

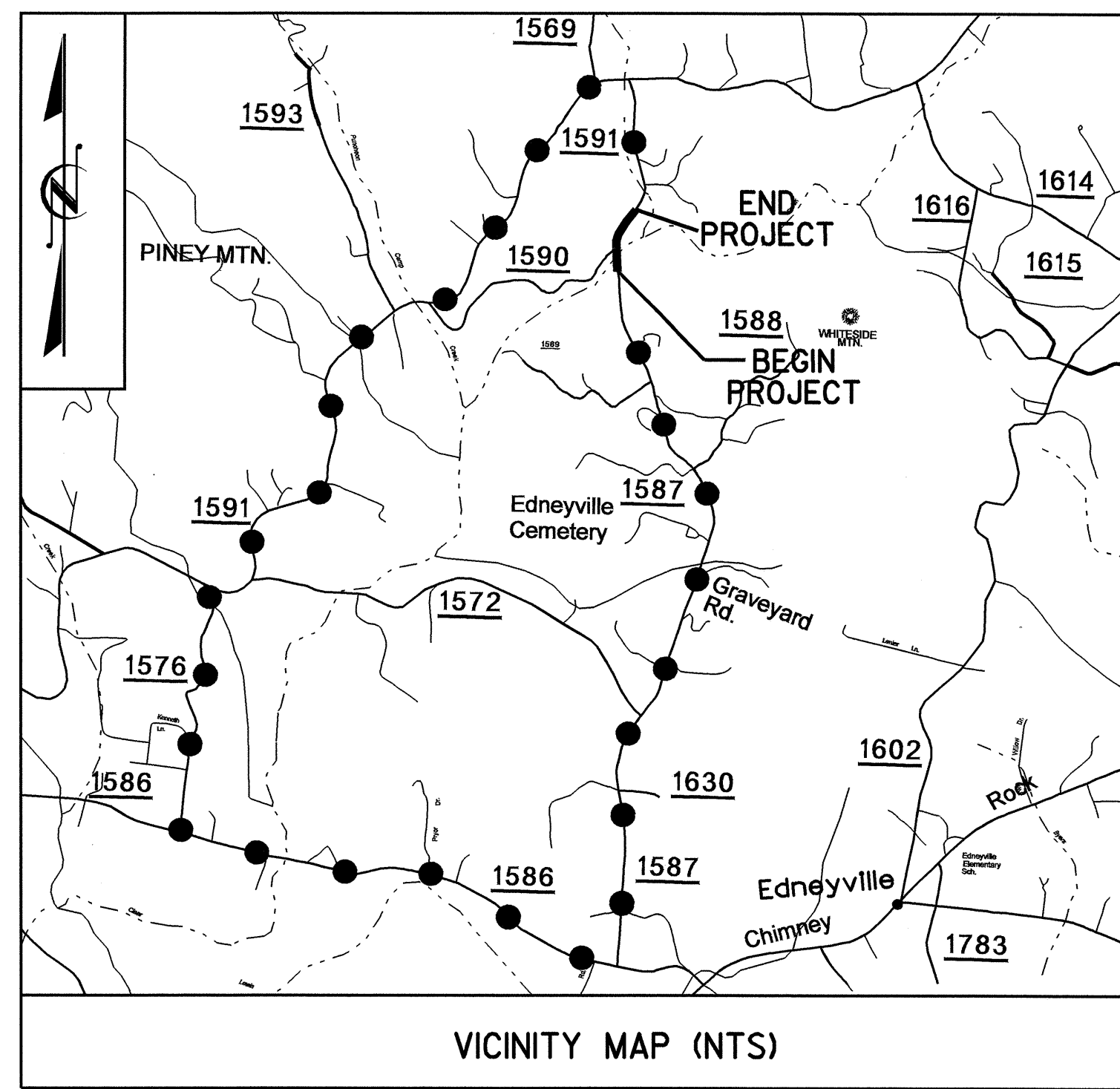
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4149		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33498.1.1	BRZ-1587(2)	P.E.	
33498.2.1	BRZ-1587(2)	RW, UTILITY	
33498.3.1	BRZ-1587(2)	CONST.	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

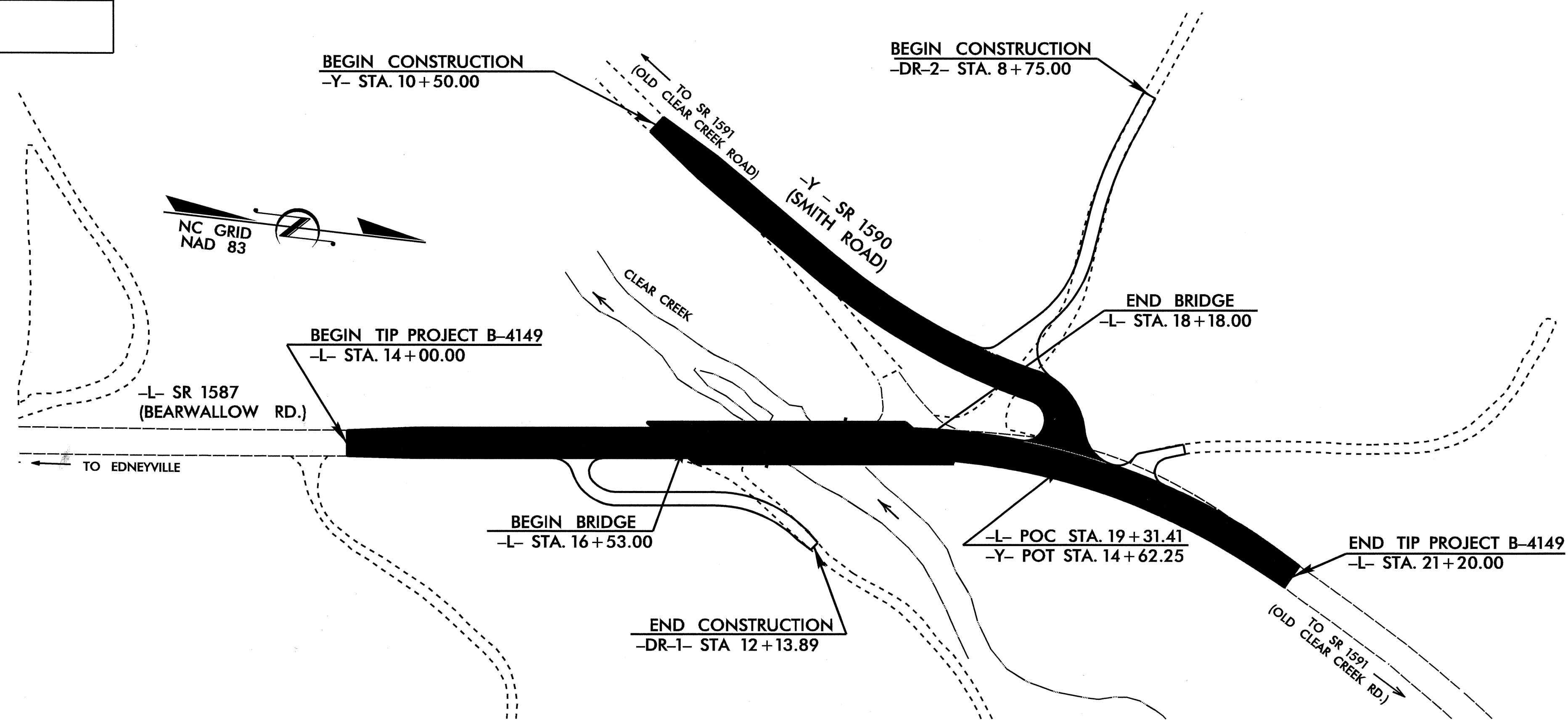
# HENDERSON COUNTY

LOCATION: BRIDGE No. 34 OVER CLEAR CREEK ON  
SR 1587 (BEARWALLOW ROAD)

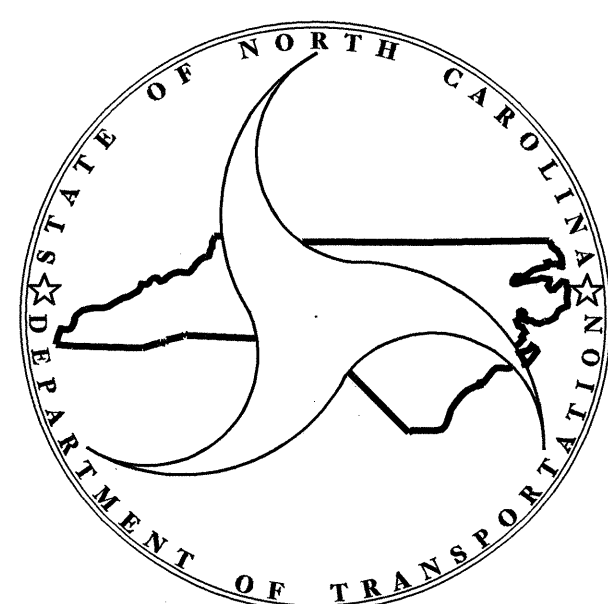
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



Proposed Detour



## STRUCTURE



DESIGN DATA
ADT 2009 = 500
ADT 2030 = 1,100
DHV = 10%
D = 60%
T = 3% (1% TTST + 2% DUALS)
V = 55 MPH
FUNCT. CLASS = RURAL LOCAL

PROJECT LENGTH
LENGTH OF ROADWAY TIP PROJECT B-4149 = 0.105 MI
LENGTH OF STRUCTURE TIP PROJECT B-4149 = 0.031 MI
TOTAL LENGTH OF TIP PROJECT B-4149 = 0.136 MI

Prepared in the Office of: DIVISION OF HIGHWAYS	
2006 STANDARD SPECIFICATIONS	B. C. Hunt, PE PROJECT ENGINEER
LETTING DATE: JANUARY 20, 2009	V. A. Patel, PE PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR., RALEIGH, NC 27610

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE DESIGN ENGINEER	P.E.
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	

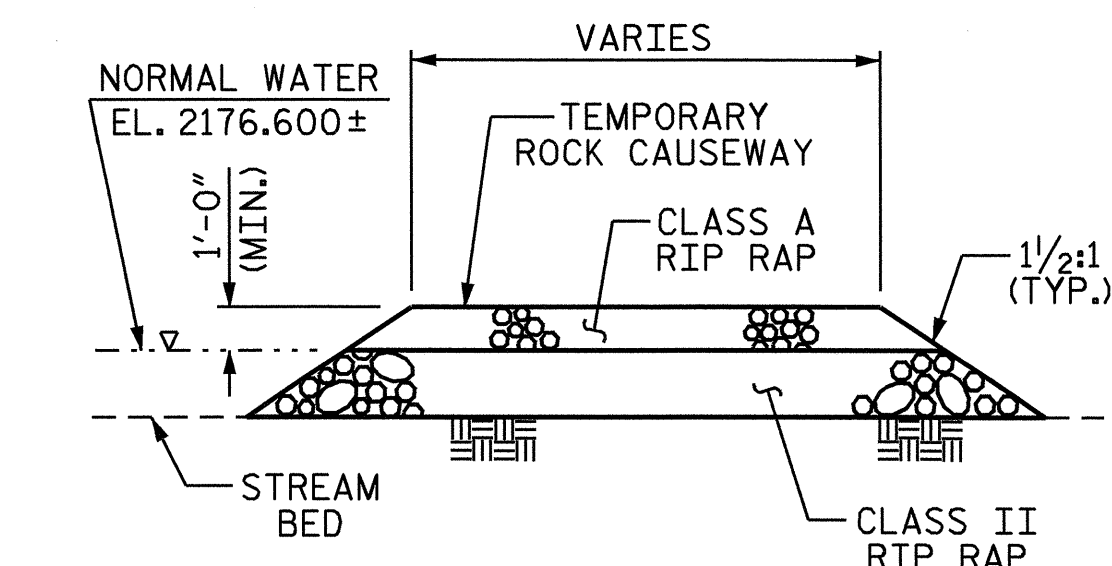
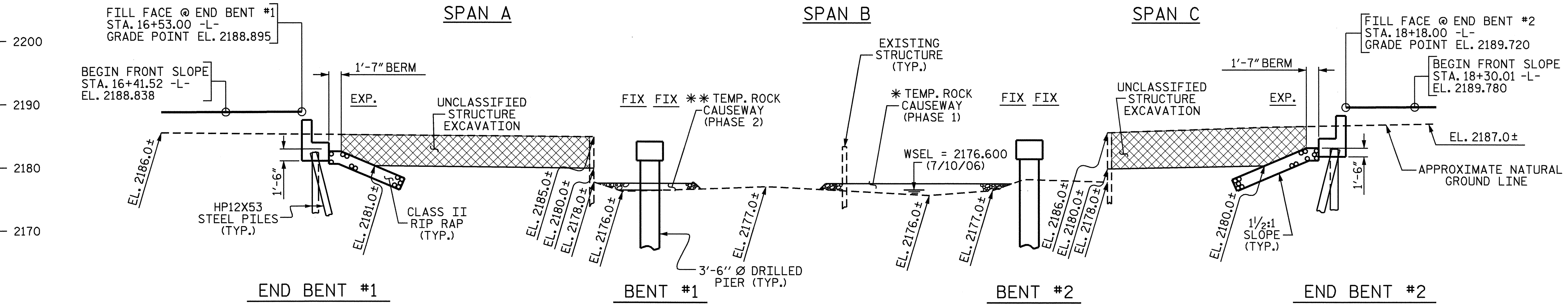
APPROVED	DATE
DIVISION ADMINISTRATOR	

TIP PROJECT: B-4149

CONTRACT: C202020

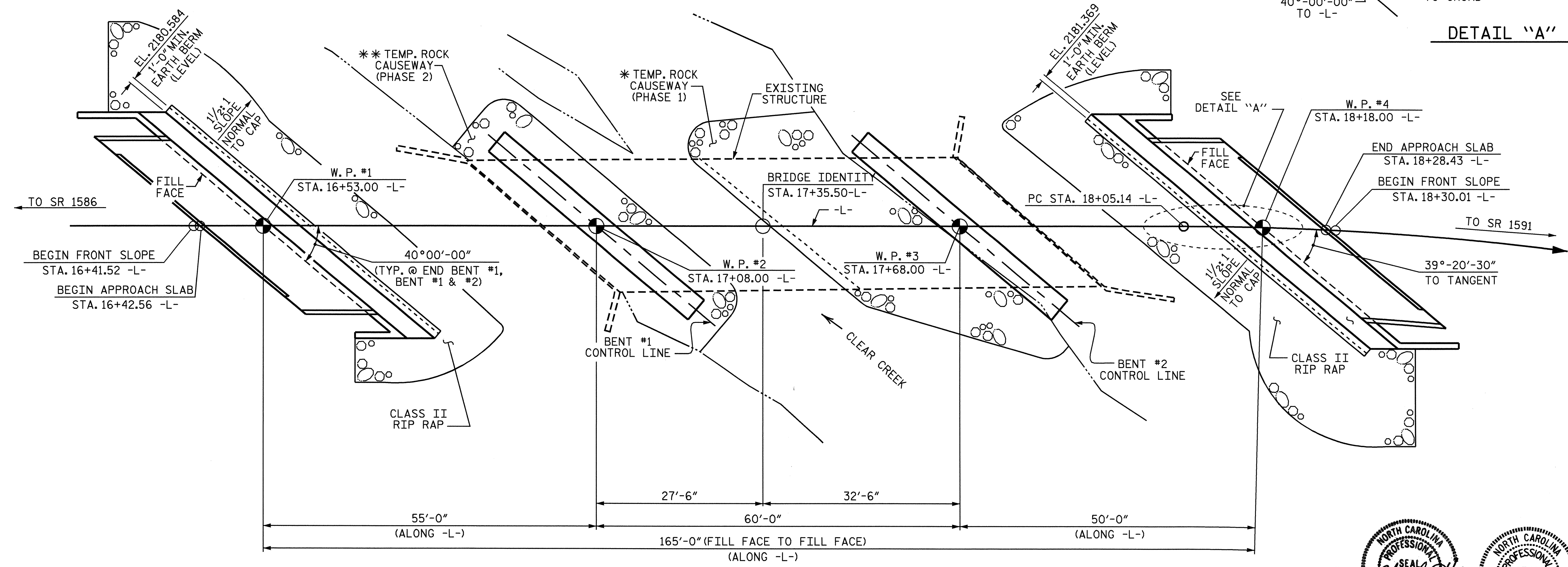
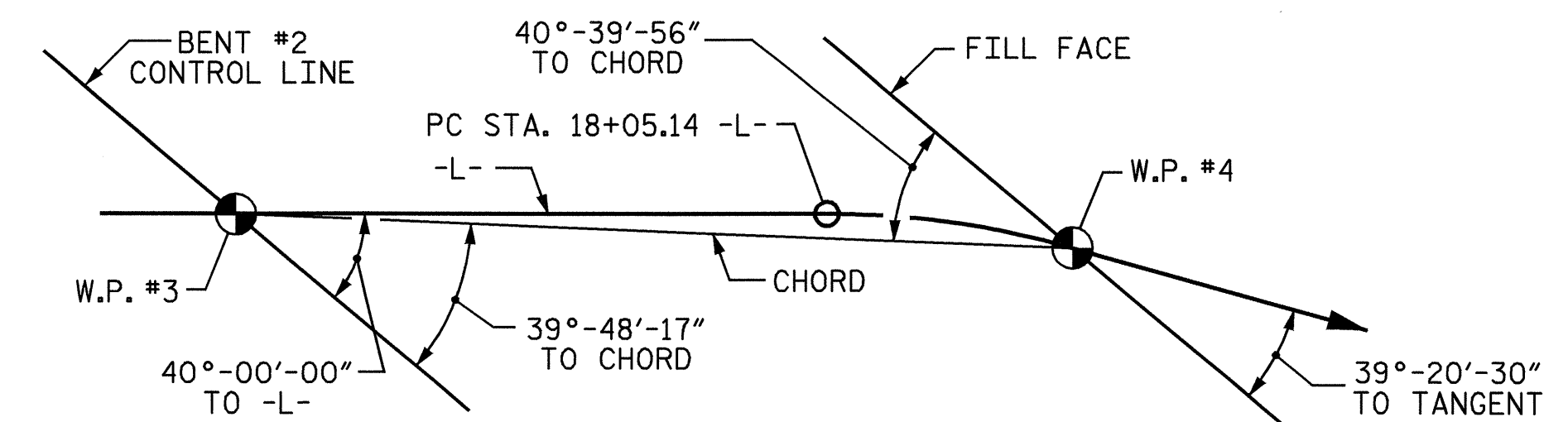
(-)-0.9727% (+)-0.5000%  
 PI = 15+10.00  
 EL = 2188.180  
 VC = 180'

GRADE DATA -L-



\* TEMPORARY ROCK CAUSEWAY (PHASE 1) FOR REMOVAL OF EXISTING STRUCTURE AND FOR CONSTRUCTION OF DRILLED PIERS AT BENT #2. PHASE 1 CAUSEWAY SHALL BE REMOVED BEFORE INSTALLING PHASE 2 CAUSEWAY.

\*\* TEMPORARY ROCK CAUSEWAY (PHASE 2) FOR CONSTRUCTION OF DRILLED PIERS AT BENT #1.



PI STA.=19+52.86 -L-  
 $\Delta = 33^\circ-52'-42.3"$  (RT)  
 $D = 11^\circ-48'-48.8"$   
 $L = 286.78'$   
 $T = 147.72'$   
 $R = 485.00'$   
 $SE = 0.06$

-L- HORIZONTAL CURVE DATA

PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 34

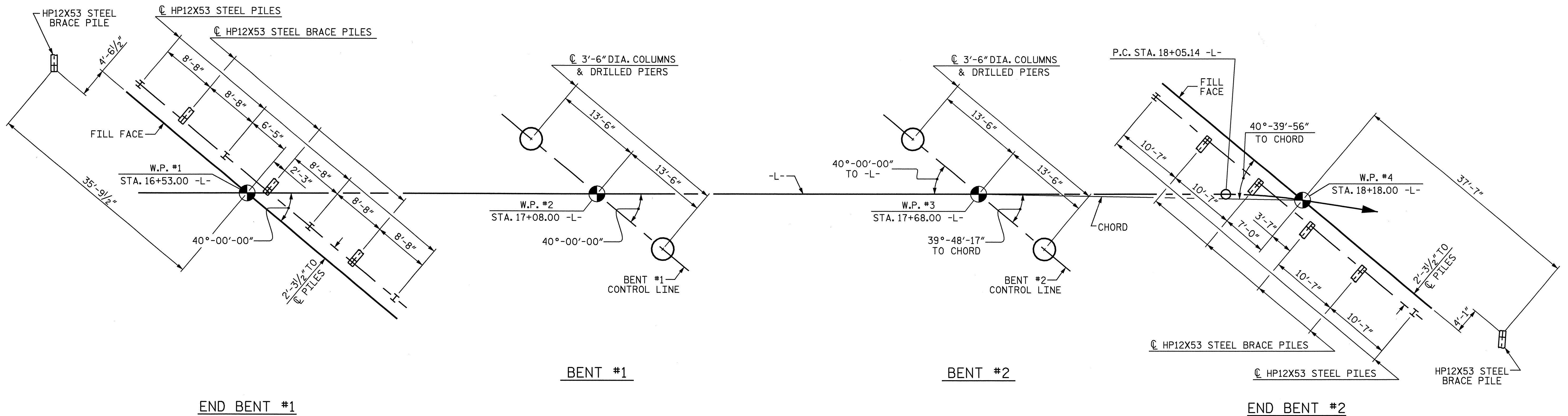
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER CLEAR CREEK  
 ON SR 1587 (BEARWALLOW RD.)  
 BETWEEN SR 1591 AND SR 1586

NORTH CAROLINA PROFESSIONAL SEAL  
 10/21/08  
 V. A. PATEL  
 10/21/08

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS	
2			4			35	



**FOUNDATION LAYOUT**

PILE LOCATION IS TO THE CENTERLINE PILE.  
 ALL PILES AT END BENTS ARE HP 12 X 53 STEEL PILES.  
 END BENT BRACE PILES ARE BATTERED 3:1/2.

**NOTES**

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT #1 AND END BENT #2 IS 60 TONS PER PILE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT #1 & BENT #2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 25 TSF.

DRILLED PIERS AT BENT #1 ARE DESIGNED FOR AN APPLIED LOAD OF 210 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT #1. DO NOT EXTEND CASING BELOW EL. 2170.000 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

DRILLED PIERS AT BENT #1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN EL. 2161.017 AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS EL. 2165.500. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT #2 ARE DESIGNED FOR AN APPLIED LOAD OF 207.5 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT #2. DO NOT EXTEND CASING BELOW EL. 2174.000 (LEFT) AND EL. 2170.000 (RIGHT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

DRILLED PIERS AT BENT #2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 2165.933 (LEFT) AND 2160.433 (RIGHT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

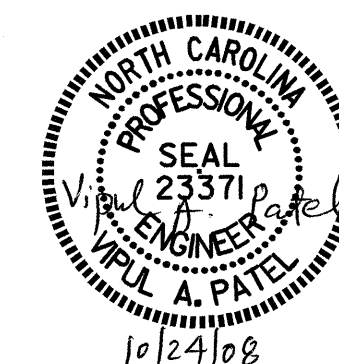
THE SCOUR CRITICAL ELEVATIONS FOR BENT #2 ARE EL. 2172.000 (LEFT) AND 2168.000 (RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

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PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

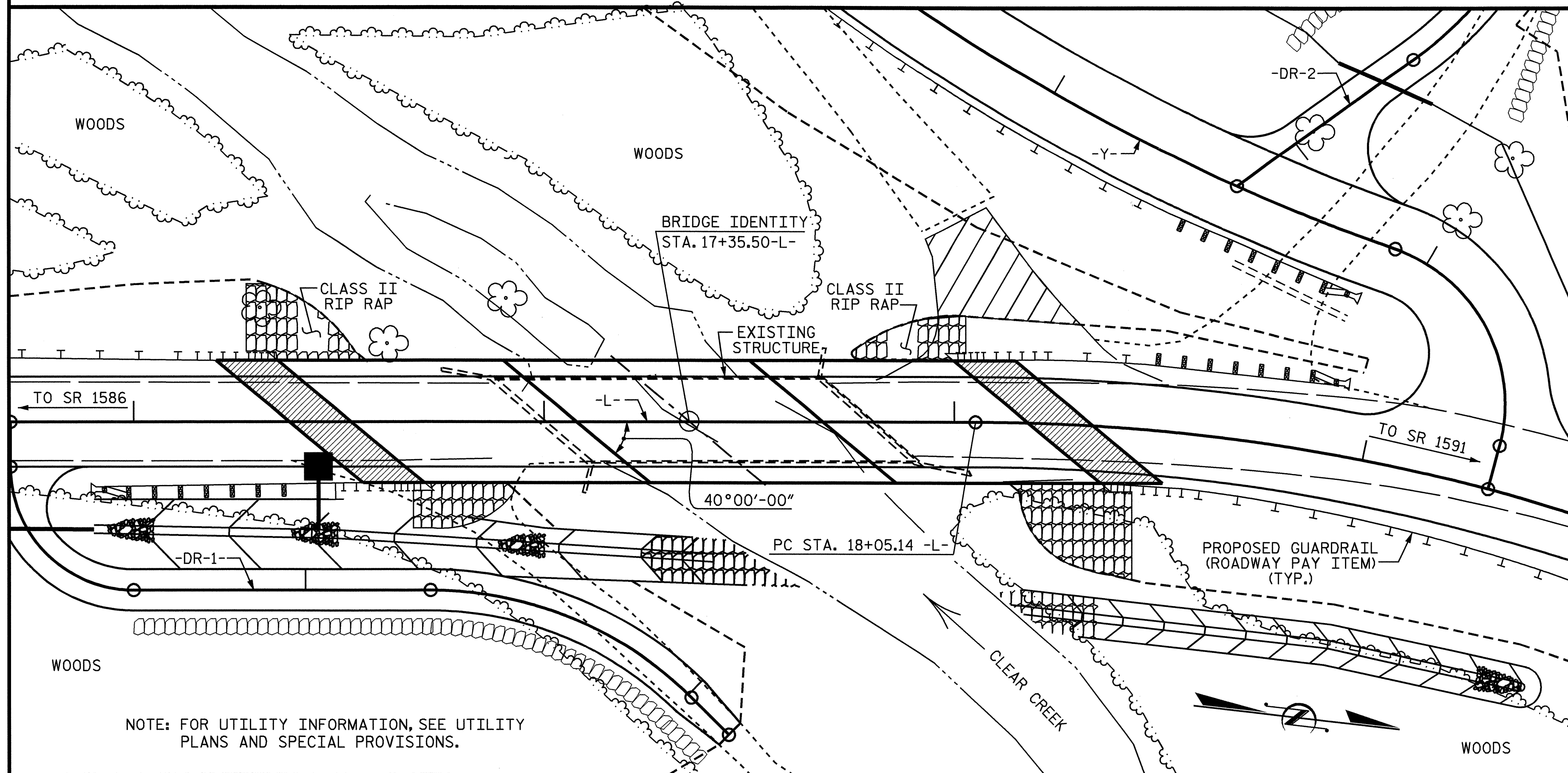
SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE OVER CLEAR CREEK  
 ON SR 1587 (BEARWALLOW RD.)  
 BETWEEN SR 1591 AND SR 1586

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			35



LOCATION SKETCH

TOTAL BILL OF MATERIAL										
	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	EACH	EACH	CU. YDS.	SQ.FT.	SQ.FT.
SUPERSTRUCTURE									5,054	4,636
END BENT #1								415		
BENT #1			22.3	11.0	15.2					
BENT #2			10.9	18.0	11.2					
END BENT #2								380		
TOTAL	LUMP SUM	LUMP SUM	33.2	29.0	26.4	2	2	795	5,054	4,636

TOTAL BILL OF MATERIAL												
	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP12x53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	
	CU.YDS.	LUMP SUM	LBS.	LBS.	No. LIN.FT.	No. LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE		LUMP SUM			12 627.29		324.33			LUMP SUM	LUMP SUM	
END BENT #1	38.2		5,162	890		8 160		151	170			
BENT #1	26.7		7,682	890								
BENT #2	27.0		7,417	805								
END BENT #2	38.9		5,236			7 105		182	200			
TOTAL	130.8	LUMP SUM	25,497	1,695	12 627.29	15 265	324.33	333	370	LUMP SUM	LUMP SUM	

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

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 jpadams

NOTES

ASSUMED LIVE LOAD = HS-20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS-25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

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 @ 40'-11") WITH A TIMBER DECK ON 8 LINES OF 16" STEEL I-BEAMS; AND A CLEAR ROADWAY WIDTH OF 19.1 FT. ON REINFORCED CONCRETE ABUTMENTS AT THE END BENTS AND REINFORCED CONCRETE CAPS ON CONCRETE PIER WALLS AT THE BENTS AND LOCATED AT THE PROPOSED STRUCTURE SITE 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

THE 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.

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.

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.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY B.

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 17+35.50 -L-.'

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAYS, THE CLASS II RIP RAP USED IN THE CAUSEWAYS MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 17+35.50 -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.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY CHOOSE TO UTILIZE THE STANDARD OVERHANG FALSEWORK BRACING SYSTEM. SEE 'STANDARD OVERHANG FALSEWORK' SHEETS.

HYDRAULIC DATA

DESIGN DISCHARGE \_\_\_\_\_ 2,100 CFS  
 FREQUENCY OF DESIGN FLOOD \_\_\_\_\_ 25 YRS  
 DESIGN HIGH WATER ELEVATION \_\_\_\_\_ 2184.000  
 DRAINAGE AREA \_\_\_\_\_ 9.75 SQ.MI.  
 BASIC DISCHARGE (Q100) \_\_\_\_\_ 3,100 CFS  
 BASIC HIGH WATER ELEVATION \_\_\_\_\_ 2186.100

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE \_\_\_\_\_ 4,600 CFS-  
 FREQUENCY OF OVERTOPPING FLOOD \_\_\_\_\_ 500 YRS-  
 OVERTOPPING FLOOD ELEVATION \_\_\_\_\_ 2188.500

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

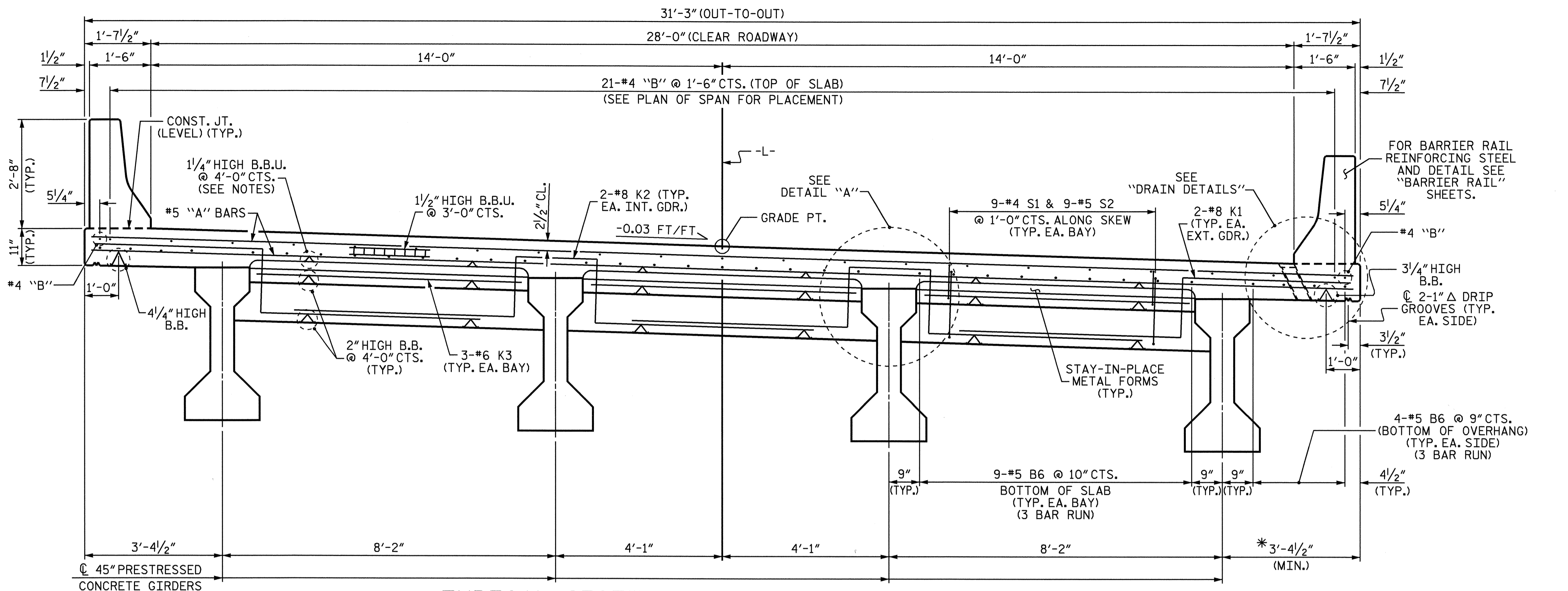
GENERAL DRAWING  
 FOR BRIDGE OVER CLEAR CREEK  
 ON SR 1587 (BEARWALLOW RD.)  
 BETWEEN SR 1591 AND SR 1586

REVISIONS

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

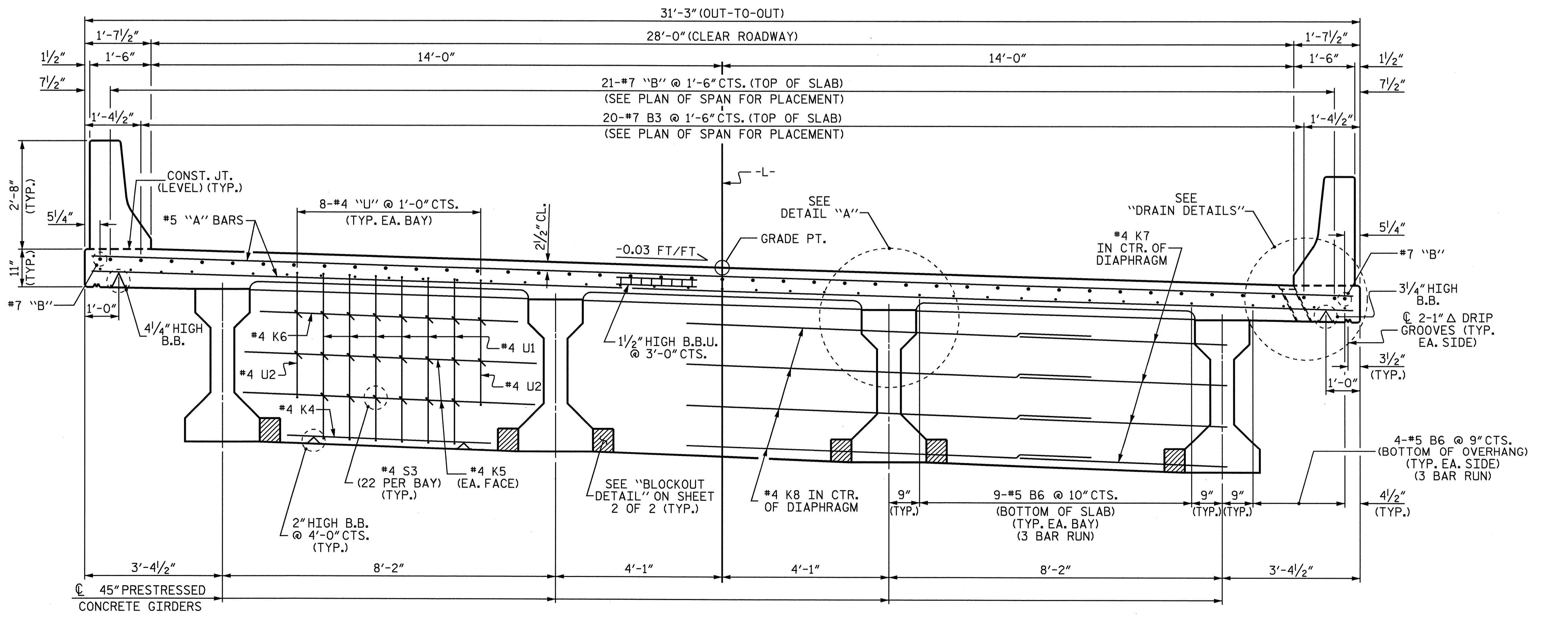
SHEET NO.  
 S-3  
 TOTAL SHEETS  
 35





TYPICAL SECTION @ END BENT DIAPHRAGM

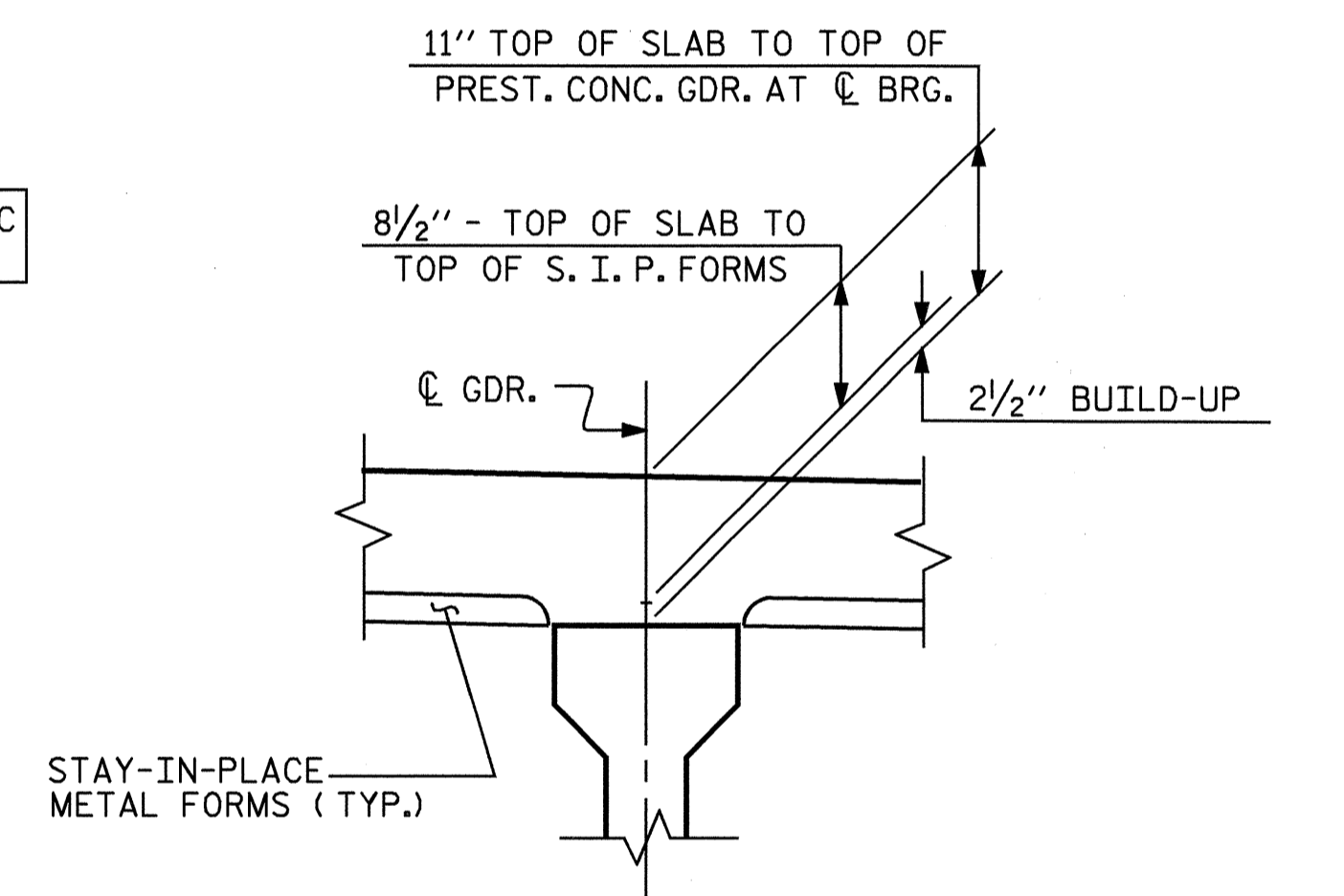
\* THIS DIMENSION IS VARIABLE IN SPAN C DUE TO CURVE



TYPICAL SECTION @ BENT DIAPHRAGM

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

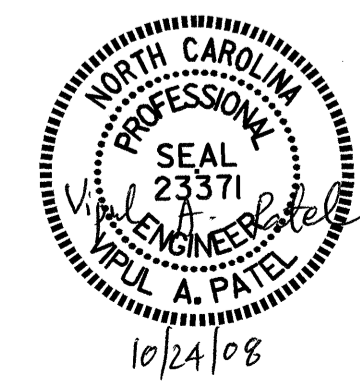


DETAIL "A"

PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 2

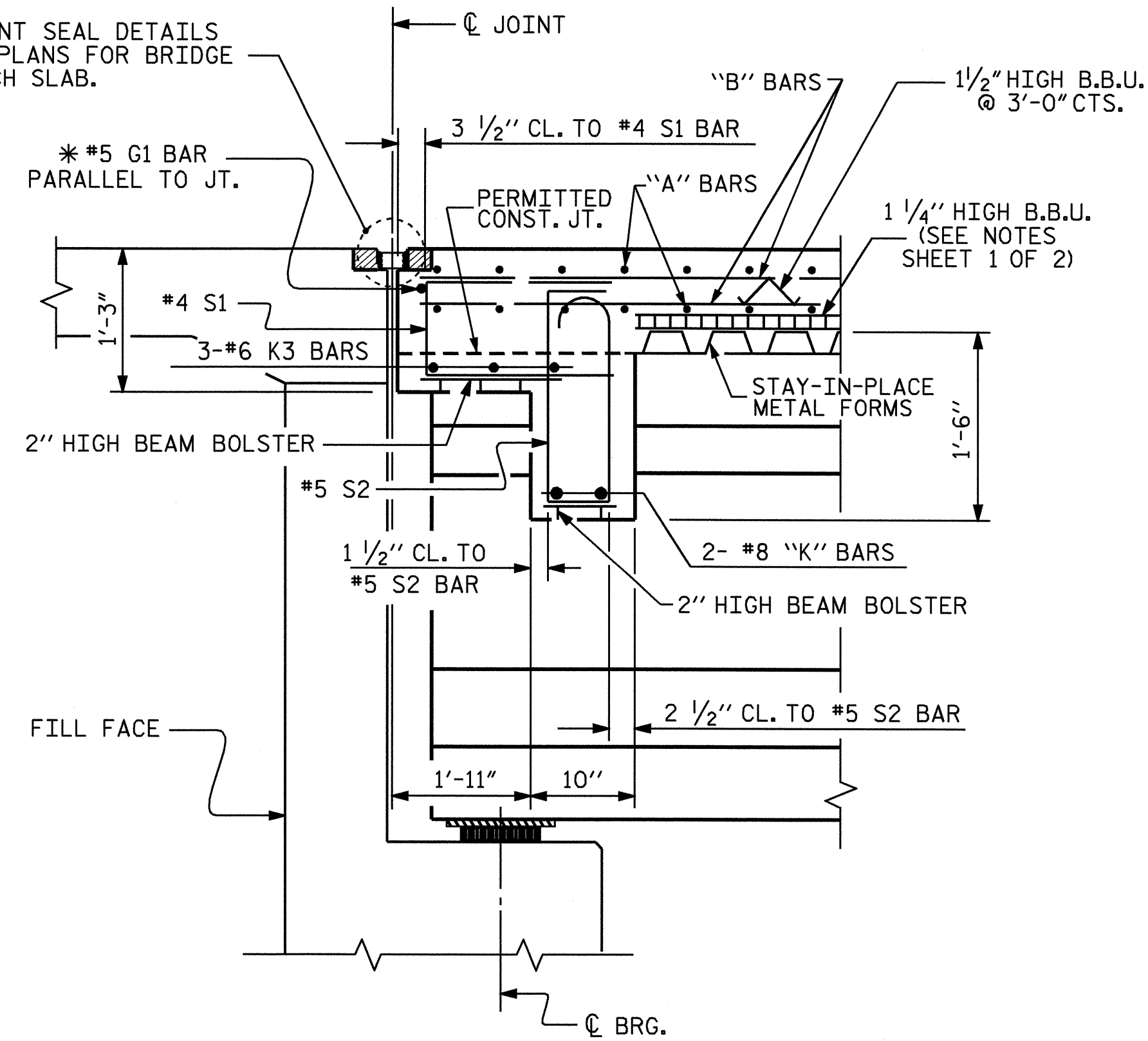
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION



DRAWN BY: S. DOMBROWSKI DATE: 02/08  
 CHECKED BY: H. LOCKLEAR DATE: 04/08

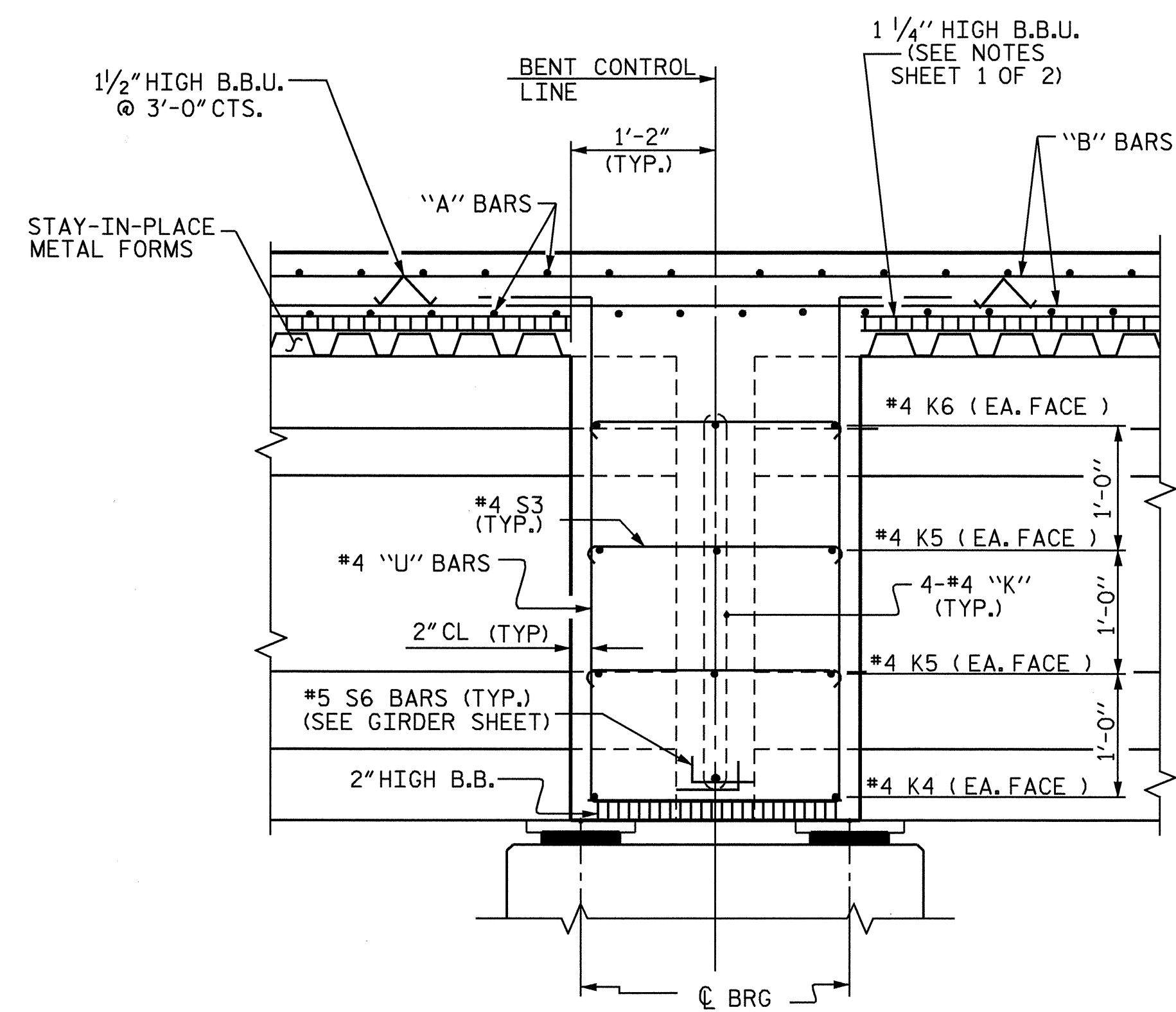
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			35

FOR EVAZOTE JOINT SEAL DETAILS AT END BENT, SEE PLANS FOR BRIDGE APPROACH SLAB.

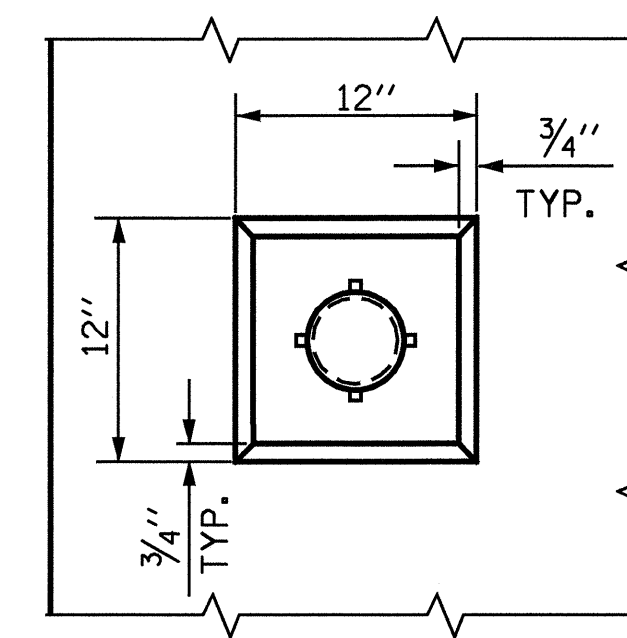
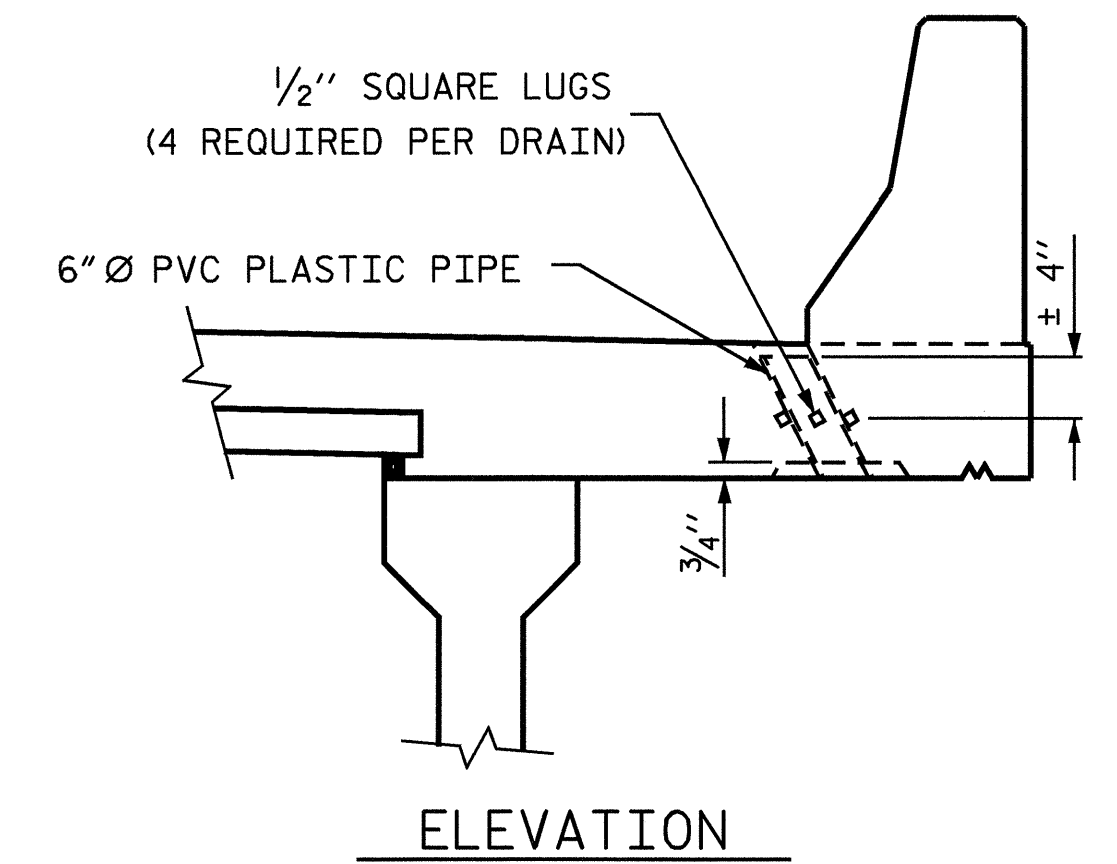


**SECTION THRU END BENT DIAPHRAGM**

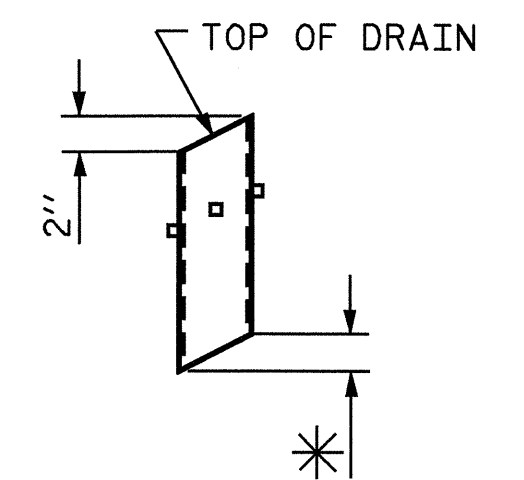
\* #5G BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



**SECTION THRU BENT DIAPHRAGM**



**PLAN OF RECESS**

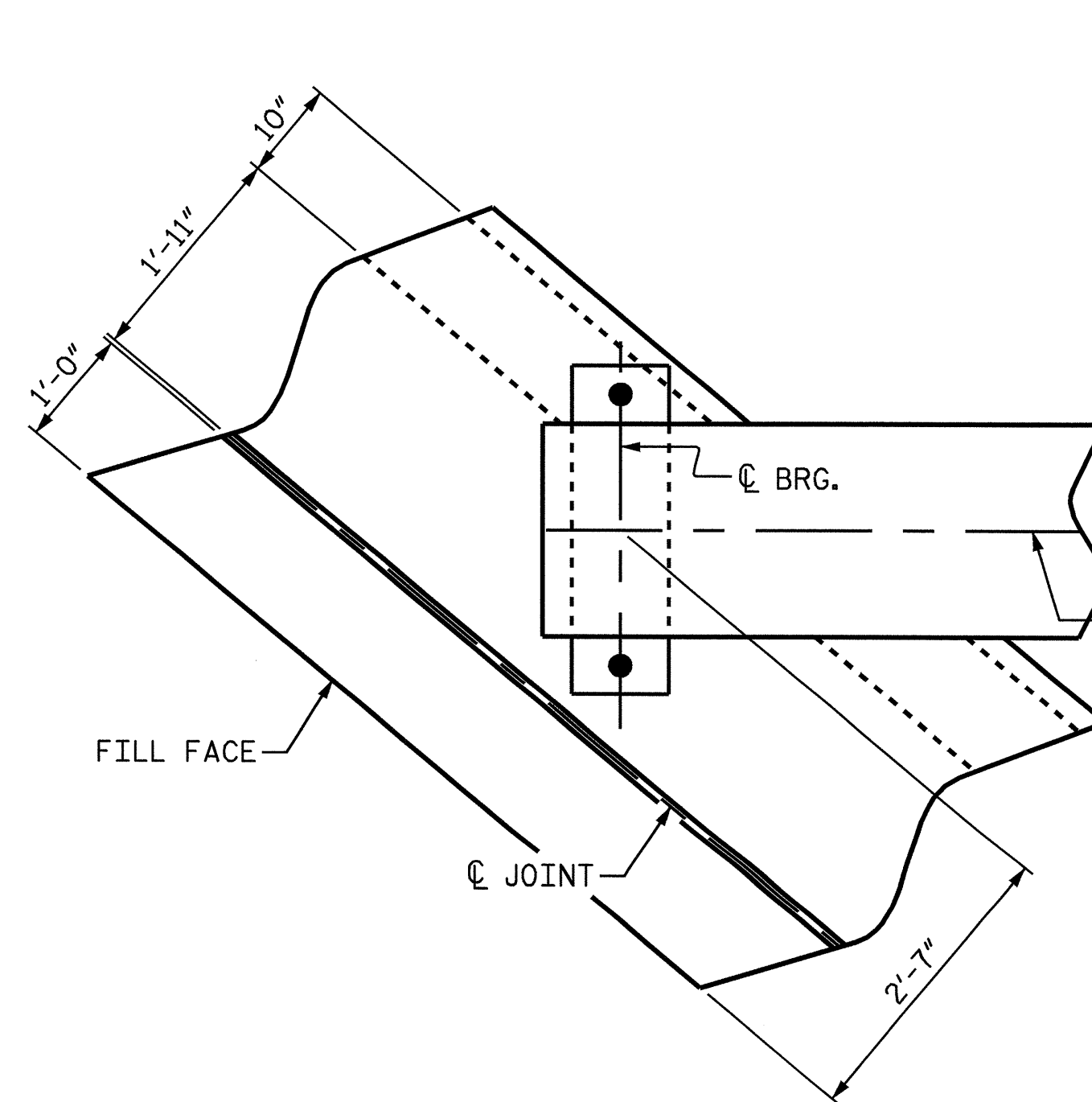


\* TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (13 DRAINS REQUIRED)

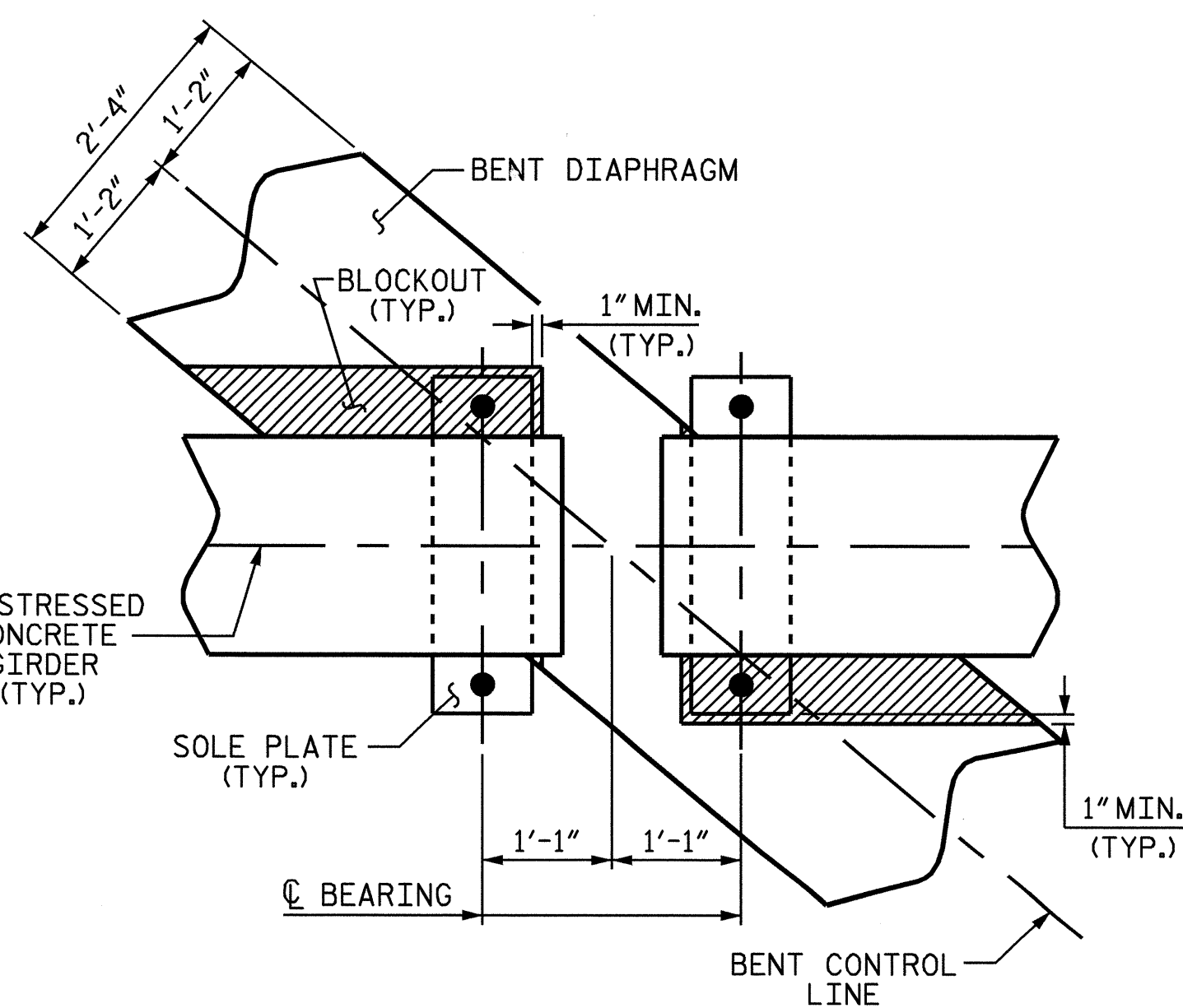
**PIPE DETAIL**

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.  
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.  
THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

**DRAIN DETAILS**

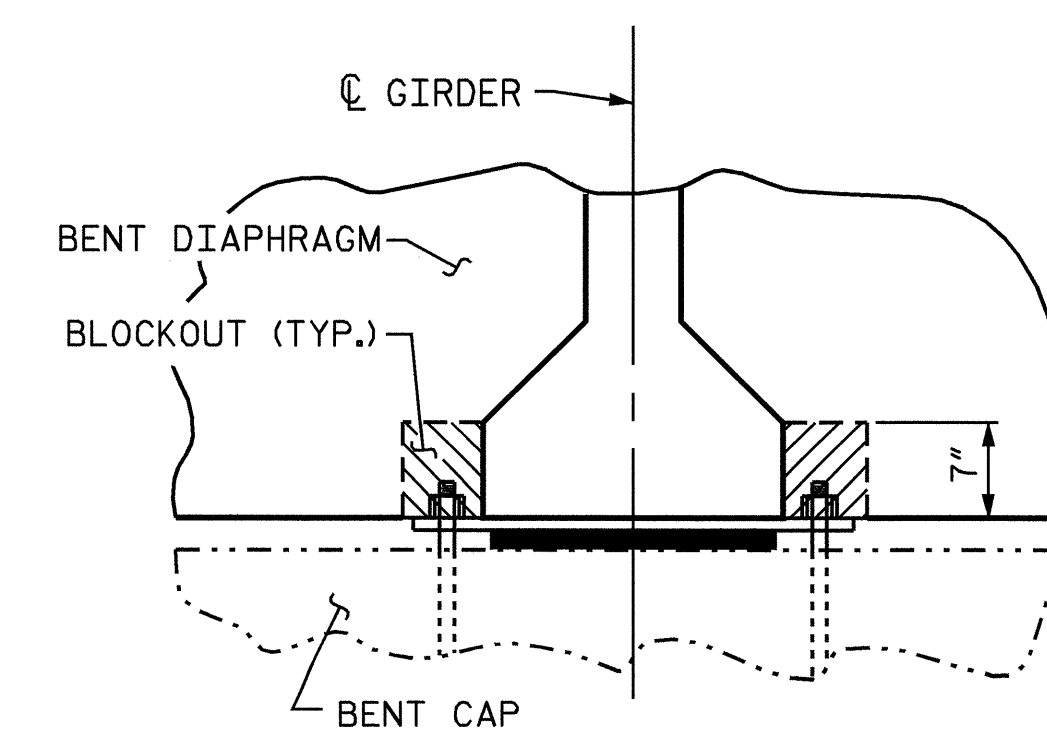


**END BENT DIAPHRAGM**



**PLAN**

**BENT DIAPHRAGM BLOCK-OUT DETAIL**

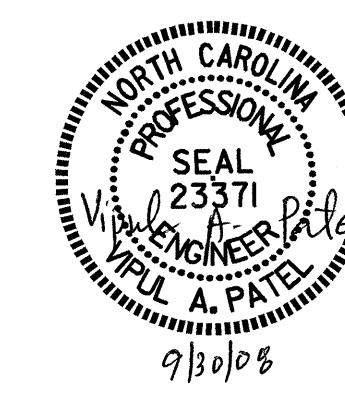


**SECTION**

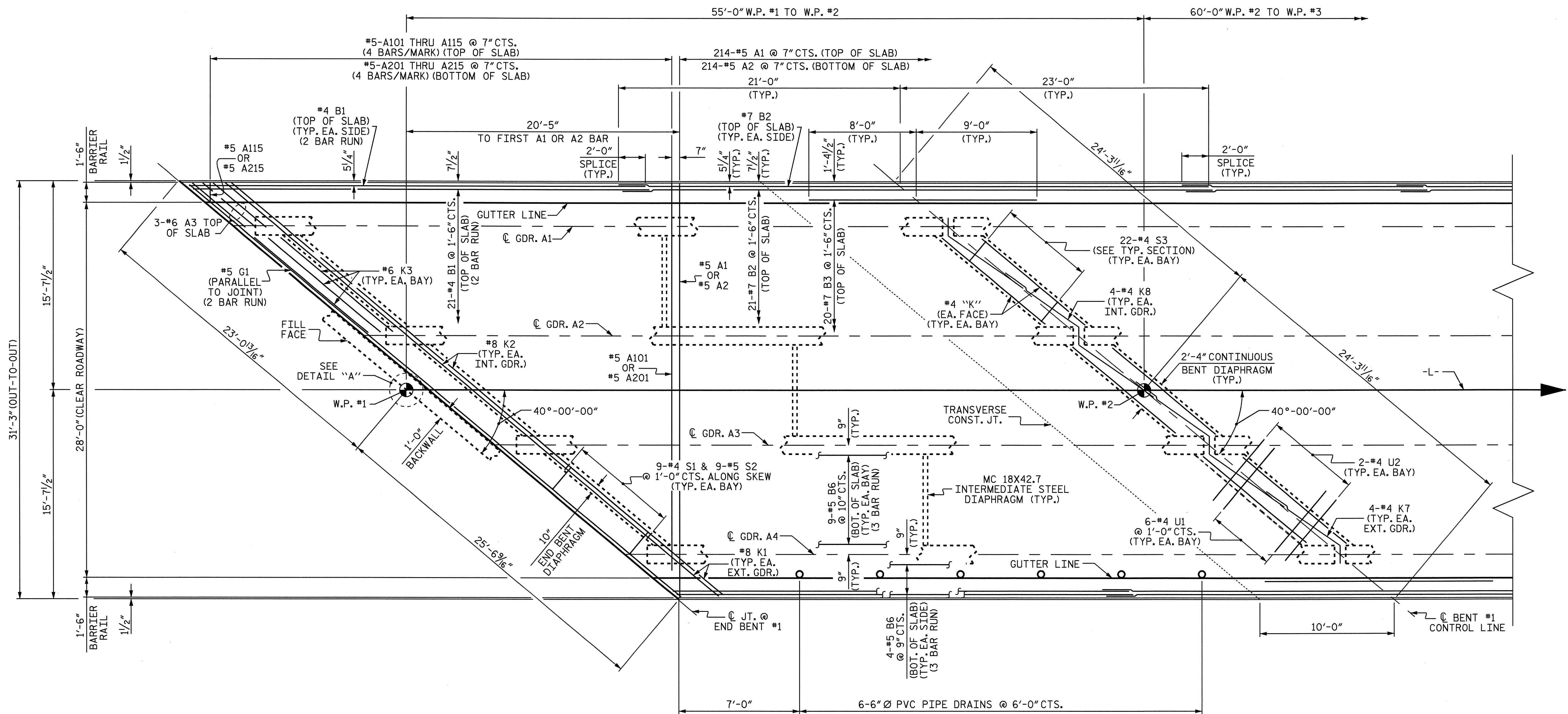
PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

SHEET 2 OF 2

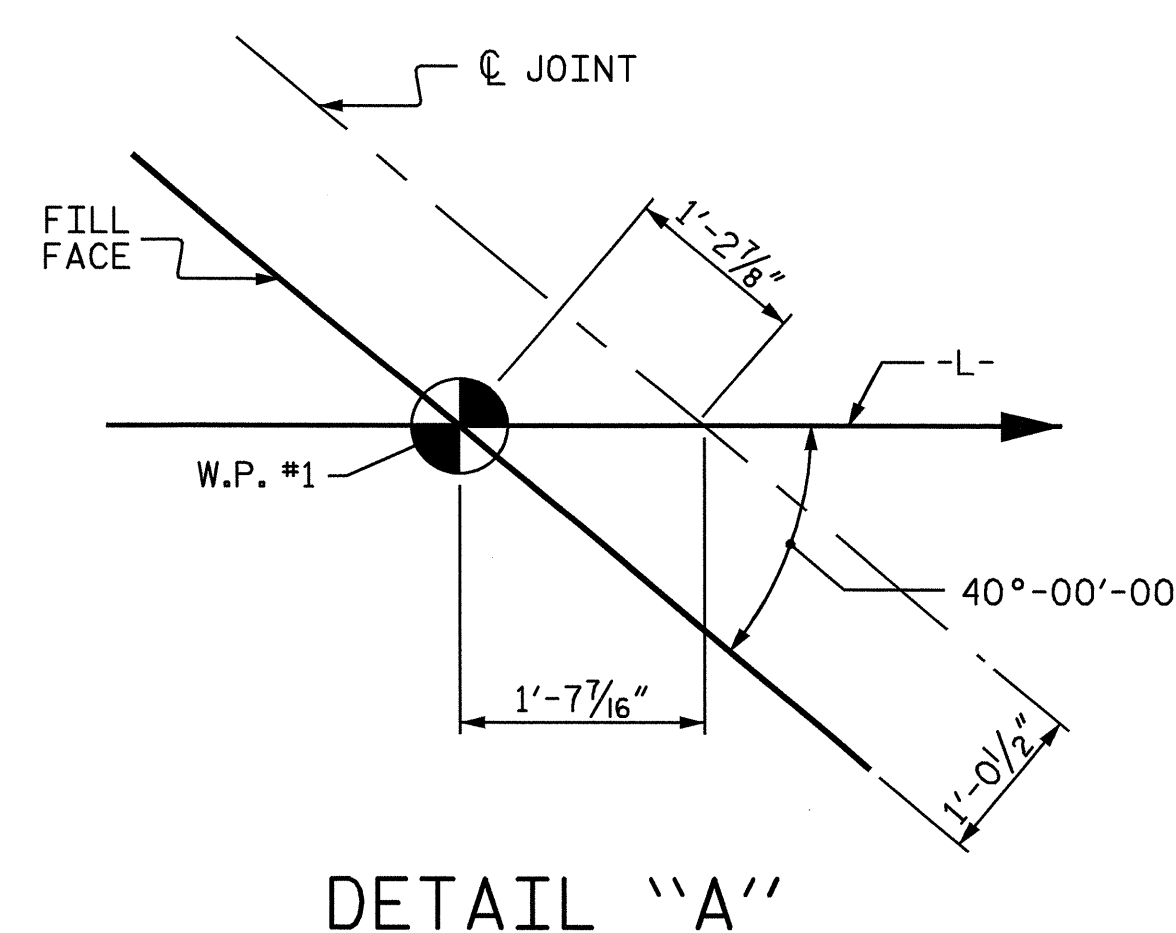
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-5
					TOTAL SHEETS 35



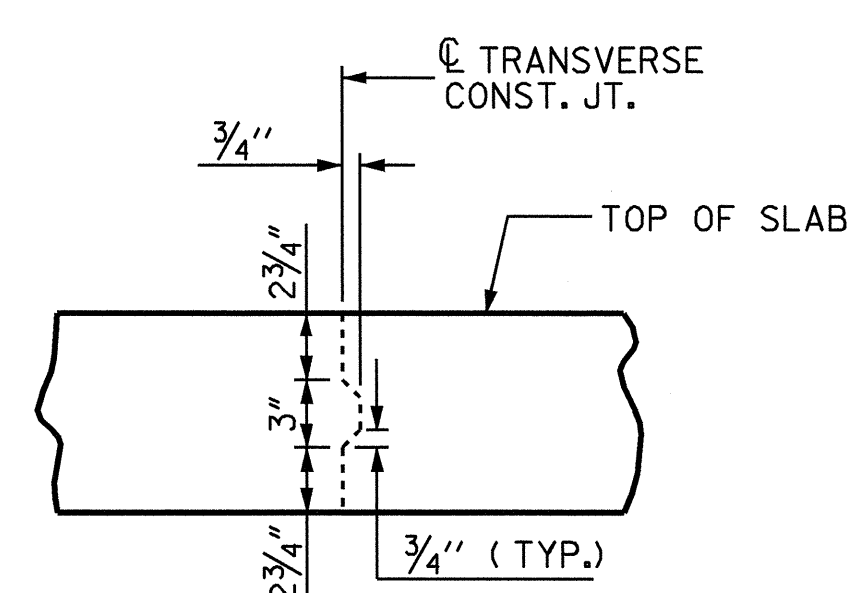
DRAWN BY: S. DOMBROWSKI DATE: 02/08  
CHECKED BY: H. LOCKLEAR DATE: 04/08



PLAN OF SPAN A

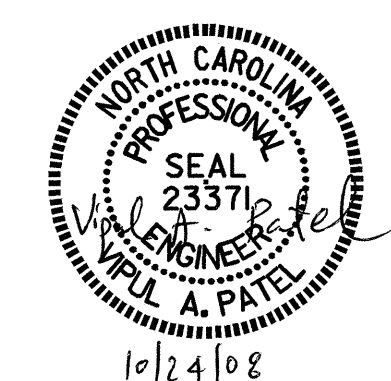


DETAIL "A"



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

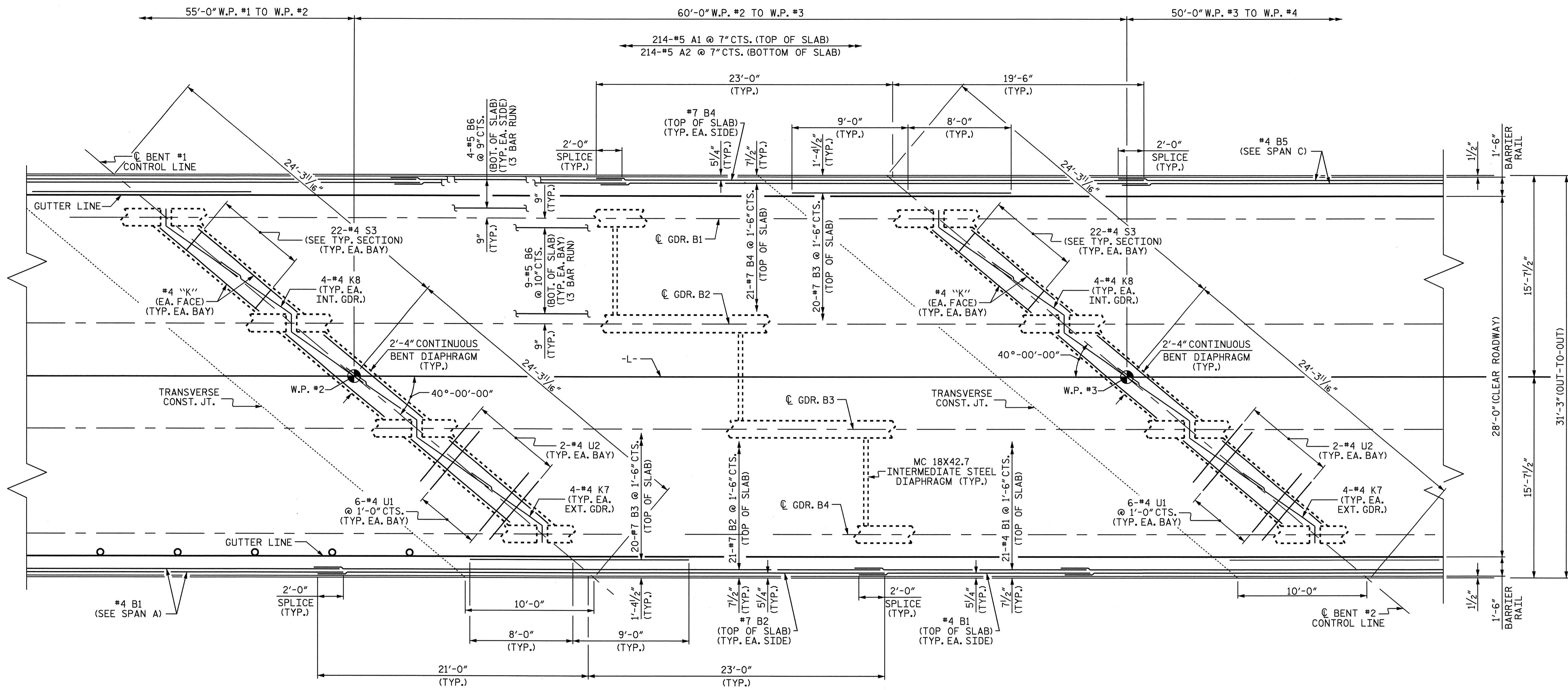
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

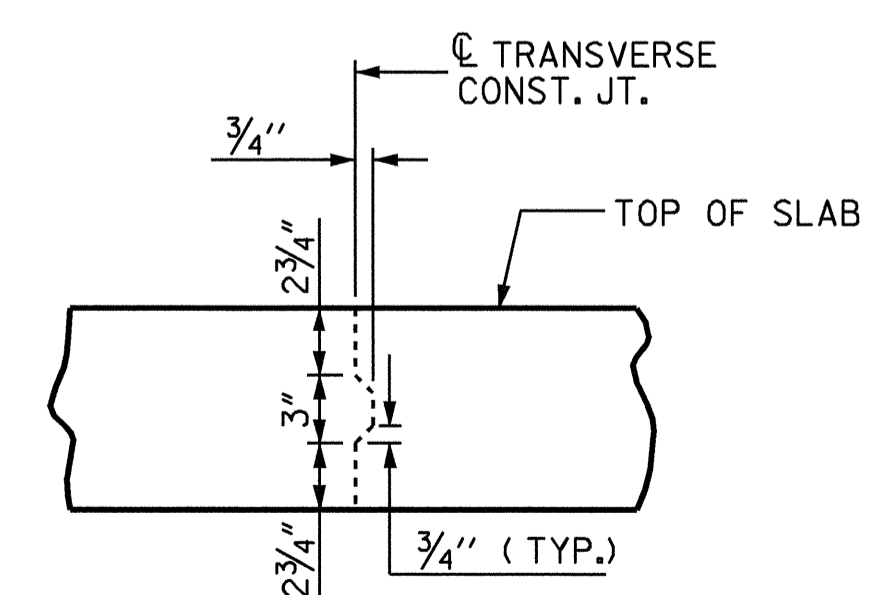
SUPERSTRUCTURE  
 PLAN OF SPAN A

DRAWN BY : S. DOMBROWSKI DATE : 02/08  
 CHECKED BY : H. LOCKLEAR DATE : 04/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			35



**PLAN OF SPAN B**

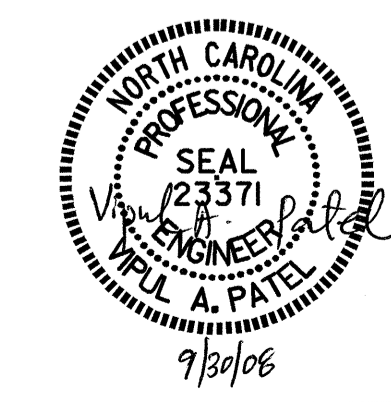


**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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

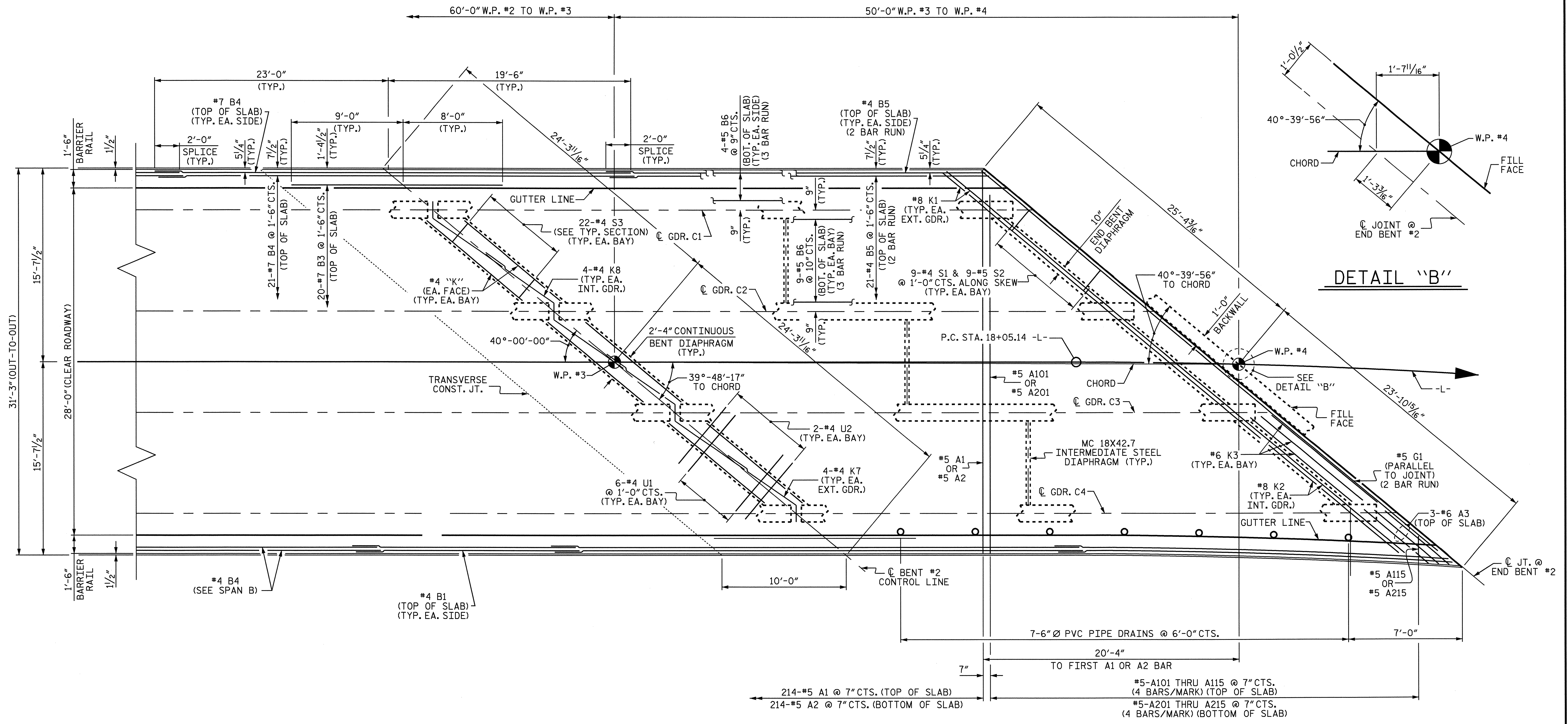
PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-  
 SHEET 2 OF 3

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-7
TOTAL SHEETS					35



DRAWN BY: S. DOMBROWSKI DATE: 02/08  
 CHECKED BY: H. LOCKLEAR DATE: 04/08





DETAIL "B"

PLAN OF SPAN C

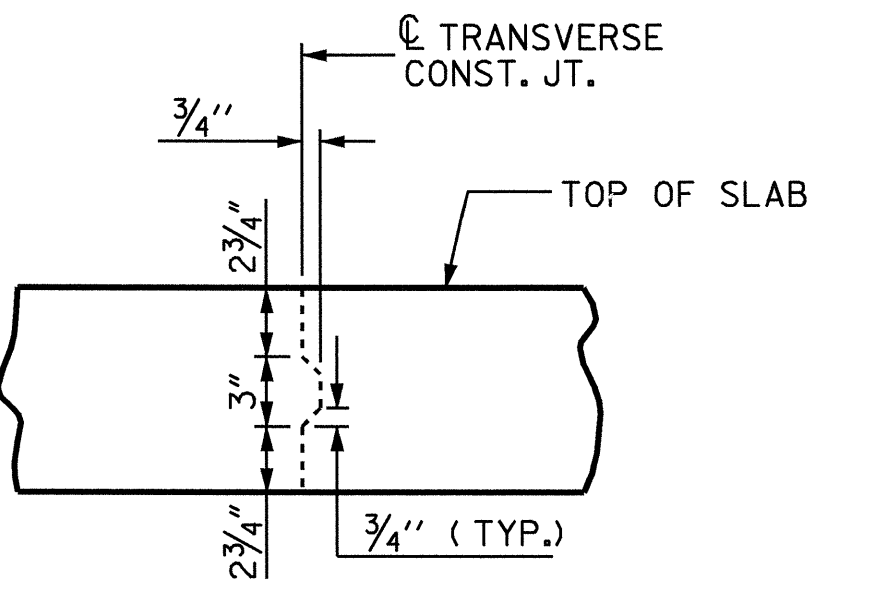
PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

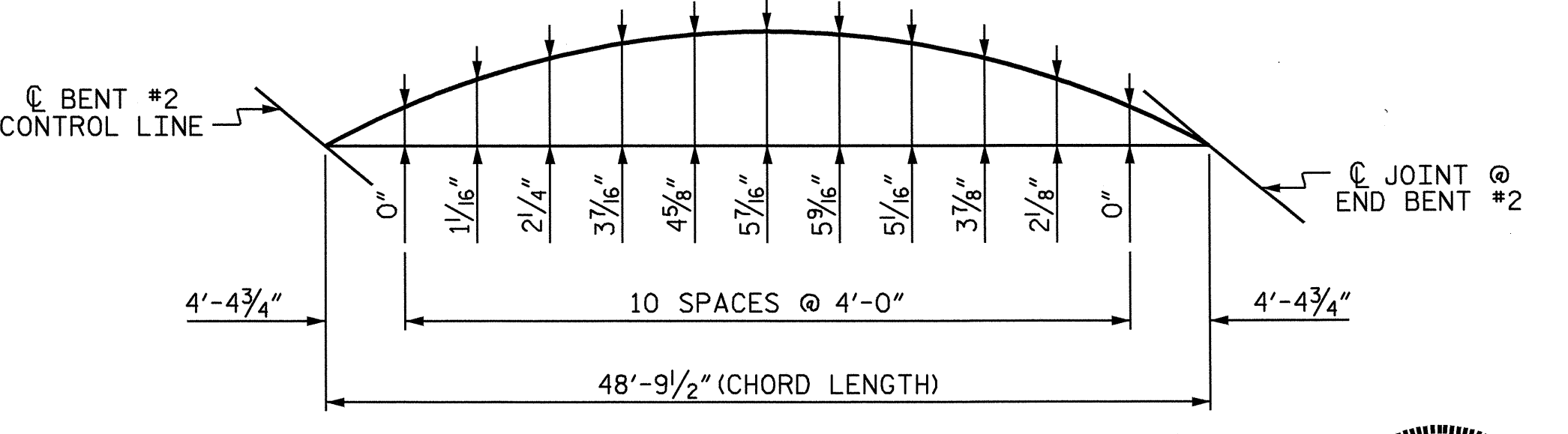
SUPERSTRUCTURE  
 PLAN OF SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			35

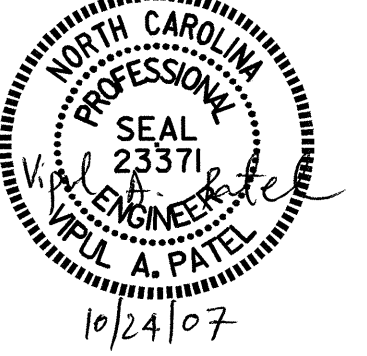


TRANSVERSE CONSTRUCTION JOINT DETAIL

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



ARC OFFSETS  
 SPAN C - RIGHT SIDE



DRAWN BY : S. DOMBROWSKI DATE : 02/08  
 CHECKED BY : H. LOCKLEAR DATE : 04/08

EXP.  
P1,E1

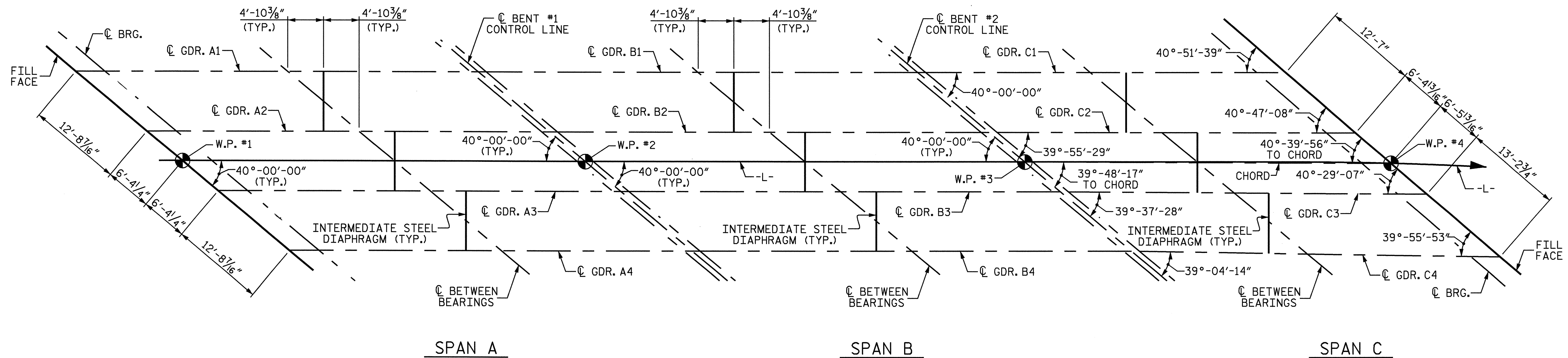
FIX  
P2,E1

FIX  
P3,E1

FIX  
P2,E1

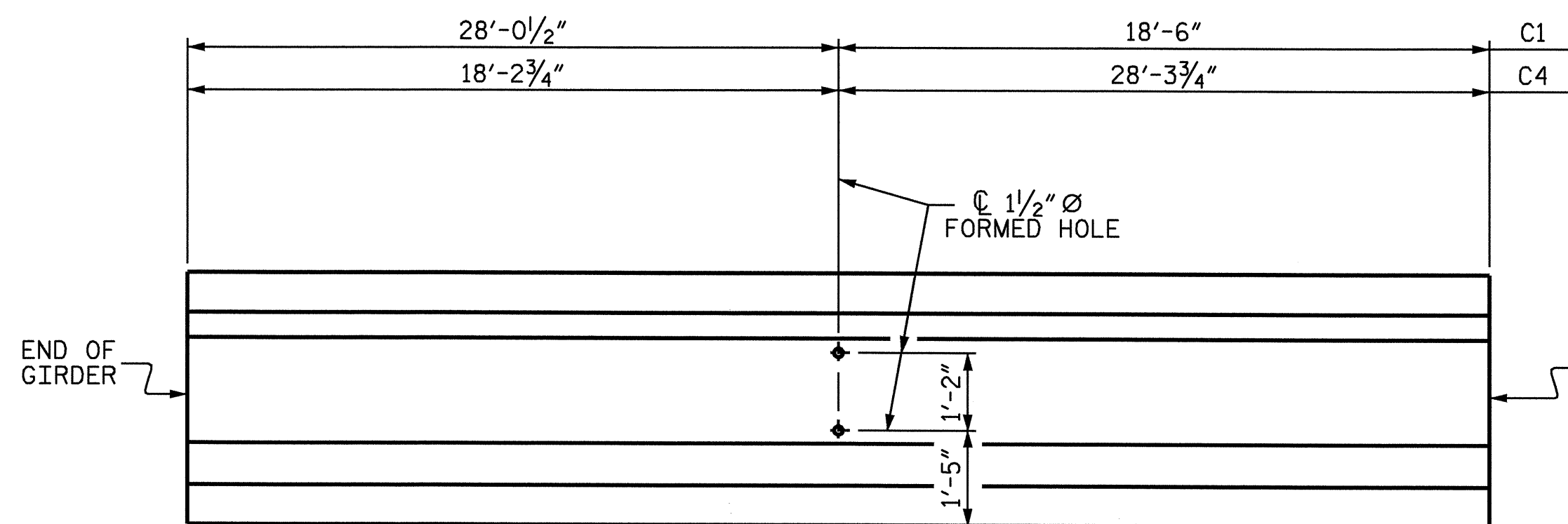
FIX  
P4,E1

EXP.  
P1,E1



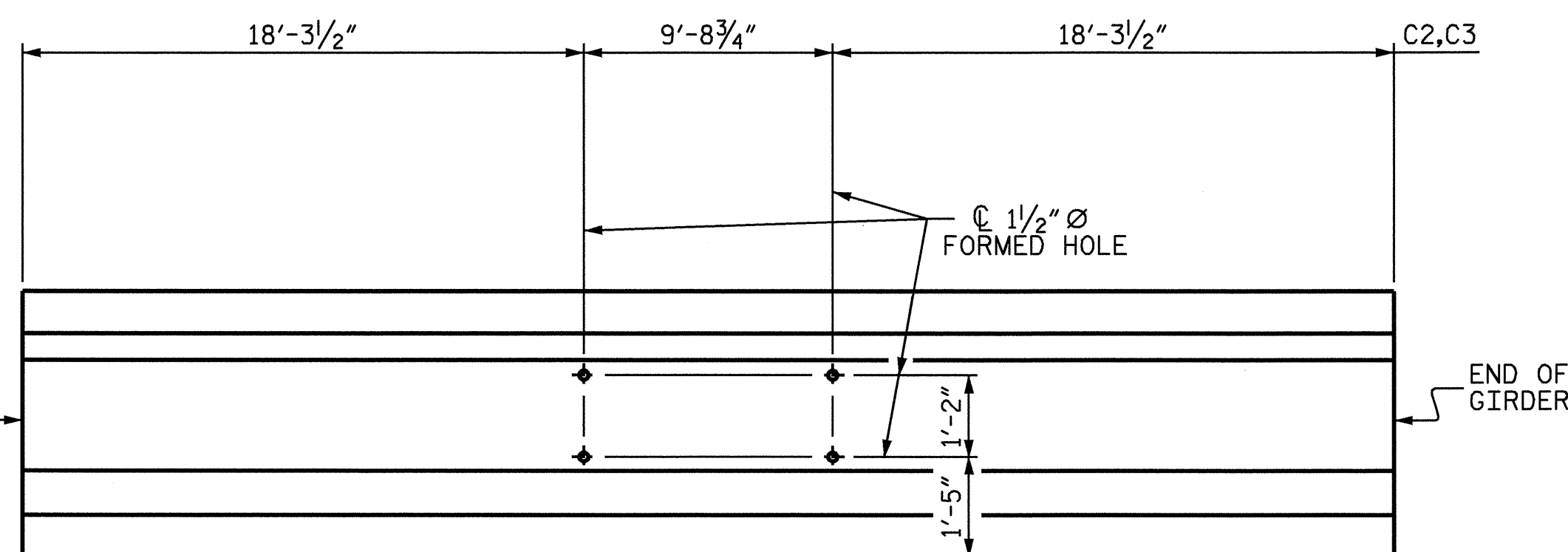
### GIRDER LAYOUT

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE  
"INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III  
PRESTRESSED CONCRETE GIRDERS" SHEET.



### ELEVATION OF EXTERIOR GIRDERS C1 & C4

SHOWING LOCATION OF 1 1/2" Ø FORMED HOLE



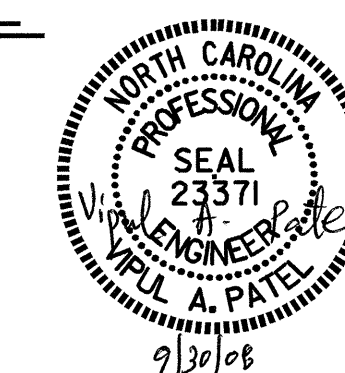
### ELEVATION OF INTERIOR GIRDERS C2 & C3

SHOWING LOCATION OF 1 1/2" Ø FORMED HOLE

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

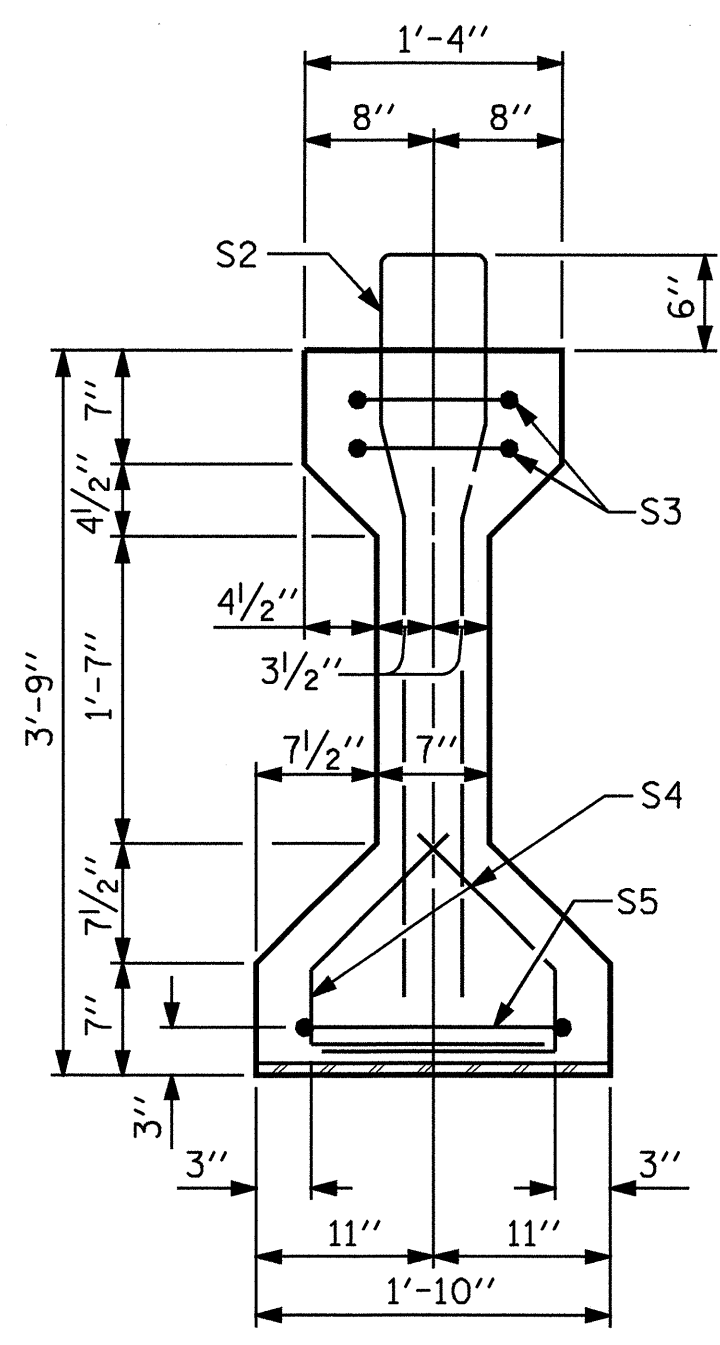
SUPERSTRUCTURE  
GIRDER LAYOUT



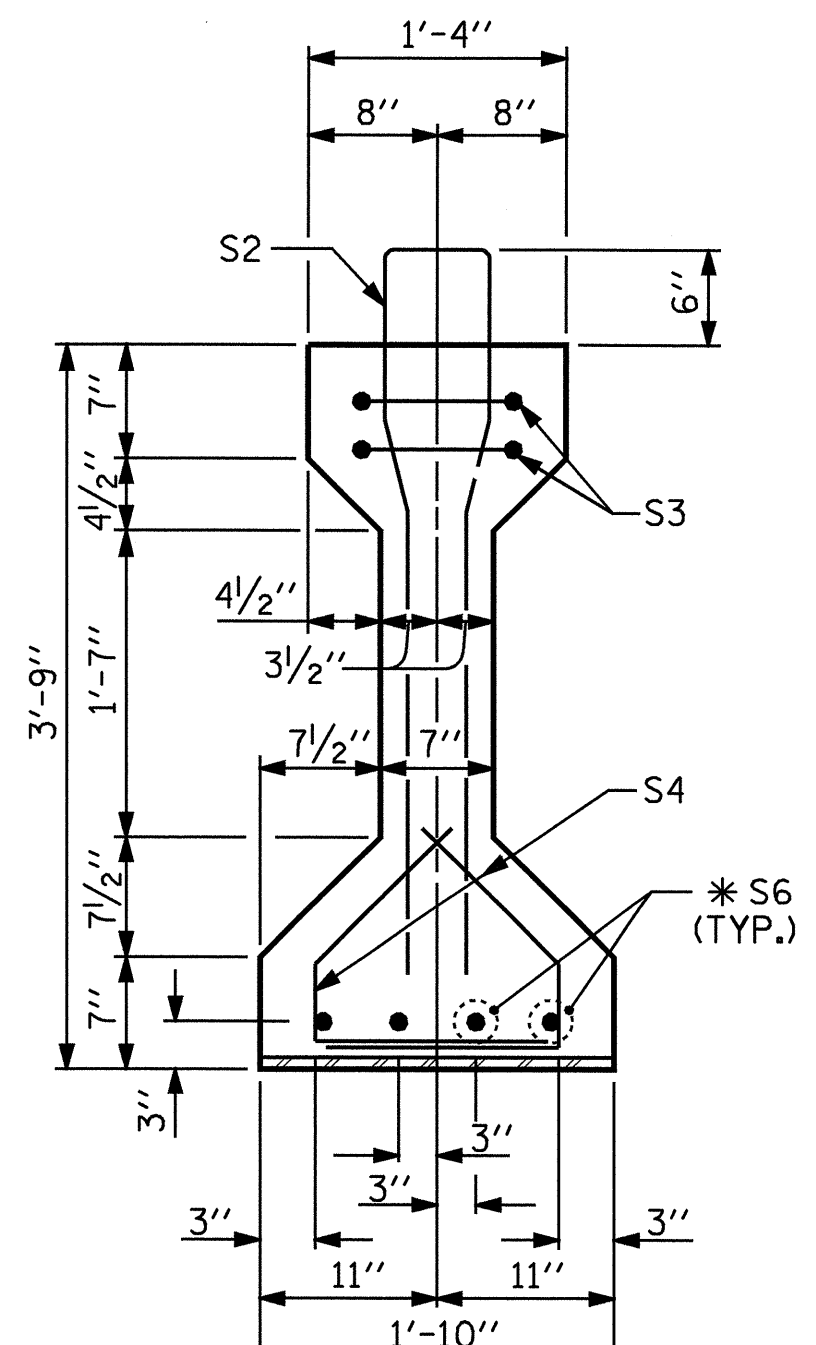
DRAWN BY: S. DOMBROWSKI DATE: 02/08  
CHECKED BY: H. LOCKLEAR DATE: 04/08

29-SEP-2008 11:06  
R:\Structures\B4149\Plans\B4149\_sd\_FP.dgn  
Jpadams

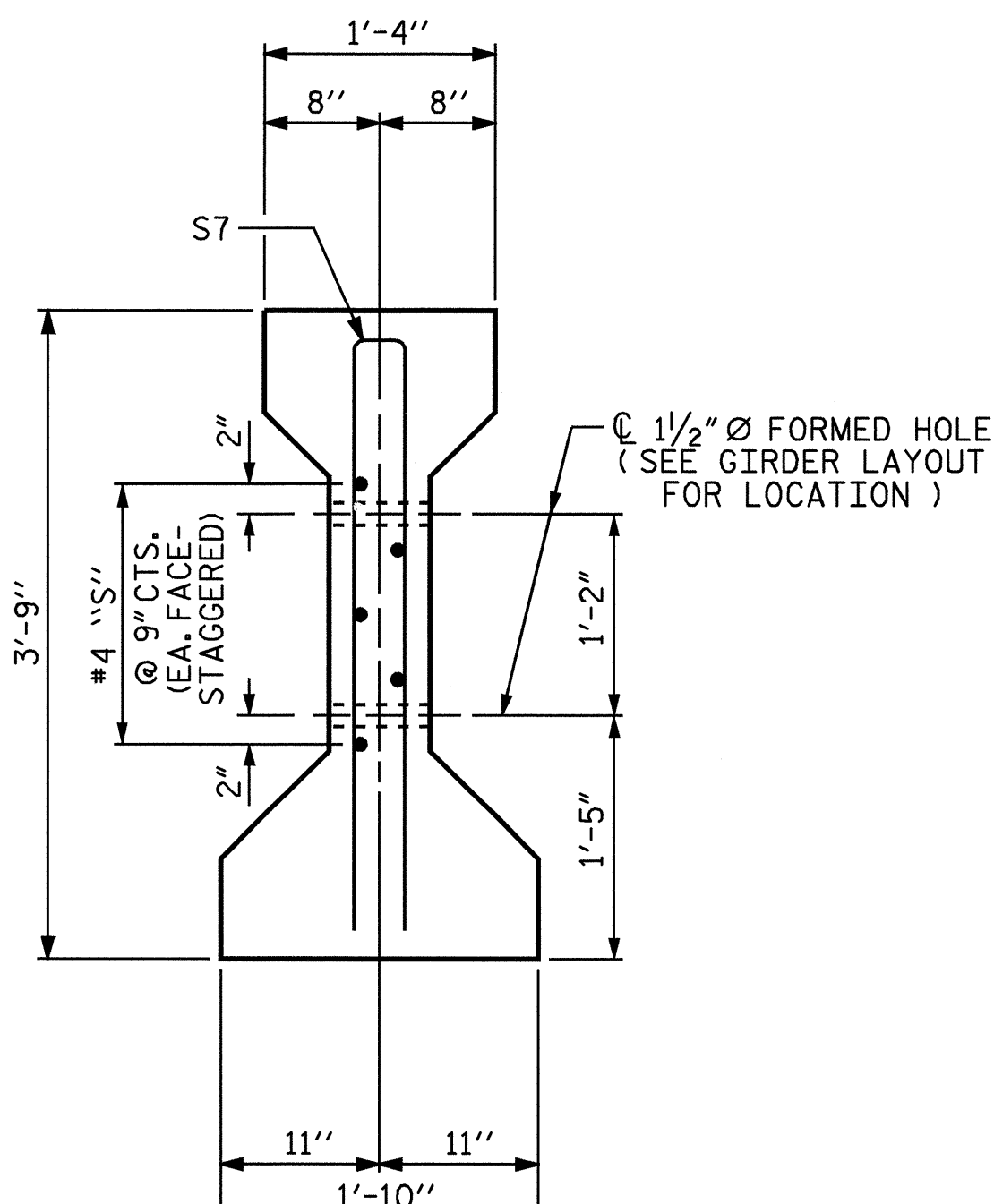
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-9
2			4			TOTAL SHEETS 35



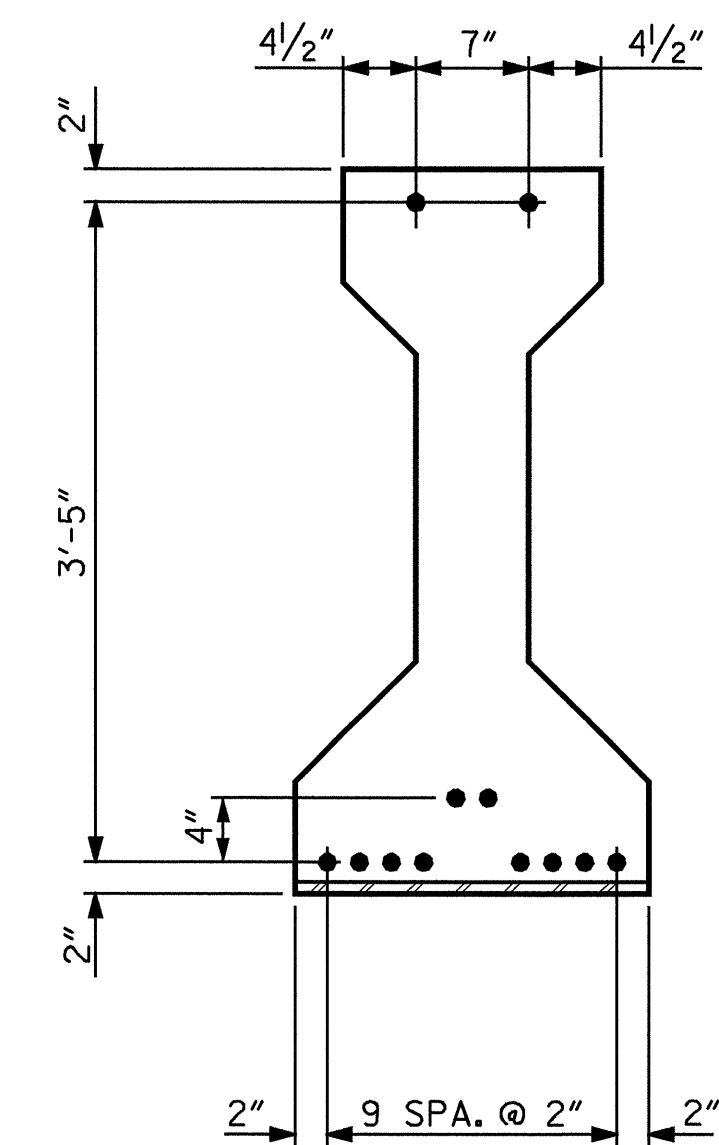
SECTION A-A



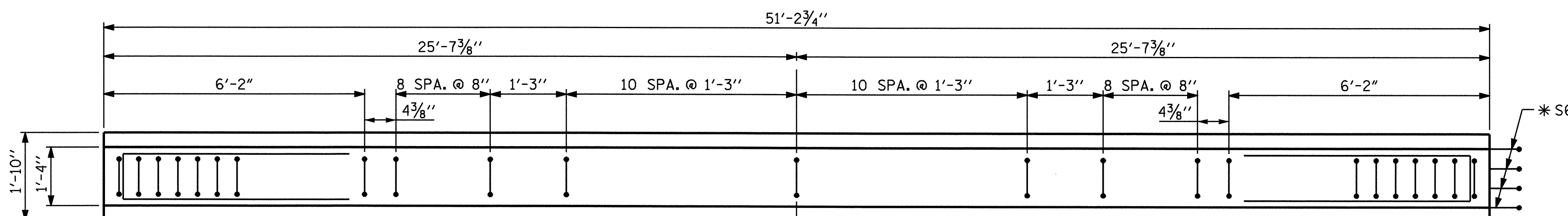
SECTION B-B



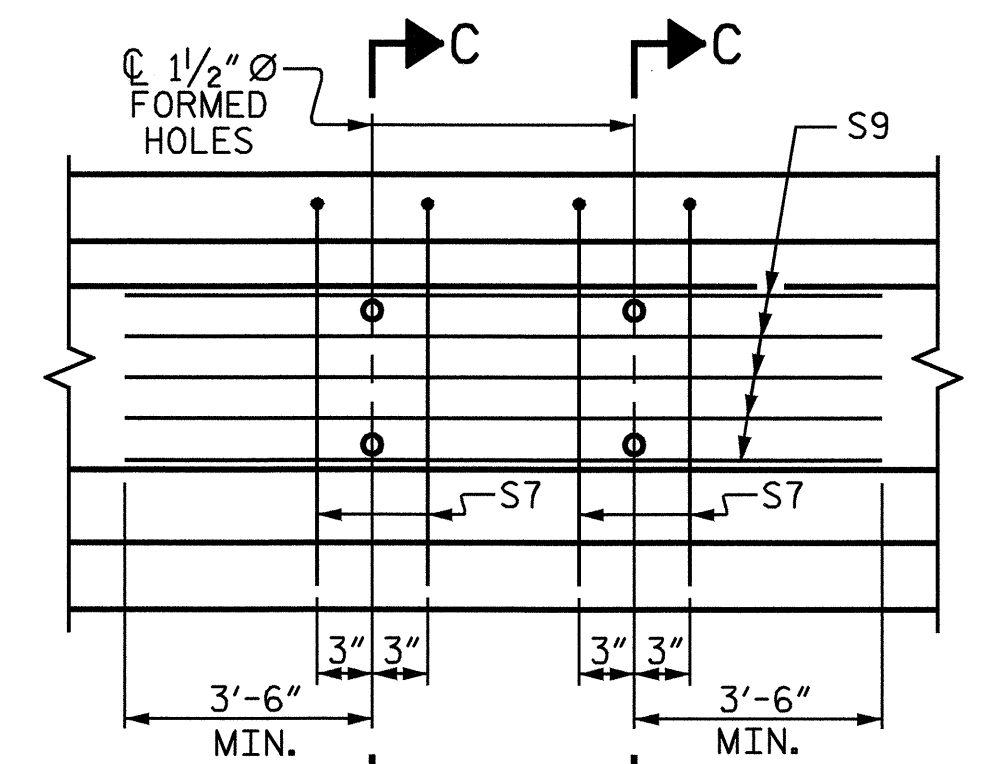
SECTION C-C  
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

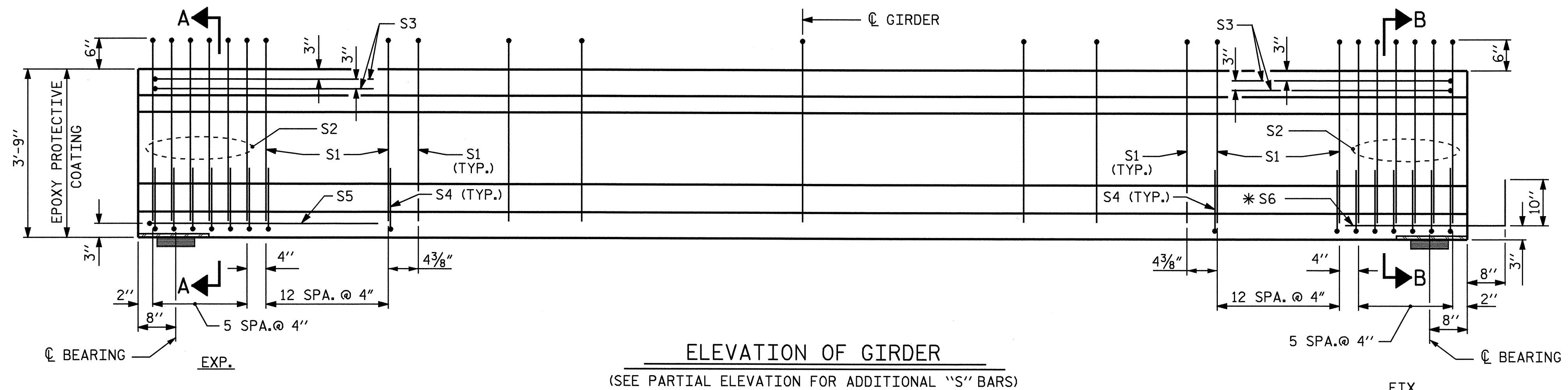


PLAN OF GIRDER



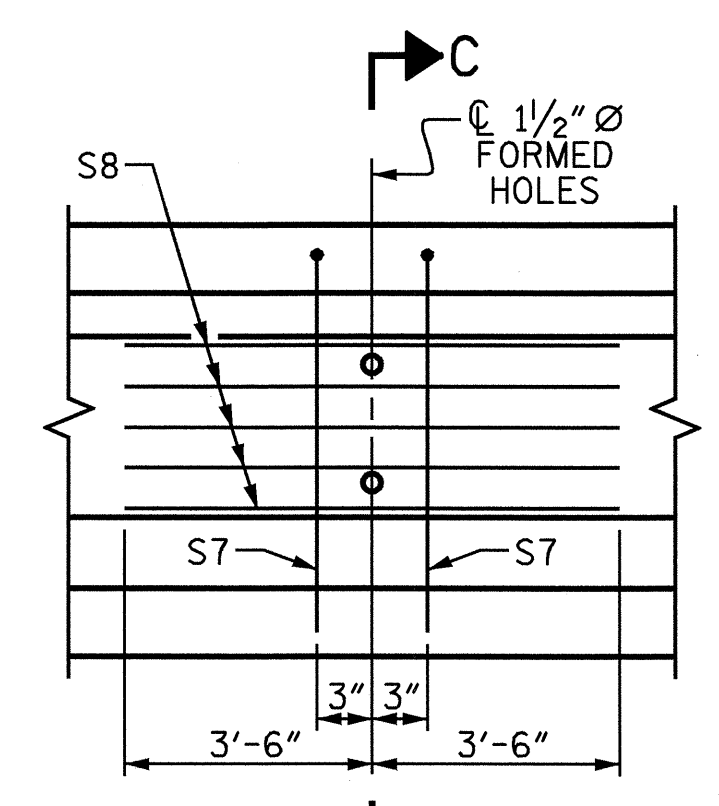
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A2 & A3



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A1 & A4

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

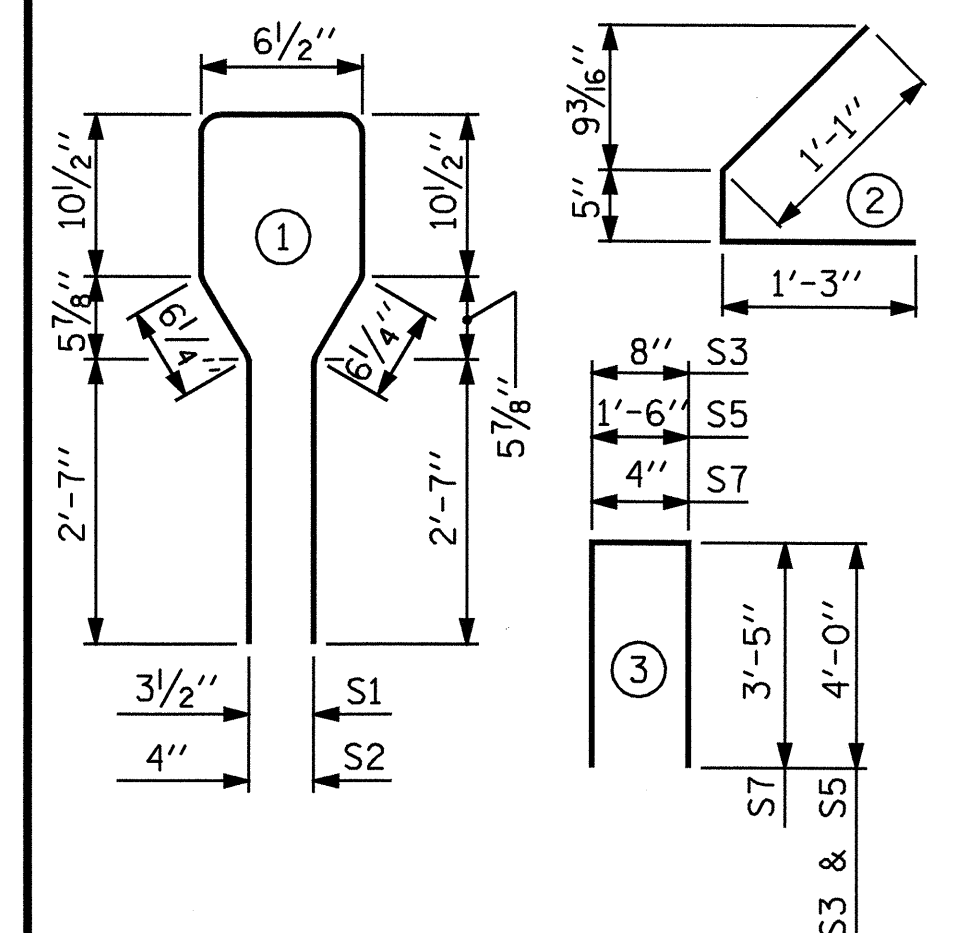
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	65	#4	1	8'-6"	369	
S2	12	#6	1	8'-6"	153	
S3	4	#4	3	8'-8"	23	
S4	76	#4	2	2'-9"	140	
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	16'-9"	56

\* 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.)	5,000 PSI CONCRETE (C.Y.)	0.6" Ø L.R. STRANDS (No.)
EXTERIOR GIRDER	744	7.4	12
INTERIOR GIRDER	792	7.4	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4 (SPAN A)	51'-2 3/4"	204'-11"

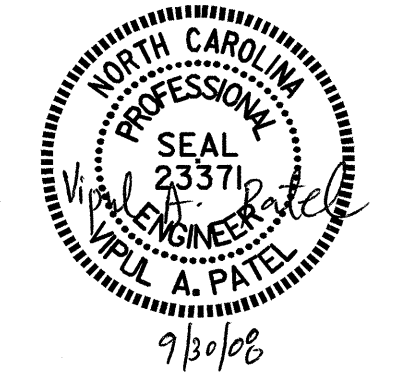
PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

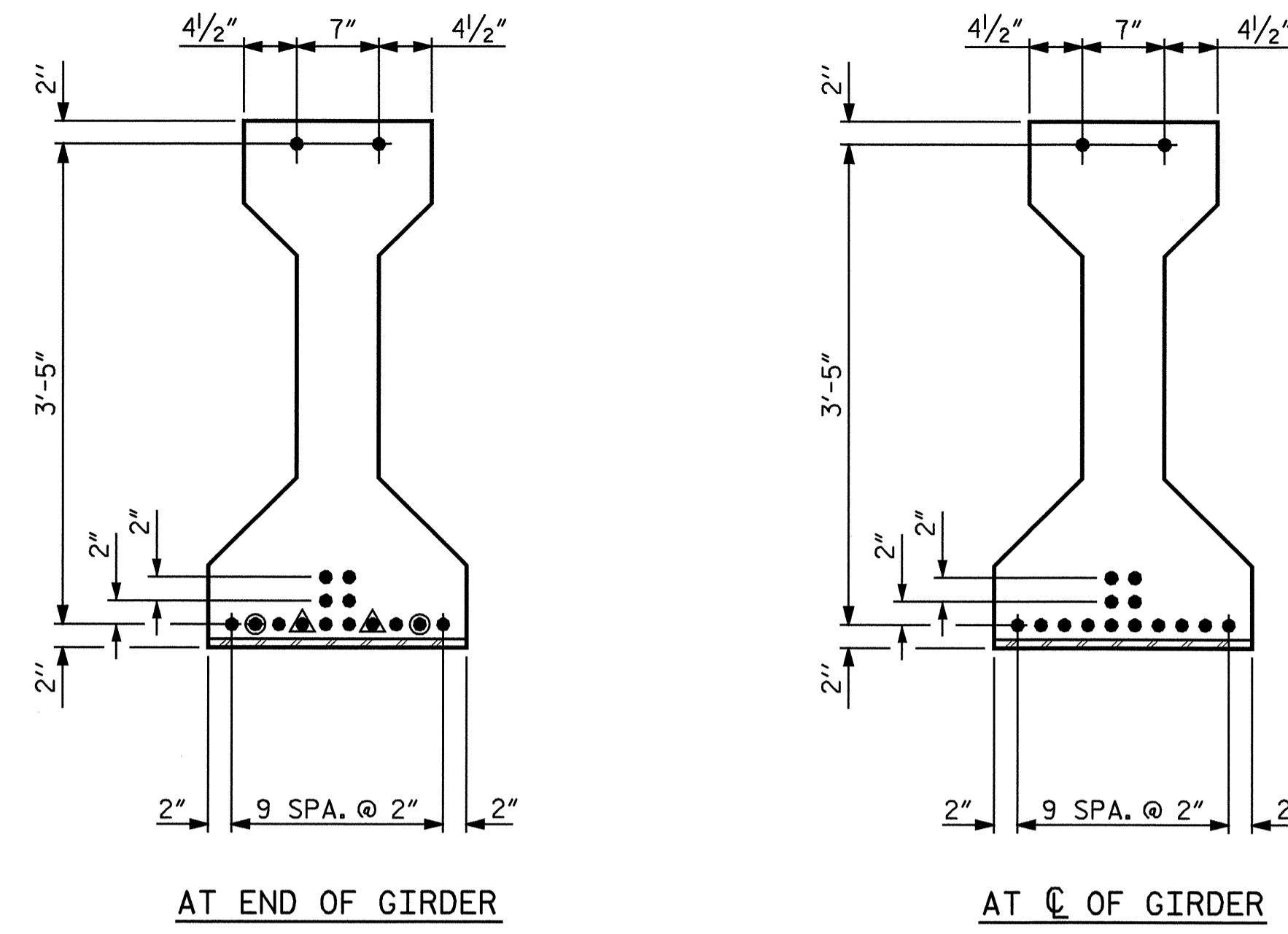
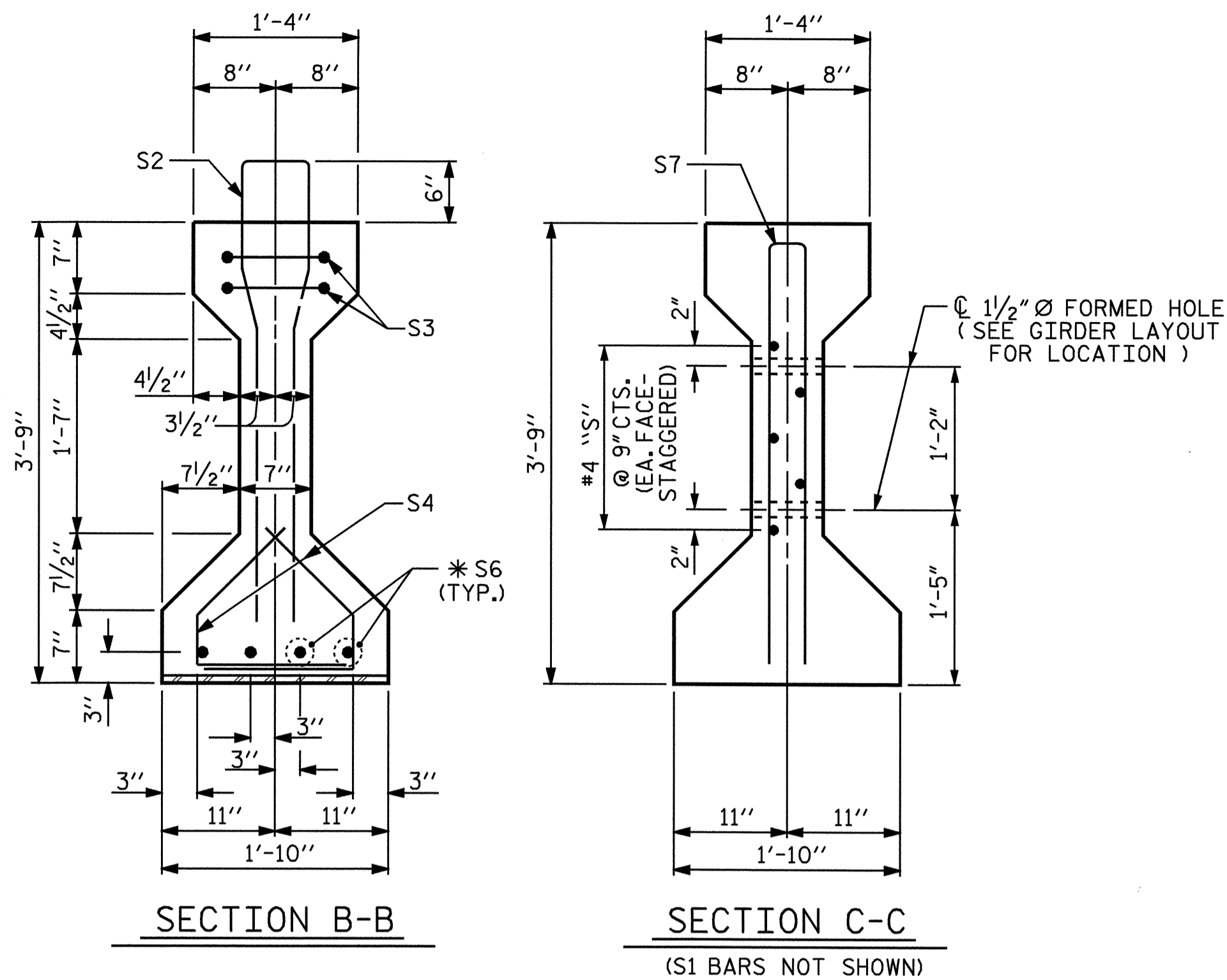
SHEET 1 OF 6

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-10
1			3			TOTAL SHEETS
2			4			35

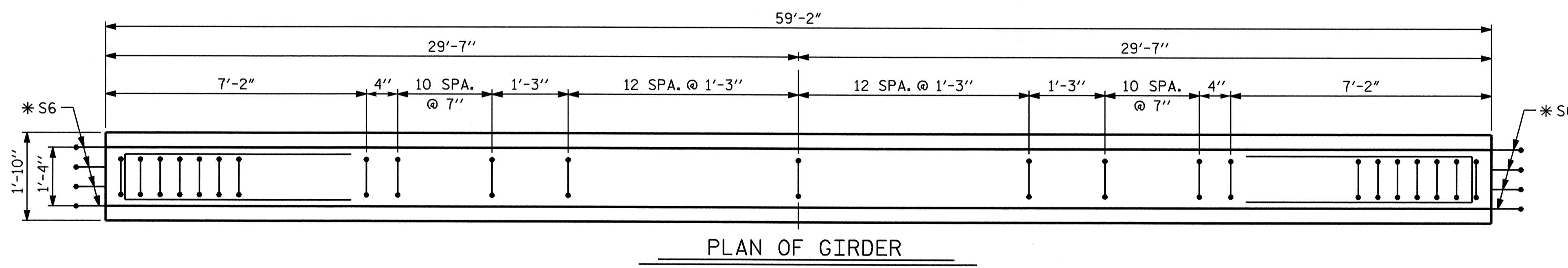
ASSEMBLED BY : S. DOMBROWSKI DATE : 02/08  
 CHECKED BY : H. LOCKLEAR DATE : 04/08  
 DRAWN BY : ELR 8/91 REV. 7/17/98 RWW/LES  
 CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES  
 REV. 5/1/06 TLA/GM



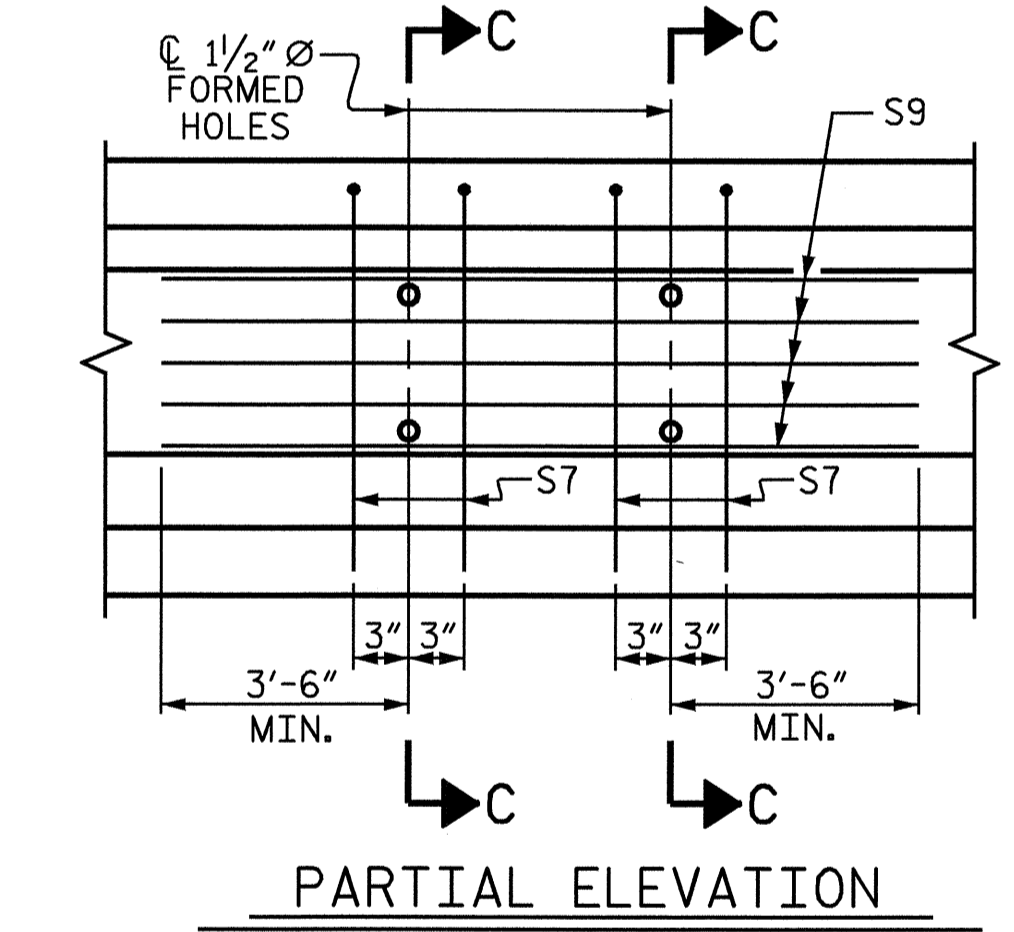


0.6" Ø LOW RELAXATION STRAND LAYOUT

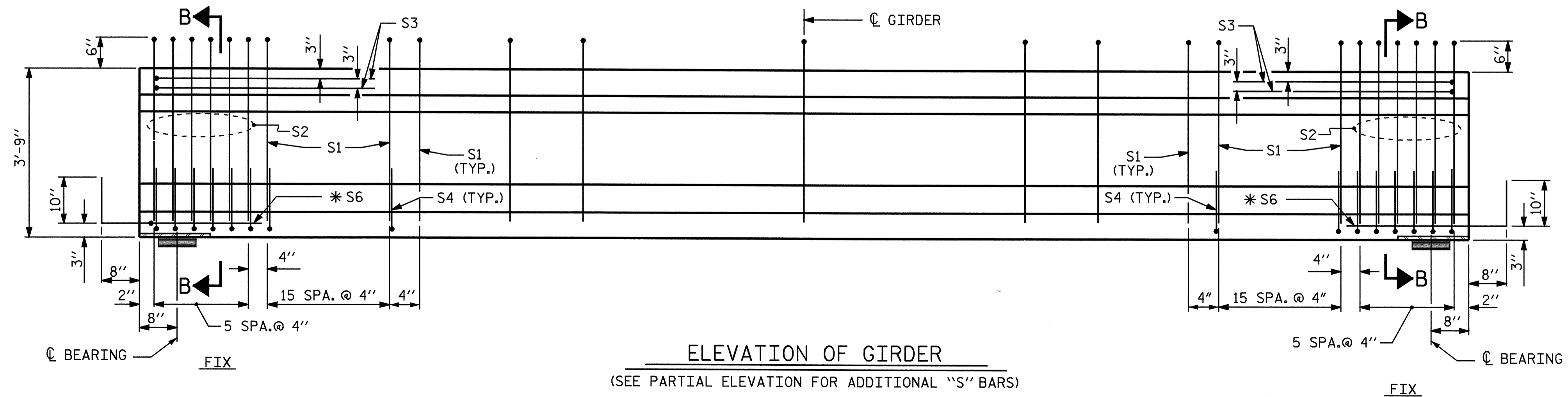
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



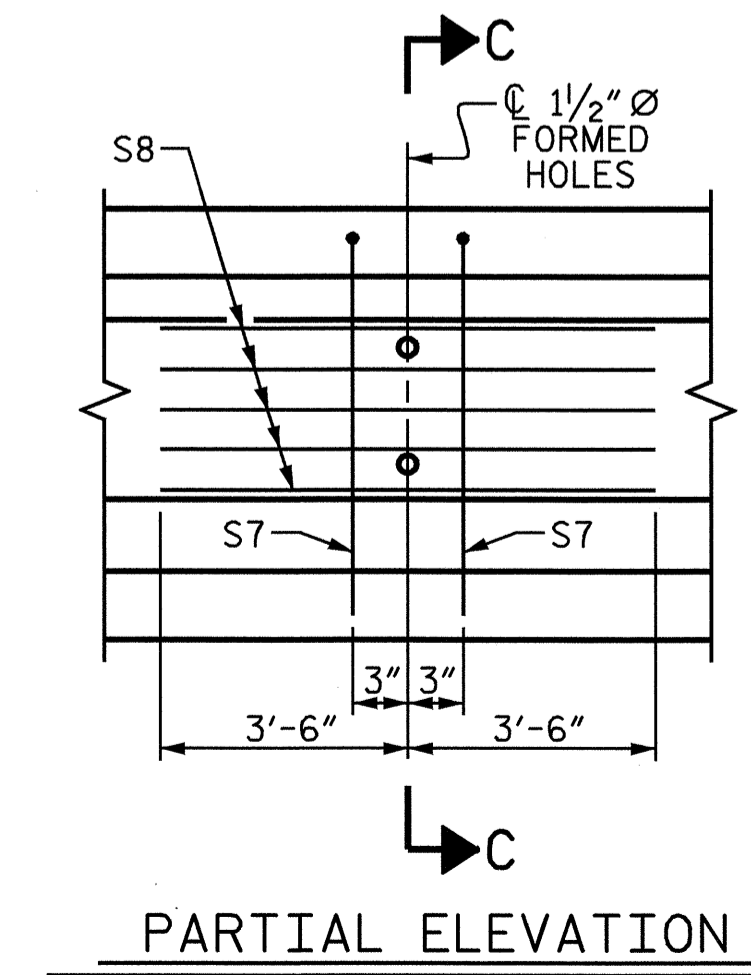
PLAN OF GIRDER



SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. B2 & B3



ELEVATION OF GIRDER  
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. B1 & B4

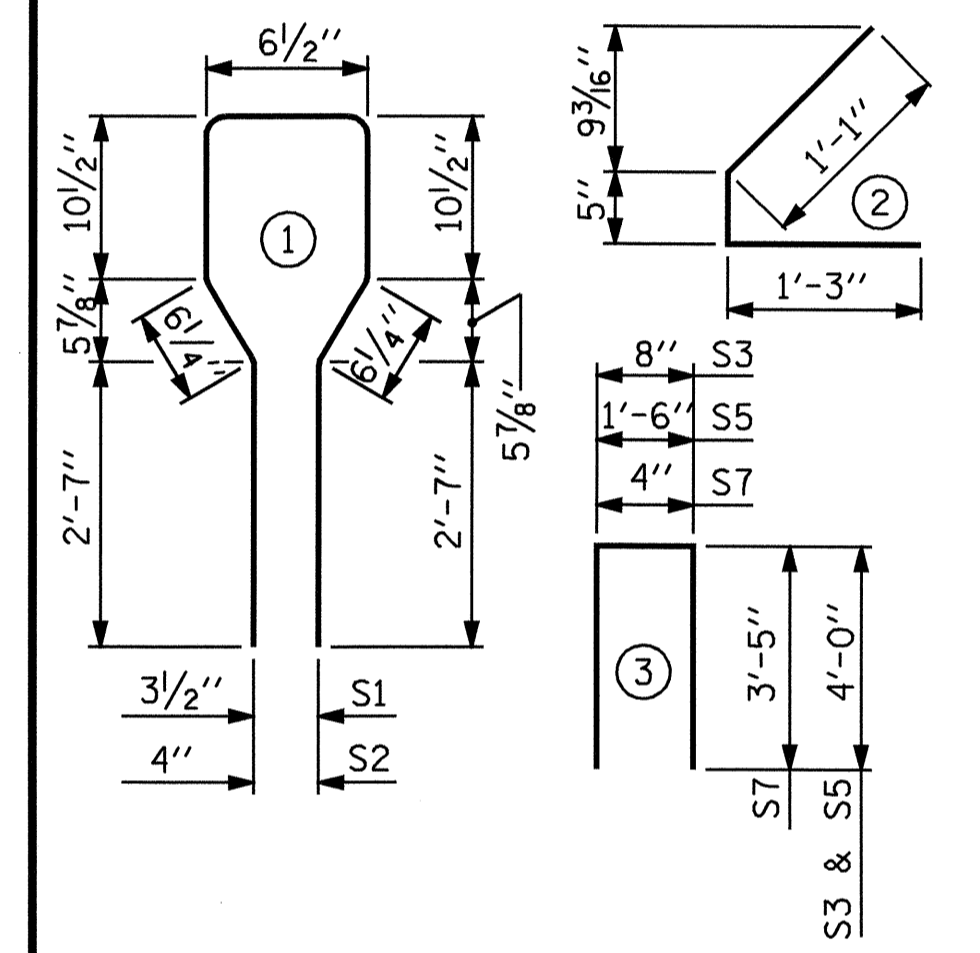
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	79	#4	1	8'-6"	449	
S2	12	#6	1	8'-6"	153	
S3	4	#4	3	8'-8"	23	
S4	88	#4	2	2'-9"	162	
*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	16'-9"	56

\* 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.	5,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
EXTERIOR GIRDER	856	8.5	16
INTERIOR GIRDER	904	8.5	16

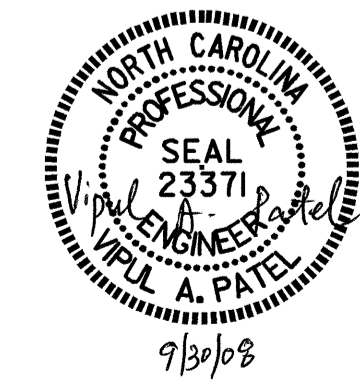
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4 (SPAN B)	59'-2"	236'-8"

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

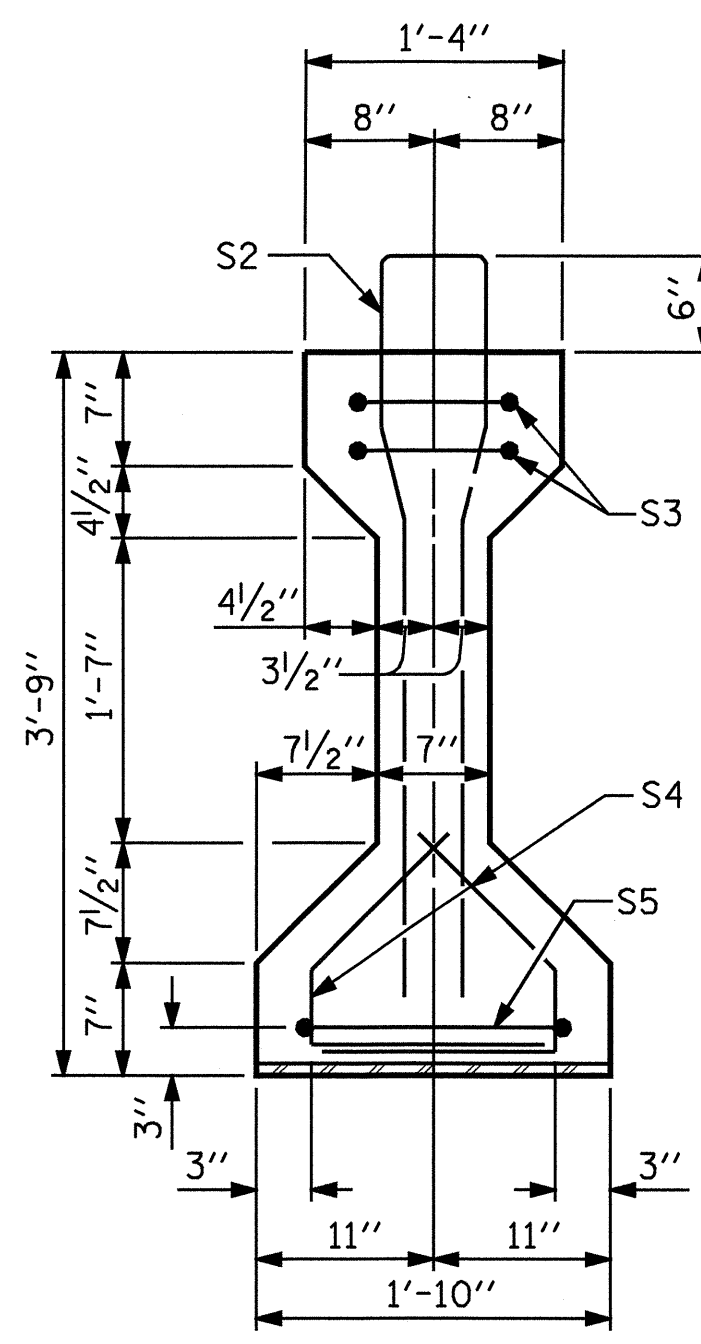
SHEET 2 OF 6

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

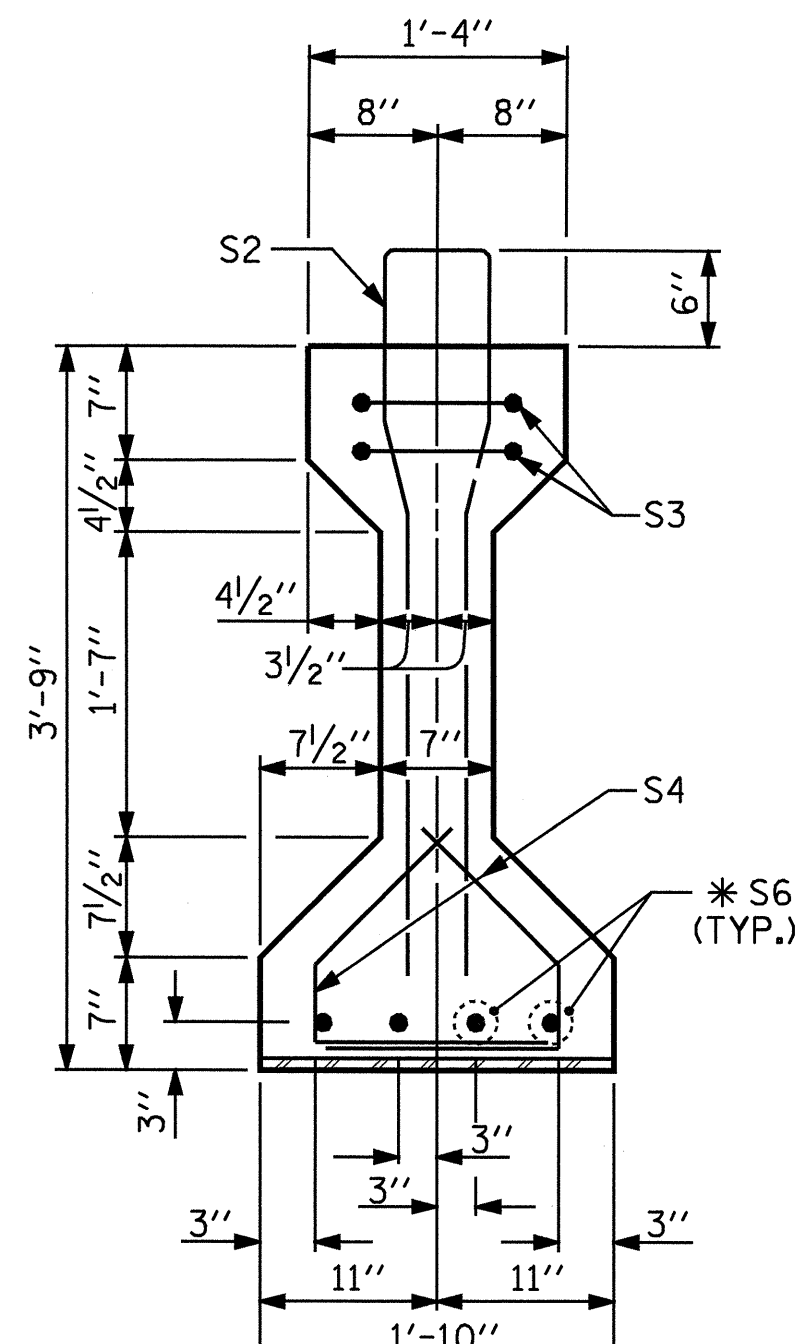


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			35

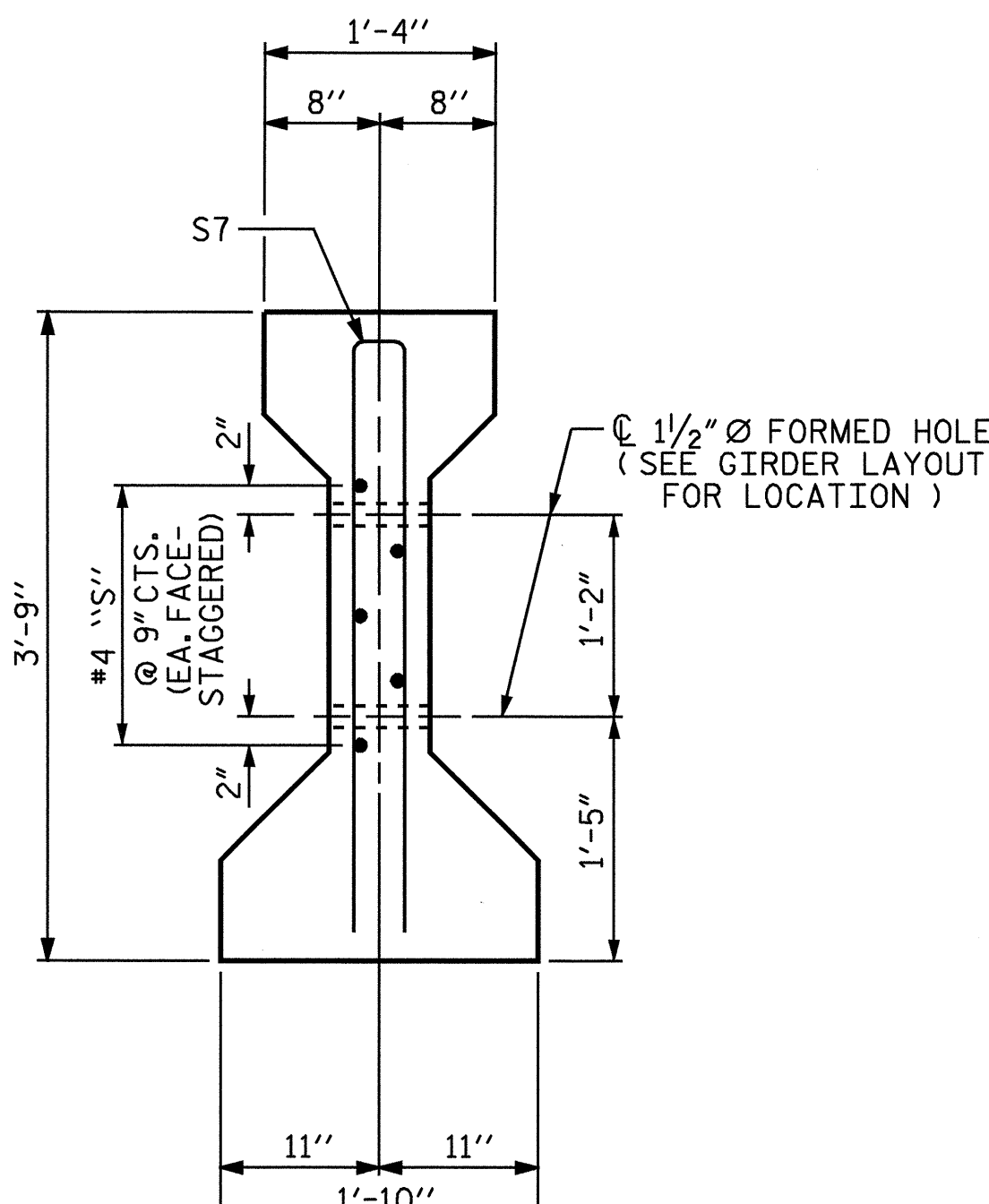
ASSEMBLED BY : S. DOMBROWSKI DATE : 02/08  
CHECKED BY : H. LOCKLEAR DATE : 04/08  
DRAWN BY : ELR 8/91 REV. 7/17/98 RWW/LES  
CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES  
REV. 5/1/06 TLA/GM



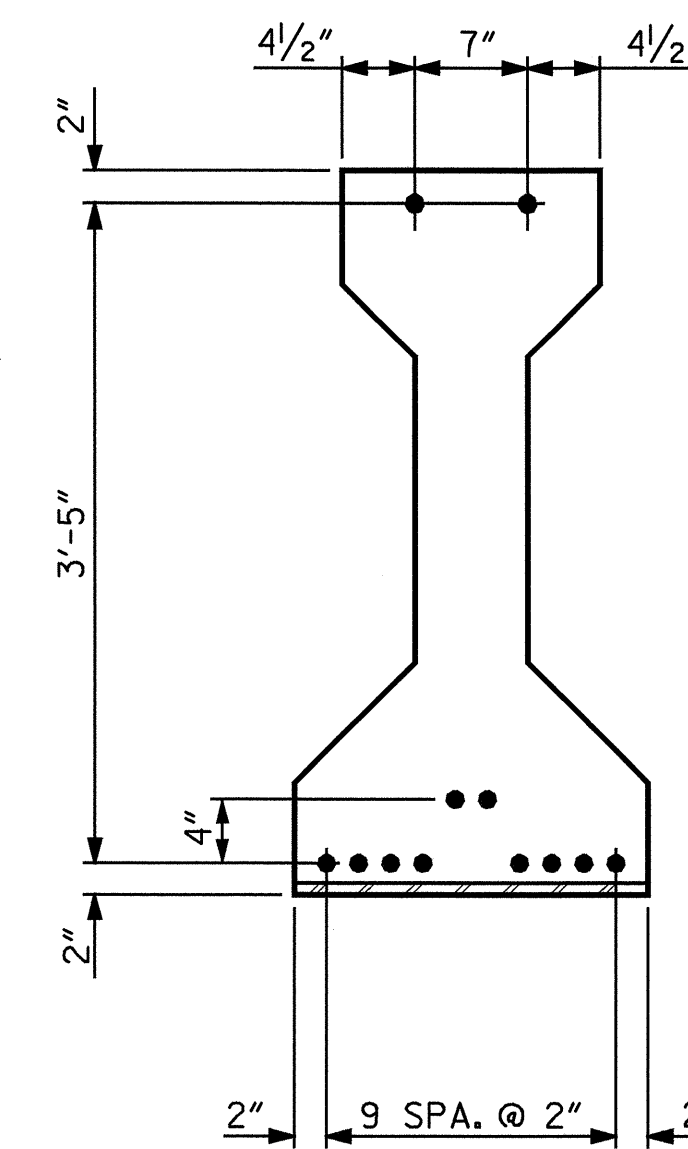
SECTION A-A



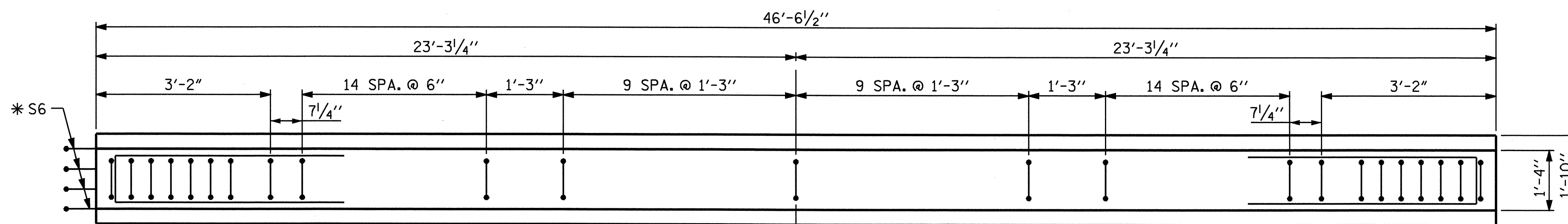
SECTION B-B



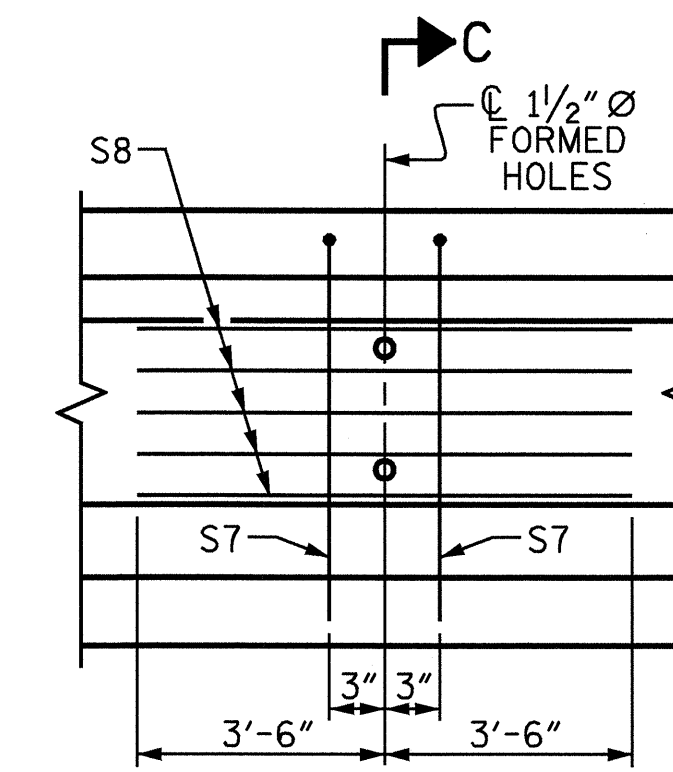
SECTION C-C  
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

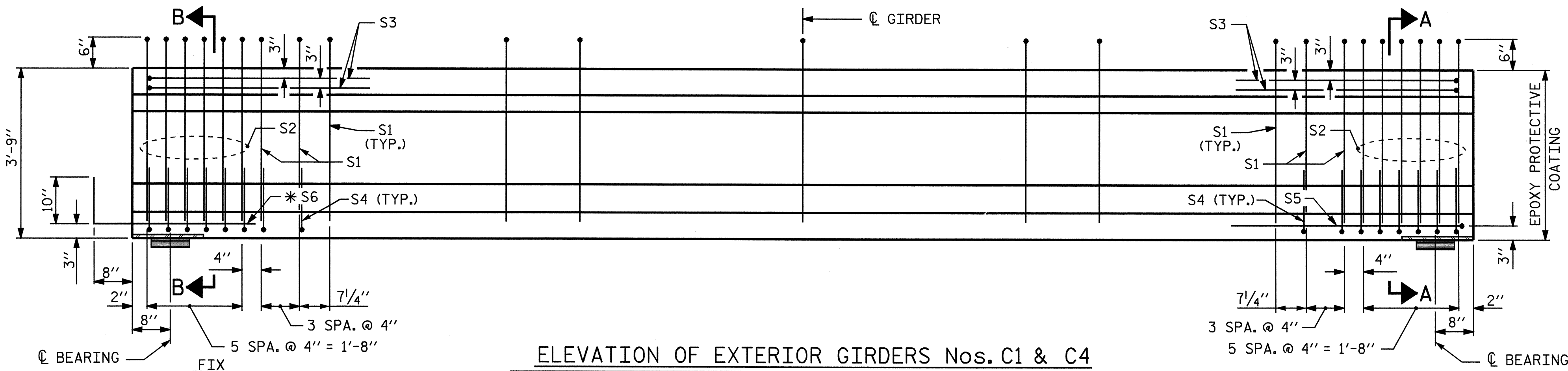


PLAN OF GIRDER Nos. C1 & C4



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. C1 & C4



ELEVATION OF EXTERIOR GIRDERS Nos. C1 & C4

(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

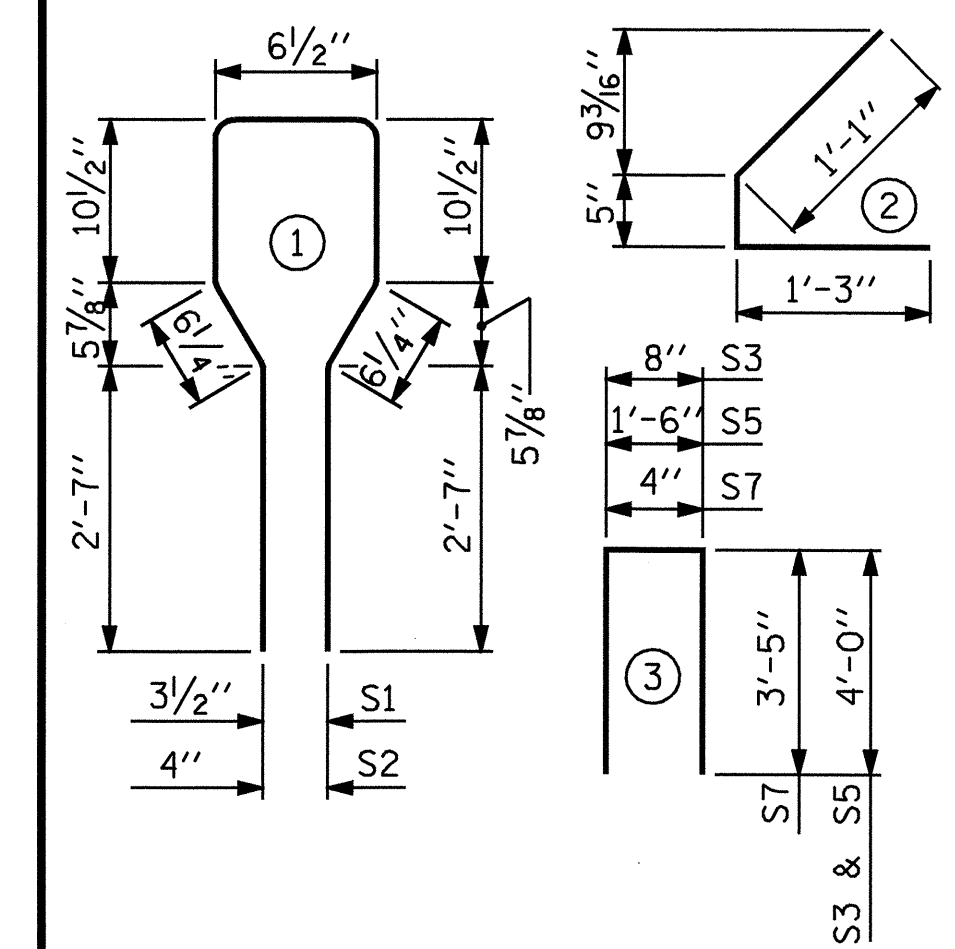
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	57	#4	1	8'-6"	324
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	40	#4	2	2'-9"	73
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23

\* 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.	5,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
EXTERIOR GIRDER	632	6.7	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2 (SPAN C)	46'-6 1/2"	93'-1"

PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 3 OF 6

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

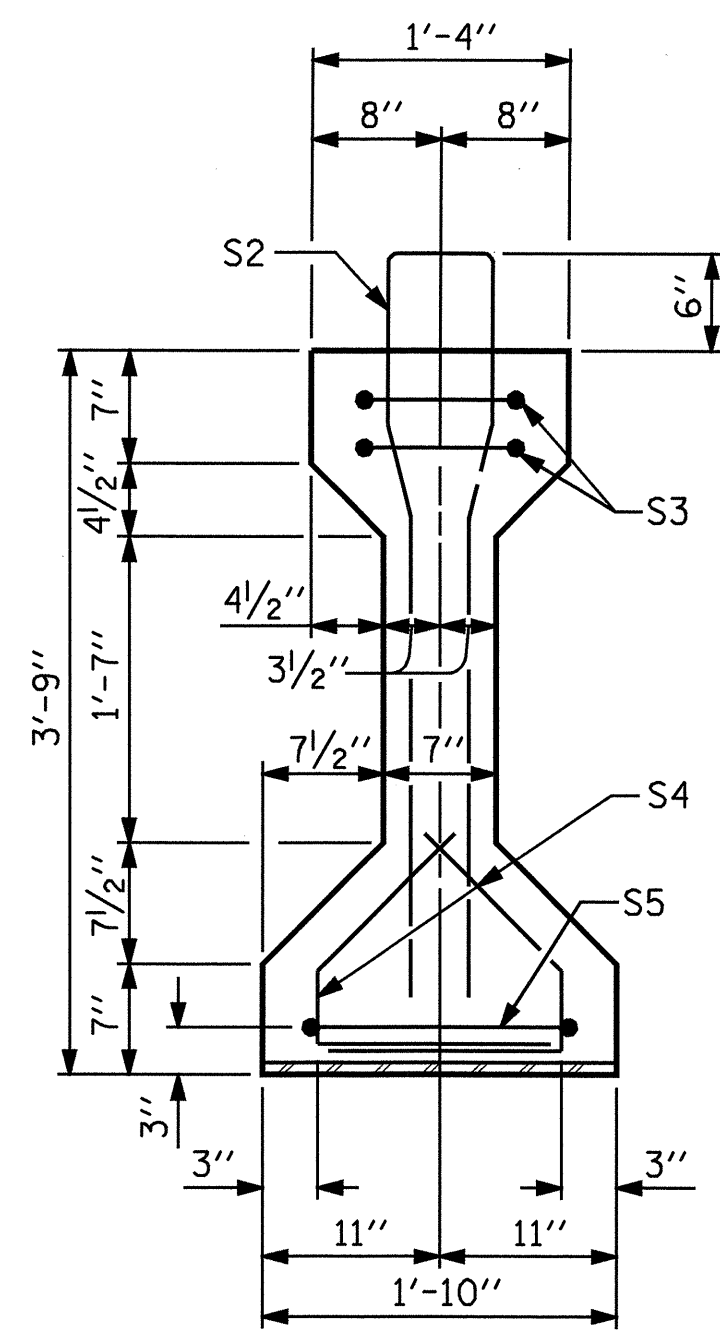


REVISIONS

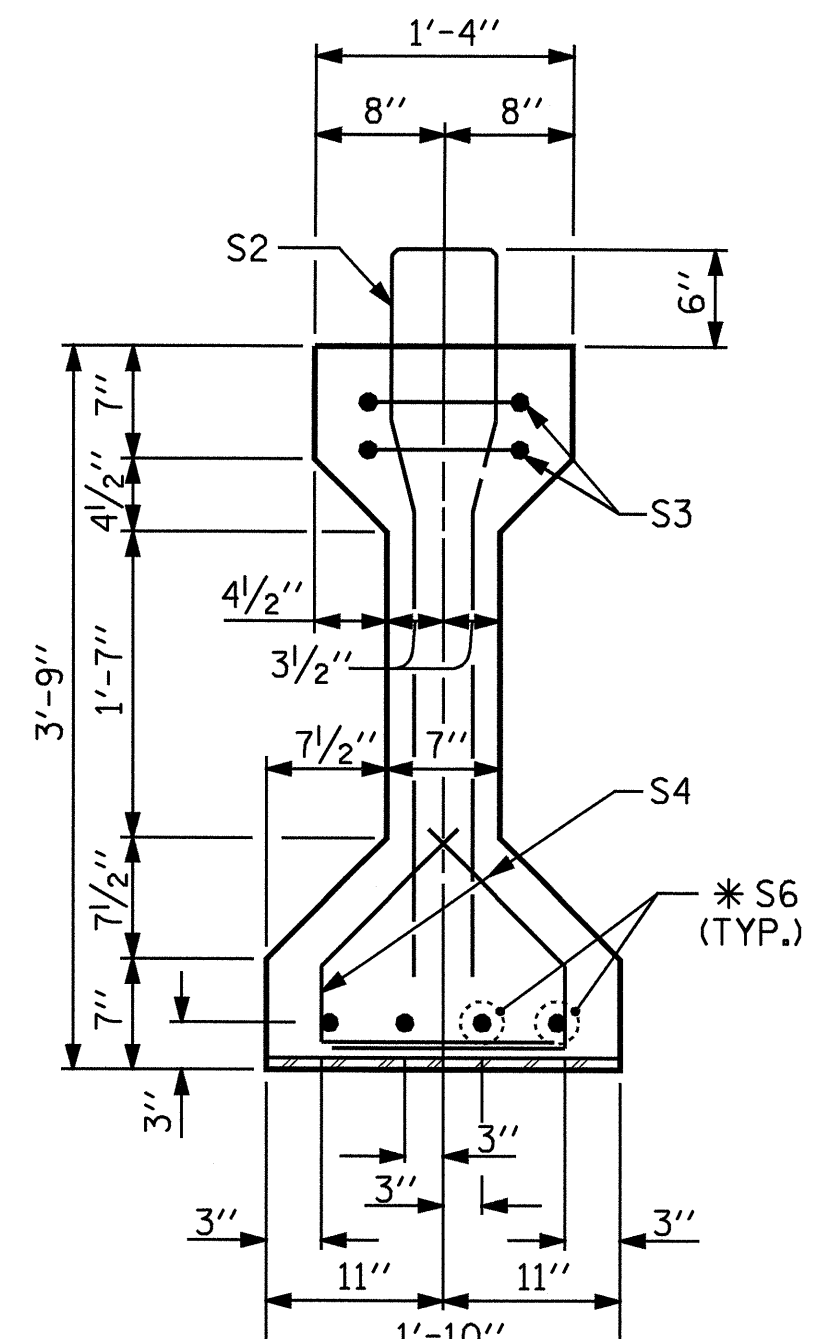
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-12
TOTAL SHEETS
35

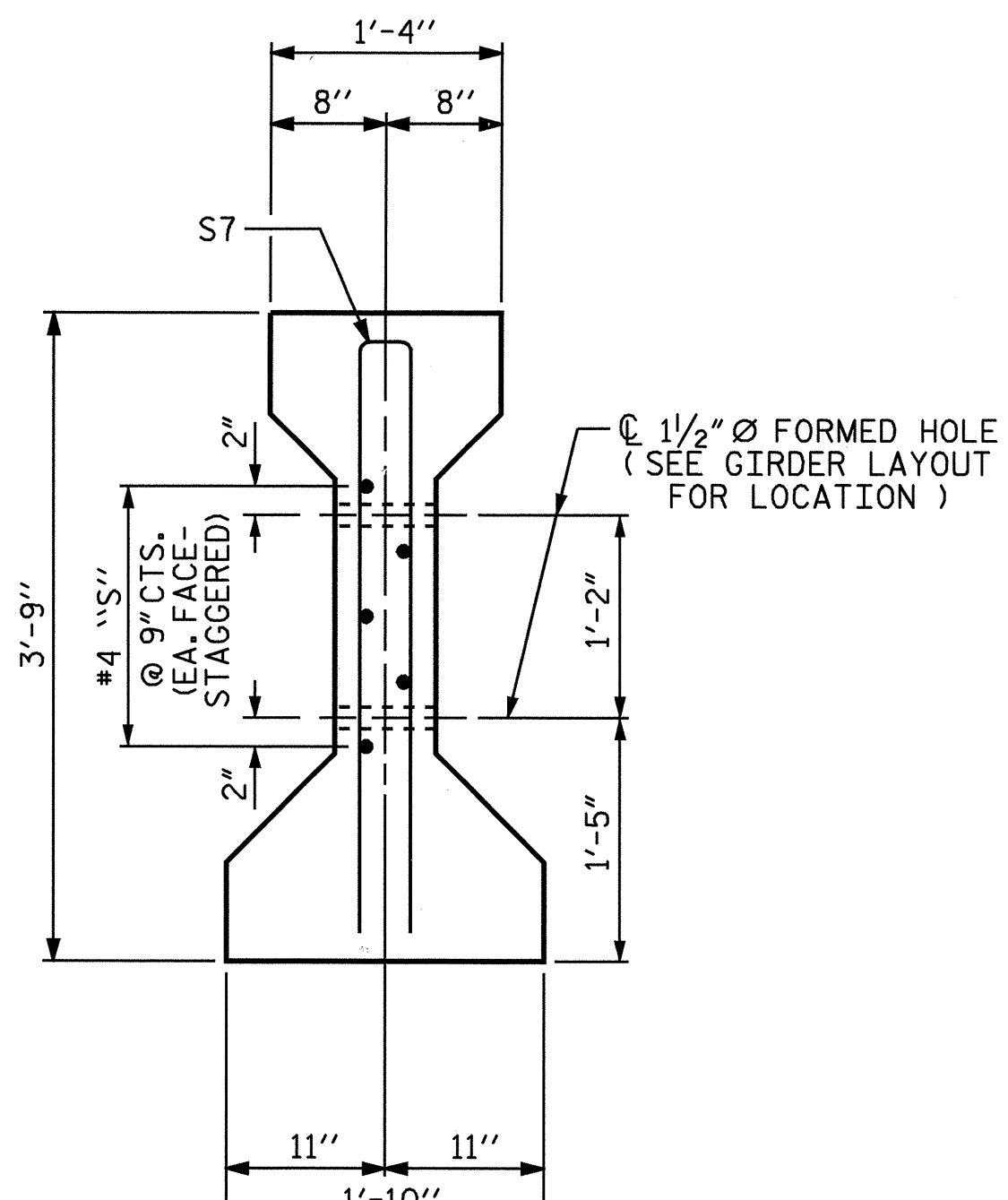
ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM



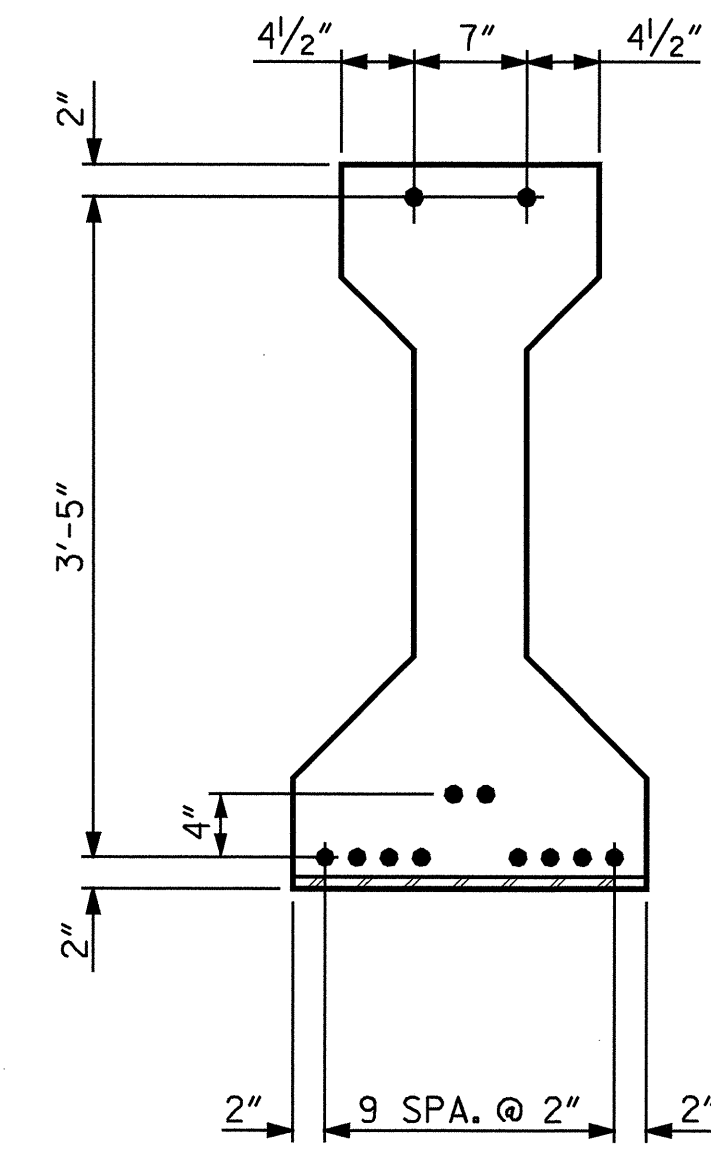
SECTION A-A



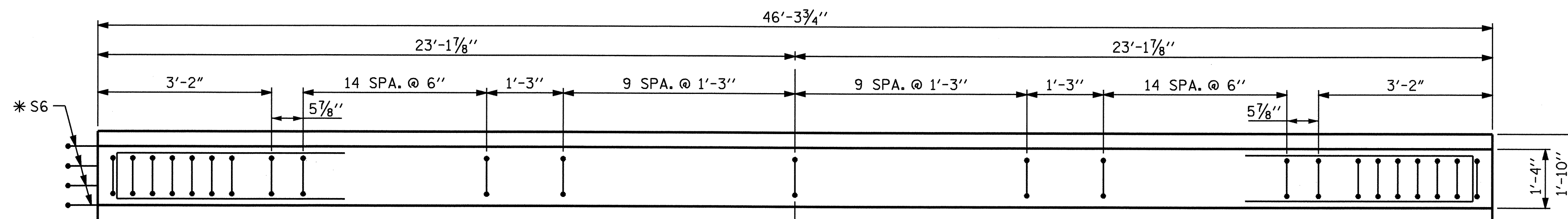
SECTION B-B



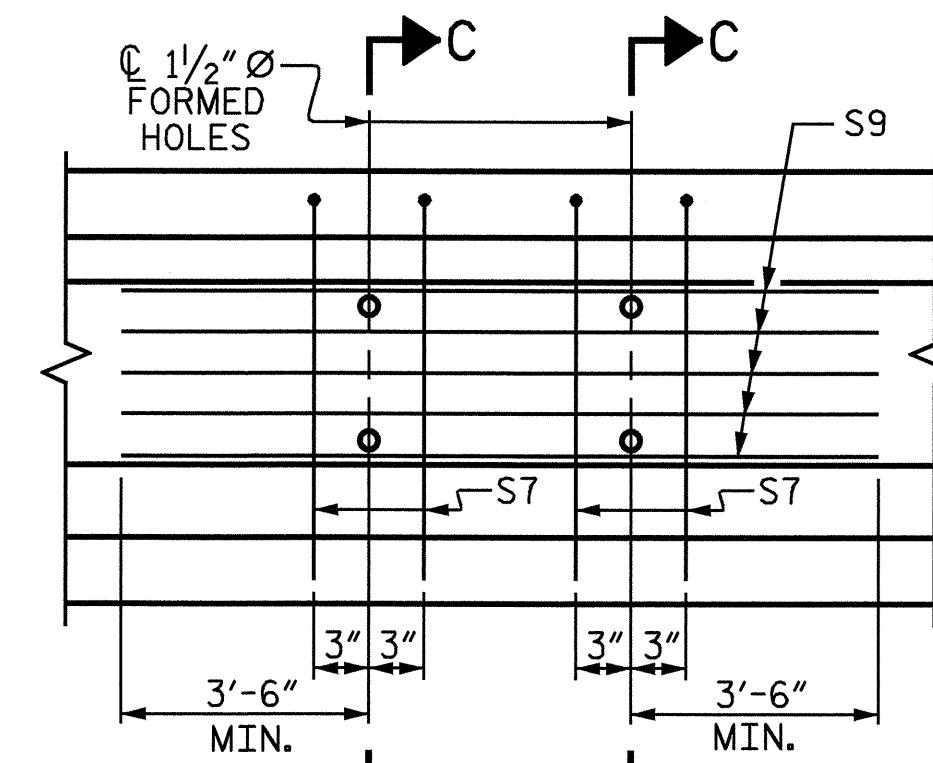
SECTION C-C  
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

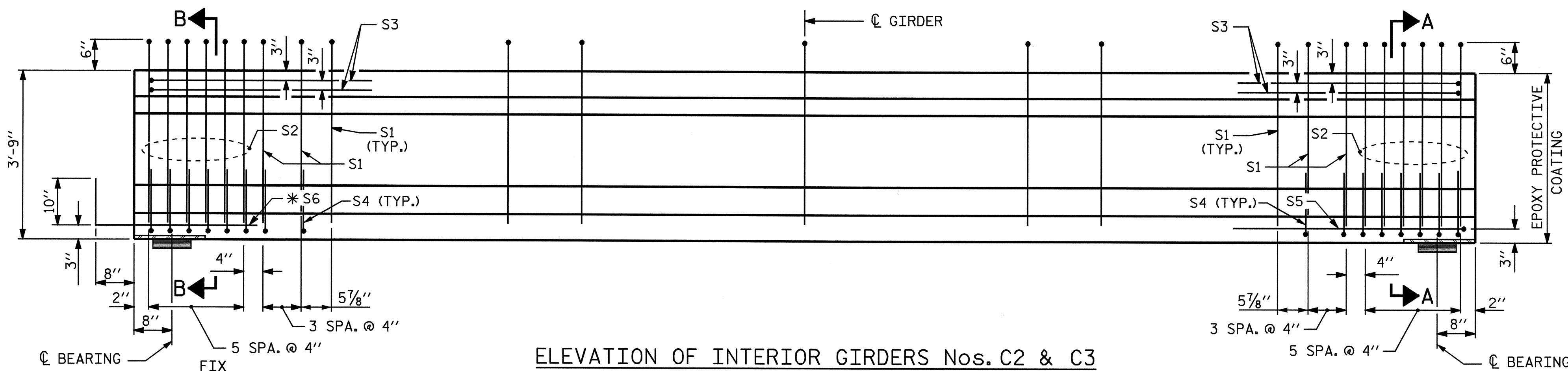


PLAN OF GIRDER Nos. C2 & C3



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. C2 & C3



ELEVATION OF INTERIOR GIRDERS Nos. C2 & C3

(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

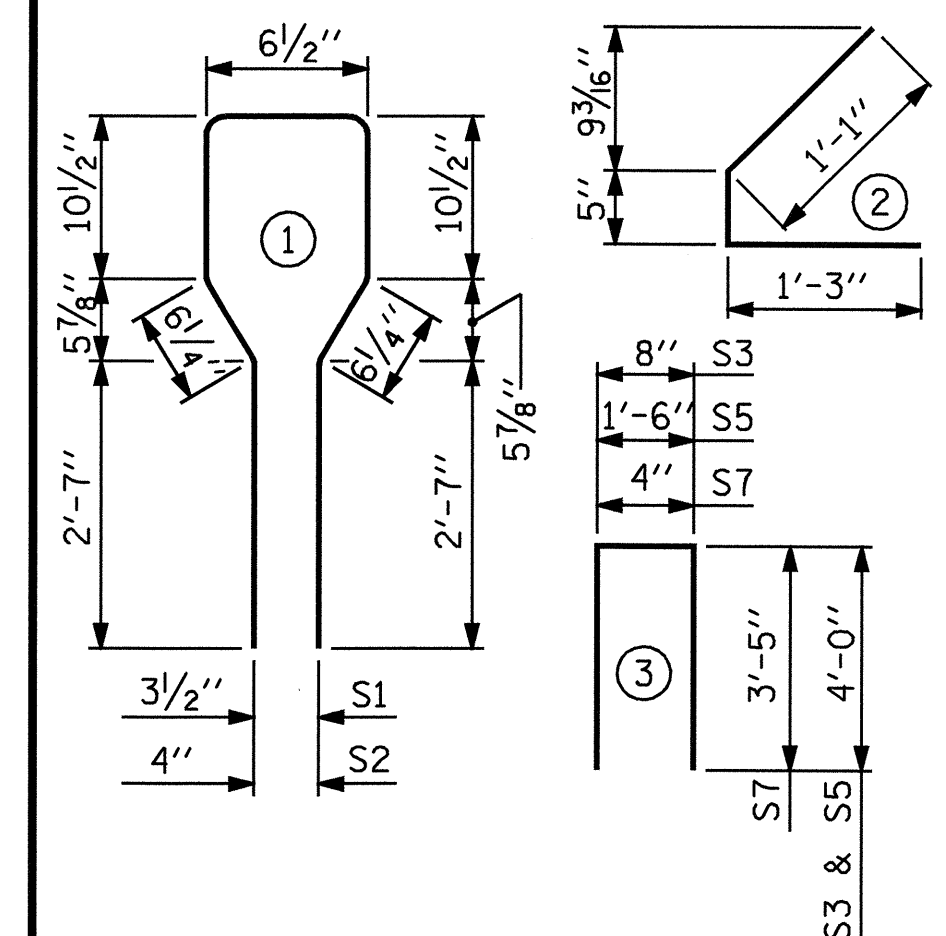
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	57	#4	1	8'-6"	324
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	40	#4	2	2'-9"	73
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15
S7	4	#5	3	7'-2"	30
S9	5	#4	STR	16'-9"	56

\* 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.	5,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
INTERIOR GIRDER	680	6.7	12

GIRDERS REQUIRED

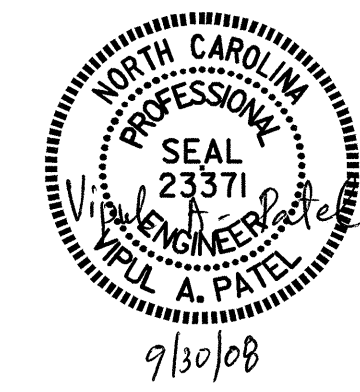
NUMBER	LENGTH	TOTAL LENGTH
2 (SPAN C)	46'-3 3/4"	92'-7 1/2"

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
AASHTO TYPE III  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
SPAN C - INTERIOR GIRDERS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM

**STRUCTURAL STEEL NOTES**

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

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE CHANNELS, ANGLES, WASHERS, PLATE WASHERS, AND DIRECT TENSION INDICATORS 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 PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

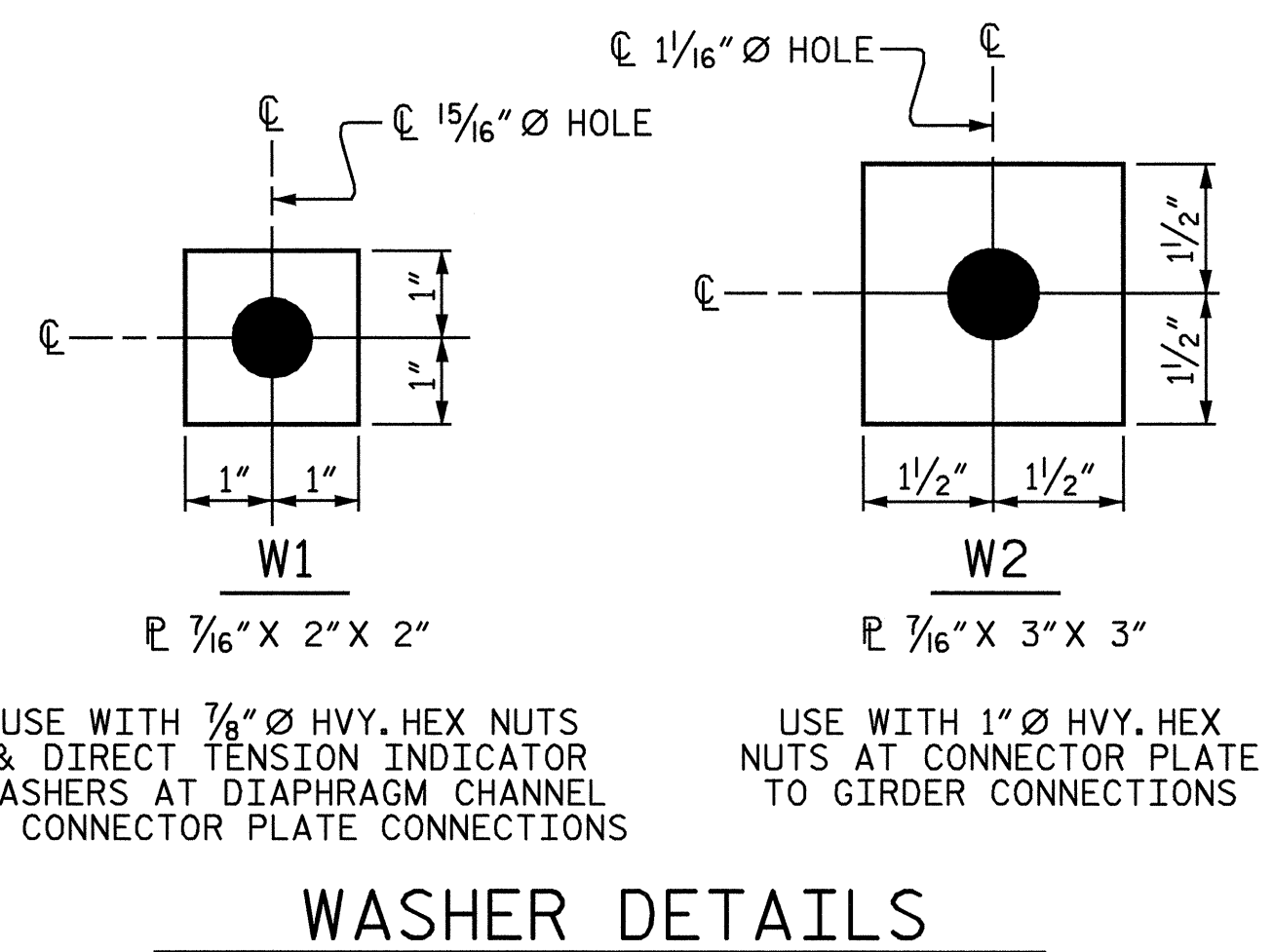
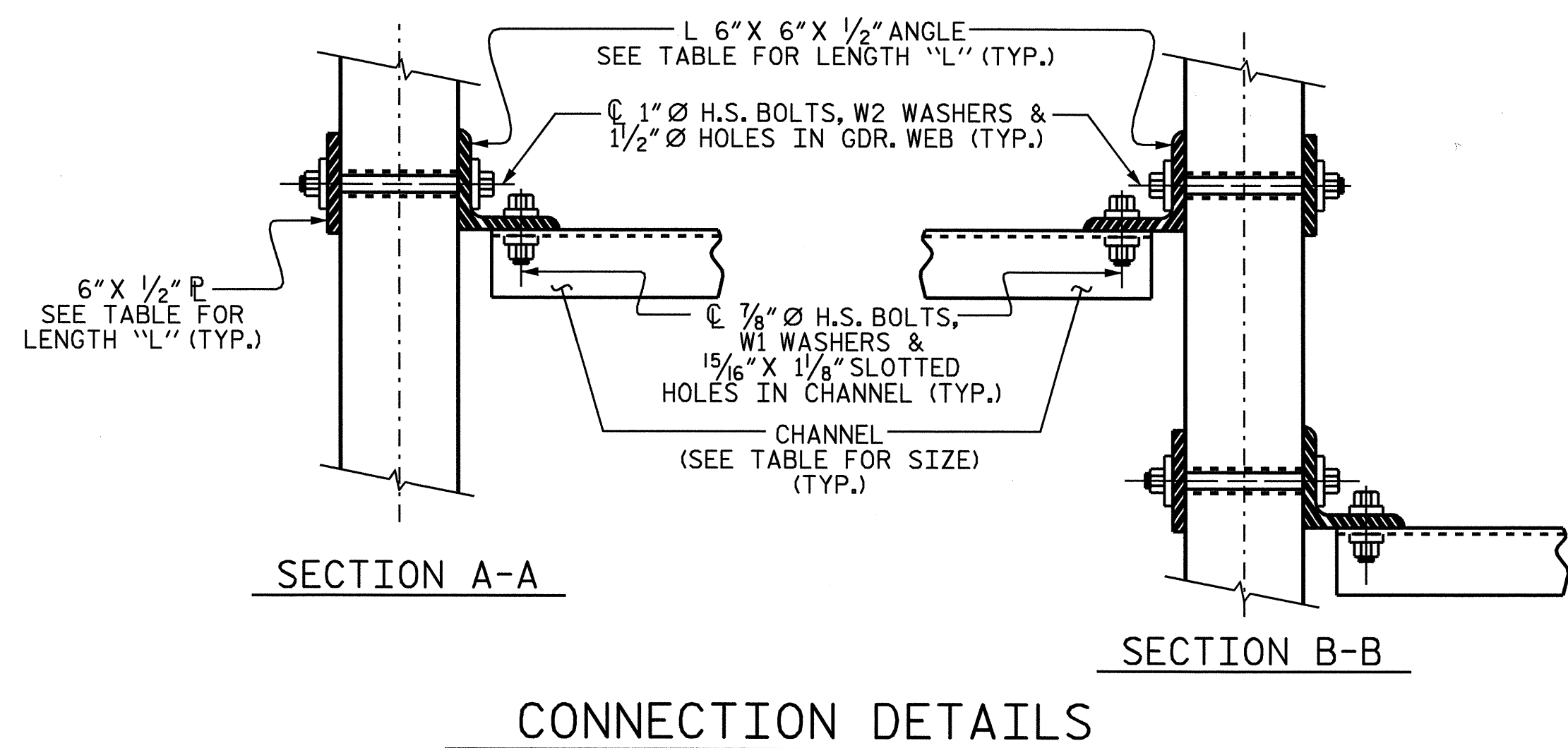
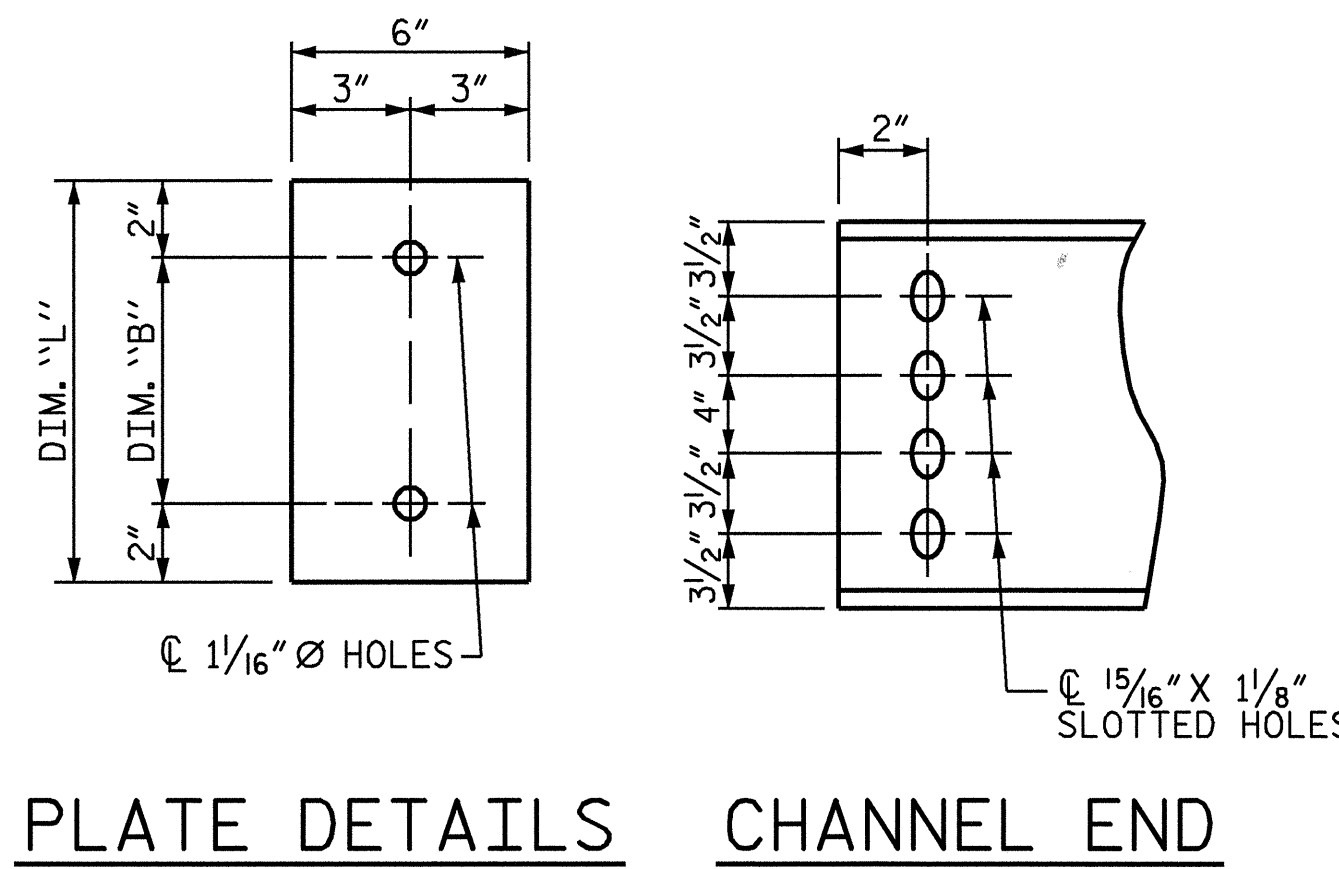
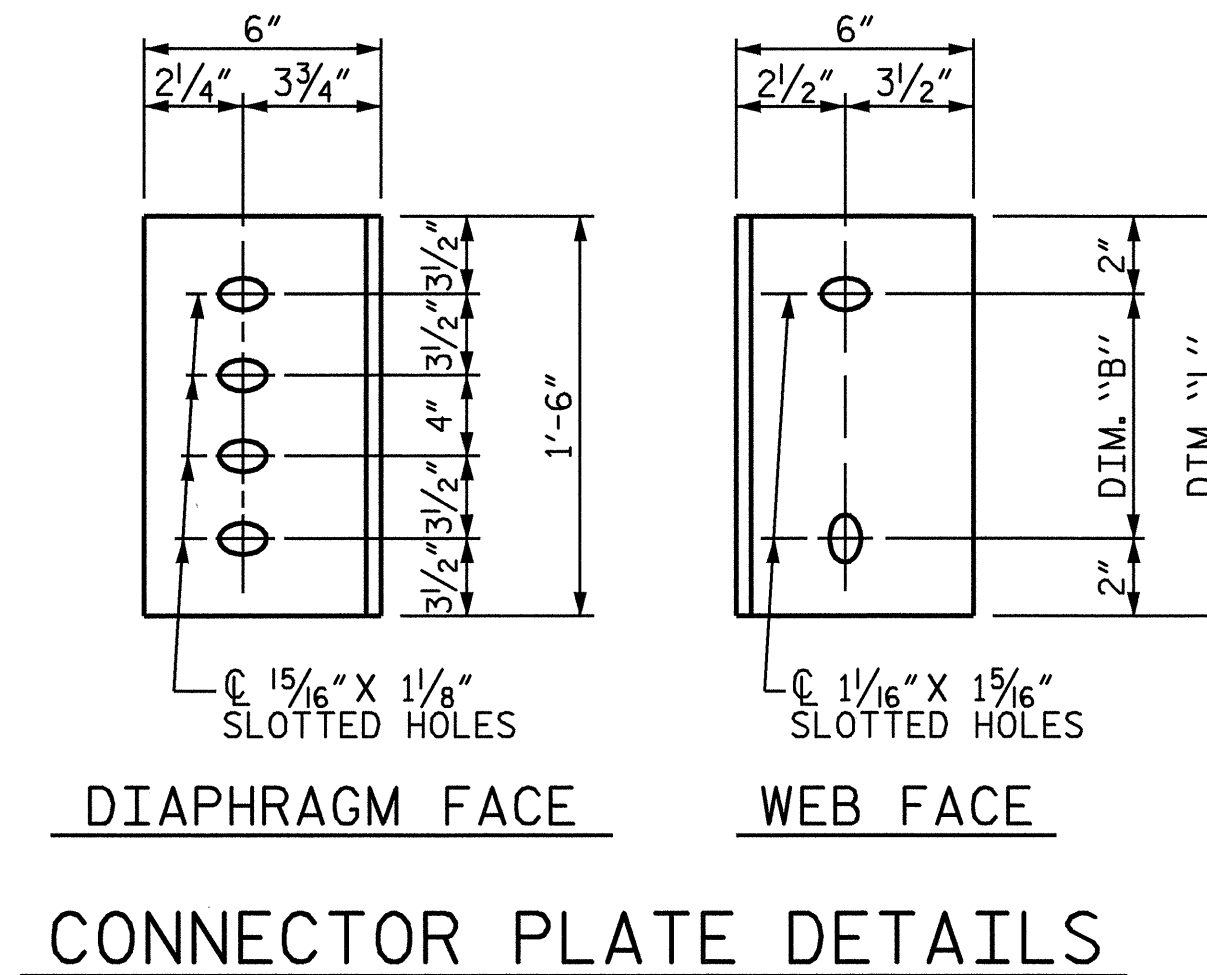
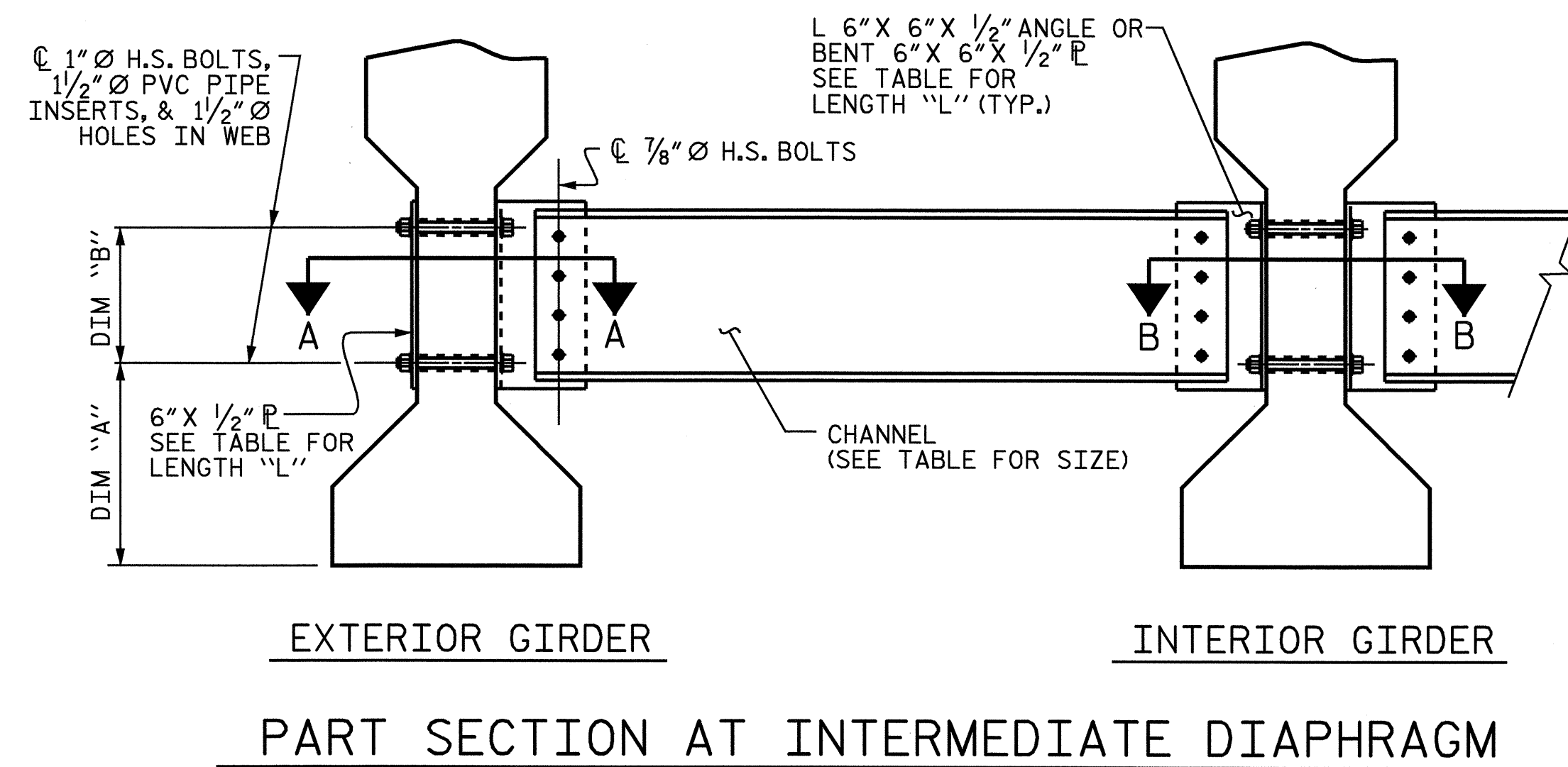
PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

CONTRACTOR SHALL 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, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

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



**TABLE**

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

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 5 OF 6



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : S. DOMBROWSKI DATE : 02/08  
 CHECKED BY : H. LOCKLEAR DATE : 04/08  
 DRAWN BY : TLA 6/05 ADDED 10/21/05  
 CHECKED BY : VC 6/05 REV. 5/1/06R KMM/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.

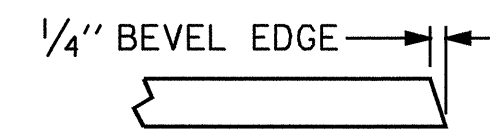
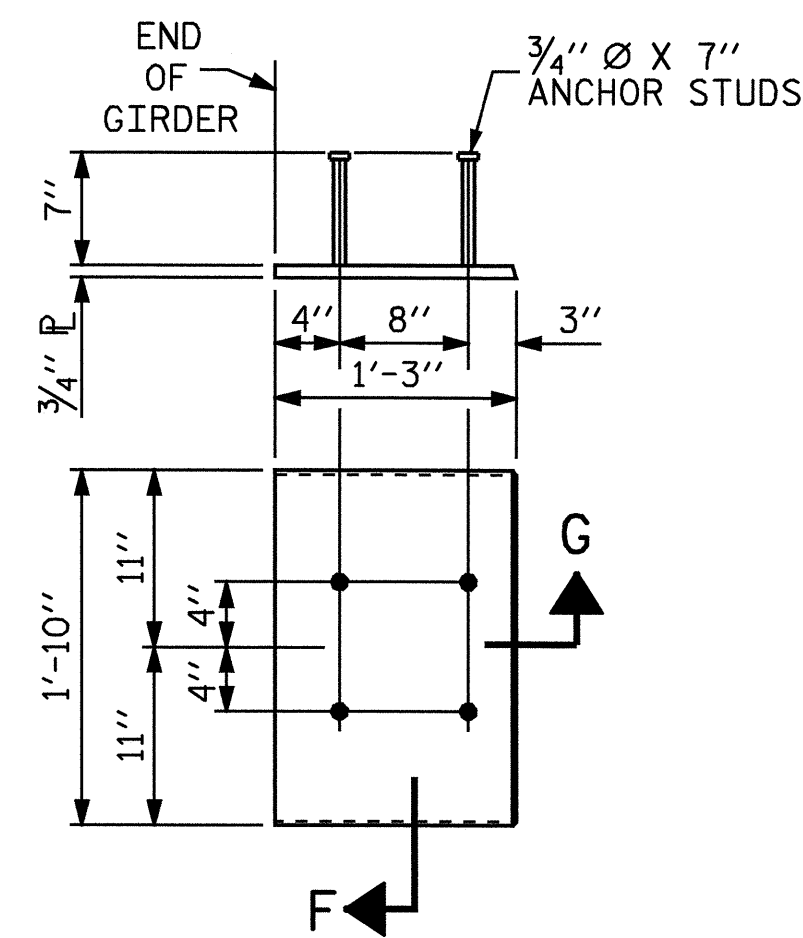
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI.

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

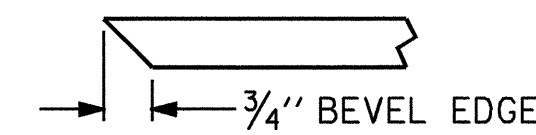
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



SECTION "G"



SECTION "F"

(SEE NOTES)

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

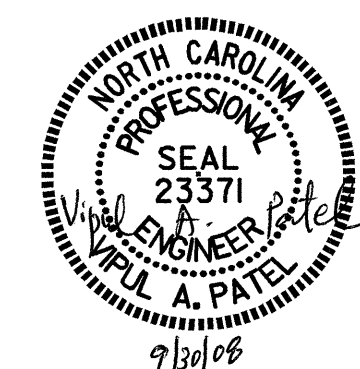
0.6" Ø LOW RELAXATION	SPAN A											SPAN B										SPAN C												
	GIRDERS											GIRDERS										GIRDERS												
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.000	0.021	0.040	0.055	0.064	0.067	0.064	0.055	0.040	0.021	0.000	0.000	0.045	0.085	0.117	0.137	0.144	0.137	0.117	0.085	0.045	0.000	0.000	0.019	0.036	0.049	0.057	0.060	0.057	0.049	0.036	0.019	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.009	0.017	0.023	0.027	0.029	0.027	0.023	0.017	0.009	0.000	0.000	0.016	0.030	0.042	0.049	0.051	0.049	0.042	0.030	0.016	0.000	0.000	0.006	0.011	0.015	0.018	0.019	0.018	0.015	0.011	0.006	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0	0	3/8"	11/16"	7/8"	11/16"	11/8"	11/16"	7/8"	11/16"	3/8"	0	0	1/8"	5/16"	7/16"	7/16"	1/2"	7/16"	7/16"	5/16"	1/8"	0

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

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

SHEET 6 OF 6

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



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			35	

ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : ELR 11/91	REV. 10/17/00 RWW/LES
CHECKED BY : GRP 11/91	REV. 7/10/01RR LES/RDR
	REV. 5/1/06 TLA/GM



**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.

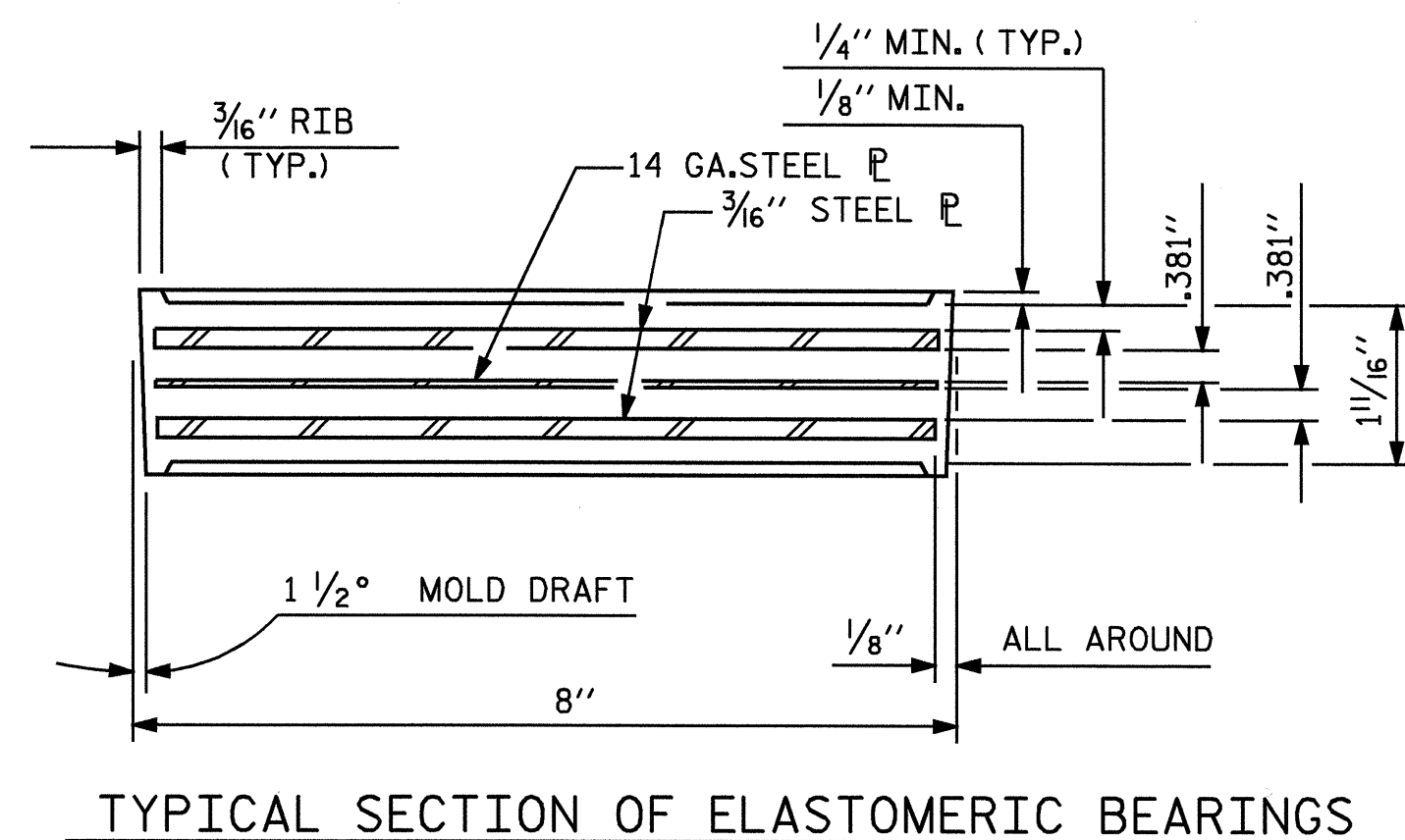
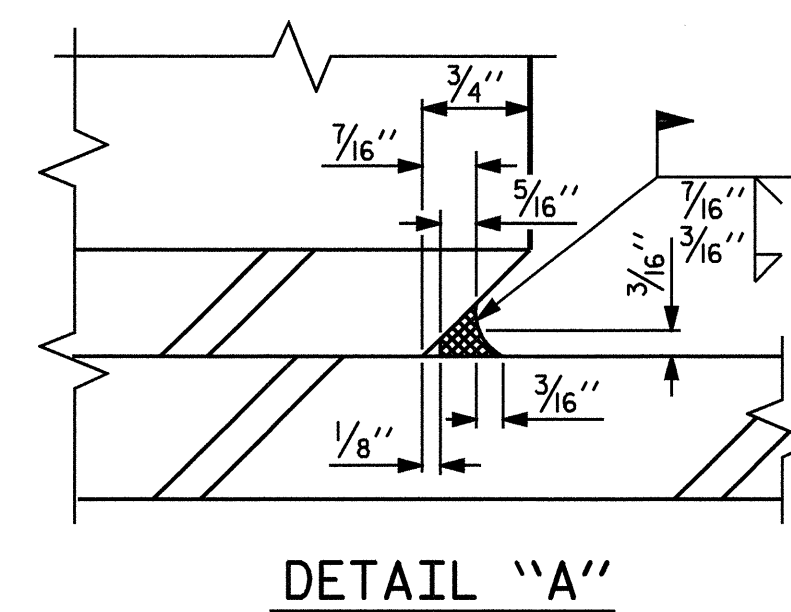
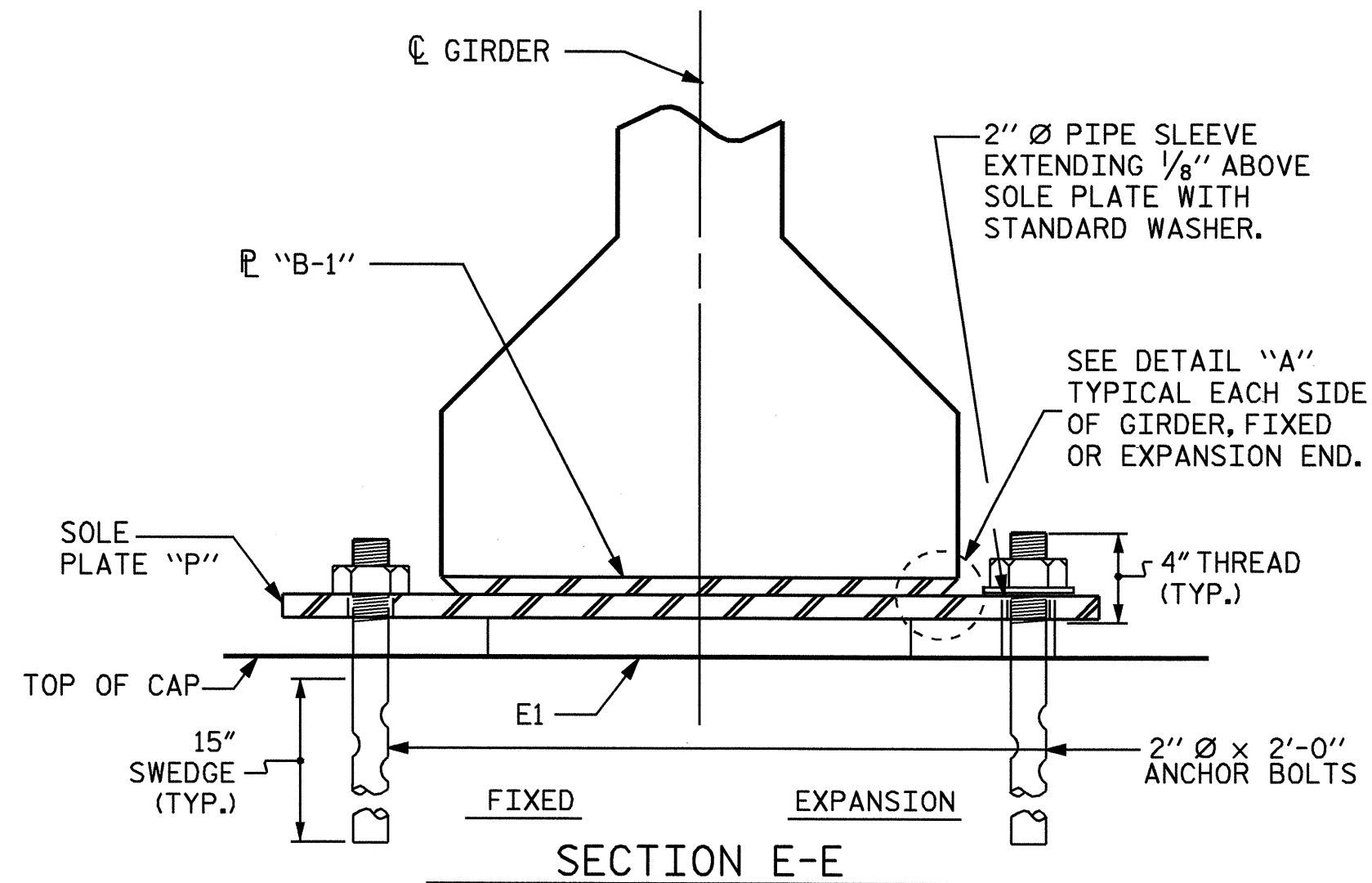
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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

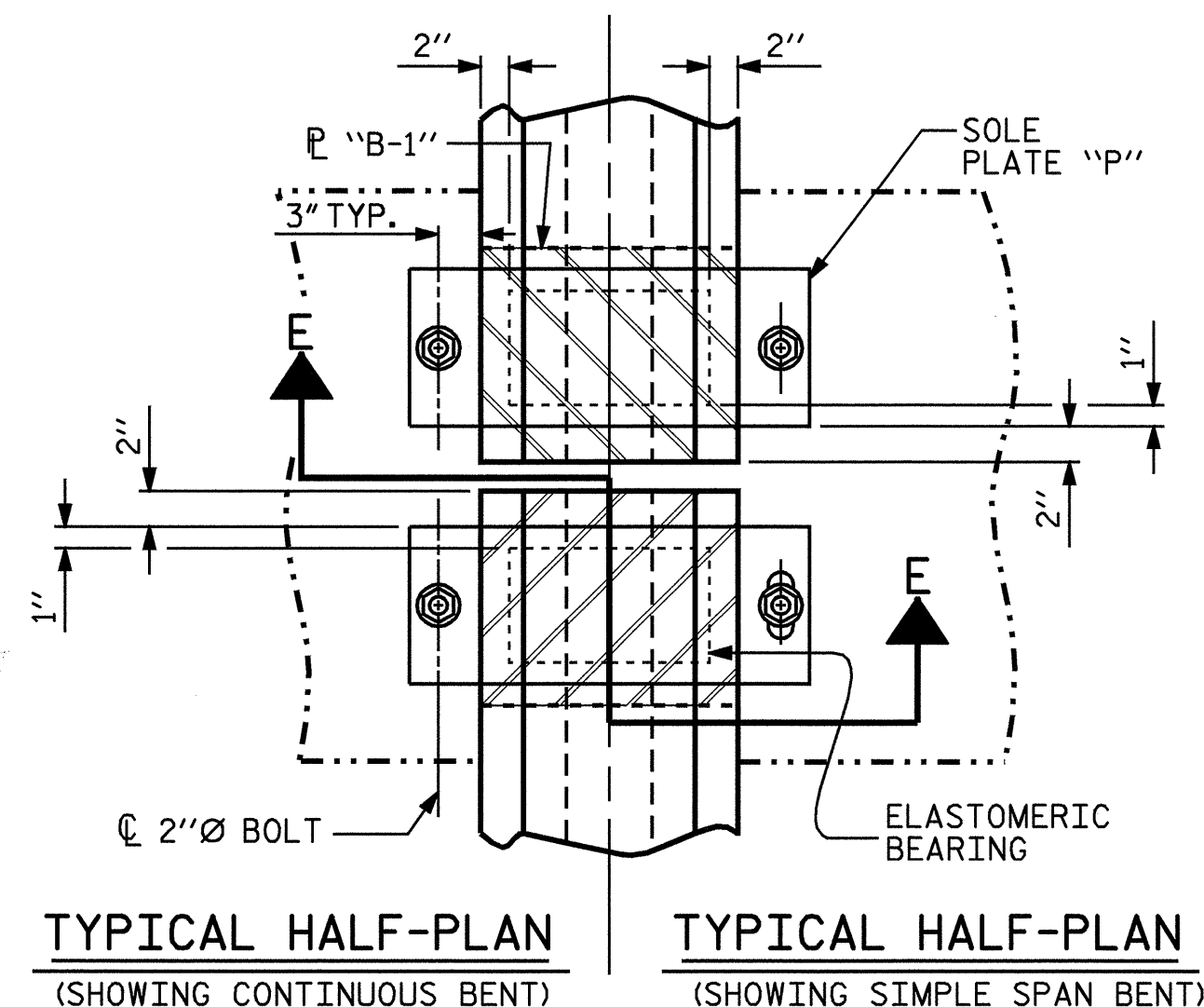
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

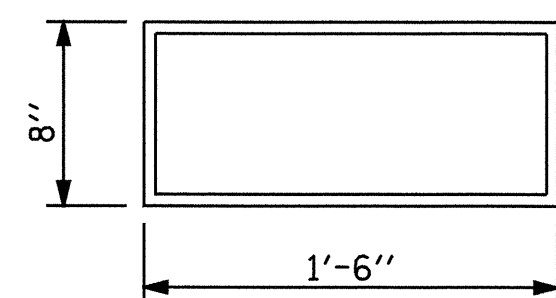
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



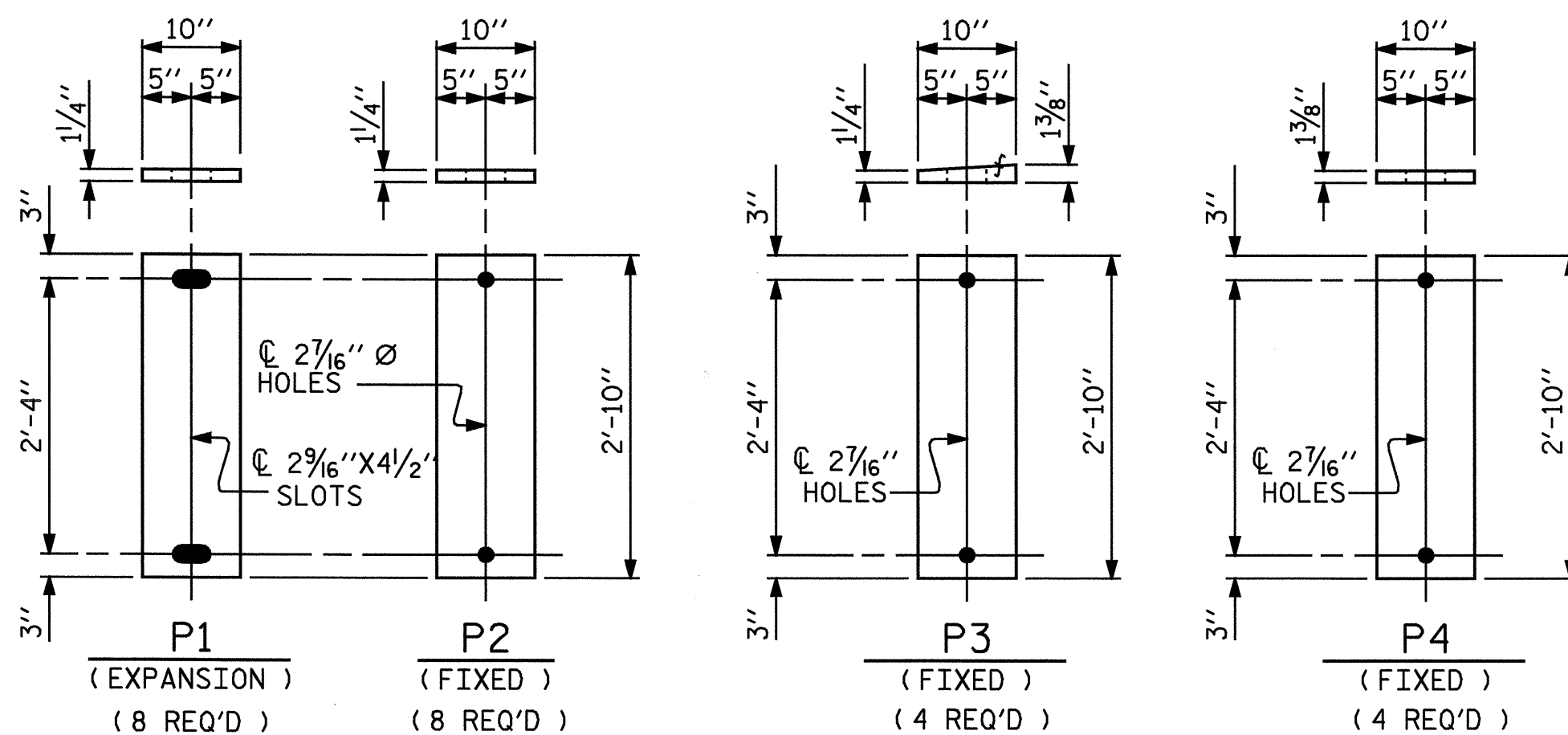
— LOAD RATING —	
	MAX.D.L.+L.L.
45" PCG -TYPE III	144 K



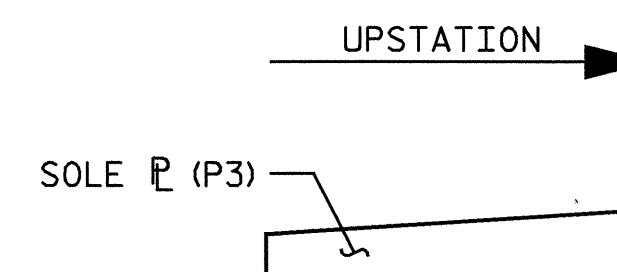
E1 (24 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE III



SOLE PLATE DETAILS ("P")



SOLE P PLACEMENT DETAIL

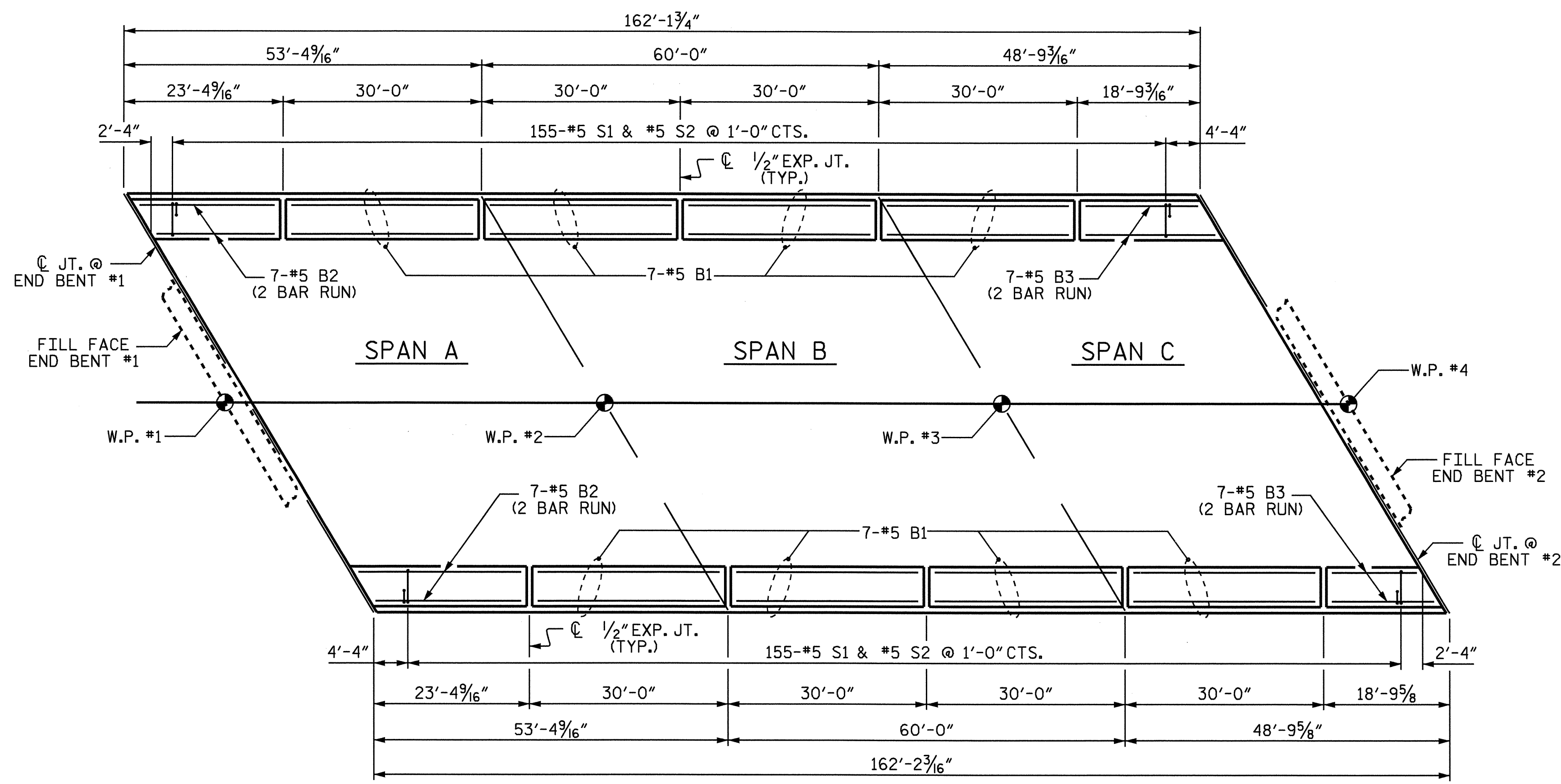
PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

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



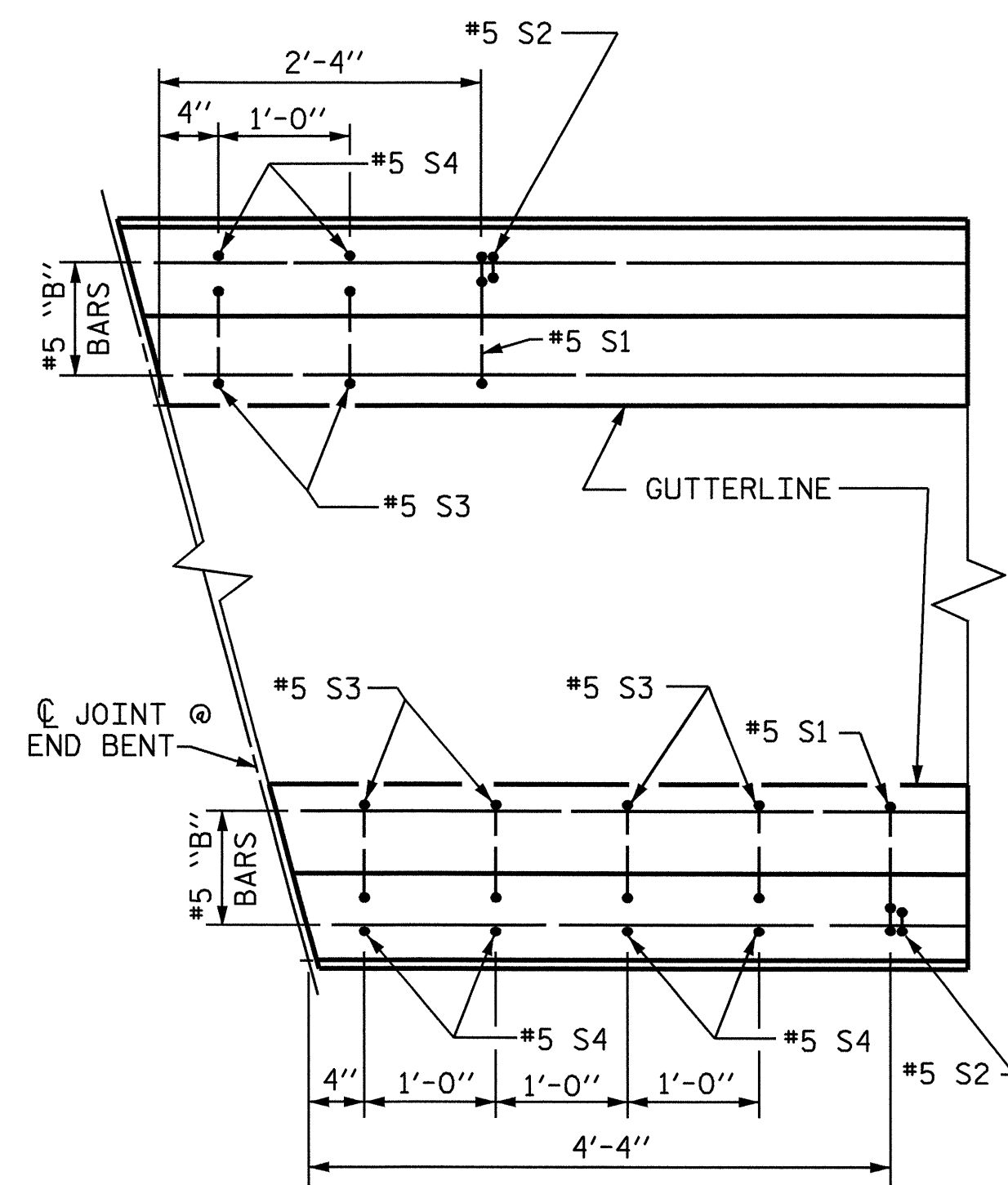
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : WJH 8/89	REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89	REV. 7/10/01 RWW/LES
	REV. 5/1/06 TLA/GM

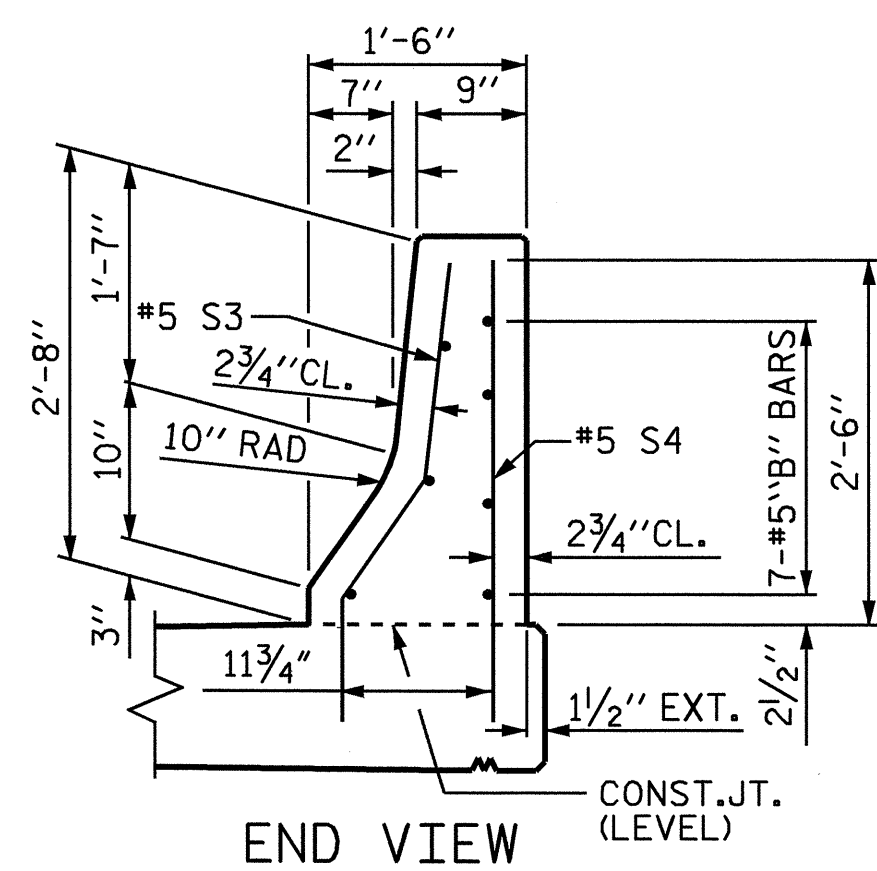


**PLAN**

SEE "END OF RAIL DETAILS" FOR ADDITIONAL REINFORCEMENT



**PLAN**



**END VIEW**

**END OF RAIL DETAILS**

FOR ADHESIVE ANCHORING AT SAWED JOINTS

**NOTES**

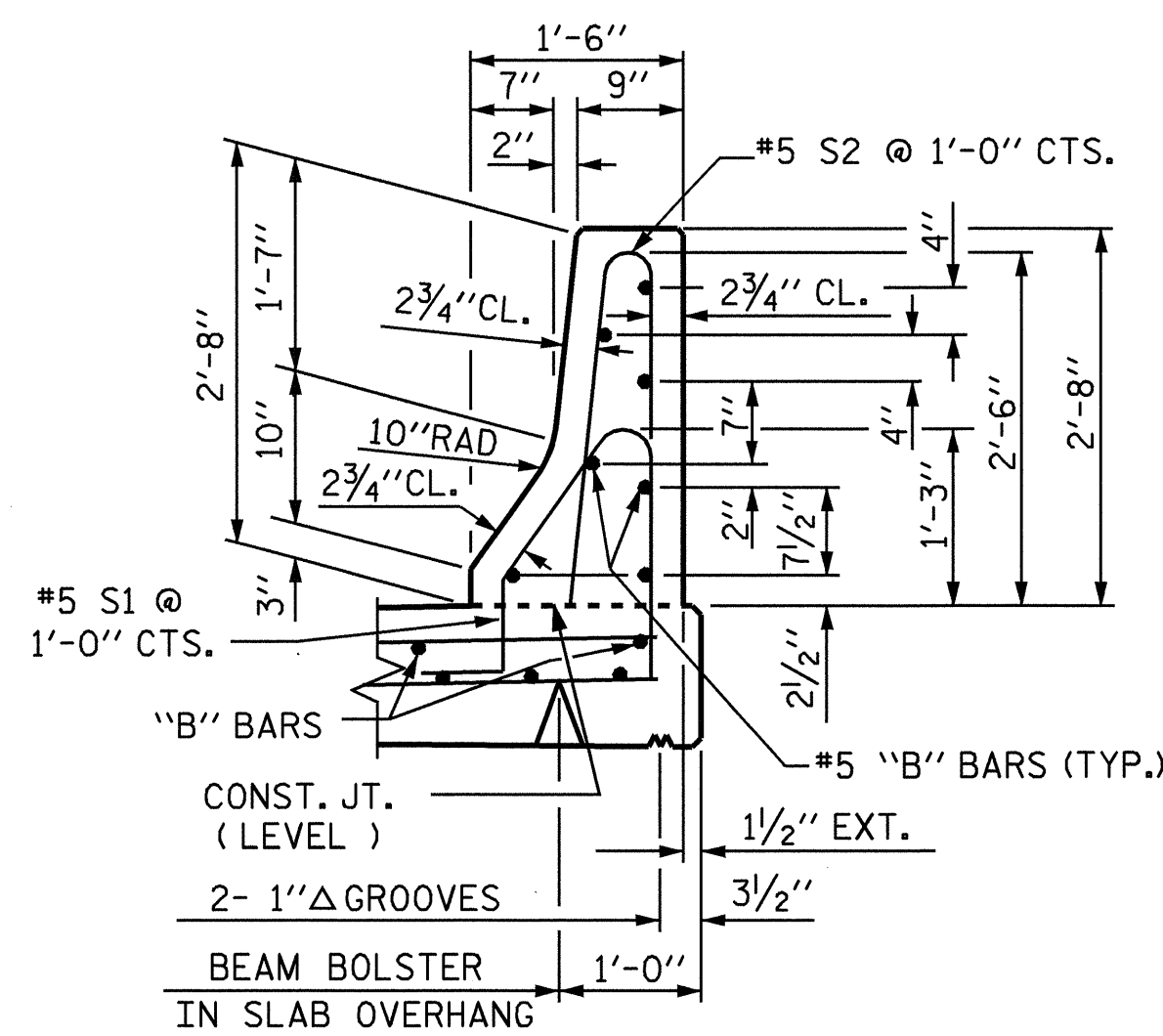
THE BARRIER RAIL IN EACH CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

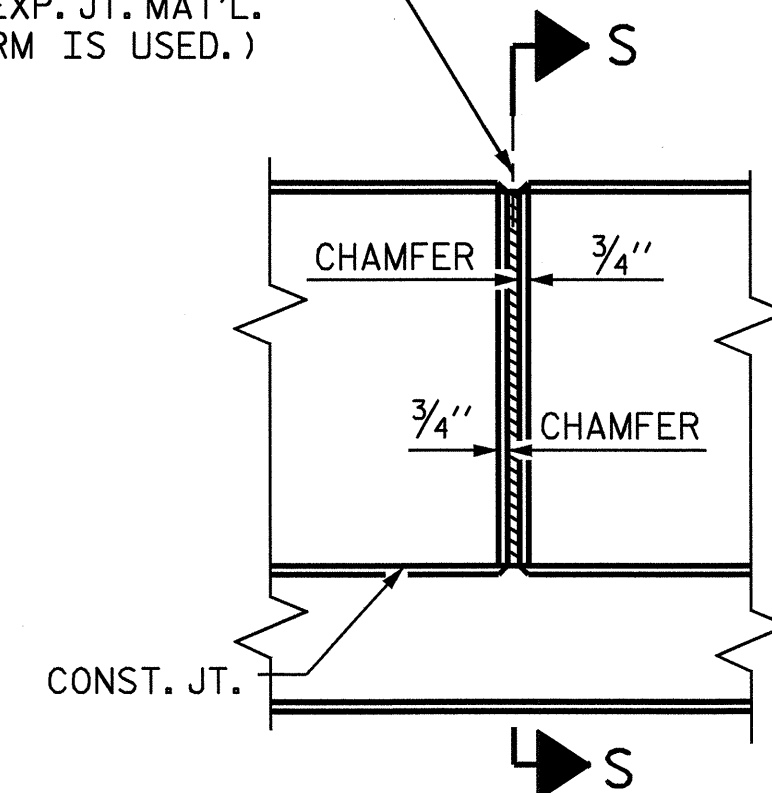
THE #5 S3 AND #5 S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 AND #5 S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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



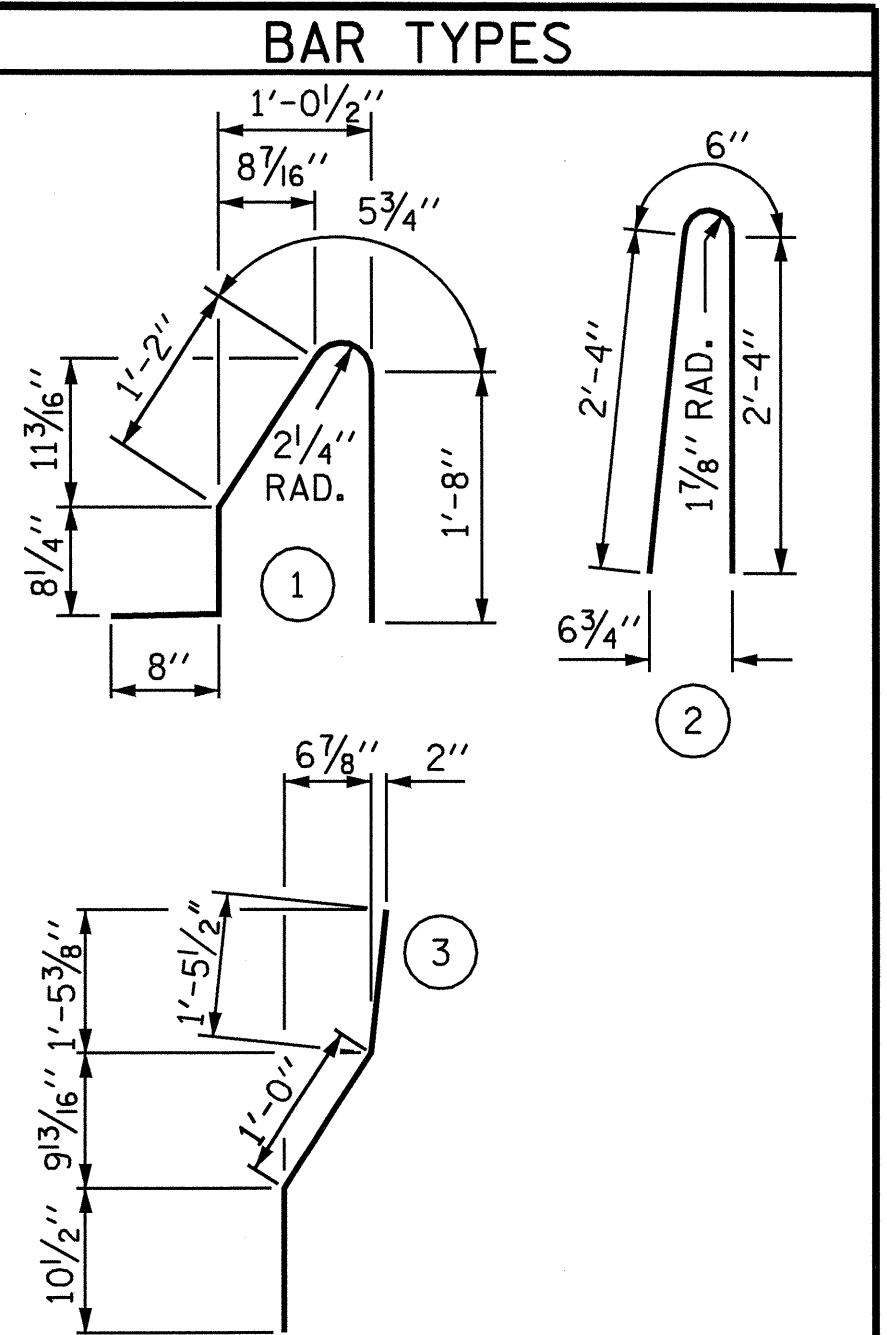
**SECTION THRU RAIL**

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



**ELEVATION AT EXPANSION JOINTS**

**BARRIER RAIL DETAILS**



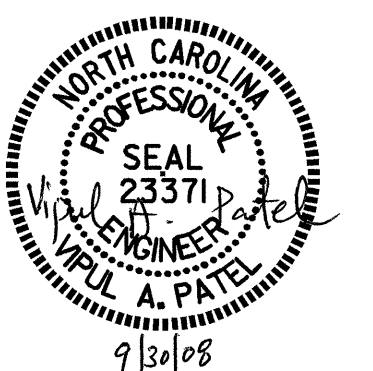
ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL**

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	310	#5	1	4'-8"	1509
* S2	310	#5	2	5'-2"	1671
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40
* B1	56	#5	STR	29'-7"	1728
* B2	28	#5	STR	13'-9"	402
* B3	28	#5	STR	11'-5"	333

\* EPOXY COATED REINFORCING STEEL 5725 LBS.  
CLASS AA CONCRETE 32.5 CU. YDS.  
CONCRETE BARRIER RAIL 324.33 LIN. FT.



PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 35
2			4			

STD. NO. CBR1 (SHT 3)

ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

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.)

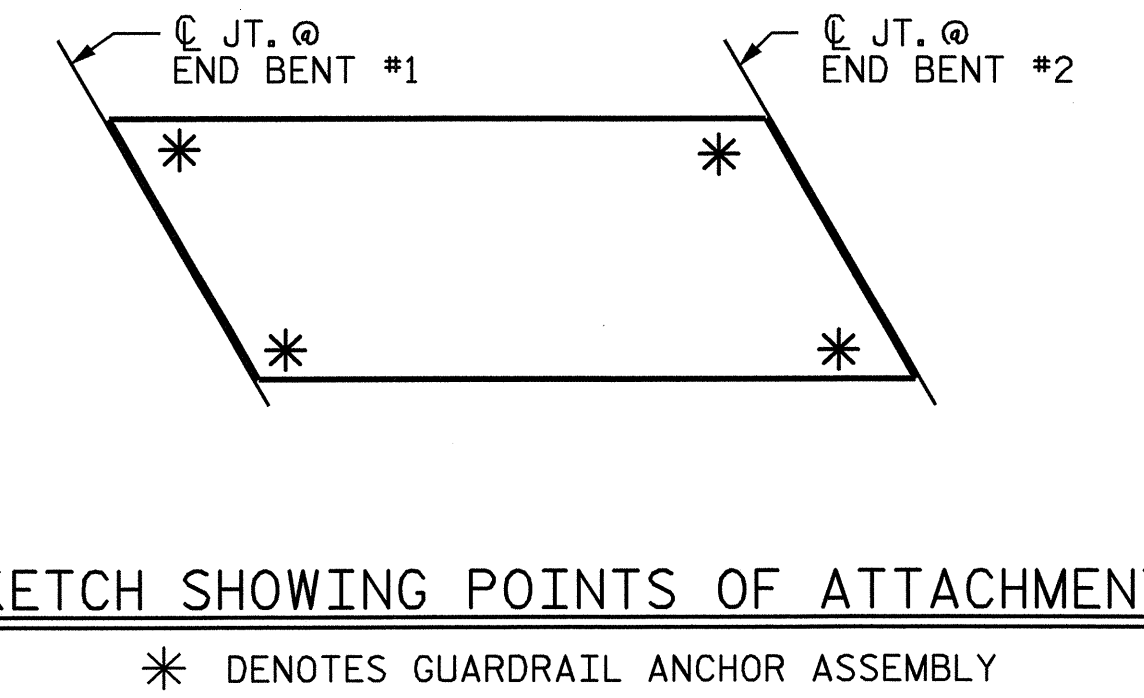
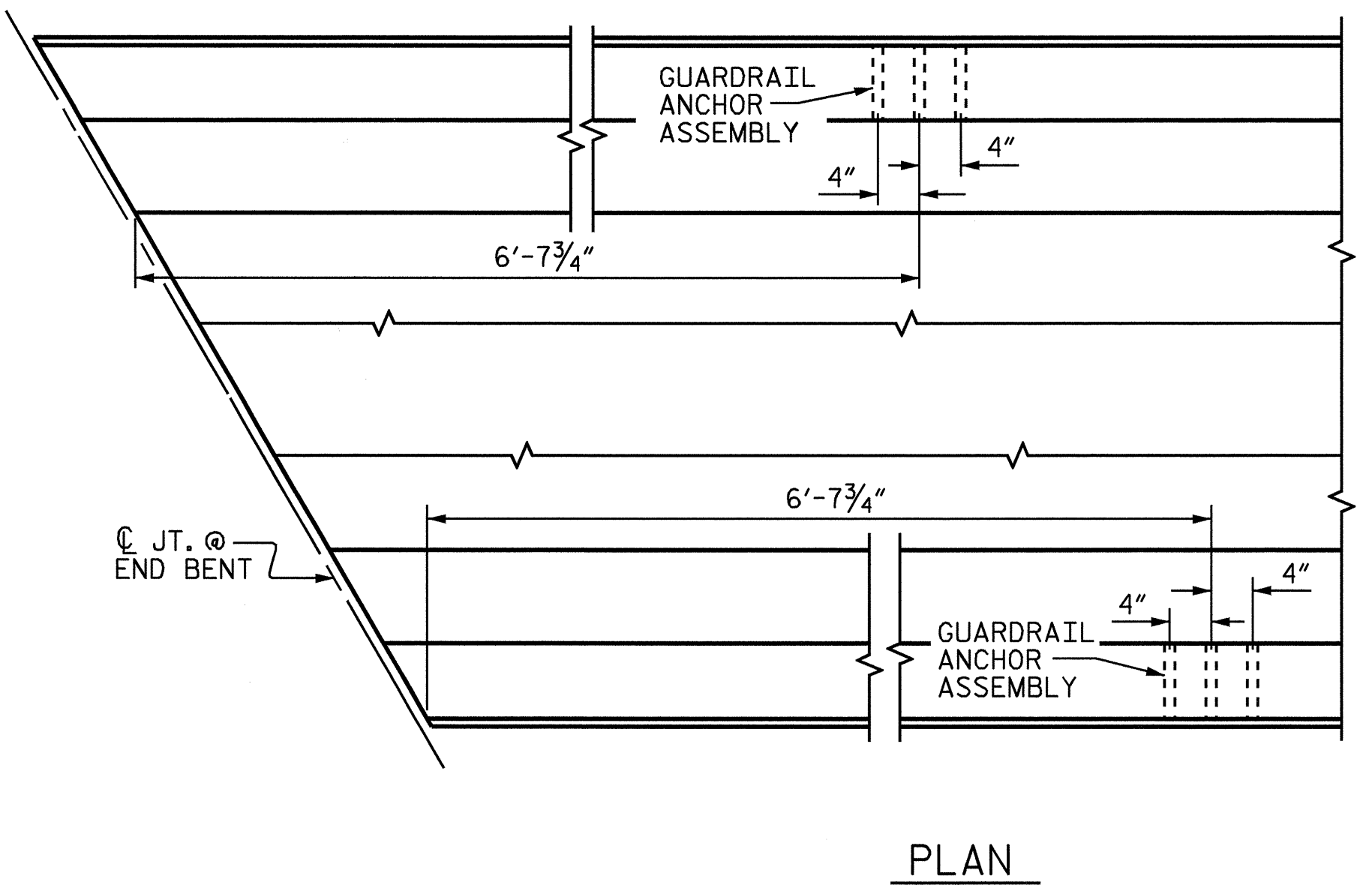
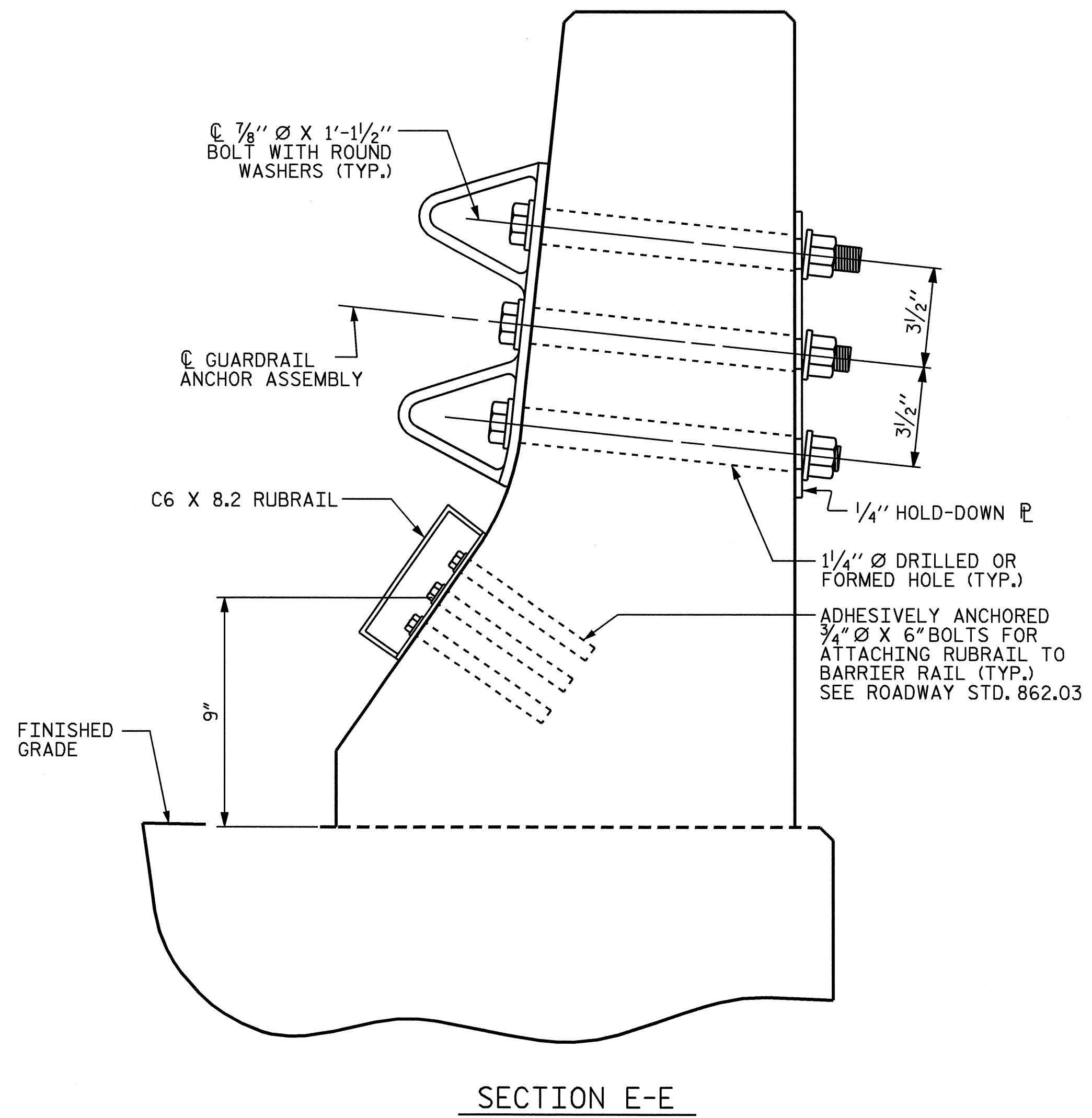
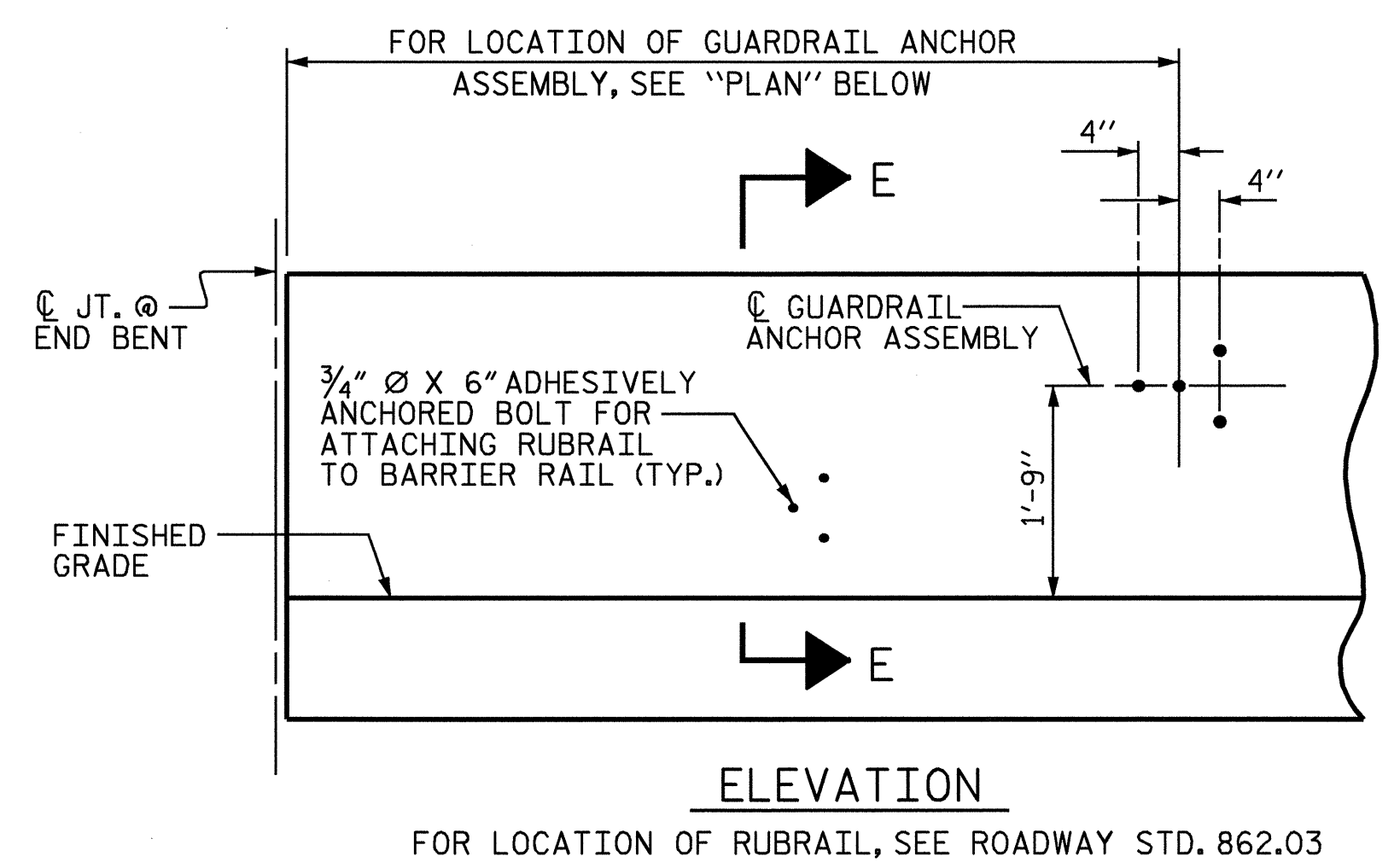
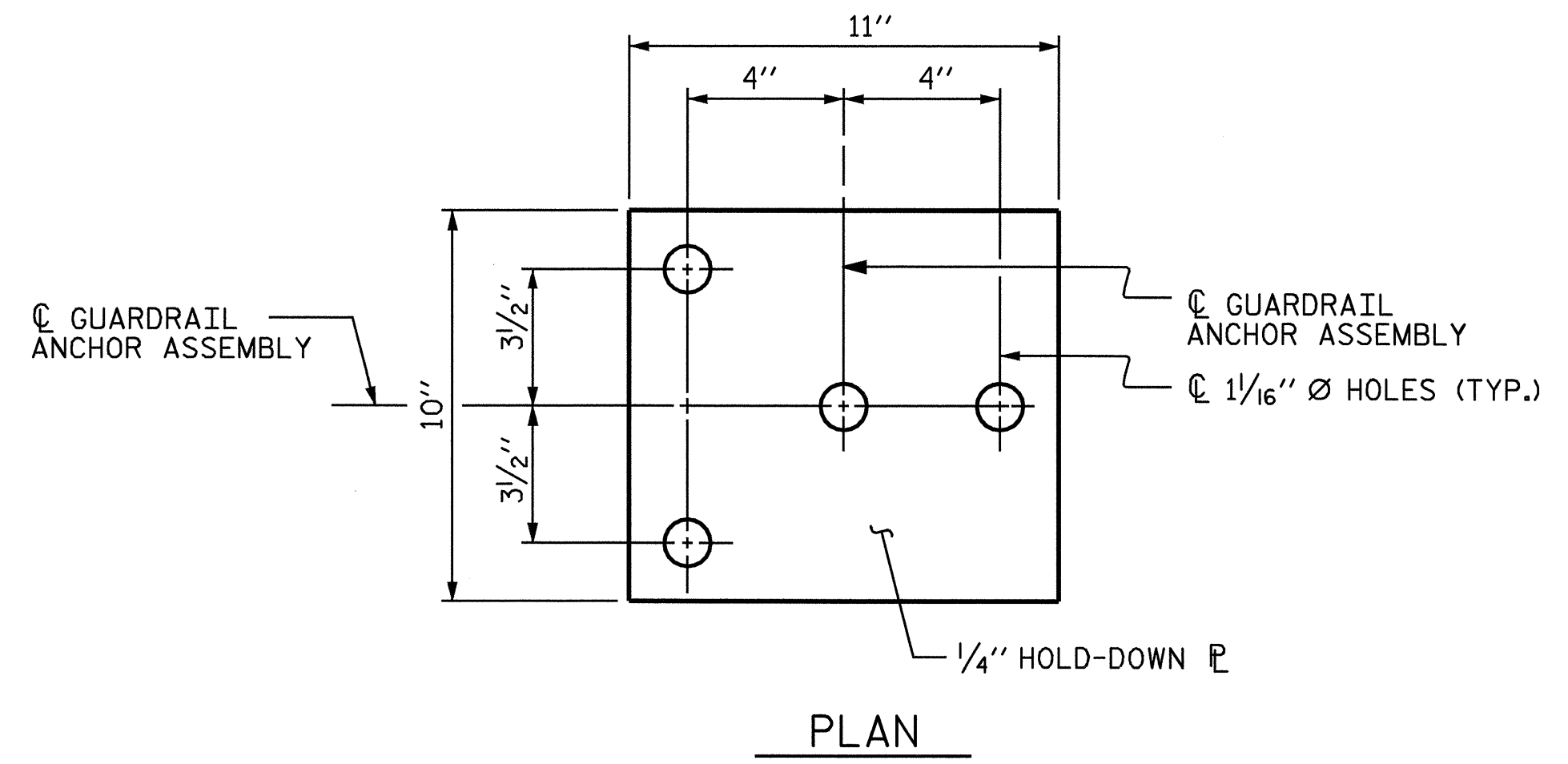
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

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

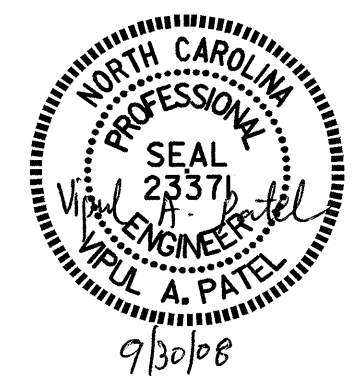
GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

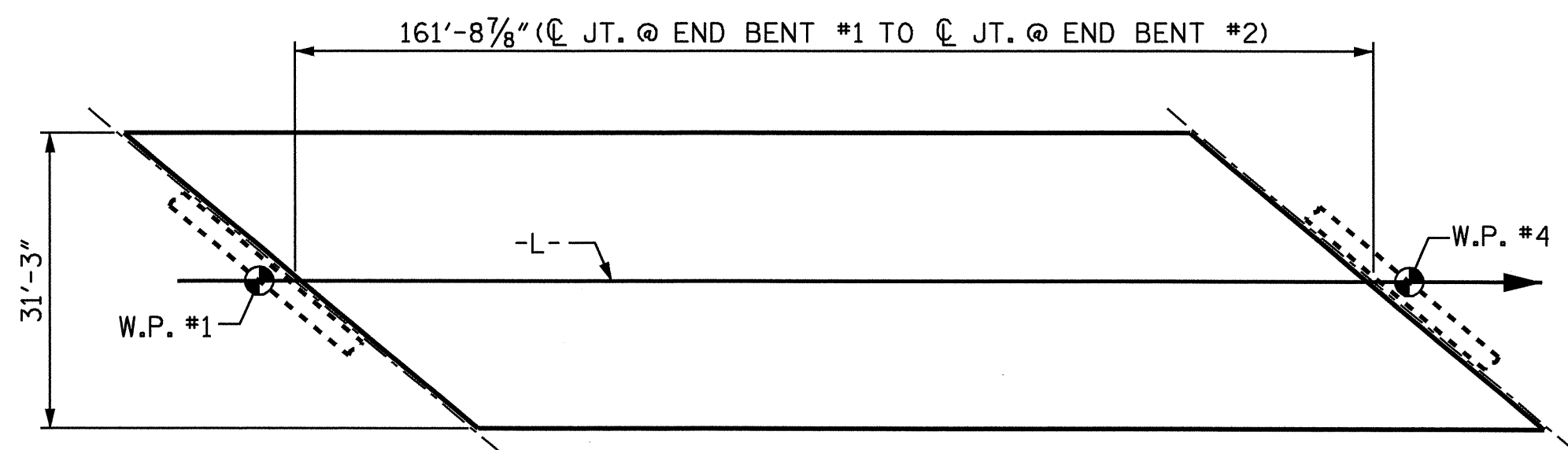
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS 35	
2			4				



ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

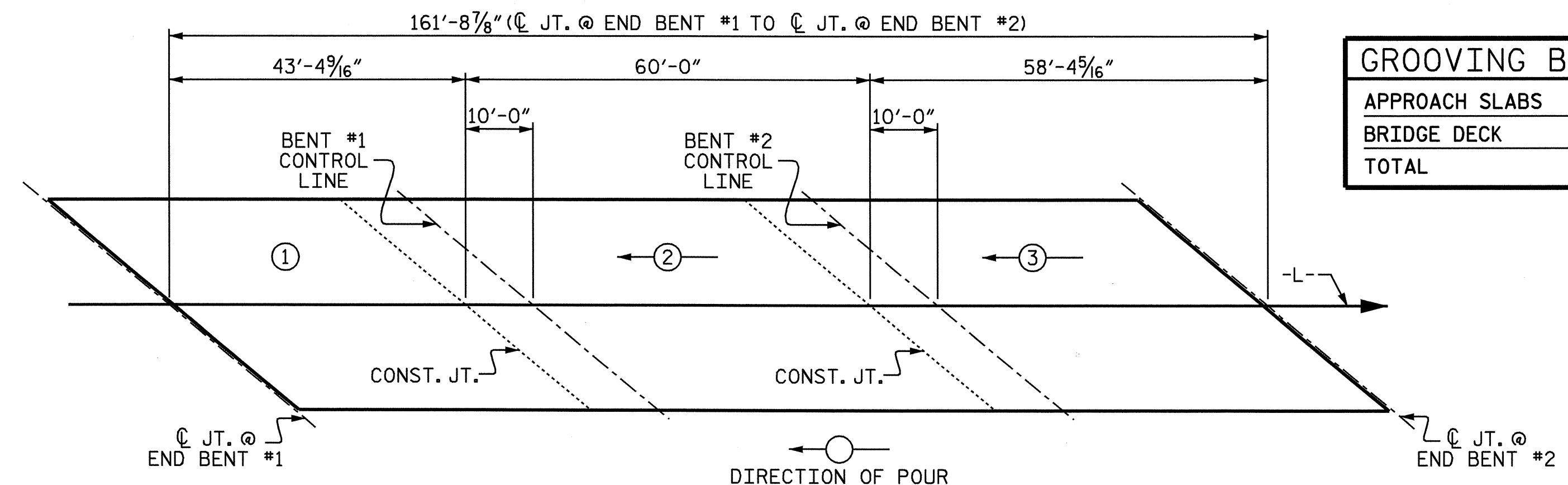
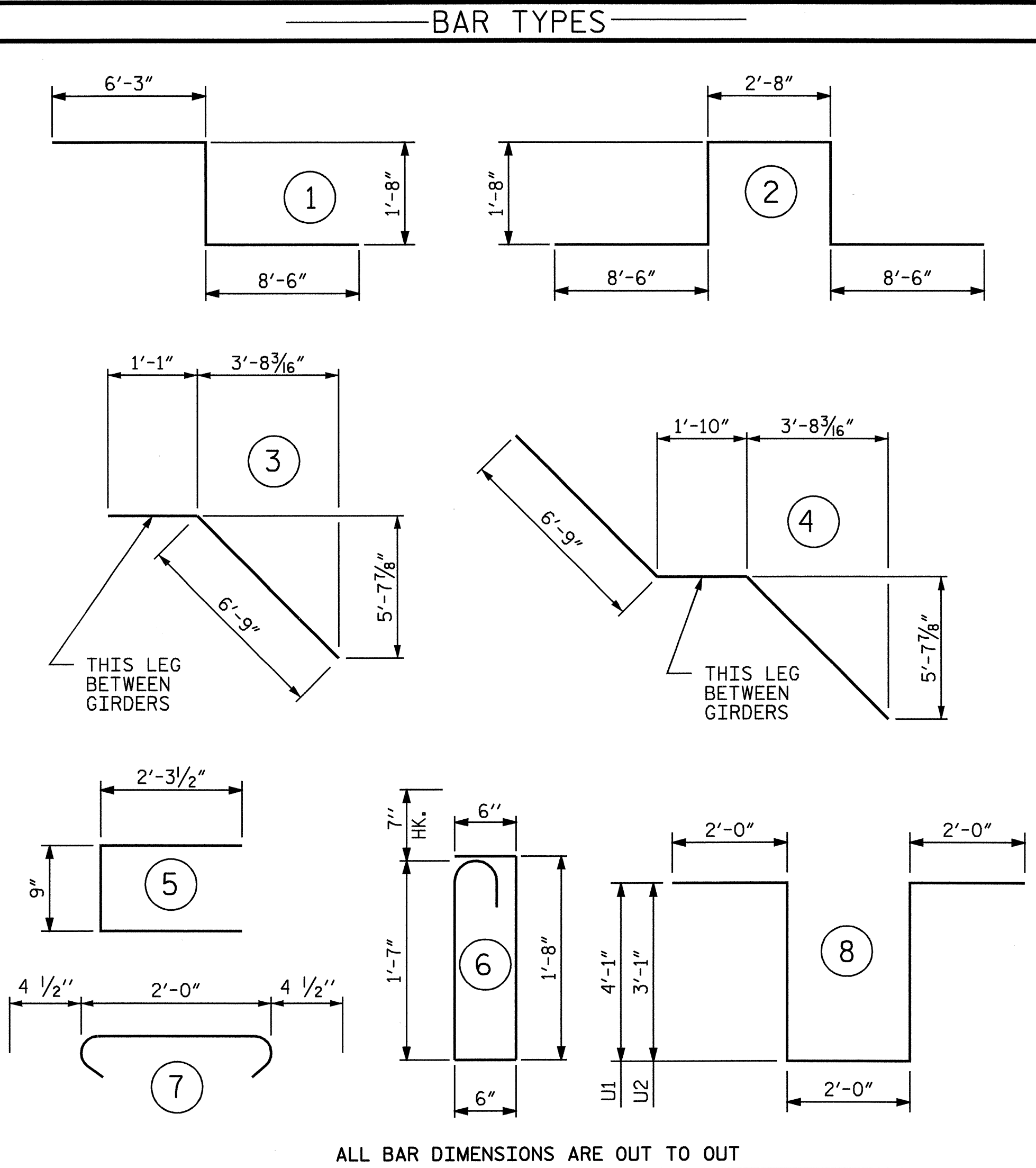
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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 OF REINFORCED CONCRETE DECK SLAB (SQ.FT. = 5,054)

BILL OF MATERIAL											
SPANS A, B & C											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	214	#5	STR	30'-11"	6901	*B1	69	#4	STR	18'-0"	830
*A101	8	#5	STR	28'-11"	241	*B2	23	#7	STR	44'-0"	2069
*A102	8	#5	STR	26'-11"	225	*B3	40	#7	STR	17'-0"	1390
*A103	8	#5	STR	25'-0"	209	*B4	23	#7	STR	42'-6"	1998
*A104	8	#5	STR	23'-0"	192	*B5	46	#4	STR	16'-5"	504
*A105	8	#5	STR	21'-1"	176	*B6	105	#5	STR	55'-4"	6060
*A106	8	#5	STR	19'-1"	159	*G1	4	#5	STR	25'-8"	107
*A107	8	#5	STR	17'-2"	143						
*A108	8	#5	STR	15'-2"	127	*K1	8	#8	1	16'-5"	351
*A109	8	#5	STR	13'-3"	111	*K2	8	#8	2	23'-0"	491
*A110	8	#5	STR	11'-3"	94	*K3	18	#6	STR	10'-0"	270
*A111	8	#5	STR	9'-4"	78	K4	12	#4	STR	7'-6"	60
*A112	8	#5	STR	7'-4"	61	K5	24	#4	STR	11'-3"	180
*A113	8	#5	STR	5'-5"	45	K6	12	#4	STR	10'-0"	80
*A114	8	#5	STR	3'-5"	29	K7	16	#4	3	7'-10"	84
*A115	8	#5	STR	1'-6"	13	K8	16	#4	4	15'-4"	164
A2	214	#5	STR	30'-11"	6901	*S1	54	#4	5	5'-4"	192
A201	8	#5	STR	28'-11"	241	*S2	54	#5	6	4'-10"	272
A202	8	#5	STR	26'-11"	225	S3	132	#4	7	2'-9"	242
A203	8	#5	STR	25'-0"	209	U1	36	#4	8	14'-2"	341
A204	8	#5	STR	23'-0"	192	U2	12	#4	8	12'-2"	98
A205	8	#5	STR	21'-1"	176						
A206	8	#5	STR	19'-1"	159						
A207	8	#5	STR	17'-2"	143						
A208	8	#5	STR	15'-2"	127						
A209	8	#5	STR	13'-3"	111						
A210	8	#5	STR	11'-3"	94						
A211	8	#5	STR	9'-4"	78						
A212	8	#5	STR	7'-4"	61						
A213	8	#5	STR	5'-5"	45						
A214	8	#5	STR	3'-5"	29						
A215	8	#5	STR	1'-6"	13						
*A3	6	#6	STR	6'-9"	61						
										REINFORCING STEEL	= 10,052 LBS
										*EPOXY COATED REINFORCING STEEL	= 23,399 LBS

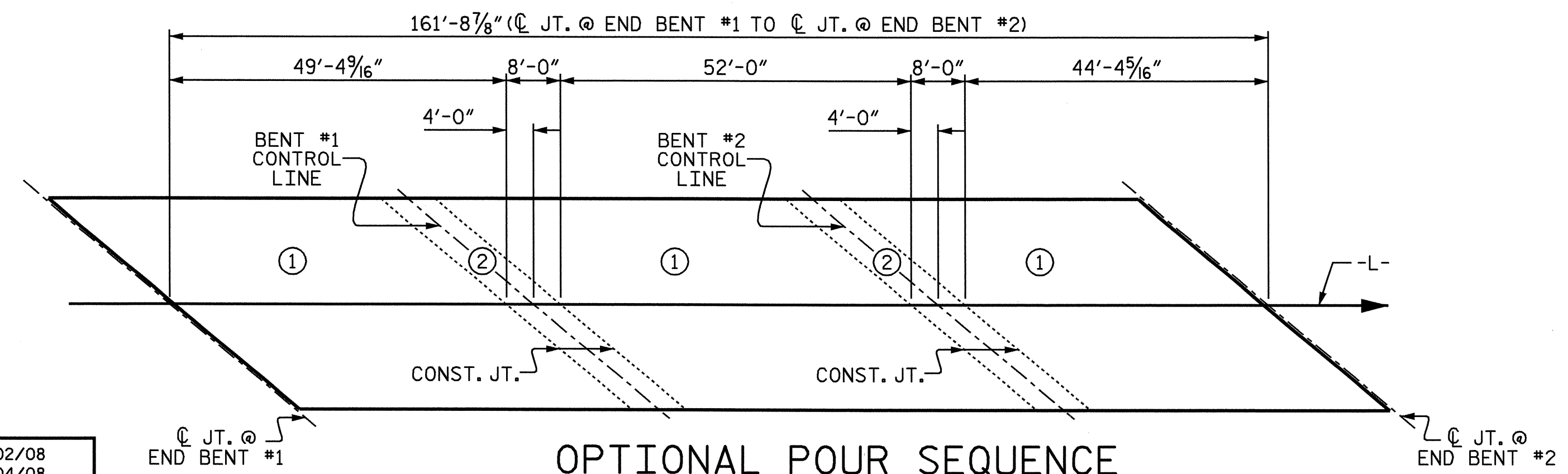


GROOVING BRIDGE FLOORS	
APPROACH SLABS	645 SQ.FT.
BRIDGE DECK	3,991 SQ.FT.
TOTAL	4,636 SQ.FT.

POUR SEQUENCE	
SPANS A, B & C	CLASS AA CONCRETE (CU. YDS.)
POUR #1	45.3
POUR #2	70.3
POUR #3	71.8
TOTALS**	187.4

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPANS A, B, & C	187.4	10,052	23,399
TOTALS**	187.4	10,052	23,399

\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



OPTIONAL POUR SEQUENCE  
POUR #2 CAN NOT BE STARTED UNTIL BOTH ADJACENT #1 POURS REACH A MINIMUM OF 3000 PSI

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35

ASSEMBLED BY : S. DOMBROWSKI	DATE : 02/08
CHECKED BY : H. LOCKLEAR	DATE : 04/08
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

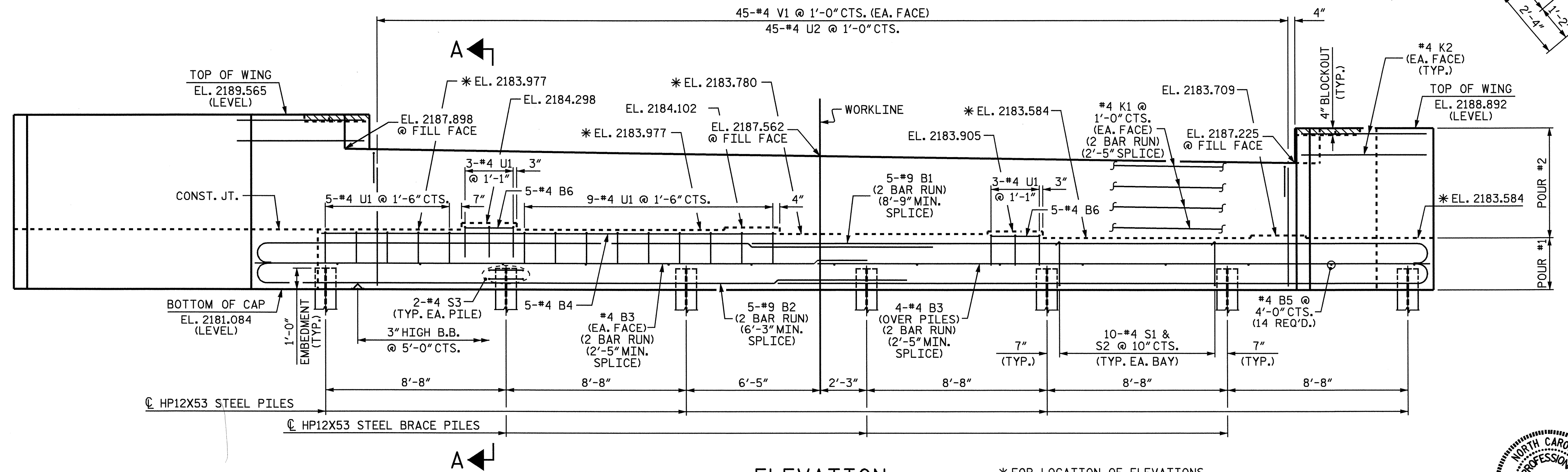
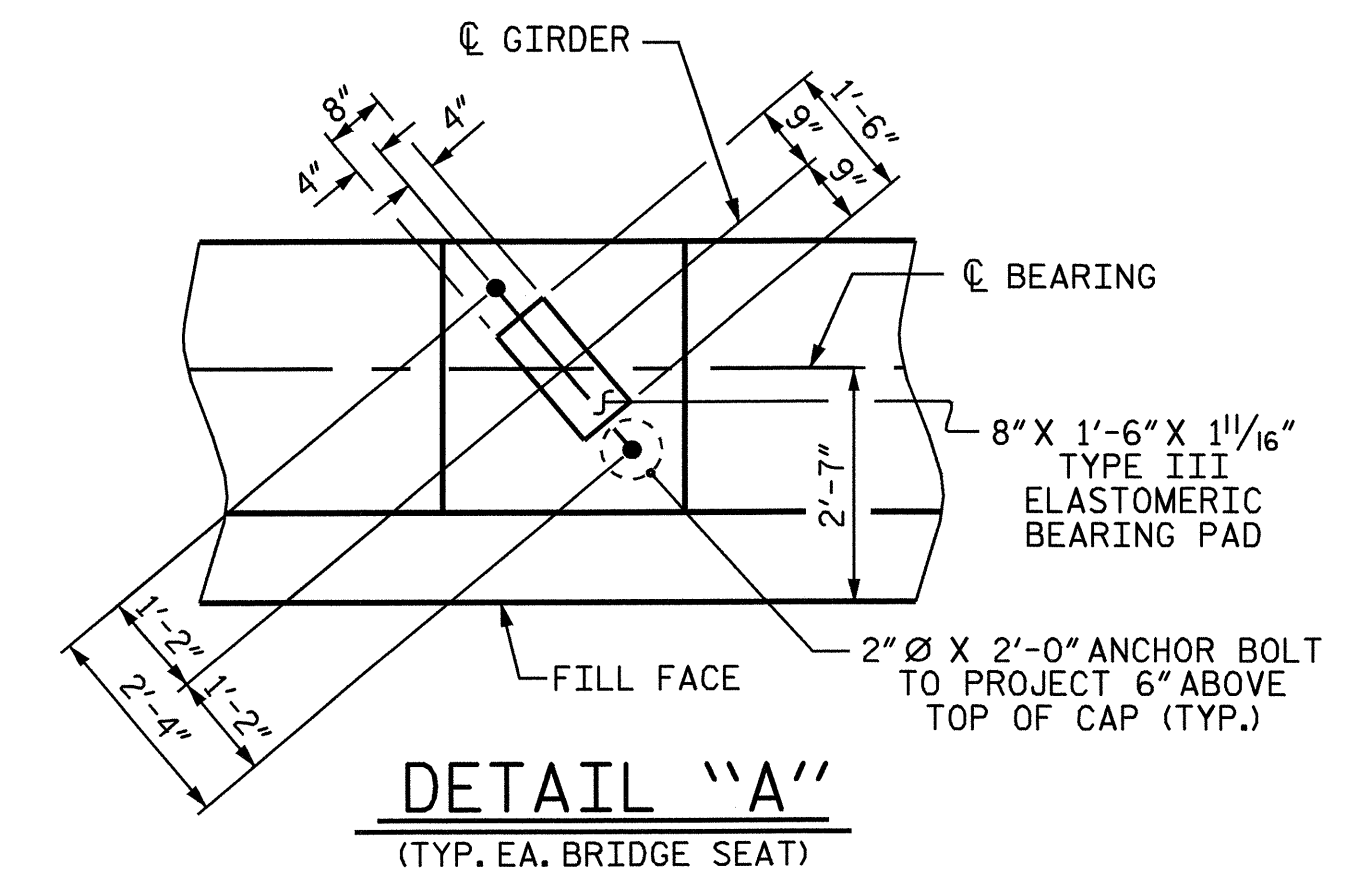
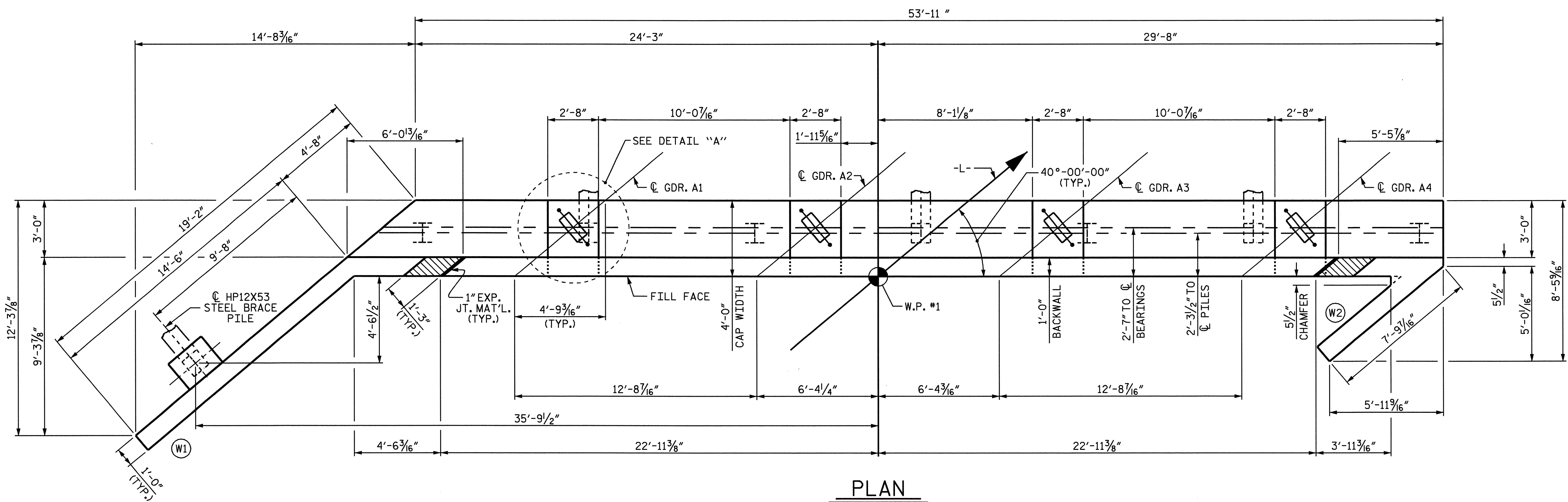
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

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

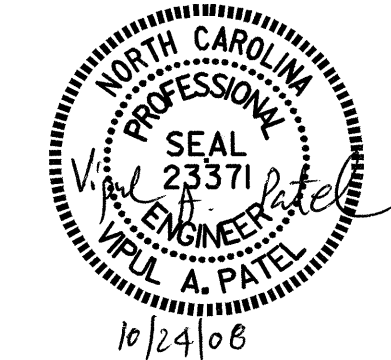


PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 3

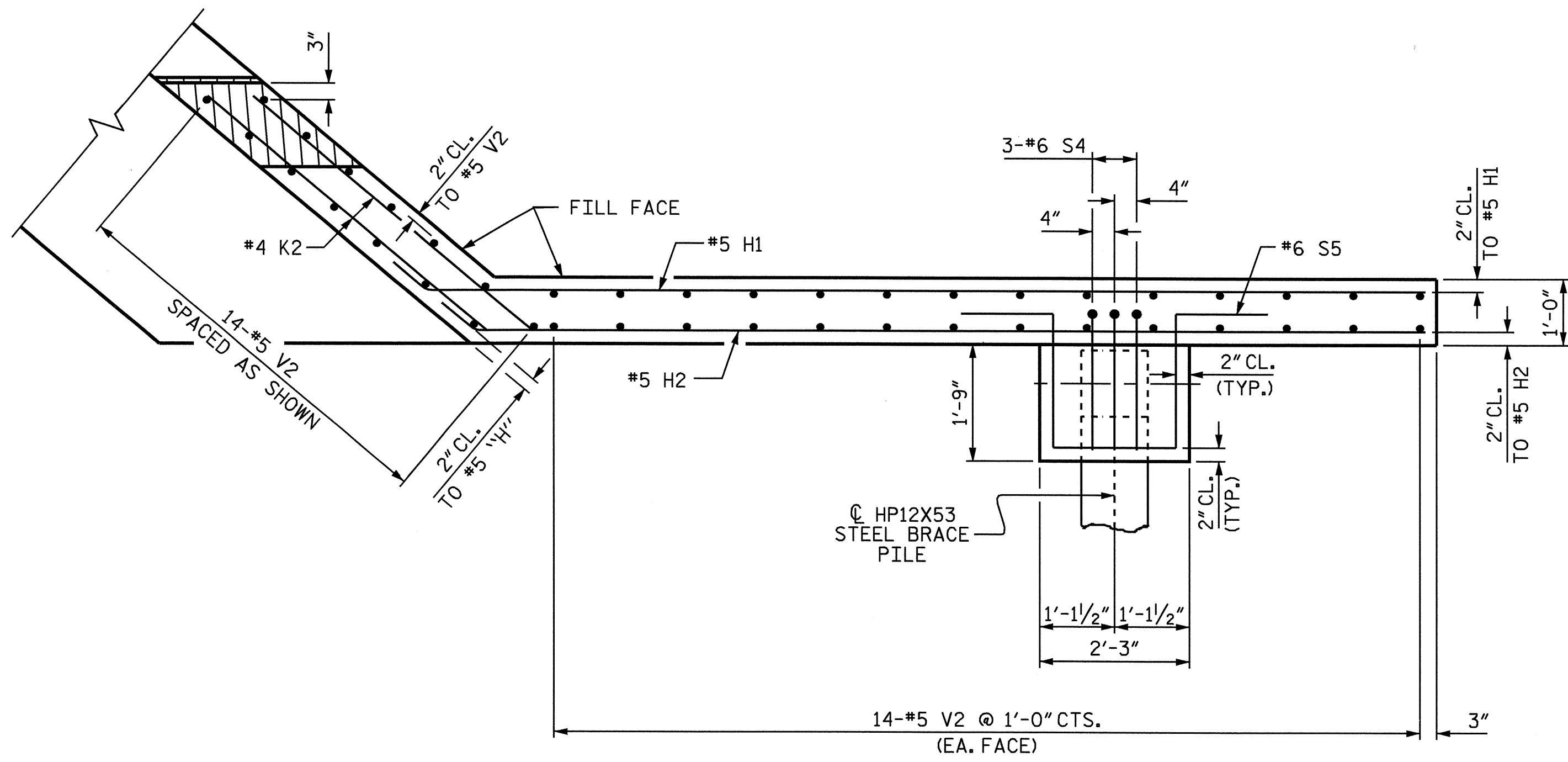
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1

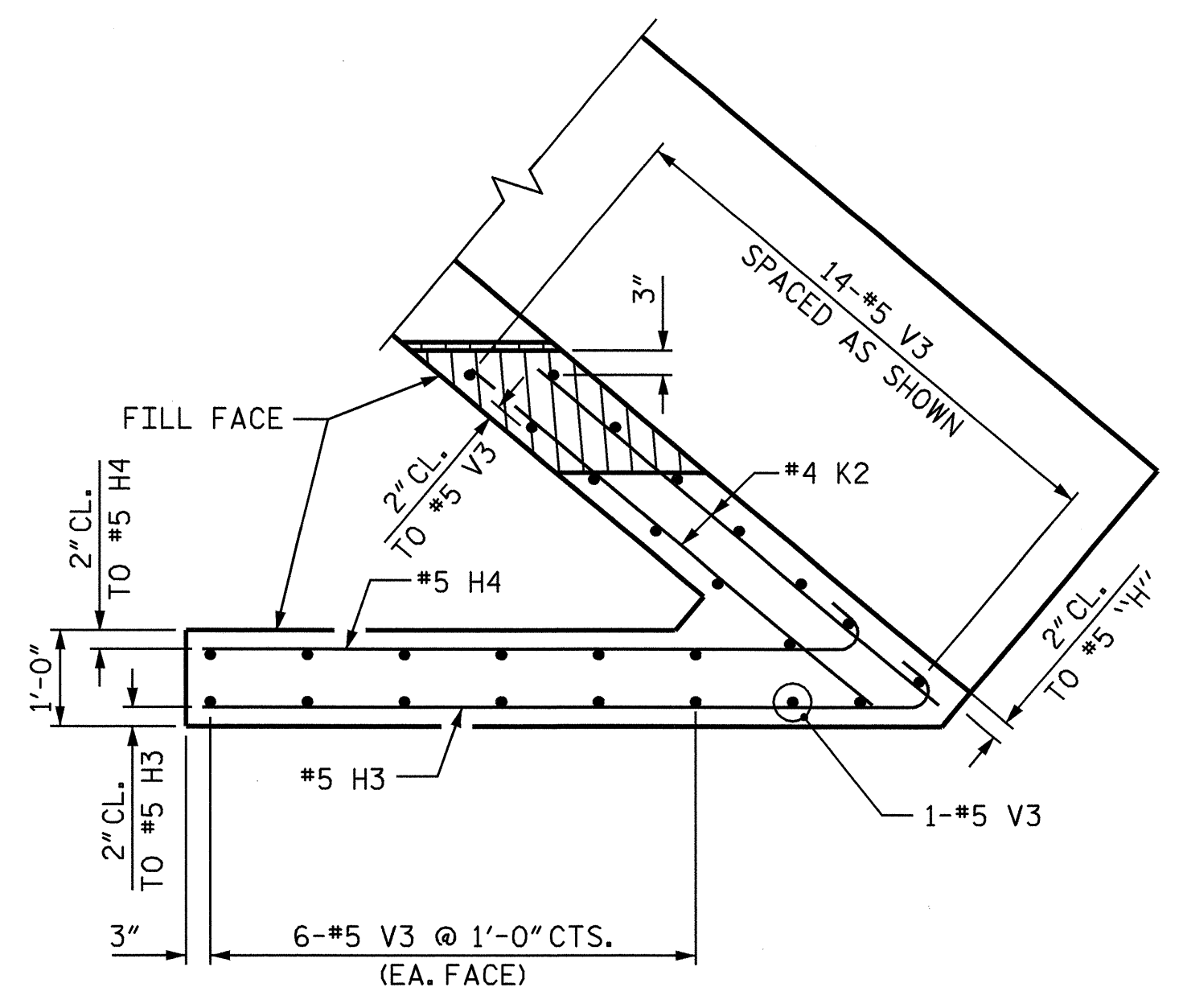


DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

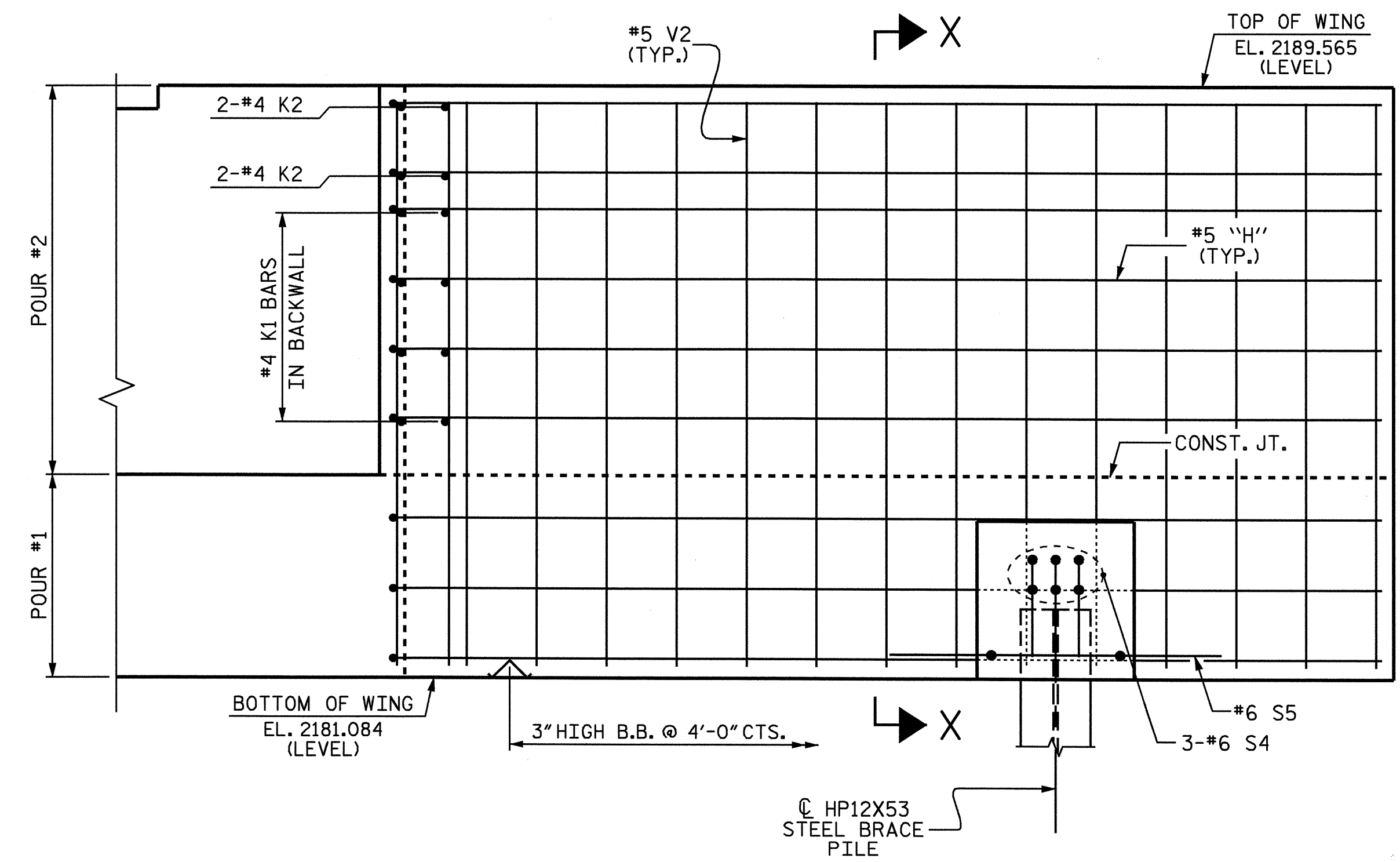
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			35



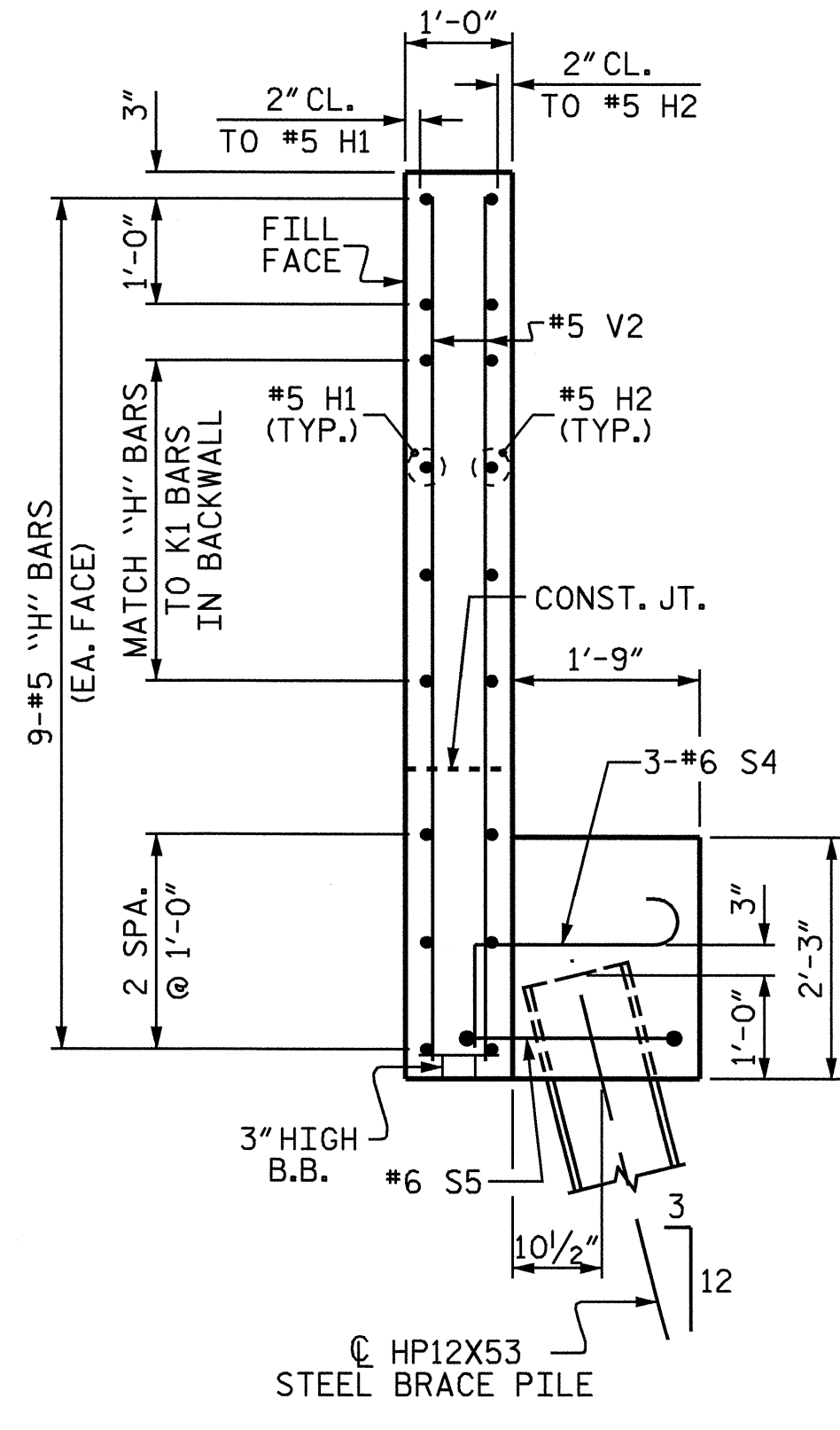
**PLAN OF WING - W1**



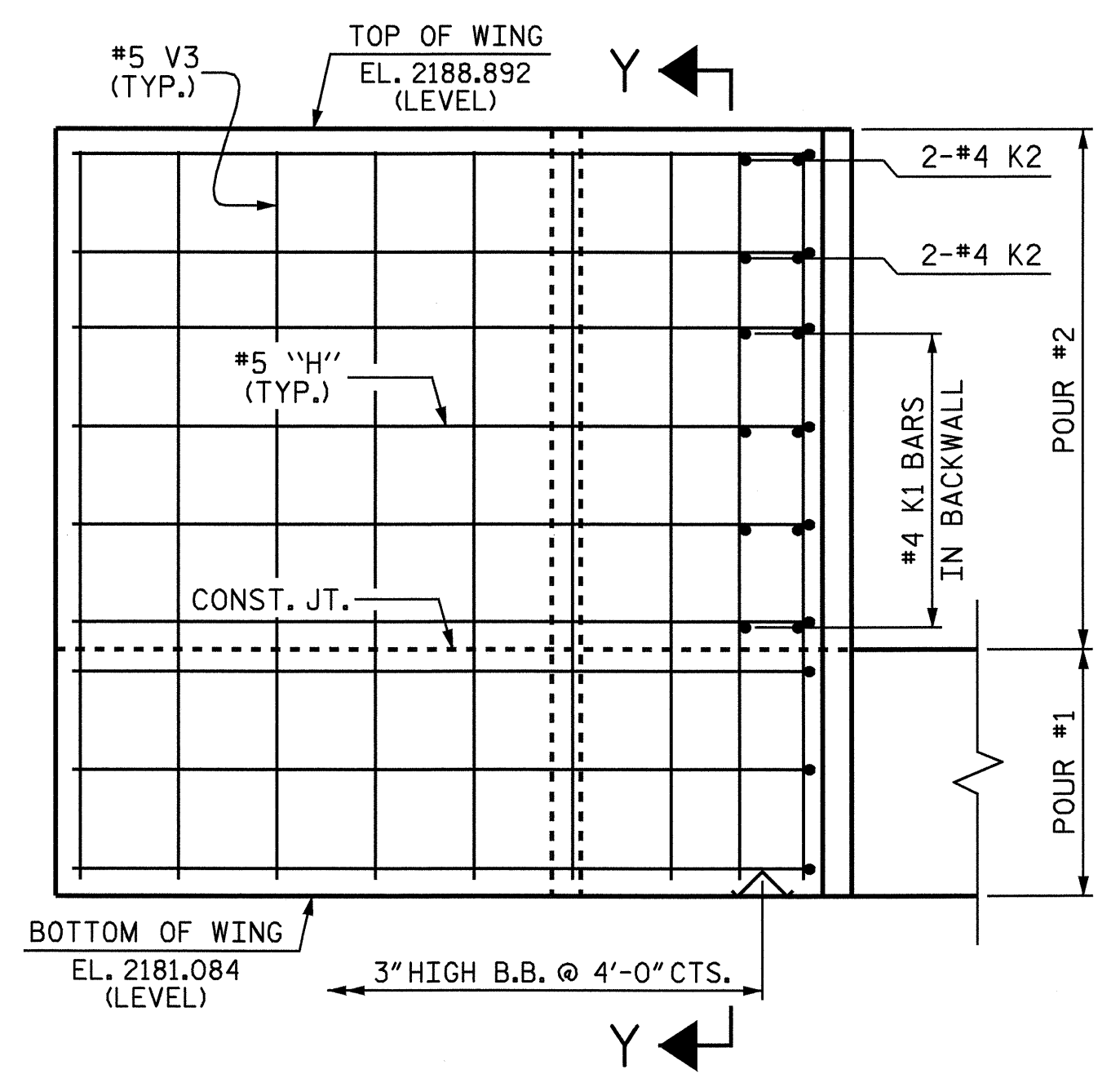
**PLAN OF WING - W2**



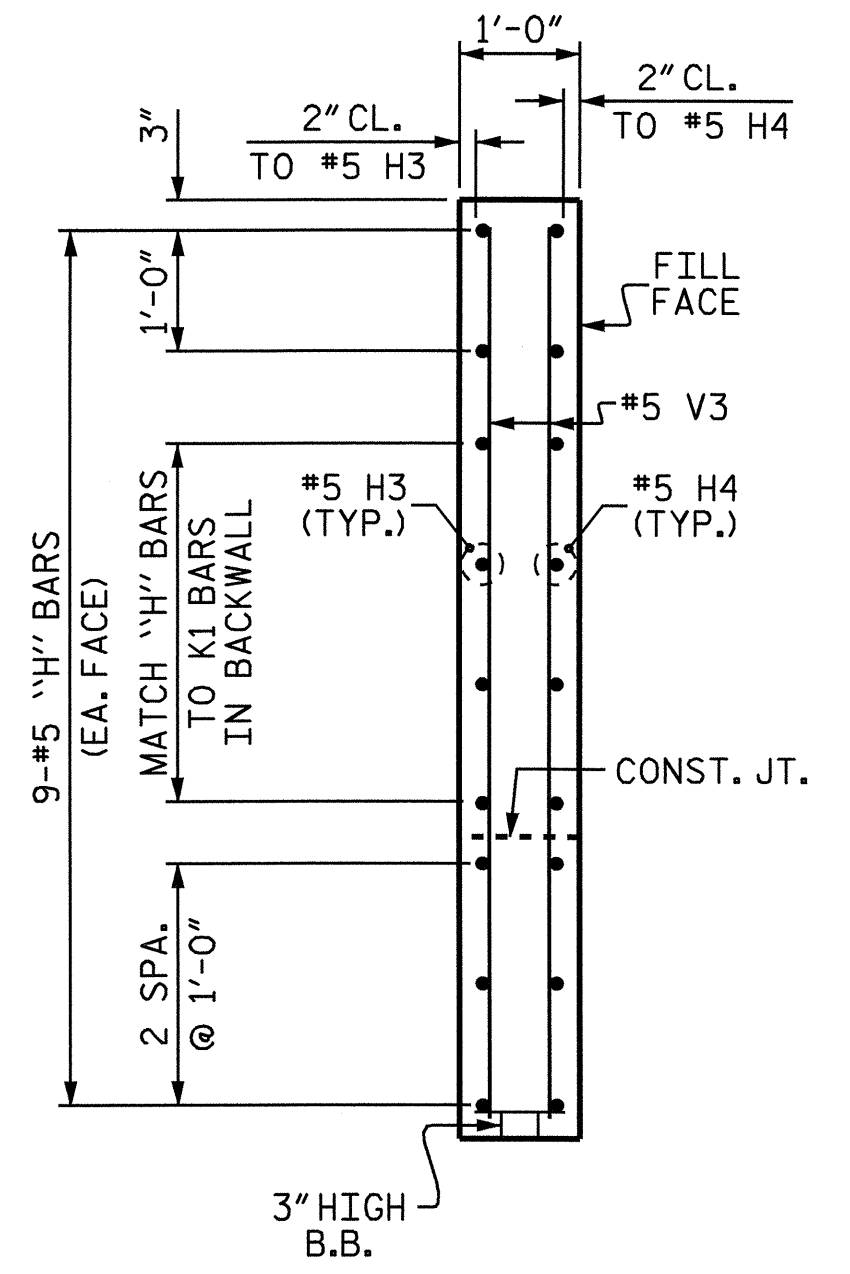
**ELEVATION OF WING - W1**



**SECTION X-X**



**ELEVATION OF WING - W2**



**SECTION Y-Y**

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

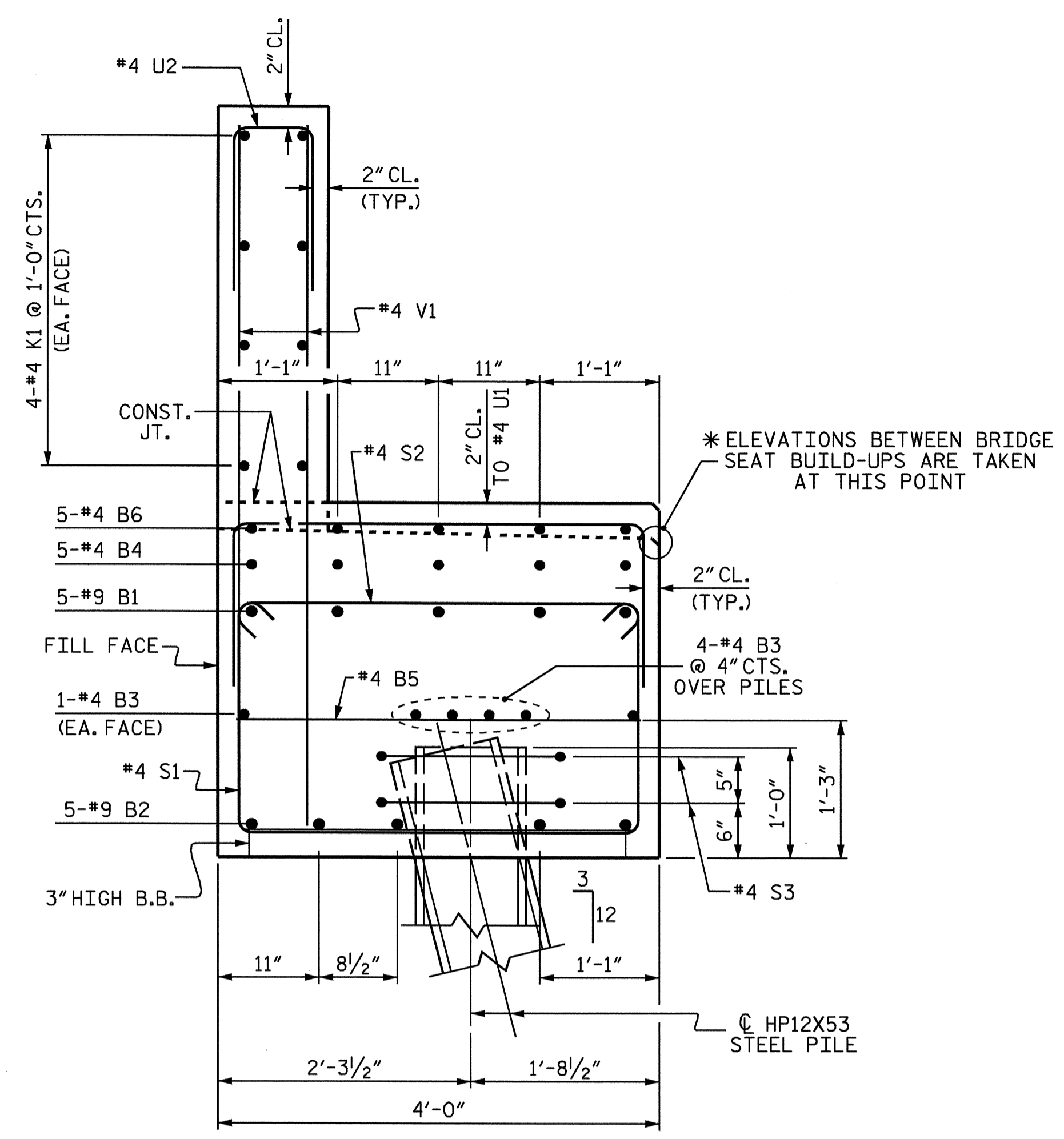
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 jpadams



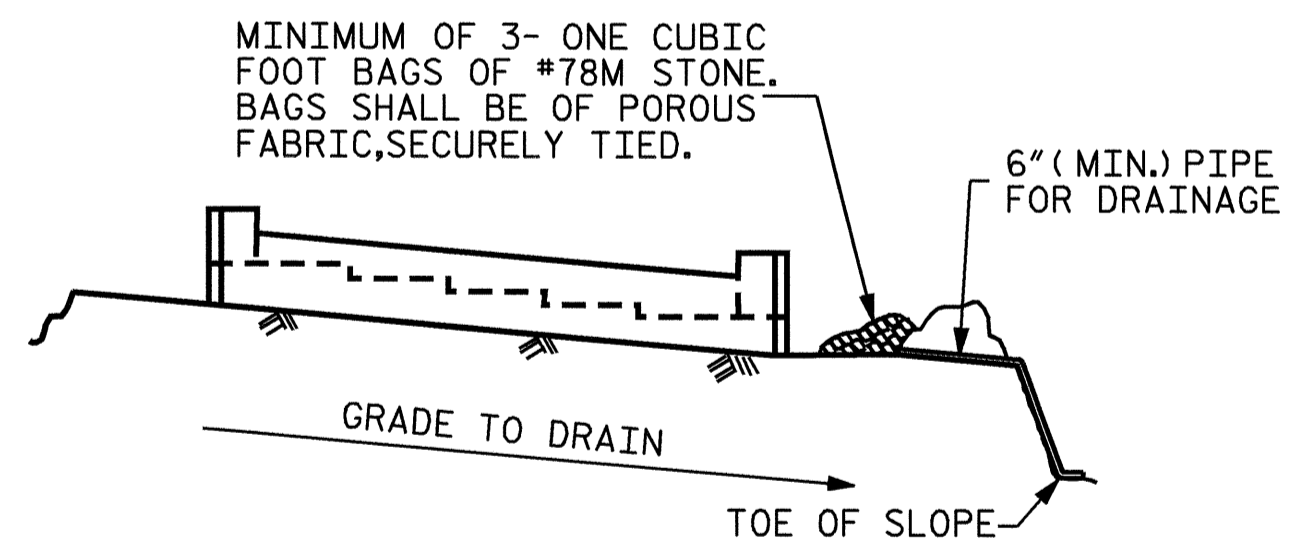
PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 2 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			35



SECTION A-A



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.

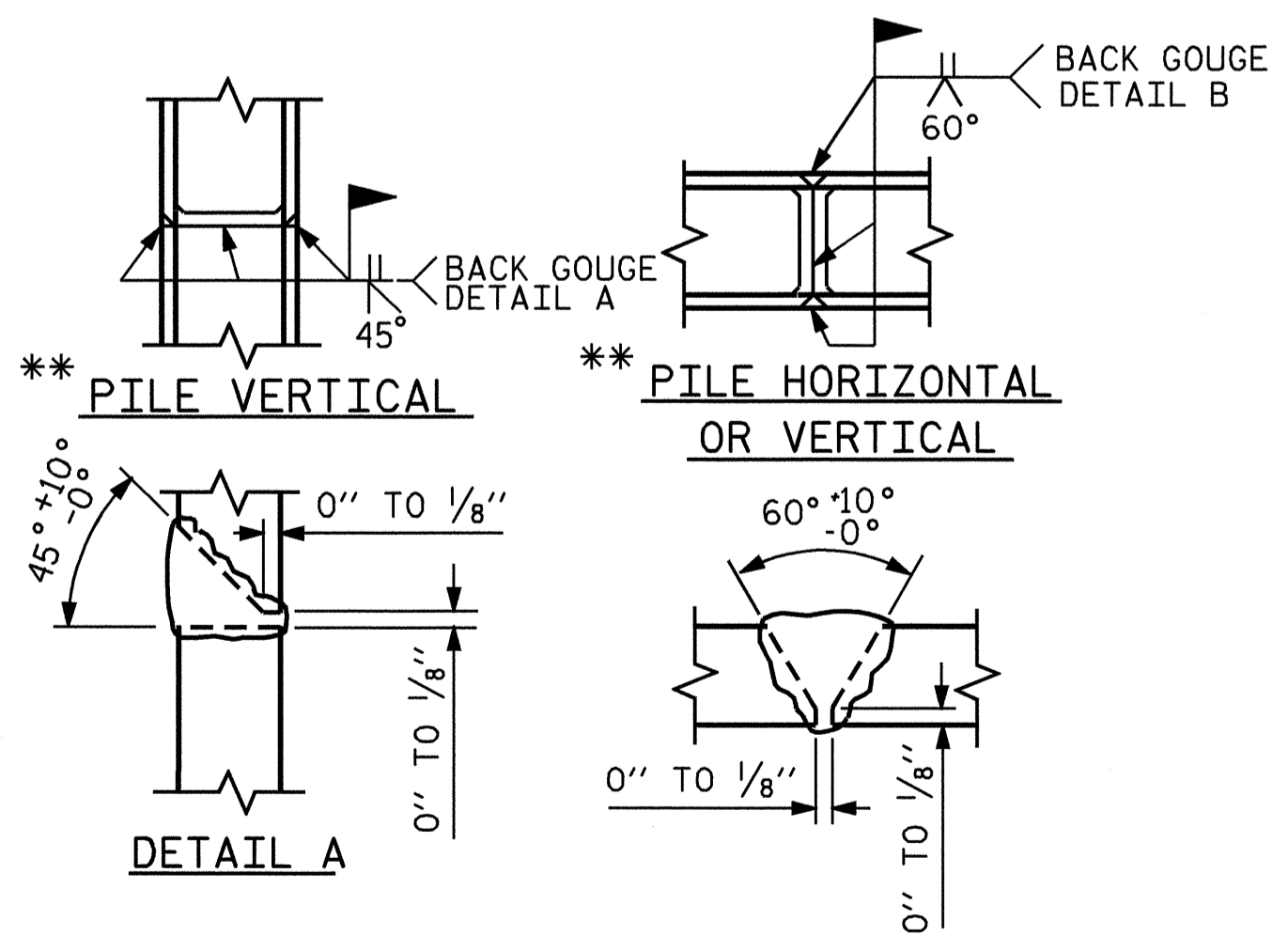
TEMPORARY DRAINAGE AT END BENT

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

23-OCT-2008 14:53  
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 jpadams

BAR TYPES					BILL OF MATERIAL						
					END BENT #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	34'-3"	1165	B1	10	#9	1	34'-3"	1165
B2	10	#9	1	33'-0"	1122	B2	10	#9	1	33'-0"	1122
B3	12	#4	STR	29'-11"	240	B3	12	#4	STR	29'-11"	240
B4	5	#4	STR	22'-0"	73	B4	5	#4	STR	22'-0"	73
B5	14	#4	STR	3'-8"	34	B5	14	#4	STR	3'-8"	34
B6	10	#4	STR	2'-4"	16	B6	10	#4	STR	2'-4"	16
H1	9	#5	2	15'-8"	147	H1	9	#5	2	15'-8"	147
H2	9	#5	2	14'-11"	140	H2	9	#5	2	14'-11"	140
H3	9	#5	3	8'-6"	80	H3	9	#5	3	8'-6"	80
H4	9	#5	3	7'-9"	73	H4	9	#5	3	7'-9"	73
K1	16	#4	STR	29'-11"	320	K1	16	#4	STR	29'-11"	320
K2	8	#4	STR	5'-4"	29	K2	8	#4	STR	5'-4"	29
S1	60	#4	4	8'-8"	347	S1	60	#4	4	8'-8"	347
S2	60	#4	5	4'-5"	177	S2	60	#4	5	4'-5"	177
S3	14	#4	6	6'-6"	61	S3	14	#4	6	6'-6"	61
S4	3	#6	8	3'-9"	17	S4	3	#6	8	3'-9"	17
S5	1	#6	9	8'-11"	13	S5	1	#6	9	8'-11"	13
U1	20	#4	7	6'-8"	89	U1	20	#4	7	6'-8"	89
U2	45	#4	7	3'-8"	110	U2	45	#4	7	3'-8"	110
V1	90	#4	STR	5'-9"	346	V1	90	#4	STR	5'-9"	346
V2	42	#5	STR	8'-1"	354	V2	42	#5	STR	8'-1"	354
V3	27	#5	STR	7'-5"	209	V3	27	#5	STR	7'-5"	209
REINFORCING STEEL					Lbs.	5162					
CLASS "A" CONCRETE											
POUR #1 CAP & LOWER WINGS					CU.YDS. 25.4						
POUR #2 UPPER WINGS & BACKWALL					CU.YDS. 12.8						
TOTAL					CU.YDS. 38.2						
HP12X53 STEEL PILES											
No. 8					LIN. FT. 160.0						

ALL BAR DIMENSIONS ARE OUT TO OUT.



\*\* POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

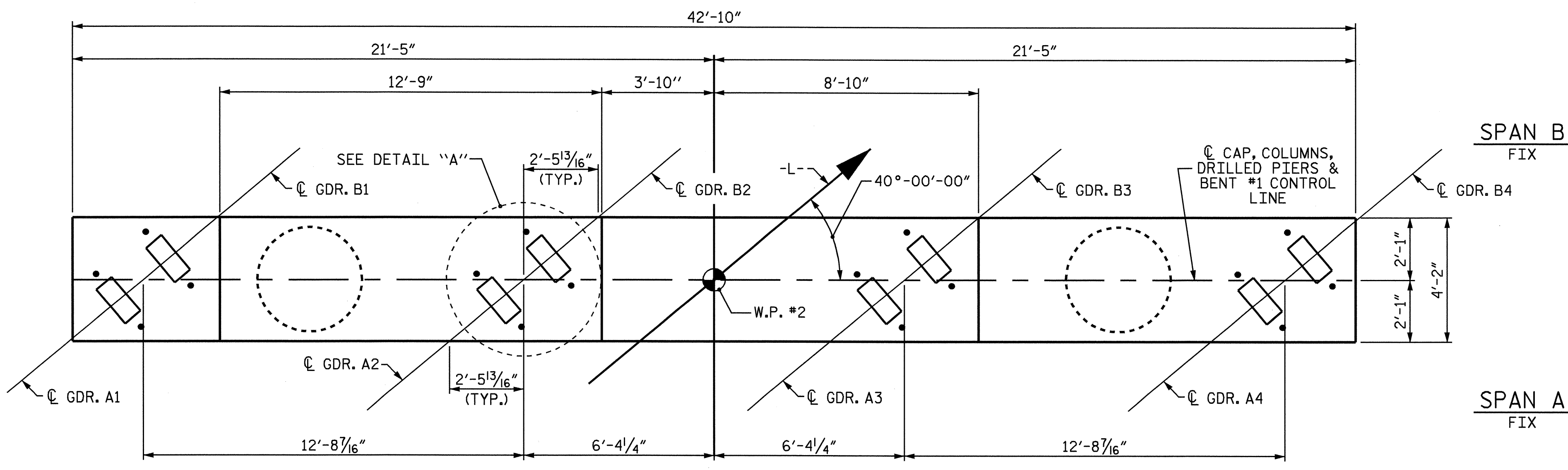
SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

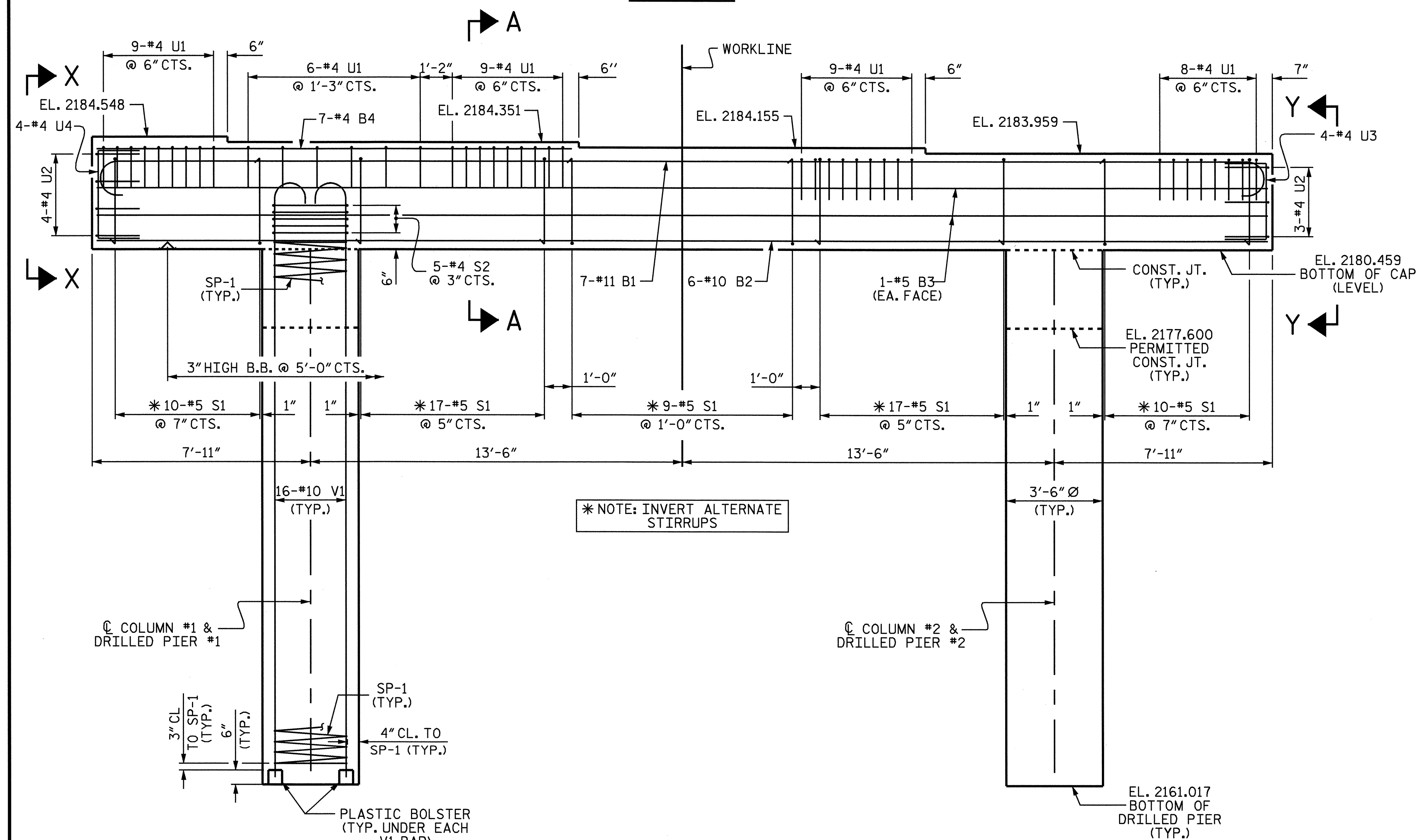
SUBSTRUCTURE  
 END BENT #1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22	
1			3			TOTAL SHEETS 35	
2			4				

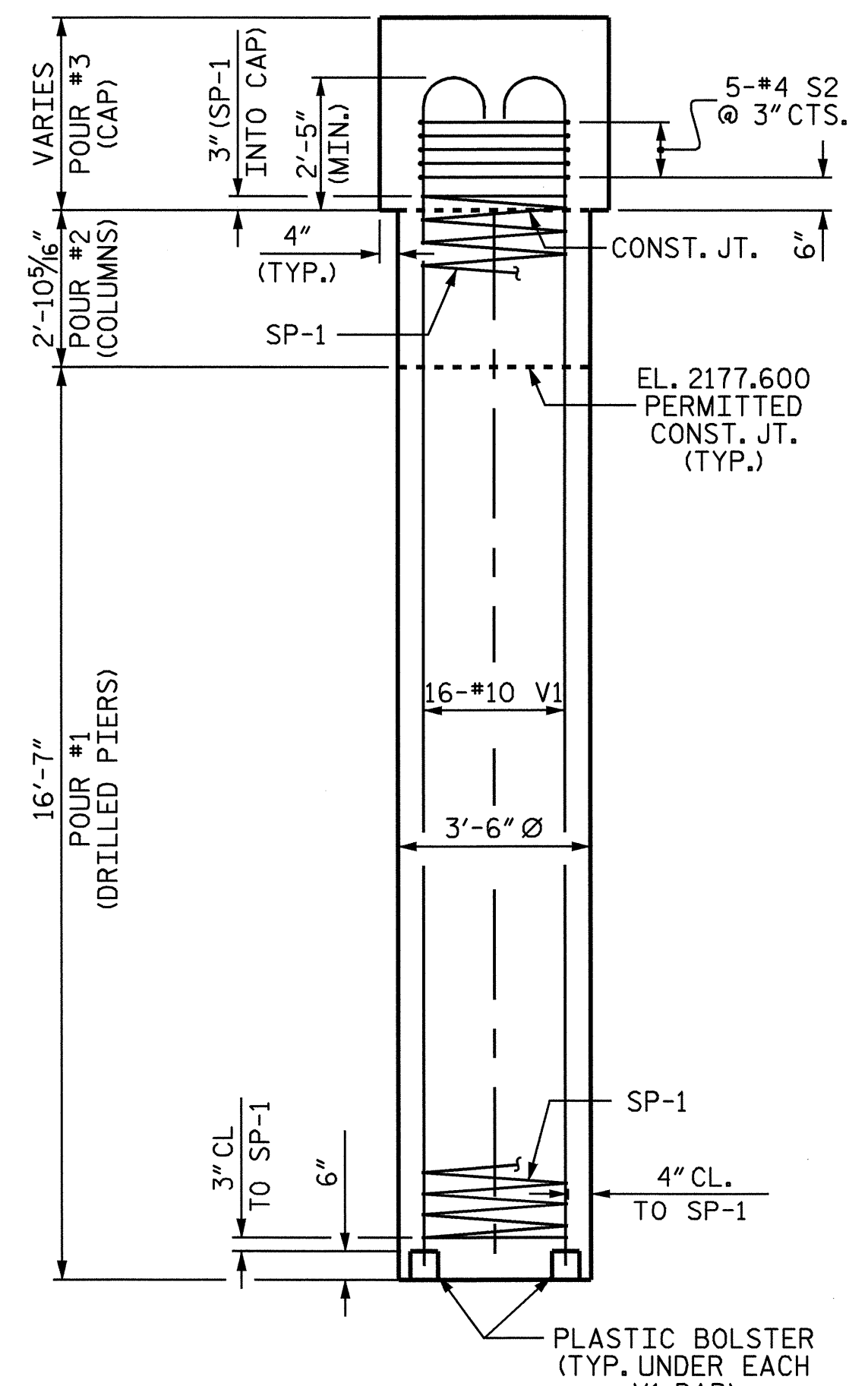




**PLAN**



**ELEVATION**



**END ELEVATION**

**NOTES**

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

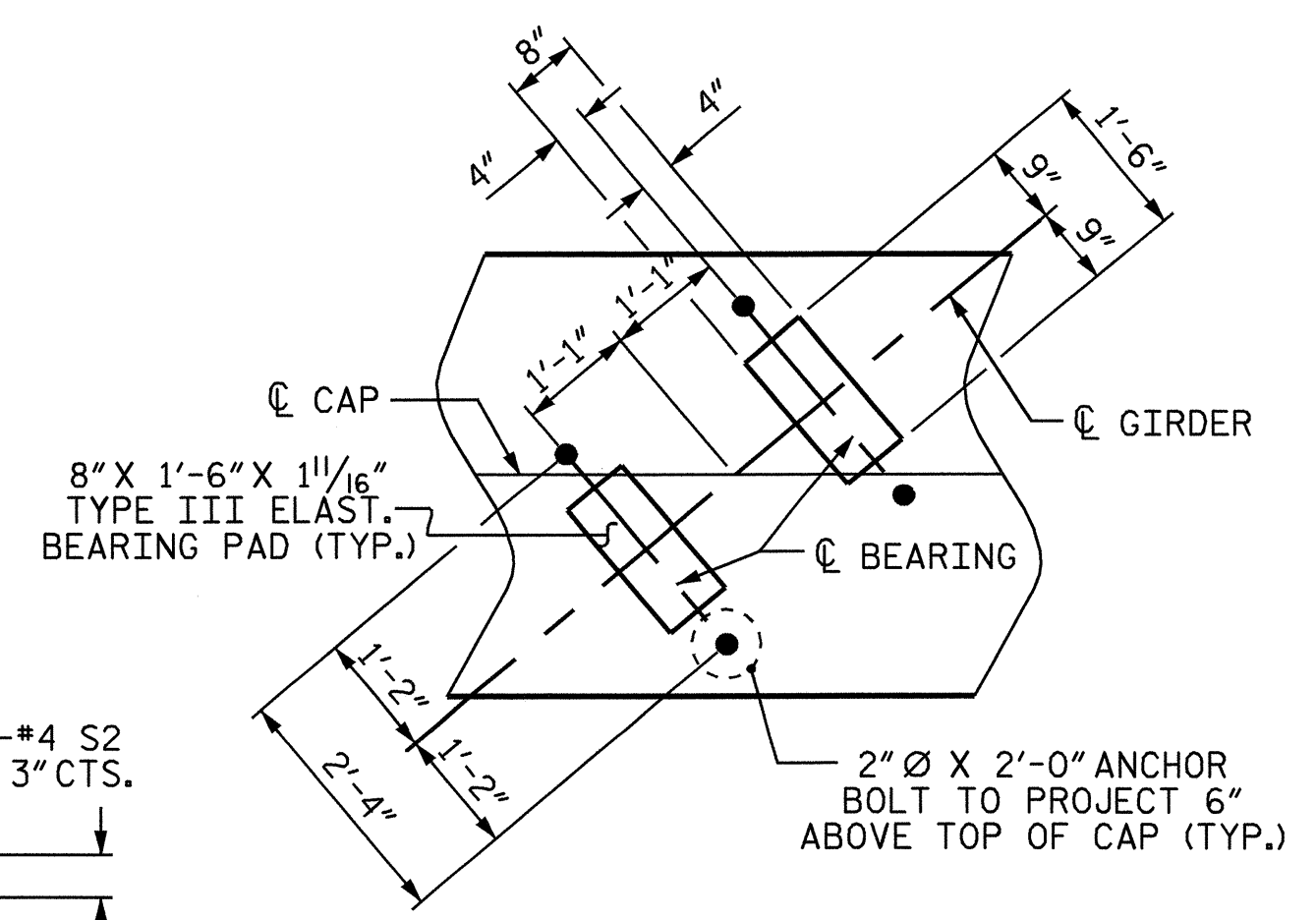
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

SPLICING OF THE LONGITUDINAL REINFORCING BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.



**DETAIL "A"**  
(TYP. EA. BRIDGE SEAT)

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

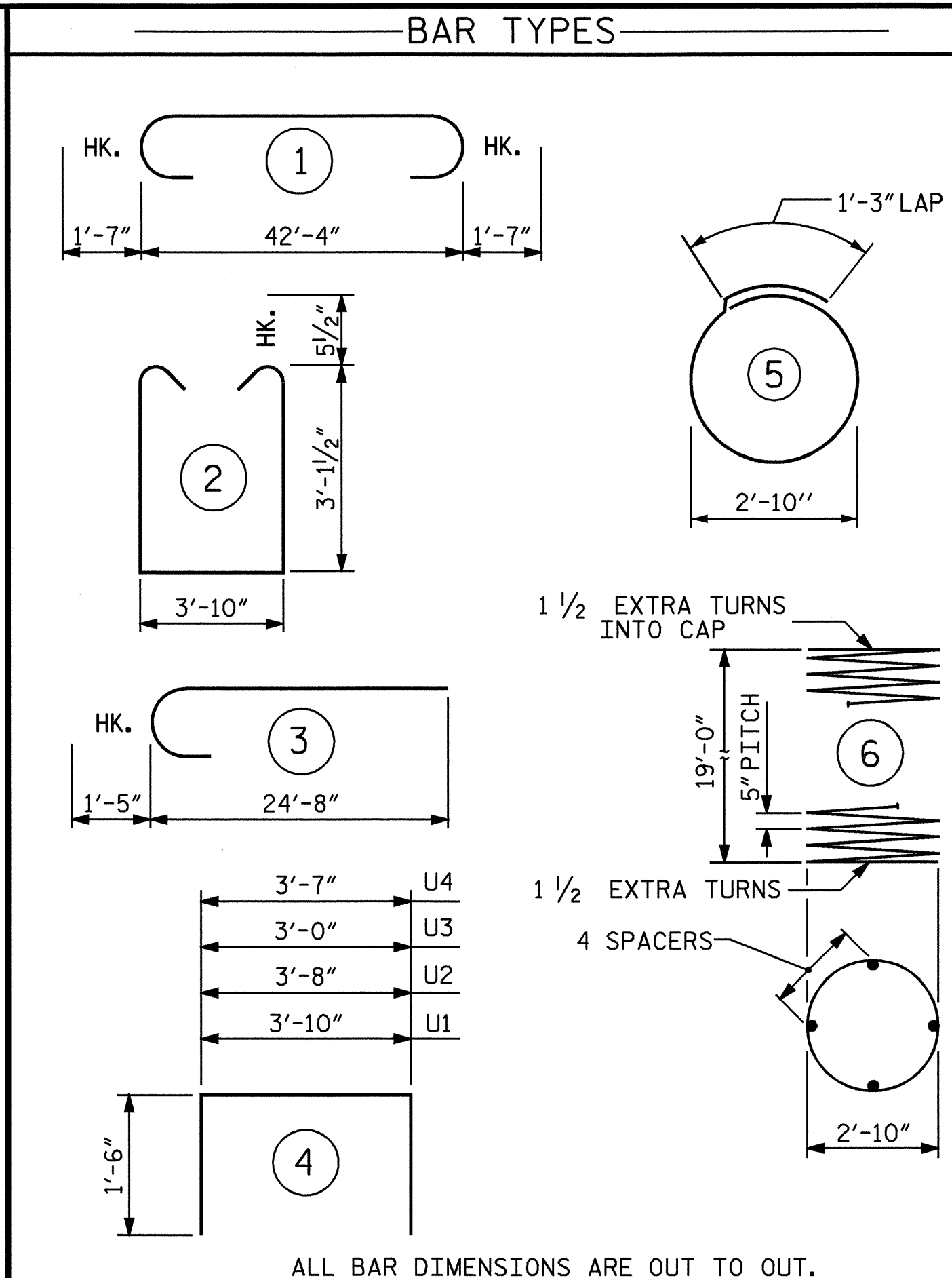
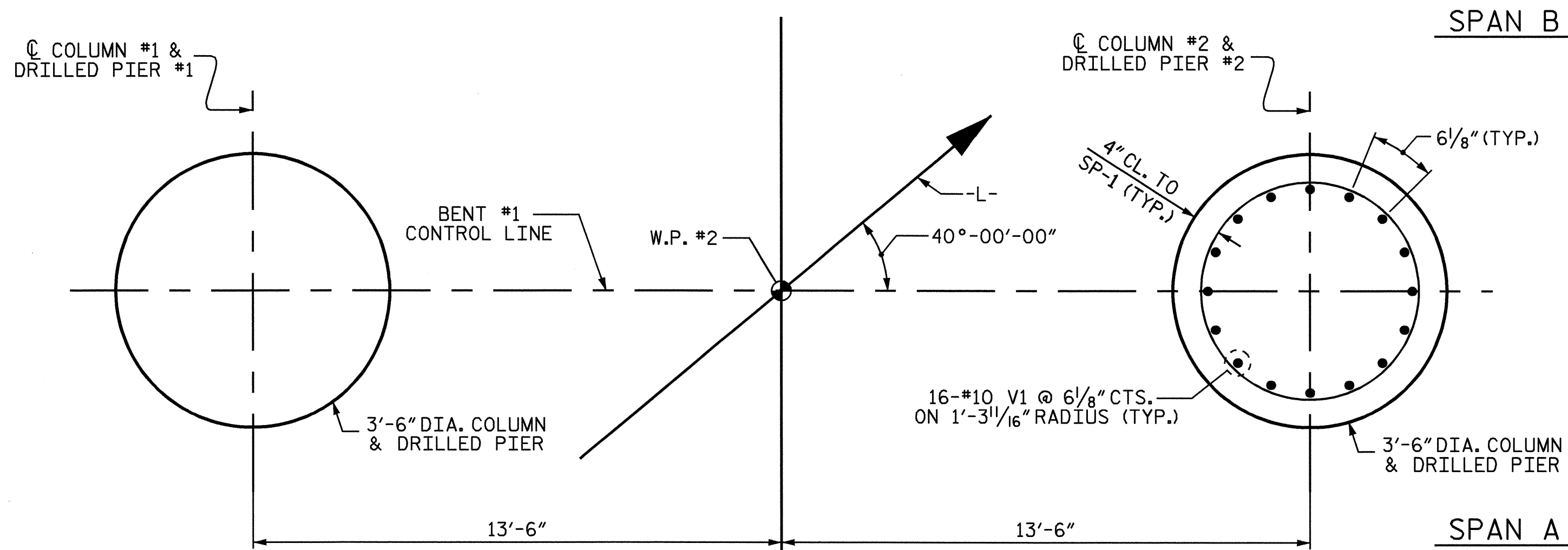
SUBSTRUCTURE  
 BENT #1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	
2			4			32	

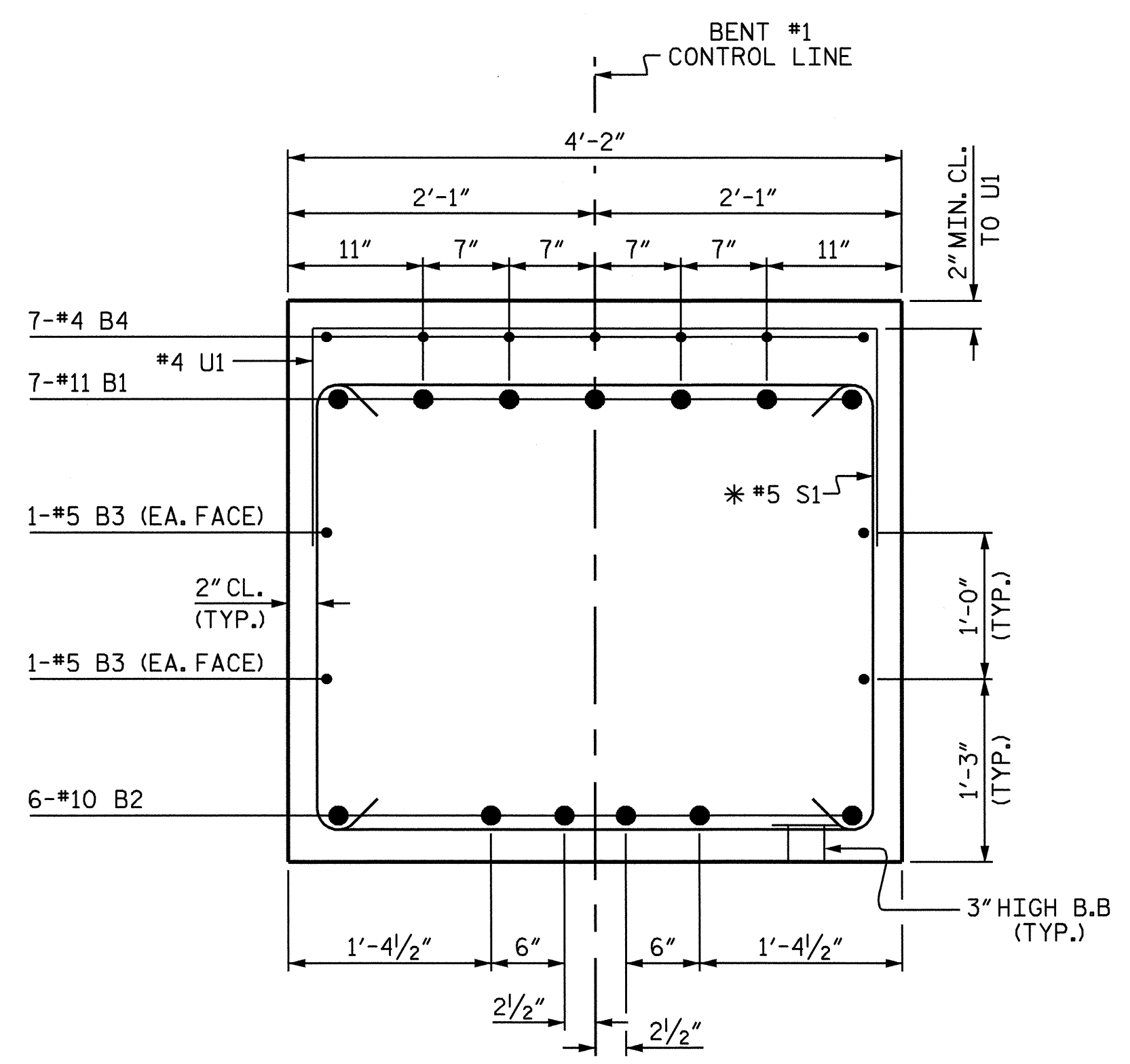
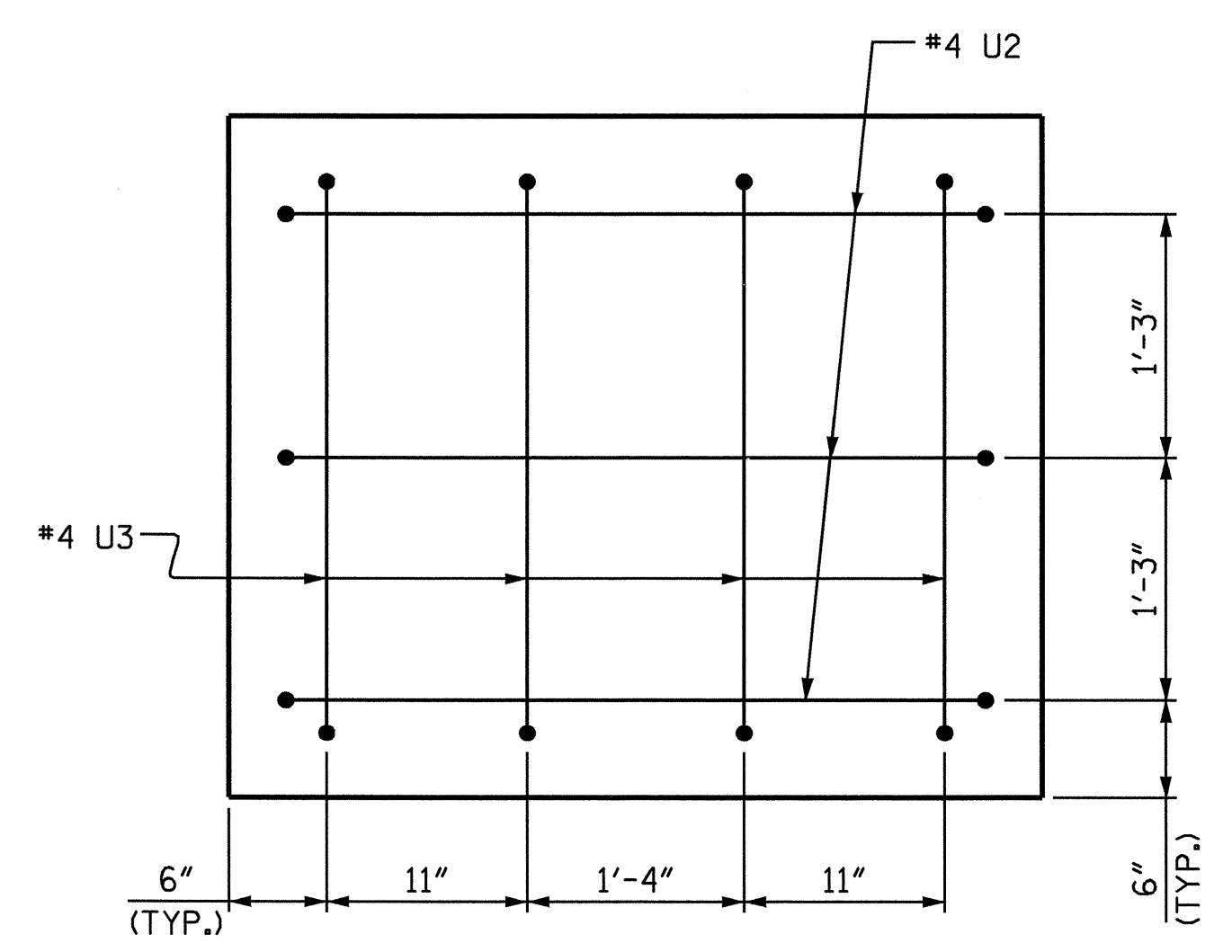
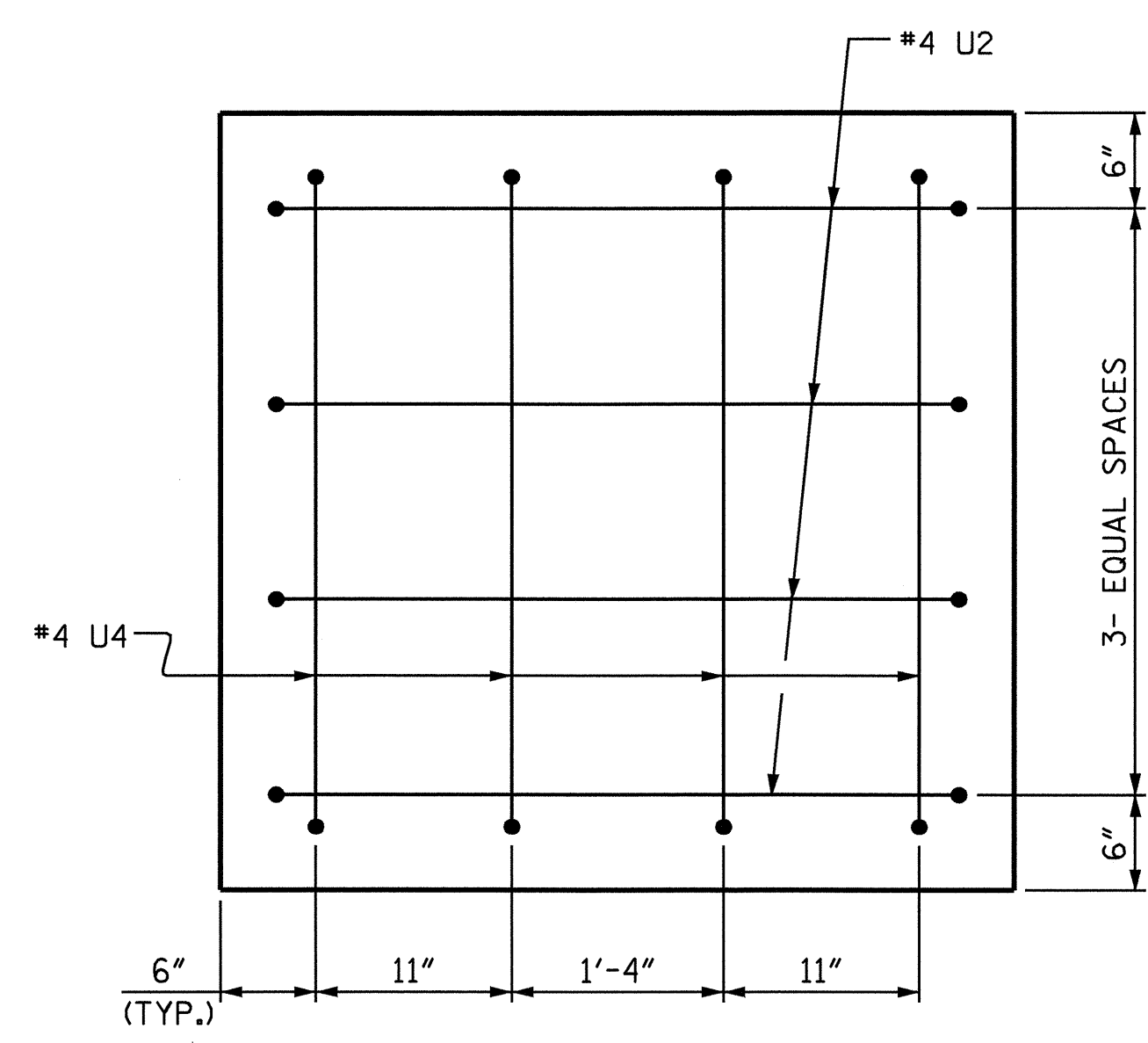
DRAWN BY: S. DOMBROWSKI DATE: 05/08  
 CHECKED BY: H.A. LOCKLEAR DATE: 06/08







BILL OF MATERIAL					
BENT #1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	45'-6"	1692
B2	6	#10	STR	42'-6"	1097
B3	4	#5	STR	42'-6"	177
B4	7	#4	STR	17'-3"	81
S1	63	#5	2	11'-0"	723
S2	10	#4	5	10'-2"	68
U1	41	#4	4	6'-10"	187
U2	7	#4	4	6'-8"	31
U3	4	#4	4	6'-0"	16
U4	4	#4	4	6'-7"	18
V1	32	#10	3	26'-1"	3592
TOTAL REINFORCING STEEL LBS.					7682
SP-1	2	**	6	426'-6"	890
TOTAL SPIRAL COLUMN REINFORCING STEEL LBS.					890
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					2.0 C.Y.
POUR #3 (BENT CAP)					24.7 C.Y.
TOTAL CLASS A CONCRETE					26.7 C.Y.
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					11.9 C.Y.
3'-6" DIA. DRILLED PIERS IN SOIL					22.3 LIN. FT.
3'-6" DIA. DRILLED PIERS NOT IN SOIL					11.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER					15.2 LIN. FT.
CSL TUBES					153.1 LIN. FT.



PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

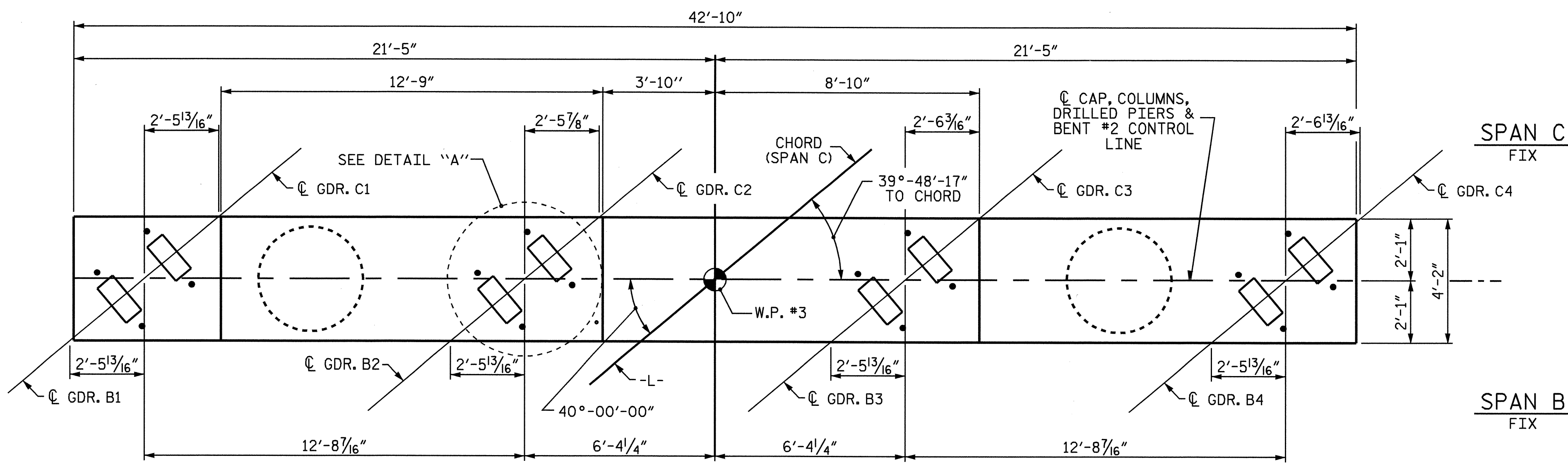
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

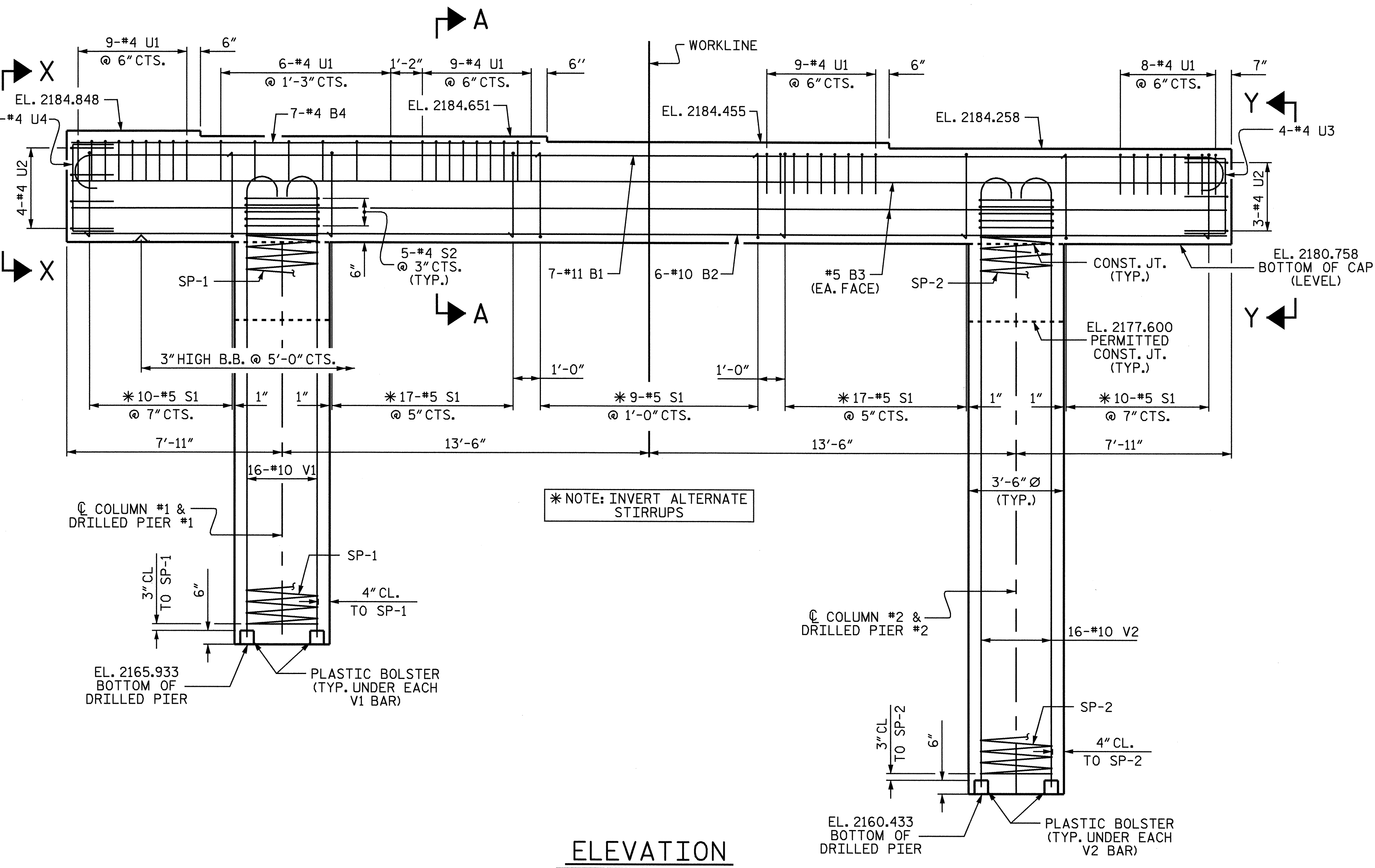
SUBSTRUCTURE  
 BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 35
2			4			

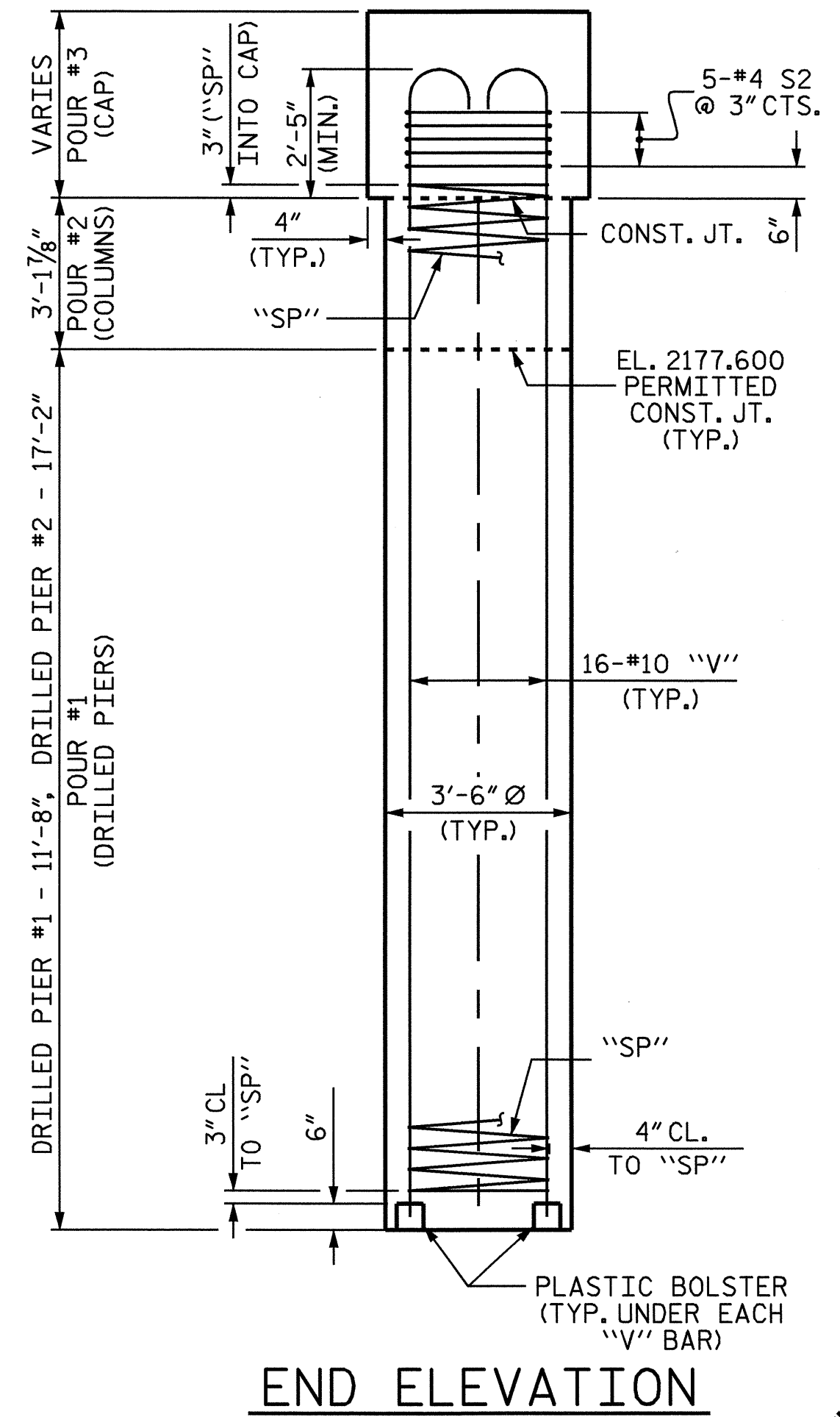
DRAWN BY: S. DOMBROWSKI DATE: 05/08  
 CHECKED BY: H.A. LOCKLEAR DATE: 06/08



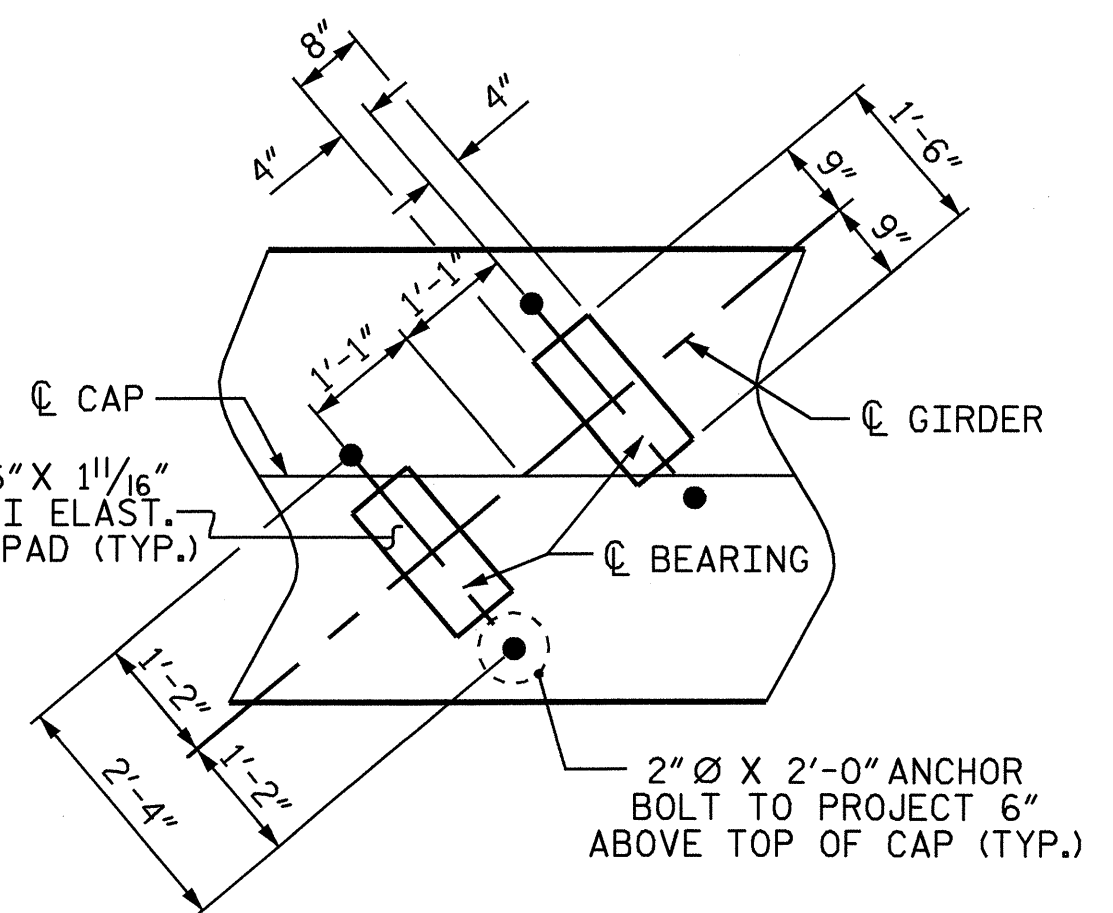
PLAN



ELEVATION



END ELEVATION



DETAIL "A"  
(TYP. EA. BRIDGE SEAT)

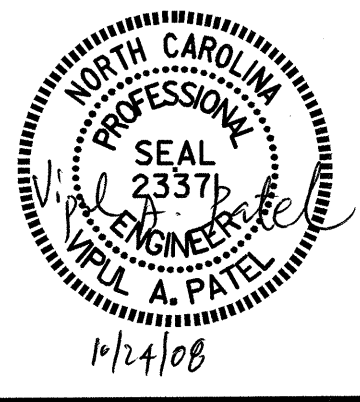
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 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".  
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.  
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.  
 SPLICING OF THE LONGITUDINAL REINFORCING BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.

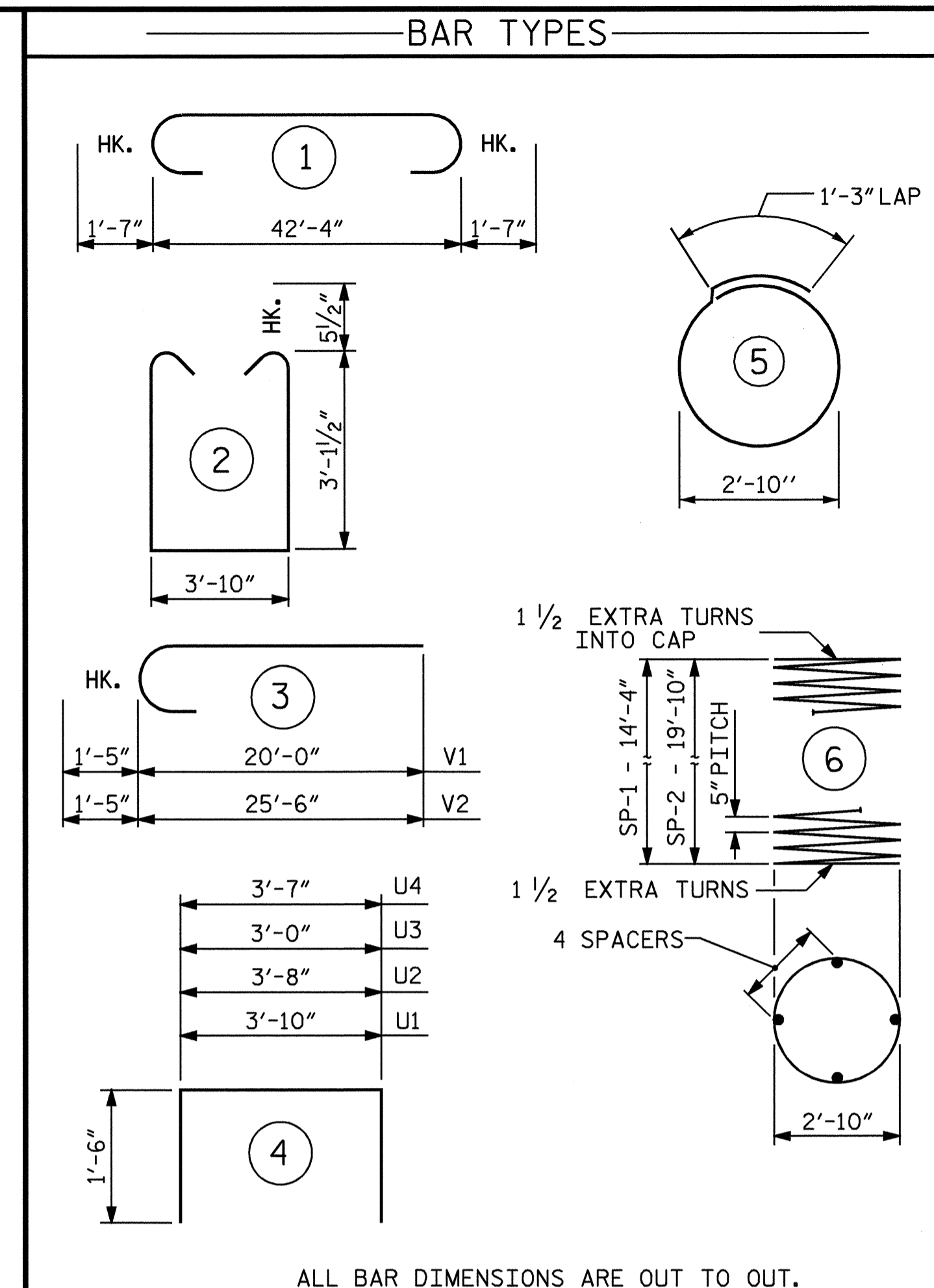
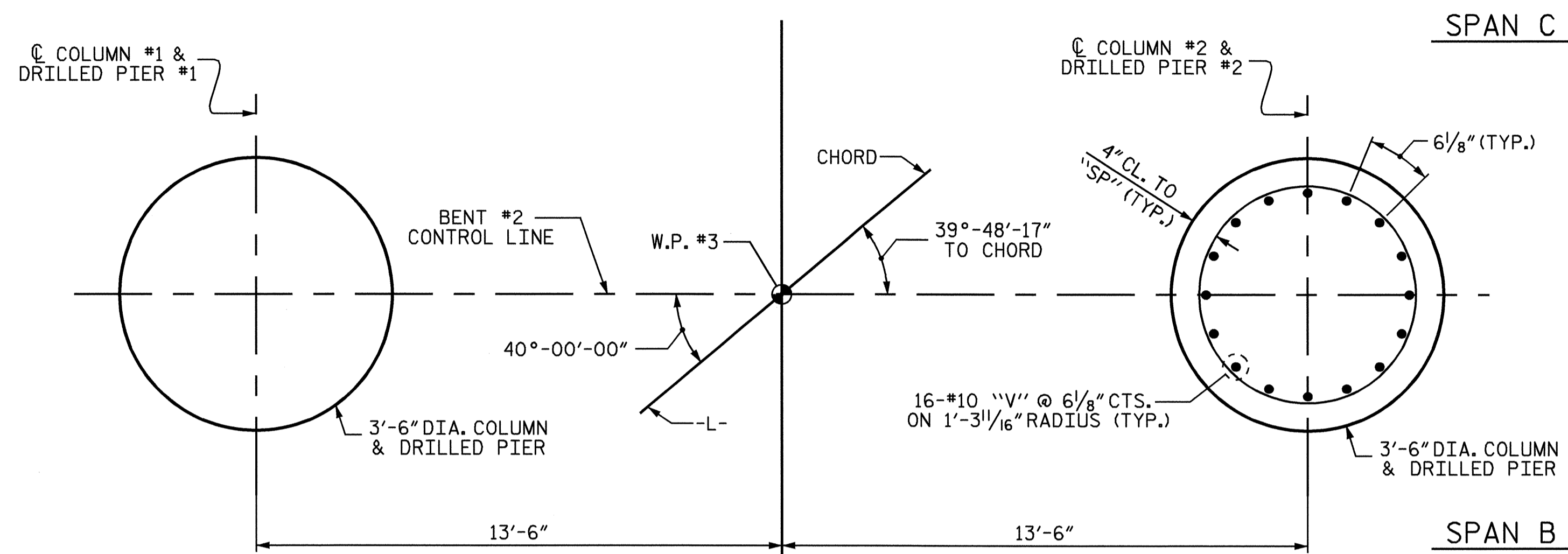
PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 2

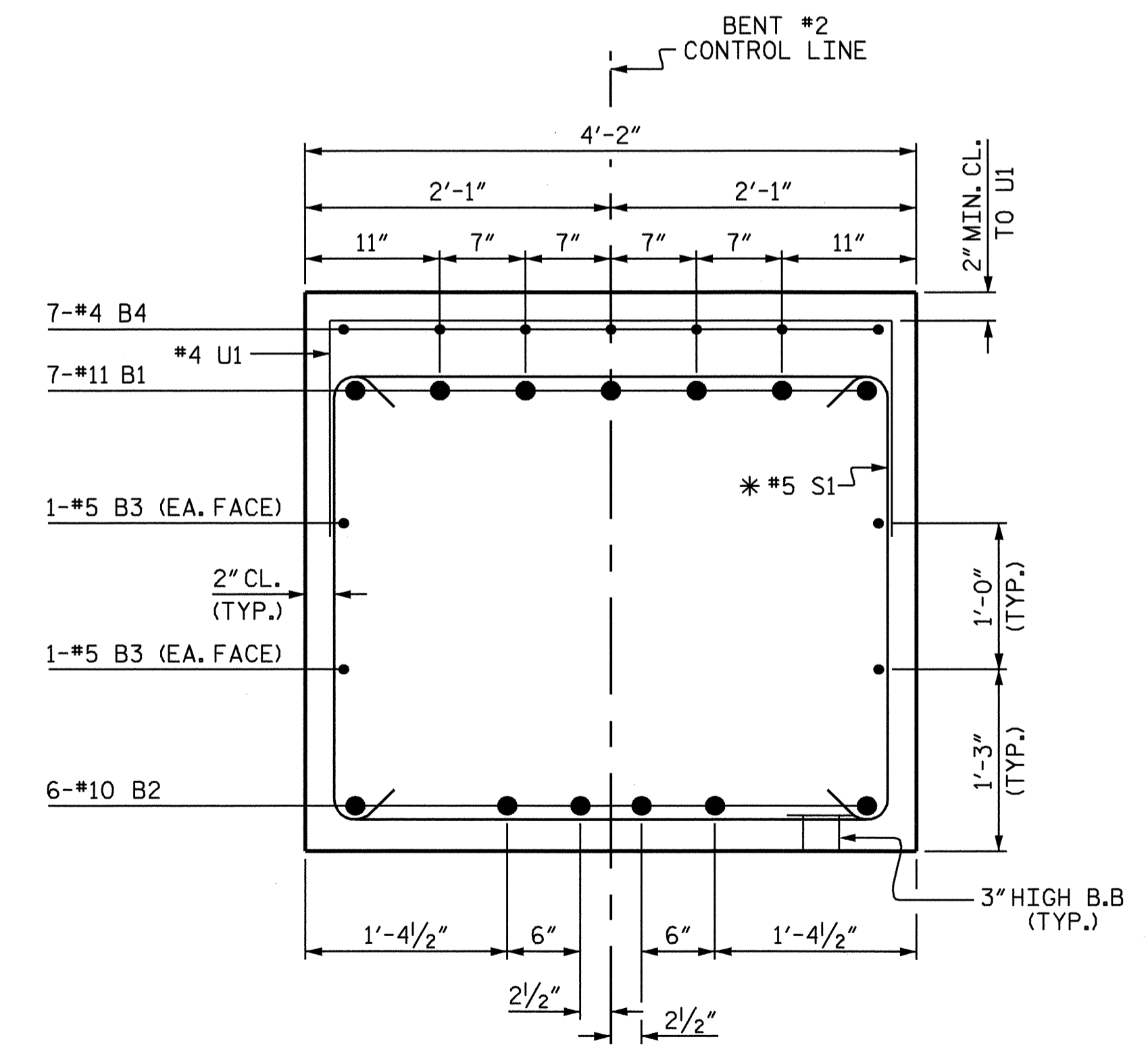
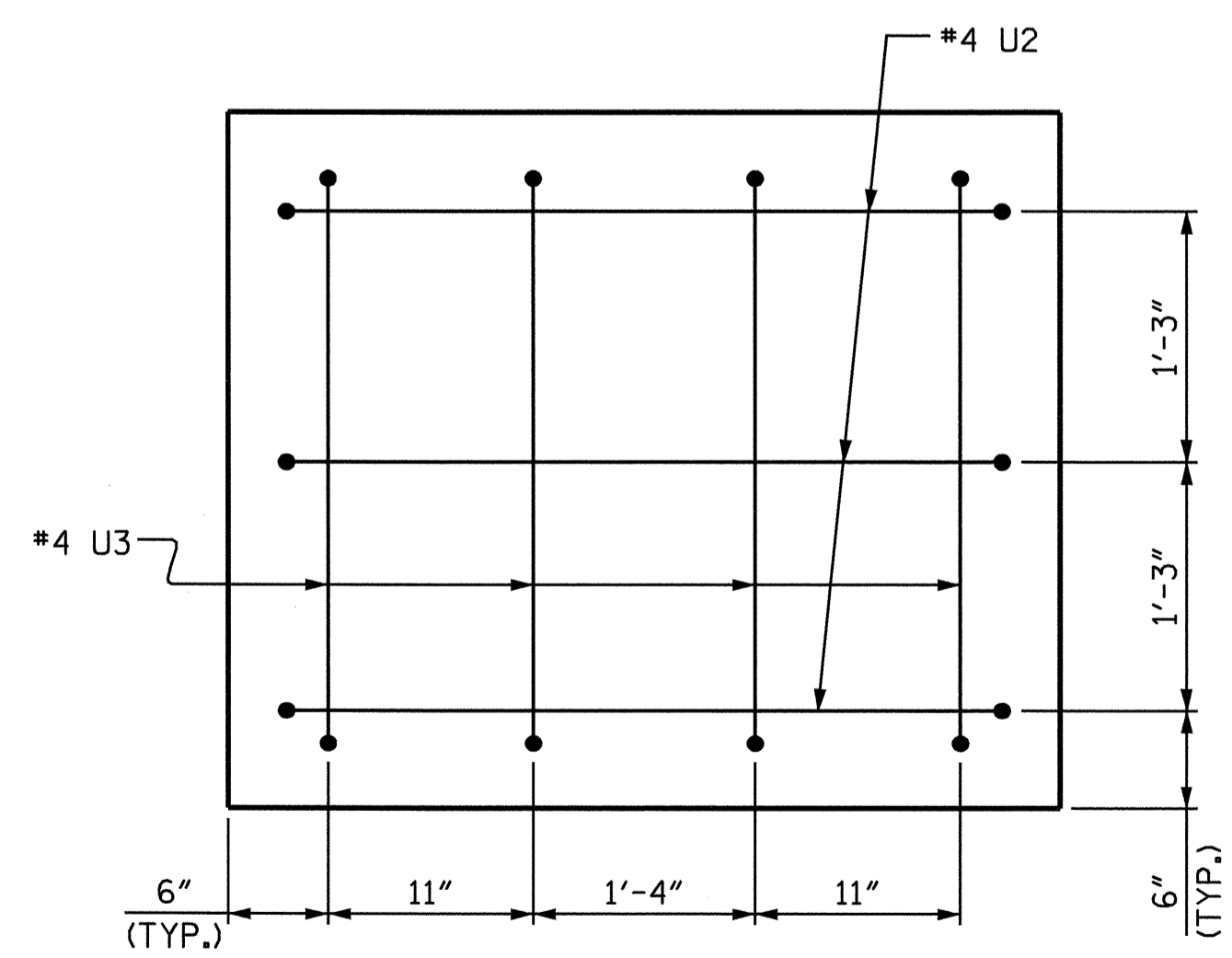
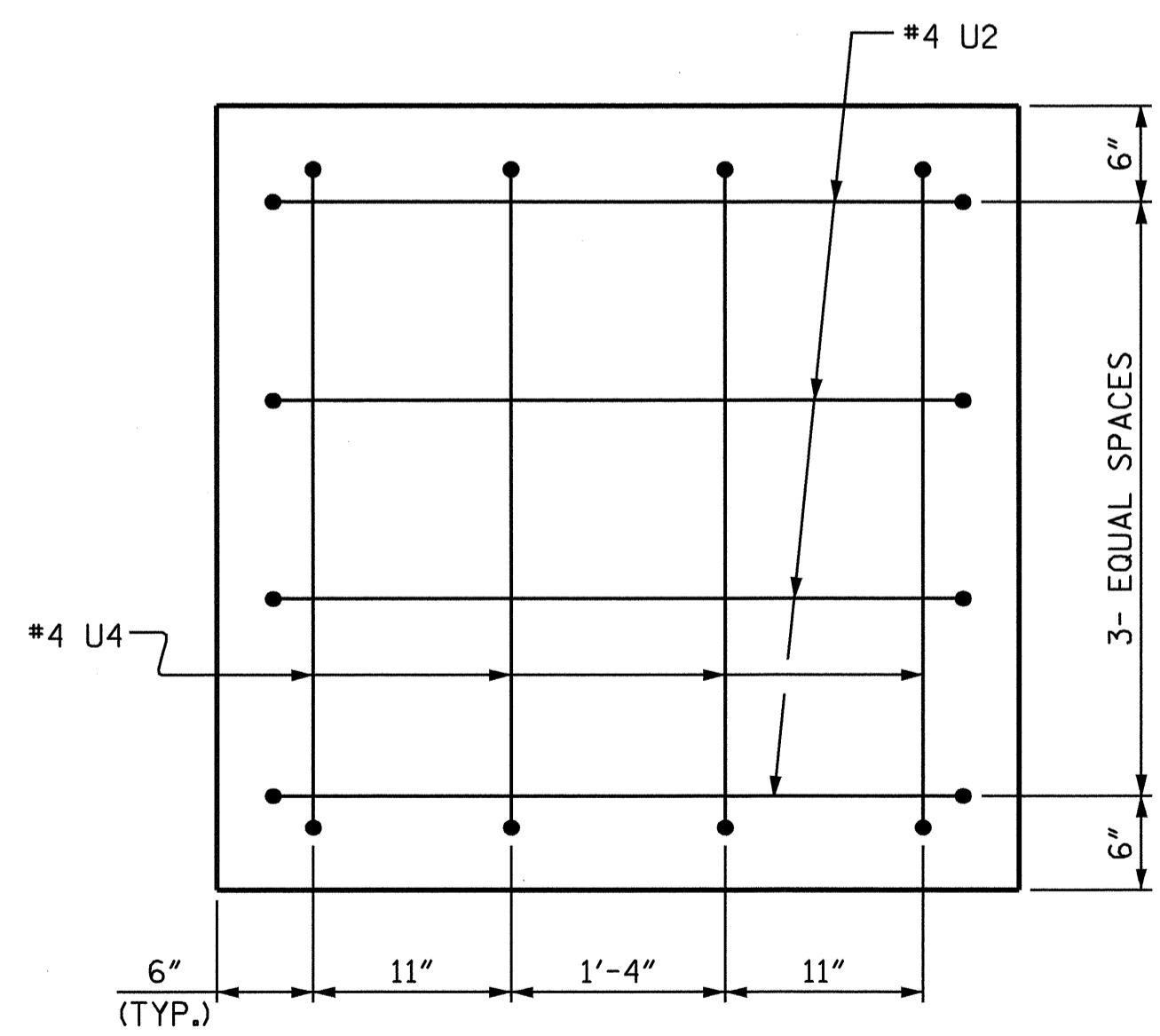
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-25
TOTAL SHEETS					35



DRAWN BY: S. DOMBROWSKI DATE: 05/08  
 CHECKED BY: H.A. LOCKLEAR DATE: 06/08



BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	45'-6"	1692
B2	6	#10	STR	42'-6"	1097
B3	4	#5	STR	42'-6"	177
B4	7	#4	STR	17'-3"	81
S1	63	#5	2	11'-0"	723
S2	10	#4	5	10'-2"	68
U1	41	#4	4	6'-10"	187
U2	7	#4	4	6'-8"	31
U3	4	#4	4	6'-0"	16
U4	4	#4	4	6'-7"	18
V1	16	#10	3	21'-5"	1474
V2	16	#10	3	26'-11"	1853
TOTAL REINFORCING STEEL LBS.					7417
SP-1	1	**	6	328'-1"	342
SP-2	1	**	6	444'-0"	463
TOTAL SPIRAL COLUMN REINFORCING STEEL LBS.					805
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					2.3 C.Y.
POUR #3 (BENT CAP)					24.7 C.Y.
TOTAL CLASS A CONCRETE					27.0 C.Y.
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					10.3 C.Y.
3'-6" DIA. DRILLED PIERS IN SOIL					10.9 LIN. FT.
3'-6" DIA. DRILLED PIERS NOT IN SOIL					18.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER					11.2 LIN. FT.
CSL TUBES					135.4 LIN. FT.



PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

**NOTES**

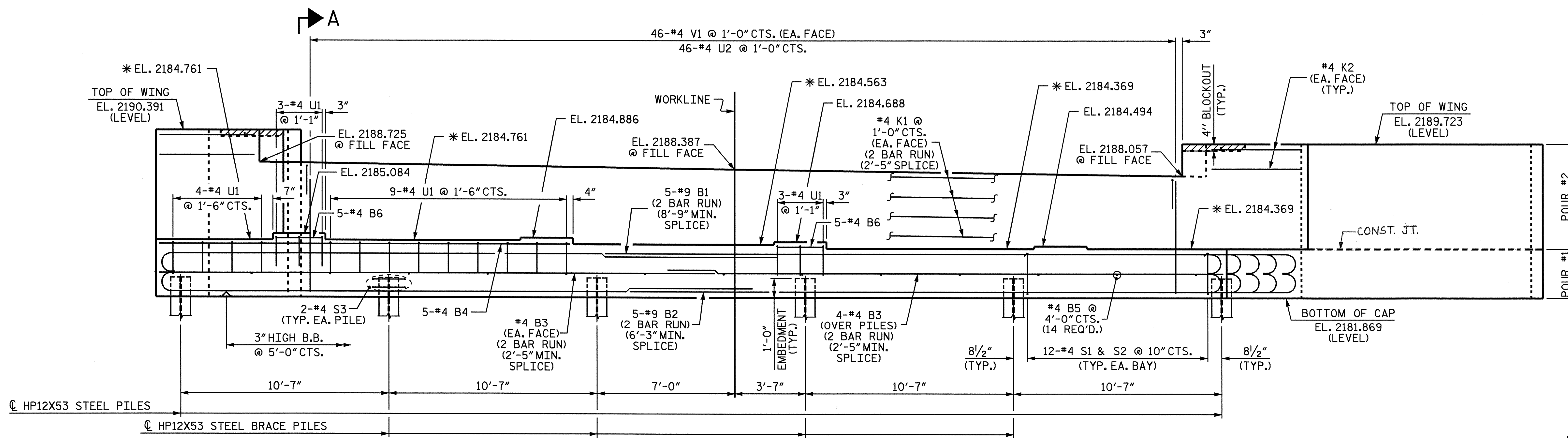
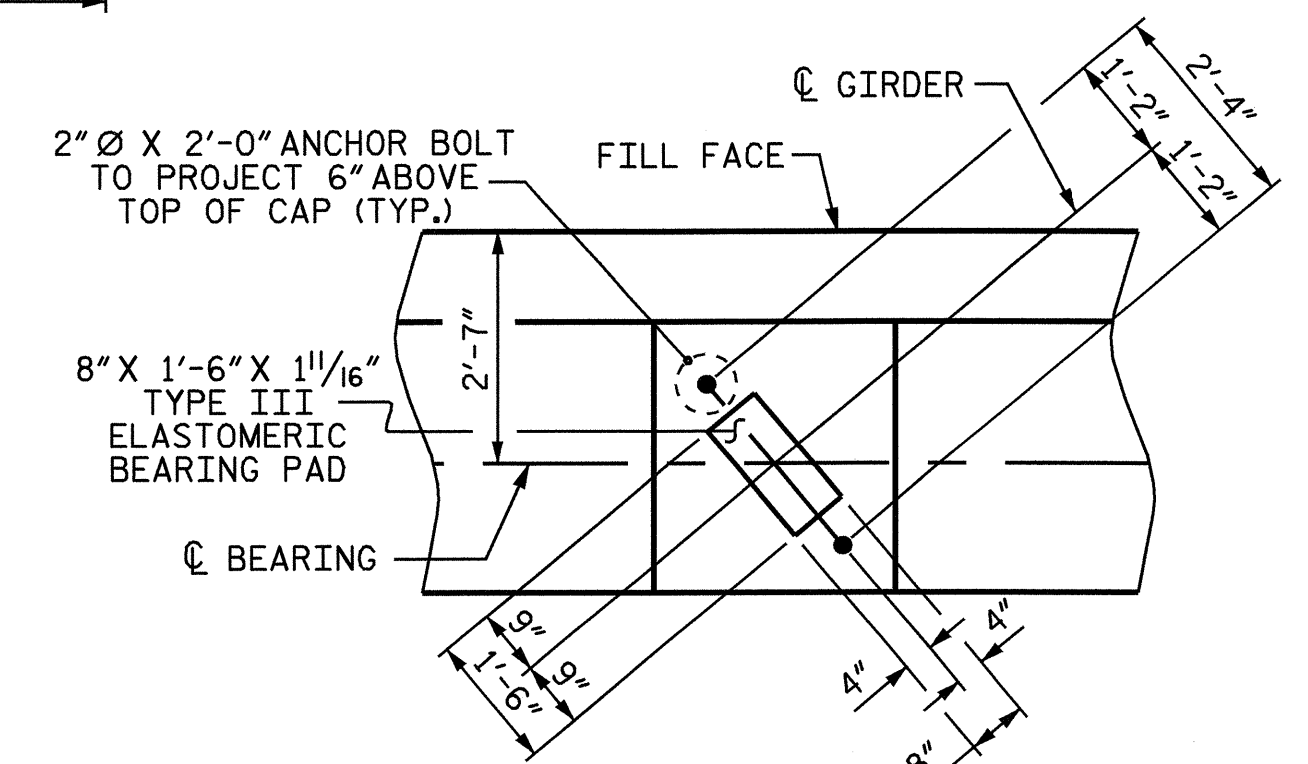
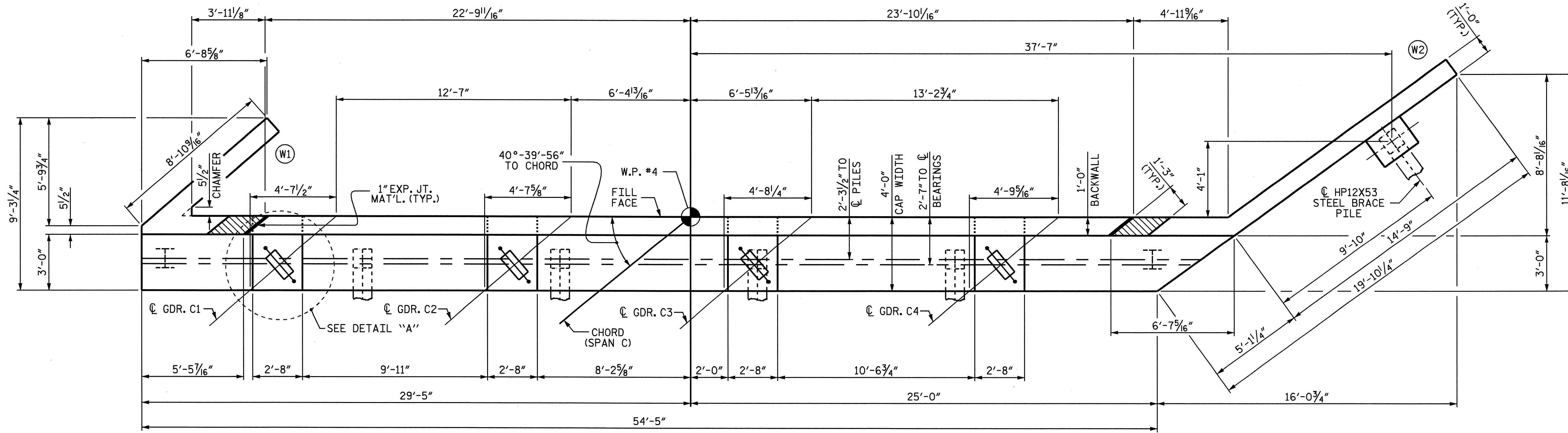
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

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



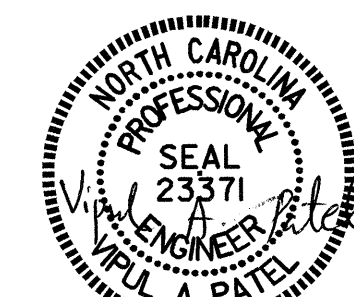
\* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3

PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

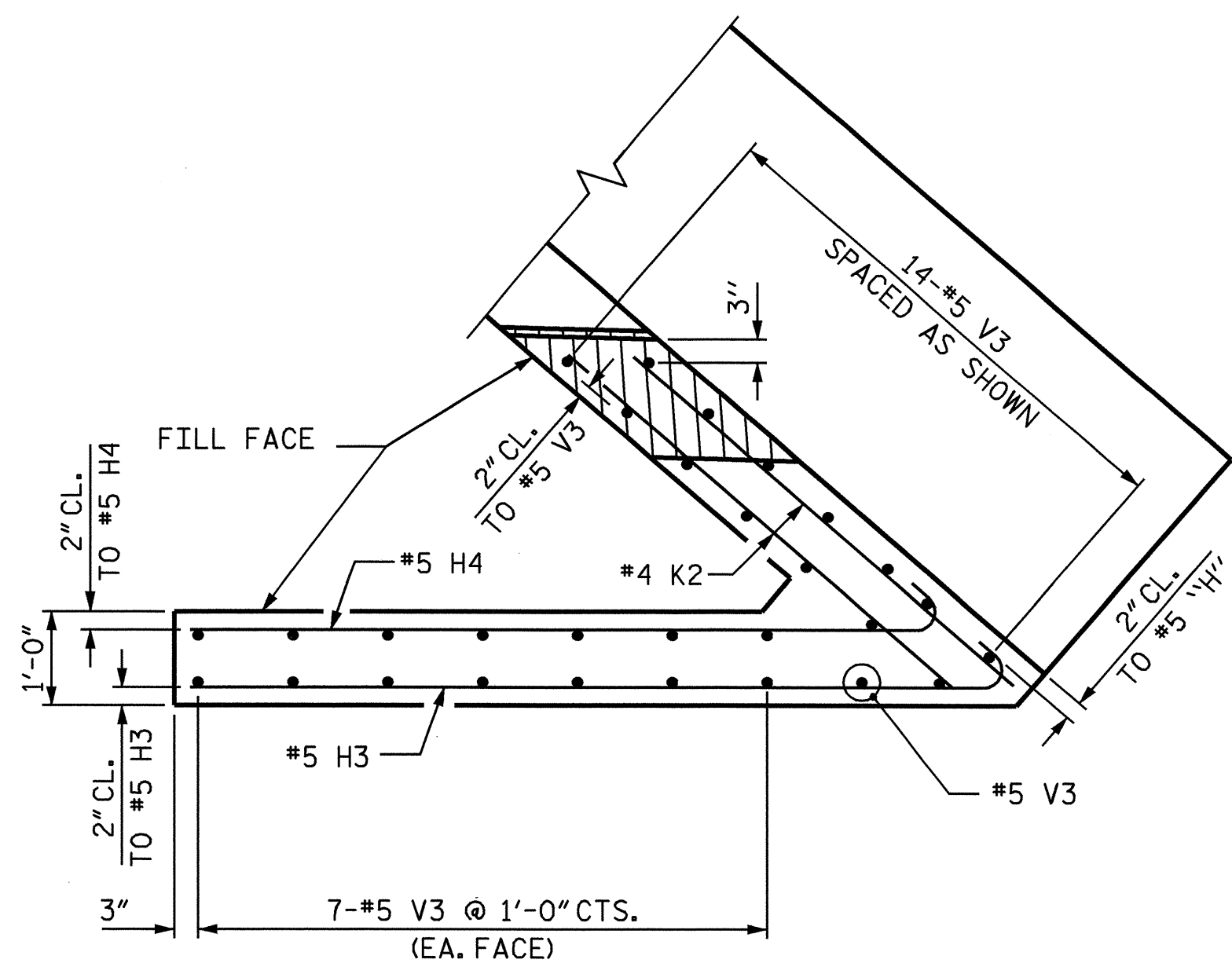
SUBSTRUCTURE  
 END BENT #2



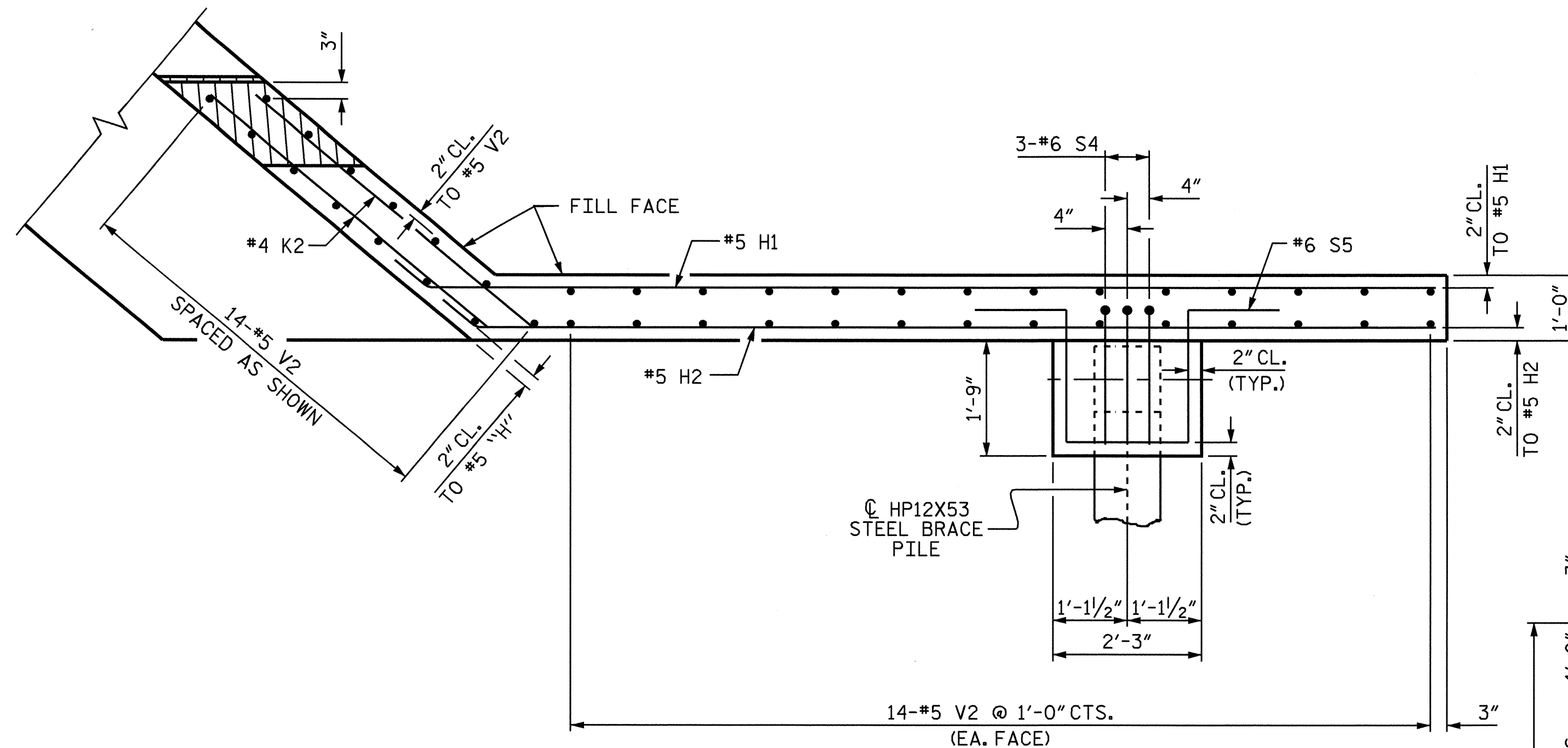
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 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

23-OCT-2008 14:54  
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 jpdams

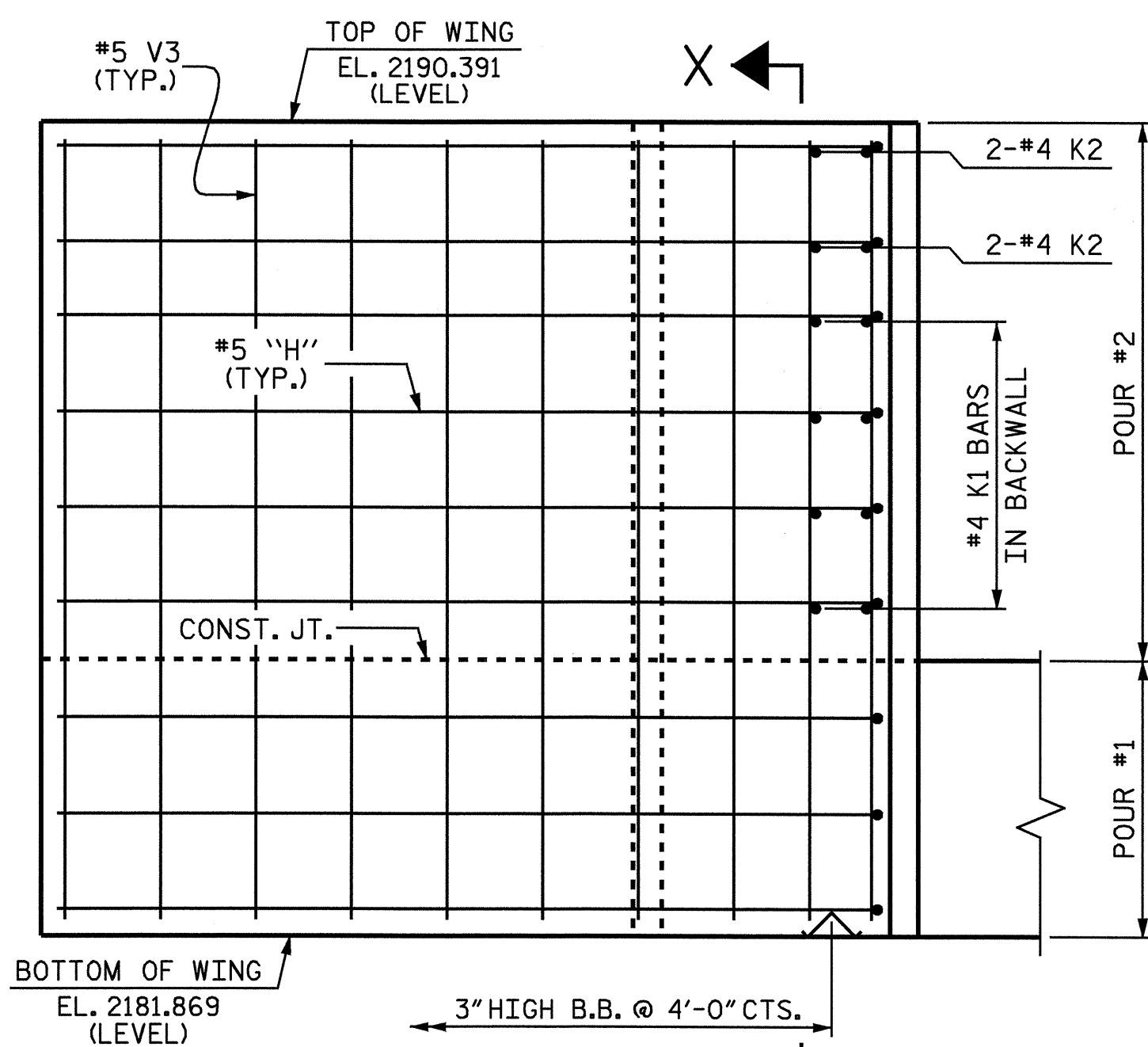
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS 35	
2			4				



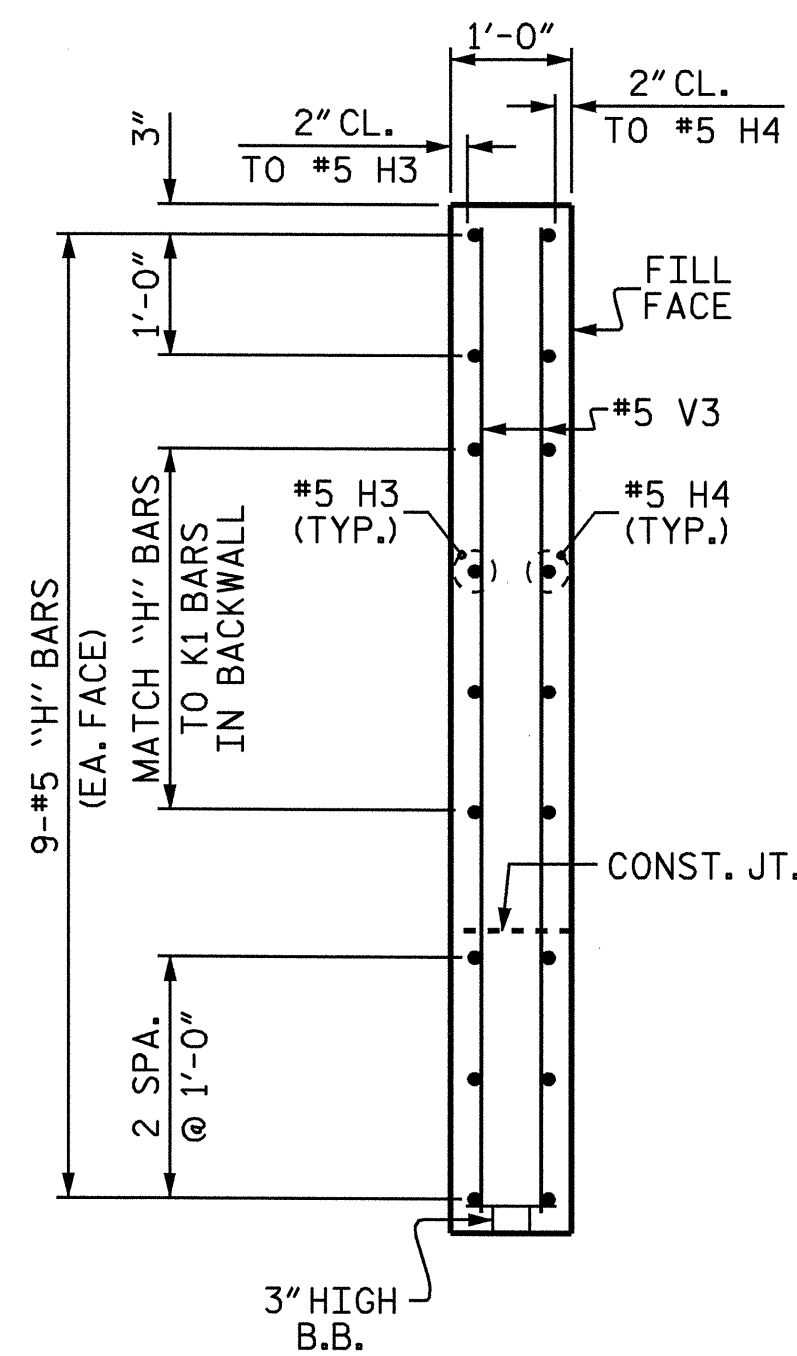
**PLAN OF WING - W1**



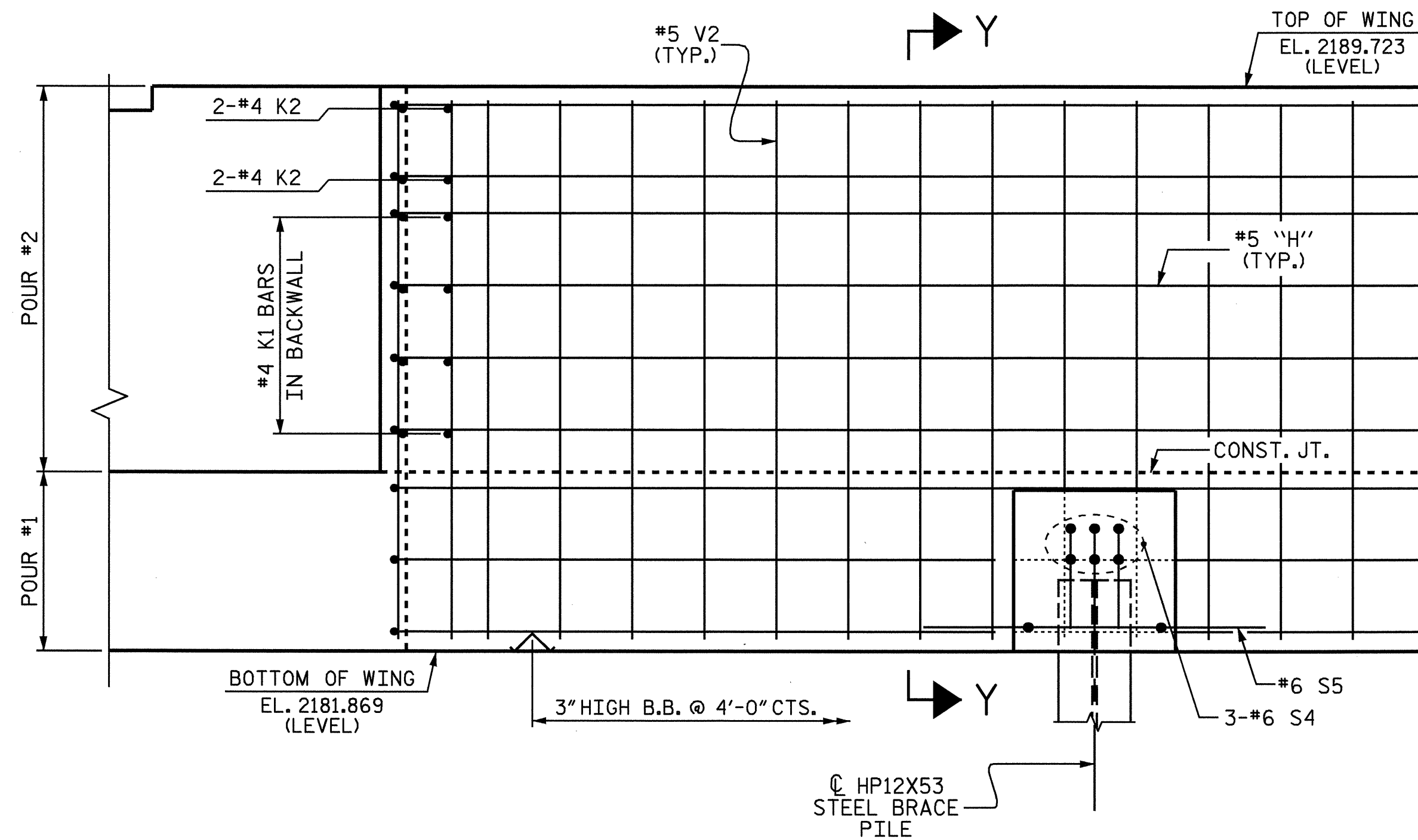
**PLAN OF WING - W2**



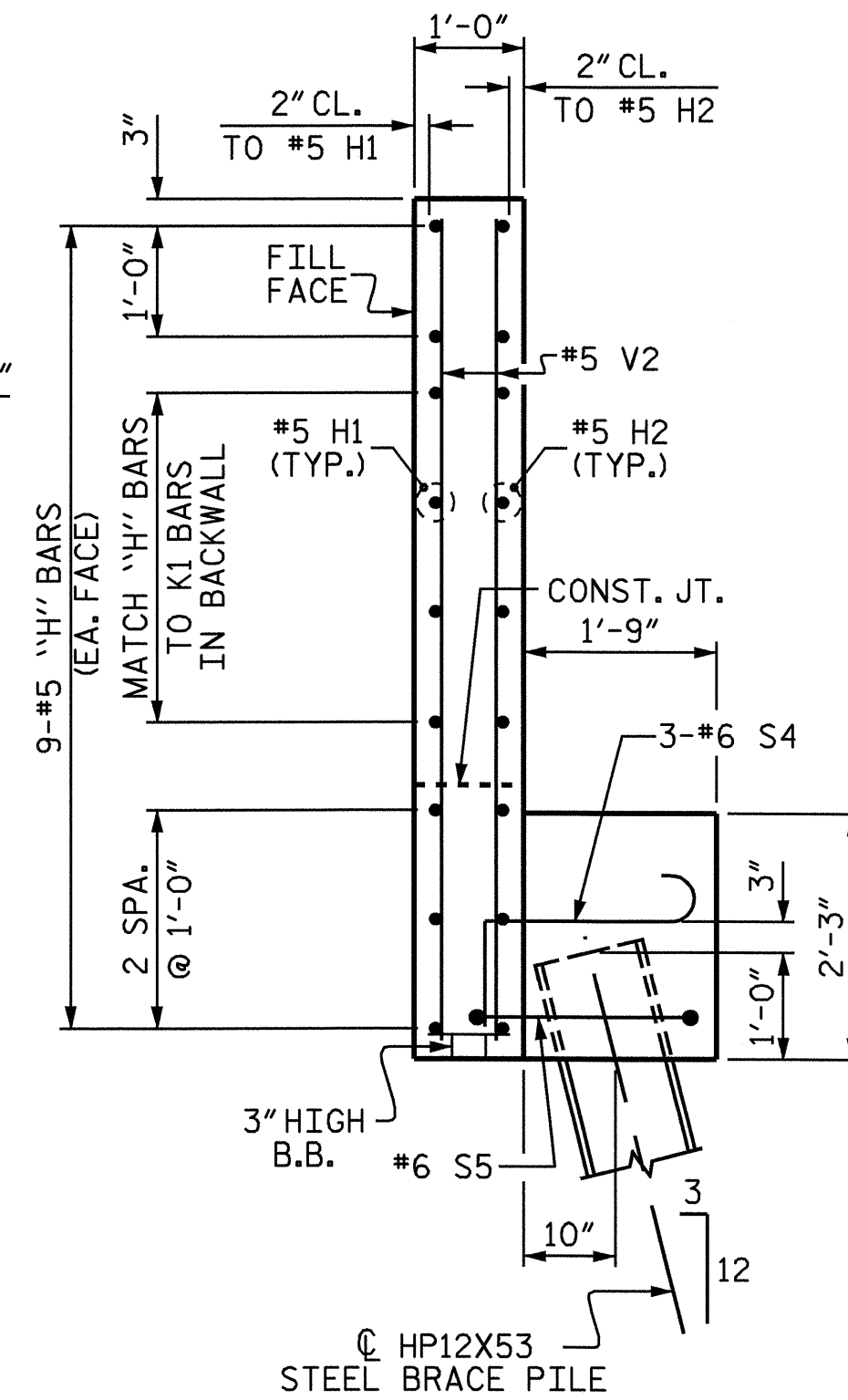
**ELEVATION OF WING - W1**



**SECTION X-X**



**ELEVATION OF WING - W2**



**SECTION Y-Y**

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 2 OF 3

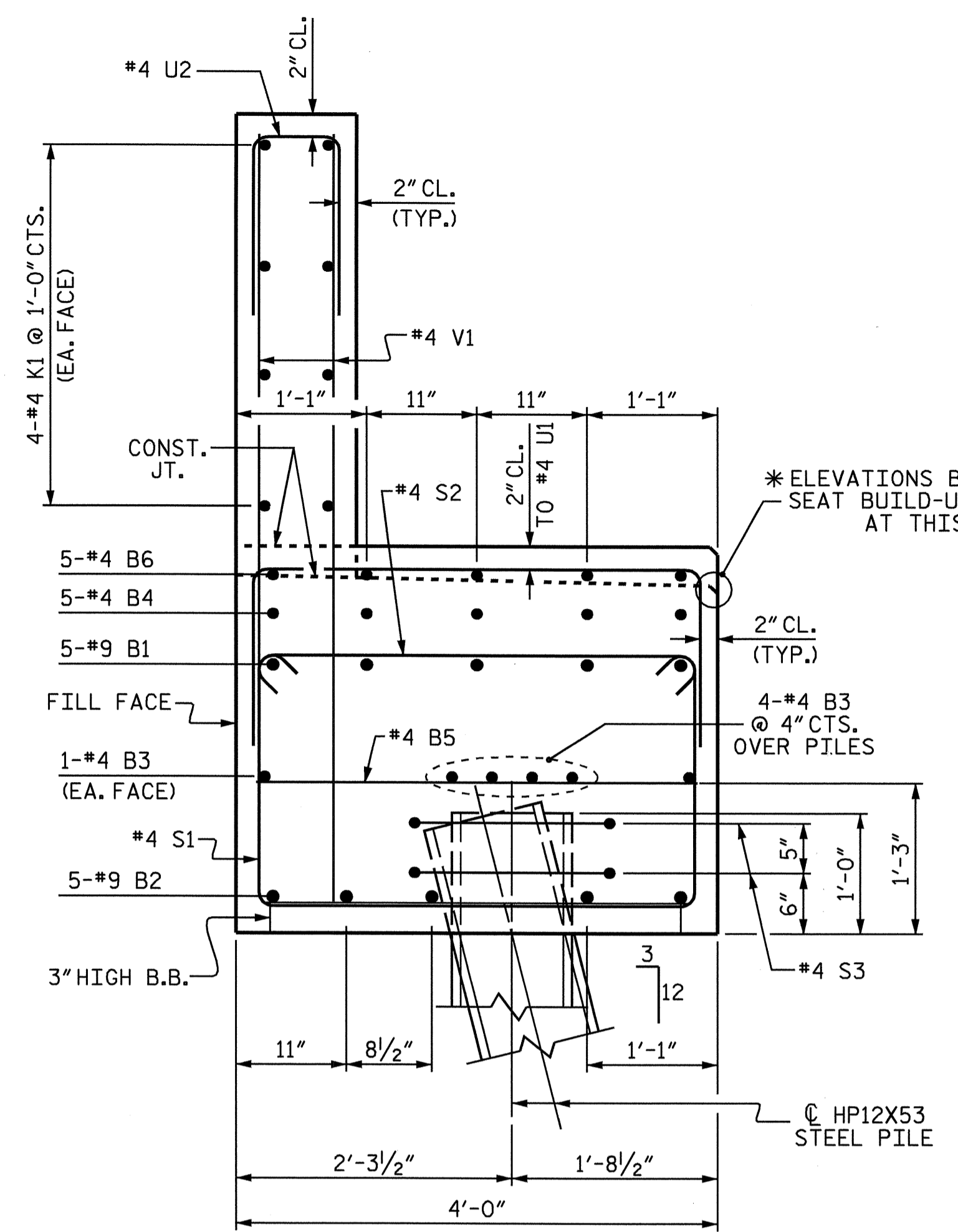
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT #2



DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

23-OCT-2008 14:54  
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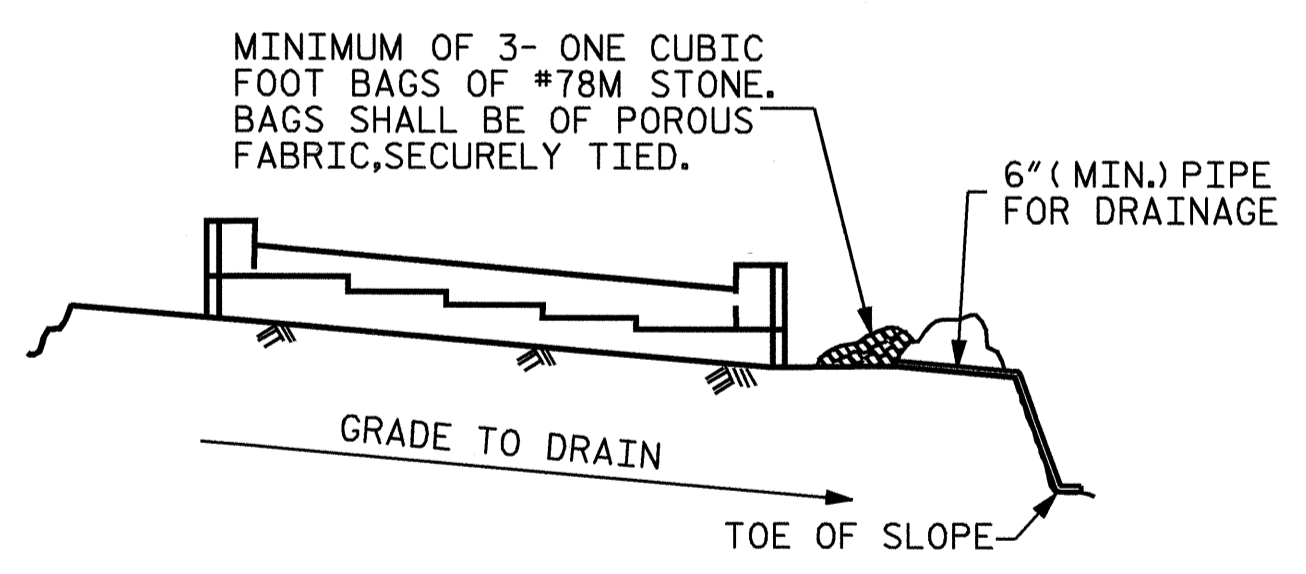
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL	35
2			4			SHEETS	



**SECTION A-A**

BAR TYPES						BILL OF MATERIAL	
						END BENT #2	
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	10	#9	1	34'-10"	1184		
B2	10	#9	1	33'-8"	1145		
B3	12	#4	STR	30'-5"	244		
B4	5	#4	STR	20'-5"	68		
B5	14	#4	STR	3'-8"	34		
B6	10	#4	STR	2'-4"	16		
H1	9	#5	2	15'-11"	149		
H2	9	#5	2	15'-2"	142		
H3	9	#5	3	9'-7"	90		
H4	9	#5	3	8'-11"	84		
K1	16	#4	STR	30'-5"	325		
K2	8	#4	STR	5'-4"	29		
S1	60	#4	4	8'-8"	347		
S2	60	#4	5	4'-5"	177		
S3	12	#4	6	6'-6"	52		
S4	3	#6	8	3'-9"	17		
S5	1	#6	9	8'-11"	13		
U1	19	#4	7	6'-8"	85		
U2	46	#4	7	3'-8"	113		
V1	92	#4	STR	5'-9"	353		
V2	42	#5	STR	7'-5"	325		
V3	29	#5	STR	8'-1"	244		
REINFORCING STEEL						Lbs.	5236
CLASS "A" CONCRETE							
POUR #1 CAP & LOWER WINGS							
						CU.YDS.	25.4
POUR #2 UPPER WINGS & BACKWALL							
						CU.YDS.	13.5
TOTAL						CU.YDS.	38.9
HP12x53 STEEL PILES							
						No. 7	LIN. FT. 105.0

ALL BAR DIMENSIONS ARE OUT TO OUT.

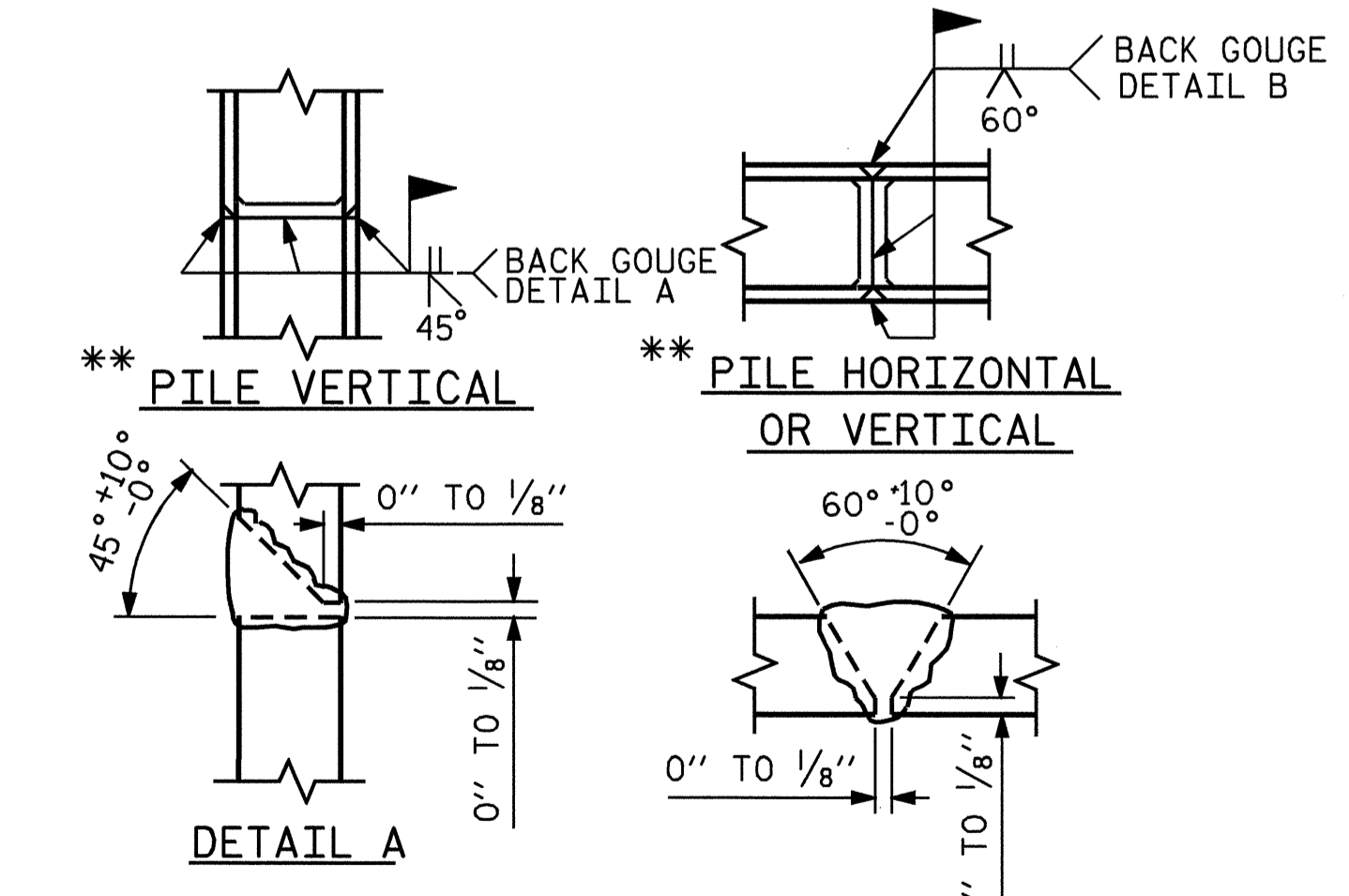


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 3 OF 3

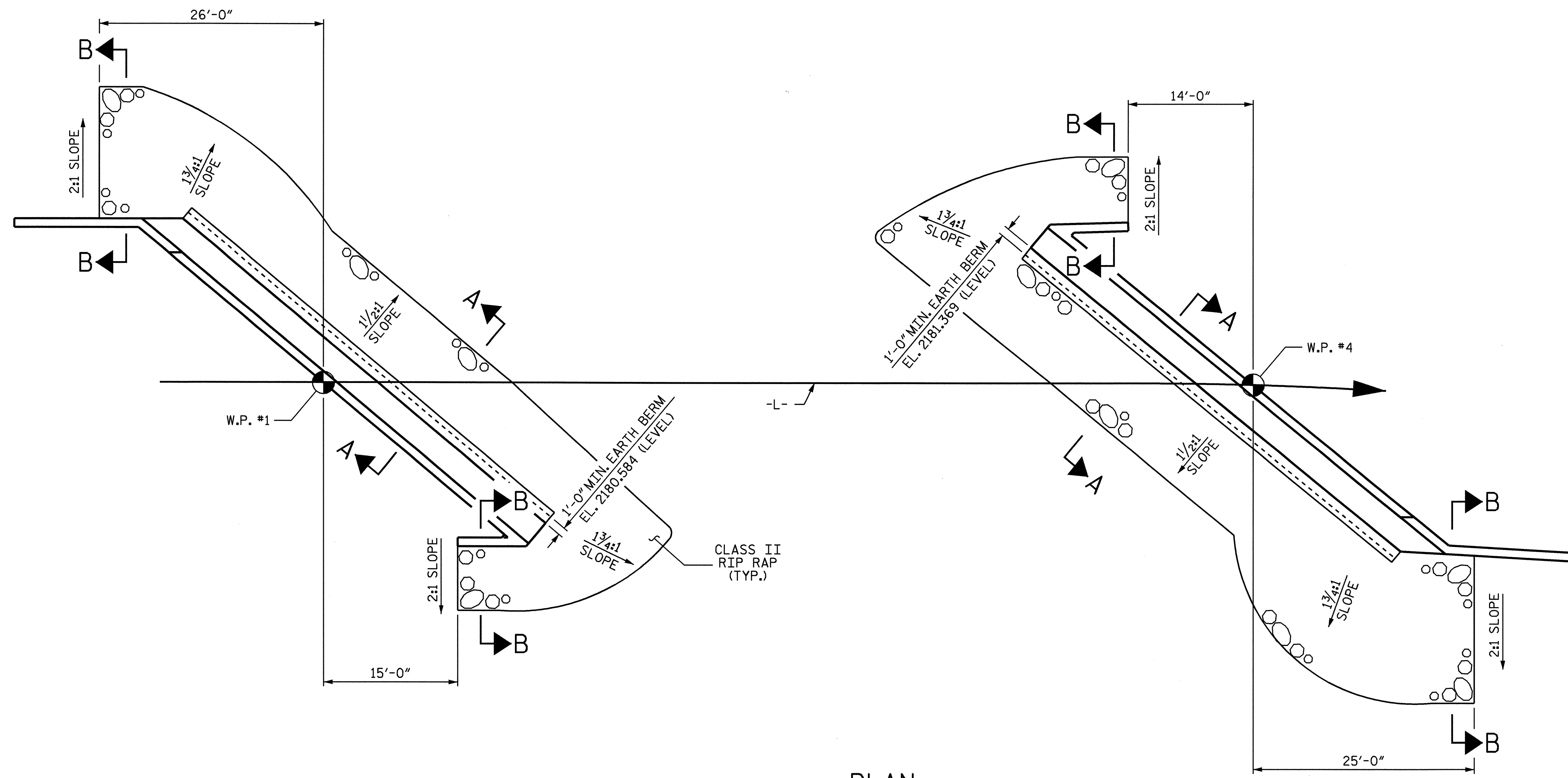
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			35

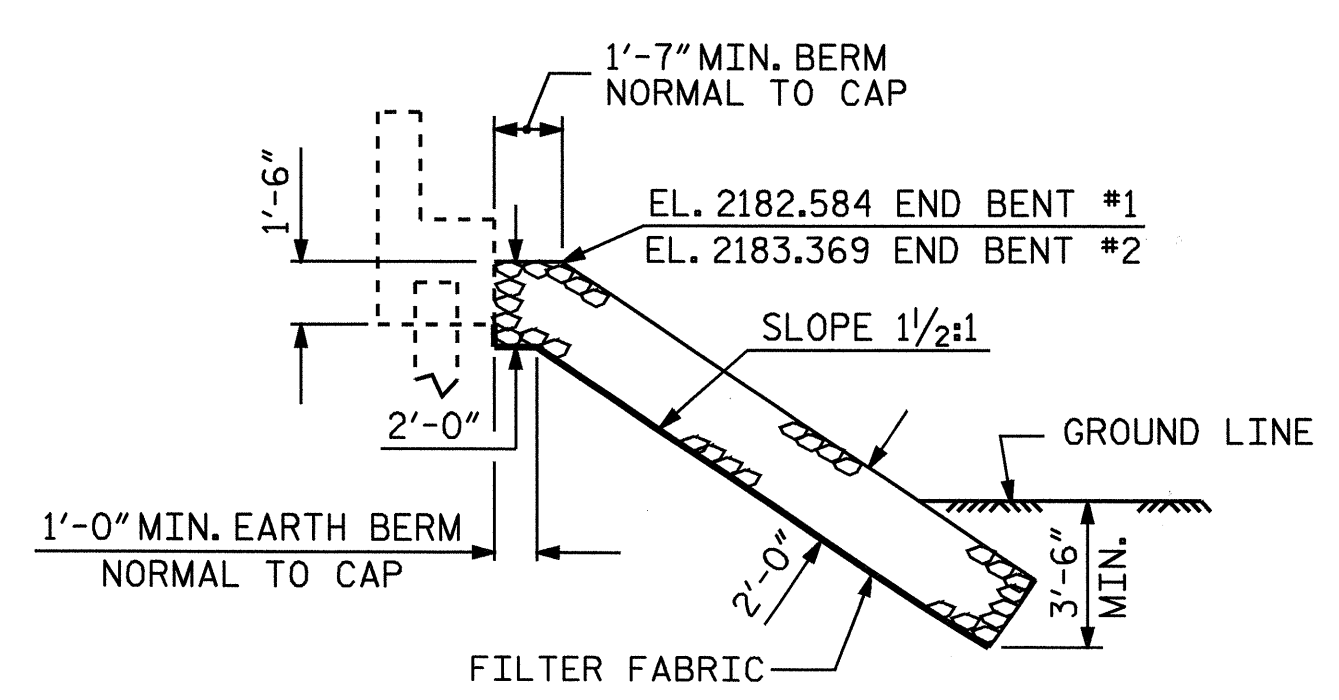


DRAWN BY : S. DOMBROWSKI DATE : 05/08  
 CHECKED BY : H.A. LOCKLEAR DATE : 06/08

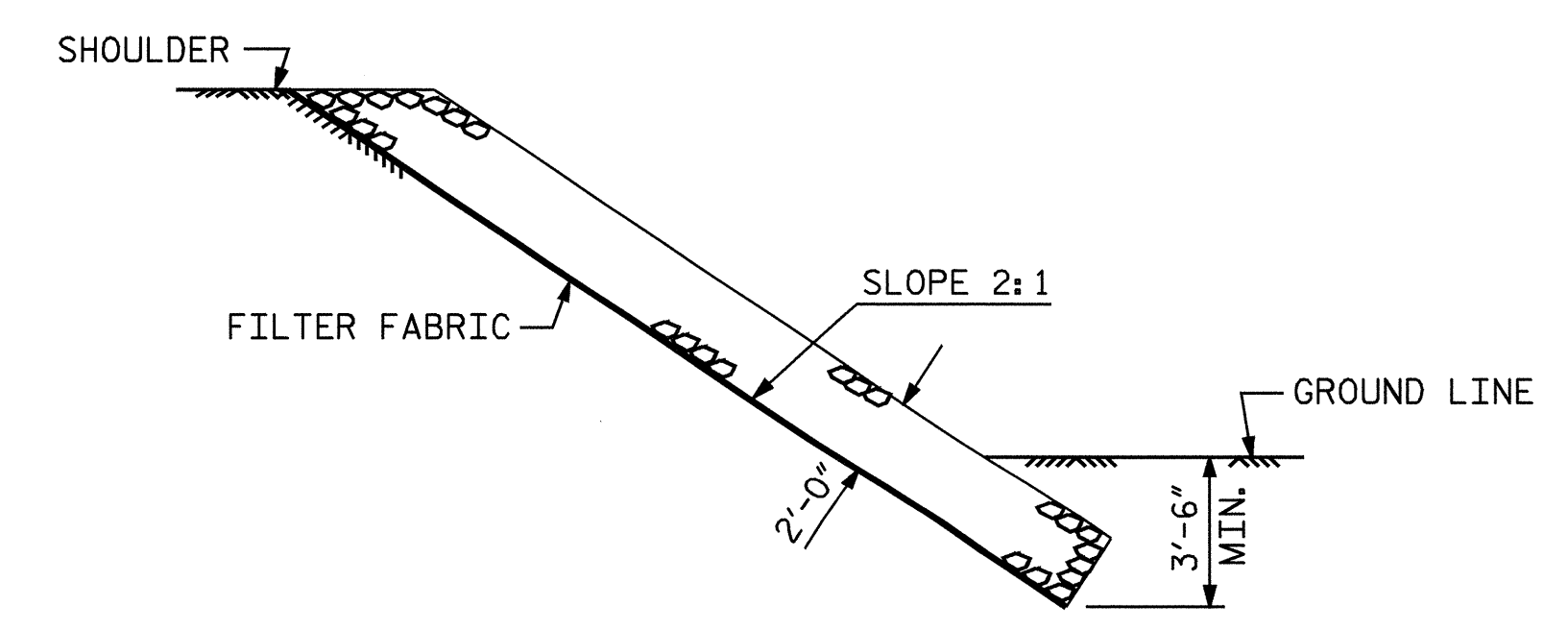


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+35.50 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	151	170
END BENT #2	182	200



SECTION A-A



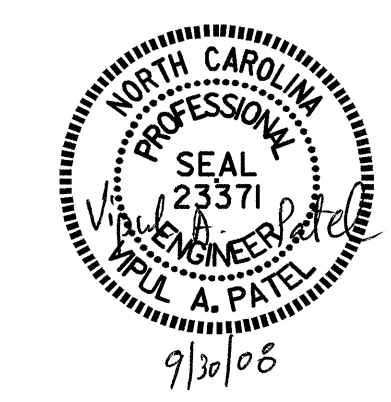
SECTION B-B

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

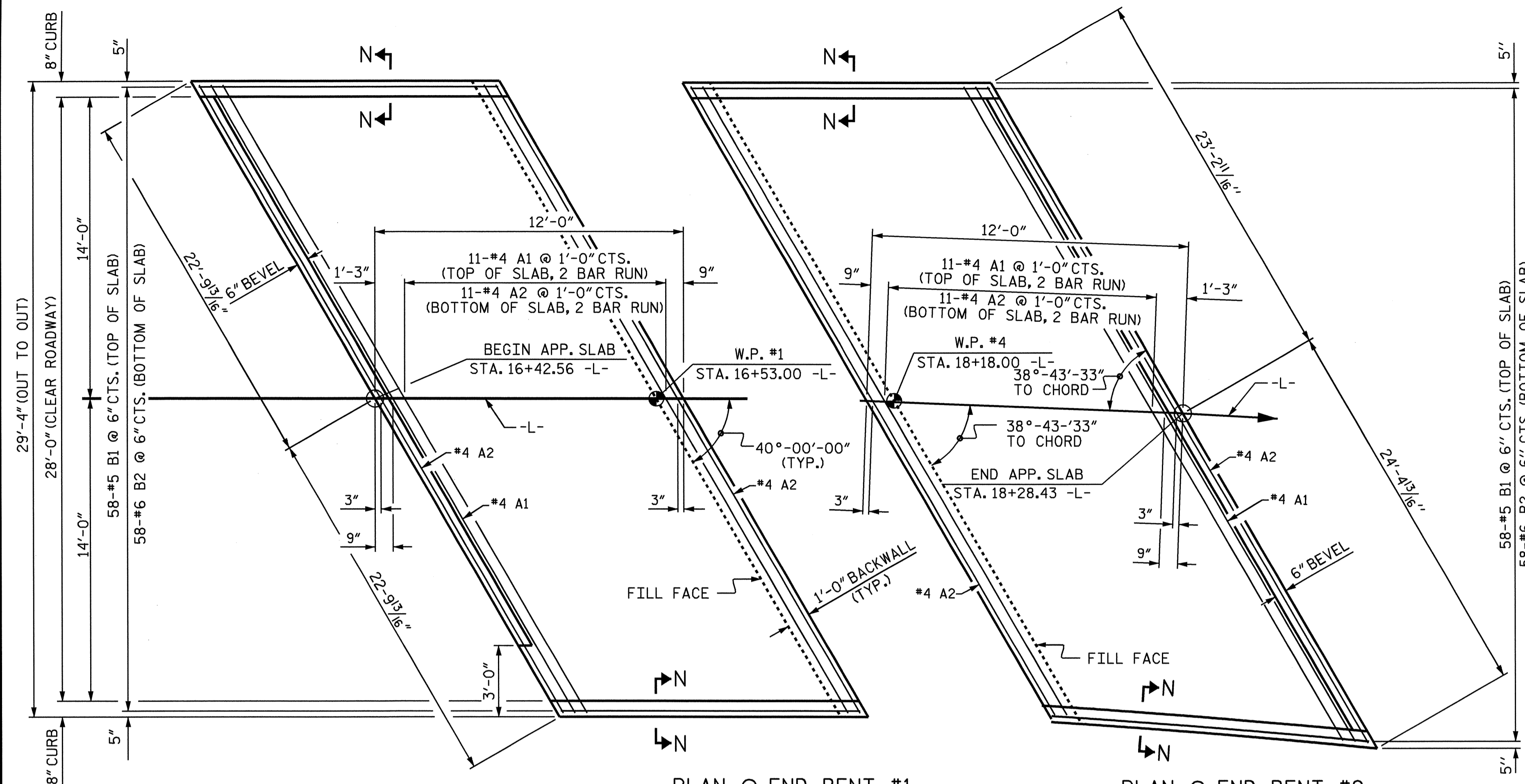
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

—RIP RAP DETAILS—

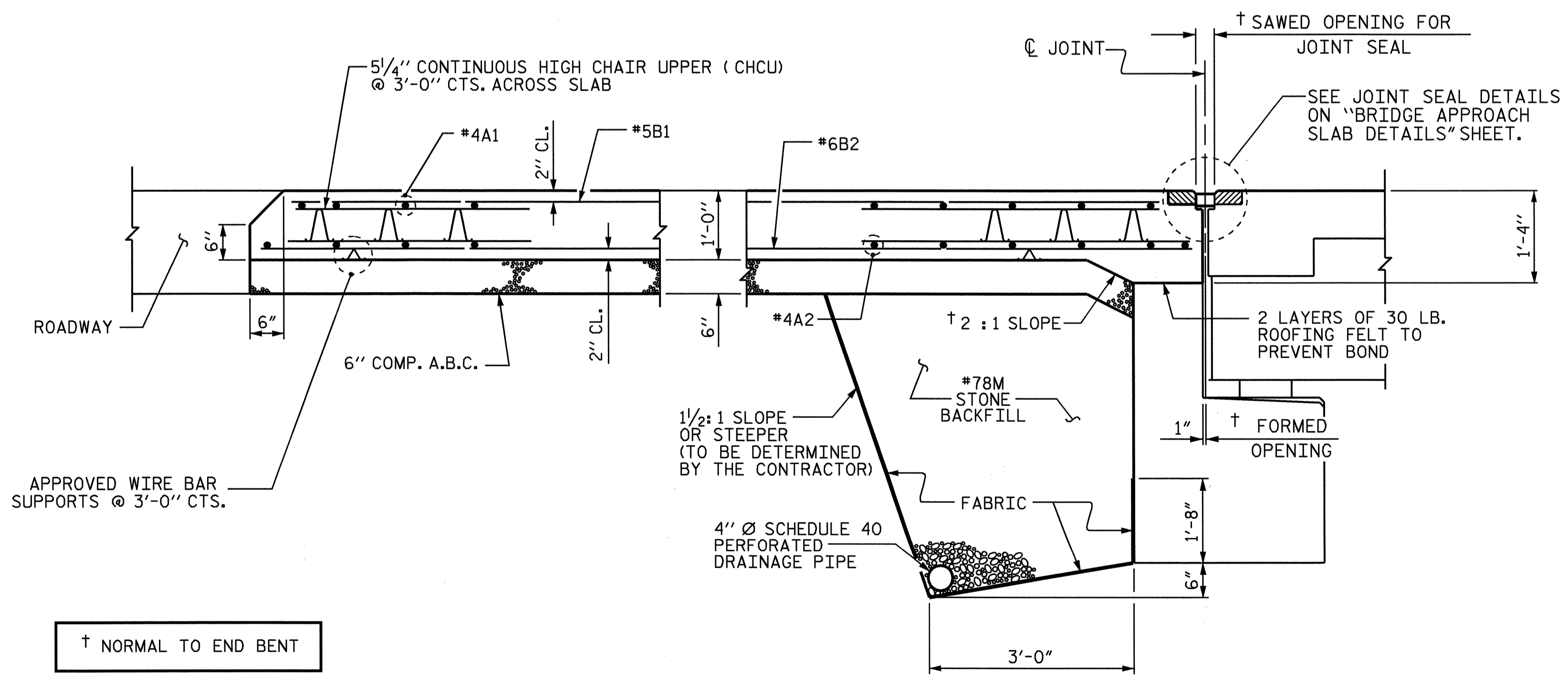
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			35



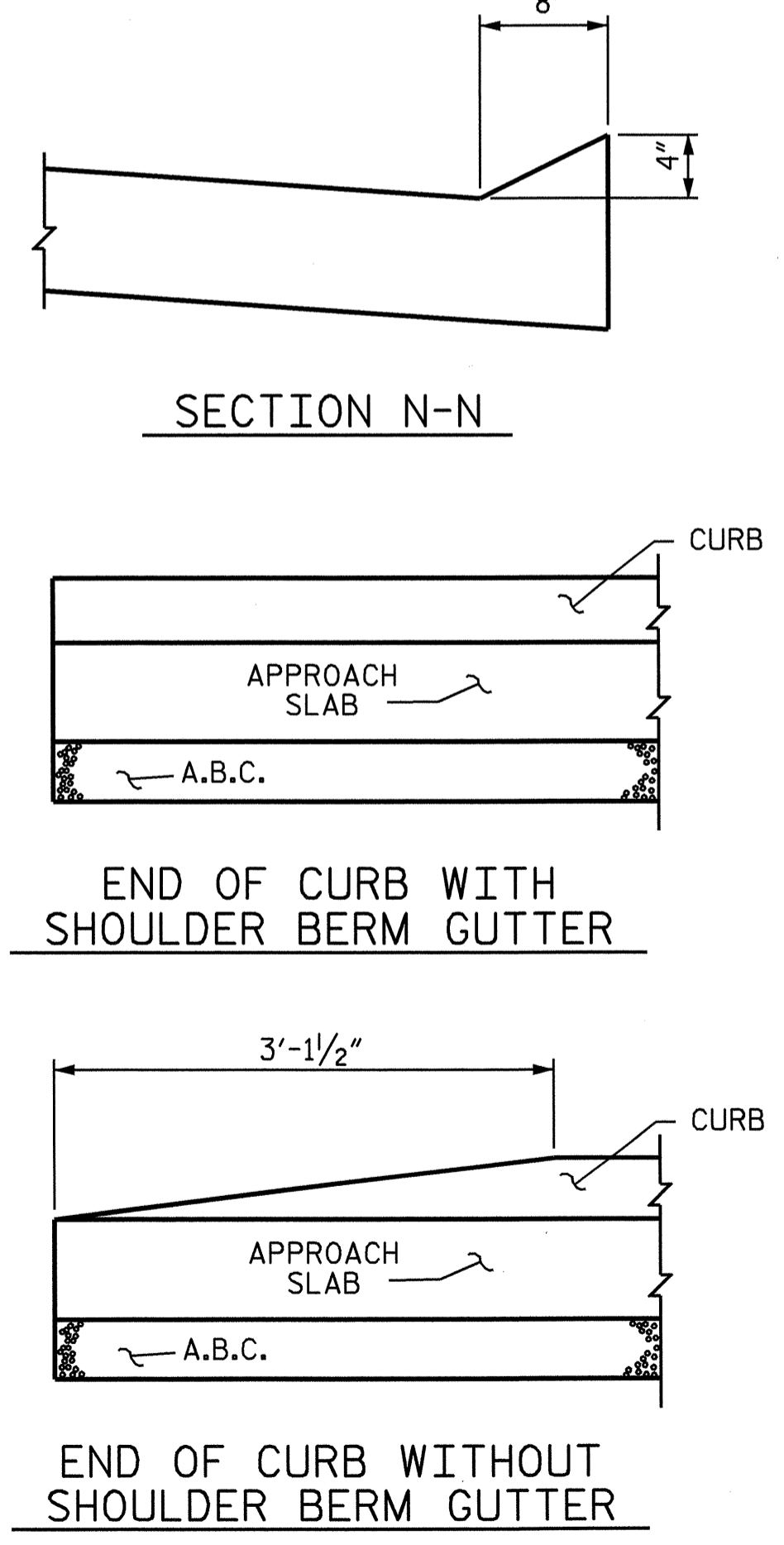
ASSEMBLED BY : S. DOMBROWSKI DATE : 5/29/08  
 CHECKED BY : M.K. BEARD DATE : 6/6/08  
 DRAWN BY : REK 1/84 REV. 8/16/99 RWW/LES  
 CHECKED BY : RDU 1/84 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLA/GM



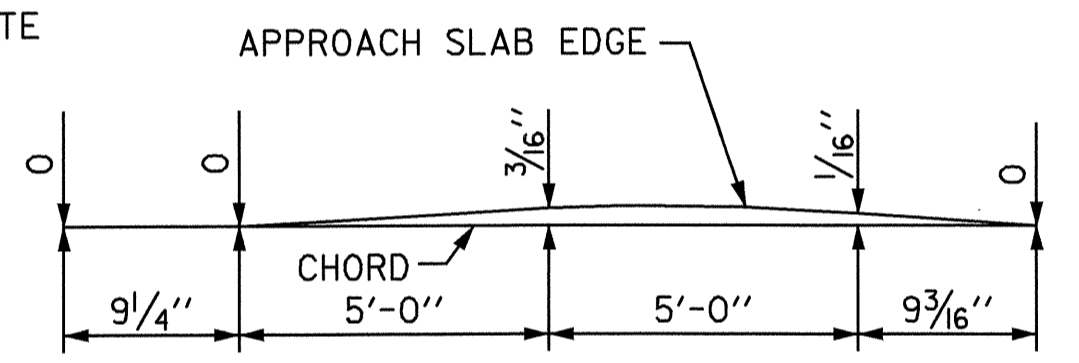
PLAN @ END BENT #1  
 PLAN @ END BENT #2  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



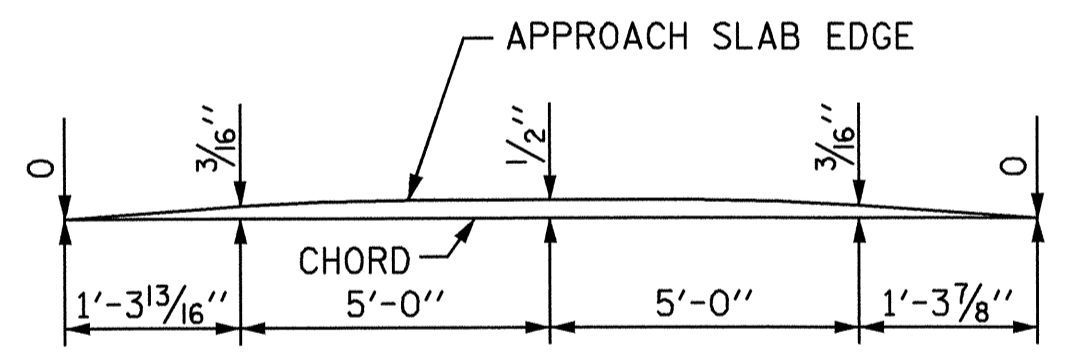
SECTION THRU SLAB



CURB DETAILS



LEFT EDGE



RIGHT EDGE

ARC OFFSETS  
 FOR APPROACH SLAB @ END BENT #2

NOTES

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

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

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

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

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

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

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

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

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

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

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL  
 FOR ONE APPROACH SLAB  
 (2 REQ'D.)

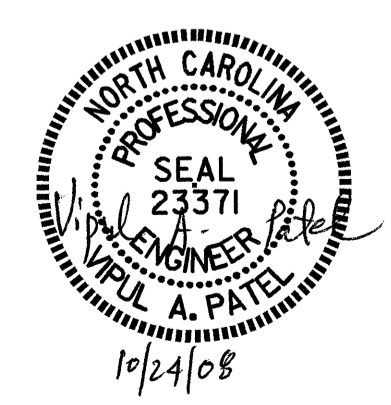
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	24'-8"	395
A2	26	#4	STR	24'-6"	426
*B1	58	#5	STR	10'-6"	635
B2	58	#6	STR	11'-5"	995
REINFORCING STEEL				LBS.	1421
*EPOXY COATED REINFORCING STEEL				LBS.	1030
CLASS AA CONCRETE				C. Y.	13.6

SPLICE CHART

#4 A1	2'-0"
#4 A2	1'-9"

ASSEMBLED BY : J.P. ADAMS DATE : 9/17/08  
 CHECKED BY : V.A. PATEL DATE : 9/18/08  
 DRAWN BY : KMM 3-08  
 CHECKED BY : GM 3-08

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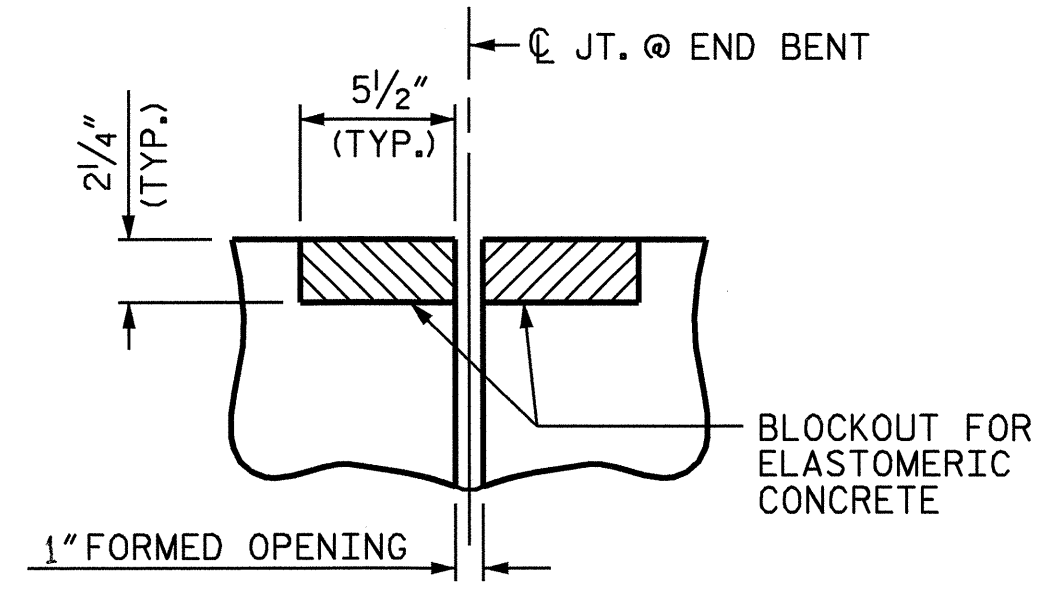
PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 2  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR FLEXIBLE PAVEMENT  
 (SUB-REGIONAL TIER)

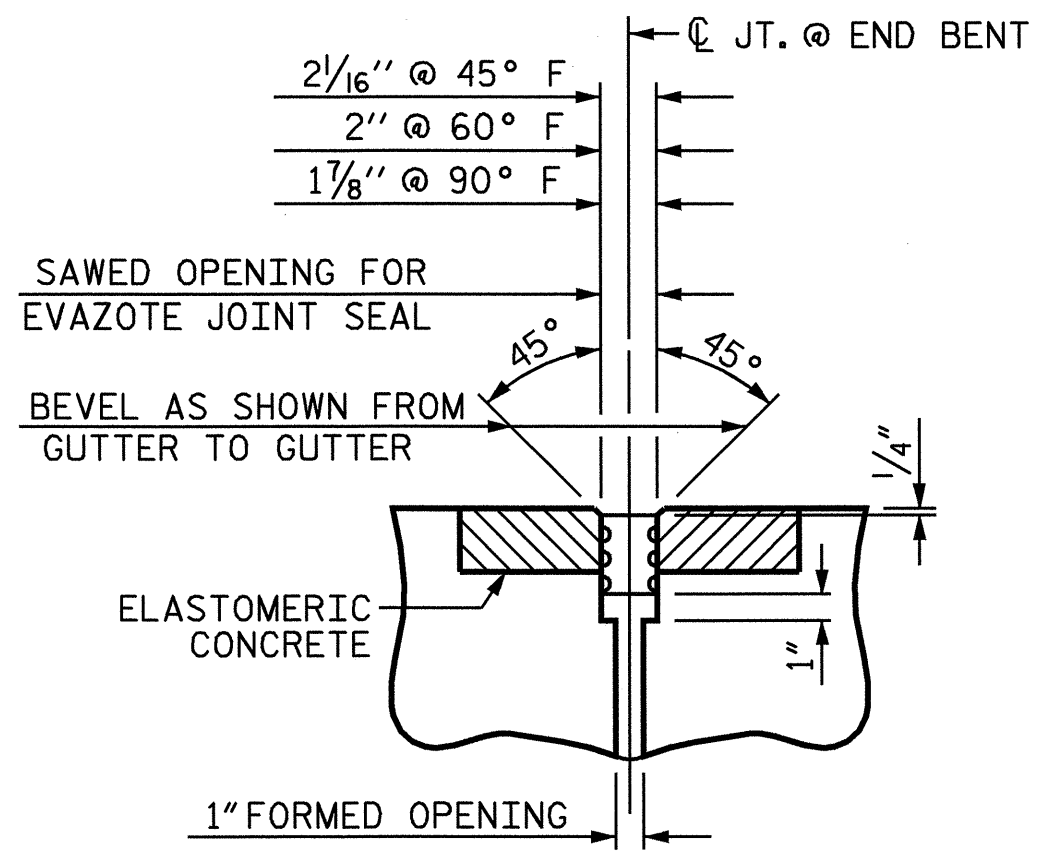
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			35
2			4			35

STD. NO. BAS13





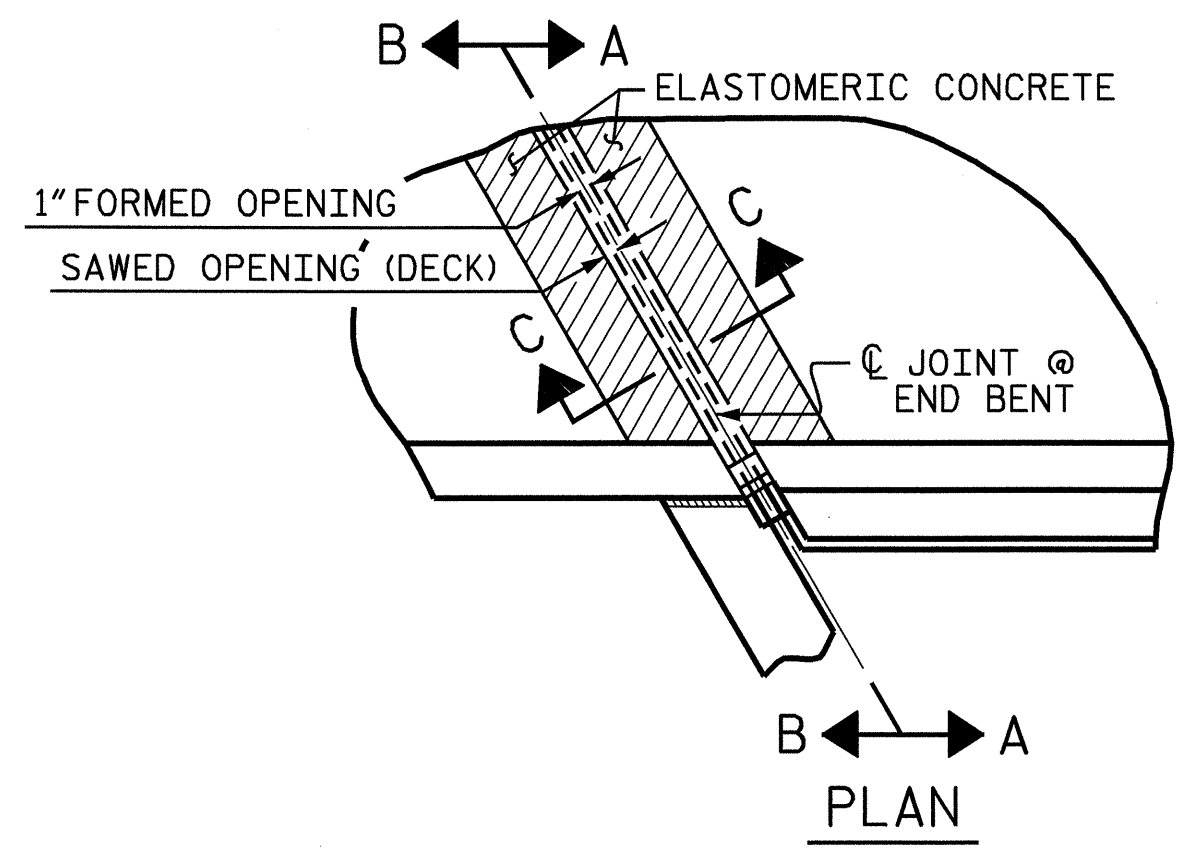
**SECTION C-C**  
EVAZOTE JOINT SEAL  
(PRE-SAWED ELASTOMERIC  
CONCRETE DIMENSIONS)



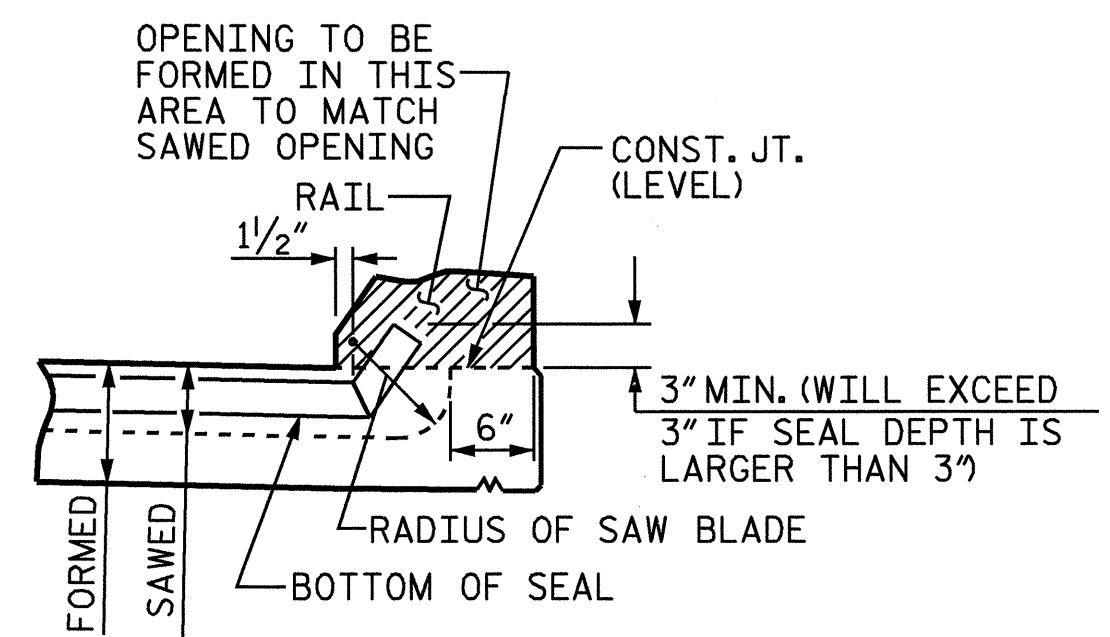
**SECTION C-C**  
EVAZOTE JOINT SEAL  
(EXPANSION)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	7.5
2	7.6
TOTAL	15.1

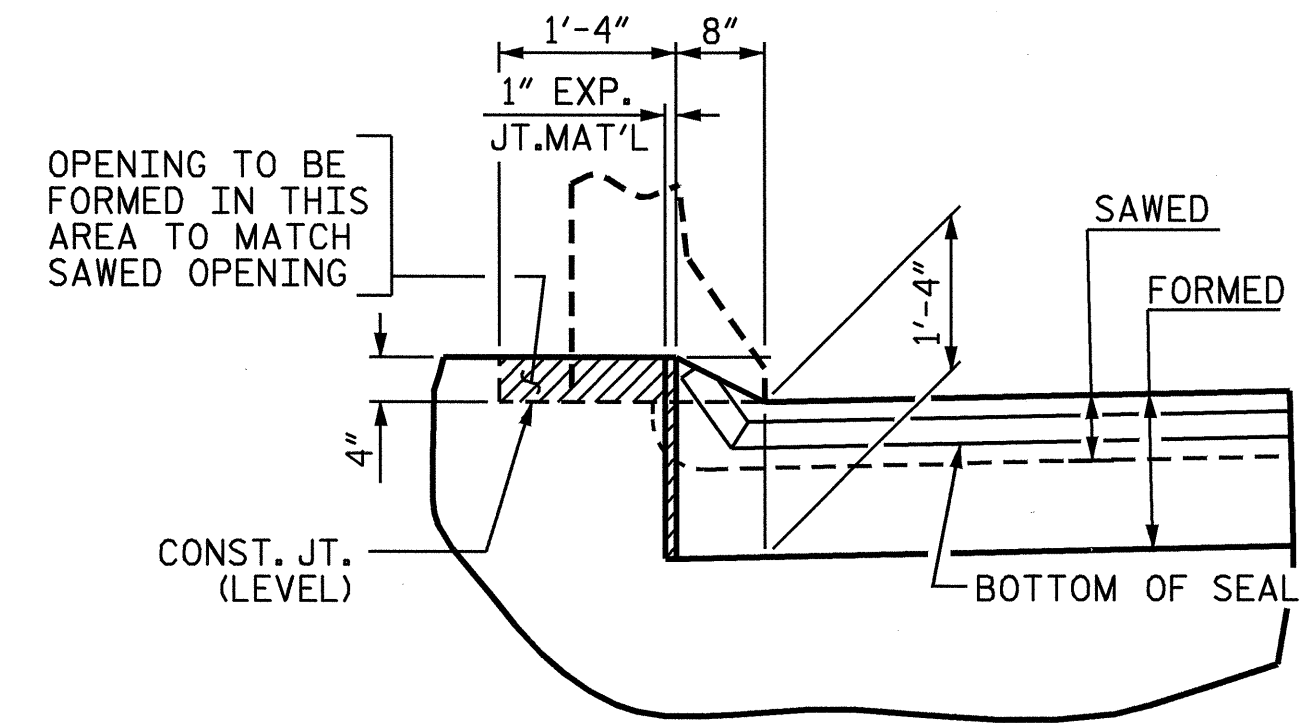
\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



**PLAN**



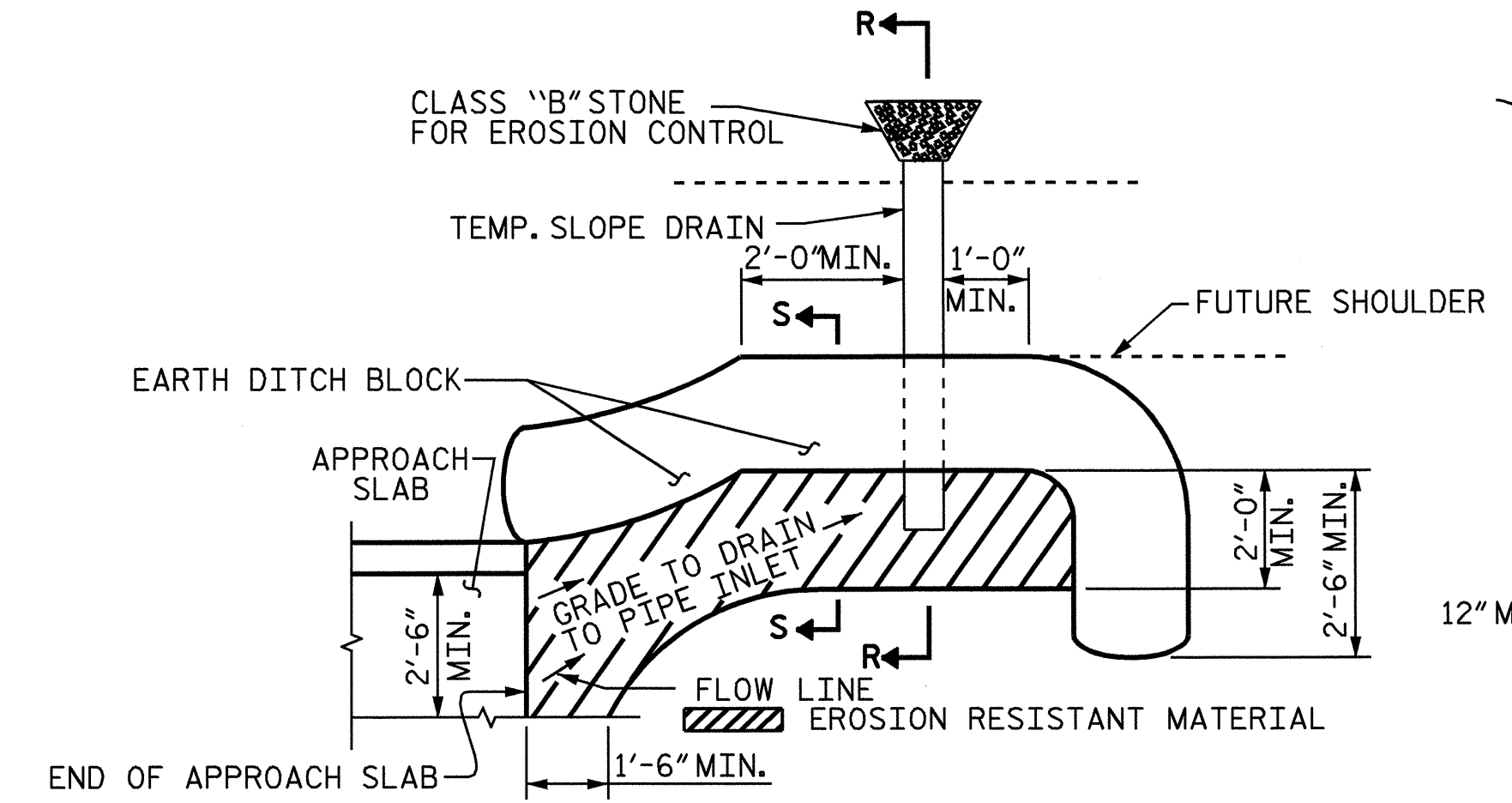
**SECTION A-A**



**SECTION B-B**

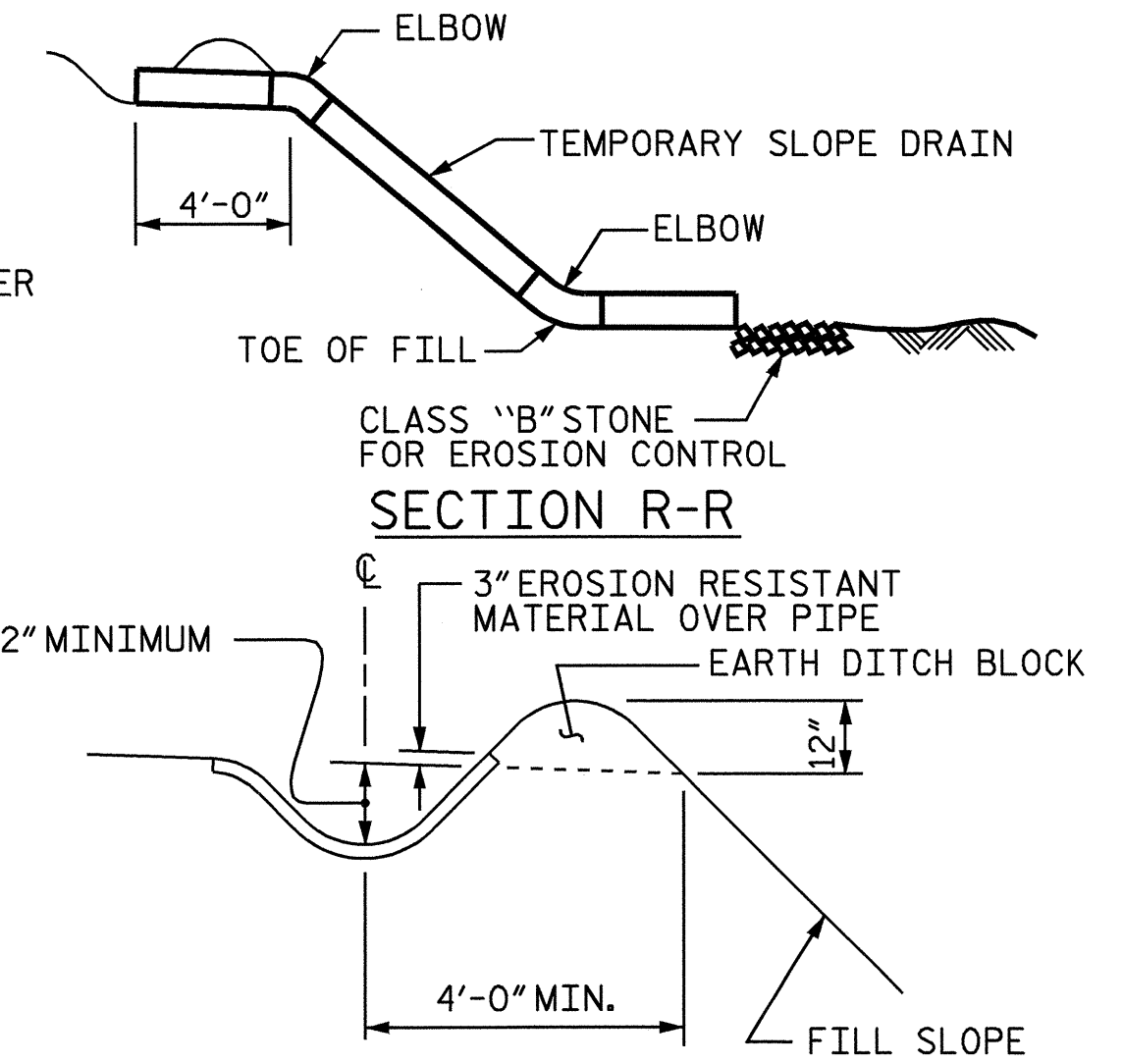
**JOINT SEAL DETAILS @ END BENT**

EVAZOTE JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.  
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.



**PLAN VIEW**

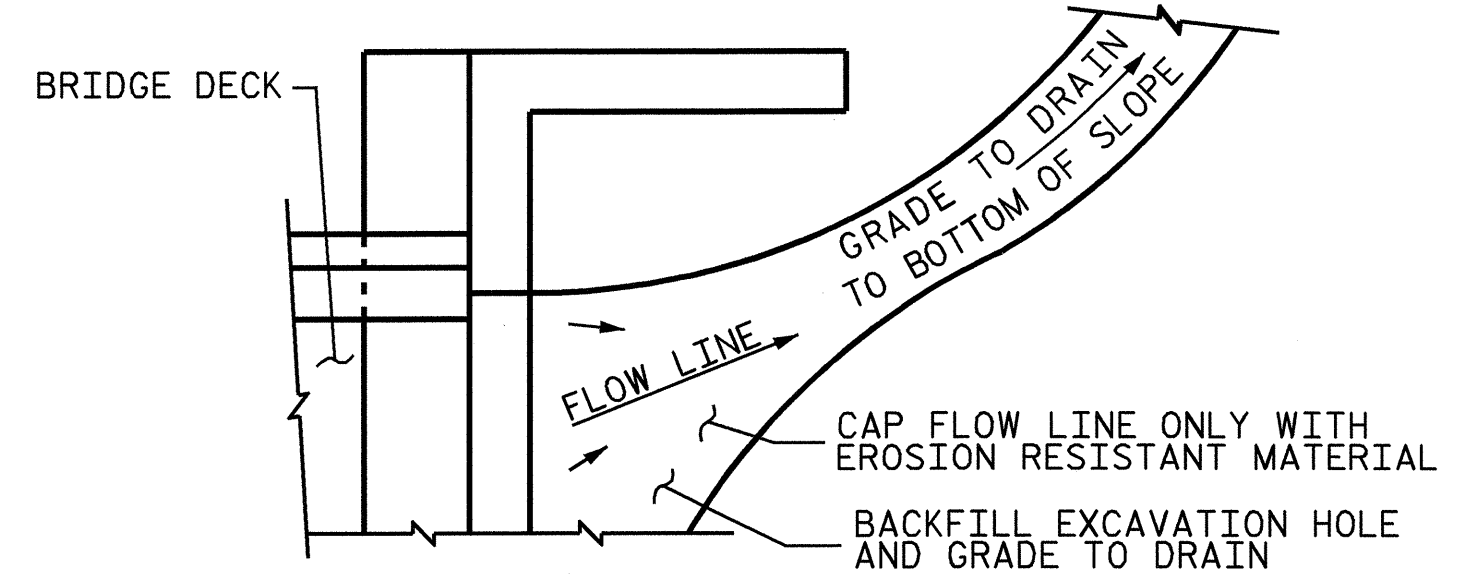
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



**SECTION S-S**

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

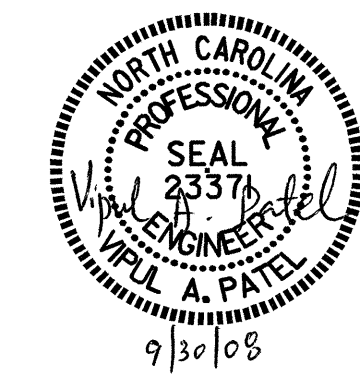


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**

PROJECT NO. B-4149  
HENDERSON COUNTY  
STATION: 17+35.50 -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		
					TOTAL SHEETS 35

ASSEMBLED BY : J.P. ADAMS	DATE : 9/17/08
CHECKED BY : V.A. PATEL	DATE : 9/18/08
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

OVERHANG BRACKET CALCULATION INSTRUCTIONS

AASHTO SHAPES - TYPES III, IV, V, AND VI

- RECORD KNOWN INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- CALCULATE THE MAXIMUM SCREED LOAD PER BRACKET (SLPB) WITH AN ESTIMATED  $R = 1.5$ ,  $SLPB = R \times W$ . ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE ESTIMATED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE, AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE THE BRACKET SPACING, S.
- CALCULATE S/D1 AND S/D2, ROUNDING UP TO NEAREST VALUE IN TABLE 2. ENTER TABLE 2 AND DETERMINE R VALUE.
- CALCULATE REVISED SLPB. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE REVISED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3 OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE REVISED BRACKET SPACING, S.
- CONTINUE ITERATIONS OF STEPS 4-6 UNTIL THE REVISED BRACKET SPACING, S, IS THE SAME AS THE PREVIOUS S VALUE.
- CHECK LUMBER JOIST SPACING: WITH BRACKET SPACING VALUE, S, ROUND THIS VALUE UP TO THE NEAREST VALUE OF ALLOWABLE SPAN LENGTH OF JOIST OF TABLE 3. USING THIS VALUE, ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE, DETERMINE JOIST SPACING FROM TABLE 3. IF NECESSARY, ADJUST LUMBER JOIST SIZE AND/OR JOIST SPACING TO MEET ALLOWABLE SPAN LENGTH OF JOIST.
- CONVERSELY, IF THE DESIRED JOIST SPACING IS KNOWN, USE THIS ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE TO DETERMINE IF ALLOWABLE SPAN LENGTH OF JOIST IS GREATER THAN THE BRACKET SPACING, S. IF NECESSARY, ADJUST LUMBER JOIST SIZE TO MEET REQUIREMENTS OF ALLOWABLE SPAN LENGTH OF JOIST AND JOIST SPACING.
- RECORD REMAINING INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" FORM.
- SUBMIT FORM AND CALCULATIONS FOR REVIEW AND APPROVAL.

TABLE 1-1 (FOR USE ON UP TO 2'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (t) (in)	BRACKET (K) DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	6'-7"	6000
	40	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	6'-7"	6000
	50	3'-6"	4'-0"	4'-5"	4'-9"	5'-1"	5'-3"	5'-5"	5'-7"	6'-7"	6000
12	30	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	6000
	40	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	6000
	50	3'-2"	3'-7"	4'-1"	4'-7"	5'-0"	5'-2"	5'-4"	5'-7"	6'-5"	6000
14	30	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	6000
	40	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	6000
	50	2'-10"	3'-4"	3'-9"	4'-2"	4'-7"	5'-0"	5'-4"	5'-7"	6'-4"	6000
16	30	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	6000
	40	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	6000
	50	2'-8"	3'-0"	3'-5"	3'-10"	4'-3"	4'-7"	5'-0"	5'-5"	6'-3"	6000

TABLE 1-2 (FOR USE ON OVER 2'-0" TO 2'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (t) (in)	BRACKET (K) DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	6000
	40	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	6000
	50	3'-1"	3'-6"	4'-0"	4'-5"	4'-11"	5'-3"	5'-5"	5'-7"	6'-7"	6000
12	30	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	6000
	40	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	6000
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-5"	6000
14	30	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	6000
	40	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	6000
	50	2'-6"	2'-10"	3'-3"	3'-7"	4'-0"	4'-4"	4'-9"	5'-1"	6'-3"	6000
16	30	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	6000
	40	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	6000
	50	2'-3"	2'-7"	2'-11"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-8"	6000

TABLE 1-3 (FOR USE ON OVER 2'-6" TO 3'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (t) (in)	BRACKET (K) DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30										4000
	40										4000
	50										4000
12	30										4000
	40										4000
	50										4000
14	30										4000
	40										4000
	50										4000
16	30										4000
	40										4000
	50										4000

TABLE 1-4 (FOR USE ON OVER 3'-0" TO 3'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (t) (in)	BRACKET (K) DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30										4000
	40										4000
	50										4000
12	30										4000
	40										4000
	50										4000
14	30										4000
	40										4000
	50										4000
16	30										4000
	40										4000
	50										4000

DEFINITIONS

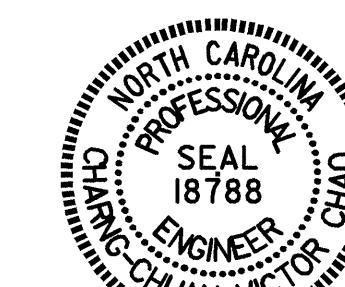
- SLPB = SCREED LOAD PER BRACKET (R x W)
- R = SCREED LOAD FACTOR, OBTAINED FROM TABLE 2
- W = WHEEL LOAD
- S = BRACKET SPACING
- T = AVERAGE SLAB THICKNESS
- SWL = SAFE WORKING LOAD
- K = DIMENSION DEFINED ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- L = OVERHANG MEASURED FROM EDGE OF TOP FLANGE TO EDGE OF SUPERSTRUCTURE

PROJECT NO. B-4149  
 HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD OVERHANG FALSEWORK  
 AASHTO TYPES  
 III, IV, V, AND VI



Chang-Chuan Victor Chao  
 7-3-2008

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS 35
2			4			

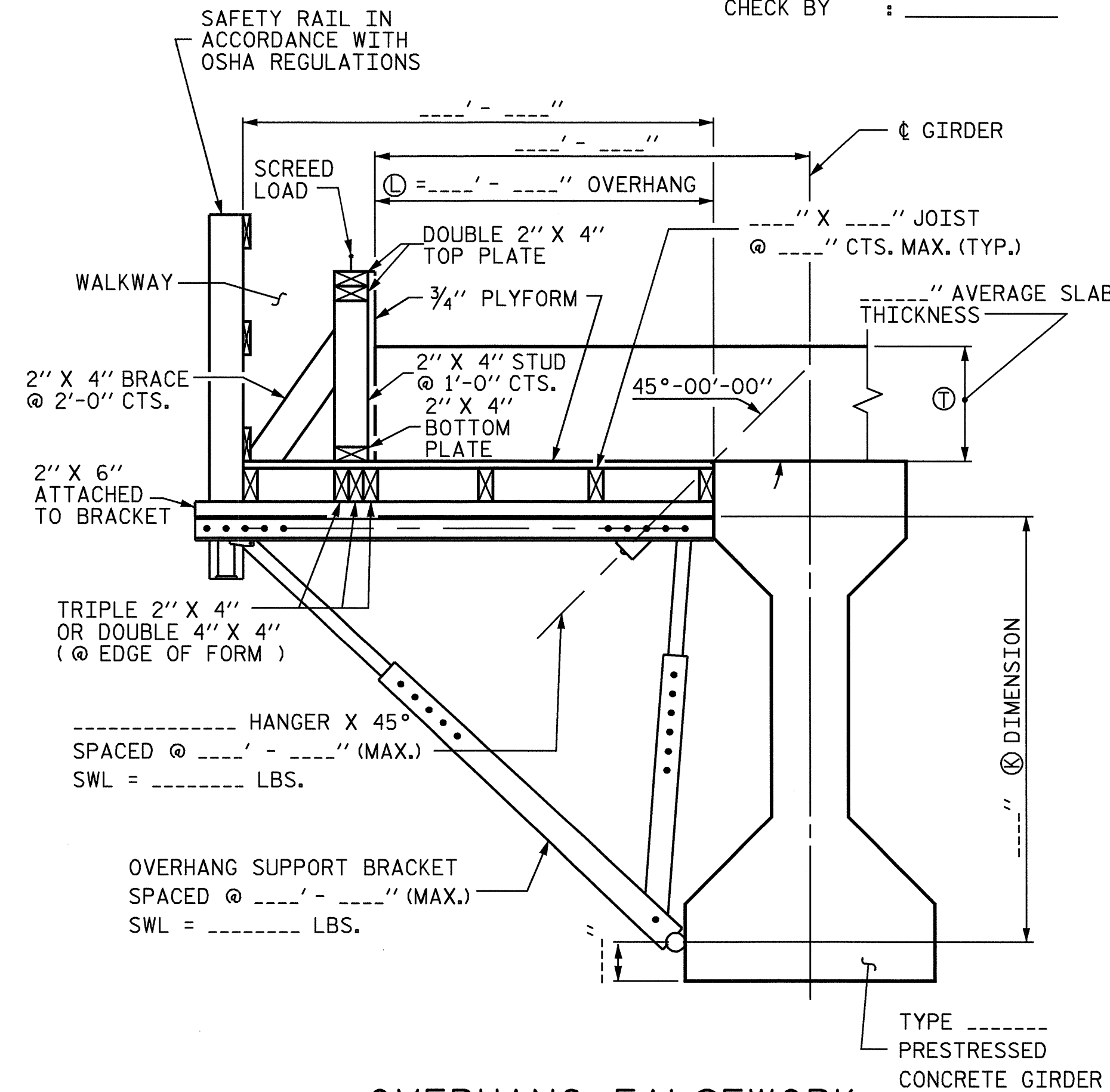
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	

**BRIDGE OVERHANG BRACKET SUMMARY**

TOTAL SCREED WEIGHT = \_\_\_\_\_ LBS.  
 NUMBER OF SCREED WHEELS = \_\_\_\_\_  
 SCREED WHEEL LOAD (W) = \_\_\_\_\_ LBS.  
 SCREED LOAD PER BRACKET = \_\_\_\_\_ LBS.

PROJECT No. : \_\_\_\_\_  
 COUNTY : \_\_\_\_\_  
 STATION : \_\_\_\_\_  
 DESCRIPTION : \_\_\_\_\_

DATE : \_\_\_\_\_  
 DESIGN BY : \_\_\_\_\_  
 CHECK BY : \_\_\_\_\_



**OVERHANG FALSEWORK**

**NOTES**

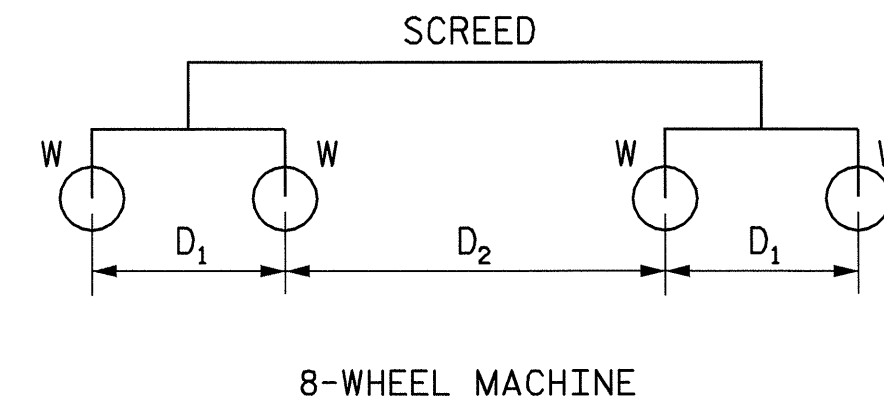
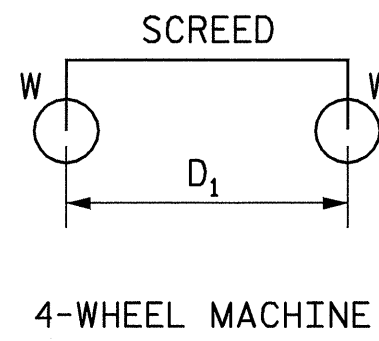
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

SUBMITTALS UTILIZING THE INSTRUCTIONS AND PROCEDURES DESCRIBED ON SHEET 1 OF 3 SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS AND SPECIAL PROVISIONS, EXCEPT THAT CALCULATIONS FOR OVERHANG FALSEWORK NEED NOT BE SEALED BY A REGISTERED ENGINEER.

FOR OVERHANG FALSEWORK BRACING DESIGN, SEE SHEET 3 OF 3.



**TABLE 2: SCREED LOAD FACTOR "R"**

4 WHEEL MACHINE	
S/D1	R
<= 1.0	1.00
1.1	1.09
1.2	1.17
1.3	1.23
1.4	1.29
1.5	1.33
1.6	1.38
1.7	1.41
1.8	1.44
1.9	1.47
2.0	1.50
2.2	1.55
2.4	1.58
2.6	1.62
2.8	1.64
3.0	1.67
3.5	1.71
4.0	1.75

		THE SCREED LOAD FACTOR R (FOR 8 WHEEL MACHINE)																	
		S/D <sub>2</sub>																	
		<= 1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0
S/D <sub>1</sub>	<= 1.0	1.00	1.09	1.17	1.23	1.29	1.33	1.38	1.41	1.44	1.47	1.50	1.55	1.58	1.62	1.64	1.67	1.71	1.75
	1.1	1.09	1.18	1.26	1.32	1.38	1.42	1.47	1.50	1.54	1.56	1.59	1.64	1.67	1.71	1.73	1.76	1.81	1.84
	1.2	1.17	1.26	1.33	1.40	1.45	1.50	1.54	1.58	1.61	1.64	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92
	1.3	1.23	1.32	1.40	1.46	1.52	1.56	1.61	1.64	1.68	1.70	1.73	1.78	1.81	1.85	1.87	1.90	1.95	1.98
	1.4	1.29	1.38	1.45	1.52	1.57	1.62	1.66	1.70	1.73	1.76	1.79	1.83	1.87	1.90	1.93	1.95	2.00	2.07
	1.5	1.33	1.42	1.50	1.56	1.62	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92	1.95	1.98	2.00	2.10	2.17
	1.6	1.38	1.47	1.54	1.61	1.66	1.71	1.75	1.79	1.82	1.85	1.88	1.92	1.96	1.99	2.04	2.08	2.18	2.25
	1.7	1.41	1.50	1.58	1.64	1.70	1.75	1.79	1.82	1.86	1.89	1.91	1.96	2.00	2.05	2.11	2.16	2.25	2.32
	1.8	1.44	1.54	1.61	1.68	1.73	1.78	1.82	1.86	1.89	1.92	1.94	1.99	2.06	2.12	2.17	2.22	2.32	2.39
	1.9	1.47	1.56	1.64	1.70	1.76	1.81	1.85	1.89	1.92	1.95	1.97	2.04	2.11	2.18	2.23	2.28	2.38	2.45
	2.0	1.50	1.59	1.67	1.73	1.79	1.83	1.88	1.91	1.94	1.97	2.00	2.09	2.17	2.23	2.29	2.33	2.43	2.50
	2.2	1.55	1.64	1.71	1.78	1.83	1.88	1.92	1.96	1.99	2.04	2.09	2.18	2.26	2.32	2.38	2.42	2.52	2.59
	2.4	1.58	1.67	1.75	1.81	1.87	1.92	1.96	2.00	2.06	2.11	2.17	2.26	2.33	2.40	2.45	2.50	2.60	2.67
	2.6	1.62	1.71	1.78	1.85	1.90	1.95	1.99	2.05	2.12	2.18	2.23	2.32	2.40	2.46	2.52	2.56	2.66	2.73
	2.8	1.64	1.73	1.81	1.87	1.93	1.98	2.04	2.11	2.17	2.23	2.29	2.38	2.45	2.52	2.57	2.62	2.71	2.79
	3.0	1.67	1.76	1.83	1.90	1.95	2.00	2.08	2.16	2.22	2.28	2.33	2.42	2.50	2.56	2.62	2.67	2.76	2.83
3.5	1.71	1.81	1.88	1.95	2.00	2.10	2.18	2.25	2.32	2.38	2.43	2.52	2.60	2.66	2.71	2.76	2.86	2.93	
4.0	1.75	1.84	1.92	1.98	2.07	2.17	2.25	2.32	2.39	2.45	2.50	2.59	2.67	2.73	2.79	2.83	2.93	3.00	

**TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS**

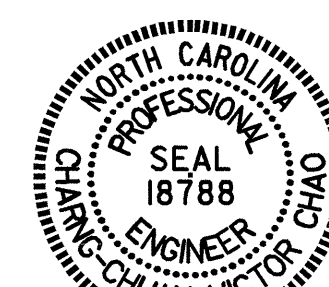
AVG. SLAB THICKNESS (IN)	LUMBER JOIST SIZE (IN X IN)	JOIST SPACINGS			
		15 IN	12 IN	10 IN	8 IN
10	2 X 4	—	4' - 6"	4' - 9"	5' - 0"
	4 X 4	5' - 9"	6' - 3"	6' - 6"	6' - 7"
12	2 X 4	—	4' - 3"	4' - 9"	5' - 0"
	4 X 4	5' - 3"	6' - 0"	6' - 3"	6' - 5"
14	2 X 4	—	4' - 0"	4' - 6"	5' - 0"
	4 X 4	—	5' - 6"	6' - 0"	6' - 4"
16	2 X 4	—	4' - 0"	4' - 3"	4' - 9"
	4 X 4	—	5' - 3"	5' - 9"	6' - 3"

PROJECT No. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

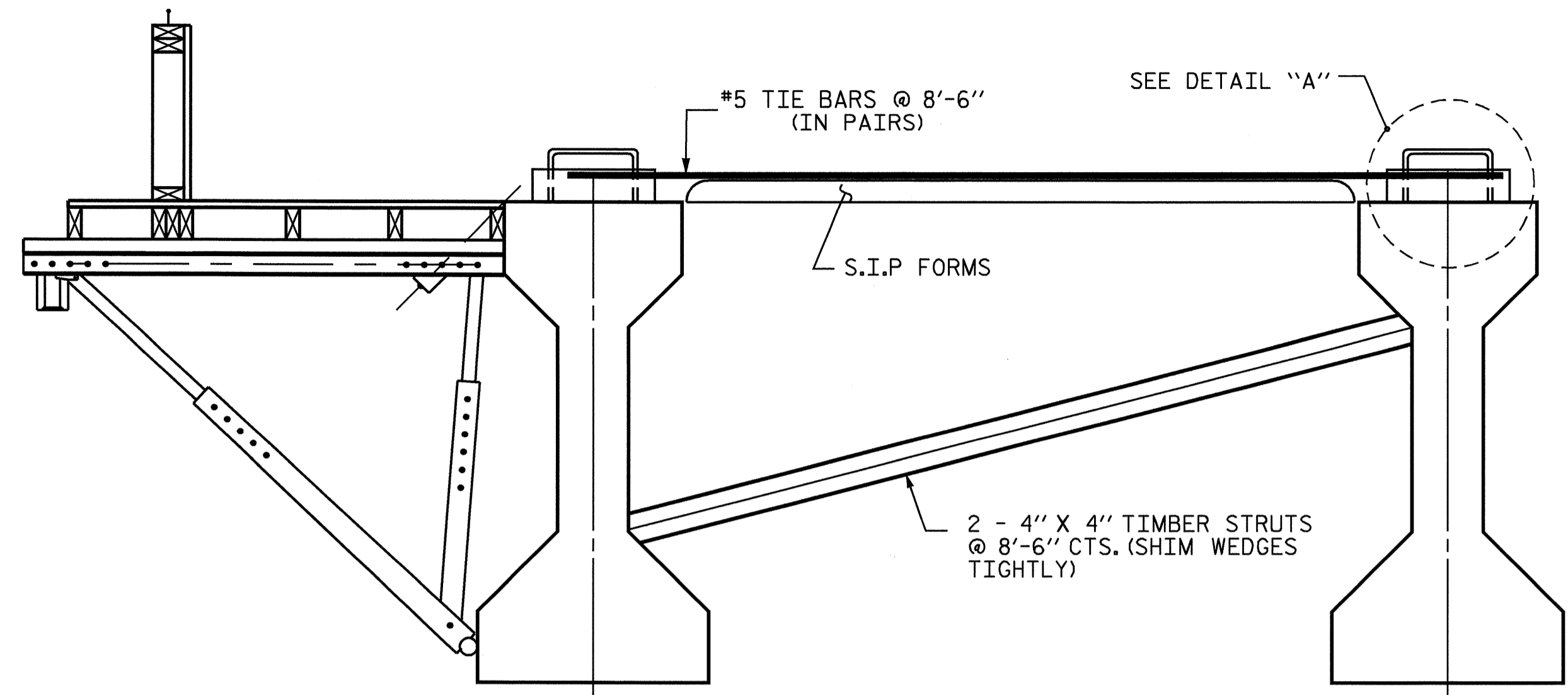
STANDARD OVERHANG FALSEWORK  
 AASHTO TYPES  
 III, IV, V, AND VI



Chang-Chuan Victor Chao  
 7-3-2008

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			35

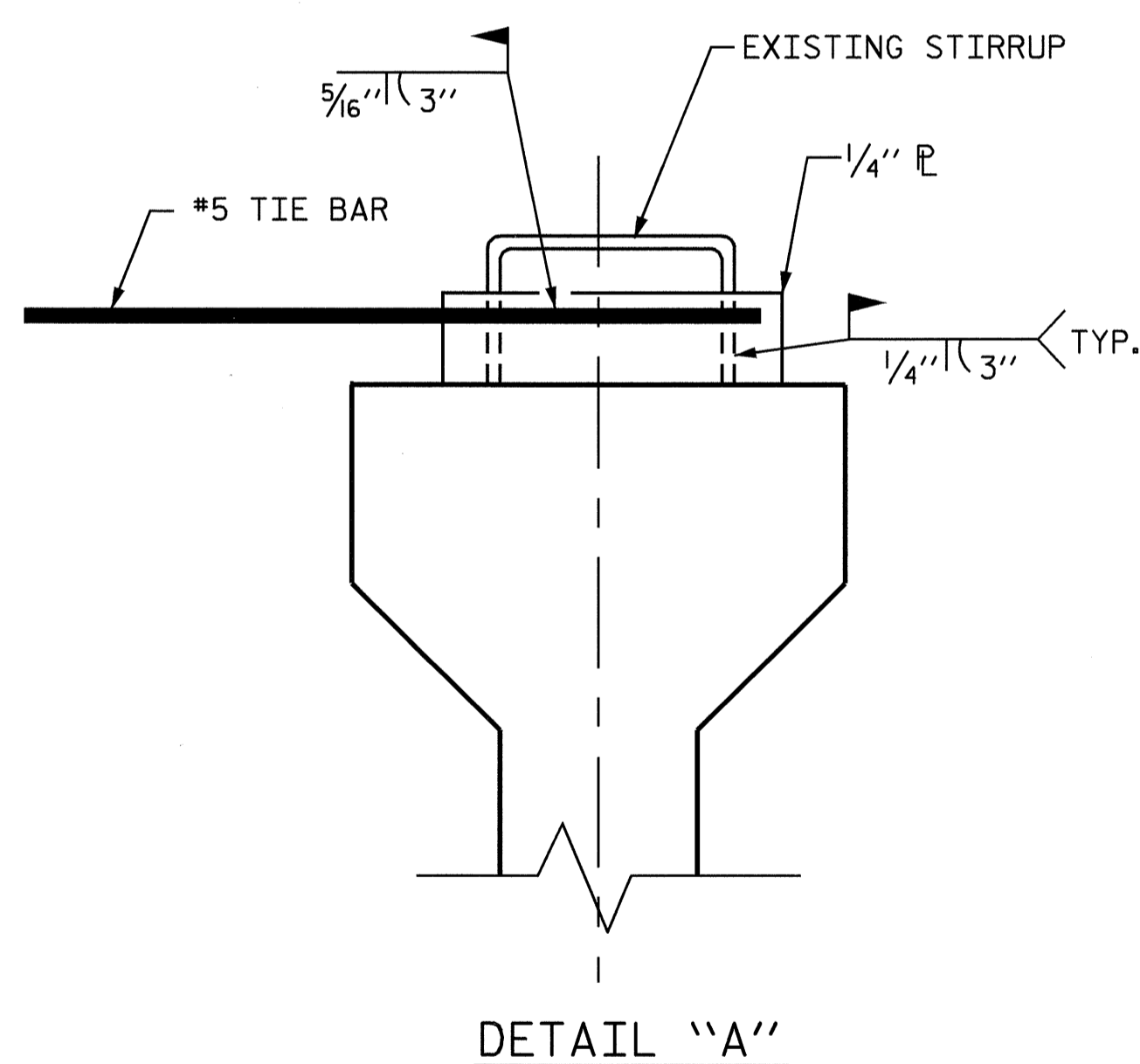
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



DETAIL "A"

NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 8'-6" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

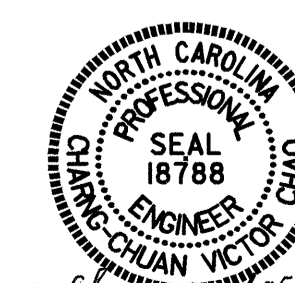
INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

PROJECT NO. B-4149  
HENDERSON COUNTY  
 STATION: 17+35.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD OVERHANG FALSEWORK  
 AASHTO TYPES  
 III, IV, V, AND VI



Chang-Chuan Victor Chao  
 7-3-2008

DRAWN BY: R. WRIGHT 06/04 DATE : \_\_\_\_\_  
 CHECKED BY: C. V. CHAO 06/04 DATE : \_\_\_\_\_

03-JUL-2008 11:53  
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 vchao

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			35
2			4			35

## 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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

### 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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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.

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