

**TIP PROJECT: B-4643**

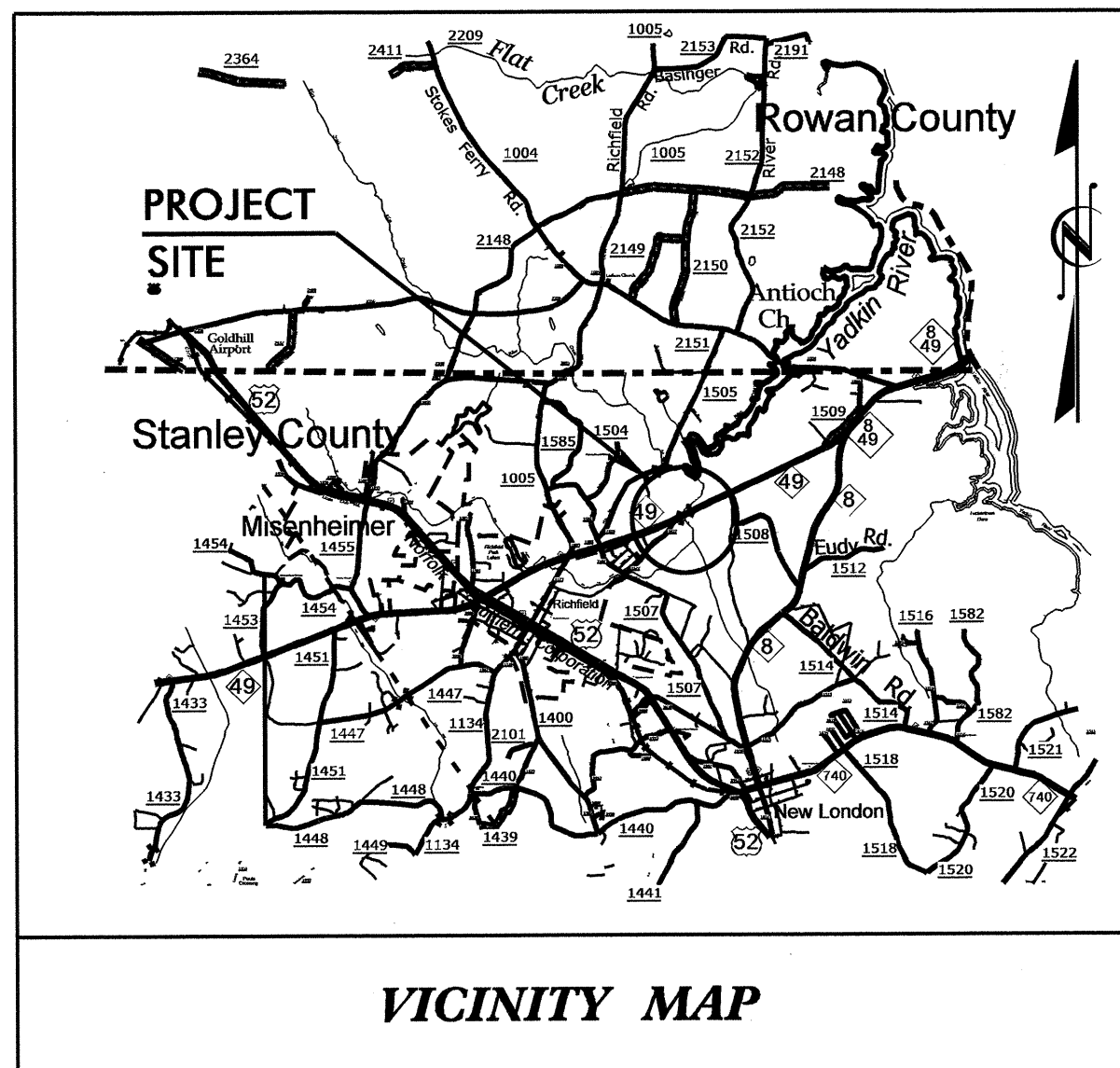
**CONTRACT : C203156**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

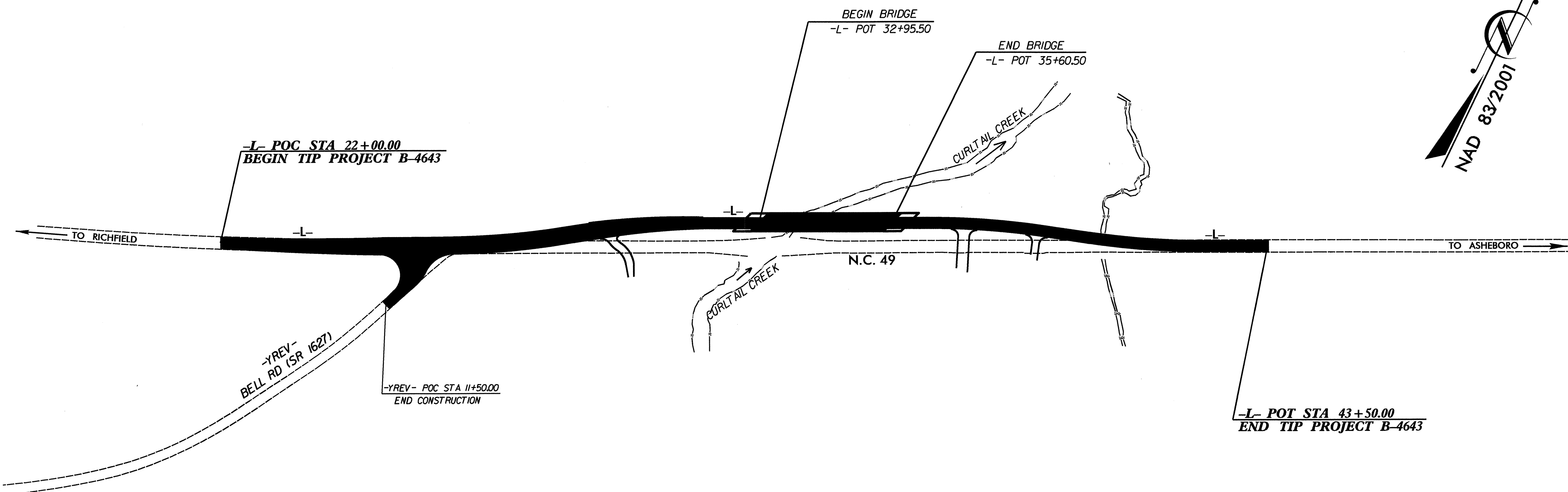
**STANLY COUNTY**

**LOCATION: BRIDGE 24 AND APPROACHES ON NC 49  
OVER CURL TAIL CREEK**

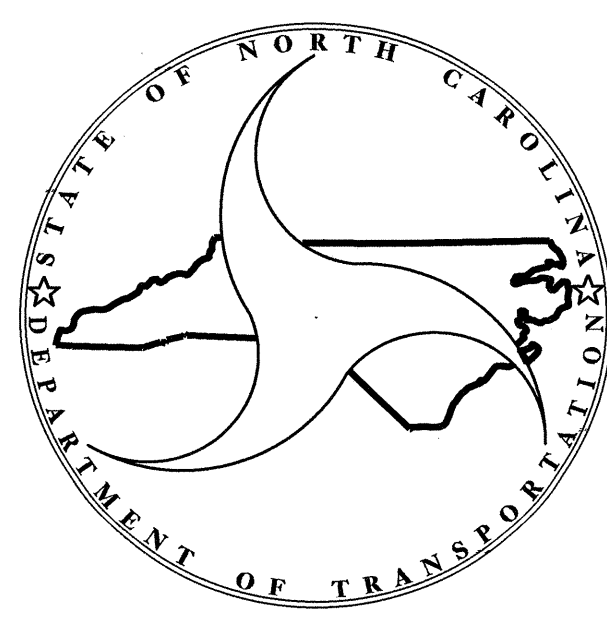
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4643		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
38451.1.1	BRNHS-49(22)	P.E.	
38451.2.1	BRNHS-0049(22)	RW & UTIL	
38451.3.1	BRNHS-0049(22)	CONSTR.	



**STRUCTURES**



**DESIGN DATA**

ADT 2013 =	5,800
ADT 2030 =	10,900
DHV =	12 %
D =	55 %
T =	14 % *
V =	60 MPH
* TTST = 10% DUAL 4%	
FUNC CLASS =	ARTERIAL
	REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-4643 =	0.357 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4643 =	0.050 MILES
TOTAL LENGTH OF TIP PROJECT B-4643 =	0.407 MILES

Prepared In the Office of:

**DIVISION OF HIGHWAYS**

2012 STANDARD SPECIFICATIONS

LETTING DATE: JUNE 18, 2013	B. C. Hunt, PE PROJECT ENGINEER
	V. A. Patel, PE PROJECT DESIGN ENGINEER

**STRUCTURES MANAGEMENT UNIT**  
1000 BIRCH RIDGE DR., RALEIGH, NC 27610

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

15-APR-2013 13:48  
\$\$\$\$\$DGN\$\$\$\$\$  
jpadams

-2.3750%    -0.4000%

PI = 28+00.00 -L-  
EL. = 581.620  
VC = 250'

**GRADE DATA**

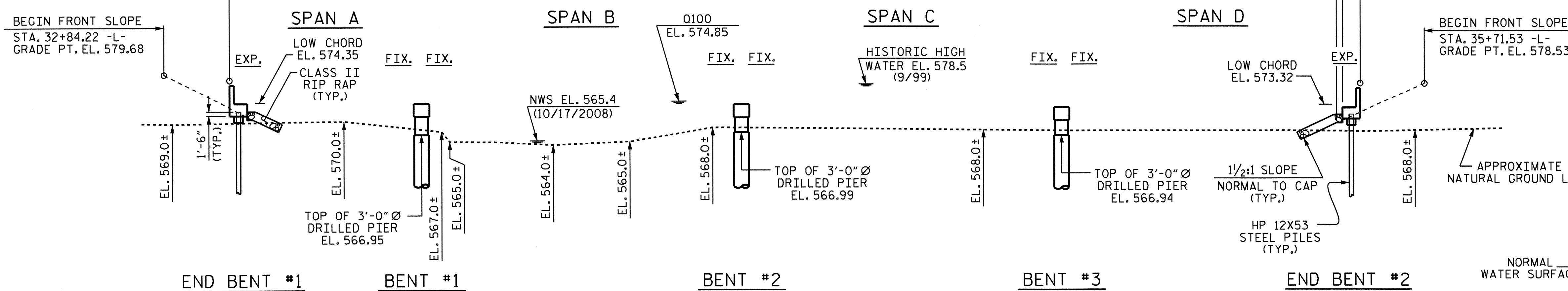
FILL FACE @ END BENT #1  
STA. 32+95.50 -L-  
GRADE PT. EL. 579.64

BEGIN FRONT SLOPE  
STA. 32+84.22 -L-  
GRADE PT. EL. 579.68

FILL FACE @ END BENT #2  
STA. 35+60.50 -L-  
GRADE PT. EL. 578.58

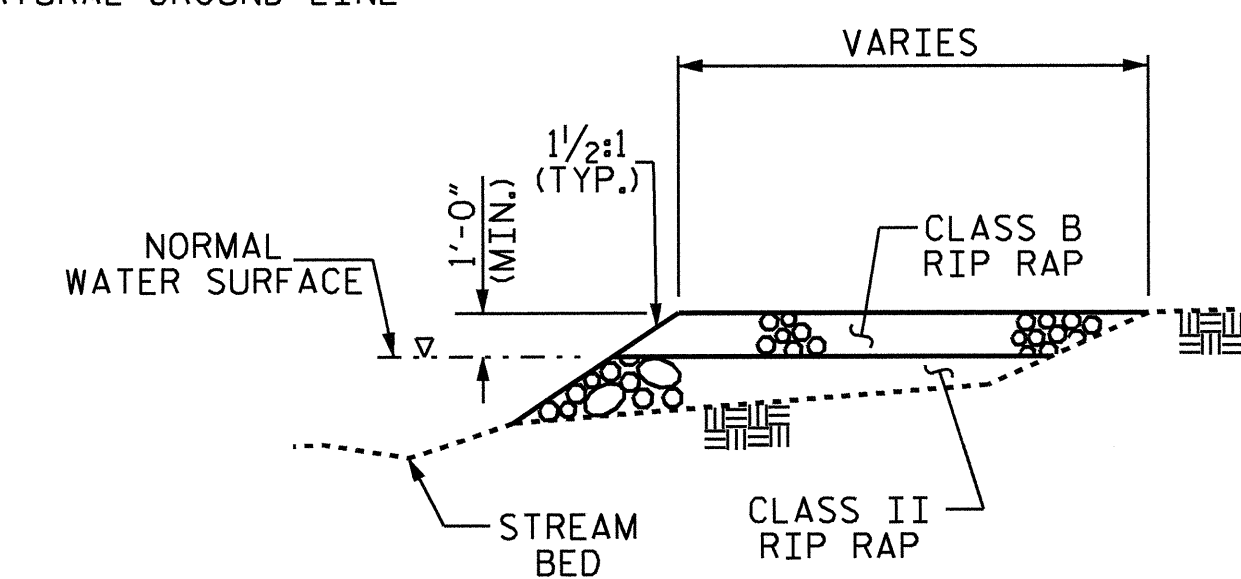
BEGIN FRONT SLOPE  
STA. 35+71.53 -L-  
GRADE PT. EL. 578.53

590  
580  
570  
560  
550

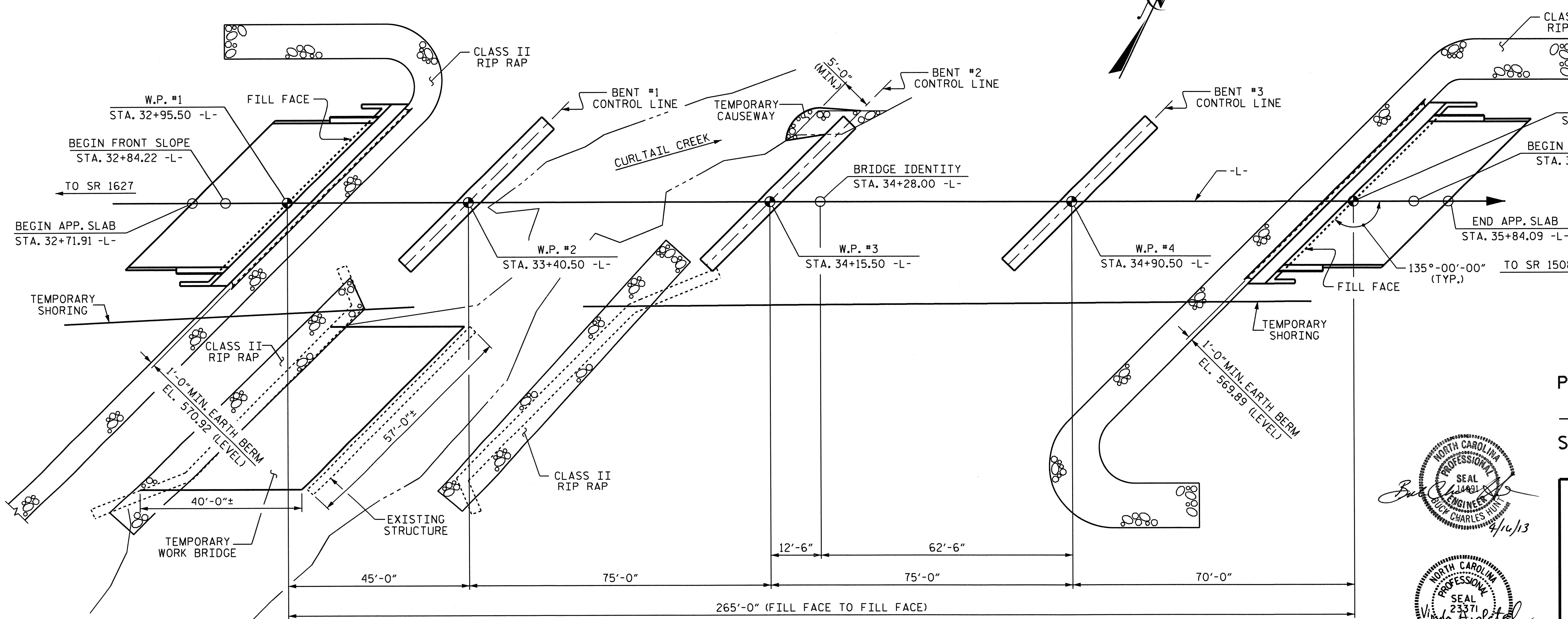


**SECTION ALONG -L-**

(SECTION TAKEN AT RIGHT ANGLE TO BENTS & END BENTS)



**DETAIL OF TEMPORARY ROCK CAUSEWAY**



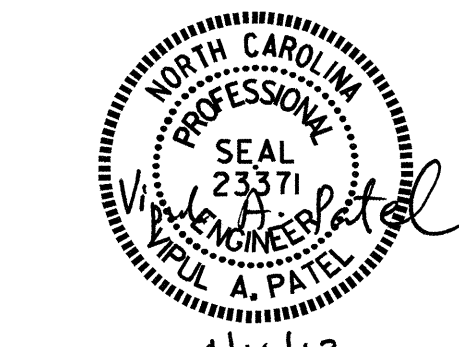
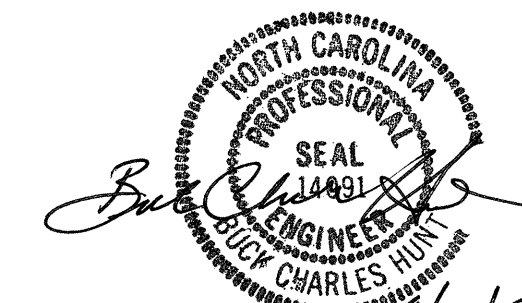
**PLAN**

(PILES, COLUMNS, & DRILLED PIERS NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-

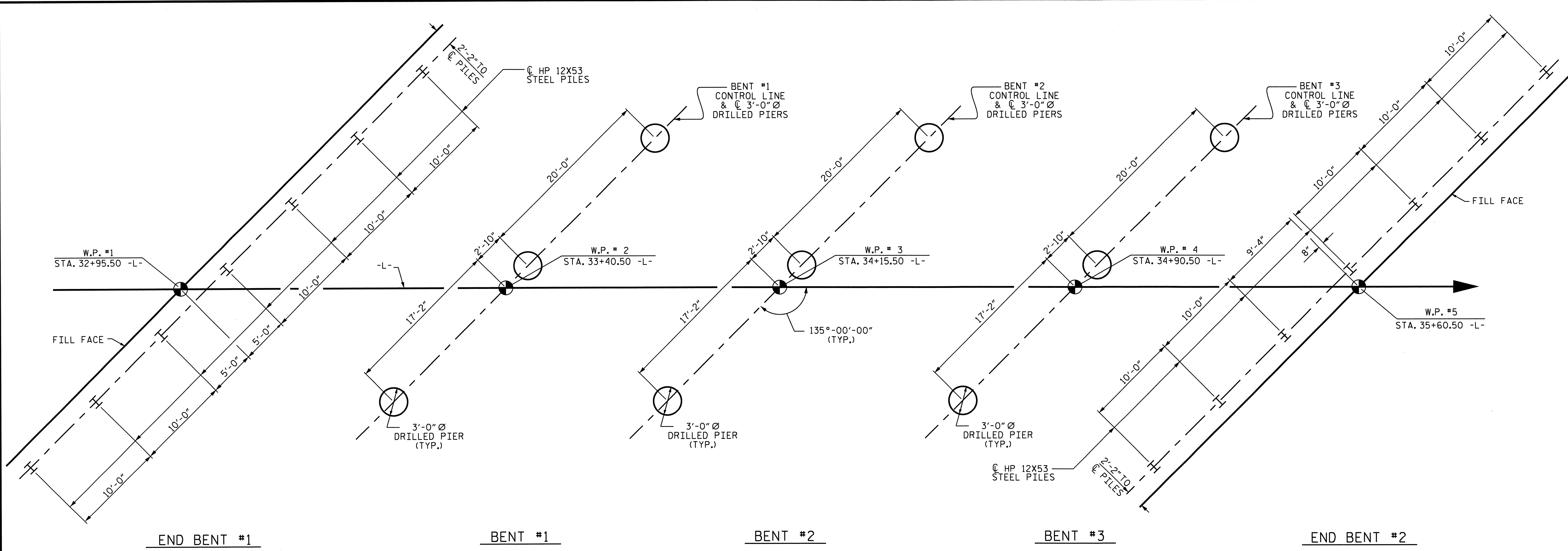
SHEET 1 OF 3 REPLACES BRIDGE NO. 24



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**GENERAL DRAWING**  
FOR BRIDGE OVER CURLTAIL  
CREEK ON NC 49 BETWEEN  
SR 1627 AND SR 1508

DRAWN BY : J. G. KHARVA DATE : 8/12  
CHECKED BY : B. N. GRADY DATE : 1/13  
DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/12/2013

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			37



**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.  
 DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF DRILLED PIERS.

**NOTES**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 1. EXCAVATE HOLES AT PILE LOCATIONS TO EL. 560.0. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT 1.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 2. EXCAVATE HOLES AT PILE LOCATIONS TO EL. 555.4. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT 2.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 355 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 562.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 554.95, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 559.0. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 355 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 562.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 554.99, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 559.0. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 355 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 3. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 562.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT 3 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 555.94, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT 3 IS ELEVATION 559.0. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

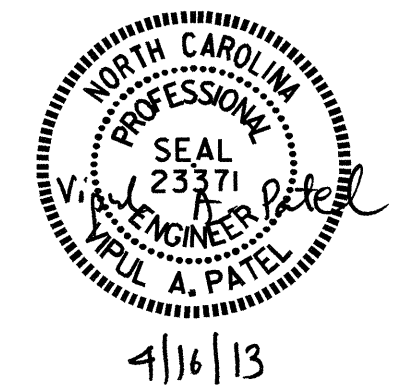
SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SPT MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRAWN BY : J. G. KHARVA DATE : 11/12  
 CHECKED BY : B. N. GRADY DATE : 1/13  
 DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/12/2013

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 jpodams

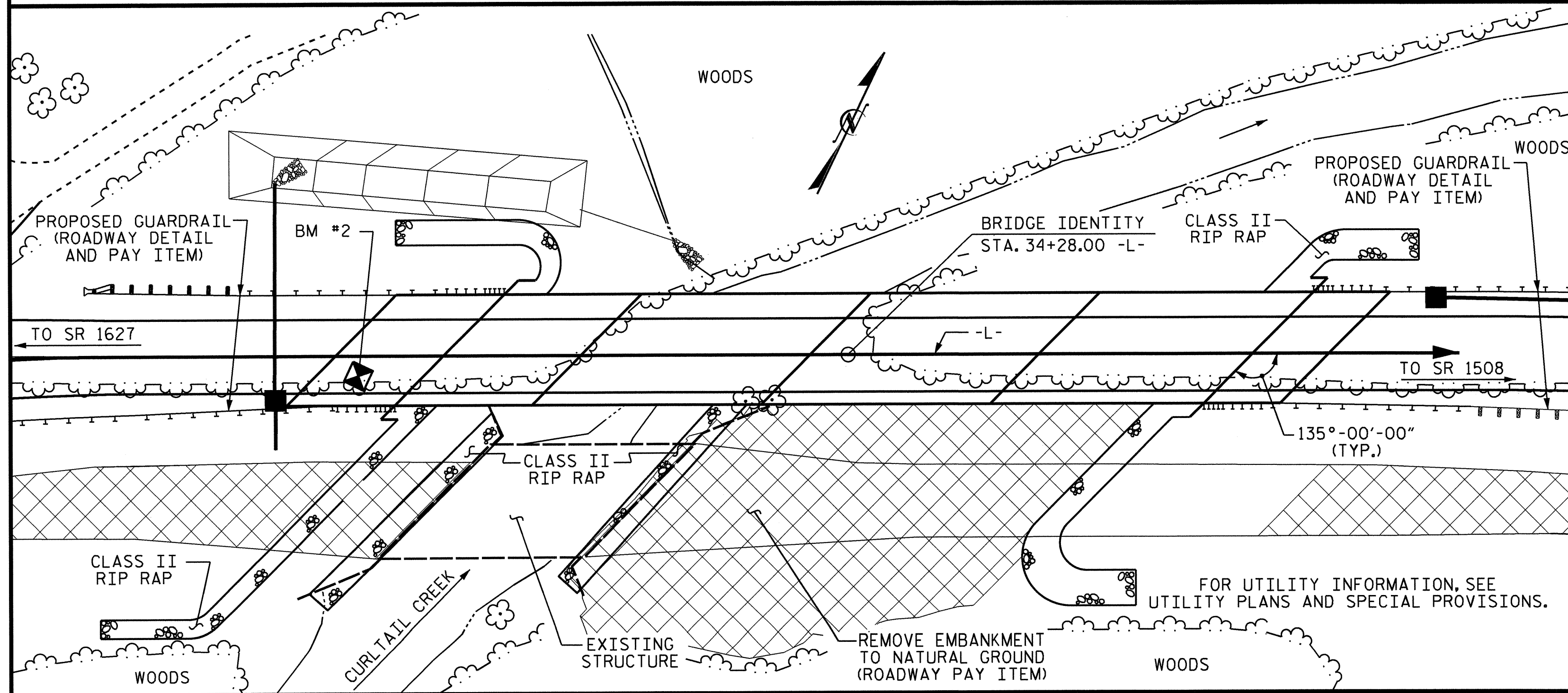


PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-2
GENERAL DRAWING FOR BRIDGE OVER CURTAIL CREEK ON NC 49 BETWEEN SR 1627 AND SR 1508						TOTAL SHEETS 37
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

BM #2 : R/R SPIKE IN 20" OAK TREE 6.47' RIGHT OF STA. 32+67.30 -L-, EL. 571.02



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.  
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (2 @ 34'-3") WITH A 24.6' CLEAR ROADWAY WIDTH AND A CONCRETE DECK AND I-BEAMS AND CONCRETE ABUTMENTS FULL HEIGHT AND A SOLID WEB CONCRETE BENT SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 34+28.00 -L-."

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 34+28.00 -L-.

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

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 CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE TEMPORARY ACCESS AT STATION 34+28.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE AND REMOVAL OF THE EXISTING STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 2500 CFS  
 FREQUENCY OF DESIGN FLOOD = 50 YRS.  
 DESIGN HIGH WATER ELEVATION = 574.2  
 DRAINAGE AREA = 9.5 SQ. MI.  
 BASE DISCHARGE (Q100) = 3066 CFS  
 BASE HIGH WATER ELEVATION = 574.85

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 3900 CFS  
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION = 575.7

TOTAL BILL OF MATERIAL

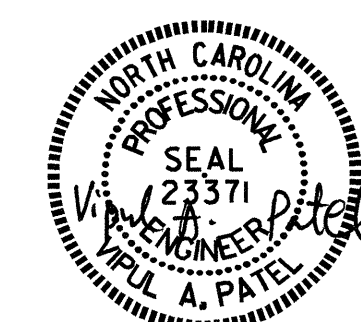
	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SO. FT.	SO. FT.
SUPERSTRUCTURE											10,284	10,130
END BENT #1			60	45								
BENT #1					16	20	15					
BENT #2					18	18	15					
BENT #3					15	18	15					
END BENT #2			53	52								
TOTAL	LUMP SUM	LUMP SUM	113	97	49	56	45	1	1	1	10,284	10,130

TOTAL BILL OF MATERIAL

	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP 12x53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	CU. YDS.	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	NO. LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		LUMP SUM			16	1,025.18	564.00			LUMP SUM	LUMP SUM
END BENT #1	45.6		6,244			7	105	390	435		
BENT #1	27.8		7,550	853							
BENT #2	27.6		7,507	837							
BENT #3	27.5		7,345	771							
END BENT #2	45.4		6,922			7	105	205	225		
TOTAL	173.9	LUMP SUM	35,568	2,461	16	1,025.18	14	210	660	LUMP SUM	LUMP SUM

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER CURLTAIL CREEK ON NC 49 BETWEEN SR 1627 AND SR 1508

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			37
2			4			

DRAWN BY : J. G. KHARVA DATE : 8/12  
 CHECKED BY : B. N. GRADY DATE : 1/13  
 DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/12/2013

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.059	--	1.75	0.798	1.70	D	ER	32.573	1.17	1.20	A	I	2.007	0.80	1.196	1.06	D	I	32.573		
	HL-93(Opr)	N/A	--	1.561	--	1.35	0.798	2.21	D	ER	32.573	1.17	1.56	A	I	2.007	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.363	49.080	1.75	0.809	2.19	A	I	20.073	1.17	1.40	A	I	2.007	0.80	0.747	1.36	D	I	32.573		
	HS-20(Opr)	36.000	--	1.817	65.426	1.35	0.809	2.84	A	I	20.073	1.17	1.82	A	I	2.007	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.007	40.591	1.40	0.809	5.13	A	I	20.073	1.17	3.79	A	I	2.007	0.80	0.747	3.01	D	I	32.573	
		SNGARBS2	20.000	--	2.271	45.412	1.40	0.809	4.20	A	I	16.058	1.17	2.81	A	I	2.007	0.80	0.747	2.27	D	I	32.573	
		SNAGRIS2	22.000	--	2.163	47.587	1.40	0.809	4.09	A	I	16.058	1.17	2.65	A	I	2.007	0.80	0.747	2.16	D	I	32.573	
		SNCOTTS3	27.250	--	1.497	40.796	1.40	0.809	2.57	A	I	20.073	1.17	1.90	A	I	2.007	0.80	0.747	1.50	D	I	32.573	
		SNAGGRS4	34.925	--	1.263	44.093	1.40	0.809	2.30	A	I	20.073	1.17	1.66	A	I	2.007	0.80	0.747	1.26	D	I	32.573	
		SNS5A	35.550	--	1.234	43.863	1.40	0.809	2.24	A	I	20.073	1.17	1.73	A	I	2.007	0.80	0.747	1.23	D	I	32.573	
		SNS6A	39.950	--	1.137	45.418	1.40	0.809	2.12	A	I	20.073	1.17	1.61	A	I	2.007	0.80	0.747	1.14	D	I	32.573	
	SNS7B	42.000	--	1.083	45.479	1.40	0.809	2.02	A	I	20.073	1.17	1.64	A	I	2.007	0.80	0.747	1.08	D	I	32.573		
	TTST	TNAGRIT3	33.000	--	1.388	45.797	1.40	0.809	2.61	A	I	20.073	1.17	1.89	A	I	2.007	0.80	0.747	1.39	D	I	32.573	
		TNT4A	33.075	--	1.395	46.147	1.40	0.809	2.64	A	I	20.073	1.17	1.80	A	I	2.007	0.80	0.747	1.40	D	I	32.573	
		TNT6A	41.600	--	1.145	47.650	1.40	0.809	2.23	A	I	20.073	1.17	1.76	A	I	2.007	0.80	0.747	1.15	D	I	32.573	
		TNT7A	42.000	--	1.154	48.453	1.40	0.809	2.29	A	I	20.073	1.17	1.63	A	I	2.007	0.80	0.747	1.15	D	I	32.573	
		TNT7B	42.000	--	1.200	50.388	1.40	0.809	2.35	A	I	20.073	1.17	1.56	A	I	2.007	0.80	0.747	1.20	D	I	32.573	
		TNAGRIT4	43.000	--	1.137	48.876	1.40	0.809	2.27	A	I	20.073	1.17	1.50	A	I	2.007	0.80	0.747	1.14	D	I	32.573	
TNAGT5A		45.000	--	1.070	48.131	1.40	0.809	2.11	A	I	20.073	1.17	1.55	A	I	2.007	0.80	0.747	1.07	D	I	32.573		
TNAGT5B	45.000	3	1.055	47.464	1.40	0.809	2.05	A	I	20.073	1.17	1.42	A	I	2.007	0.80	0.747	1.05	D	I	32.573			

NOTES:

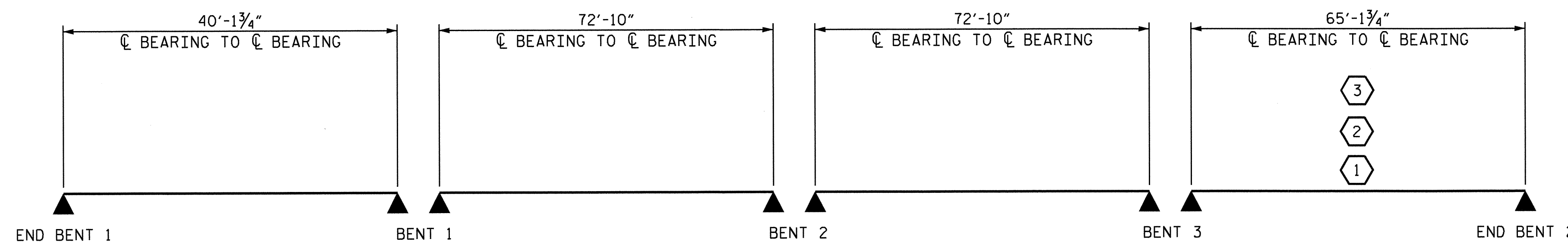
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

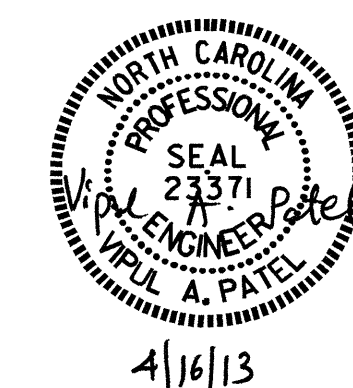
- 1.
- 2.
- 3.
- 4.

#	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. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 37

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR	DATE: 3/12/2013
ASSEMBLED BY: H.A. LOCKLEAR	DATE: 3-12
CHECKED BY: R.L. CHESSON	DATE: 4-12
DRAWN BY: MAA 1/08	REV. 11/12/OBR MAA/GM
CHECKED BY: GM/DI 2/08	

**NOTES**

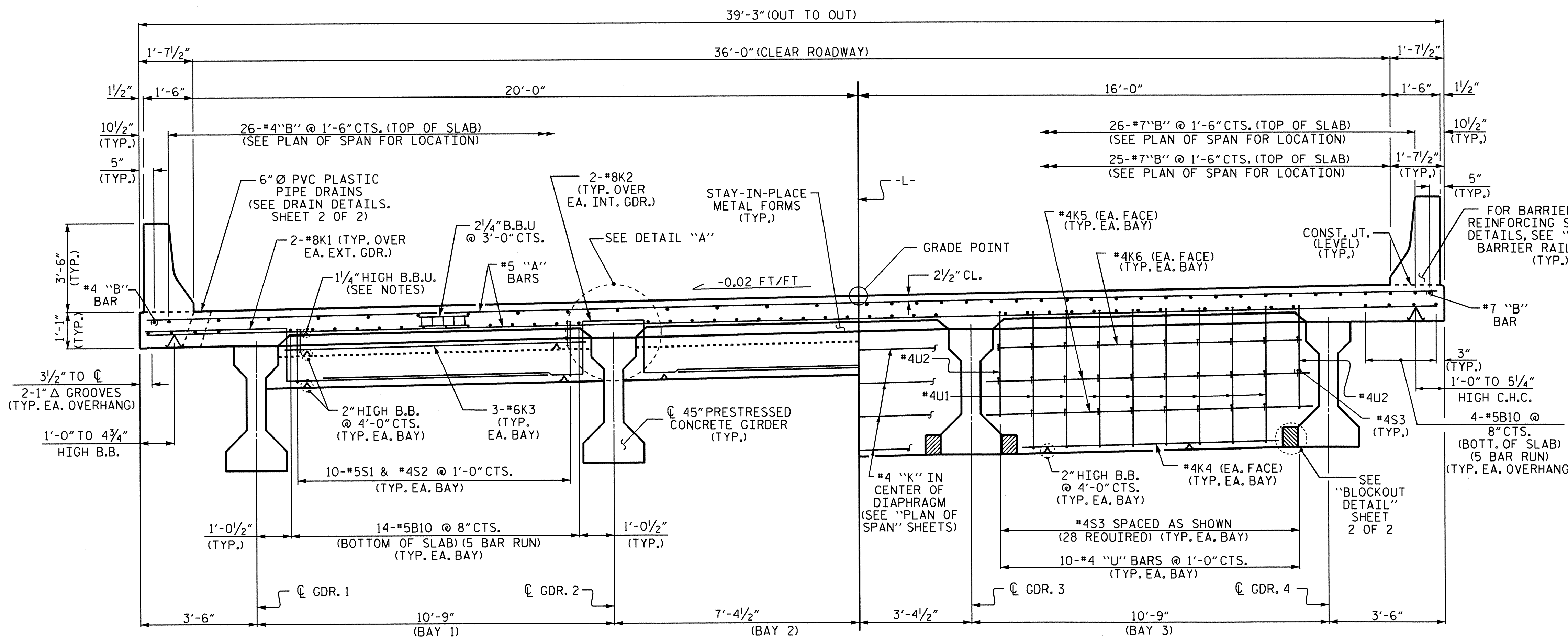
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2"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

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

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

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

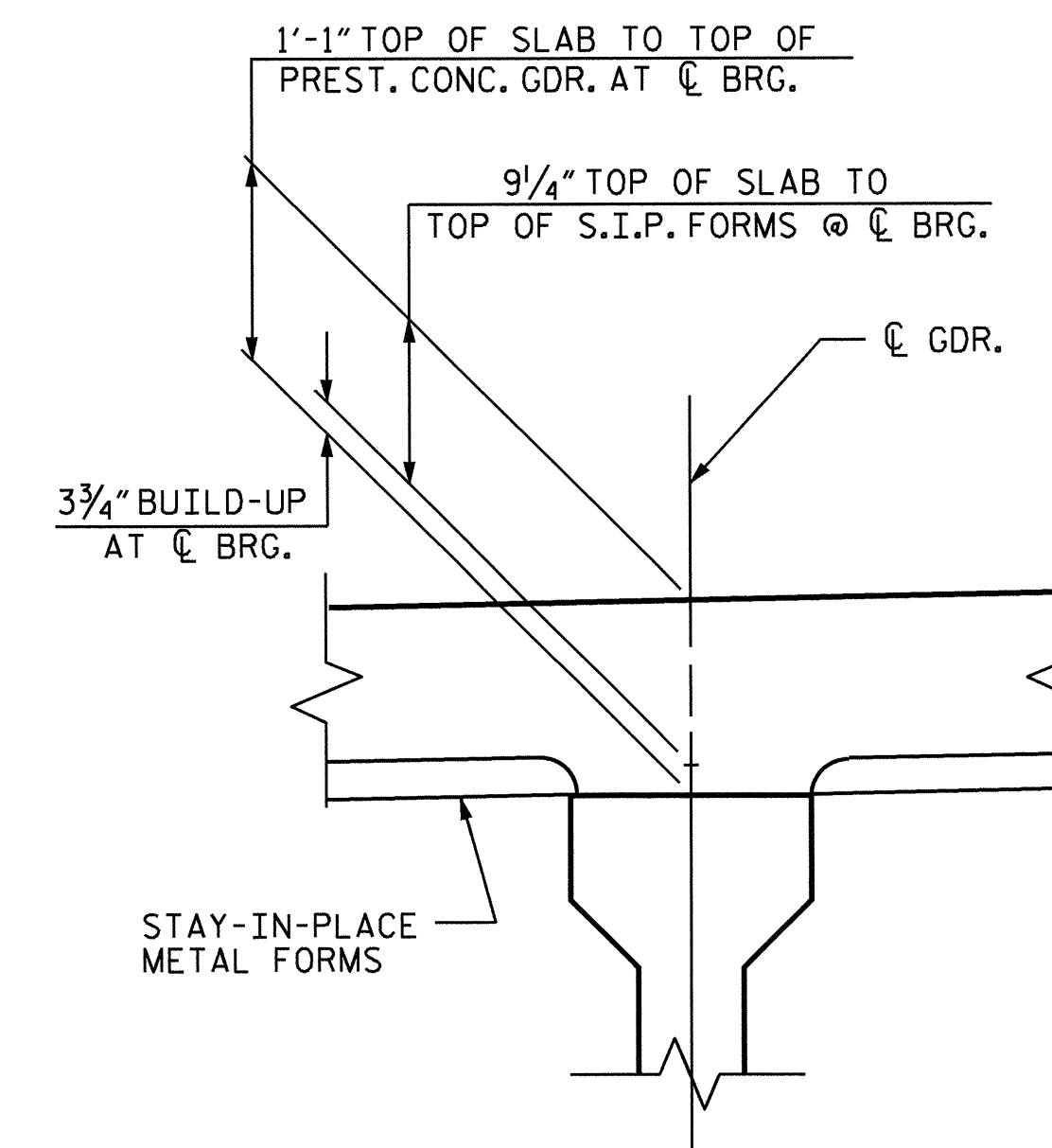
#5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



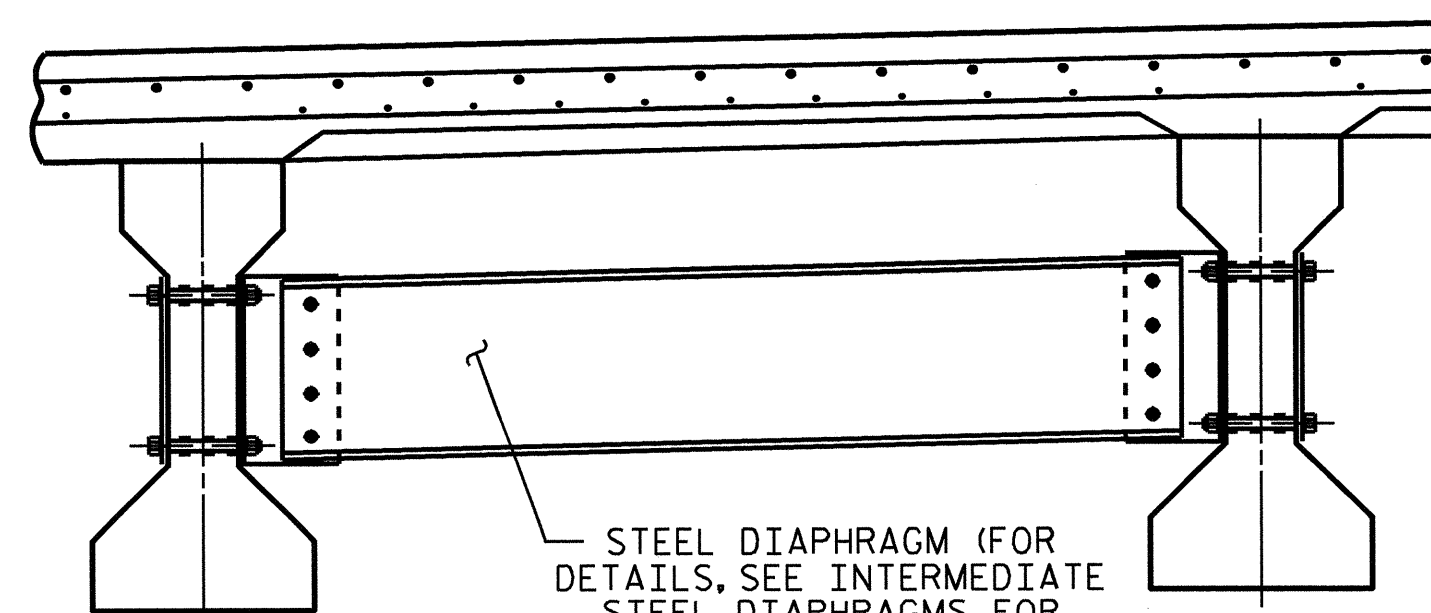
TYPICAL SECTION @ END BENTS

TYPICAL SECTION

TYPICAL SECTION @ BENTS



DETAIL A



INTERMEDIATE DIAPHRAGM

(TYP. EA. BAY)

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTION

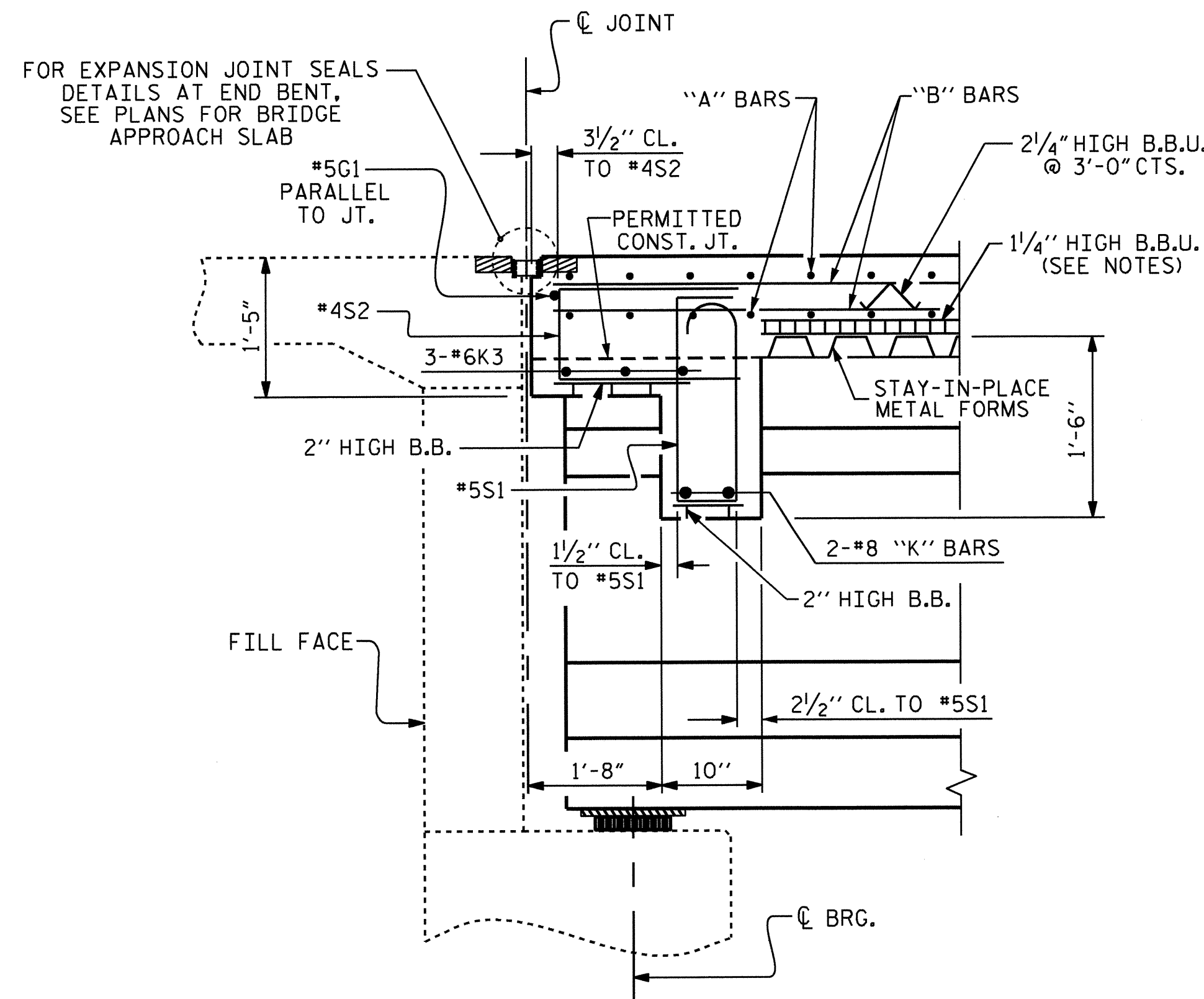


4/16/13

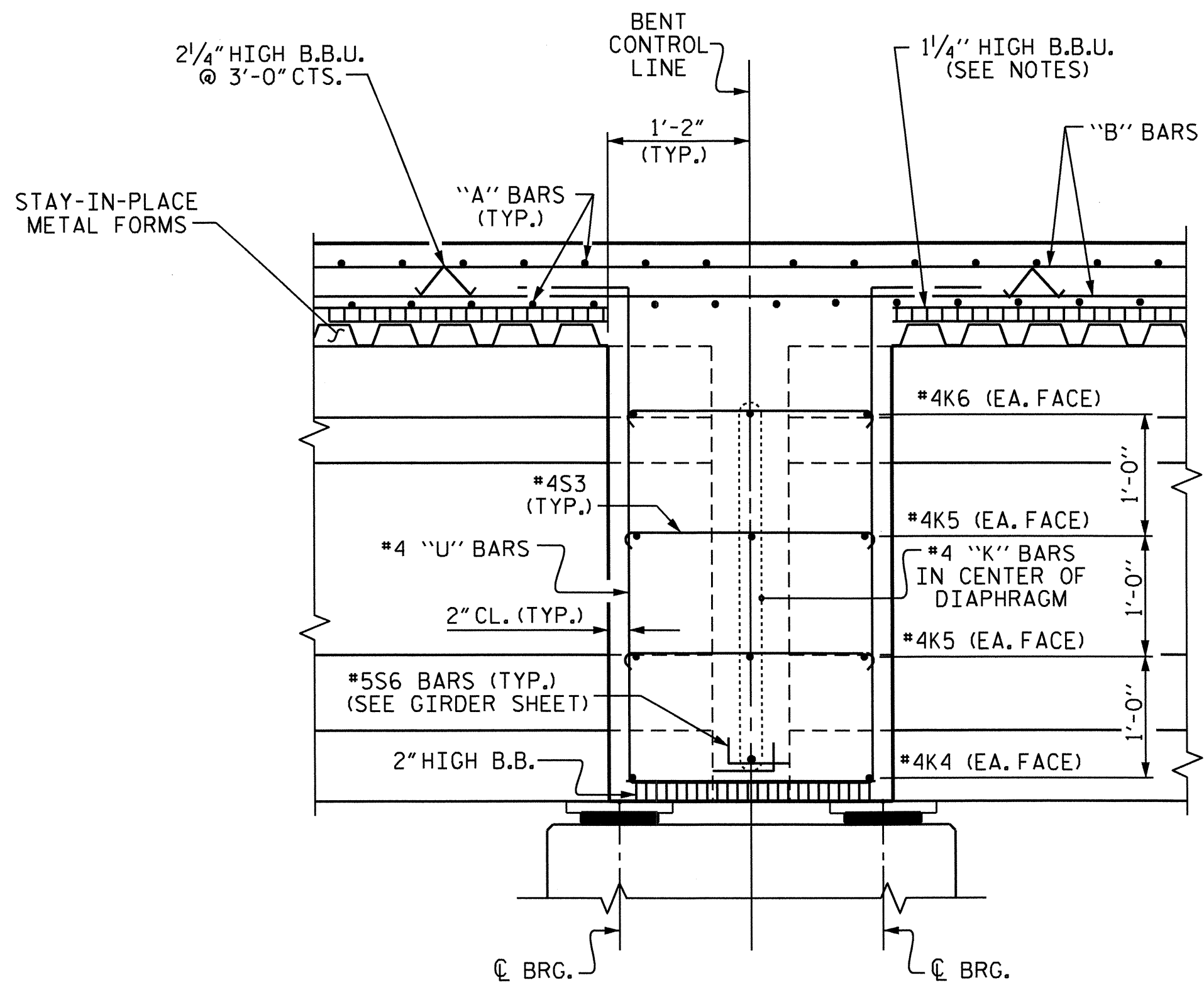
DRAWN BY : J. G. KHARVA DATE : 04/19/12  
 CHECKED BY : H. T. DIEU DATE : 05/7/12  
 DESIGN ENGINEER OF RECORD : H.A. LOCKLEAR DATE : 03/12/13

15-APR-2013 13:48  
 X:\Structures\plans\B-4643.SD.TS.dgn  
 jpodams

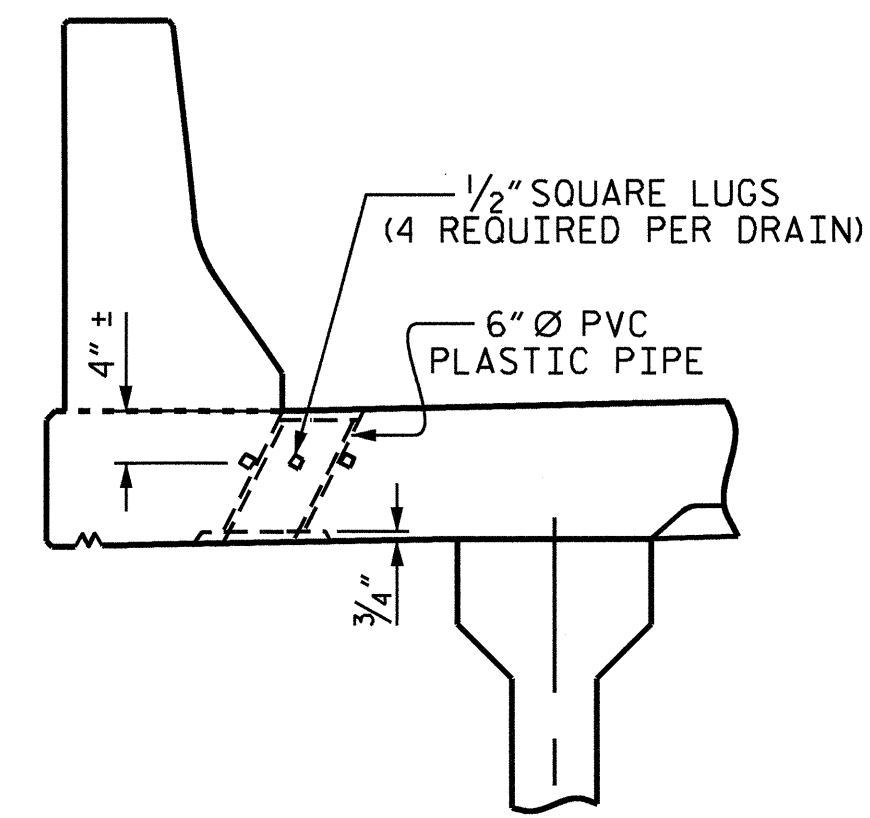
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			37



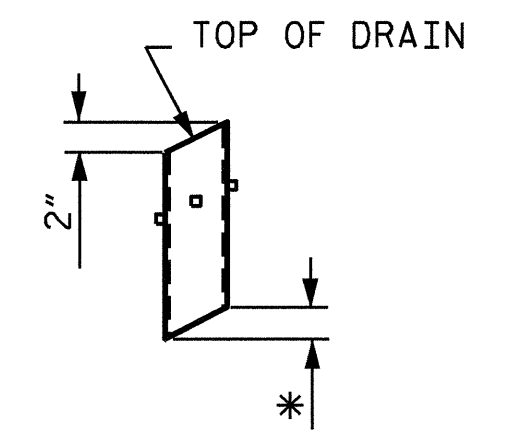
SECTION THRU END BENT DIAPHRAGM



SECTION THRU BENT DIAPHRAGM

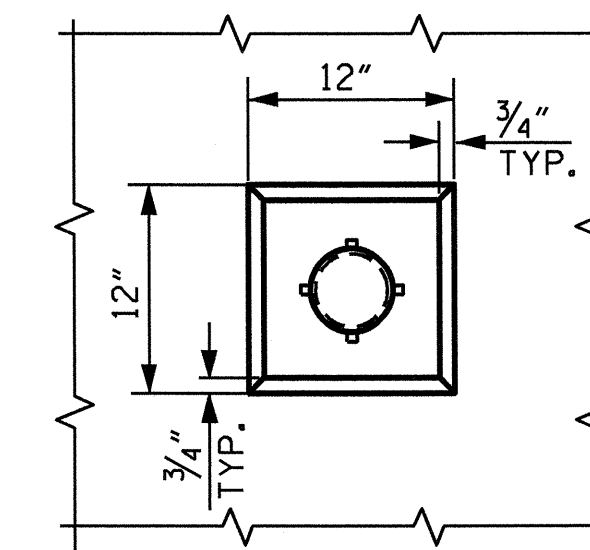


ELEVATION



\* TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (10 DRAINS REQUIRED)

PIPE DETAIL



PLAN OF RECESS

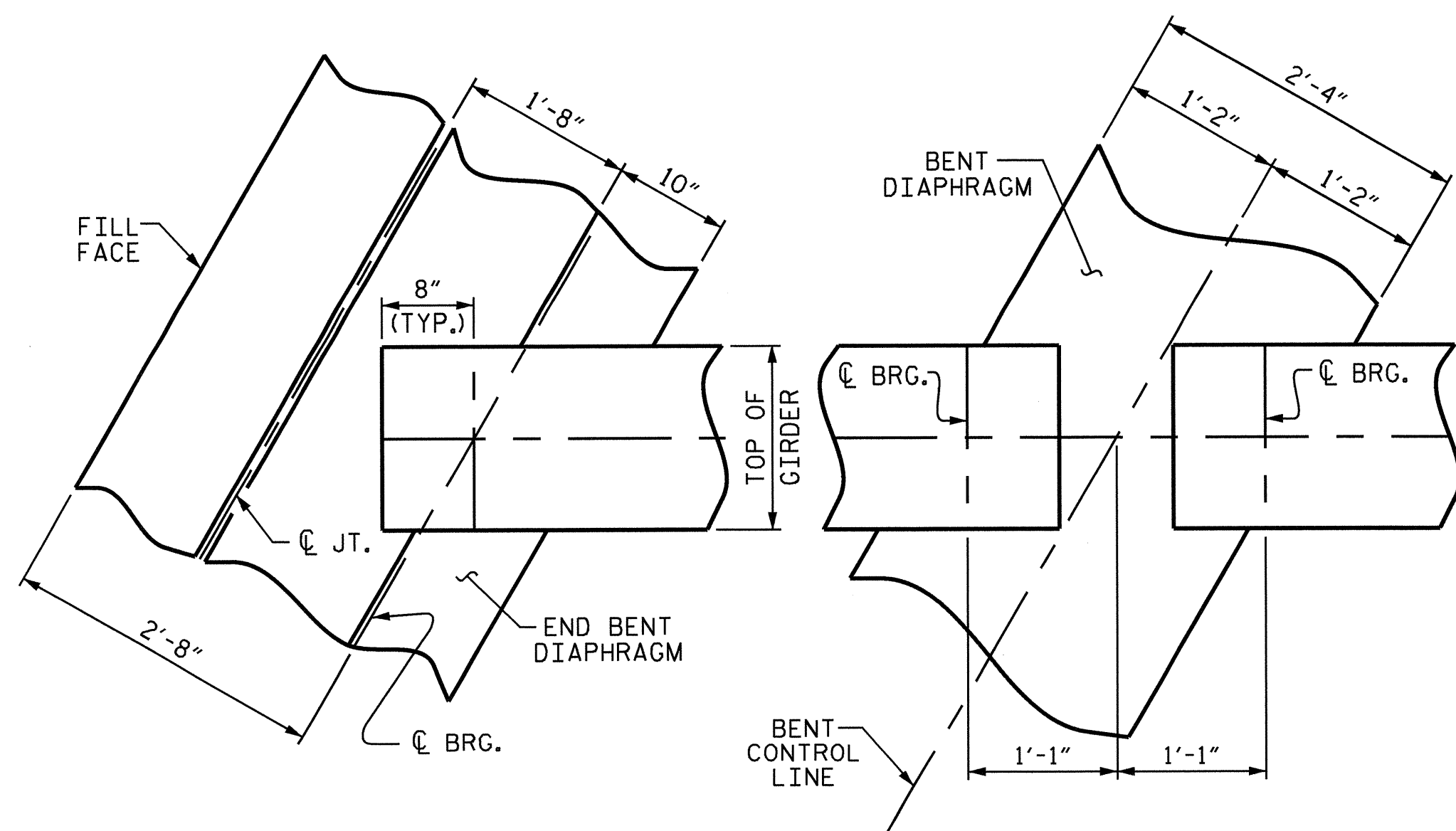
**DRAIN DETAIL NOTES**

TOP OF FLOOR DRAIN TO BE SET 3/8\"/>

4 - 1/2\"/>

THE 6\"/>

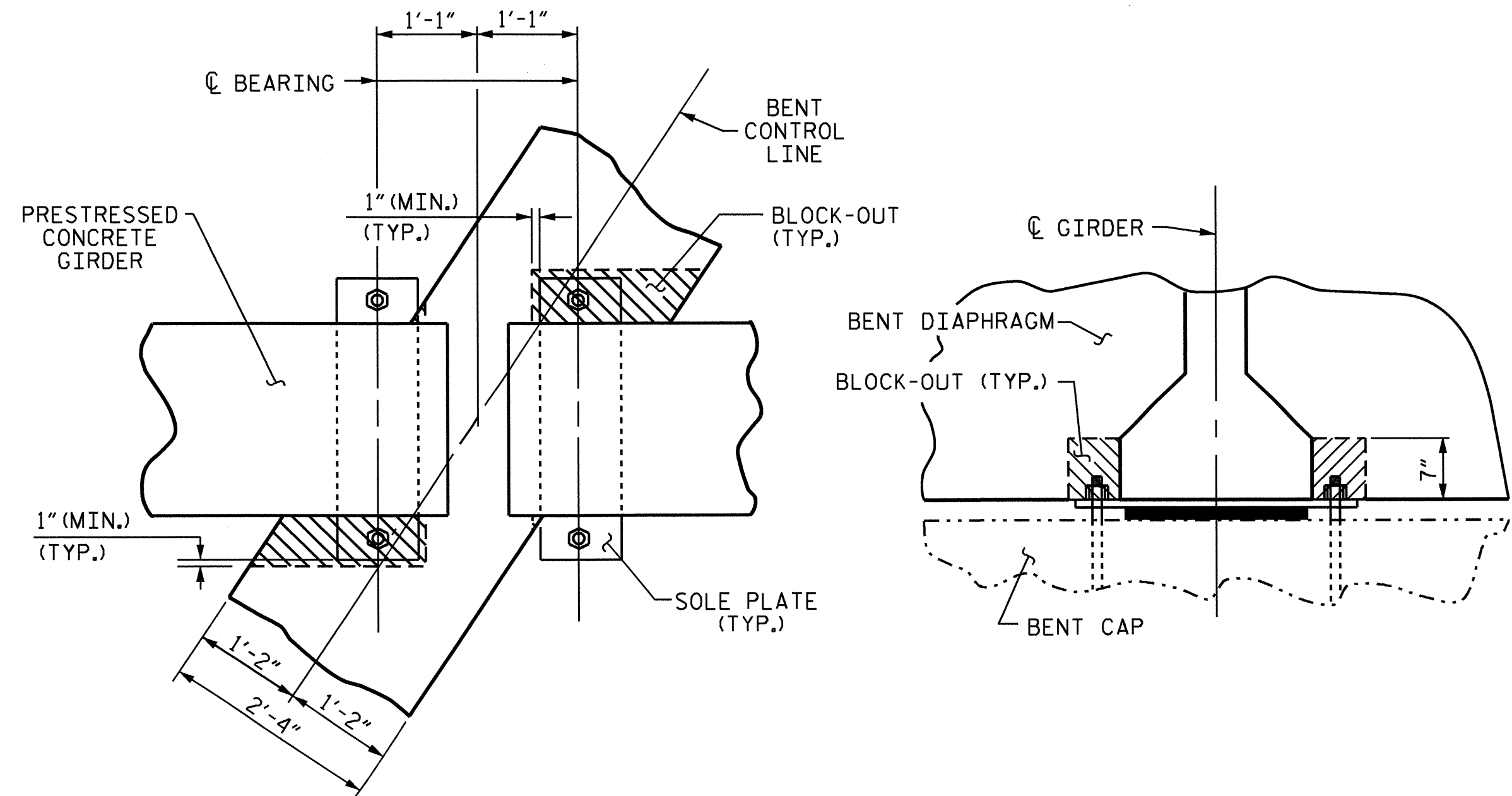
**DRAIN DETAILS**



AT END BENT

AT BENT

**PLAN OF DIAPHRAGMS**

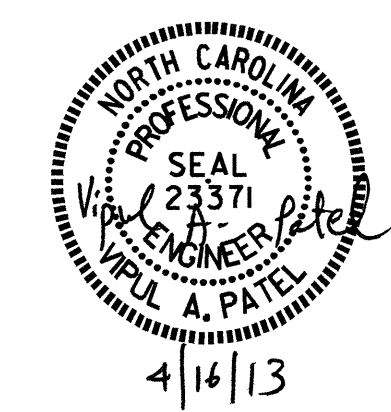


**BENT DIAPHRAGM BLOCK-OUT DETAIL**

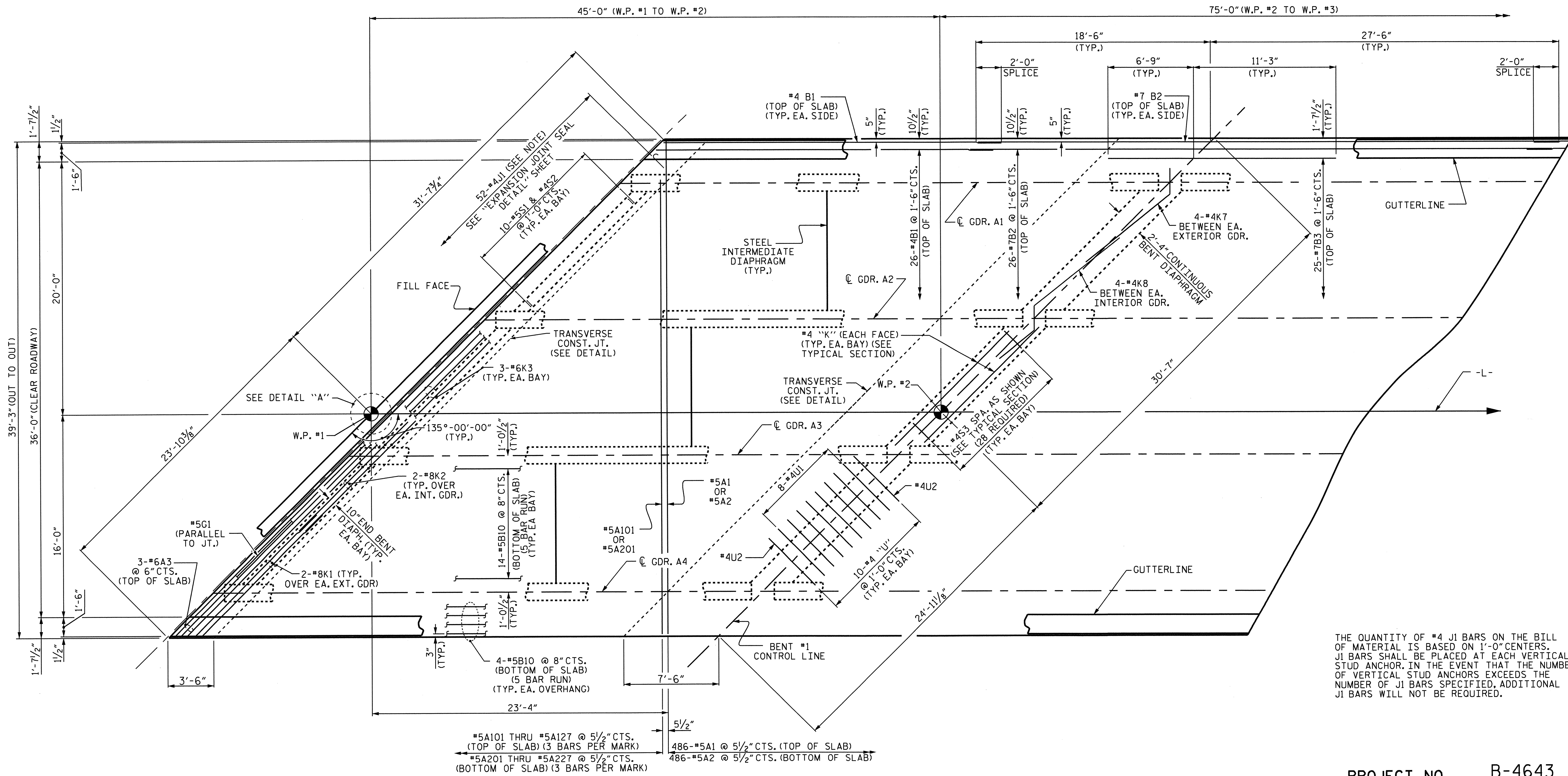
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 2

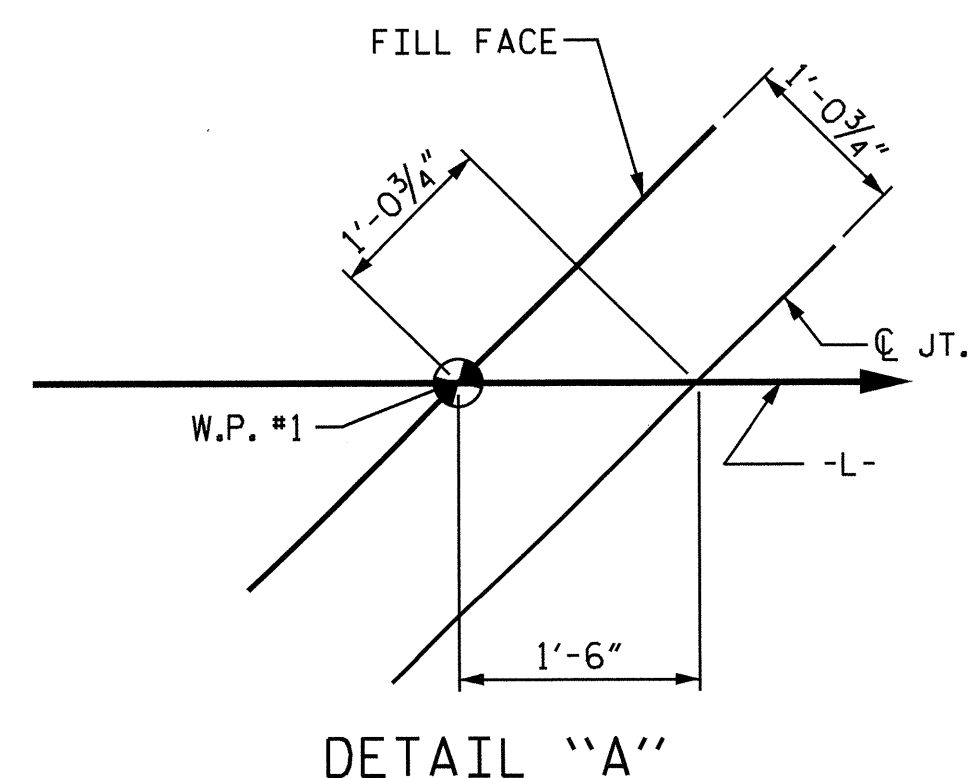
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-6
TOTAL SHEETS					37



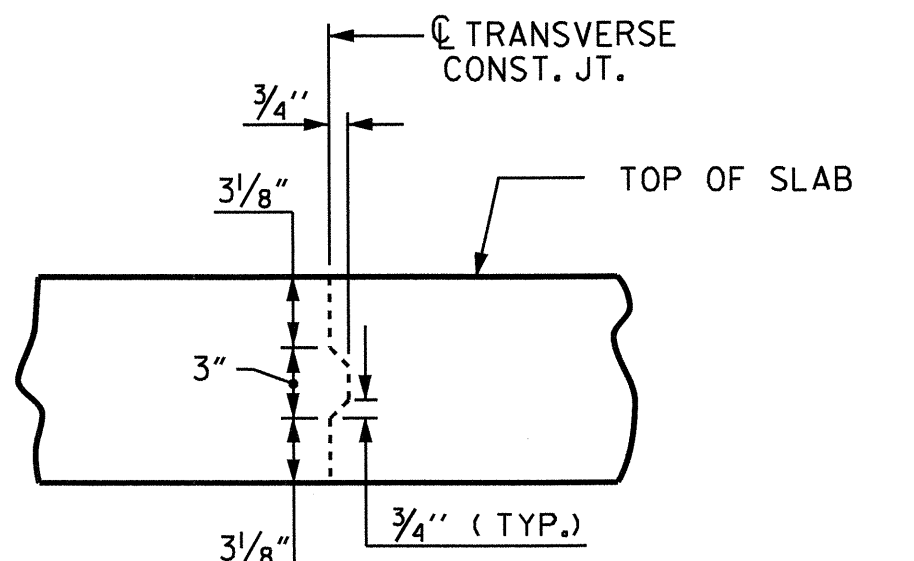
DRAWN BY : J. G. KHARVA DATE : 4/19/12  
 CHECKED BY : H. T. DIEU DATE : 5/07/12  
 DESIGN ENGINEER OF RECORD : H.A. LOCKLEAR DATE : 3/12/13



THE QUANTITY OF #4 JI BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. JI BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF JI BARS SPECIFIED, ADDITIONAL JI BARS WILL NOT BE REQUIRED.



PLAN OF SPAN A



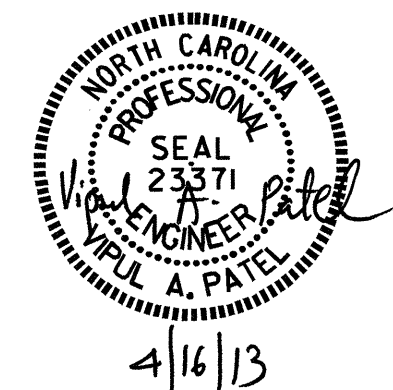
TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

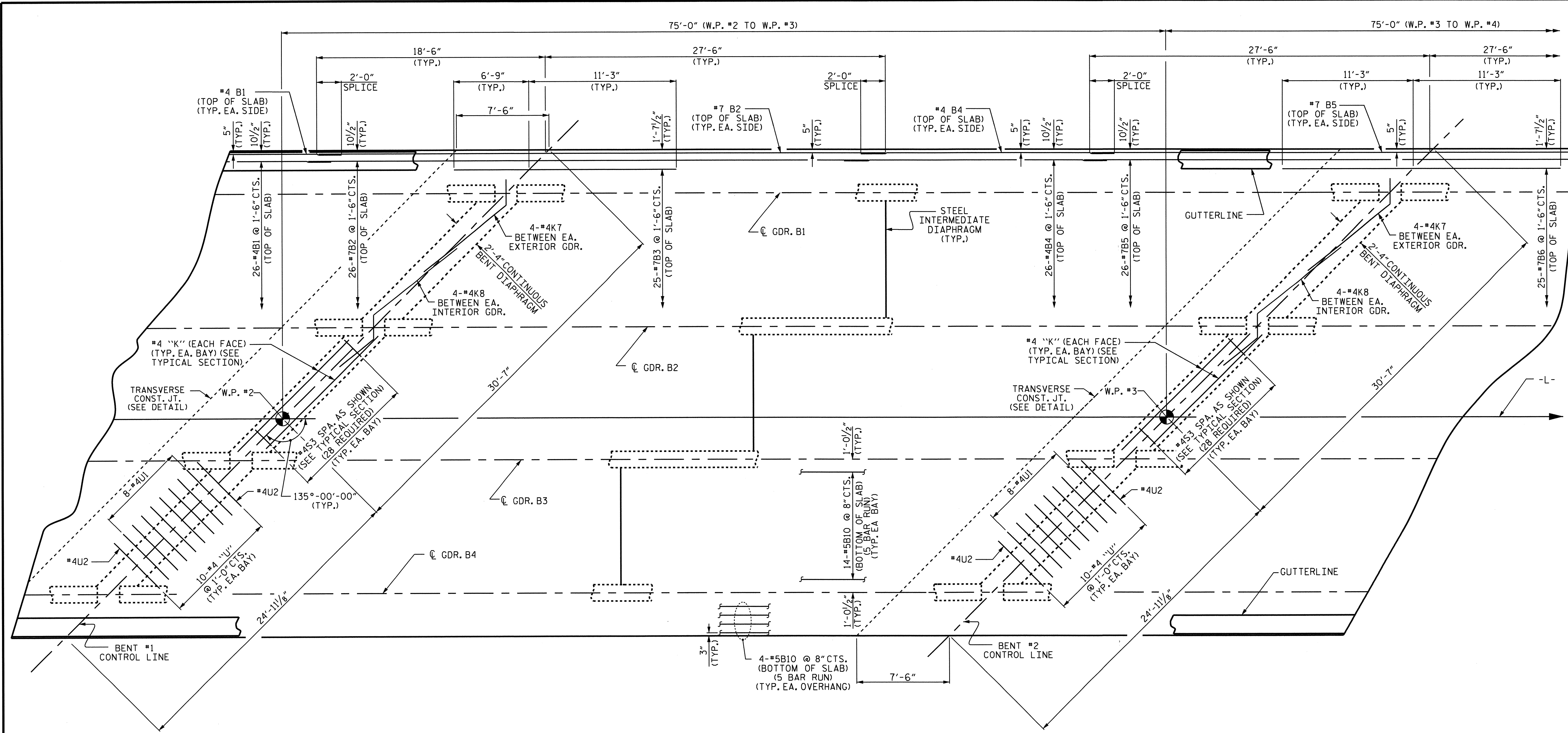
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 37

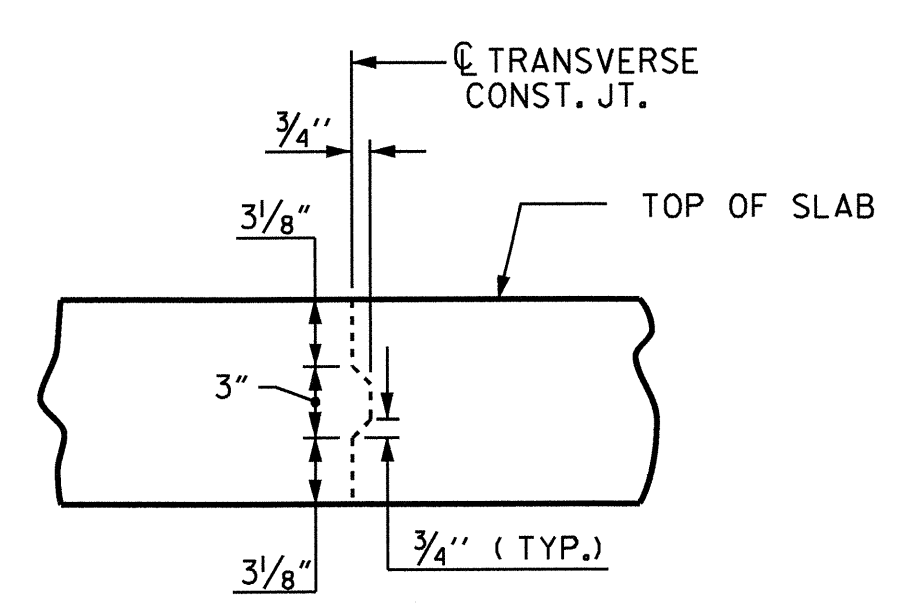


DRAWN BY: J. G. KHARVA      DATE: 04/23/12  
 CHECKED BY: H. T. DIEU      DATE: 05/07/12  
 DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR      DATE: 03/12/13



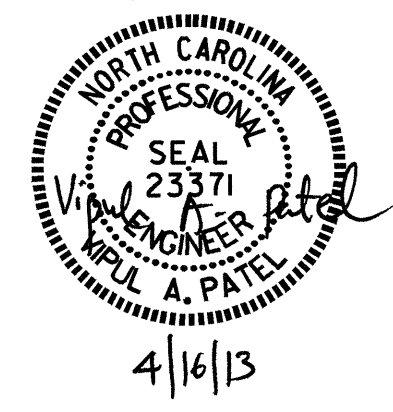


**PLAN OF SPAN B**



**TRANSVERSE CONSTRUCTION JOINT DETAIL**

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT



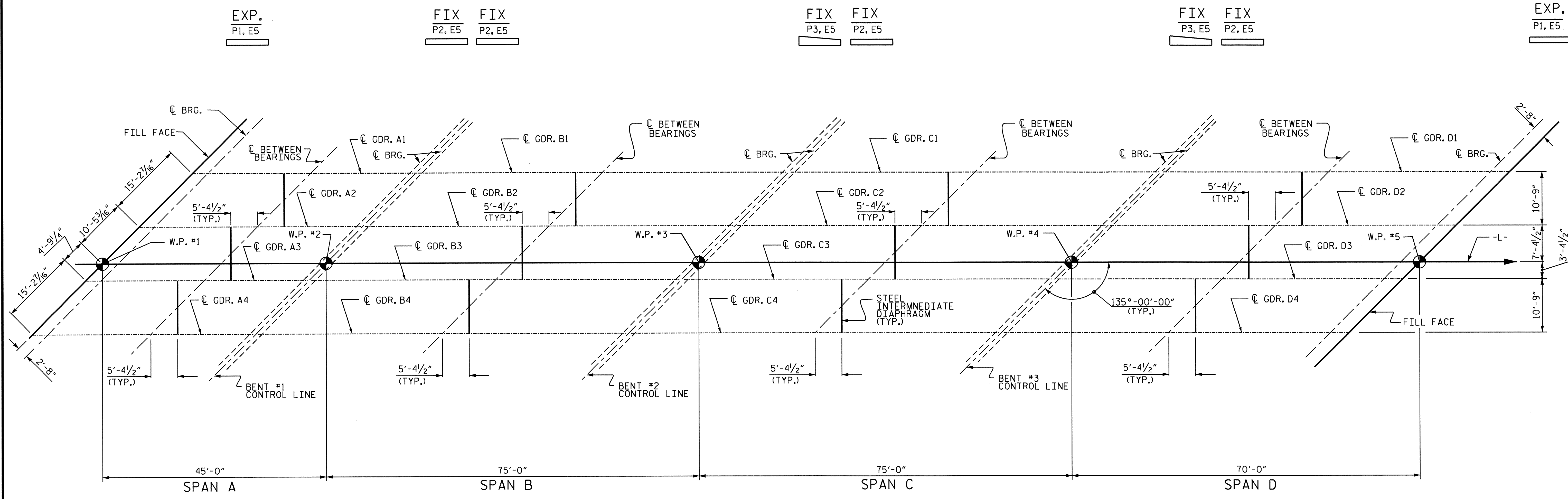
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-8
TOTAL SHEETS					37

DRAWN BY: J. G. KHARVA      DATE: 04/23/12  
 CHECKED BY: H. T. DIEU      DATE: 05/07/12  
 DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR      DATE: 03/12/13







EXP.  
P1, E5

FIX  
P2, E5    FIX  
P2, E5

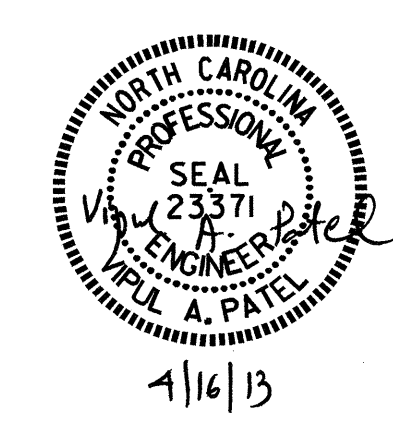
FIX  
P3, E5    FIX  
P2, E5

FIX  
P3, E5    FIX  
P2, E5

EXP.  
P1, E5

GIRDER LAYOUT

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-



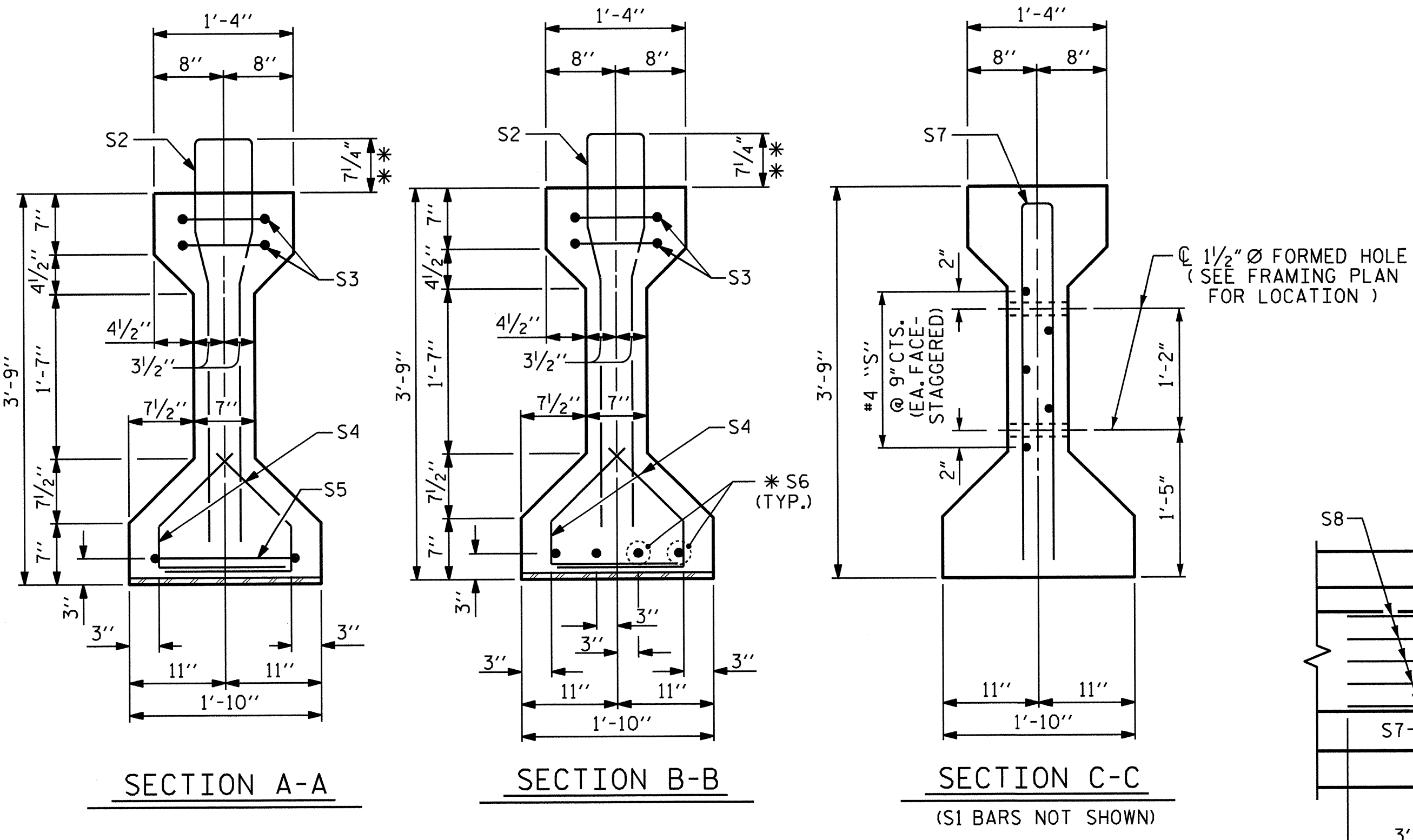
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 GIRDER LAYOUT

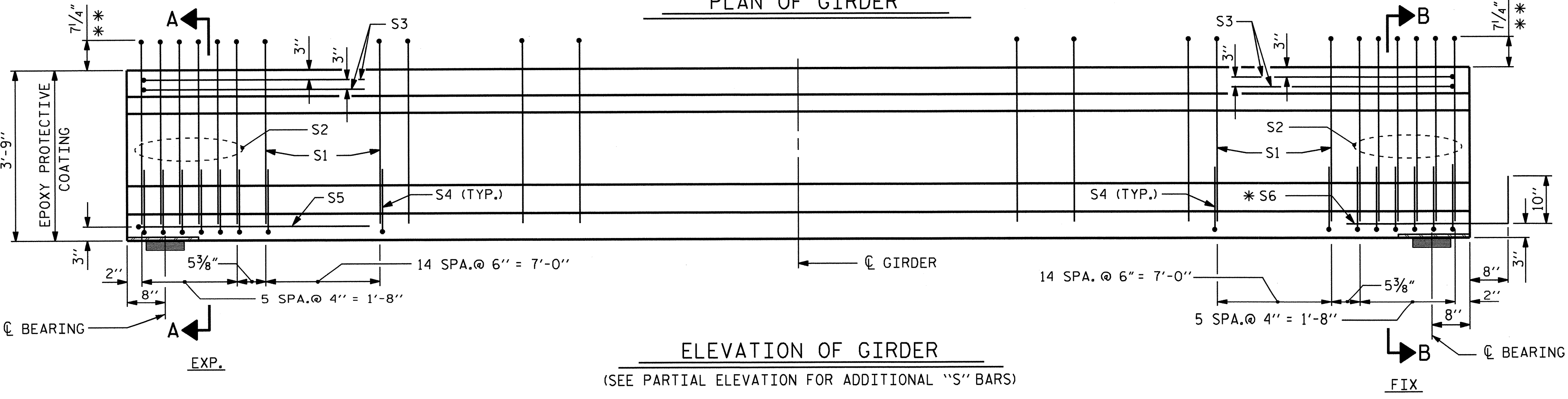
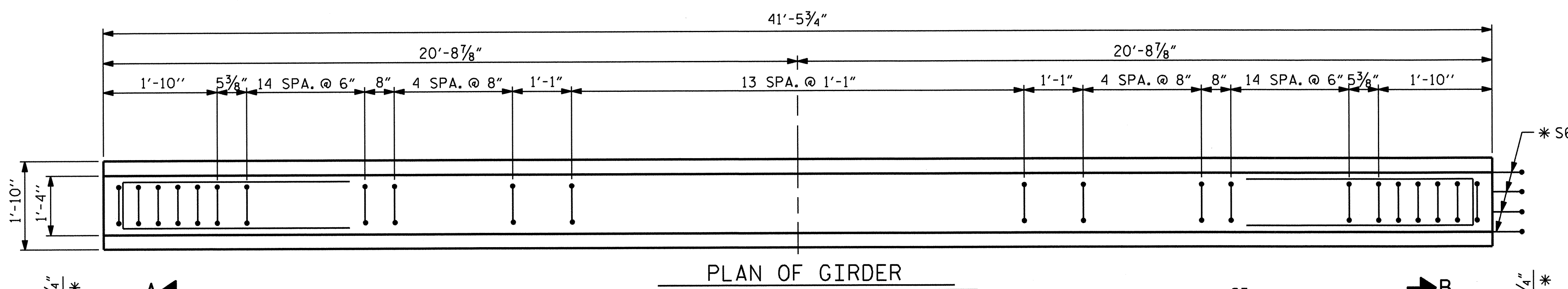
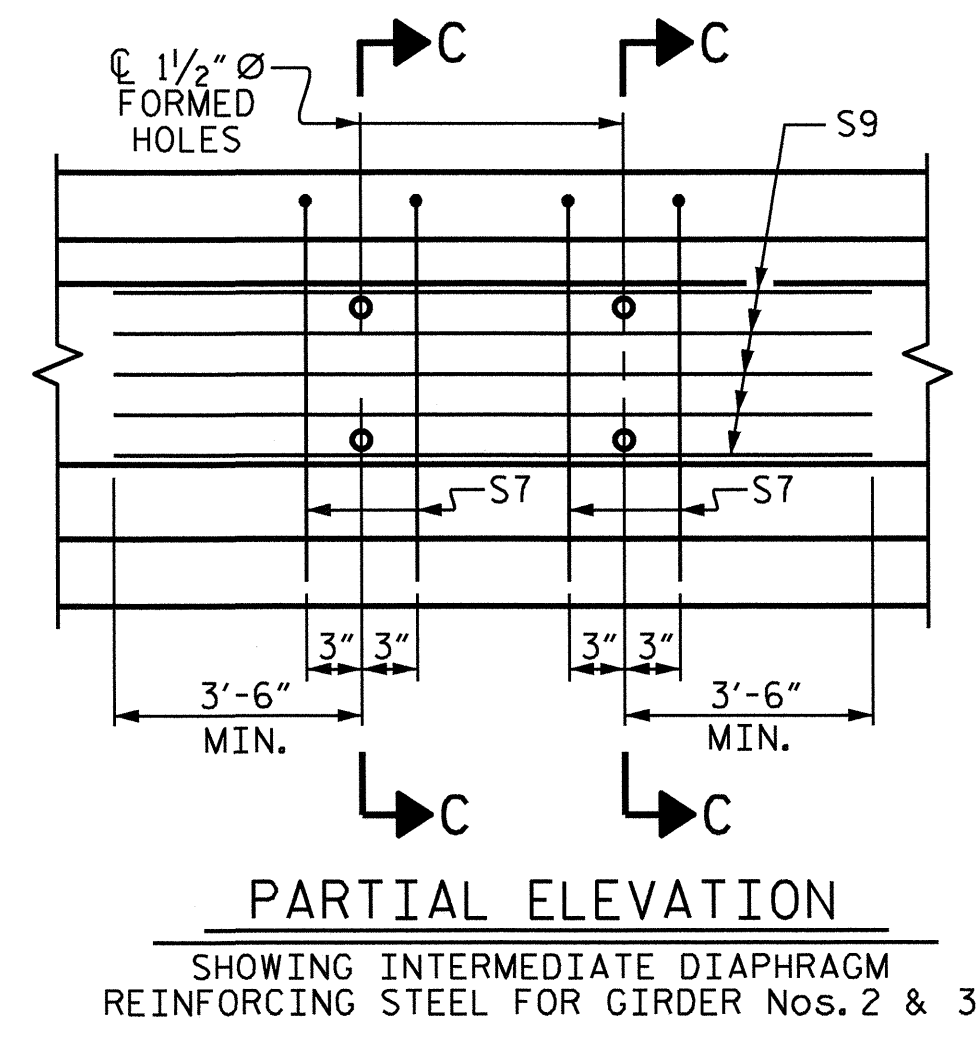
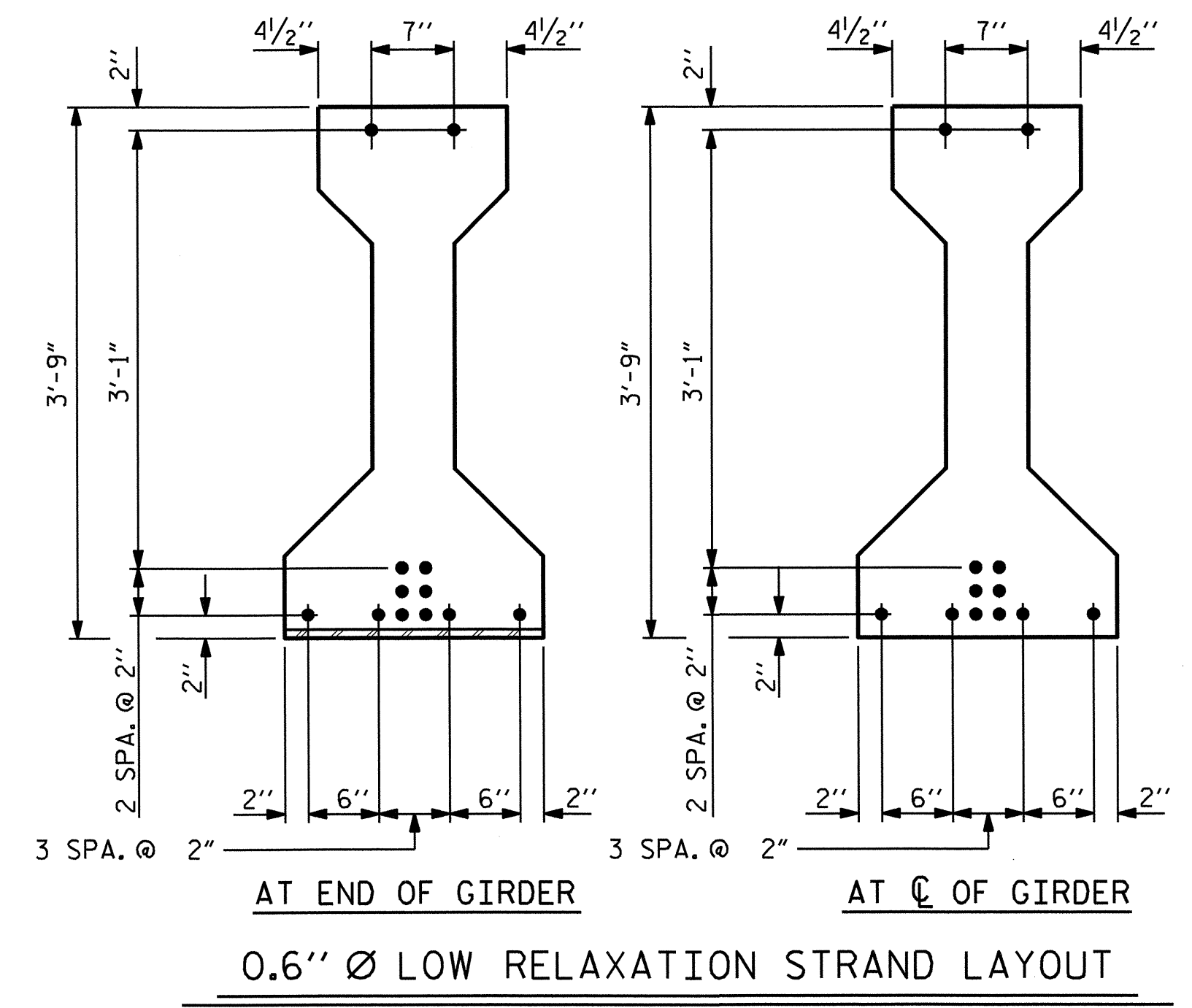
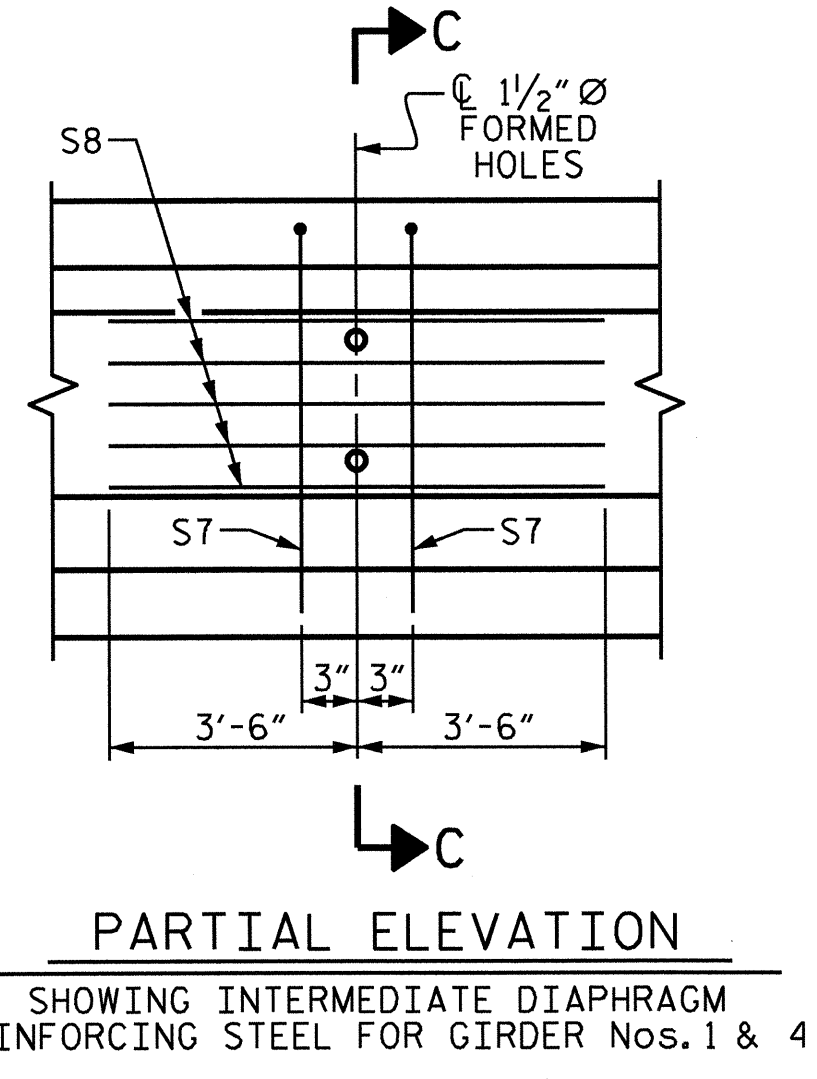
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS 37	
2			4				

DRAWN BY : J. G. KHARVA    DATE : 04/26/12  
 CHECKED BY : H. T. DIEU    DATE : 05/07/12  
 DESIGN ENGINEER OF RECORD : H.A. LOCKLEAR    DATE : 03/12/13

15-APR-2013 13:48  
 X:\Structures\plans\B-4643.SD.FP.dgn  
 jpodams



\*\* - S1 & S2 BARS WILL HAVE AN EXTENSION OF 7/4" ABOVE THE TOP OF THE GIRDER THAT IS CONSTANT ALONG THE GIRDER LENGTH.



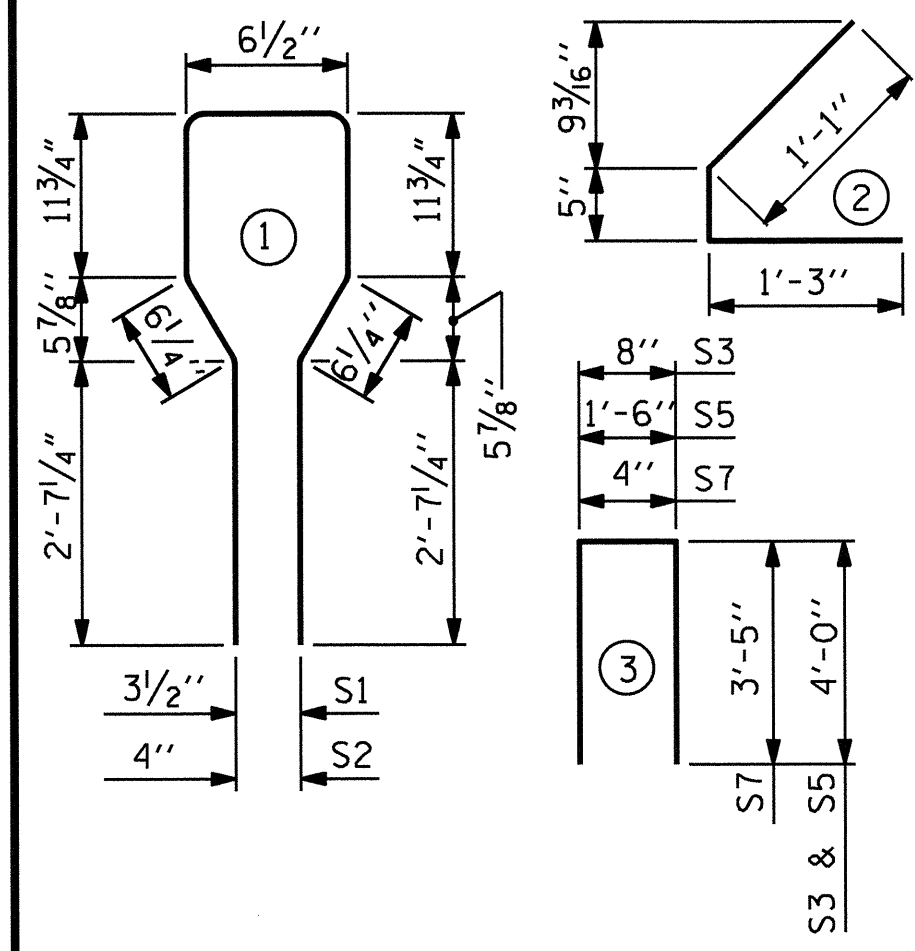
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	54	#4	1	8'-9"	316	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	84	#4	2	2'-9"	154	
S5	1	#4	3	9'-6"	6	
* S6	4	#5	STR	3'-8"	15	
S7	2	#5	3	7'-2"	15	
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	17'-9"	59

\* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

**BAR TYPES**

ALL BAR DIMENSIONS ARE OUT-TO-OUT



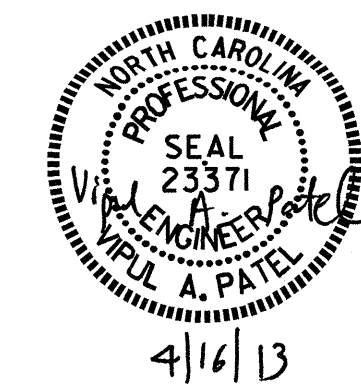
**QUANTITIES FOR ONE GIRDER**

	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
EXTERIOR GIRDER	710	6.0	12
INTERIOR GIRDER	761	6.0	12

**GIRDERS REQUIRED**

NUMBER	LENGTH	TOTAL LENGTH
4	41'-5 3/4"	165.92

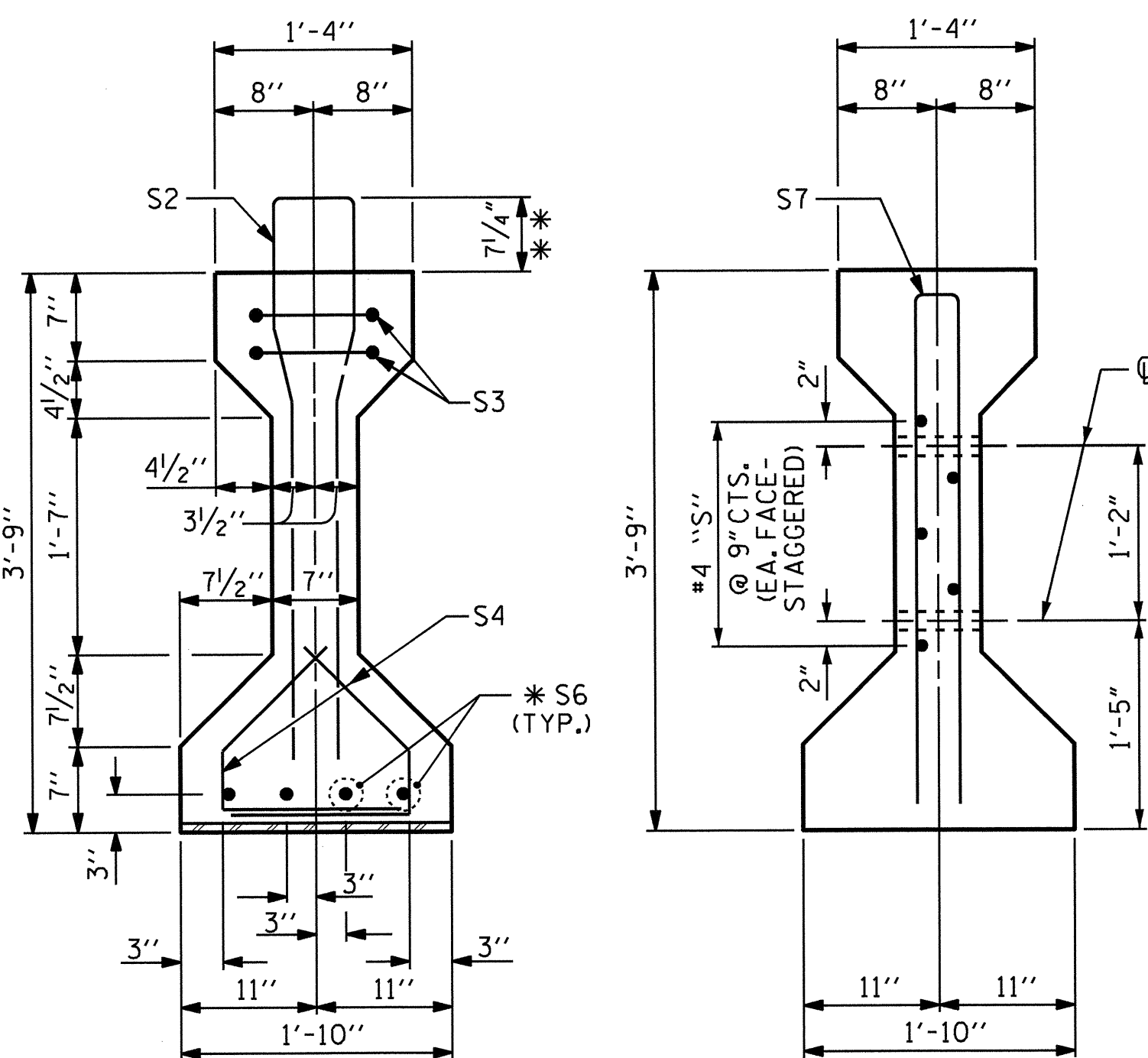
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 AASHTO TYPE III  
 PRESTRESSED CONCRETE GIRDER  
 CONTINUOUS FOR LIVE LOAD  
 SPAN A

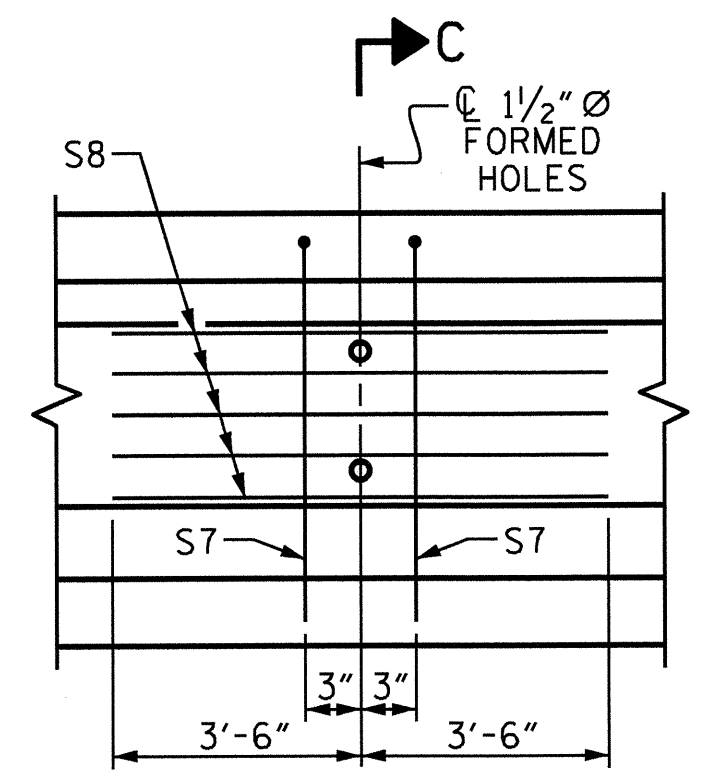
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			37

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR DATE: 3/12
CHECKED BY: R.L. CHESSON DATE: 5/12
DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/12/11 MAA/GM



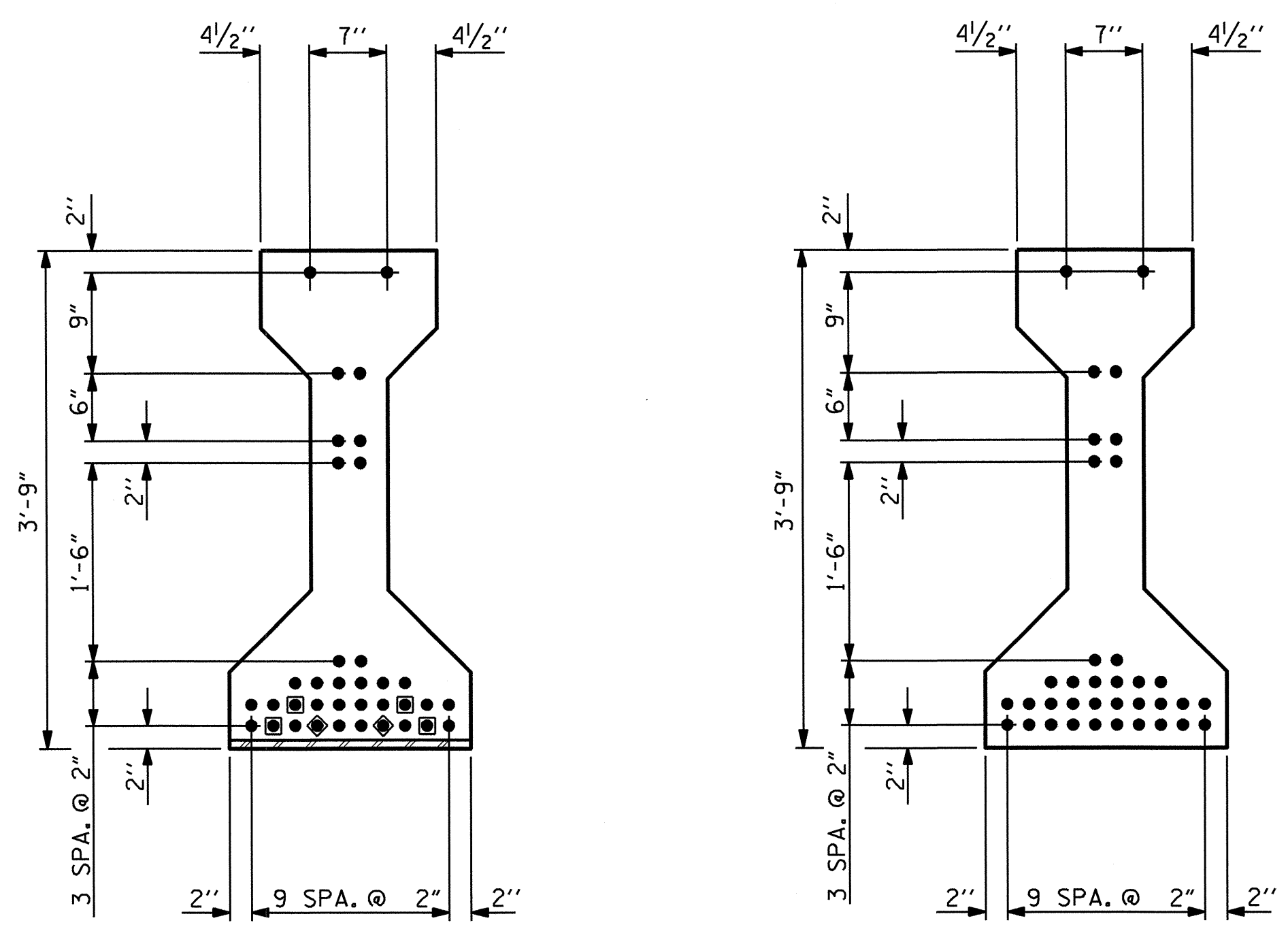
SECTION B-B  
SECTION C-C (S1 BARS NOT SHOWN)

\*\* - S1 & S2 BARS WILL HAVE AN EXTENSION ABOVE THE TOP OF THE GIRDER THAT VARIES FROM 7/4" AT THE GIRDER END TO 6" AT MIDSPAN.



PARTIAL ELEVATION

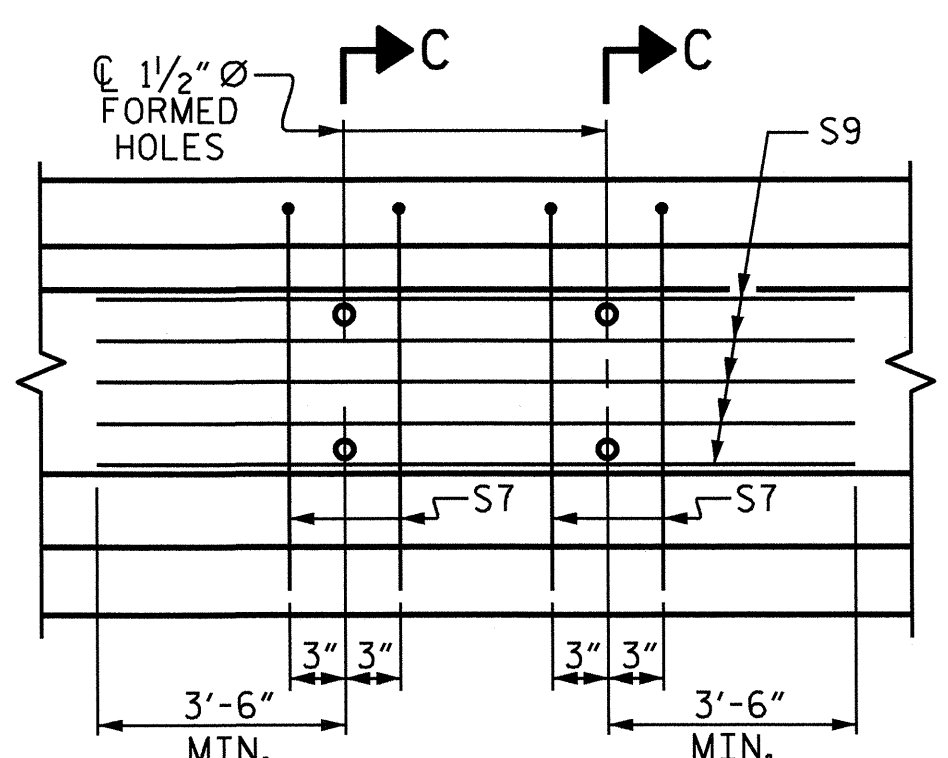
REINFORCING STEEL FOR GIRDER Nos. 1 & 4



AT END OF GIRDER AT C OF GIRDER

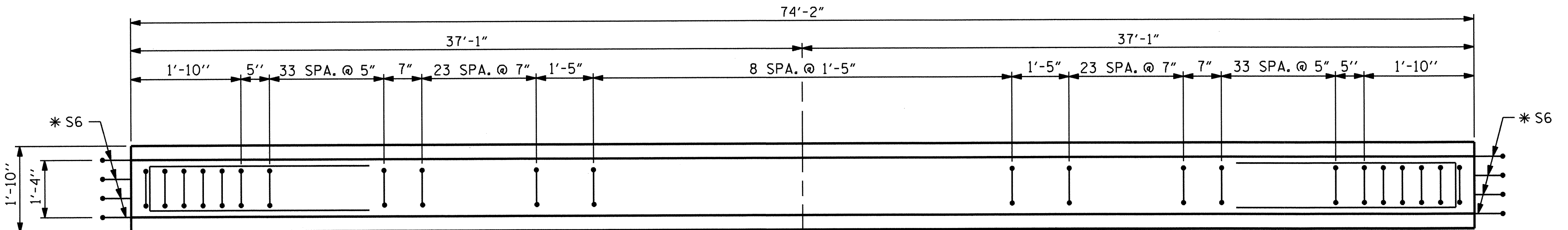
0.6" Ø LOW RELAXATION STRAND LAYOUT

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

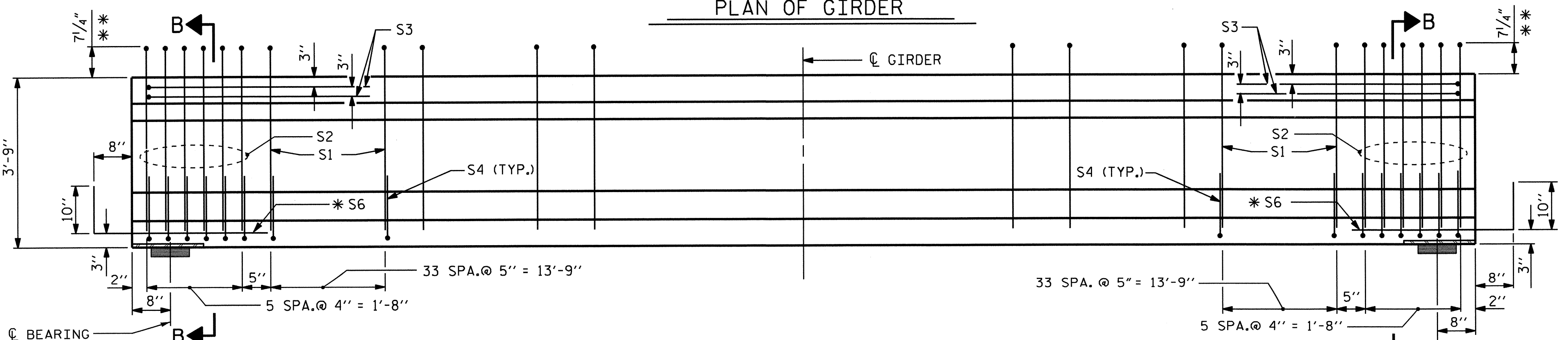


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 & 3



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

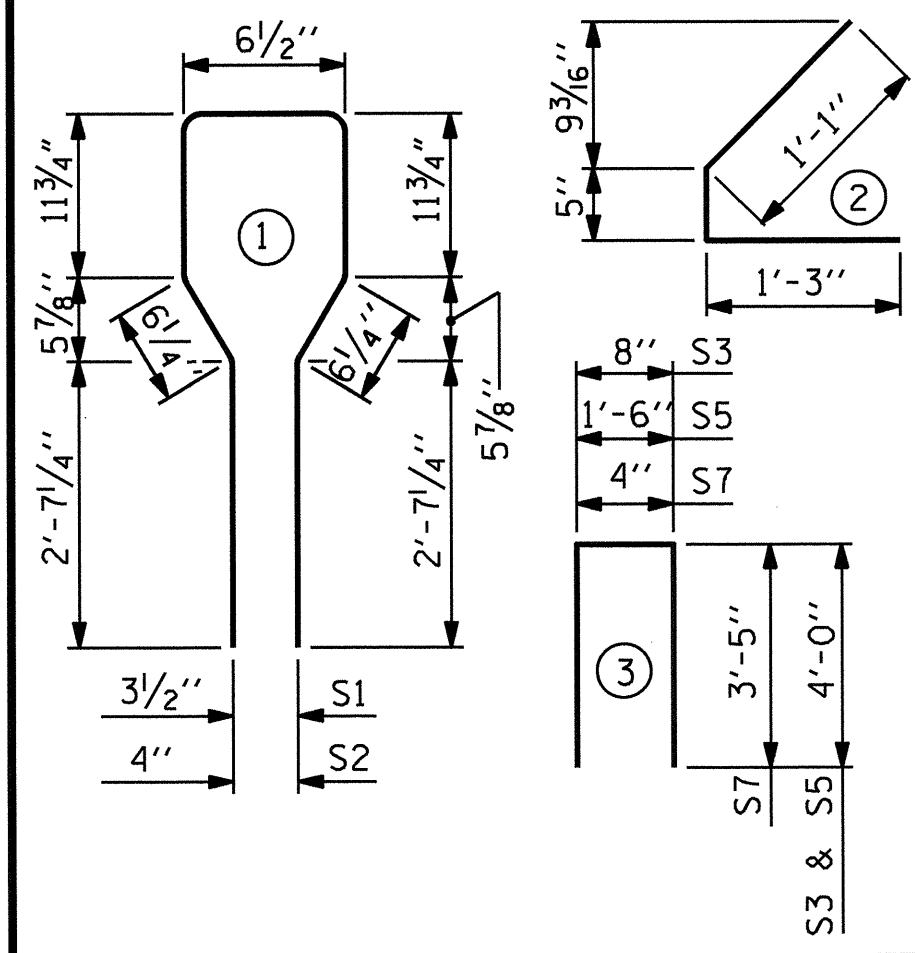
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	125	#5	1	8'-9"	1141	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	160	#4	2	2'-9"	294	
* S6	8	#5	STR	3'-8"	31	
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	17'-9"	59

\* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



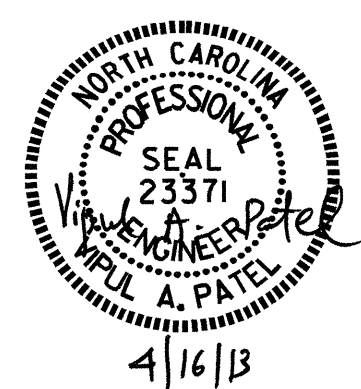
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL (LB.)	9000 PSI CONCRETE (C.Y.)	0.6" Ø L. R. STRANDS (No.)
EXTERIOR GIRDER	1685	10.7	36
INTERIOR GIRDER	1736	10.7	36

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
SPAN B	4	74'-2"	296.67
SPAN C	4	74'-2"	296.67

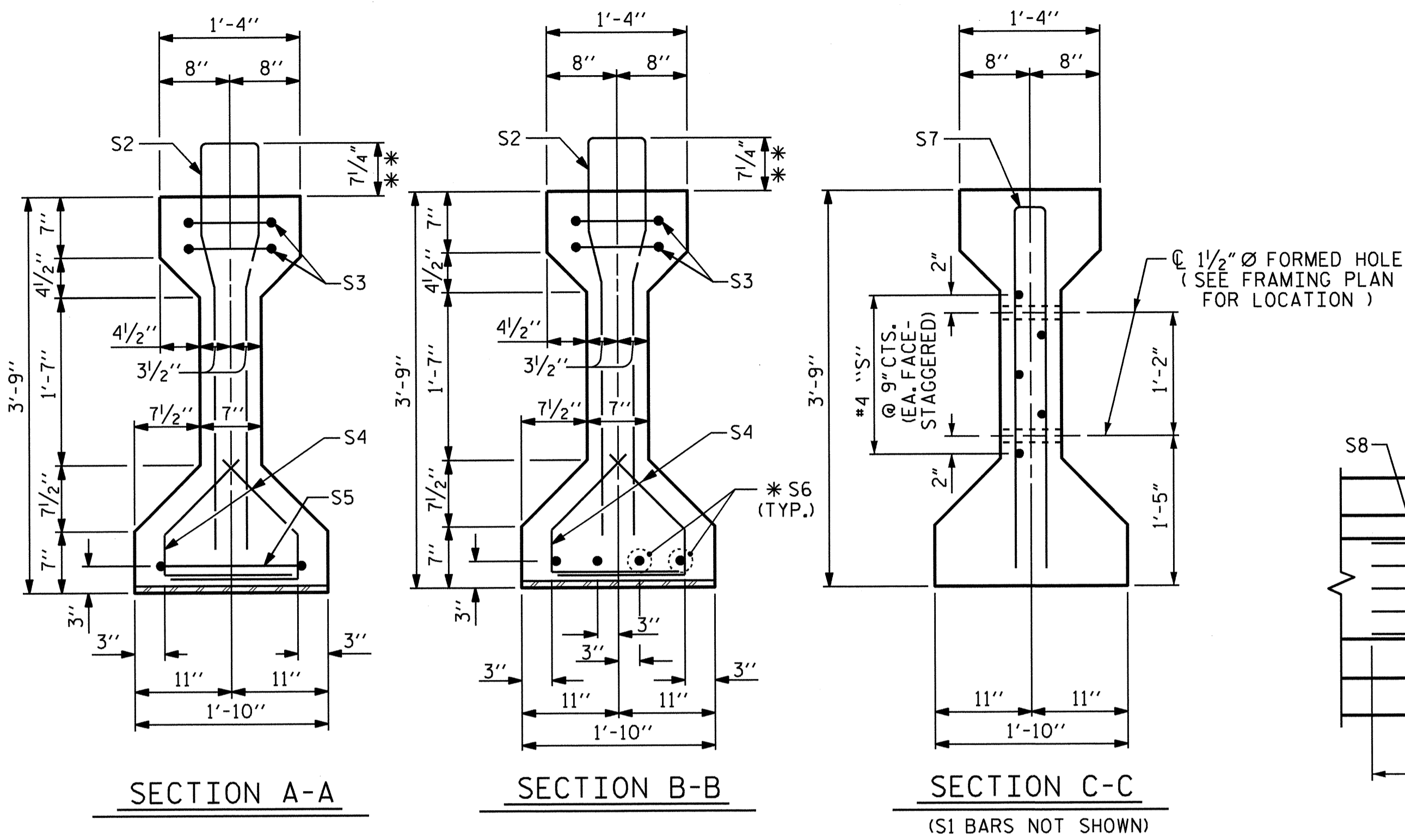
PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-



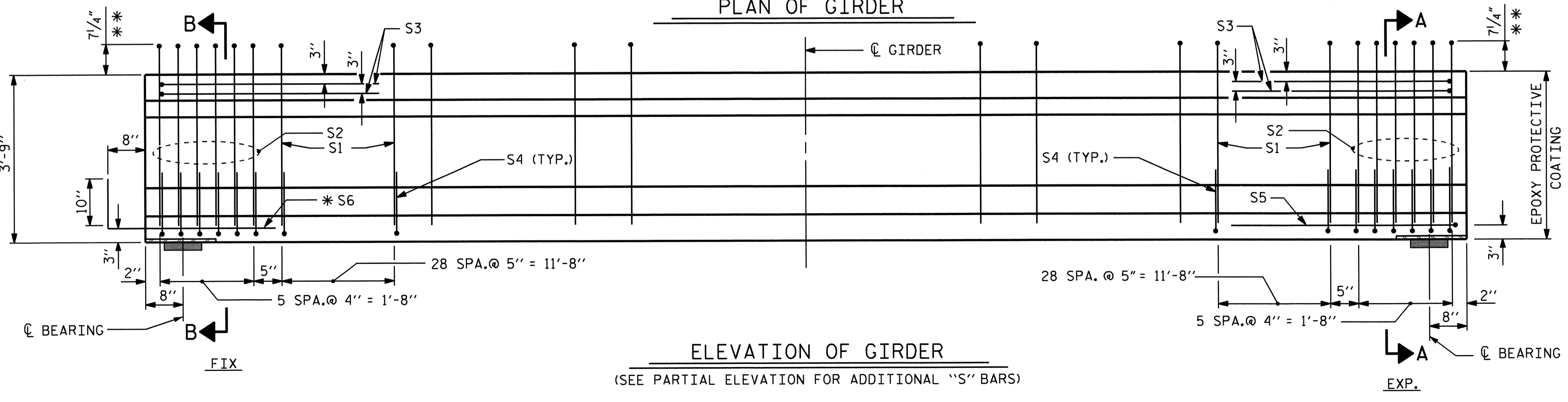
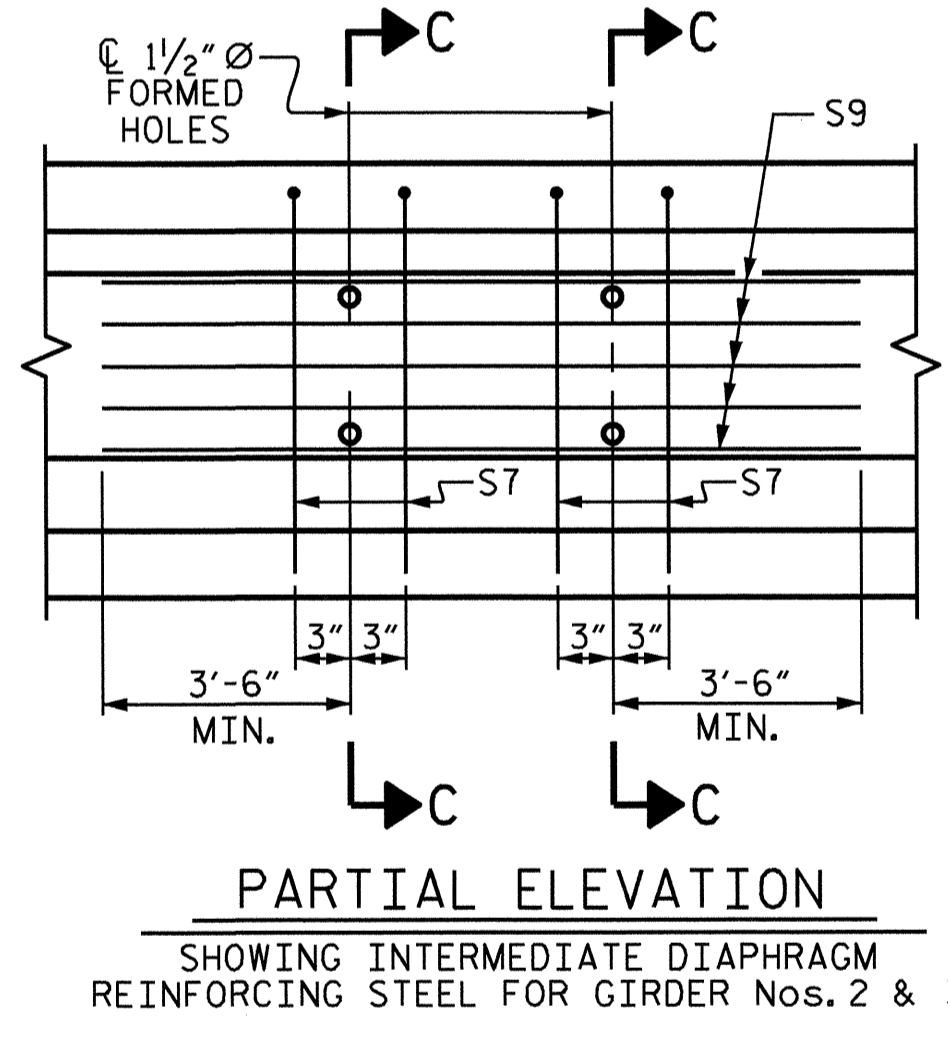
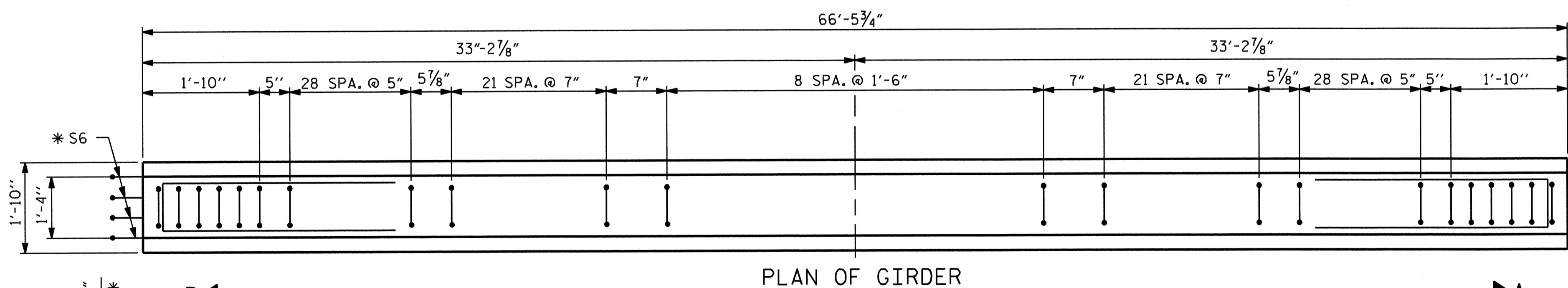
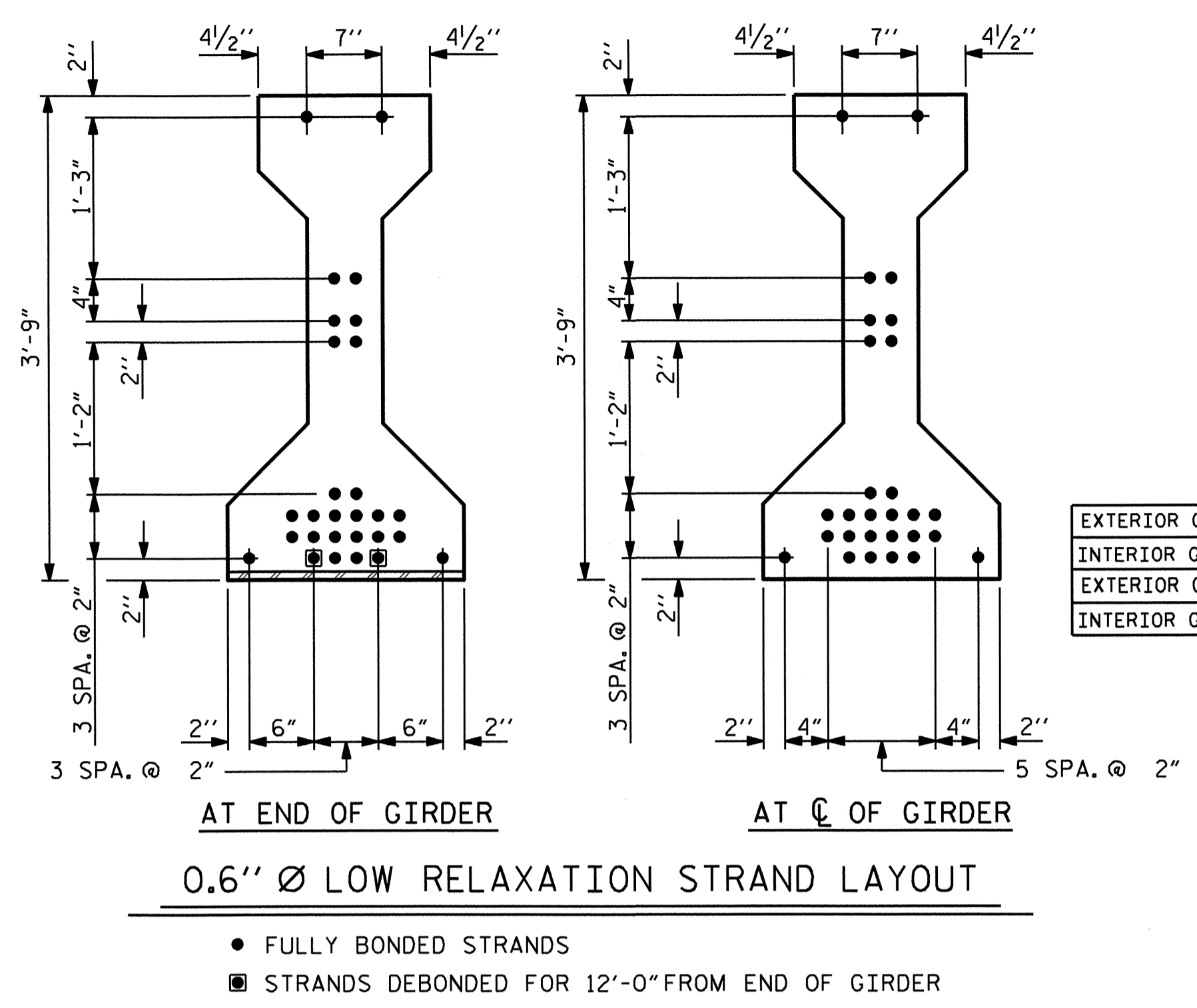
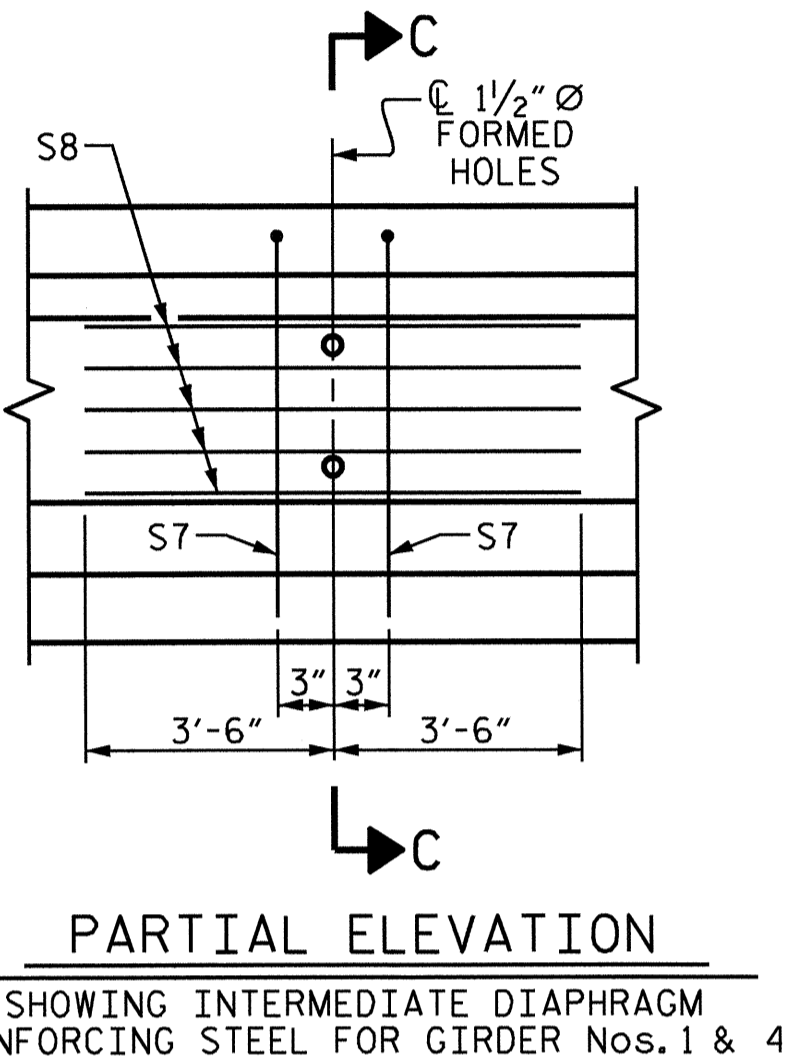
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
AASHTO TYPE III  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
SPAN B & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			37

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR DATE: 3/12
CHECKED BY: R.L. CHESSON DATE: 5/12
DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM



\*\* - S1 & S2 BARS WILL HAVE AN EXTENSION ABOVE THE TOP OF THE GIRDER THAT VARIES FROM 7 1/4" AT THE GIRDER END TO 6 1/2" AT MIDSPAN.



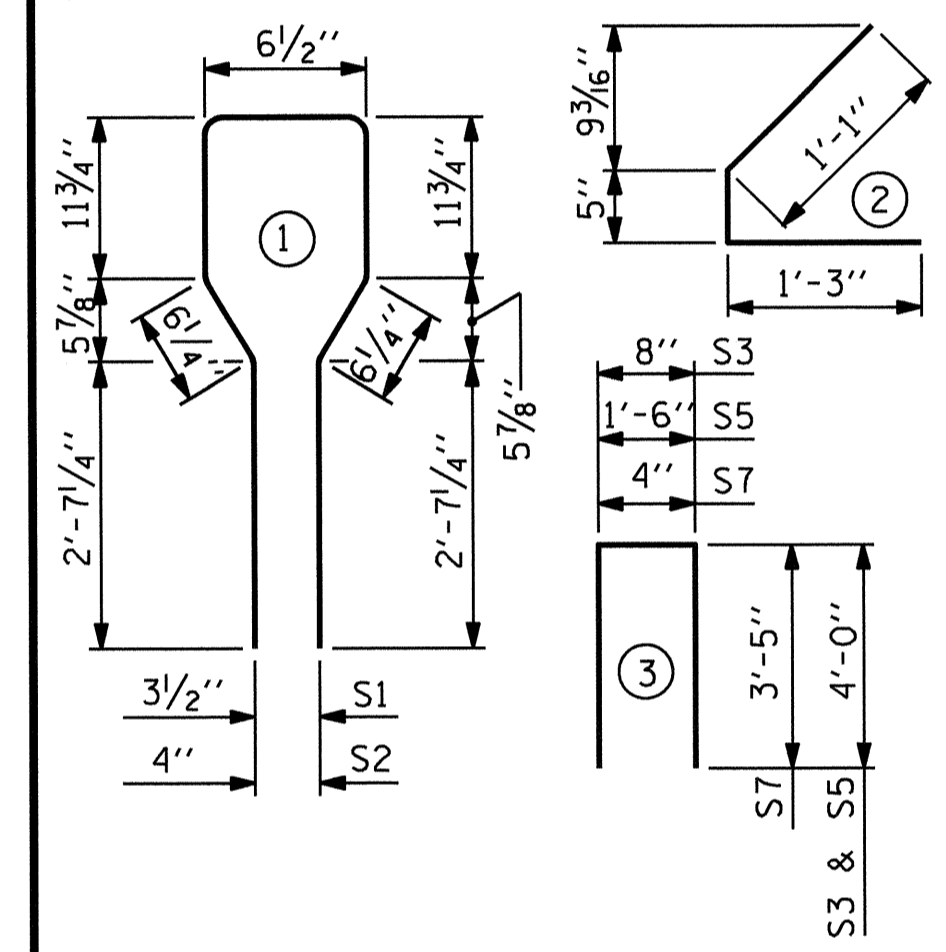
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	111	#5	1	8'-9"	1013	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	140	#4	2	2'-9"	257	
S5	1	#4	3	9'-6"	6	
*S6	4	#5	STR	3'-8"	15	
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	17'-9"	59

\* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



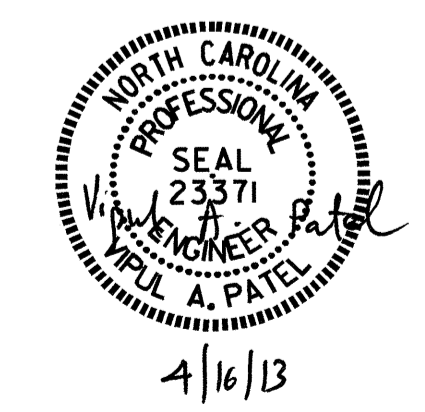
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
EXTERIOR GIRDER	1510	9.6	28
INTERIOR GIRDER	1561	9.6	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	66'-5 3/4"	265.92

PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
AASHTO TYPE III  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
SPAN D

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 37
2			4			

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR      DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR      DATE: 3/12
CHECKED BY: R.L. CHESSON      DATE: 5/12
DRAWN BY: ELR 8/91      REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91      REV. 5/1/06R TLA/GM
REV. 10/1/11      MAA/GM

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

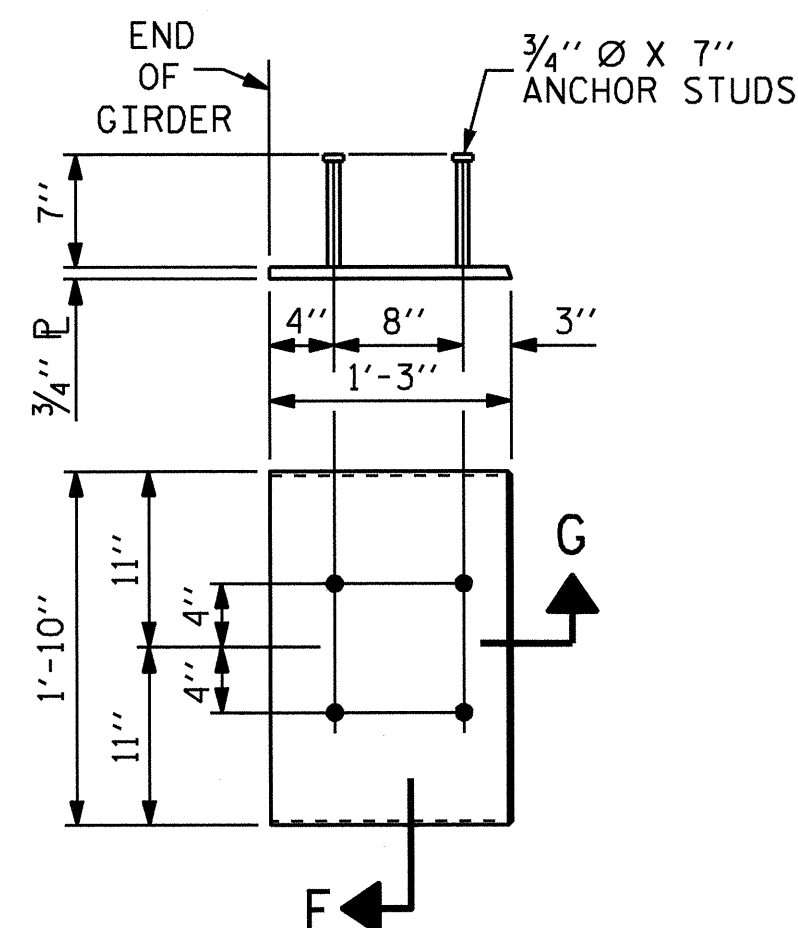
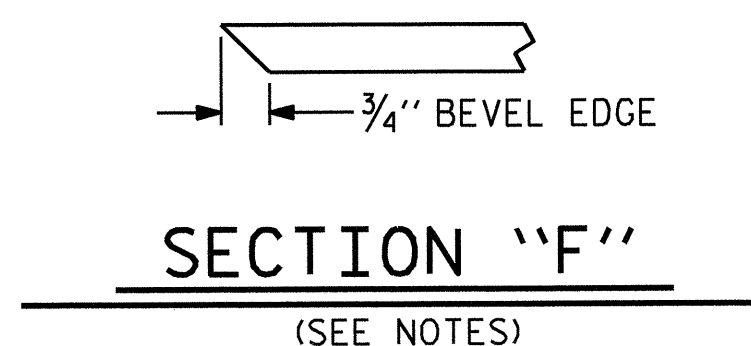
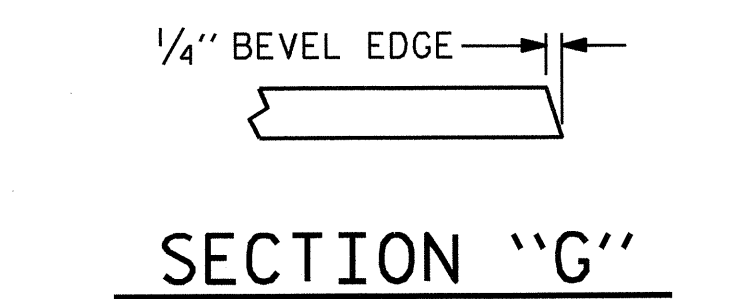
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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 4000 PSI FOR SPAN A, 7200 PSI FOR SPANS B AND C AND 5300 PSI FOR SPAN D.

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".



EMBEDDED PLATE "B-1" DETAILS  
FOR AASHTO TYPE III GIRDER  
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
0.6" Ø LOW RELAXATION	SPAN A												SPAN B & C										SPAN D											
	GIRDERS 1 THRU 4												GIRDERS 1 THRU 4										GIRDERS 1 THRU 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.000	0.013	0.025	0.034	0.040	0.042	0.040	0.034	0.025	0.013	0.000	0.000	0.082	0.156	0.213	0.249	0.262	0.249	0.213	0.156	0.082	0.000	0.000	0.049	0.094	0.128	0.150	0.157	0.150	0.128	0.094	0.049	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.004	0.008	0.012	0.014	0.014	0.014	0.012	0.008	0.004	0.000	0.000	0.037	0.069	0.095	0.111	0.116	0.111	0.095	0.069	0.037	0.000	0.000	0.026	0.050	0.068	0.080	0.084	0.080	0.068	0.050	0.026	0.000
FINAL CAMBER	↑	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	9/16"	1 1/16"	1 7/16"	1 5/8"	1 3/4"	1 5/8"	1 7/16"	1 1/16"	9/16"	0	0	1/4"	1/2"	3/4"	13/16"	7/8"	13/16"	3/4"	1/2"	1/4"	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. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS &  
DEAD LOAD DEFLECTIONS

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR DATE: 3/12
CHECKED BY: R.L. CHESSON DATE: 5/12
DRAWN BY: ELR 11/91 REV. 7/10/01RR LES/RDR
CHECKED BY: GRP 11/91 REV. 5/1/06 TLA/GM
REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			37



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

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE 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.

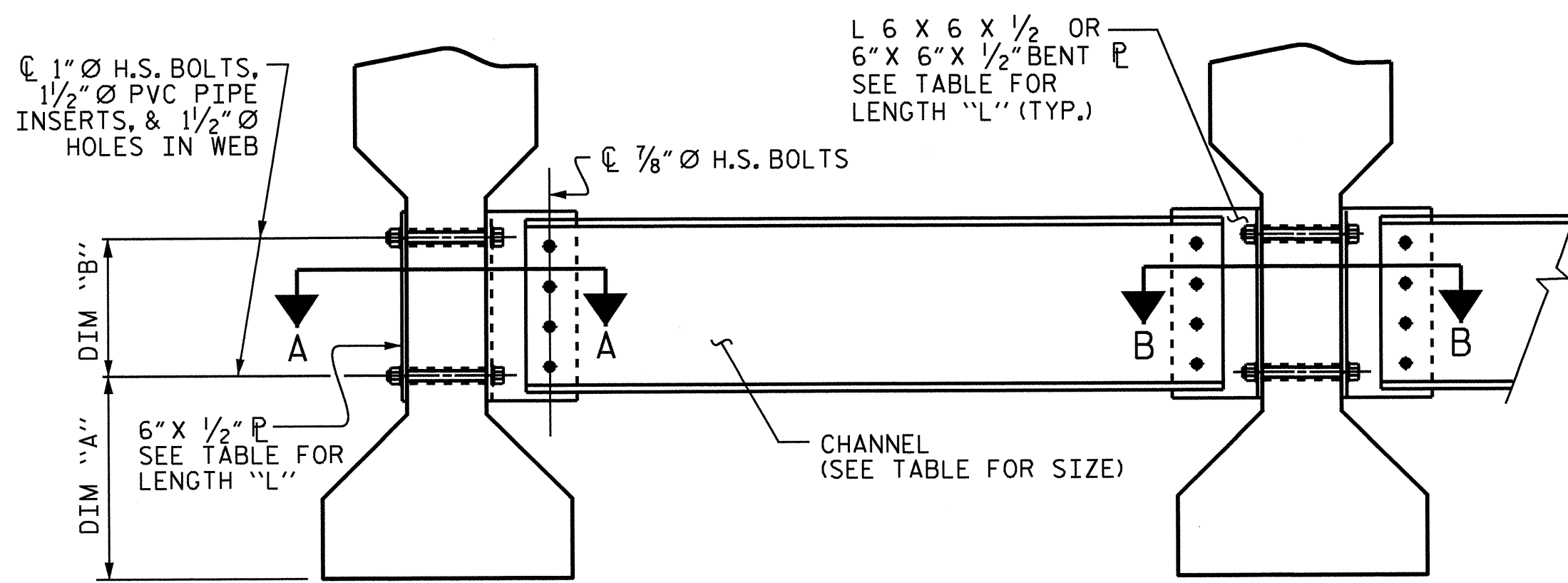
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

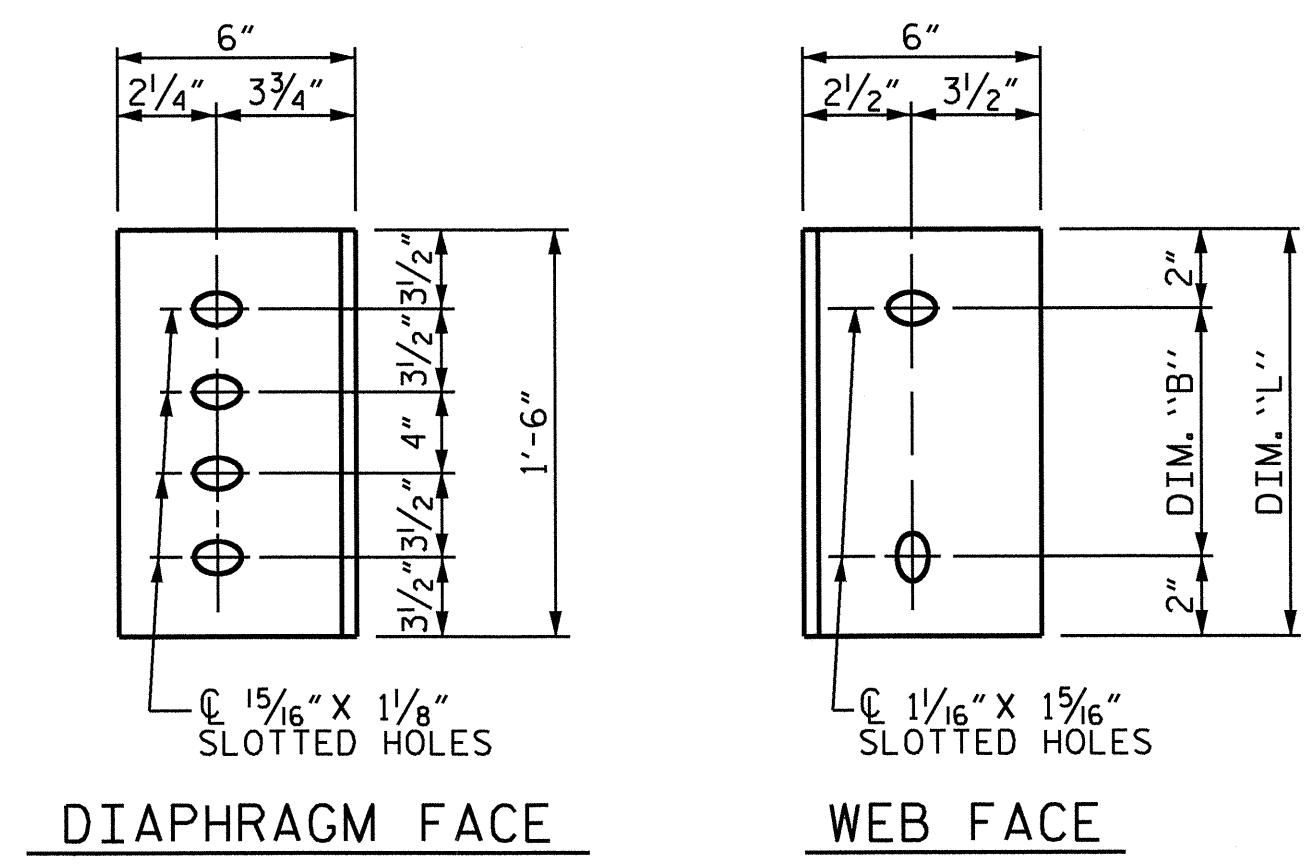
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

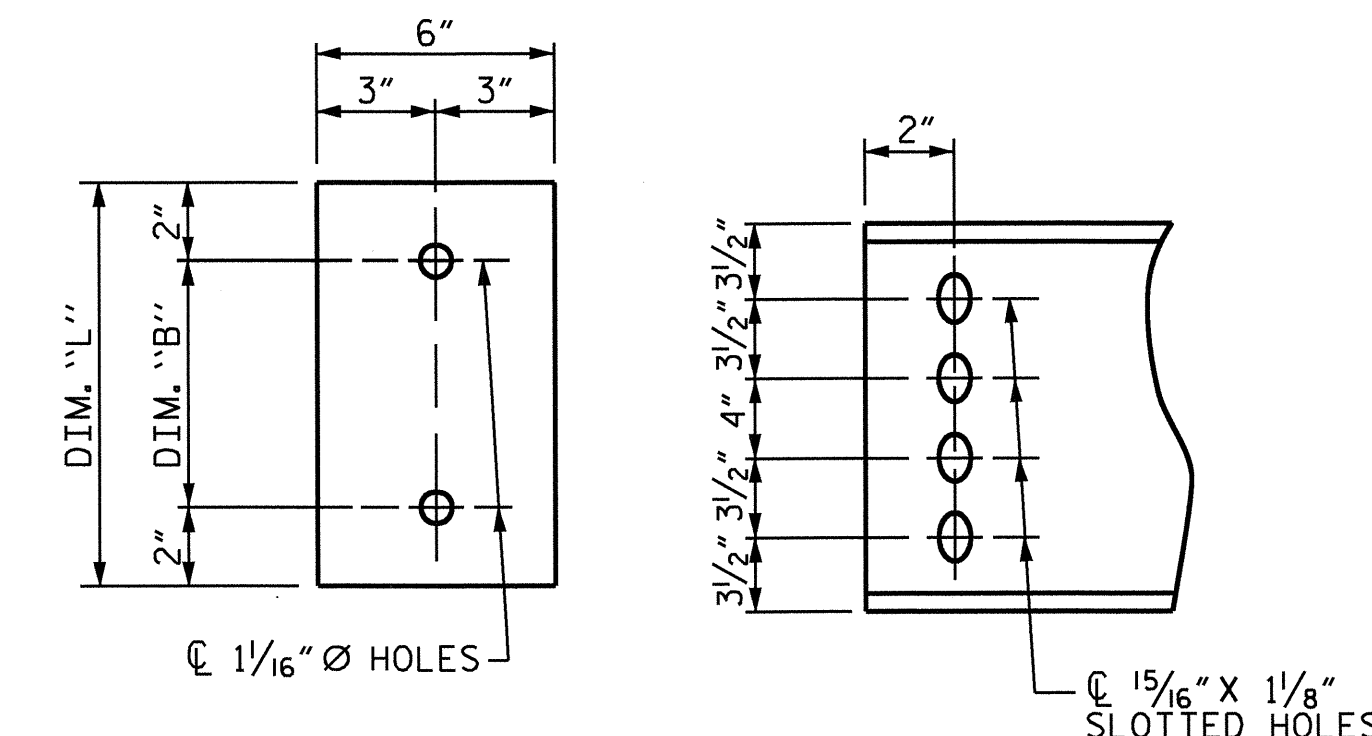
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



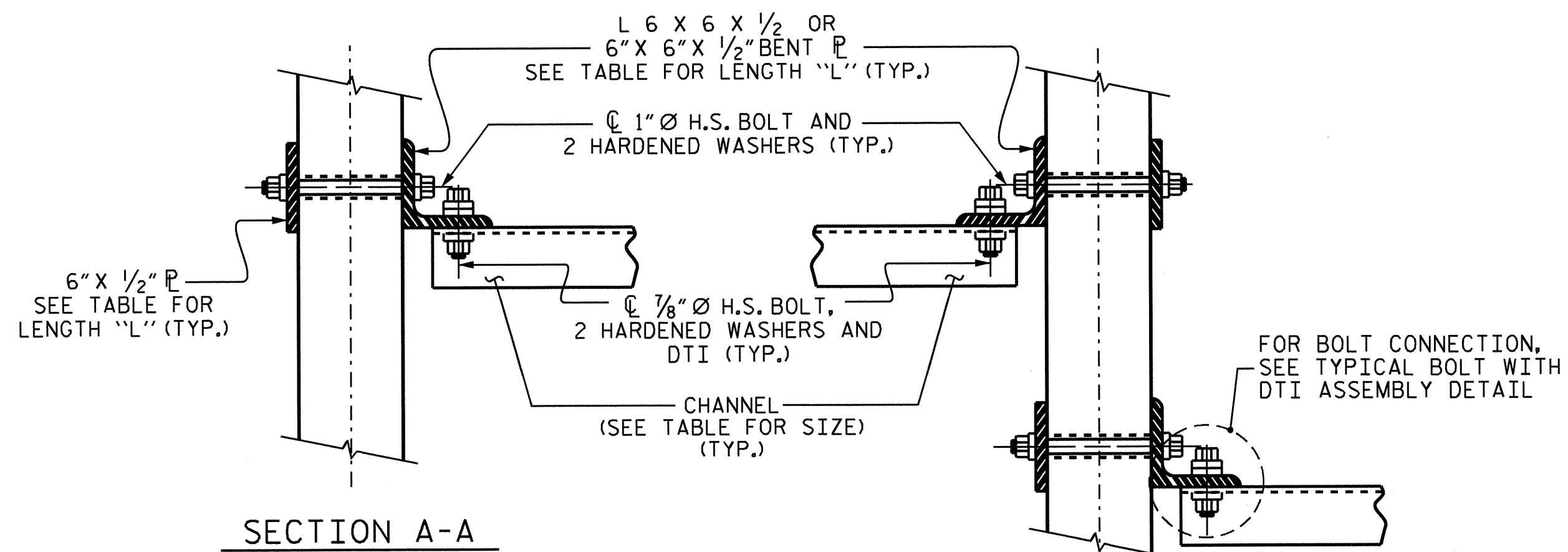
**EXTERIOR GIRDER INTERIOR GIRDER**  
**PART SECTION AT INTERMEDIATE DIAPHRAGM**



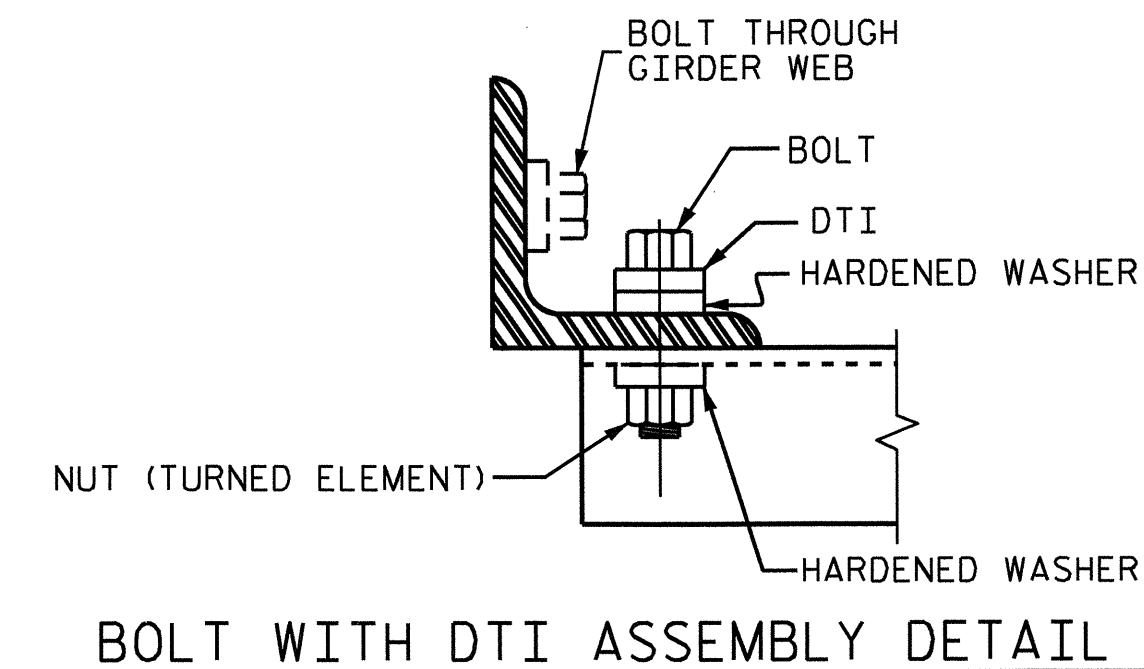
**DIAPHRAGM FACE WEB FACE**  
**CONNECTOR PLATE DETAILS**



**PLATE DETAILS CHANNEL END**



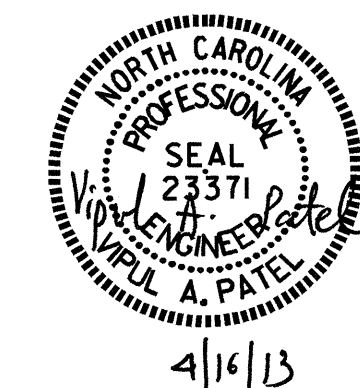
**SECTION A-A SECTION B-B**  
**CONNECTION DETAILS**



**TABLE**

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"

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STANLY COUNTY  
 STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 INTERMEDIATE  
 STEEL DIAPHRAGMS  
 FOR TYPE III  
 PRESTRESSED CONCRETE  
 GIRDERS

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR	DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR	DATE: 2/12
CHECKED BY: R.L. CHESSON	DATE: 5/12
DRAWN BY: TLA 6/05	ADDED 10/21/05
CHECKED BY: VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			37
2			4			

**NOTES**

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

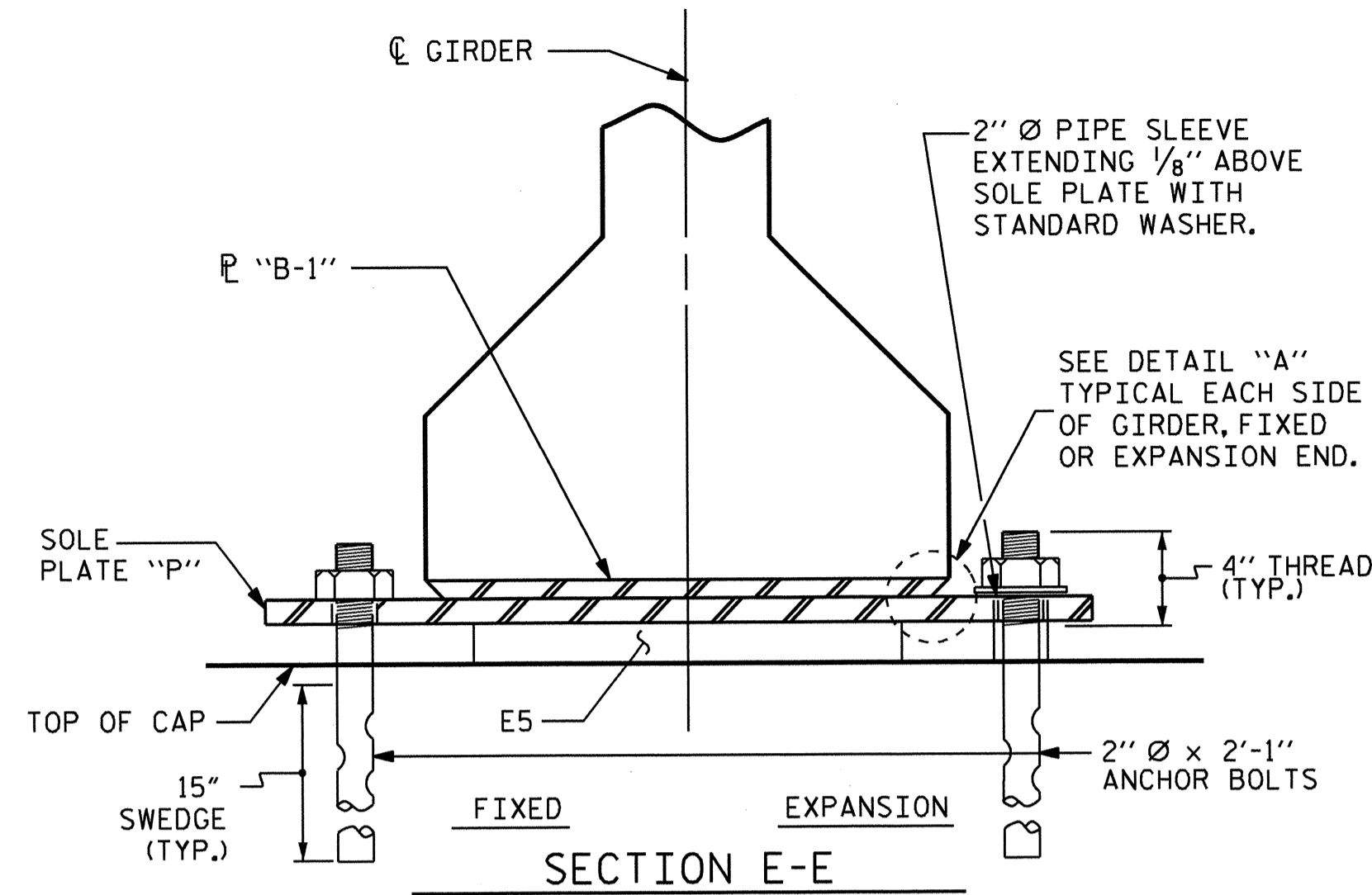
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

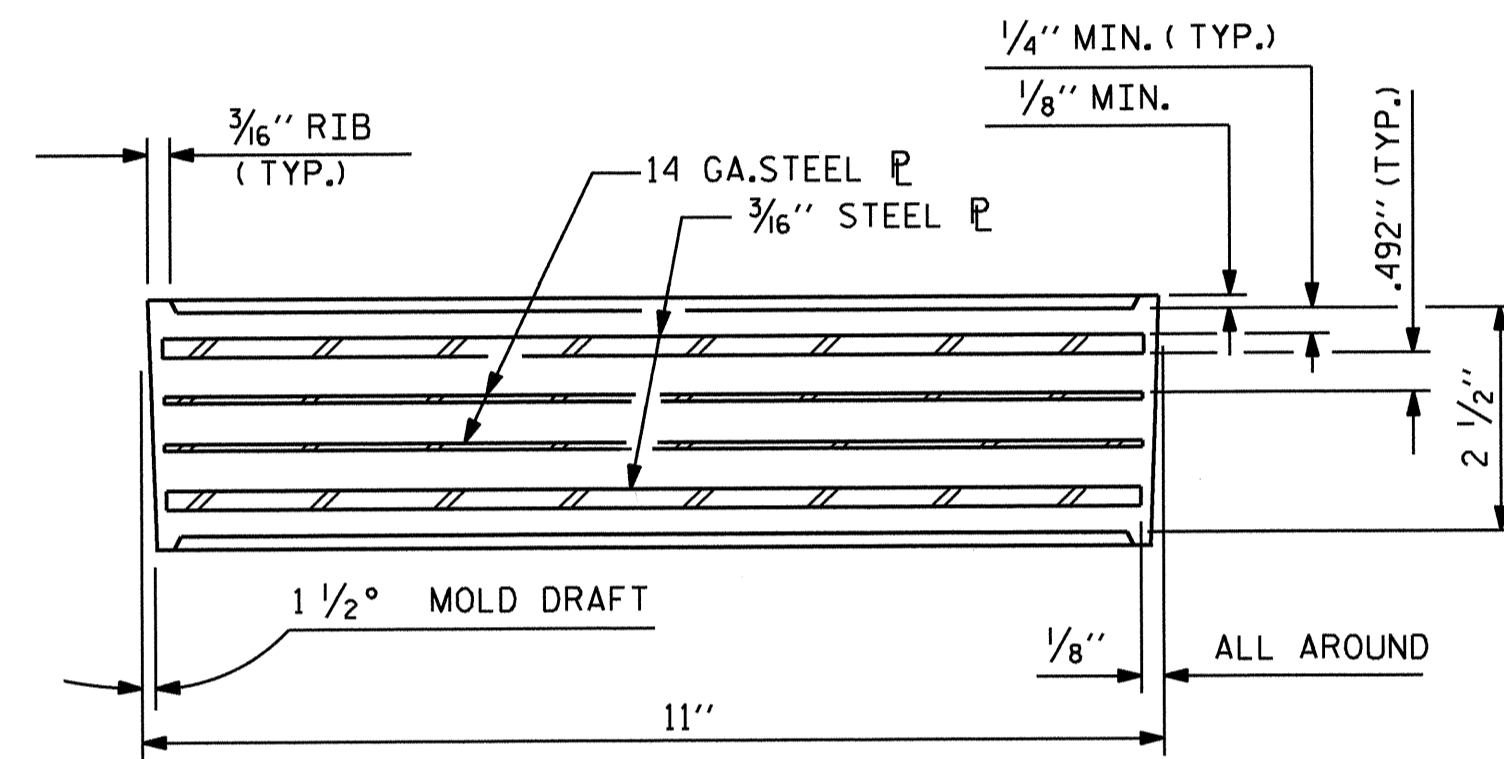
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

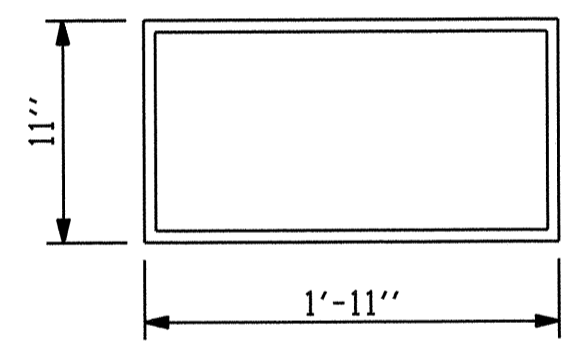


— LOAD RATINGS —

TYPE VI	MAX.D.L.+ L.L.
	211 K



TYPICAL SECTION OF ELASTOMERIC BEARINGS

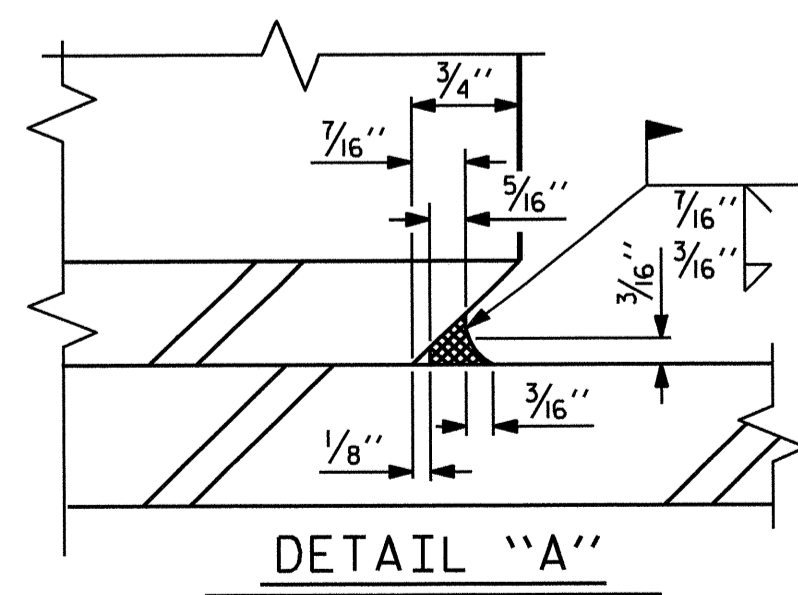


E5 (32 REQ'D)

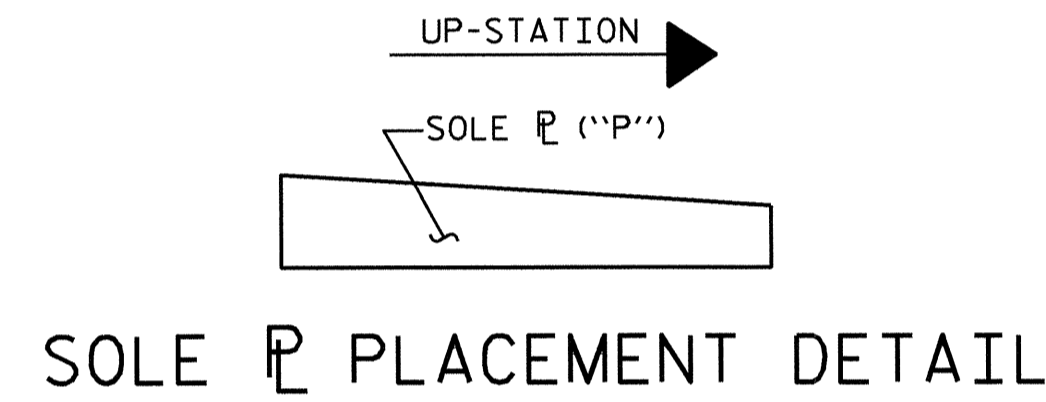
PLAN VIEW OF ELASTOMERIC BEARING

**TYPE VI**

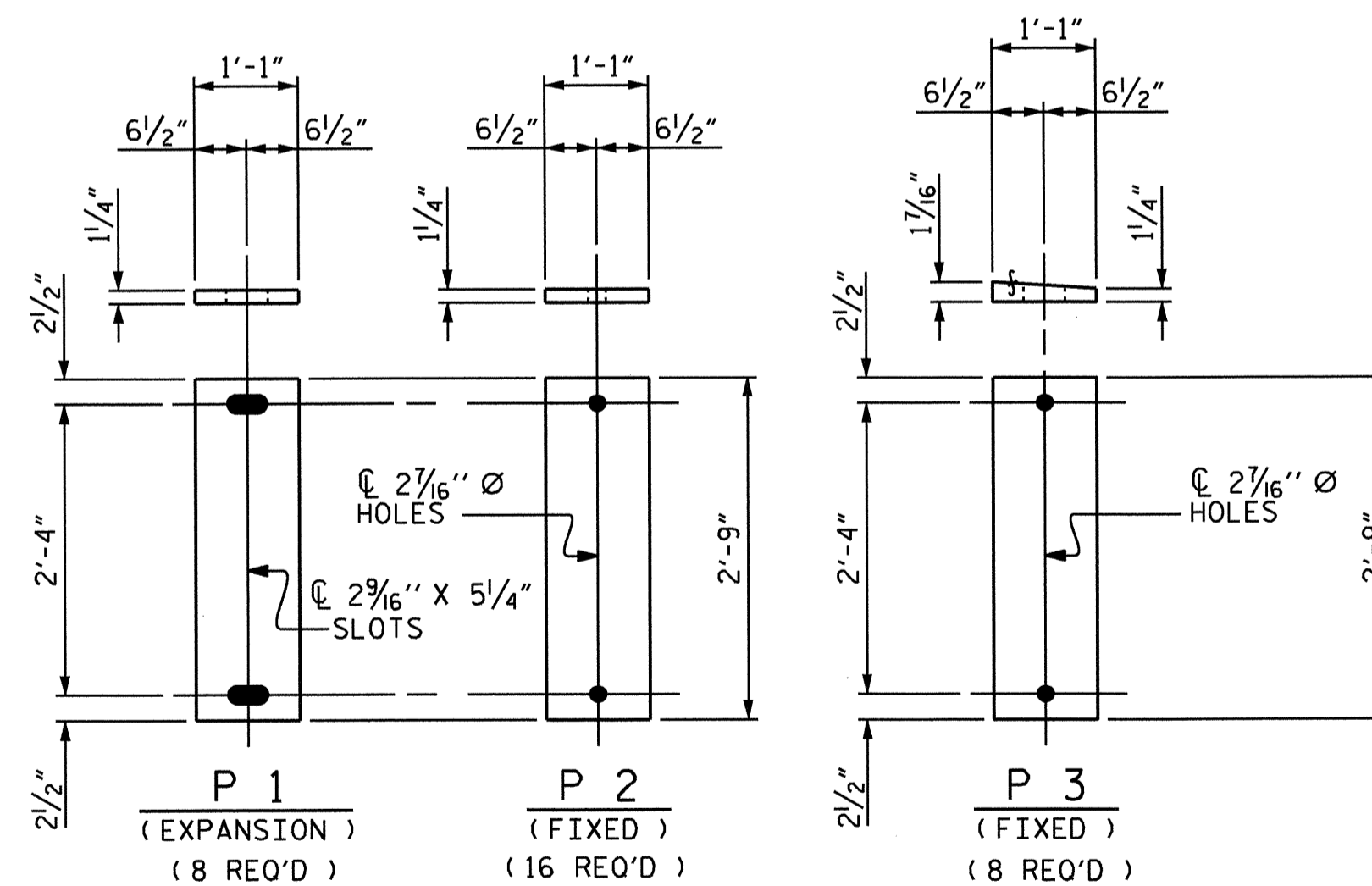
(ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS)



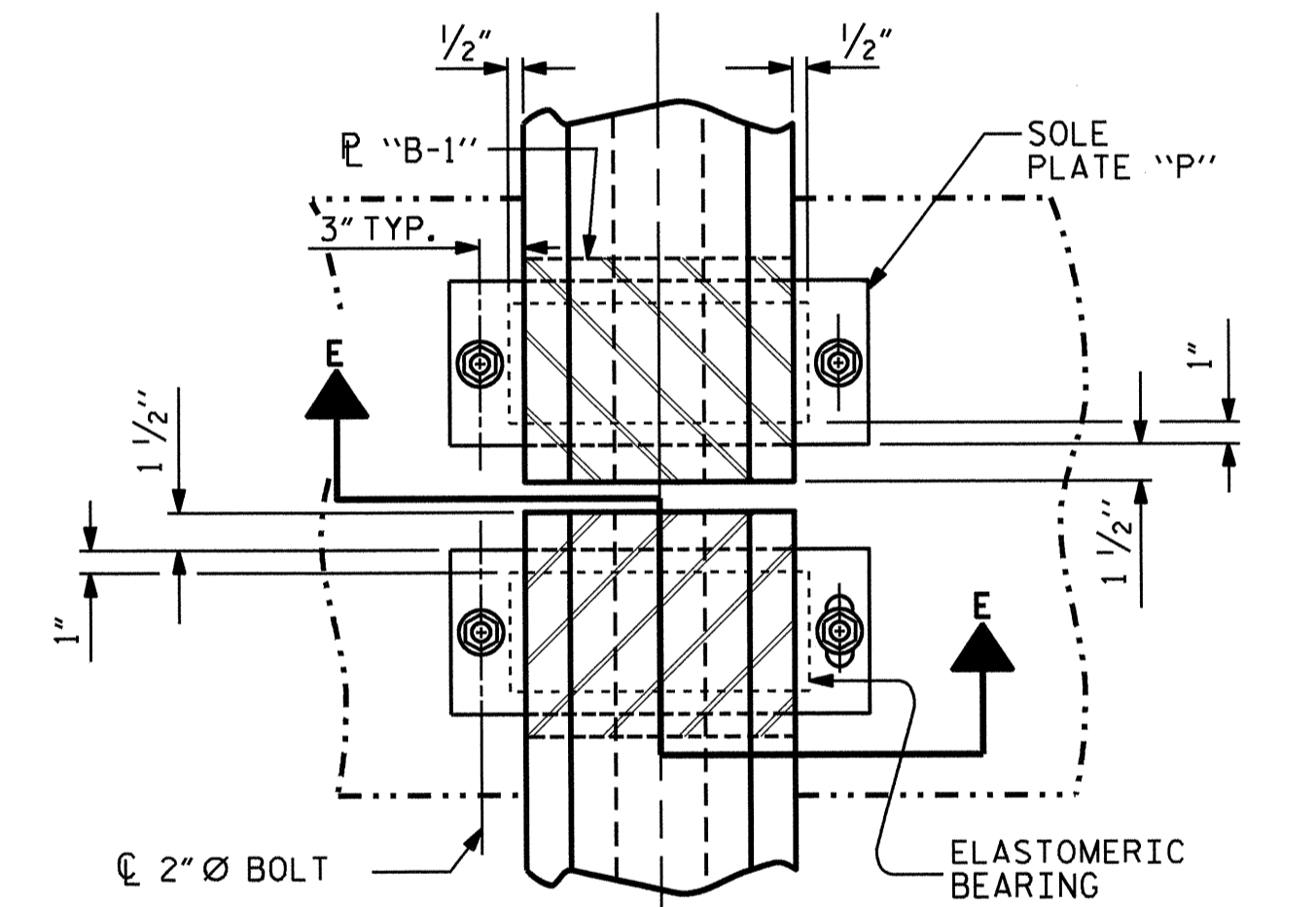
DETAIL "A"



SOLE P PLACEMENT DETAIL



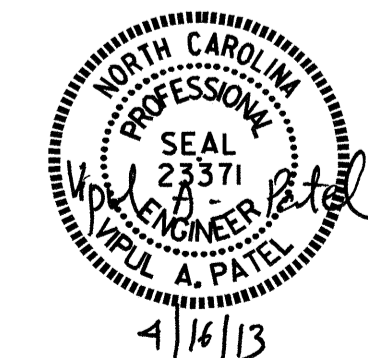
SOLE PLATE DETAILS ("P")



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)

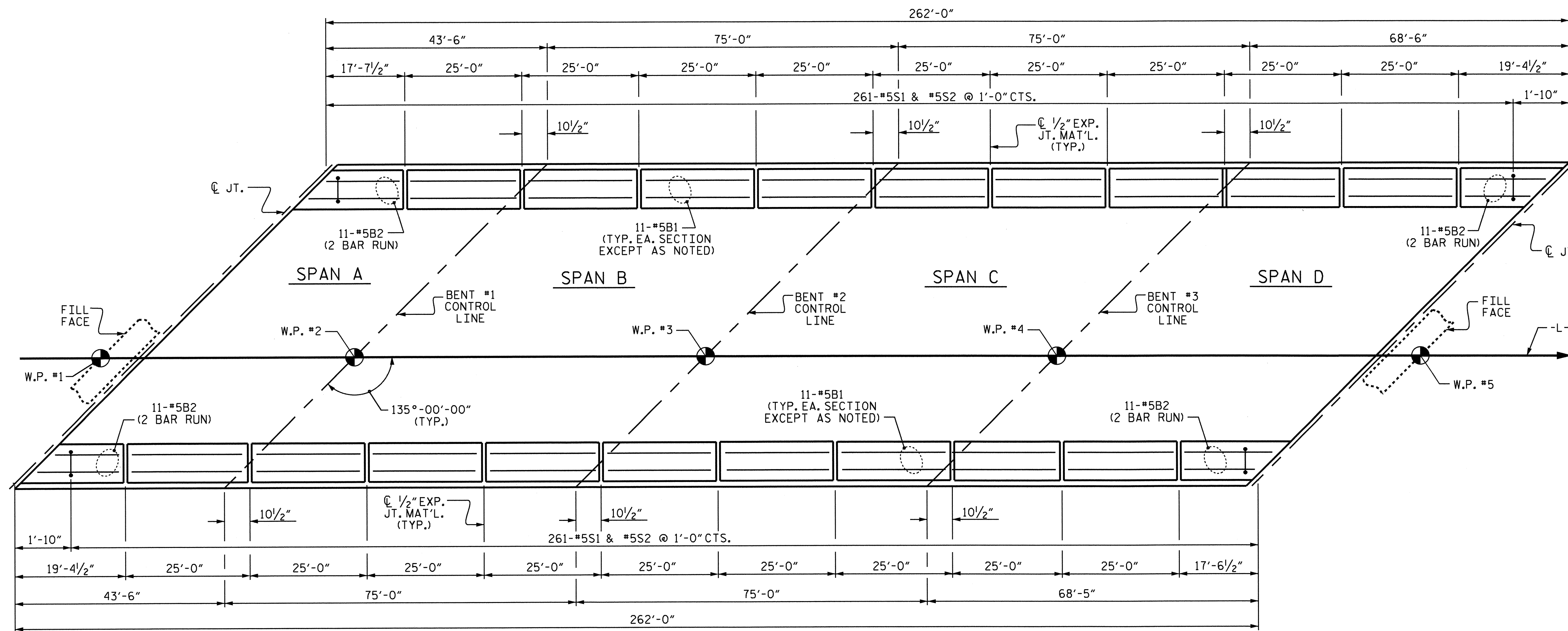
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**ELASTOMERIC BEARING  
 DETAILS**  
 PRESTRESSED CONCRETE GIRDER  
 SUPERSTRUCTURE

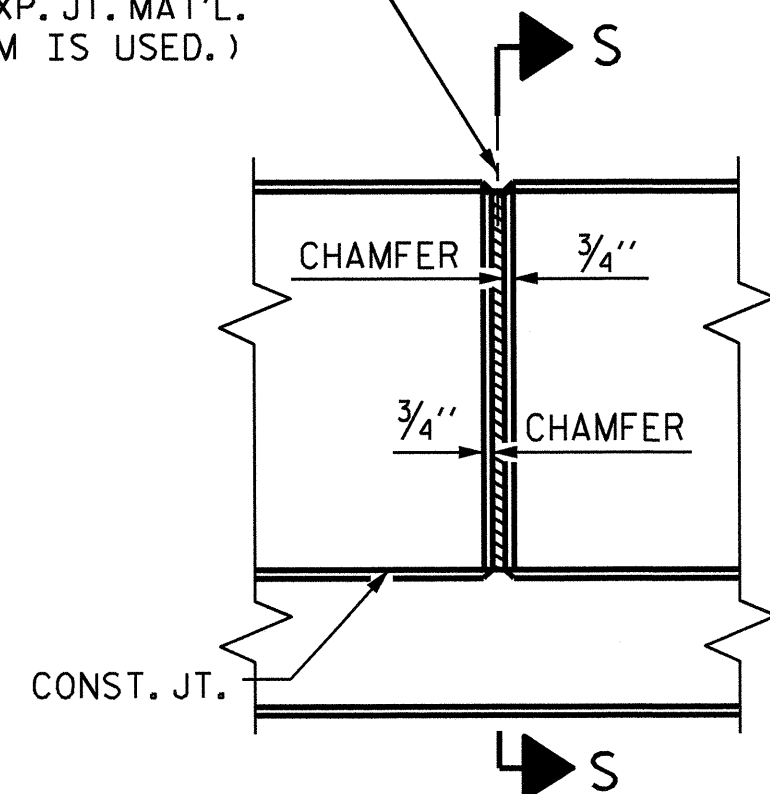
DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR	DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR	DATE: 3/12
CHECKED BY: R.L. CHESSON	DATE: 5/12
DRAWN BY: EEM 2/97	REV. 10/17/00 RWW/LES
CHECKED BY: VAP 2/97	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			37

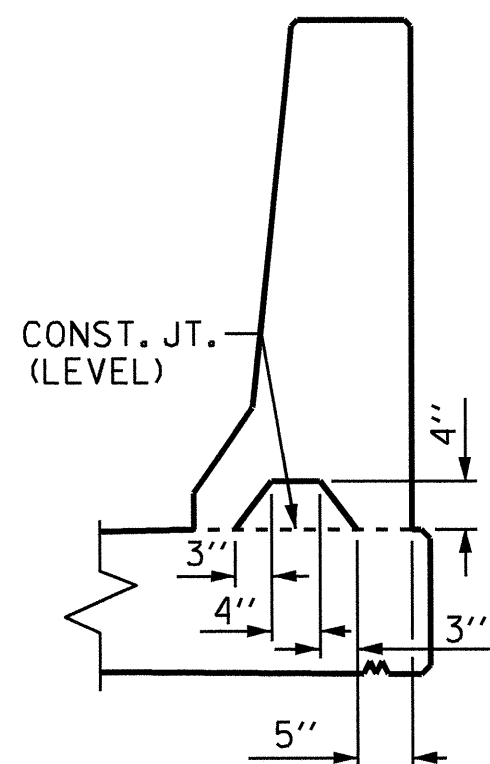


PLAN OF BARRIER RAIL

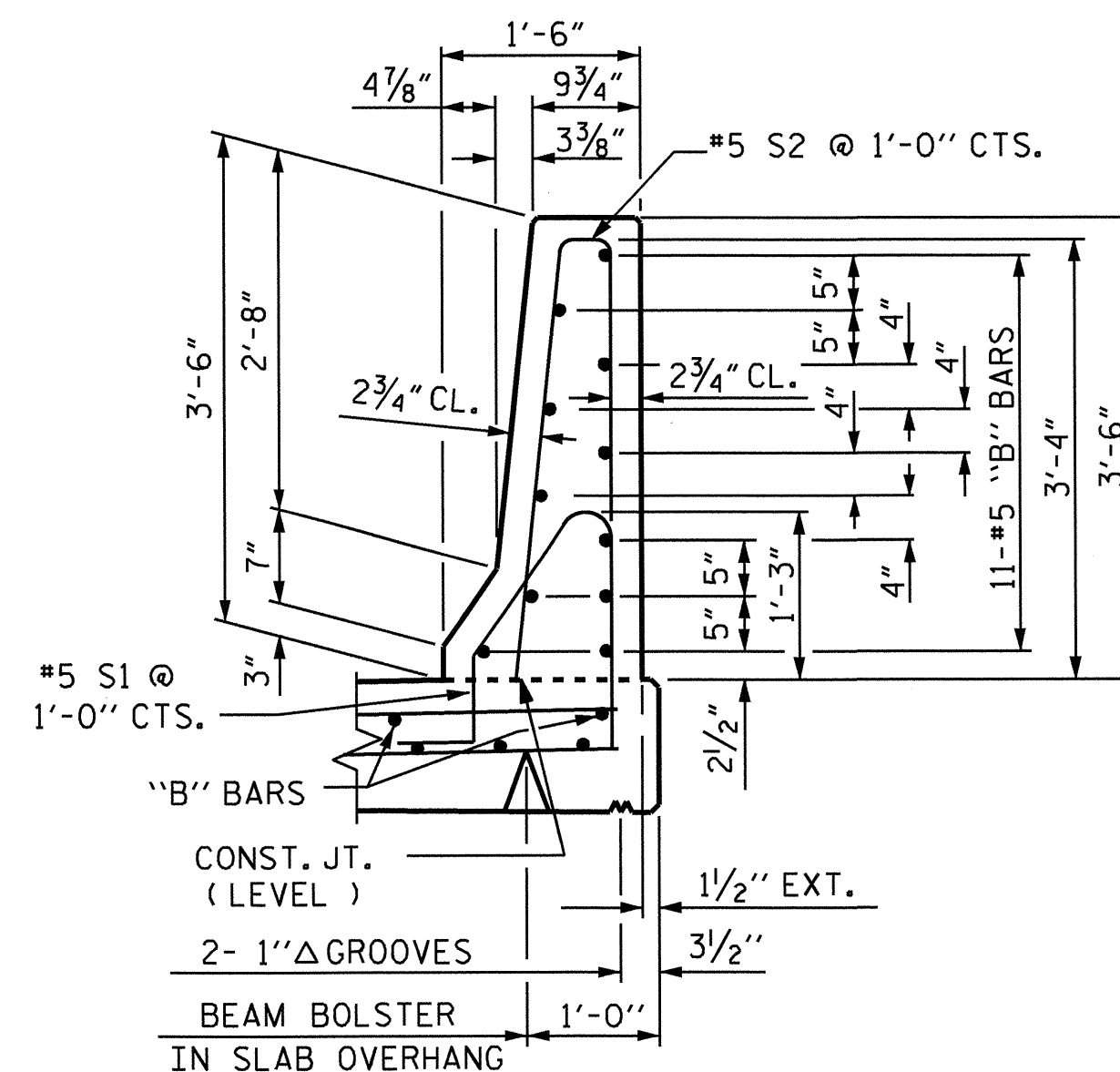
① 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



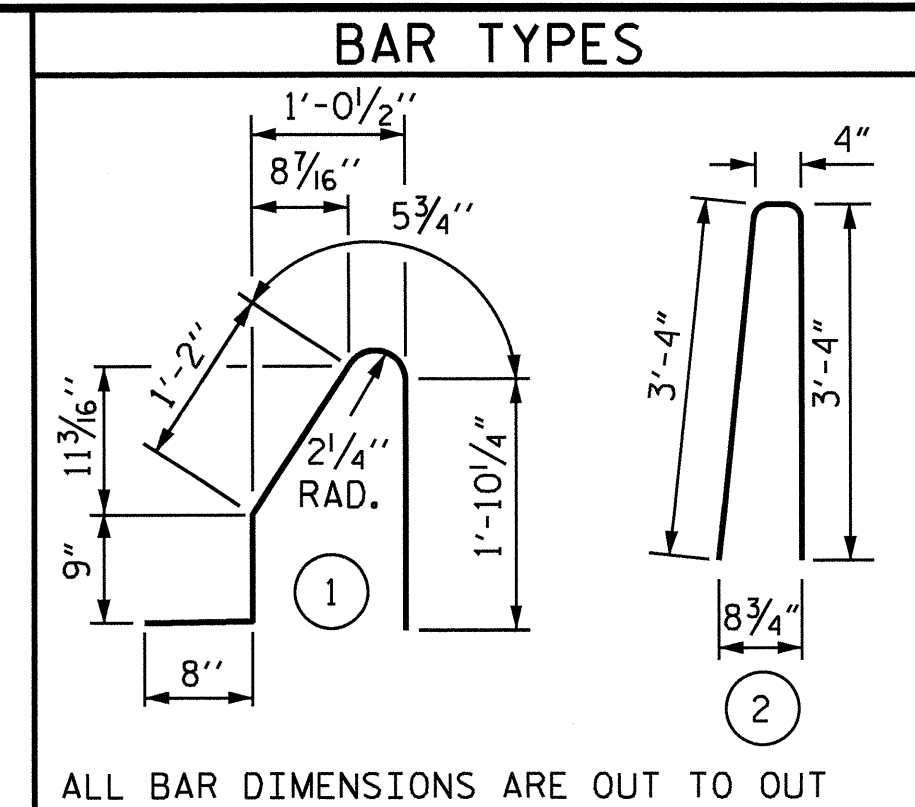
ELEVATION AT EXPANSION JOINTS



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



SECTION THRU RAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	198	#5	STR	24'-7"	5077
* B2	88	#5	STR	11'-0"	1010
* S1	522	#5	1	4'-11"	2677
* S2	522	#5	2	7'-0"	3811
* EPOXY COATED REINFORCING STEEL					12,575 LBS.
CLASS AA CONCRETE					75.2 CU. YDS.
CONCRETE BARRIER RAIL					524.00 LIN. FT.

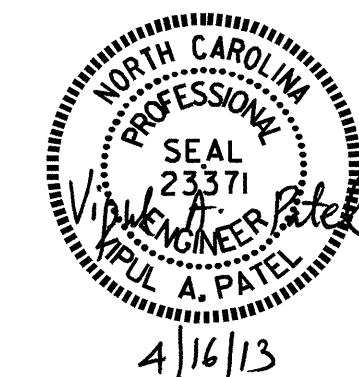
NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND 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.

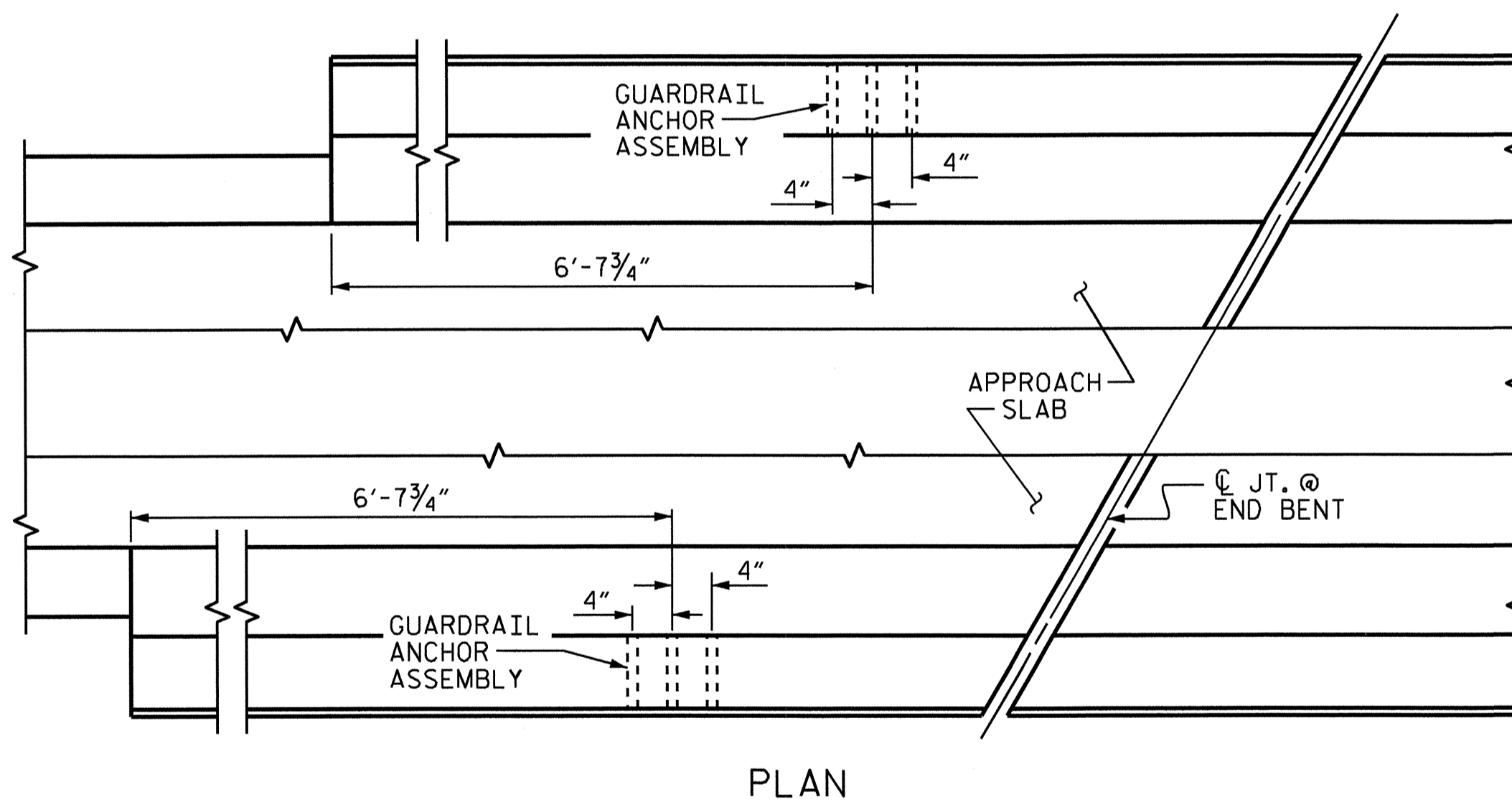
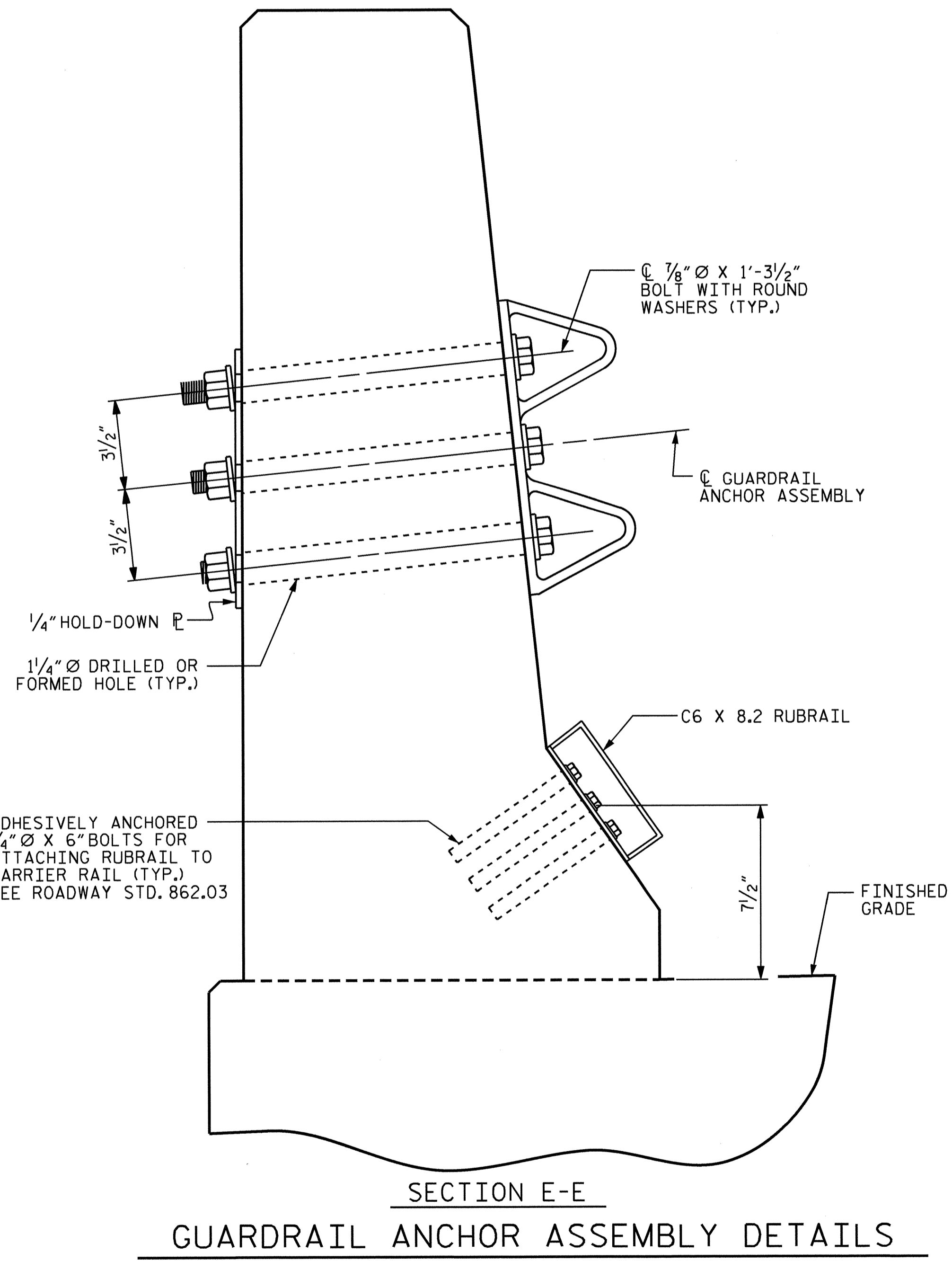
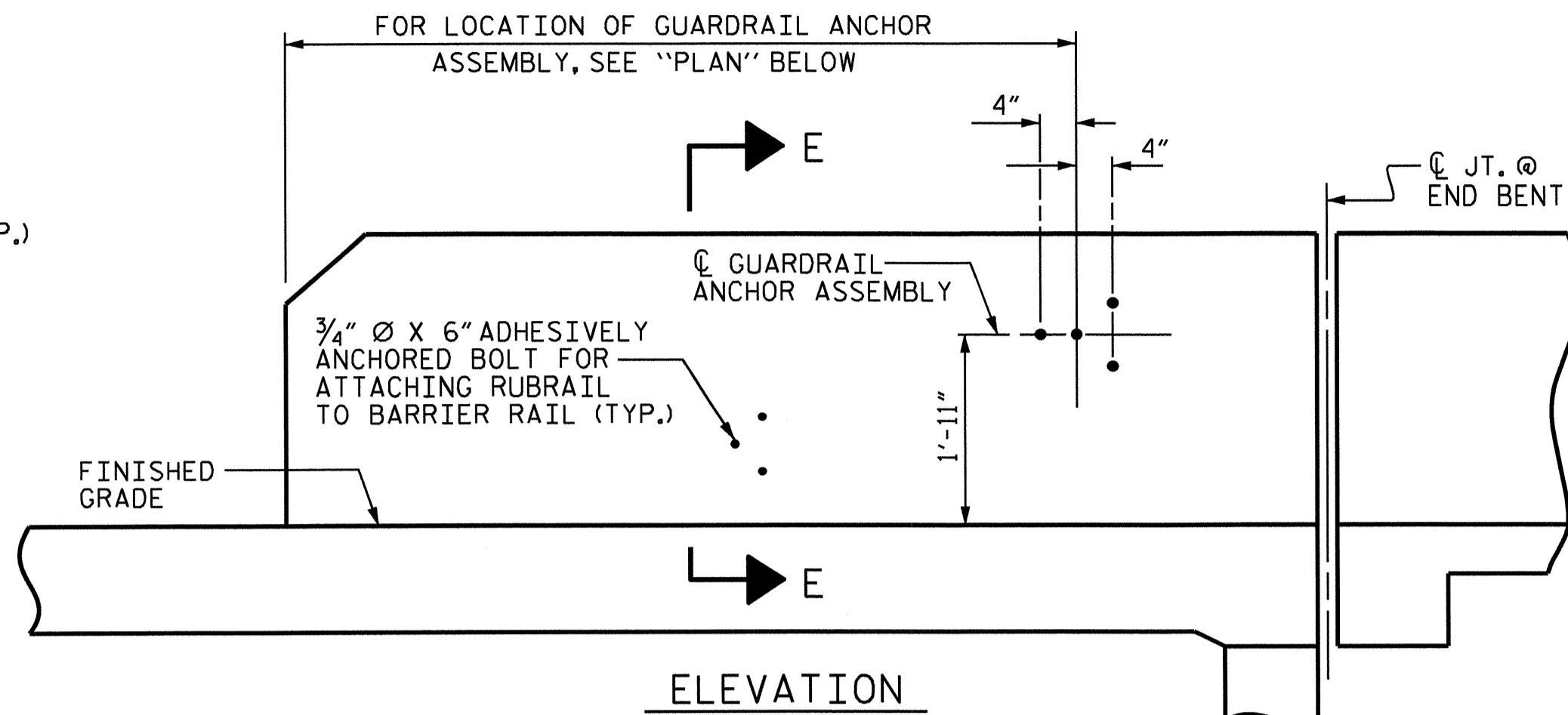
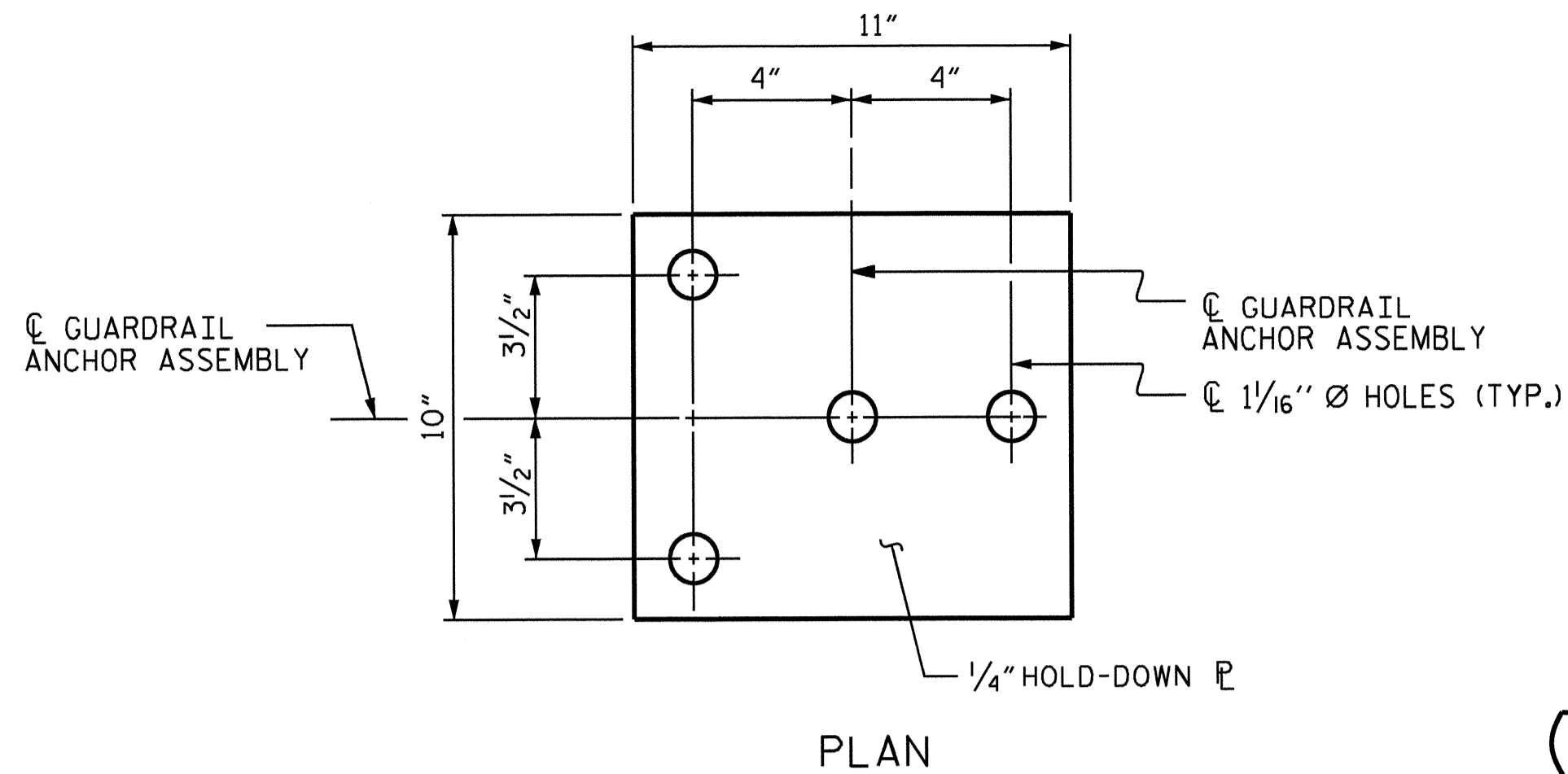
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 CONCRETE  
 BARRIER RAIL

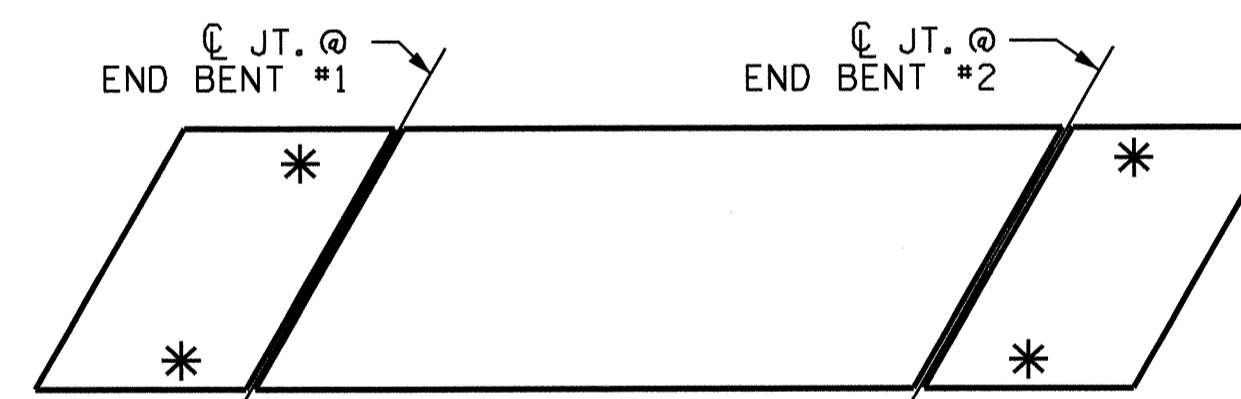
DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR	DATE: 03/12/13
ASSEMBLED BY: J. G. KHARVA	DATE: 04/27/12
CHECKED BY: H. T. DIEU	DATE: 05/07/12
DRAWN BY: ARB 5/87	REV. 10/1/11 MAA/GM
CHECKED BY: SJD 9/87	REV. 7/12 MAA/GM
	REV. 10/12 MAA/GM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS	37
2			4				



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

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

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

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

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

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

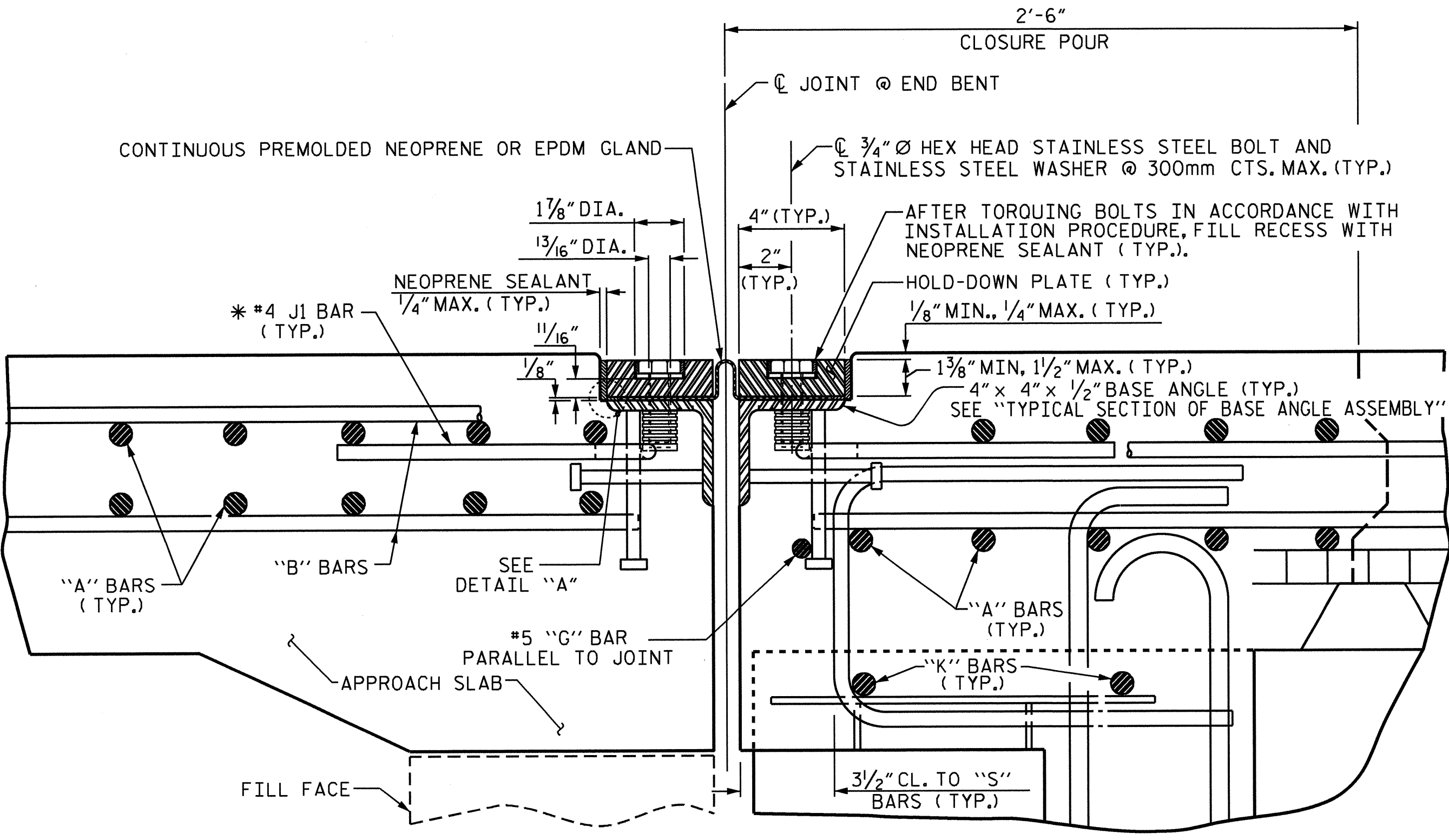
PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-



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

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13	
ASSEMBLED BY: J. G. KHARVA DATE: 4/27/12	CHECKED BY: H. T. DIEU DATE: 05/07/12
DRAWN BY: TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY: GM 5/06	REV. 7/12 MAA/GM
	REV. 10/12 MAA/GM

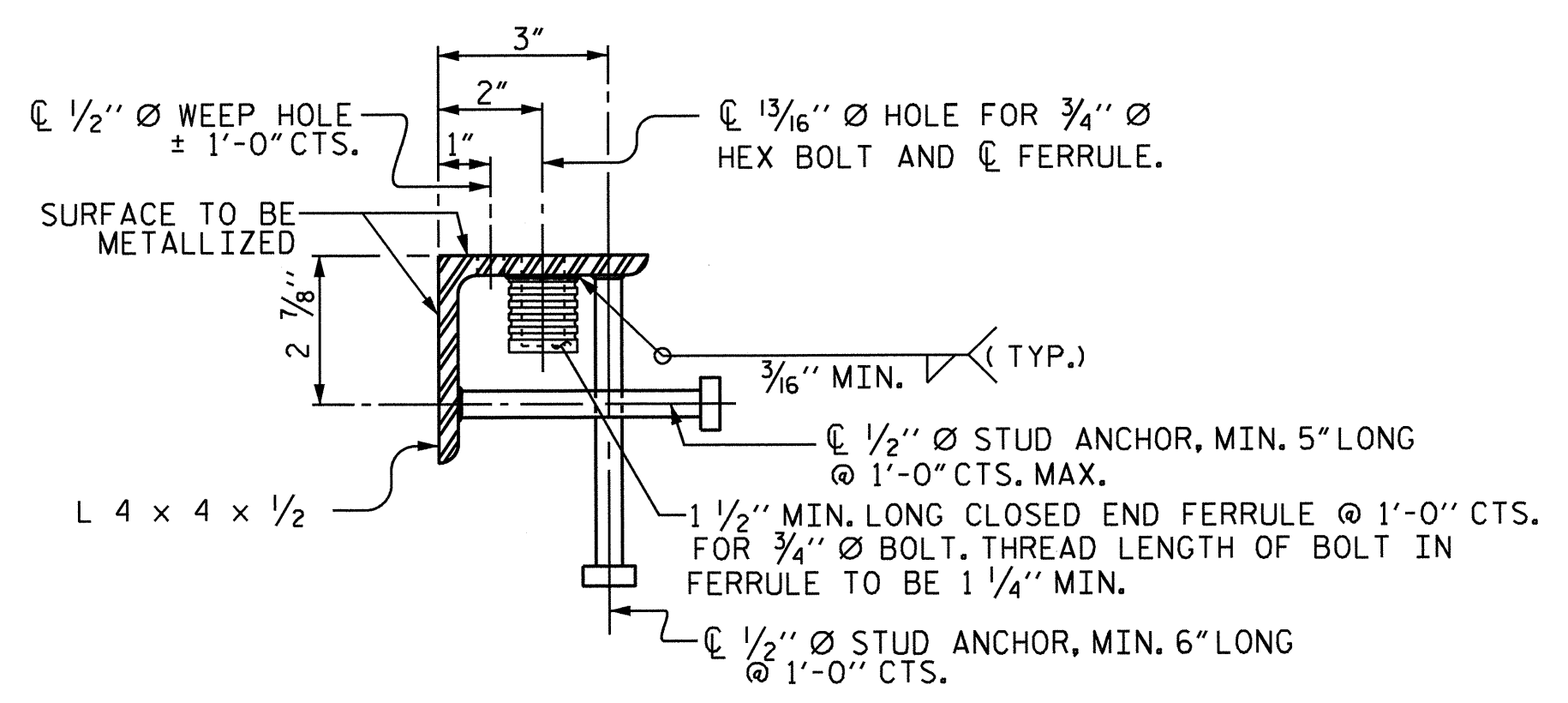
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-19
2			4			37



**EXPANSION JOINT DETAILS**

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

\* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



**TYPICAL SECTION OF BASE ANGLE ASSEMBLY**

MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT #1	135°-00'-00"	1"	1 1/2"	1 3/8"	1 1/8"
END BENT #2	135°-00'-00"	1 3/16"	1 1/16"	1 1/16"	1 1/8"

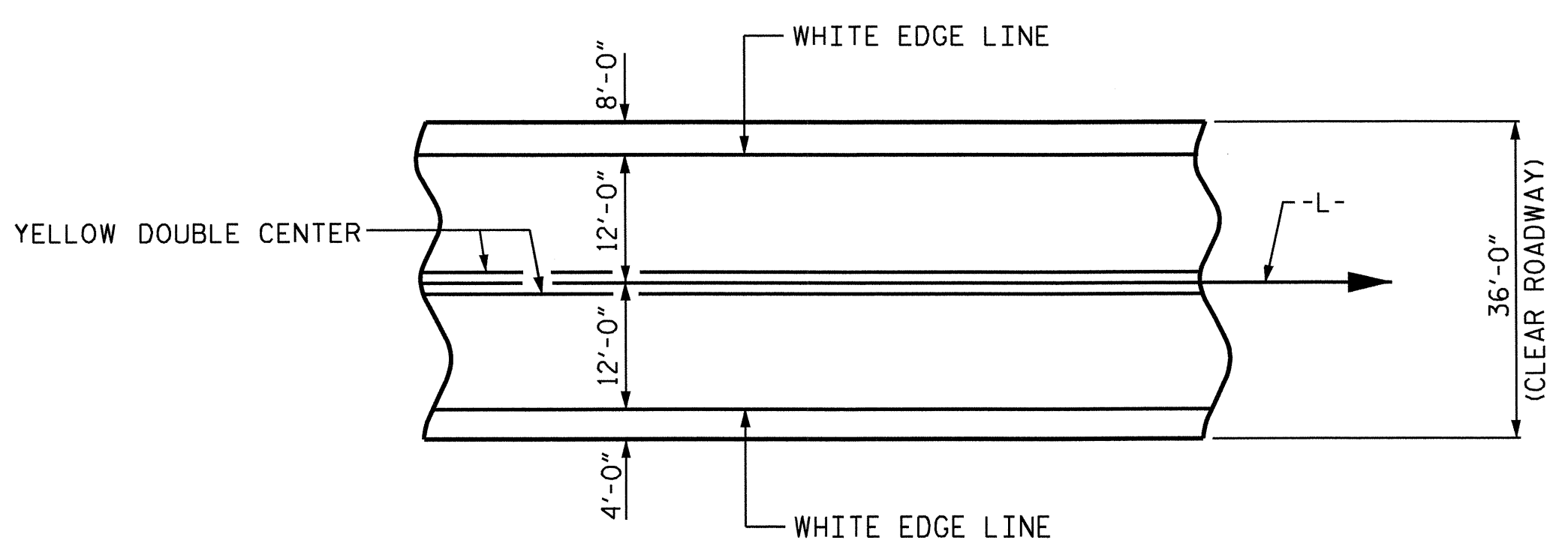
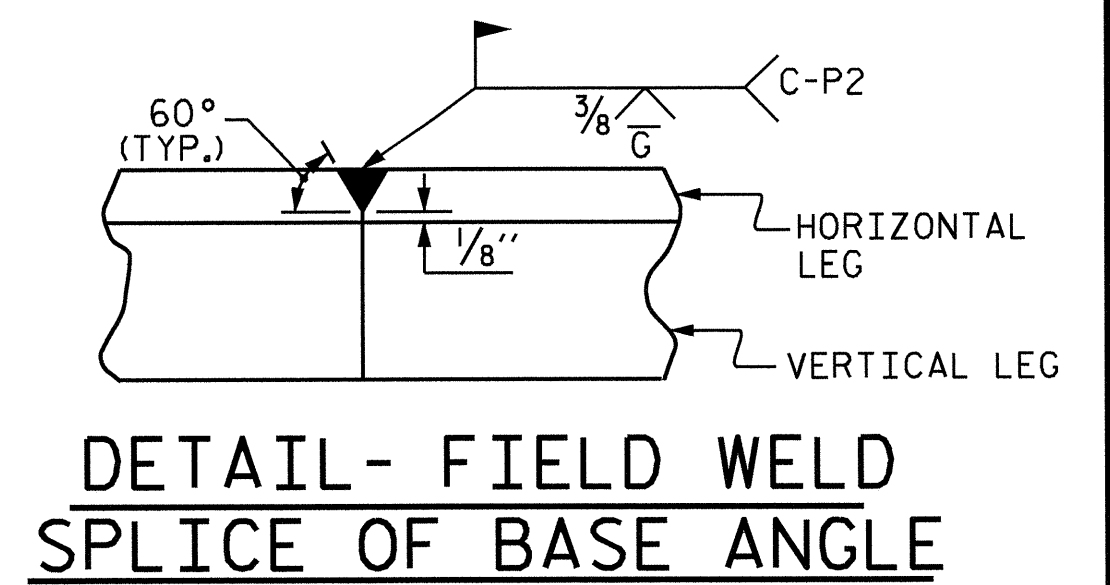
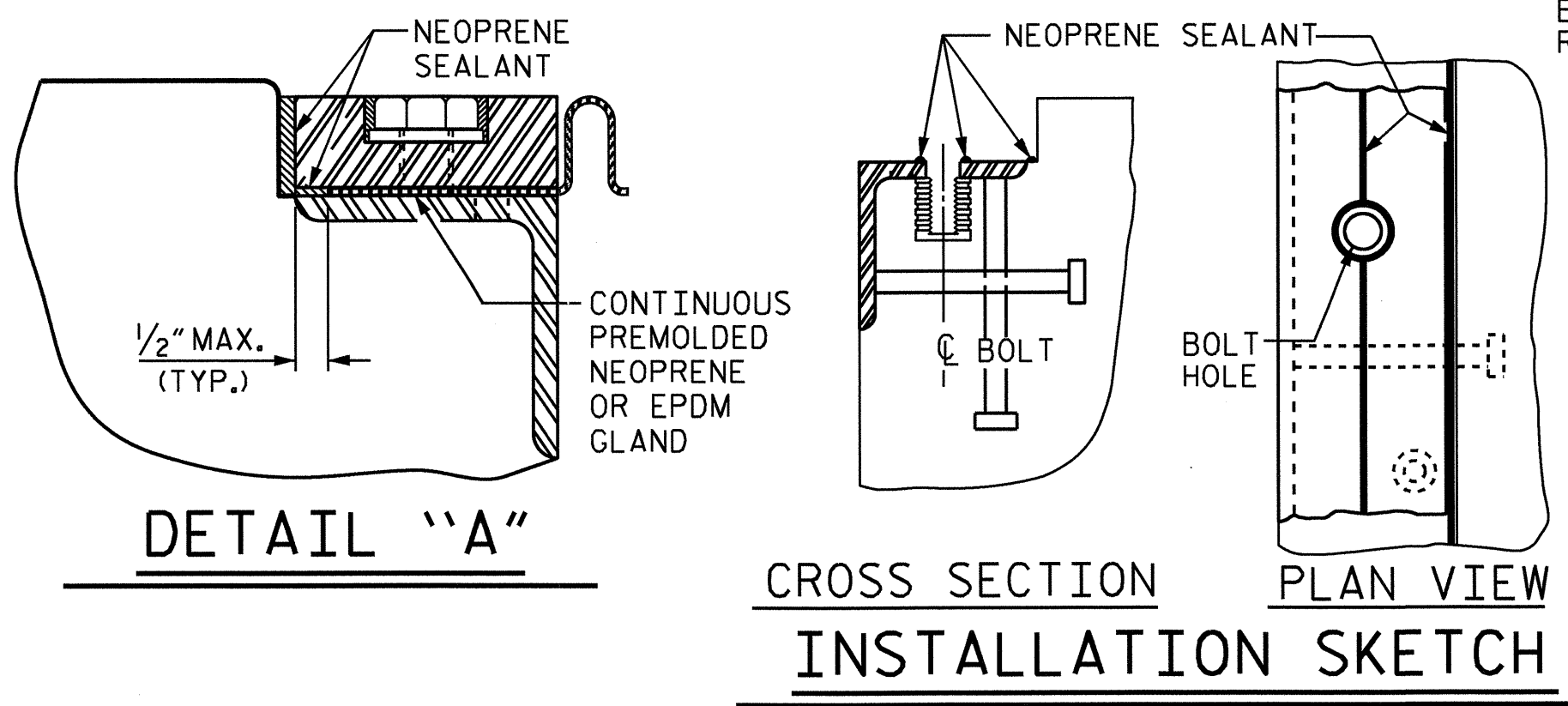
DESIGN ENGINEER OF RECORD:  
**H.A. LOCKLEAR** DATE: 03/12/13  
 ASSEMBLED BY: H.A. LOCKLEAR DATE: 2/12  
 CHECKED BY: R.L. CHESSON DATE: 5/12  
 DRAWN BY: REK 9/87 REV. 5/7/03R RWW/JTE  
 CHECKED BY: CRK 10/87 REV. 5/1/06R TLA/GM  
 REV. 10/1/11 MAA/GM

**INSTALLATION PROCEDURE**

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4/8" TO 4/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 3/4" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X 1/2" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 1/8" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

**GENERAL NOTES**

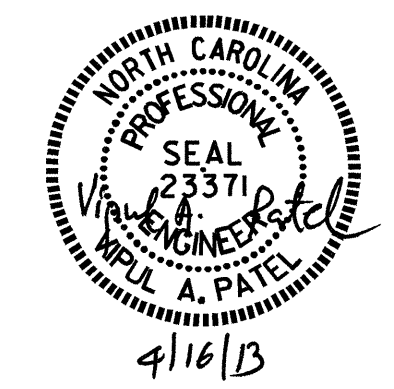
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
7. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
9. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
10. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



**PAVEMENT MARKING ALIGNMENT**

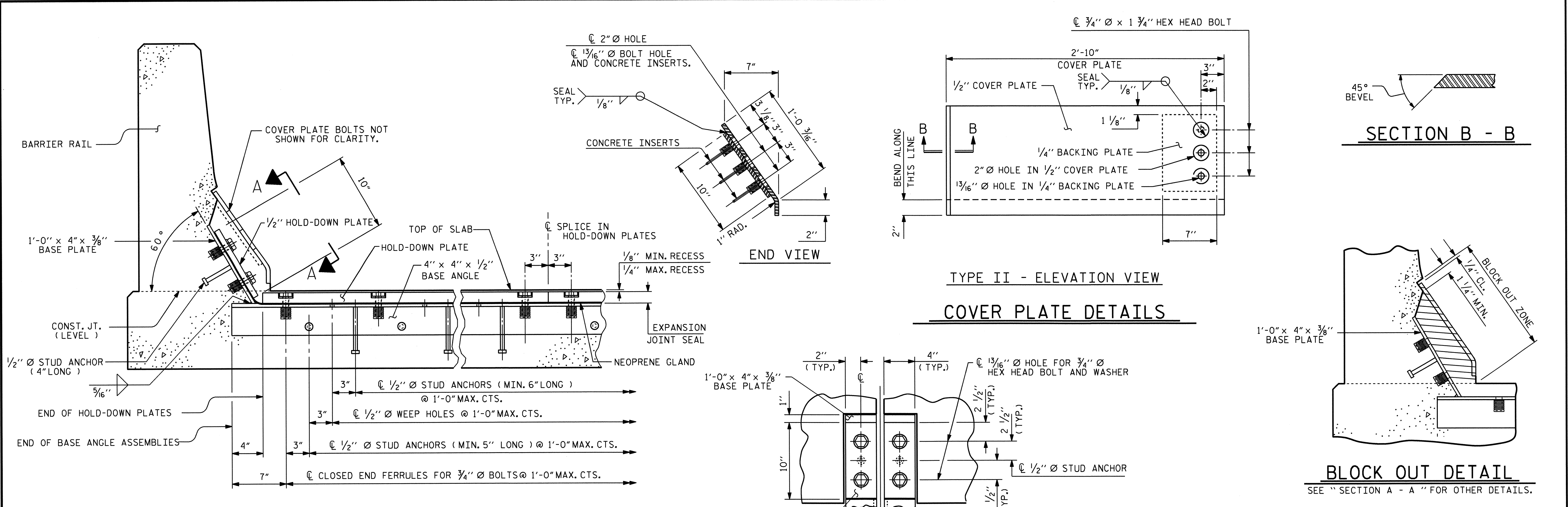
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 1 OF 2

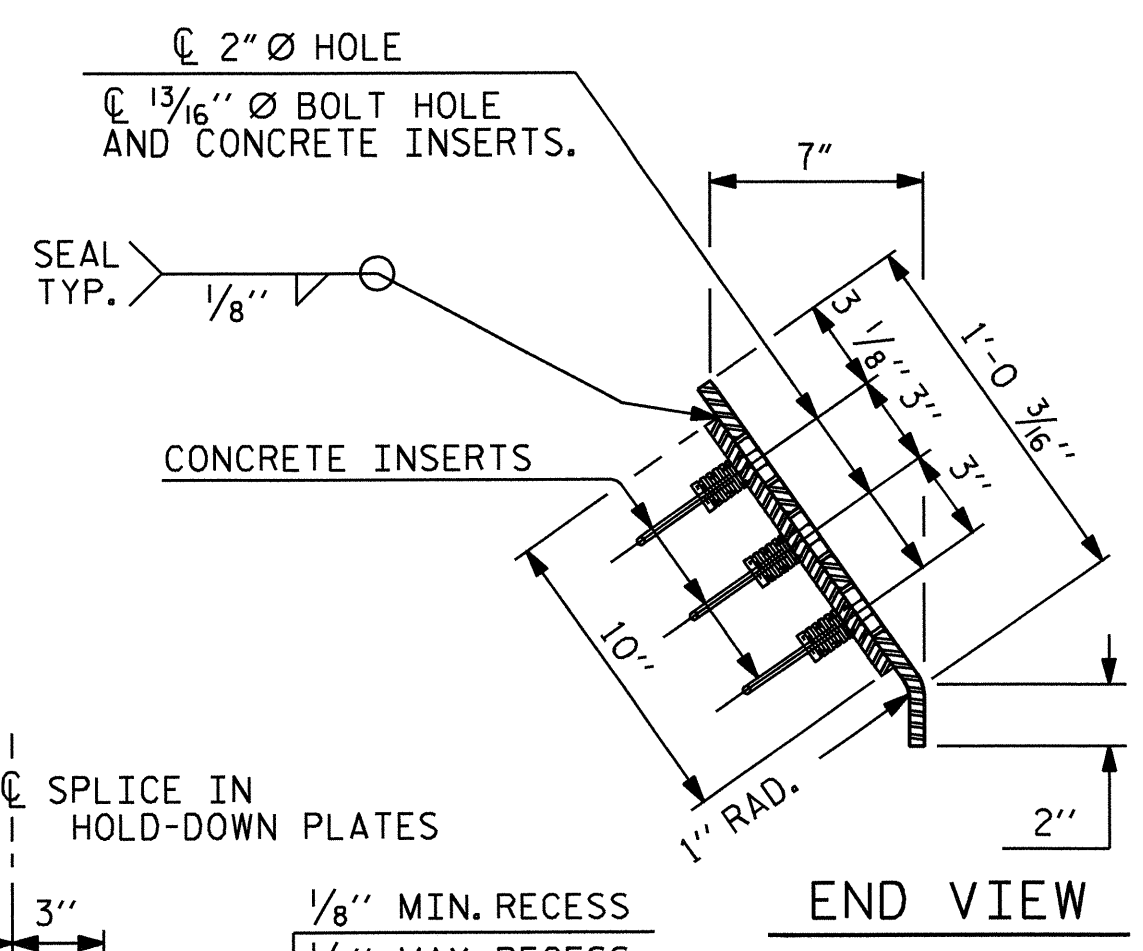


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 EXPANSION JOINT  
 SEAL DETAILS

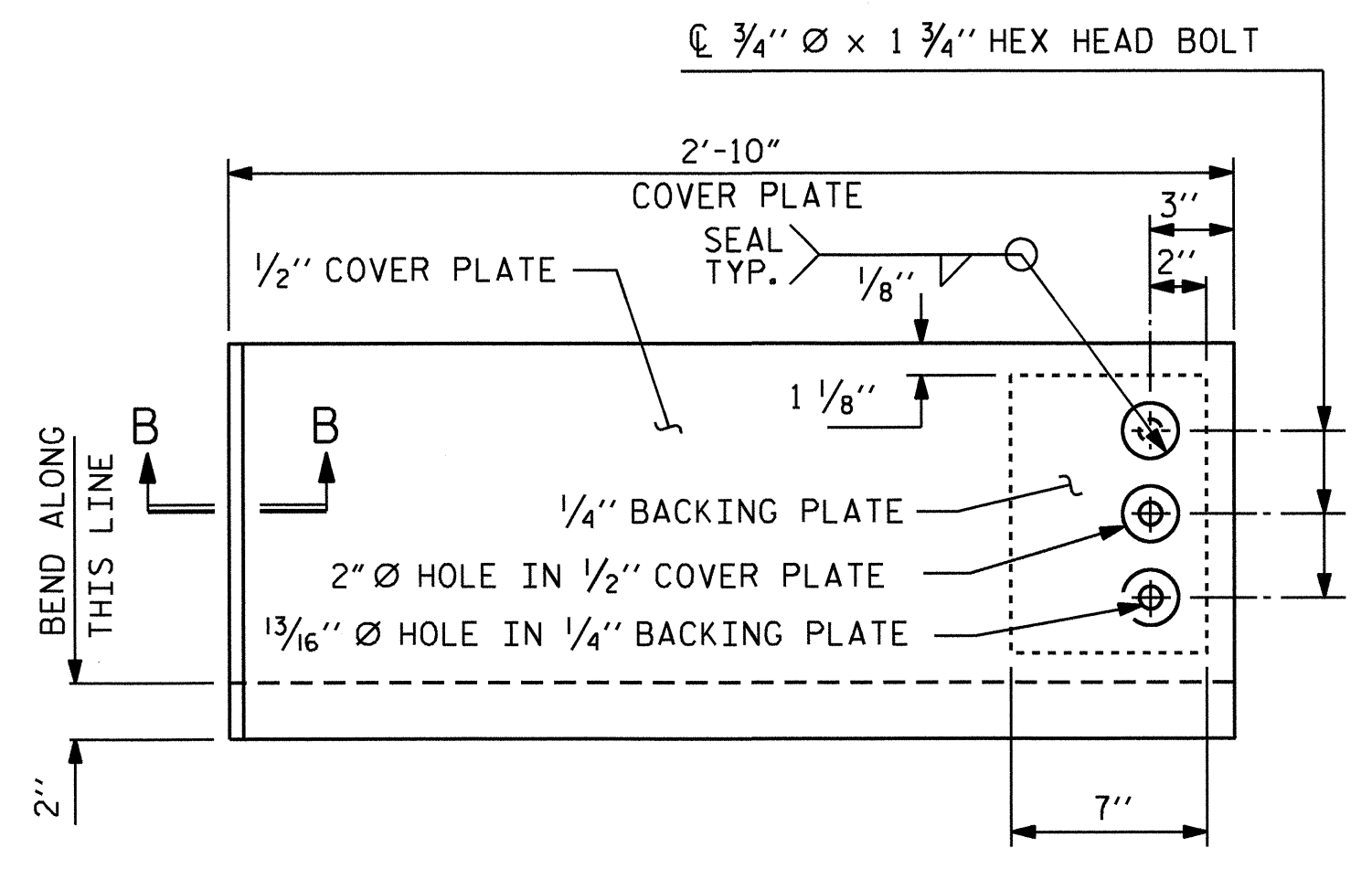
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 37
2			4			



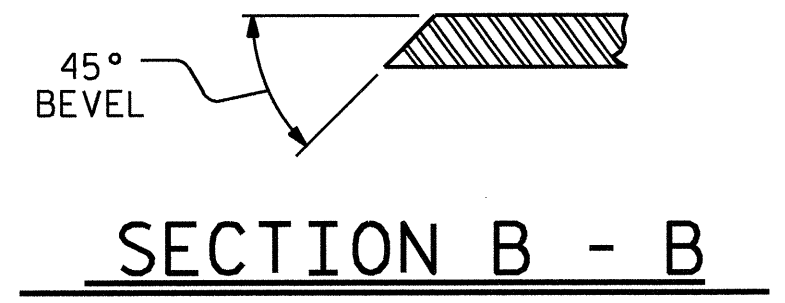
**SECTION THRU RAIL NORMAL TO JOINT**



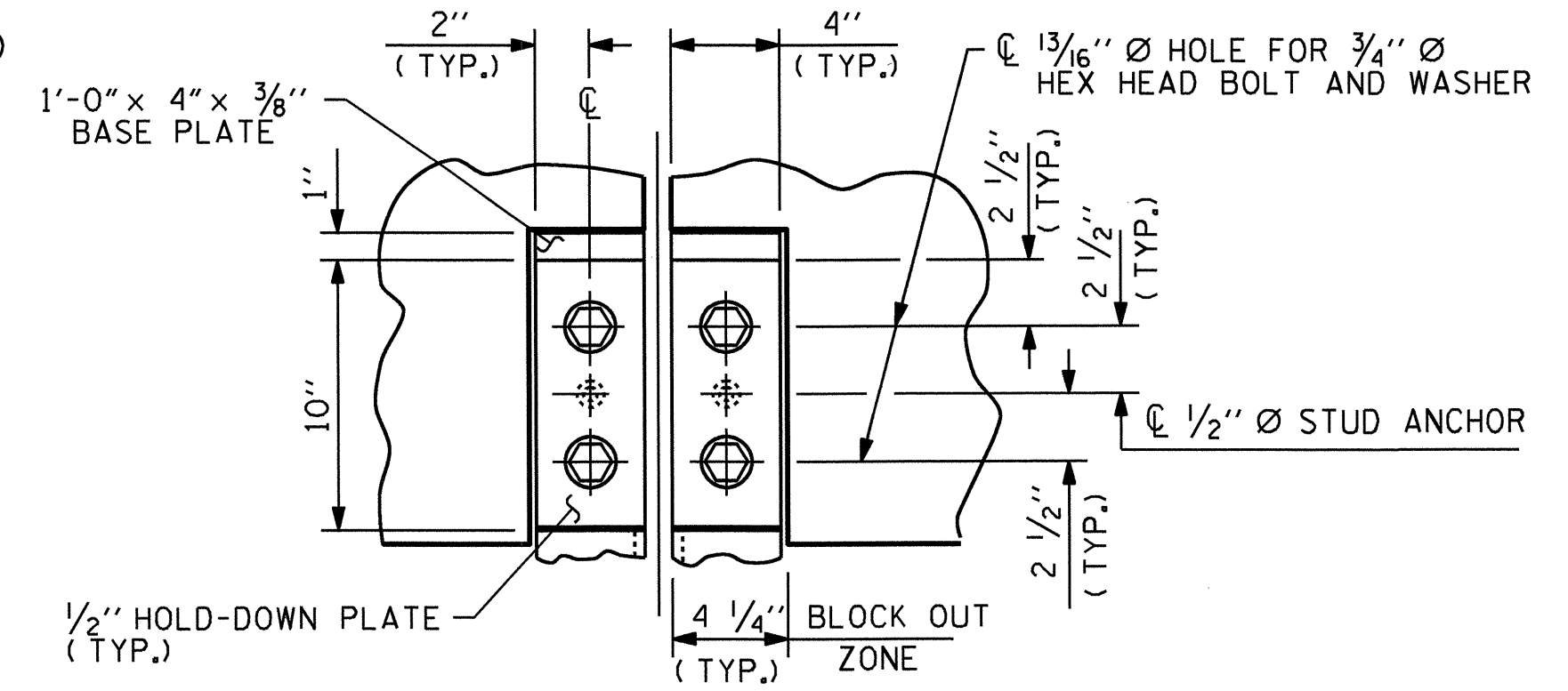
**END VIEW**



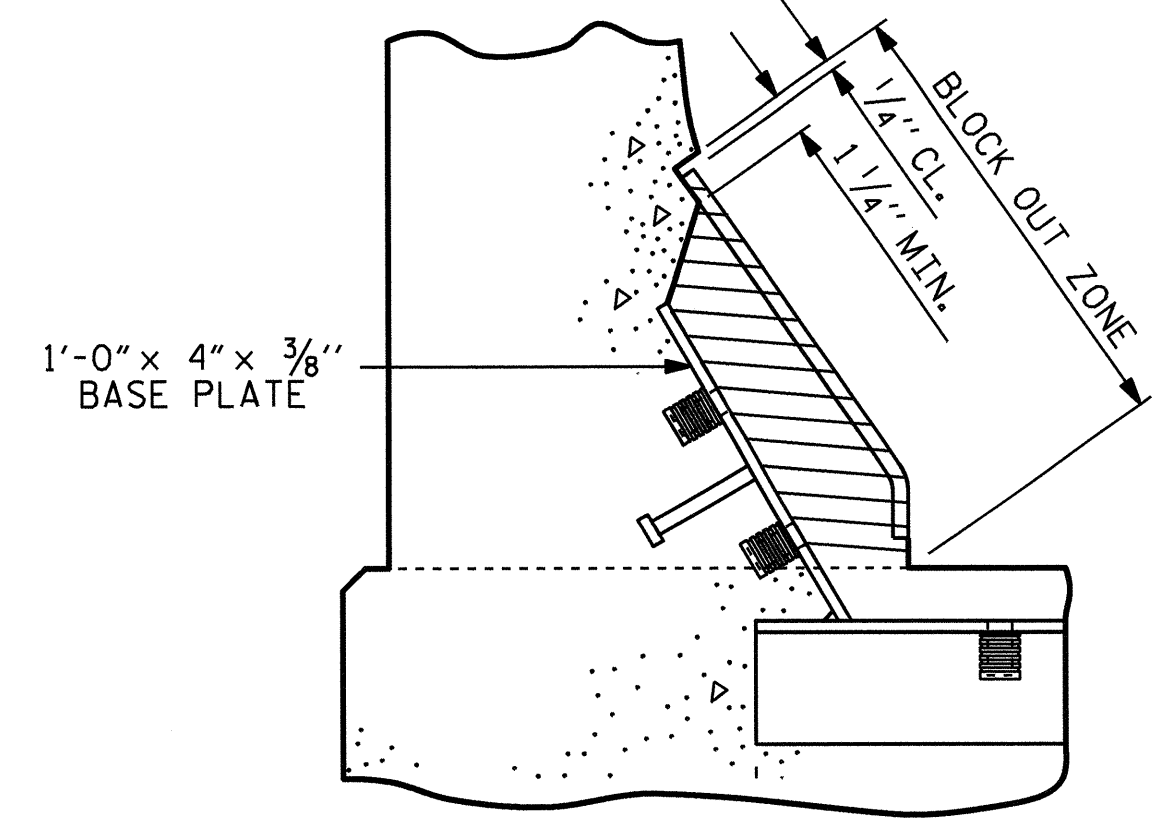
**TYPE II - ELEVATION VIEW  
COVER PLATE DETAILS**



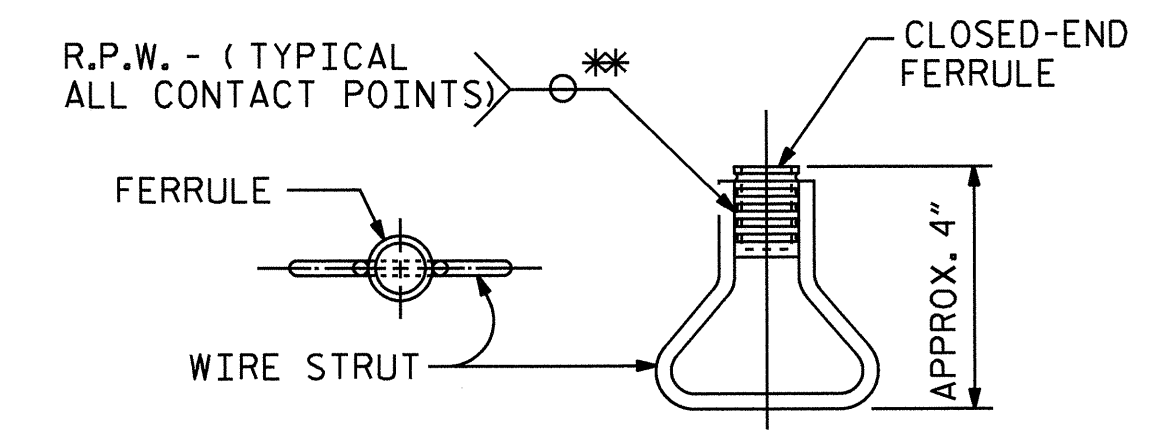
**SECTION B - B**



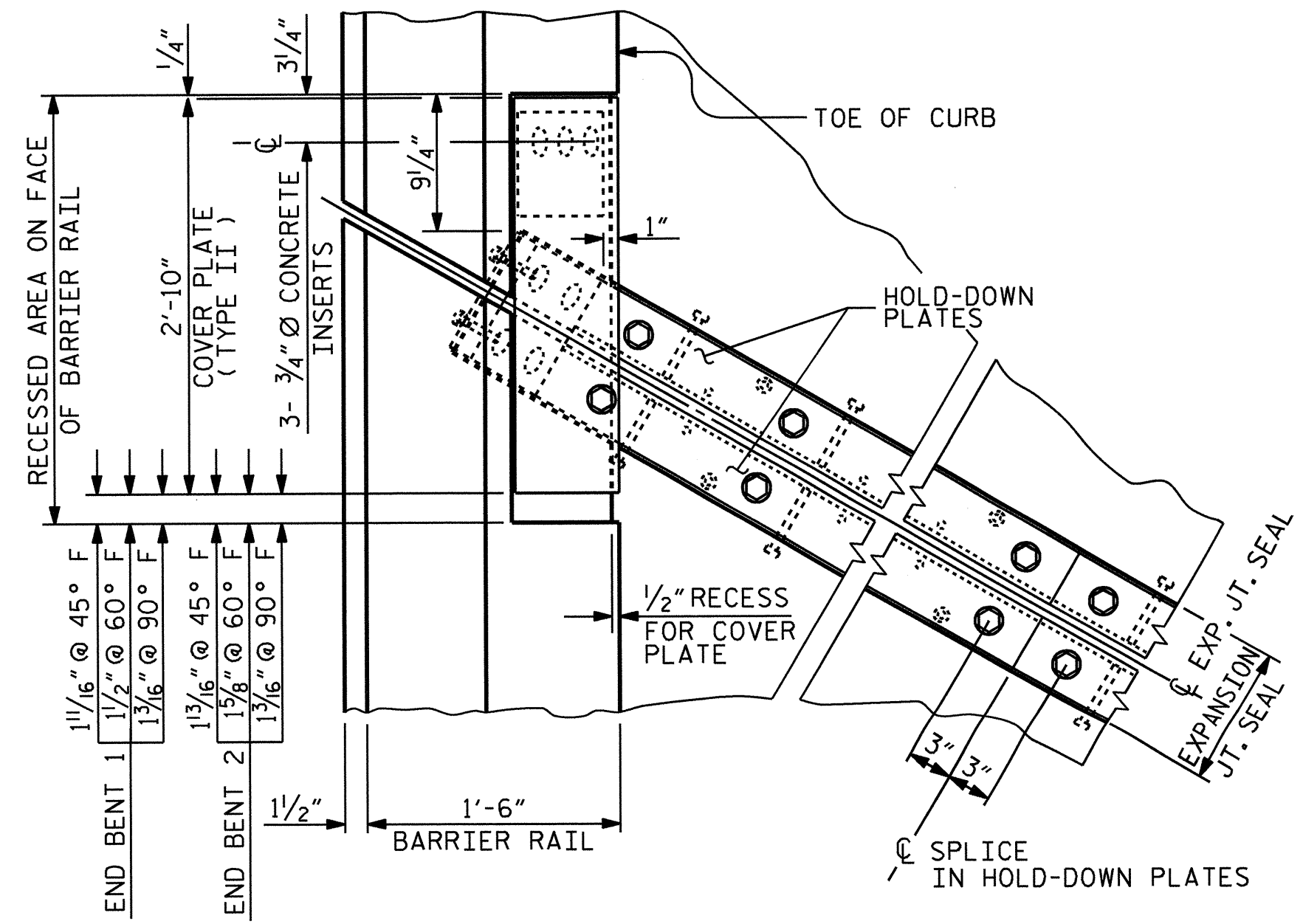
**SECTION A - A**



**BLOCK OUT DETAIL**  
SEE "SECTION A - A" FOR OTHER DETAILS.

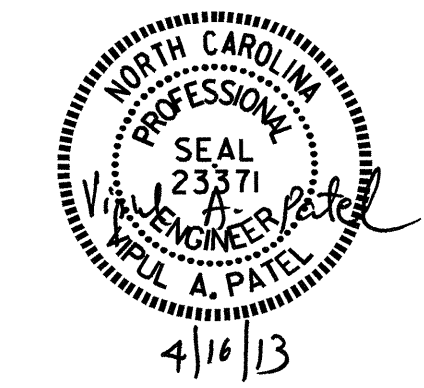


**PLAN ELEVATION  
CONCRETE INSERT**



**PLAN OF EXPANSION JOINT SEAL**

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR	DATE: 03/12/13
ASSEMBLED BY: H.A. LOCKLEAR	DATE: 2/12
CHECKED BY: R.L. CHESSON	DATE: 3/12
DRAWN BY: REK 9/87	REV. 10/17/00 RWW/LES
CHECKED BY: CRK 10/87	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



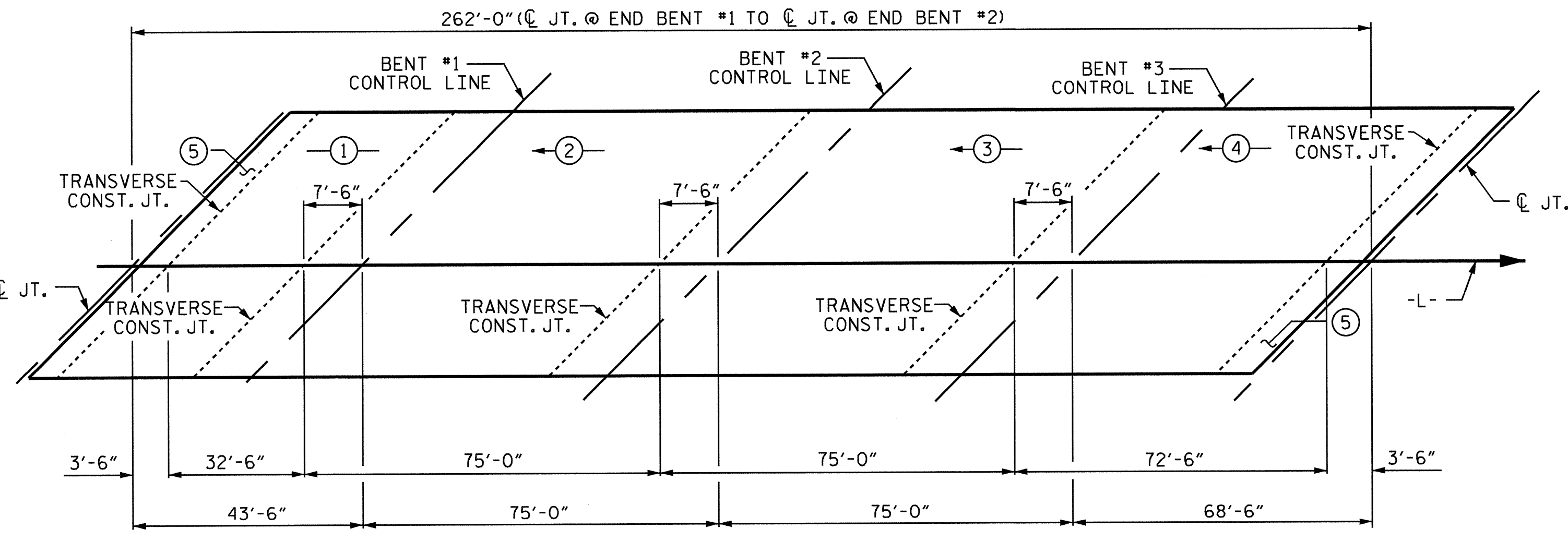
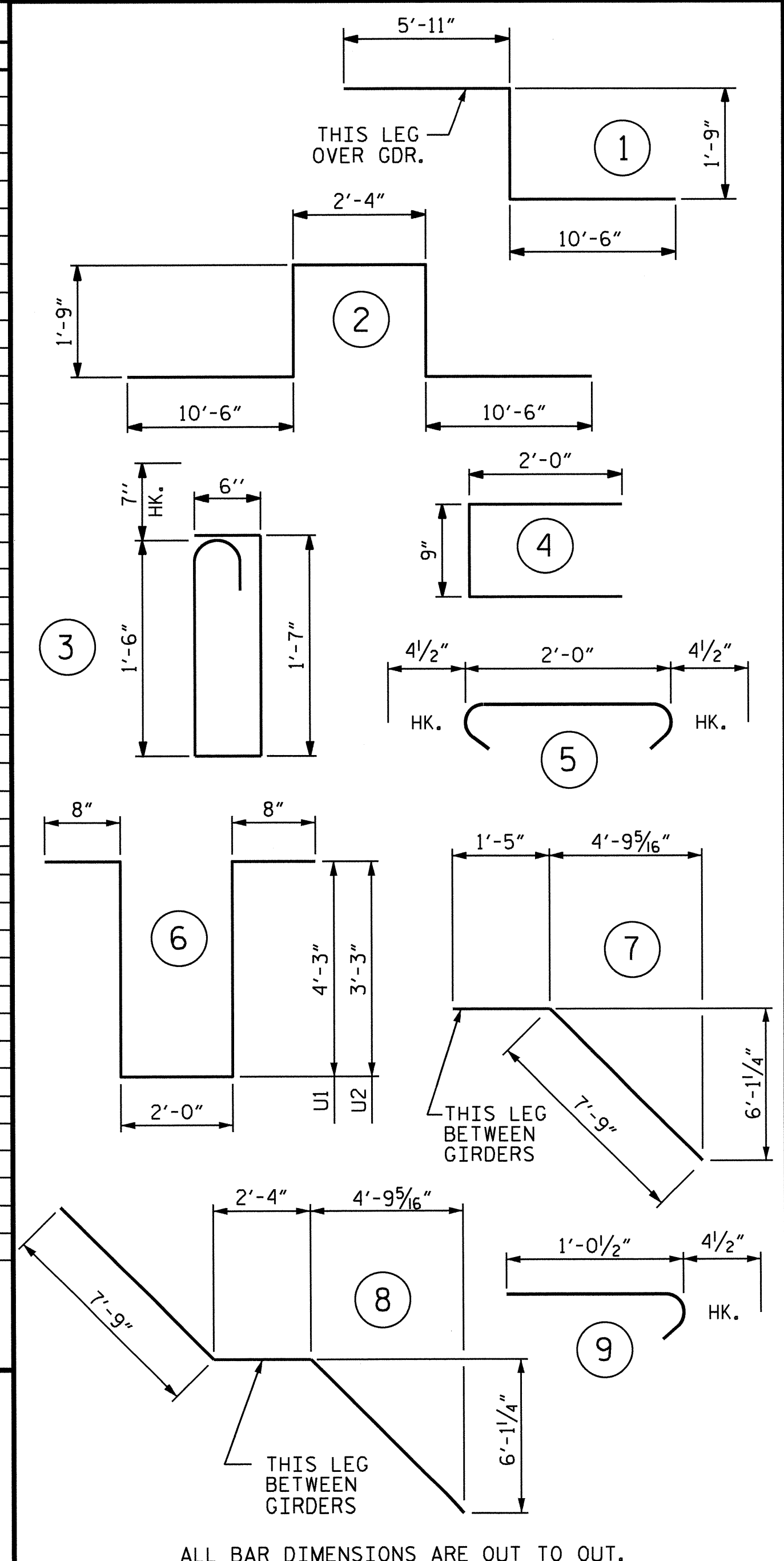
PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 37

### REINFORCING BAR SCHEDULE

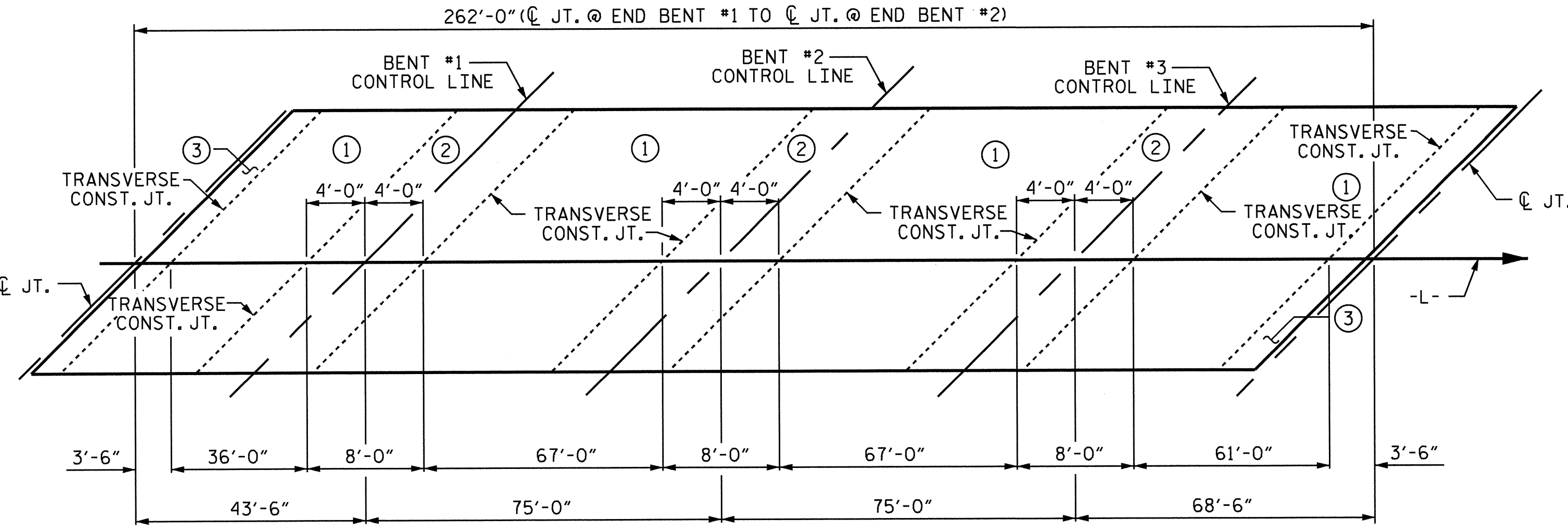
SPANS A, B, C & D											
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	486	#5	STR.	38'-11"	19727	A216	6	#5	STR.	17'-1"	107
A2	486	#5	STR.	38'-11"	19727	A217	6	#5	STR.	15'-8"	98
*A3	6	#6	STR.	20'-0"	180	A218	6	#5	STR.	14'-4"	90
						A219	6	#5	STR.	12'-11"	81
*A101	6	#5	STR.	37'-8"	236	A220	6	#5	STR.	11'-7"	72
*A102	6	#5	STR.	36'-4"	227	A221	6	#5	STR.	10'-2"	64
*A103	6	#5	STR.	34'-11"	219	A222	6	#5	STR.	8'-10"	55
*A104	6	#5	STR.	33'-7"	210	A223	6	#5	STR.	7'-5"	46
*A105	6	#5	STR.	32'-2"	201	A224	6	#5	STR.	6'-1"	38
*A106	6	#5	STR.	30'-10"	193	A225	6	#5	STR.	4'-8"	29
*A107	6	#5	STR.	29'-5"	184	A226	6	#5	STR.	3'-4"	21
*A108	6	#5	STR.	28'-1"	176	A227	6	#5	STR.	2'-0"	13
*A109	6	#5	STR.	26'-8"	167						
*A110	6	#5	STR.	25'-4"	159	*B1	28	#4	STR.	26'-10"	502
*A111	6	#5	STR.	23'-11"	150	*B2	28	#7	STR.	46'-0"	2633
*A112	6	#5	STR.	22'-7"	141	*B3	25	#7	STR.	18'-0"	920
*A113	6	#5	STR.	21'-2"	132	*B4	56	#4	STR.	24'-0"	898
*A114	6	#5	STR.	19'-10"	124	*B5	28	#7	STR.	55'-0"	3148
*A115	6	#5	STR.	18'-5"	115	*B6	25	#7	STR.	22'-6"	1150
*A116	6	#5	STR.	17'-1"	107	*B7	28	#7	STR.	53'-6"	3062
*A117	6	#5	STR.	15'-8"	98	*B8	25	#7	STR.	21'-9"	1111
*A118	6	#5	STR.	14'-4"	90	*B9	56	#4	STR.	23'-3"	870
*A119	6	#5	STR.	12'-11"	81	B10	250	#5	STR.	54'-4"	14167
*A120	6	#5	STR.	11'-7"	72						
*A121	6	#5	STR.	10'-2"	64	*G1	2	#5	STR.	55'-0"	115
*A122	6	#5	STR.	8'-10"	55						
*A123	6	#5	STR.	7'-5"	46	*J1	104	#4	9	1'-5"	98
*A124	6	#5	STR.	6'-1"	38						
*A125	6	#5	STR.	4'-8"	29	*K1	8	#8	1	18'-2"	388
*A126	6	#5	STR.	3'-4"	21	*K2	8	#8	2	26'-10"	573
*A127	6	#5	STR.	2'-0"	13	*K3	18	#6	STR.	12'-6"	338
						K4	18	#4	STR.	10'-7"	127
A201	6	#5	STR.	37'-8"	236	K5	36	#4	STR.	13'-10"	333
A202	6	#5	STR.	36'-4"	227	K6	18	#4	STR.	12'-10"	154
A203	6	#5	STR.	34'-11"	219	K7	24	#4	7	9'-2"	147
A204	6	#5	STR.	33'-7"	210	K8	24	#4	8	17'-10"	286
A205	6	#5	STR.	32'-2"	201						
A206	6	#5	STR.	30'-10"	193	*S1	60	#5	3	4'-8"	292
A207	6	#5	STR.	29'-5"	184	*S2	60	#4	4	4'-9"	190
A208	6	#5	STR.	28'-1"	176	S3	252	#4	5	2'-9"	463
A209	6	#5	STR.	26'-8"	167						
A210	6	#5	STR.	25'-4"	159	U1	72	#4	6	11'-10"	569
A211	6	#5	STR.	23'-11"	150	U2	18	#4	6	9'-10"	118
A212	6	#5	STR.	22'-7"	141						
A213	6	#5	STR.	21'-2"	132						
A214	6	#5	STR.	19'-10"	124						
A215	6	#5	STR.	18'-5"	115						
REINFORCING STEEL 39439 LBS											
*EPOXY COATED REINFORCING STEEL 39543 LBS											

### BAR TYPES



### POURING SEQUENCE

INDICATES POUR NUMBER AND DIRECTION OF POUR

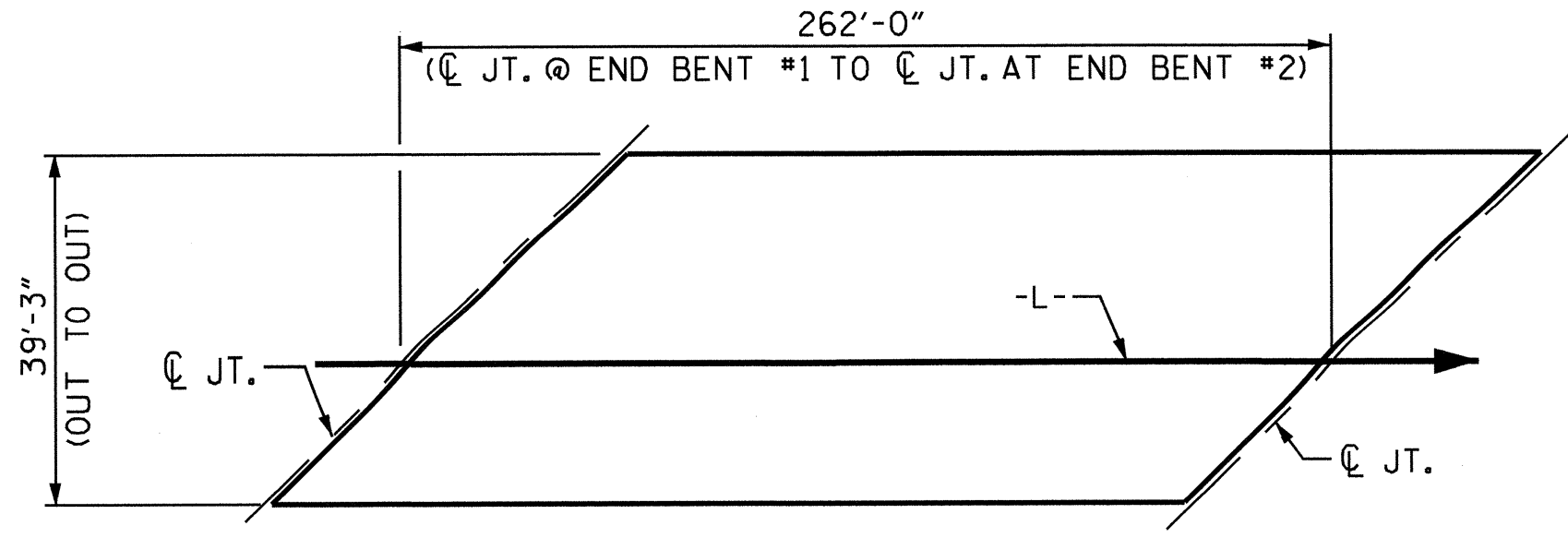


### OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL POUR ① REACHES A MINIMUM OF 3000 PSI

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"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 10,284)

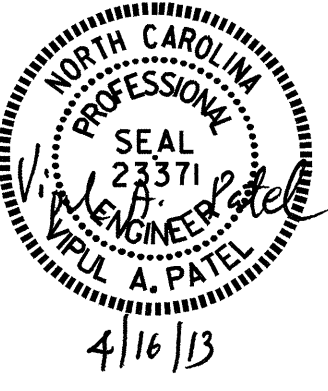
### SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	43.4		
POUR #2	113.9		
POUR #3	113.9		
POUR #4	110.3		
POUR #5	18.0		
TOTALS**	399.6	39439	39543

\*\*QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

### GROOVING BRIDGE FLOORS

APPROACH SLABS	1539	SQ.FT.
BRIDGE DECK	8591	SQ.FT.
TOTAL	10130	SQ.FT.



PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
SUPERSTRUCTURE  
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 37
2			4			

STD. NO. BOM2

DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13  
ASSEMBLED BY: J.G. KHARVA DATE: 04/25/12  
CHECKED BY: H.T. DIEU DATE: 05/08/12  
DRAWN BY: JMB 5/87 REV. 6/1/94 EEM/GRP  
CHECKED BY: SJD 9/87 REV. 8/16/99 RWW/LES  
REV. 5/1/06 TLA/GM

**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

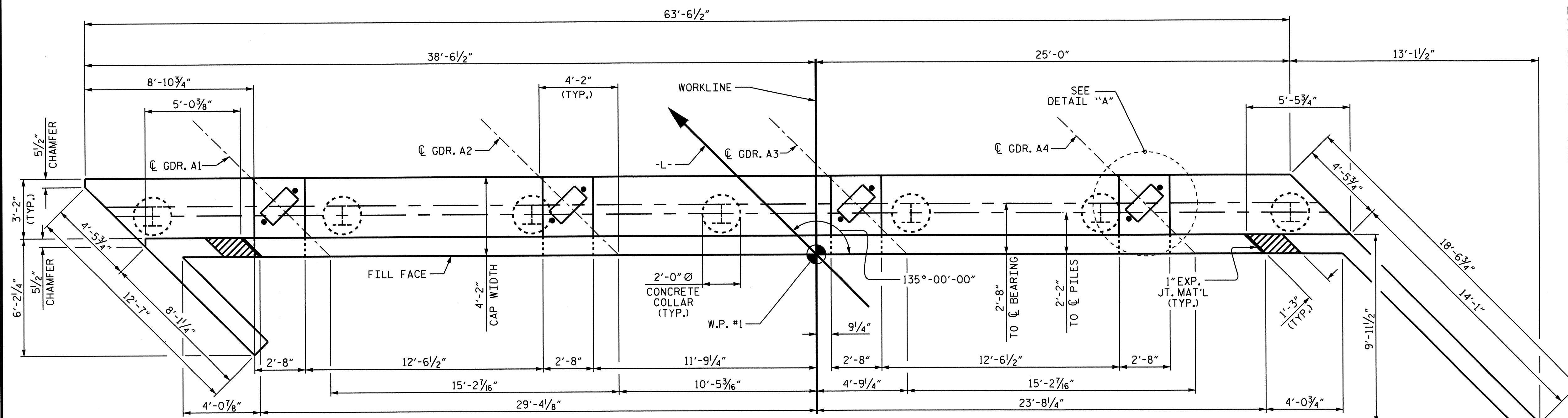
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCEMENT BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

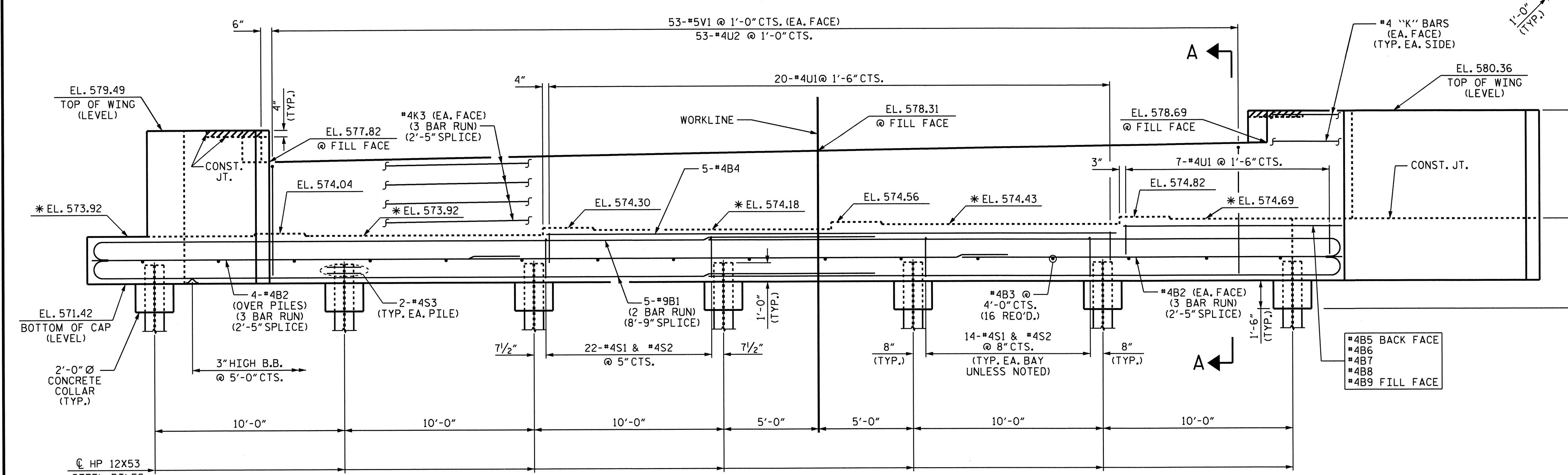
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

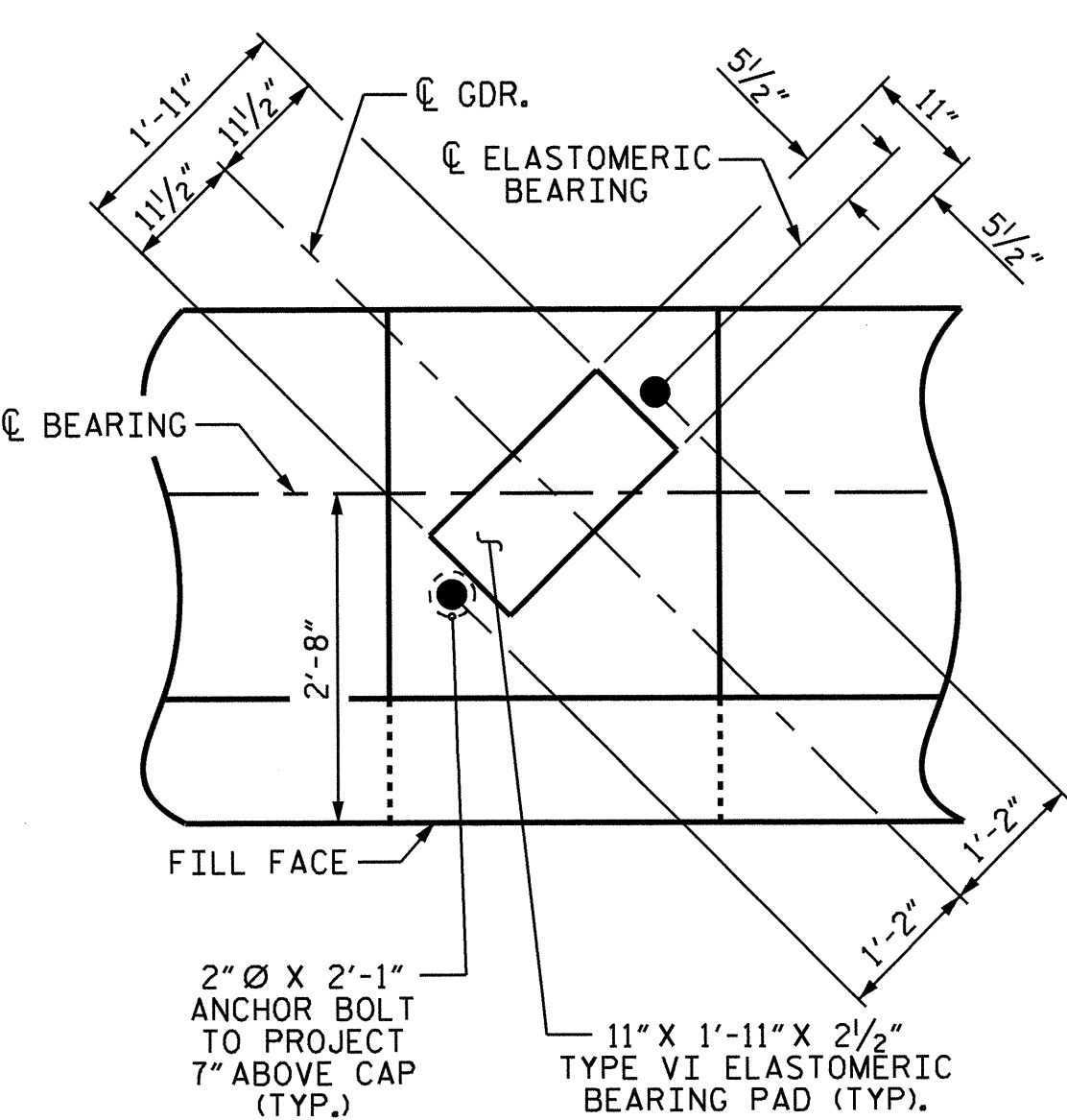
THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



**PLAN**



**ELEVATION**



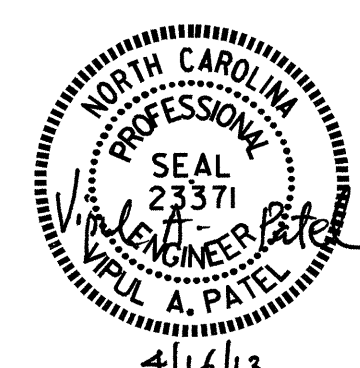
**DETAIL "A"**  
(TYP. EA. GDR.)

PROJECT NO. B-4643  
**STANLY COUNTY**  
 STATION: 34+28.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE**  
**END BENT 1**

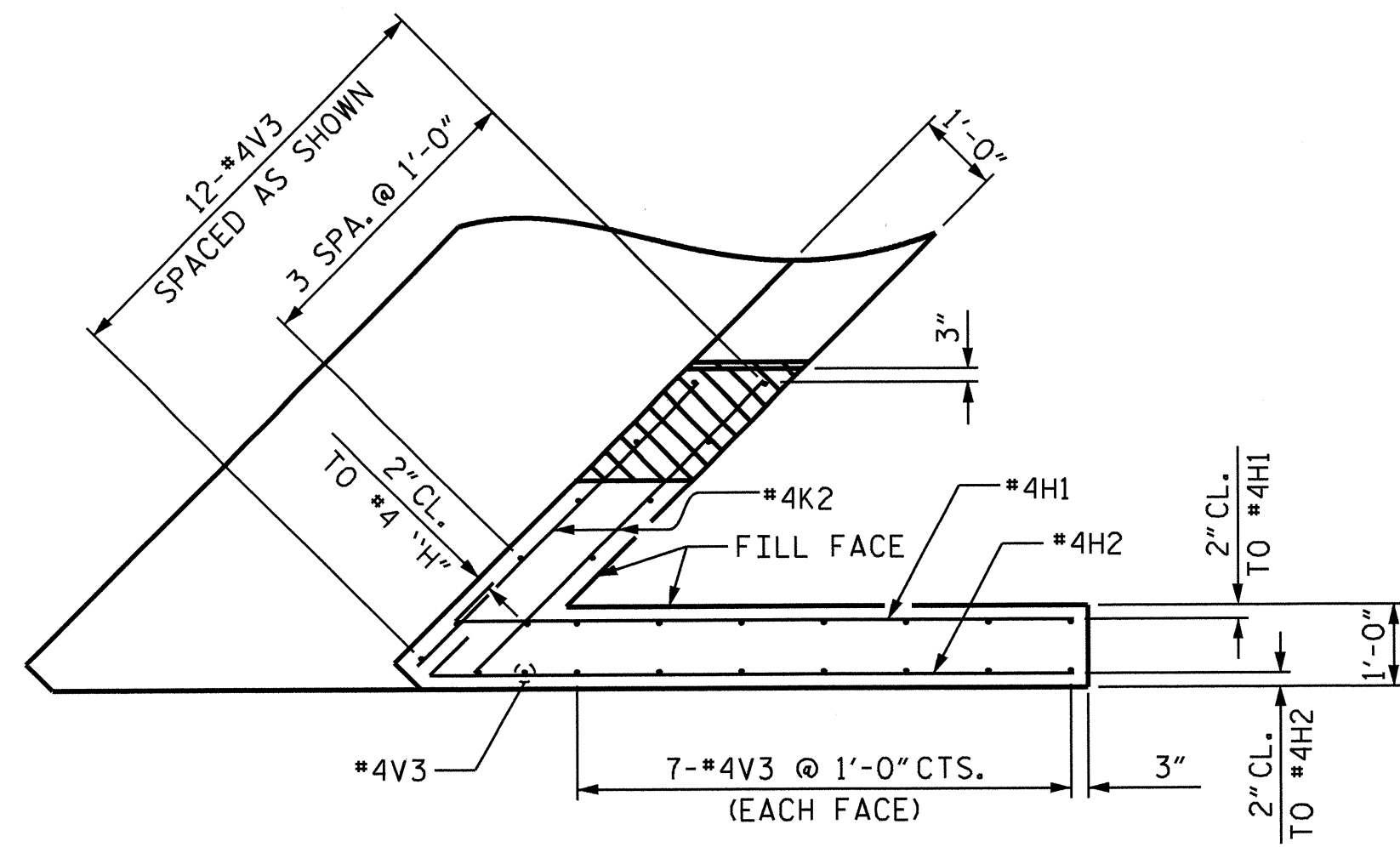


\* SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS.

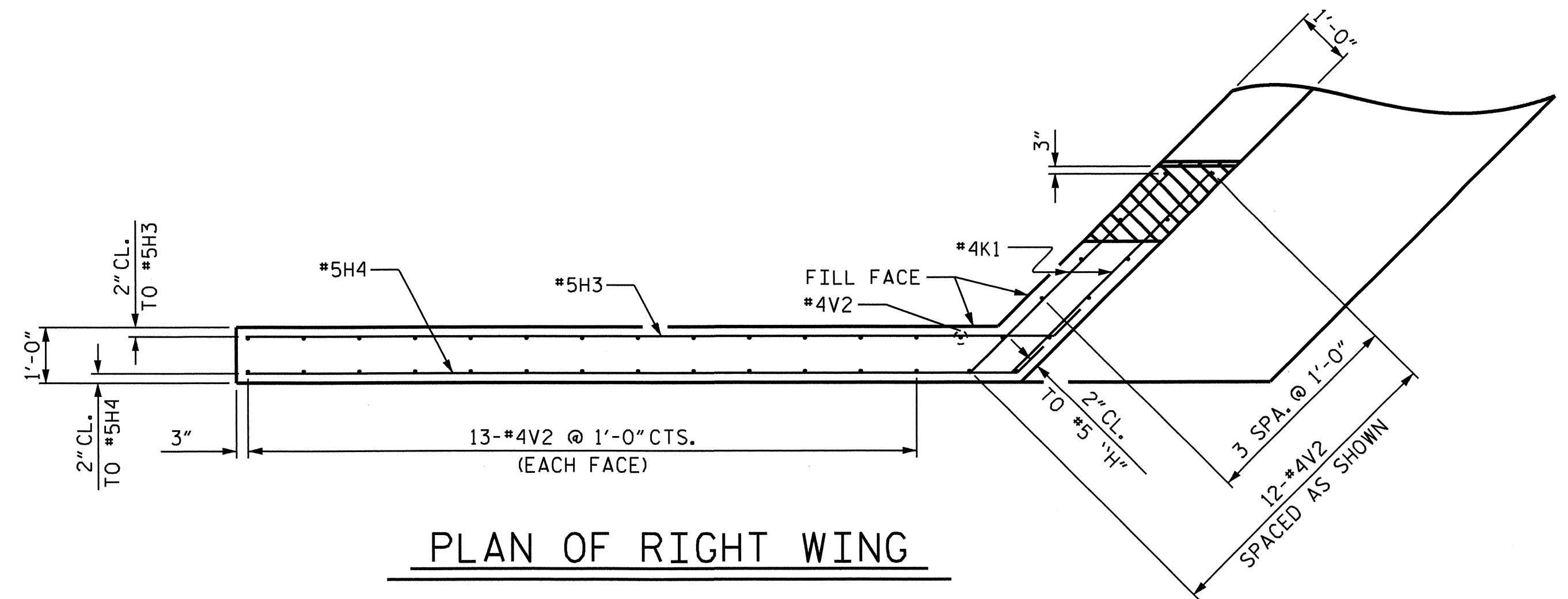
DRAWN BY : T.H. CARROLL DATE : 11/12  
 CHECKED BY : R.L. CHESSON DATE : 11/12  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 03/12/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	37
2			4				

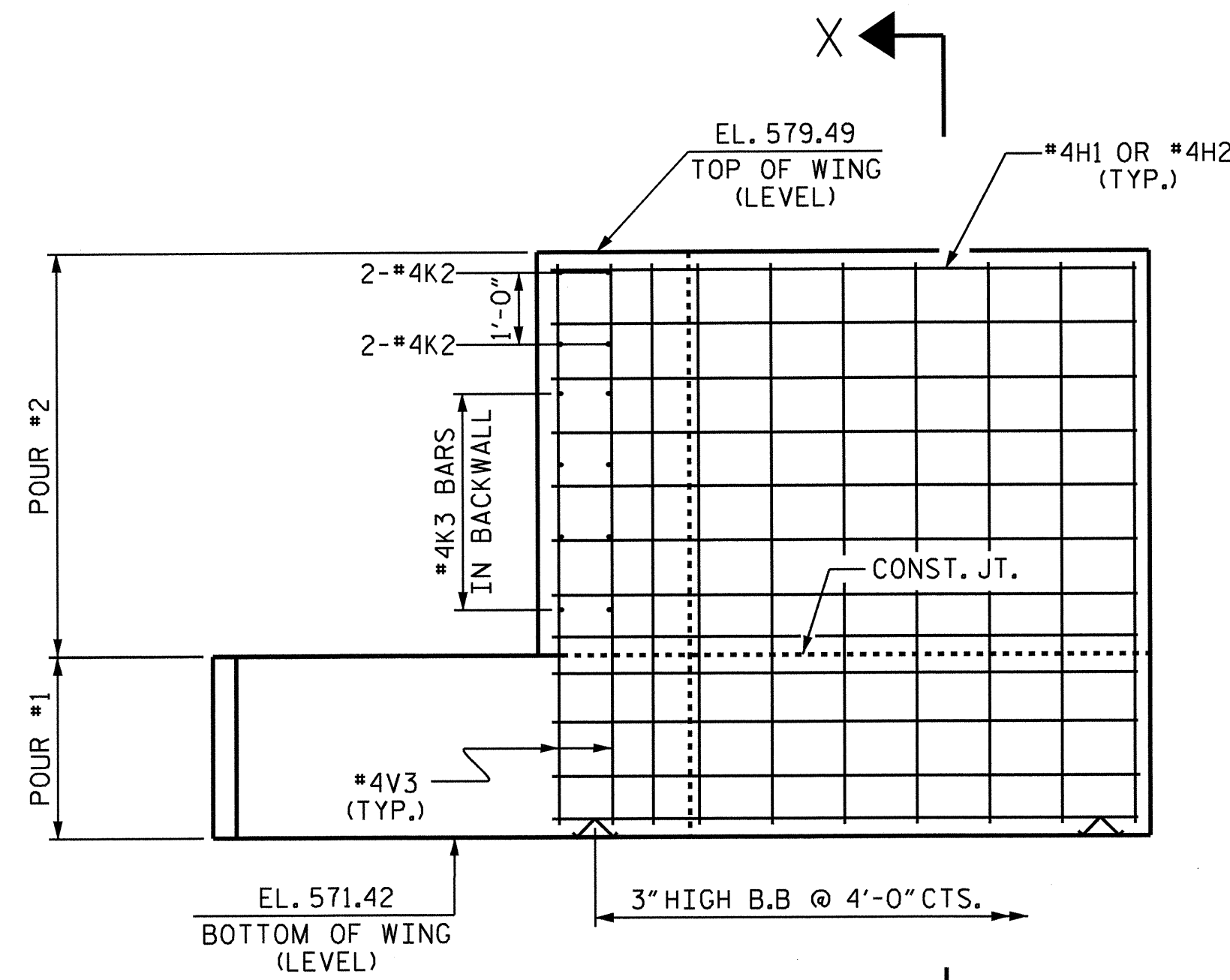




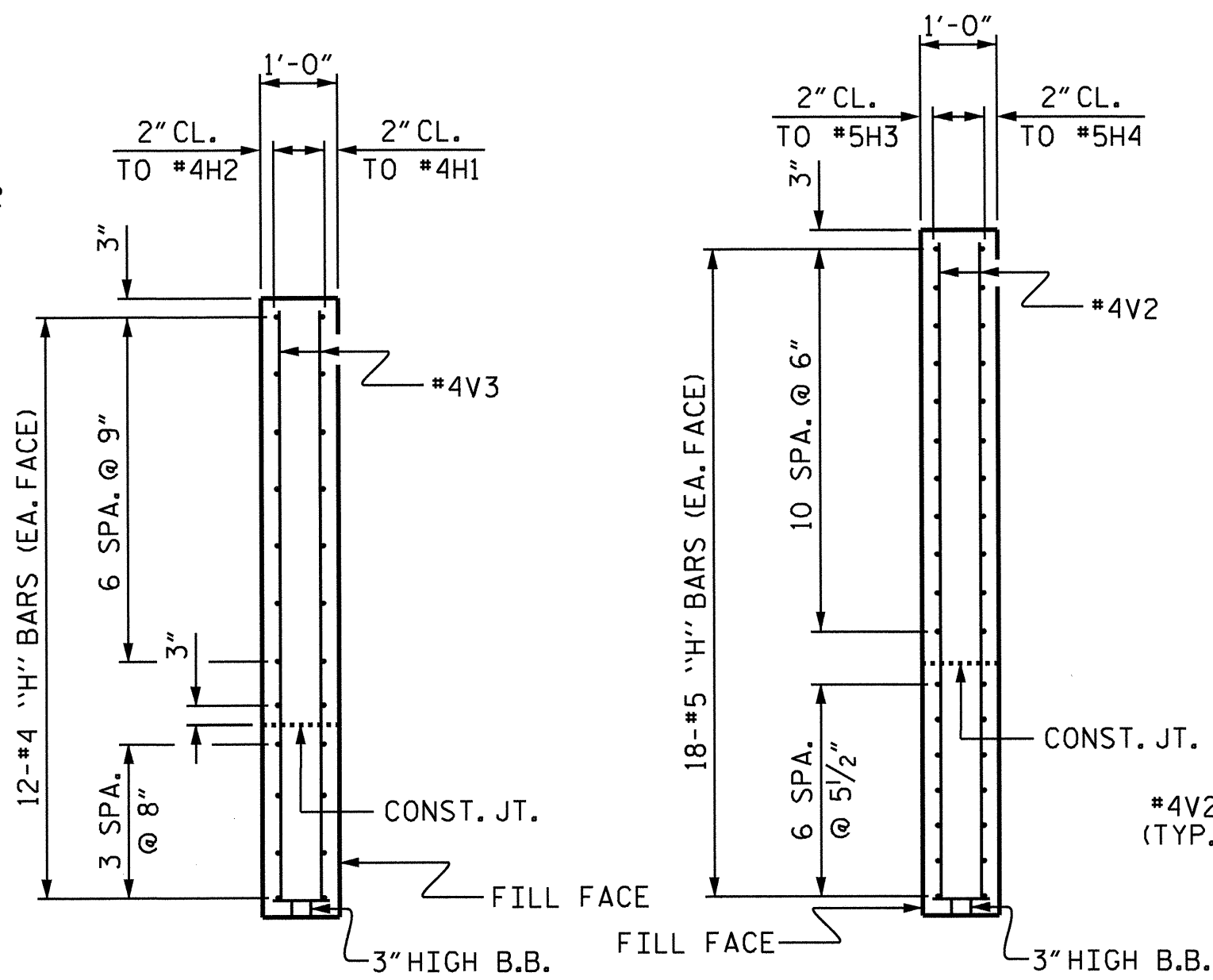
PLAN OF LEFT WING



PLAN OF RIGHT WING

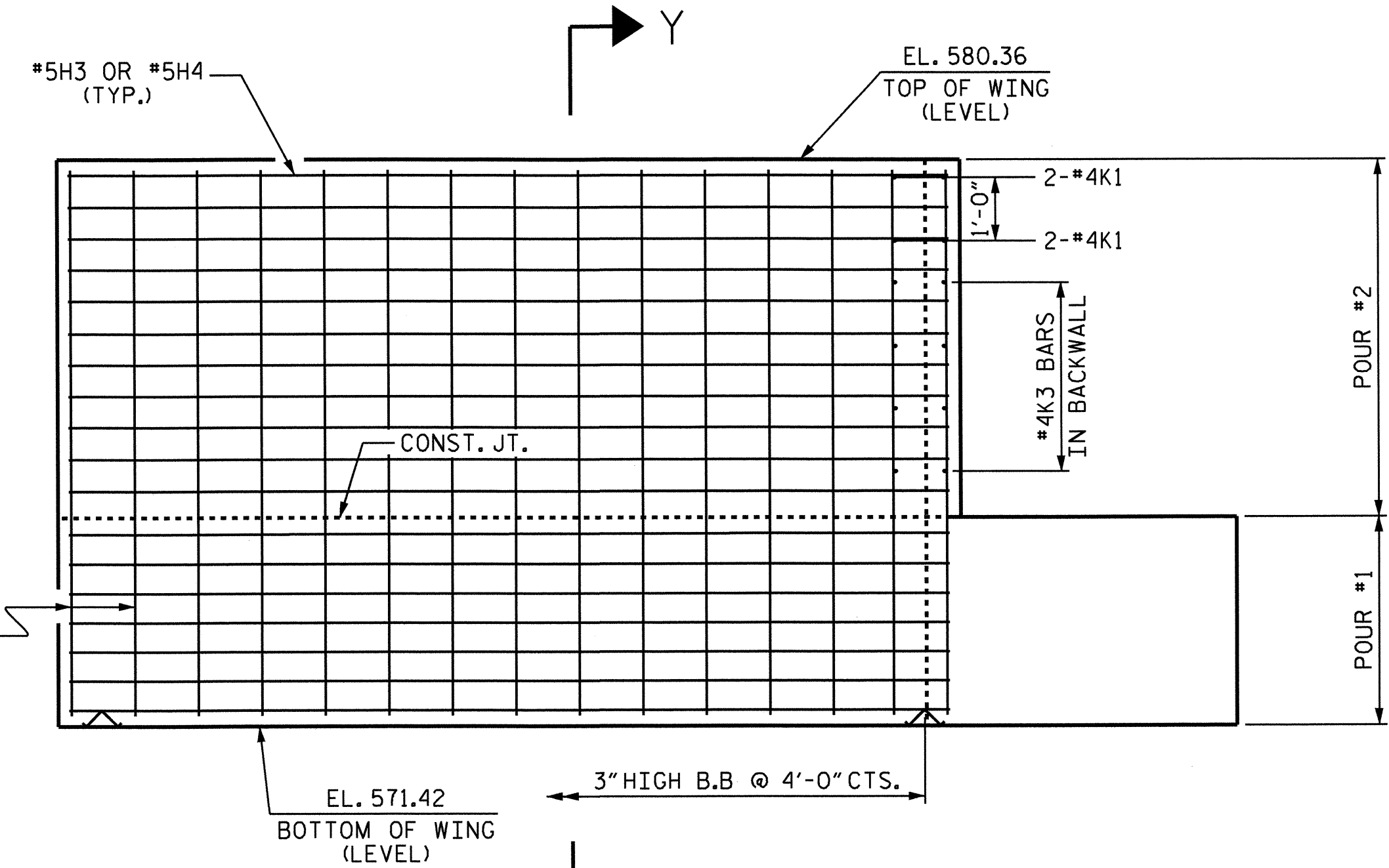


ELEVATION OF LEFT WING



SECTION X-X

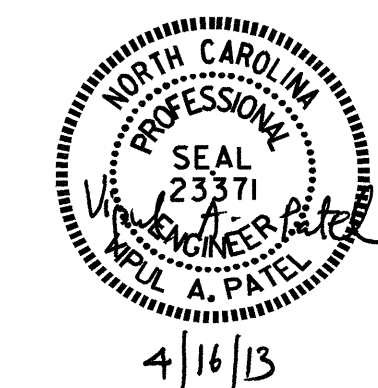
SECTION Y-Y



ELEVATION OF RIGHT WING

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 3



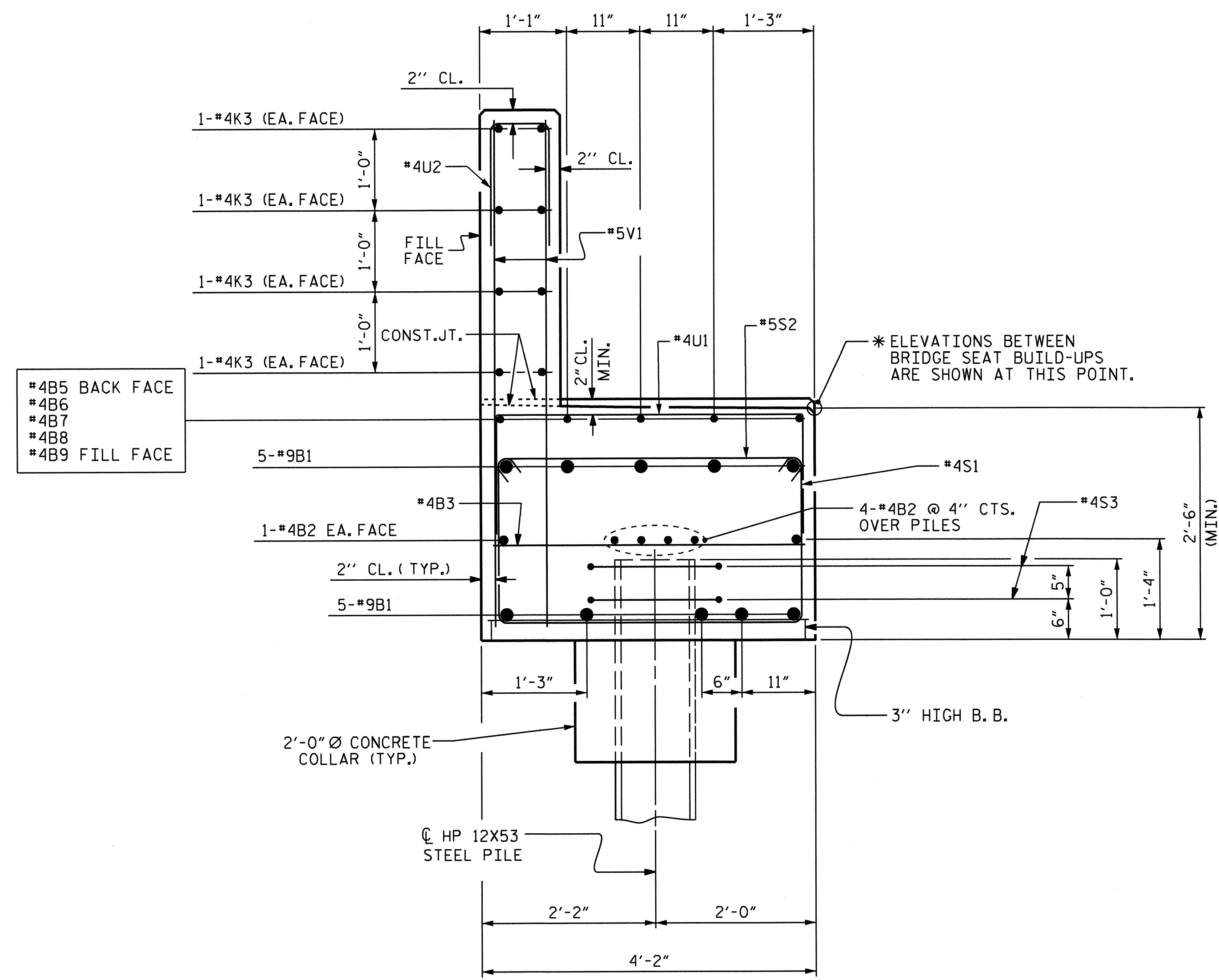
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

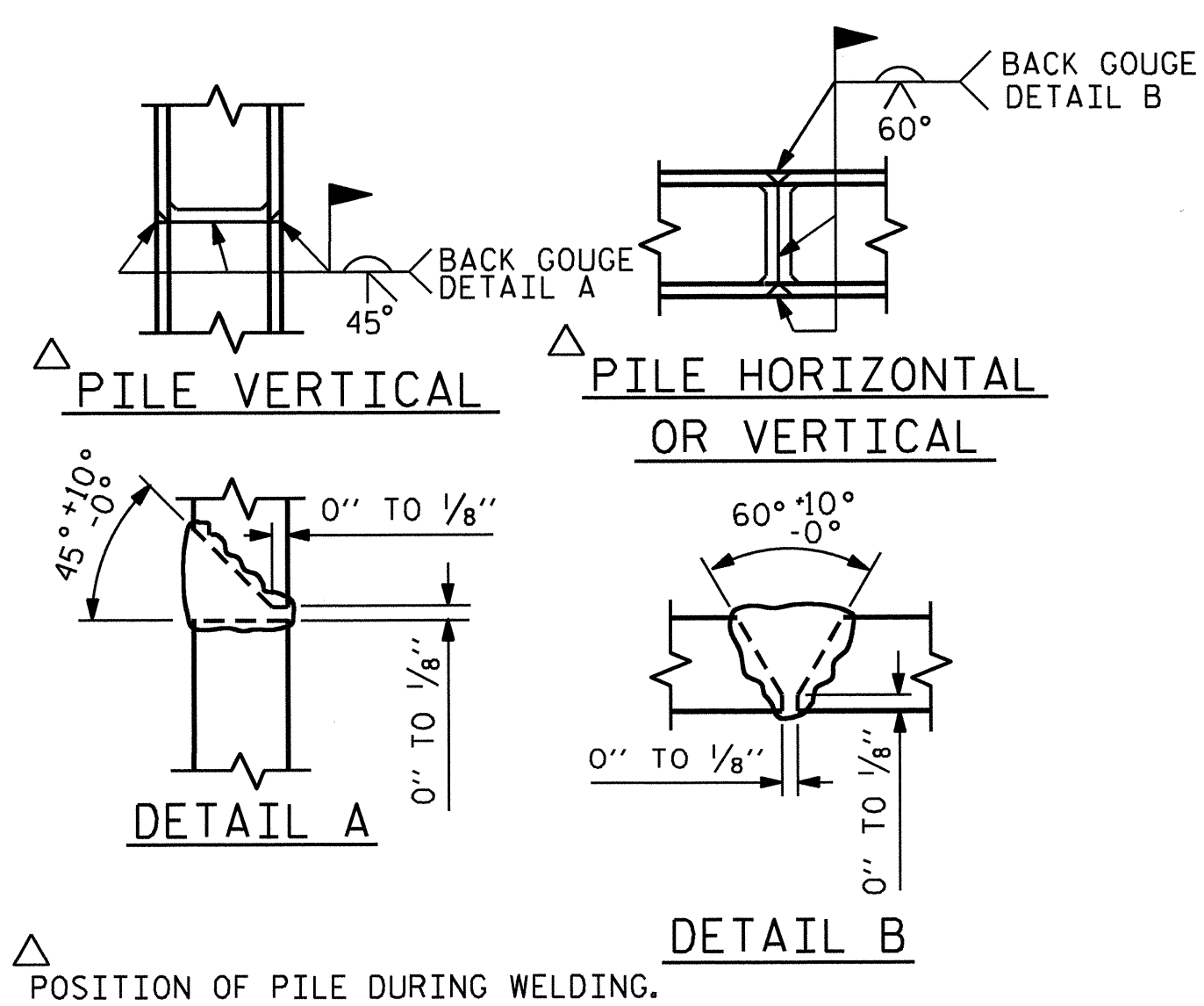
DRAWN BY: T.H. CARROLL DATE: 11/12  
 CHECKED BY: R.L. CHESSON DATE: 11/12  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 03/12/13

15-APR-2013 13:48  
 X:\Structures\plans\B-4643\_SD.E\*.dgn  
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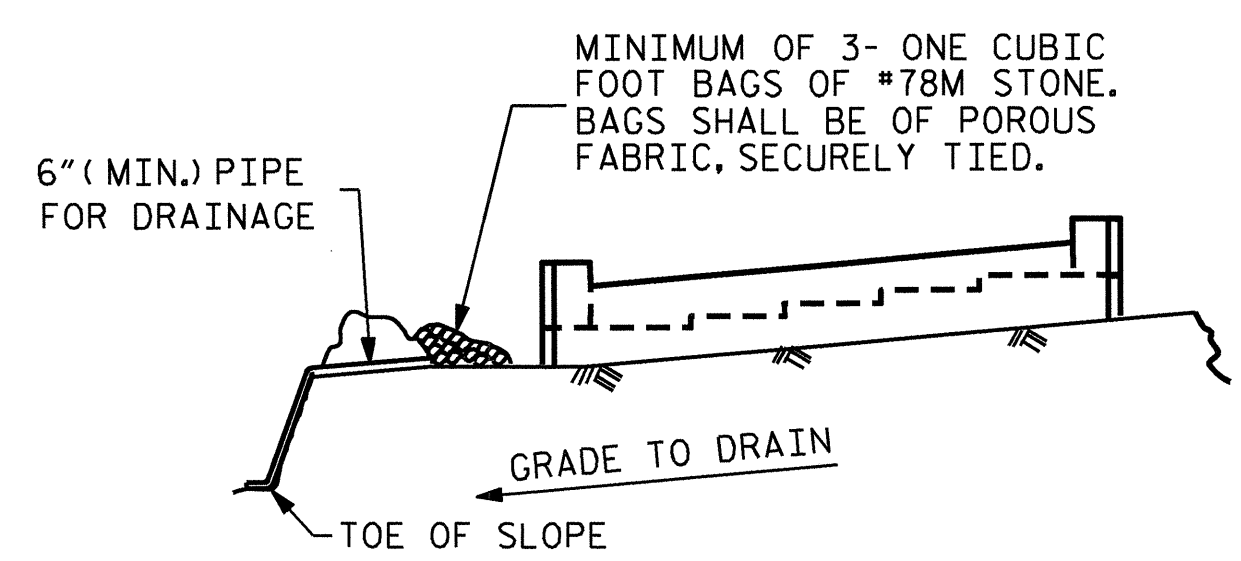
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			37



SECTION A-A



PILE SPLICE DETAILS

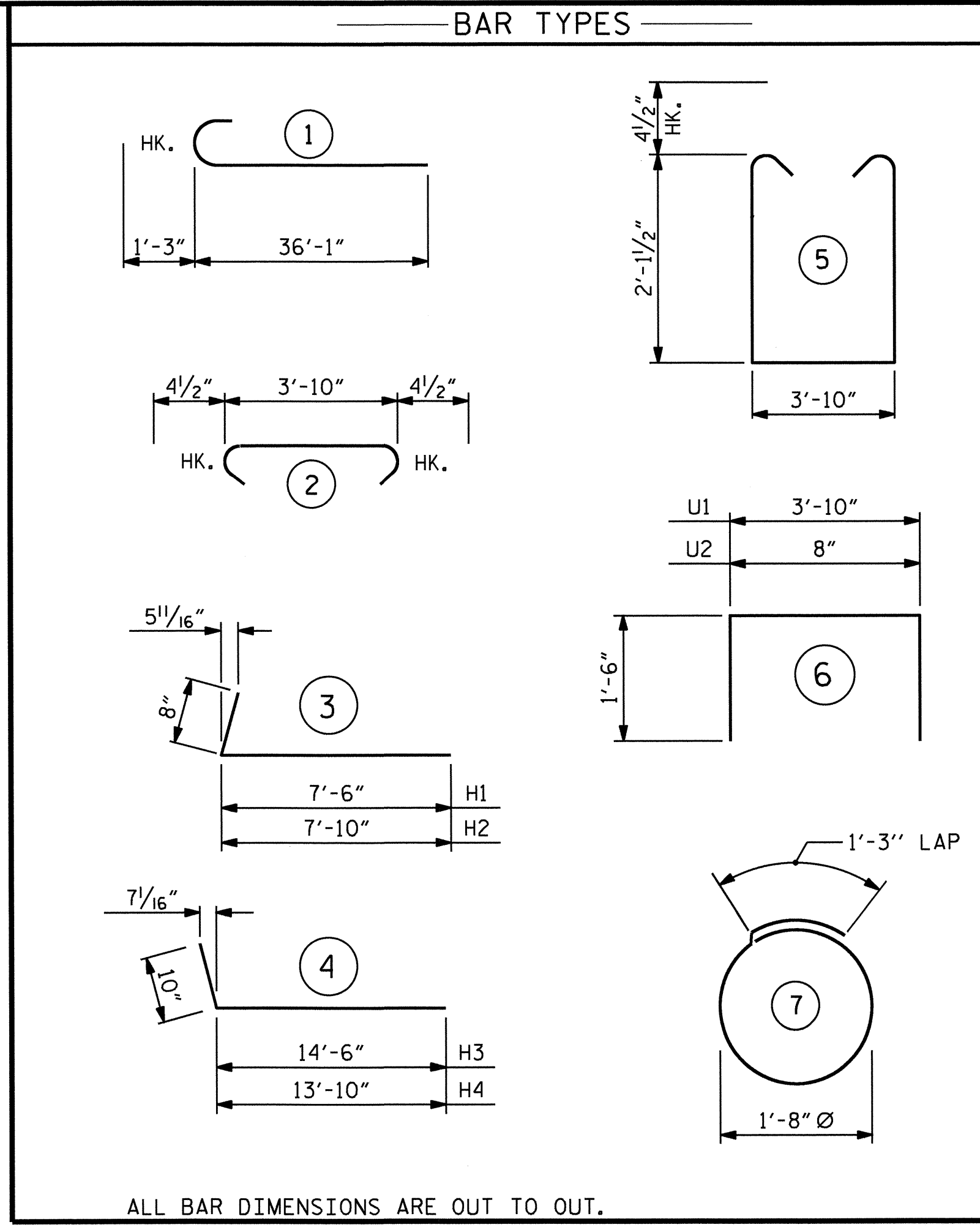


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



ALL BAR DIMENSIONS ARE OUT TO OUT.

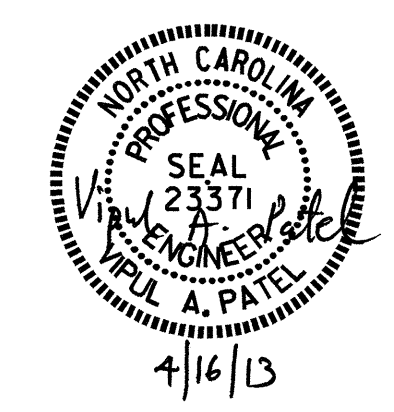
BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	9	1	37'-4"	2539
B2	18	4	STR	22'-10"	275
B3	16	4	STR	3'-10"	41
B4	5	4	STR	30'-0"	100
B5	1	4	STR	8'-9"	6
B6	1	4	STR	9'-9"	7
B7	1	4	STR	10'-8"	7
B8	1	4	STR	11'-7"	8
B9	1	4	STR	12'-5"	8
H1	12	4	3	8'-2"	65
H2	12	4	3	8'-6"	68
H3	18	5	4	15'-4"	288
H4	18	5	4	14'-8"	275
K1	4	4	STR	5'-0"	13
K2	4	4	STR	4'-8"	12
K3	24	4	STR	22'-10"	366
S1	92	4	5	8'-10"	543
S2	92	4	2	4'-7"	282
S3	14	4	7	6'-6"	61
U1	27	4	6	6'-10"	123
U2	53	4	6	3'-8"	130
V1	106	5	STR	6'-0"	663
V2	39	4	STR	8'-7"	224
V3	27	4	STR	7'-9"	140
REINFORCING STEEL					LBS 6244
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, COLLAR, & LOWER PART OF WINGS					31.3 C.Y.
POUR #2 UPPER WINGS & BACKWALL					14.3 C.Y.
CLASS A CONCRETE TOTAL					45.6 C.Y.
HP 12X53 STEEL PILES NO. 7					LIN. FT. 105
PILE EXCAVATION IN SOIL					LIN. FT. 60
PILE EXCAVATION NOT IN SOIL					LIN. FT. 45

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 3 OF 3

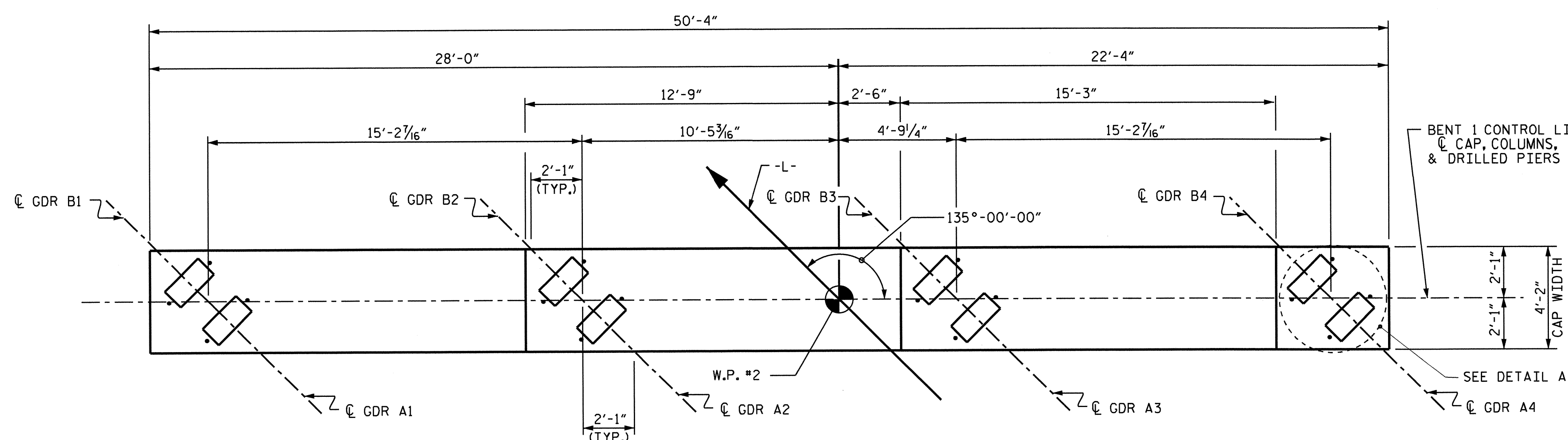
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

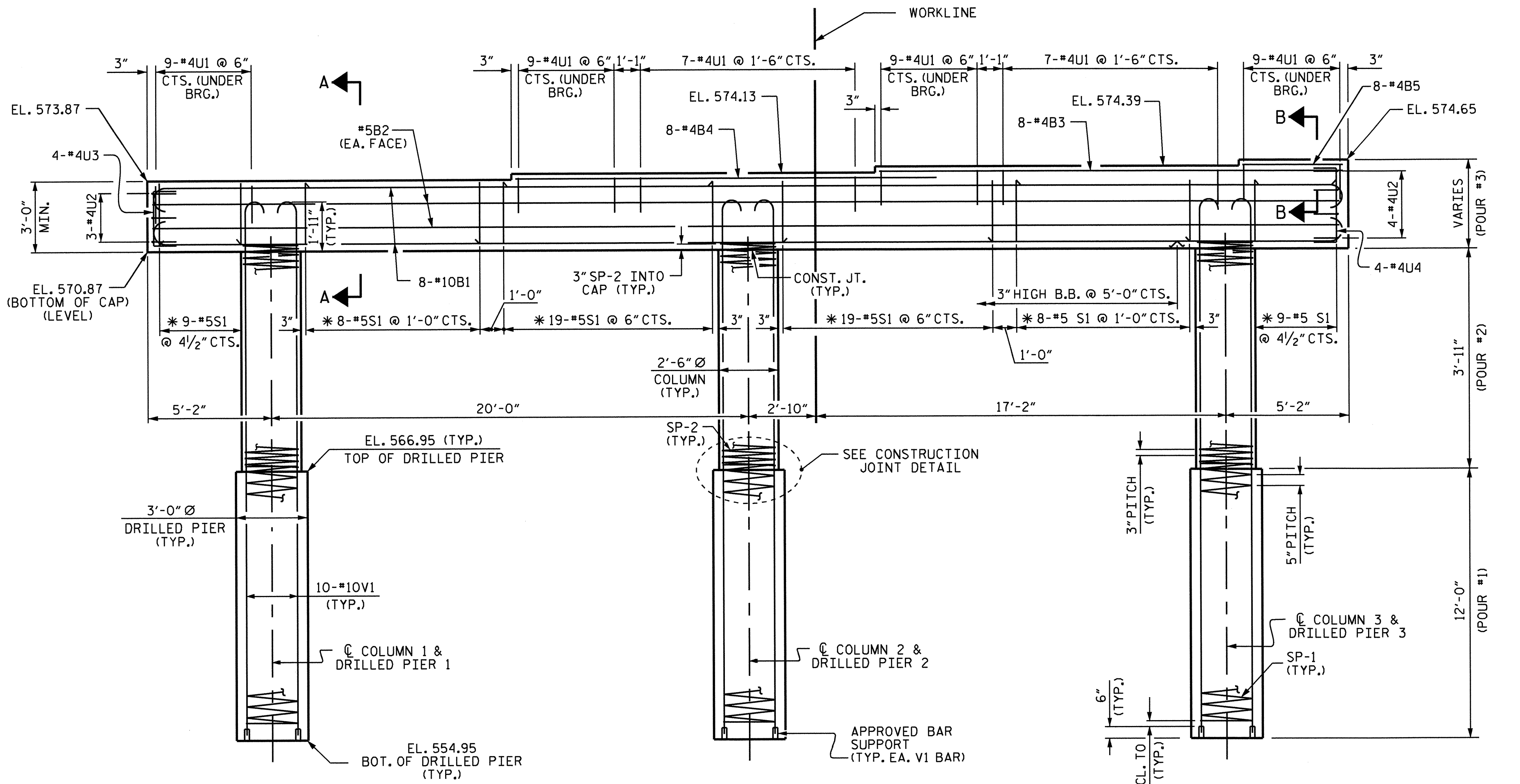


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS	37
2			4				

DRAWN BY : T.H. CARROLL DATE : 11/12  
 CHECKED BY : R.L. CHESSON DATE : 11/12  
 DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 03/12/13

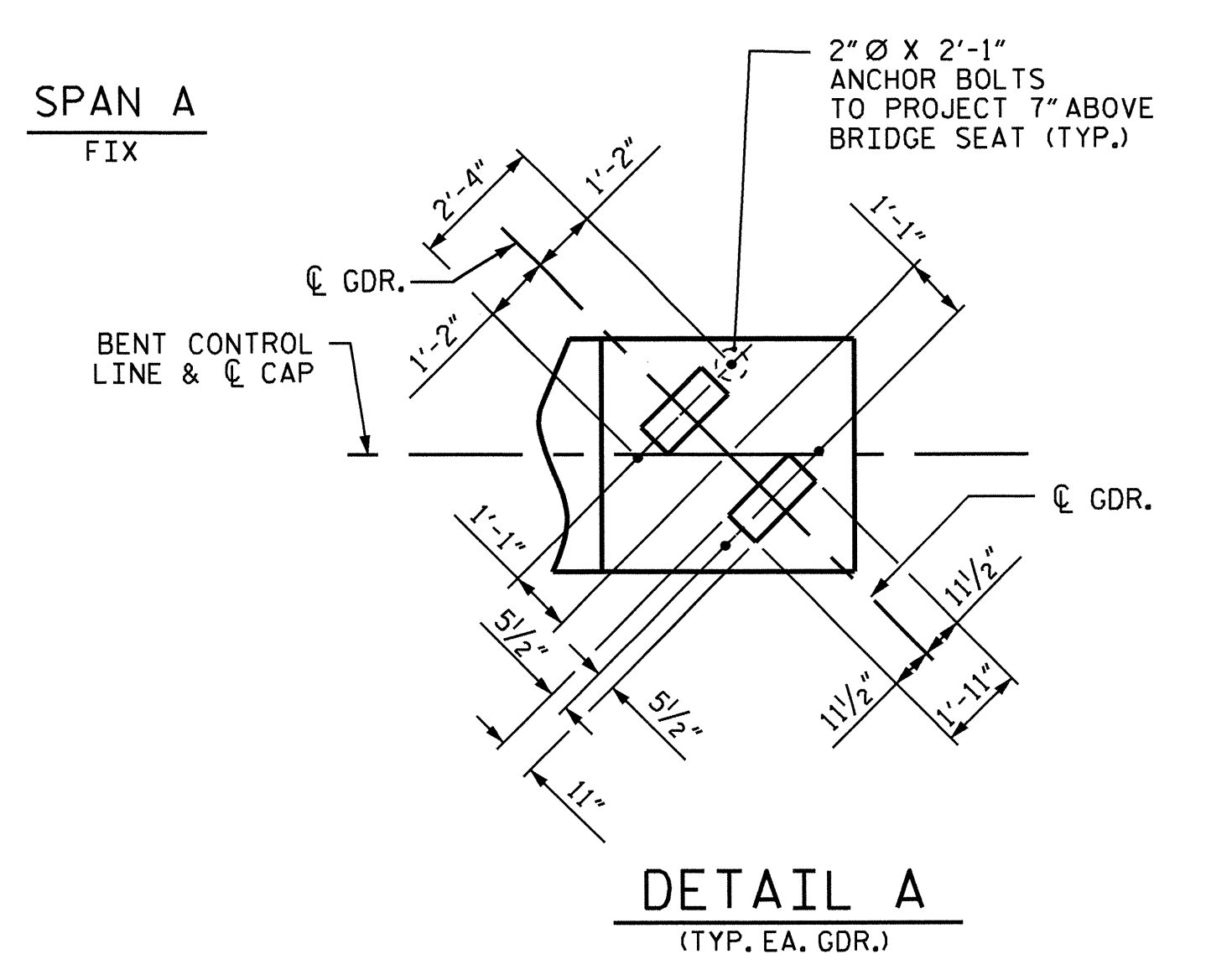


PLAN

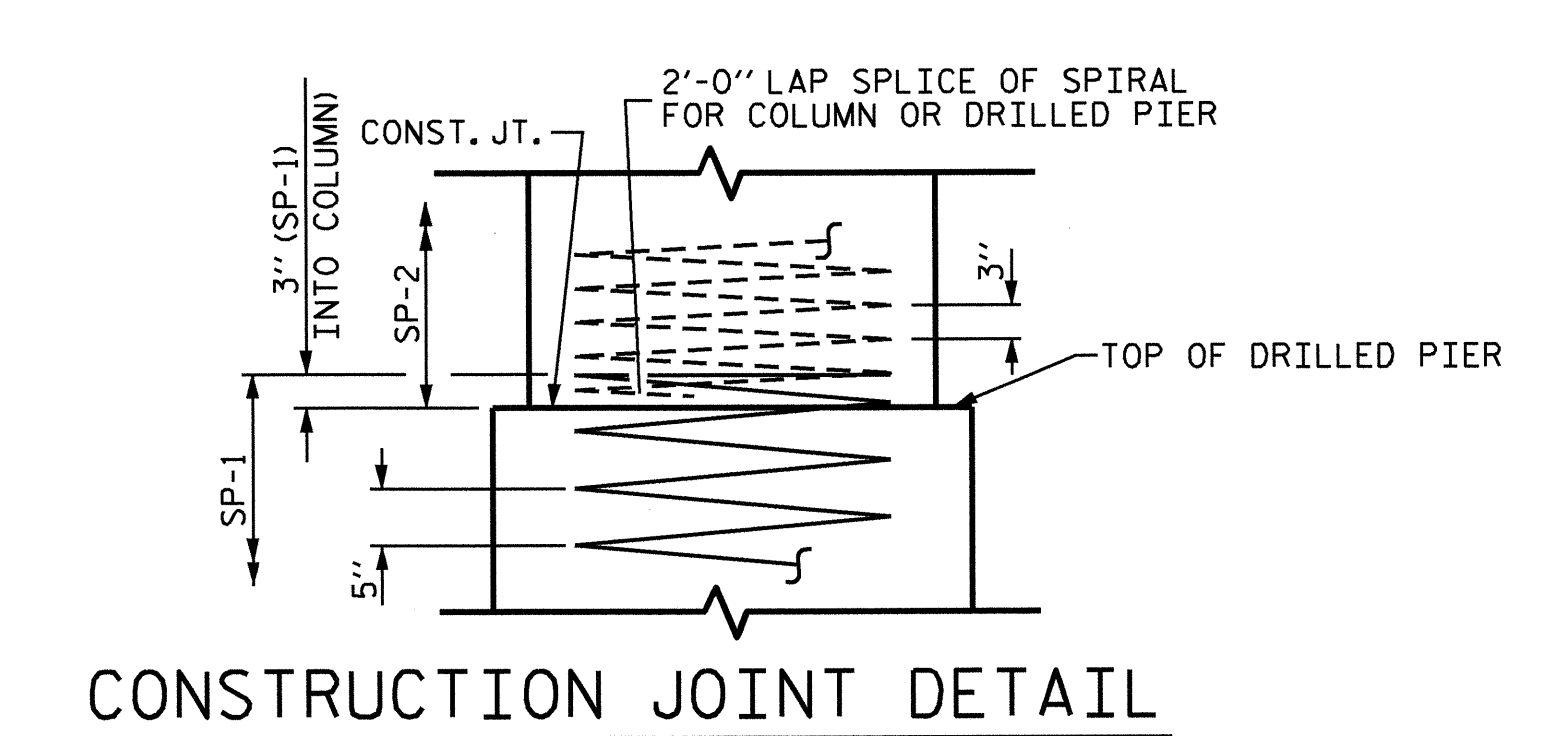


ELEVATION

**NOTES:**  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



DETAIL A  
(TYP. EA. GDR.)



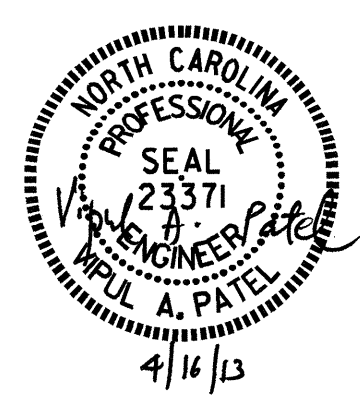
CONSTRUCTION JOINT DETAIL

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 1 OF 2

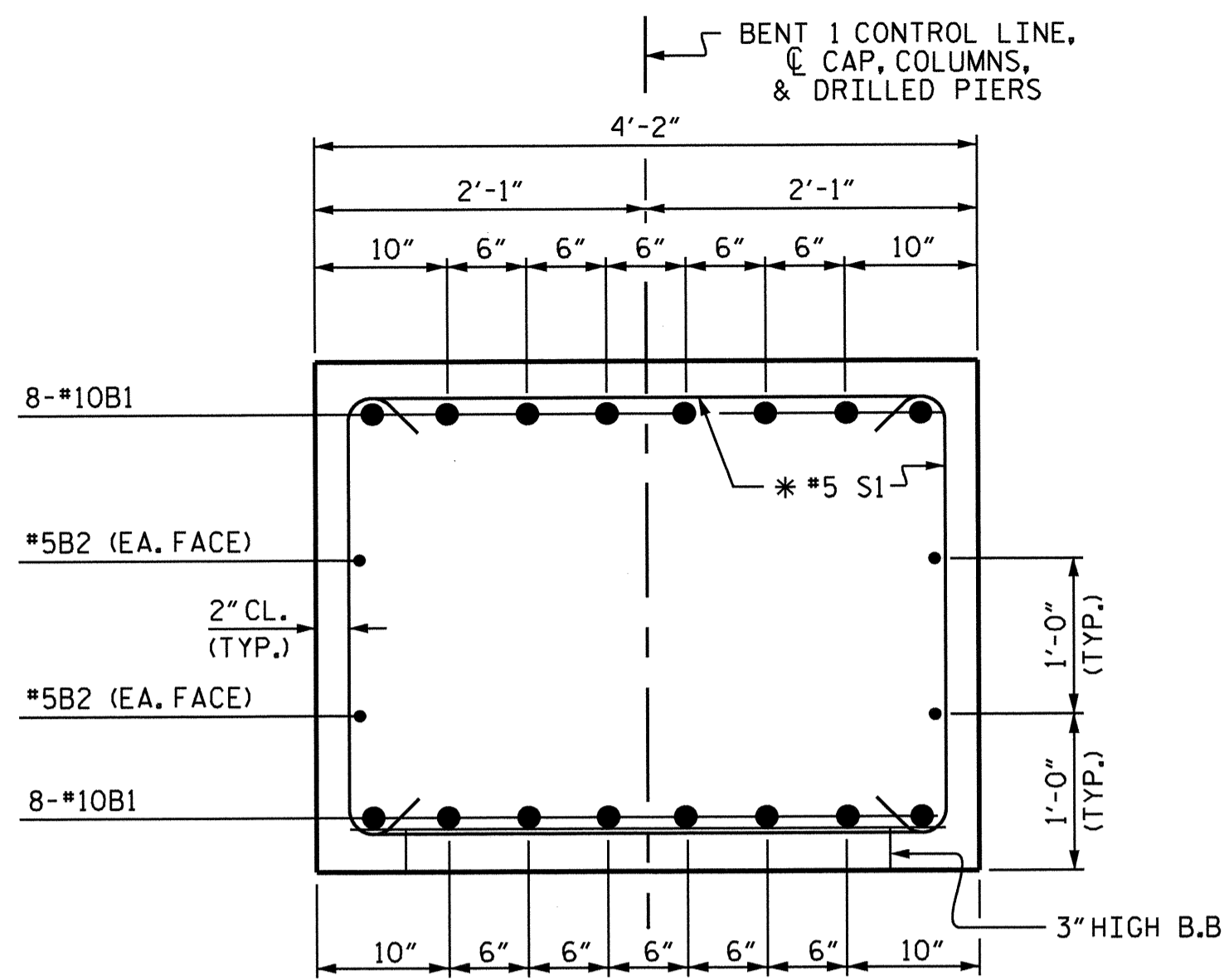
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1

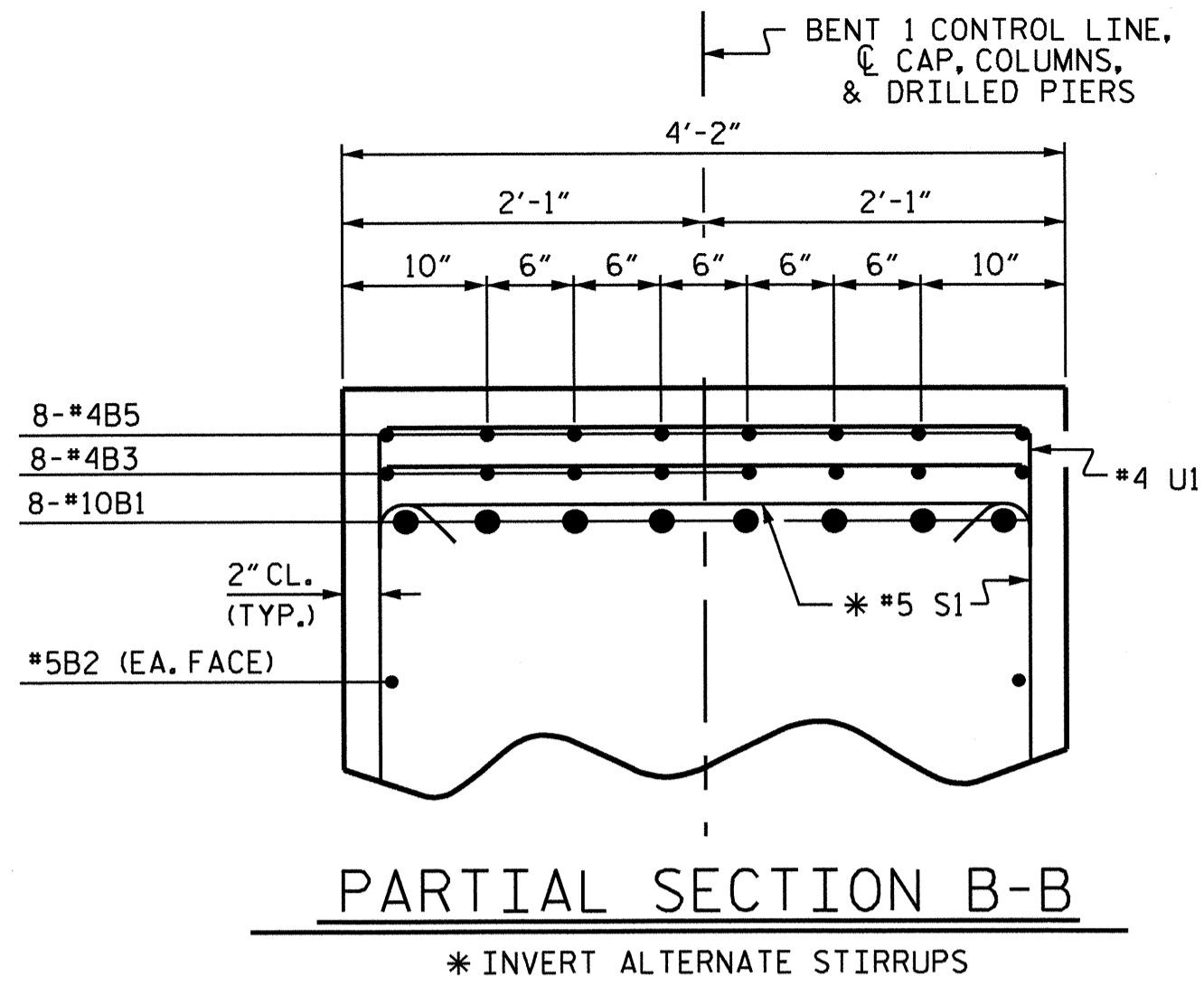


DRAWN BY : J. G. KHARVA DATE : 11/12  
 CHECKED BY : H.A. LOCKLEAR DATE : 1/13  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 03/12/13

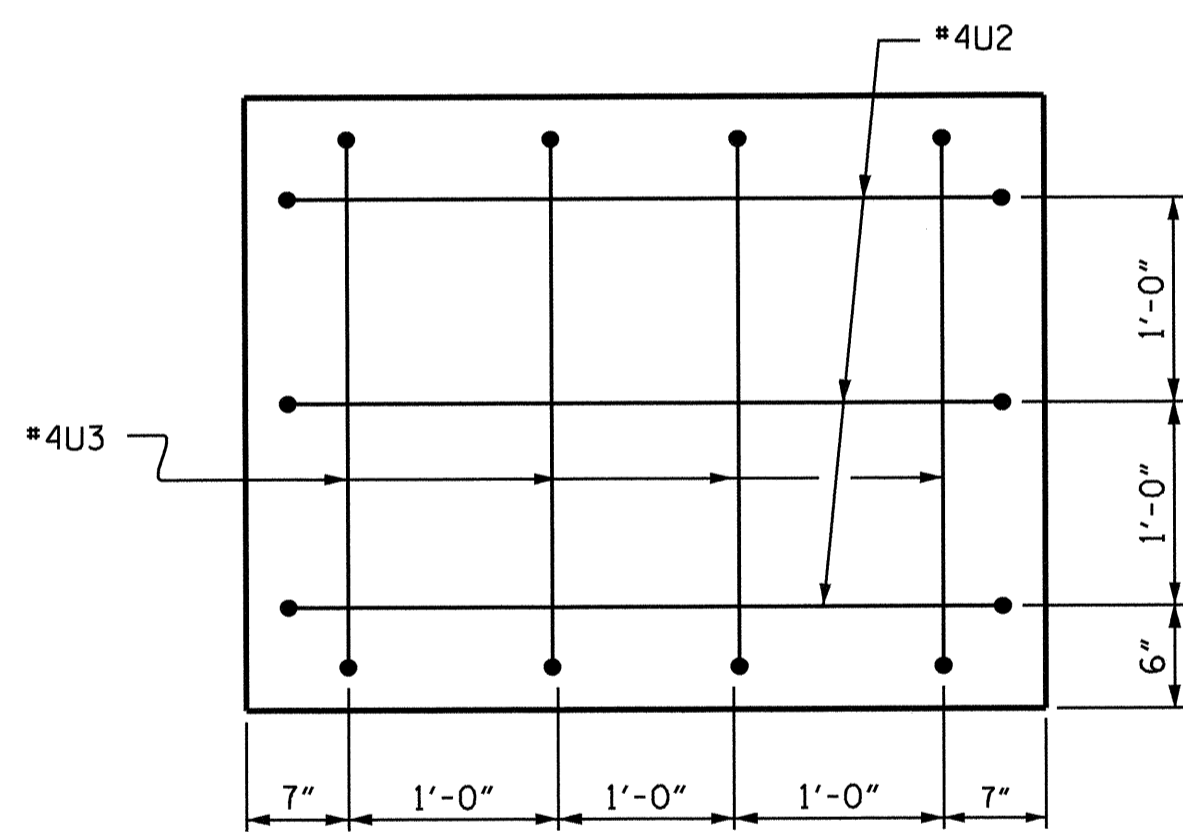
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			37



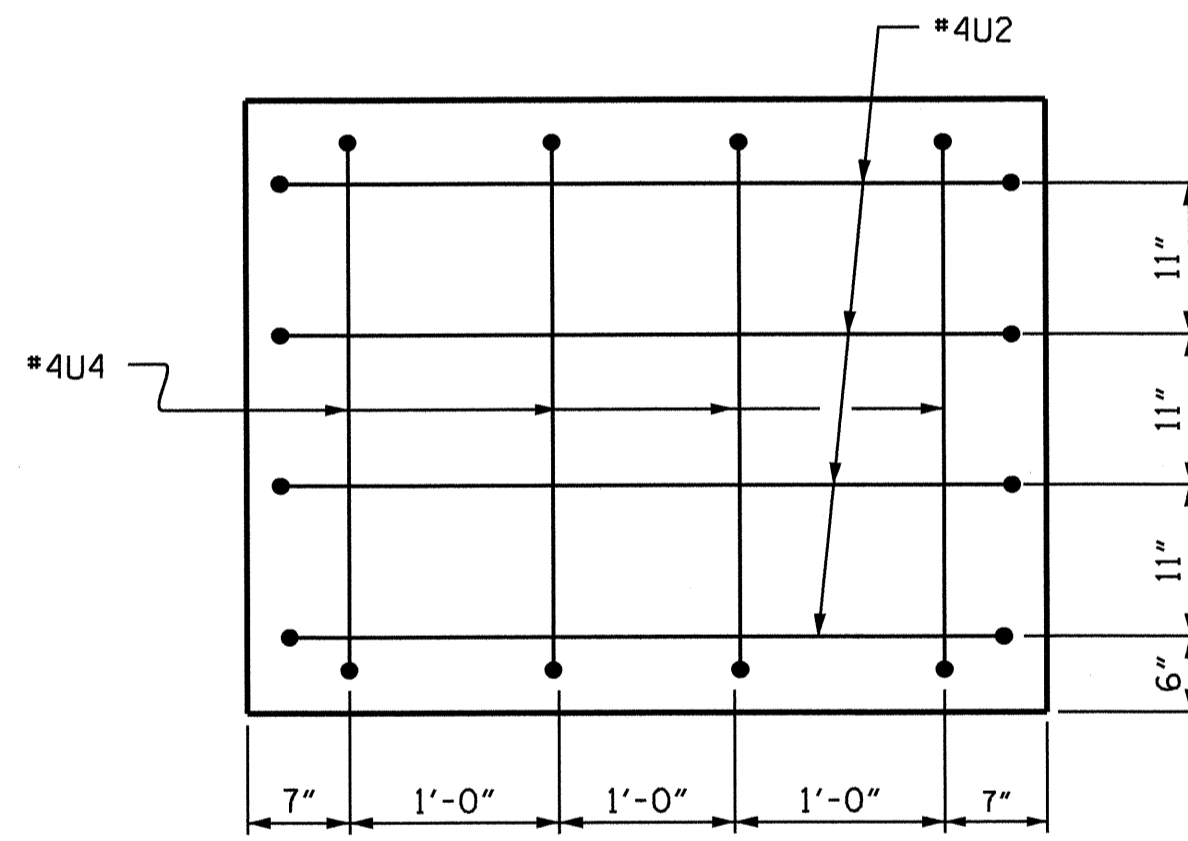
**SECTION A-A**  
\* INVERT ALTERNATE STIRRUPS



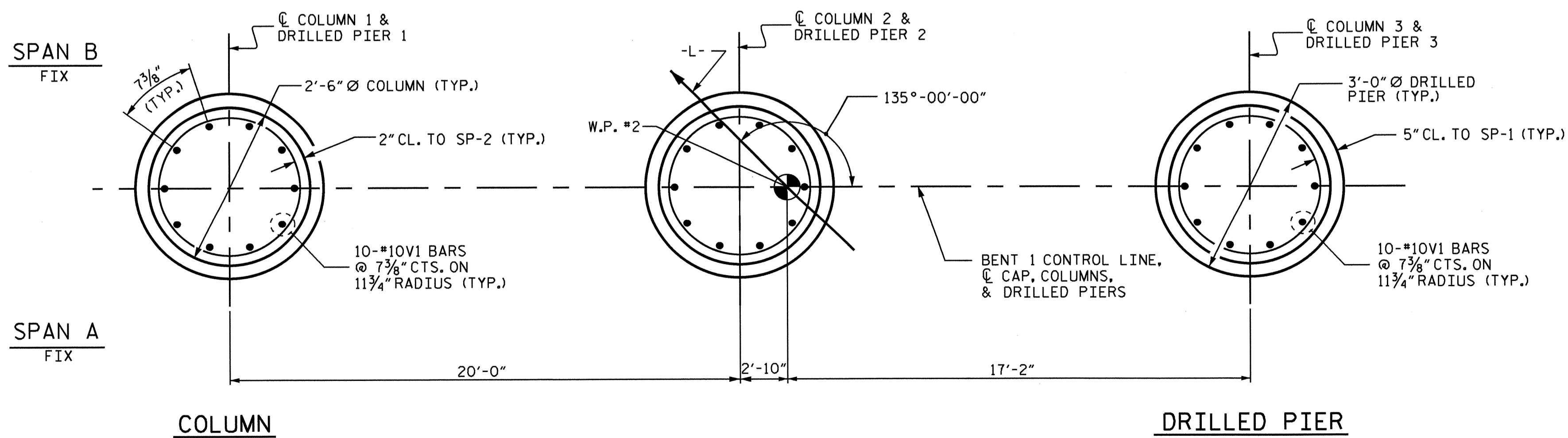
**PARTIAL SECTION B-B**  
\* INVERT ALTERNATE STIRRUPS



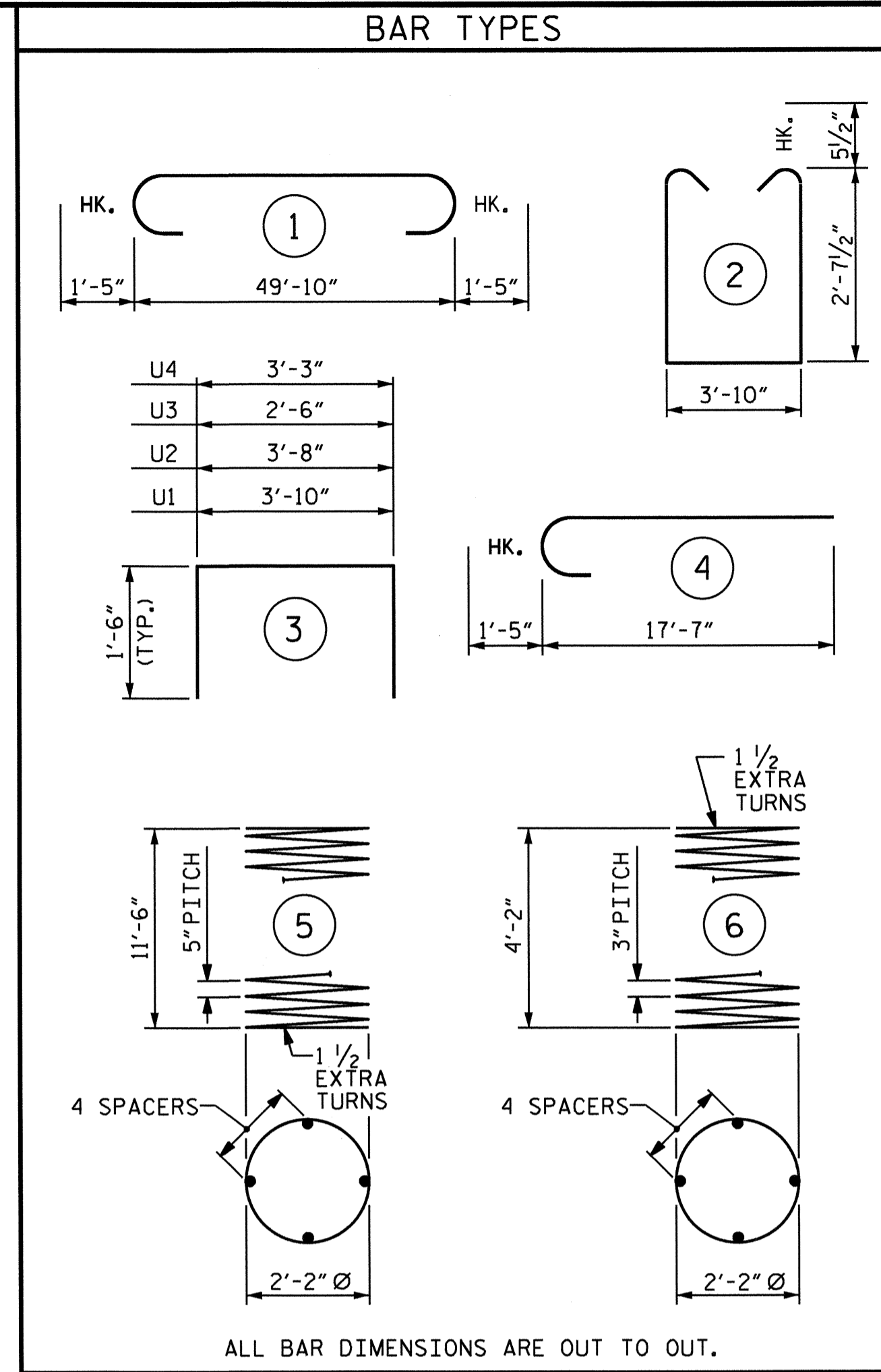
**LEFT END OF CAP DETAIL**



**RIGHT END OF CAP DETAIL**



**PLAN OF DRILLED PIERS & COLUMNS**  
(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#10	1	52'-8"	3626
B2	4	#5	STR	50'-0"	209
B3	8	#4	STR	19'-6"	104
B4	8	#4	STR	17'-8"	94
B5	8	#4	STR	4'-2"	22
S1	72	#5	2	10'-0"	751
U1	50	#4	3	6'-10"	228
U2	7	#4	3	6'-8"	31
U3	4	#4	3	5'-6"	15
U4	4	#4	3	6'-3"	17
V1	30	#10	4	19'-0"	2453
REINFORCING STEEL =					LBS 7550
SP-1	3	**	5	194'-9"	609
SP-2	3	***	6	122'-0"	244
SPIRAL COLUMN REINFORCING STEEL =					LBS 853
CLASS A CONCRETE					
POUR #2 (COLUMNS) =					C.Y. 2.1
POUR #3 (CAP) =					C.Y. 25.7
TOTAL CLASS A CONCRETE					C.Y. 27.8
DRILLED PIERS:					
DRILLED PIER CONCRETE (C.Y.)					
POUR #1 (DRILLED PIERS) =					C.Y. 9.4
3'-0" Ø DRILLED PIERS IN SOIL					= LIN.FT. 16.0
3'-0" Ø DRILLED PIERS NOT IN SOIL					= LIN.FT. 20.0
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					= LIN.FT. 15.0
CSL TUBES					= LIN.FT. 162

\*\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

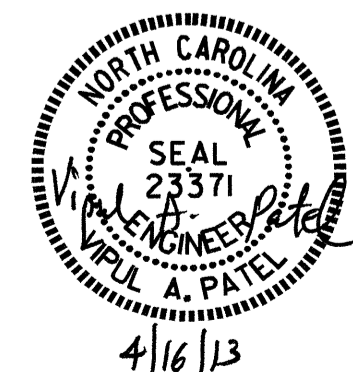
\*\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1



4/16/13

DRAWN BY : J. G. KHARVA DATE : 11/12  
 CHECKED BY : H.A. LOCKLEAR DATE : 1/13  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 03/12/13

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

S-27  
TOTAL SHEETS  
37

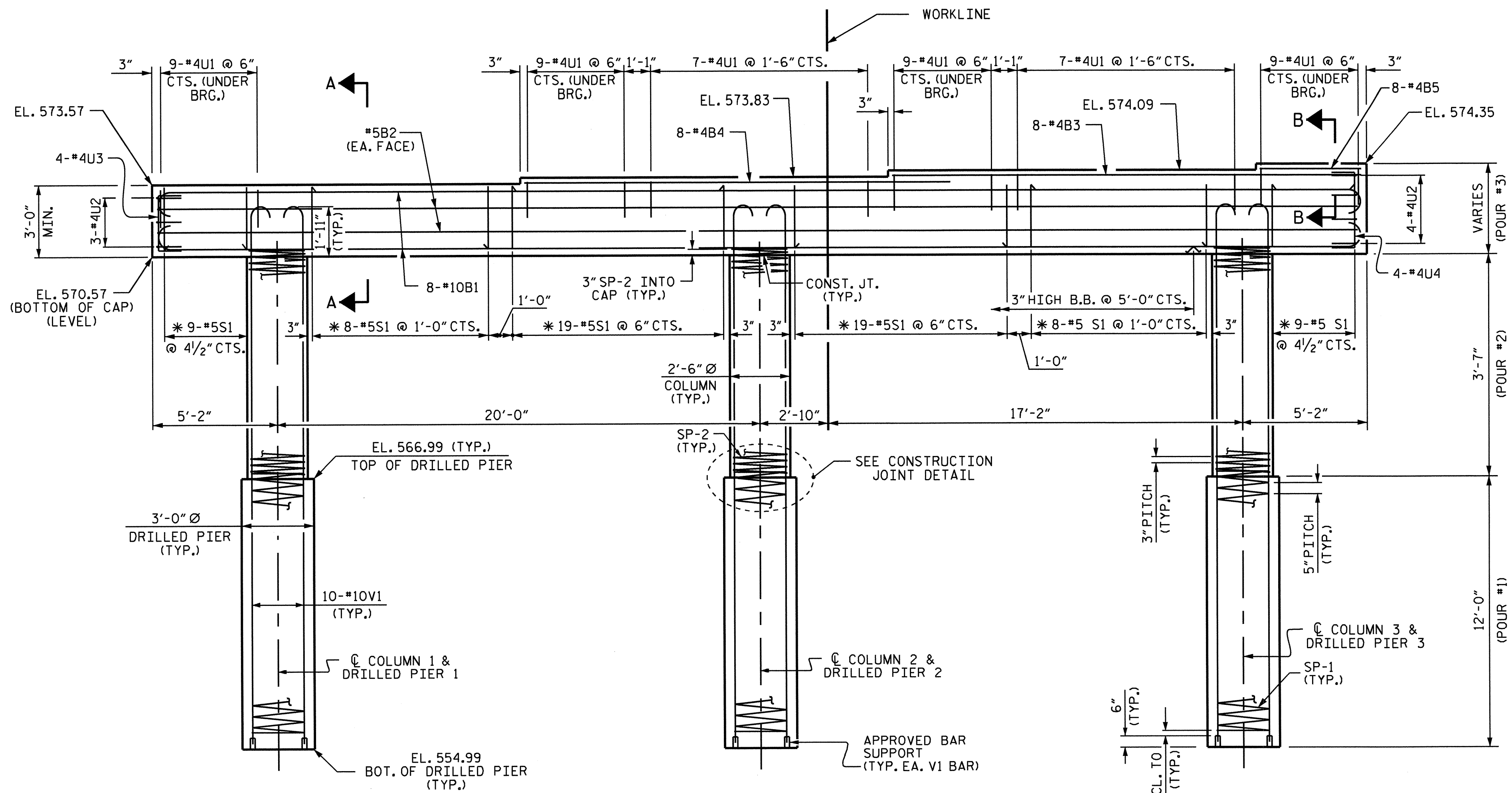
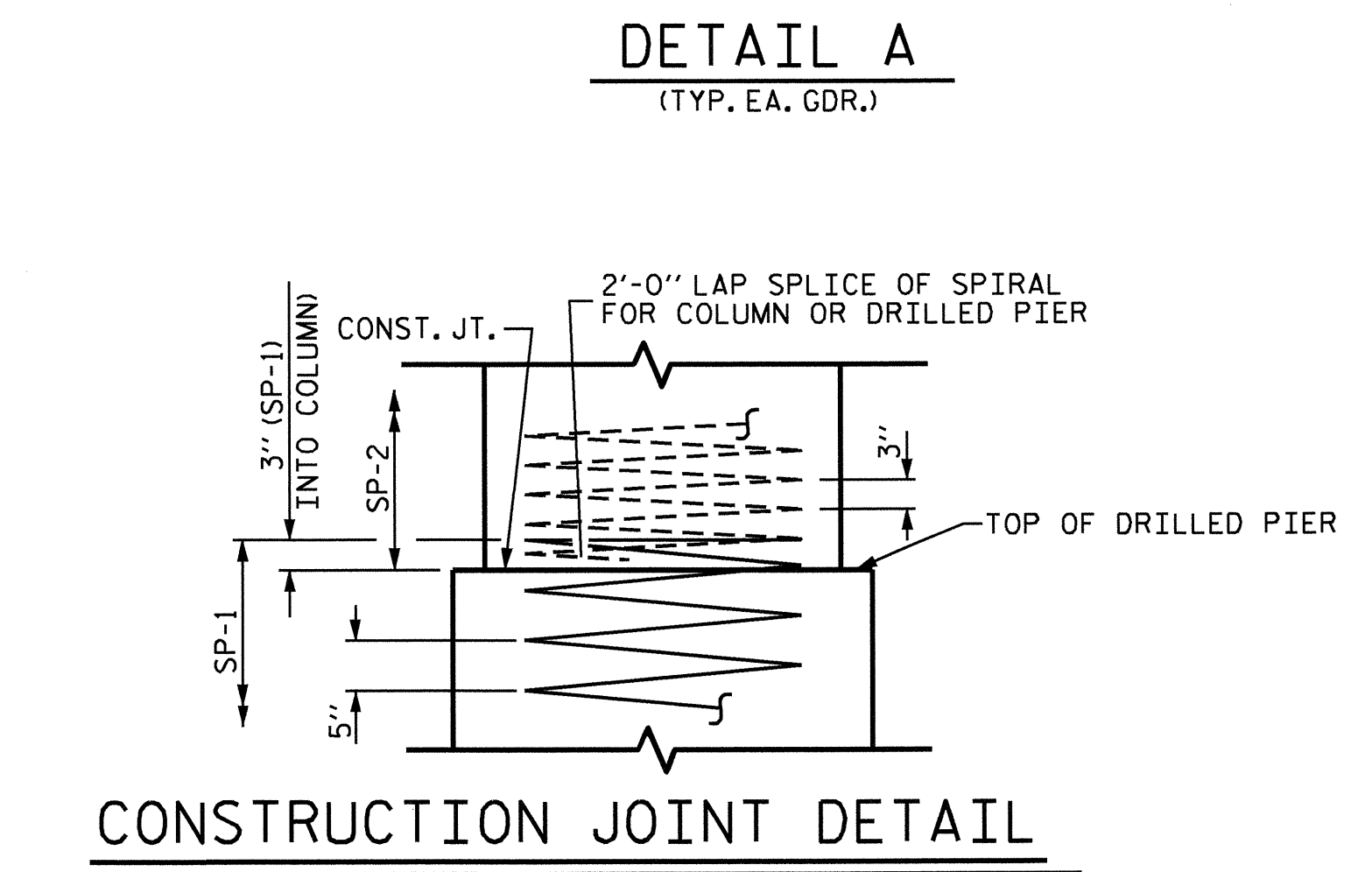
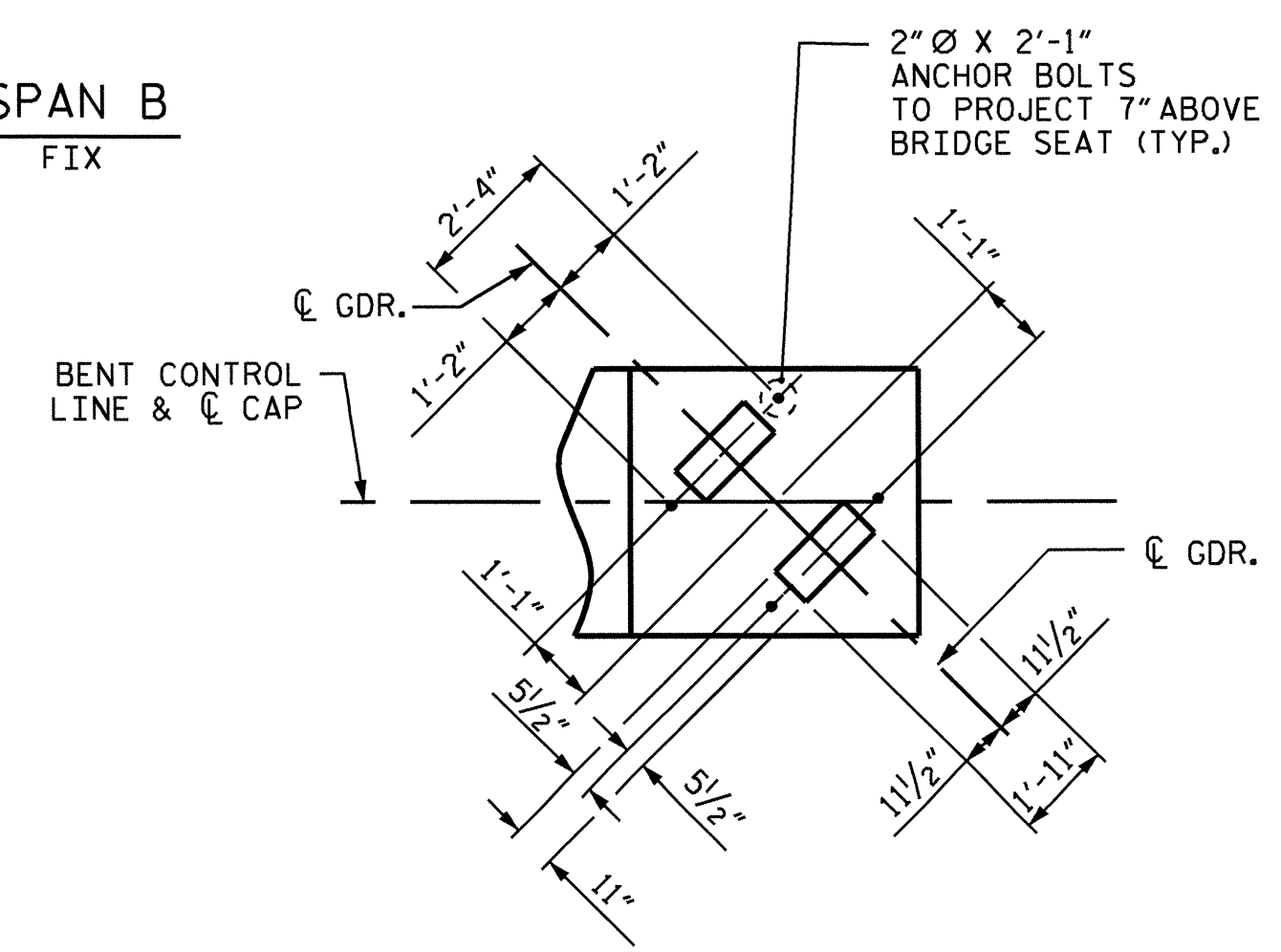
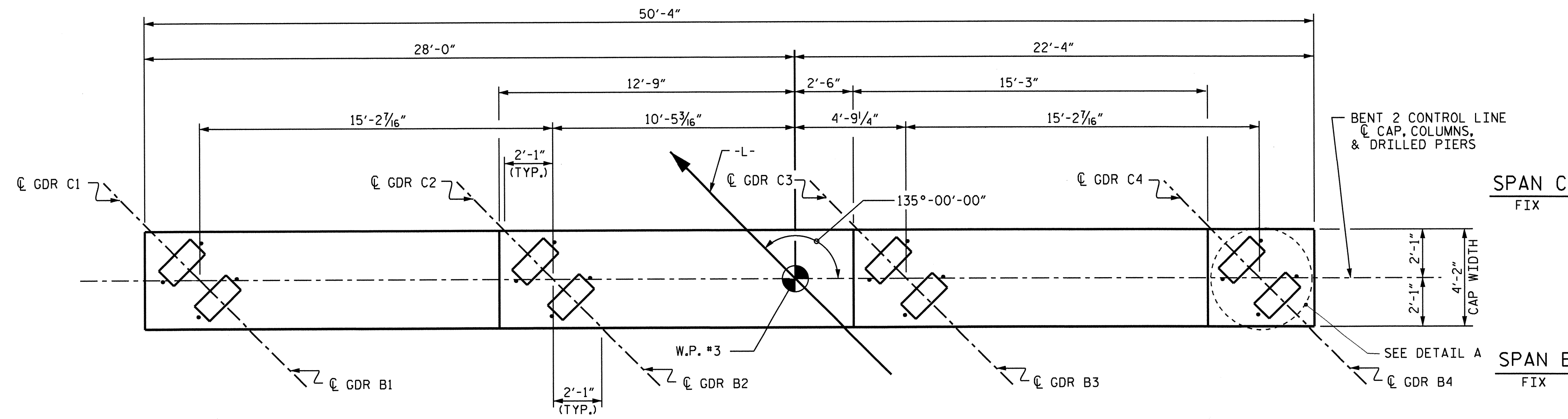
**NOTES:**

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

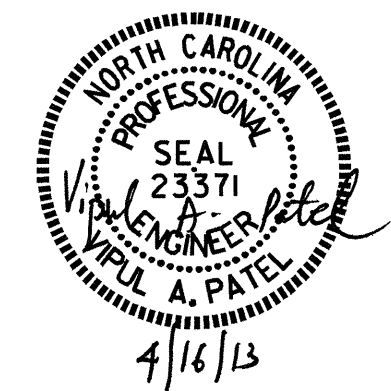
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

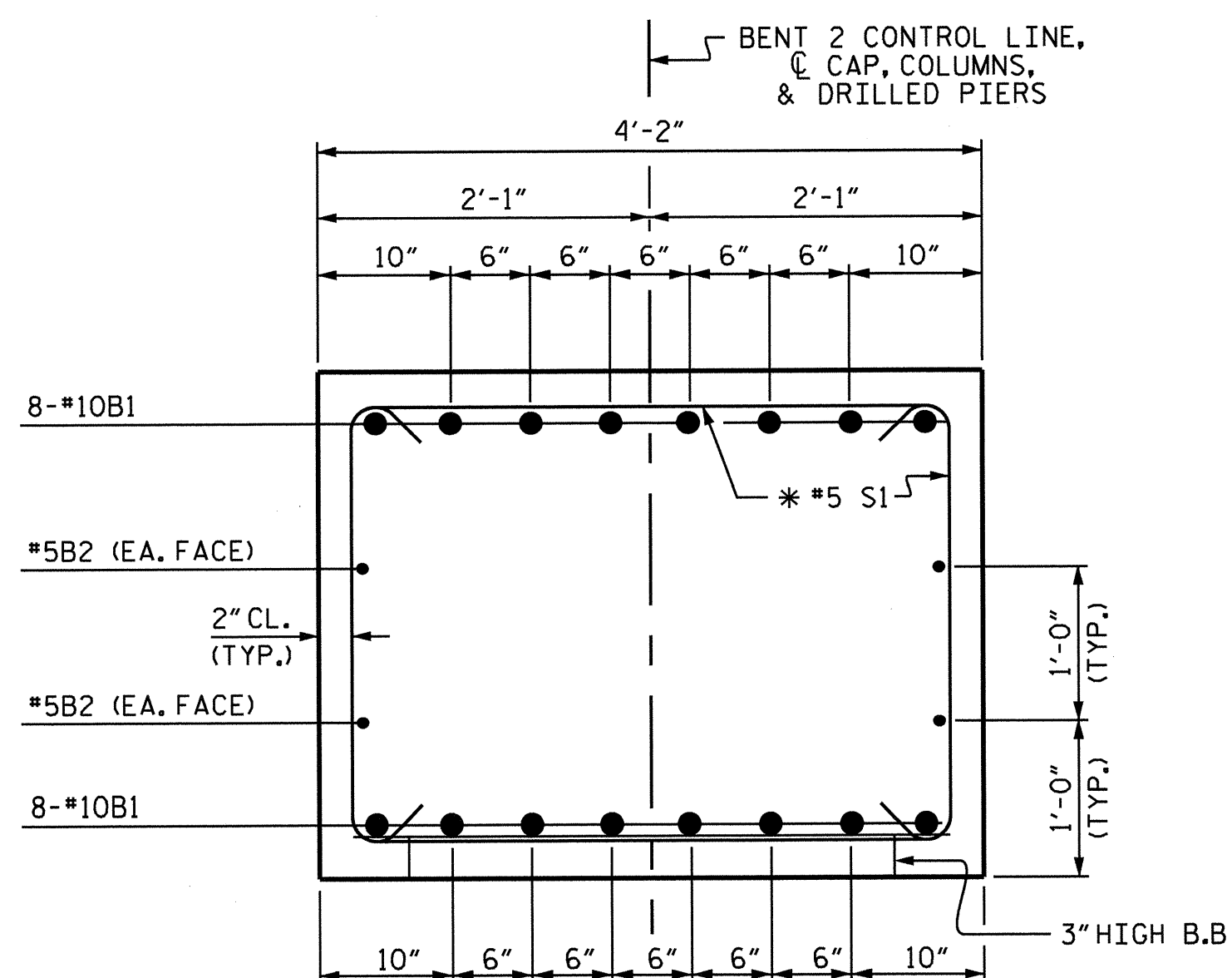


PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-  
 SHEET 1 OF 2



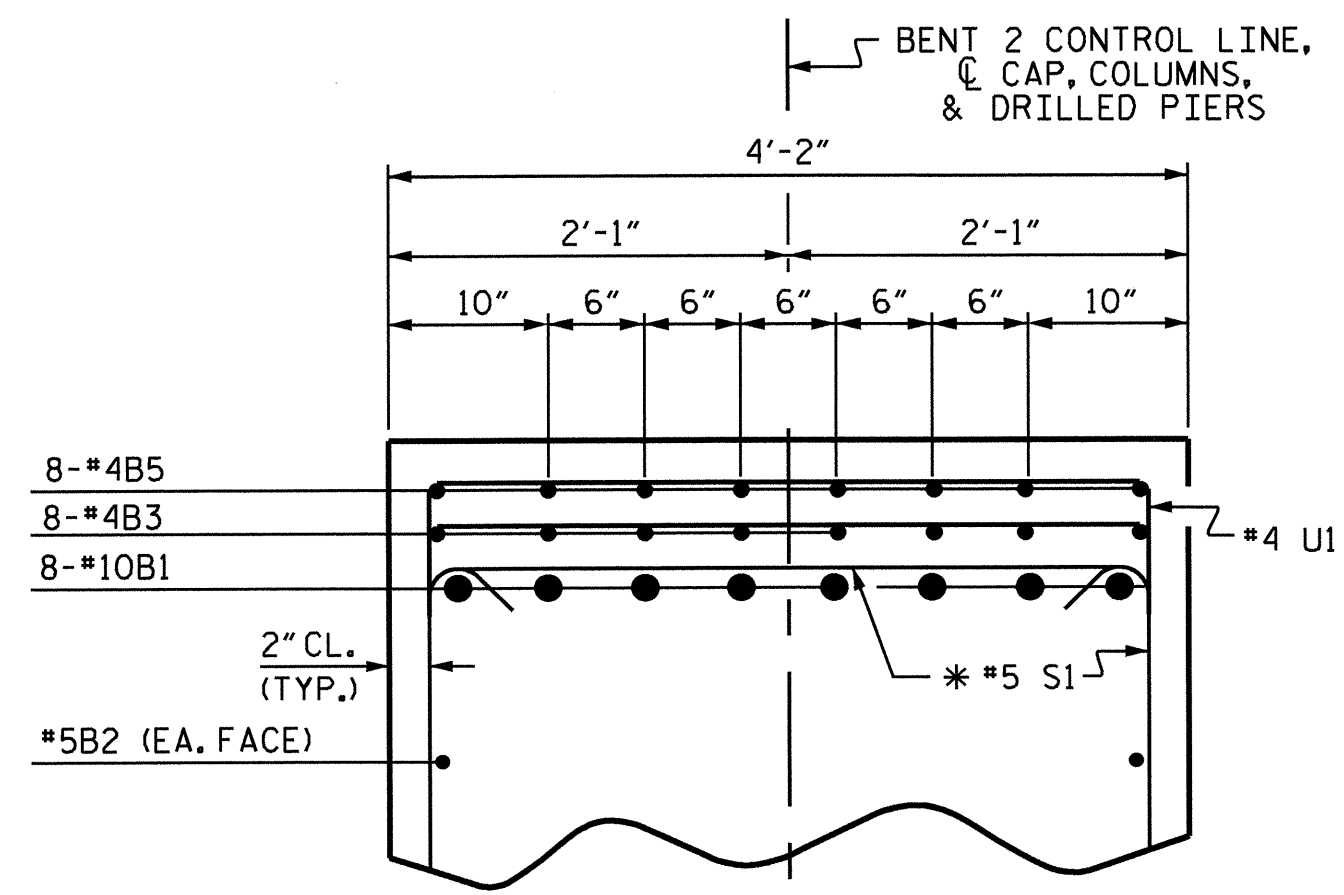
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 37

DRAWN BY : J. G. KHARVA DATE : 11/12  
 CHECKED BY : H.A. LOCKLEAR DATE : 1/13  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 03/12/13



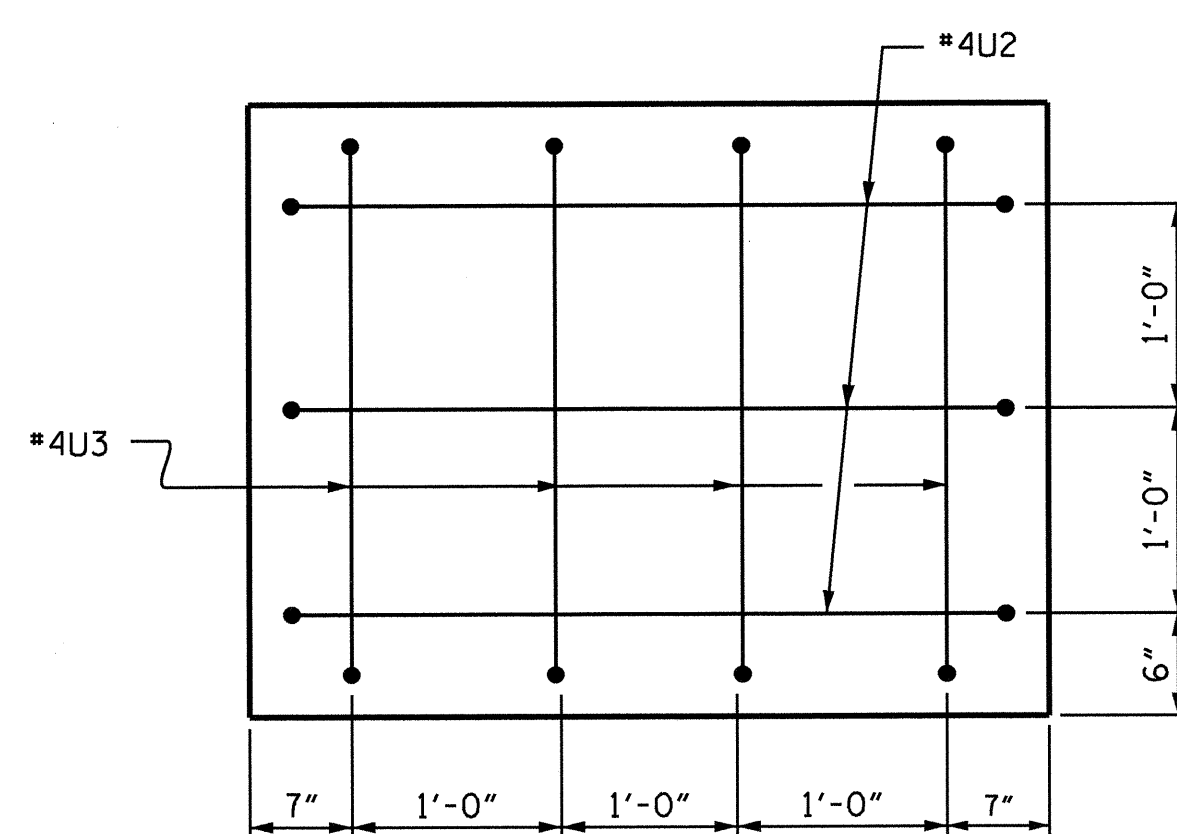
SECTION A-A

\* INVERT ALTERNATE STIRRUPS

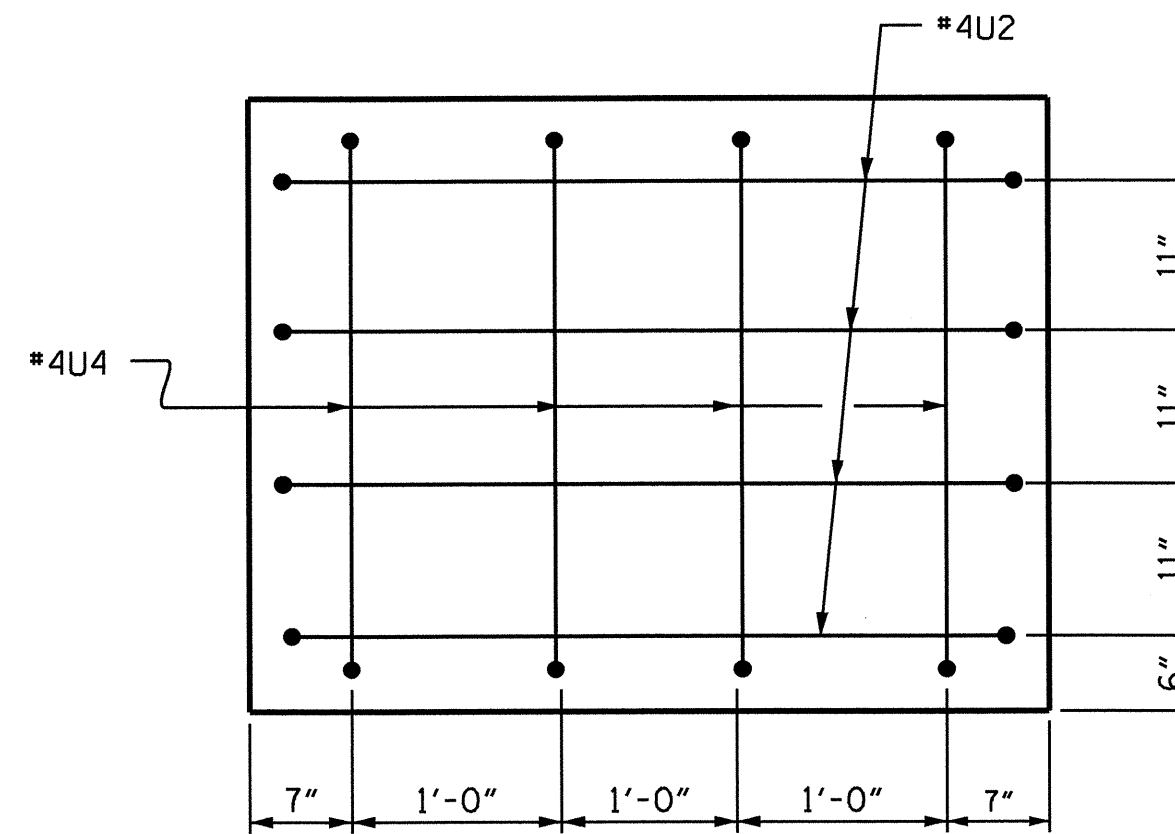


PARTIAL SECTION B-B

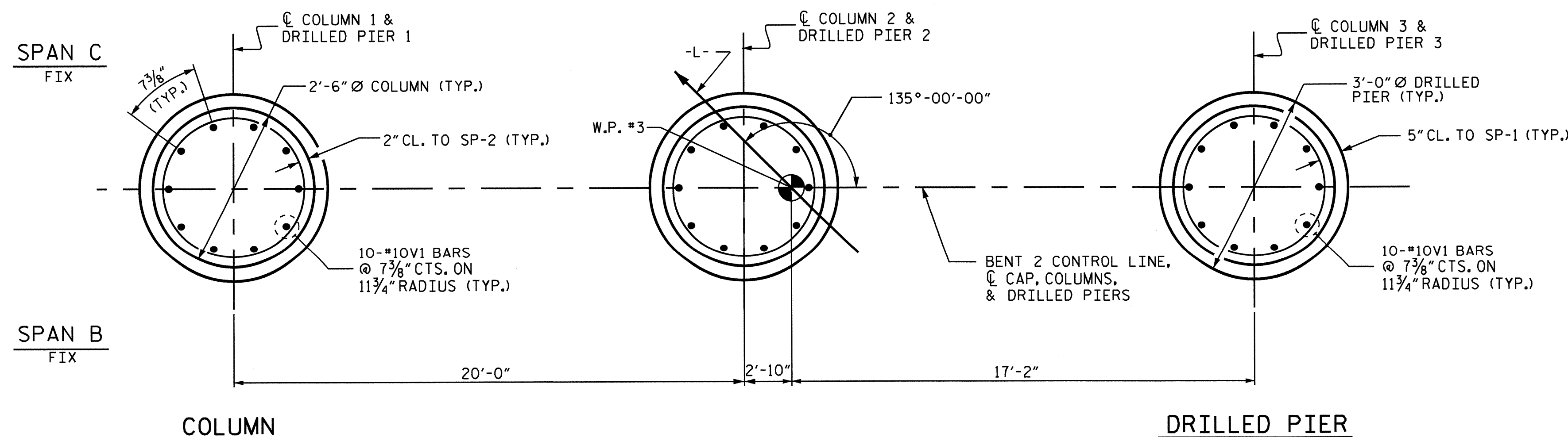
\* INVERT ALTERNATE STIRRUPS



LEFT END OF CAP DETAIL

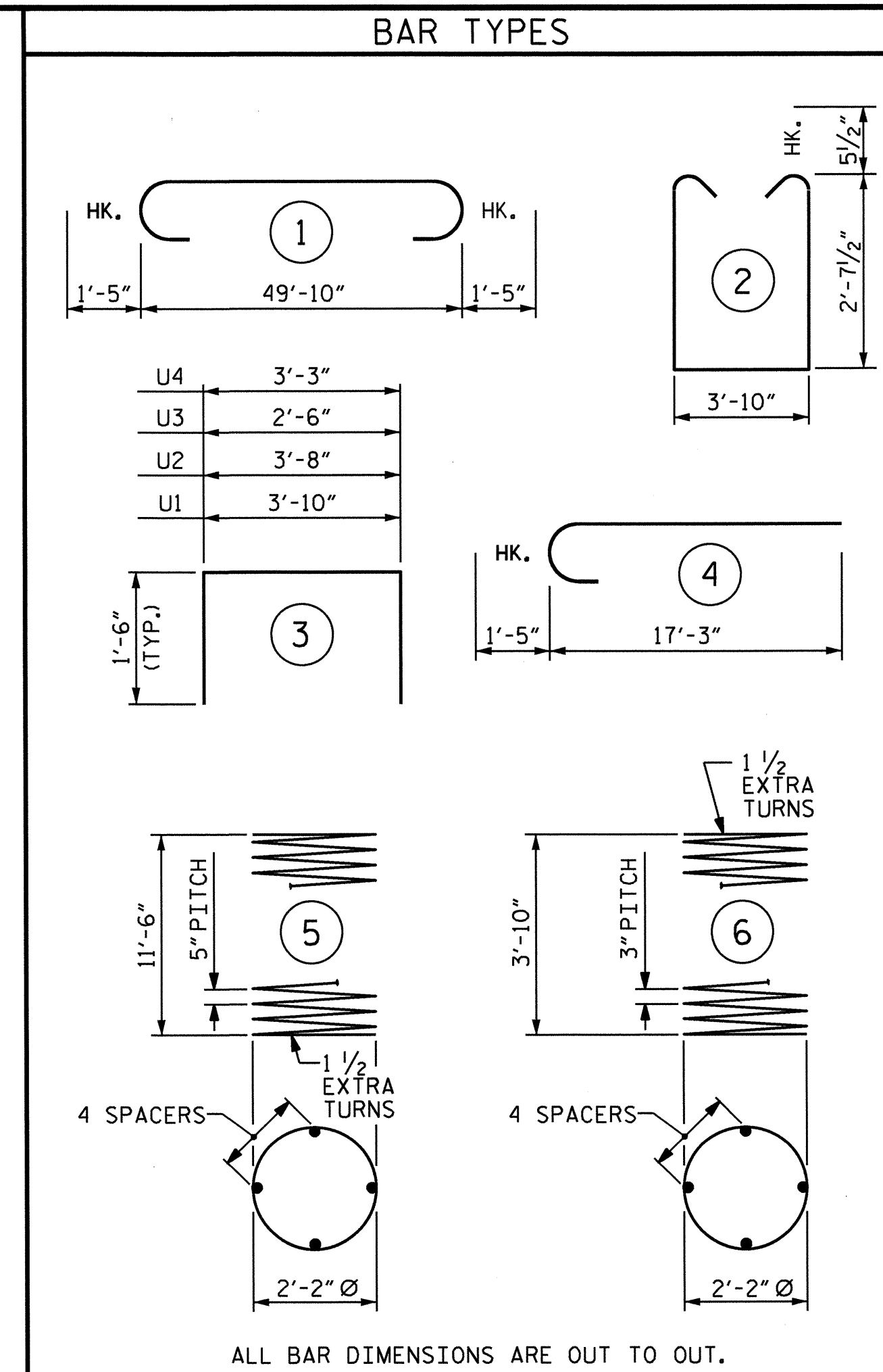


RIGHT END OF CAP DETAIL



PLAN OF DRILLED PIERS & COLUMNS

(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)



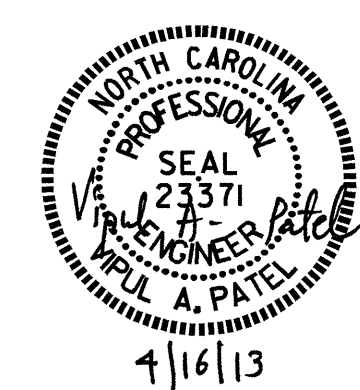
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#10	1	52'-8"	3626
B2	4	#5	STR	50'-0"	209
B3	8	#4	STR	19'-6"	104
B4	8	#4	STR	17'-8"	94
B5	8	#4	STR	4'-2"	22
S1	72	#5	2	10'-0"	751
U1	50	#4	3	6'-10"	228
U2	7	#4	3	6'-8"	31
U3	4	#4	3	5'-6"	15
U4	4	#4	3	6'-3"	17
V1	30	#10	4	18'-8"	2410
REINFORCING STEEL =				LBS	7507
SP-1	3	**	5	194'-9"	609
SP-2	3	***	6	113'-7"	228
SPIRAL COLUMN REINFORCING STEEL =				LBS	837
CLASS A CONCRETE					
POUR #2 (COLUMNS) =				C.Y.	1.9
POUR #3 (CAP) =				C.Y.	25.7
TOTAL CLASS A CONCRETE				C.Y.	27.6
DRILLED PIERS:					
DRILLED PIER CONCRETE (C.Y.)					
POUR #1 (DRILLED PIERS) =				C.Y.	9.4
3'-0" Ø DRILLED PIERS IN SOIL =				LIN. FT.	18.0
3'-0" Ø DRILLED PIERS NOT IN SOIL =				LIN. FT.	18.0
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER =				LIN. FT.	15.0
CSL TUBES =				LIN. FT.	162

\*\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.  
 \*\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

DRAWN BY : J. G. KHARVA DATE : 11/12  
 CHECKED BY : H.A. LOCKLEAR DATE : 1/13  
 DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 03/12/13

15-APR-2013 13:48  
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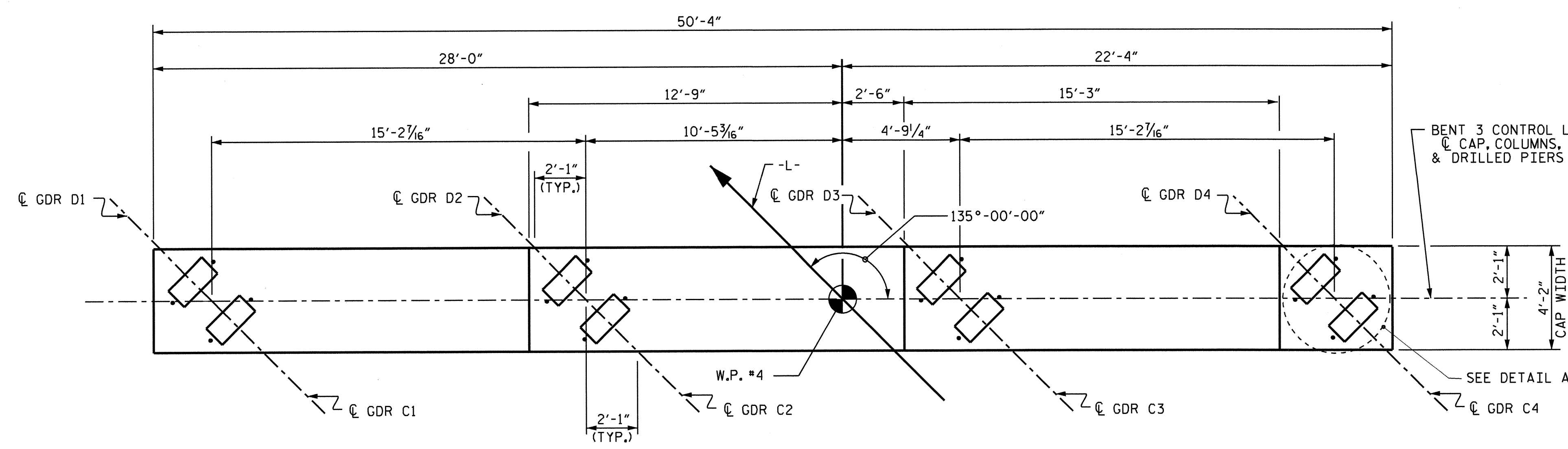


PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-  
 SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			37
2			4			

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 2

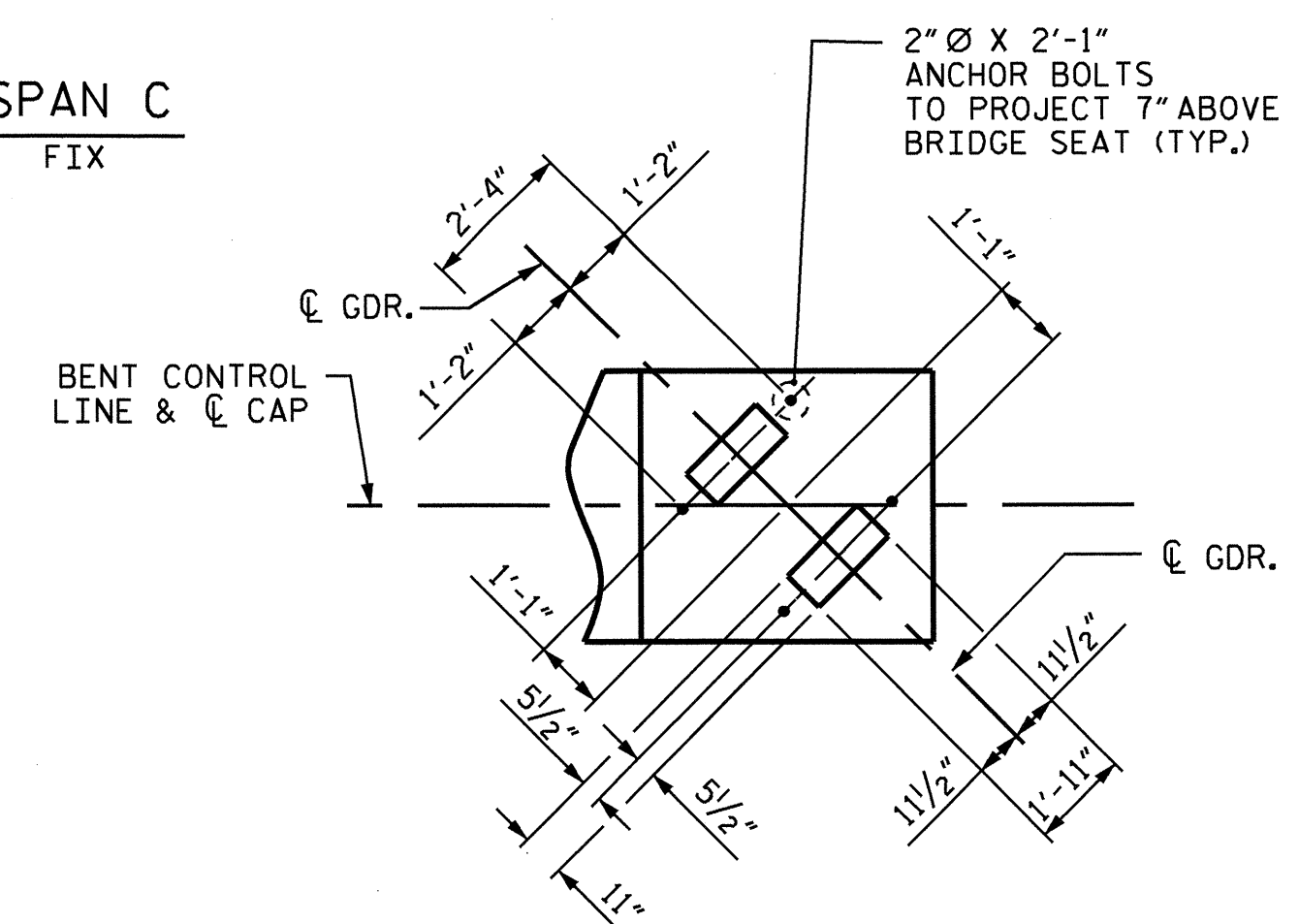
**NOTES:**  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."  
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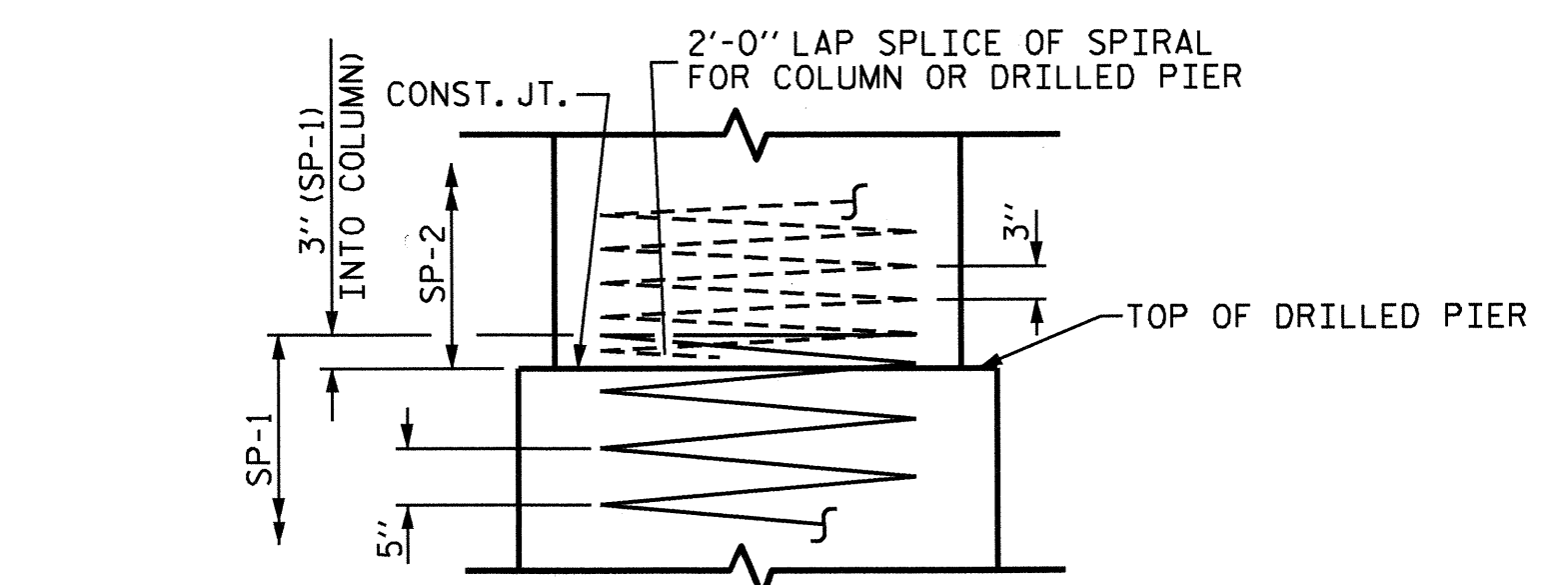
**PLAN**

SPAN D  
FIX

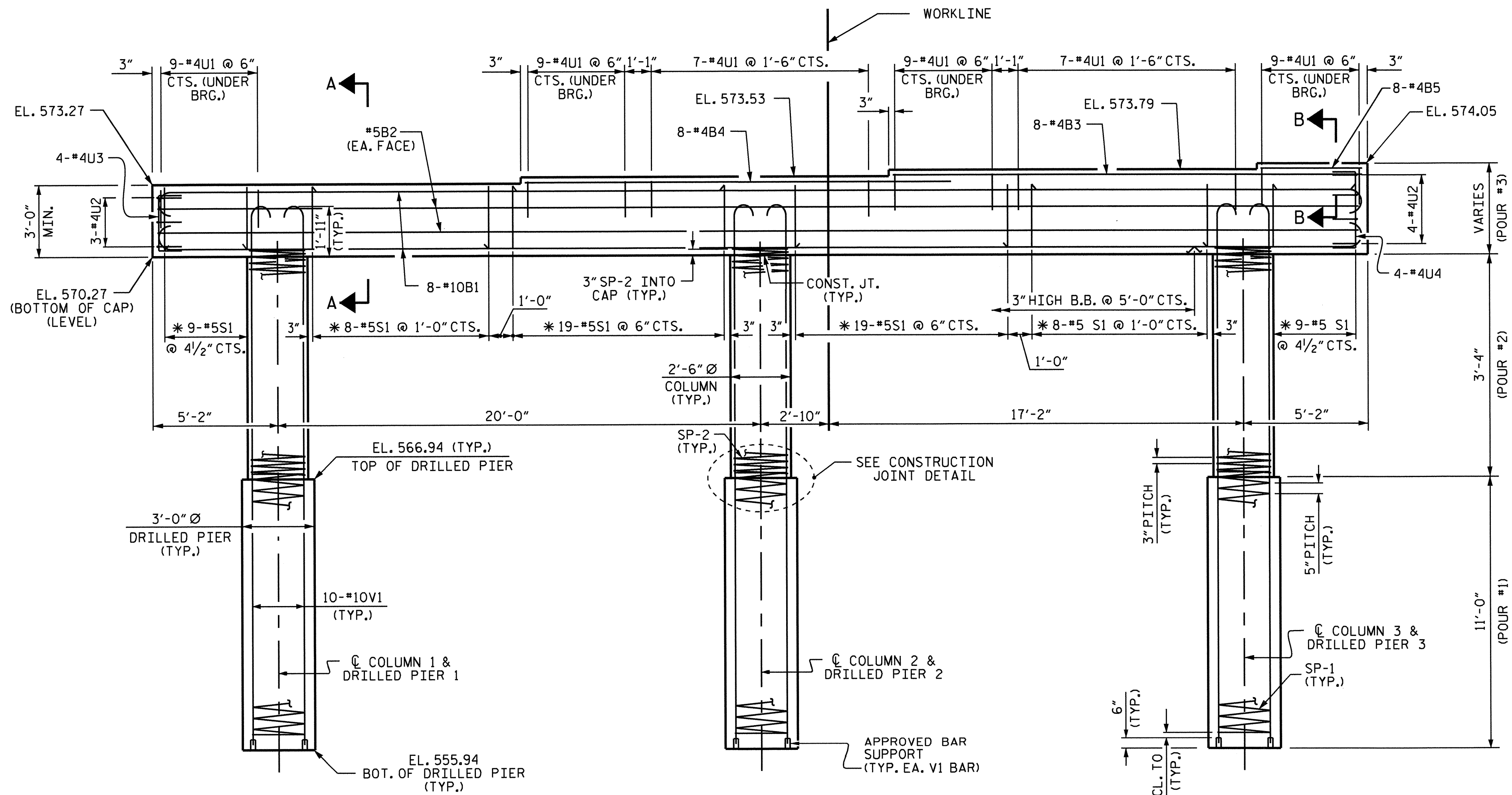
SPAN C  
FIX



**DETAIL A**  
(TYP. EA. GDR.)



**CONSTRUCTION JOINT DETAIL**



**ELEVATION**

\* INVERT ALTERNATE STIRRUPS

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 1 OF 2

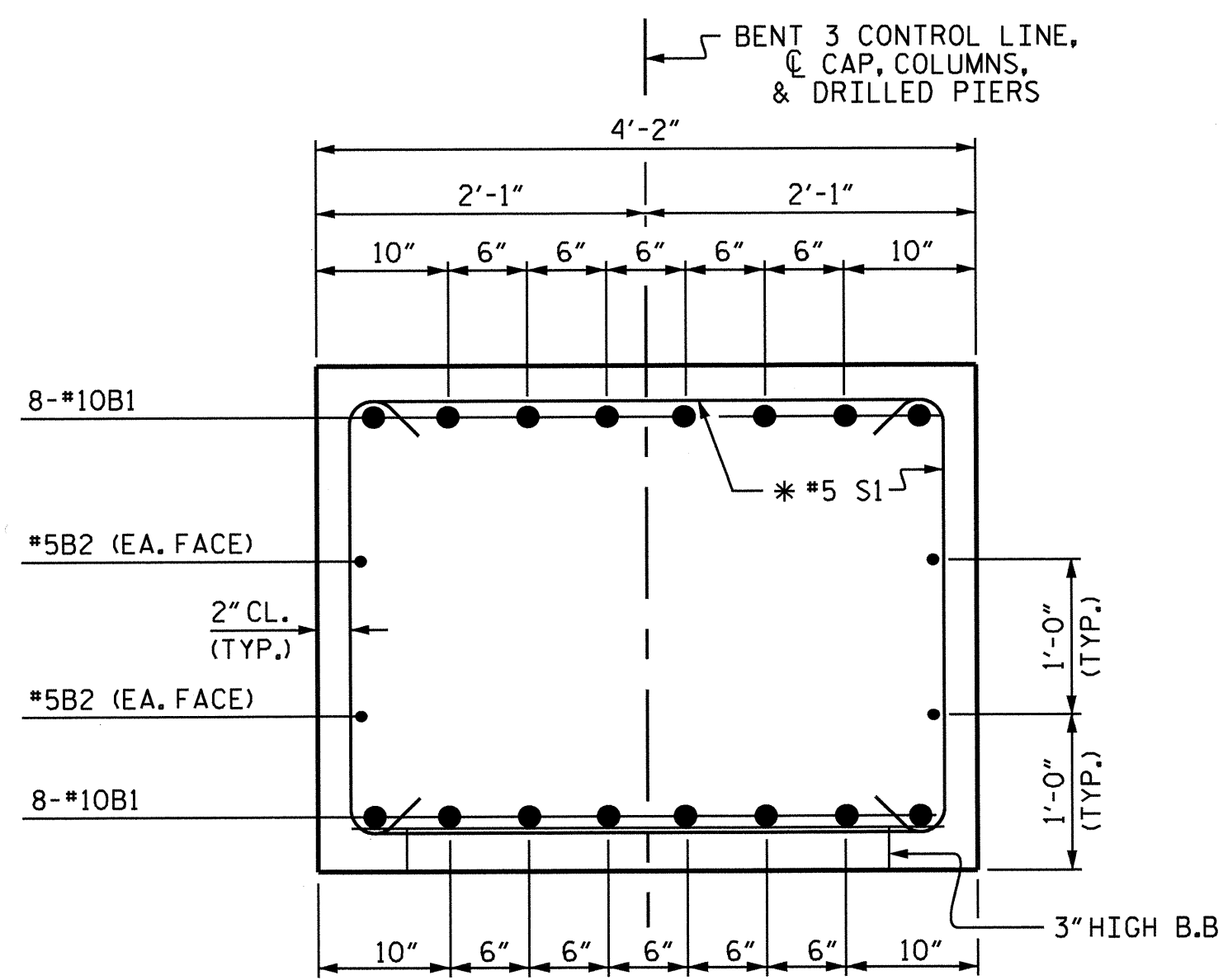
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENT 3**

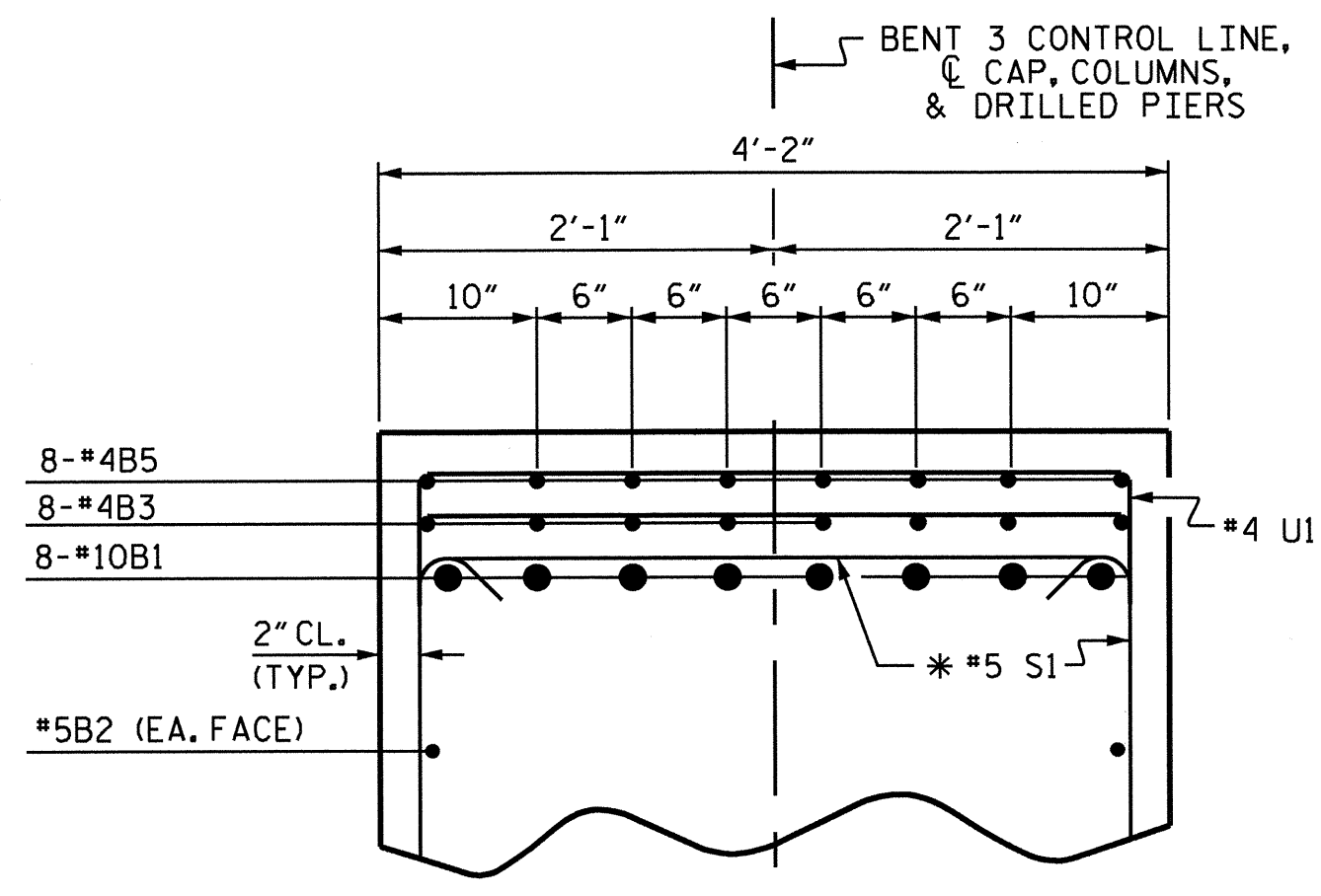


DRAWN BY: J. G. KHARVA DATE: 11/12  
 CHECKED BY: H.A. LOCKLEAR DATE: 1/13  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 03/12/13

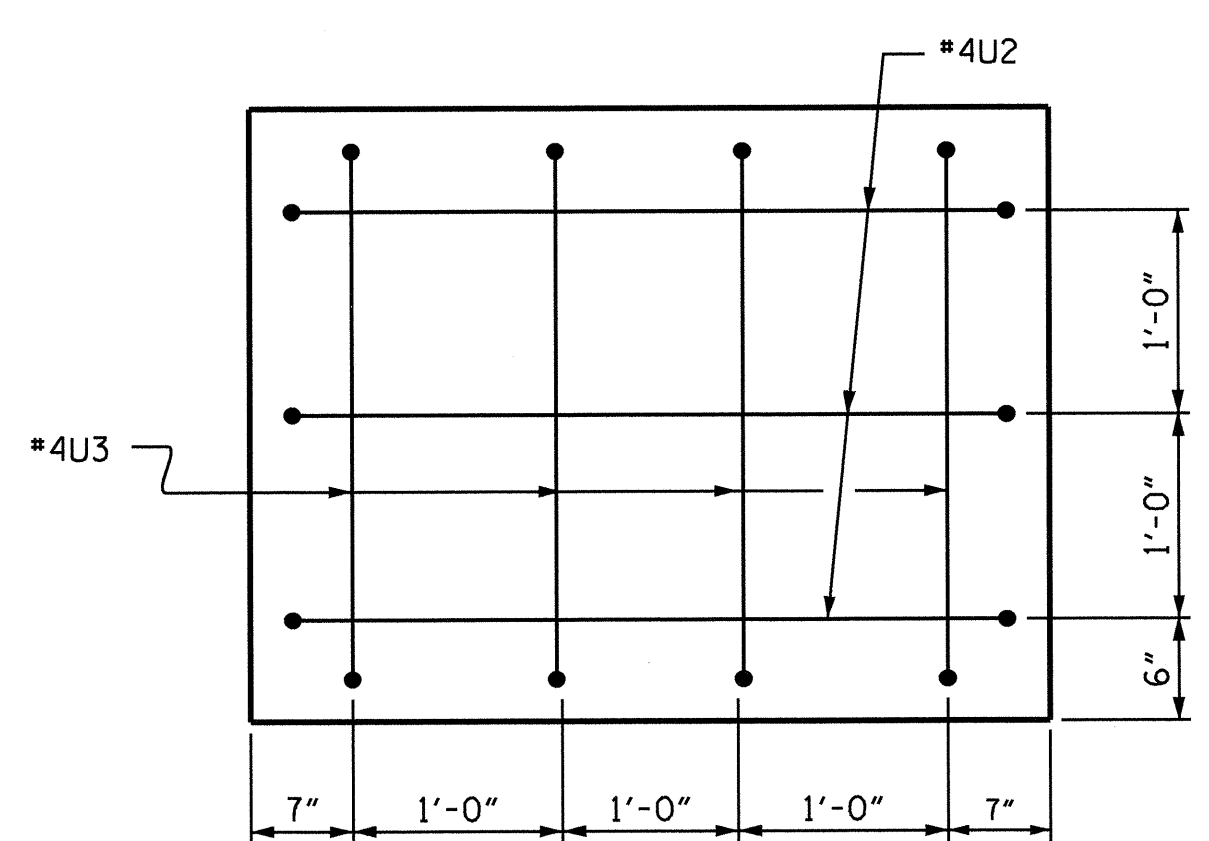
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	37
1			3			
2			4			



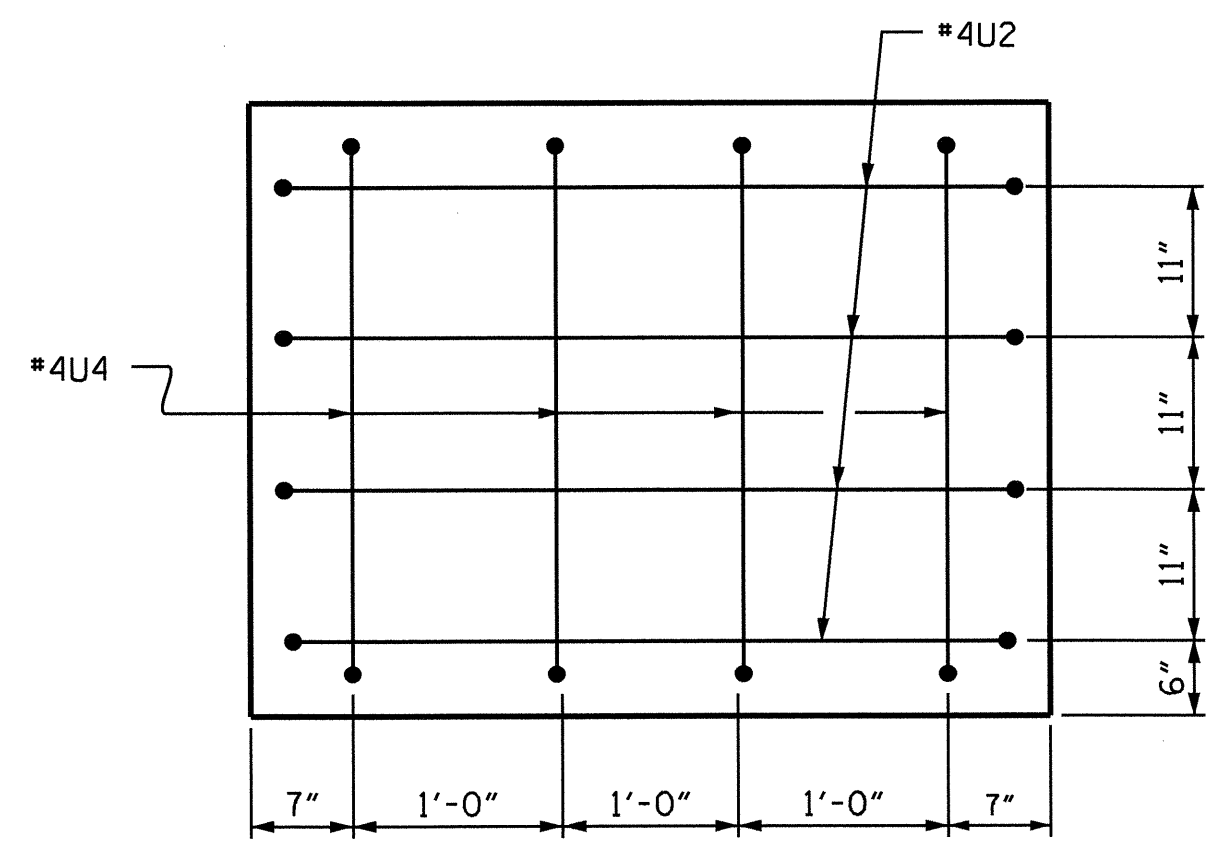
**SECTION A-A**  
\* INVERT ALTERNATE STIRRUPS



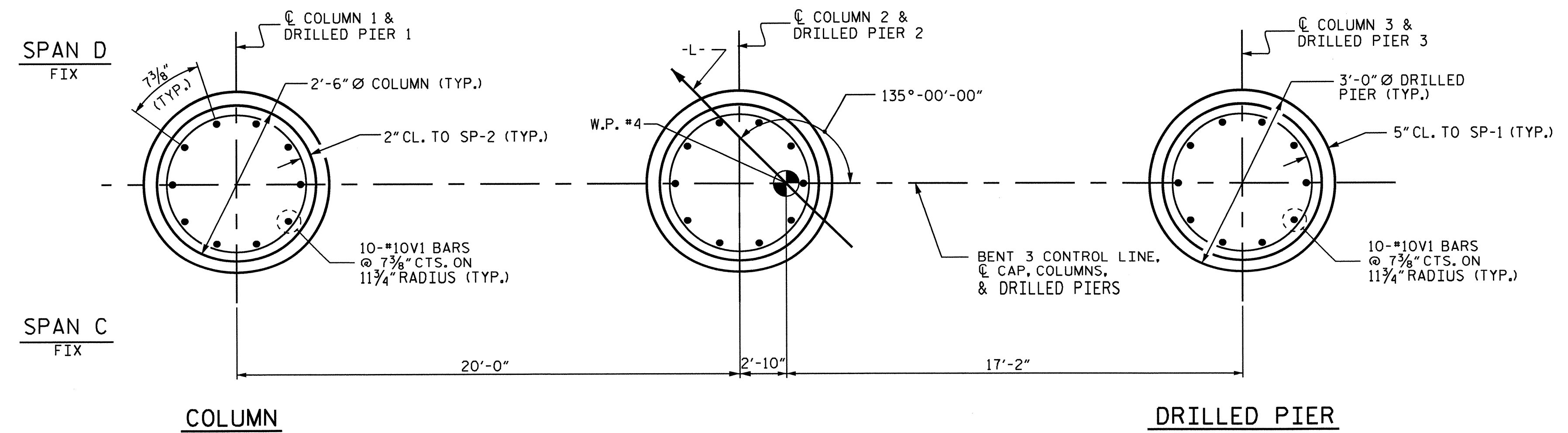
**PARTIAL SECTION B-B**  
\* INVERT ALTERNATE STIRRUPS



**LEFT END OF CAP DETAIL**



**RIGHT END OF CAP DETAIL**



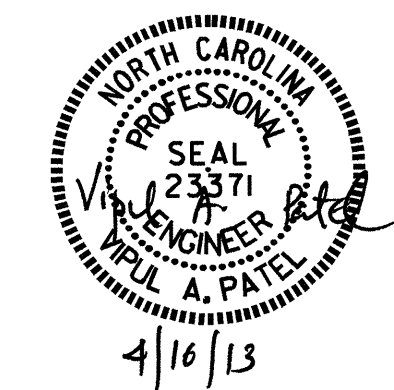
**PLAN OF DRILLED PIERS & COLUMNS**  
(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)

BAR TYPES						BILL OF MATERIAL					
						BENT 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
						B1	16	#10	1	52'-8"	3626
						B2	4	#5	STR	50'-0"	209
						B3	8	#4	STR	19'-6"	104
						B4	8	#4	STR	17'-8"	94
						B5	8	#4	STR	4'-2"	22
						S1	72	#5	2	10'-0"	751
						U1	50	#4	3	6'-10"	228
						U2	7	#4	3	6'-8"	31
						U3	4	#4	3	5'-6"	15
						U4	4	#4	3	6'-3"	17
						V1	30	#10	4	17'-5"	2248
REINFORCING STEEL =						LBS	7345				
SP-1	3	**	5	178'-1"	557						
SP-2	3	***	6	106'-11"	214						
SPIRAL COLUMN REINFORCING STEEL =						LBS	771				
CLASS A CONCRETE											
POUR #2 (COLUMNS) =						C.Y.	1.8				
POUR #3 (CAP) =						C.Y.	25.7				
TOTAL CLASS A CONCRETE						C.Y.	27.5				
DRILLED PIERS:											
DRILLED PIER CONCRETE (C.Y.)											
POUR #1 (DRILLED PIERS) =						C.Y.	8.6				
3'-0" Ø DRILLED PIERS IN SOIL						=	LIN. FT.	15.0			
3'-0" Ø DRILLED PIERS NOT IN SOIL						=	LIN. FT.	18.0			
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER						=	LIN. FT.	15.0			
CSL TUBES						=	LIN. FT.	150			

\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.  
\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

DRAWN BY : J. G. KHARVA DATE : 11/12  
CHECKED BY : H.A. LOCKLEAR DATE : 1/13  
DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 03/12/13

15-APR-2013 13:48  
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jpodams



PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 34+28.00 -L-

SHEET 2 OF 2

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			37	



**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

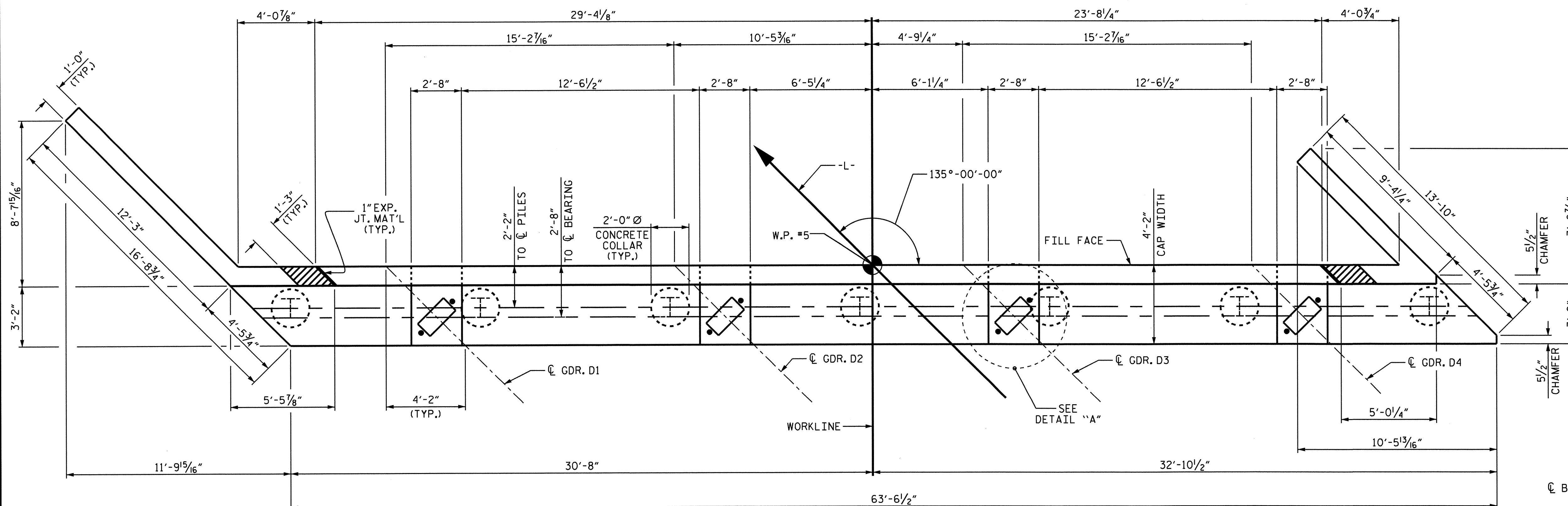
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCEMENT BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

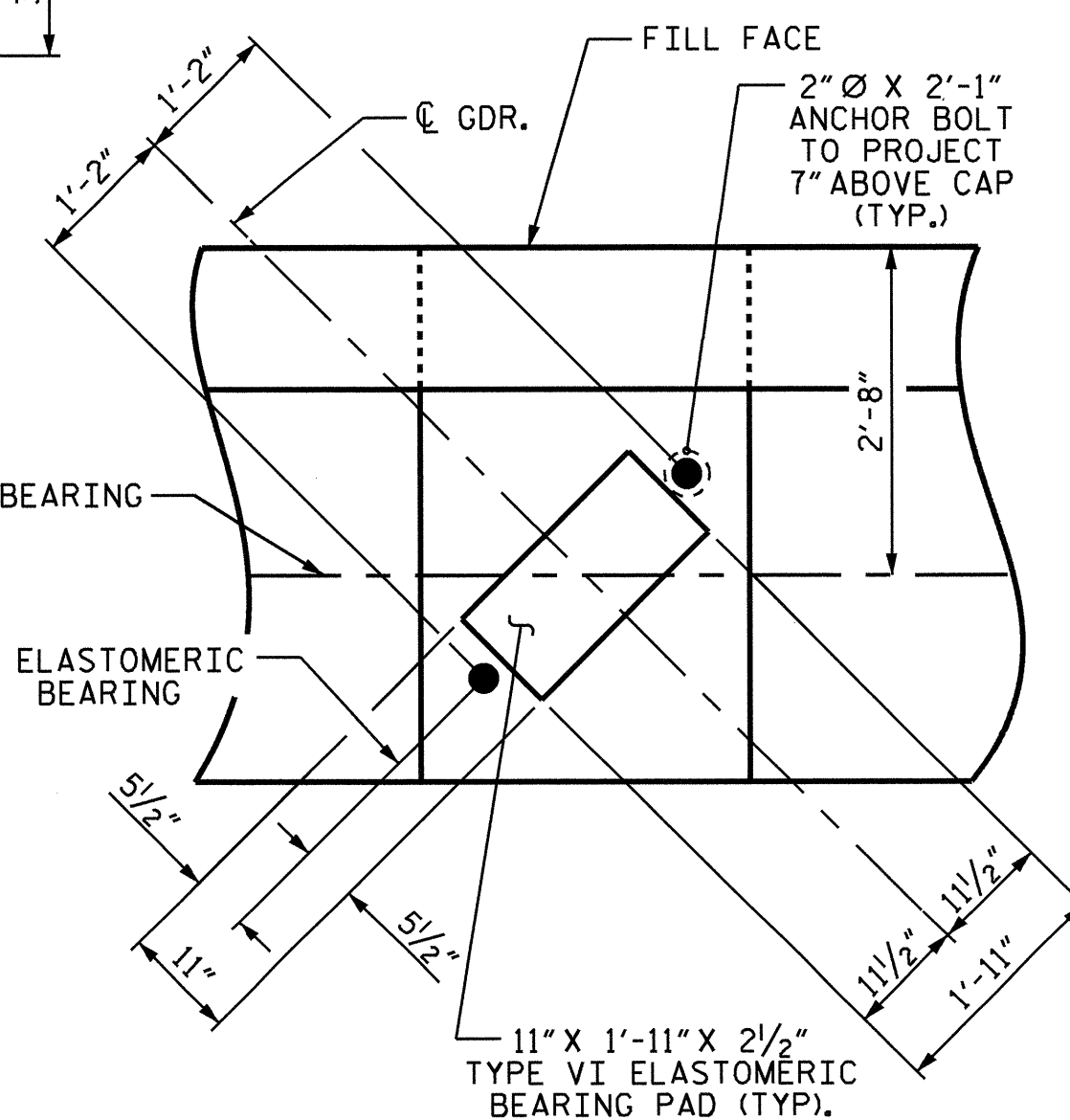
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

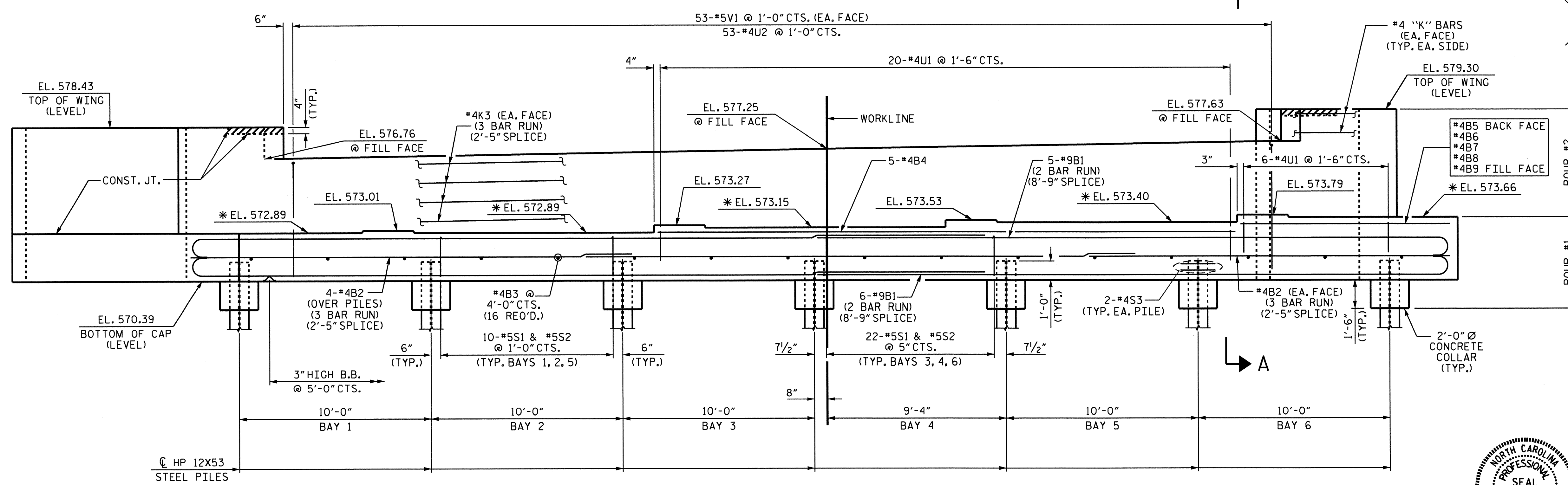


**PLAN**



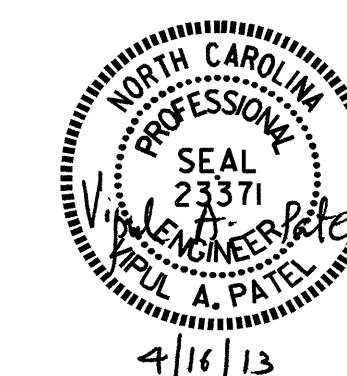
**DETAIL "A"**

(TYP. EA. GDR.)



**ELEVATION**

\* SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS.



PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

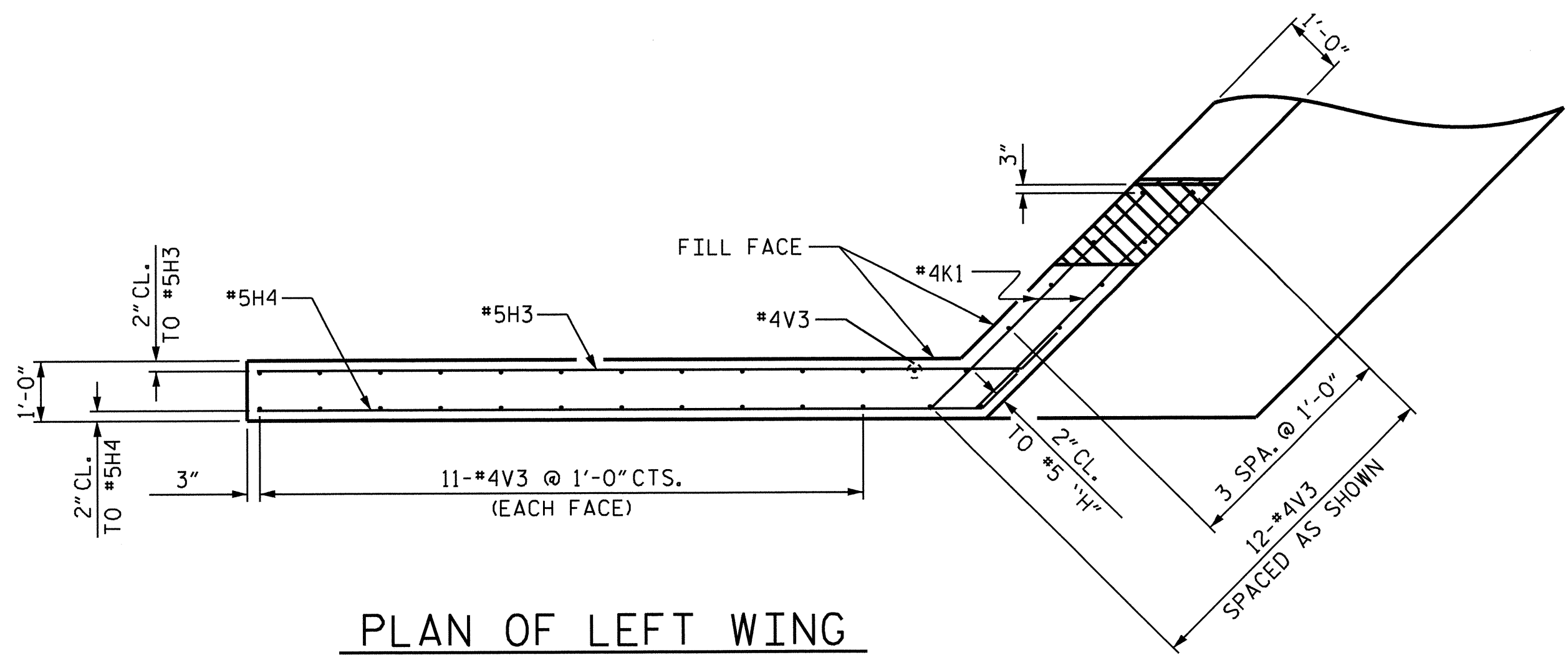
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

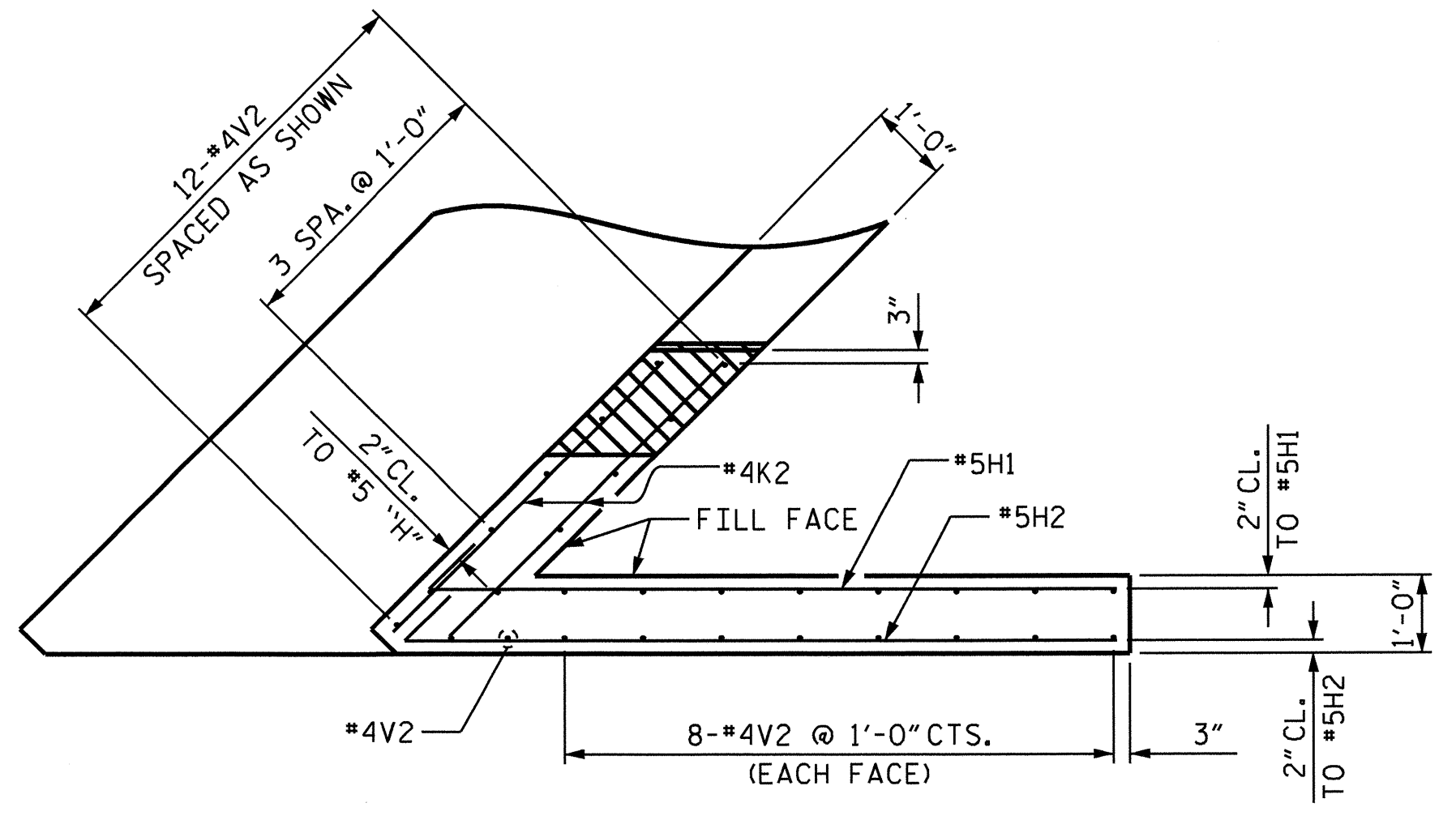
SUBSTRUCTURE  
 END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			37

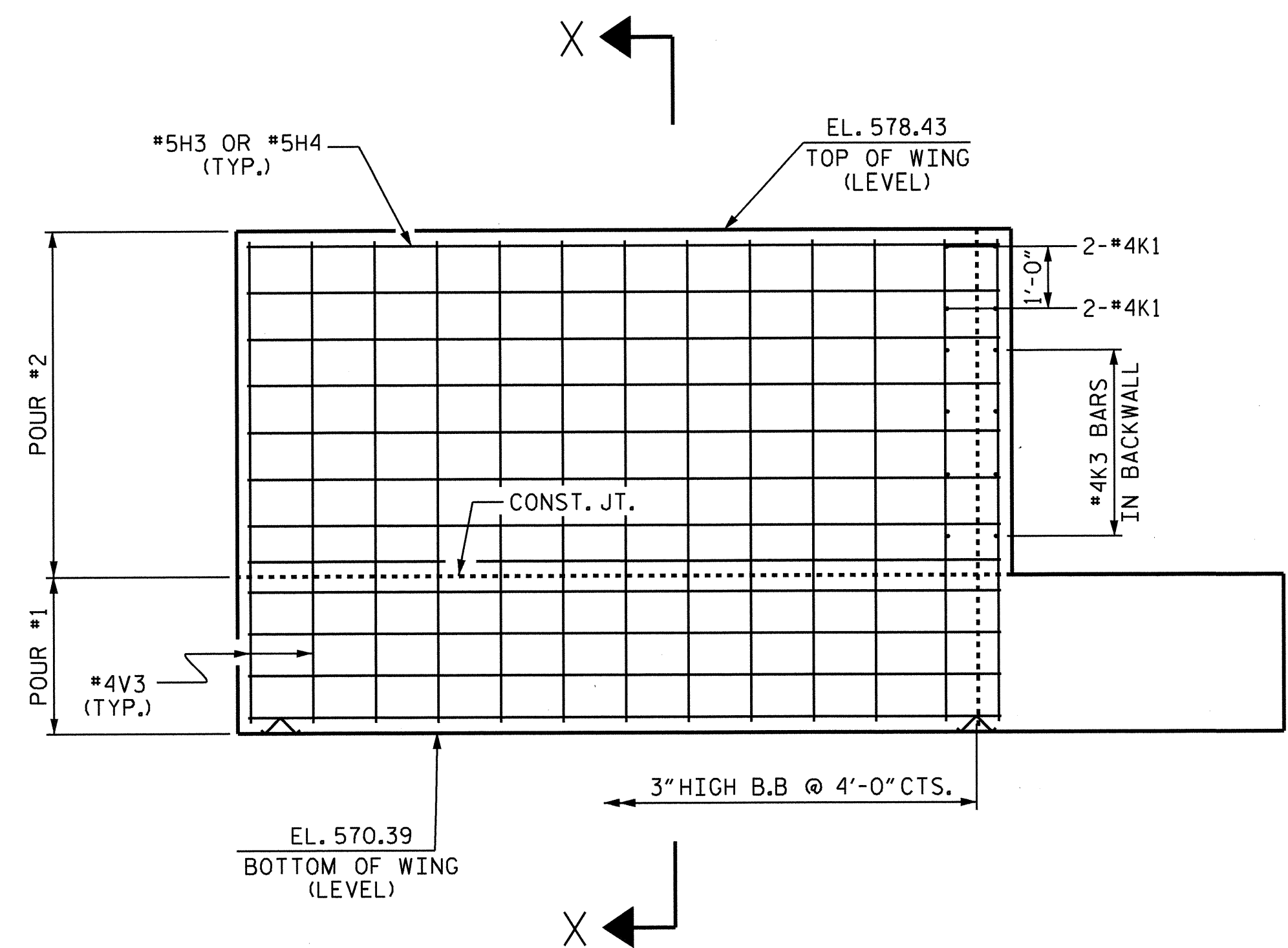
DRAWN BY : T.H. CARROLL DATE : 11/12  
 CHECKED BY : R.L. CHESSON DATE : 11/12  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 03/12/13



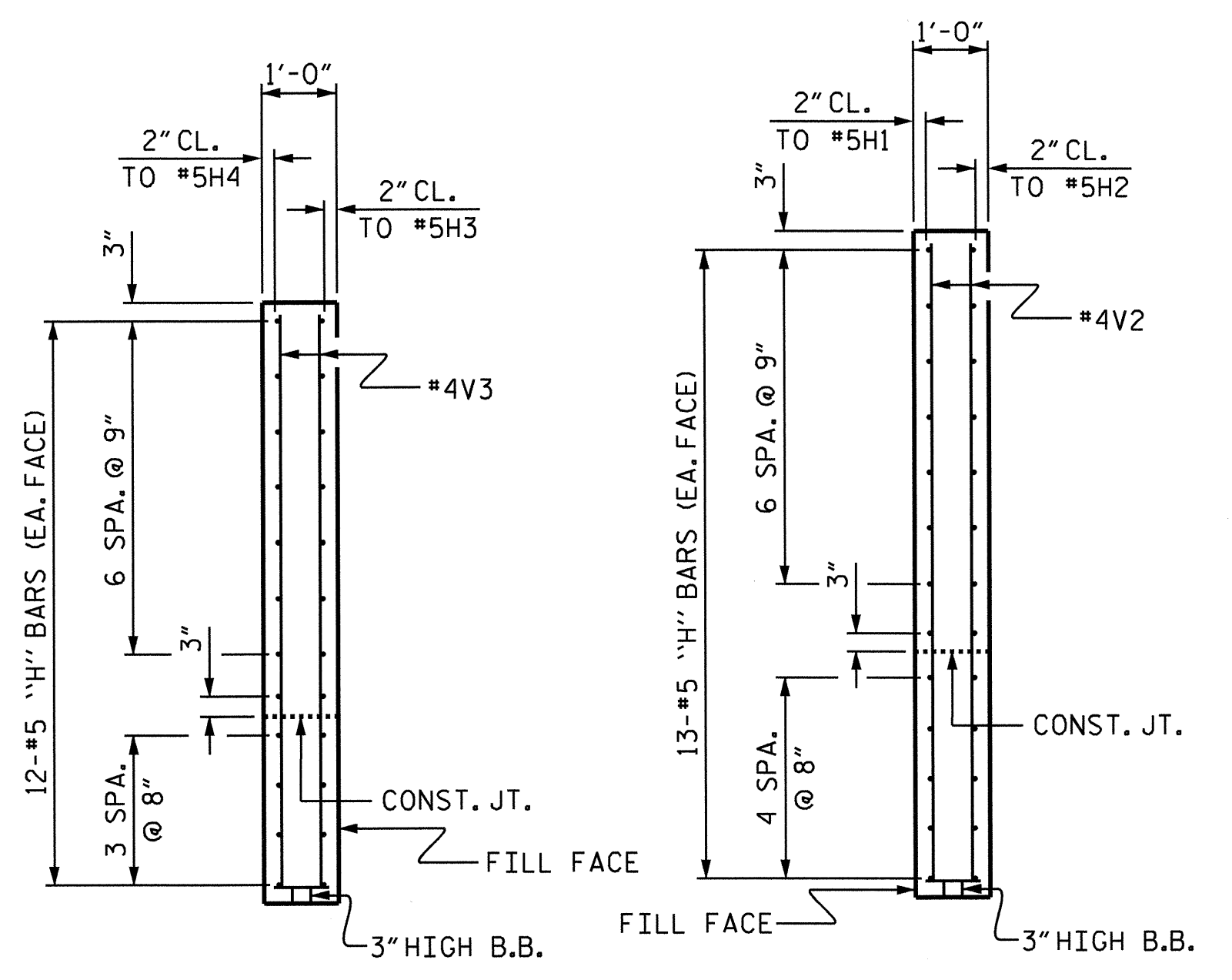
PLAN OF LEFT WING



PLAN OF RIGHT WING

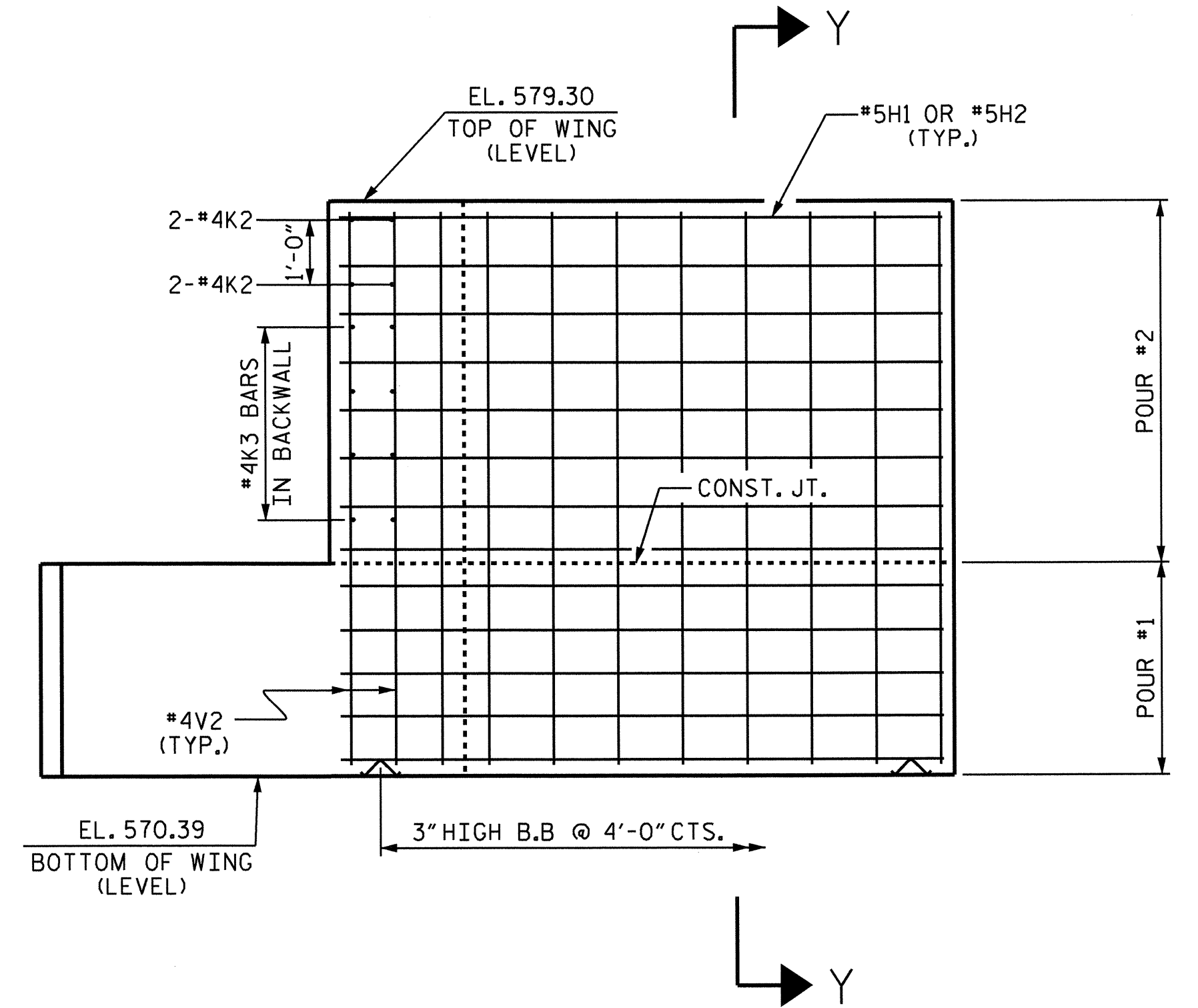


ELEVATION OF LEFT WING



SECTION X-X

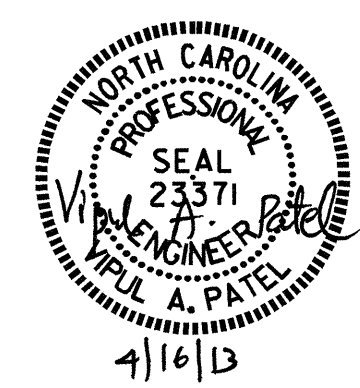
SECTION Y-Y



ELEVATION OF RIGHT WING

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 3

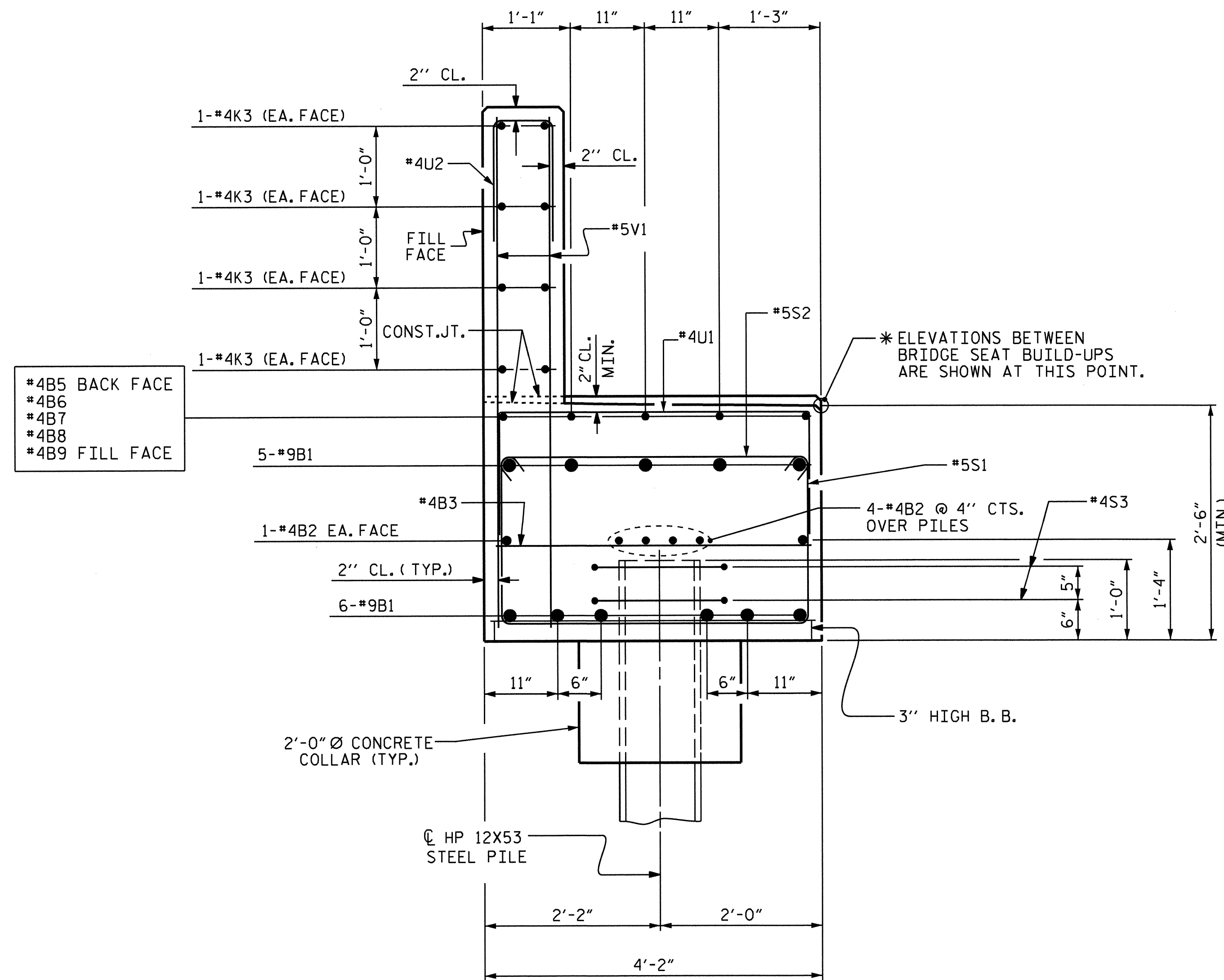


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2

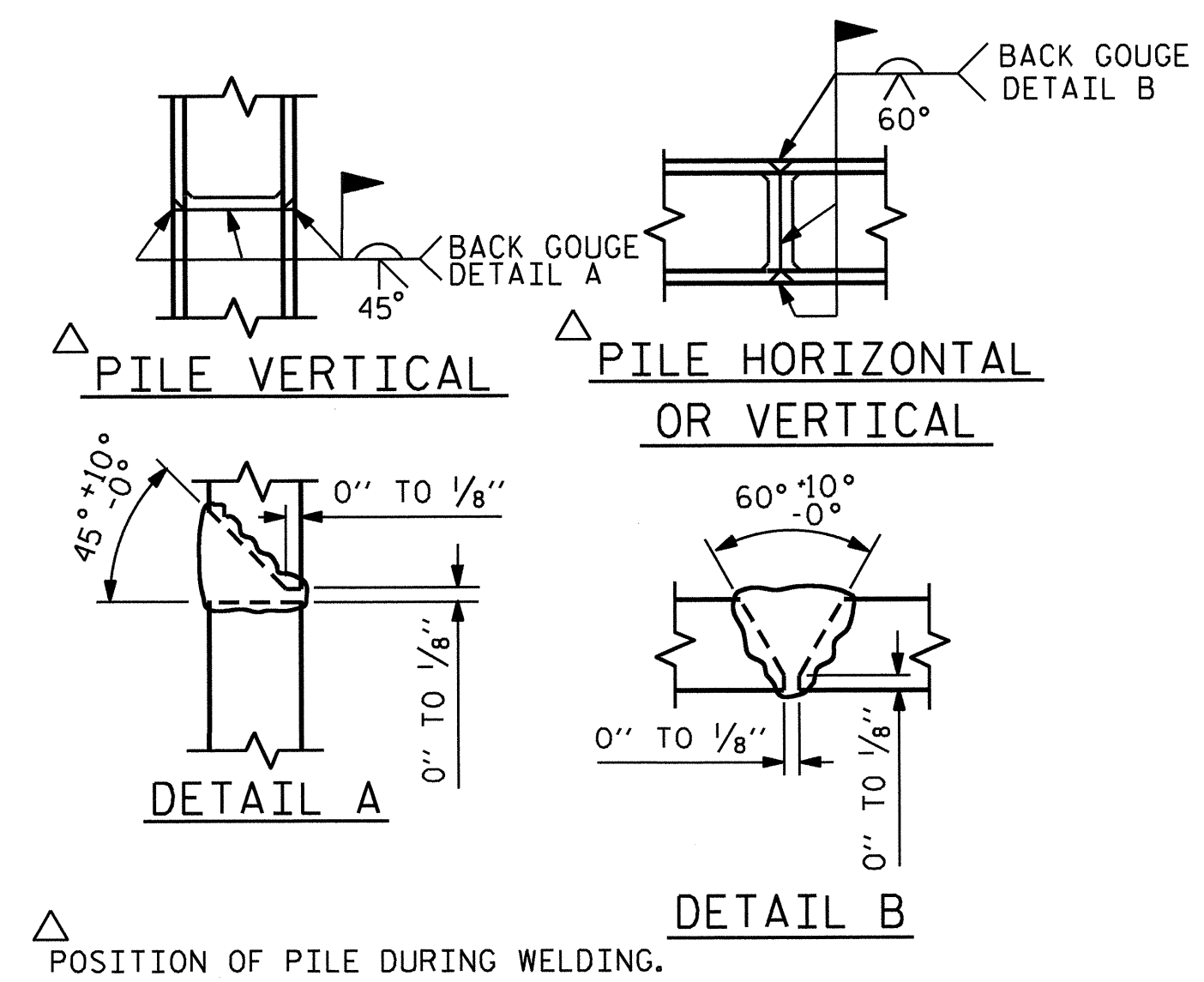
DRAWN BY : T.H. CARROLL DATE : 11/12  
 CHECKED BY : R.L. CHESSON DATE : 11/12  
 DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 03/12/13

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 jpodams

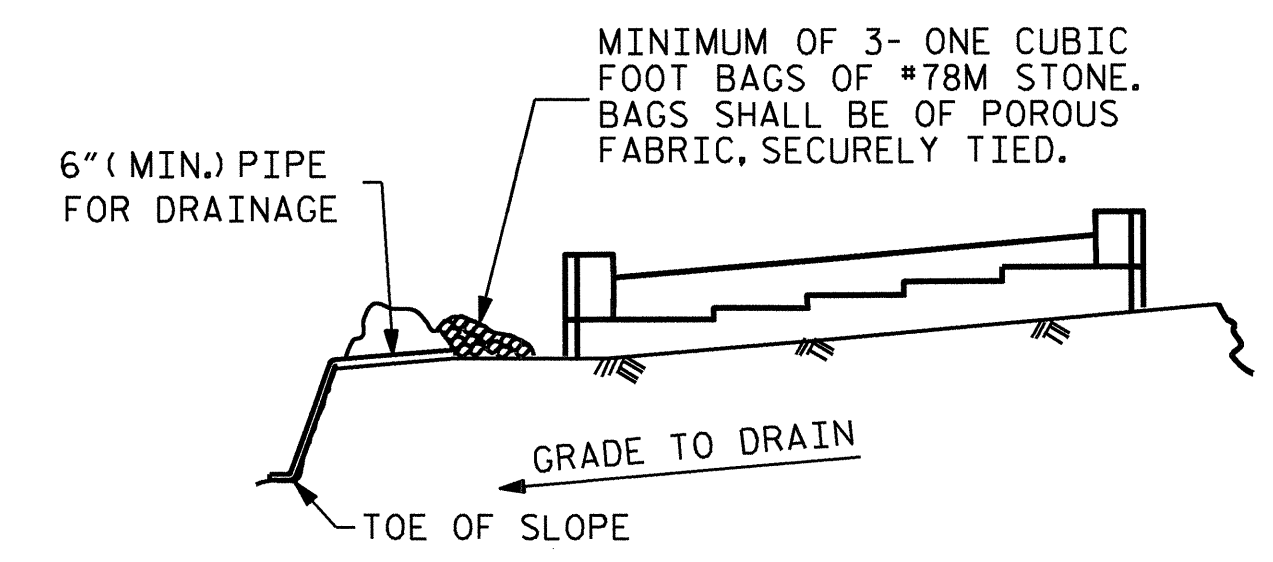
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			37



SECTION A-A



PILE SPLICE DETAILS



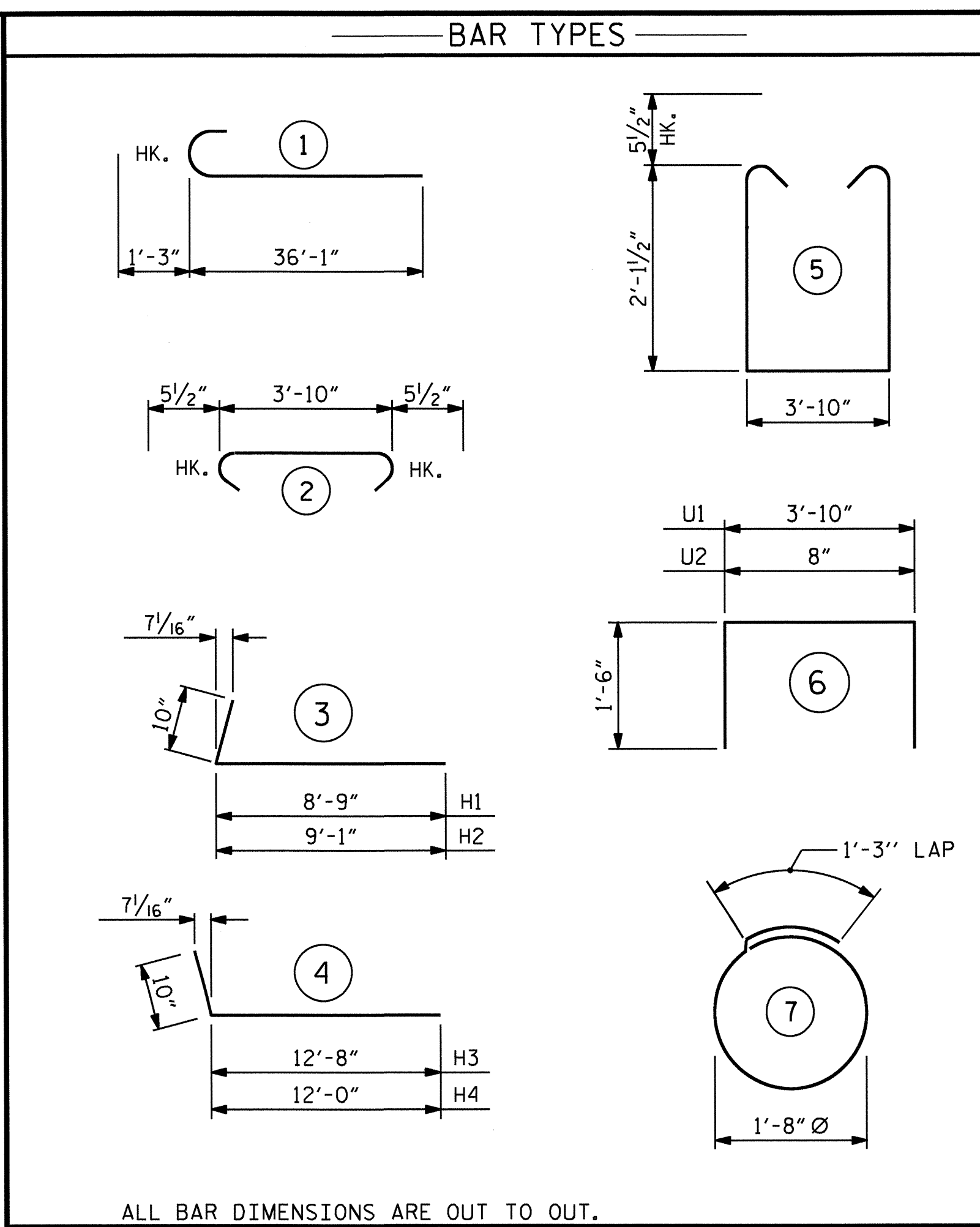
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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



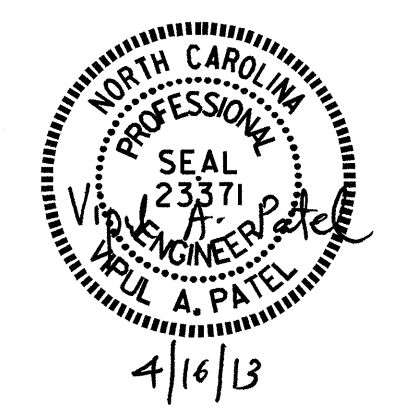
BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	22	9	1	37'-4"	2793
B2	18	4	STR	22'-10"	275
B3	16	4	STR	3'-10"	41
B4	5	4	STR	30'-0"	100
B5	1	4	STR	11'-3"	8
B6	1	4	STR	10'-4"	7
B7	1	4	STR	9'-5"	6
B8	1	4	STR	8'-5"	6
B9	1	4	STR	7'-8"	5
H1	13	5	3	9'-7"	130
H2	13	5	3	9'-11"	134
H3	12	5	4	13'-6"	169
H4	12	5	4	12'-10"	161
K1	4	4	STR	5'-0"	13
K2	4	4	STR	4'-10"	13
K3	24	4	STR	22'-10"	366
S1	96	5	5	9'-0"	901
S2	96	5	2	4'-9"	476
S3	14	4	7	6'-6"	61
U1	26	4	6	6'-10"	119
U2	53	4	6	3'-8"	130
V1	106	5	STR	6'-0"	663
V2	29	4	STR	8'-7"	166
V3	35	4	STR	7'-8"	179
REINFORCING STEEL					LBS 6922
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, COLLAR, & LOWER PART OF WINGS					31.1 C.Y.
POUR #2 UPPER WINGS & BACKWALL					14.3 C.Y.
CLASS A CONCRETE TOTAL					45.4 C.Y.
HP 12X53 STEEL PILES NO. 7					LIN. FT. 105
PILE EXCAVATION IN SOIL					LIN. FT. 53
PILE EXCAVATION NOT IN SOIL					LIN. FT. 52

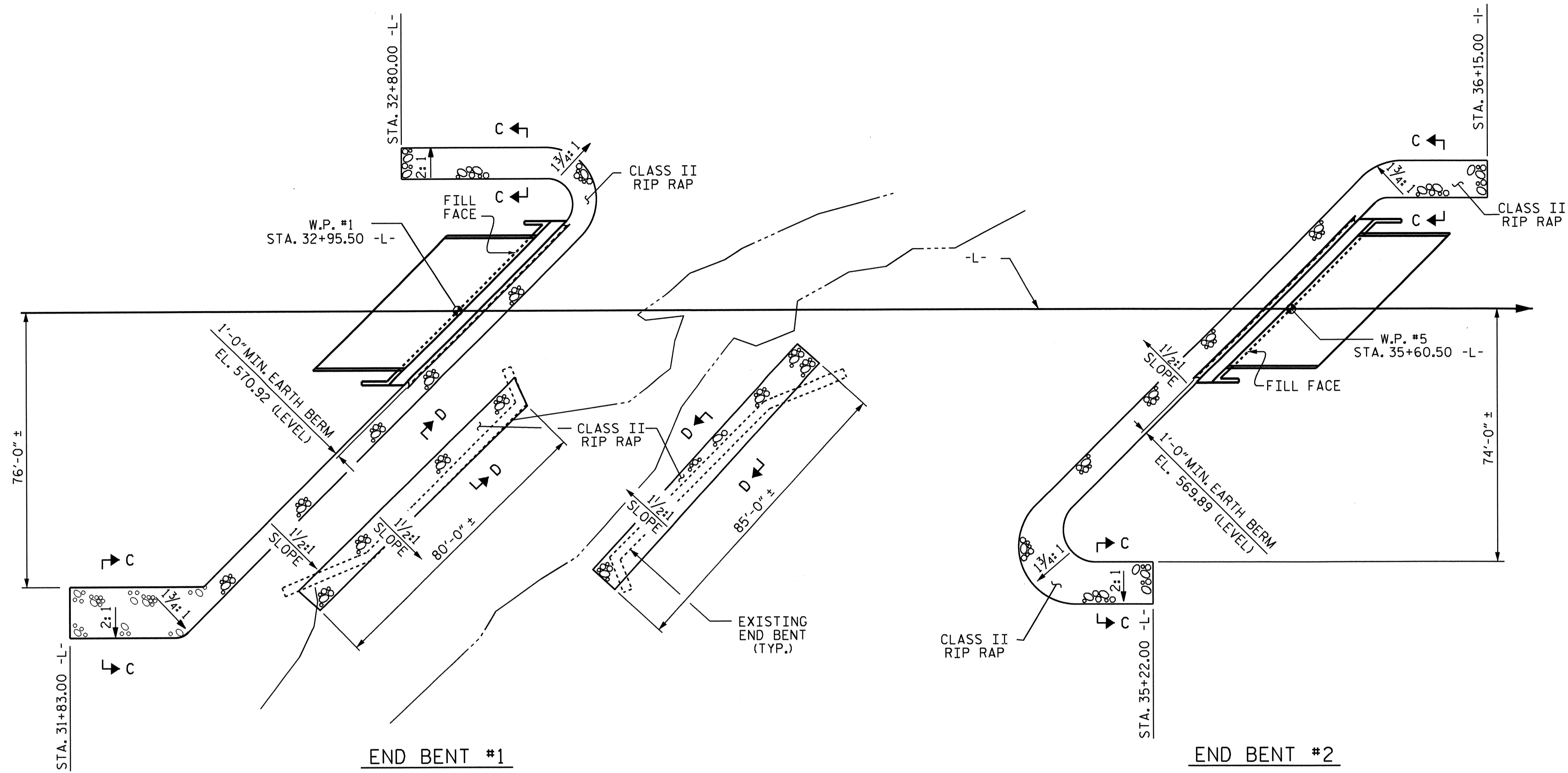
PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

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

SHEET NO. S-34  
TOTAL SHEETS 37

DRAWN BY: T.H. CARROLL DATE: 11/12  
 CHECKED BY: R.L. CHESSON DATE: 11/12  
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 03/12/13

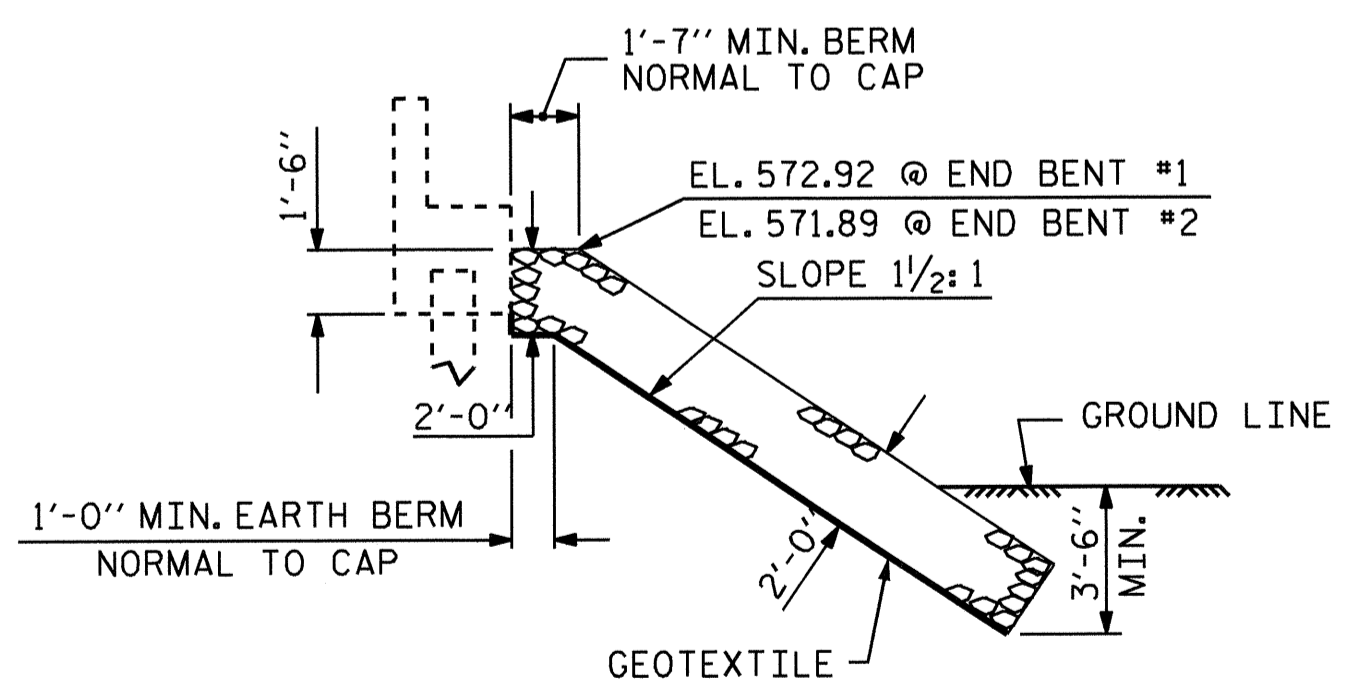




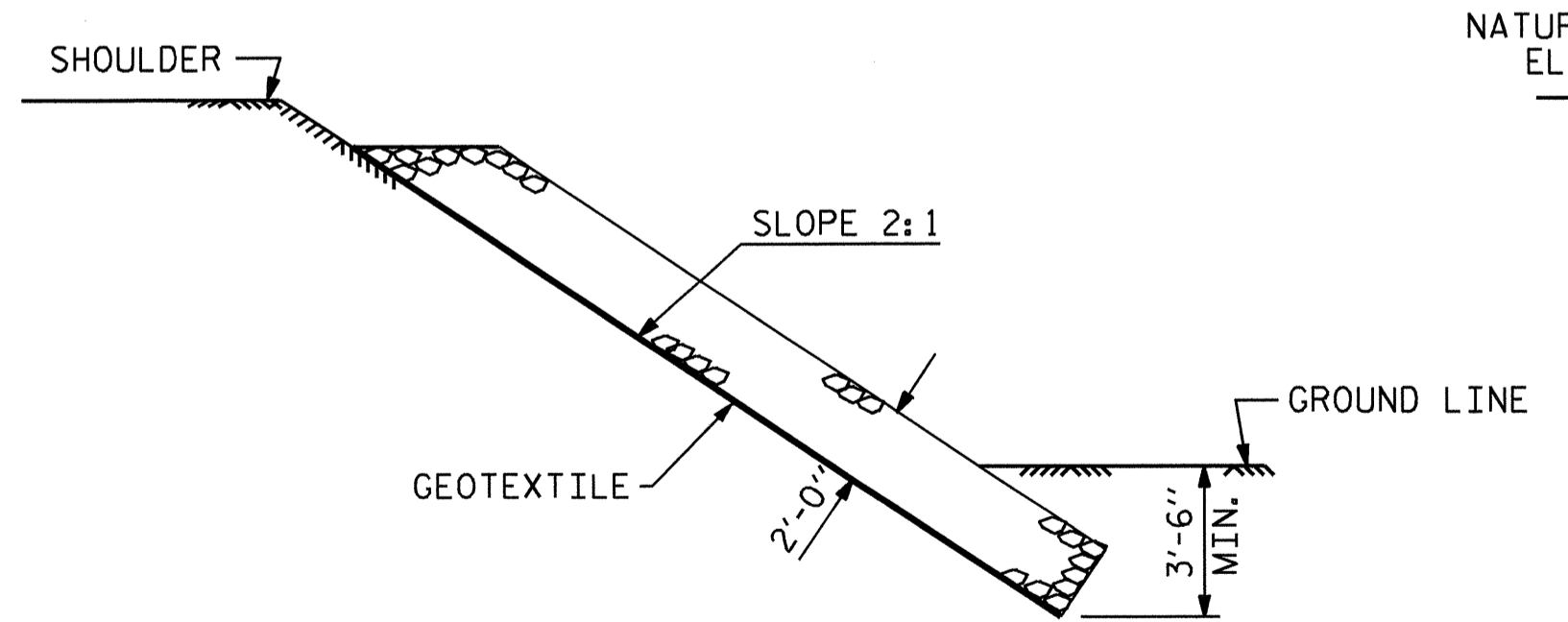
**PLAN OF RIP RAP**

ESTIMATED QUANTITIES		
BRIDGE @ STA. 34+28.00 -L-	RIp RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
* END BENT #1	390	435
END BENT #2	205	225

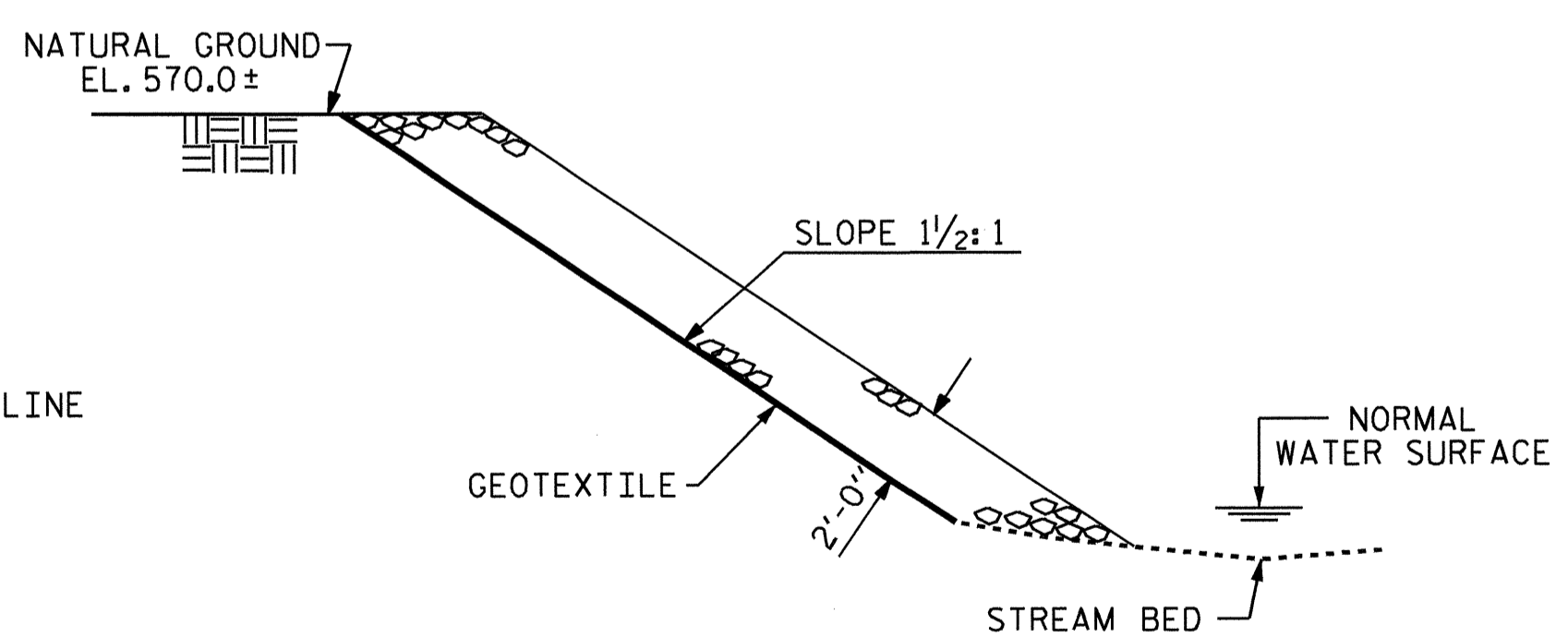
\* THE CLASS II RIP RAP THAT IS TO BE PLACED IN THE AREA OF THE EXISTING END BENTS HAS BEEN INCLUDED IN THE QUANTITY SHOWN FOR END BENT #1. APPROXIMATELY 160 TONS OF RIP RAP AND APPROXIMATELY 180 SQUARE YARDS OF GEOTEXTILE FOR DRAINAGE.



**SECTION C-C  
BERM RIP RAPPED**



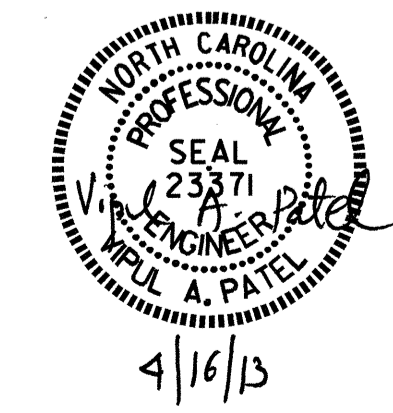
**SECTION C-C**



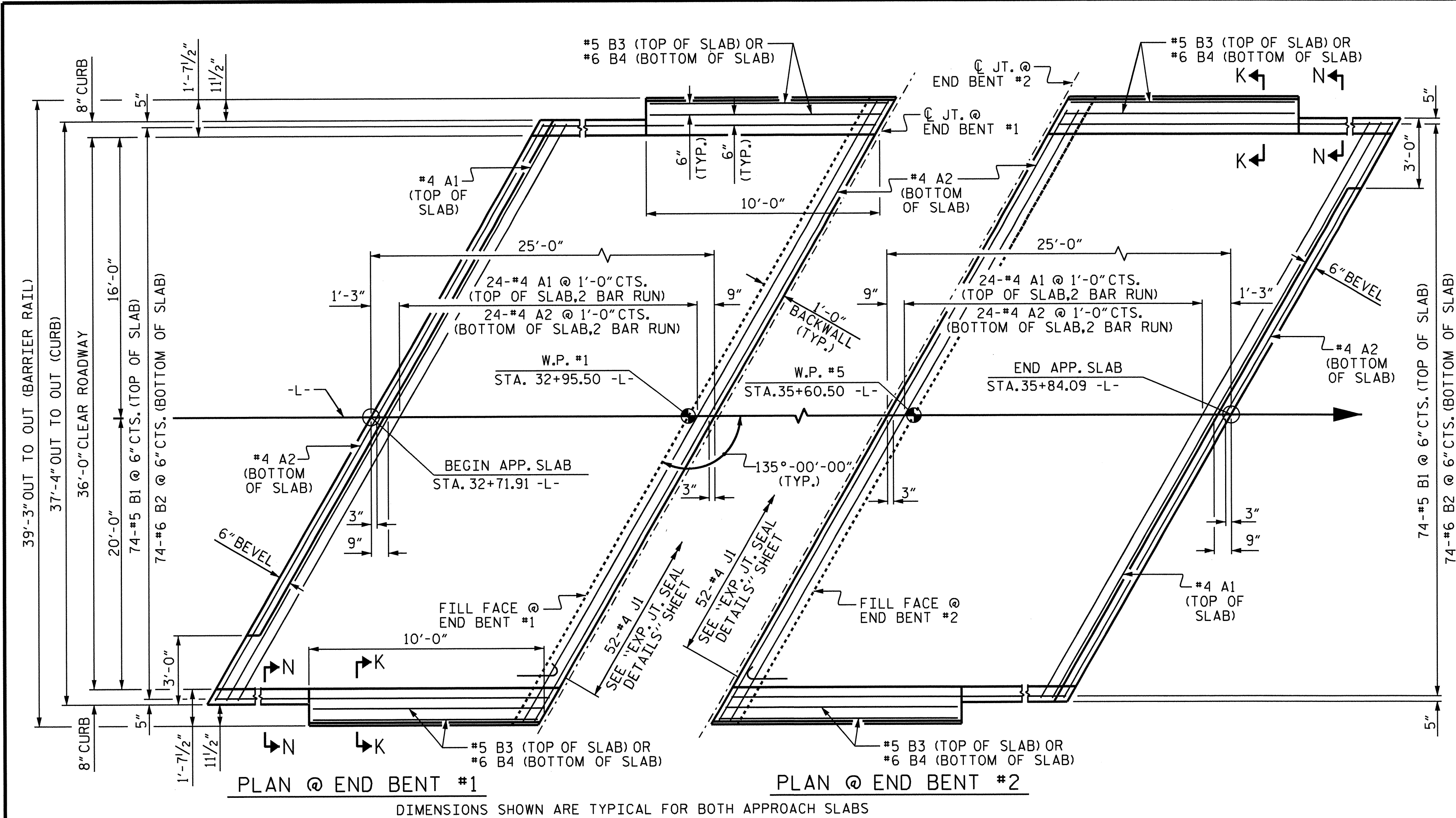
**SECTION D-D**

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 37



DESIGN ENGINEER OF RECORD:  
V.A. PATEL DATE: 03/12/13  
 DRAWN BY: J. G. KHARVA DATE: 8/12  
 CHECKED BY: K. D. LAYNE DATE: 11/09/12



### NOTES

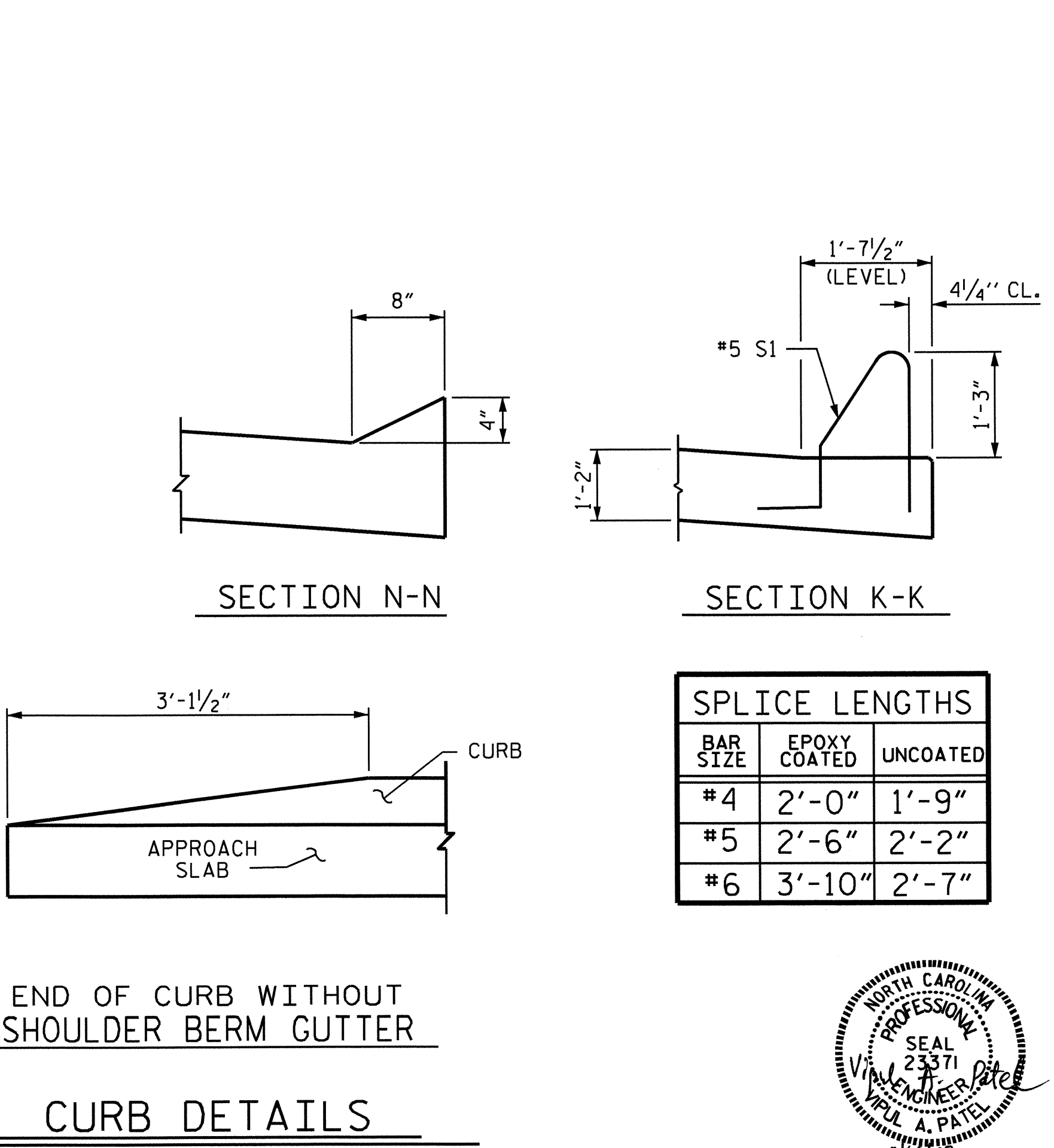
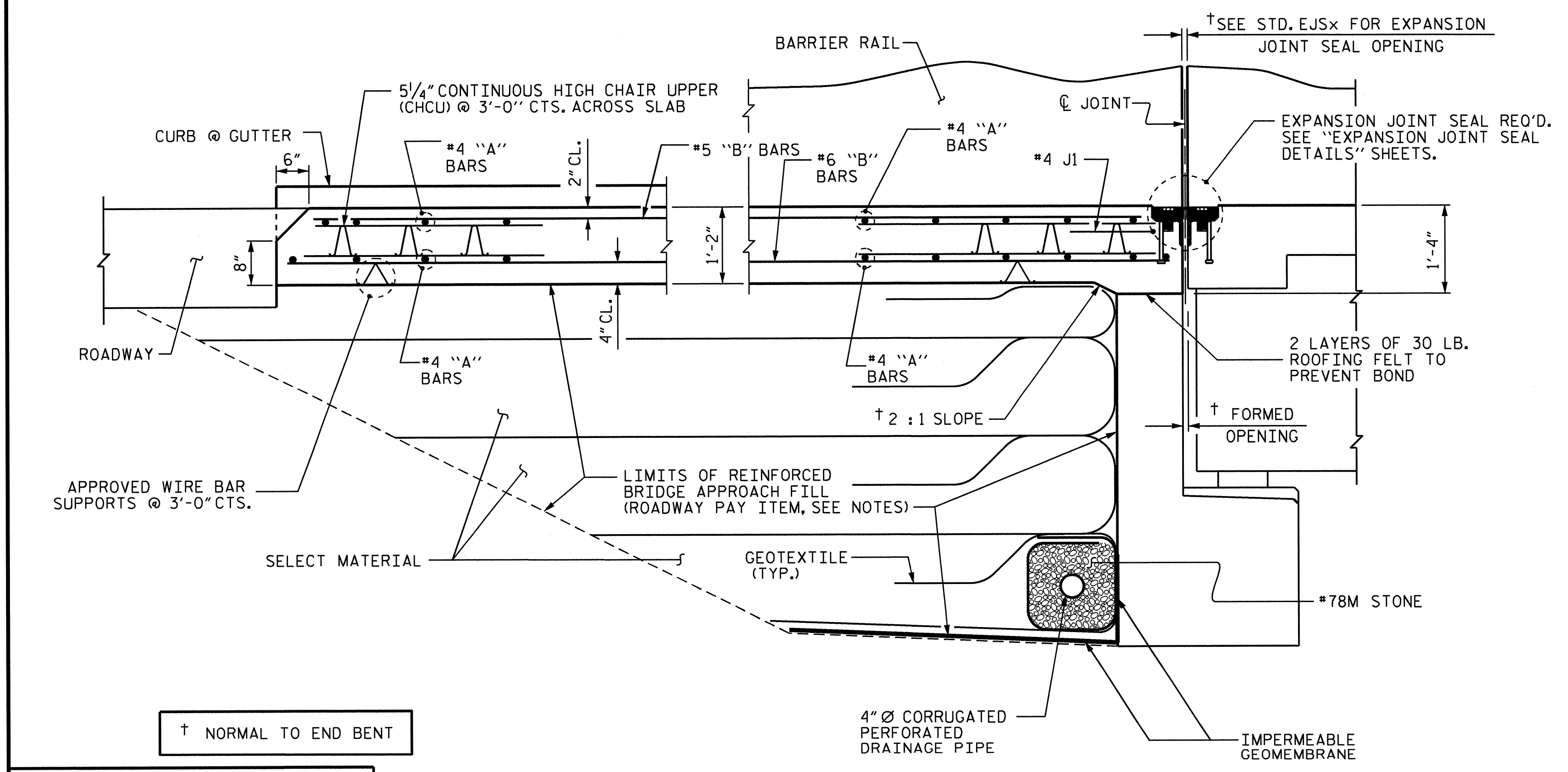
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
<b>APPROACH SLAB AT EB #1</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	28'-7"	955
A2	52	#4	STR	28'-5"	949
*B1	74	#5	STR	23'-9"	1833
B2	74	#6	STR	24'-6"	2723
*B3	4	#5	STR	9'-10"	41
B4	4	#6	STR	9'-10"	59
*J1	52	#4	1	1'-5"	49
REINFORCING STEEL **					LBS. 3731
*EPOXY COATED REINFORCING STEEL **					LBS. 2878
CLASS AA CONCRETE **					C. Y. 34.82
<b>APPROACH SLAB AT EB #2</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A	50	#4	STR	28'-7"	955
A	52	#4	STR	28'-5"	949
*B1	74	#5	STR	23'-9"	1833
B2	74	#6	STR	24'-6"	2723
*B3	4	#5	STR	9'-10"	39
B4	4	#6	STR	9'-10"	57
*J1	52	#4	1	1'-5"	49
REINFORCING STEEL **					LBS. 3731
*EPOXY COATED REINFORCING STEEL **					LBS. 2878
CLASS AA CONCRETE **					C. Y. 34.8
<b>BAR TYPE</b>					
ALL BAR DIMENSIONS ARE OUT TO OUT					
** QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED. SEE SHEET 2 OF 2.					



THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 34+28.00 -L-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 BRIDGE APPROACH SLAB  
 FOR FLEXIBLE PAVEMENT

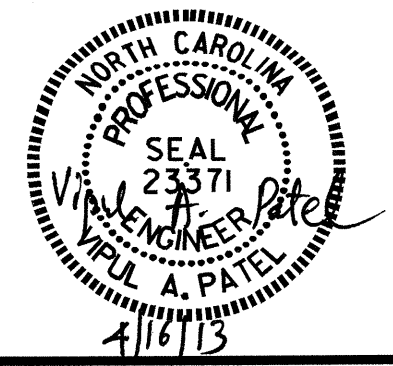
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1			3			TOTAL SHEETS
2			4			37

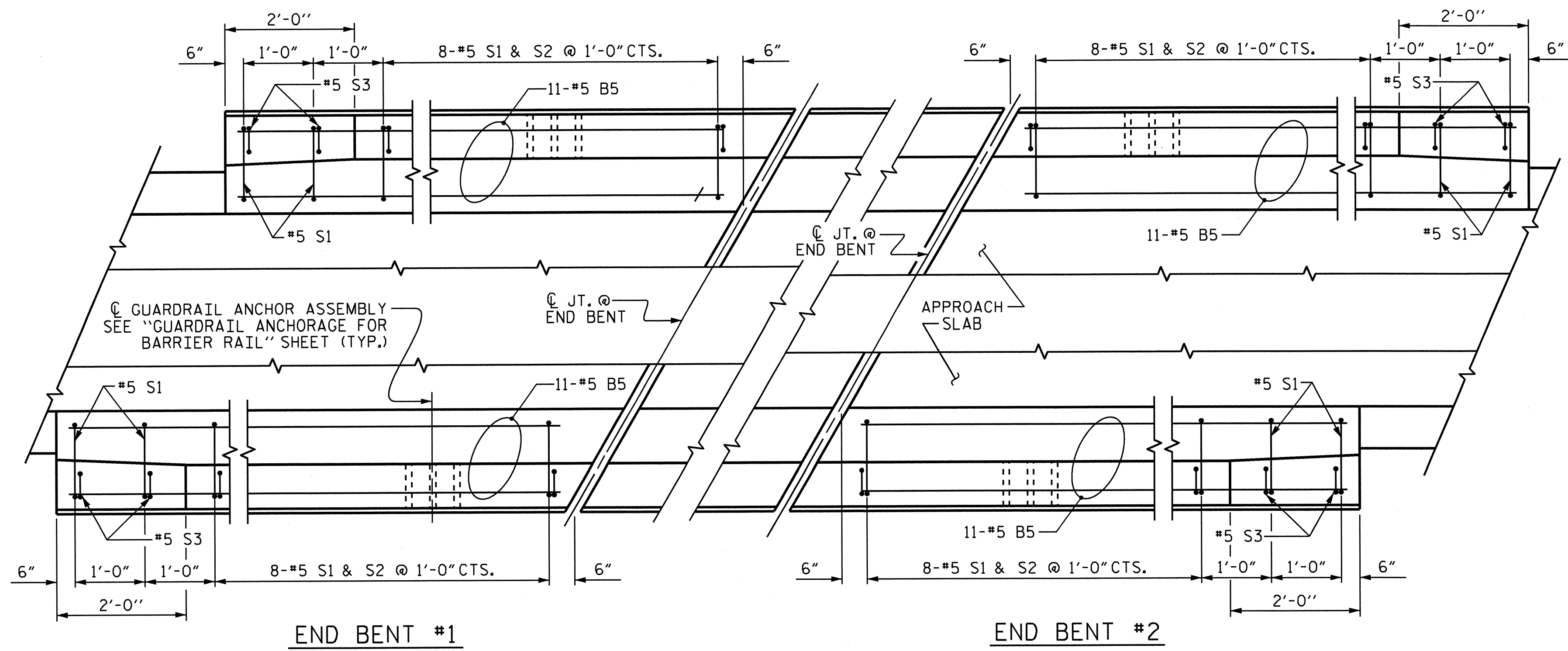
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DESIGN ENGINEER OF RECORD:  
 V.A. PATEL DATE: 03/12/13

ASSEMBLED BY: M. ALI DATE: 4/12/012  
 CHECKED BY: J.G. KHARVA DATE: 4/19/012

DRAWN BY: EEM 3/95 REV. 5/7/03R RWM/JTE  
 CHECKED BY: VAP 3/95 REV. 5/1/06RR KMM/GM  
 REV. 10/1/11 MAA/GM





END BENT #1

END BENT #2

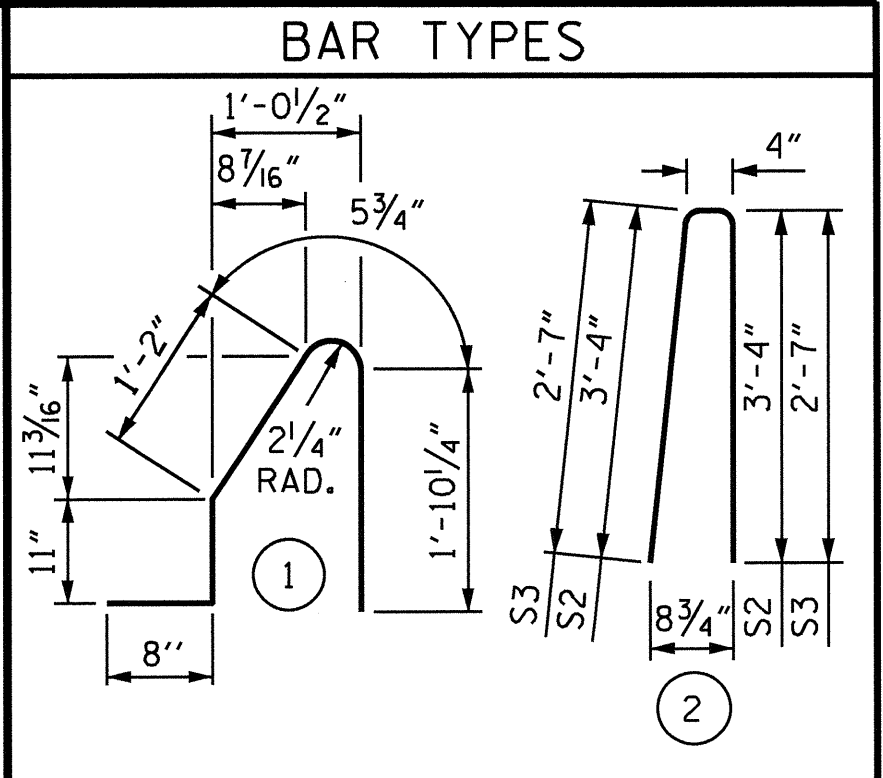
PLAN OF BARRIER RAIL

NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

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

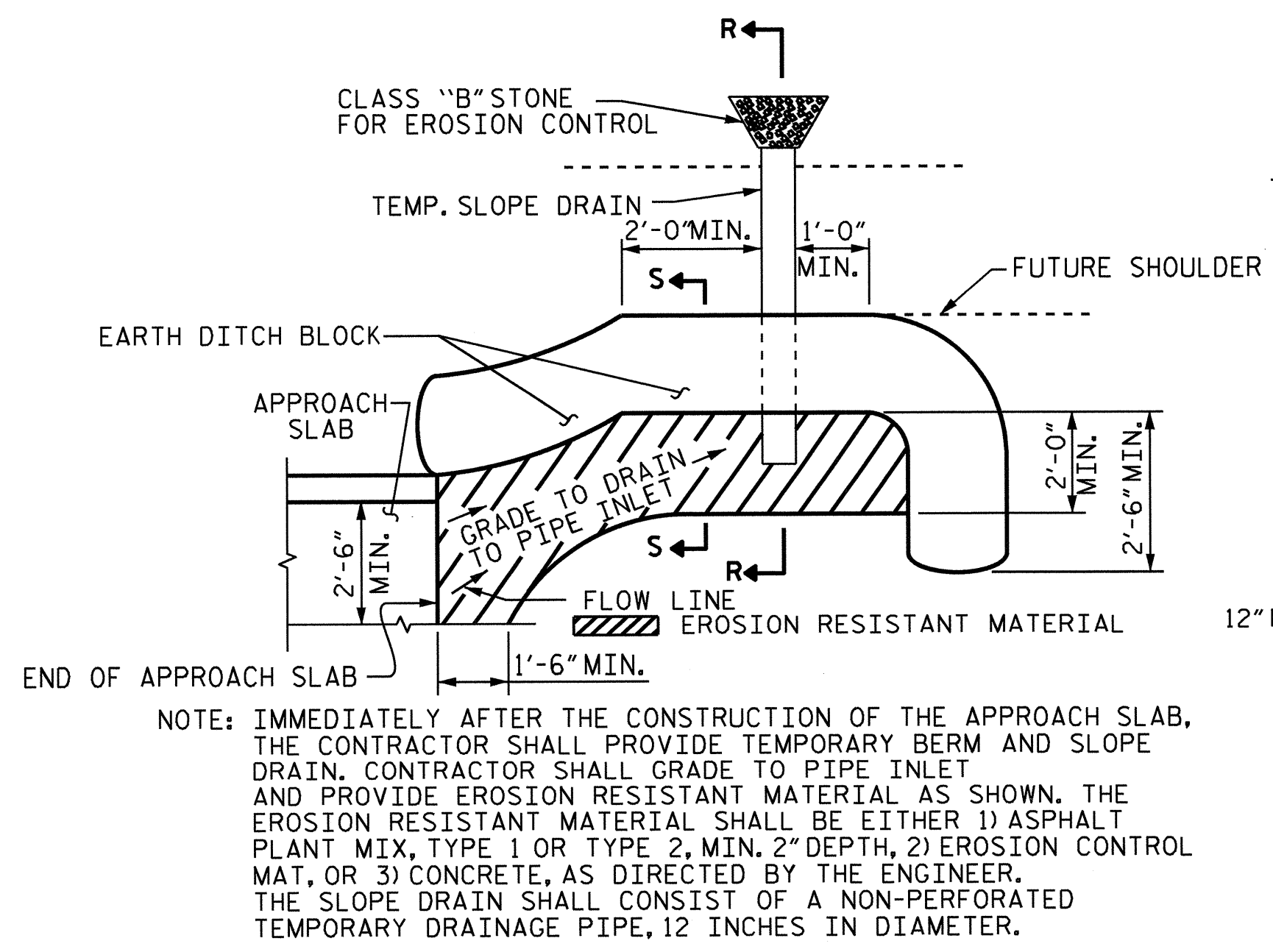
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



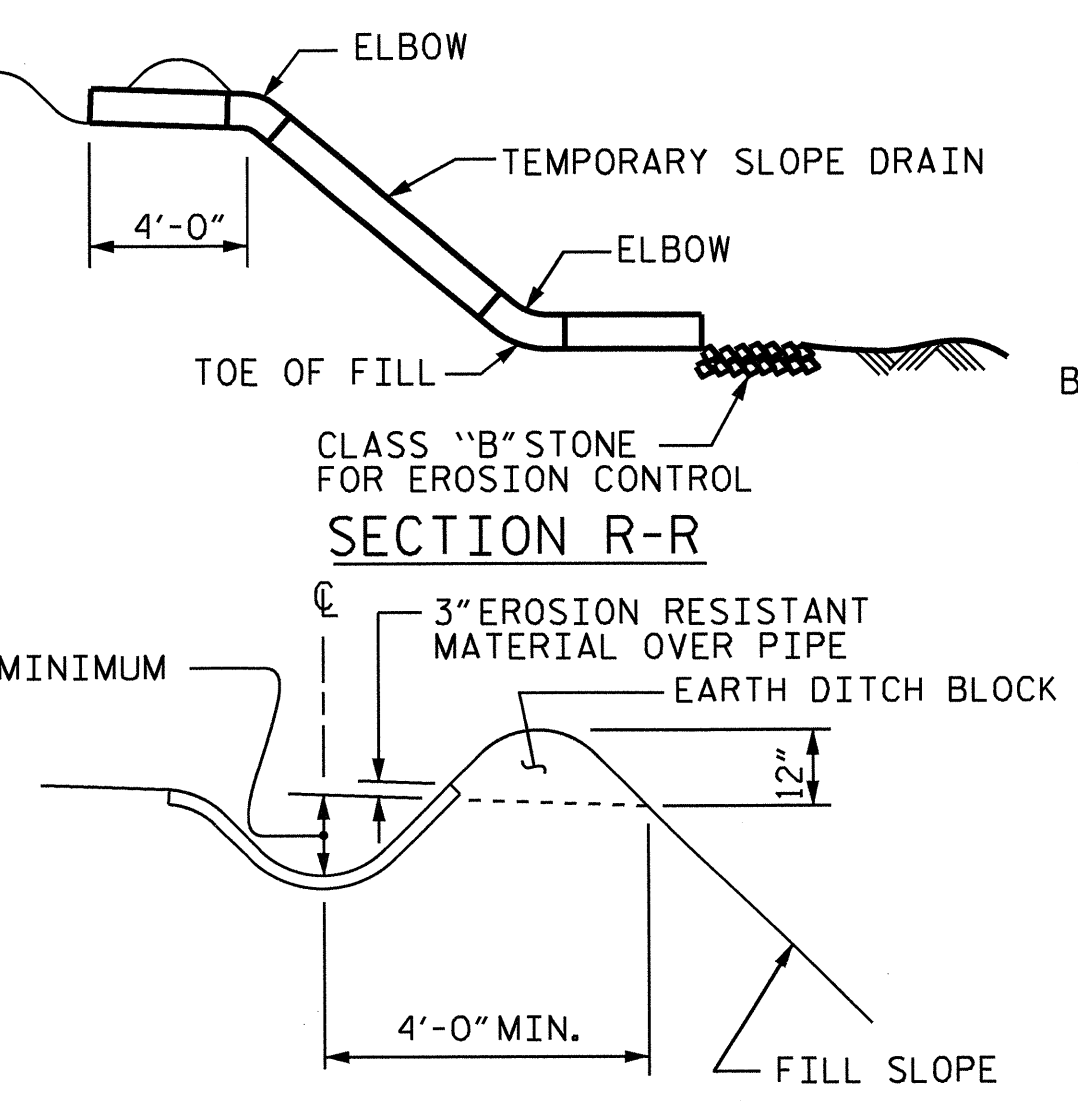
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

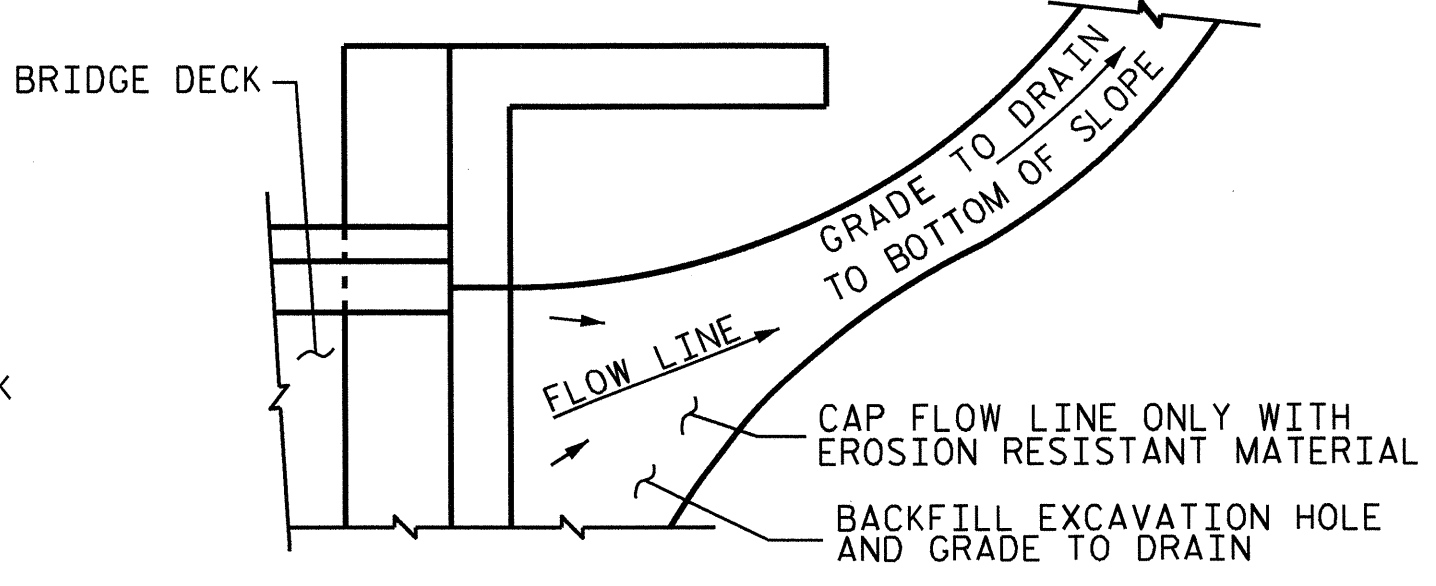
BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B5	44	#5	STR	9'-8"	444
*S1	40	#5	1	5'-1"	212
*S2	32	#5	2	7'-0"	234
*S3	8	#5	2	5'-6"	46
*EPOXY COATED REINFORCING STEEL				LBS.	936
CLASS AA CONCRETE				C. Y.	5.8
CONCRETE BARRIER RAIL				40 LIN. FT.	



PLAN VIEW

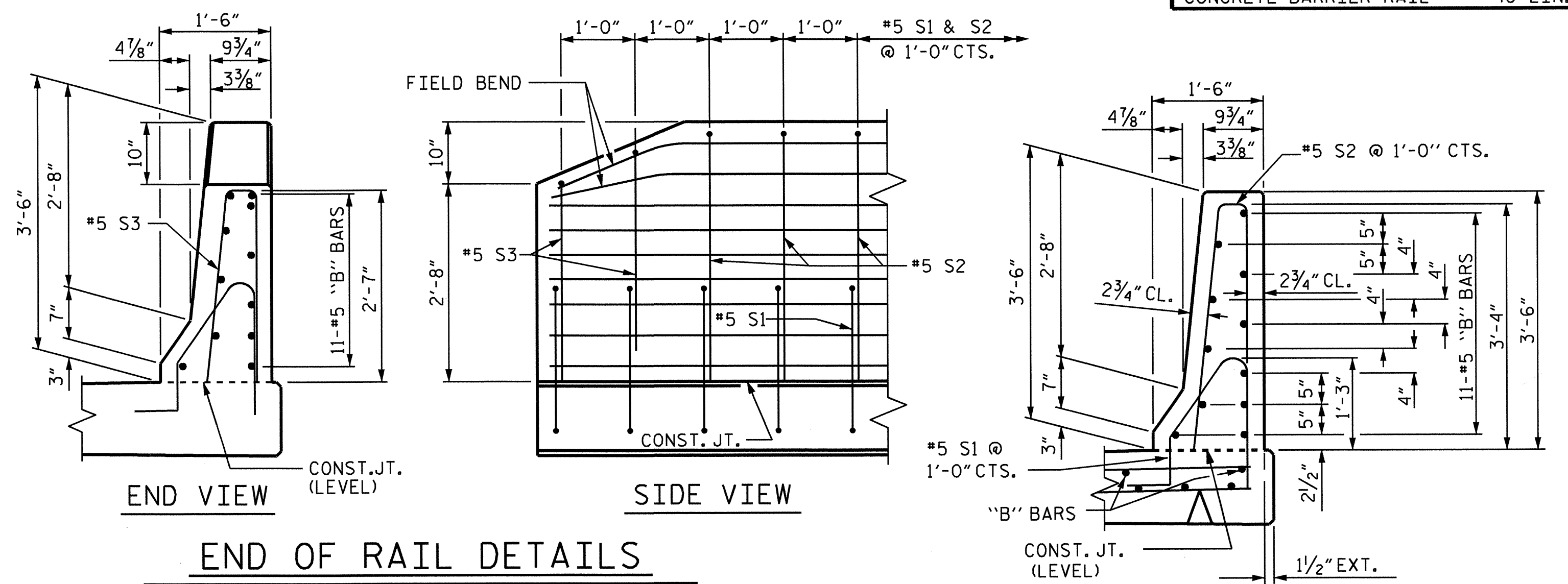


SECTION R-R



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

TEMPORARY DRAINAGE DETAIL



END VIEW

SIDE VIEW

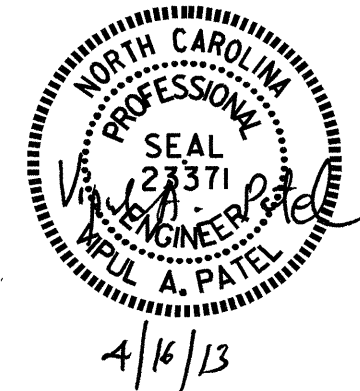
SECTION THRU RAIL

END OF RAIL DETAILS

PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 34+28.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-37
					TOTAL SHEETS 37

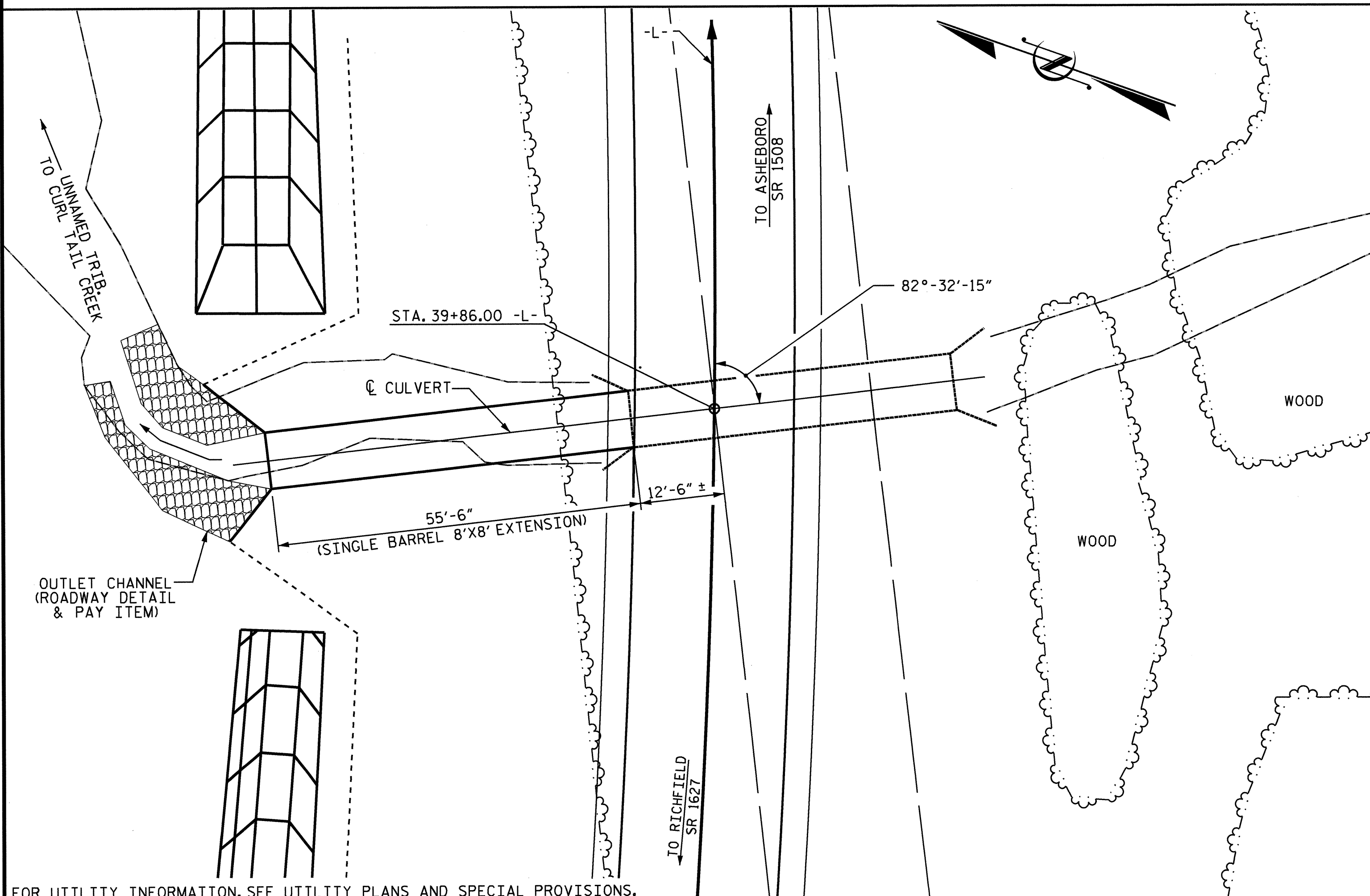


DESIGN ENGINEER OF RECORD:	V.A. PATEL	DATE:	03/12/13
ASSEMBLED BY:	M. ALI	DATE:	4/12/012
CHECKED BY:	J.G. KHARVA	DATE:	4/19/012
DRAWN BY:	FCJ 11/88	REV. 10/11	MAA/GM
CHECKED BY:	ARB 11/88	REV. 7/12	MAA/GM
		REV. 10/12	MAA/GM

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BM: #3 : RR SPIKE IN 15" CEDAR TREE, LEFT 35' STA. 43+57.00 -L- ELEV. 574.75



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

GRADE DATA

GRADE POINT ELEV. @ STA. 39+86.00 -L-	= 576.90
BED ELEV. @ STA. 39+86.00 -L-	= 563.20
ROADWAY SLOPES	= 2:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 550 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 574.10
DRAINAGE AREA	= 0.7 Sq.m.
BASE DISCHARGE (Q100)	= 650 C.F.S.
BASE HIGH WATER ELEVATION	= 575.10

OVERTOPPING FLOOD DATA

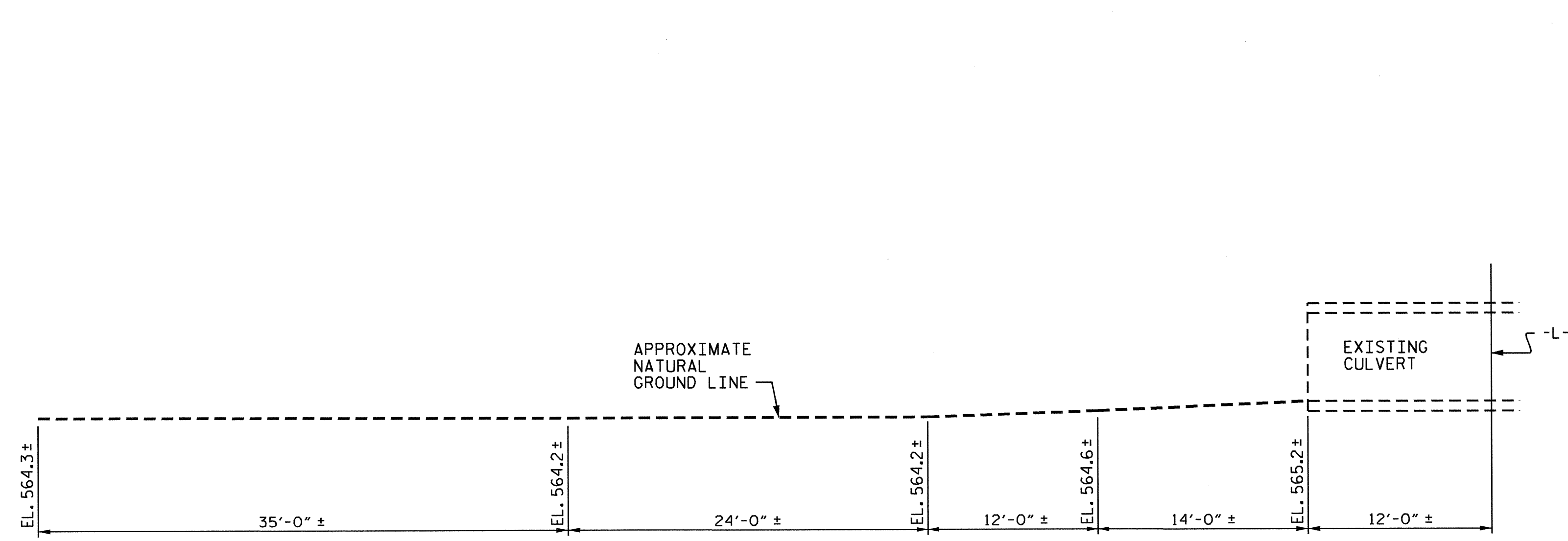
OVERTOPPING DISCHARGE	= 610 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 100 ± YRS.
OVERTOPPING FLOOD ELEVATION	= 574.80

TOTAL STRUCTURE QUANTITIES

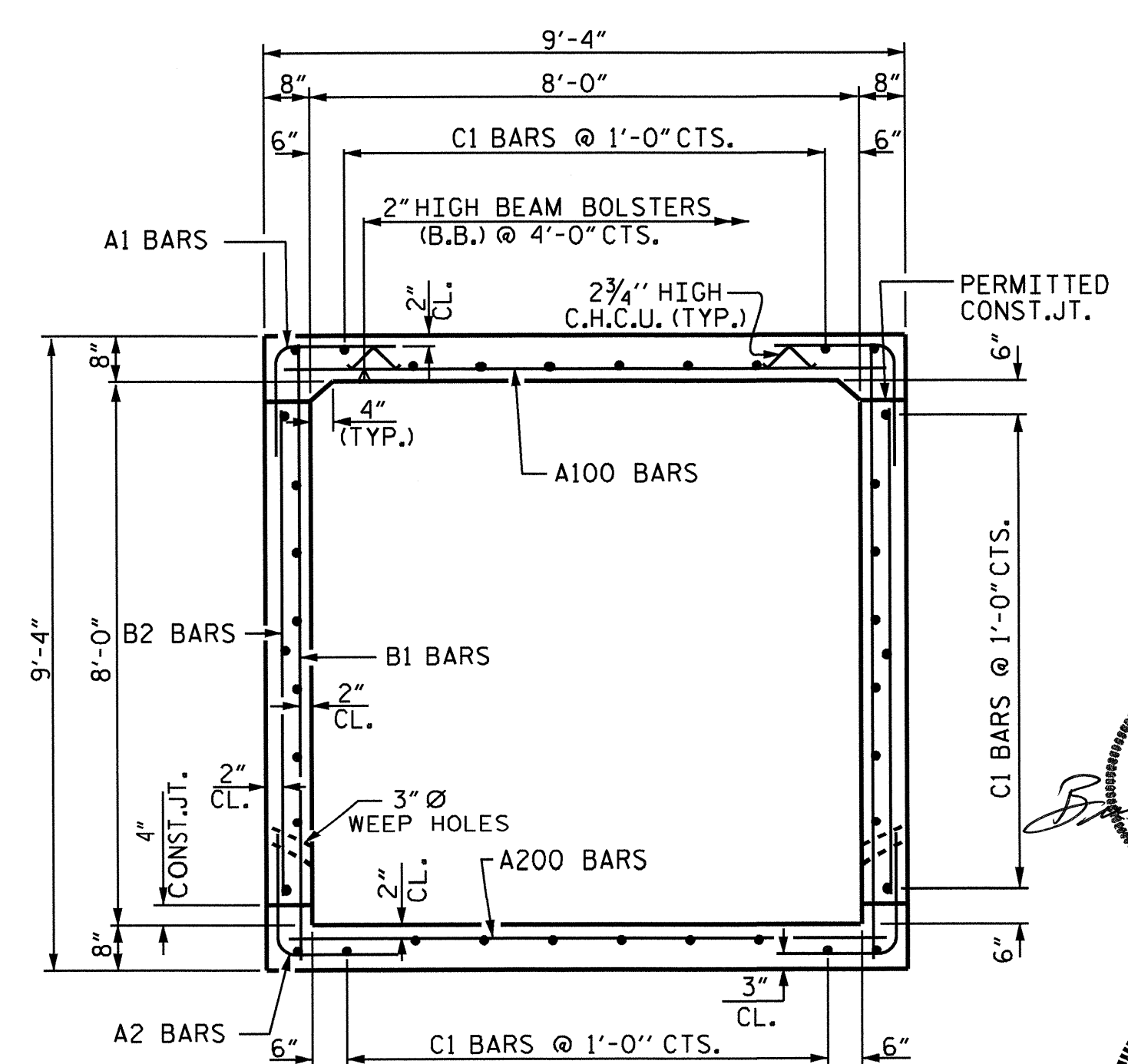
CLASS A CONCRETE	
BARREL @ 0.86 CY/FT	47.7 C.Y.
WING ETC.	11.5 C.Y.
TOTAL	59.2 C.Y.
REINFORCING STEEL	
BARREL	7215 LBS.
WINGS ETC.	721 LBS.
TOTAL	7936 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDI. MAT'L	37.0 TONS

NOTES

- ASSUMED LIVE LOAD ----- HS-20-44 OR ALTERNATE LOADING.
- DESIGN FILL----- 6.00 FT.
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
  1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
  2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- AT THE CONTRACTORS OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.
- IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.
- NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.
- 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 CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

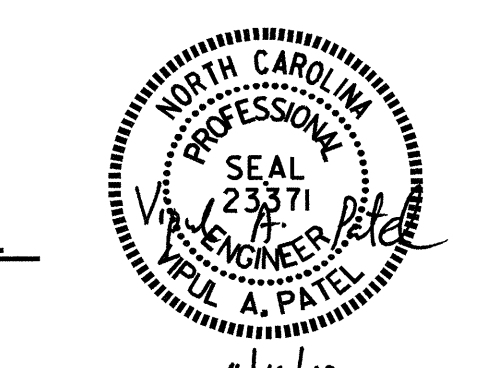
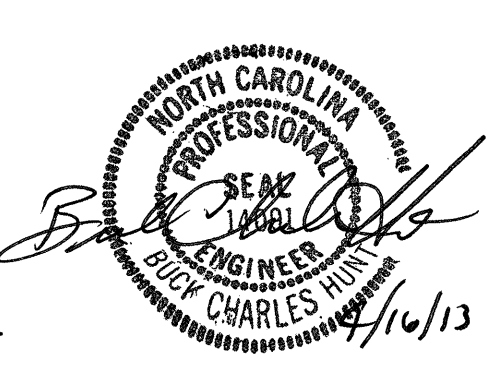


PROFILE ALONG CULVERT



RIGHT ANGLE SECTION OF BARREL

THERE ARE 38 "C" BARS IN SECTION OF BARREL



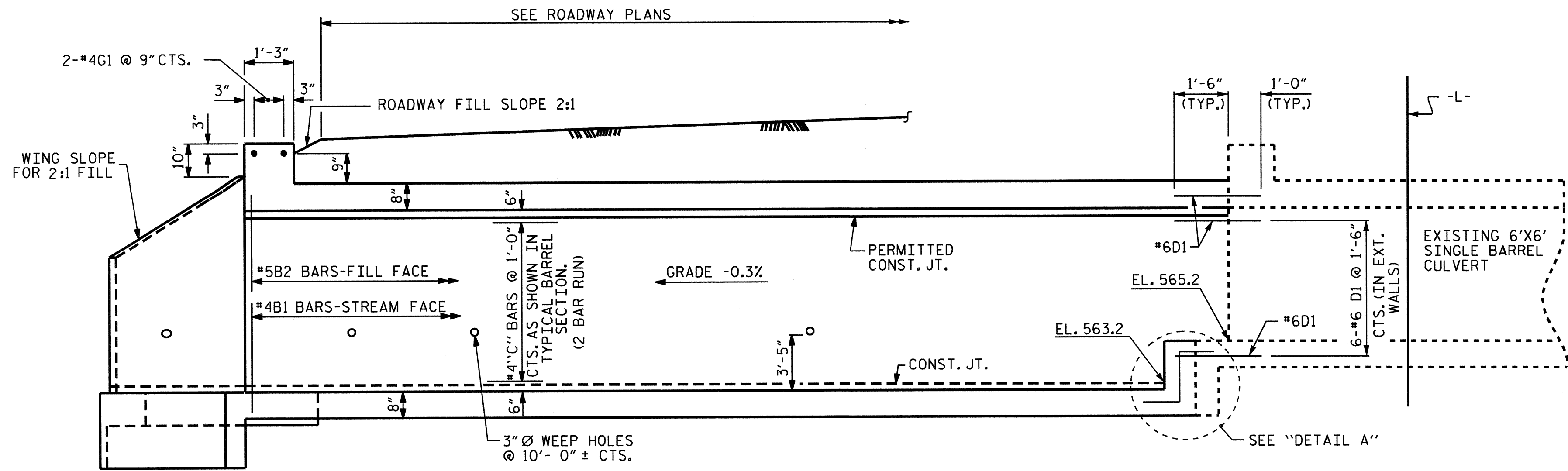
PROJECT NO. B-4643  
 STANLY COUNTY  
 STATION: 39+86.00 -L-

SHEET 1 OF 3

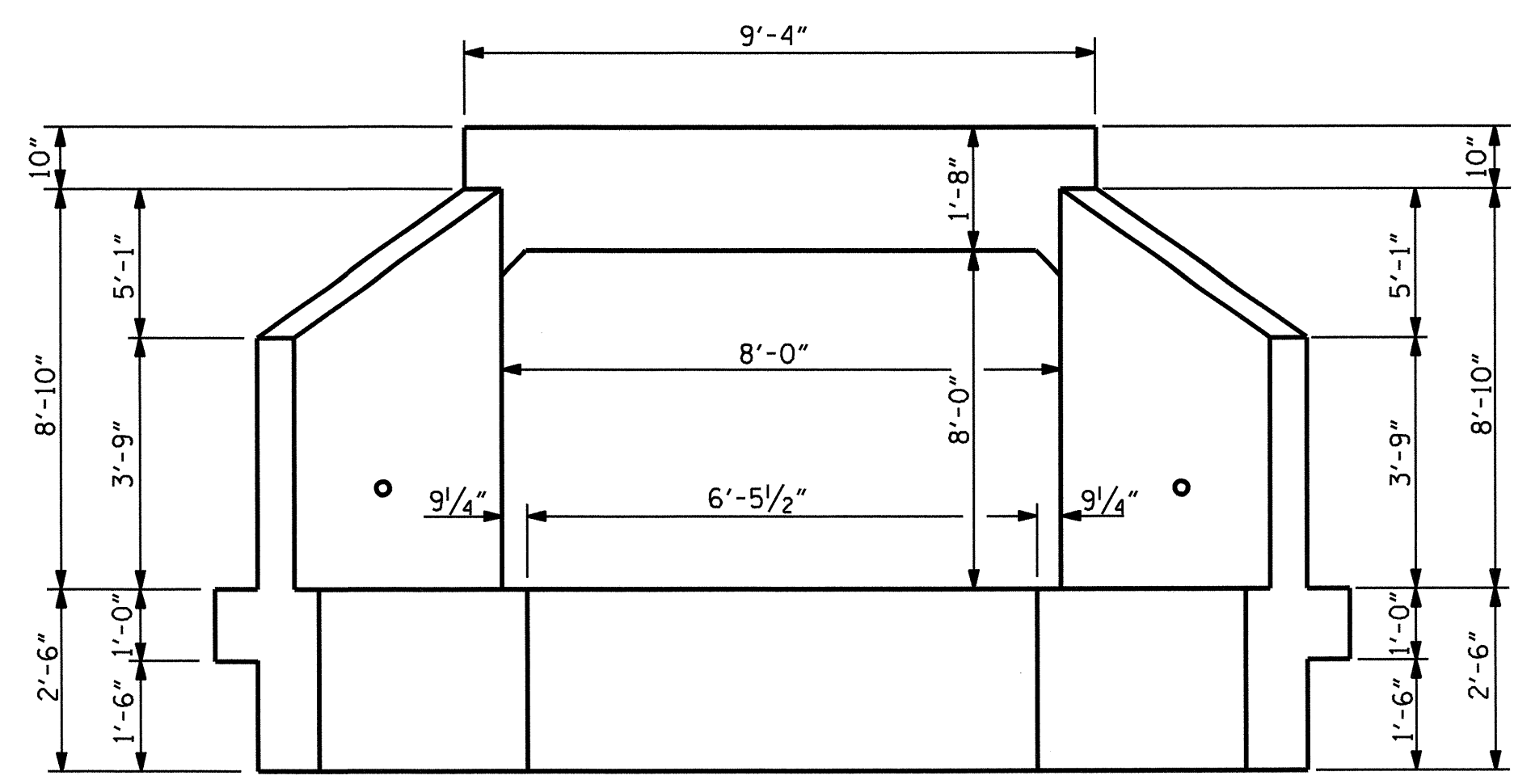
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 82°-32'-15" SKEW  
 (LEFT EXTENSION)

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

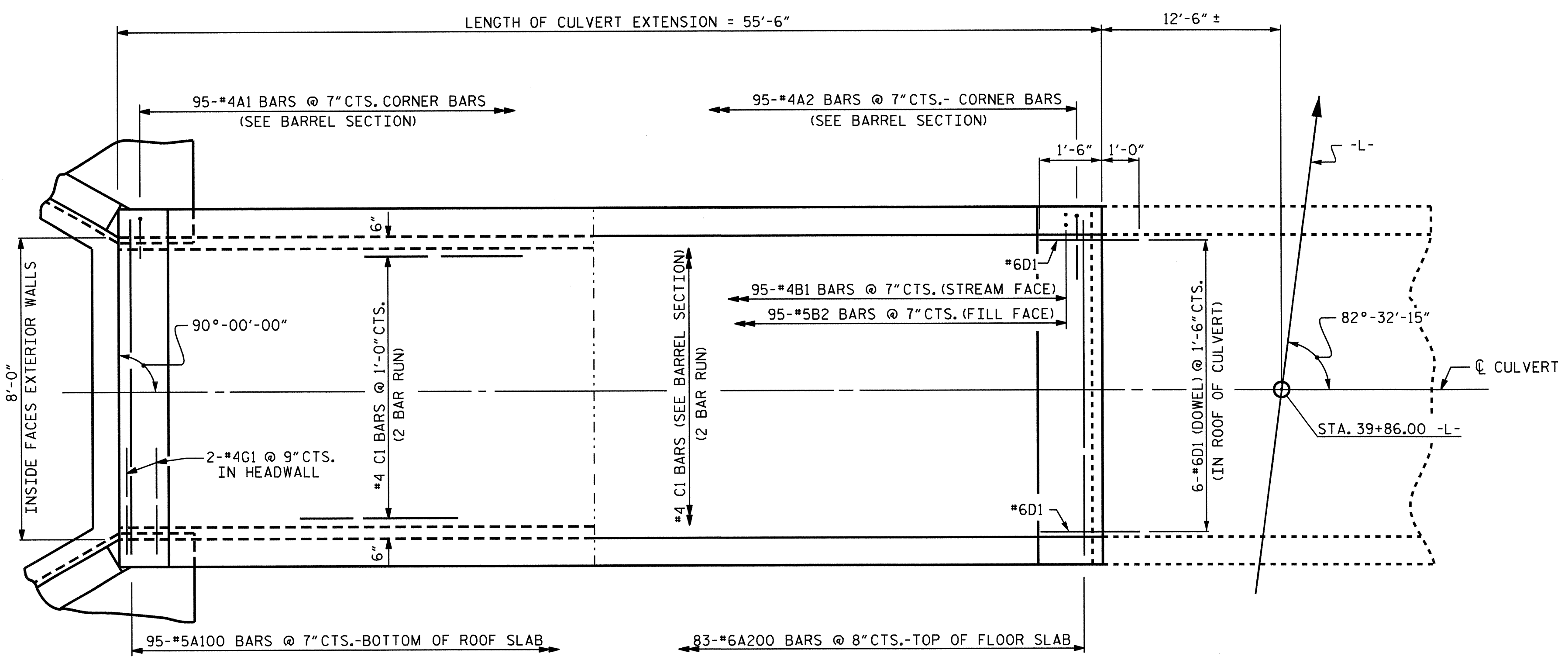
DESIGN ENGINEER OF RECORD: H.A. LOCKLEAR DATE: 03/12/13  
 DRAWN BY: J. G. KHARVA DATE: 05/30/12  
 CHECKED BY: H. T. DIEU DATE: 6/12



CULVERT SECTION NORMAL TO ROADWAY



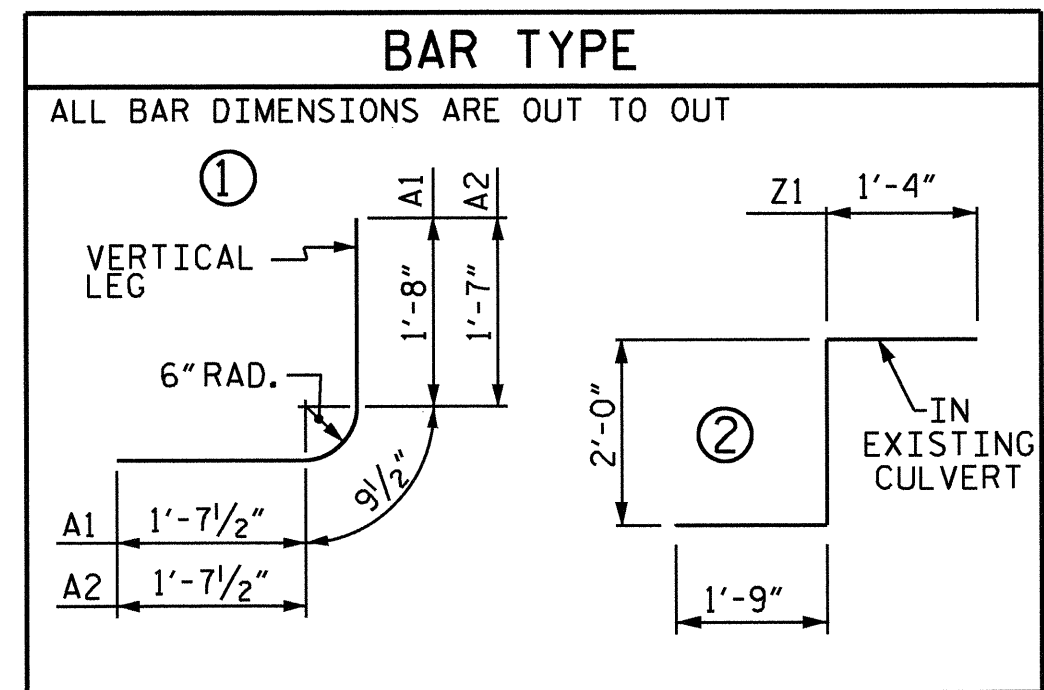
OUTLET END ELEVATION- NORMAL TO SKEW



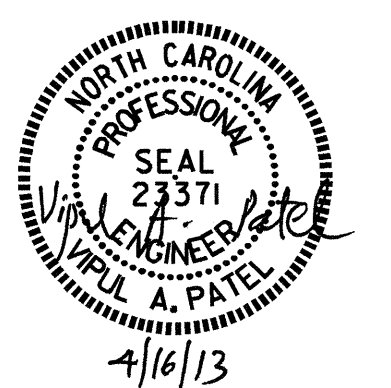
PART PLAN ROOF SLAB

PART PLAN FLOOR SLAB

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	190	#4	1	4'-1"	518
A2	190	#4	1	4'-0"	508
A100	95	#5	STR	8'-11"	884
A200	83	#6	STR	8'-11"	1112
B1	190	#4	STR	8'-10"	1121
B2	190	#5	STR	7'-4"	1453
C1	76	#4	STR	28'-8"	1455
D1	18	#6	STR	2'-6"	68
G1	2	#4	STR	9'-0"	12
L1	3	#6	STR	8'-6"	38
Z1	6	#6	2	5'-1"	46
REINFORCING STEEL					7215 LBS



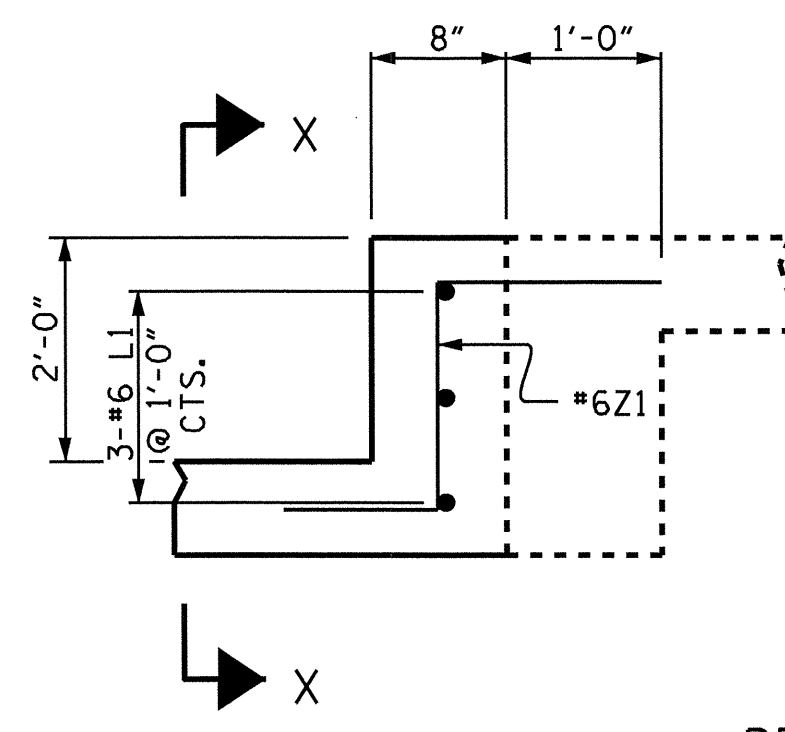
SPLICE LENGTH CHART		
BAR	SIZE	LENGTH
C1	#4	1'-11"



PROJECT NO. B-4643  
STANLY COUNTY  
 STATION: 39+86.00 -L-  
 SHEET 2 OF 3

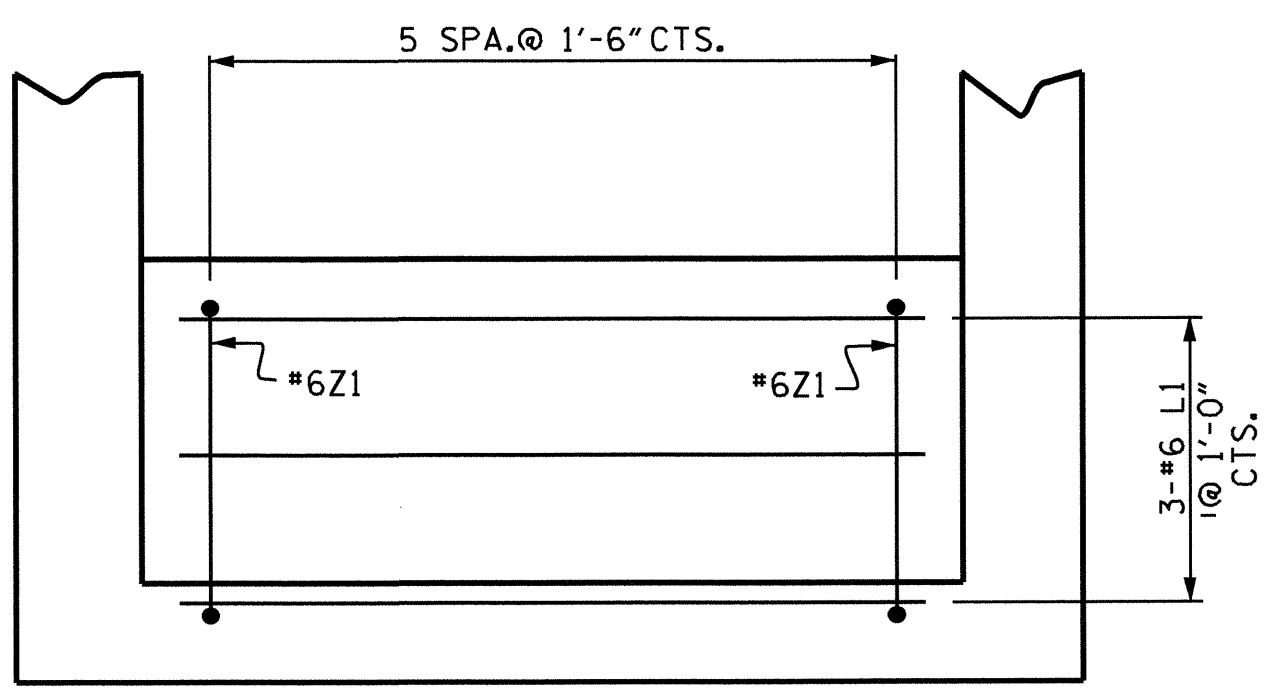
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 82°-32'-15" SKEW  
 (LEFT EXTENSION)

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



DETAIL A

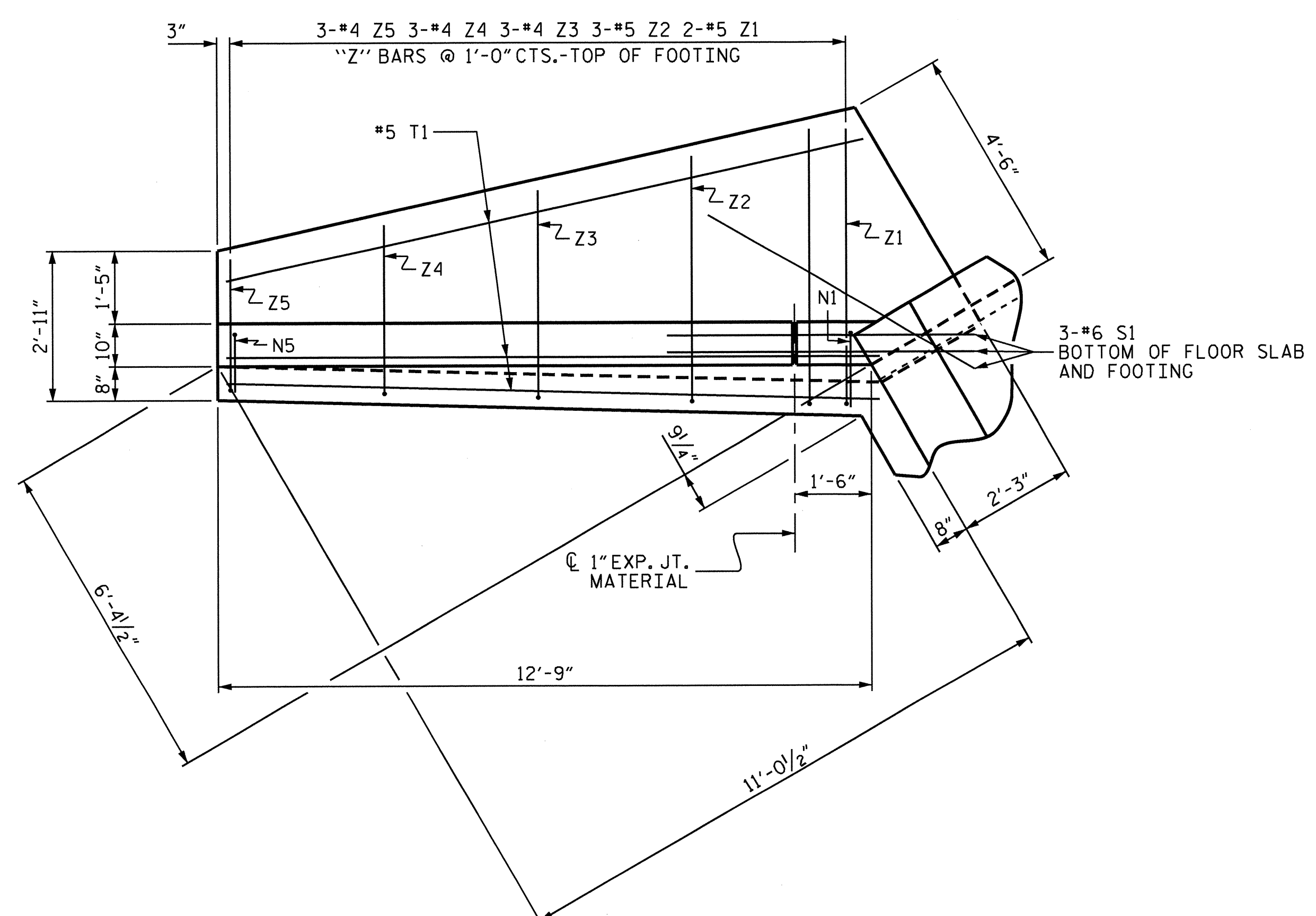
"Z" BARS SHALL BE DRILLED AND GROUTED IN THE EXISTING CULVERT



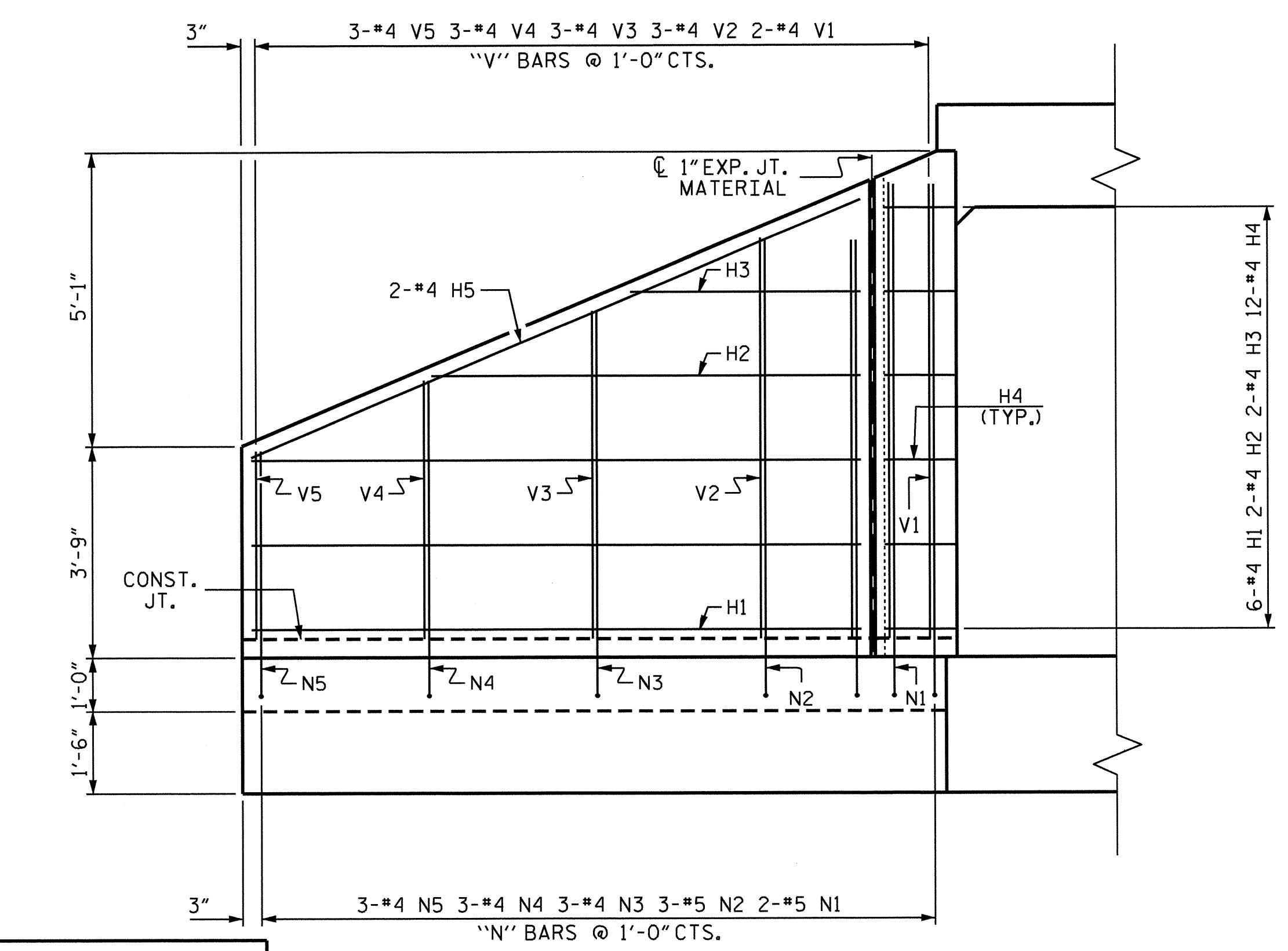
VIEW X-X

DESIGN ENGINEER OF RECORD:  
H.A. LOCKLEAR DATE: 03/12/13  
 DRAWN BY: J.G. KHARVA DATE: 05/30/12  
 CHECKED BY: H.T. DIEU DATE: 06/12

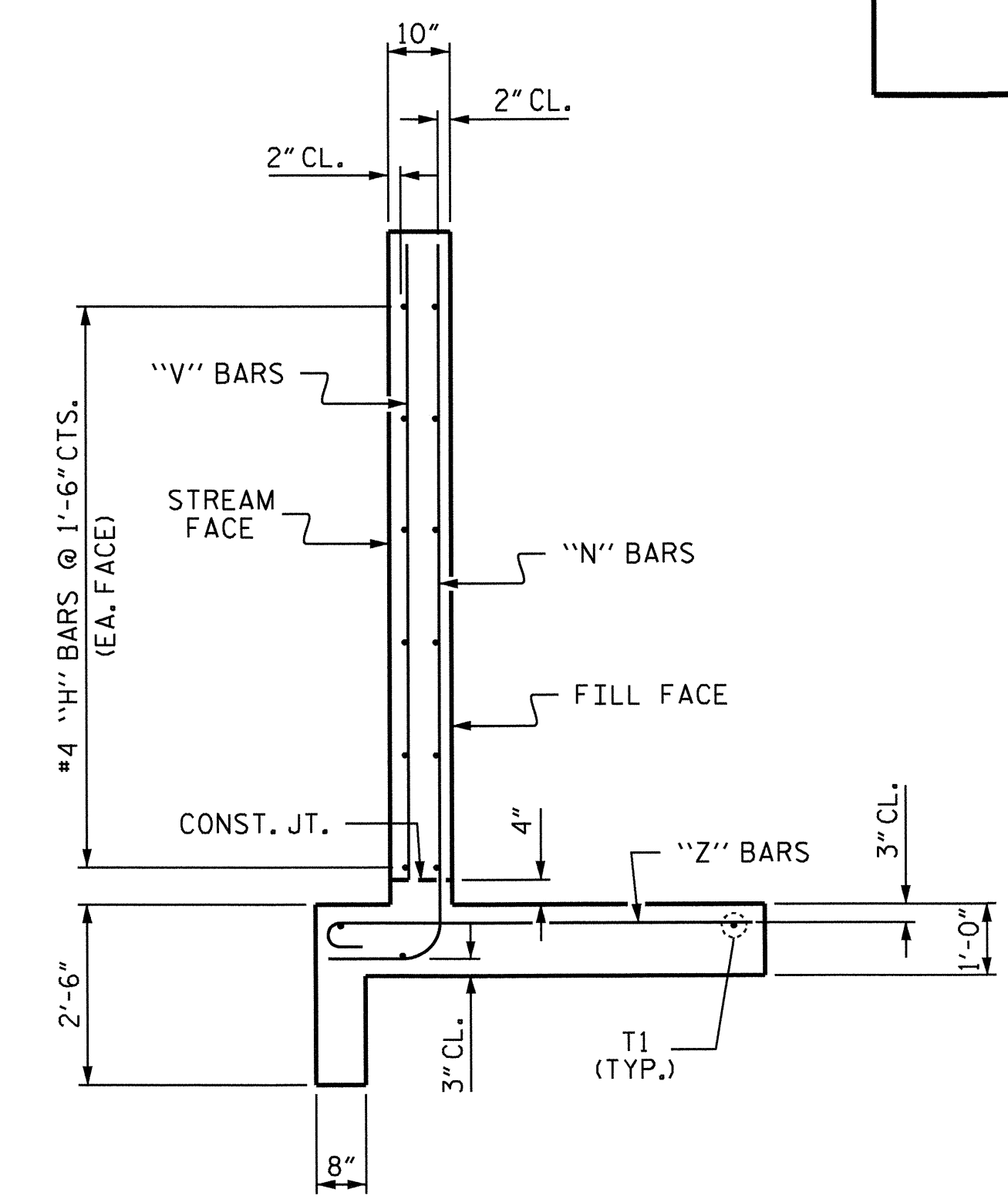




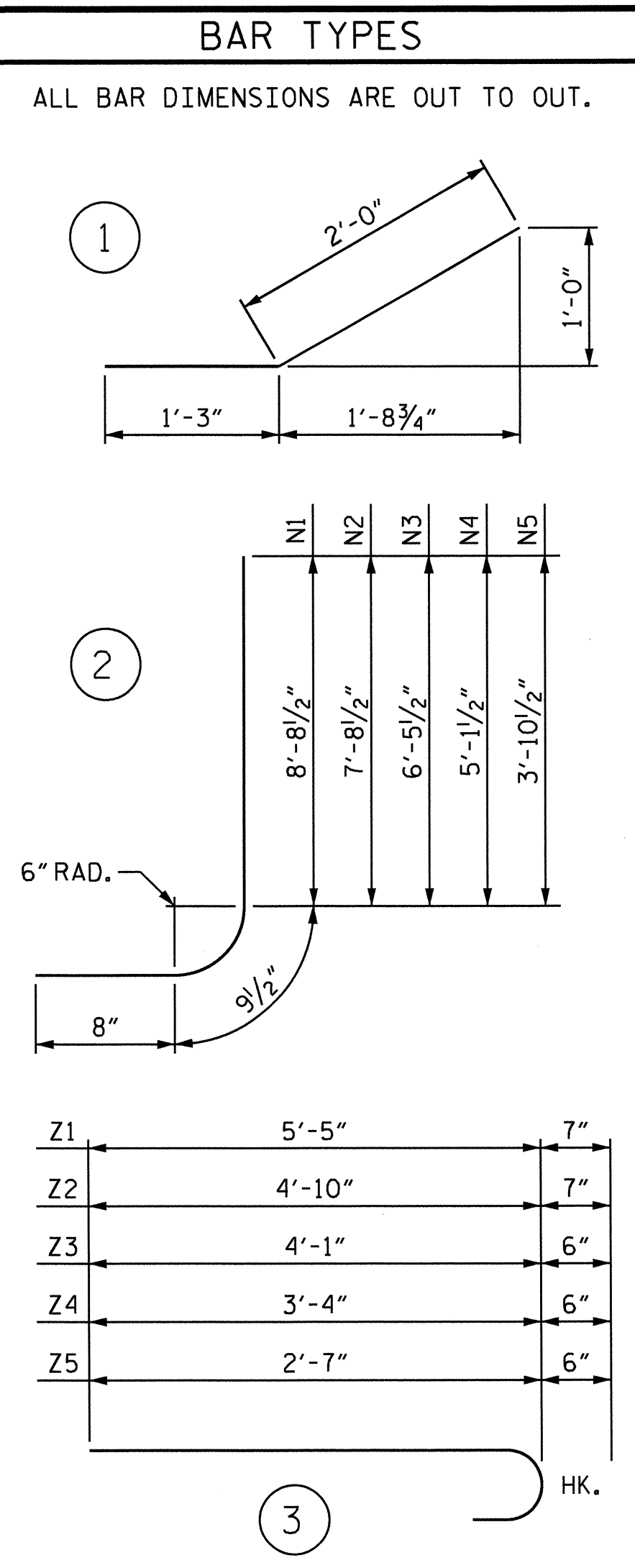
PLAN



ELEVATION



TYPICAL WING SECTION



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	10'-10"	87
H2	4	#4	STR	7'-8"	20
H3	4	#4	STR	4'-1"	11
H4	24	#4	1	3'-3"	52
H5	4	#4	STR	11'-9"	31
N1	4	#5	2	10'-2"	42
N2	6	#5	2	9'-2"	57
N3	6	#4	2	7'-11"	32
N4	6	#4	2	6'-7"	26
N5	6	#4	2	5'-4"	21
S1	6	#6	STR	6'-0"	54
T1	6	#5	STR	12'-9"	80
V1	4	#4	STR	8'-1"	22
V2	6	#4	STR	7'-1"	28
V3	6	#4	STR	5'-10"	23
V4	6	#4	STR	4'-7"	18
V5	6	#4	STR	3'-4"	13
Z1	4	#5	3	6'-0"	25
Z2	6	#5	3	5'-5"	34
Z3	6	#4	3	4'-7"	18
Z4	6	#4	3	3'-10"	15
Z5	6	#4	3	3'-1"	12

REINFORCING STEEL FOR 2 WINGS 721 LBS

CLASS A CONCRETE		
2 WINGS	10.7	CY
1 HEADWALL	0.4	CY
1 END CURTAIN WALL	0.4	CY
TOTAL	11.5	CY

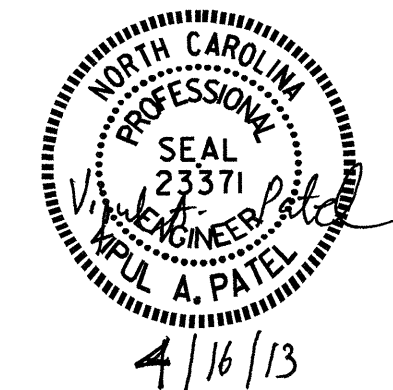
Z1	5'-5"	7"
Z2	4'-10"	7"
Z3	4'-1"	6"
Z4	3'-4"	6"
Z5	2'-7"	6"

DESIGN ENGINEER OF RECORD:  
H.A. LOCKLEAR DATE: 03/12/13

ASSEMBLED BY: J. G. KHARYA DATE: 05/30/12  
CHECKED BY: H. T. DIEU DATE: 06/12

DRAWN BY: CCJ 10/99  
CHECKED BY: RWW 03/00

15-APR-2013 13:47  
X:\Structures\plans\B-4643\_SD.cu.dgn  
jpodams



PROJECT NO. B-4643  
STANLY COUNTY  
STATION: 39+86.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD WINGS  
FOR  
CONCRETE BOX CULVERT  
H = 8'-0" SLOPE = 2:1  
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTALS
2			4			3

STD. NO. CW9008

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN, WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER, WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN, AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990