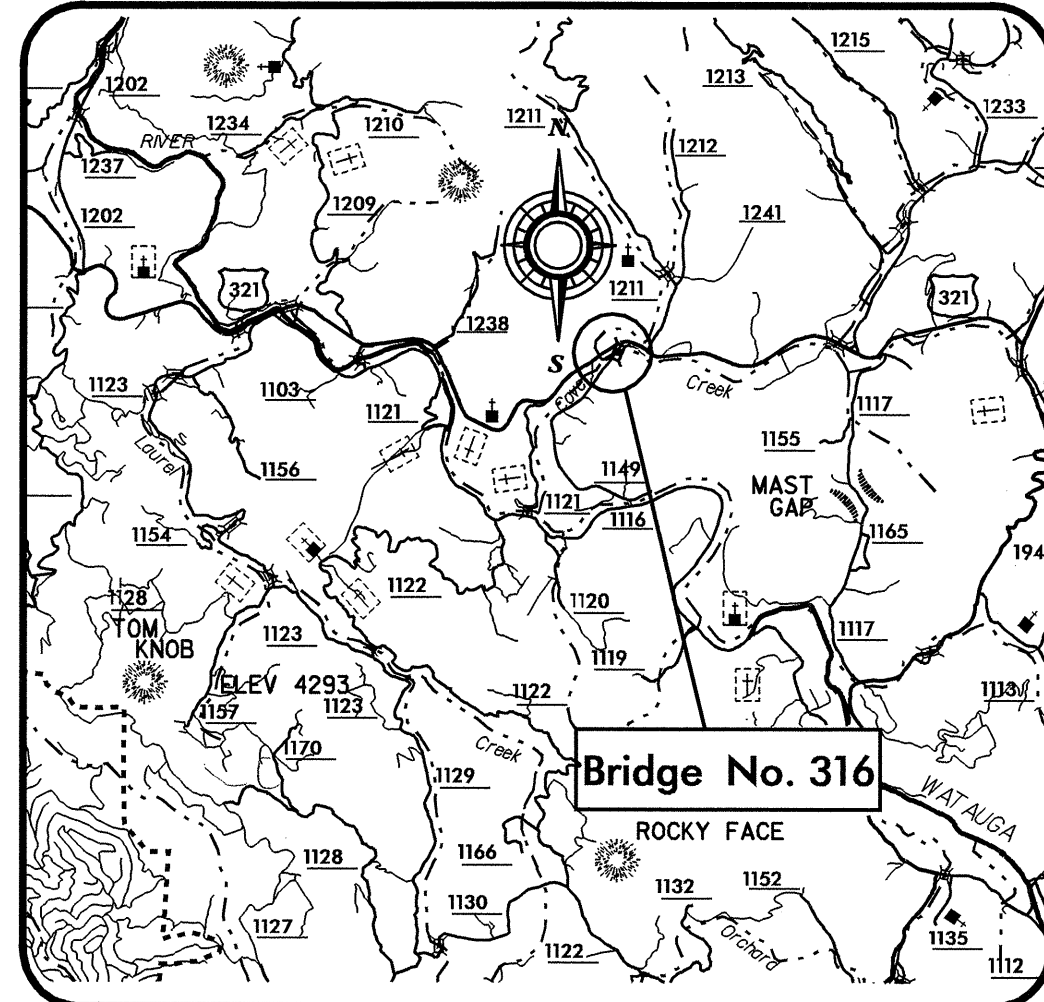


CONTRACT: C201510 TIP PROJECT: B-3922

STRUCTURE

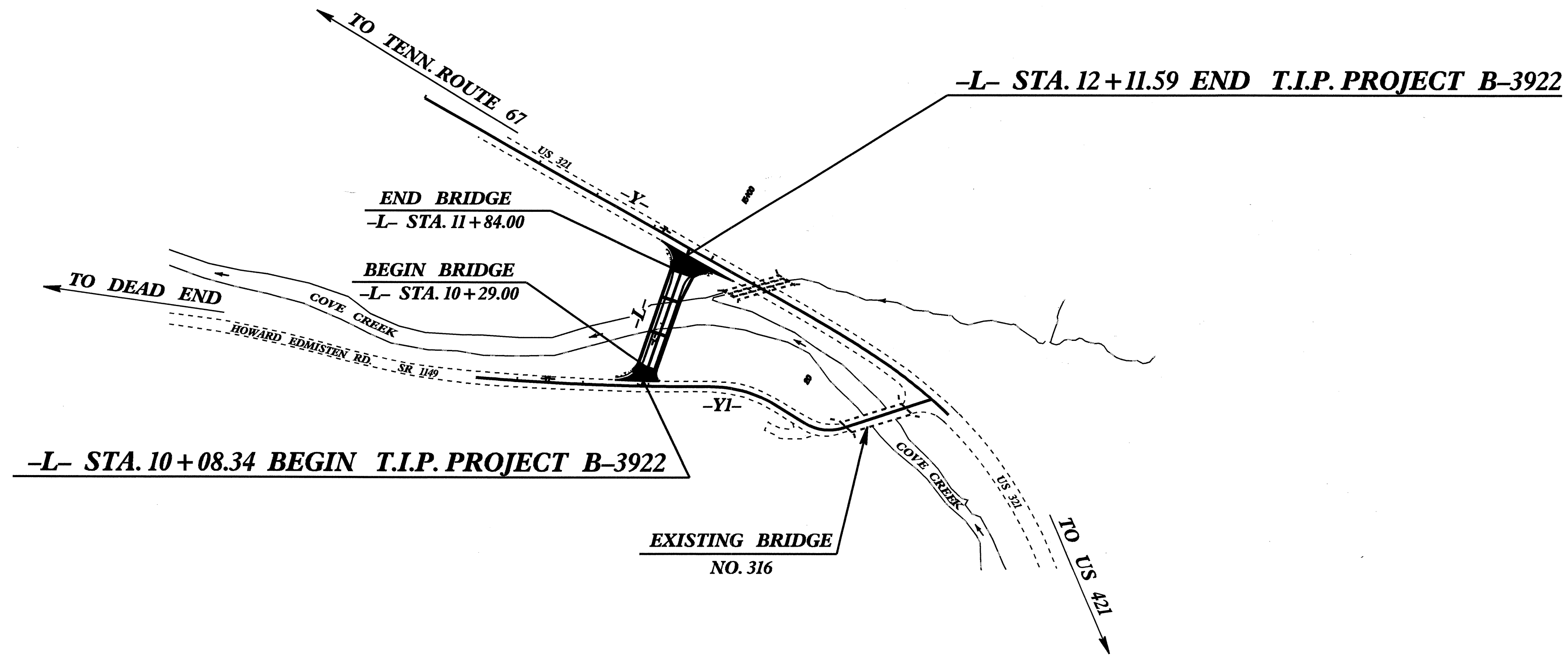


VICINITY MAP

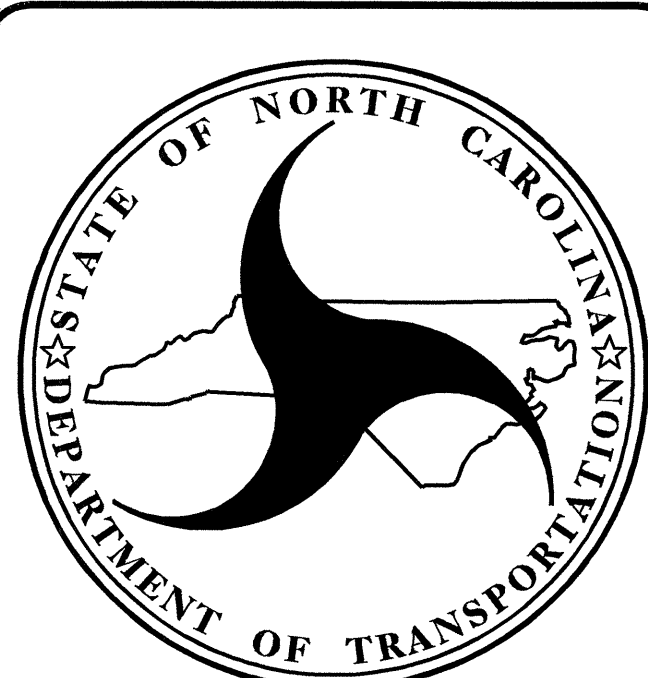
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WATAUGA COUNTY

**LOCATION: BRIDGE NO. 316 OVER COVE CREEK
ON SR 1149 (HOWARD EDMINSTEN ROAD)**

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



STATE	STATE PROJECT REFERENCE NO.	
N.C.	B-3922	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION
33356.1.1	BRZ-1149(3)	PE
33356.2.2	BRZ-1149(3)	RW, UTIL.
33356.3.1	BRZ-1149(3)	CONSTRUCTION



DESIGN DATA

ADT 2005 =	340
ADT 2025 =	600
DHV =	15 %
D =	60 %
* T =	3 %
V =	30 MPH

* (1 % TTST & 2% DUAL)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3922	=	0.009 MI
LENGTH STRUCTURE TIP PROJECT B-3922	=	0.029 MI
TOTAL LENGTH TIP PROJECT B-3922	=	0.038 MI

2002 STANDARD SPECIFICATIONS

LETTING DATE :
 MAY 16, 2006

Prepared In the Office of:
**DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**
1000 Birch Ridge Drive Raleigh, N.C. 27610

B. S. COX, P. E.
PROJECT ENGINEER

D. E. PETREY, P. E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
RALEIGH, N.C. 27610

Gregory R. Perpetti
3-7-06

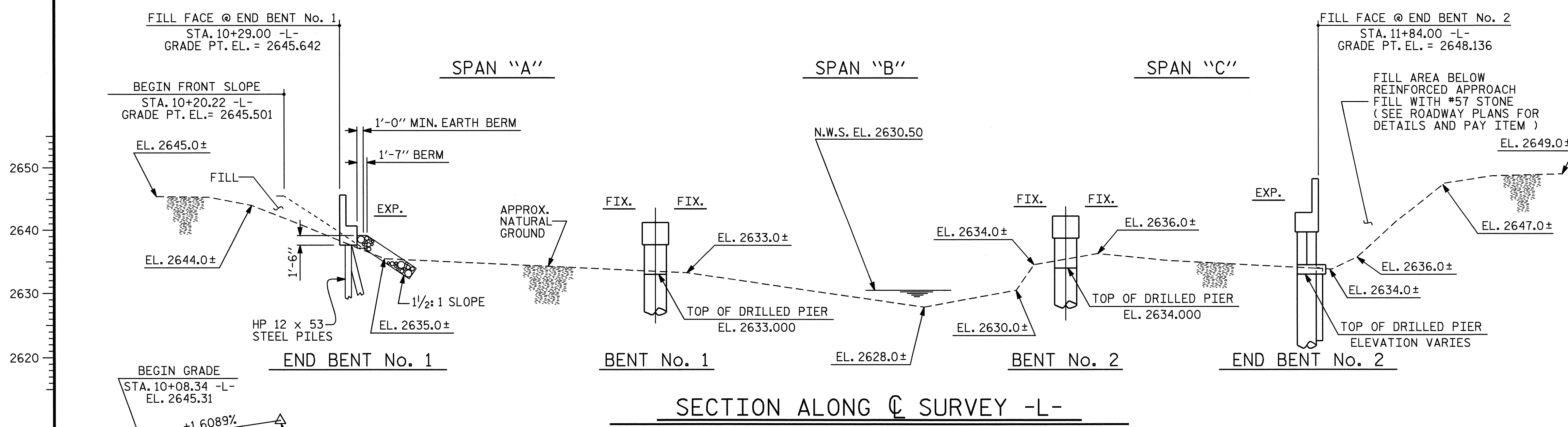
**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

P.E.
STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED
DIVISION ADMINISTRATOR

DATE



NOTES :

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS AT BENTS No. 1 AND No. 2 IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
 AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE LOCATED APPROXIMATELY 375' UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 THE EXISTING STRUCTURE CONSISTS OF THE FOLLOWING :
 SUPERSTRUCTURE - TIMBER FLOOR ON CONTINUOUS I-BEAMS
 SUBSTRUCTURE - END BENTS & BENTS 2 & 4; TIM. POST/CONC. SILL BENTS 1, 3 & 5; DRIVEN PILES
 SPANS - 1 @ 16'-5", 1 @ 14'-4" CONT.; 1 @ 20'-4", 1 @ 19'-8" CONT.; 1 @ 12'-6", 1 @ 12'-9" CONT.
 CLEAR ROADWAY WIDTH - 19'-2"

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

THE EXISTING BRIDGE DESCRIBED IN THE NOTES IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS 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 DESCRIBED IN THE NOTES 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 AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

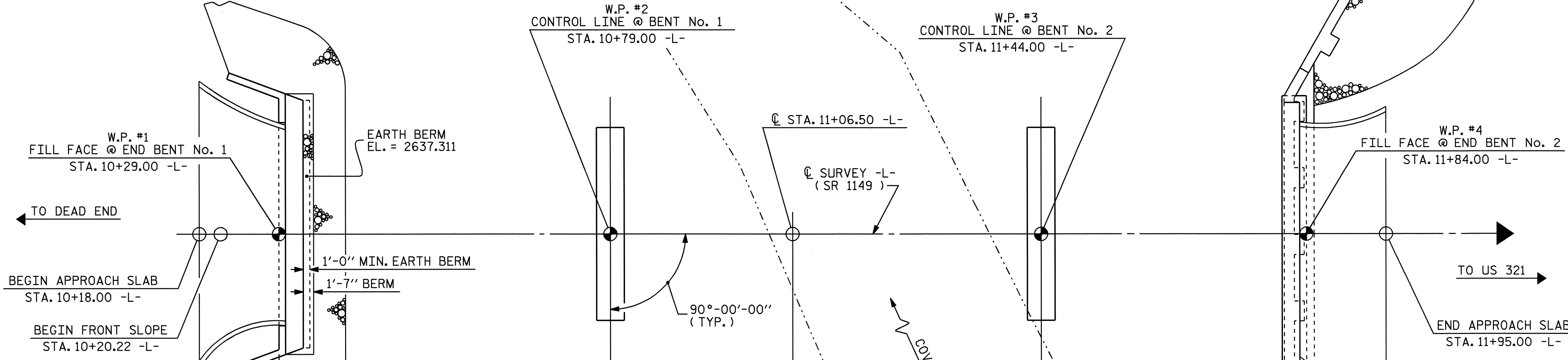
THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE VERTICAL ABUTMENT AT END BENT No. 2 SHALL BE BACKFILLED WITH #57 STONE. SEE ROADWAY PLANS FOR DETAILS AND PAY ITEM.

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

NOTES CONTINUED ON SHEET 2 OF 3.

GRADE DATA



HYDROGRAPHIC DATA

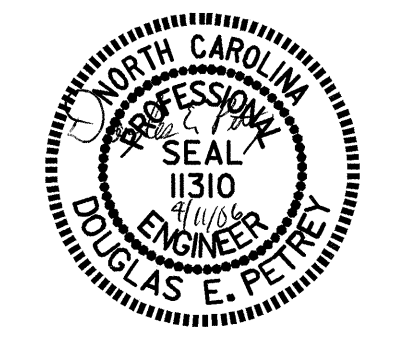
DESIGN DISCHARGE-----	4600 CFS
FREQUENCY OF DESIGN FLOOD-----	25 YR.
DESIGN HIGH WATER ELEVATION-----	2639.80
DRAINAGE AREA-----	32.6 SQ.MI.
BASIC DISCHARGE (Q100)-----	6900 CFS
BASIC HIGH WATER ELEVATION-----	2641.30
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE-----	13300 CFS
FREQUENCY OF OVERTOPPING FLOOD-----	>500 YRS
OVERTOPPING FLOOD ELEVATION-----	2645.30

PROJECT No. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE #316

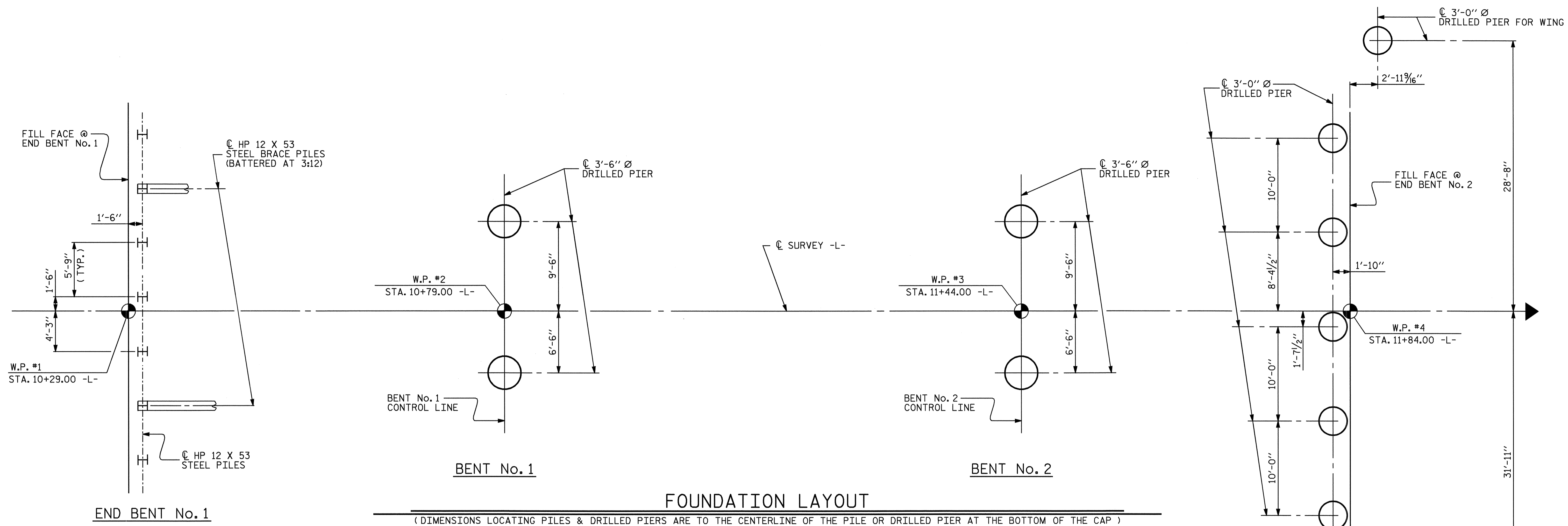
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON
 RELOCATED SR 1149
 OVER COVE CREEK BETWEEN
 US 321 AND DEAD END



DRAWN BY : MIKE BRITT DATE : 2-7-05
 CHECKED BY : A. R. CHESSON DATE : 2/05

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			41



(DIMENSIONS LOCATING PILES & DRILLED PIERS ARE TO THE CENTERLINE OF THE PILE OR DRILLED PIER AT THE BOTTOM OF THE CAP)

NOTES : (CONTINUED FROM SHEET 1 OF 3)

DRILLED PIERS AT BENT No. 1 AND BENT No. 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 30 TSF.

DRILLED PIERS AT END BENT No. 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 30 TSF.

DRILLED PIERS AT BENT No. 1 AND BENT No. 2 ARE DESIGNED FOR AN APPLIED LOAD OF 191 TONS EACH AT THE TOP OF THE COLUMN.

DRILLED PIERS AT END BENT No. 2 ARE DESIGNED FOR AN APPLIED LOAD OF 86 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS NOT REQUIRED FOR DRILLED PIERS AT BENT No. 1.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 2. IF REQUIRED, DO NOT EXTEND BELOW ELEVATION 2626 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

PERMANENT STEEL CASING IS NOT REQUIRED FOR DRILLED PIERS AT END BENT No. 2.

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

DRILLED PIERS AT BENT No. 1 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 2619 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT No. 2 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 2618 FT. (LEFT) AND 2614 FT. (RIGHT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT END BENT No. 2 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 2617 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

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.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 AND BENT No. 2 IS ELEVATION 2625.0 FT. BRIDGE MAINTENANCE USES SCOUR CRITICAL ELEVATIONS TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR END BENT No. 2 IS ELEVATION 2626.0 FT. BRIDGE MAINTENANCE USES SCOUR CRITICAL ELEVATIONS TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DO NOT USE SLURRY CONSTRUCTION FOR THIS PROJECT.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT No. 1, BENT No. 2 AND END BENT No. 2.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIER SPECIAL PROVISION.

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT No. 1 TO A MINIMUM BEARING CAPACITY OF 50 TONS EACH.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT No. 1. SEE SPECIAL PROVISION FOR STEEL PILE POINTS.

WHEN DRIVING PILES, DO NOT EXCEED THE MAXIMUM BLOW COUNT.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS/DOWELS IN PLACE OF ANCHOR BOLTS/DOWELS. SEE SPECIAL PROVISION FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.

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 11+06.50 -L-".

FOR TEMPORARY WORK BRIDGE, SEE SPECIAL PROVISION FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 11+06.50 -L-.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFTY, SEE SPECIAL PROVISIONS.

FOR STEEL H PILES, SEE SPECIAL PROVISIONS.



PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

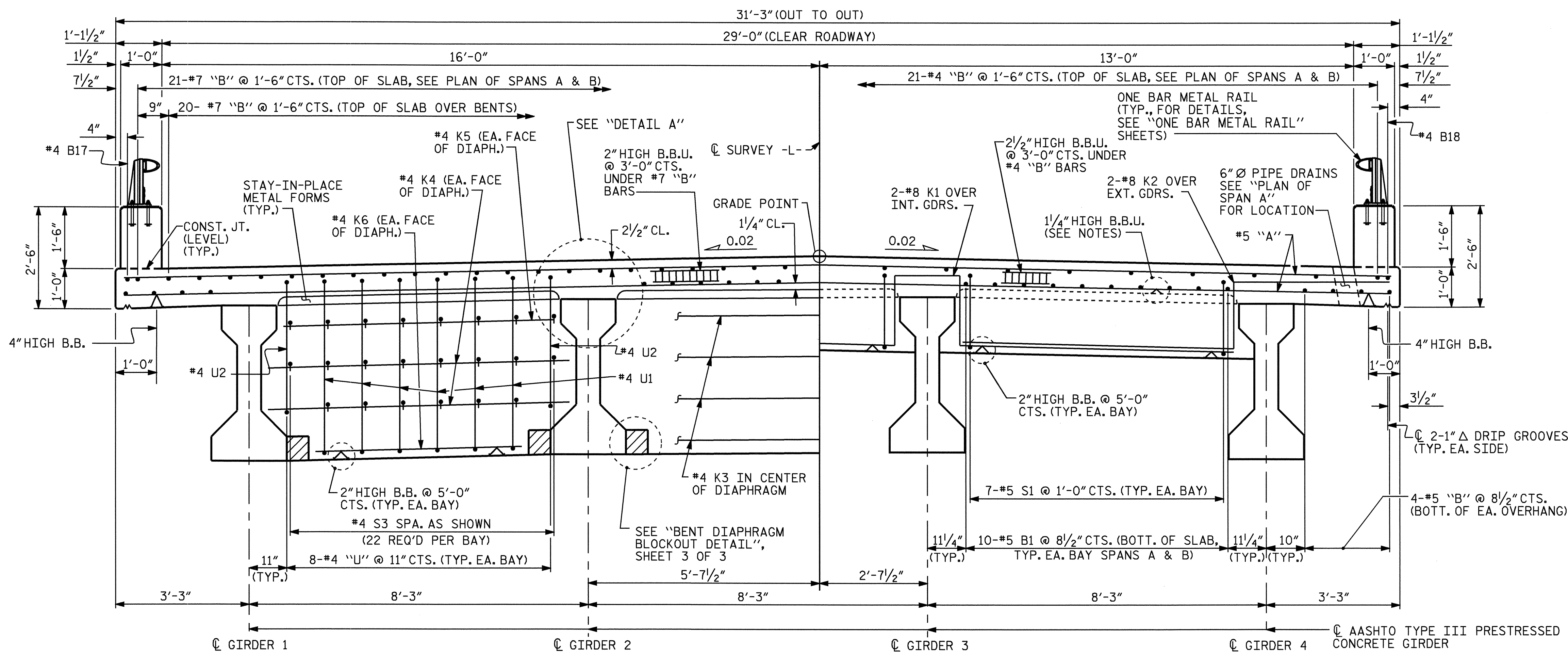
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON
 RELOCATED SR 1149
 OVER COVE CREEK BETWEEN
 US 321 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			41

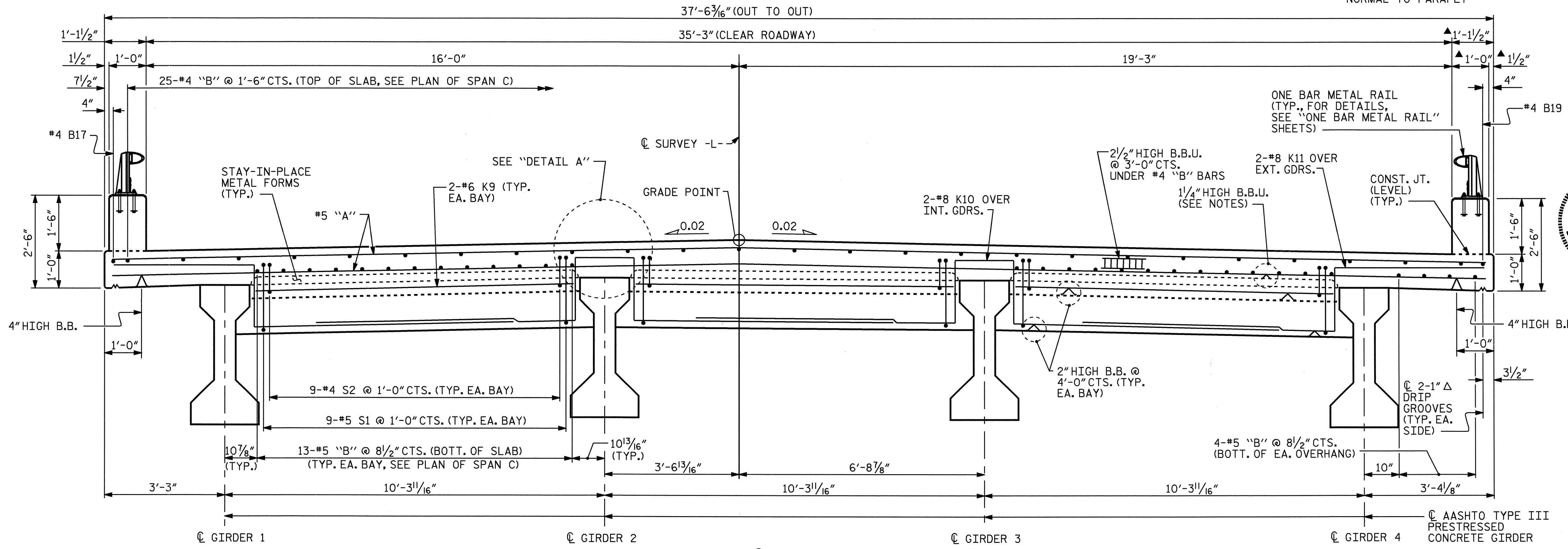
DRAWN BY : MIKE BRITT DATE : 2-7-05
 CHECKED BY : A.R. CHESSON DATE : 2/05



HALF TYPICAL SECTION AT BENTS
(SHOWING CONTINUOUS FOR LIVE LOAD DIAPHRAGMS)

TYPICAL SECTION

HALF TYPICAL SECTION AT END BENT No.1
(SHOWING END BENT No. 1 DIAPHRAGMS)



TYPICAL SECTION AT CENTER JOINT AT END BENT No. 2
(SHOWING END BENT No. 2 DIAPHRAGMS)

NOTES :

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

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.

CONCRETE IN INTERMEDIATE DIAPHRAGMS MAY BE CLASS A IN LIEU OF CLASS AA. PAYMENT SHALL BE MADE UNDER THE UNIT CONTRACT PRICE FOR REINFORCED CONCRETE DECK SLAB.

TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE DIAPHRAGMS AND THE NUTS ON THE 1/4" DIA. TIE RODS SHALL BE FULLY TIGHTENED BEFORE THE DIAPHRAGMS ARE CAST. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. THE TIE RODS SHALL BE RE-TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

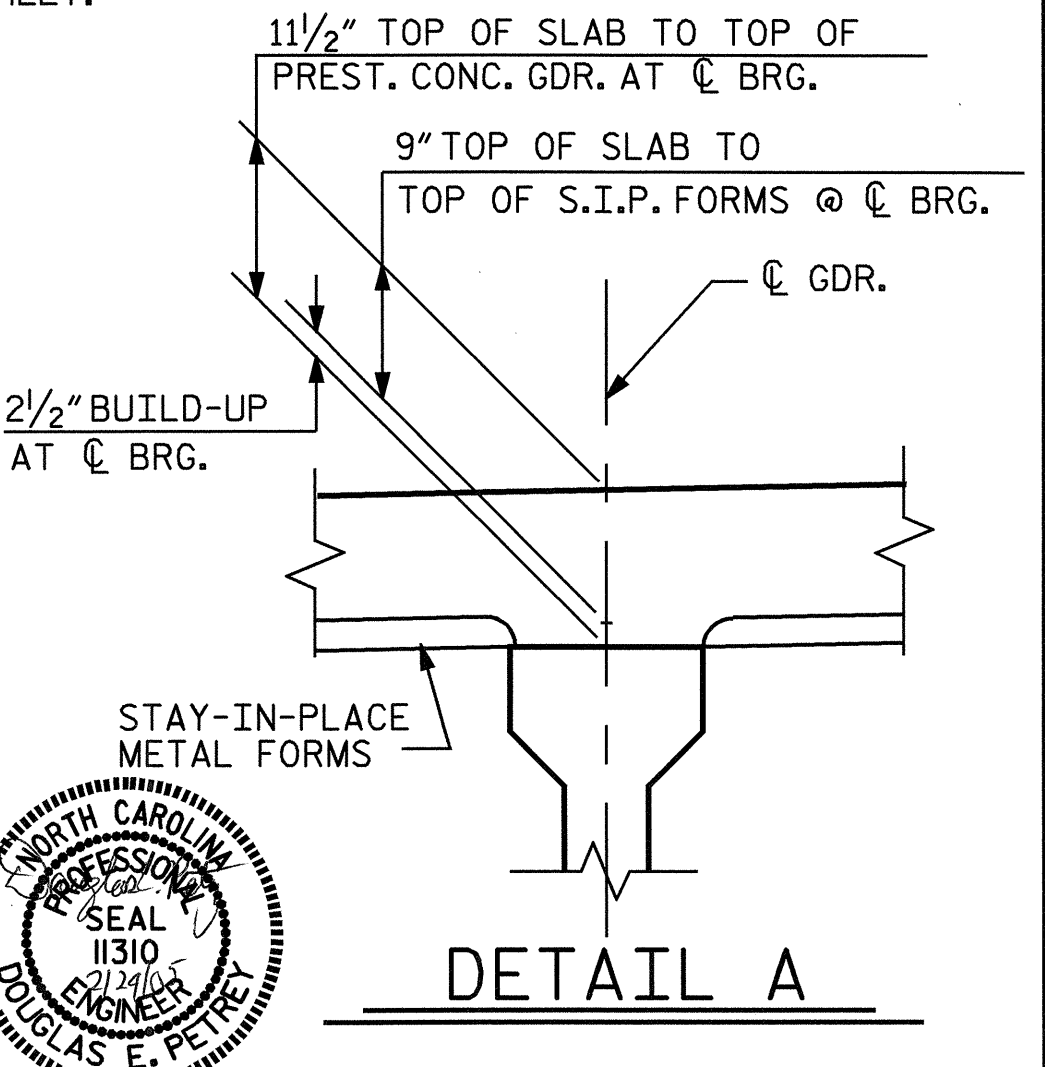
REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

ALL REINFORCEMENT IN PARAPETS SHALL BE EPOXY COATED.

THE NORMAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2/2" AT END BENT No.1 AND No. 2. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR PARAPET REINFORCING STEEL AND DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.



PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

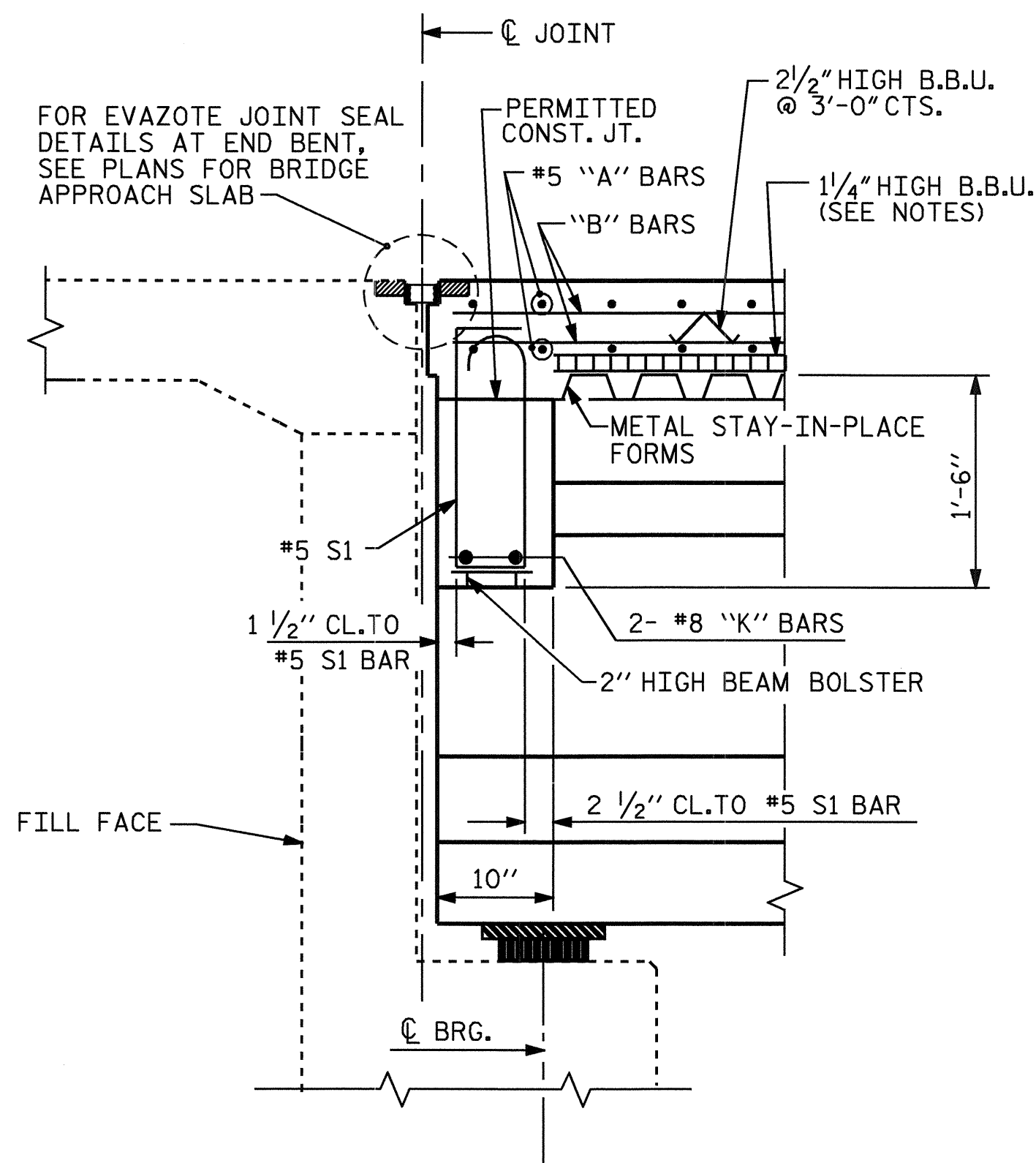
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

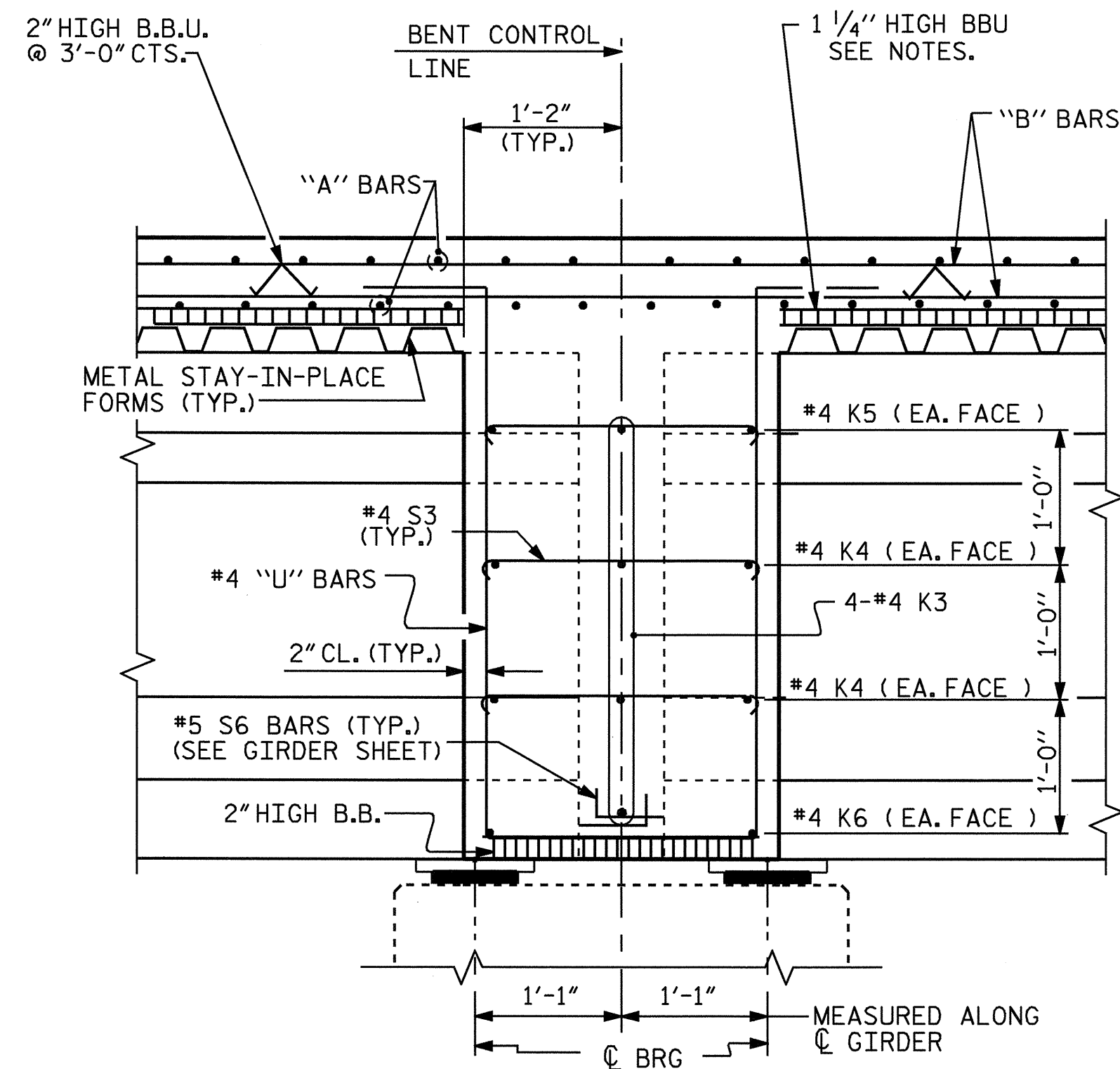
SUPERSTRUCTURE
TYPICAL SECTIONS

REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			

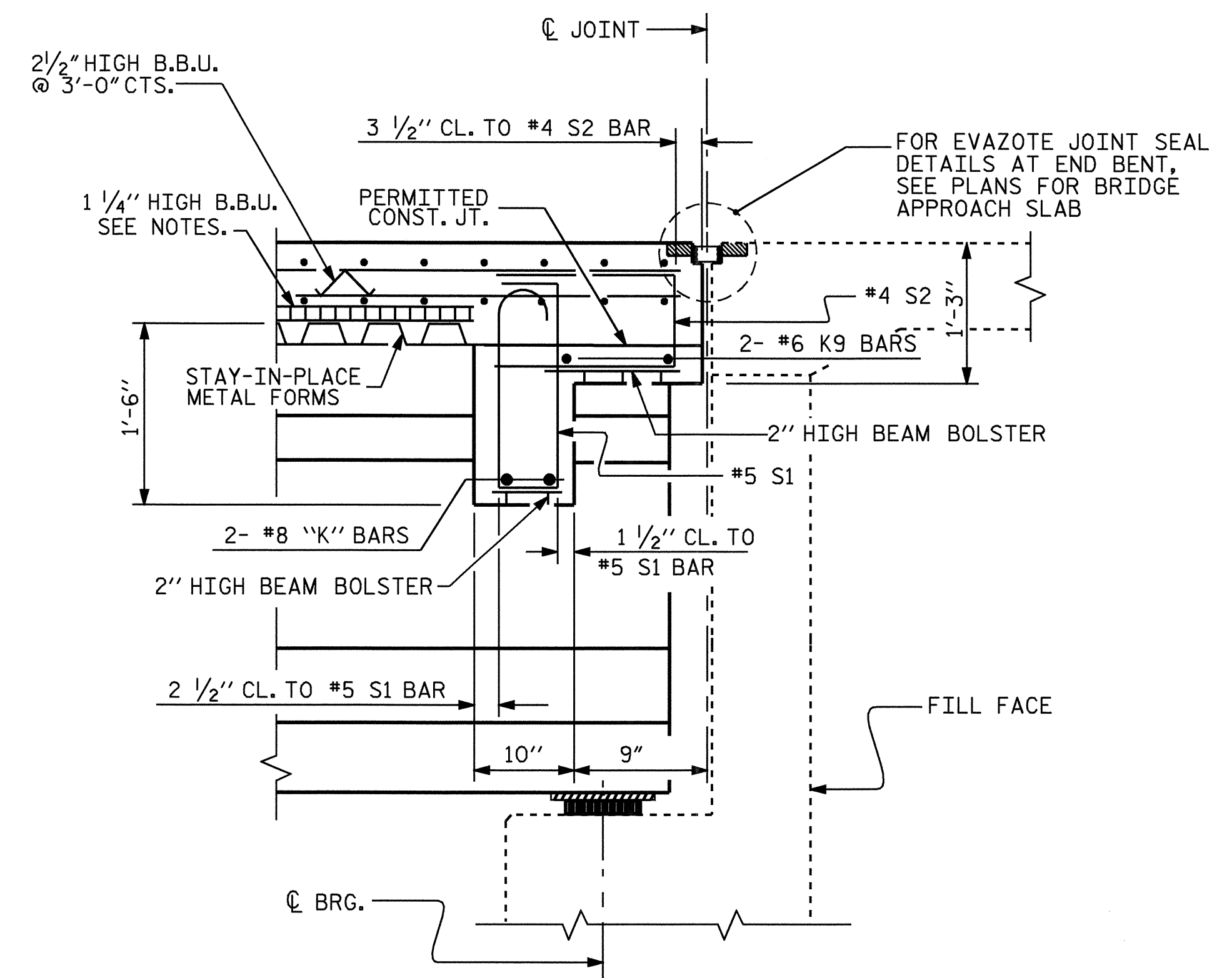
DRAWN BY : A.R.CHESSON DATE : 6-04
CHECKED BY : B.N.GRADY DATE : 9-04



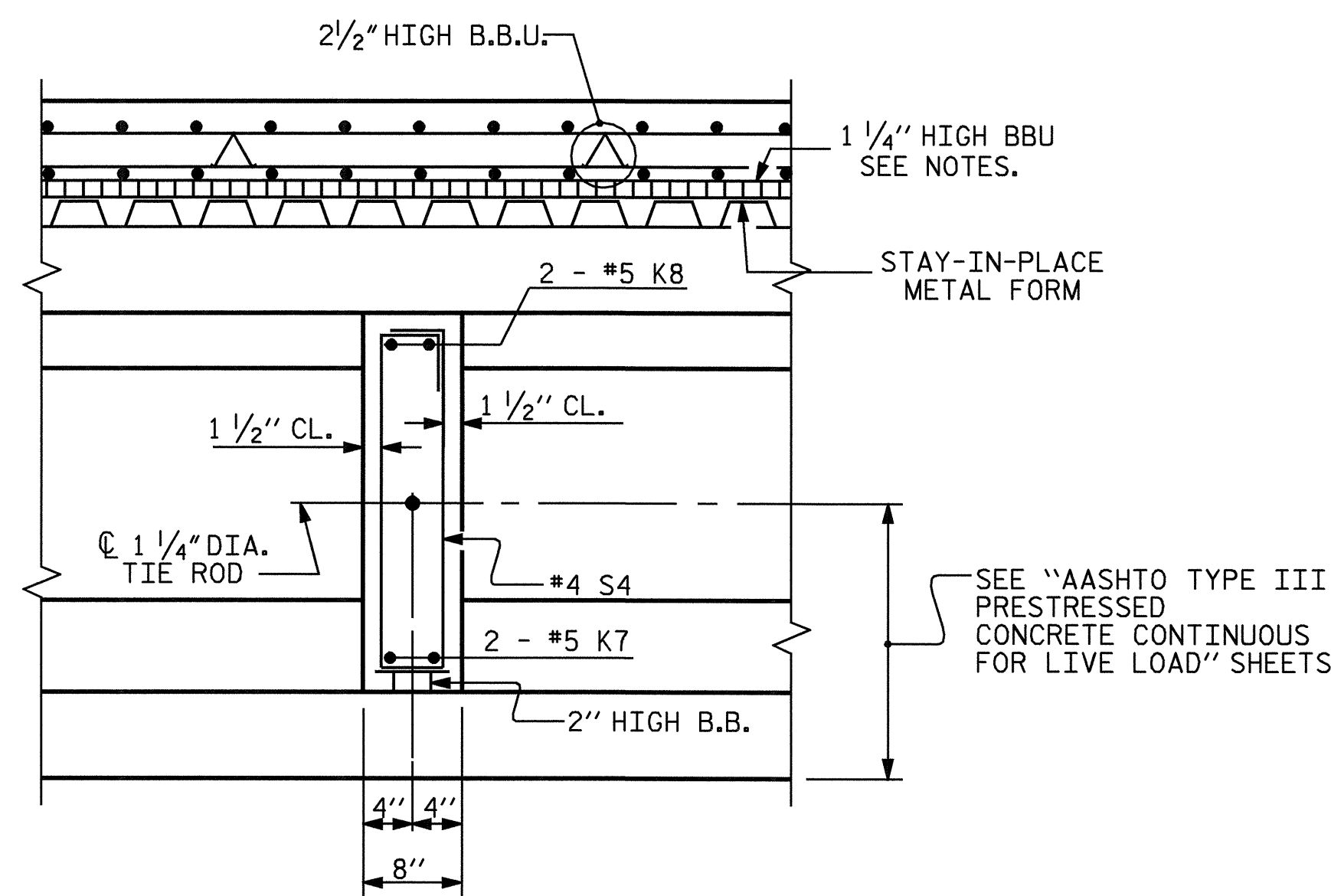
SECTION THROUGH END BENT No. 1



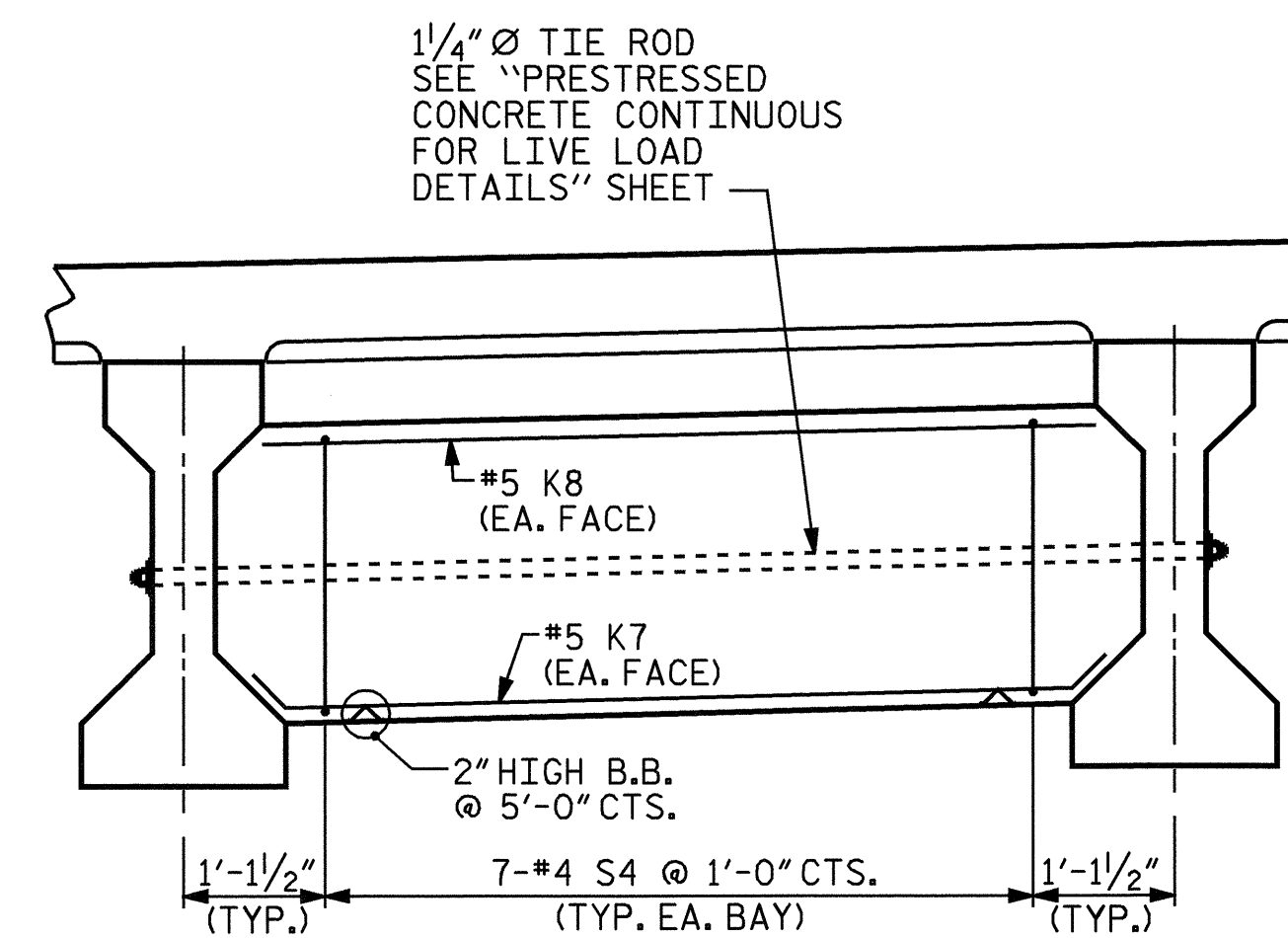
SECTION THROUGH BENTS



SECTION THROUGH END BENT No. 2



SECTION THROUGH INTERMEDIATE DIAPHRAGM (TYPICAL SPANS A & B)



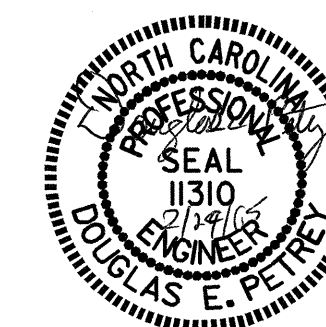
INTERMEDIATE DIAPHRAGM (TYP. SPANS A & B)

PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTIONS

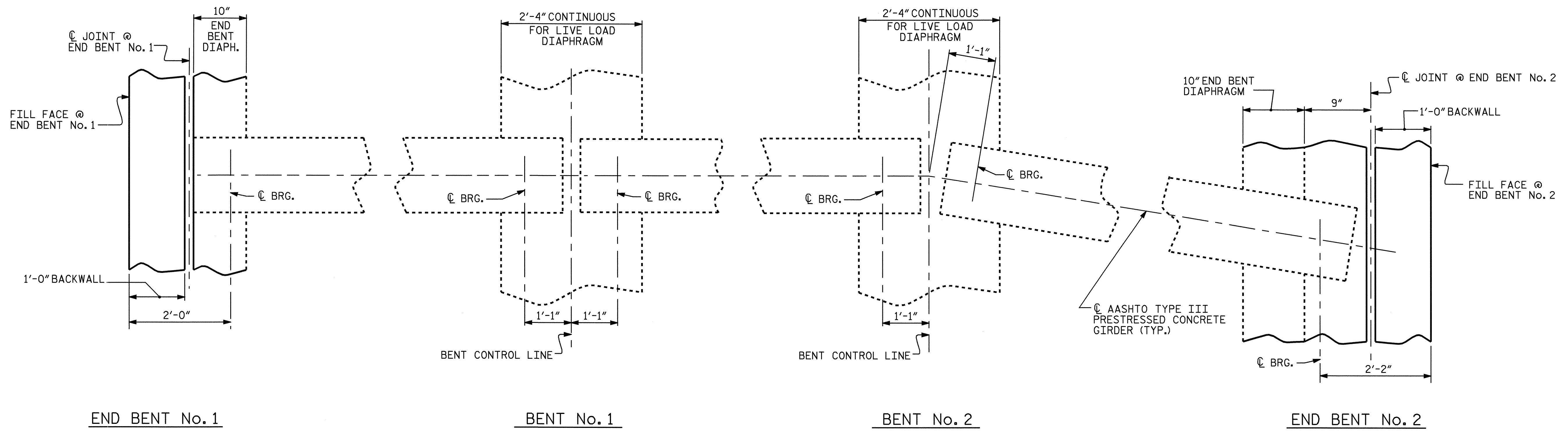


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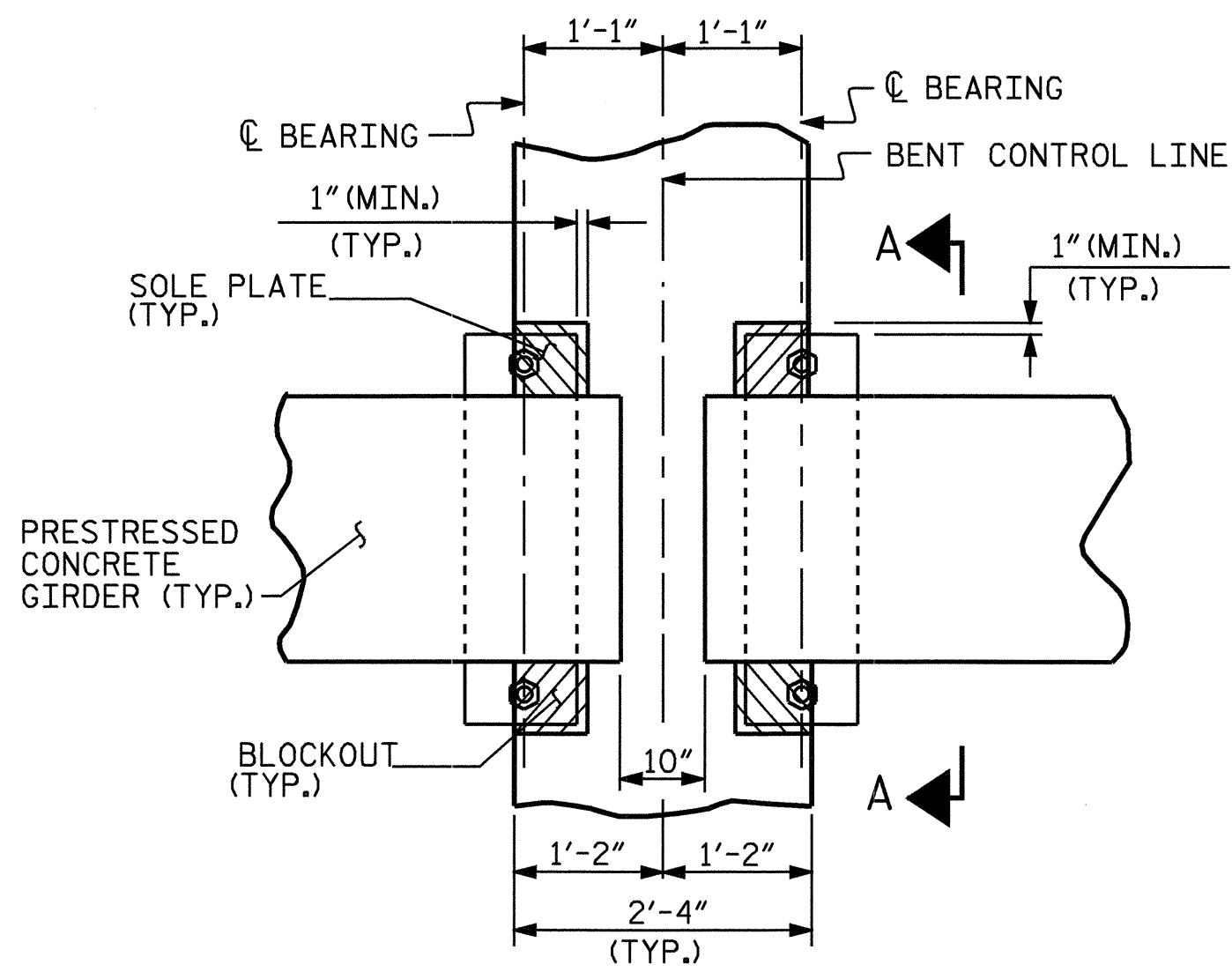
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			41

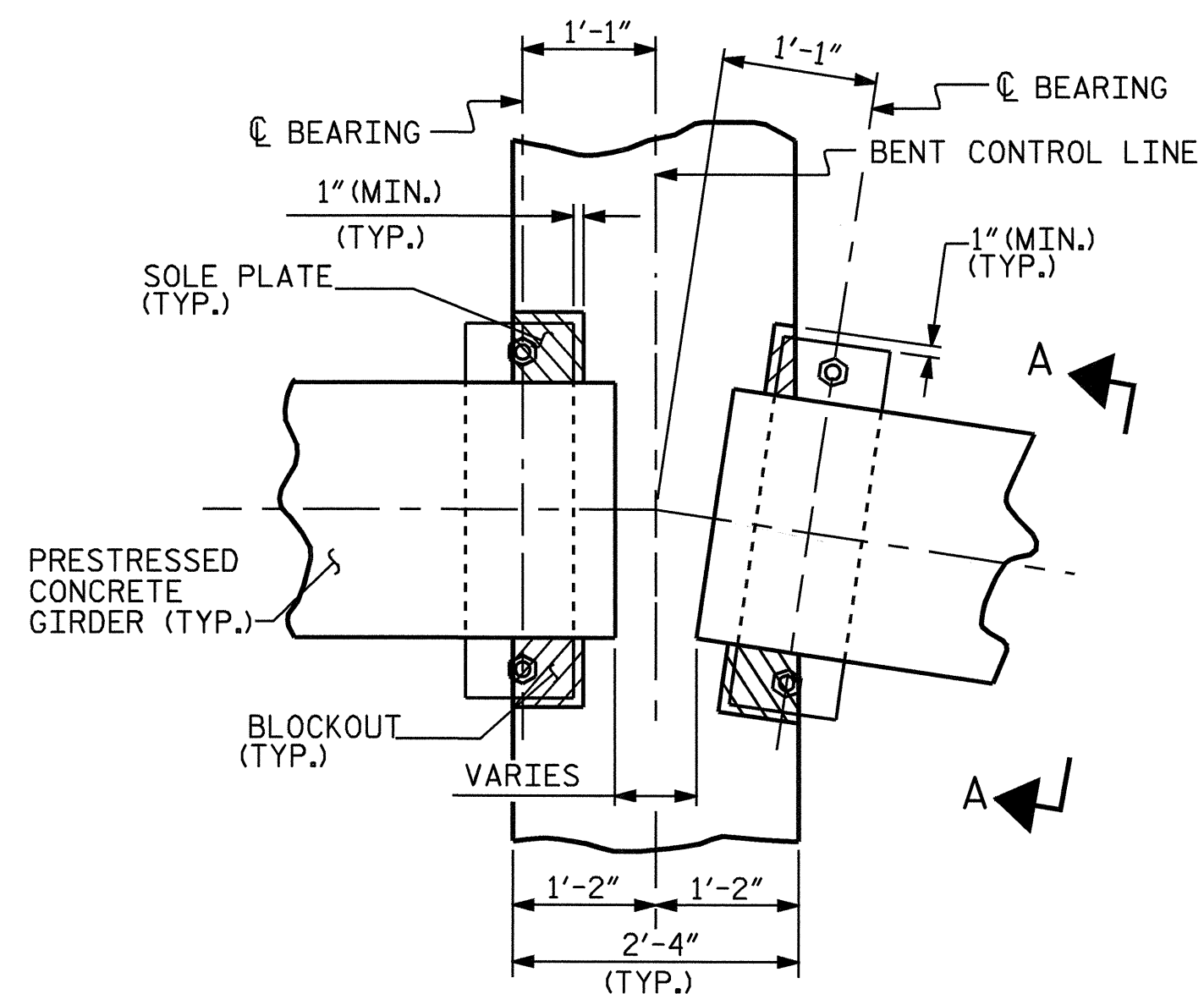
NC006



PLAN OF DIAPHRAGMS

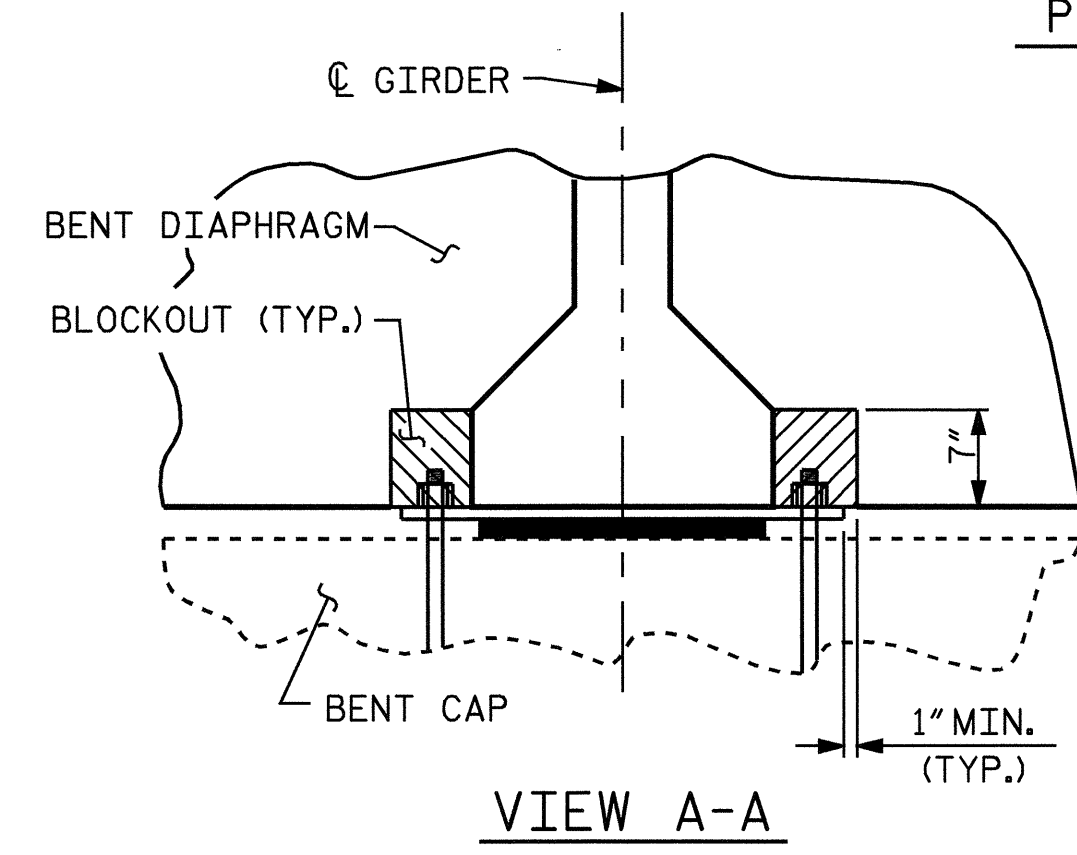


PLAN @ BENT No. 1

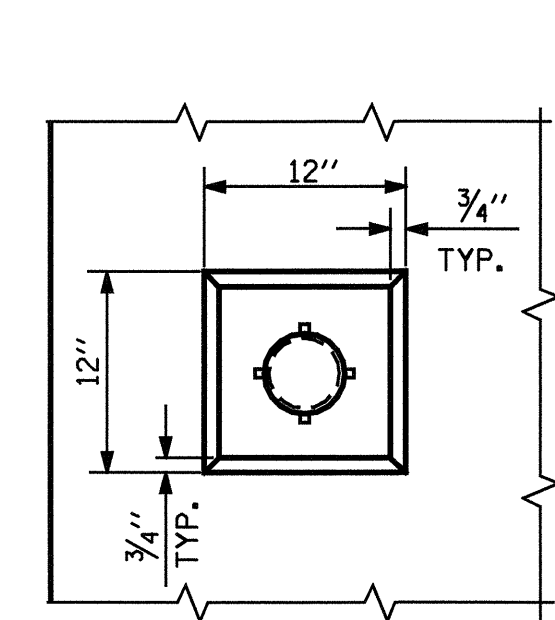


PLAN @ BENT No. 2

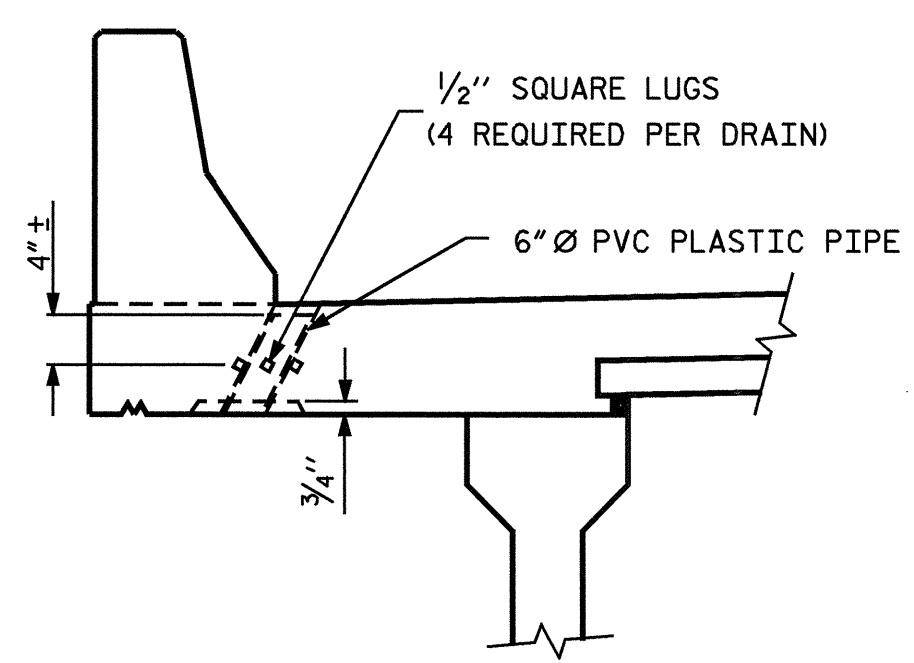
BENT DIAPHRAGM BLOCKOUT DETAIL



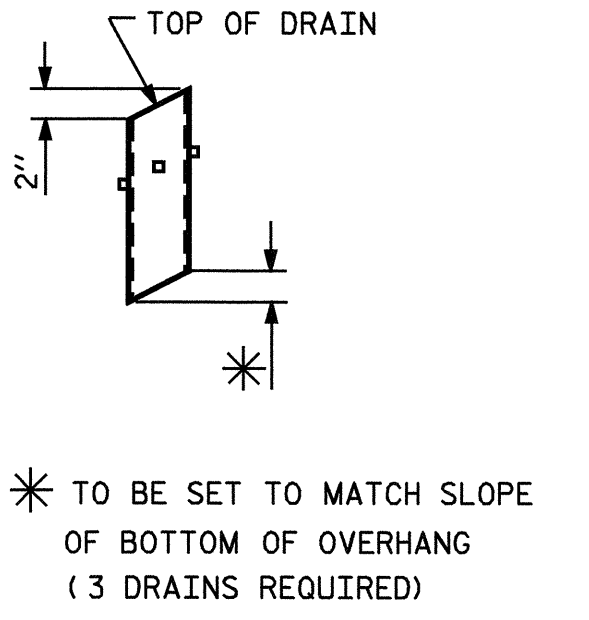
VIEW A-A



PLAN OF RECESS



ELEVATION



PIPE DETAIL

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

PIPE DRAIN DETAILS

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 3 OF 3

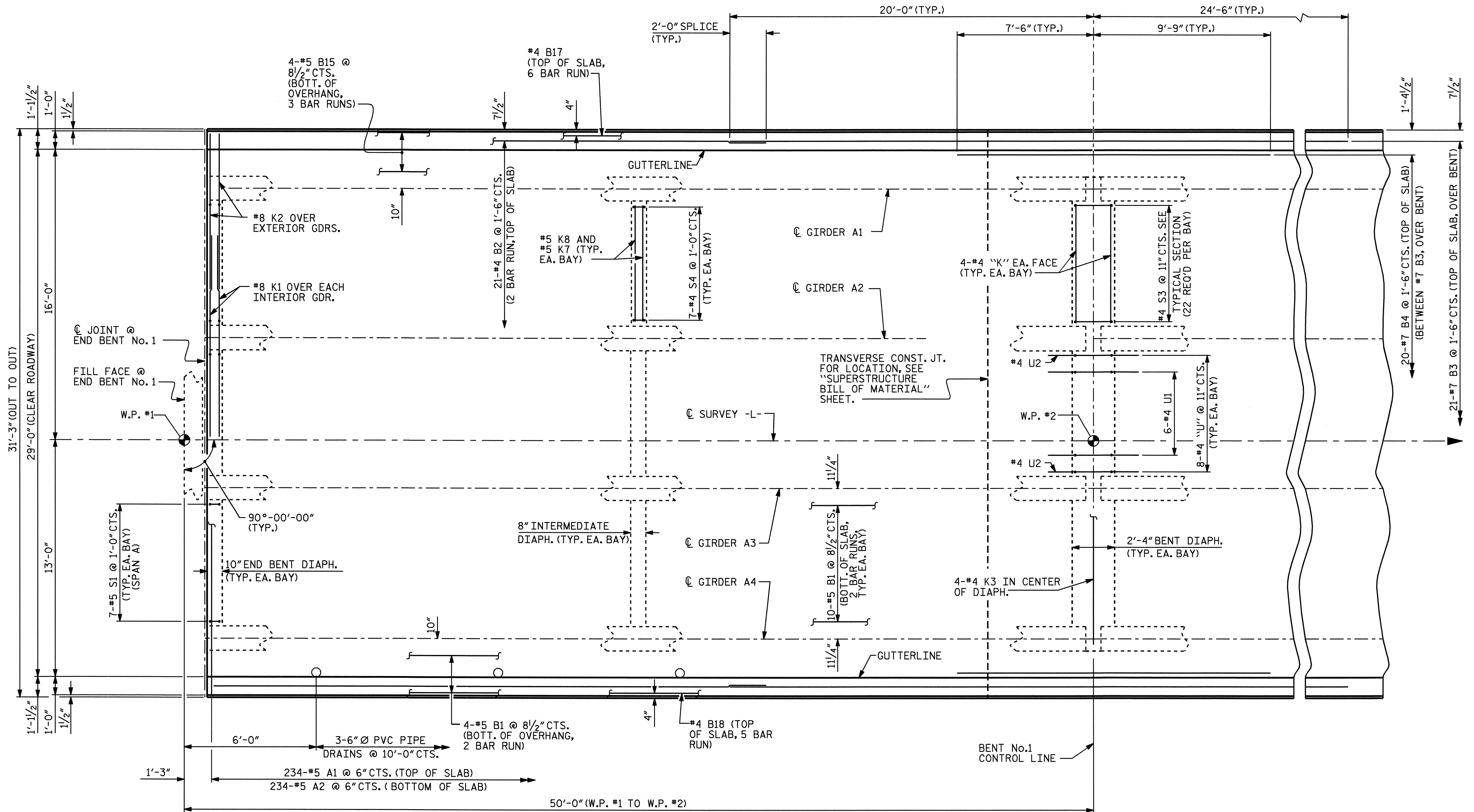
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS



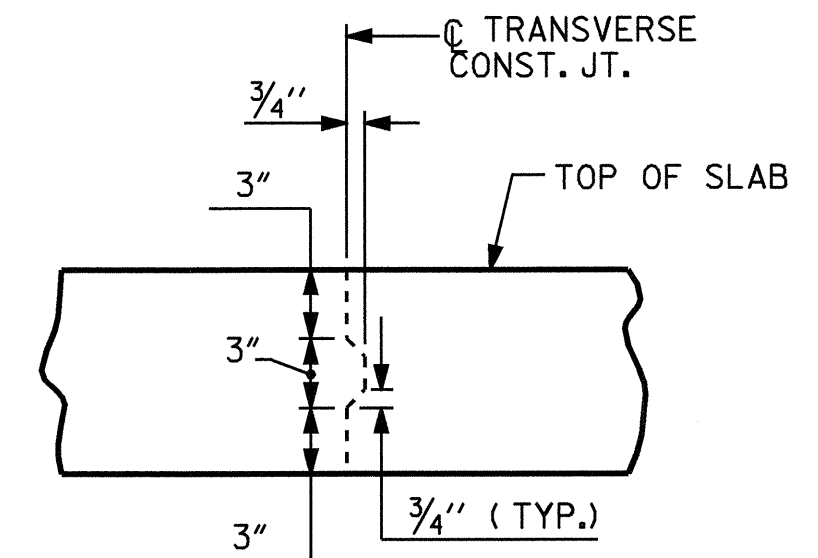
DRAWN BY: A.R.CHESSON DATE: 7-04
 CHECKED BY: B.N. GRADY DATE: 9-04

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			41



PLAN OF SPAN A

NOTES:
 FOR PARAPET REINFORCING STEEL AND DETAILS SEE "CONCRETE PARAPET DETAILS" SHEETS.
 SEE "TYPICAL SECTIONS" SHEETS FOR DETAILS OF DIAPHRAGMS.



TRANSVERSE CONSTRUCTION JOINT DETAIL

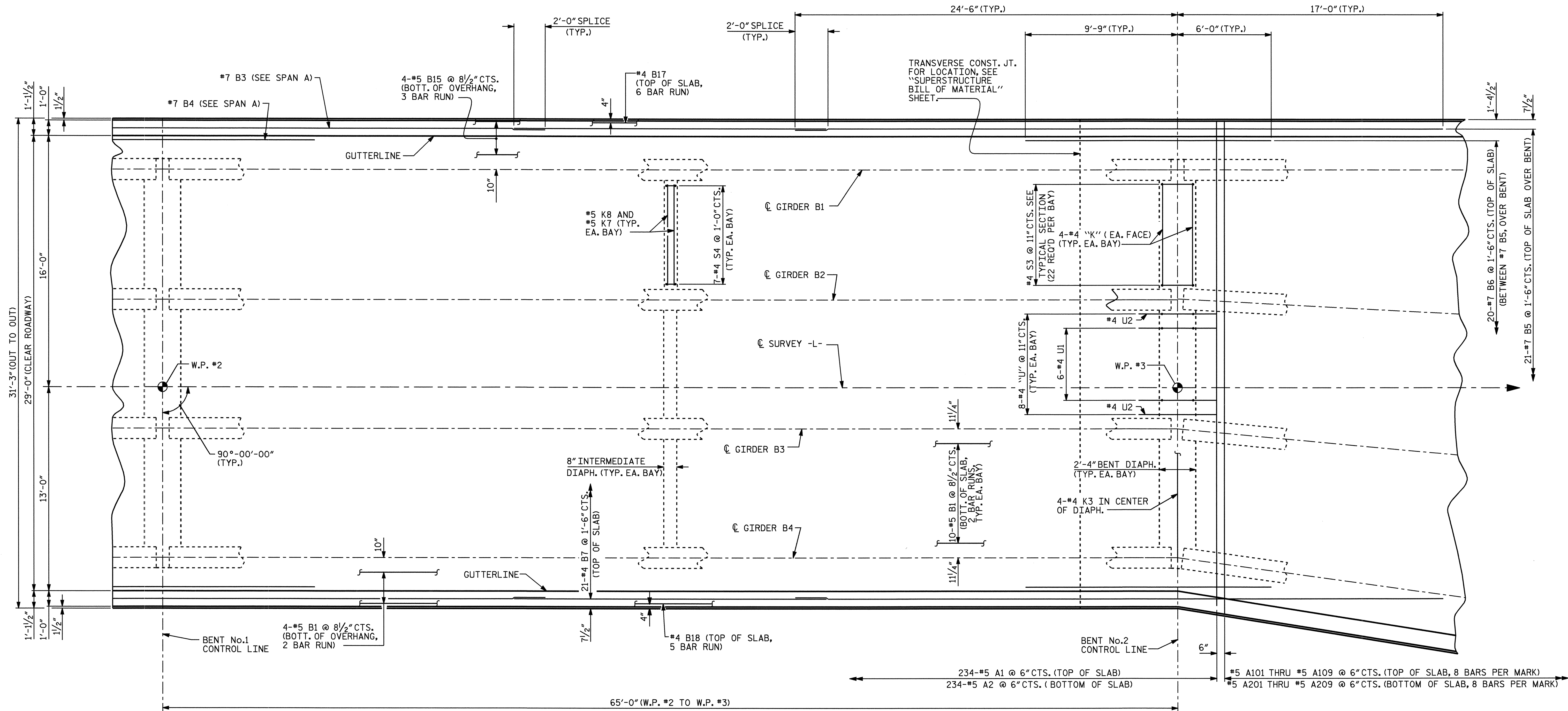
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-7					TOTAL SHEETS 41



DRAWN BY : A.R.CHESSON DATE : 7-04
 CHECKED BY : B.N. GRADY DATE : 9-04

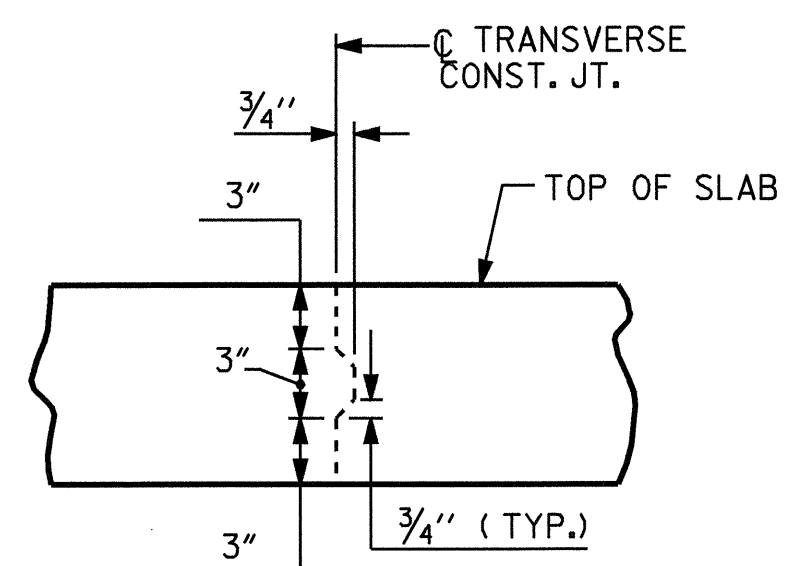


PLAN OF SPAN B

NOTES:

FOR PARAPET REINFORCING STEEL AND DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.

SEE "TYPICAL SECTIONS" SHEETS FOR DETAILS OF DIAPHRAGMS.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

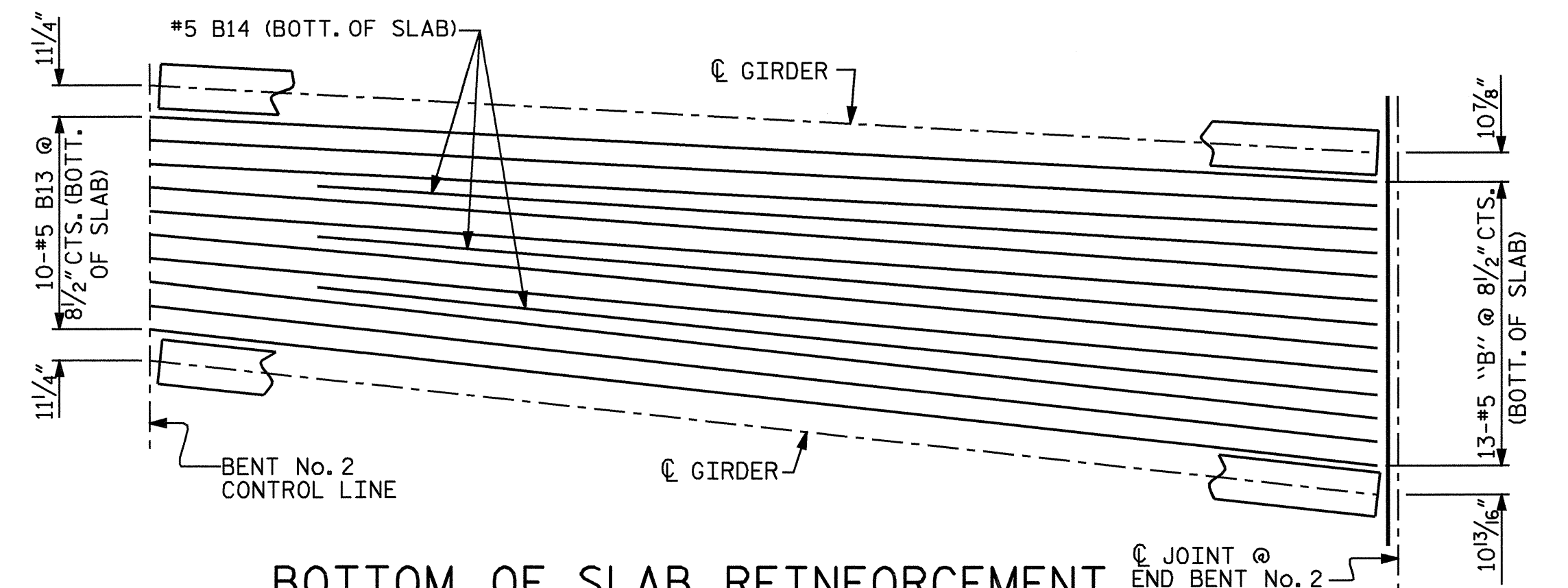
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN B**

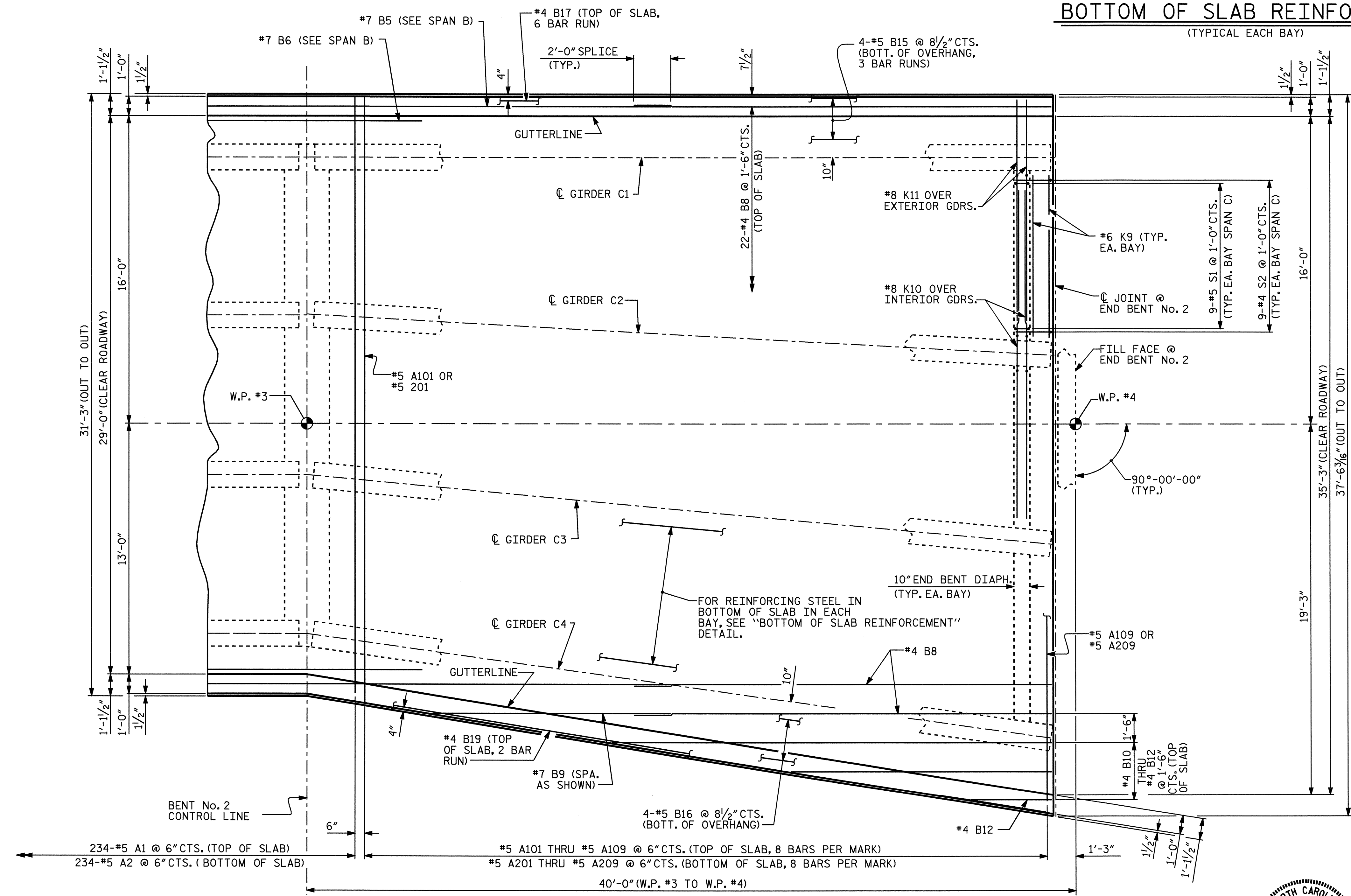


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			41

DRAWN BY : A.R.CHESSON DATE : 7-04
 CHECKED BY : B.N. GRADY DATE : 9-04



BOTTOM OF SLAB REINFORCEMENT
(TYPICAL EACH BAY)



PLAN OF SPAN C

NOTES:
 FOR PARAPET REINFORCING STEEL AND DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.
 SEE "TYPICAL SECTIONS" SHEETS FOR DETAILS OF DIAPHRAGMS.
 MAINTAIN EQUAL COVER ON BOTH ENDS OF #5 "A" BARS TOP & BOTTOM OF SLAB.

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

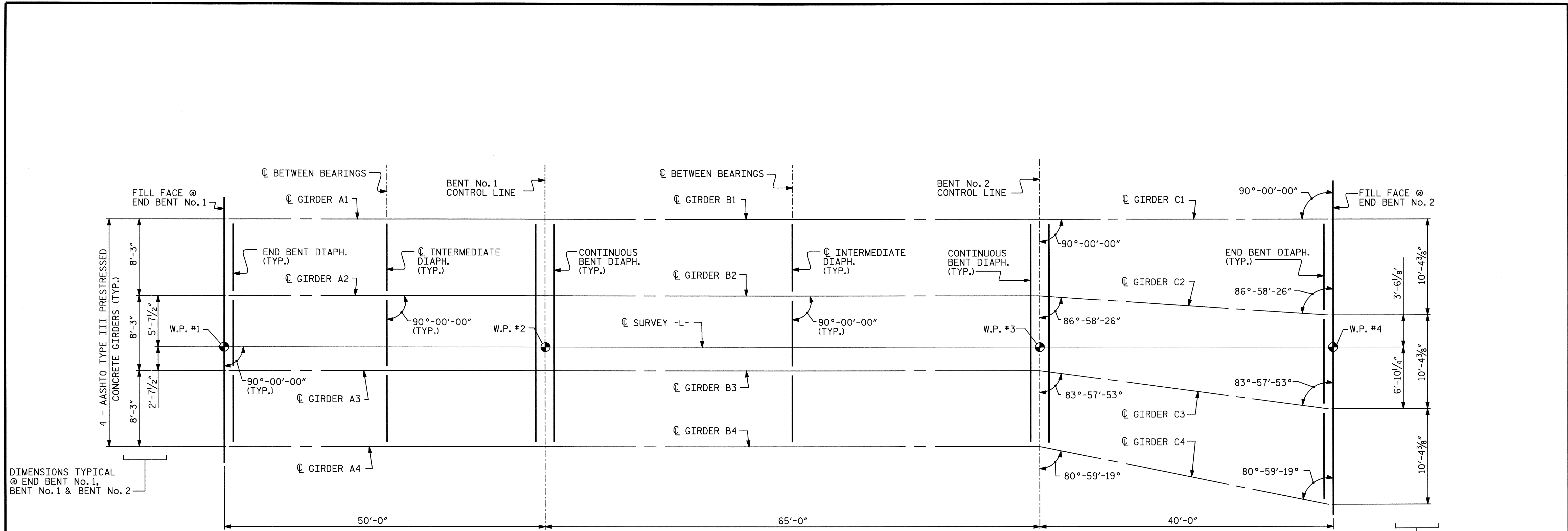
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C



DRAWN BY : A.R.CHESSON DATE : 7-04
 CHECKED BY : B.N. GRADY DATE : 9-04

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			41



DIMENSIONS TYPICAL @ END BENT No. 1, BENT No. 1 & BENT No. 2

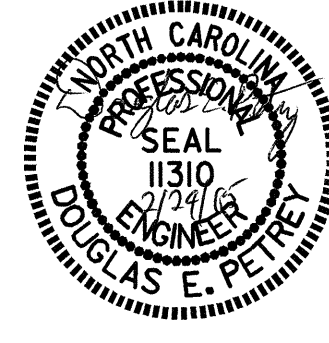
DIMENSIONS ALONG FILL FACE @ END BENT No. 2



GIRDER LAYOUT

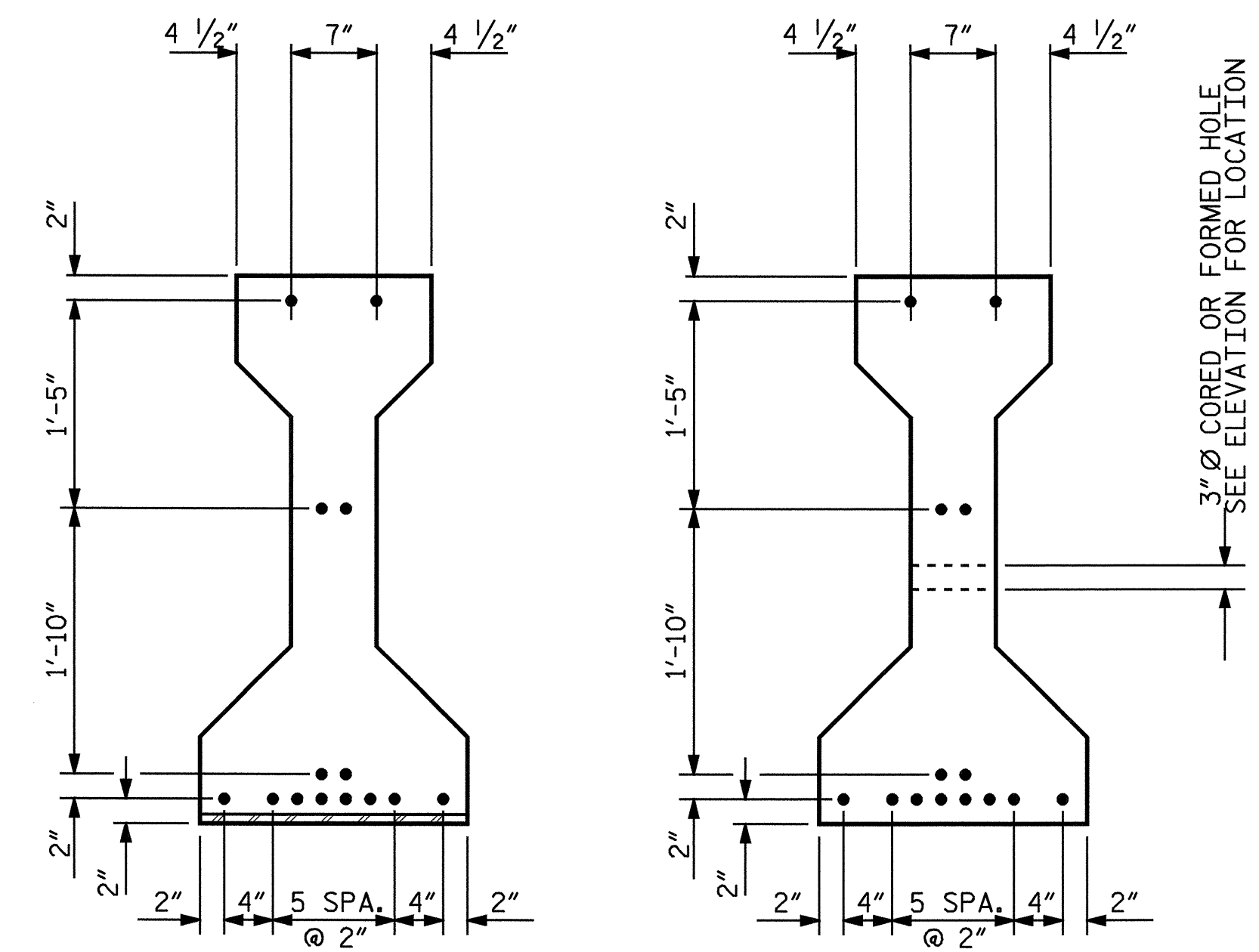
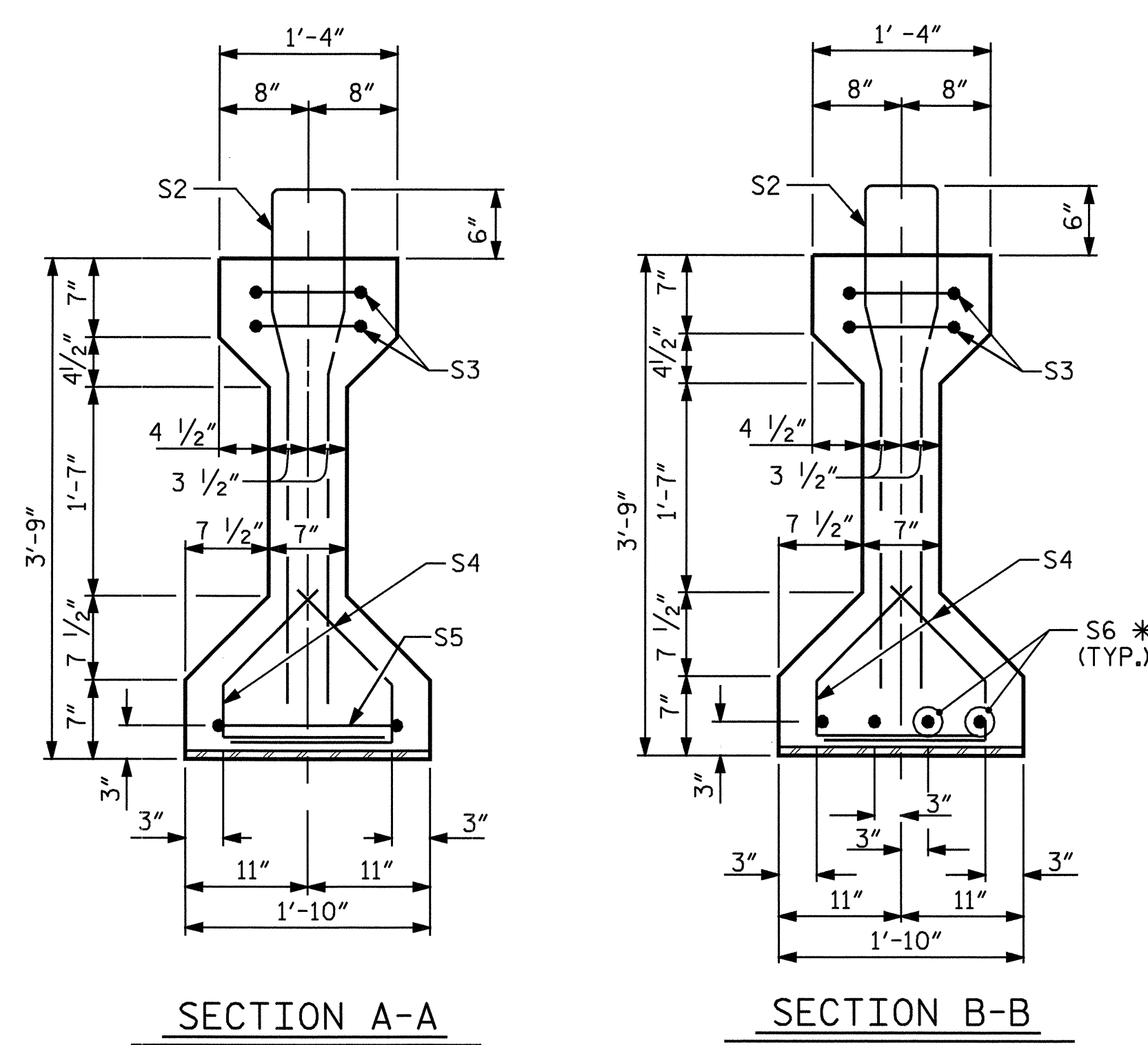
PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT

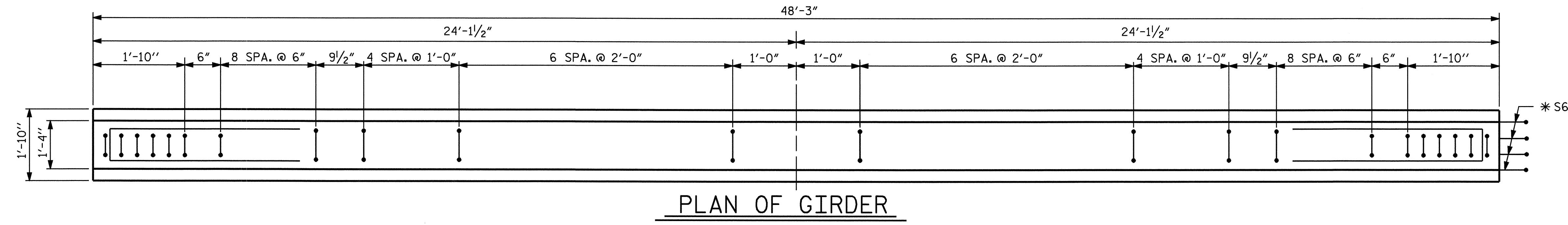


DRAWN BY : A.R.CHESSON DATE : 7-04
 CHECKED BY : B.N.GRADY DATE : 9-04

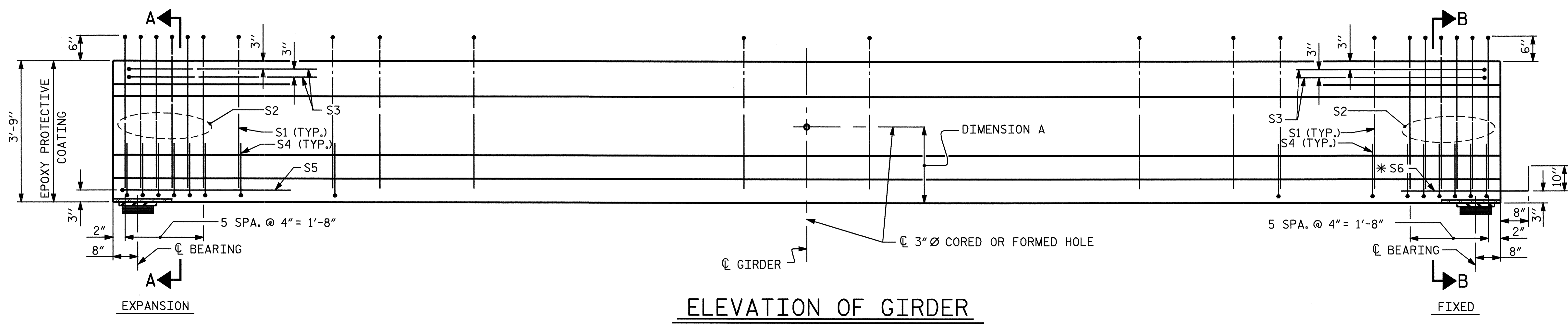
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			41



AT END OF GIRDER AT ϕ OF GIRDER
1/2" ϕ LOW RELAXATION STRAND LAYOUT

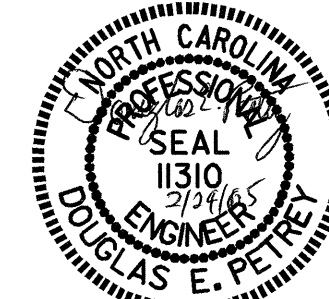


PLAN OF GIRDER



ELEVATION OF GIRDER

DIAPHRAGM LOCATION	
GIRDER	DIMENSION A
A1	1'-9"
A2	1'-7"
A3	1'-6"
A4	1'-8"

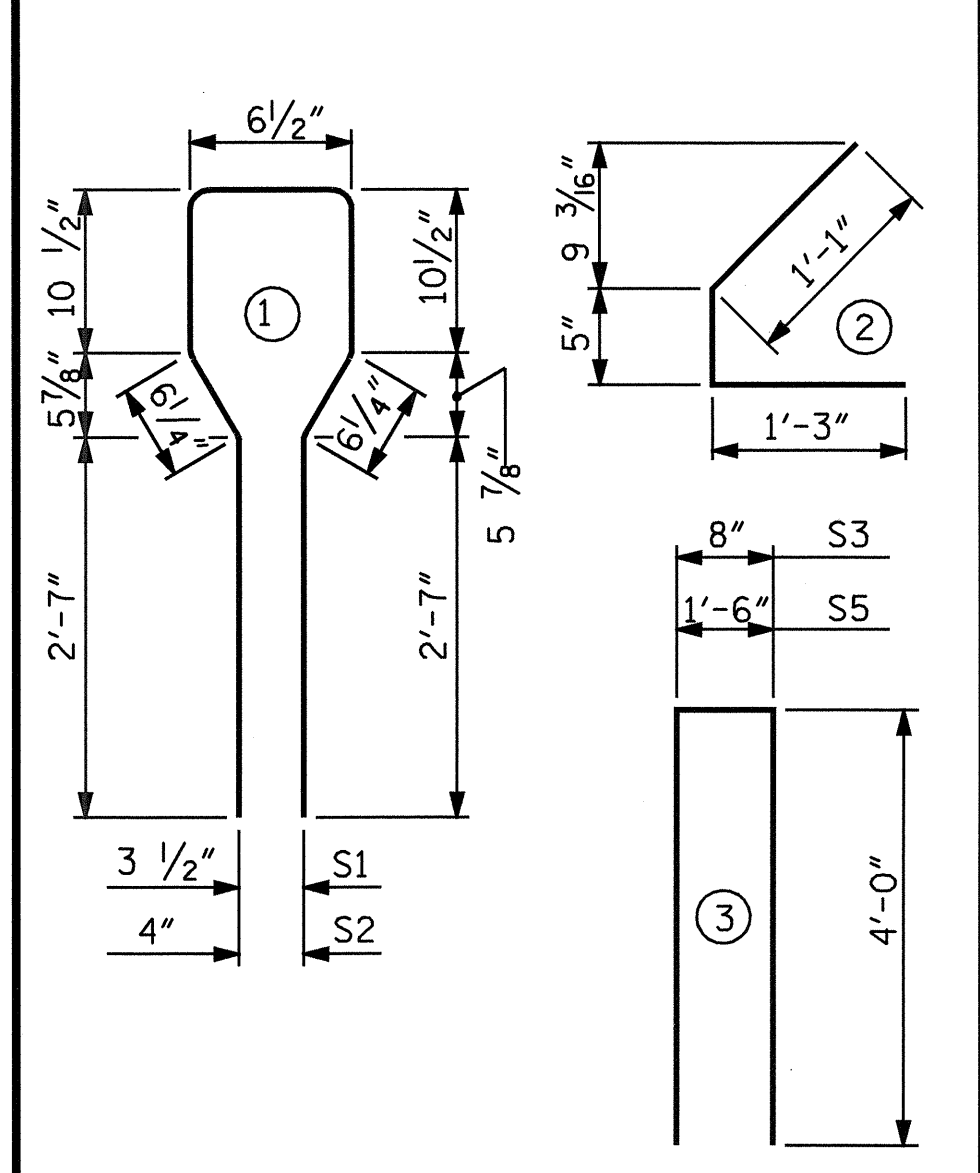


1/2" ϕ L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	40	#4	1	8'-6"	227
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
S5	1	#4	3	9'-6"	6
* S6	4	#5	STR	3'-8"	15

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

BAR TYPES
 ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	5000 PSI CONCRETE	1/2" ϕ L.R. STRANDS
LB.	C.Y.	No.
534	6.9	14

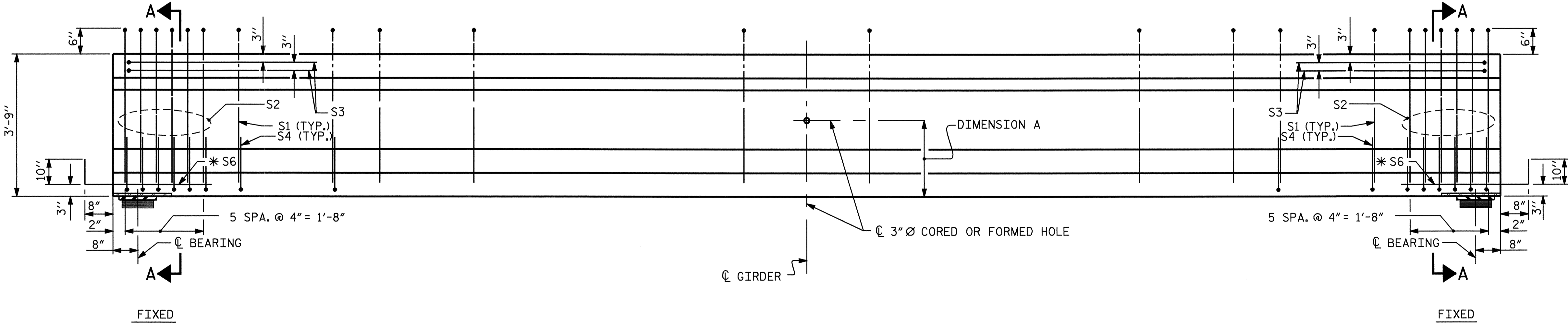
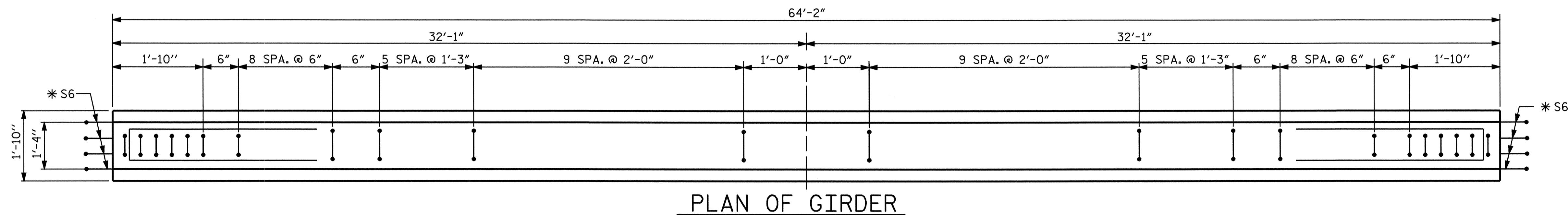
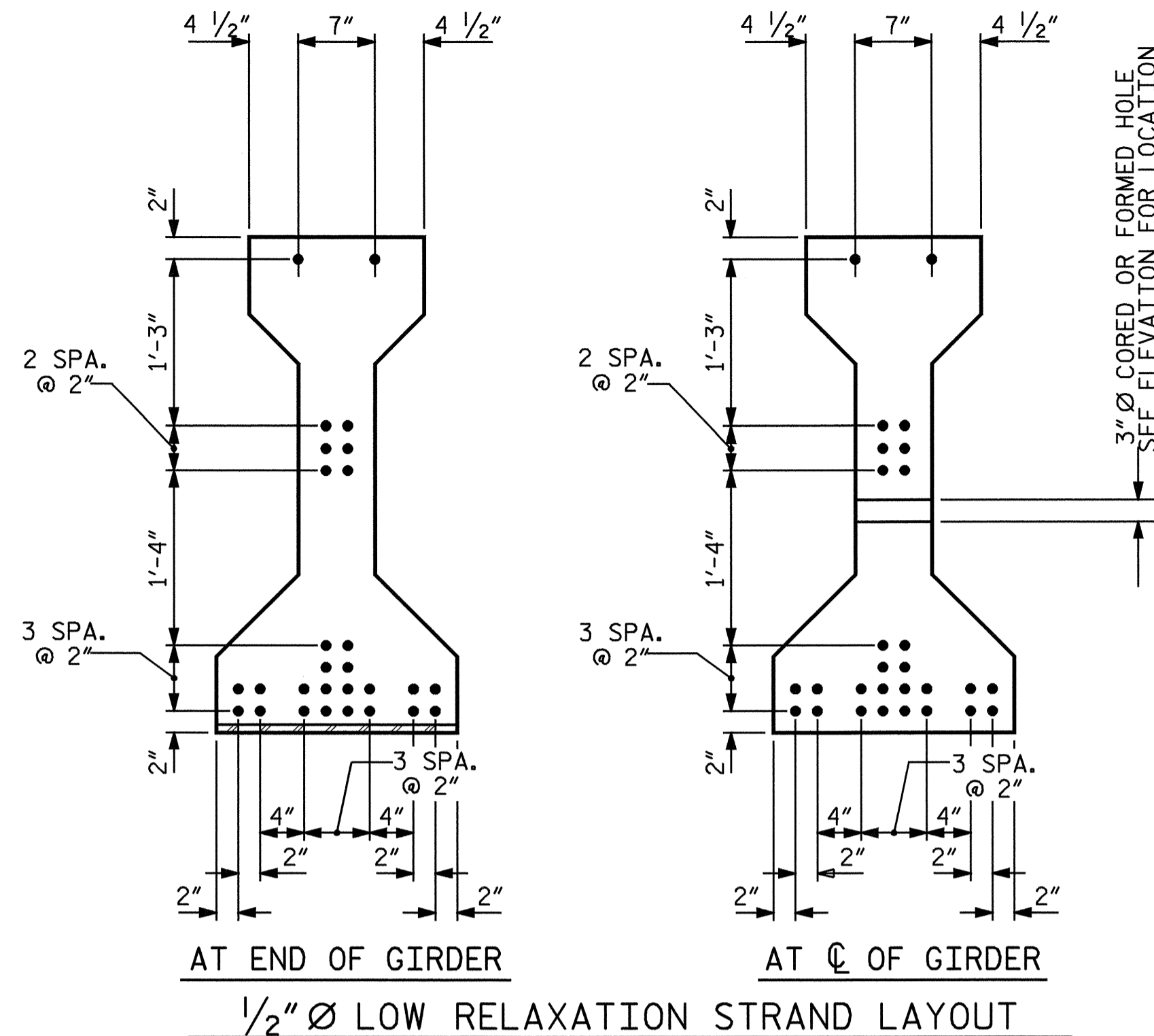
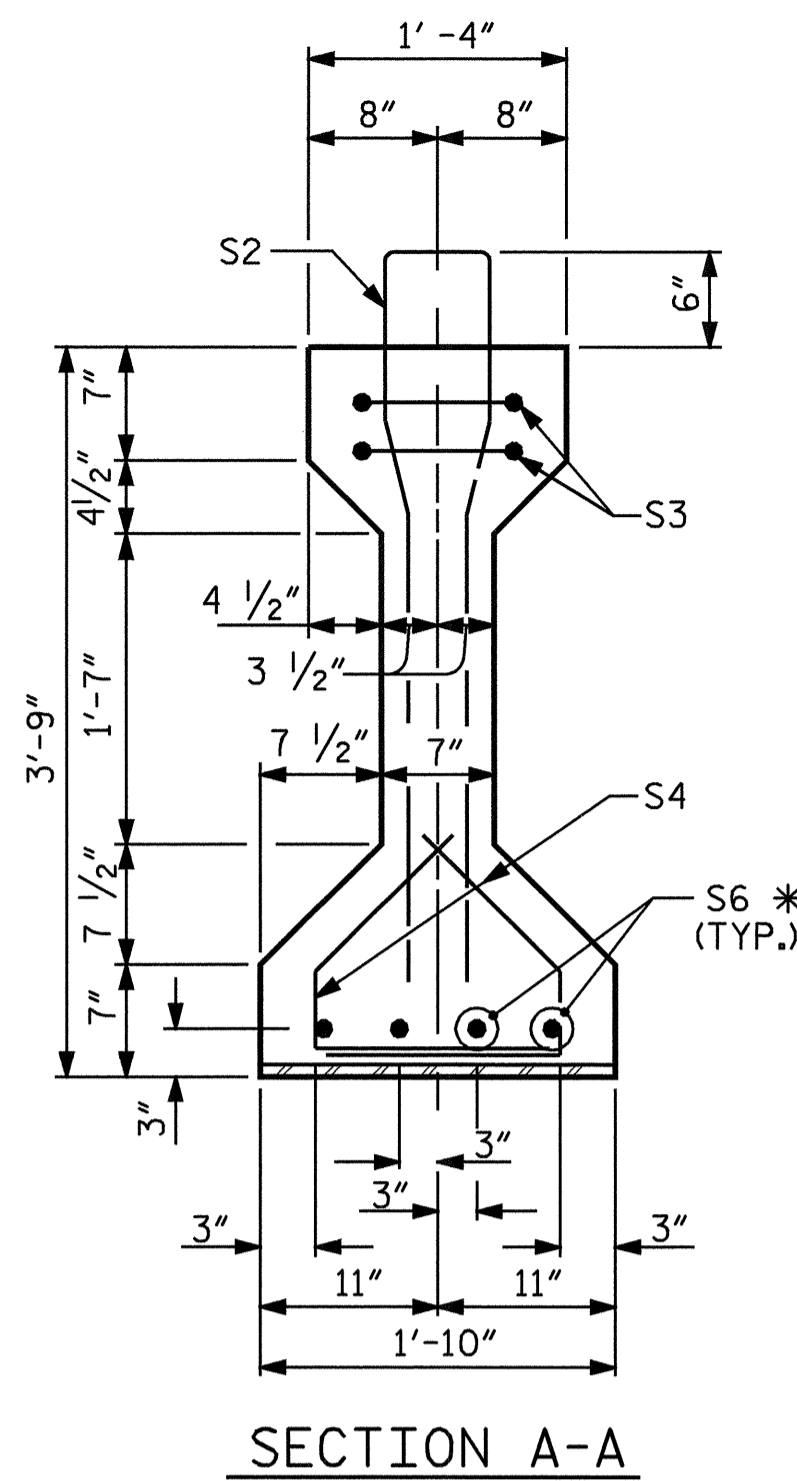
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
A1 - A4	48'-3"	193.00'

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	
2			4			41	

ASSEMBLED BY : A.R.CHESSON	DATE : 7-04	CADD STANDARD
CHECKED BY : B.N.GRADY	DATE : 9-04	
DRAWN BY : RB 2/97	REV. 8/16/99 ARB/LES	
CHECKED BY : VP 2/97		



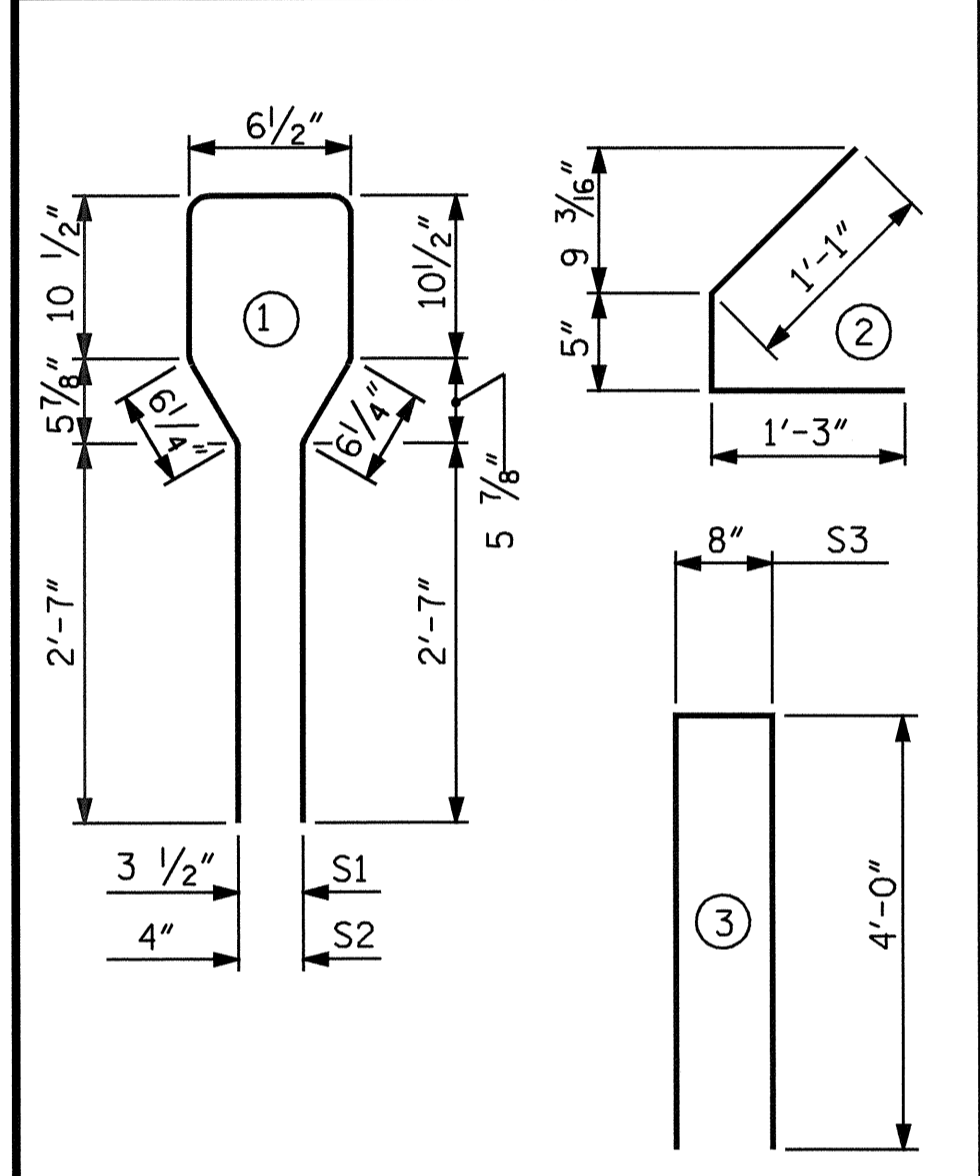
DIAPHRAGM LOCATION	
GIRDER	DIMENSION A
B1	1'-9"
B2	1'-7"
B3	1'-6"
B4	1'-8"

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	48	#4	1	8'-6"	273
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
* S6	8	#5	STR	3'-8"	31

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	6000 PSI CONCRETE	1/2" Ø L.R. STRANDS
LB.	C.Y.	No.
590	9.2	28

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
B1 - B4	64'-2"	256.67'

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

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



ASSEMBLED BY : A.R.CHESSON	DATE : 7-04	CADD STANDARD
CHECKED BY : B.N.GRADY	DATE : 9-04	
DRAWN BY : RB	2/97	REV. 8/16/99 ARB/LES
CHECKED BY : VP	2/97	

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS 41	
2			4				

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

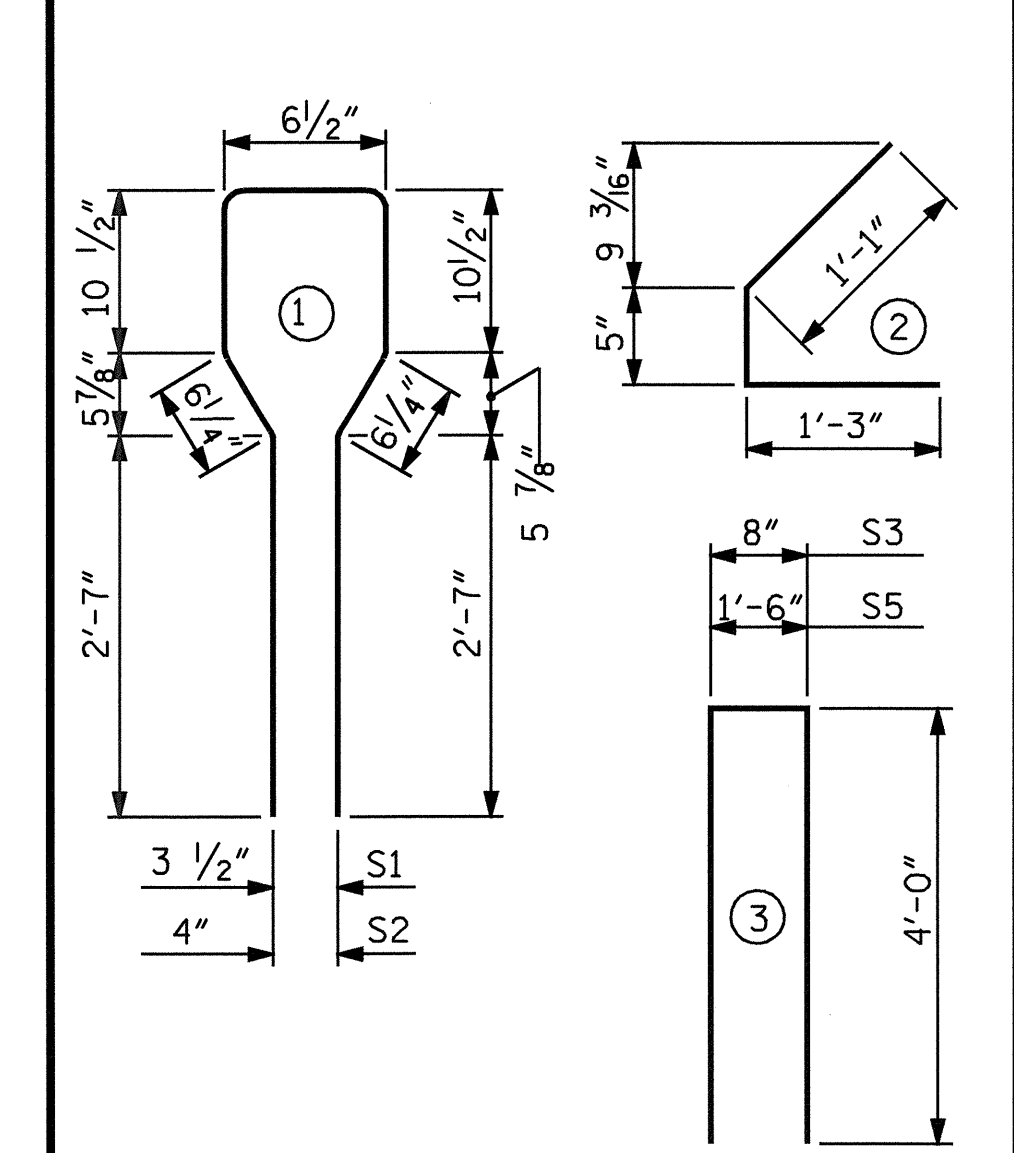
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	34	#4	1	8'-6"	193
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	60	#4	2	2'-9"	110
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



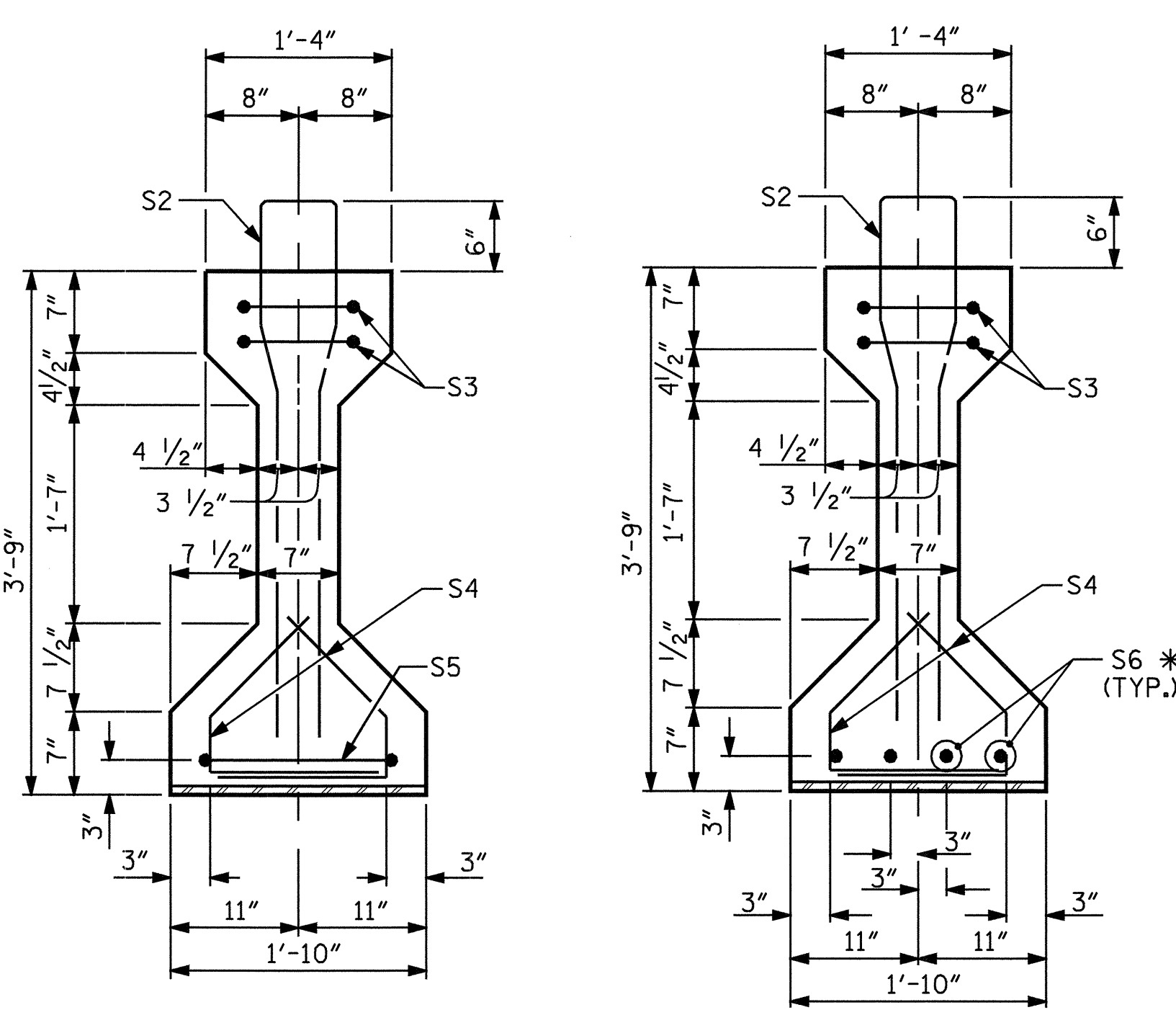
QUANTITIES FOR ONE GIRDER

GIRDER	REINFORCING STEEL	5000 PSI CONCRETE	1/2" Ø L.R. STRANDS
	LB.	C.Y.	No.
C1	500	5.5	12
C2	500	5.5	12
C3	500	5.5	12
C4	500	5.5	12

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

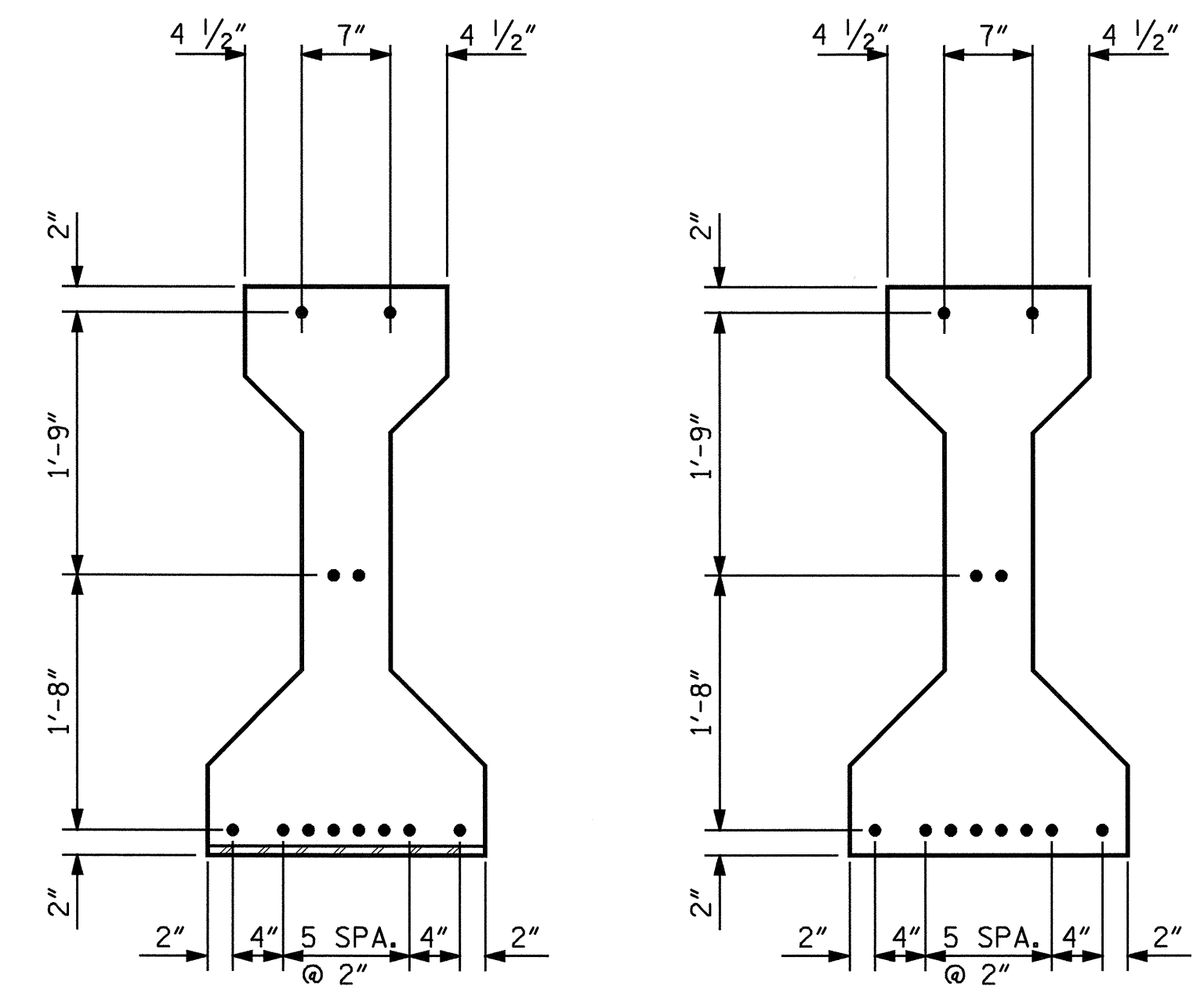
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN C

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS 41	
2			4				



SECTION A-A

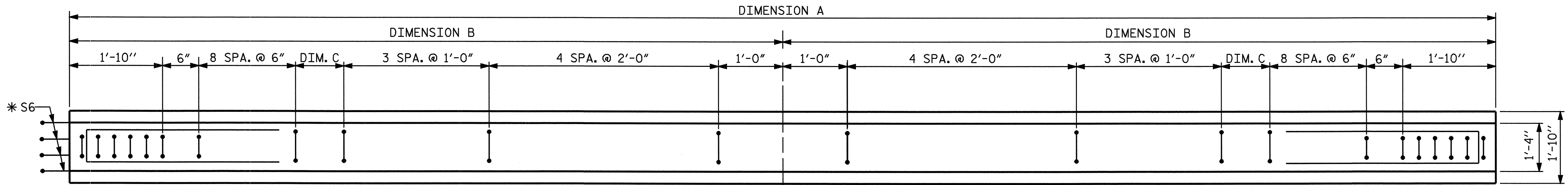
SECTION B-B



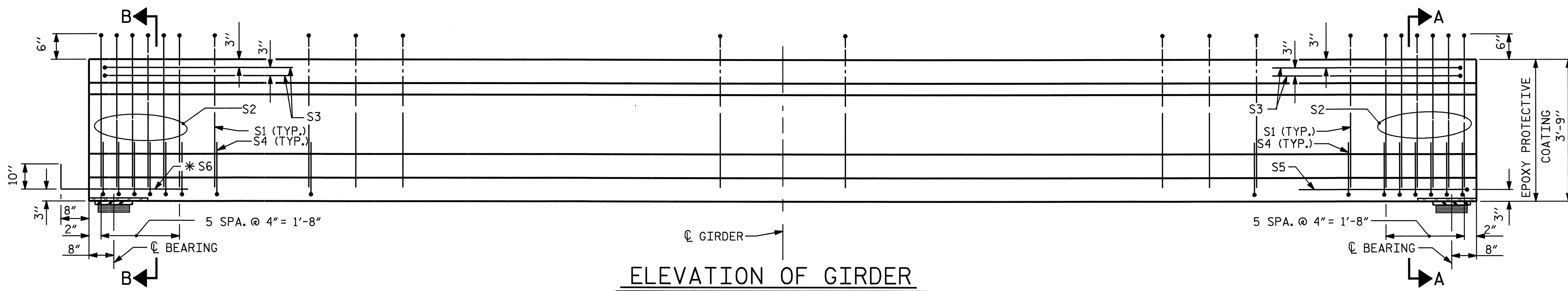
AT END OF GIRDER

AT CL OF GIRDER

1/2" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



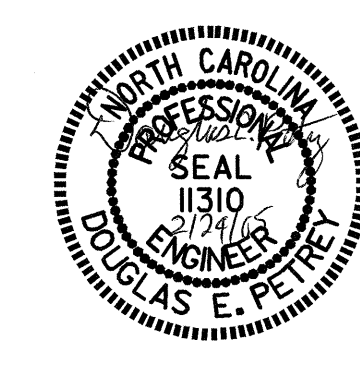
ELEVATION OF GIRDER

FIXED

EXPANSION

GIRDER DIMENSIONS			
GIRDER	DIMENSION A	DIMENSION B	DIMENSION C
C1	38'-1"	19'-0 1/2"	8 1/2"
C2	38'-1 5/8"	19'-0 3/16"	8 3/16"
C3	38'-3 1/2"	19'-1 3/4"	9 3/4"
C4	38'-6 3/4"	19'-3 3/8"	11 3/8"

GIRDERS REQUIRED	
NUMBER	LENGTH
C1	38'-1"
C2	38'-1 5/8"
C3	38'-3 1/2"
C4	38'-6 3/4"
TOTAL LENGTH	153.07'



ASSEMBLED BY: A.R.CHESSON	DATE: 7-04	CADD STANDARD
CHECKED BY: B.N.GRADY	DATE: 9-04	
DRAWN BY: RB	2/97	REV. 8/16/99 ARB/LES
CHECKED BY: VP	2/97	

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.

TIE ROD ASSEMBLY SHALL BE AASHTO M270 GRADE 36 STRUCTURAL STEEL.

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

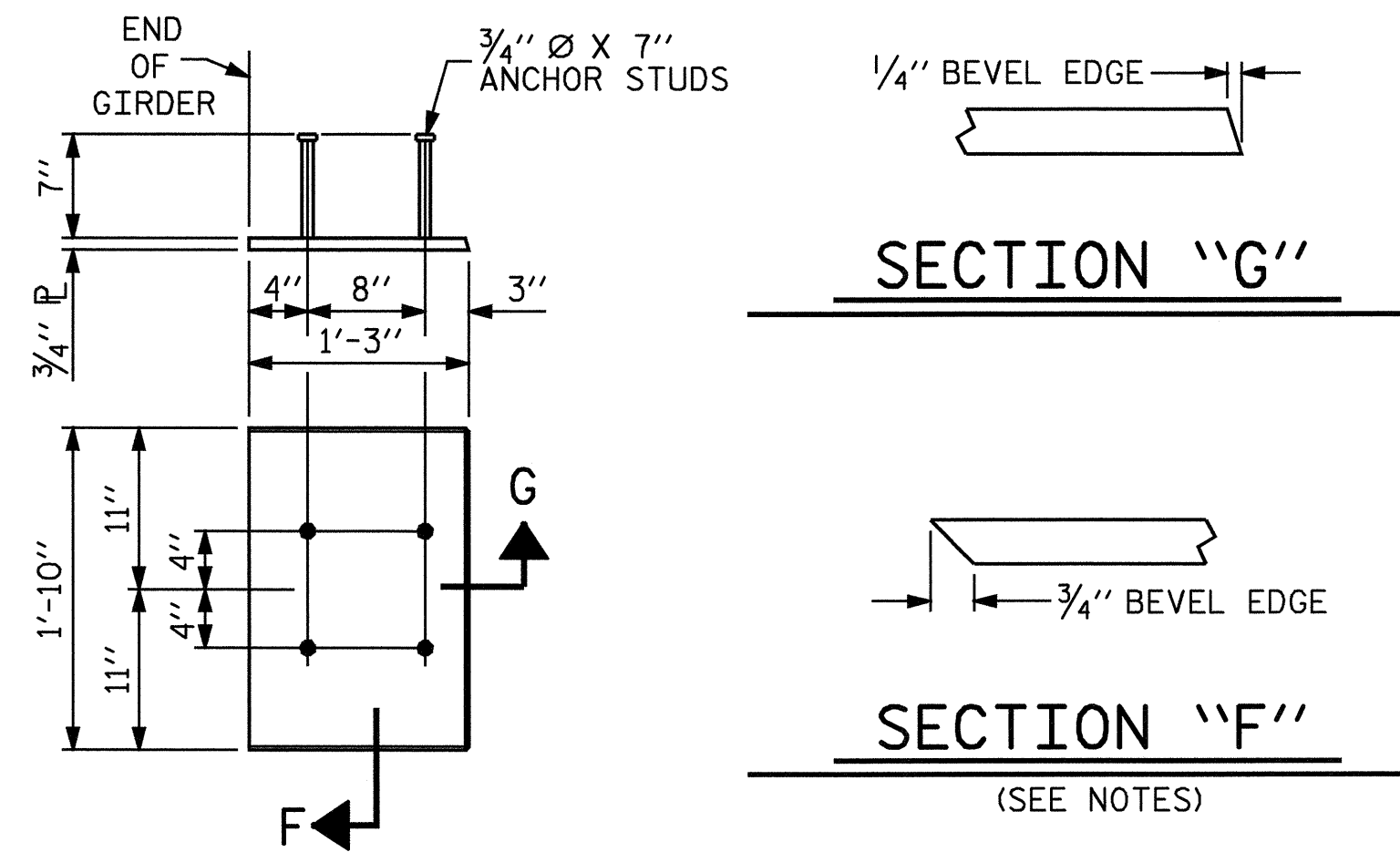
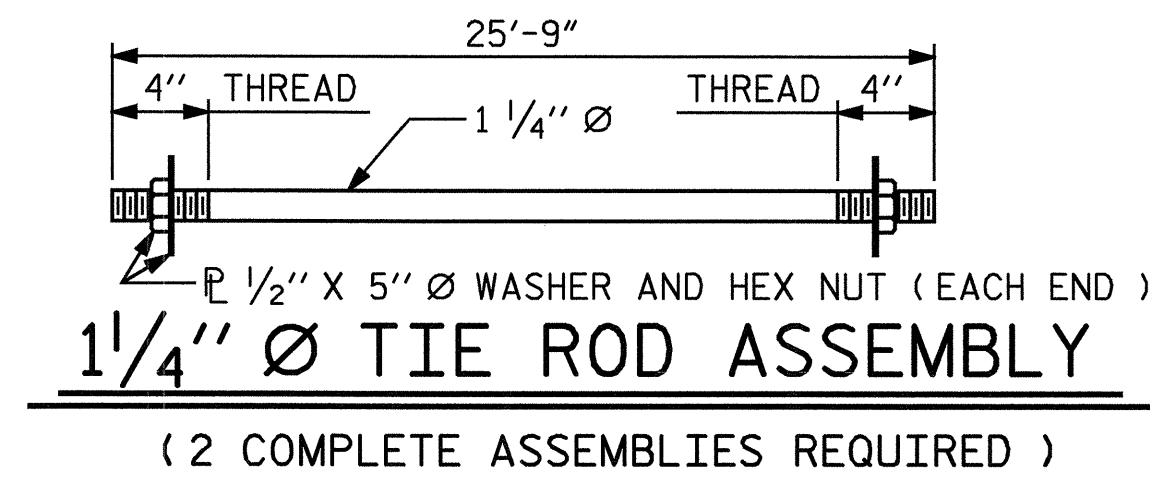
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & C AND 4400 PSI FOR SPAN B.

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".

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



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

DEAD LOAD DEFLECTION TABLE FOR SPAN A

TENTH POINTS	GIRDER A1 & A4											GIRDER A2 & A3										
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.010	0.020	0.027	0.032	0.033	0.032	0.027	0.020	0.010	0.0	0.0	0.010	0.020	0.027	0.032	0.033	0.032	0.027	0.020	0.010	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.007	0.012	0.017	0.020	0.021	0.020	0.017	0.012	0.007	0.0	0.0	0.007	0.014	0.019	0.022	0.023	0.022	0.019	0.014	0.007	0.0
FINAL CAMBER ↑	0.0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0.0	0.0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0.0	0.0

DEAD LOAD DEFLECTION TABLE FOR SPAN B

TENTH POINTS	GIRDER B1 & B4											GIRDER B2 & B3										
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.039	0.073	0.100	0.117	0.123	0.117	0.100	0.073	0.039	0.0	0.0	0.039	0.073	0.100	0.117	0.123	0.117	0.100	0.073	0.039	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.018	0.034	0.046	0.054	0.056	0.054	0.046	0.034	0.018	0.0	0.0	0.020	0.037	0.051	0.059	0.062	0.059	0.051	0.037	0.020	0.0
FINAL CAMBER ↑	0.0	1/4"	1/2"	5/8"	3/4"	13/16"	3/4"	5/8"	1/2"	1/4"	0.0	0.0	1/4"	7/16"	9/16"	11/16"	3/4"	11/16"	9/16"	7/16"	1/4"	0.0

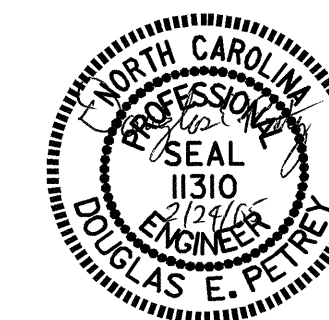
DEAD LOAD DEFLECTION TABLE FOR SPAN C

TENTH POINTS	GIRDER C1											GIRDER C2 & C3											GIRDER C4										
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0.0	0.0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0.0	0.0	0.006	0.012	0.016	0.019	0.020	0.019	0.016	0.012	0.006	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.003	0.005	0.007	0.009	0.009	0.009	0.007	0.005	0.003	0.0	0.0	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.0	0.0	0.003	0.006	0.008	0.009	0.009	0.009	0.008	0.006	0.003	0.0
FINAL CAMBER ↑	0.0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0.0	0.0	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/16"	1/16"	1/16"	0.0	0.0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0.0	

* INCLUDES FUTURE WEARING SURFACE.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM)
EXCEPT CAMBER, WHICH IS GIVEN IN INCHES (FRACTION FORM).

ASSEMBLED BY :	A.R.CHESSON	DATE :	7-04
CHECKED BY :	B.N.GRADY	DATE :	9-04
DRAWN BY :	ELR 11/91	REV. 8/16/99	MAB/LES
CHECKED BY :	GRP 11/91	REV. 10/17/00	RWW/LES
		REV. 7/10/01	LES/RDR



PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						STANDARD		PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS AND DEAD LOAD DEFLECTIONS		NOVEMBER 1991	
REVISIONS								SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:			S-14			
1			3					TOTAL SHEETS			
2			4					41			

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.

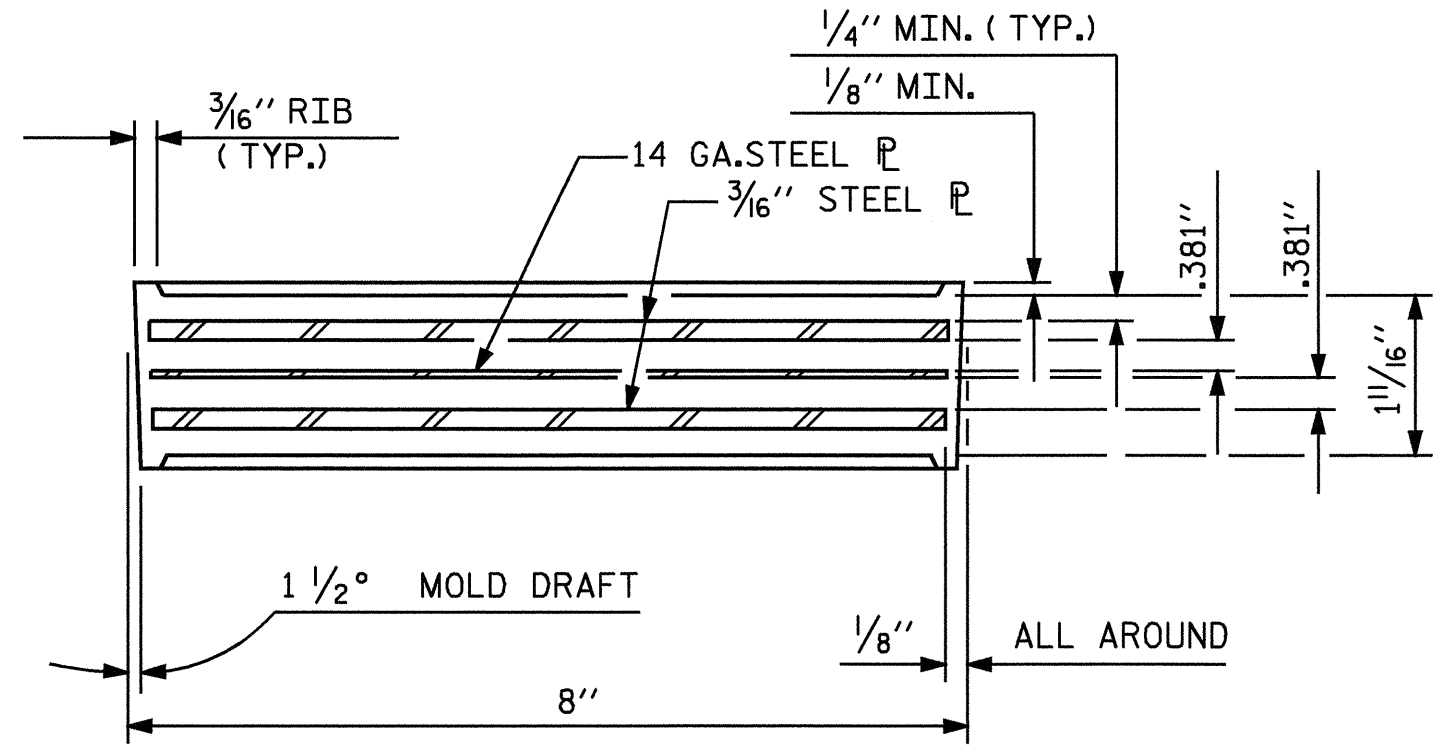
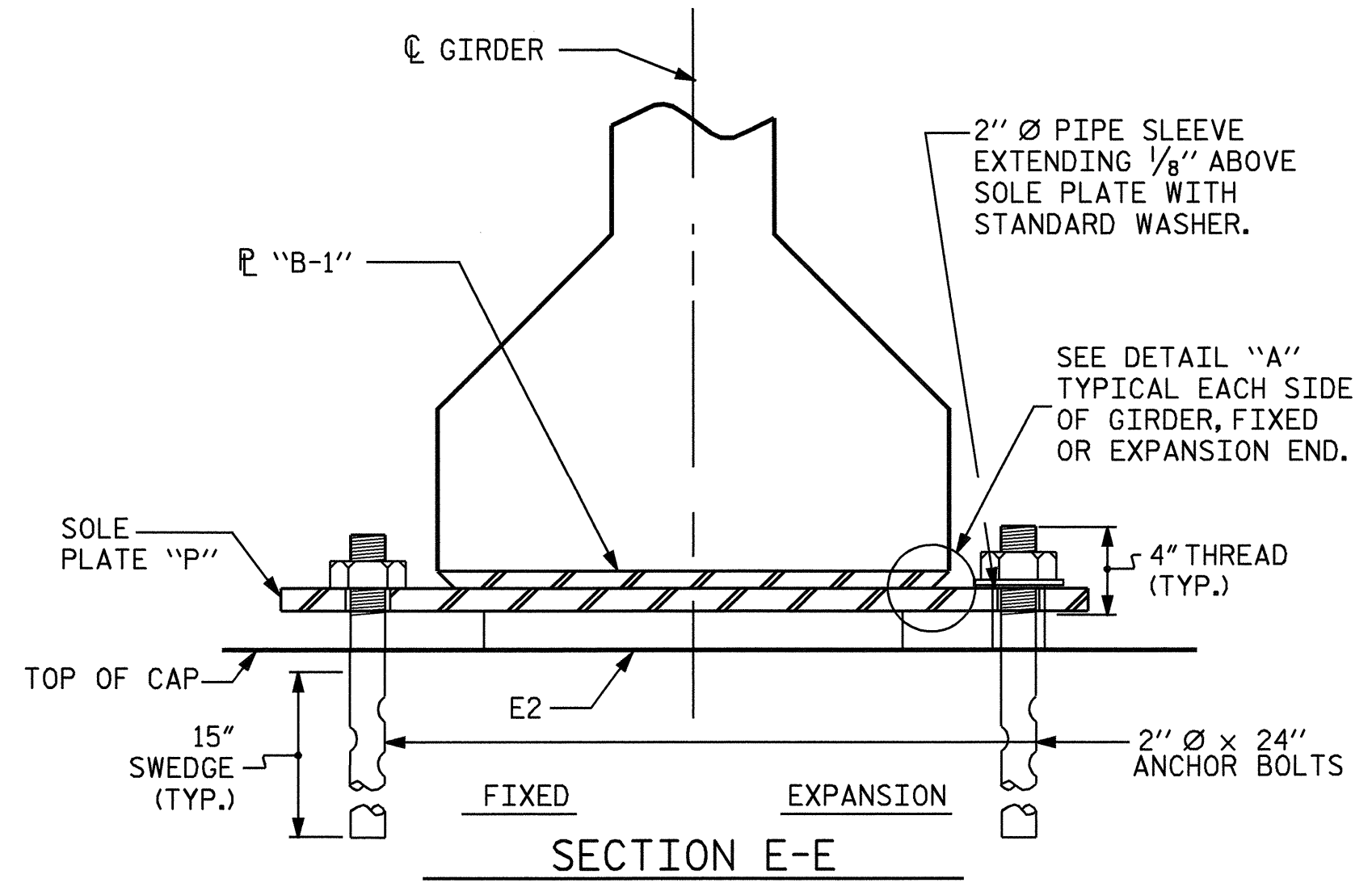
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

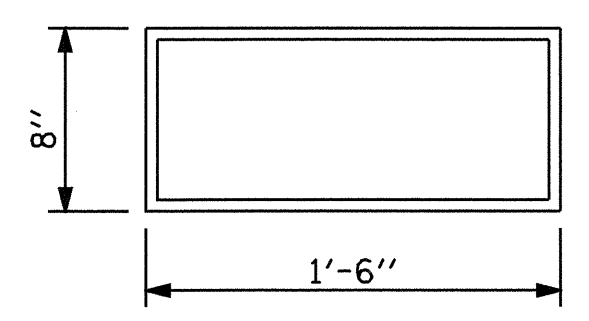
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

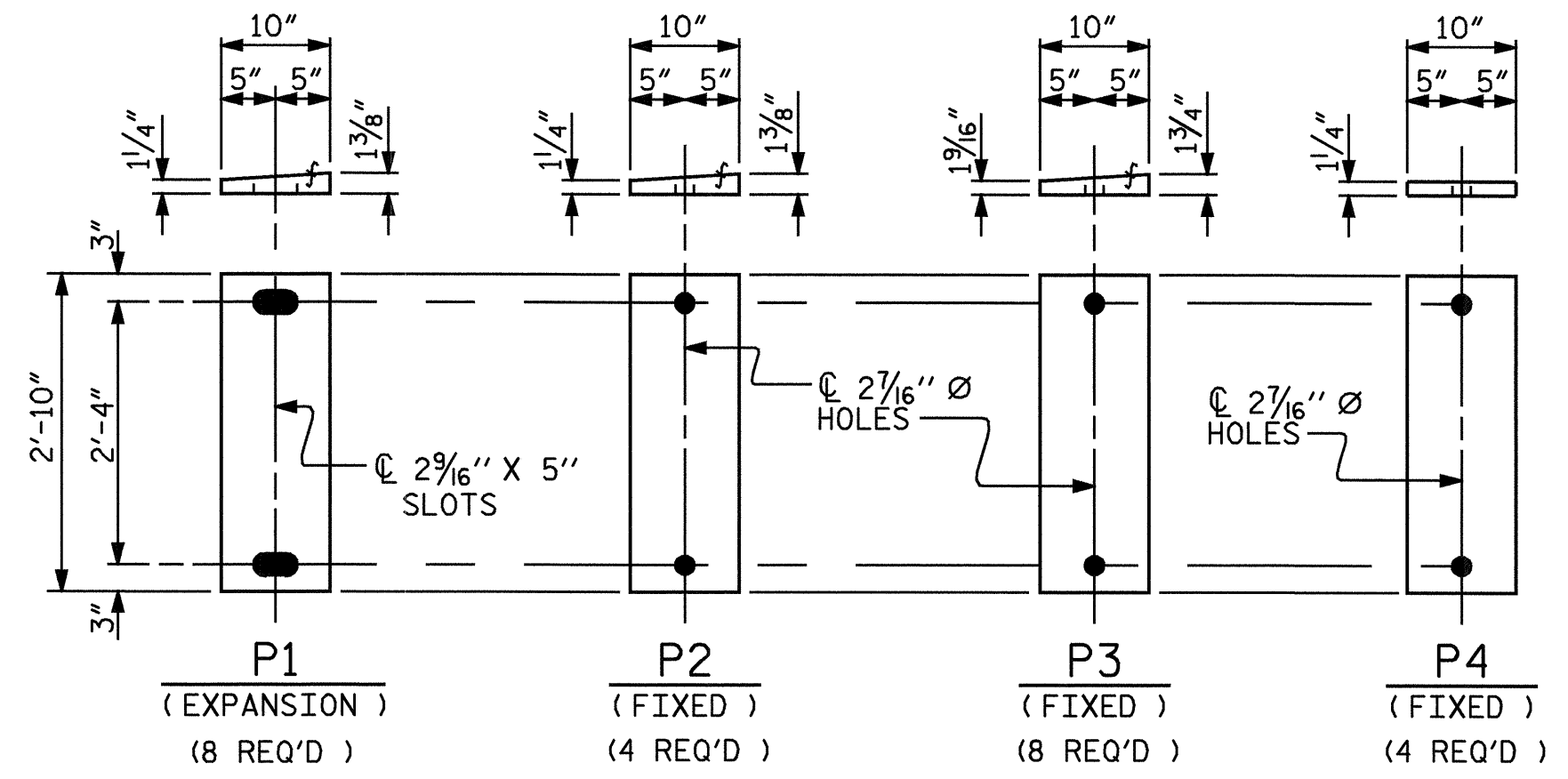


TYPICAL SECTION OF ELASTOMERIC BEARINGS



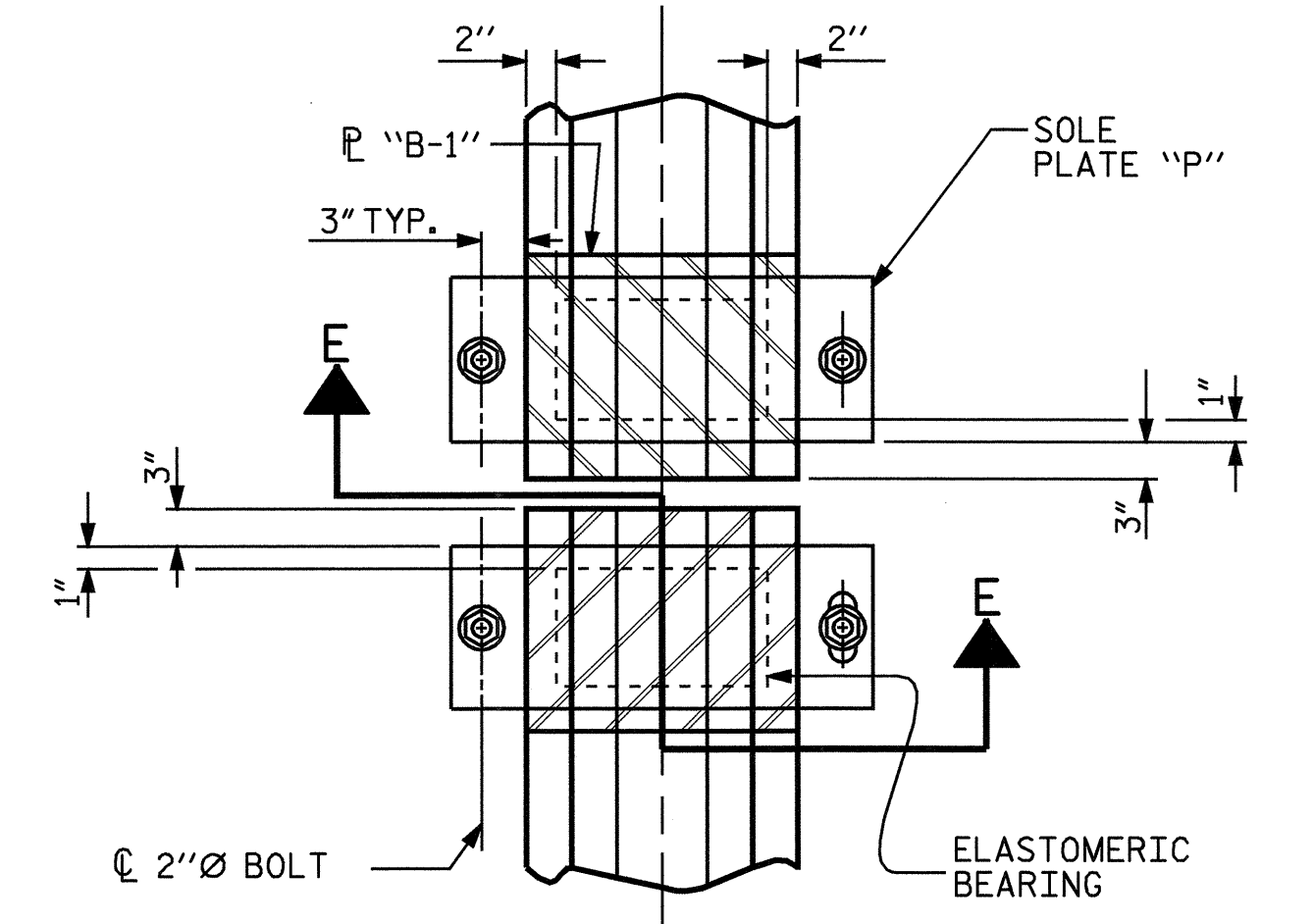
E2 (24 REQ'D)
 PLAN VIEW OF ELASTOMERIC BEARING

TYPE III

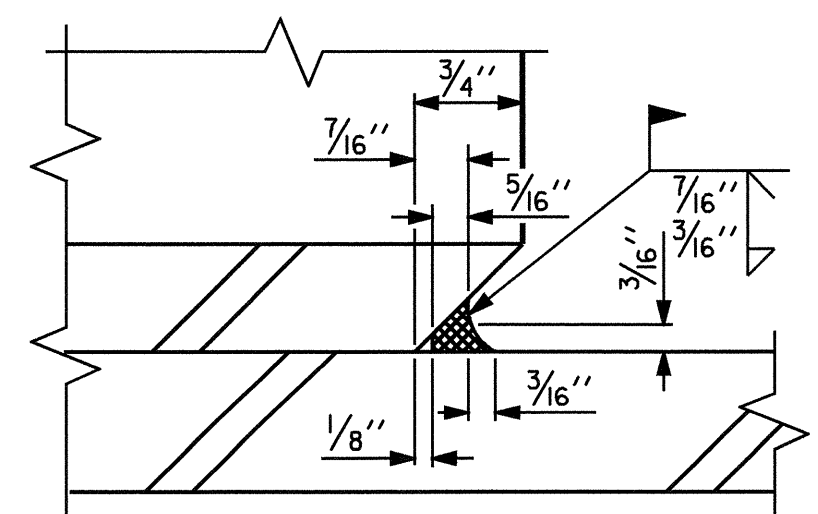


SOLE PLATE DETAILS ("P")

SEE "GIRDER LAYOUT" SHEET FOR SOLE P ORIENTATION.



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)
 TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



DETAIL "A"

- LOAD RATINGS -	
45" PCG -TYPE III	MAX.D.L.+L.L. 115 K

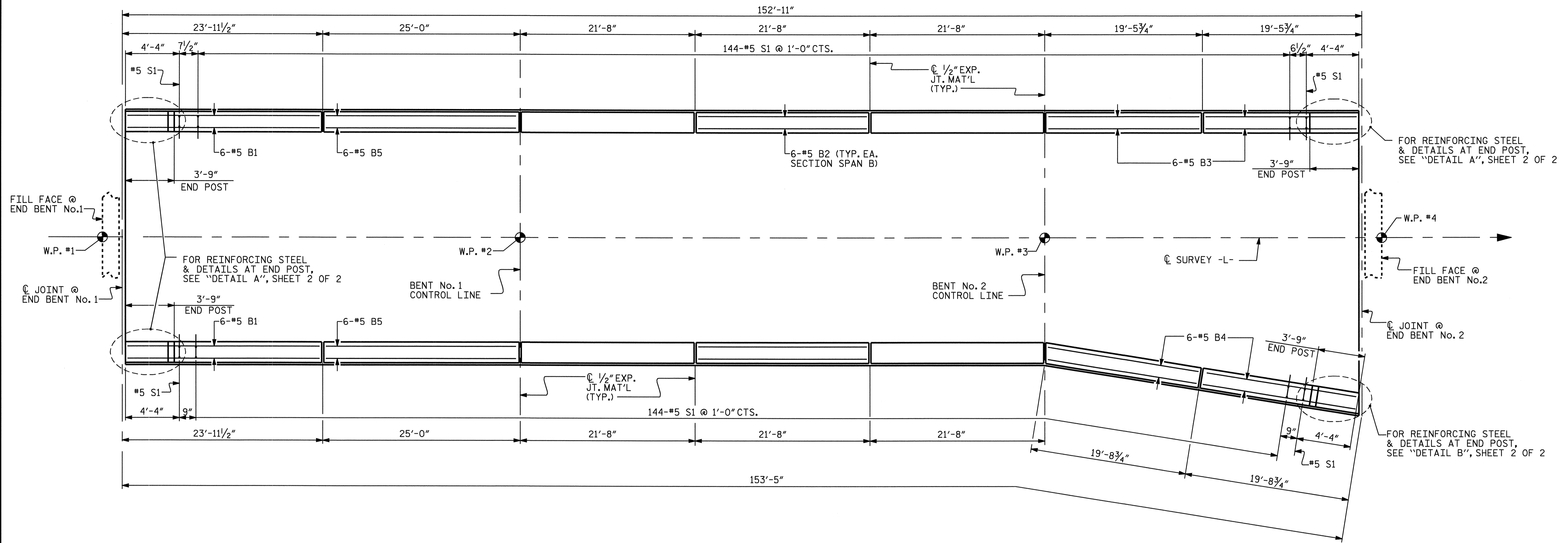
PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER
 AUGUST SUPERSTRUCTURE 1989



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : A.R.CHESSON	DATE : 7-04
CHECKED BY : B.N.GRADY	DATE : 9-04
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



PLAN OF CONCRETE PARAPET

FOR REINFORCING STEEL & DETAILS OF PARAPET, SEE "CONCRETE PARAPET DETAILS", SHEET 2 OF 2.

*5 S1 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE PARAPET.

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

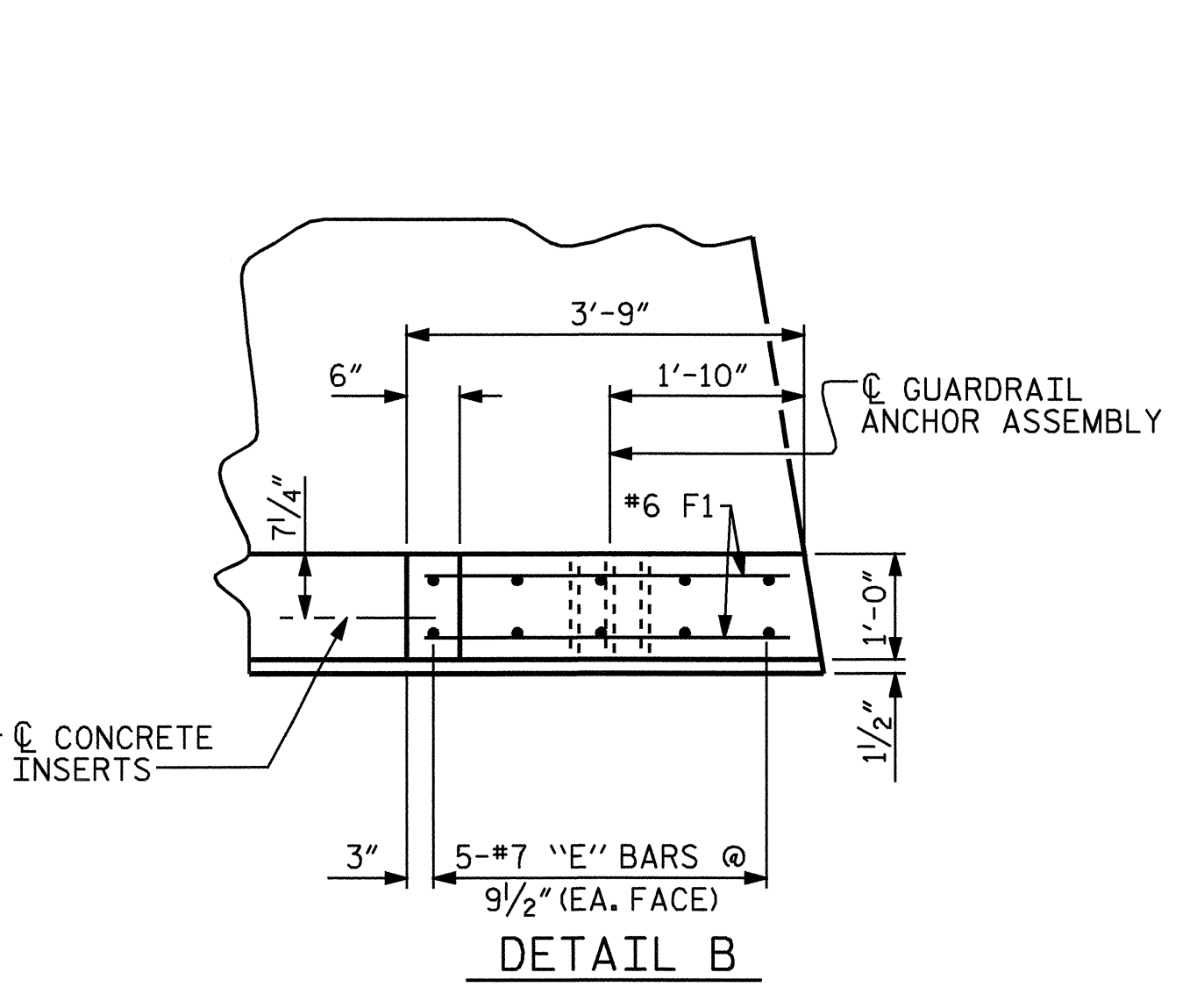
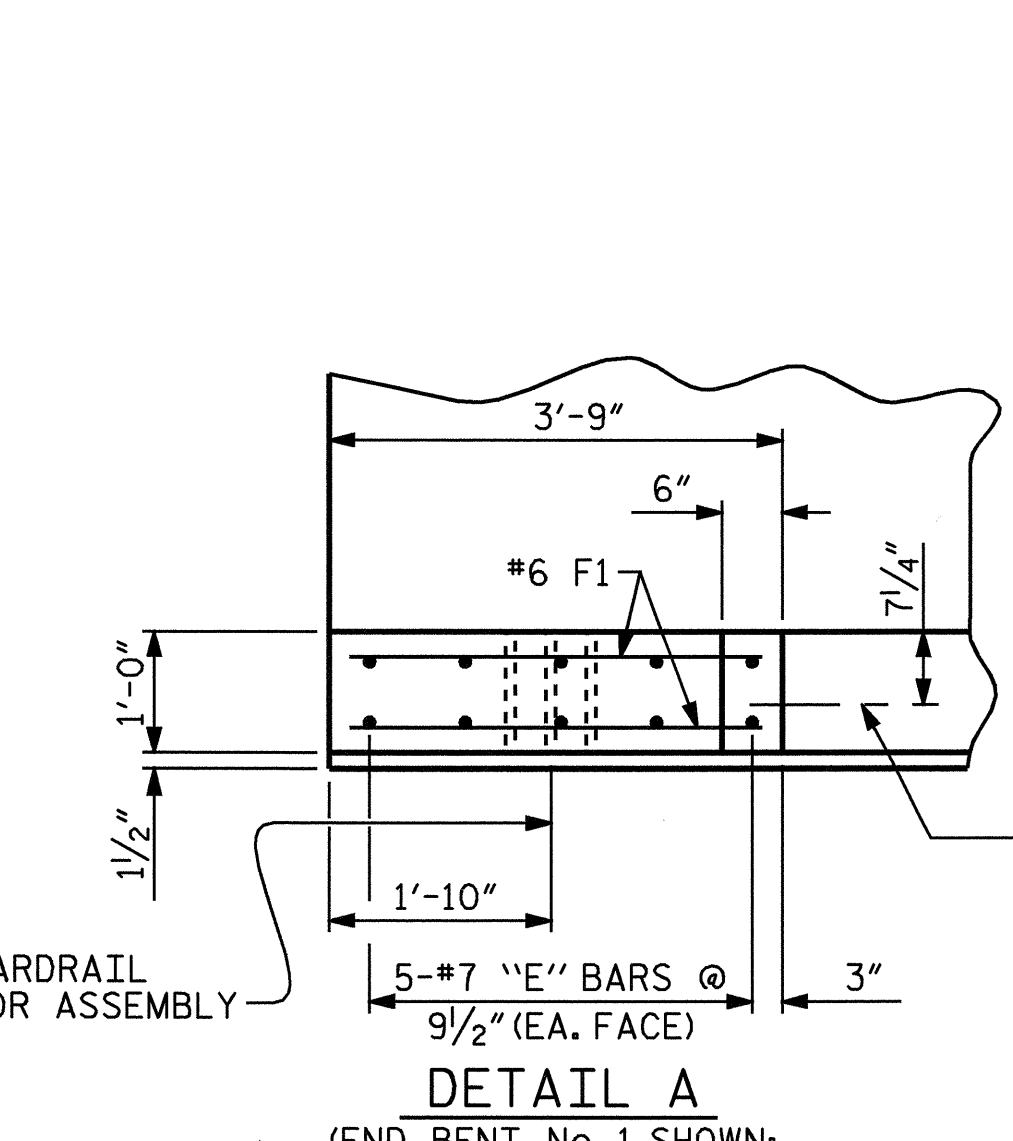
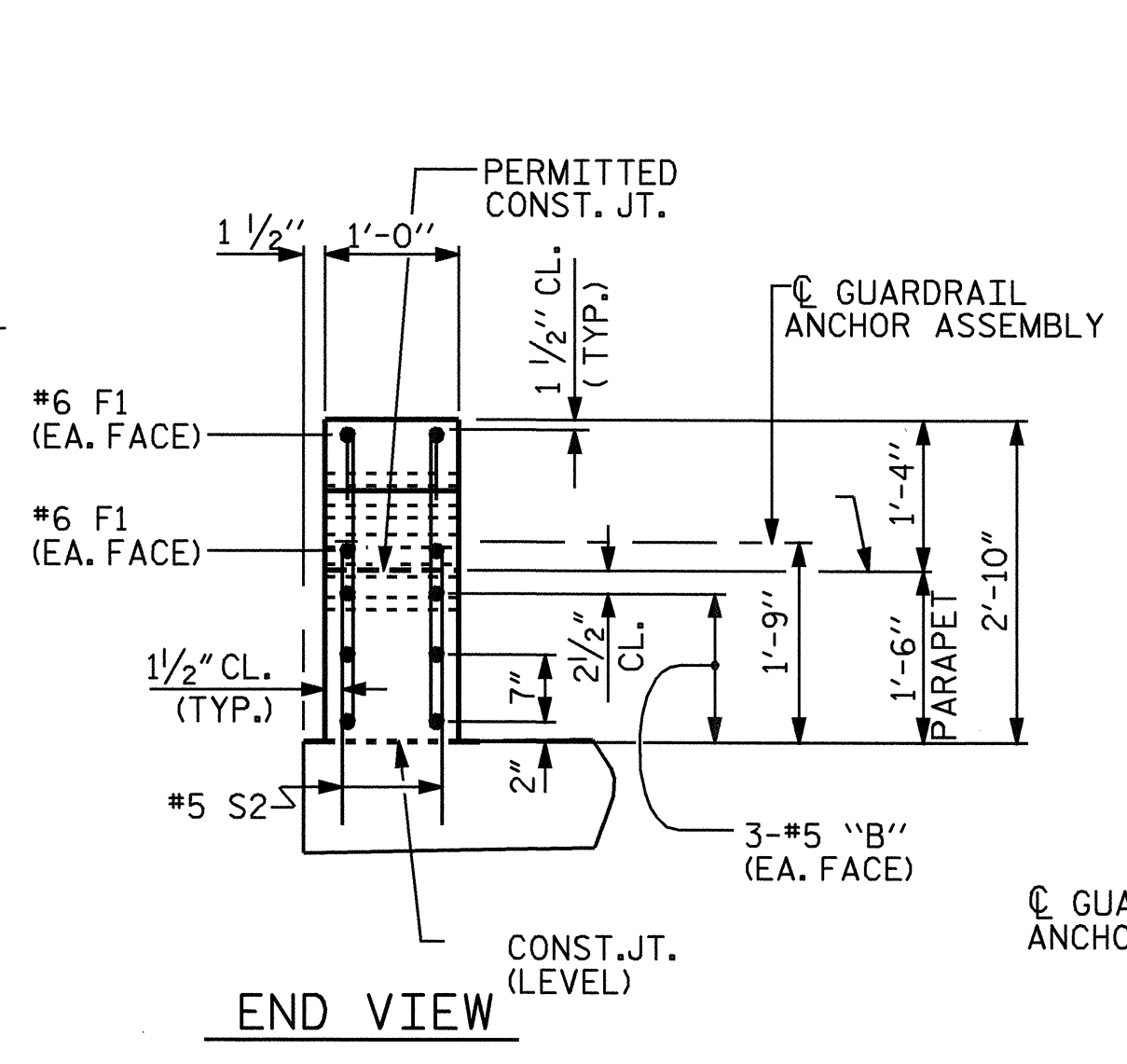
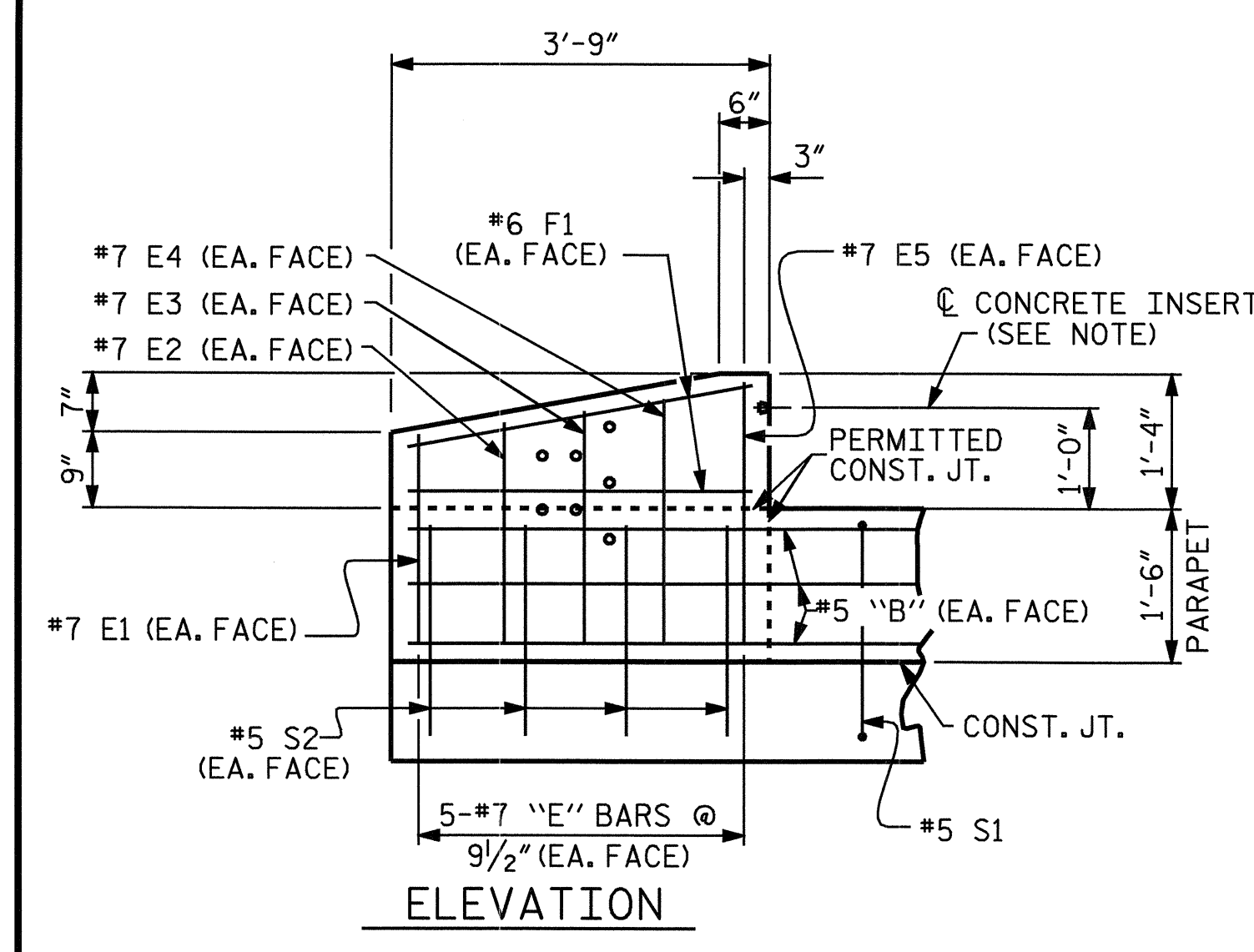
CONCRETE PARAPET DETAILS



DRAWN BY: A.R.CHESSON DATE: 7-04
 CHECKED BY: B.N.GRADY DATE: 9-04

24-FEB-2005 10:26
 W:\squadw\lb3922\achesson\mlorost\atlon\lb3922_sd_mr_01.dgn
 achesson

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			41



END POST DETAILS

NOTES

THE CONCRETE PARAPETS 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.

ALL REINFORCING STEEL IN CONCRETE PARAPETS SHALL BE EPOXY COATED.

THE JOINT IN THE DECK SHALL BE SAWS PRIOR TO CASTING THE CONCRETE PARAPET.

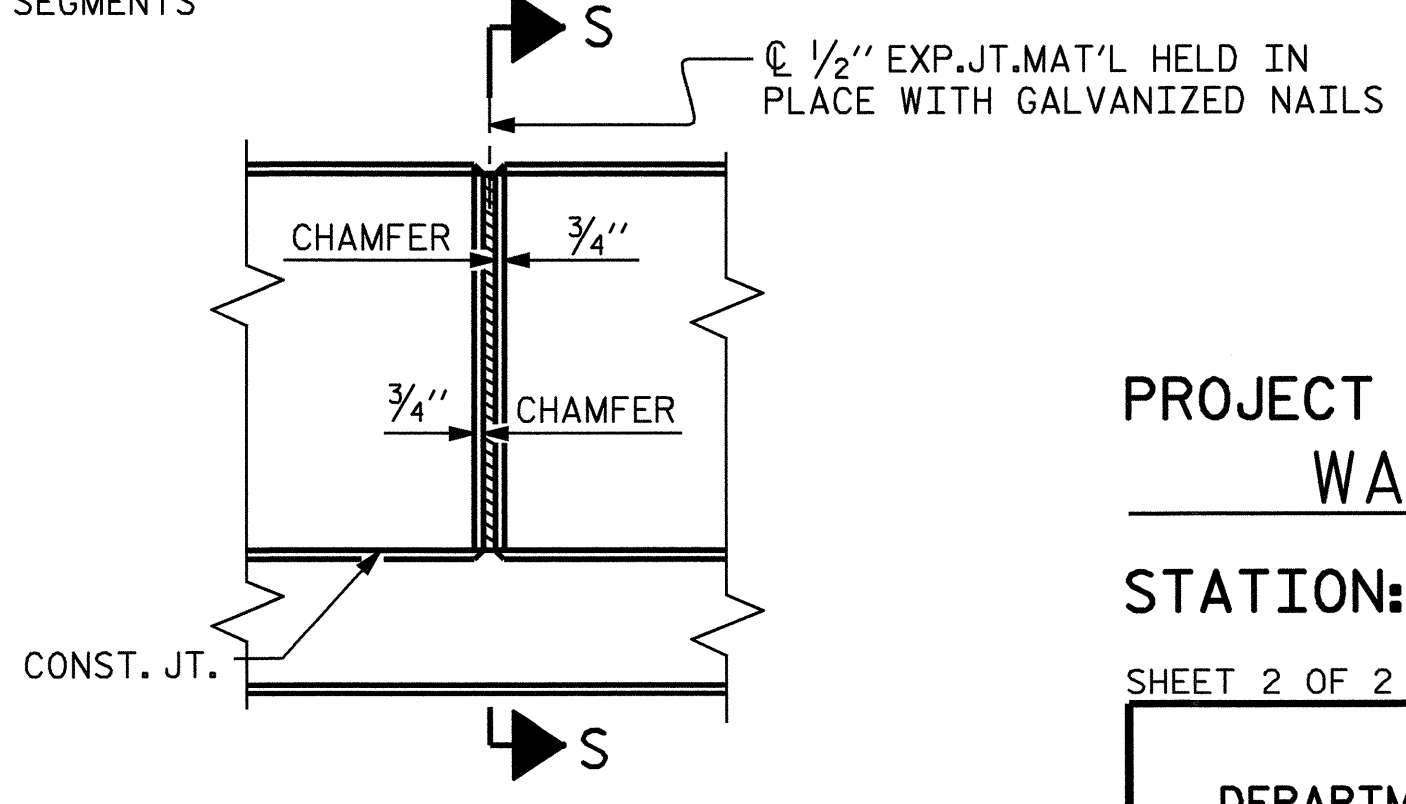
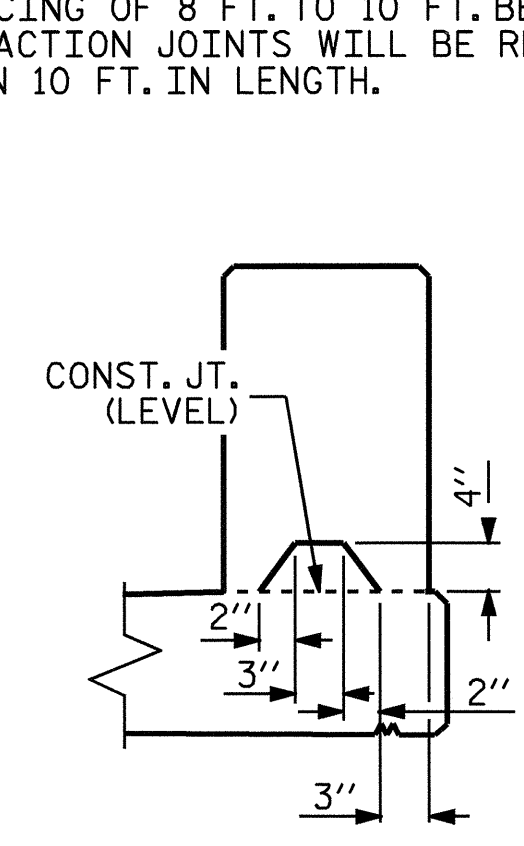
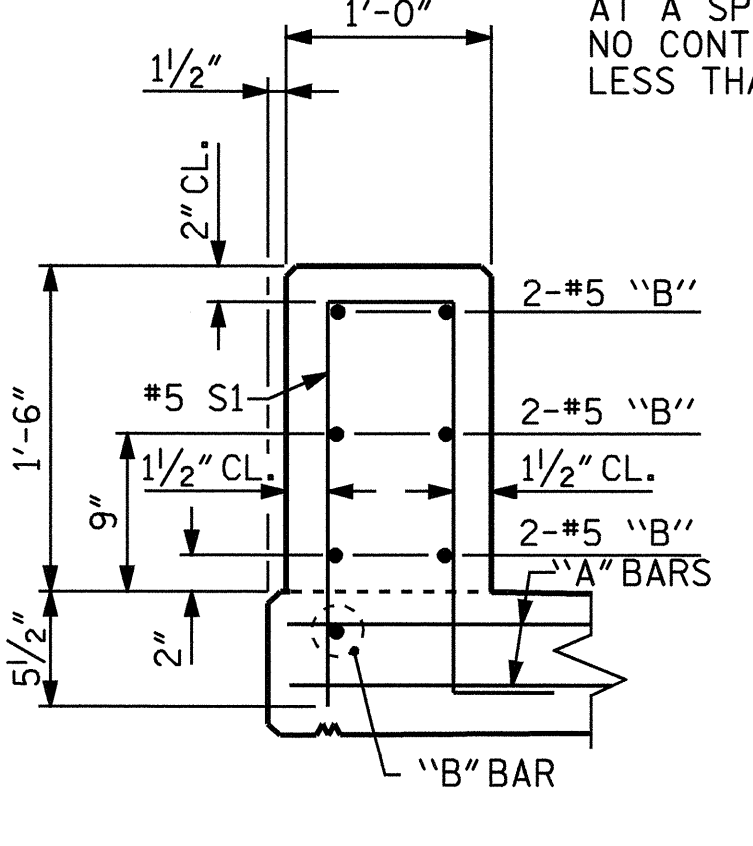
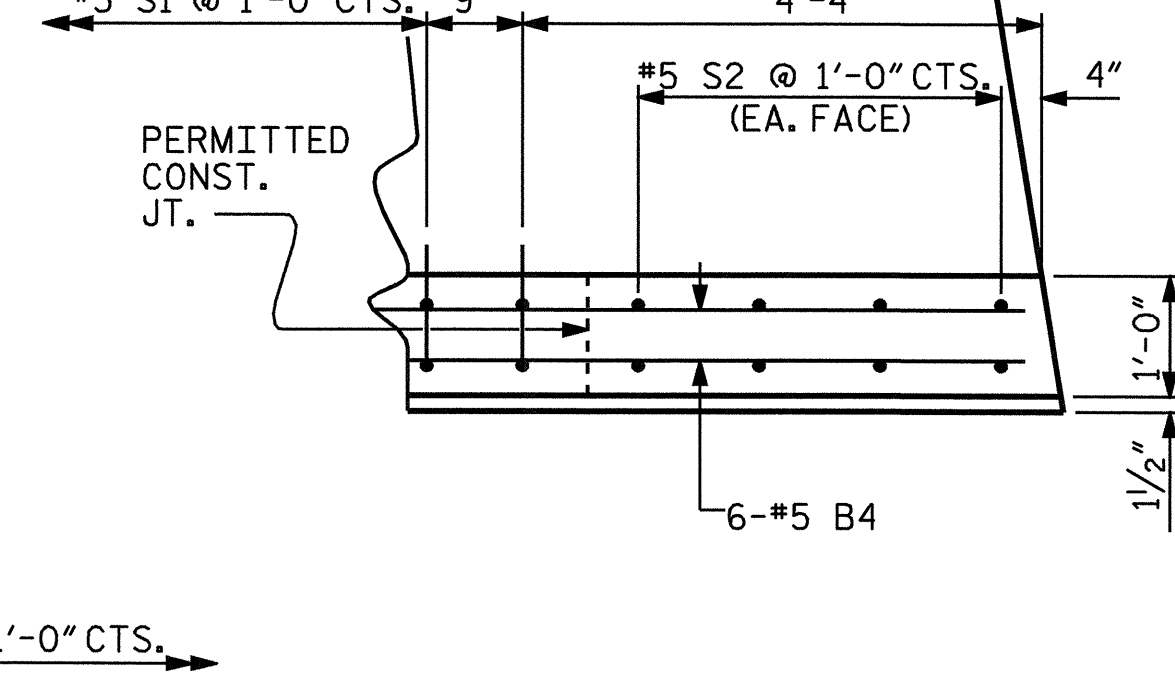
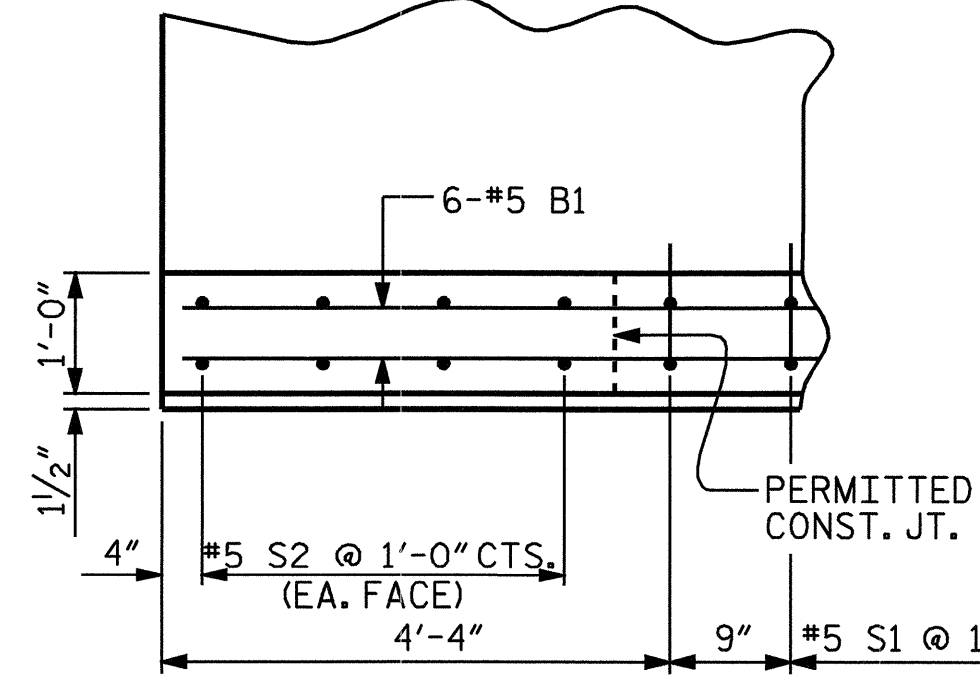
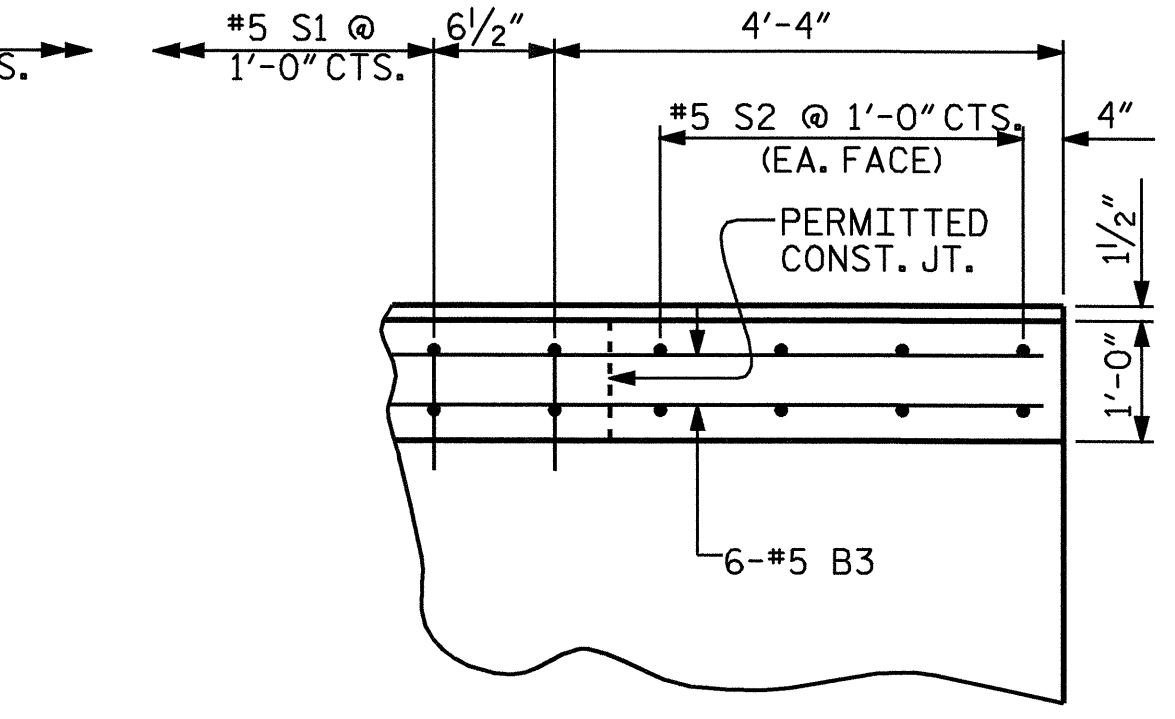
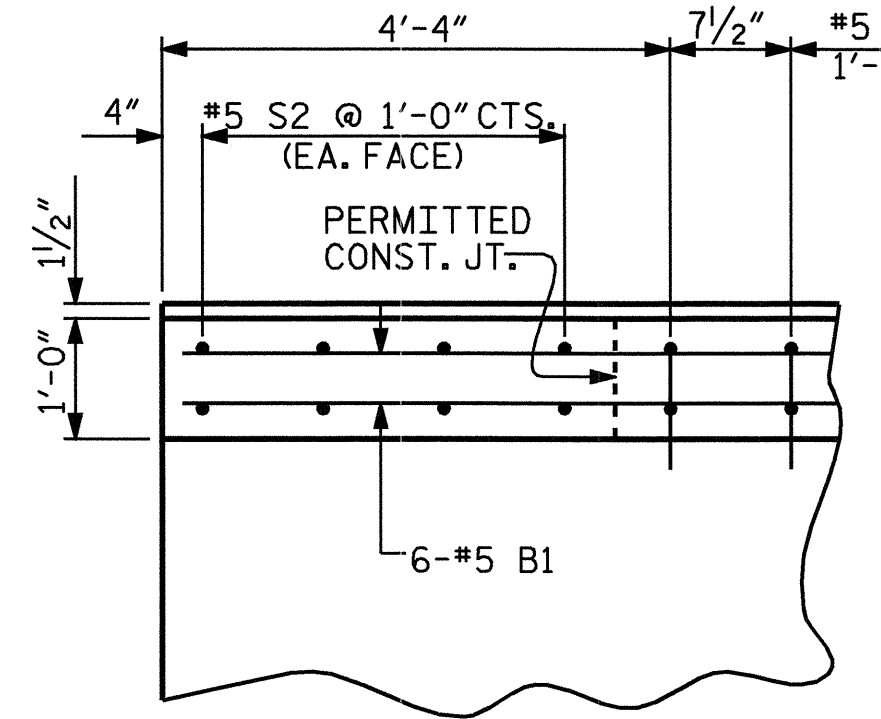
THE #5 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD OF THE #5 S2 BARS IS 18.6 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

FOR THE DETAILS OF THE CONCRETE INSERTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

THE REINFORCING STEEL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR THE ANCHOR ASSEMBLY FOR ONE BAR METAL RAIL.

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



PARAPET DETAILS

BAR TYPE						
BAR DIMENSIONS ARE OUT TO OUT						
BILL OF MATERIAL						
FOR TWO PARAPETS AND FOUR END POSTS FOR ONE BAR METAL RAIL						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*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	16	#6	STR	3'-5"	82	
*B1	12	#5	STR	23'-6"	294	
*B2	36	#5	STR	21'-3"	798	
*B3	12	#5	STR	19'-1"	239	
*B4	12	#5	STR	19'-4"	242	
*B5	12	#5	STR	24'-7"	308	
*S1	292	#5	1	5'-0"	1523	
*S2	32	#5	STR	2'-0"	67	
* THESE BARS ARE EPOXY COATED.						
EPOXY COATED REINF. STEEL = 3742 LBS						
CLASS AA CONCRETE					TOTAL C.Y.	17.6
1'-0" X 1'-6" CONCRETE PARAPET					LIN. FT.	306.33

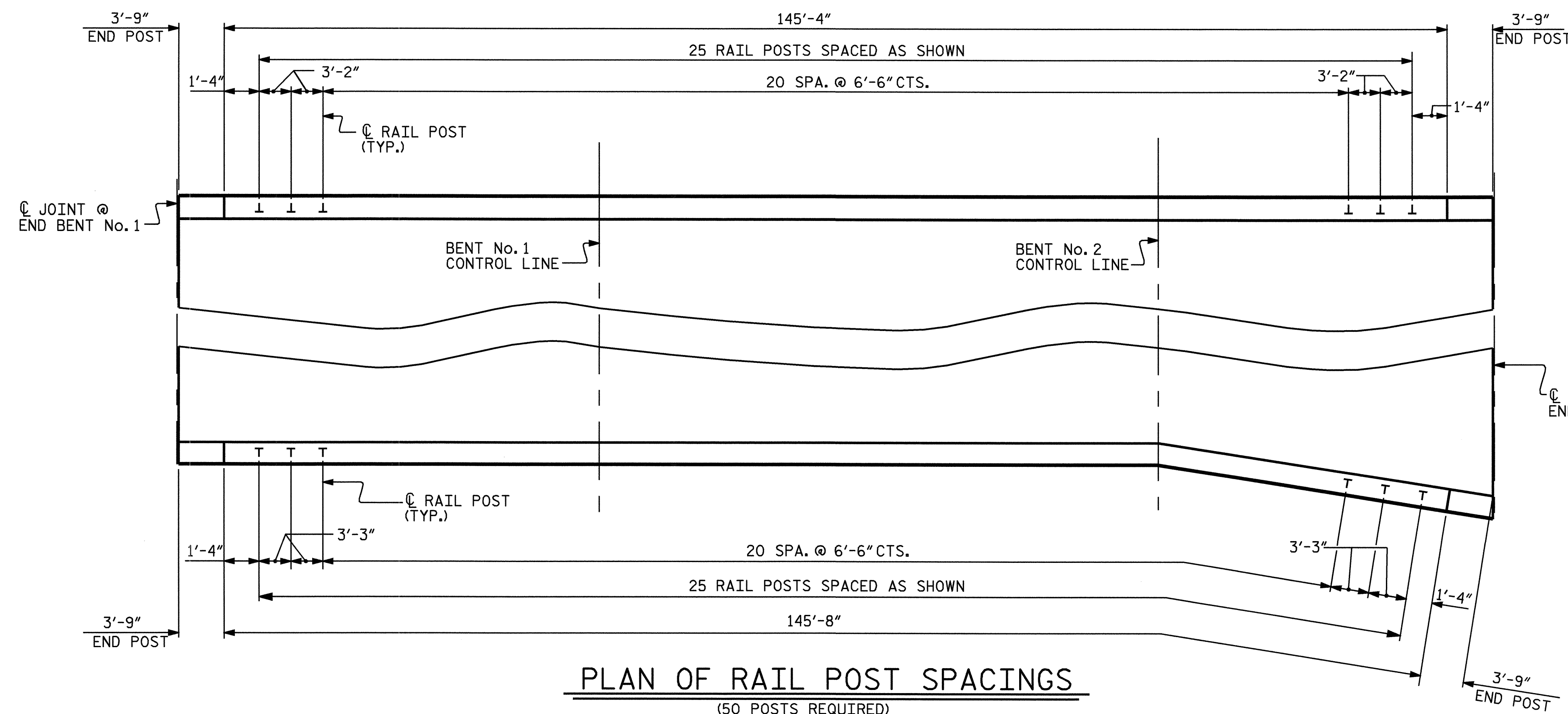
PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 2 OF 2

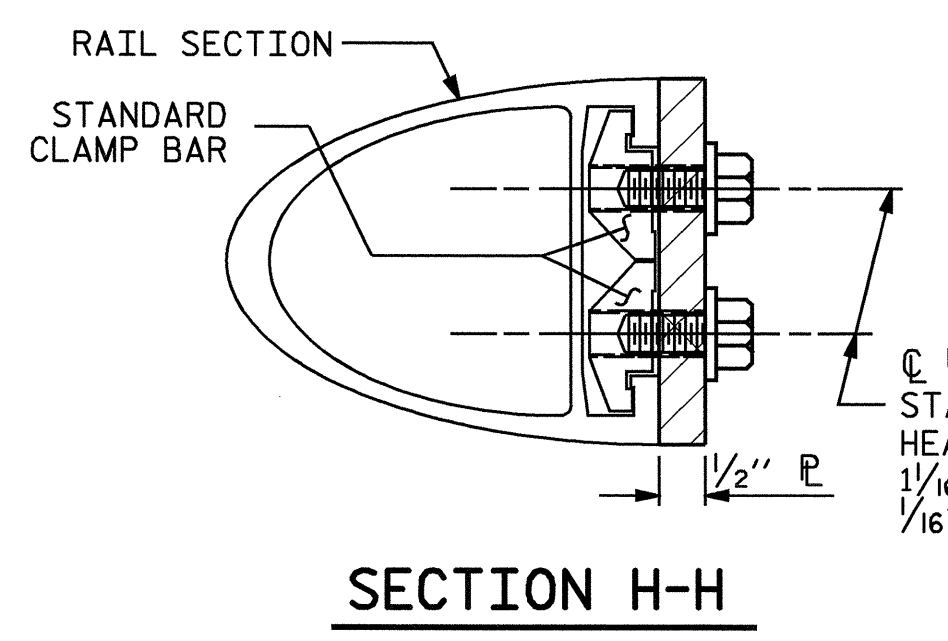
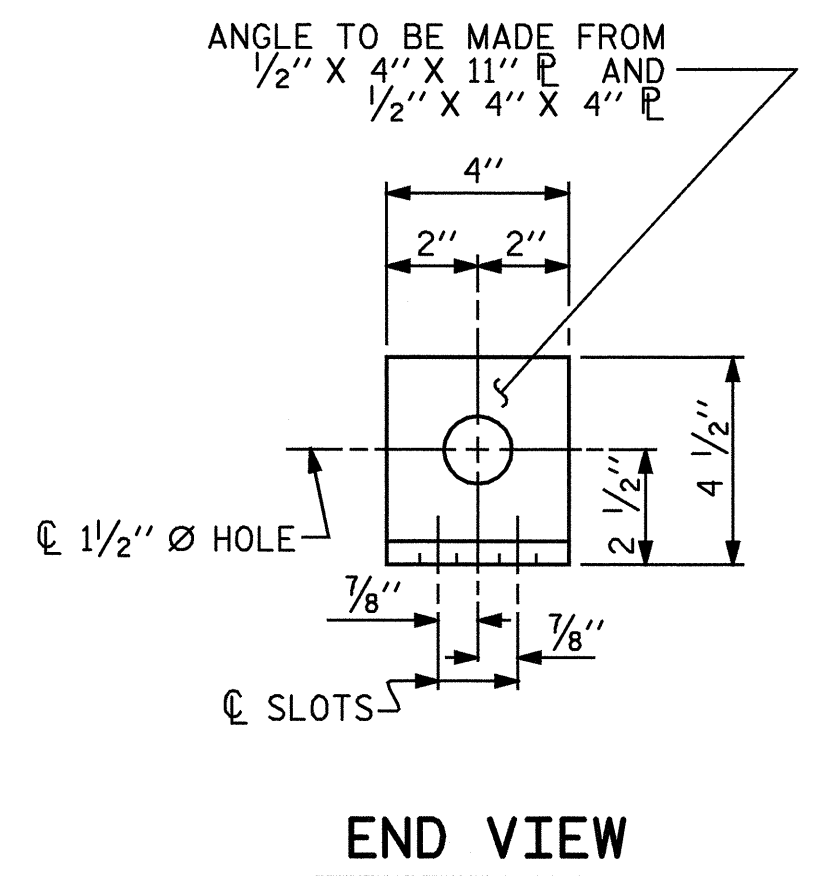
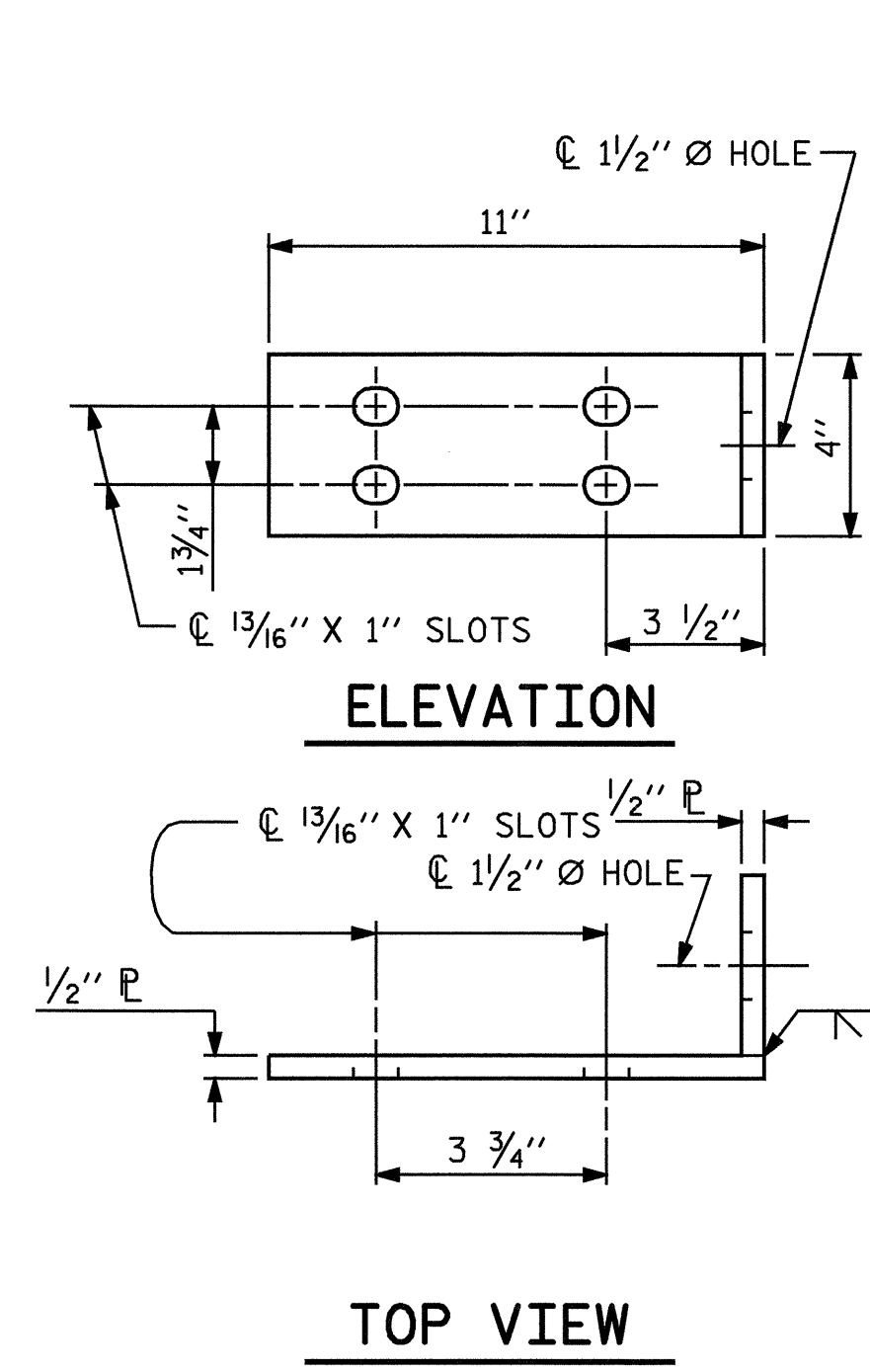
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CONCRETE PARAPET DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					41

ASSEMBLED BY: A.R.CHESSON DATE: 7-04
 CHECKED BY: B.N.GRADY DATE: 9-04
 DRAWN BY: LES 8/01
 CHECKED BY: RDR 8/01

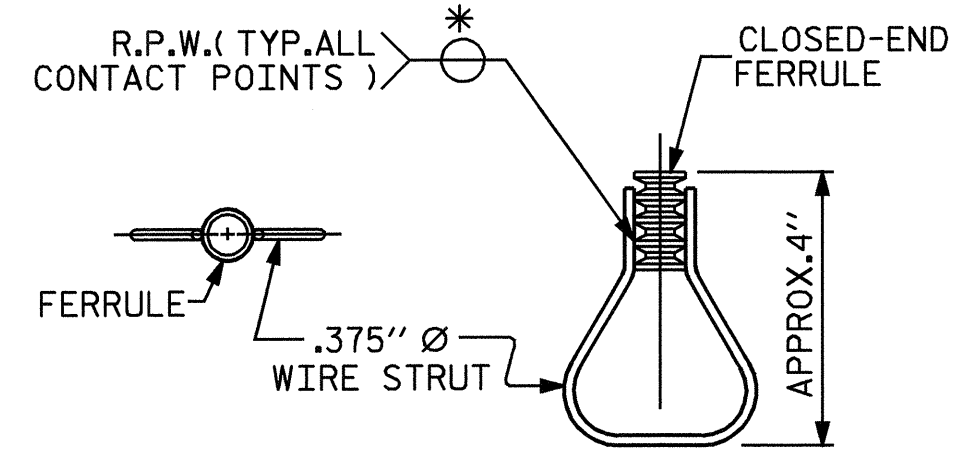
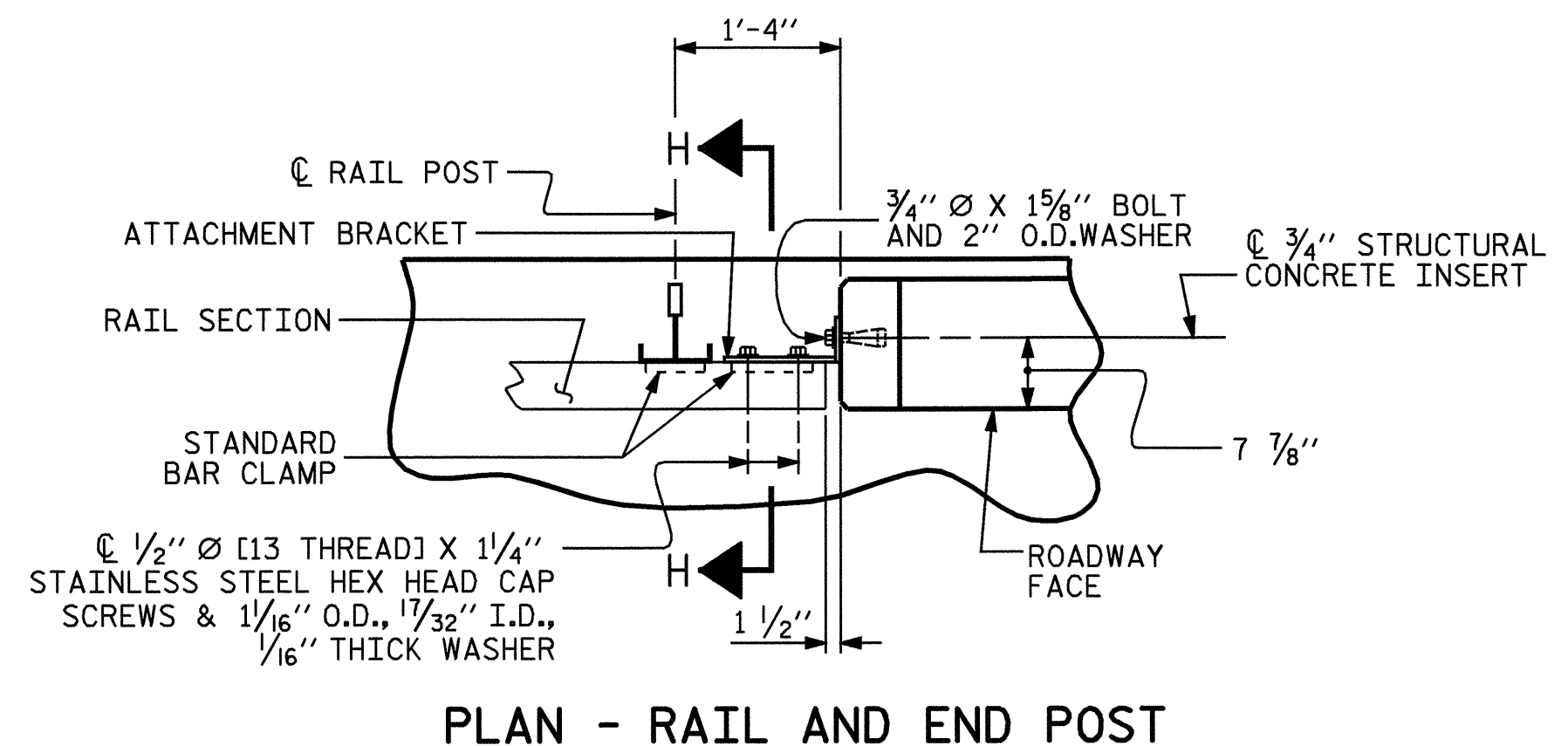




PLAN OF RAIL POST SPACINGS
(50 POSTS REQUIRED)



DETAILS FOR ATTACHING METAL RAIL TO END POST



STRUCTURAL CONCRETE INSERT

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

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" Ø 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" Ø 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 1/16" Ø 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" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø 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" Ø 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" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø 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.

ASSEMBLED BY : A.R.CHESSON	DATE : 7-04
CHECKED BY : B.N.GRADY	DATE : 9-04
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



PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
RAIL POST SPACINGS AND END OF RAIL DETAILS					
DECEMBER 1988					
REVISIONS					SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS 41					

NOTES

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

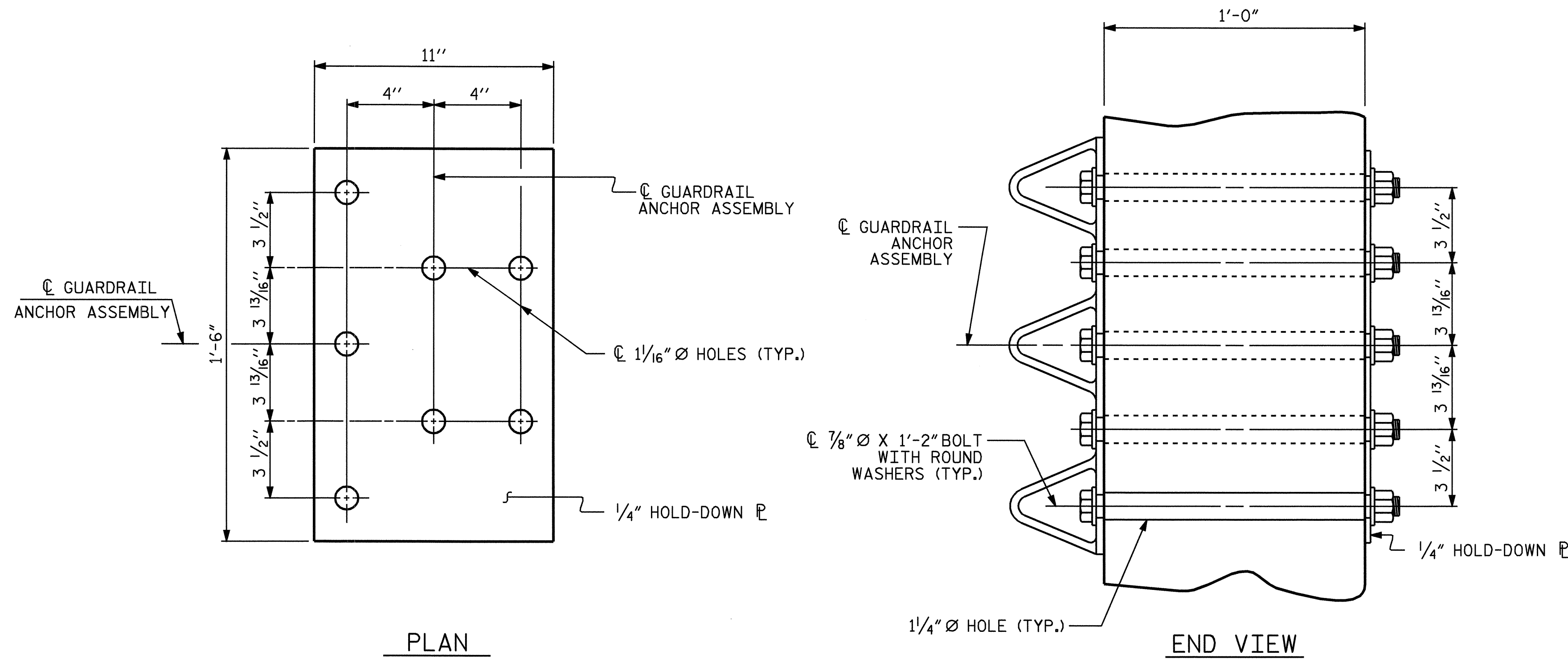
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

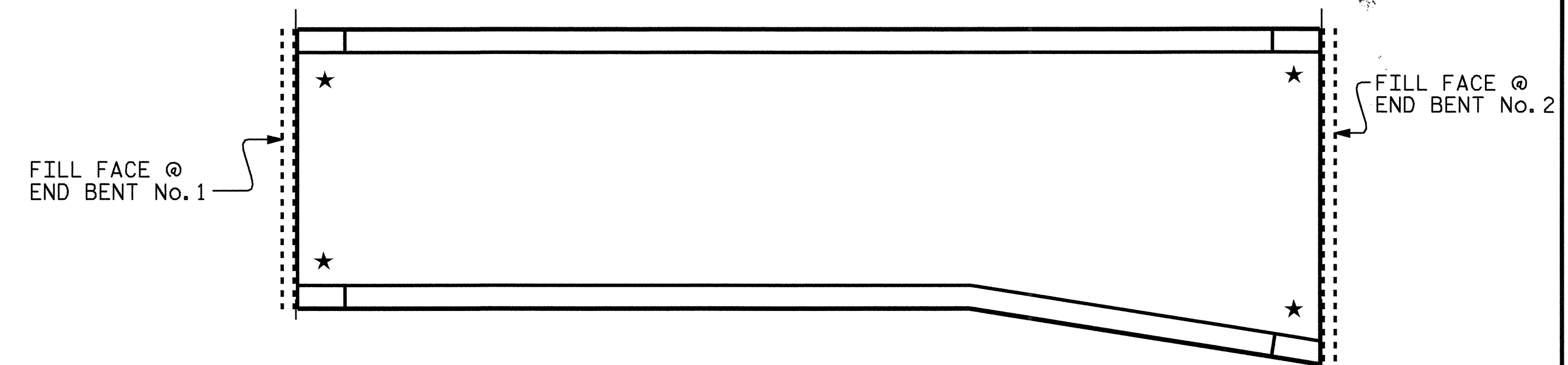
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

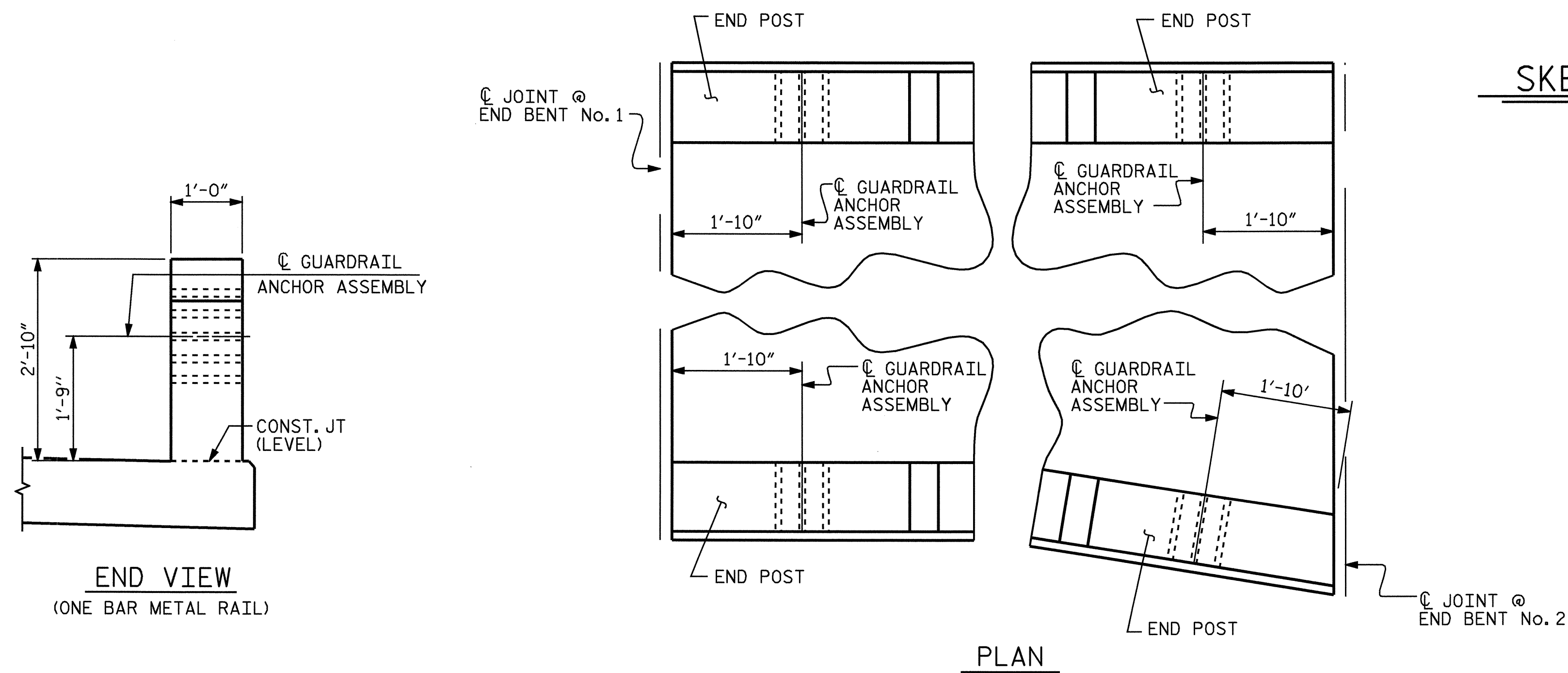


GUARDRAIL ANCHOR ASSEMBLY DETAILS



★ LOCATION OF GUARDRAIL ATTACHMENT

SKETCH SHOWING POINTS OF ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-



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

JUNE		1994	
REVISIONS			
NO.	BY:	DATE:	TOTAL SHEETS
1			41
2			41

ASSEMBLED BY : A.R.CHESSON	DATE : 7-04
CHECKED BY : B.N.GRADY	DATE : 9-04
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

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

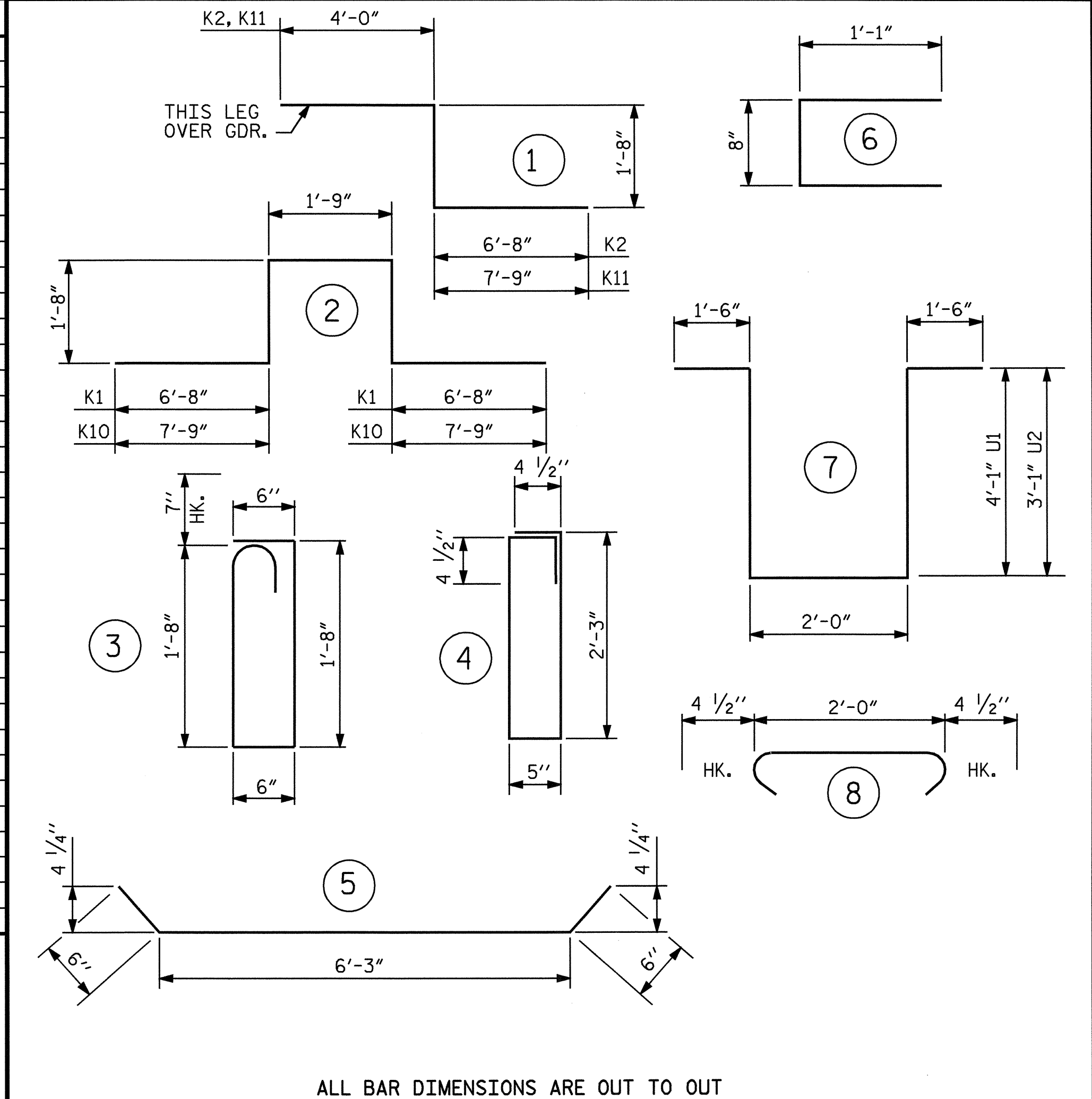
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

BILL OF MATERIAL

SPANS A, B & C											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	234	#5	STR	30'-11"	7546	*B10	1	#4	STR	23'-9"	16
A2	234	#5	STR	30'-11"	7546	*B11	1	#4	STR	14'-5"	10
						*B12	1	#4	STR	5'-0"	3
*A101	8	#5	STR	31'-4"	261	B13	30	#5	STR	38'-9"	1212
*A102	8	#5	STR	32'-0"	267	B14	9	#5	STR	33'-11"	318
*A103	8	#5	STR	32'-8"	273	B15	12	#5	STR	52'-4"	655
*A104	8	#5	STR	33'-3"	277	B16	4	#5	STR	39'-2"	163
*A105	8	#5	STR	33'-11"	283	*B17	6	#4	STR	27'-1"	109
*A106	8	#5	STR	34'-7"	289	*B18	5	#4	STR	24'-9"	83
*A107	8	#5	STR	35'-3"	294	*B19	2	#4	STR	20'-7"	27
*A108	8	#5	STR	35'-10"	299						
*A109	8	#5	STR	36'-6"	305	*K1	4	#8	2	18'-5"	197
						*K2	4	#8	1	12'-4"	132
A201	8	#5	STR	31'-4"	261	K3	8	#4	STR	25'-0"	134
A202	8	#5	STR	32'-0"	267	K4	24	#4	STR	7'-4"	118
A203	8	#5	STR	32'-8"	273	K5	12	#4	STR	6'-7"	53
A204	8	#5	STR	33'-3"	277	K6	12	#4	STR	4'-11"	39
A205	8	#5	STR	33'-11"	283	K7	12	#5	5	7'-3"	91
A206	8	#5	STR	34'-7"	289	K8	12	#5	STR	6'-9"	84
A207	8	#5	STR	35'-3"	294	*K9	6	#6	STR	8'-7"	77
A208	8	#5	STR	35'-10"	299	*K10	4	#8	2	20'-7"	220
A209	8	#5	STR	36'-6"	305	*K11	4	#8	1	13'-5"	143
B1	68	#5	STR	59'-1"	4190	*S1	48	#5	3	4'-11"	246
*B2	42	#4	STR	16'-5"	461	*S2	27	#4	6	2'-10"	51
*B3	21	#7	STR	44'-6"	1910	S3	132	#4	8	2'-9"	242
*B4	20	#7	STR	17'-3"	705	S4	42	#4	4	6'-1"	171
*B5	21	#7	STR	41'-6"	1781						
*B6	20	#7	STR	15'-9"	644	U1	36	#4	7	13'-2"	317
*B7	21	#4	STR	20'-0"	281	U2	12	#4	7	11'-2"	90
*B8	22	#4	STR	23'-9"	349						
*B9	1	#7	STR	11'-4"	23						

REINFORCING STEEL = 17971 LBS
*EPOXY COATED REINF. STEEL = 17562 LBS

BAR TYPES



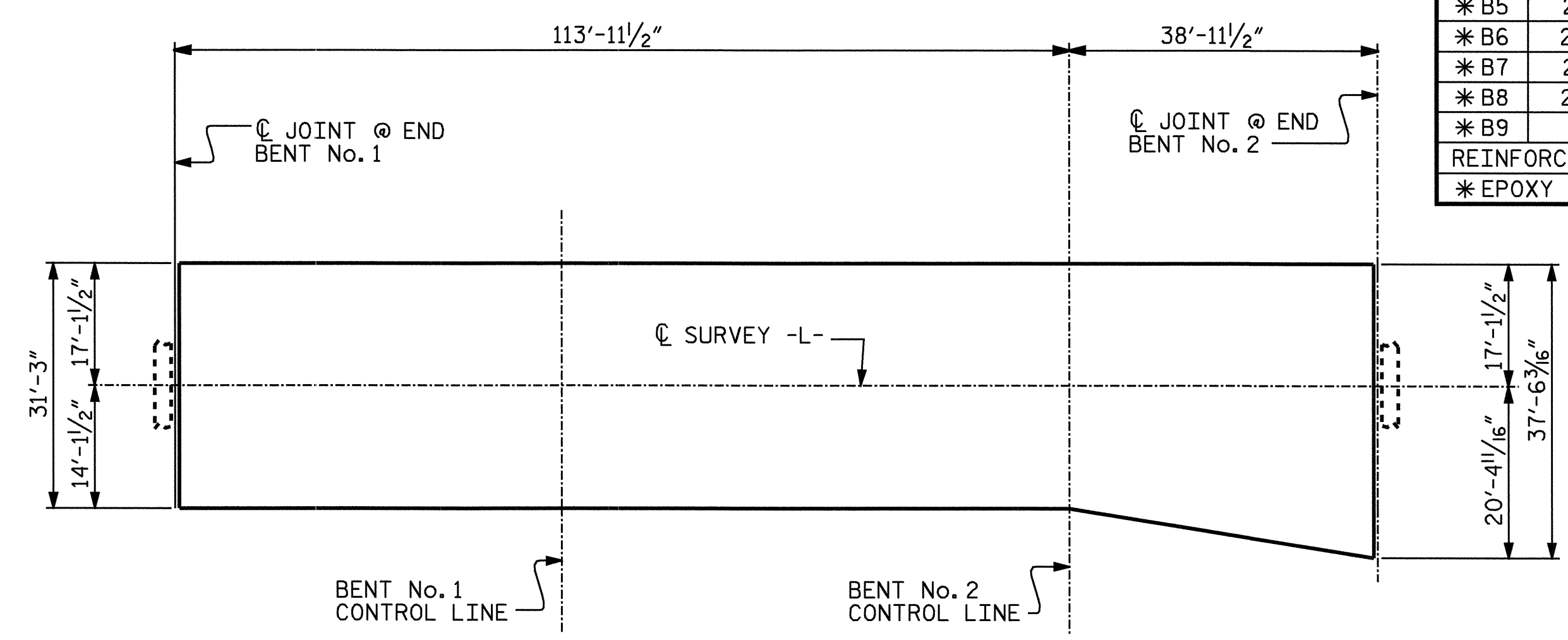
ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

SPANS A, B & C	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR 1	45.1		
POUR 2	75.4		
POUR 3	59.9		
** TOTALS	180.4	17,971	17,562

** QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED.

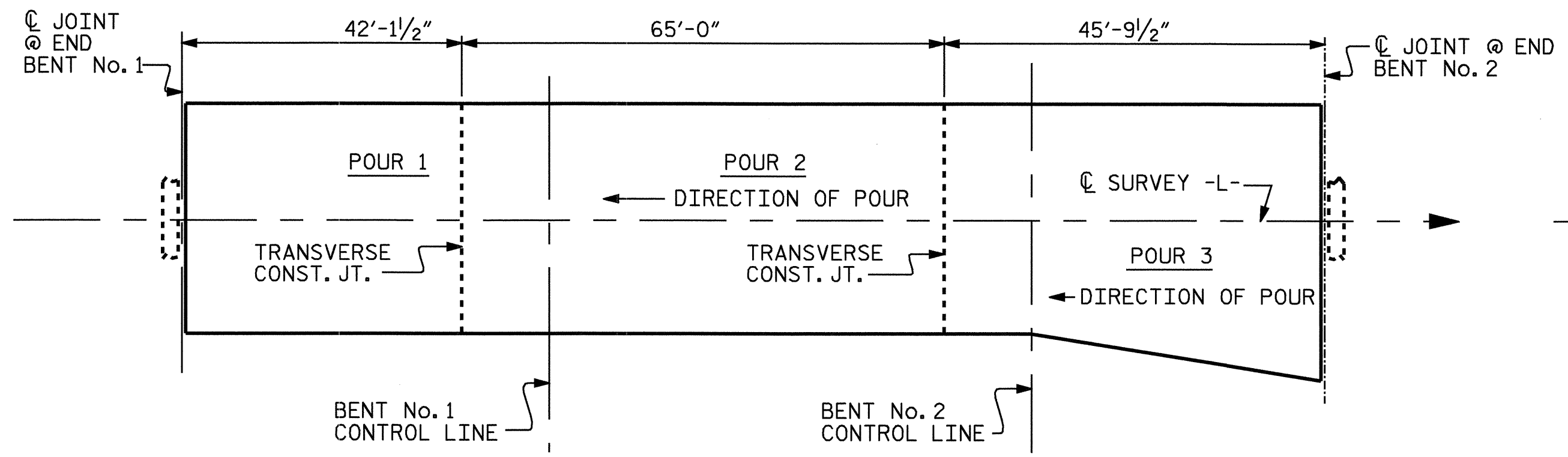
LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 4,901)



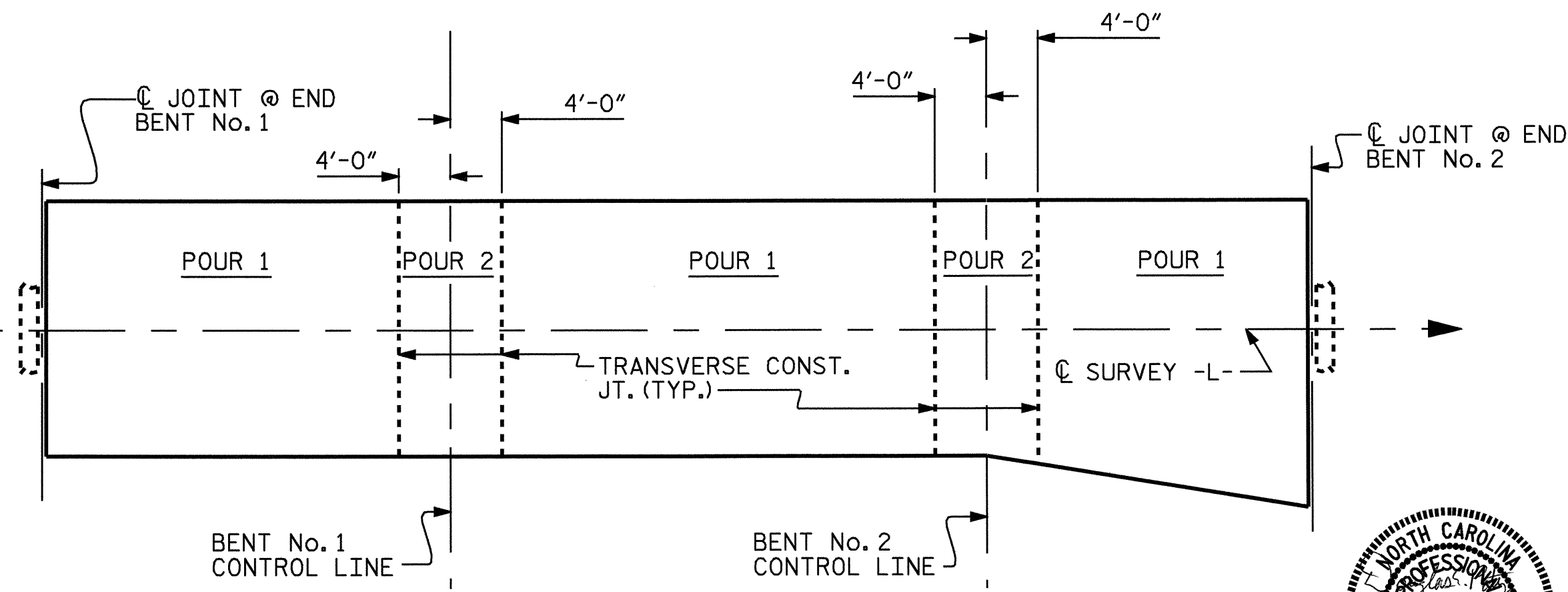
GROOVING BRIDGE FLOORS

APPROACH SLABS	723	SQ.FT.
BRIDGE DECK	4,061	SQ.FT.
TOTAL	4,784	SQ.FT.

POUR SEQUENCE



OPTIONAL POUR SEQUENCE



POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POUR 1'S HAVE REACHED A MINIMUM OF 3000 PSI.

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

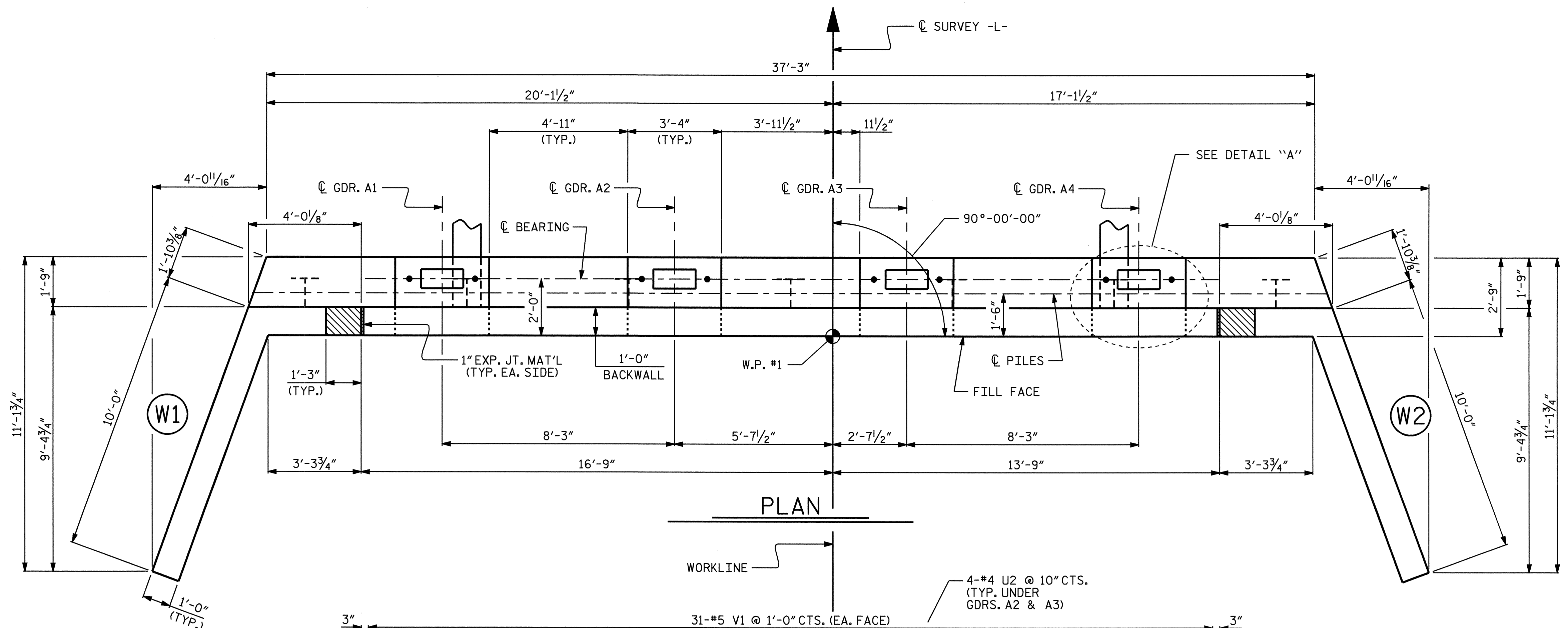
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

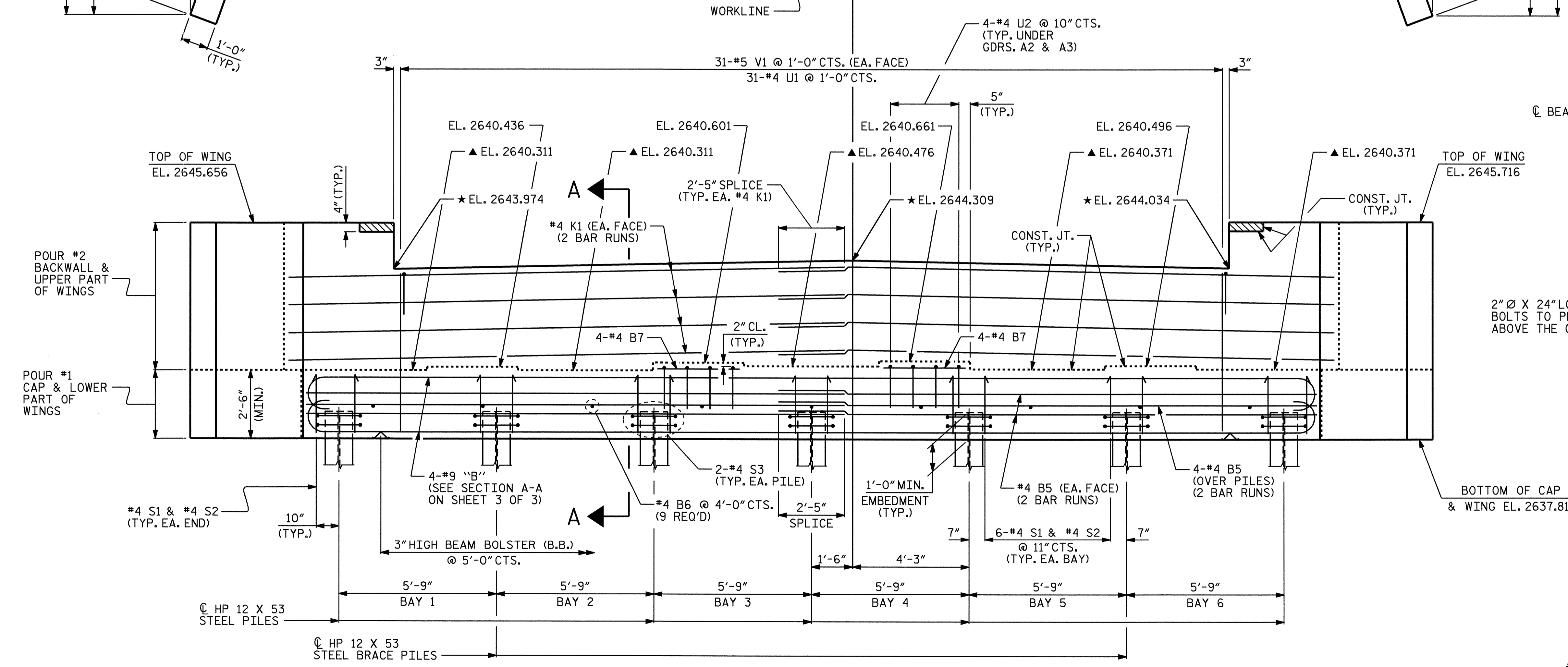


ASSEMBLED BY : A.R.CHESSON	DATE: 7-04
CHECKED BY : B.N.GRADY	DATE: 9-04
DRAWN BY : JMB	5/87
CHECKED BY : JSD	9/87
REV. 6/1/94	EEM/GRP

REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					41



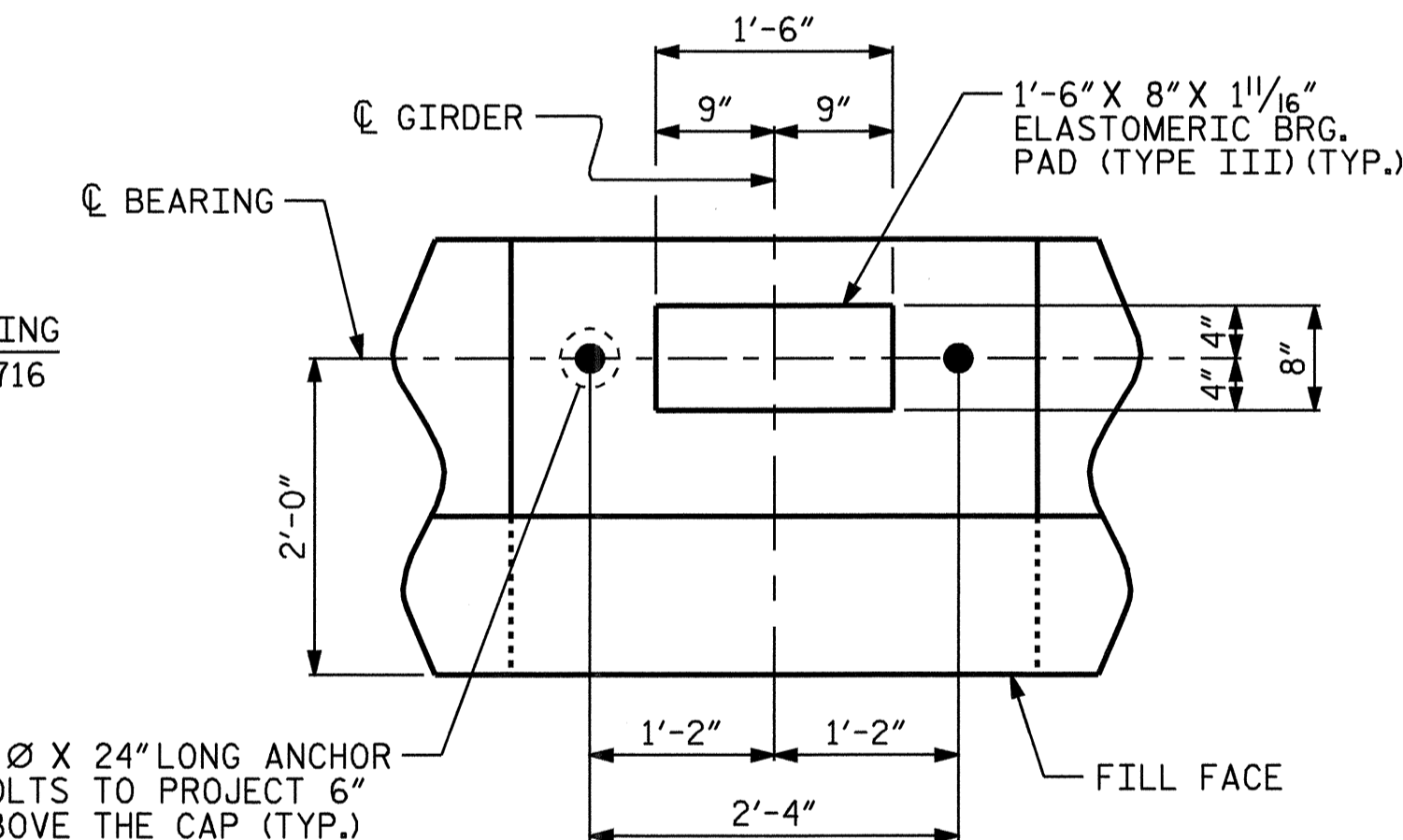
PLAN



ELEVATION

NOTES:

- ▲ FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.
- ★ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.
- #5 "V" BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.
- STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONTRACTOR SHALL PROVIDE FOR THE 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.
- THE CONCRETE IN THE SHADED AREA OF THE WINGS 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.



DETAIL "A"

PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 3

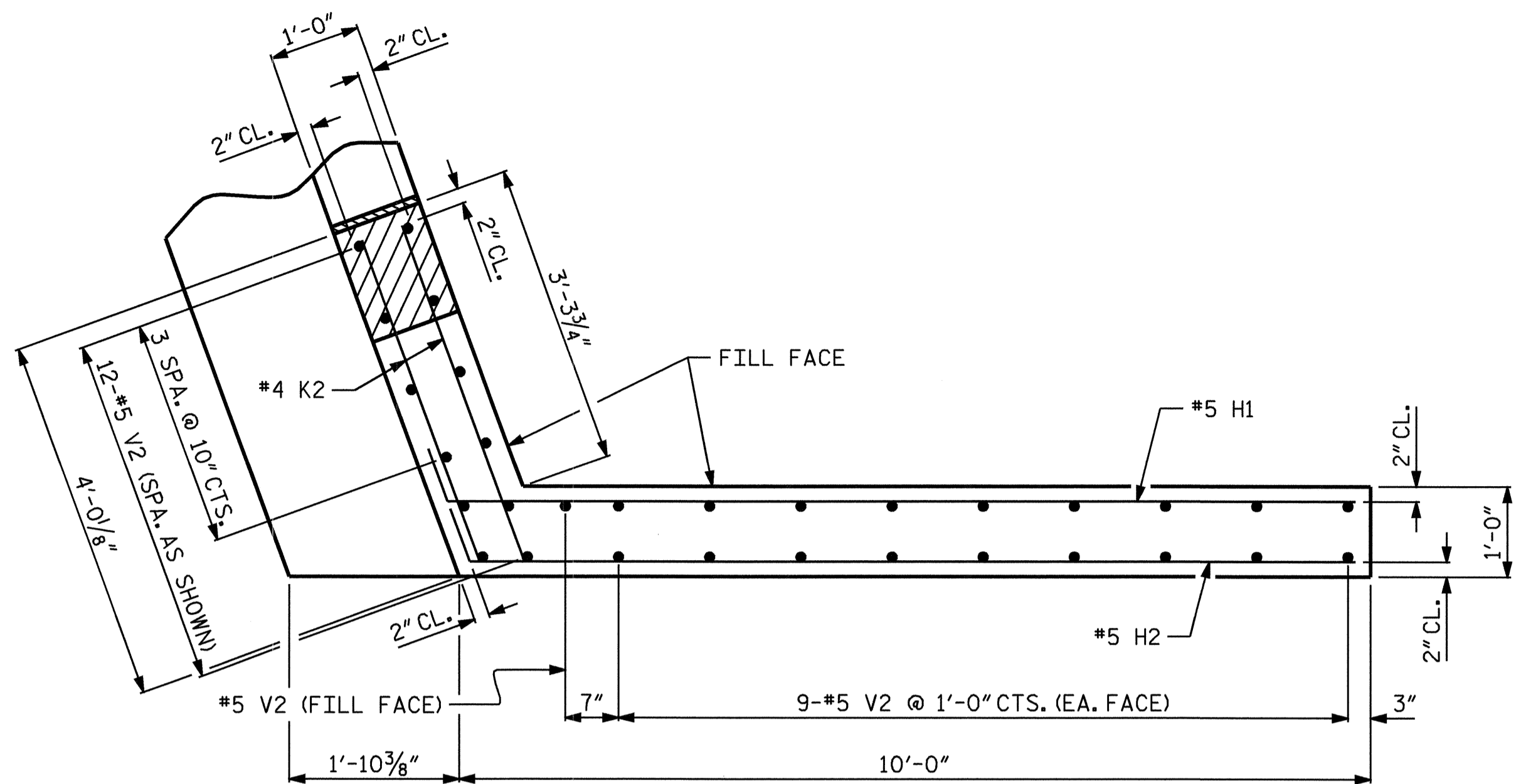
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

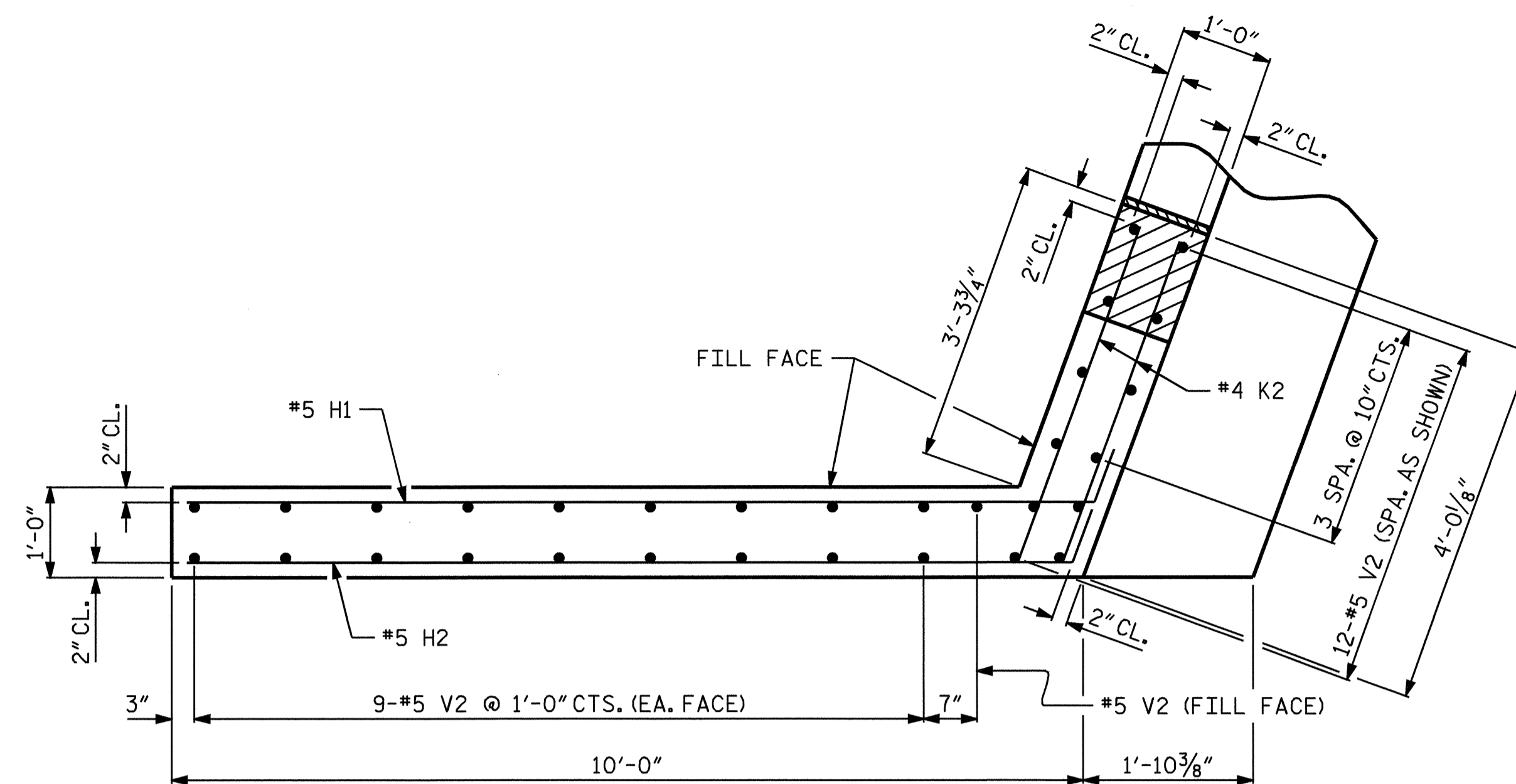


DRAWN BY: P.C. BREWER DATE: 2/17/05
 CHECKED BY: D.E. PETREY DATE: 2/18/05

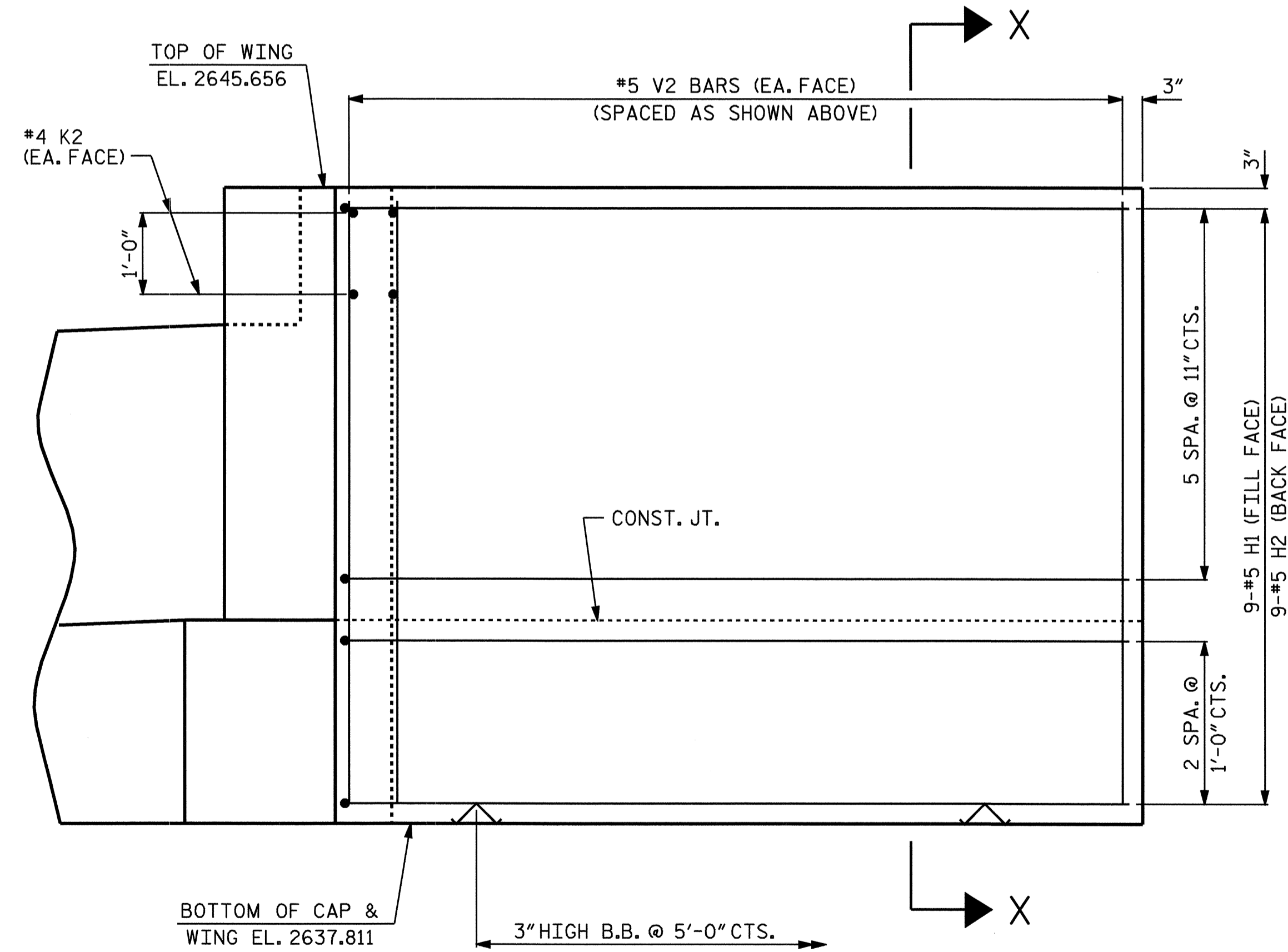
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22	
1			3			TOTAL SHEETS	
2			4			41	



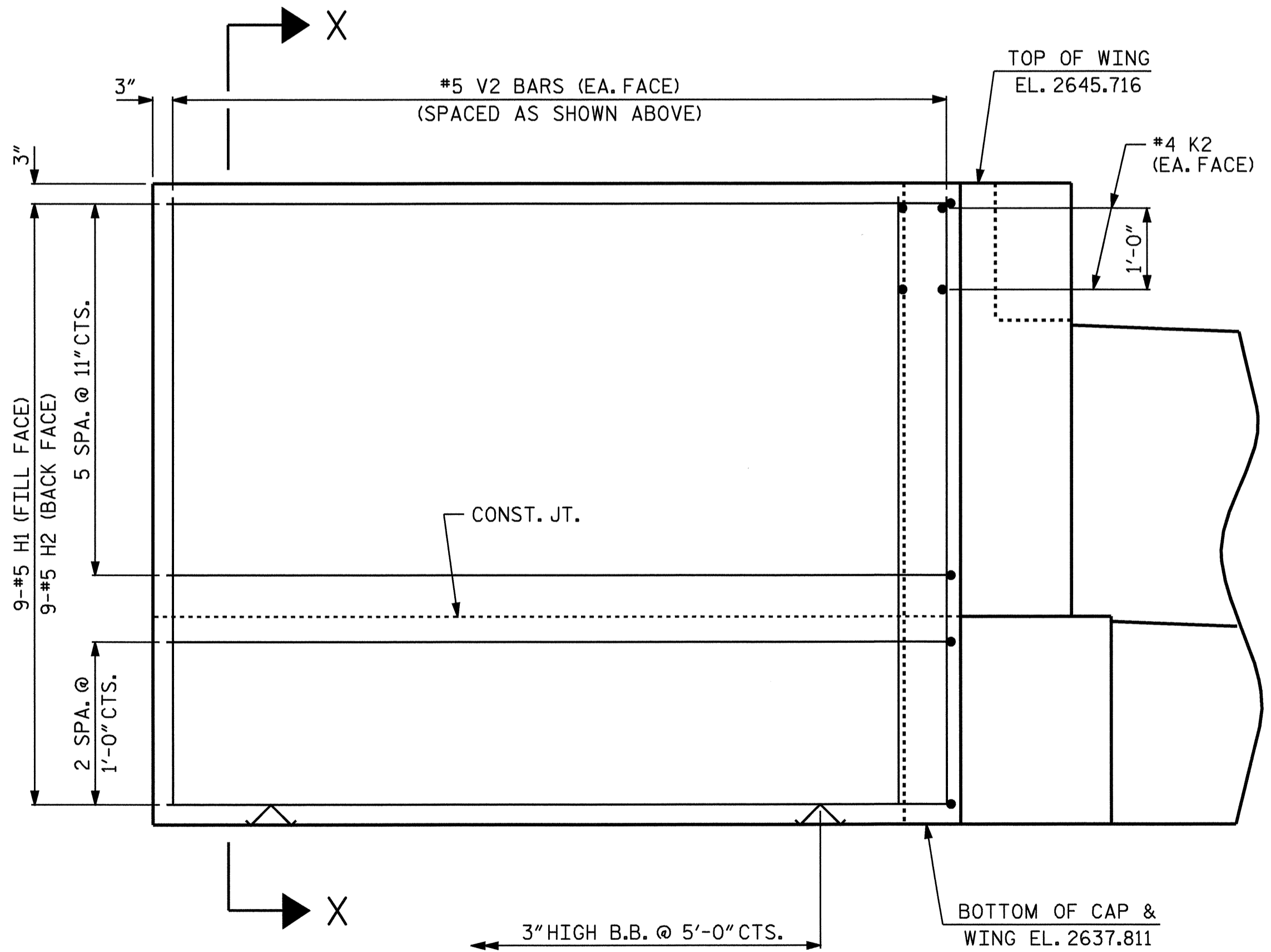
PLAN OF WING (W1)



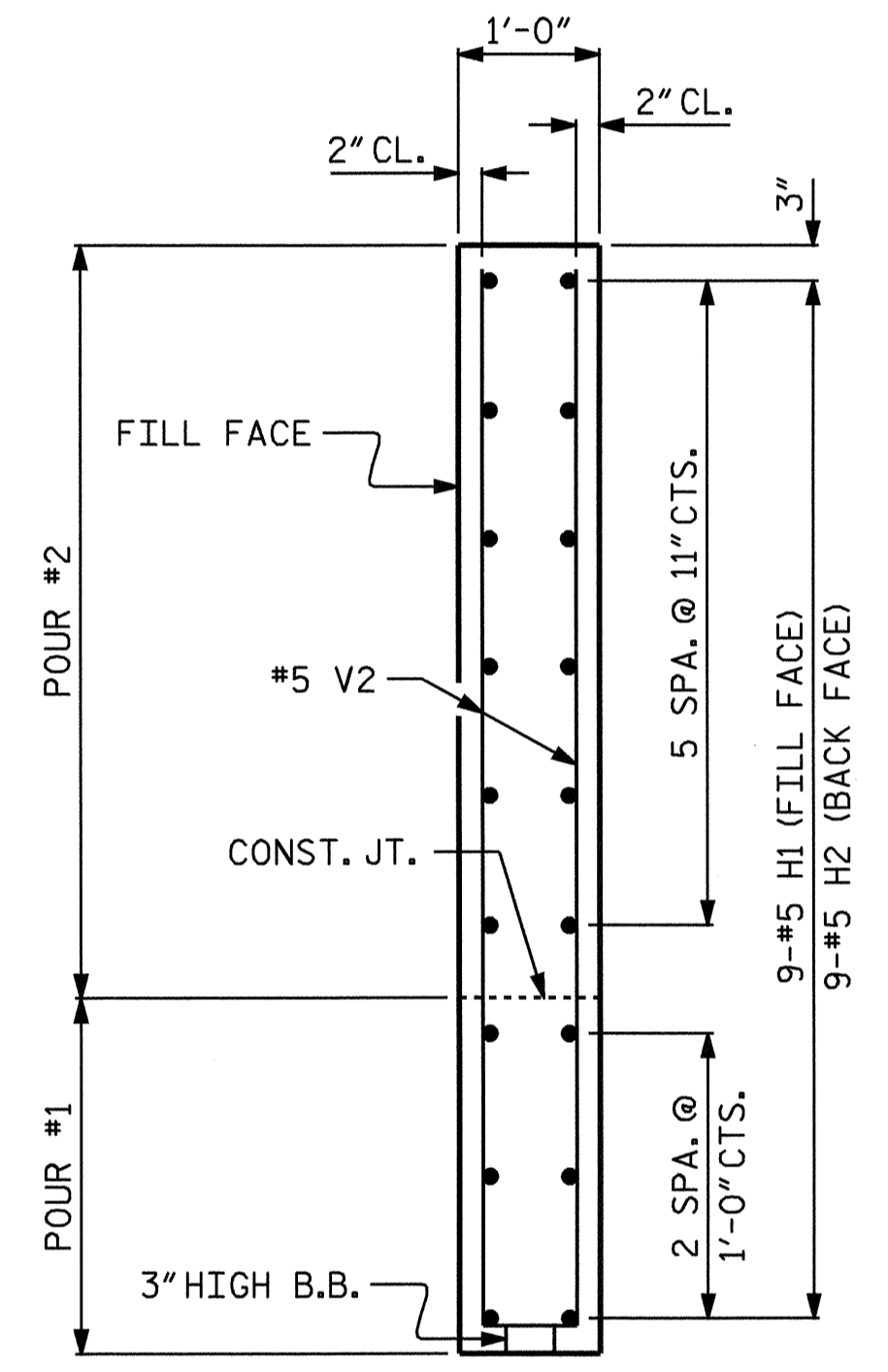
PLAN OF WING (W2)



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

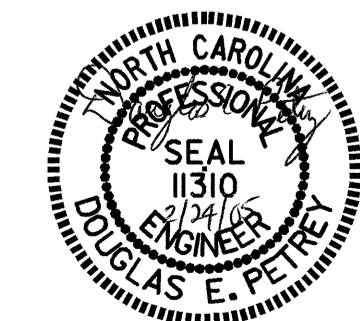


SECTION X-X

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 2 OF 3

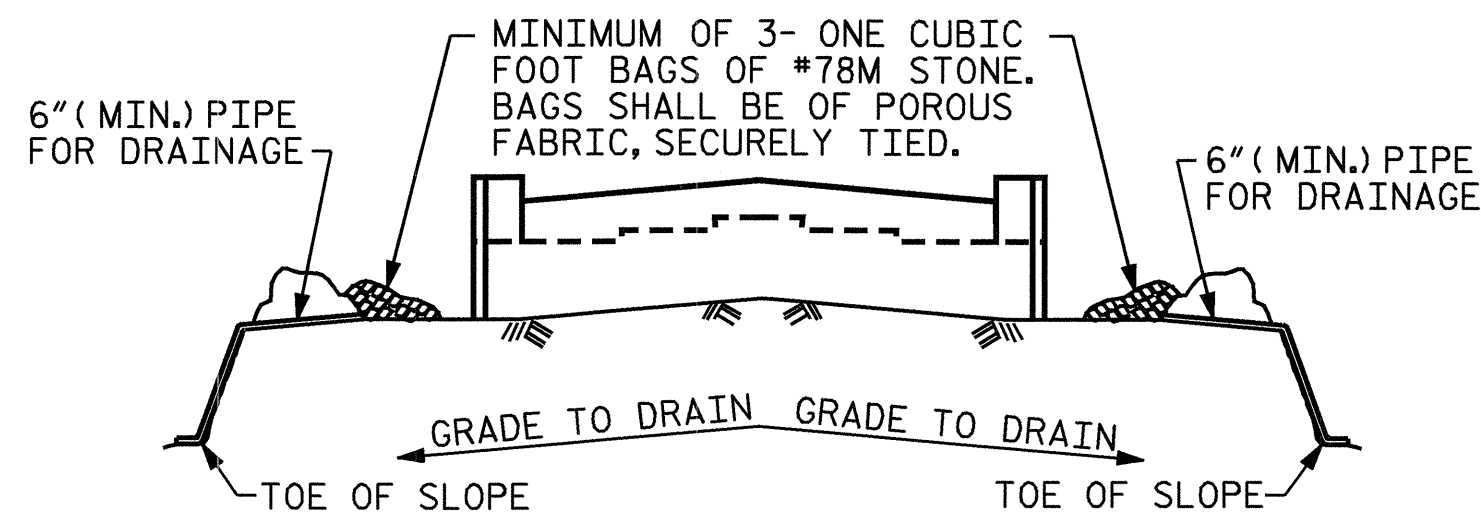
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1



DRAWN BY : P.C. BREWER DATE : 2/17/05
 CHECKED BY : D.E. PETREY DATE : 2/18/05

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 achesson

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			41

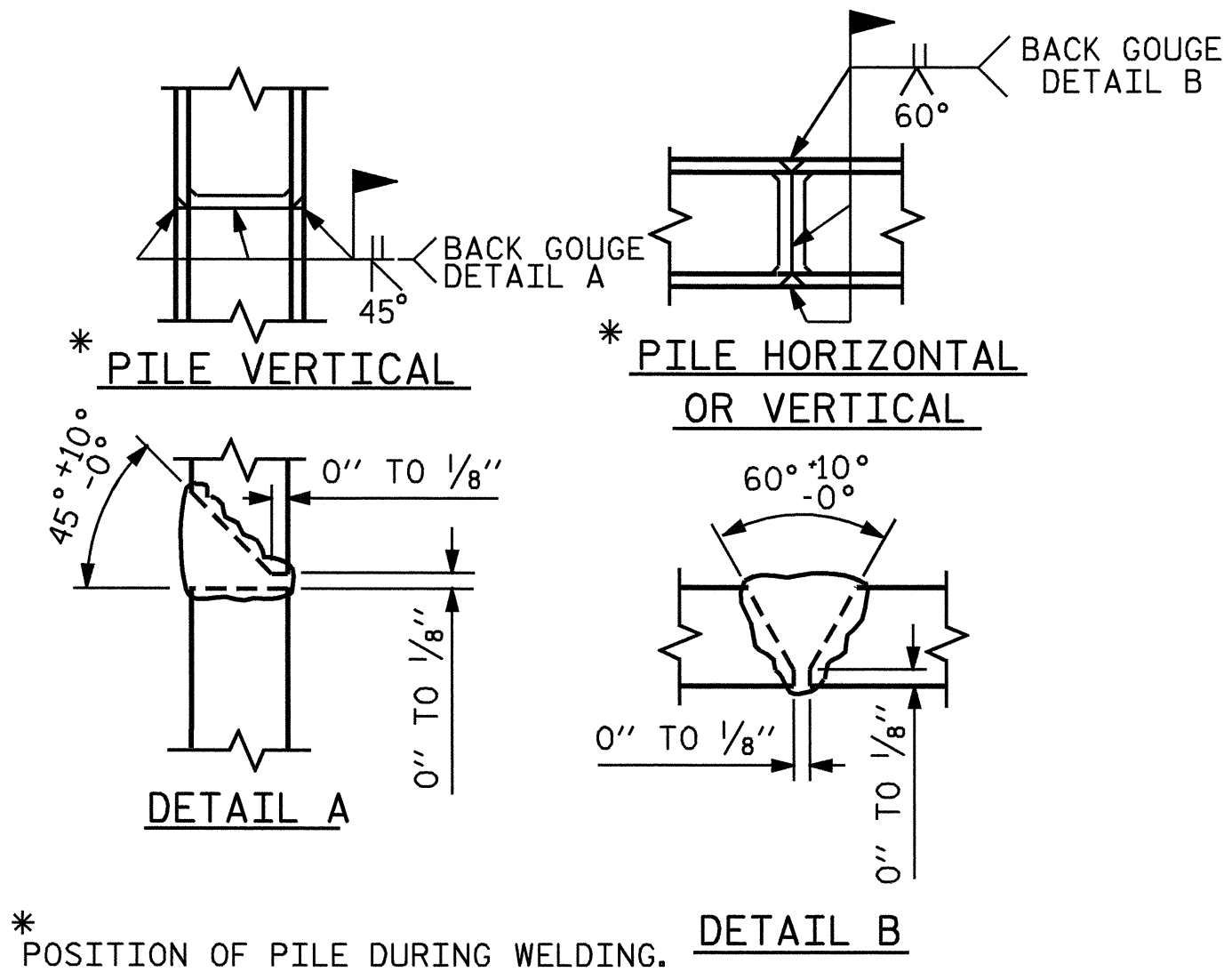


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

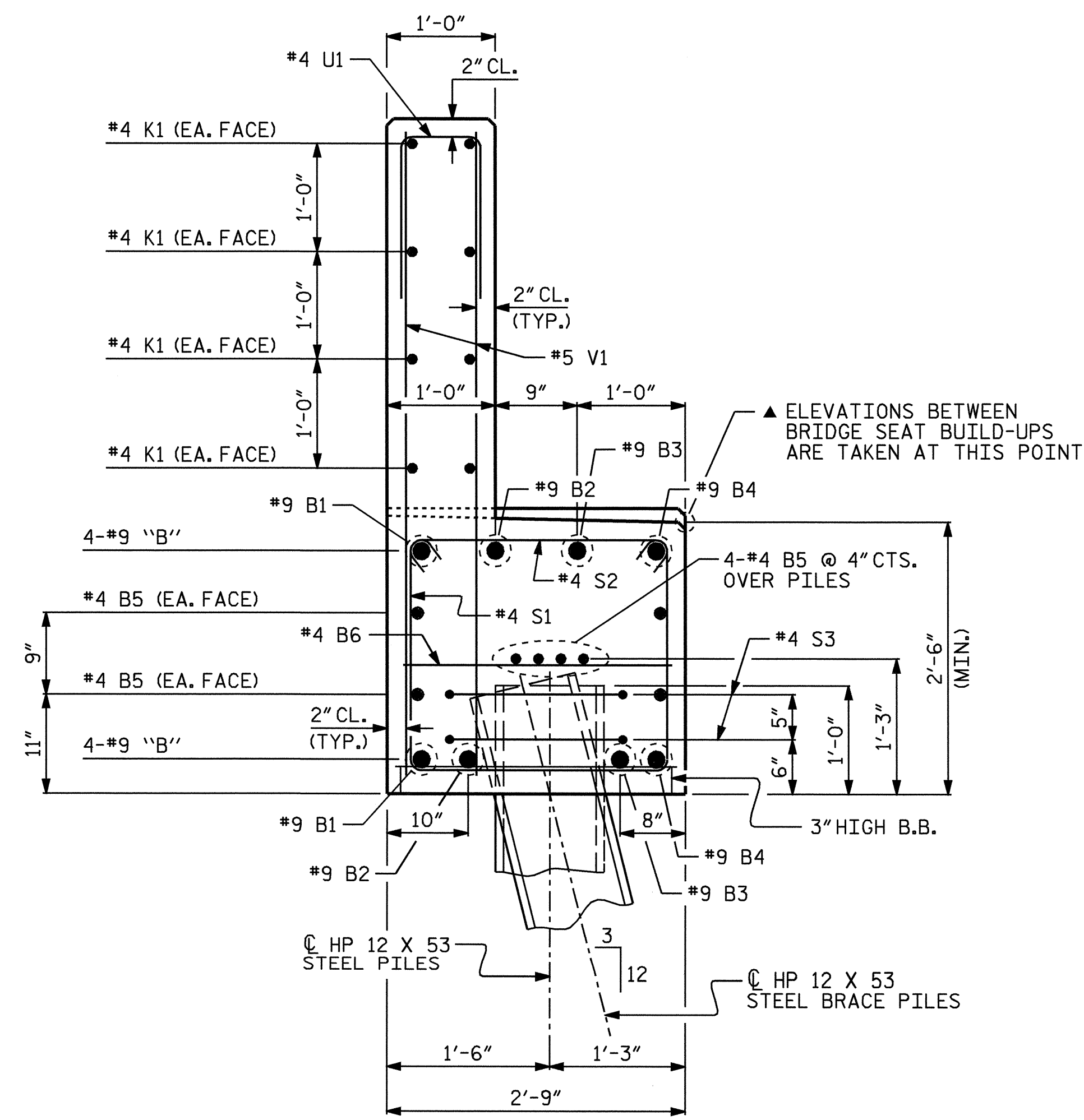
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

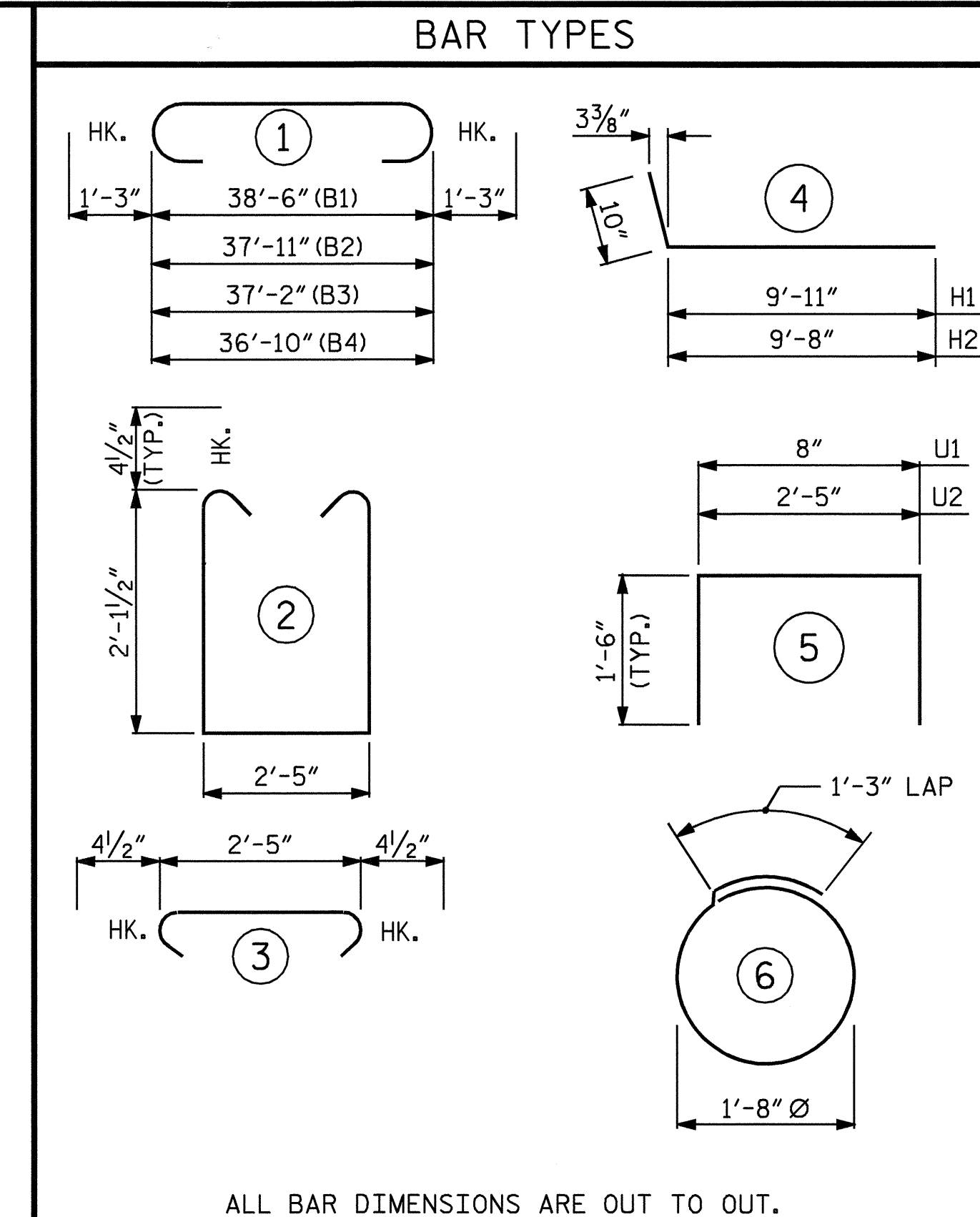
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



SECTION A-A



BILL OF MATERIAL						
END BENT No. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	2	9	1	41'-0"	279	
B2	2	9	1	40'-5"	275	
B3	2	9	1	39'-8"	270	
B4	2	9	1	39'-4"	267	
B5	16	4	STR	20'-7"	220	
B6	9	4	STR	2'-5"	15	
B7	8	4	STR	3'-0"	16	
H1	18	5	4	10'-9"	202	
H2	18	5	4	10'-6"	197	
K1	16	4	STR	20'-7"	220	
K2	8	4	STR	3'-9"	20	
S1	38	4	2	7'-5"	188	
S2	38	4	3	3'-2"	80	
S3	14	4	6	6'-6"	61	
U1	31	4	5	3'-8"	76	
U2	8	4	5	5'-5"	29	
V1	62	5	STR	5'-8"	366	
V2	62	5	STR	7'-5"	480	
REINFORCING STEEL					3,261	LBS
CLASS A CONCRETE BREAKDOWN:						
POUR #1 (CAP & LOWER PART OF WINGS)					11.9	CU. YDS.
POUR #2 (BACKWALL & UPPER PART OF WINGS)					9.4	CU. YDS.
TOTAL:					21.3	CU. YDS.
HP 12 X 53 STEEL PILES						
No. 7 105.0 LIN. FT.						
STEEL PILE POINTS					No. 7	

PROJECT NO. B-3922

WATAUGA COUNTY

STATION: 11+06.50 -L-

SHEET 3 OF 3

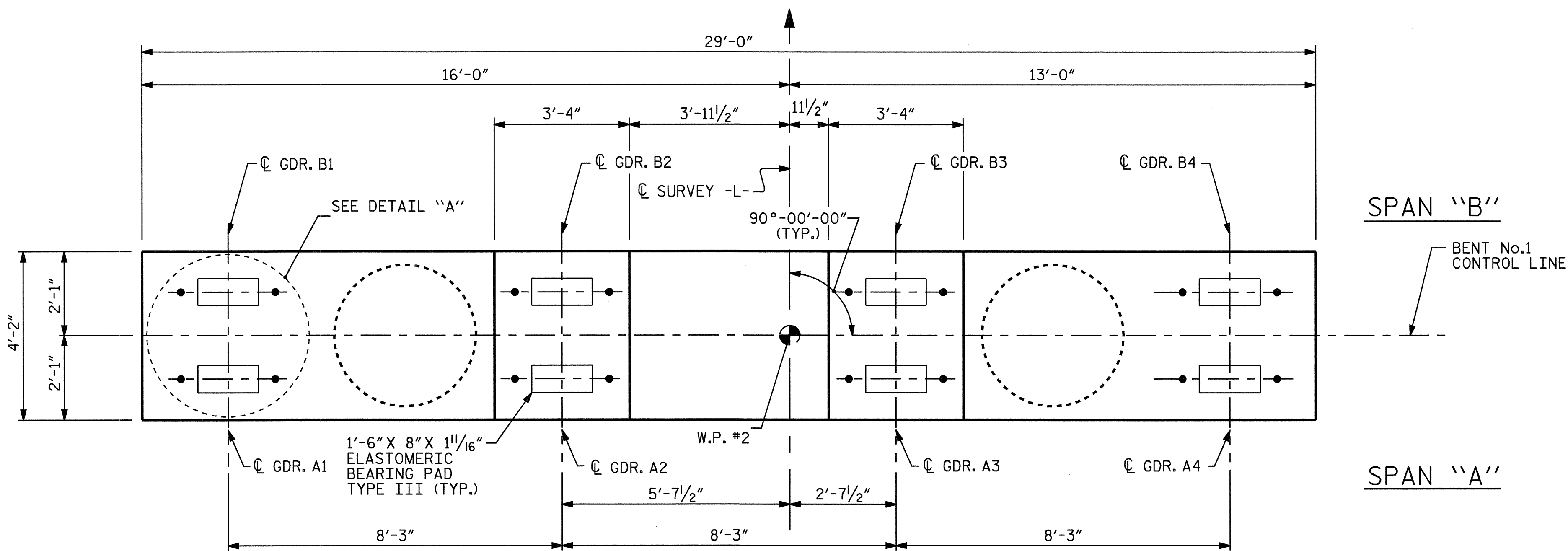
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

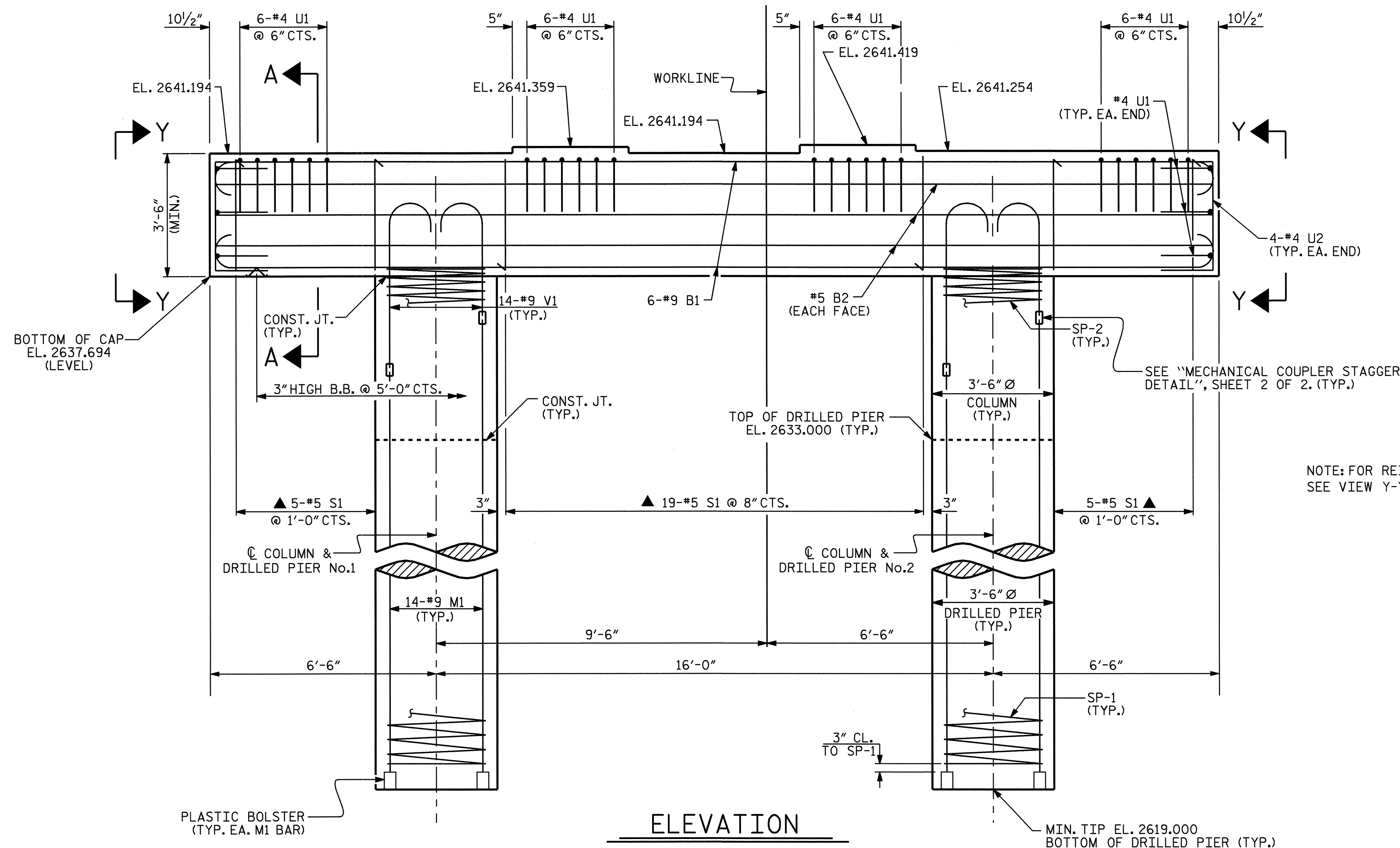
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			41

DRAWN BY : P.C. BREWER DATE : 2/17/05
CHECKED BY : D.E. PETREY DATE : 2/18/05





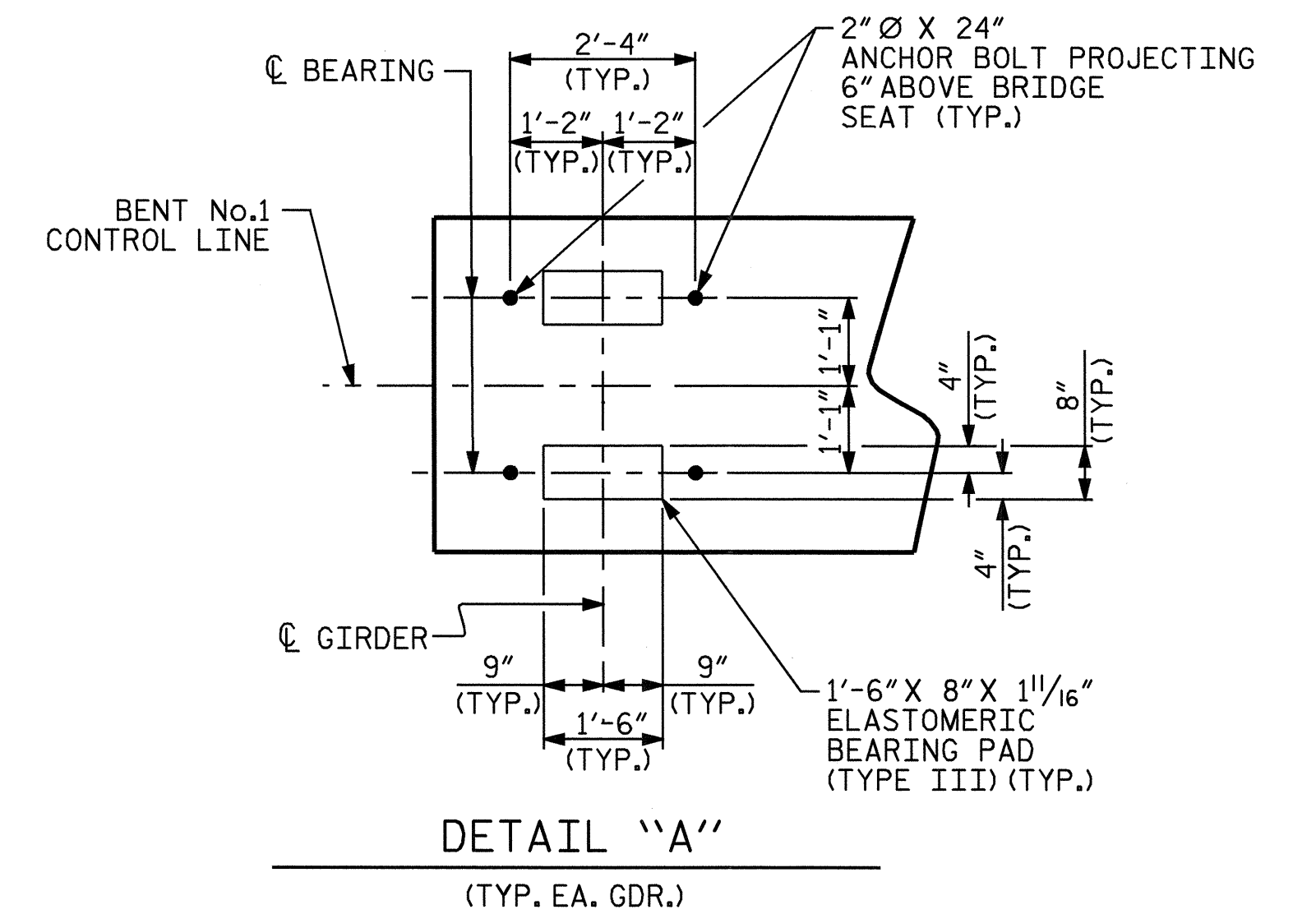
PLAN



ELEVATION

NOTES:

- STIRRUPS AND U1 BARS 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 LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- ▲ INVERT ALTERNATE STIRRUPS AS SHOWN
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH THREE FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL TO THE COLUMN REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER AND COLUMN STEEL SHALL BE CUT ACCORDINGLY. SEE SPECIAL PROVISIONS FOR MECHANICAL BUTT SPLICING FOR REINFORCING STEEL.



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

NOTE: FOR REINFORCING STEEL IN END OF CAP SEE VIEW Y-Y ON SHEET 2 OF 2.

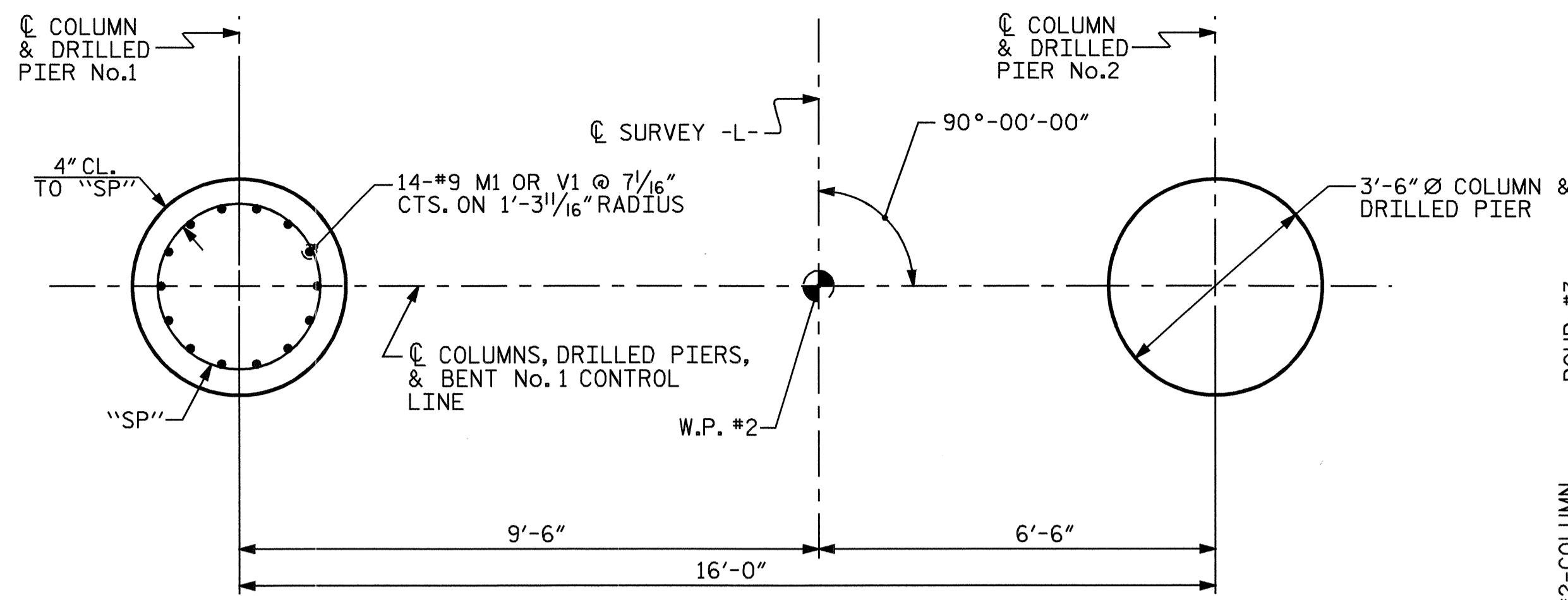
PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 2



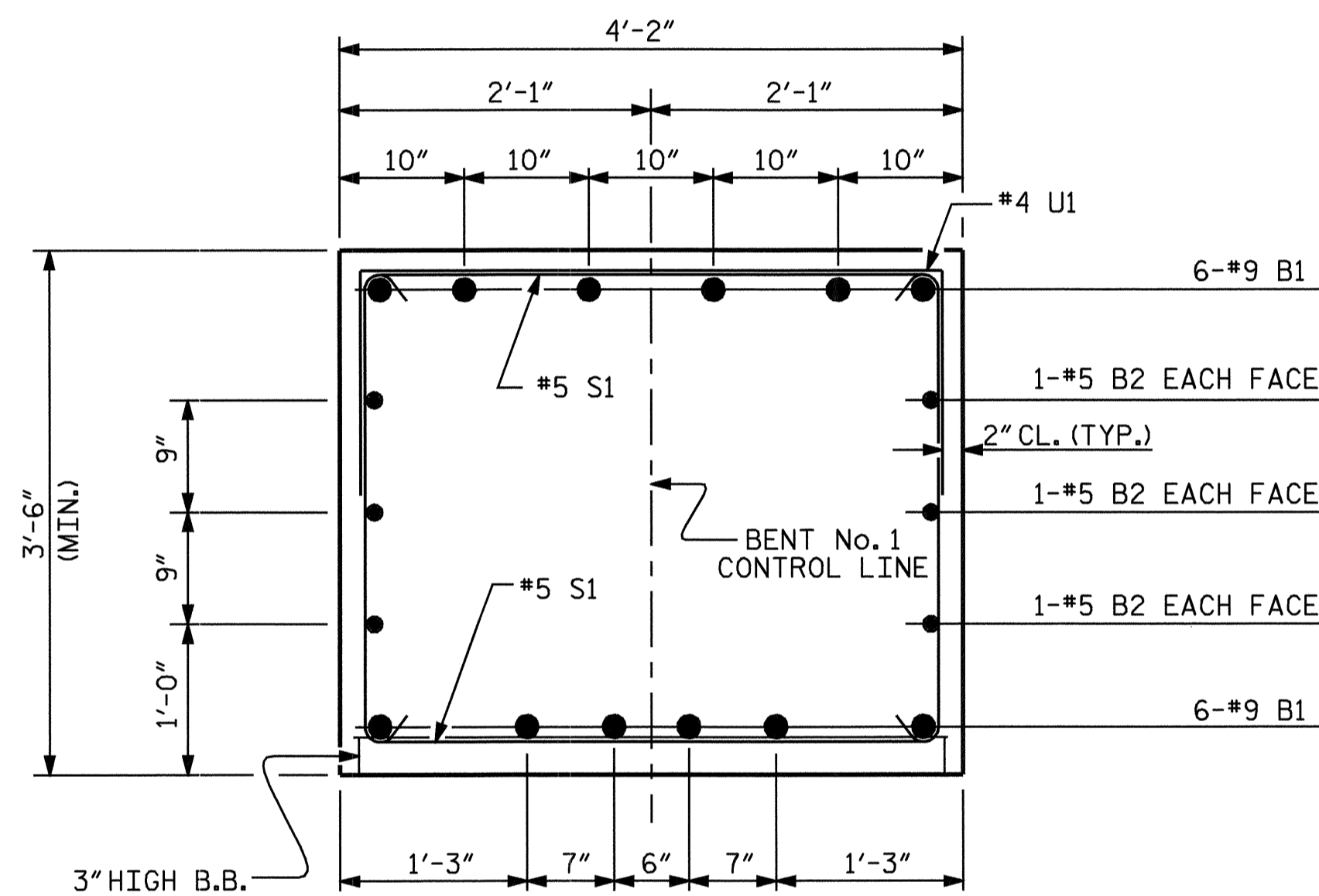
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-25					TOTAL SHEETS 41

DRAWN BY: A. V. ROYAL DATE: 12/04
 CHECKED BY: B. N. GRADY DATE: 1/05

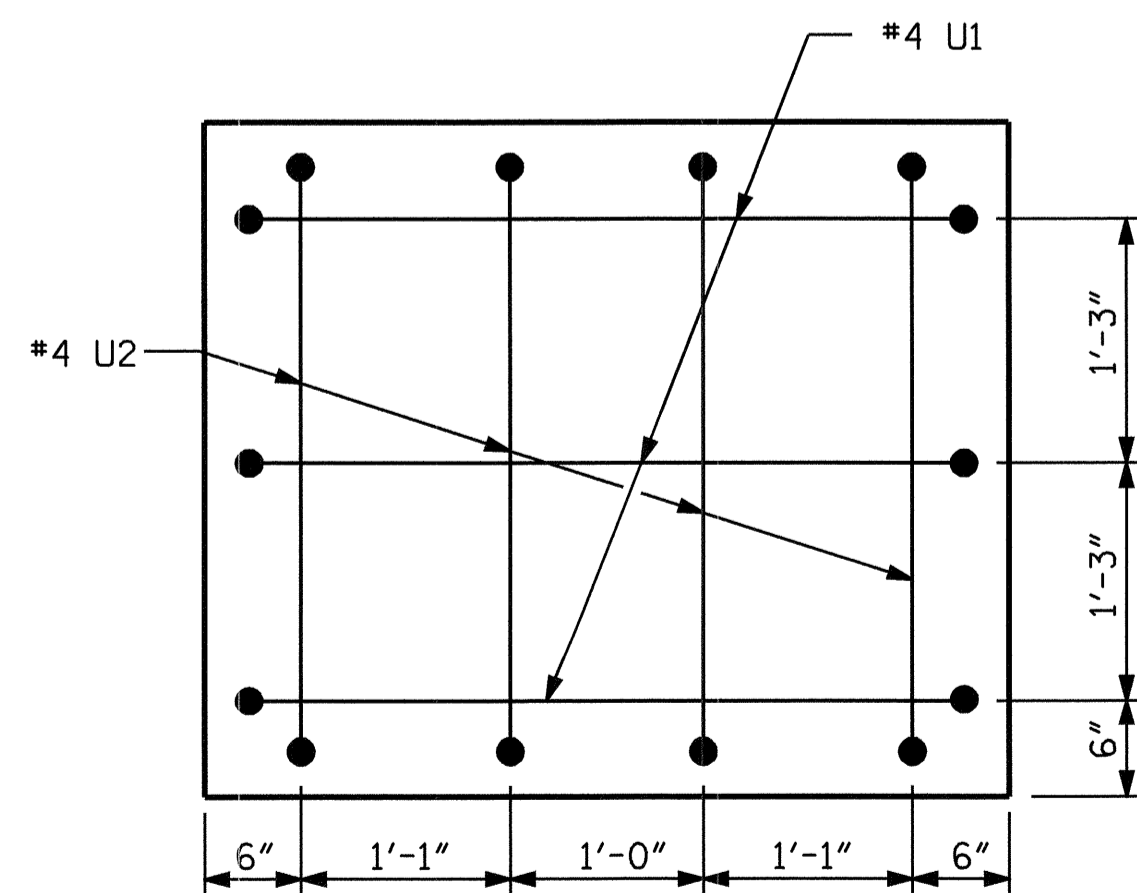


PLAN OF COLUMNS & DRILLED PIERS

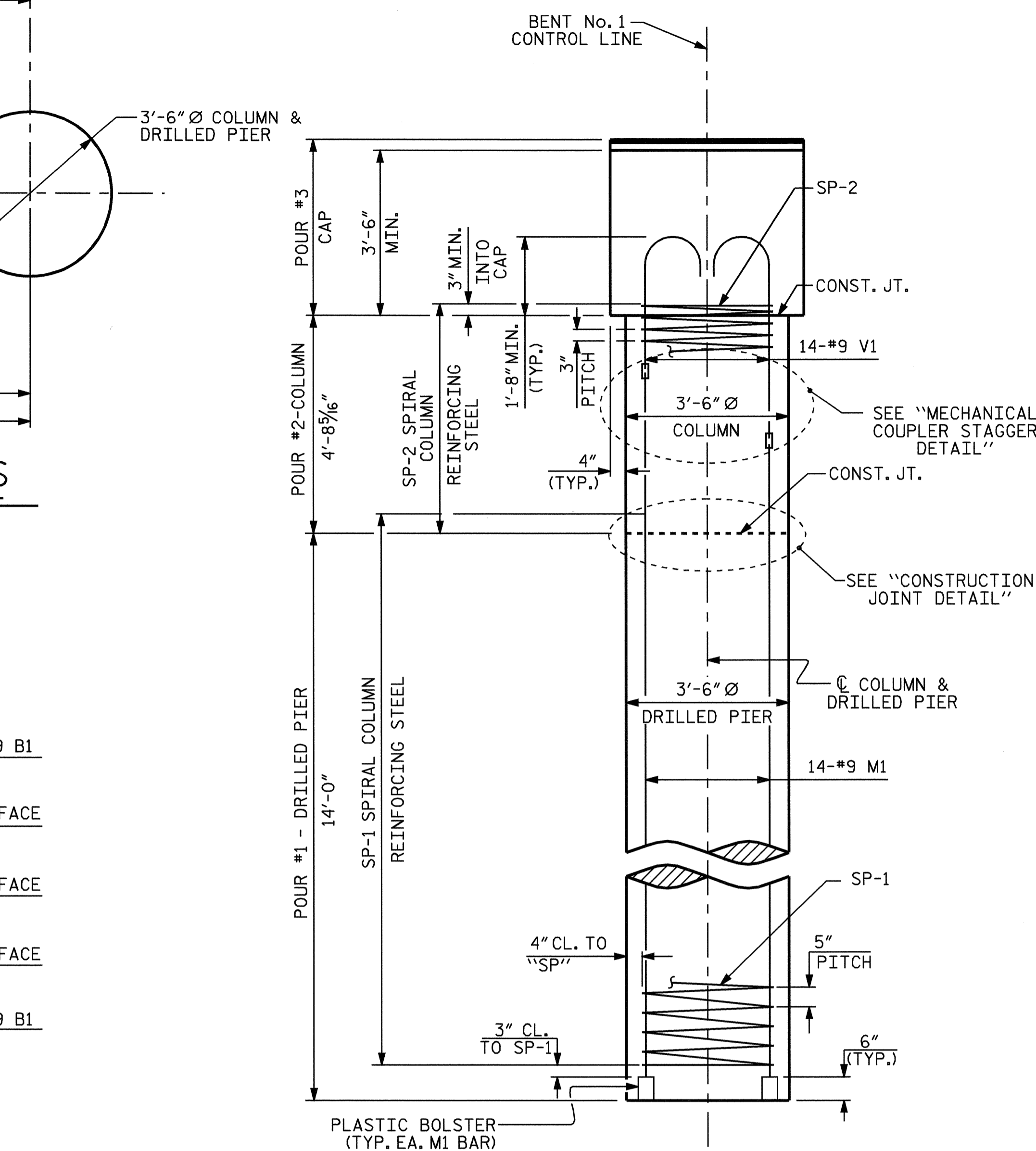
REINFORCING STEEL, DIMENSIONS, AND DETAILS ARE TYPICAL FOR ALL DRILLED PIERS & COLUMNS



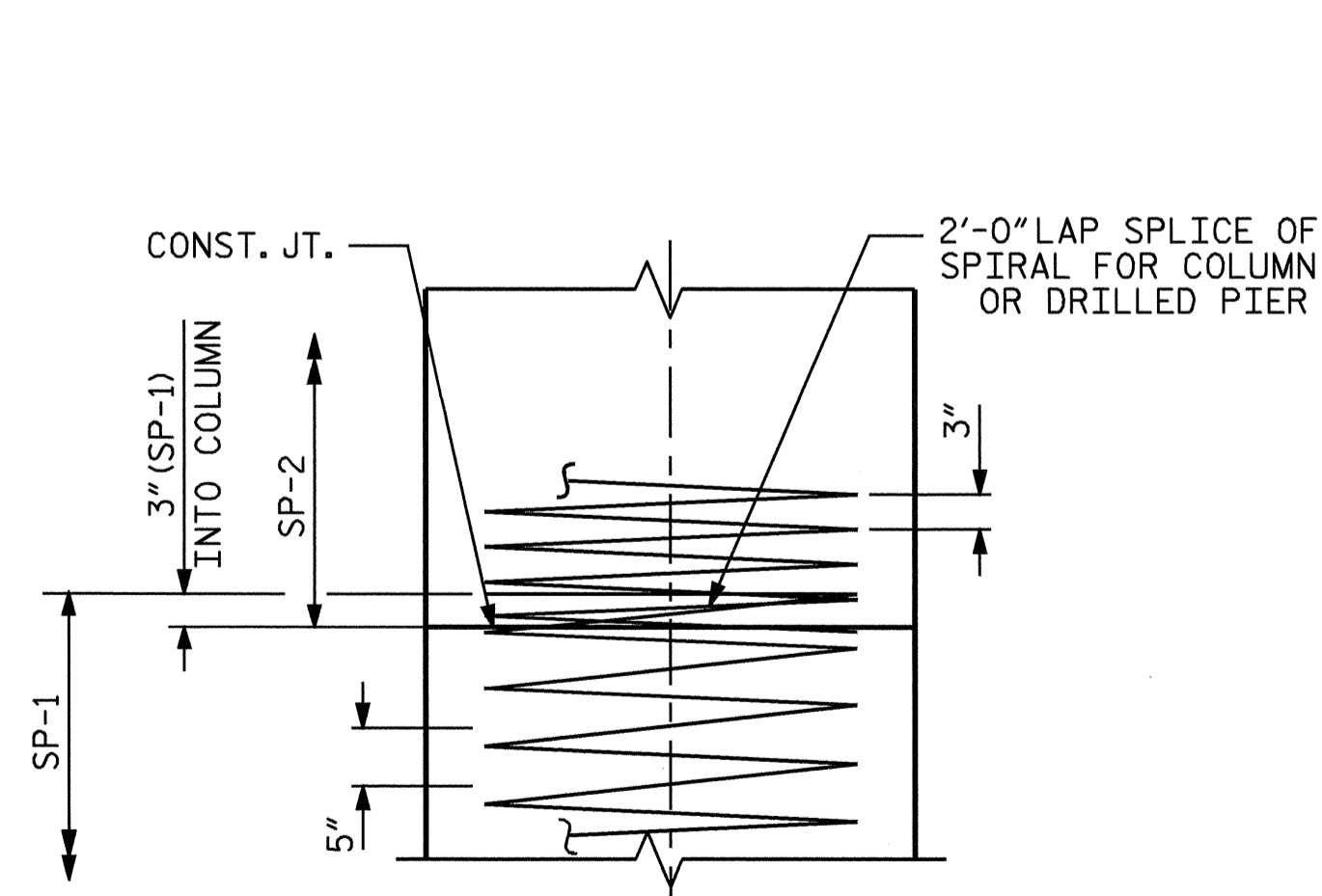
SECTION A-A



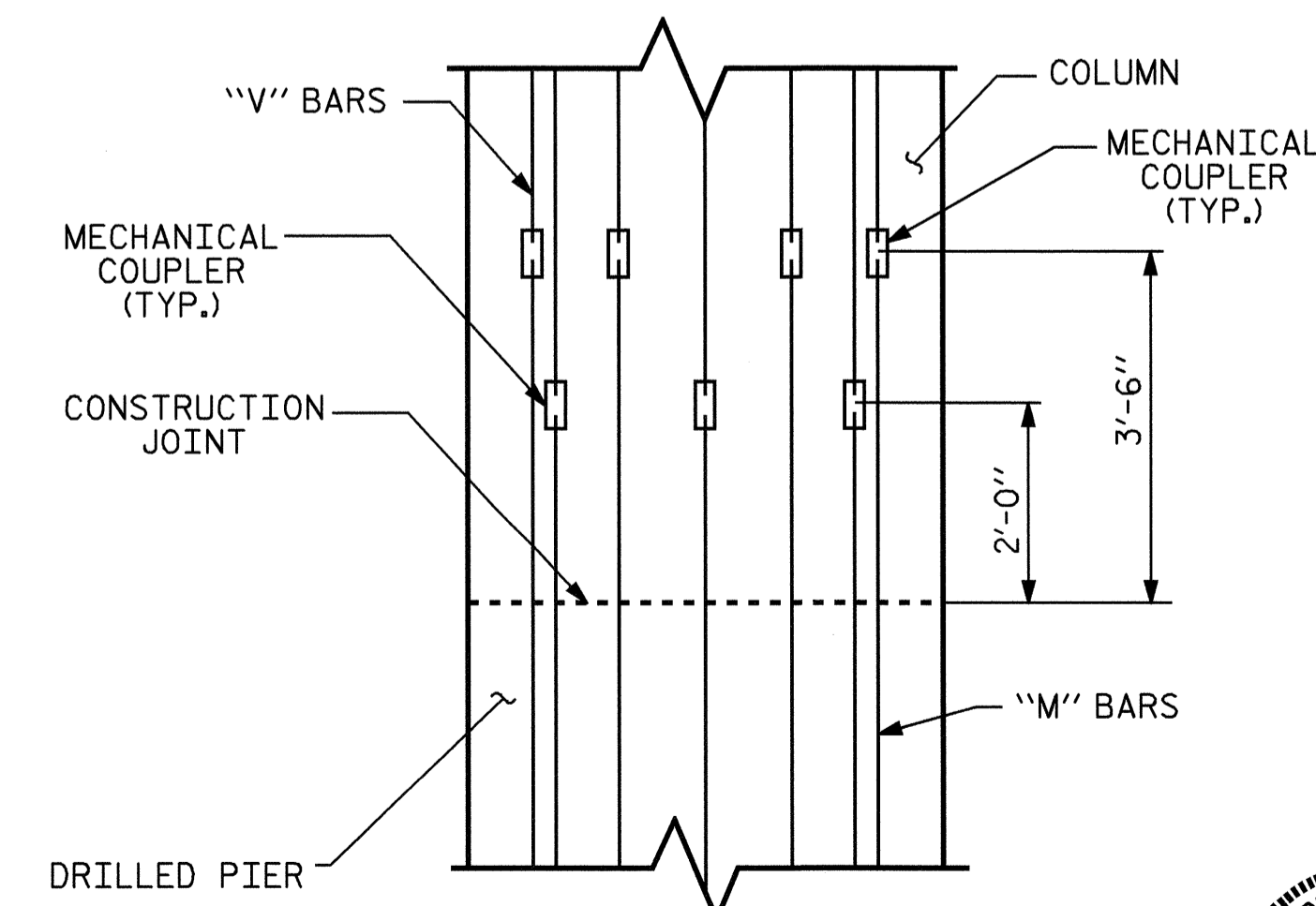
VIEW Y-Y



END ELEVATION

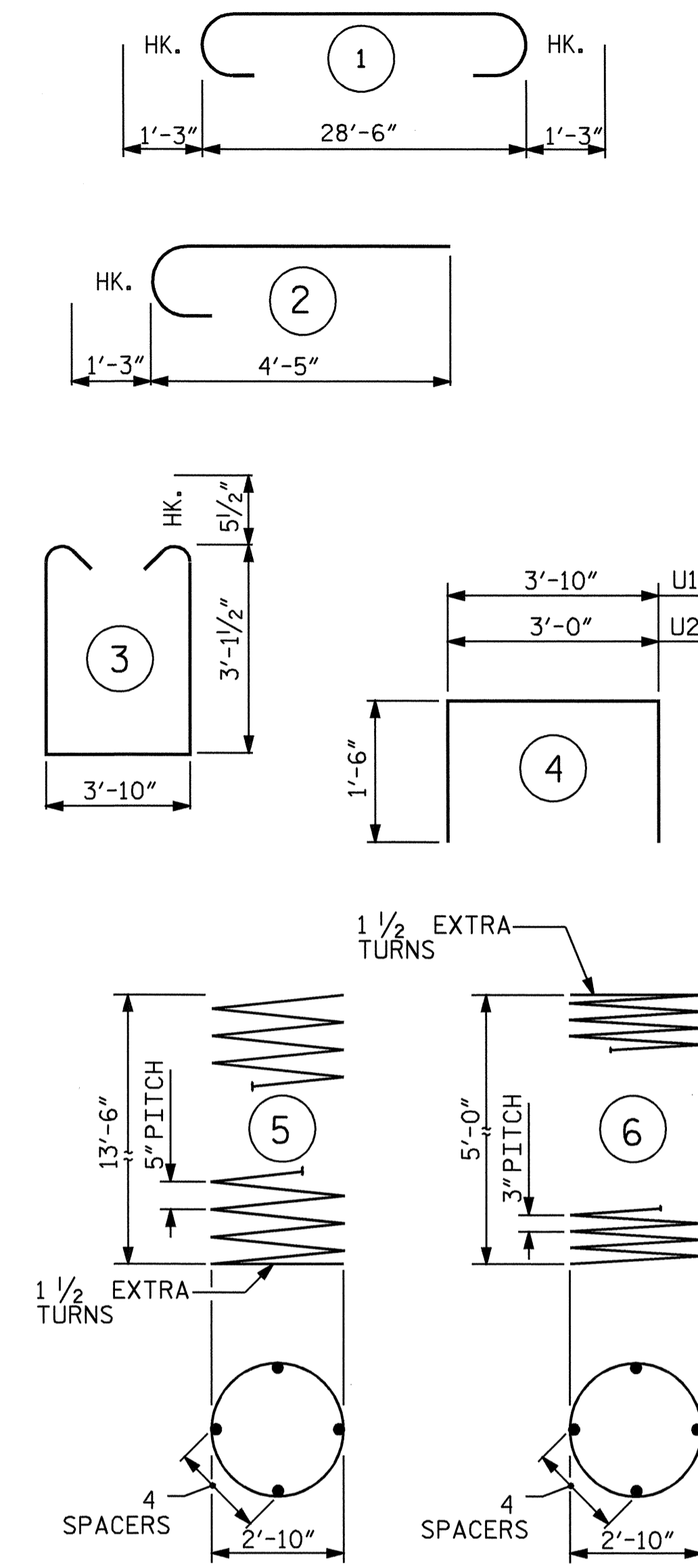


CONSTRUCTION JOINT DETAIL



MECHANICAL COUPLER STAGGER DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	1	31'-0"	1265
B2	6	5	STR	28'-8"	179
S1	29	5	3	11'-0"	333
U1	30	4	4	6'-10"	137
U2	8	4	4	6'-0"	32
V1	28	9	2	5'-8"	539
M1	28	9	STR	20'-0"	1904

REINFORCING STEEL	LBS.	
SP-1	2	** 5 297'-5" 620
SP-2	2	* 6 193'-1" 258

SPIRAL COLUMN REINFORCING STEEL	LBS.	
U1		3'-10"
U2		3'-0"
		1'-6"
		3'-10"
		3'-1 1/2"

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

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

CLASS A CONCRETE BREAKDOWN :

POUR #2 (COLUMNS)	3.3 C. Y.
POUR #3 (CAP)	15.9 C. Y.
TOTAL	19.2 C. Y.

DRILLED PIER QUANTITIES

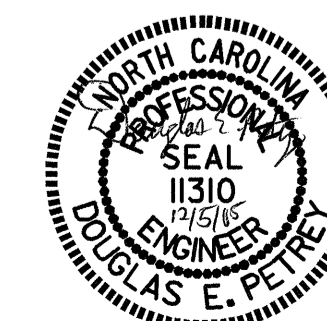
DRILLED PIER CONCRETE:	
POUR #1 (DRILLED PIERS)	10.0 C. Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL	10.0 LIN. FT.
3'-6" Ø DRILLED PIERS IN SOIL	18.0 LIN. FT.
CSL TUBES	132.0 LIN. FT.

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

SHEET 2 OF 2

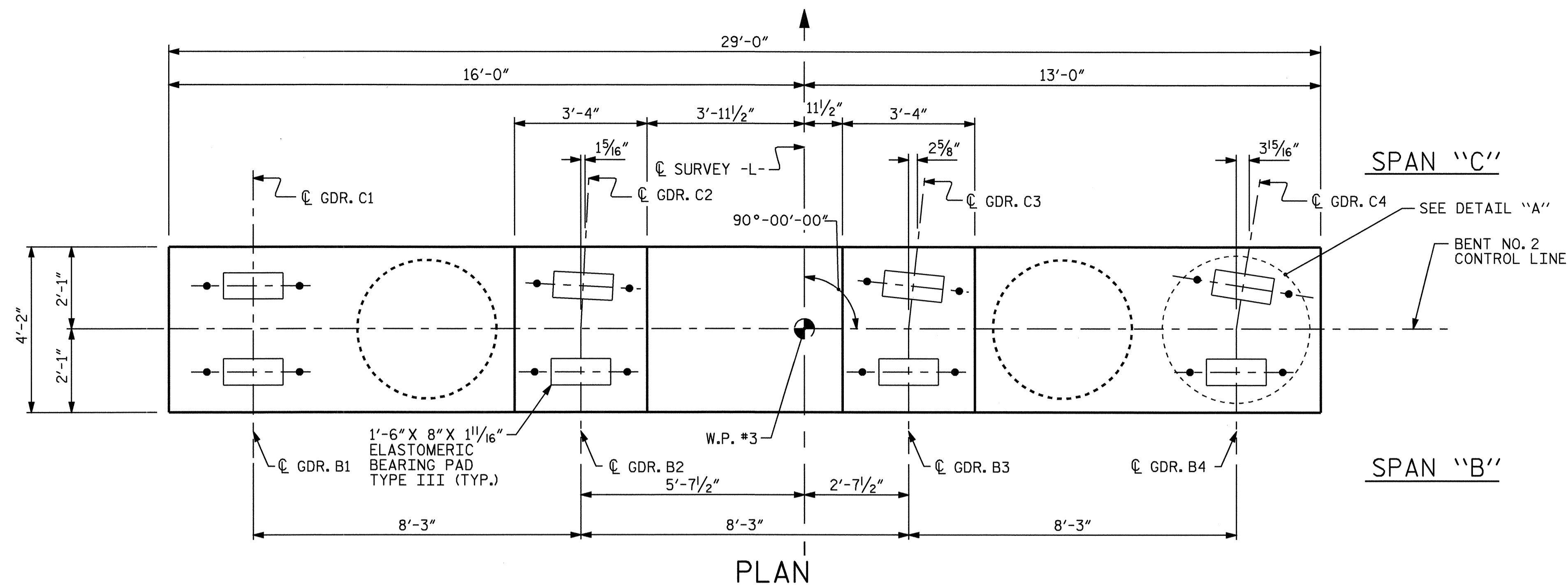
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26	
1			3			TOTAL SHEETS 41	
2			4				

DRAWN BY: A. V. ROYAL DATE: 12/04
CHECKED BY: B. N. GRADY DATE: 1/05



NOTES:

STIRRUPS AND U1 BARS 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 LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

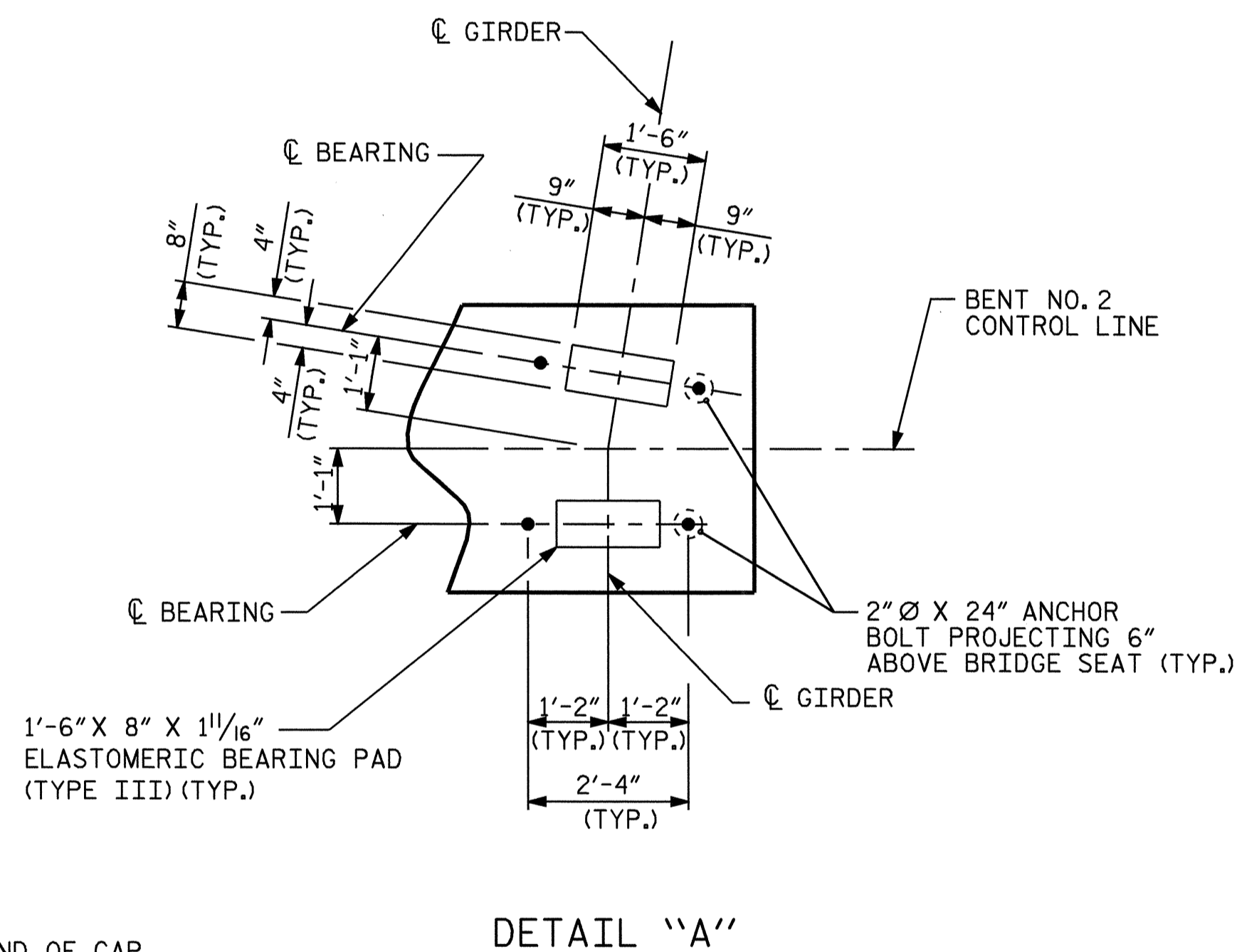
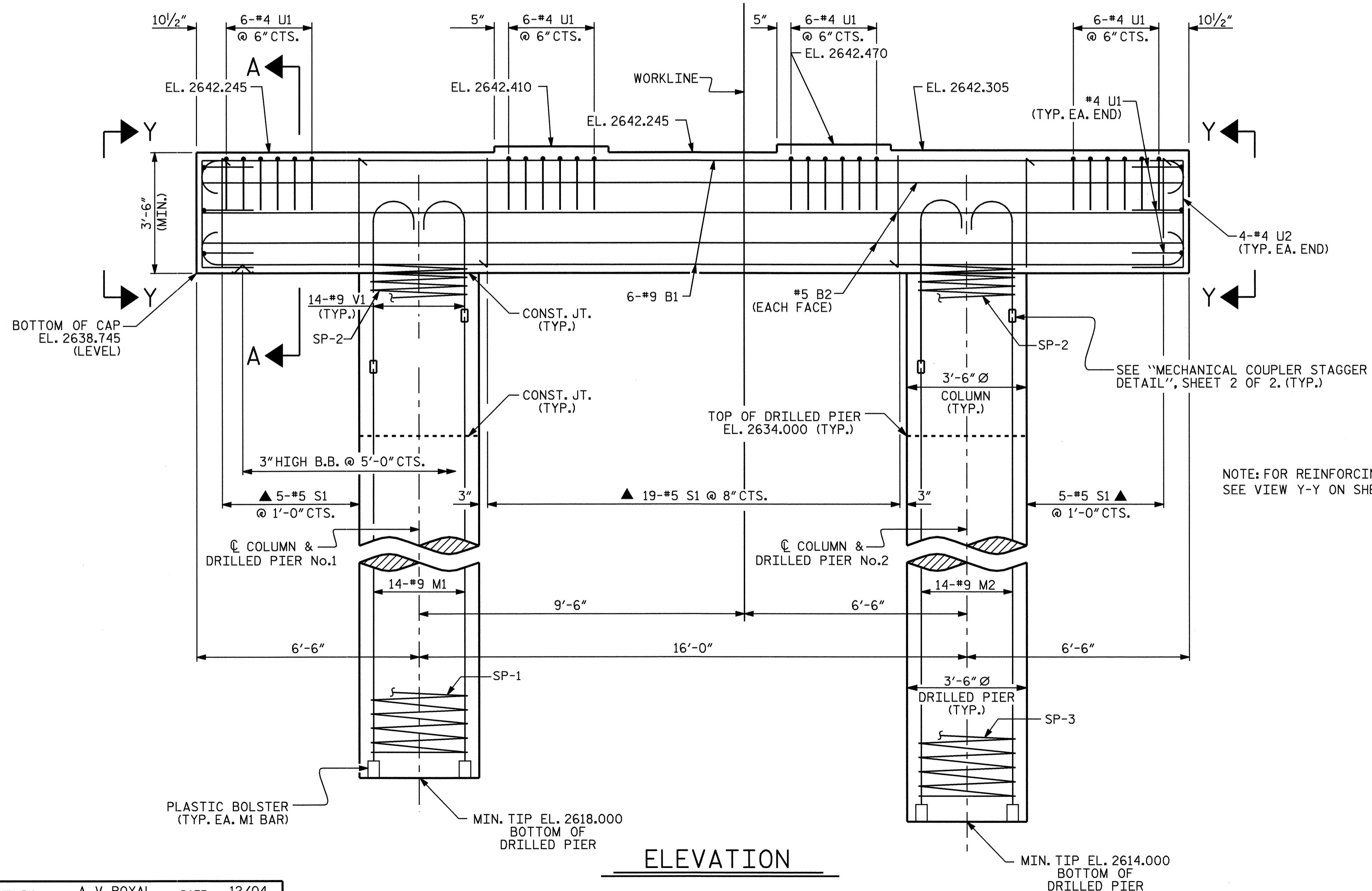
▲ INVERT ALTERNATE STIRRUPS AS SHOWN

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

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

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL TO THE COLUMN REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER AND COLUMN STEEL SHALL BE CUT ACCORDINGLY. SEE SPECIAL PROVISIONS FOR MECHANICAL BUTT SPLICING FOR REINFORCING STEEL.

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



NOTE: FOR REINFORCING STEEL IN END OF CAP SEE VIEW Y-Y ON SHEET 2 OF 2.

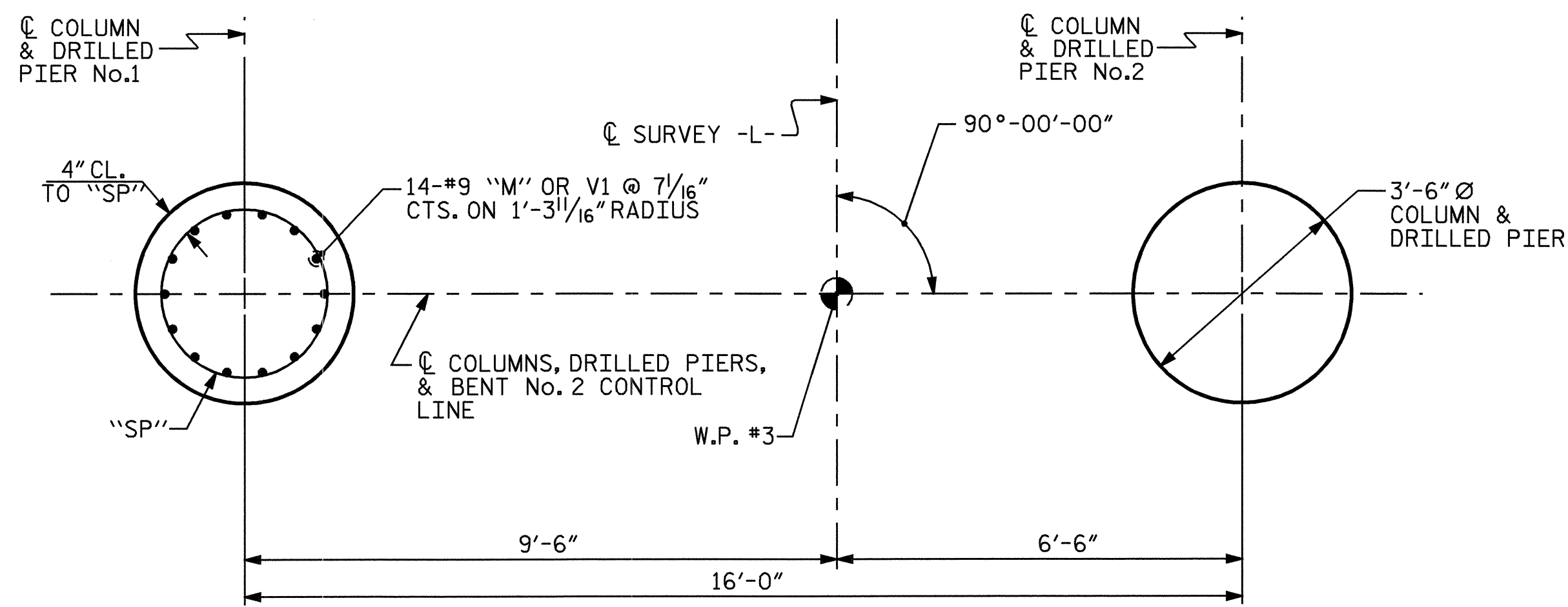
PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT No. 2



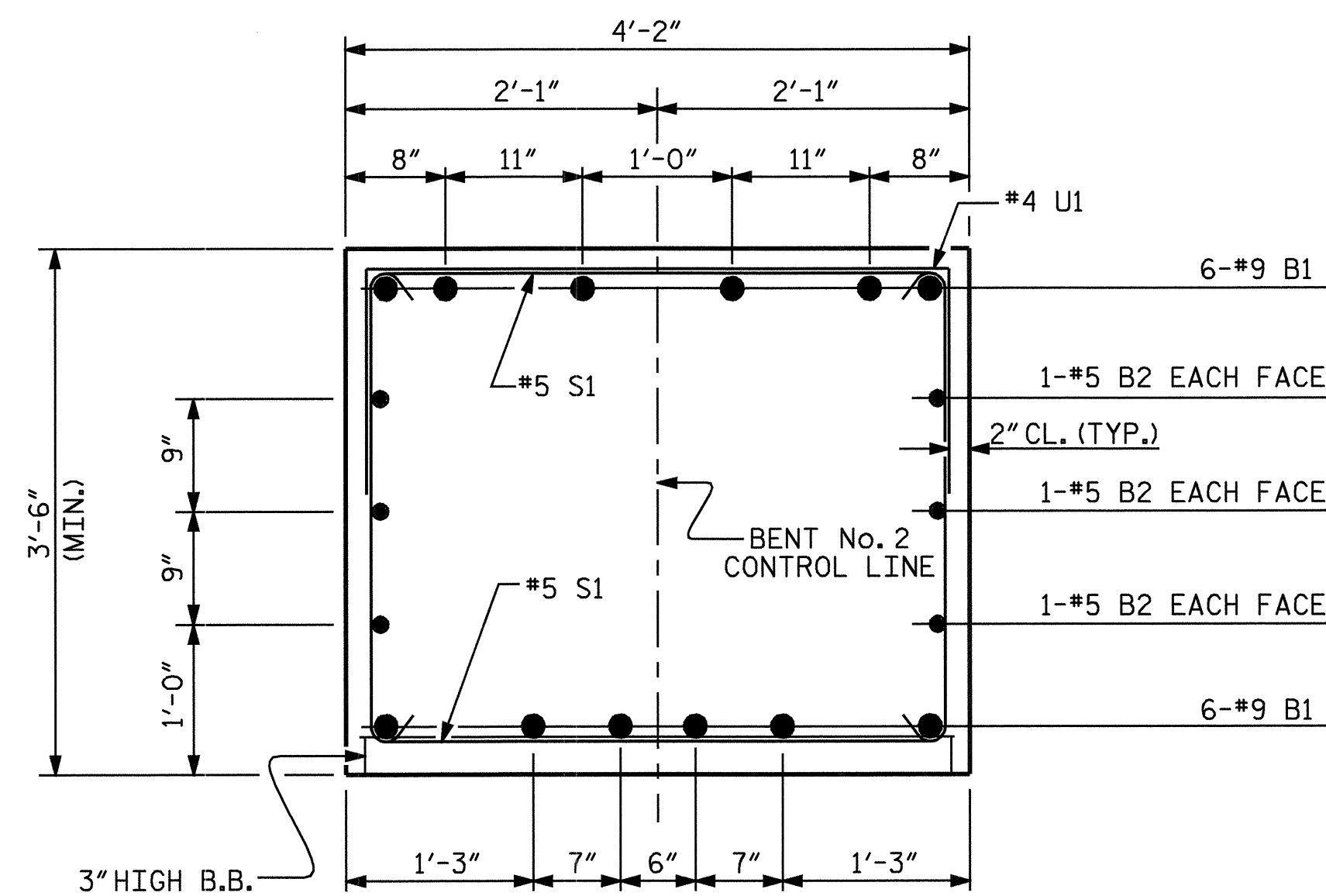
DRAWN BY: A. V. ROYAL DATE: 12/04
CHECKED BY: B. N. GRADY DATE: 1/05

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS	
2			4			41	

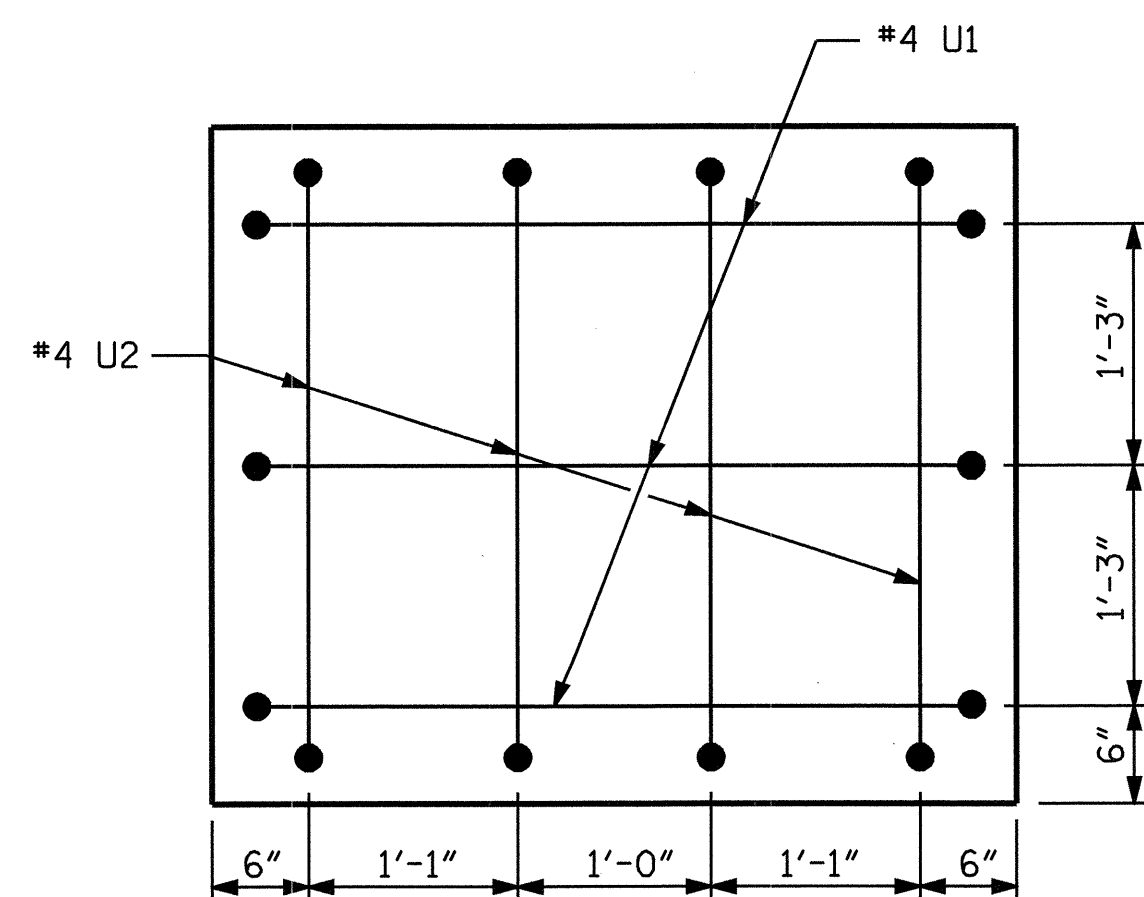


PLAN OF COLUMNS & DRILLED PIERS

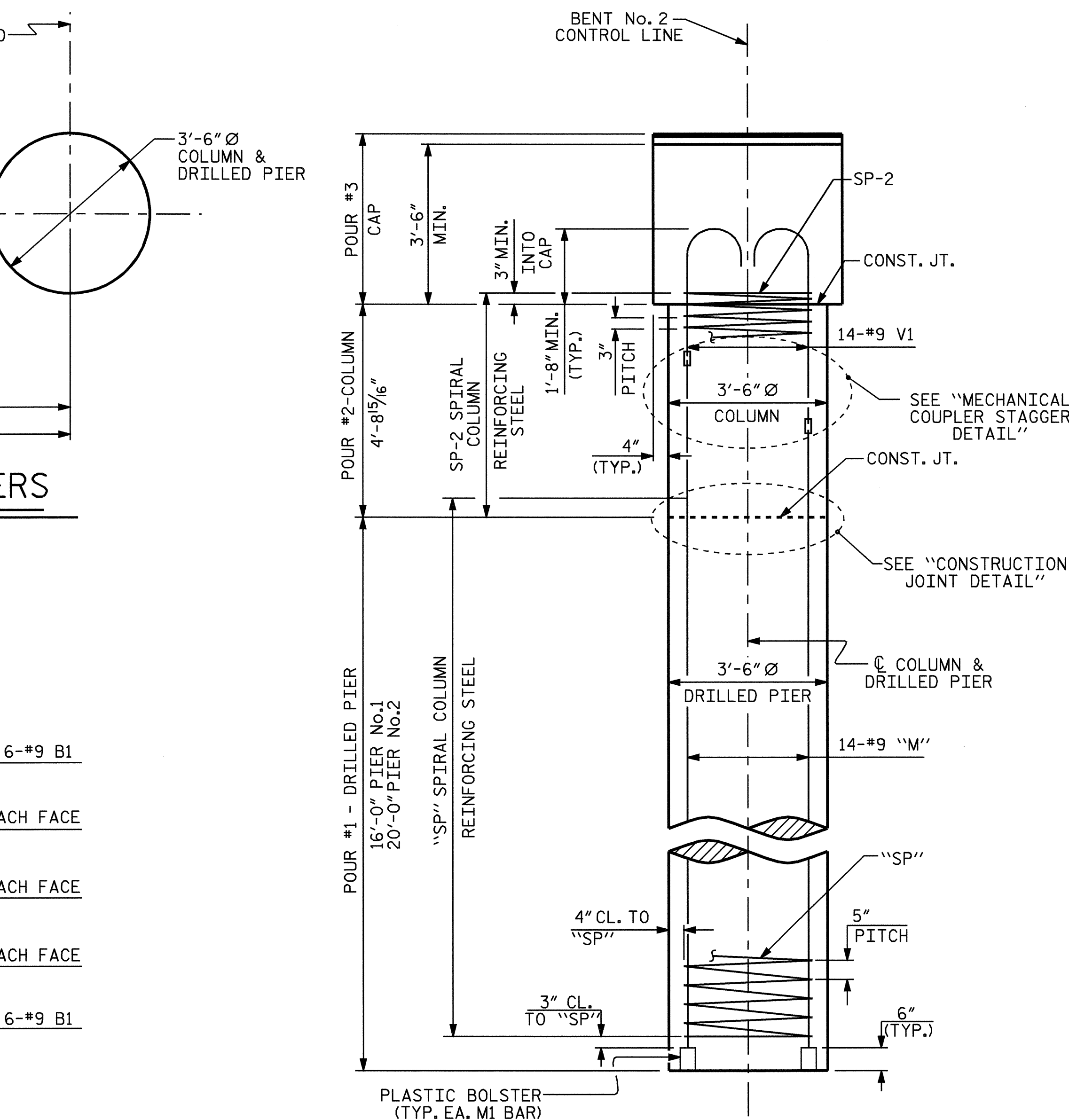
REINFORCING STEEL, DIMENSIONS, AND DETAILS ARE TYPICAL FOR ALL DRILLED PIERS & COLUMNS



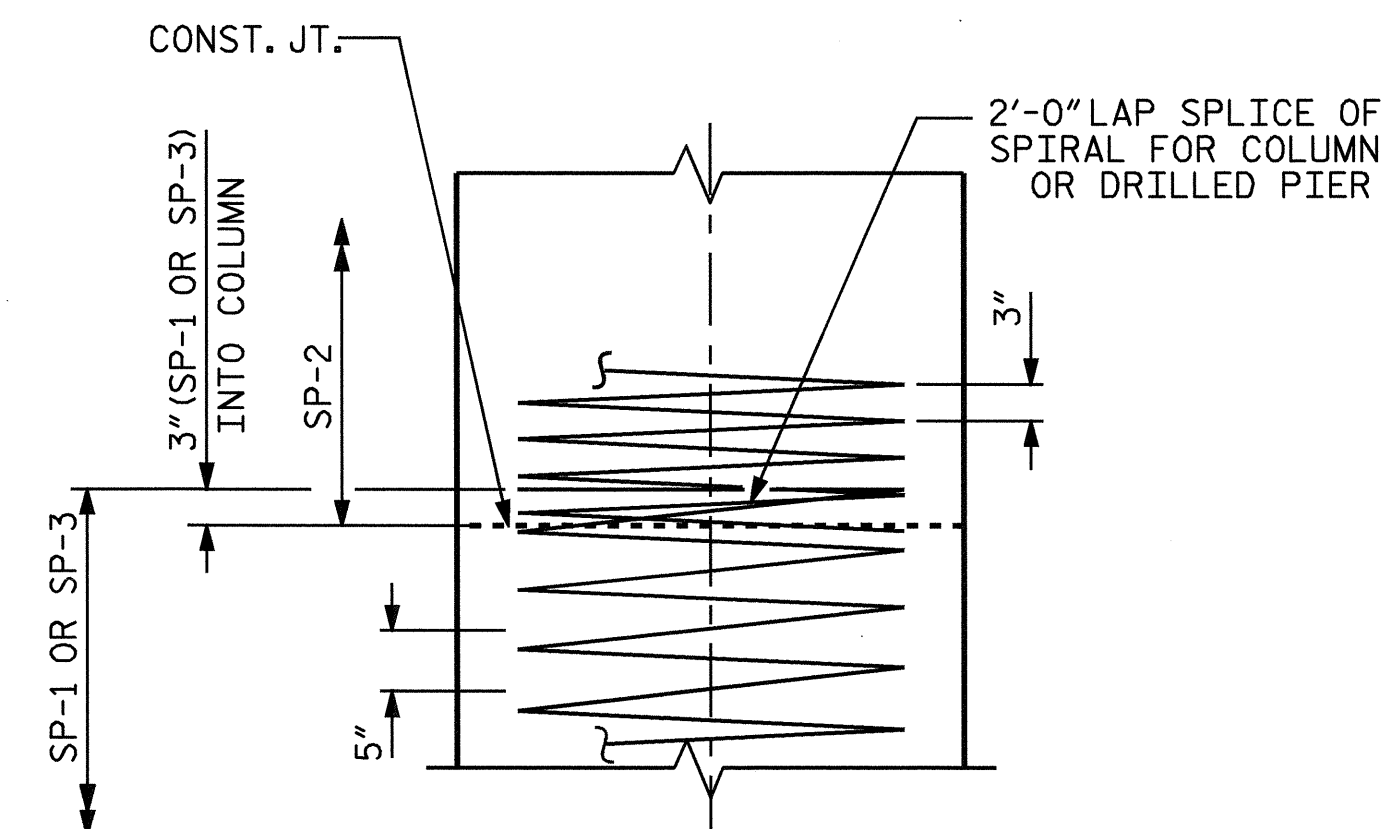
SECTION A-A



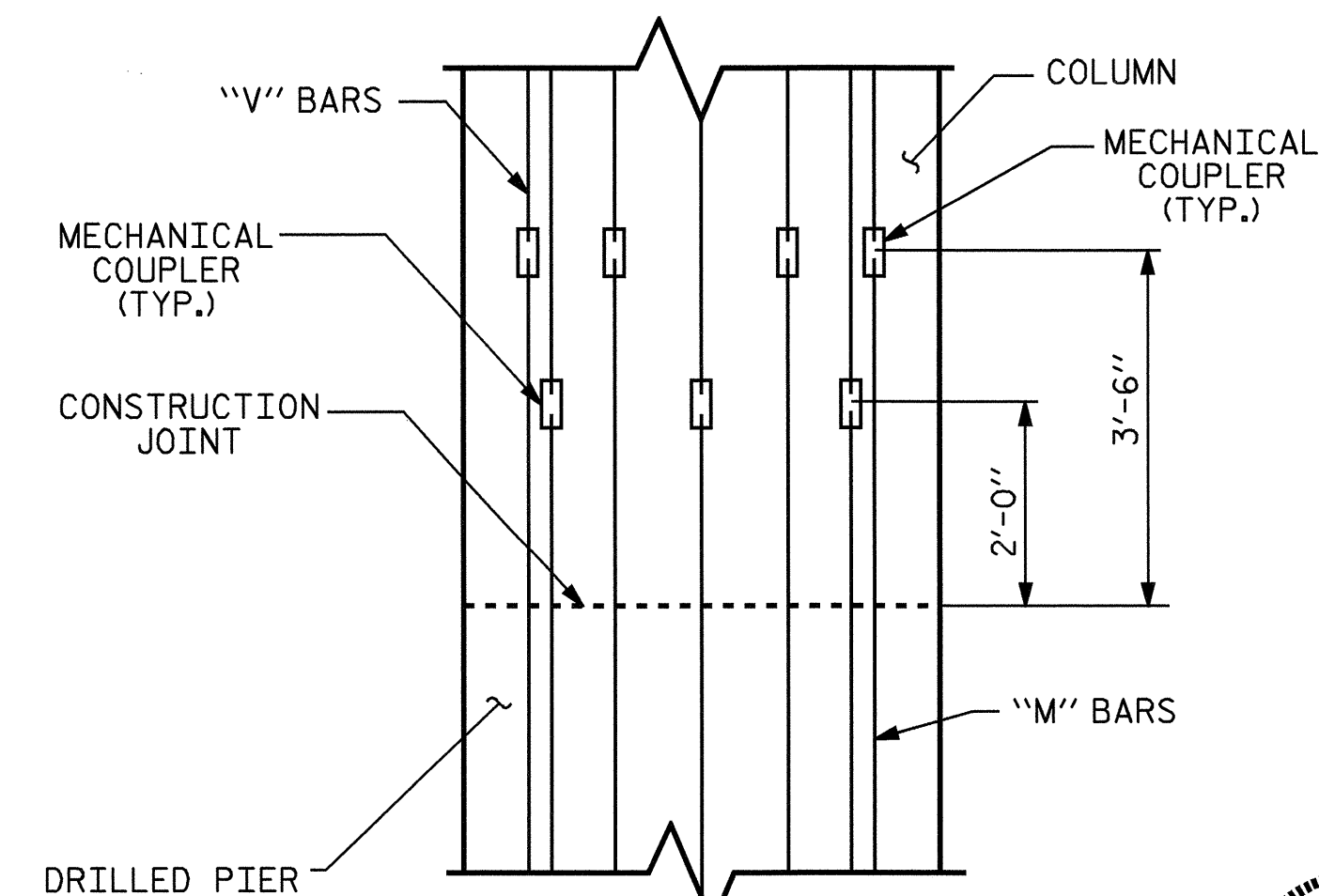
VIEW Y-Y



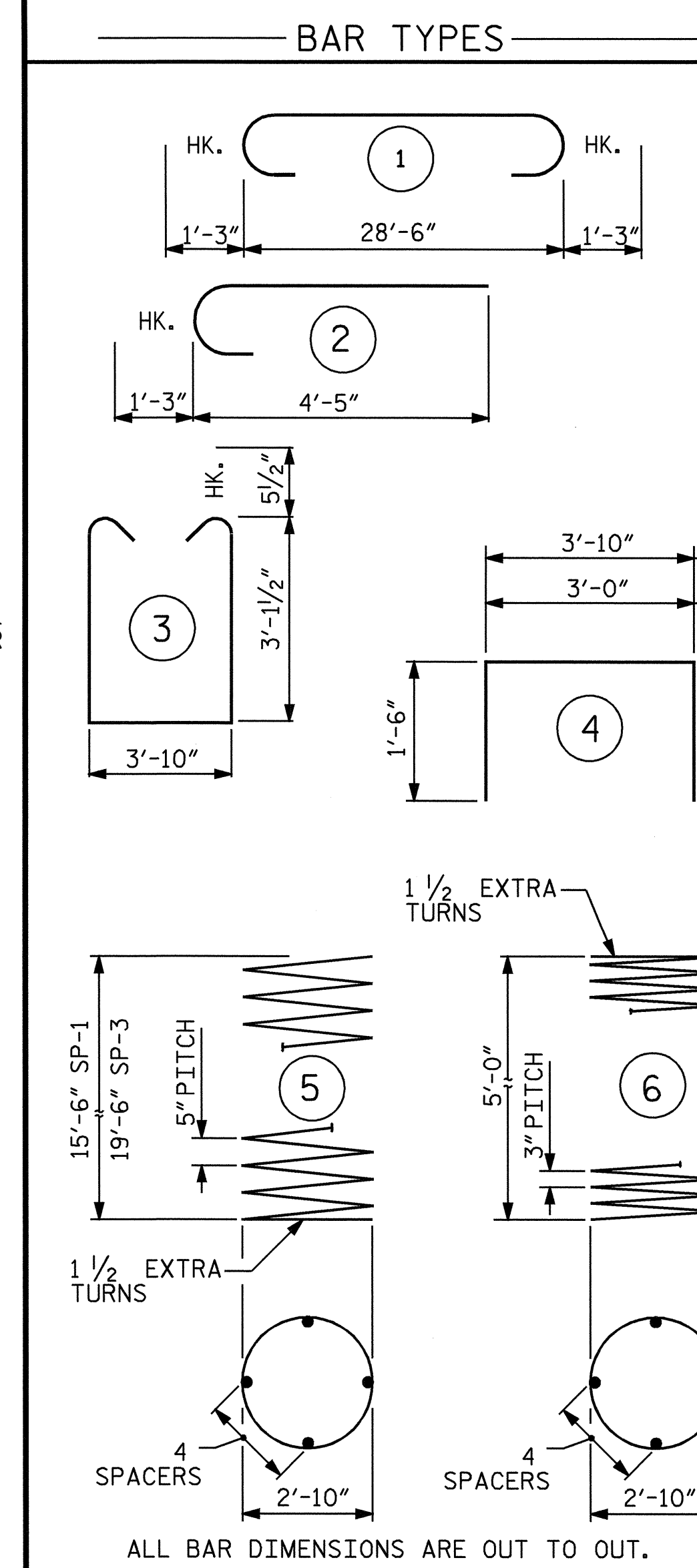
END ELEVATION



CONSTRUCTION JOINT DETAIL



MECHANICAL COUPLER STAGGER DETAIL



BILL OF MATERIAL

BENT No. 2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	1	31'-0"	1265
B2	6	5	STR	28'-8"	179
S1	29	5	3	11'-0"	333
U1	30	4	4	6'-10"	137
U2	8	4	4	6'-0"	32
V1	28	9	2	5'-8"	539
M1	14	9	STR	22'-0"	1047
M2	14	9	STR	26'-0"	1238

REINFORCING STEEL	LBS.	4770
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SPIRAL COLUMN REINFORCING STEEL	LBS.	1061
---------------------------------	------	------

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

* THE SP-1 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN:	
POUR #2 (COLUMNS)	3.4 C. Y.
POUR #3 (CAP)	15.9 C. Y.
TOTAL	19.3 C. Y.

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE:	
POUR #1 (DRILLED PIERS)	12.8 C. Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL	15.0 LIN. FT.
3'-6" Ø DRILLED PIERS IN SOIL	21.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	16.0 LIN. FT.
CSL TUBES	164.0 LIN. FT.

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

SHEET 2 OF 2

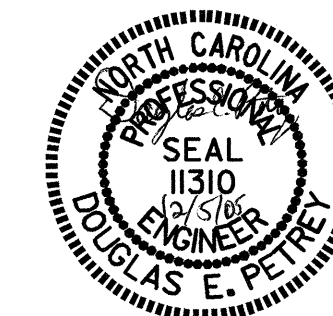
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS 41
2			4			

DRAWN BY: A. V. ROYAL DATE: 12/04
CHECKED BY: B. N. GRADY DATE: 1/05

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NOTES

- STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- PIPE DRAINS IN WALL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH THREE FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.
- STEEL SHEET PILING SHALL BE DRIVEN TO ROCKLINE AND EMBEDDED 1'-0" INTO SHEET PILE CAP.
- THE STEEL SHEET PILES SHALL BE HOT ROLLED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" Ø 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 LOCATIONS OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION X-X, SHEET 5 OF 6.

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.

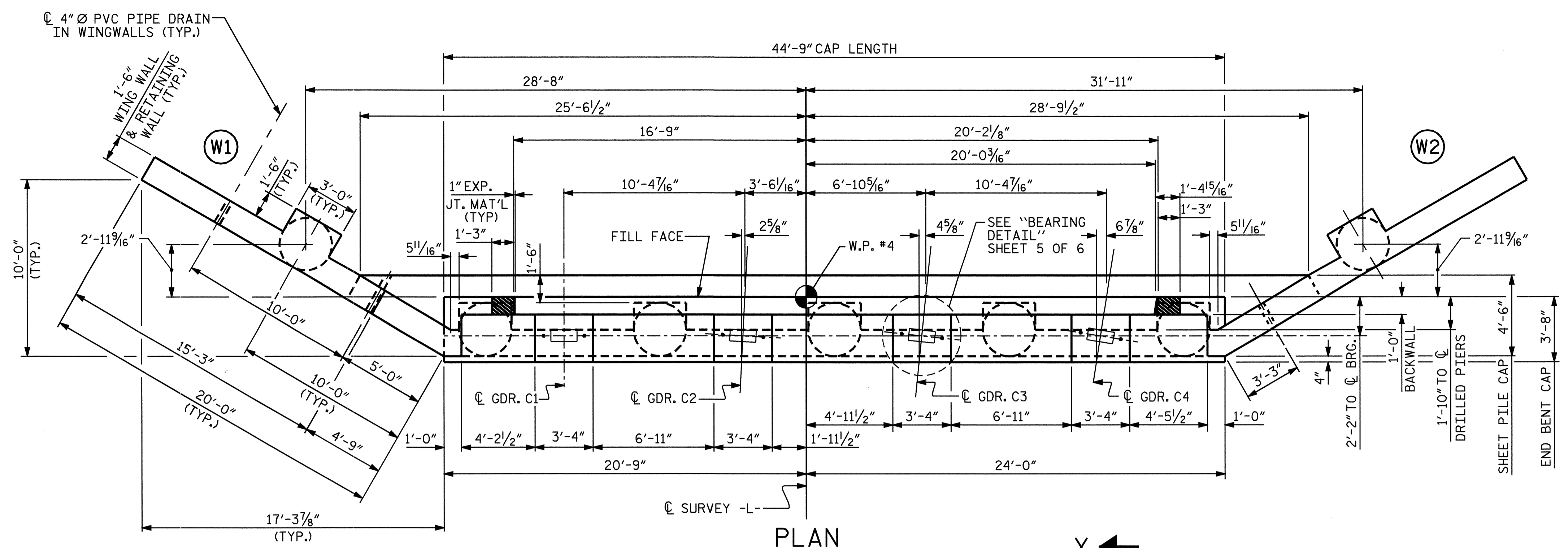
MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL TO THE COLUMN REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER AND COLUMN STEEL SHALL BE CUT ACCORDINGLY. SEE SPECIAL PROVISIONS FOR MECHANICAL BUTT SPLICING FOR REINFORCING STEEL.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS. BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

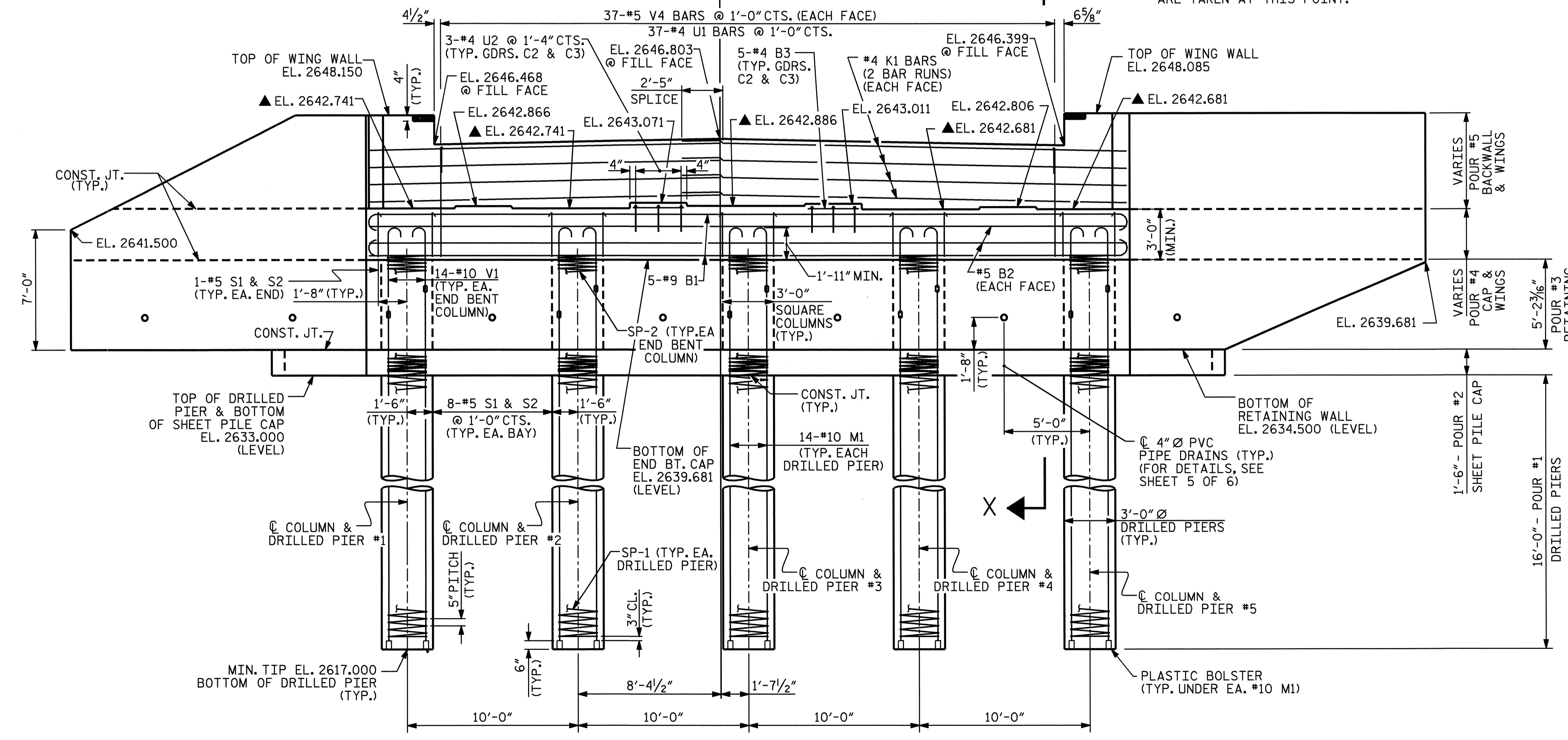
THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

#5 V3 BARS IN BACKWALL SHALL BE PLACED BEFORE THE EPOXY PROTECTION COATING.

NOTE: FOR ADDITIONAL REINFORCING STEEL REQUIRED, SEE "RETAINING WALL AND SHEET PILE CAP DETAILS", SHEET 2 OF 6 AND WING DETAILS, SHEET 3 & 4 OF 6.



PLAN



ELEVATION

COLUMNS & DRILLED PIERS IN WINGS NOT SHOWN FOR CLARITY

DRAWN BY : A. V. ROYAL DATE : 2/05
 CHECKED BY : M. BRITT DATE : 2/11/05

05-APR-2006 15:21
 R:\Structure\B3922\aroyal\Microstation\B-3922.sd.E*2.01.dgn
 aroyal

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

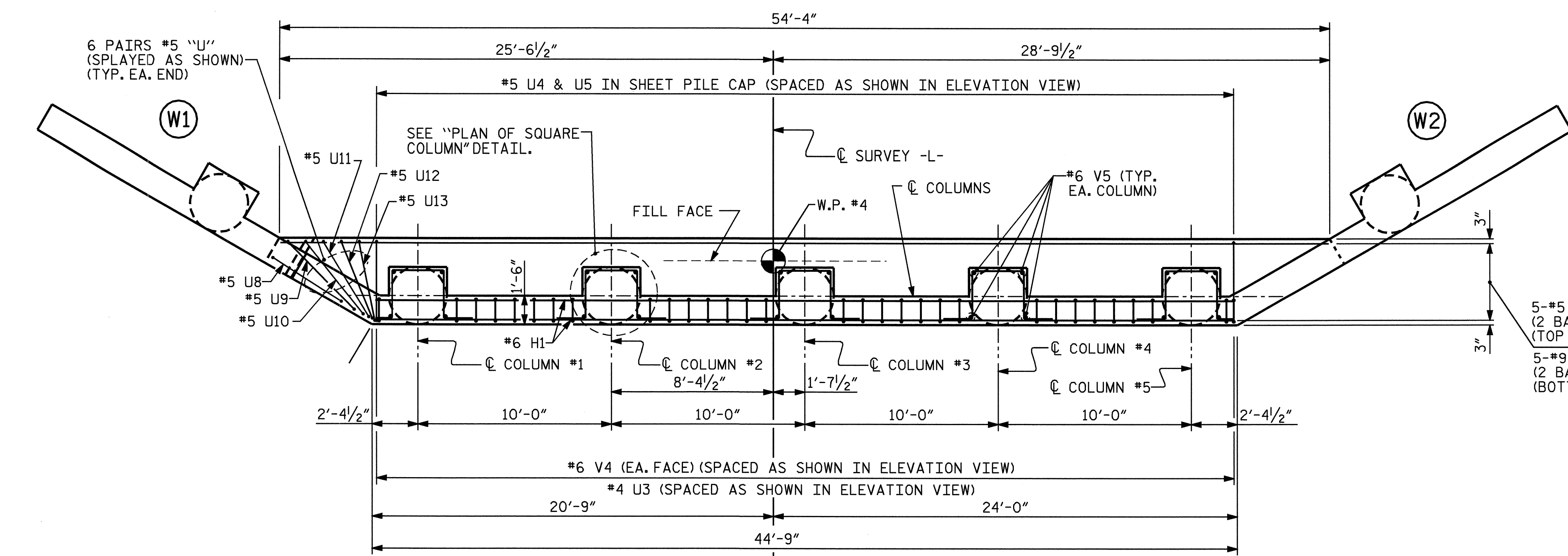
SHEET 1 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

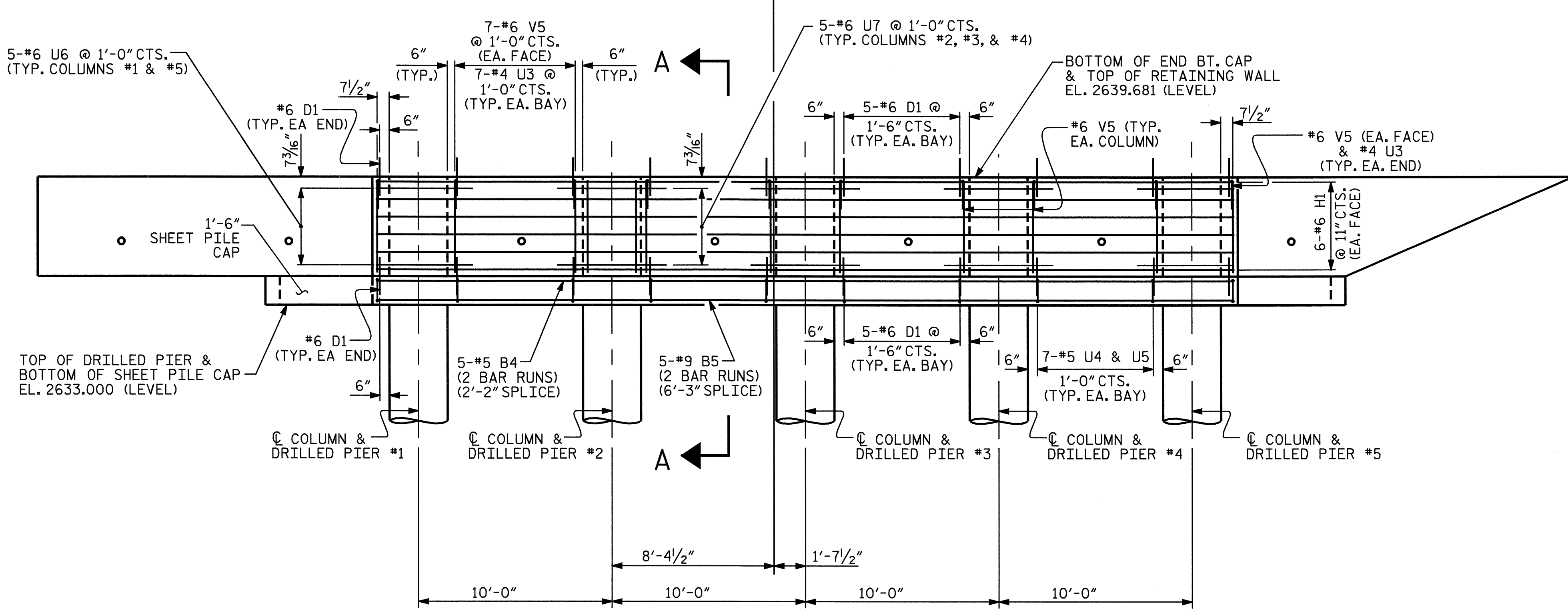
SUBSTRUCTURE
 END BENT No.2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			41



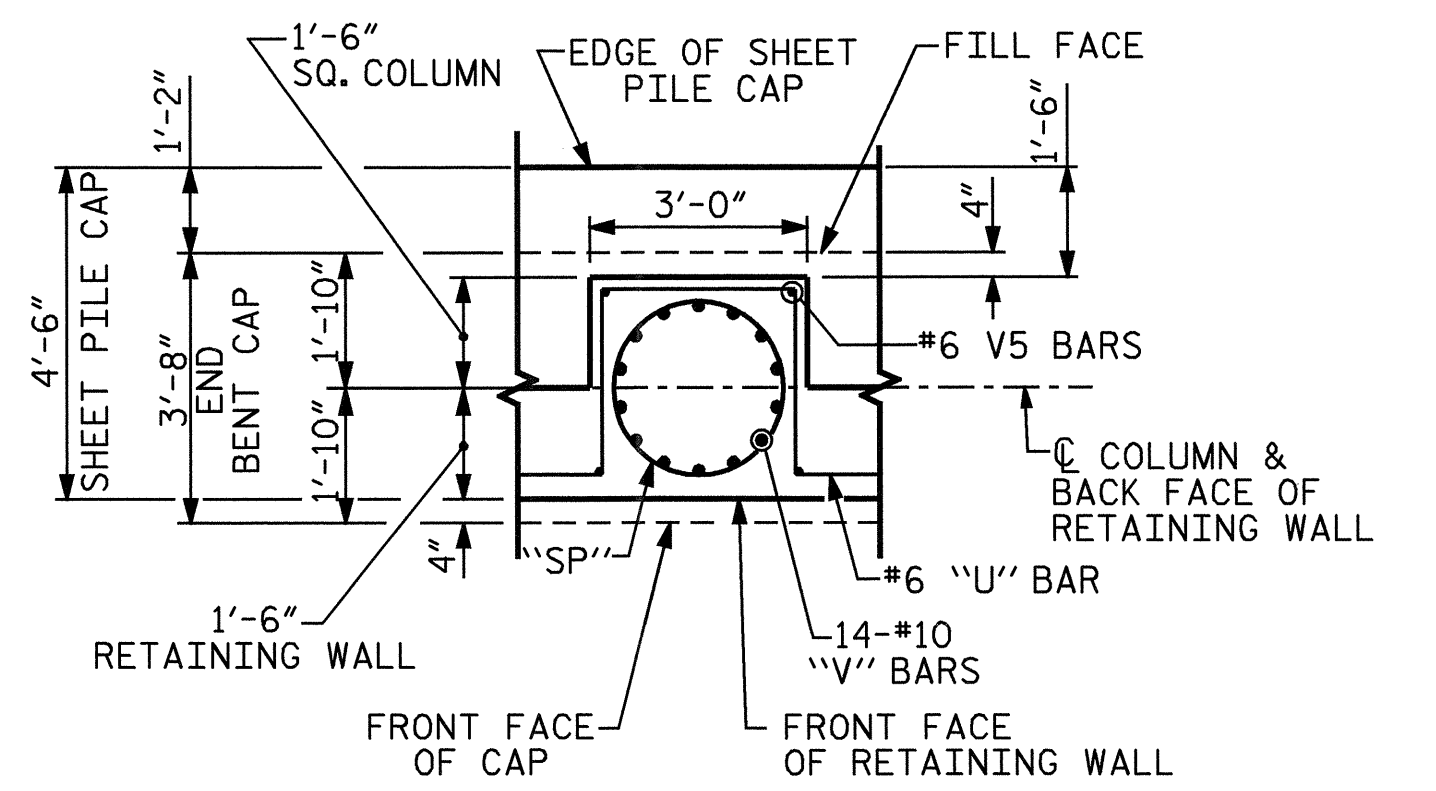
PLAN
WORKLINE



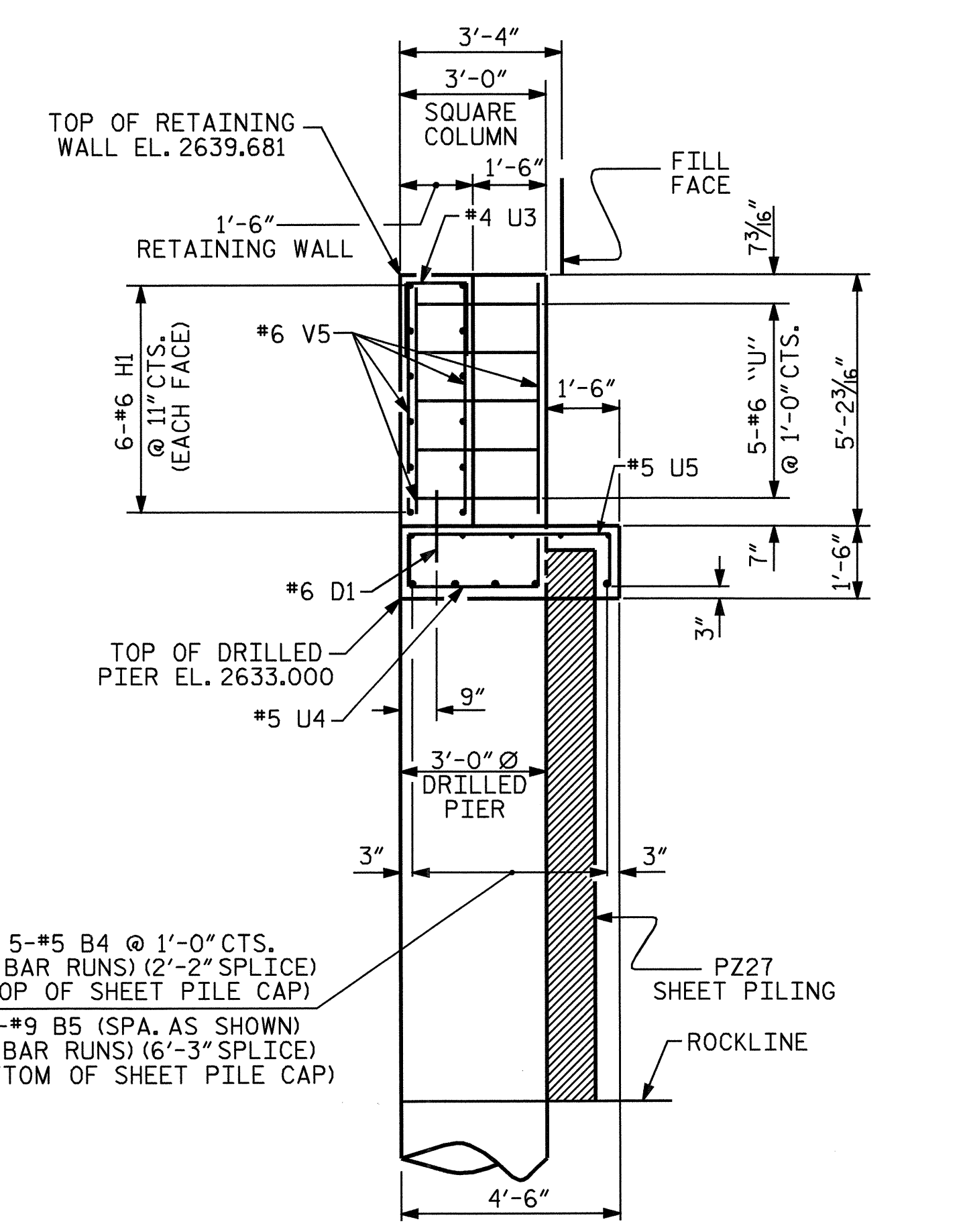
ELEVATION

COLUMNS & DRILLED PIERS IN WINGS NOT SHOWN FOR CLARITY

RETAINING WALL & SHEET PILE CAP DETAILS



PLAN OF SQUARE COLUMN



SECTION A-A

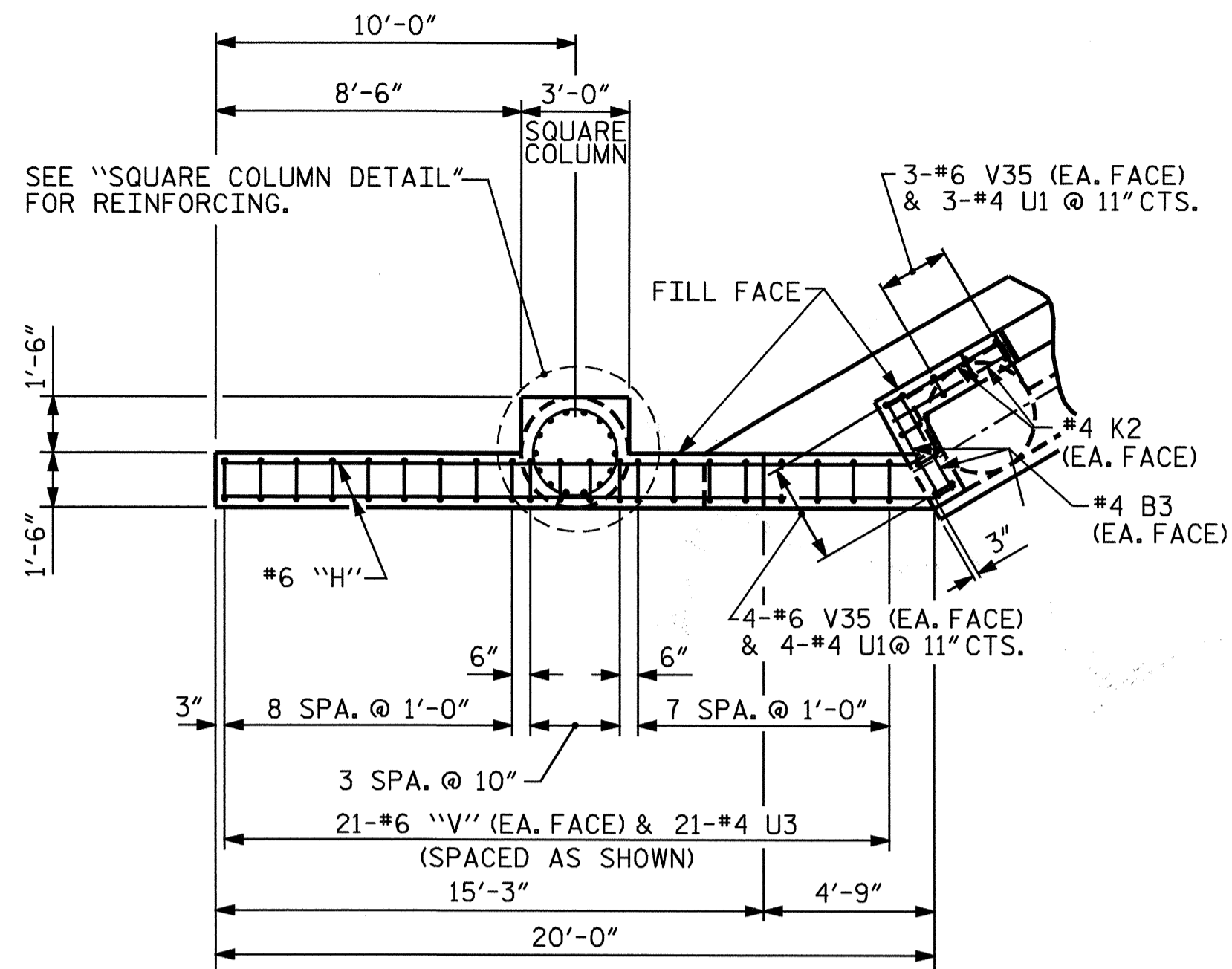
PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

SHEET 2 OF 6
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No.2

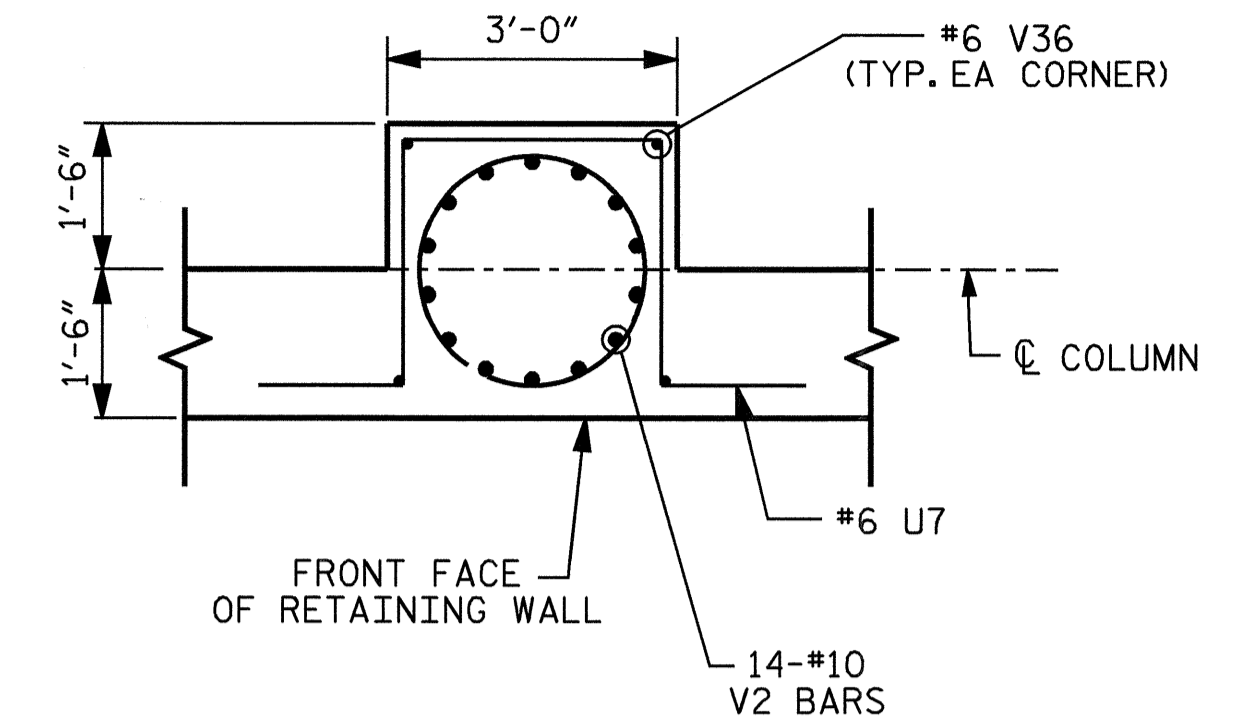


DRAWN BY: A. V. ROYAL DATE: 2/05
CHECKED BY: M. BRITT DATE: 2/15/05

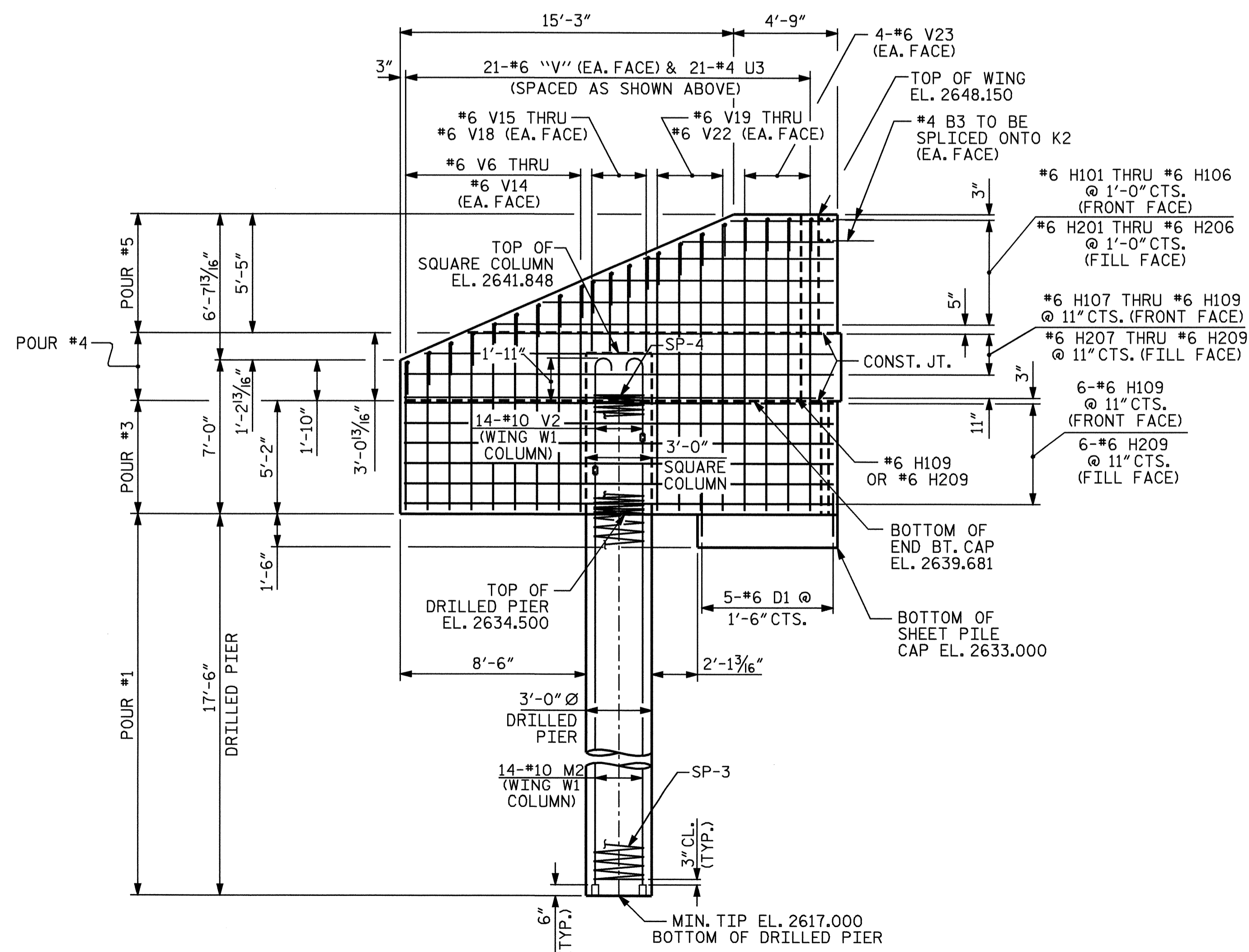
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS	41
2			4				



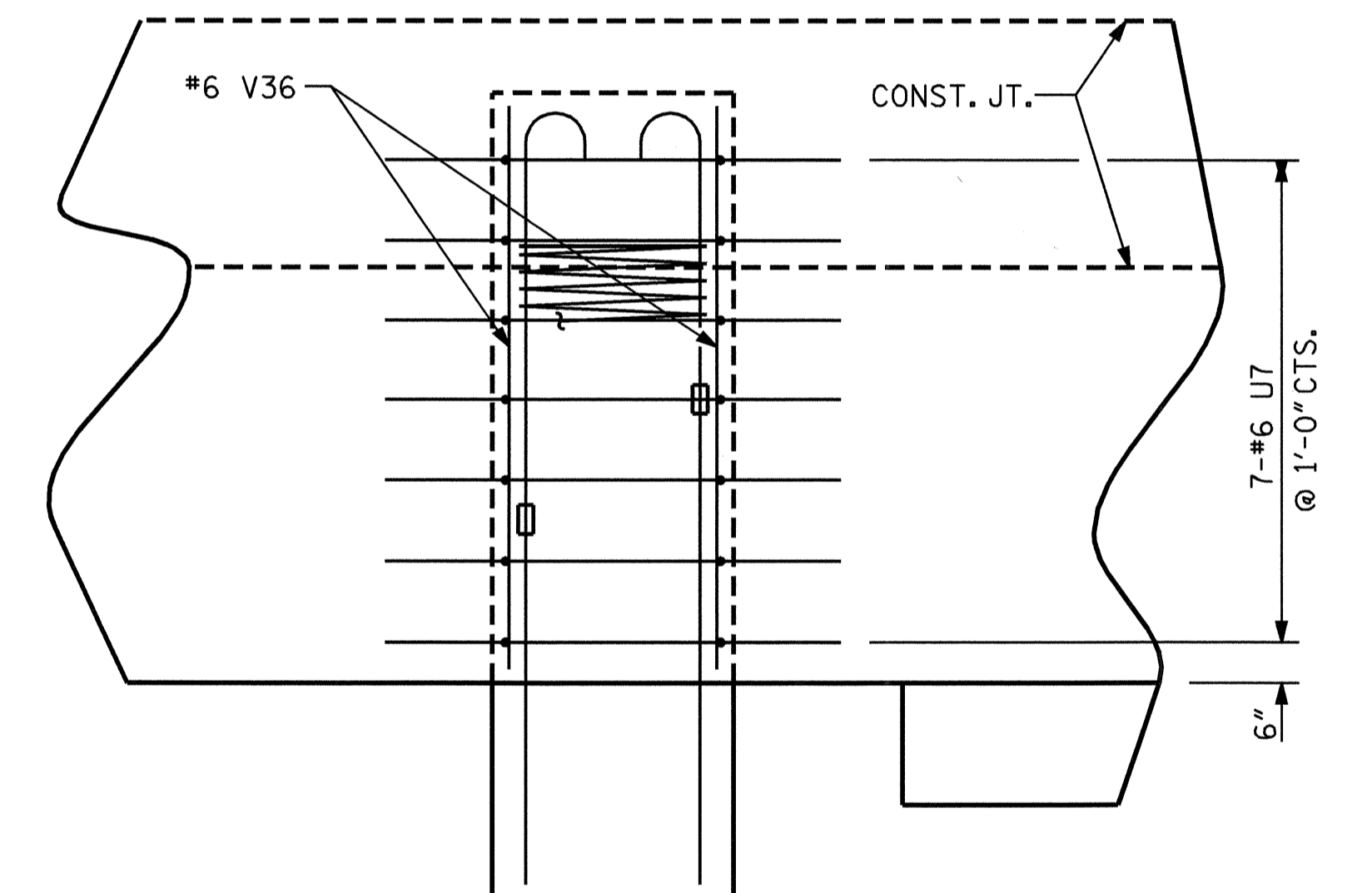
PLAN - WING WALL (W1)



PLAN - SQUARE COLUMN (W1)



ELEVATION - WING WALL (W1)



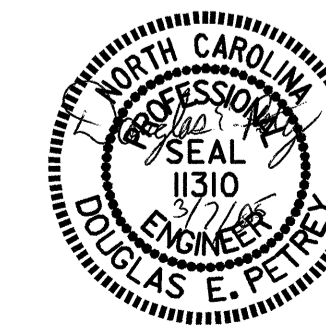
ELEVATION - SQUARE COLUMN (W1)

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 3 OF 6

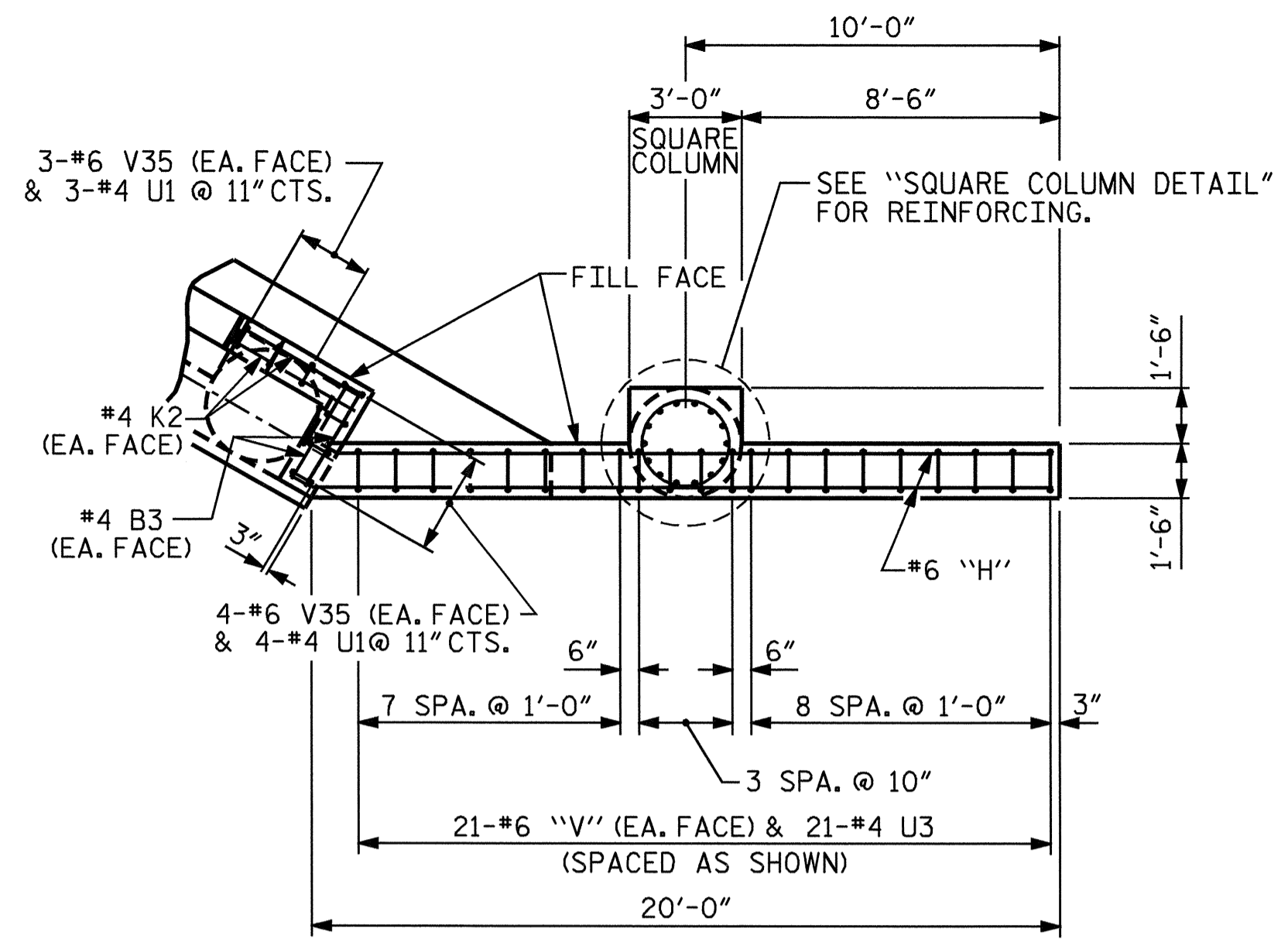
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No.2

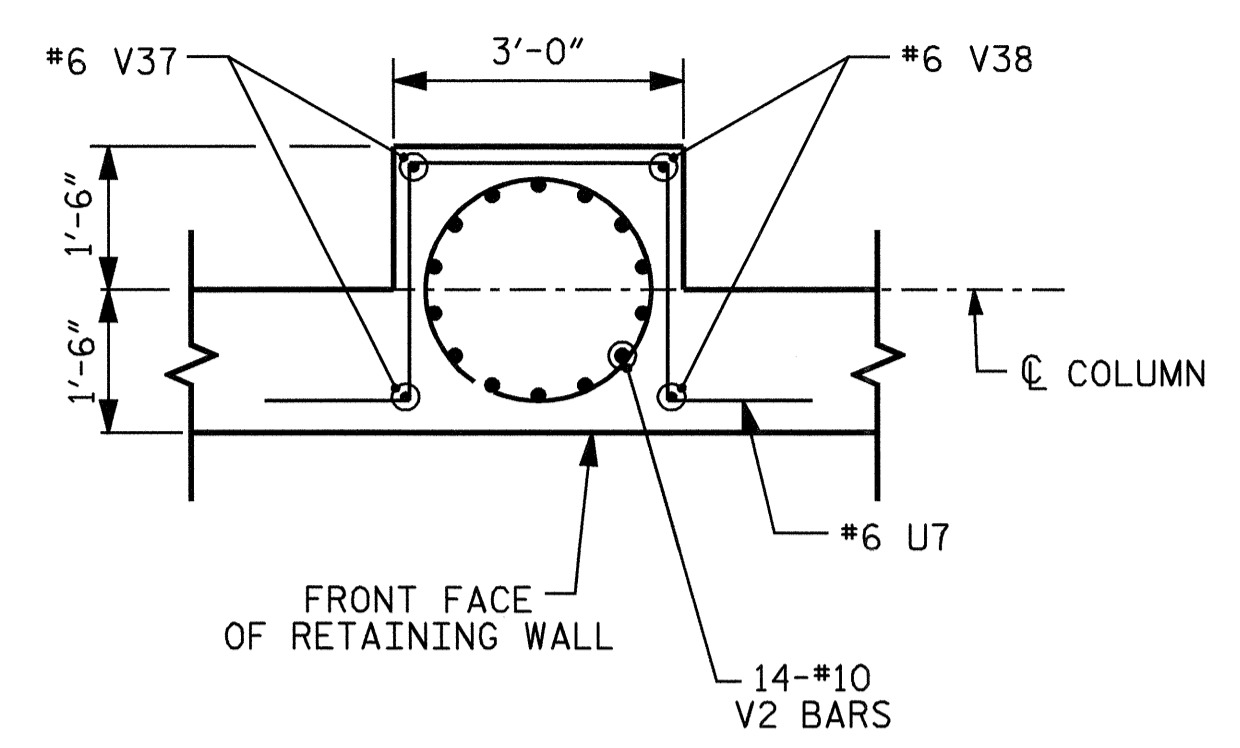


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	41
2			4				

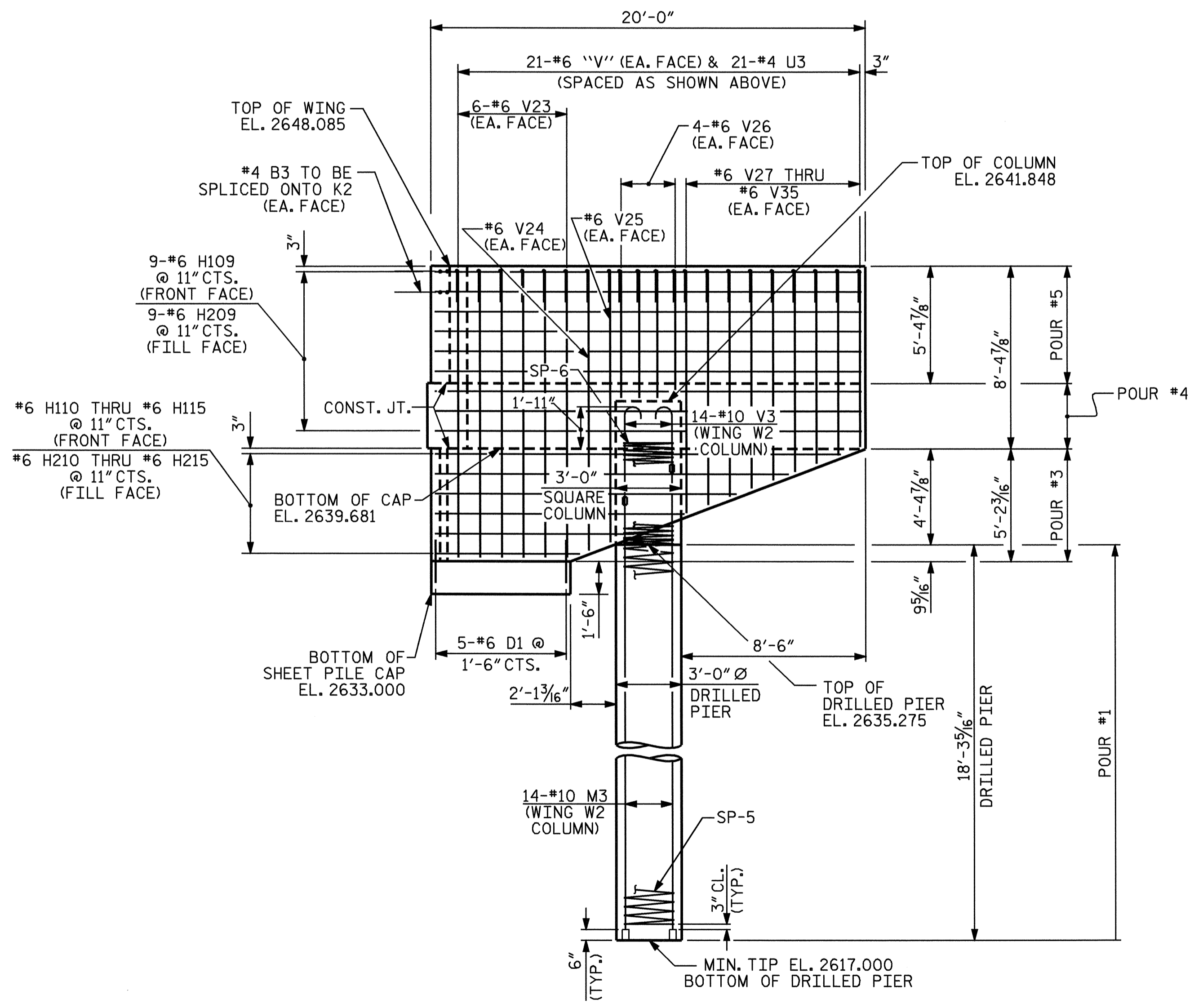
DRAWN BY: A. V. ROYAL DATE: 2/05
 CHECKED BY: M. BRITT DATE: 2/16/05



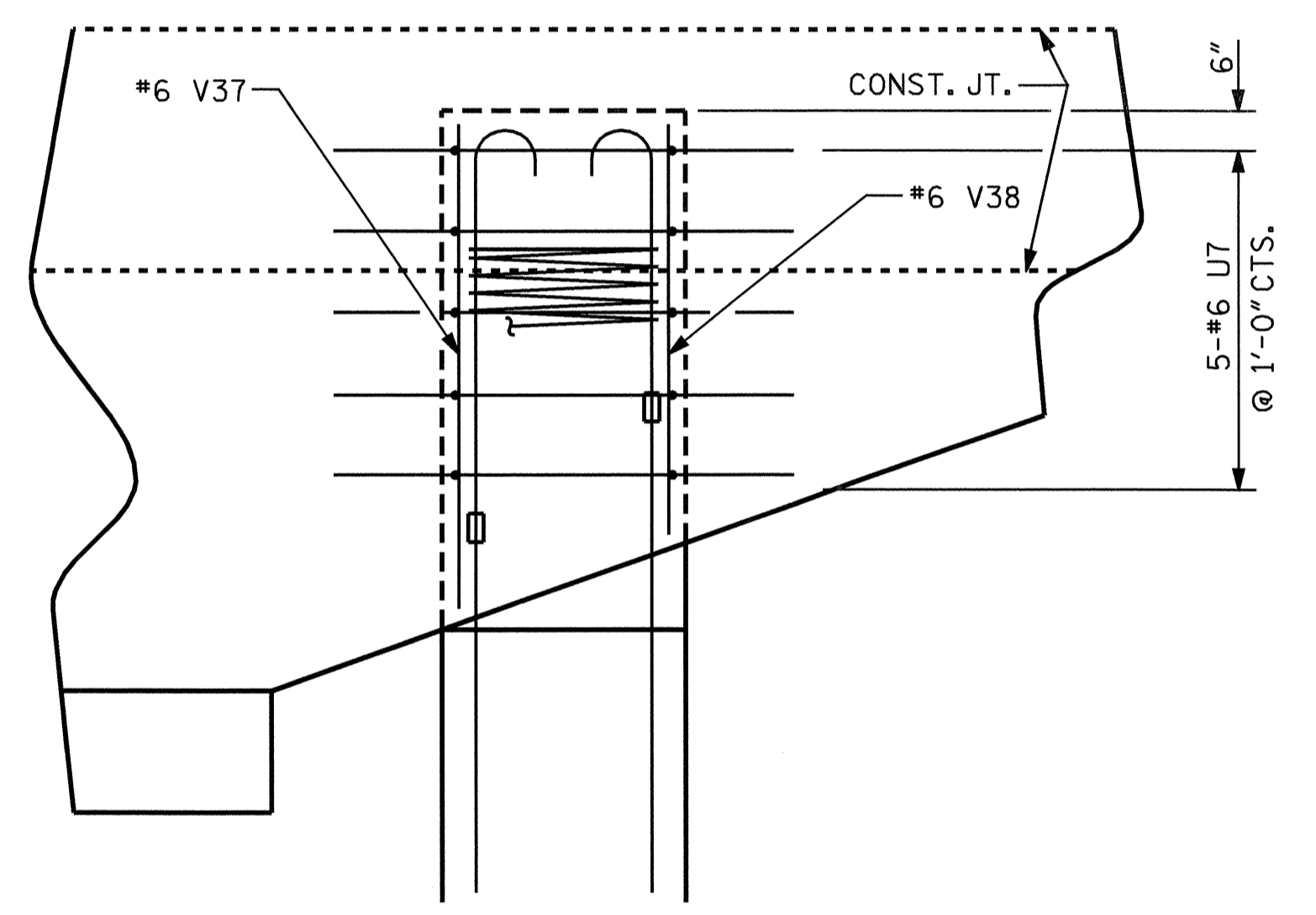
PLAN - WING WALL (W2)



PLAN - SQUARE COLUMN (W2)



ELEVATION - WING WALL (W2)



ELEVATION - SQUARE COLUMN (W2)

PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-
 SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

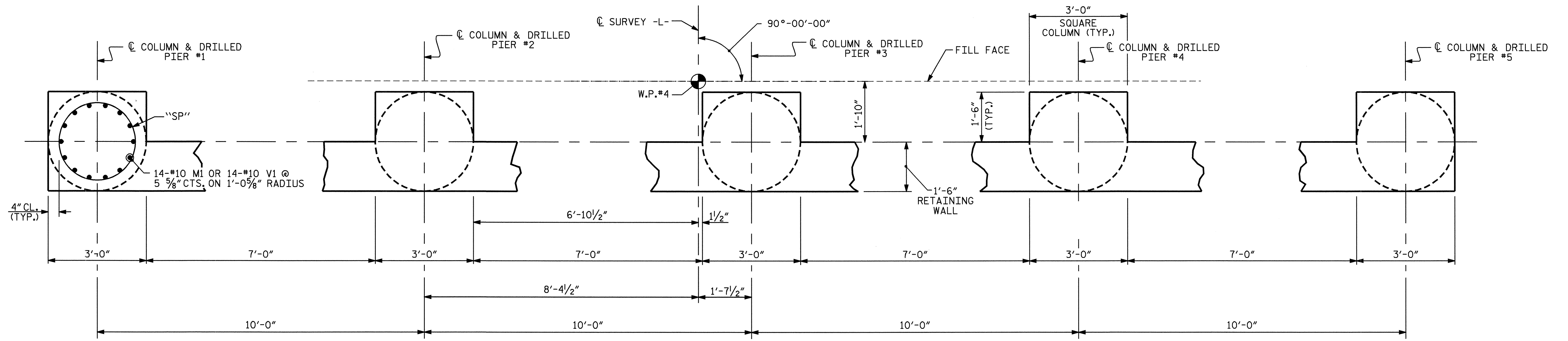
SUBSTRUCTURE
 END BENT No.2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			41

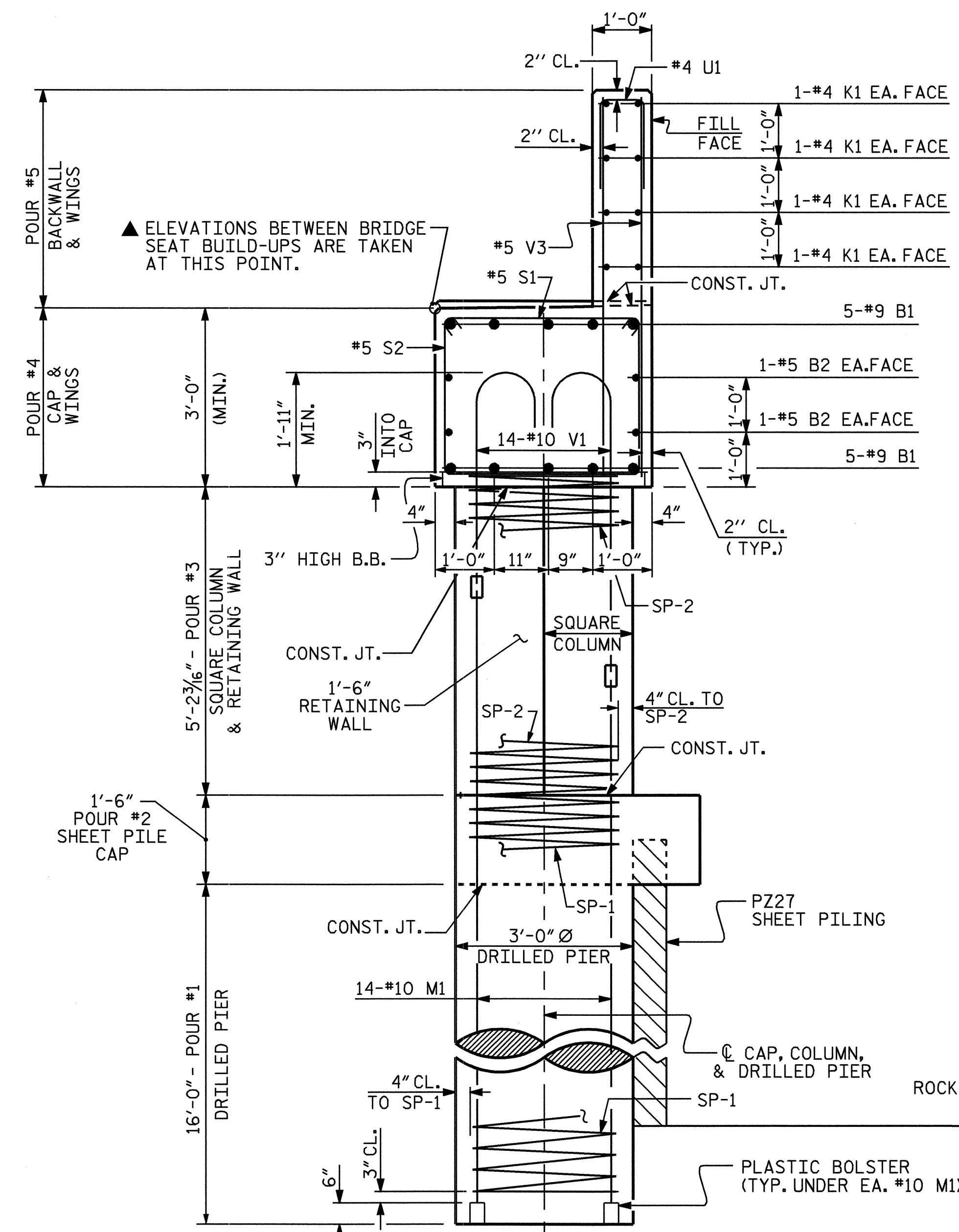
DRAWN BY: A. V. ROYAL DATE: 2/05
 CHECKED BY: M. BRITT DATE: 2/18/05

07-MAR-2005 08:14
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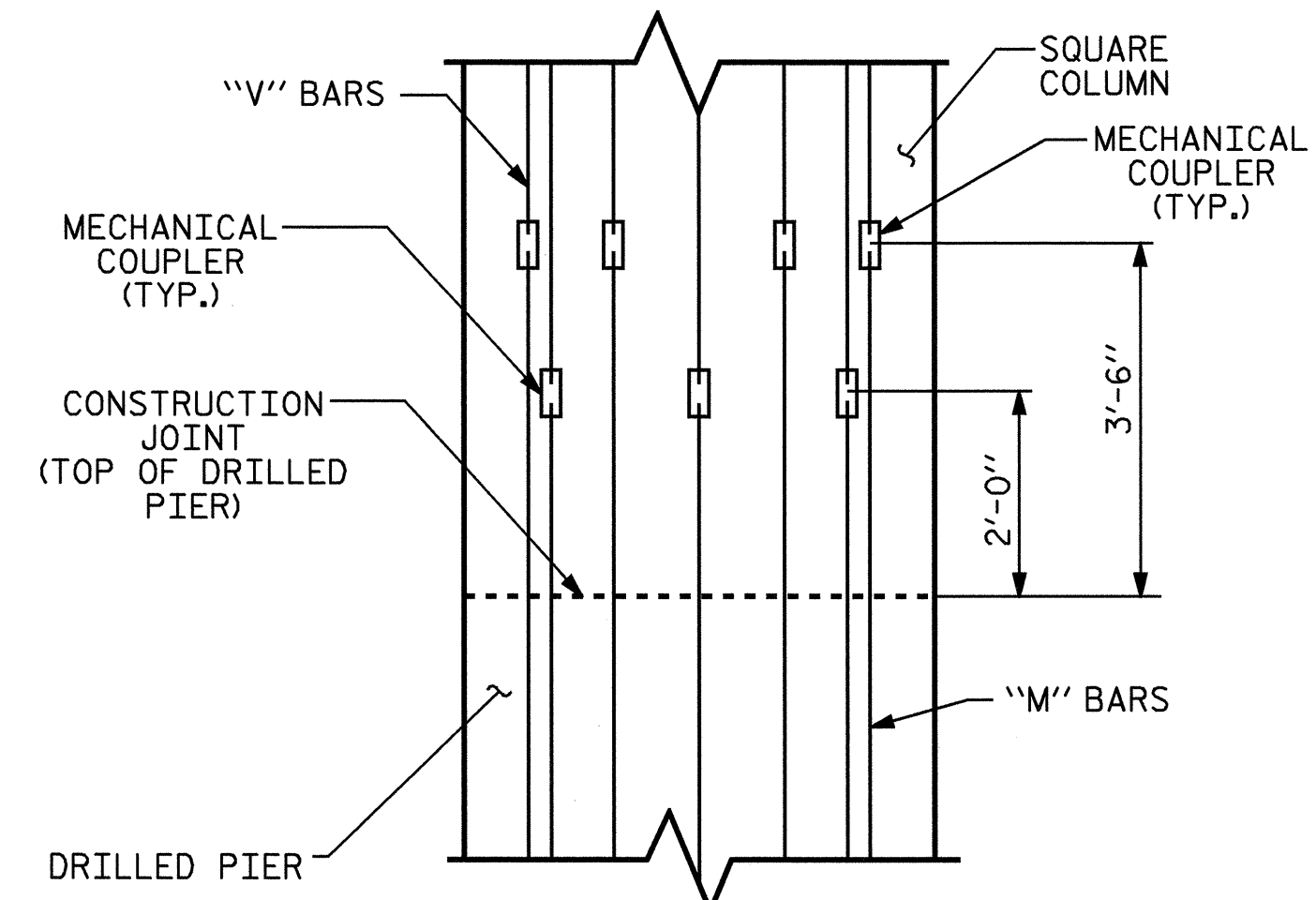


PLAN OF COLUMNS & DRILLED PIERS

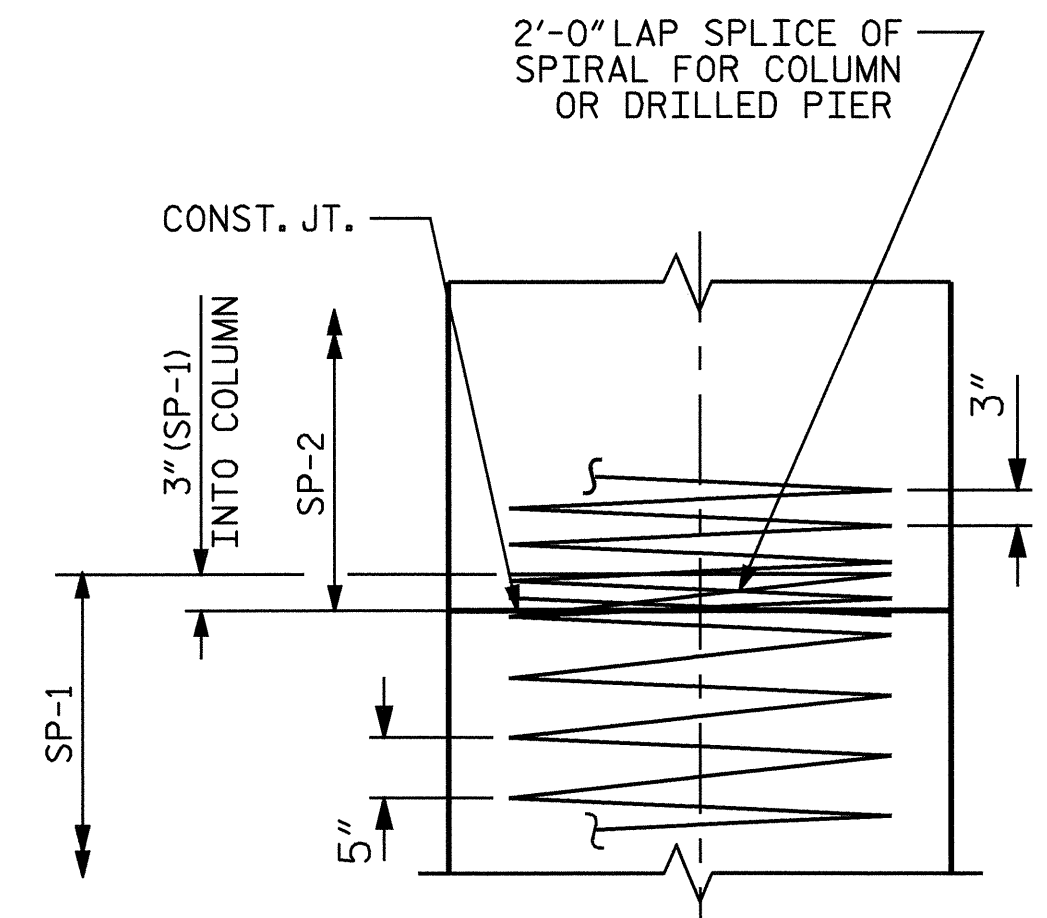
(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS & DRILLED PIERS) (DRILLED PIERS ON WINGS NOT SHOWN)



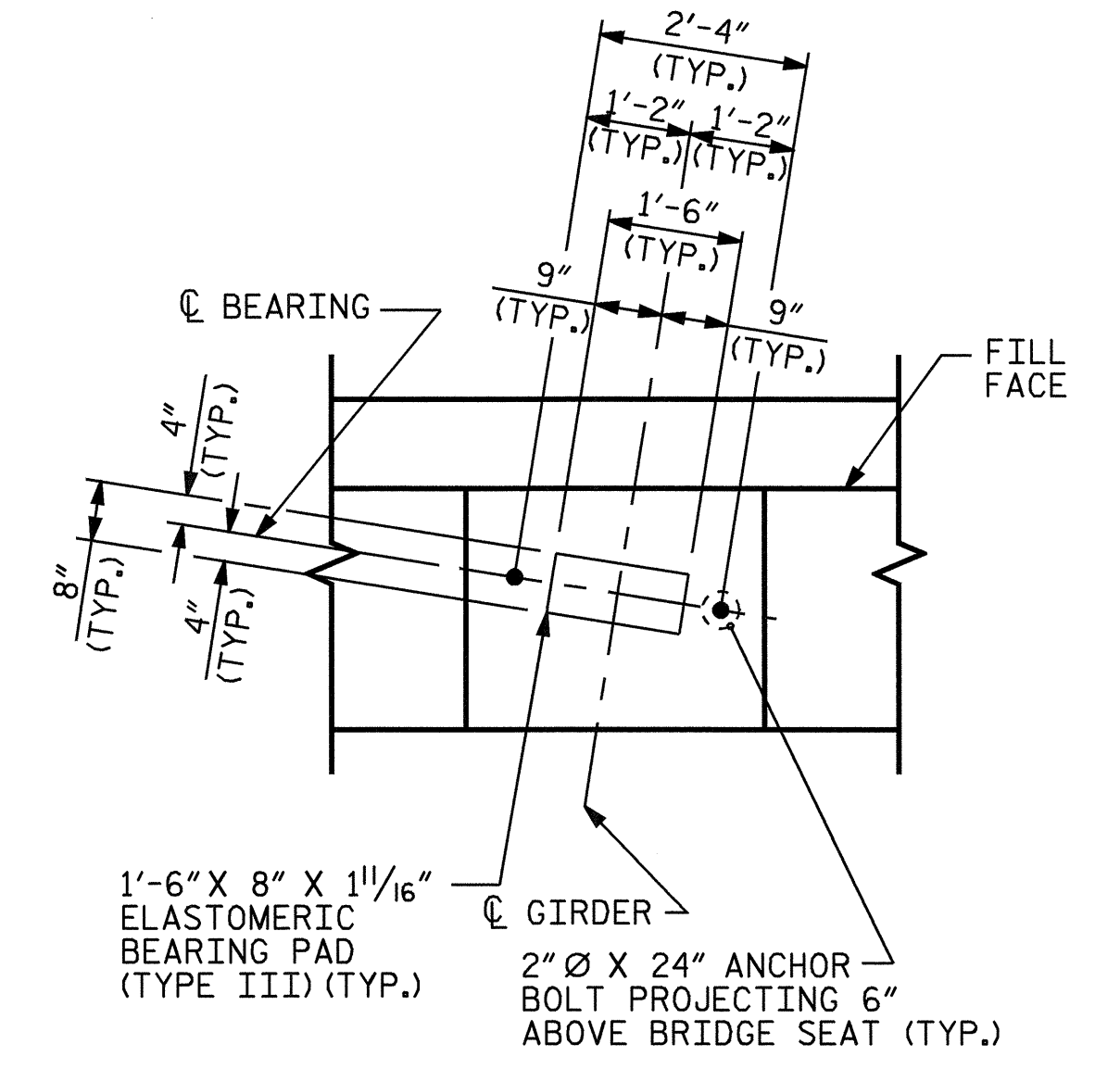
SECTION X-X



MECHANICAL COUPLER STAGGER DETAIL

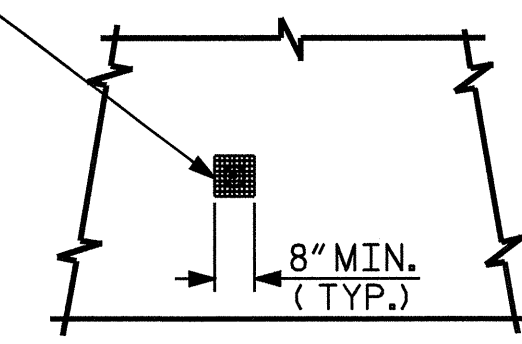


CONSTRUCTION JOINT DETAIL

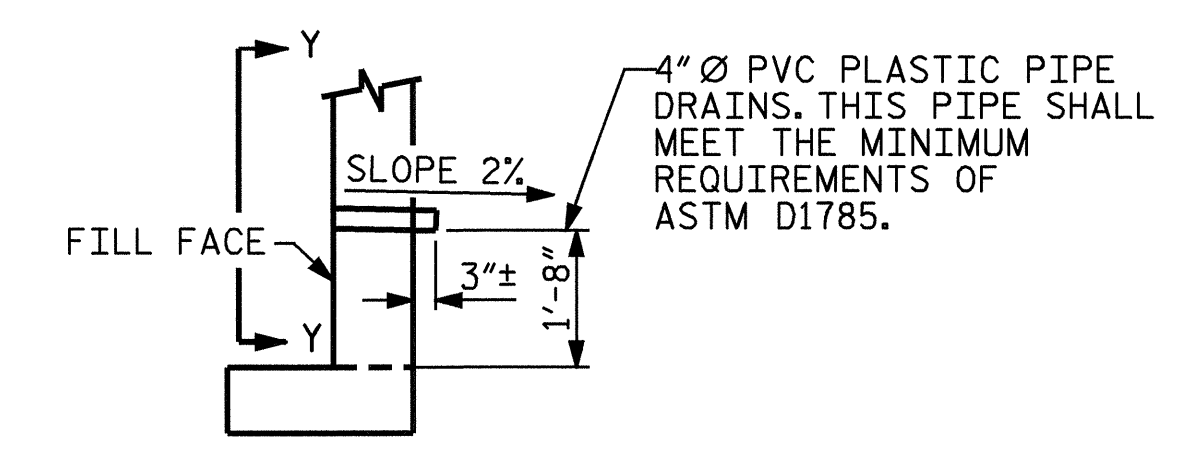


BEARING DETAIL

8" SQUARE ALUMINUM OR GALVANIZED STEEL WIRE 4 MESH HARDWARE CLOTH OF COMMERCIAL QUALITY, ANCHOR FIRMLY TO FILL FACE.



VIEW Y-Y



SECTION THRU CAP

NOTE:
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

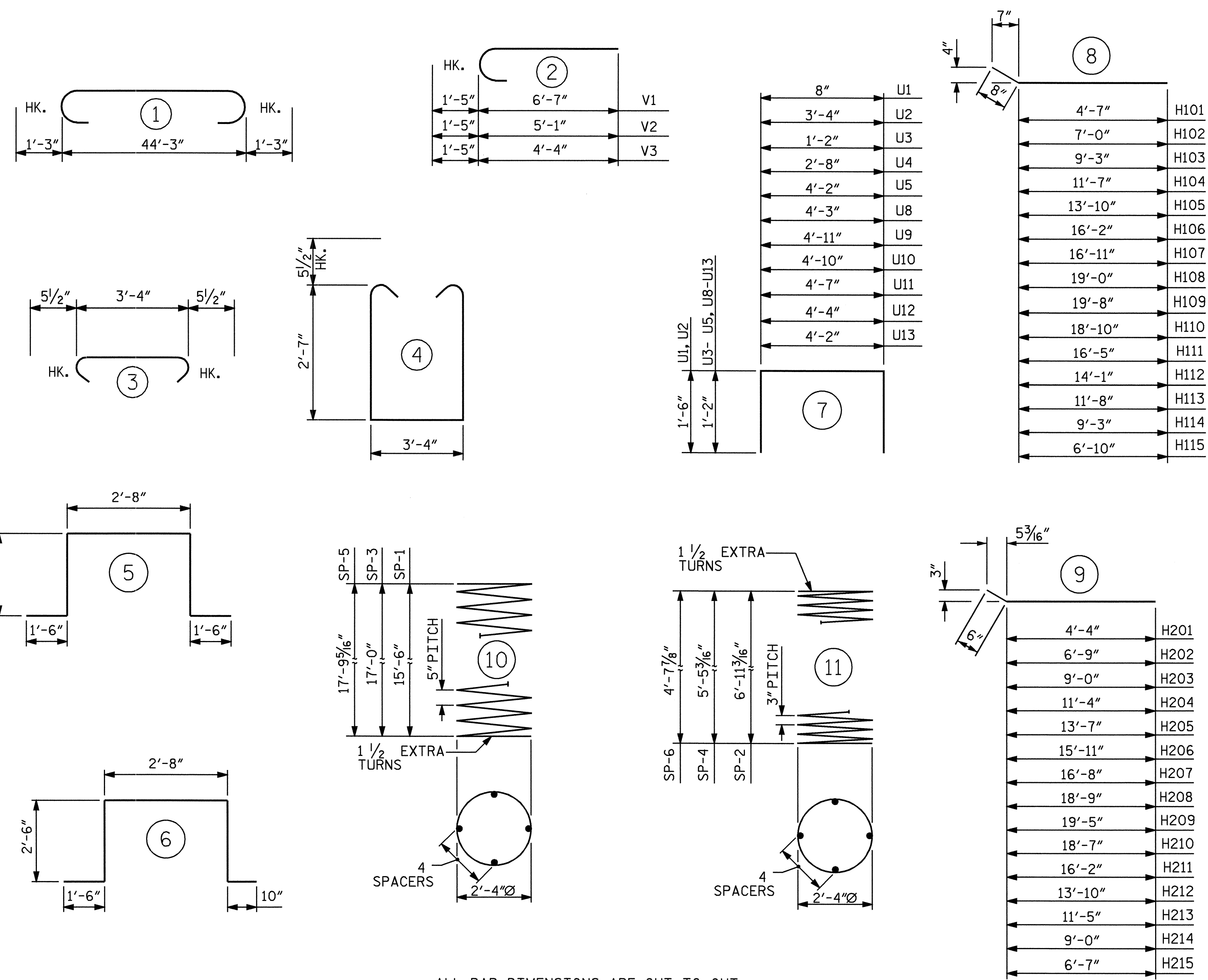
**SUBSTRUCTURE
 END BENT No.2**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS 41	
2			4				



DRAWN BY: A. V. ROYAL DATE: 2/05
 CHECKED BY: M. BRITT DATE: 2/18/05

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No.2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	9	1	46'-9"	1590	U1	51	4	7	3'-8"	125	SP-1	5	**	10	280'-0"	1460
B2	4	5	STR	44'-5"	185	U2	6	4	7	6'-4"	25	SP-2	5	*	11	216'-2"	722
B3	18	4	STR	3'-0"	36	U3	72	4	7	3'-6"	168	SP-3	1	**	10	308'-9"	322
B4	10	5	STR	28'-3"	295	U4	30	5	7	5'-0"	156	SP-4	1	*	11	172'-11"	116
B5	10	9	STR	30'-4"	1031	U5	30	5	7	6'-6"	203	SP-5	1	**	10	323'-1"	337
						U6	10	6	6	10'-0"	150	SP-6	1	*	11	151'-4"	101
D1	54	6	STR	1'-6"	122	U7	27	6	5	10'-8"	433	SPIRAL COLUMN REINFORCING STEEL LBS. 3058					
H1	12	6	STR	44'-5"	801	U8	4	5	7	6'-7"	40	CLASS A CONCRETE BREAKDOWN					
H101	1	6	8	5'-3"	8	U9	4	5	7	7'-3"	44	POUR #2 (SHEET PILE CAP) 12.9 C. Y.					
H102	1	6	8	7'-8"	12	U10	4	5	7	7'-2"	43	POUR #3 (RETAINING WALL, COLUMNS, & WINGS) 28.5 C. Y.					
H103	1	6	8	9'-11"	15	U11	4	5	7	6'-8"	40	POUR #4 (CAP & WINGS) 26.4 C. Y.					
H104	1	6	8	12'-3"	18	U12	4	5	7	6'-6"	39	POUR #5 (BACKWALL & WINGS) 16.5 C. Y.					
H105	1	6	8	14'-6"	22	V1	70	10	2	8'-0"	2410	TOTAL CLASS A CONCRETE 84.3 C. Y.					
H106	1	6	8	16'-10"	25	V2	14	10	2	8'-0"	2410	3'-0" Ø DRILLED PIERS					
H107	1	6	8	17'-7"	26	V3	14	10	2	8'-0"	2410	DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) 30.3 C. Y.					
H108	1	6	8	19'-8"	30	V4	74	5	STR	6'-4"	489	3'-0" Ø DRILLED PIERS NOT IN SOIL 55.0 LIN. FT.					
H109	16	6	8	20'-4"	489	V5	80	6	STR	4'-10"	581	3'-0" Ø DRILLED PIERS IN SOIL 60.8 LIN. FT.					
H110	1	6	8	19'-6"	29	V6	2	6	STR	6'-9"	20	CSL TUBES FOR 3'-0" Ø DRILLED PIER: 533.1 FT.					
H111	1	6	8	17'-1"	26	V7	2	6	STR	7'-2"	22	18" STEEL SHEET PILES (PZ27): 675.0 SQ. FT.					
H112	1	6	8	14'-9"	22	V8	2	6	STR	7'-7"	23	* THE SP-2, SP-4 & SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
H113	1	6	8	12'-4"	19	V9	2	6	STR	8'-0"	24	* THE SP-1, SP-3 & SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
H114	1	6	8	9'-11"	15	V10	2	6	STR	8'-5"	25						
H115	1	6	8	7'-6"	11	V11	2	6	STR	8'-11"	27						
H201	1	6	9	4'-10"	7	V12	2	6	STR	9'-4"	28						
H202	1	6	9	7'-3"	11	V13	2	6	STR	9'-9"	29						
H203	1	6	9	9'-6"	14	V14	2	6	STR	10'-3"	31						
H204	1	6	9	11'-10"	18	V15	2	6	STR	3'-1"	9						
H205	1	6	9	14'-1"	21	V16	2	6	STR	3'-6"	11						
H206	1	6	9	16'-5"	25	V17	2	6	STR	3'-10"	12						
H207	1	6	9	17'-2"	26	V18	2	6	STR	4'-2"	13						
H208	1	6	9	19'-3"	29	V19	2	6	STR	11'-8"	35						
H209	16	6	9	19'-11"	479	V20	2	6	STR	12'-2"	37						
H210	1	6	9	19'-1"	29	V21	2	6	STR	12'-7"	38						
H211	1	6	9	16'-8"	25	V22	2	6	STR	13'-0"	39						
H212	1	6	9	14'-4"	22	V23	20	6	STR	13'-3"	398						
H213	1	6	9	11'-11"	18	V24	2	6	STR	12'-11"	39						
H214	1	6	9	9'-6"	14	V25	2	6	STR	12'-6"	38						
H215	1	6	9	7'-1"	11	V26	8	6	STR	5'-10"	70						
						V27	2	6	STR	11'-2"	34						
						V28	2	6	STR	10'-9"	32						
K1	16	4	STR	23'-5"	250	V29	2	6	STR	10'-5"	31						
K2	8	4	STR	3'-5"	18	V30	2	6	STR	10'-0"	30						
						V31	2	6	STR	9'-8"	29						
M1	70	10	STR	22'-0"	6627	V32	2	6	STR	9'-3"	28						
M2	14	10	STR	23'-6"	1416	V33	2	6	STR	8'-11"	27						
M3	14	10	STR	24'-3"	1461	V34	2	6	STR	8'-6"	26						
						V35	30	6	STR	8'-1"	364						
S1	34	5	3	4'-3"	151	V36	4	6	STR	7'-0"	42						
S2	34	5	4	9'-5"	334	V37	2	6	STR	6'-1"	18						
						V38	2	6	STR	5'-1"	15						
											REINFORCING STEEL		23203 LBS.				

PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No.2

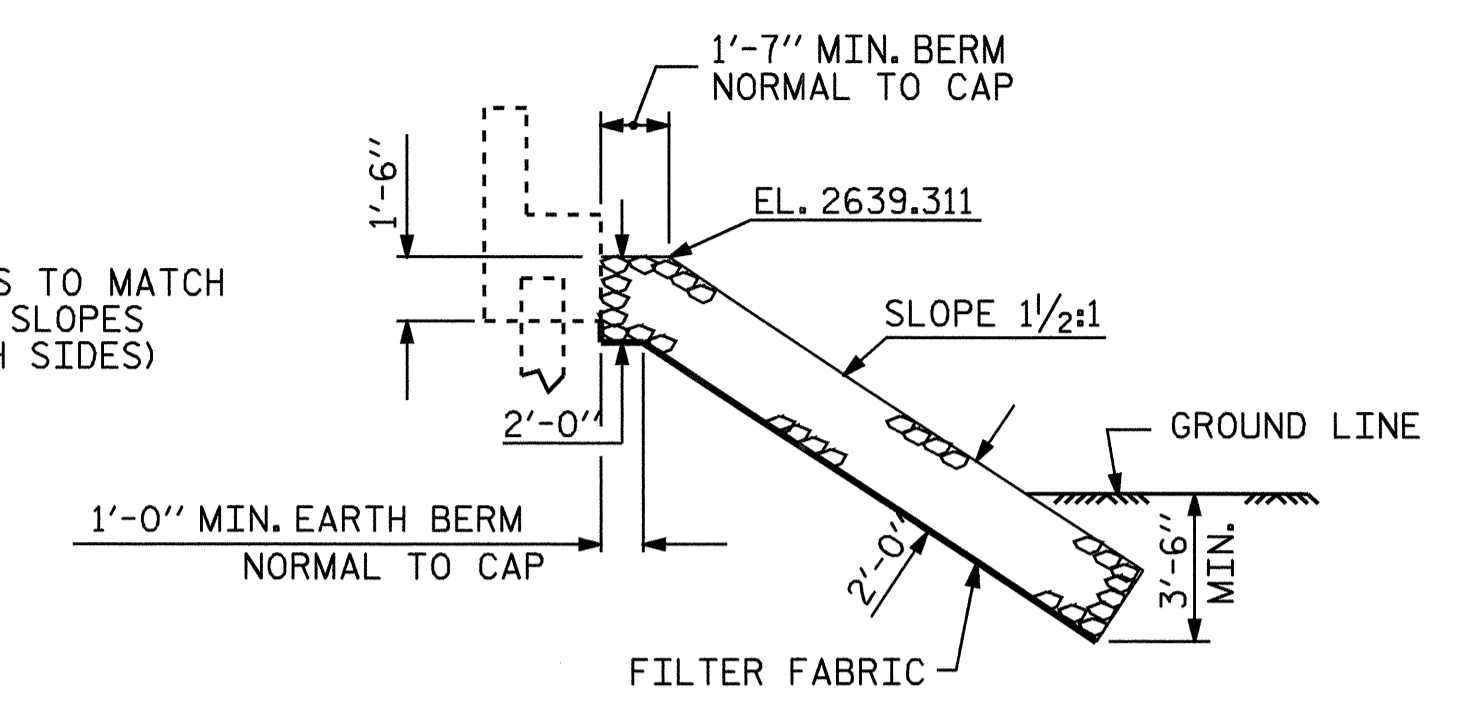
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34	
1			3			TOTAL SHEETS	41
2			4				



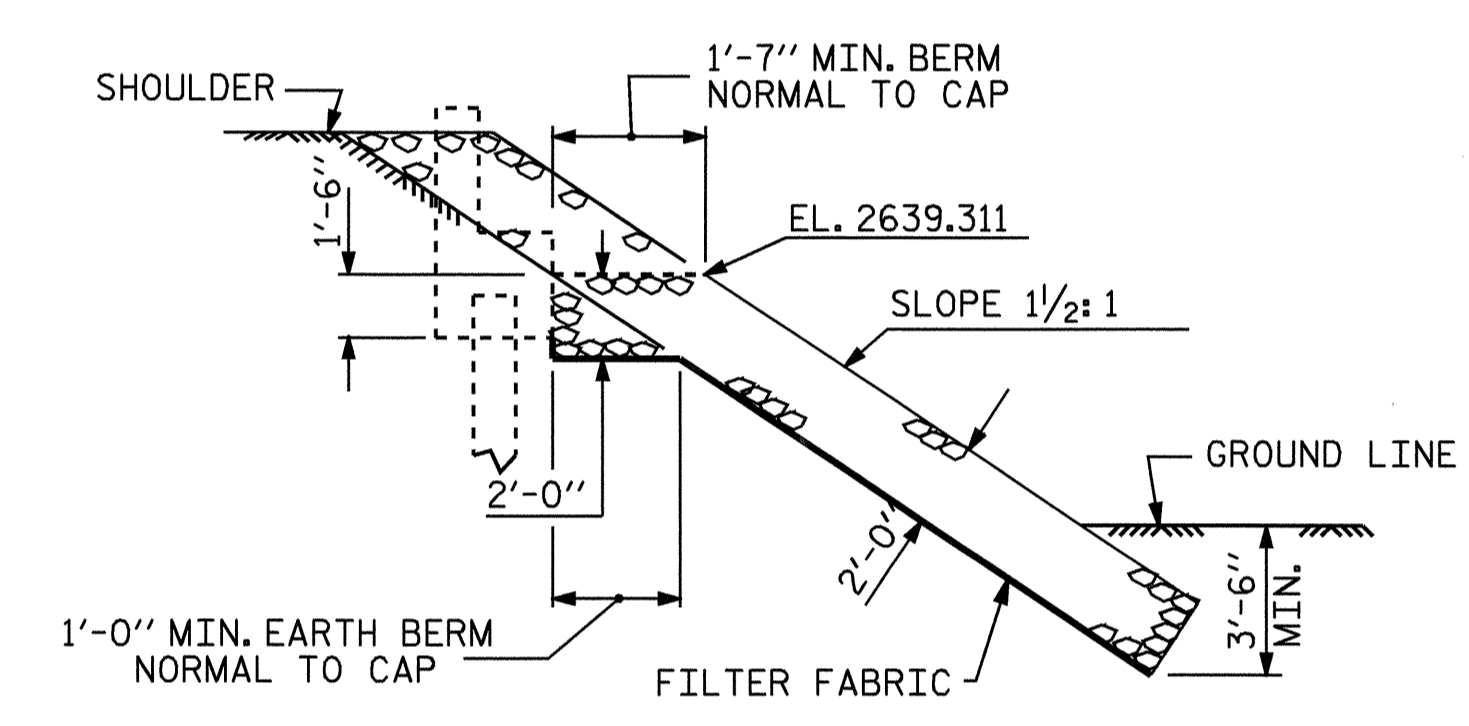
DRAWN BY: A. V. ROYAL DATE: 2/05
 CHECKED BY: M. BRITT DATE: 2/18/05

NOTES :

PLACE RIP RAP TO LIMITS OF EMBANKMENT DISTURBED BY CONSTRUCTION AT THE DIRECTION OF THE ENGINEER.



SECTION
BERM RIP RAPPED @ END BENT No. 1



SECTION H-H

ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+06.50 -L-	PLAIN RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	115	128
END BENT No. 2	58	65

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

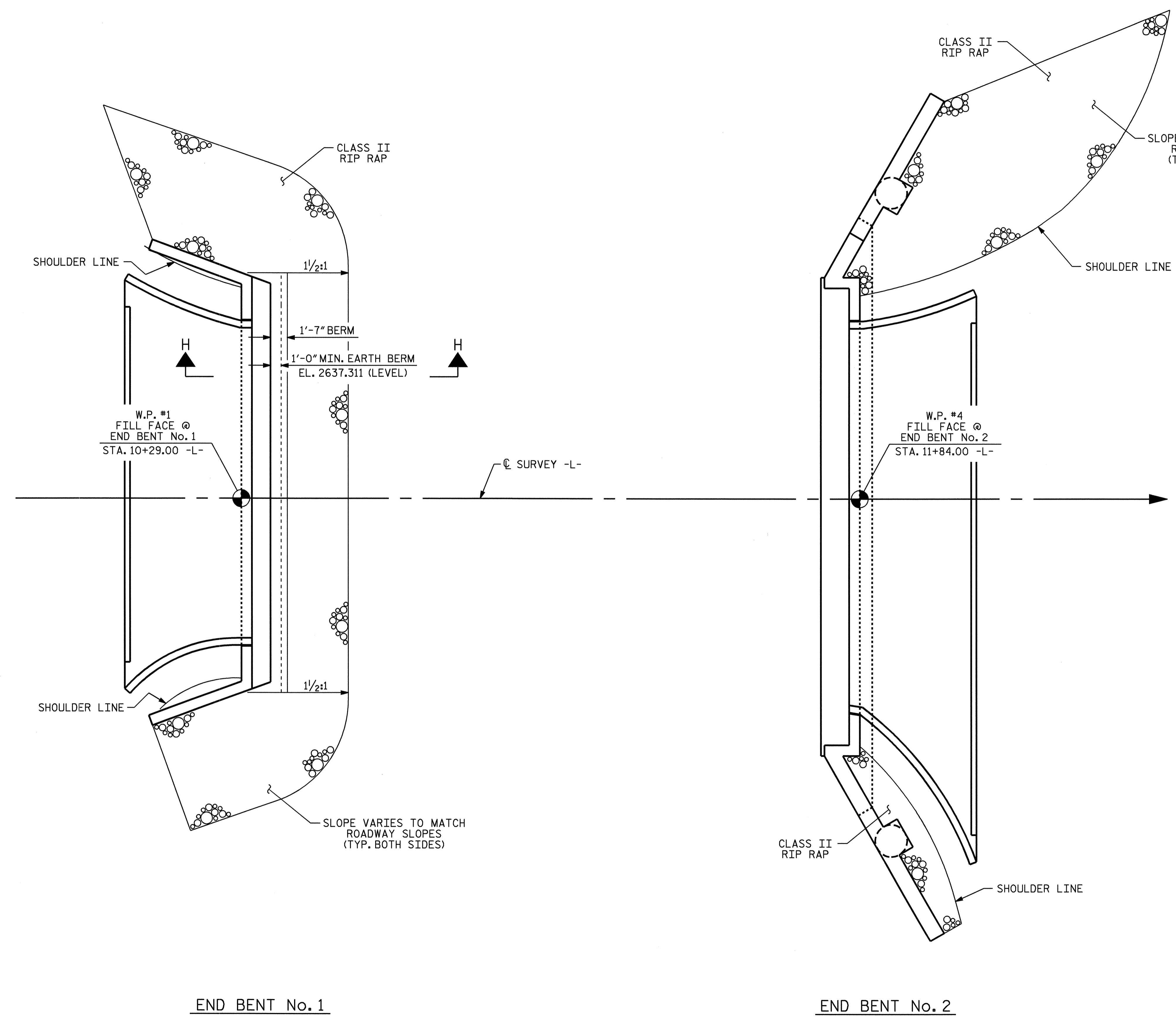
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			41

SKEW 90°

STD. NO. RR2



END BENT No. 1

END BENT No. 2

PLAN OF RIP RAP

ASSEMBLED BY : B.N. GRADY	DATE : 1/05
CHECKED BY : A.R. CHESSON	DATE : 1/05
DRAWN BY : FCJ 2/88	REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

24-FEB-2005 10:56
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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.

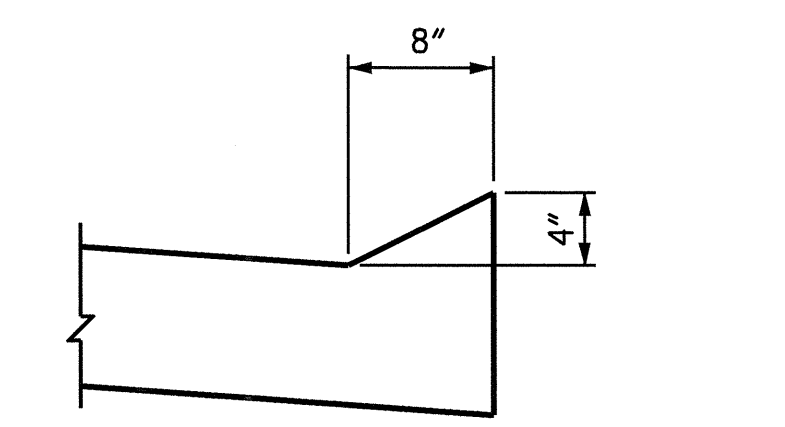
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 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.

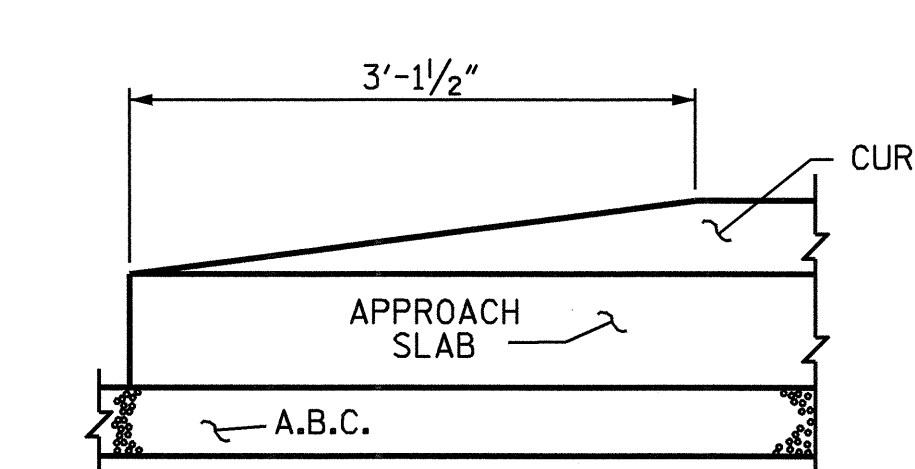
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

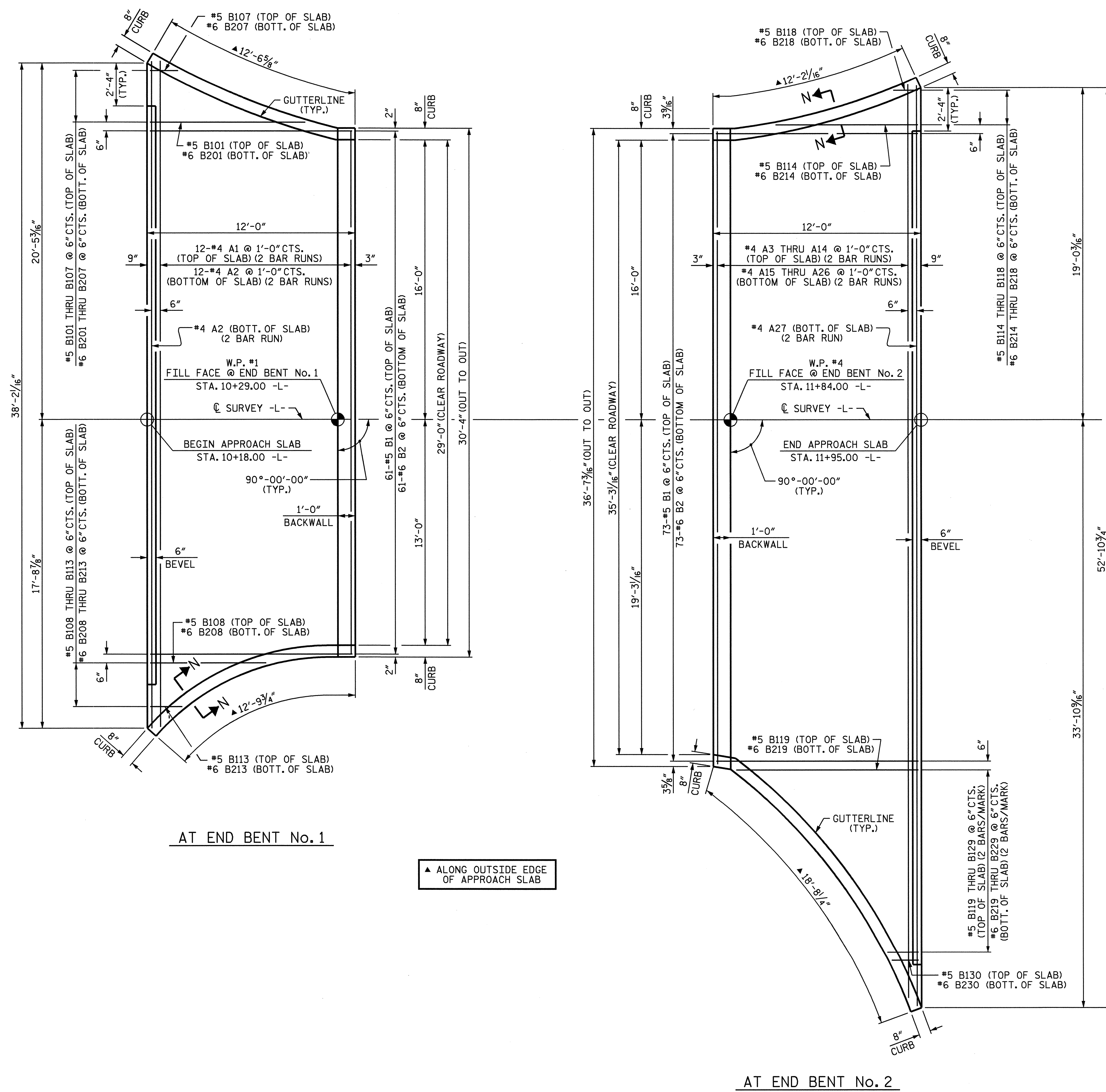
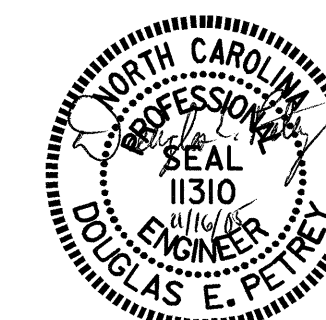
PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 WITH REINFORCED
 BRIDGE APPROACH FILL

REVISIONS						SHEET NO. S-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 41
2			4			



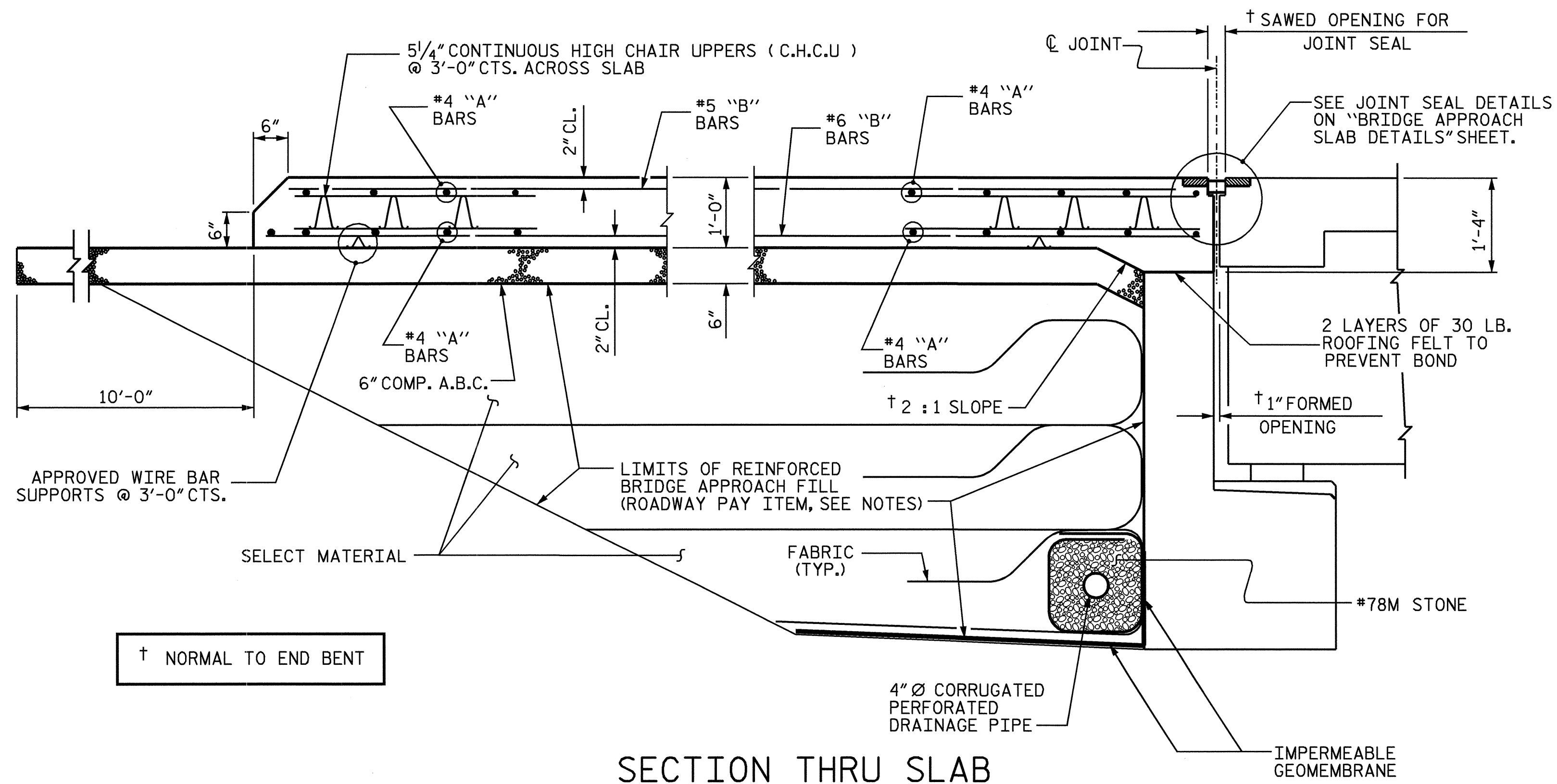
AT END BENT No. 1

AT END BENT No. 2

PLAN OF APPROACH SLABS

▲ ALONG OUTSIDE EDGE OF APPROACH SLAB

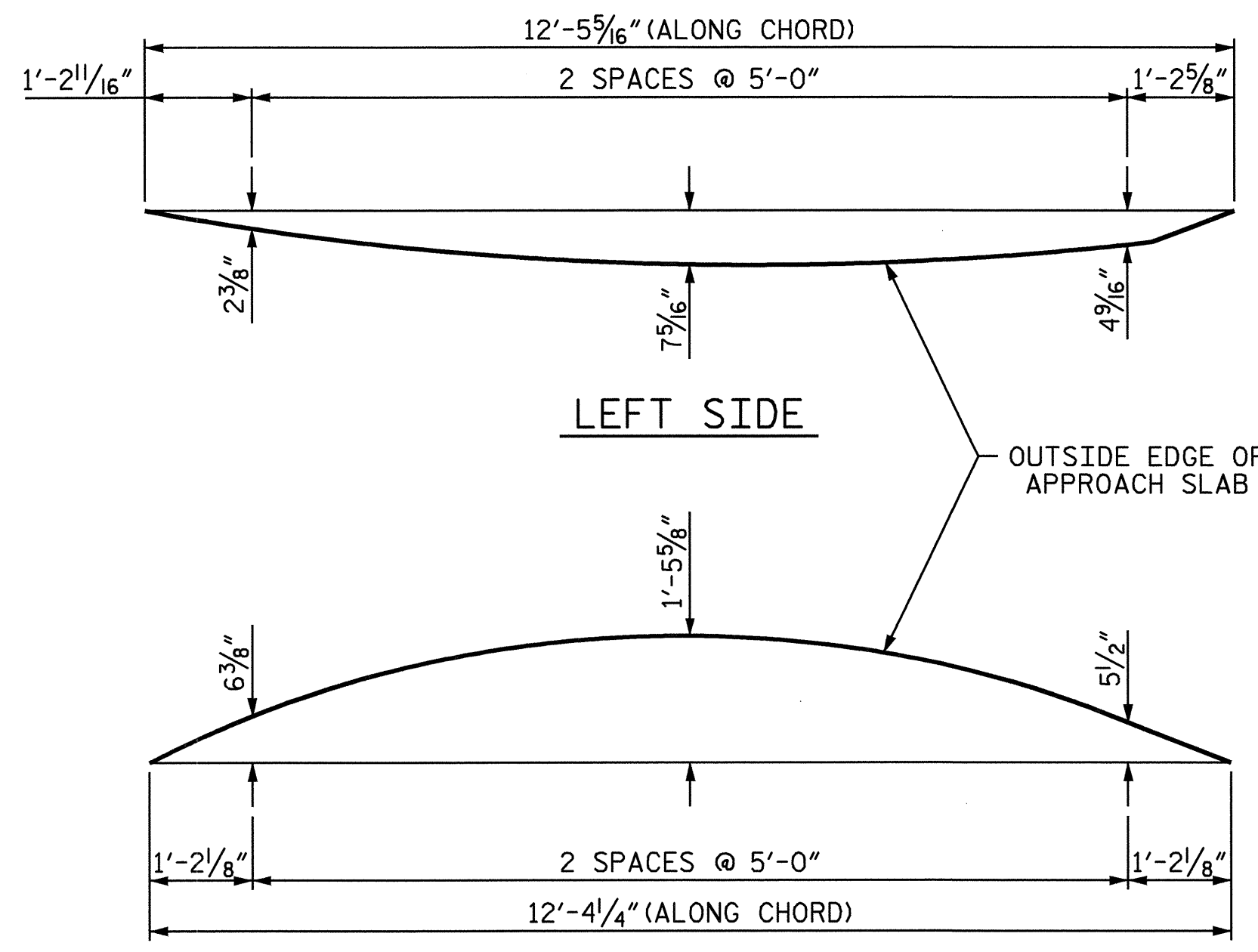
DRAWN BY : B.N. GRADY DATE : 10/05
 CHECKED BY : A.R.C. / R.G.E. DATE : 10/05



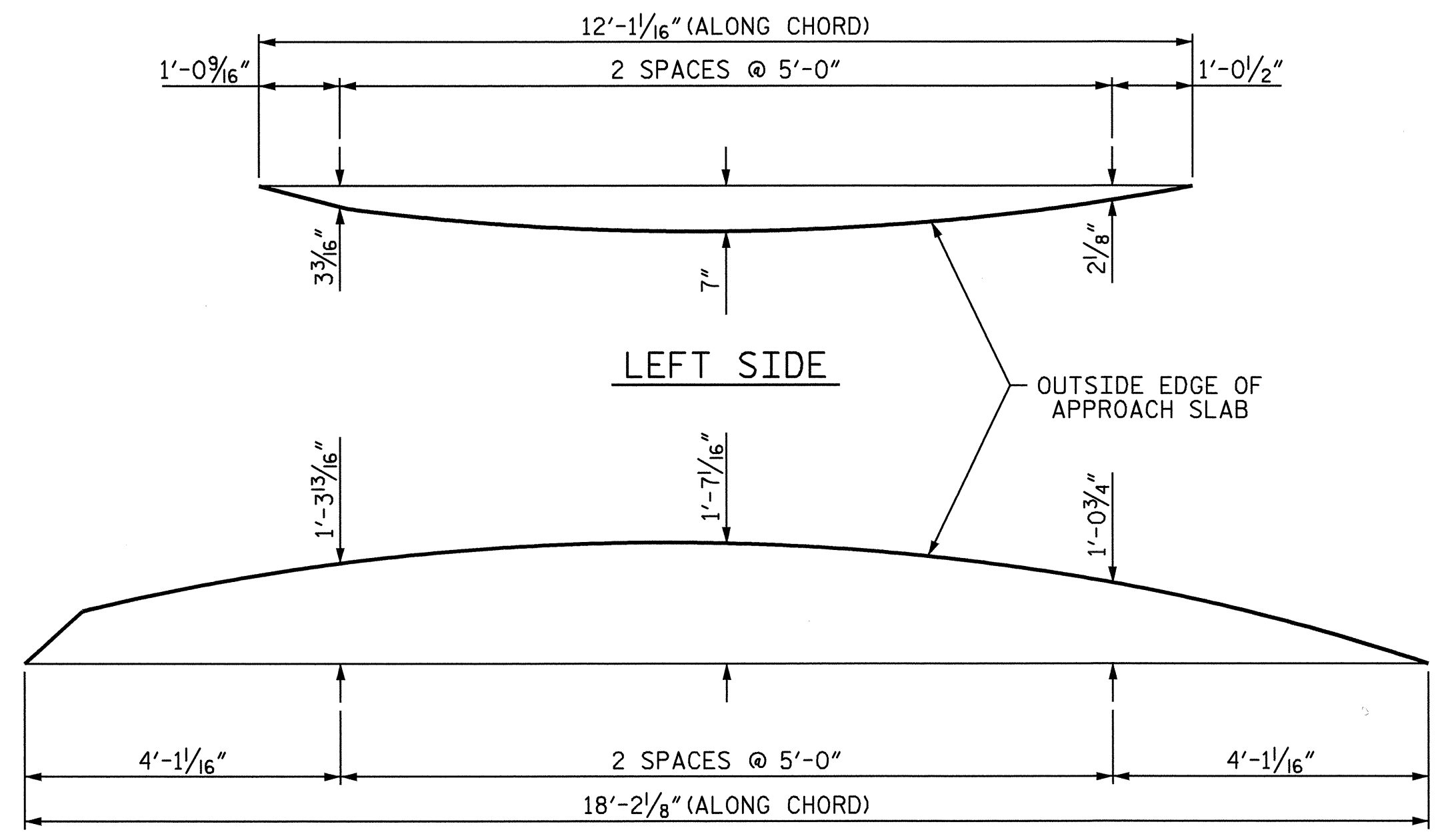
SECTION THRU SLAB

BILL OF MATERIAL

APPROACH SLAB @ E.B. No. 1						APPROACH SLAB @ END BENT No. 2											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	20'-2"	323	*A3	2	#4	STR	19'-2"	26	*B120	2	#5	STR	8'-3"	17
A2	26	#4	STR	20'-0"	347	*A4	2	#4	STR	19'-4"	26	*B121	2	#5	STR	7'-3"	15
						*A5	2	#4	STR	19'-10"	26	*B122	2	#5	STR	6'-3"	13
*B1	61	#5	STR	11'-3"	716	*A6	2	#4	STR	20'-4"	27	*B123	2	#5	STR	5'-4"	11
B2	61	#6	STR	11'-8"	1069	*A7	2	#4	STR	20'-11"	28	*B124	2	#5	STR	4'-7"	10
						*A8	2	#4	STR	21'-6"	29	*B125	2	#5	STR	3'-10"	8
*B101	1	#5	STR	8'-6"	9	*A9	2	#4	STR	22'-3"	30	*B126	2	#5	STR	3'-1"	6
*B102	1	#5	STR	6'-11"	7	*A10	2	#4	STR	23'-0"	31	*B127	2	#5	STR	2'-6"	5
*B103	1	#5	STR	6'-0"	6	*A11	2	#4	STR	23'-11"	32	*B128	2	#5	STR	1'-11"	4
*B104	1	#5	STR	4'-9"	5	*A12	2	#4	STR	24'-10"	33	*B129	2	#5	STR	1'-4"	3
*B105	1	#5	STR	3'-7"	4	*A13	2	#4	STR	26'-0"	35	*B130	1	#5	STR	1'-1"	2
*B106	1	#5	STR	2'-7"	3	*A14	2	#4	STR	27'-4"	37						
*B107	1	#5	STR	1'-7"	2	A15	2	#4	STR	19'-1"	25	B214	1	#6	STR	8'-2"	12
*B108	1	#5	STR	6'-3"	7	A16	2	#4	STR	19'-2"	26	B215	1	#6	STR	5'-11"	9
*B109	1	#5	STR	4'-10"	5	A17	2	#4	STR	19'-8"	26	B216	1	#6	STR	4'-2"	6
*B110	1	#5	STR	3'-9"	4	A18	2	#4	STR	20'-2"	27	B217	1	#6	STR	2'-8"	4
*B111	1	#5	STR	3'-3"	3	A19	2	#4	STR	20'-9"	28	B218	1	#6	STR	1'-5"	2
*B112	1	#5	STR	2'-6"	3	A20	2	#4	STR	21'-5"	29	B219	2	#6	STR	9'-10"	30
*B113	1	#5	STR	1'-10"	2	A21	2	#4	STR	22'-1"	30	B220	2	#6	STR	8'-8"	26
						A22	2	#4	STR	22'-11"	31	B221	2	#6	STR	7'-8"	23
B201	1	#6	STR	8'-11"	13	A23	2	#4	STR	23'-9"	32	B222	2	#6	STR	6'-8"	20
B202	1	#6	STR	7'-4"	11	A24	2	#4	STR	24'-9"	33	B223	2	#6	STR	5'-9"	17
B203	1	#6	STR	6'-0"	9	A25	2	#4	STR	25'-10"	35	B224	2	#6	STR	5'-0"	15
B204	1	#6	STR	4'-9"	7	A26	2	#4	STR	27'-2"	36	B225	2	#6	STR	4'-3"	13
B205	1	#6	STR	3'-7"	5	A27	2	#4	STR	27'-5"	37	B226	2	#6	STR	3'-6"	11
B206	1	#6	STR	2'-7"	4							B227	2	#6	STR	2'-11"	9
B207	1	#6	STR	1'-7"	2	*B1	73	#5	STR	11'-3"	857	B228	2	#6	STR	2'-4"	7
B208	1	#6	STR	6'-8"	10	B2	73	#6	STR	11'-8"	1279	B229	2	#6	STR	1'-9"	5
B209	1	#6	STR	5'-2"	8							B230	1	#6	STR	1'-6"	2
B210	1	#6	STR	4'-1"	6	*B114	1	#5	STR	8'-2"	9						
B211	1	#6	STR	3'-3"	5	*B115	1	#5	STR	5'-11"	6						
B212	1	#6	STR	2'-6"	4	*B116	1	#5	STR	4'-2"	4	REINFORCING STEEL = 1885 LBS					
B213	1	#6	STR	1'-10"	3	*B117	1	#5	STR	2'-8"	3	*EPOXY COATED REINF. STEEL = 1354 LBS					
						*B118	1	#5	STR	1'-5"	1						
						*B119	2	#5	STR	9'-5"	20	CLASS AA CONCRETE = 19.7 C.Y.					
REINFORCING STEEL = 1503 LBS						REINFORCING STEEL = 1503 LBS											
*EPOXY COATED REINF. STEEL = 1099 LBS						*EPOXY COATED REINF. STEEL = 1099 LBS											
CLASS AA CONCRETE = 15.2 C.Y.						CLASS AA CONCRETE = 15.2 C.Y.											



ARC OFFSETS @ END BENT No. 1



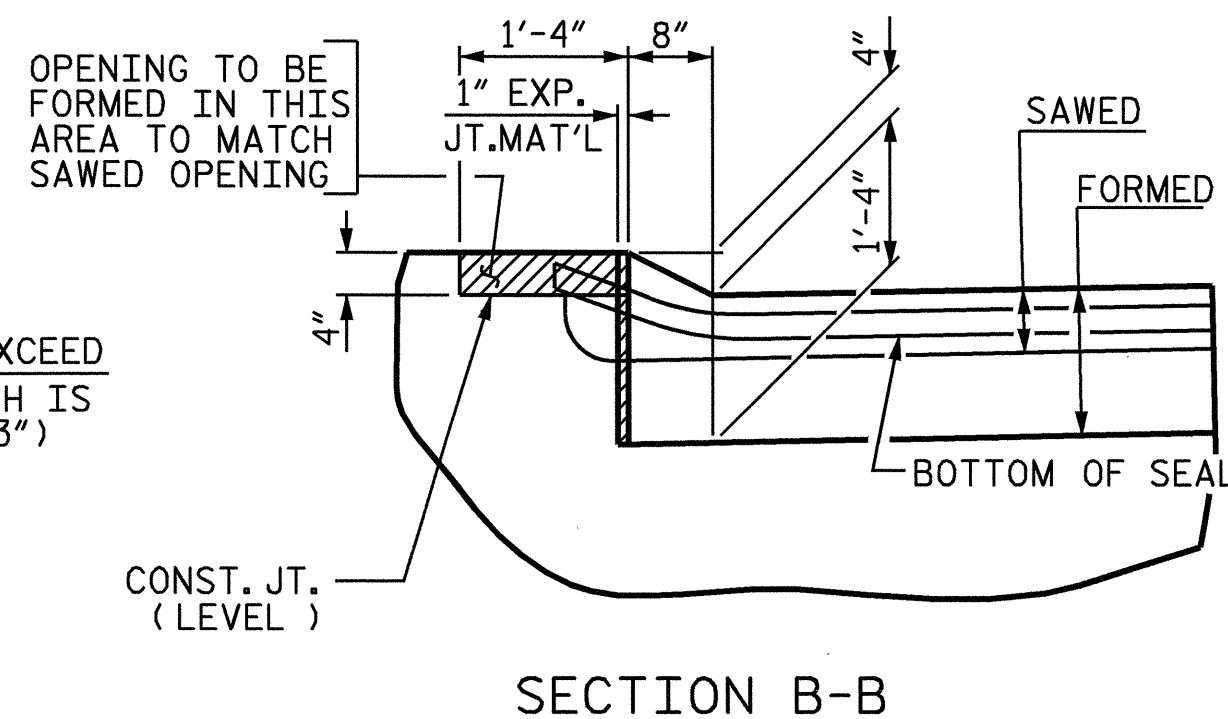
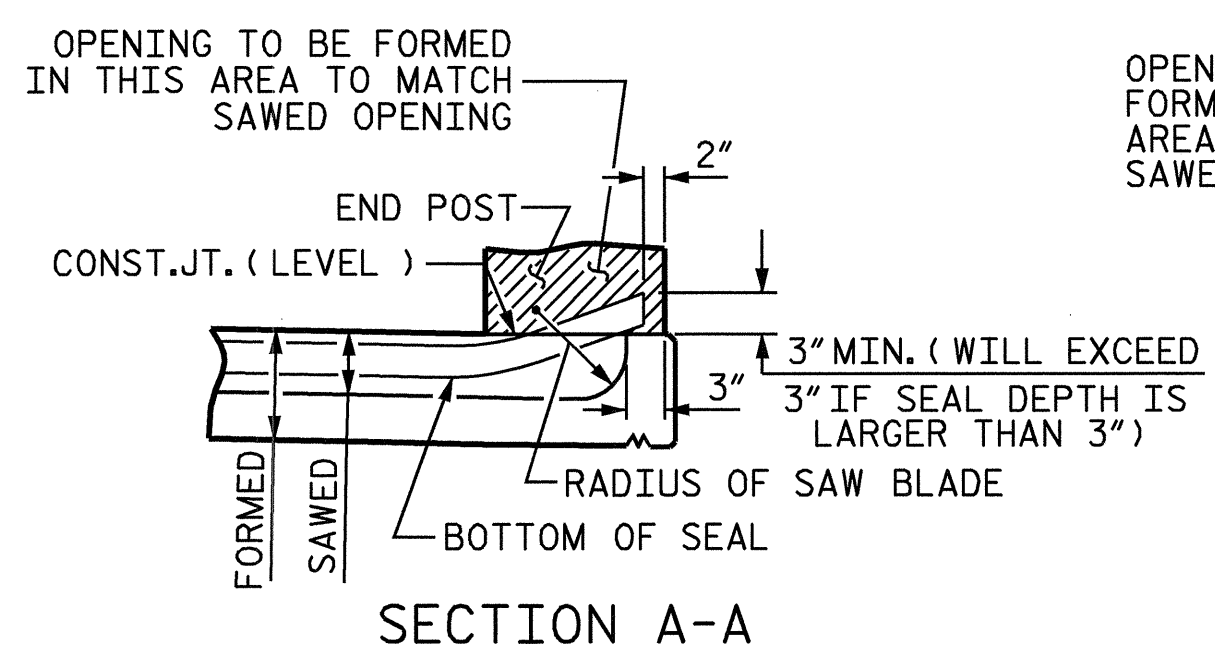
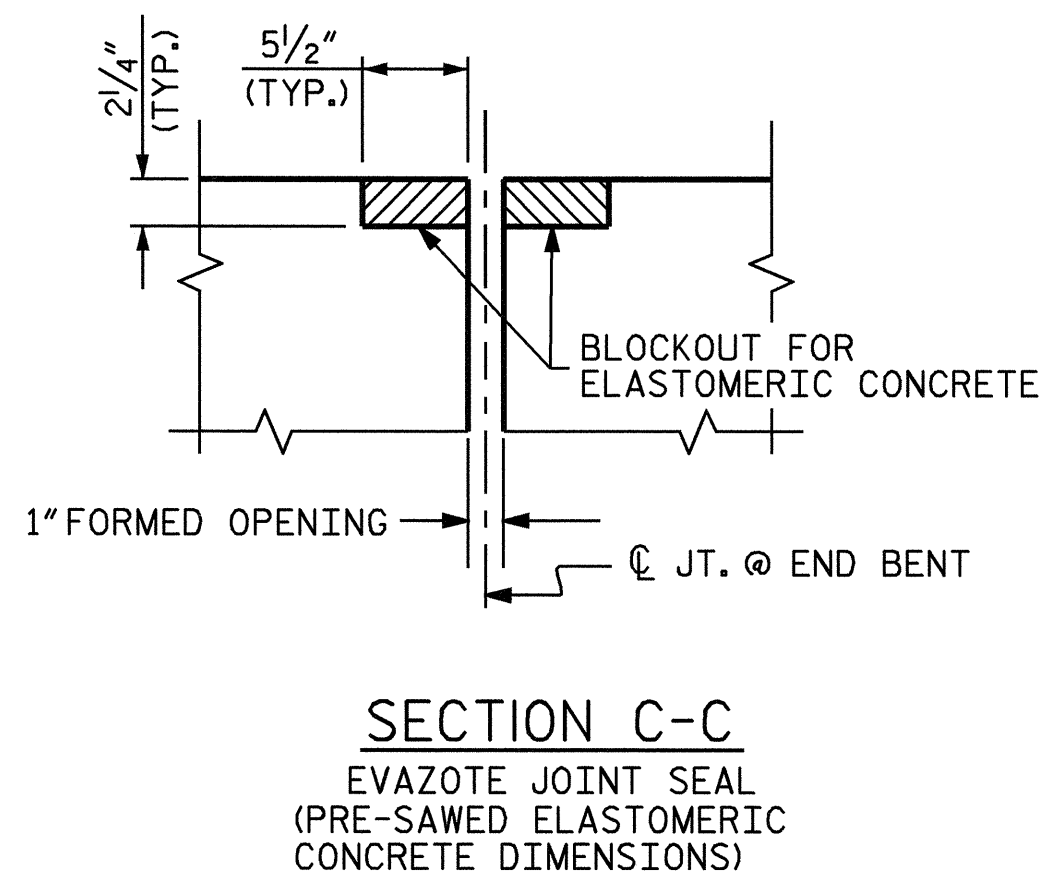
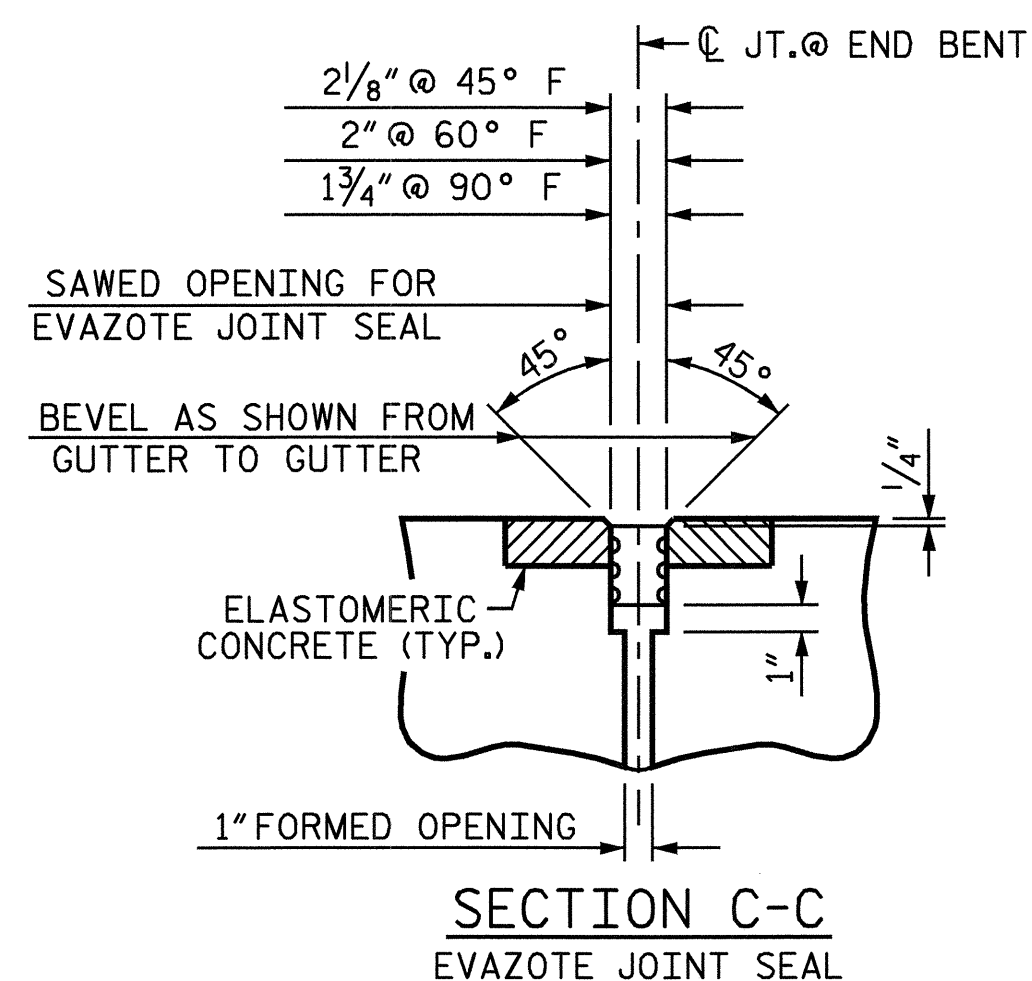
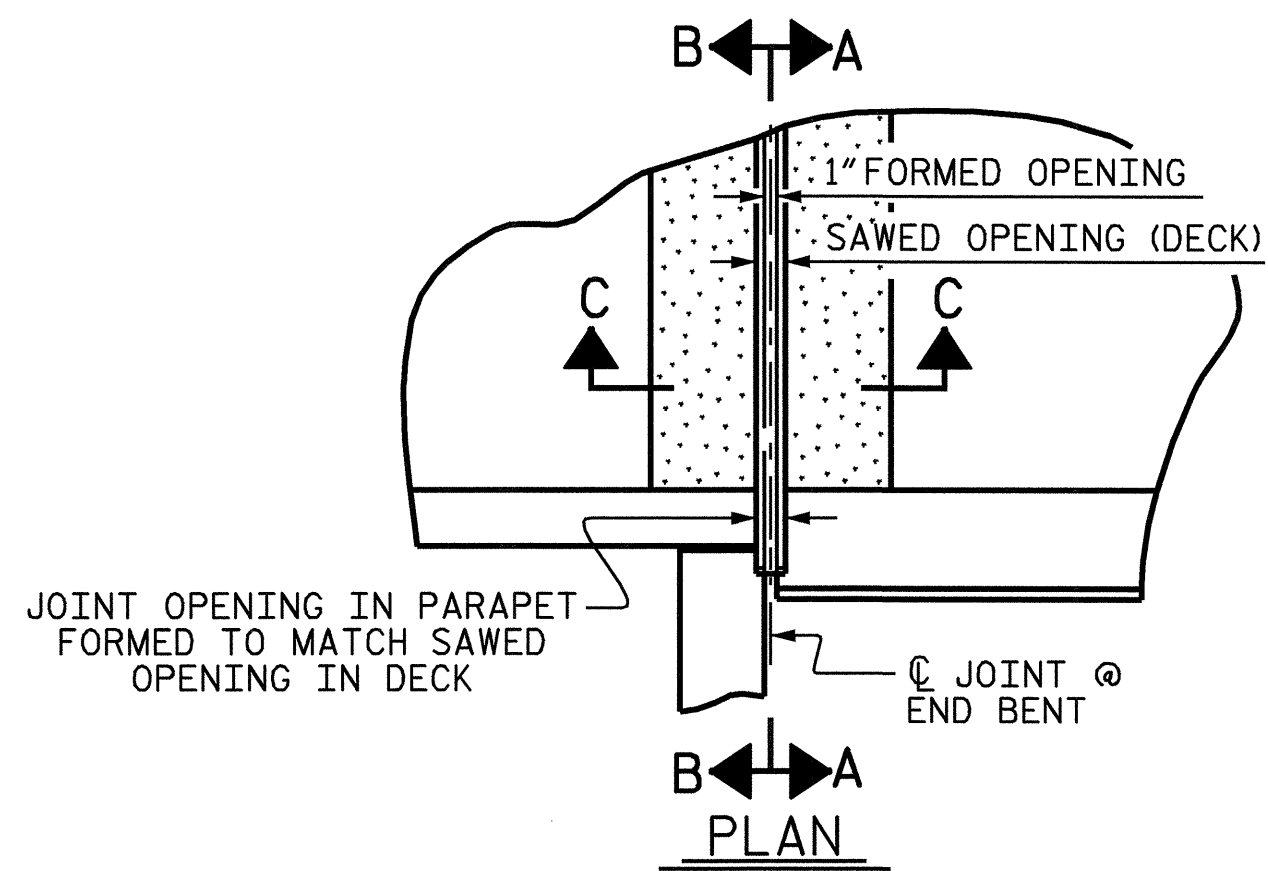
ARC OFFSETS @ END BENT No. 2

PROJECT NO. B-3922
 WATAUGA COUNTY
 STATION: 11+06.50 -L-

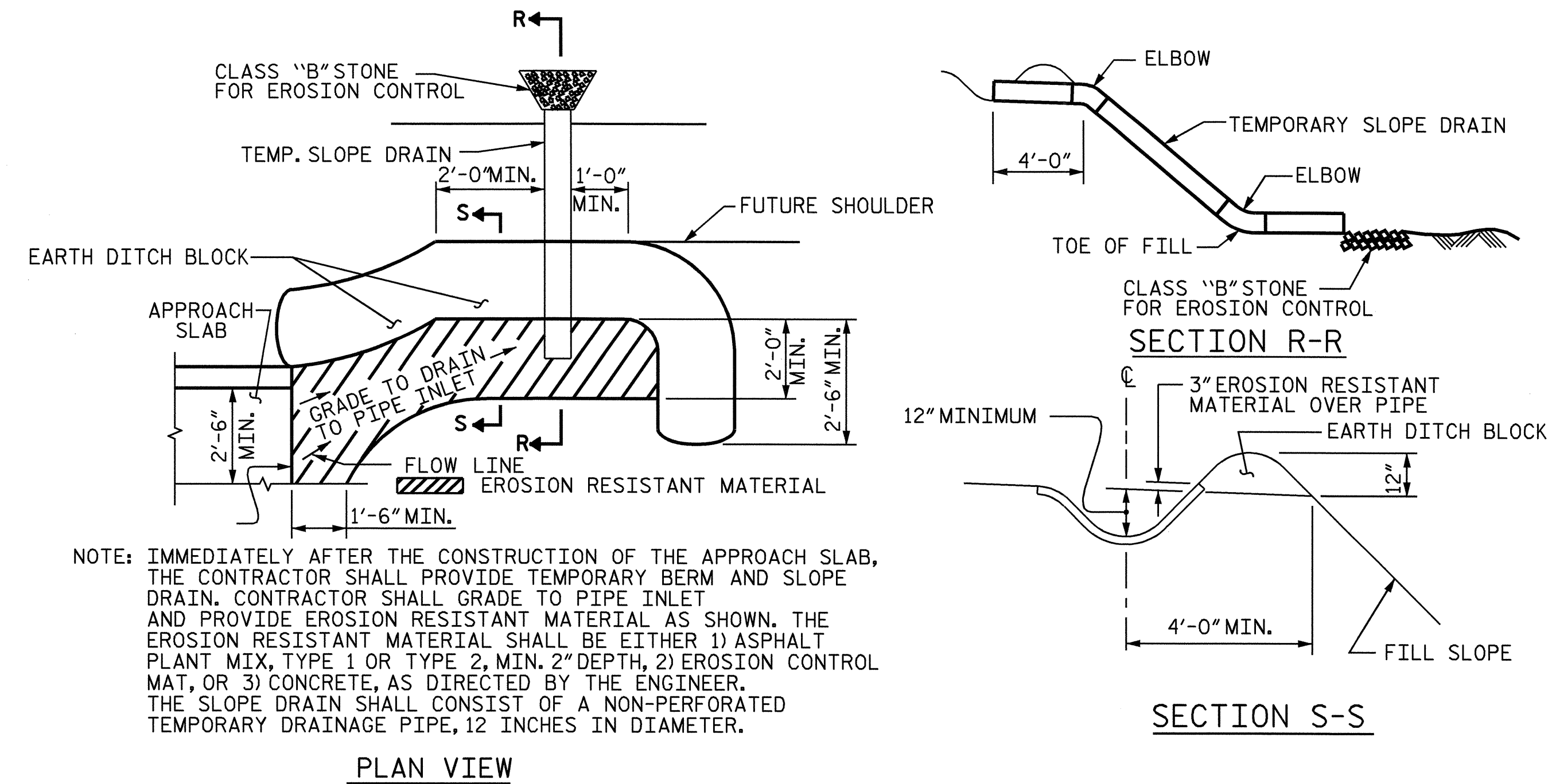
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 WITH REINFORCED
 BRIDGE APPROACH FILL

ASSEMBLED BY : B.N. GRADY DATE : 10/05
 CHECKED BY : A.R.C. /R.G.E. DATE : 10/05
 DRAWN BY : EEM 3/95 REV. 10/17/00 RWW/LES
 CHECKED BY : VAP 3/95 REV. 7/10/01 LES/RDR
 REV. 5/7/03R RWW/JTE

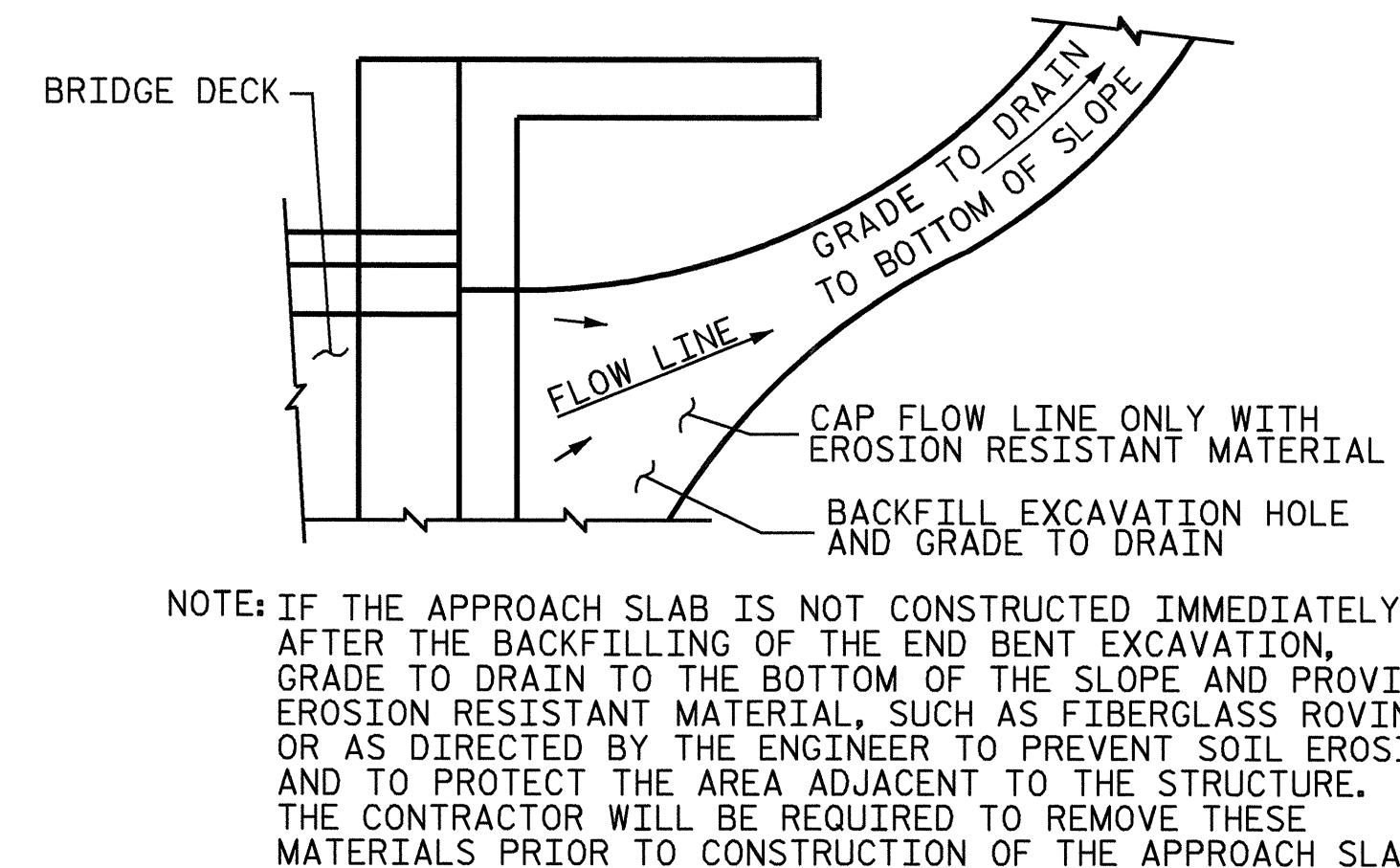
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37	
1			3			TOTAL SHEETS 41	
2			4				



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



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



TEMPORARY DRAINAGE DETAIL

BILL OF MATERIAL	
LOCATION	ELASTOMERIC CONCRETE * (CU. FT.)
END BENT No. 1	5.0
END BENT No. 2	6.1

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-3922
WATAUGA COUNTY
STATION: 11+06.50 -L-

SHEET 3 OF 3
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB DETAILS



ASSEMBLED BY : B.N. GRADY	DATE : 10/05
CHECKED BY : A. R. C. / R.G. E.	DATE : 10/05
DRAWN BY : FCJ 11/88	REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/88	REV. 10/17/00 RWW/LES
	REV. 5/7/03 RWW/JTE

REVISIONS						SHEET NO. S-38
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 41
2			4			

STD. NO. BAS10

OVERHANG BRACKET CALCULATION INSTRUCTIONS

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

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

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

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	4000
	40	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	6000
	50	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	6000
12	30	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	4000	
	40	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	6000	
	50	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	6000	
14	30	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	4000	
	40	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	6000	
	50	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	6000	
16	30	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	4000	
	40	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	6000	
	50	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	6000	

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

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	4000	
	40	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	6000	
	50	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	6000	
12	30	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000	
	40	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000	
	50	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000	
14	30	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	6000		
	40	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	6000		
	50	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	6000		
16	30	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	4000		
	40	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	6000		
	50	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	6000		

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

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)		
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.			
		BRACKET SPACING											
10	30							2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
	40							2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000
	50							2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	6000
12	30							2'-2"	2'-7"	2'-11"	4'-0"	4'-6"	4000
	40	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	
14	30							2'-2"	2'-7"	2'-11"	4'-0"	4'-6"	4000
	40	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	
16	30							2'-2"	2'-7"	2'-11"	4'-0"	4'-6"	4000
	40	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	
	50	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	4'-10"	5'-3"	5'-7"	6'-7"	6'-7"	6000	

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

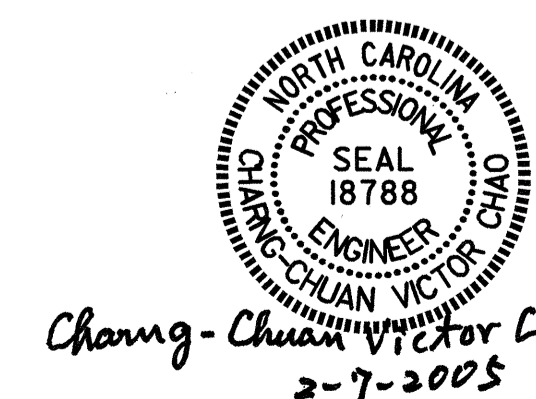
AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)		
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.			
		BRACKET SPACING											
10	30							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	40							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
	50							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
12	30							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	40							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
	50							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
14	30							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	40							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
	50							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
16	30							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	40							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000
	50							2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	6000

DEFINITIONS

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

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI

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

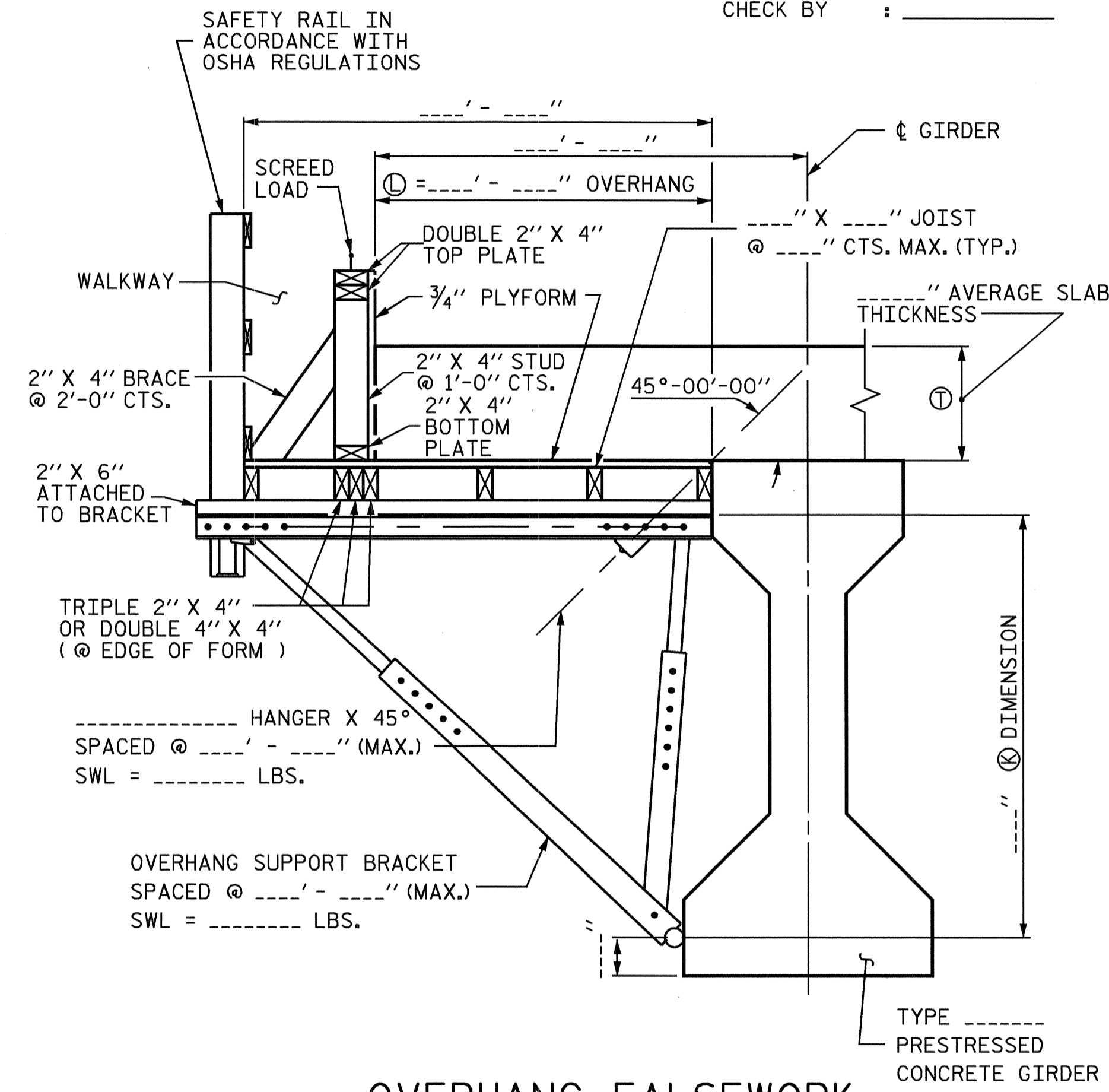
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

5-39
TOTAL SHEETS 41

BRIDGE OVERHANG BRACKET SUMMARY

TOTAL SCREED WEIGHT = _____ LBS. PROJECT No. : _____
 NUMBER OF SCREED WHEELS = _____ COUNTY : _____
 SCREED WHEEL LOAD (W) = _____ LBS. STATION : _____
 SCREED LOAD PER BRACKET = _____ LBS. DESCRIPTION : _____

DATE : _____
 DESIGN BY : _____
 CHECK BY : _____



OVERHANG FALSEWORK

NOTES

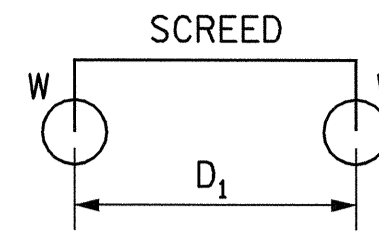
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

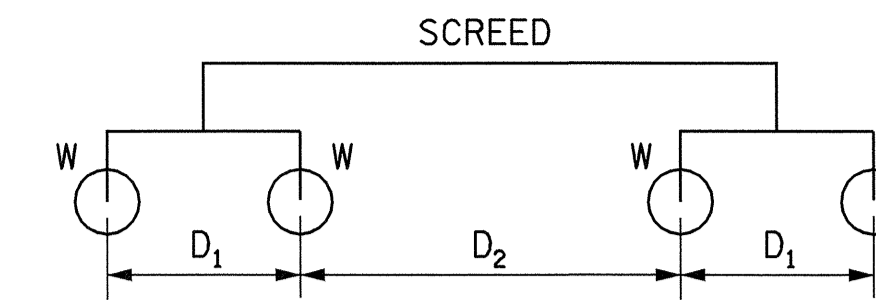
THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

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

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



4-WHEEL MACHINE



8-WHEEL MACHINE

TABLE 2: SCREED LOAD FACTOR "R"

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

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

TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS

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

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

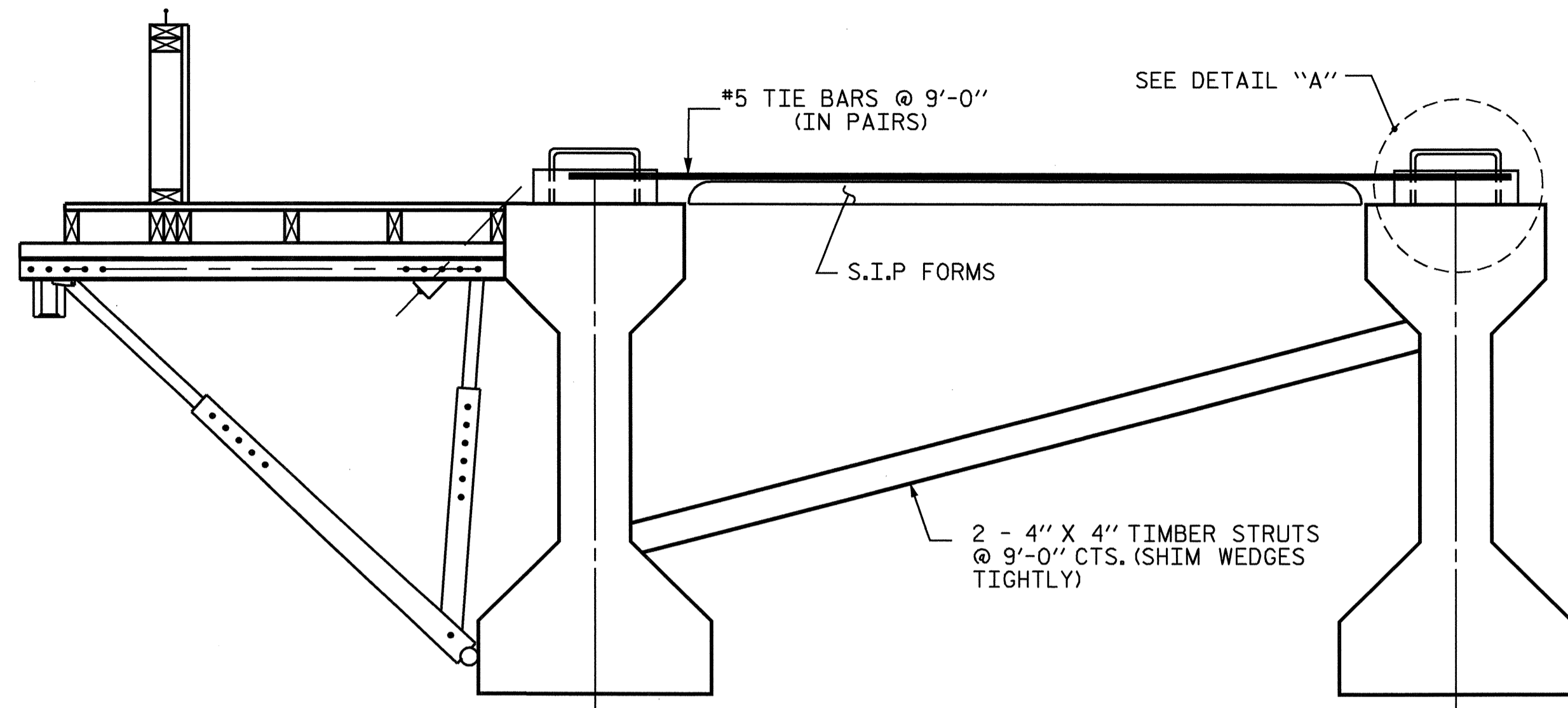
STANDARD OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI



Chang-Chuan Victor Chao
 2-7-2005

REVISIONS					SHEET NO. S-40
NO.	BY:	DATE:	NO.	DATE:	
1			3		TOTAL SHEETS 41
2			4		

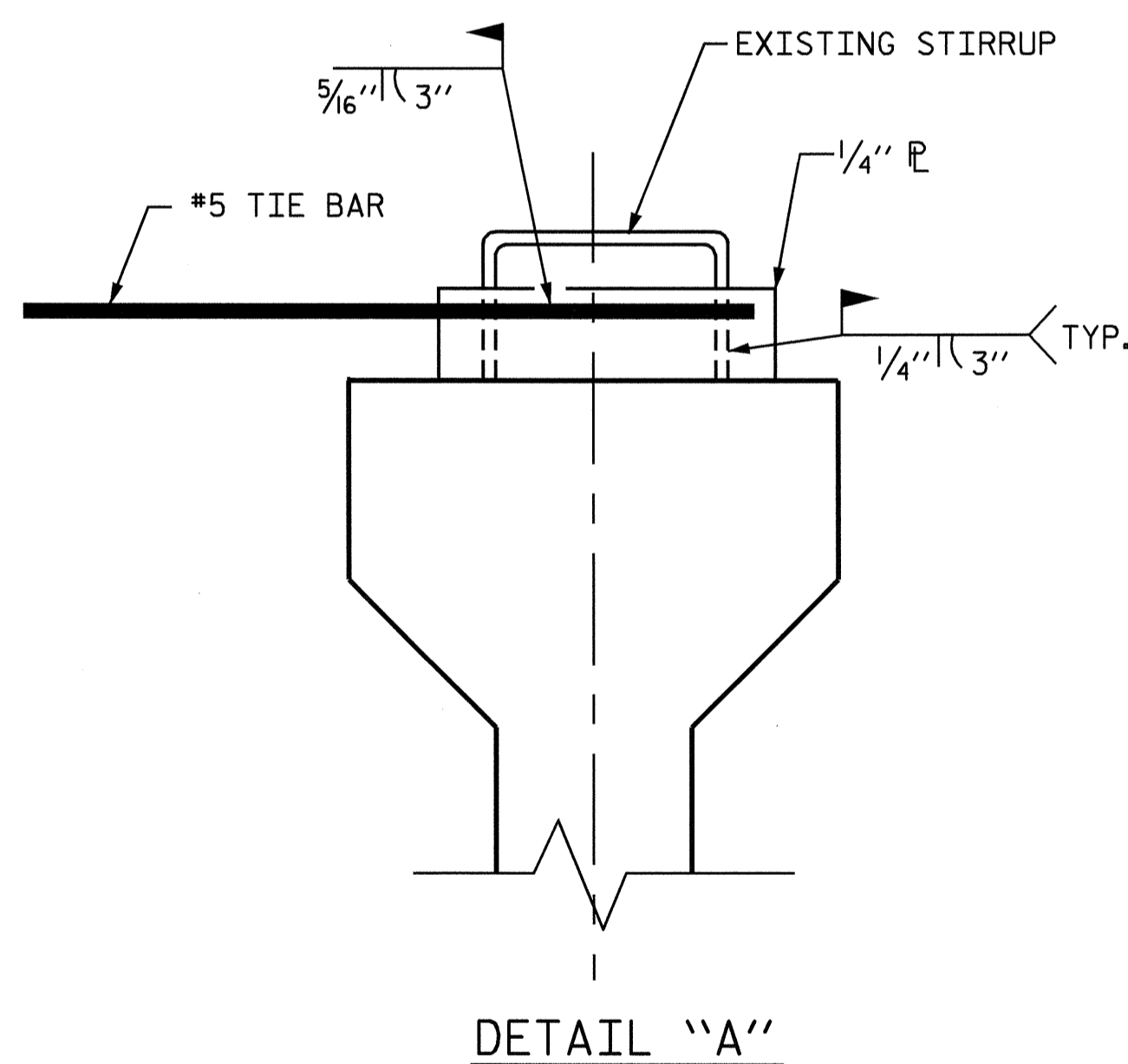
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



NOTES:

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

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 9'-0" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

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

PROJECT NO. B-3922
WATAUGA COUNTY
 STATION: 11+06.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK

AASHTO TYPES
 III, IV, V, AND VI



Chang-Chuan Victor Chao
 2-7-2005

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-41
2			4			TOTAL SHEETS 41

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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.
IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.
DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.
WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".
EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.
PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.
WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.
METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN