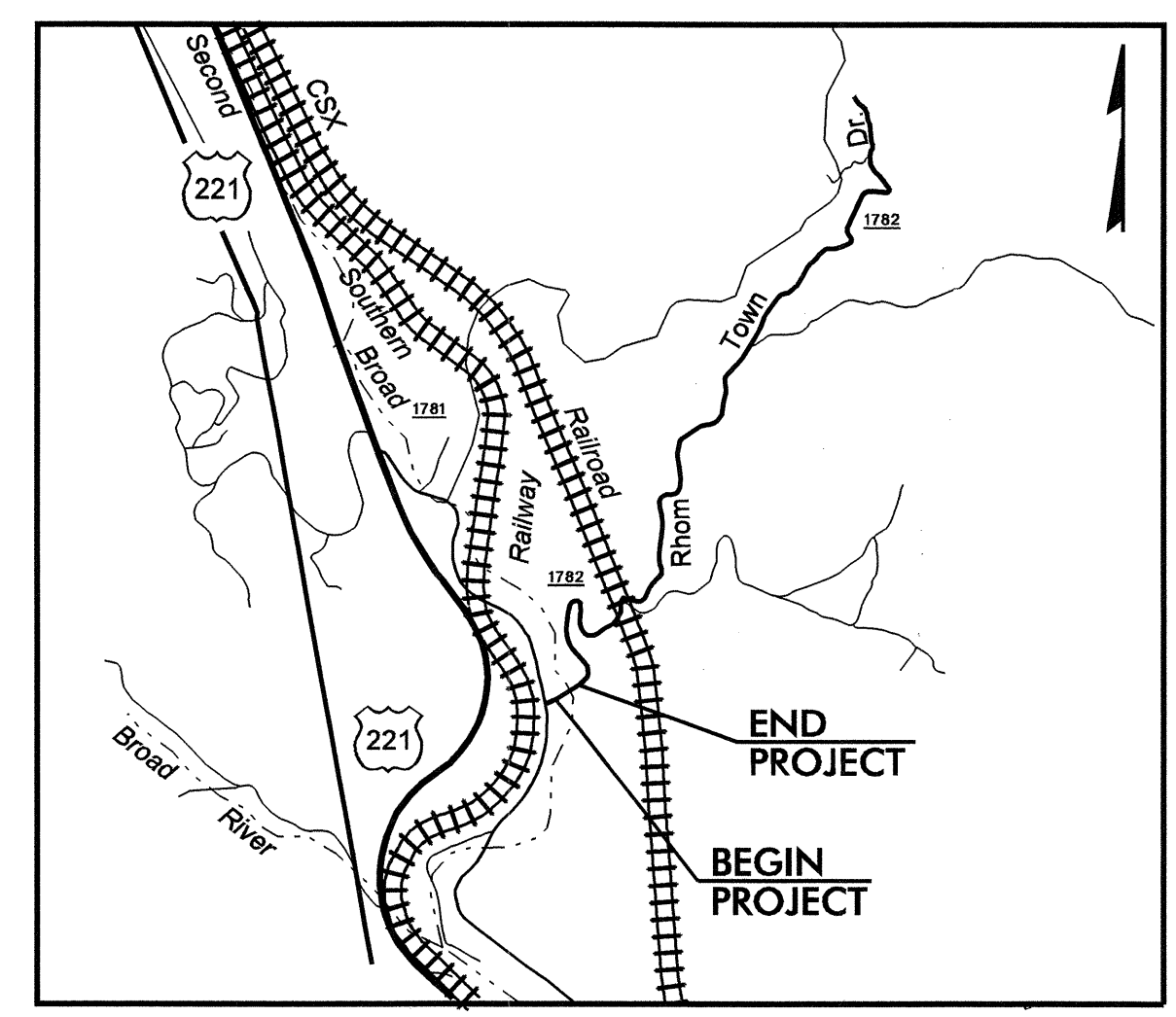


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09/08/99

CONTRACT: C201445 TIP PROJECT: B-4199

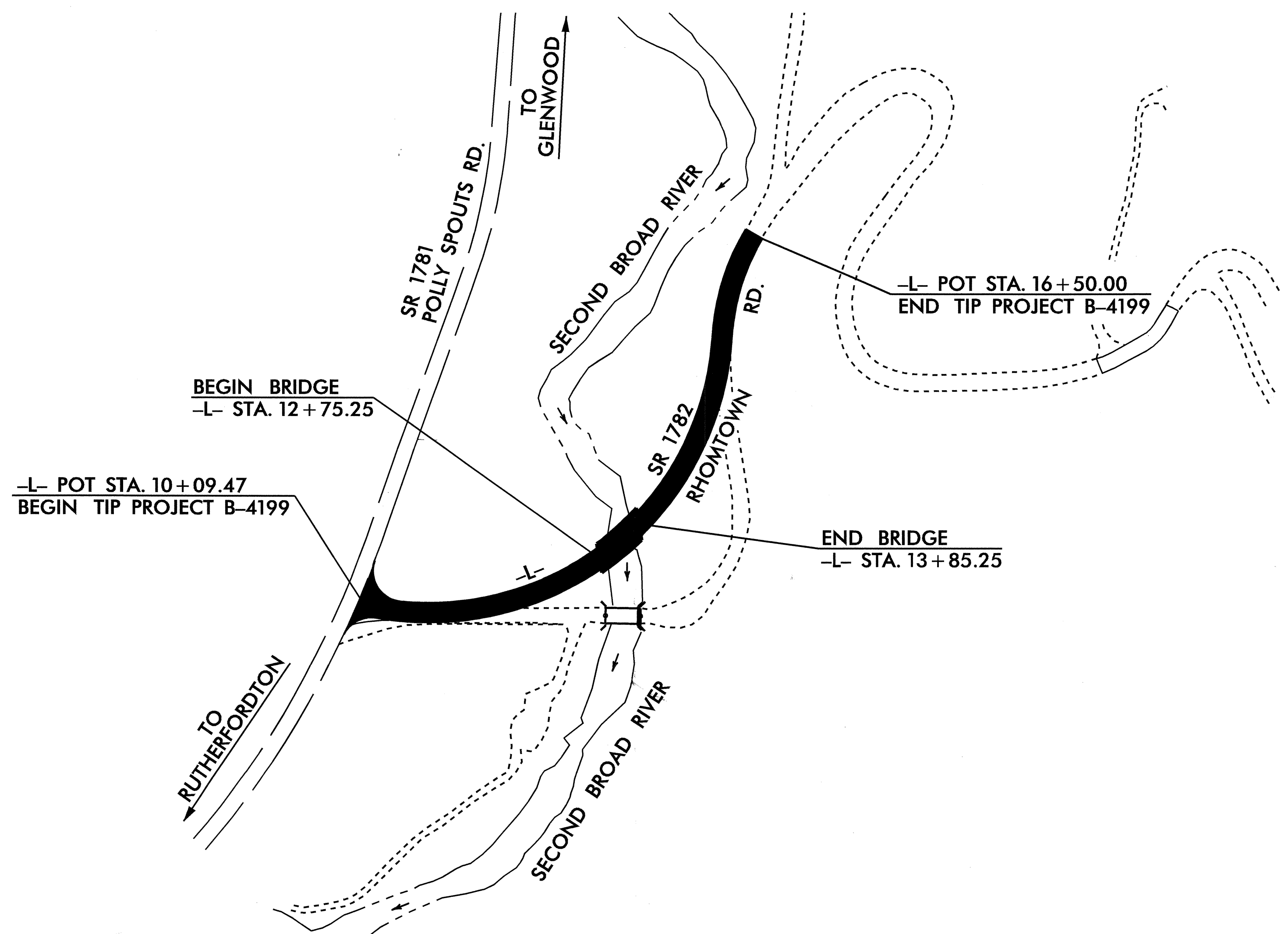
STRUCTURE



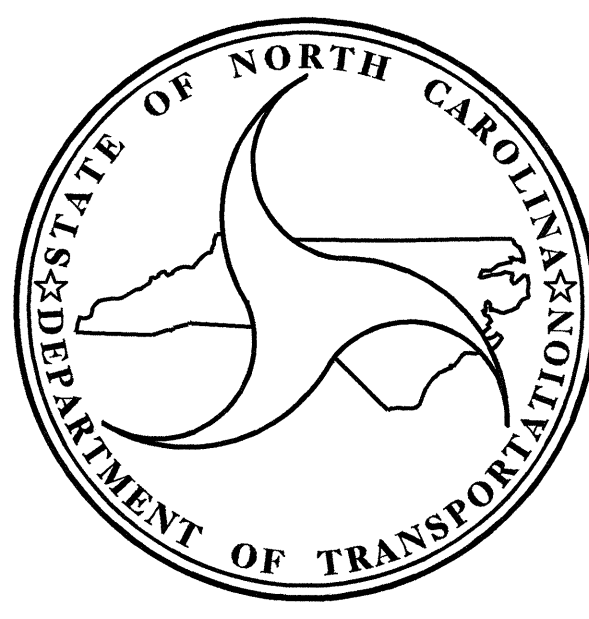
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
McDOWELL COUNTY

LOCATION: BRIDGE NO.198 OVER SECOND BROAD RIVER ON SR 1782
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



** DESIGN EXCEPTION FOR DESIGN SPEED REQUIRED



DESIGN DATA	
ADT 2006 =	117
ADT 2026 =	204
DHV =	12 %
D =	60 %
T =	3 % *
V =	30 MPH**
* TTST 1%	DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4199	=	0.100 mi
LENGTH STRUCTURE TIP PROJECT B-4199	=	0.021 mi
TOTAL LENGTH TIP PROJECT B-4199	=	0.121 mi

Plans prepared in the office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS

LETTING DATE:
November 21, 2006

JOHN C. FYRE, PE
PROJECT ENGINEER

W. A. DAVIS, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 Birch Ridge Dr., Raleigh NC, 27610

Gregory R. Perry
9-8-06

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

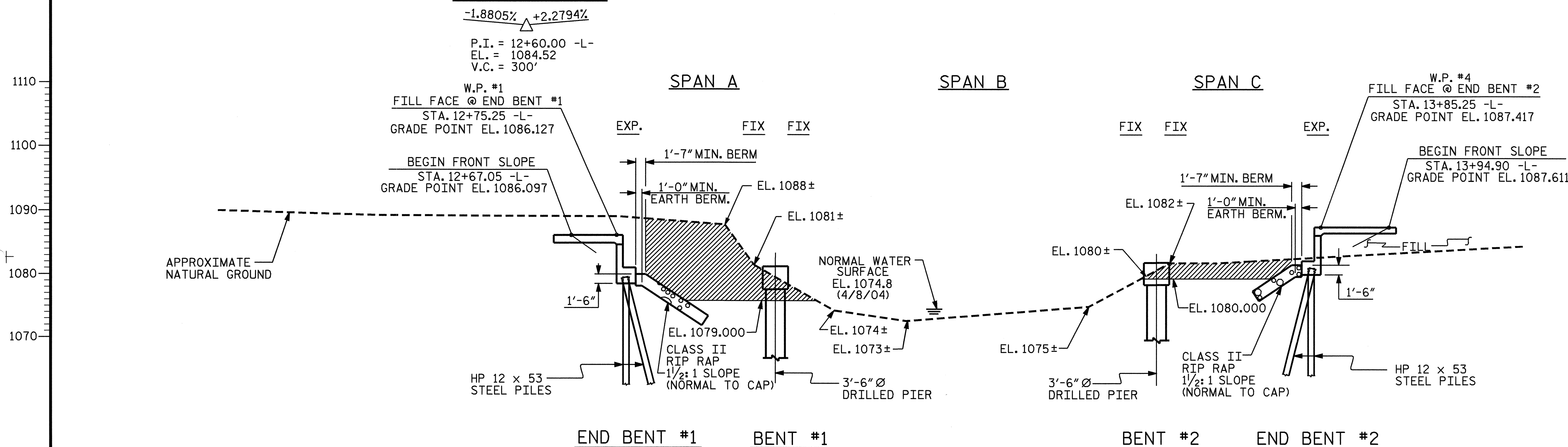
APPROVED
DIVISION ADMINISTRATOR

DATE

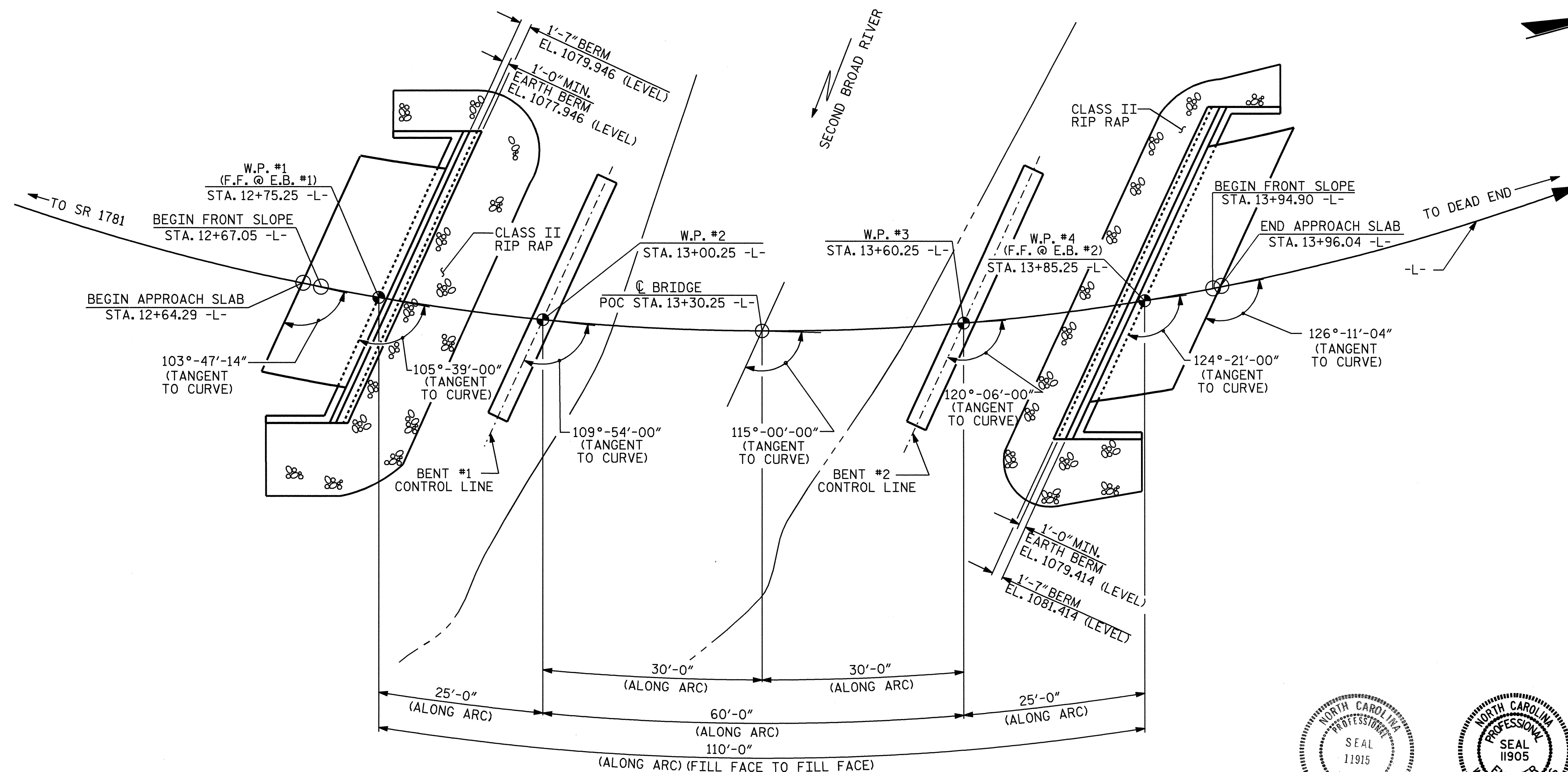
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4199		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33546.1.1	BRZ-1782(1)	P.E.	
33546.3.1	BRZ-1782(1)	RW & UTIL.	
33546.2.1	BRZ-1782(1)	CONST.	

GRADE DATA

F.A. PROJECT: BRZ-1782(1)



SECTION ALONG -L- SECTIONS @ BENTS AND END BENTS ARE @ RIGHT ANGLES.



HORIZONTAL CURVE DATA (-L-)

PI Sta 14+07.86
Δ = 96° 24' 33.0\" (LT)
D = 17° 00' 00.0\"
L = 567.11'
T = 377.01'
R = 337.03'

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 198

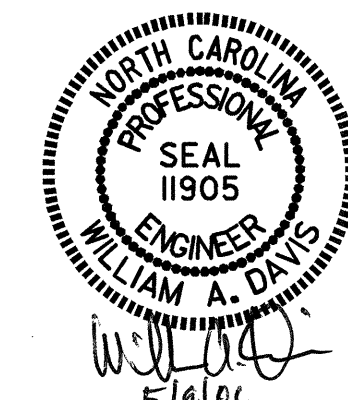
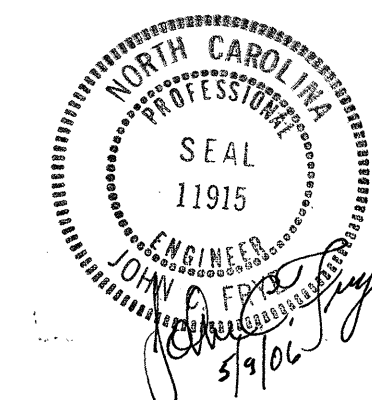
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING FOR
BRIDGE OVER SECOND
BROAD RIVER ON
SR 1782 BETWEEN
SR 1781 AND DEAD END

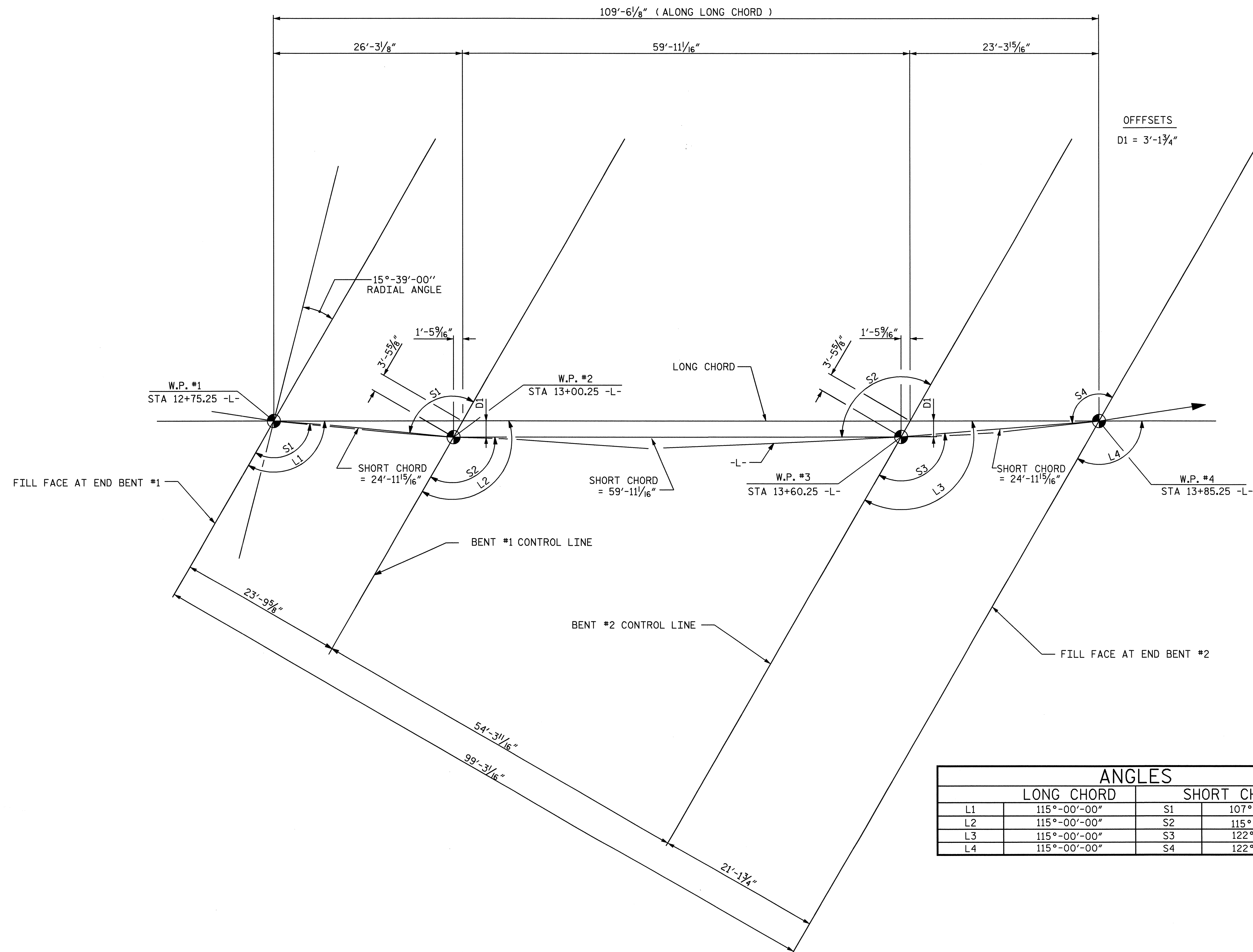
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-1	
				TOTAL SHEETS	33

DRAWN BY : J.G. KHARVA DATE : 10/07/05
CHECKED BY : W.A. DAVIS DATE : 2/22/06

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PLAN
PILES AND DRILLED PIERS ARE NOT
SHOWN IN PLAN VIEW FOR CLARITY.





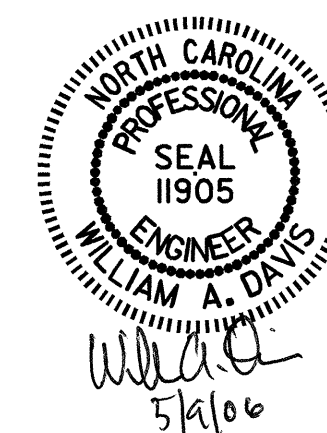
HORIZONTAL CURVE DATA (-L-)

PI Sta 14+07.86
 $\Delta = 96^\circ 24' 33.0''$ (LT)
 $D = 17^\circ 00' 00.0''$
 $L = 567.11'$
 $T = 377.01'$
 $R = 337.03'$

ANGLES			
	LONG CHORD		SHORT CHORD
L1	115°-00'-00"	S1	107°-46'-30"
L2	115°-00'-00"	S2	115°-00'-00"
L3	115°-00'-00"	S3	122°-13'-30"
L4	115°-00'-00"	S4	122°-13'-30"

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 2 OF 4

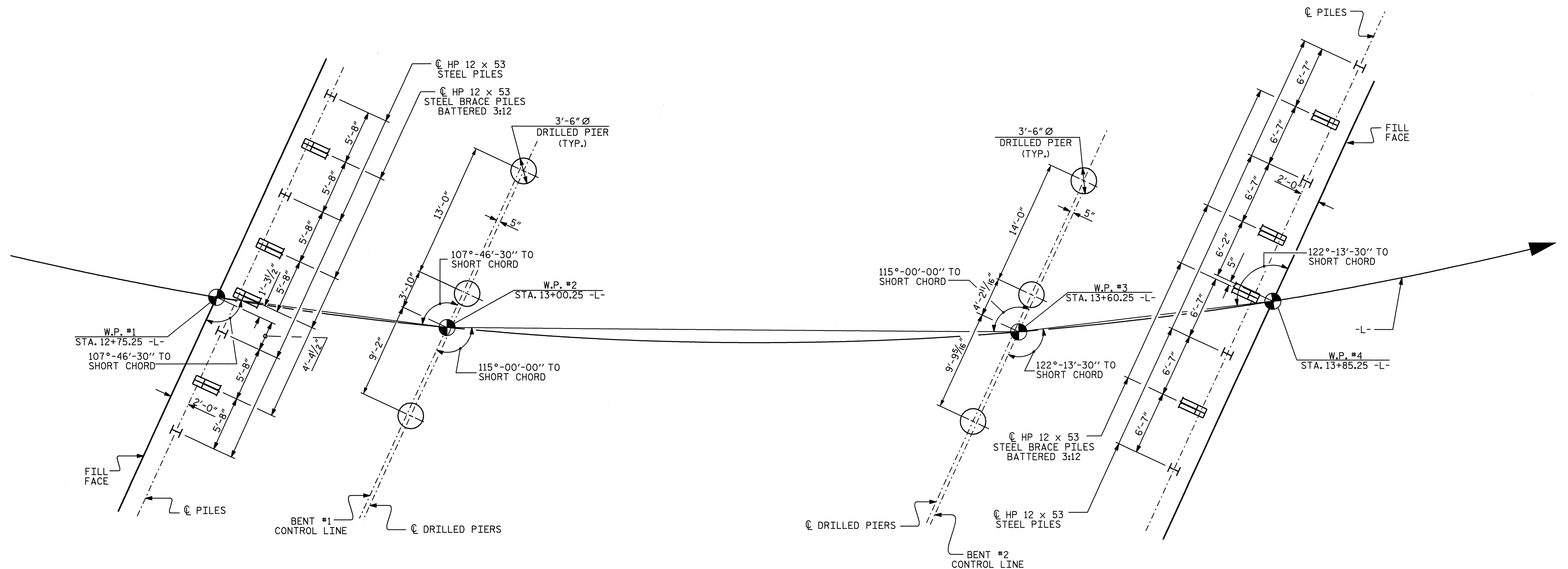


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE OVER SECOND
 BROAD RIVER ON
 SR 1782 BETWEEN
 SR 1781 AND DEAD END

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

DRAWN BY : J. G. KHARVA DATE : 10/17/05
 CHECKED BY : W. A. DAVIS DATE : 02/23/06

LONG CHORD LAYOUT
 ALL END BENTS & BENTS ARE PARALLEL



END BENT #1

BENT #1

BENT #2

END BENT #2

FOUNDATION LAYOUT

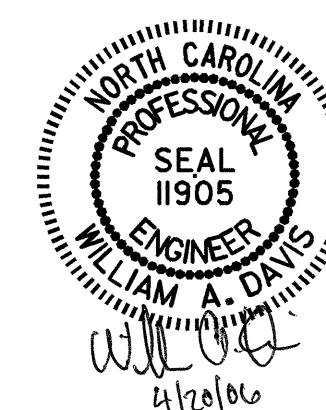
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.
DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO DRILLED PIER CENTERLINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE BENT CONTROL LINE IS OFFSET FROM THE CENTERLINE BENT CAP AND DRILLED PIERS.

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING FOR
BRIDGE OVER SECOND
BROAD RIVER ON
SR 1782 BETWEEN
SR 1781 AND DEAD END

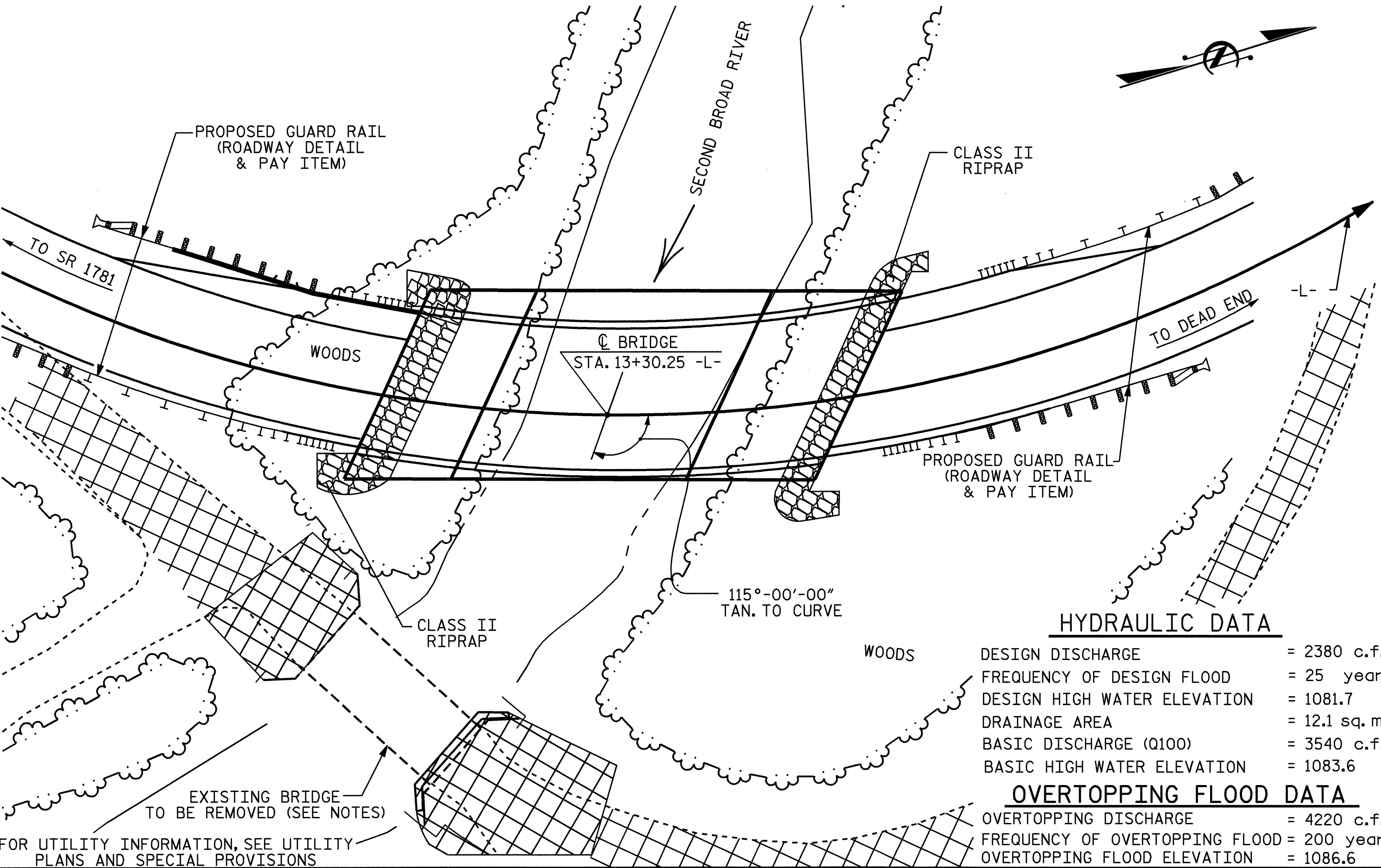


DRAWN BY : J. G. KHARVA DATE : 10/17/05
CHECKED BY : W. A. DAVIS DATE : 2/23/06

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

B. M. #2, 8"NAIL SET IN BASE OF 24" TULIP POPLAR 12.50' LT. OF -BL3-
STA. 13+06.78, 11.53' LT. OF -L- STA. 17+06.77, EL. 1095.10.



HYDRAULIC DATA

DESIGN DISCHARGE = 2380 c.f.s.
FREQUENCY OF DESIGN FLOOD = 25 years
DESIGN HIGH WATER ELEVATION = 1081.7
DRAINAGE AREA = 12.1 sq. ml.
BASIC DISCHARGE (Q100) = 3540 c.f.s.
BASIC HIGH WATER ELEVATION = 1083.6

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 4220 c.f.s.
FREQUENCY OF OVERTOPPING FLOOD = 200 years +
OVERTOPPING FLOOD ELEVATION = 1086.6

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	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	SPT TESTING	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE									3794.9	3393	
END BENT #1											27.1
BENT #1		67.7	15.0	28.7	1	3	1				26.0
BENT #2		18.0	25.0	13.0		3	1				27.9
END BENT #2											29.3
TOTAL	LUMP SUM	85.7	40.0	41.7	1	6	2	LUMP SUM	3794.9	3393	110.3

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS		HP 12 x 53 STEEL PILES		STEEL PILE POINTS	ONE BAR METAL RAIL	CONCRETE PARAPET 1'-0"x1'-6"	PLAIN RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				15	524.33				200.95	215.95			LUMP SUM	LUMP SUM
END BENT #1		3819				8	120	8			143	159		
BENT #1		12595	1854											
BENT #2		9523	965											
END BENT #2		4317				8	80	8			81	90		
TOTAL	LUMP SUM	30254	2819	15	524.33	16	200	16	200.95	215.95	224	249	LUMP SUM	LUMP SUM

DRAWN BY : J. G. KHARVA DATE : 9/29/05
CHECKED BY : W. A. DAVIS DATE : 2/23/06

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NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN OF 41'-2" WITH A TIMBER FLOOR ON I-BEAMS WITH AND A CLEAR ROADWAY WIDTH OF 17.3' ON REINFORCED CONCRETE ABUTMENTS AND LOCATED 89' DOWNSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED AS FOLLOWS: THE SUPERSTRUCTURE WILL BE TOTALLY REMOVED AND THE ABUTMENTS SHALL BE REMOVED TO THE TOP OF FOOTING AS DIRECTED BY THE ENGINEER, THE EXISTING BRIDGE IS PRESENTLY POSTED. 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 ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

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.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", NOVEMBER, 1995.

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

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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THE ESTIMATED QUANTITY IS LESS THAN 500 CUBIC YARDS. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SPECIAL PROVISIONS.

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.

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

THE SCOUR CRITICAL ELEVATION FOR BENTS No.1 AND No.2 ARE 1061 AND 1073, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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 13+30.25 -L-."

FOR STEEL H PILES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE DRILLED PIERS AT BENT #1 AND BENT #2 HAVE BEEN DESIGNED FOR BOTH SKIN FRICTION AND TIP BEARING. THE REQUIRED TIP BEARING CAPACITY IS 15 TSF.

THE REQUIRED TIP BEARING CAPACITY AT BENT #1 AND BENT #2 SHALL BE VERIFIED.

SPT TESTING IS REQUIRED TO DETERMINE THE TIP BEARING CAPACITY OF THE DRILLED PIERS AT BENT #1 AND BENT #2. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS FOR BENT #1 HAVE BEEN DESIGNED FOR AN APPLIED LOAD OF 206 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS FOR BENT #2 HAVE BEEN DESIGNED FOR AN APPLIED LOAD OF 195 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT #1. IF REQUIRED, THE CASING SHALL NOT EXTEND BELOW ELEVATION 1068' WITHOUT THE ENGINEER'S PERMISSION. THE NEED FOR PERMANENT CASING WILL BE DETERMINED BY THE ENGINEER.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT #2. IF REQUIRED, THE CASING SHALL NOT EXTEND BELOW ELEVATION 1074' WITHOUT THE ENGINEER'S PERMISSION. THE NEED FOR PERMANENT CASING WILL BE DETERMINED BY THE ENGINEER.

FOR PERMANENT STEEL CASING, SEE SPECIAL PROVISIONS FOR DRILLED PIERS.

DRILLED PIERS AT BENT #1 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 1050' AND SATISFY THE REQUIRED TIP BEARING CAPACITY.

DRILLED PIERS AT BENT #2 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 1064' AND SATISFY THE REQUIRED TIP BEARING CAPACITY.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT #1 AND BENT #2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS AT BENT #1 AND BENT #2. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE SPECIAL PROVISION FOR CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

PILES AT END BENT #1 & END BENT #2 SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 50 TONS EACH.

STEEL PILE POINTS WITH TEETH ARE REQUIRED FOR PILES AT END BENT #1 AND END BENT #2. SEE STEEL PILE POINTS SPECIAL PROVISION.

WHEN DRIVING PILES, THE MAXIMUM BLOW COUNT SHALL NOT BE EXCEEDED.

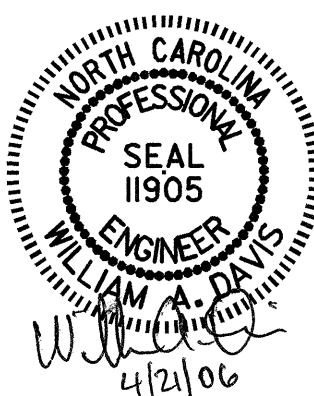
FOR FABRICATED METAL STAY IN PLACE FORMS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4199

McDOWELL COUNTY

STATION: 13+30.25 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR
BRIDGE OVER SECOND
BROAD RIVER ON
SR 1782 BETWEEN
SR 1781 AND DEAD END

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

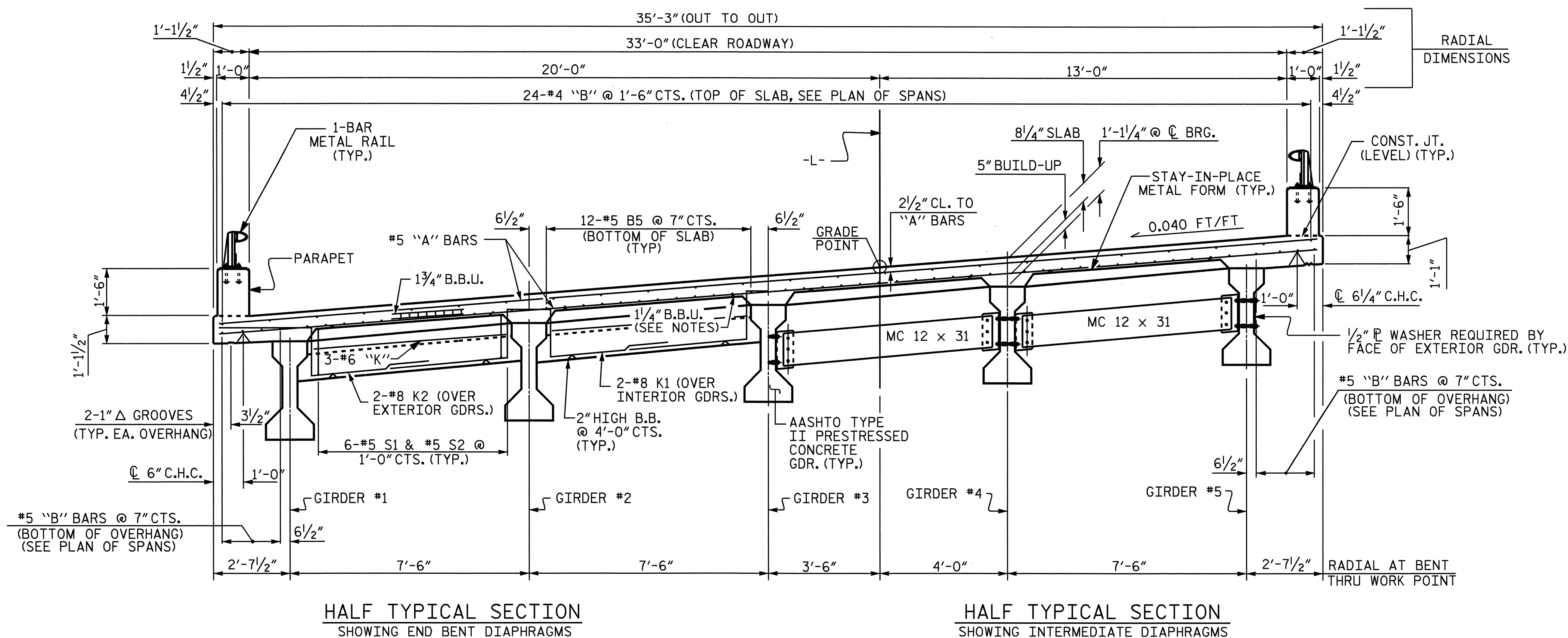
NOTES

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

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

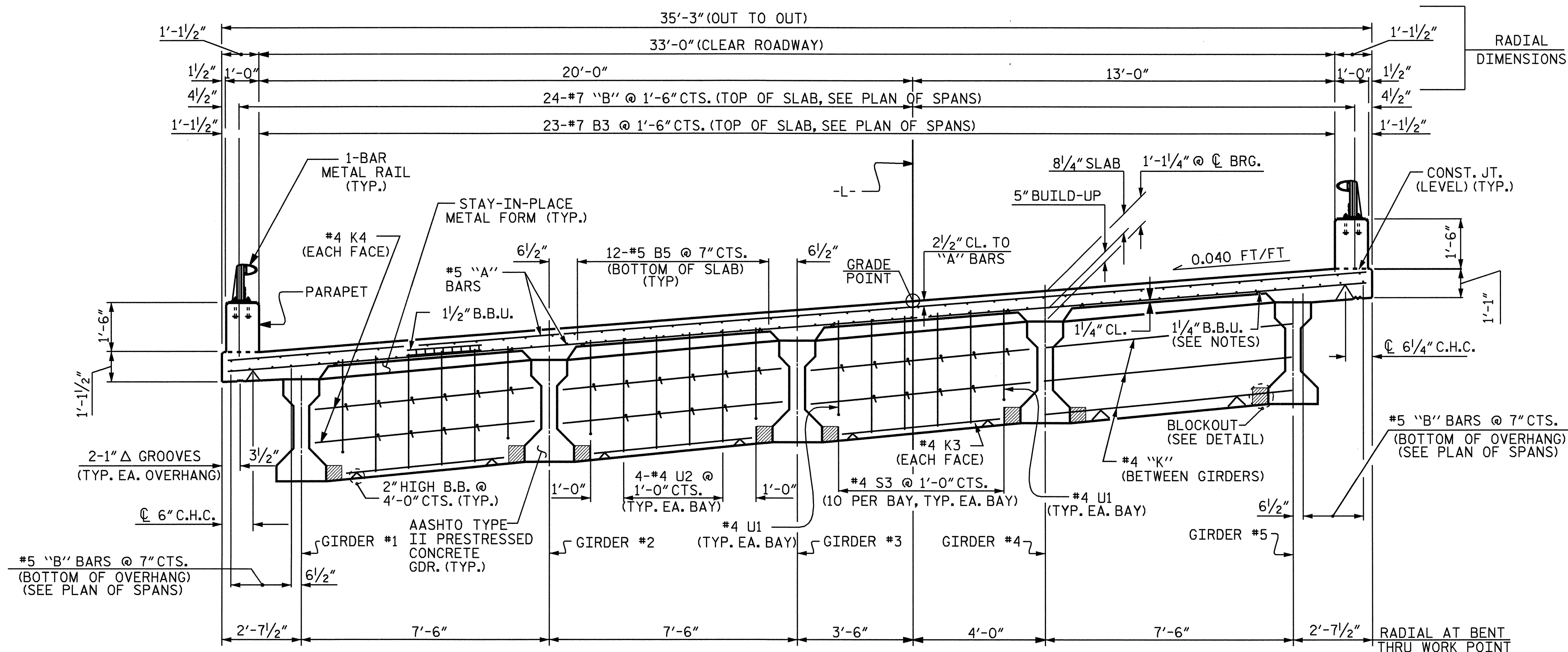
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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



HALF TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

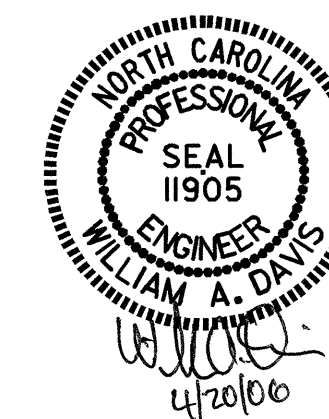


TYPICAL SECTION

SHOWING BENT DIAPHRAGMS

DRAWN BY : J. G. KHARVA DATE : 05/16/05
CHECKED BY : W. F. PARKER DATE : 11/08/05

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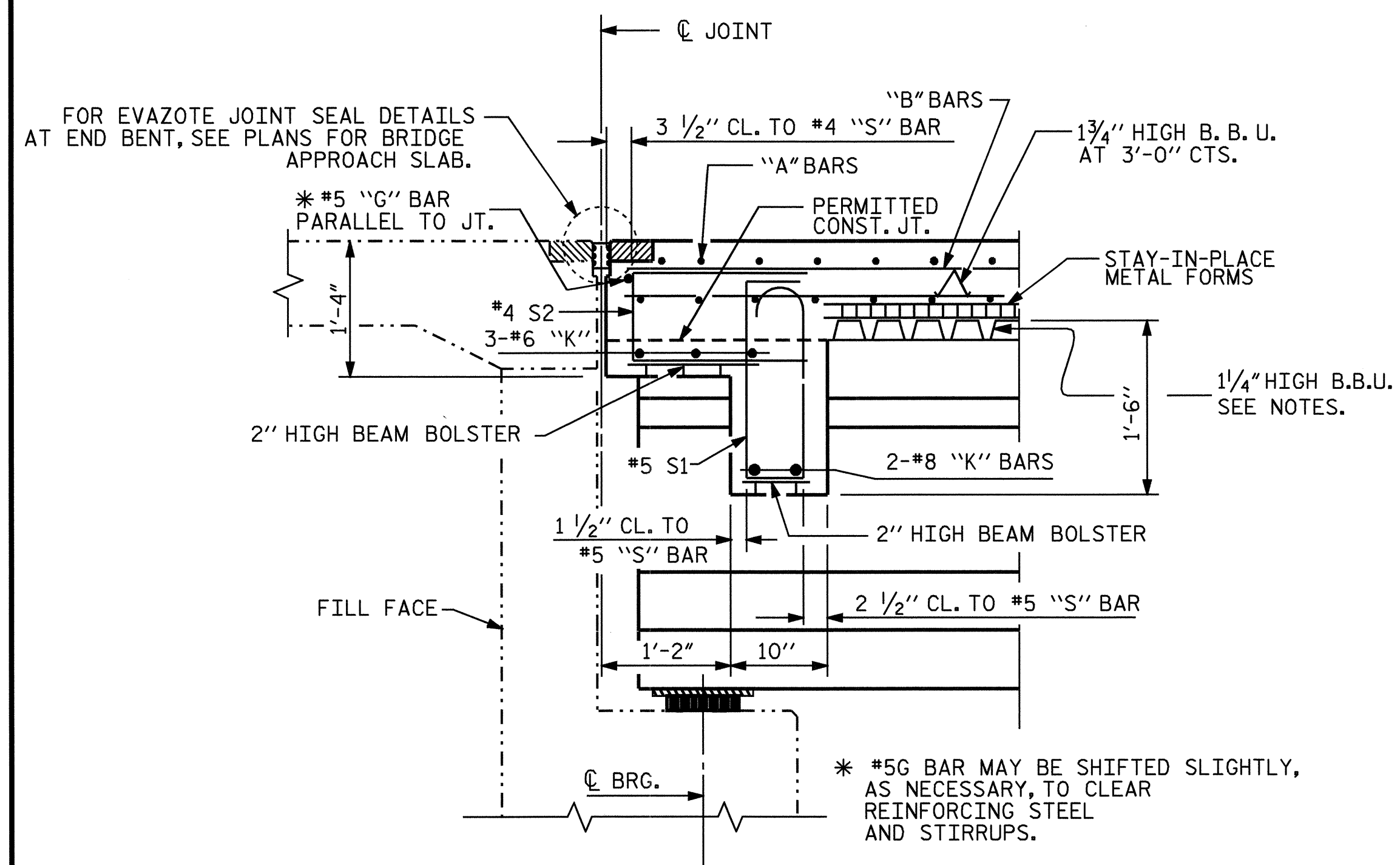
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 2

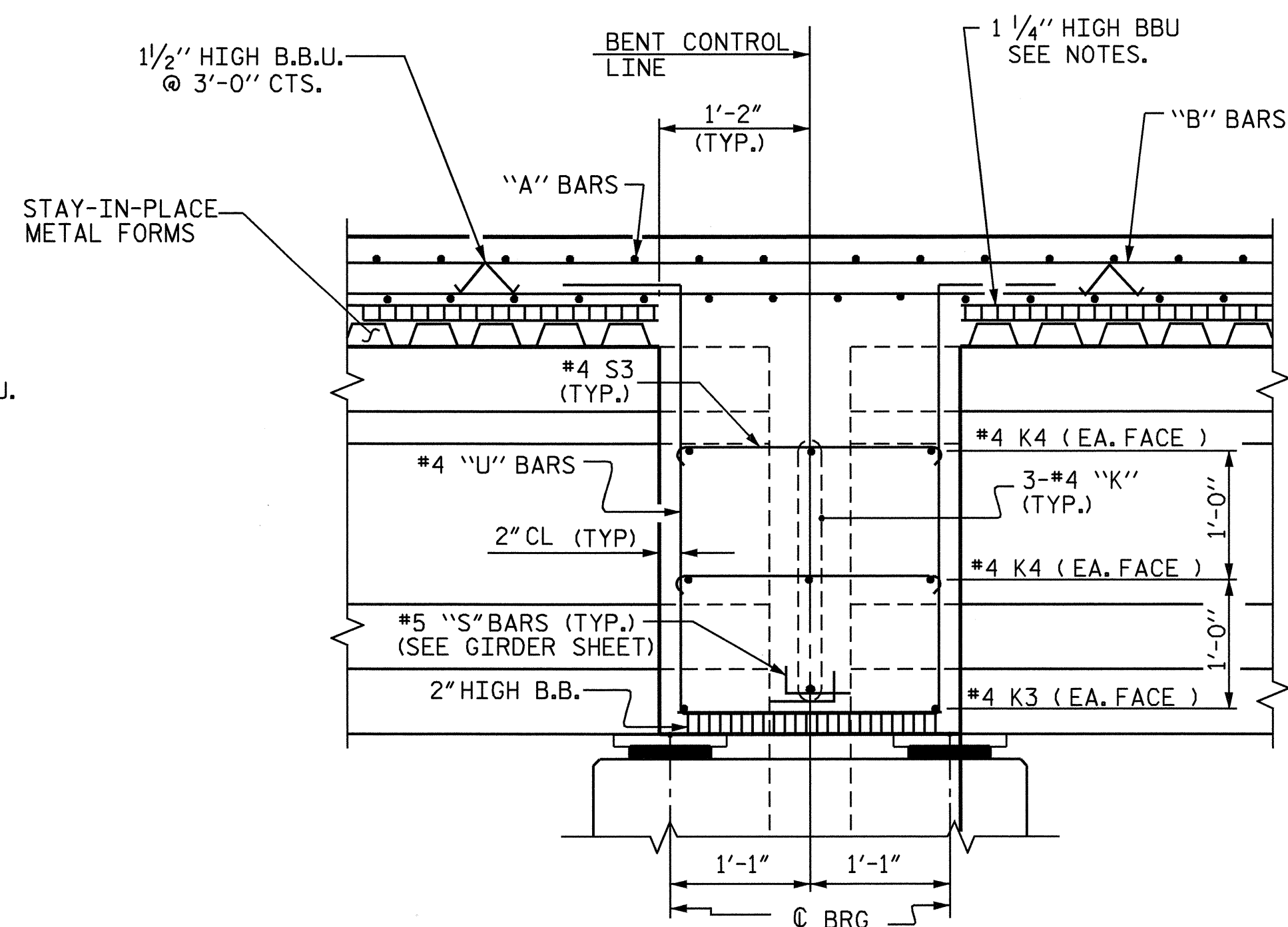
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

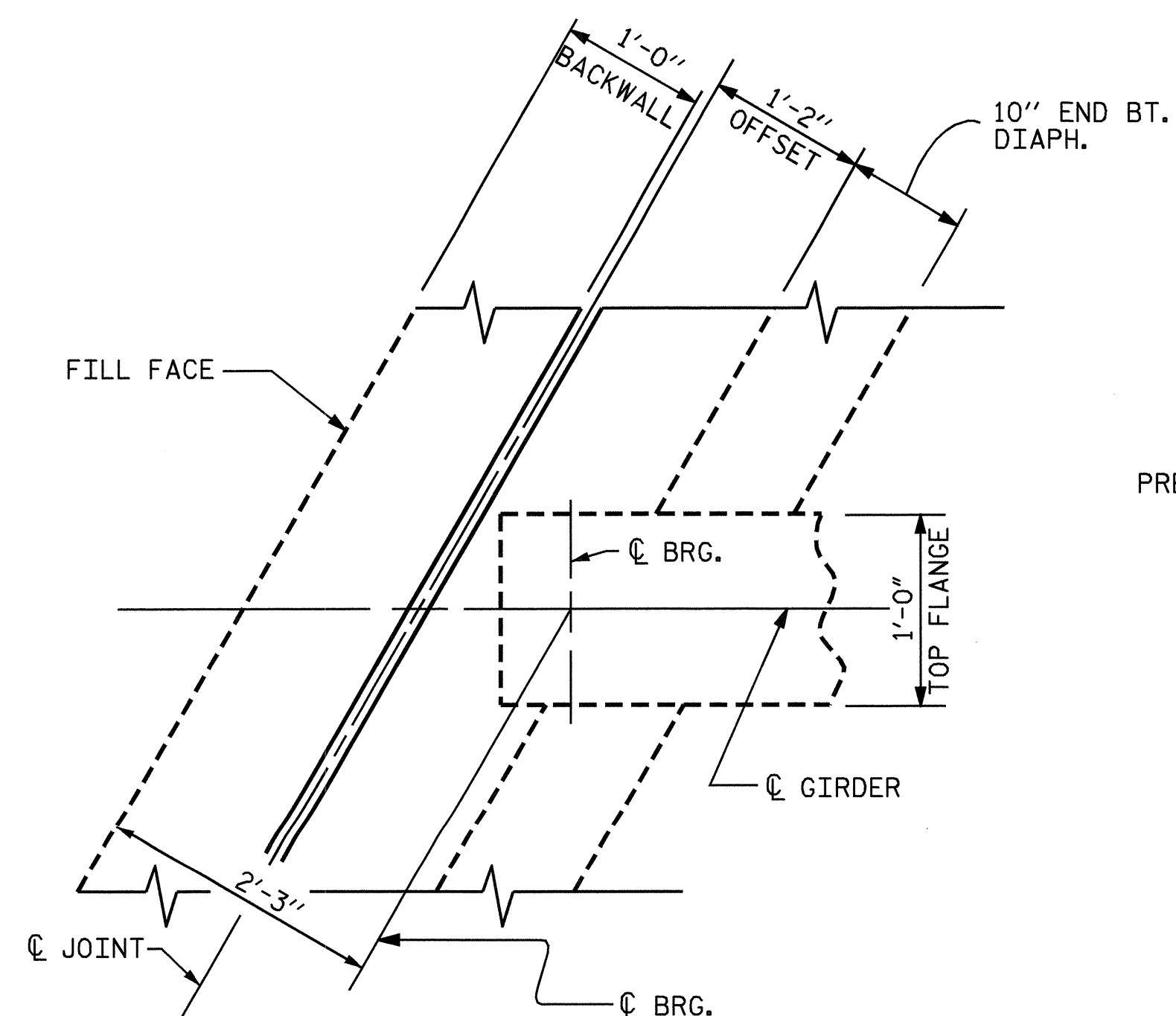
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2			4			TOTAL SHEETS 33



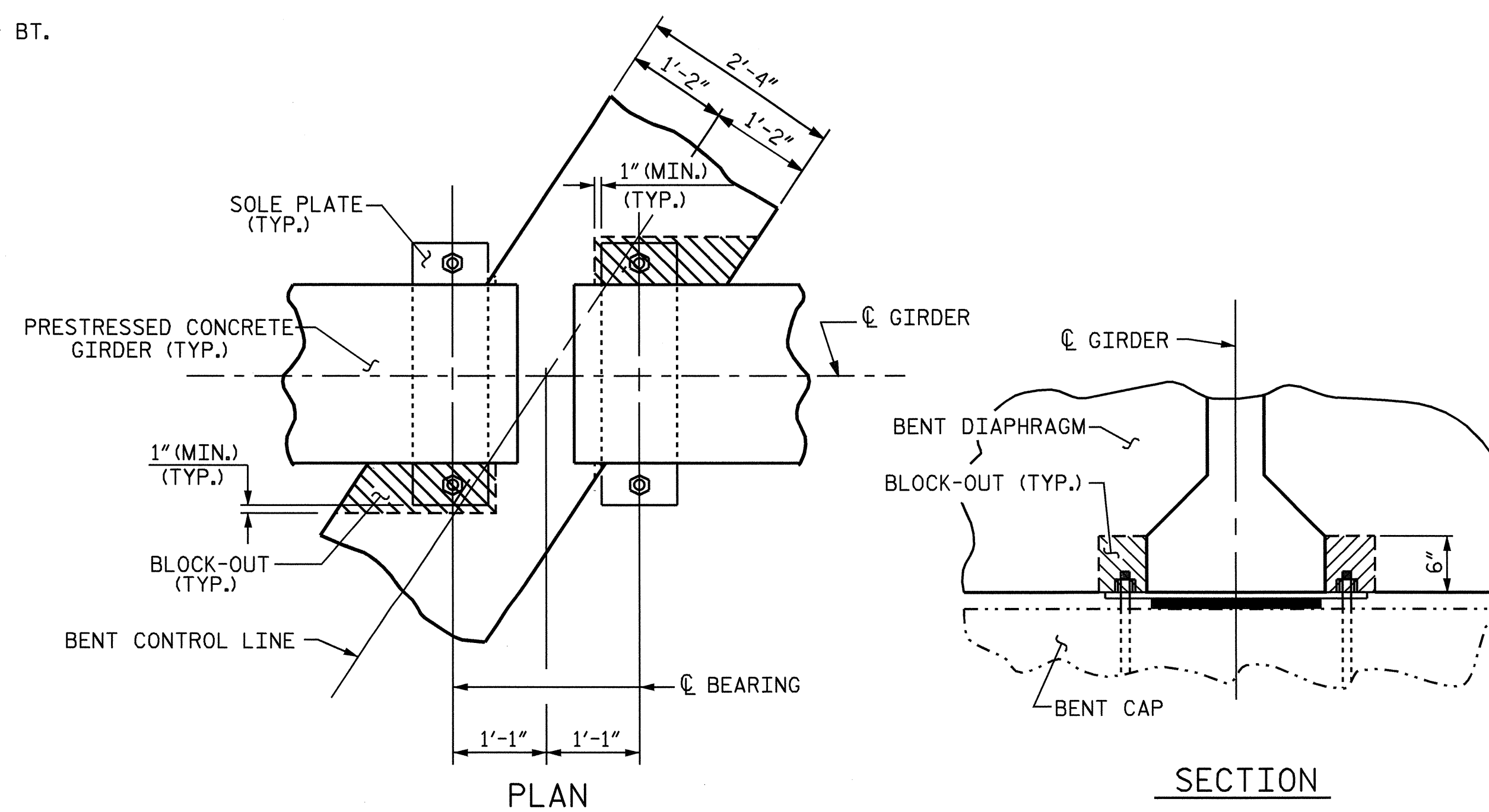
SECTION THRU
END BENT DIAPHRAGMS



SECTION THRU
BENT DIAPHRAGMS



PLAN VIEW OF END BENT DIAPHRAGM



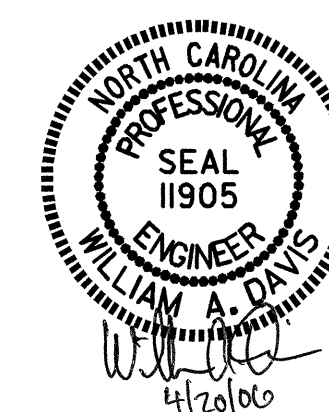
BENT DIAPHRAGM BLOCK-OUT DETAIL

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 2 OF 2

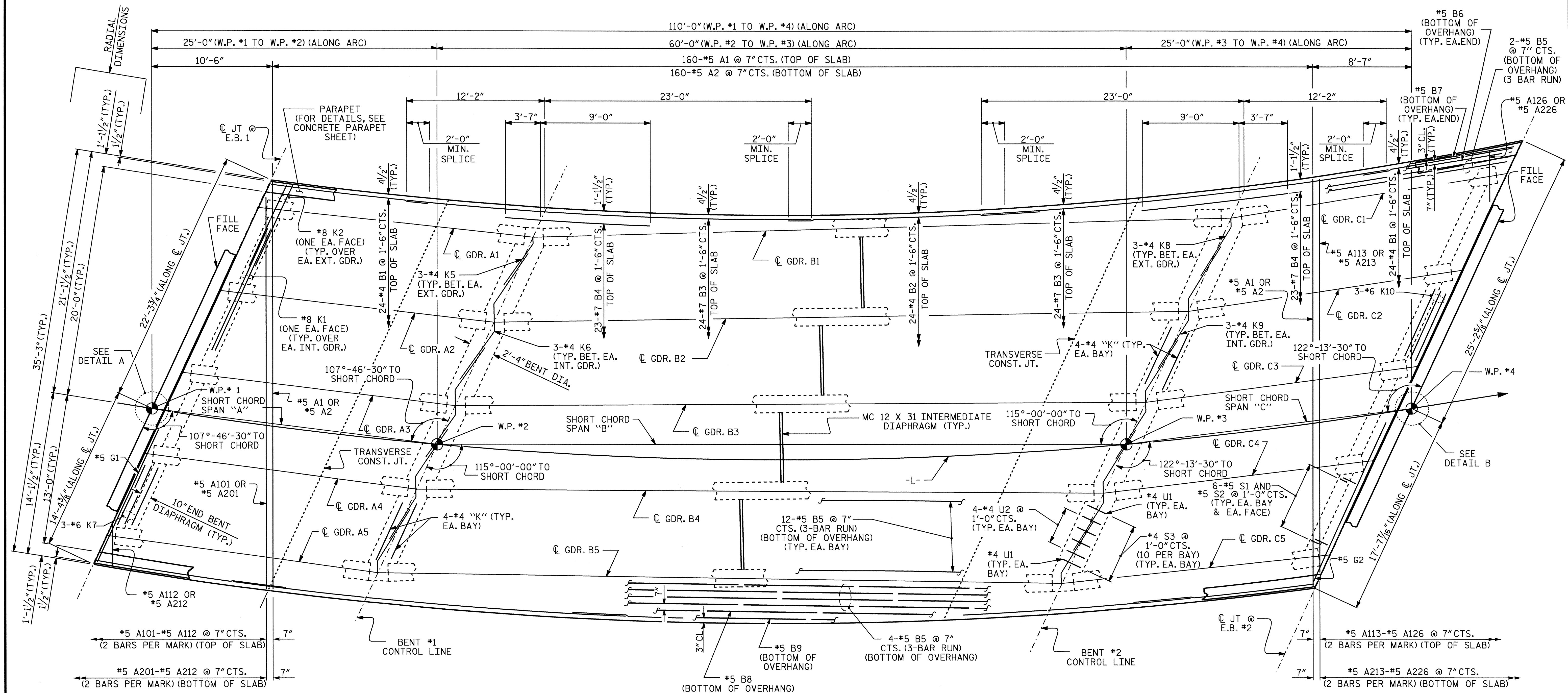
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS



DRAWN BY : J. G. KHARVA DATE : 05/16/05
 CHECKED BY : W. F. PARKER DATE : 11/08/05

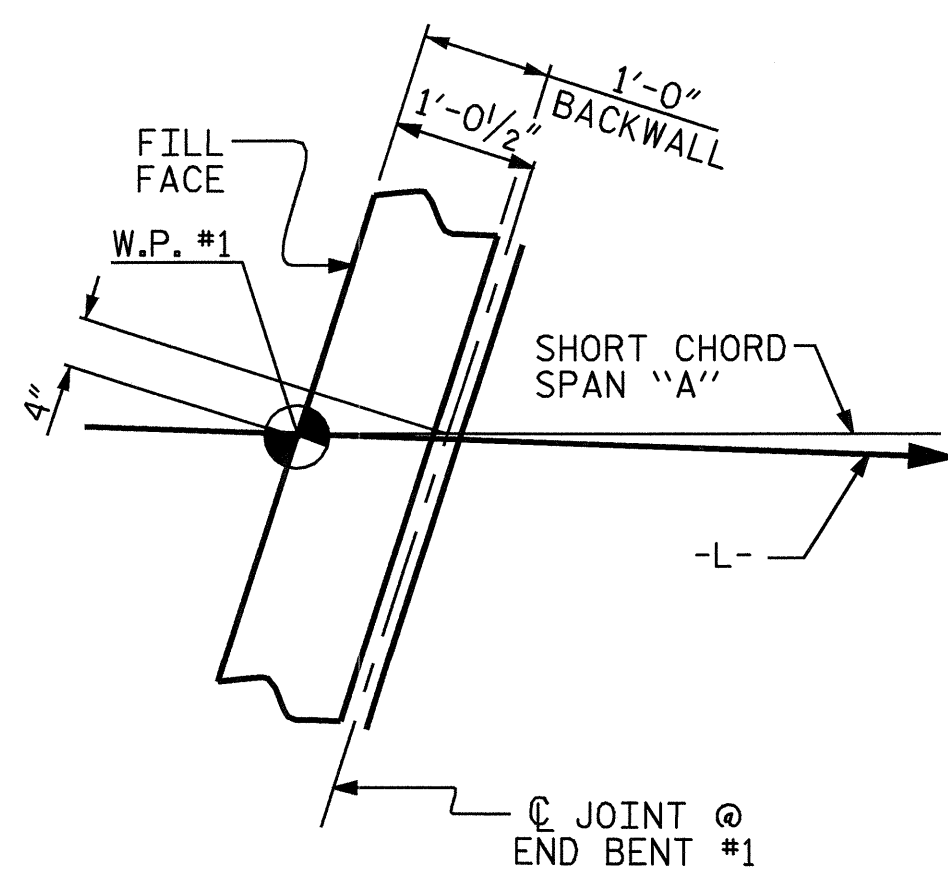
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2			4			
TOTAL SHEETS 33						



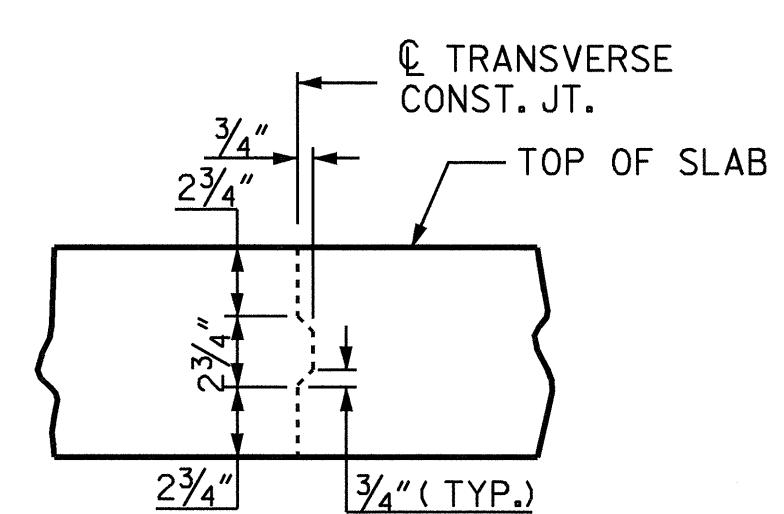
SPAN A

SPAN B

SPAN C



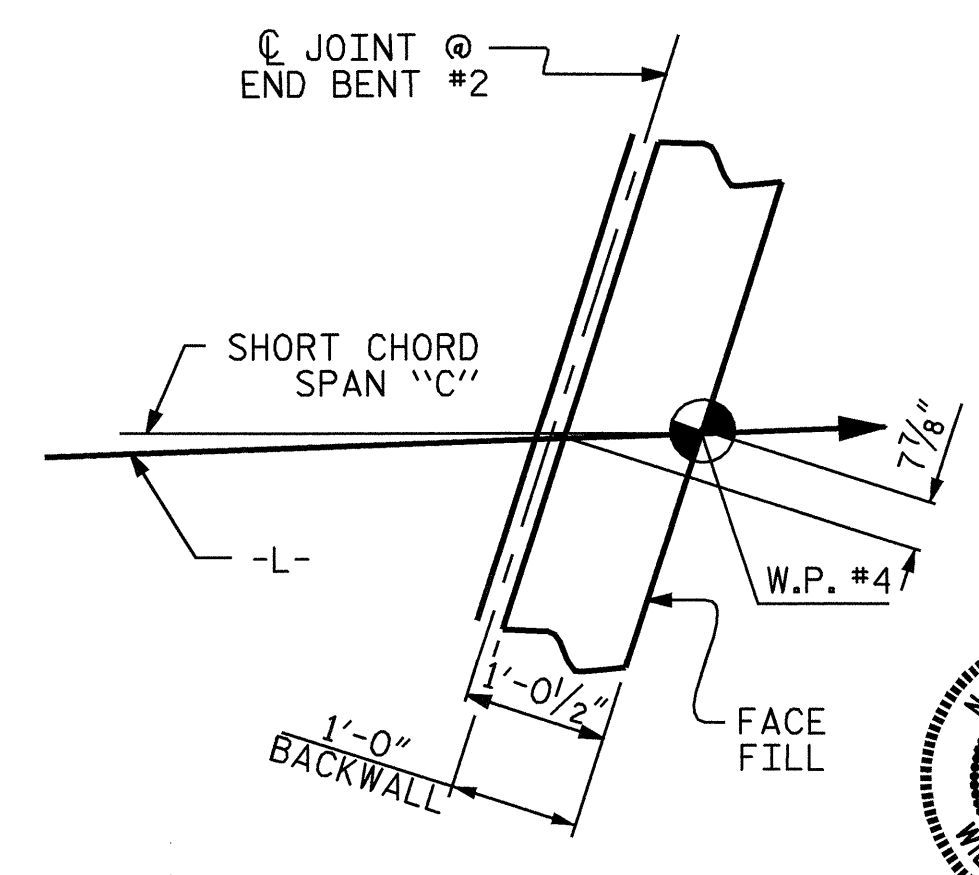
DETAIL A



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

(SEE THE SUPERSTRUCTURE BILL OF MATERIAL FOR LOCATION AND POUR DIRECTIONS.)

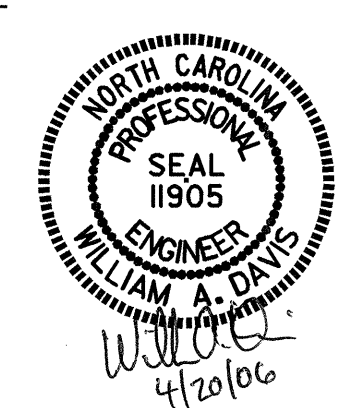


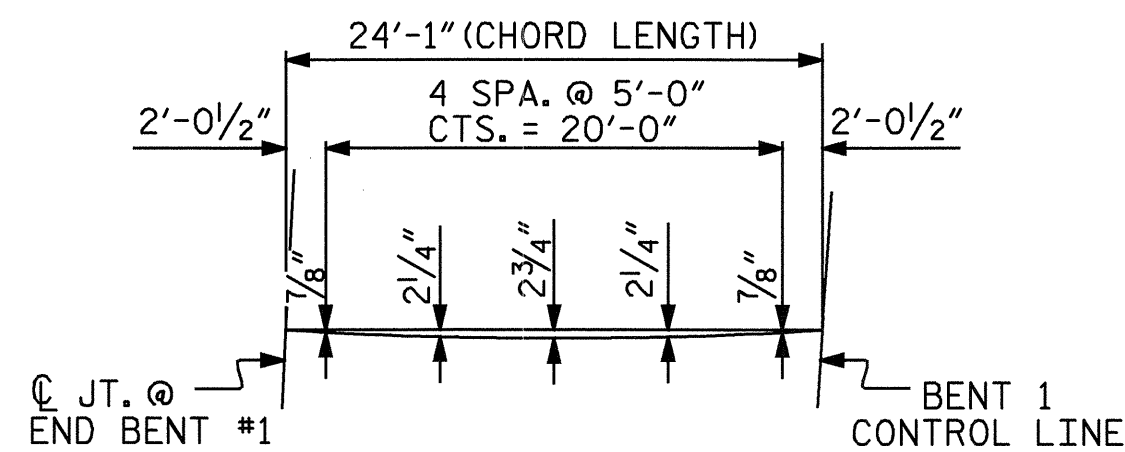
DETAIL B

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

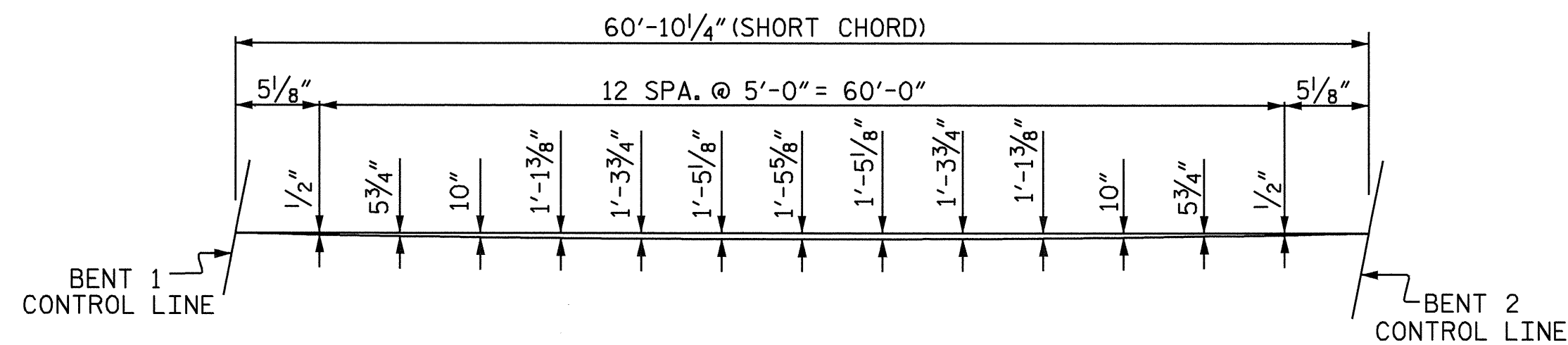
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-7
2			4			TOTAL SHEETS 33

DRAWN BY: J. G. KHARVA DATE: 05/19/05
 CHECKED BY: W. F. PARKER DATE: 11-08-05

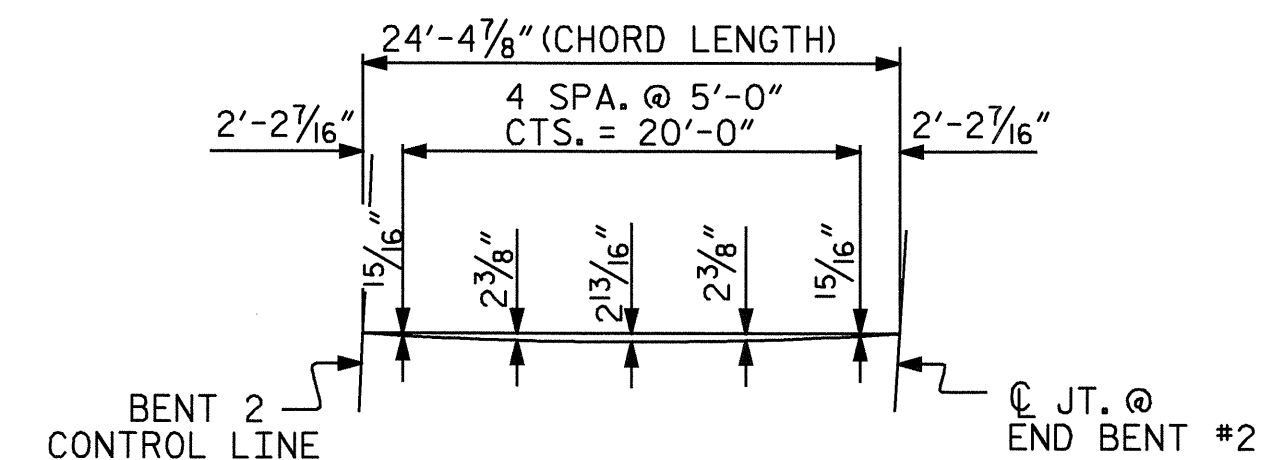




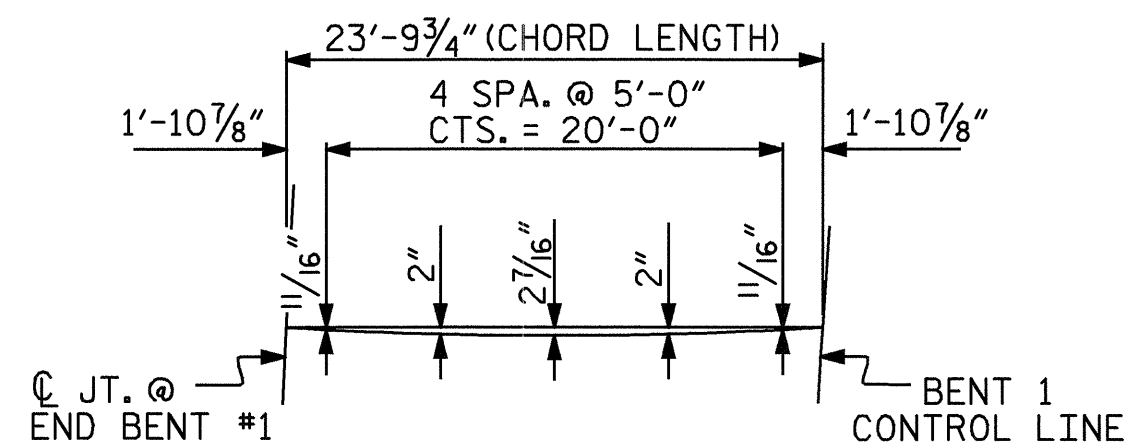
LEFT OUTSIDE EDGE



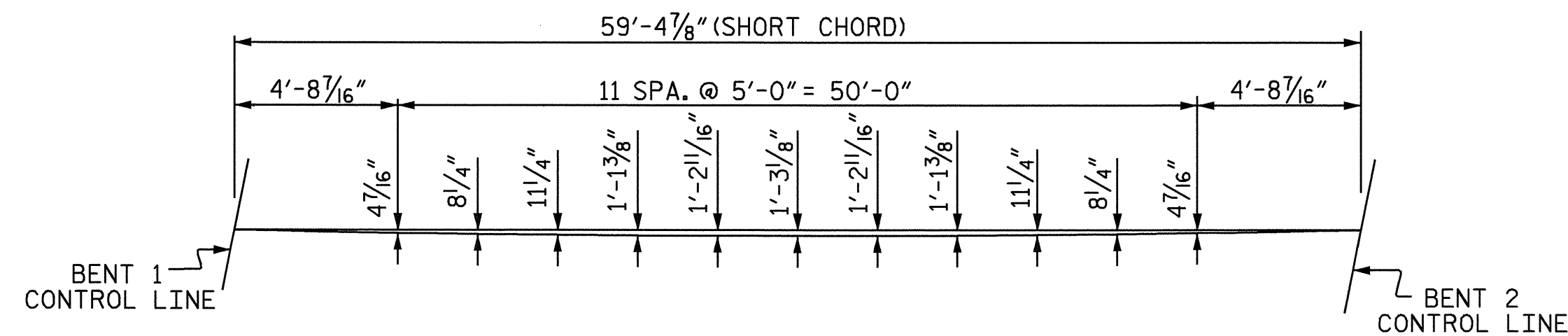
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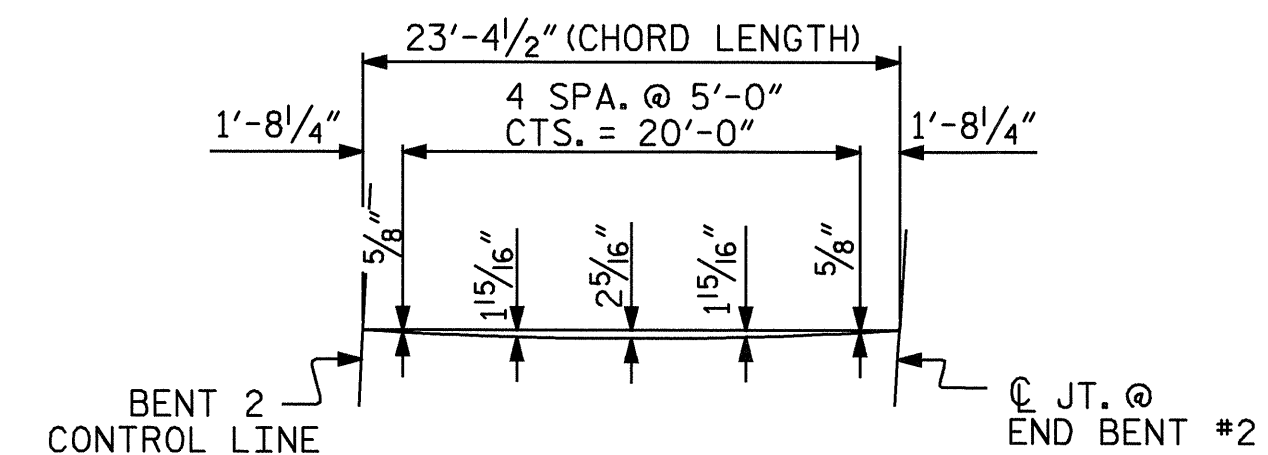
LEFT OUTSIDE EDGE



RIGHT OUTSIDE EDGE



RIGHT OUTSIDE EDGE



RIGHT OUTSIDE EDGE

ARC OFFSETS - SPAN A

ARC OFFSETS - SPAN B

ARC OFFSETS - SPAN C

DRAWN BY : J. G. KHARVA DATE : 05-19-05
CHECKED BY : W. F. PARKER DATE : 08-03-05

18-APR-2006 08:19
G:\STRUCT-1\FINALP-1\B-4199_SD_PS_01.DGN
rwwr1ght



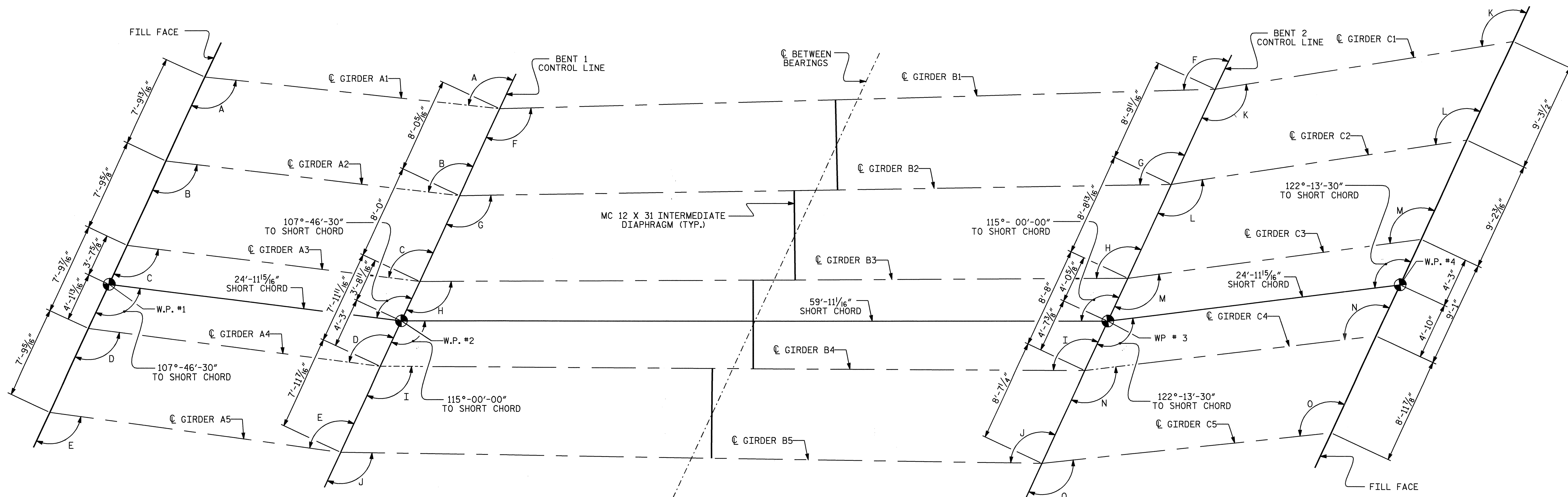
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8
2			4			TOTAL SHEETS 33



EXP.
P1, E1

FIX.
P2, E1

FIX.
P3, E1

FIX.
P2, E1

FIX.
P4, E1

EXP.
P1, E1

SPAN A

SPAN B

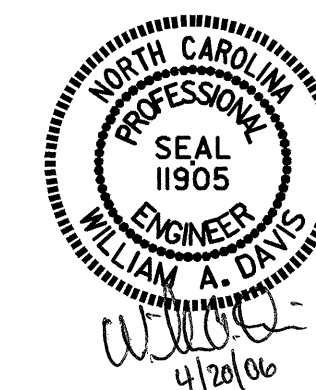
SPAN C

FRAMING PLAN

SEE GIRDER SHEETS FOR LOCATION
OF INTERMEDIATE DIAPHRAGMS

ANGLES						
GIRDER	SPAN A		SPAN B		SPAN C	
1	A	108°-50'-49"	F	116°-34'-44"	K	124°-21'-09"
2	B	108°-23'-49"	G	115°-54'-51"	L	123°-27'-16"
3	C	107°-58'-05"	H	115°-17'-00"	M	122°-36'-20"
4	D	107°-33'-34"	I	114°-41'-02"	N	121°-48'-06"
5	E	107°-10'-09"	J	114°-06'-49"	O	121°-02'-20"

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

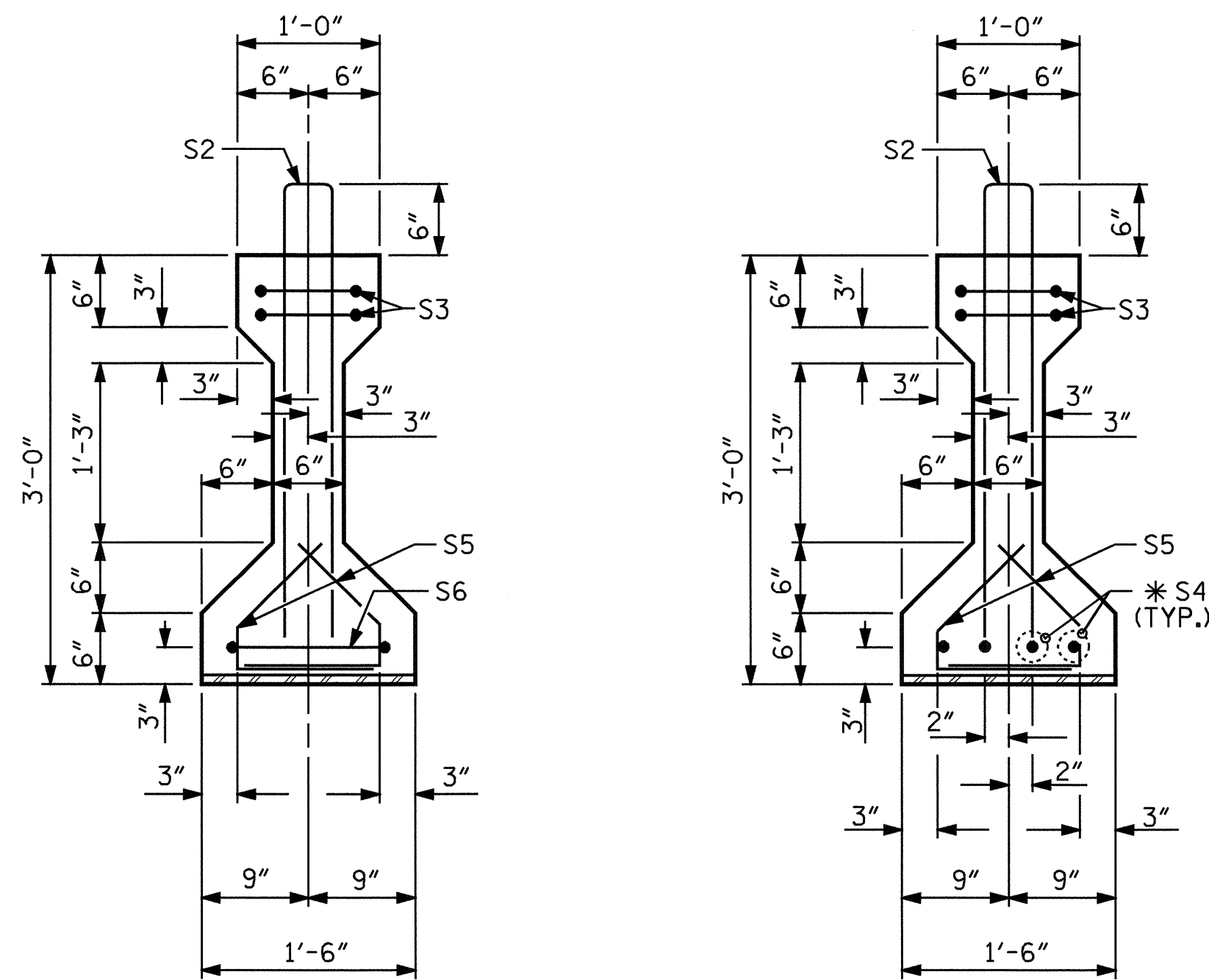


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE FRAMING PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-9					TOTAL SHEETS 33

DRAWN BY : J. G. KHARVA DATE : 06/07/05
 CHECKED BY : W. F. PARKER DATE : 11/08/05

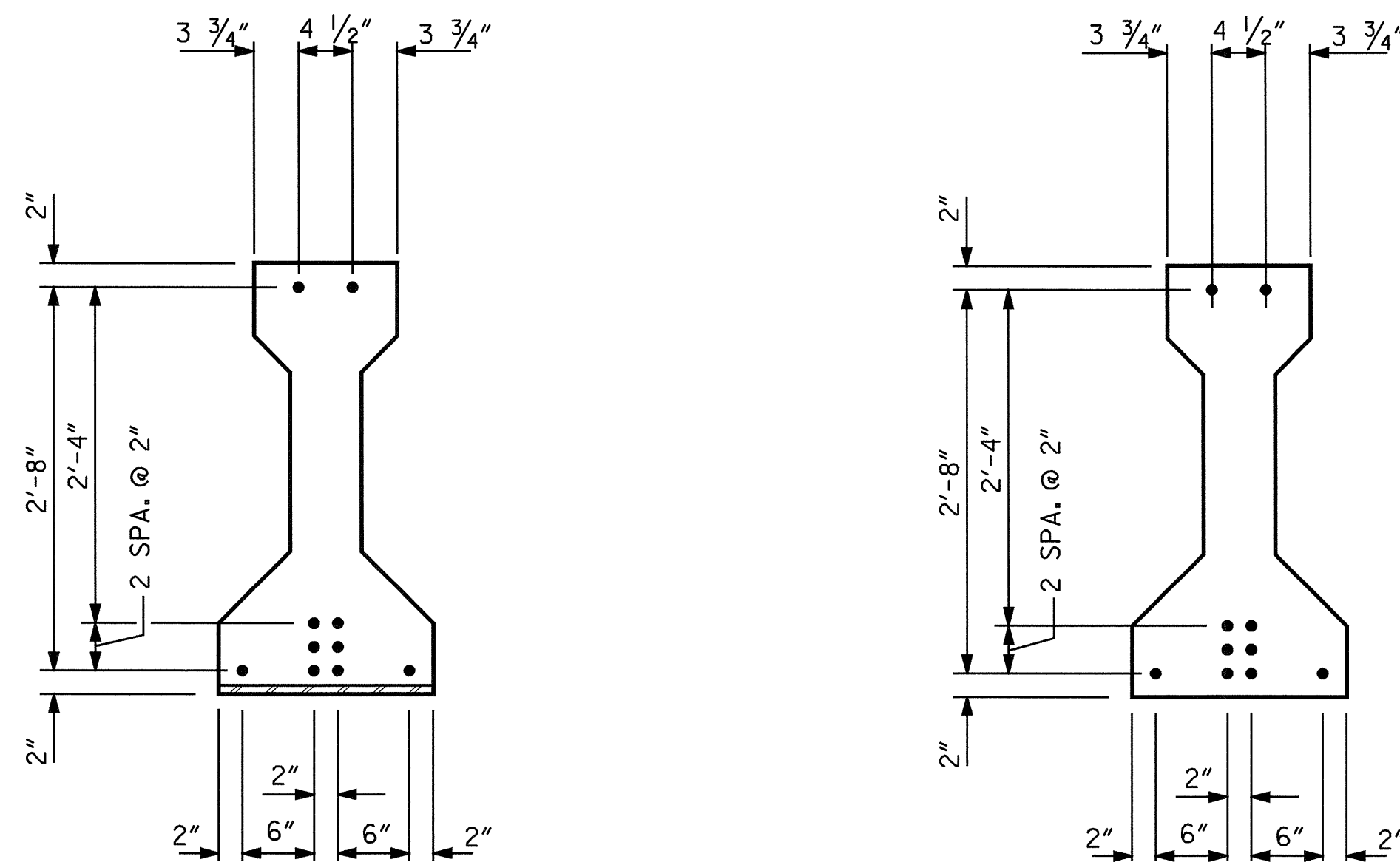
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NC006



SECTION A-A

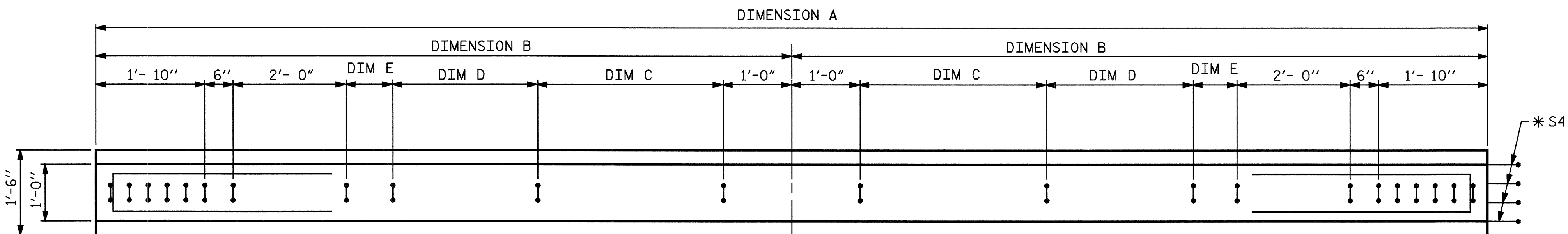
SECTION B-B



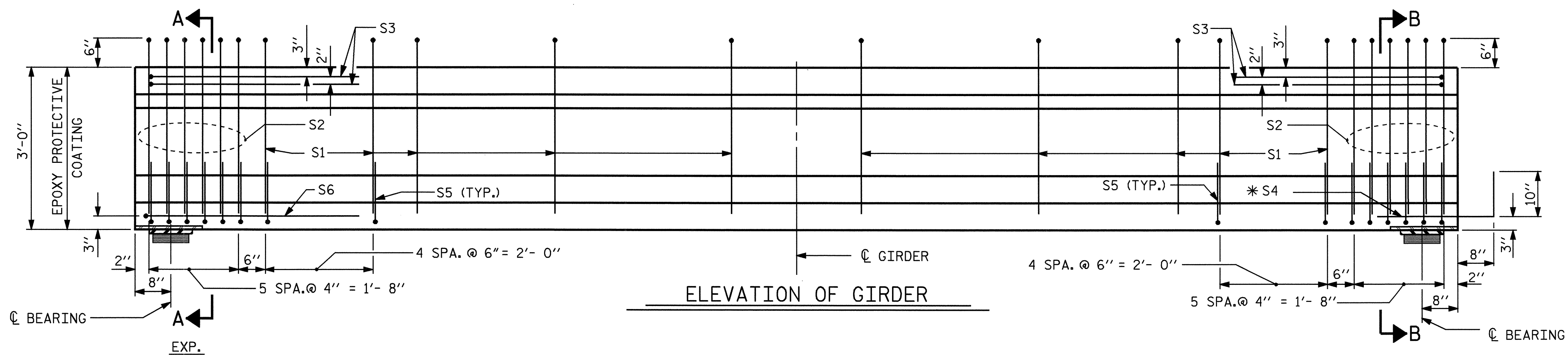
AT END OF GIRDER

AT C OF GIRDER

1/2" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

GIRDER DIMENSIONS FOR SPAN A					
	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E
GIRDER A1	23'-0 1/4"	11'-6 1/8"	2 SPA. @ 2'-0"	2 SPA. @ 10"	6 1/8"
GIRDER A2	22'-11 5/8"	11'-5 3/16"	2 SPA. @ 2'-0"	2 SPA. @ 10"	5 3/16"
GIRDER A3	22'-10 7/8"	11'-5 7/16"	2 SPA. @ 2'-0"	2 SPA. @ 10"	5 7/16"
GIRDER A4	22'-10 1/4"	11'-5 1/8"	2 SPA. @ 2'-0"	2 SPA. @ 10"	5 1/8"
GIRDER A5	22'-9 3/4"	11'-4 7/8"	2 SPA. @ 2'-0"	2 SPA. @ 10"	4 7/8"

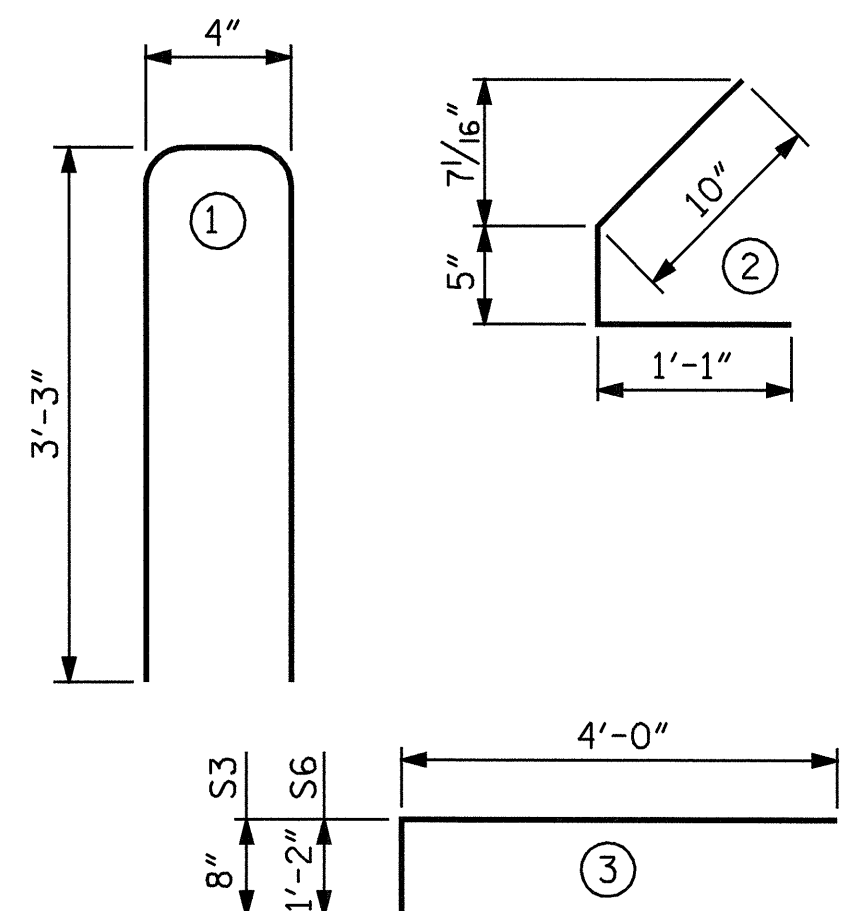
1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	20	#4	1	6'-10"	91
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
*S4	4	#5	STR	3'-8"	15
S5	44	#4	2	2'-4"	69
S6	1	#4	3	9'-2"	6

* NOTE: S4 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	5000 PSI CONCRETE	1/2" Ø L.R. STRANDS
LB.	C.Y.	No.
290	2.2	10

GIRDERS REQUIRED

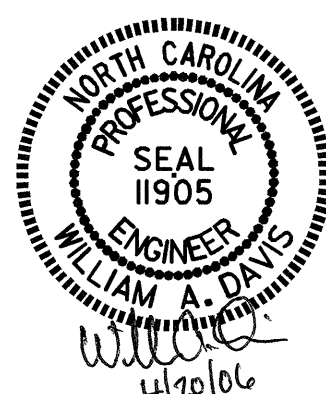
NUMBER	LENGTH	TOTAL LENGTH
5	VARIES	114.56

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

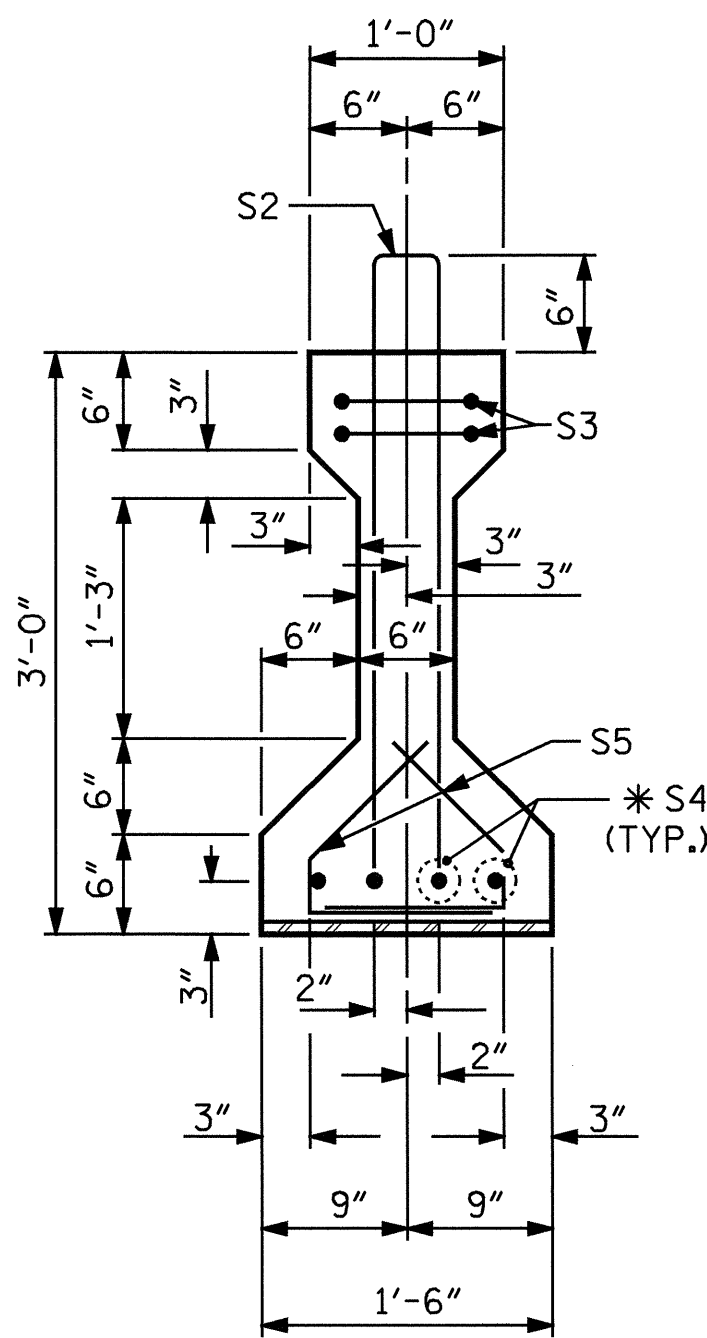
SHEET 1 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
AASHTO TYPE II PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD (SPAN A)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

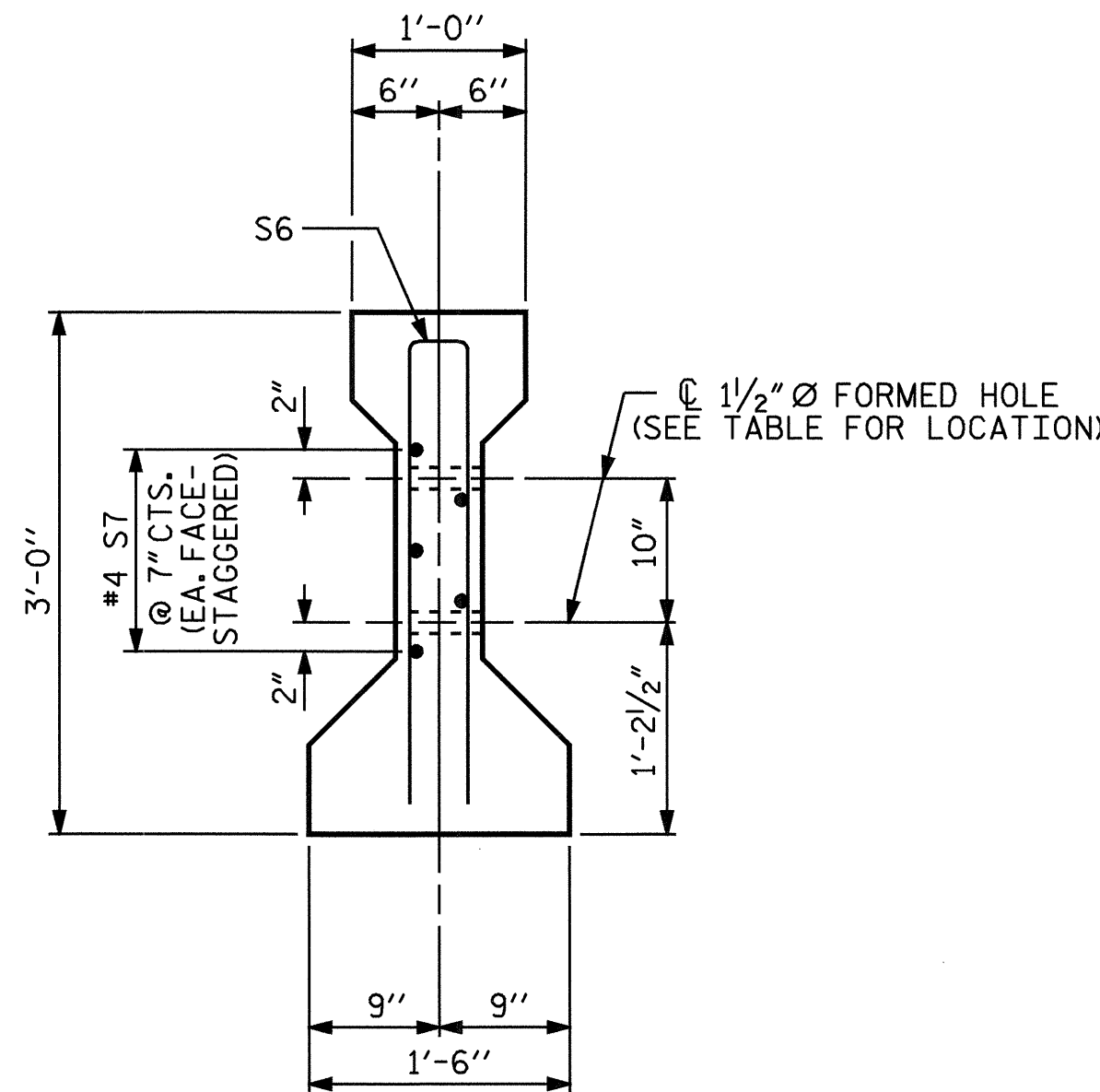
SHEET NO.
S-10
TOTAL SHEETS
33



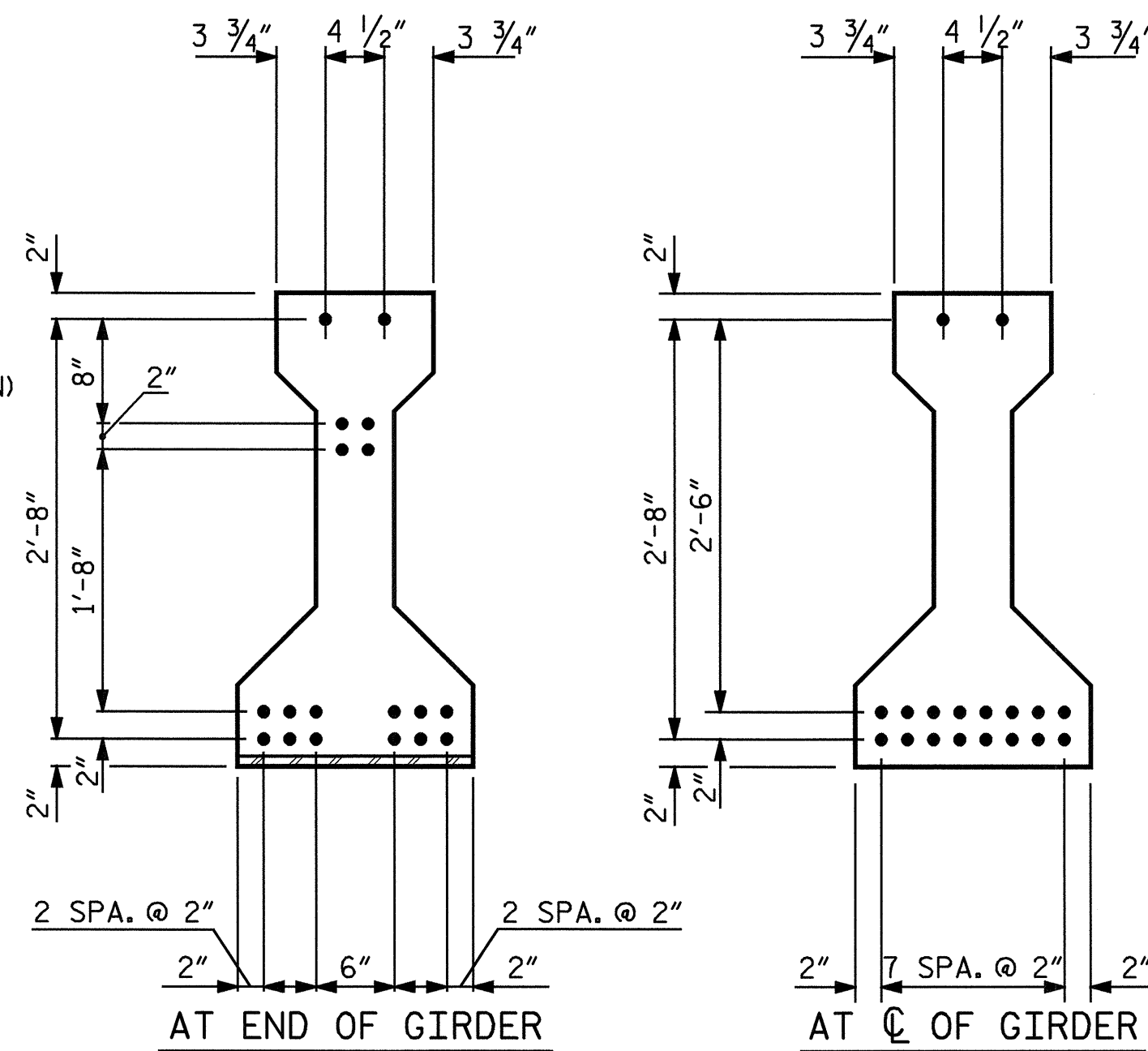
ASSEMBLED BY : J. G. KHARVA	DATE : 6/6/05
CHECKED BY : W. F. PARKER	DATE : 8/4/05
DRAWN BY : RB	2/97
CHECKED BY : EEM	2/97



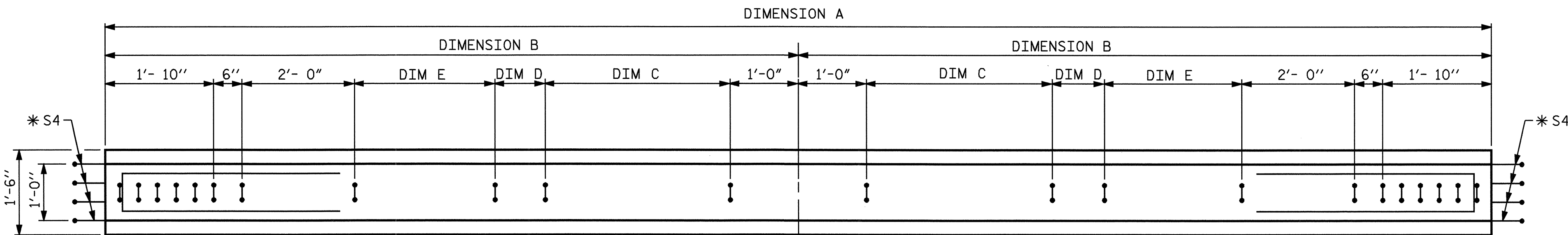
SECTION A-A



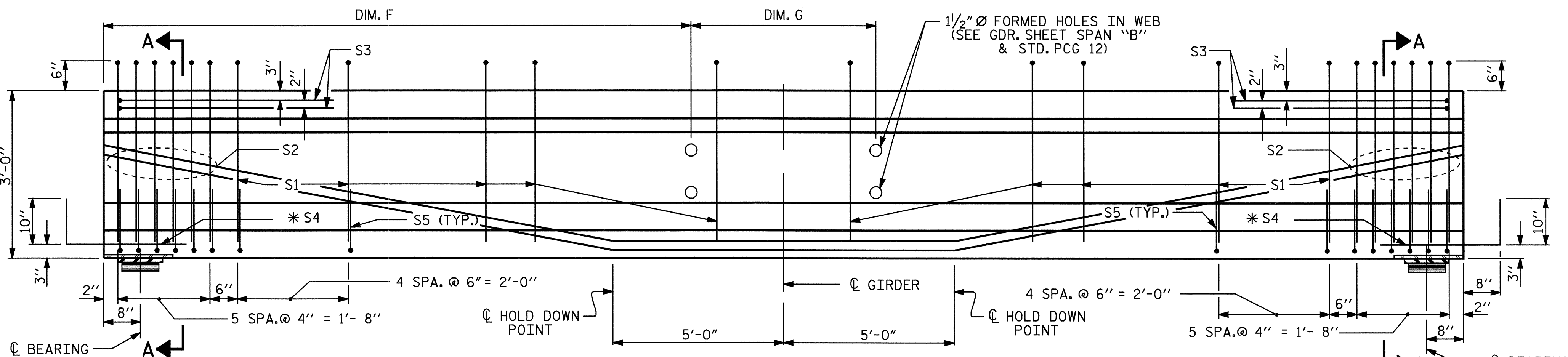
SECTION C-C
(S1 BARS NOT SHOWN)



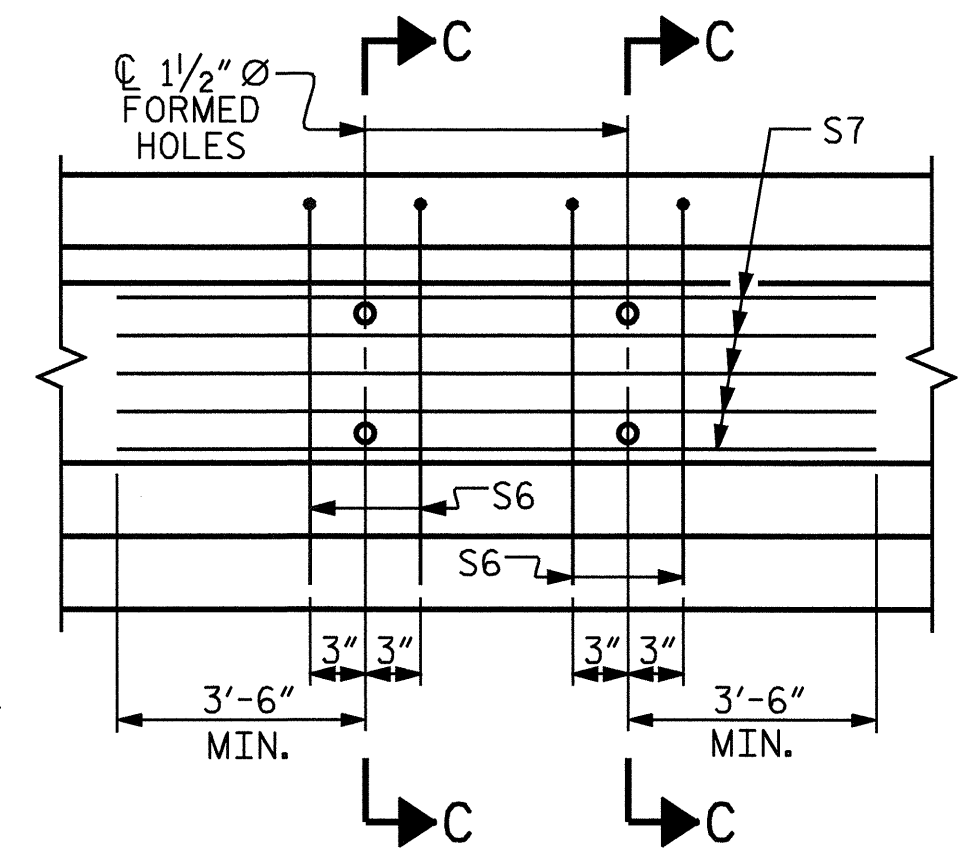
0.6" Ø LOW RELAXATION STRAND LAYOUT



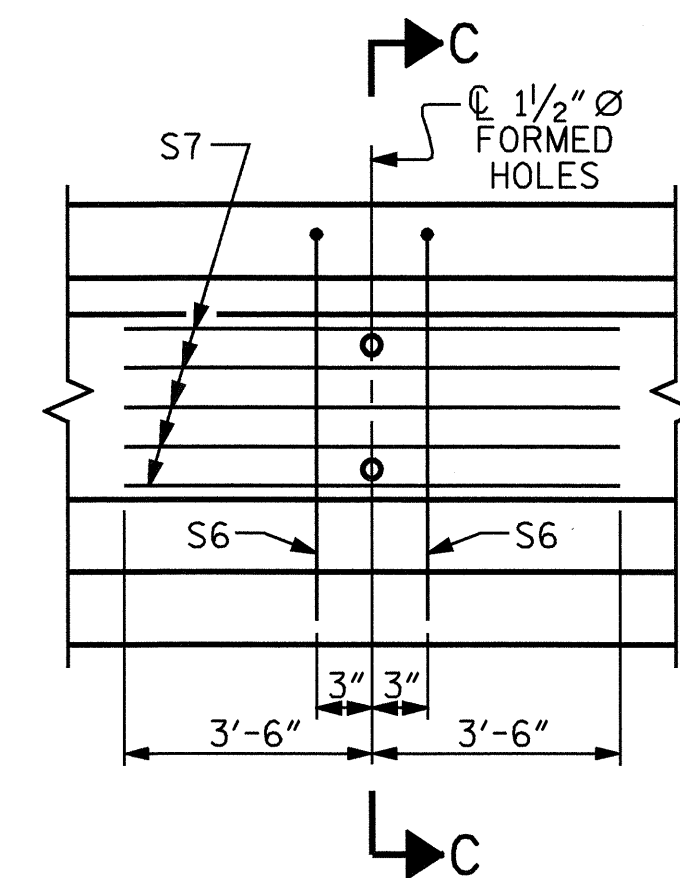
PLAN OF GIRDER



ELEVATION OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR INTERIOR GIRDERS



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR EXTERIOR GIRDERS

CONC. FOR EA. GDR.	
GDR.	C.Y.
B1	5.7
B2	5.7
B3	5.6
B4	5.6
B5	5.6

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

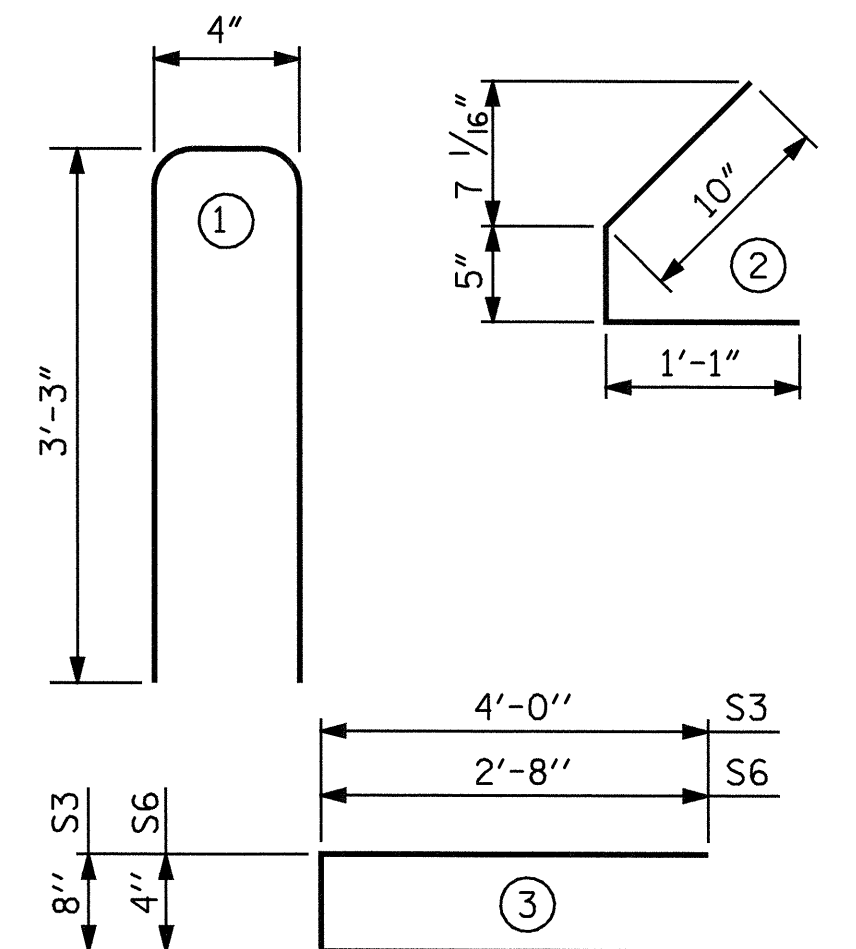
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	6'-10"	219
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
* S4	8	#5	STR	3'-8"	31
S5	44	#4	2	2'-4"	69
INTERIOR S6	4	#5	3	5'-8"	24
EXTERIOR S6	2	#5	3	5'-8"	12
INTERIOR S7	5	#4	STR	10'-8"	34
EXTERIOR S7	5	#4	STR	7'-0"	23

* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
INTERIOR	486	SEE TABLE	18
EXTERIOR	463	SEE TABLE	18

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	VARIES	296.28

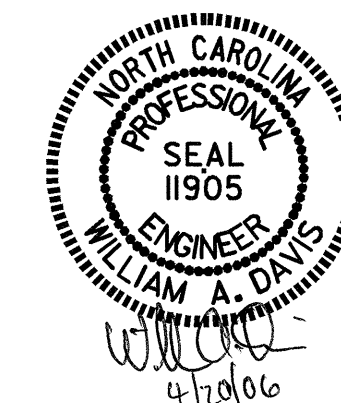
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

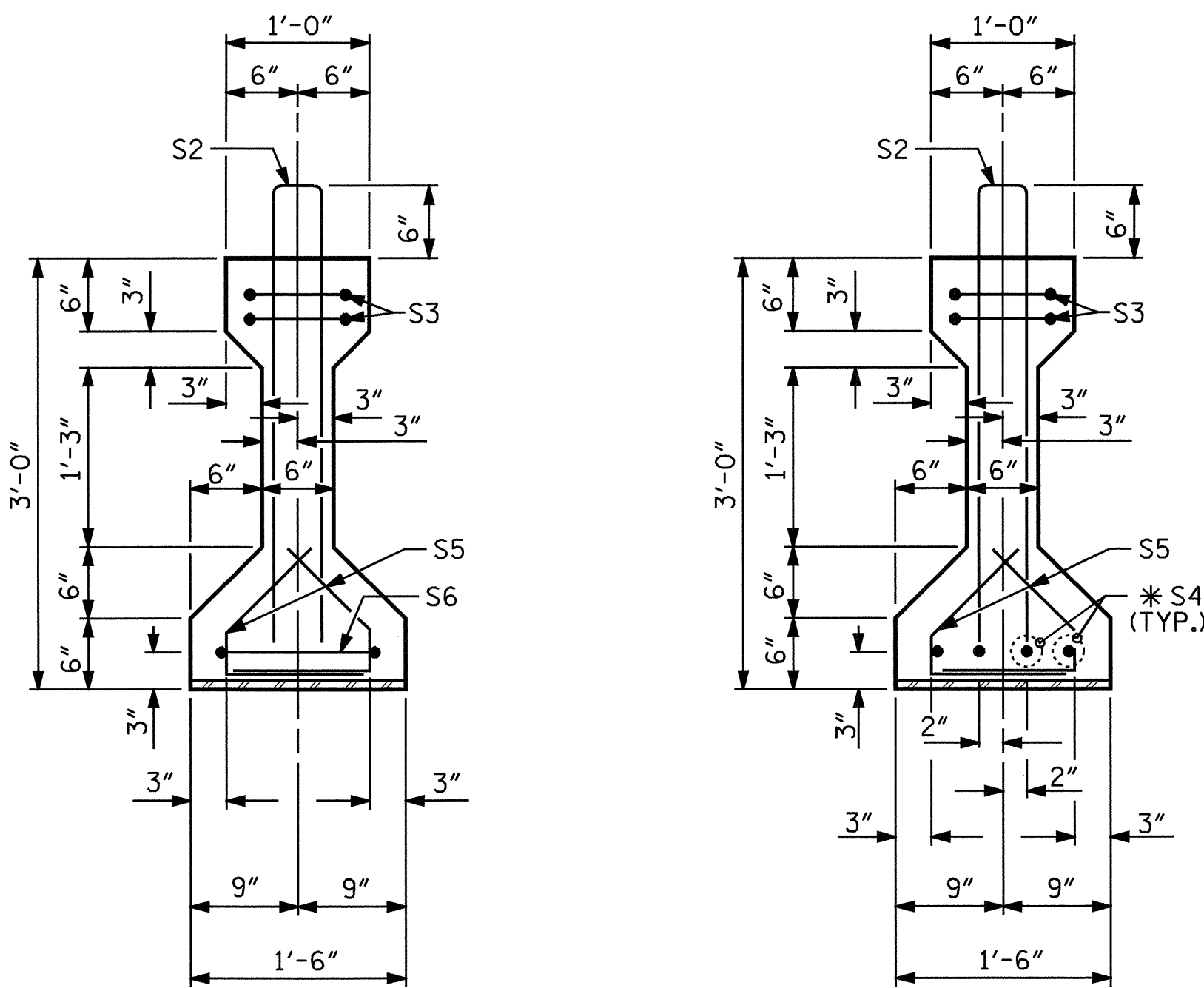
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE II
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD
(SPAN B)

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL 33
2			4			

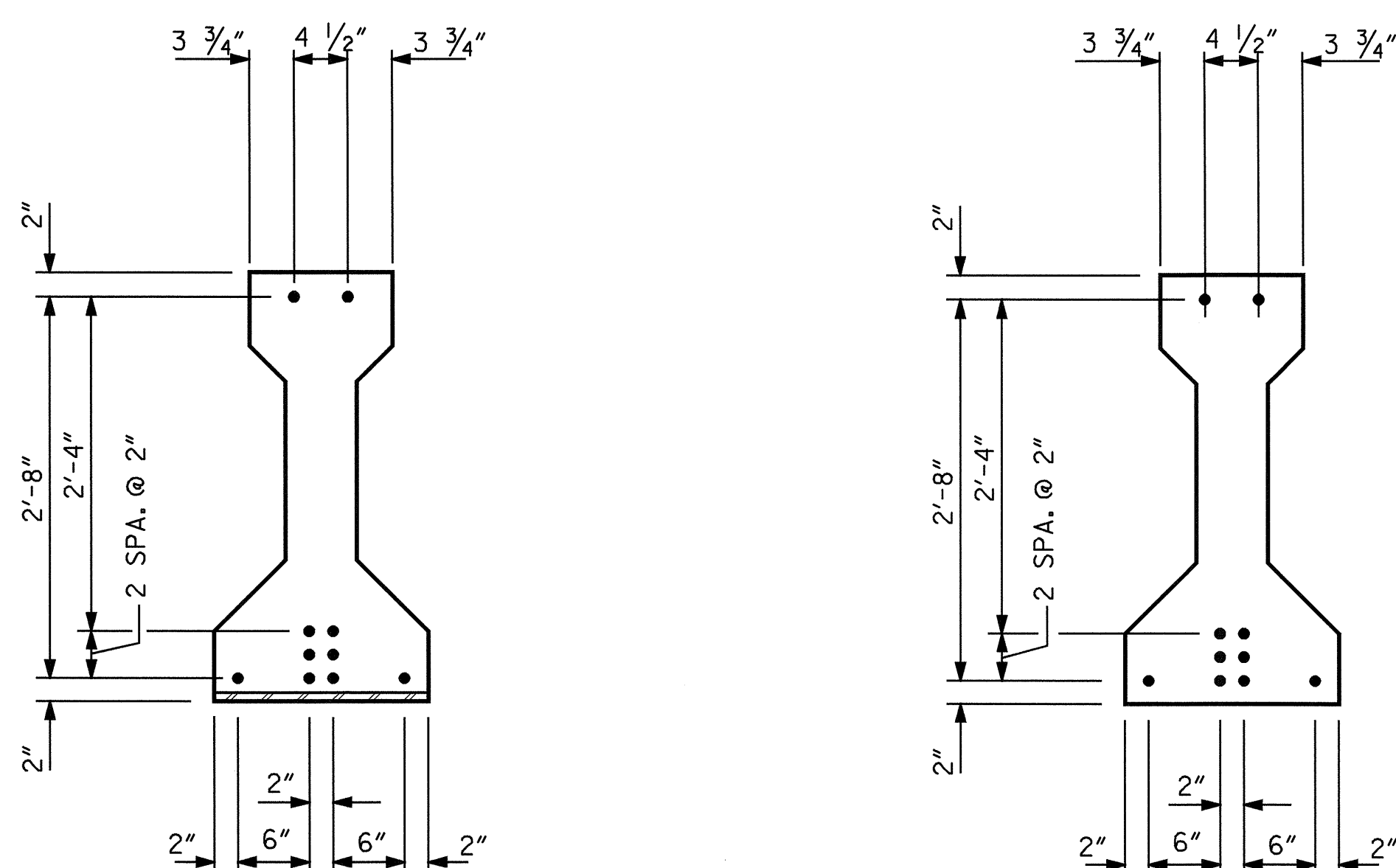
ASSEMBLED BY : J. G. KHARVA	DATE : 6/6/05
CHECKED BY : W. F. PARKER	DATE : 11/8/05
DRAWN BY : RB 2/97	REV. 8/16/99 RWW/LES
CHECKED BY : EEM 2/97	





SECTION A-A

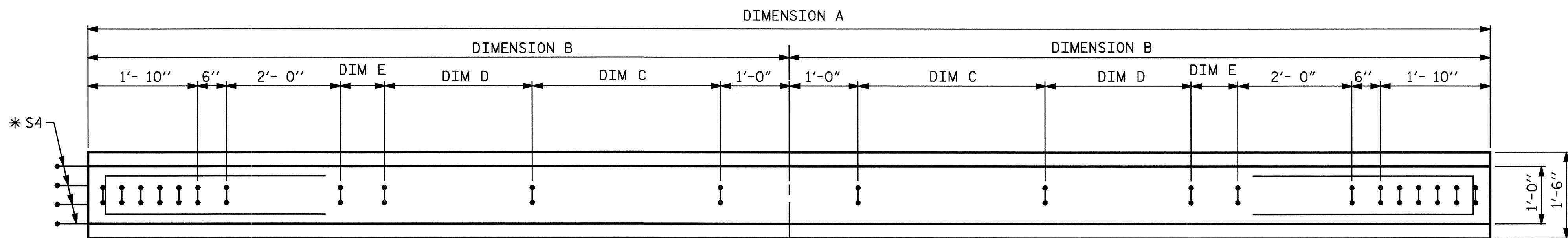
SECTION B-B



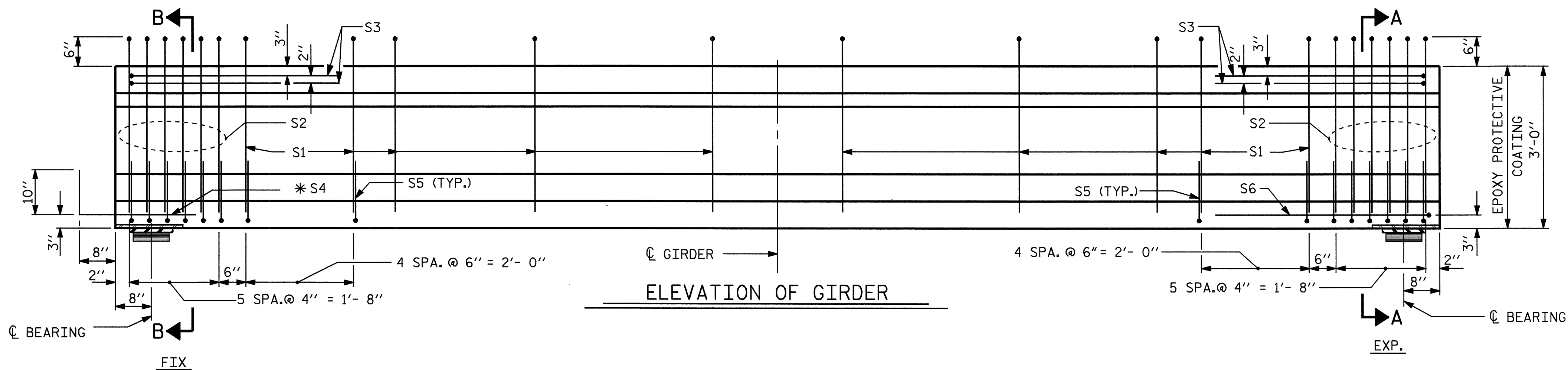
AT END OF GIRDER

AT C OF GIRDER

1/2" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E
GIRDER C1	23'-1 ⁵ / ₈ "	11'-6 ¹³ / ₁₆ "	2 SPA. @ 2'-0"	2 SPA. @ 10"	6 ¹³ / ₁₆ "
GIRDER C2	22'-10 ³ / ₄ "	11'-5 ³ / ₈ "	2 SPA. @ 2'-0"	2 SPA. @ 10"	5 ³ / ₈ "
GIRDER C3	22'-8 ⁷ / ₈ "	11'-4 ¹ / ₁₆ "	2 SPA. @ 2'-0"	2 SPA. @ 10"	4 ¹ / ₁₆ "
GIRDER C4	22'-5 ³ / ₄ "	11'-2 ⁷ / ₈ "	2 SPA. @ 2'-0"	2 SPA. @ 8"	6 ⁷ / ₈ "
GIRDER C5	22'-3 ³ / ₈ "	11'-1 ¹³ / ₁₆ "	2 SPA. @ 2'-0"	2 SPA. @ 8"	5 ¹³ / ₁₆ "

CONC. FOR EA. GDR.	
GDR.	C.Y.
C1	2.2
C2	2.2
C3	2.2
C4	2.1
C5	2.1

1/2" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

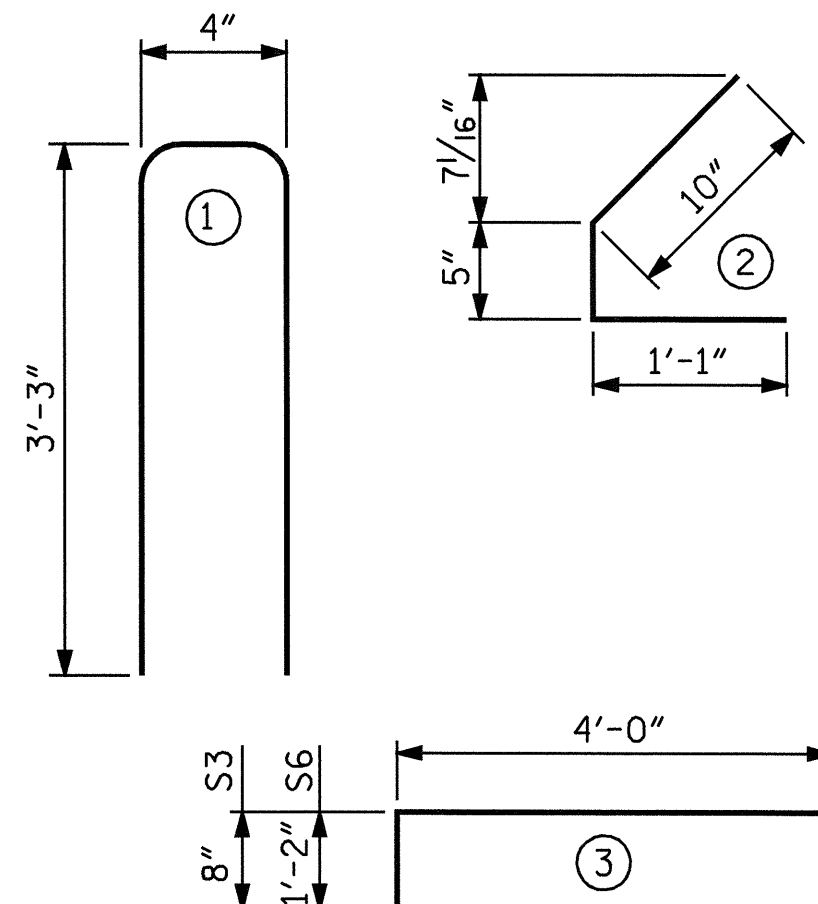
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	20	#4	1	6'-10"	91
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
*S4	4	#5	STR	3'-8"	15
S5	44	#4	2	2'-4"	69
S6	1	#4	3	9'-2"	6

* NOTE: S4 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	5000 PSI CONCRETE	1/2" Ø L.R. STRANDS
	LB.	C.Y.	No.
	290	SEE TABLE	10

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	VARIES	113.49

PROJECT NO. B-4199

MCDOWELL COUNTY

STATION: 13+30.25 -L-

SHEET 3 OF 5



ASSEMBLED BY : J. G. KHARVA	DATE : 6/6/05
CHECKED BY : W. F. PARKER	DATE : 8/4/05
DRAWN BY : RB	2/97
CHECKED BY : EEM	2/97

REV. 8/16/99 RWW/LES

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

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. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI. FOR SPANS A & C AND 5800 PSI FOR SPAN B.

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

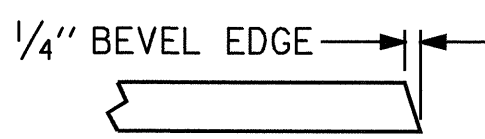
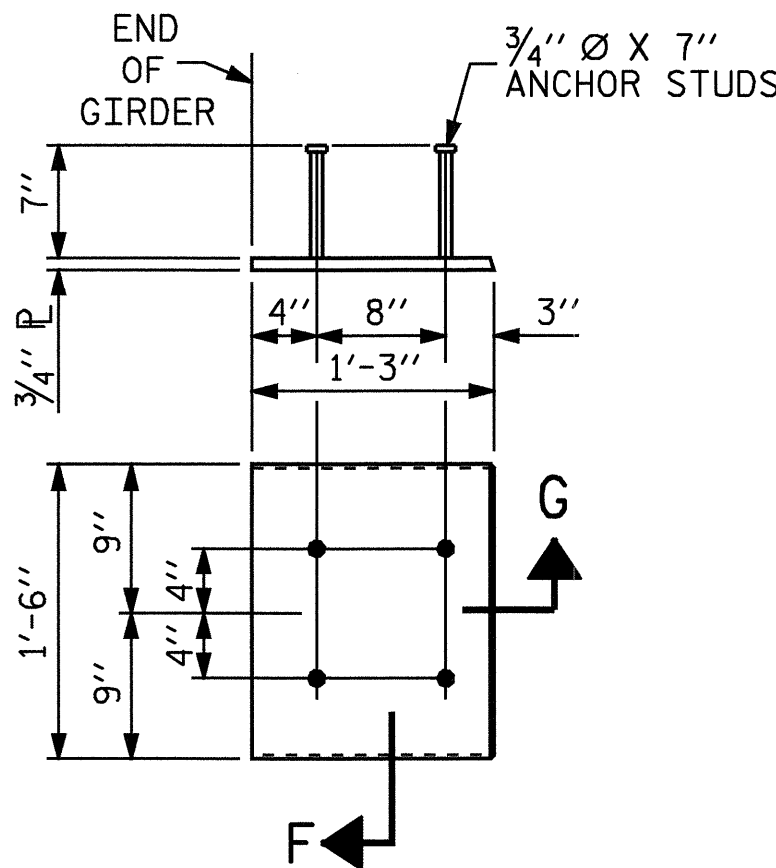
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

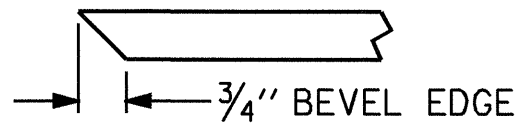
FOR VERTICAL CRACKS IN PRESTRESSED CONCRETE GIRDERS PRIOR TO DETENSIONING, SEE SPECIAL PROVISIONS.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



SECTION "G"



SECTION "F"

(SEE NOTES)

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

DEAD LOAD DEFLECTION TABLE FOR SPANS A AND C											
1/2" Ø 270 KSI	GIRDERS 1 THRU 4										
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.004	0.008	0.012	0.014	0.014	0.014	0.012	0.008	0.004	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.000
FINAL CAMBER	↑ 0.000	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0.000

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

DEAD LOAD DEFLECTION TABLE FOR SPAN B											
0.6" Ø LOW RELAXATION	GIRDERS 1 THRU 4										
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.071	0.134	0.184	0.215	0.226	0.215	0.184	0.134	0.071	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.024	0.046	0.063	0.074	0.078	0.074	0.063	0.046	0.024	0.000
FINAL CAMBER	↑ 0.000	3/16"	1/16"	1/16"	1 1/16"	1 13/16"	1 11/16"	1 7/16"	1/16"	3/16"	0.000

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

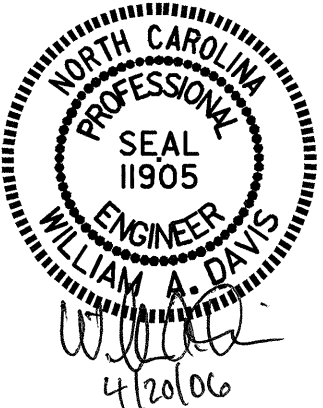
PROJECT NO. B-4199
MCDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 4 OF 5

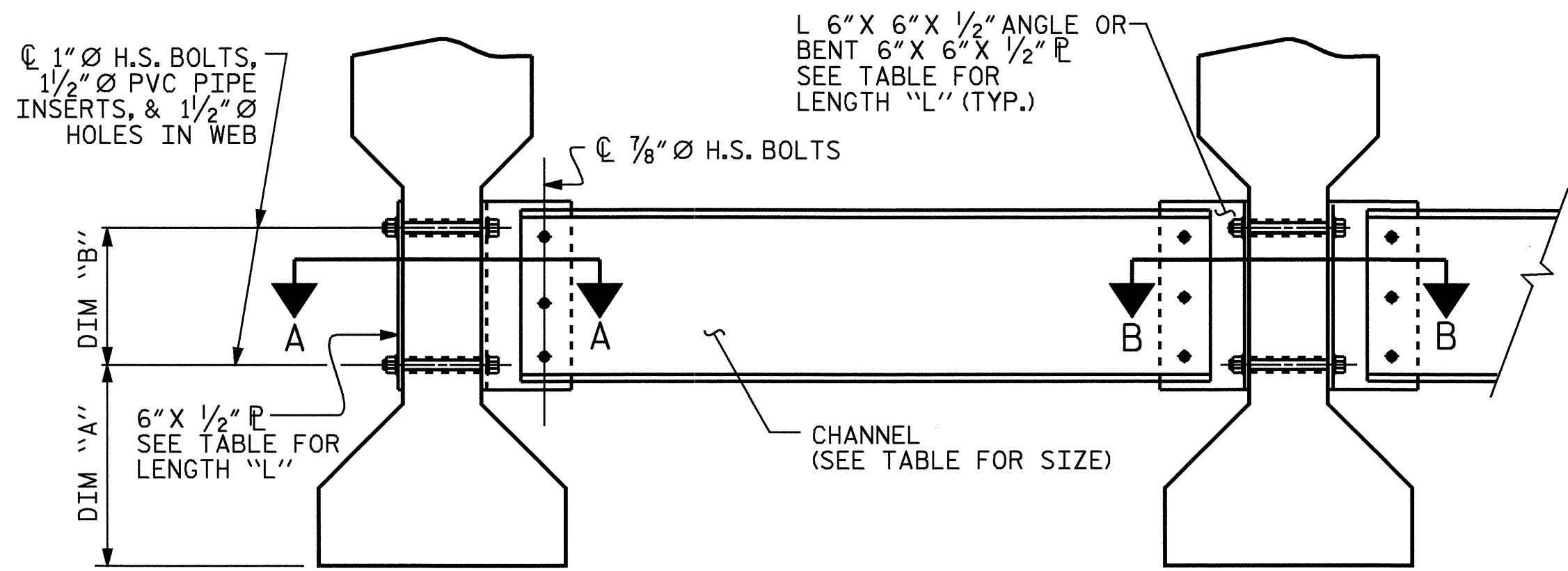
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD DETAILS

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			



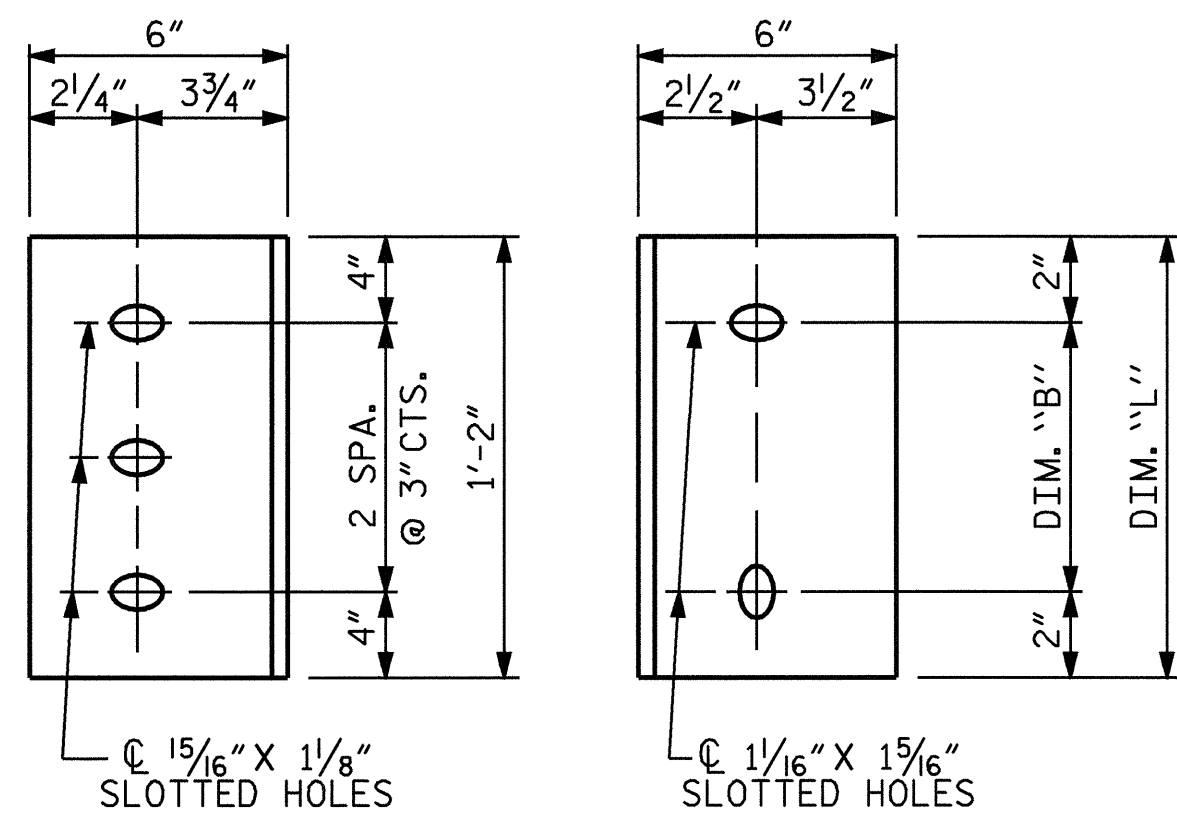
ASSEMBLED BY : J. G. KHARVA	DATE : 6/6/05
CHECKED BY : W. F. PARKER	DATE : 8/4/05
DRAWN BY : ELR 11/91	REV. 8/16/99 MAB/LES
CHECKED BY : GRP 11/91	REV. 10/17/00 RWW/LES
	REV. 7/10/01RR LES/RDR



EXTERIOR GIRDER
INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"



DIAPHRAGM FACE
WEB FACE

CONNECTOR PLATE DETAILS

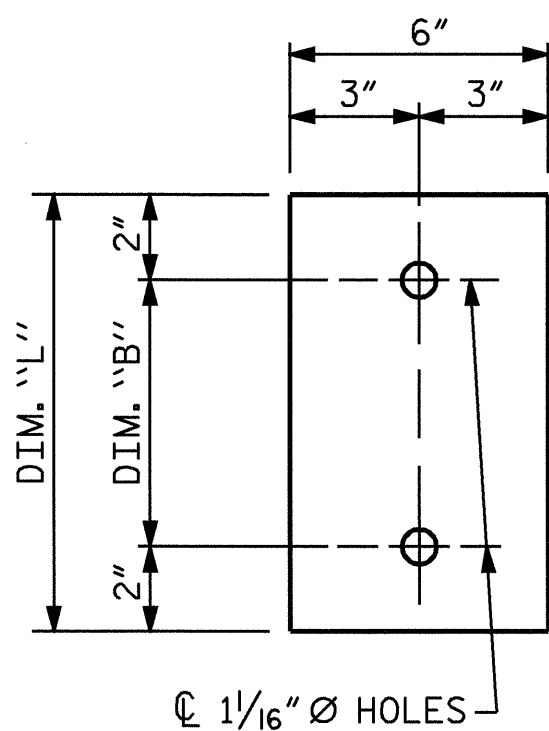
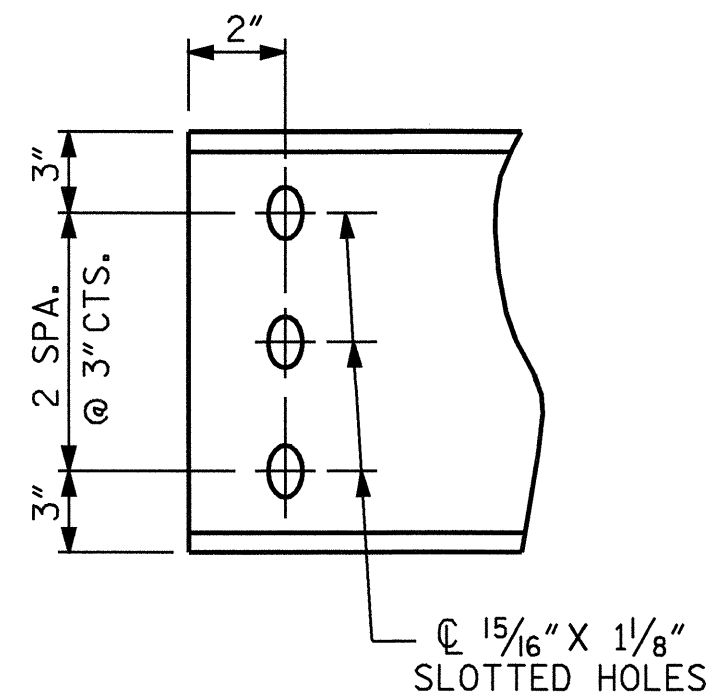
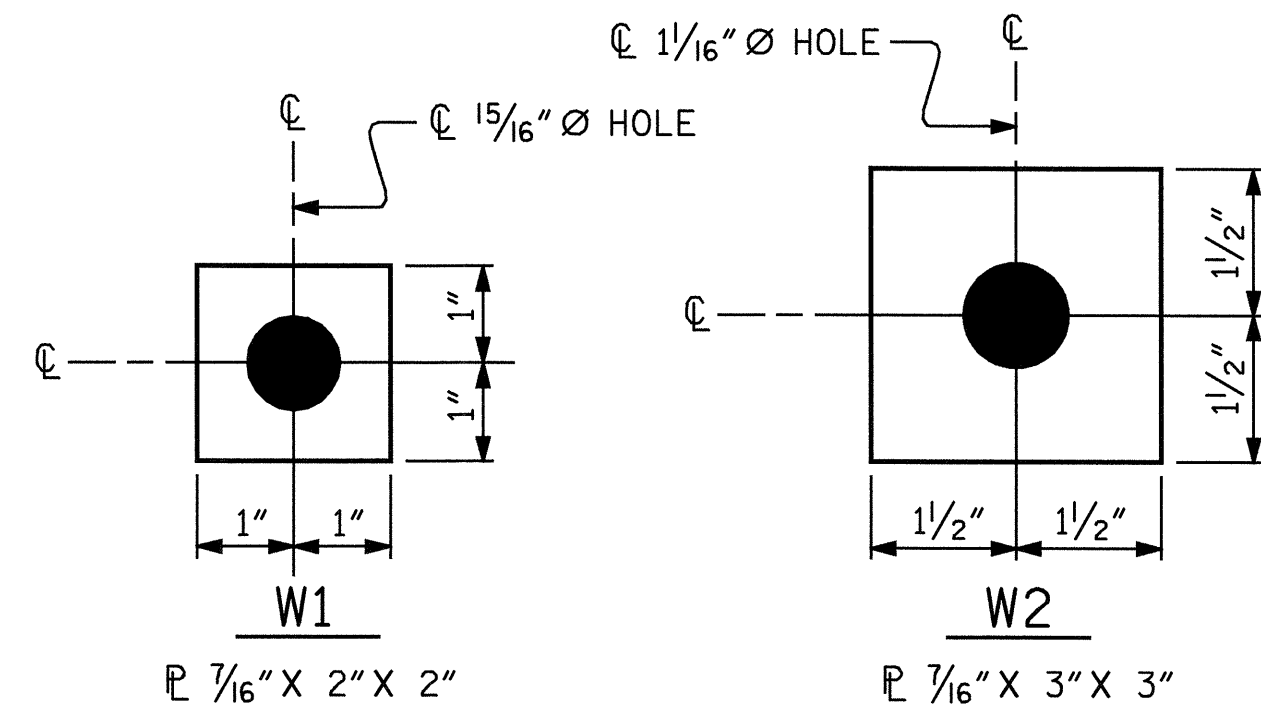


PLATE DETAILS

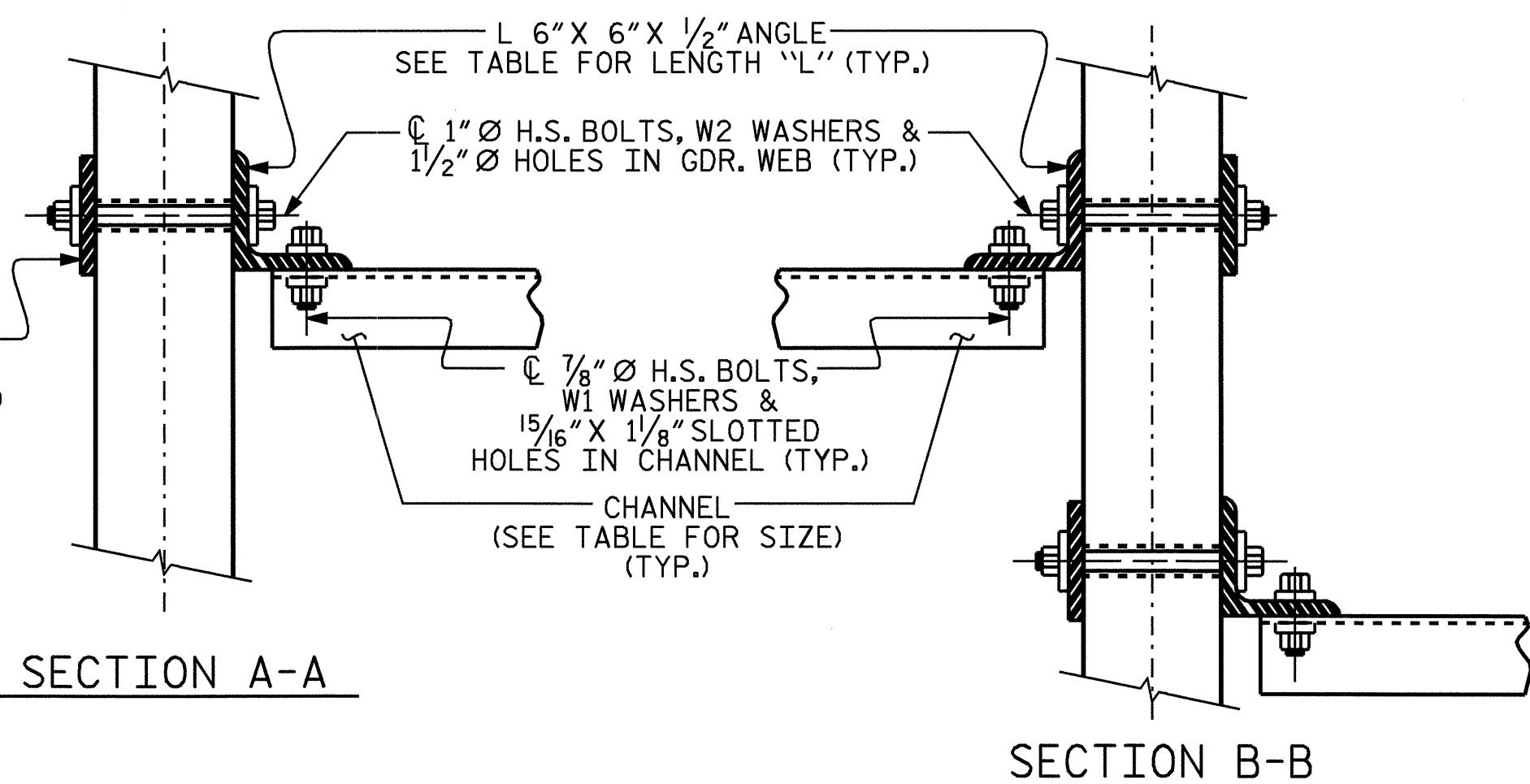


CHANNEL END



USE WITH 7/8 inch diameter H.V.Y. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS
USE WITH 1 inch diameter H.V.Y. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS



SECTION A-A
SECTION B-B
CONNECTION DETAILS

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE II,
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-14
2			4			TOTAL SHEETS 33

ASSEMBLED BY : J. G. KHARVA	DATE : 6/6/05
CHECKED BY : W. F. PARKER	DATE : 11/8/05
DRAWN BY : TLA	6/05
CHECKED BY : VC	6/05
ADDED	10/21/05

NOTES

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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.

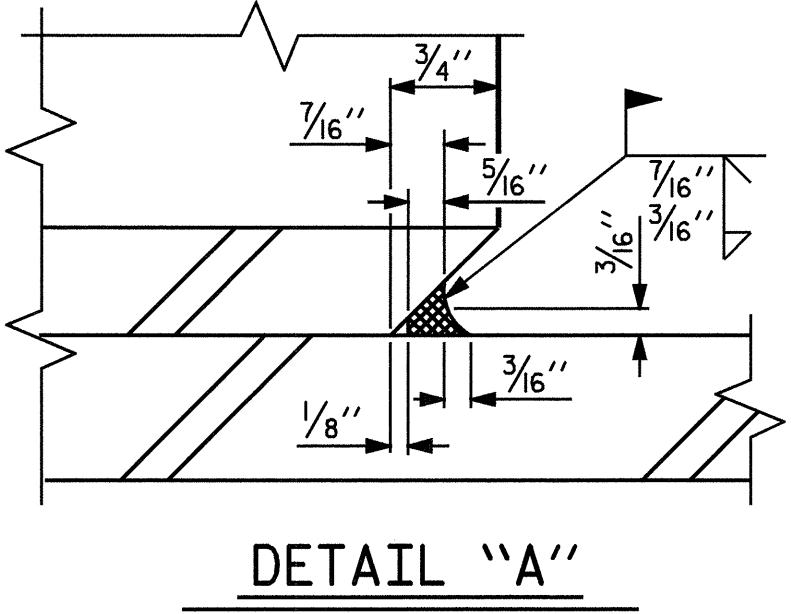
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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

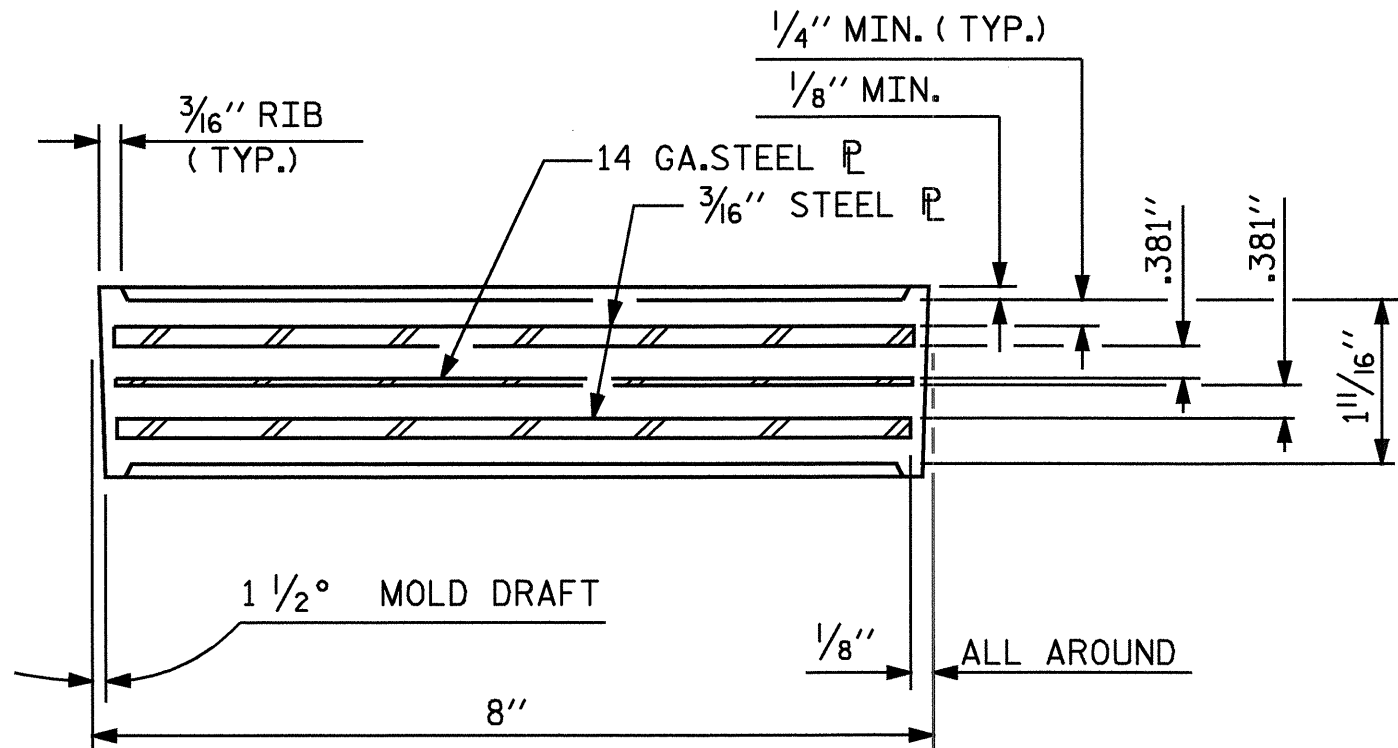
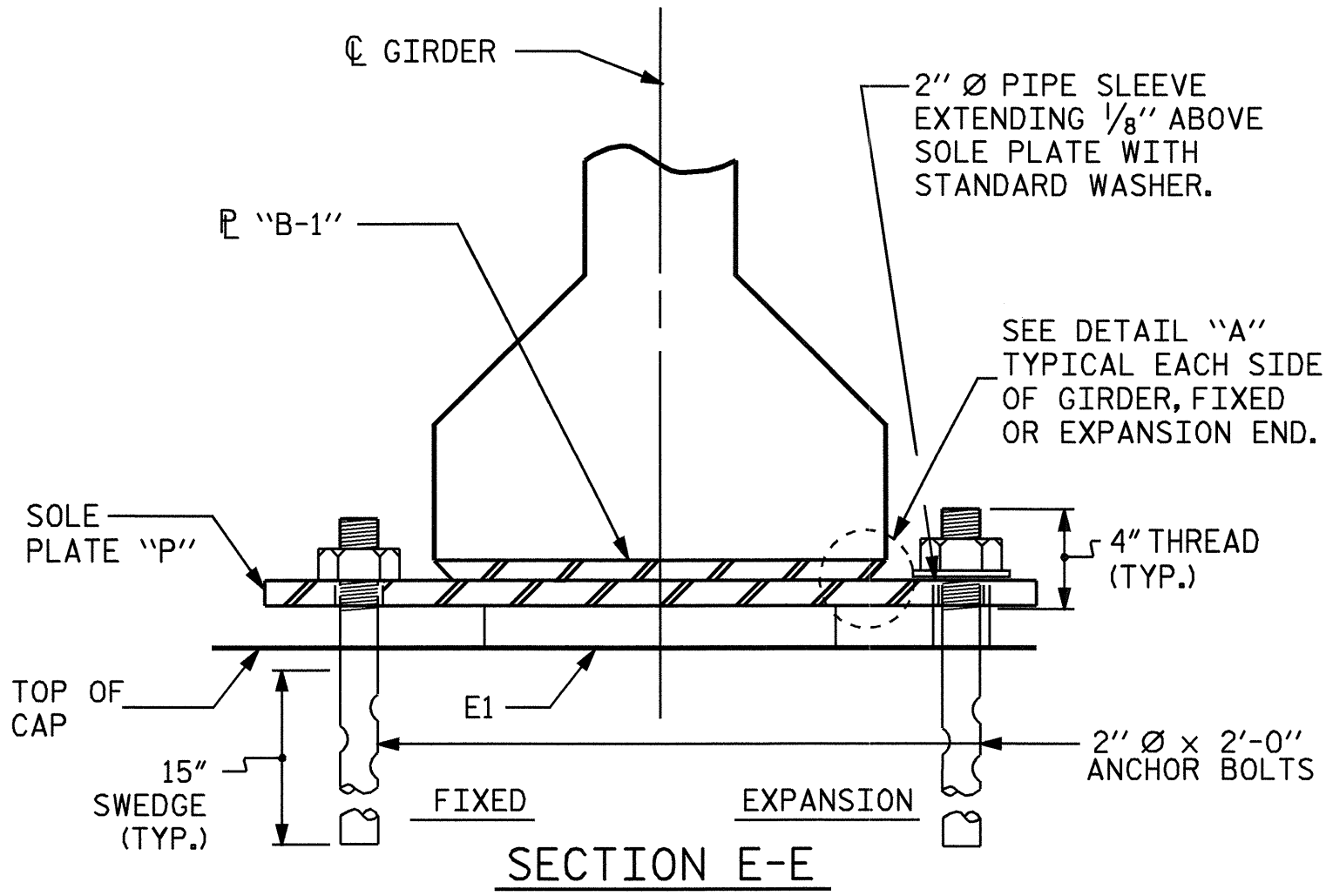
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

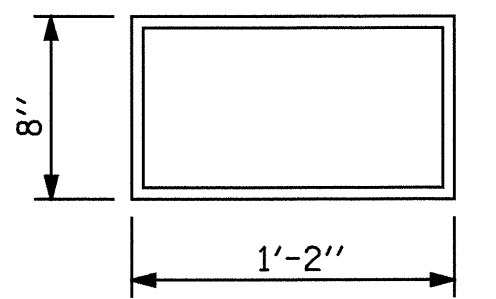
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



— LOAD RATINGS —	
	MAX.D.L.+L.L.
36" PCG -TYPE II	100 K



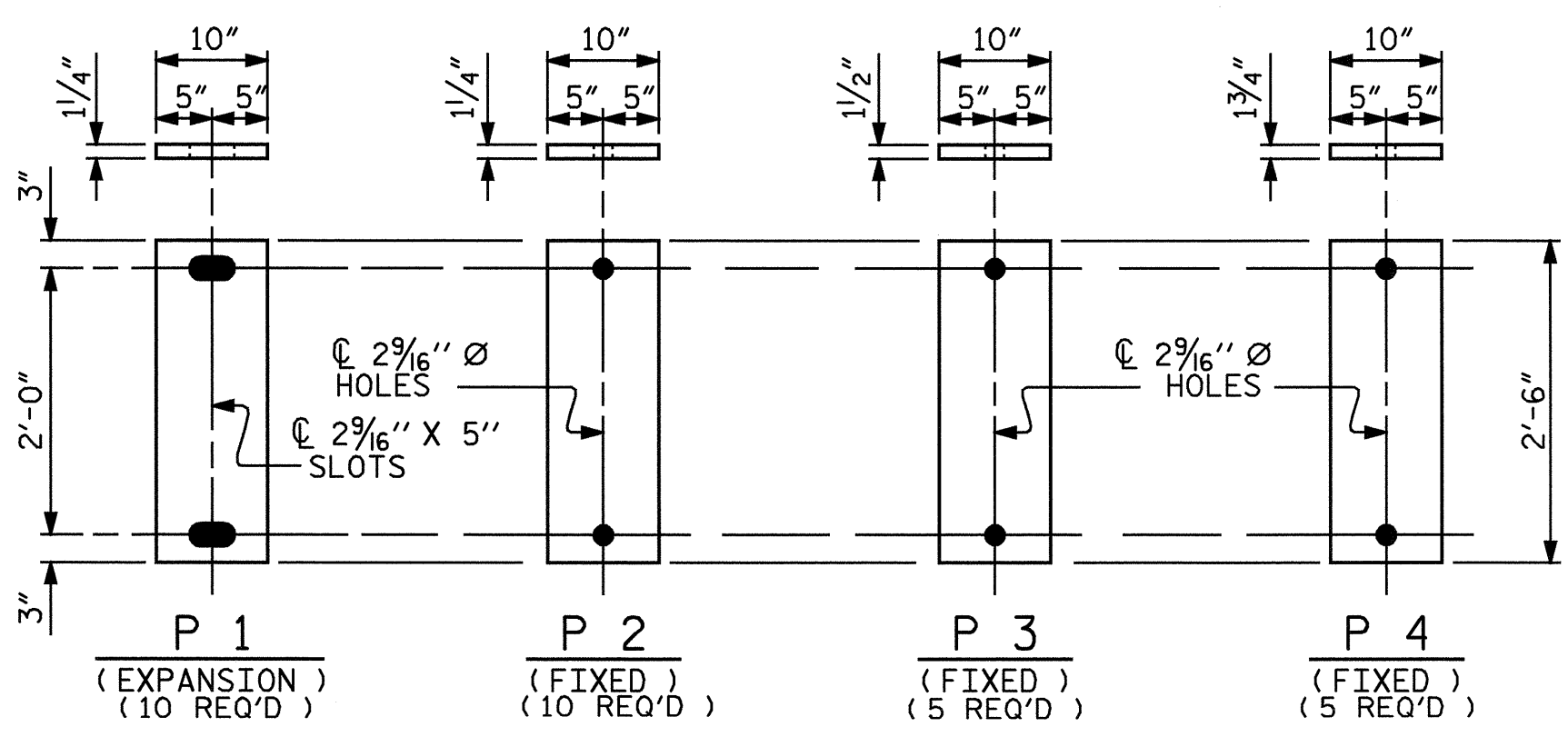
TYPICAL SECTION OF ELASTOMERIC BEARINGS



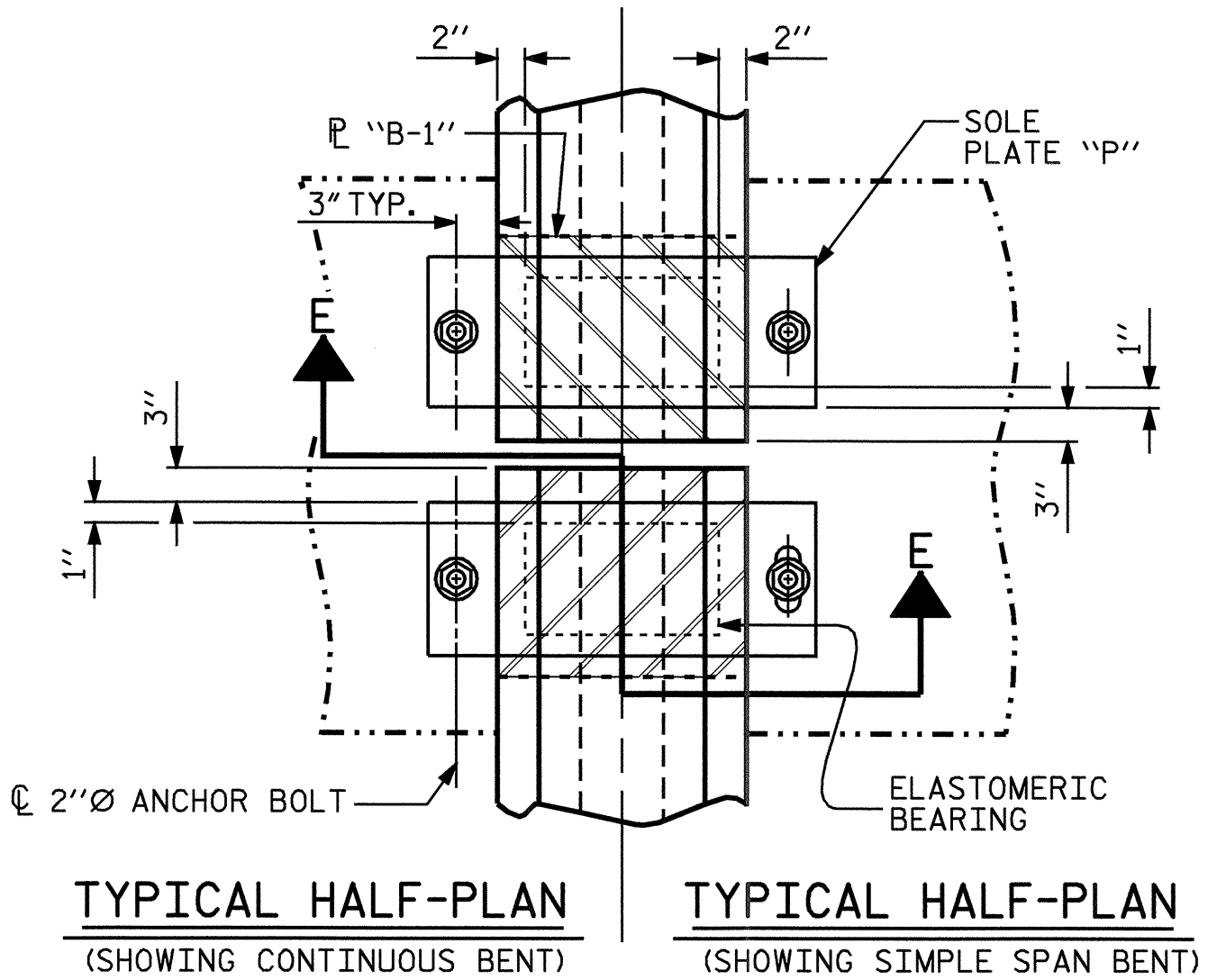
E1 (30 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE II



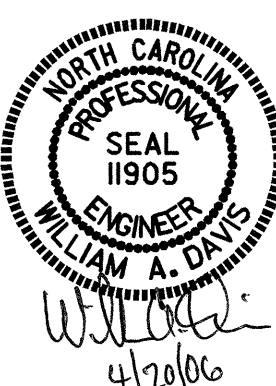
SOLE PLATE DETAILS ("P")



TYPICAL HALF-PLAN
(SHOWING CONTINUOUS BENT)

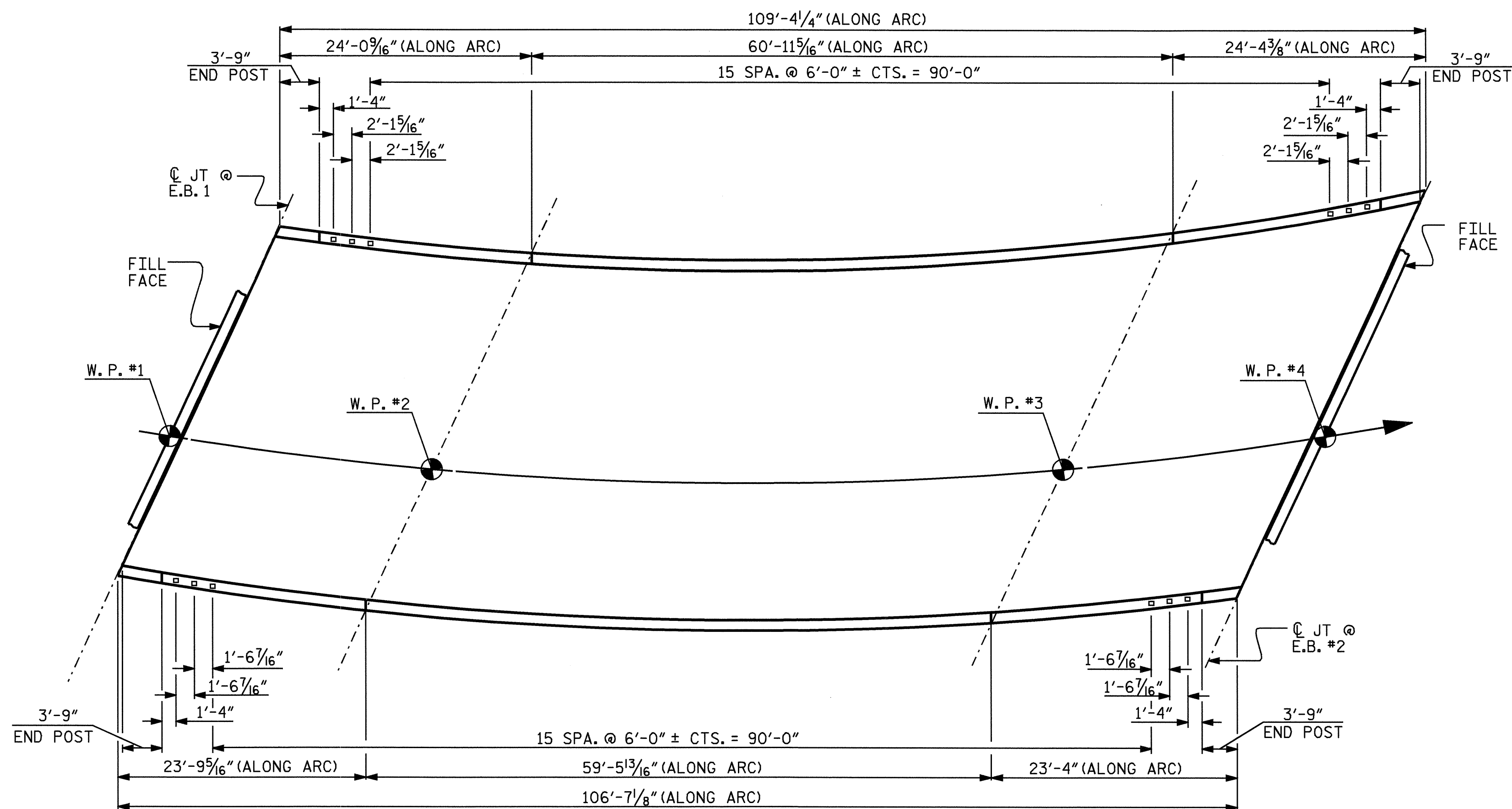
TYPICAL HALF-PLAN
(SHOWING SIMPLE SPAN BENT)

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

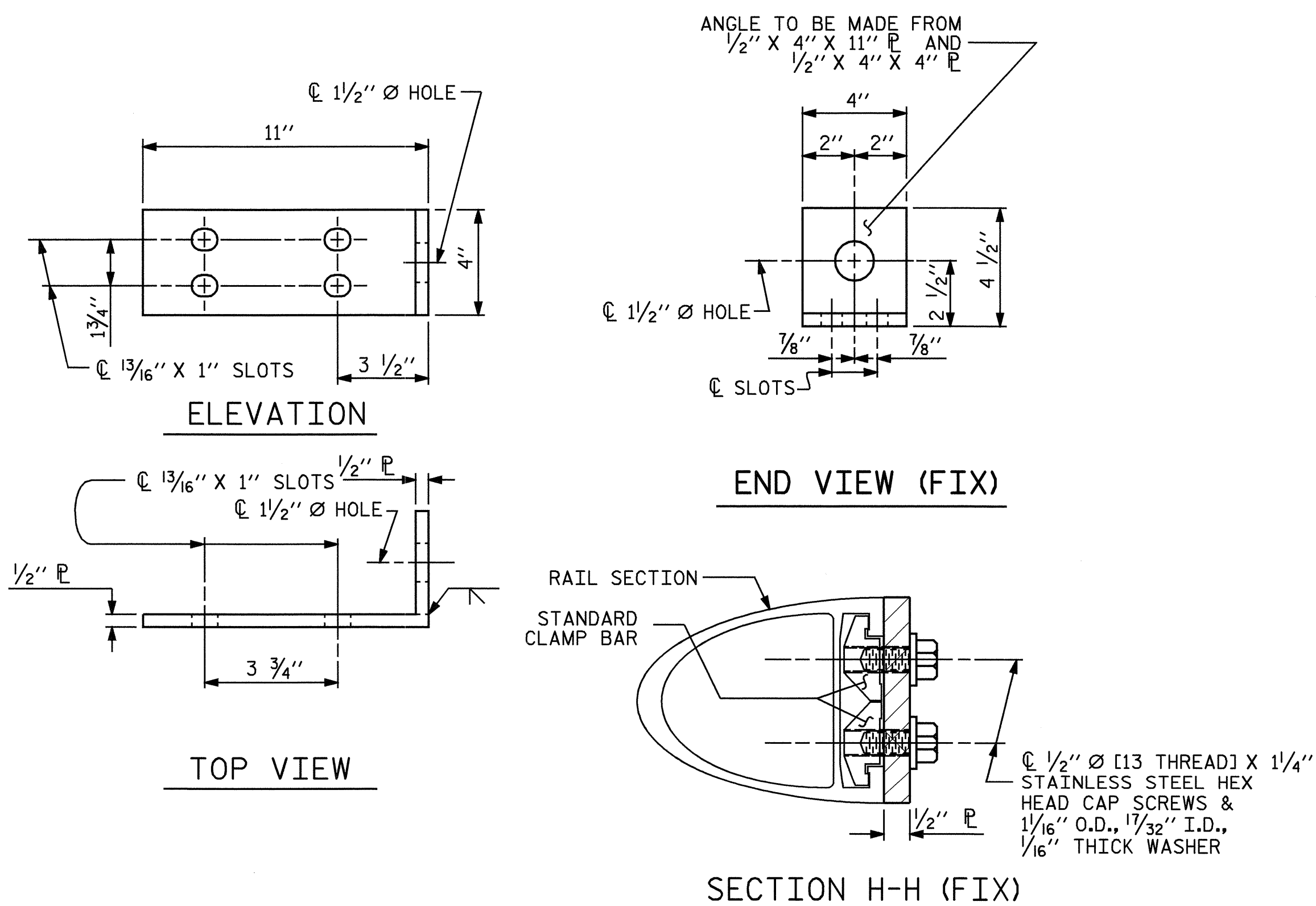


ASSEMBLED BY : J. G. KHARVA	DATE : 05/07/05
CHECKED BY : W. F. PARKER	DATE : 08/04/05
DRAWN BY : WJH 8/89	REV. 8/16/99 RWW/LES
CHECKED BY : CRK 8/89	REV. 10/17/00 RWW/LES
	REV. 7/10/01 RWW/LES

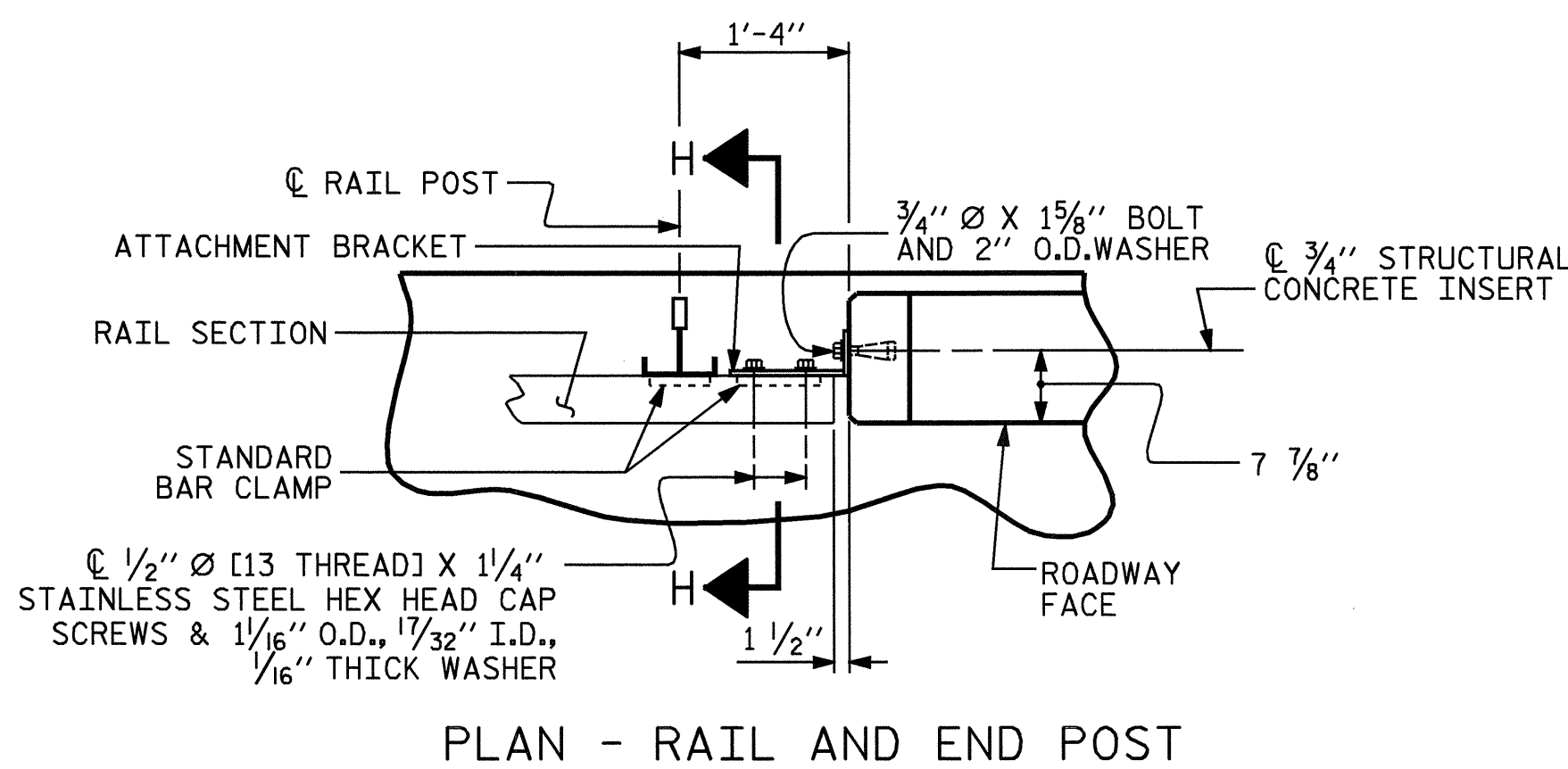
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD ELASTOMERIC BEARING DETAILS					
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-15
					TOTAL SHEETS 33



PLAN OF RAIL POST SPACINGS



DETAILS FOR ATTACHING METAL RAIL TO END POST



NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".
- 1 - 3/4" $\varnothing$ X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" $\varnothing$ X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" $\varnothing$ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

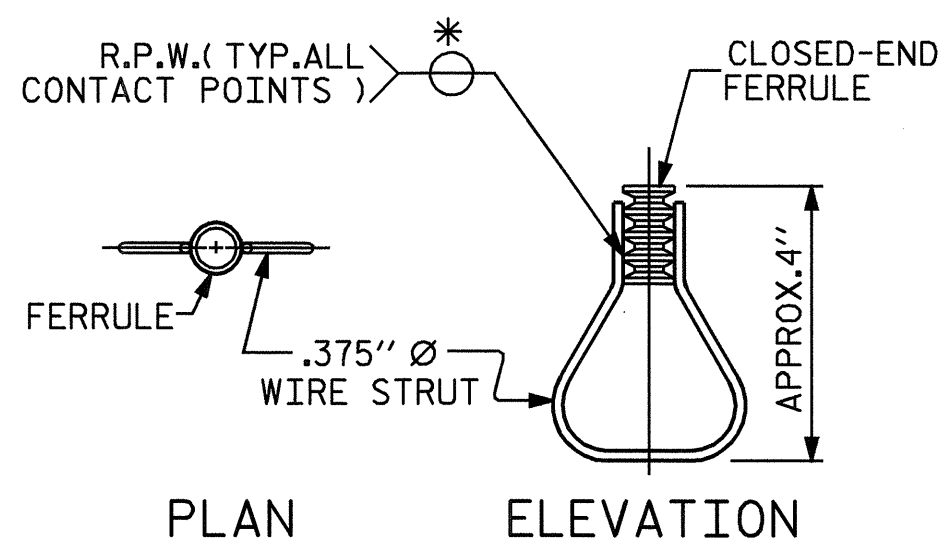
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" $\varnothing$ X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" $\varnothing$ X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" $\varnothing$ PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" $\varnothing$ X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" $\varnothing$ X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" $\varnothing$ X 1 5/8" BOLT SHALL APPLY TO THE 3/4" $\varnothing$ X 6 1/2" BOLT. SEE SPECIAL PROVISIONS FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

STD. NO. BMR2

ASSEMBLED BY : J. G. KHARVA	DATE : 06-02-05
CHECKED BY : W. F. PARKER	DATE : 08-04-05
DRAWN BY : FCJ 1/88	REV. 8/16/99 RWW/LES
CHECKED BY : CRK 3/89	REV. 10/17/00 LES/RDR
	REV. 5/7/03 RWW/JTE

NOTES

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEETS.

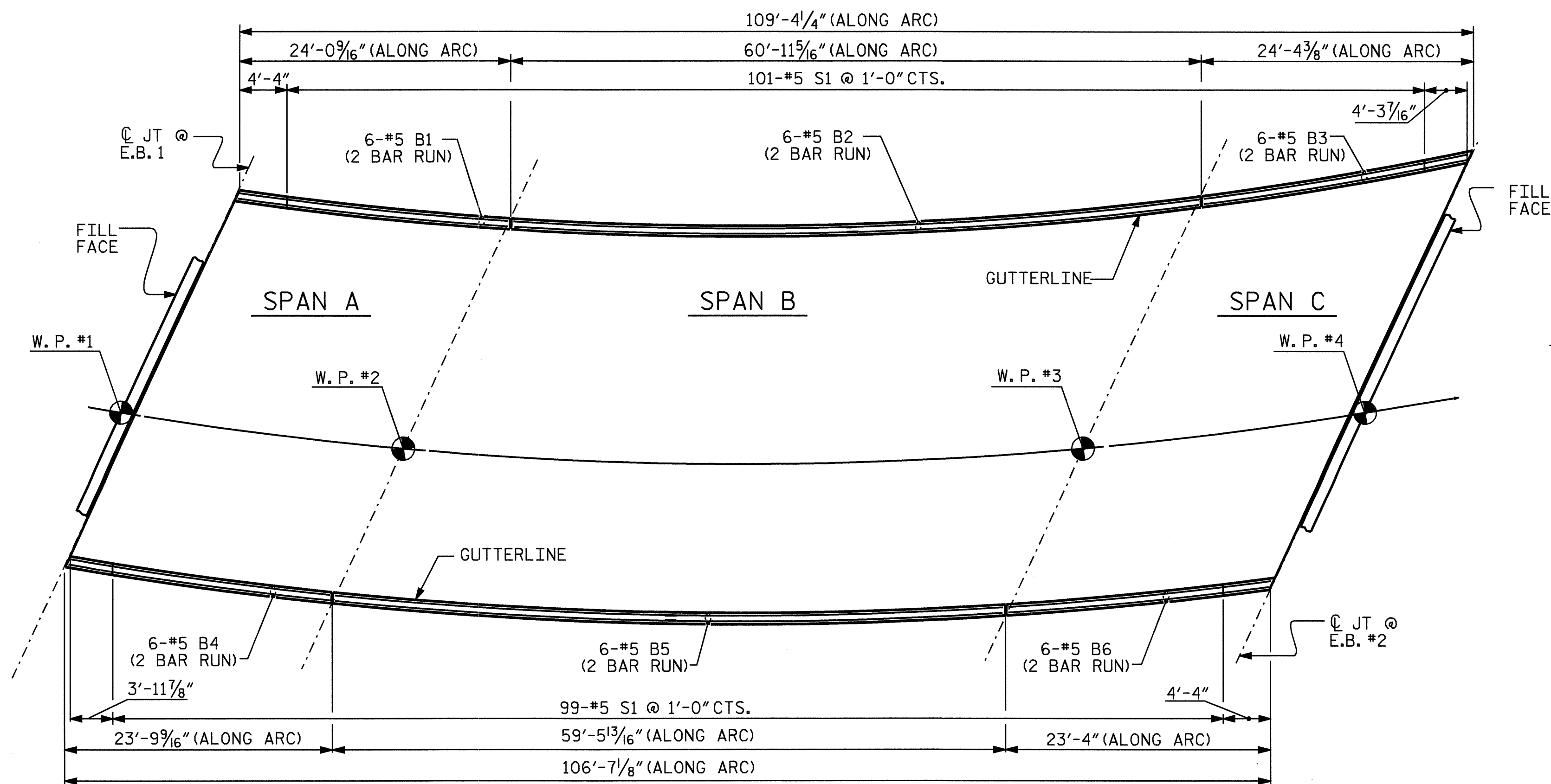
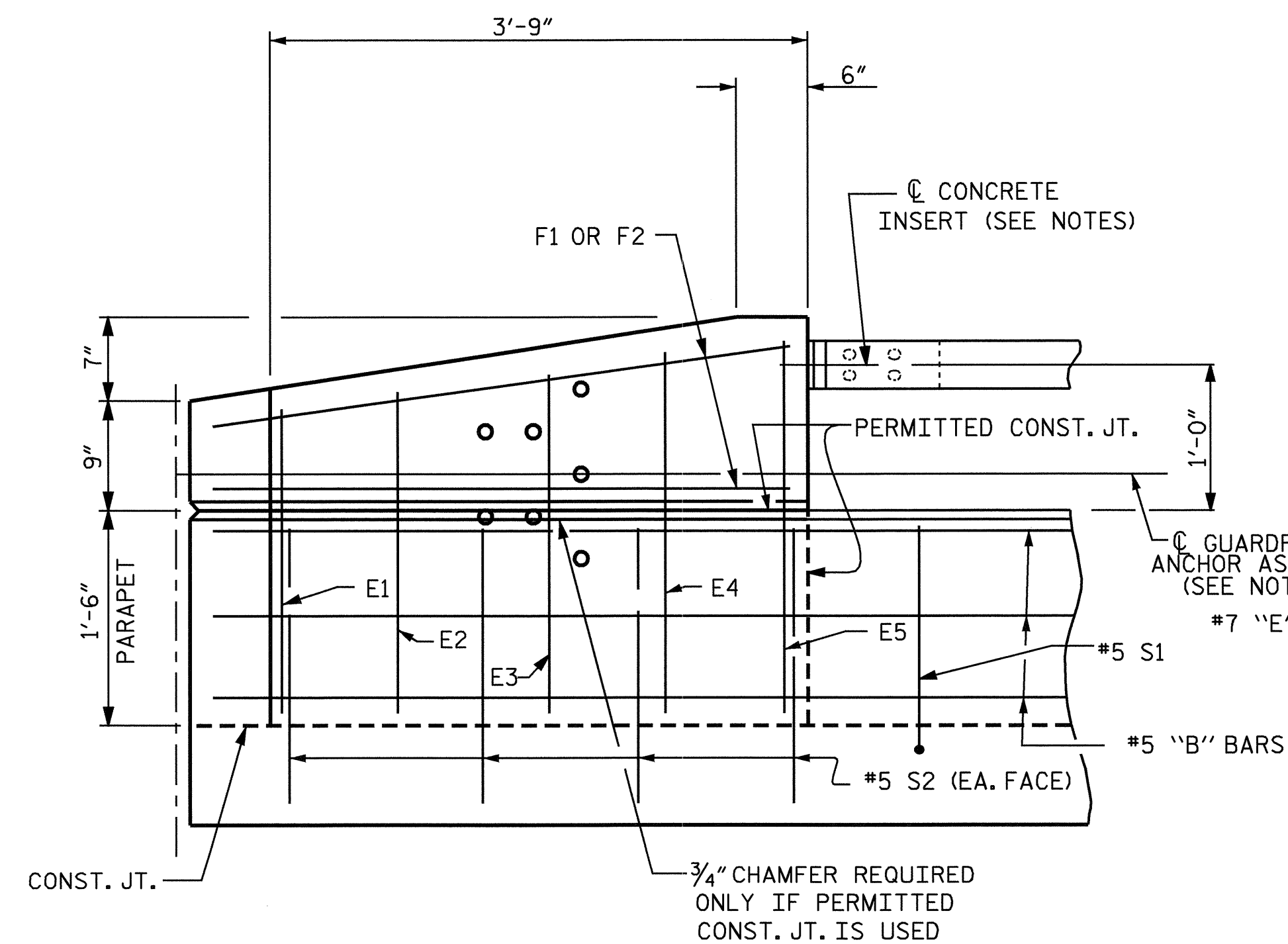
THE #5 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD FOR THE #5 S2 BARS IS 18.6 KIPS FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

ALL REINFORCING STEEL IN THE CONCRETE PARAPET SHALL BE EPOXY COATED.

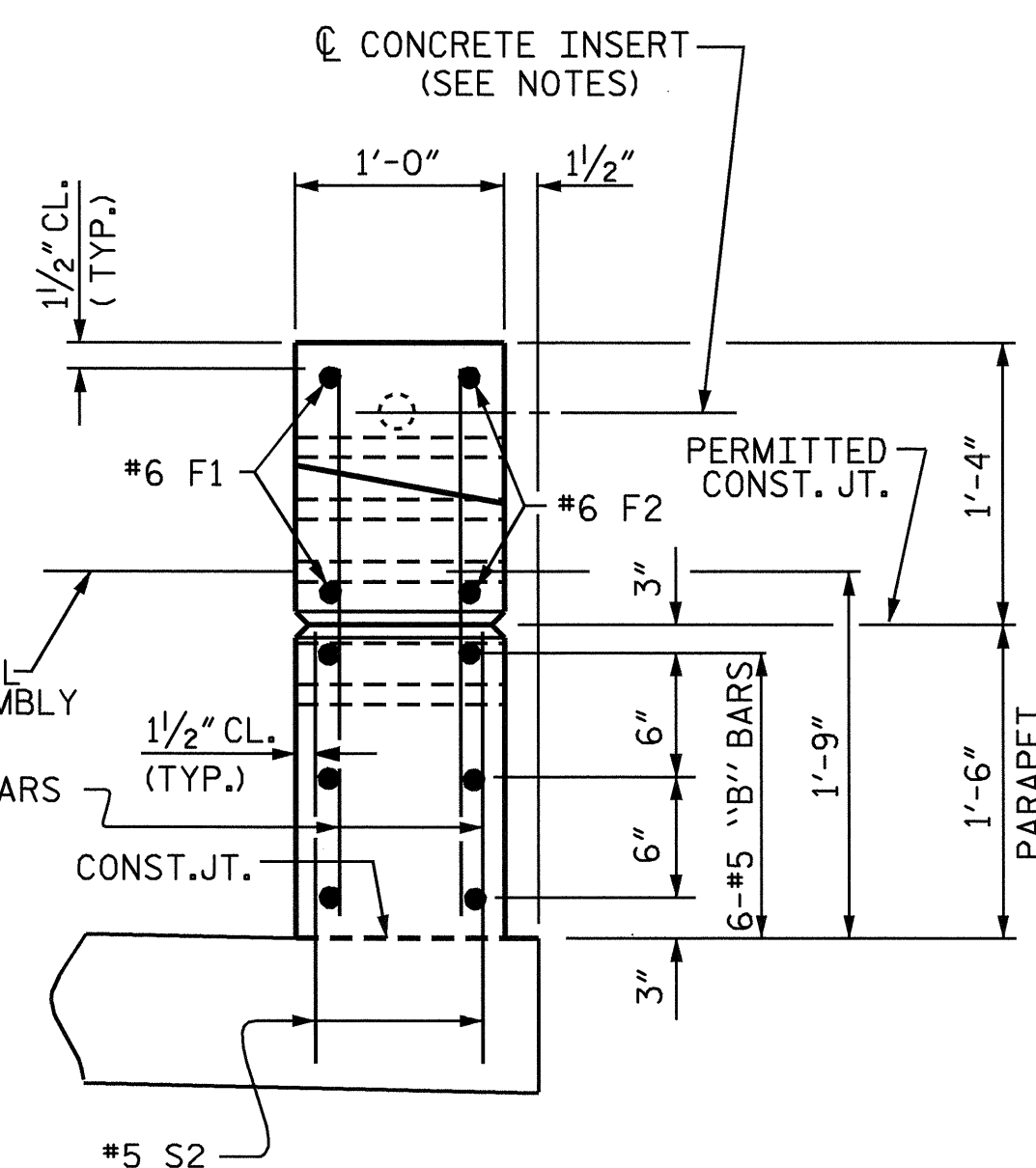
GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

BILL OF MATERIAL FOR 2
PARAPETS AND 4 END POSTS

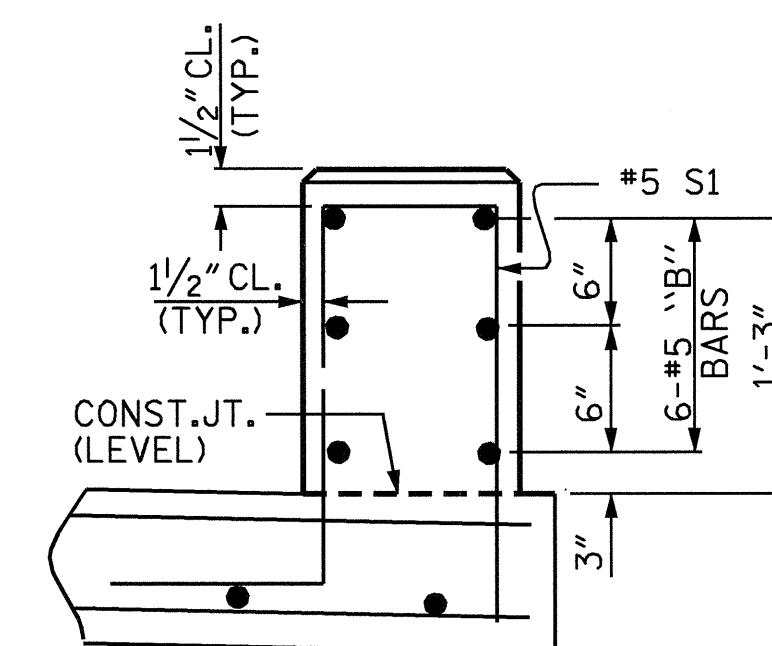
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	12	5	STR	13'-8"	171
* B2	12	5	STR	32'-1"	402
* B3	12	5	STR	13'-10"	173
* B4	12	5	STR	13'-7"	170
* B5	12	5	STR	31'-3"	391
* B6	12	5	STR	13'-5"	168
* E1	8	7	STR	2'-0"	33
* E2	8	7	STR	2'-2"	35
* E3	8	7	STR	2'-4"	38
* E4	8	7	STR	2'-6"	41
* E5	8	7	STR	2'-7"	42
* F1	8	6	STR	3'-5"	41
* F2	8	6	STR	3'-8"	44
* S1	200	5	1	5'-0"	1043
* S2	32	5	STR	2'-0"	67
* EPOXY COATED REINFORCING STEEL				LBS.	2859
CLASS "AA" CONCRETE				C. Y.	12.6
1'-0" X 1'-6" CONCRETE PARAPET					215.95 FT.

PLAN OF PARAPET
(DIMENSIONS ALONG OUTSIDE EDGE OF PARAPET)

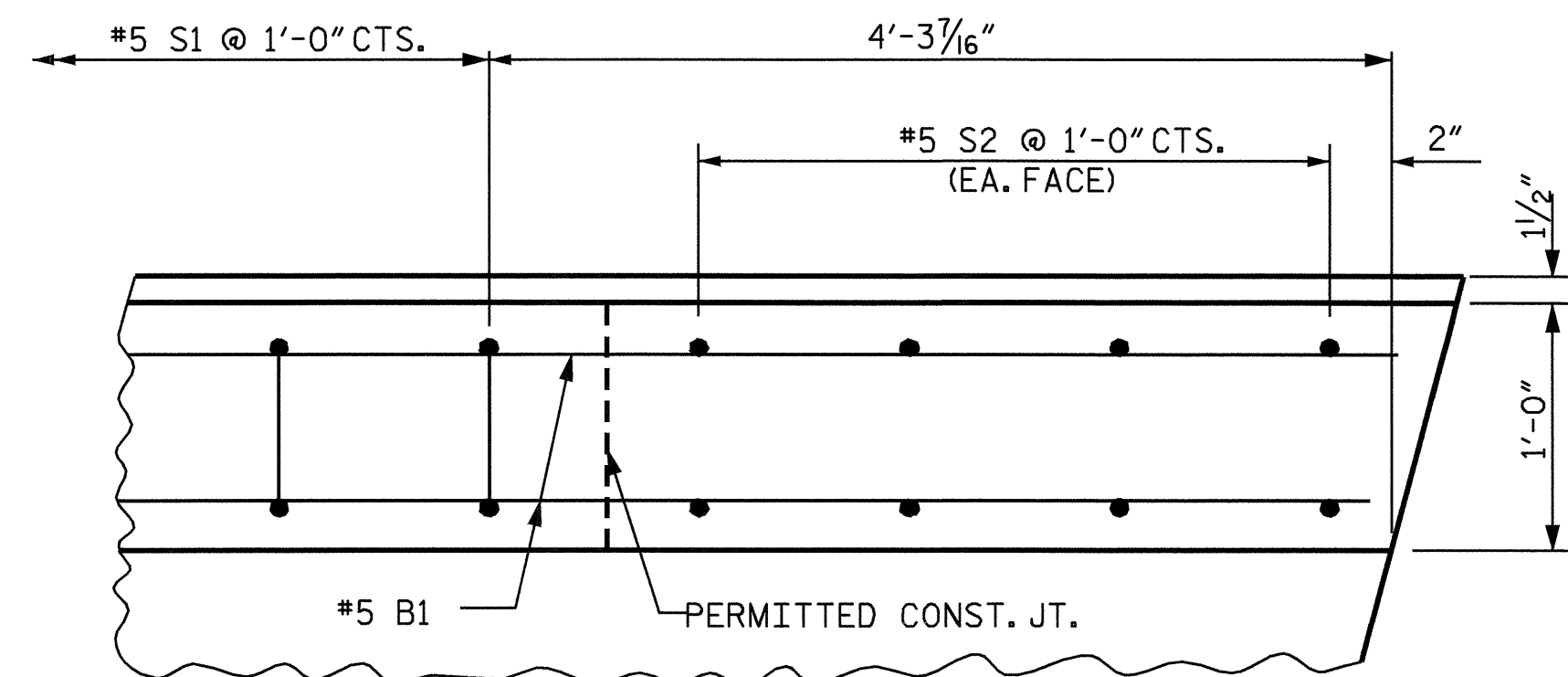
ELEVATION



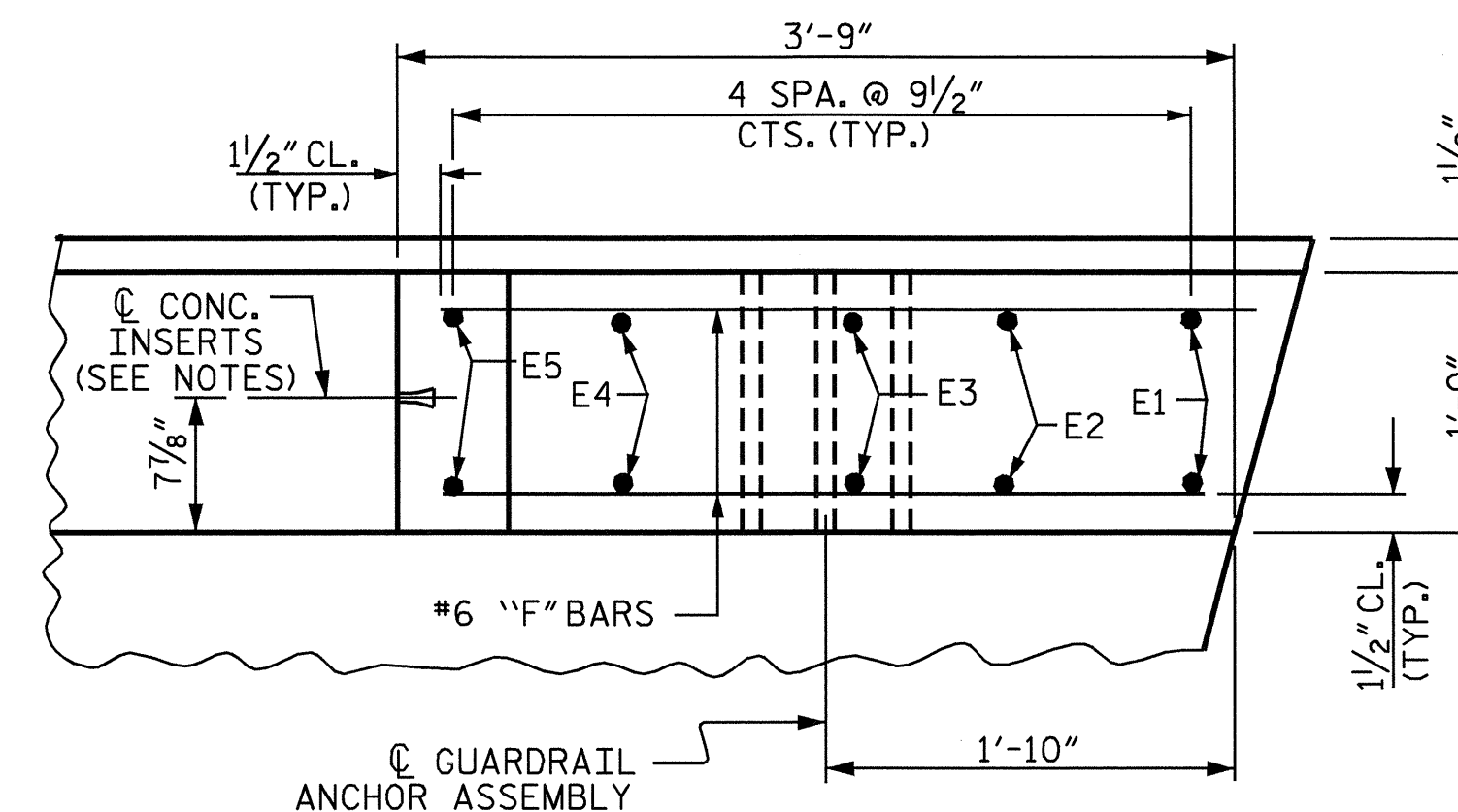
END VIEW



SECTION THRU RAIL

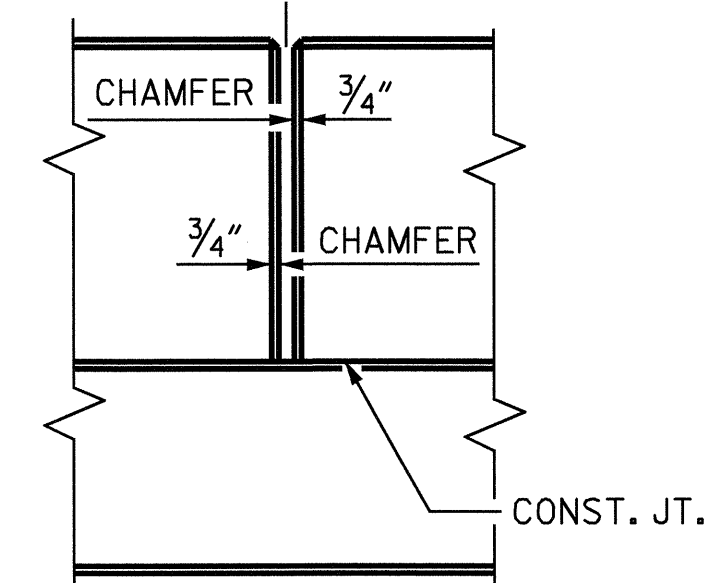
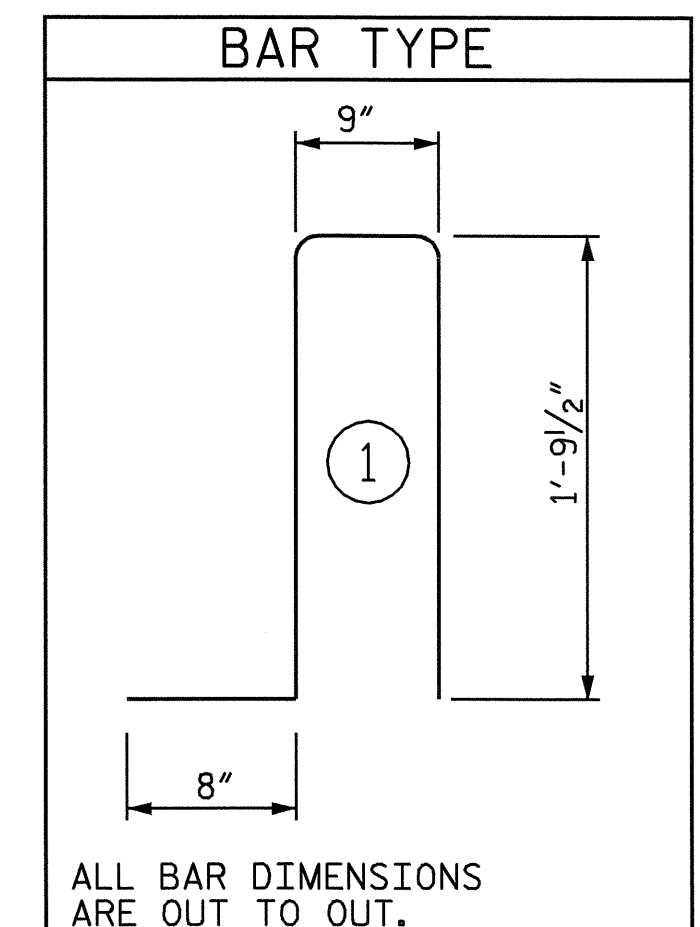


PLAN OF PARAPET



PLAN OF END POST

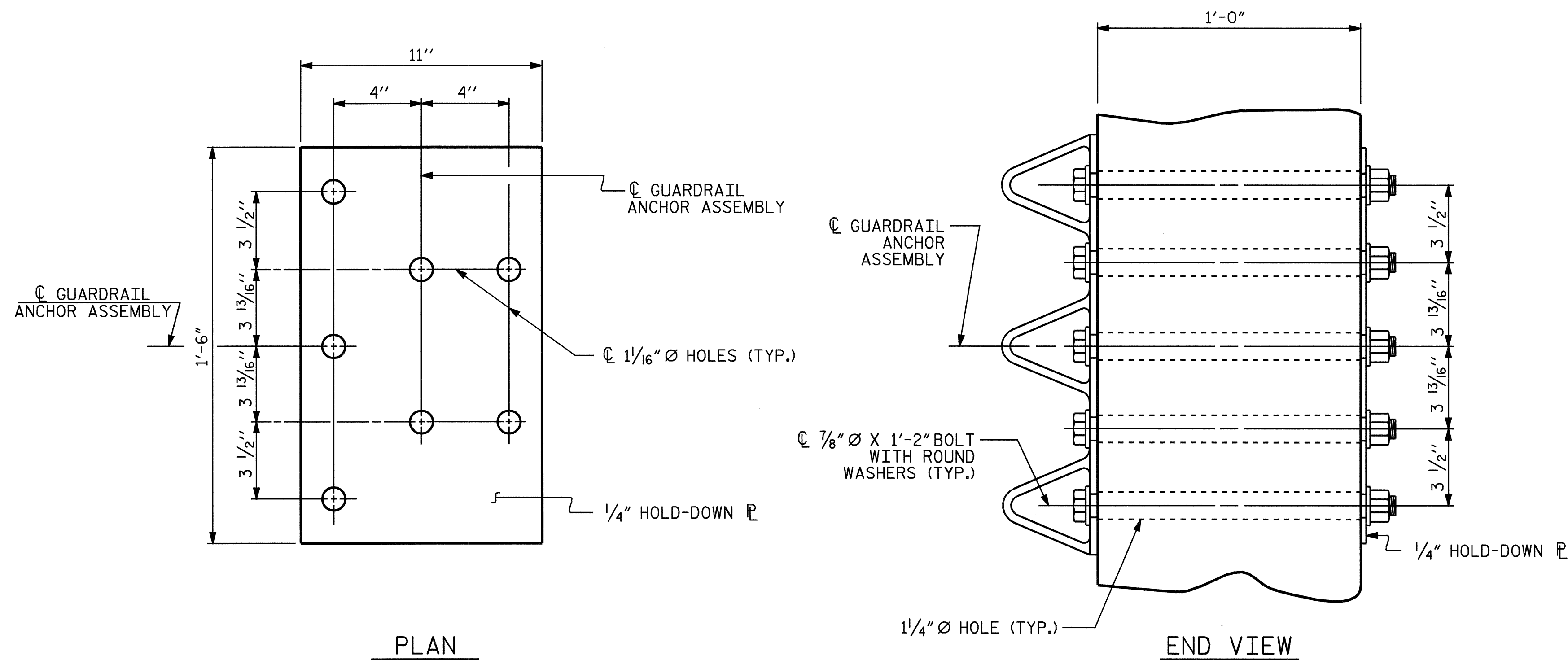
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)

ELEVATION AT EXPANSION JOINTS
PARAPET DETAILS

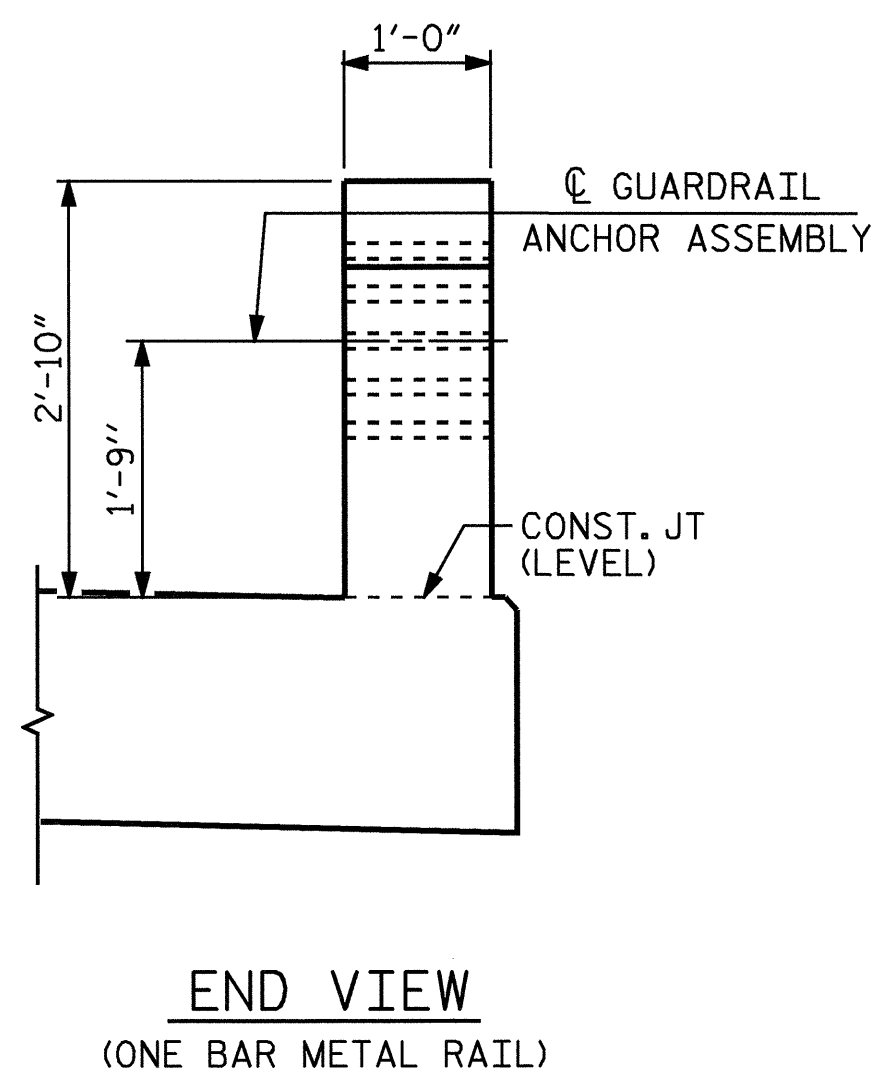
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CONCRETE PARAPET
AND
RAIL END POST DETAIL
FOR 1 BAR METAL RAIL

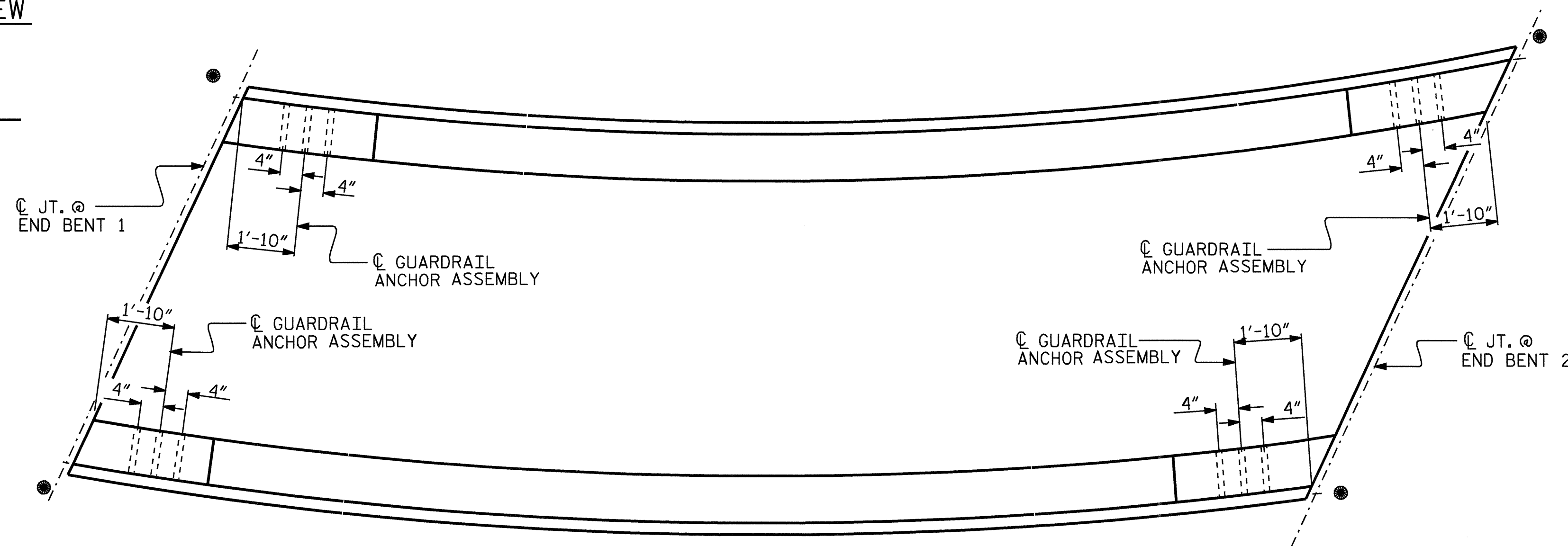
REVISIONS					SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS
2			4		33



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

● LOCATION OF GUARDRAIL ATTACHMENT

NOTES

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

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

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

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

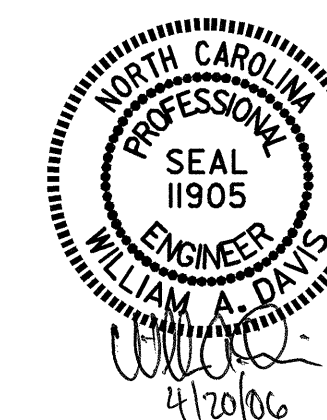
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

ASSEMBLED BY :	J. G. KHARVA	DATE :	06/02/05
CHECKED BY :	W. F. PARKER	DATE :	08-04-05
DRAWN BY :	EEM 6/94	REV. 8/16/99	RWW/LES
CHECKED BY :	RGW 6/94	REV. 10/17/00	RWW/LES
		REV. 5/7/03	RWW/JTE

18-APR-2006 08:15
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rwwright

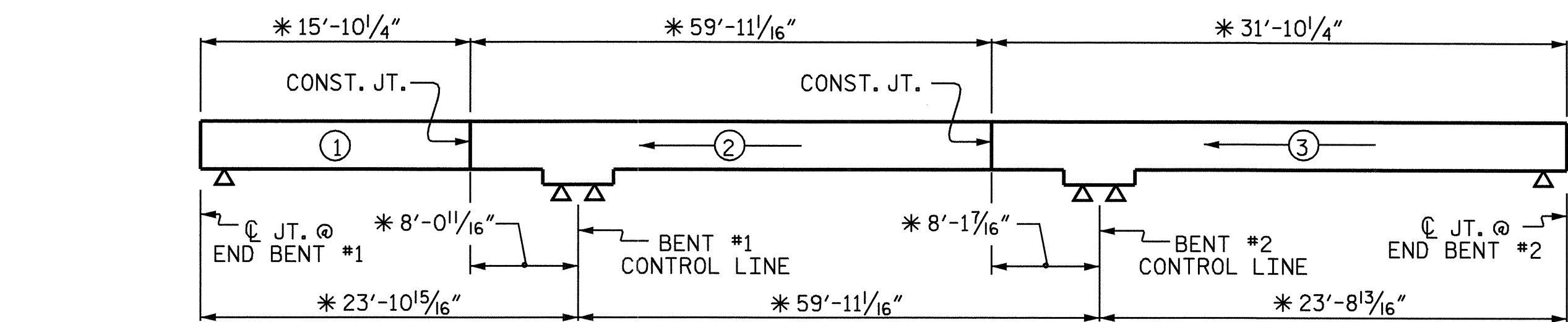


PROJECT NO. B-4199
MCDOWELL COUNTY
STATION: 13+30.25 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-19
2			4			TOTAL SHEETS 33

STD. NO. BMR8

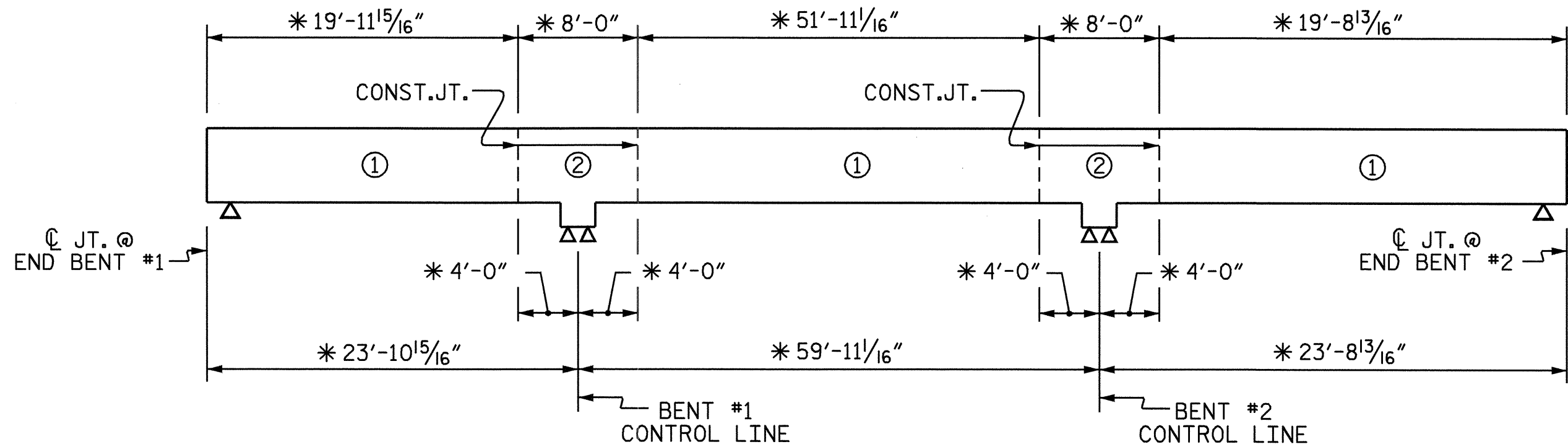


3 SPANS

POURING SEQUENCE-PRESTRESSED CONCRETE SUPERSTRUCTURE

(CONTINUOUS FOR LIVE LOAD)

NOTE : * ALL DIMENSIONS ARE LENGTHS MEASURED
ALONG SHORT CHORDS

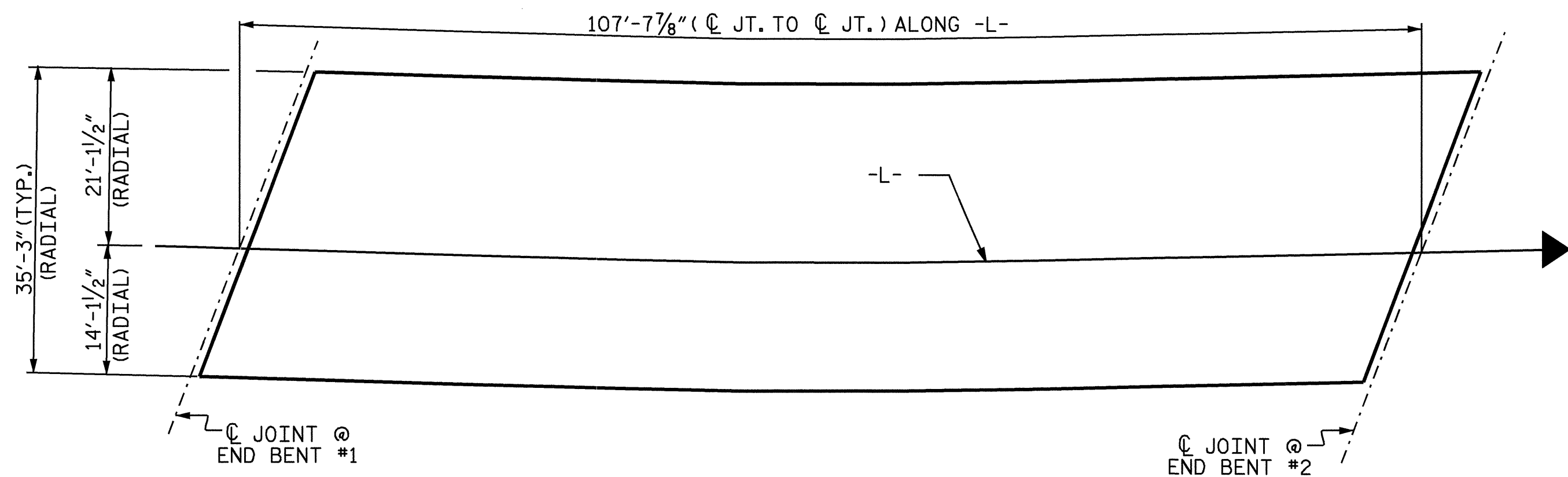


* POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

OPTIONAL POURING SEQUENCE-PRESTRESSED CONCRETE SUPERSTRUCTURE

(CONTINUOUS FOR LIVE LOAD)

NOTE : * ALL DIMENSIONS ARE LENGTHS MEASURED
ALONG SHORT CHORDS



LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 3794.9)

GROOVING BRIDGE FLOORS

BRIDGE DECK	3218	SQ. FT.
APPROACH SLAB	175	SQ. FT.
TOTAL	3393	SQ. FT.

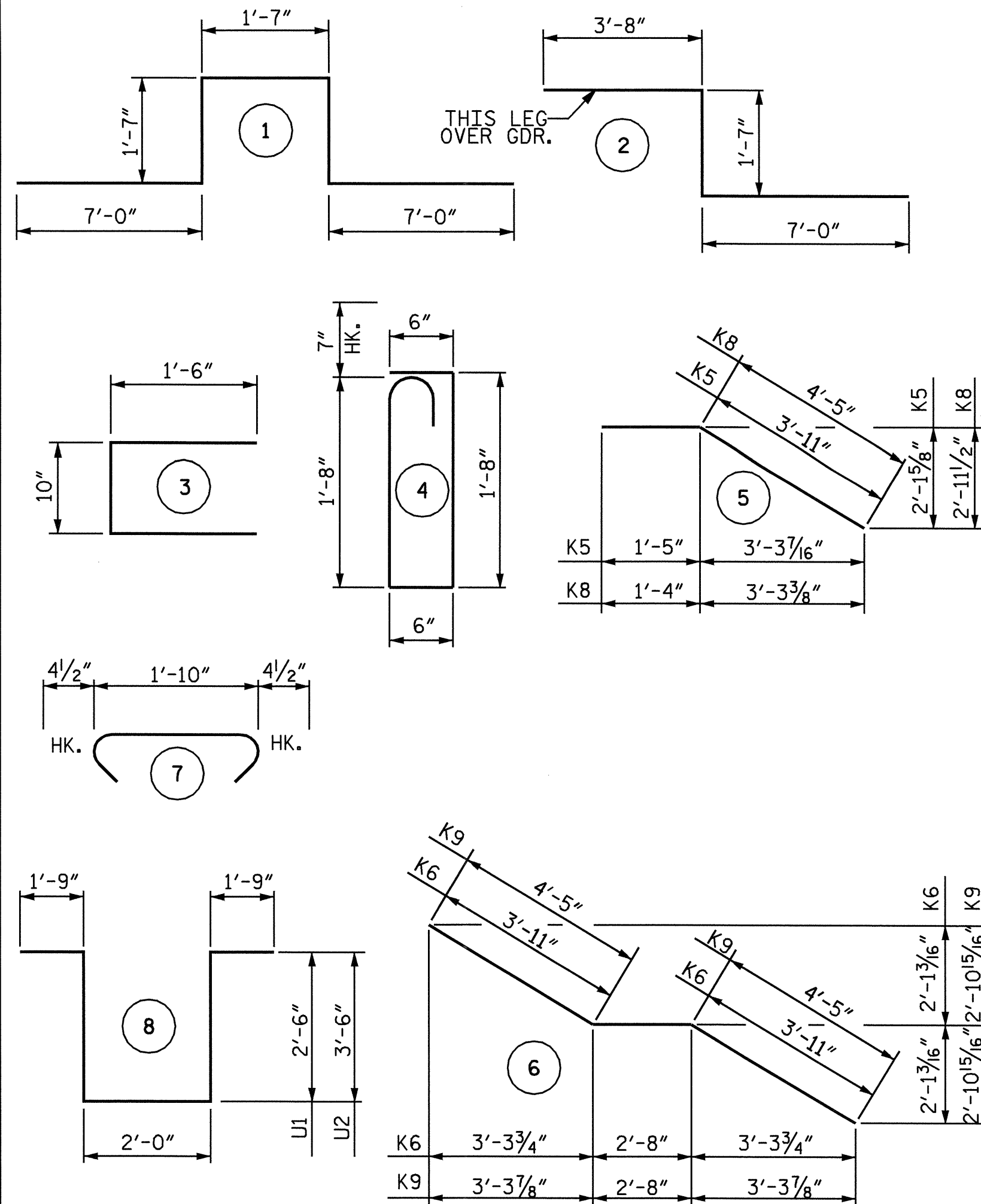
ASSEMBLED BY : J. G. KHARVA DATE: 05/23/05
CHECKED BY : W. F. PARKER DATE: 11/08/05

BILL OF MATERIAL

SPANS A, B, & C

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	160	#5	STR	34'-11"	5827	A215	2	#5	STR	28'-1"	59
A2	160	#5	STR	34'-11"	5827	A216	2	#5	STR	25'-9"	54
						A217	2	#5	STR	23'-6"	49
*A101	2	#5	STR	32'-5"	68	A218	2	#5	STR	21'-3"	44
*A102	2	#5	STR	29'-9"	62	A219	2	#5	STR	19'-0"	40
*A103	2	#5	STR	27'-1"	56	A220	2	#5	STR	16'-8"	35
*A104	2	#5	STR	24'-6"	51	A221	2	#5	STR	14'-5"	30
*A105	2	#5	STR	21'-10"	46	A222	2	#5	STR	12'-2"	25
*A106	2	#5	STR	19'-2"	40	A223	2	#5	STR	9'-11"	21
*A107	2	#5	STR	16'-6"	34	A224	2	#5	STR	7'-8"	16
*A108	2	#5	STR	13'-10"	29	A225	2	#5	STR	5'-5"	11
*A109	2	#5	STR	11'-2"	23	A226	4	#5	STR	3'-2"	7
*A110	2	#5	STR	8'-6"	18						
*A111	2	#5	STR	5'-10"	12	*B1	48	#4	STR	13'-4"	428
*A112	2	#5	STR	3'-2"	7	*B2	24	#4	STR	18'-0"	289
*A113	2	#5	STR	32'-8"	68	*B3	48	#7	STR	35'-2"	3450
*A114	2	#5	STR	30'-4"	63	*B4	46	#7	STR	12'-7"	1183
*A115	2	#5	STR	28'-1"	59	B5	162	#5	STR	37'-2"	6280
*A116	2	#5	STR	25'-9"	54	B6	2	#5	STR	25'-0"	52
*A117	2	#5	STR	23'-6"	49	B7	2	#5	STR	30'-0"	63
*A118	2	#5	STR	21'-3"	44	B8	1	#5	STR	43'-6"	45
*A119	2	#5	STR	19'-0"	40	B9	1	#5	STR	16'-4"	17
*A120	2	#5	STR	16'-8"	35						
*A121	2	#5	STR	14'-5"	30	*G1	1	#5	STR	36'-2"	38
*A122	2	#5	STR	12'-2"	25	*G2	1	#5	STR	42'-4"	44
*A123	2	#5	STR	9'-11"	21						
*A124	2	#5	STR	7'-8"	16	*K1	12	#8	1	18'-9"	601
*A125	2	#5	STR	5'-5"	11	*K2	8	#8	2	12'-3"	262
*A126	2	#5	STR	3'-2"	7	K3	16	#4	STR	4'-11"	53
						K4	32	#4	STR	7'-4"	157
A201	2	#5	STR	32'-5"	68	K5	6	#4	5	5'-4"	21
A202	2	#5	STR	29'-9"	62	K6	9	#4	6	10'-6"	63
A203	2	#5	STR	27'-1"	56	K7	12	#6	STR	6'-5"	116
A204	2	#5	STR	24'-6"	51	K8	6	#4	5	5'-9"	23
A205	2	#5	STR	21'-10"	46	K9	9	#4	6	11'-6"	69
A206	2	#5	STR	19'-2"	40	K10	12	#6	STR	7'-5"	134
A207	2	#5	STR	16'-6"	34						
A208	2	#5	STR	13'-10"	29	*S1	48	#5	4	4'-11"	246
A209	2	#5	STR	11'-2"	23	*S2	48	#5	3	3'-10"	192
A210	2	#5	STR	8'-6"	18	S3	80	#4	7	2'-7"	138
A211	2	#5	STR	5'-10"	12						
A212	2	#5	STR	3'-2"	7	*U1	16	#4	8	10'-6"	112
A213	2	#5	STR	32'-8"	68	*U2	32	#4	8	12'-6"	267
A214	2	#5	STR	30'-4"	63						
					REINFORCING STEEL		= 14026 LBS.				
							*EPOXY COATED REINF. STEEL = 13907 LBS.				

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

—SUPERSTRUCTURE BILL OF MATERIAL—

	CLASS AA CONCRETE			REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)			(LBS.)	(LBS.)
	(POUR #1)	(POUR #2)	(POUR #3)		
SPANS A,B, & C	20.0	76.8	47.2	13706	14281
TOTAL **	144.0			13706	14281

**QUANTITIES FOR PARAPET ARE NOT INCLUDED

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"			

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -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			S-20
2			4			TOTAL SHEETS 33

NOTES

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

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

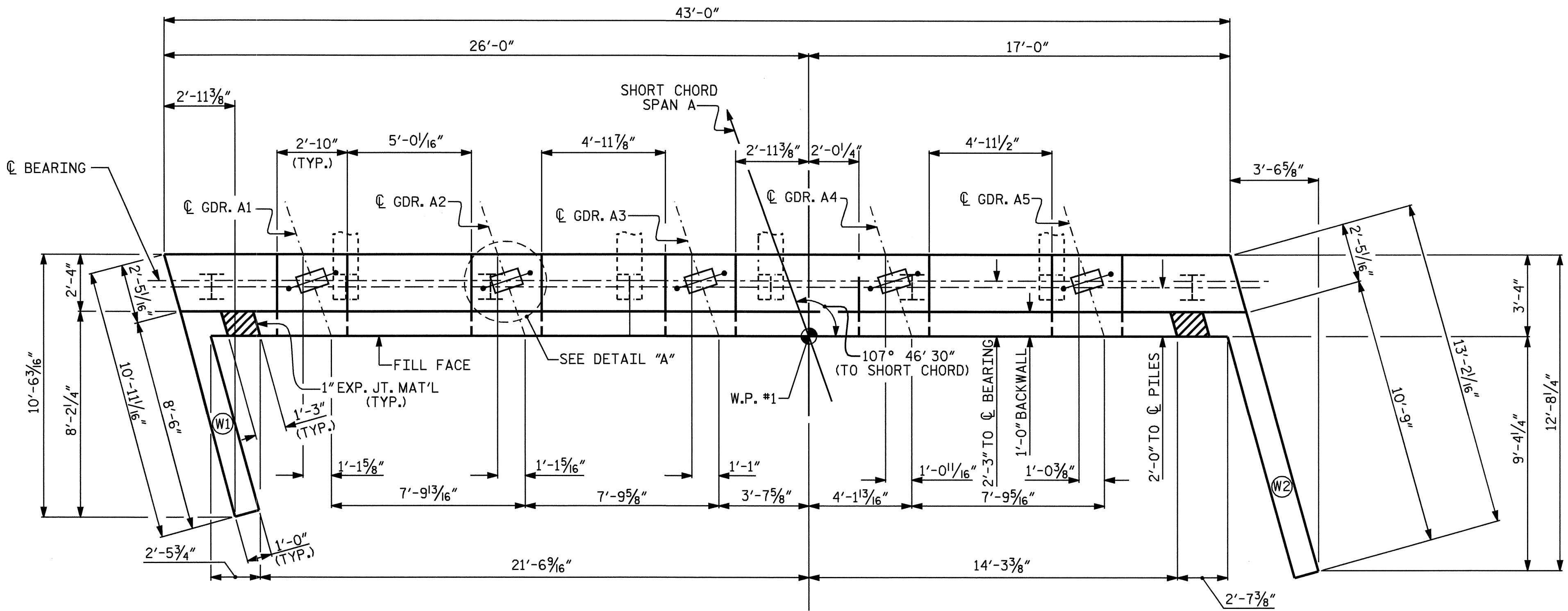
FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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.

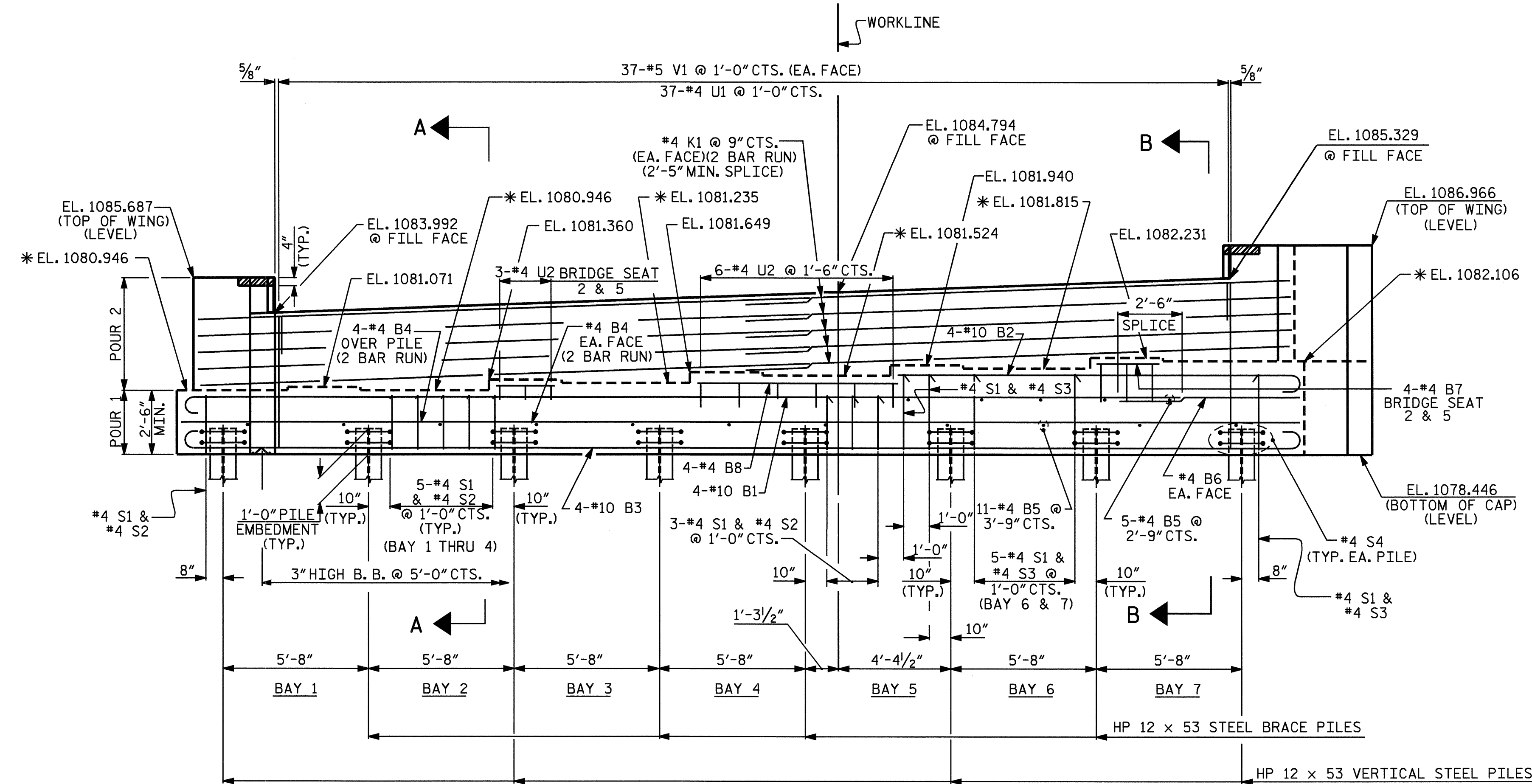
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

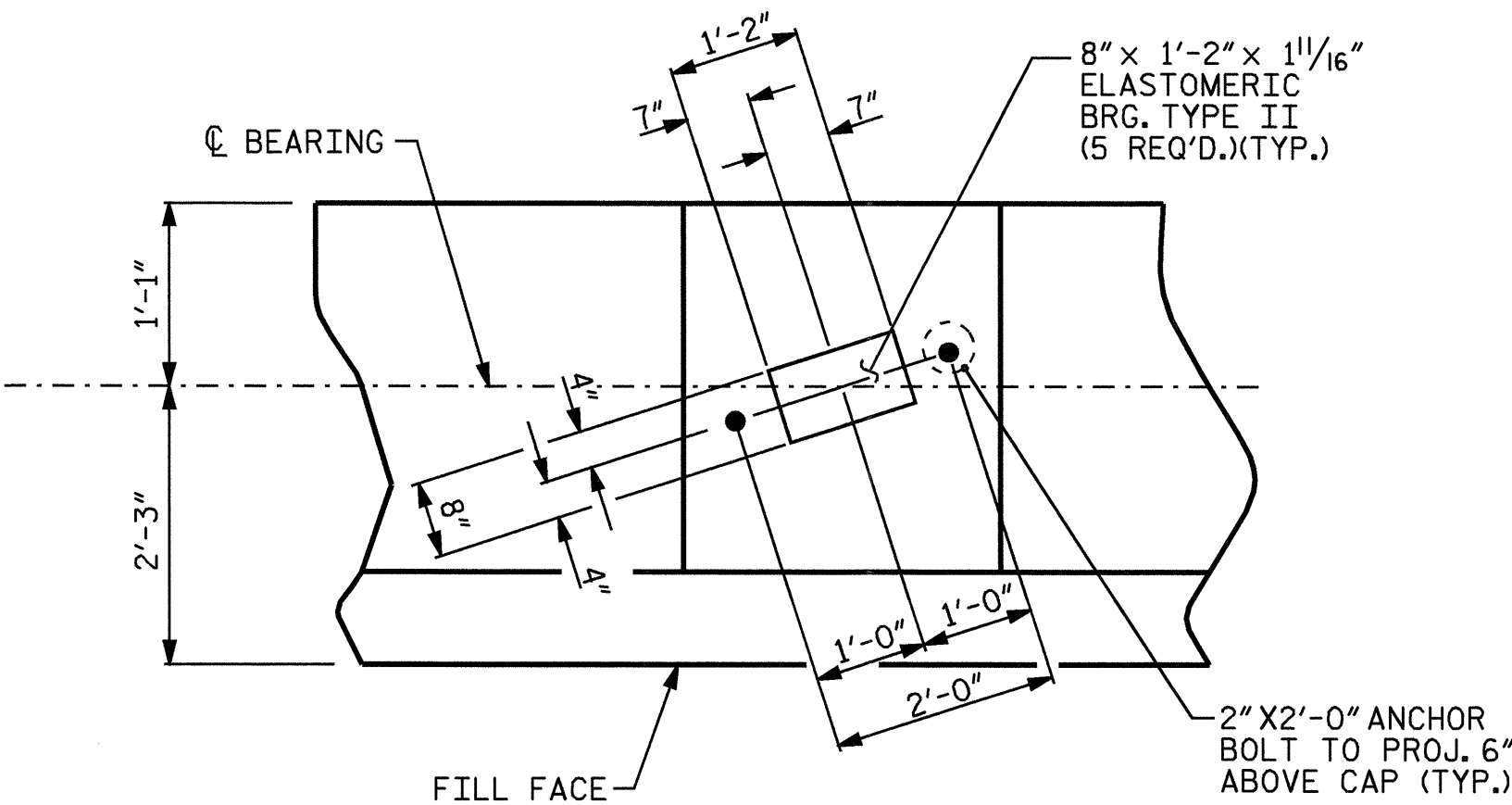
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.



PLAN



ELEVATION



DETAIL "A"

* FOR LOCATIONS OF BRIDGE SEAT ELEVATIONS SEE SECTION A-A SHEET 3 OF 3.

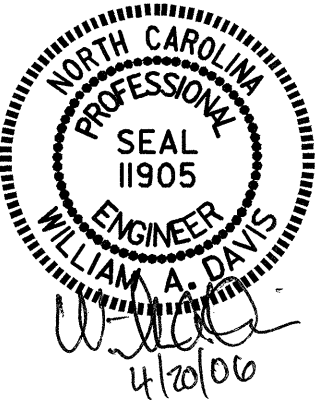
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 3

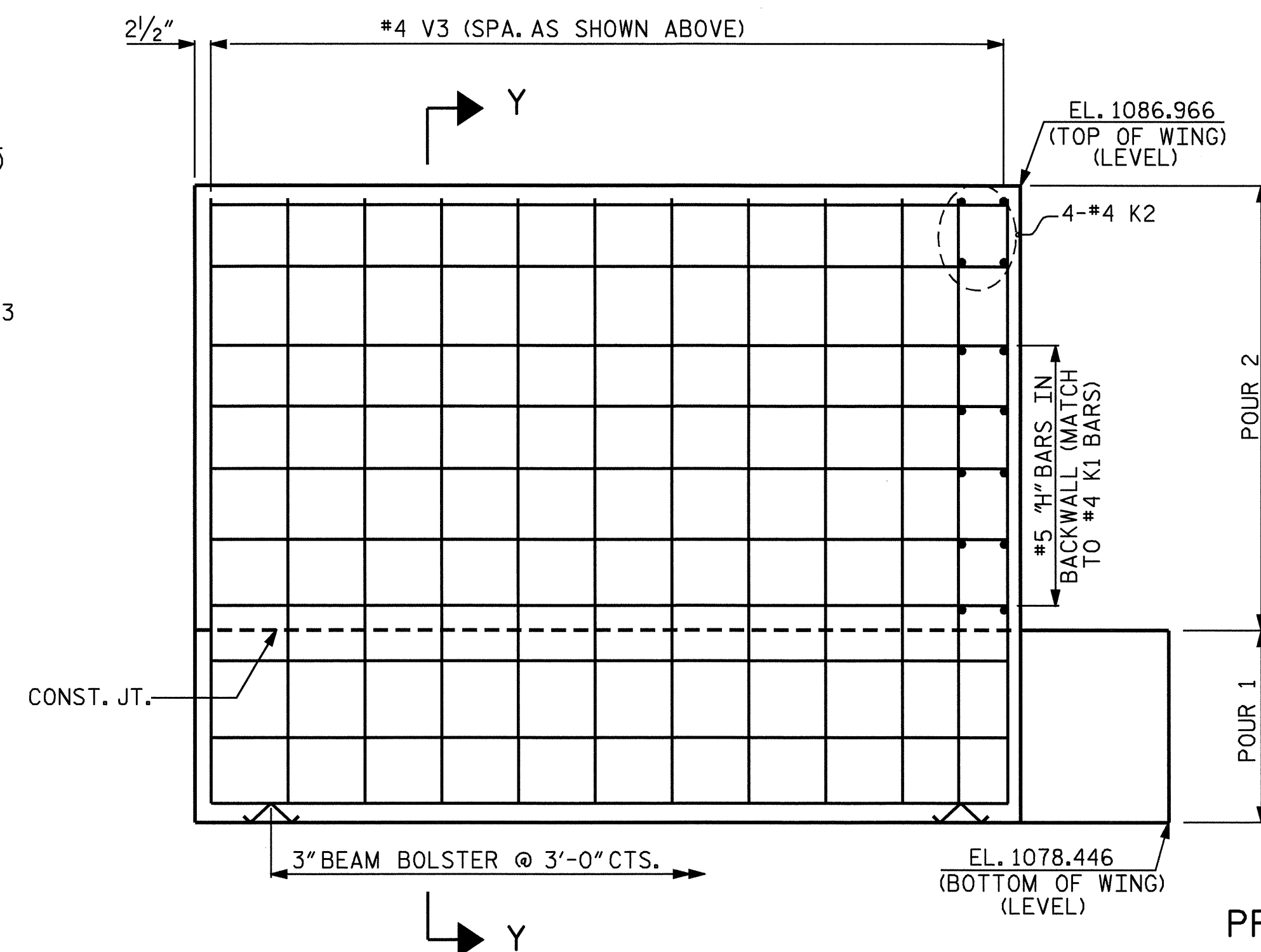
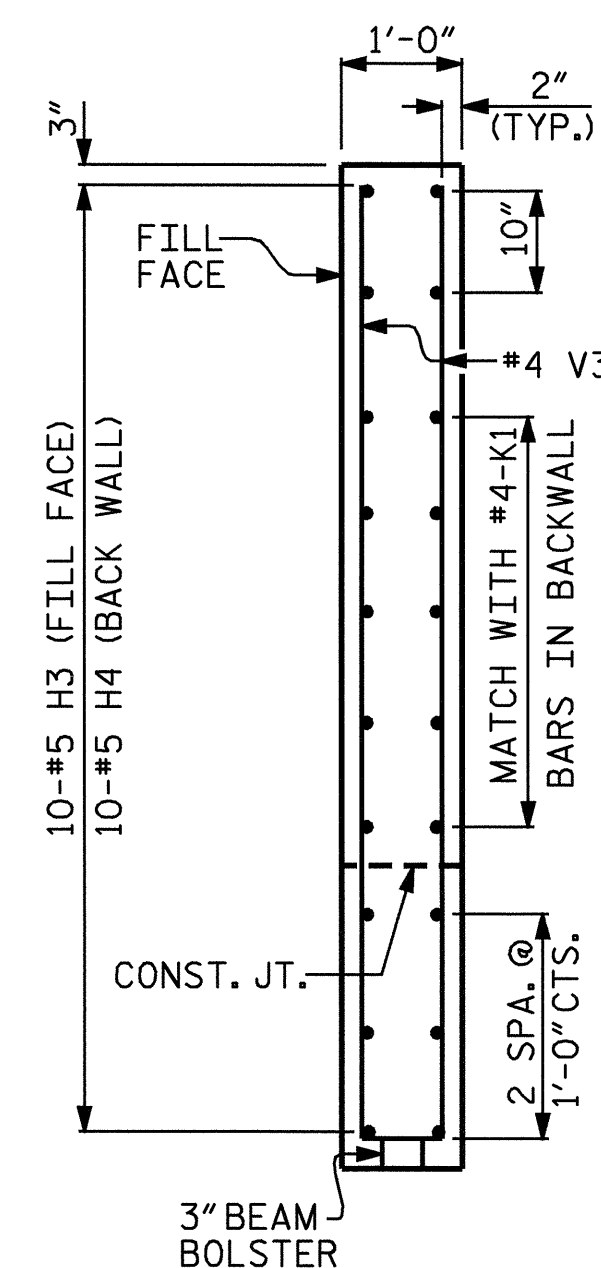
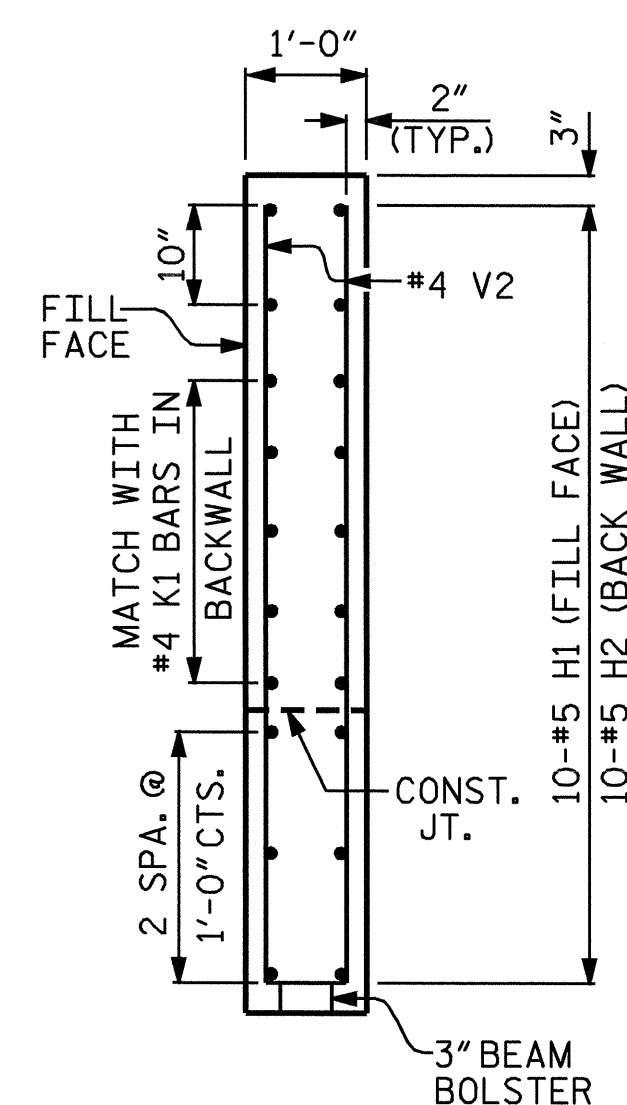
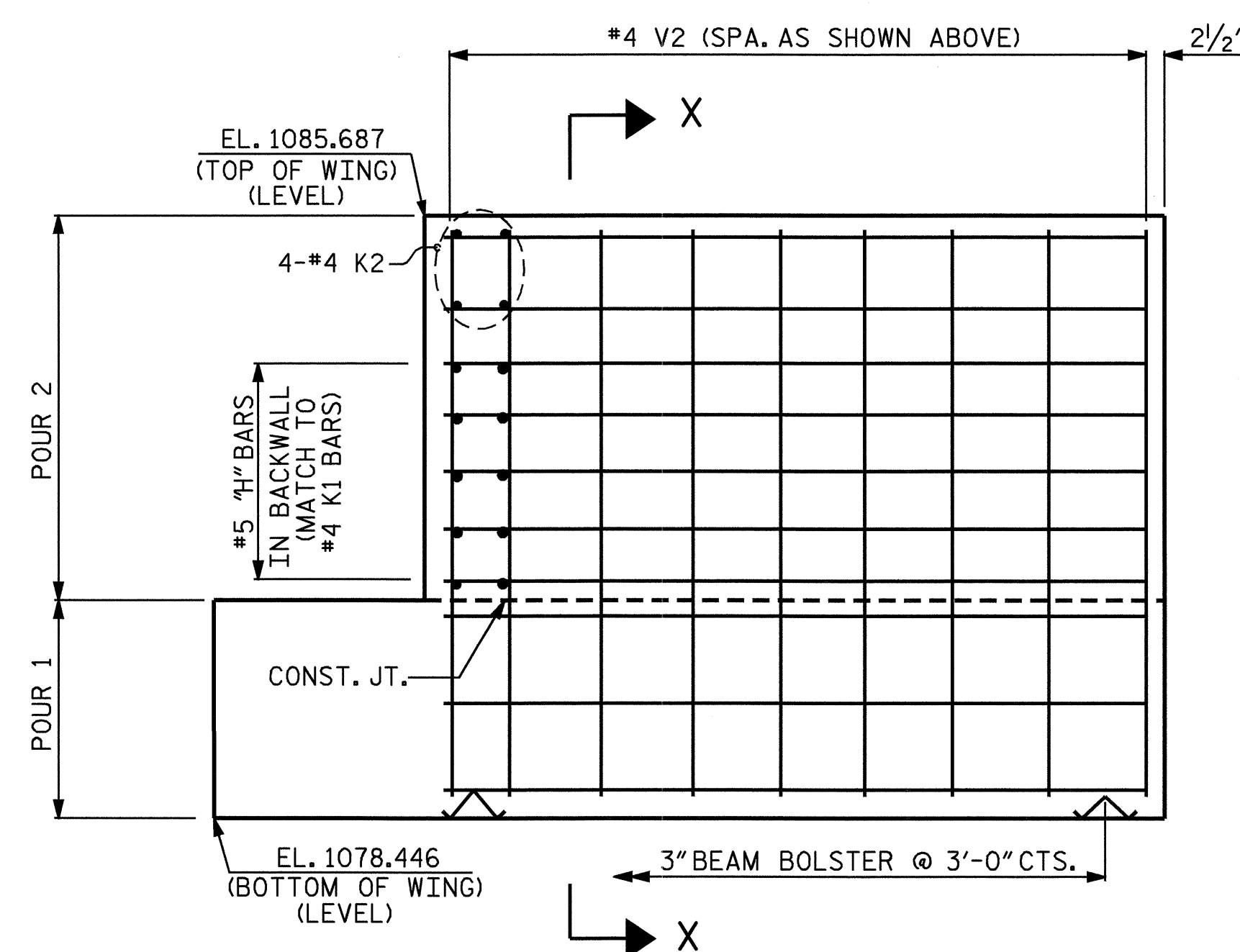
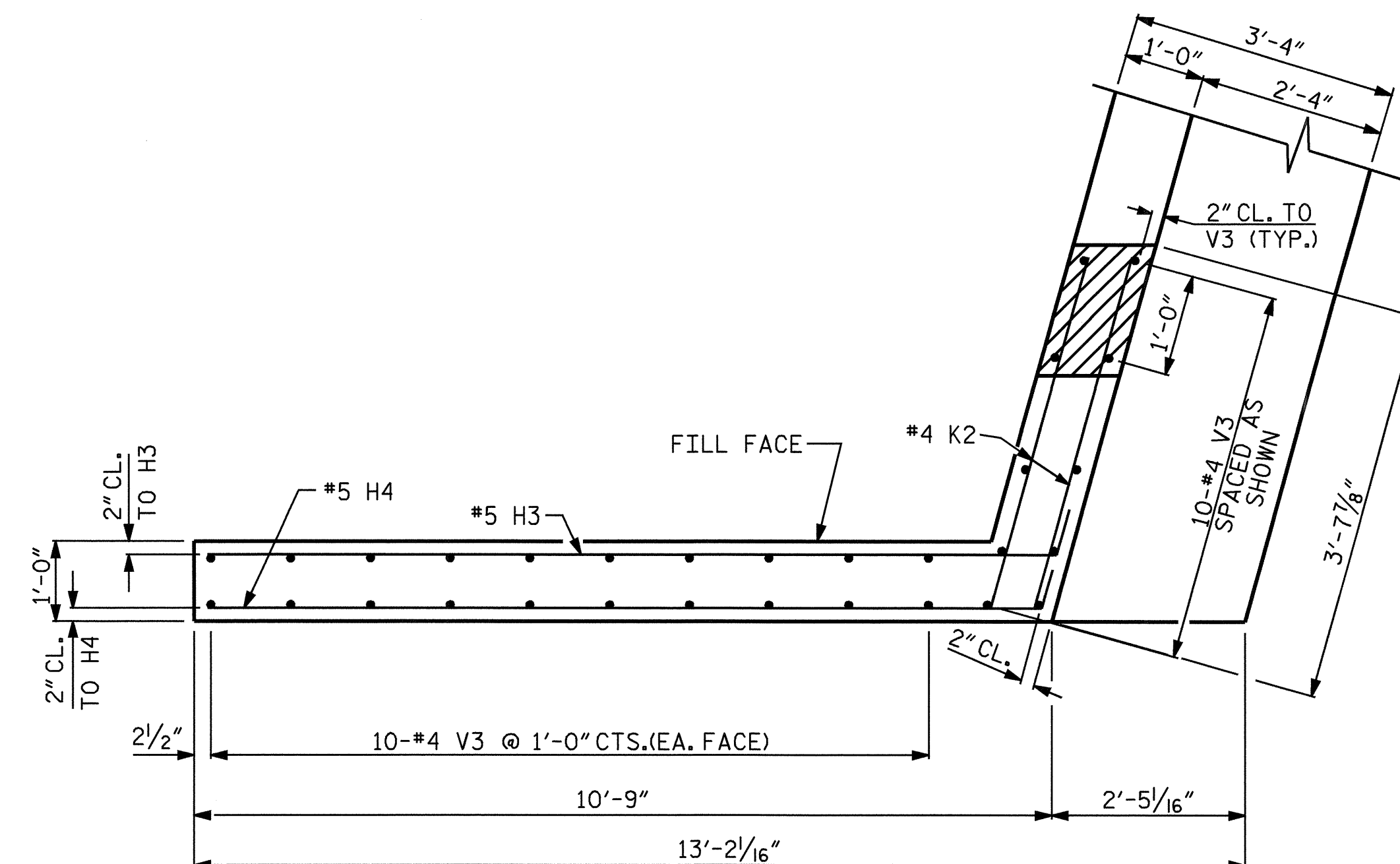
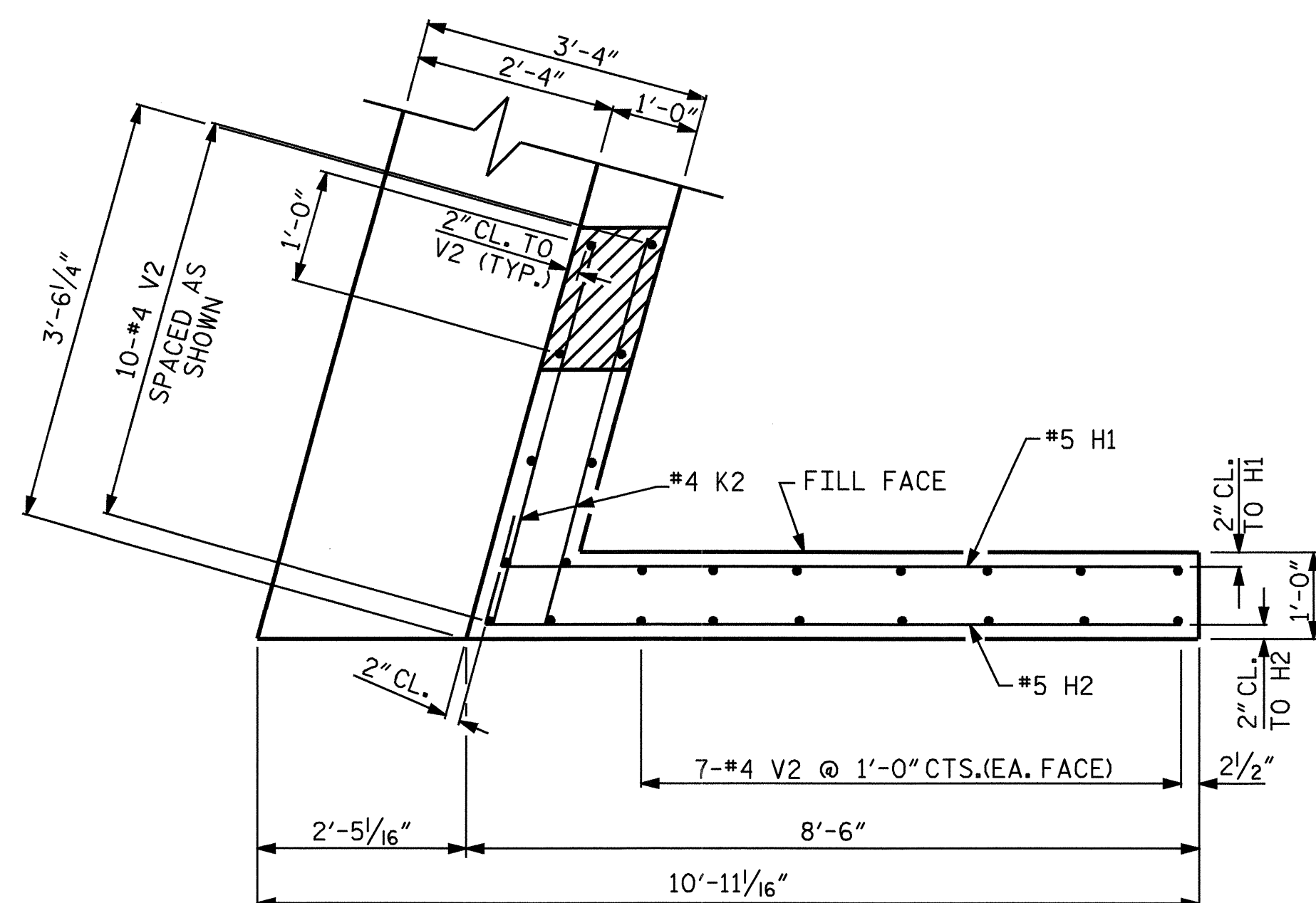
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			



DRAWN BY : G.O. COOPER DATE : 06/17/05
CHECKED BY : J.G. KHARVA DATE : 10/25/05



PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 2 OF 3

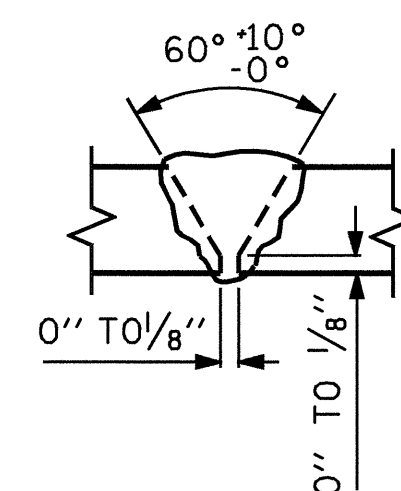
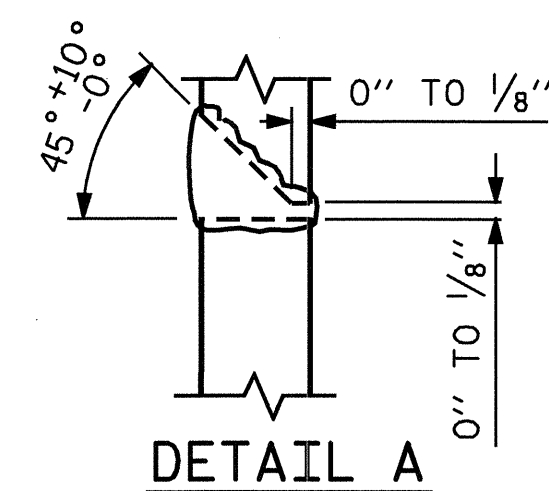
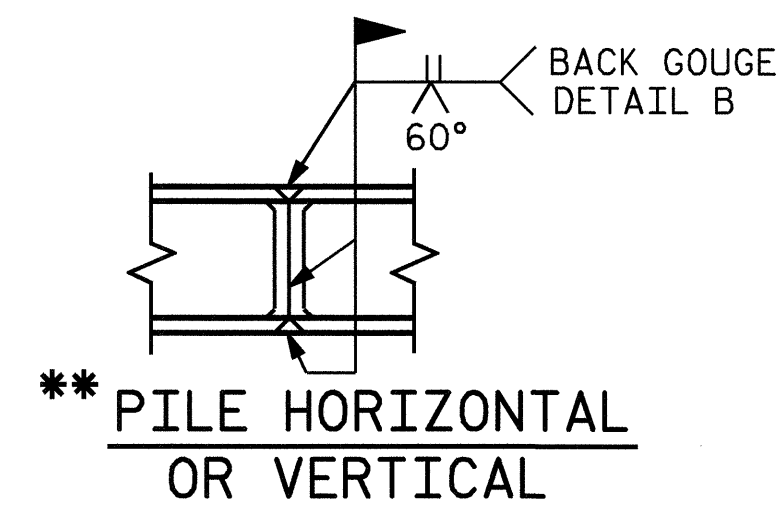
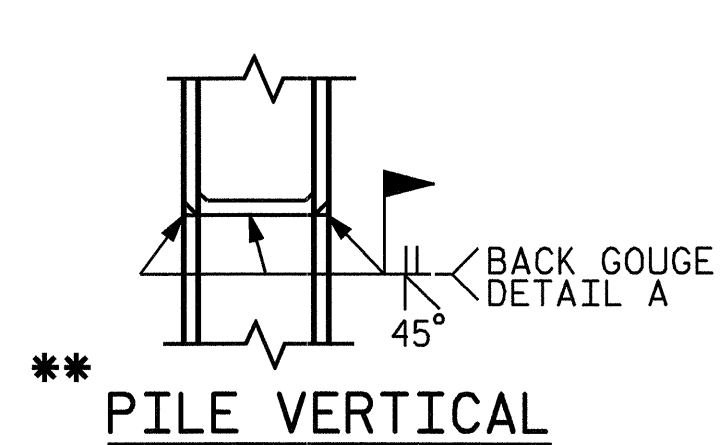
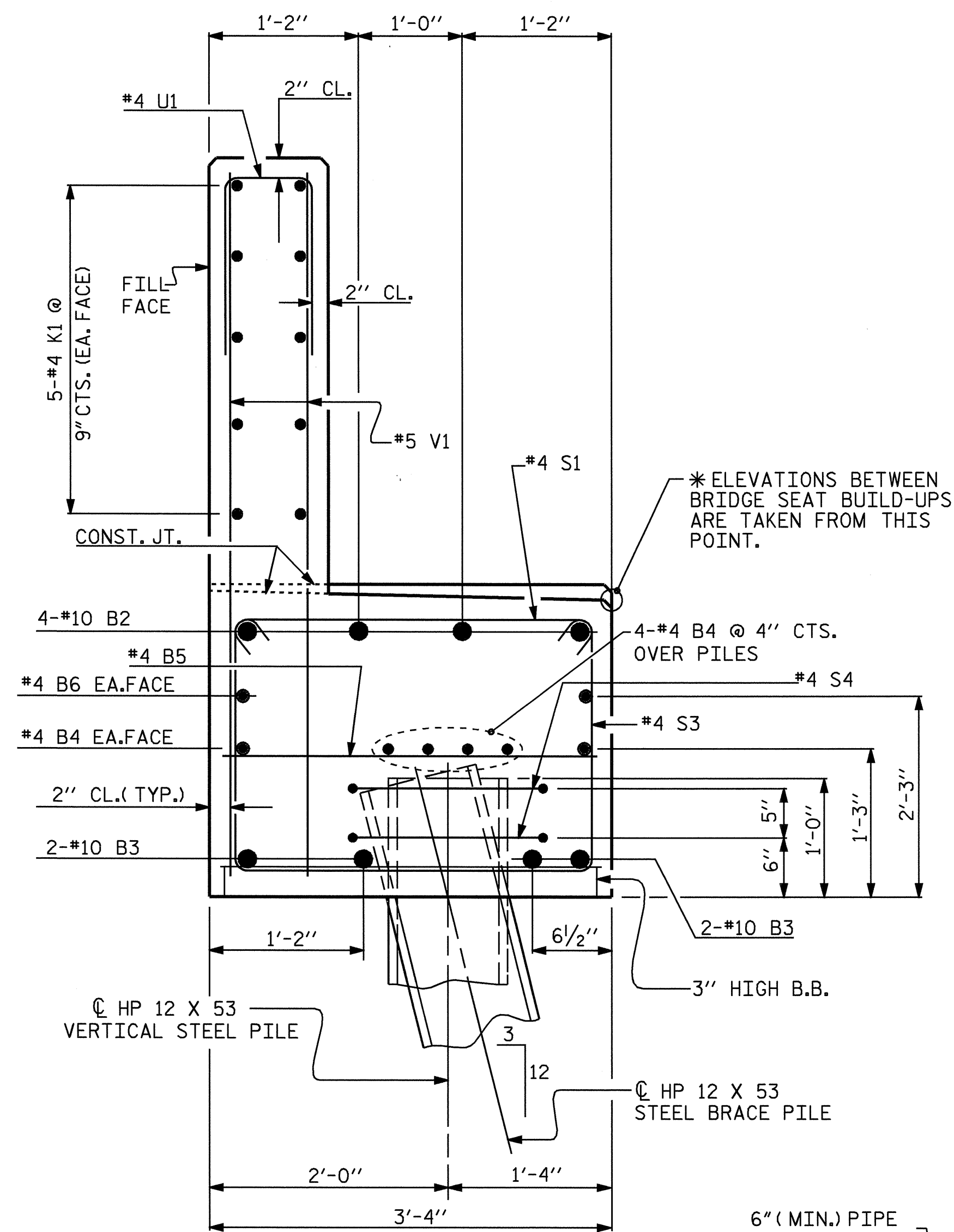
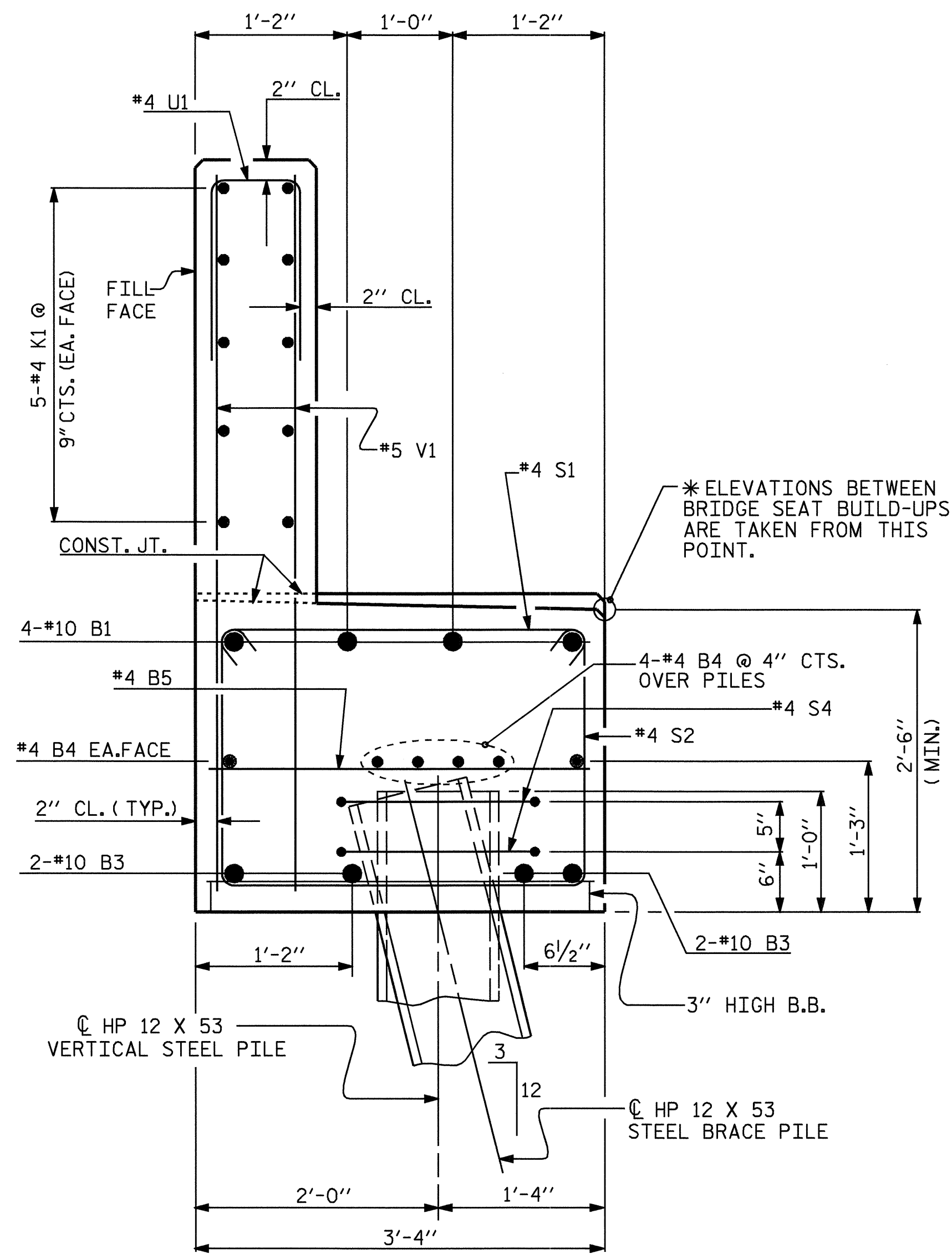
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RAI ETCH

SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

DRAWN BY : G.O. COOPER **DATE :** 6/23/05
CHECKED BY : J.G. KHARVA **DATE :** 10/25/05

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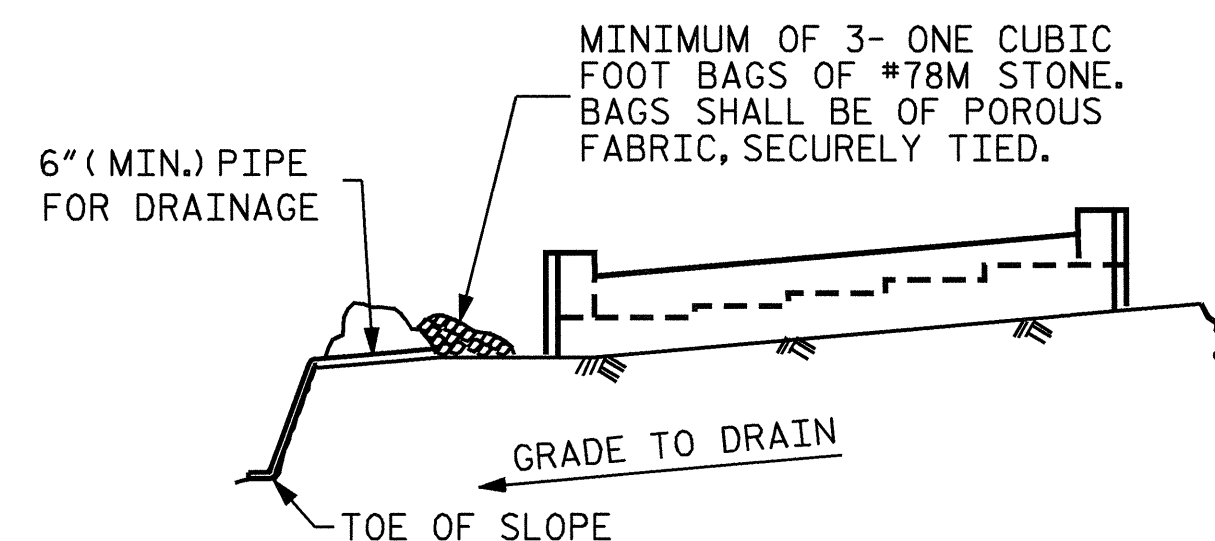
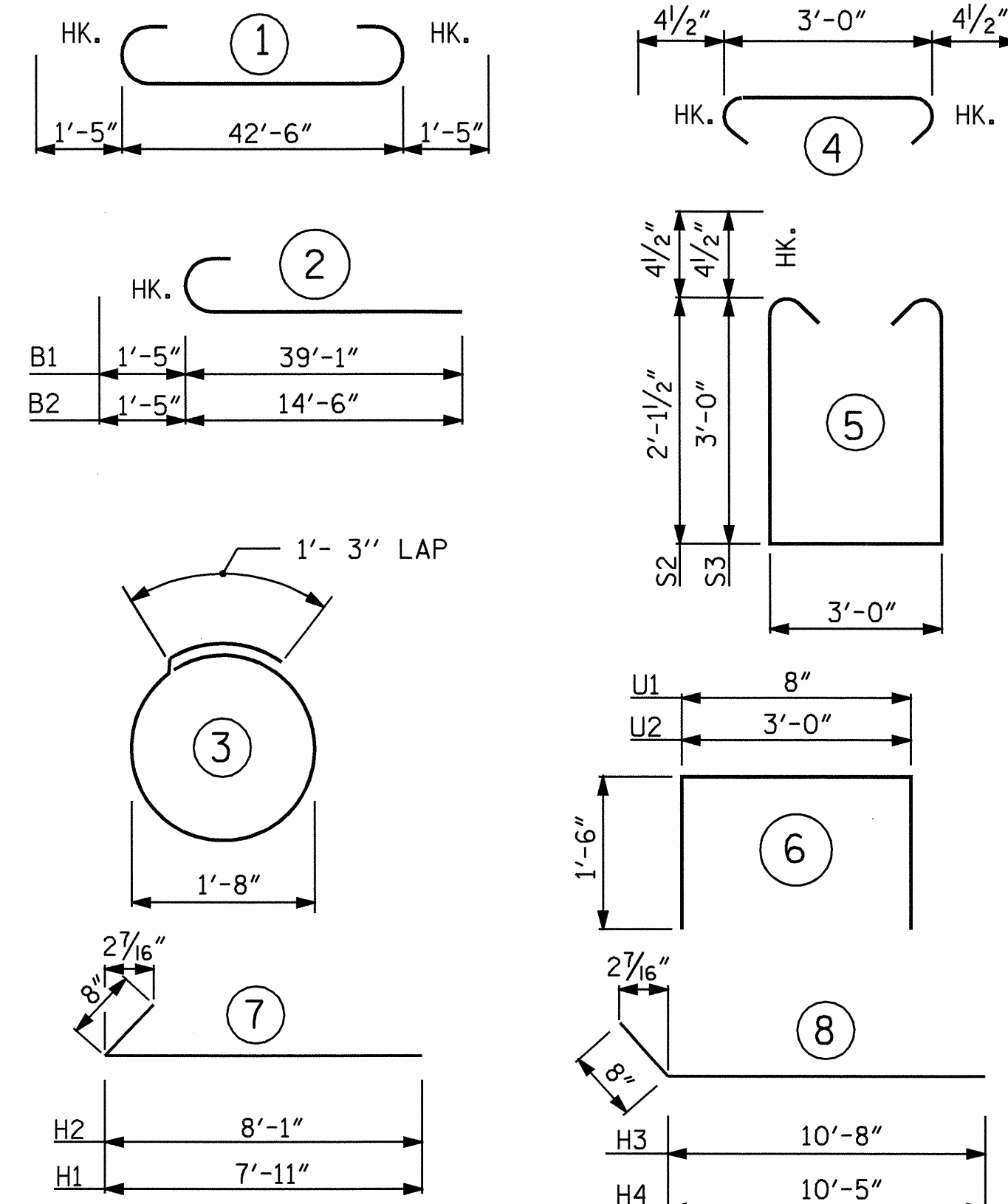


**
POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

DRAWN BY : G. O. COOPER DATE : 6/17/05
CHECKED BY : J.G. KHARVA DATE : 10/25/05

BAR TYPES

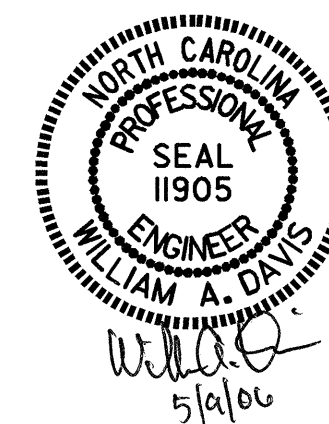


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	2	40'-6"	697
B2	4	#10	2	15'-11"	274
B3	4	#10	1	45'-4"	780
B4	12	#4	STR	22'-9"	182
B5	16	#4	STR	3'-0"	32
B6	2	#4	STR	7'-1"	9
B7	8	#4	STR	2'-6"	13
B8	4	#4	STR	7'-10"	21

H1	10	#5	7	8'-7"	90
H2	10	#5	7	8'-9"	91
H3	10	#5	8	11'-4"	118
H4	10	#5	8	11'-1"	116

K1	10	#4	STR	22'-7"	151
K2	8	#4	STR	3'-2"	17

S1	37	#4	4	3'-9"	93
S2	24	#4	5	8'-0"	128
S3	13	#4	5	9'-9"	85
S4	16	#4	3	6'-6"	69

U1	37	#4	6	3'-8"	91
U2	12	#4	6	6'-0"	48

V1	74	#5	STR	5'-9"	444
V2	24	#4	STR	6'-9"	108
V3	30	#4	STR	8'-1"	162

REINFORCING STEEL	LBS.	3819
CLASS A CONC. BREAKDOWN		
POUR 1 CAP	C.Y.	18.4
POUR 2 WINGS & BACKWALL	C.Y.	8.7
TOTAL	C.Y.	27.1

HP 12X53 STEEL PILES	
NUMBER = 8	LIN. FT. = 120.0

STEEL PILE POINTS	EA. 8
-------------------	-------

SPLICE LENGTH CHART

BARS	SIZE	SPLICE LENGTH
B4	#4	2'-5"

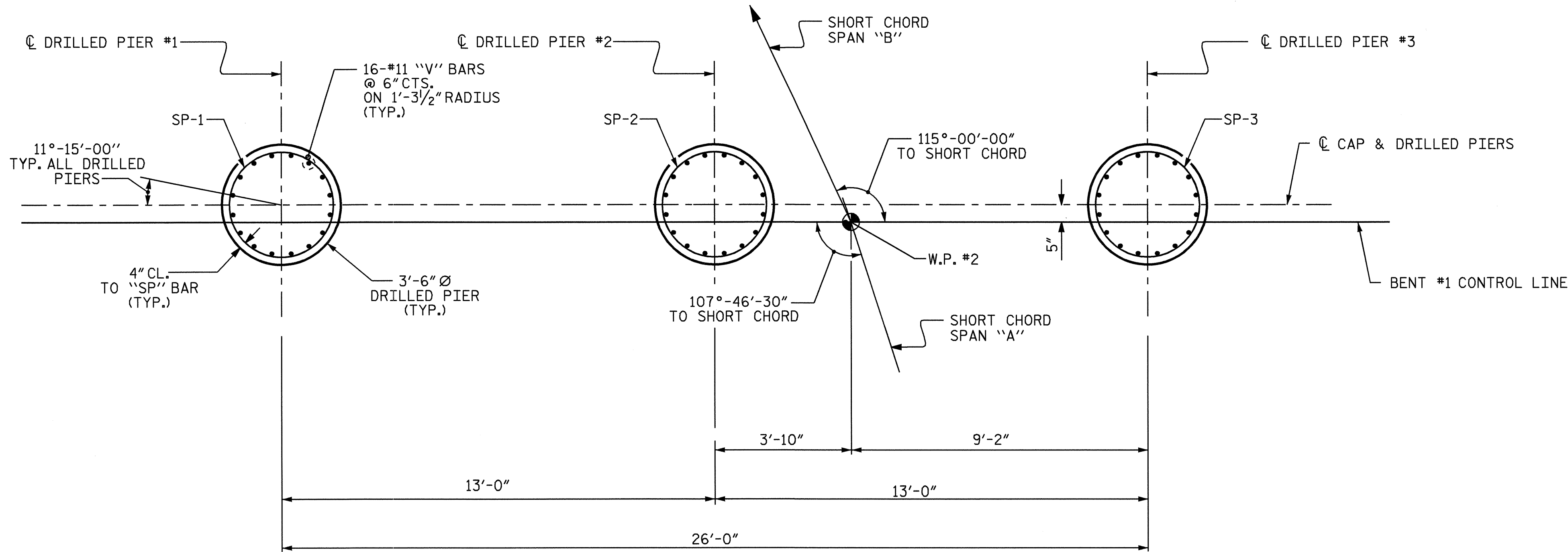
PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

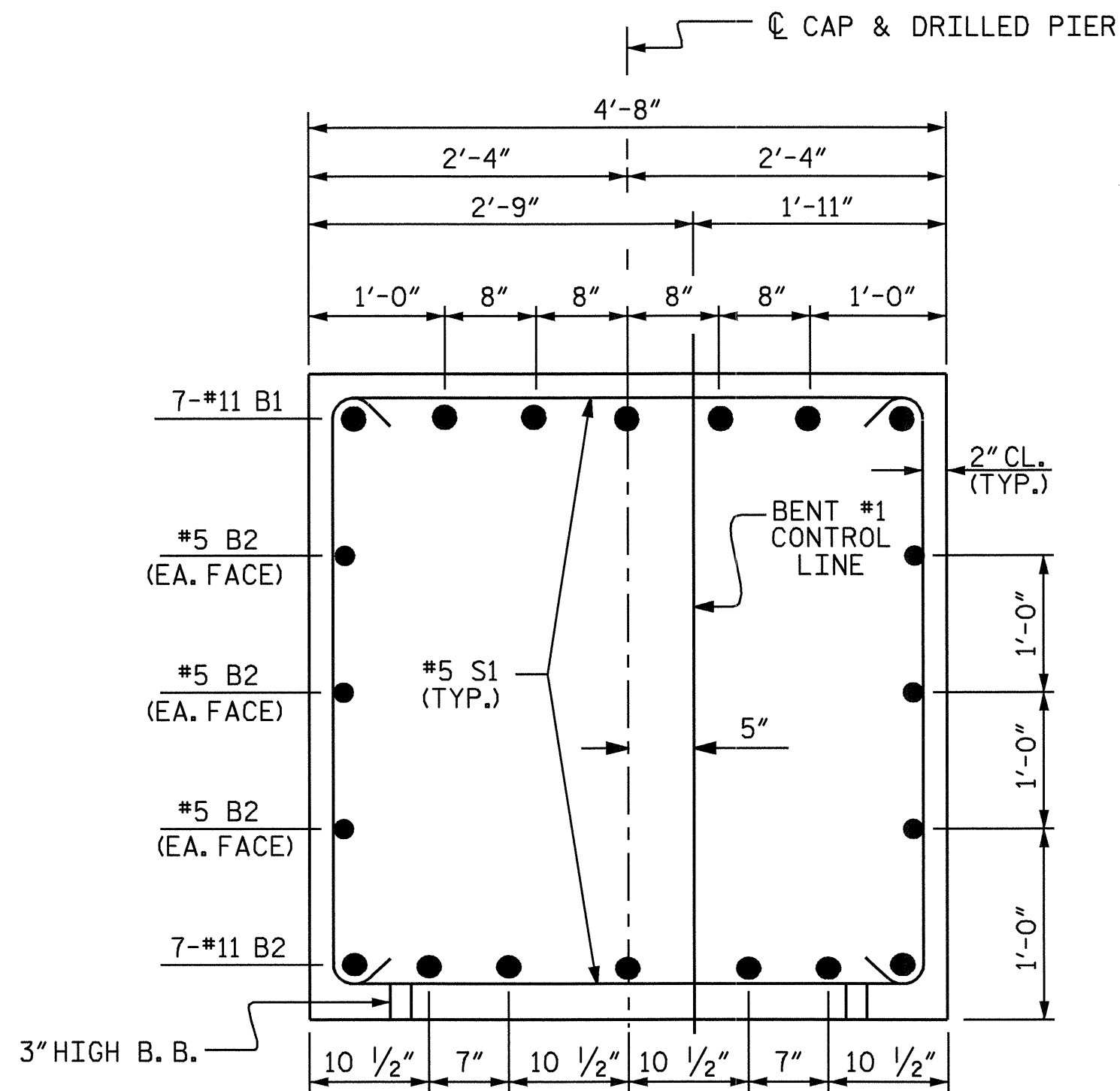
SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

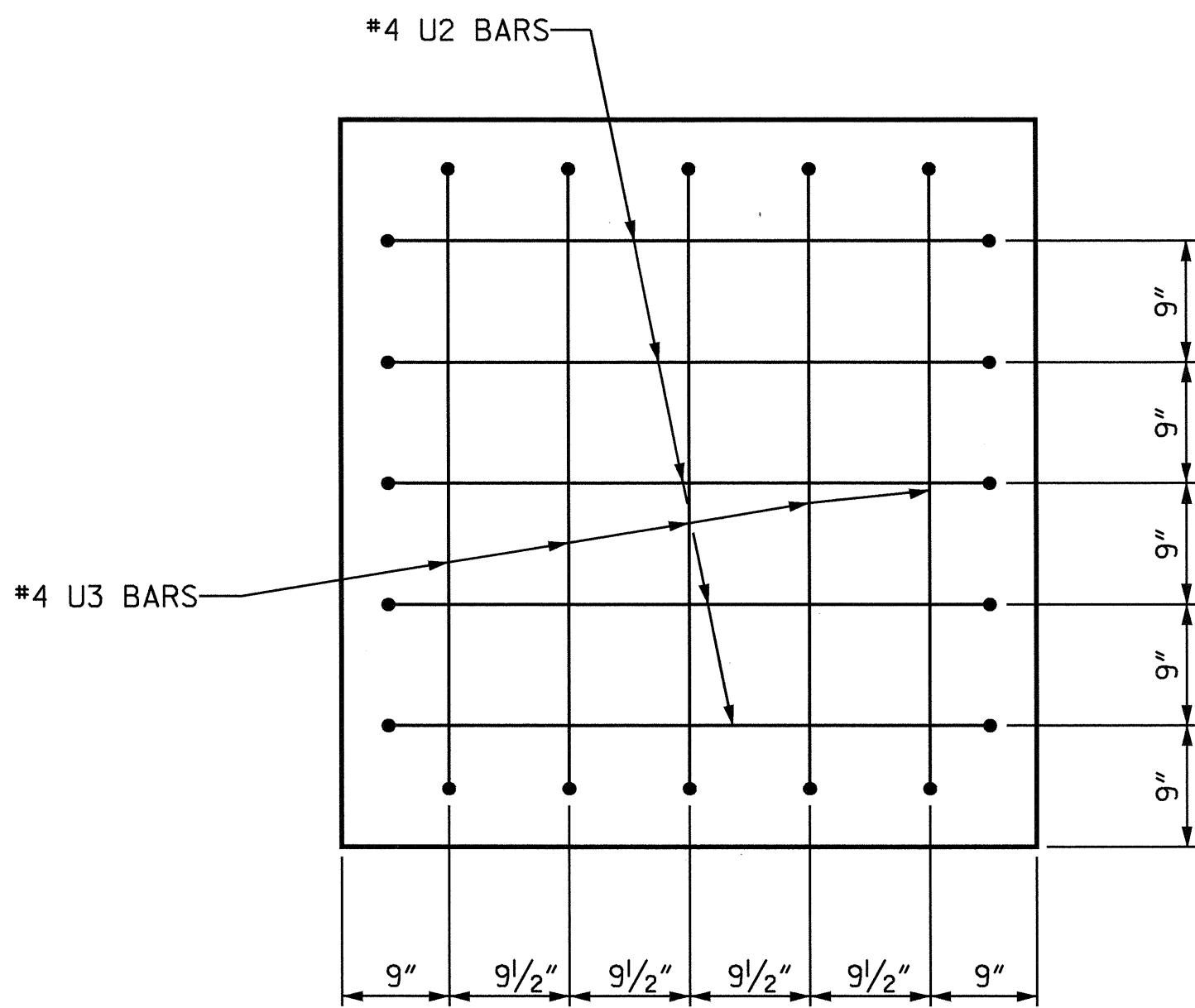


PLAN OF DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.



SECTION A-A



VIEW X-X

BAR TYPES				BILL OF MATERIAL					
BENT #1									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	14	11	1	38'-10"	2888				
B2	6	5	STR	35'-10"	224				
V1	16	11	2	33'-4"	2834				
V2	16	11	2	33'-9"	2869				
V3	16	11	2	34'-3"	2912				
S1	28	5	3	12'-7"	367				
S2	15	4	6	10'-2"	102				
U1	40	5	4	7'-4"	306				
U2	10	4	4	7'-2"	48				
U3	10	4	4	6'-8"	45				
REINFORCING STEEL					12595 LBS.				
SP-1	1	***	5	582'-9"	608				
SP-2	1	***	5	591'-7"	617				
SP-3	1	***	5	602'-9"	629				
SPIRAL COLUMN REINFORCING STEEL					1854 LBS.				
CLASS A CONCRETE									
POUR 2 (CAP)					26.0 C.Y.				
TOTAL CLASS A CONCRETE					26.0 C.Y.				
3'-6" Ø DRILLED PIERS									
DRILLED PIER CONCRETE BREAKDOWN									
POUR 1 (DRILLED PIERS)					29.5 C.Y.				
3'-6" Ø DRILLED PIER IN SOIL :									
LINEAR FEET					67.7 FT.				
3'-6" Ø DRILLED PIER NOT IN SOIL :									
LINEAR FEET					15.0 FT.				
PERMANENT STEEL CASING									
FOR 3'-6" Ø DRILLED PIERS:					28.7 FT.				
CROSSHOLE SONIC LOGGING					1 EA.				
CSL TUBES:					360.8 FT.				

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

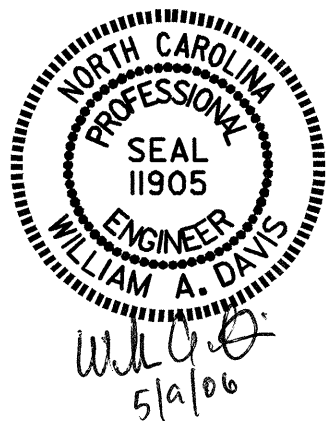
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

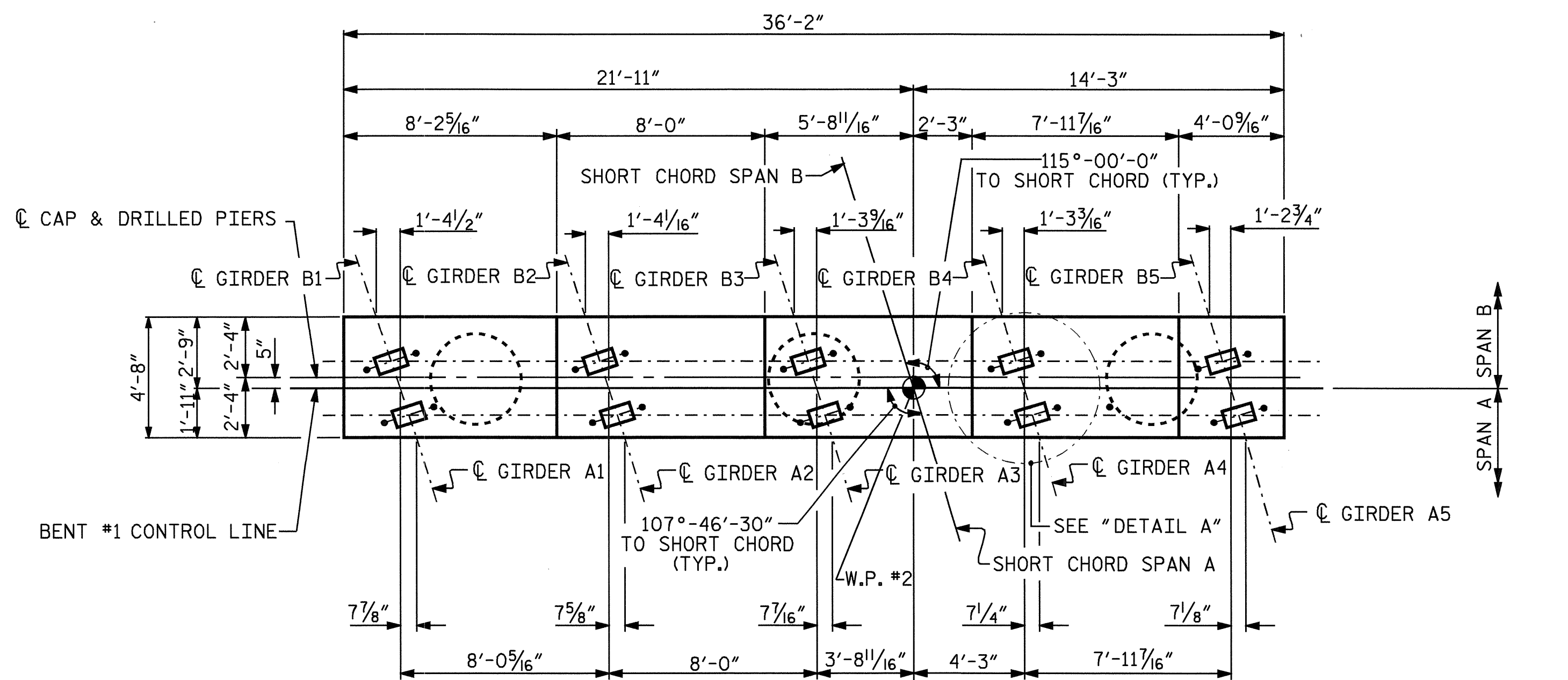
SUBSTRUCTURE
BENT #1

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

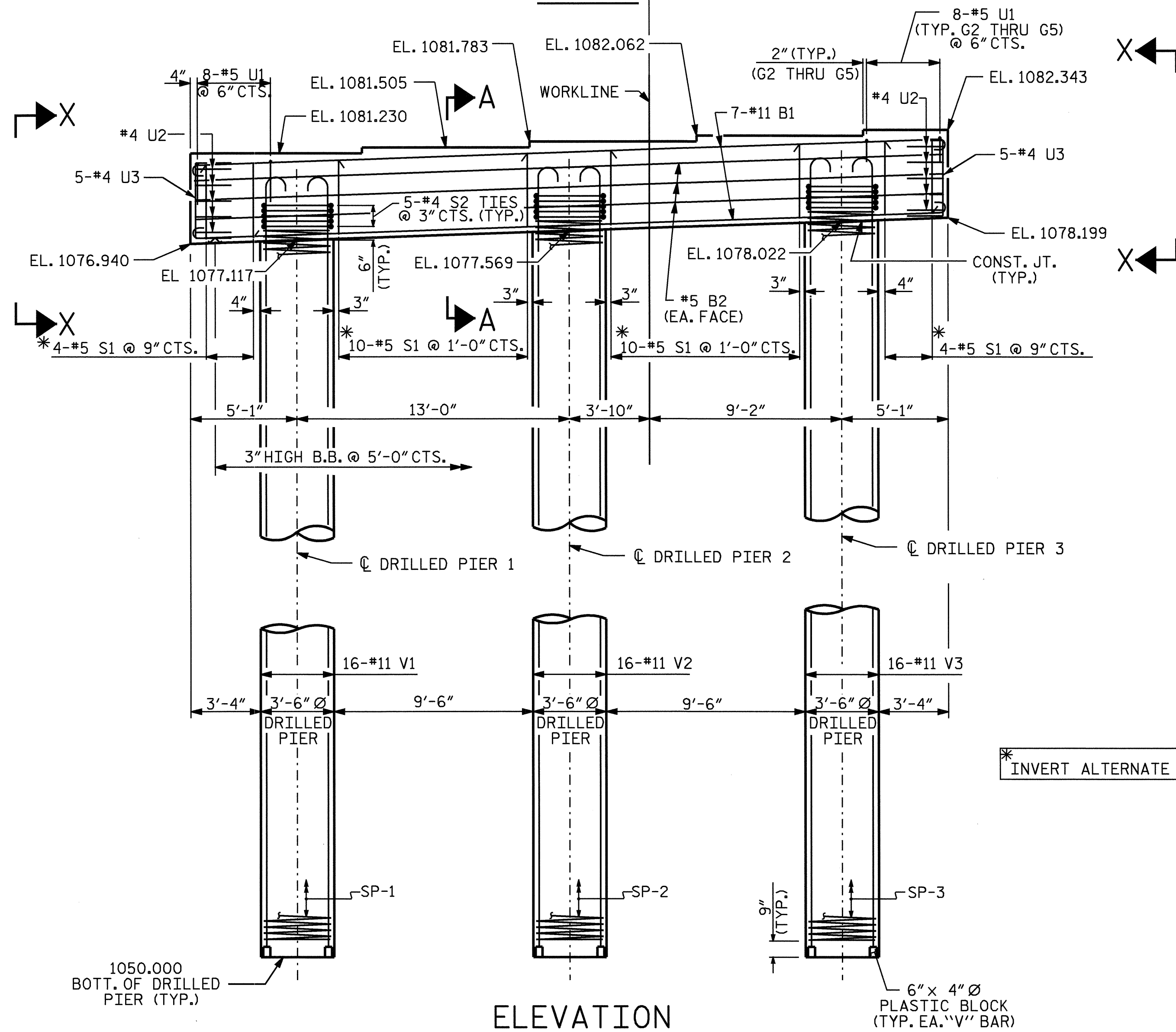


DRAWN BY : J.G. KHARVA DATE : 7/06/05
CHECKED BY : J.L. WALTON DATE : 10/12/05

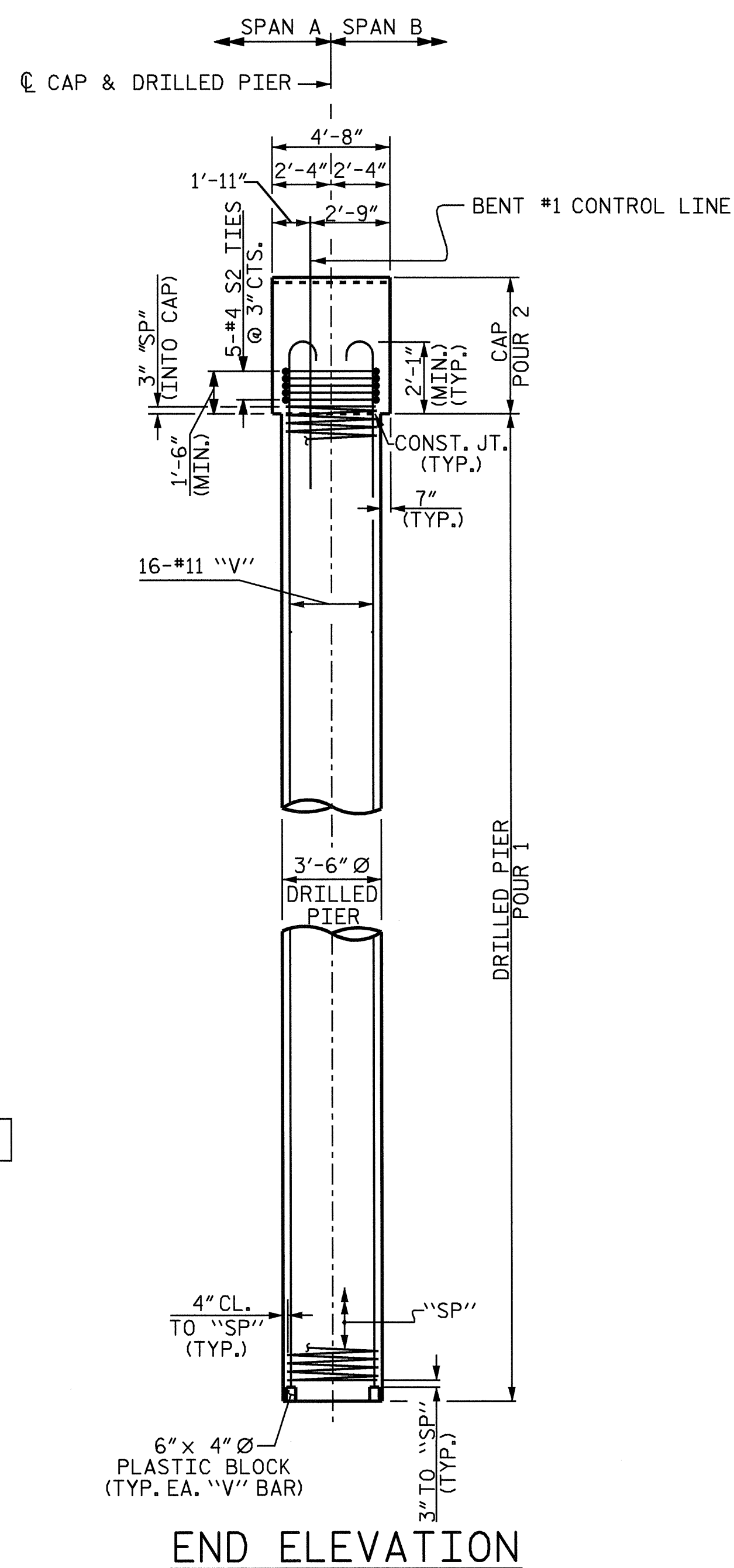
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PLAN



ELEVATION



END ELEVATION

NOTES

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

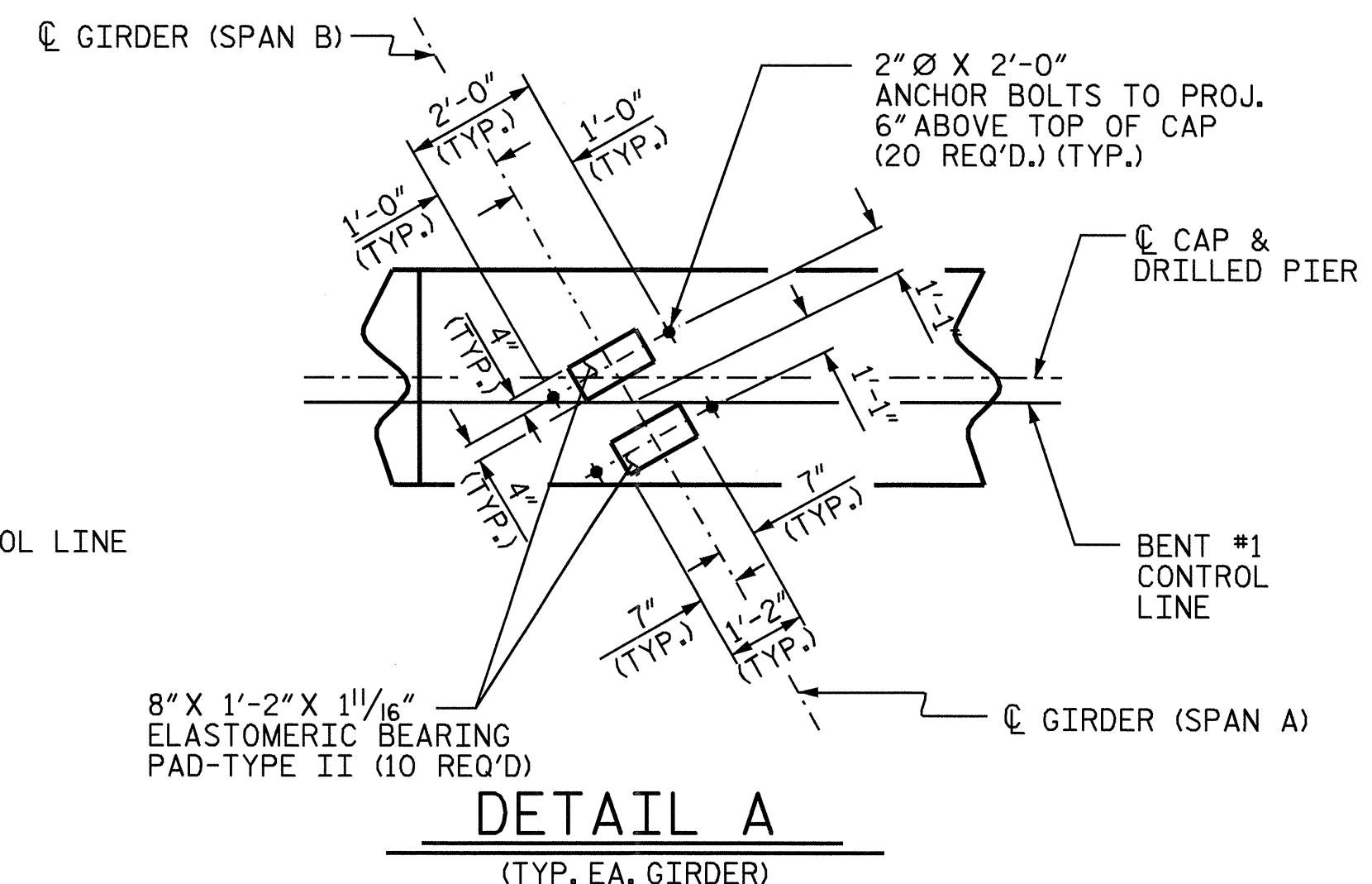
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE BENT CONTROL LINE IS OFFSET FROM THE CENTERLINE BENT CAP AND DRILLED PIERS.



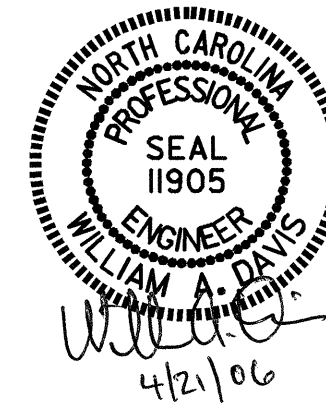
DETAIL A
(TYP. EA. GIRDER)

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

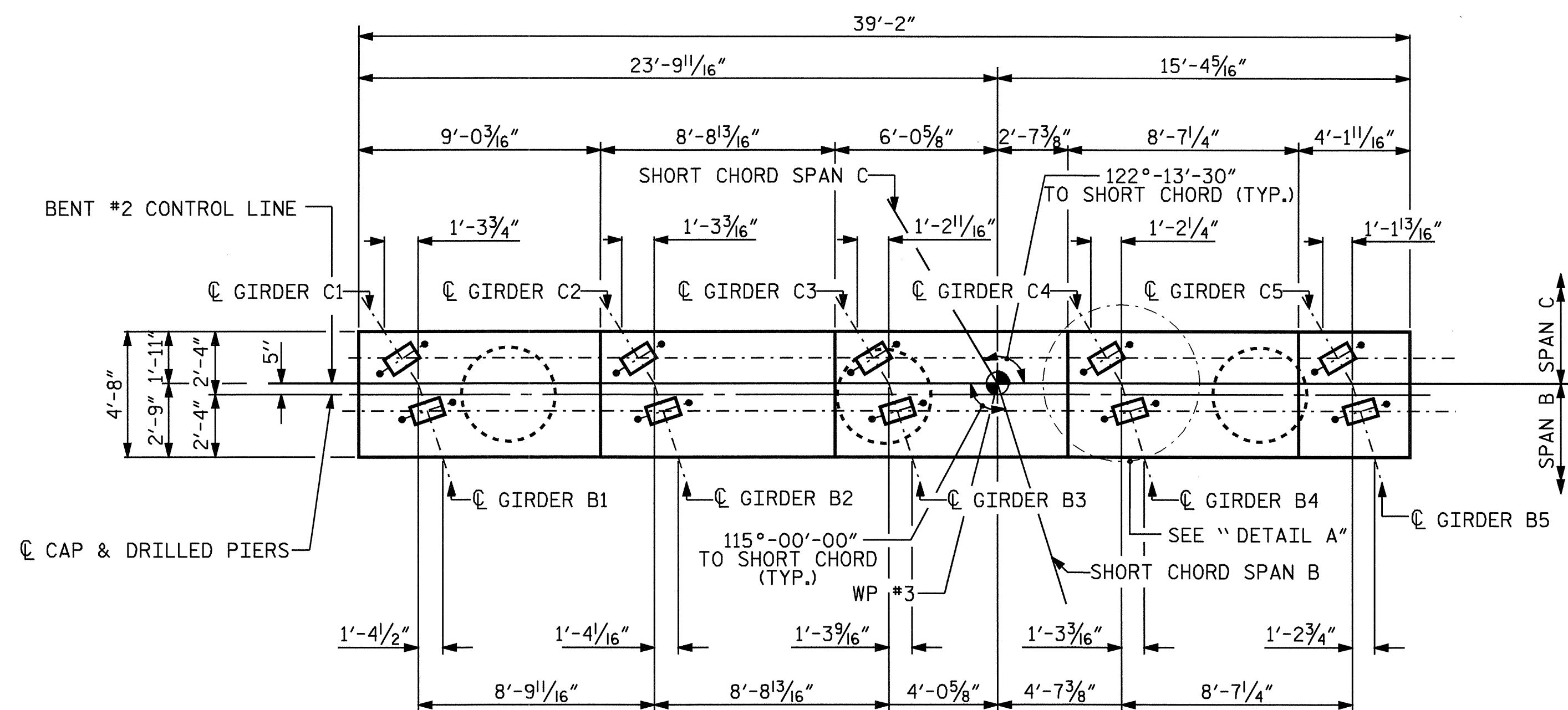
SUBSTRUCTURE
BENT #1



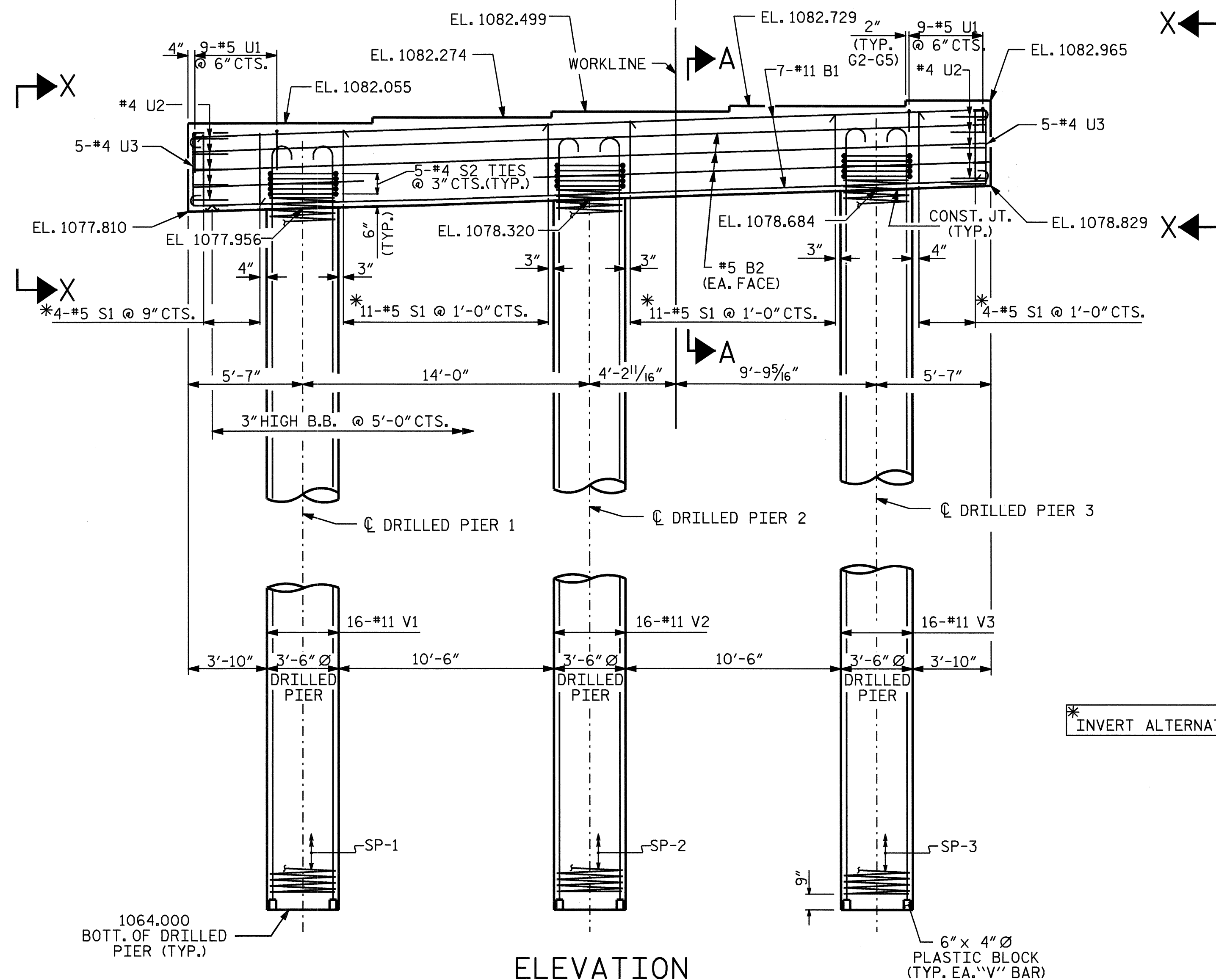
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-24
2			4			TOTAL SHEETS 33

DRAWN BY : J. G. KHARVA DATE : 07/06/05
CHECKED BY : J. L. WALTON DATE : 10/11/05

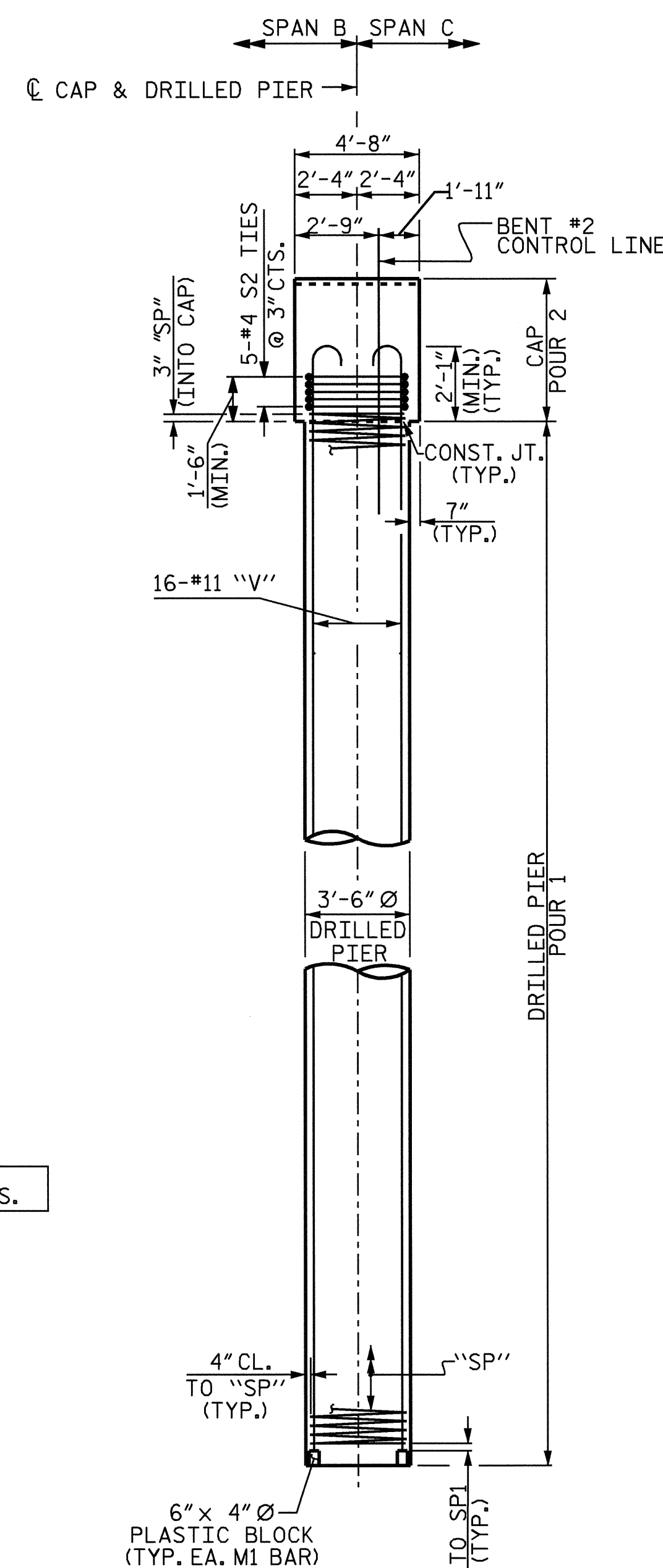
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PLAN



ELEVATION



END ELEVATION

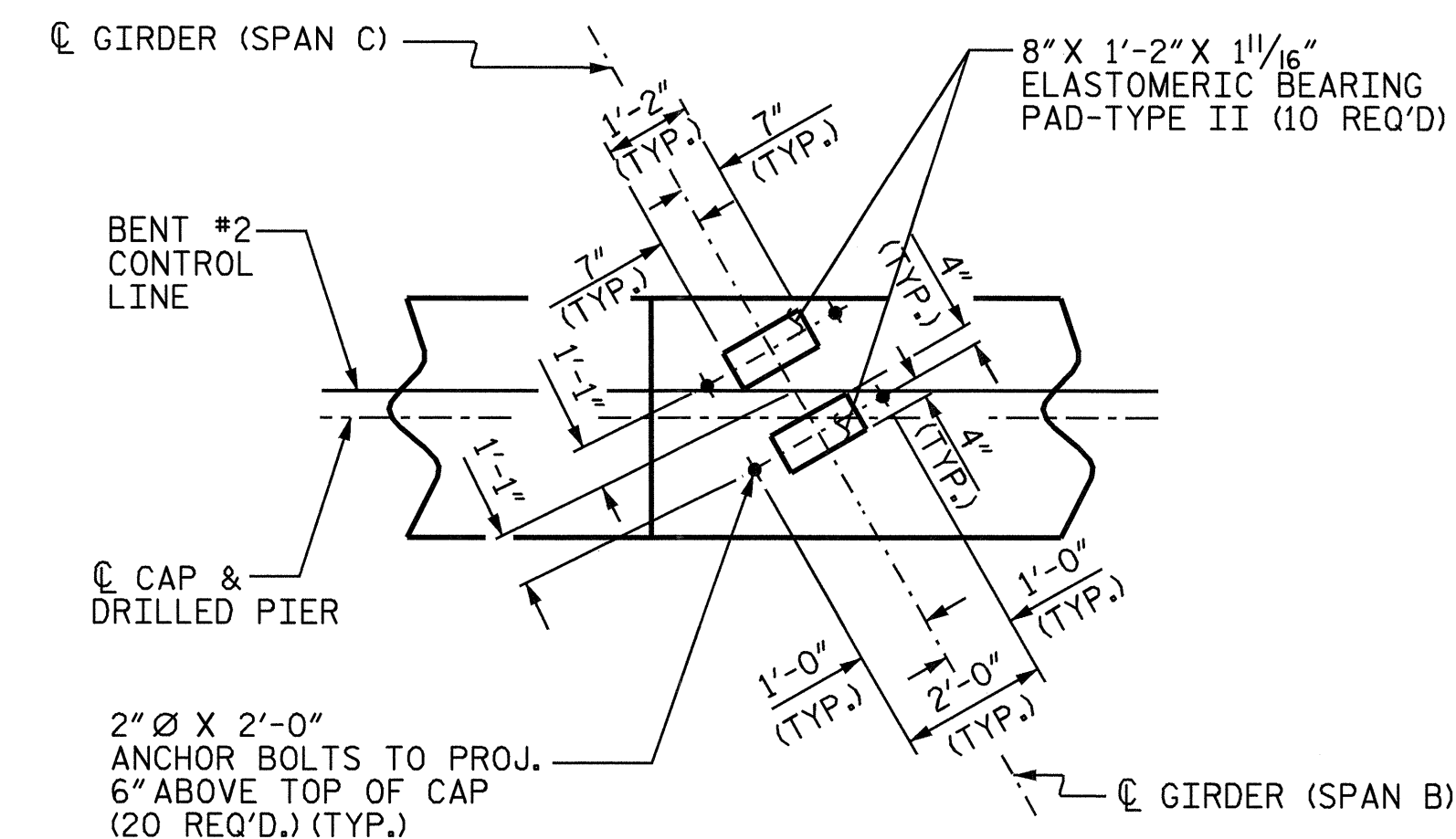
NOTES

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE BENT CONTROL LINE IS OFFSET FROM THE CENTERLINE BENT CAP AND DRILLED PIERS.



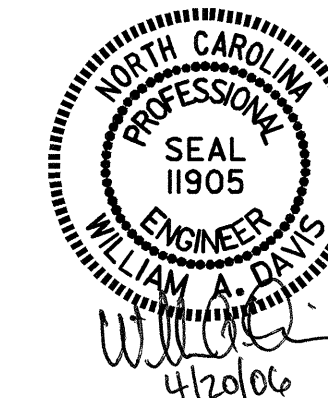
DETAIL A
(TYP. EA. GIRDER)

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

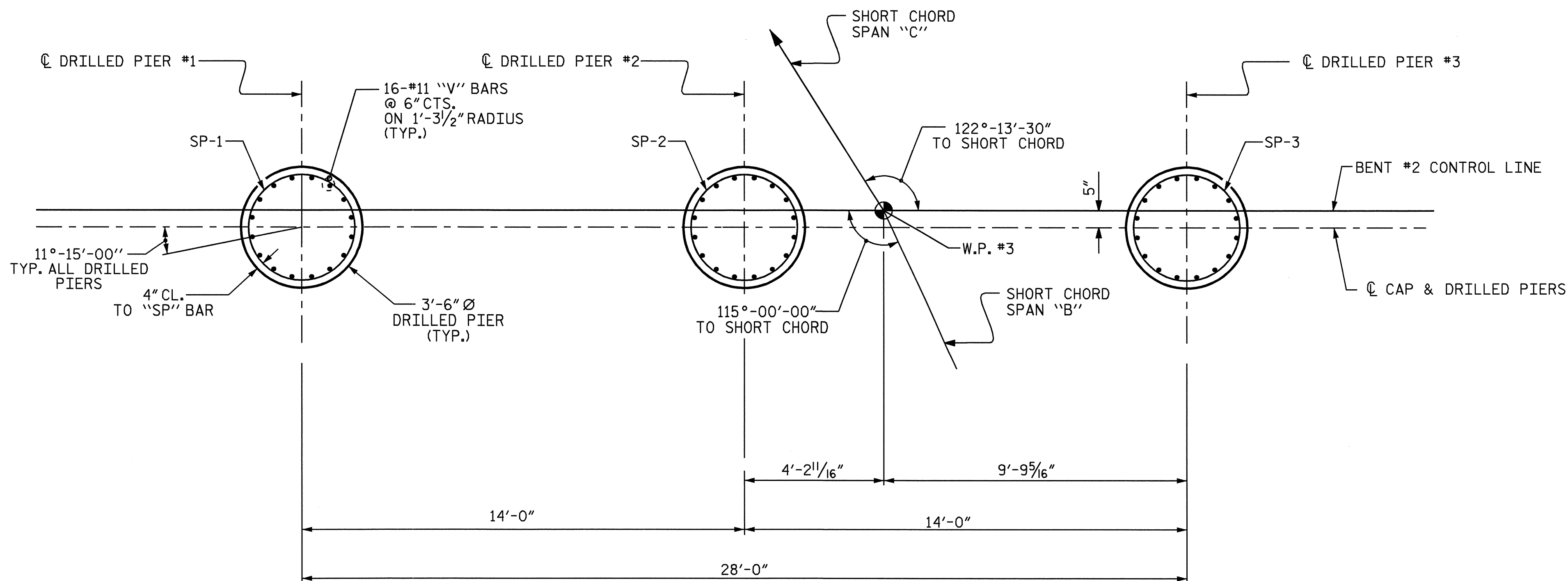
SUBSTRUCTURE
BENT #2



REVISIONS						SHEET NO. S-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

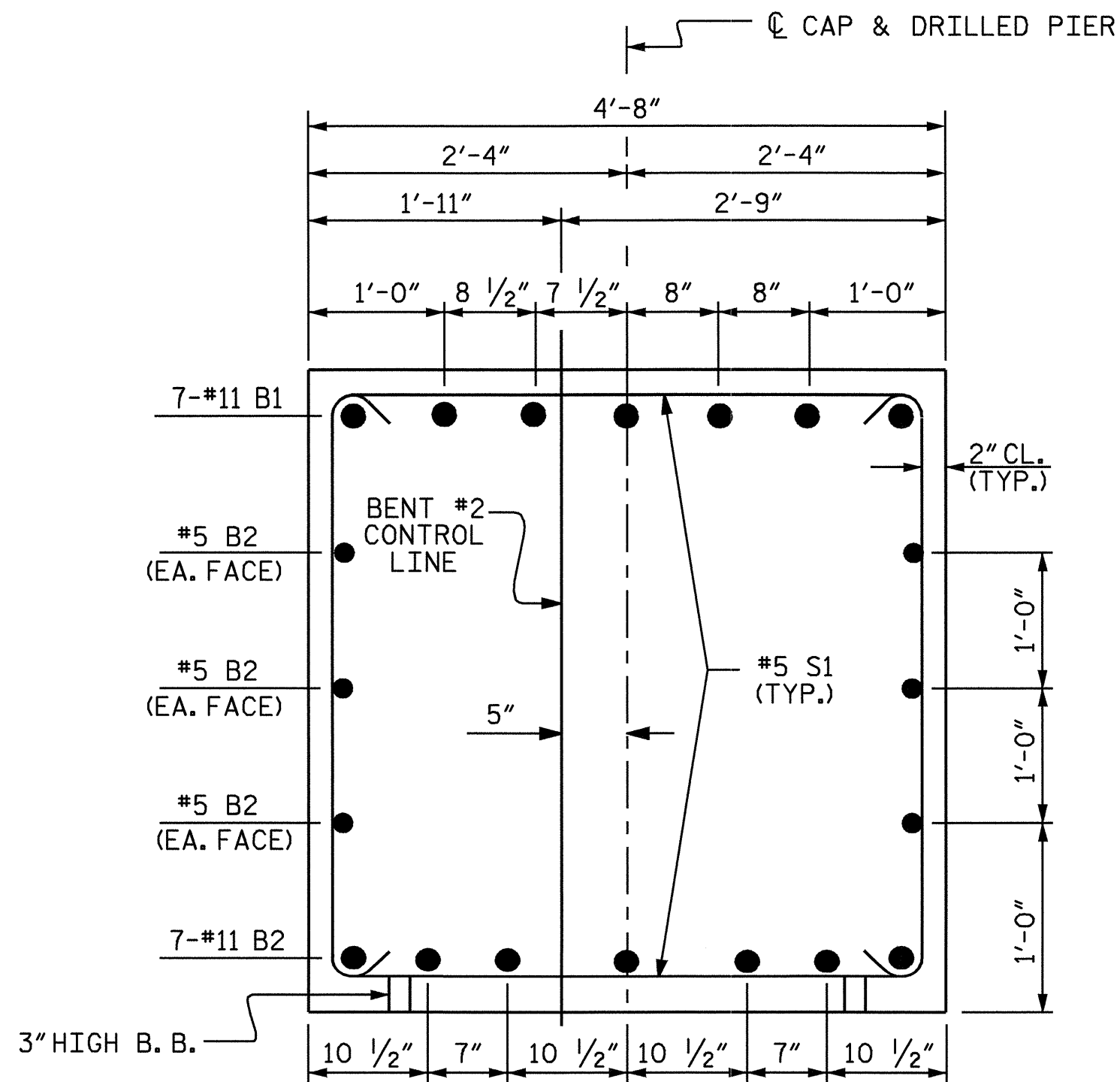
DRAWN BY : J. G. KHARVA DATE : 07/06/05
CHECKED BY : J. L. WALTON DATE : 10/11/05

18-APR-2006 08:12
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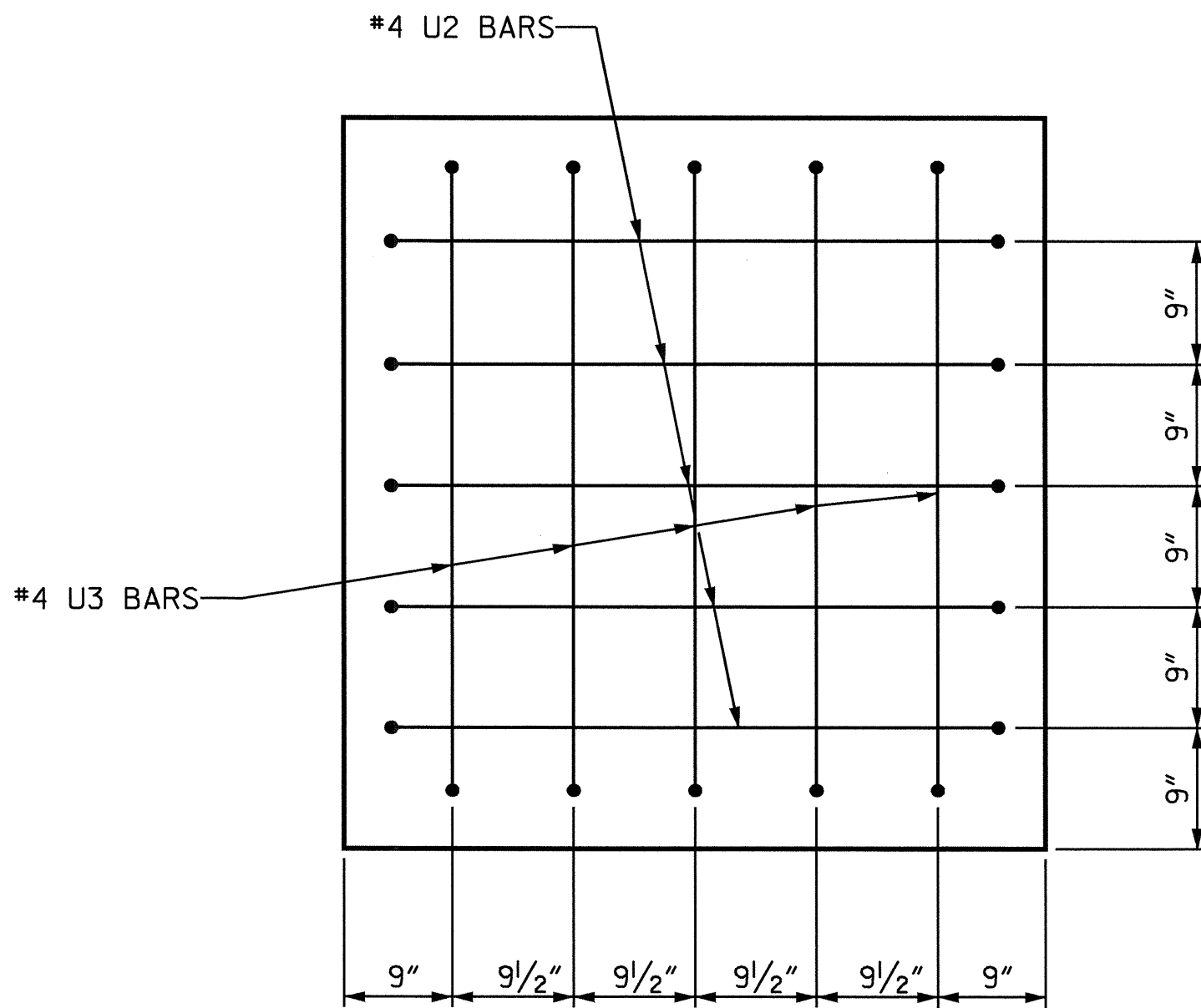


PLAN OF DRILLED PIERS

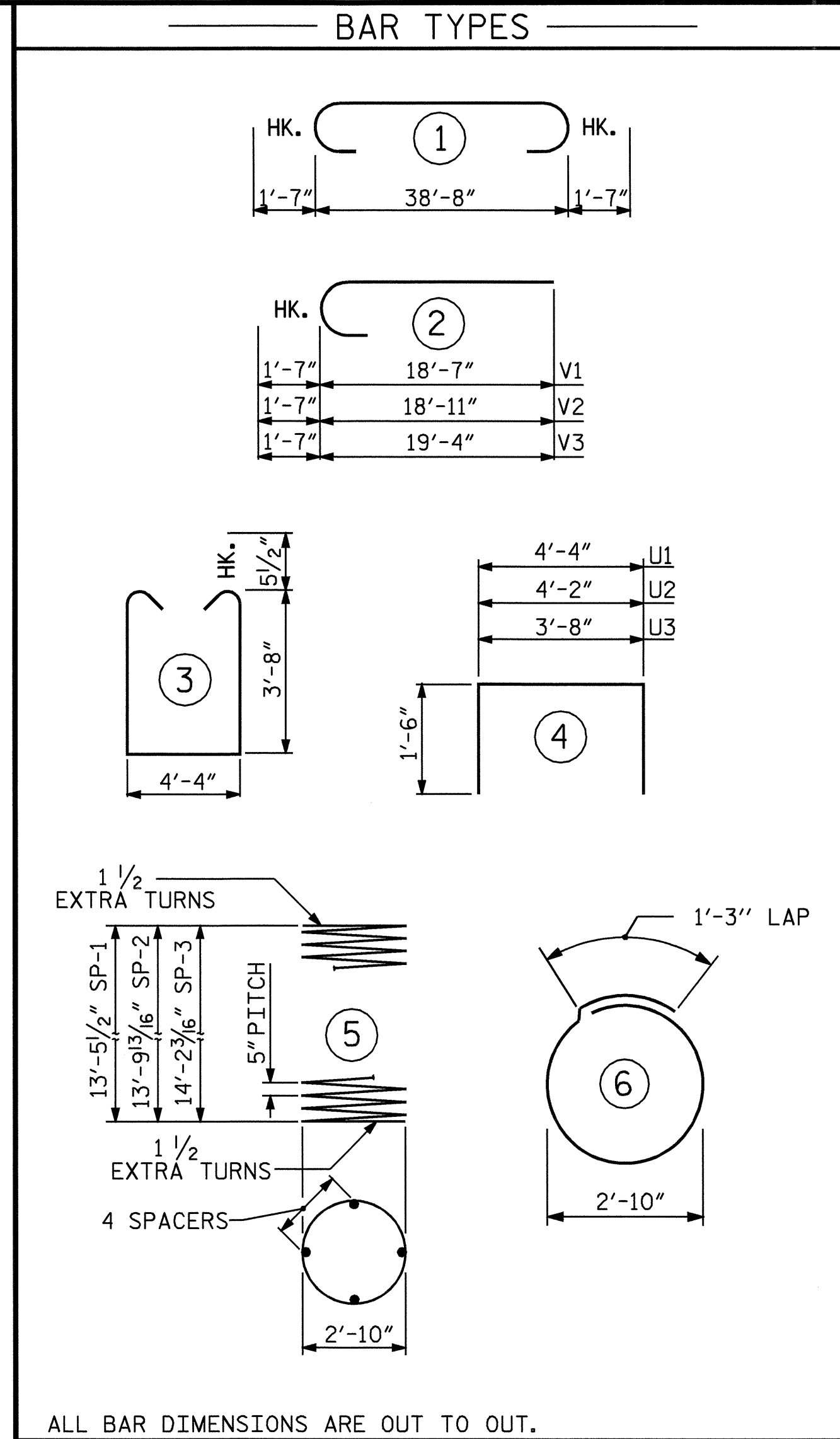
REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.



SECTION A-A



VIEW X-X



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	11	1	41'-10"	3112
B2	6	5	STR	38'-10"	243
V1	16	11	2	20'-2"	1714
V2	16	11	2	20'-6"	1743
V3	16	11	2	20'-11"	1778
S1	30	5	3	12'-7"	394
S2	15	4	6	10'-2"	102
U1	45	5	4	7'-4"	344
U2	10	4	4	7'-2"	48
U3	10	4	4	6'-8"	45
REINFORCING STEEL					9523 LBS.
SP-1	1	***	5	302'-6"	316
SP-2	1	***	5	309'-2"	322
SP-3	1	***	5	313'-7"	327
SPIRAL COLUMN REINFORCING STEEL					965 LBS.
CLASS A CONCRETE					
POUR 2 (CAP)					27.9 C.Y.
TOTAL CLASS A CONCRETE					27.9 C.Y.
3'-6" Ø DRILLED PIERS					
DRILLED PIER CONCRETE BREAKDOWN					
POUR 1 (DRILLED PIERS)					15.3 C.Y.
3'-6" Ø DRILLED PIER IN SOIL :					
LINEAR FEET				18.0 FT.	
3'-6" Ø DRILLED PIER NOT IN SOIL :					
LINEAR FEET				25.0 FT.	
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS:					13.0 FT.
CROSSHOLE SONIC LOGGING					1 EA.
CSL TUBES:					201.8 FT.

PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 2 OF 2



REVISIONS						SHEET NO. S-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			33

DRAWN BY : J.G. KHARVA DATE : 7/06/05
CHECKED BY : J.L. WALTON DATE : 10/12/05

09-MAY-2006 14:08
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Telleland

NOTES

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

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

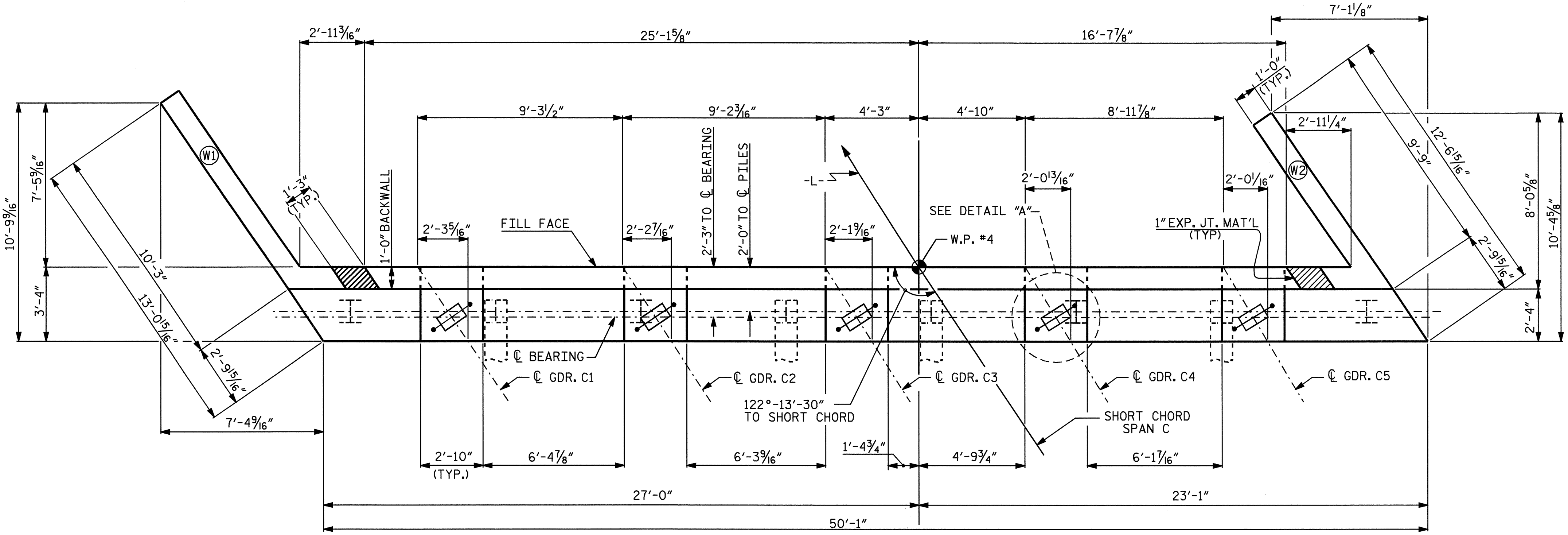
FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

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.

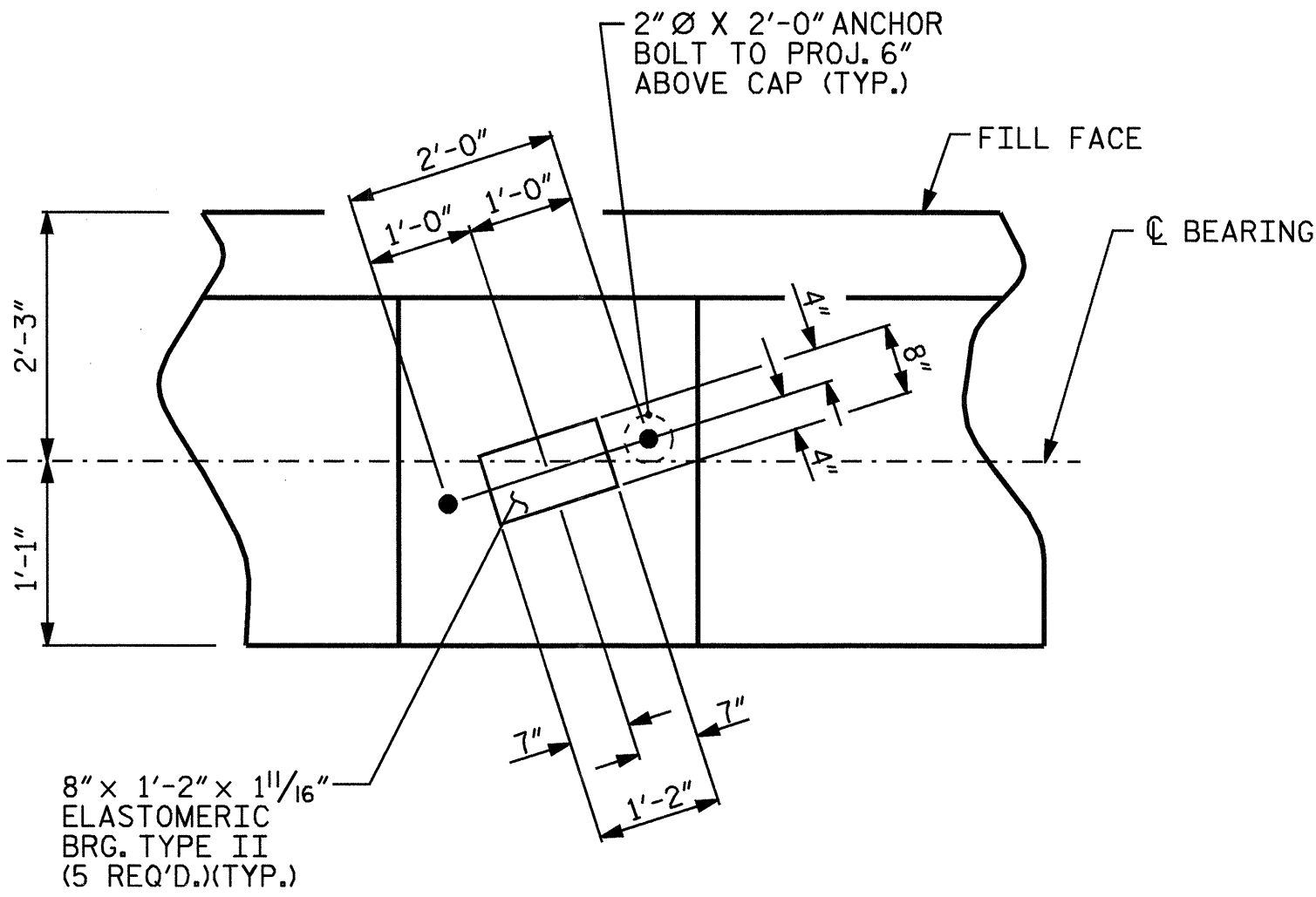
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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 PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

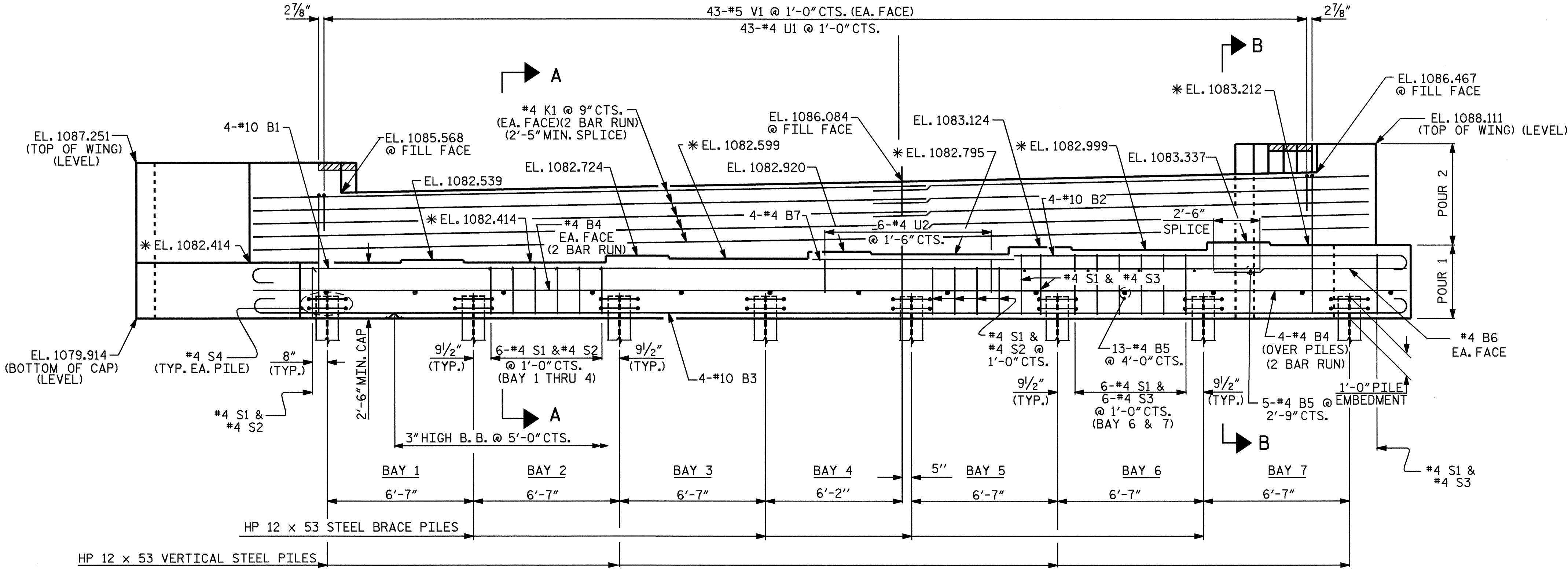


PLAN



DETAIL "A"

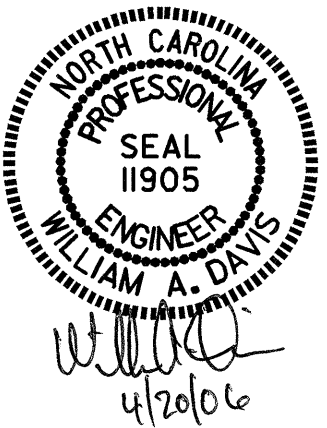
* FOR LOCATIONS OF BRIDGE SEAT ELEVATIONS SEE SECTION A-A SHEET 3 OF 3.



ELEVATION

DRAWN BY : G.O. COOPER DATE : 06/17/05
CHECKED BY : J.G. KHARVA DATE : 10/25/05

18-APR-2006 08:12
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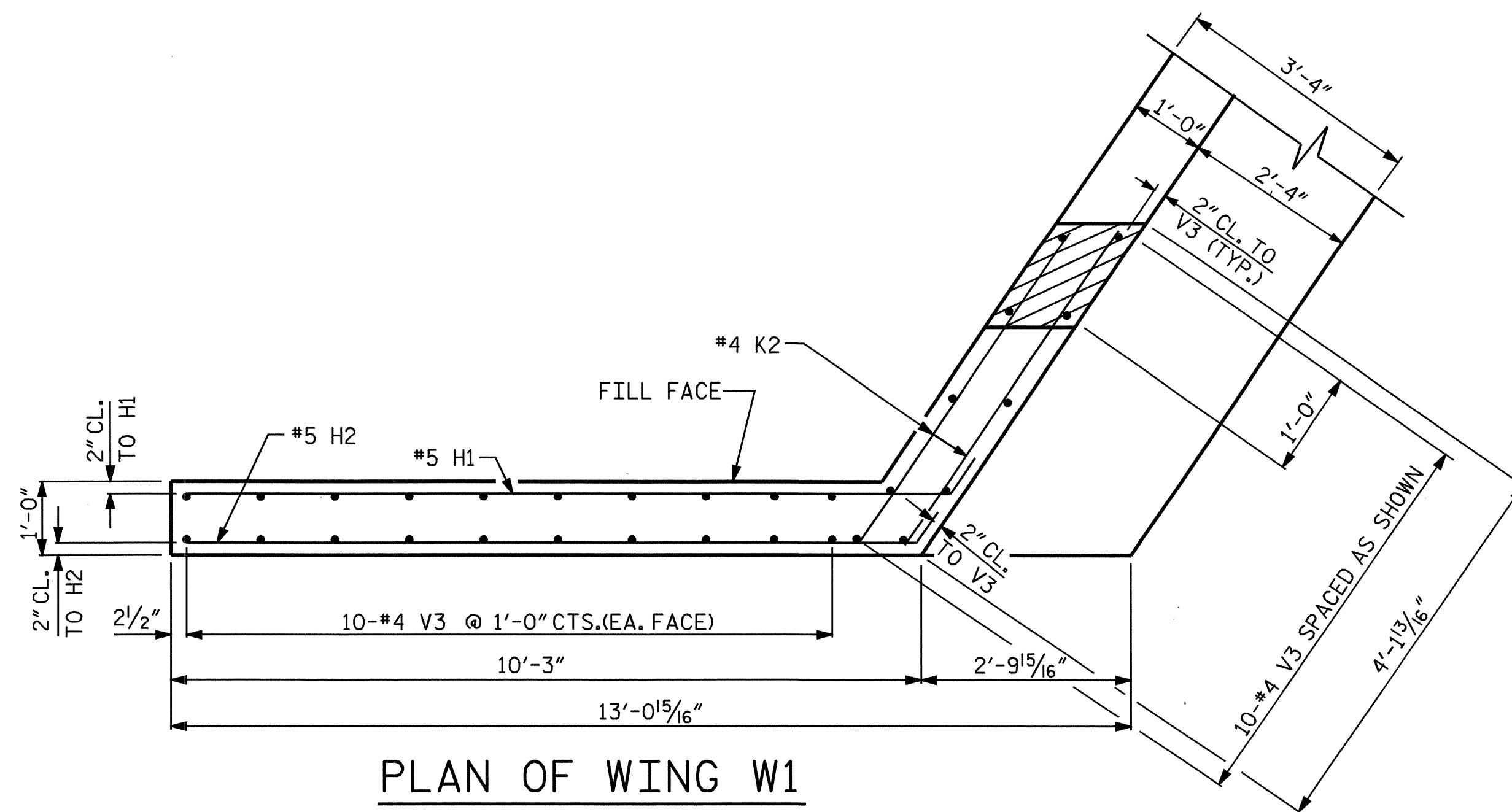
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 1 OF 3

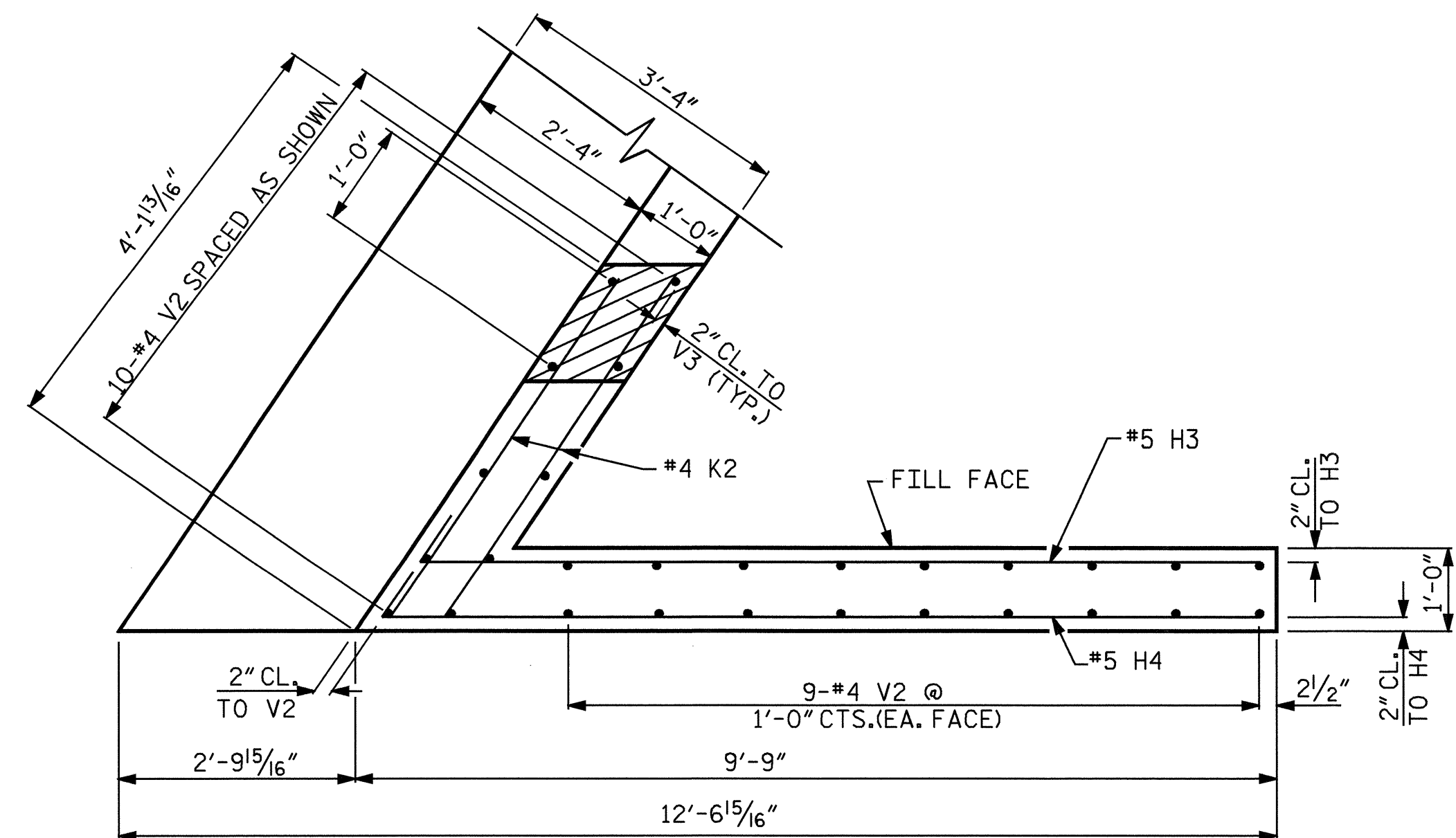
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

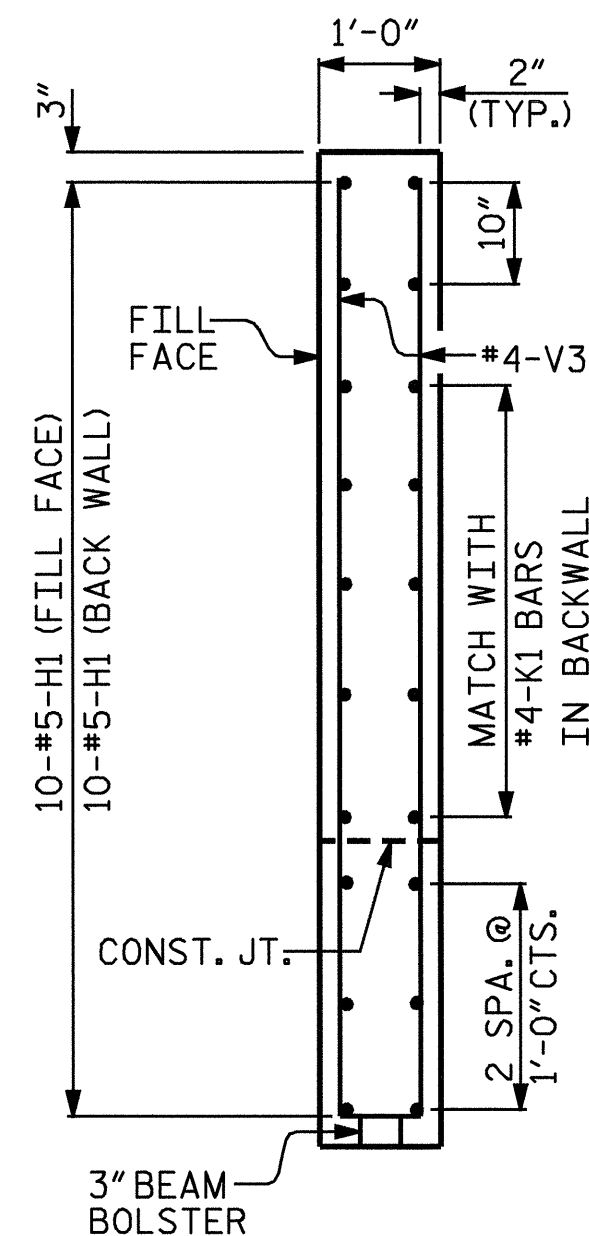
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			



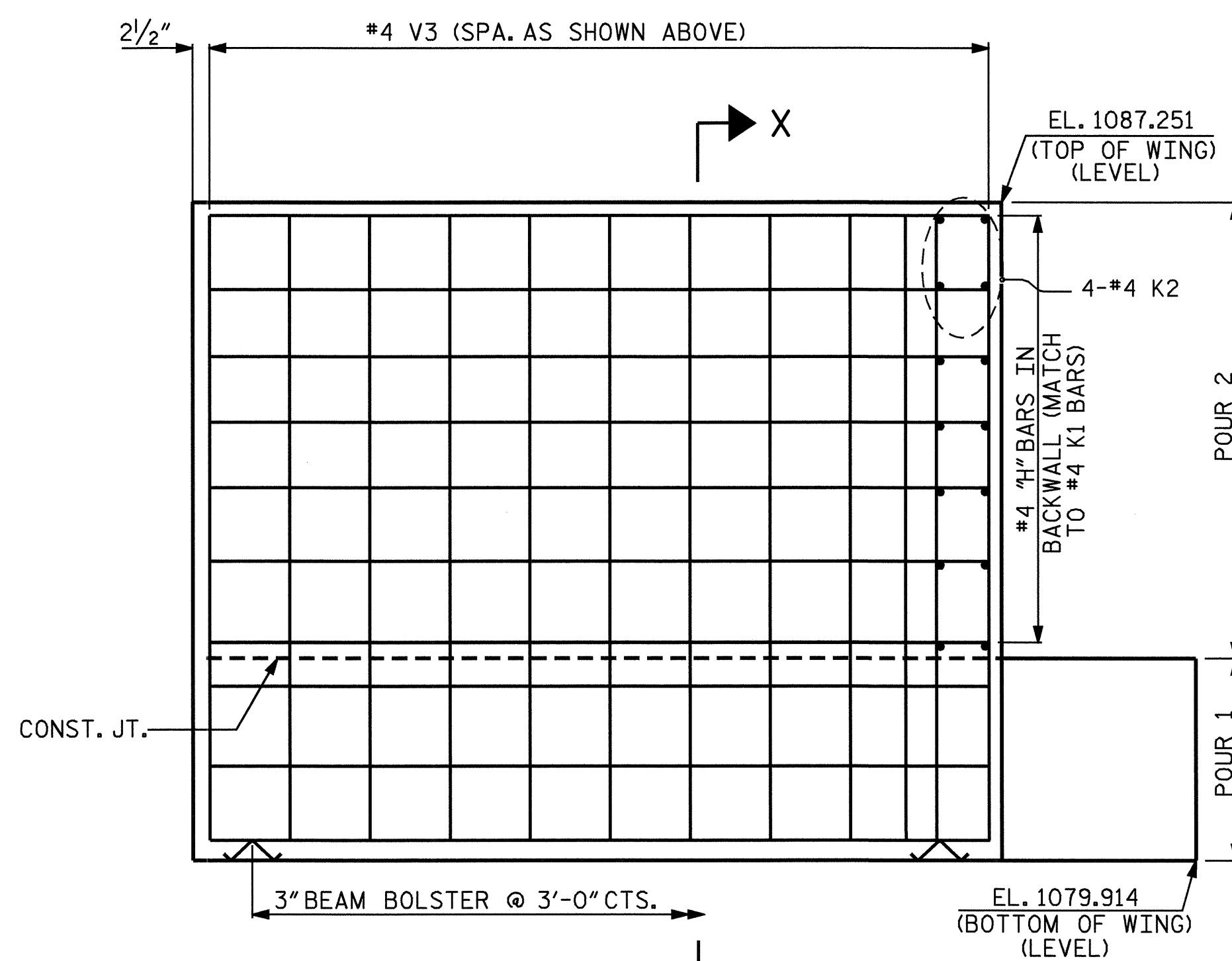
PLAN OF WING W1



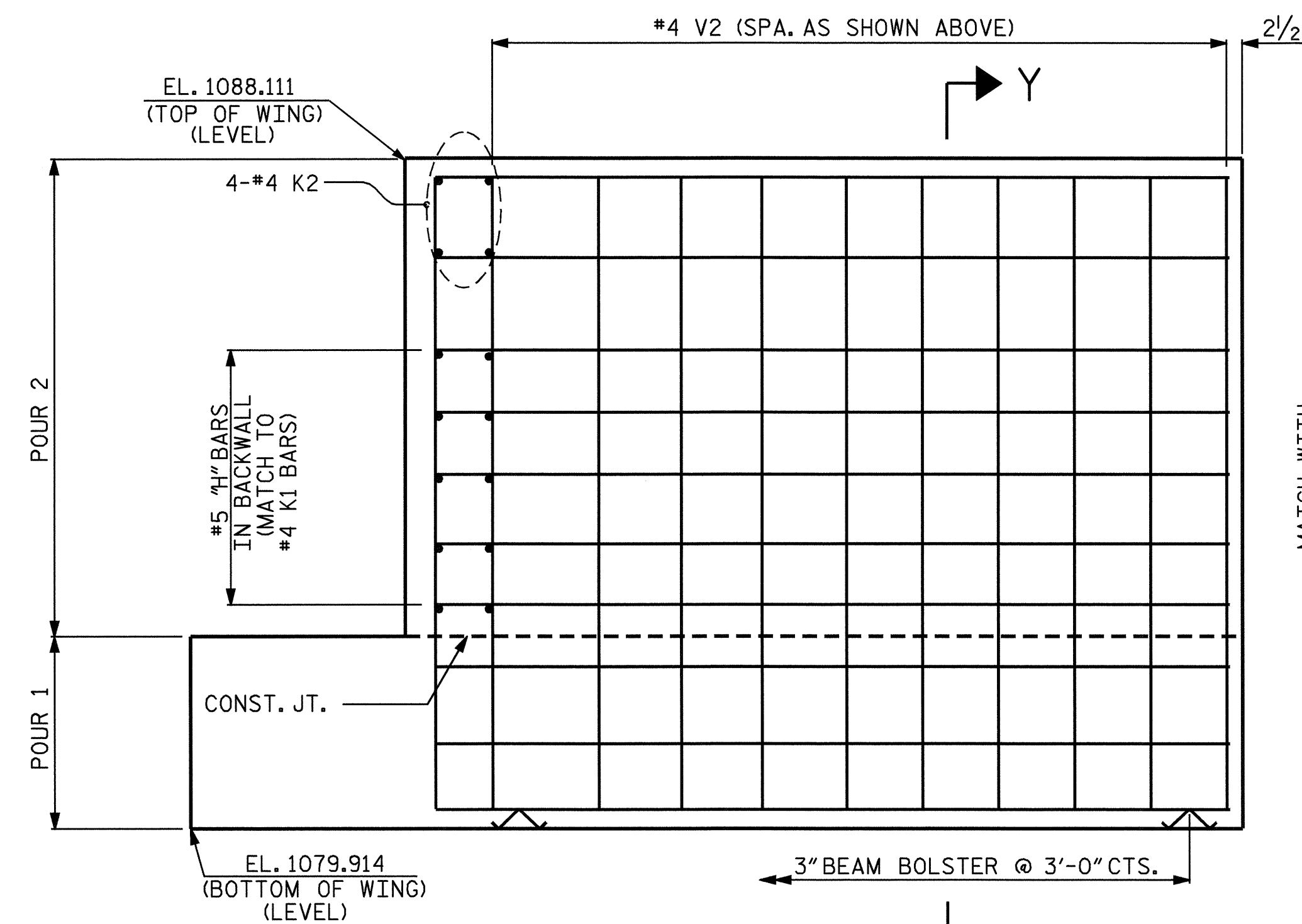
PLAN OF WING W2



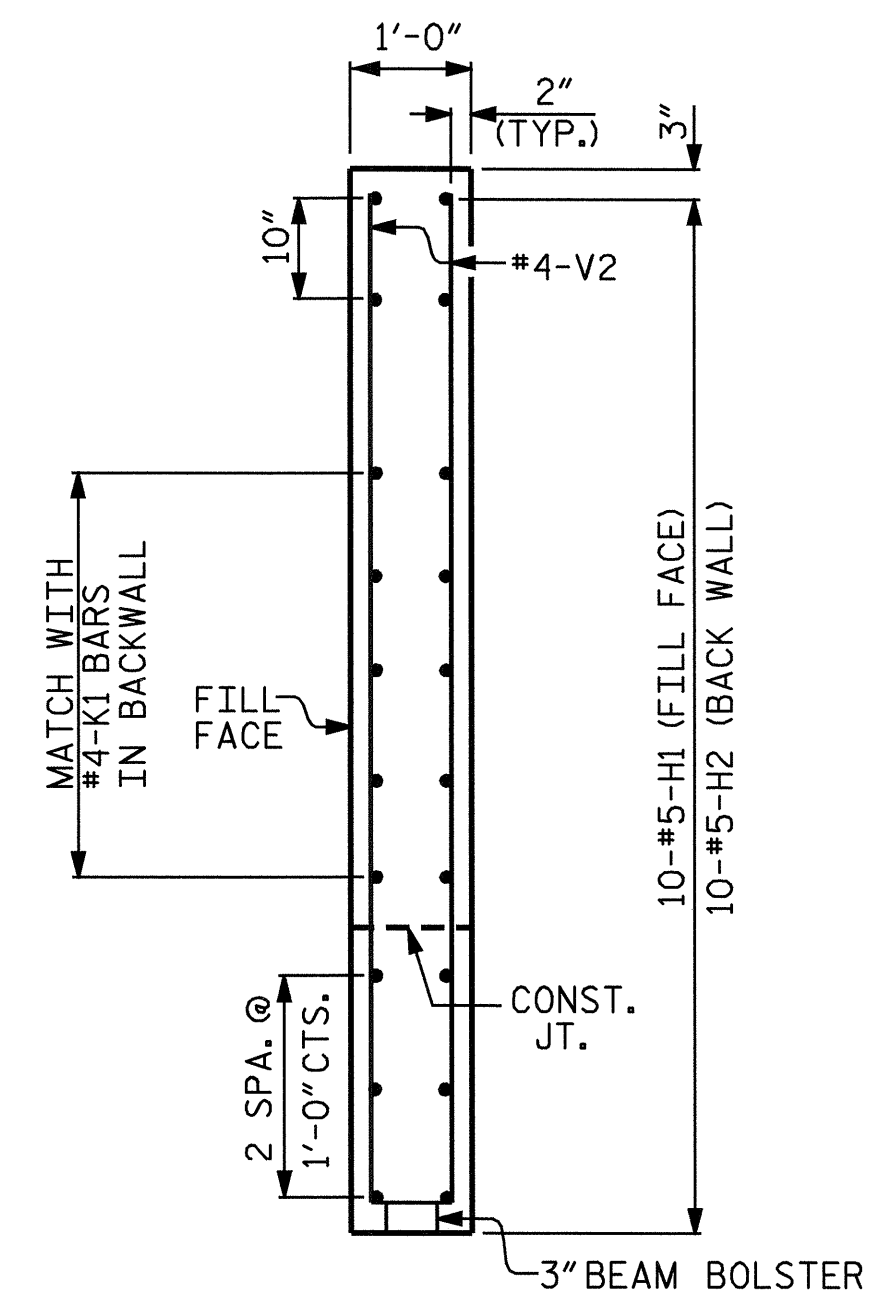
SECTION X-X



ELEVATION OF WING W1



ELEVATION OF WING W2

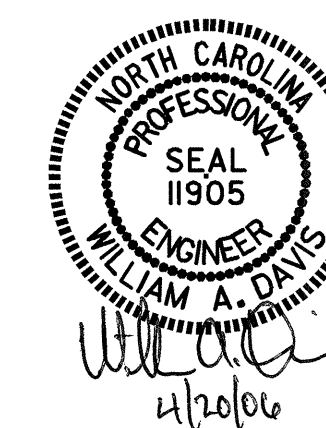


SECTION Y-Y

PROJECT NO. B-4199
 McDOWELL COUNTY
 STATION: 13+30.25 -L-

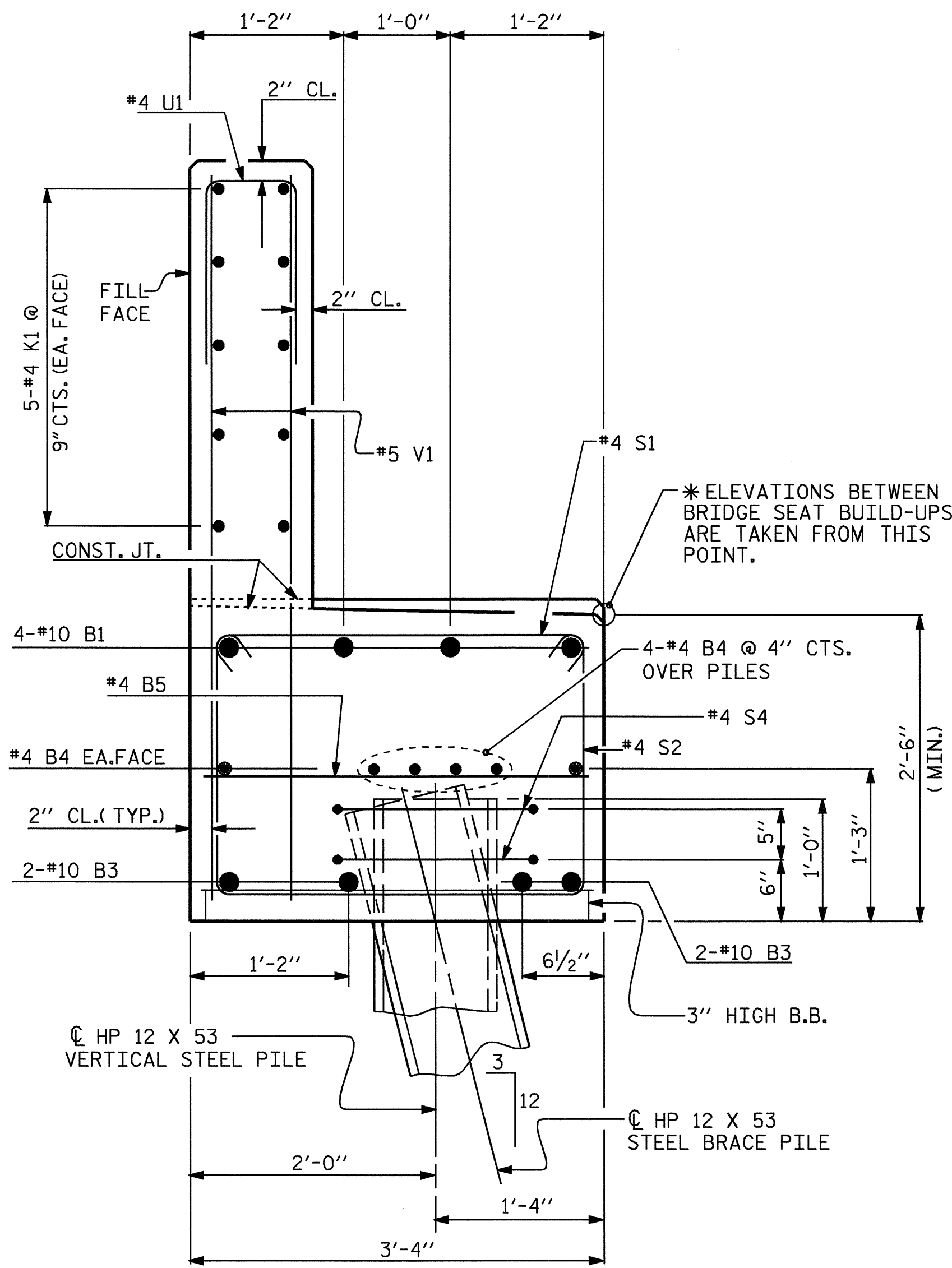
SHEET 2 OF 3

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

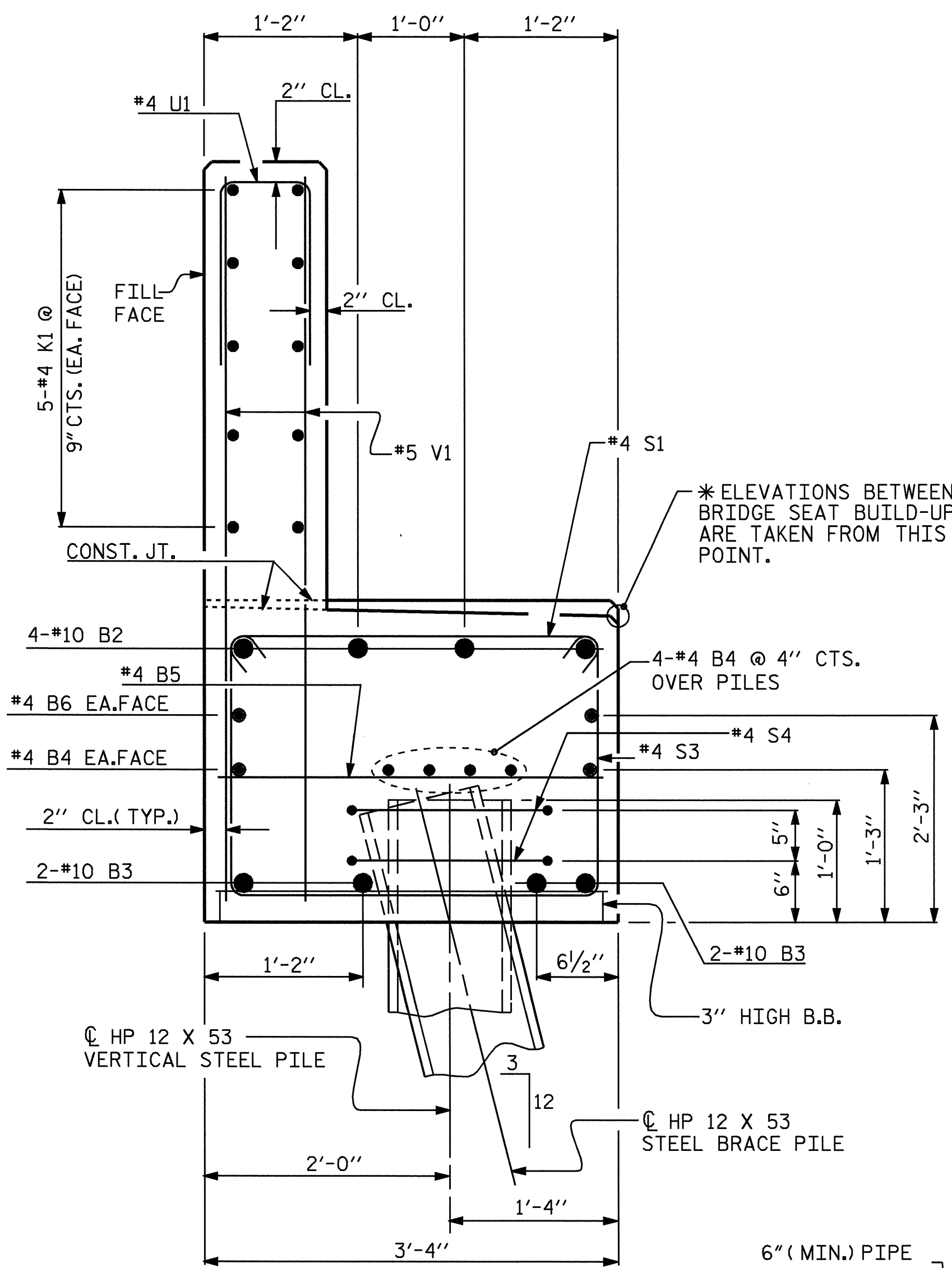


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 CHECKED BY : J.G. KHARVA DATE : 10/25/05

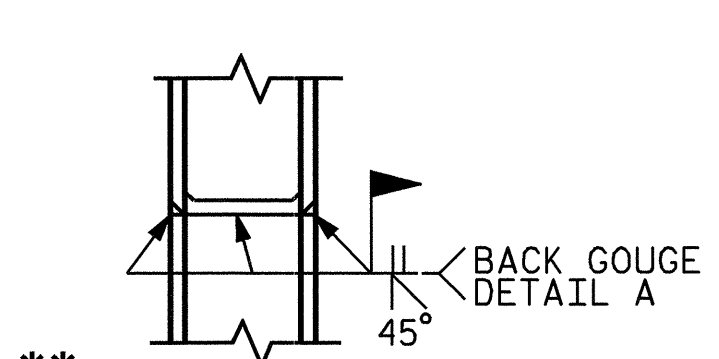
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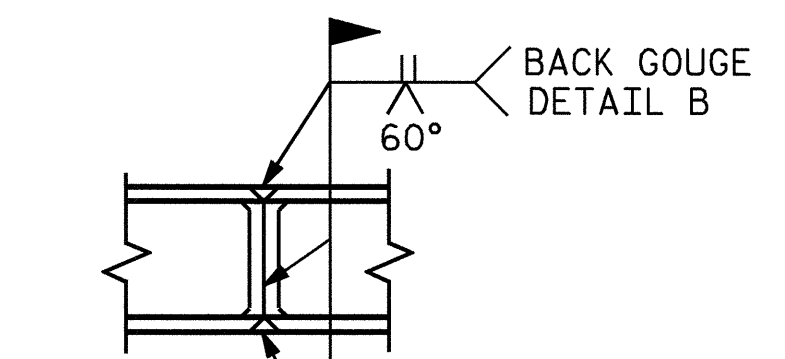
SECTION A-A



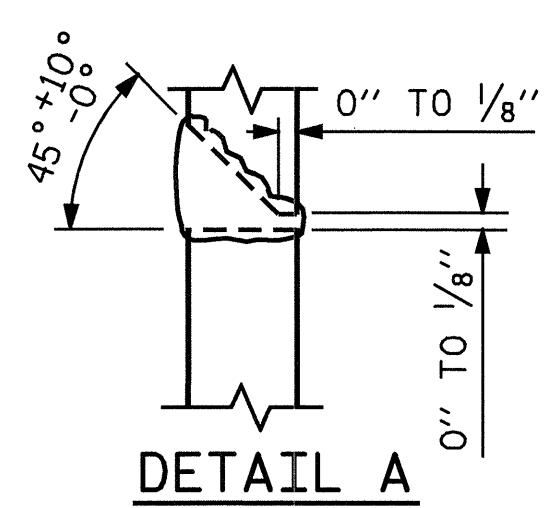
SECTION B-B



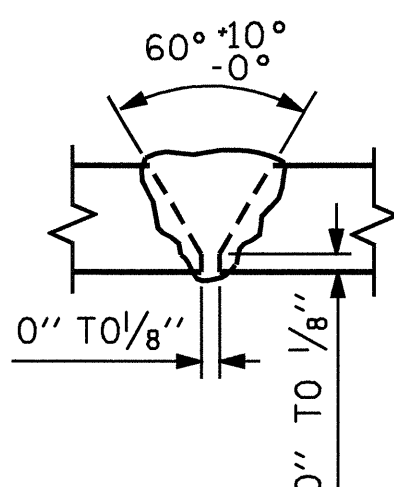
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL



DETAIL A

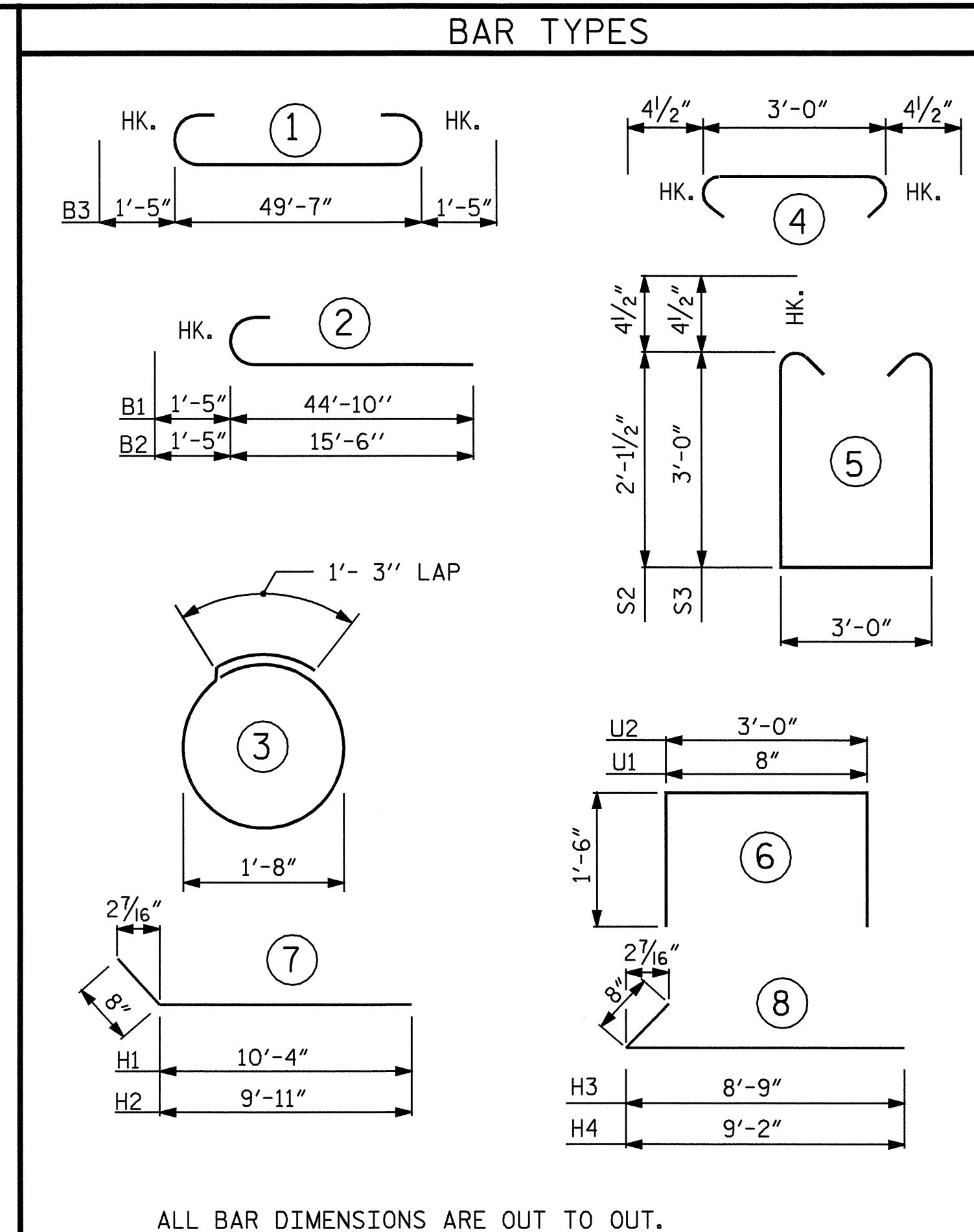


DETAIL B

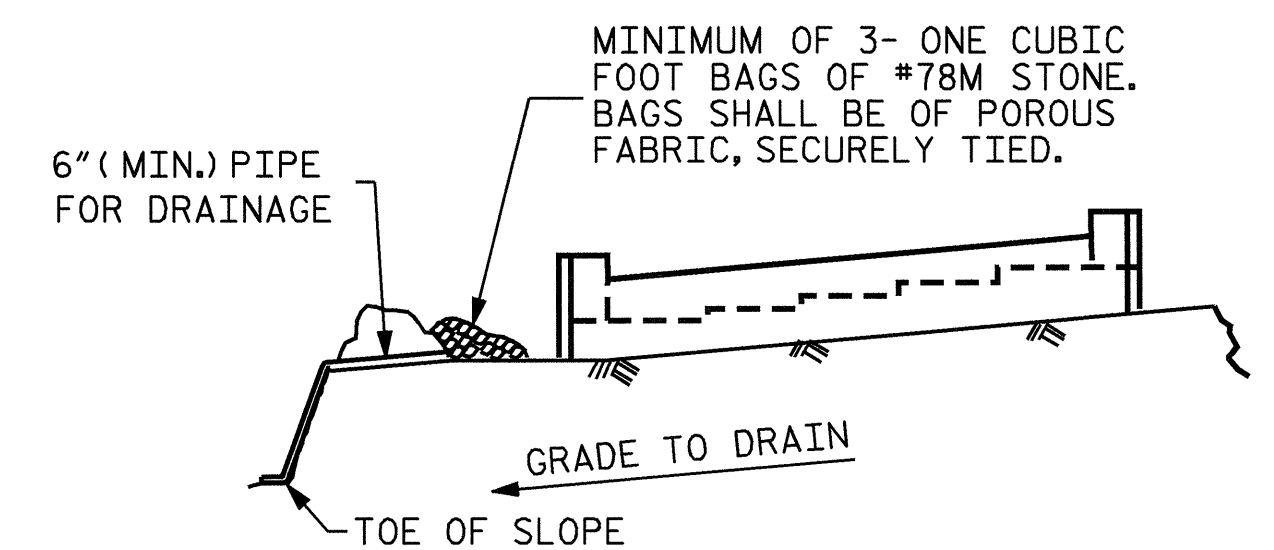
PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.

DRAWN BY : G. O. COOPER DATE : 6/17/05
CHECKED BY : J. G. KHARVA DATE : 10/25/05



ALL BAR DIMENSIONS ARE OUT TO OUT.

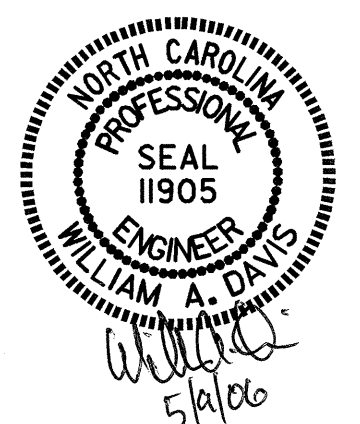


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



BILL OF MATERIAL

END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	2	46'-3"	796
B2	4	#10	2	16'-11"	291
B3	4	#10	1	52'-5"	902
B4	12	#4	STR	26'-1"	468
B5	18	#4	STR	3'-0"	36
B6	2	#4	STR	8'-8"	12
B7	4	#4	STR	8'-10"	24
H1	10	#5	7	11'-0"	115
H2	10	#5	7	10'-7"	110
H3	10	#5	8	9'-5"	98
H4	10	#5	8	9'-10"	103
K1	10	#4	STR	26'-1"	25
K2	8	#4	STR	3'-9"	20
S1	44	#4	4	3'-9"	110
S2	29	#4	5	8'-0"	155
S3	15	#4	5	9'-9"	98
S4	16	#4	3	6'-6"	69
U1	43	#4	6	3'-8"	105
U2	6	#4	6	6'-0"	24
V1	86	#5	STR	5'-3"	472
V2	28	#4	STR	7'-9"	145
V3	30	#4	STR	6'-11"	139
REINFORCING STEEL					LBS. 4317
CLASS A CONC. BREAKDOWN					
POUR 1 (CAP & BACKWALL)				C.Y.	19.6
POUR 2 (WINGWALLS)				C.Y.	9.7
TOTAL				C.Y.	29.3
HP 12X53 STEEL PILES					
NUMBER = 8				LIN. FT. =	80.0
STEEL PILE POINTS					EA. 8

SPLICE LENGTH CHART

BARS	SIZE	SPLICE LENGTH
B4	#4	2'-5"

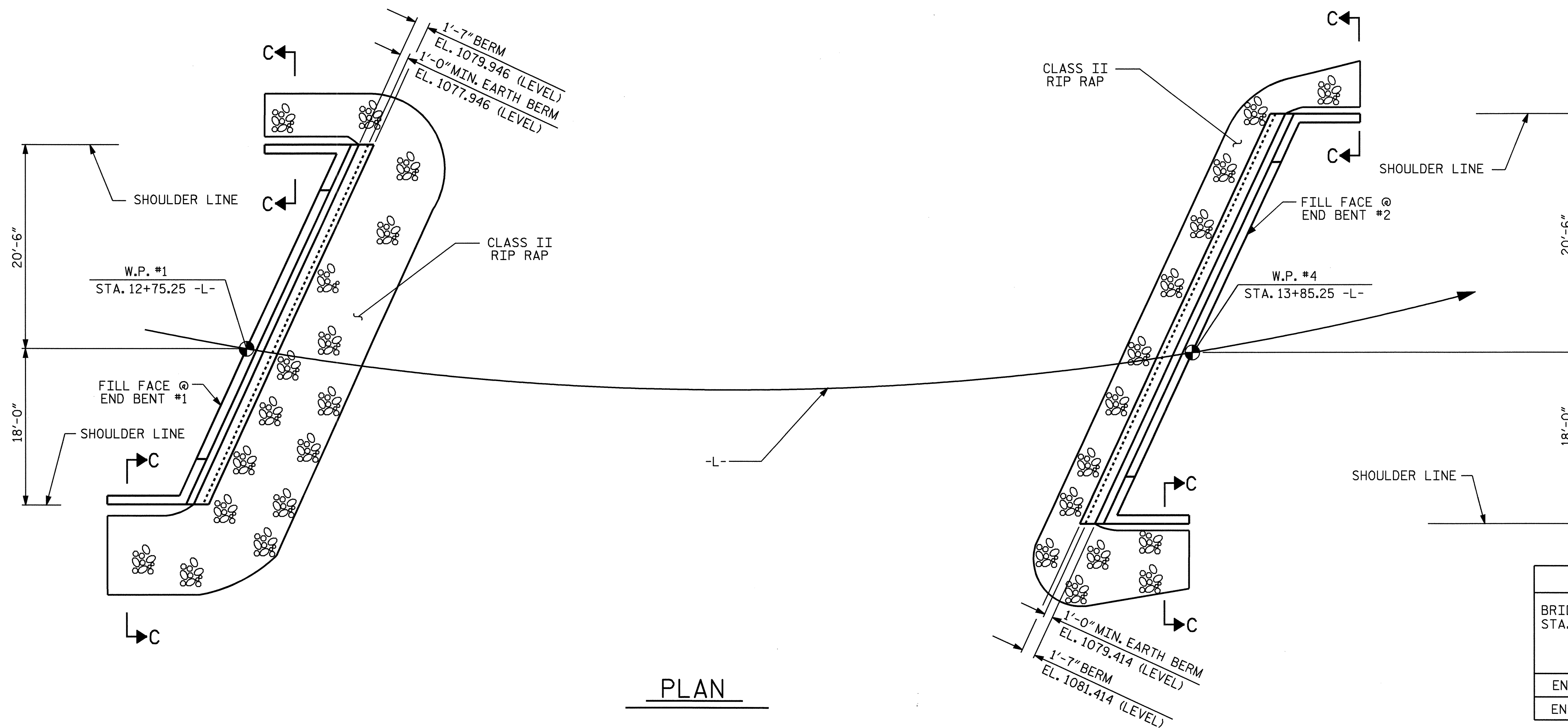
PROJECT NO. B-4199
McDOWELL COUNTY
STATION: 13+30.25 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

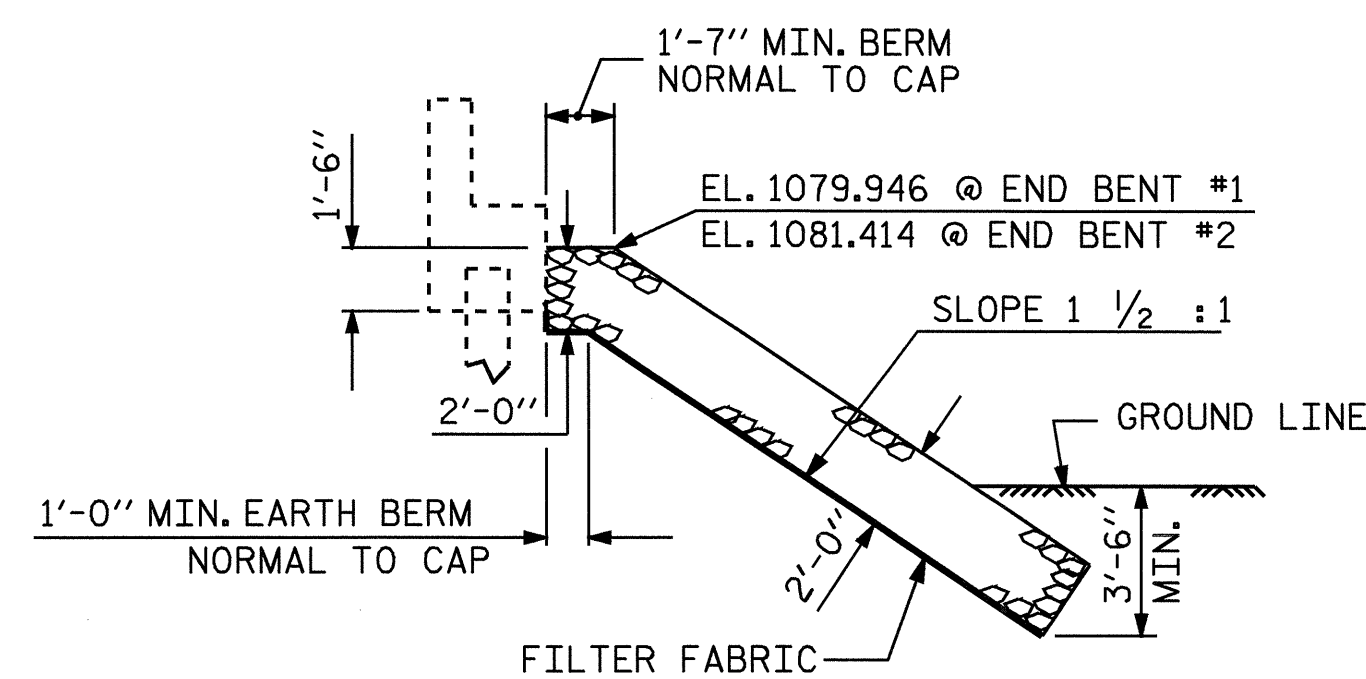
SUBSTRUCTURE
END BENT #2

REVISIONS						SHEET NO. S-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

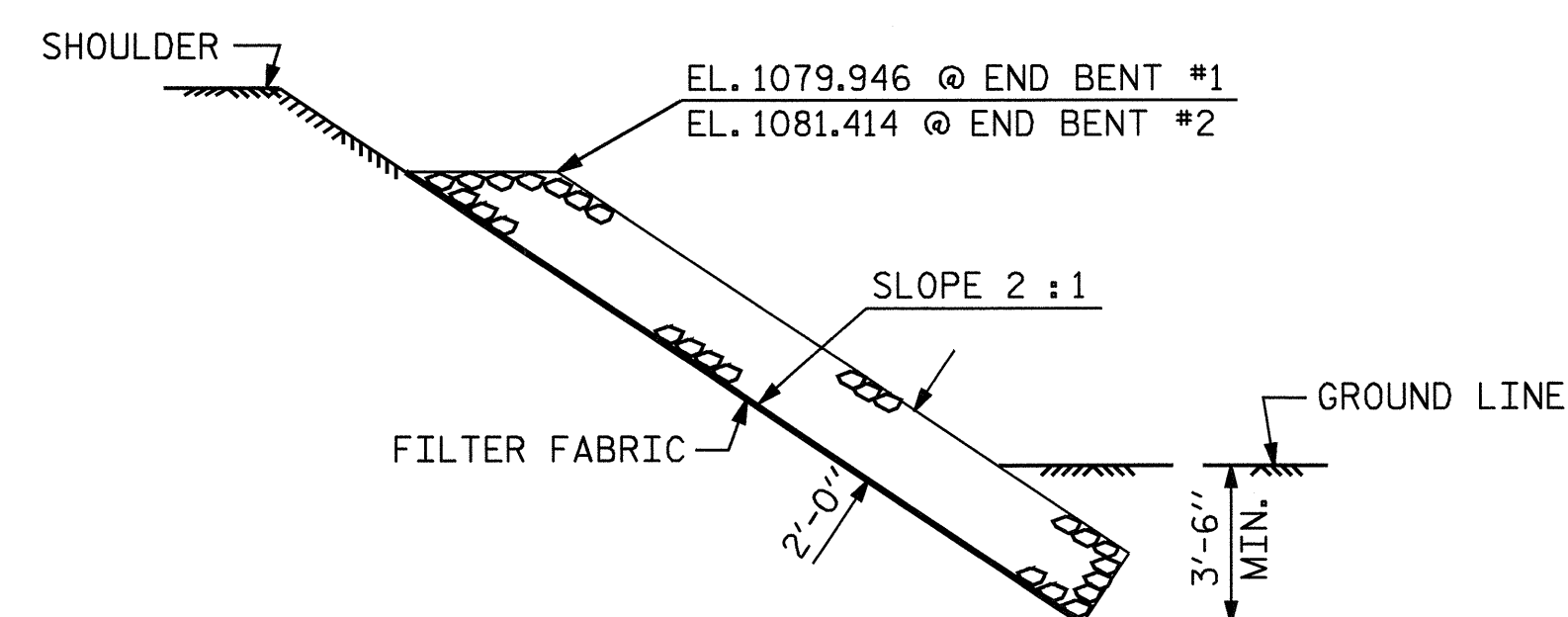


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+30.25 -L-	PLAIN RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	143	159
END BENT #2	81	90



C SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-



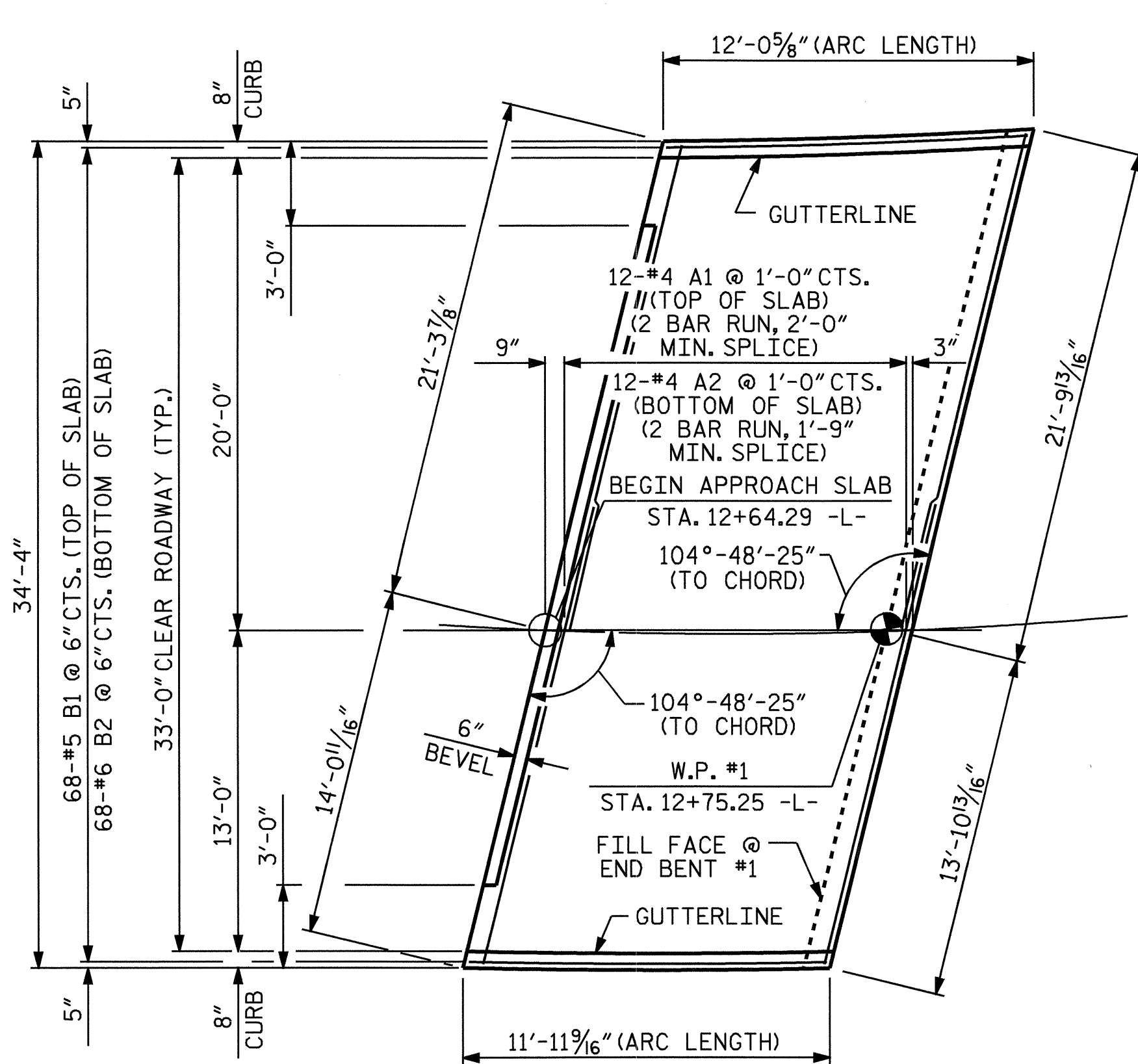
ASSEMBLED BY : J.L. WALTON	DATE : 9/05
CHECKED BY : J.G. KHARVA	DATE : 9/05
DRAWN BY : REK 1/84	REV. 7/17/98 REK/RWW
CHECKED BY : RDU 1/84	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

18-APR-2006 08:10
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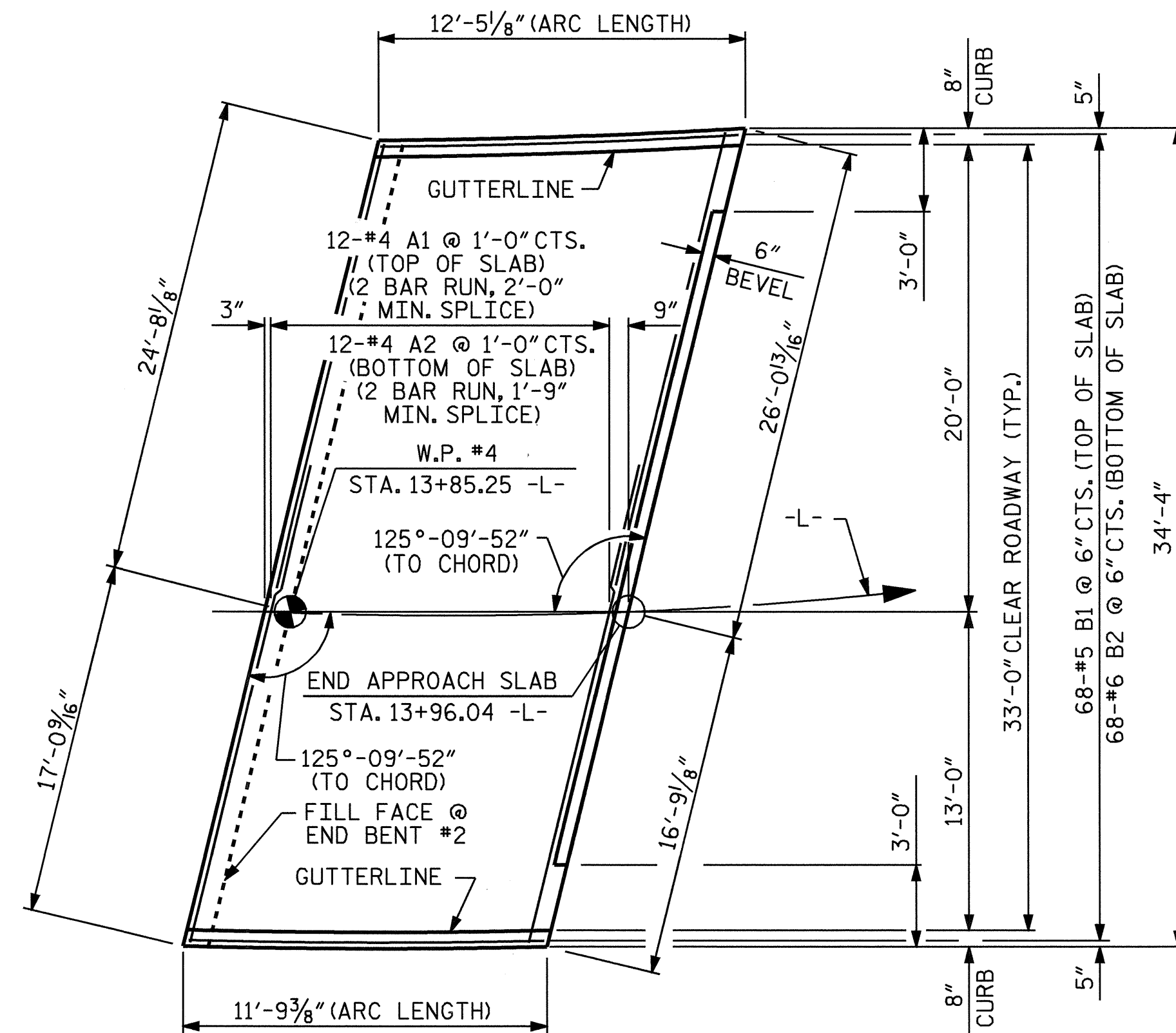
SKREW < 90°

STD. NO. RR1

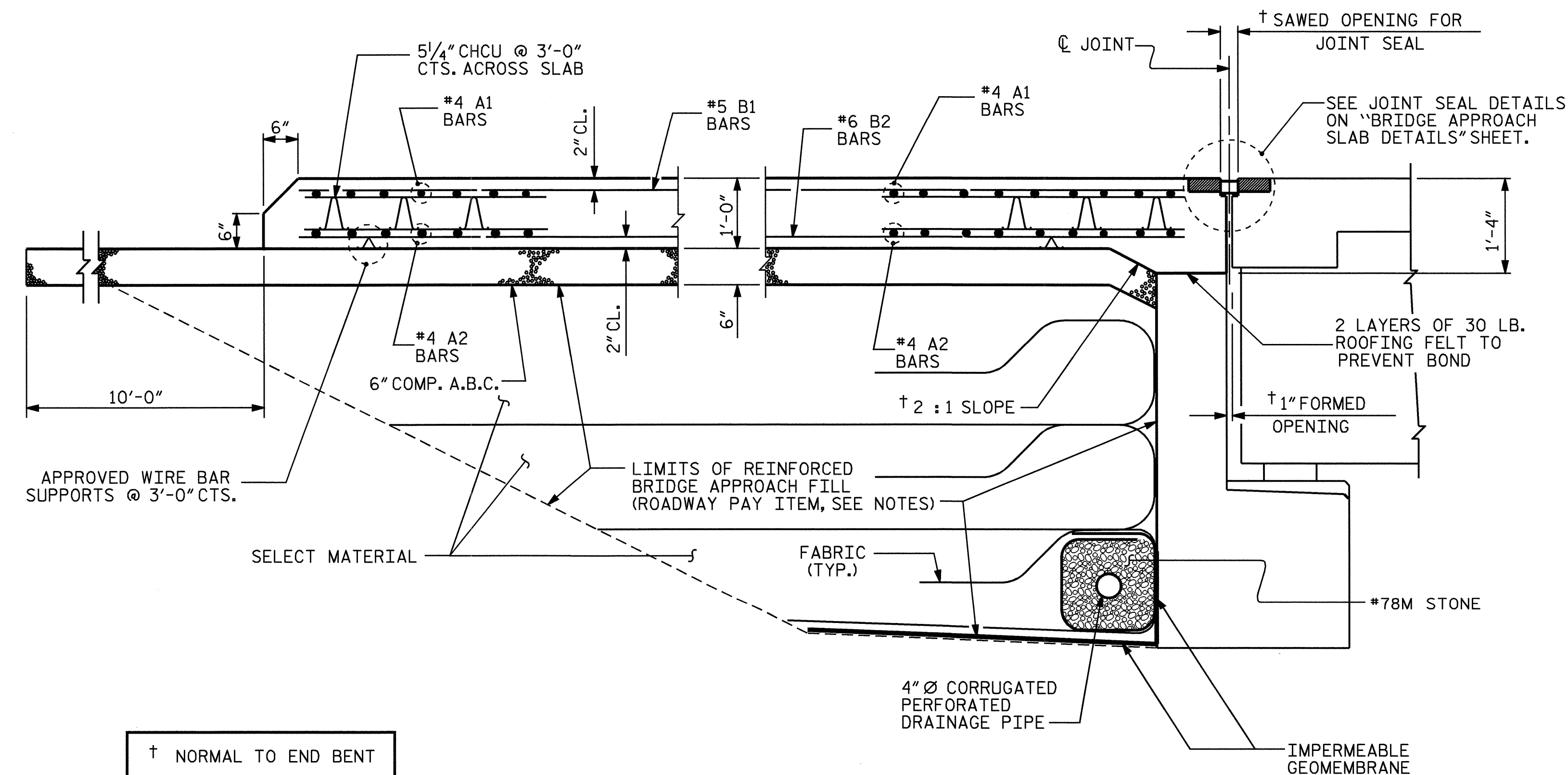
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-31
2			4			TOTAL SHEETS 33



PLAN @ END BENT #1



PLAN @ END BENT #2



SECTION THRU SLAB

NOTES

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

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

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

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 EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF 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 EXTEND 1'-0" BEYOND THE 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 EXTEND 1'-0" BEYOND THE 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.

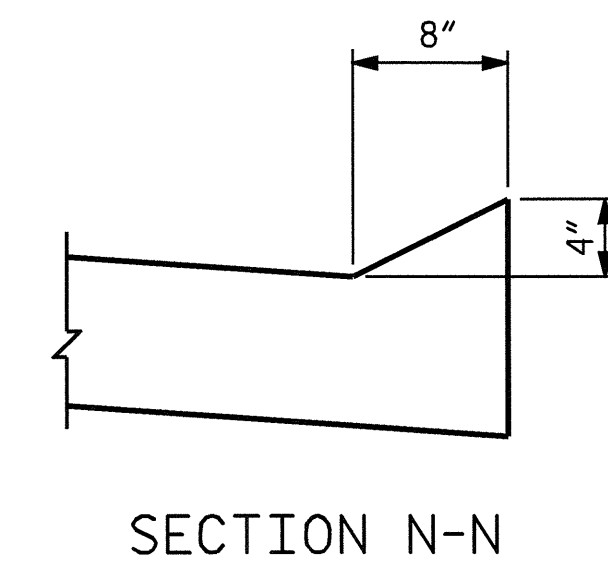
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET AND END POST.

WITH EVAZOTE JOINT SEAL

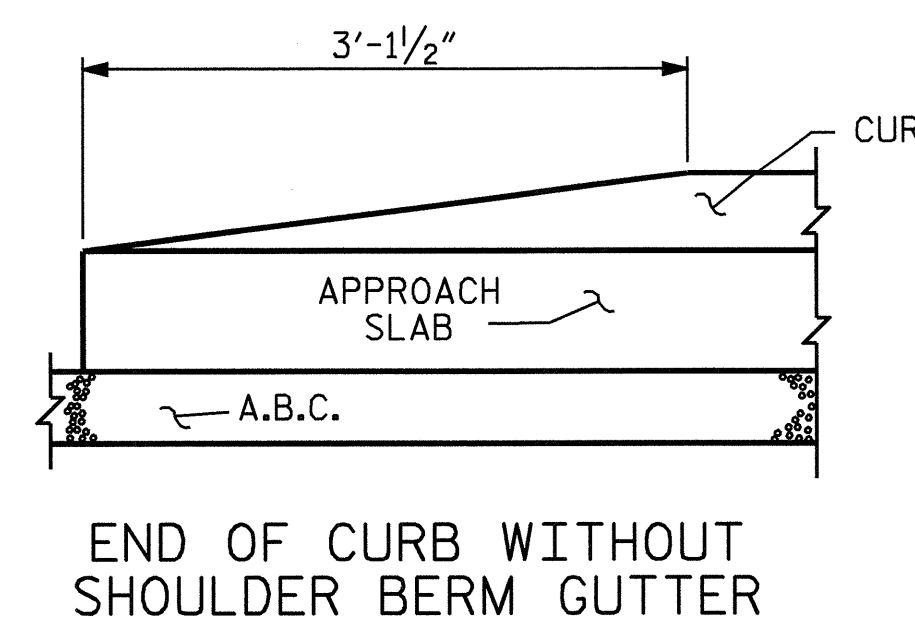
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

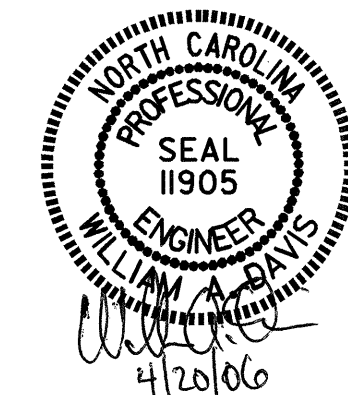
CURB DETAILS

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	18'-6"	297
A2	24	#4	STR	18'-5"	295
*B1	68	#5	STR	11'-1"	786
B2	68	#6	STR	11'-7"	1183
REINFORCING STEEL				LBS.	1478
*EPOXY COATED REINFORCING STEEL				LBS.	1083
CLASS AA CONCRETE				C. Y.	15.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	21'-8"	347
A2	24	#4	STR	21'-6"	345
*B1	68	#5	STR	10'-9"	762
B2	68	#6	STR	11'-4"	1158
REINFORCING STEEL				LBS.	1503
*EPOXY COATED REINFORCING STEEL				LBS.	1109
CLASS AA CONCRETE				C. Y.	15.8

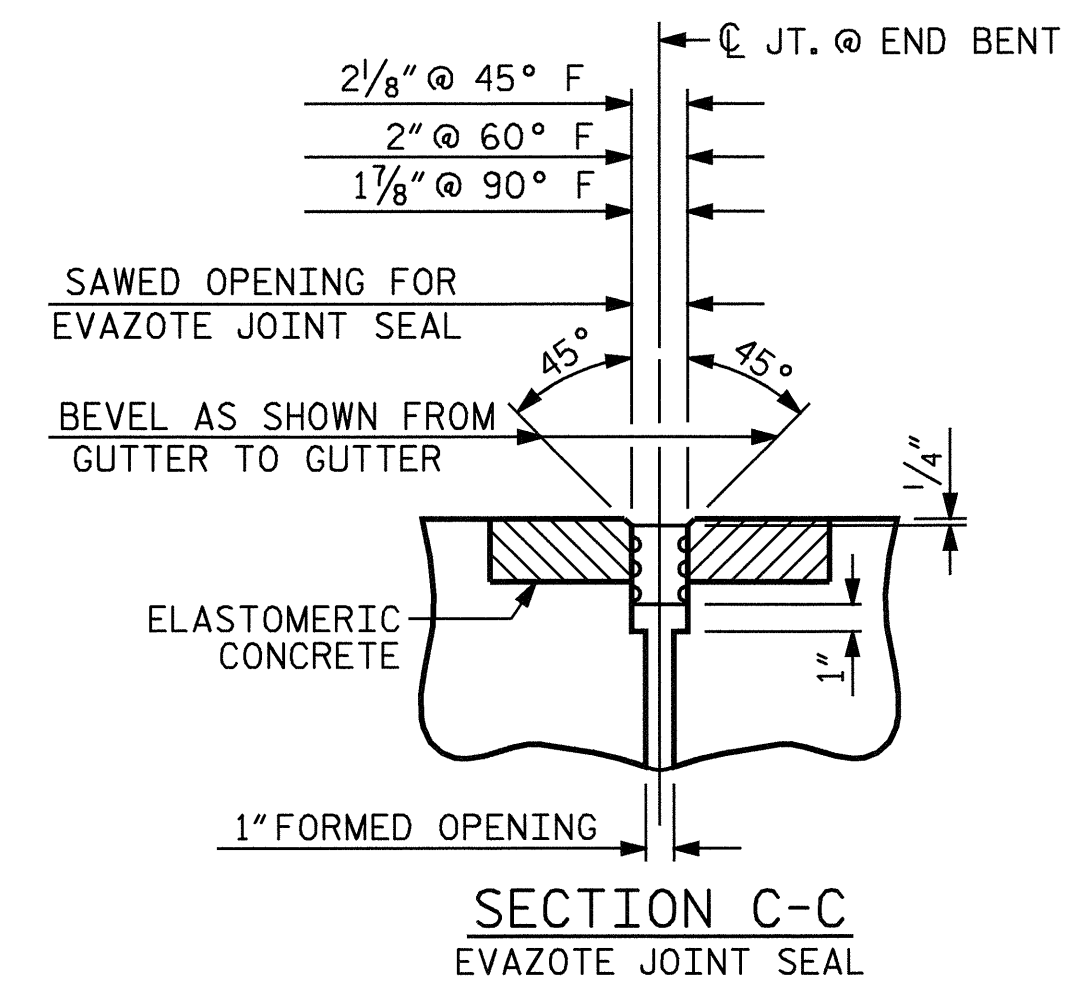
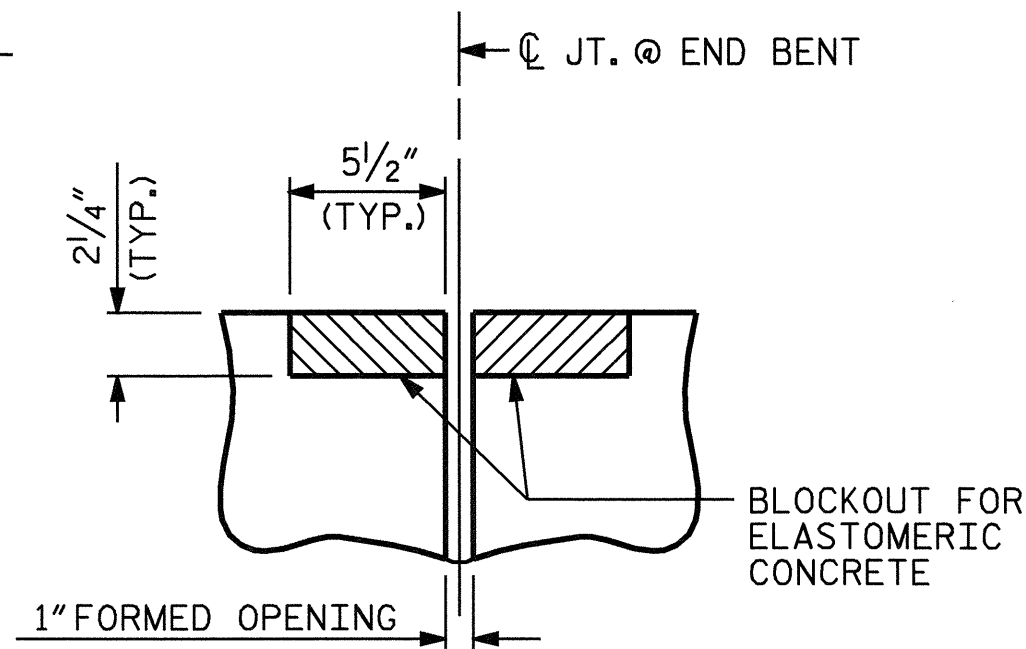
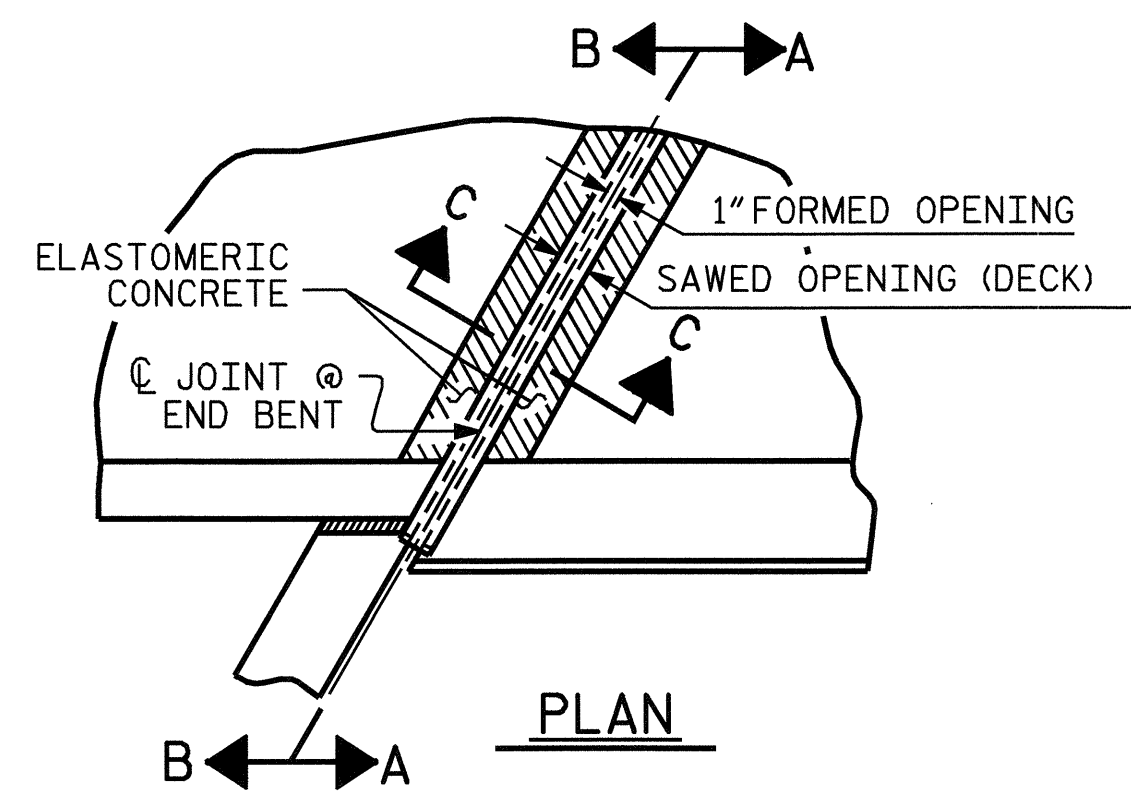
PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					33



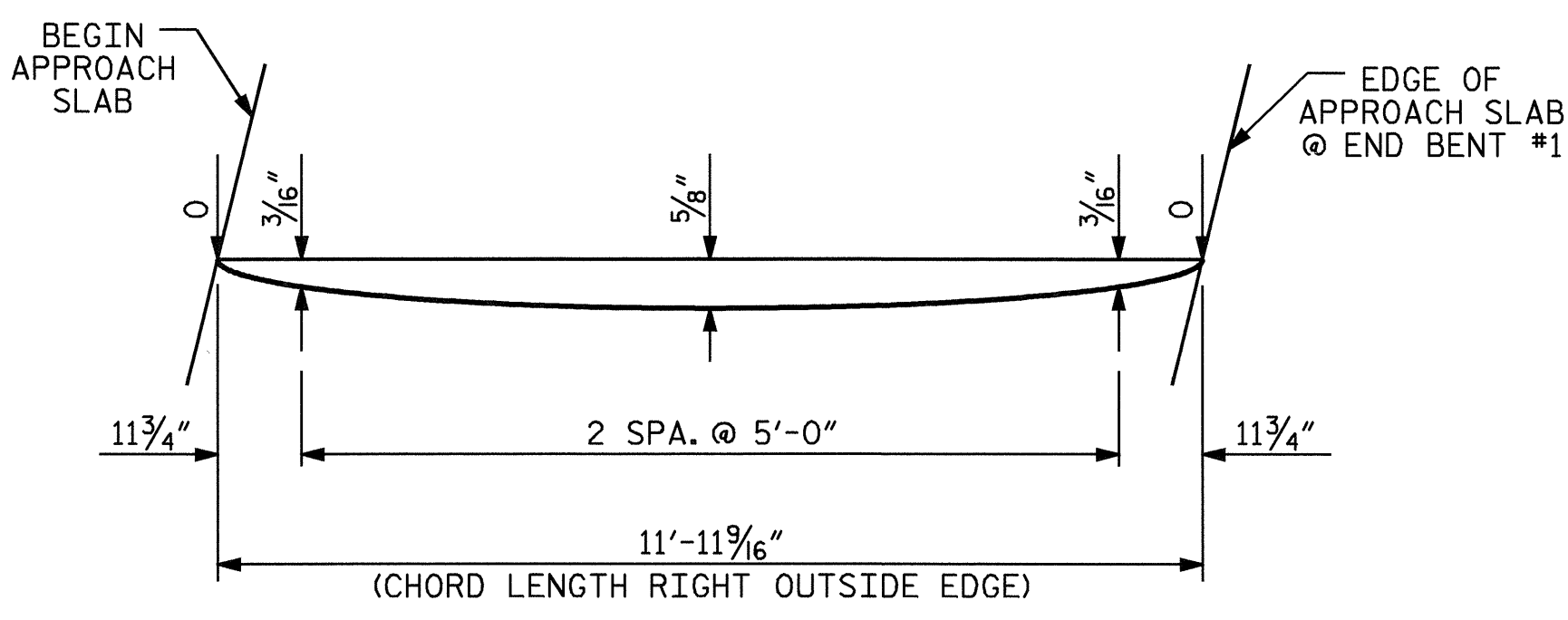
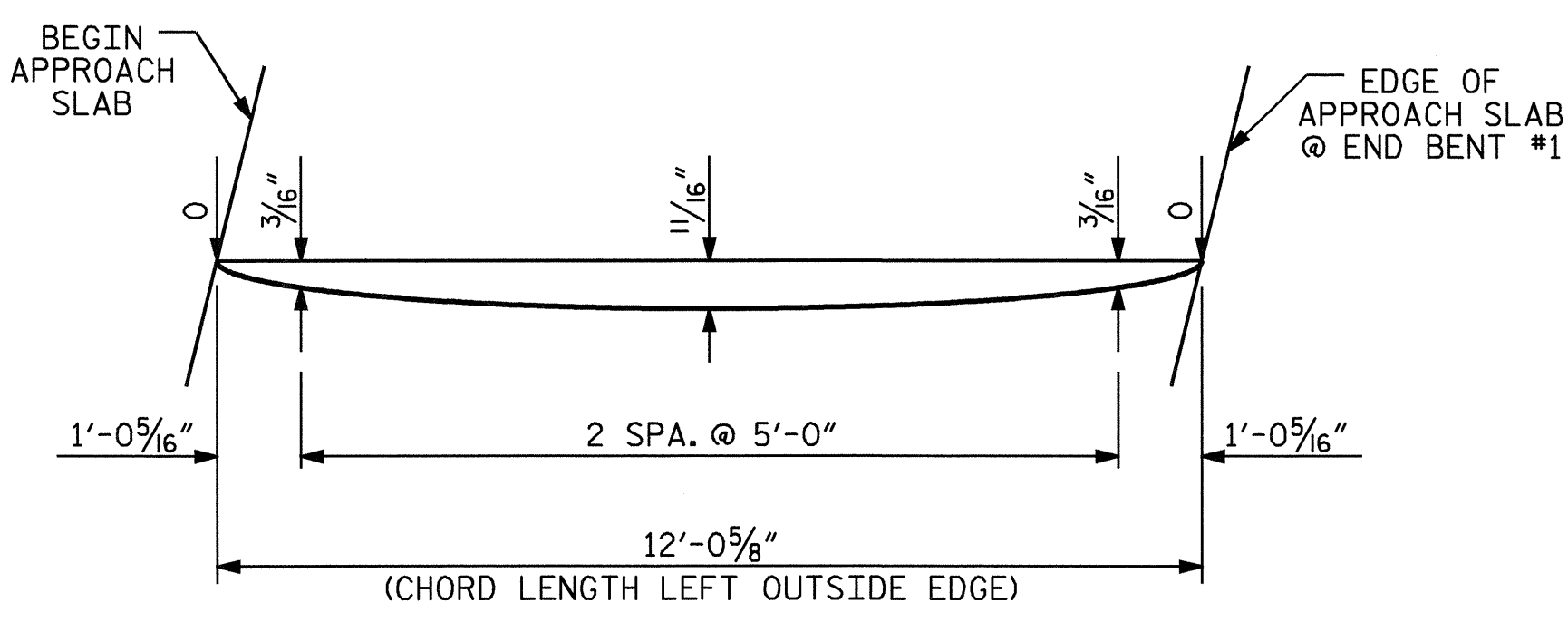
ASSEMBLED BY : J.L. WALTON	DATE : 10/05
CHECKED BY : J.G. KHARVA	DATE : 10/05
DRAWN BY : EEM	3/95
CHECKED BY : VAP	3/95
REV. 10/17/00	RWW/LES
REV. 7/10/01	LES/RDR
REV. 5/7/03R	RWW/JTE



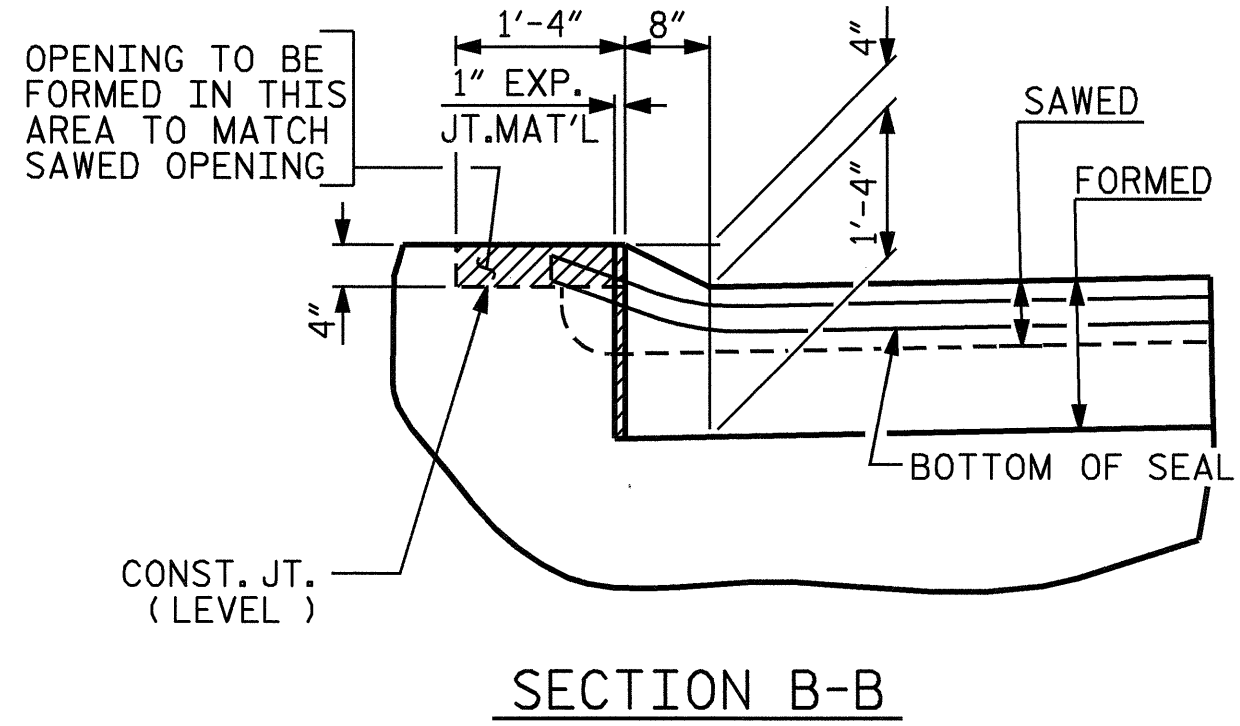
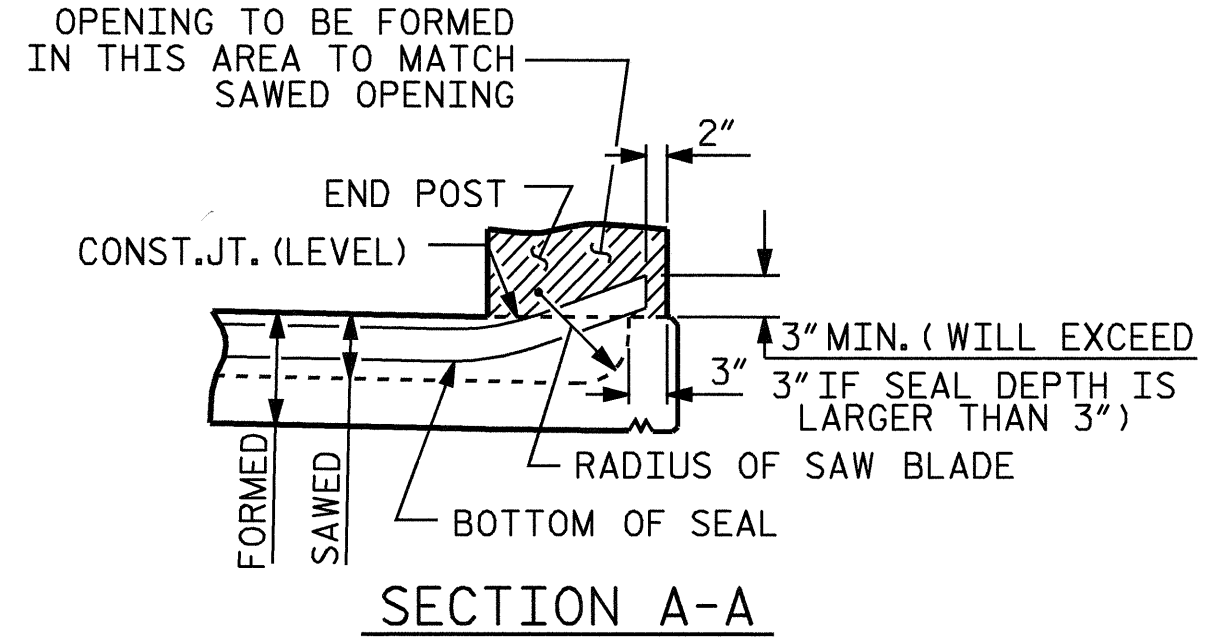
ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.1
2	6.9
TOTAL	13.3

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

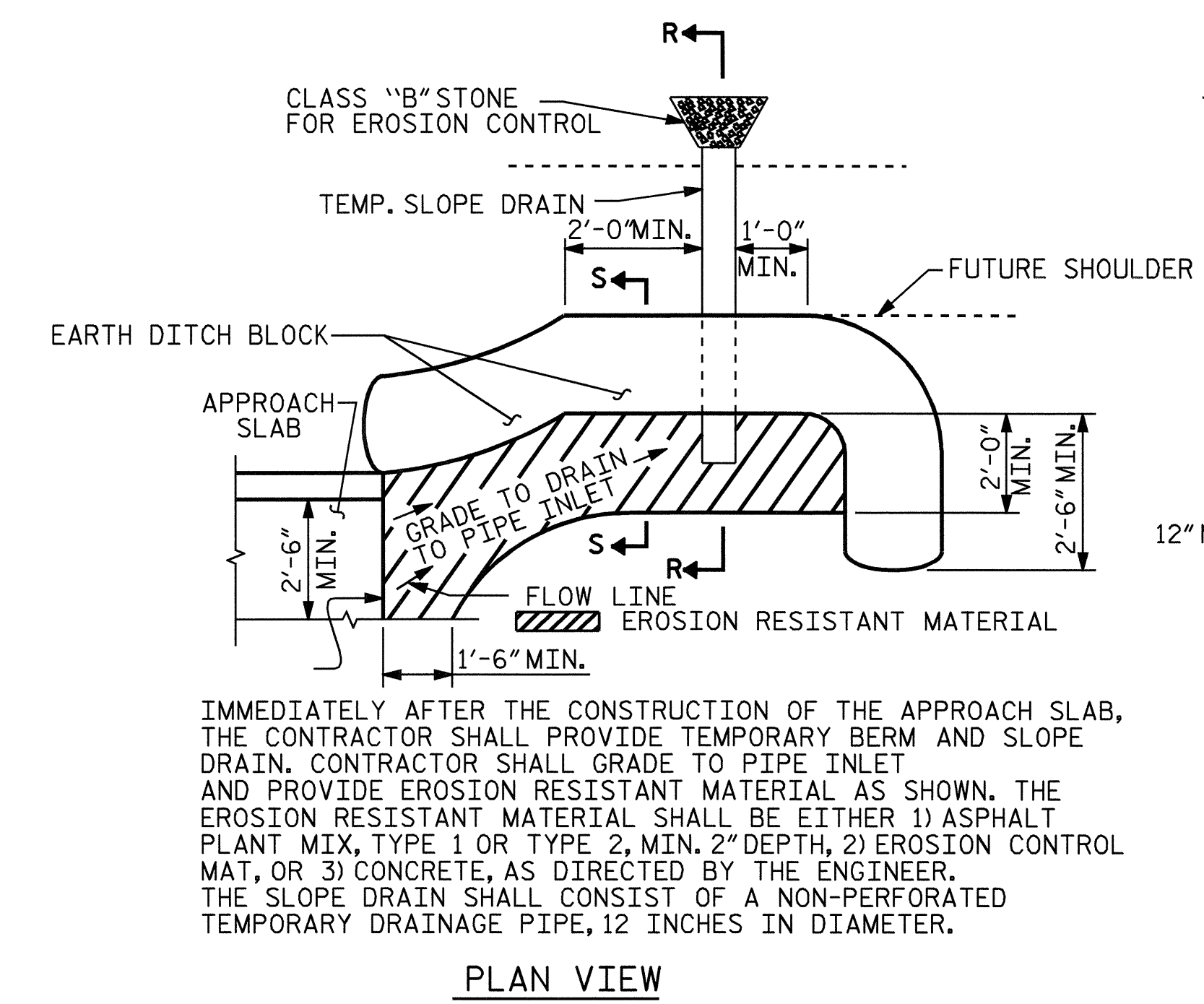
JOINT SEAL DETAILS @ END BENT (FOR METAL RAILS WITH CURB)



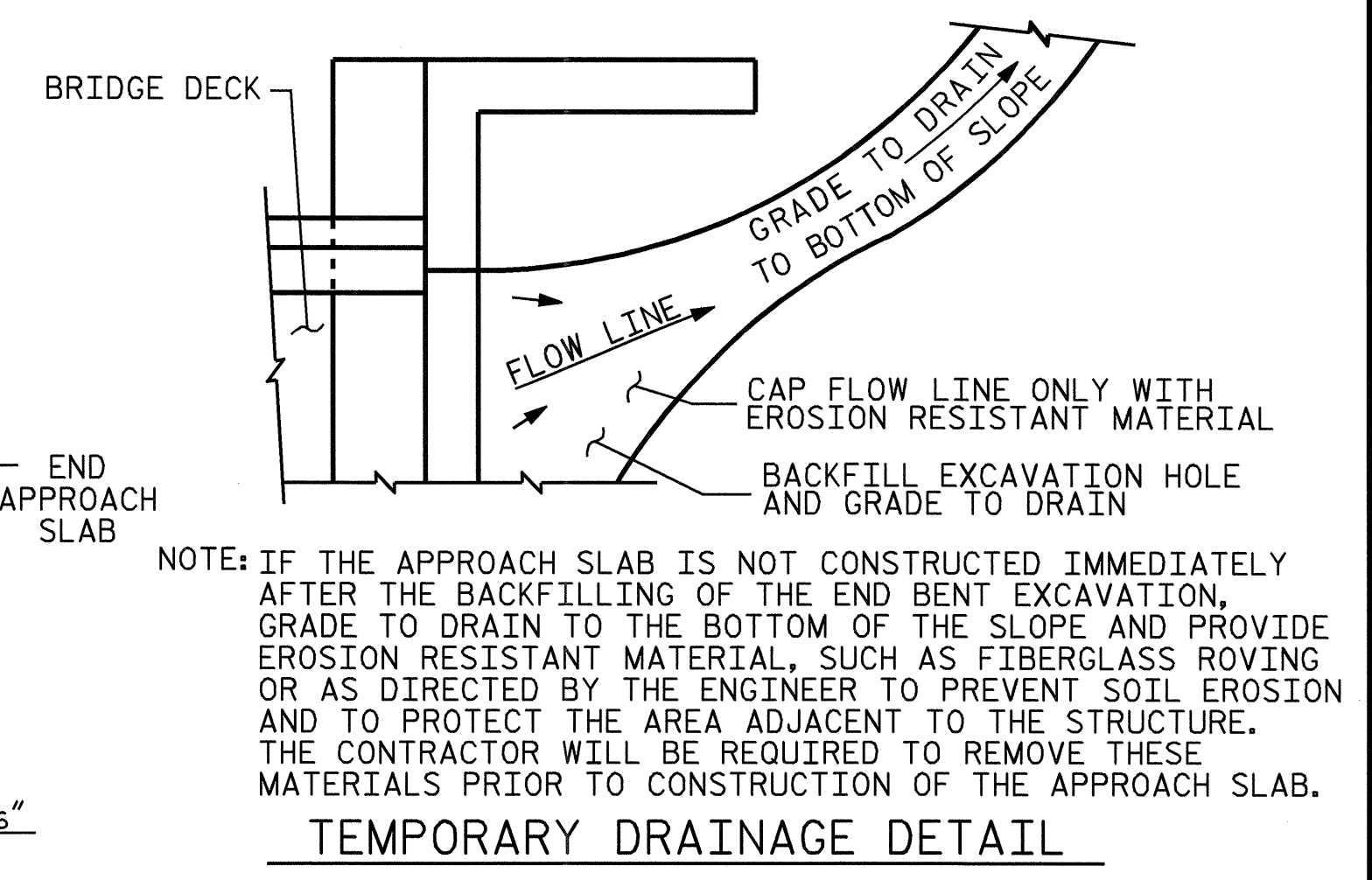
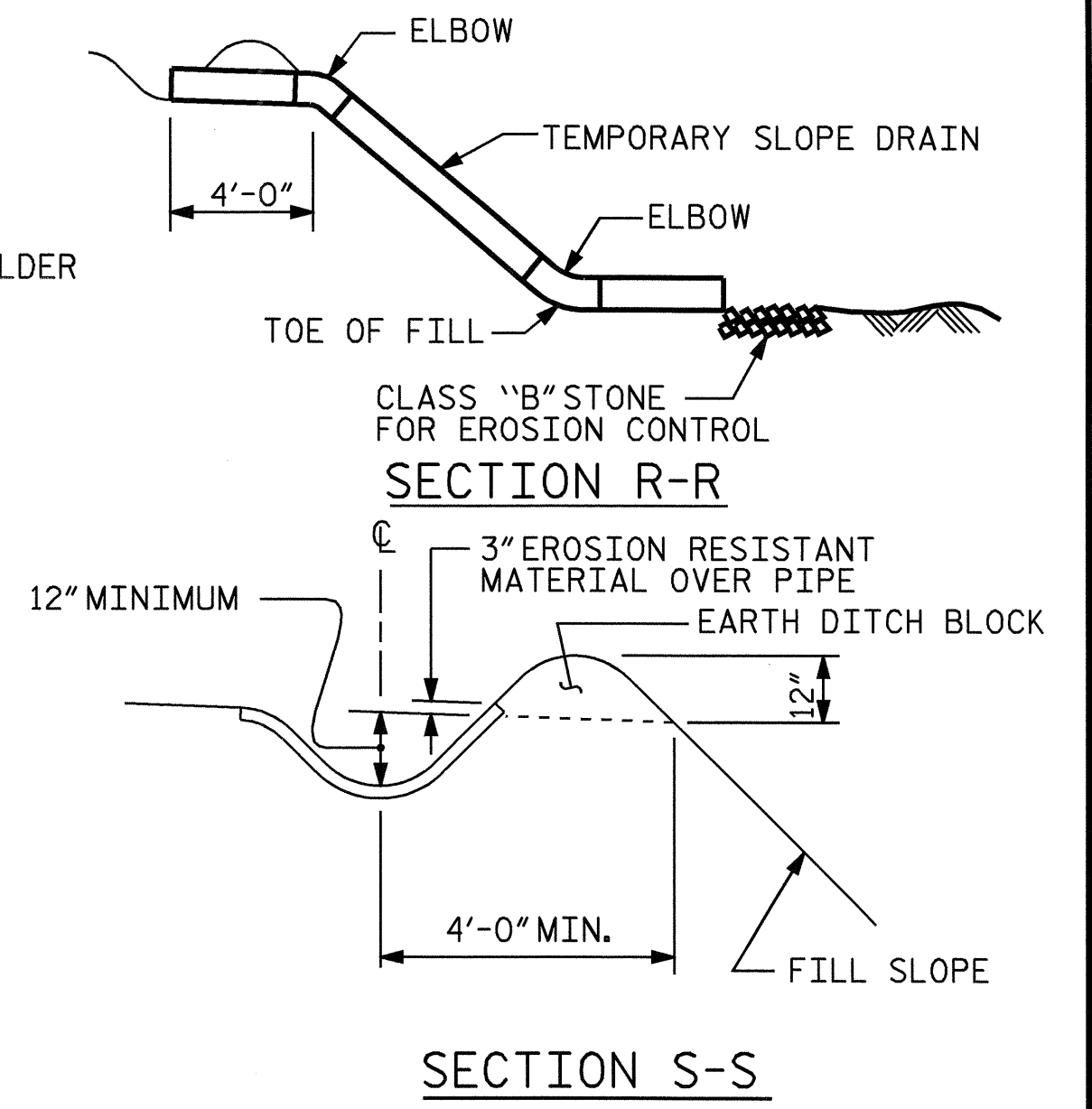
ARC OFFSETS @ END BENT #1



SECTION B-B



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



PROJECT NO. B-4199
McDOWELL COUNTY
 STATION: 13+30.25 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					1988
					SHEET NO. S-33
					TOTAL SHEETS 33

STD. NO. BAS10

ASSEMBLED BY :	J.L. WALTON	DATE :	10/05
CHECKED BY :	J.G. KHARVA	DATE :	10/05
DRAWN BY :	FCJ	REV. 8/16/99	MAB/LES
CHECKED BY :	ARB	REV. 10/17/00	RWW/LES
		REV. 5/7/03	RWW/JTE

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 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 MATERIAL HANDLING UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBER 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. FINES 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.