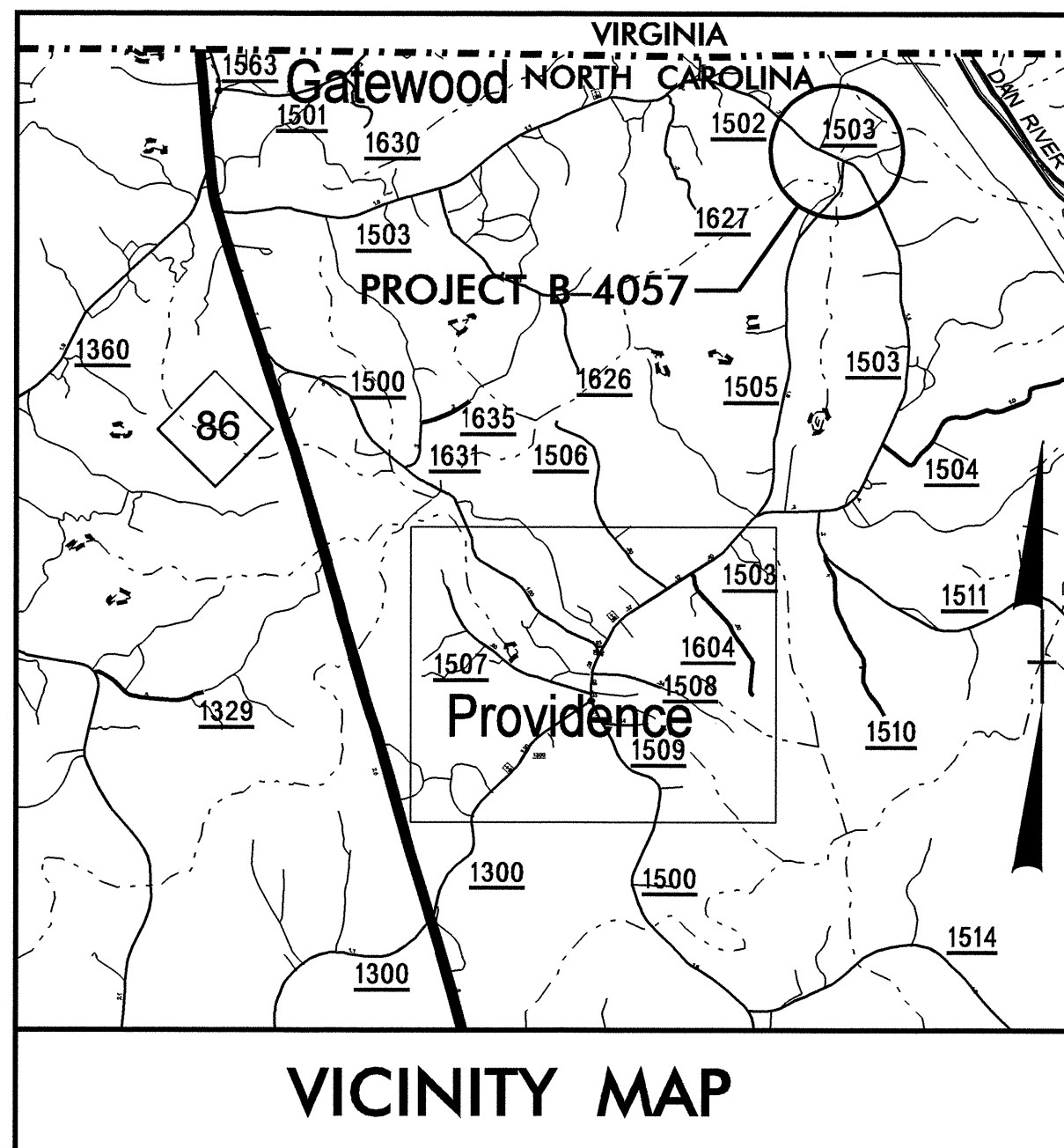


CONTRACT: C201566 TIP PROJECT: B-4057

STRUCTURE



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

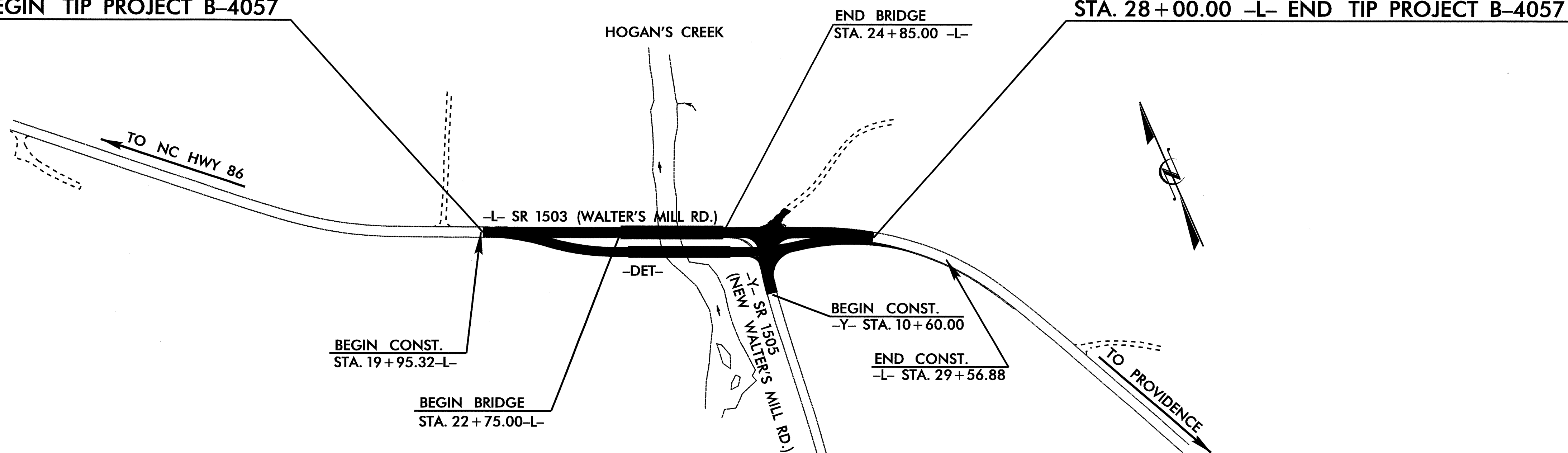
CASWELL COUNTY

LOCATION: BRIDGE NO. 39 OVER HOGAN'S CREEK
ON SR 1503 (WALTER'S MILL ROAD)

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

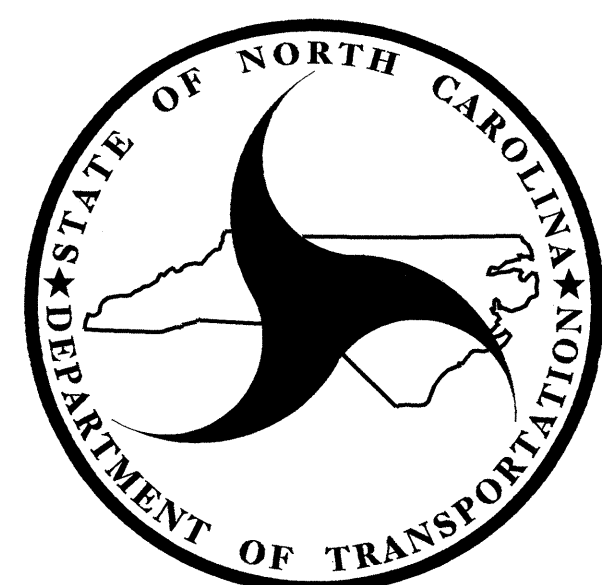
STATE	STATE PROJECT REFERENCE NO.		
N.C.	B-4057		
WBS PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33421.1.1	BRZ-1503(5)	P.E.	
33421.2.2	BRZ-1503(5)	RW & UTIL	
33421.3.1	BRZ-1503(9)	CONST.	

STA. 20+00.00 -L- BEGIN TIP PROJECT B-4057



STA. 28+00.00 -L- END TIP PROJECT B-4057

** DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVES, SHOULDER WIDTH, AND STOPPING SIGHT DISTANCES



DESIGN DATA

ADT 2008 =	920
ADT 2025 =	1,200
DHV =	10 %
D =	60 %
T =	3 % *
V =	50 MPH
DETOUR V =	40 MPH
* TTST 1%	DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4057 =	0.112 MI
LENGTH STRUCTURE TIP PROJECT B-4057 =	0.040 MI
TOTAL LENGTH TIP PROJECT B-4057 =	0.152 MI

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 17, 2008

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

T.J. BEACH, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

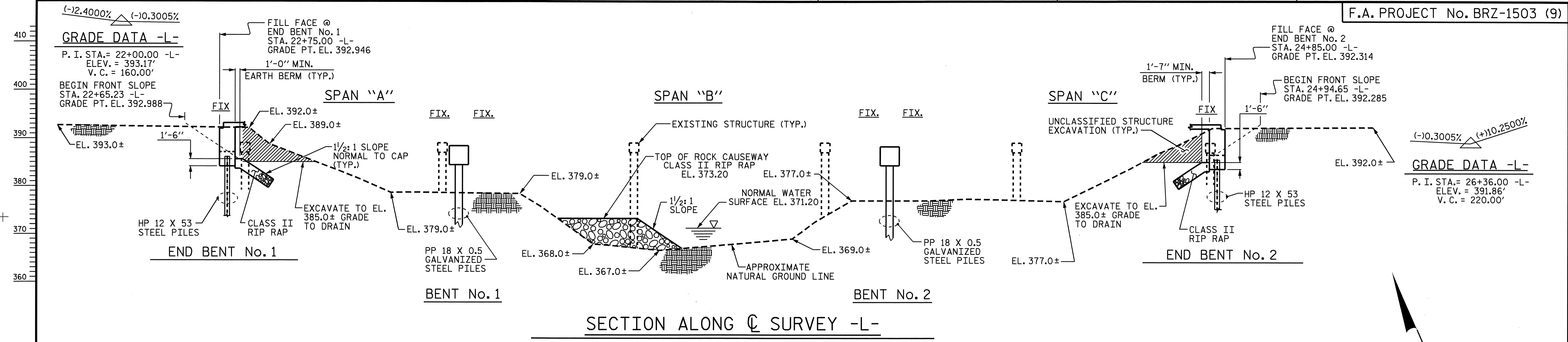
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY ENGINEER - DESIGN
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR
DIVISION ADMINISTRATOR

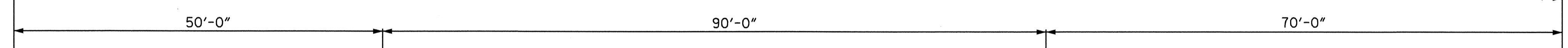
DATE

22+50 23+00 23+50 24+00 24+50 25+00



SECTION ALONG Q SURVEY -L-

210'-0" TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE)



PLAN

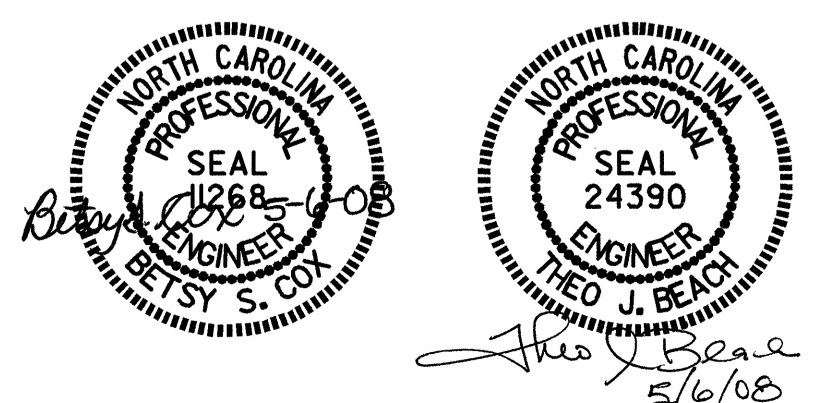
(PILES ARE NOT SHOWN FOR CLARITY)

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #39

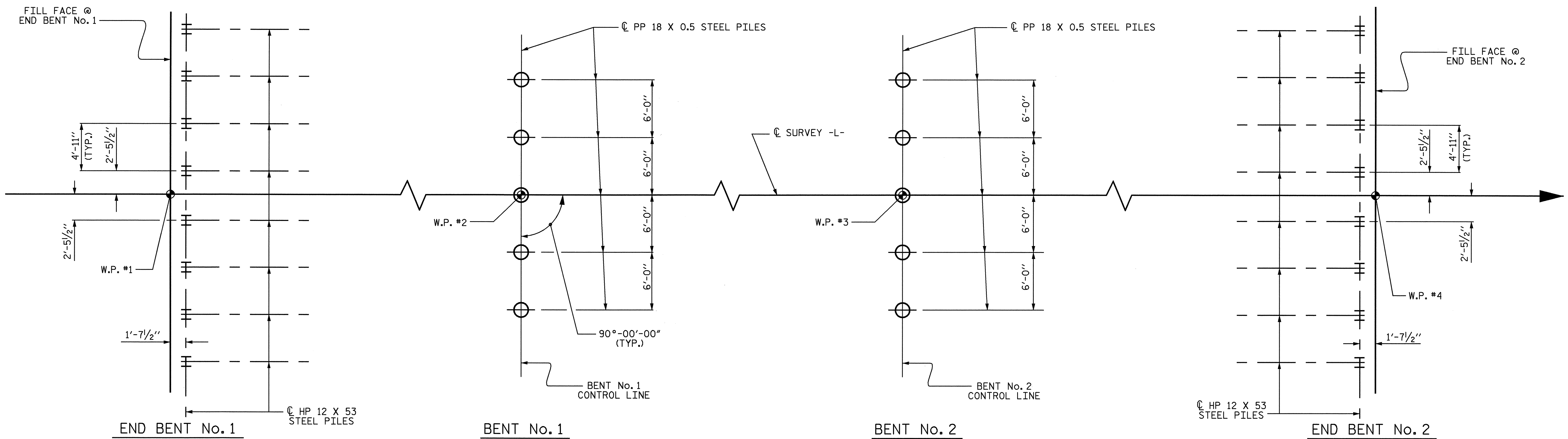
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1503
 (WALTER'S MILL RD.)
 OVER HOGAN'S CREEK
 BETWEEN NC 86 AND SR 1505

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



DRAWN BY: S.B. WILLIAMS DATE: 3-08
 CHECKED BY: T.J. BEACH DATE: 4-08



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILE AT THE BOTTOM OF THE CAP)

NOTES :

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

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

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION, SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 23+80.00 -L-.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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

THE EXISTING STRUCTURE CONSISTING OF TIMBER DECK WITH ASPHALT WEARING SURFACE ON I-BEAMS WITH SPANS OF 1 @ 40'-3 1/2", 1 @ 40'-0", 1 @ 40'-2", 1 @ 40'-0 1/2" & 1 @ 40'-5" WITH A CLEAR ROADWAY WIDTH OF 19'-0" ON TIMBER CAPS & PILES AT END BENTS AND BENTS AND WITH STEEL CAP & PILE CRUTCH BENTS AT BENTS 2 THRU 4, AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

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

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

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

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.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

THE 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.

DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No. 1 AND END BENT No. 2 IS 60 TONS PER PILE.

DRIVE PILES AT BENT No. 1 AND BENT No. 2 TO A REQUIRED BEARING CAPACITY OF 230 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No. 1 AND BENT No. 2 IS 110 TONS PER PILE.

DRIVE PILES AT BENT No. 1 AND BENT No. 2 TO A TIP ELEVATION NO HIGHER THAN 353 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 AND BENT No. 2 IS ELEVATION 368 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 48,500 FT.-LBS. TO 83,800 FT.-LBS PER BLOW WILL BE REQUIRED TO DRIVE THE PILES AT BENT No. 1 AND BENT No. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 23+80.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

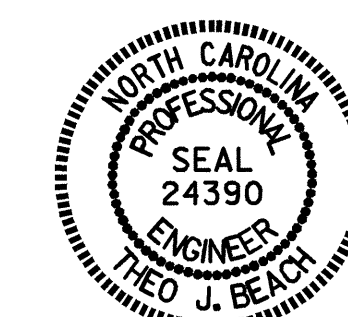
INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS CALLED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF EXISTING STRUCTURE AT STA. 23+80.00 -L-.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 23 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

DRAWN BY : S. B. WILLIAMS DATE : 3-08
CHECKED BY : T. J. BEACH DATE : 4-08

05-MAY-2008 16:32
R:\Structures\GeneralDrawng\b4057.ed.gd.gn
tbeach



Theodor J. Beach
5/6/08

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 2 OF 3

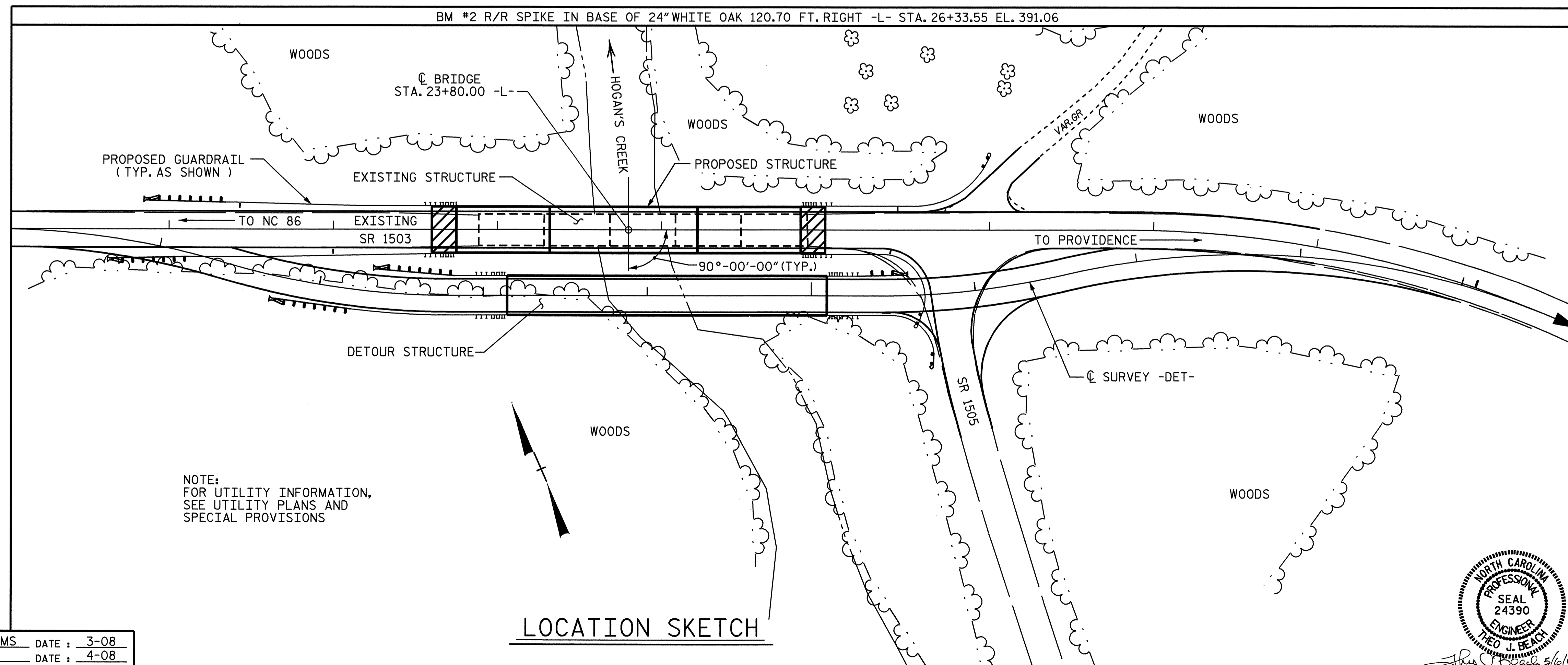
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1503
OVER HOGAN'S CREEK
BETWEEN NC 86 AND SR 1505

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

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	PP 18 X 0.50 GALVANIZED STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS			
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	No.	LIN. FT.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					6,562	5,827		LUMP SUM		12	826.00					416.67			LUMP SUM	LUMP SUM
END BENT No. 1							21.5		3,287			8	280.0				100	111		
BENT No. 1							11.6		1,851				5	200						
BENT No. 2							11.6		1,851				5	175						
END BENT No. 2							21.5		3,287			8	240.0				76	84		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	6,562	5,827	66.2	LUMP SUM	10,276	12	826.00	16	520.0	10	375	416.67	176	195	LUMP SUM	LUMP SUM



HYDRAULIC DATA

DESIGN DISCHARGE.....= 9,500 CFS.
 FREQUENCY OF DESIGN FLOOD.....= 25 YEARS
 DESIGN HIGH WATER ELEVATION.....= 383.08
 DRAINAGE AREA.....= 102 SQ. MI.
 BASIC DISCHARGE (Q100).....= 13,500 CFS.
 BASIC HIGH WATER ELEVATION.....= 385.07

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE.....= 19,200+ CFS.
 FREQUENCY OF OVERTOPPING FLOOD.....= 500+ YRS.
 OVERTOPPING FLOOD ELEVATION.....= 392.30

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1503
 OVER HOGAN'S CREEK
 BETWEEN NC 86 AND SR 1505

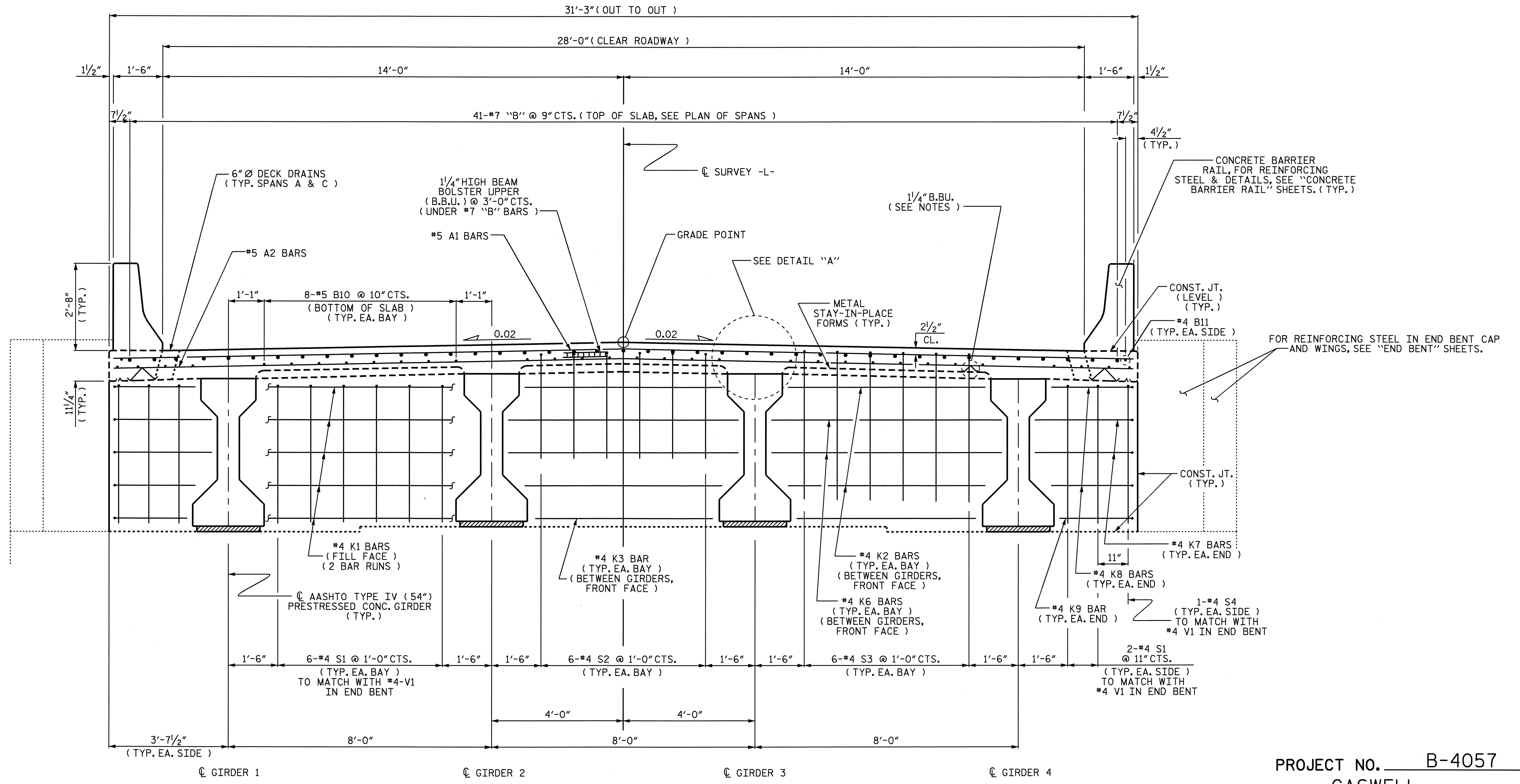


REVISIONS

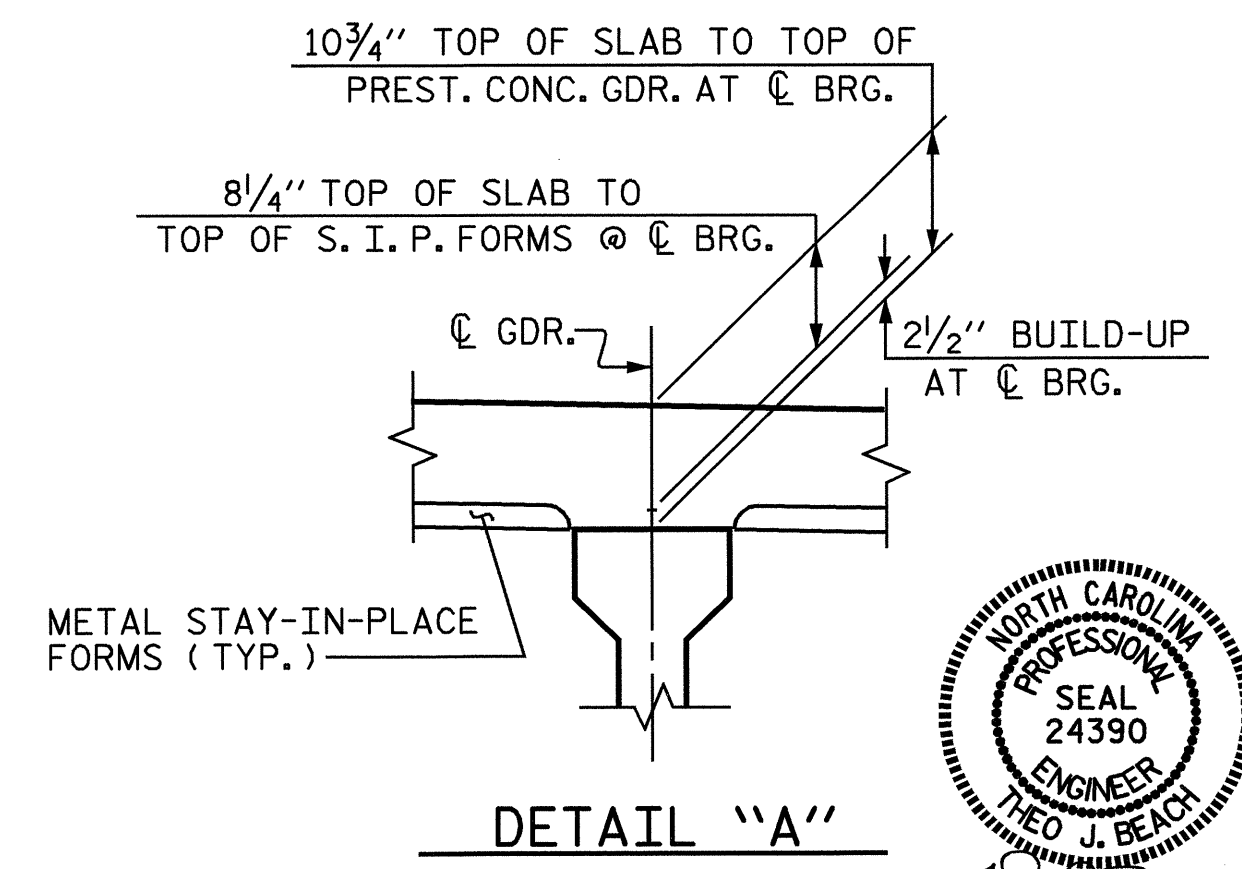
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
 S-3
 TOTAL SHEETS
 40

DRAWN BY : S.B. WILLIAMS DATE : 3-08
 CHECKED BY : T. J. BEACH DATE : 4-08



END ELEVATION
 (END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR)
 (FOR SECTION THRU END BENT, SEE SHEET 3 OF 3)

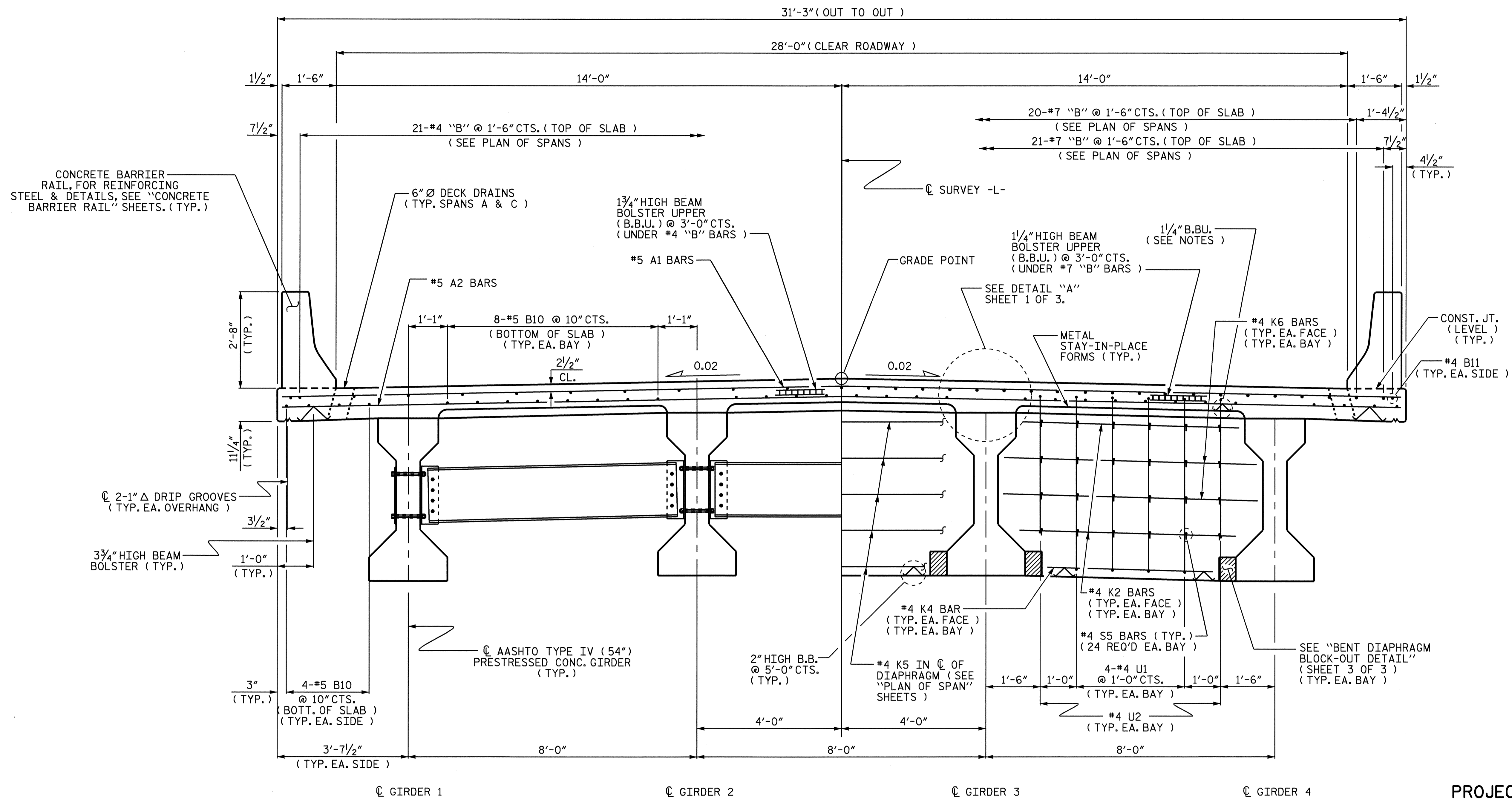


PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : N. PIERCE DATE : 9-07
 CHECKED BY : B.N. GRADY DATE : 10-07

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



PARTIAL TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGMS)

PARTIAL TYPICAL SECTION
(SHOWING CONTINUOUS FOR LIVE LOAD DIAPHRAGMS)

TYPICAL SECTION

FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS,
SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

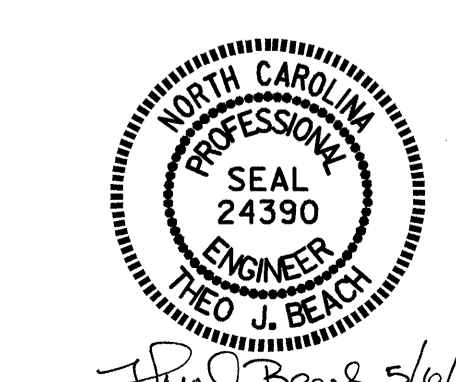
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

DRAWN BY : N. PIERCE DATE : 9-07
CHECKED BY : B.N. GRADY DATE : 10-07

05-MAY-2008 09:58
R:\Structures\SuperstructureDrawings\B-4057_sd.TS.dgn
tbeach



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			40

NOTES:

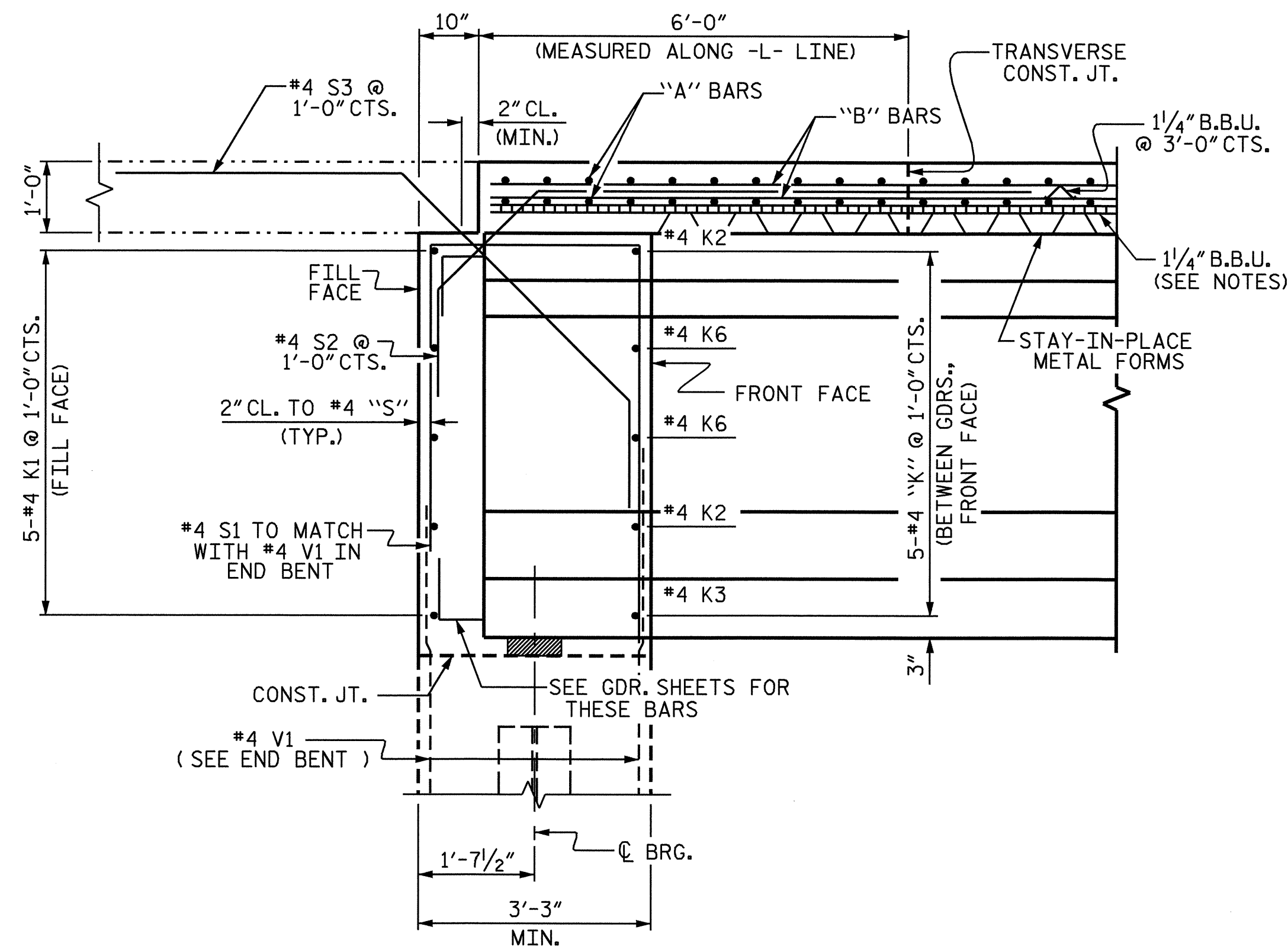
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2"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

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

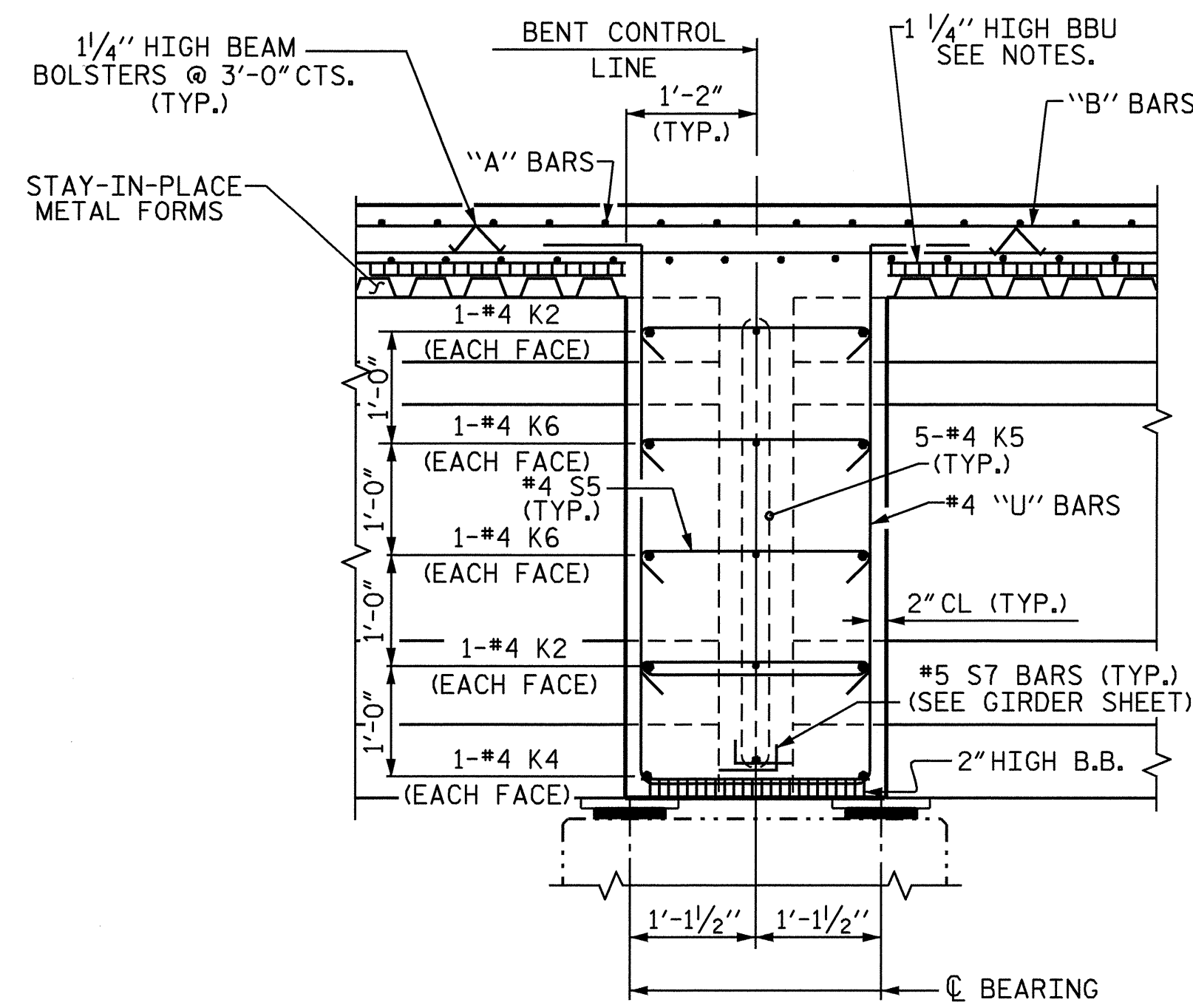
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

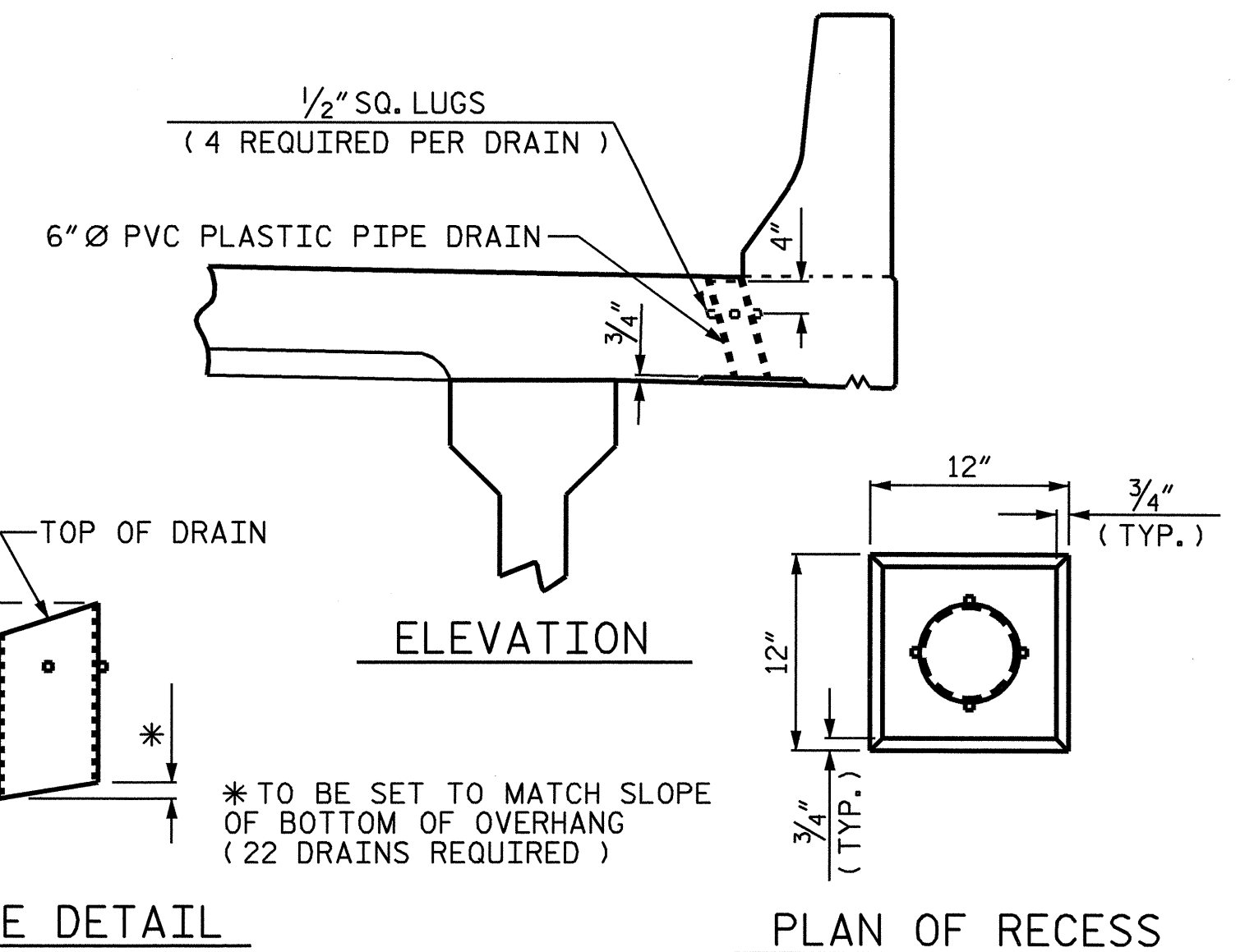
FOR LOCATION OF SECTIONS, SEE "PLAN OF SPAN" SHEETS.



SECTION THRU END BENT

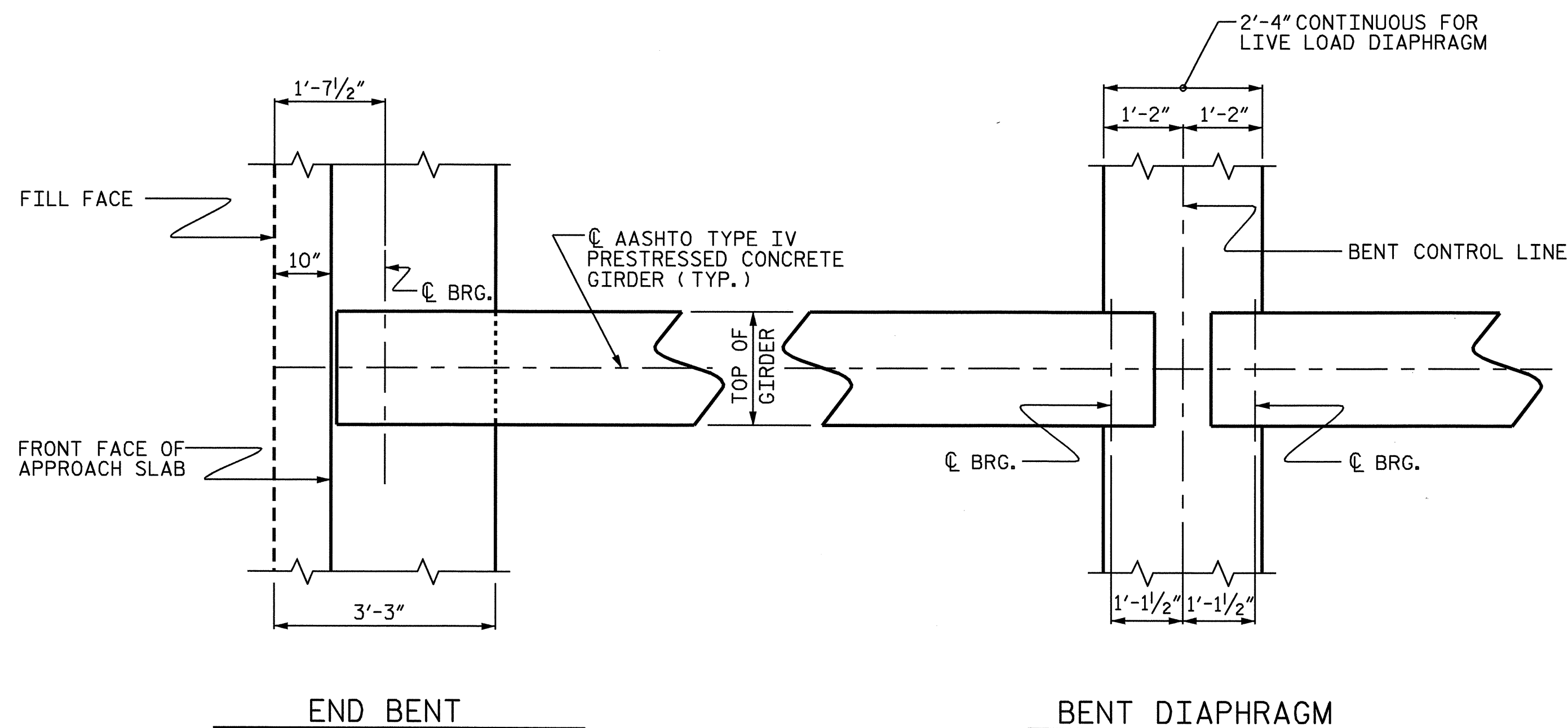


**SECTION A-A
(BENT DIAPHRAGM)**

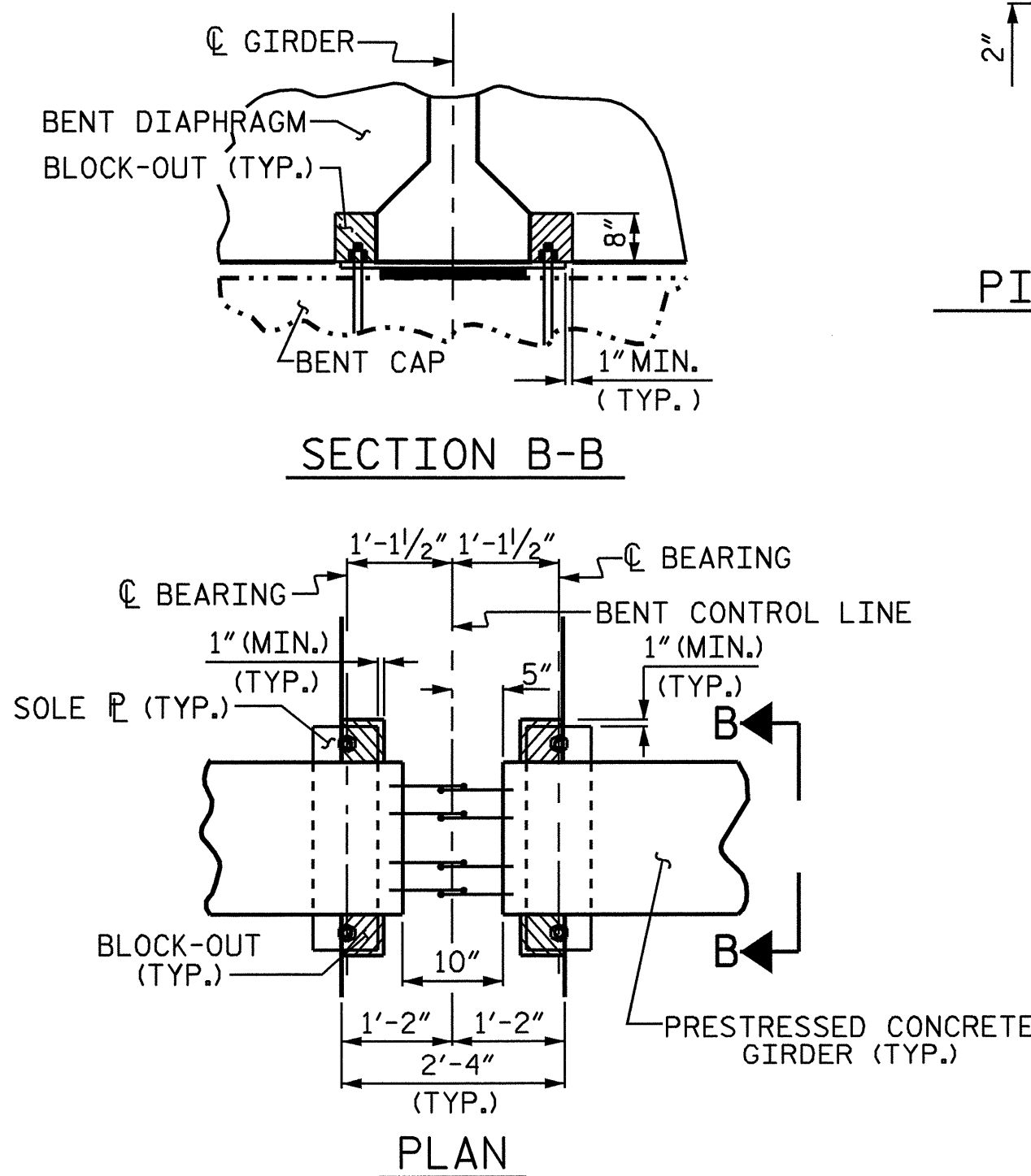


DRAIN DETAILS

TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
4-1/2" SQUARE LUGS TO BE GLUED TO THE PVC 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.



PLAN OF GIRDERS



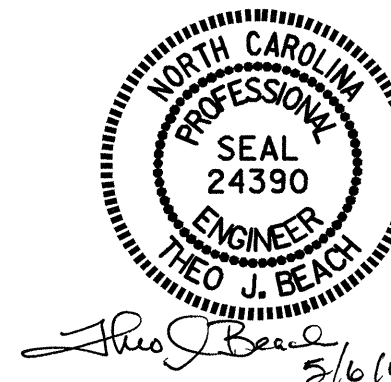
BENT DIAPHRAGM BLOCK-OUT DETAIL

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION



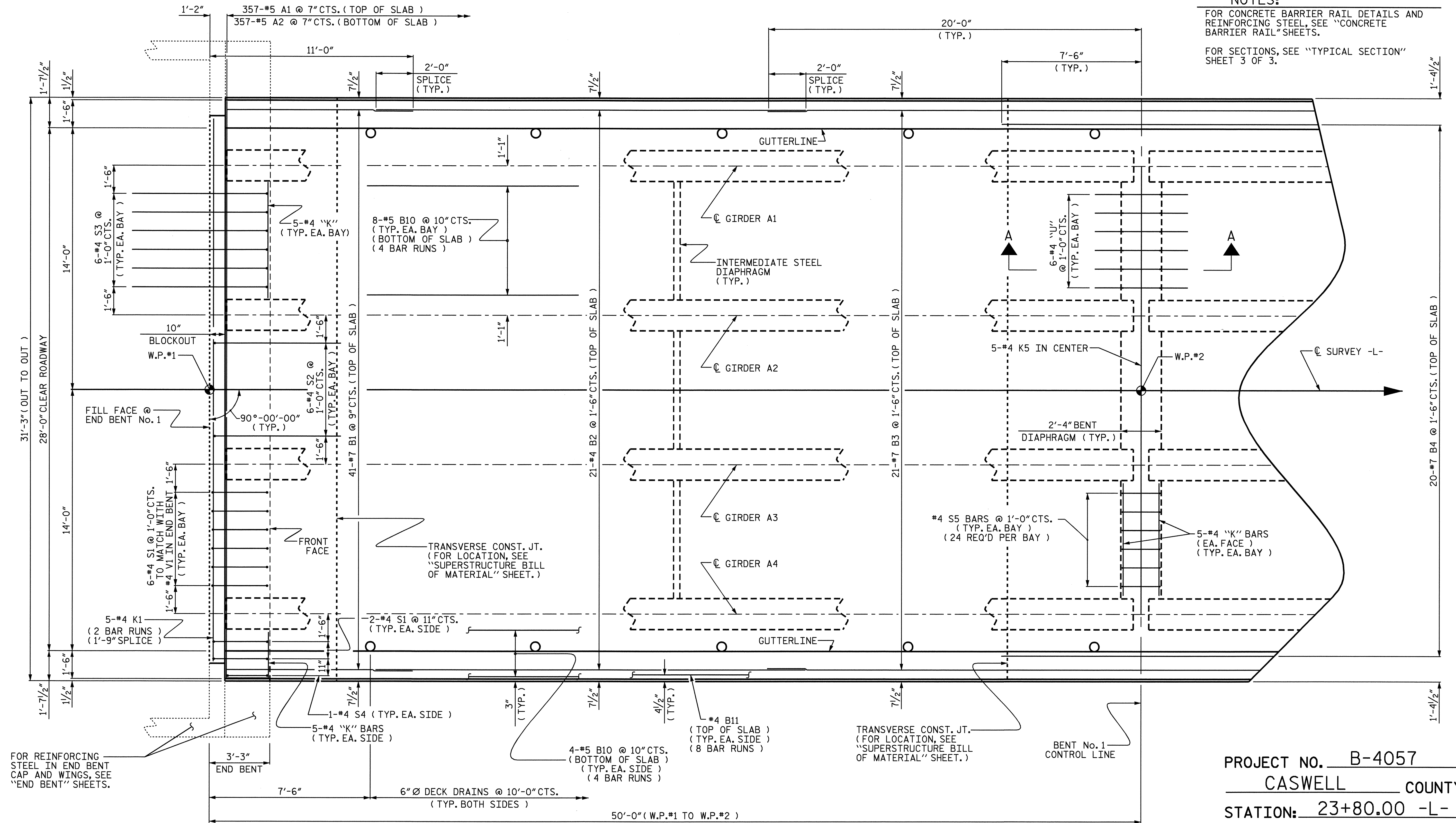
DRAWN BY: N. PIERCE DATE: 9-07
CHECKED BY: B.N. GRADY DATE: 10-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			40

NOTES:

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

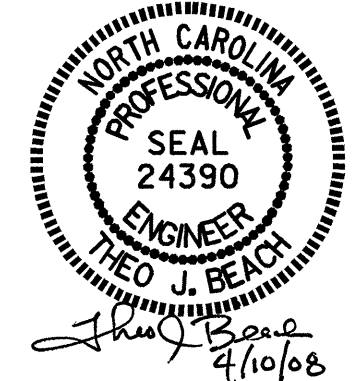
FOR SECTIONS, SEE "TYPICAL SECTION" SHEET 3 OF 3.



PLAN OF SPAN A

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

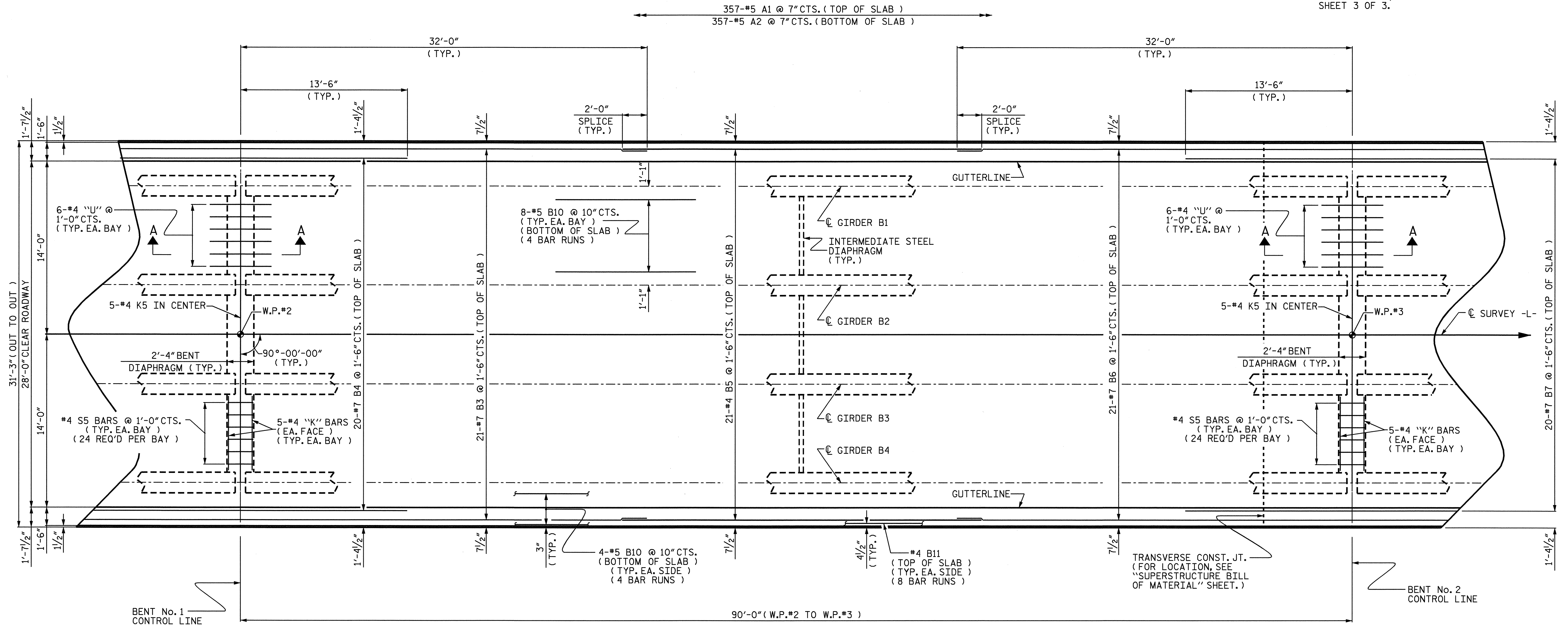
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A



DRAWN BY : N. PIERCE DATE : 9-07
 CHECKED BY : B.N. GRADY DATE : 10-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			40

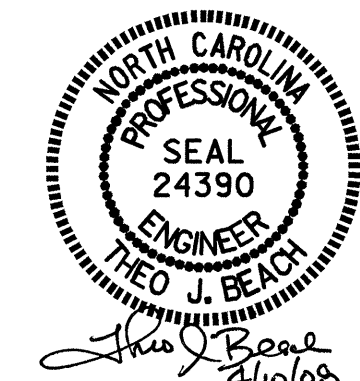
NOTES:
 FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.
 FOR SECTIONS, SEE "TYPICAL SECTION" SHEET 3 OF 3.



PLAN OF SPAN B

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B



DRAWN BY: N. PIERCE DATE: 9-07
 CHECKED BY: B.N. GRADY DATE: 10-07

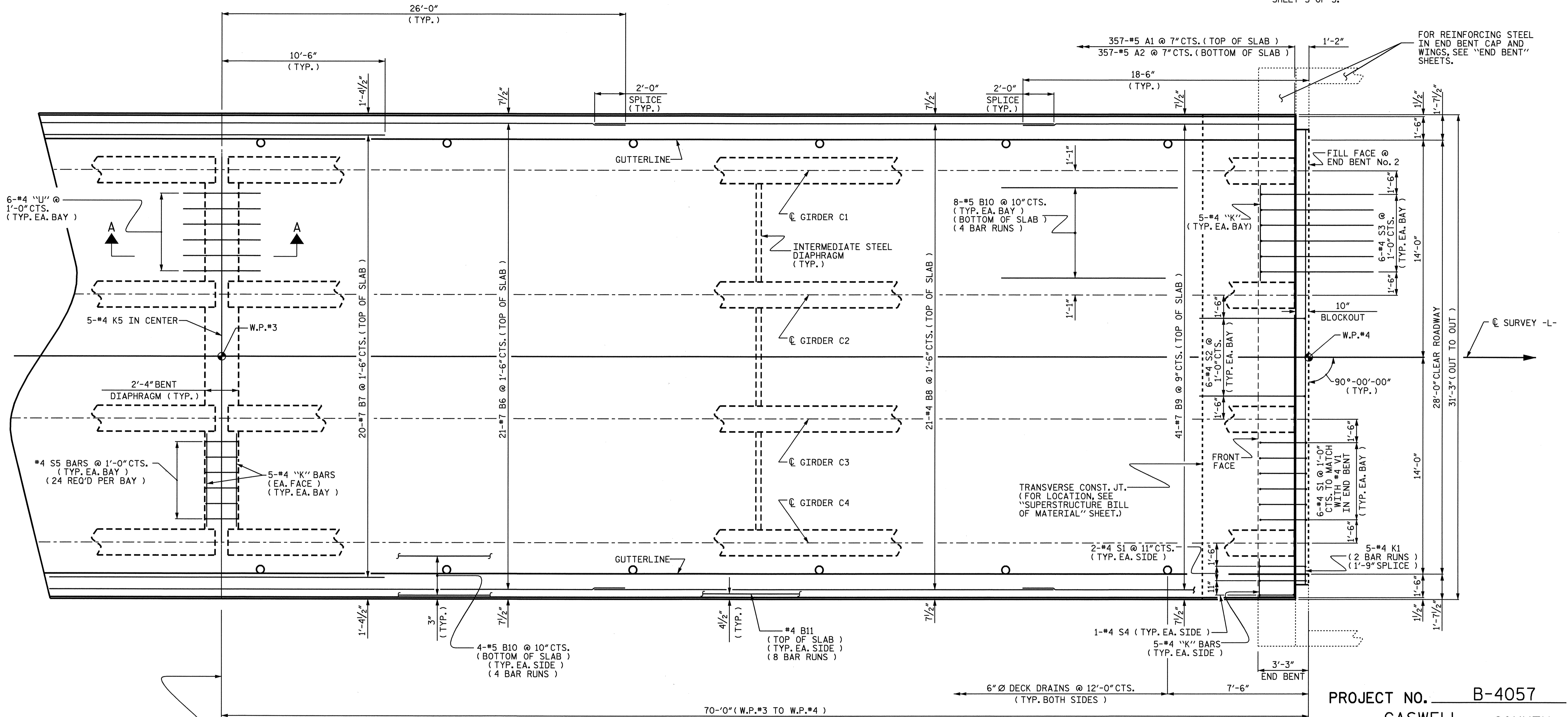
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			40

NOTES:

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

FOR SECTIONS, SEE "TYPICAL SECTION" SHEET 3 OF 3.

FOR REINFORCING STEEL IN END BENT CAP AND WINGS, SEE "END BENT" SHEETS.

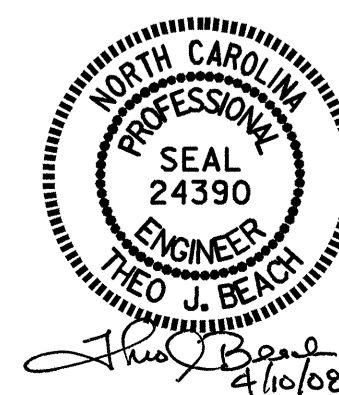


PLAN OF SPAN C

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

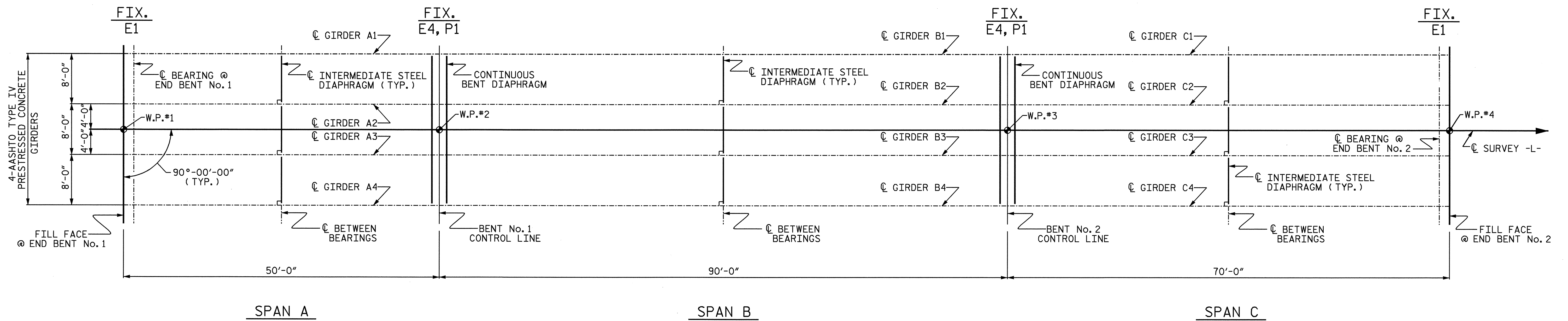
**SUPERSTRUCTURE
 PLAN OF SPAN C**



DRAWN BY: N. PIERCE DATE: 9-07
 CHECKED BY: B.N. GRADY DATE: 10-07

10-APR-2008 12:34
 R:\Structures\SuperstructureDrawings\B-4057.ed.PS.dgn
 tbeach

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	
2			4			40	



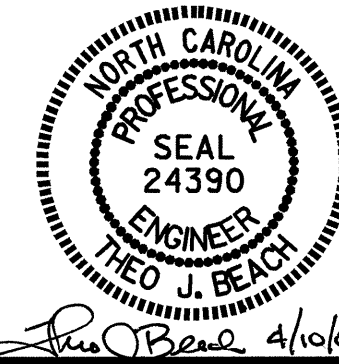
GIRDER LAYOUT

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

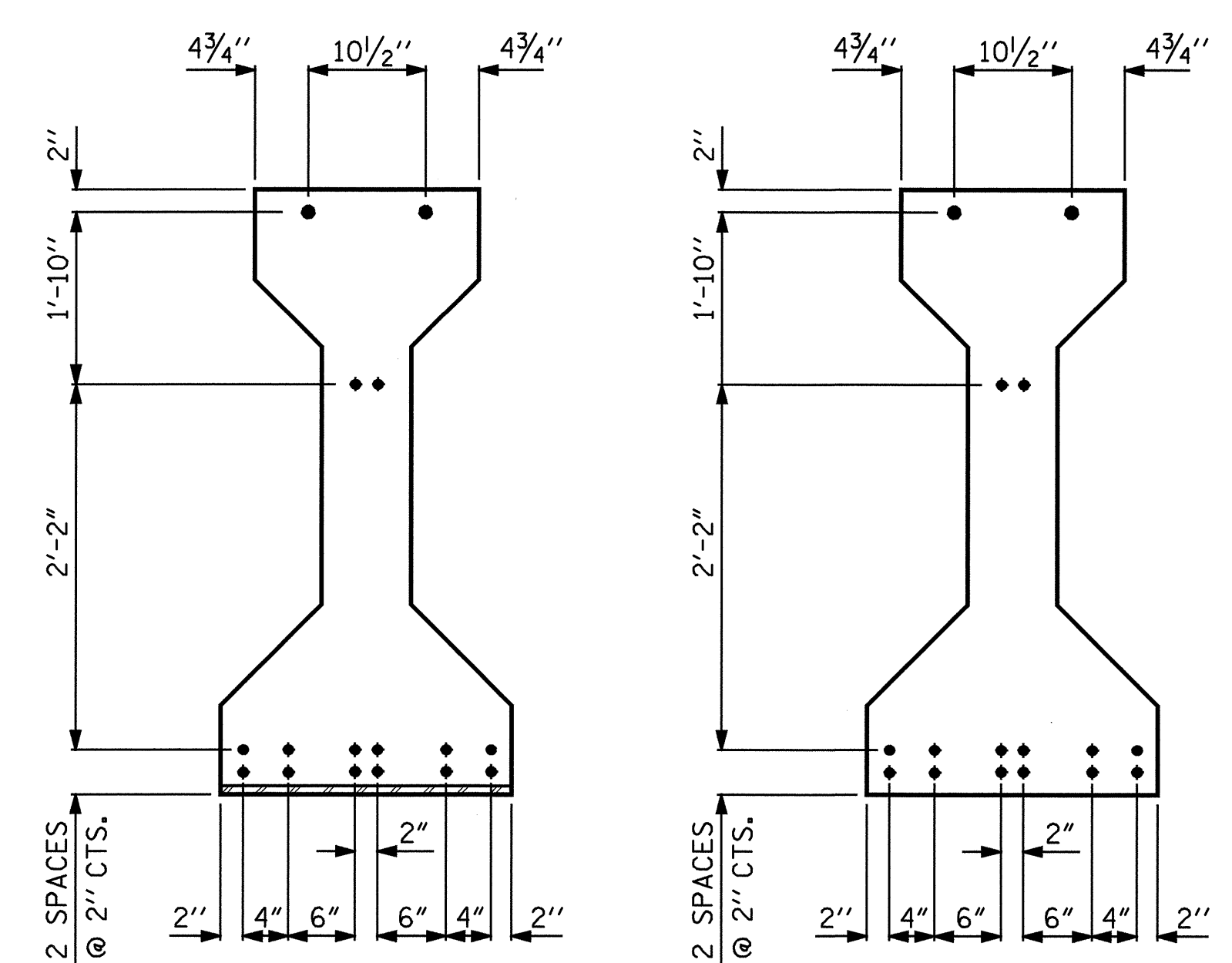
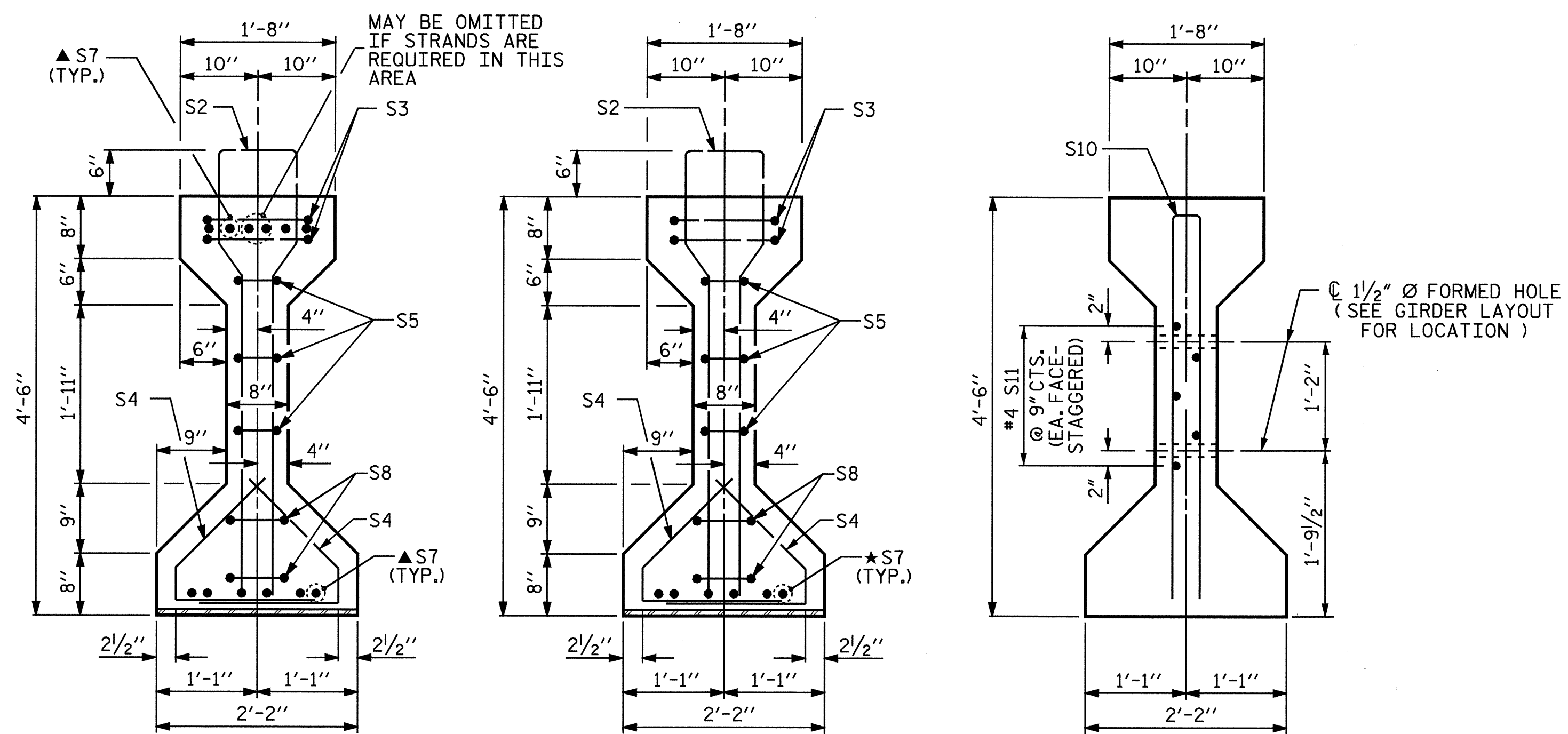
SUPERSTRUCTURE
 GIRDER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			40



DRAWN BY : N. PIERCE DATE : 9-07
 CHECKED BY : B.N. GRADY DATE : 10-07

10-APR-2008 12:34
 R:\Structures\SuperstructureDrawings\B-4057.sd.FP.dgn
 tbeach

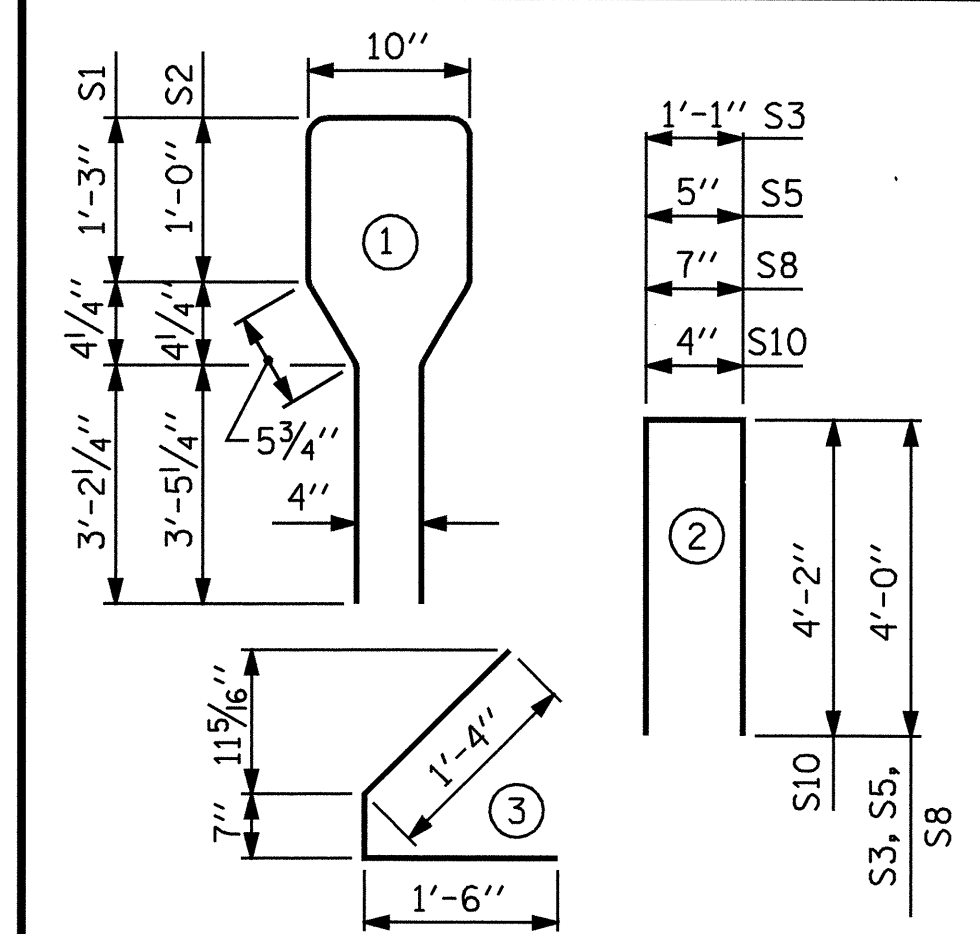


1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	10'-8"	342
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#3	STR	1'-4"	1
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

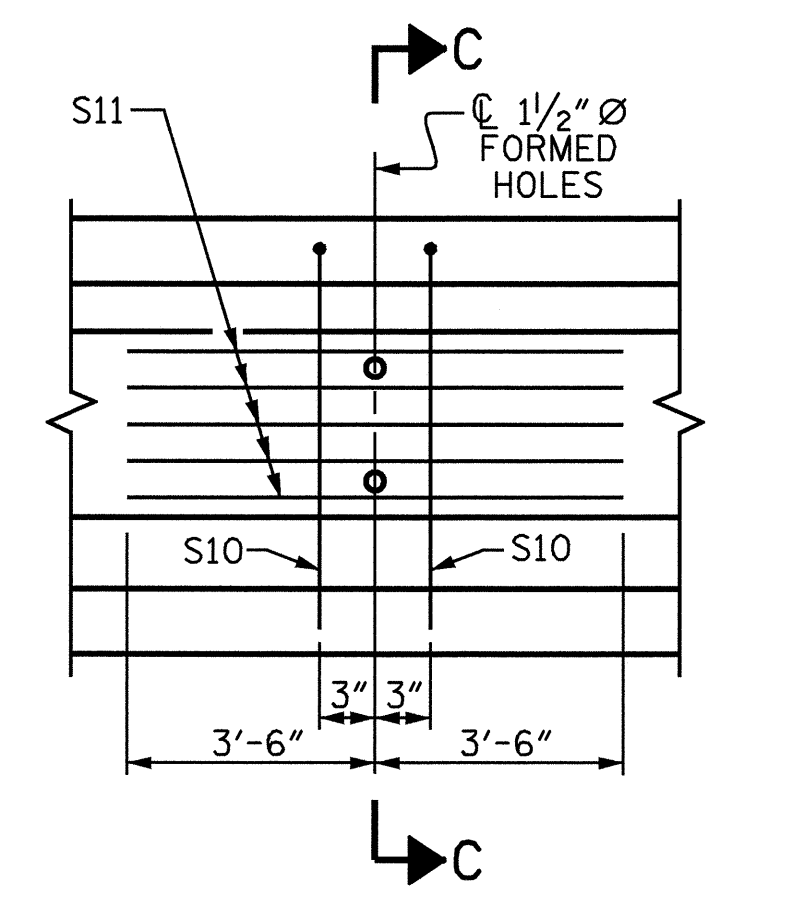
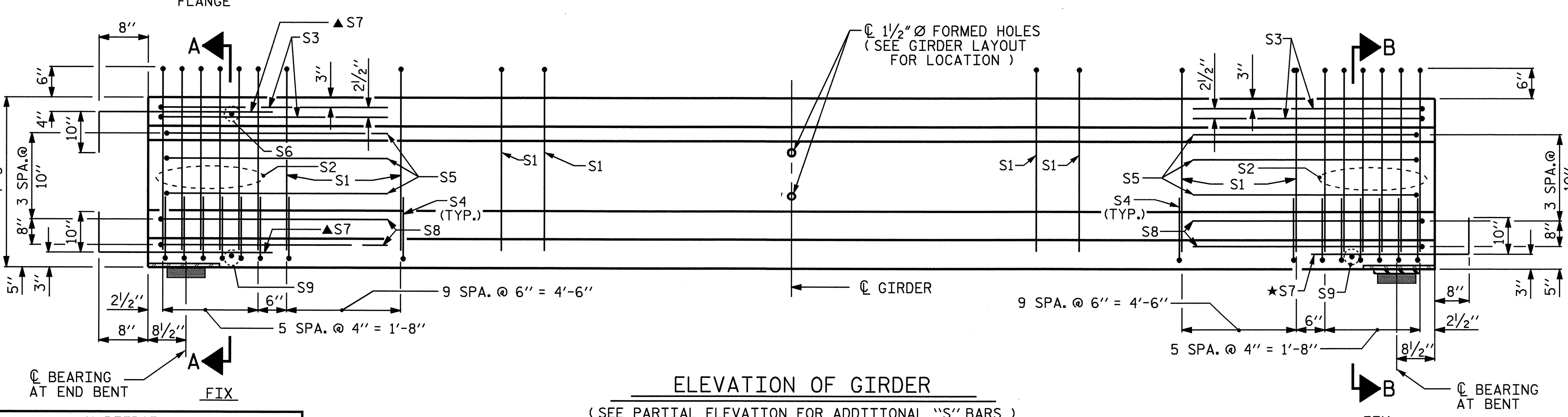
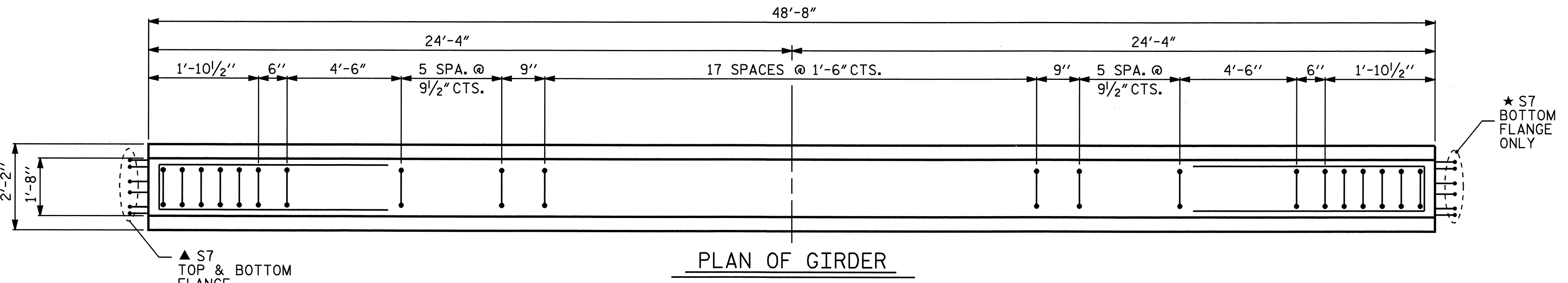
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	5000 PSI CONCRETE	1/2" Ø L.R. STRANDS
LB.	C.Y.	No.
873	9.9	16

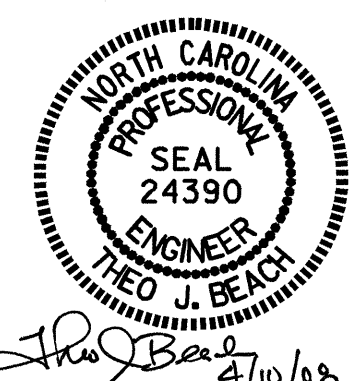
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	48'-8"	194.67



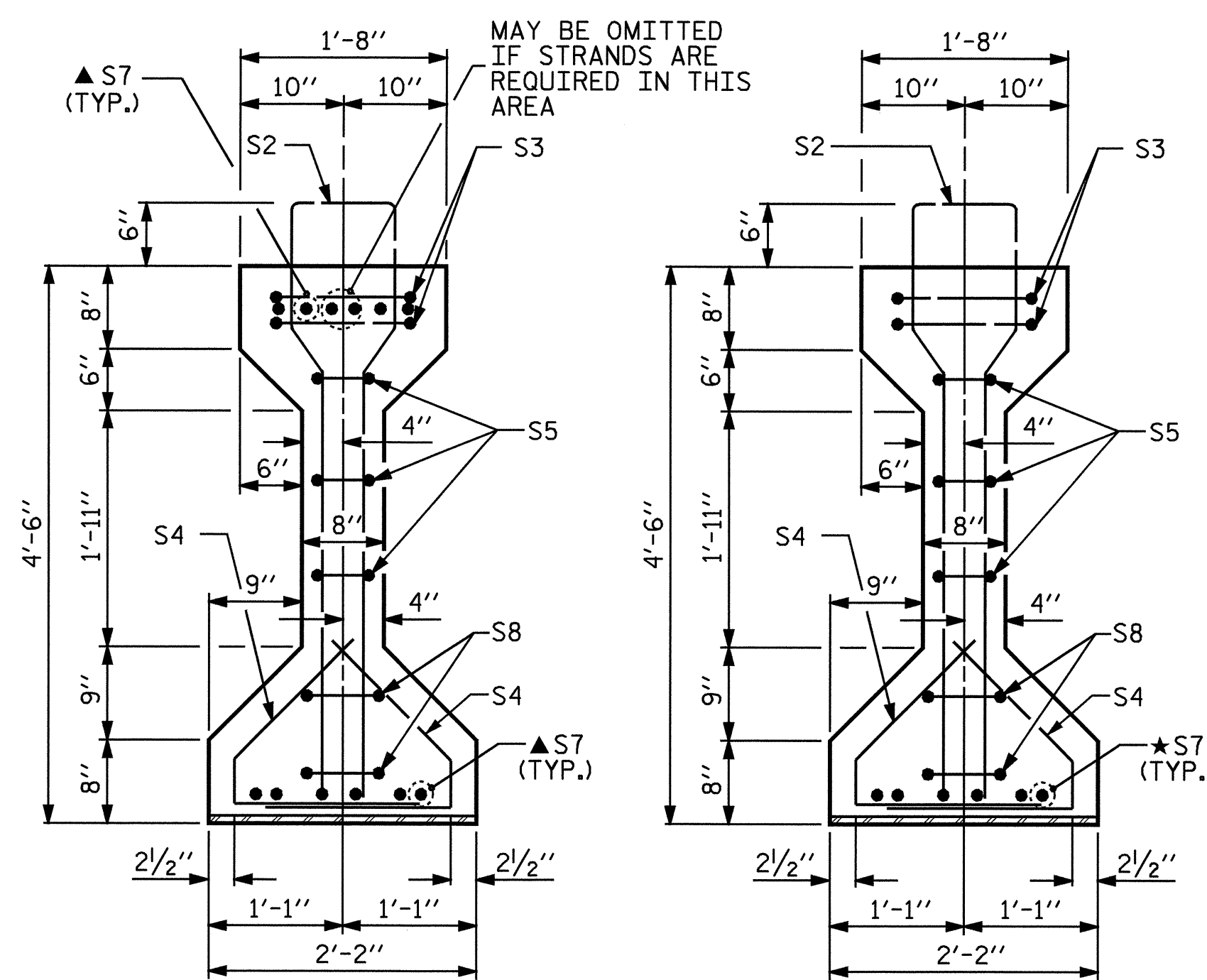
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 WITH INTEGRAL END BENT
 SPAN A**

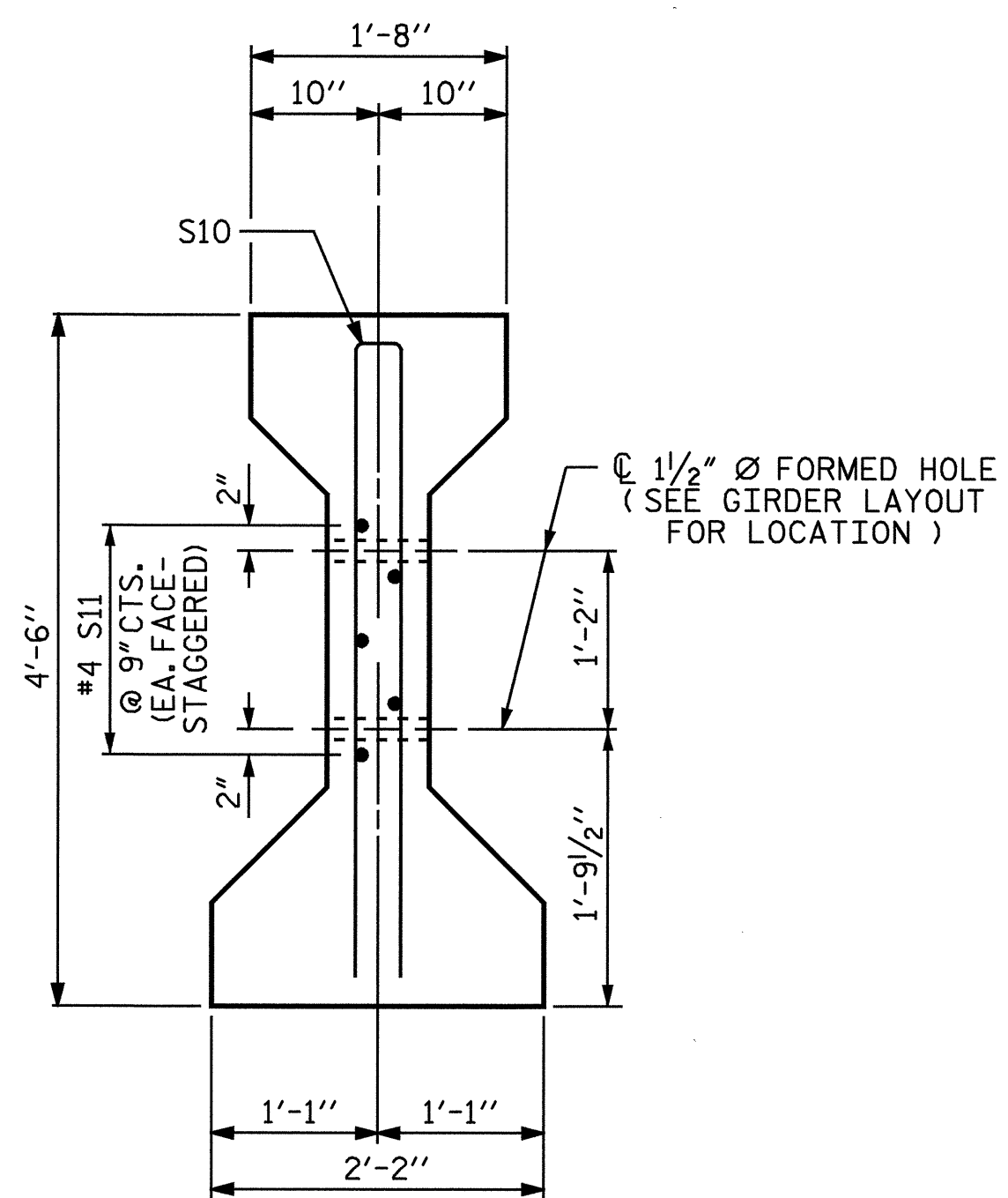


ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06 TLA/GM
	REV. 10/1/06 TJB/

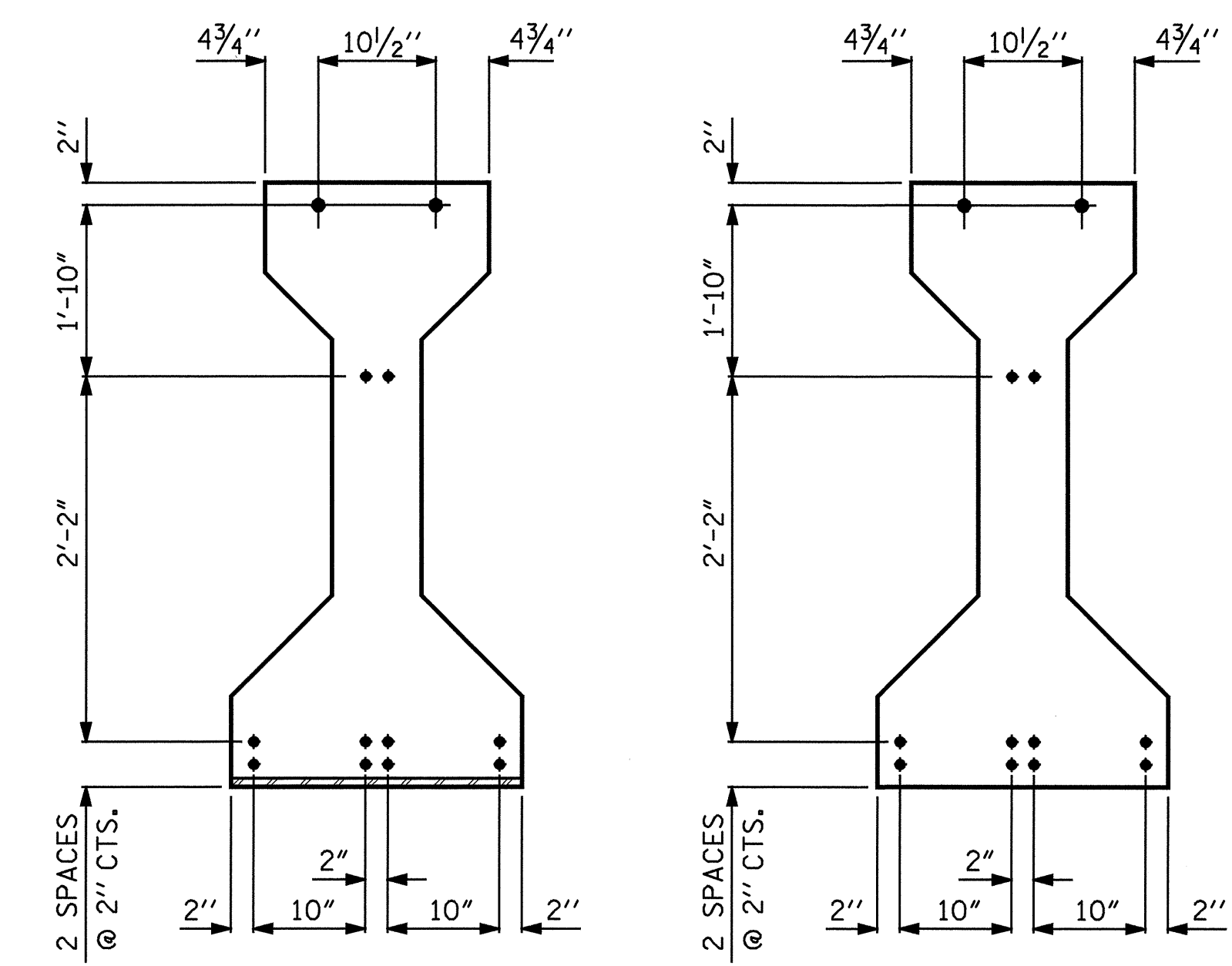


SECTION A-A
AT END BENT

SECTION B-B
AT BENT



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

▲ FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

★ FOR S7 BARS, SEE
DETAIL "B" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

CONTRACTOR'S ATTENTION
IS CALLED TO THE FACT
THAT STRAND PATTERN
ON THIS SHEET
UTILIZES 0.6" Ø STRANDS

0.6" Ø L. R. GRADE 270 STRANDS

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

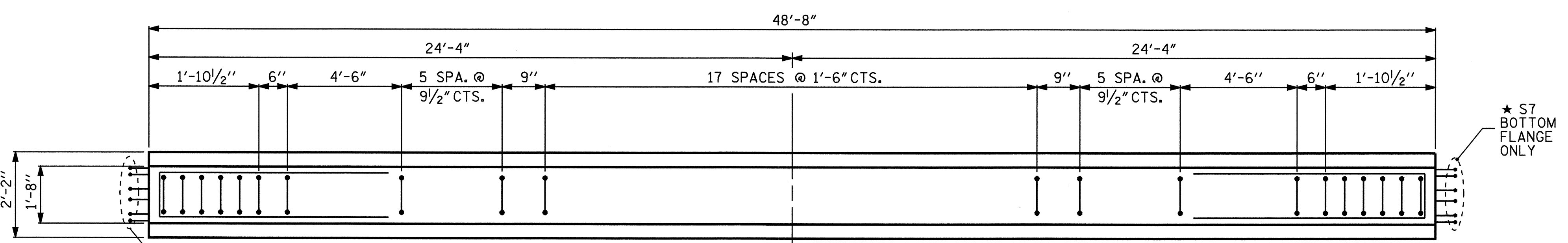
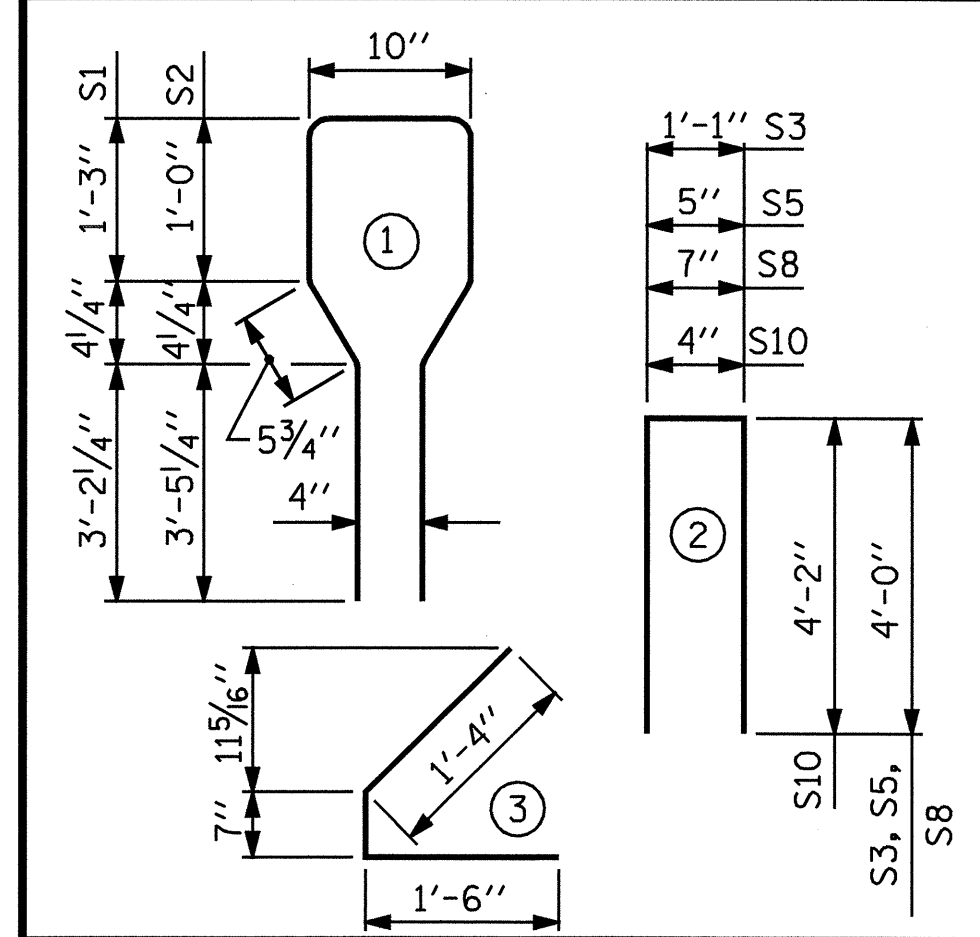
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	10'-8"	342
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#3	STR	1'-4"	1
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

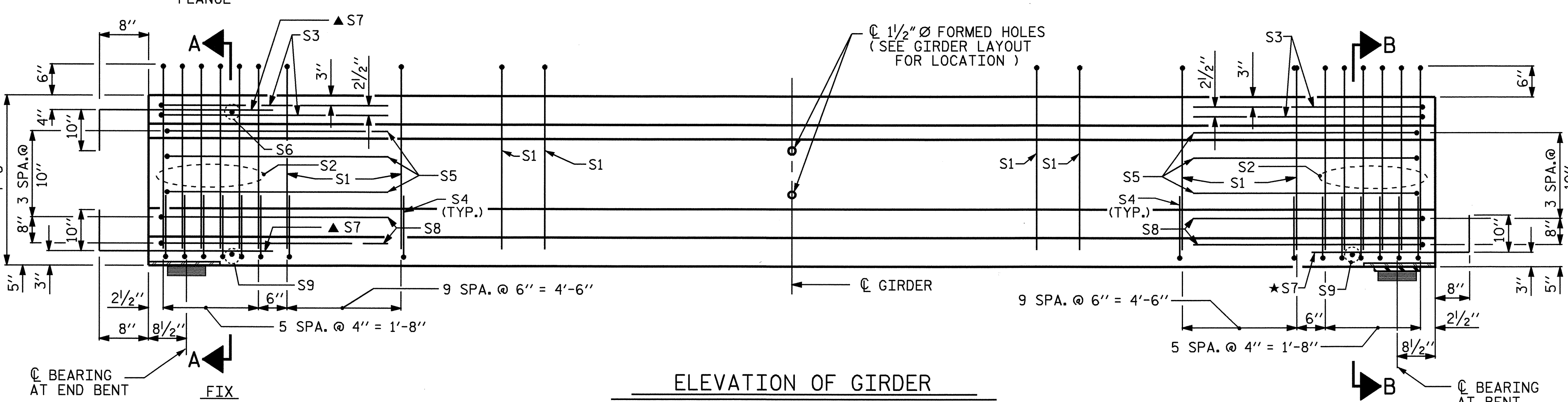
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

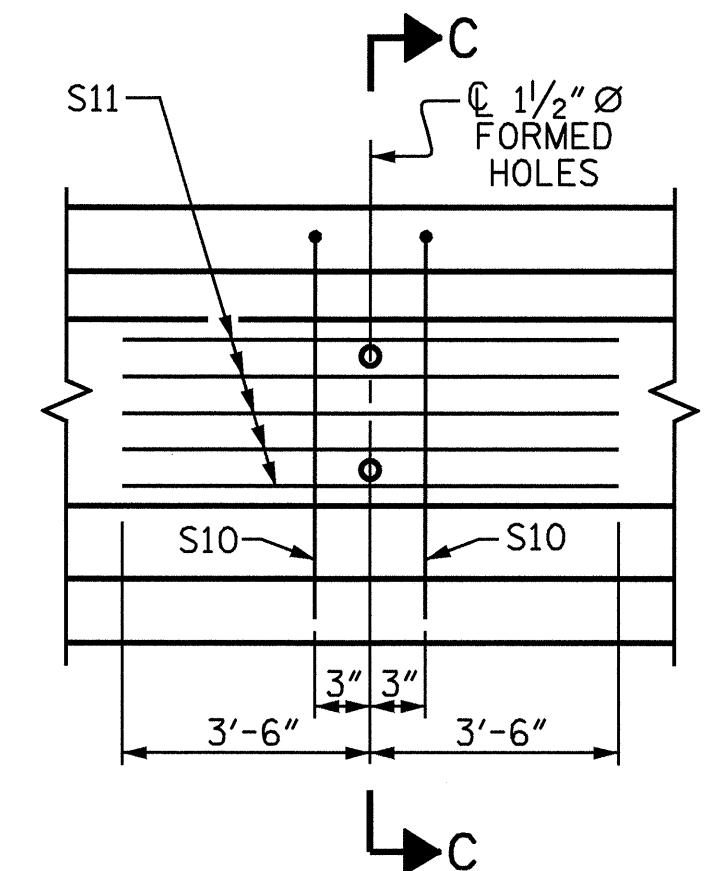
ALL BAR DIMENSIONS ARE OUT-TO-OUT



PLAN OF GIRDER



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



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS

QUANTITIES FOR ONE GIRDER

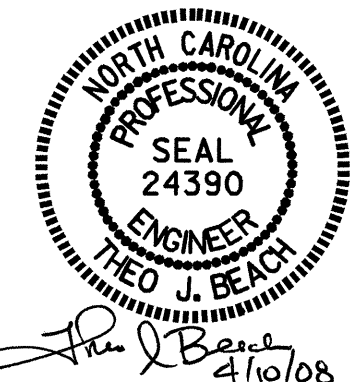
REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
873	9.9	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	48'-8"	194.67

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
WITH INTEGRAL END BENT
OPTIONAL 0.6" Ø STRANDS
SPAN A

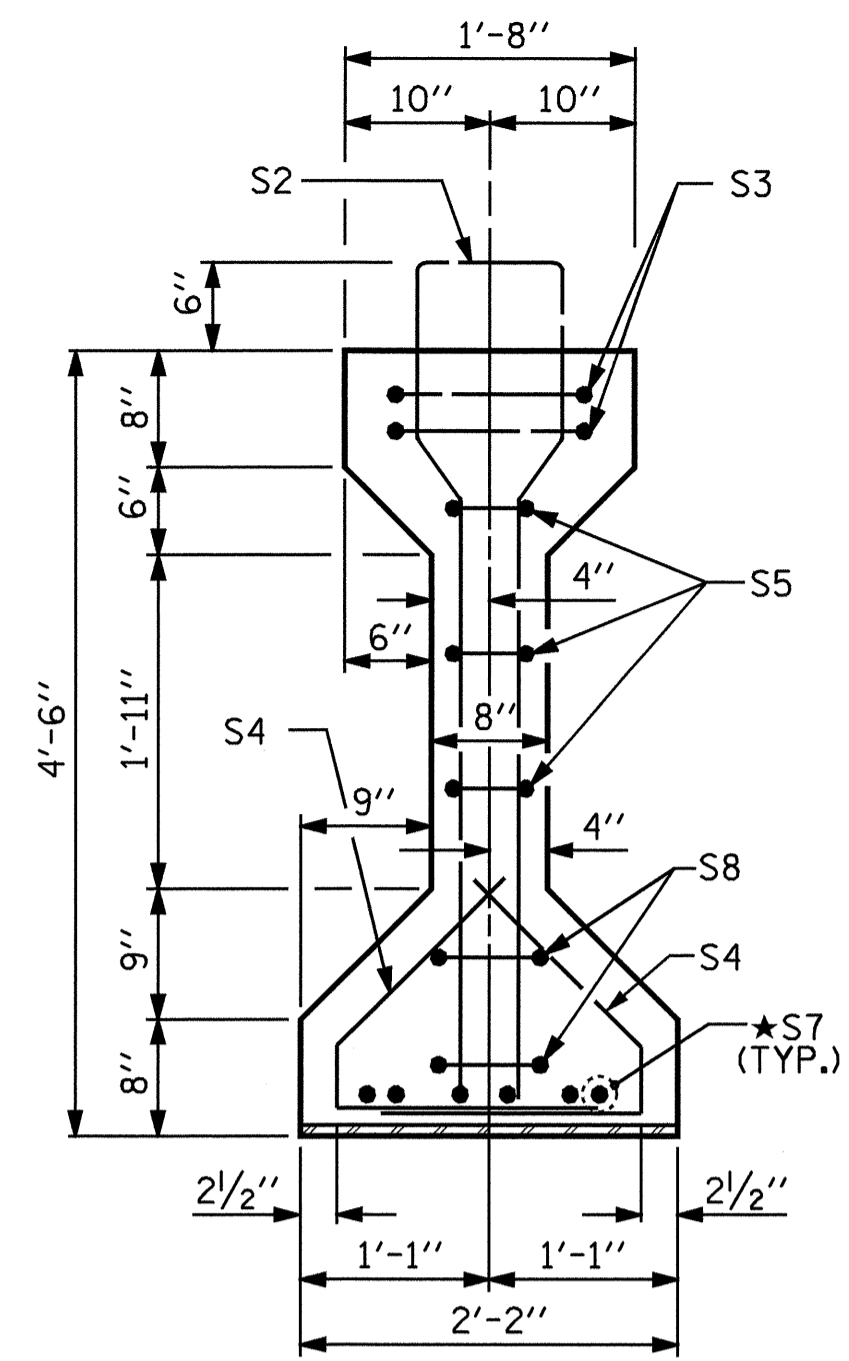


ASSEMBLED BY : N. PIERCE DATE : 9-07
CHECKED BY : B.N. GRADY DATE : 10-07
DRAWN BY : ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91 REV. 5/1/06 TLA/GM
REV. 10/1/06 TJB/

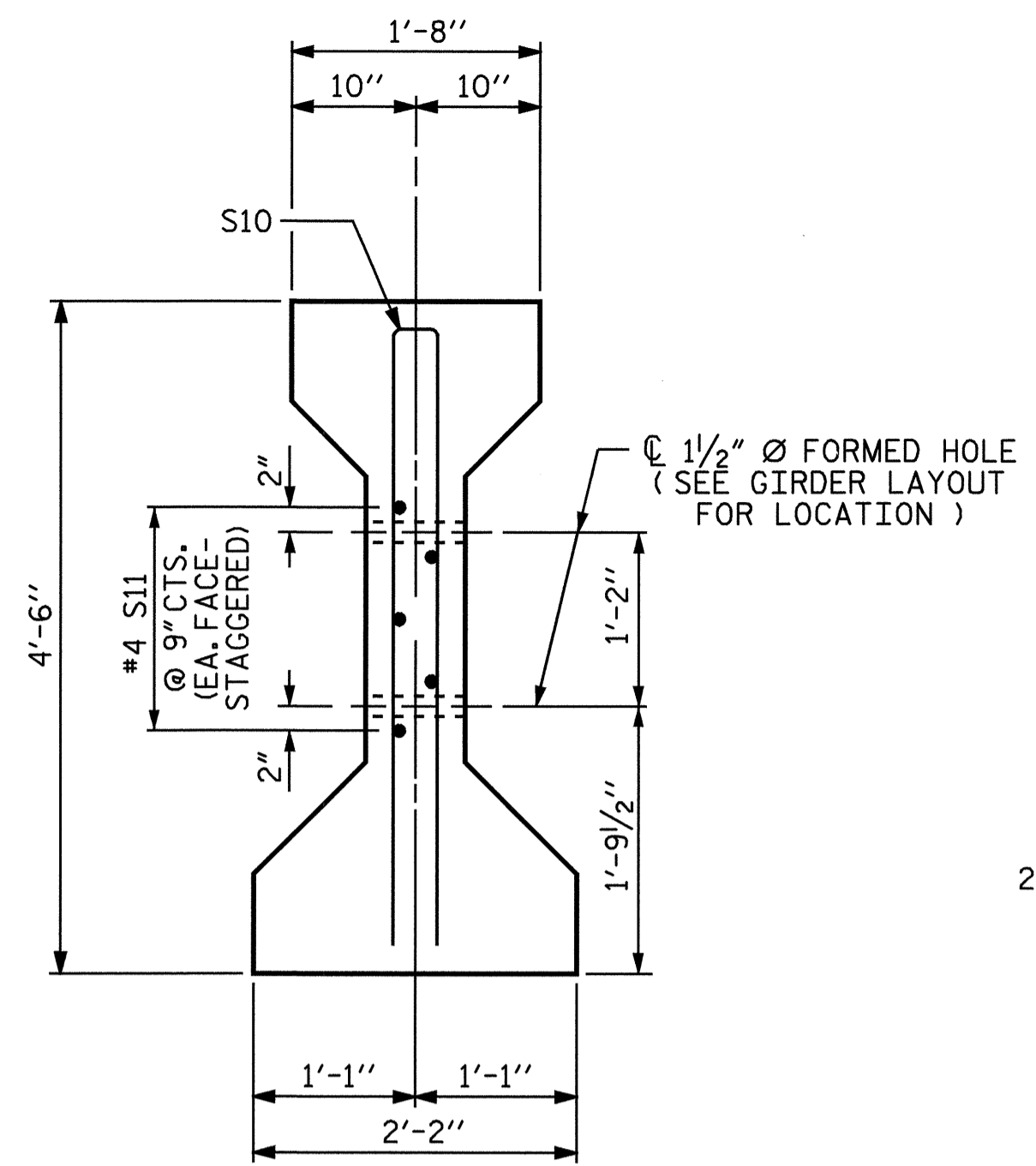
REVISIONS

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

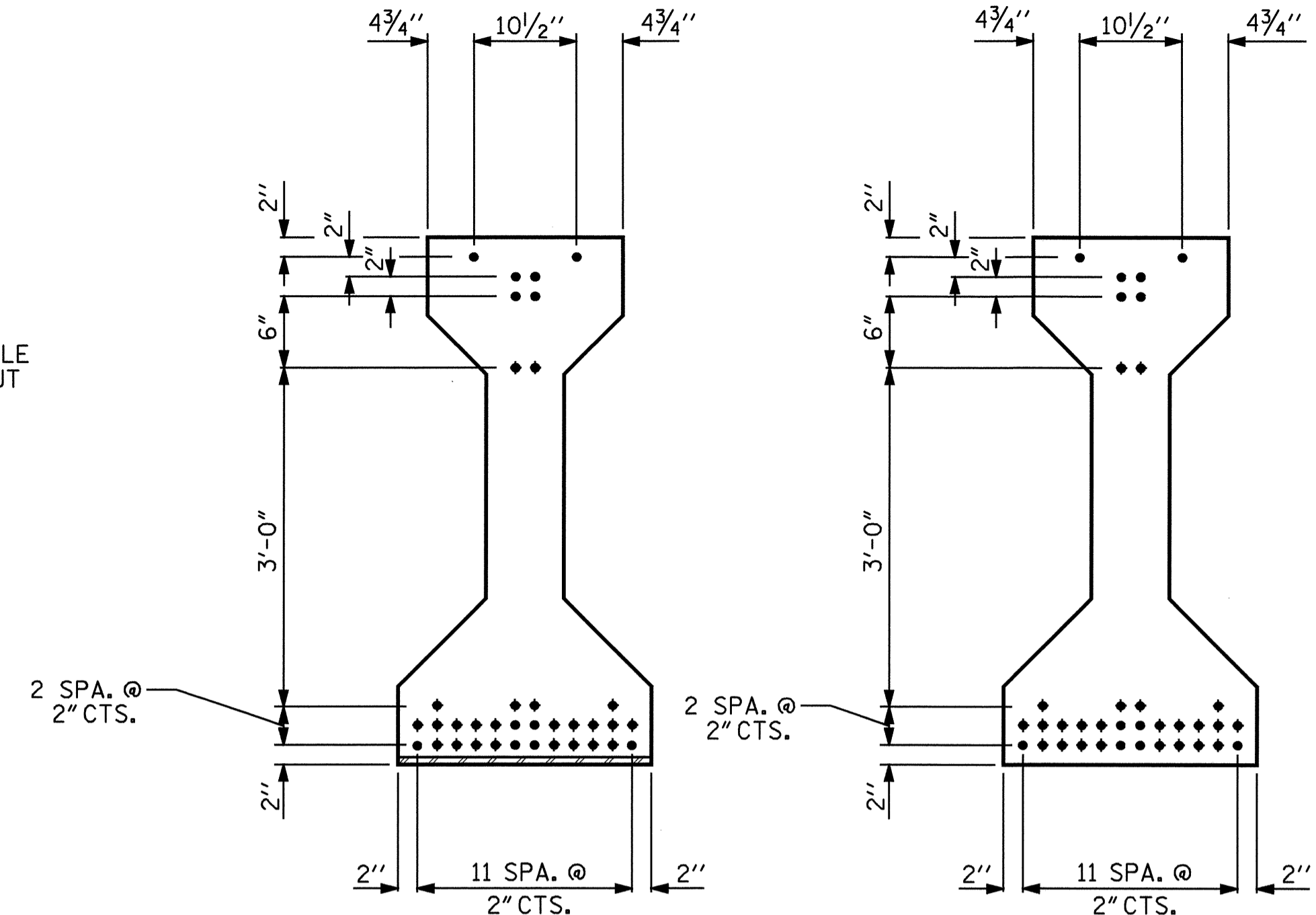
SHEET NO. S-12
TOTAL SHEETS 40



SECTION A-A



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER AT C. OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

★ FOR S7 BARS, SEE
DETAIL "B" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

CONTRACTOR'S ATTENTION
IS CALLED TO THE FACT
THAT STRAND PATTERN
ON THIS SHEET
UTILIZES 0.6" Ø STRANDS

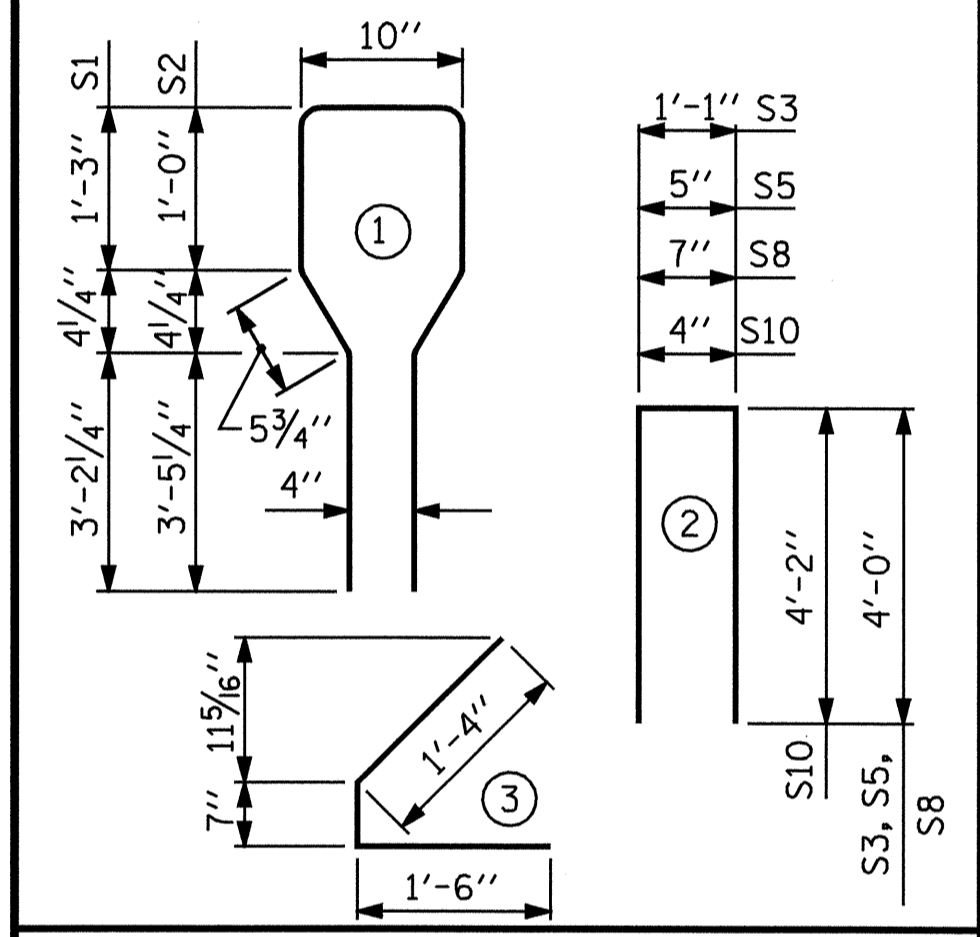
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	70	#4	1	10'-8"	499
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

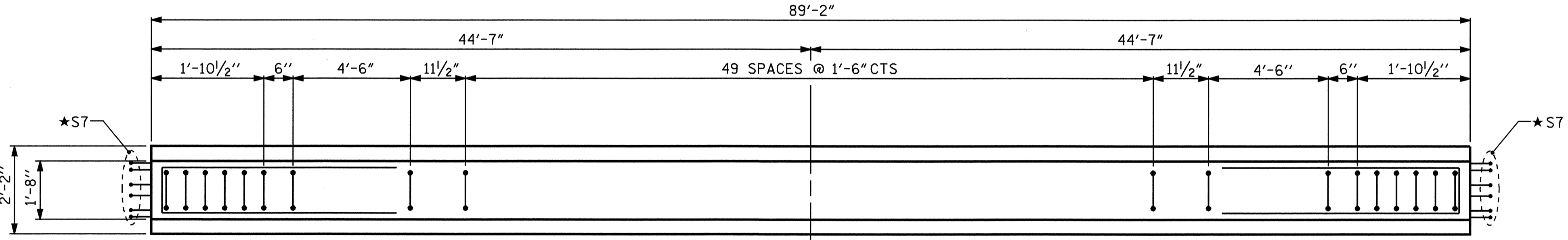
ALL BAR DIMENSIONS ARE OUT-TO-OUT



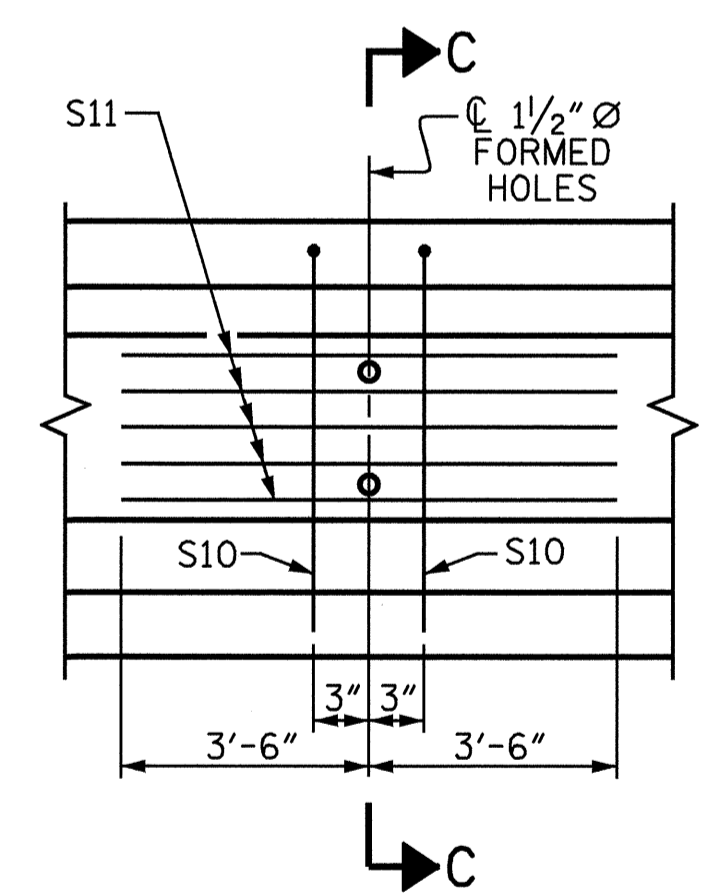
QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1006	18.1	36

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	89'-2"	356.67

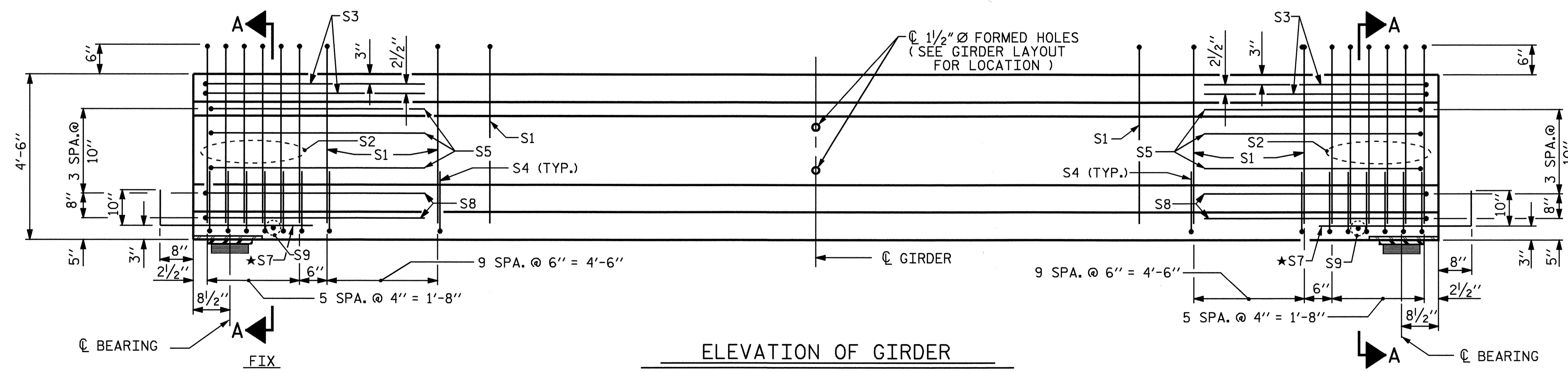


PLAN OF GIRDER



PARTIAL ELEVATION

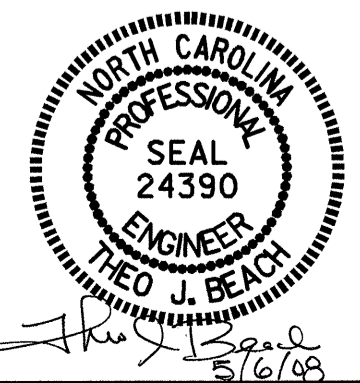
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL EXTERIOR GIRDERS AND INTERIOR GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

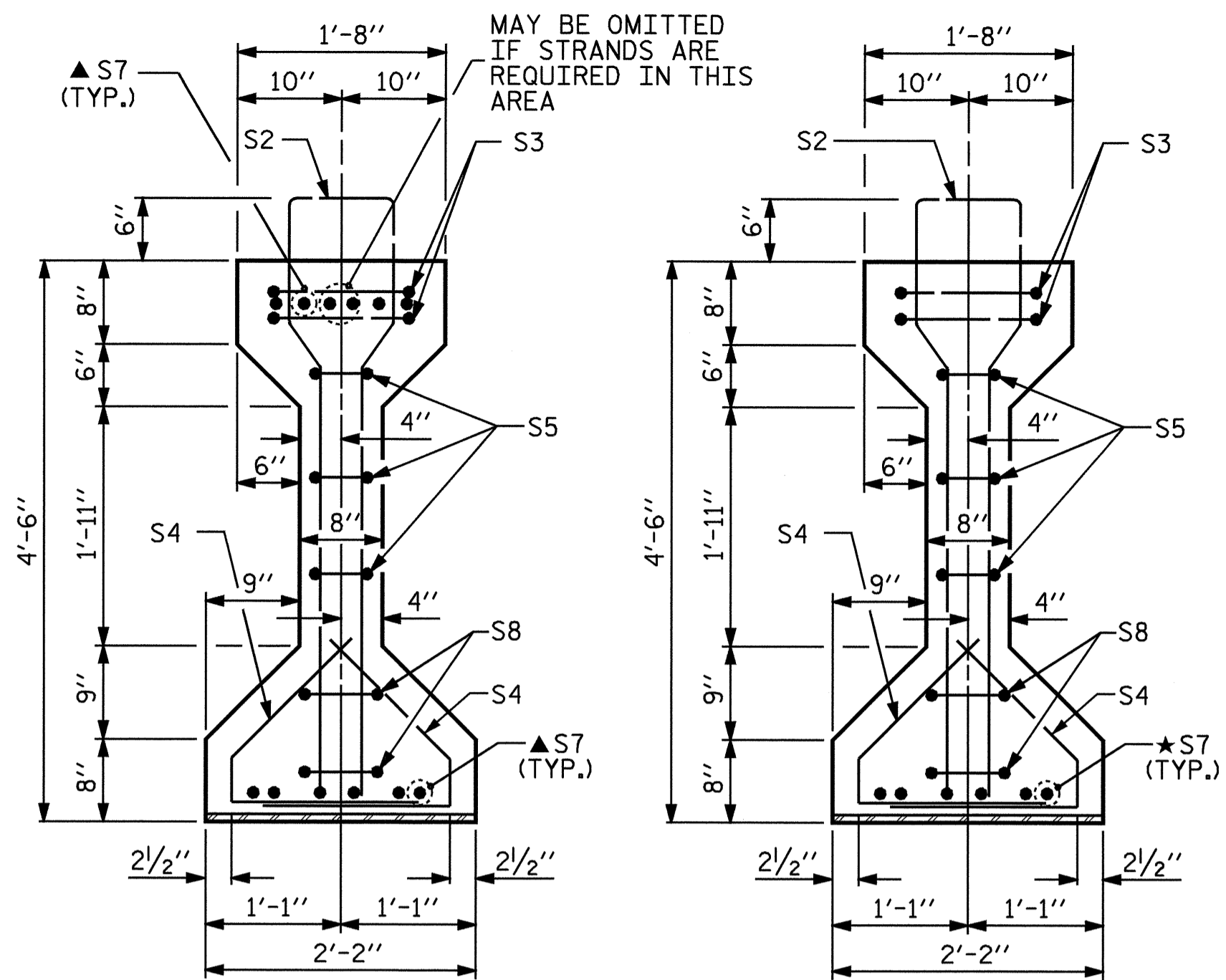
ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

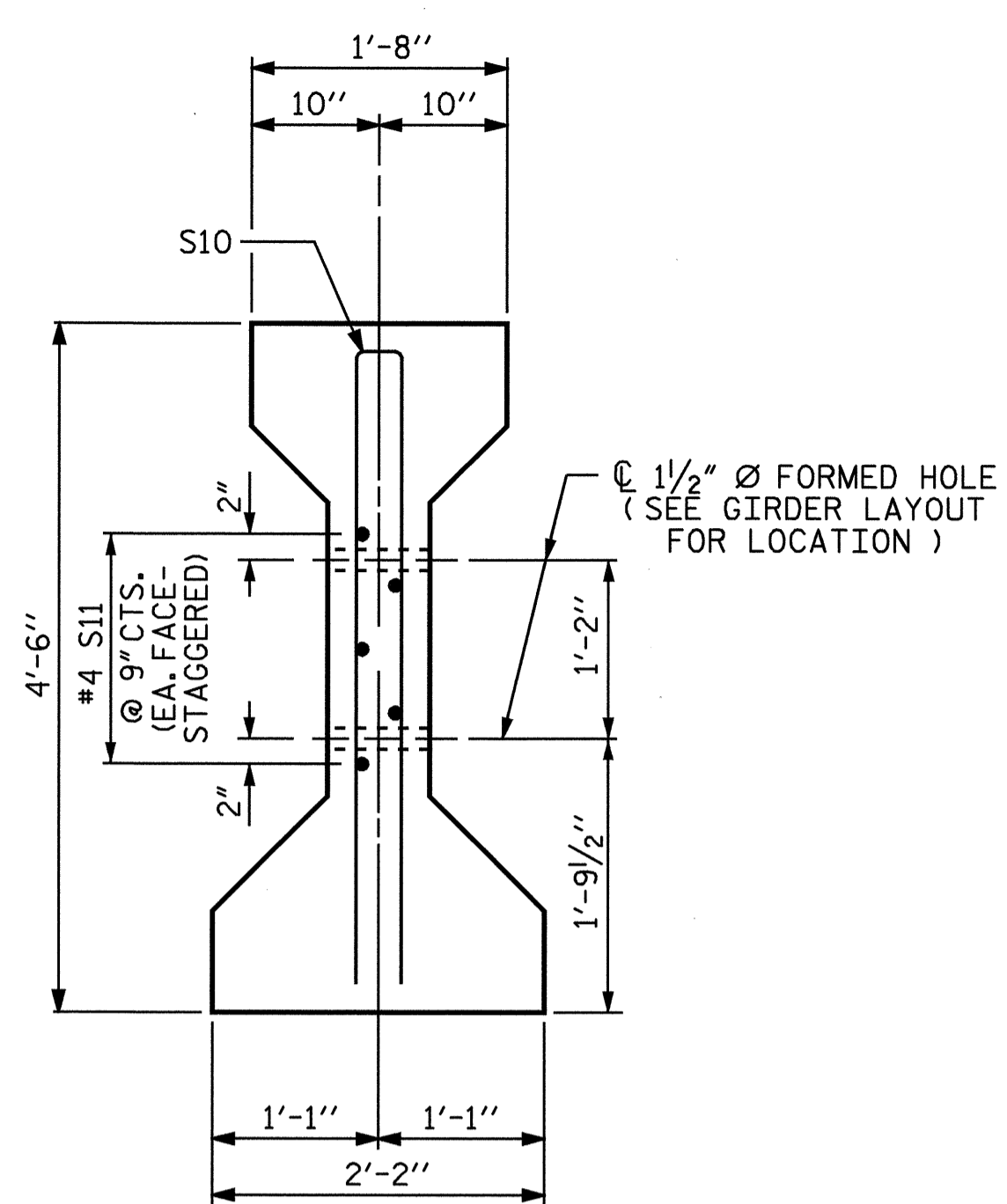


SECTION A-A
AT END BENT

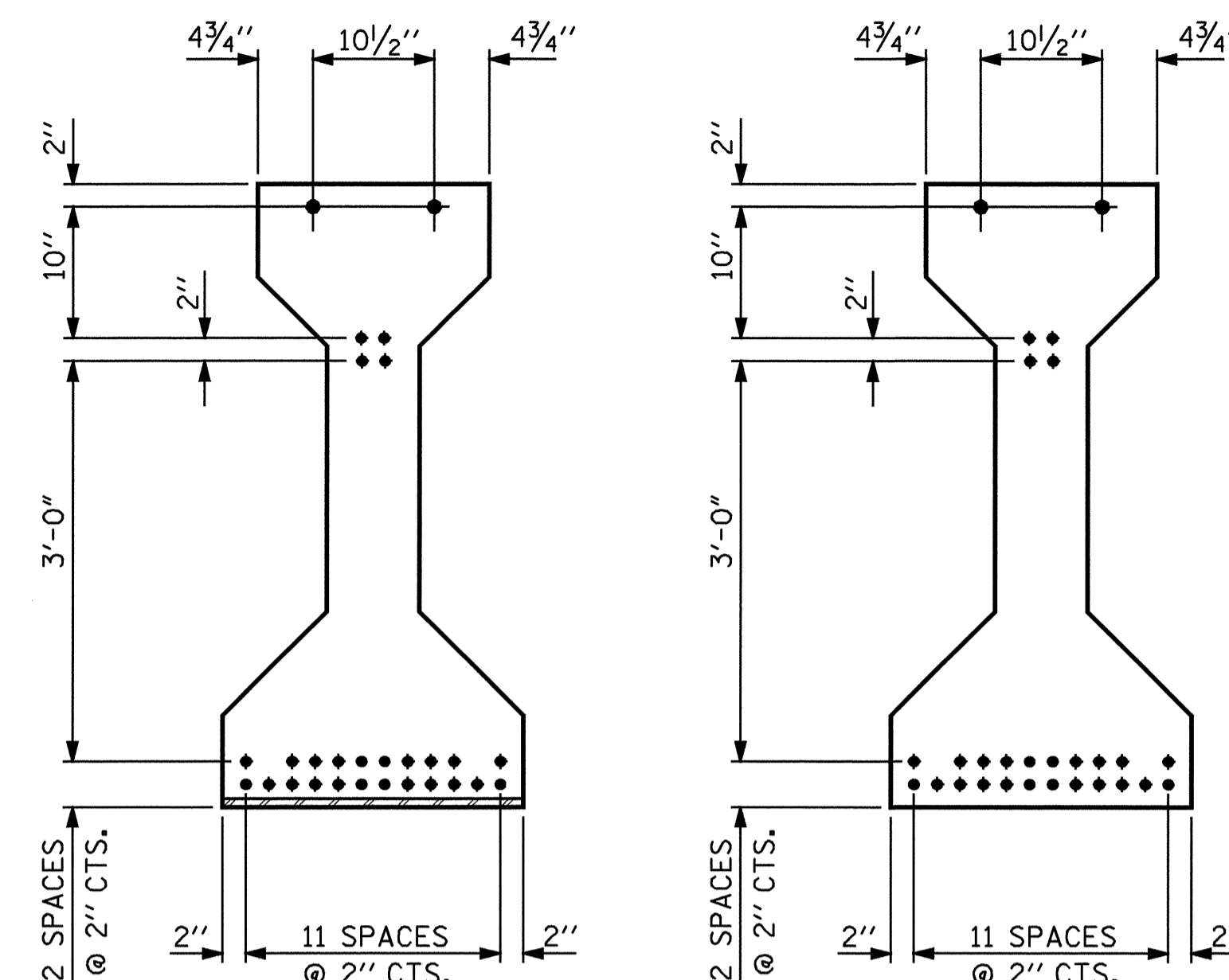
SECTION B-B
AT BENT

▲ FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

★ FOR S7 BARS, SEE
DETAIL "B" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT \O OF GIRDER

1/2" \O LOW RELAXATION STRAND LAYOUT

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

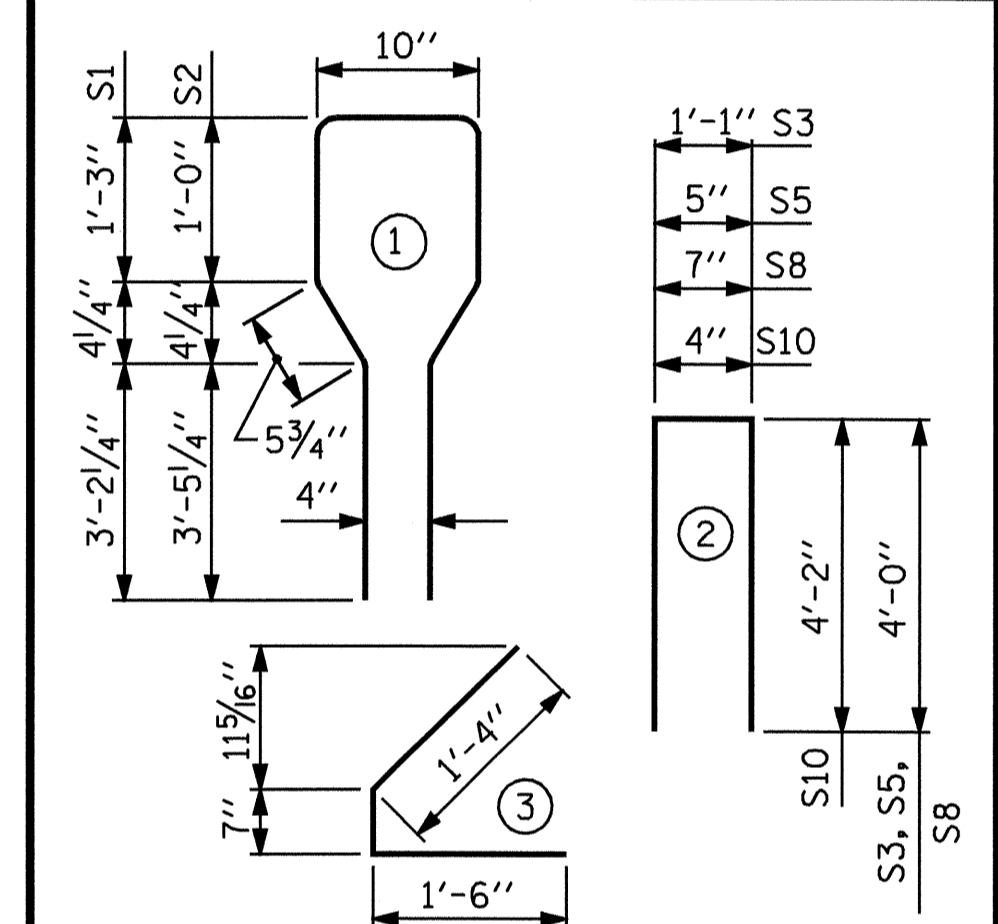
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	64	#4	1	10'-8"	456
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#3	STR	1'-4"	1
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

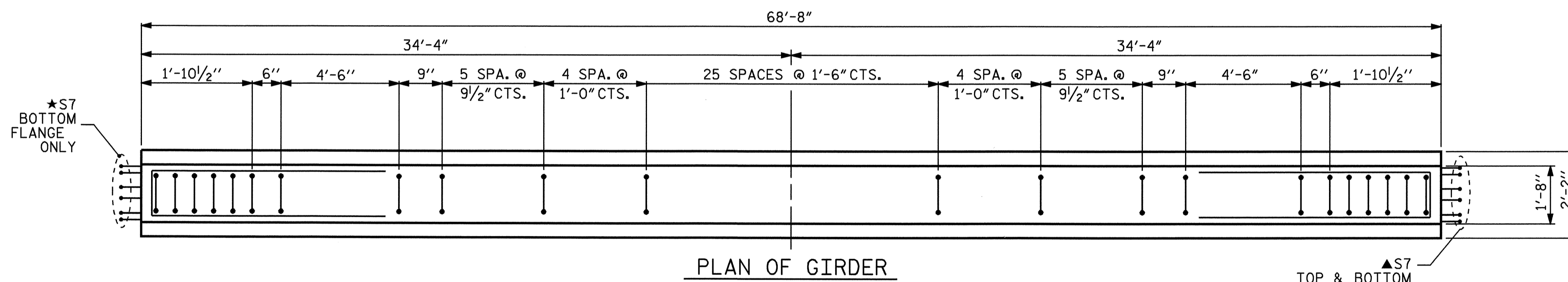


QUANTITIES FOR ONE GIRDER

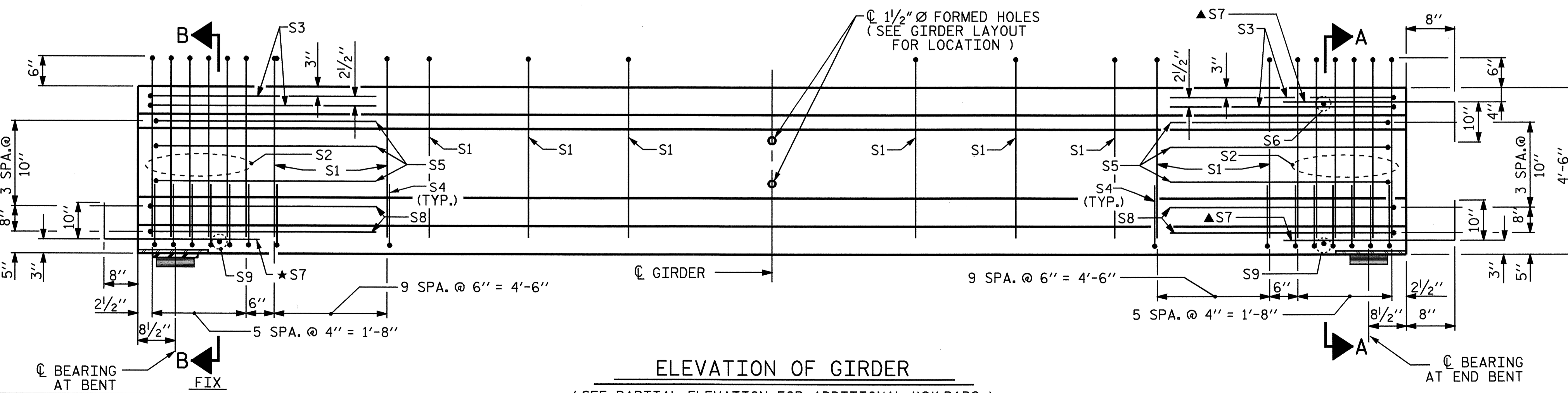
REINFORCING STEEL	5000 PSI CONCRETE	1/2" \O L.R. STRANDS
LB.	C.Y.	No.
987	13.9	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	68'-8"	274.67

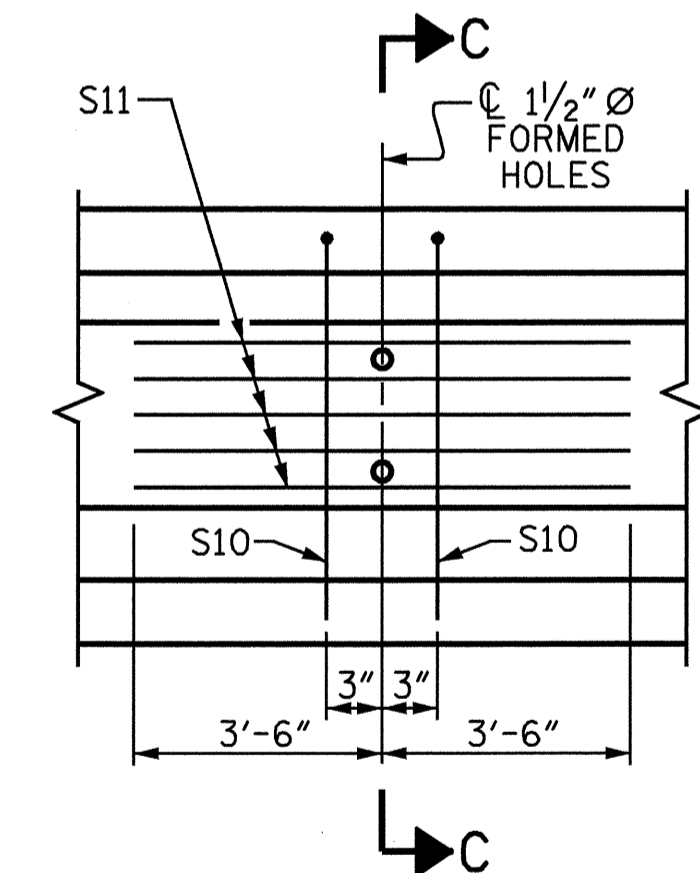


PLAN OF GIRDER



ELEVATION OF GIRDER

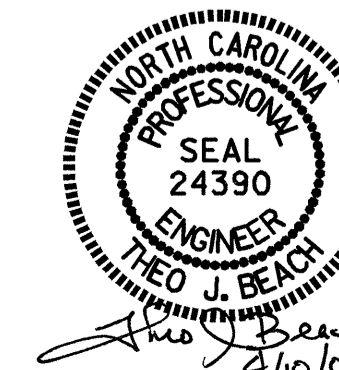
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS

ASSEMBLED BY :	N. PIERCE	DATE :	9-07
CHECKED BY :	B.N. GRADY	DATE :	10-07
DRAWN BY :	ELR 8/91	REV. 10/17/00R	RWW/LES
CHECKED BY :	GRP 8/91	REV. 5/1/06	TLA/GM
		REV. 10/1/06	TJB/



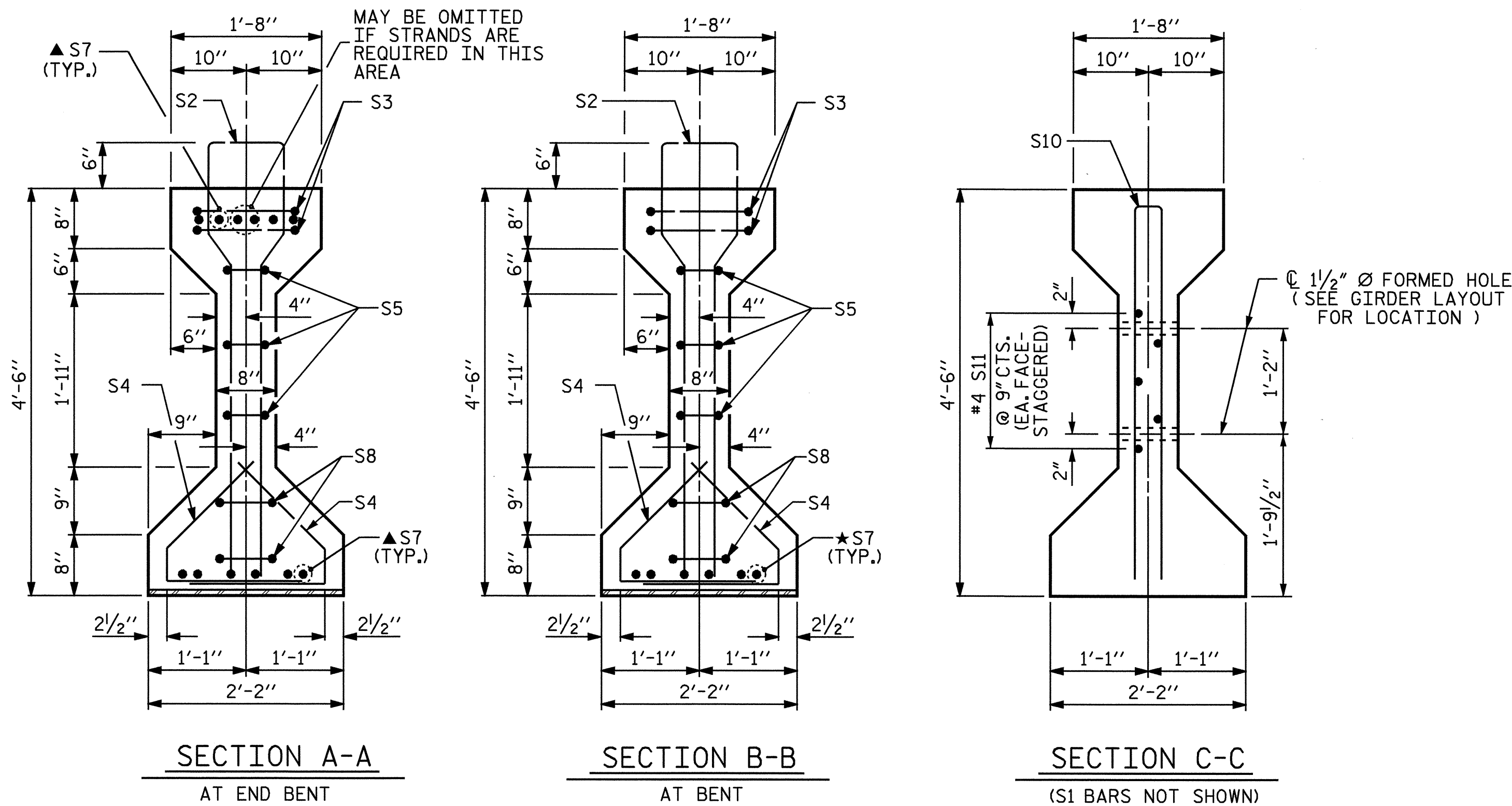
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 WITH INTEGRAL END BENT
 SPAN C

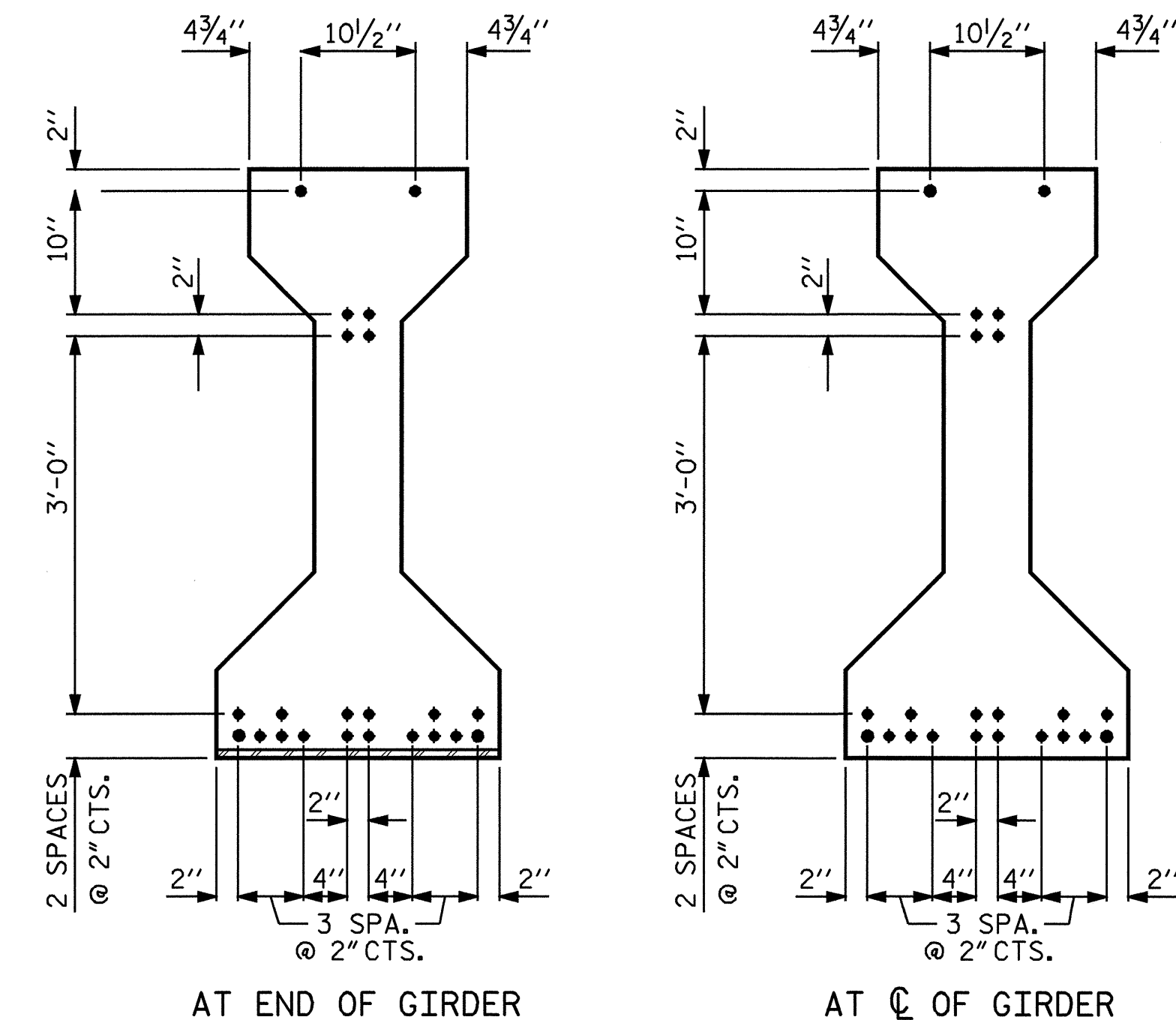
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 40
2			4			

STD. NO. PCG6



▲ FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

★ FOR S7 BARS, SEE DETAIL "B" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



0.6" Ø LOW RELAXATION STRAND LAYOUT

CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT STRAND PATTERN ON THIS SHEET UTILIZES 0.6" Ø STRANDS

0.6" Ø L. R. GRADE 270 STRANDS

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

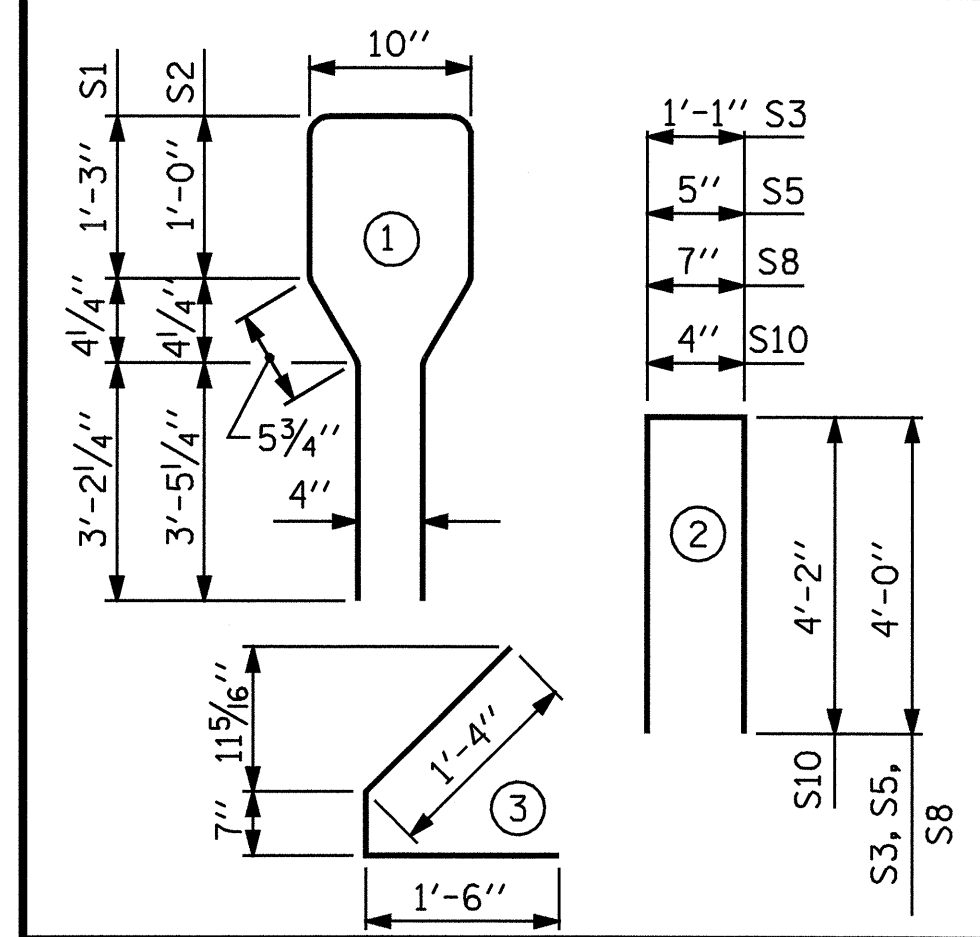
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	64	#4	1	10'-8"	456
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#3	STR	1'-4"	1
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

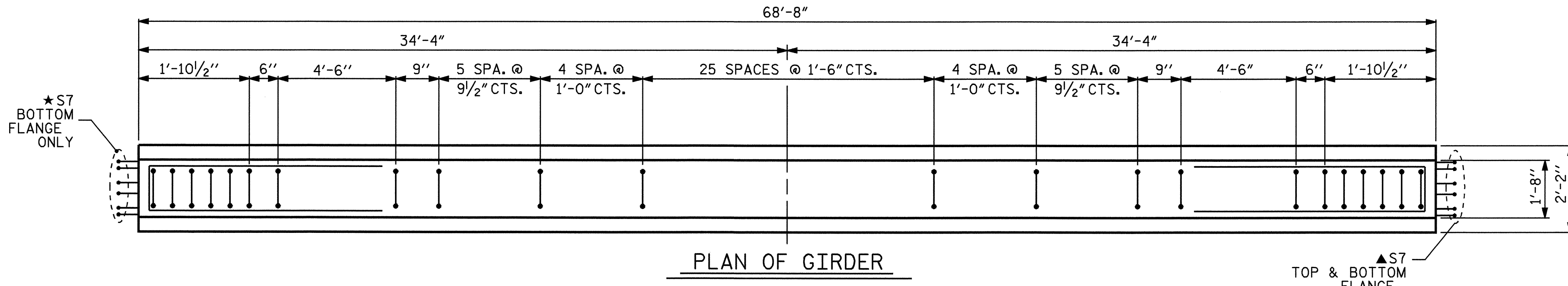


QUANTITIES FOR ONE GIRDER

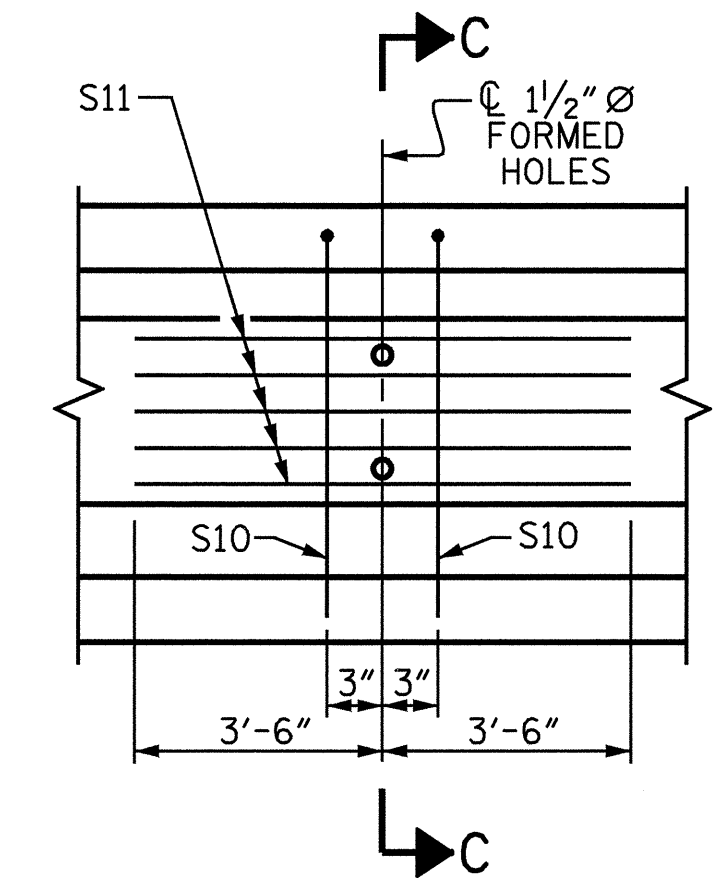
REINFORCING STEEL	5000 PST CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
987	13.9	22

GIRDERS REQUIRED

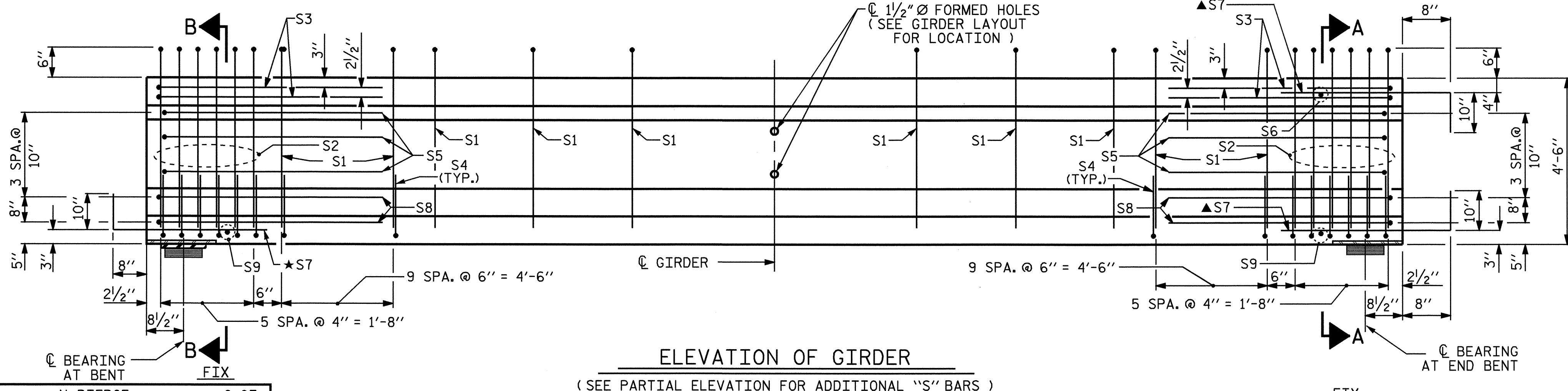
NUMBER	LENGTH	TOTAL LENGTH
4	68'-8"	274.67



PLAN OF GIRDER



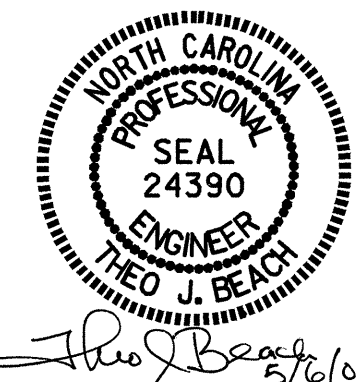
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06 TLA/GM
	REV. 10/1/06 TJB/



PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
WITH INTEGRAL END BENT
OPTIONAL 0.6" Ø STRANDS
SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS 40
2			4			

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

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.

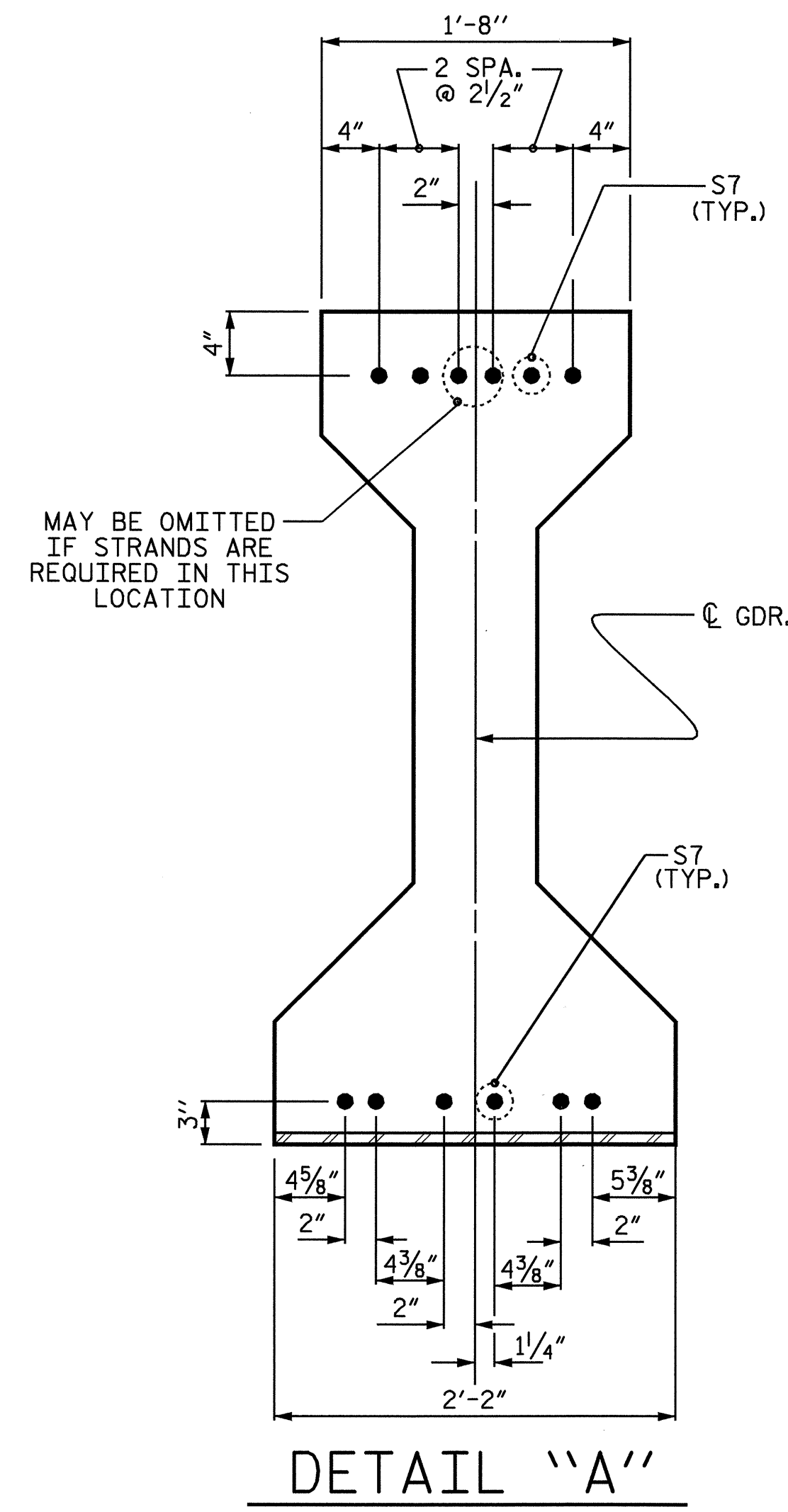
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A AND C, AND 6200 PSI FOR SPAN B.

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

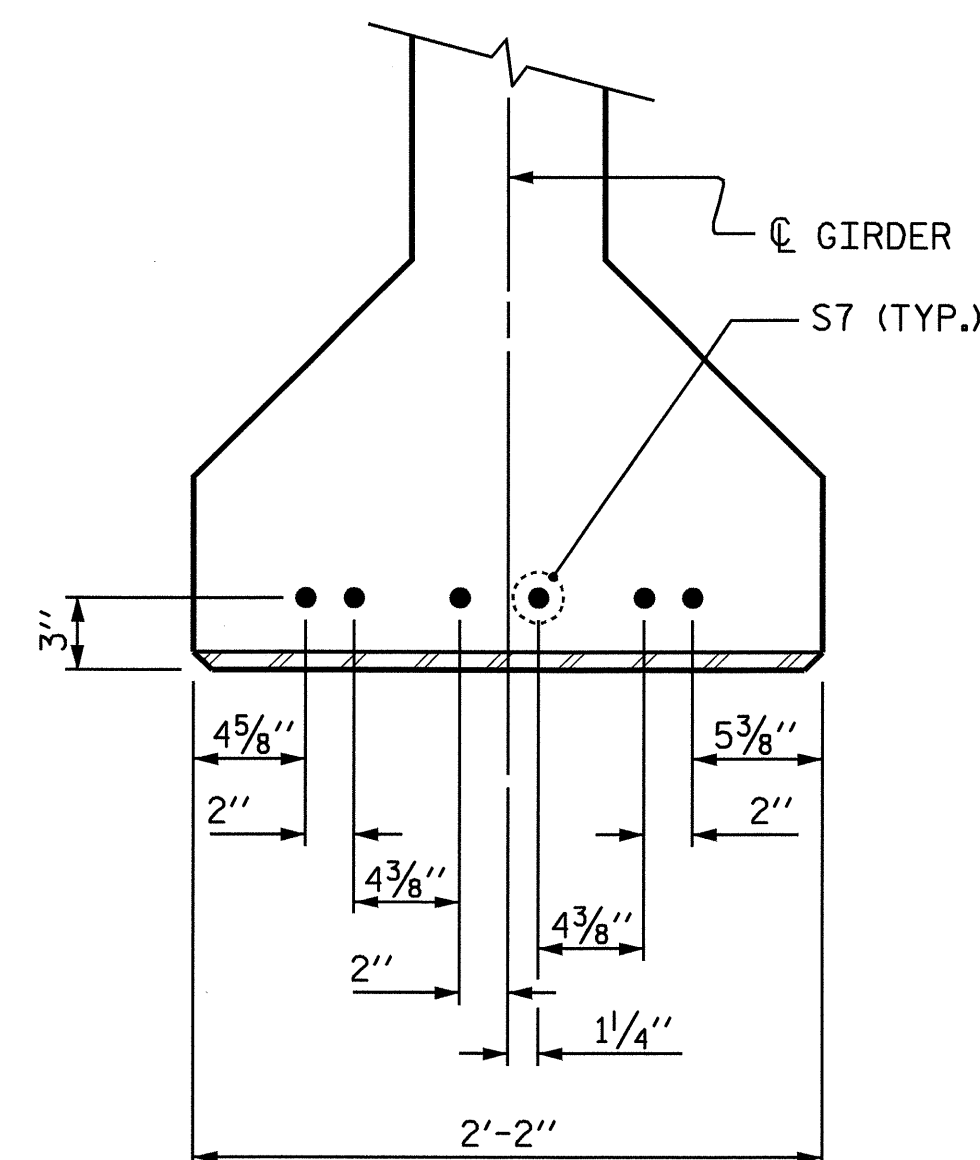
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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

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

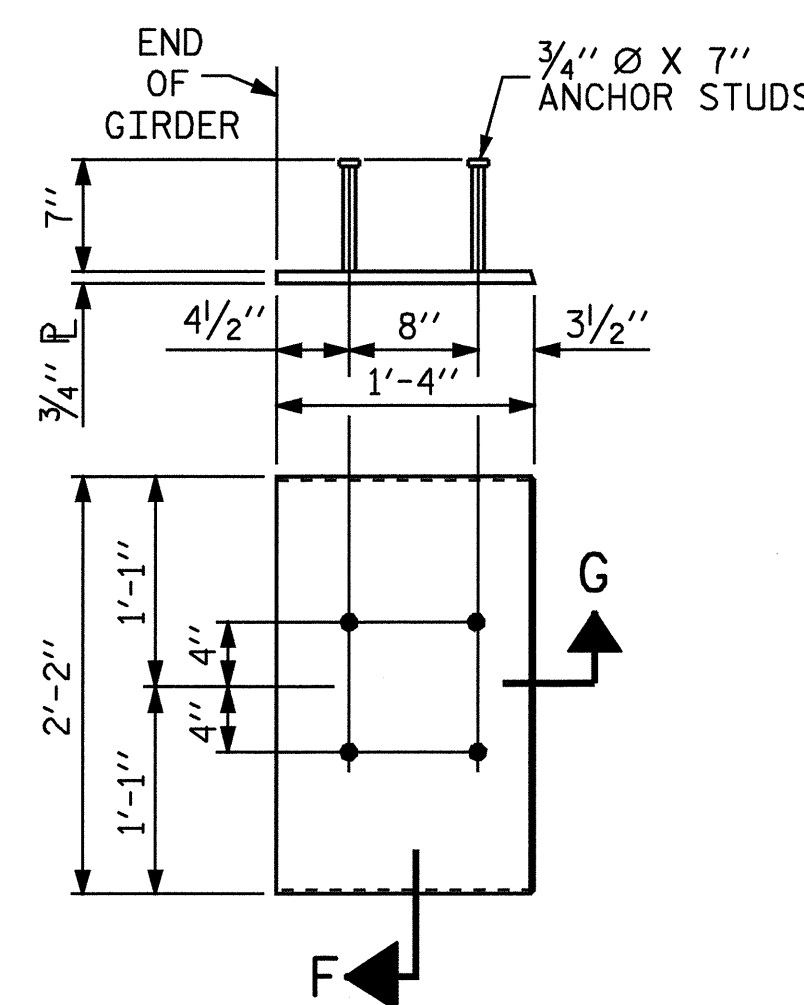


DETAIL "A"



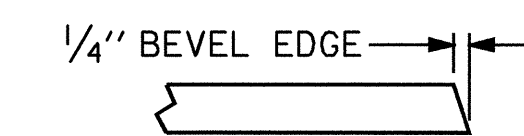
DETAIL "B"

(FOR AASHTO TYPE IV GIRDERS)

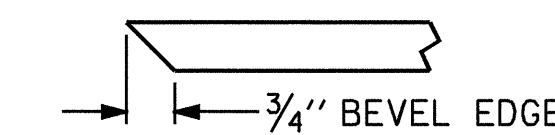


EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER

(2 REQ'D PER GIRDER)



SECTION "G"



SECTION "F"

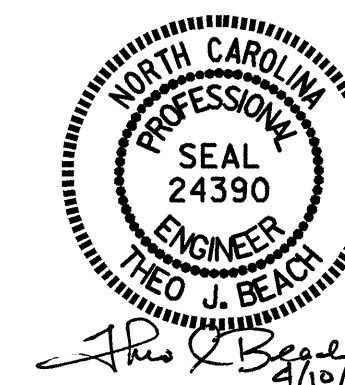
(SEE NOTES)

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

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

NOVEMBER 1991

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	
2			4			40	



ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : ELR 11/91	REV. 10/17/00 RWW/LES
CHECKED BY : GRP 11/91	REV. 7/10/01RR LES/RDR
	REV. 5/1/06 TLA/GM

STRUCTURAL STEEL NOTES

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

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

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

THE CHANNELS, ANGLES, WASHERS, PLATE WASHERS, AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

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

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

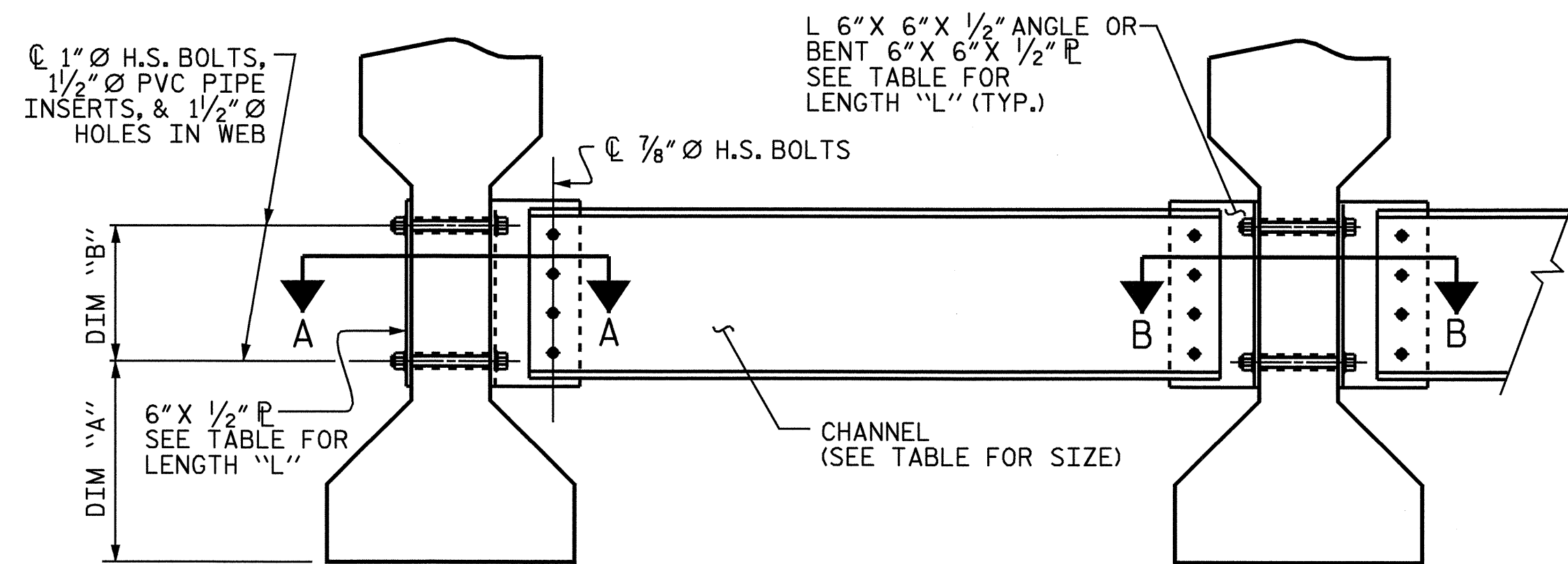
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"



EXTERIOR GIRDER INTERIOR GIRDER
 PART SECTION AT INTERMEDIATE DIAPHRAGM

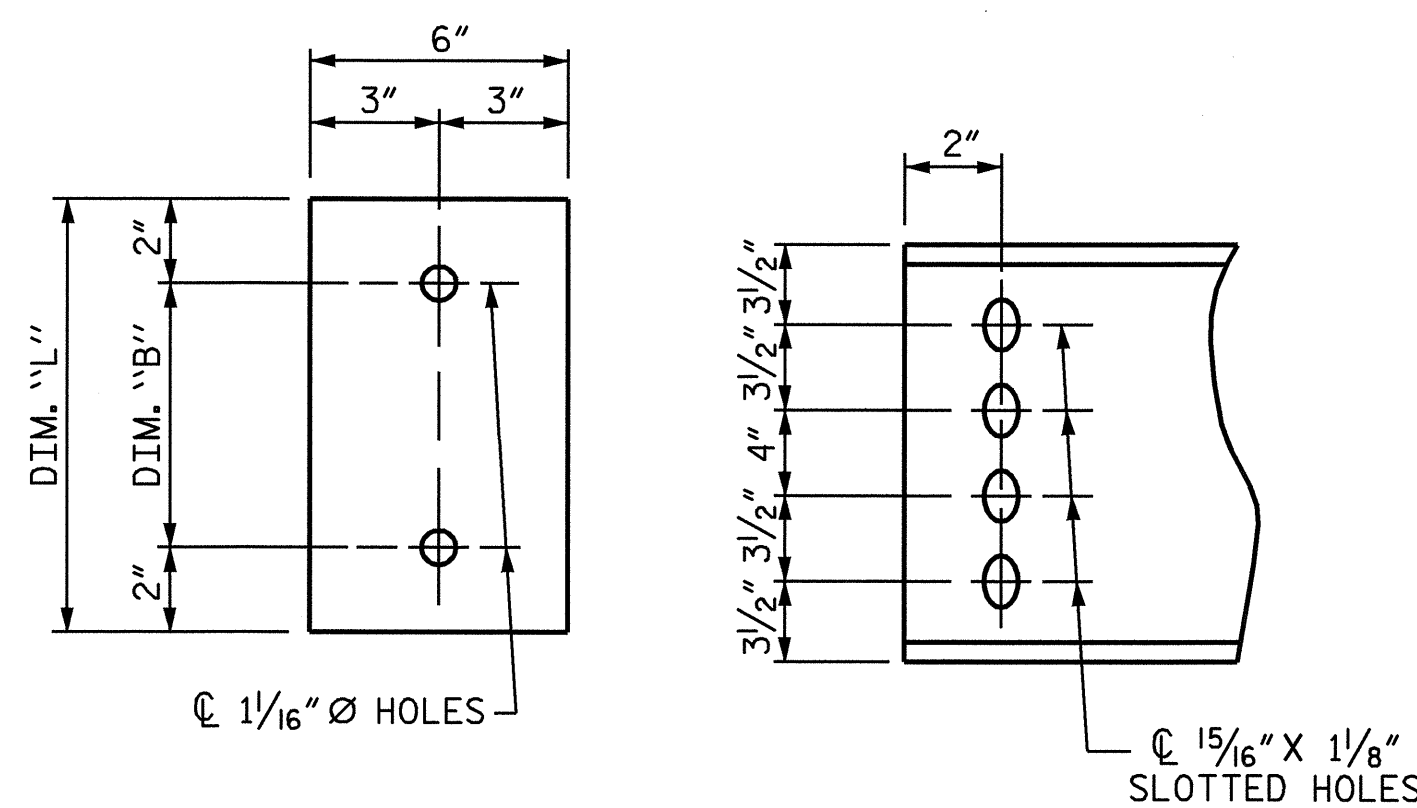
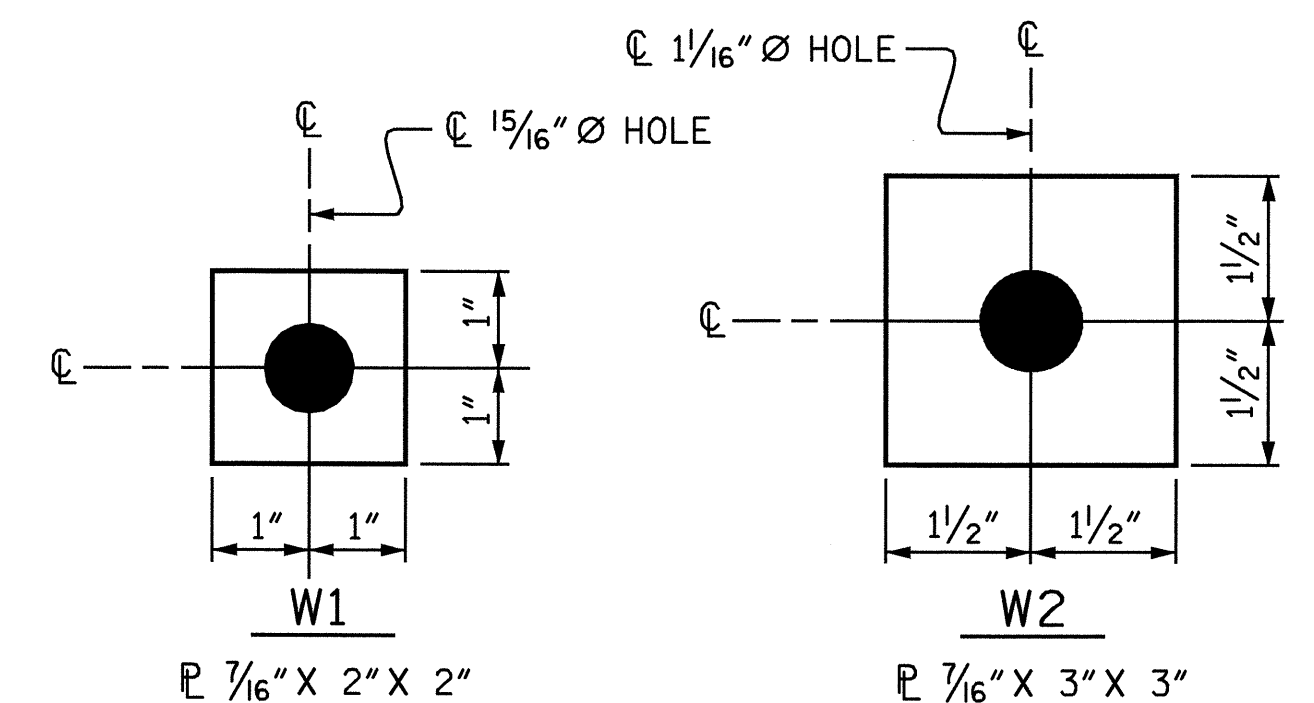
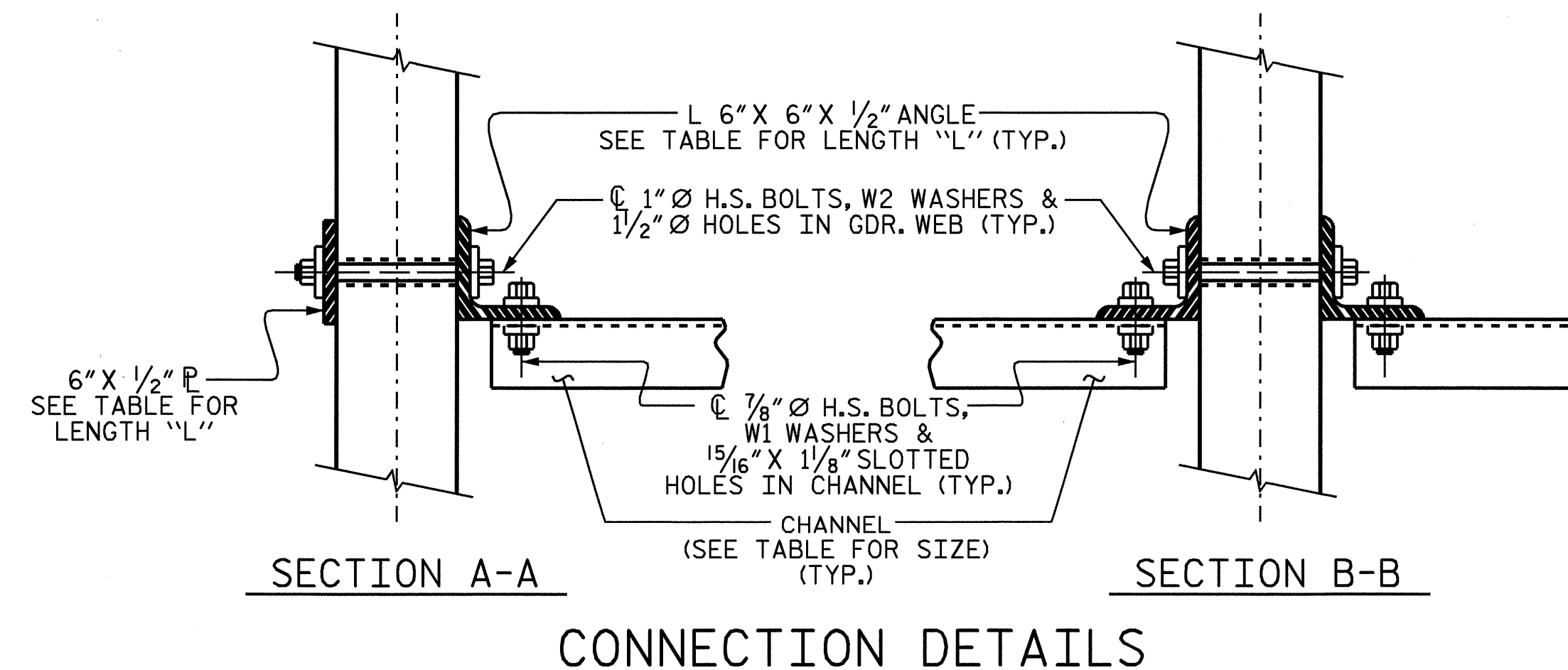
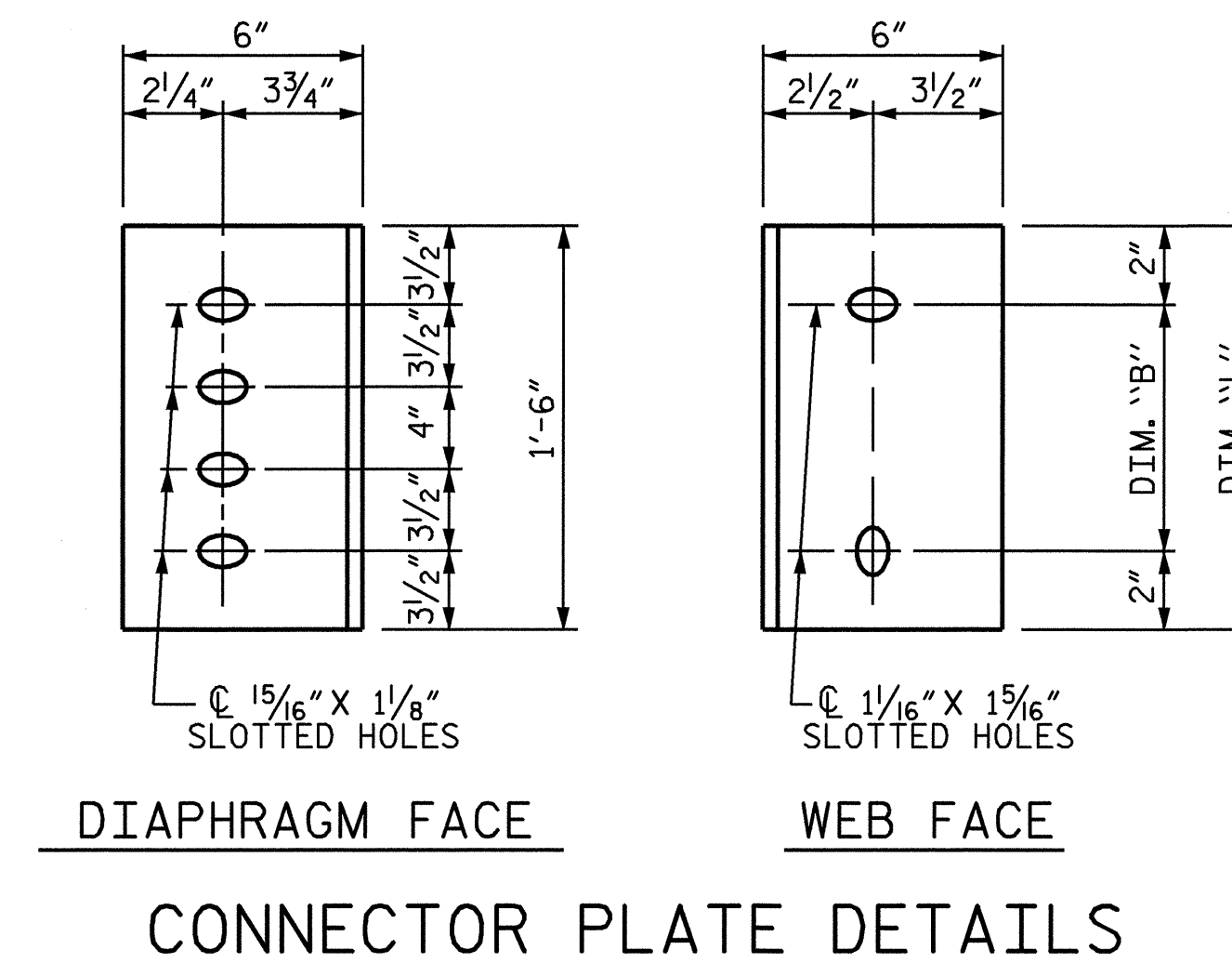


PLATE DETAILS CHANNEL END



USE WITH 7/8" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS
 USE WITH 1" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS



PROJECT NO. B-4057
 CASWELL COUNTY
 STATION: 23+80.00 -L-

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



Theo J. Beach 5/6/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06 TLA/GM

NOTES

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

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

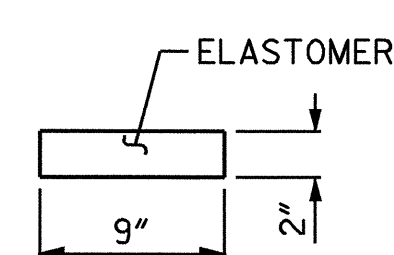
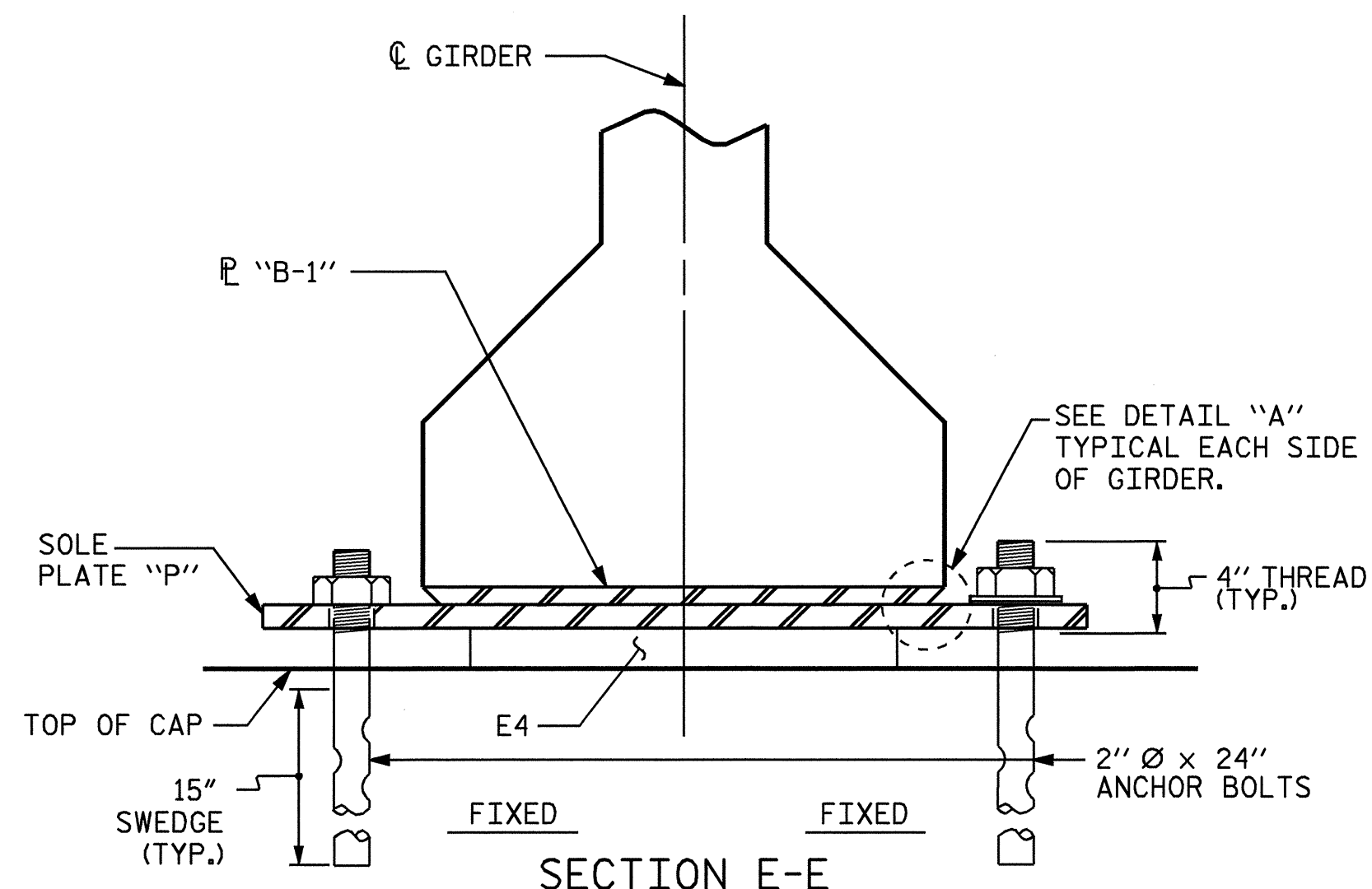
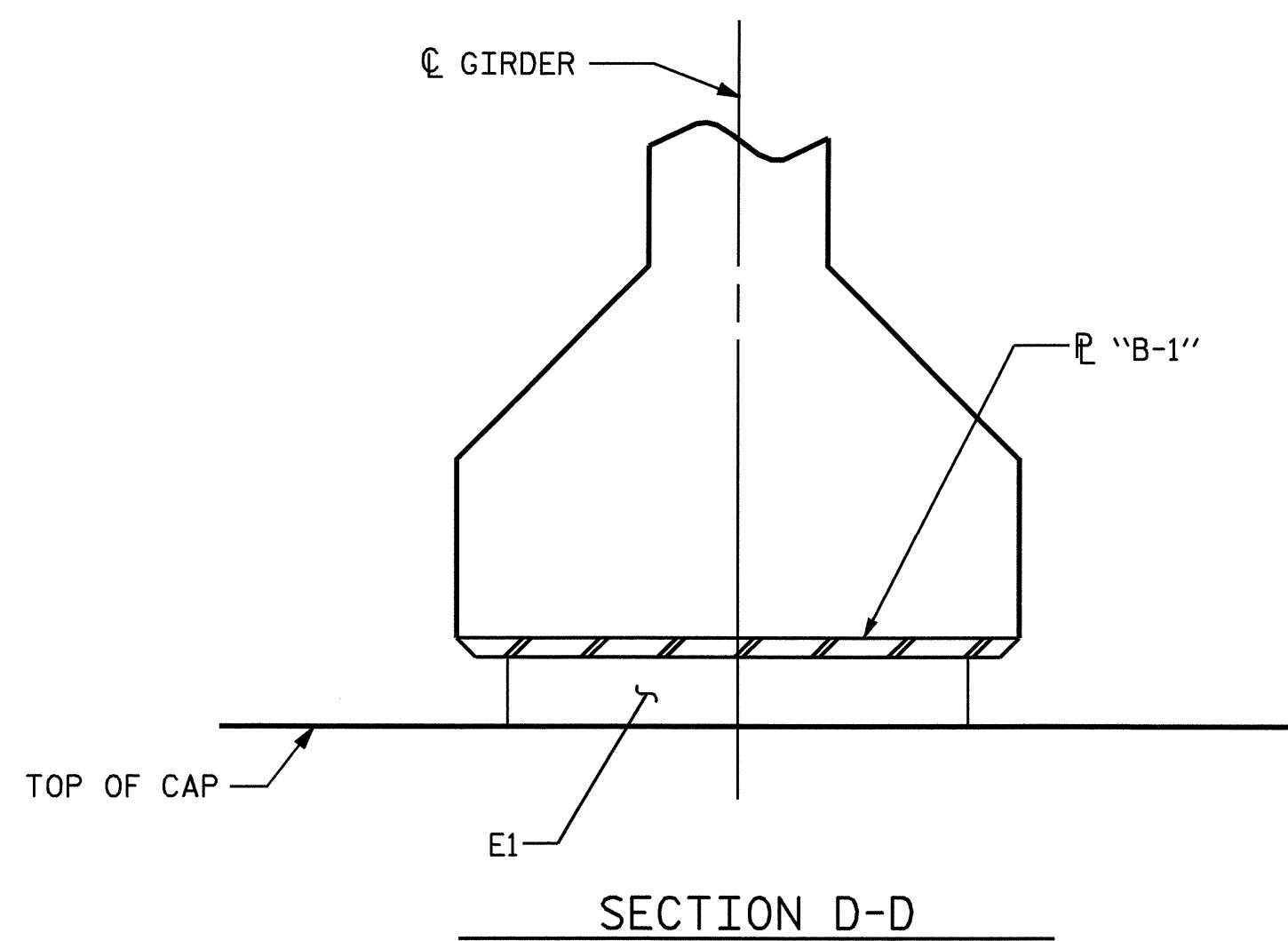
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

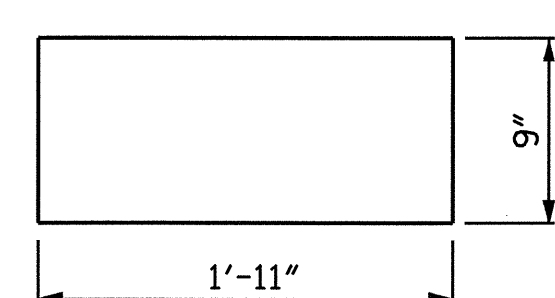
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

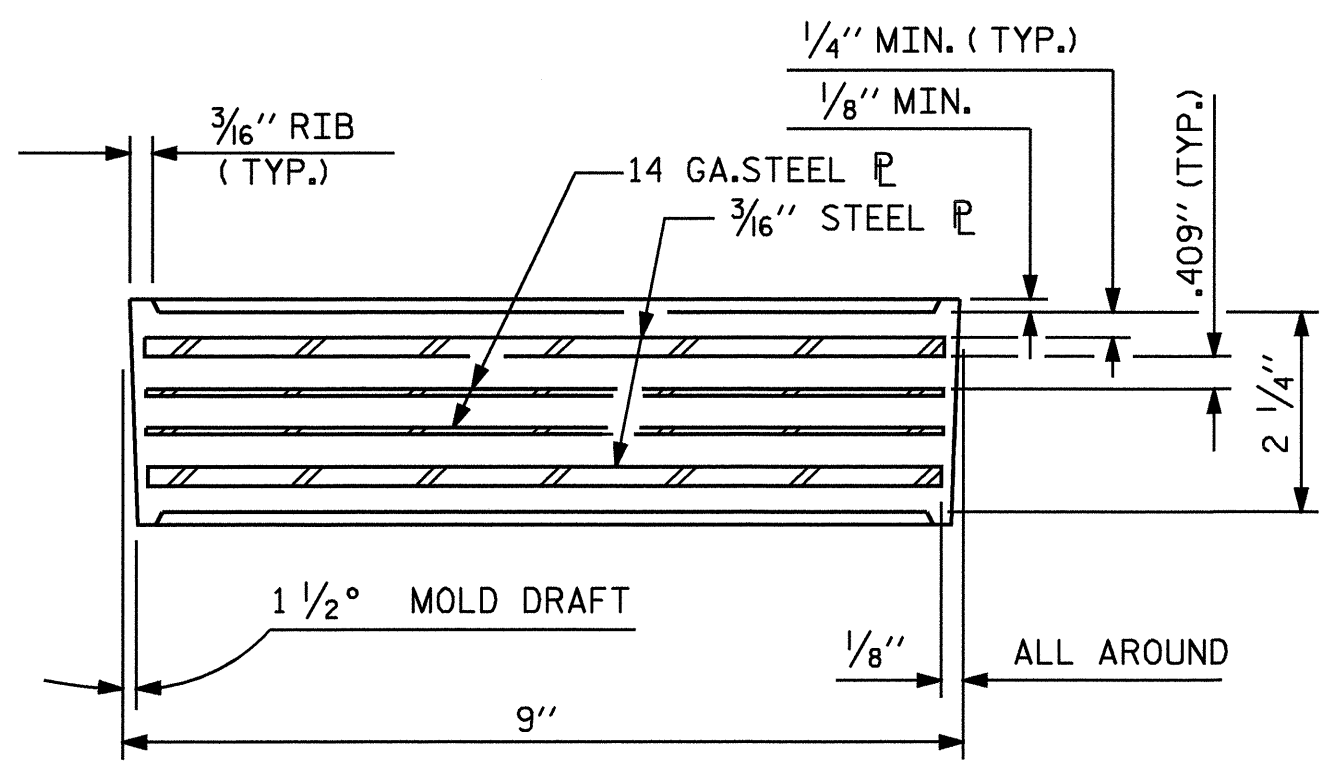
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



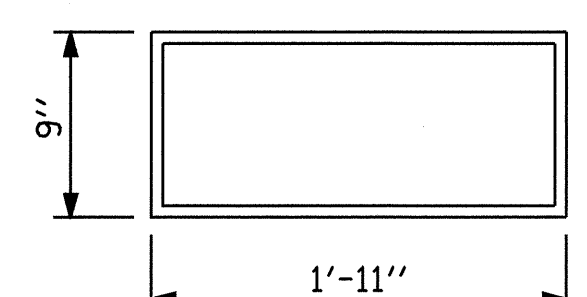
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (FIXED)
E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

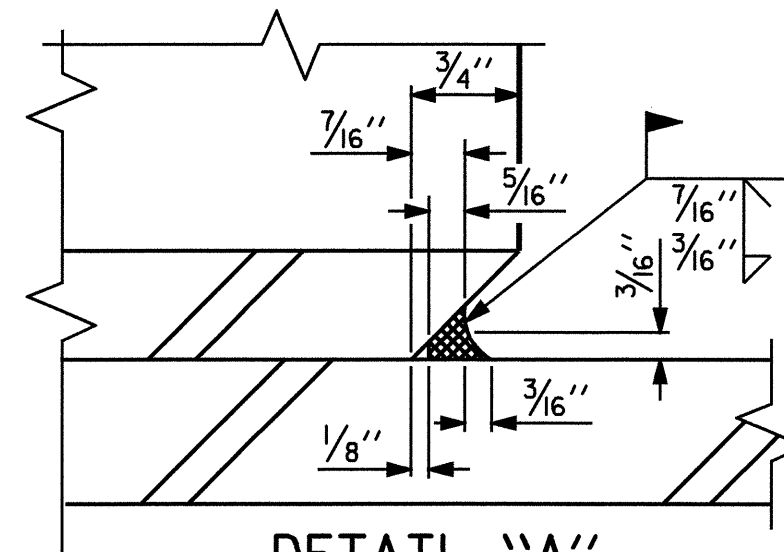


TYPICAL SECTION OF ELASTOMERIC BEARINGS

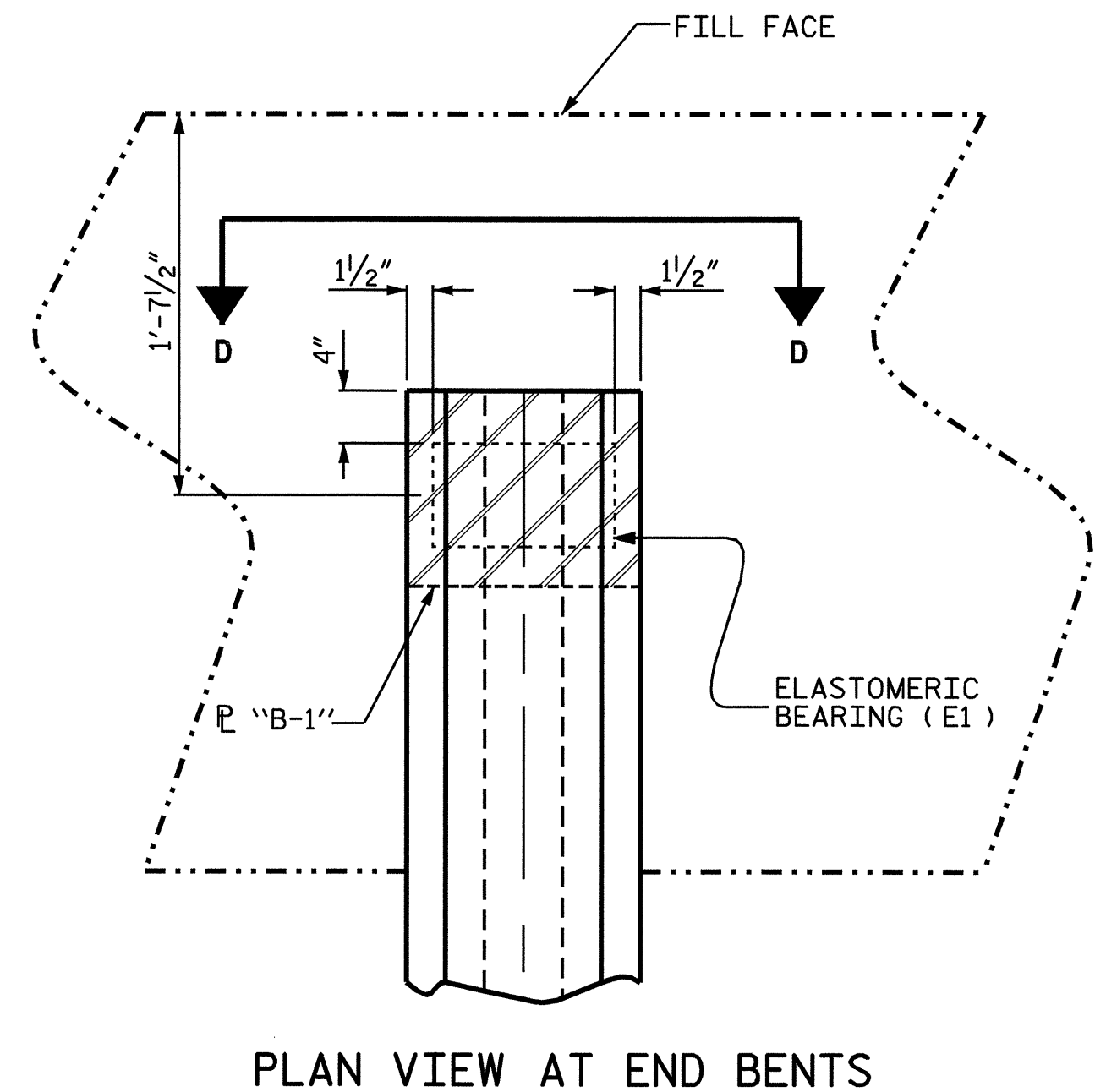


E4 (16 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V

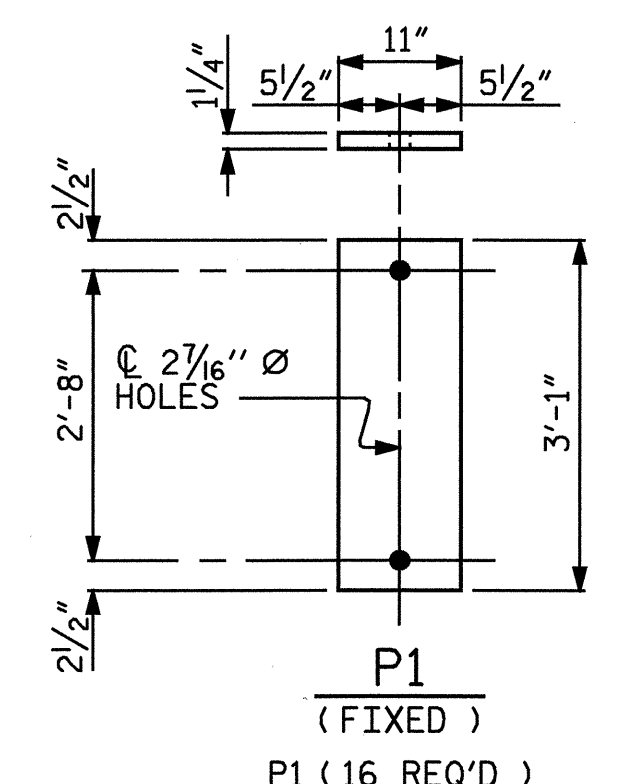
LOAD RATINGS	
TYPE V	MAX.D.L.+ L.L. 180 K



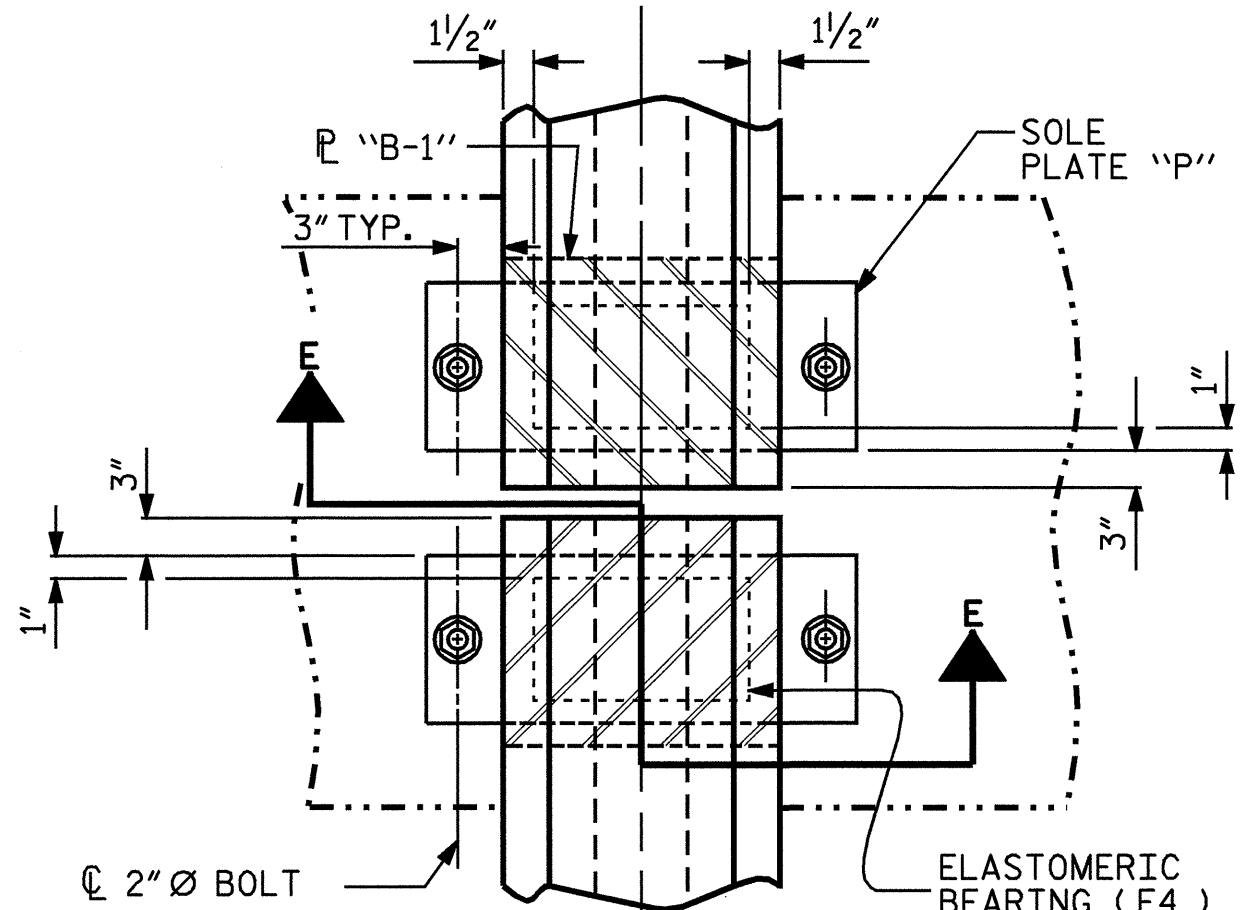
DETAIL "A"



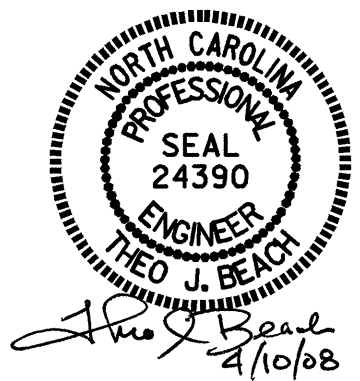
PLAN VIEW AT END BENTS



SOLE PLATE DETAILS ("P")



PLAN VIEW AT BENTS
(SHOWING CONTINUOUS BENT)



PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

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

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-18
					TOTAL SHEETS 40

ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : EEM	2/97
CHECKED BY : VAP	2/97
REV. 8/16/99	RWW/LES
REV. 10/17/00	RWW/LES
REV. 5/1/06	TLA/GM

DEAD LOAD DEFLECTION TABLE FOR SPAN A																																		
1/2" Ø LOW RELAXATION	GIRDER No. 1											GIRDER No. 2 & No. 3										GIRDER No. 4												
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.009	0.017	0.023	0.027	0.029	0.027	0.023	0.017	0.009	0.0	0.0	0.009	0.017	0.023	0.027	0.029	0.027	0.023	0.017	0.009	0.0	0.0	0.009	0.017	0.023	0.027	0.029	0.027	0.023	0.017	0.009	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	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	0.007	0.009	0.010	0.011	0.010	0.009	0.007	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
FINAL CAMBER	↑	0.0	1/16"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0.0	0.0	1/16"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0.0	0.0	1/16"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0.0

DEAD LOAD DEFLECTION TABLE FOR OPTIONAL SPAN A																																		
0.6" Ø LOW RELAXATION	GIRDER No. 1											GIRDER No. 2 & No. 3										GIRDER No. 4												
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.006	0.011	0.015	0.018	0.019	0.018	0.015	0.011	0.006	0.0	0.0	0.006	0.011	0.015	0.018	0.019	0.018	0.015	0.011	0.006	0.0	0.0	0.006	0.011	0.015	0.018	0.019	0.018	0.015	0.011	0.006	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	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	0.007	0.009	0.010	0.011	0.010	0.009	0.007	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
FINAL CAMBER	↑	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"	1/16"	1/8"	1/8"	1/8"	1/16"	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

DEAD LOAD DEFLECTION TABLE FOR SPAN B																																		
0.6" Ø LOW RELAXATION	GIRDER No. 1											GIRDER No. 2 & No. 3										GIRDER No. 4												
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.062	0.117	0.160	0.188	0.197	0.188	0.160	0.117	0.062	0.0	0.0	0.062	0.117	0.160	0.188	0.197	0.188	0.160	0.117	0.062	0.0	0.0	0.062	0.117	0.160	0.188	0.197	0.188	0.160	0.117	0.062	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.032	0.061	0.083	0.097	0.102	0.097	0.083	0.061	0.032	0.0	0.0	0.033	0.062	0.085	0.099	0.104	0.099	0.085	0.062	0.033	0.0	0.0	0.032	0.061	0.083	0.097	0.102	0.097	0.083	0.061	0.032	0.0
FINAL CAMBER	↑	0.0	3/8"	1/16"	15/16"	1/16"	1/8"	1/16"	15/16"	1/16"	3/8"	0.0	0.0	3/8"	1/16"	7/8"	1/16"	1/8"	1/16"	7/8"	1/16"	3/8"	0.0	0.0	3/8"	1/16"	15/16"	1/16"	1/8"	1/16"	15/16"	1/16"	3/8"	0.0

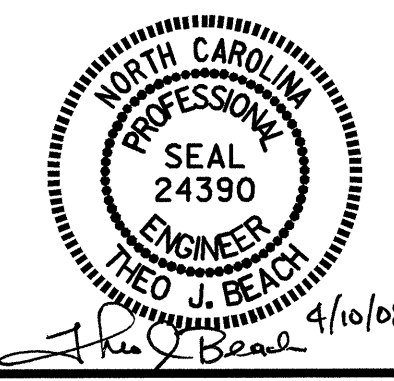
DEAD LOAD DEFLECTION TABLE FOR SPAN C																																		
1/2" Ø LOW RELAXATION	GIRDER No. 1											GIRDER No. 2 & No. 3										GIRDER No. 4												
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.030	0.057	0.079	0.092	0.097	0.092	0.079	0.057	0.030	0.0	0.0	0.030	0.057	0.079	0.092	0.097	0.092	0.079	0.057	0.030	0.0	0.0	0.030	0.057	0.079	0.092	0.097	0.092	0.079	0.057	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.013	0.026	0.035	0.041	0.043	0.041	0.035	0.026	0.013	0.0	0.0	0.014	0.026	0.036	0.042	0.044	0.042	0.036	0.026	0.014	0.0	0.0	0.013	0.026	0.035	0.041	0.043	0.041	0.035	0.026	0.013	0.0
FINAL CAMBER	↑	0.0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0.0	0.0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0.0	0.0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0.0

DEAD LOAD DEFLECTION TABLE FOR OPTIONAL SPAN C																																		
0.6" Ø LOW RELAXATION	GIRDER No. 1											GIRDER No. 2 & No. 3										GIRDER No. 4												
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.025	0.048	0.066	0.077	0.081	0.077	0.066	0.048	0.025	0.0	0.0	0.025	0.048	0.066	0.077	0.081	0.077	0.066	0.048	0.025	0.0	0.0	0.025	0.048	0.066	0.077	0.081	0.077	0.066	0.048	0.025	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.013	0.026	0.035	0.041	0.043	0.041	0.035	0.026	0.013	0.0	0.0	0.014	0.026	0.036	0.042	0.044	0.042	0.036	0.026	0.014	0.0	0.0	0.013	0.026	0.035	0.041	0.043	0.041	0.035	0.026	0.013	0.0
FINAL CAMBER	↑	0.0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0.0	0.0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0.0	0.0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0.0

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

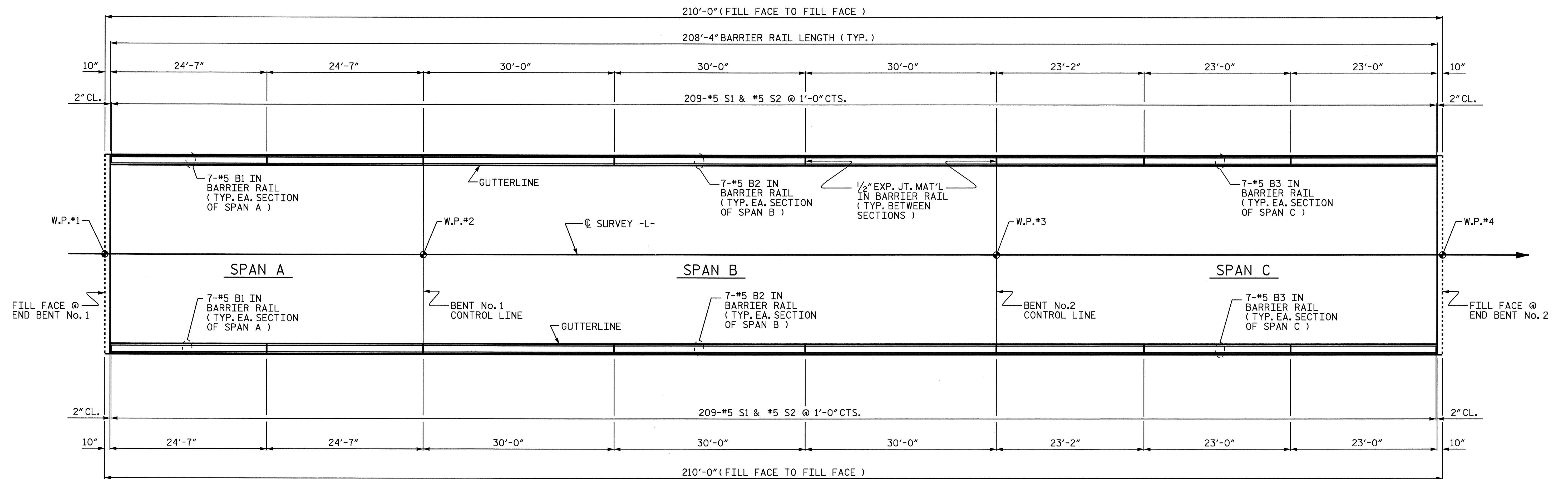
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS



DRAWN BY : N. PIERCE DATE : 9-07
 CHECKED BY : B.N. GRADY DATE : 10-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			40



PLAN OF BARRIER RAIL

PROJECT NO. B-4057

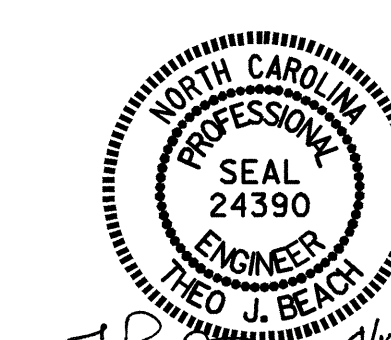
CASWELL COUNTY

STATION: 23+80.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CONCRETE
BARRIER RAIL



DRAWN BY : N. PIERCE DATE : 10-07
CHECKED BY : B.N. GRADY DATE : 10-07

10-APR-2008 12:39
R:\Structures\SuperstructureDrawings\B-4057_sd_BR.dgn
tbeach

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			40

NOTES

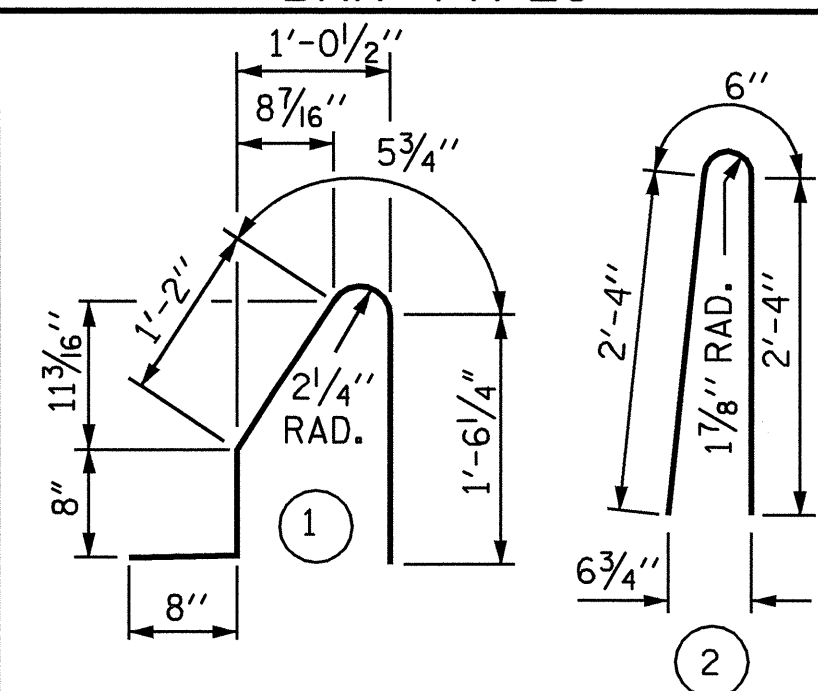
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 "S" BARS MAY BE SHIFTED AS NECESSARY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN BARRIER RAIL.

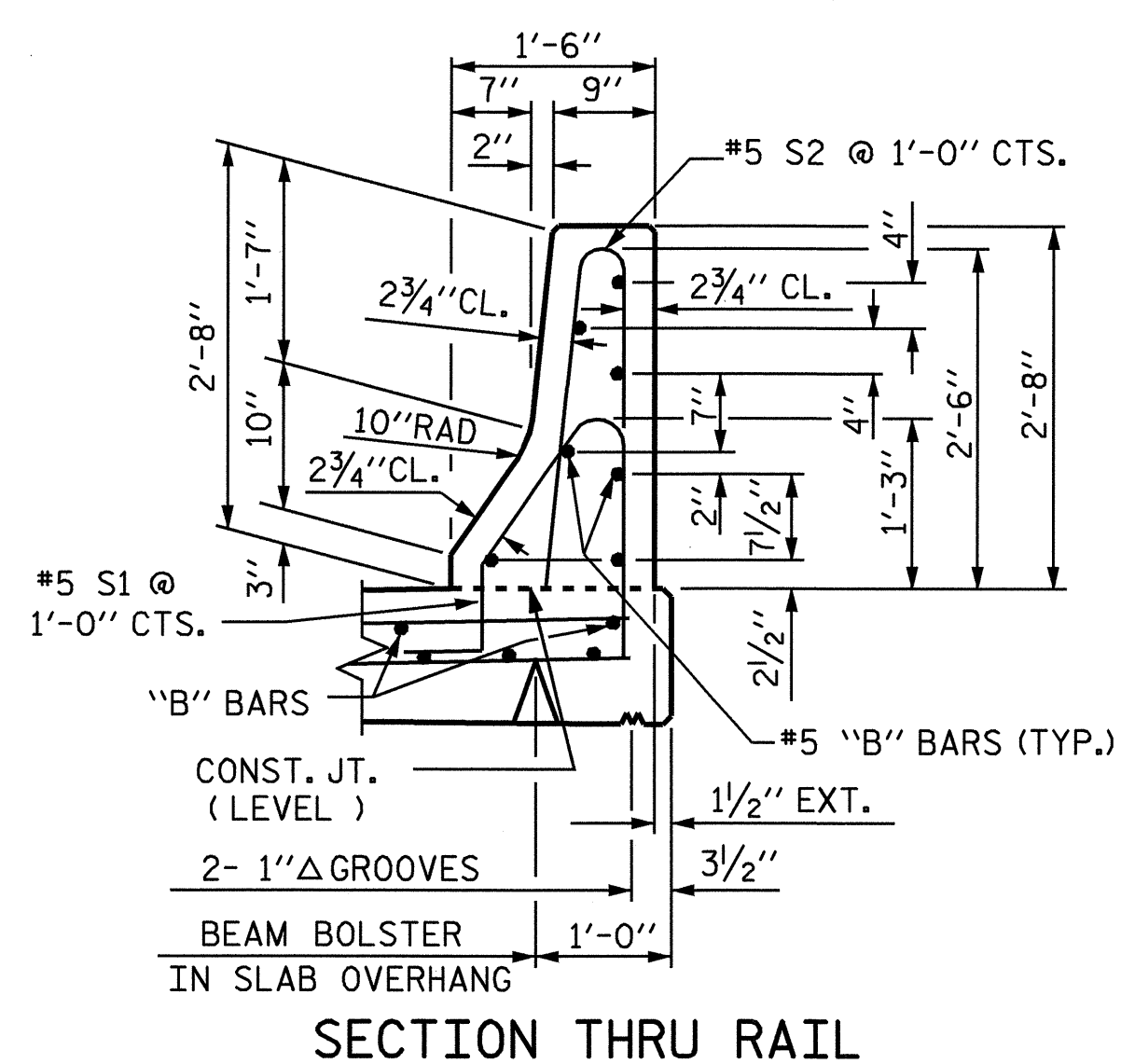
BAR TYPES



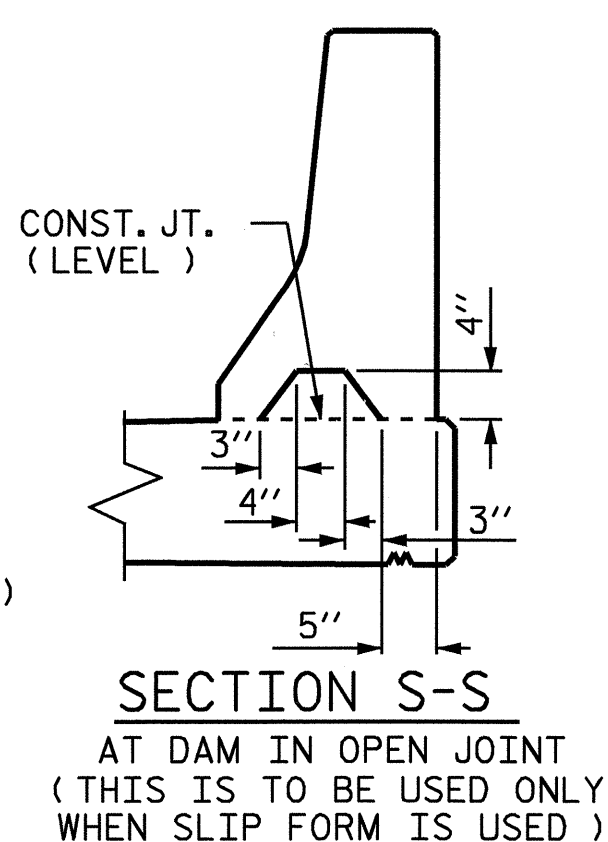
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	28	#5	STR	24'-2"	706
*B2	42	#5	STR	29'-7"	1296
*B3	42	#5	STR	22'-7"	989
*S1	418	#5	1	4'-6"	1962
*S2	418	#5	2	5'-2"	2253
*EPOXY COATED REINFORCING STEEL					7206 LBS.
CLASS AA CONCRETE					41.7 CU. YDS.
CONCRETE BARRIER RAIL					416.67 LIN. FT.

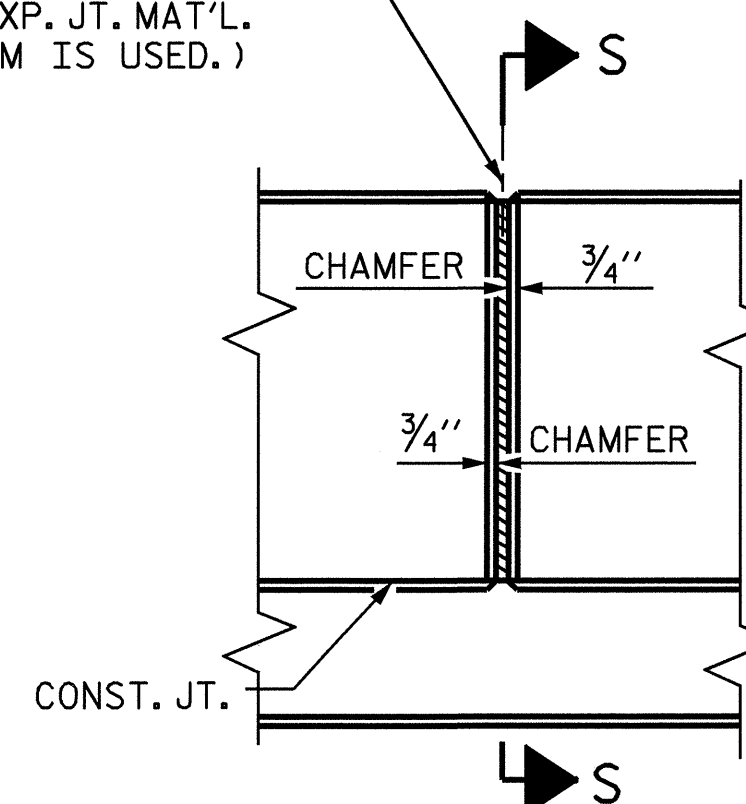


SECTION THRU RAIL



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

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 2 OF 2

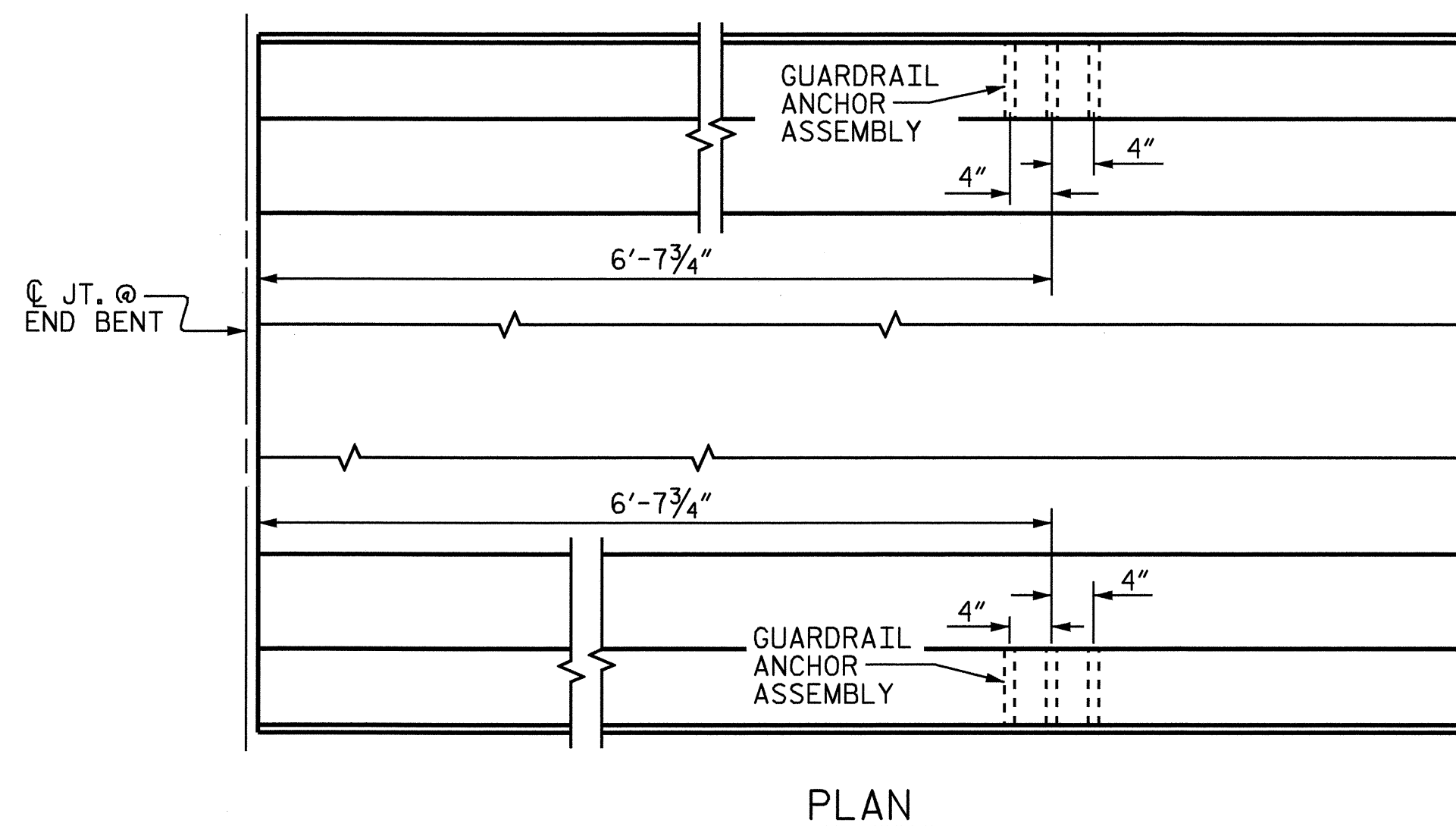
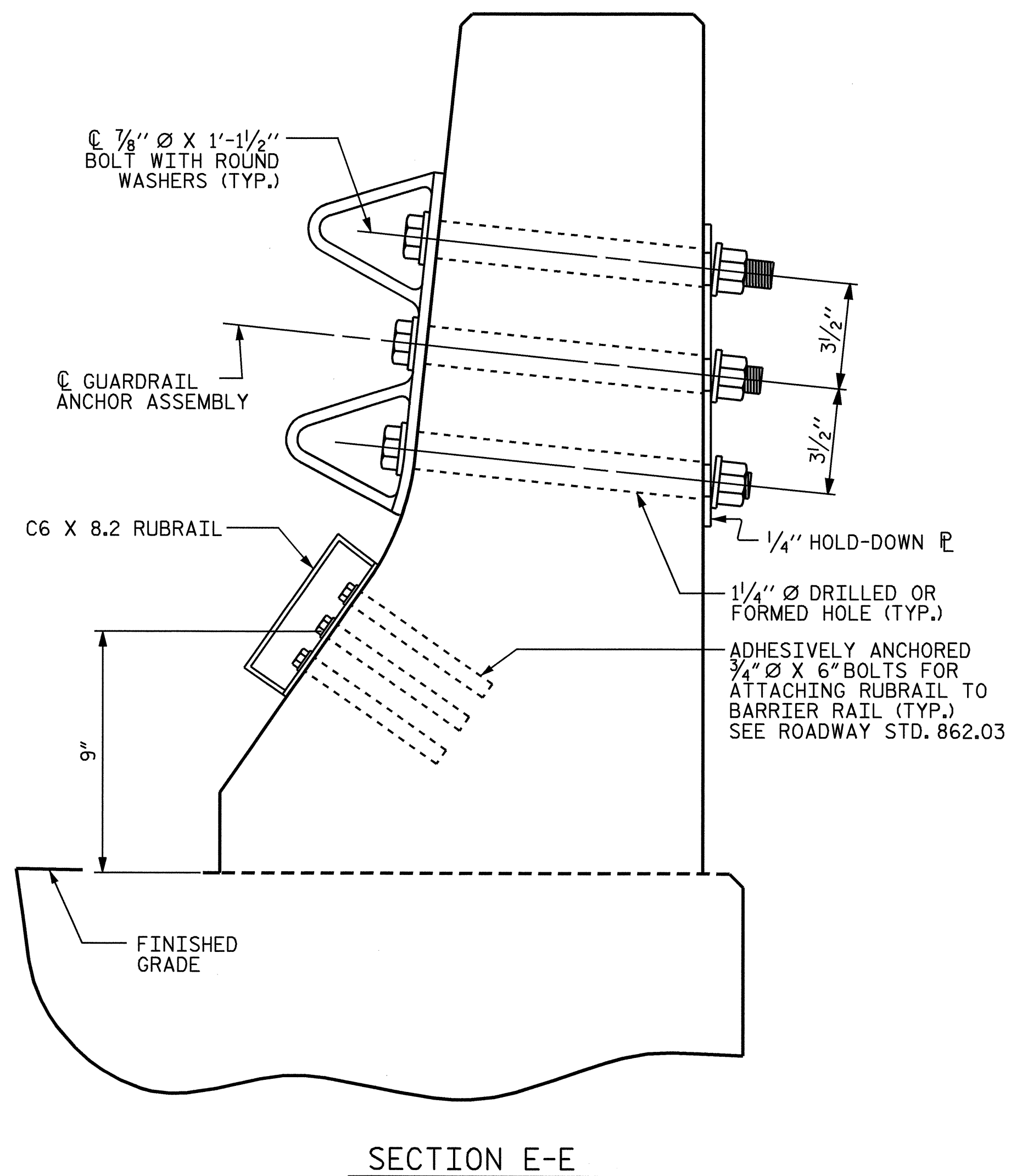
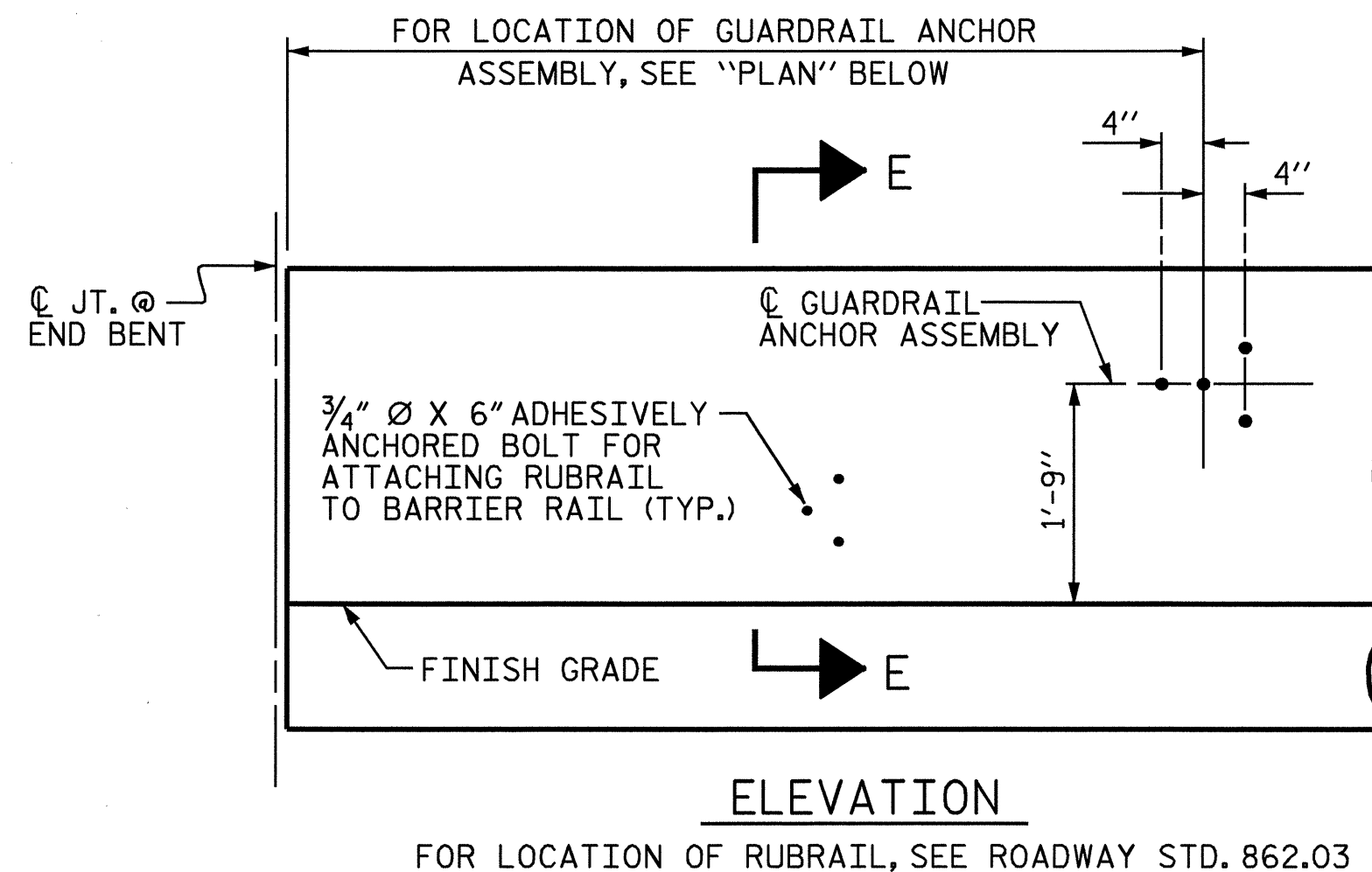
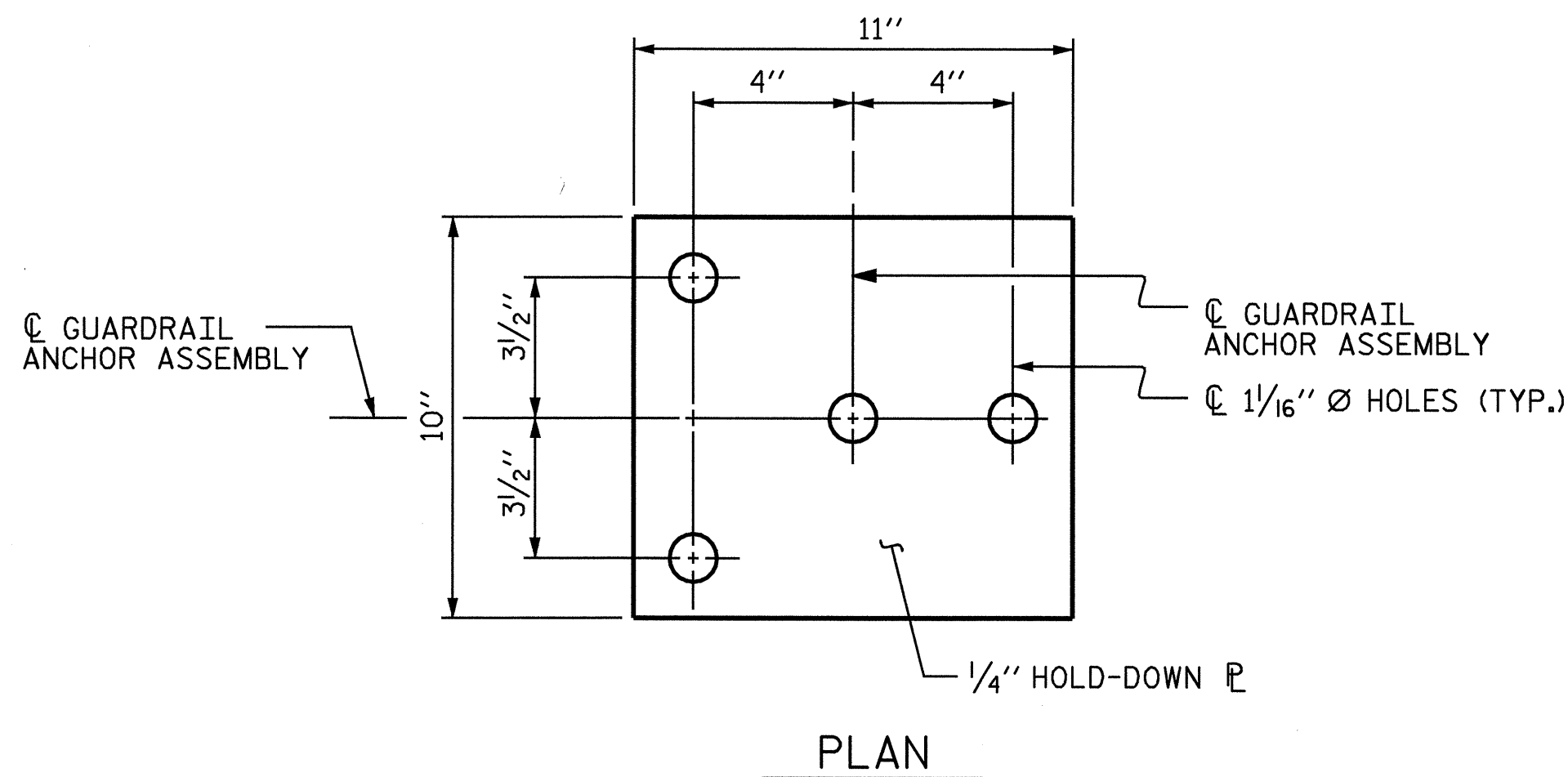
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL



Theo J. Beach 4/10/08

ASSEMBLED BY : N. PIERCE	DATE : 10-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			40

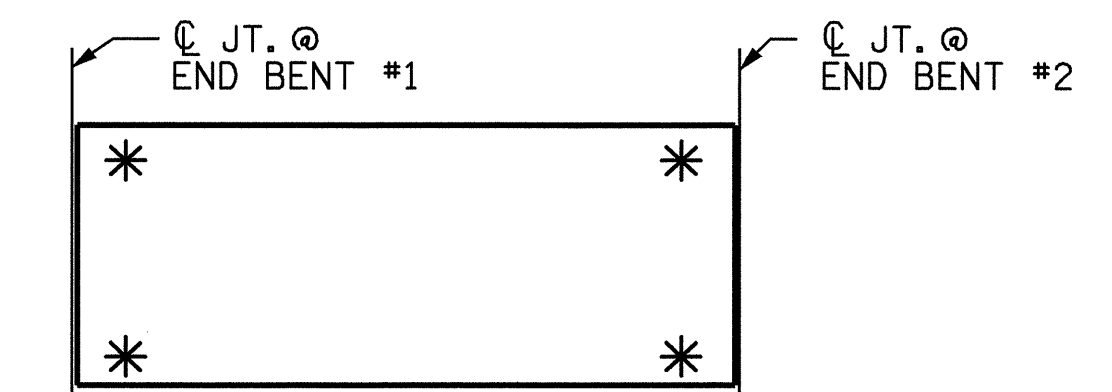


LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 1/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
- THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.
- THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

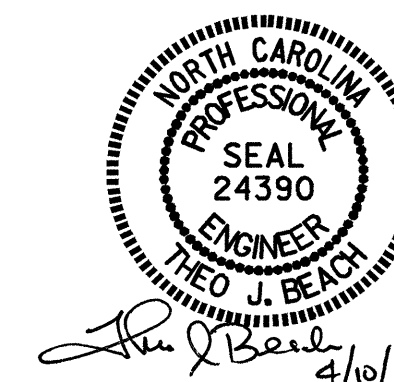


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00-L-

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

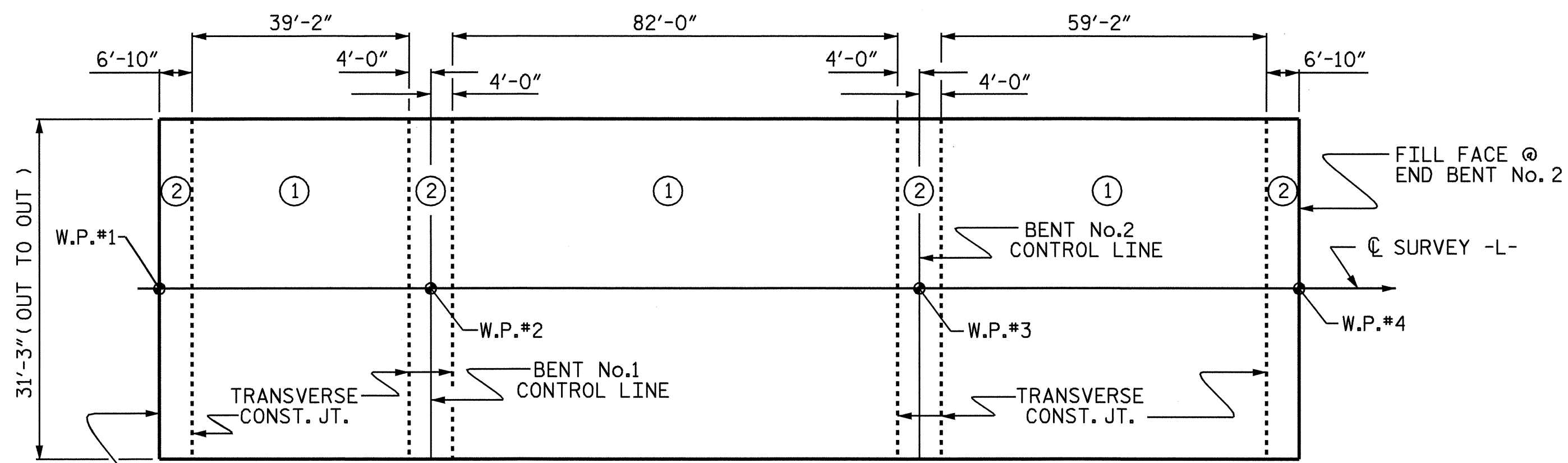


ASSEMBLED BY : N. PIERCE	DATE : 9-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

10-APR-2008 12:40
 R:\Structures\SuperstructureDrawings\B-4057.sd.BR.dgn
 tbeach

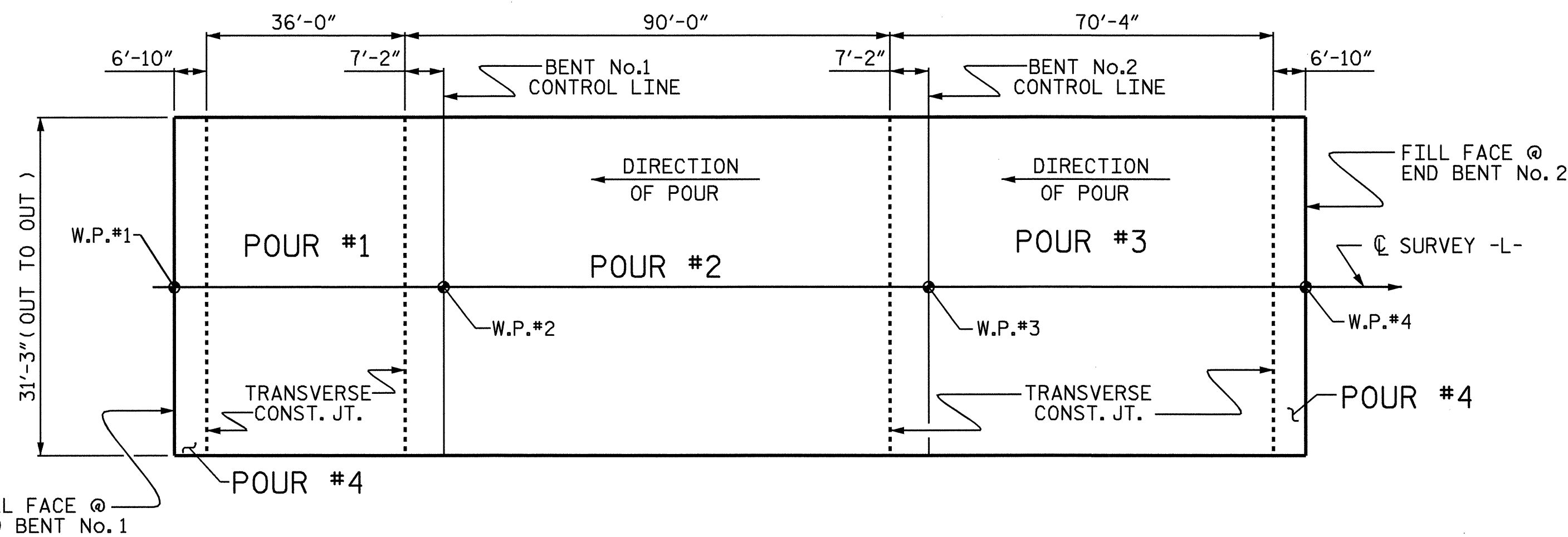
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 40

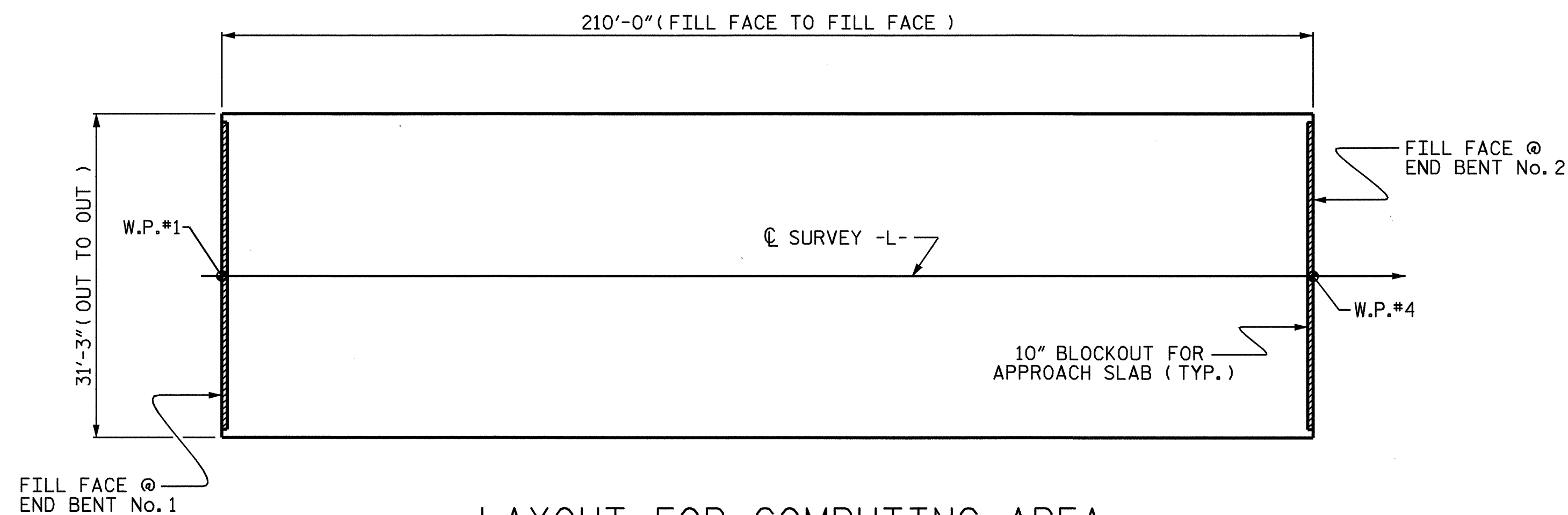


OPTIONAL POURING SEQUENCE

POUR (2) CANNOT BE STARTED UNTIL BOTH ADJACENT (1) POURS REACH A MINIMUM OF 3000 PSI.



POURING SEQUENCE



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 6,562)

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

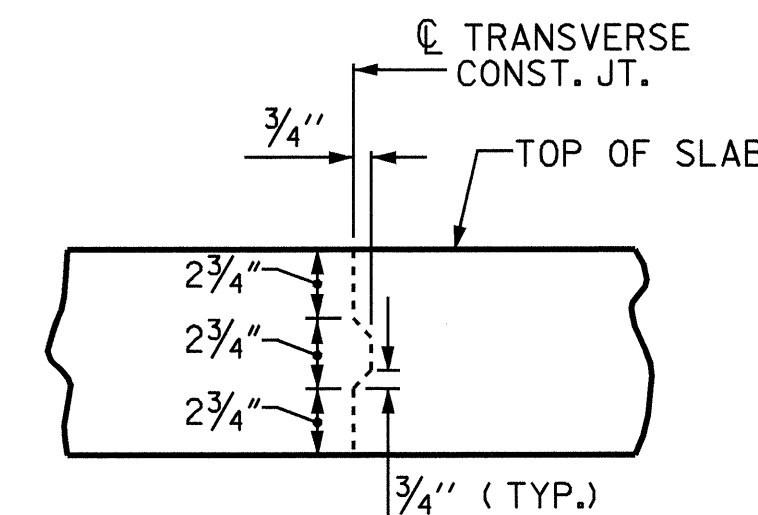
SPAN A, B, & C

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	357	#5	STR	30'-11"	11512
A2	357	#5	STR	30'-11"	11512
*B1	41	#7	STR	10'-0"	838
*B2	21	#4	STR	23'-0"	323
*B3	21	#7	STR	52'-0"	2232
*B4	20	#7	STR	21'-0"	858
*B5	21	#4	STR	30'-0"	421
*B6	21	#7	STR	58'-0"	2490
*B7	20	#7	STR	24'-0"	981
*B8	21	#4	STR	29'-6"	414
*B9	41	#7	STR	17'-6"	1467
B10	128	#5	STR	53'-8"	7165
*B11	16	#4	STR	27'-9"	297
K1	20	#4	STR	15'-4"	205
K2	36	#4	STR	6'-0"	144
K3	6	#4	STR	5'-6"	22
K4	12	#4	STR	4'-5"	35
K5	10	#4	STR	24'-4"	163
K6	36	#4	STR	7'-0"	168
K7	8	#4	4	8'-0"	43
K8	8	#4	4	7'-0"	37
K9	4	#4	4	6'-4"	17
S1	44	#4	4	11'-7"	340
*S2	36	#4	3	11'-8"	281
*S3	36	#4	3	10'-2"	244
S4	4	#4	4	10'-9"	29
S5	144	#4	2	2'-9"	265
U1	24	#4	1	14'-10"	238
U2	12	#4	1	12'-10"	103

REINFORCING STEEL = 20,486 LBS.
*EPOXY COATED REIN. STEEL = 22,358 LBS.

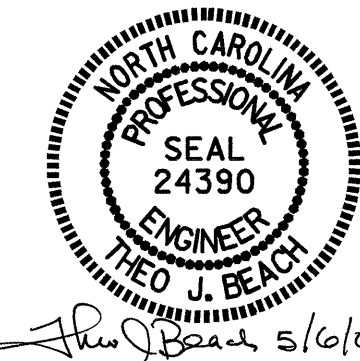
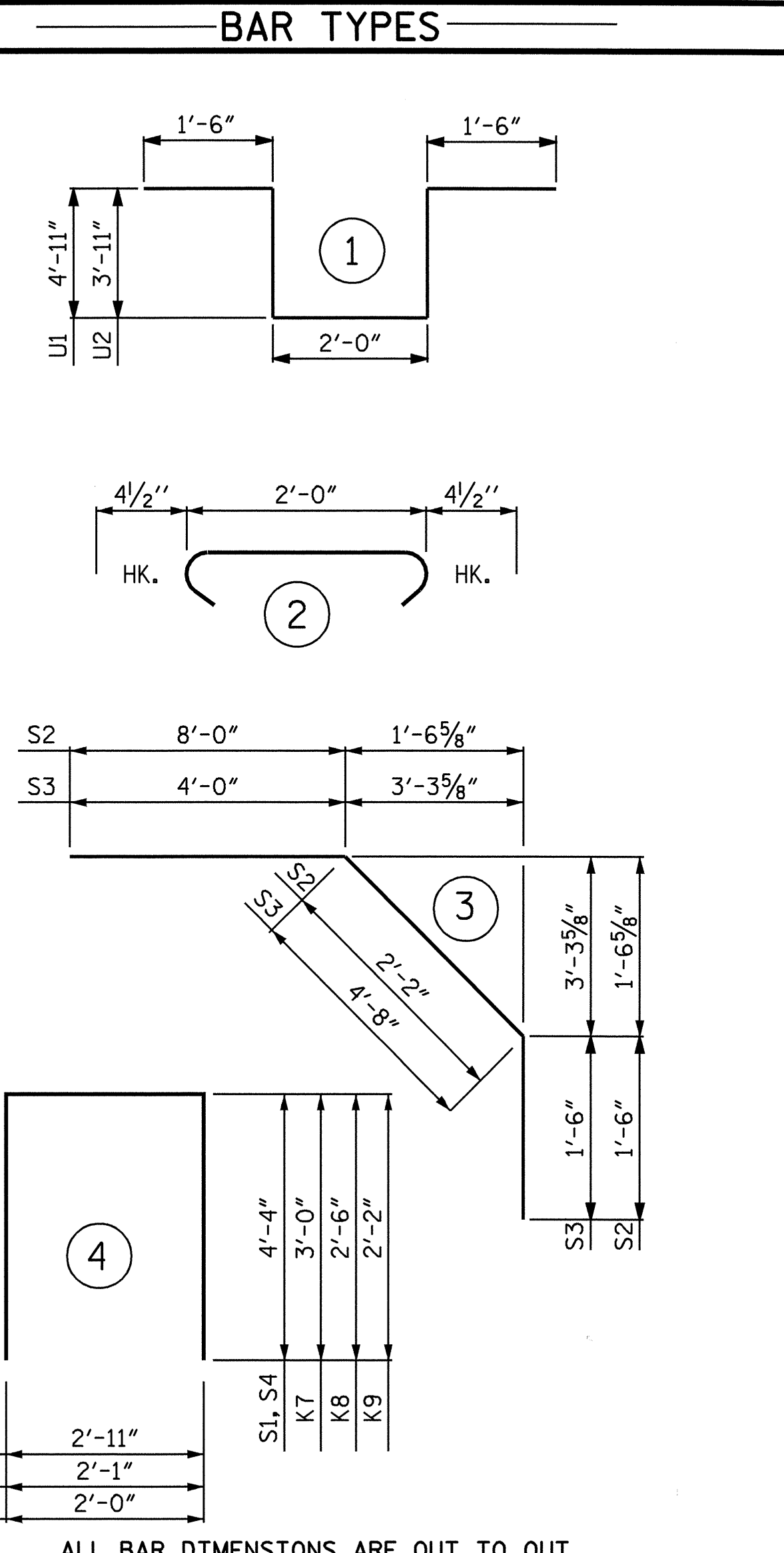
GROOVING BRIDGE FLOORS

APPROACH SLABS	627	SQ.FT.
BRIDGE DECK	5200	SQ.FT.
TOTAL	5827	SQ.FT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



THEO J. BEACH 5/6/08

—SUPERSTRUCTURE BILL OF MATERIAL—

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A, B, & C			
POUR #1	34.4		
POUR #2	94.4		
POUR #3	75.6		
POUR #4	43.1		
TOTALS**	247.5	20,486 LBS.	22,358 LBS.

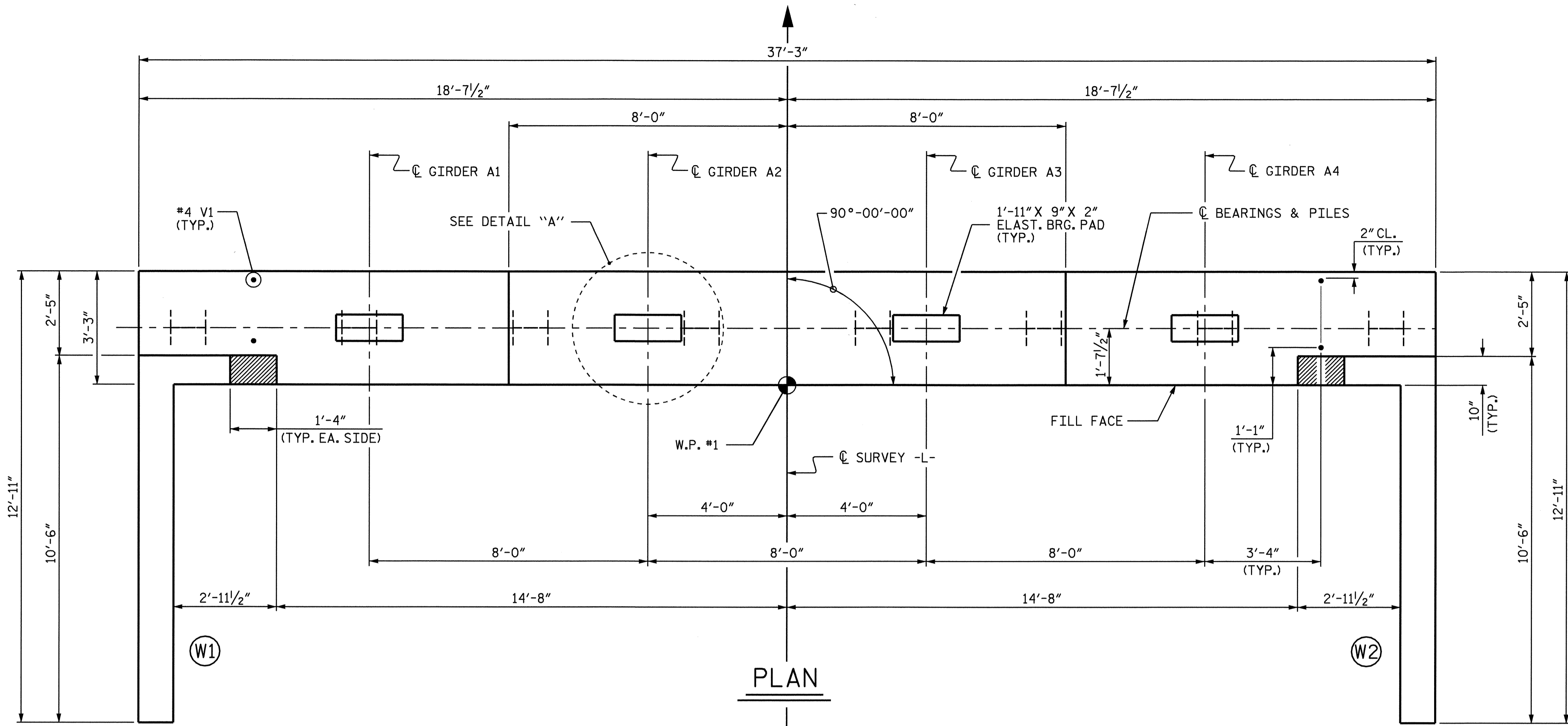
** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

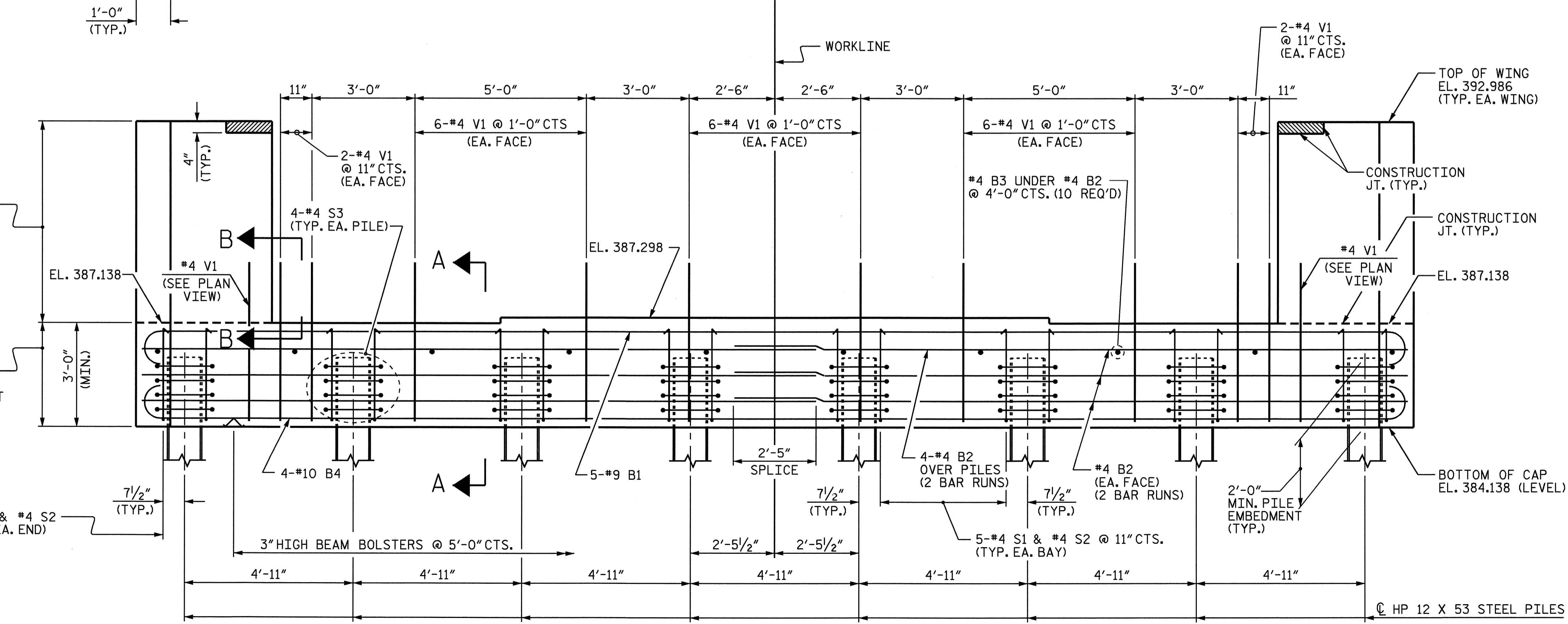
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

ASSEMBLED BY : N. PIERCE	DATE : 09-07
CHECKED BY : B.N. GRADY	DATE : 10-07
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS 40
2			4			



PLAN



ELEVATION

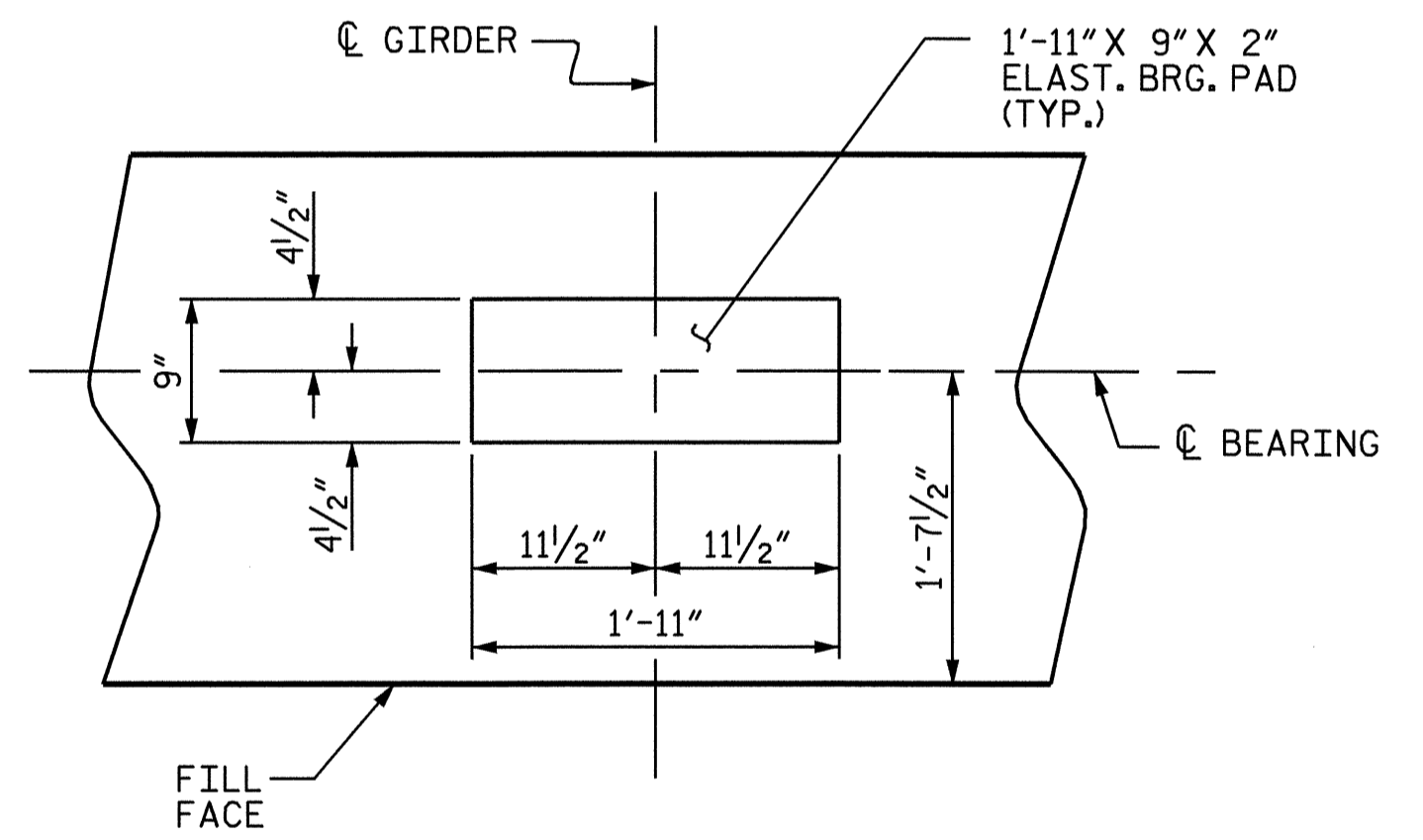
NOTES:

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR THE 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 SECTION A-A AND PARTIAL SECTION B-B, SEE SHEET 3 OF 3.

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

#4 V1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.



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

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 3

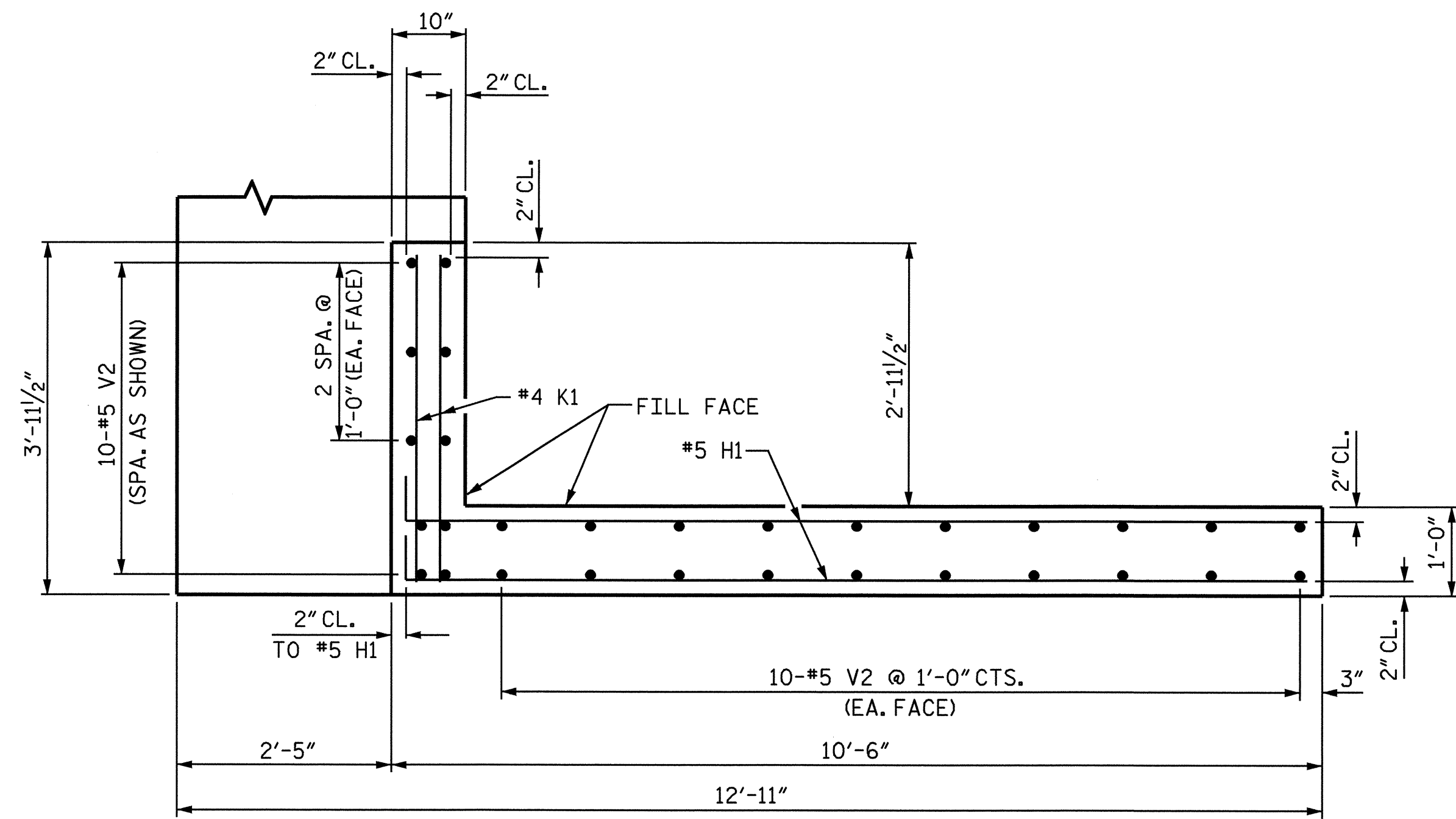
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

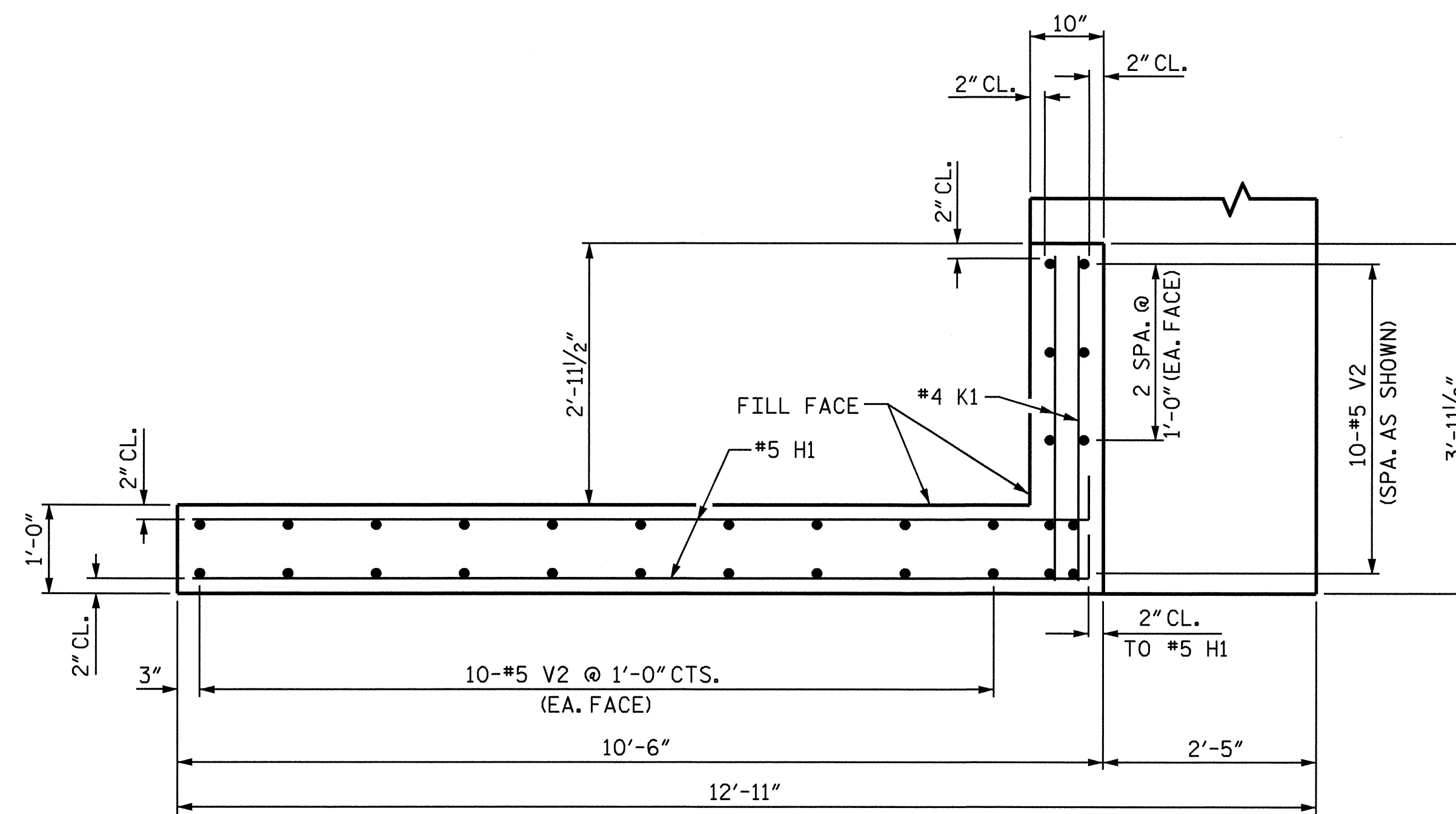


DRAWN BY: M.L. BROWN DATE: 9/07
 CHECKED BY: S.B. WILLIAMS DATE: 10/07

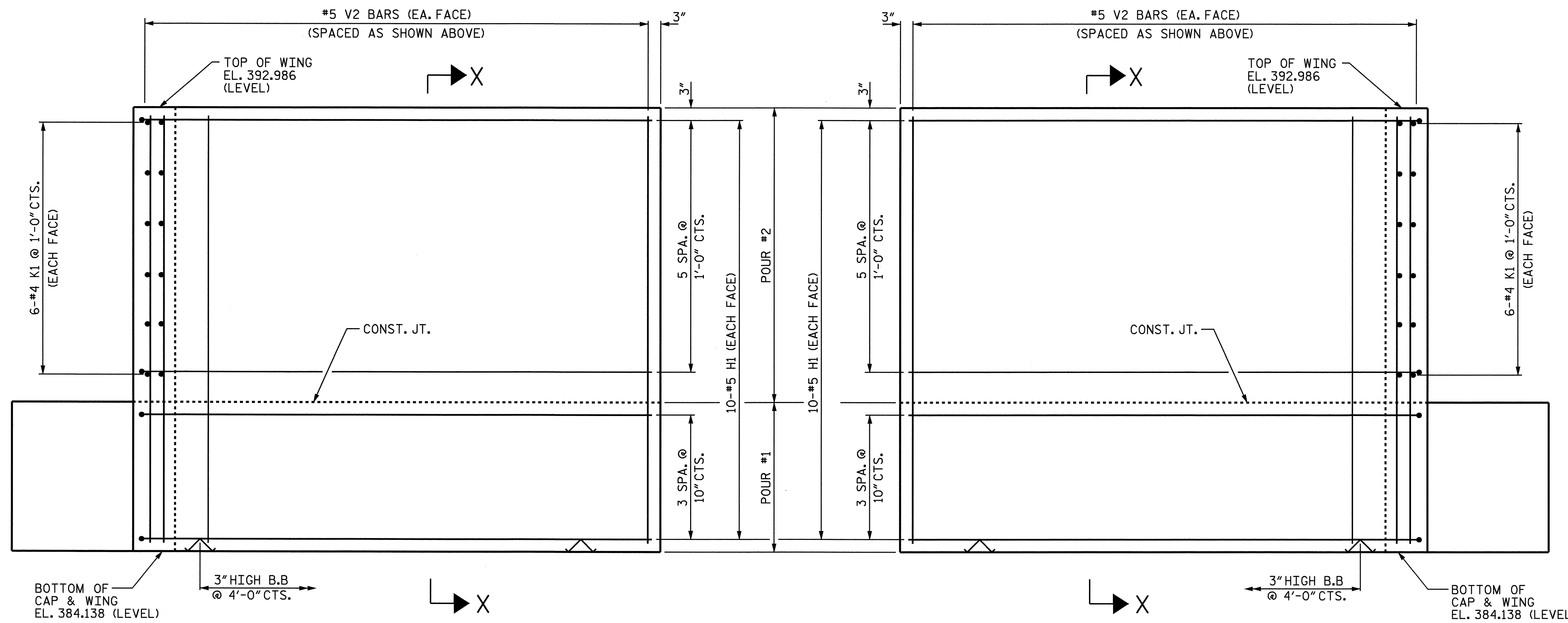
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			40



PLAN OF WING (W1)

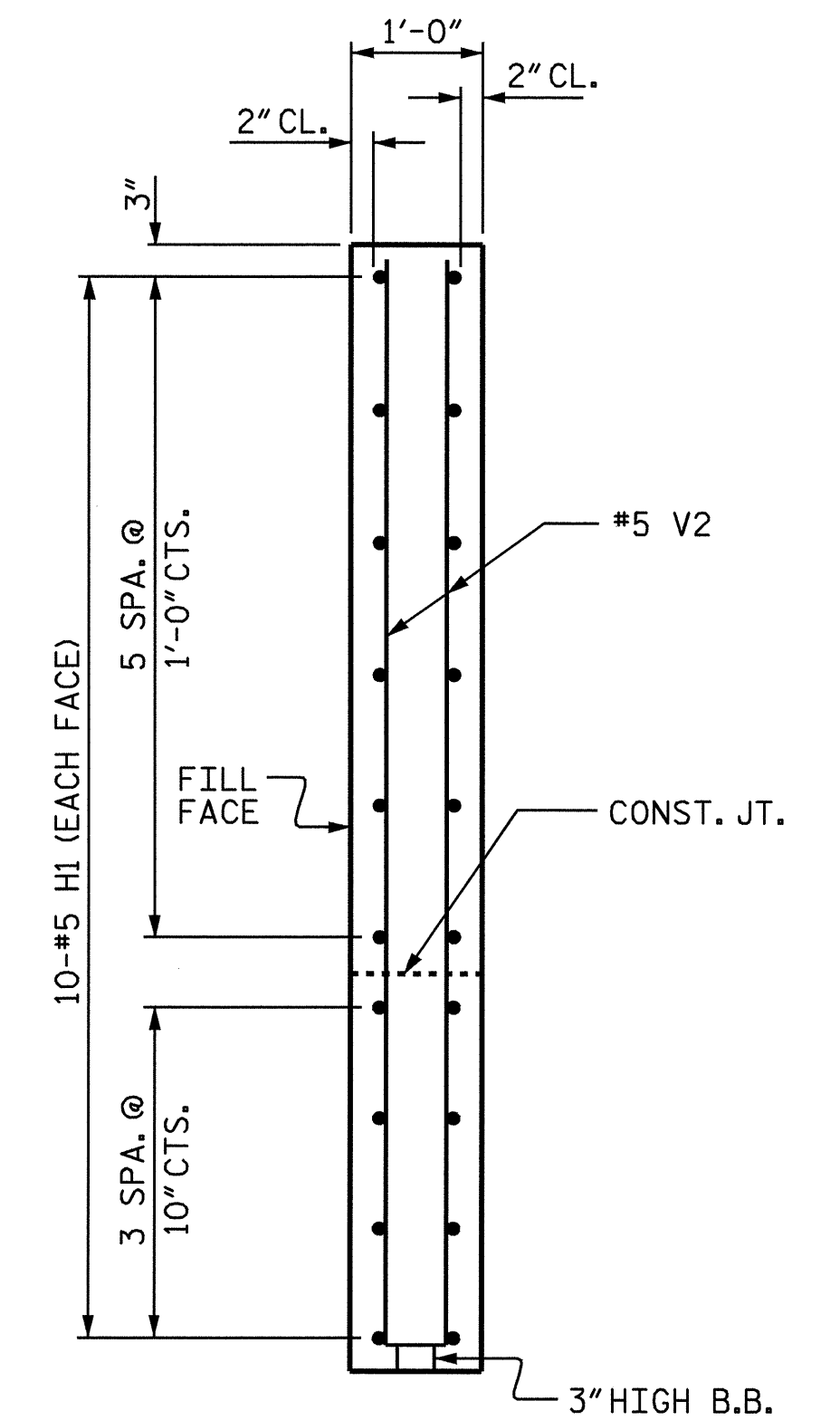


PLAN OF WING (W2)



ELEVATION OF WING (W1)

ELEVATION OF WING (W2)



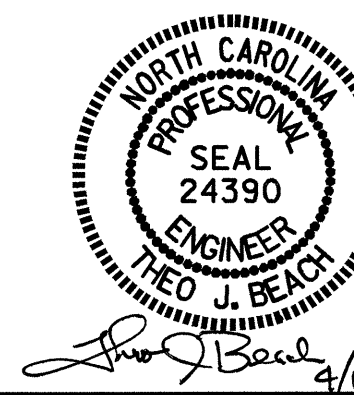
SECTION X-X

PROJECT NO. B-4057
 CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

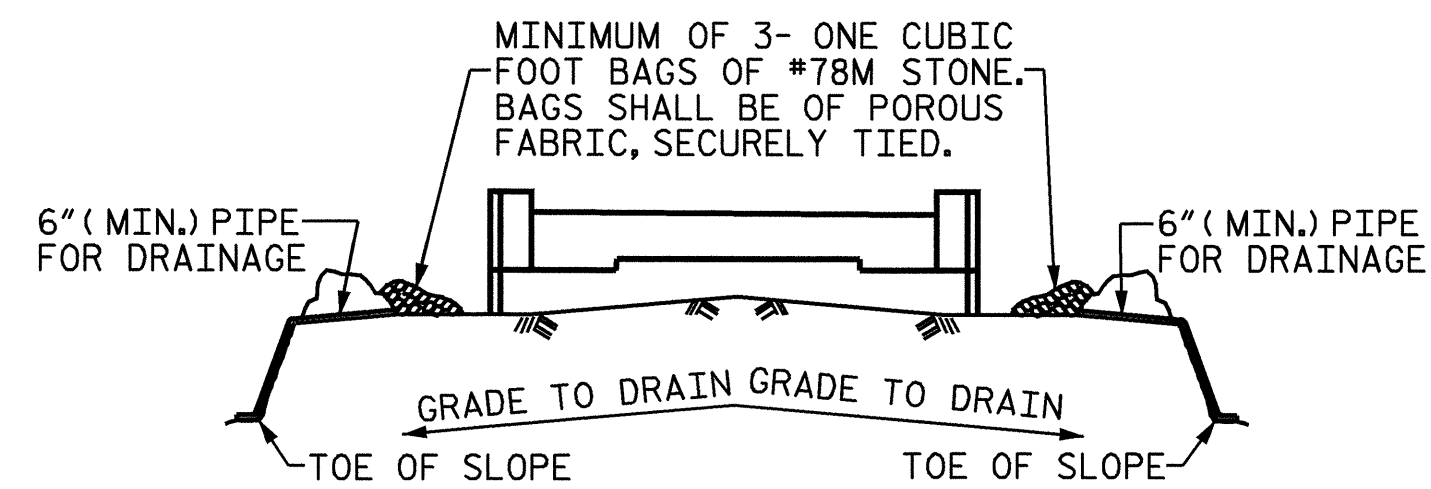
SUBSTRUCTURE
 END BENT No. 1



DRAWN BY: M.L. BROWN DATE: 9/07
 CHECKED BY: S.B. WILLIAMS DATE: 10/07

10-APR-2008 12:42
 R:\Structures\SubstructureDrawings\EndBentDrawings\B-4057.sd.E*.dgn
 tbeach

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			40

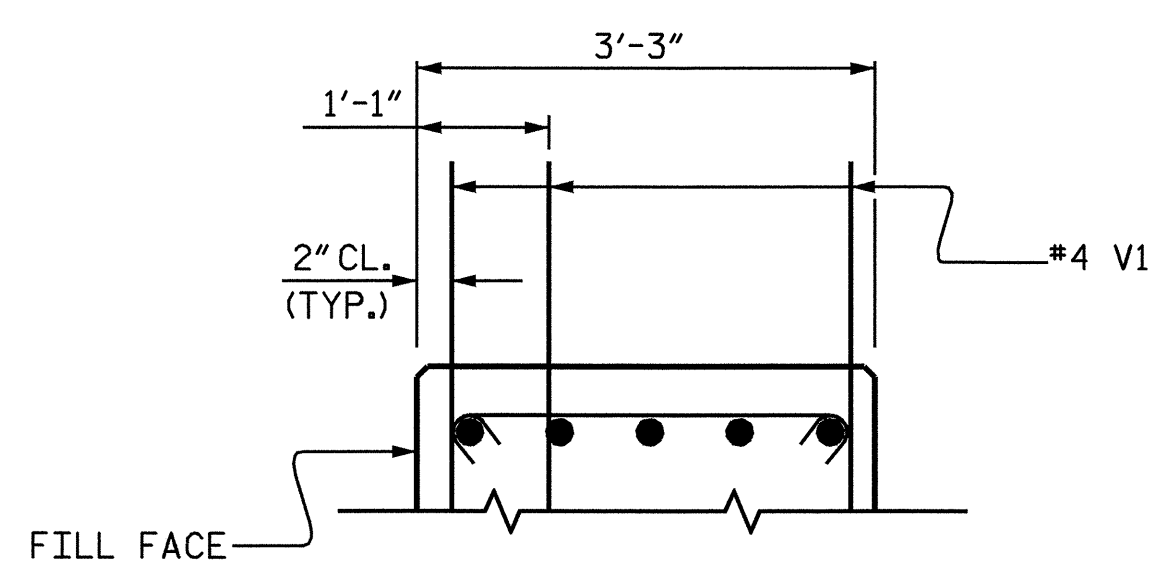


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

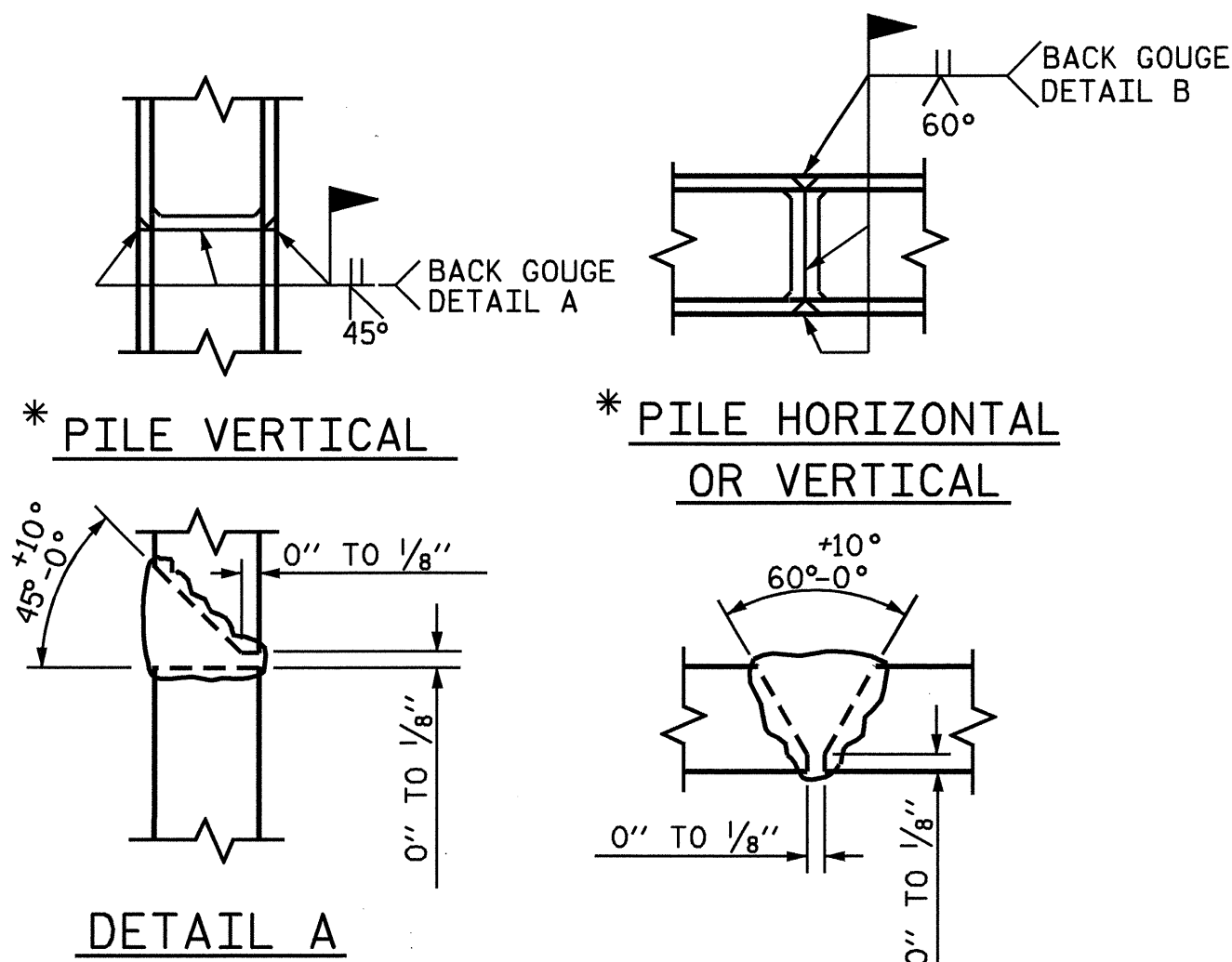
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



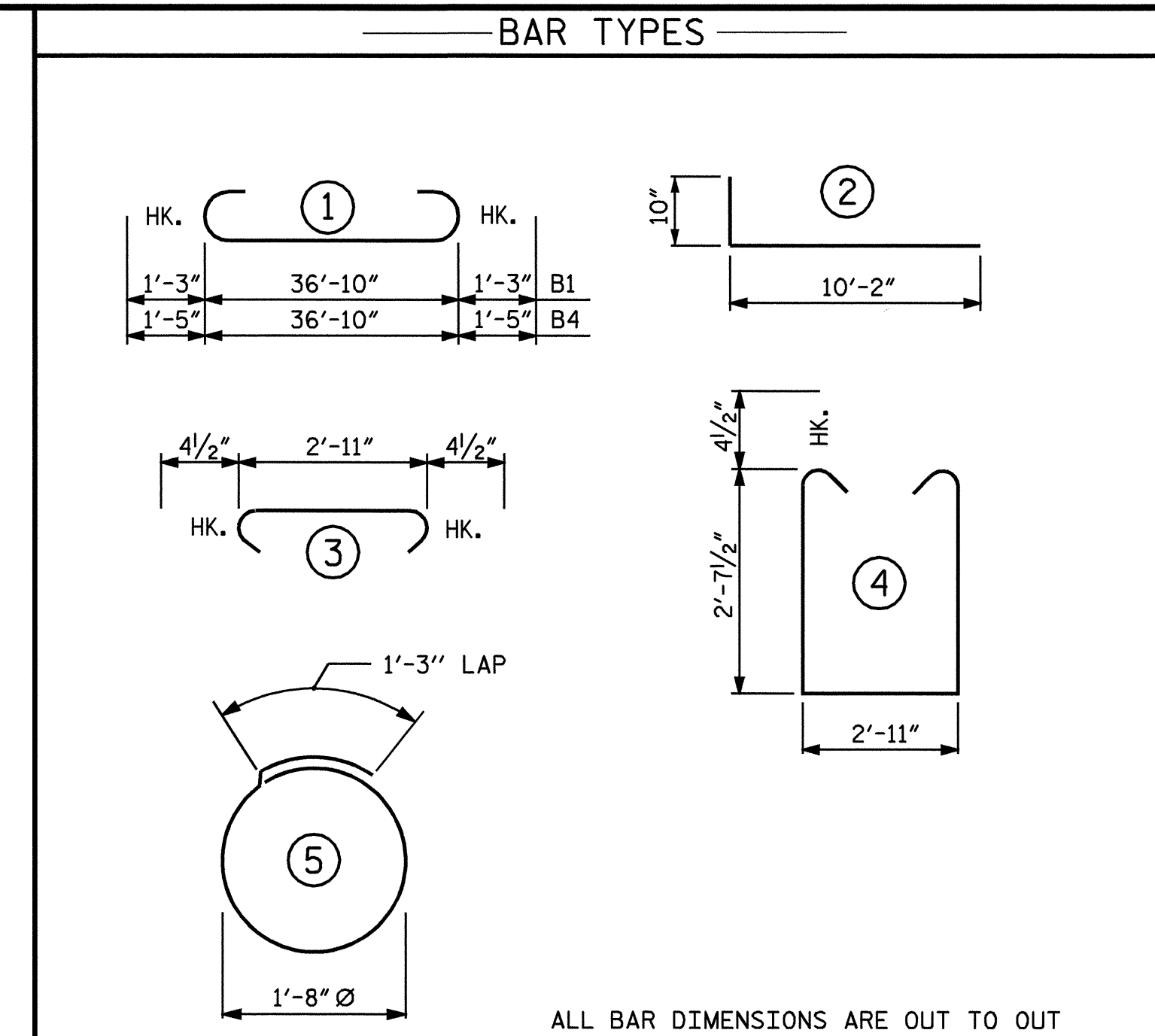
PARTIAL SECTION B-B



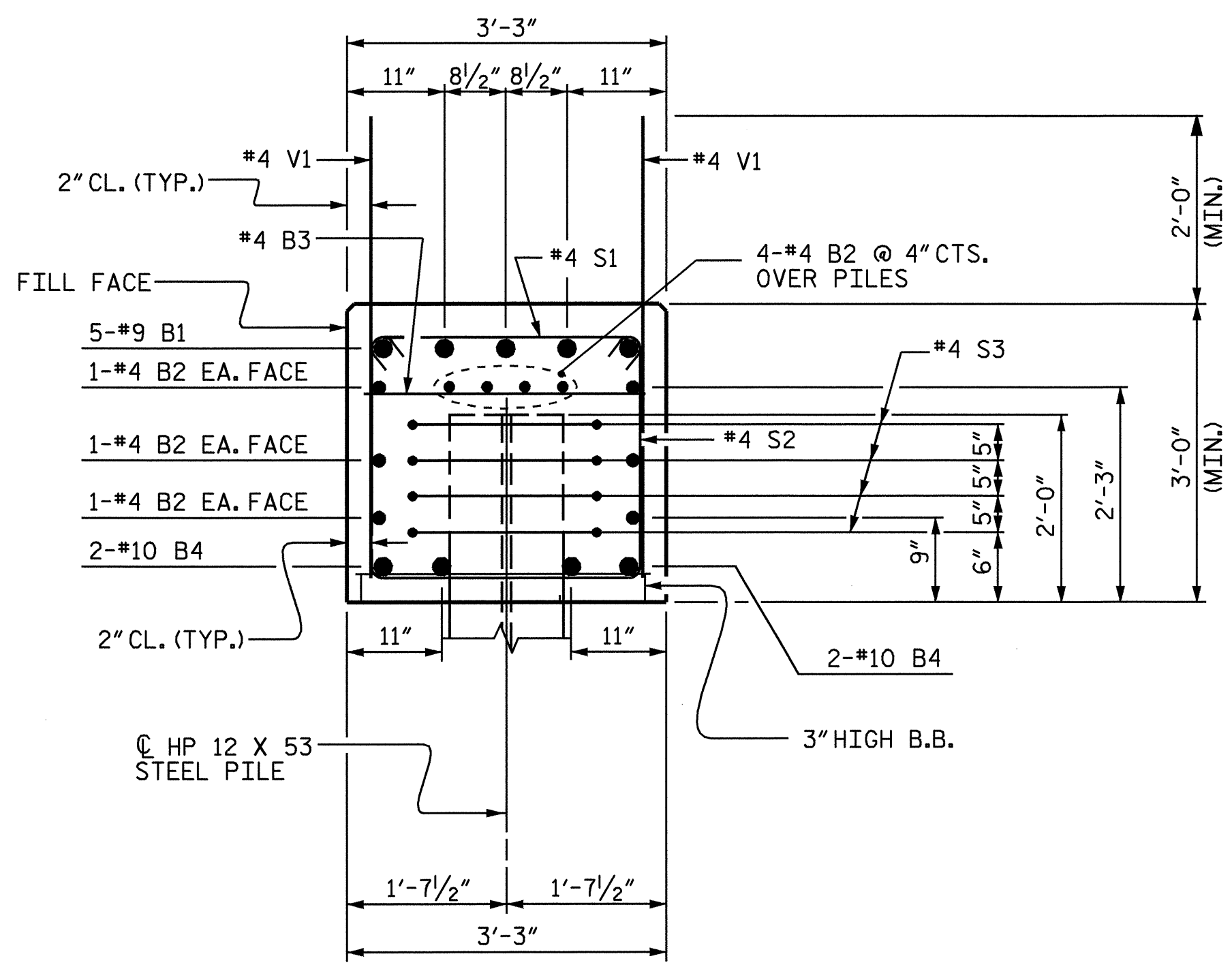
* POSITION OF PILE DURING WELDING.

DETAIL B

PILE SPLICE DETAILS



BILL OF MATERIAL						
END BENT No. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	5	#9	1	39'-4"	669	
B2	20	#4	STR	19'-8"	263	
B3	10	#4	STR	2'-11"	19	
B4	4	#10	1	39'-8"	683	
H1	40	#5	2	11'-0"	459	
K1	24	#4	STR	3'-7"	57	
S1	37	#4	3	3'-8"	91	
S2	37	#4	4	8'-11"	220	
S3	32	#4	5	6'-6"	139	
V1	48	#4	STR	4'-10"	155	
V2	60	#5	STR	8'-6"	532	
REINFORCING STEEL					3287 LBS.	
CLASS A CONCRETE BREAKDOWN						
POUR #1 CAP & LOWER PART OF WINGS					15.9 C.Y.	
POUR #2 UPPER PART OF WINGS					5.6 C.Y.	
TOTAL CLASS A CONCRETE					21.5 C.Y.	
HP 12 X 53 STEEL PILES						
NO: 8					LIN. FT. = 280	



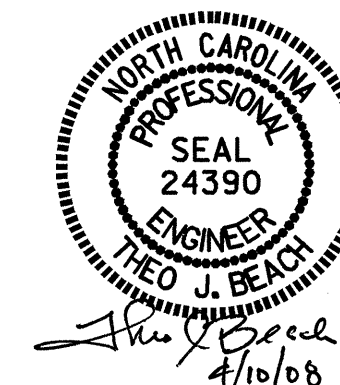
SECTION A-A

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3

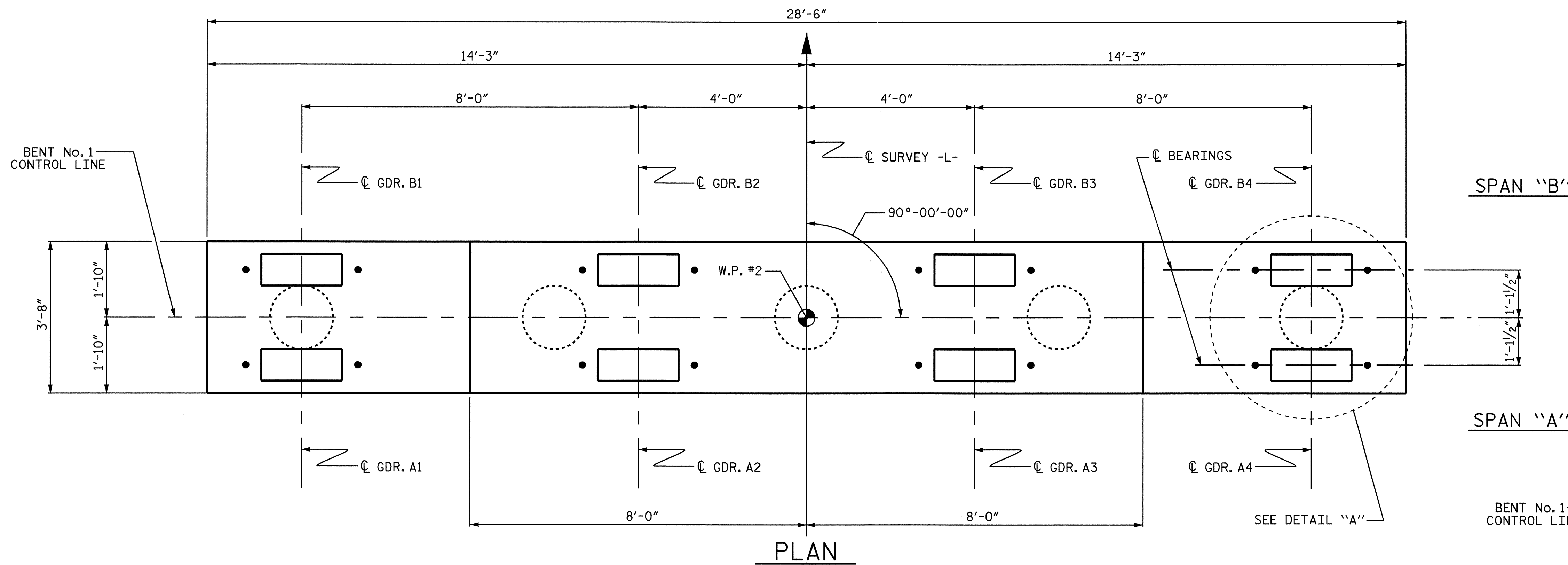
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



DRAWN BY: M.L. BROWN DATE: 9/07
 CHECKED BY: S.B. WILLIAMS DATE: 10/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			40



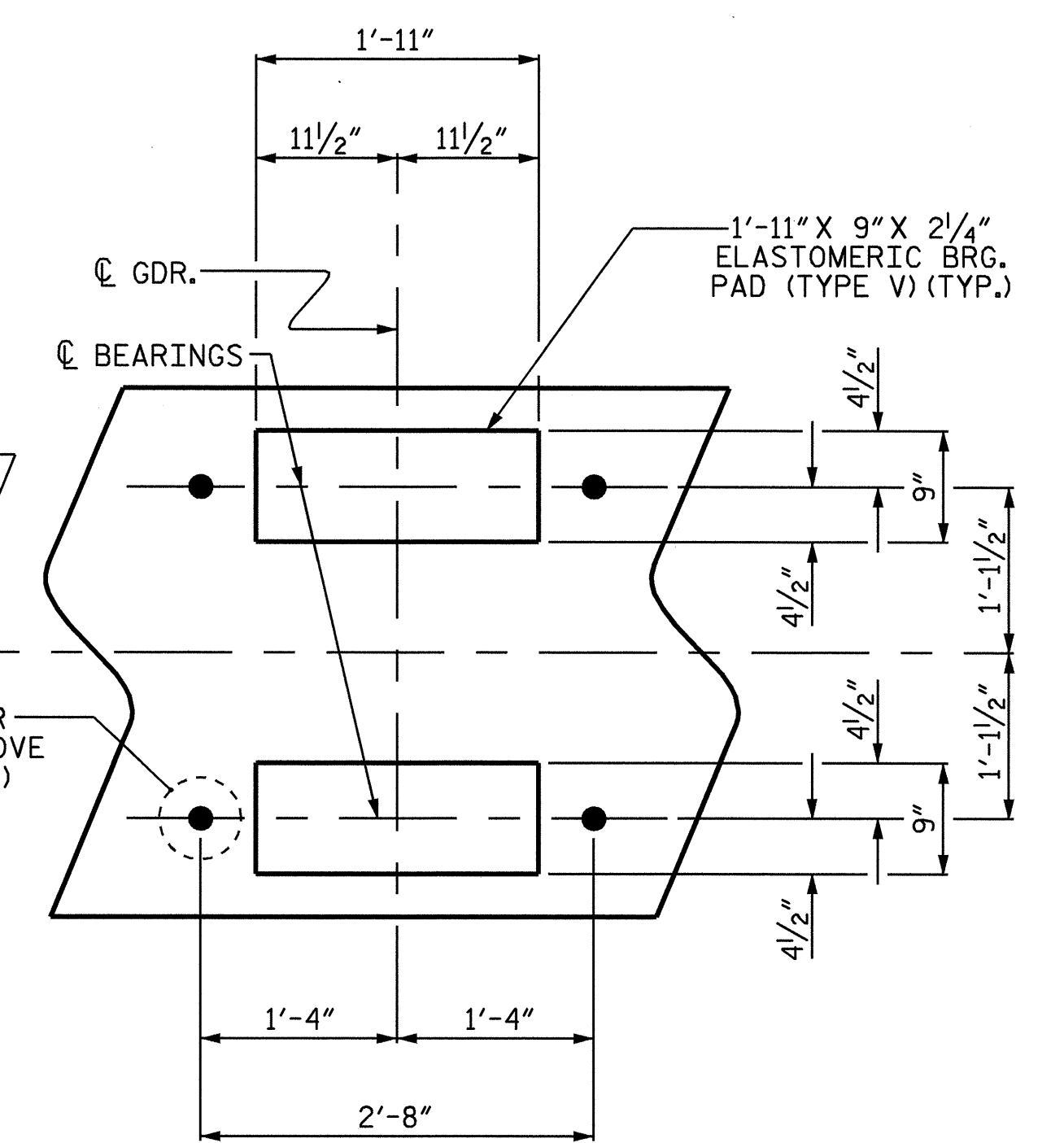
PLAN

NOTES
 STIRRUPS MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 ▲ INVERT ALTERNATE OF STIRRUPS.

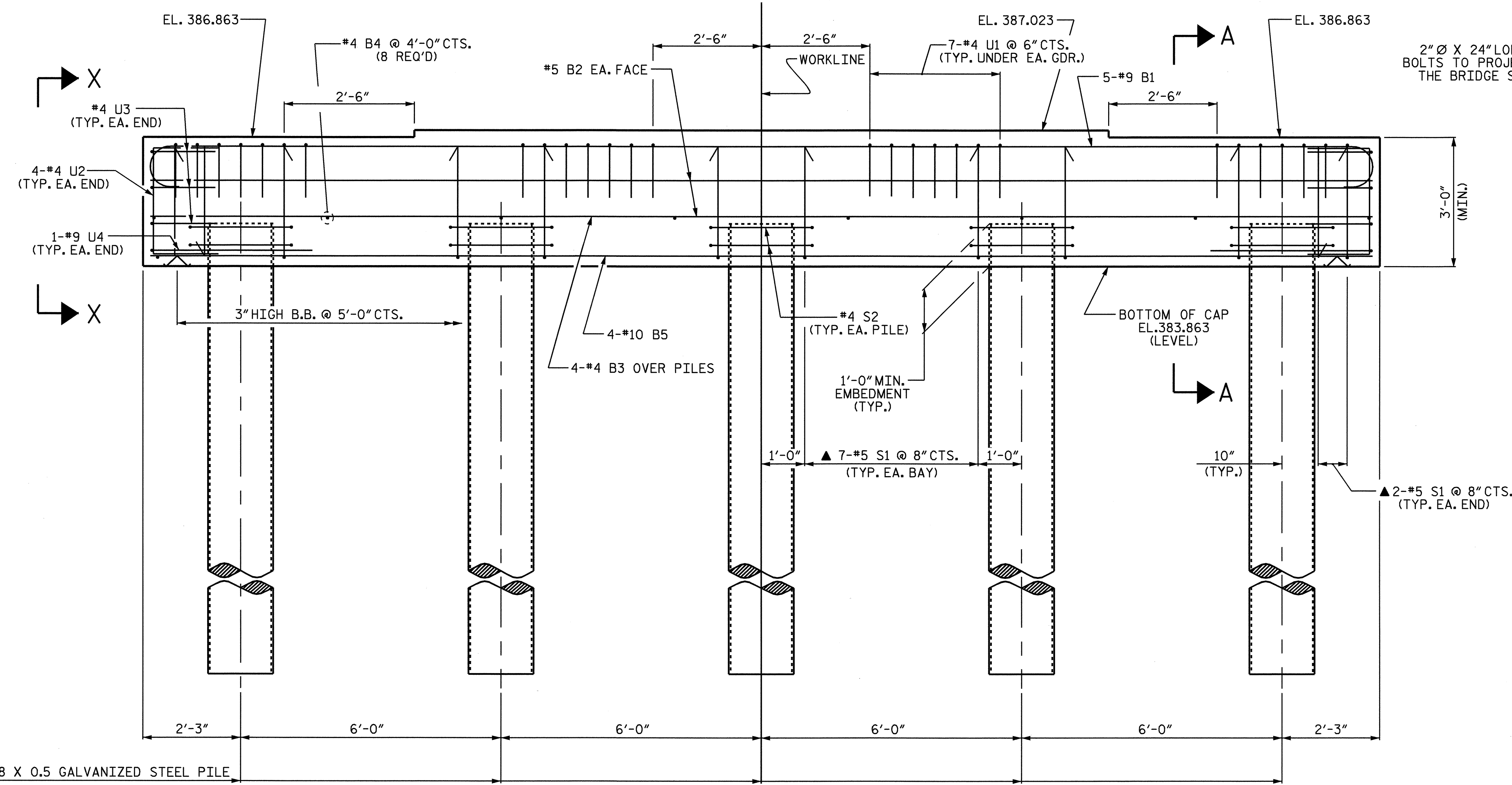
SPAN "B"

SPAN "A"

SEE DETAIL "A"



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

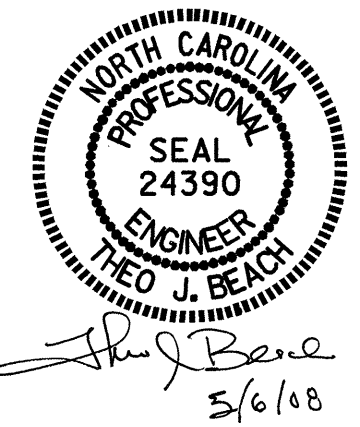


ELEVATION

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-
 SHEET 1 OF 2

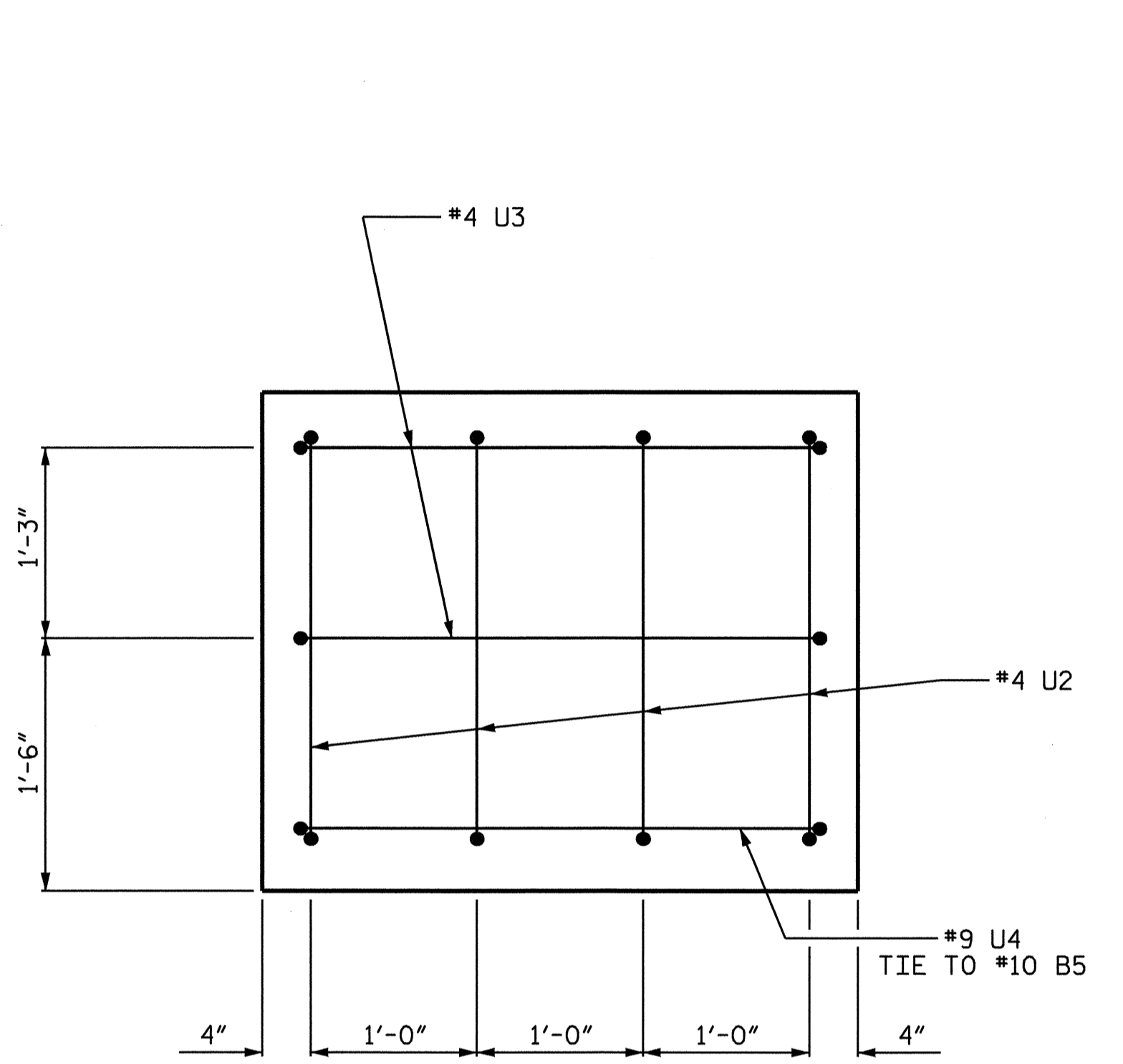
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

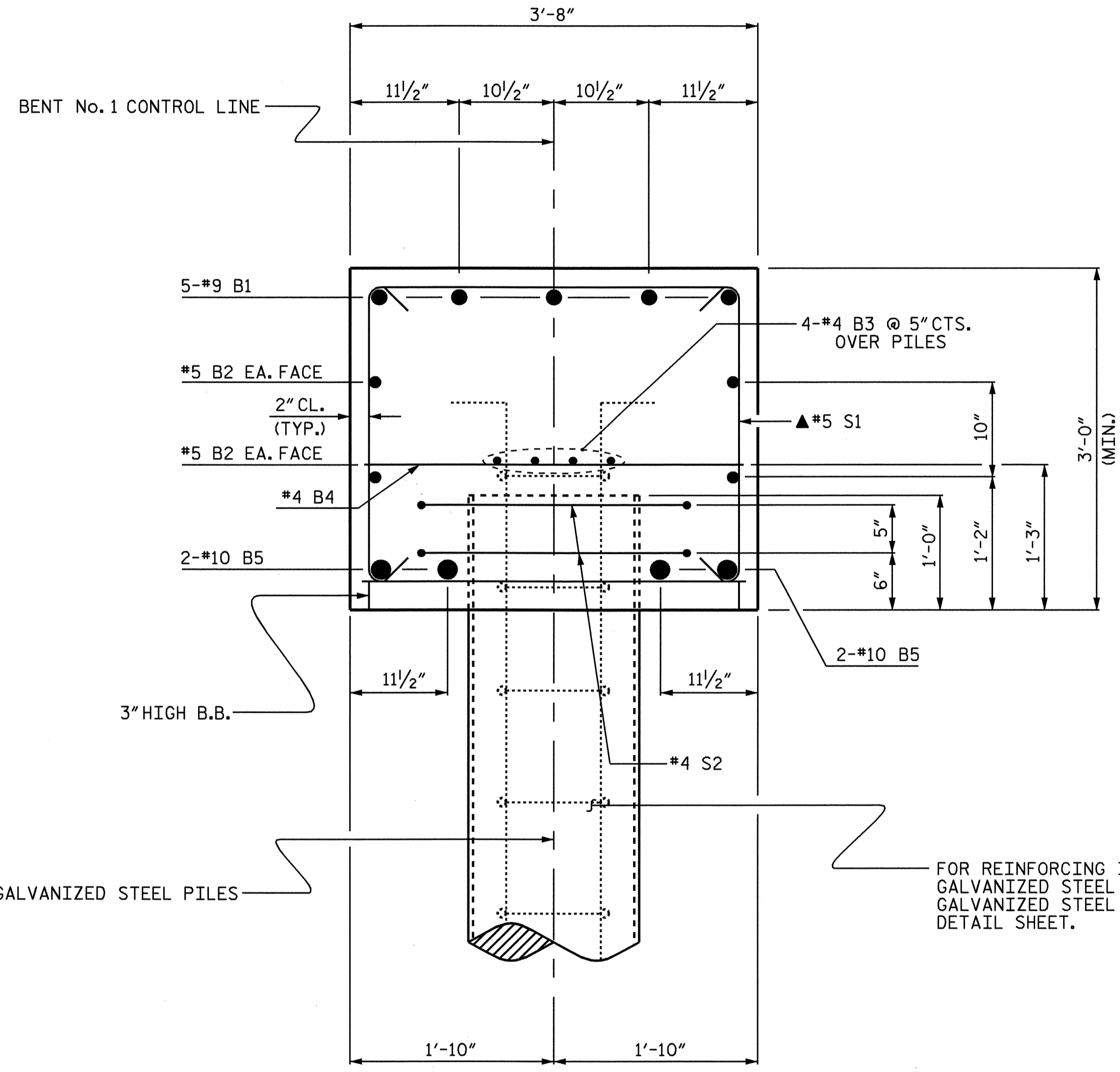


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			40

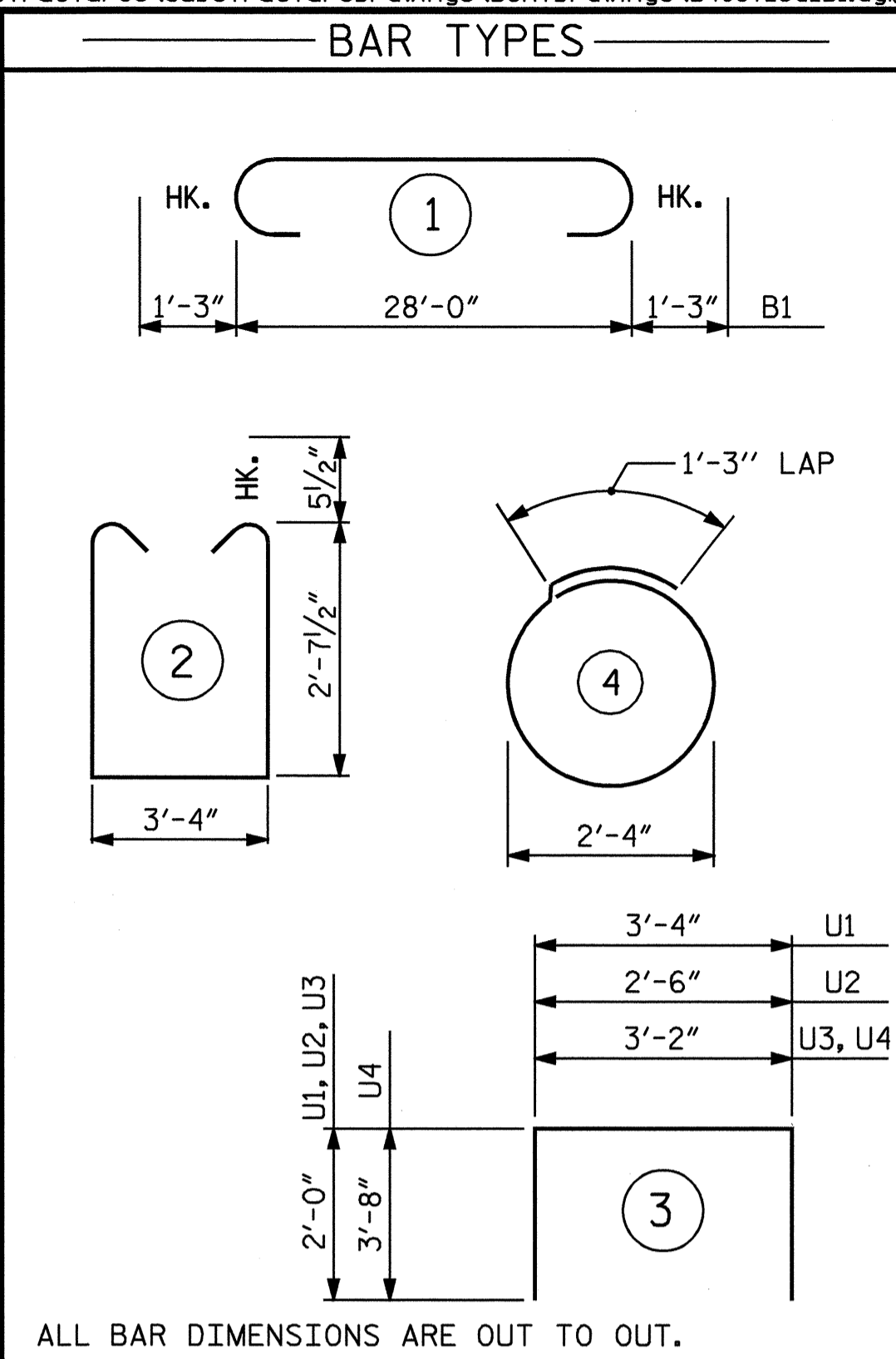
DRAWN BY: P. ROYSTER DATE: 3/07
 CHECKED BY: S. B. WILLIAMS DATE: 3/07



END VIEW X-X
(TYP. EA. END)



SECTION A-A
(▲ INVERT ALTERNATE STIRRUPS)



BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	1	30'-6"	519
B2	4	#5	STR	28'-2"	118
B3	4	#4	STR	28'-2"	75
B4	8	#4	STR	3'-4"	18
B5	4	#10	STR	28'-2"	485
S1	32	#5	2	9'-6"	317
S2	10	#4	4	8'-7"	57
U1	28	#4	3	7'-4"	137
U2	8	#4	3	6'-6"	35
U3	4	#4	3	7'-2"	19
U4	2	#9	3	10'-6"	71
REINFORCING STEEL					LBS. 1851
CLASS A CONCRETE					
POUR #1 CAP					11.6 C.Y.
CLASS A CONCRETE TOTAL					11.6 C.Y.
PP 18 X 0.5 GALVANIZED STEEL PILES					
NO. 5					LIN. FT. 200

ALL BAR DIMENSIONS ARE OUT TO OUT.
THE CONCRETE DISPLACED BY THE FILLED PP 18 X 0.5 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE QUANTITY OF CLASS A CONCRETE FOR THE BENT CAP.

☉ PP 18 X 0.5 GALVANIZED STEEL PILES

FOR REINFORCING IN PP 18 X 0.5 GALVANIZED STEEL PILES, SEE "18 X 0.5 GALVANIZED STEEL PIPE PILES" DETAIL SHEET.

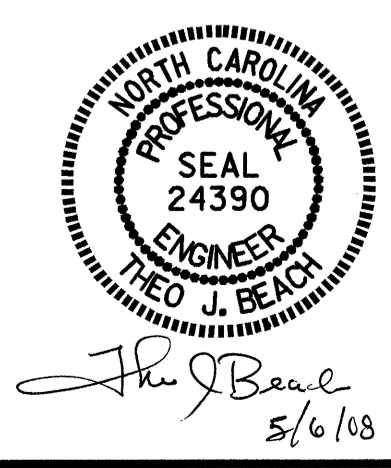
PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 2 OF 2

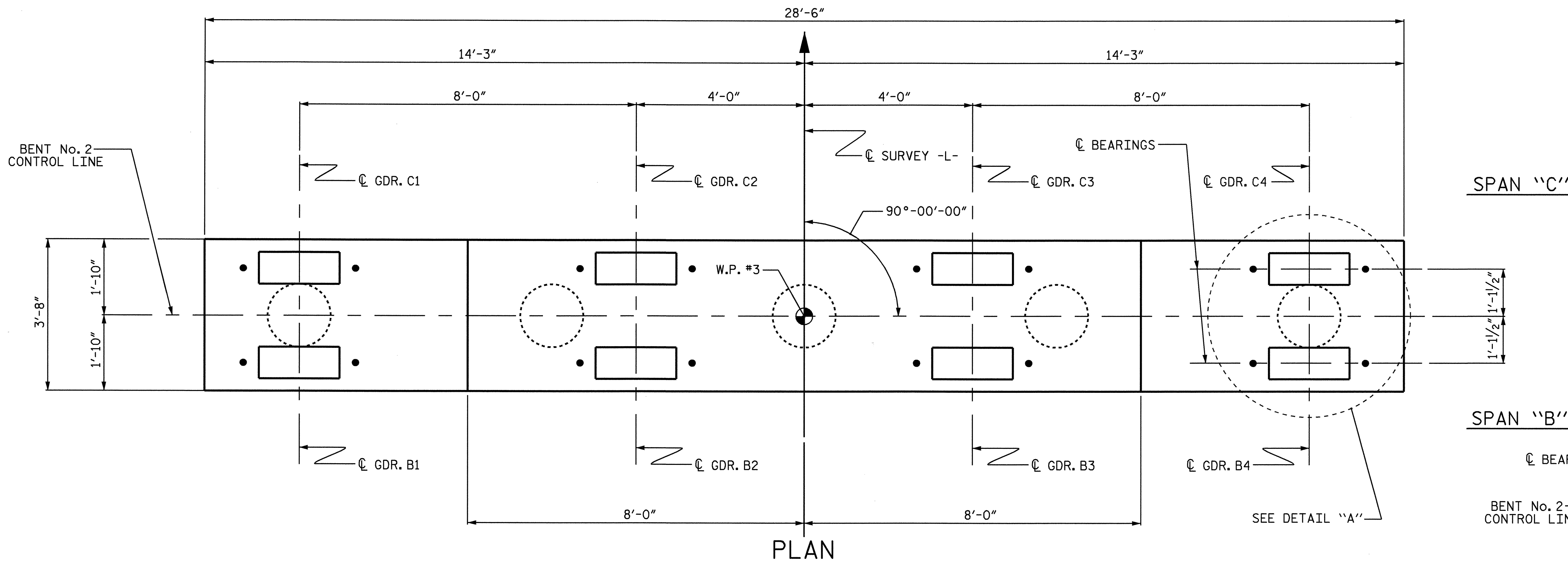
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 40	
2			4				



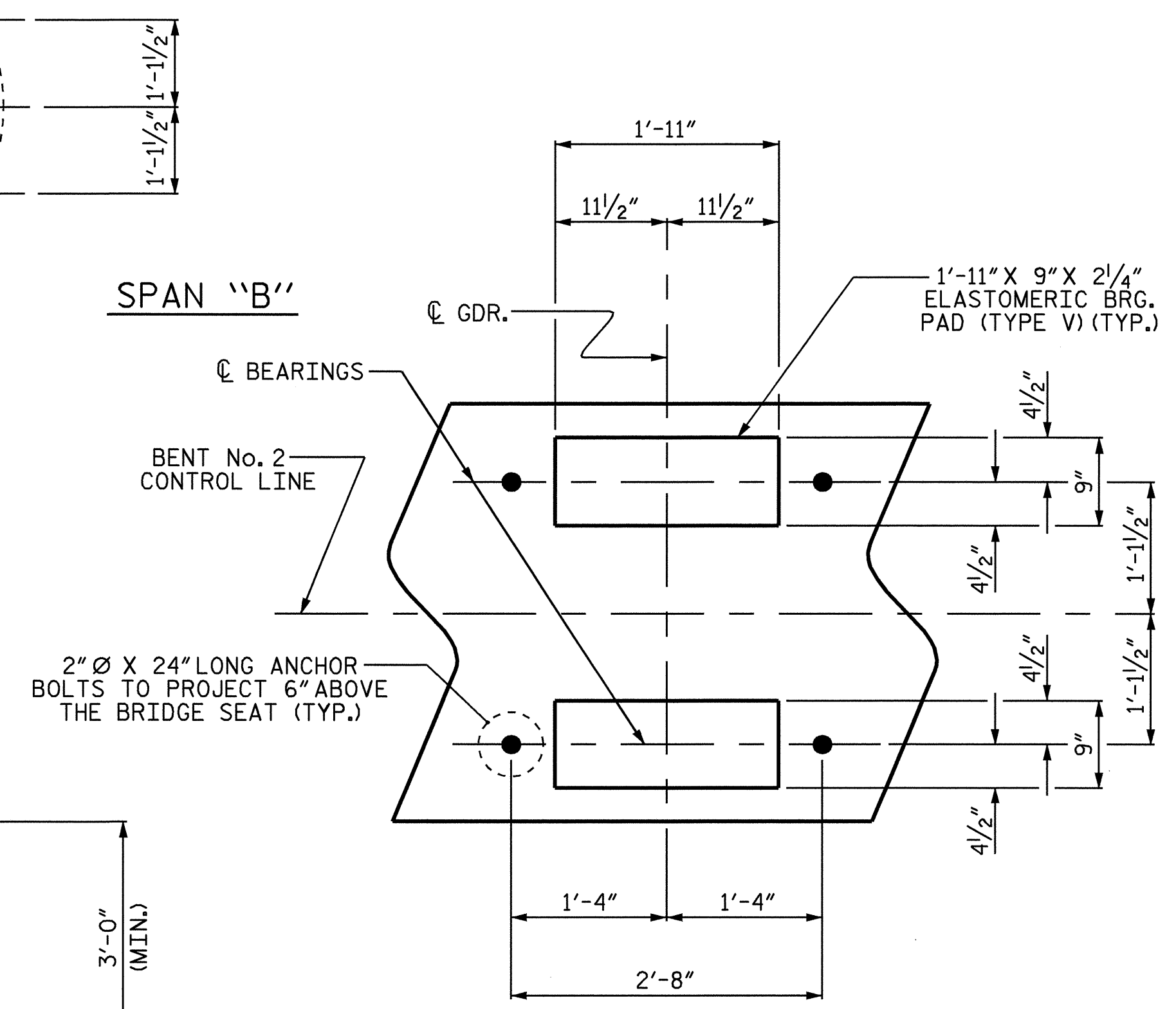
DRAWN BY: P. ROYSTER DATE: 3/07
CHECKED BY: S. B. WILLIAMS DATE: 3/07



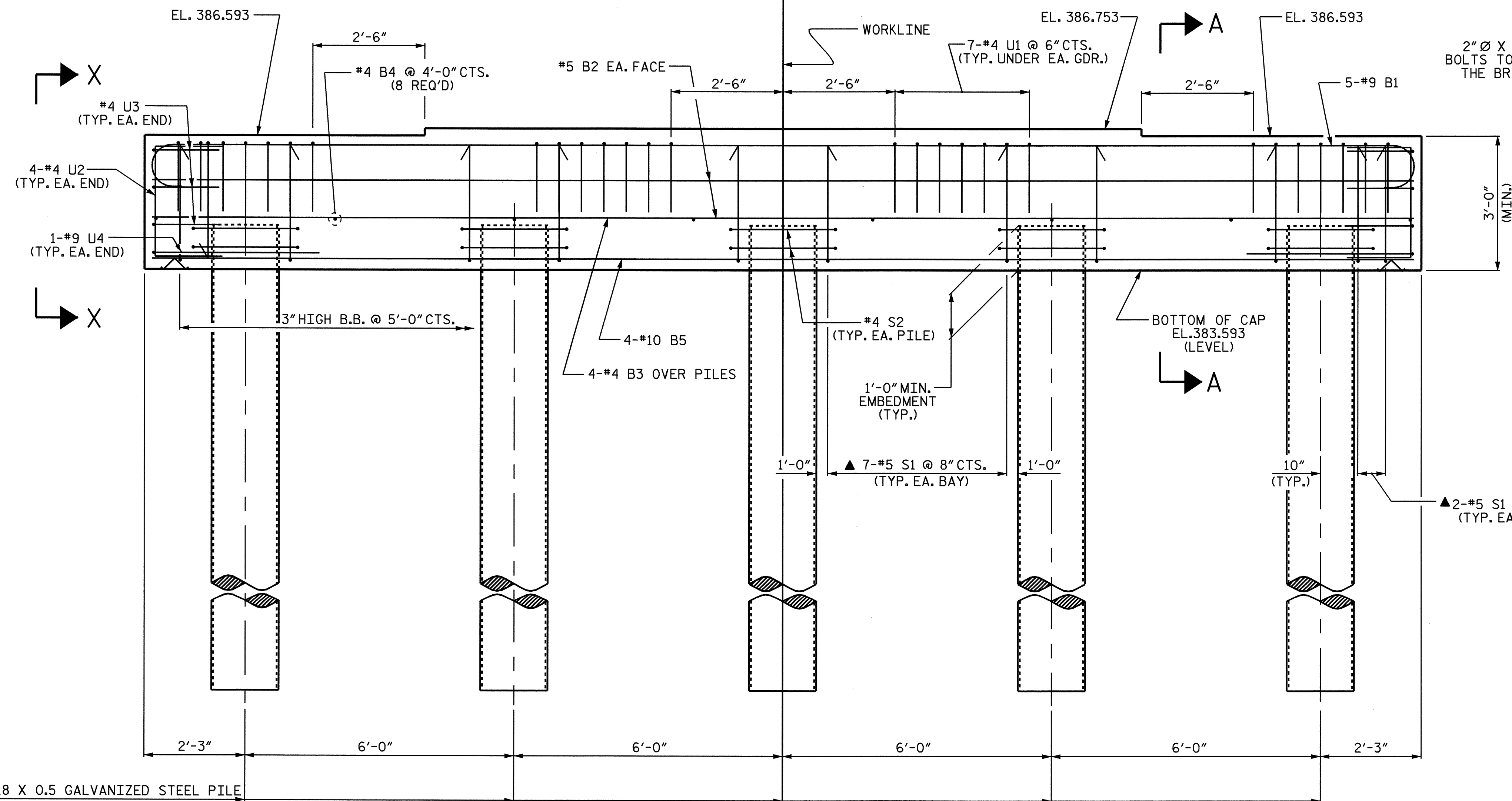
PLAN

SPAN "C"

SPAN "B"



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



ELEVATION

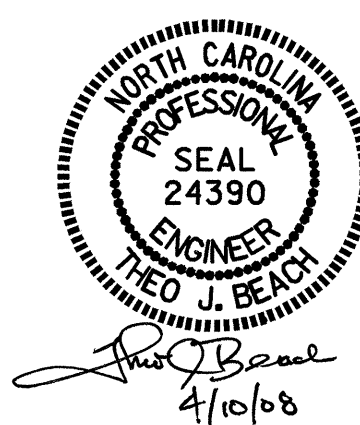
NOTES
STIRRUPS MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
▲INVERT ALTERNATE PAIRS OF STIRRUPS.

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 1 OF 2

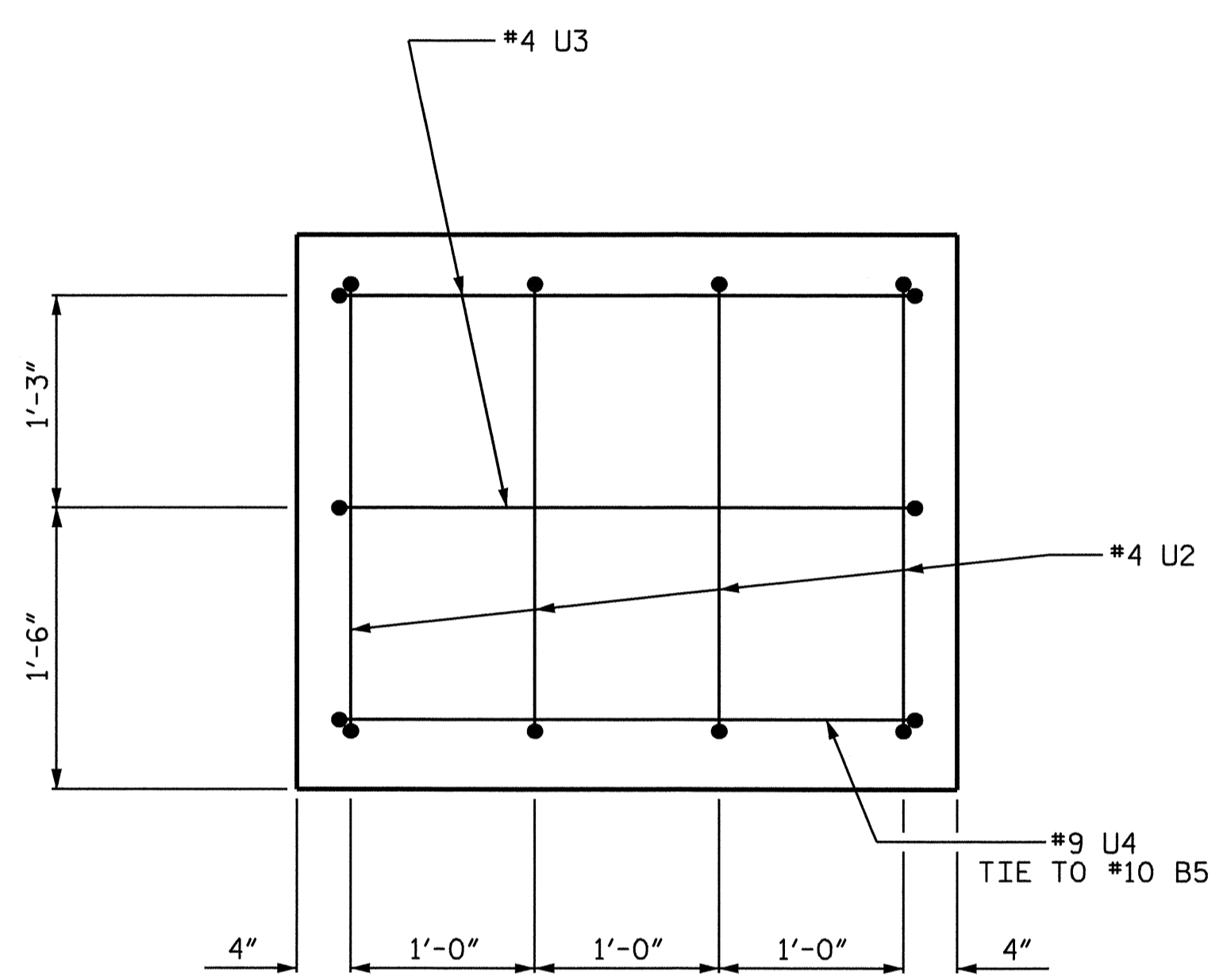
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

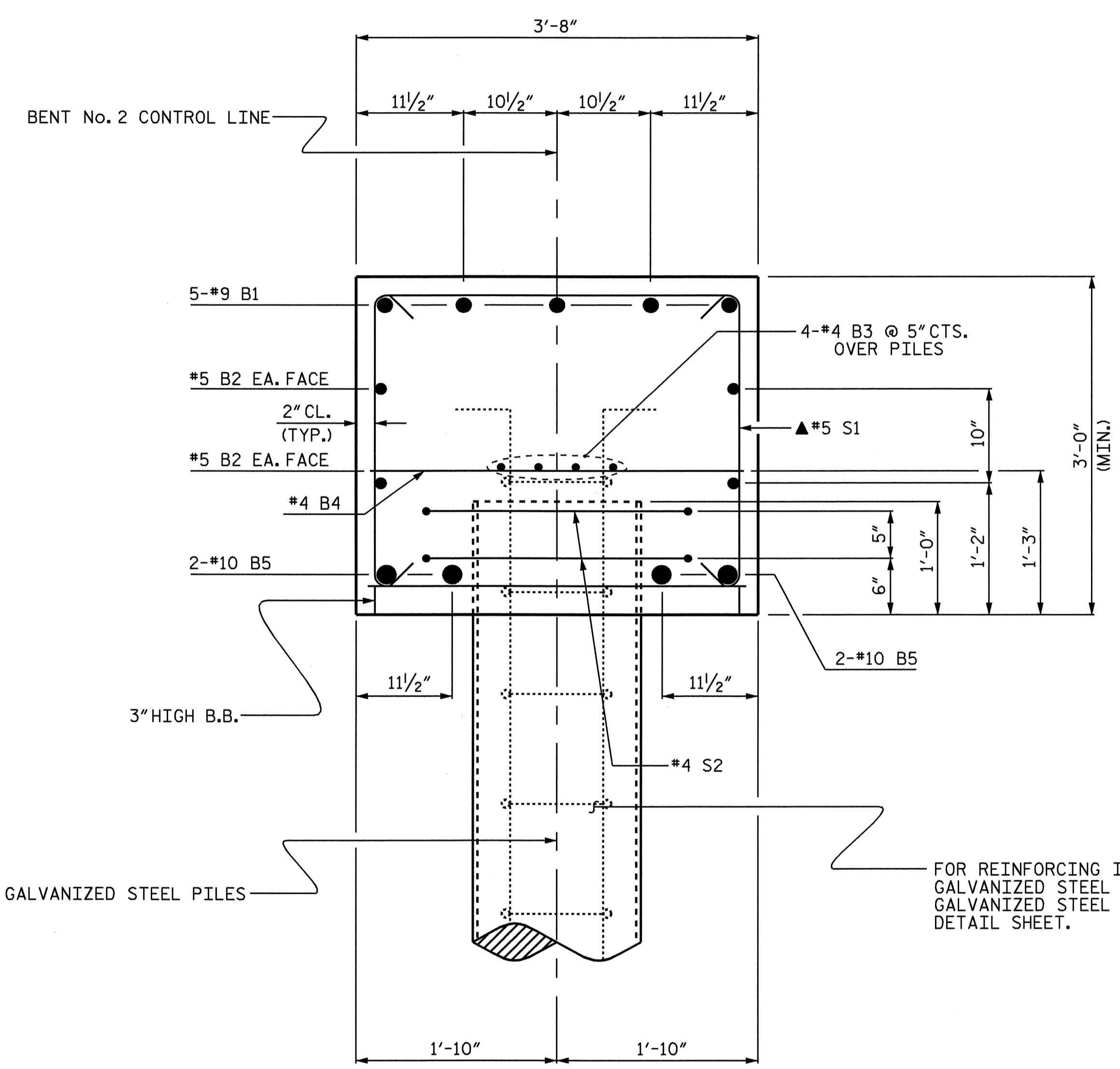


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			40

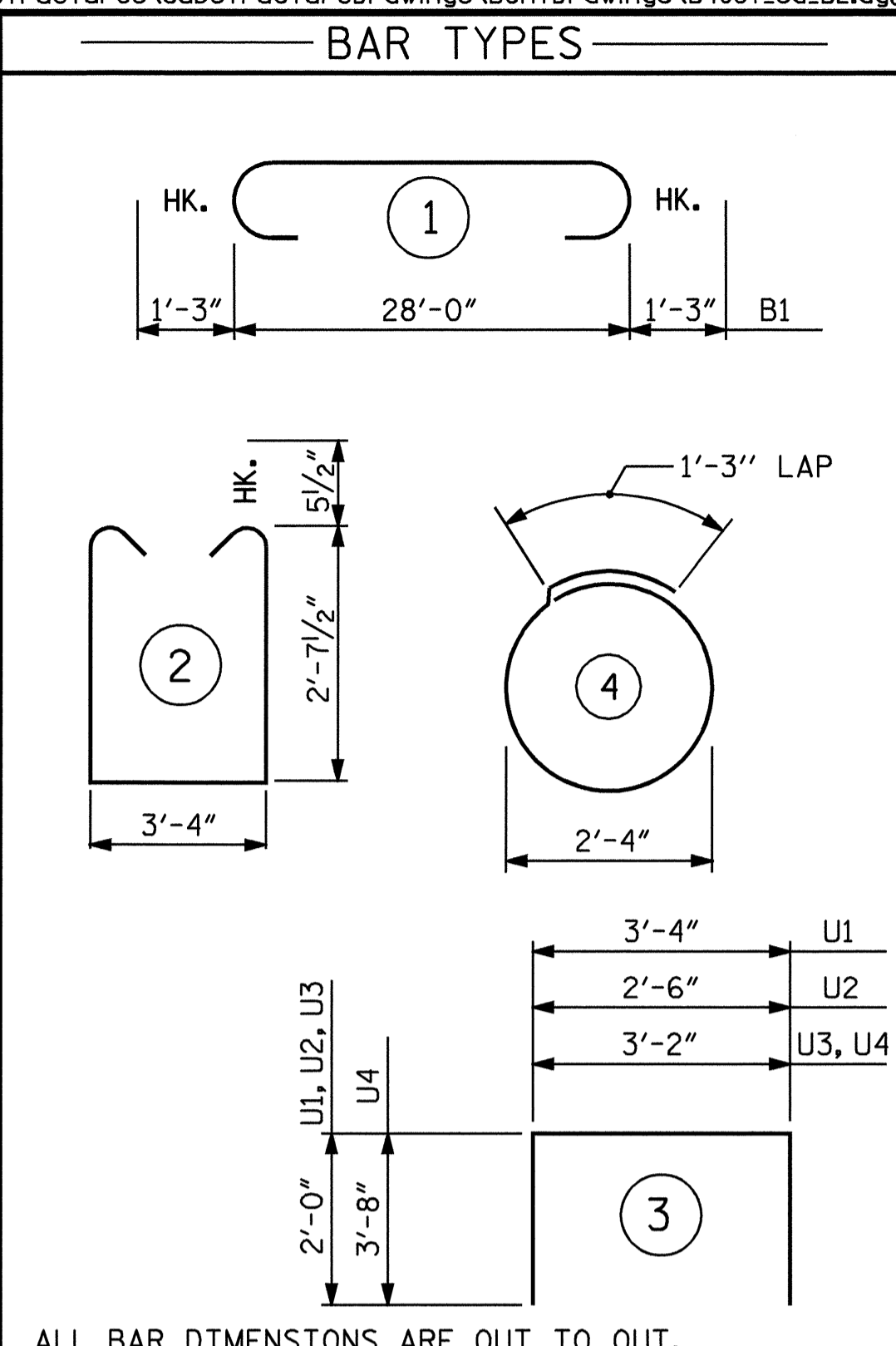
DRAWN BY: P. ROYSTER DATE: 3/07
CHECKED BY: S. B. WILLIAMS DATE: 3/07



END VIEW X-X
(TYP. EA. END)



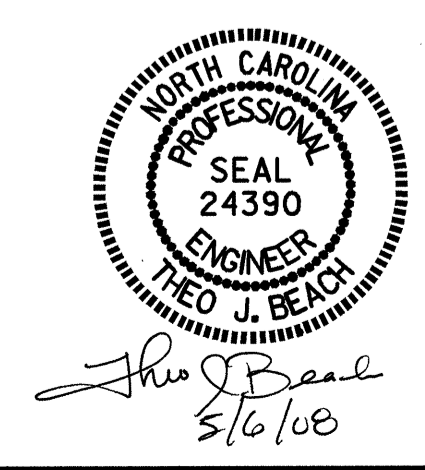
SECTION A-A
(▲ INVERT ALTERNATE STIRRUPS)



BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	1	30'-6"	519
B2	4	#5	STR	28'-2"	118
B3	4	#4	STR	28'-2"	75
B4	8	#4	STR	3'-4"	18
B5	4	#10	STR	28'-2"	485
S1	32	#5	2	9'-6"	317
S2	10	#4	4	8'-7"	57
U1	28	#4	3	7'-4"	137
U2	8	#4	3	6'-6"	35
U3	4	#4	3	7'-2"	19
U4	2	#9	3	10'-6"	71
REINFORCING STEEL					LBS. 1851
CLASS A CONCRETE					
POUR #1 CAP					11.6 C.Y.
CLASS A CONCRETE TOTAL					11.6 C.Y.
PP 18 X 0.5 GALVANIZED STEEL PILES					
NO. 5					LIN. FT. 175

ALL BAR DIMENSIONS ARE OUT TO OUT.
THE CONCRETE DISPLACED BY THE FILLED 18 X 0.5 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE QUANTITY OF CLASS A CONCRETE FOR THE BENT CAP.

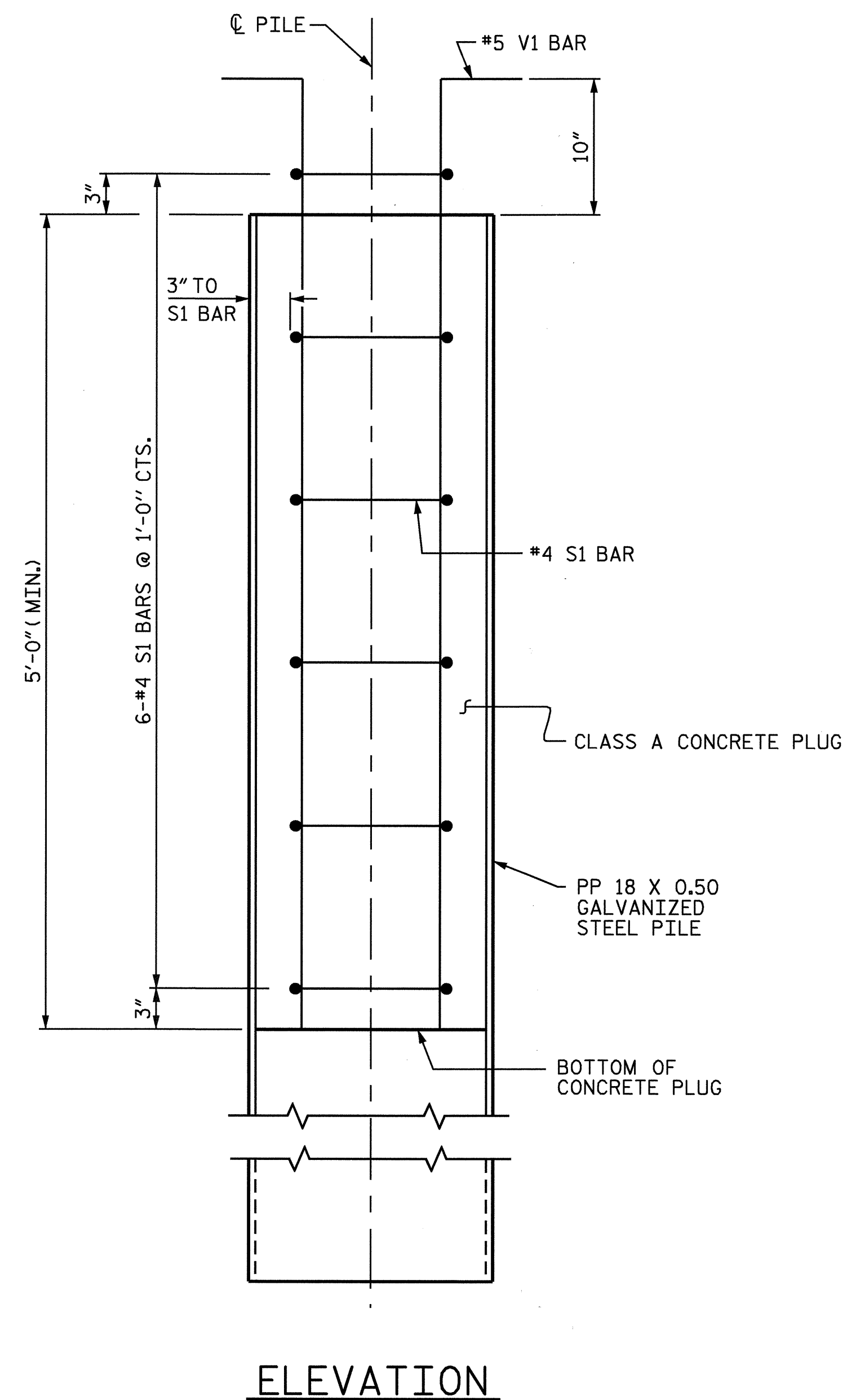
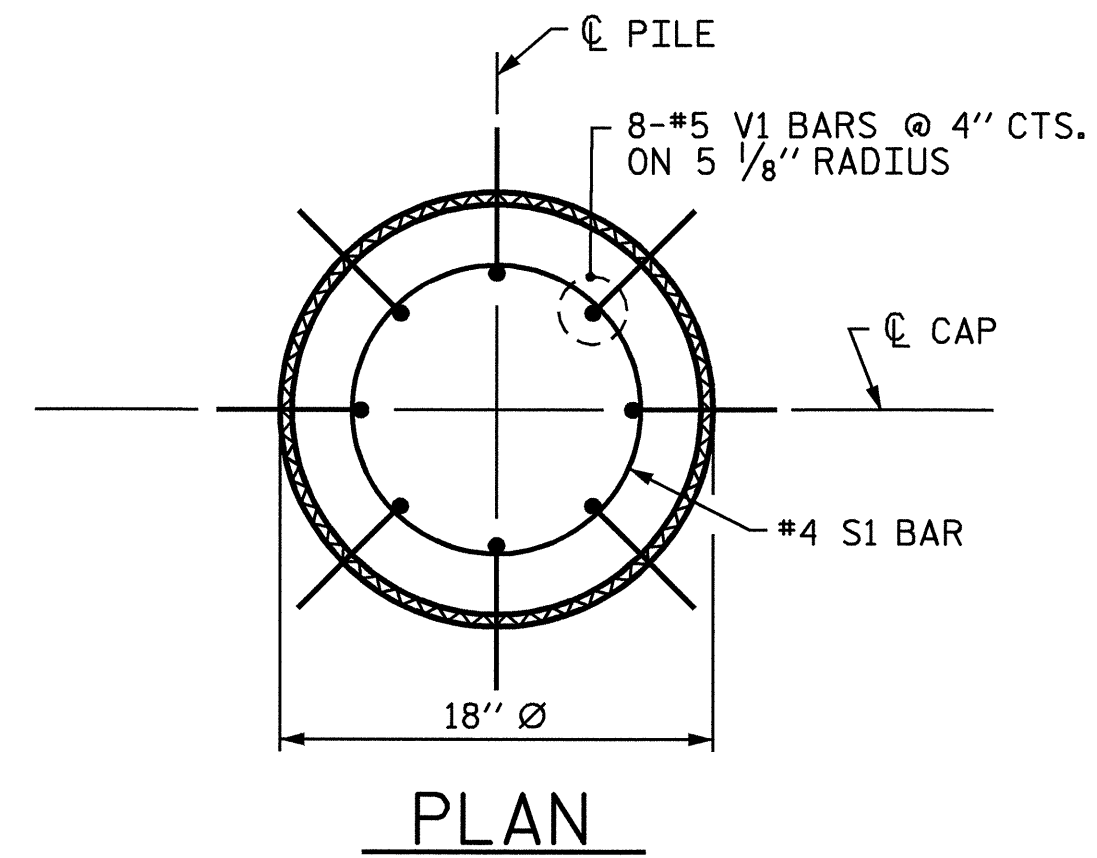
DRAWN BY : P. ROYSTER DATE : 3/07
CHECKED BY : S. B. WILLIAMS DATE : 3/07



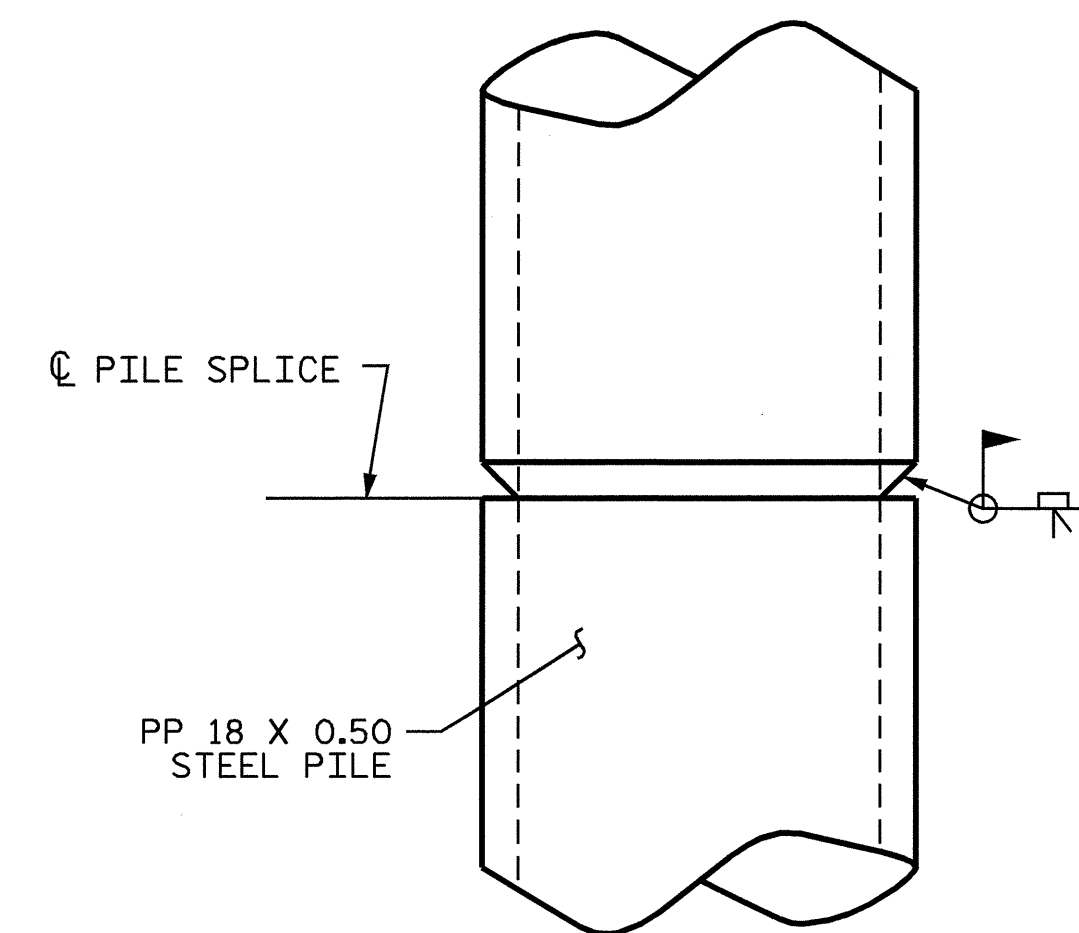
PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 2 OF 2

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS 40	
2			4				



PP 18 X 0.50 GALVANIZED STEEL PILE
(OPEN END)



NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, GALVANIZING, ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

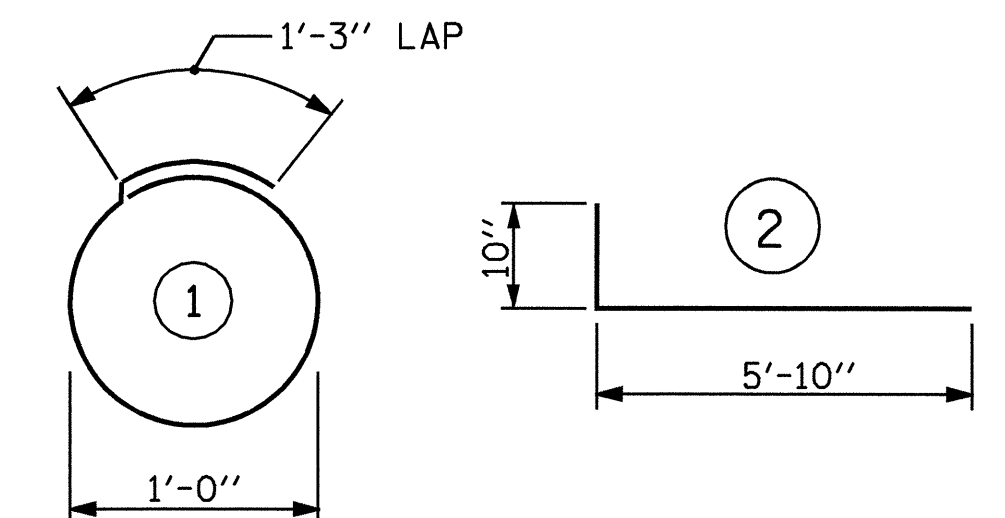
BILL OF MATERIAL FOR ONE
PP 18 X 0.50 STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =				74	lbs

CLASS A CONCRETE

5'-0" MINIMUM PLUG 0.3 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

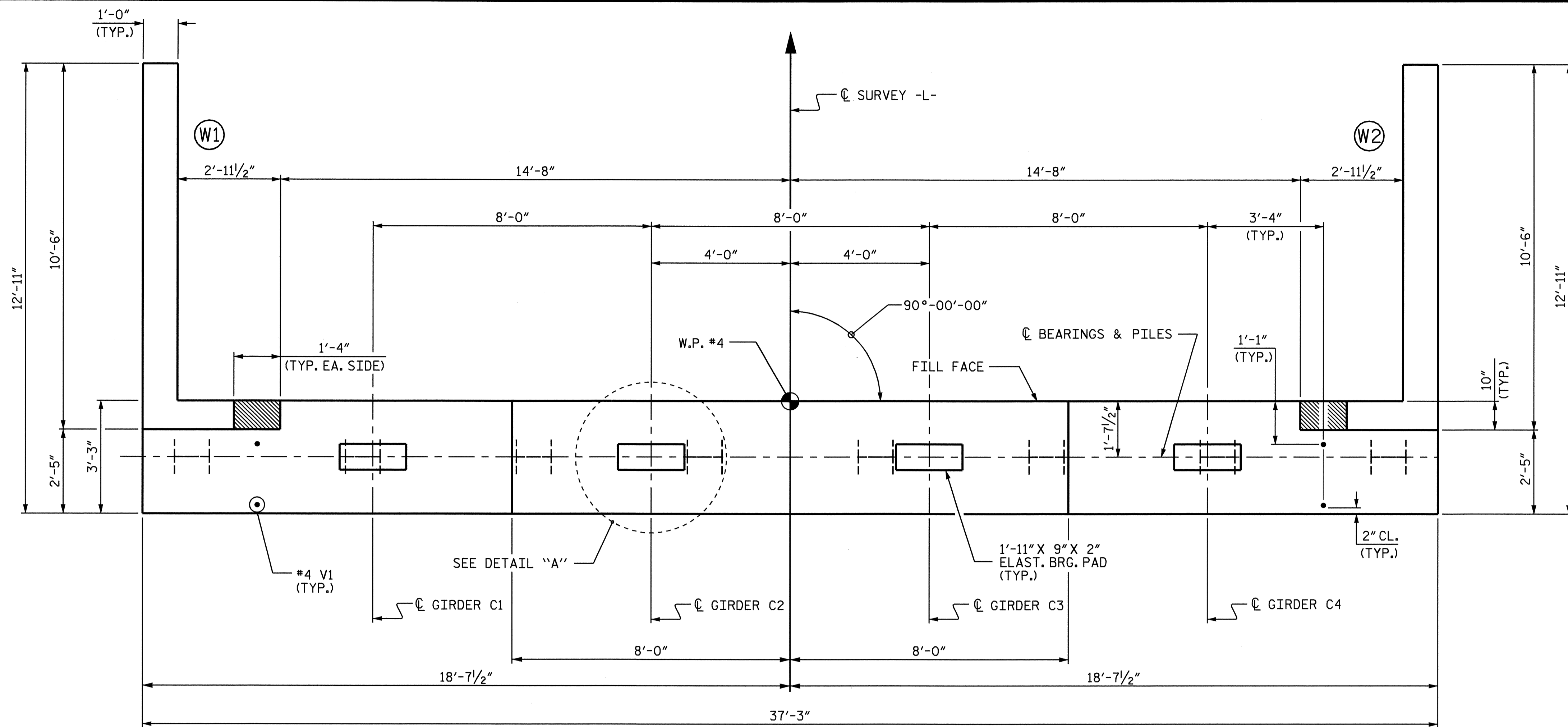
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
18" STEEL PIPE PILE



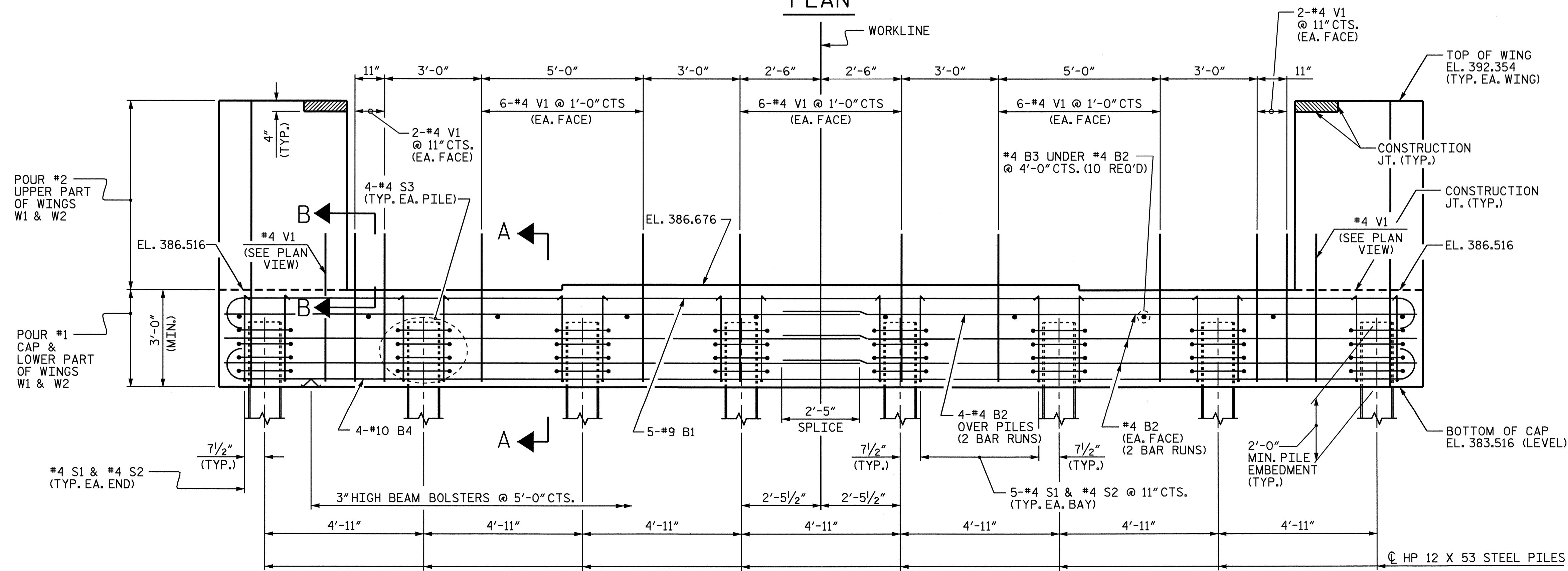
ASSEMBLED BY : S. B. WILLIAMS	DATE : 3/07
CHECKED BY : T. J. BEACH	DATE : 4-08
DRAWN BY : RWW 1/01	REV. 5/7/03 RWW/JTE
CHECKED BY : LES 1/01	REV. 10/1/05 LBG/TLA
	REV. 5/1/06 TLA/GM

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

TOTAL SHEETS 40

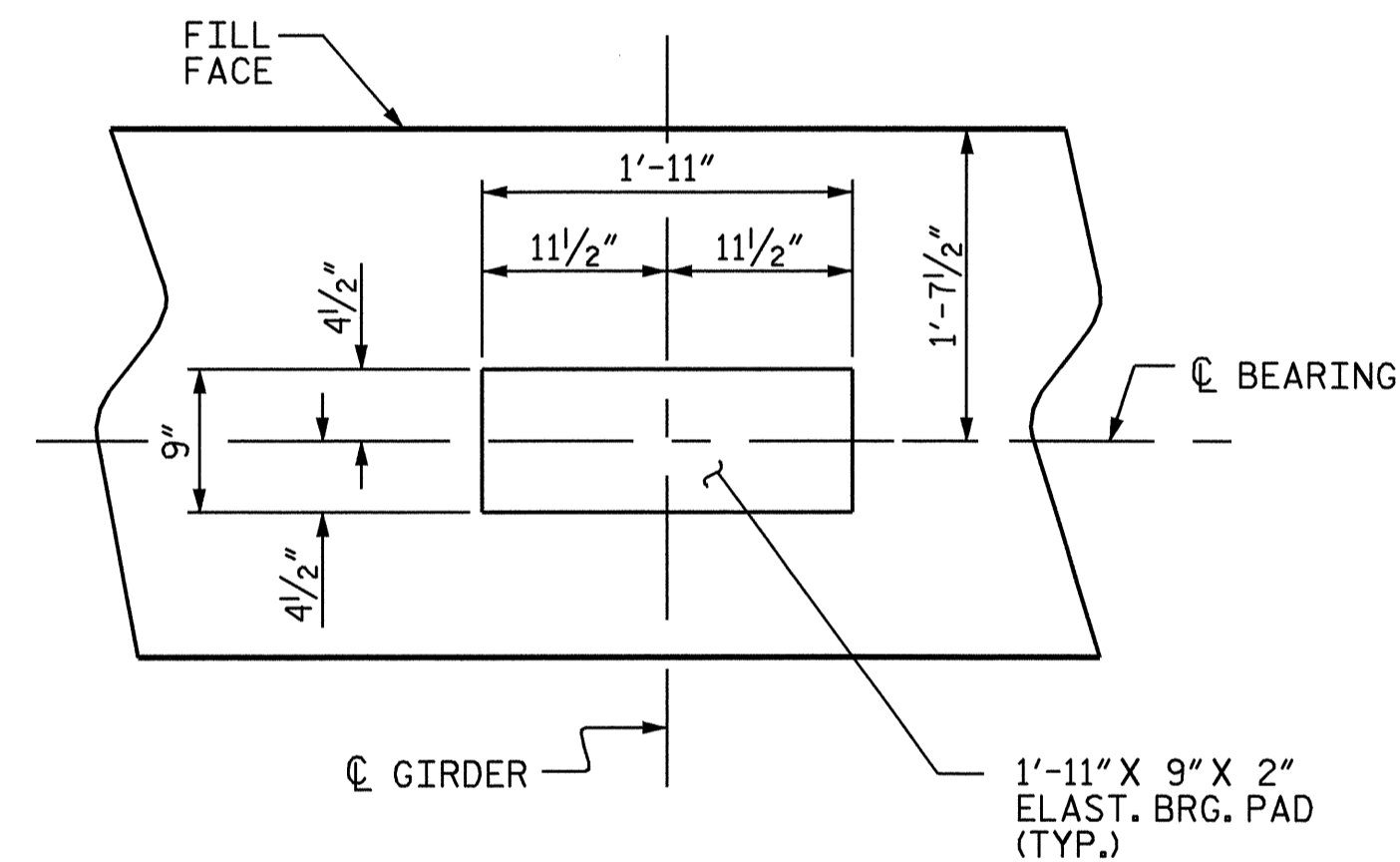


PLAN



ELEVATION

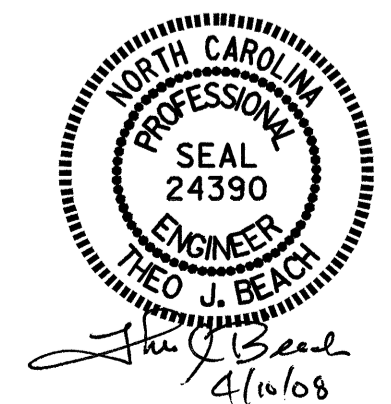
NOTES:
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR THE REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 FOR SECTION A-A AND PARTIAL SECTION B-B, SEE SHEET 3 OF 3.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 #4 V1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.



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

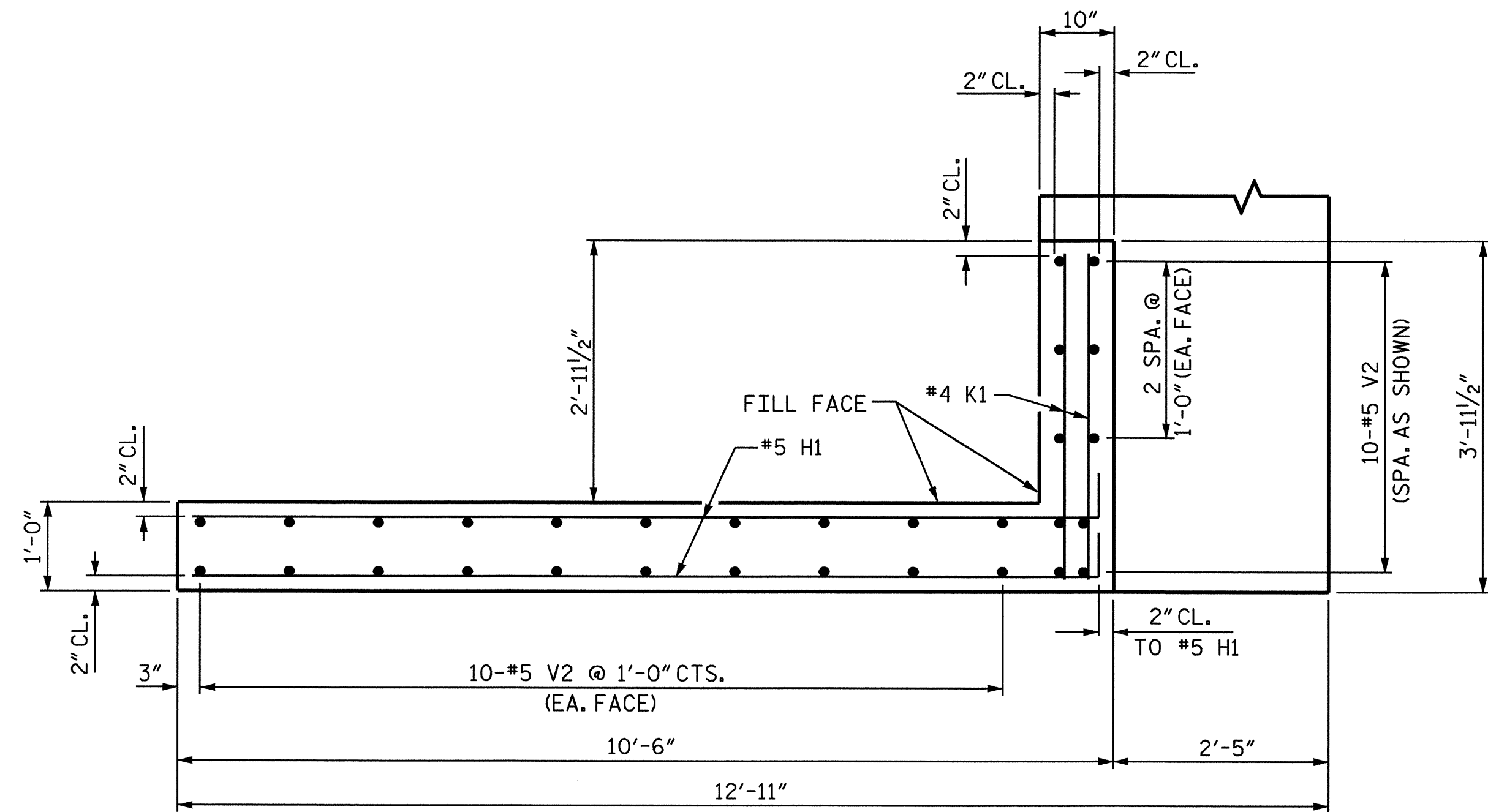
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

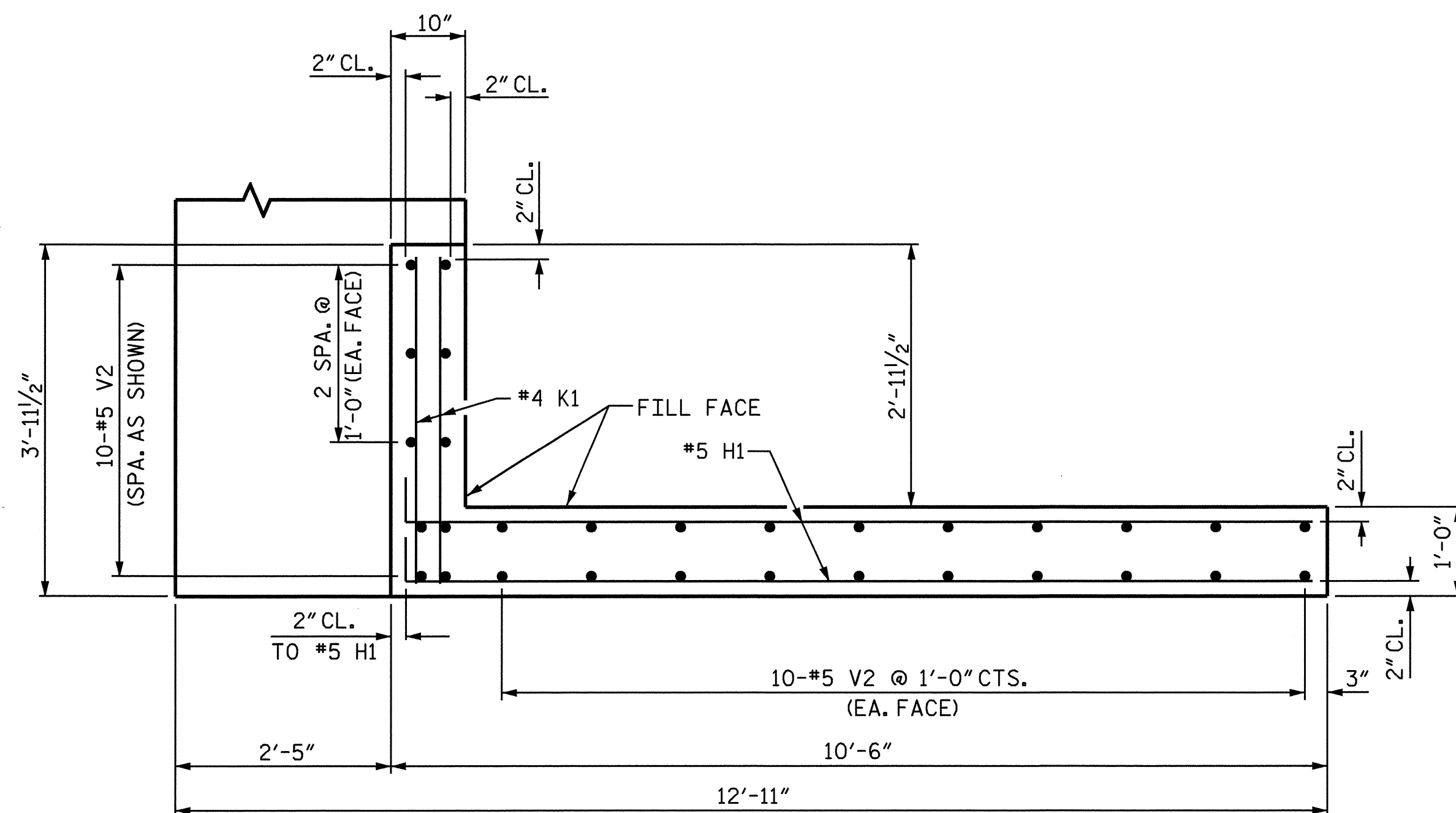


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32	
1			3			TOTAL SHEETS	
2			4			40	

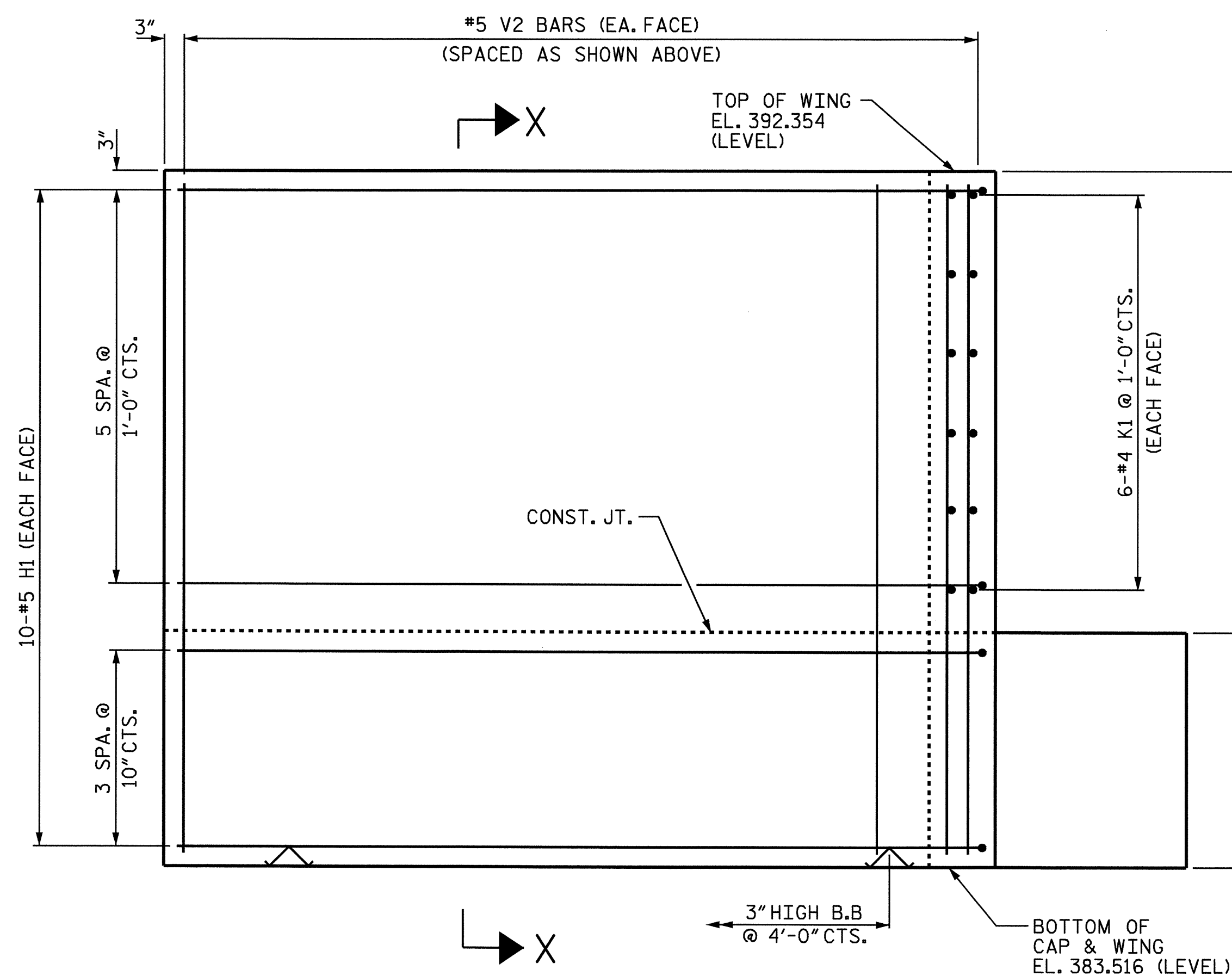
DRAWN BY: M.L. BROWN DATE: 9/07
 CHECKED BY: S.B. WILLIAMS DATE: 10/07



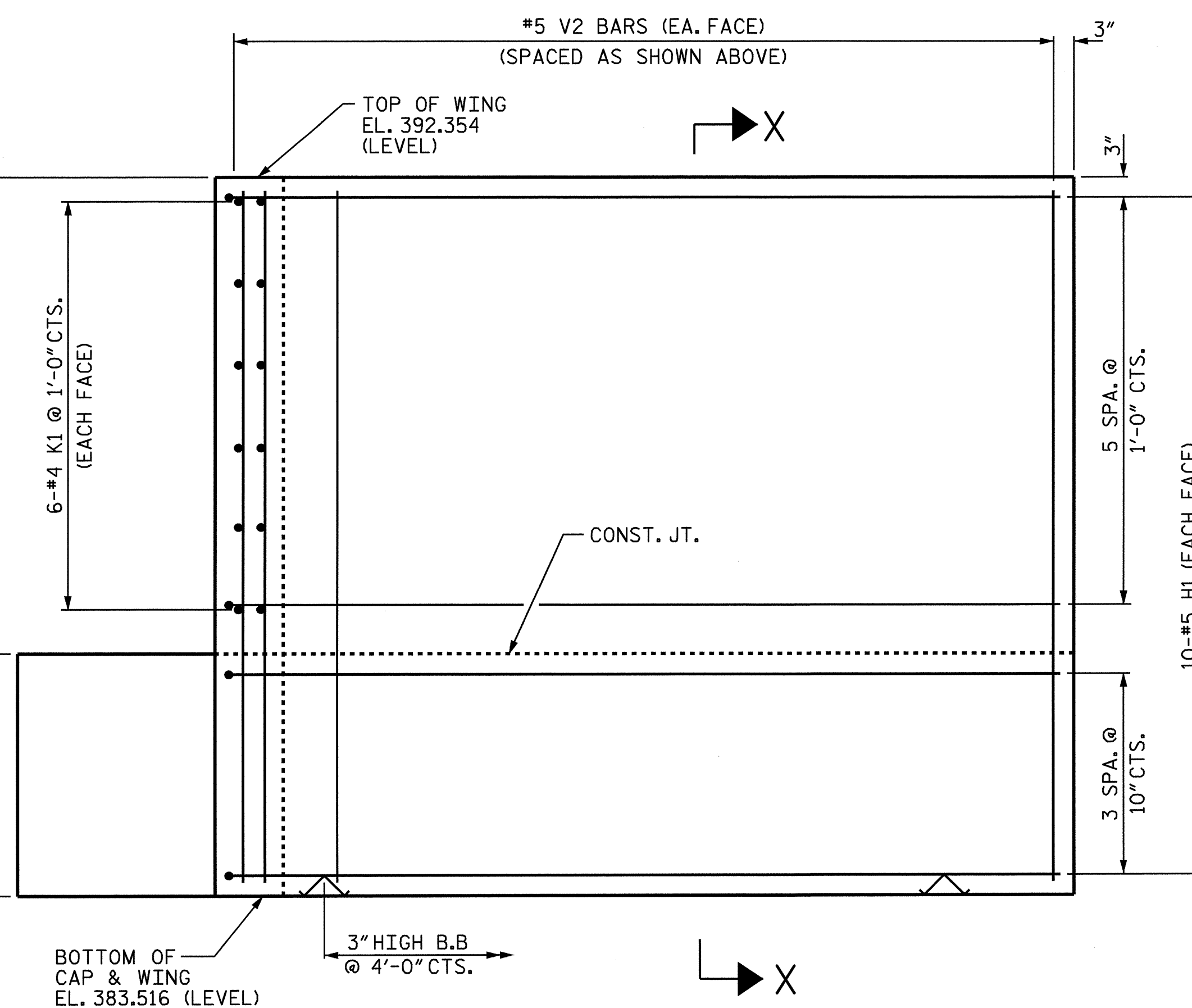
PLAN OF WING (W1)



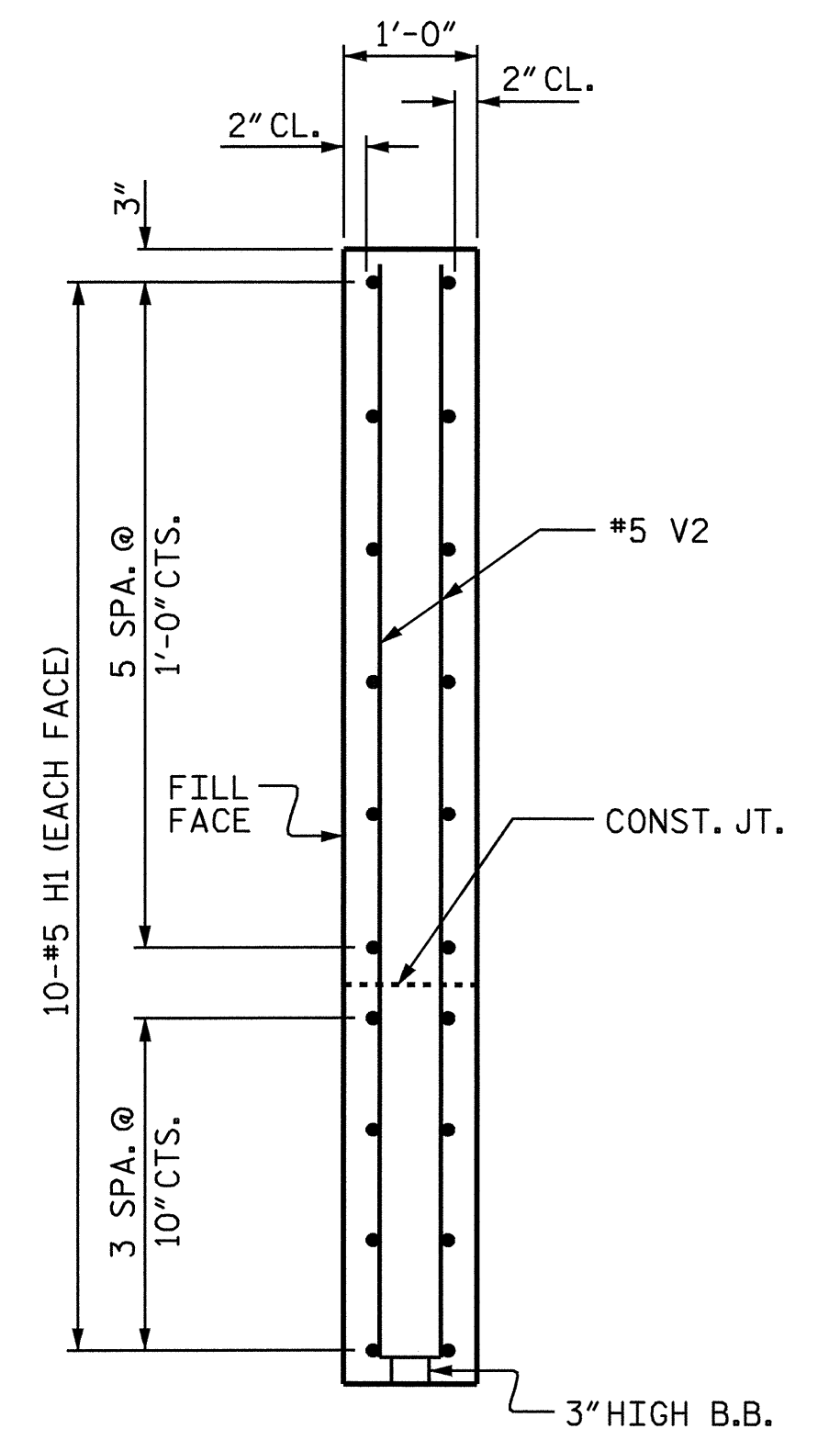
PLAN OF WING (W2)



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



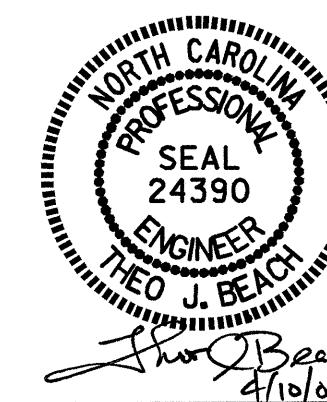
SECTION X-X

PROJECT NO. B-4057
 CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

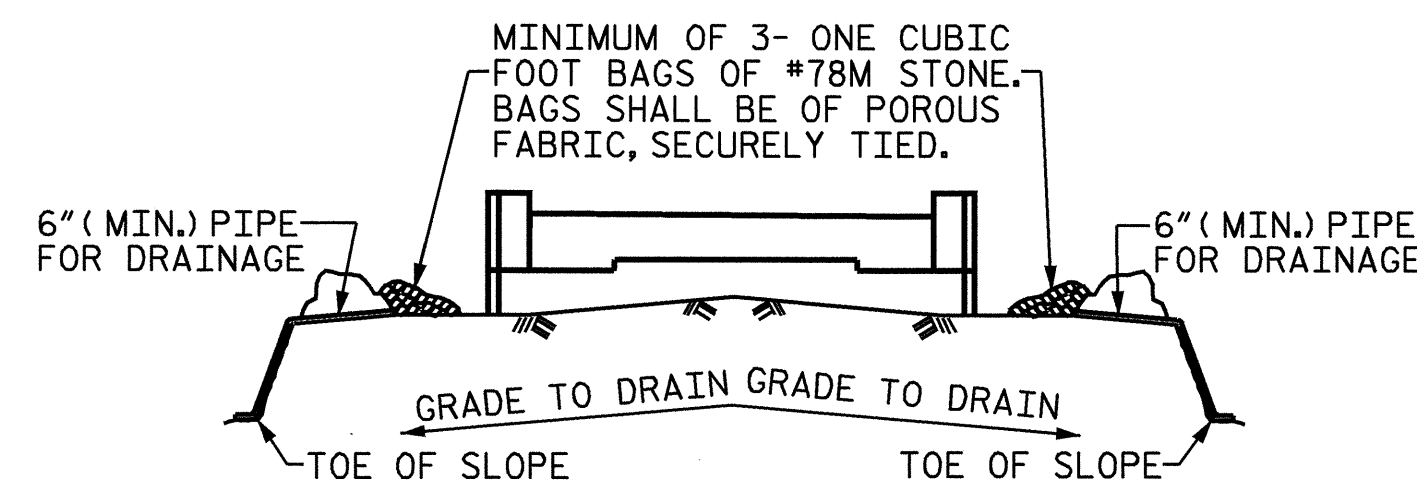
SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: M.L. BROWN DATE: 9/07
 CHECKED BY: S.B. WILLIAMS DATE: 10/07

10-APR-2008 12:43
 R:\Structures\SubstructureDrawings\EndBentDrawings\B-4057.sd.E*.dgn
 tbeach

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS 40	
2			4				

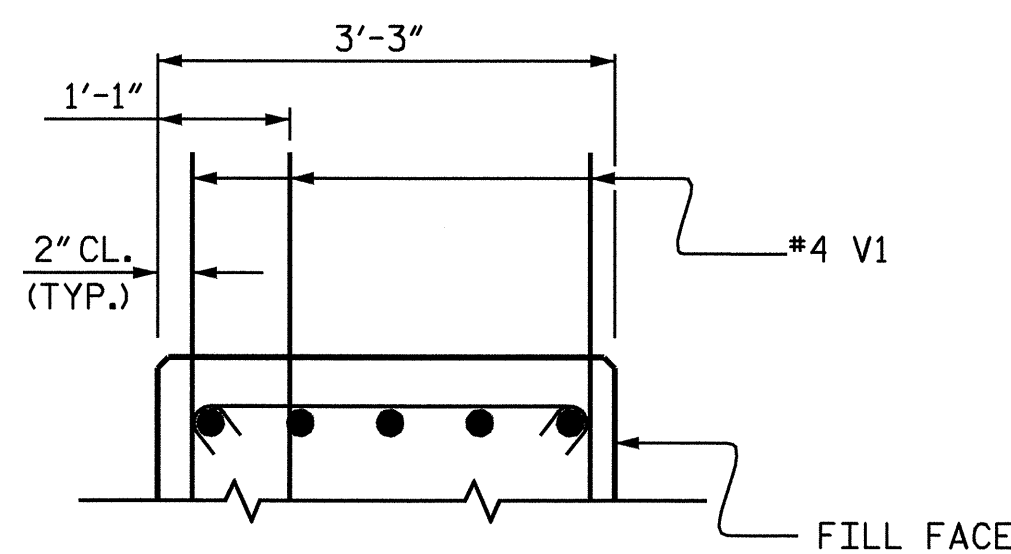


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

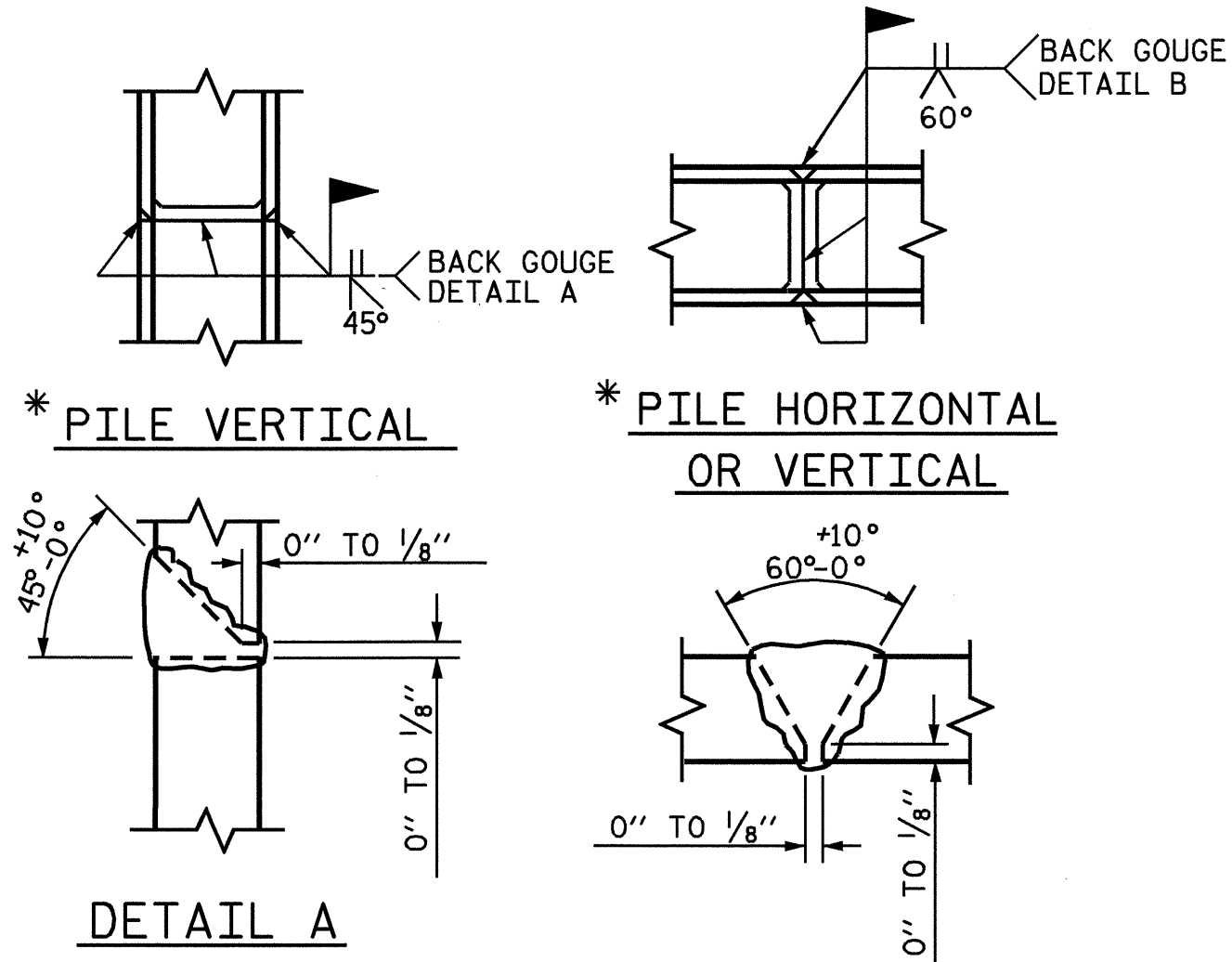
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



PARTIAL SECTION B-B

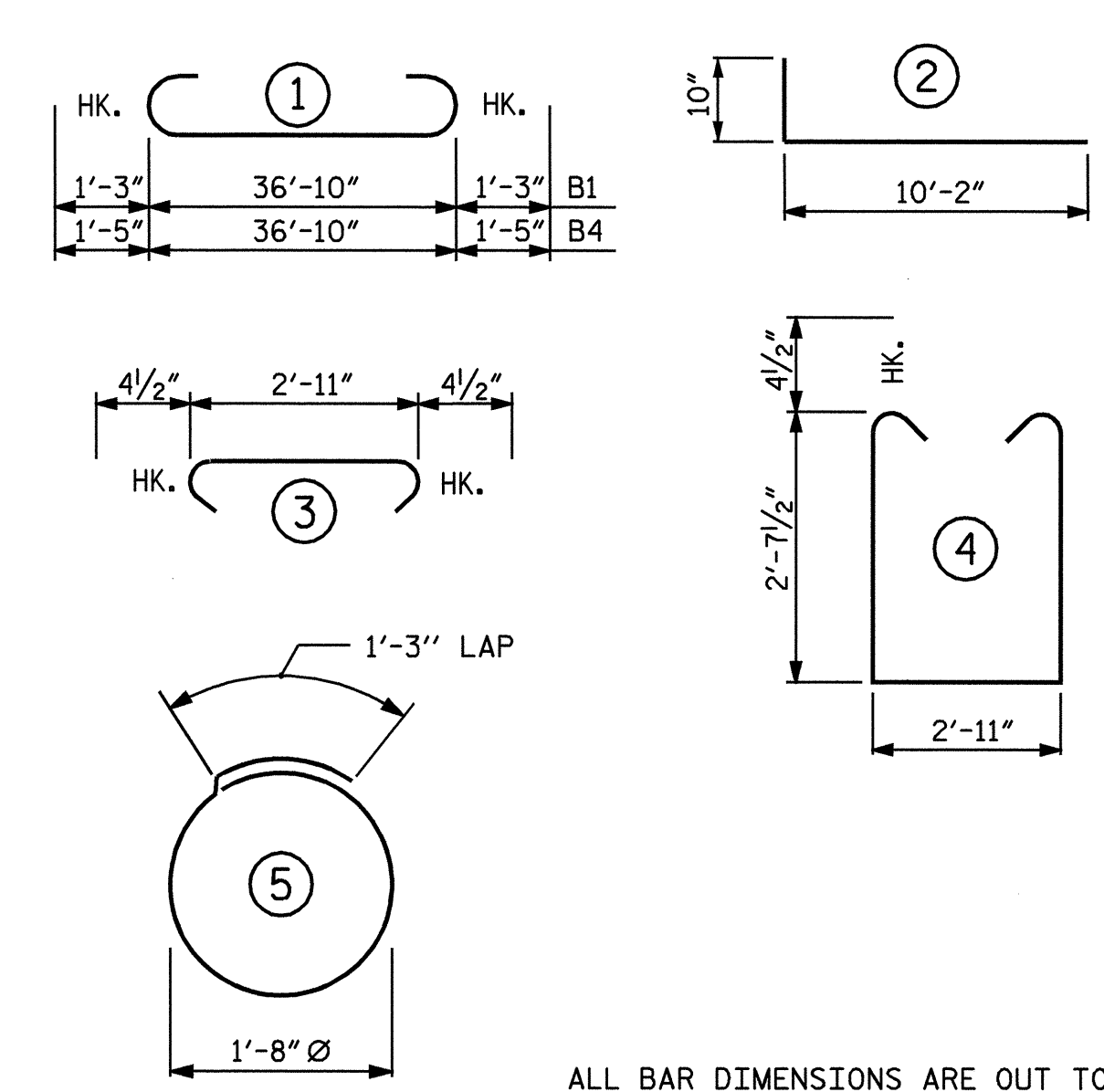


*POSITION OF PILE DURING WELDING.

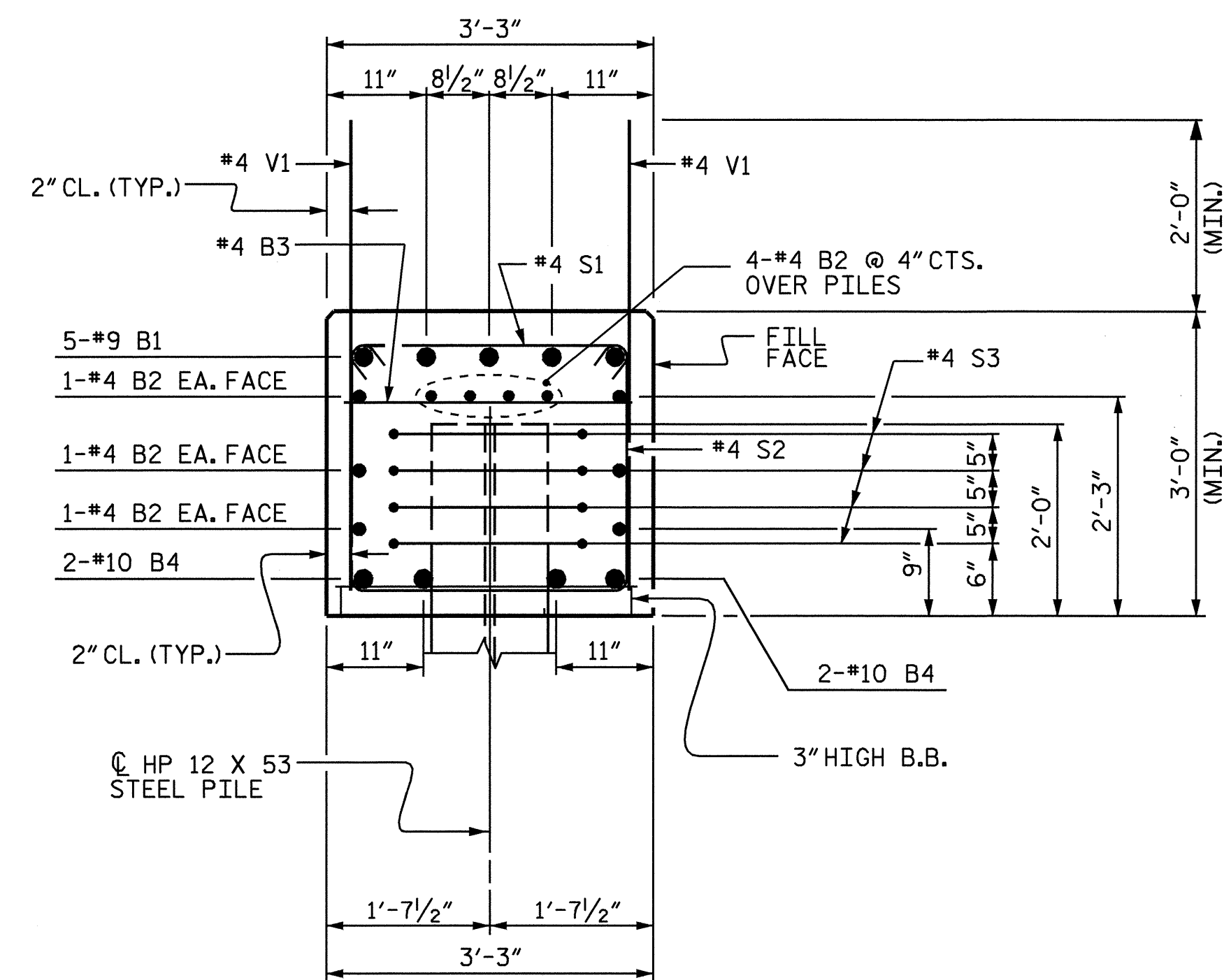
DETAIL B

PILE SPLICE DETAILS

BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	1	39'-4"	669
B2	20	#4	STR	19'-8"	263
B3	10	#4	STR	2'-11"	19
B4	4	#10	1	39'-8"	683
H1	40	#5	2	11'-0"	459
K1	24	#4	STR	3'-7"	57
S1	37	#4	3	3'-8"	91
S2	37	#4	4	8'-11"	220
S3	32	#4	5	6'-6"	139
V1	48	#4	STR	4'-10"	155
V2	60	#5	STR	8'-6"	532
REINFORCING STEEL					3287 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WINGS					15.9 C.Y.
POUR #2 UPPER PART OF WINGS					5.6 C.Y.
TOTAL CLASS A CONCRETE					21.5 C.Y.
HP 12 X 53 STEEL PILES					NO: 8 LIN. FT. = 240



ALL BAR DIMENSIONS ARE OUT TO OUT



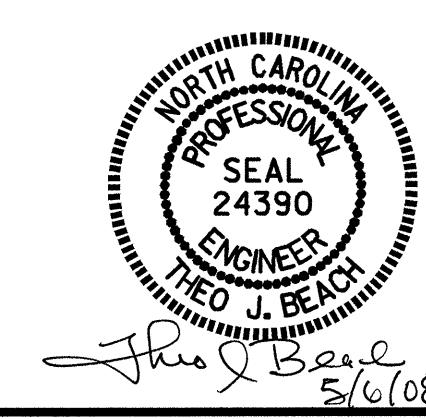
SECTION A-A

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3

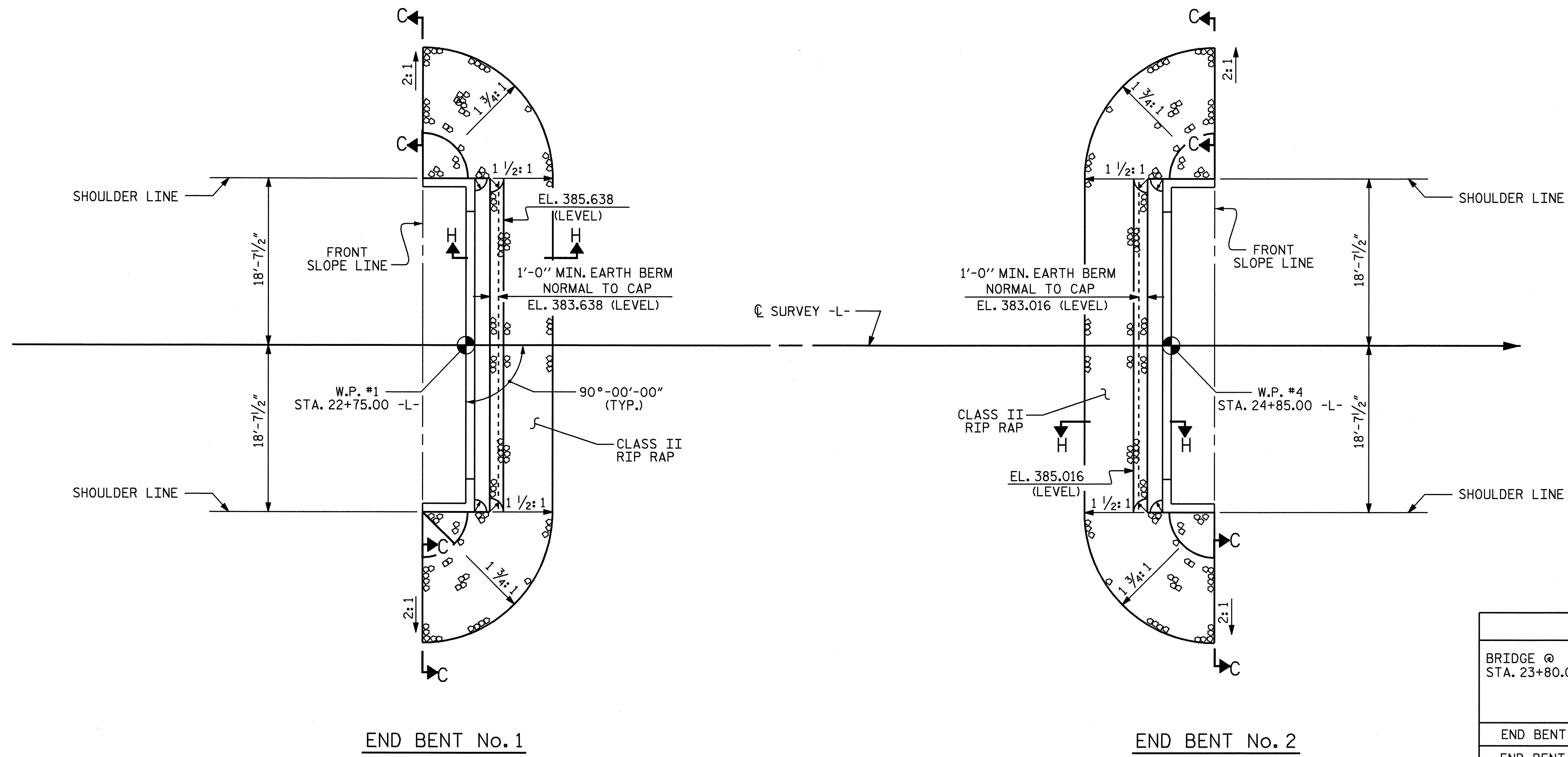
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2



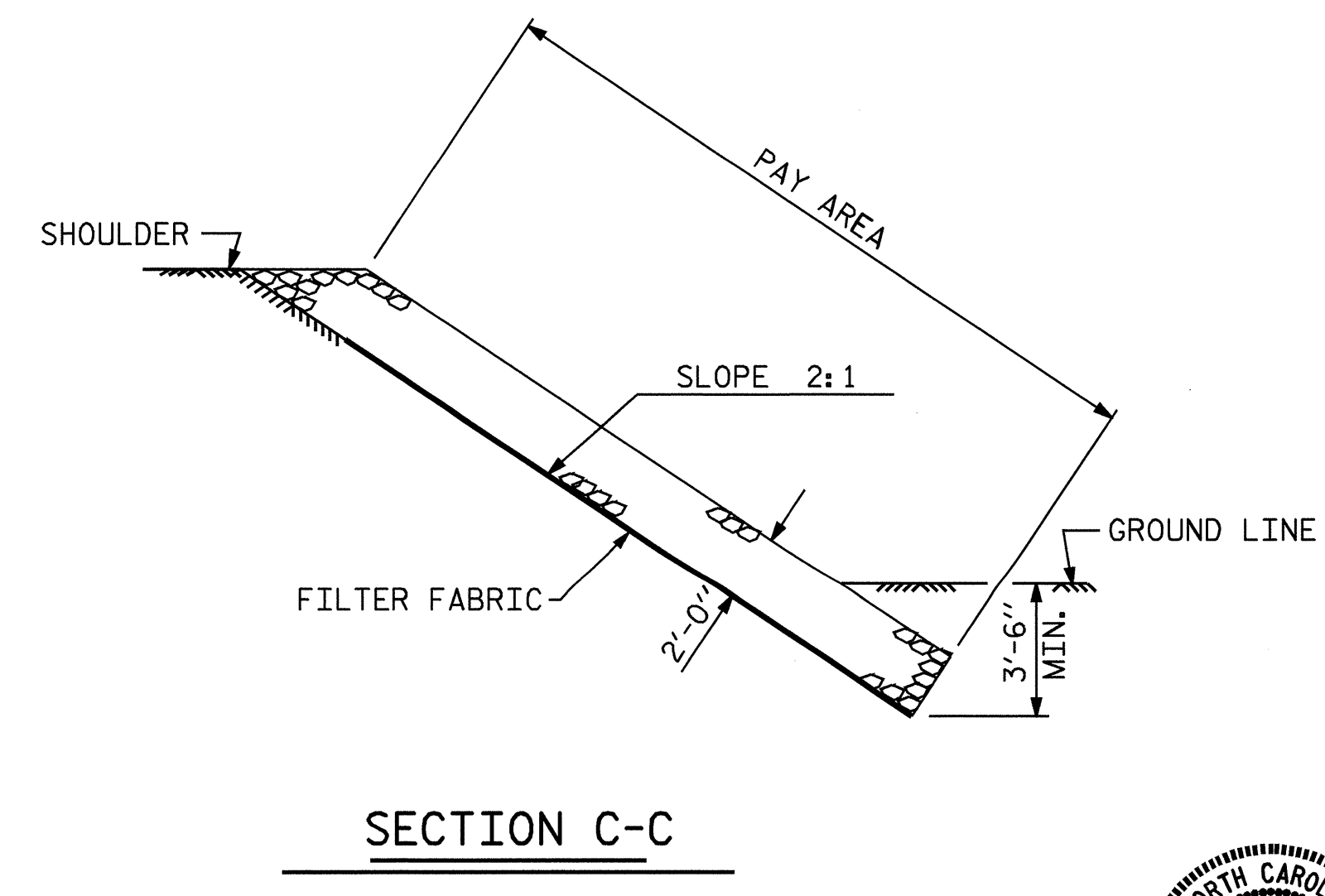
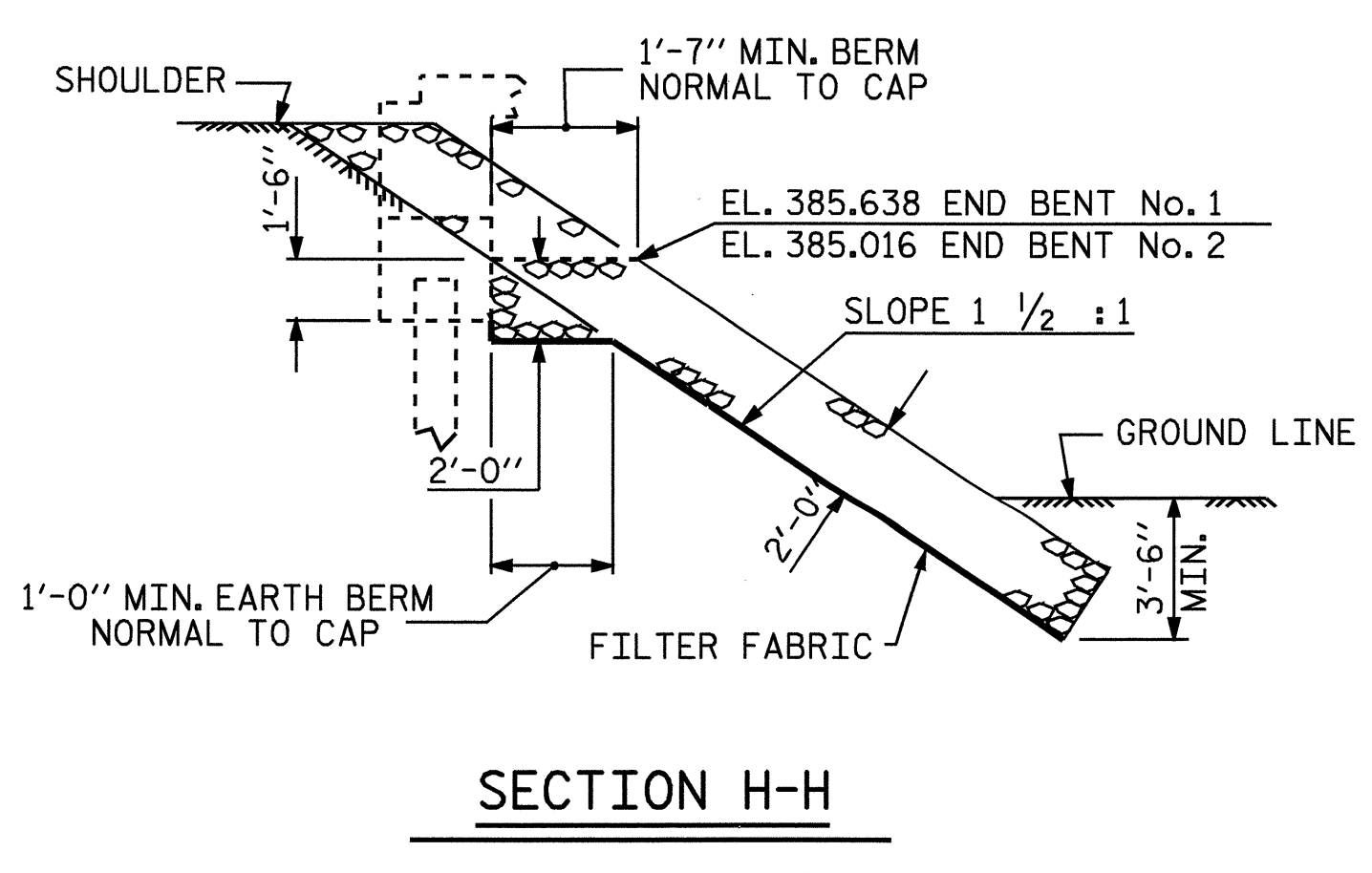
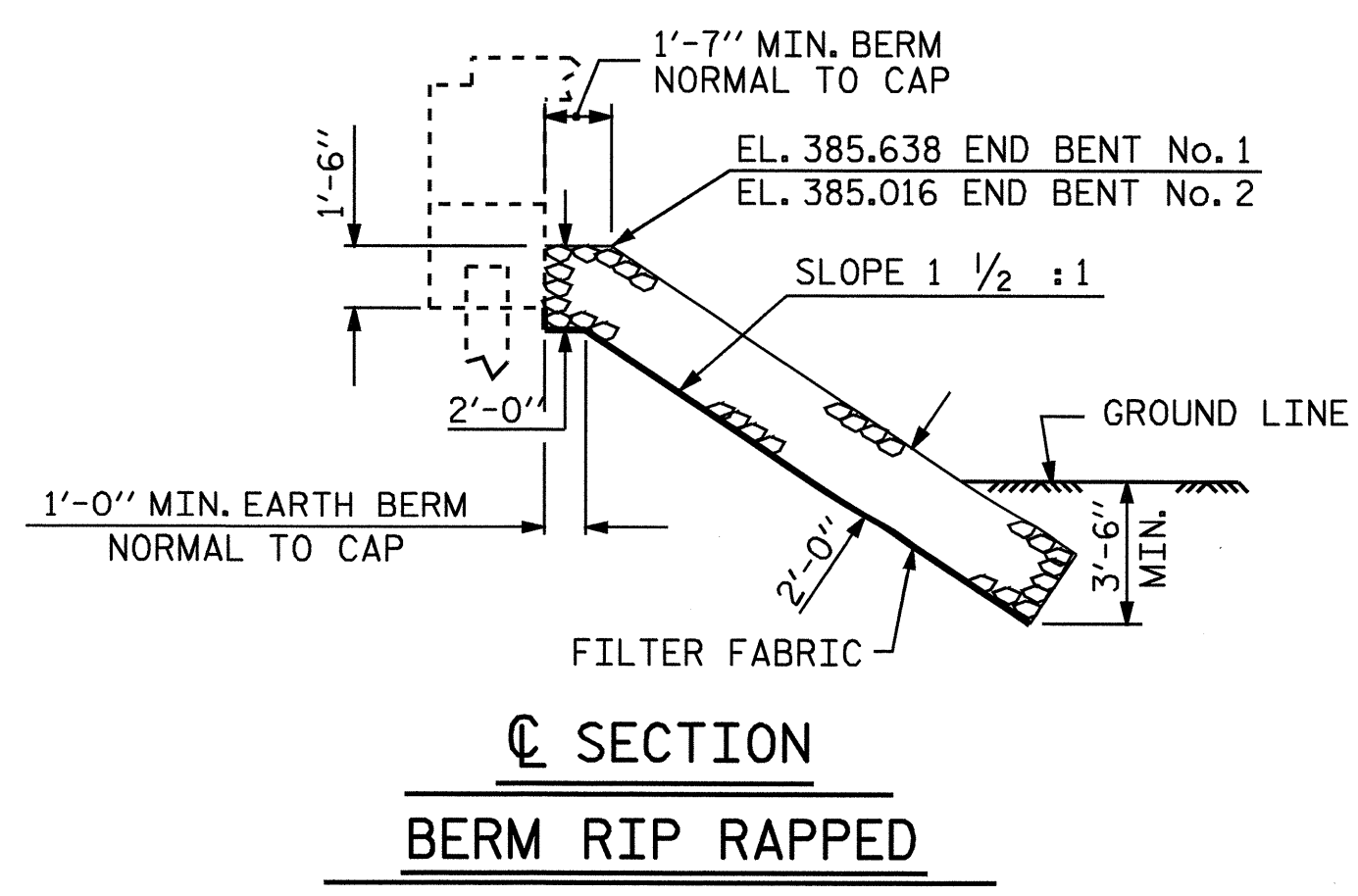
DRAWN BY : M.L. BROWN DATE : 9/07
 CHECKED BY : S.B. WILLIAMS DATE : 10/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			40



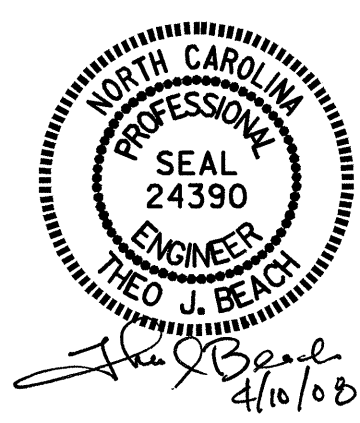
ESTIMATED QUANTITIES		
BRIDGE @ STA. 23+80.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	100	111
END BENT 2	76	84

PLAN OF RIP RAP



PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

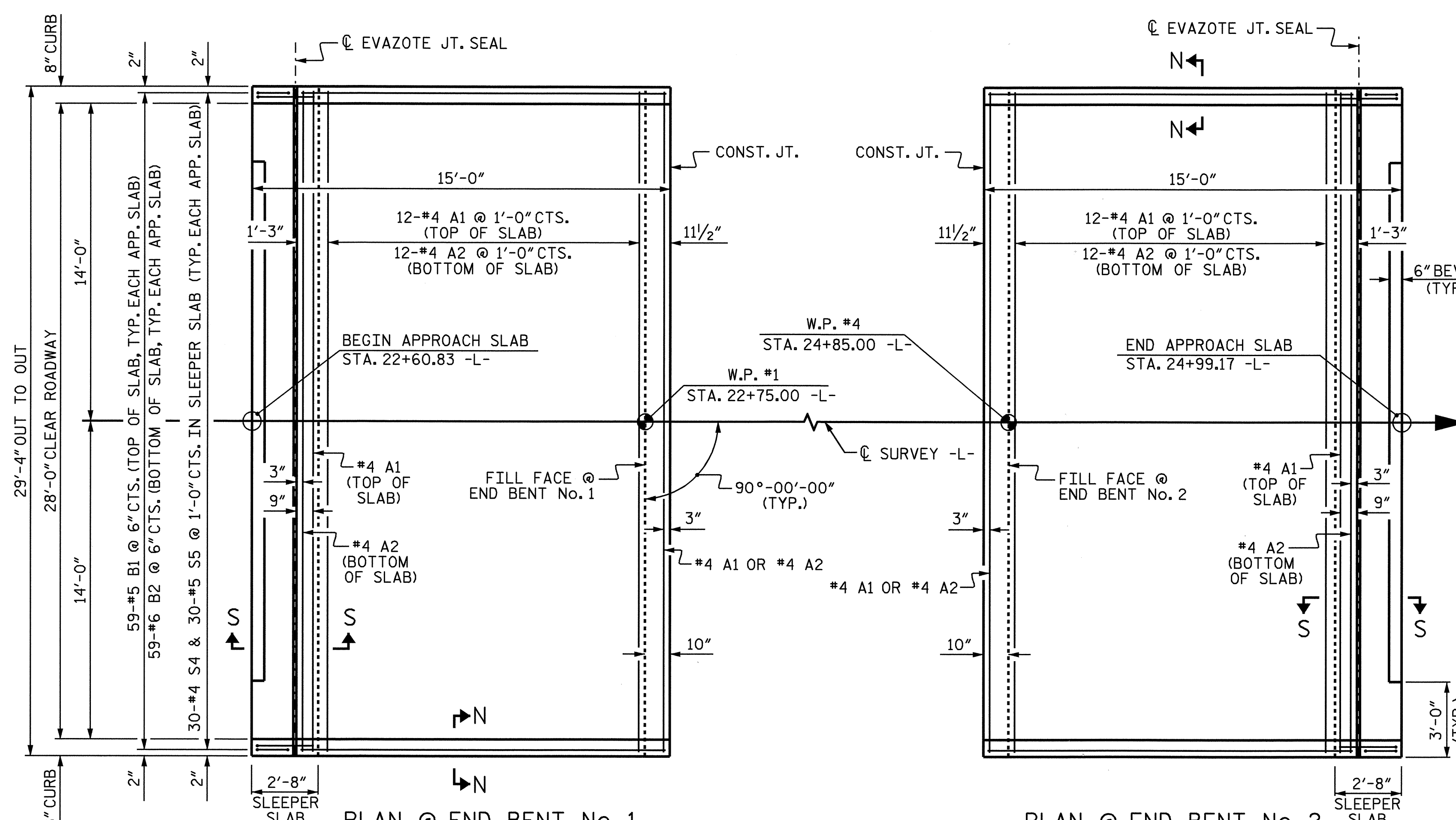
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS



ASSEMBLED BY : S.B. WILLIAMS DATE : 4-07
 CHECKED BY : M.L. BROWN DATE : 5-07
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLG/GM

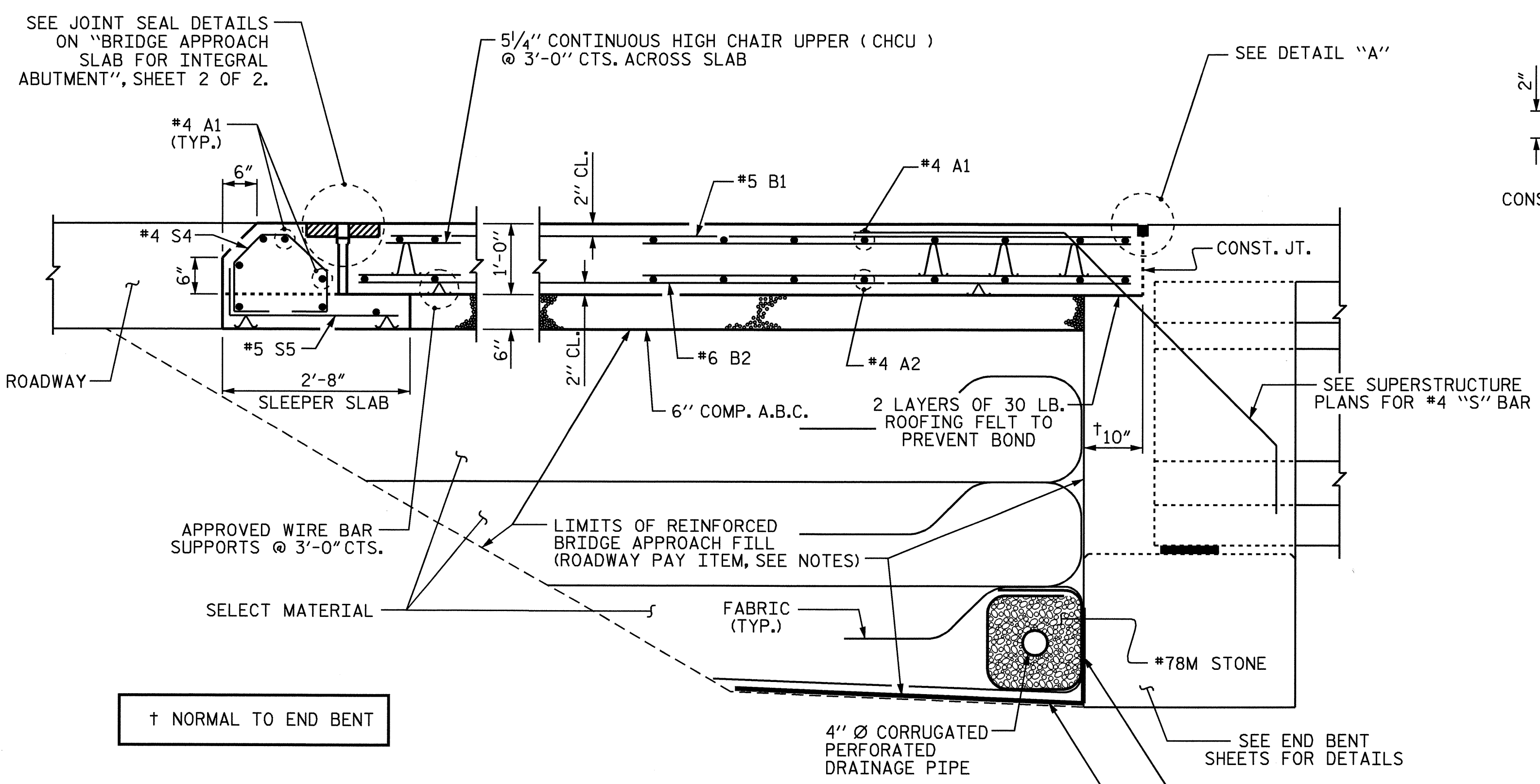
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 40



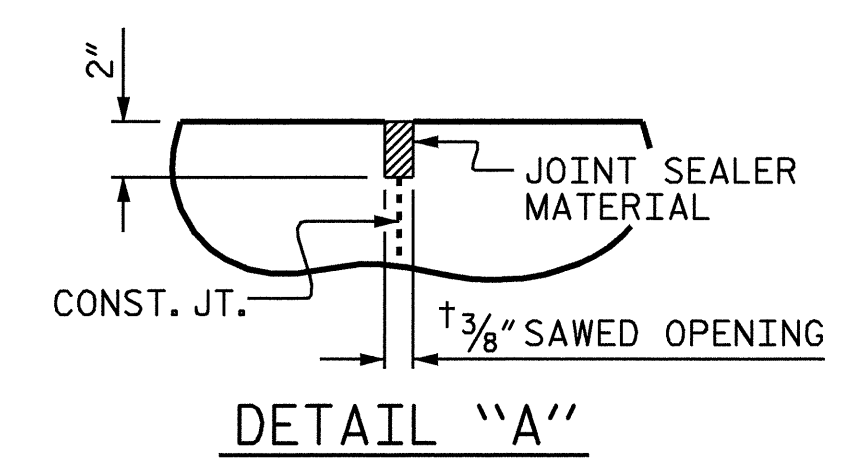
PLAN @ END BENT No. 1
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. #4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.

PLAN @ END BENT No. 2

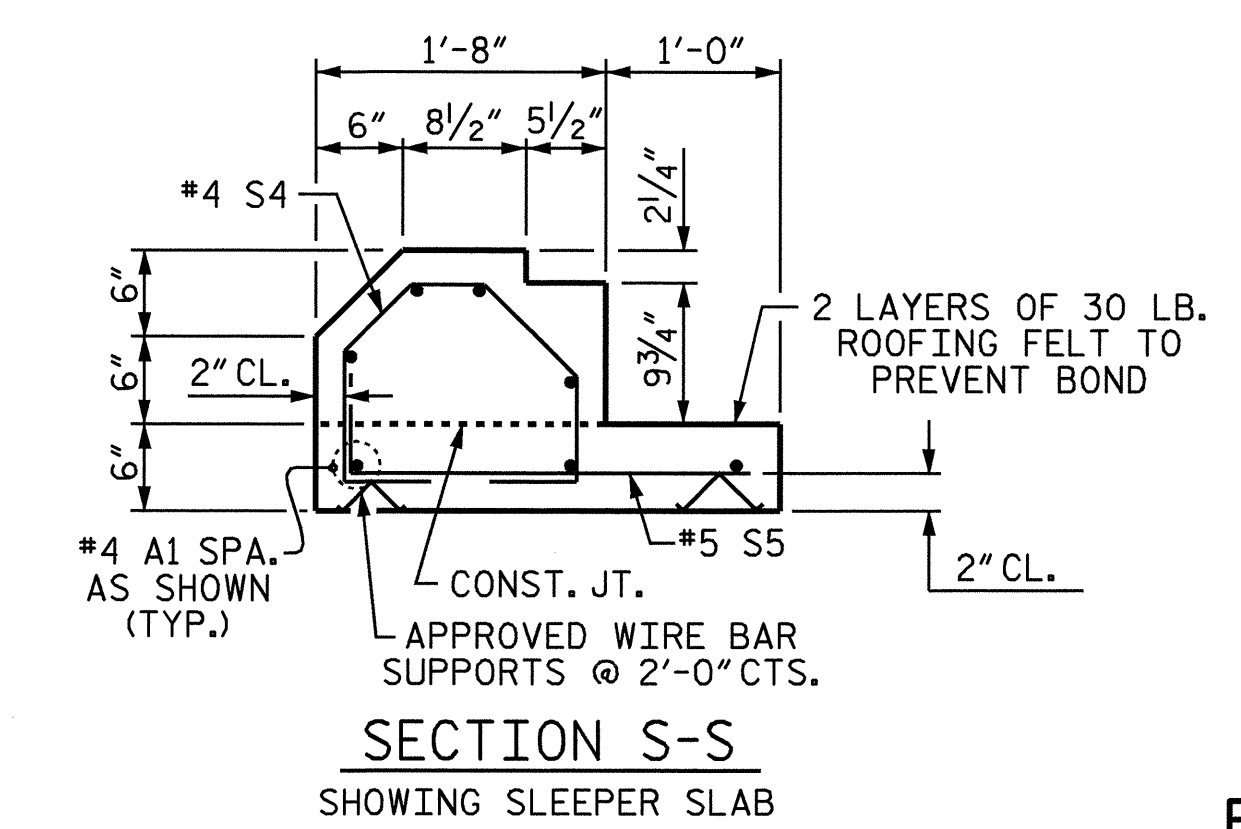


SECTION THRU SLAB

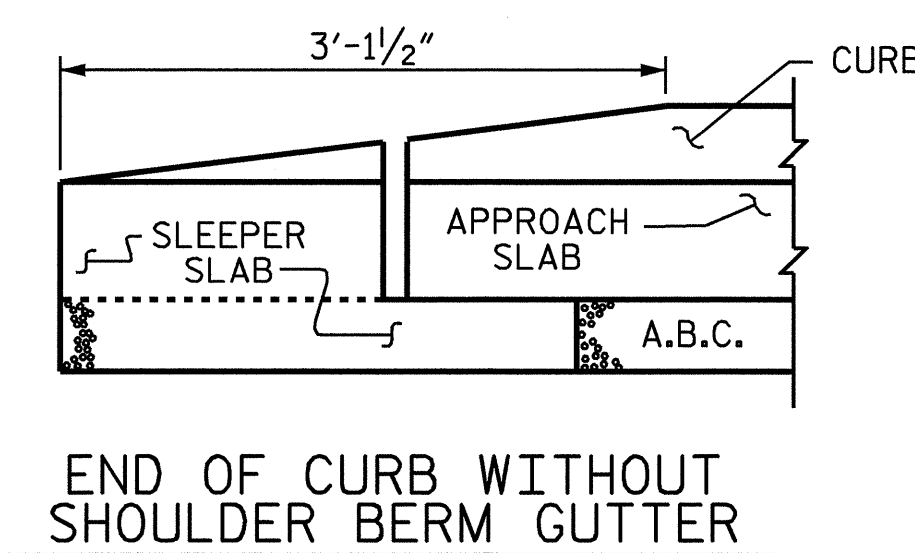
ASSEMBLED BY : S.B. WILLIAMS DATE : 10-06
 CHECKED BY : M. BROWN DATE : 10-06
 DRAWN BY : TLA 10/05 ADDED 5/1/06R KMM/GM
 CHECKED BY : GM 5/06



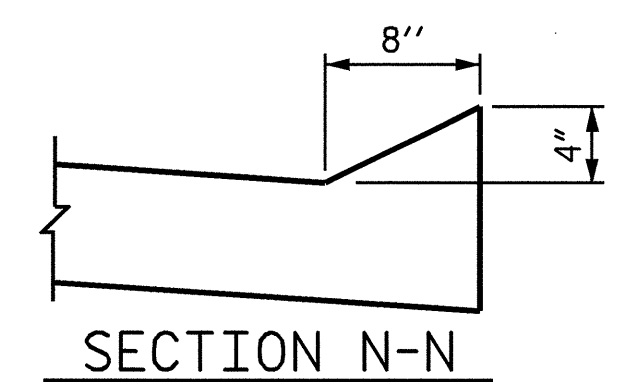
DETAIL "A"



SECTION S-S
SHOWING SLEEPER SLAB



END OF CURB WITHOUT
SHOULDER BERM GUTTER



SECTION N-N

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.

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

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

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

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE SLEEPER 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 VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	21	#4	STR	29'-0"	407
A2	14	#4	STR	29'-0"	271
* B1	59	#5	STR	12'-5"	764
B2	59	#6	STR	13'-0"	1152
* S4	30	#4	1	3'-11"	78
S5	30	#5	2	2'-11"	91

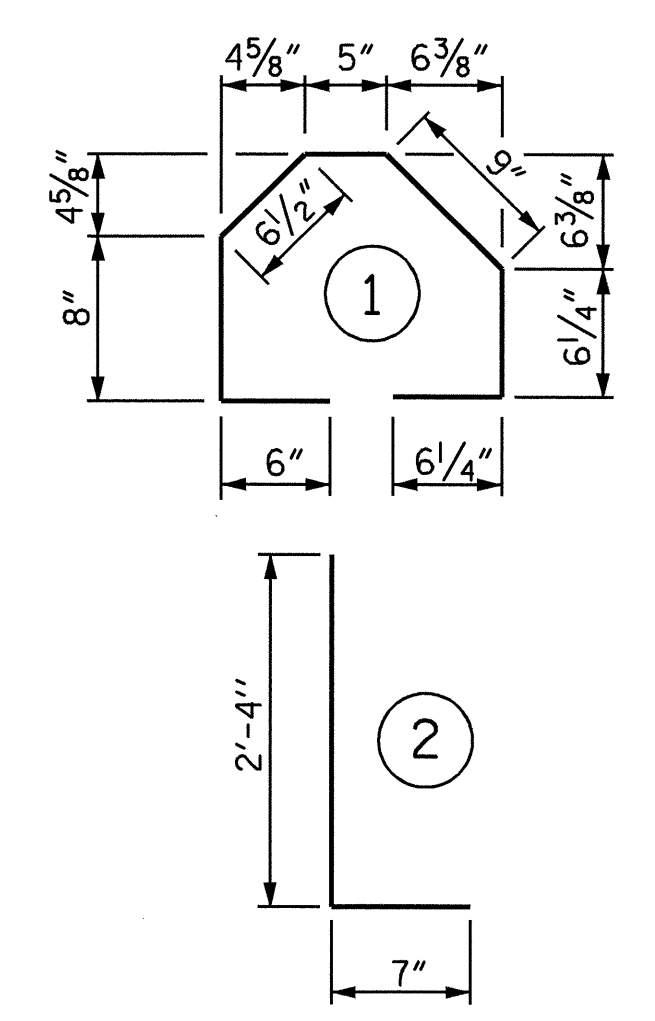
REINFORCING STEEL	LBS.	1514
* EPOXY COATED REINFORCING STEEL	LBS.	1249

CLASS AA CONCRETE

POUR #1 - SLEEPER SLAB	C. Y.	3.1
POUR #2 - SLAB & CURB	C. Y.	14.5

TOTAL	C. Y.	17.6
-------	-------	------

BAR TYPES



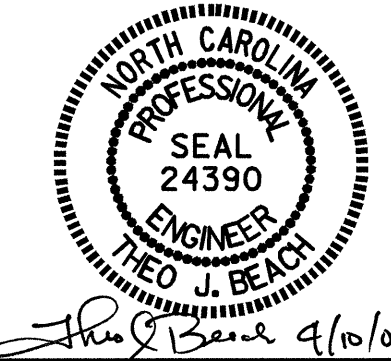
ALL BAR DIMENSIONS ARE OUT TO OUT

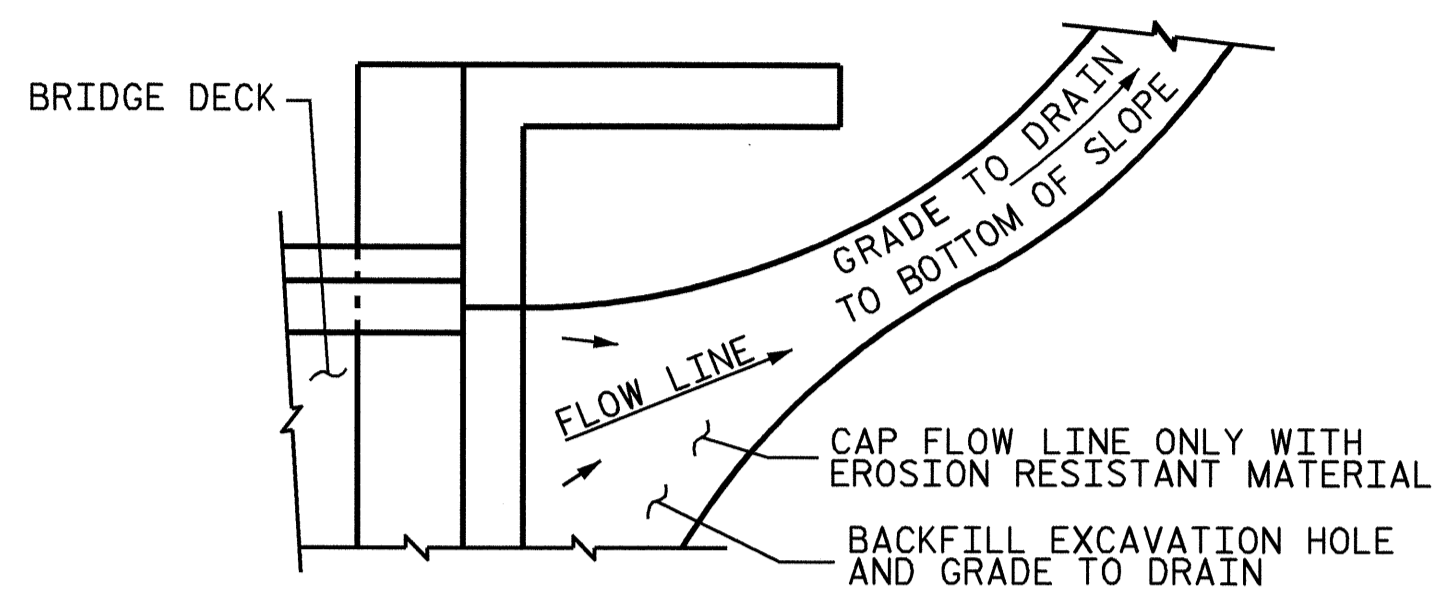
PROJECT NO. B-4057
 CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT

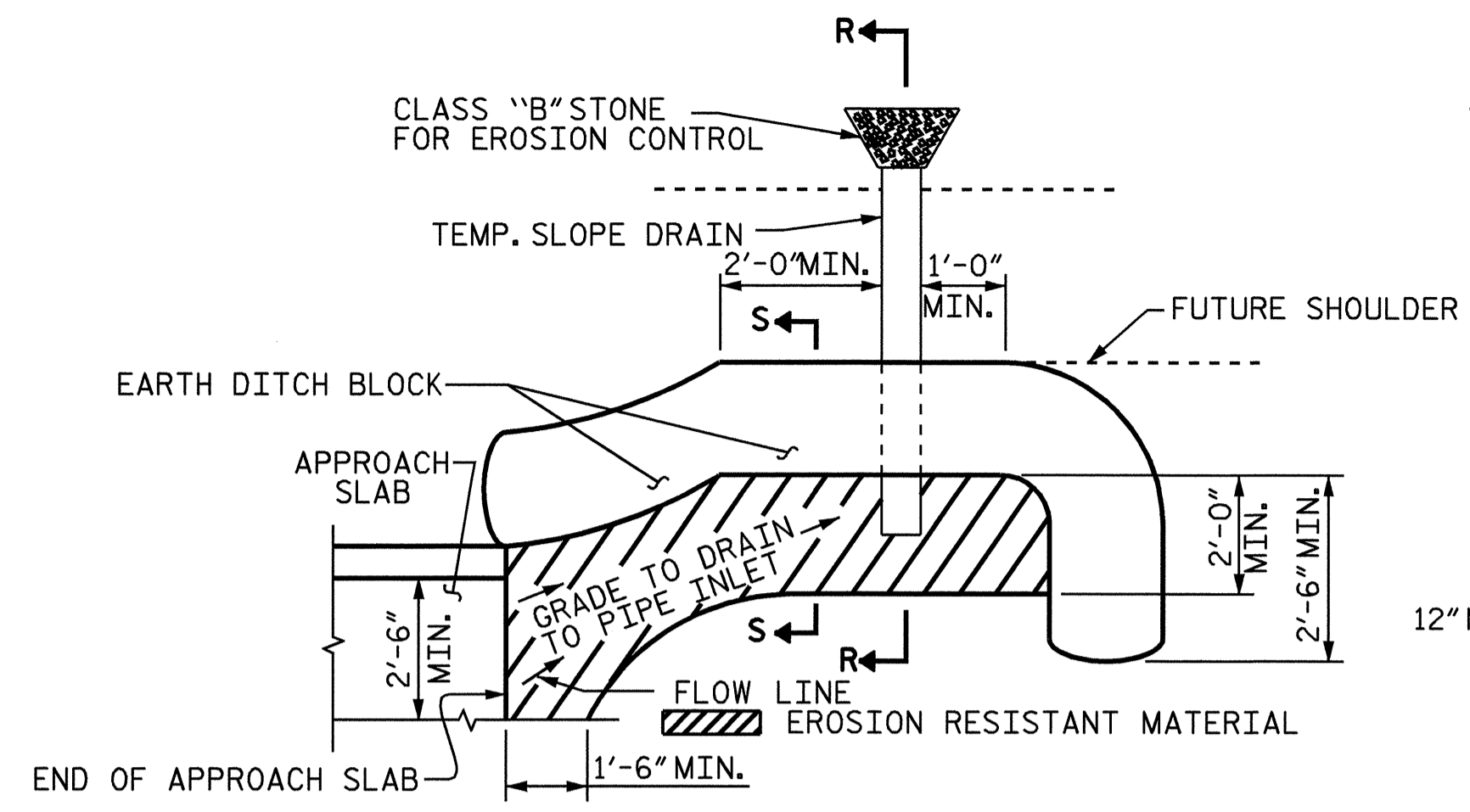
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS 40	
2			4				





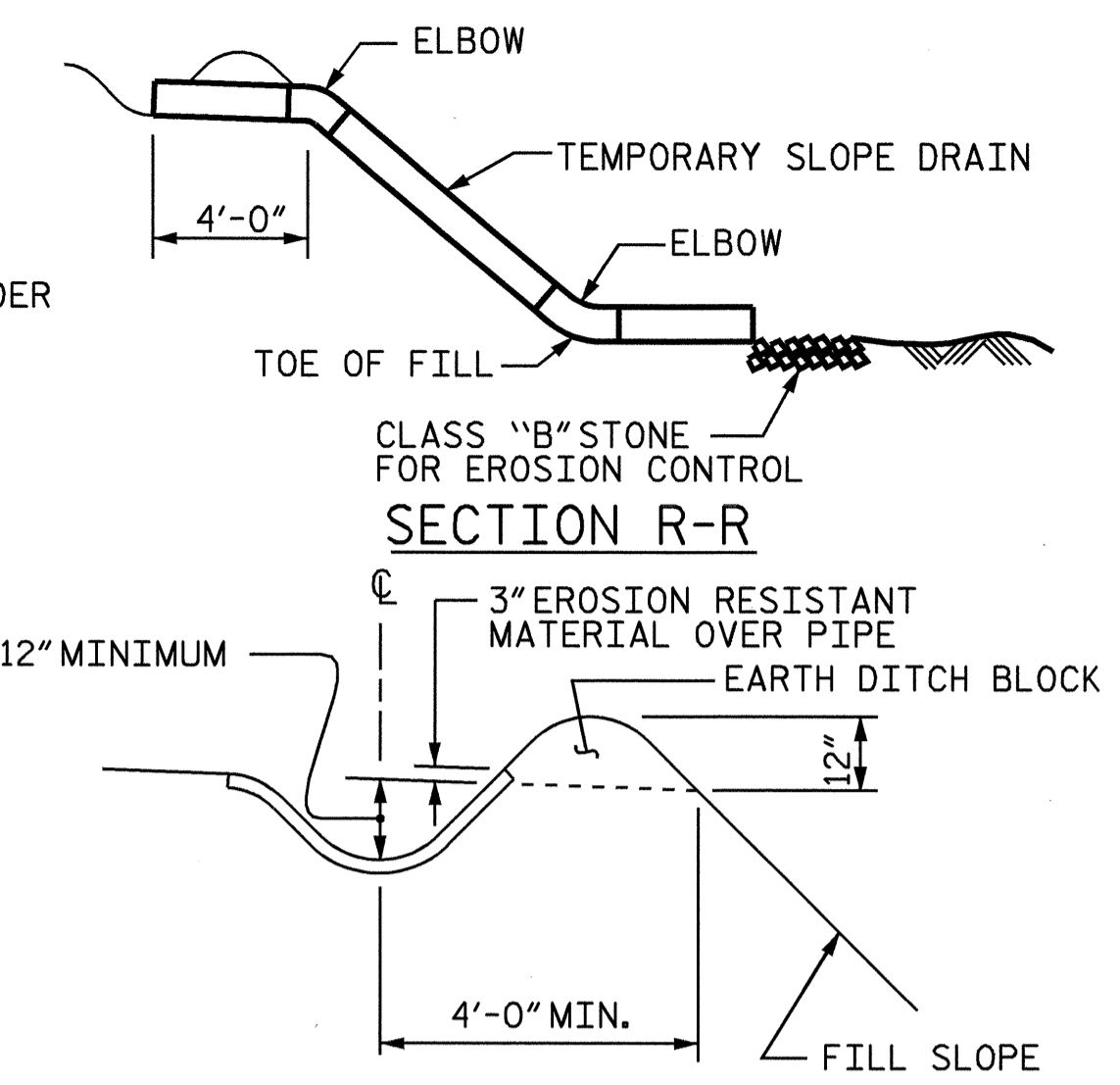
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

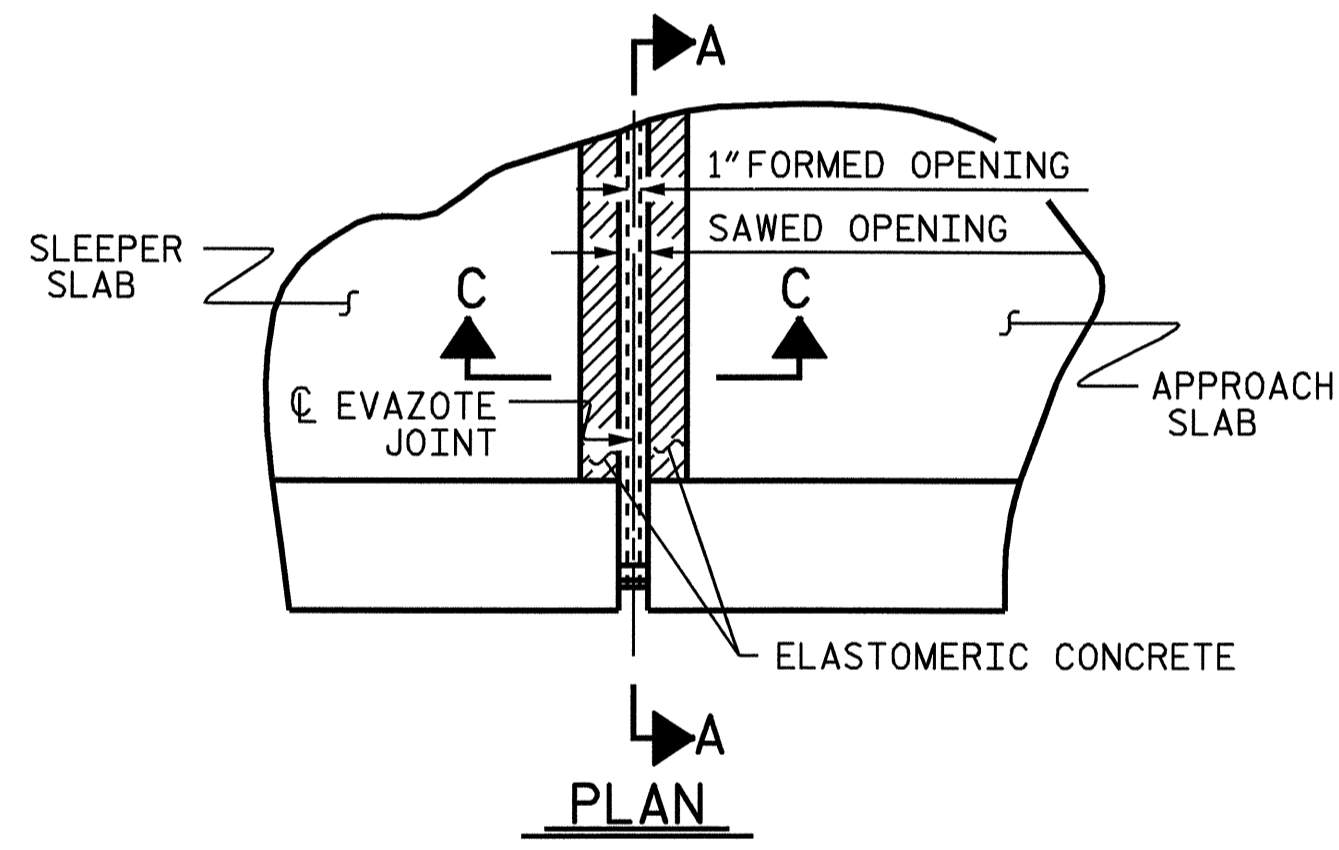
PLAN VIEW



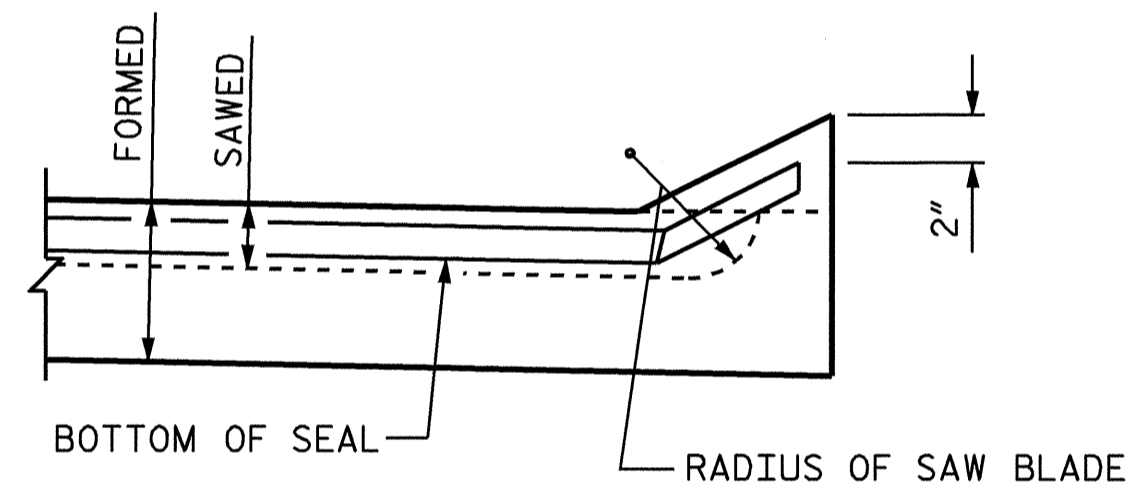
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



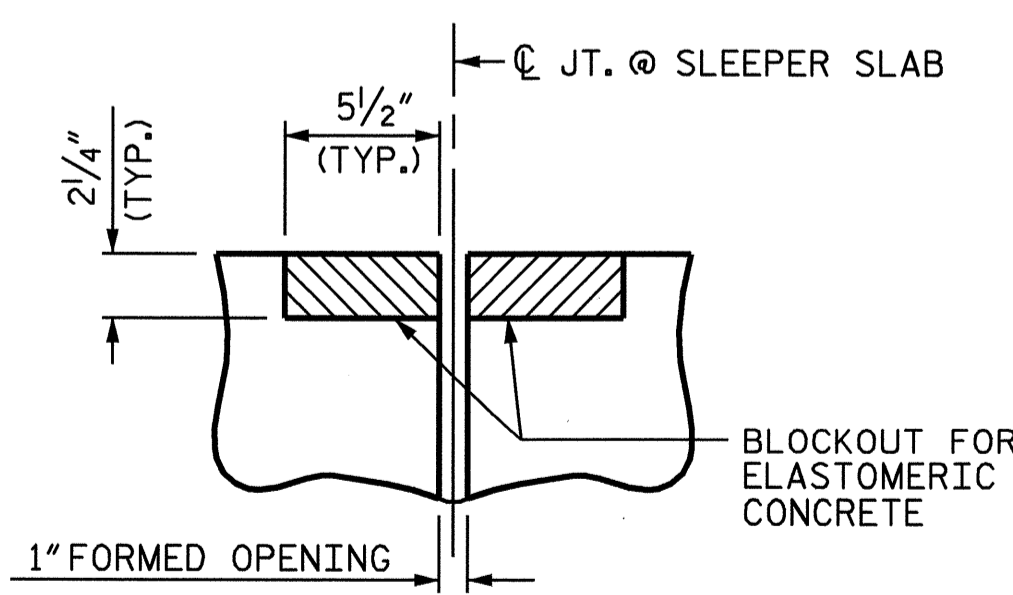
PLAN



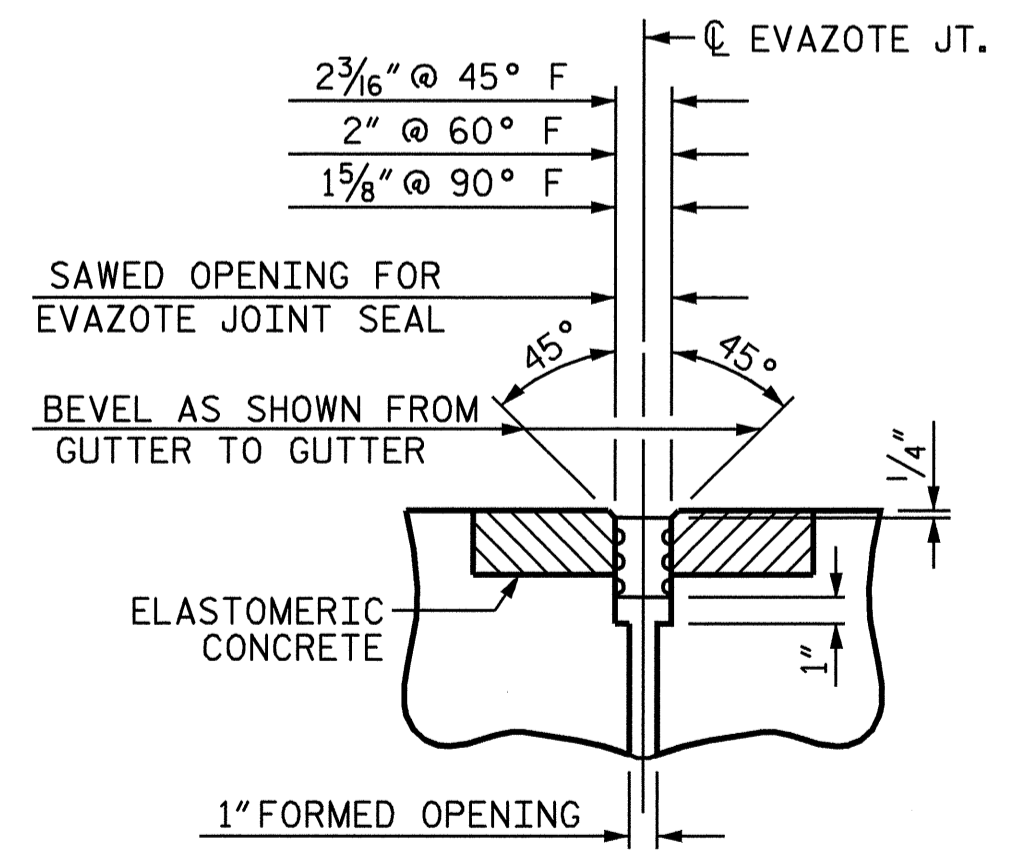
SECTION A-A

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	4.8
2	4.8
TOTAL	9.6

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



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



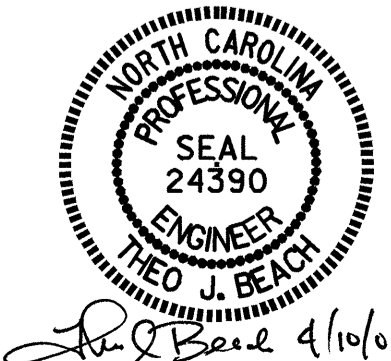
SECTION C-C
EVAZOTE JOINT SEAL
(EXPANSION)

JOINT SEAL DETAILS @ SLEEPER SLAB

PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT



ASSEMBLED BY : S. B. WILLIAMS	DATE : 10-06
CHECKED BY : M. BROWN	DATE : 10-06
DRAWN BY : FCJ	11/88
CHECKED BY : ARB	11/88
REV. 10/17/00	RWW/LES
REV. 5/1/03	RWW/JTE
REV. 5/1/06	TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			40

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 X 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)

Table with columns: AVG. SLAB THICKNESS (in), BRACKET DIMENSION (in), SCREED LOAD PER BRACKET (2500 lbs. to 0 lbs.), BRACKET SPACING, 45° HANGER SWL (lbs).

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

Table with columns: AVG. SLAB THICKNESS (in), BRACKET DIMENSION (in), SCREED LOAD PER BRACKET (2500 lbs. to 0 lbs.), BRACKET SPACING, 45° HANGER SWL (lbs).

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

Table with columns: AVG. SLAB THICKNESS (in), BRACKET DIMENSION (in), SCREED LOAD PER BRACKET (2500 lbs. to 0 lbs.), BRACKET SPACING, 45° HANGER SWL (lbs).

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

Table with columns: AVG. SLAB THICKNESS (in), BRACKET DIMENSION (in), SCREED LOAD PER BRACKET (2500 lbs. to 0 lbs.), BRACKET SPACING, 45° HANGER SWL (lbs).

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-4057
CASWELL COUNTY
STATION: 23+80.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD OVERHANG FALSEWORK

AASHTO TYPES III, IV, V, AND VI

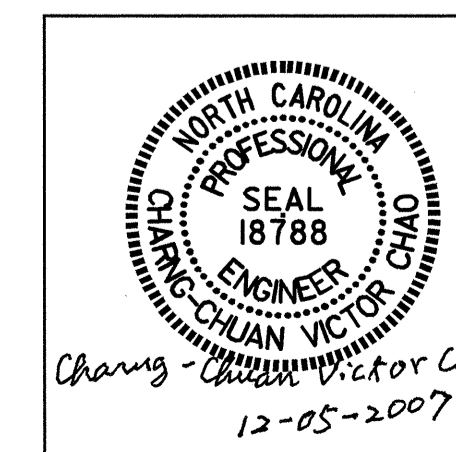


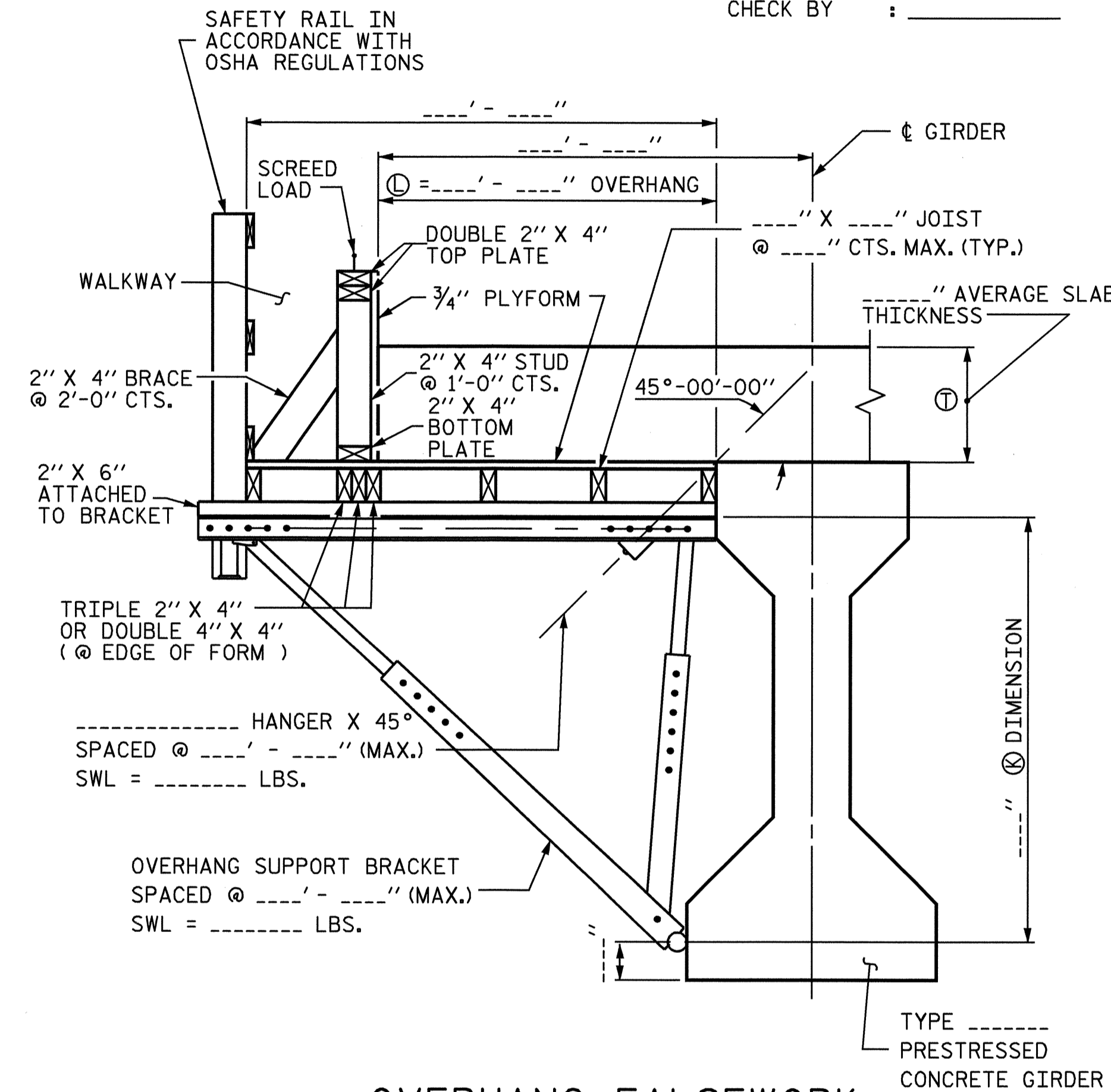
Table with columns: NO., REVISIONS (BY, DATE), SHEET NO. (5-38), TOTAL SHEETS (10).

Table with columns: ASSEMBLED BY, CHECKED BY, DATE, REV. (DRAWN BY: R. WRIGHT, CHECKED BY: C. V. CHAO).

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

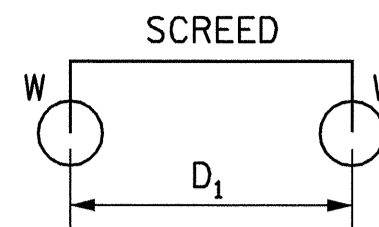
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

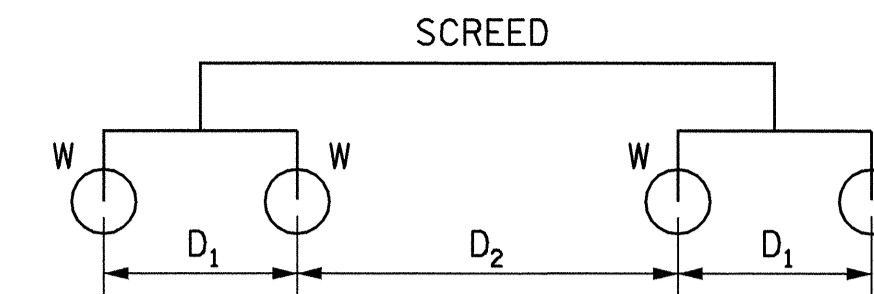
THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

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																	
S/D ₁		<= 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
	<= 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	1.84
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	1.92
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	1.98
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	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	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	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	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	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	2.45
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	2.50
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	2.59
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	2.67
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	2.73
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	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	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	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	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"

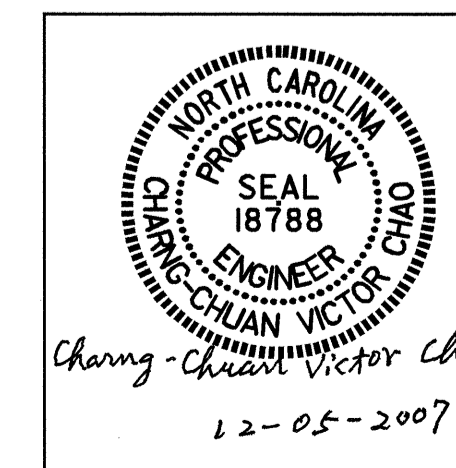
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

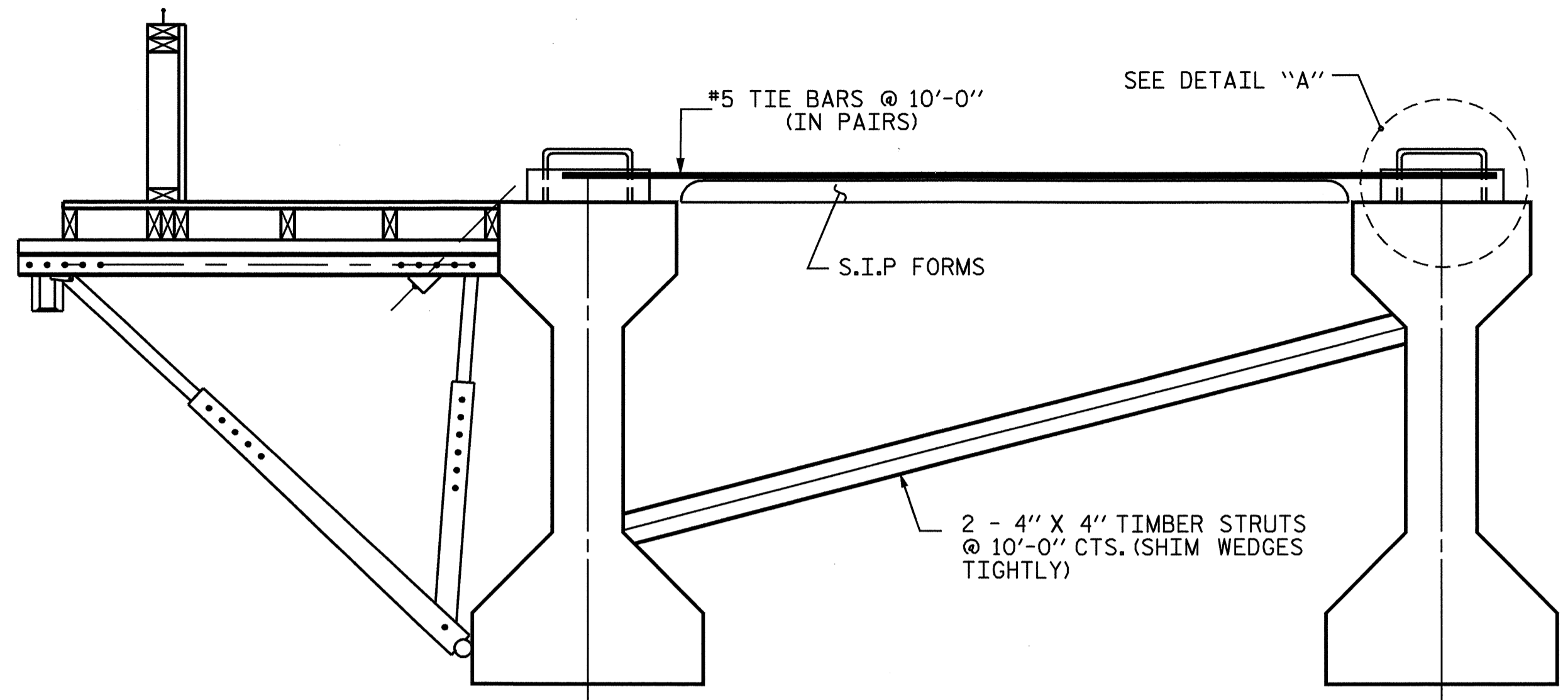
STANDARD OVERHANG FALSEWORK

AASHTO TYPES III, IV, V, AND VI



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-39
2			4			TOTAL SHEETS 40

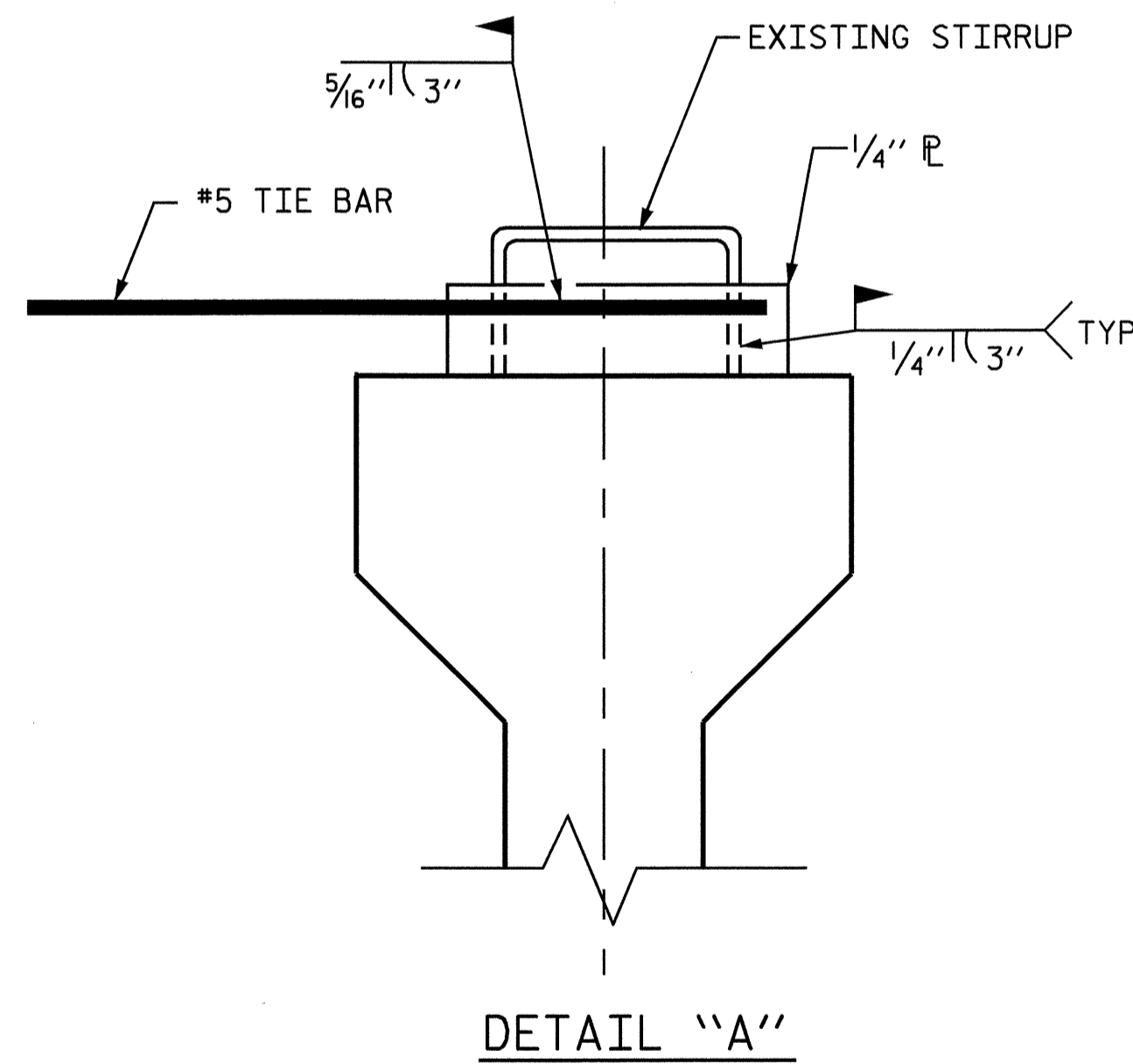
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	



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 10'-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.

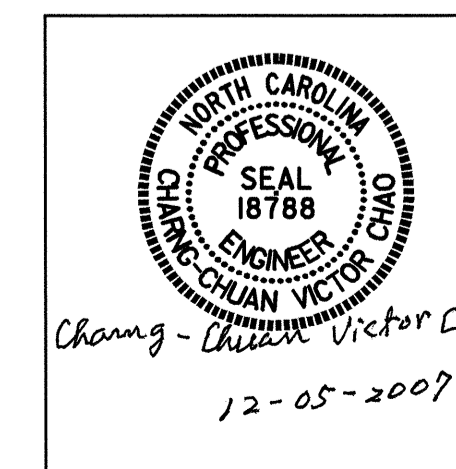
PROJECT NO. B-4057
CASWELL COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK

AASHTO TYPES
 III, IV, V, AND VI



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			5-40
2			4			TOTAL SHEETS 40

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