

09/06/99  
**TIP: B-4113**  
**CONTRACT: C201444**

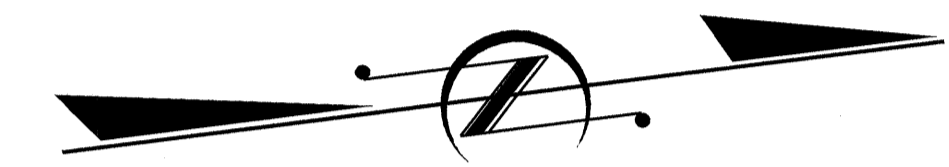
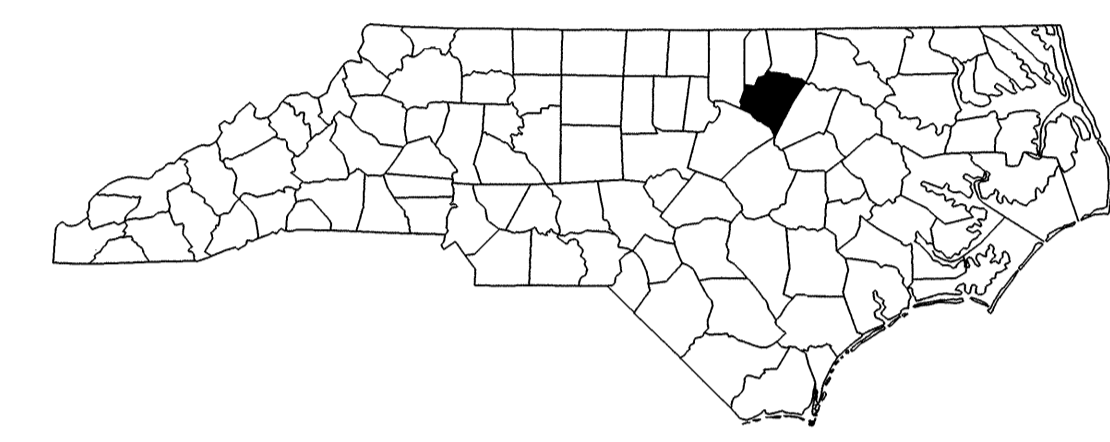
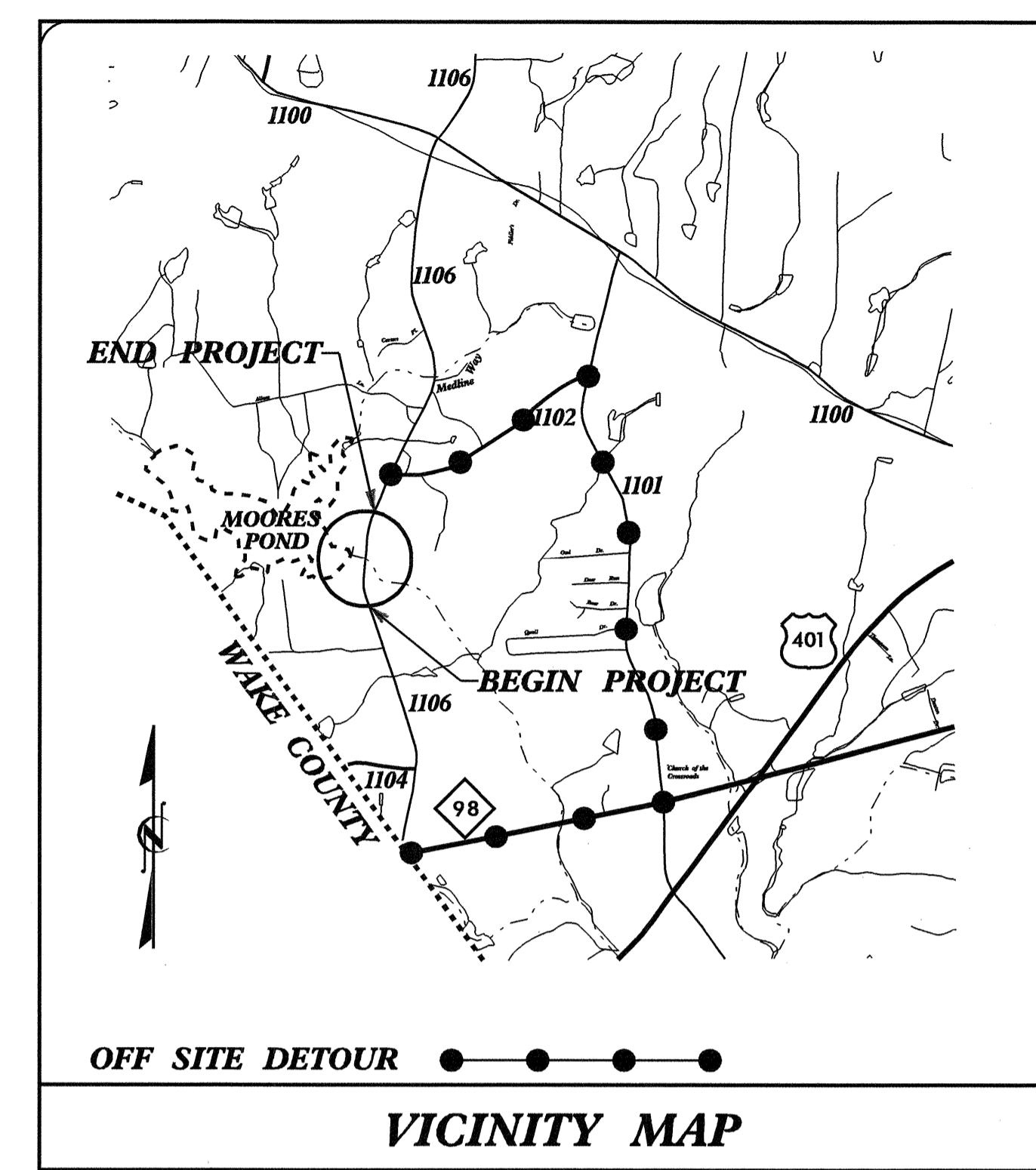
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**FRANKLIN COUNTY**

**LOCATION: BRIDGE NO. 15 OVER LITTLE RIVER AND APPROACHES ON SR 1106 (MOORES POND RD.)**

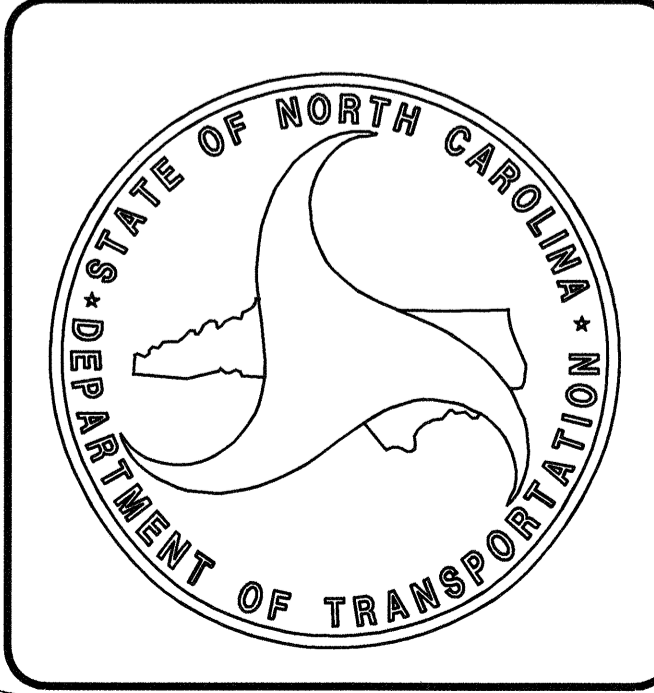
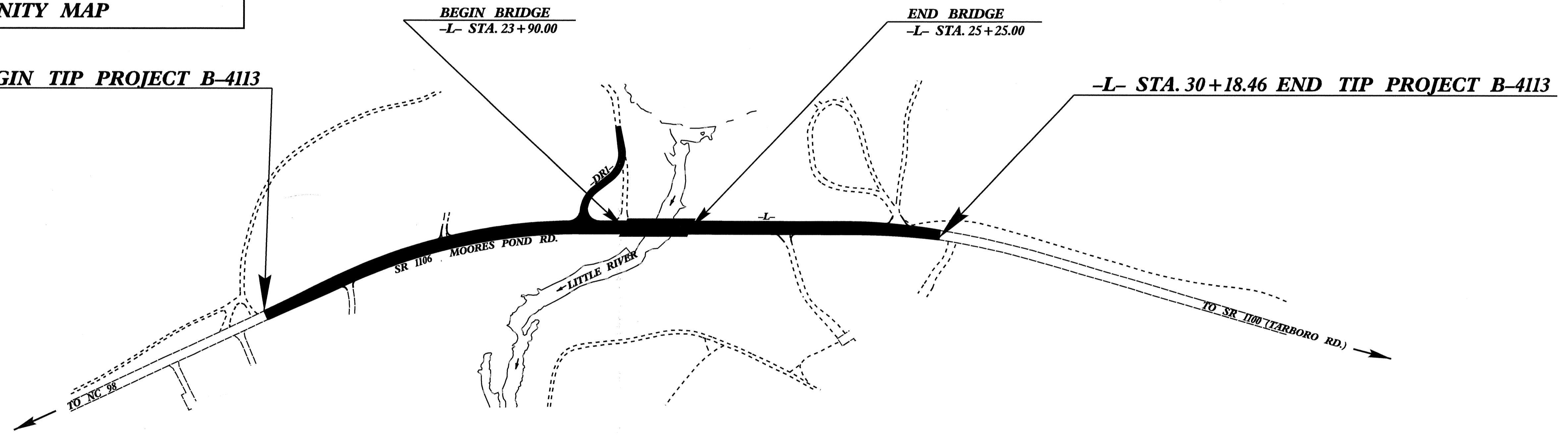
**TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4113		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33468.1.1	BRZ-1106(3)	P.E.	
33468.2.1	BRZ-1106(3)	RW & UTIL.	
33468.3.1	BRZ-1106(3)	CONST.	



**-L- STA. 16+50.00 BEGIN TIP PROJECT B-4113**

**STRUCTURE**



**DESIGN DATA**

ADT 2005 =	1200
ADT 2025 =	2000
DHV =	13 %
D =	60 %
* T =	3 %
V =	60 MPH
* (TTST 1 % + DUAL 2 %)	
FUNC CLASS=RURAL LOCAL	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4113 =	0.233 MILES
LENGTH STRUCTURE TIP PROJECT B-4113 =	0.026 MILES
TOTAL LENGTH OF TIP PROJECT B-4113 =	0.259 MILES

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
 1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS	PROJECT ENGINEER
LETTING DATE: June 20, 2006	<b>ROY GIROLAMI, P.E.</b>
	<b>DAVID ANDERSON, P.E.</b>

**STRUCTURE DESIGN UNIT**

*Gregory R. Perrett*  
5.8.06

**DIVISION OF HIGHWAYS**  
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER	P.E.
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED DIVISION ADMINISTRATOR	DATE

23-MAR-2006 14:29  
 \*\*\*\*\*DCN\*\*\*\*\*  
 danderson

GRADE DATA 24+00

24+50

25+00

25+50

GRADE DATA

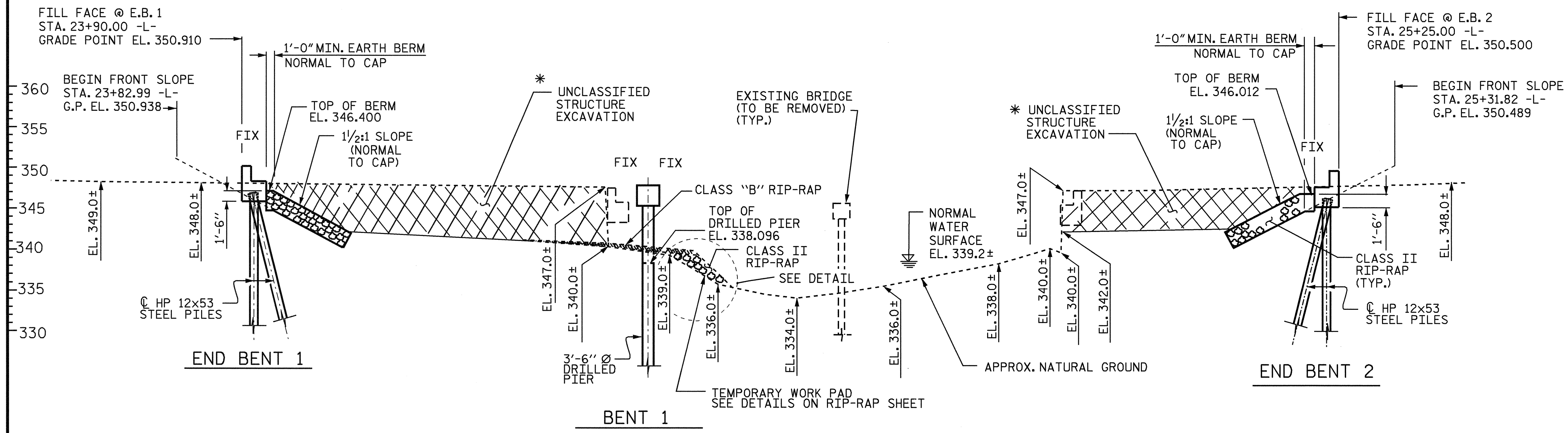
-0.3000% +5.9708%

PI = 23+00.00-L-  
EL = 351.180  
VC = 180'

PI = 26+38.00-L-  
EL = 350.160  
VC = 230'

SPAN A

SPAN B



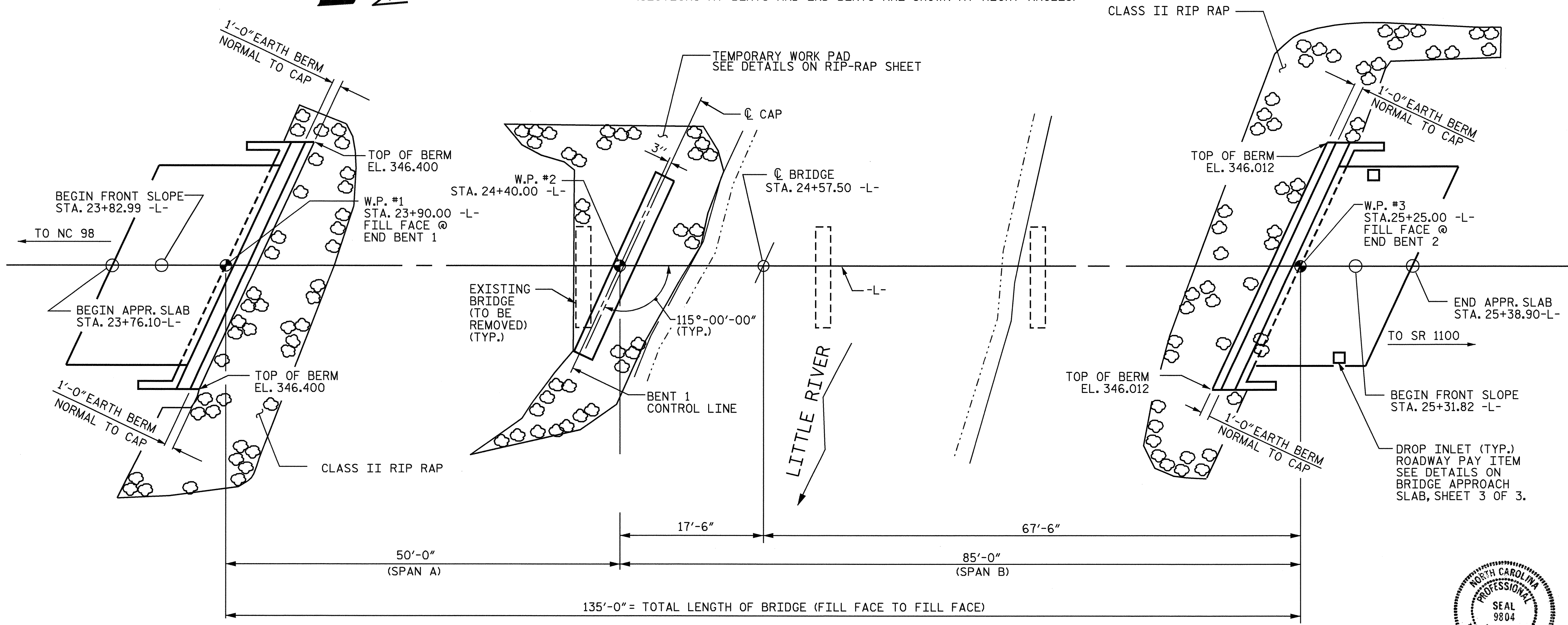
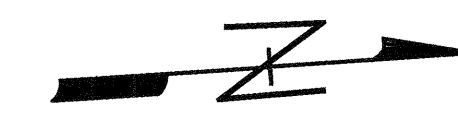
\* SUITABLE UNCLASSIFIED STRUCTURE EXCAVATION TO BE USED IN ROADWAY FILL. SEE ROADWAY PLANS

HYDRAULIC DATA

DESIGN DISCHARGE	1500 c.f.s.
FREQUENCY OF DESIGN FLOOD	25 yr.
DESIGN HIGH WATER ELEVATION	342.900
DRAINAGE AREA	6.0 sq. MI.
BASIC DISCHARGE(Q100)	2300 c.f.s.
BASIC HIGH WATER ELEVATION	344.700

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	5200 c.f.s.
FREQUENCY OF OVERTOPPING FLOOD	500 yr.
OVERTOPPING FLOOD ELEVATION	350.500

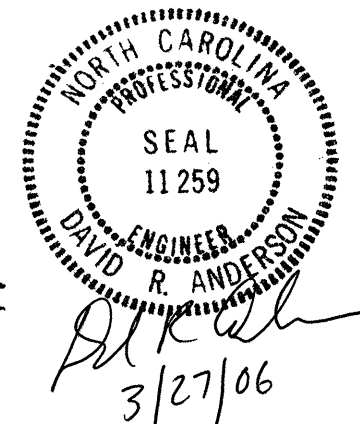
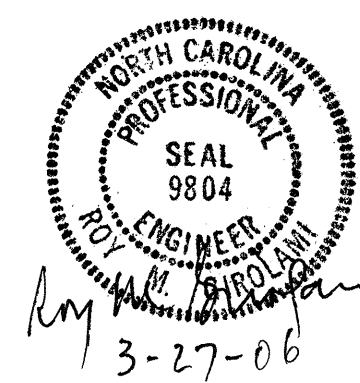


PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE 15

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

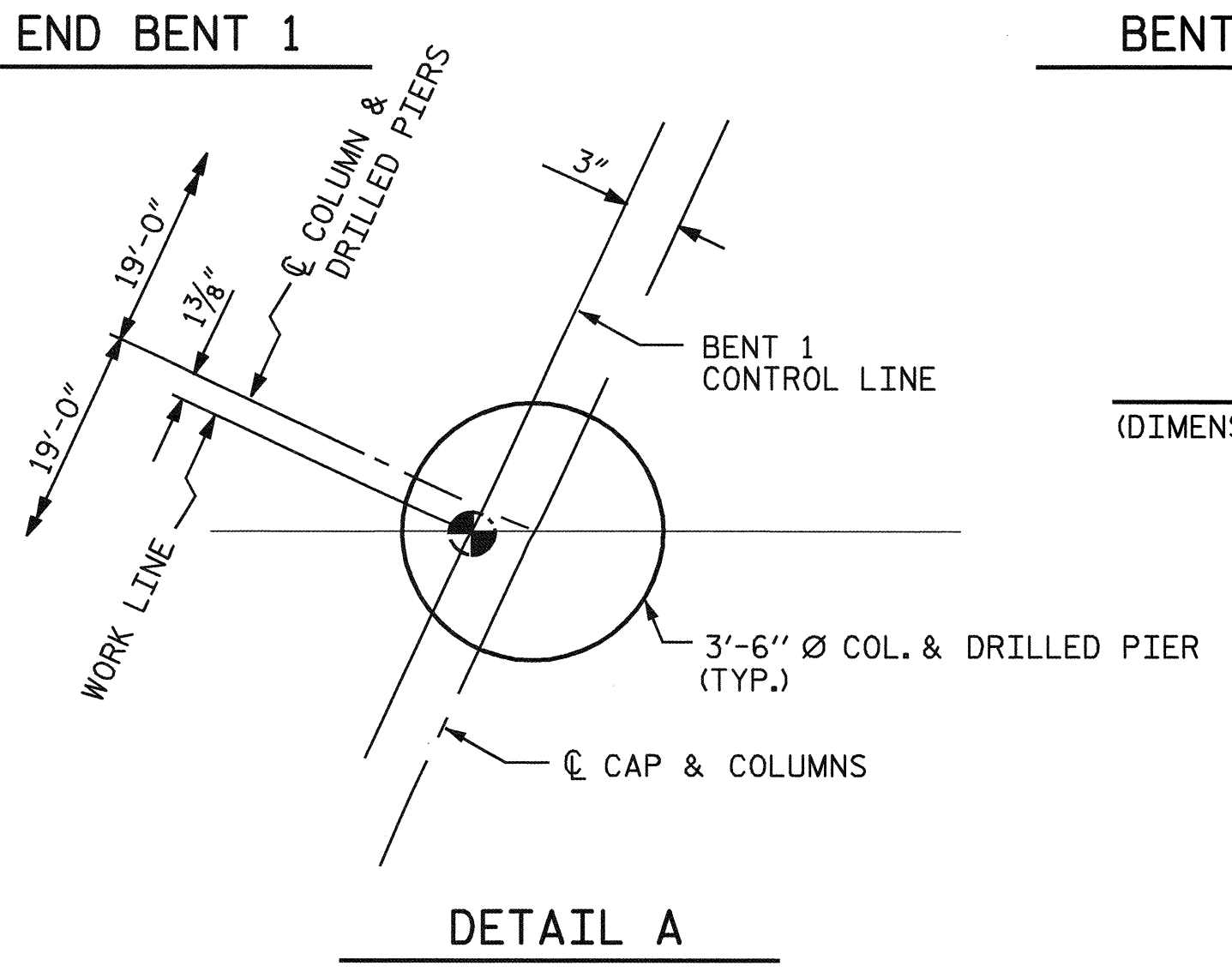
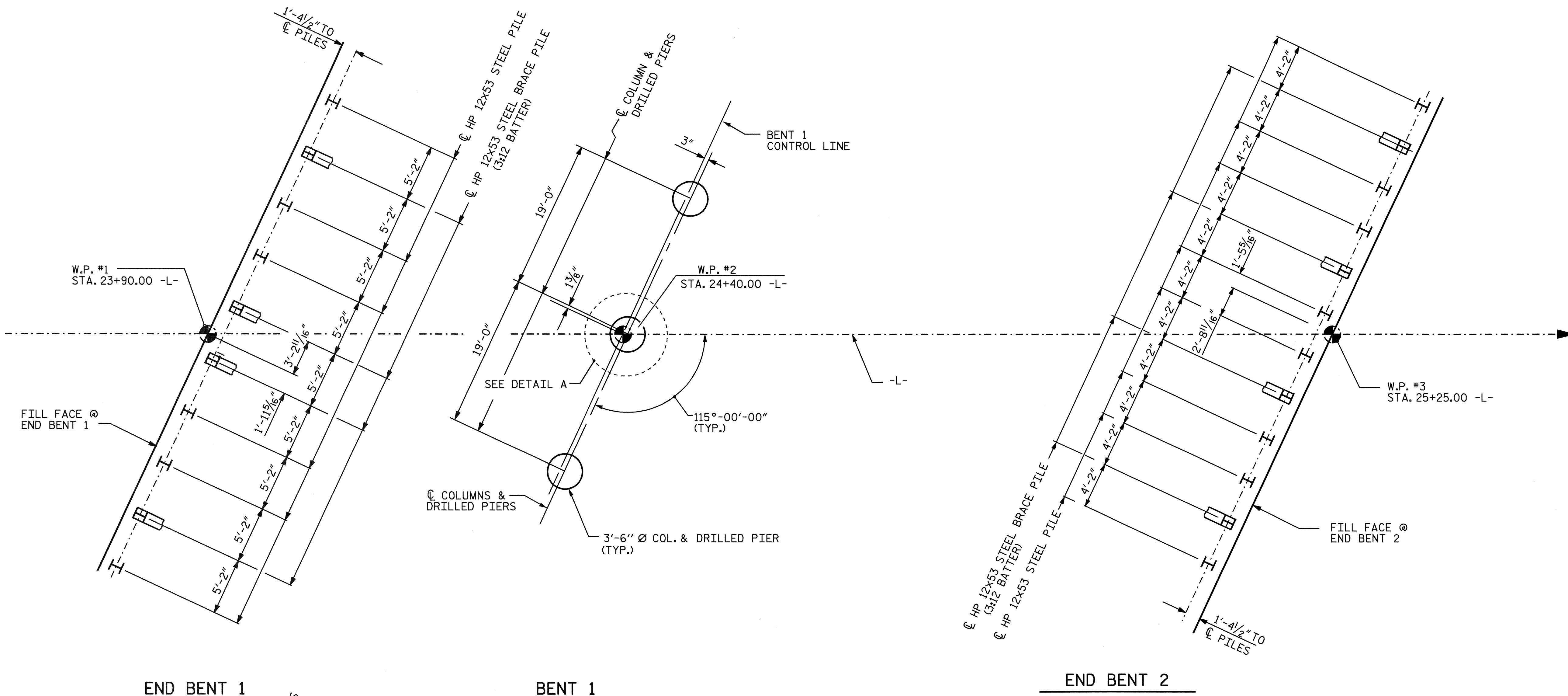
GENERAL DRAWING  
BRIDGE ON SR 1106 OVER  
LITTLE RIVER  
BETWEEN  
NC 98 AND SR 1100



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

DRAWN BY : N. Q. TRAN DATE : 9-04  
CHECKED BY : S. M. RASHIDI DATE : 11-04

23-MAR-2006 14:12 C:\Users\mtran\My Documents\Projects\BRZ-1106\BRZ-1106.dwg



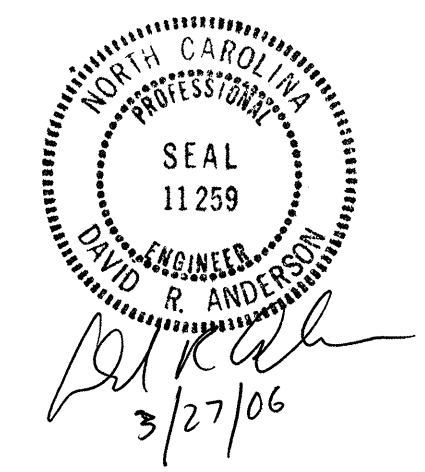
**FOUNDATION LAYOUT**  
 (DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)

NOTE: CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE PERS & COLS. IS OFFSET FROM THE BENT CONTROL LINE.

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOUNDATION LAYOUT



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

DRAWN BY : N. Q. TRAN DATE : 10-04  
 CHECKED BY : S. M. RASHIDI DATE : 8-05

22-MAR-2006 15:58 H:\Structures\ntfran\Microe-sb\wkb4113-rl.dgn



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 CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN BOX BEAMS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING BOX BEAMS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,200 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

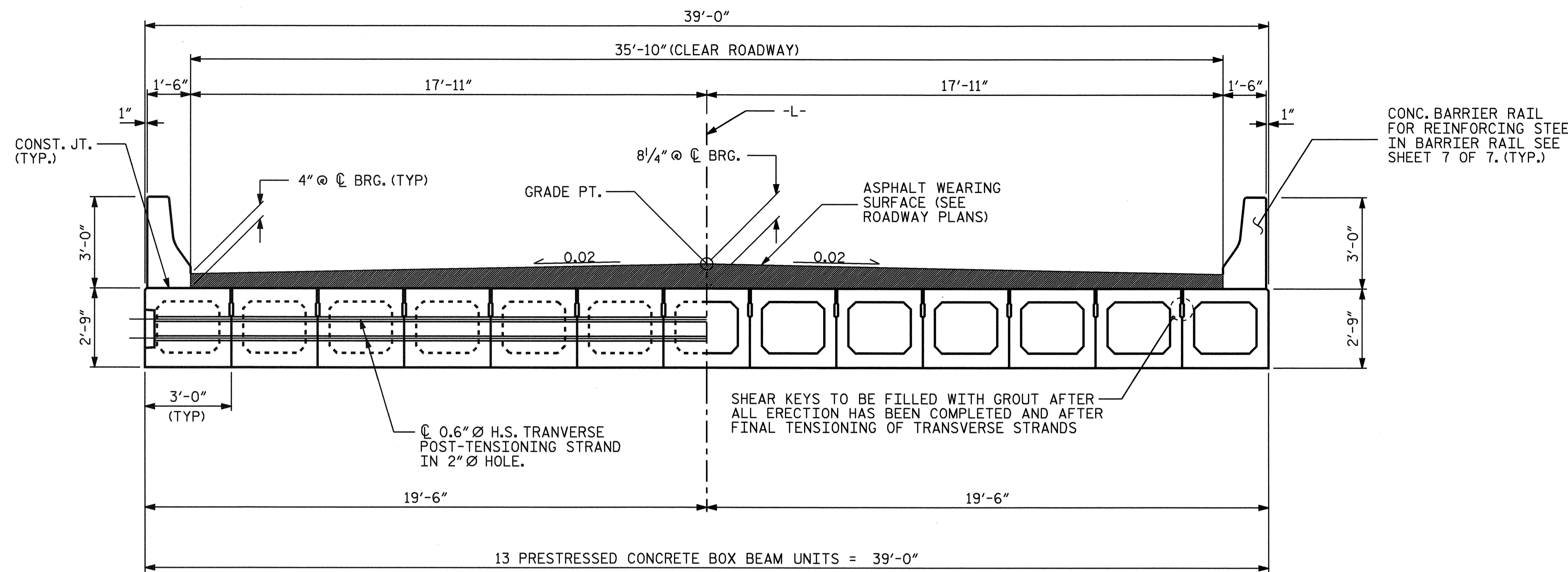
VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION 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.

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE BOX BEAMS, SEE SPECIAL PROVISIONS.

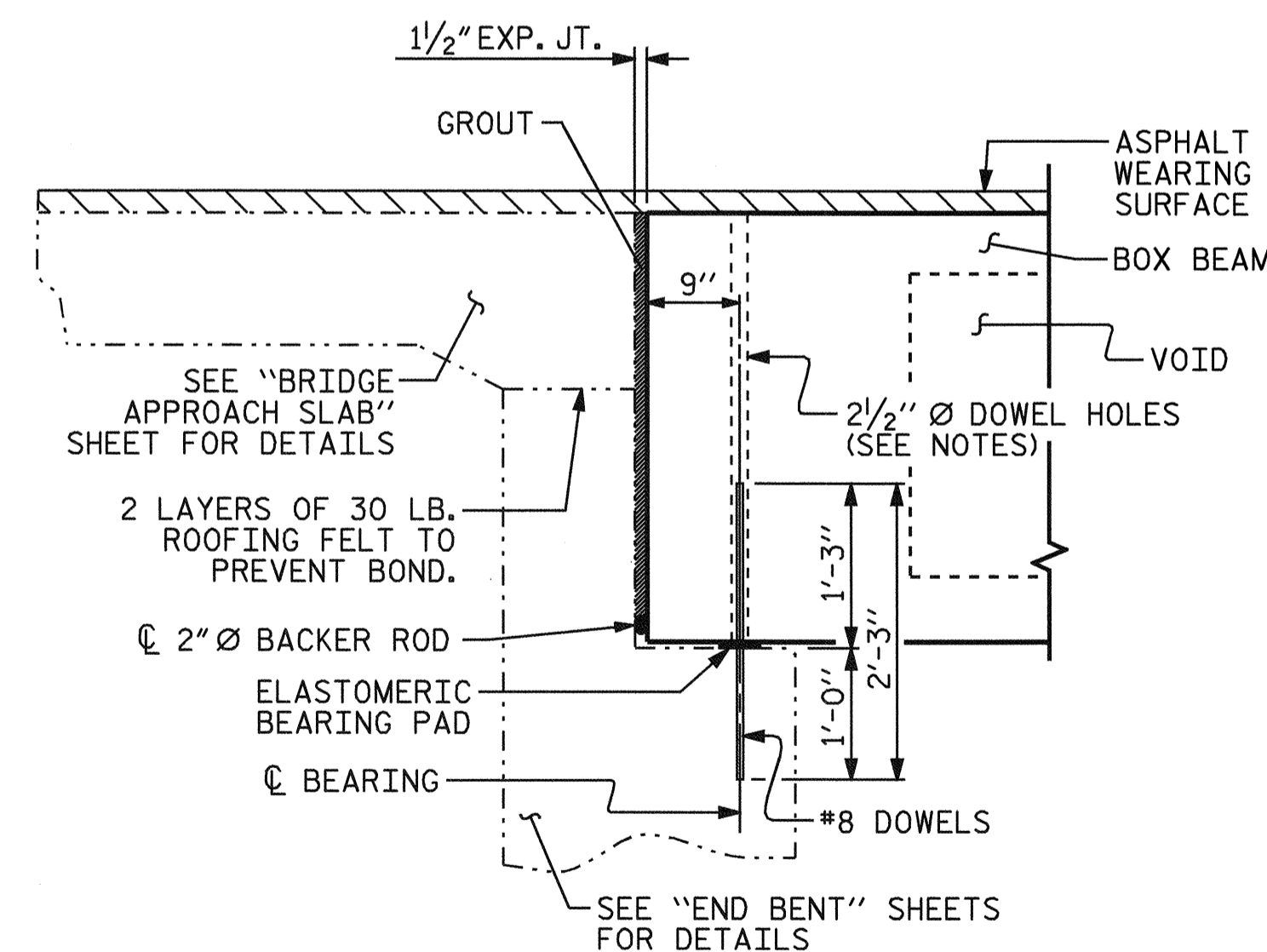
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

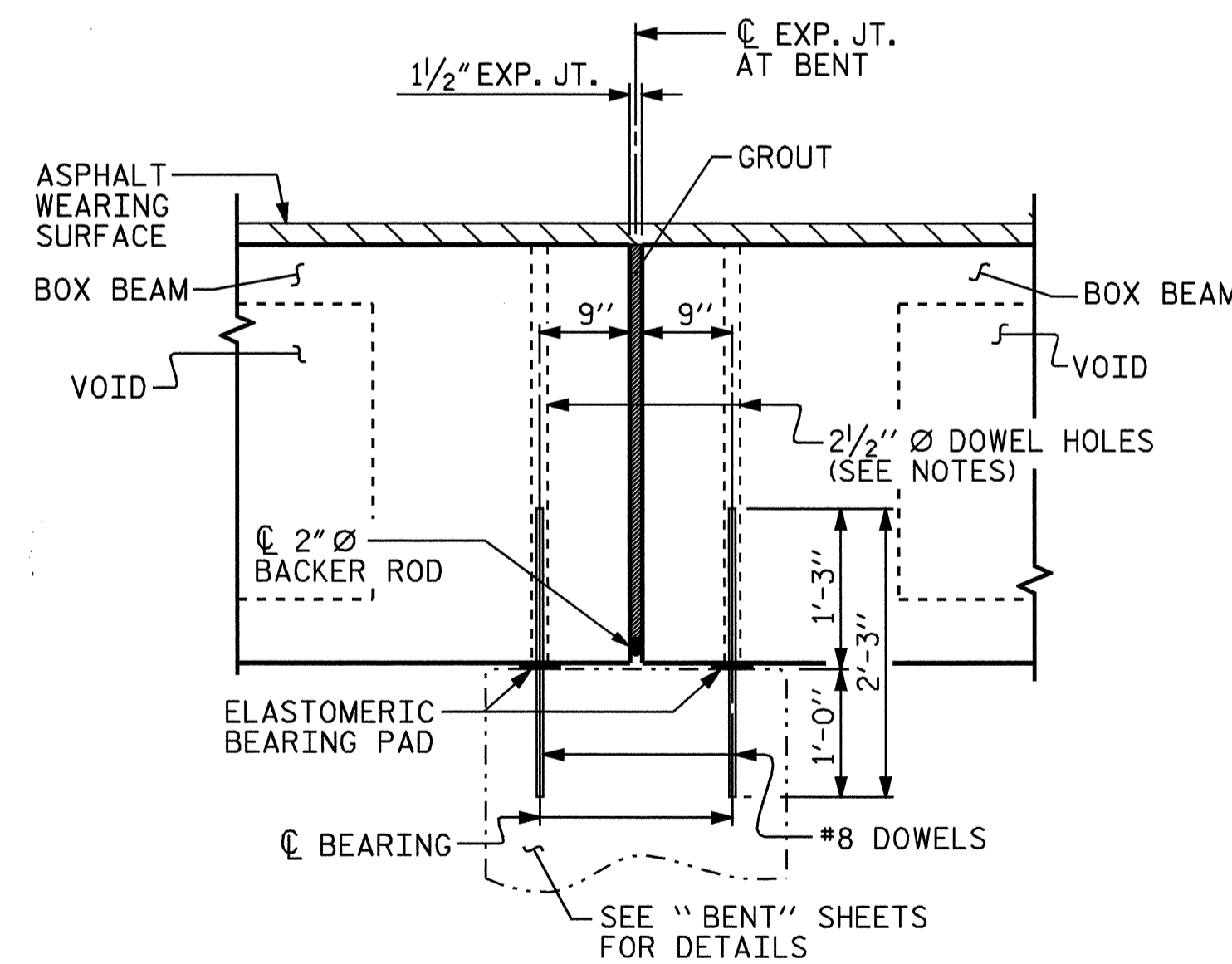


HALF SECTION AT INTERMEDIATE DIAPHRAGM      HALF SECTION AT 2'-2" x 1'-9 1/2" VOIDS

TYPICAL SECTION



SECTION AT END BENT



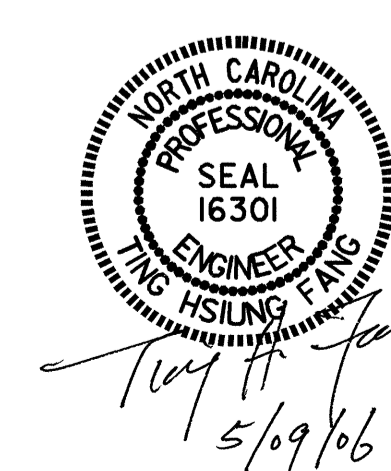
SECTION AT BENT

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

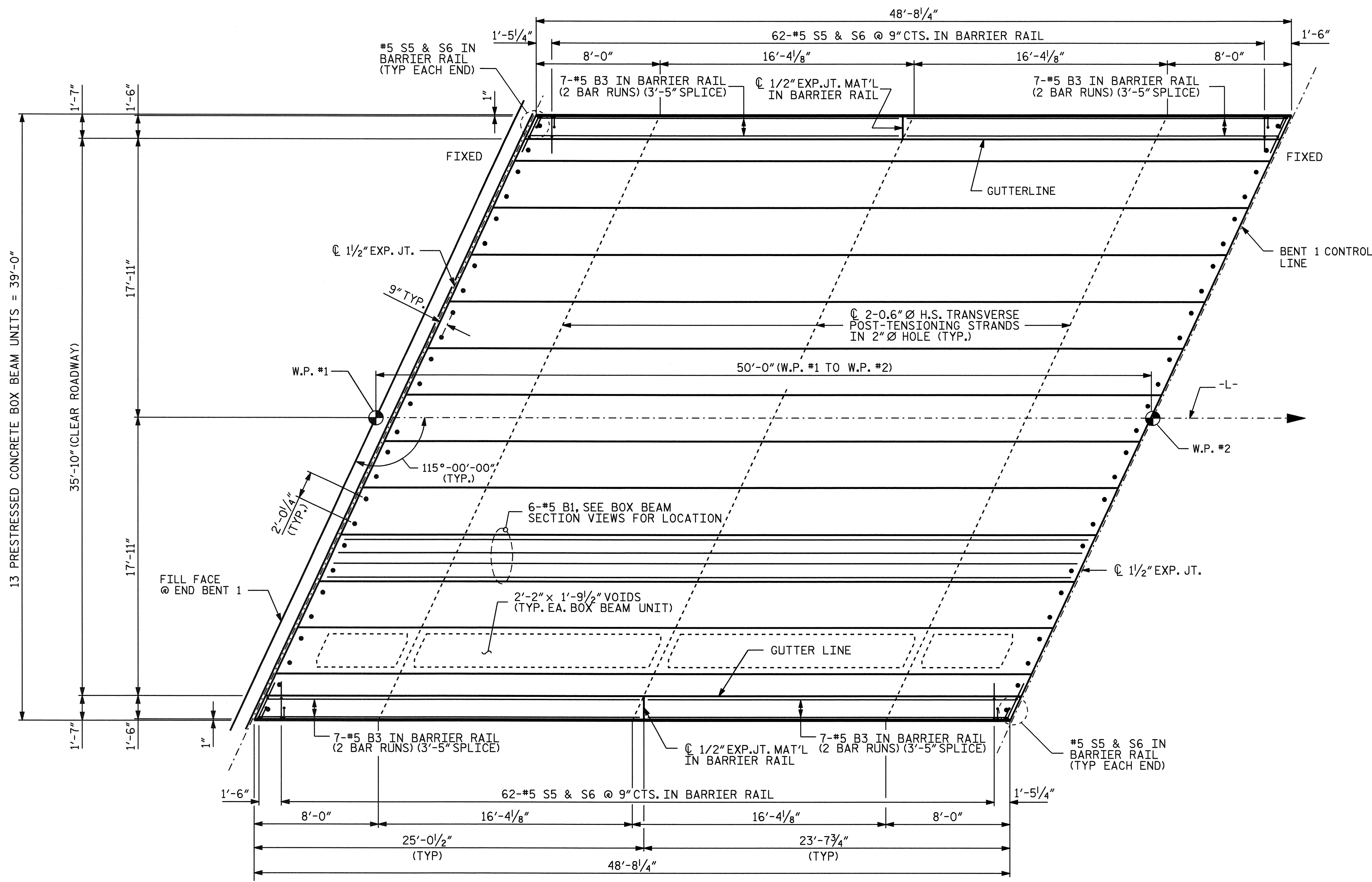
STANDARD  
 3'-0" X 2'-9"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT



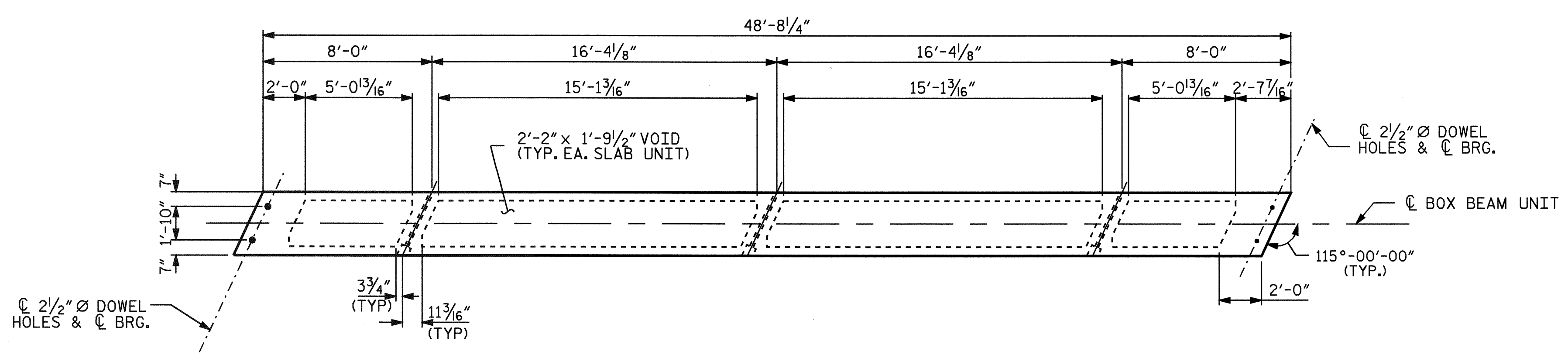
ASSEMBLED BY :	T.H. FANG	DATE :	07/05
CHECKED BY :	M.A. ALLEN	DATE :	08/05
DRAWN BY :	TLA 5/05	ADDED :	7/11/05
CHECKED BY :	GM 6/05		

08-MAY-2006 11:49  
 I:\STRUCT\Tffang\Microstation\B4113.sd.BX.01.dgn  
 madden

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



PLAN OF SPAN "A"



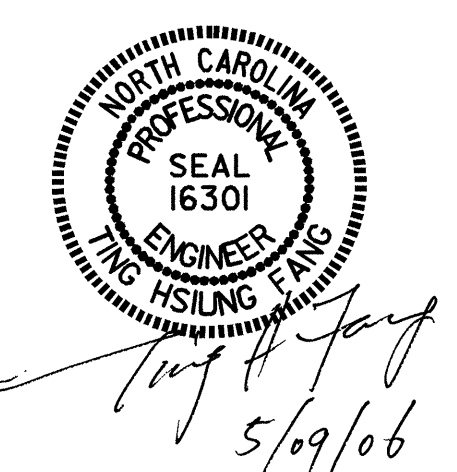
PLAN OF BOX BEAM VOIDS

VOIDS SHOWN ONLY, FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM ON SHEET 4 OF 7

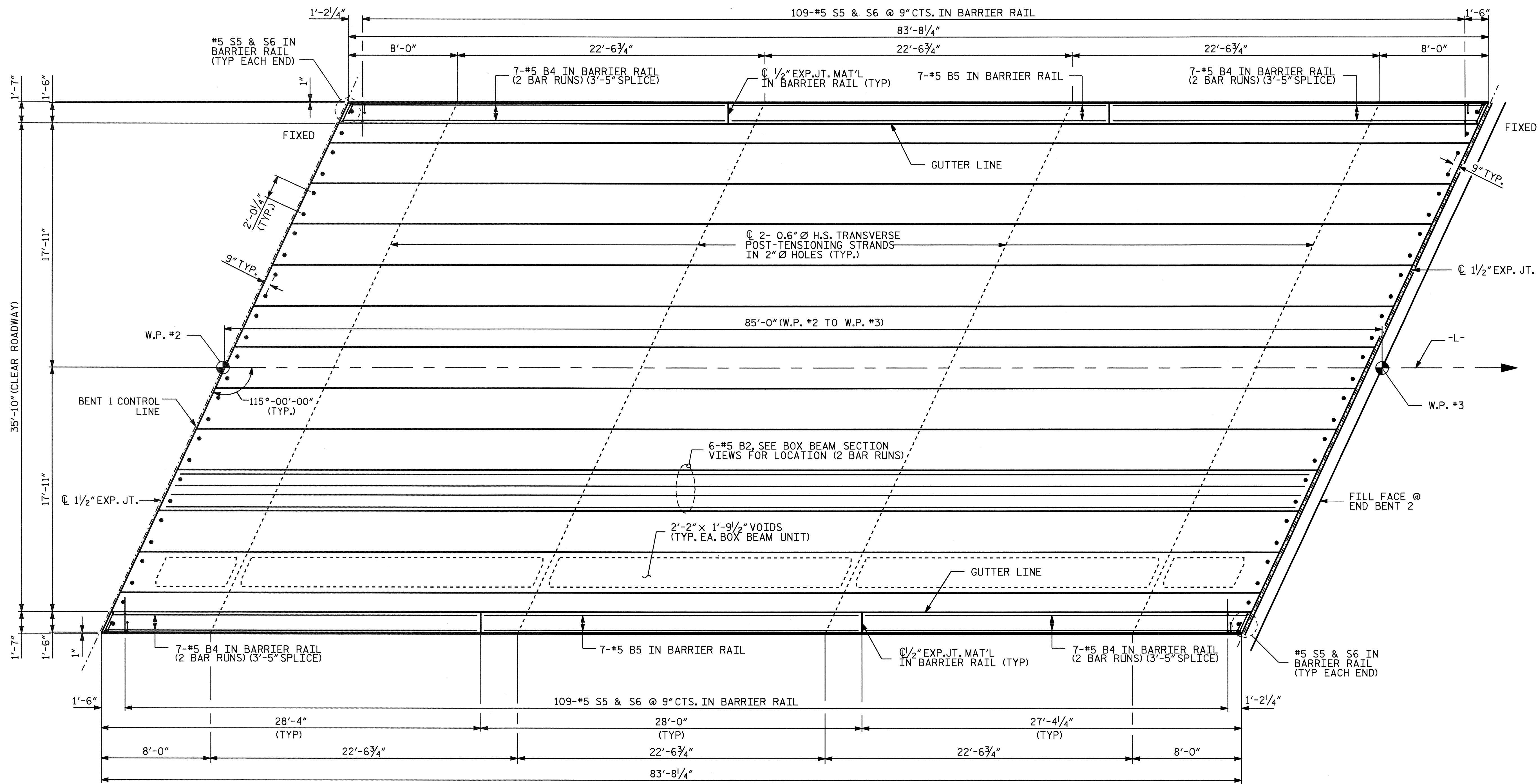
PROJECT NO. B-4113  
 FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 2 OF 7

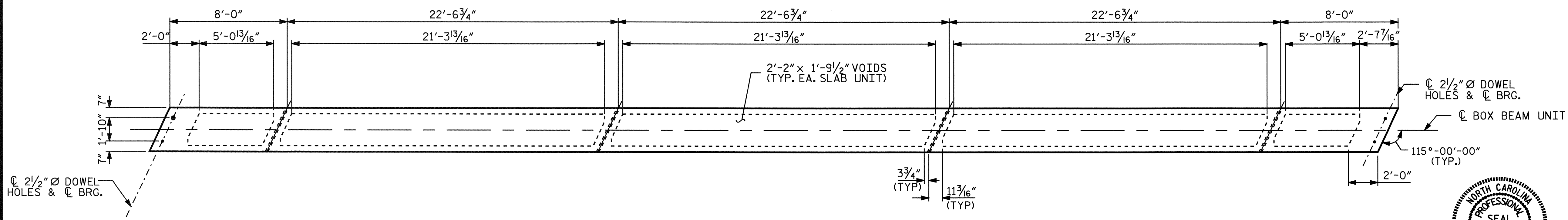
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22



DRAWN BY: T.H. FANG DATE: 8/22/05  
 CHECKED BY: M.A. ALLEN DATE: 8/25/05



PLAN OF SPAN "B"



PLAN OF BOX BEAM VOIDS

VOIDS SHOWN ONLY, FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM ON SHEET 5 OF 7

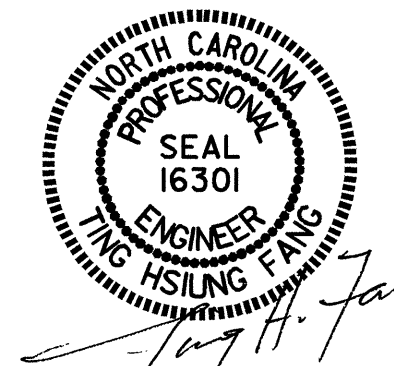
PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-  
 SHEET 3 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

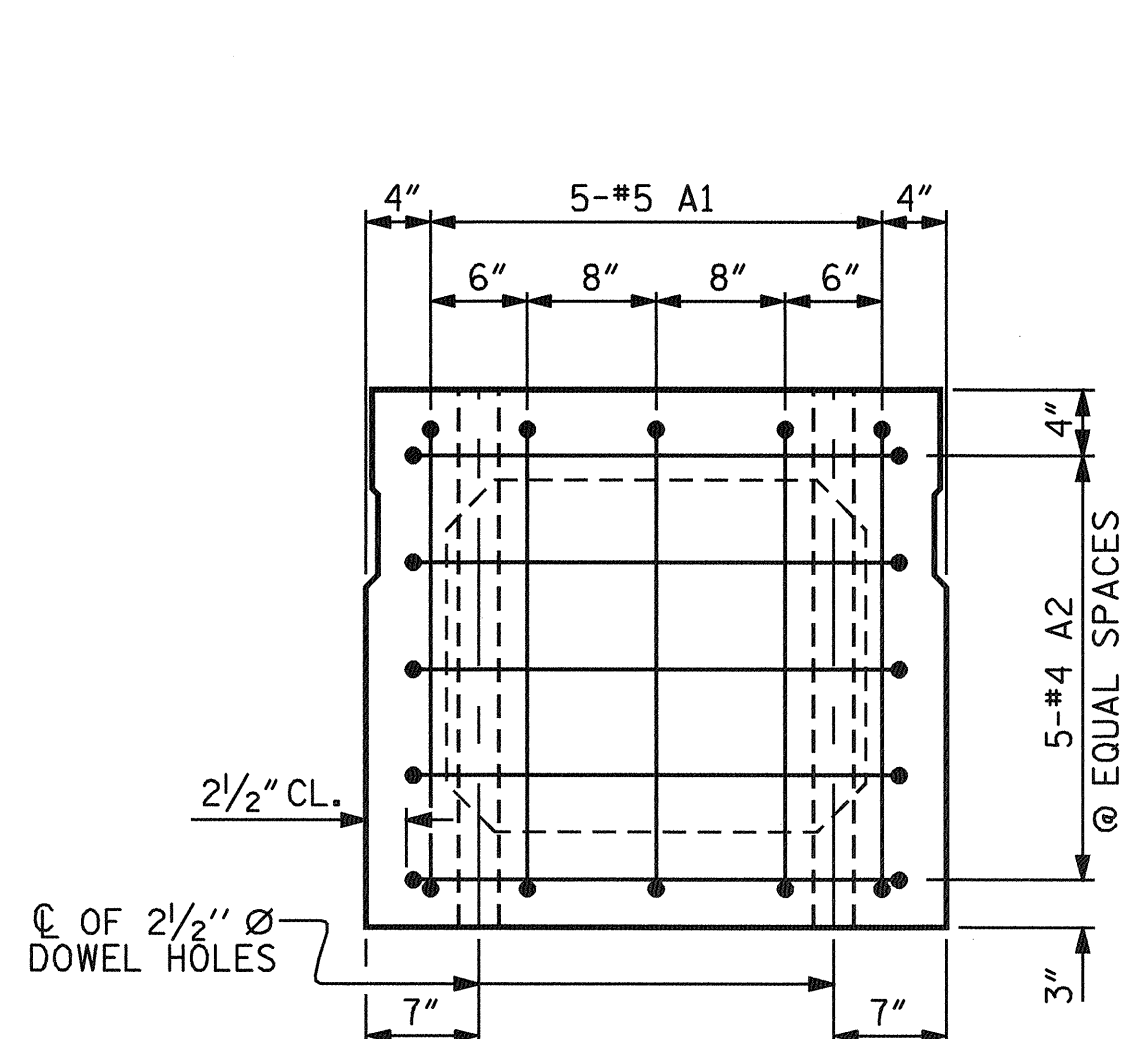
SUPERSTRUCTURE  
 PLAN OF SPAN  
 SPAN "B"

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL SHEETS	
2			4			22	

NCBDS

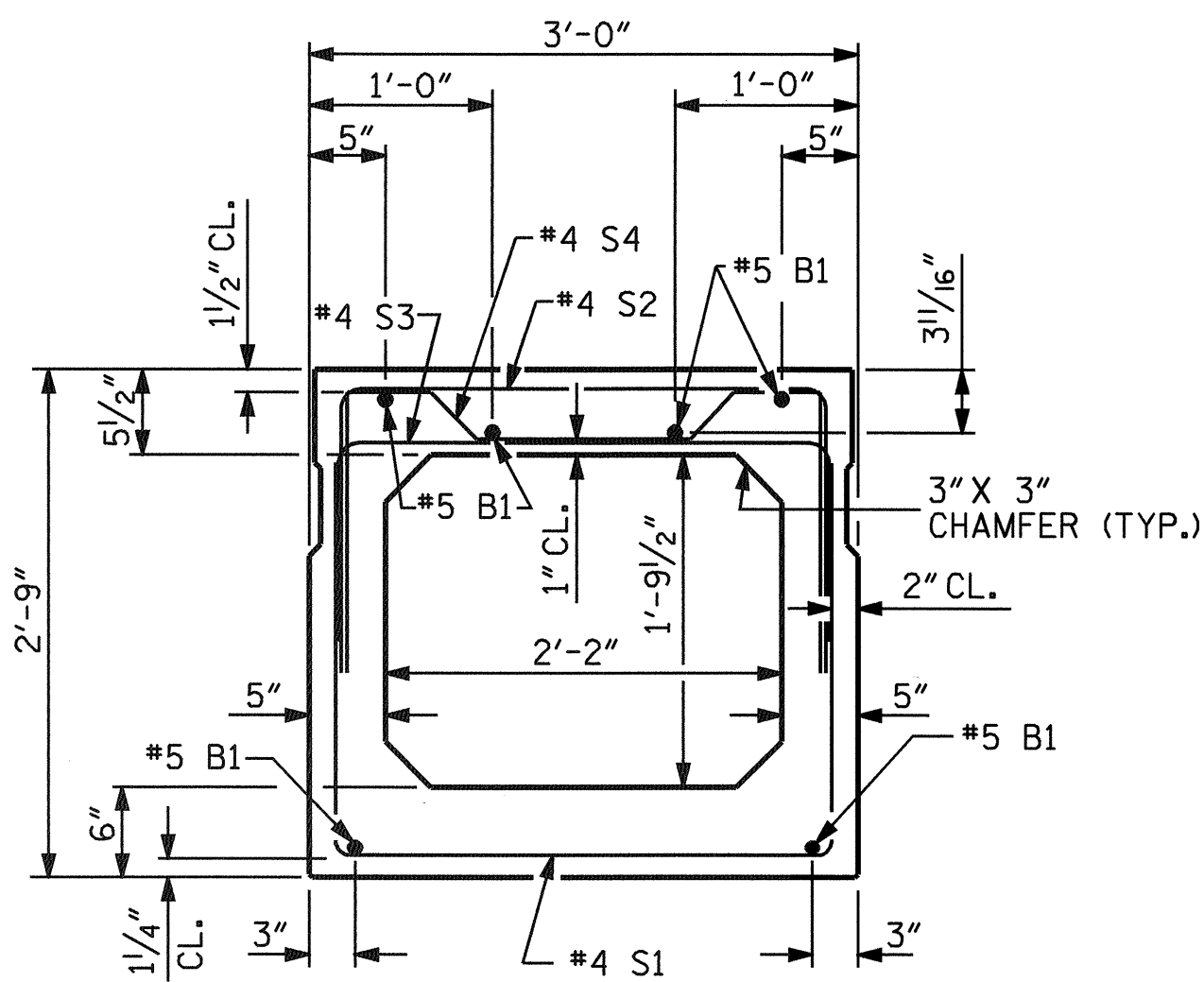


DRAWN BY: T.H. FANG DATE: 8/22/05  
 CHECKED BY: M.A. ALLEN DATE: 8/29/05



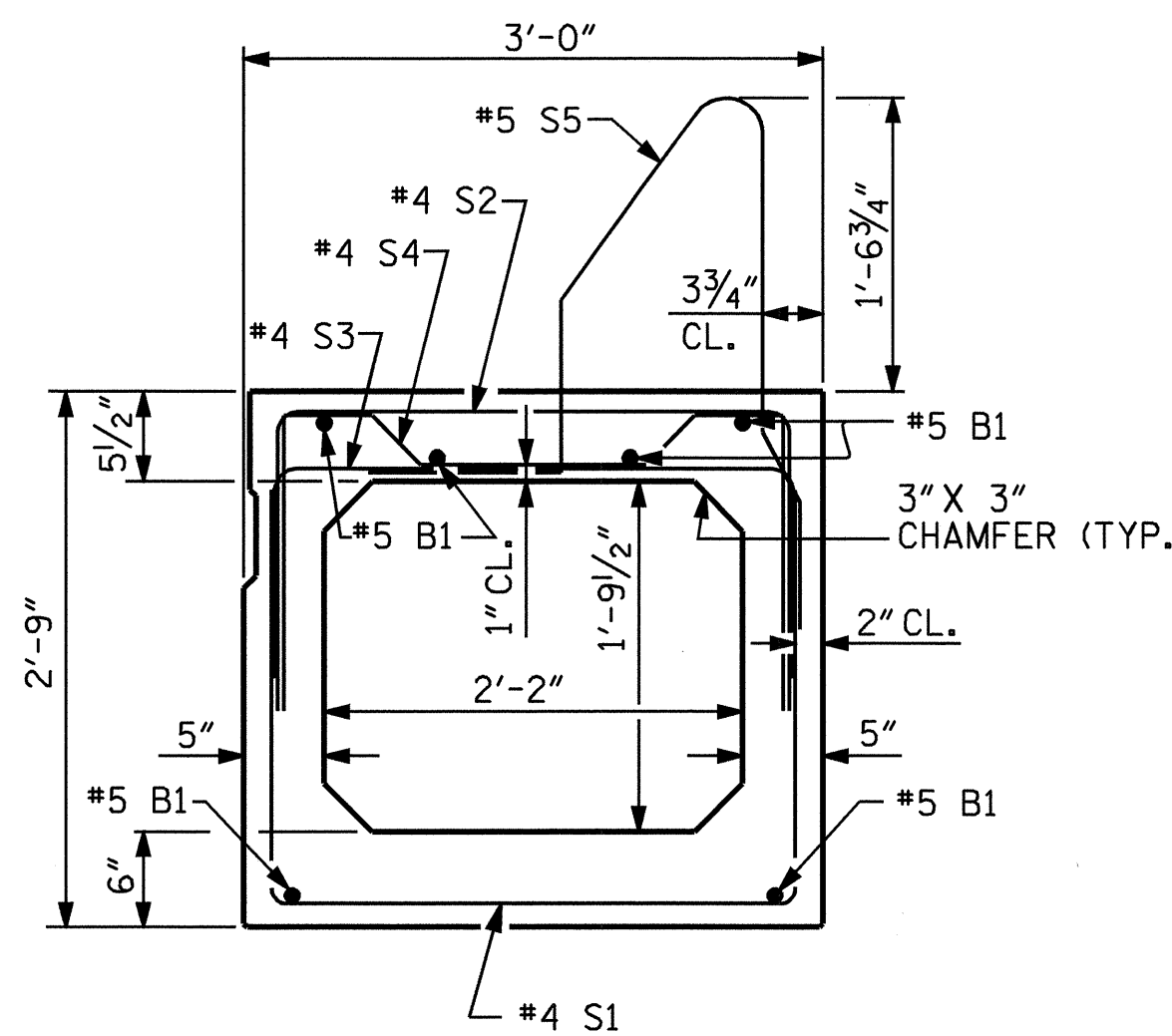
**END ELEVATION**

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN, EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



**INTERIOR BOX BEAM SECTION**

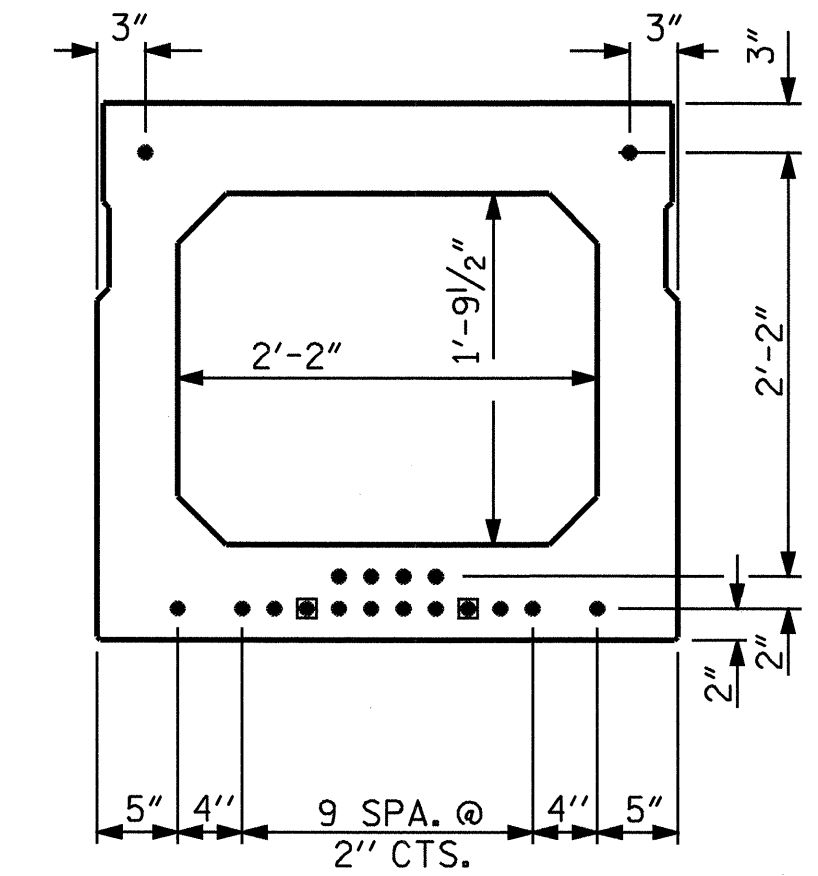
(STRAND LAYOUT NOT SHOWN)



**EXTERIOR BOX BEAM SECTION**

(STRAND LAYOUT NOT SHOWN)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**



**TYPICAL STRAND LOCATION**

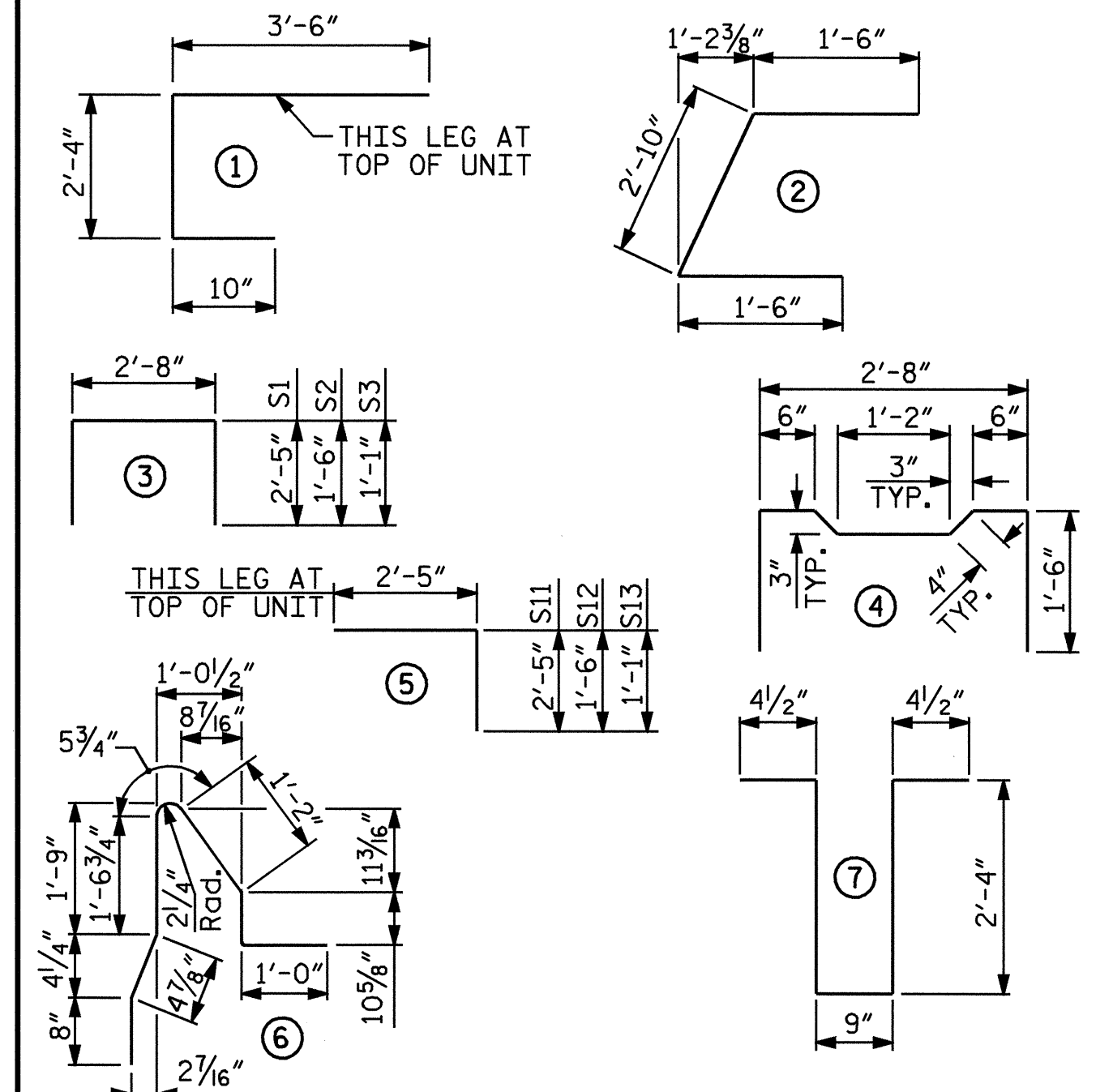
(18 STRANDS REQUIRED)  
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

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

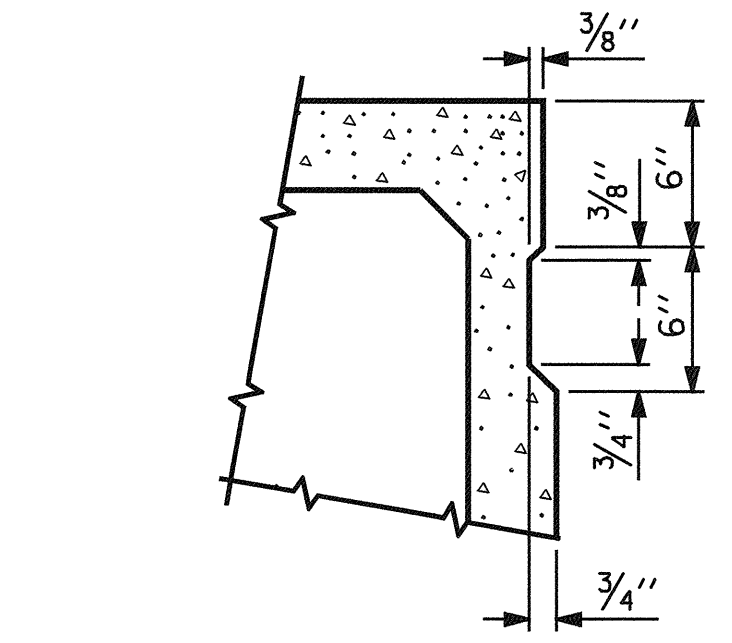
**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

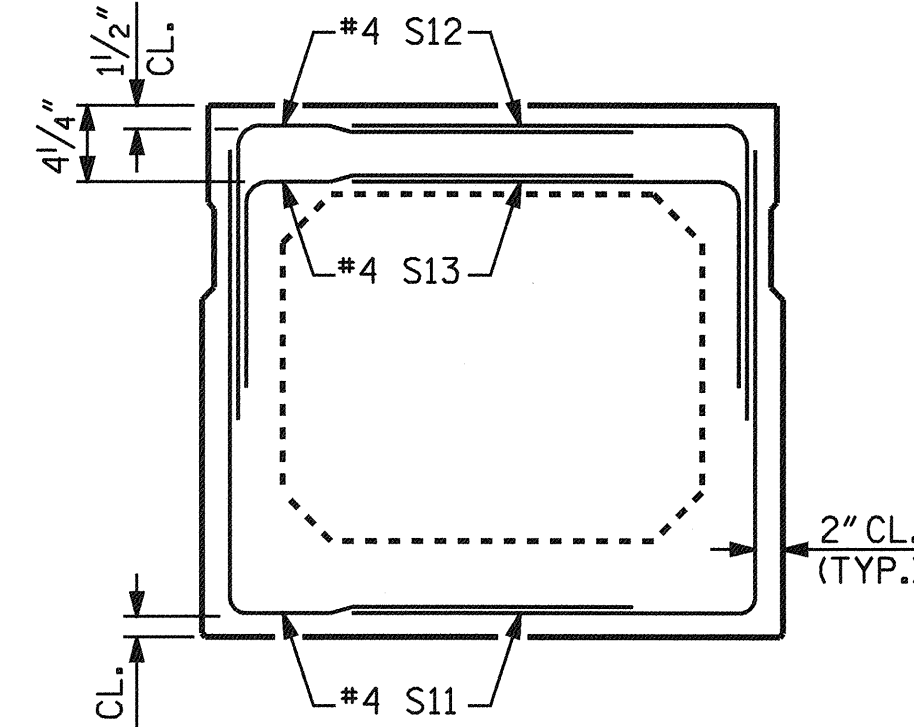
**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	28	#4	2	5'-10"	109	5'-10"	109
B1	6	#5	STR	48'-4"	302	48'-4"	302
K1	9	#4	7	6'-2"	37	6'-2"	37
K2	6	#4	STR	2'-7"	10	2'-7"	10
S1	35	#4	3	7'-6"	175	7'-6"	175
S2	35	#4	3	5'-8"	132	5'-8"	132
S3	61	#4	3	4'-10"	197	4'-10"	197
S4	26	#4	4	5'-10"	101	5'-10"	101
S11	28	#4	5	4'-10"	90	4'-10"	90
S12	28	#4	5	3'-11"	73	3'-11"	73
S13	28	#4	5	3'-6"	65	3'-6"	65
* S5	64	#5	6	6'-2"	412	--	--
REINFORCING STEEL				LBS.	1,361		1,361
* EPOXY COATED REINF. STEEL				LBS.	412		--
6,500 P.S.I. CONCRETE				CU. YDS.	9.1		9.1
0.6" Ø L.R. STRANDS				No.	18		18



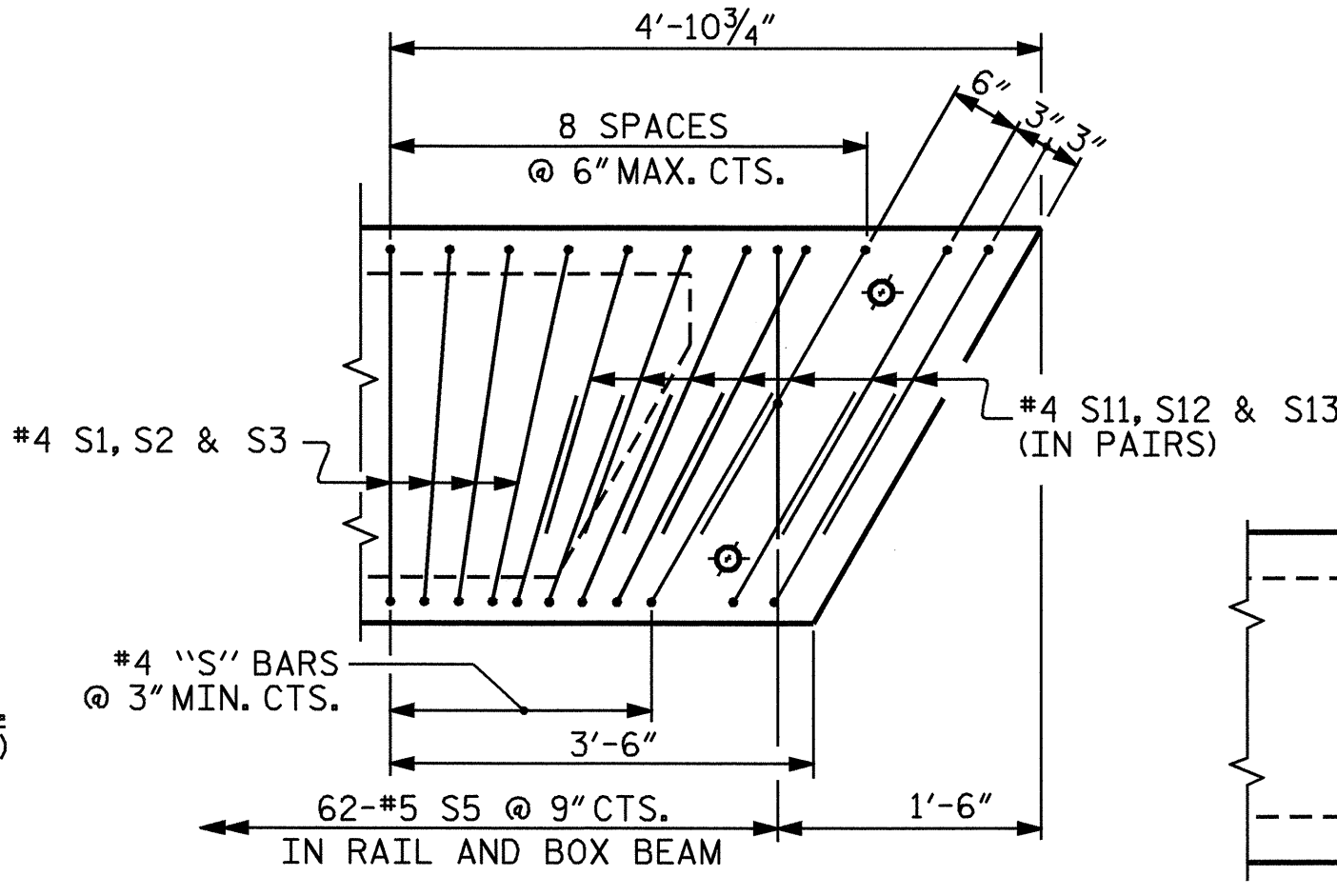
**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



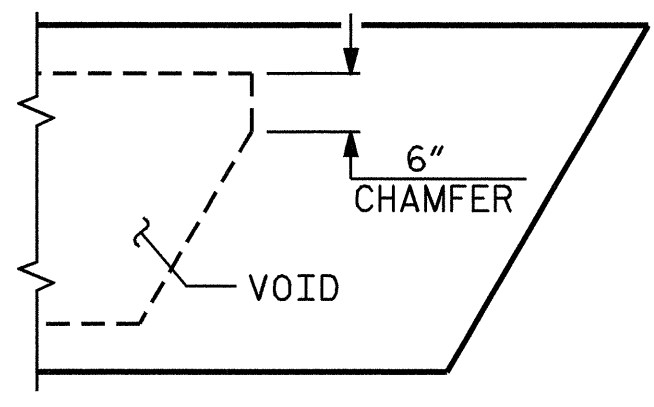
**END VIEW**

(SHOWING #4 "S" BARS IN END OF BEAM)



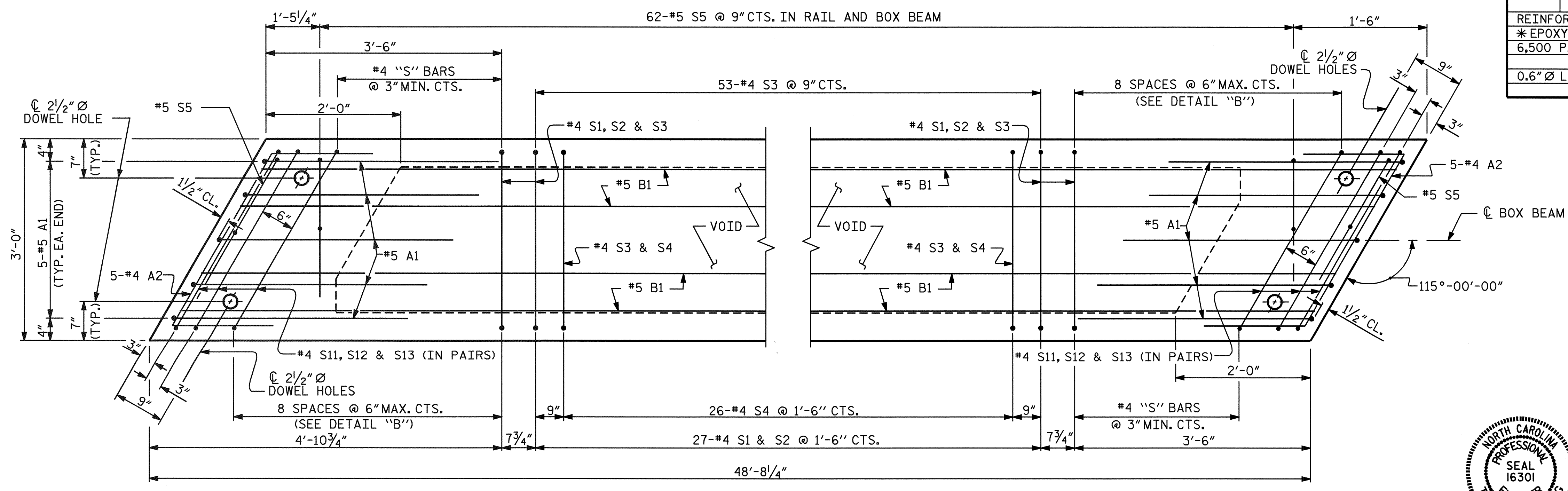
**DETAIL "B"**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



**CHAMFER DETAIL**

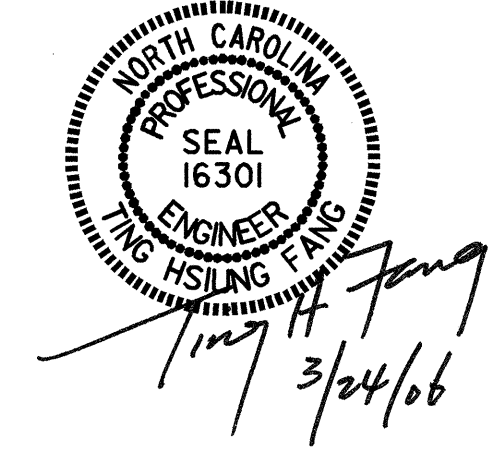
SHOWING 6" VOID CHAMFER



**PLAN OF BOX BEAM**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS ON SHEET 6 OF 7.

ASSEMBLED BY : T.H. FANG	DATE : 07/05
CHECKED BY : M.A. ALLEN	DATE : 08/05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	



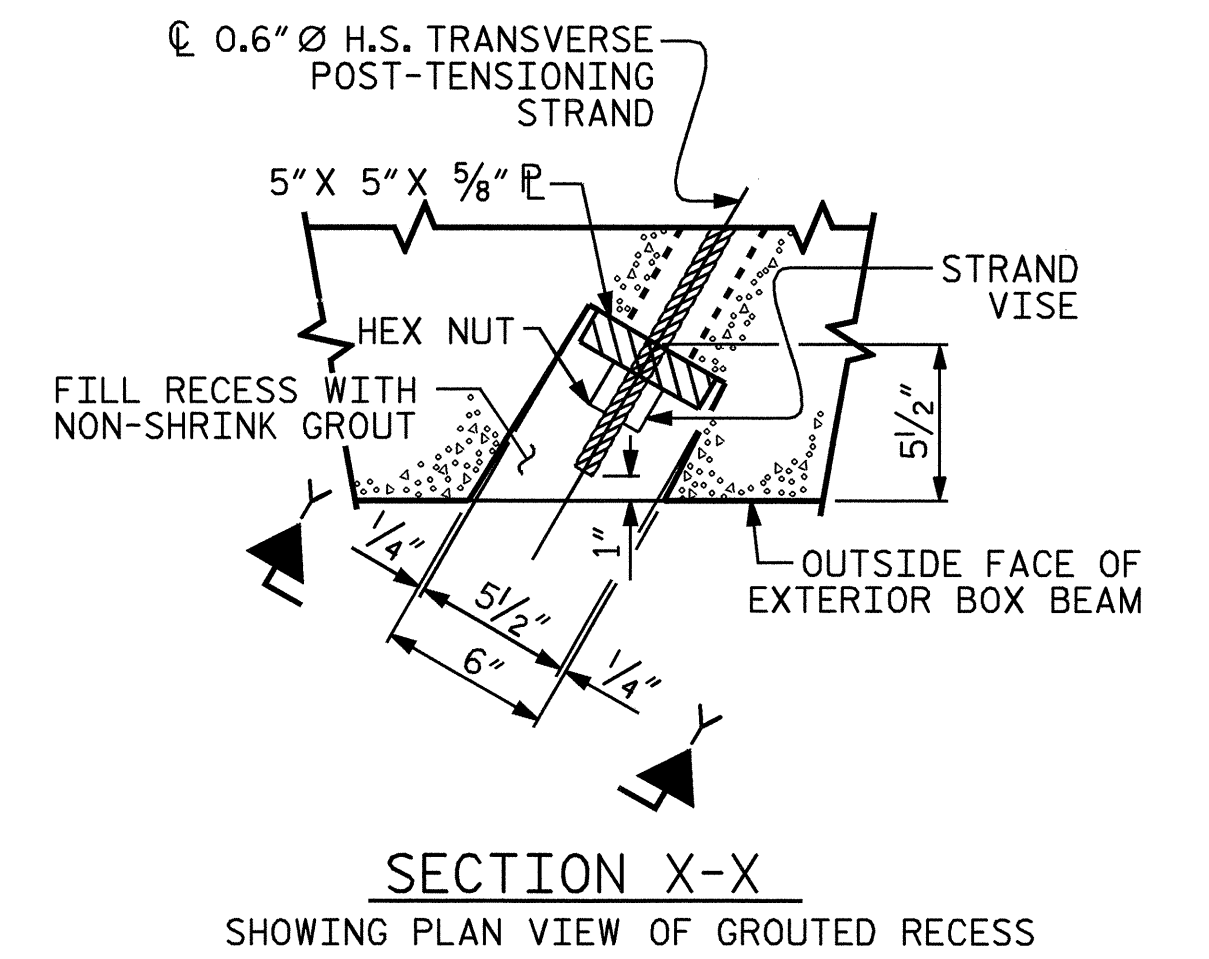
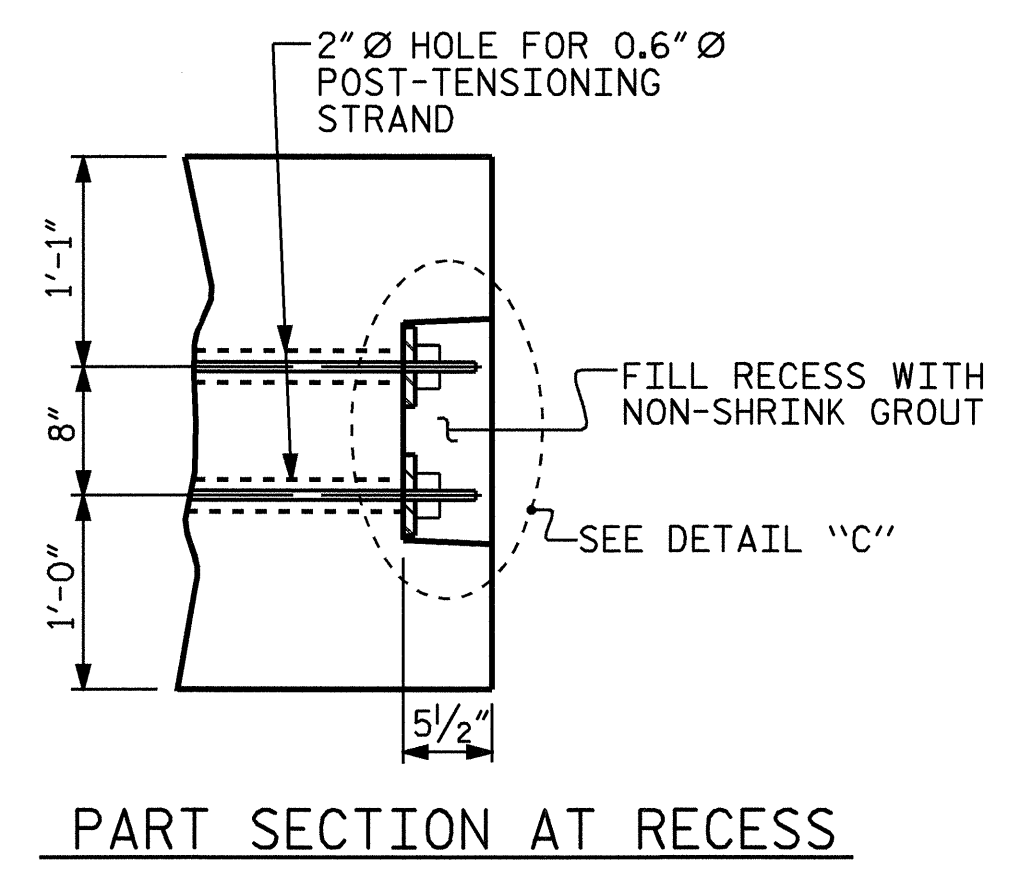
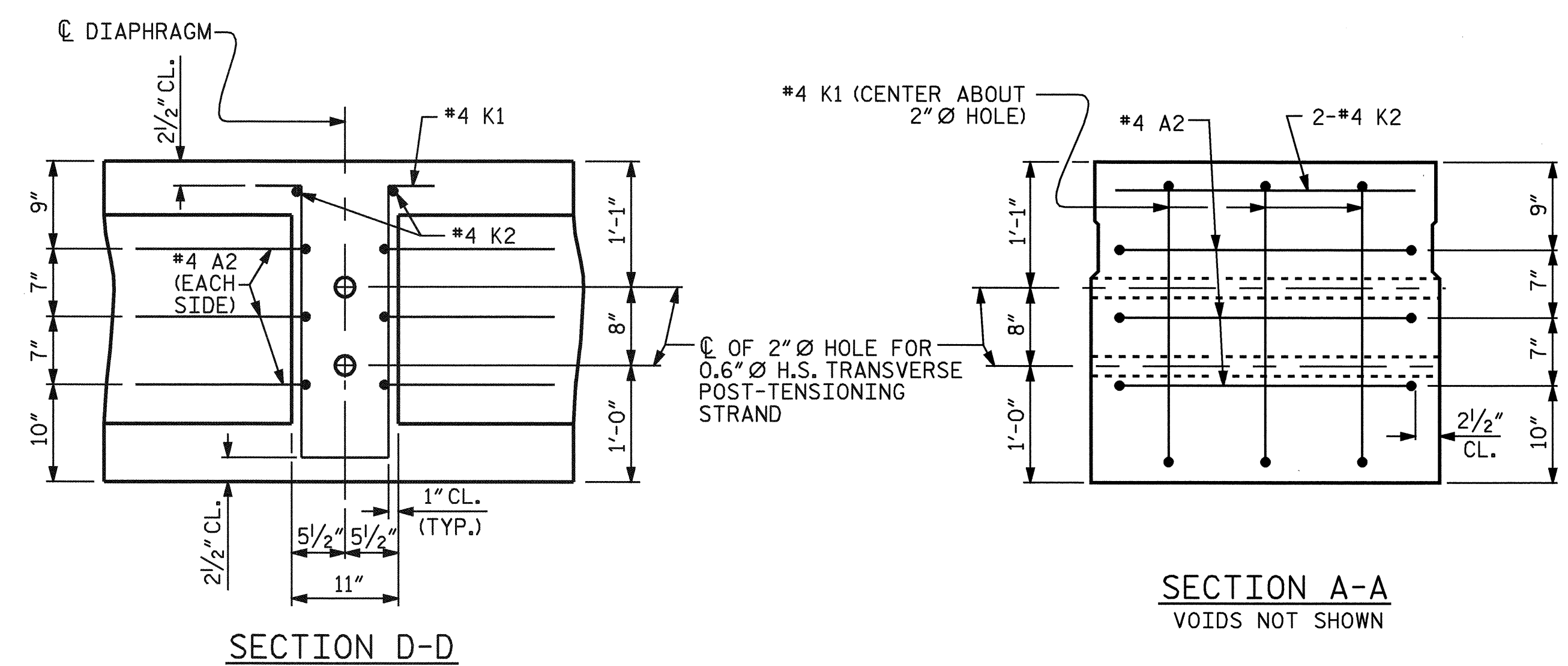
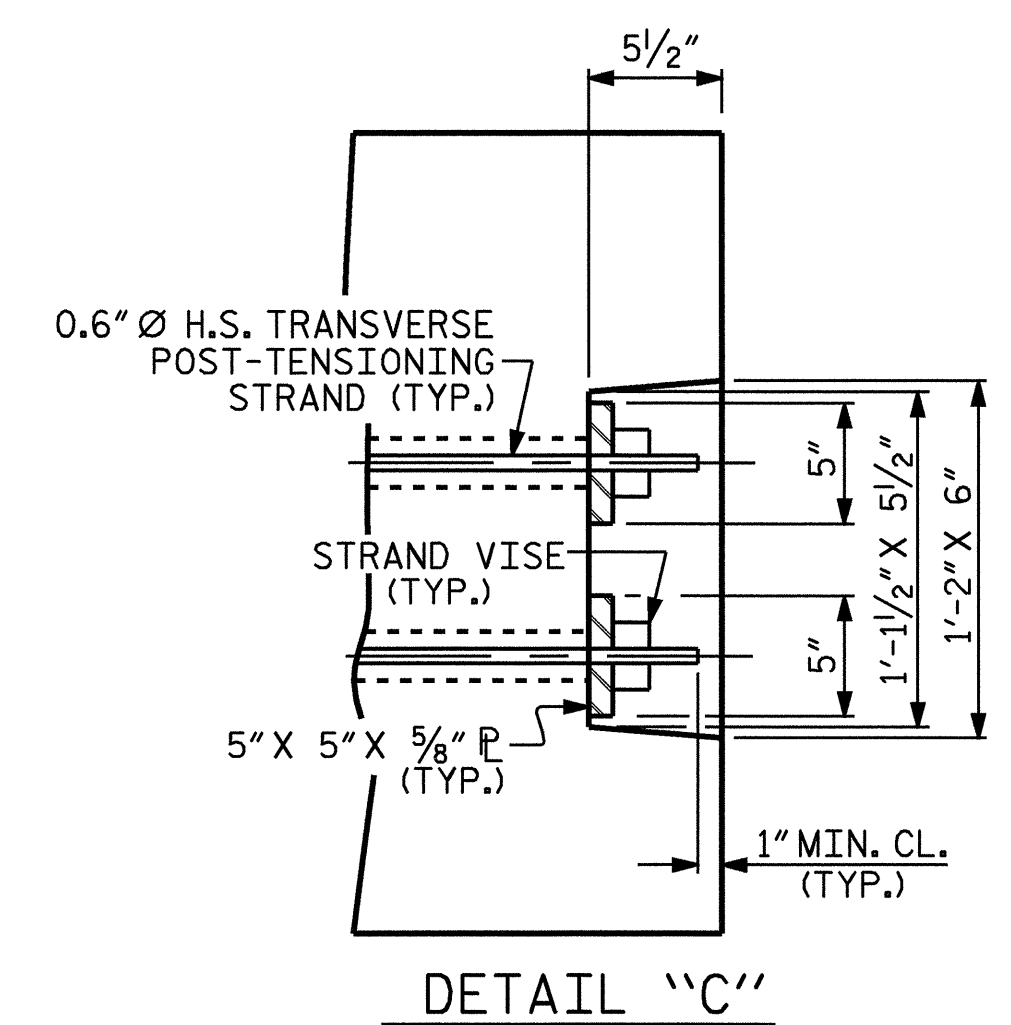
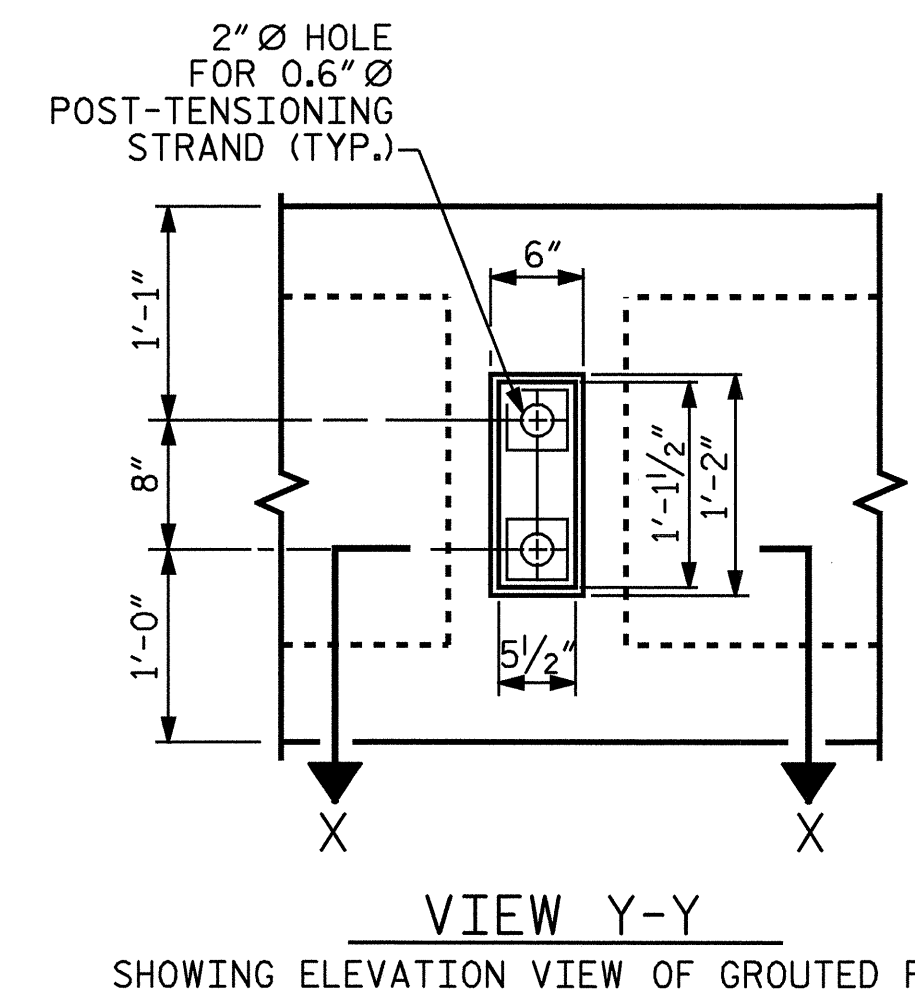
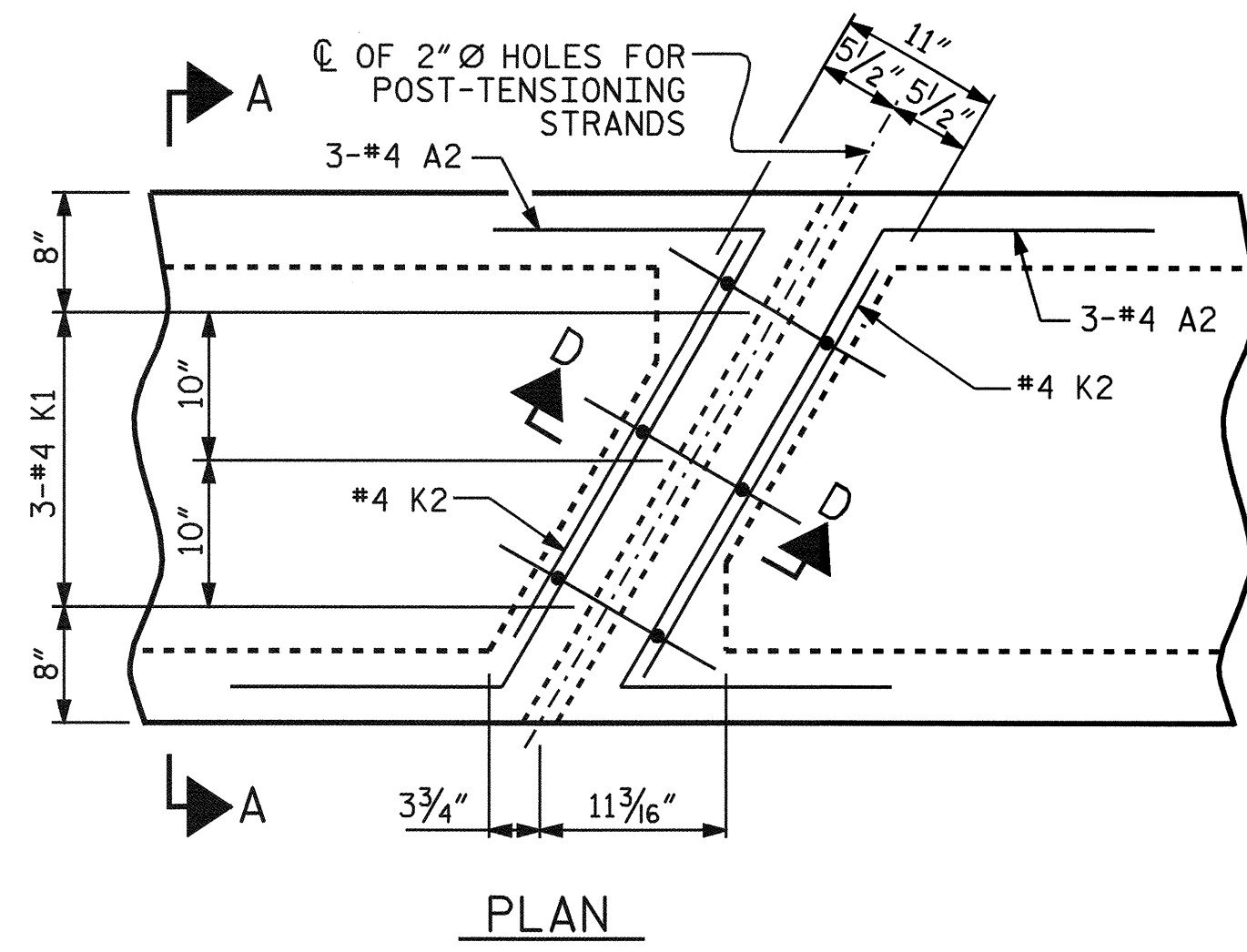
PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

SHEET 4 OF 7

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-7
2			4			TOTAL SHEETS 22







**GROUTED RECESS DETAIL AT  
END OF POST-TENSIONED STRANDS  
OF EXTERIOR BOX BEAM**

**DOUBLE DIAPHRAGM DETAILS**  
\*4 "S" BARS NOT SHOWN. \*4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 2'-9"	
	0.6" Ø L.R. STRAND	
	SPAN "A"	SPAN "B"
CAMBER (BEAM ALONE IN PLACE)	1 1/2"	3 3/16"
DEFLECTION DUE TO ASPHALT WEARING SURFACE	1/16"	1 3/16"
FINAL CAMBER	1 7/16"	2 3/8"

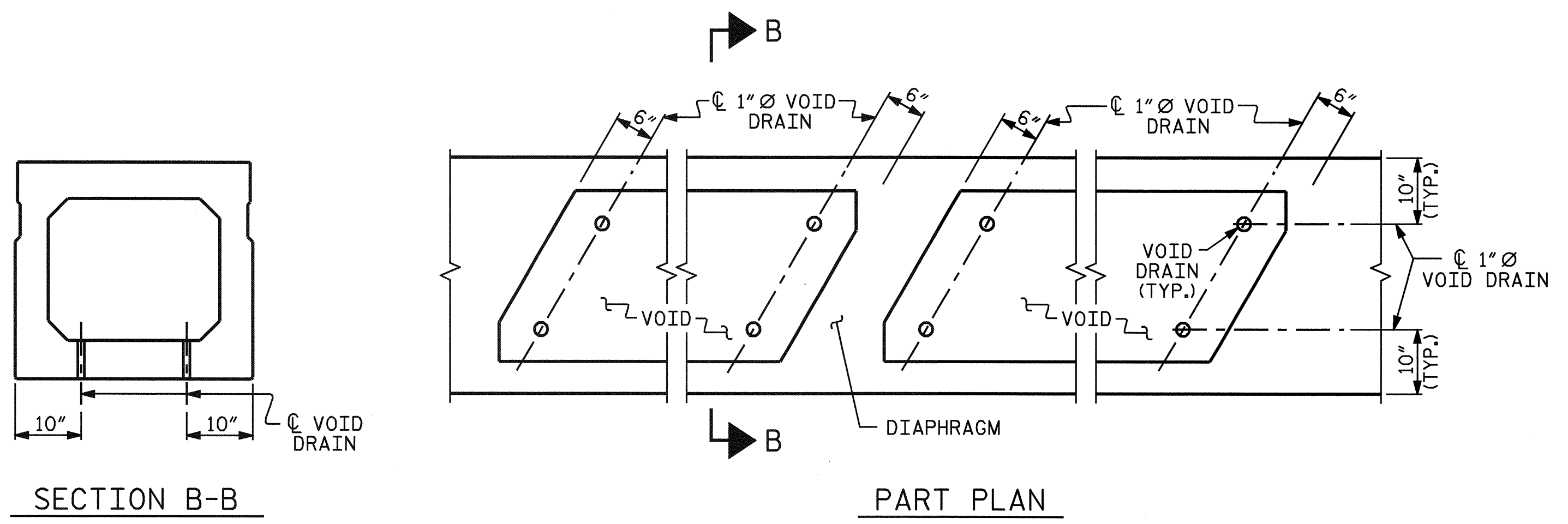
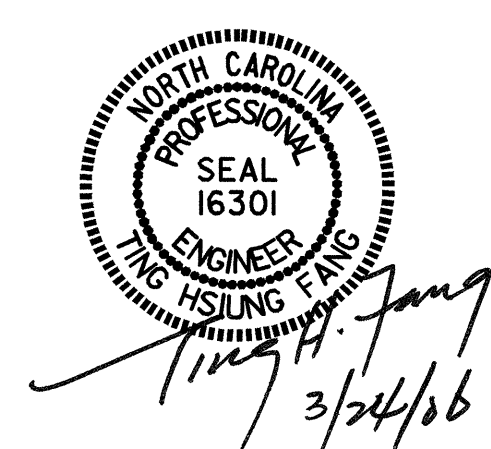
PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

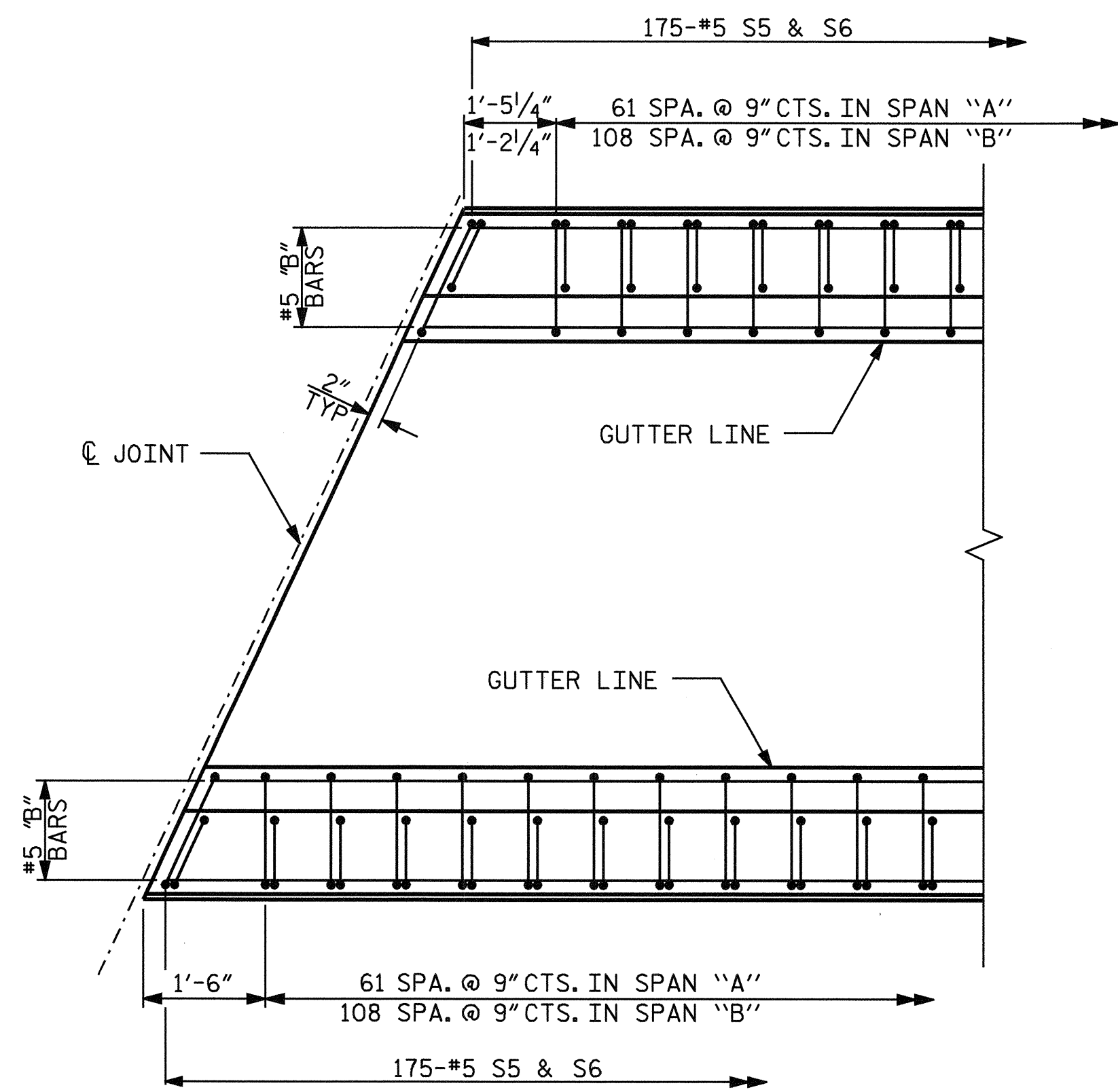
STANDARD  
3'-0" x 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS 22	
2			4				



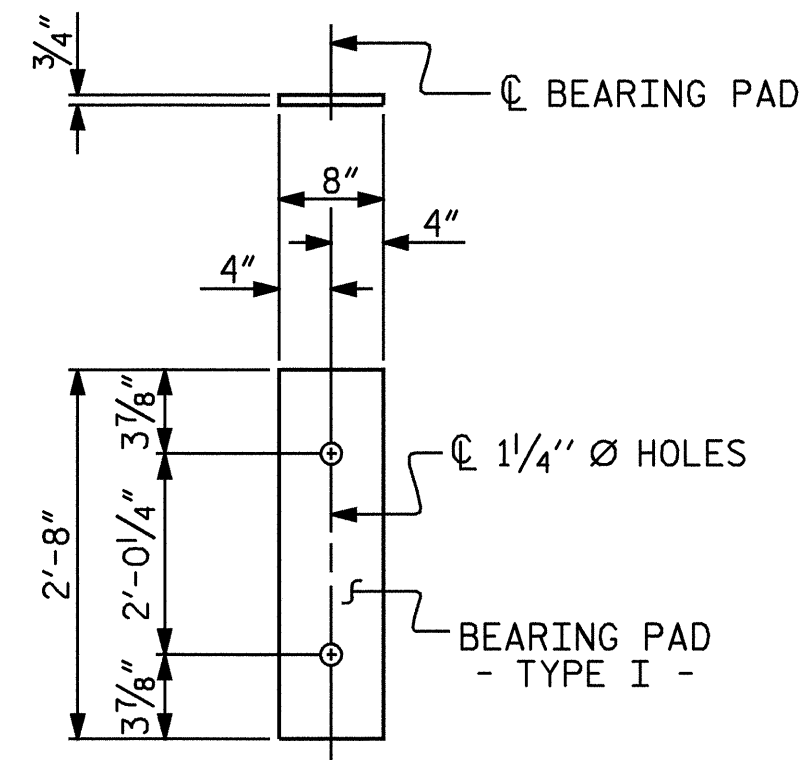
**VOID DRAIN DETAILS**  
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

ASSEMBLED BY : T.H. FANG	DATE : 07/05
CHECKED BY : M.A. ALLEN	DATE : 08/05
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	



PLAN

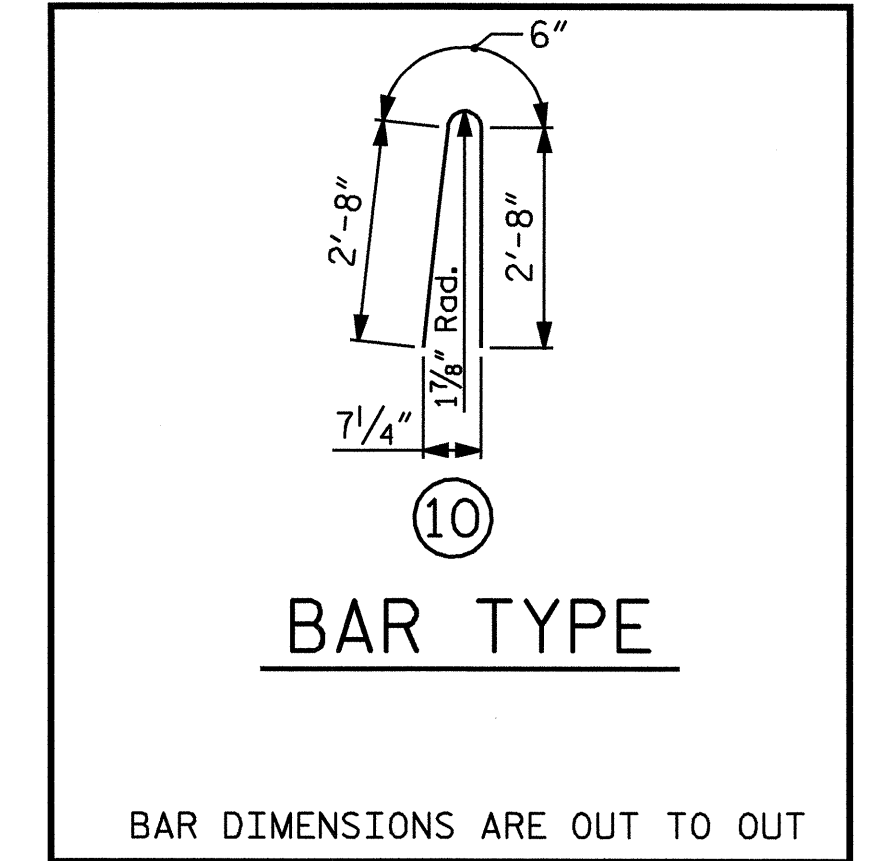
FOR SPACING OF #5 S5 & #5 S6 BARS, SEE "PLAN OF SPANS".



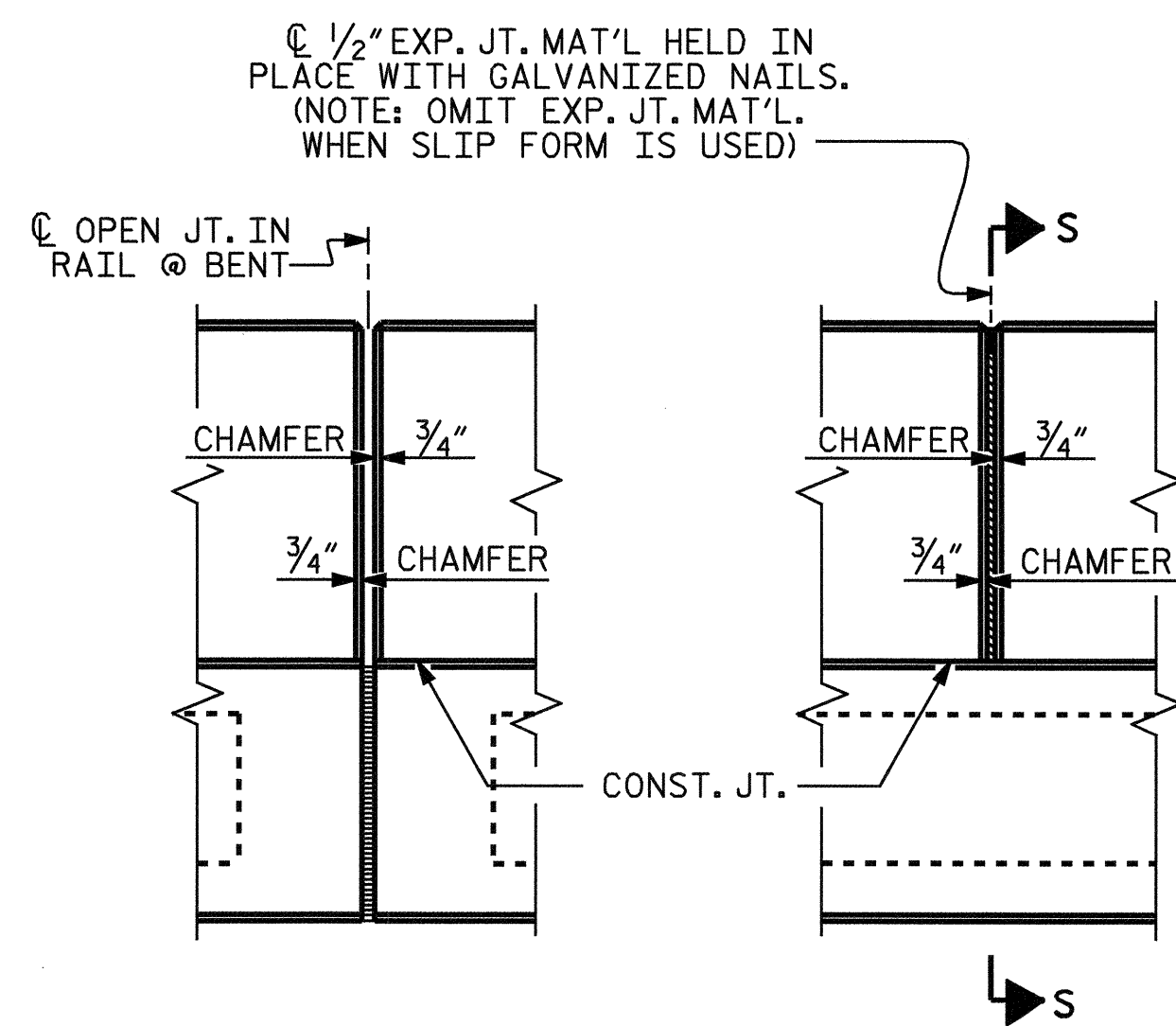
FIXED END  
(TYPE I - 52 REQ'D)

ELASTOMERIC BEARING DETAILS

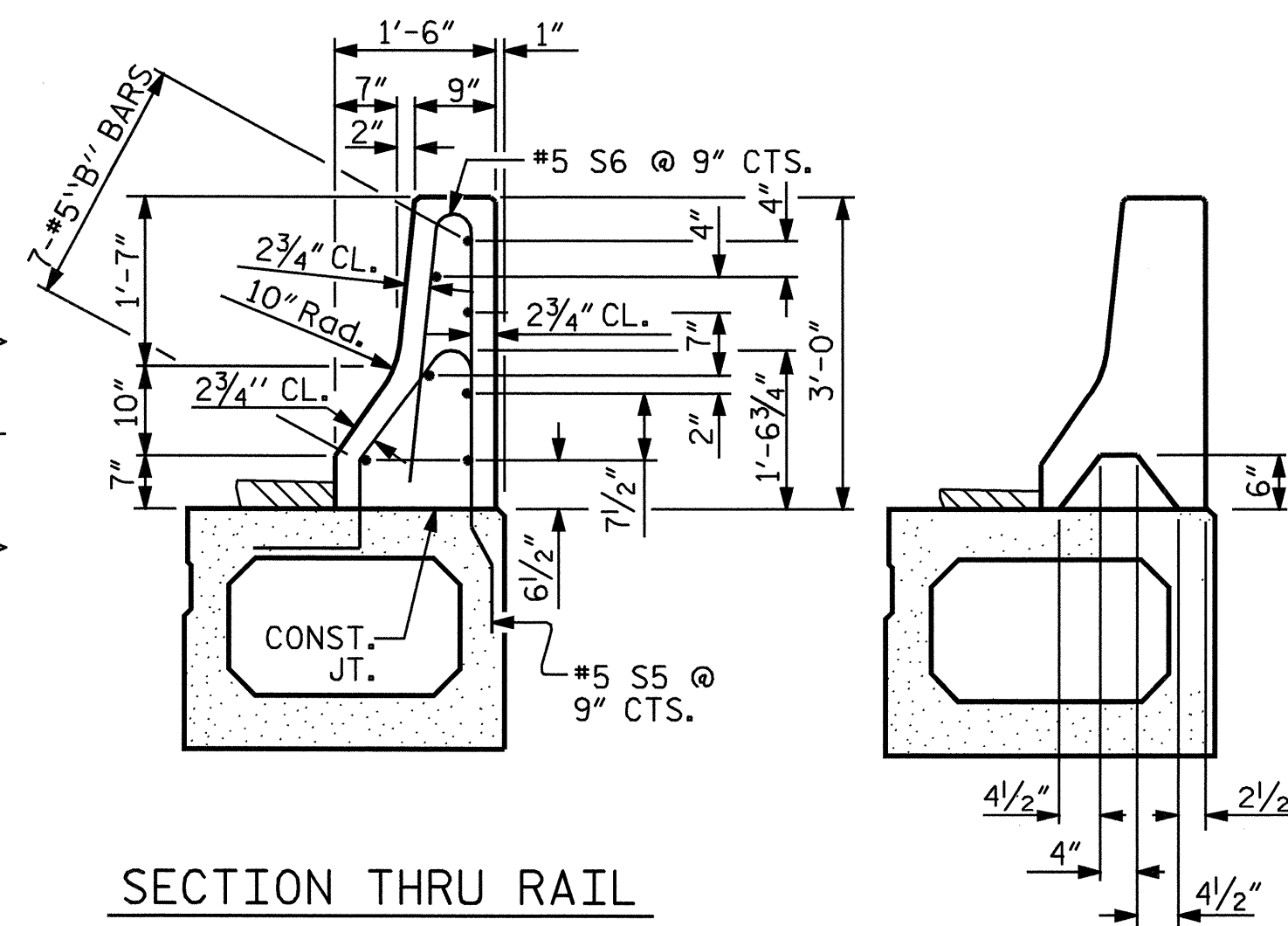
BOX BEAM UNITS REQUIRED				
SPAN	GIRDER	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	INTERIOR	11	48'-8 1/4"	535'-6 3/4"
	EXTERIOR	2	48'-8 1/4"	97'-4 1/2"
SPAN B	INTERIOR	11	83'-8 1/4"	920'-6 3/4"
	EXTERIOR	2	83'-8 1/4"	167'-4 1/2"
TOTAL		26		1720.88'



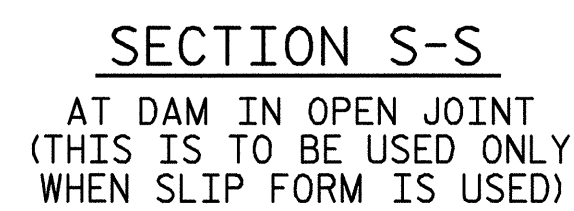
BILL OF MATERIAL FOR CONCRETE BARRIER RAIL							
BAR	SPAN A	SPAN B	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	56	—	56	#5	STR	14'-0"	818
* B4	—	56	56	#5	STR	15'-9"	920
* B5	—	14	14	#5	STR	27'-7"	403
* S6	128	222	350	#5	10	5'-10"	2,129
* EPOXY COATED REINFORCING STEEL LBS.							4,270
CLASS AA CONCRETE CU.YDS.							31.5
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL							265.0



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



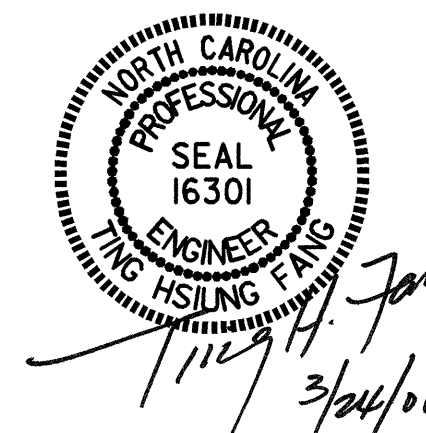
SECTION S-S  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY  
WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS

PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

SHEET 7 OF 7

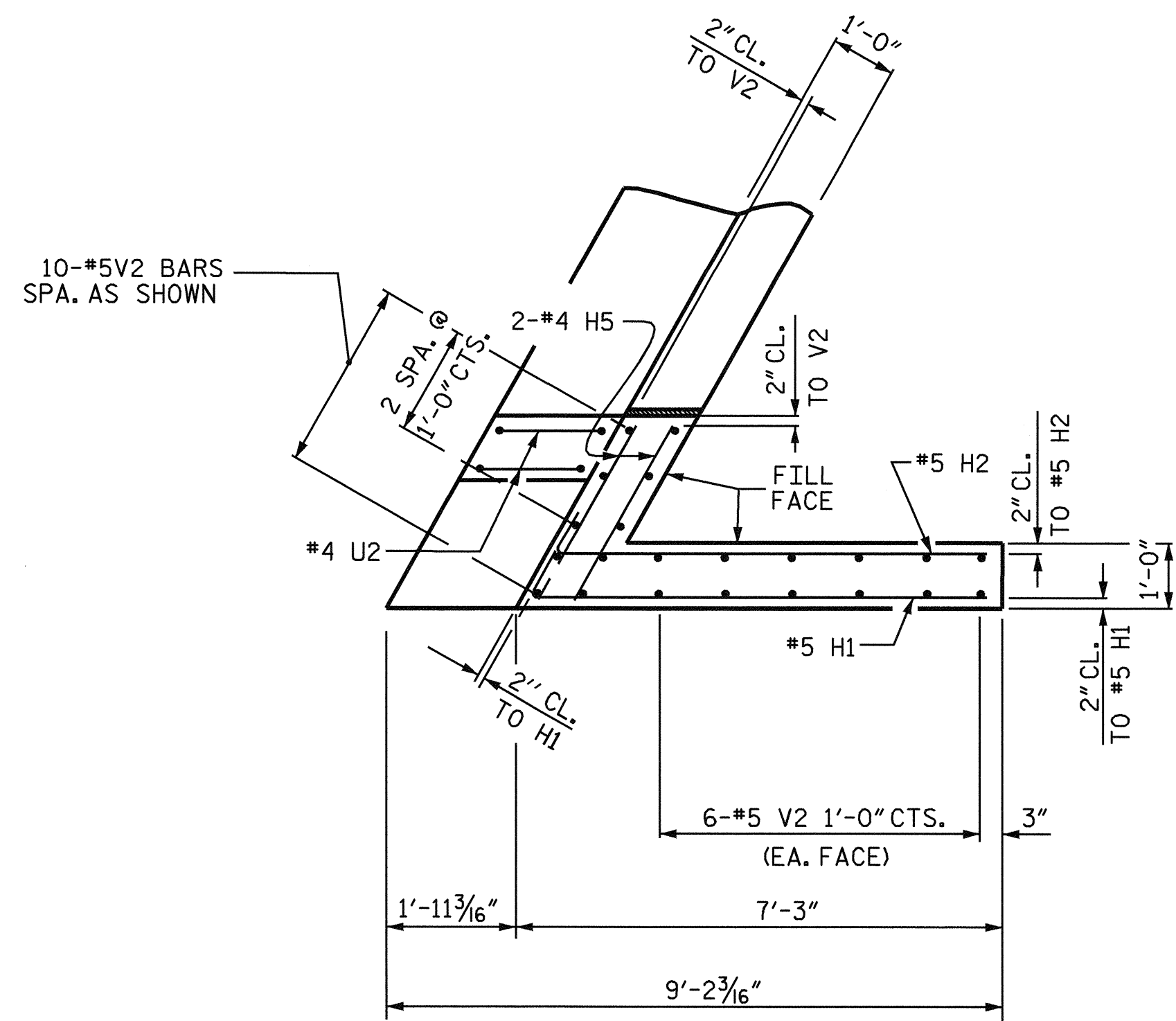
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM  
UNIT DETAILS



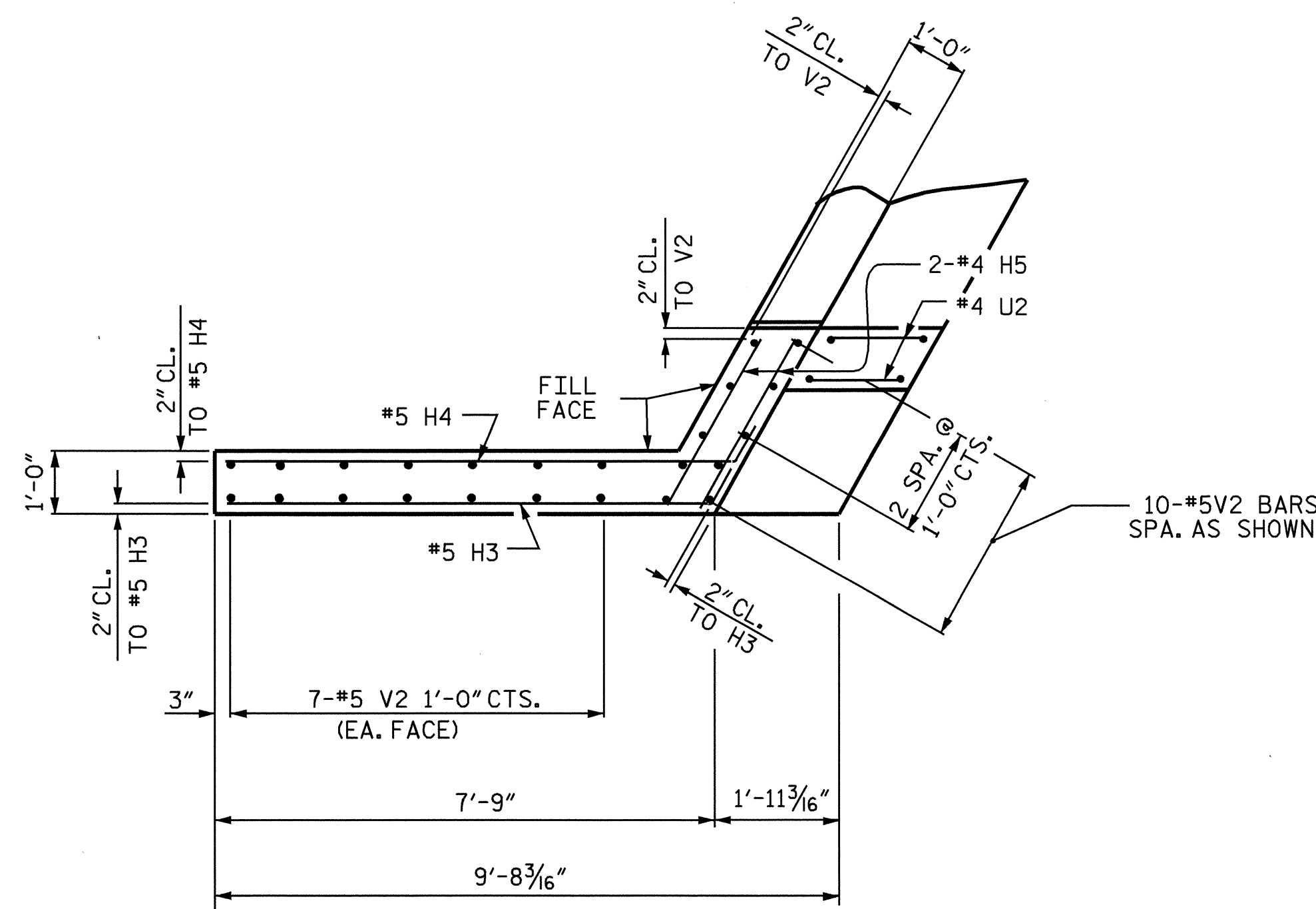
ASSEMBLED BY : T.H. FANG	DATE : 07/05
CHECKED BY : M.A. ALLEN	DATE : 08/05
DRAWN BY : TLA	5/05
CHECKED BY : GM	6/05
ADDED	7/11/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

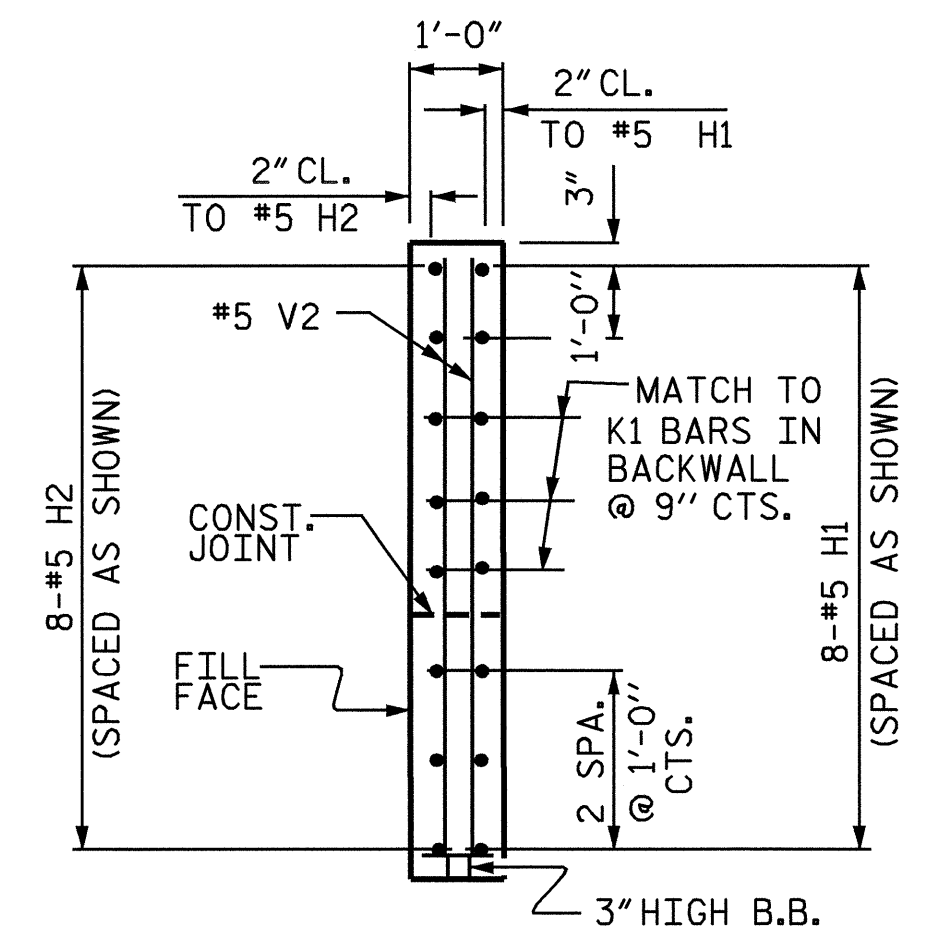




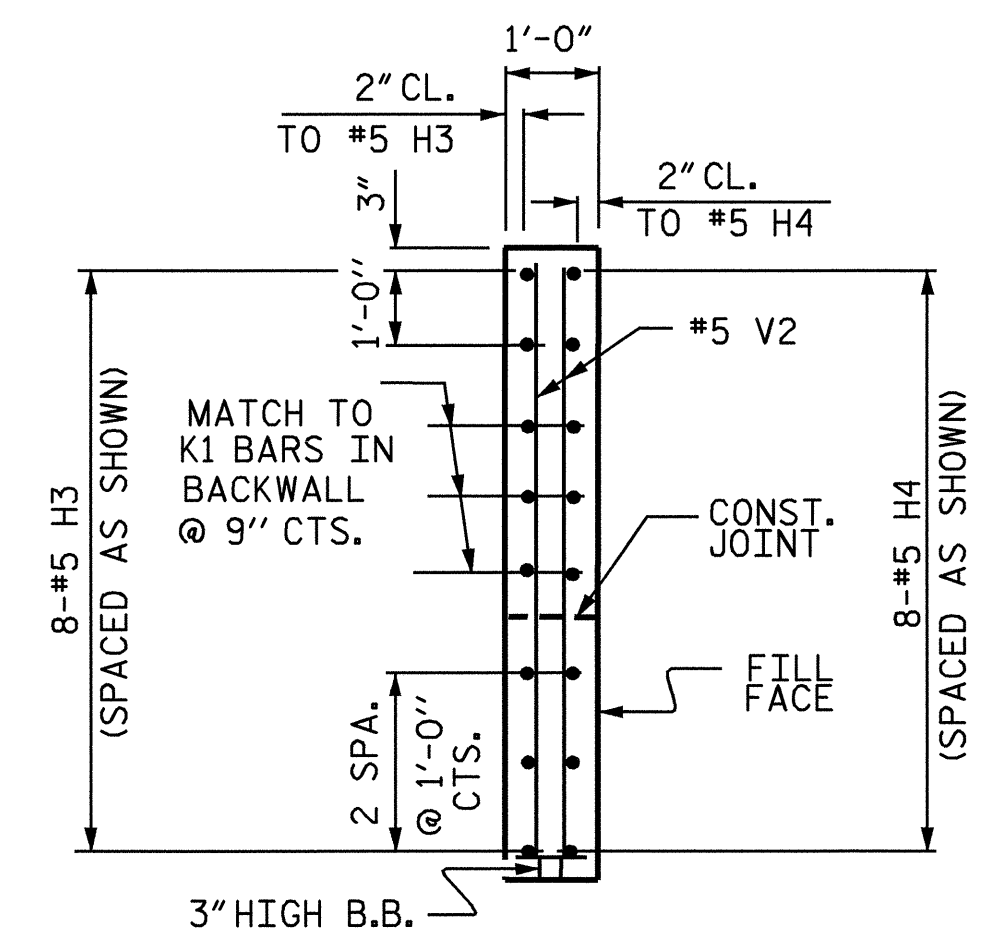
PLAN OF WING W1



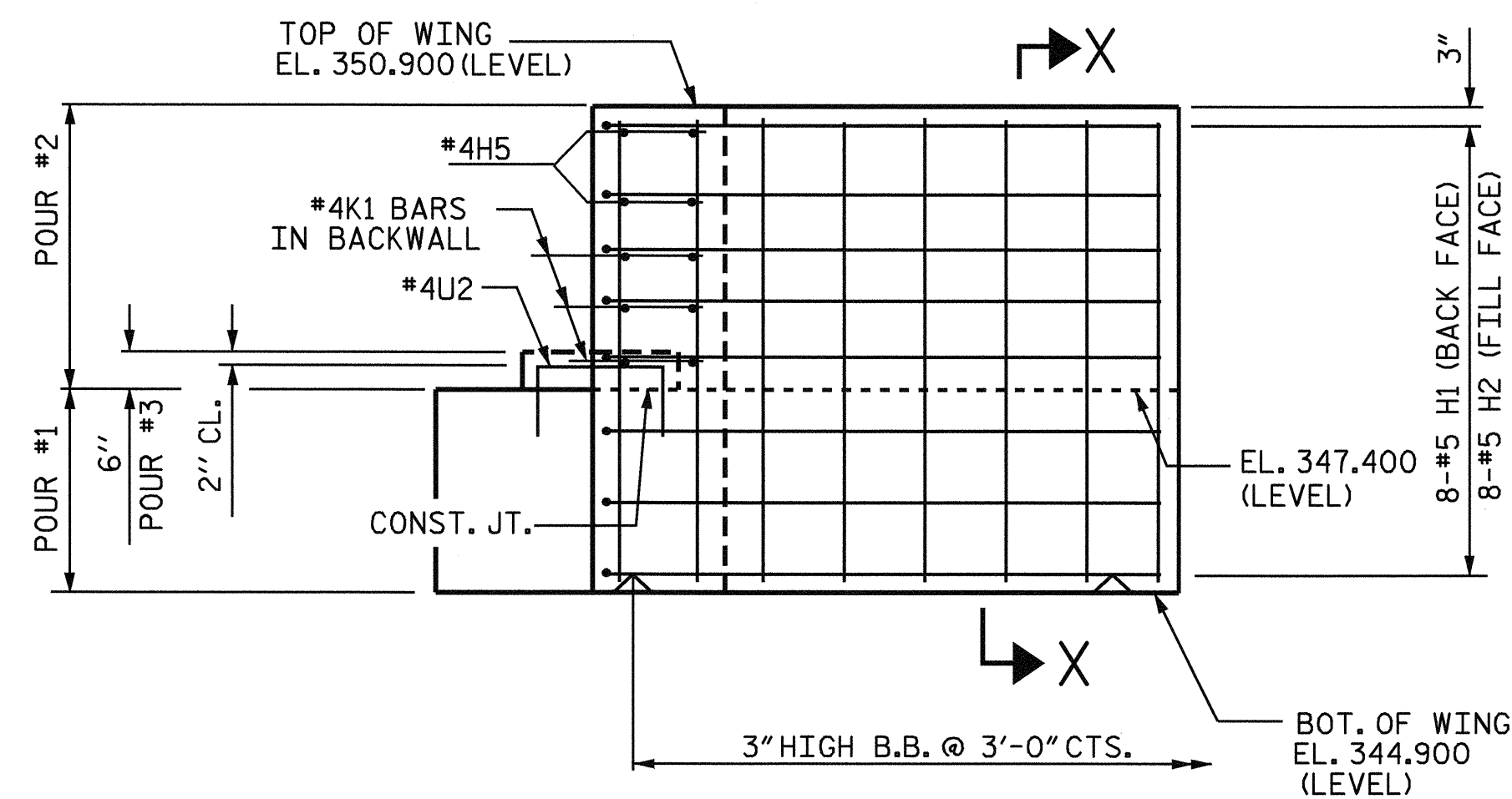
PLAN OF WING W2



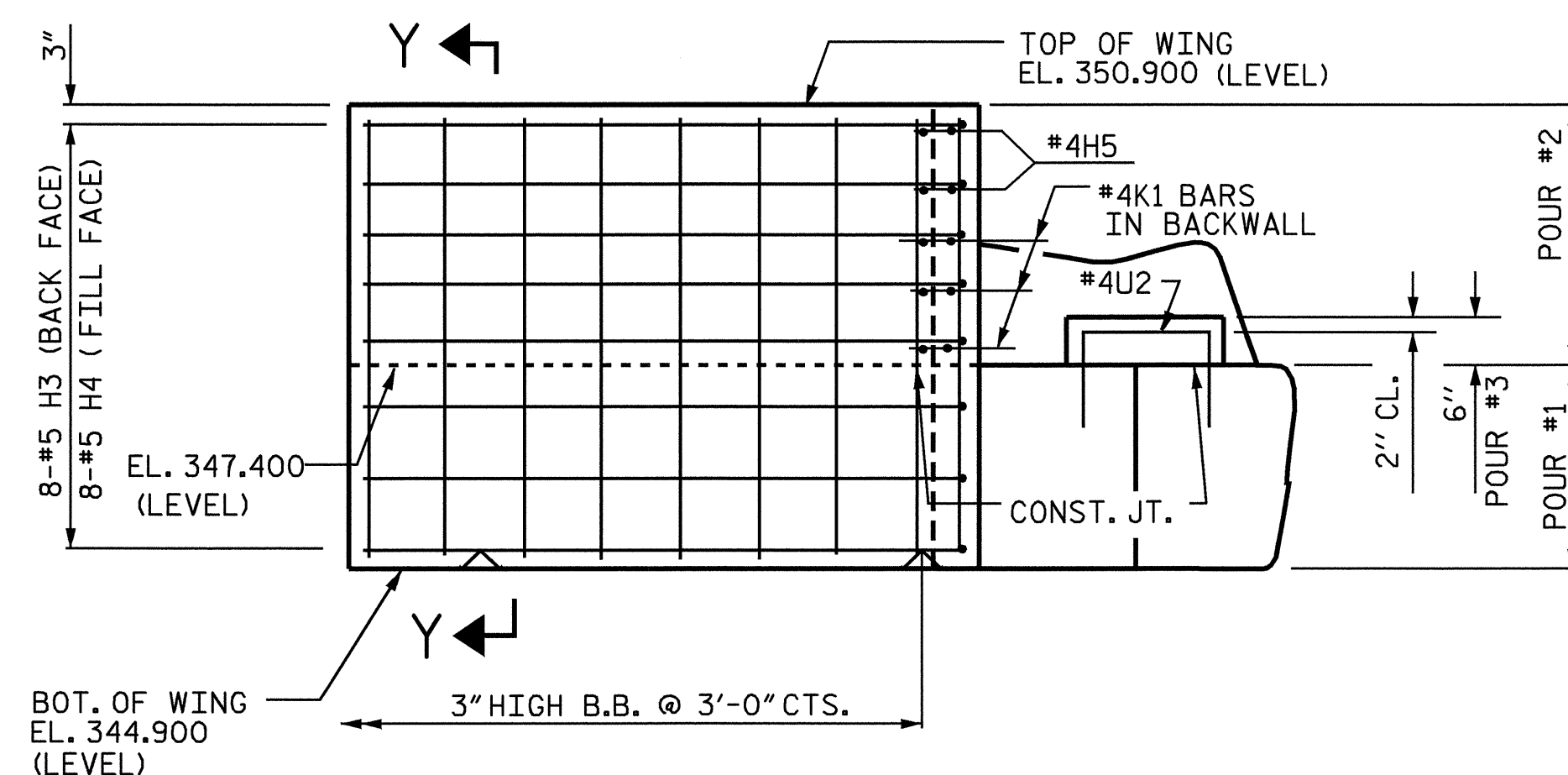
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1



ELEVATION OF WING W2

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

*Steven L. Wance*  
 ENGINEER  
 21545  
 03/24/06

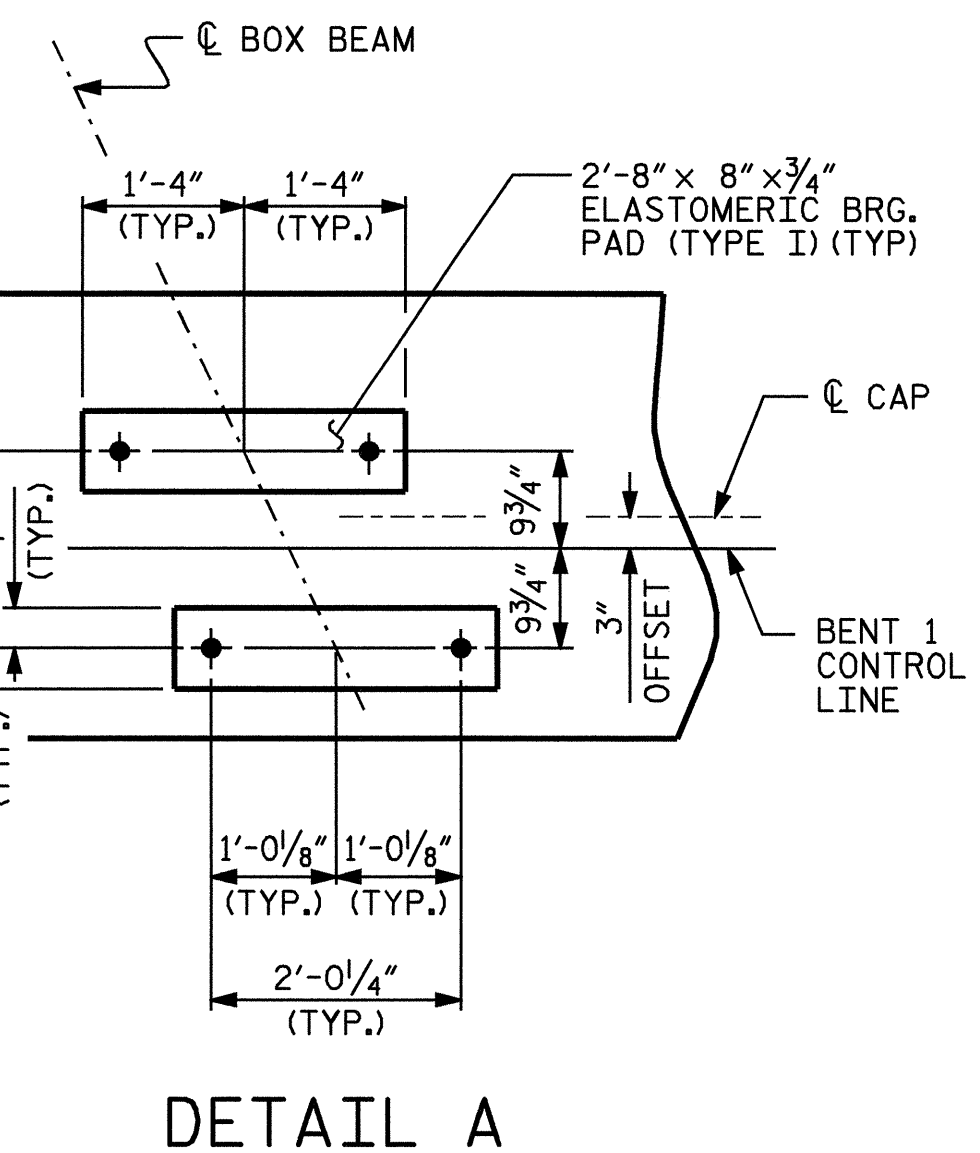
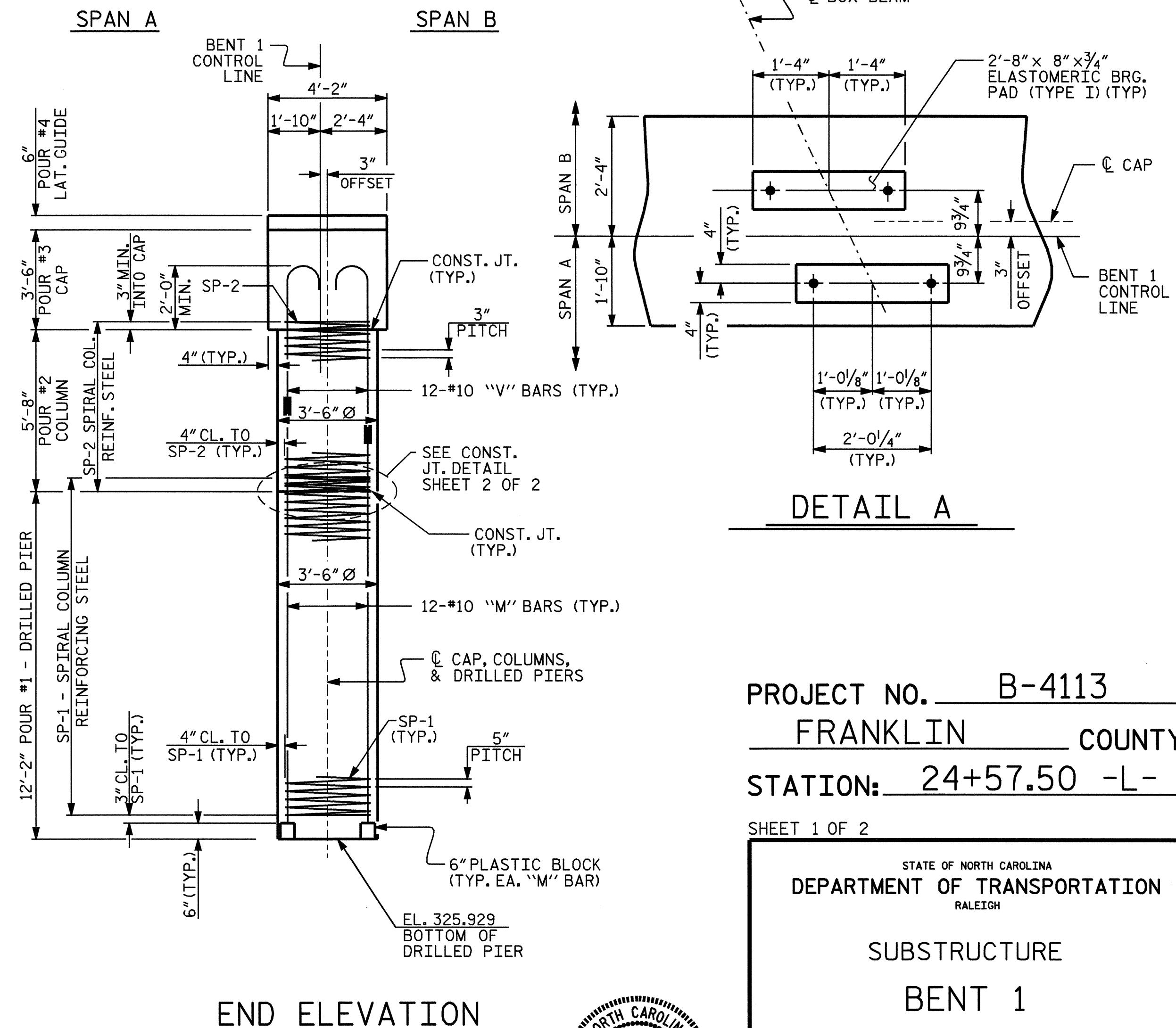
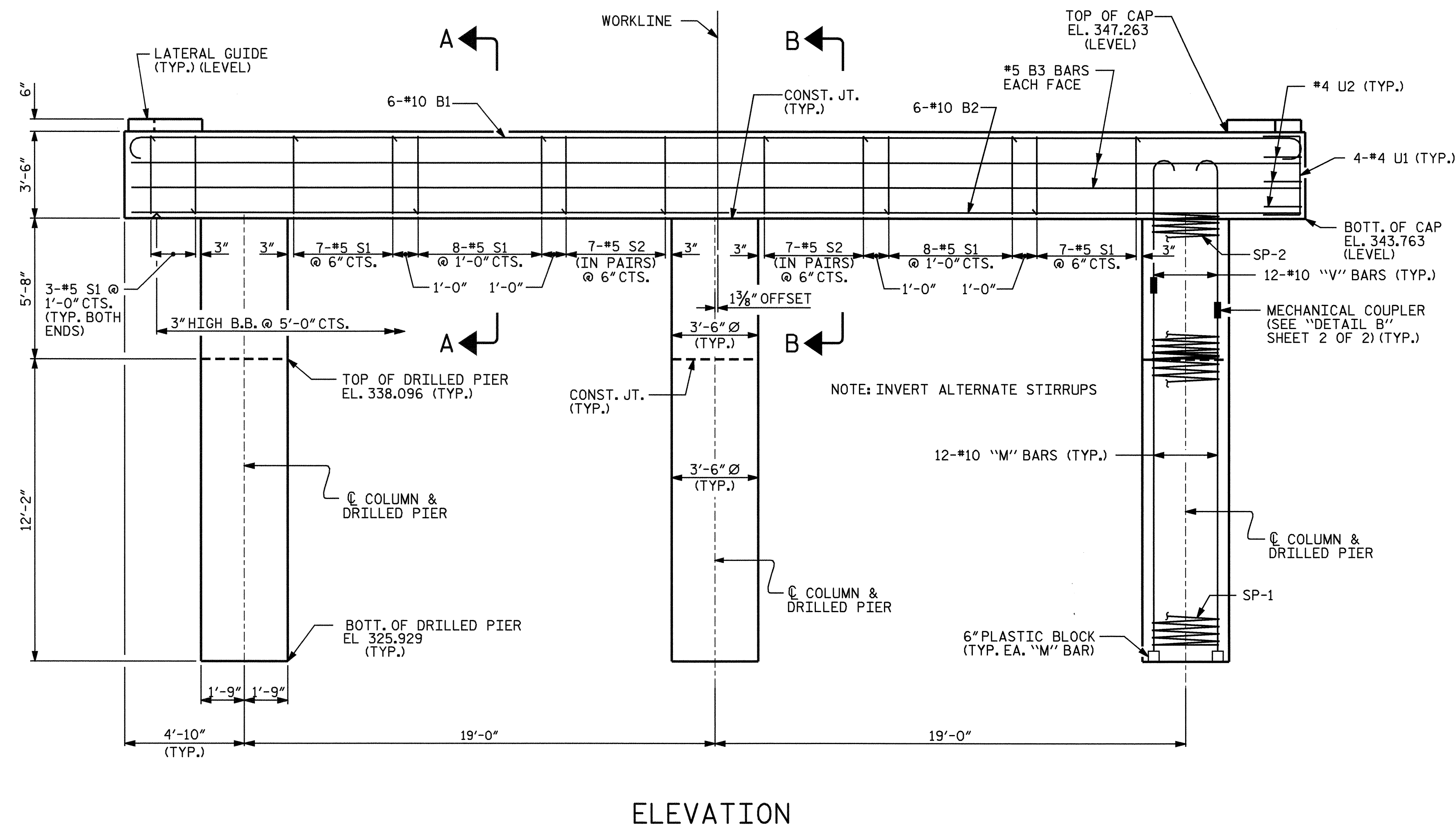
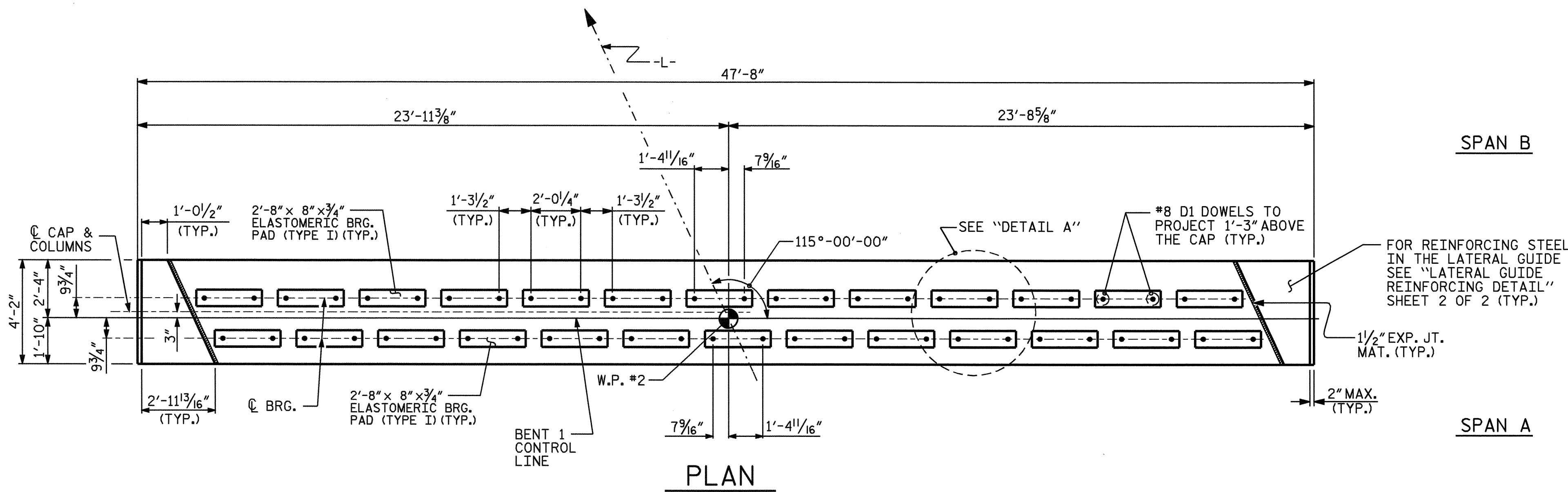
DRAWN BY: N. Q. TRAN DATE: 3/29/05  
 CHECKED BY: S. M. RASHIDI DATE: 5/29/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22



**NOTES:**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE CONTRACTOR SHALL ALIGN THE "V" & "M" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS AND COLUMNS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIER IS DETAILED WITH 3'-0" OF EXTRA LENGTH.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1'-0" BELOW THE GROUND LINE.
- SPlicing OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- FOR PERMANENT STEEL CASING, SEE DRILLED PIERS SPECIAL PROVISION.
- MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL TO THE COLUMN REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER AND COLUMN STEEL SHALL BE CUT ACCORDINGLY. SEE SPECIAL PROVISIONS FOR MECHANICAL BUTT SPlicing FOR REINFORCING STEEL.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE BENT 1 CONTROL LINE IS OFFSET FROM THE CENTERLINE OF BENT CAP, COLUMNS AND DRILLED PIERS.



PROJECT NO. B-4113  
 FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

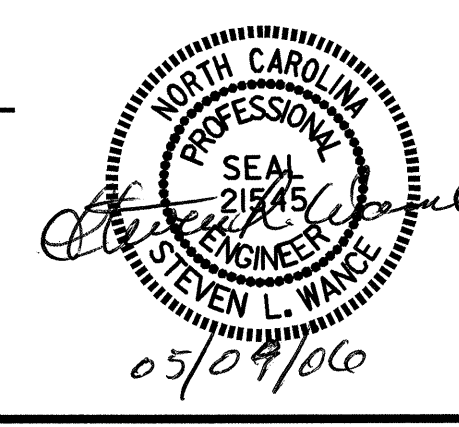
SHEET 1 OF 2

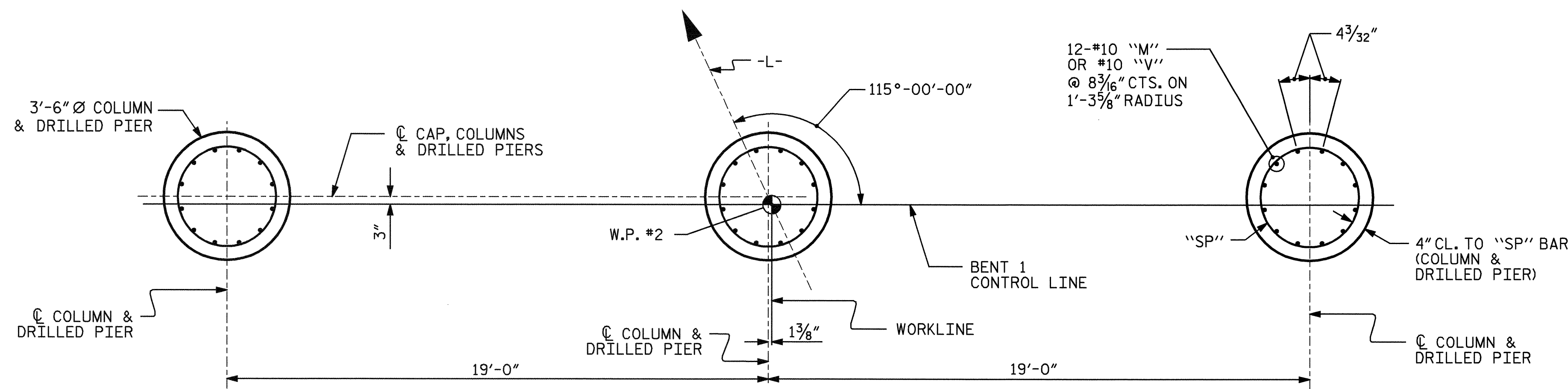
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

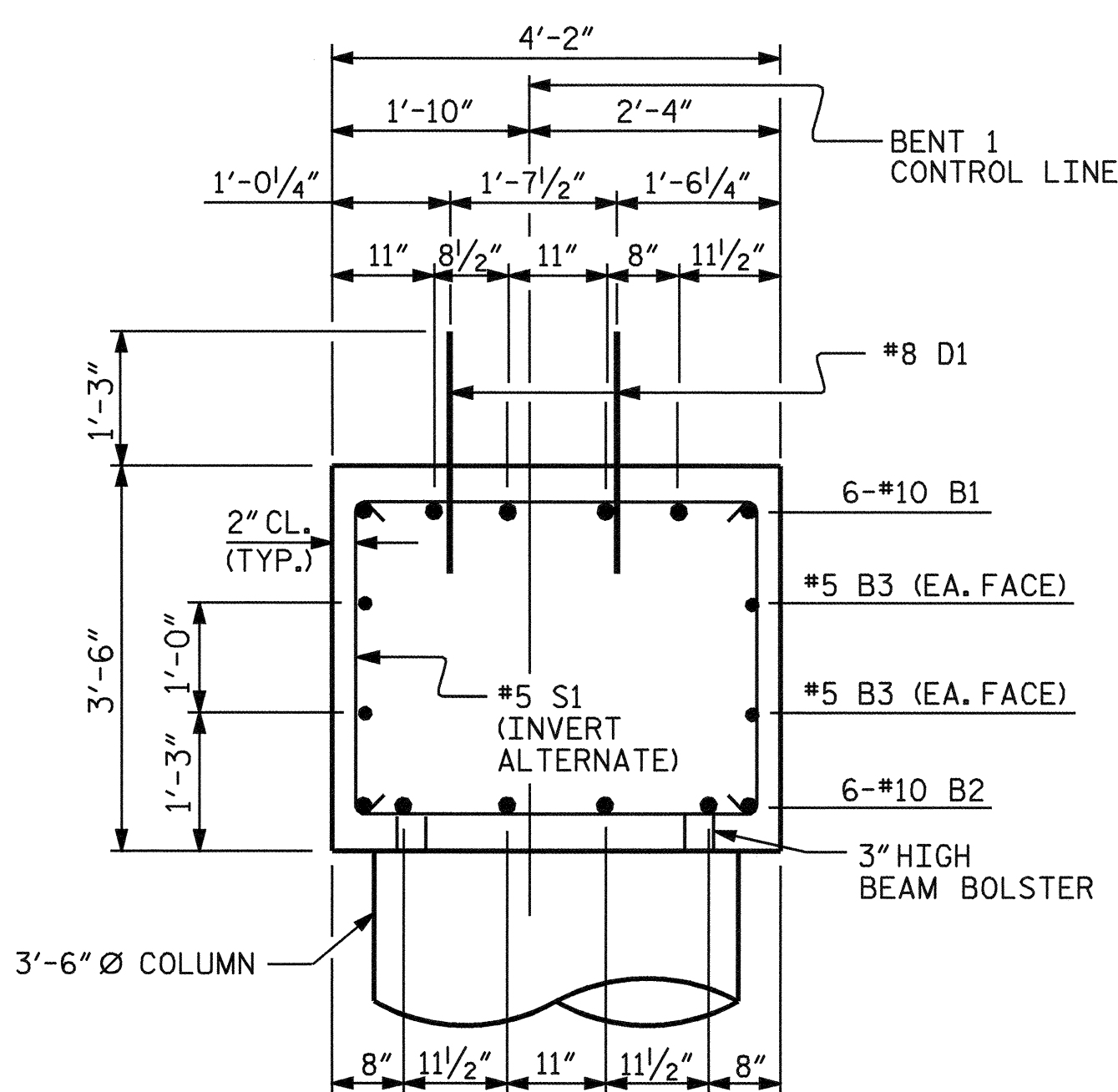
DRAWN BY: SWANcPE DATE: 10/05  
 CHECKED BY: M.A. ALLEN DATE: 12/05



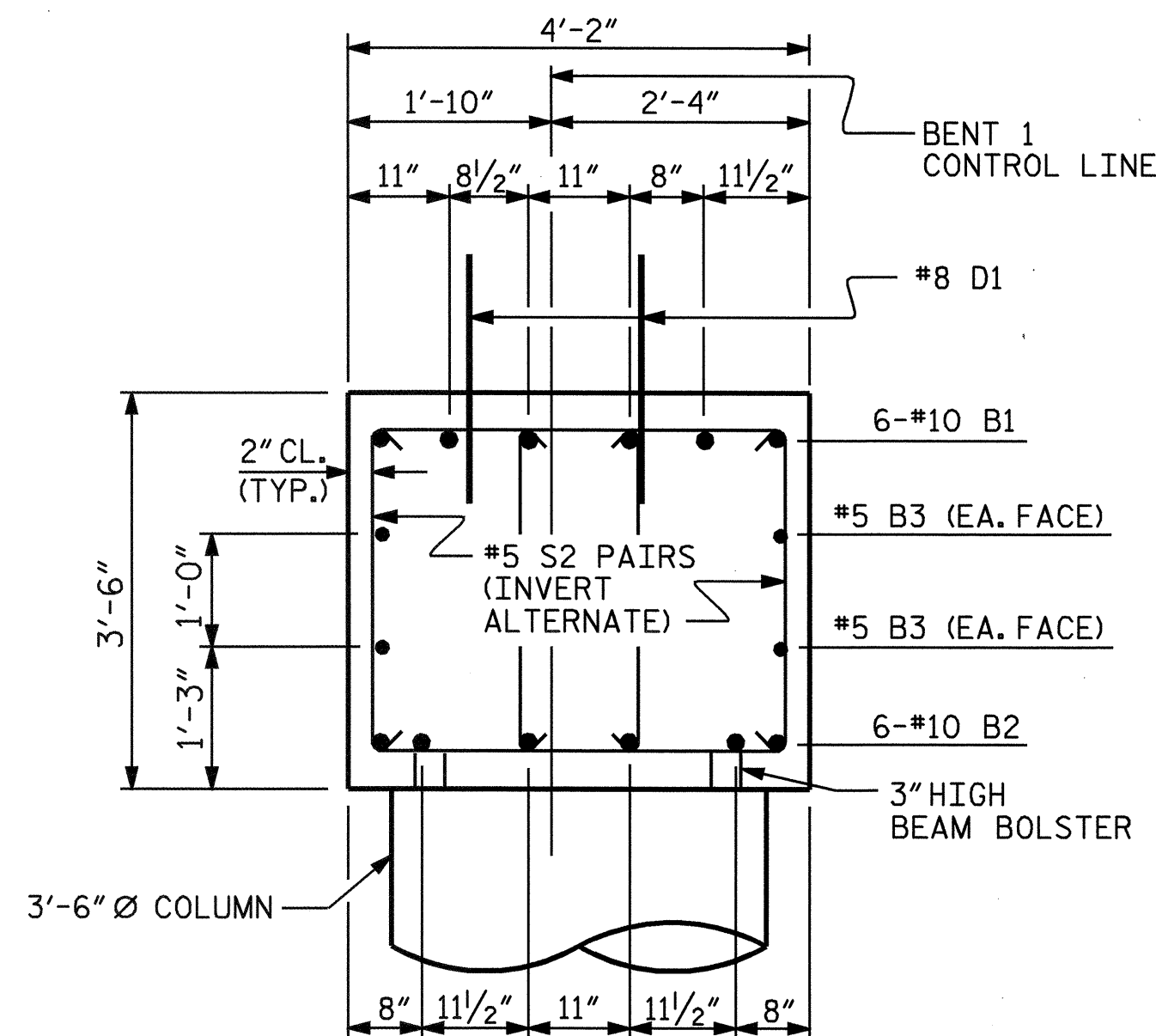


**PLAN OF COLUMNS AND DRILLED PIERS**

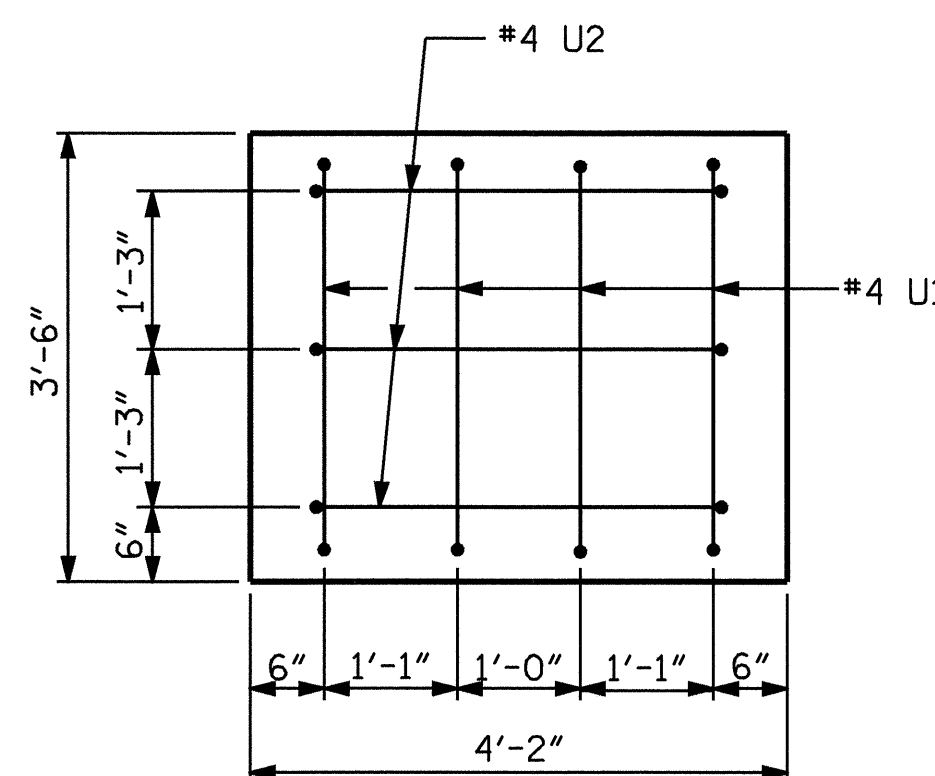
(ALL DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS)



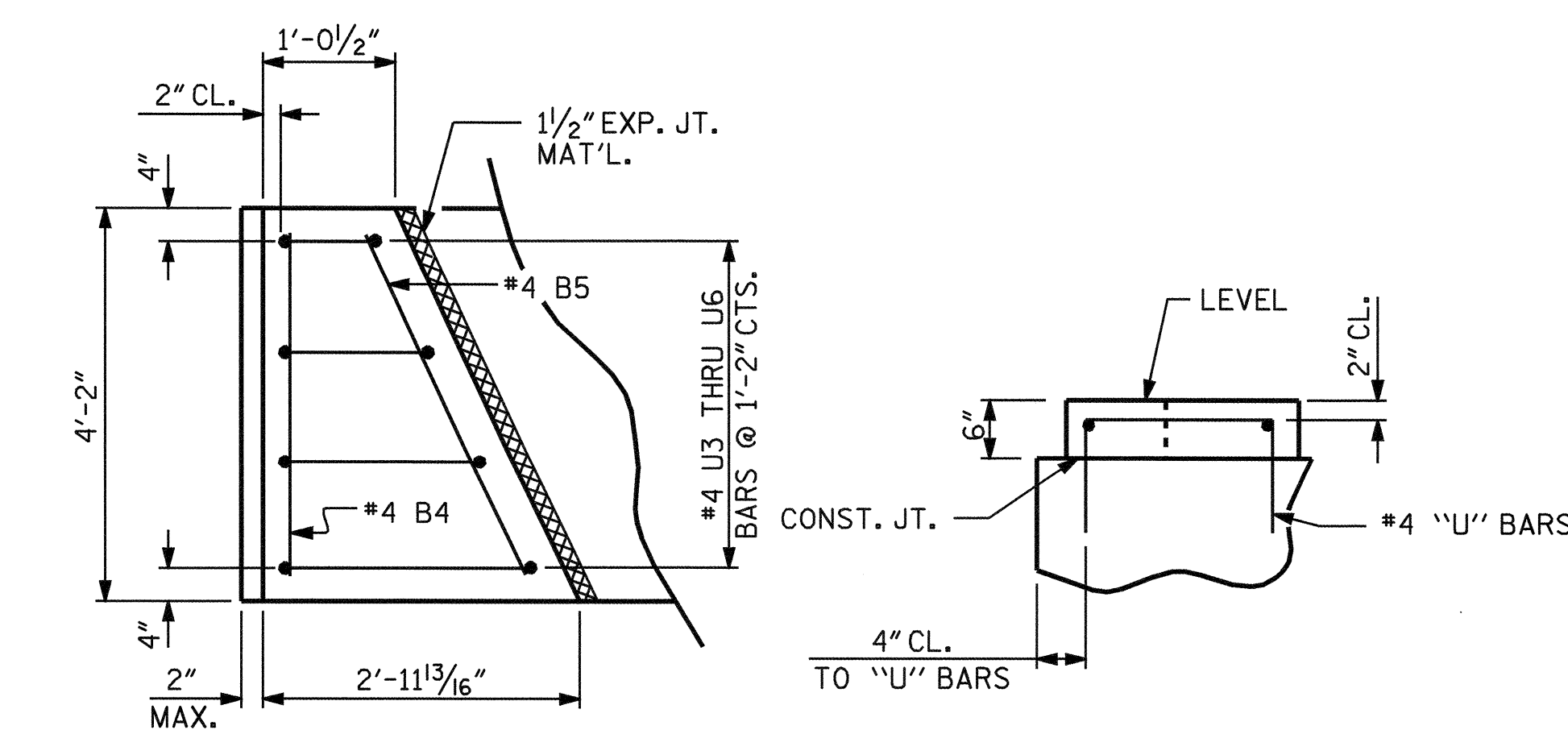
**SECTION A-A**



**SECTION B-B**

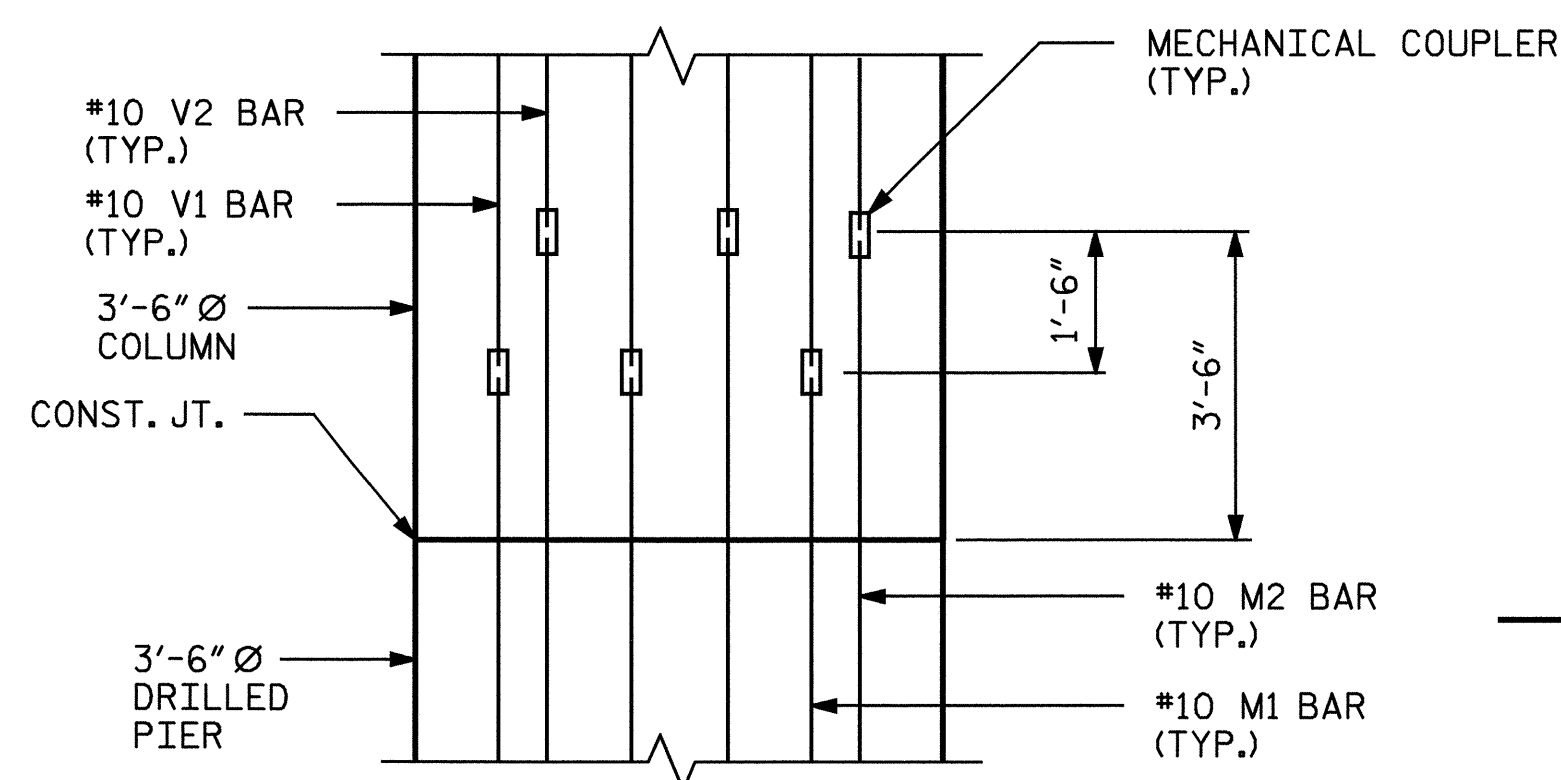


**END VIEW**



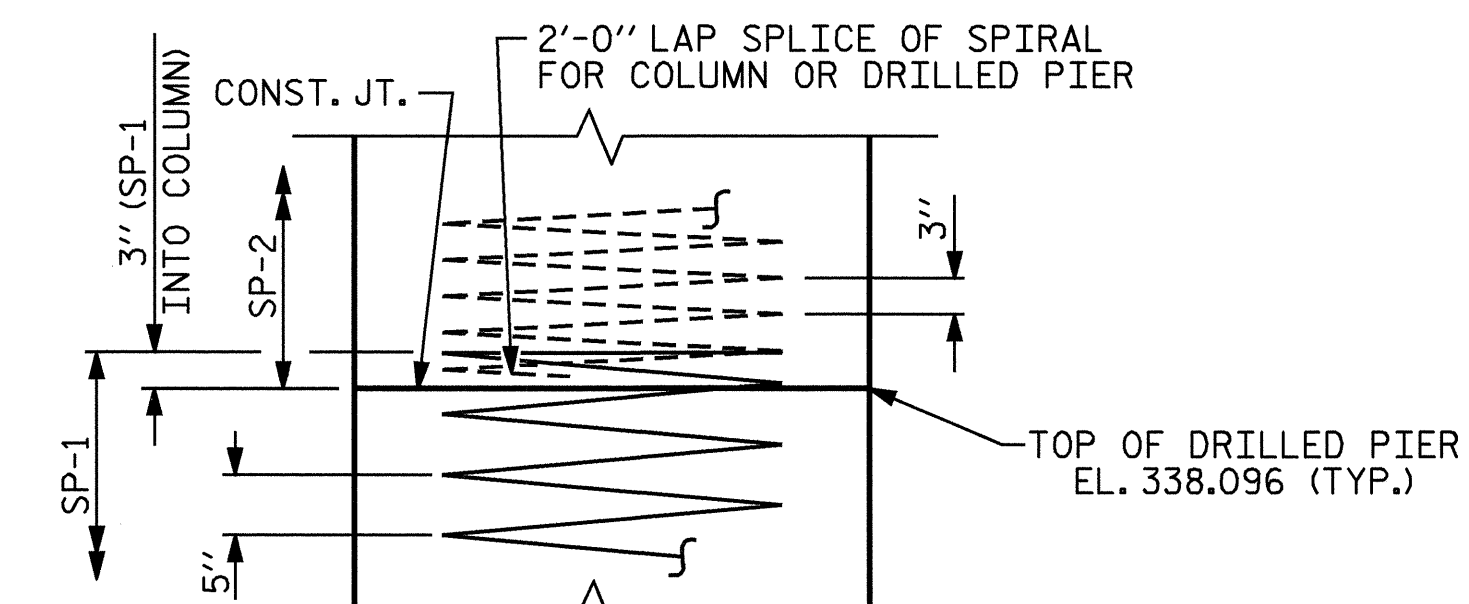
**LATERAL GUIDE REINFORCING DETAIL**

LEFT END OF THE CAP SHOWN, RIGHT END SIMILAR BY ROTATION

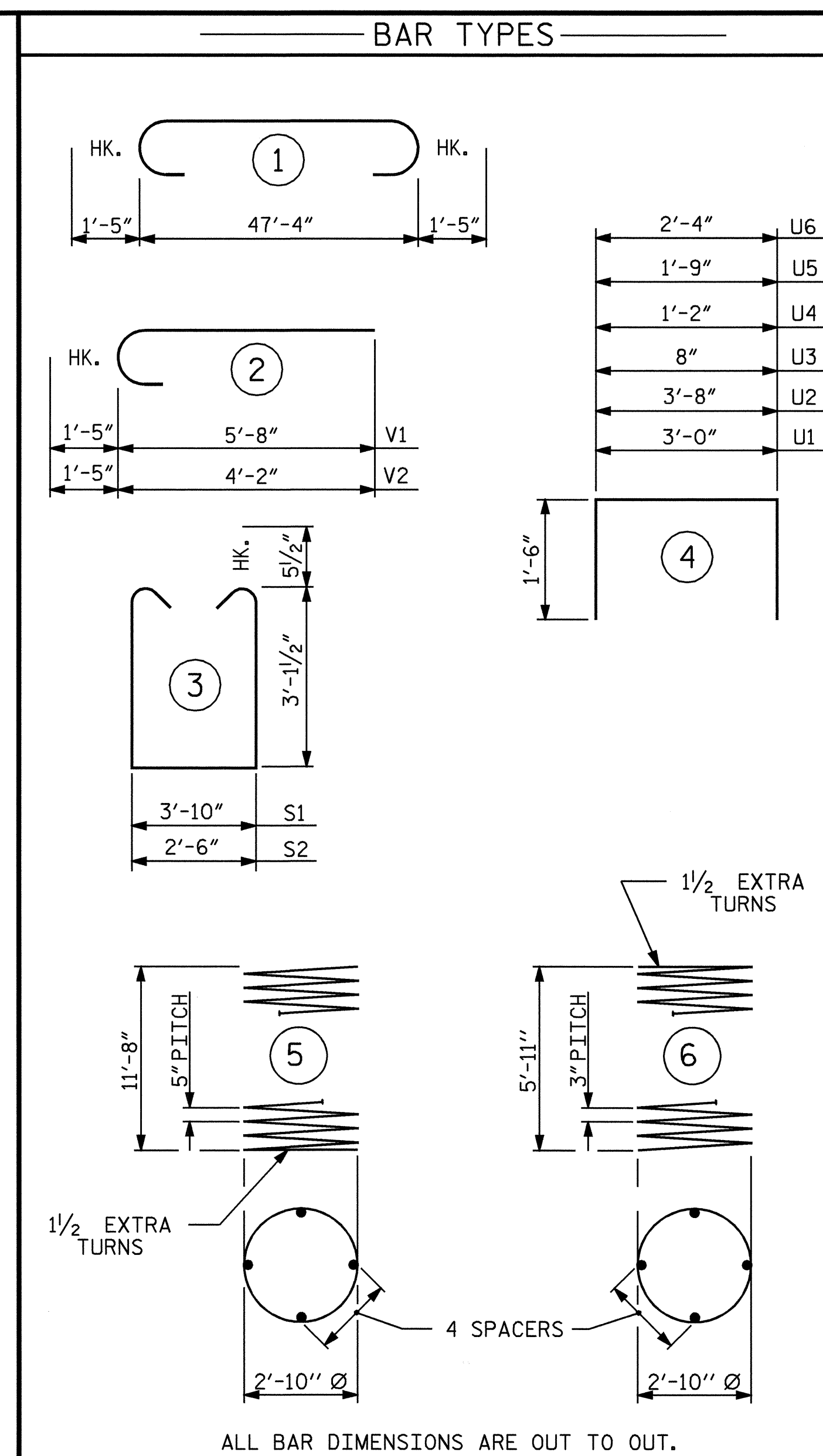


**DETAIL B**

MECHANICAL COUPLER STAGGER DETAIL



**CONSTRUCTION JOINT DETAIL**



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

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

**BILL OF MATERIAL**

BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	6	10	1	50'-2"	1295
B2	6	10	STR	47'-4"	1222
B3	4	5	STR	47'-4"	197
B4	2	4	STR	3'-10"	5
B5	2	4	STR	4'-2"	6
D1	52	8	STR	2'-3"	312
M1	18	10	STR	16'-8"	1291
M2	18	10	STR	18'-2"	1407
S1	36	5	3	11'-0"	413
S2	28	5	3	9'-8"	282
U1	8	4	4	6'-0"	32
U2	6	4	4	6'-8"	27
U3	2	4	4	3'-8"	5
U4	2	4	4	4'-2"	6
U5	2	4	4	4'-9"	6
U6	2	4	4	5'-4"	7
V1	18	10	2	7'-1"	549
V2	18	10	2	5'-7"	432
REINFORCING STEEL			LBS.	7494	
SP-1	3	*	5	262'-6"	821
SP-2	3	**	6	228'-2"	457
SPIRAL COLUMN REINFORCING STEEL			LBS.	1278	
CLASS 'A' CONCRETE					
POUR #2 (COLUMNS)			CU. YD.	6.1	
POUR #3 (BENT CAP)			CU. YD.	25.8	
POUR #4 (LAT'L. GUIDES)			CU. YD.	0.3	
TOTAL:			CU. YD.	32.2	
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)			C.Y.	13.0	
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.			=	18.5	
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.			=	18.0	
3'-6" Ø PERMANENT STEEL CASING, LIN. FT.			=	18.0	
CROSSHOLE SONIC LOGGING CSL TUBES			LN. FT.	176.0	

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

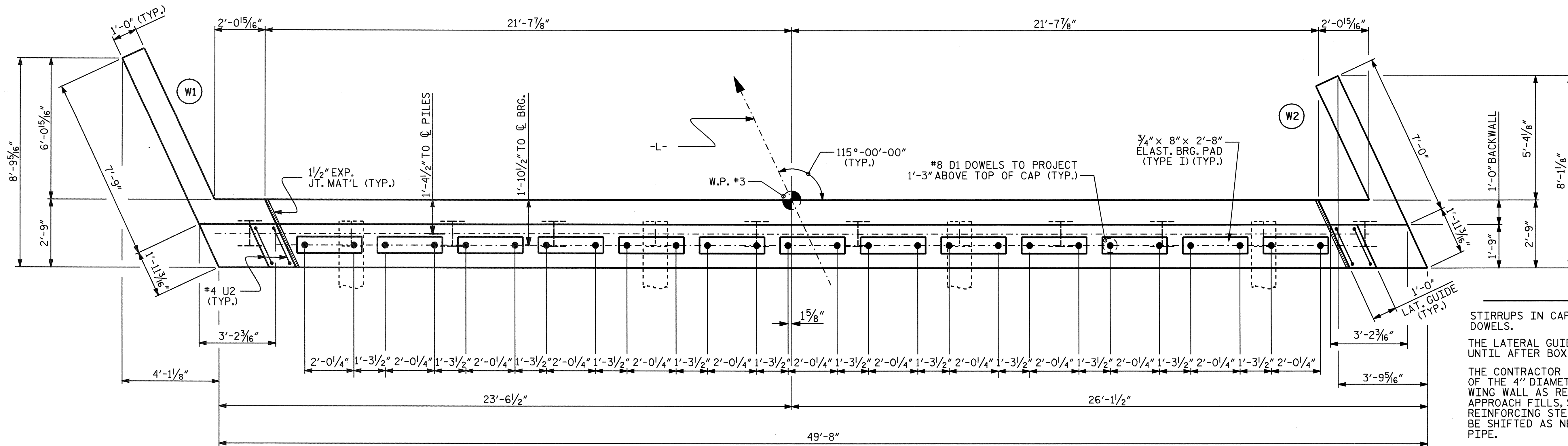
SUBSTRUCTURE  
 BENT 1



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	22
2			4				

DRAWN BY: SWANCPPE DATE: 10/05  
 CHECKED BY: M.A. ALLEN DATE: 12/05

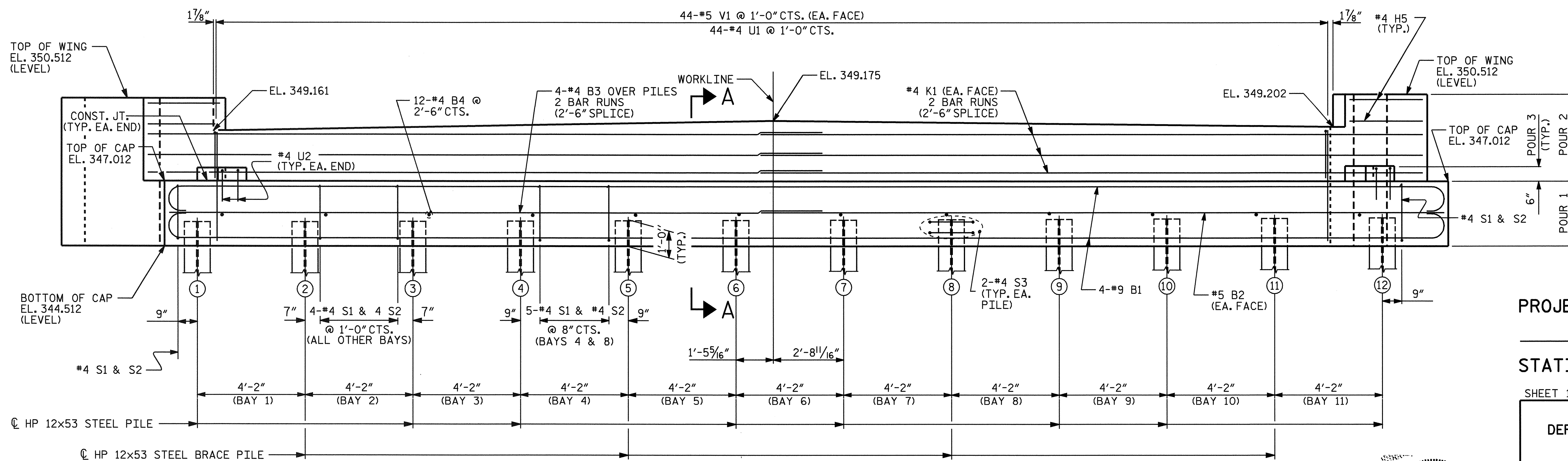




PLAN

NOTES

STIRRUPS IN CAP MAY BE SHIFTED TO CLEAR DOWELS.  
 THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.  
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4' DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



ELEVATION

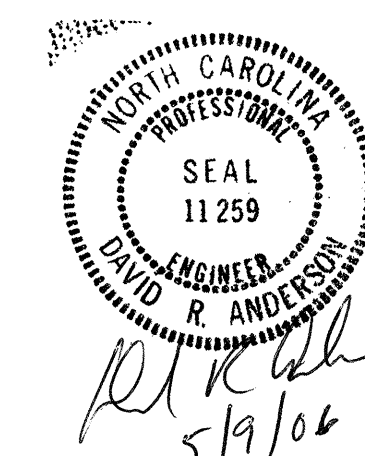
NOTE : SEE SECTION A-A, SHEET 3 OF 3

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 1 OF 3

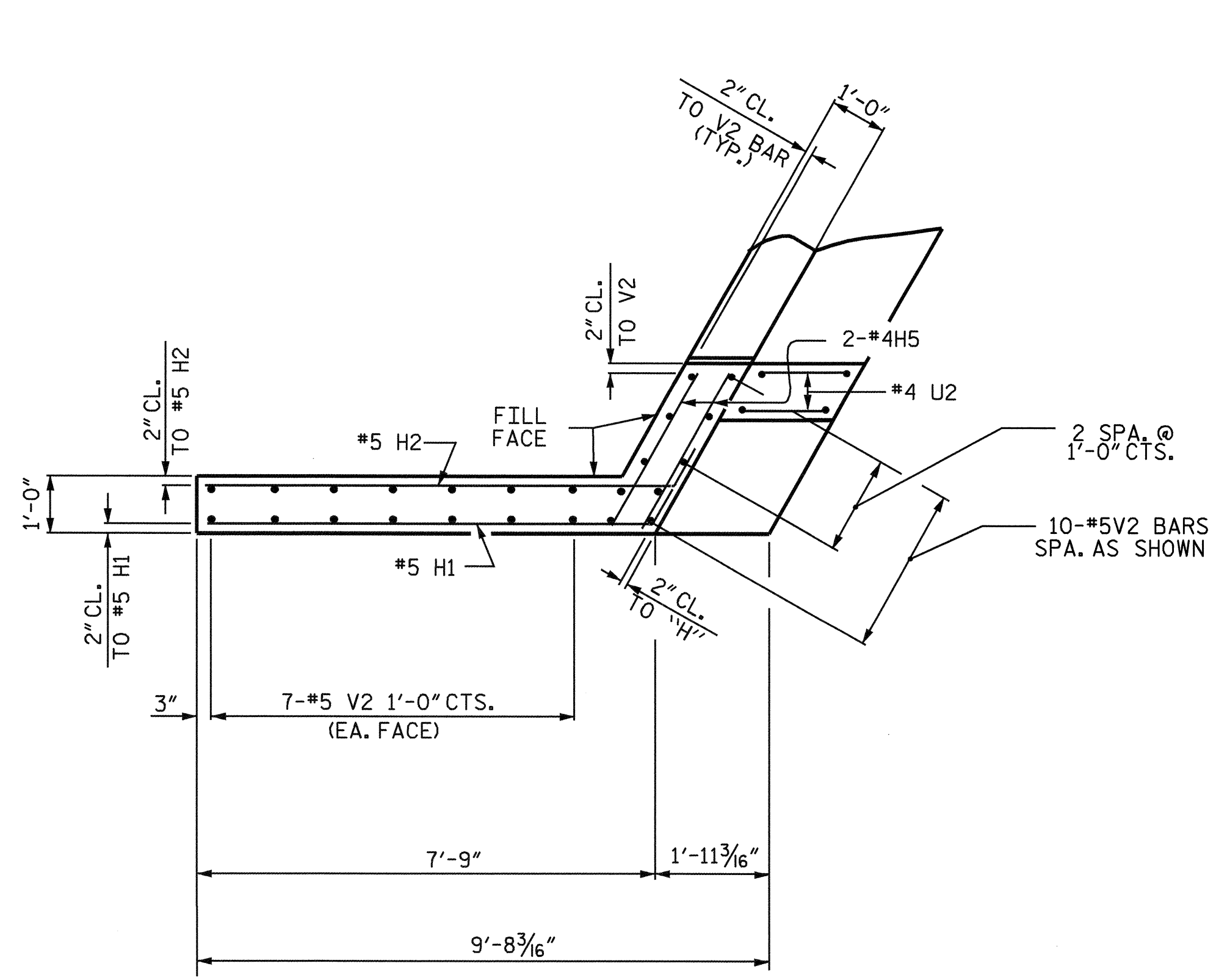
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

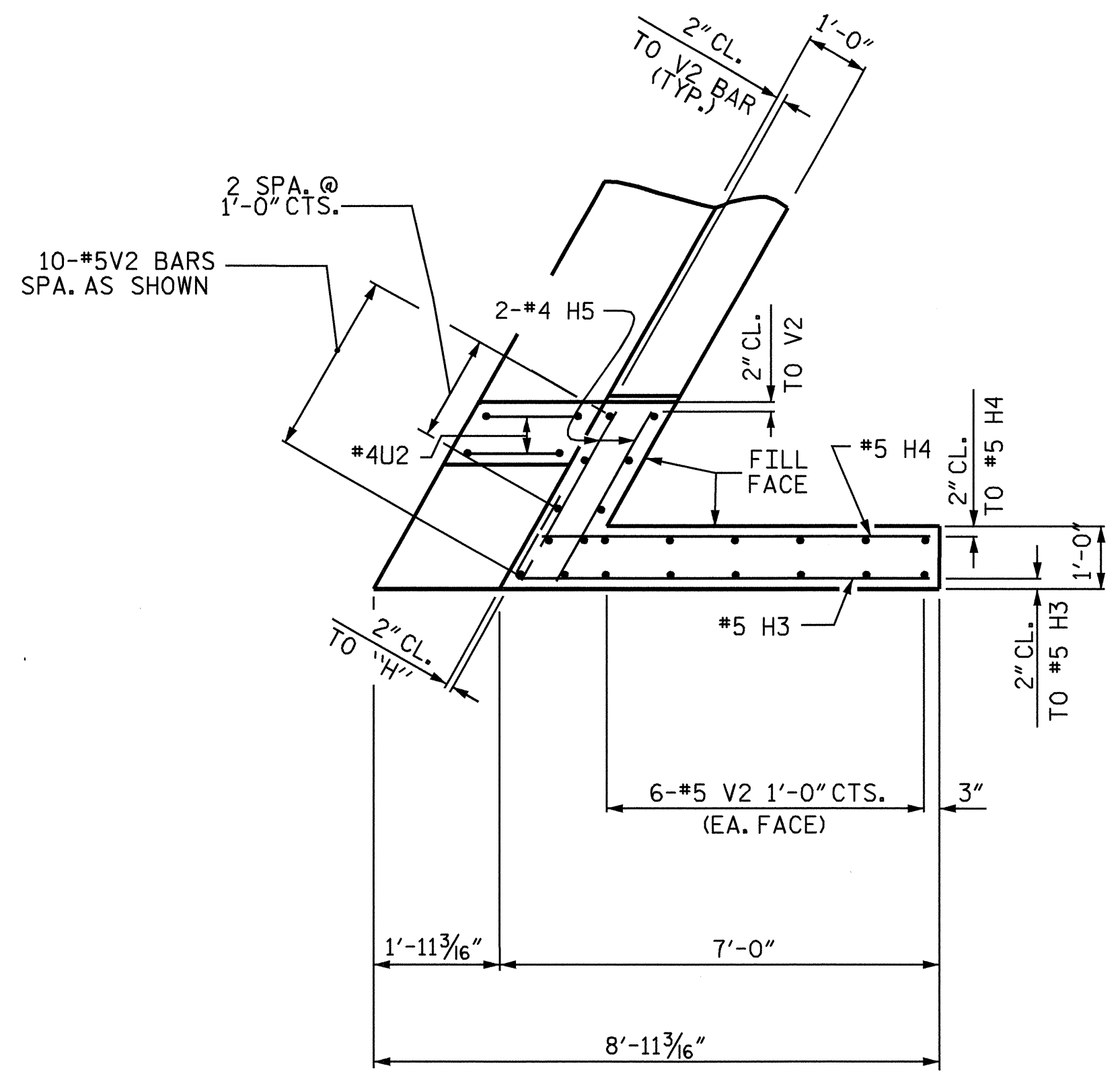


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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

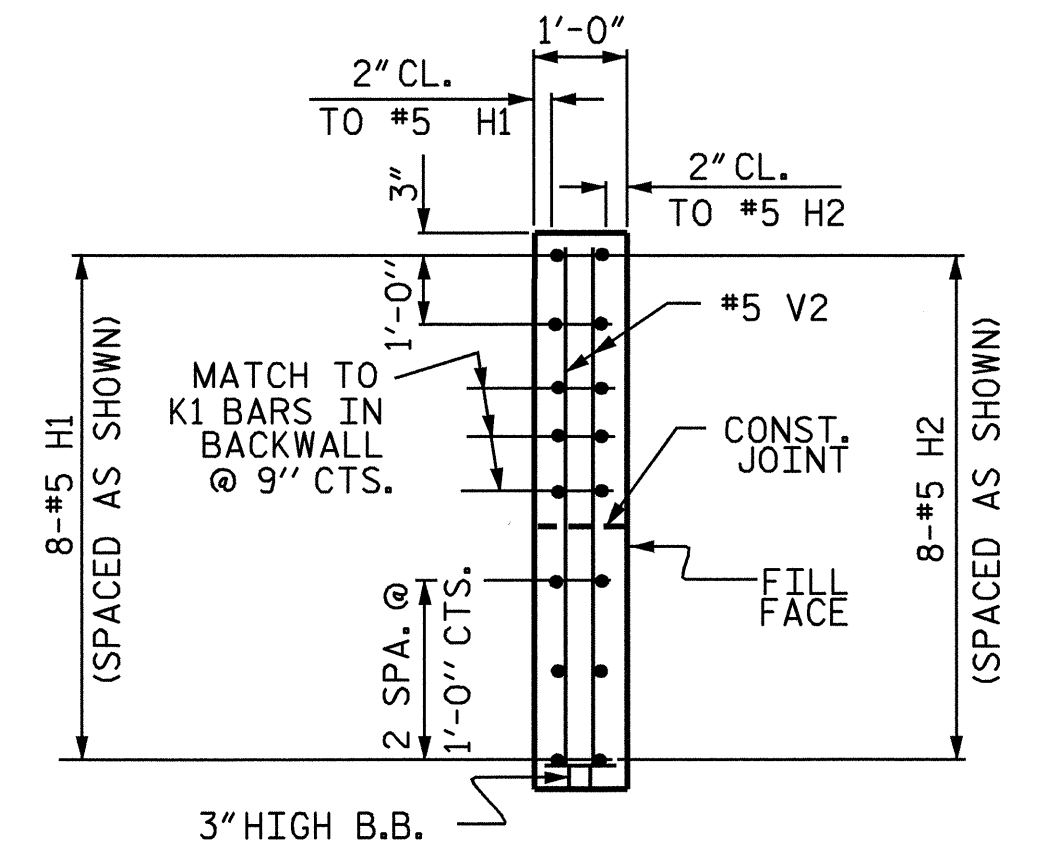
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 DRAWN BY : N.O. TRAN/MAA DATE : 3/28/05  
 CHECKED BY : S. B. RASHIDI DATE : 5/15/05



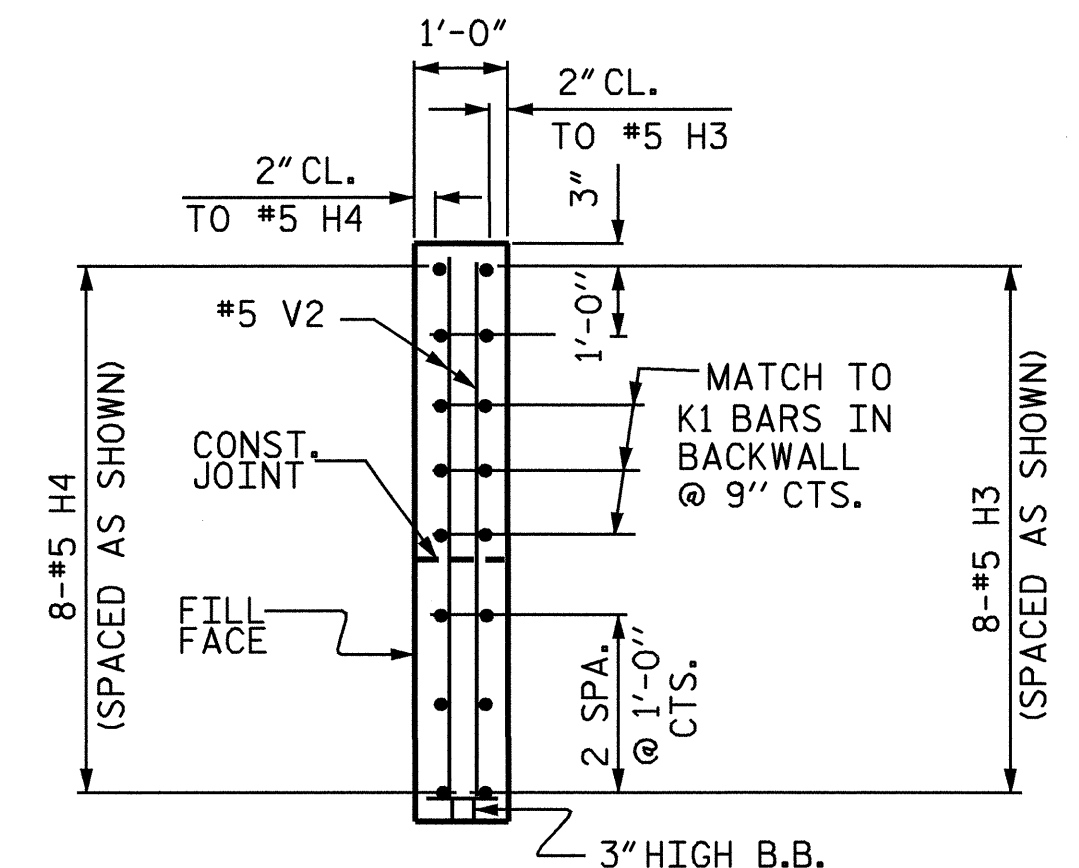
PLAN OF WING W1



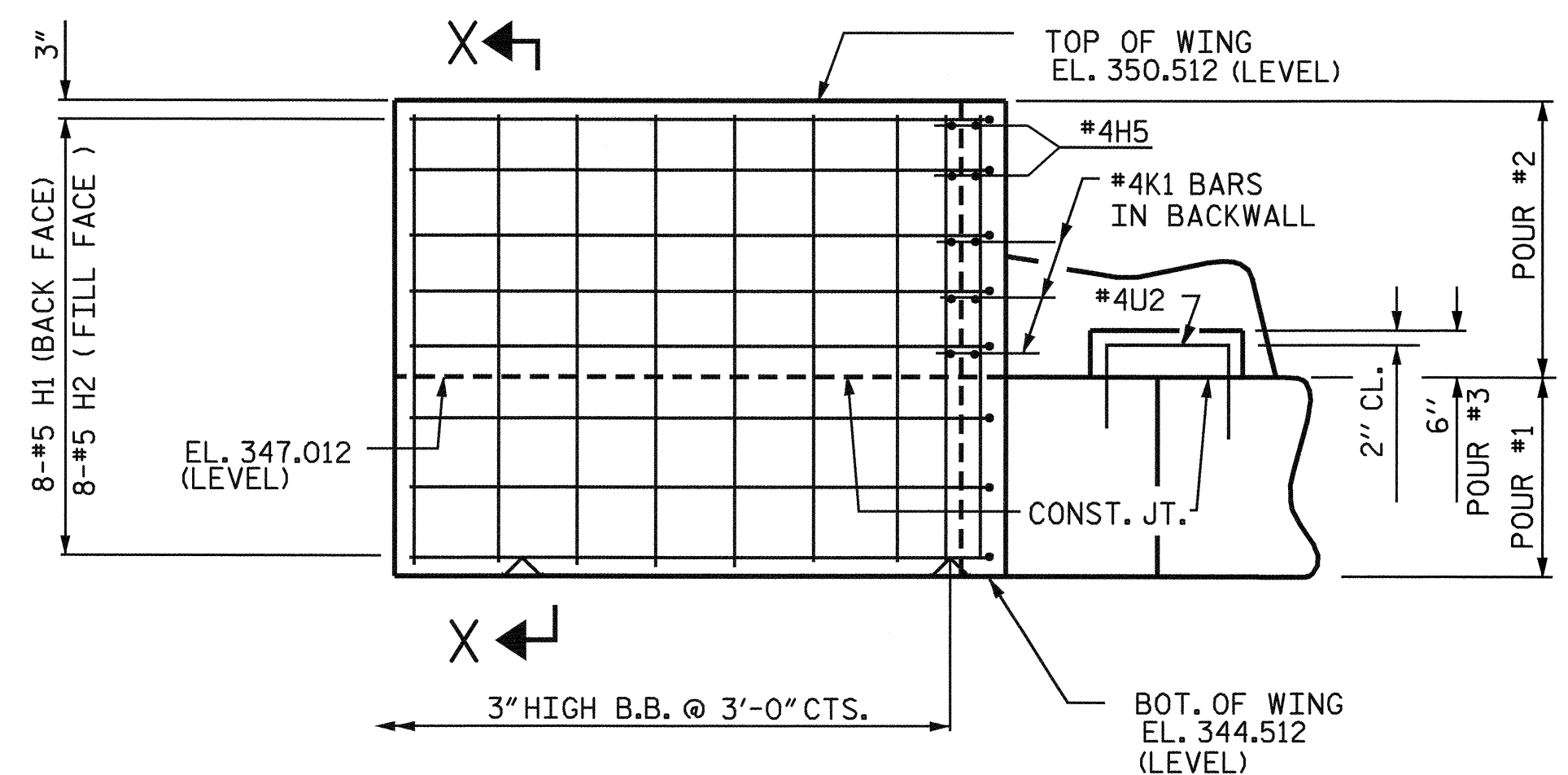
PLAN OF WING W2



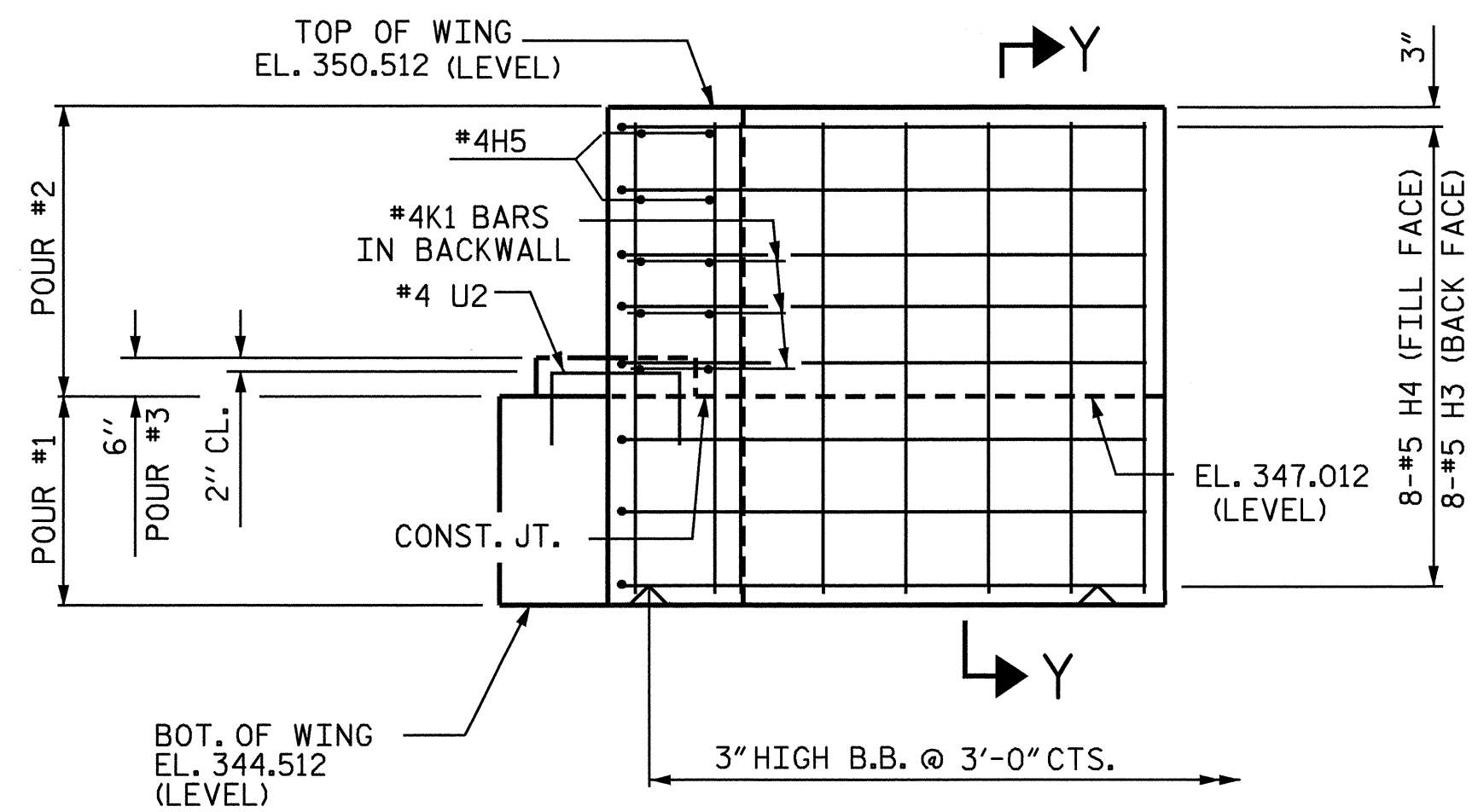
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1



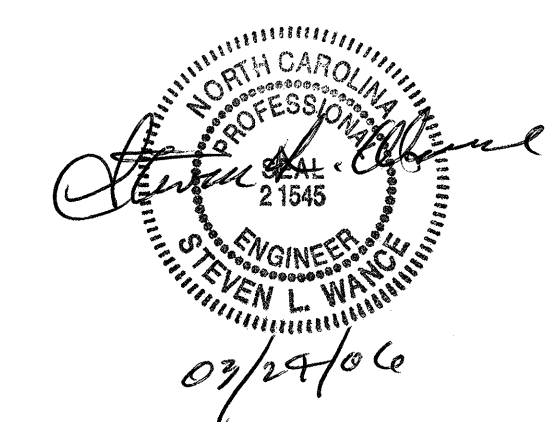
ELEVATION OF WING W2

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

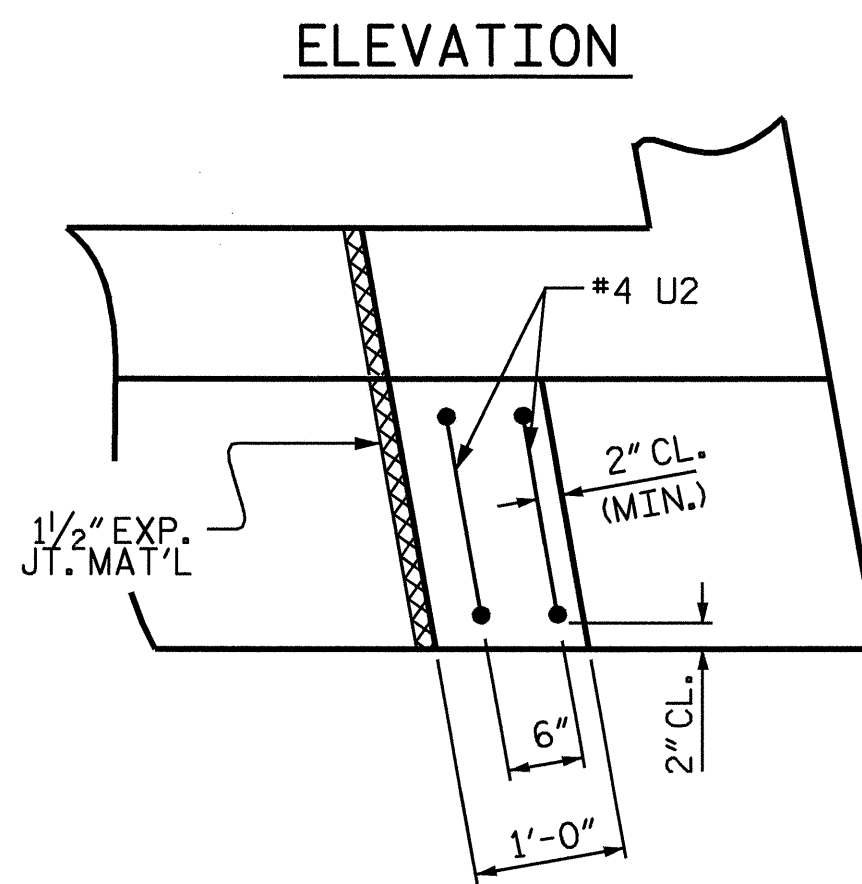
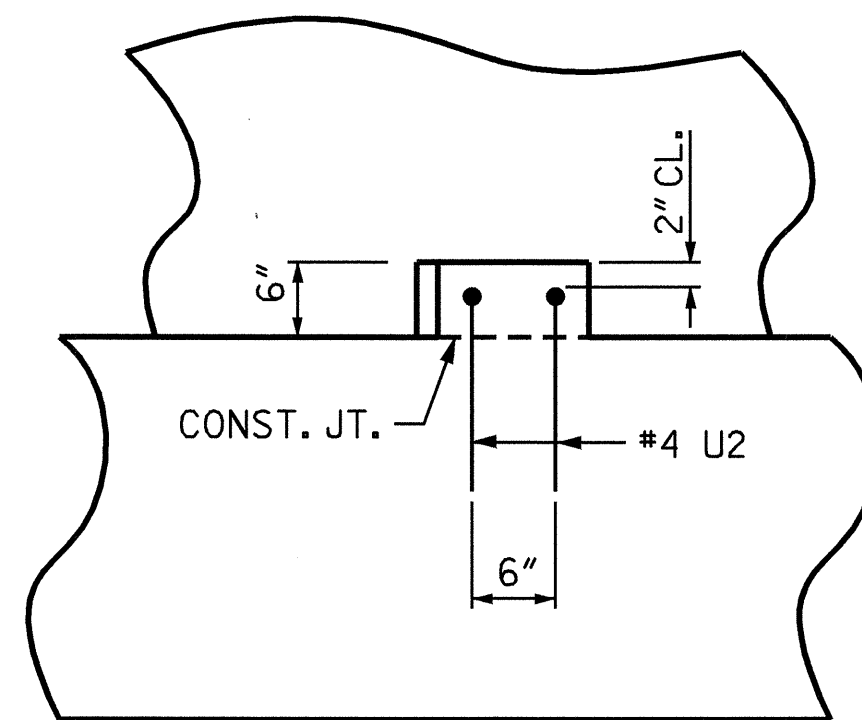
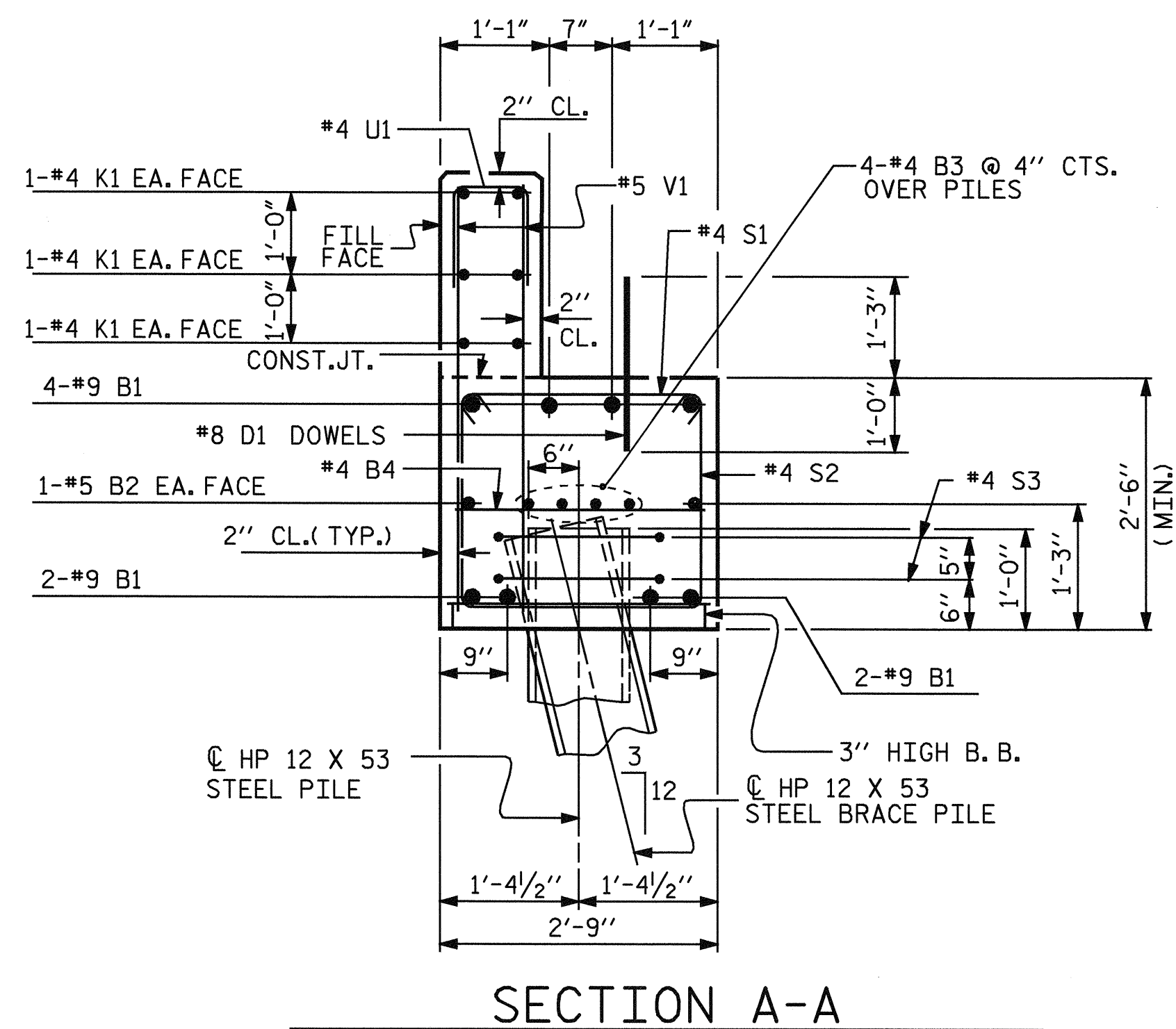
SUBSTRUCTURE  
 END BENT 2



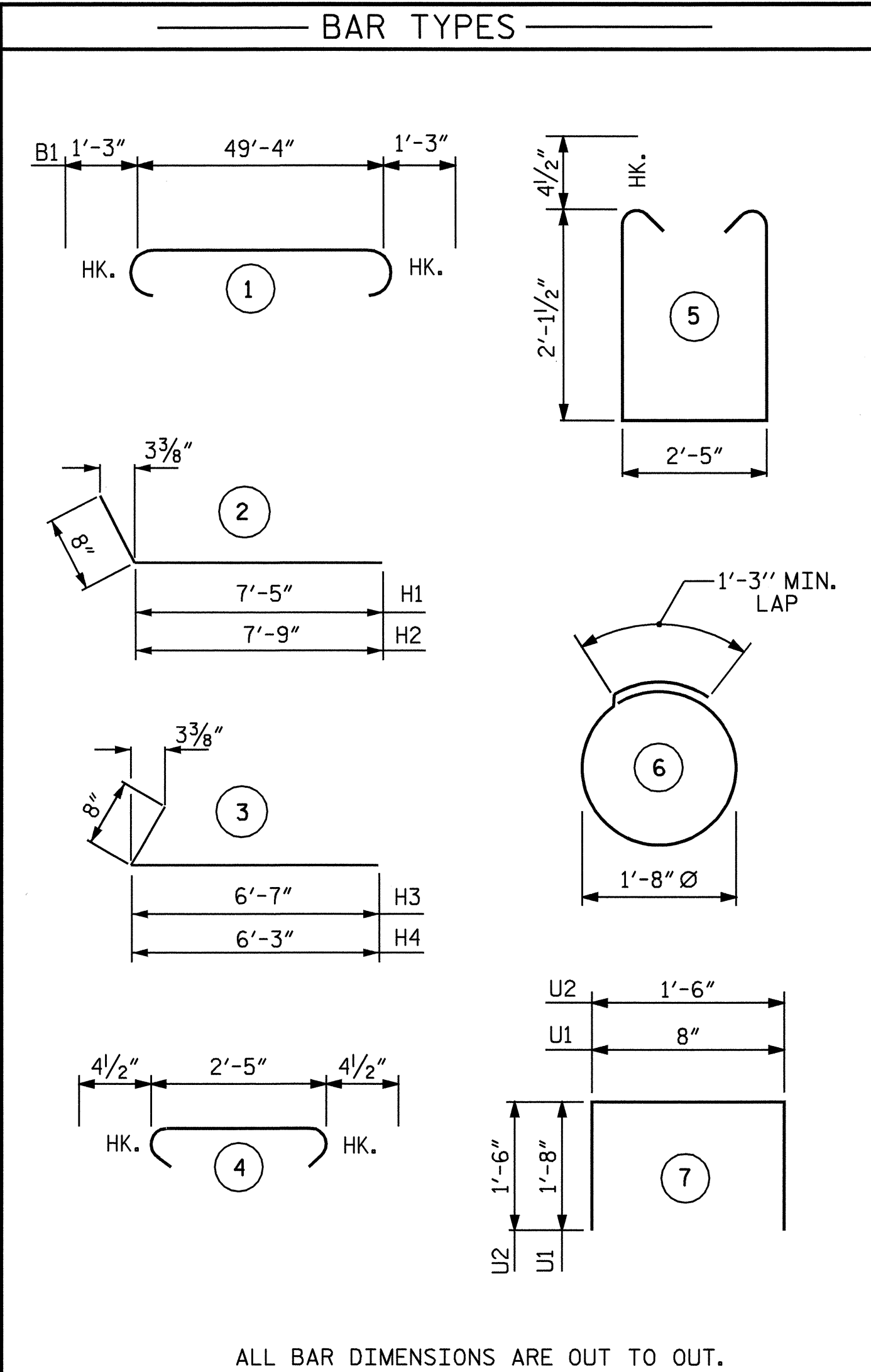
REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY: N. Q. TRAN DATE: 3/29/05  
 CHECKED BY: S. M. RASHIDI DATE: 5/9/05

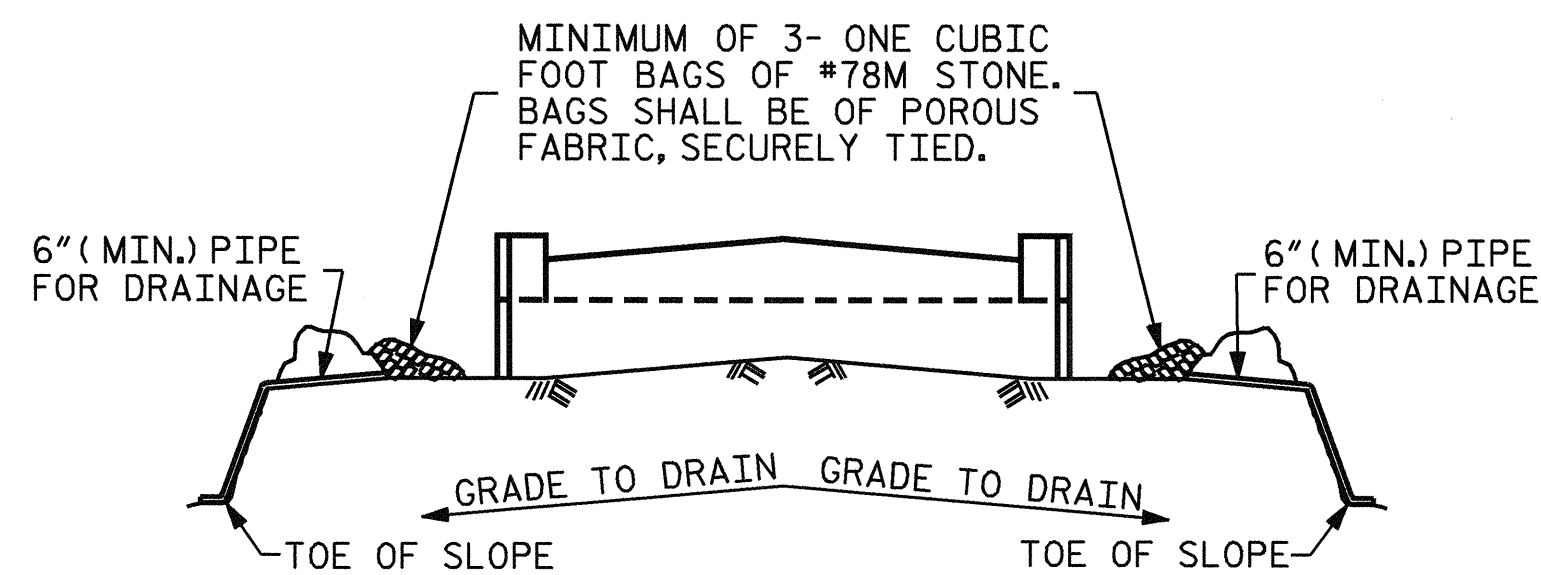
24-MAR-2006 15:16 C:\p1\es\h1\an\microe-sb\wkg\4113-ab.dgn



**LATERAL GUIDE DETAILS**



BILL OF MATERIAL					
END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	51'-10"	1410
B2	2	5	STR	49'-4"	103
B3	8	4	STR	25'-11"	138
B4	12	4	STR	2'-5"	19
D1	26	8	STR	2'-3"	156
H1	8	5	2	8'-1"	67
H2	8	5	2	8'-5"	70
H3	8	5	3	7'-3"	60
H4	8	5	3	6'-11"	58
H5	8	4	STR	2'-9"	15
K1	12	4	STR	25'-11"	208
S1	48	4	4	3'-2"	102
S2	48	4	5	7'-5"	238
S3	24	4	6	6'-6"	104
U1	44	4	7	4'-0"	118
U2	4	4	7	4'-6"	12
V1	88	5	STR	4'-4"	398
V2	46	5	STR	5'-8"	272
REINFORCING STEEL TOTAL					LBS. 3548
CLASS A CONCRETE					
POUR #1 CAP & LOWER PORTION OF WINGS 13.8 CU. YD.					
POUR #2 BACKWALL & UPPER PORTION OF WINGS 5.9 CU. YD.					
POUR #3 LATERAL GUIDE 0.1 CU. YD.					
TOTAL CLASS A CONCRETE					19.8 CU. YD.
HP 12 X 53 STEEL PILES					
NO. 12		LIN. FEET		180	

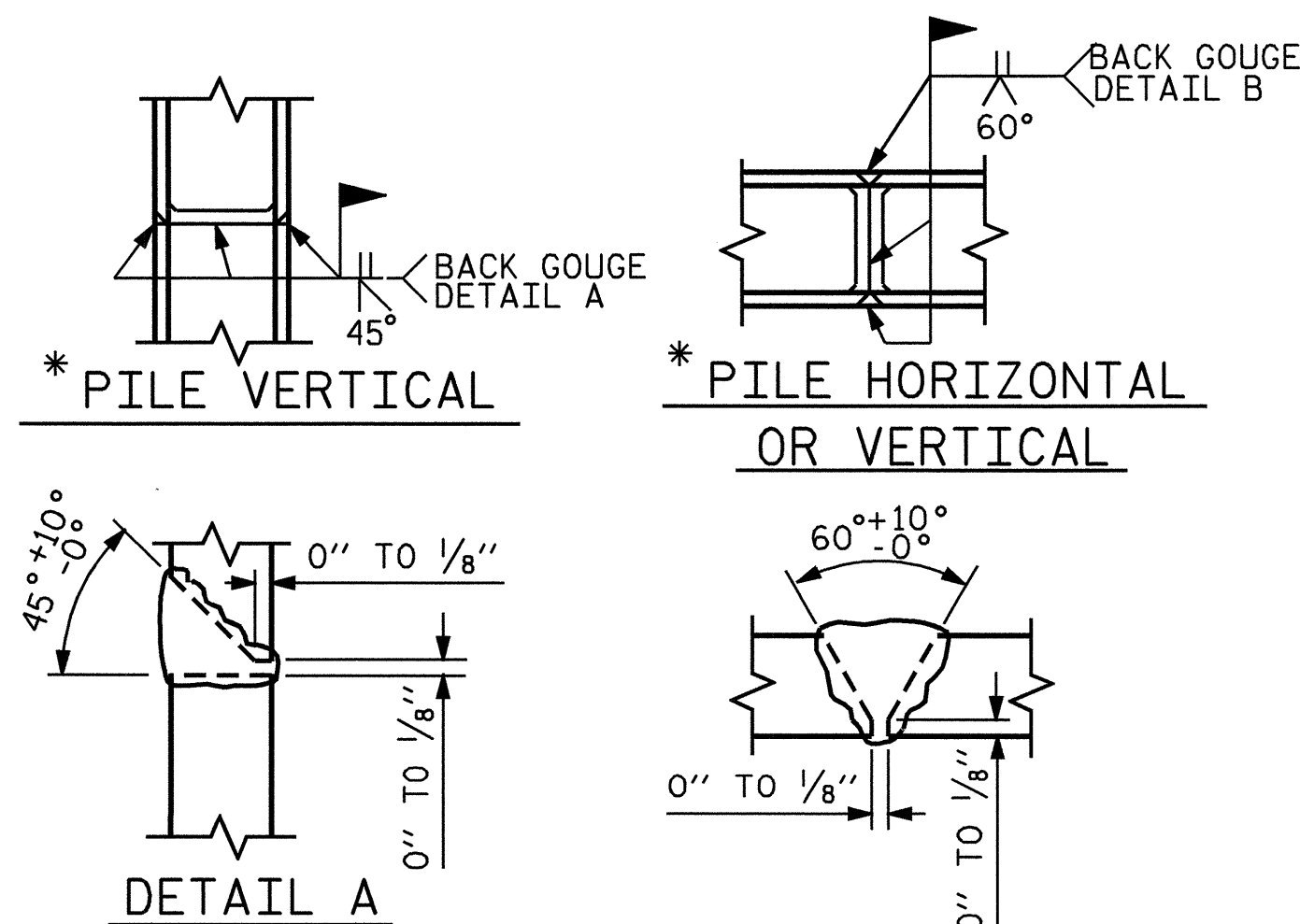


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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**



\* POSITION OF PILE DURING WELDING.

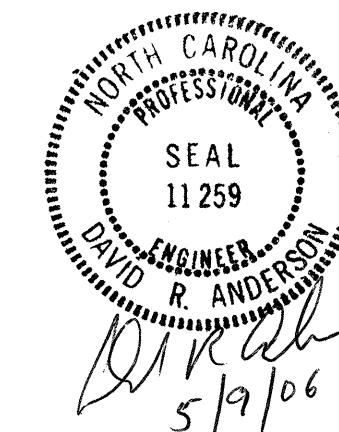
**PILE SPLICE DETAILS**

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

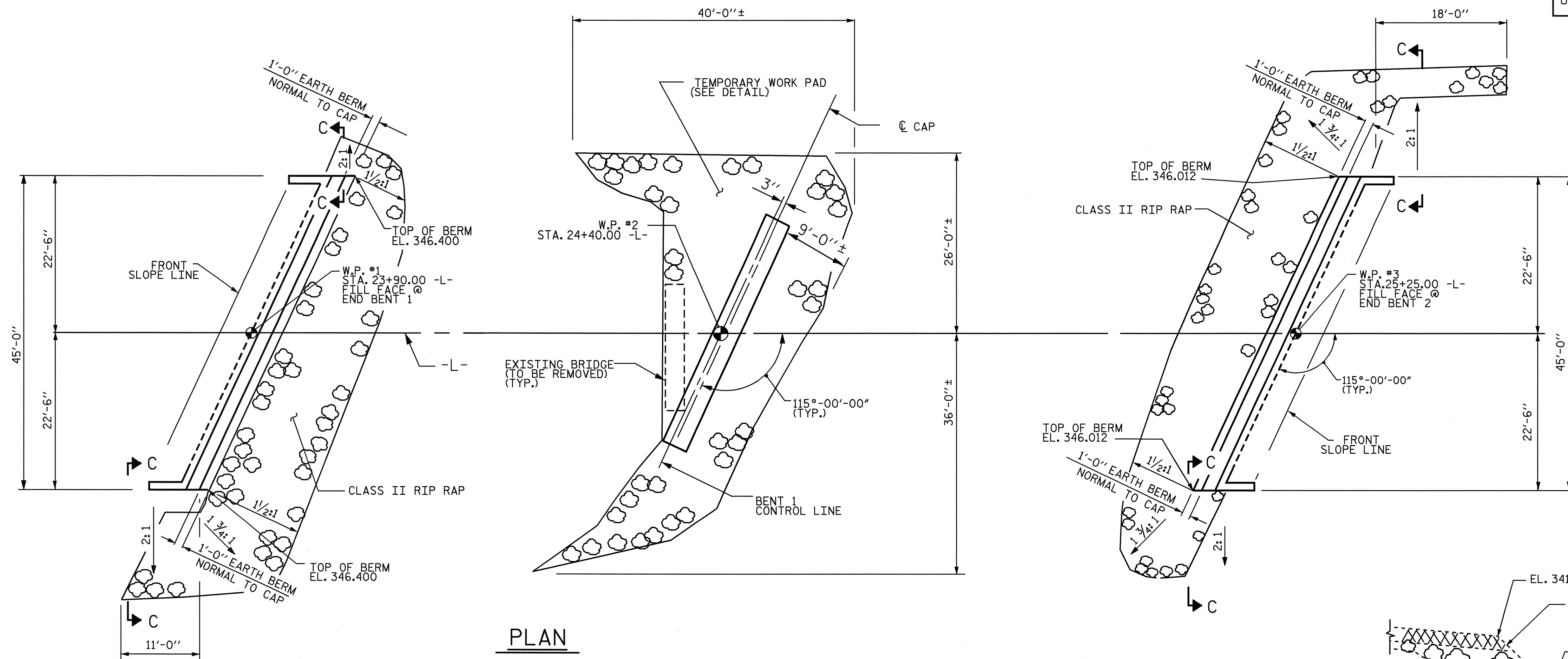


REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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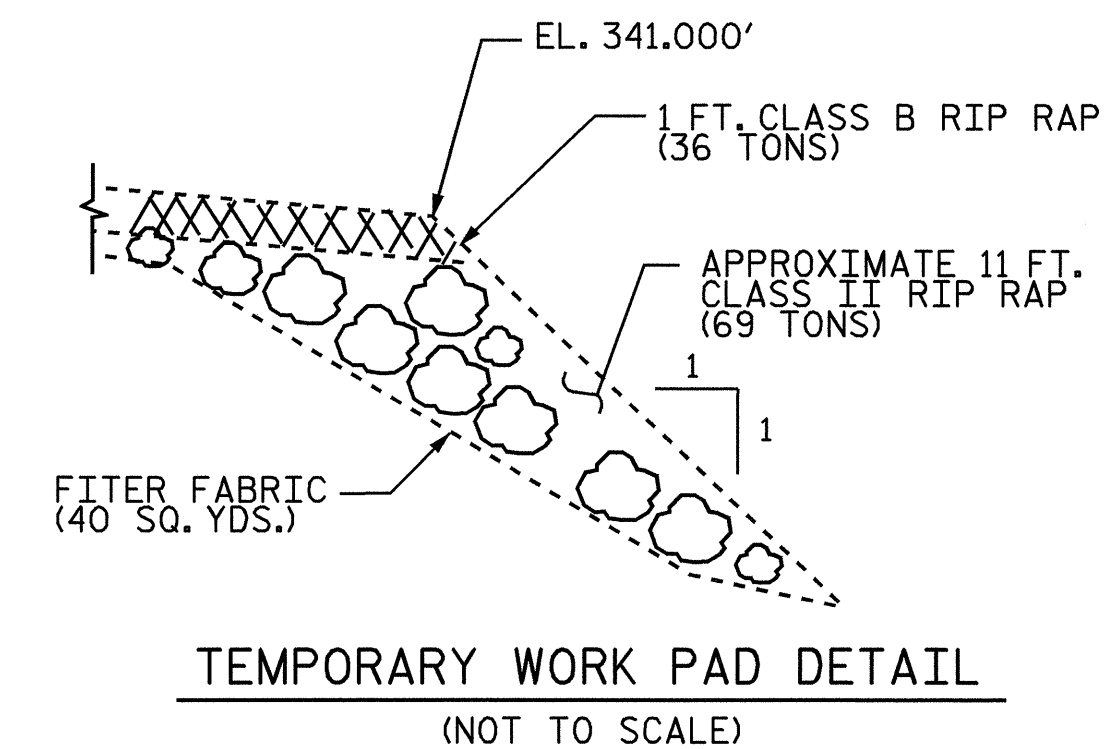
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DRAWN BY: N.Q. TRAN DATE: 3/29/05  
 CHECKED BY: S. B. RASHIDI DATE: 5/15/05

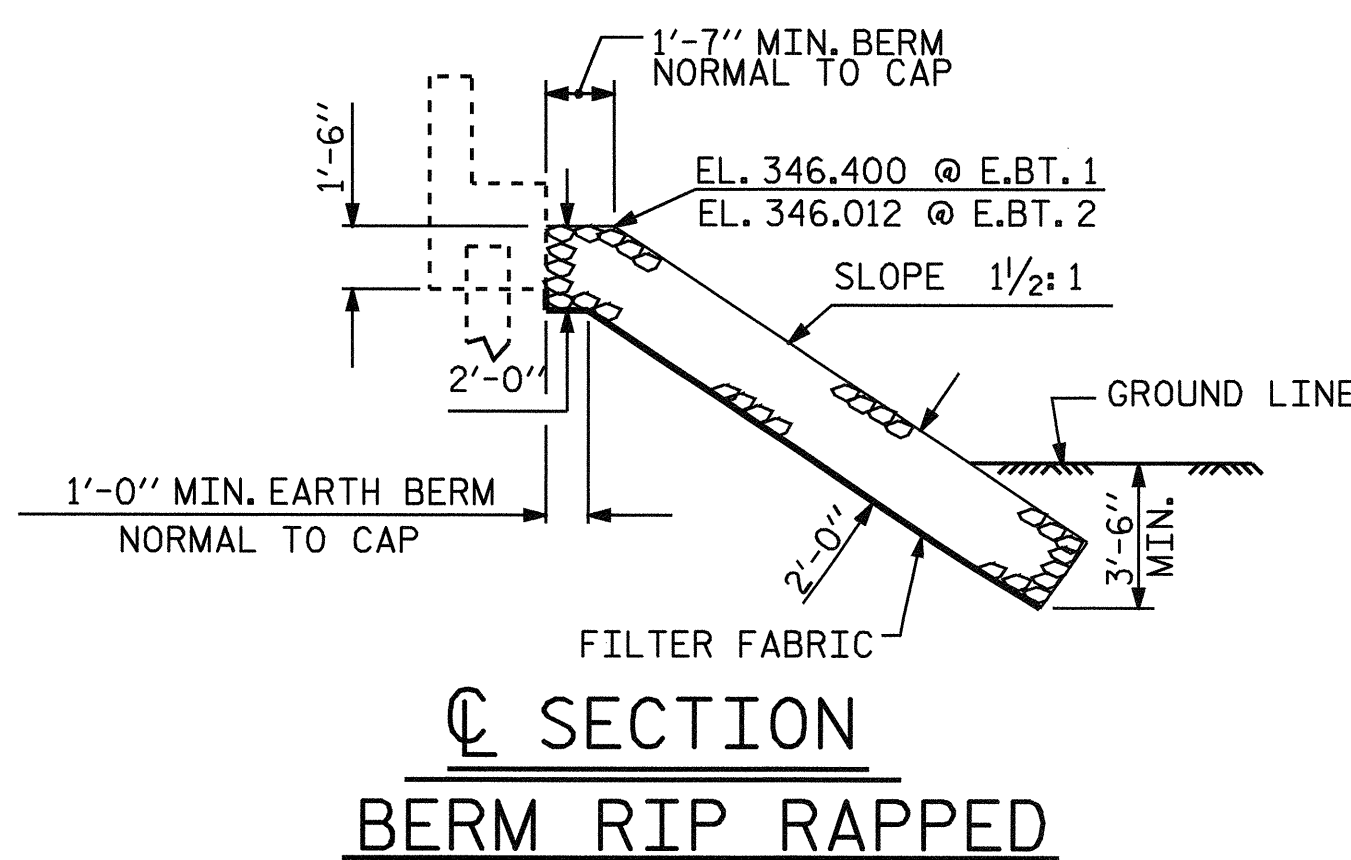
FILTER FABRIC SHALL BE PLACED UNDER ENTIRE AREA OF RIP RAP.



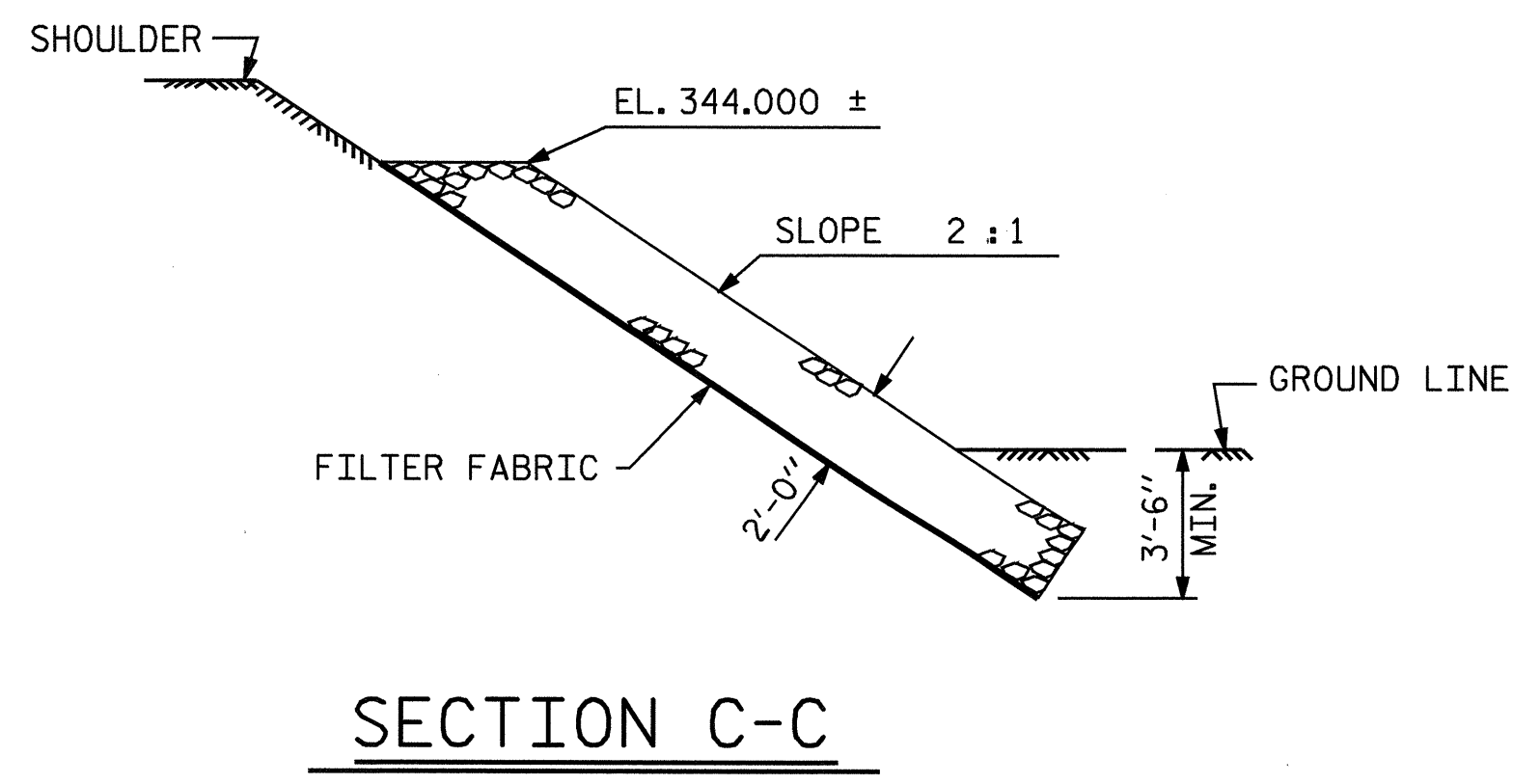
PLAN



TEMPORARY WORK PAD DETAIL  
(NOT TO SCALE)



SECTION  
BERM RIP RAPPED

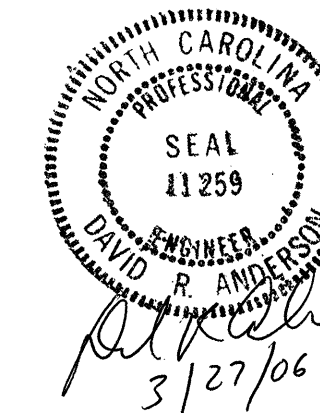


SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 24+57.50 -L-	PLAIN RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	95	105
END BENT 2	113	125

PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

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



REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			22
2			4			

ASSEMBLED BY : N. O. TRAN	DATE : 7-28-05
CHECKED BY : S.M.RASHIDI	DATE : 8-8-05
DRAWN BY : FCJ 2/88	REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

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NOTES

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

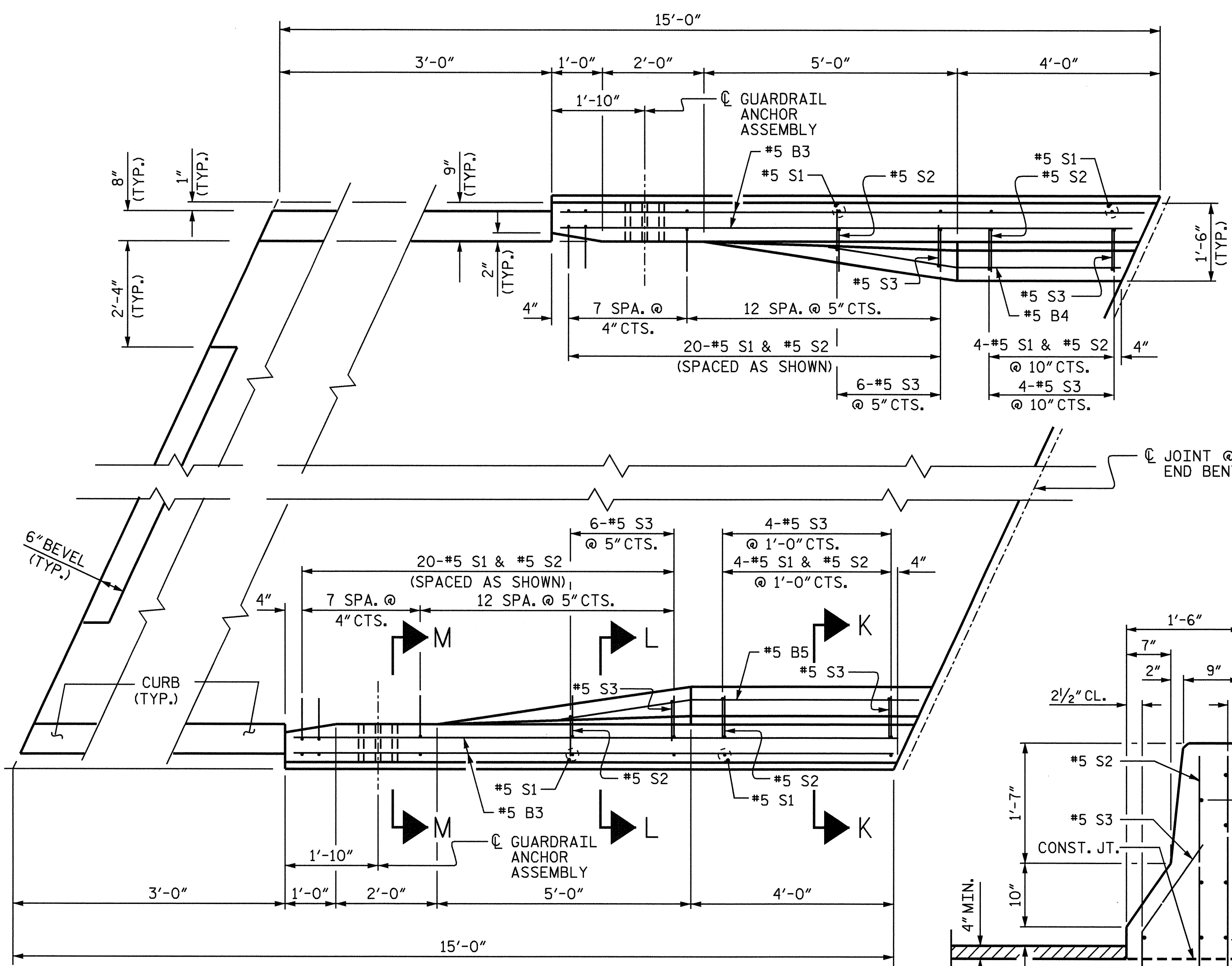
THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

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

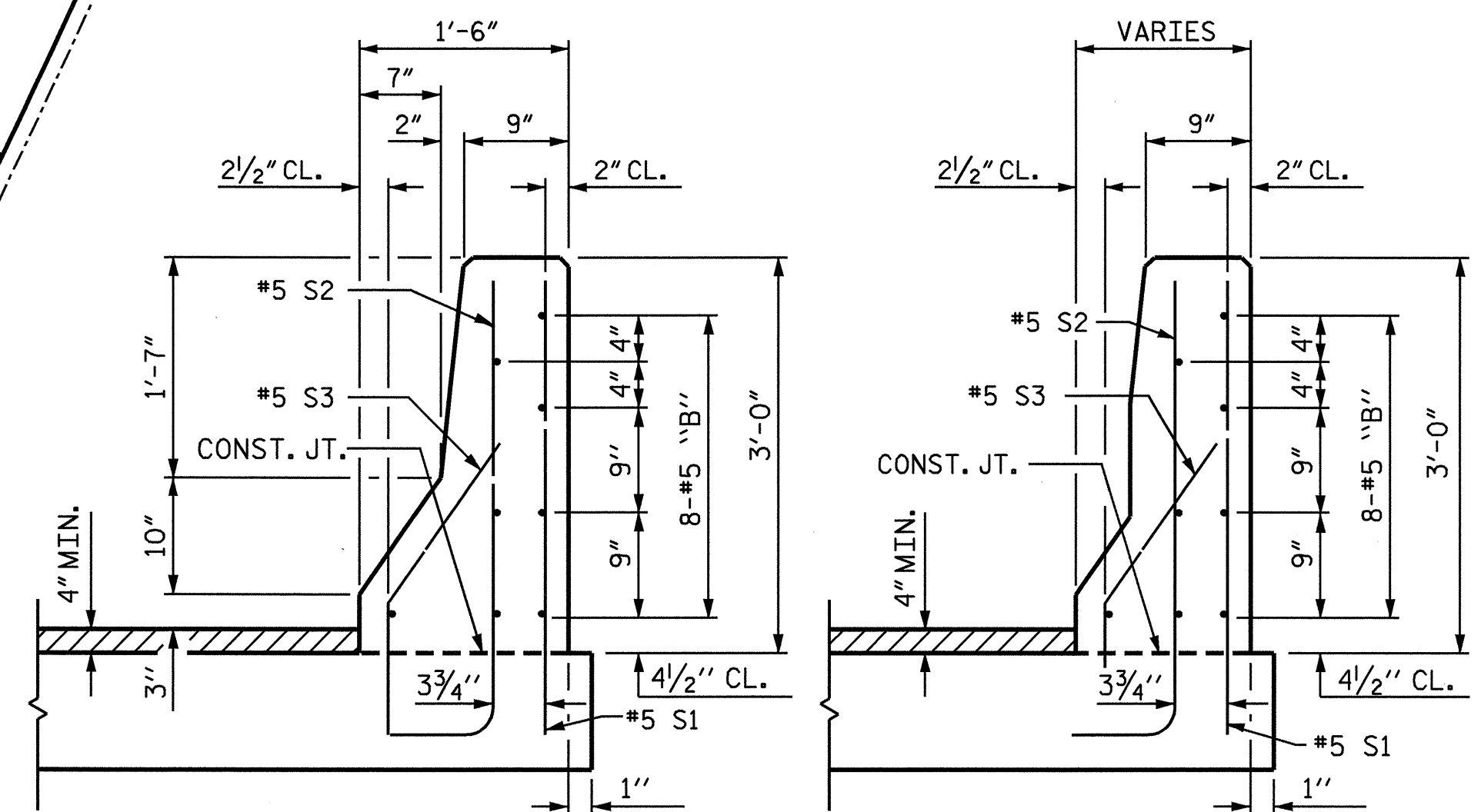
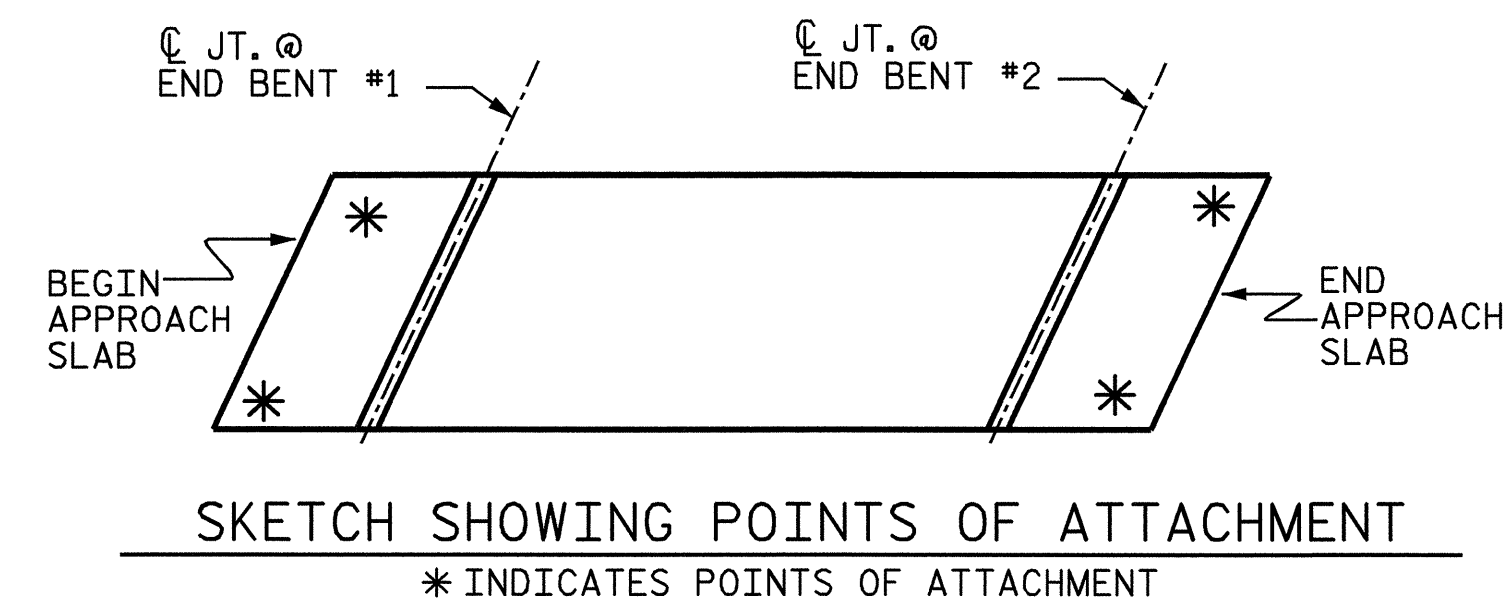
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLAB.

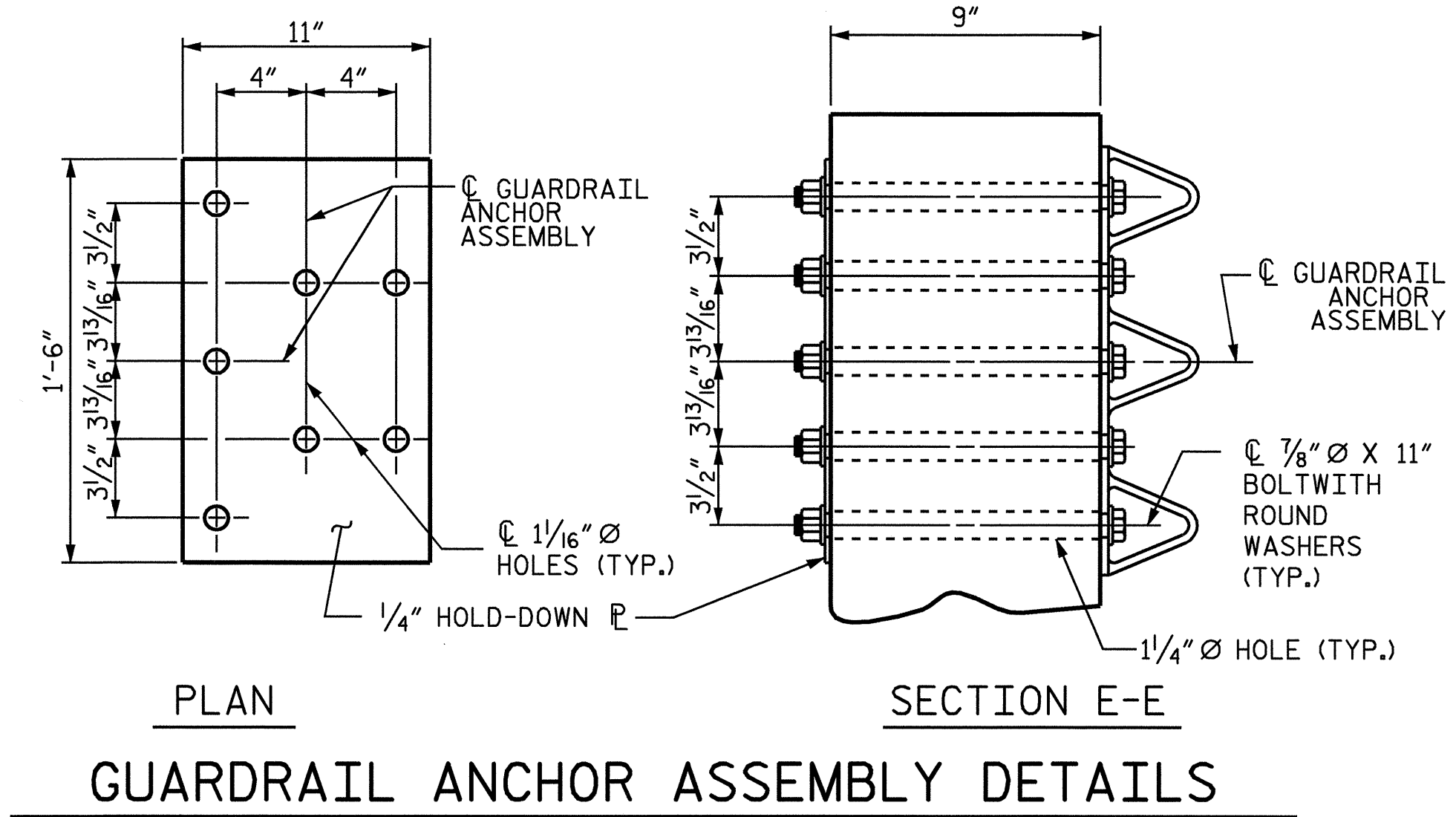
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



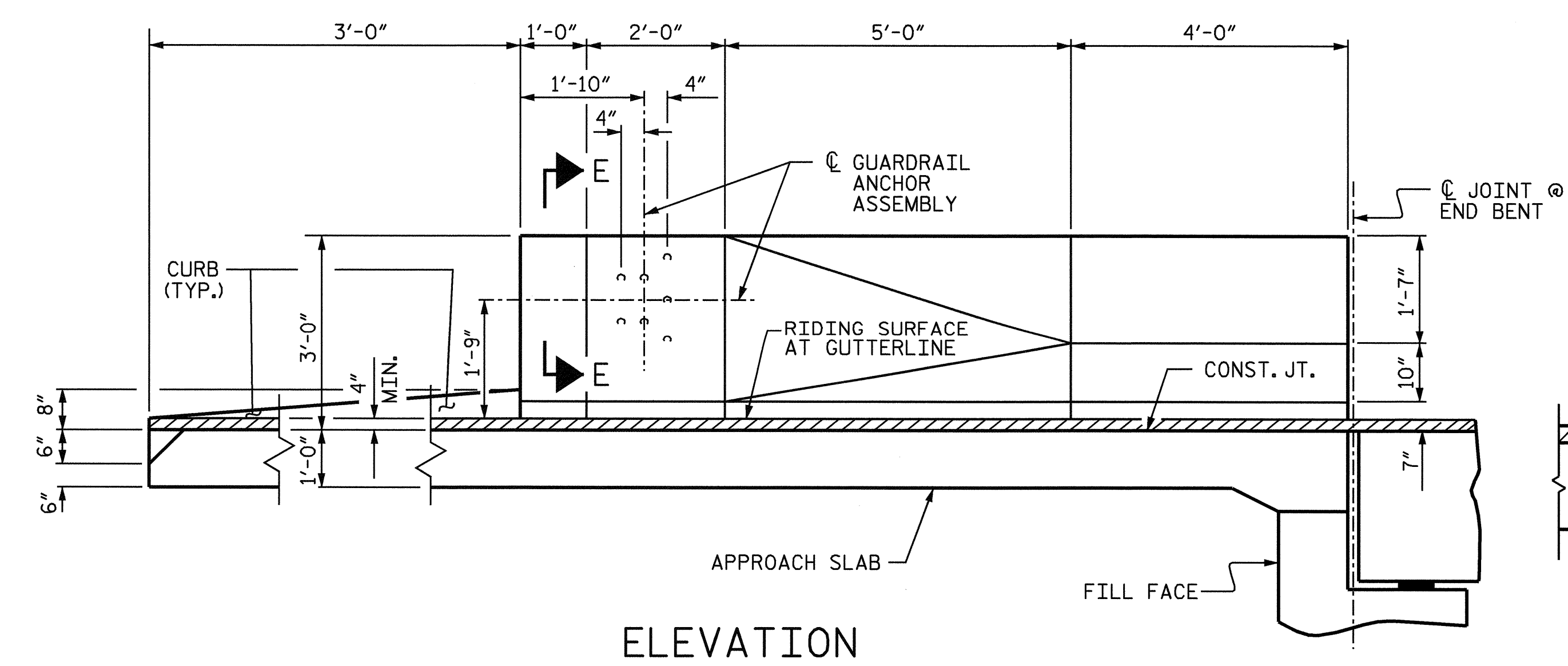
**PLAN**  
BEGIN APPROACH SLAB SHOWN,  
END APPROACH SLAB SIMILAR



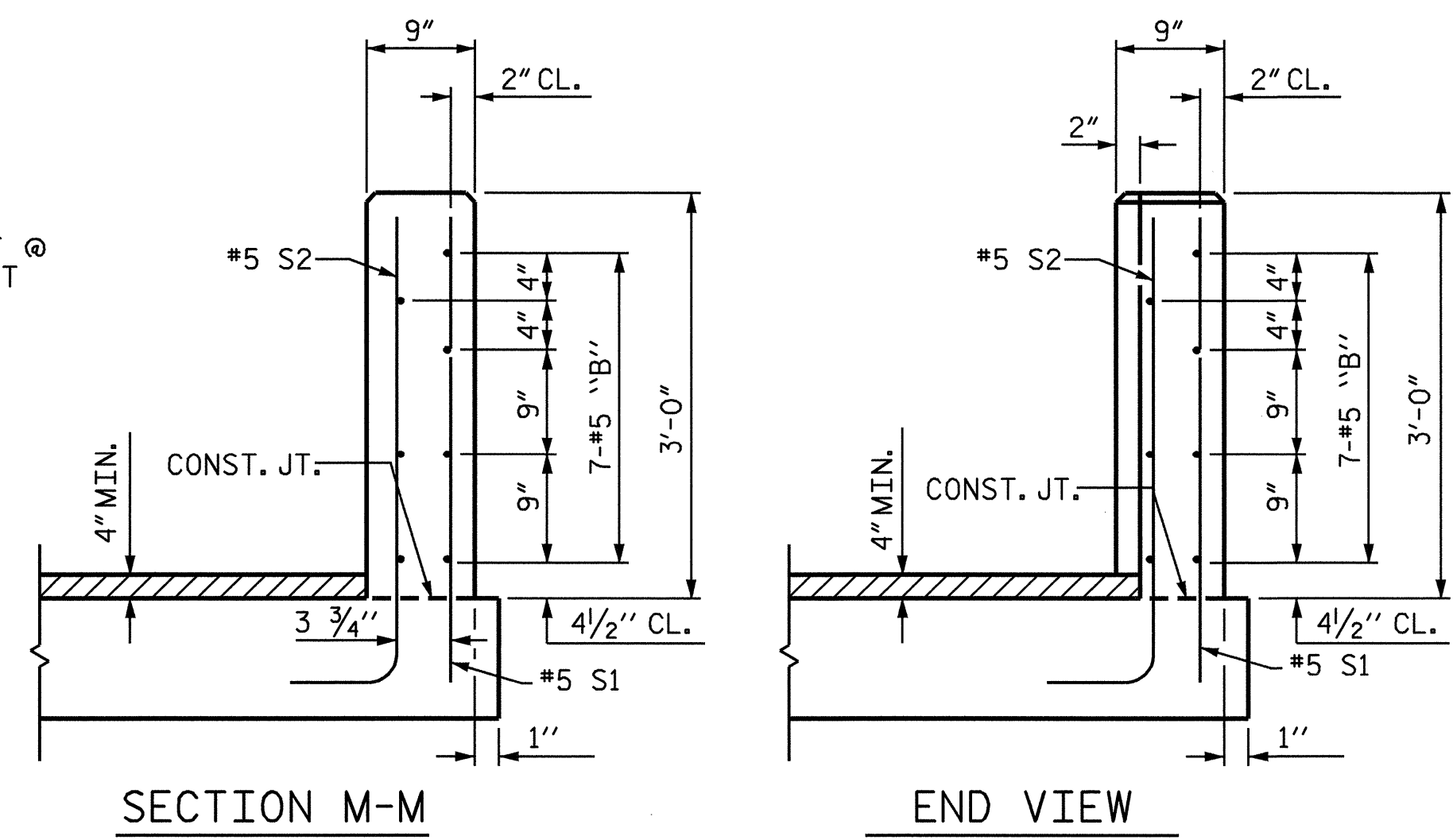
SECTION K-K SECTION L-L



**PLAN**  
**SECTION E-E**  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



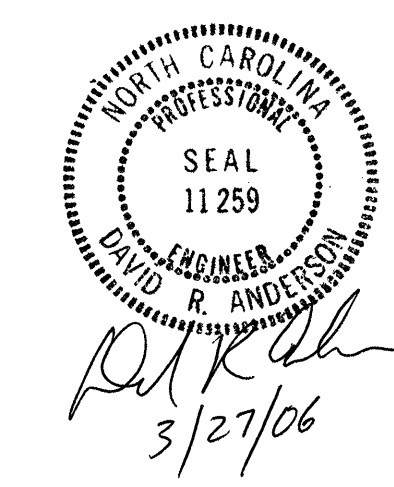
**ELEVATION**



SECTION M-M END VIEW

PROJECT NO. B-4113  
FRANKLIN COUNTY  
STATION: 24+57.50 -L-

SHEET 2 OF 3  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BRIDGE APPROACH SLAB  
DETAILS FOR  
PRESTRESSED  
CONCRETE BOX BEAM  
WITH BARRIER RAIL



REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

ASSEMBLED BY: N.Q. TRAN DATE: 7-21-05  
CHECKED BY: S.M. RASHIDI DATE: 8-24-05

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**NOTES**

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

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

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

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

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

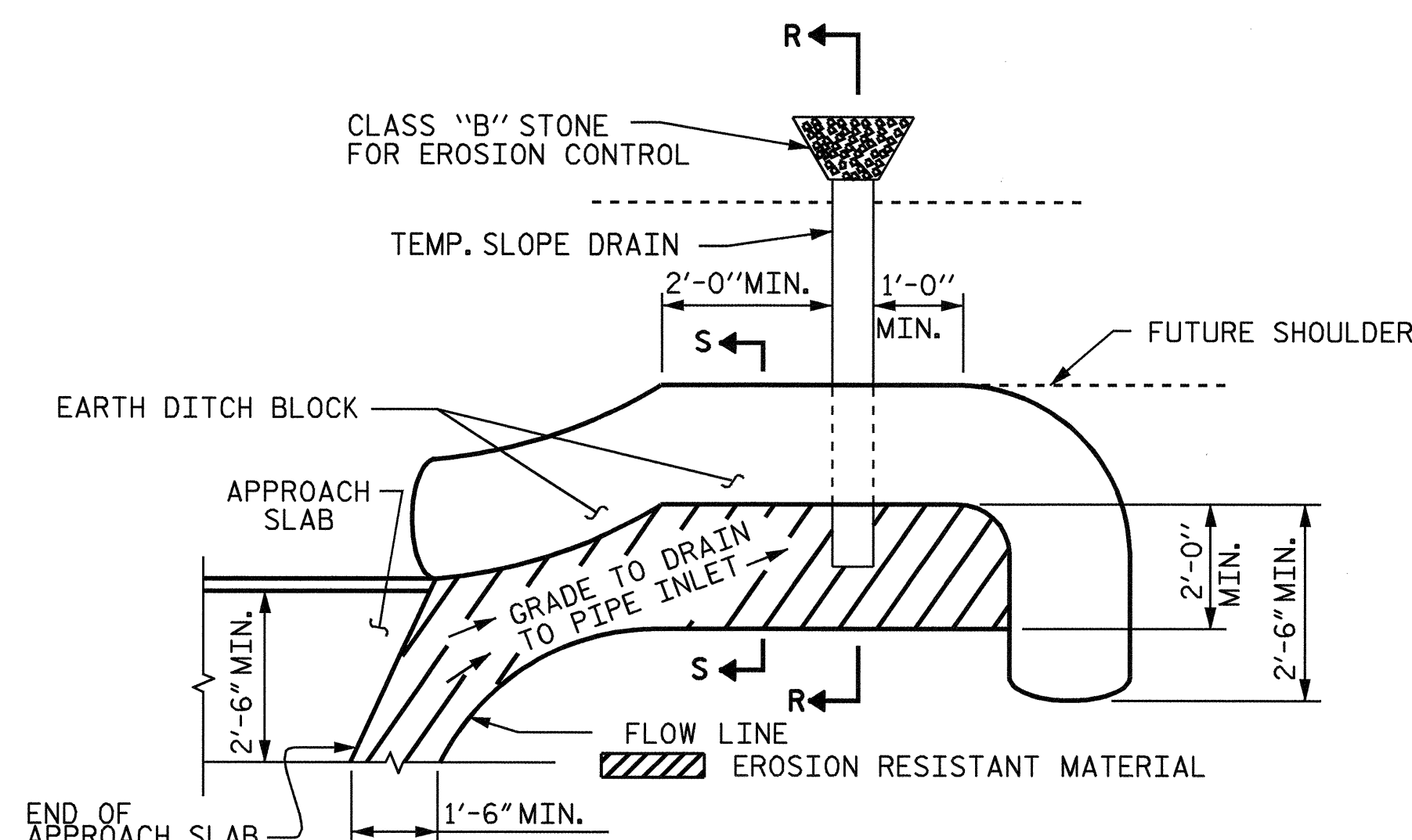
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE SEALED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

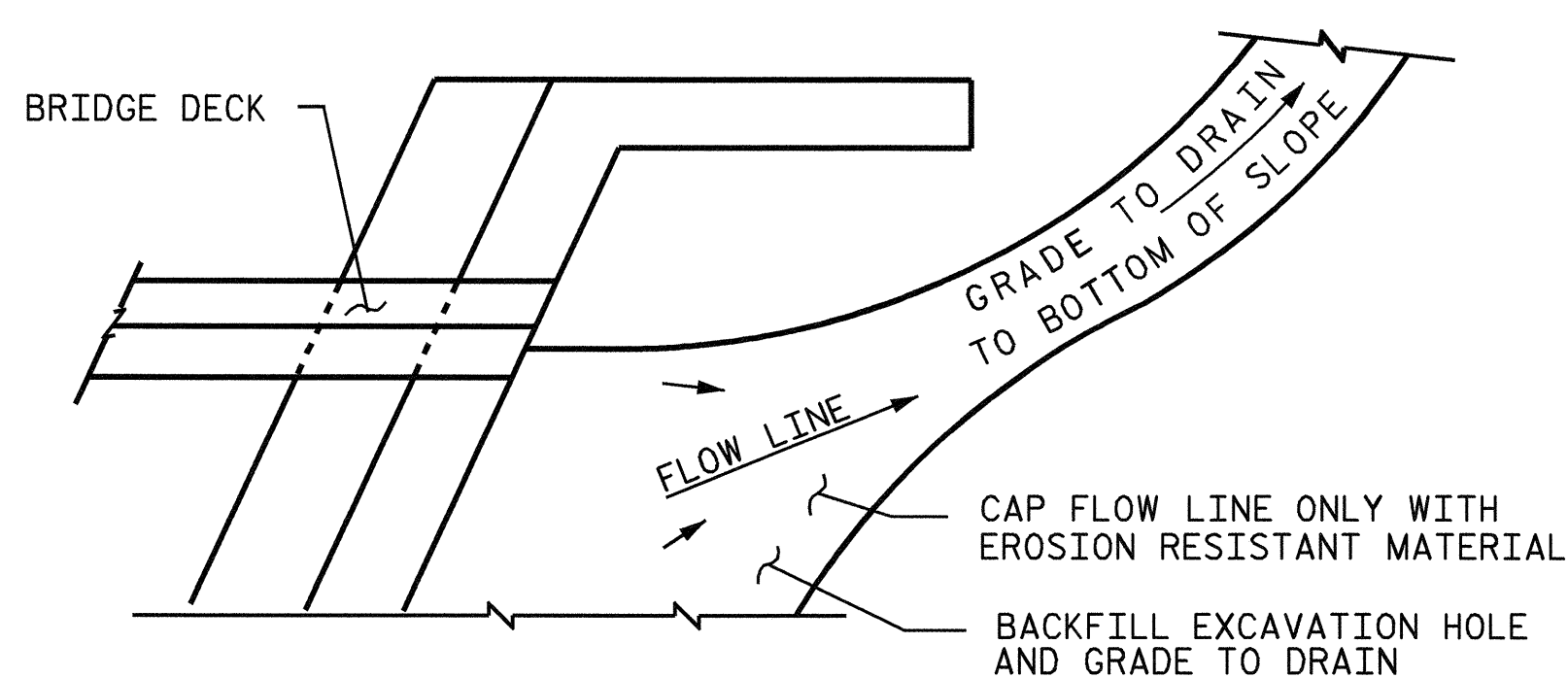


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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**

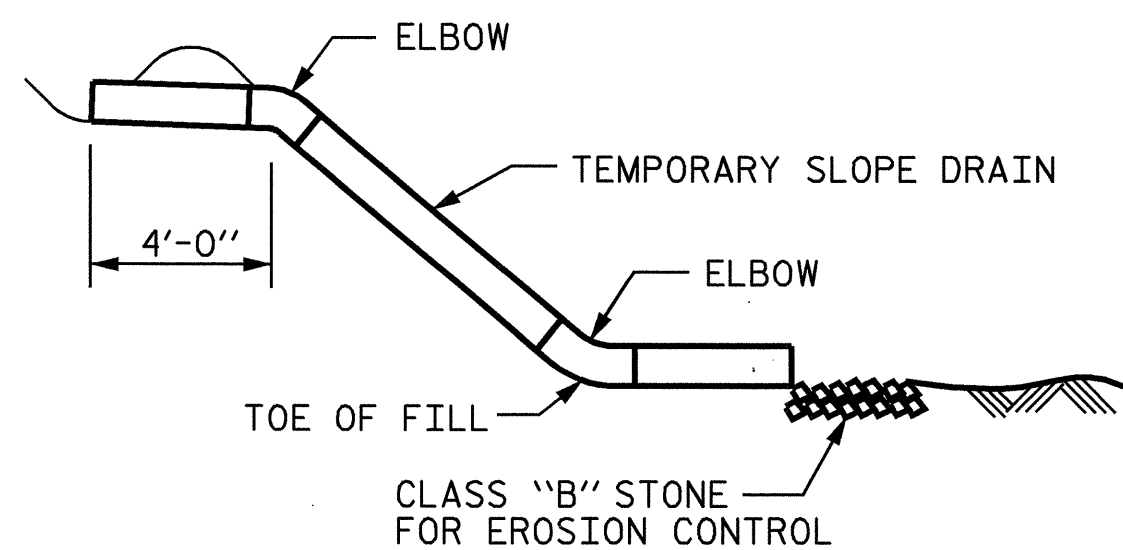
**TEMPORARY BERM AND DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

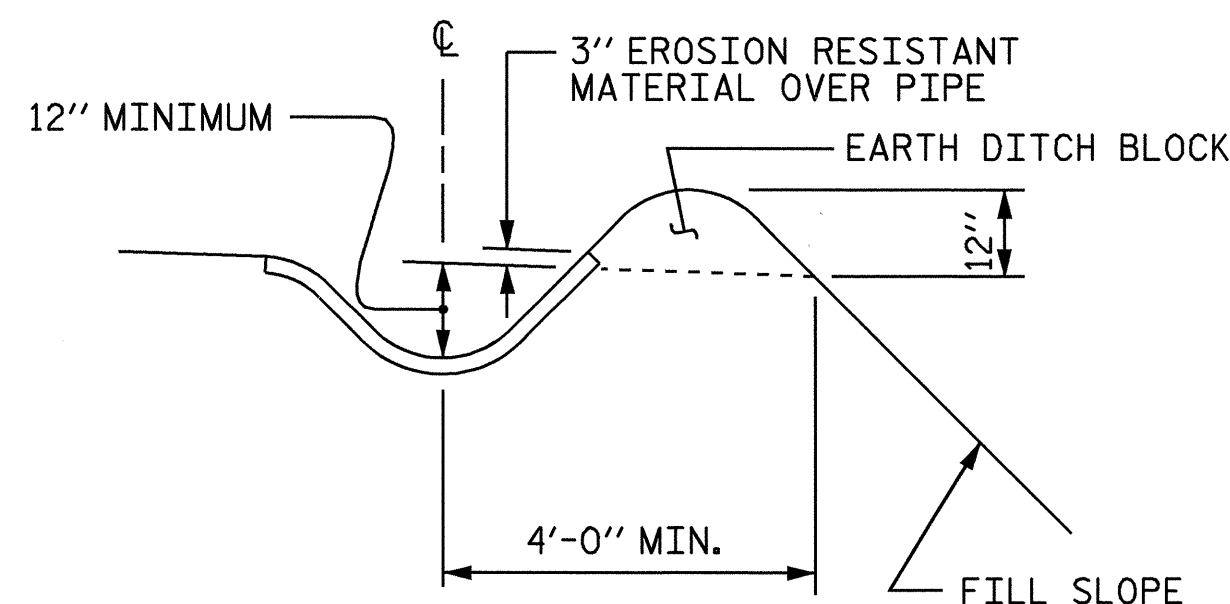


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

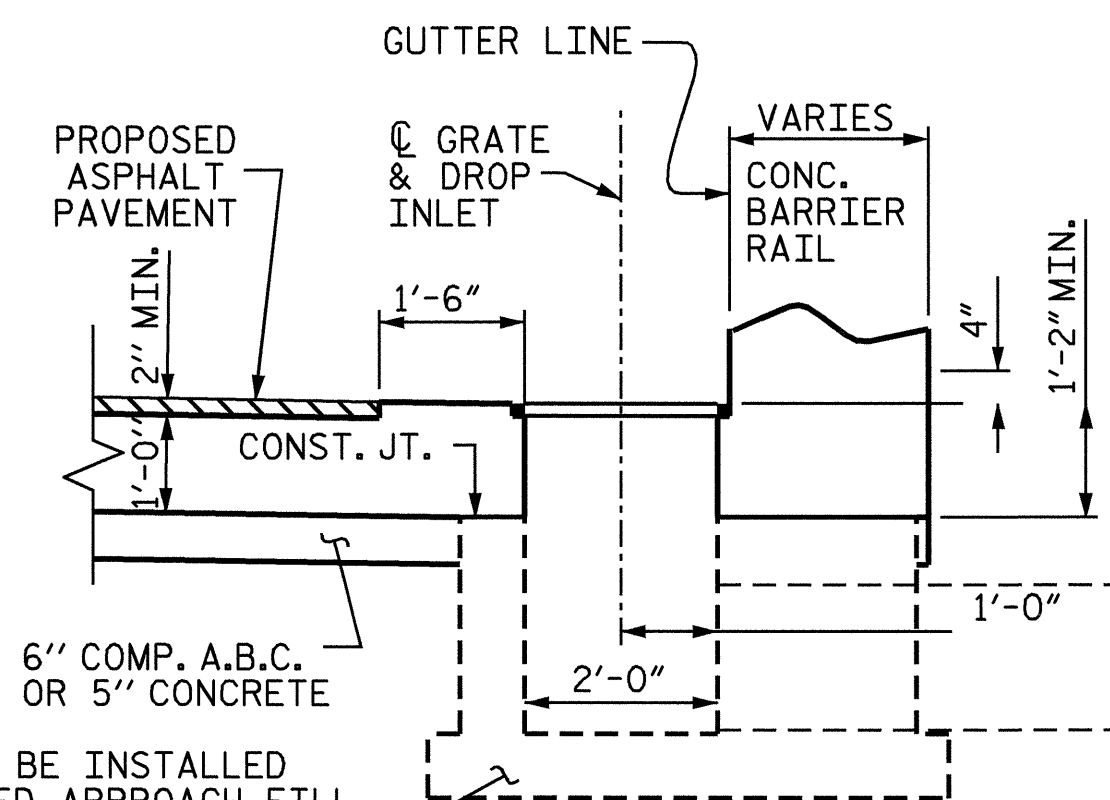
**TEMPORARY DRAINAGE DETAIL**



**SECTION R-R**

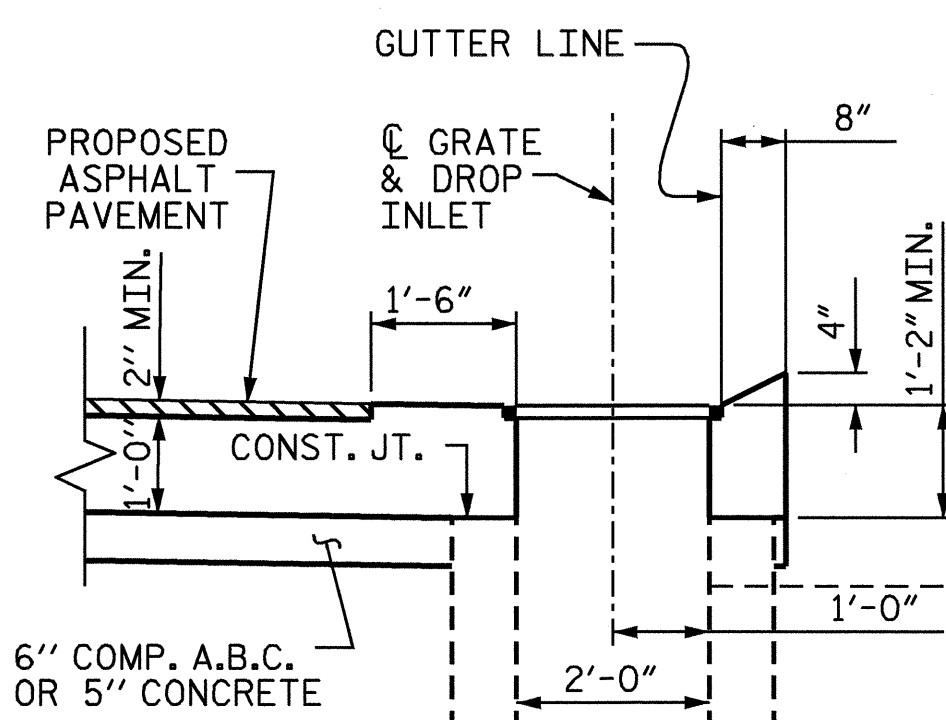


**SECTION S-S**



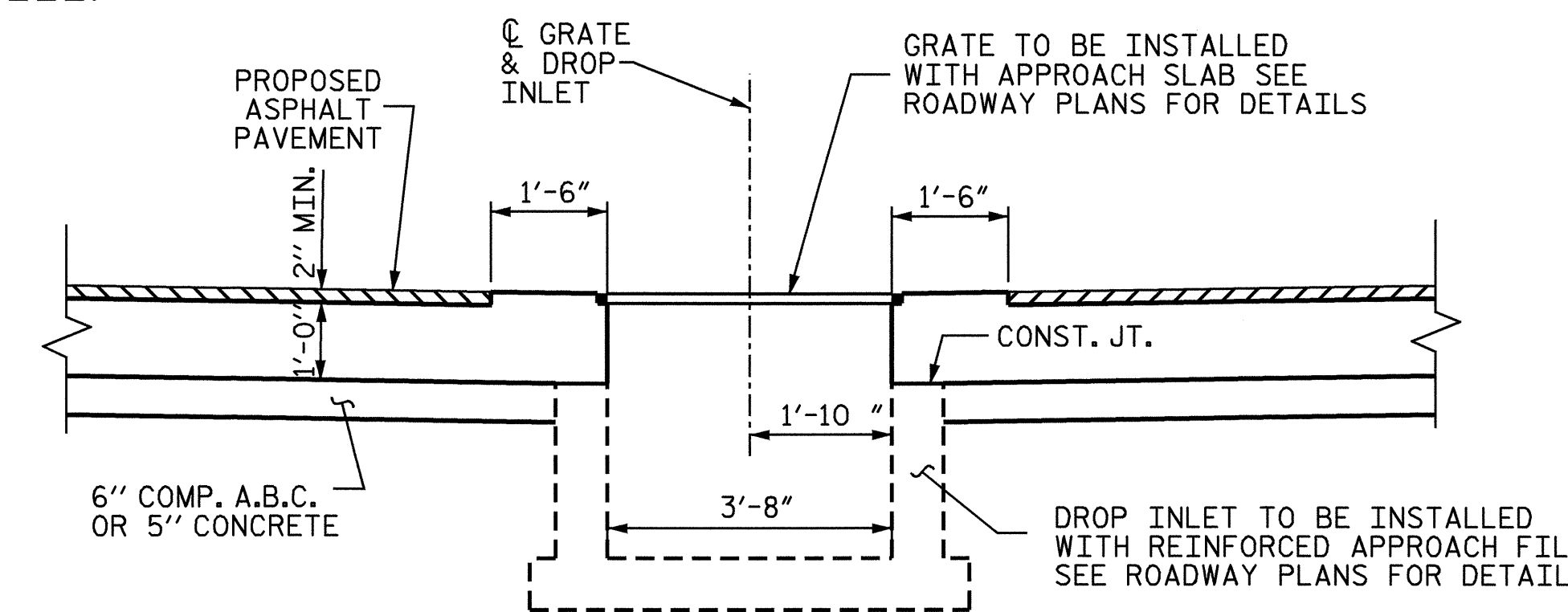
**SECTION B-B (LEFT SIDE)**

DROP INLET TO BE INSTALLED WITH REINFORCED APPROACH FILL SEE ROADWAY PLANS FOR DETAILS

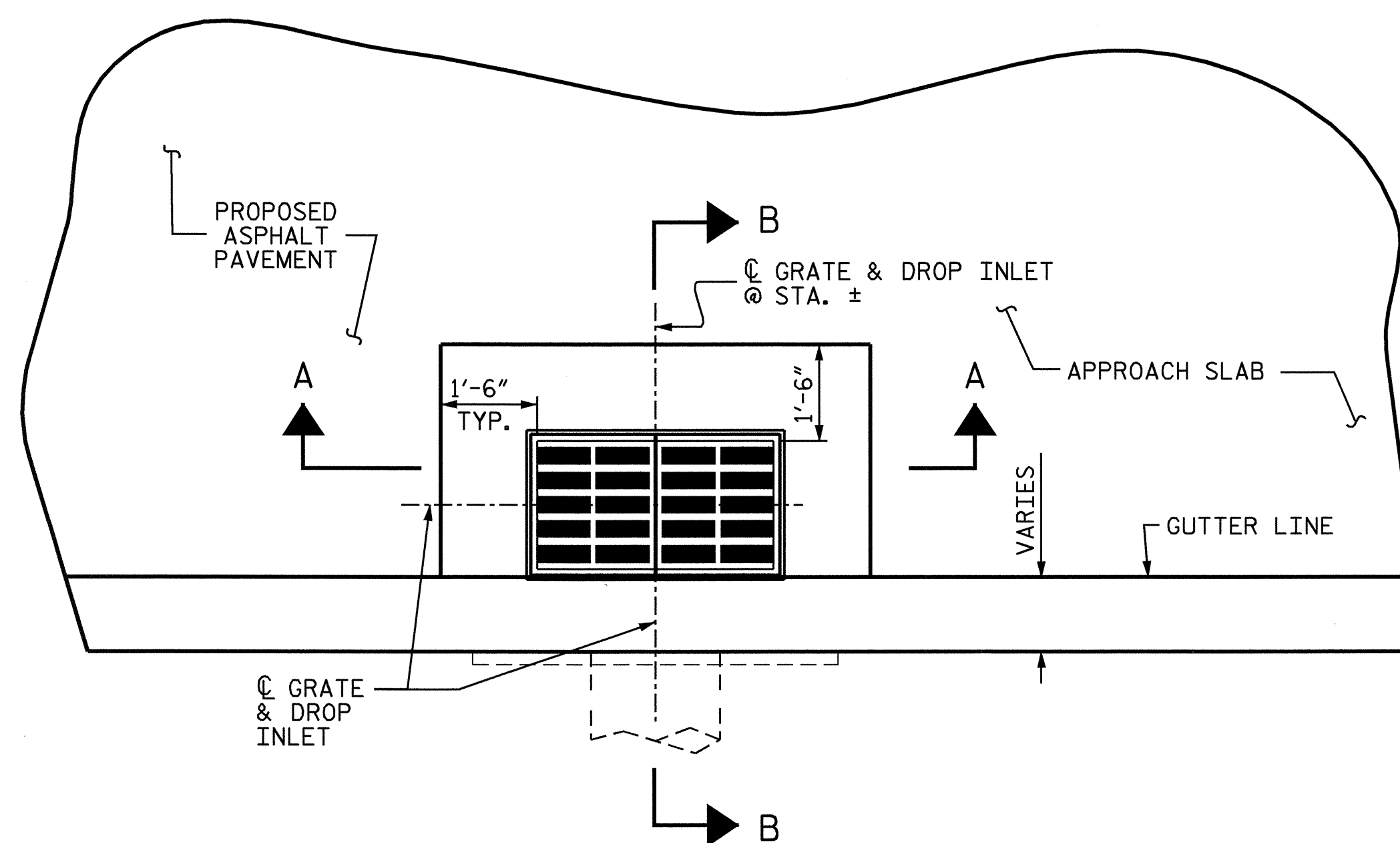


**SECTION B-B (RIGHT SIDE)**

DROP INLET TO BE INSTALLED WITH REINFORCED APPROACH FILL SEE ROADWAY PLANS FOR DETAILS



**SECTION A-A**



**TYPICAL PART PLAN**

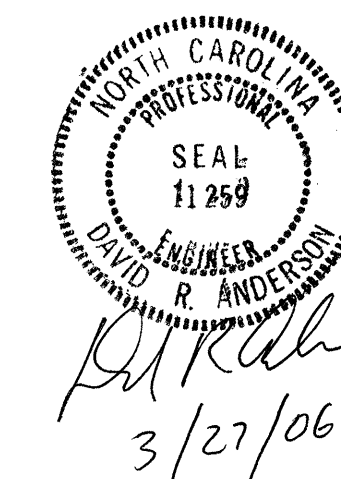
**DROP INLET DETAIL**

PROJECT NO. B-4113  
FRANKLIN COUNTY  
 STATION: 24+57.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BRIDGE APPROACH SLAB DETAILS**



REVISIONS					SHEET NO.
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DRAWN BY: N. Q. TRAN DATE: 7-21-05  
 CHECKED BY: S. M. RASHIDI DATE: 8-24-05

## 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