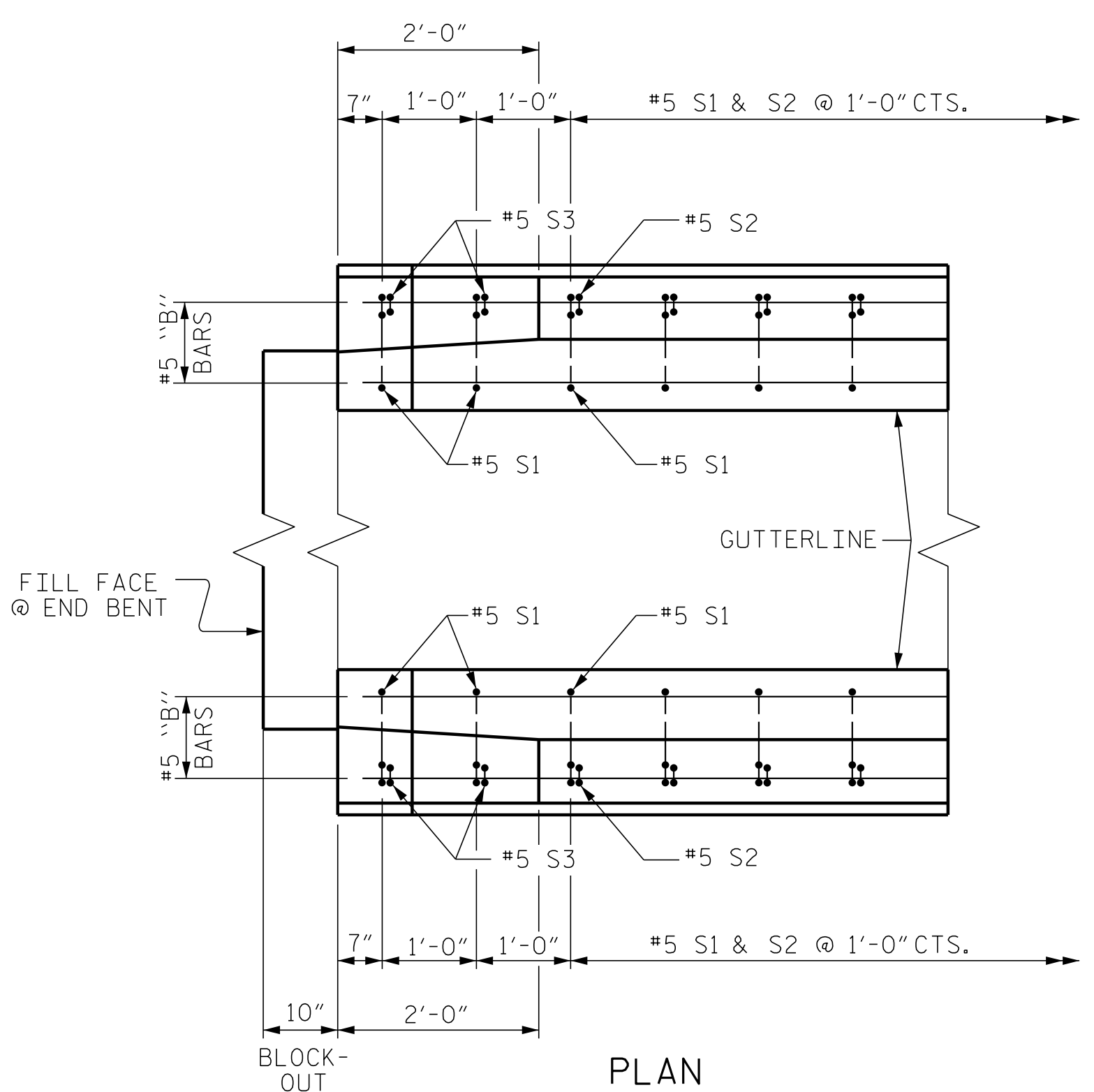
BAR TYPES



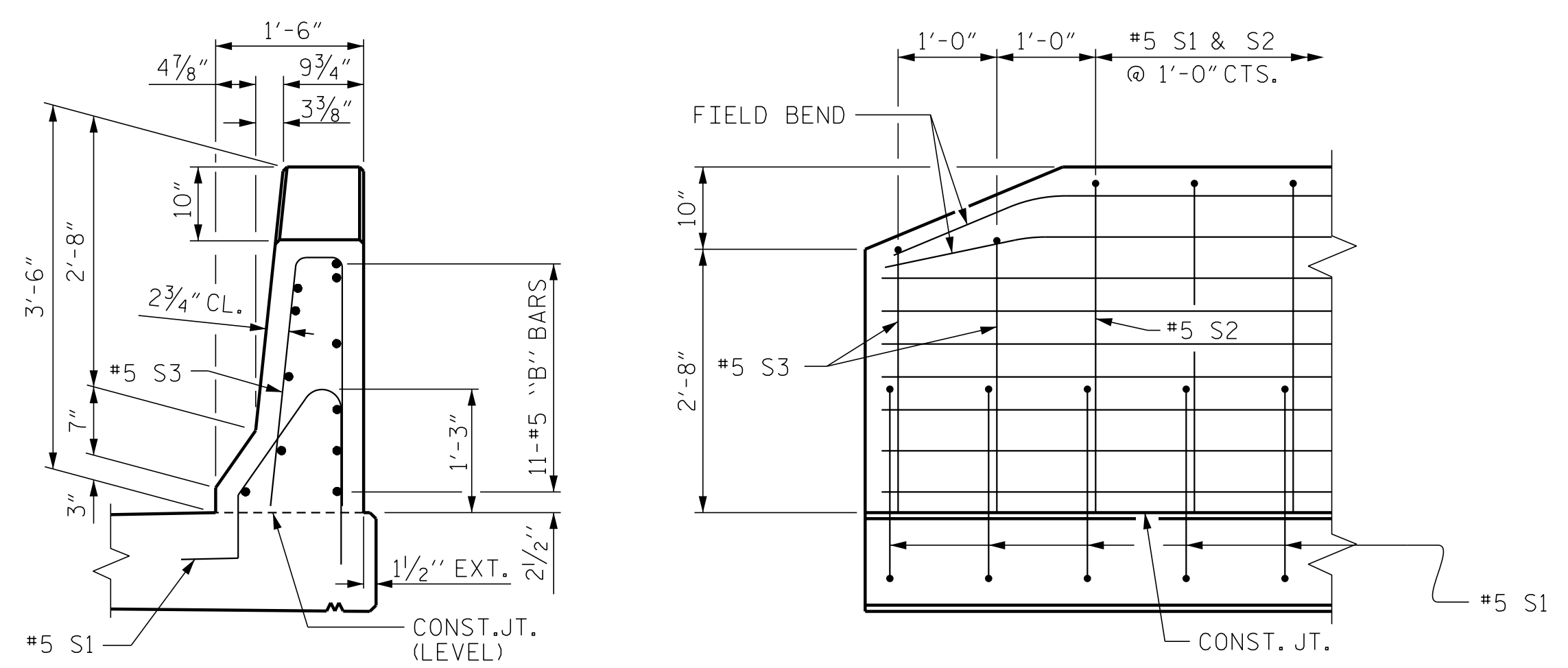
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	208	#5	1	4'-8"	1012
* S2	200	#5	2	7'-0"	1460
* S3	8	#5	2	5'-6"	46
* B1	88	#5	STR	25'-7"	2348
* EPOXY COATED REINFORCING STEEL					4,866 LBS.
CLASS AA CONCRETE					28.3 CU. YDS.
CONCRETE BARRIER RAIL					208.33 LTN. FT.



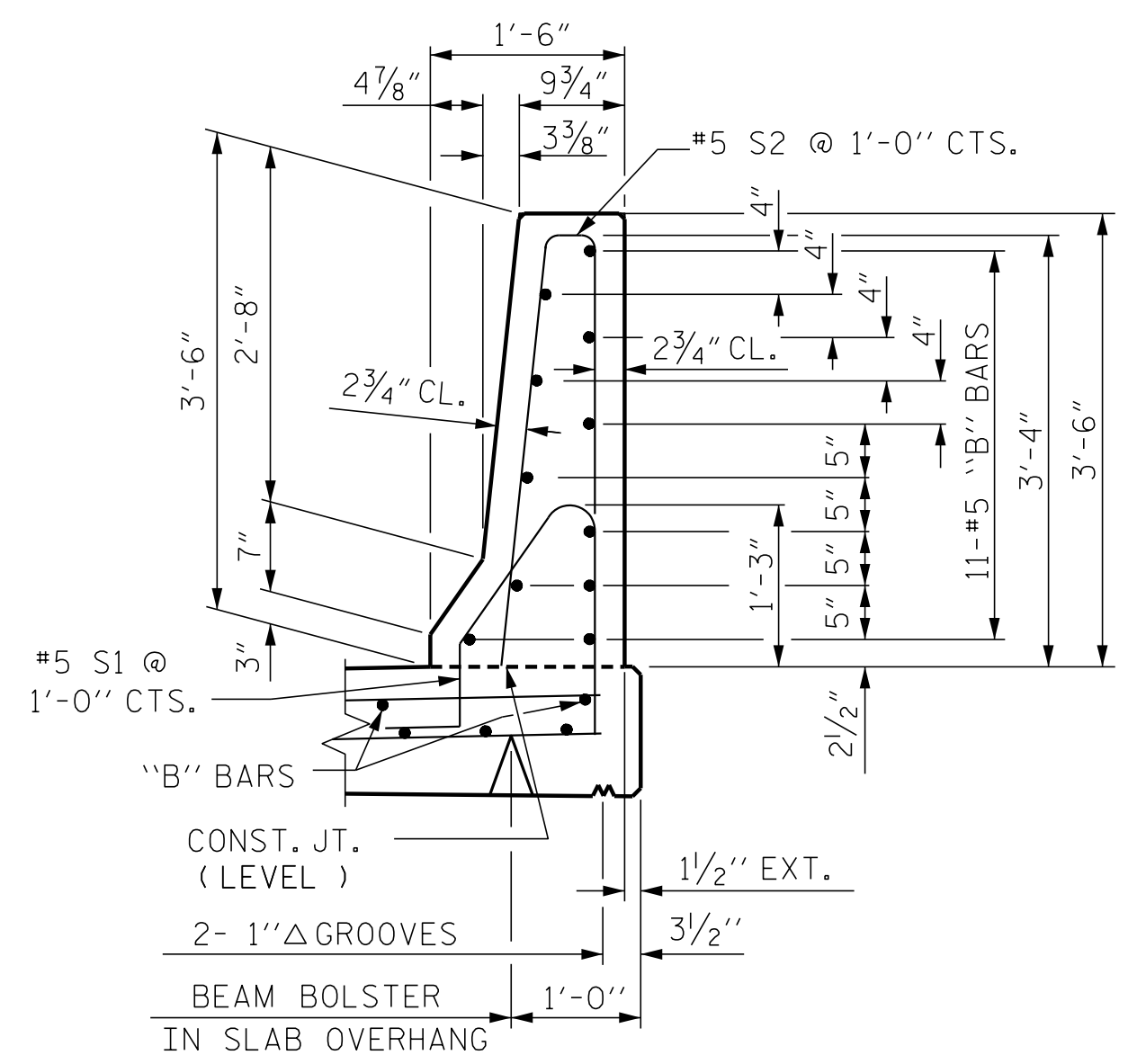
PLAN



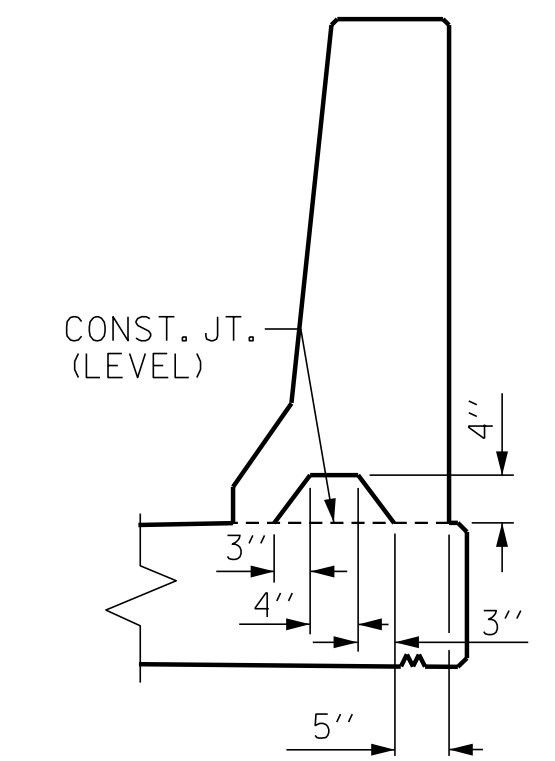
END VIEW

SIDE VIEW

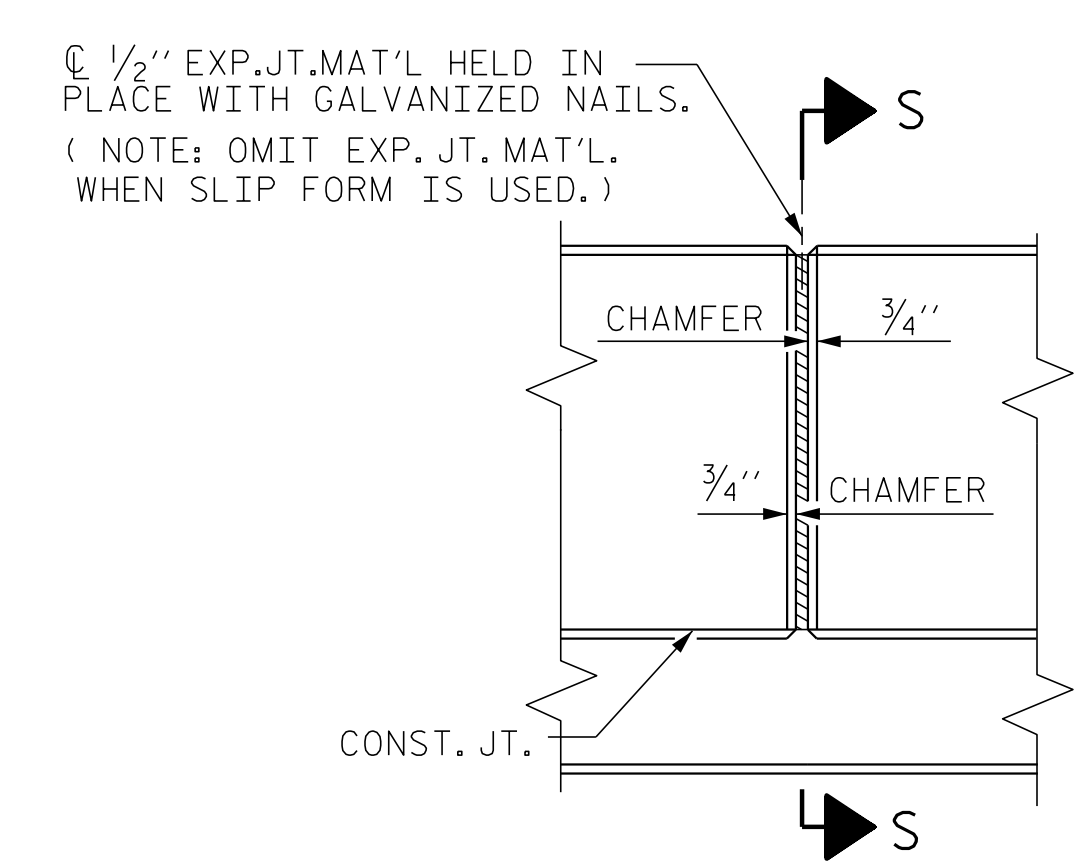
END OF RAIL DETAILS



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 2

ENGINEER OF RECORD:
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD CONCRETE BARRIER RAIL (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S5-14
 TOTAL SHEETS 26

ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

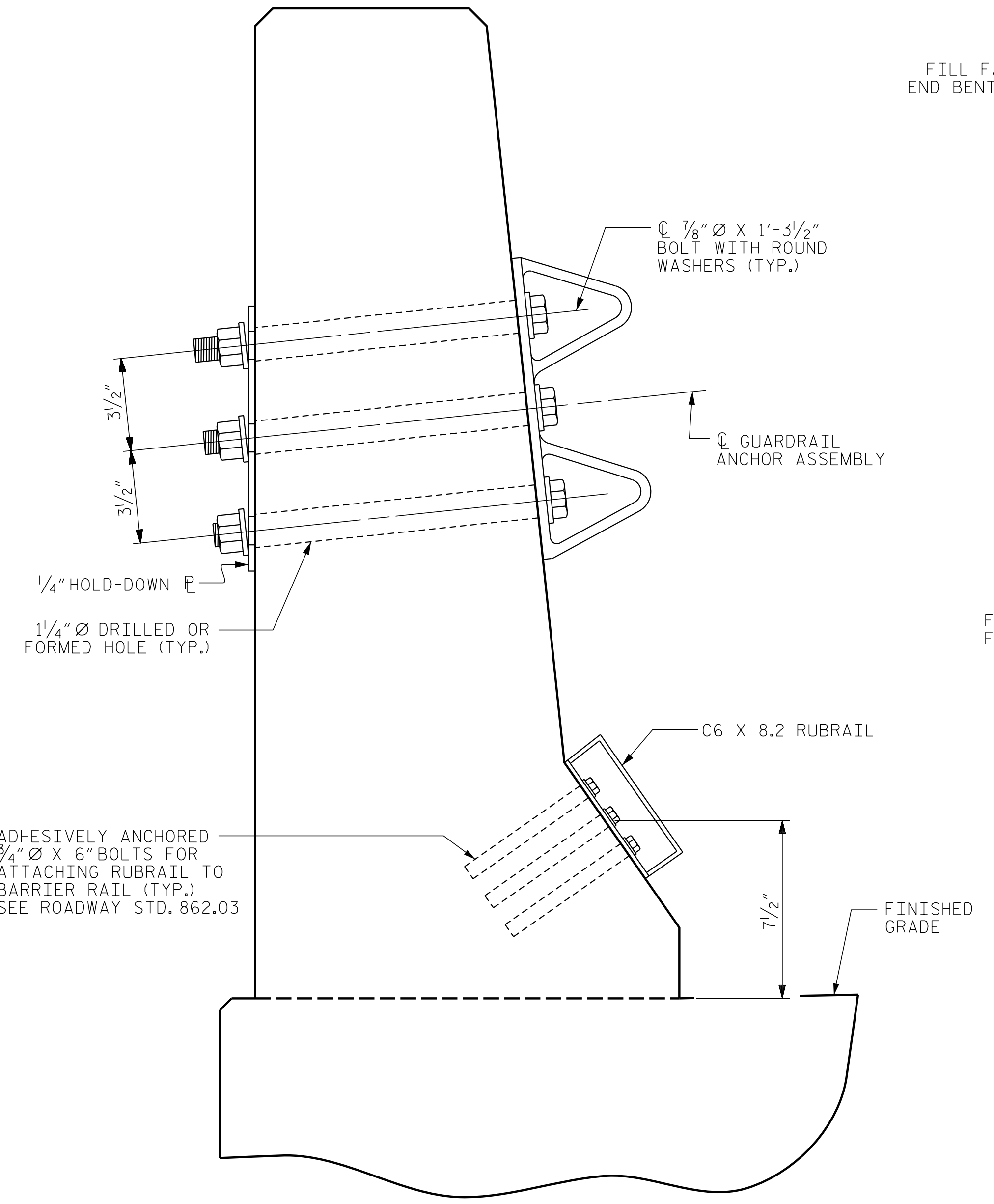
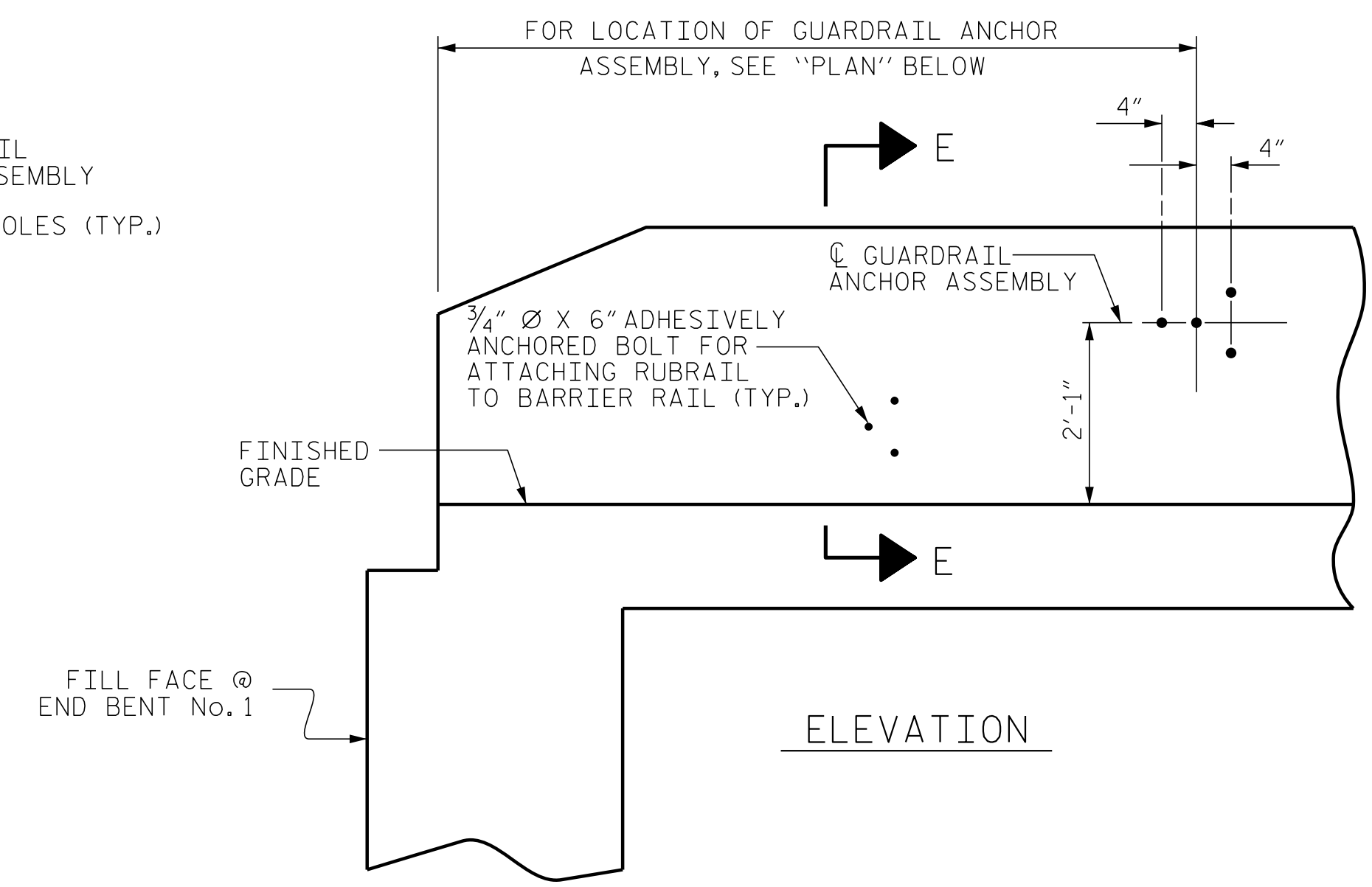
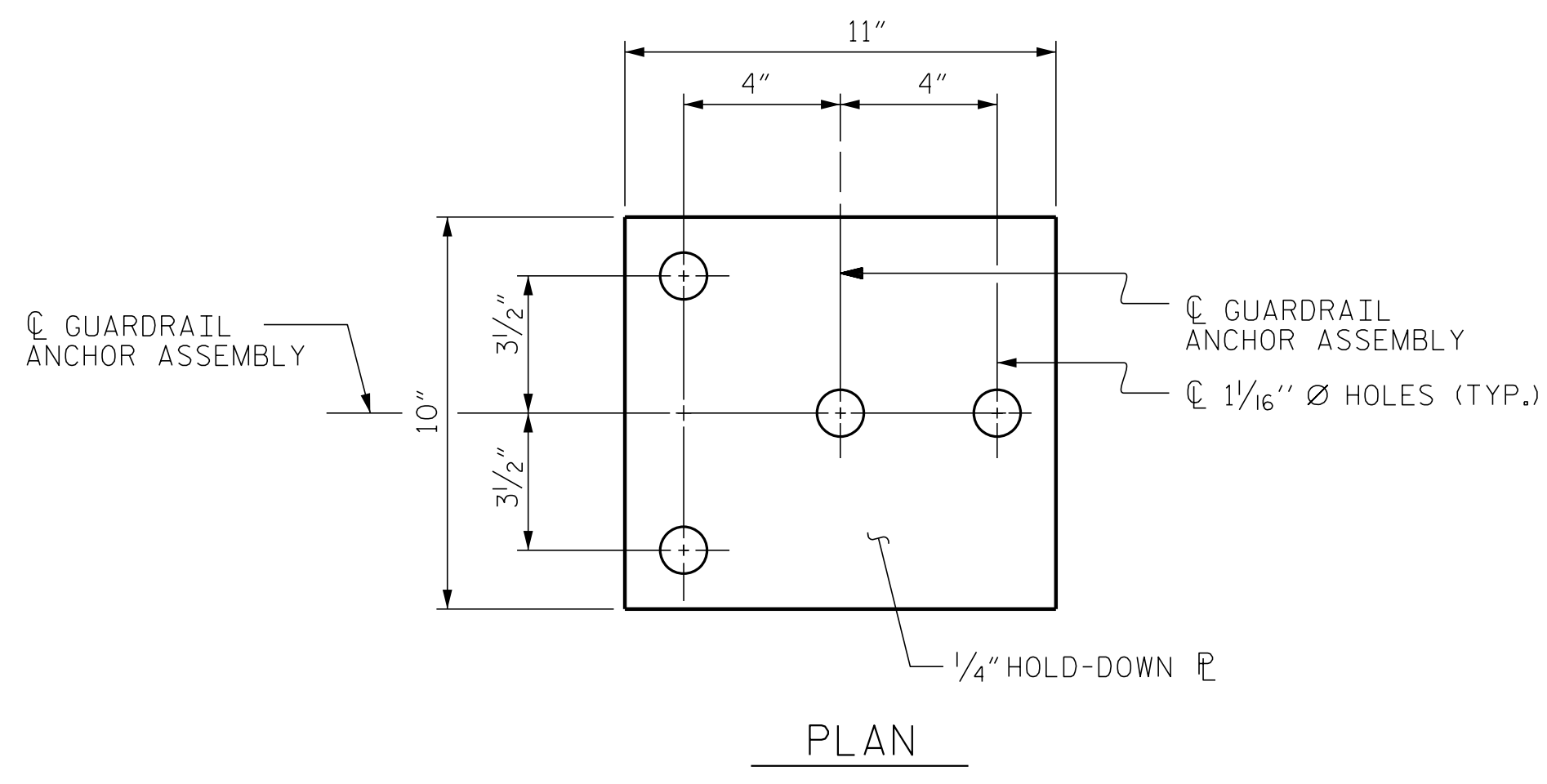
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

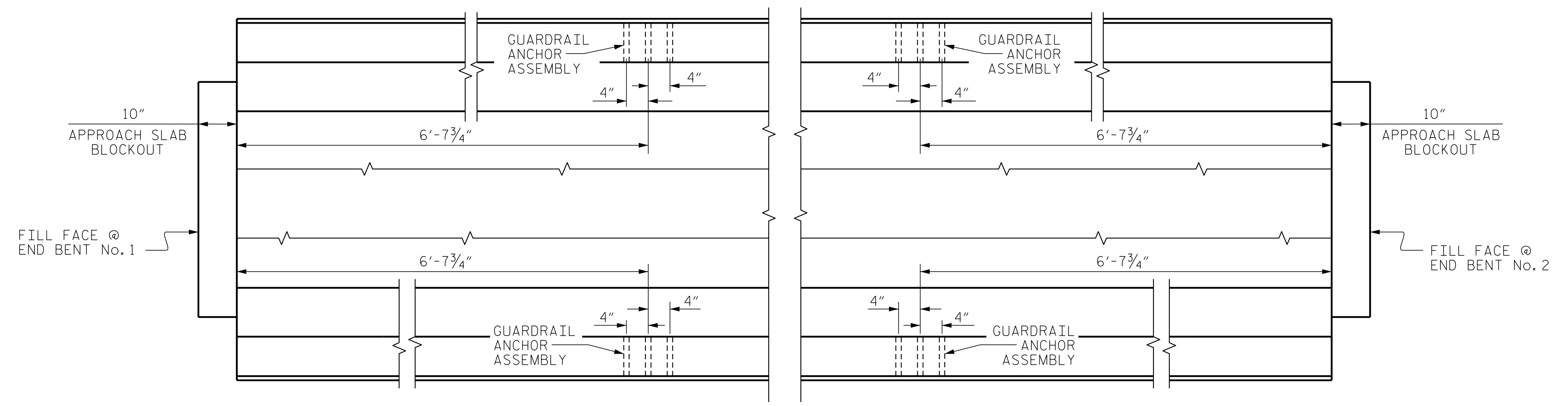
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

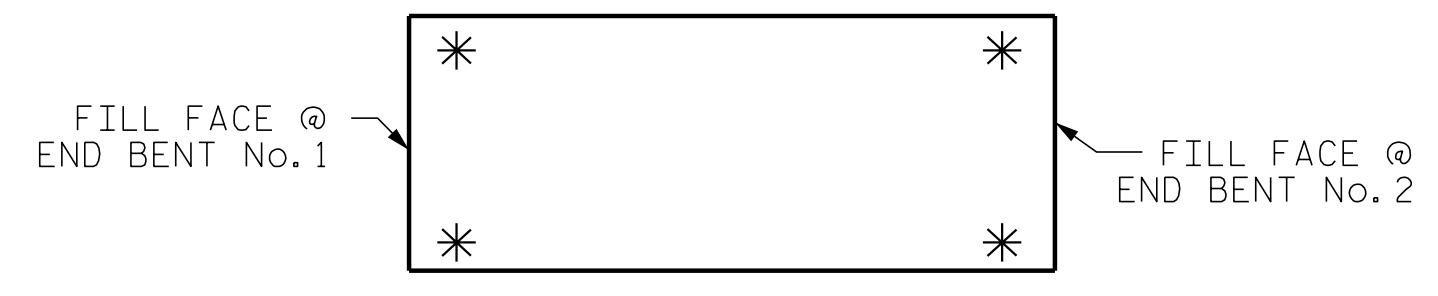
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-

ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL
(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

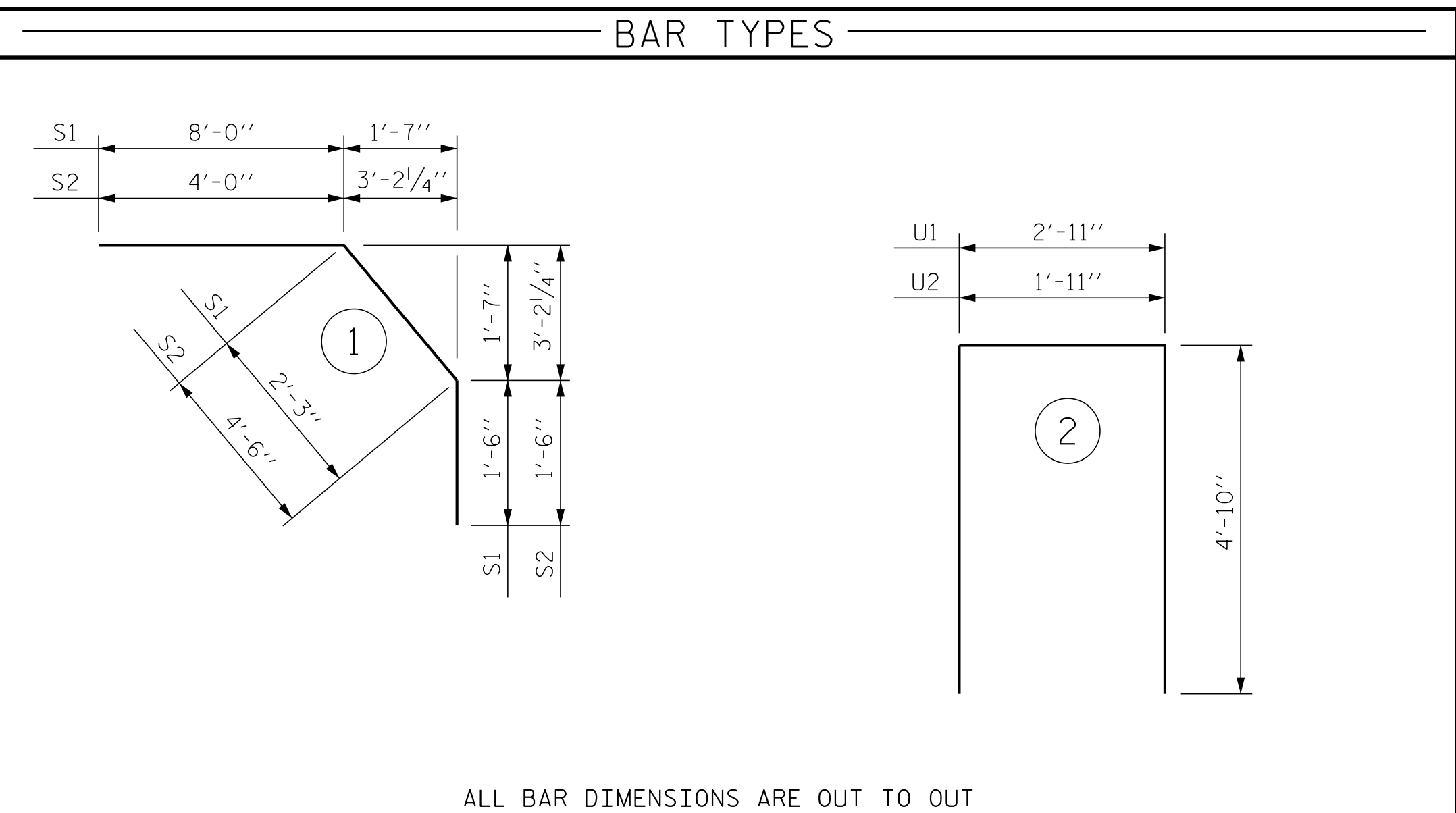
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 8/29/2018 8:55:00 AM

ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

BILL OF MATERIAL

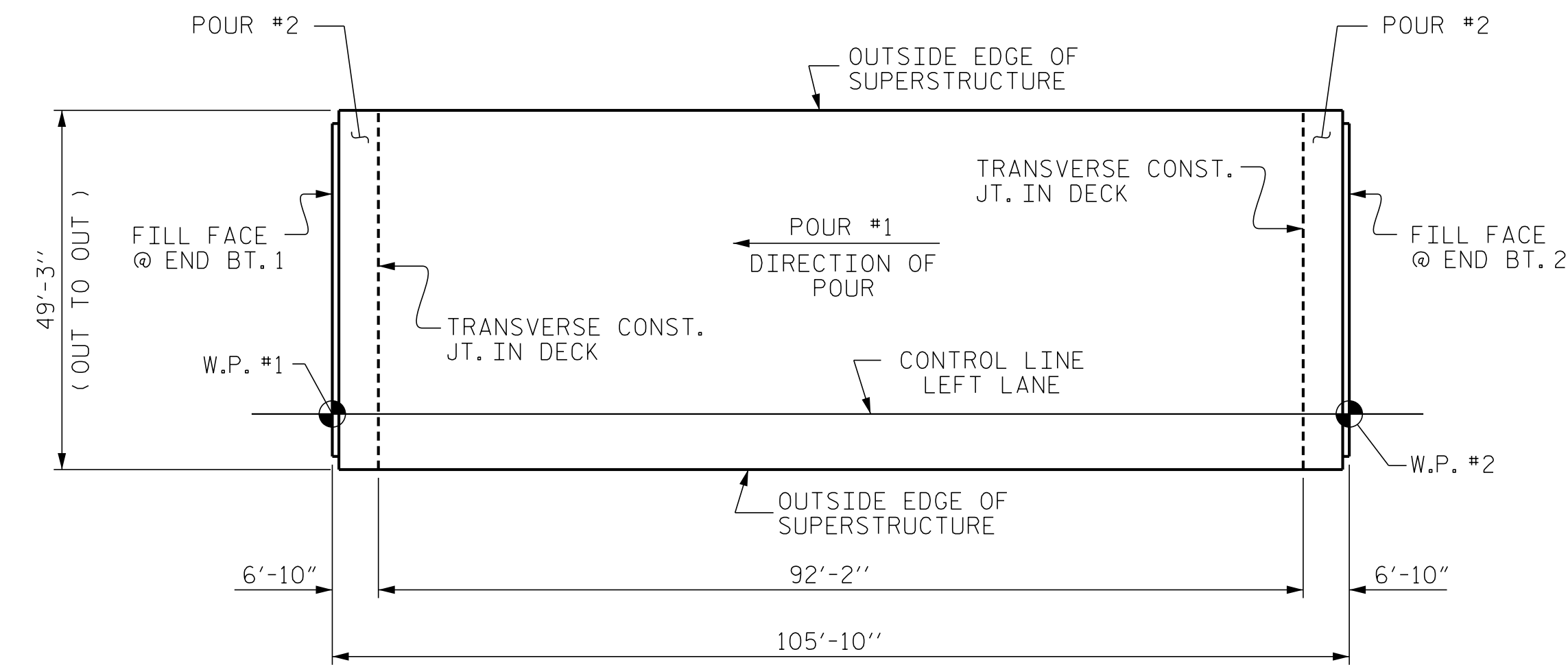
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	179	#5	STR	48'-11"	9133
A2	179	#5	STR	48'-11"	9133
* B1	8	#4	STR	27'-6"	147
* B2	188	#6	STR	24'-11"	7036
* B3	64	#4	STR	30'-0"	1283
B4	88	#6	STR	24'-1"	3183
B5	44	#5	STR	60'-0"	2754
K1	24	#4	STR	24'-5"	391
K2	32	#4	STR	9'-5"	201
K3	8	#4	STR	7'-10"	42
K4	8	#4	STR	6'-5"	34
K5	16	#4	STR	3'-4"	36
K6	4	#4	STR	2'-6"	7
K7	4	#4	STR	1'-10"	5
* S1	68	#4	1	11'-9"	534
* S2	64	#4	1	10'-0"	428
U1	64	#4	2	12'-7"	538
U2	4	#4	2	11'-7"	31
REINFORCING STEEL				LBS.	16,355
* EPOXY COATED REINFORCING STEEL				LBS.	18,561



SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS **	229.1	16,355	18,561

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED



CONCRETE DECK POUR DETAIL

NOTE: POUR #2 INCLUDES UPPER PART OF THE INTEGRAL END BENT.

GROOVING BRIDGE FLOORS

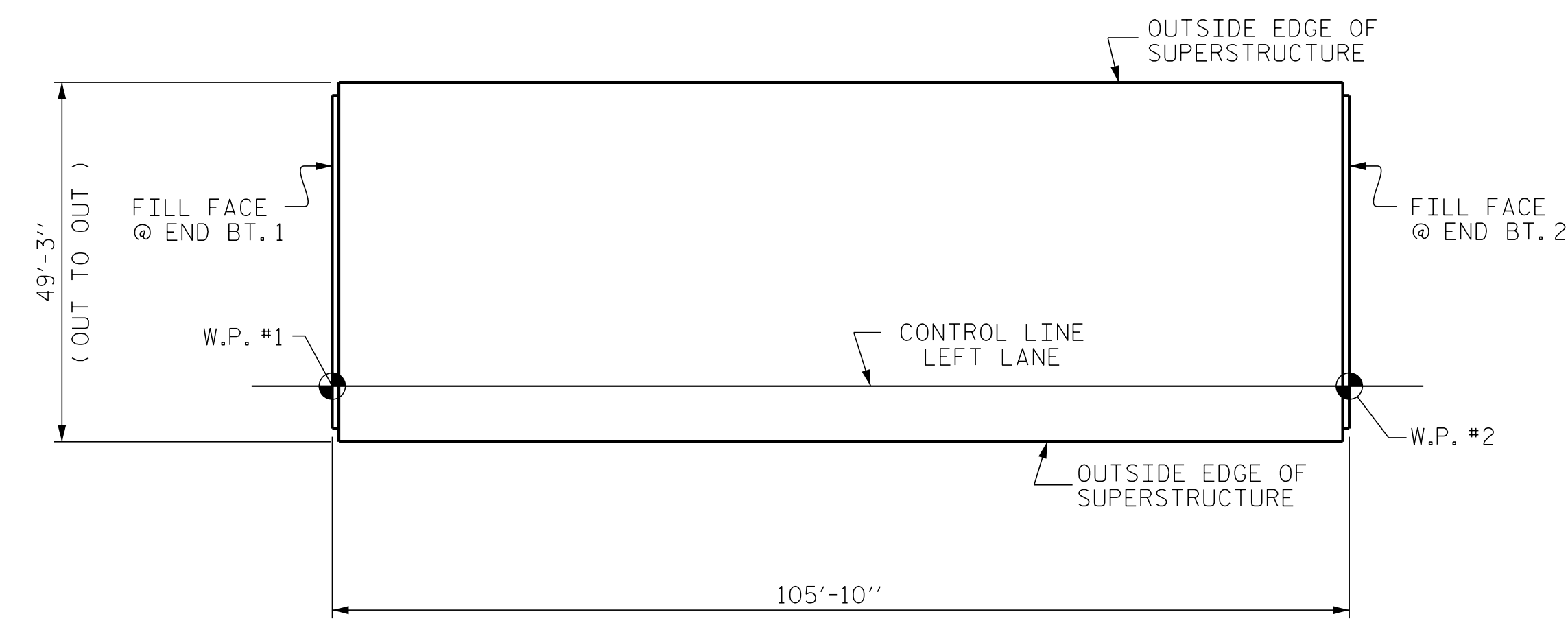
APPROACH SLABS	2,093 SQ.FT.
BRIDGE DECK	4,479 SQ.FT.
TOTAL	6,572 SQ.FT.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

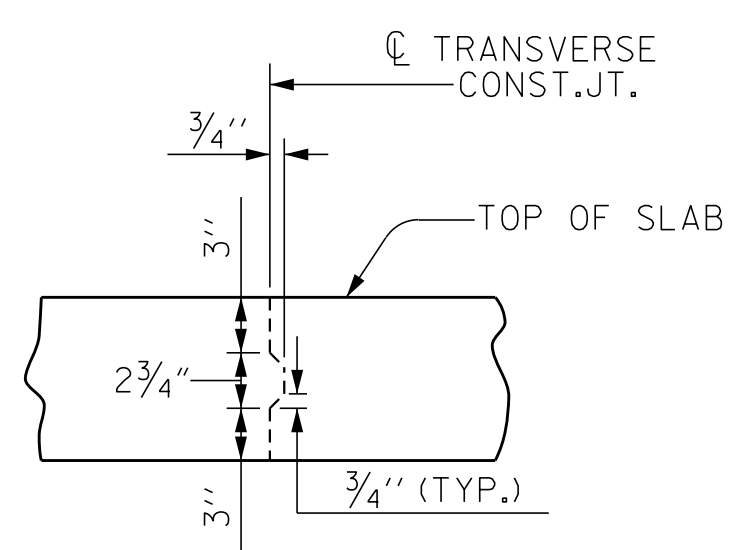
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

CLASS AA CONCRETE BREAKDOWN

POUR #1	150.5	CY
POUR #2	78.6	CY
CLASS AA CONCRETE BREAKDOWN TOTAL	229.1	CY



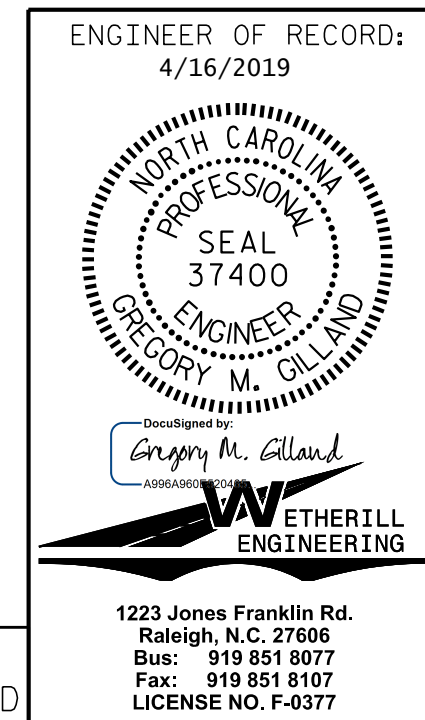
LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 5,212)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

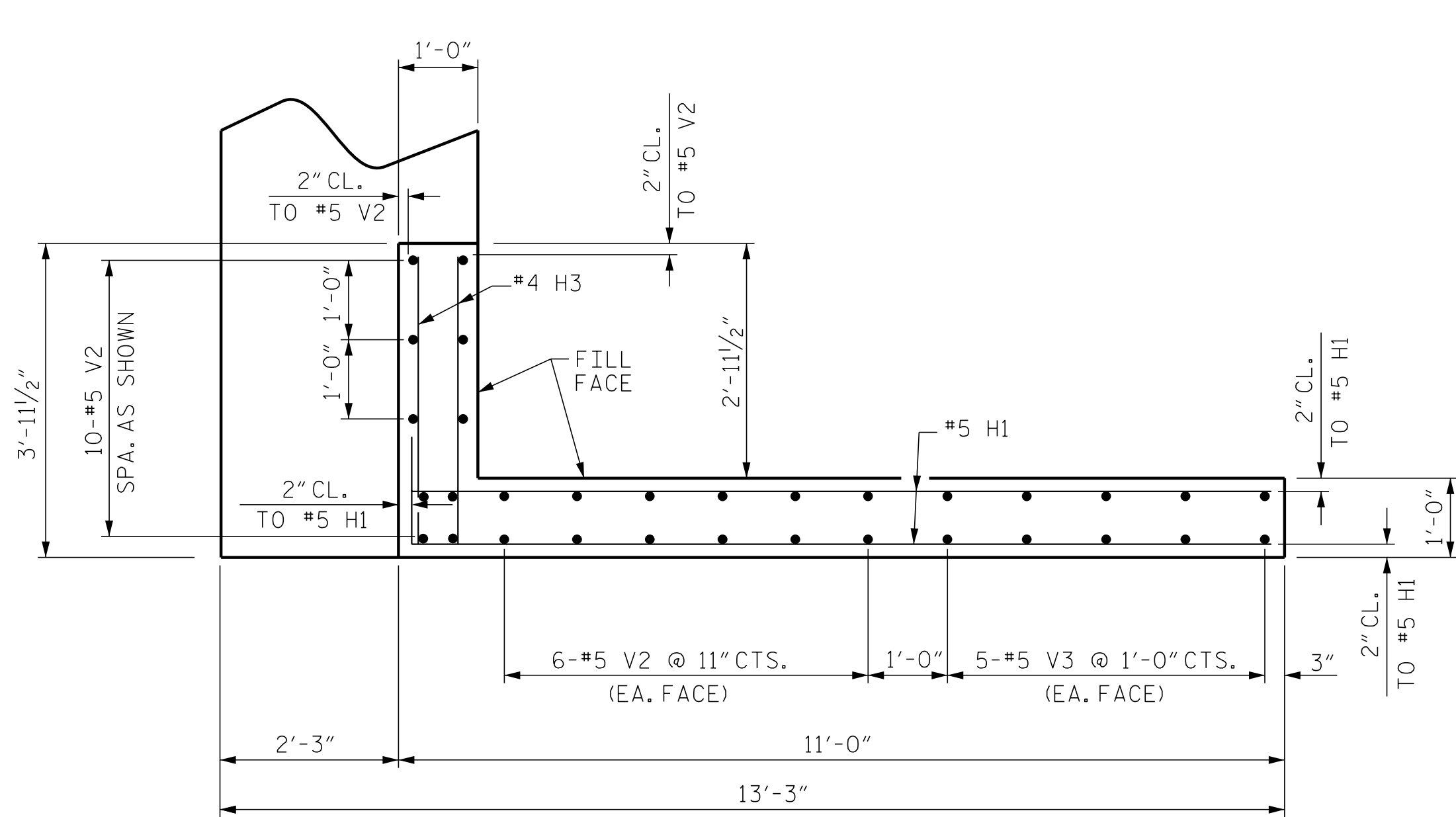
SUPERSTRUCTURE BILL OF MATERIAL (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-16
1			3			TOTAL SHEETS
2			4			26

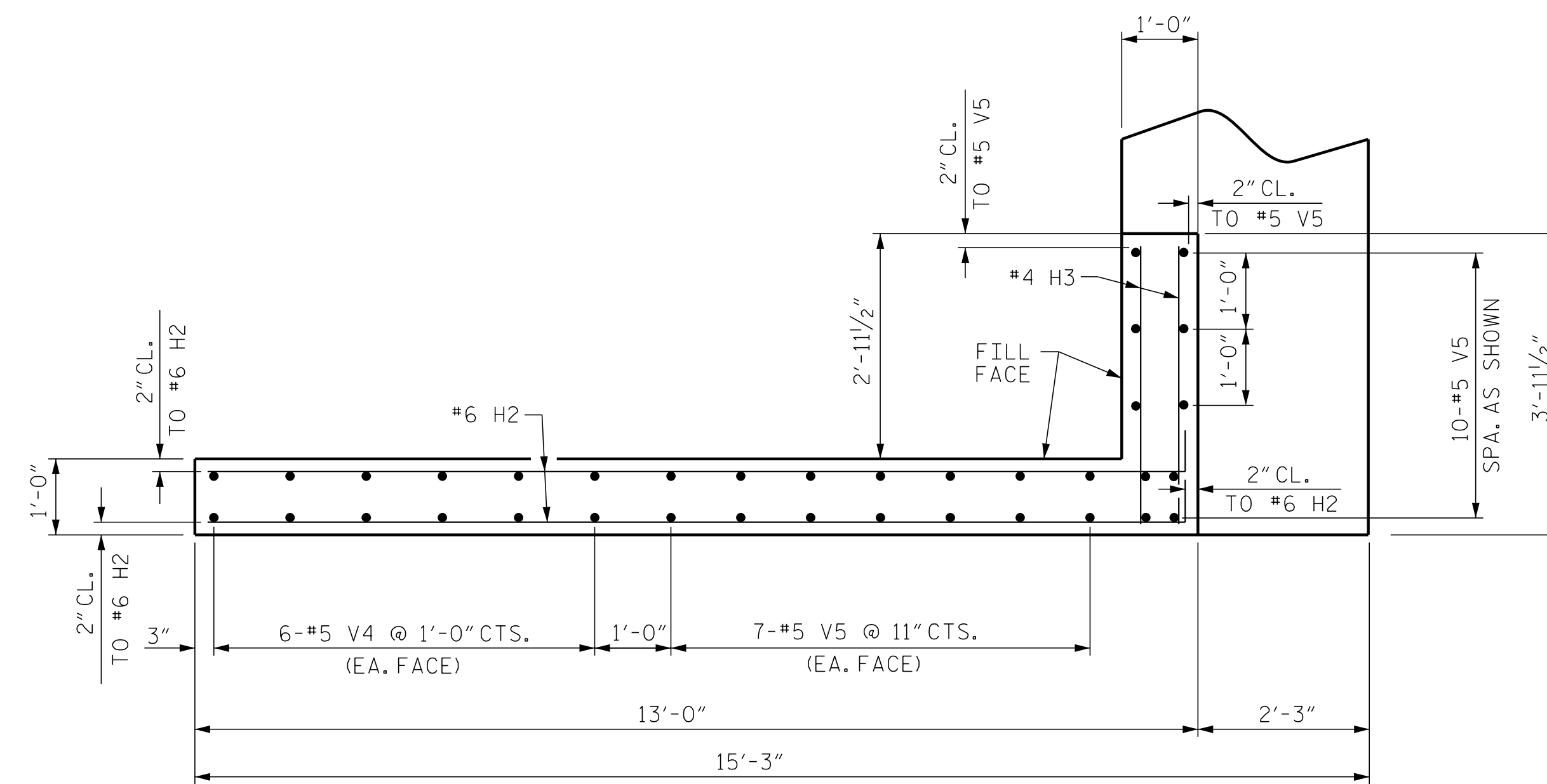
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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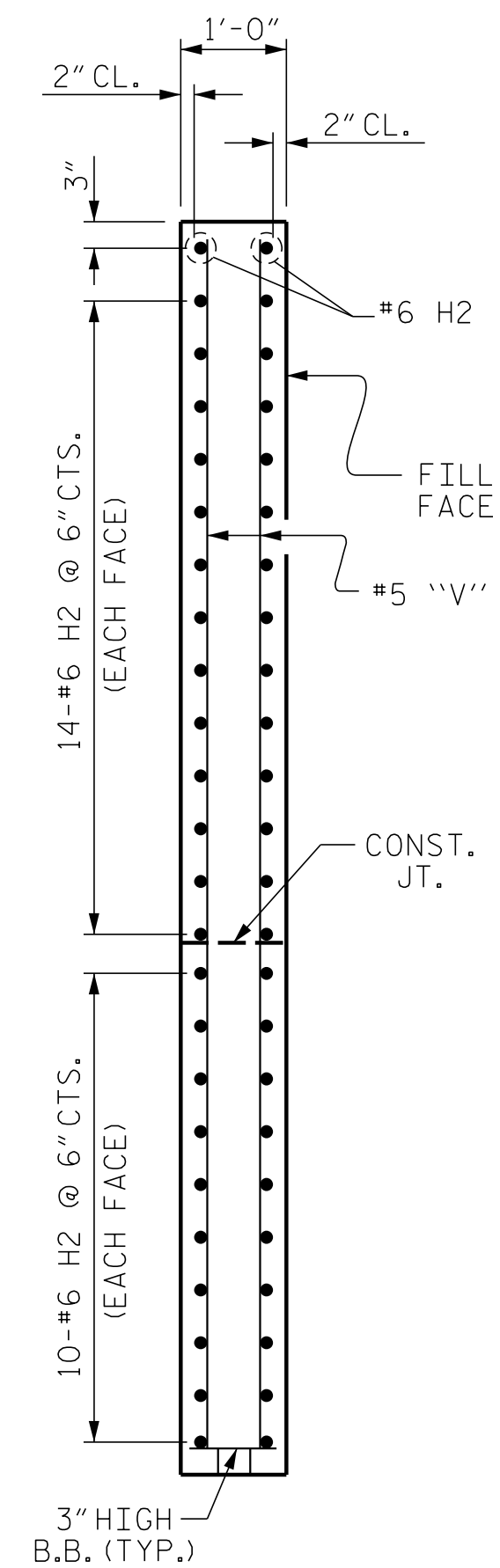
DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 4/18



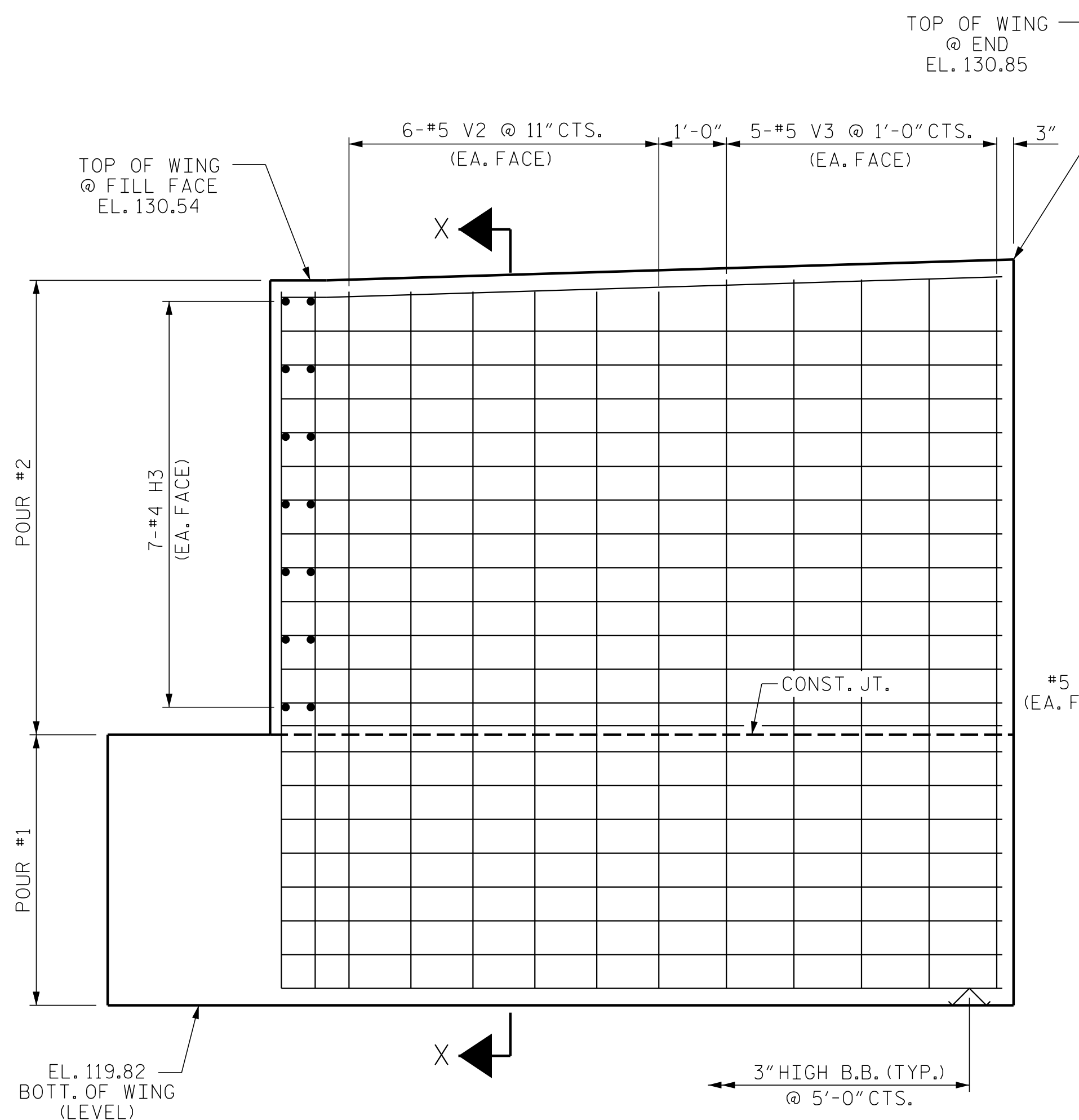
PLAN OF WING - W1



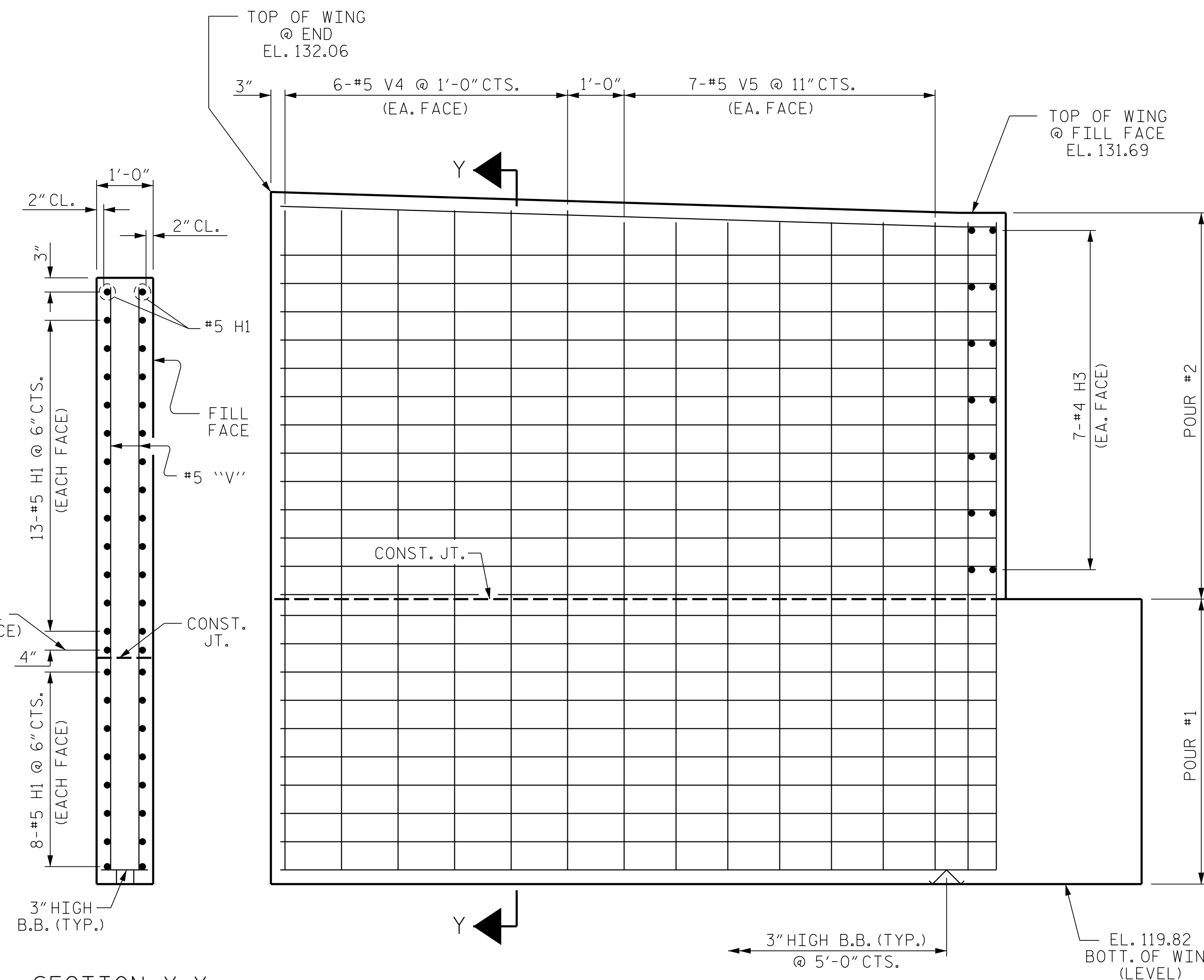
PLAN OF WING - W2



SECTION Y-Y



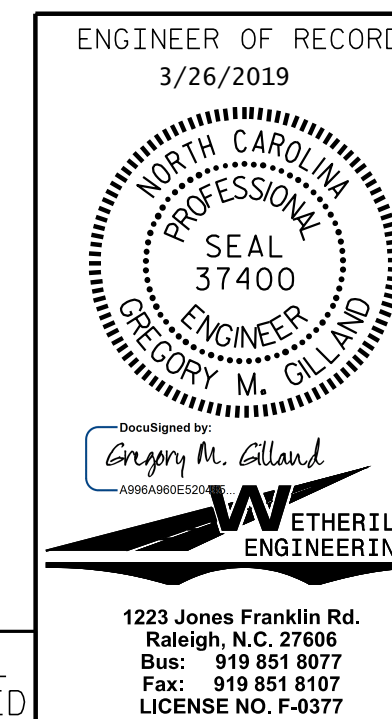
ELEVATION OF WING - W1



ELEVATION OF WING - W2

SECTION X-X

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 3

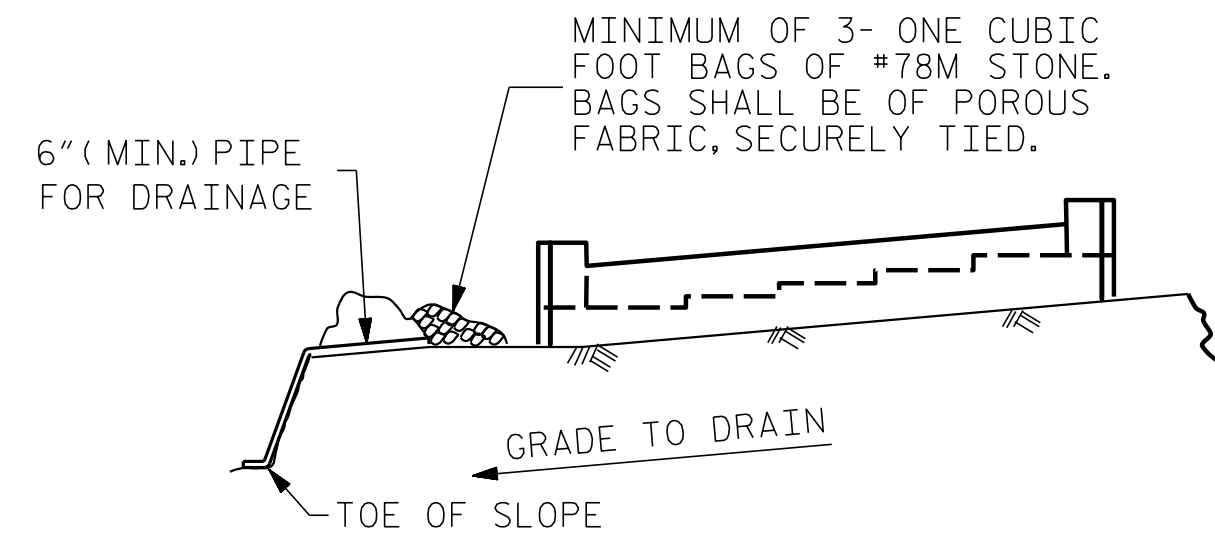


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1 (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

SHEET NO.
S5-18
 TOTAL SHEETS
26

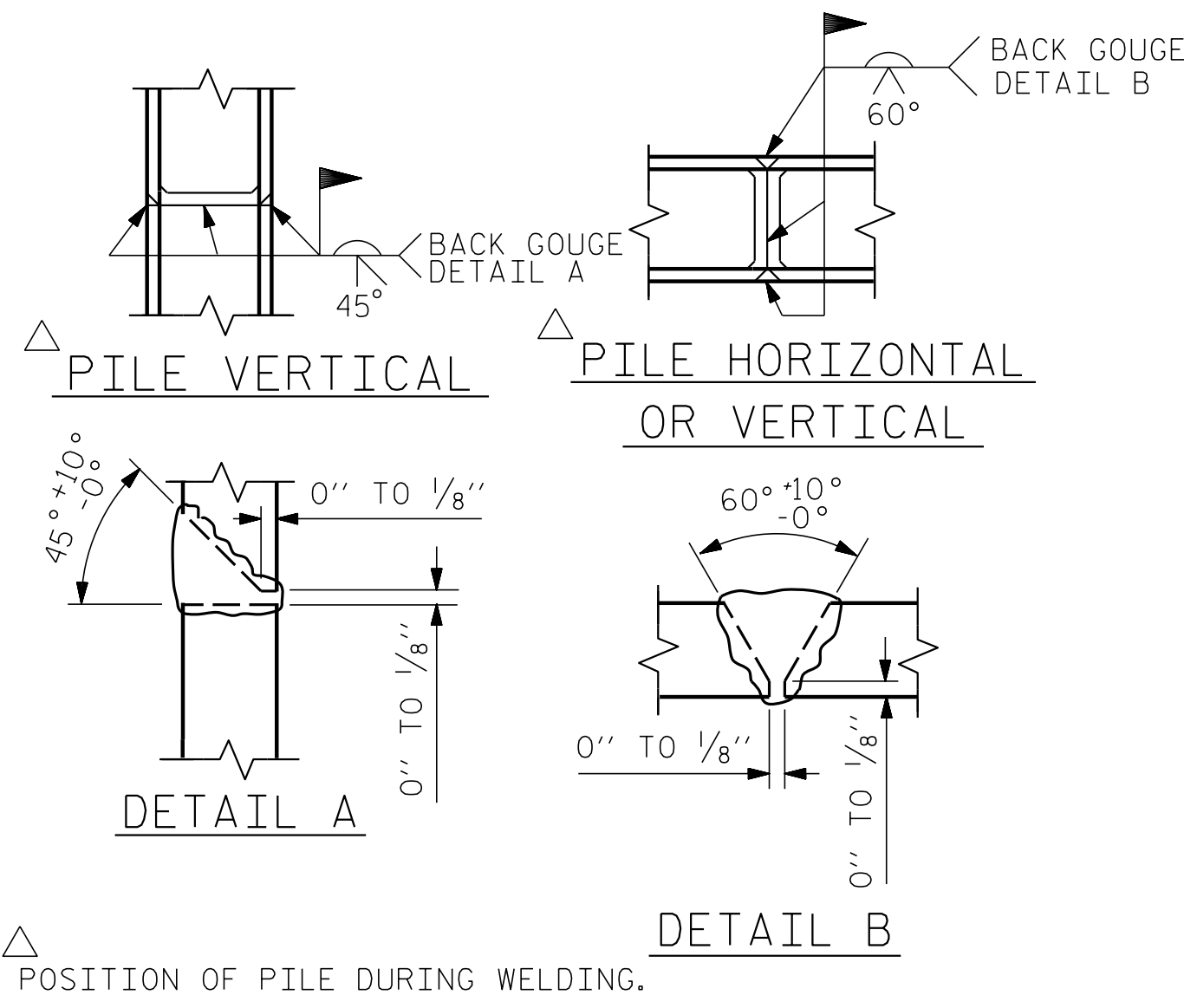


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

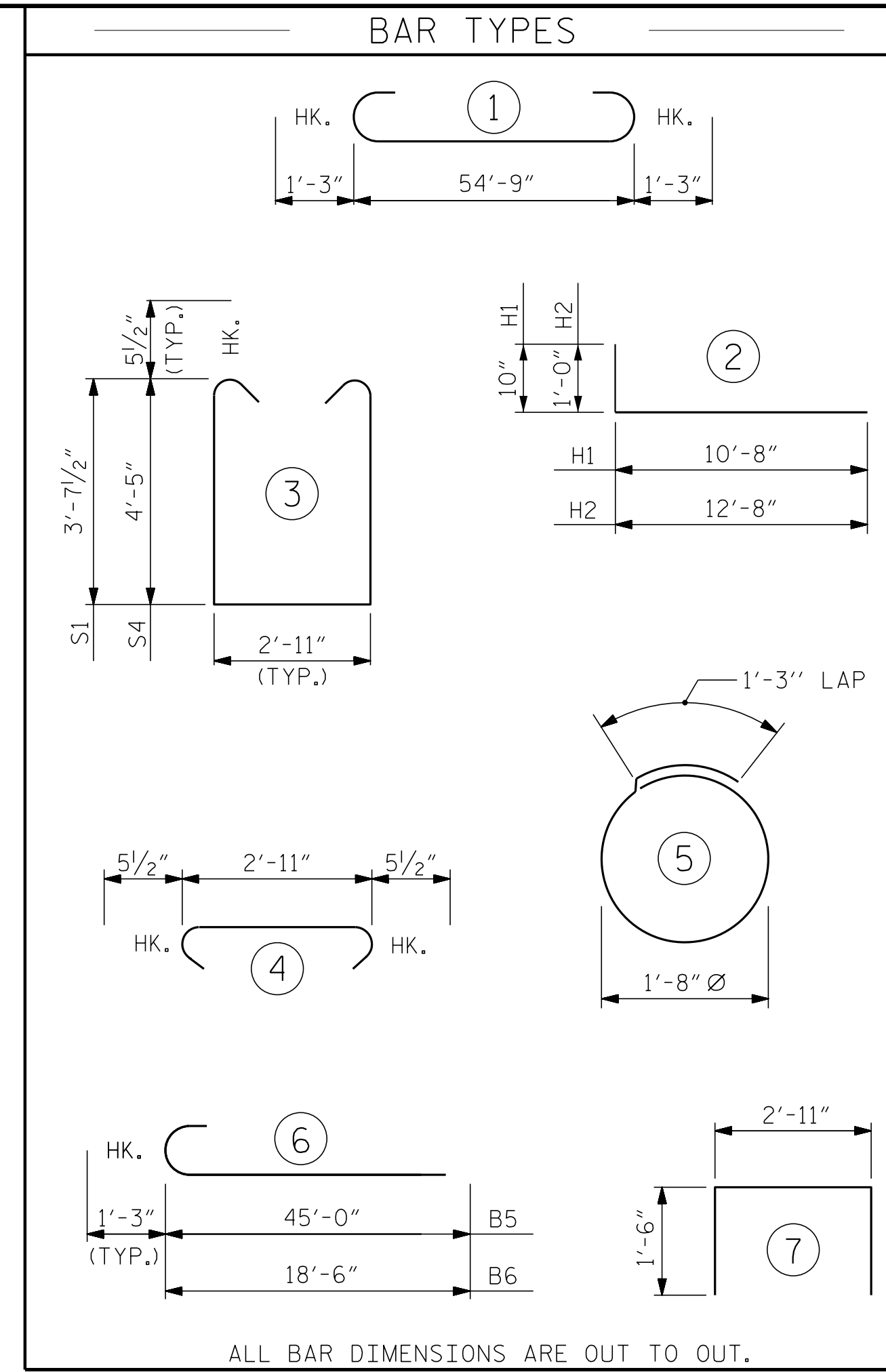
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



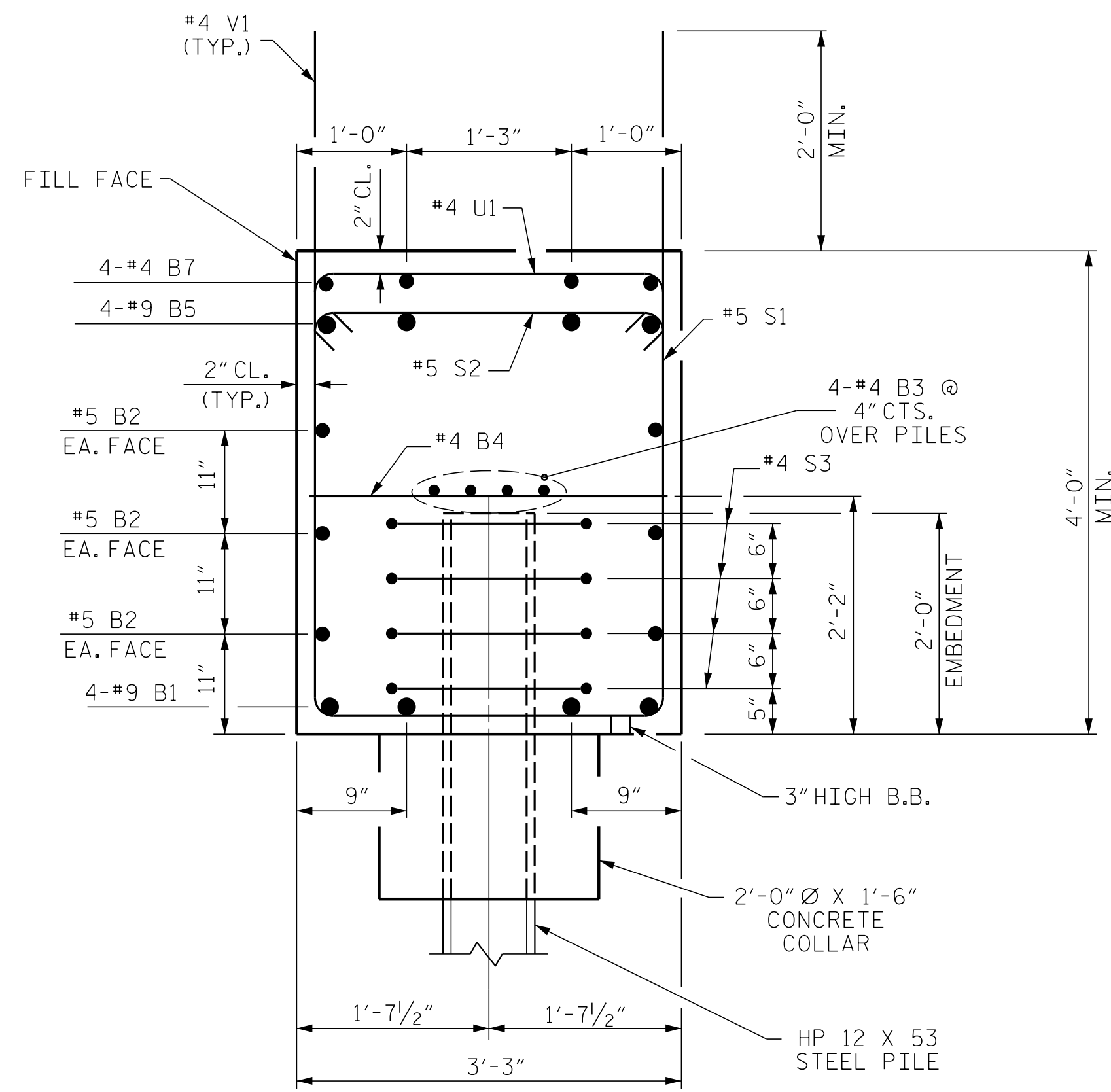
PILE SPLICE DETAILS

△ POSITION OF PILE DURING WELDING.

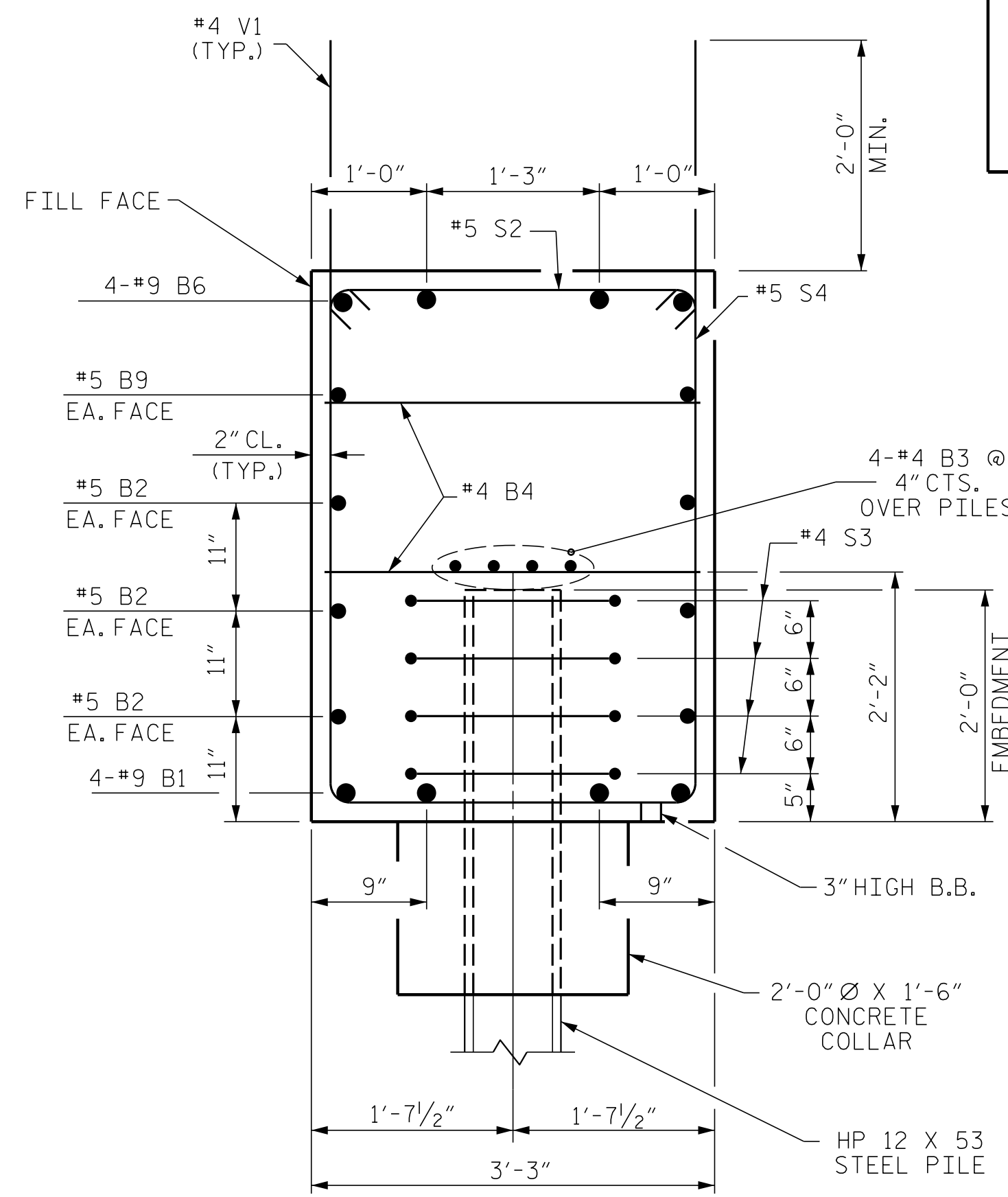


BILL OF MATERIAL					
END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-3"	779
B2	6	#5	STR	54'-11"	344
B3	8	#4	STR	28'-8"	153
B4	17	#4	STR	2'-11"	33
B5	4	#9	6	46'-3"	629
B6	4	#9	6	19'-9"	269
B7	8	#4	STR	10'-4"	55
B8	4	#4	STR	8'-3"	22
B9	2	#5	STR	12'-11"	27
H1	44	#5	2	11'-6"	528
H2	48	#6	2	13'-8"	985
H3	28	#4	STR	3'-7"	67
S1	43	#5	3	11'-1"	497
S2	64	#5	4	3'-10"	256
S3	36	#4	5	6'-6"	156
S4	21	#5	3	12'-8"	277
U1	20	#4	7	5'-11"	79
V1	66	#4	STR	5'-9"	254
V2	22	#5	STR	10'-3"	235
V3	10	#5	STR	10'-5"	109
V4	12	#5	STR	11'-8"	146
V5	24	#5	STR	11'-5"	286

REINFORCING STEEL	6,186 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS	34.9 C.Y.
POUR #2 UPPER PART OF WINGS	7.6 C.Y.
TOTAL CLASS A CONCRETE	42.5 C.Y.
HP 12 X 53 STEEL PILES	
NO: 9	LIN. FT. = 540
PILE REDRIVES	9 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	9 EA.

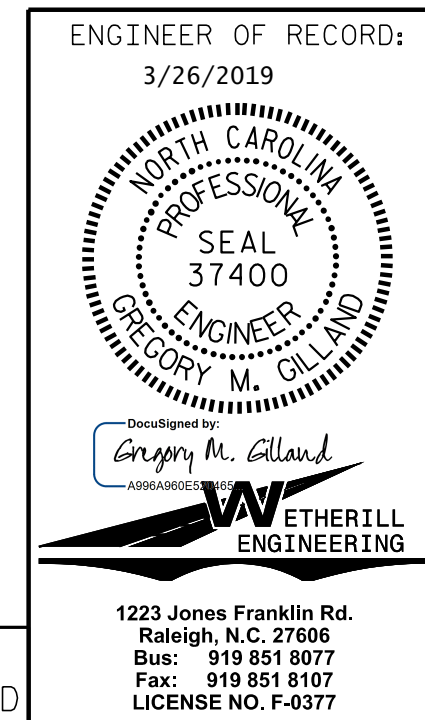


SECTION A-A



SECTION B-B

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 3 OF 3



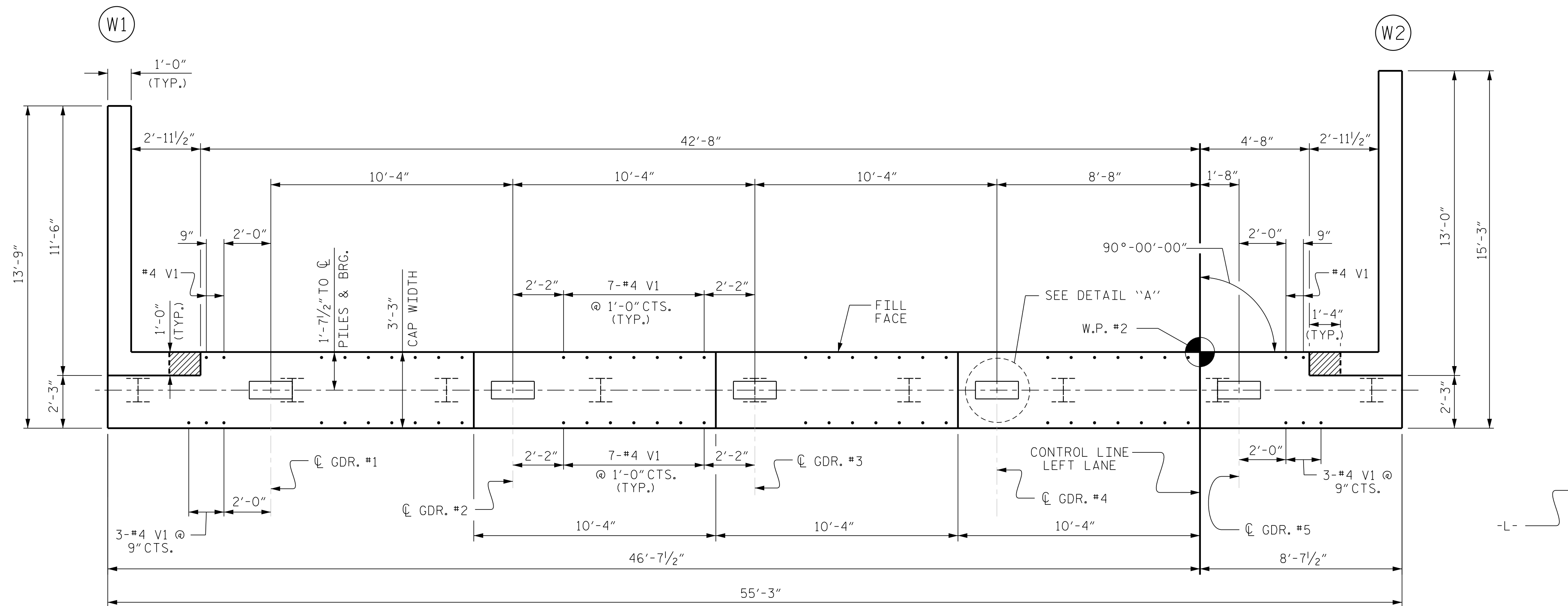
STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
END BENT No. 1					
(LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S5-19
TOTAL SHEETS					26

DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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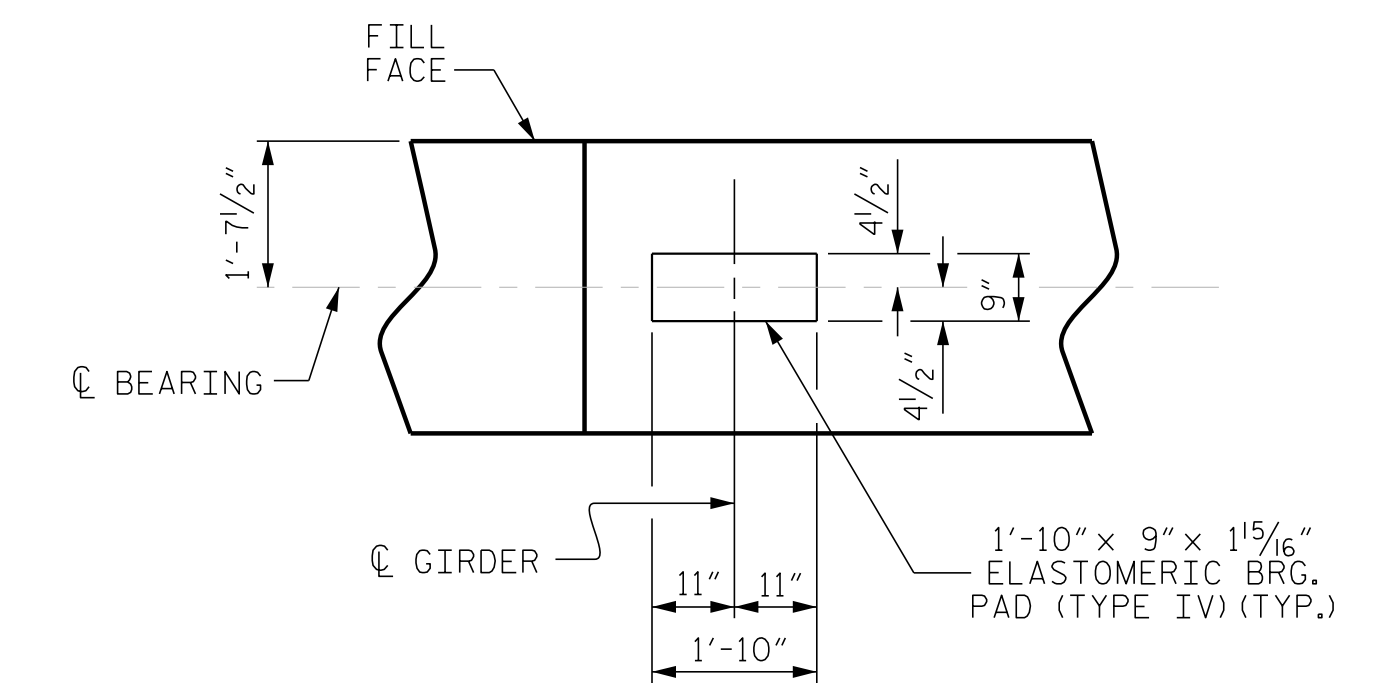


PLAN
(CONCRETE COLLARS NOT SHOWN FOR CLARITY)

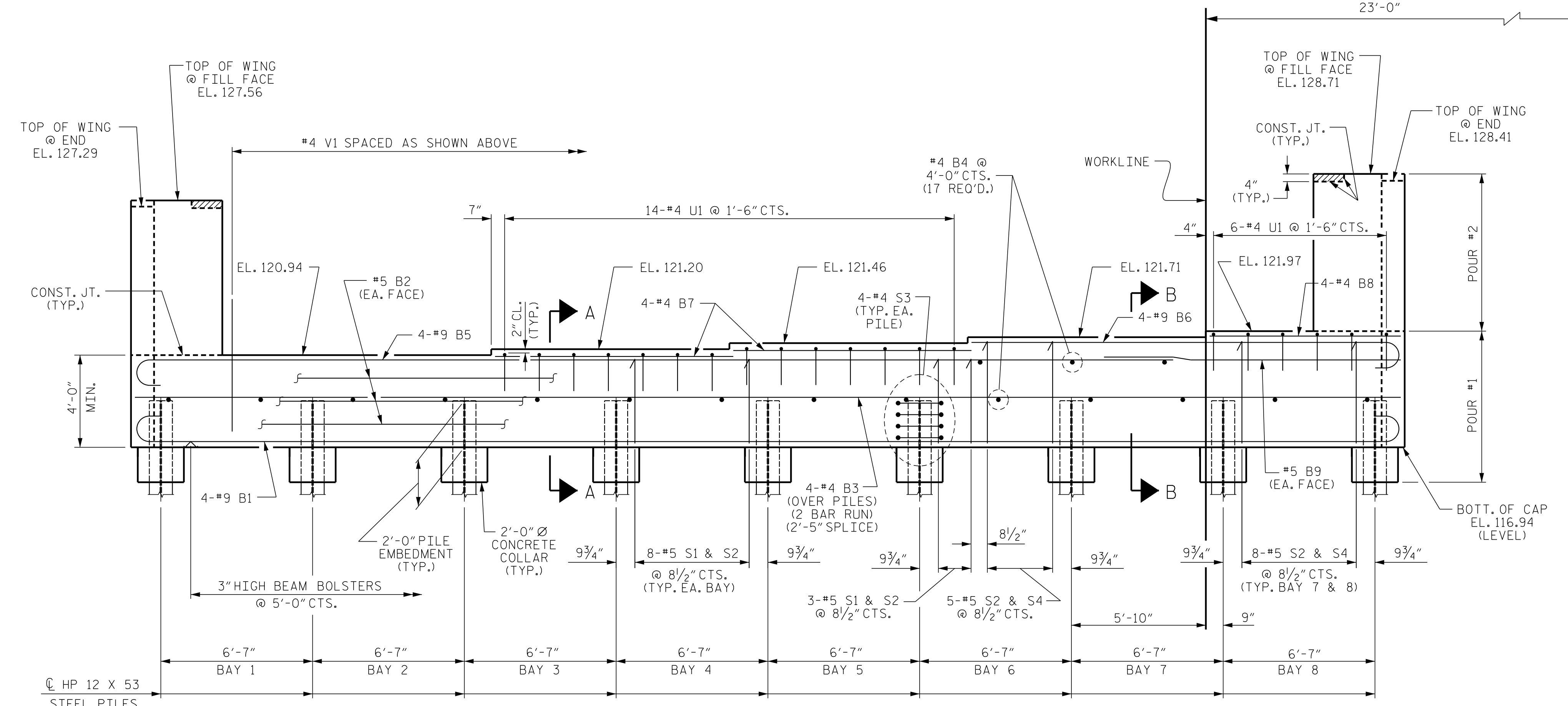
NOTES

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

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1"4".



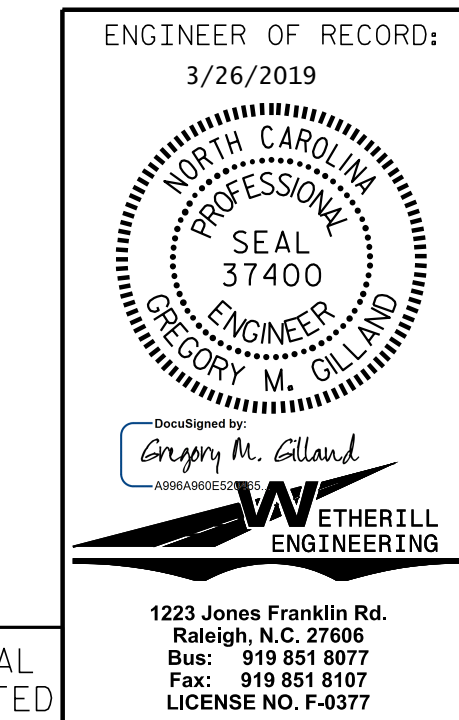
DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION

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

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 3

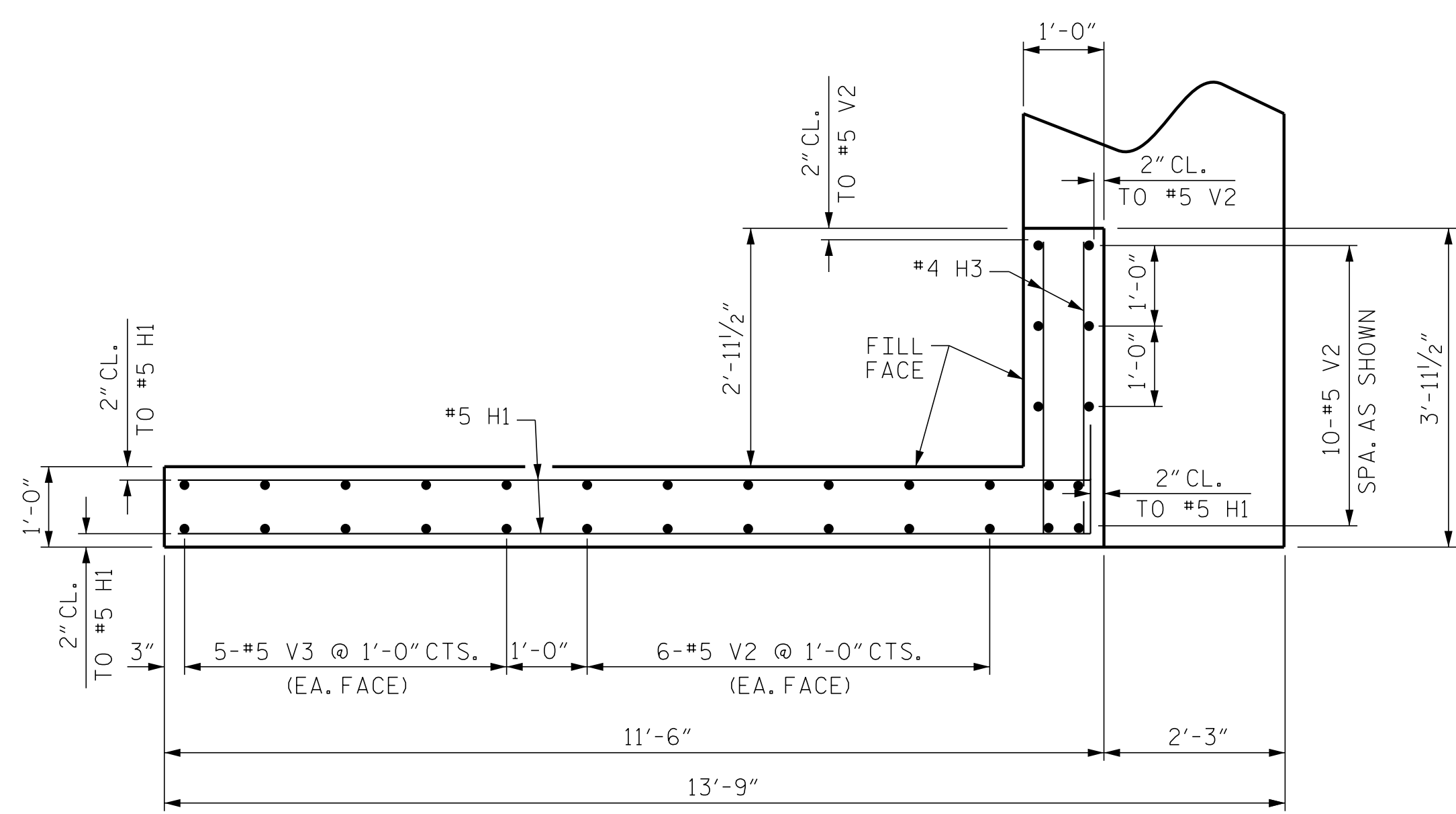


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 2 (LEFT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S5-20
2			TOTAL SHEETS 26

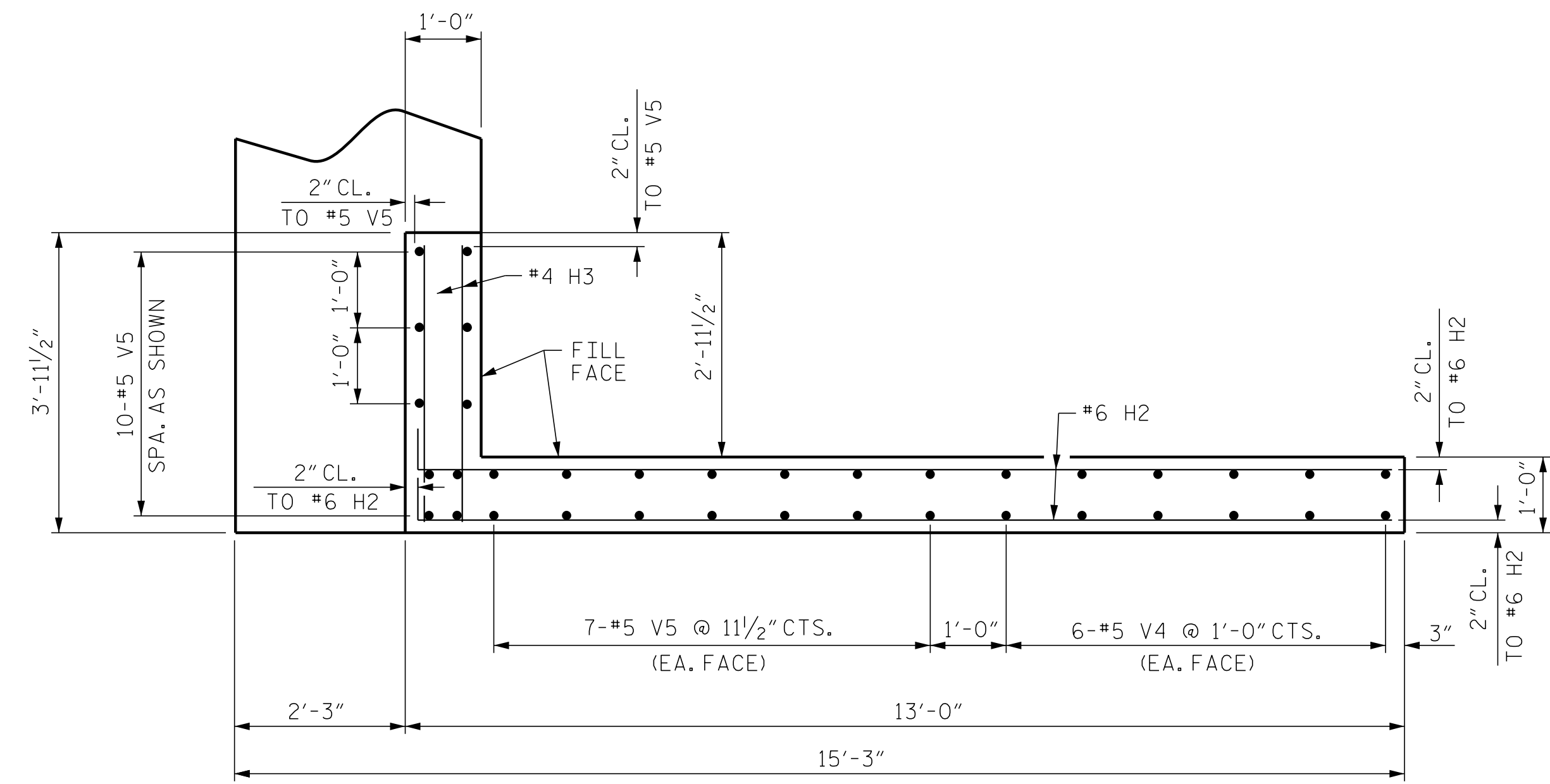
DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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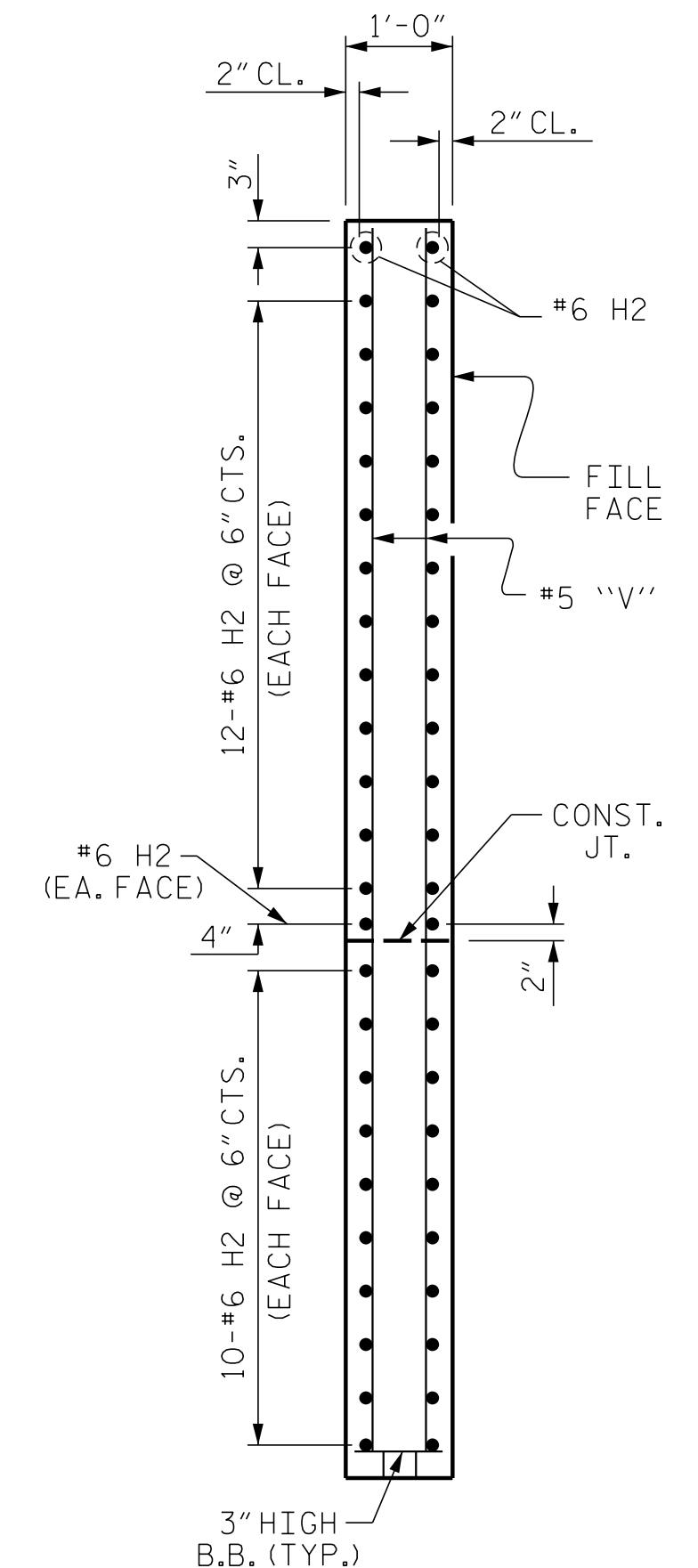
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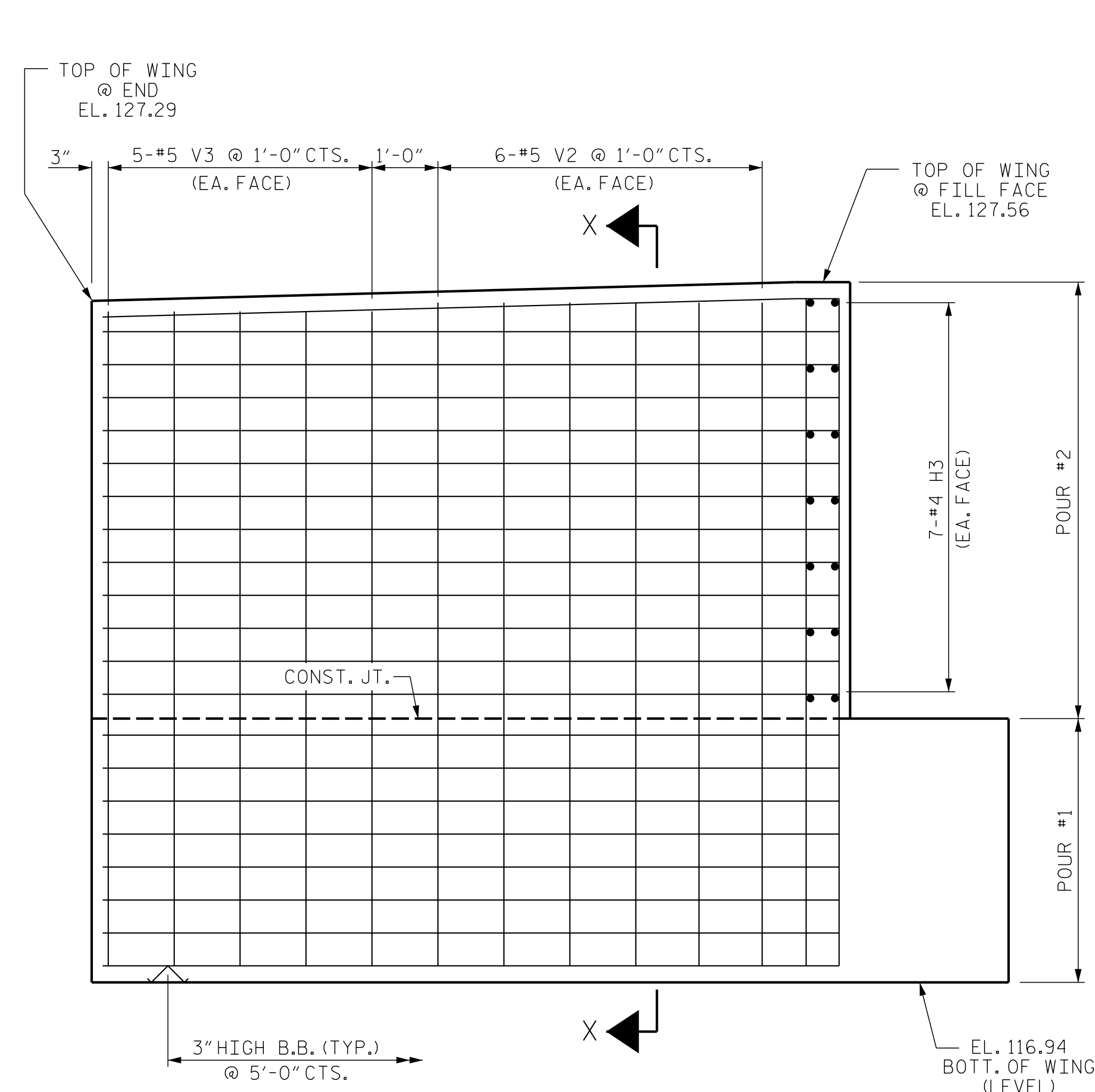
PLAN OF WING - W1



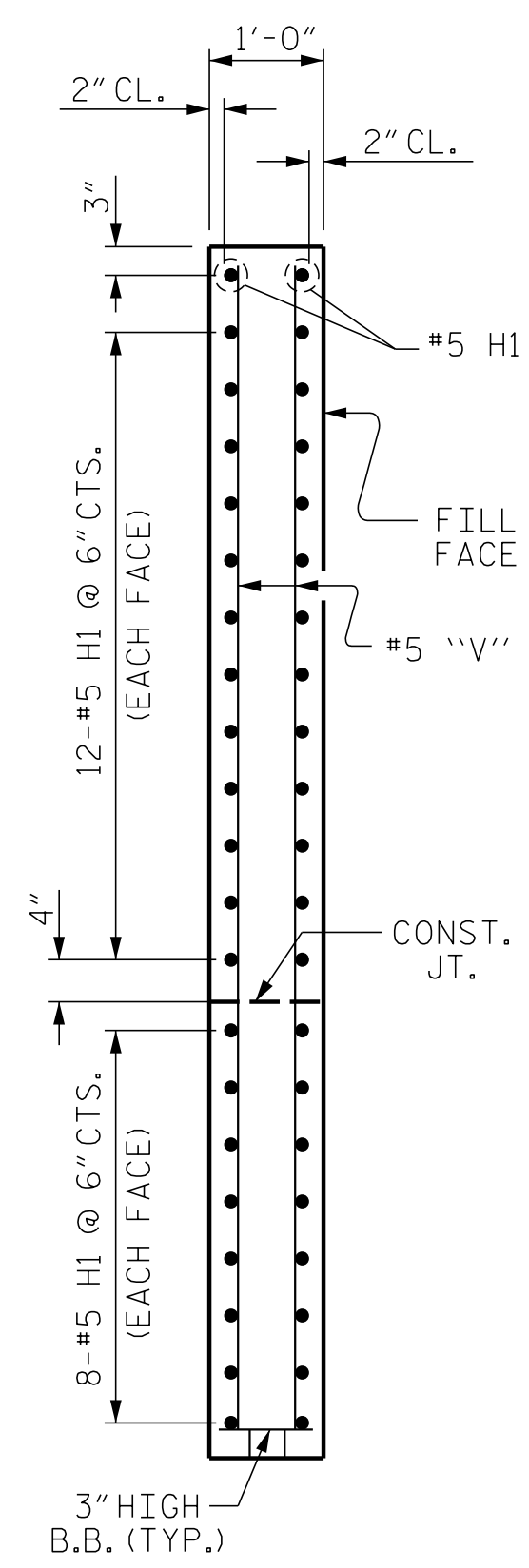
PLAN OF WING - W2



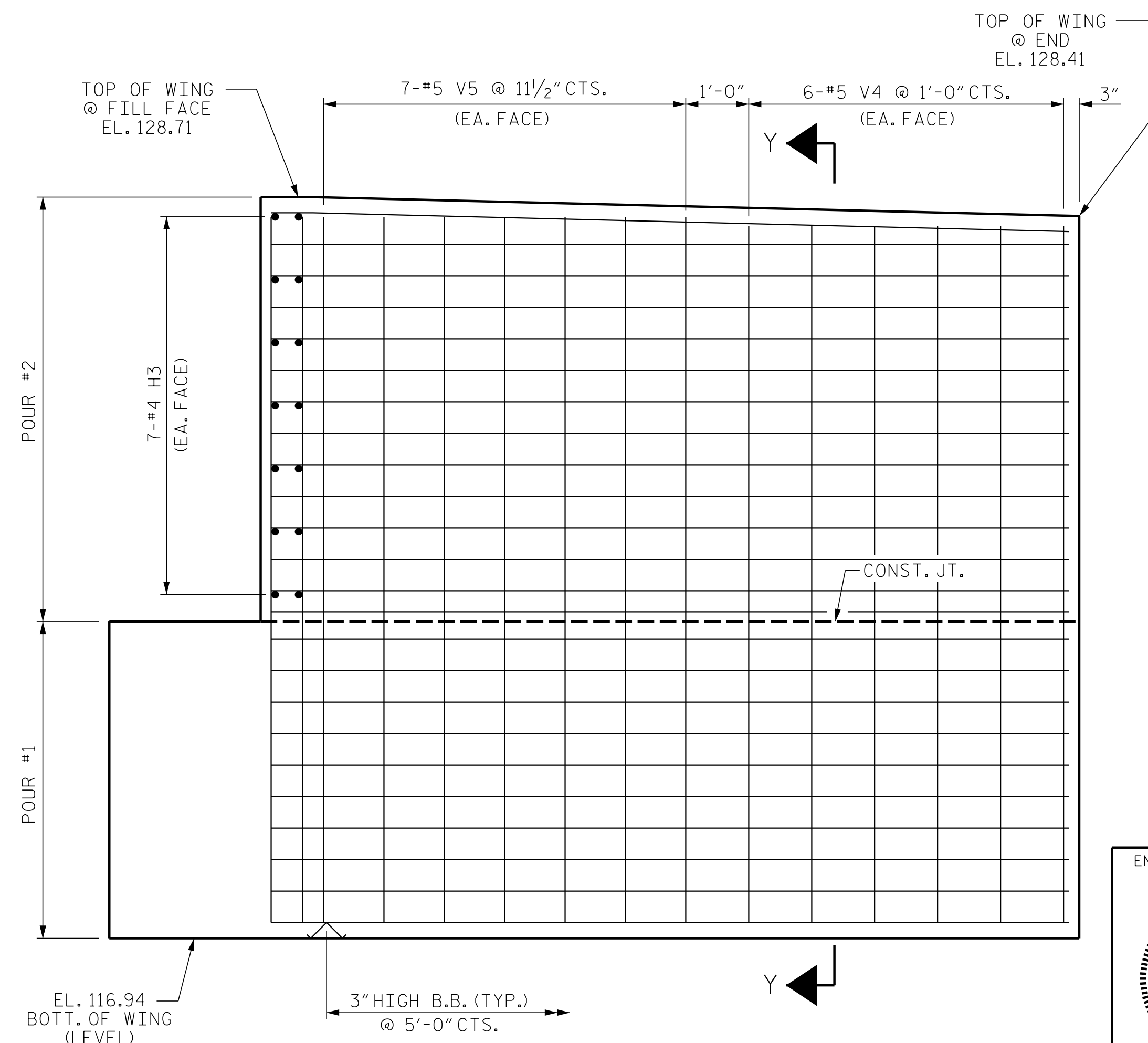
SECTION Y-Y



ELEVATION OF WING - W1

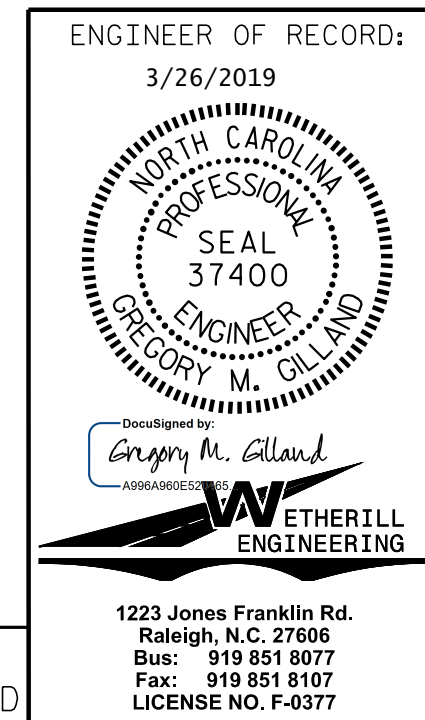


SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 3



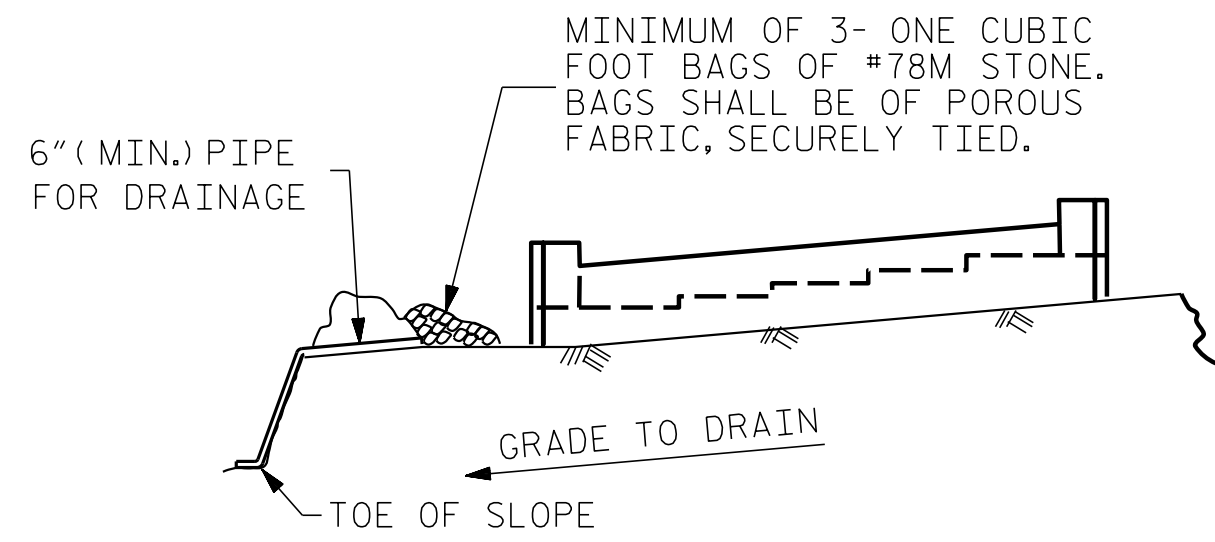
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 2 (LEFT LANE)	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO.			S5-21
TOTAL SHEETS			26

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DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

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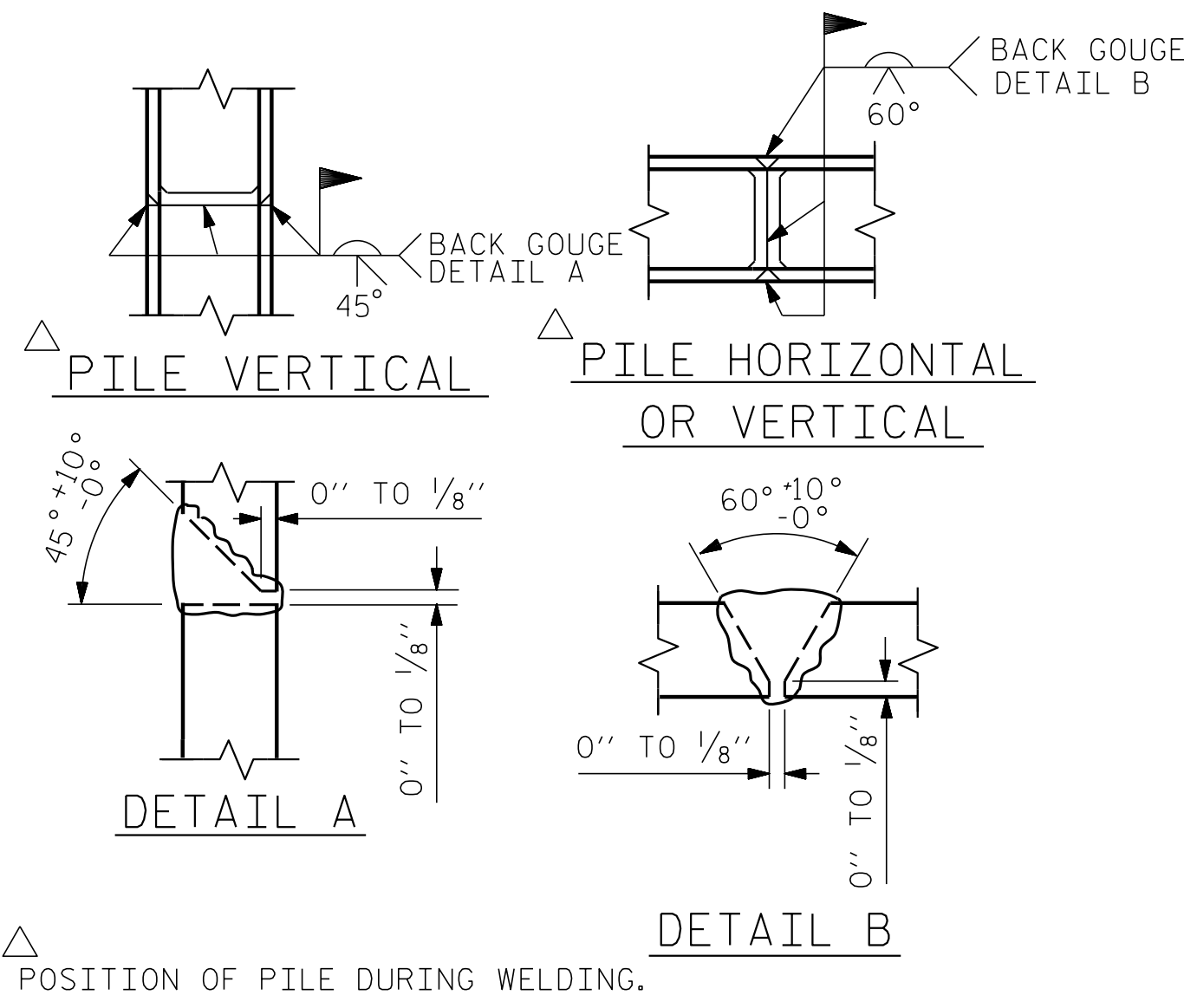


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-3"	779
B2	6	#5	STR	54'-11"	344
B3	8	#4	STR	28'-8"	153
B4	17	#4	STR	2'-11"	33
B5	4	#9	6	46'-3"	629
B6	4	#9	6	19'-9"	269
B7	8	#4	STR	10'-4"	55
B8	4	#4	STR	8'-3"	22
B9	2	#5	STR	12'-11"	27
H1	42	#5	2	12'-0"	526
H2	48	#6	2	13'-8"	985
H3	28	#4	STR	3'-7"	67
S1	43	#5	3	11'-1"	497
S2	64	#5	4	3'-10"	256
S3	36	#4	5	6'-6"	156
S4	21	#5	3	12'-8"	277
U1	20	#4	7	5'-11"	79
V1	66	#4	STR	5'-9"	254
V2	22	#5	STR	10'-1"	231
V3	10	#5	STR	9'-11"	103
V4	12	#5	STR	11'-0"	138
V5	24	#5	STR	11'-2"	280

REINFORCING STEEL 6,160 LBS.

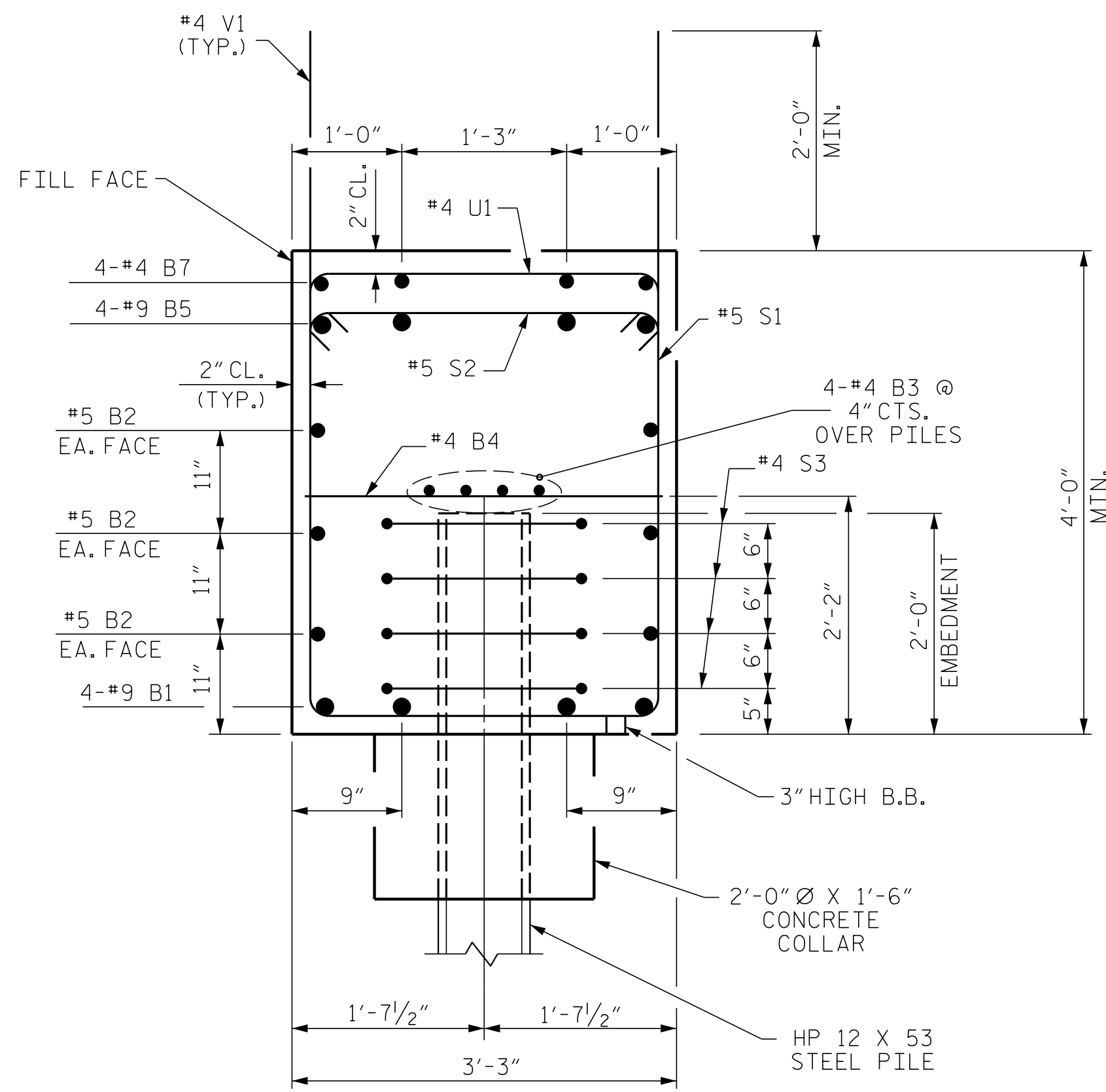
CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS	34.9 C.Y.
POUR #2	UPPER PART OF WINGS	7.4 C.Y.
TOTAL CLASS A CONCRETE		42.3 C.Y.

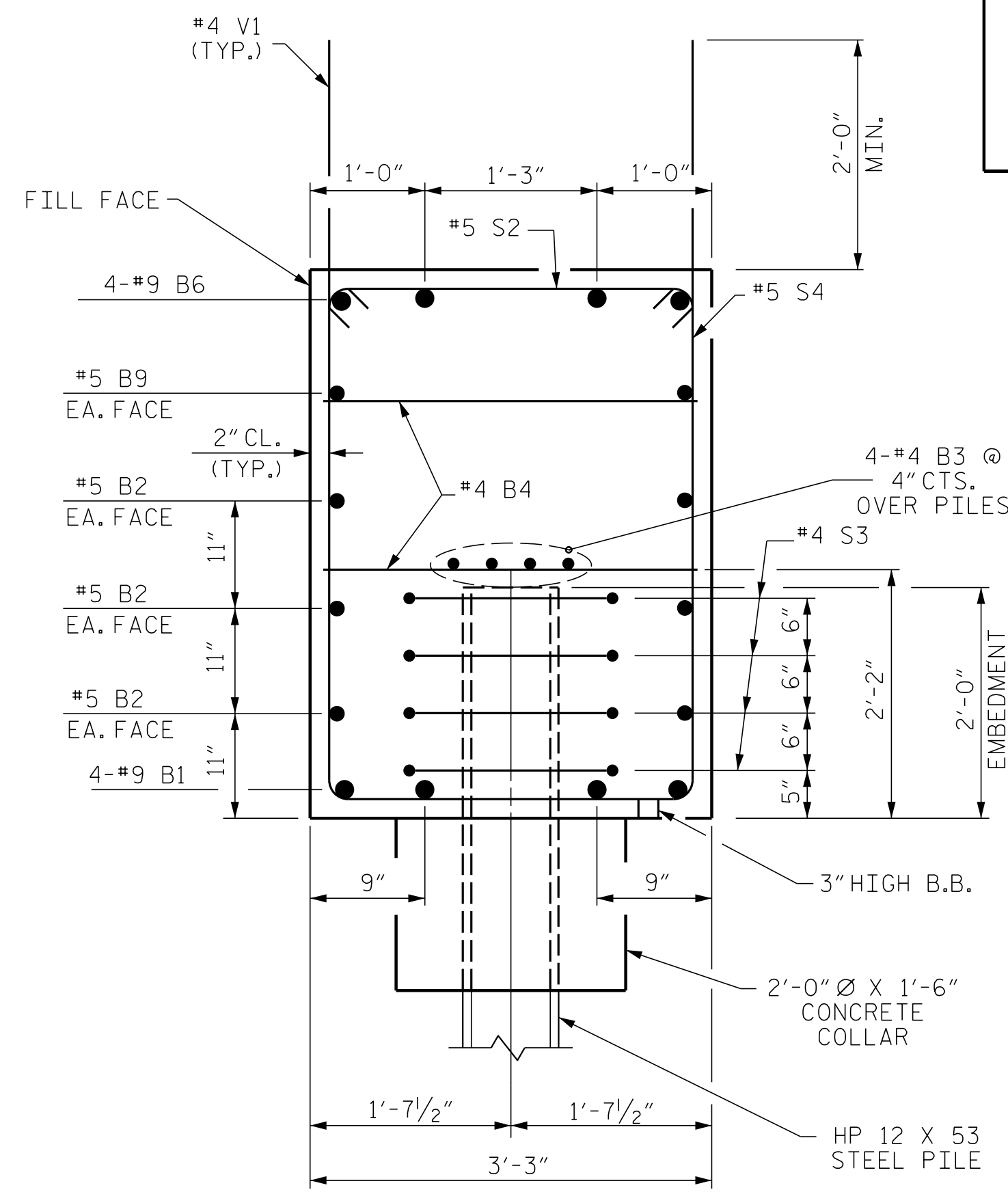
HP 12 X 53 STEEL PILES
NO: 9 LIN. FT. = 675

PILE REDRIVES 9 EA.

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 9 EA.



SECTION A-A



SECTION B-B

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DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
3/26/2019

Gregory M. Gilland
ETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

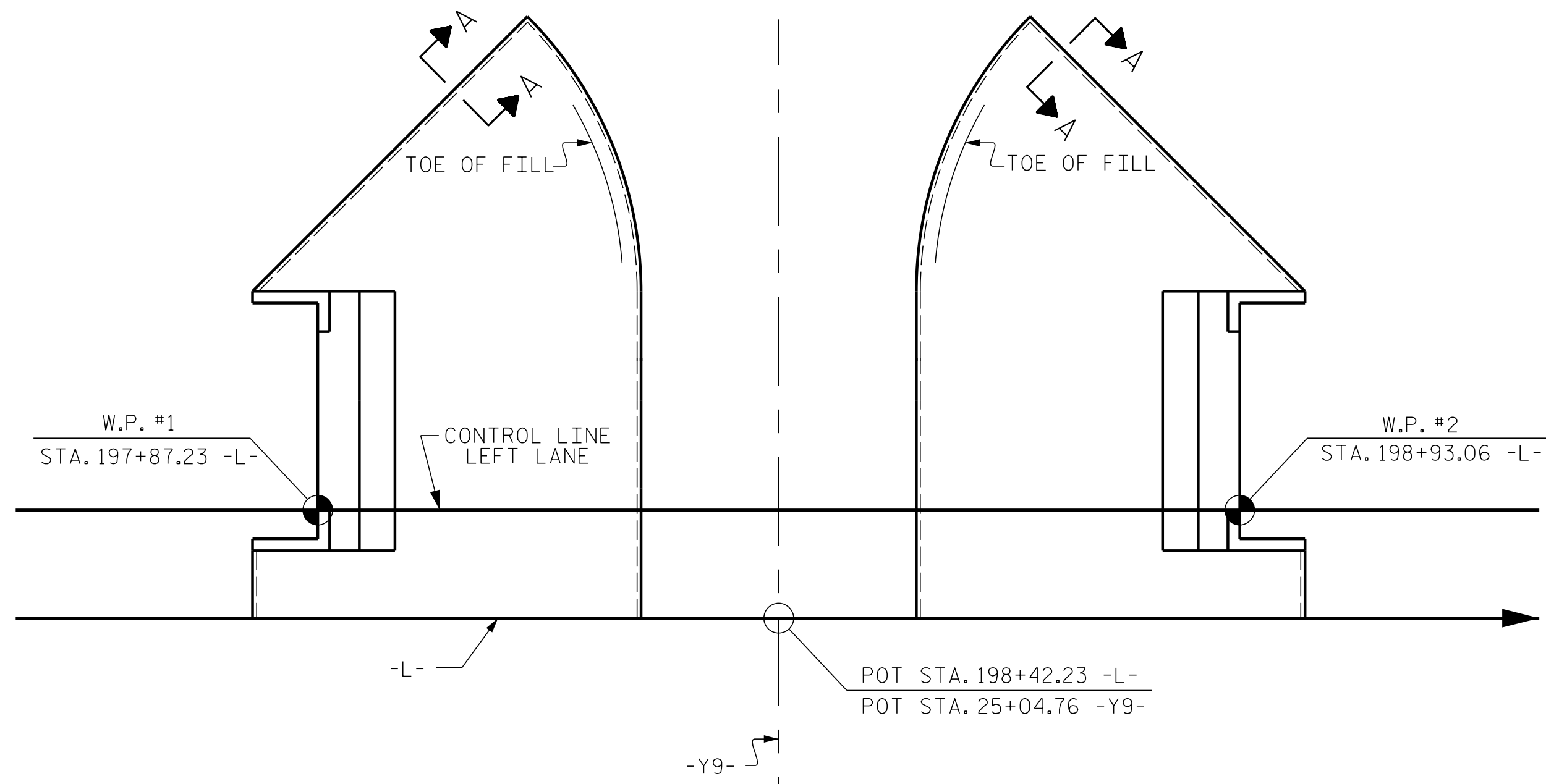
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
(LEFT LANE)

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

SHEET NO. S5-22
TOTAL SHEETS 26



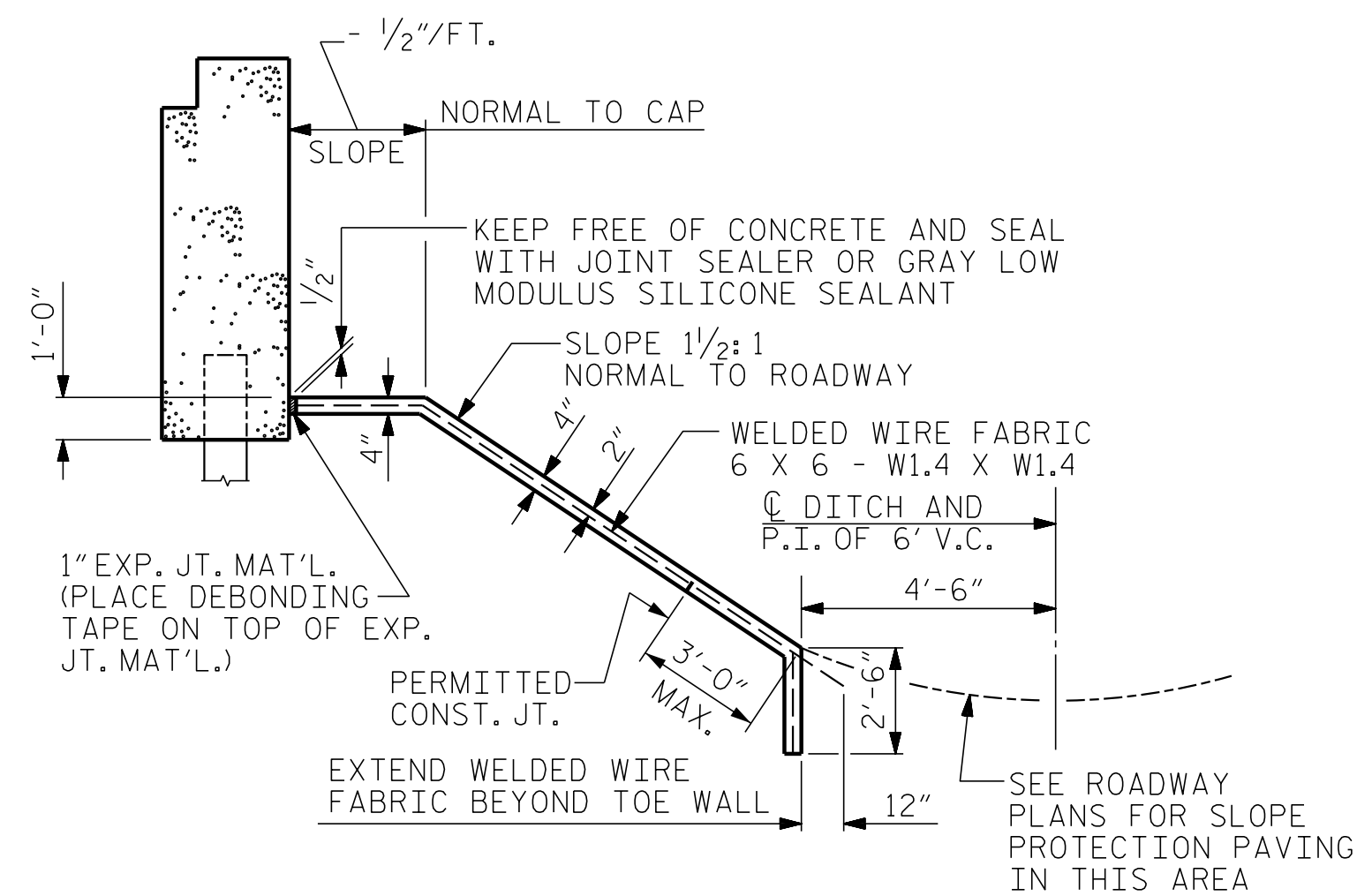
PLAN

GENERAL NOTES

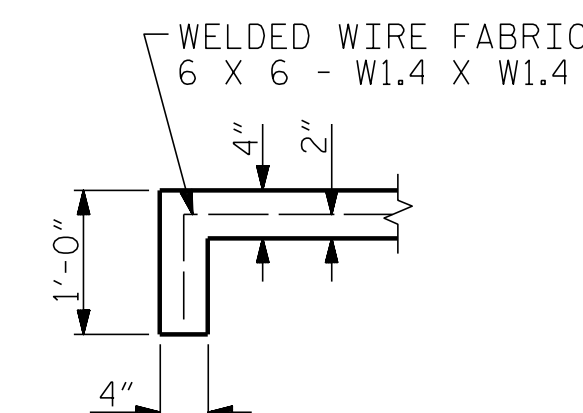
STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 198+42.23 -L-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	325	570
END BENT 2	265	465

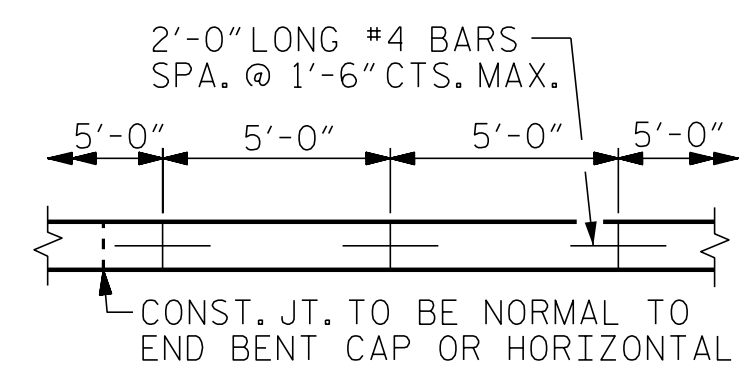
* QUANTITY SHOWN IS BASED ON 5' POURS.



SECTION ALONG C SURVEY WHEN FILL CATCHES IN DITCH

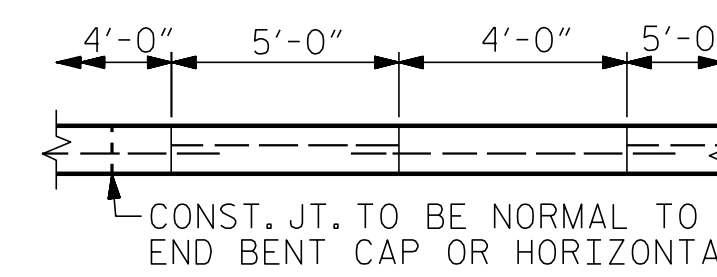


SECTION A-A



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

SHEET 1 OF 2

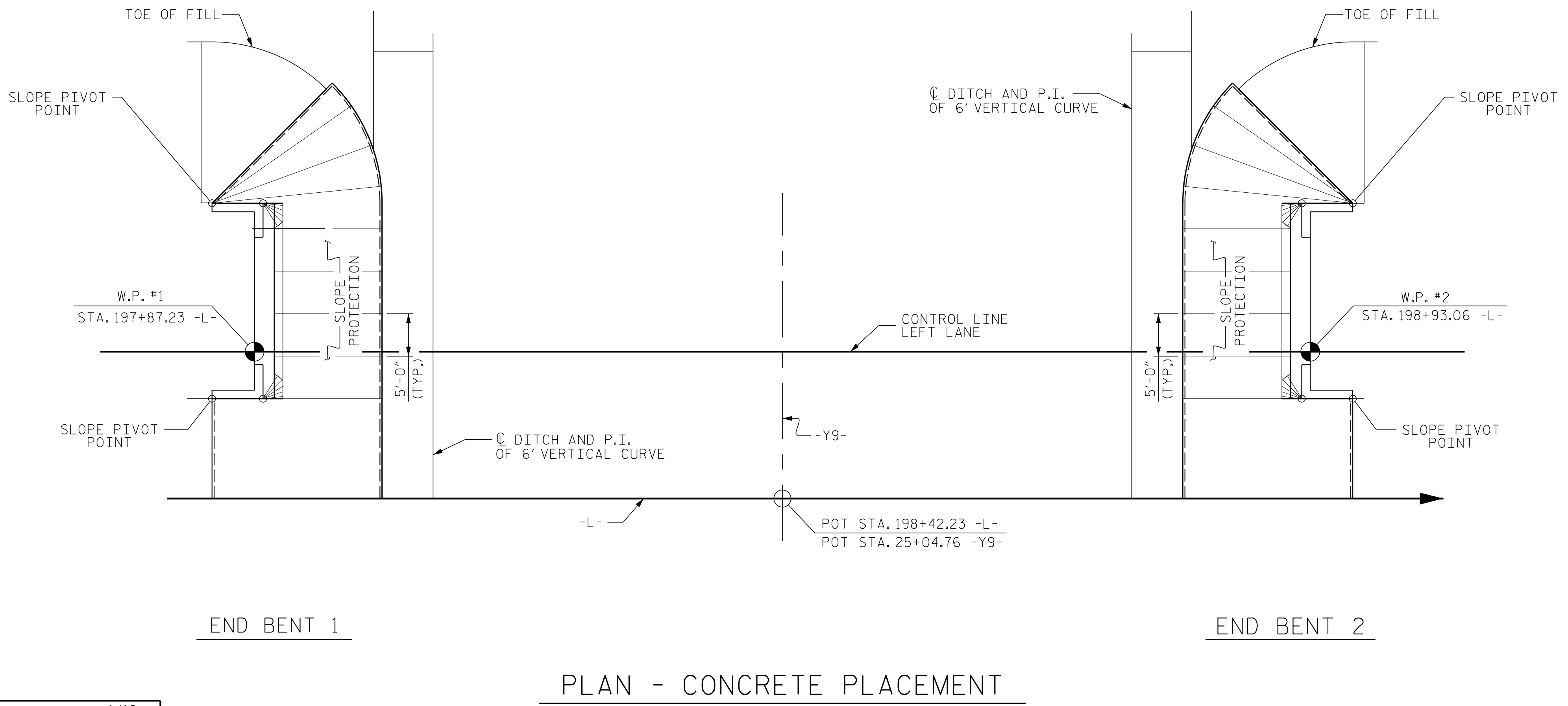
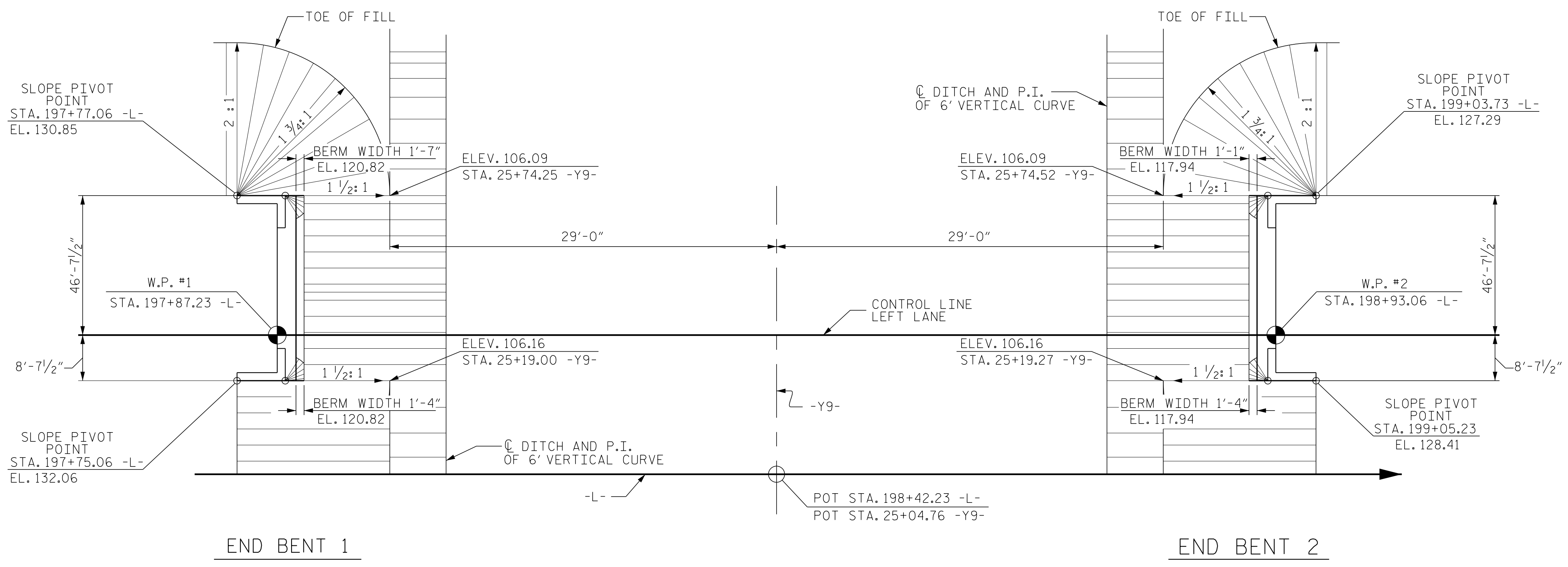
ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 4/18
DRAWN BY : ELR 5/92	REV. 12/21/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
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ENGINEER OF RECORD:
Gregory M. Gilland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. GILLAND
 8/29/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S5-23
					TOTAL SHEETS 26

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PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S5-24
TOTAL SHEETS					26

ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLILAND	DATE : 4/18
DRAWN BY : WJH 10/88	REV. 10/11/11 MAA/GM
CHECKED BY : FCJ 10/88	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

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NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, 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 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

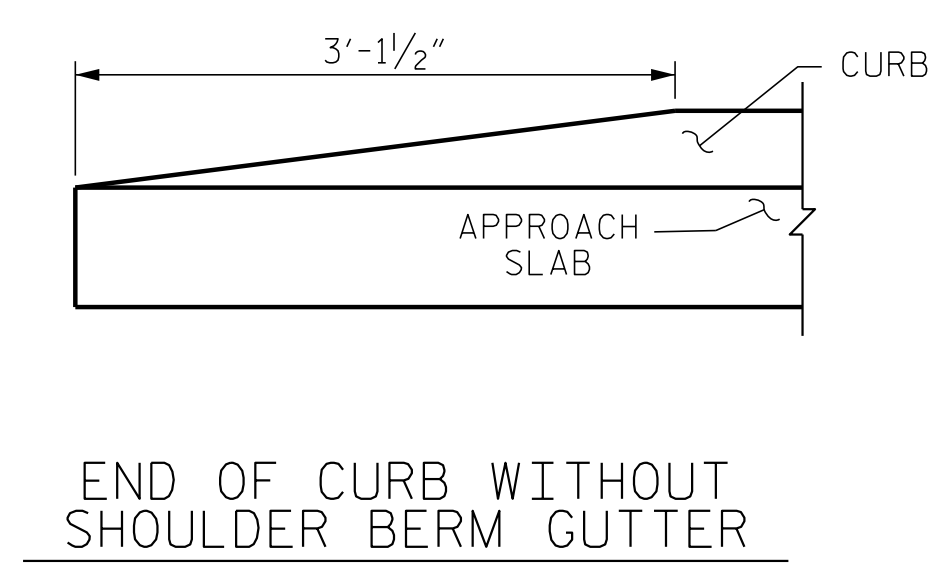
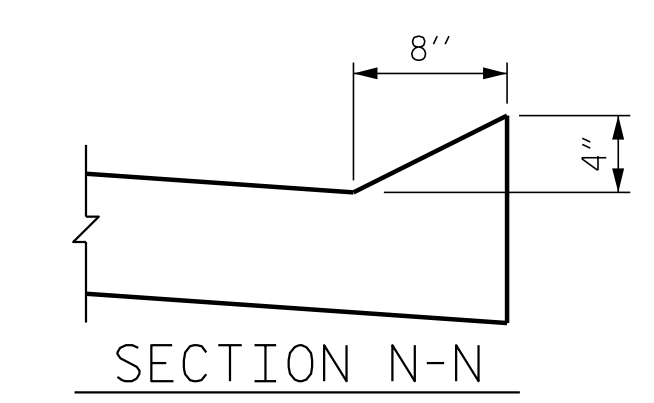
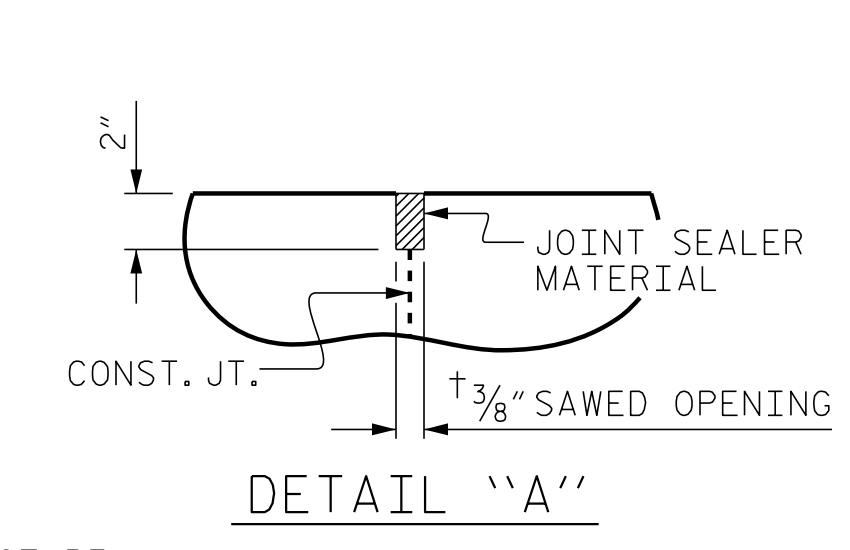
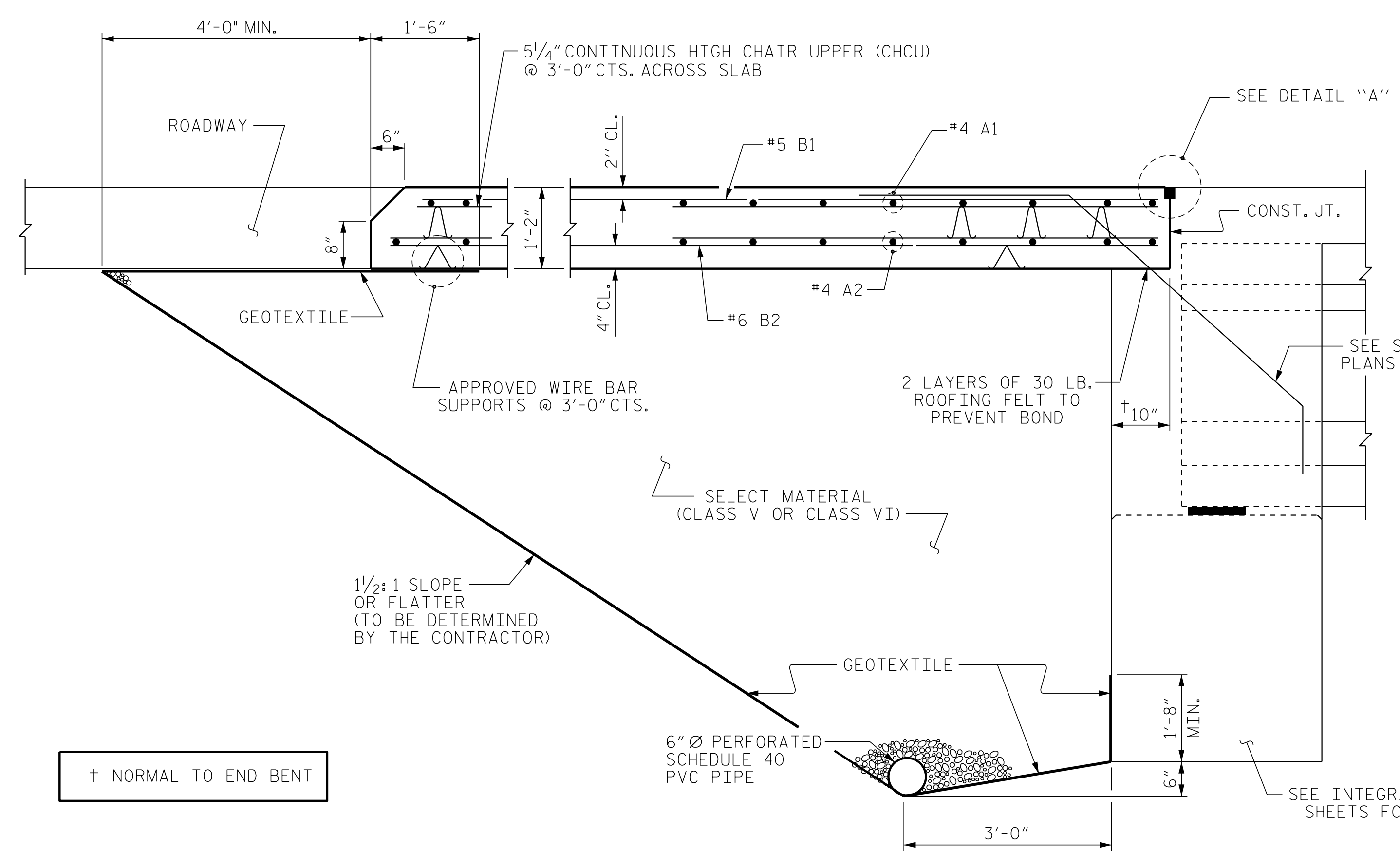
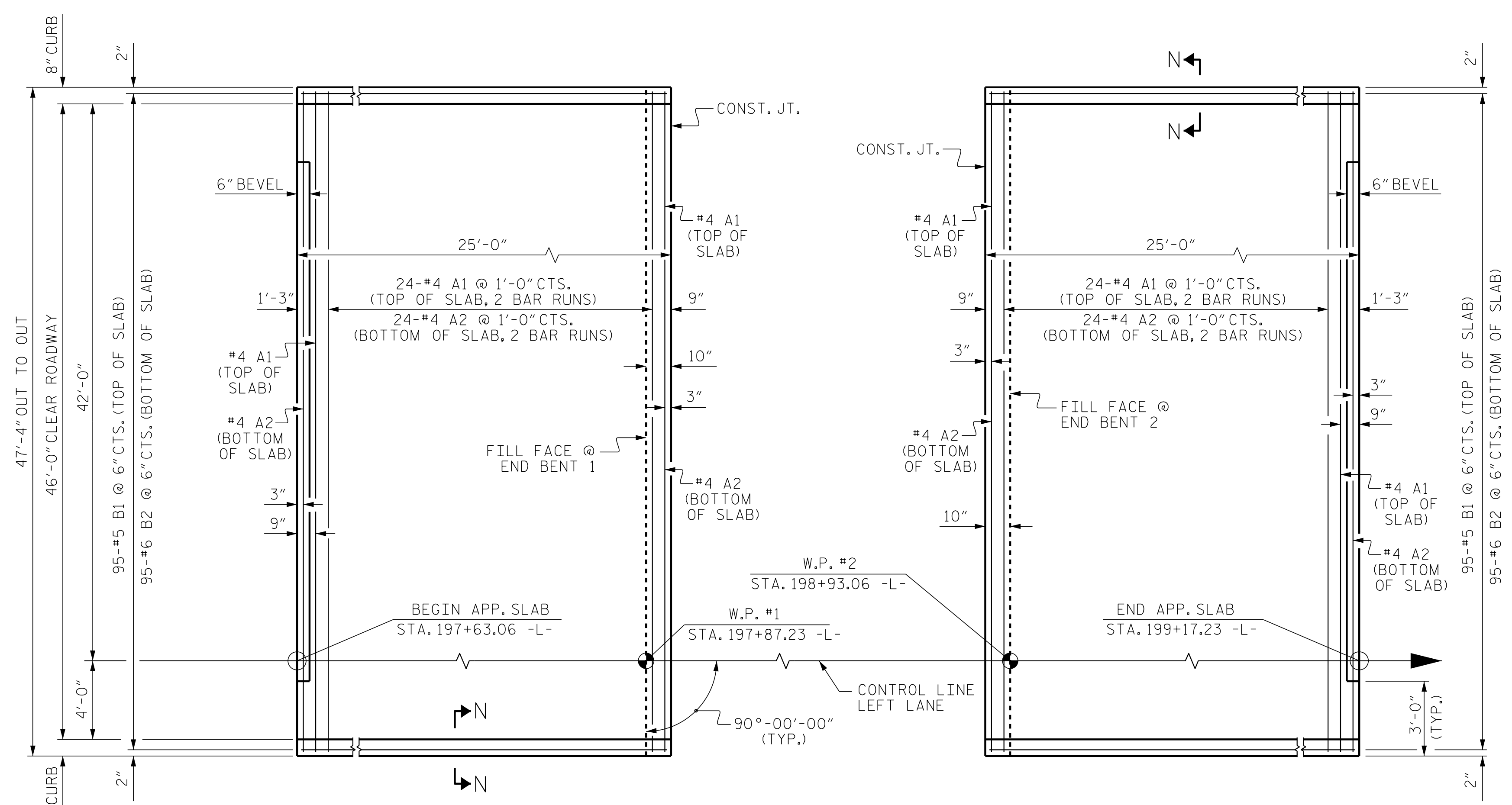
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	24'-6"	851
A2	52	#4	STR	24'-5"	848
* B1	95	#5	STR	24'-2"	2395
B2	95	#6	STR	24'-8"	3520
REINFORCING STEEL				LBS.	4368
* EPOXY COATED REINFORCING STEEL				LBS.	3246
CLASS AA CONCRETE				C. Y.	51.1

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



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
 8/29/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
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 Fax: 919 851 8107
 LICENSE NO. F-0377

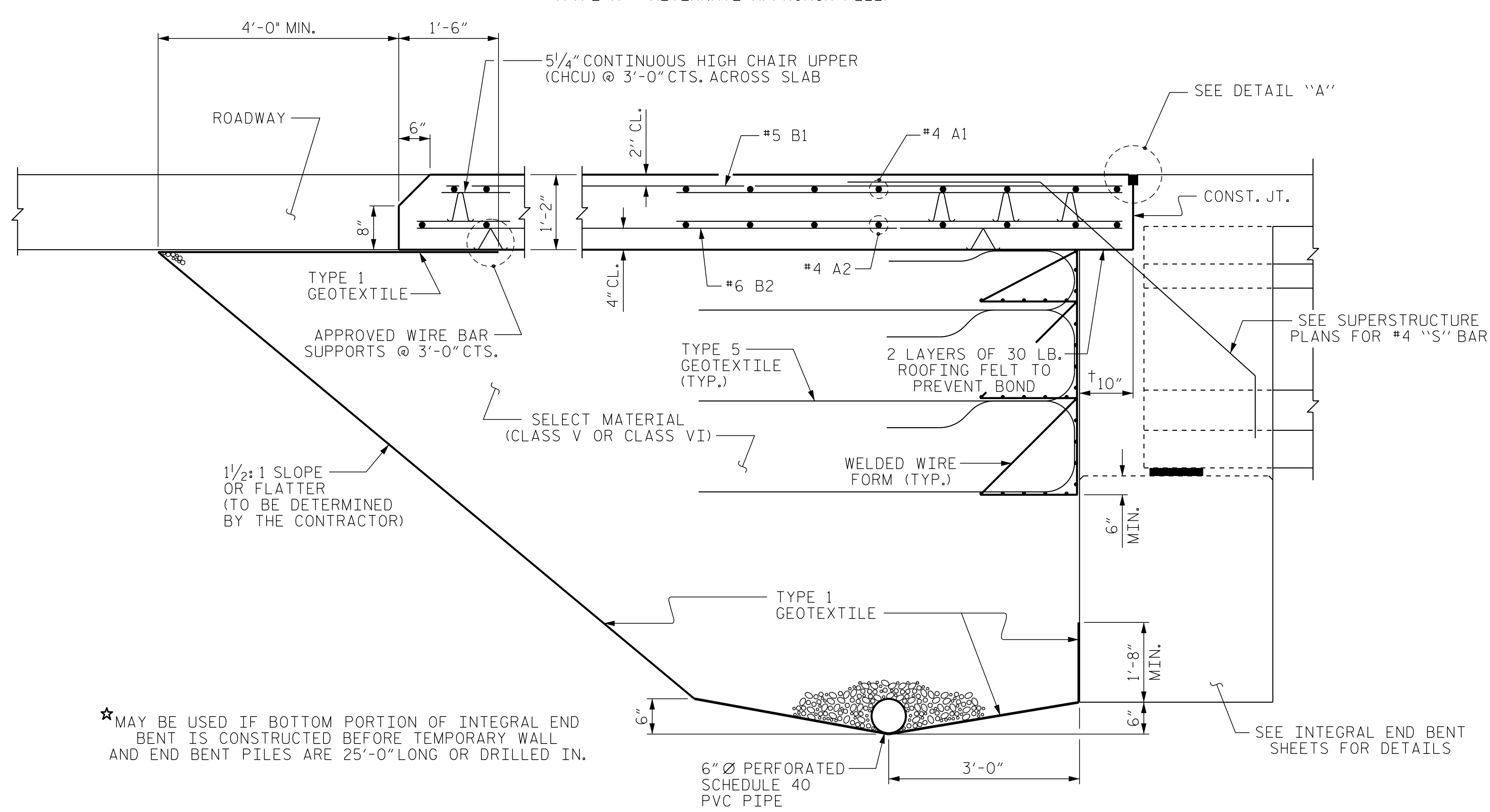
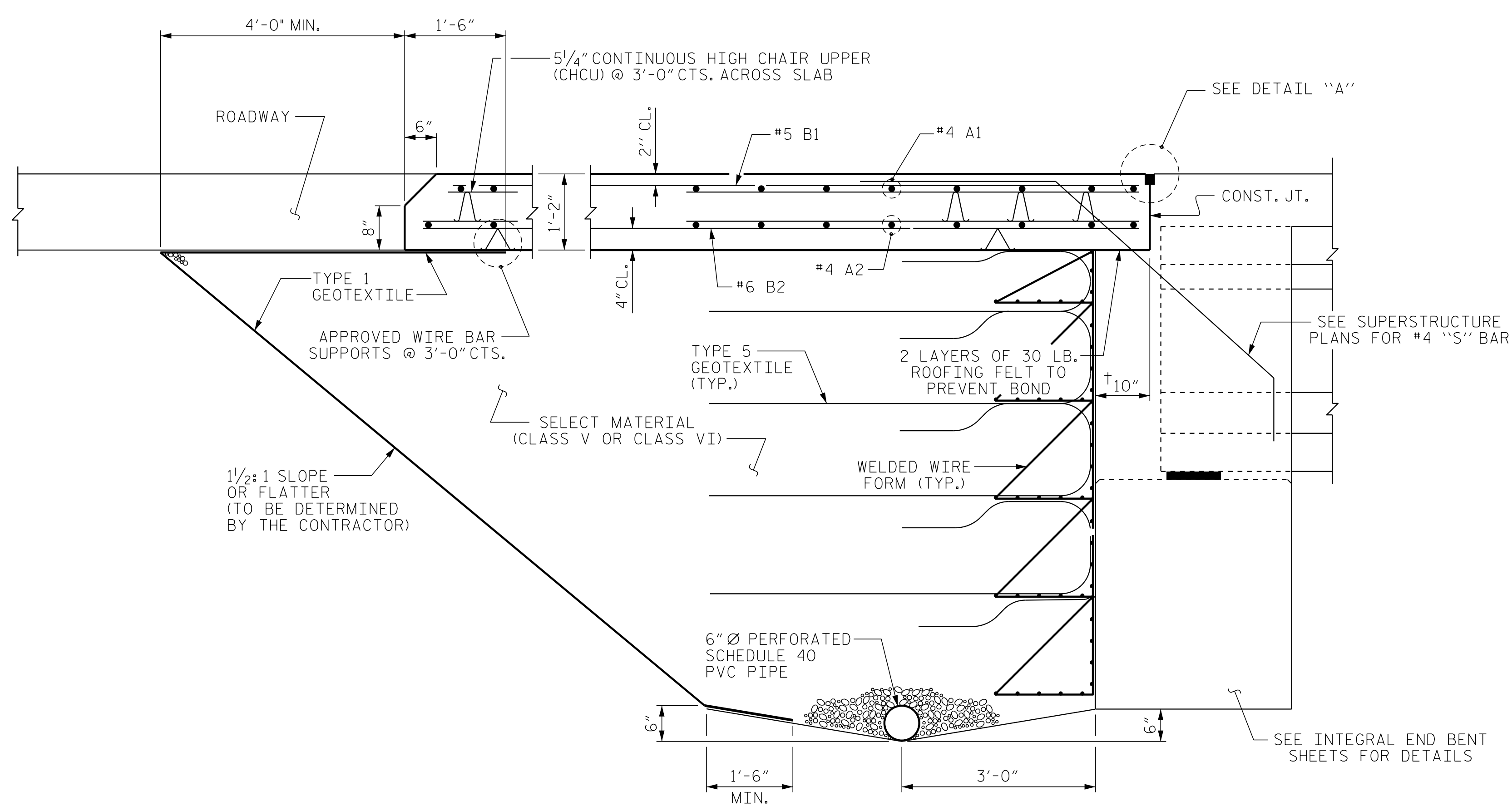
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S5-25
 TOTAL SHEETS 26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

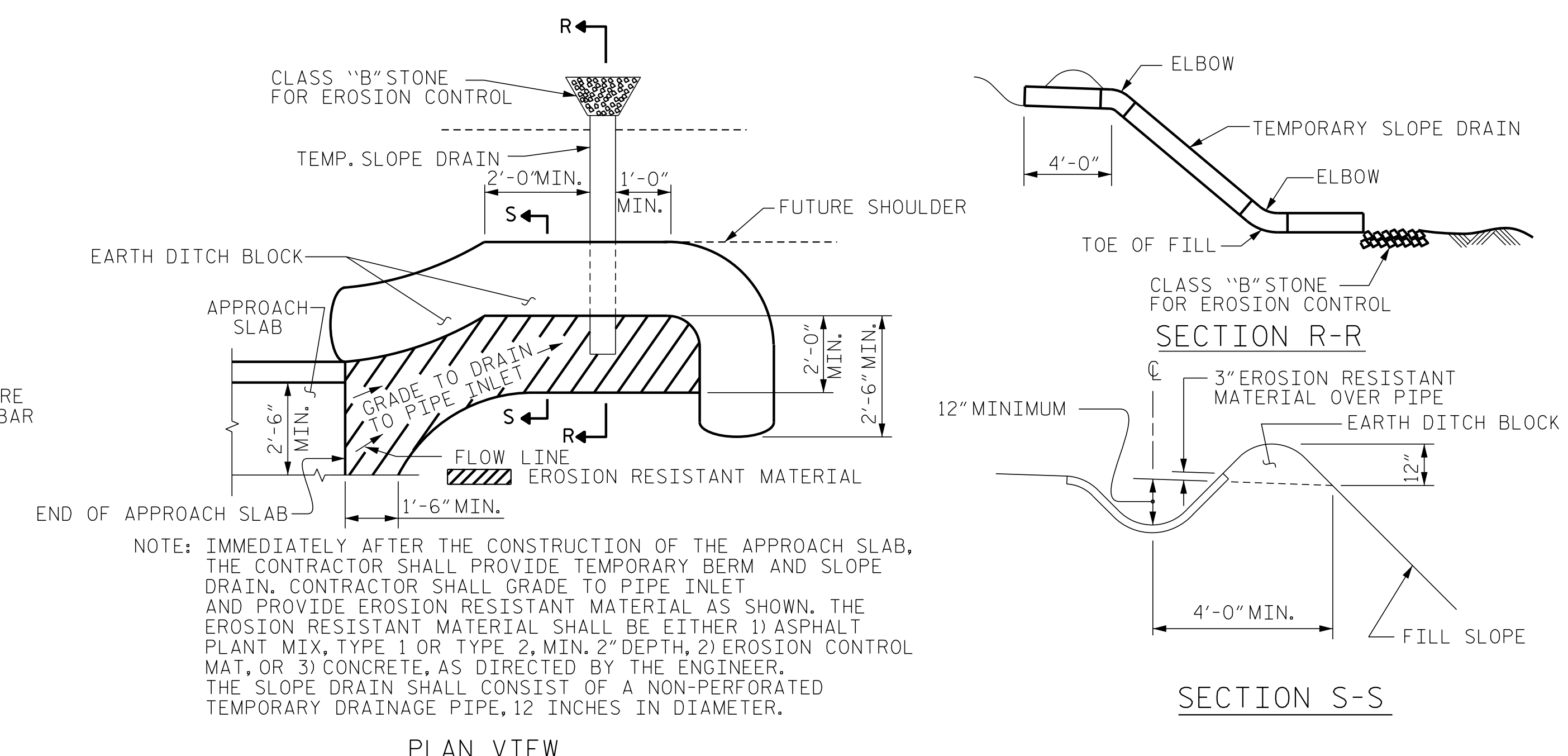
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ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

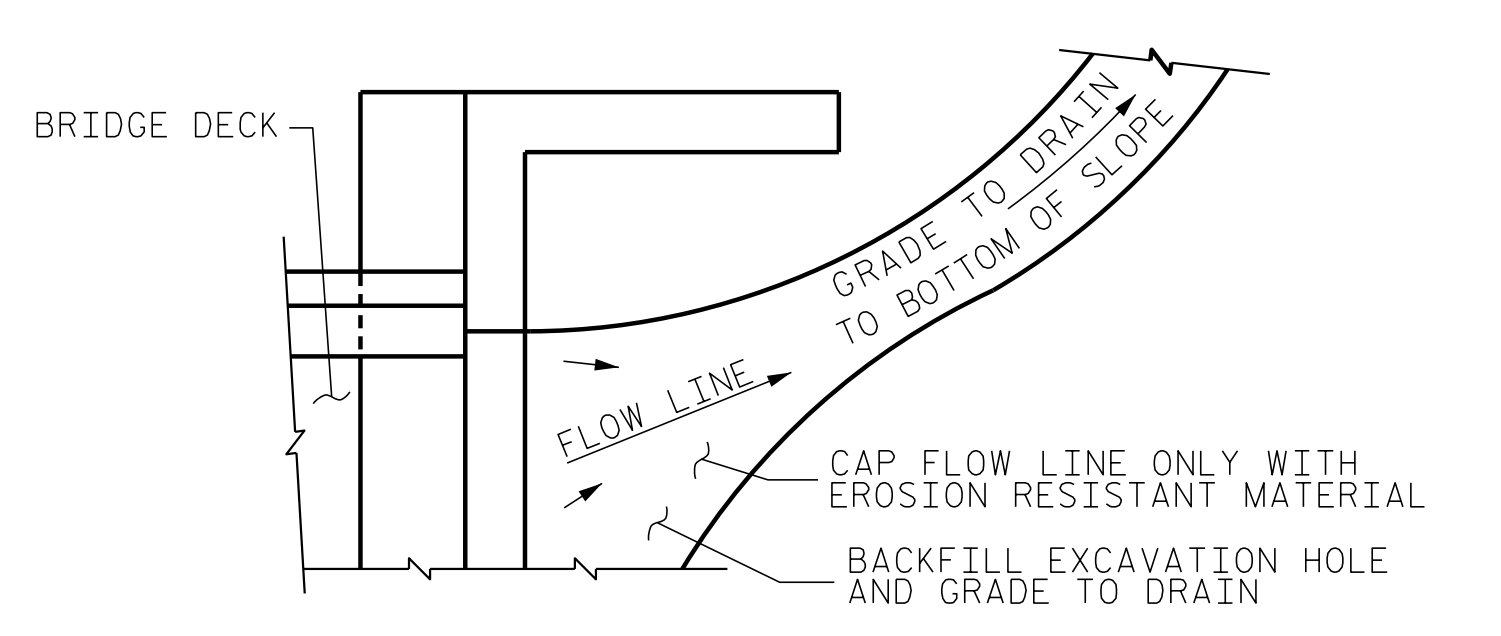


ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS 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.

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB/DECK SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

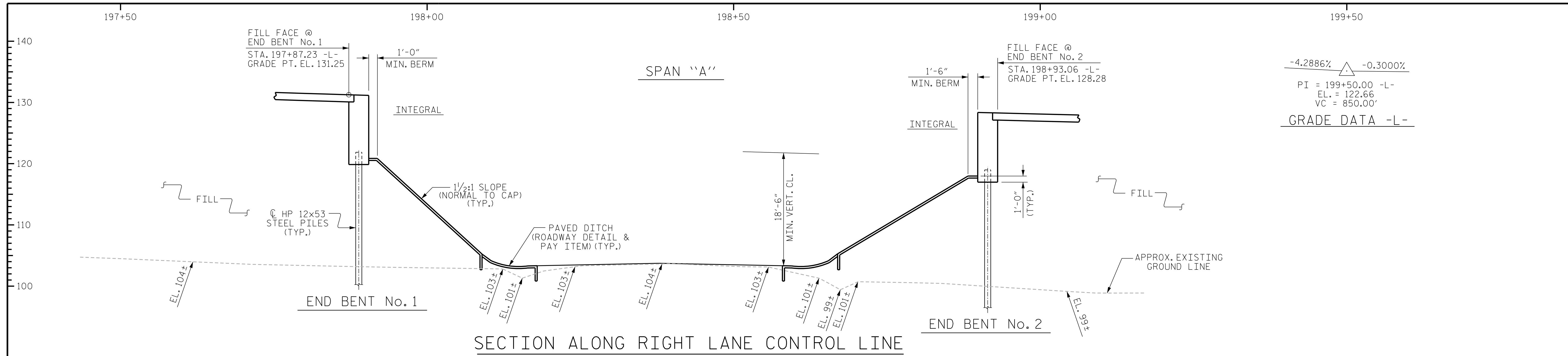
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-
SHEET 2 OF 2

ENGINEER OF RECORD:
Gregory M. Olland
NORTH CAROLINA PROFESSIONAL ENGINEER
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8/29/2018
ETHERILL ENGINEERING
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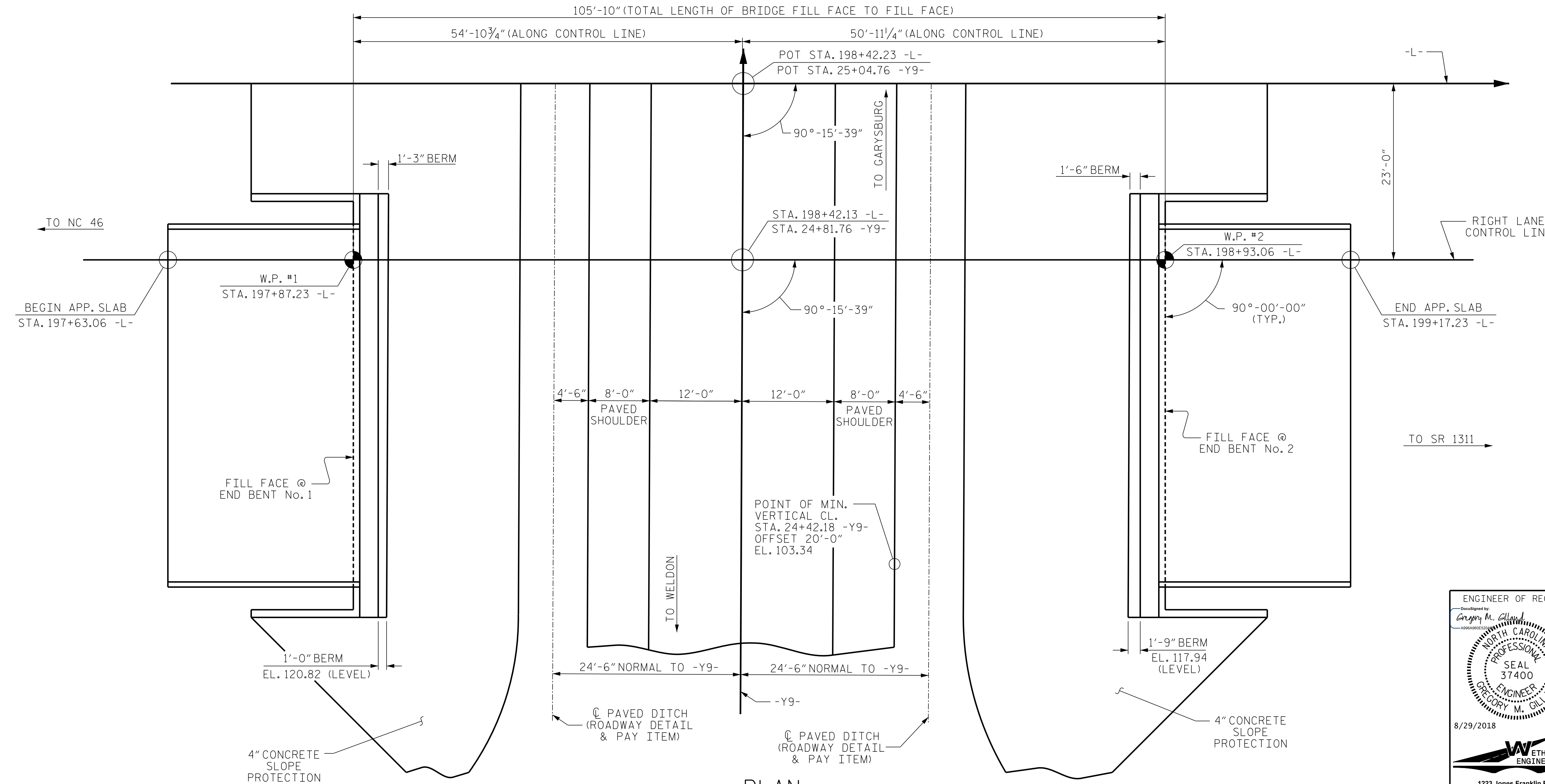
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S5-26					TOTAL SHEETS 26

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SECTION ALONG RIGHT LANE CONTROL LINE



PLAN

PILES NOT SHOWN FOR CLARITY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
25+04.76 -Y9-
 SHEET 1 OF 3 BRIDGE No. 124

ENGINEER OF RECORD:
Gregory M. Gilland
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING RIGHT LANE BRIDGE ON US 158 OVER US 301 BETWEEN NC 46 & SR 1311					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S6-1
TOTAL SHEETS					26

DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

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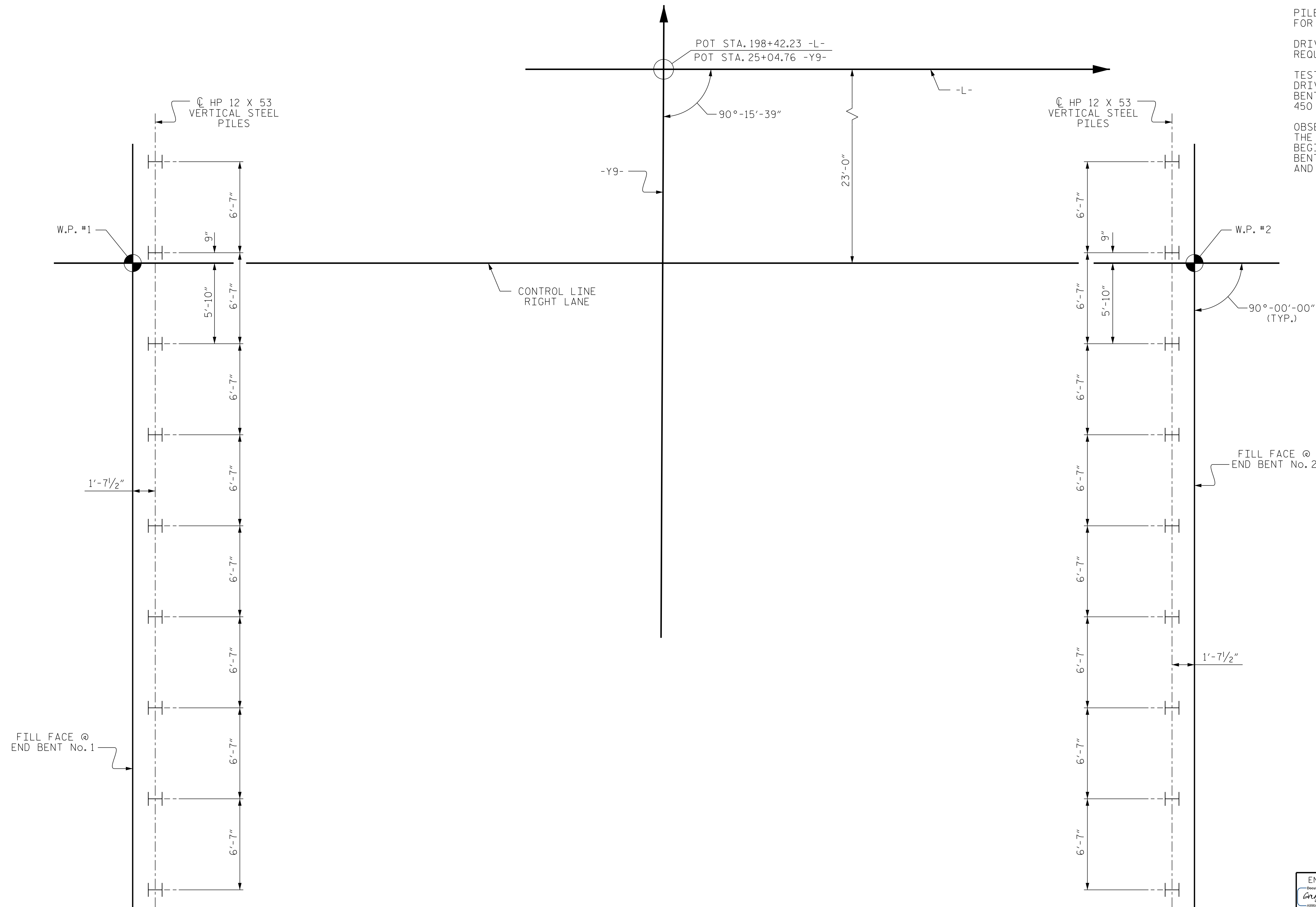
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT No.1 AND END BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT No.1 AND END BENT No.2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT END BENT No.1 OR END BENT No.2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A FOUR MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT No.1 AND END BENT No.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.



END BENT No. 1

FOUNDATION LAYOUT

END BENT No. 2

PROJECT NO. R-2582A

NORTHAMPTON COUNTY

STATION: 198+42.23 -L-

SHEET 2 OF 3

ENGINEER OF RECORD:
Gregory M. Gilland
 8/29/2018

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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

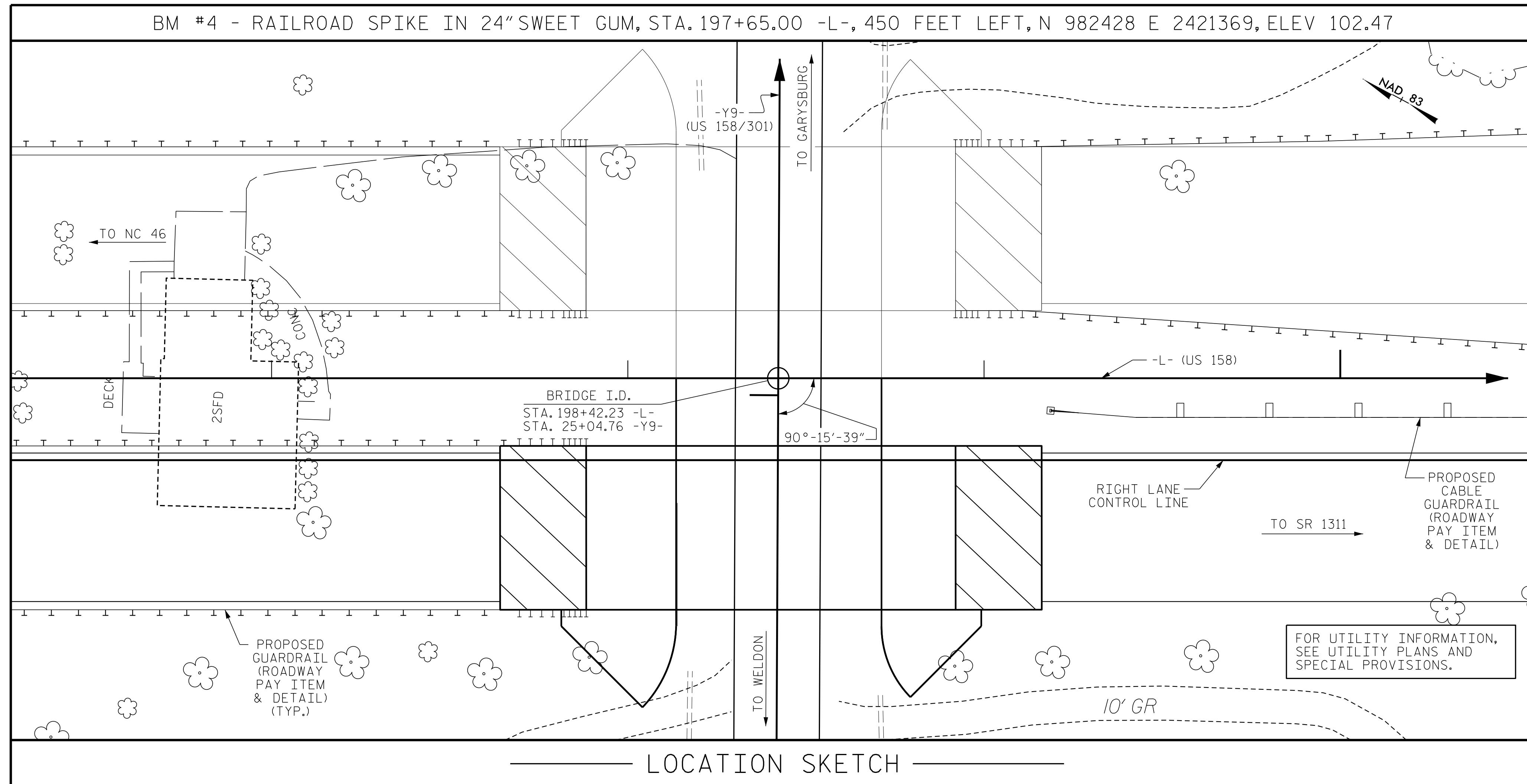
GENERAL DRAWING
 RIGHT LANE BRIDGE ON
 US 158 OVER US 301
 BETWEEN NC 46 & SR 1311

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-2
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

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 8/28/2018 11:28:06 AM



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 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.

THE ELEVATION AND CLEARANCE SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

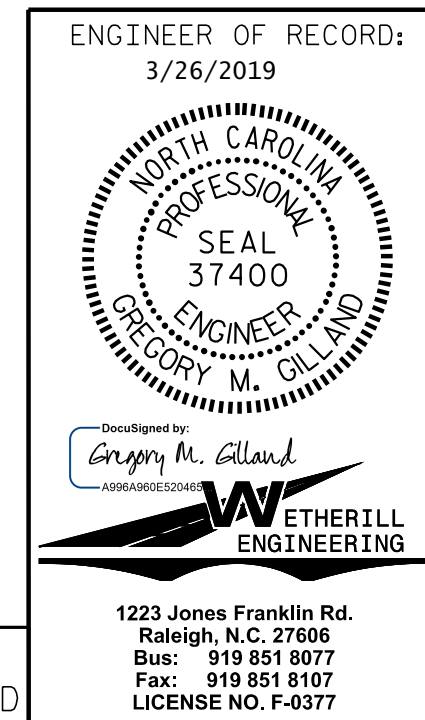
FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL															
	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		5,212	6,572		LUMP SUM		5	520.00				208.33		LUMP SUM	
END BENT No. 1				42.8		6,220			9	9	585	9		265	
END BENT No. 2				42.1		6,106			9	9	675	9		325	
TOTAL	1	5,212	6,572	84.9	LUMP SUM	12,326	5	520.00	18	18	1,260	18	208.33	590	LUMP SUM

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE ON
 US 158 OVER US 301
 BETWEEN NC 46 & SR 1311

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-3
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

DOCUMENT NOT CONSIDERED FINAL
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LOAD AND RESISTANCE FACTOR RATING (LRFR) 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								
						LIVE-LOAD FACTORS (γ _{LL})	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)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.07	--	1.75	0.890	1.28	A	E	51.290	0.990	1.14	A	I	72.090	0.80	0.890	1.07	A	E	51.290		
	HL-93 (OPERATING)	N/A		1.66	--	1.35	0.890	1.66	A	E	51.290	0.990	1.76	A	I	82.490	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.50	54.000	1.75	0.890	1.80	A	E	51.290	0.990	1.78	A	I	82.490	0.80	0.890	1.50	A	E	51.290		
	HS-20 (OPERATING)	36.000		2.34	84.240	1.35	0.890	2.34	A	E	51.290	0.990	2.35	A	I	82.490	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.58	48.330	1.40	0.890	5.37	A	E	51.290	0.990	5.72	A	I	82.490	0.80	0.890	3.58	A	E	51.290	
		SNGARBS2	20.000		2.58	51.600	1.40	0.890	3.88	A	E	51.290	0.990	3.98	A	I	82.490	0.80	0.890	2.58	A	E	51.290	
		SNAGRIS2	22.000		2.41	53.020	1.40	0.890	3.62	A	E	51.290	0.990	3.66	A	I	82.490	0.80	0.890	2.41	A	E	51.290	
		SNCOTTS3	27.250		1.78	48.505	1.40	0.890	2.67	A	E	51.290	0.990	2.78	A	I	82.490	0.80	0.890	1.78	A	E	51.290	
		SNAGGRS4	34.925		1.45	50.641	1.40	0.890	2.18	A	E	51.290	0.990	2.25	A	I	82.490	0.80	0.890	1.45	A	E	51.290	
		SNS5A	35.550		1.42	50.481	1.40	0.890	2.14	A	E	51.290	0.990	2.26	A	I	82.490	0.80	0.890	1.42	A	E	51.290	
		SNS6A	39.950		1.29	51.536	1.40	0.890	1.94	A	E	51.290	0.990	2.04	A	I	82.490	0.80	0.890	1.29	A	E	51.290	
	SNS7B	42.000		1.23	51.660	1.40	0.890	1.85	A	E	51.290	0.990	1.98	A	I	82.490	0.80	0.890	1.23	A	E	51.290		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.57	51.810	1.40	0.890	2.36	A	E	51.290	0.990	2.46	A	I	82.490	0.80	0.890	1.57	A	E	51.290	
		TNT4A	33.075		1.58	52.259	1.40	0.890	2.37	A	E	51.290	0.990	2.41	A	I	82.490	0.80	0.890	1.58	A	E	51.290	
		TNT6A	41.600		1.28	53.248	1.40	0.890	1.92	A	E	51.290	0.990	2.09	A	I	82.490	0.80	0.890	1.28	A	E	51.290	
		TNT7A	42.000		1.28	53.760	1.40	0.890	1.92	A	E	51.290	0.990	2.05	A	I	82.490	0.80	0.890	1.28	A	E	51.290	
		TNT7B	42.000		1.31	55.020	1.40	0.890	1.96	A	E	51.290	0.990	1.94	A	I	82.490	0.80	0.890	1.31	A	E	51.290	
		TNAGRIT4	43.000		1.25	53.750	1.40	0.890	1.88	A	E	51.290	0.990	1.88	A	I	82.490	0.80	0.890	1.25	A	E	51.290	
TNAGT5A		45.000		1.19	53.550	1.40	0.890	1.78	A	E	51.290	0.990	1.85	A	I	82.490	0.80	0.890	1.19	A	E	51.290		
TNAGT5B	45.000		③	1.18	53.100	1.40	0.890	1.77	A	E	51.290	0.990	1.79	A	I	82.490	0.80	0.890	1.18	A	E	51.290		

LOAD FACTORS:

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:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

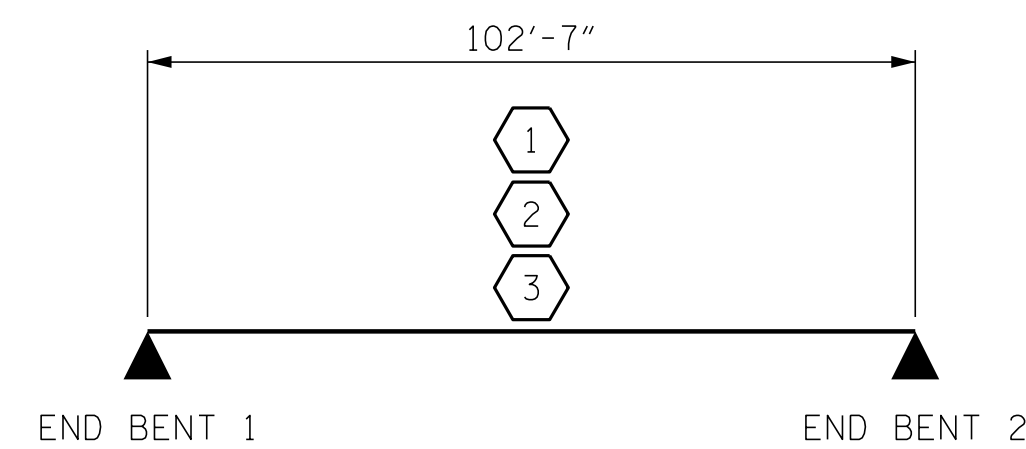
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

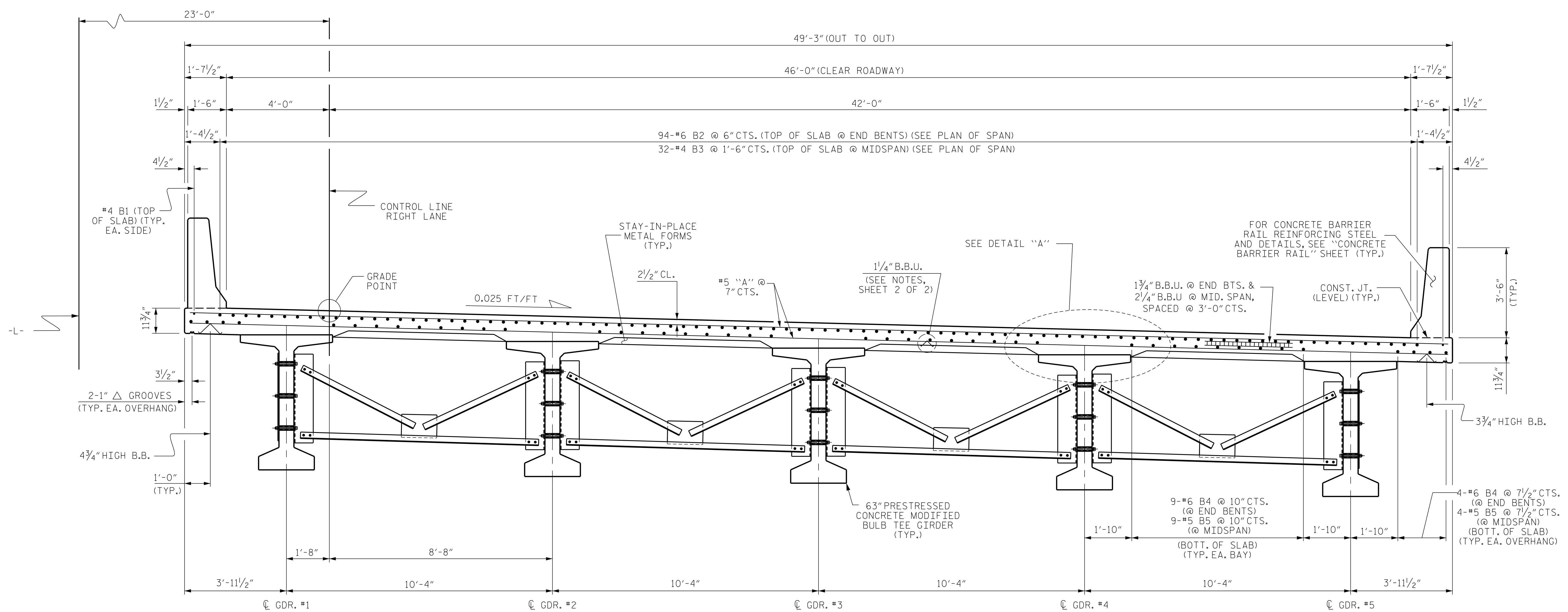
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ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

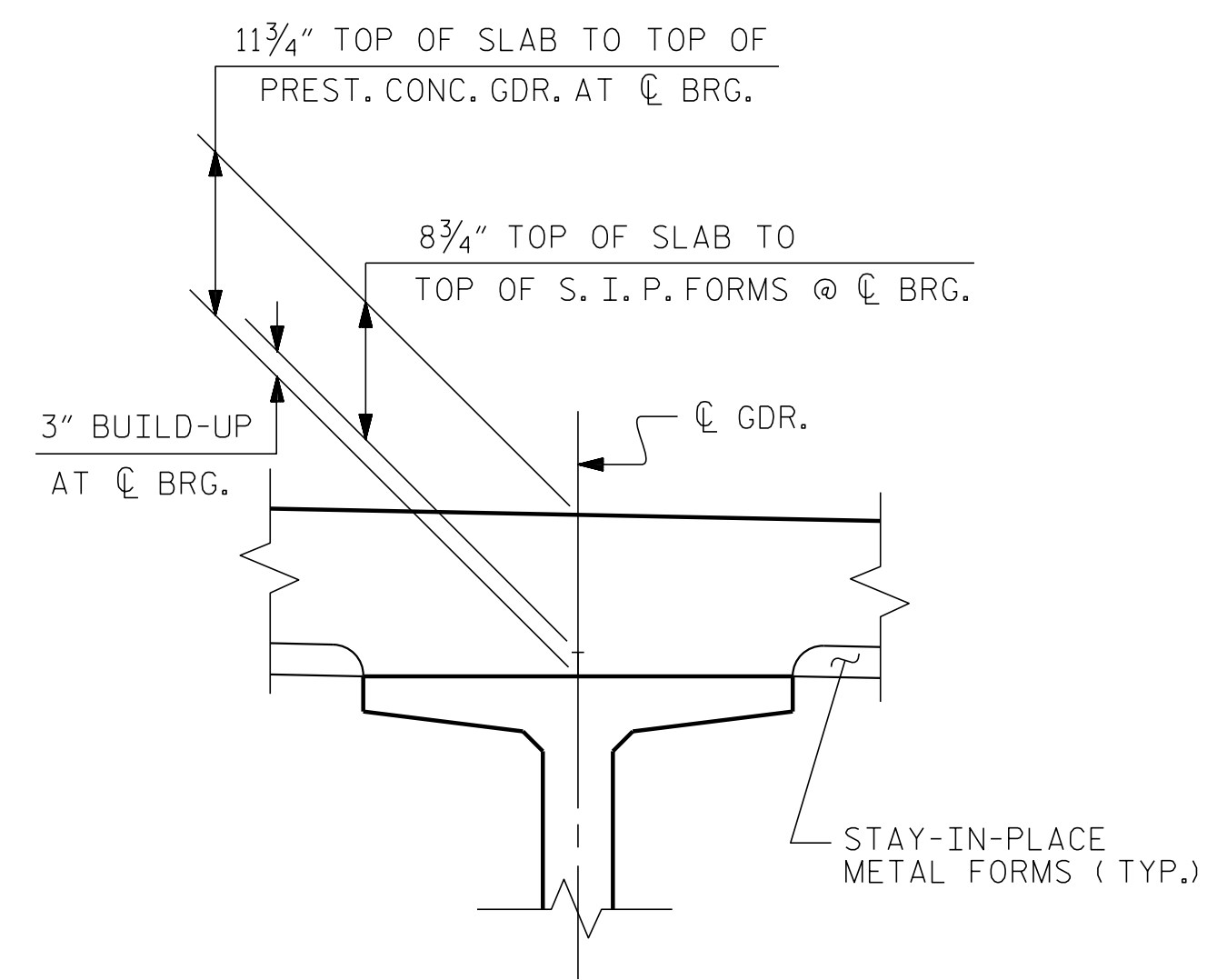
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. O'Neil
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. O'NEIL
 8/29/2018
 WETHERILL ENGINEERING
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 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S6-4
					TOTAL SHEETS 26



TYPICAL SECTION



DETAIL "A"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2

ENGINEER OF RECORD:
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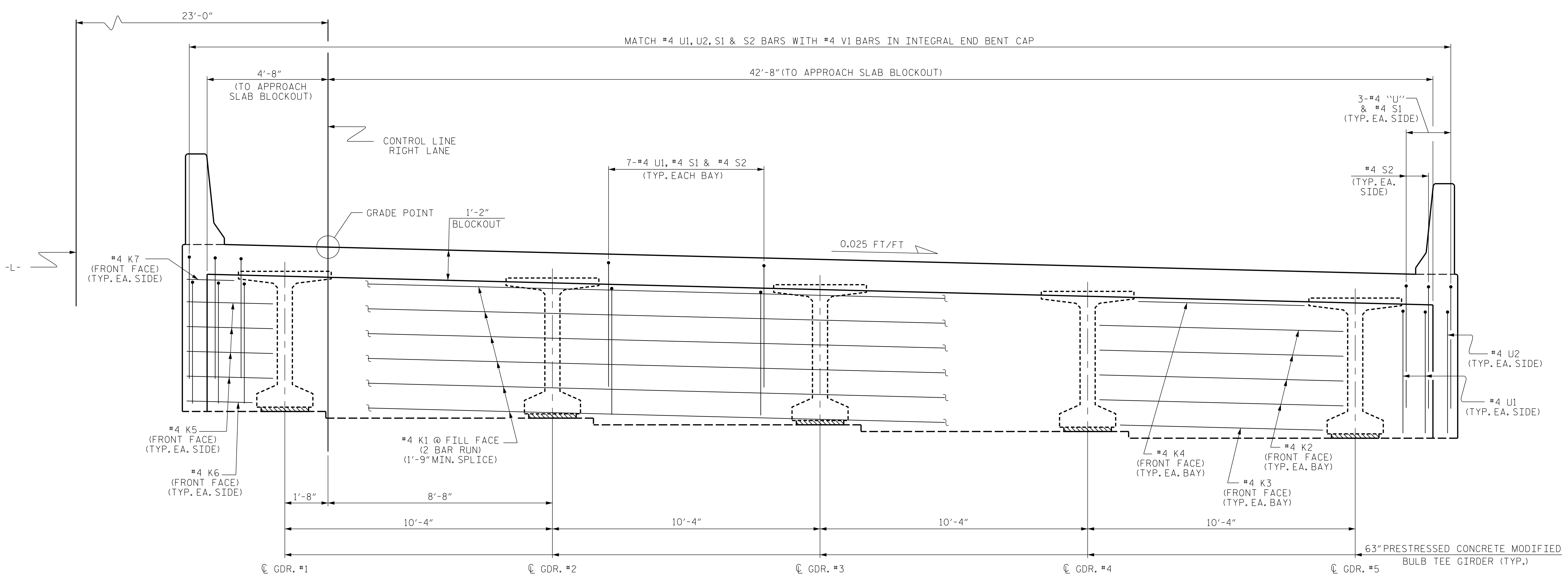
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-5
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18

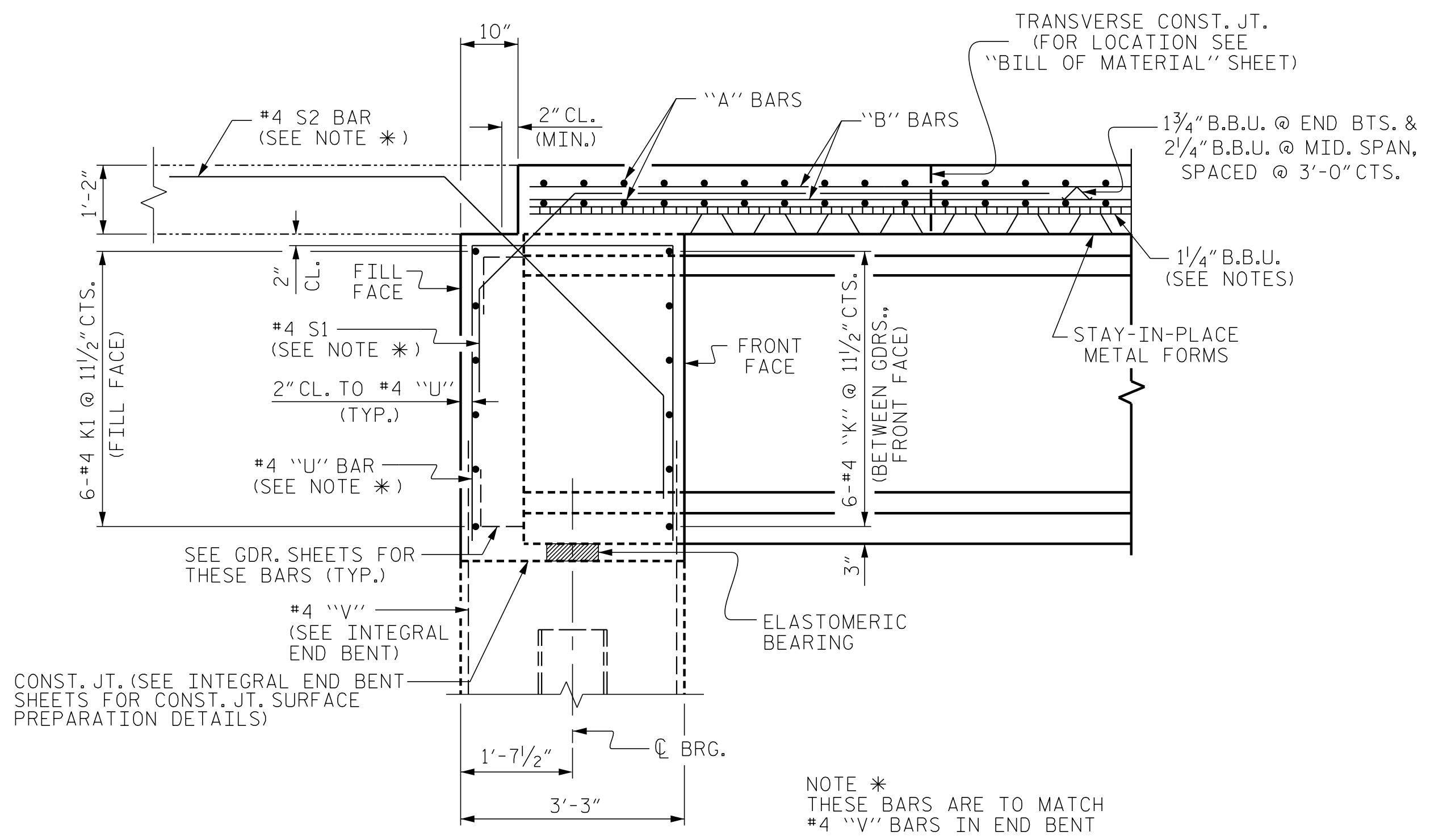
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TYPICAL SECTION THROUGH INTEGRAL END BENT

DECK REINFORCEMENT NOT SHOWN FOR CLARITY, SEE SHEET 1 OF 2



SECTION THRU INTEGRAL END BENT

NOTES

- PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SLAB.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 2

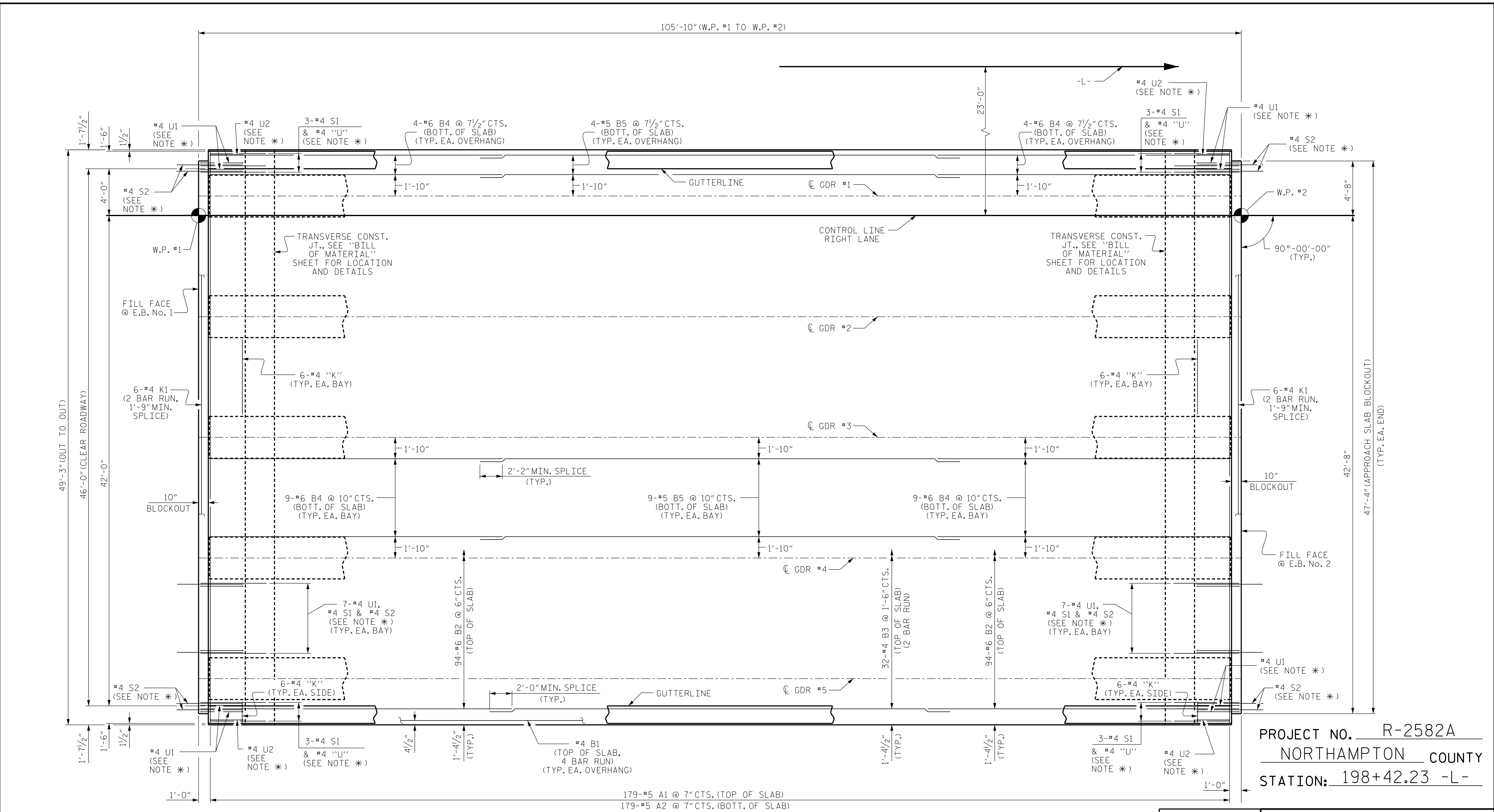
ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S6-6
TOTAL SHEETS					26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18

DOCUMENT NOT CONSIDERED FINAL
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PLAN OF SPAN A

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET.

FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

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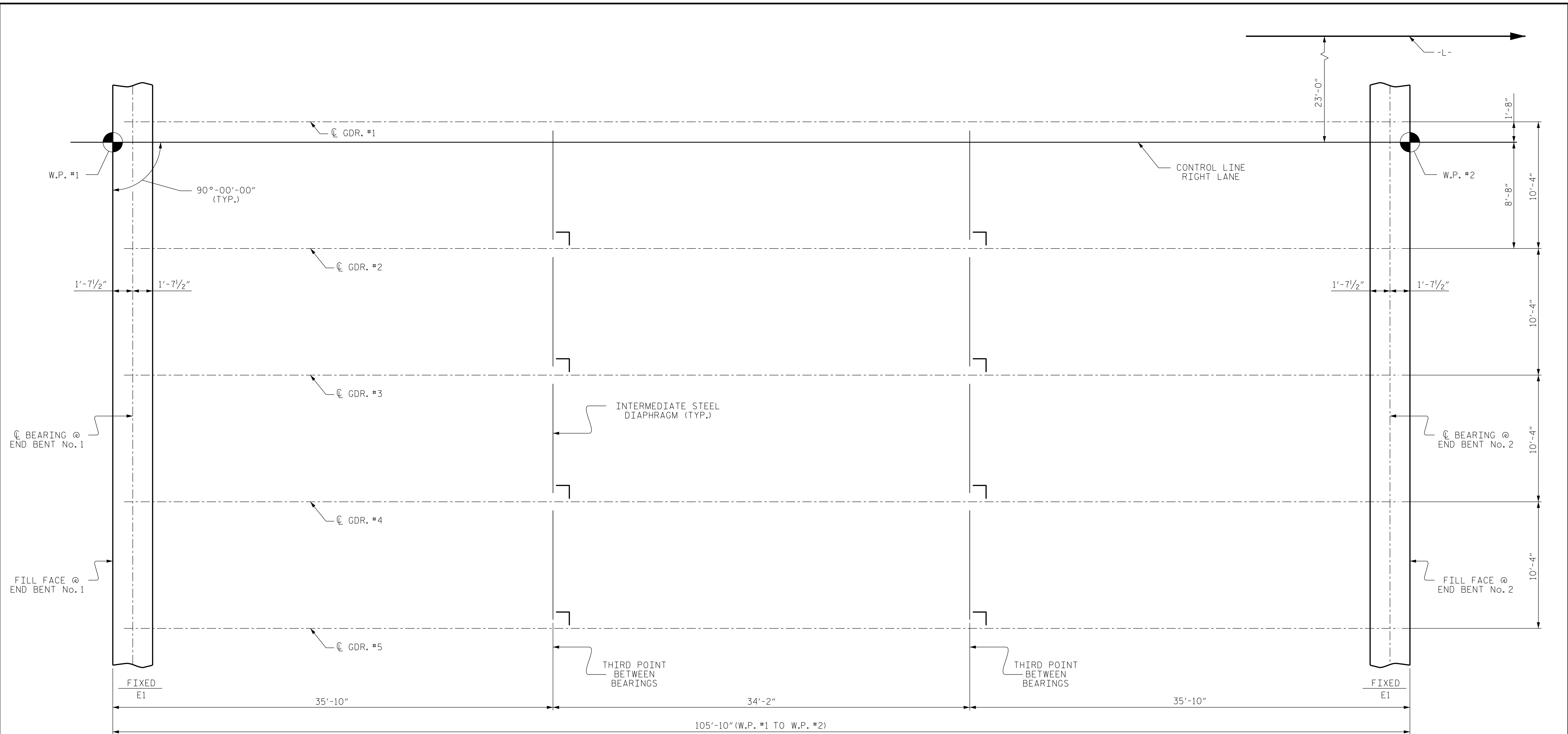
DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: B.C. HUNT DATE: 4/18

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ENGINEER OF RECORD:
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S6-7 TOTAL SHEETS 26

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SPAN A

FRAMING PLAN

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18

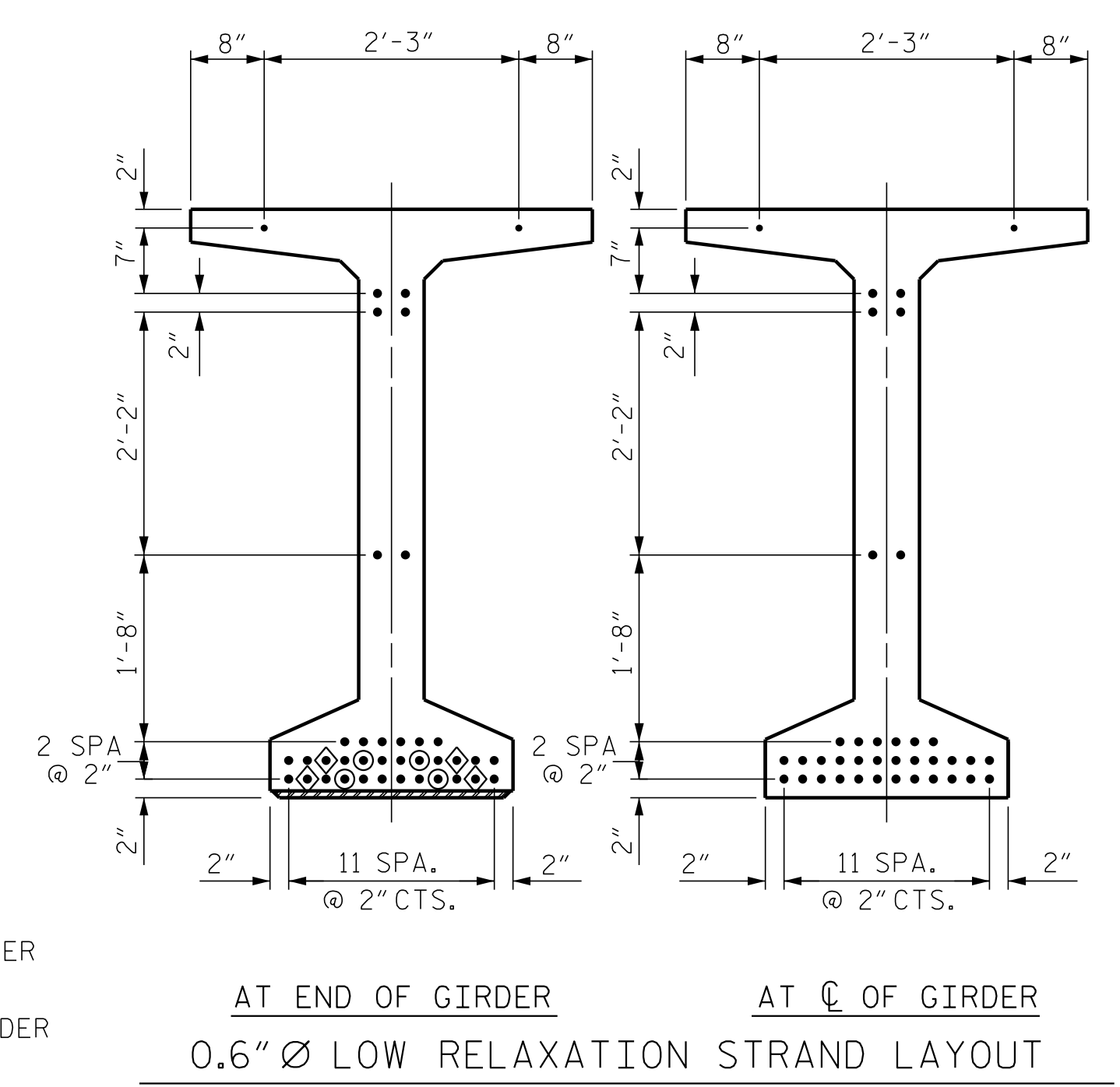
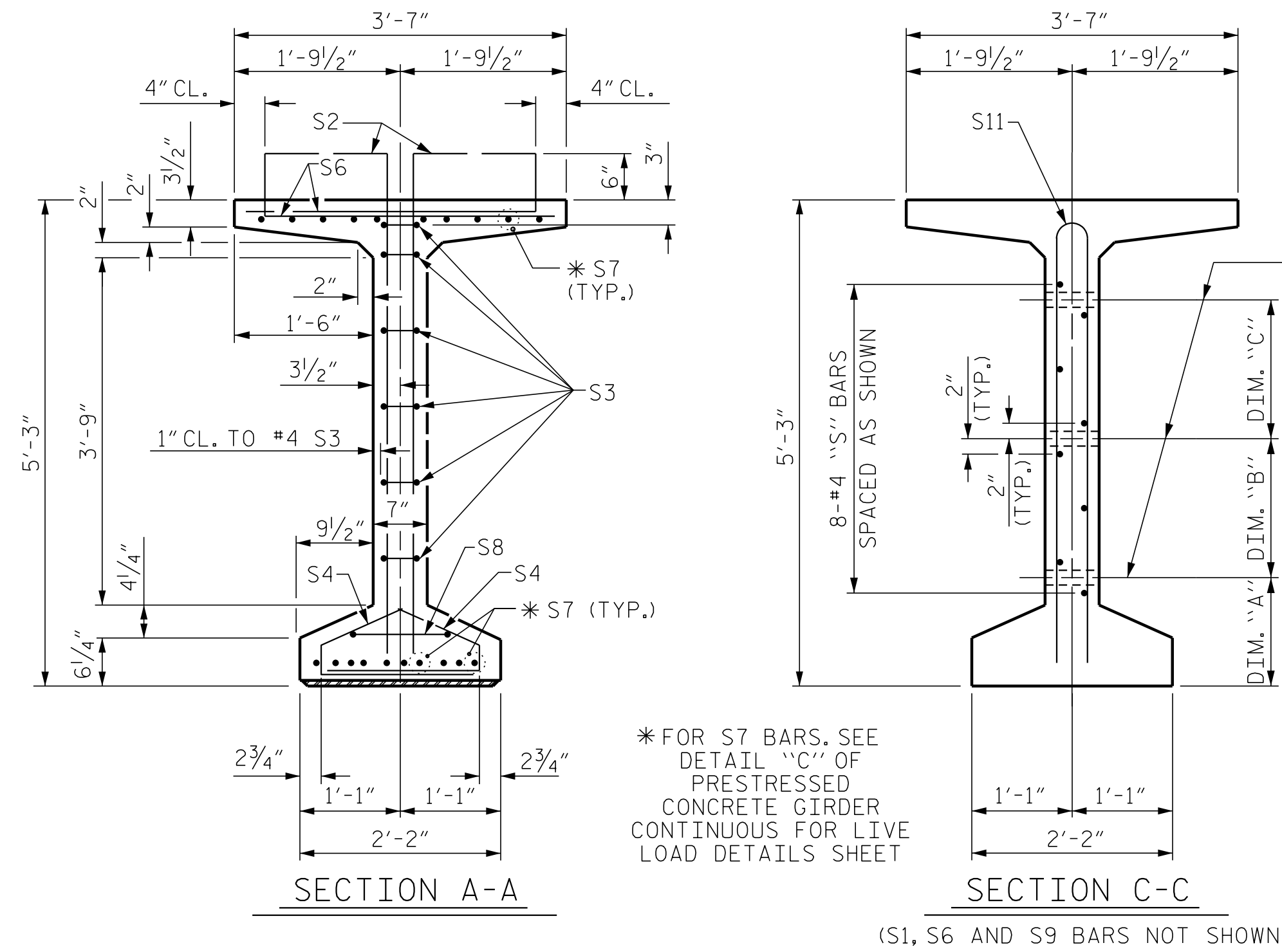
DOCUMENT NOT CONSIDERED FINAL
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ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26

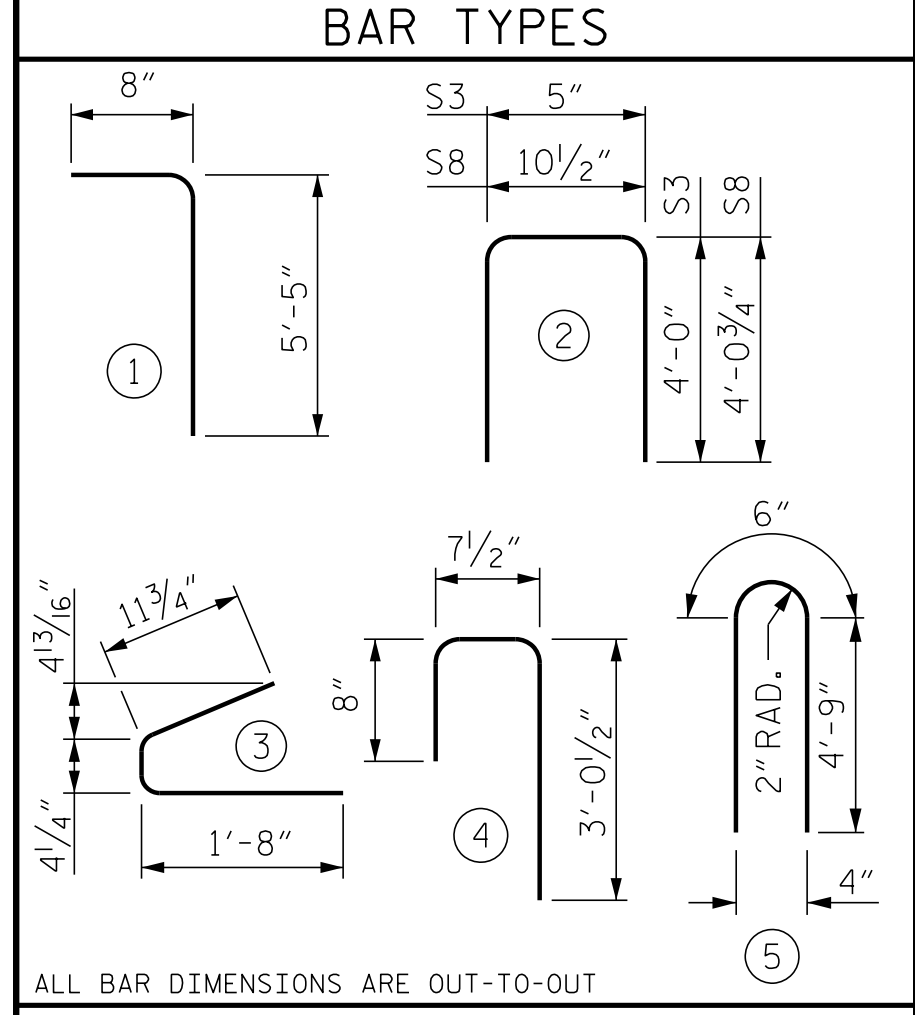


- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ◇ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

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

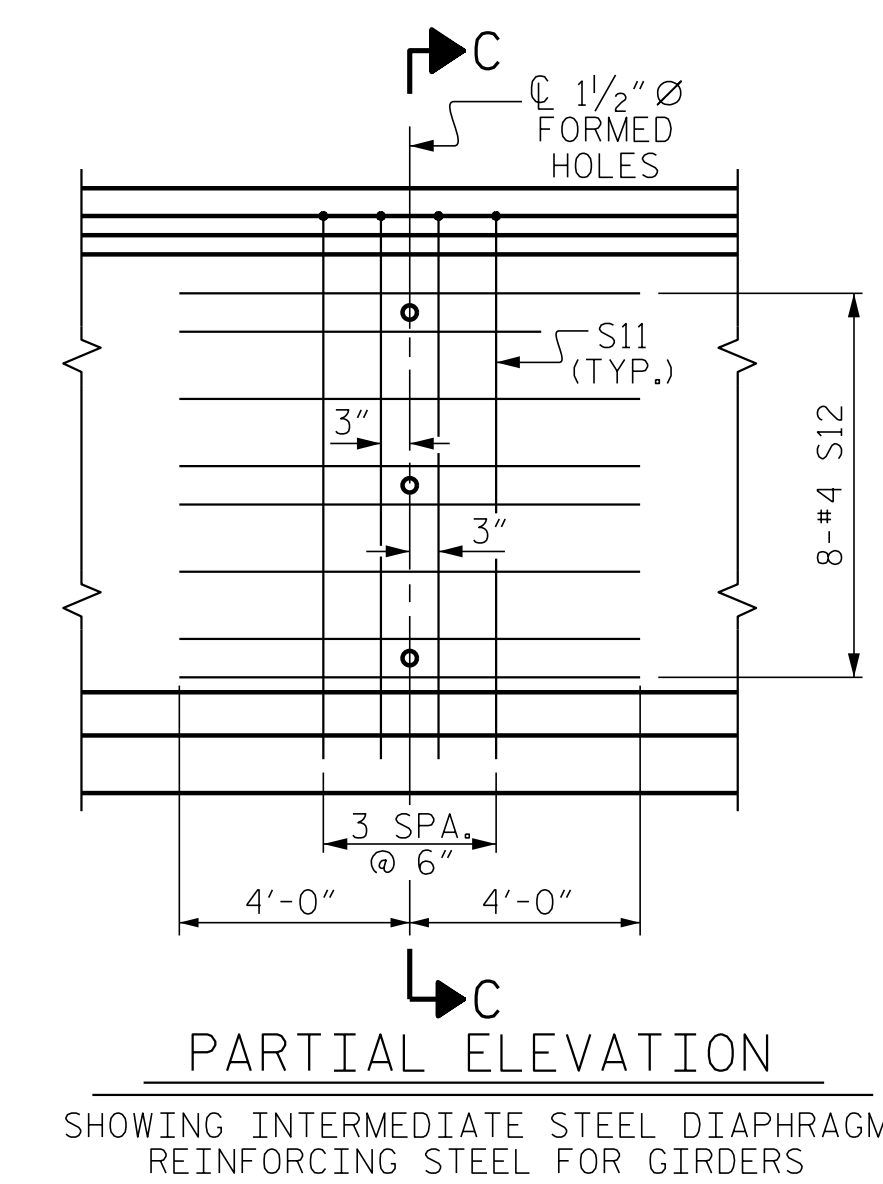
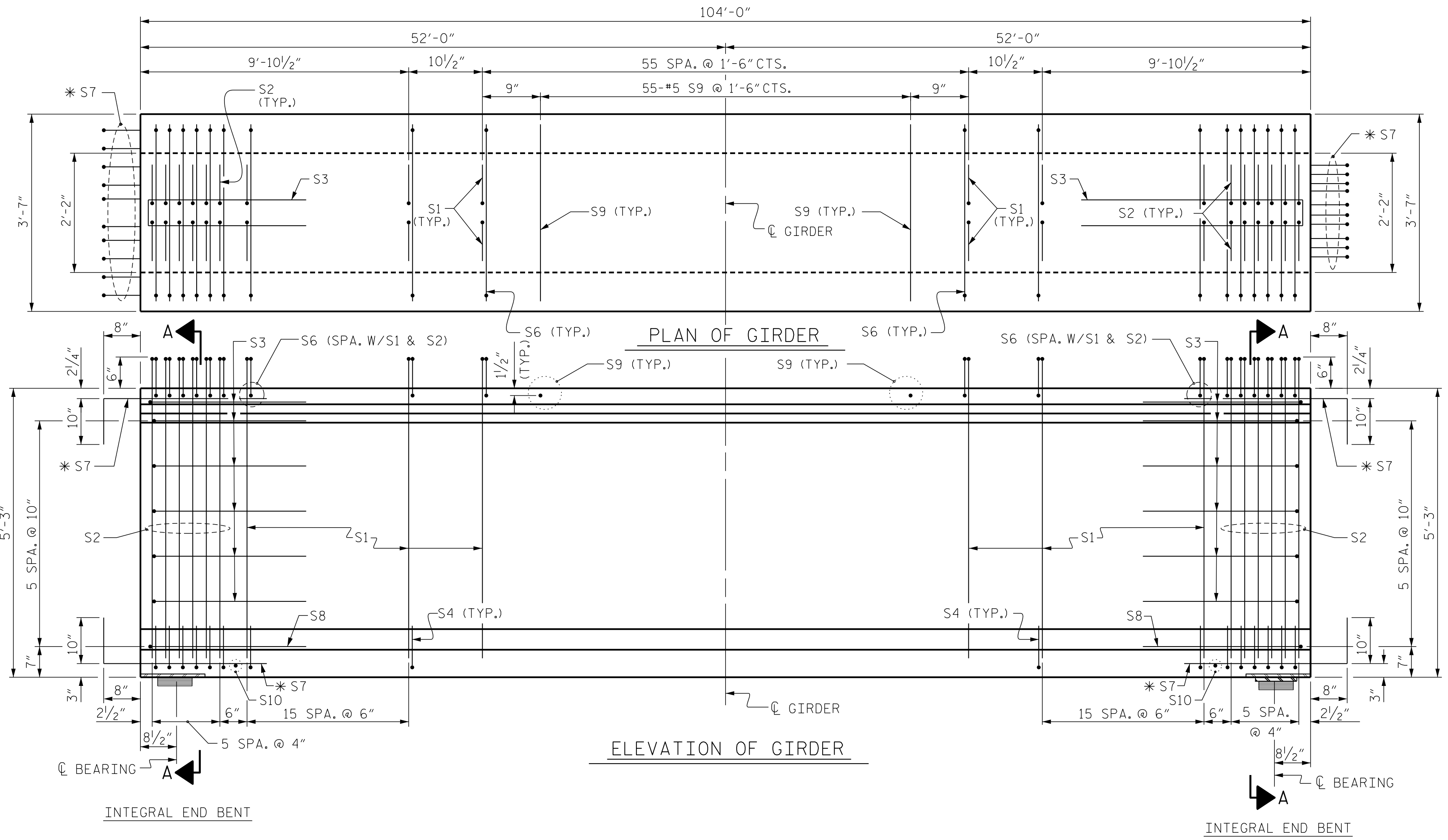
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	176	#4	1	6'-1"	715
S2	24	#6	1	6'-1"	219
S3	12	#4	2	8'-5"	67
S4	88	#4	3	3'-0"	176
S6	200	#5	4	4'-4"	904
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	55	#5	STR	3'-3"	186
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2609	20.6	38

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	104'-0"	520'-0"



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 3



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

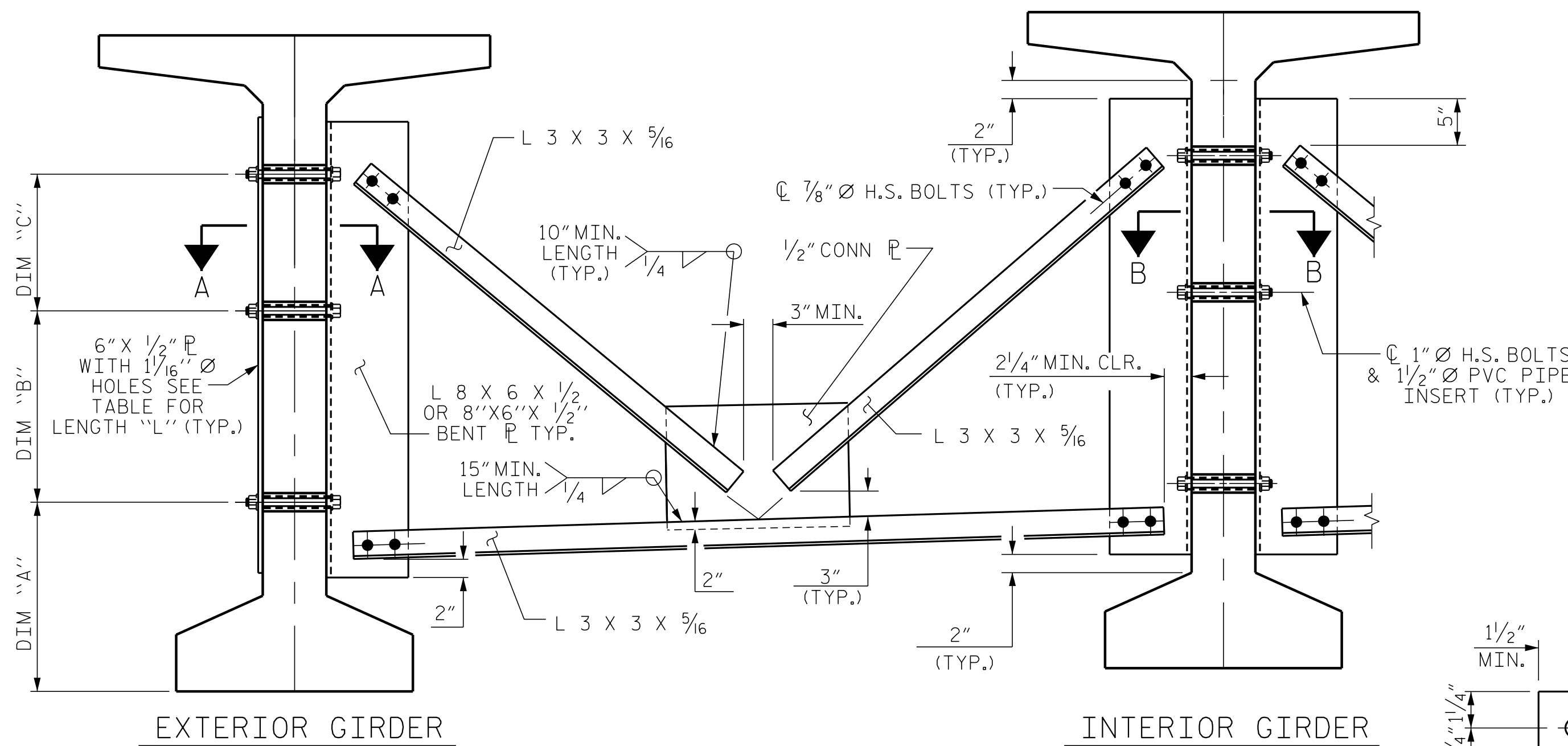
ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

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1223 Jones Franklin Rd.
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 Bus: 919 851 8077
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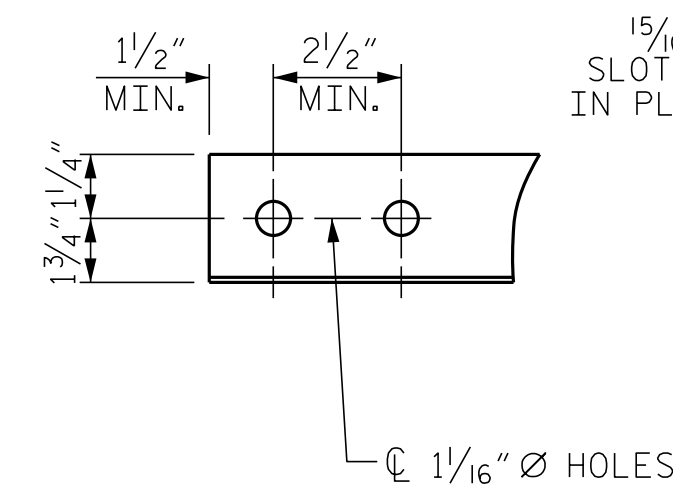
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TOTAL SHEETS 26					

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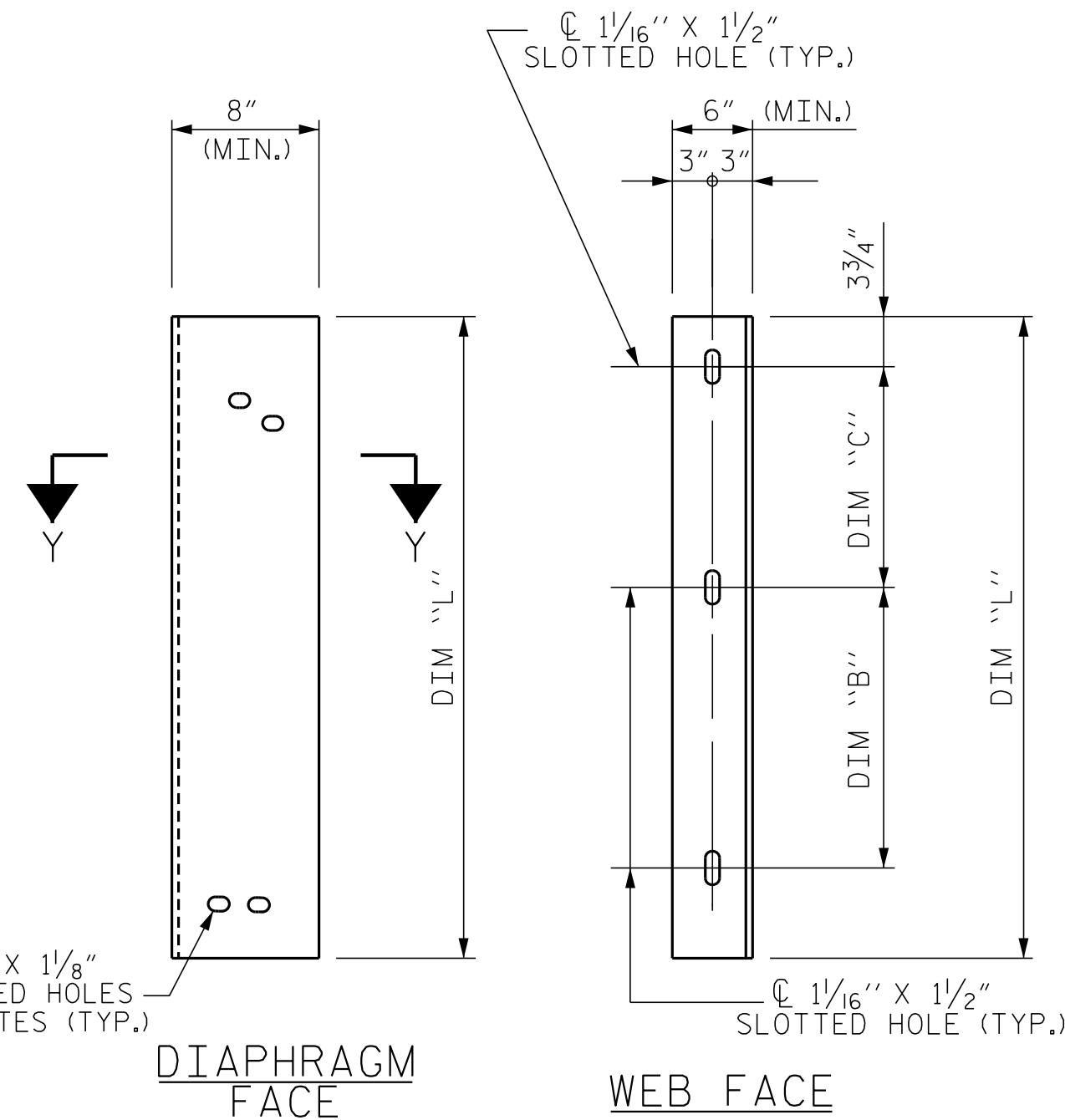
PART SECTION AT INTERMEDIATE DIAPHRAGM

(63" BULB TEE GIRDER SHOWN)

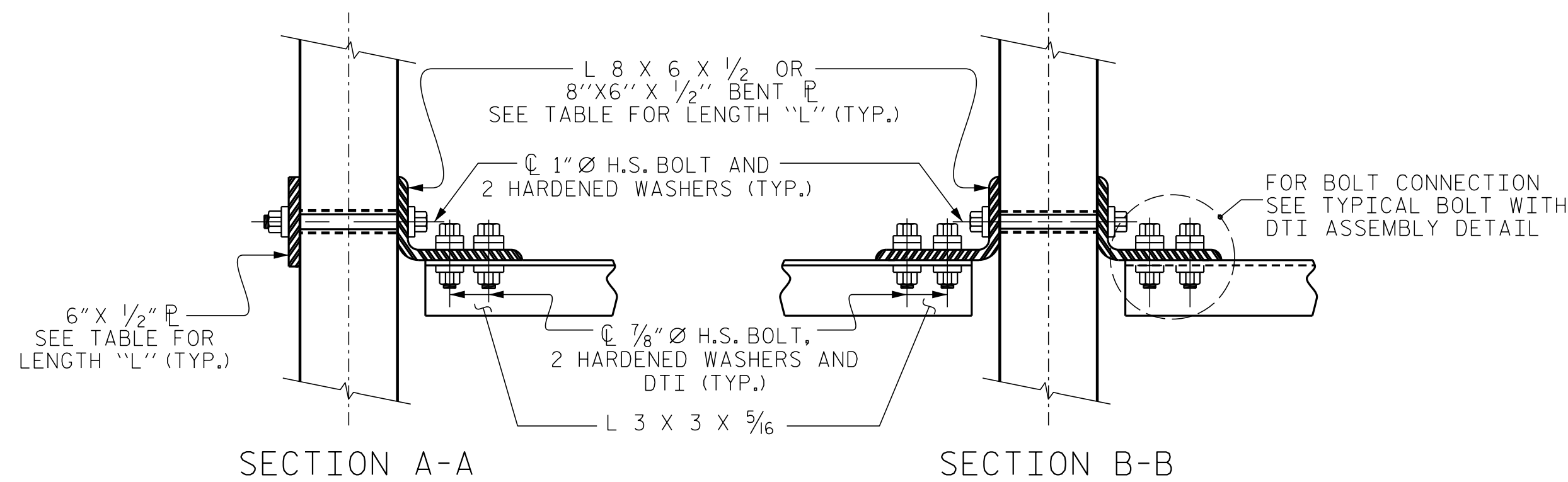


ANGLE END

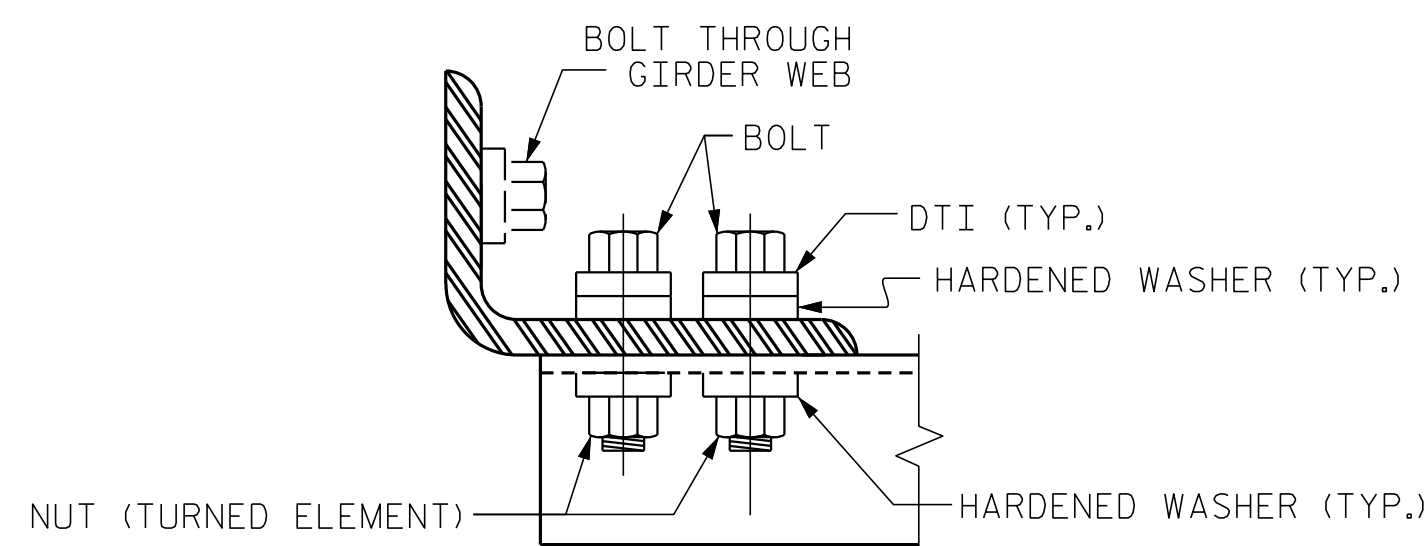
(L 3 X 3 X 5/16)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-7"	1'-3"	1'-3"	3'-5"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

SHEET 2 OF 3

ENGINEER OF RECORD:
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE STEEL
 DIAPHRAGMS
 FOR 63" MODIFIED BULB TEE
 PRESTRESSED CONCRETE
 GIRDERS
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-10
1			3			TOTAL SHEETS
2			4			26

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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 SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

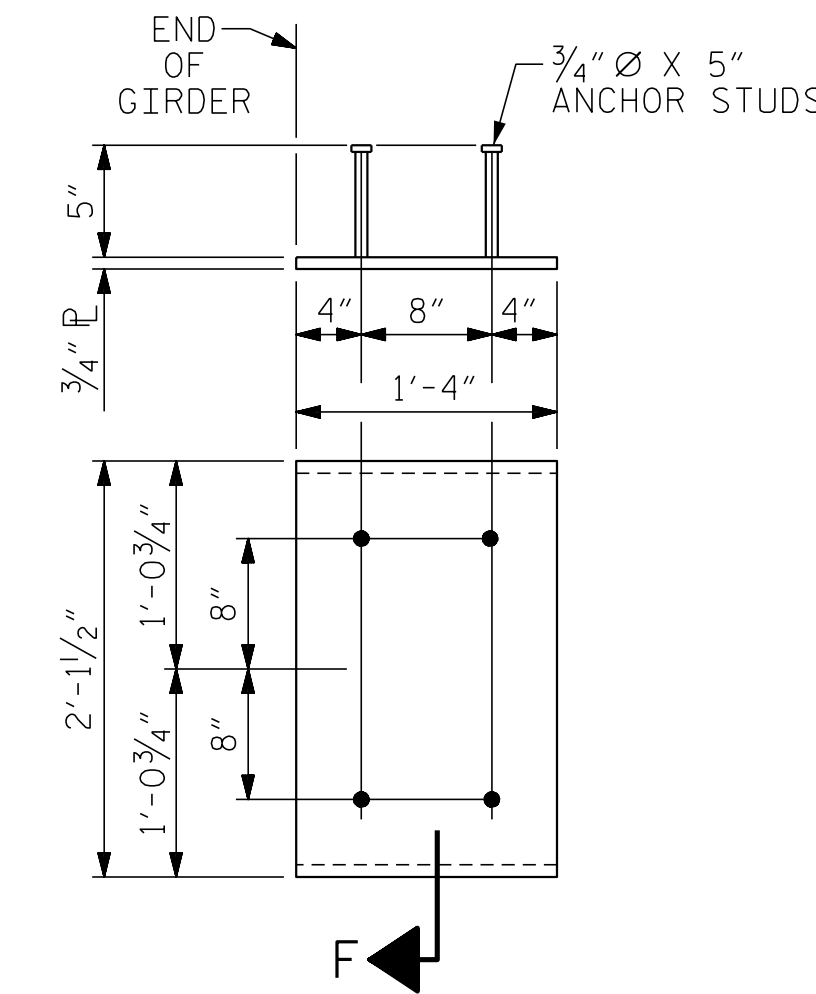
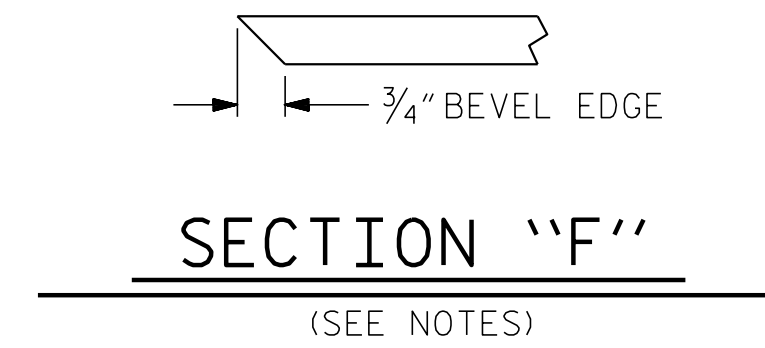
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6200 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" MODIFIED BULB TEES ONLY.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



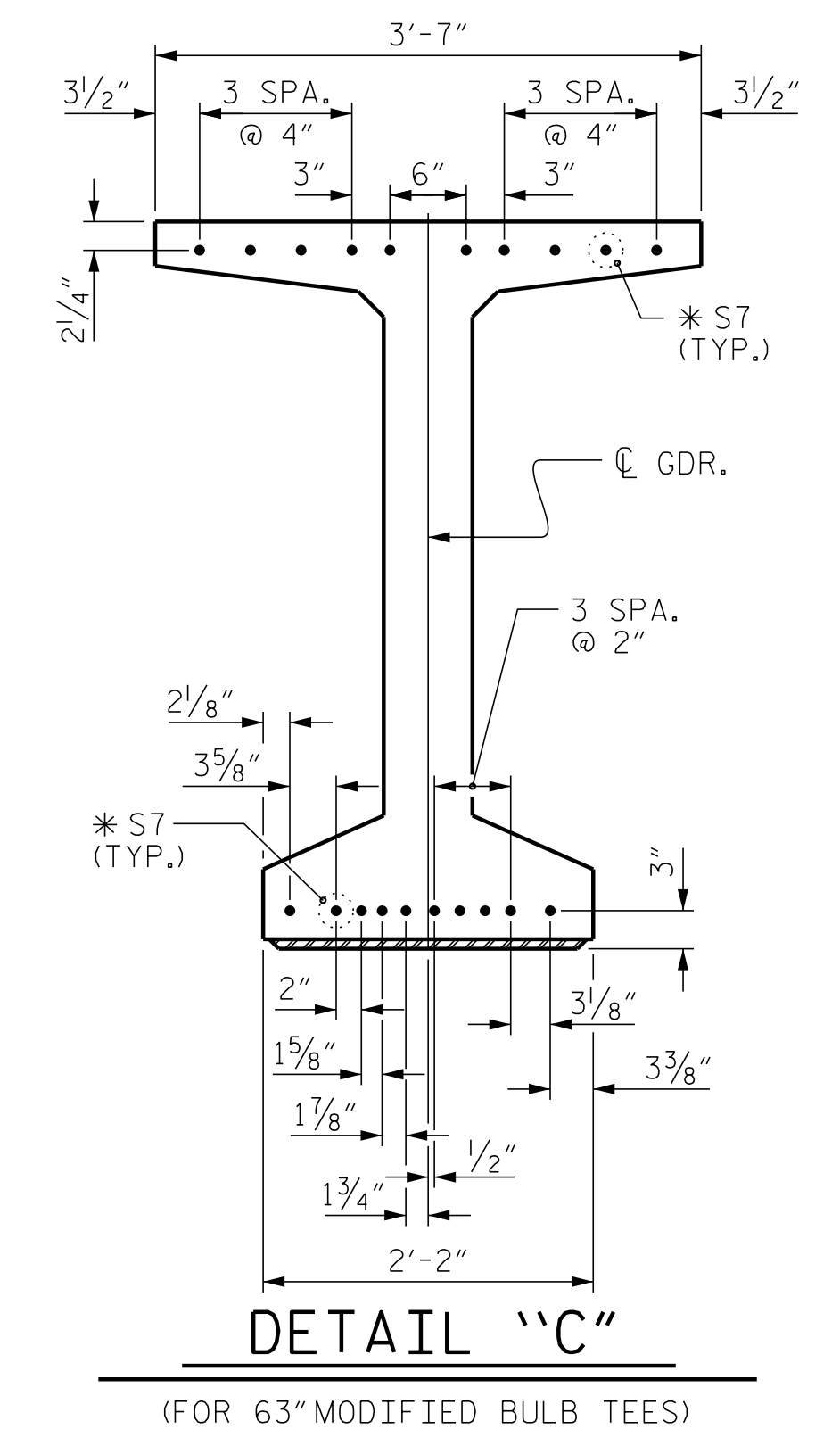
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #1 & #5																					
	TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.033	0.065	0.095	0.122	0.147	0.167	0.184	0.196	0.203	0.205	0.203	0.196	0.184	0.167	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.021	0.043	0.063	0.084	0.100	0.116	0.126	0.136	0.140	0.143	0.140	0.136	0.126	0.116	0.100	0.084	0.063	0.043	0.021	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	11/16"	3/4"	3/4"	3/4"	11/16"	11/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

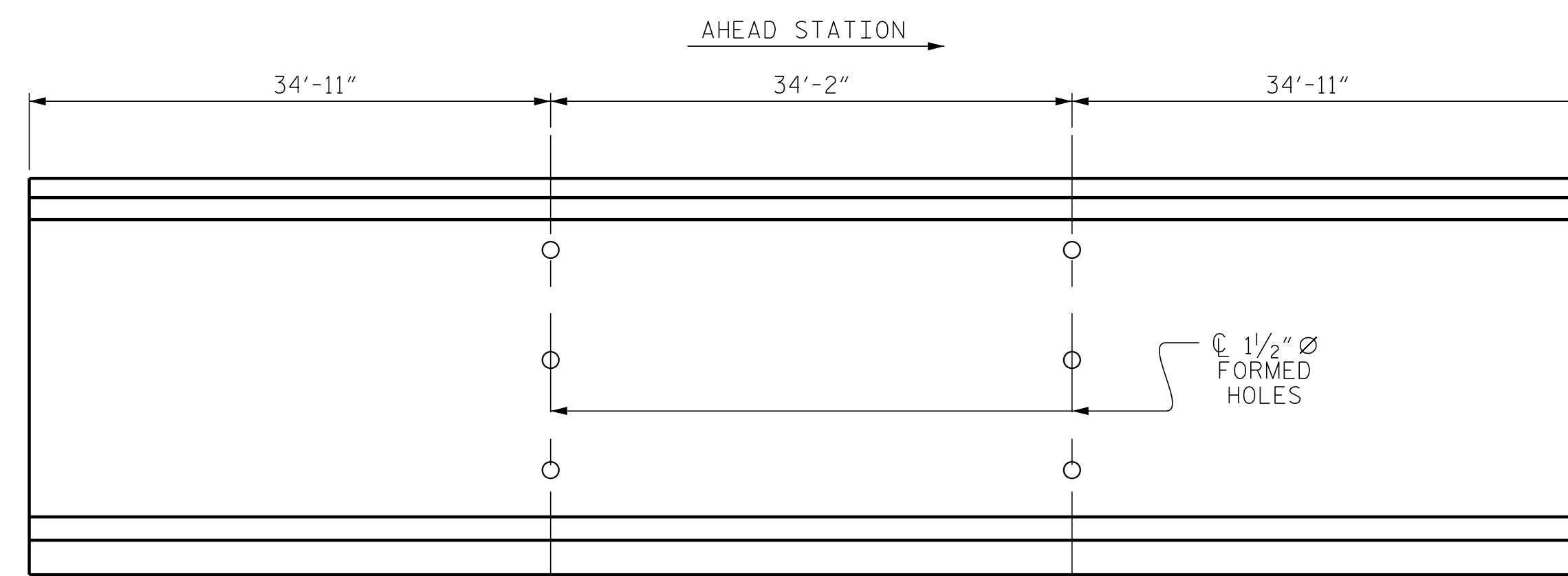
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #2, #3 & #4																					
	TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.033	0.065	0.095	0.122	0.147	0.167	0.184	0.196	0.203	0.205	0.203	0.196	0.184	0.167	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.023	0.047	0.069	0.091	0.109	0.126	0.138	0.149	0.153	0.156	0.153	0.149	0.138	0.126	0.109	0.091	0.069	0.047	0.023	0.000
FINAL CAMBER	↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-

SHEET 3 OF 3



ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : ELR 11/91	REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15 MAA/TMG
	REV. 12/17 MAA/THC

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UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Designed by:
Gregory M. Olland
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GREGORY M. OLLAND
8/29/2018
ETHERILL ENGINEERING
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Fax: 919 851 8107
LICENSE NO. F-0377

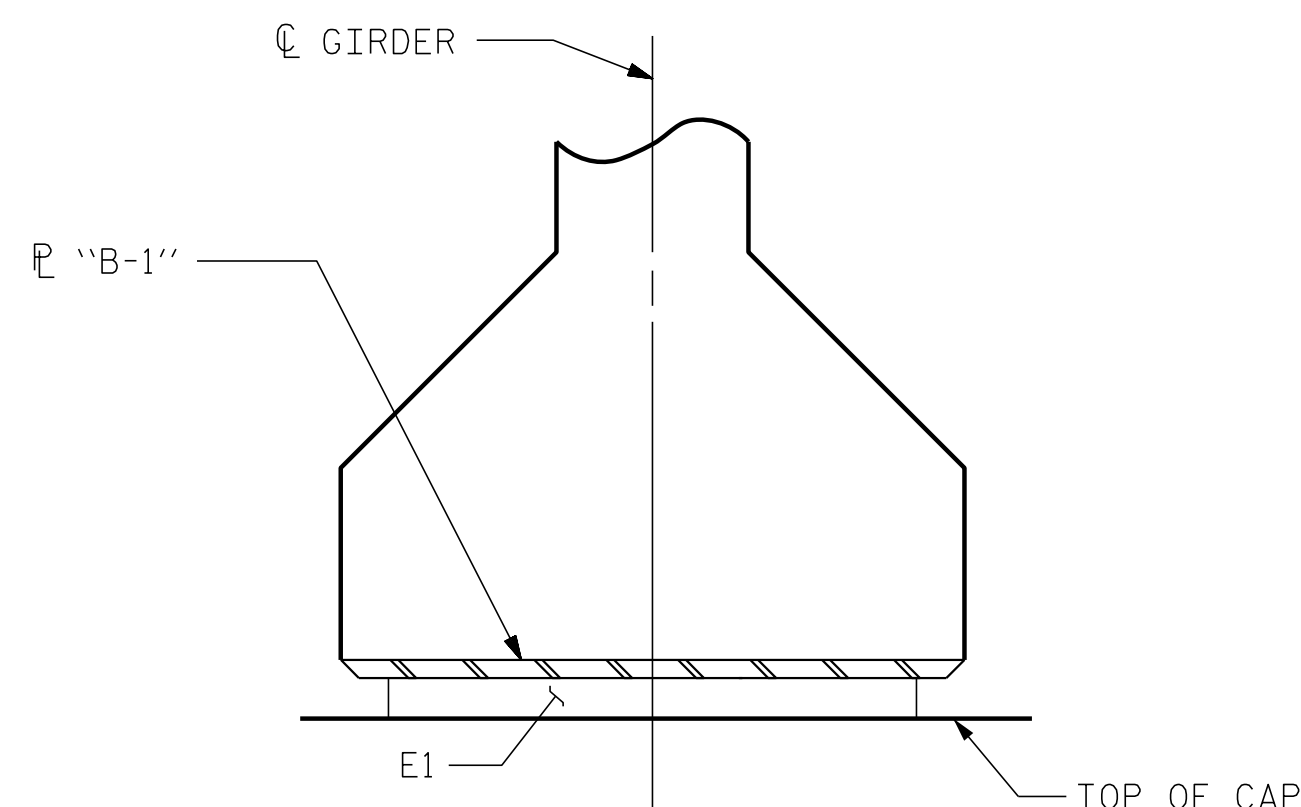
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		STANDARD PRESTRESSED CONCRETE GIRDER (RIGHT LANE)			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S6-11			TOTAL SHEETS 26		

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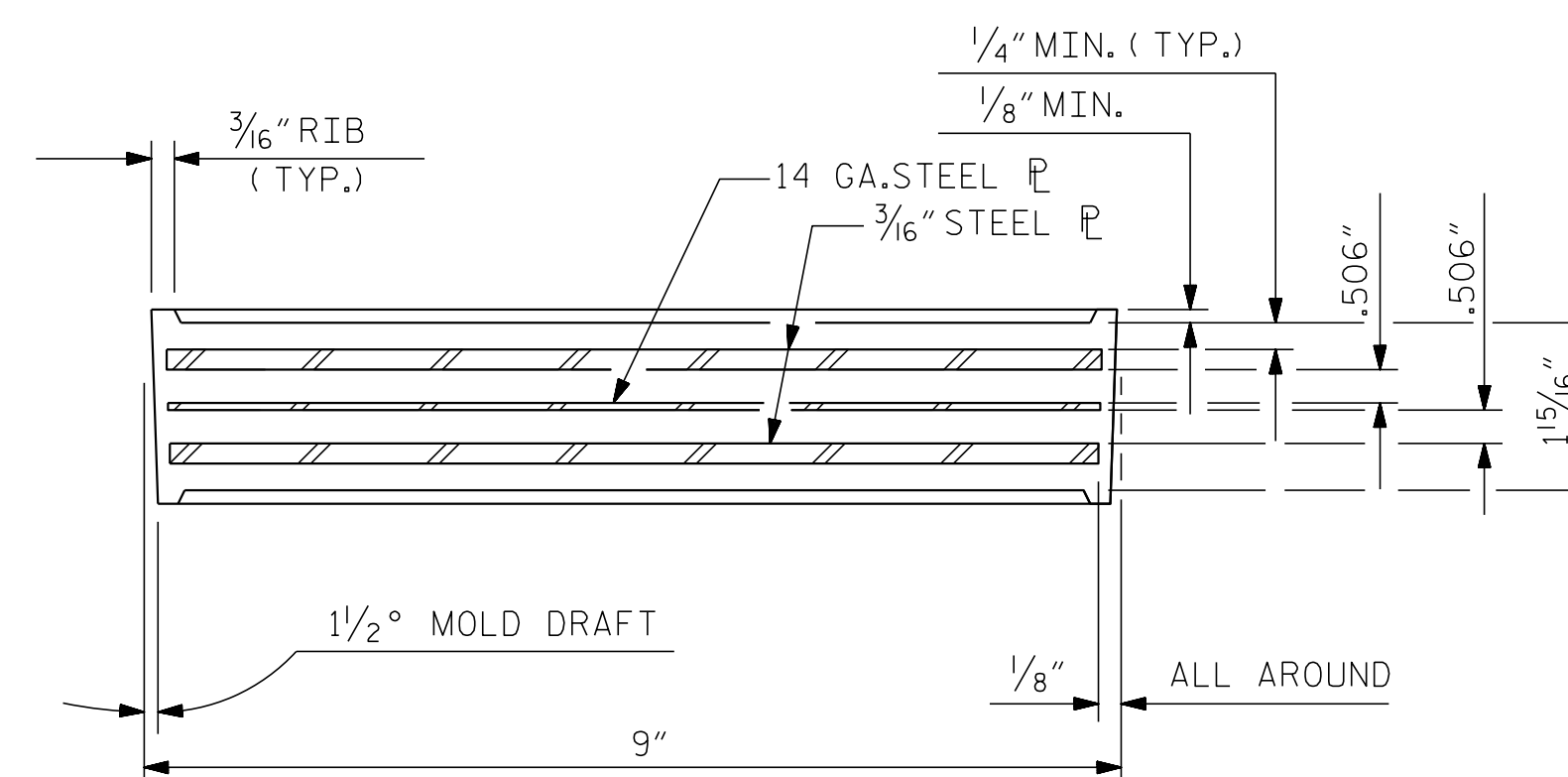
NOTES

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

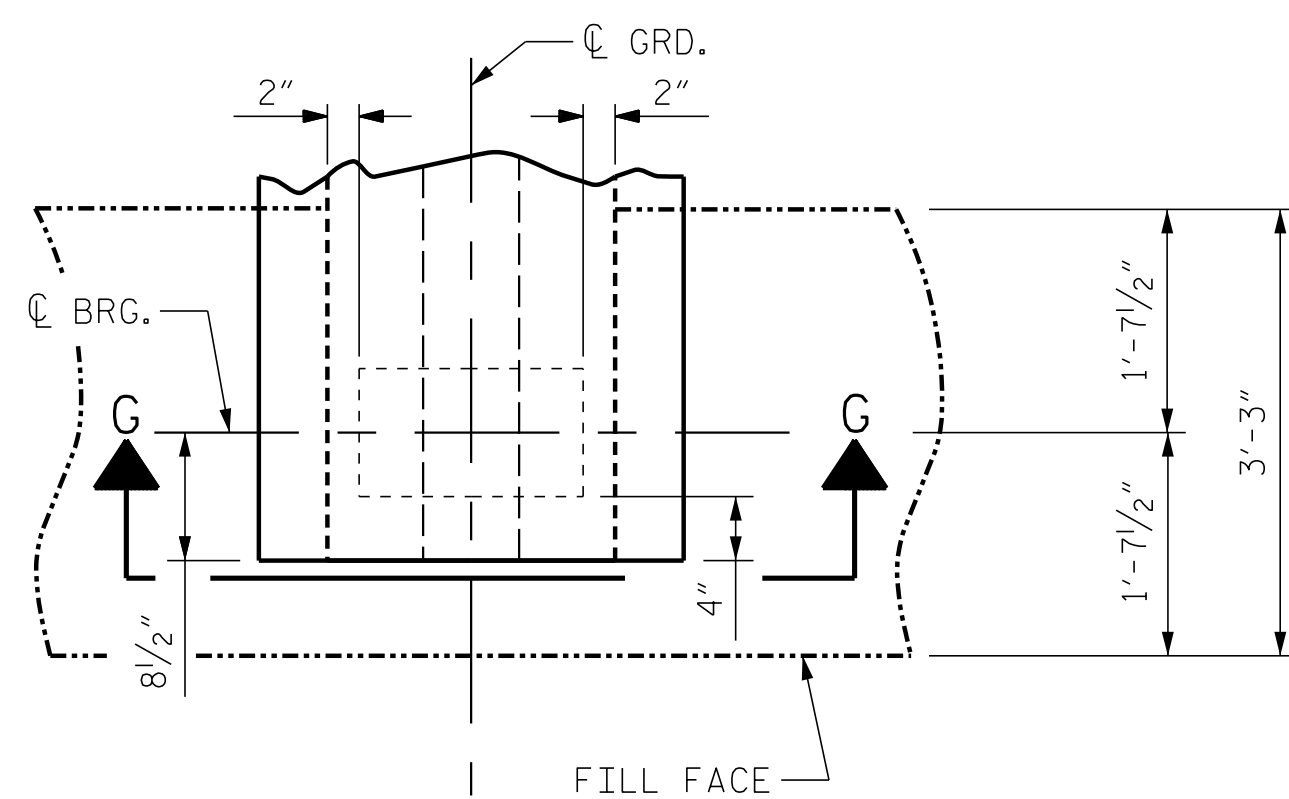
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



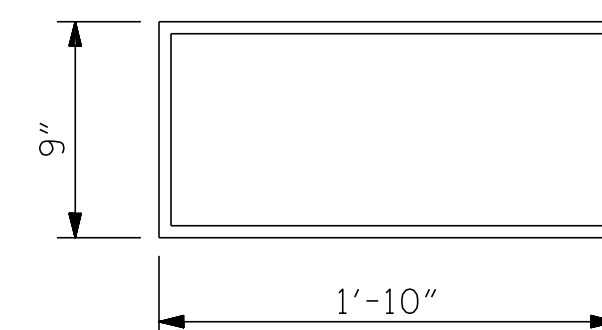
SECTION G-G



TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL PLAN @ END BENT



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

ENGINEER OF RECORD:
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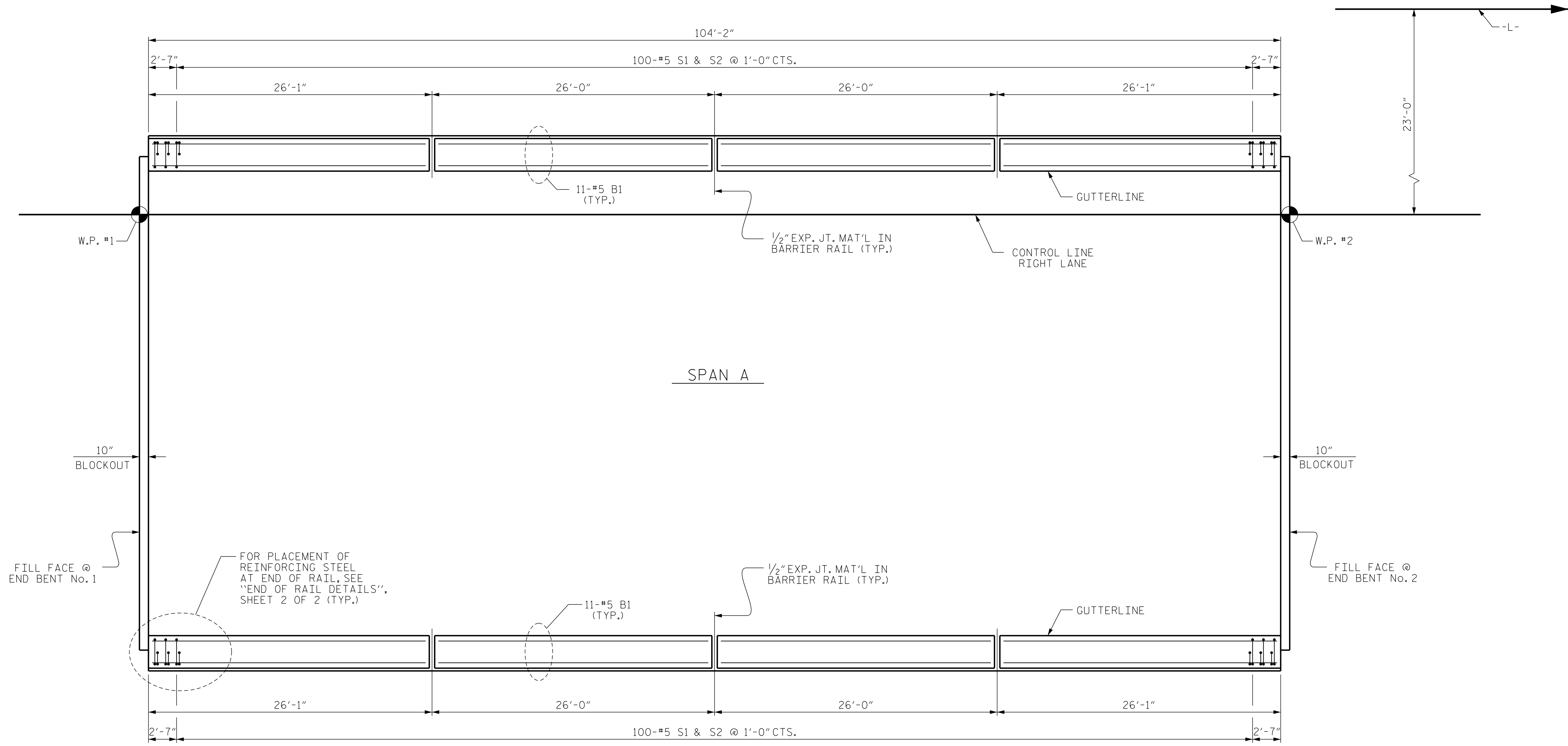
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

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DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2

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DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18

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ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 37400
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE
 BARRIER RAIL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-13
1			3			TOTAL SHEETS
2			4			26

NOTES

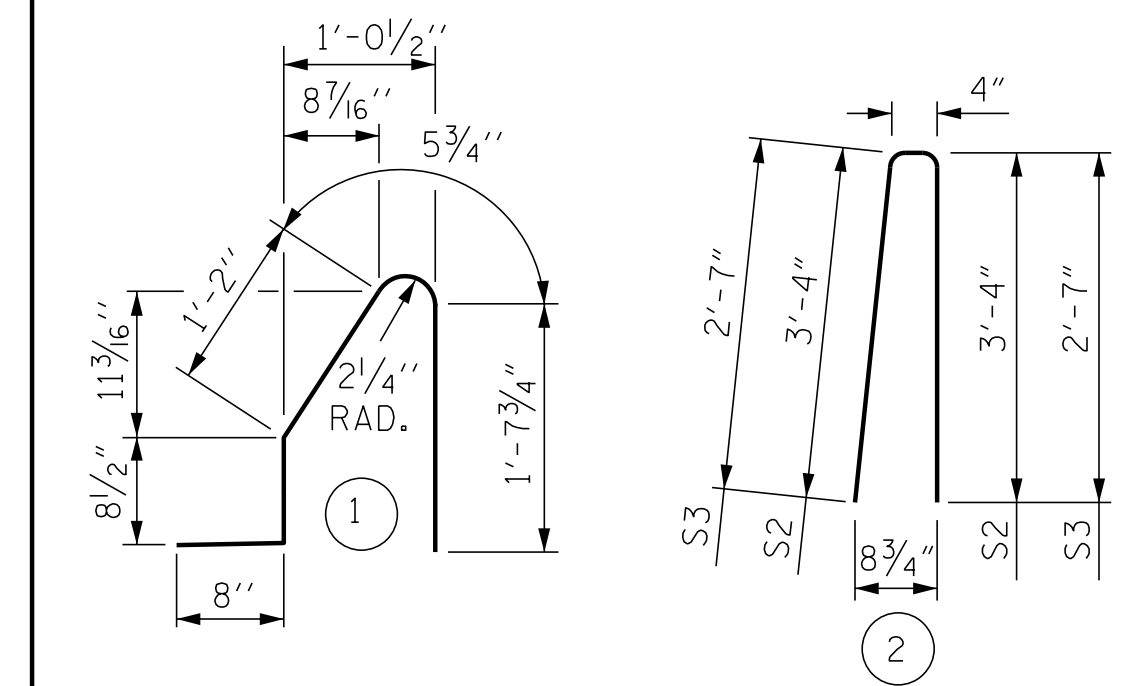
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

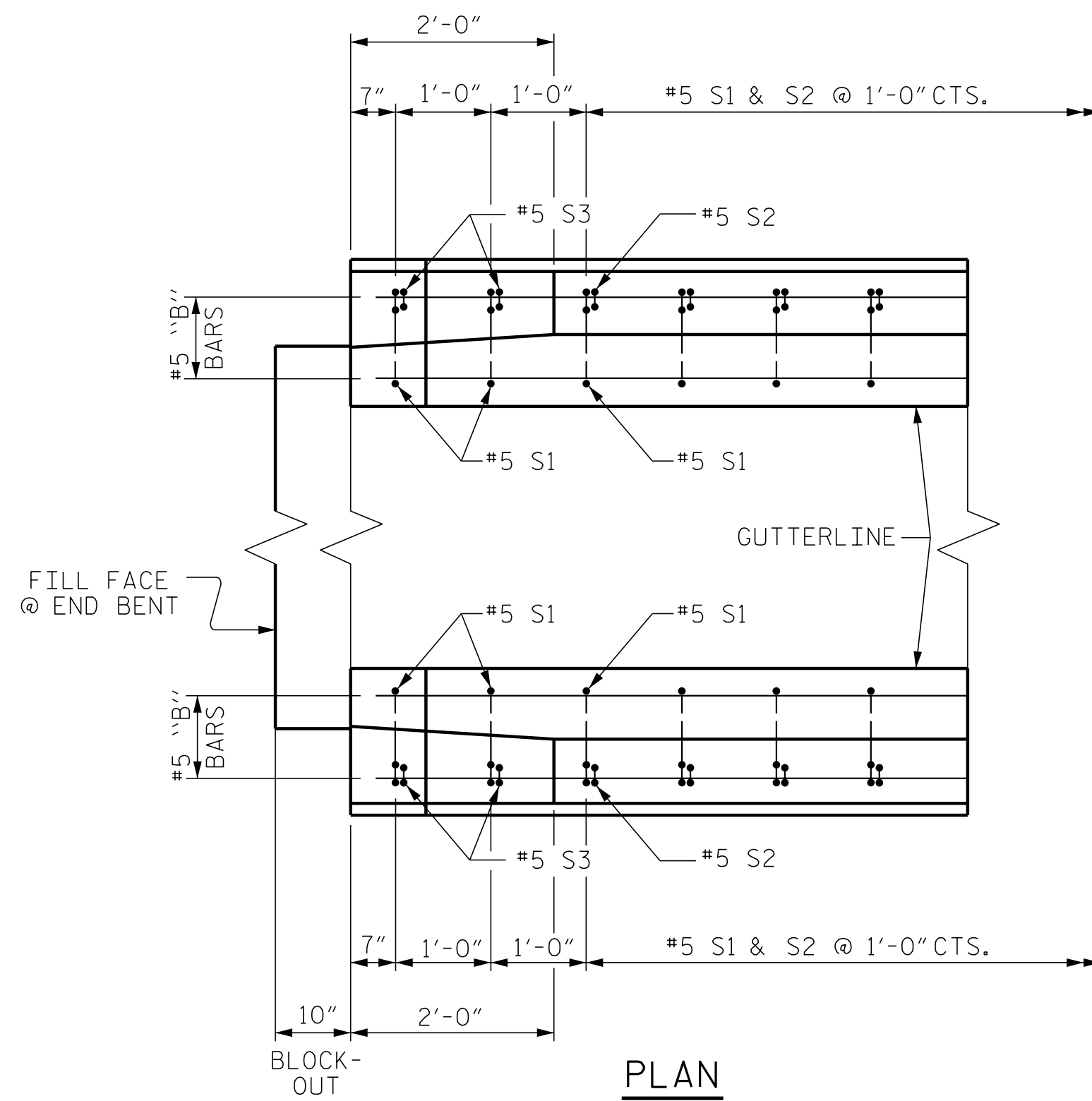
BAR TYPES



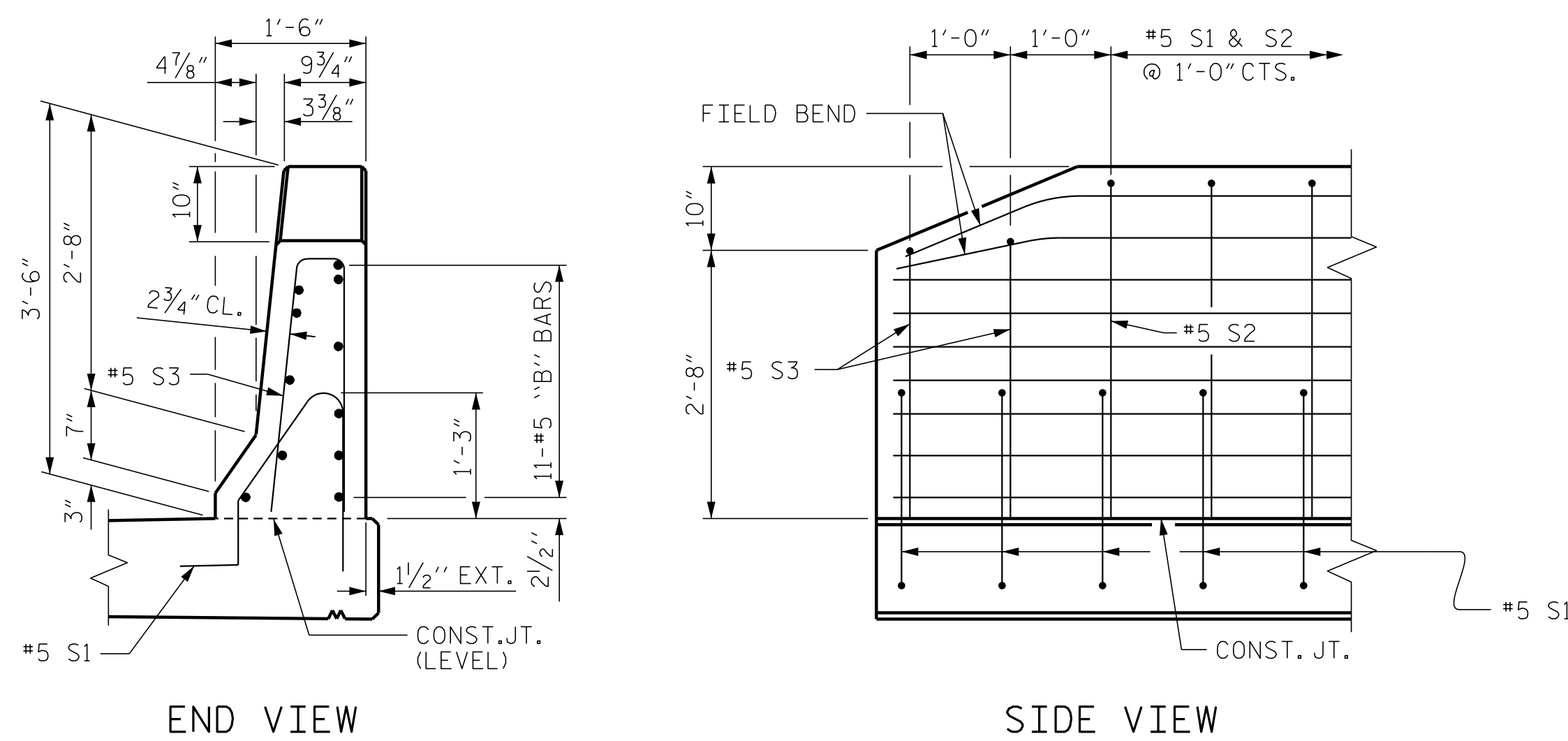
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	208	#5	1	4'-8"	1012
* S2	200	#5	2	7'-0"	1460
* S3	8	#5	2	5'-6"	46
* B1	88	#5	STR	25'-7"	2348
* EPOXY COATED REINFORCING STEEL					4,866 LBS.
CLASS AA CONCRETE					28.3 CU. YDS.
CONCRETE BARRIER RAIL					208.33 LTN. FT.



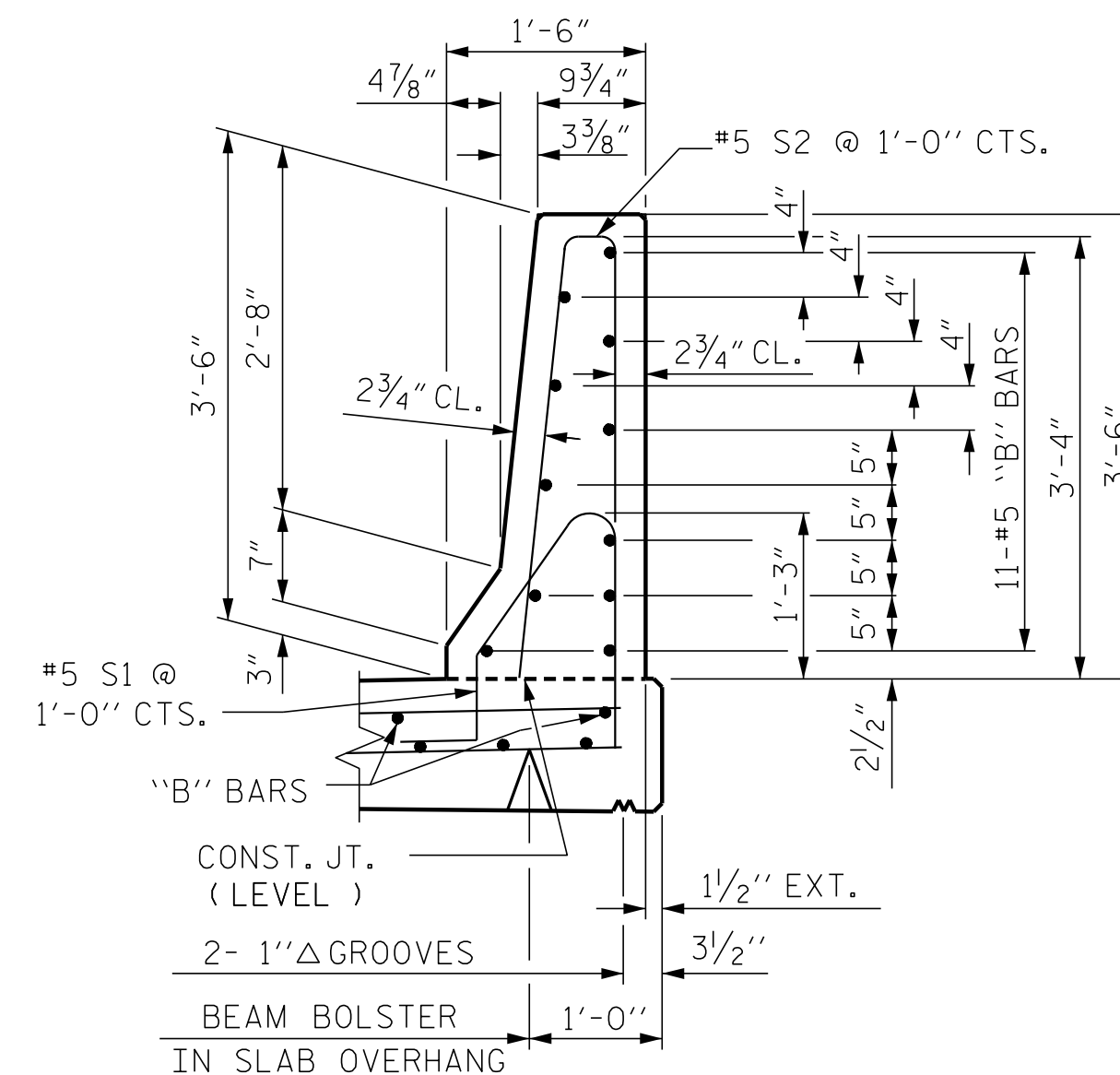
PLAN



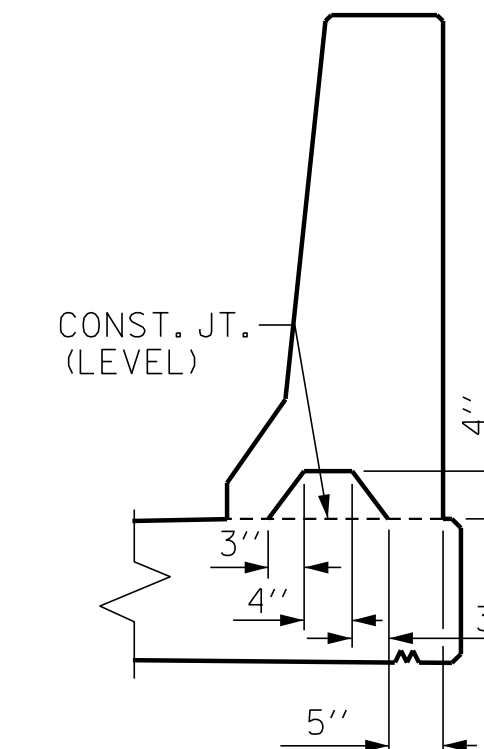
END VIEW

SIDE VIEW

END OF RAIL DETAILS

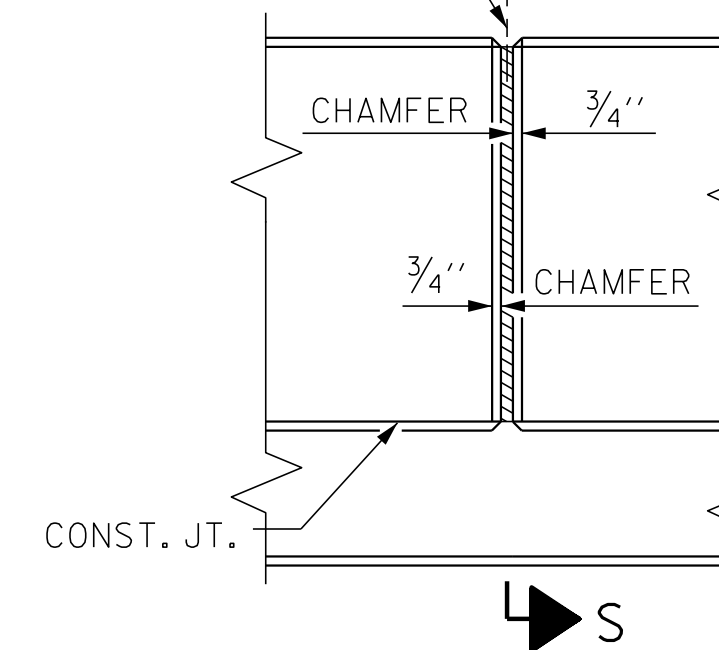


SECTION THRU RAIL



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
BARRIER RAIL DETAILS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 198+42.23 -L-

SHEET 2 OF 2

ENGINEER OF RECORD:
Developed by
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
(RIGHT LANE)

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S6-14
2			4			TOTAL SHEETS 26

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ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

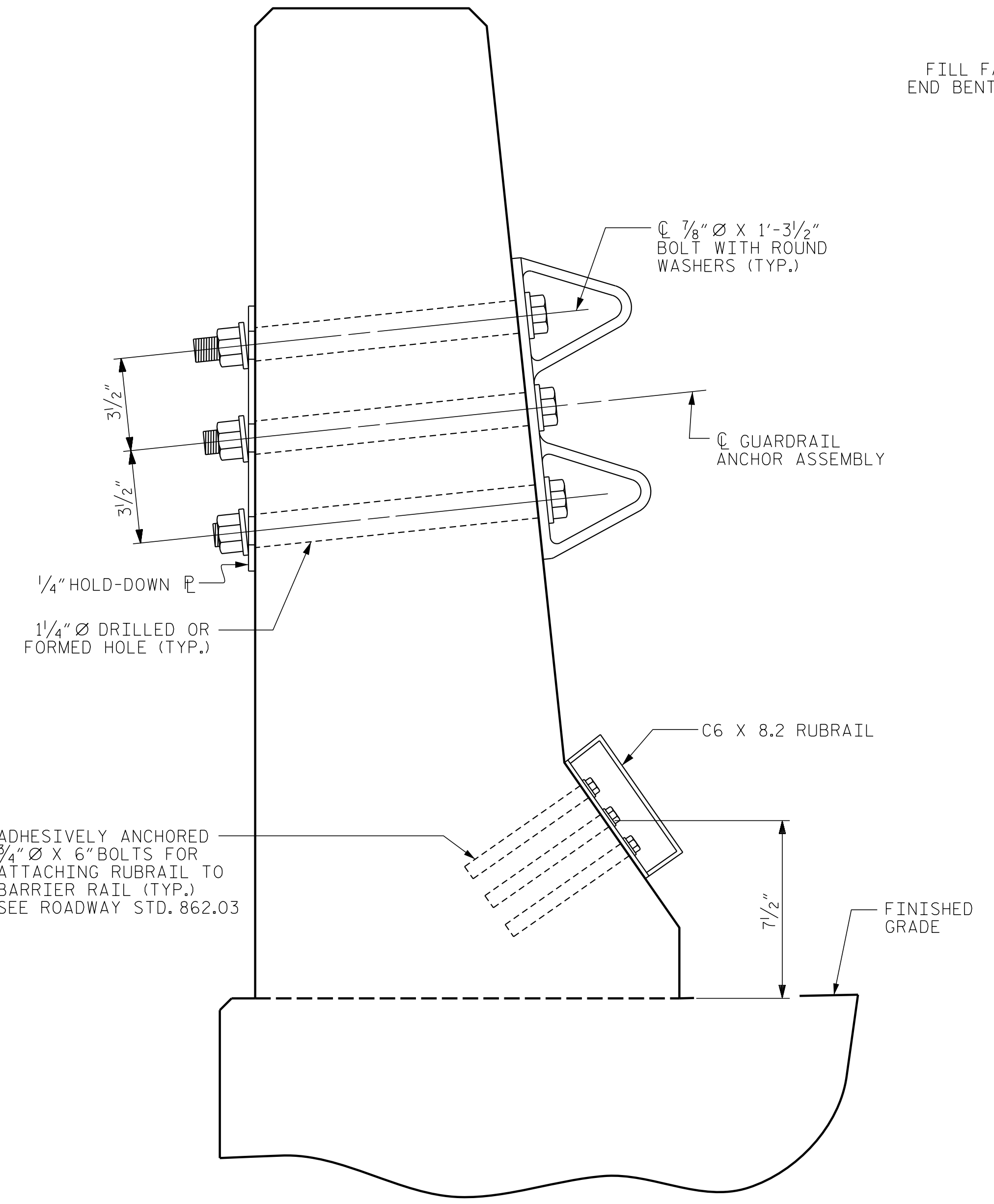
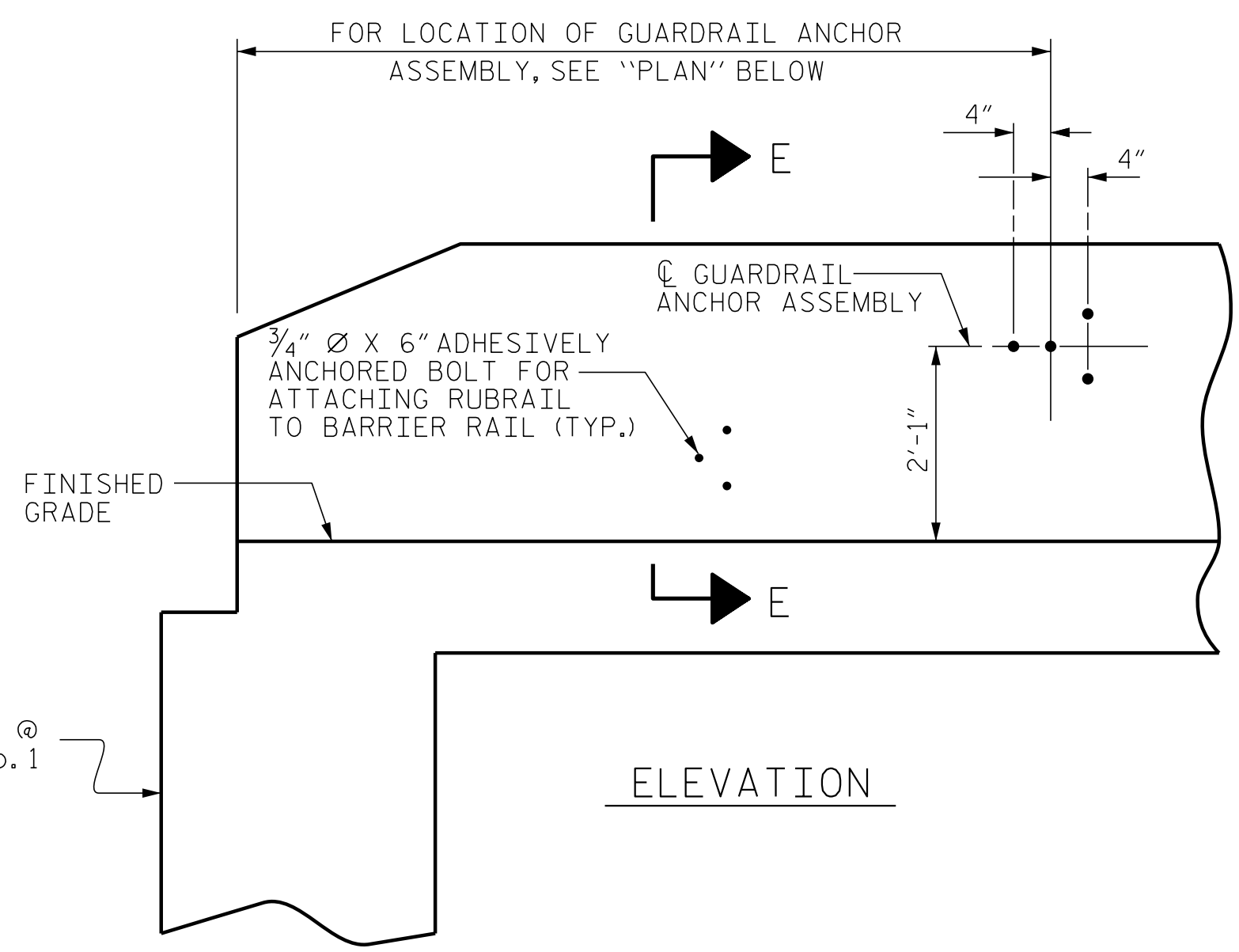
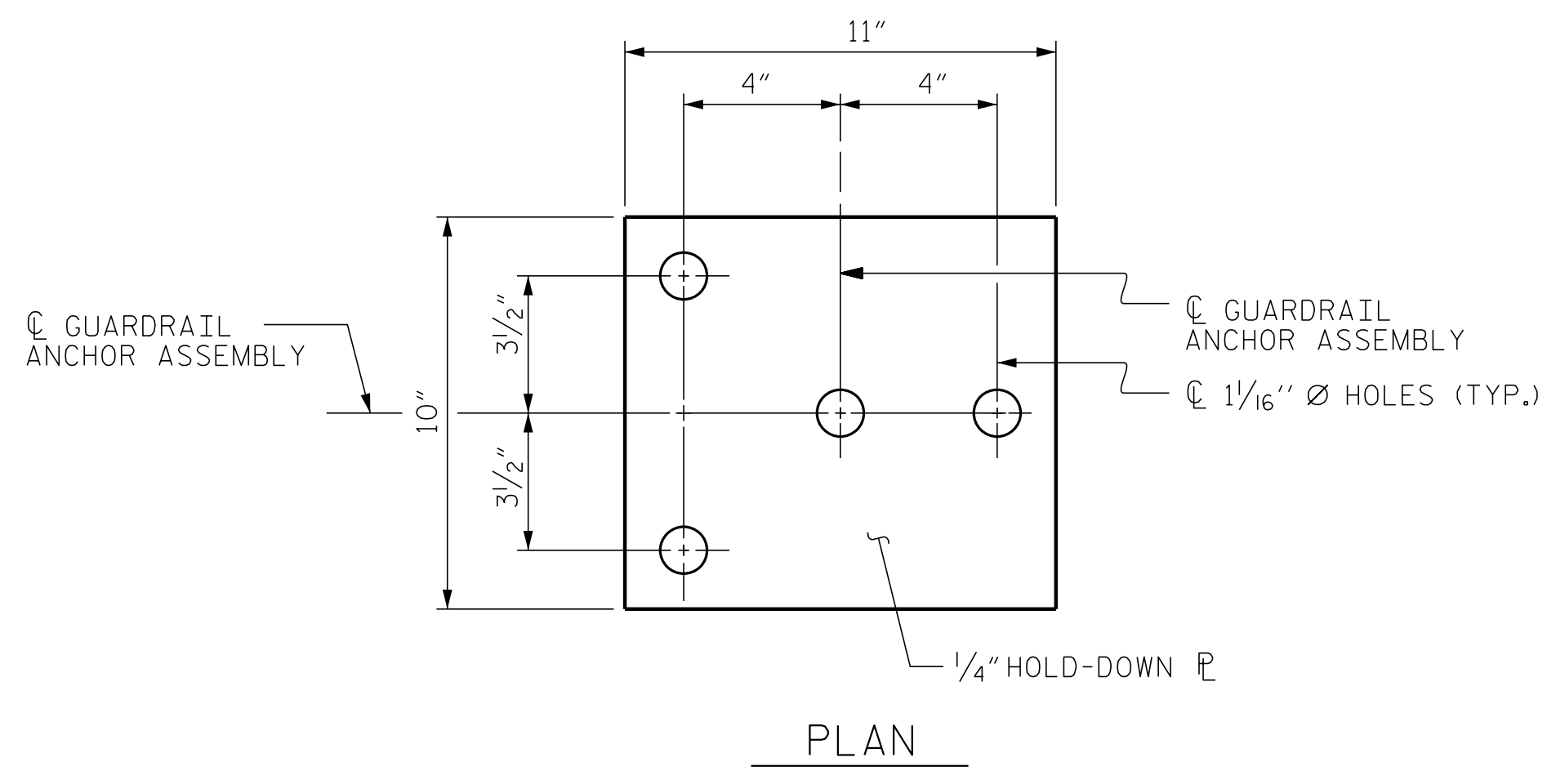
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

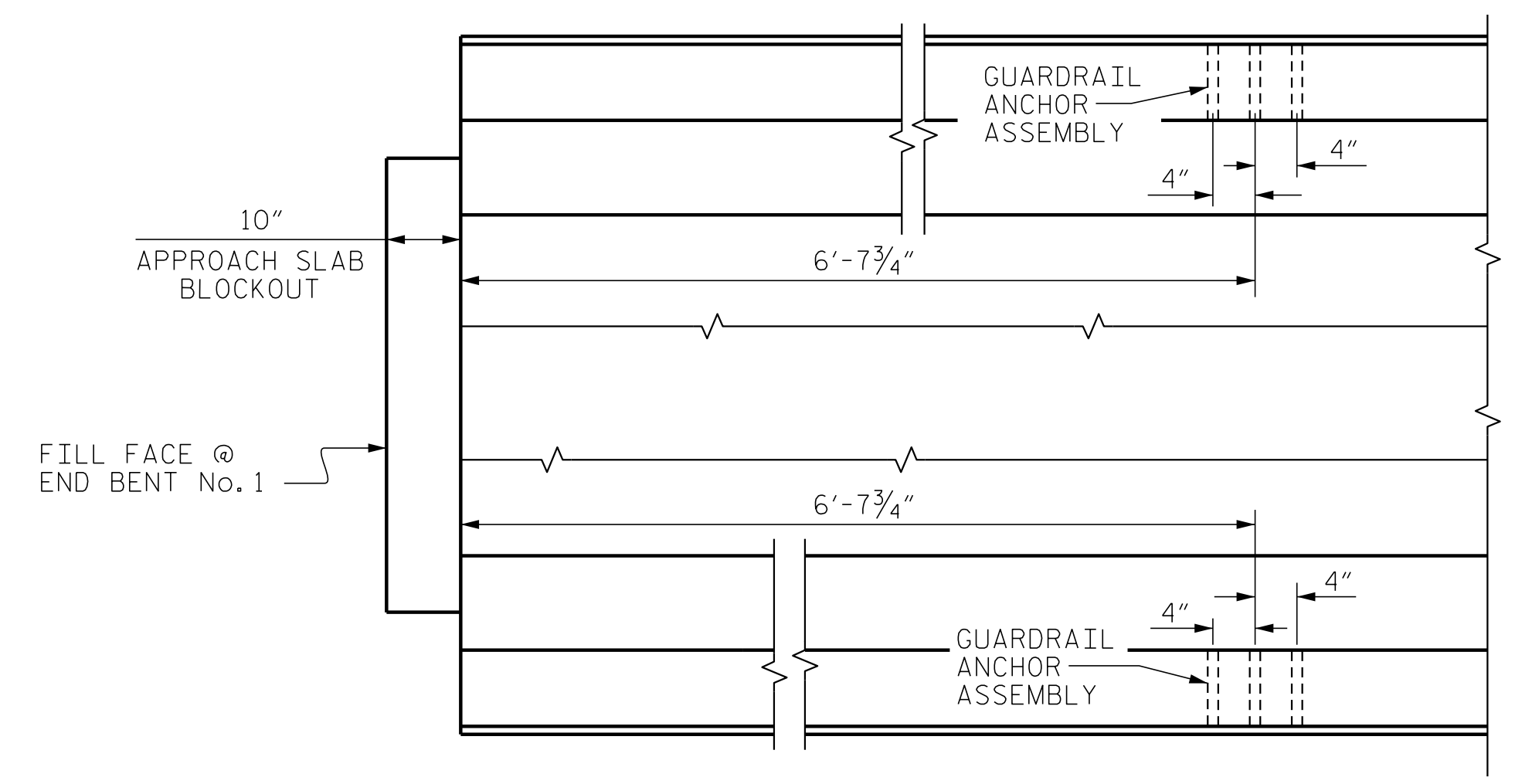
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

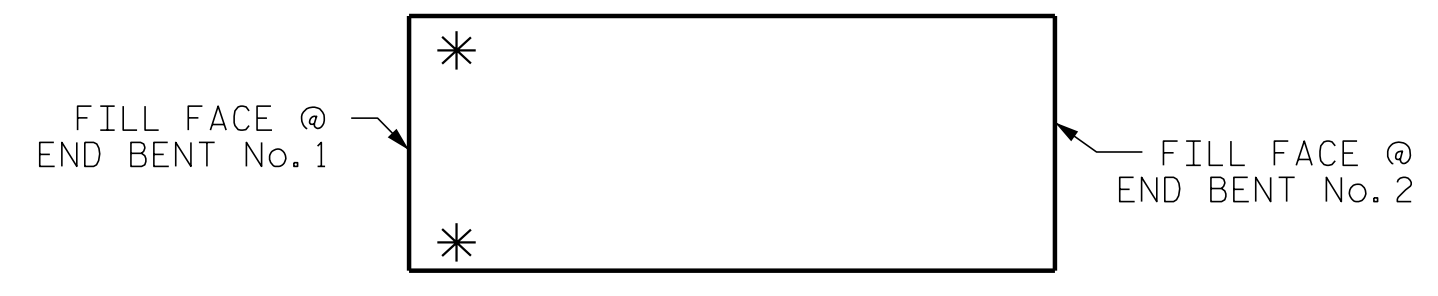
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



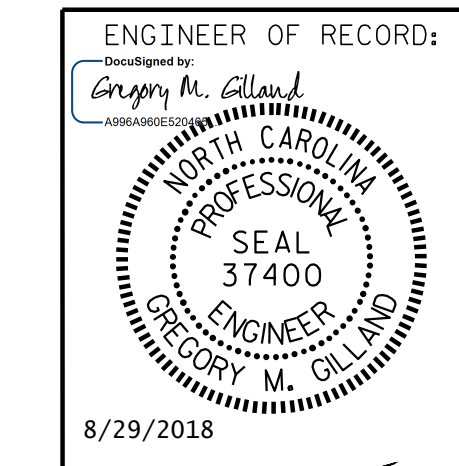
LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26

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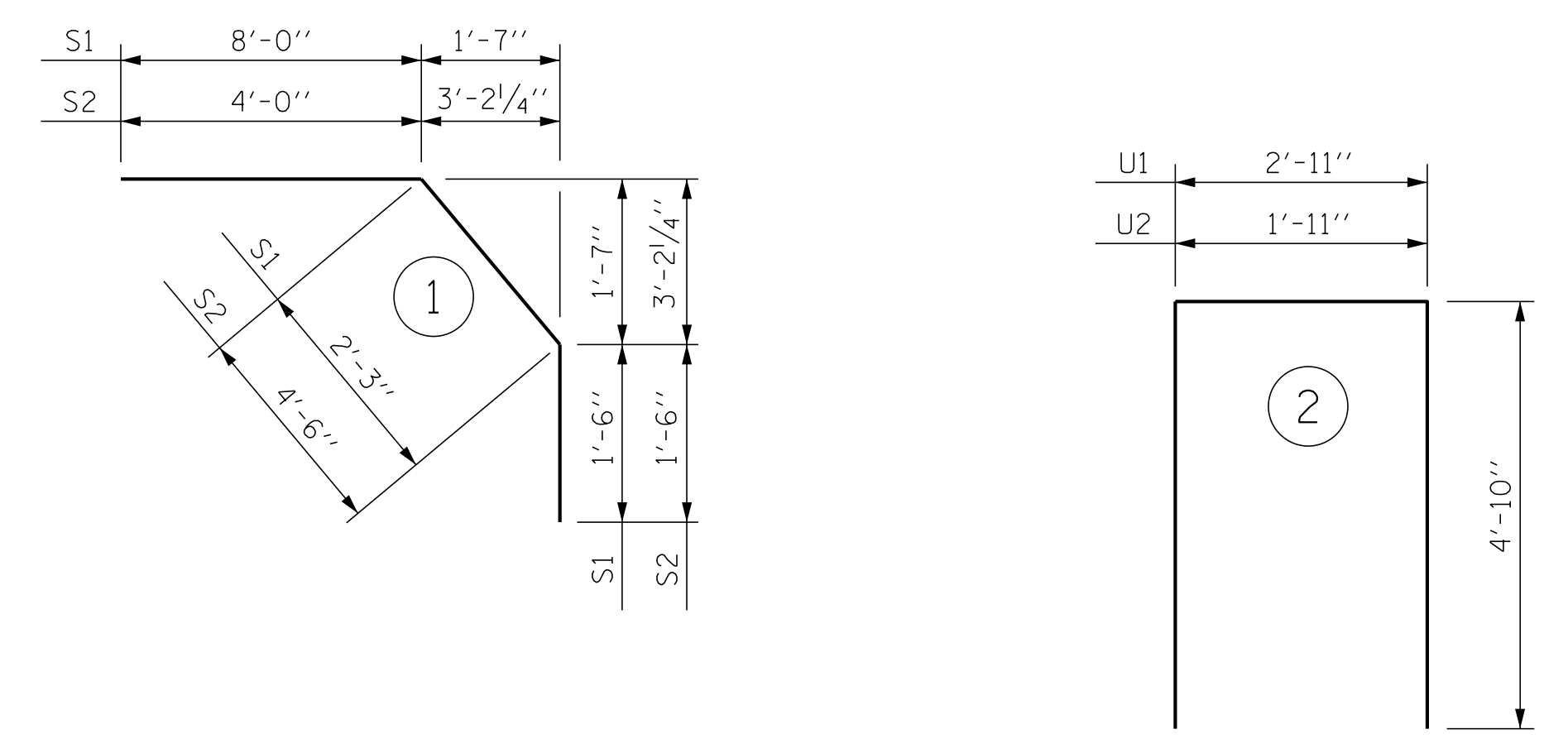
ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : B.C. HUNT	DATE : 4/18
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	179	#5	STR	48'-11"	9133
A2	179	#5	STR	48'-11"	9133
* B1	8	#4	STR	27'-6"	147
* B2	188	#6	STR	24'-11"	7036
* B3	64	#4	STR	30'-0"	1283
B4	88	#6	STR	24'-1"	3183
B5	44	#5	STR	60'-0"	2754
K1	24	#4	STR	24'-5"	391
K2	32	#4	STR	9'-5"	201
K3	8	#4	STR	7'-10"	42
K4	8	#4	STR	6'-5"	34
K5	16	#4	STR	3'-4"	36
K6	4	#4	STR	2'-6"	7
K7	4	#4	STR	1'-10"	5
* S1	68	#4	1	11'-9"	534
* S2	64	#4	1	10'-0"	428
U1	64	#4	2	12'-7"	538
U2	4	#4	2	11'-7"	31

REINFORCING STEEL LBS. 16,355
 * EPOXY COATED REINFORCING STEEL LBS. 18,561
 * THESE BARS ARE EPOXY COATED.

BAR TYPES

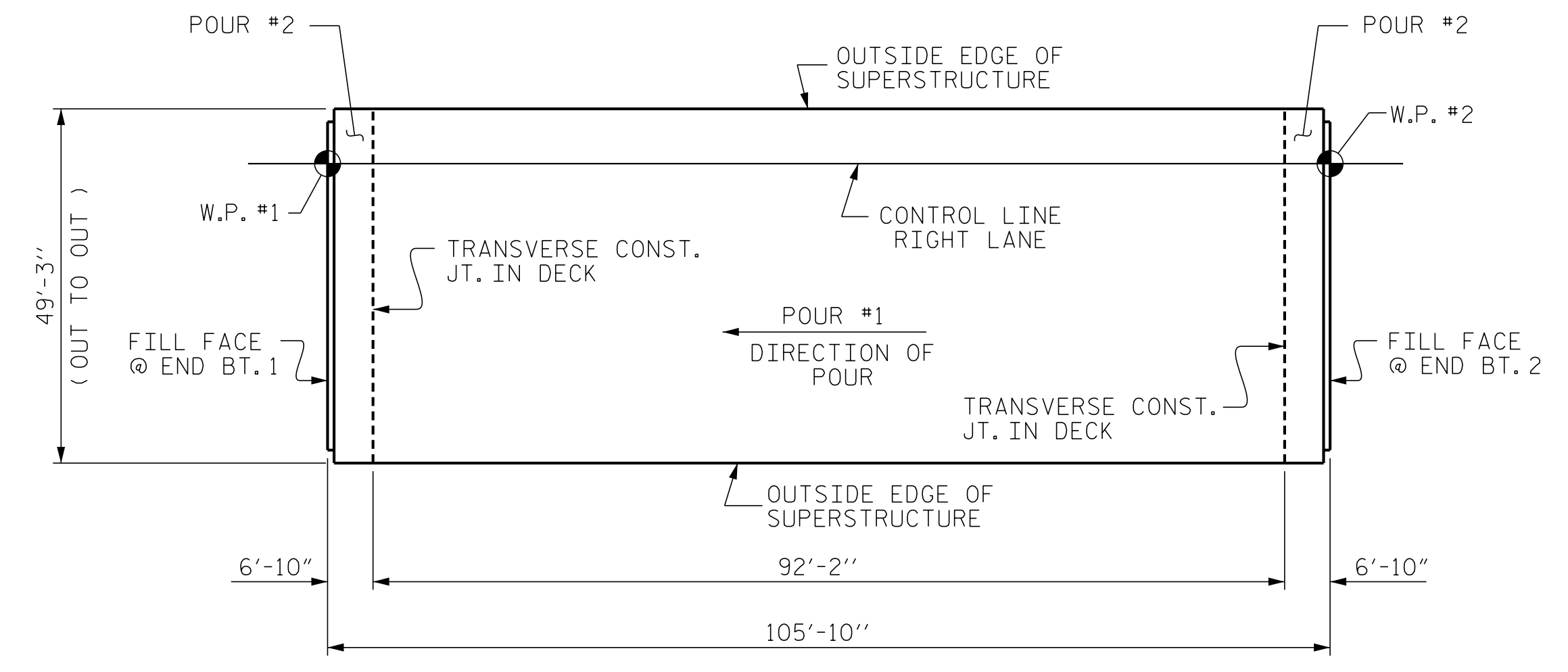


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS **	229.1	16,355	18,561

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED



CONCRETE DECK POUR DETAIL

NOTE :
POUR #2 INCLUDES UPPER PART OF THE INTEGRAL END BENT.

GROOVING BRIDGE FLOORS

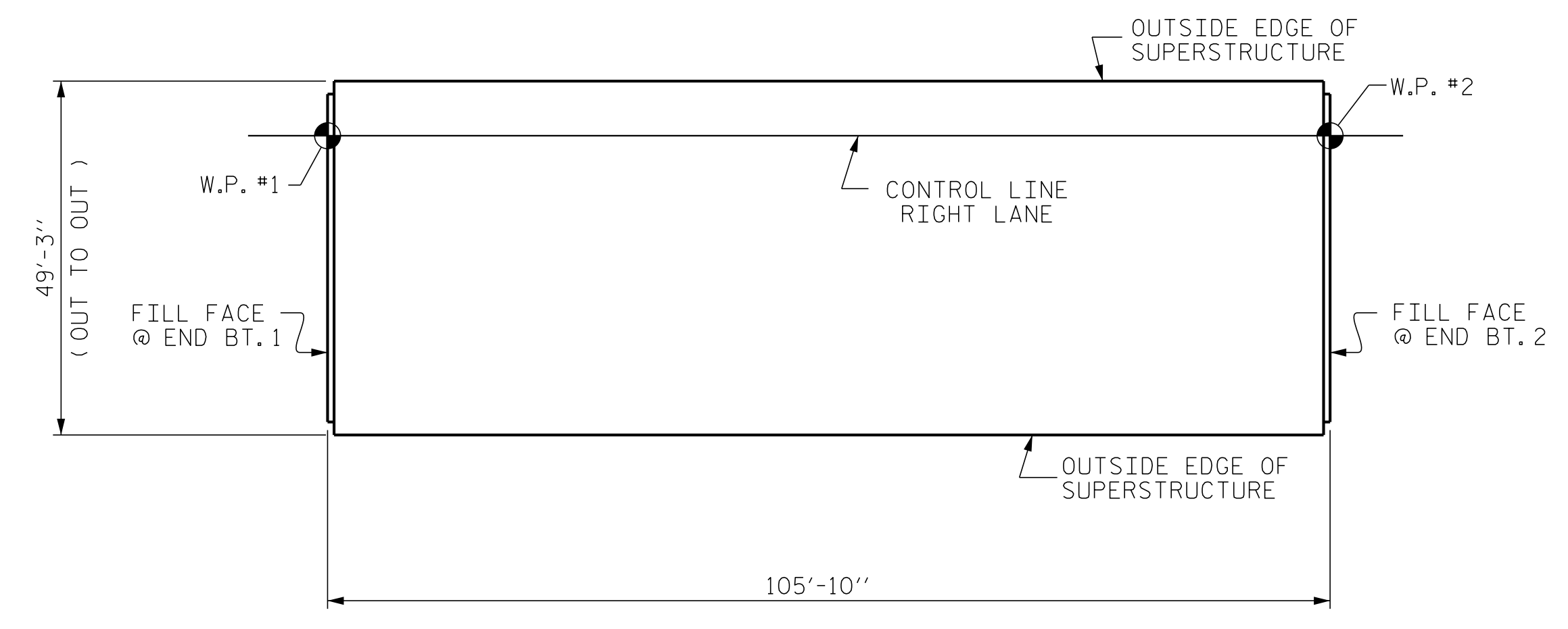
APPROACH SLABS	2,093 SQ.FT.
BRIDGE DECK	4,479 SQ.FT.
TOTAL	6,572 SQ.FT.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

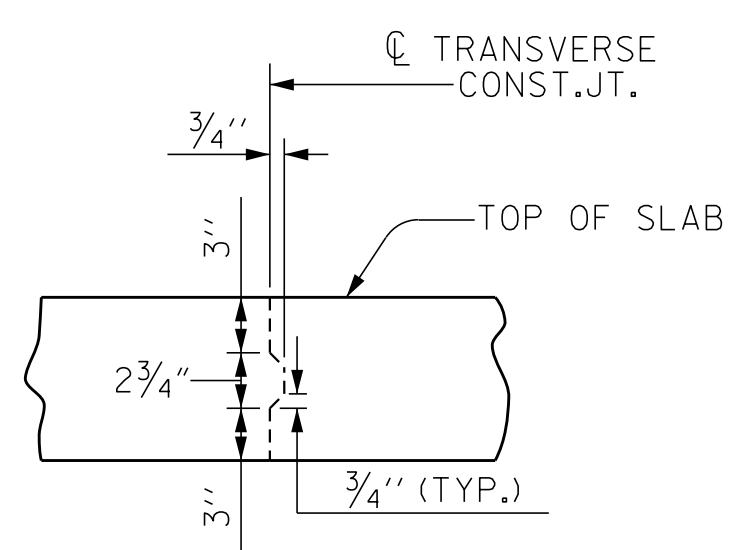
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

CLASS AA CONCRETE BREAKDOWN

POUR #1	150.5	CY
POUR #2	78.6	CY
CLASS AA CONCRETE BREAKDOWN TOTAL	229.1	CY



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,212)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL (RIGHT LANE)

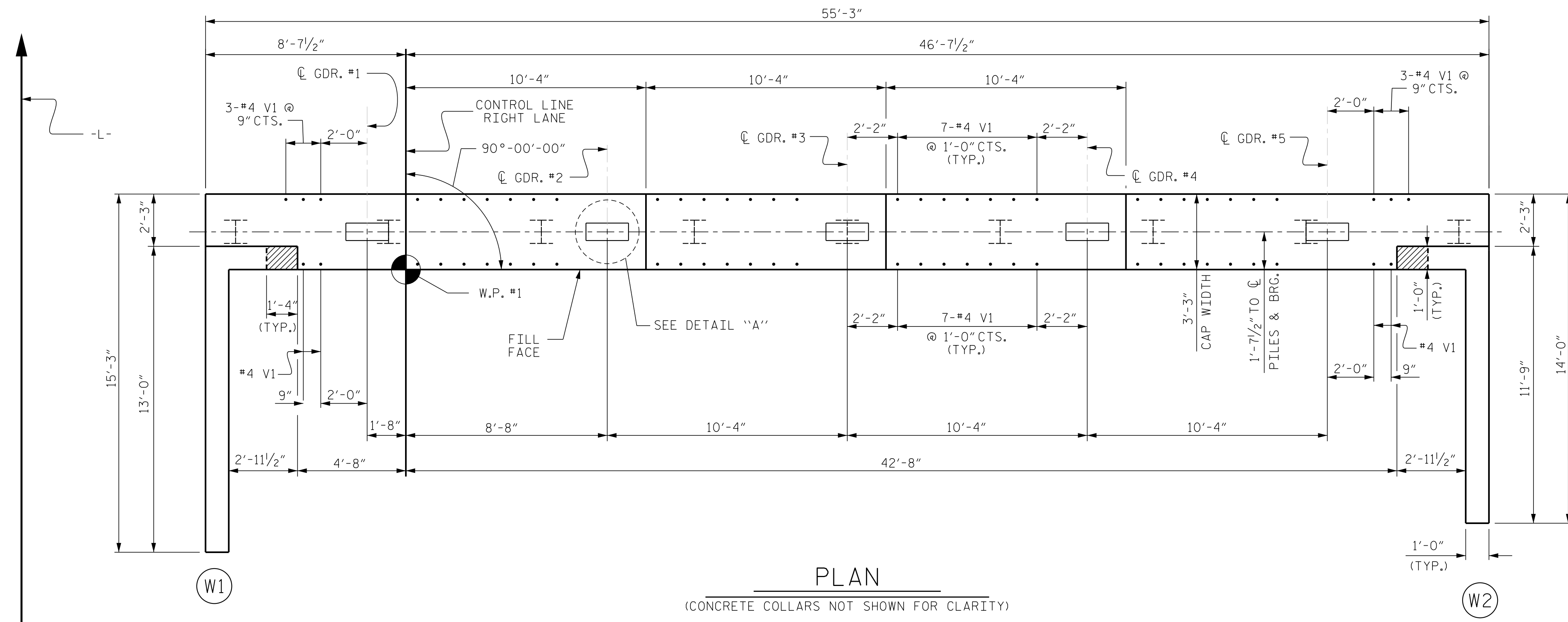
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26

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DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : B.C. HUNT DATE : 4/18

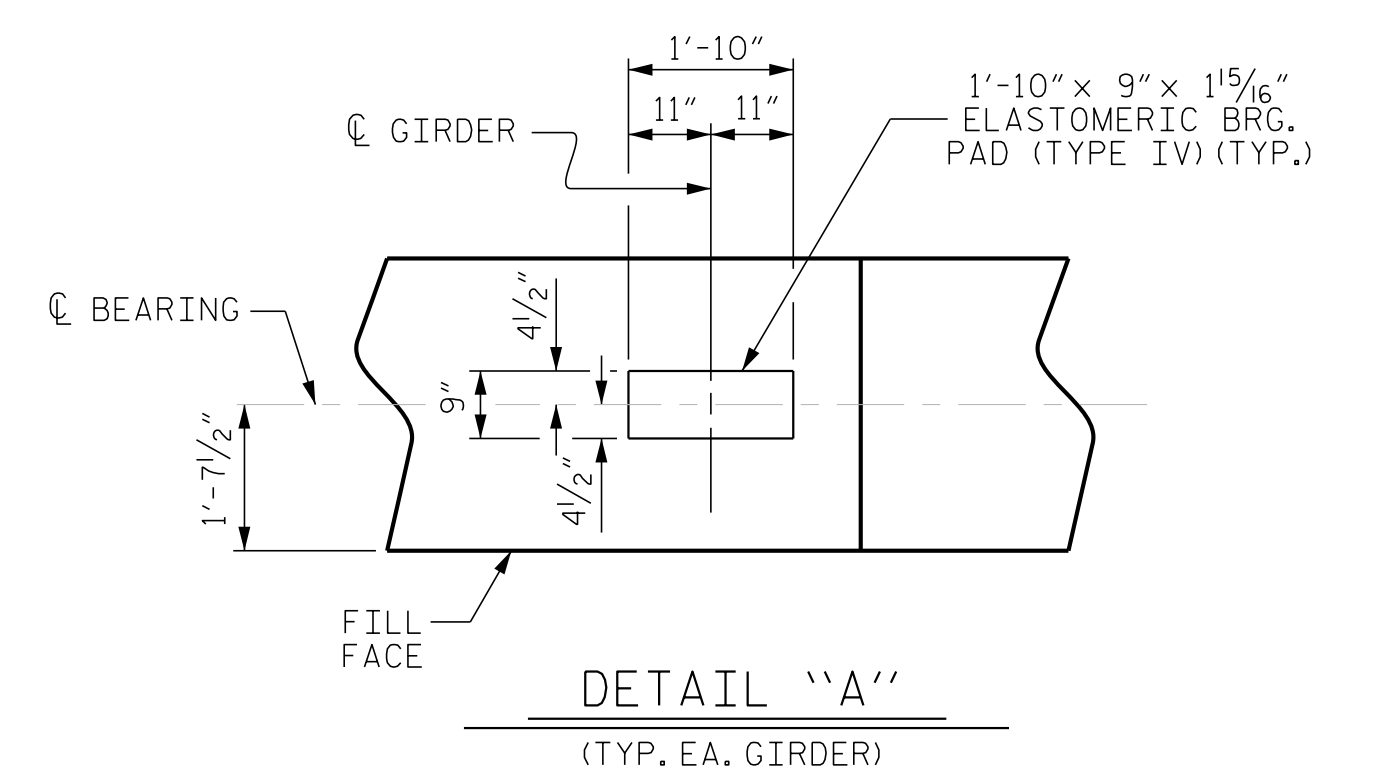


PLAN
(CONCRETE COLLARS NOT SHOWN FOR CLARITY)

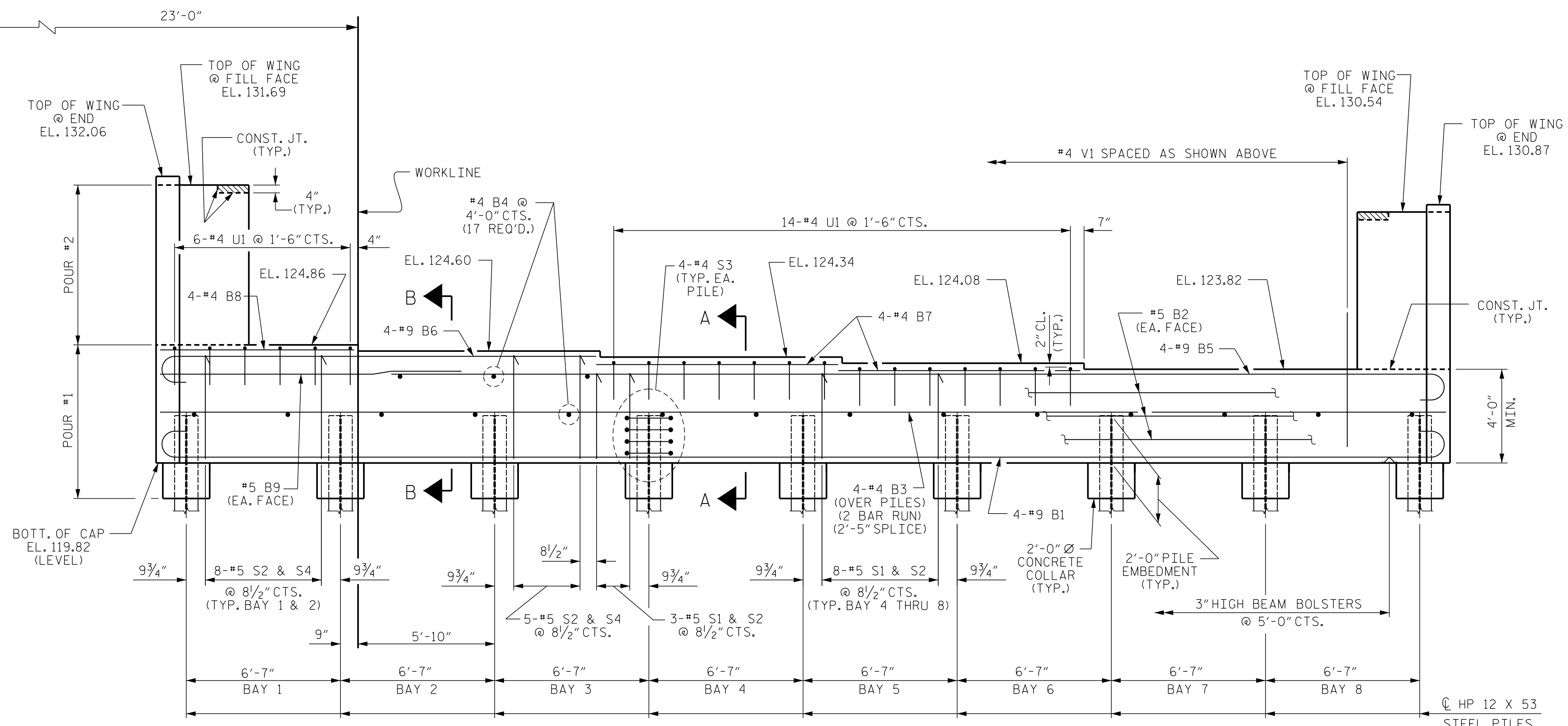
NOTES

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

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



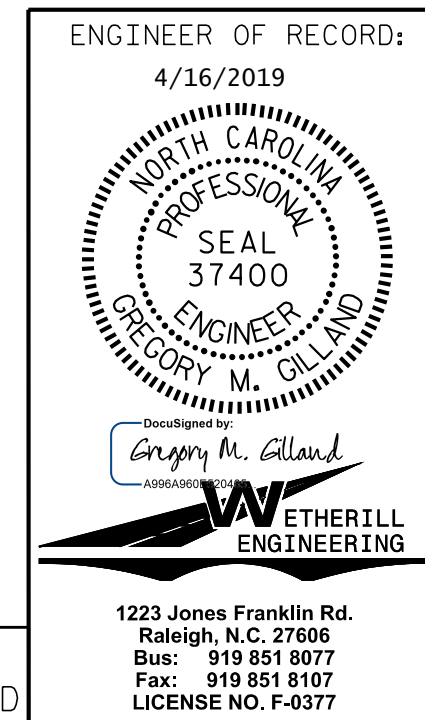
DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION

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

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 3

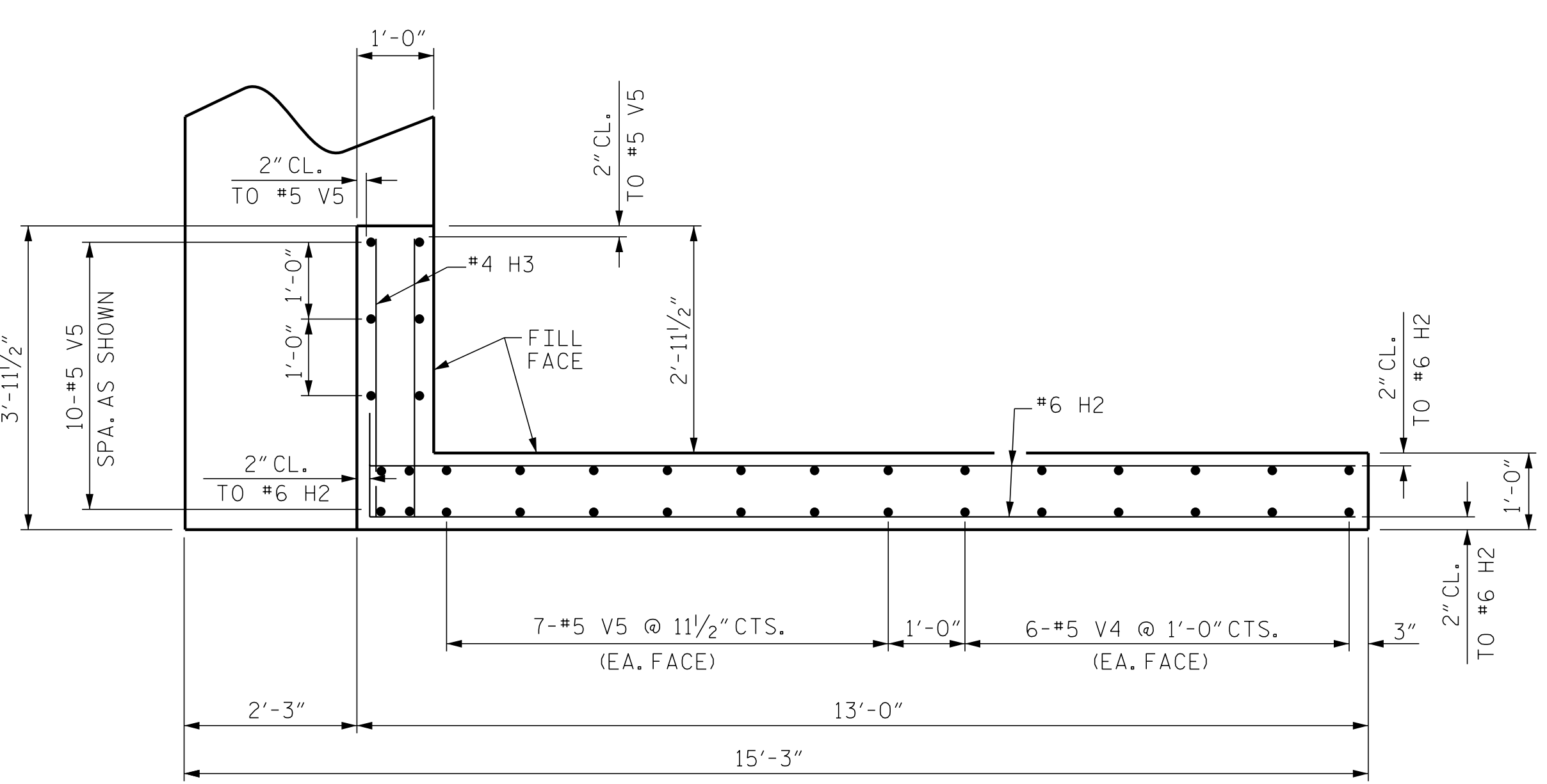


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 1 (RIGHT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S6-17
2			TOTAL SHEETS 26

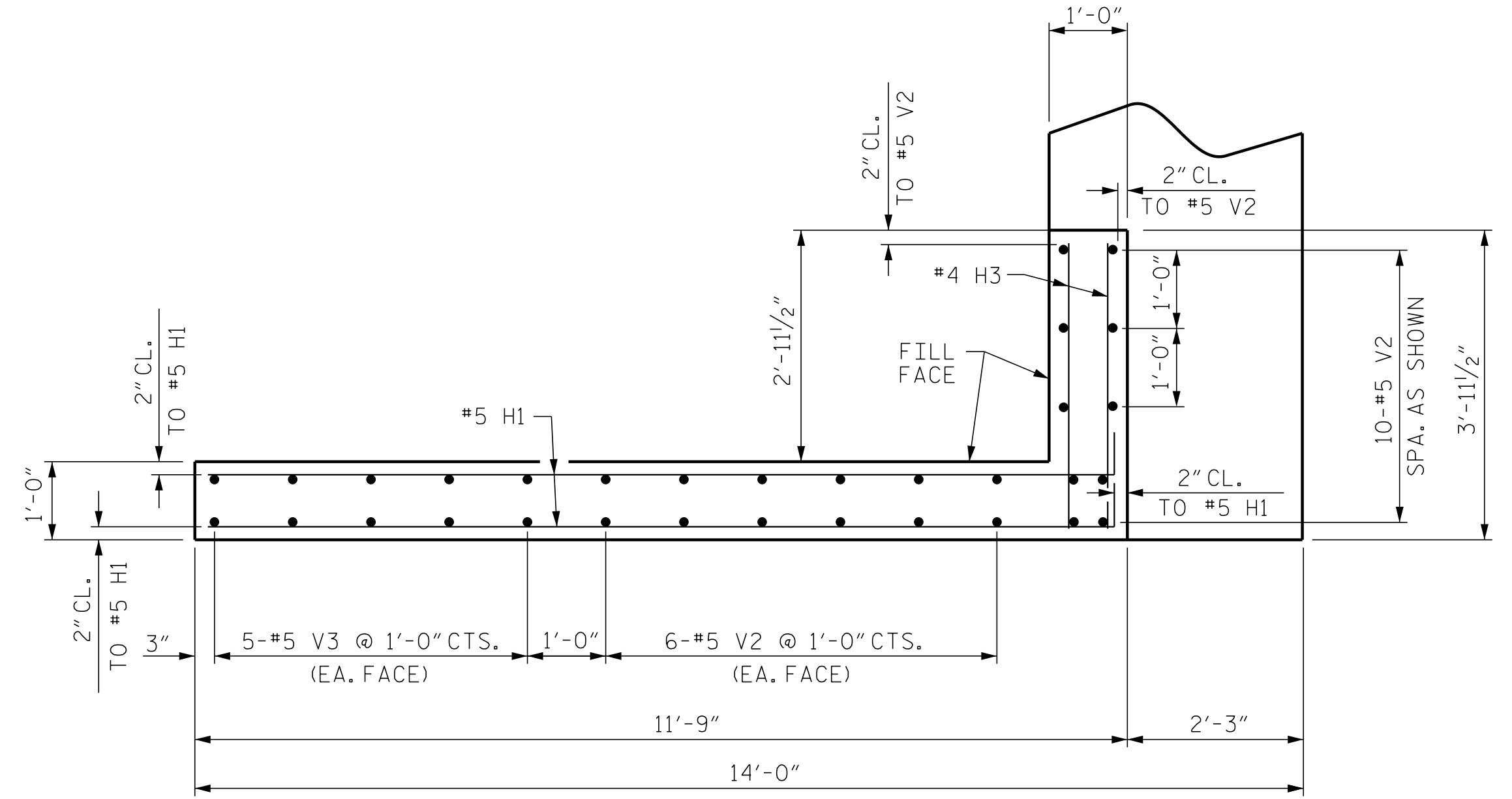
DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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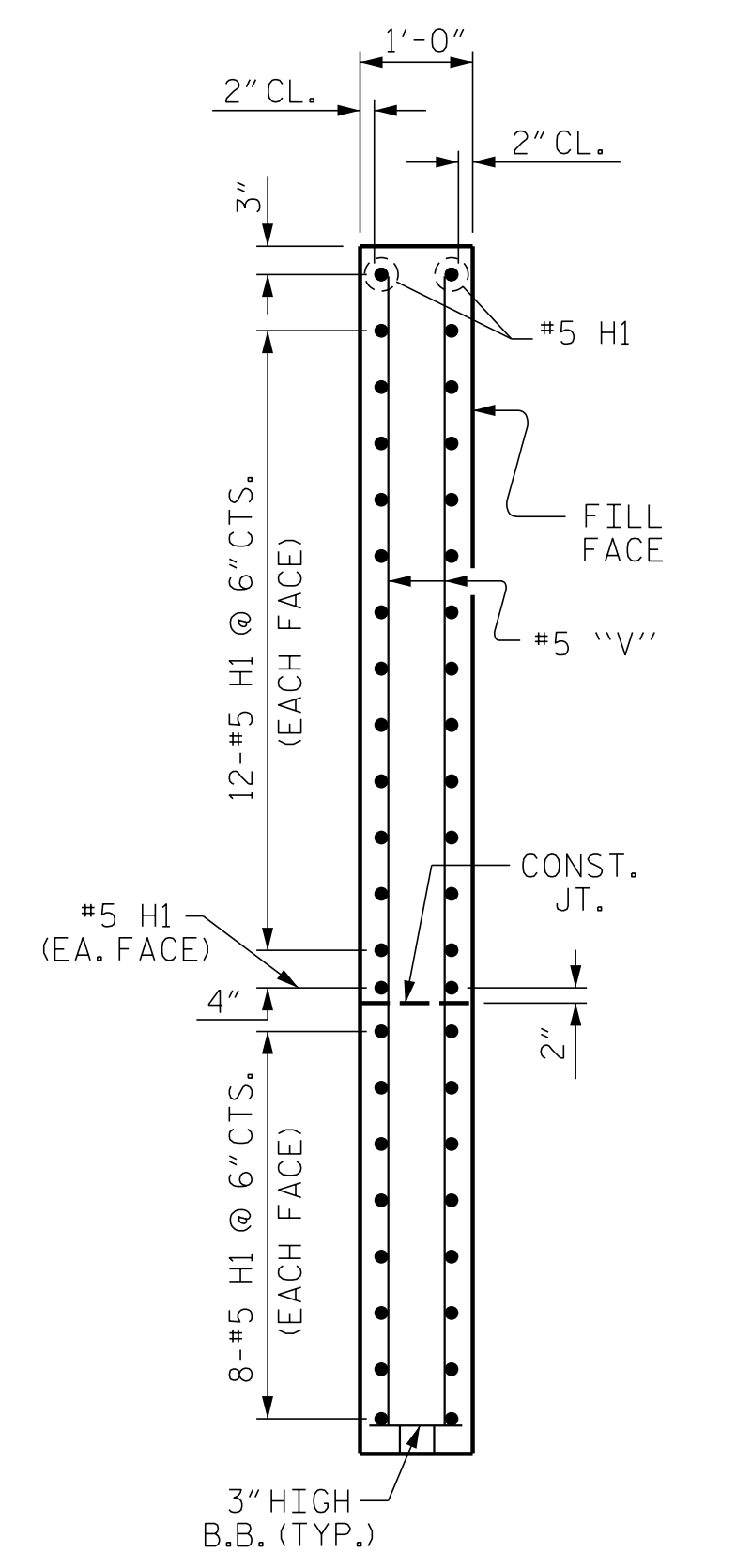
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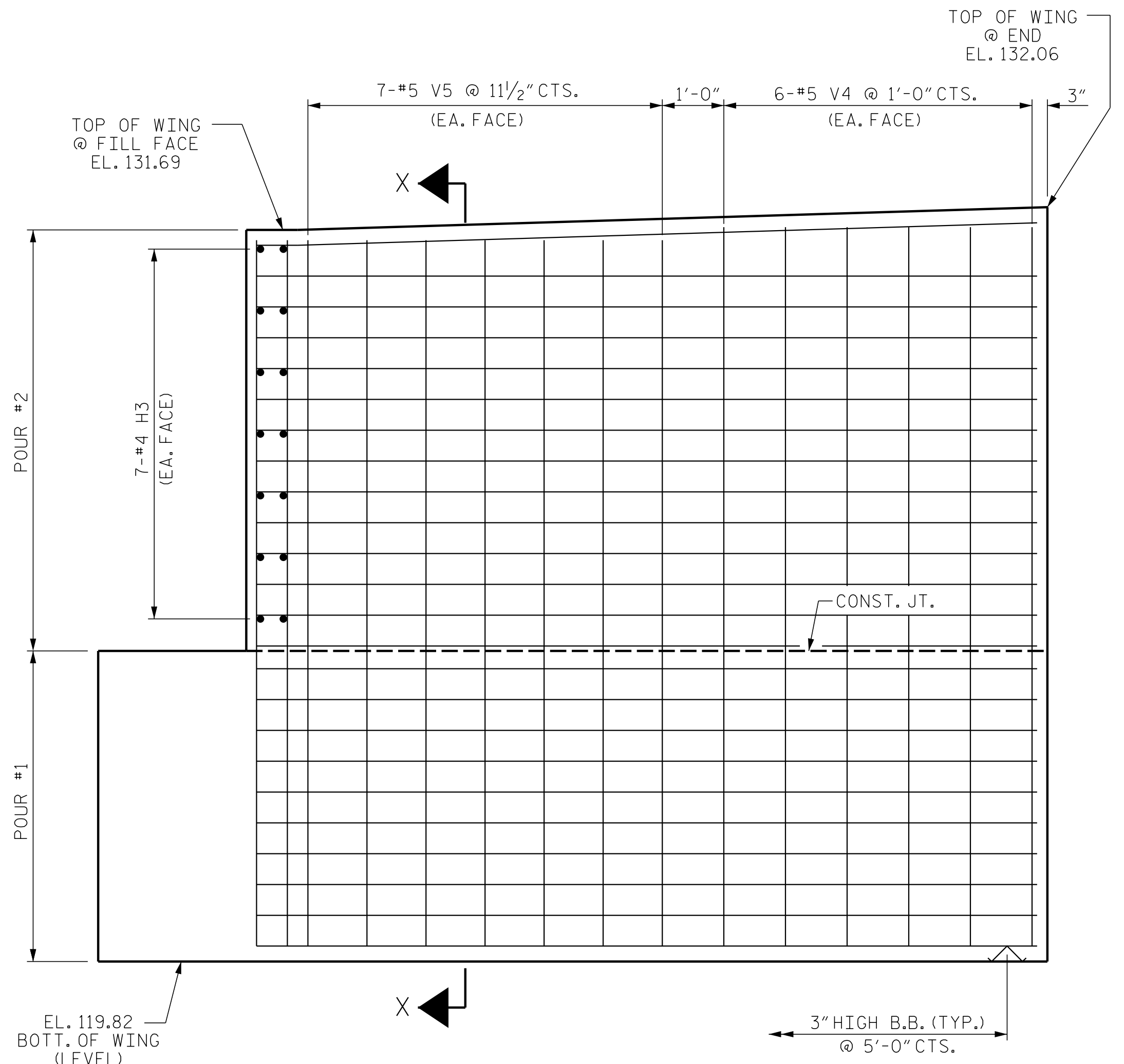
PLAN OF WING - W1



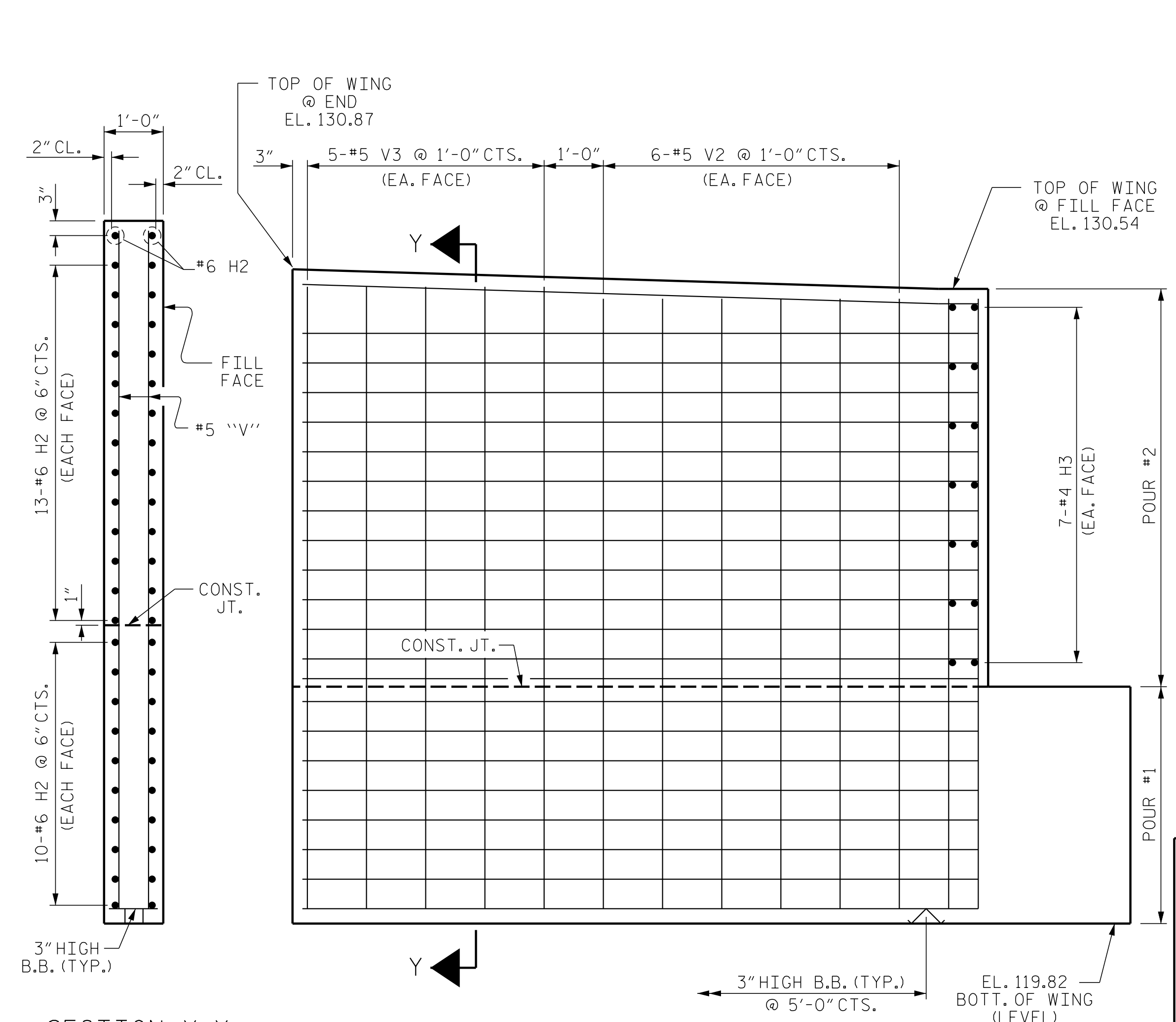
PLAN OF WING - W2



SECTION Y-Y

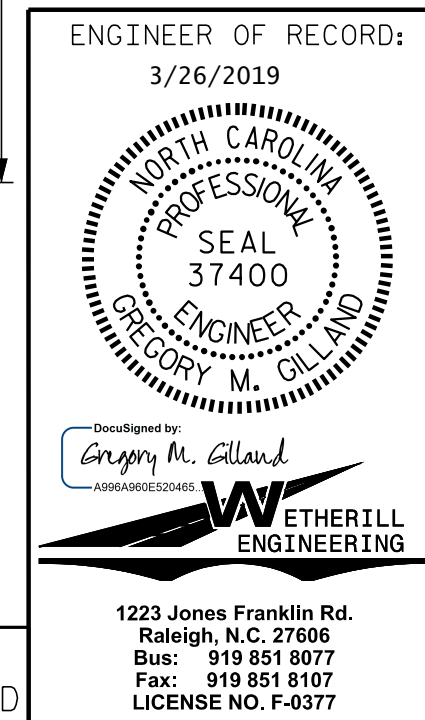


ELEVATION OF WING - W1



ELEVATION OF WING - W2

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 3



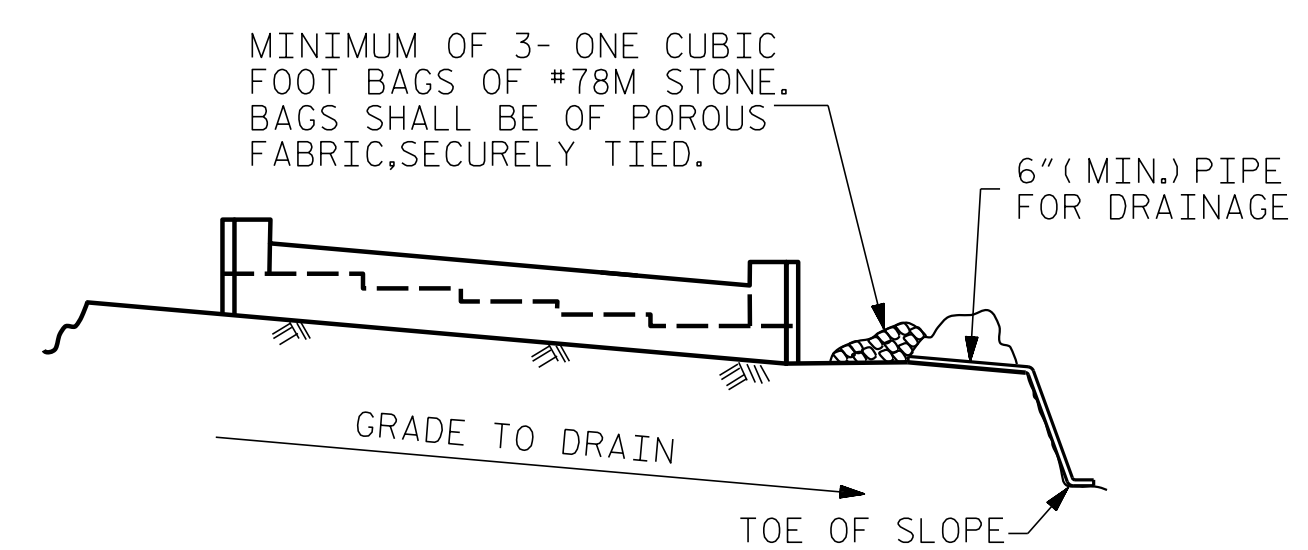
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26

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DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

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1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
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 LICENSE NO. F-0377

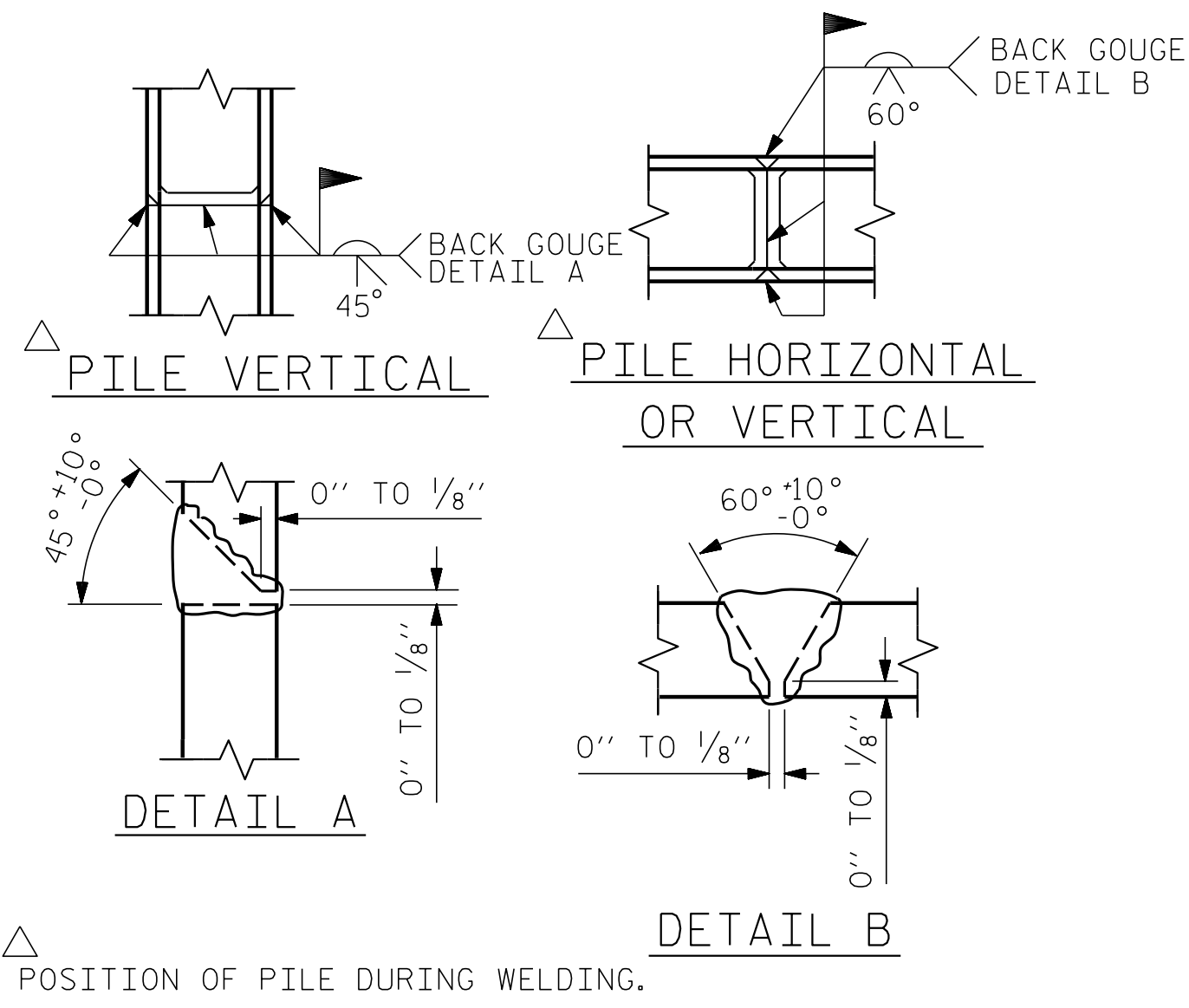


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

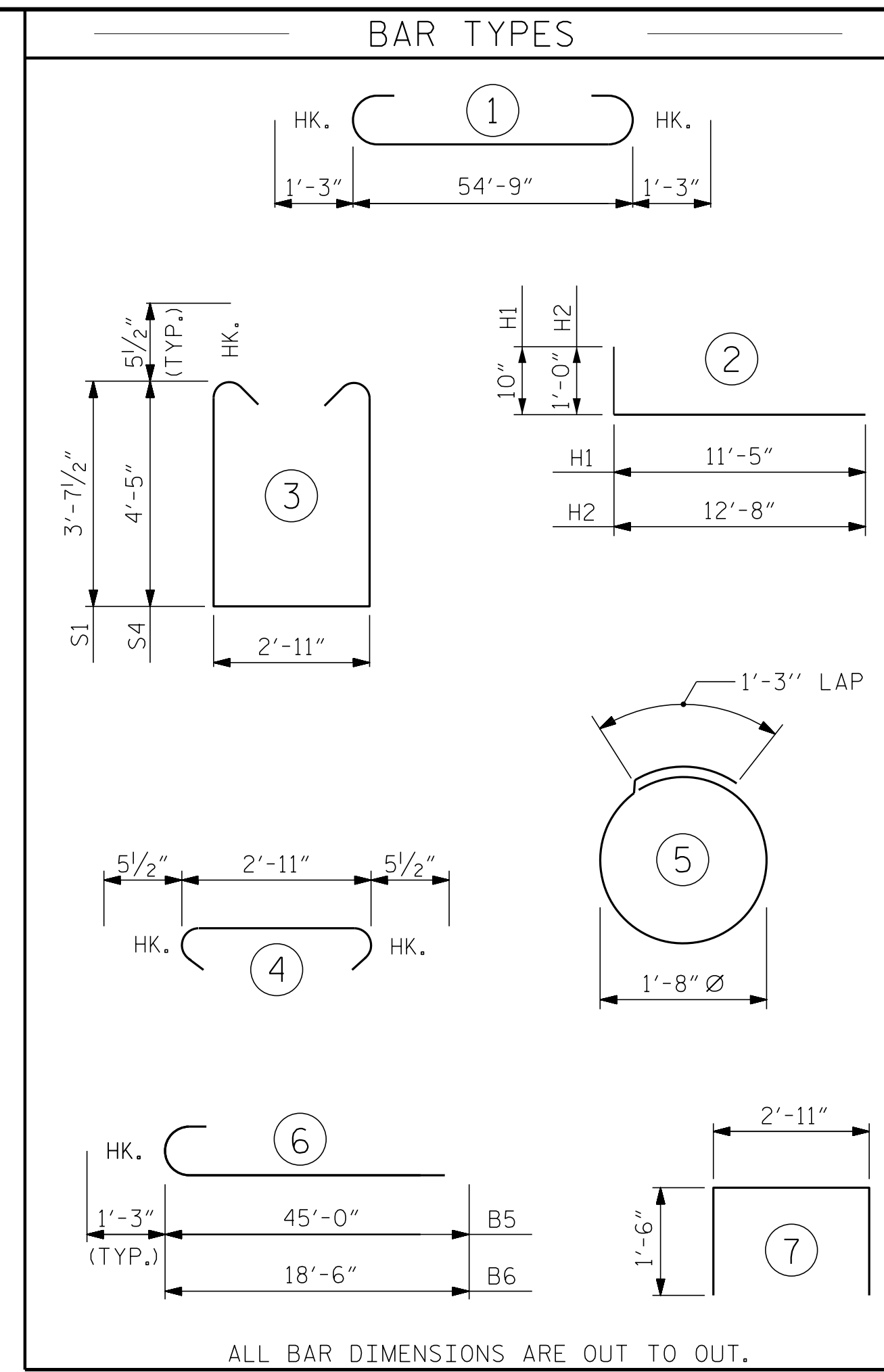
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

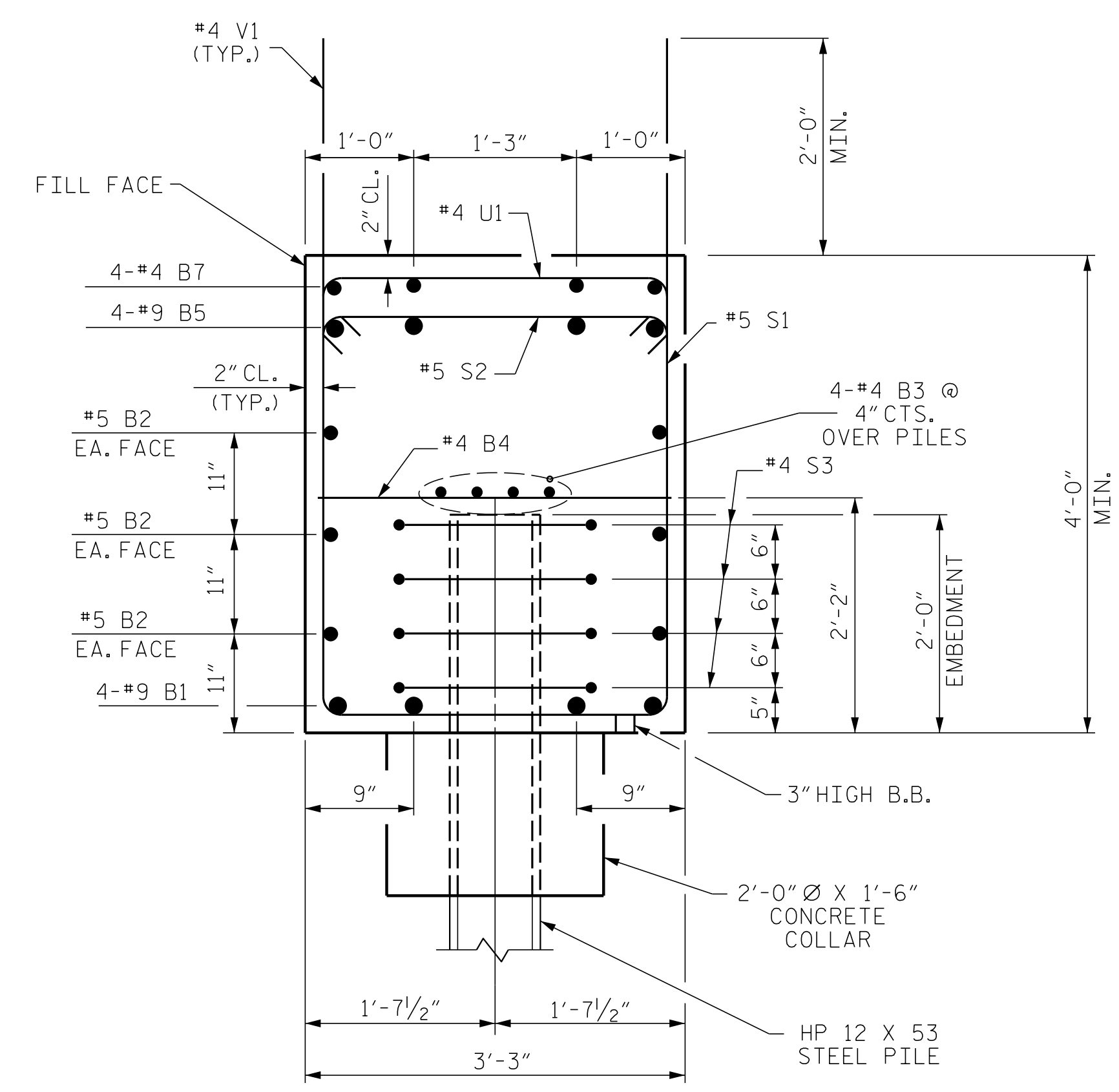


PILE SPLICE DETAILS

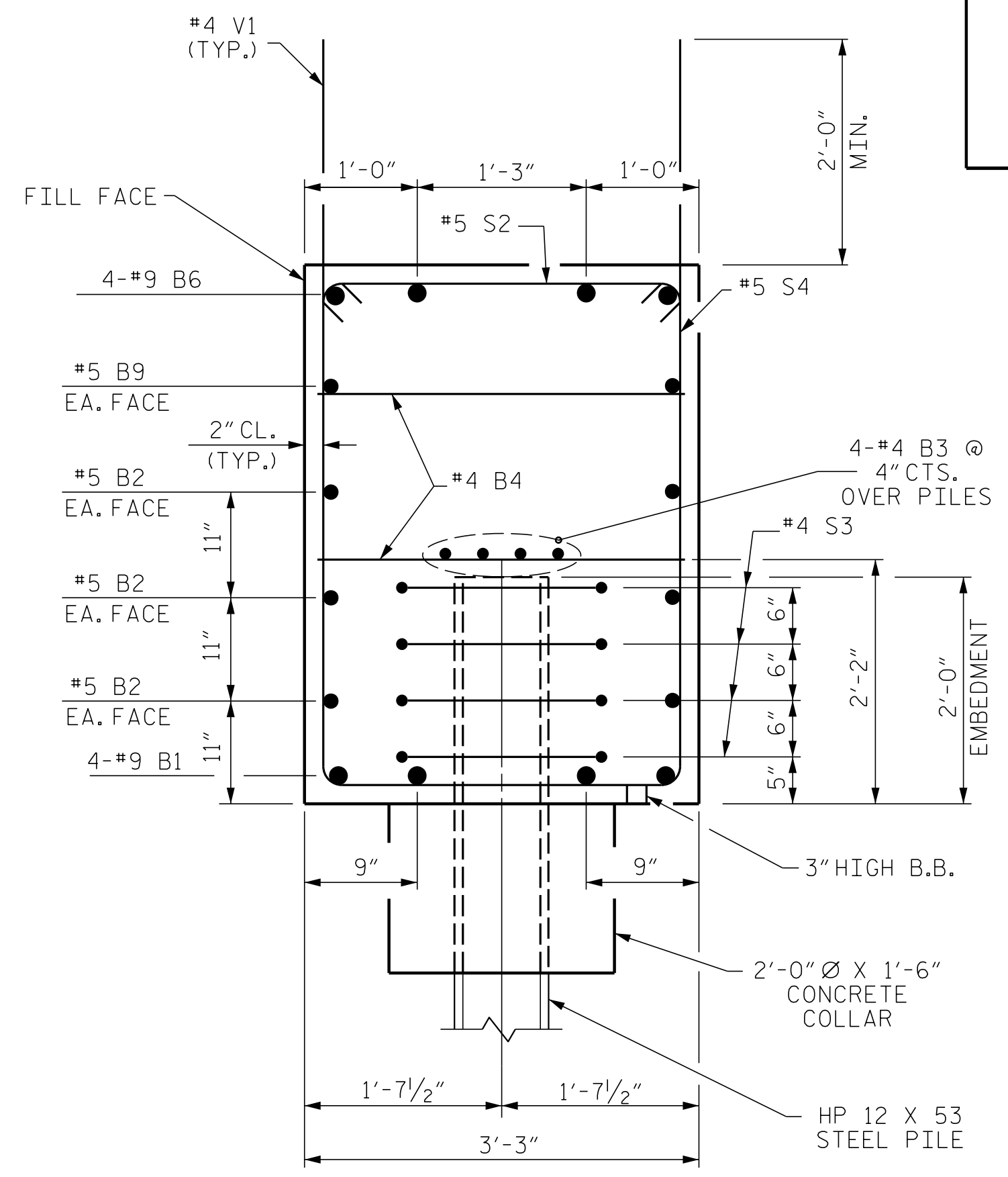


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-3"	779
B2	6	#5	STR	54'-11"	344
B3	8	#4	STR	28'-8"	153
B4	17	#4	STR	2'-11"	33
B5	4	#9	6	46'-3"	629
B6	4	#9	6	19'-9"	269
B7	8	#4	STR	10'-4"	55
B8	4	#4	STR	8'-3"	22
B9	2	#5	STR	12'-11"	27
H1	44	#5	2	12'-3"	562
H2	48	#6	2	13'-8"	985
H3	28	#4	STR	3'-7"	67
S1	43	#5	3	11'-1"	497
S2	64	#5	4	3'-10"	256
S3	36	#4	5	6'-6"	156
S4	21	#5	3	12'-8"	277
U1	20	#4	7	5'-11"	79
V1	66	#4	STR	5'-9"	254
V2	22	#5	STR	10'-3"	235
V3	10	#5	STR	10'-5"	109
V4	12	#5	STR	11'-8"	146
V5	24	#5	STR	11'-5"	286
REINFORCING STEEL					6,220 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS				35.0 C.Y.
POUR #2	UPPER PART OF WINGS				7.8 C.Y.
TOTAL CLASS A CONCRETE					42.8 C.Y.
HP 12 X 53 STEEL PILES					
NO: 9					LIN. FT. = 585
PILE REDRIVES					9 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					9 EA.

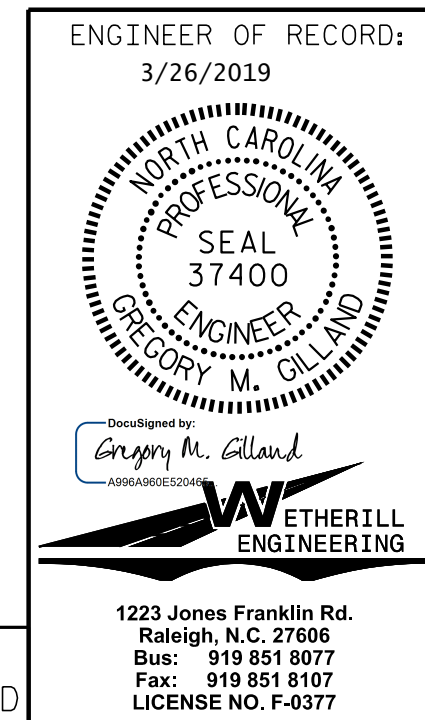


SECTION A-A



SECTION B-B

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1 (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
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LICENSE NO. F-0377

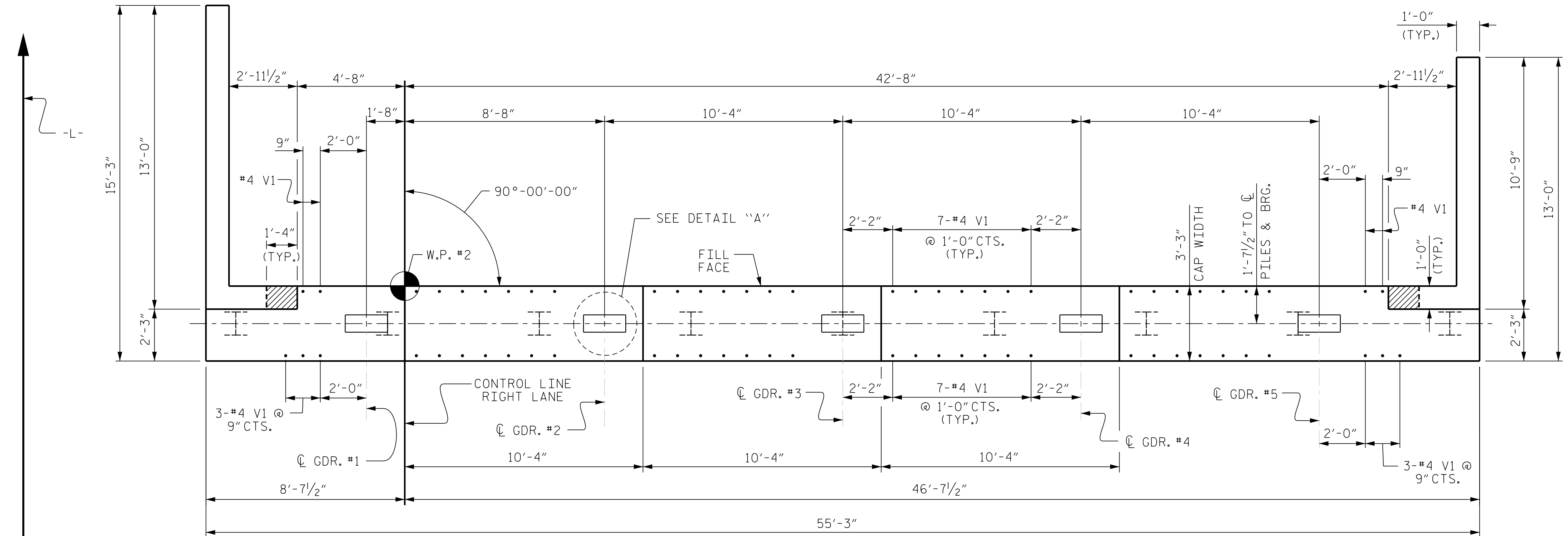
SHEET NO.
S6-19
TOTAL SHEETS
26

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DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

W1

W2



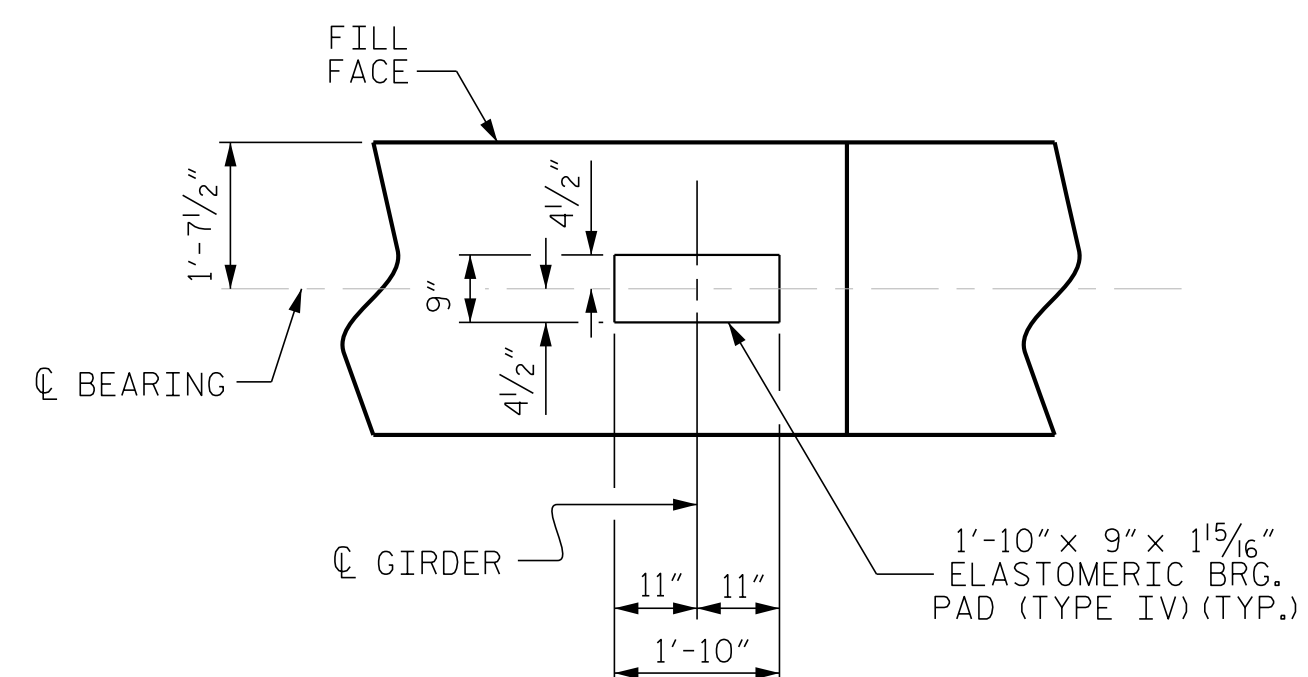
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(CONCRETE COLLARS NOT SHOWN FOR CLARITY)

NOTES

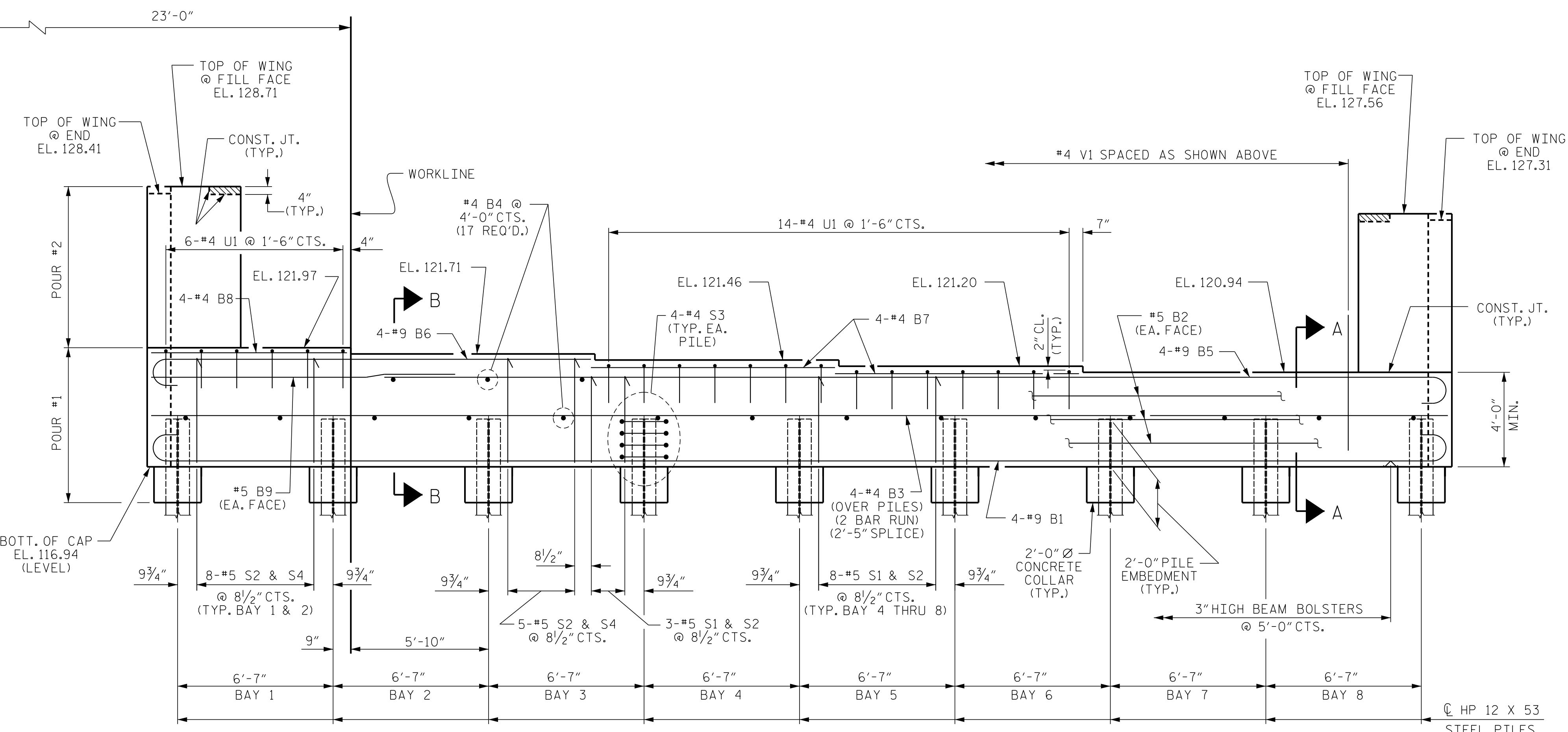
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"

(TYP. EA. GIRDER)

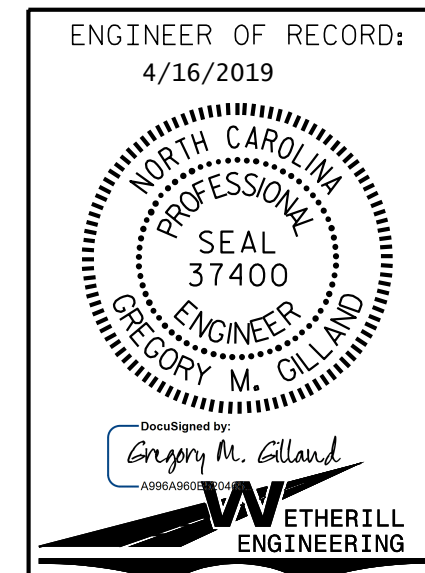


ELEVATION

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

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

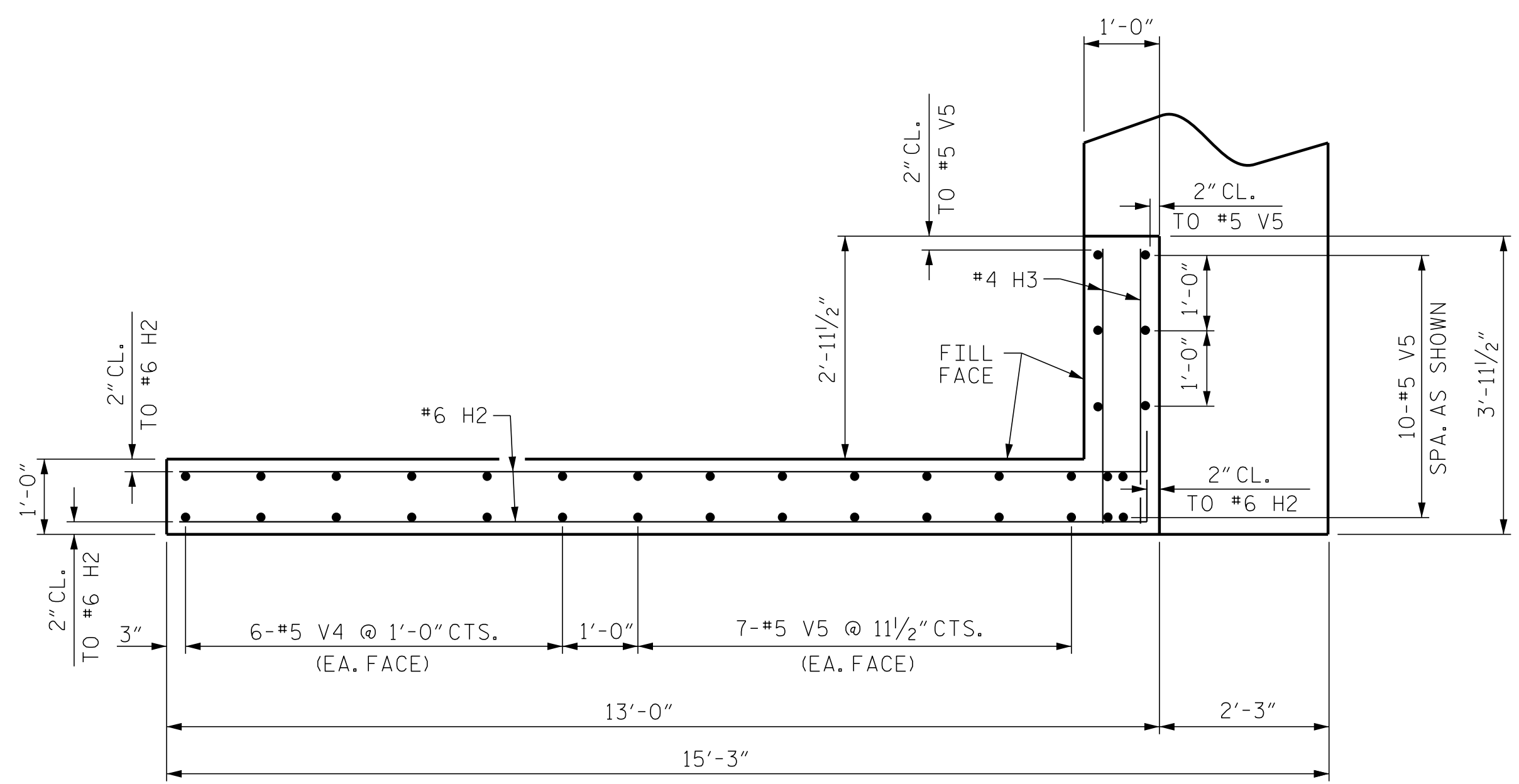
SUBSTRUCTURE
 END BENT No. 2
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-20
1			3			TOTAL SHEETS
2			4			26

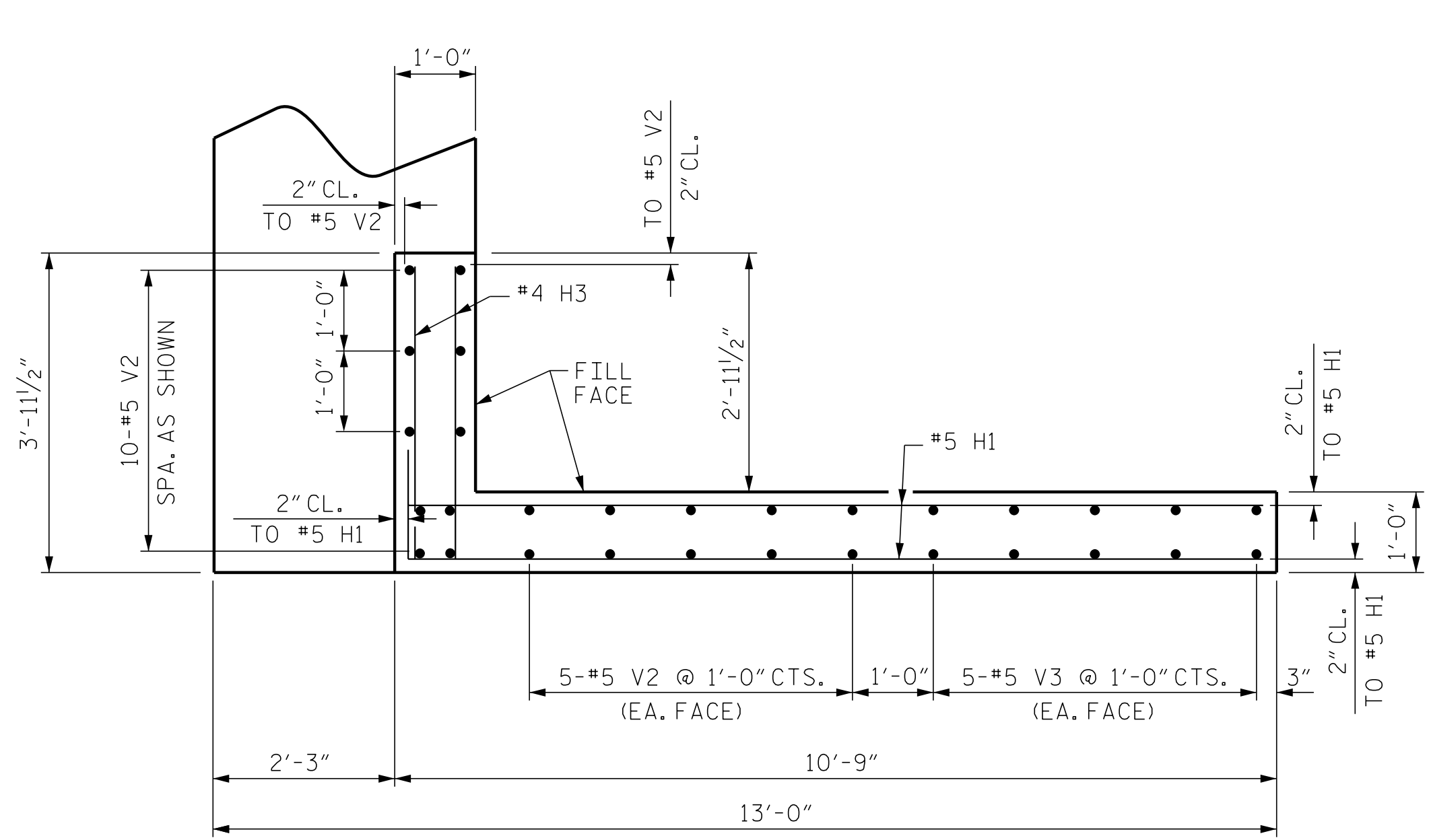
DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

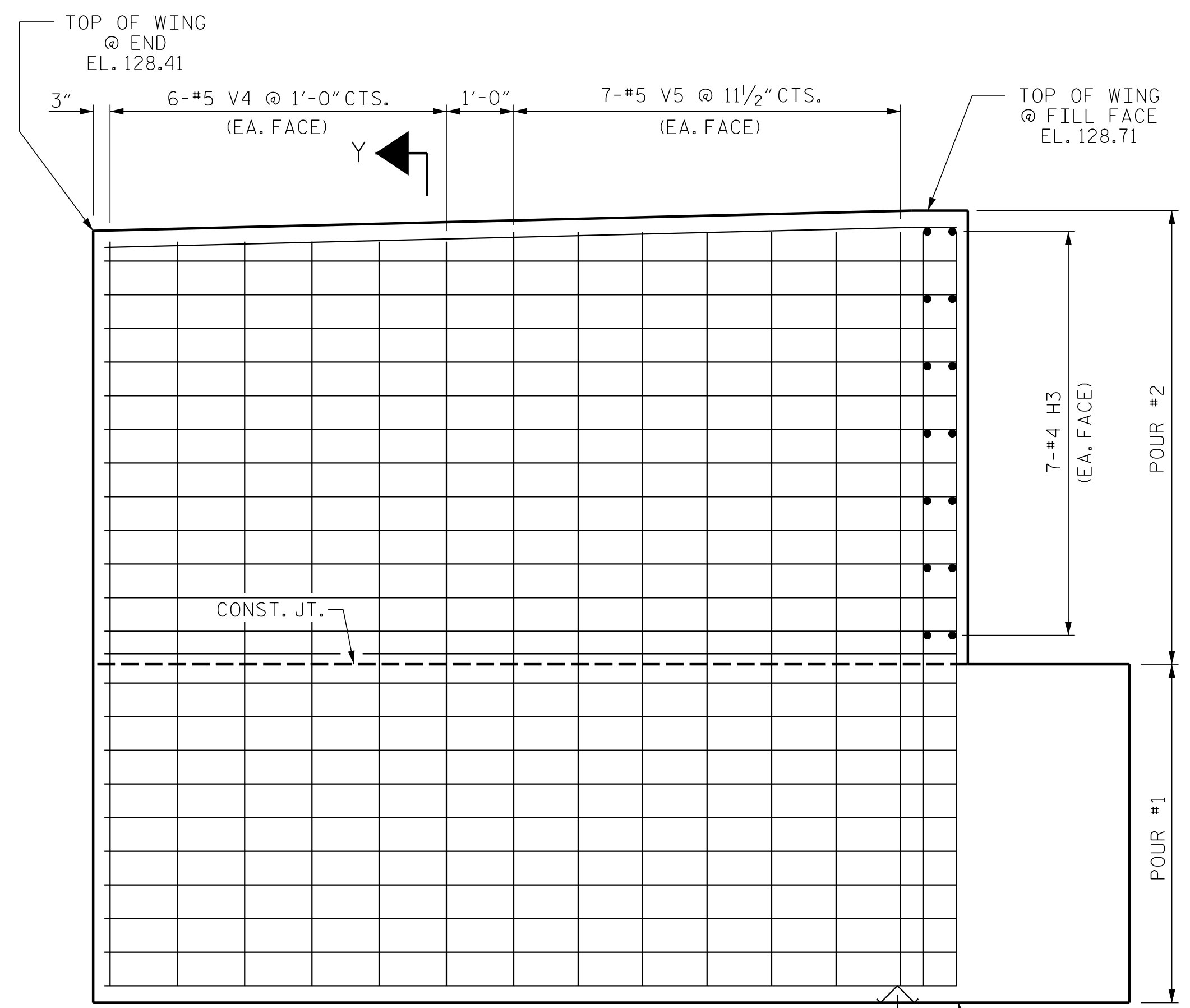
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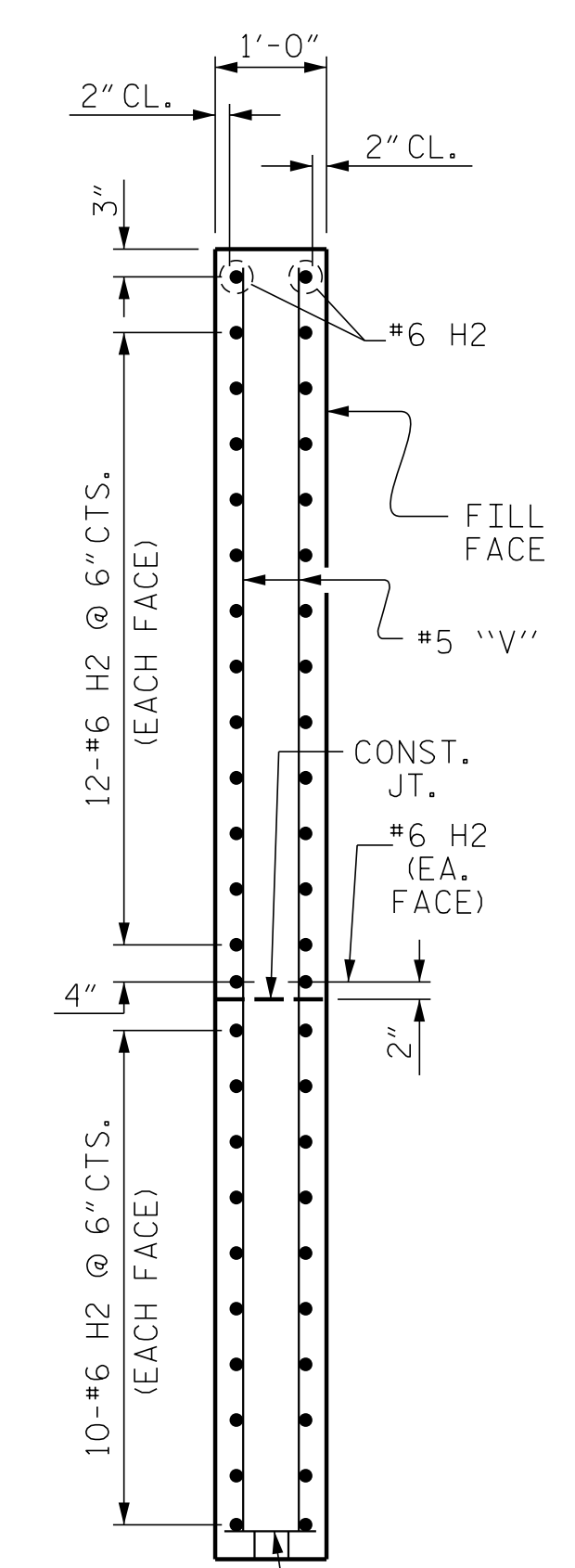
PLAN OF WING - W1



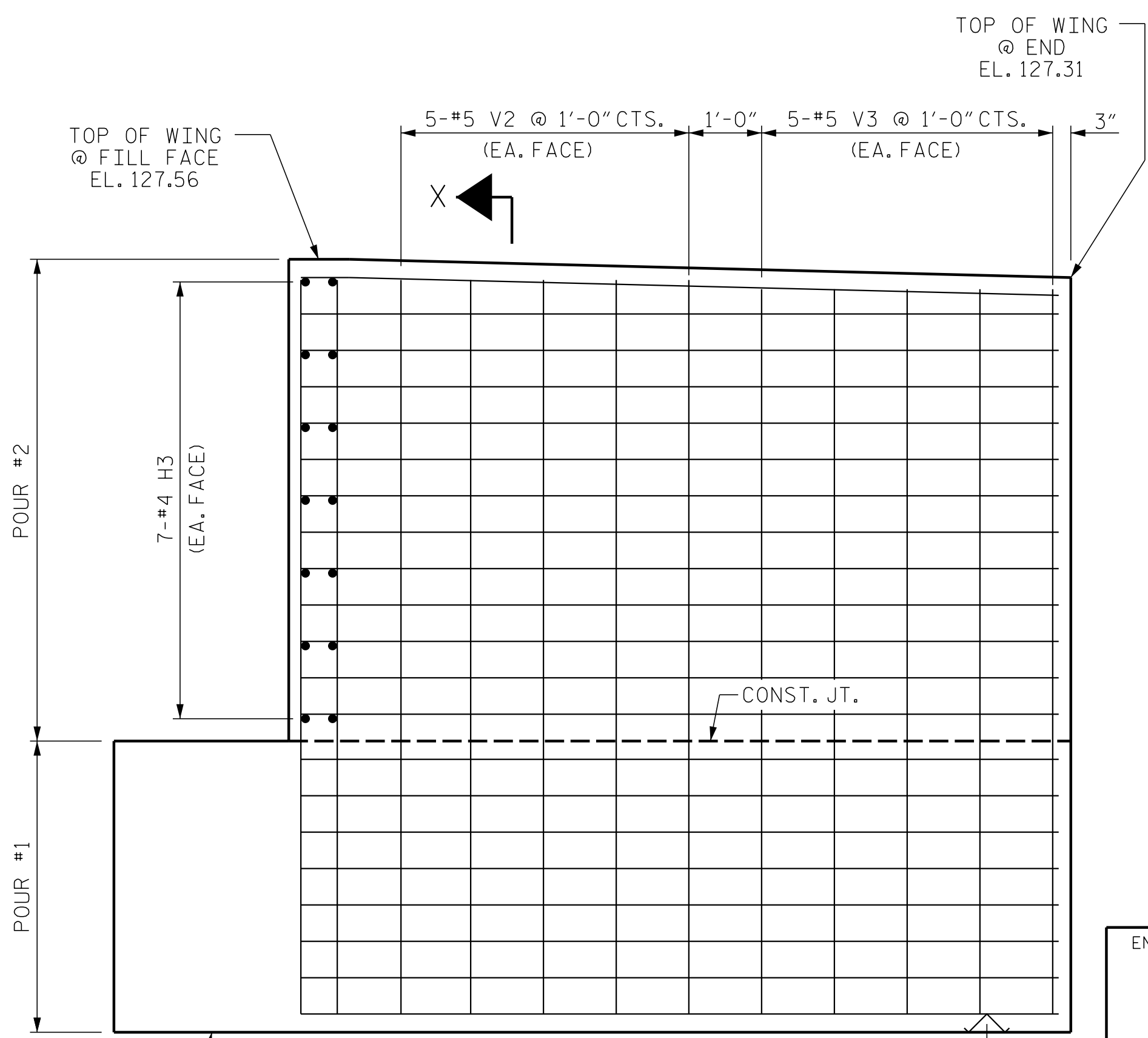
PLAN OF WING - W2



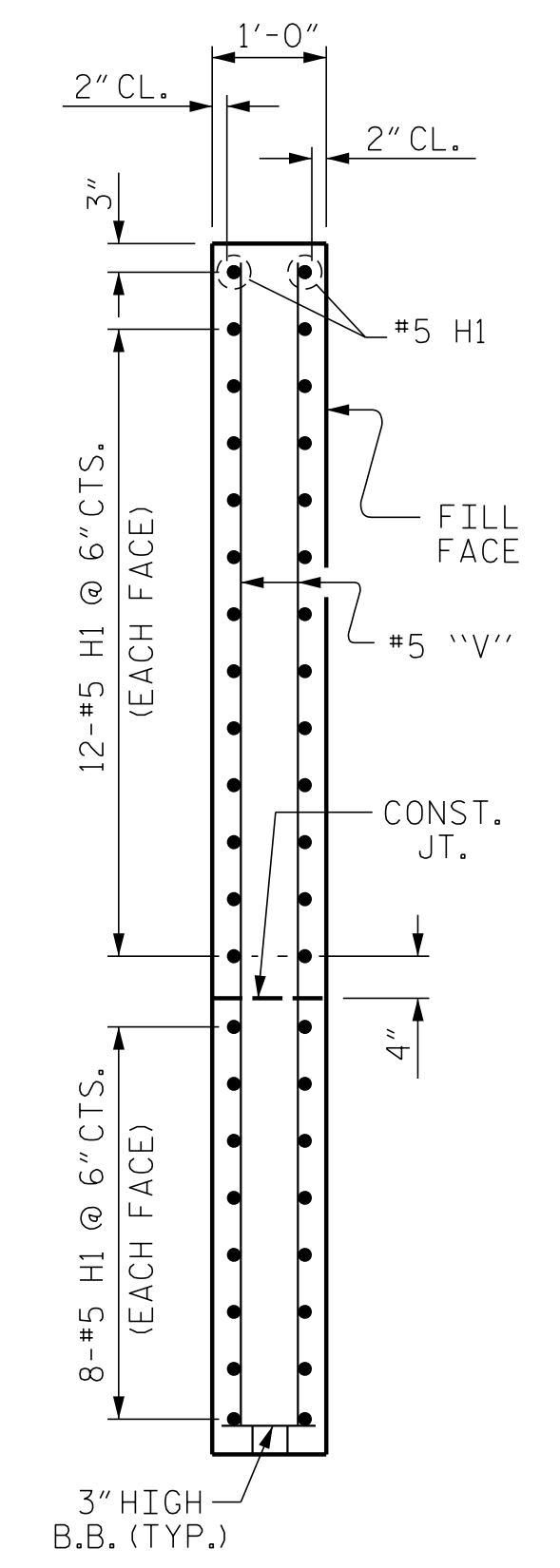
ELEVATION OF WING - W1



SECTION Y-Y

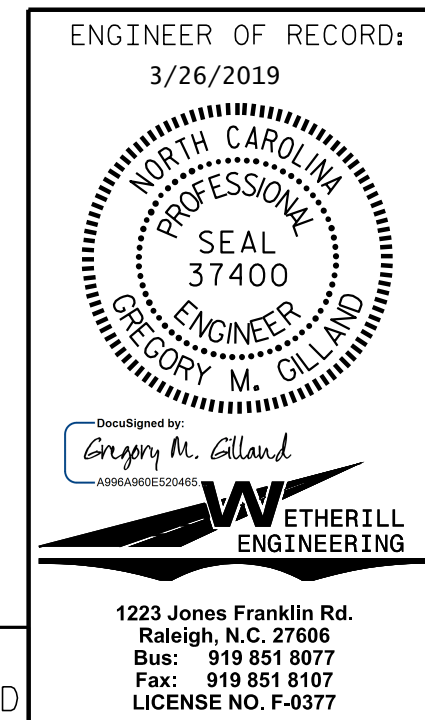


ELEVATION OF WING - W2



SECTION X-X

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 3

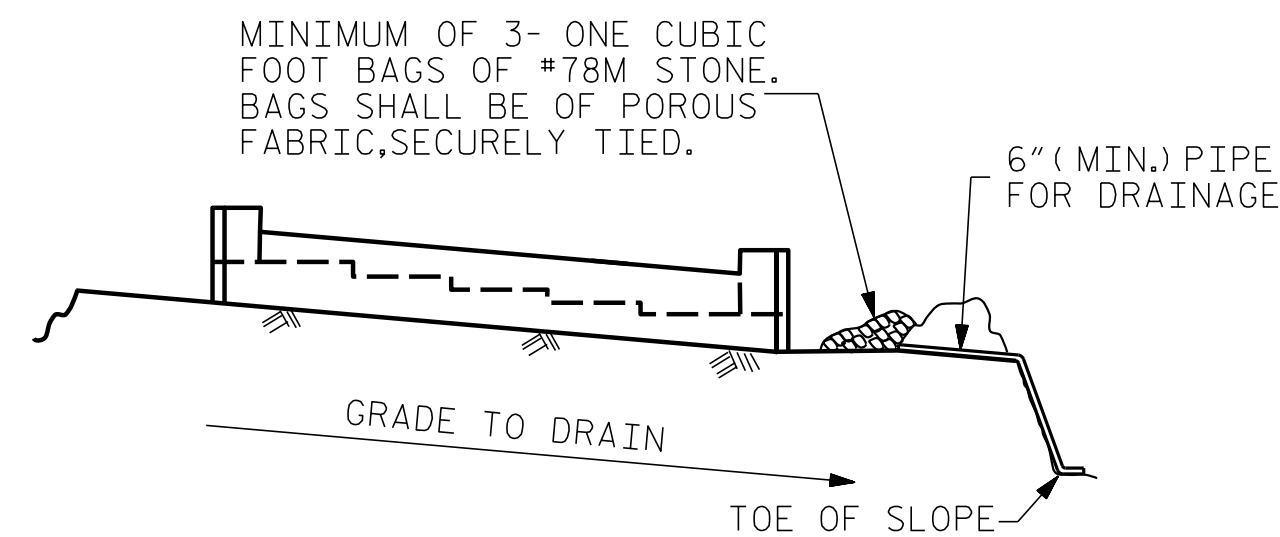


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 2 (RIGHT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S6-21
2			TOTAL SHEETS 26

DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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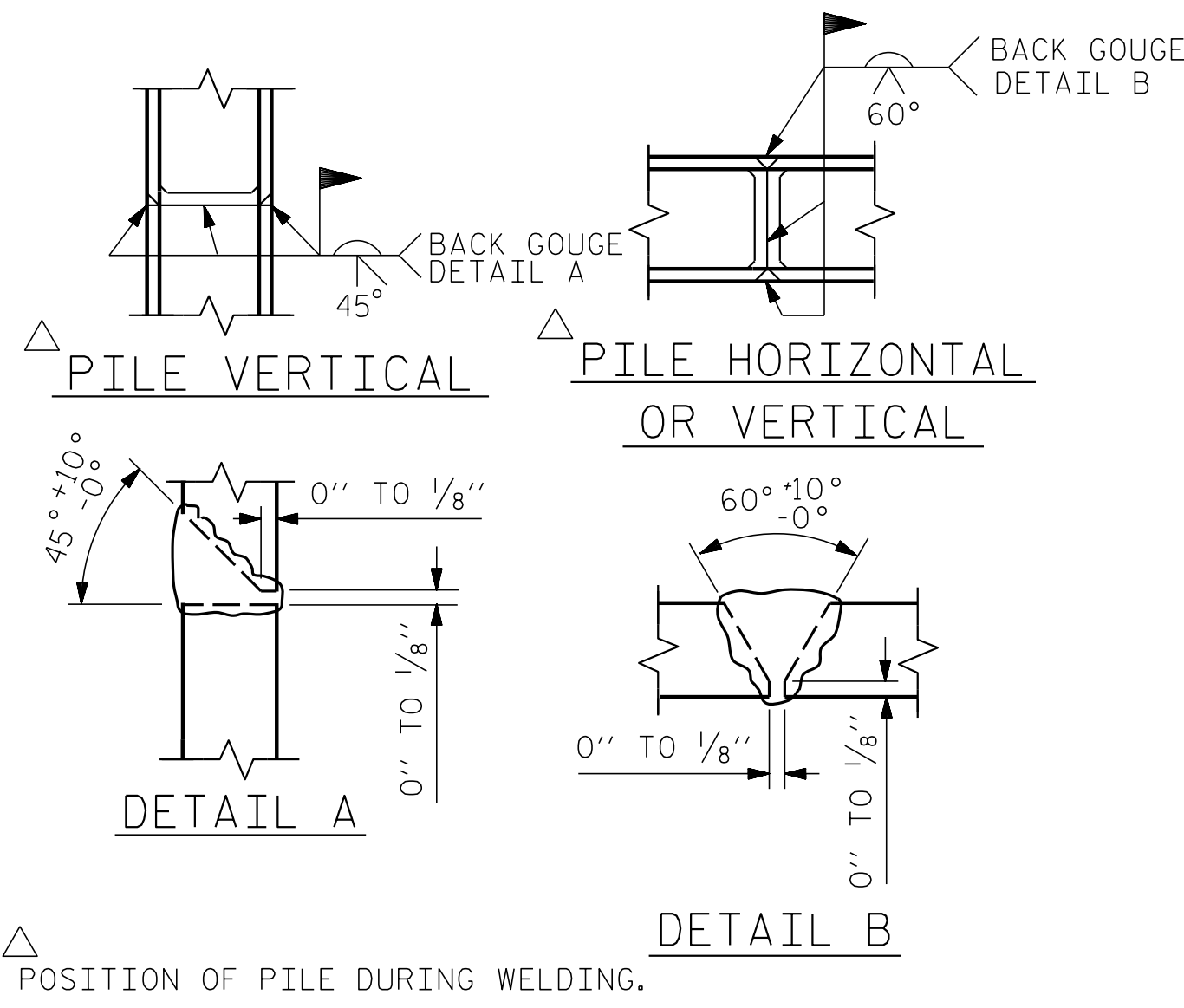


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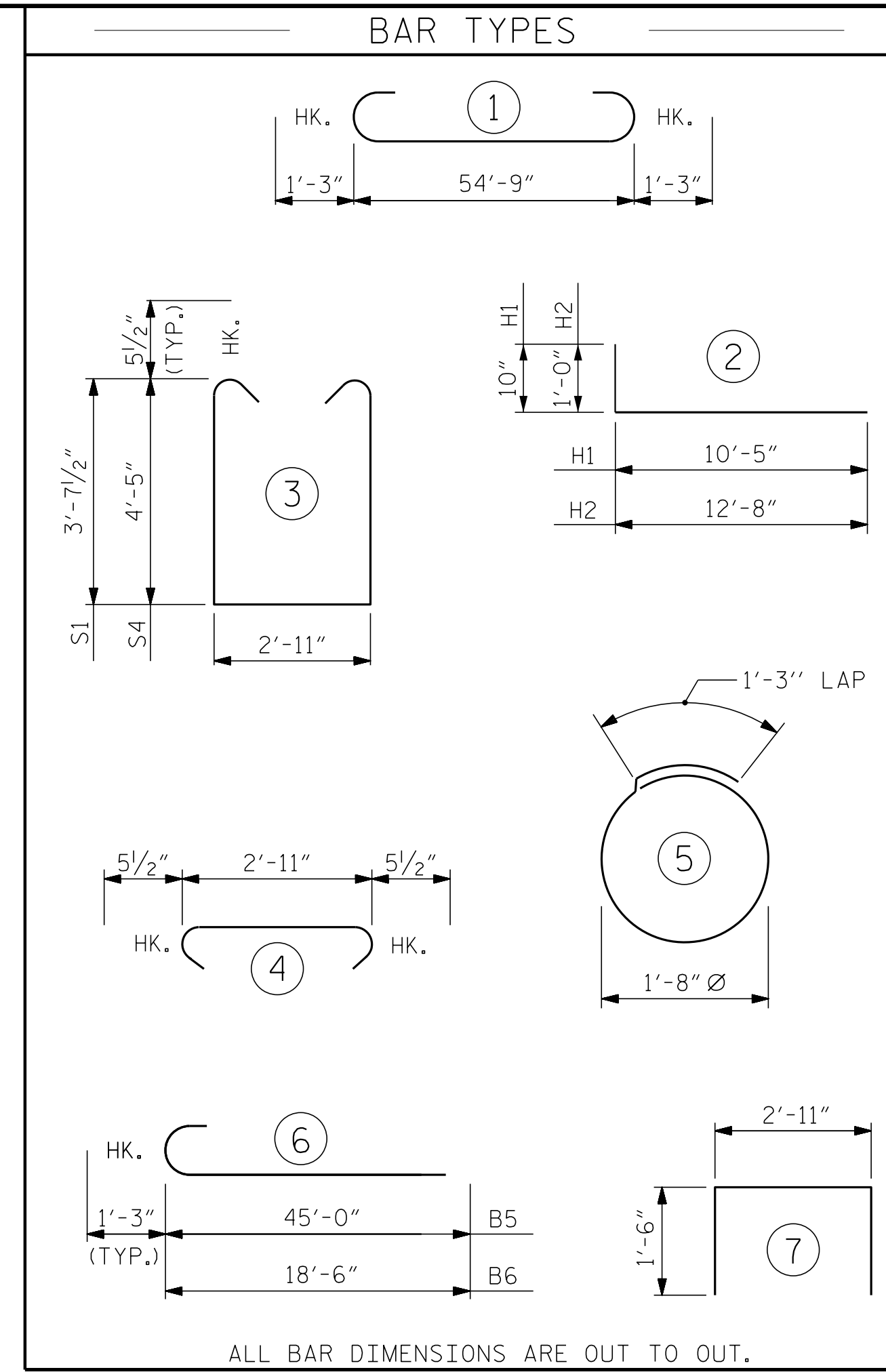
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TEMPORARY DRAINAGE AT END BENT

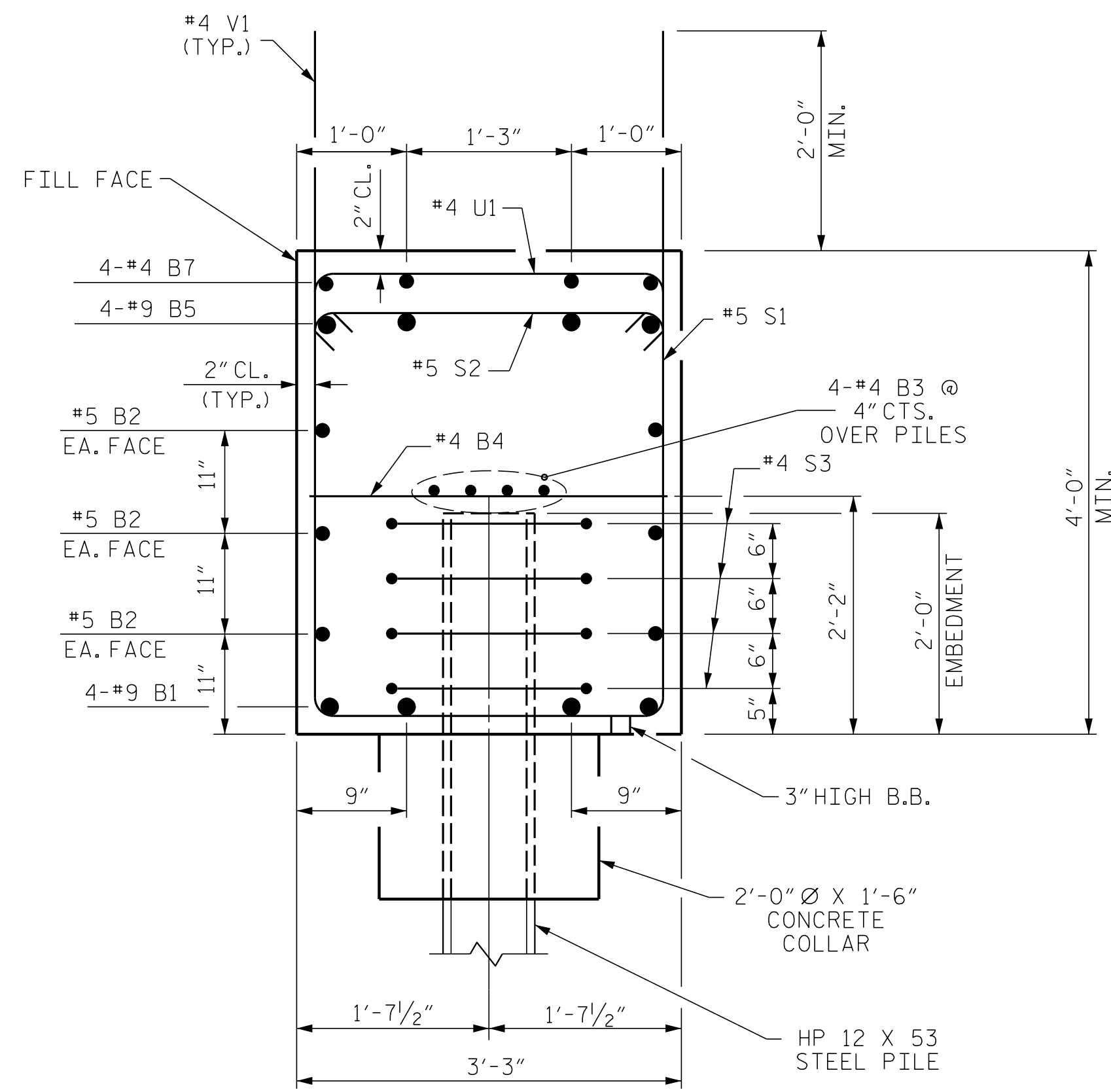


PILE SPLICE DETAILS

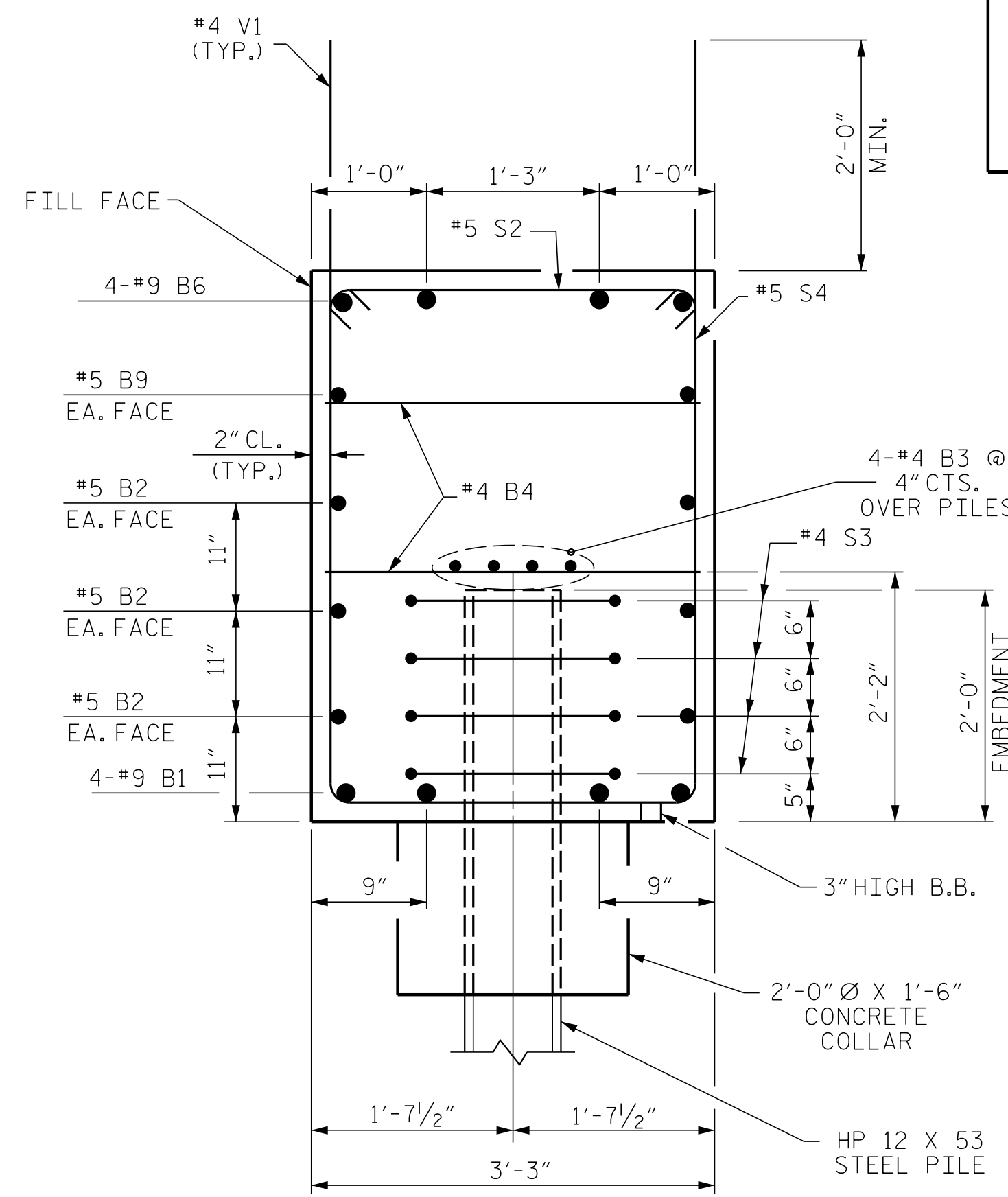


BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-3"	779
B2	6	#5	STR	54'-11"	344
B3	8	#4	STR	28'-8"	153
B4	17	#4	STR	2'-11"	33
B5	4	#9	6	46'-3"	629
B6	4	#9	6	19'-9"	269
B7	8	#4	STR	10'-4"	55
B8	4	#4	STR	8'-3"	22
B9	2	#5	STR	12'-11"	27
H1	42	#5	2	11'-3"	493
H2	48	#6	2	13'-8"	985
H3	28	#4	STR	3'-7"	67
S1	43	#5	3	11'-1"	497
S2	64	#5	4	3'-10"	256
S3	36	#4	5	6'-6"	156
S4	21	#5	3	12'-8"	277
U1	20	#4	7	5'-11"	79
V1	66	#4	STR	5'-9"	254
V2	20	#5	STR	10'-1"	210
V3	10	#5	STR	9'-11"	103
V4	12	#5	STR	11'-0"	138
V5	24	#5	STR	11'-2"	280

REINFORCING STEEL	6,106 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS	34.9 C.Y.
POUR #2 UPPER PART OF WINGS	7.2 C.Y.
TOTAL CLASS A CONCRETE	42.1 C.Y.
HP 12 X 53 STEEL PILES	
NO: 9	LIN. FT. = 675
PILE REDRIVES	9 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	9 EA.

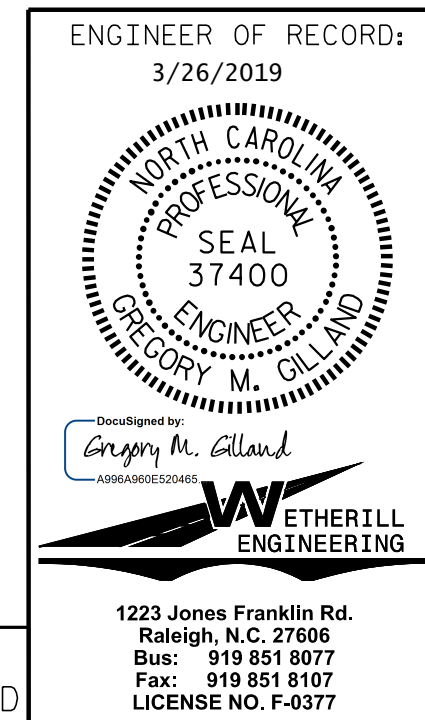


SECTION A-A



SECTION B-B

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
END BENT No. 2					
(RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S6-22					
TOTAL SHEETS 26					

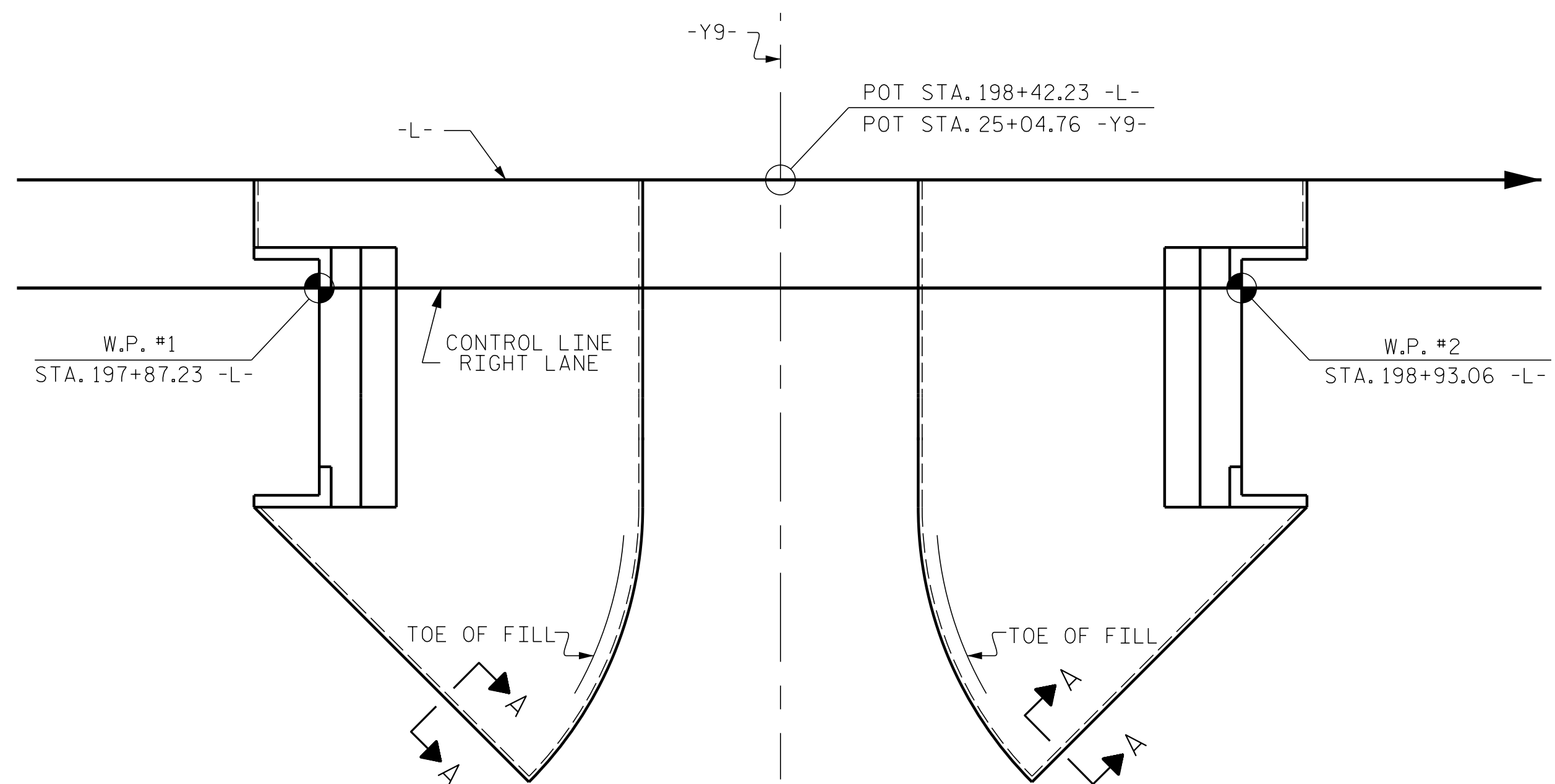
DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

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 LICENSE NO. F-0377

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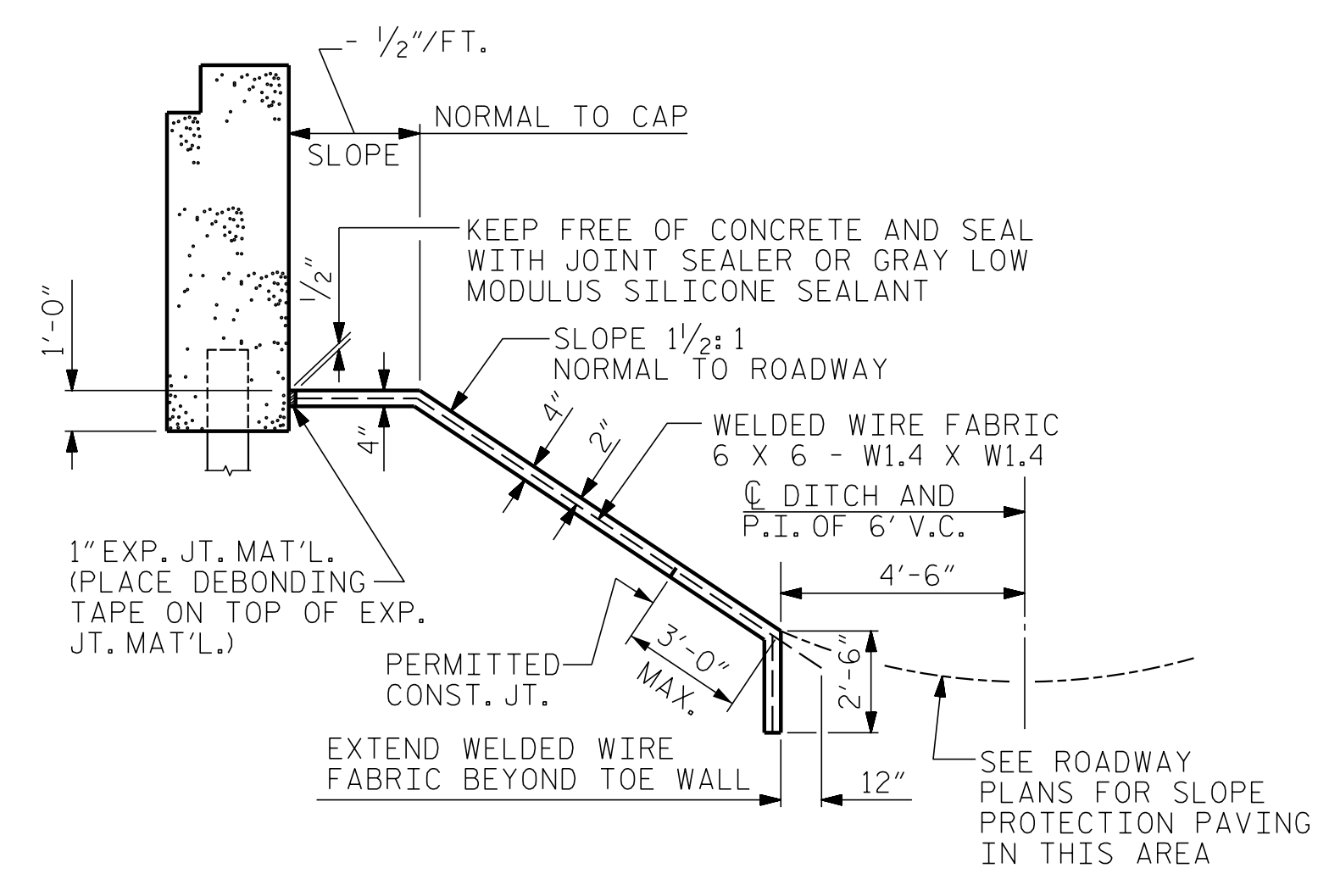
PLAN

GENERAL NOTES

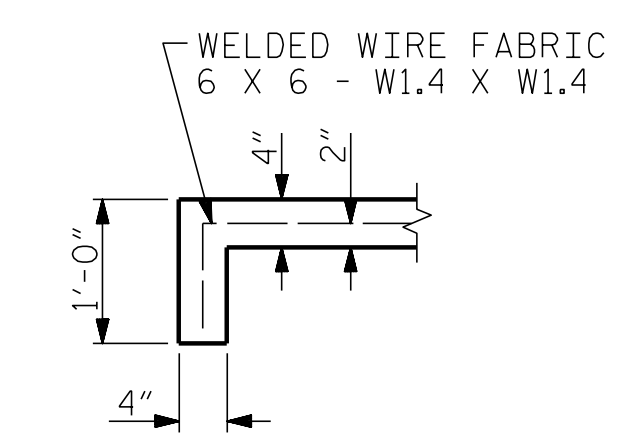
STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 198+42.23 -L-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	265	465
END BENT 2	325	570

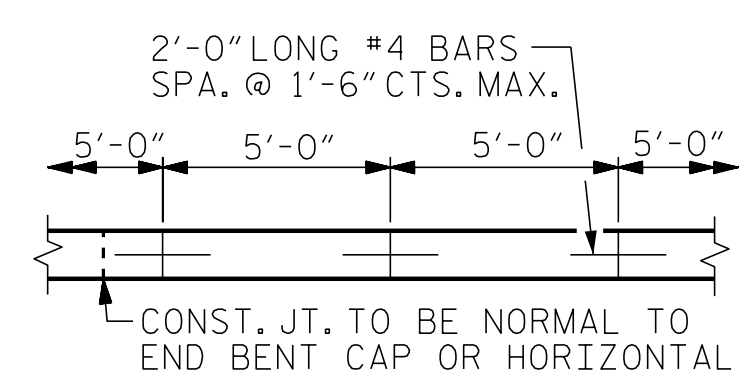
* QUANTITY SHOWN IS BASED ON 5' POURS.



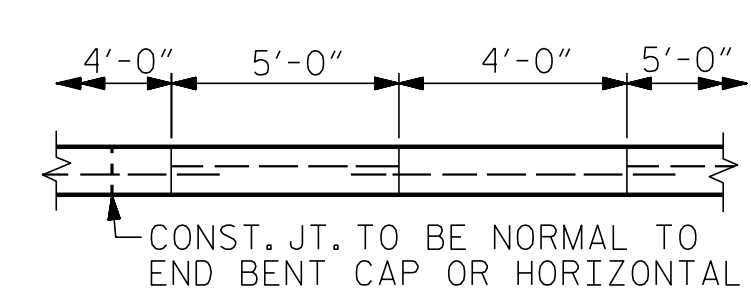
SECTION ALONG C SURVEY WHEN FILL CATCHES IN DITCH



SECTION A-A



POURING DETAIL



OPTIONAL POURING DETAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

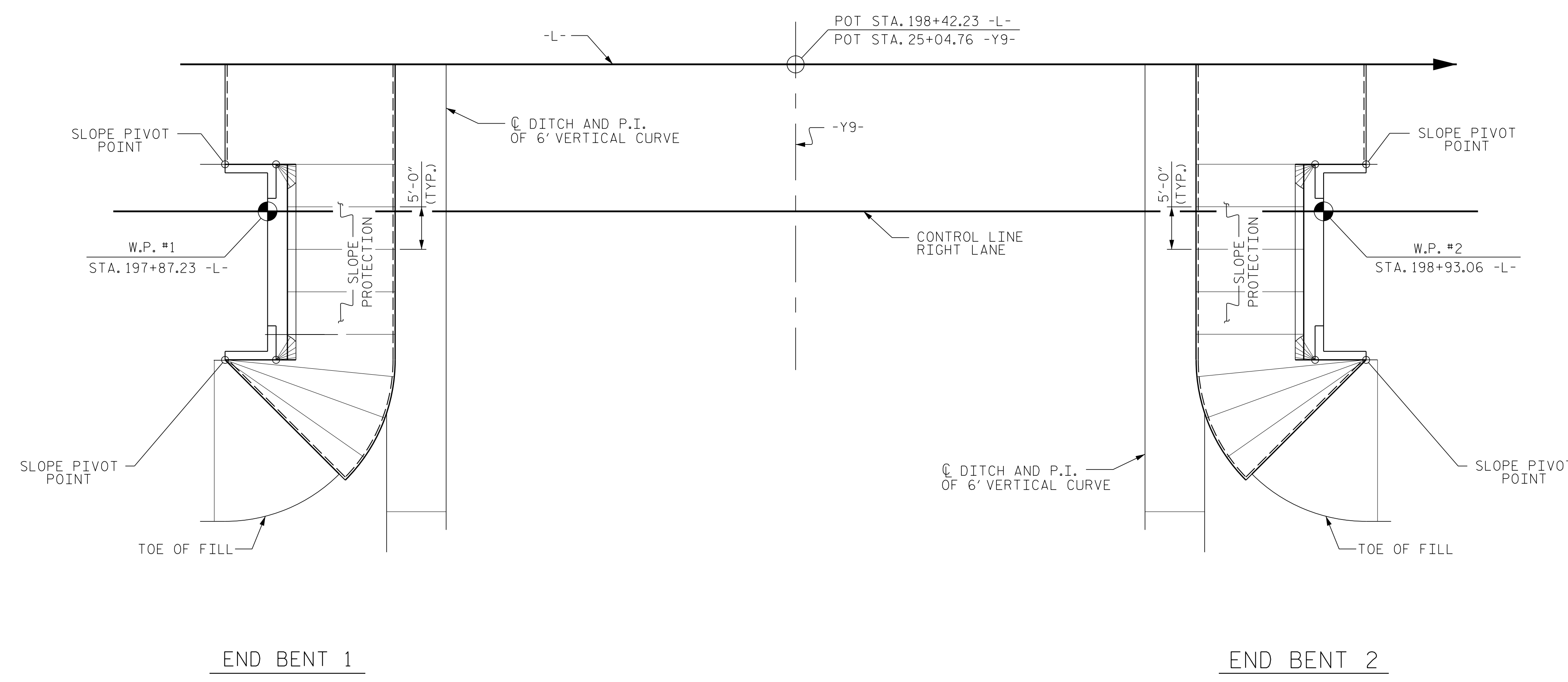
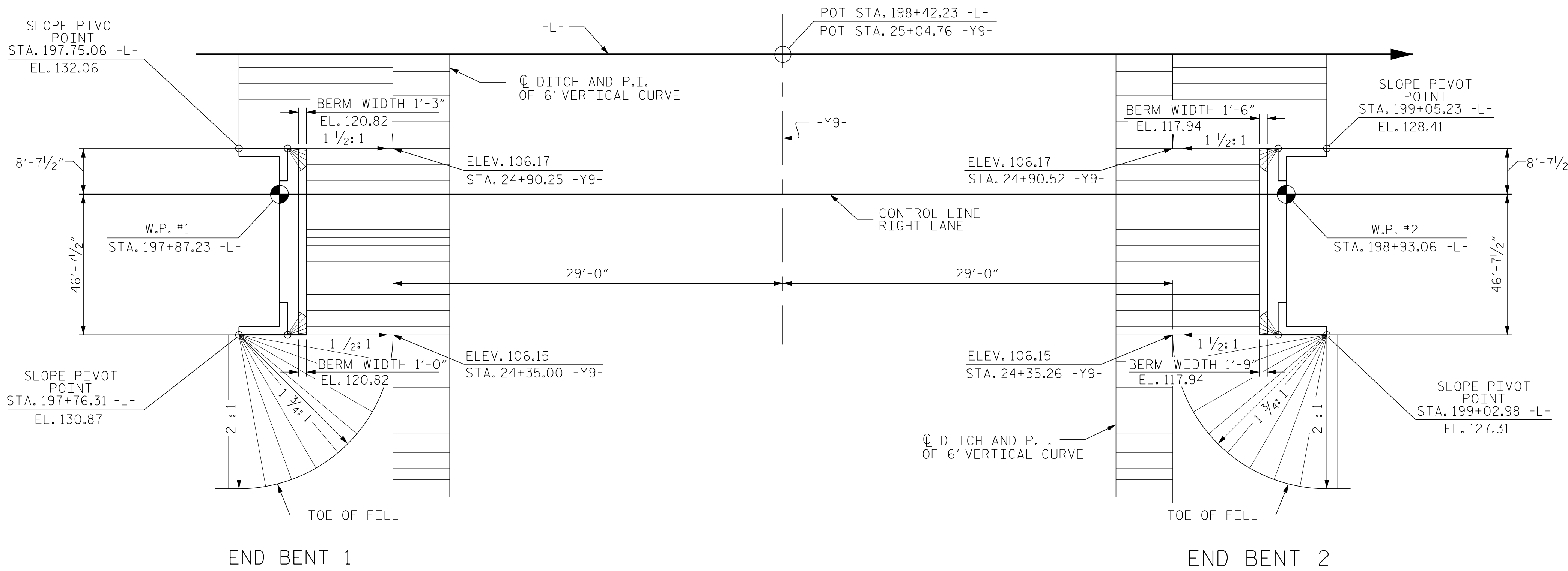
SHEET 1 OF 2

ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 4/18
DRAWN BY : ELR 5/92	REV. 12/21/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
 Greg M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 GREGORY M. OLLAND
 8/29/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S6-23
					TOTAL SHEETS 26



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 2 OF 2

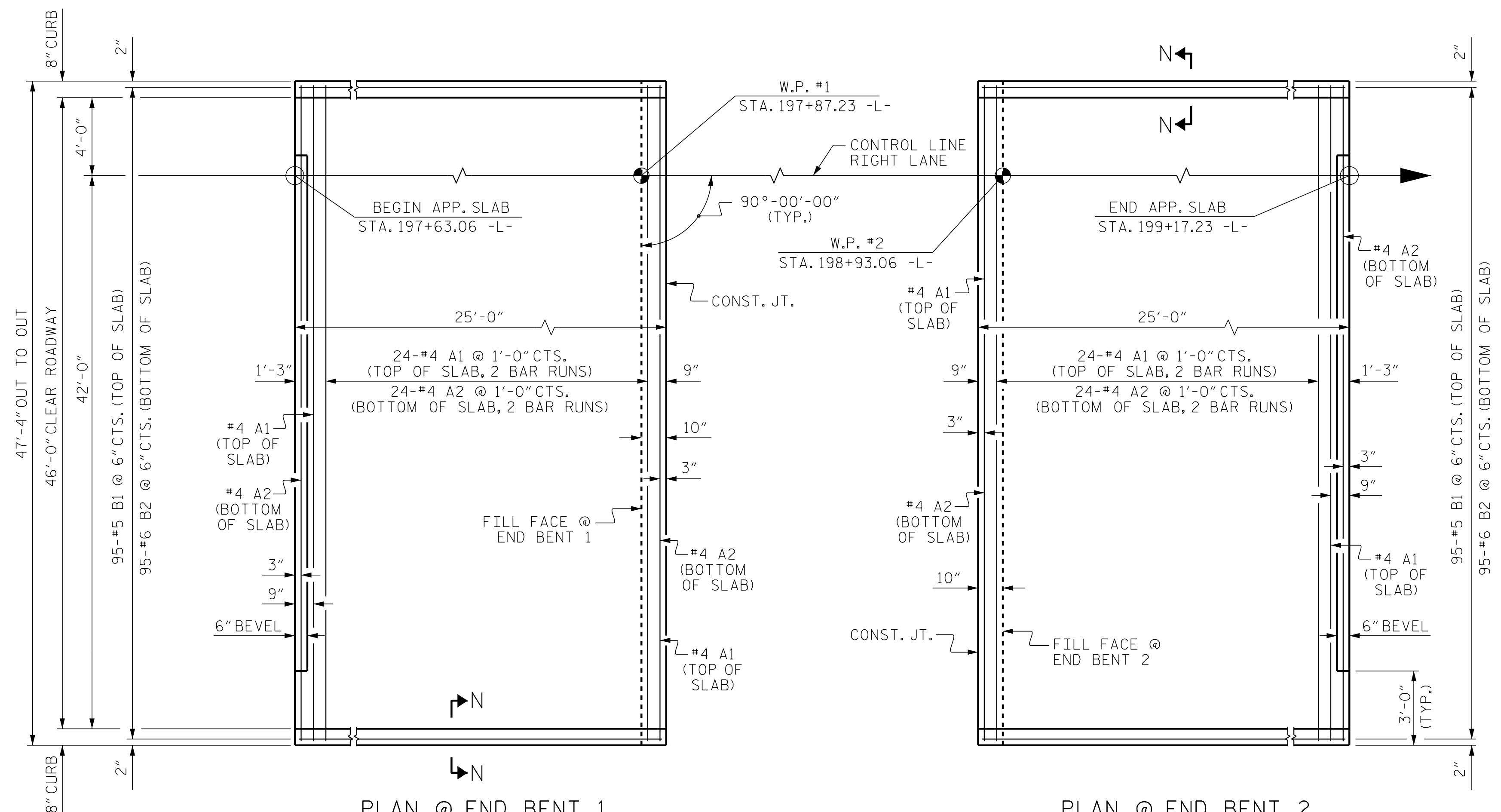


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S6-24
TOTAL SHEETS					26

ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 4/18
DRAWN BY : WJH 10/88	REV. 10/11/11 MAA/GM
CHECKED BY : FCJ 10/88	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
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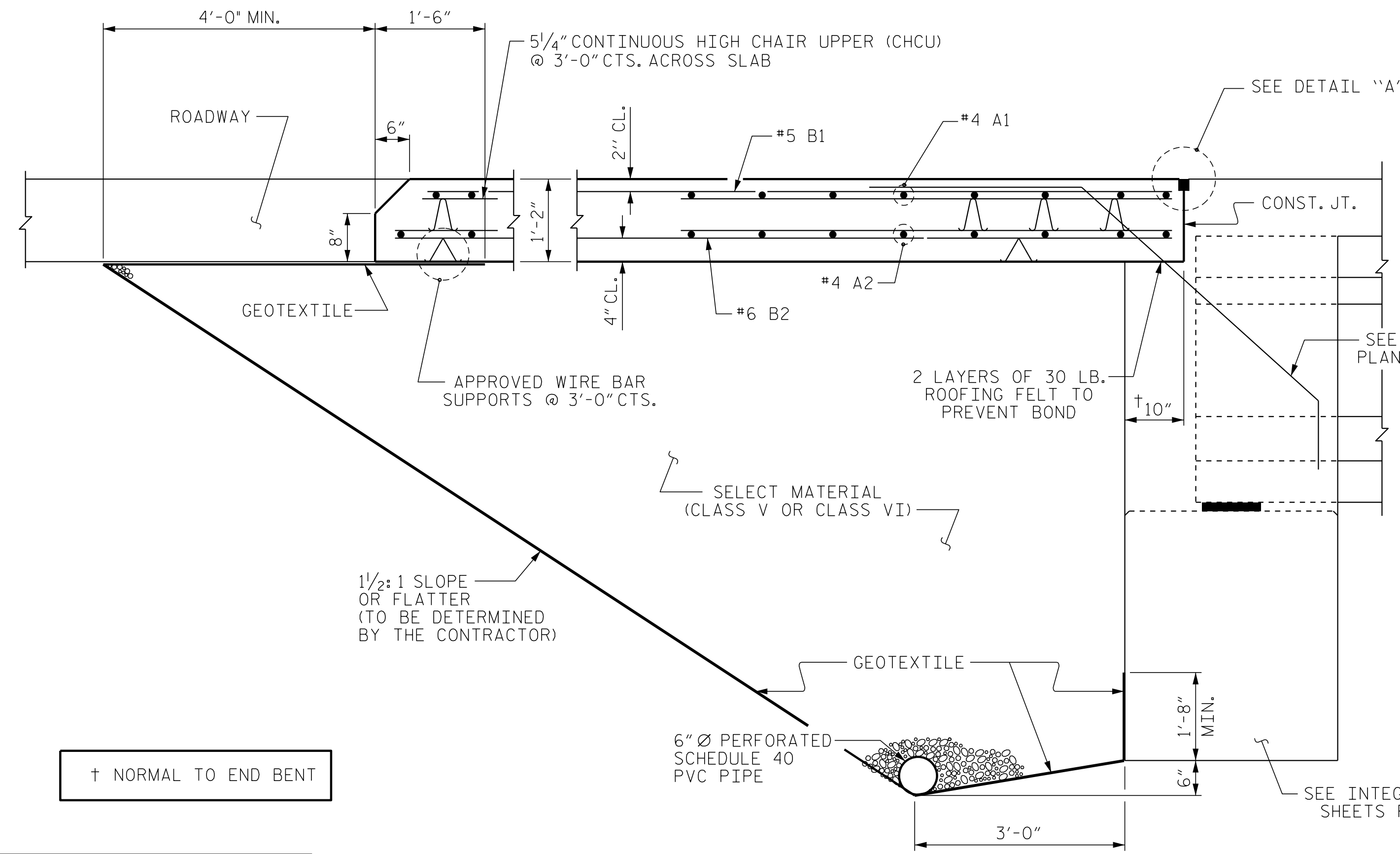
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PLAN @ END BENT 1

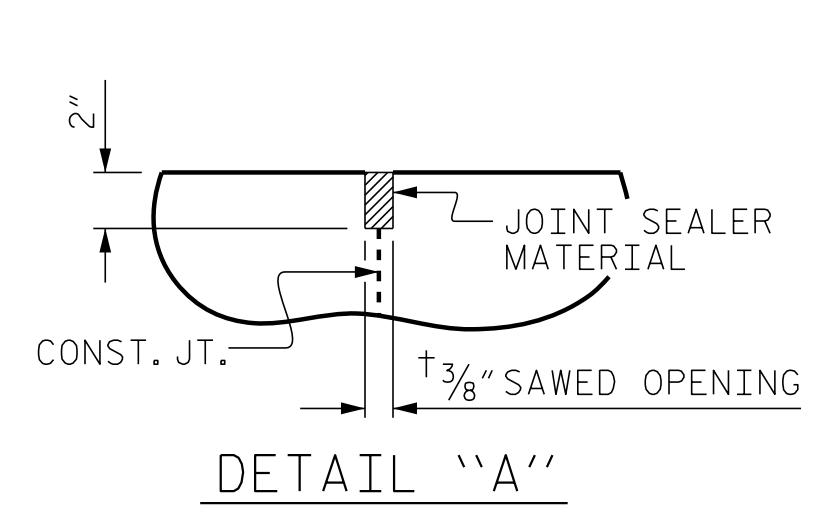
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

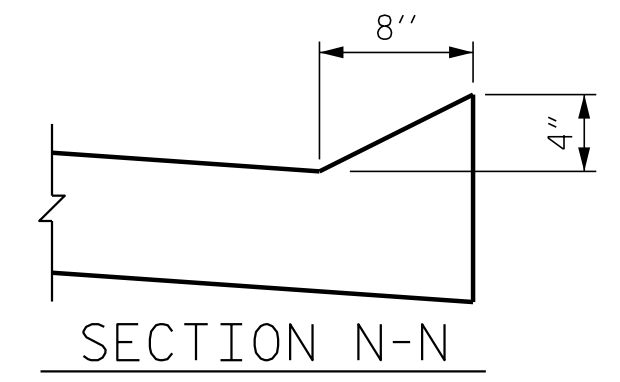


SECTION THRU SLAB

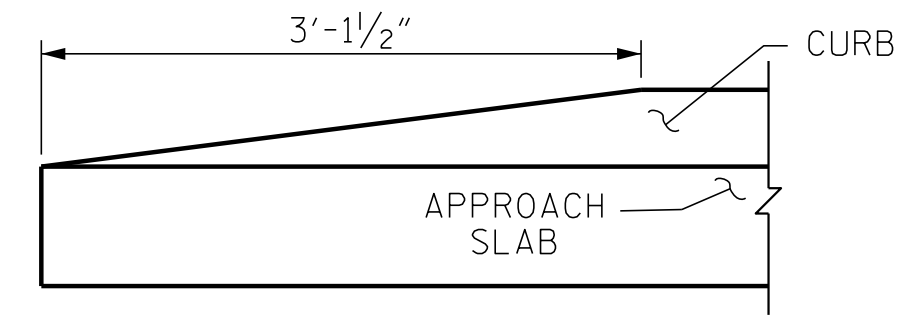
(TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, 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 6" 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.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	24'-6"	851
A2	52	#4	STR	24'-5"	848
* B1	95	#5	STR	24'-2"	2395
B2	95	#6	STR	24'-8"	3520
REINFORCING STEEL				LBS.	4368
* EPOXY COATED REINFORCING STEEL				LBS.	3246
CLASS AA CONCRETE				C. Y.	51.1

SPLICE LENGTHS

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

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 SHEET 1 OF 2



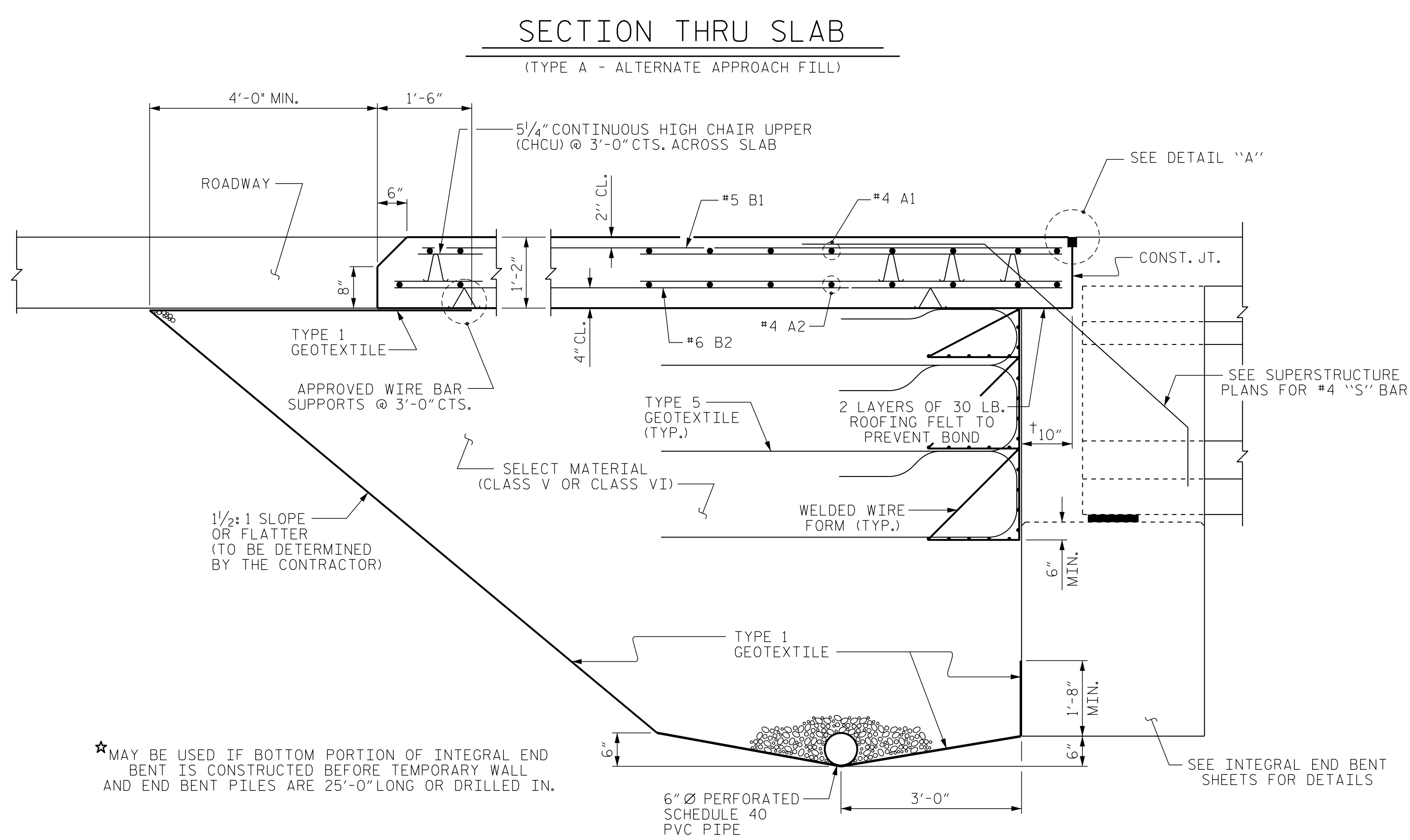
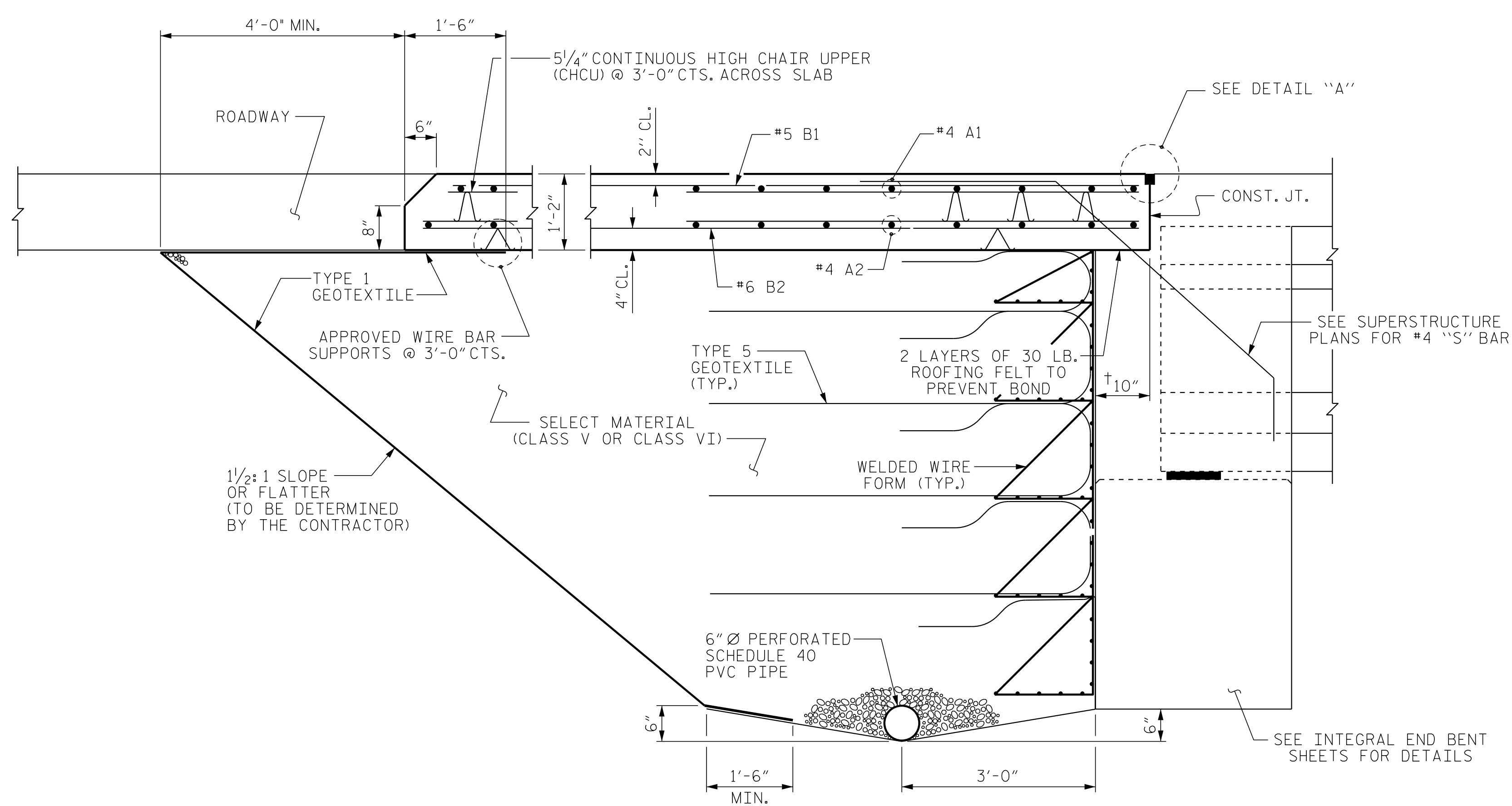
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT
 RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-25
1			3			TOTAL SHEETS
2			4			26

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

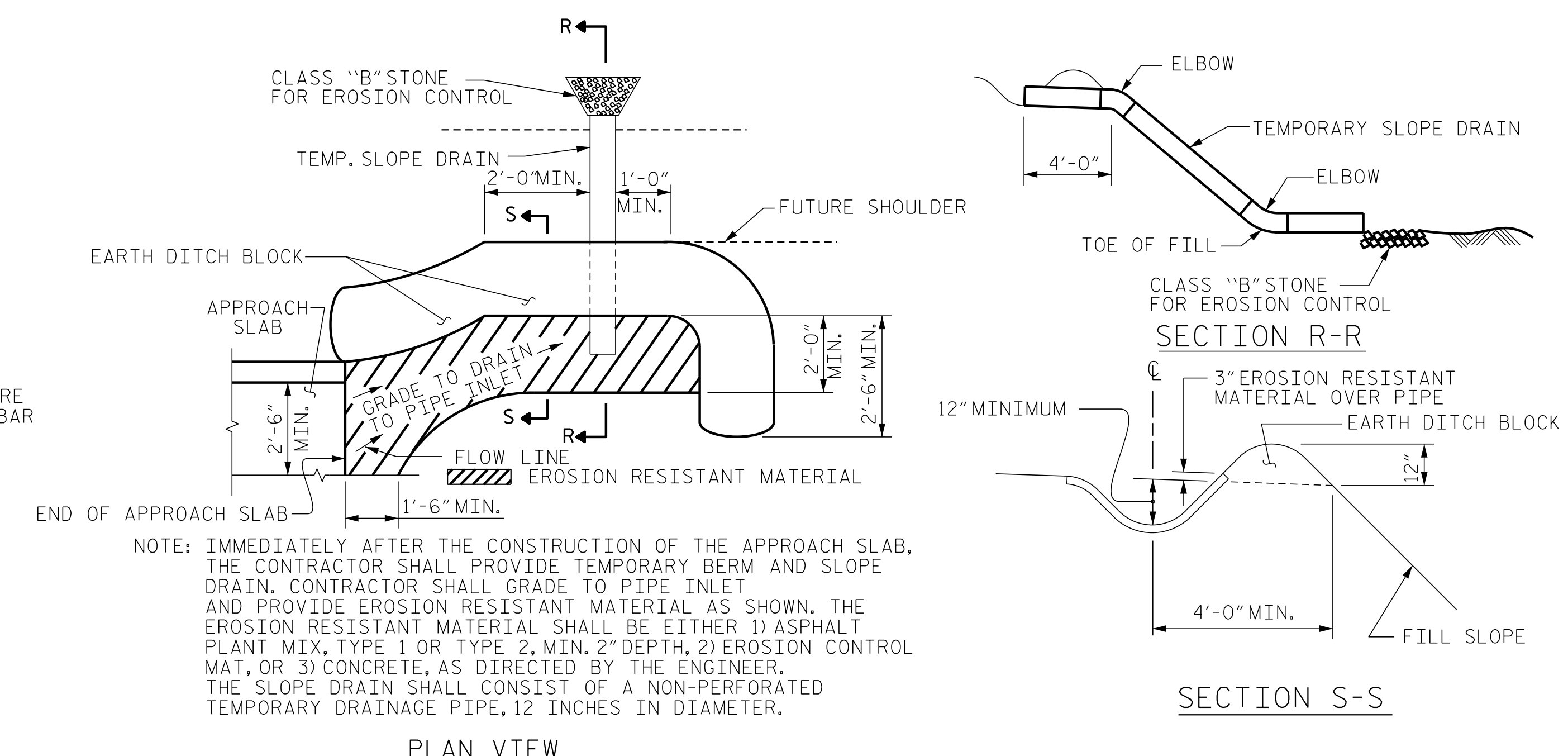
1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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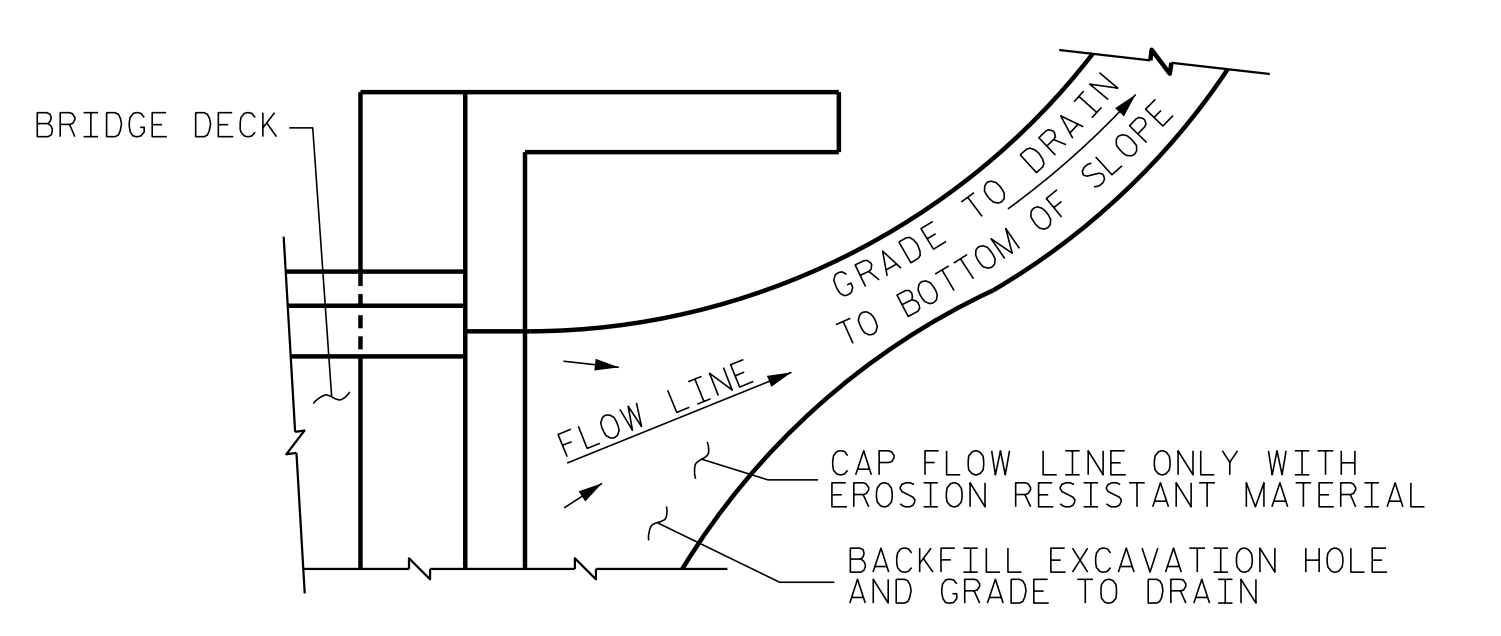


ASSEMBLED BY : D. HODGE	DATE : 4/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS 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.

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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 BACKFILL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB/DECK SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

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NORTHAMPTON COUNTY
STATION: 198+42.23 -L-
SHEET 2 OF 2

ENGINEER OF RECORD:
Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 37400
GREGORY M. GILLAND
8/29/2018
ETHERILL ENGINEERING
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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S6-26					TOTAL SHEETS 26

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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