

TIP PROJECT: B-4668

CONTRACT: C202819

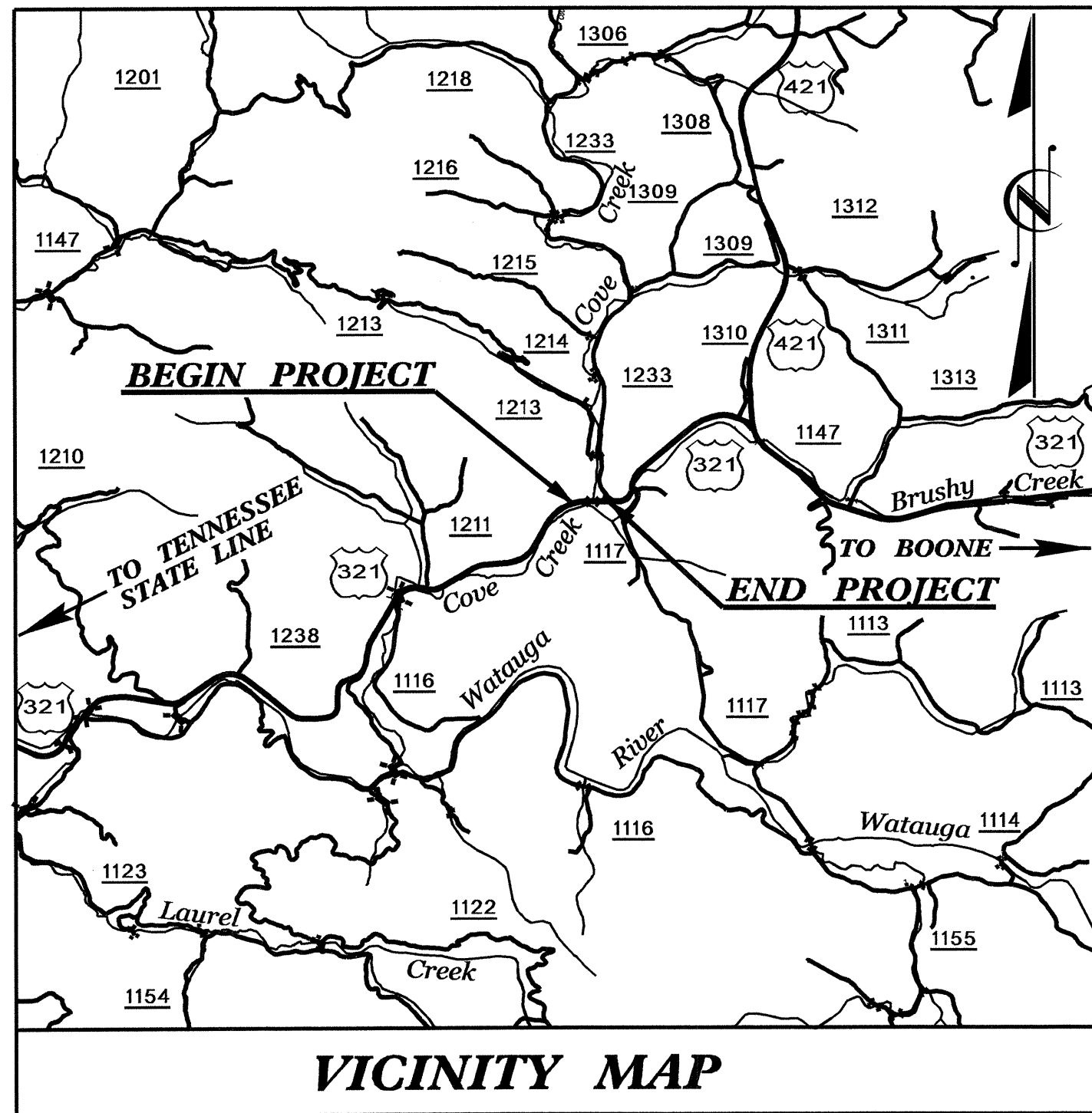
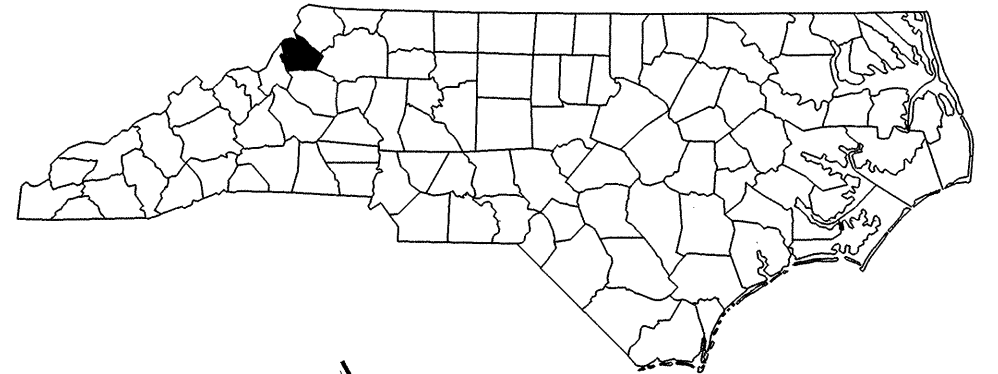
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA COUNTY

LOCATION: BRIDGE NO. 29 OVER COVE CREEK ON US 321

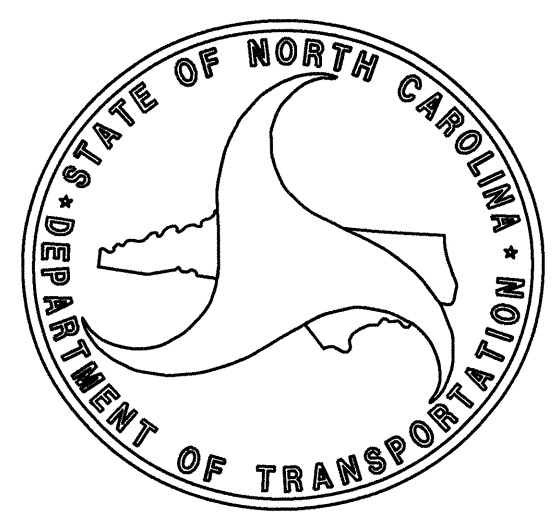
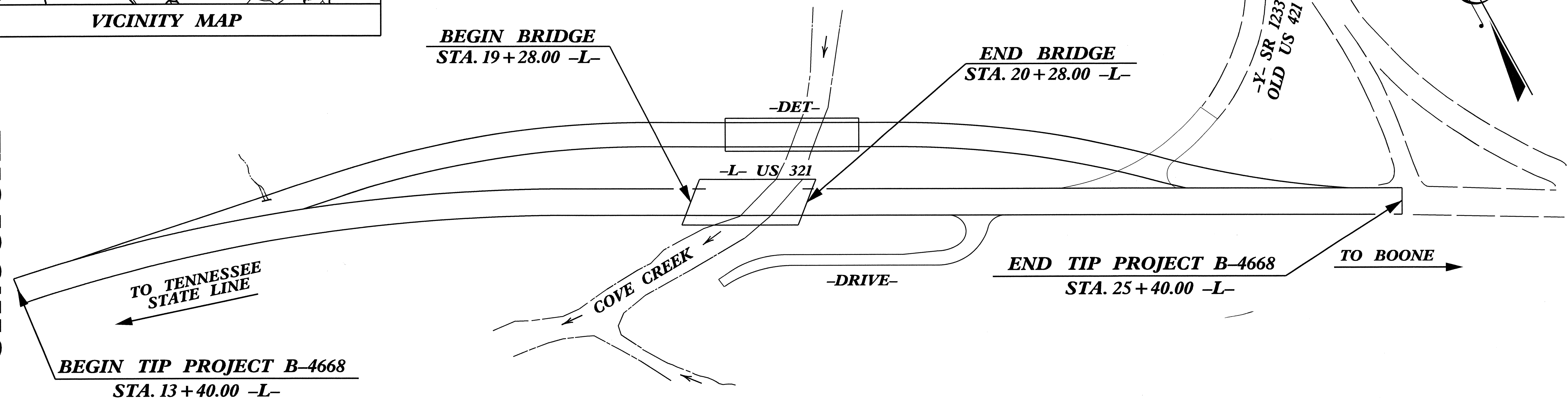
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4668		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
38461.1.1	BRNHS-321(13)	P.E.	
38461.2.1	BRNHS-321(13)	RW & UTIL.	
38461.3.1	BRNHS-321(13)	CONST.	



VICINITY MAP

STRUCTURE



DESIGN DATA

ADT 2012 =	6,600 VPD
ADT 2032 =	10,600 VPD
DHV =	12 %
D =	80 %
* T =	6 %
V =	40 MPH
* (TTST 2% + DUAL 4%)	
FUNC. CLASS. =	
RURAL ARTERIAL	
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4668	=	0.208	MILE
LENGTH STRUCTURE TIP PROJECT B-4668	=	0.019	MILE
TOTAL LENGTH TIP PROJECT B-4668	=	0.227	MILE

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 15, 2012

J.M. BAILEY, PE
PROJECT ENGINEER

D.A. DAVENPORT, JR., PE
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
1000 Birch Ridge Dr.,
Raleigh NC, 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER:
**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

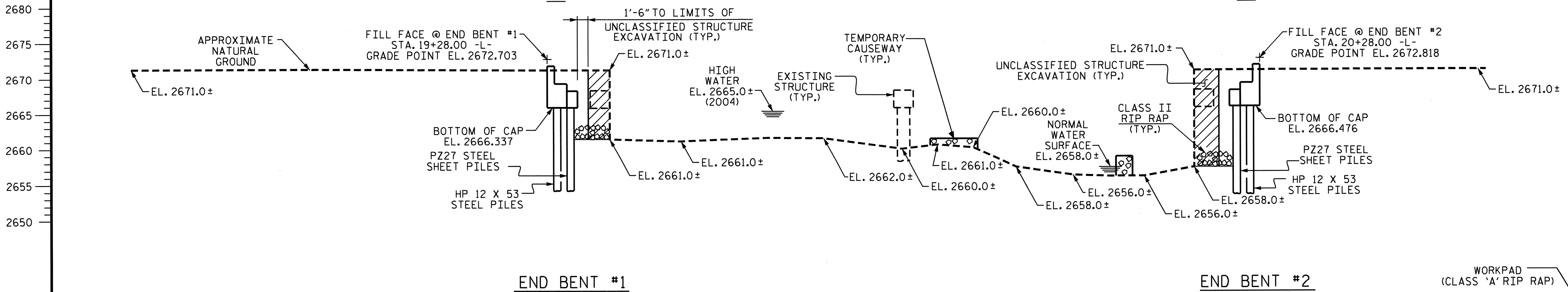
APPROVED
DIVISION ADMINISTRATOR

DATE

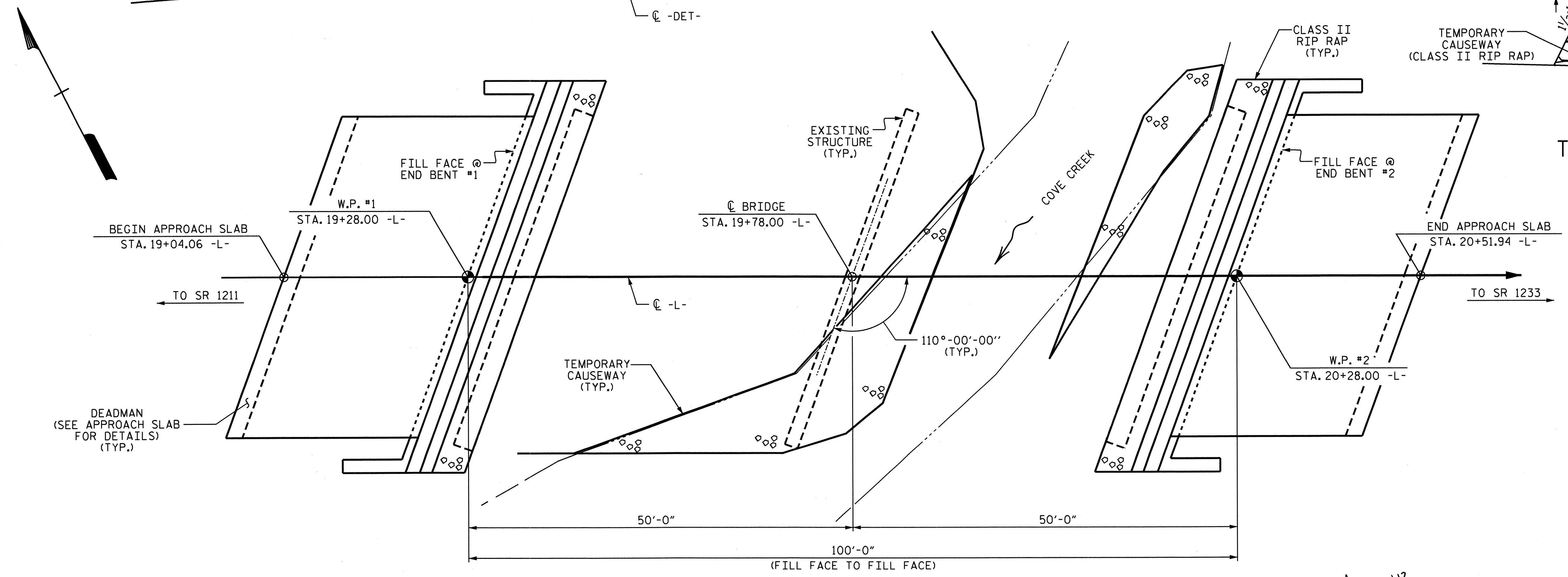
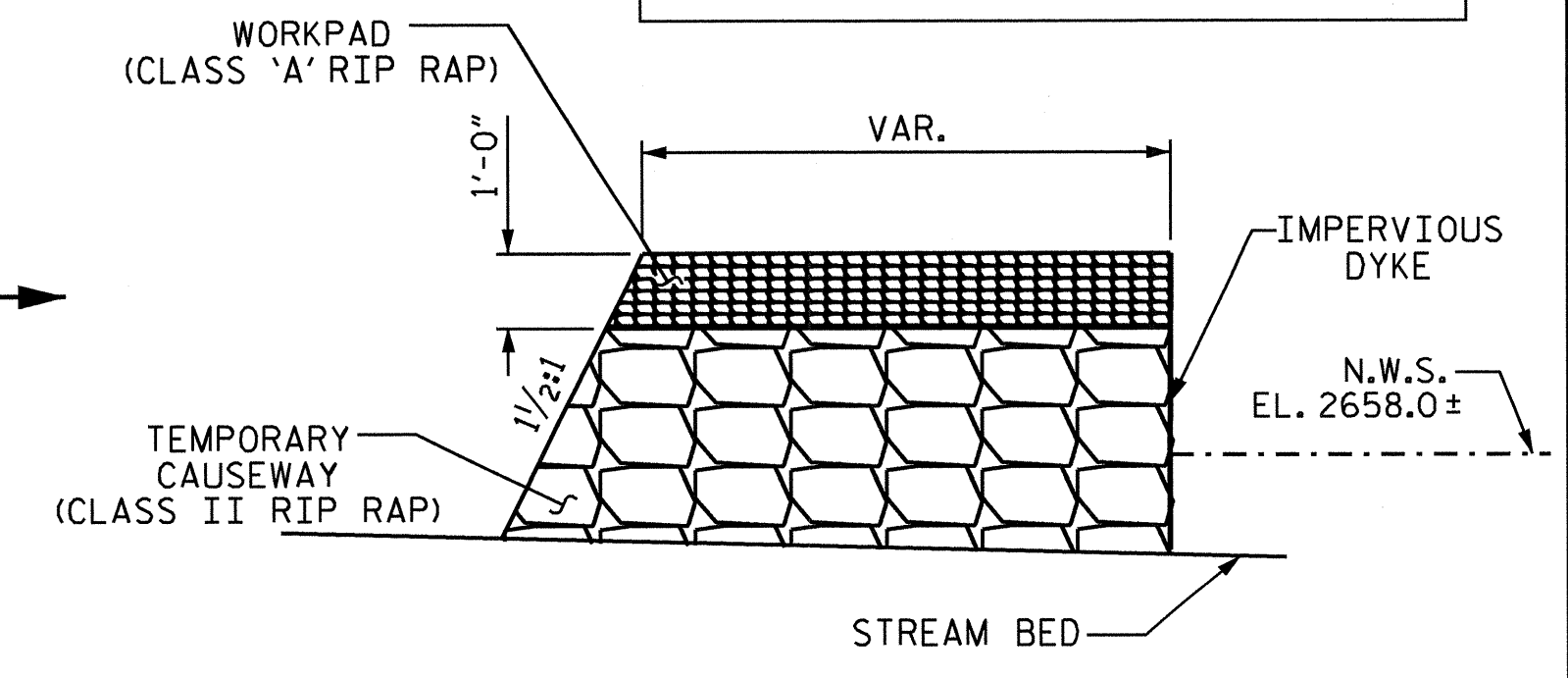
(+) 0.8596 % (-) 0.6297 %

PI = 19+78.00 -L-
EL. = 2673.300
VC = 250'

GRADE DATA



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



PLAN

(PILES ARE NOT SHOWN FOR CLARITY)

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 29

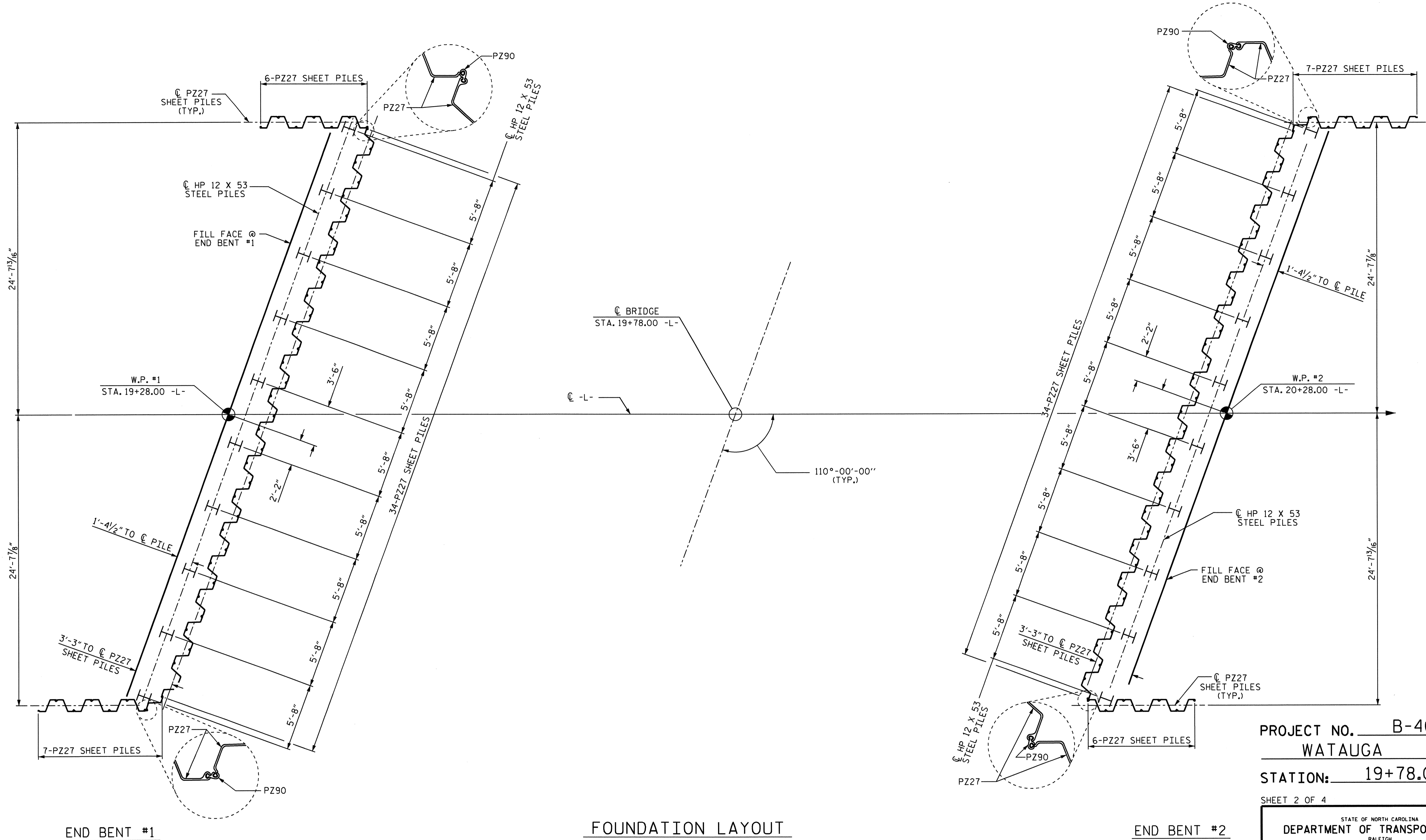
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 COVE CREEK ON
 US 321 BETWEEN
 SR 1211 AND SR 1233

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

DRAWN BY : D.A. DAVENPORT DATE : 06/22/11
 CHECKED BY : E.C. LOCKLEAR DATE : 08/04/11

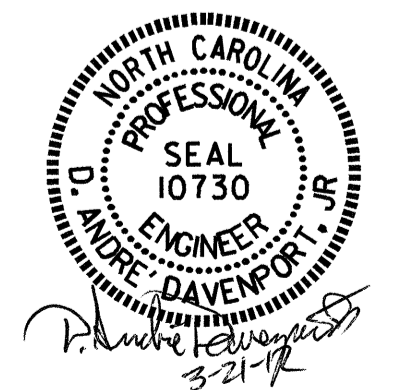




PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 COVE CREEK ON
 US 321 BETWEEN
 SR 1211 AND SR 1233



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

FOUNDATION LAYOUT

ALL DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 158 TONS PER PILE.

SHEET PILES SHALL BE INSTALLED TO AN ELEVATION 2658.000 AT END BENT NO.1 AND END BENT NO. 2.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO.1 AND END BENT NO.2 IS ELEVATION 2661.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE CONTRACTOR SHALL USE PZ27 STEEL SHEET PILES OR EQUIVALENT. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

STEEL PILE POINTS ARE REQUIRED FOR PILES AT END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRAWN BY : D.A. DAVENPORT DATE : 06/24/11
 CHECKED BY : E.C. LOCKLEAR DATE : 08/04/11

21-MAR-2012 08:19
 R:\Structures\PLANS\B-4668.SD.GDgn
 ddavenport

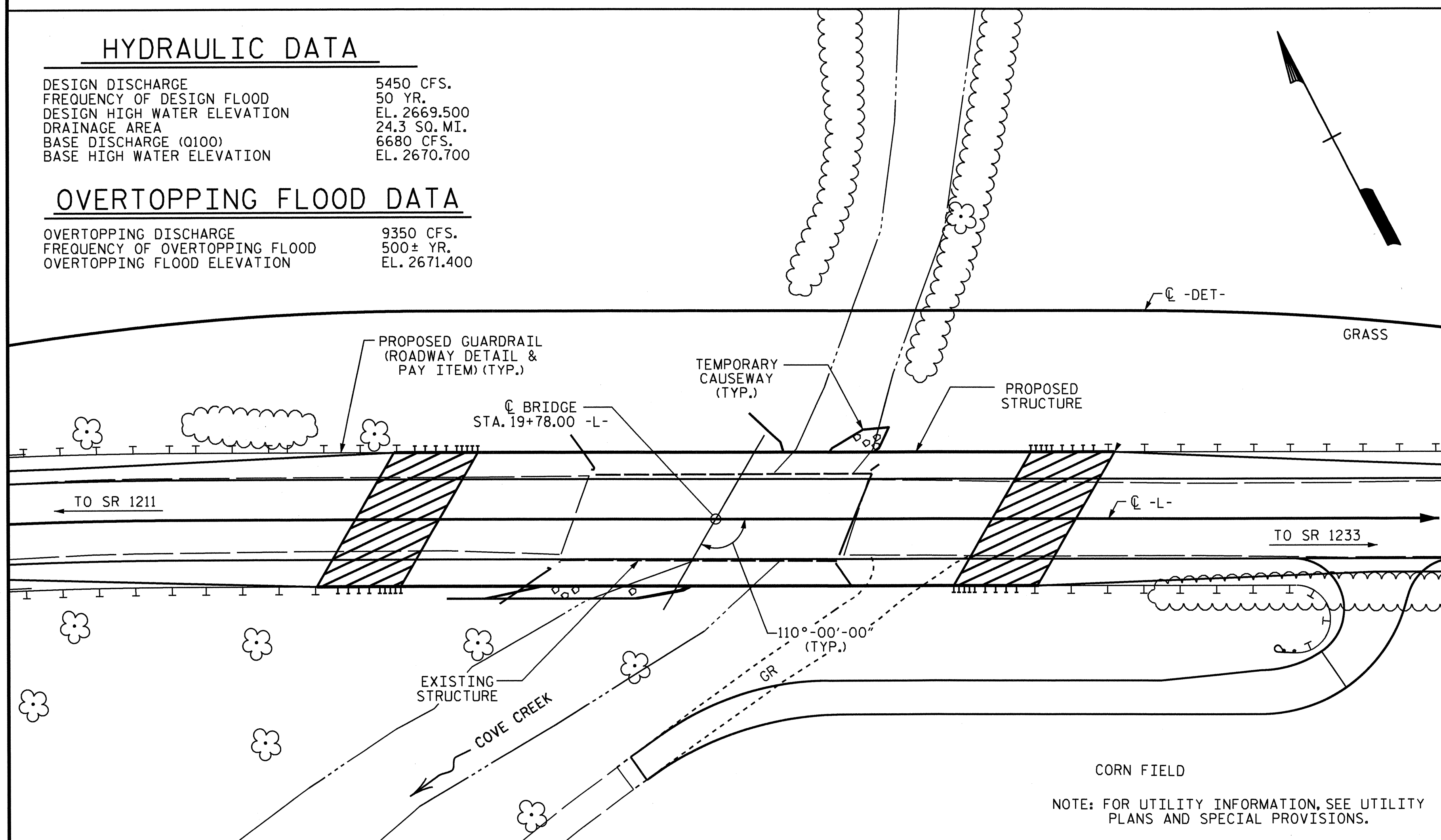
BENCH MARK #1: 8" SPIKE IN ROOT OF 14" Ø SWEET GUM TREE, 109.00' RIGHT OF STA. 18+96.00 -L-; EL. 2666.580

HYDRAULIC DATA

DESIGN DISCHARGE 5450 CFS.
 FREQUENCY OF DESIGN FLOOD 50 YR.
 DESIGN HIGH WATER ELEVATION EL. 2669.500
 DRAINAGE AREA 24.3 SQ. MI.
 BASE DISCHARGE (Q100) 6680 CFS.
 BASE HIGH WATER ELEVATION EL. 2670.700

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE 9350 CFS.
 FREQUENCY OF OVERTOPPING FLOOD 500± YR.
 OVERTOPPING FLOOD ELEVATION EL. 2671.400



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF TWO SIMPLE SPANS, EACH AT 42'-0", REINFORCED CONCRETE DECK GIRDERS; CLEAR ROADWAY WIDTH OF 23.8 FT. WITH A 3" ASPHALT WEARING SURFACE ON REINFORCED CONCRETE ABUTMENTS AND REINFORCED CONCRETE POST AND WEB AT INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE DETOUR BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 19+78.00-L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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 19+78.00-L-.

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 SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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 BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

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

TOTAL BILL OF MATERIAL

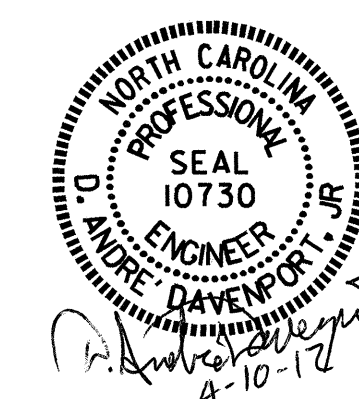
	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE	CONSTRUCTION, MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	18" STEEL SHEET PILES		
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	LIN. FT.	NO.	SQ. FT.	
SUPERSTRUCTURE					4042	5588		LUMP SUM				195.21			LUMP SUM	LUMP SUM	1464.06			
END BENT NO. 1				LUMP SUM			24.6		4264	10	200		27	30				47	770	
END BENT NO. 2				LUMP SUM			24.6		4264	10	200	10	27	30				47	780	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	4042	5588	49.2	LUMP SUM	8528	20	400	10	195.21	54	60	LUMP SUM	LUMP SUM	1464.06	94	1550

PROJECT NO. B-4668
 WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 COVE CREEK ON
 US 321 BETWEEN
 SR 1211 AND SR 1233



DRAWN BY: D.A. DAVENPORT DATE: 06/22/11
 CHECKED BY: E.C. LOCKLEAR DATE: 08/08/11

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

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.08	--	1.75	0.257	1.79	A	EL	48.005	0.575	1.08	A	EL	4.8	0.80	0.257	1.14	A	EL	48.005		
	HL-93 (OPERATING)	N/A	--	1.41	--	1.35	0.257	2.31	A	EL	48.005	0.575	1.41	A	EL	4.8	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.46	52.487	1.75	0.257	2.47	A	EL	48.005	0.575	1.46	A	EL	4.8	0.80	0.257	1.58	A	EL	48.005		
	HS-20 (OPERATING)	36.000	--	1.89	68.039	1.35	0.257	3.20	A	EL	48.005	0.575	1.89	A	EL	4.8	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.72	50.263	1.40	0.257	7.29	A	EL	48.005	0.575	4.49	A	EL	4.8	0.80	0.257	3.72	A	EL	48.005	
		SNGARBS2	20.000	--	2.70	54.051	1.40	0.257	5.29	A	EL	48.005	0.575	3.14	A	EL	4.8	0.80	0.257	2.70	A	EL	48.005	
		SNAGRIS2	22.000	--	2.53	55.665	1.40	0.257	4.95	A	EL	48.005	0.575	2.9	A	EL	4.8	0.80	0.257	2.53	A	EL	48.005	
		SNCOTTS3	27.250	--	1.85	50.430	1.40	0.257	3.62	A	EL	48.005	0.575	2.24	A	EL	4.8	0.80	0.257	1.85	A	EL	48.005	
		SNAGGRS4	34.925	--	1.52	53.044	1.40	0.257	2.97	A	EL	48.005	0.575	1.82	A	EL	4.8	0.80	0.257	1.52	A	EL	48.005	
		SNS5A	35.550	--	1.49	52.866	1.40	0.257	2.91	A	EL	48.005	0.575	1.83	A	EL	4.8	0.80	0.257	1.49	A	EL	48.005	
		SNS6A	39.950	--	1.35	54.055	1.40	0.257	2.65	A	EL	48.005	0.575	1.65	A	EL	4.8	0.80	0.257	1.35	A	EL	48.005	
	SNS7B	42.000	--	1.29	54.101	1.40	0.257	2.52	A	EL	48.005	0.575	1.61	A	EL	4.8	0.80	0.257	1.29	A	EL	48.005		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.65	54.340	1.40	0.257	3.22	A	EL	48.005	0.575	1.98	A	EL	4.8	0.80	0.257	1.65	A	EL	48.005	
		TNT4A	33.075	--	1.65	54.602	1.40	0.257	3.23	A	EL	48.005	0.575	1.94	A	EL	4.8	0.80	0.257	1.65	A	EL	48.005	
		TNT6A	41.600	--	1.34	55.711	1.40	0.257	2.62	A	EL	48.005	0.575	1.68	A	EL	4.8	0.80	0.257	1.34	A	EL	48.005	
		TNT7A	42.000	--	1.34	56.293	1.40	0.257	2.62	A	EL	48.005	0.575	1.66	A	EL	4.8	0.80	0.257	1.34	A	EL	48.005	
		TNT7B	42.000	--	1.37	57.664	1.40	0.257	2.69	A	EL	48.005	0.575	1.58	A	EL	4.8	0.80	0.257	1.37	A	EL	48.005	
		TNAGRIT4	43.000	--	1.32	56.596	1.40	0.257	2.58	A	EL	48.005	0.575	1.54	A	EL	4.8	0.80	0.257	1.32	A	EL	48.005	
		TNAGT5A	45.000	--	1.25	56.060	1.40	0.257	2.44	A	EL	48.005	0.575	1.51	A	EL	4.8	0.80	0.257	1.25	A	EL	48.005	
TNAGT5B		45.000	3	1.23	55.575	1.40	0.257	2.42	A	EL	48.005	0.575	1.46	A	EL	4.8	0.80	0.257	1.23	A	EL	48.005		

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

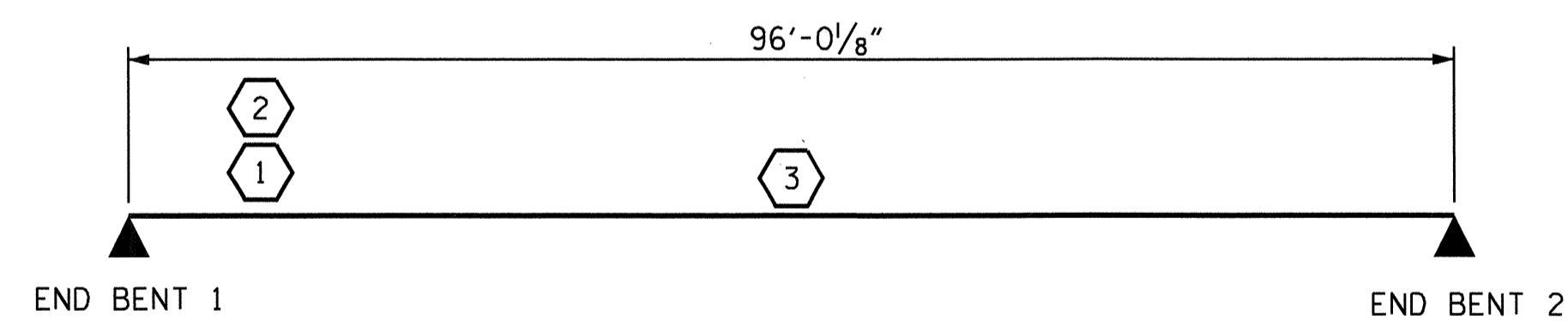
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

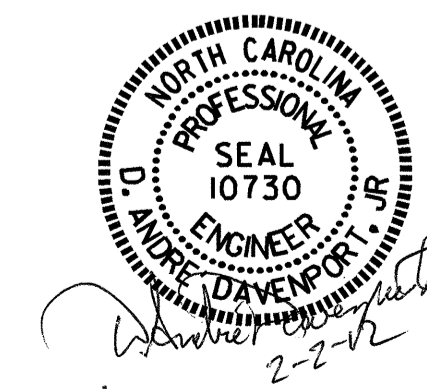
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE BOX BEAM
 UNITS
 (NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY : D.A. DAVENPORT DATE : 8/1/11
 CHECKED BY : E.C. LOCKLEAR DATE : 8/4/11
 DRAWN BY : MAA 1/08 REV. 11/12/OBR MAA/GM
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM

NOTES

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

ALL REINFORCING STEEL 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 BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5600 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS AND CONCRETE WEARING SURFACE 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.

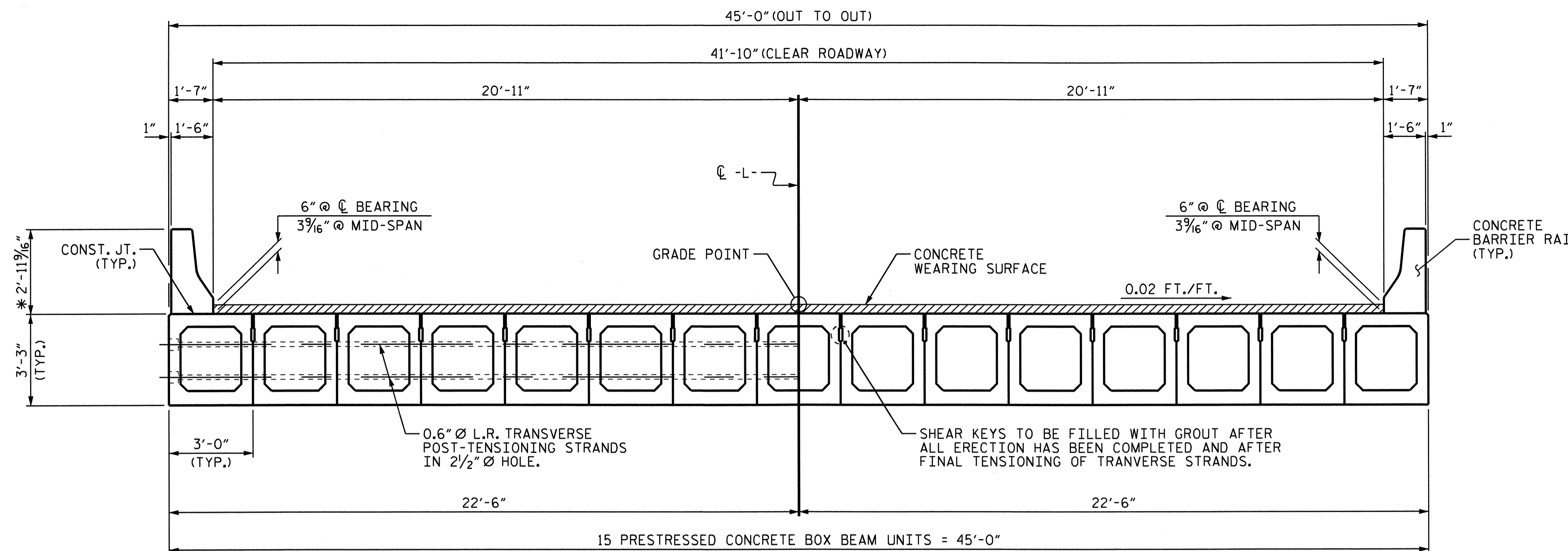
VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION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

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

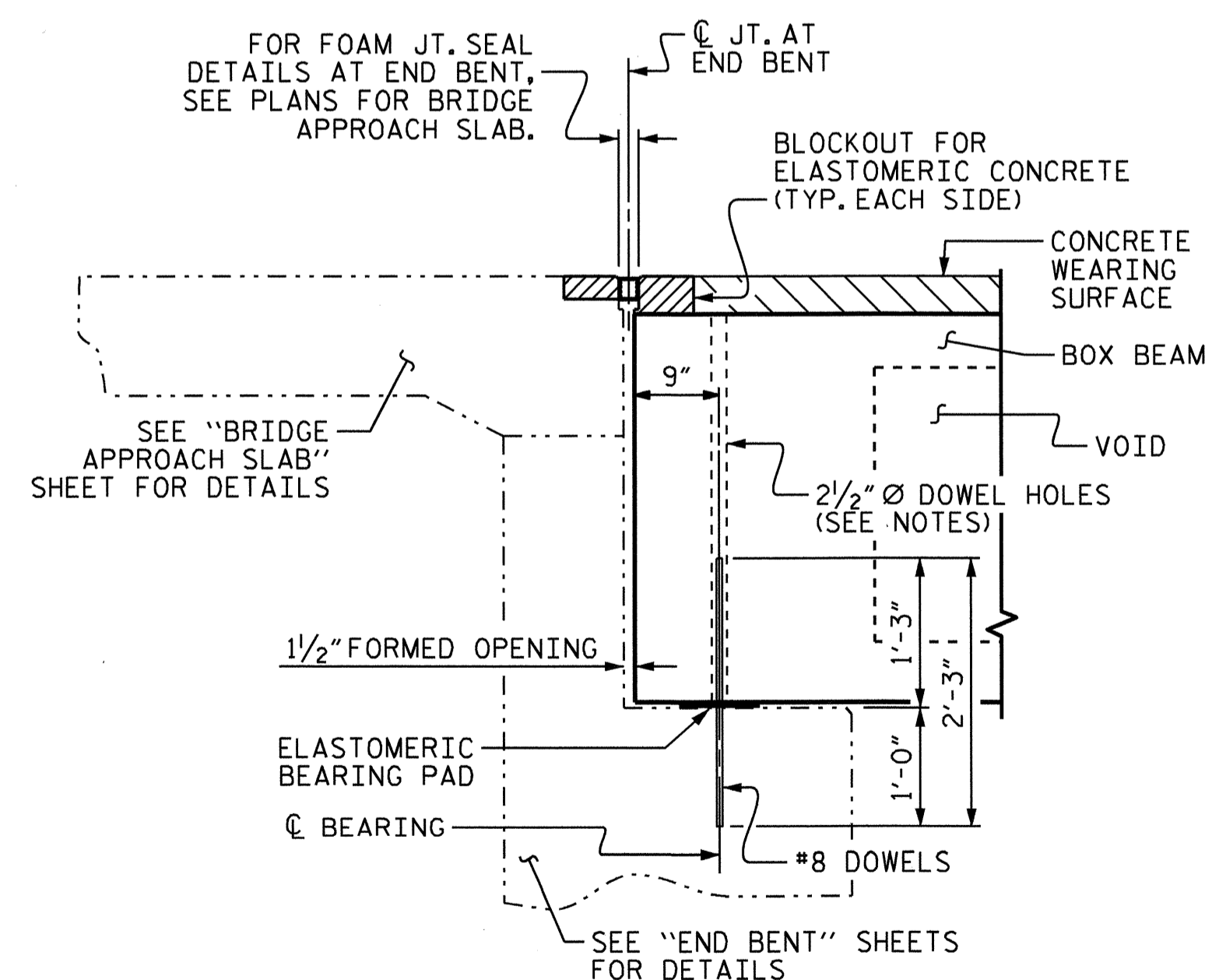
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.



TYPICAL SECTION

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS. THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

FIXED END



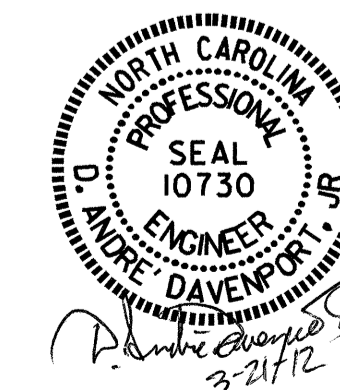
SECTION AT END BENT

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 1 OF 6

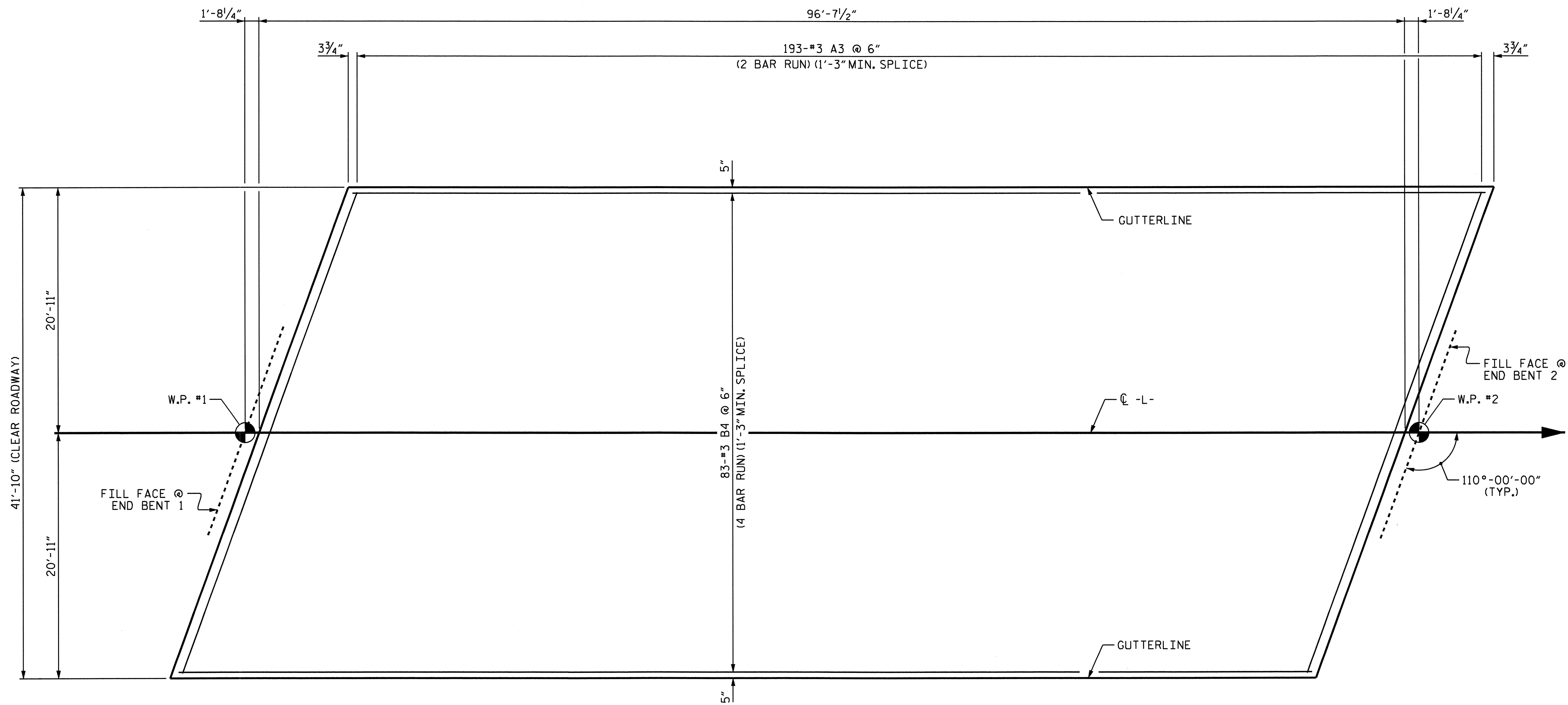
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



ASSEMBLED BY : E.C. LOCKLEAR DATE : 1-04-11
 CHECKED BY : D.A. GLADDEN DATE : 1-12-11
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05
 ADDED 7/11/05R
 REV. 5/1/06R KMM/GM
 REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			20

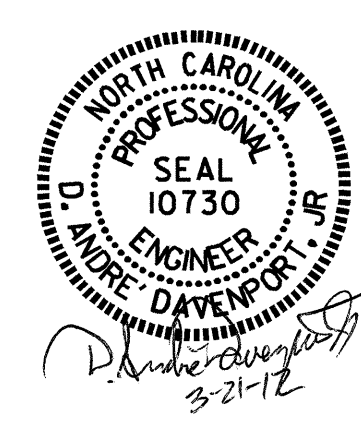


PLAN OF REINFORCING STEEL FOR CONCRETE WEARING SURFACE

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

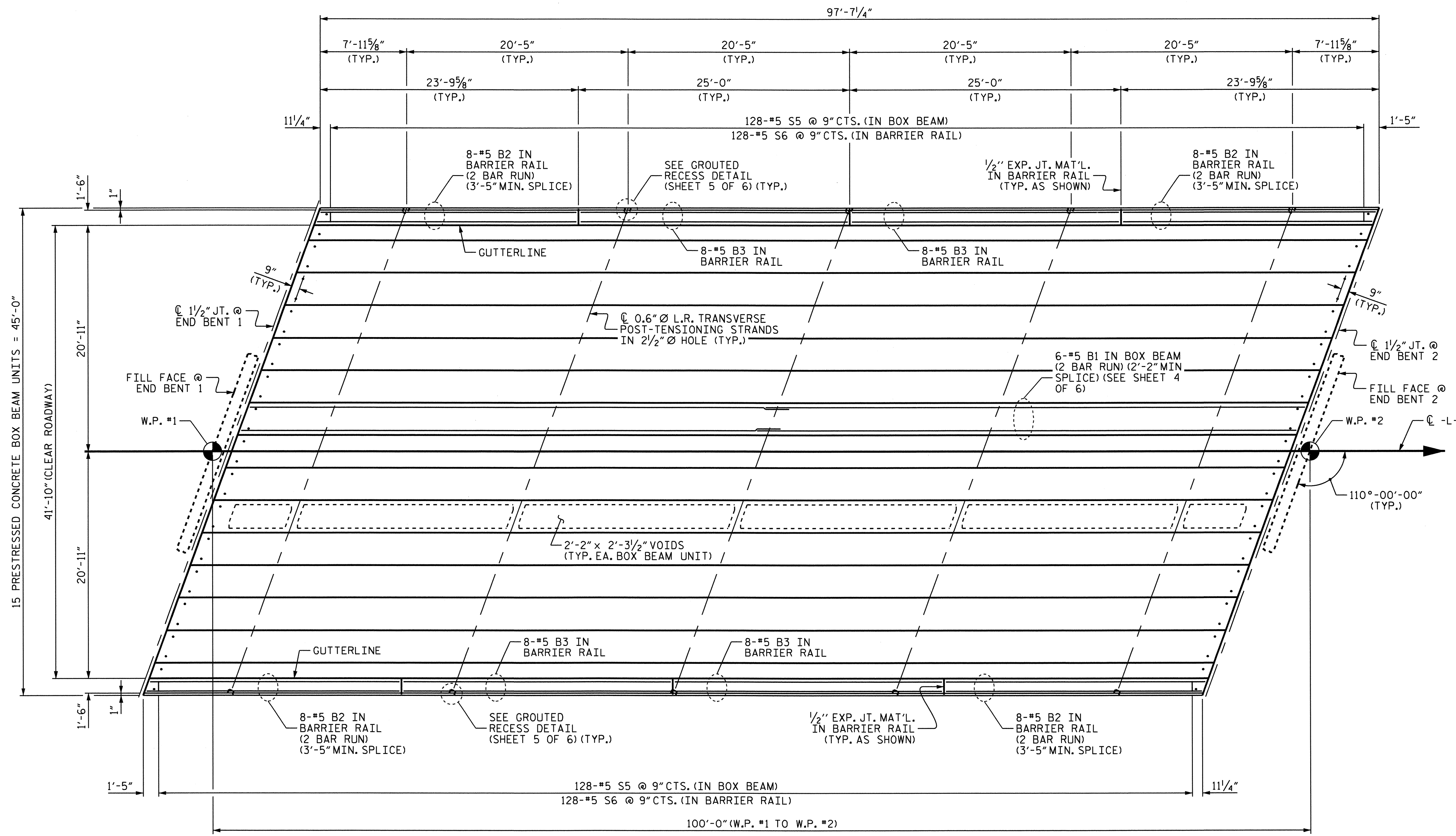
SHEET 2 OF 6

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



DRAWN BY : E.C. LOCKLEAR DATE : 1-05-11
 CHECKED BY : D.A. GLADDEN DATE : 1-12-11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			20



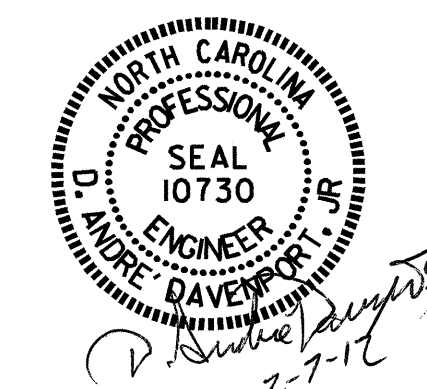
PLAN OF SPAN A

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 3 OF 6

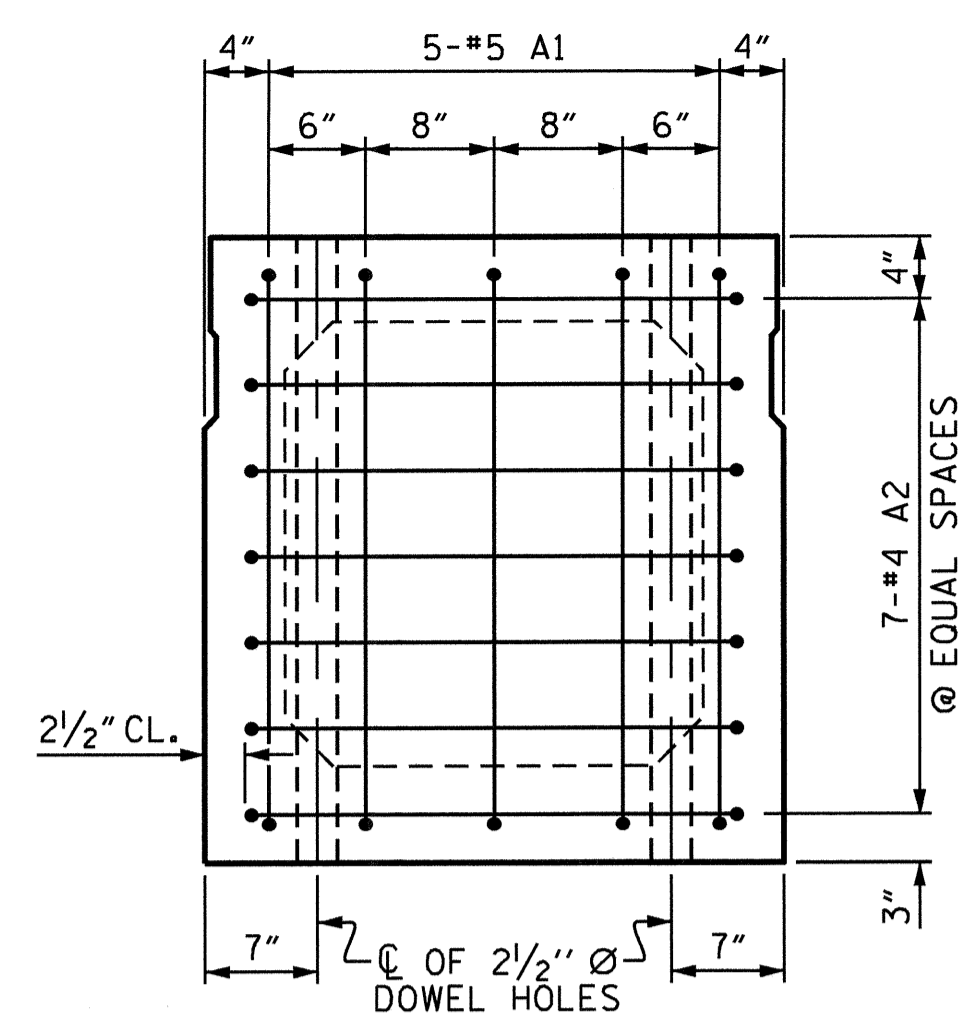
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 PLAN OF SPAN "A"



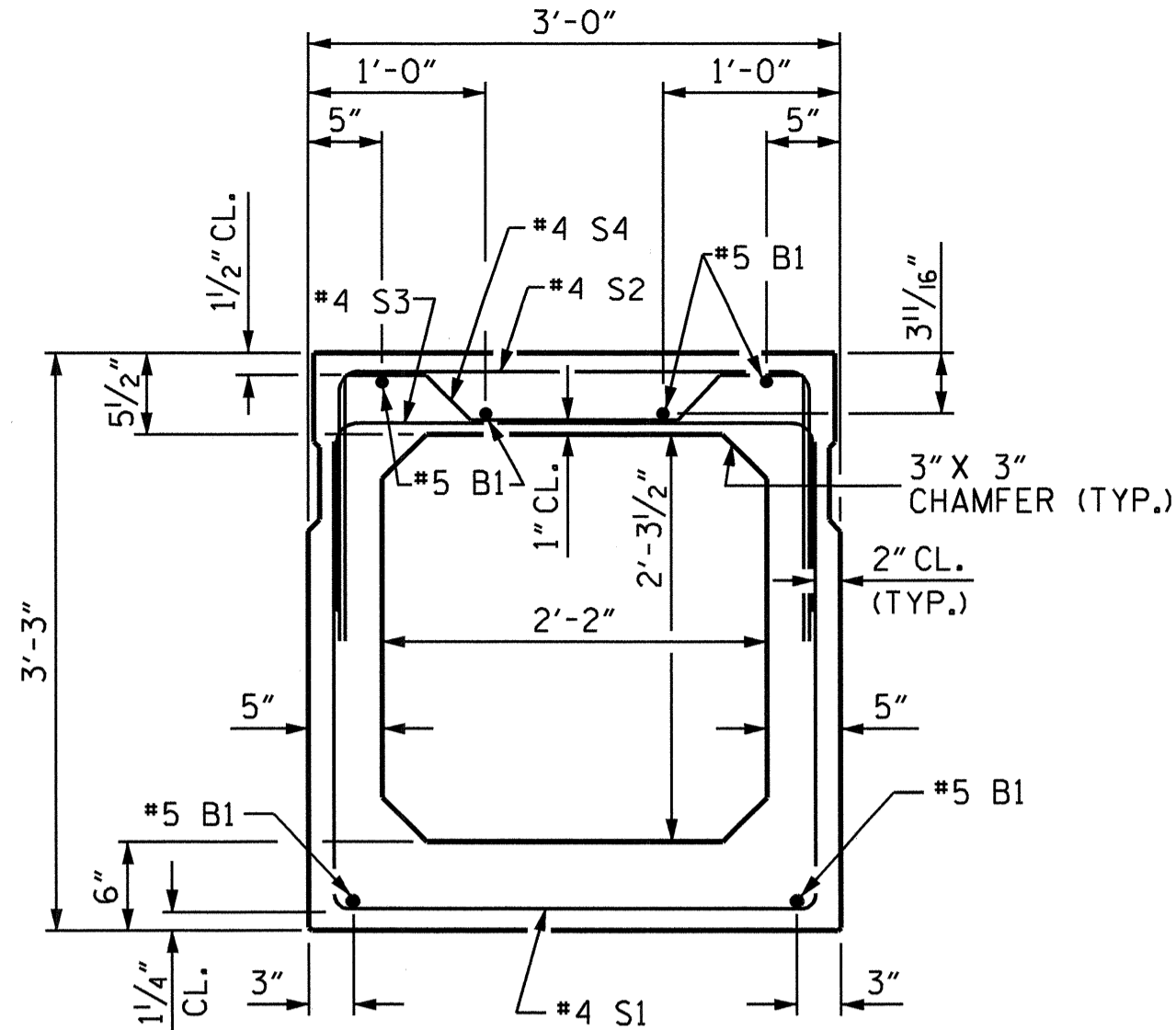
DRAWN BY : E.C. LOCKLEAR DATE : 1-04-11
 CHECKED BY : D.A. GLADDEN DATE : 1-12-11

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	
2			4			20	



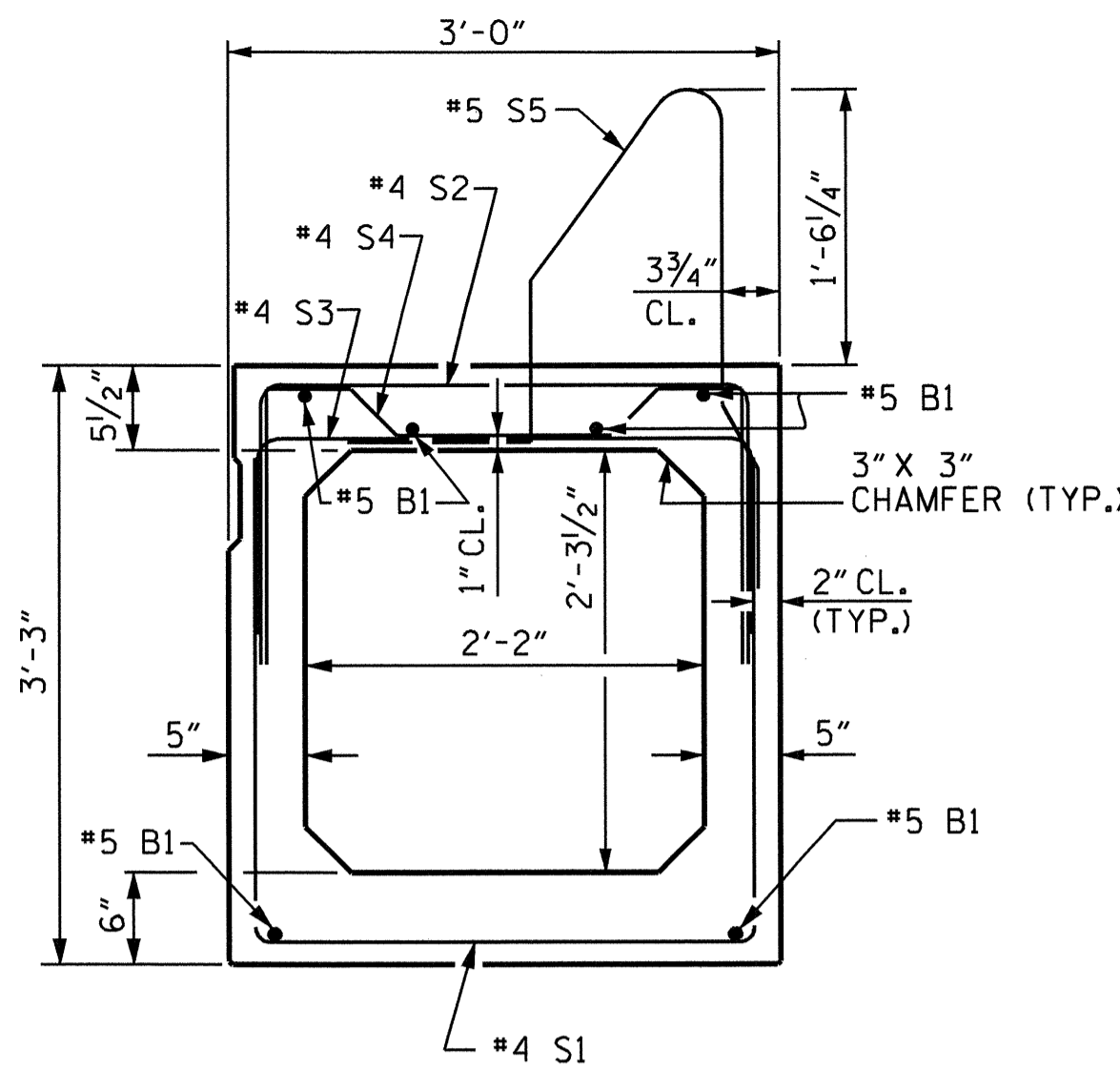
END ELEVATION

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

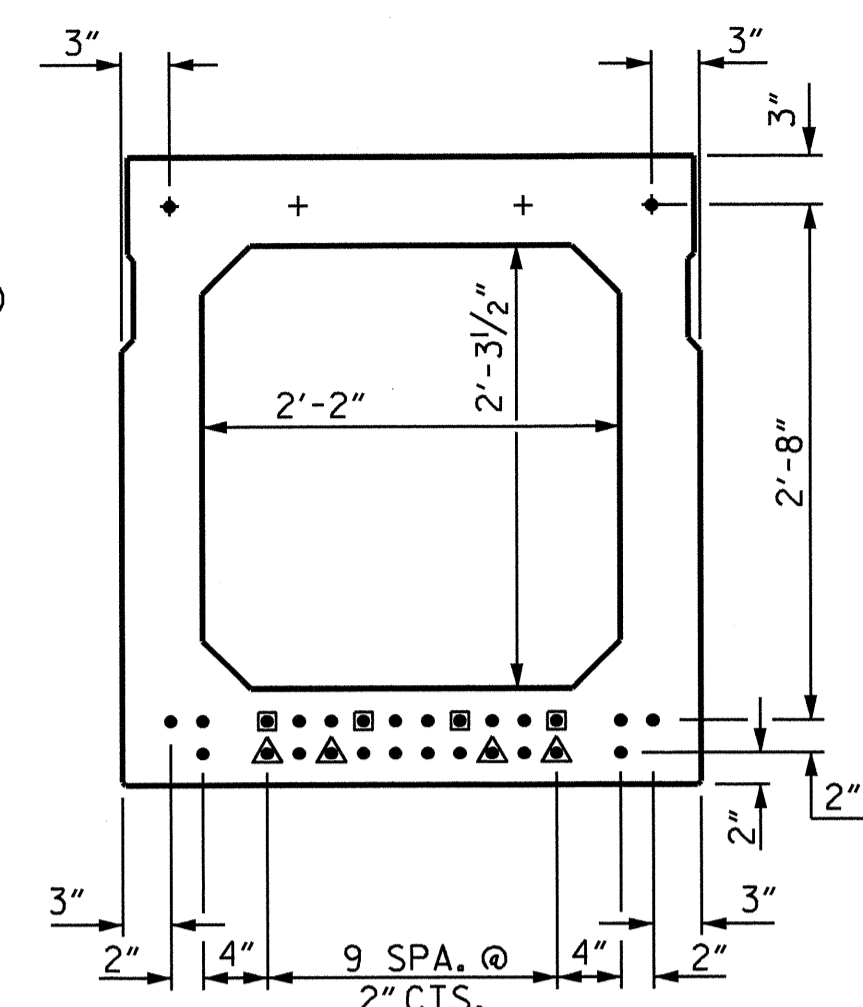
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

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

DEBONDING LEGEND

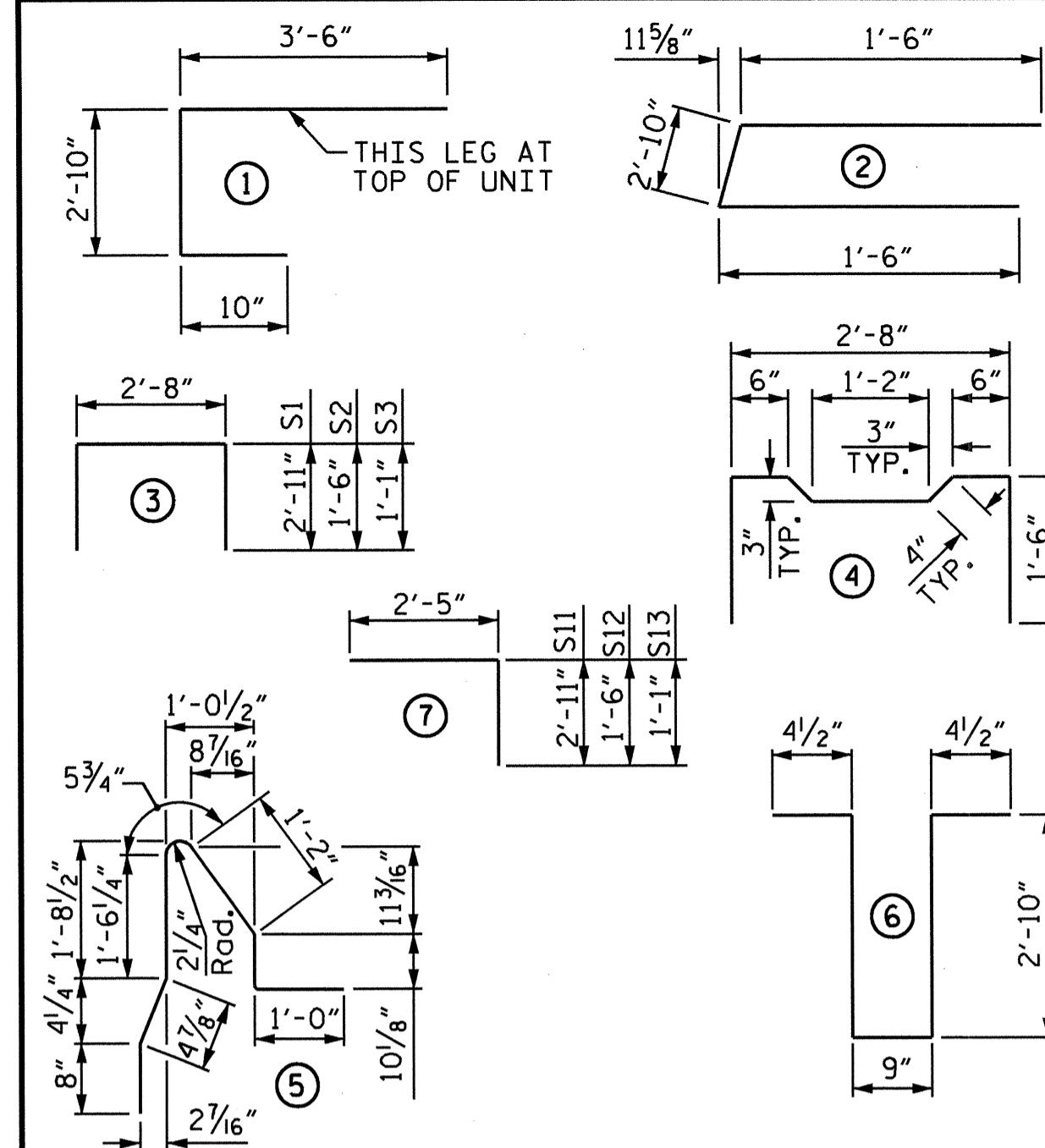
- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- △ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

GRADE 270 STRANDS

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

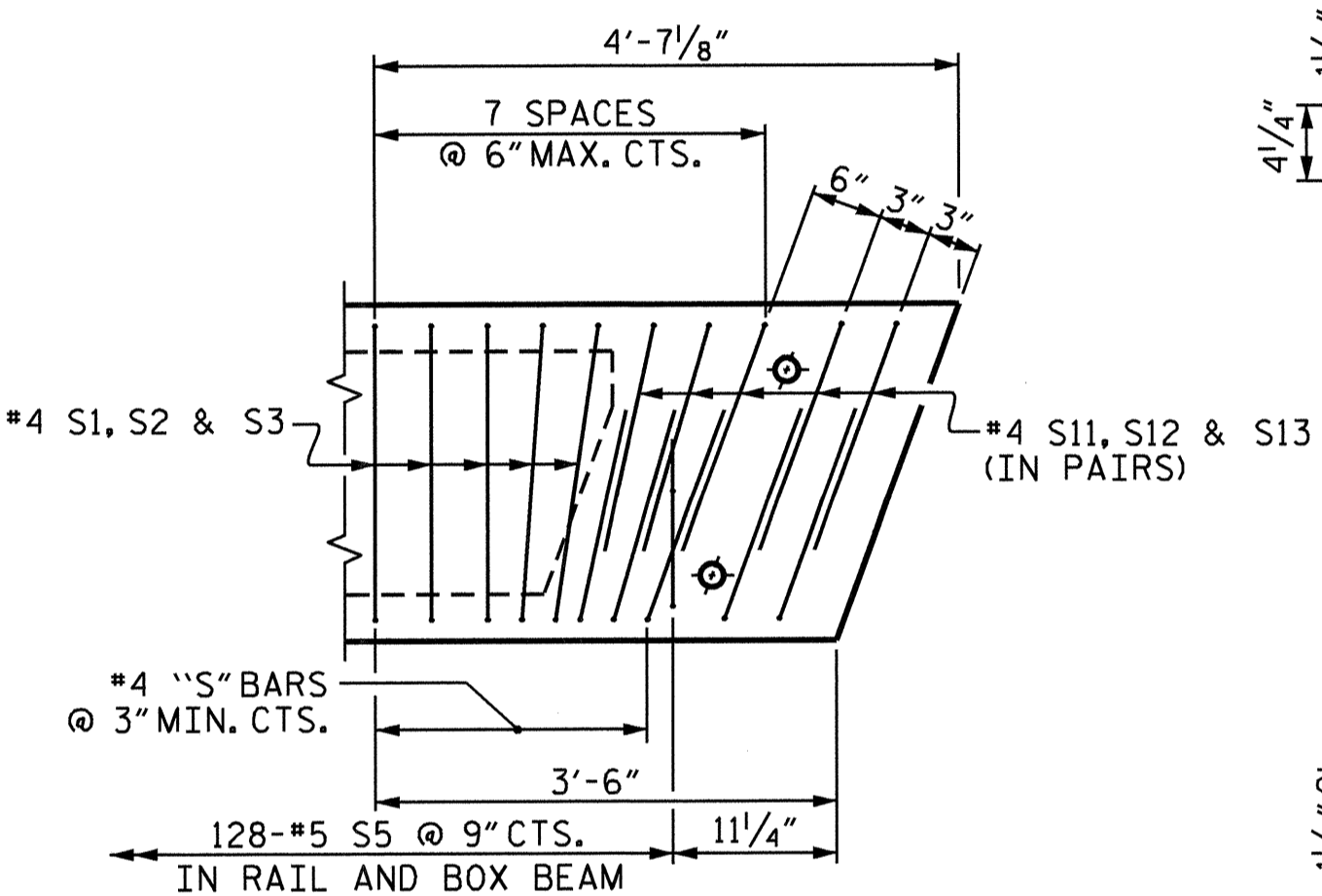
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

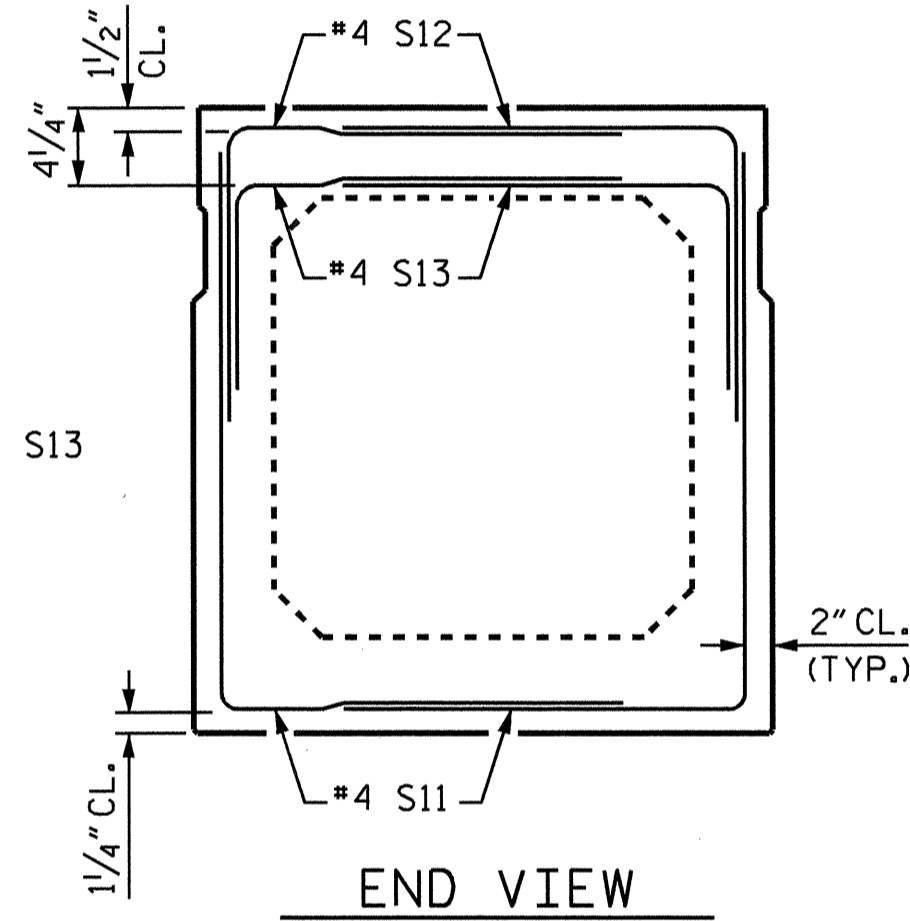
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
			LENGTH	WEIGHT	LENGTH	WEIGHT
A1	#5	1	7'-2"	75	7'-2"	75
A2	#4	2	5'-10"	171	5'-10"	171
B1	#5	STR	49'-9"	623	49'-9"	623
K1	#4	6	7'-2"	72	7'-2"	72
K2	#4	STR	2'-8"	18	2'-8"	18
S1	#4	3	8'-6"	397	8'-6"	397
S2	#4	3	5'-8"	265	5'-8"	265
S3	#4	3	4'-10"	416	4'-10"	416
S4	#4	4	5'-10"	230	5'-10"	230
S11	#4	7	5'-4"	71	5'-4"	71
S12	#4	7	3'-11"	52	3'-11"	52
S13	#4	7	3'-6"	47	3'-6"	47
* S5	#5	5	6'-1"	812	--	--
REINFORCING STEEL			2437 LBS.		2437 LBS.	
* EPOXY COATED REINF. STEEL			812 LBS.			
7000 P.S.I. CONCRETE			19.2 CU. YDS.		19.1 CU. YDS.	
0.6" Ø L.R. STRANDS			No. 28		No. 28	



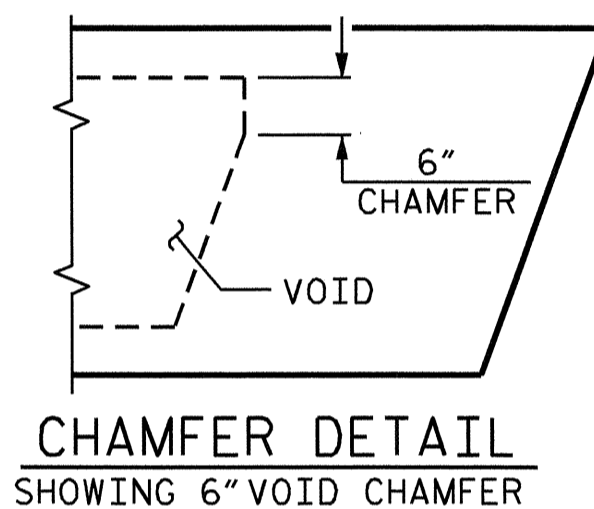
DETAIL "B"

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



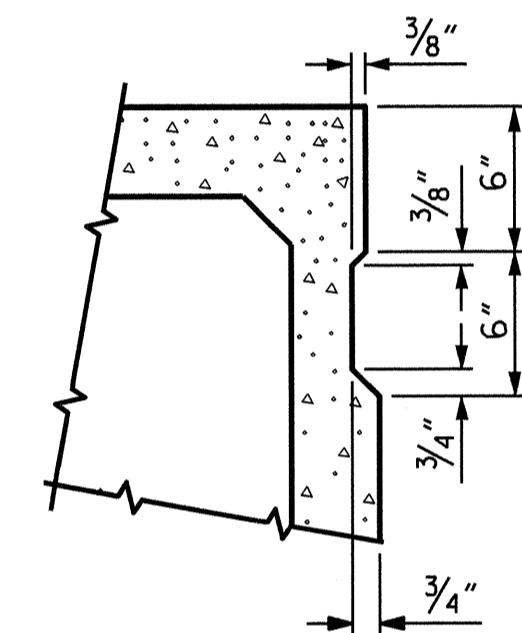
END VIEW

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



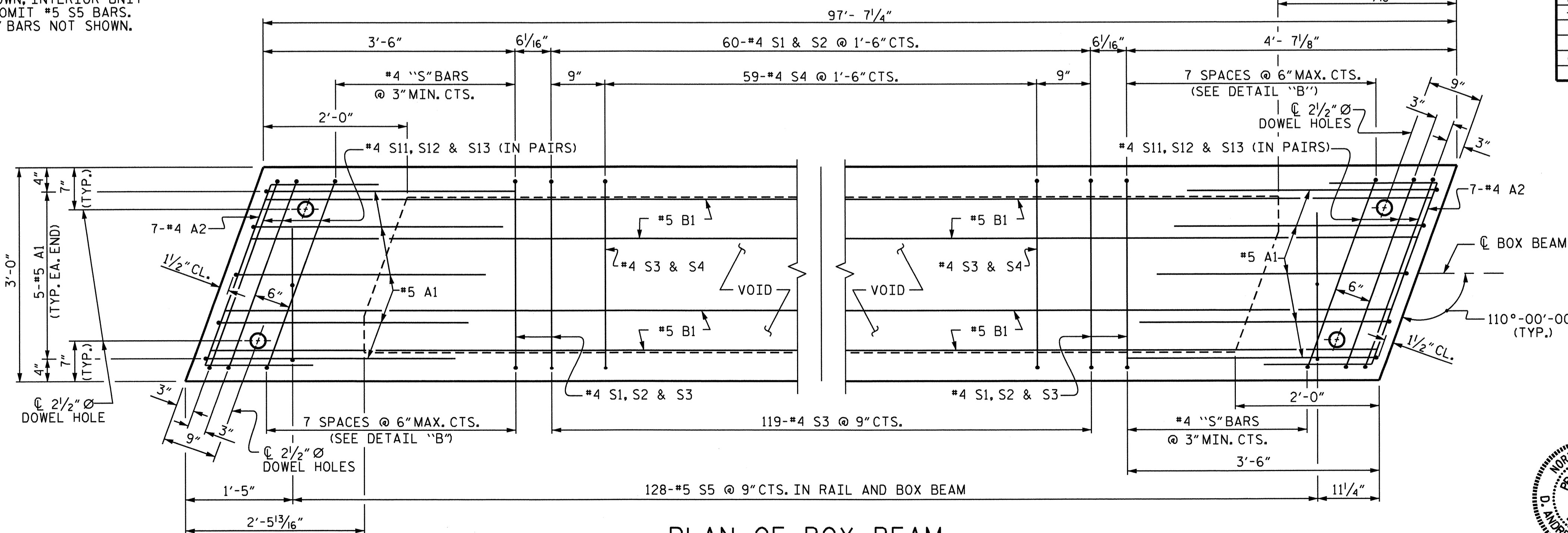
CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



SHEAR KEY DETAIL

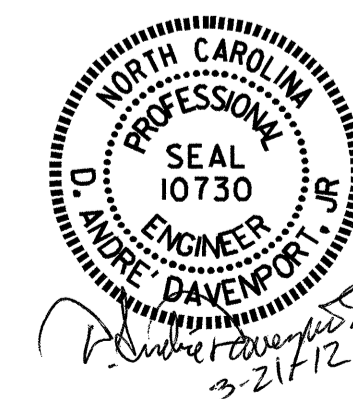
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



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.

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 1-04-11
CHECKED BY : D.A. GLADDEN	DATE : 1-12-11
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



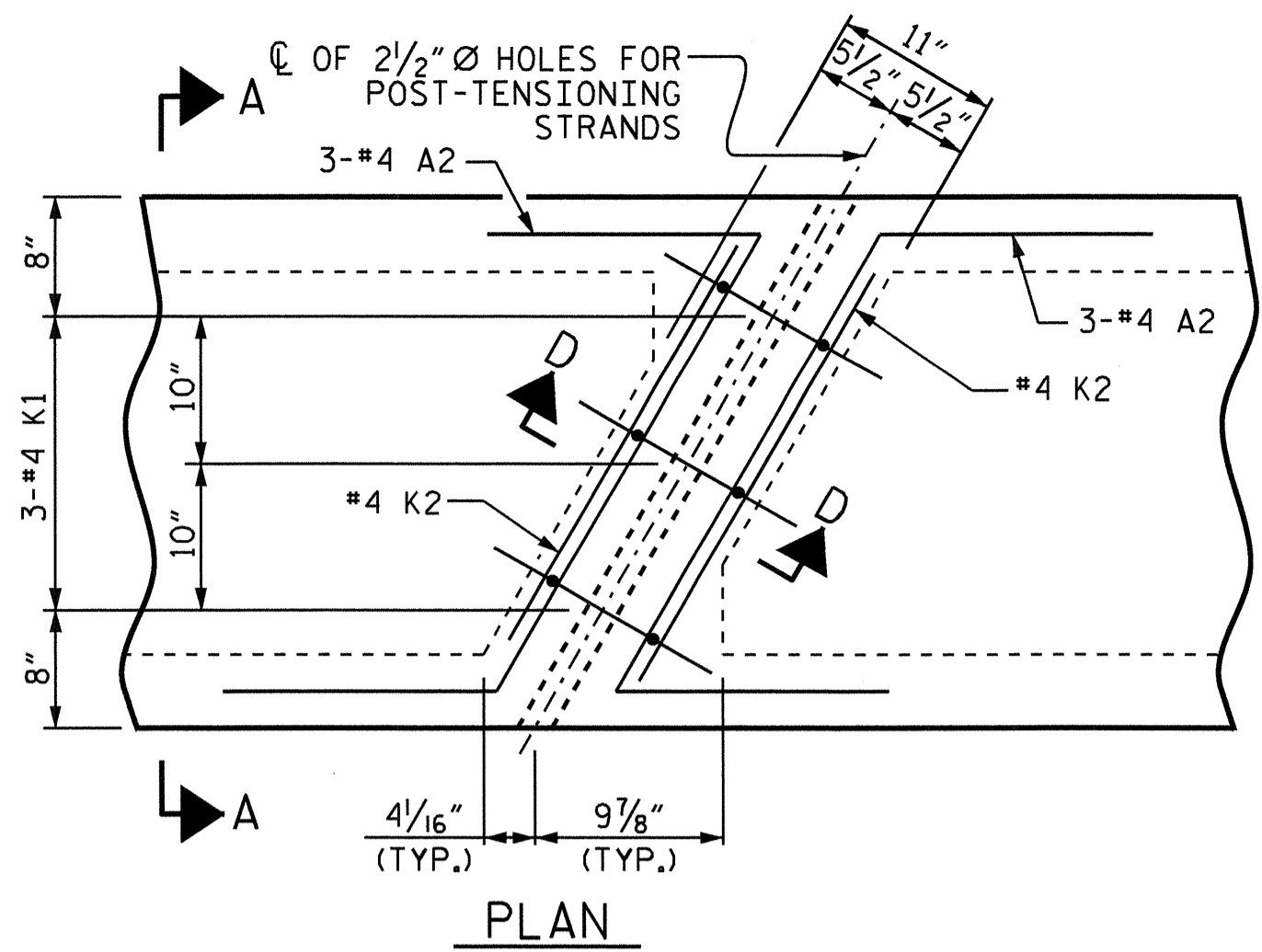
PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 4 OF 6

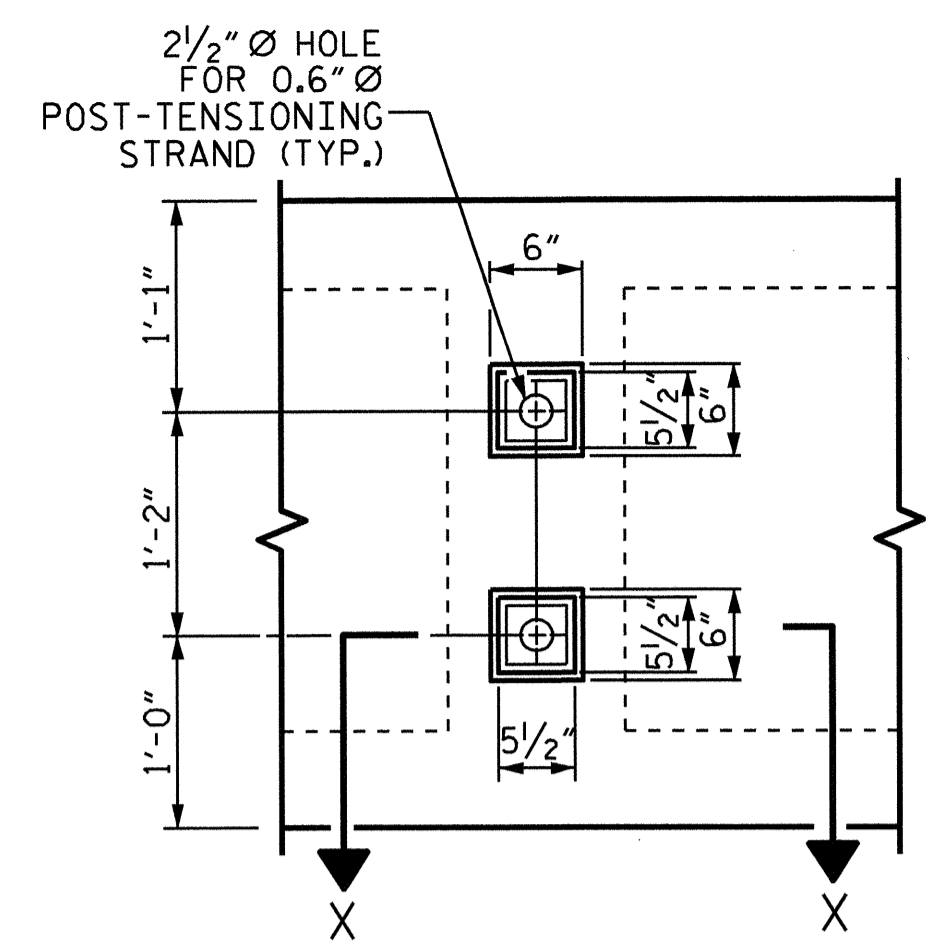
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 20
2			4			

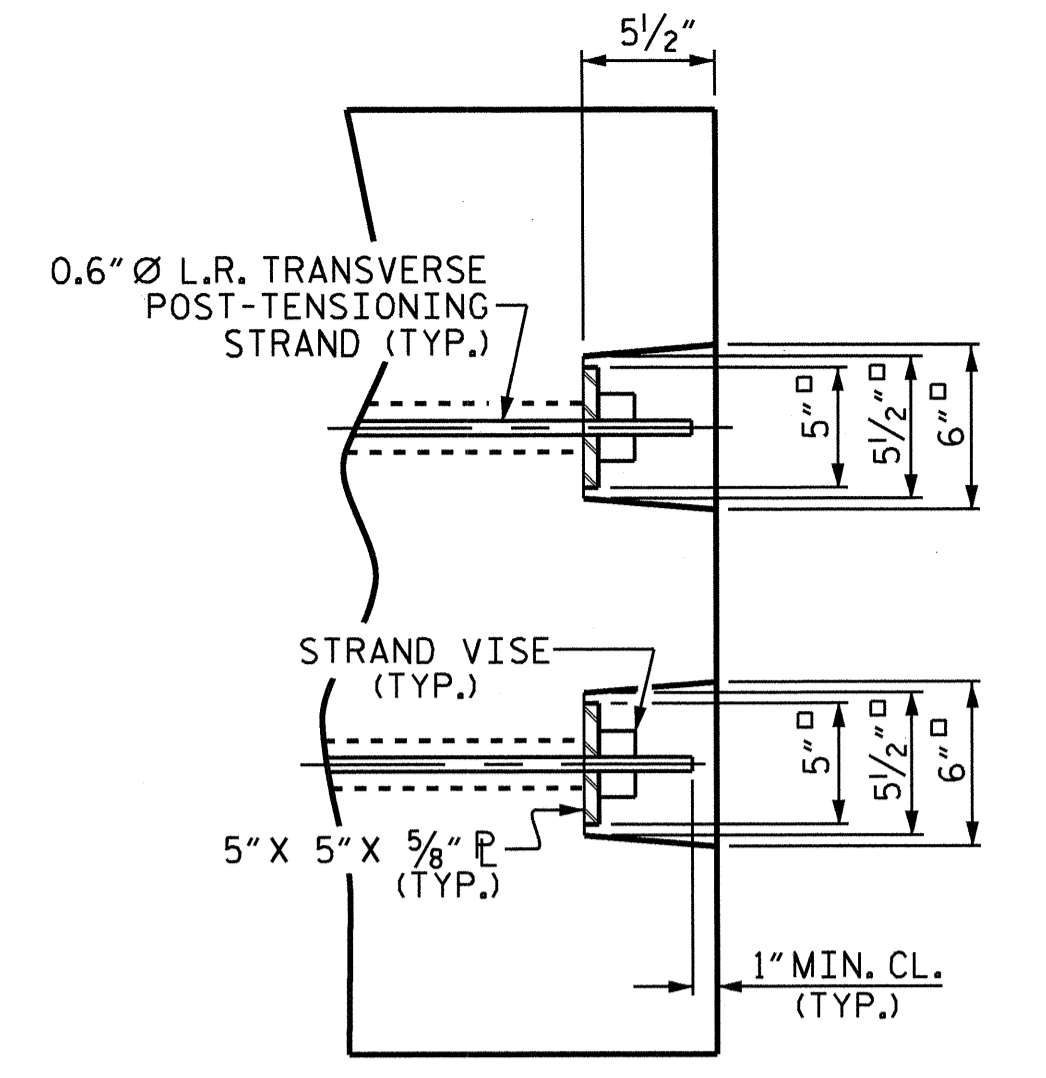
(SHT 2) STD. NO. PCBB6



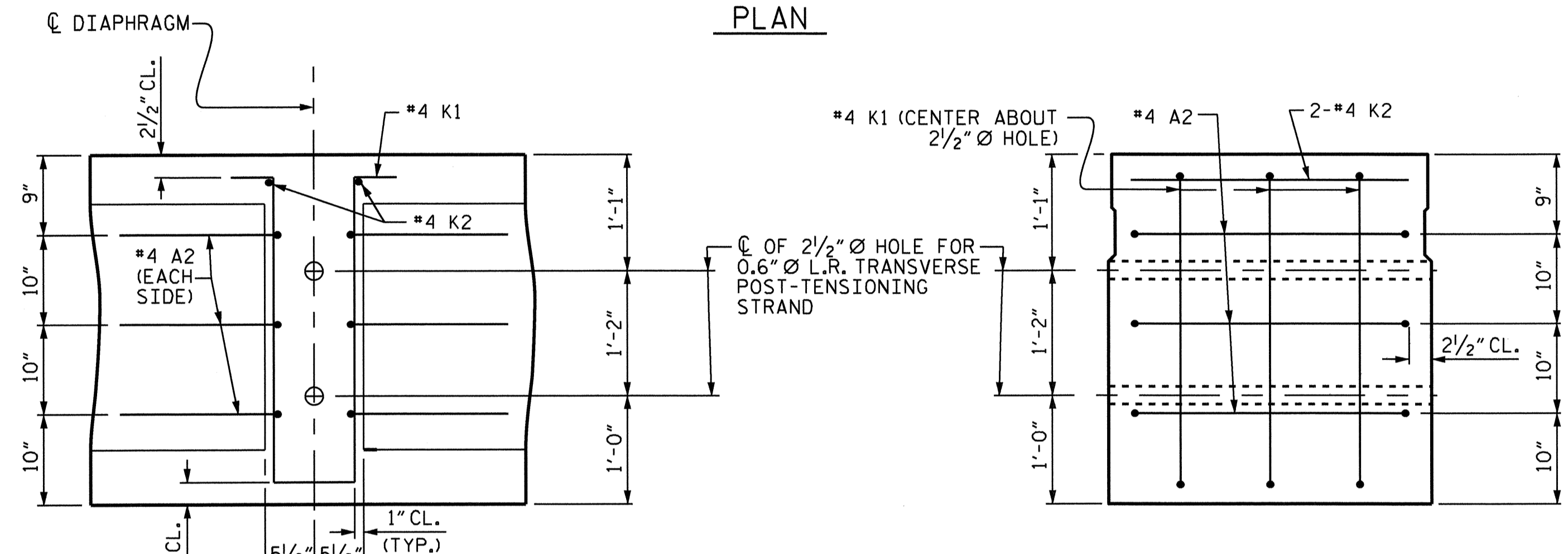
PLAN



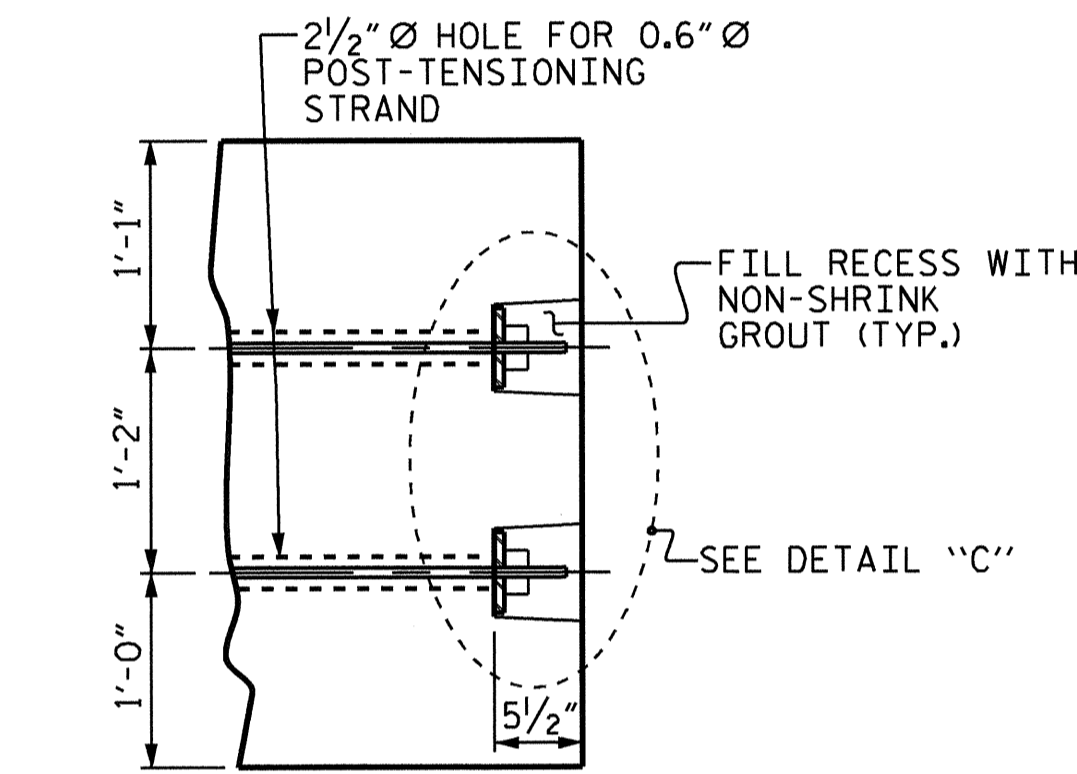
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



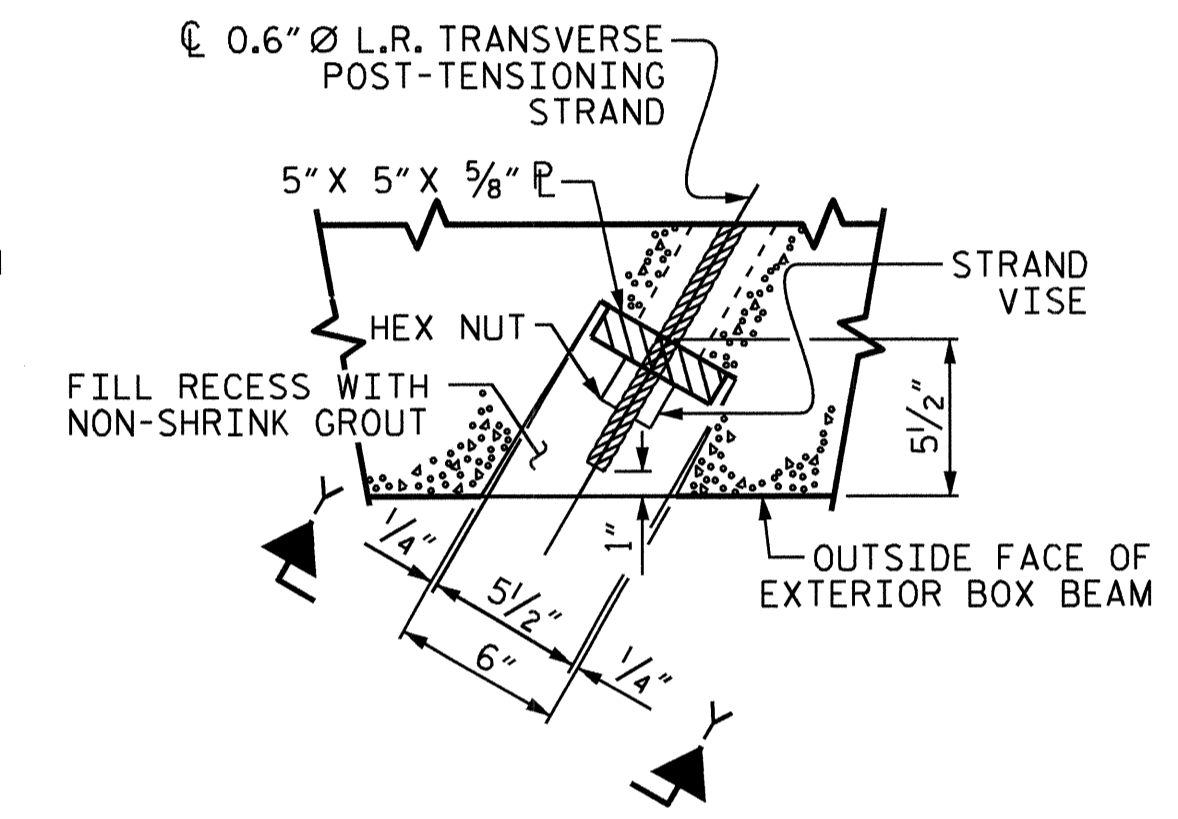
DETAIL "C"



SECTION A-A
VOIDS NOT SHOWN



PART SECTION AT RECESS

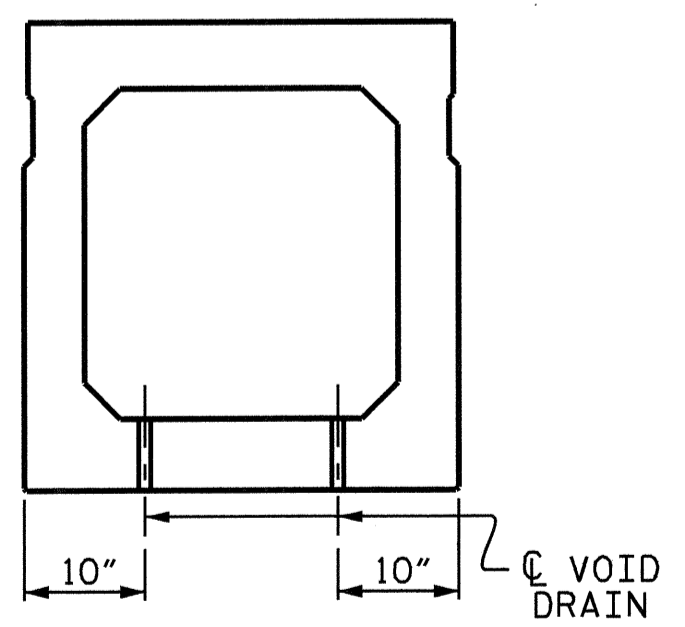


SECTION X-X

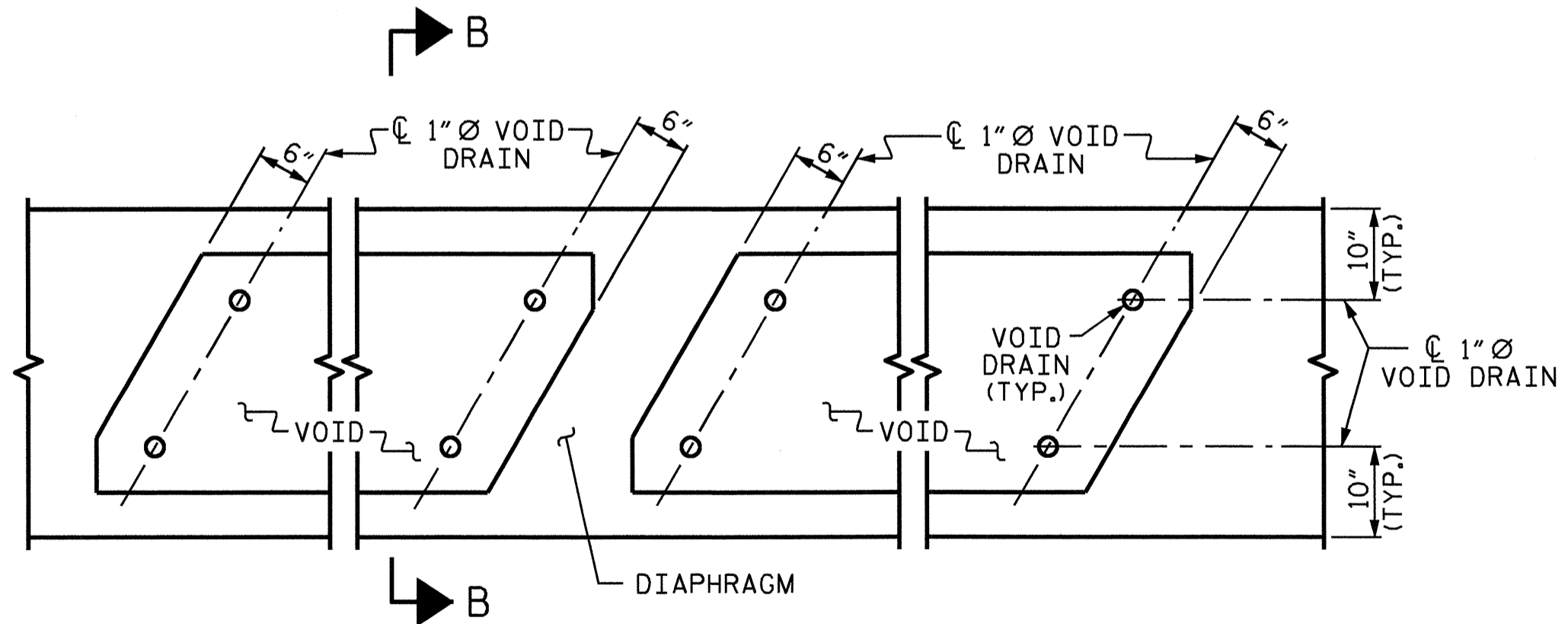
DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.

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



SECTION B-B



PART PLAN

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

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
	0.6" Ø L.R. STRAND
	SPAN "A"
CAMBER (BEAM ALONE IN PLACE)	↑ 3 7/8"
DEFLECTION DUE TO CONCRETE WEARING SURFACE	↓ 9/16"
FINAL CAMBER	↑ 3 1/4"

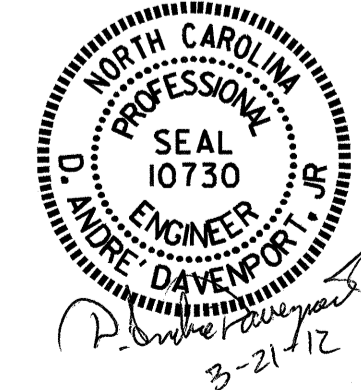
PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

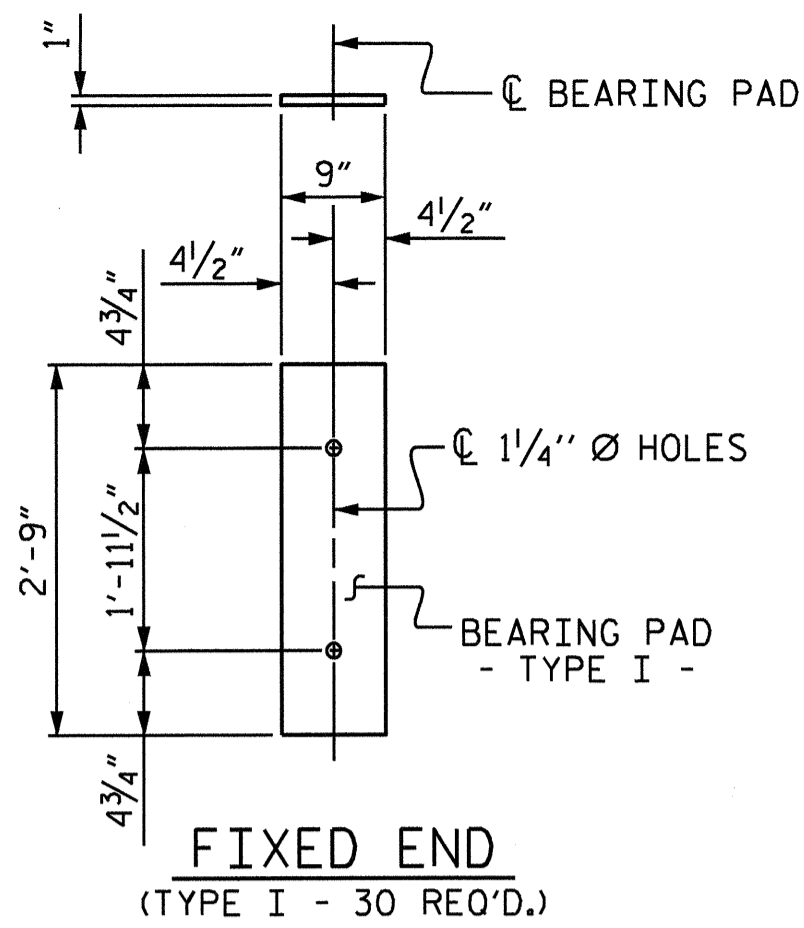
**3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			20

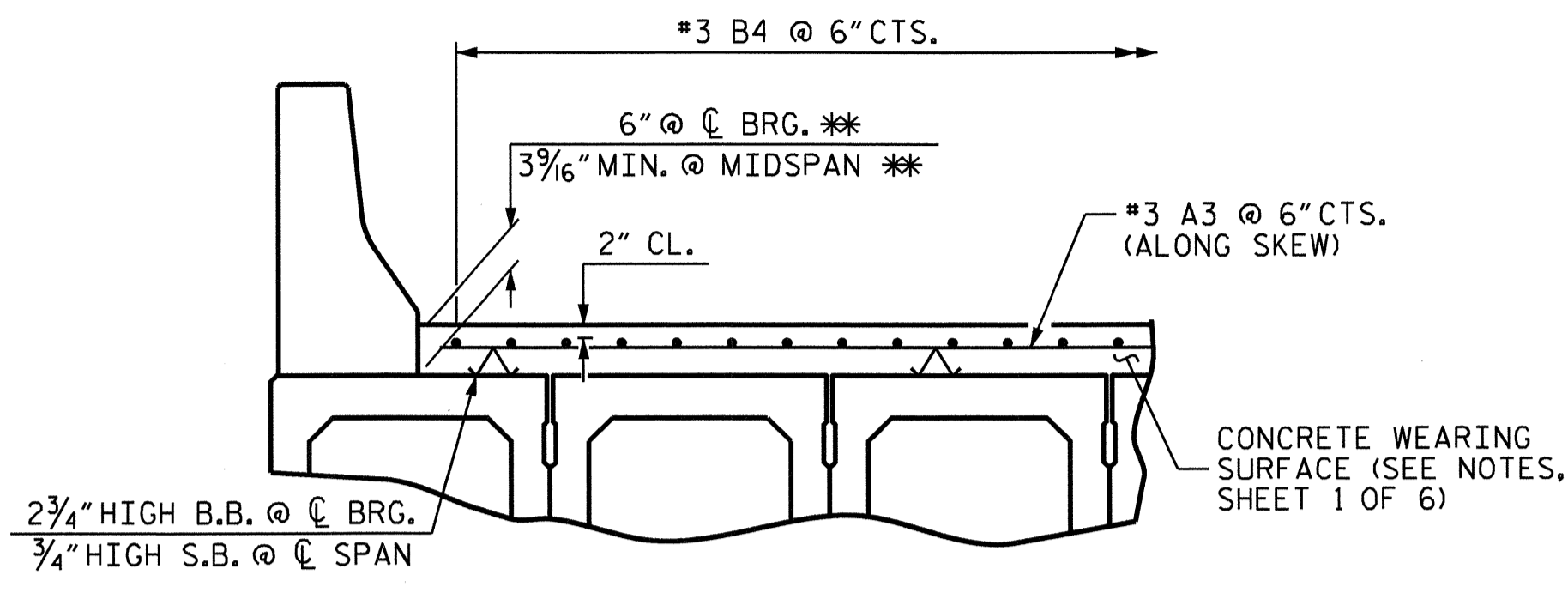


ASSEMBLED BY : E.C. LOCKLEAR DATE : 1-04-11
 CHECKED BY : D.A. GLADDEN DATE : 1-12-11
 DRAWN BY : TLA 5/05
 CHECKED BY : CM 6/05

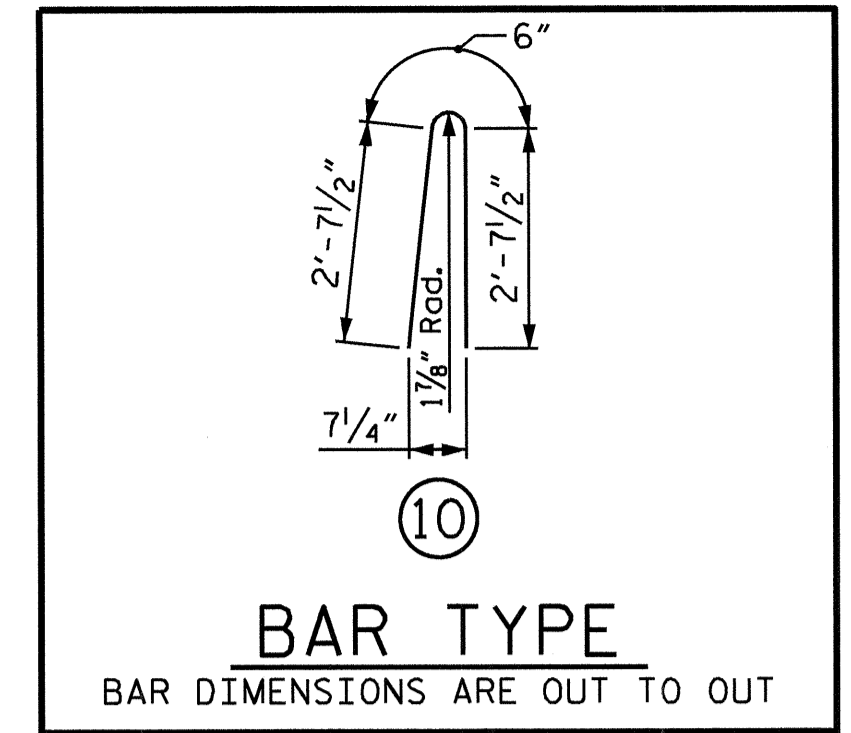
ADDED 7/11/05
 REV. 5/1/06
 REV. 10/1/11



ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



REINFORCING FOR CONCRETE WEARING SURFACE
** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



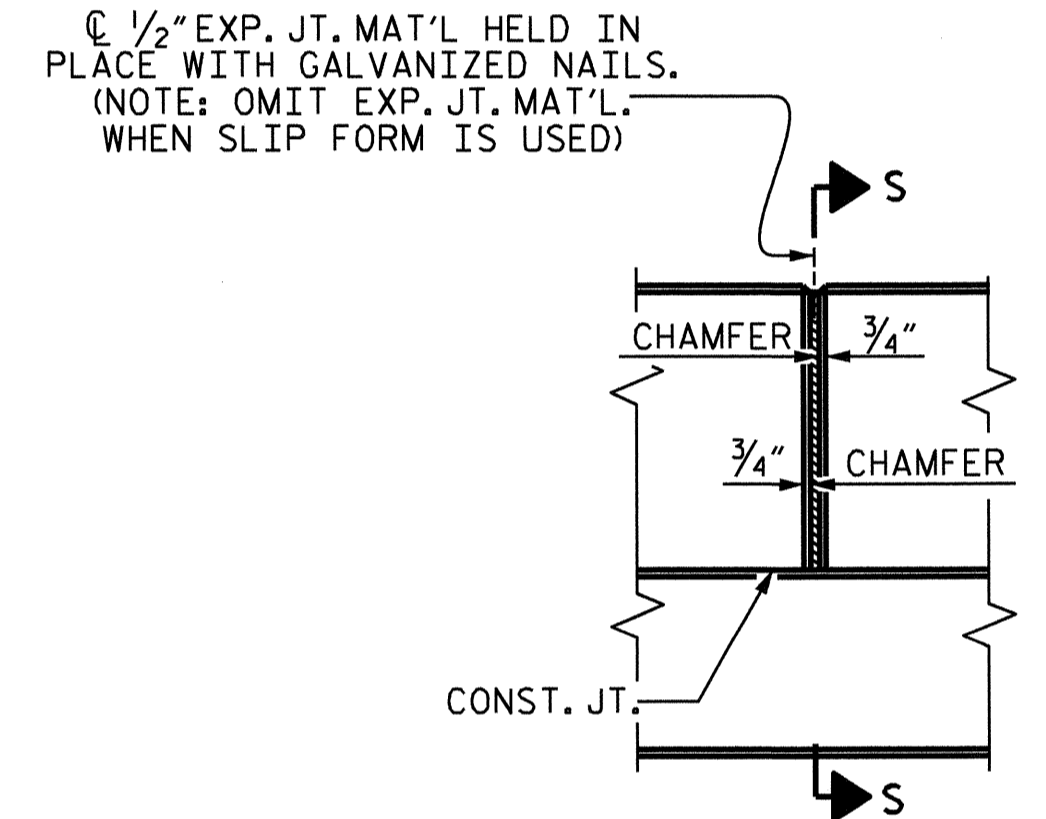
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	15	97'-7 1/4"	1464'-0 3/4"
TOTAL	15		1464'-0 3/4"

BAR	BARS PER SPAN	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B2	64	64	#5	STR	13'-9"	918
* B3	32	32	#5	STR	24'-7"	820
* S6	256	256	#5	10	5'-9"	1535
* EPOXY COATED REINFORCING STEEL						3273 LBS.
CLASS AA CONCRETE						24.0 CU. YDS.
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL						195.208

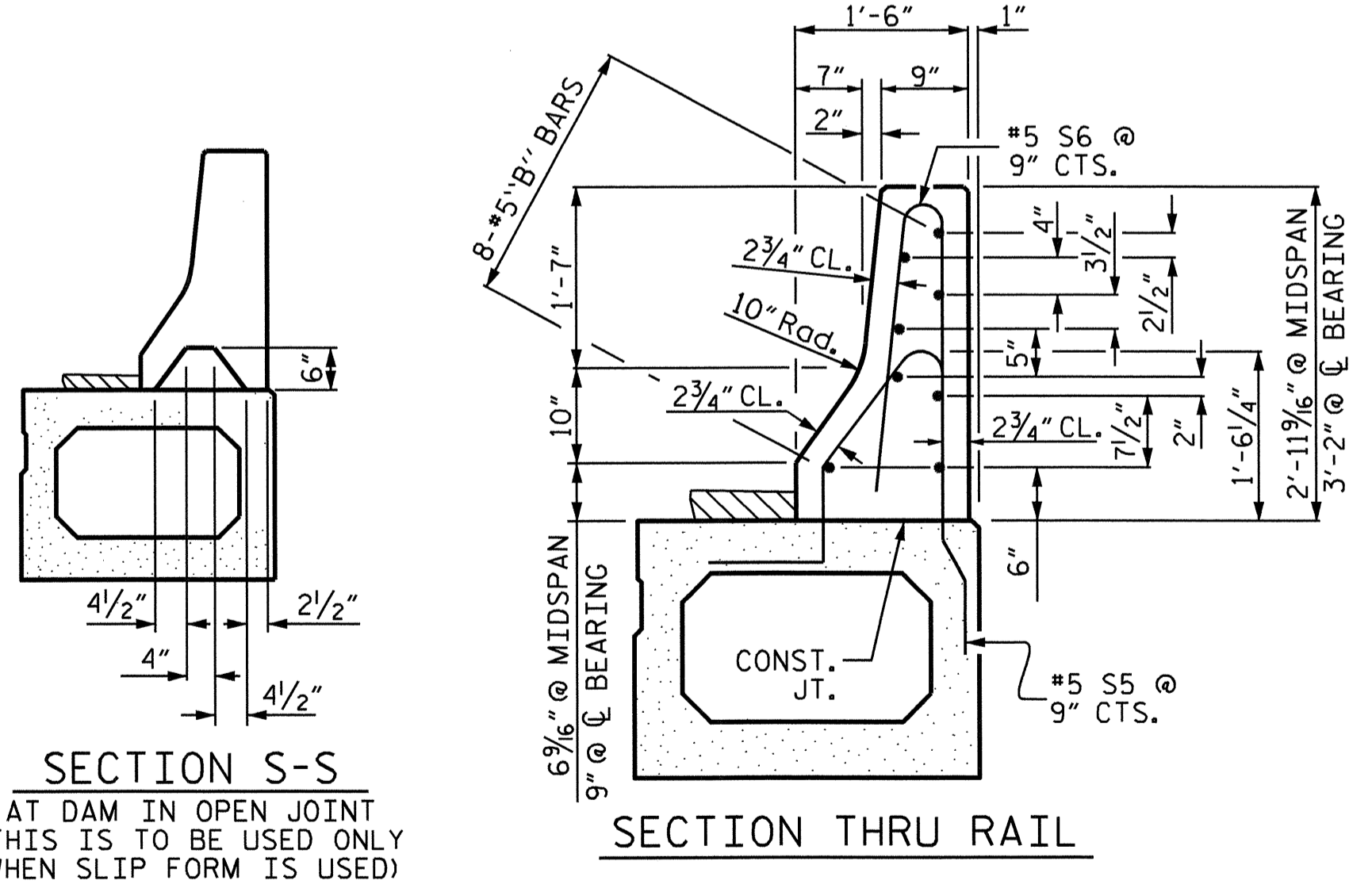
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	386	#3	STR	22'-9"	3302
* B4	332	#3	STR	25'-1"	3131
* EPOXY COATED REINFORCING STEEL					6433 LBS.
CONCRETE WEARING SURFACE					4042 SQ. FT.

APPROACH SLABS	1849	SQ. FT.
BRIDGE DECK	3739	SQ. FT.
TOTAL	5588	SQ. FT.

BAR SIZE	EPOXY COATED
#3	1'-3"
#4	1'-8"

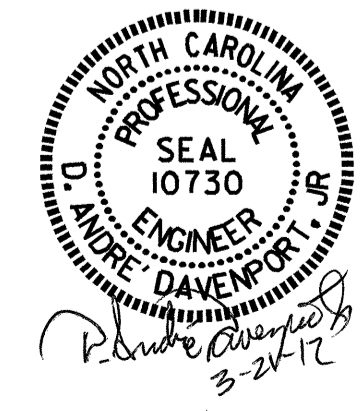


ELEVATION AT EXPANSION JOINTS



BARRIER RAIL DETAILS

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-
 SHEET 6 OF 6



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 1-04-11
CHECKED BY : D.A. GLADDEN	DATE : 1-12-11
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06RR
	REV. 10/1/11
	TLA/GM
	MAA/GM

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 3/8" 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 3/8" 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.)

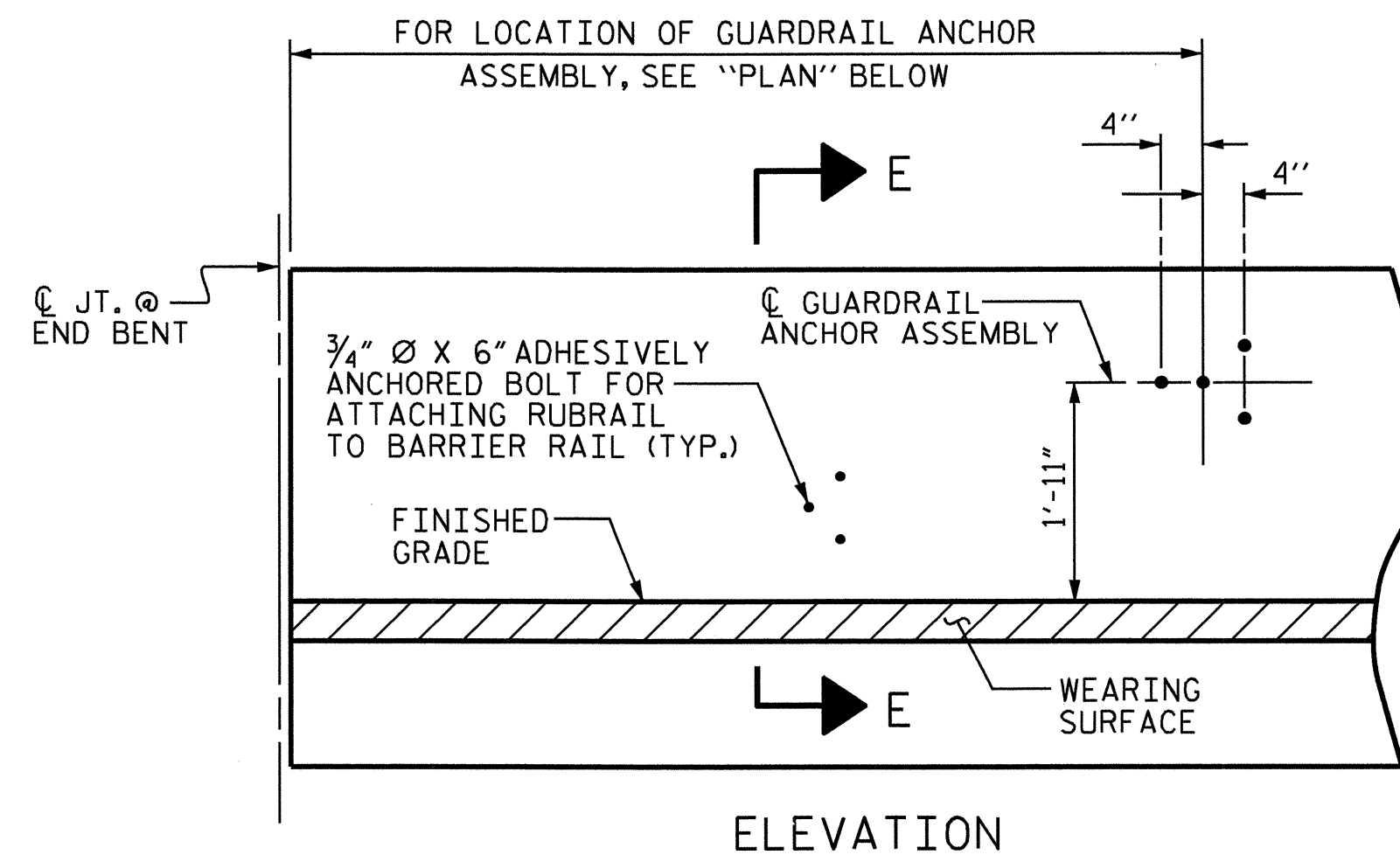
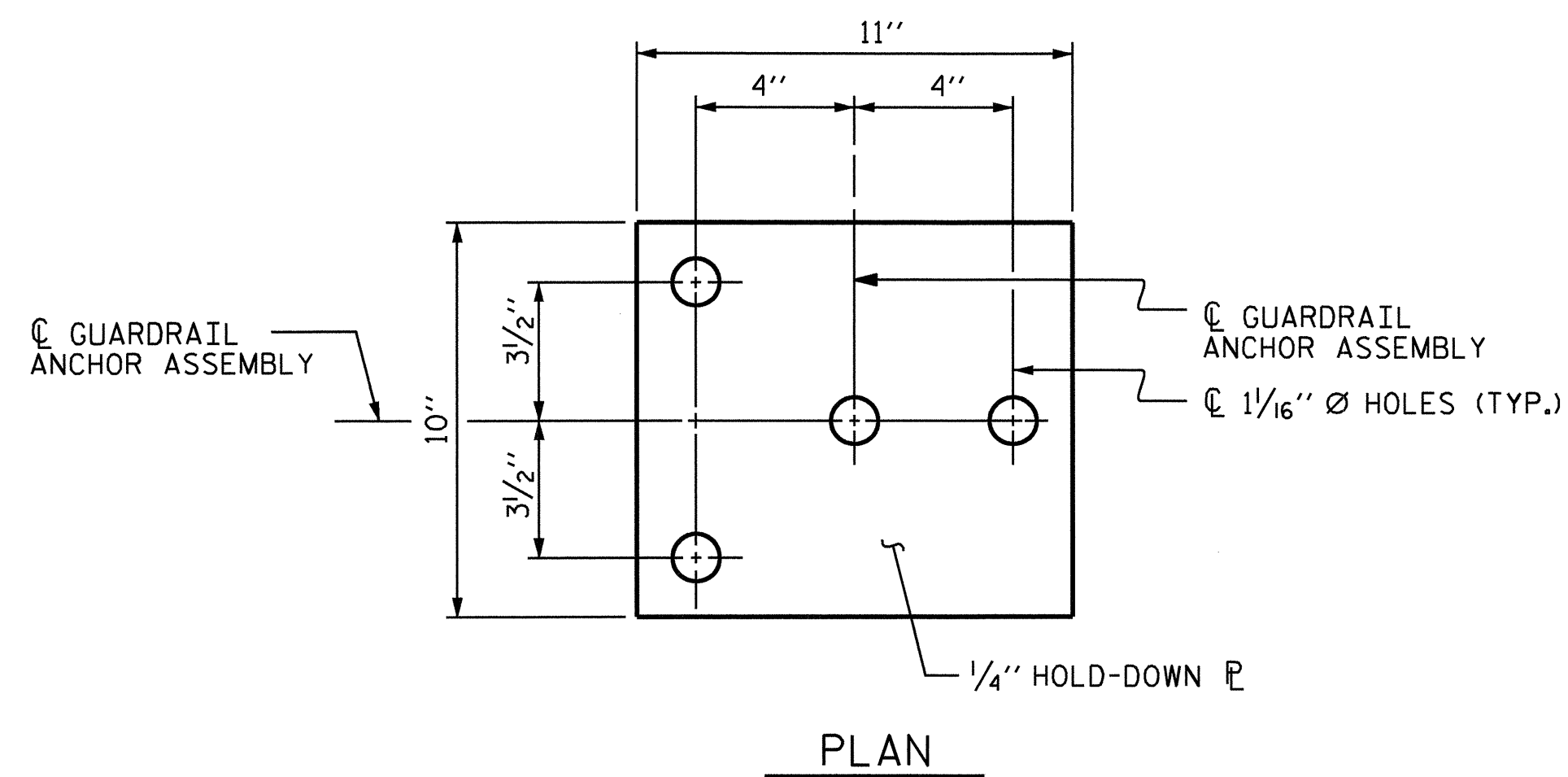
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

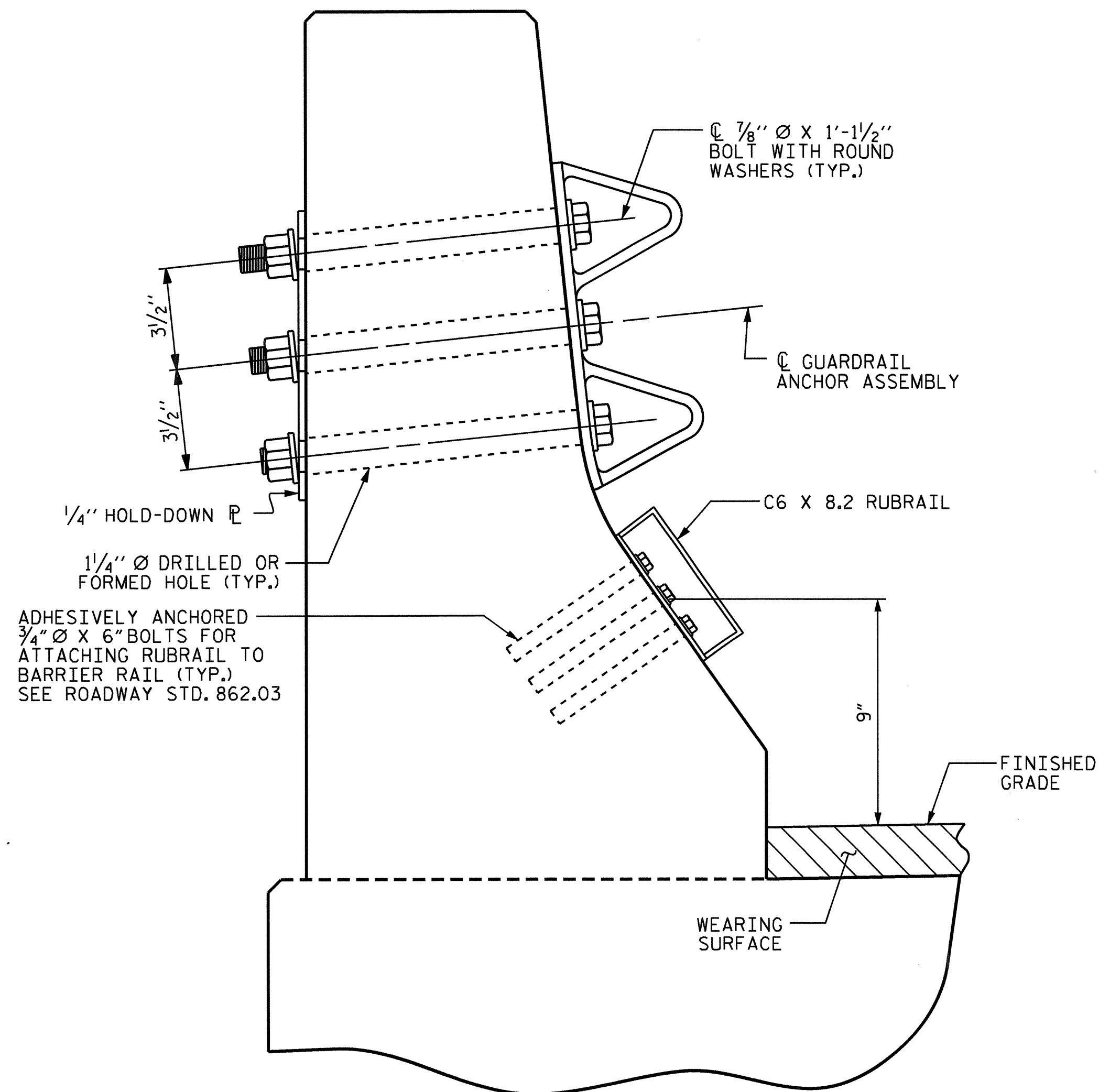
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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 STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

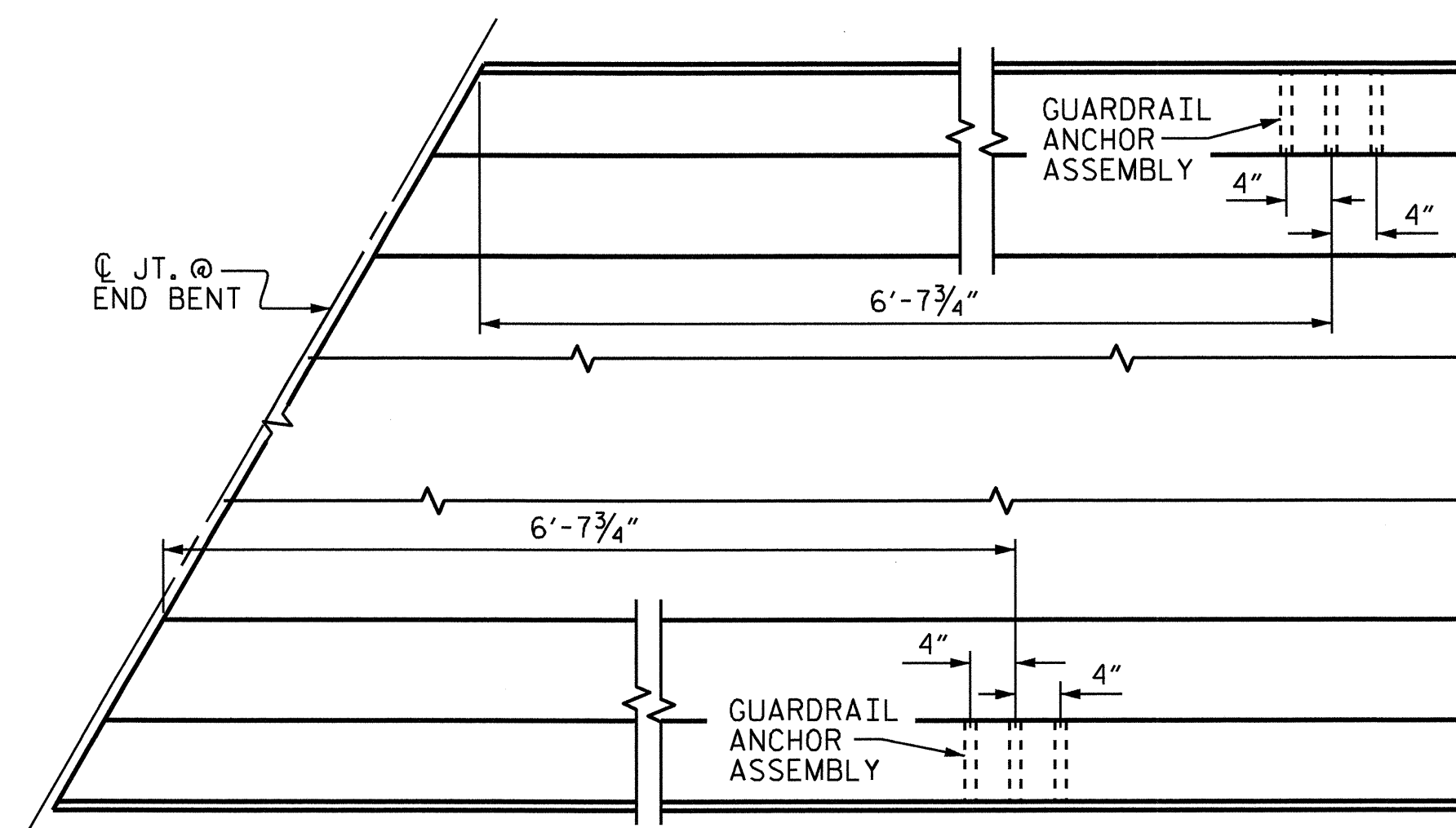


FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

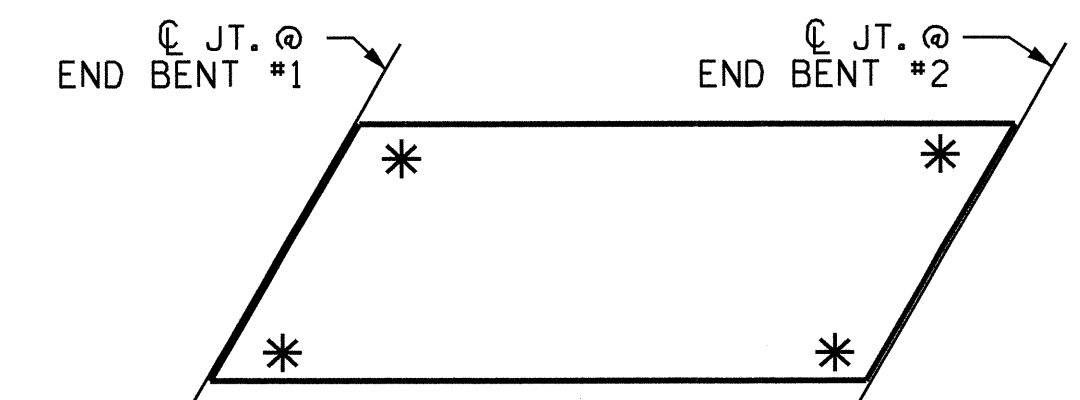
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

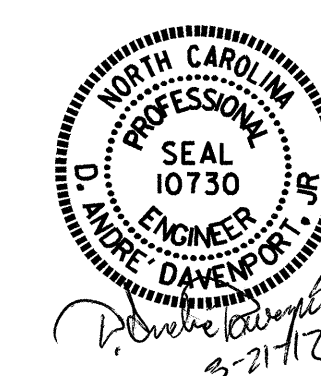
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-

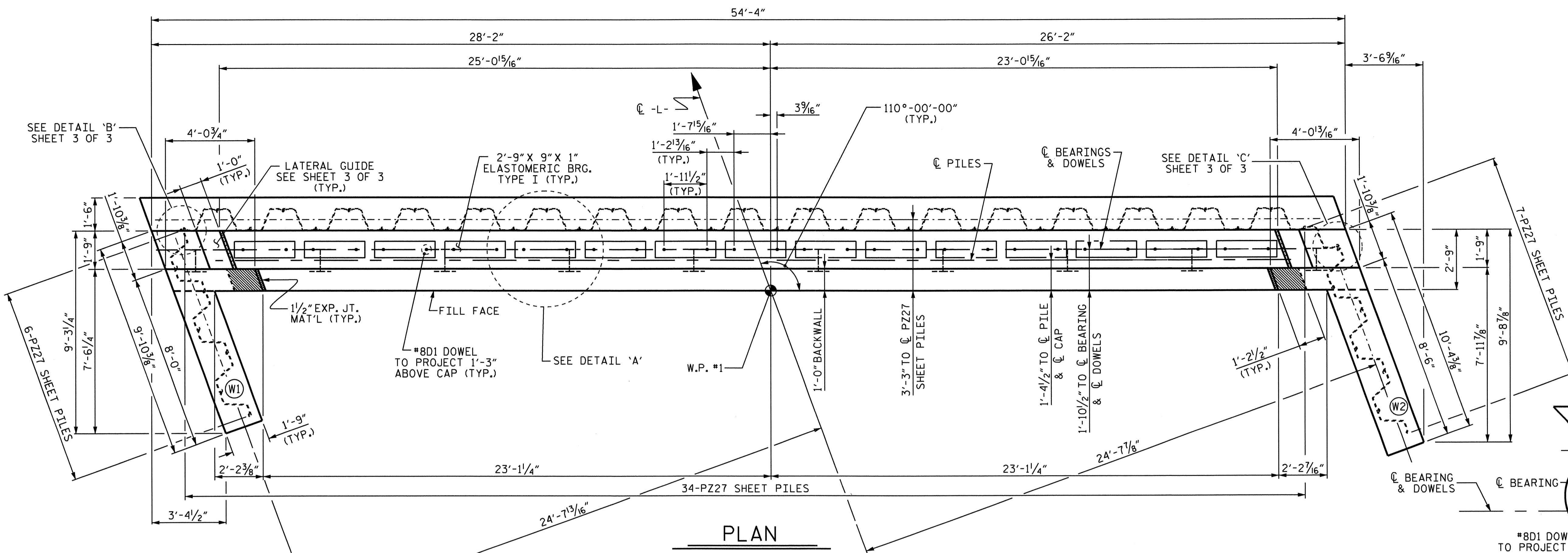
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

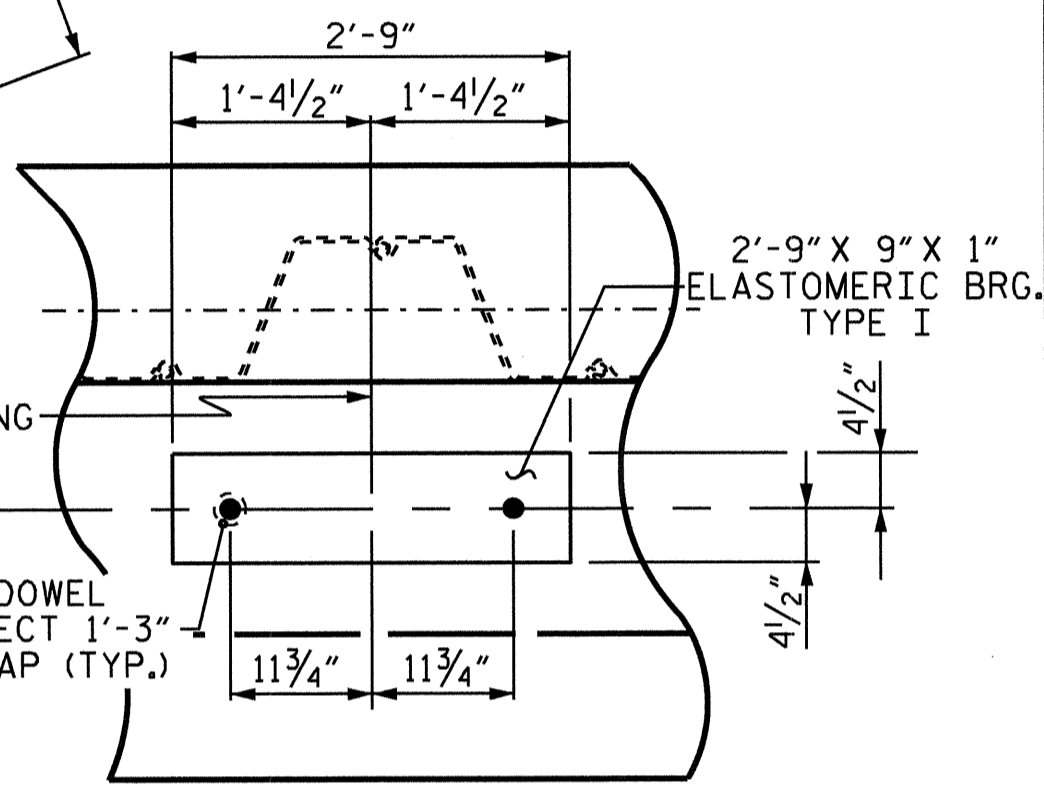
REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			



ASSEMBLED BY : D.A. DAVENPORT	DATE : 12/08/12
CHECKED BY : D.A. GLADDEN	DATE : 12/08/12
DRAWN BY : TLA 5/06	ADDED 5/1/06RR KMM/GM
CHECKED BY : GM 5/06	REV. 10/1/11 MAA/GM



TOP OF PILE ELEVATIONS	
①	2667.865
②	2667.750
③	2667.636
④	2667.521
⑤	2667.407
⑥	2667.292
⑦	2667.178
⑧	2667.064
⑨	2666.949
⑩	2666.835

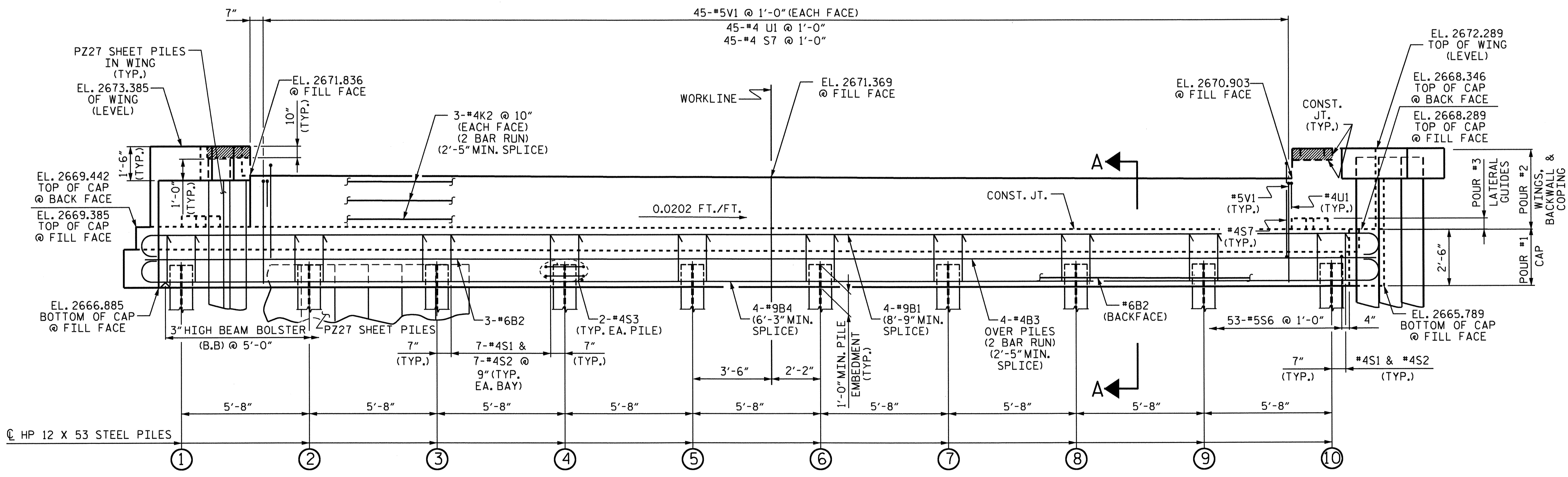


PLAN

DETAIL 'A'

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS 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 SHEET PILES AS REQUIRED FOR THE BRIDGE APPROACH FILLS, SEE APPROACH SLAB SHEET.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



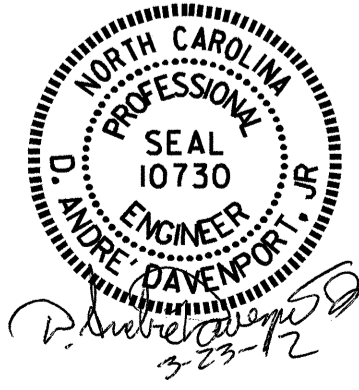
ELEVATION

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

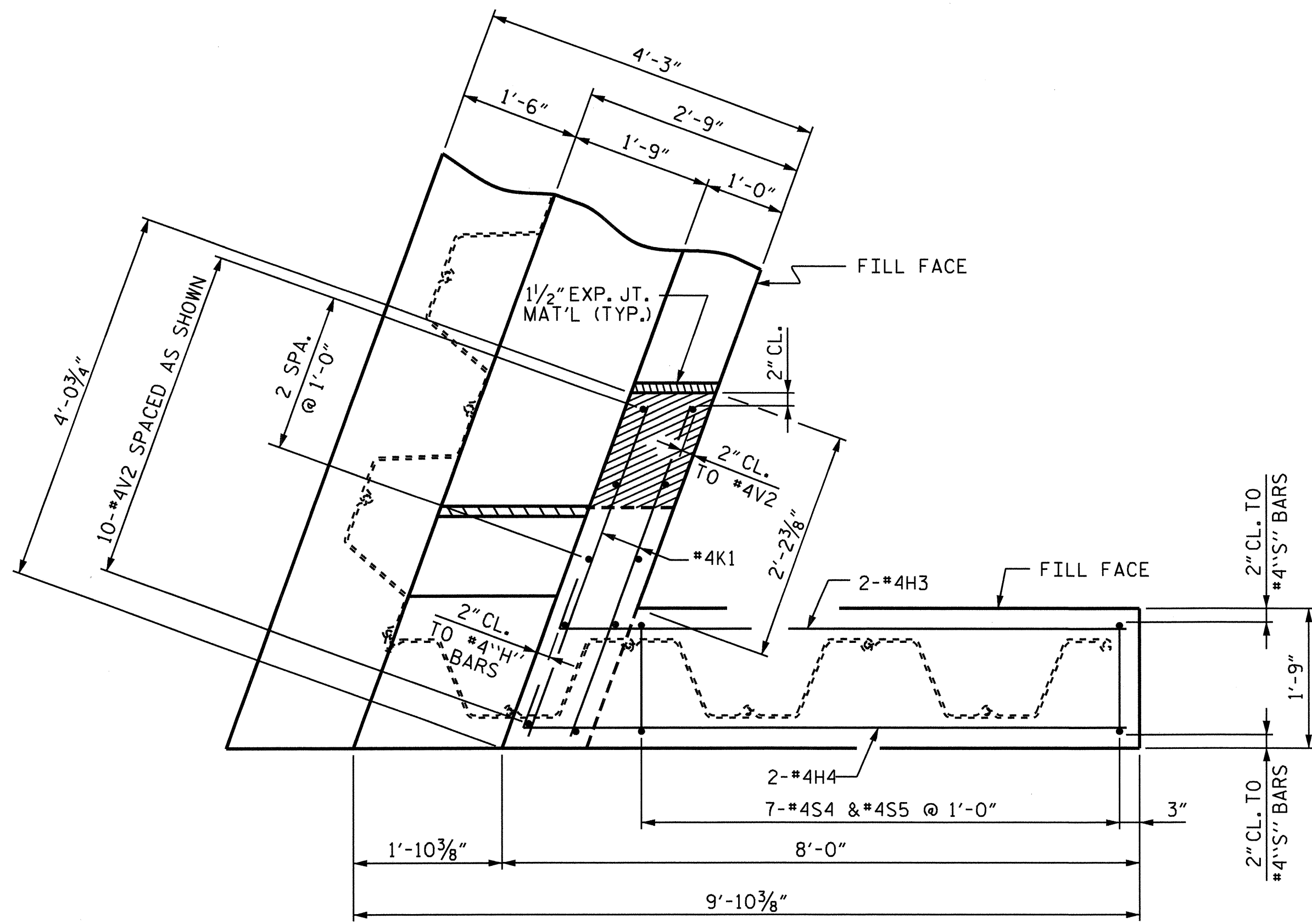
**SUBSTRUCTURE
 END BENT #1**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS 20	
2			4				

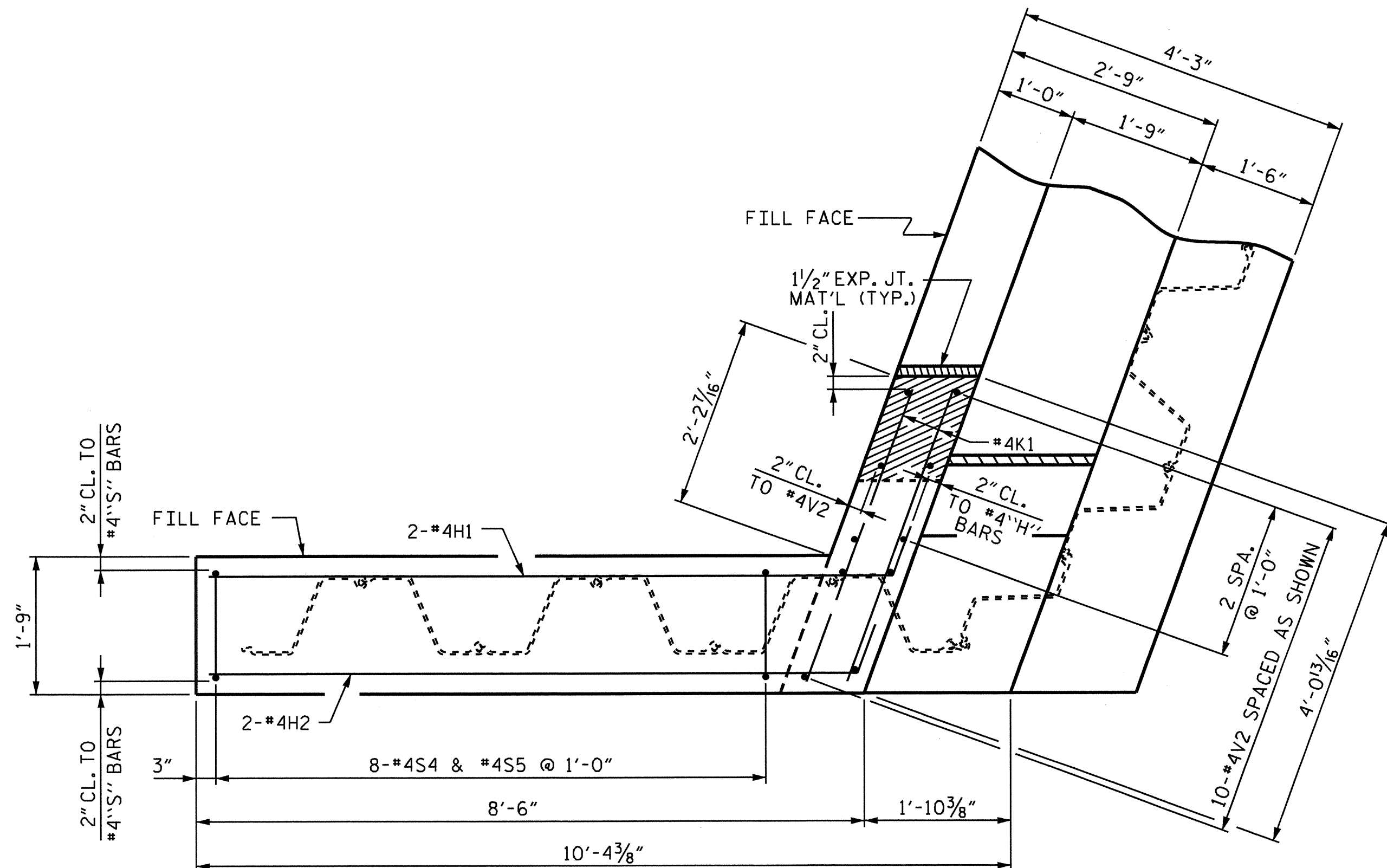


DRAWN BY : D.A. DAVENPORT DATE : 06/20/11
 CHECKED BY : D.A. GLADDEN DATE : 08/24/11

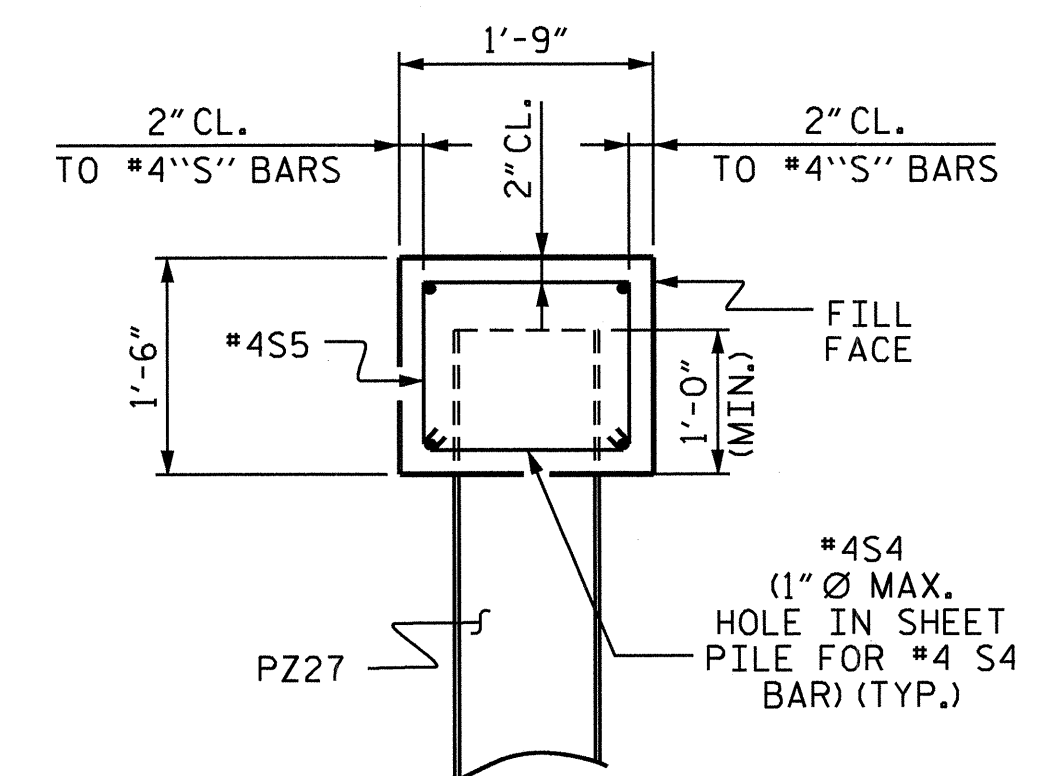
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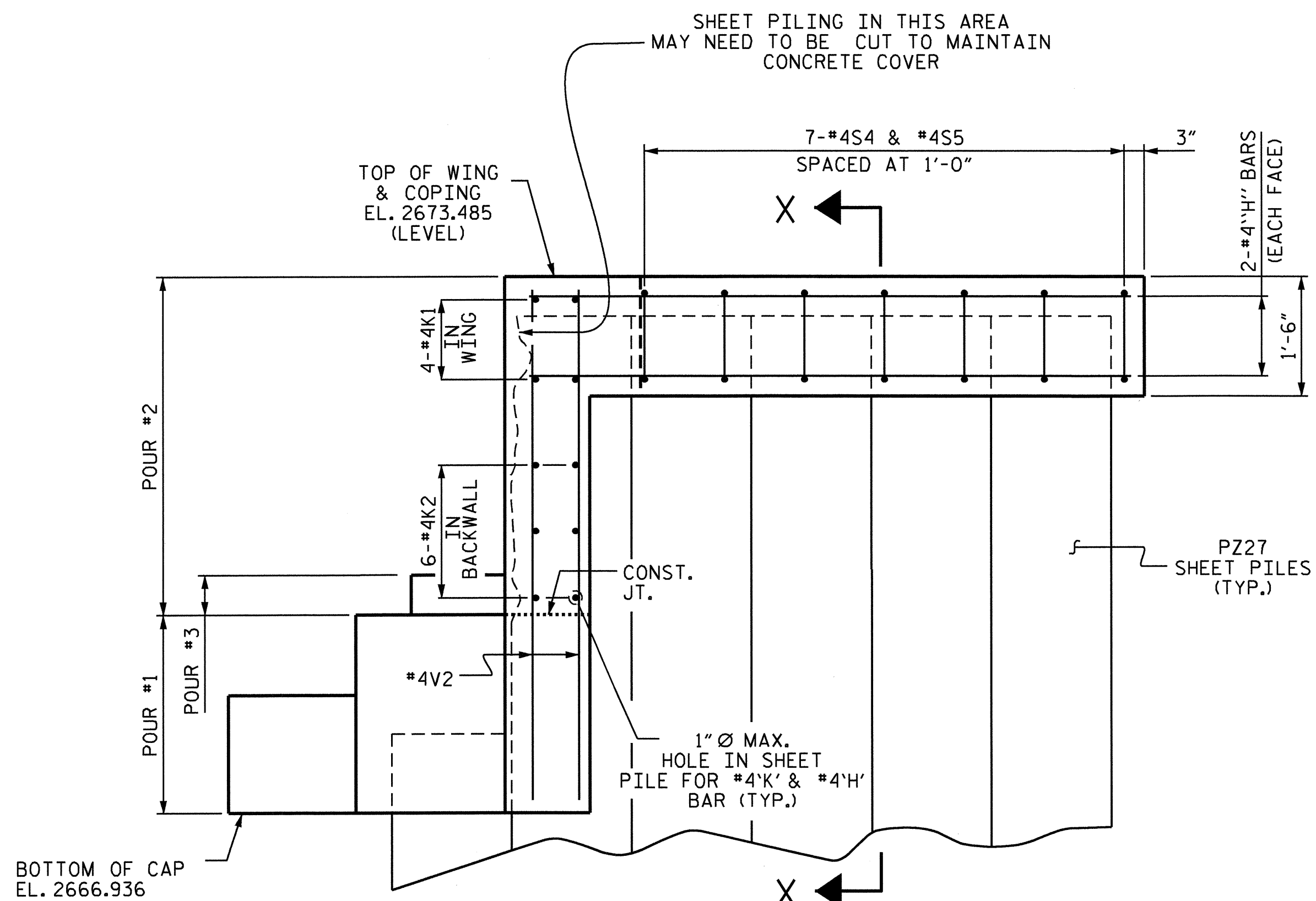
PLAN OF LEFT WING (W1)



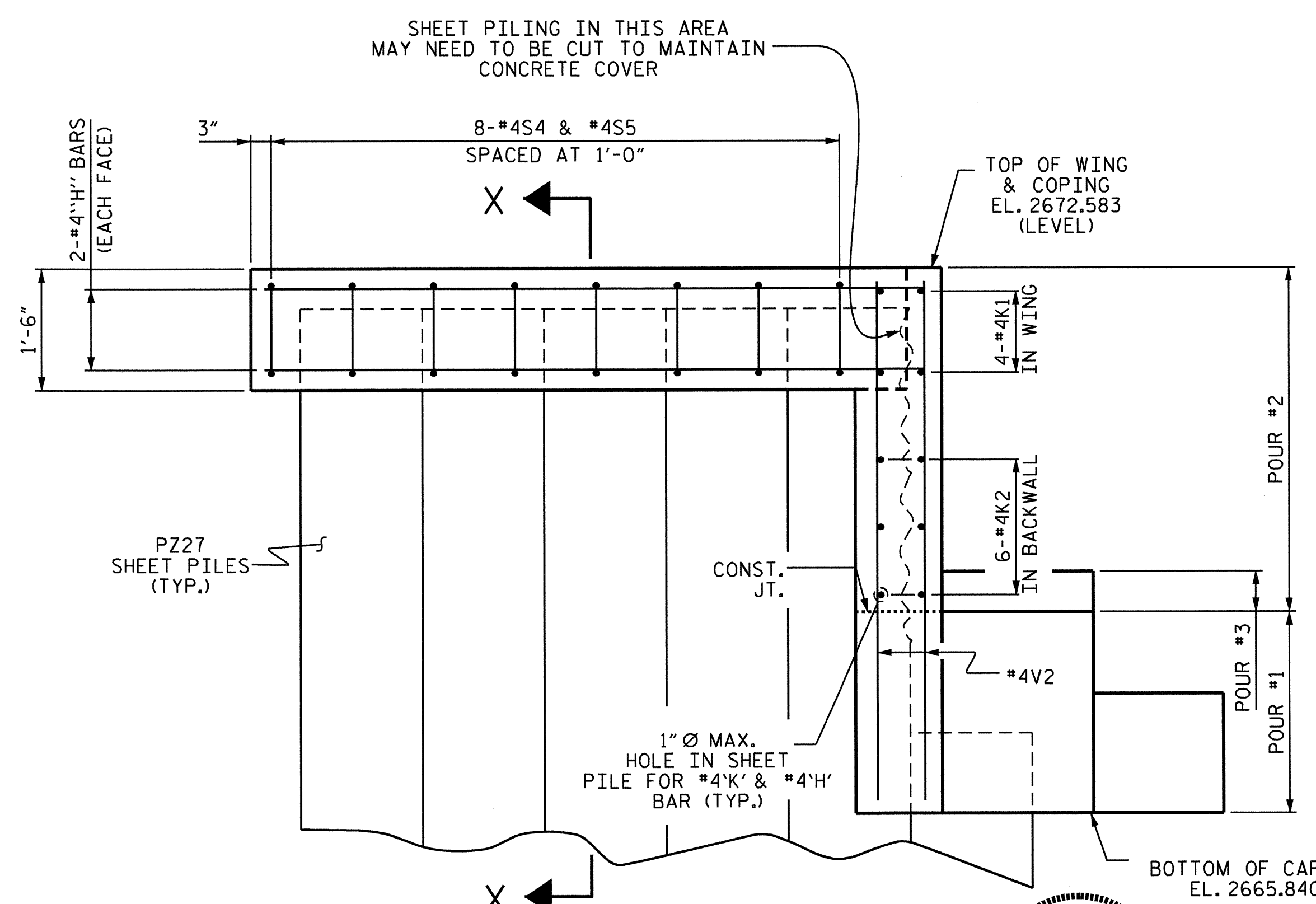
PLAN OF RIGHT WING (W2)



SECTION X-X



ELEVATION OF LEFT WING (W1)

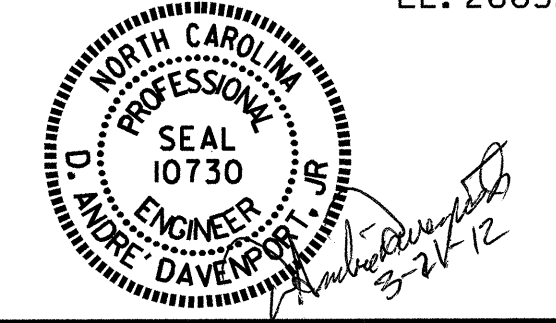


ELEVATION OF RIGHT WING (W2)

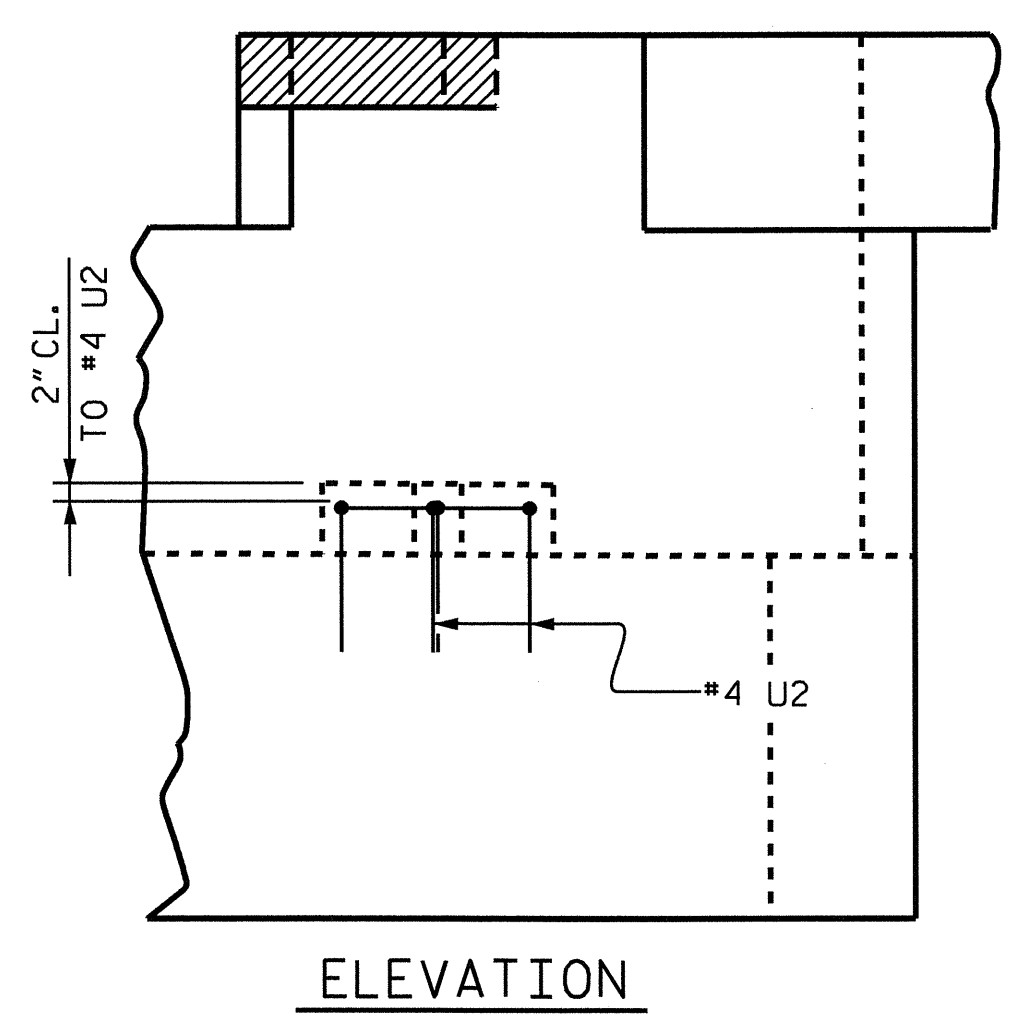
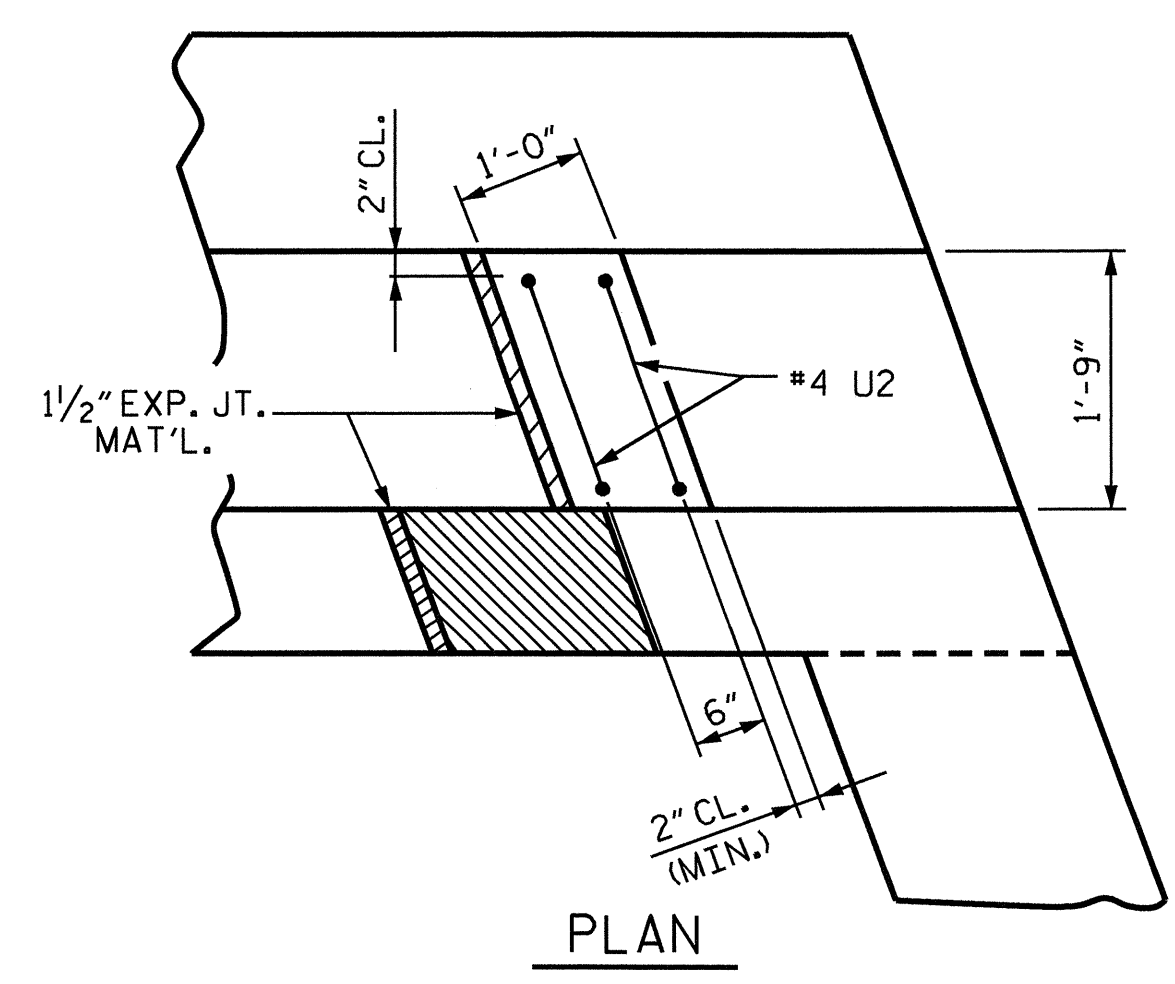
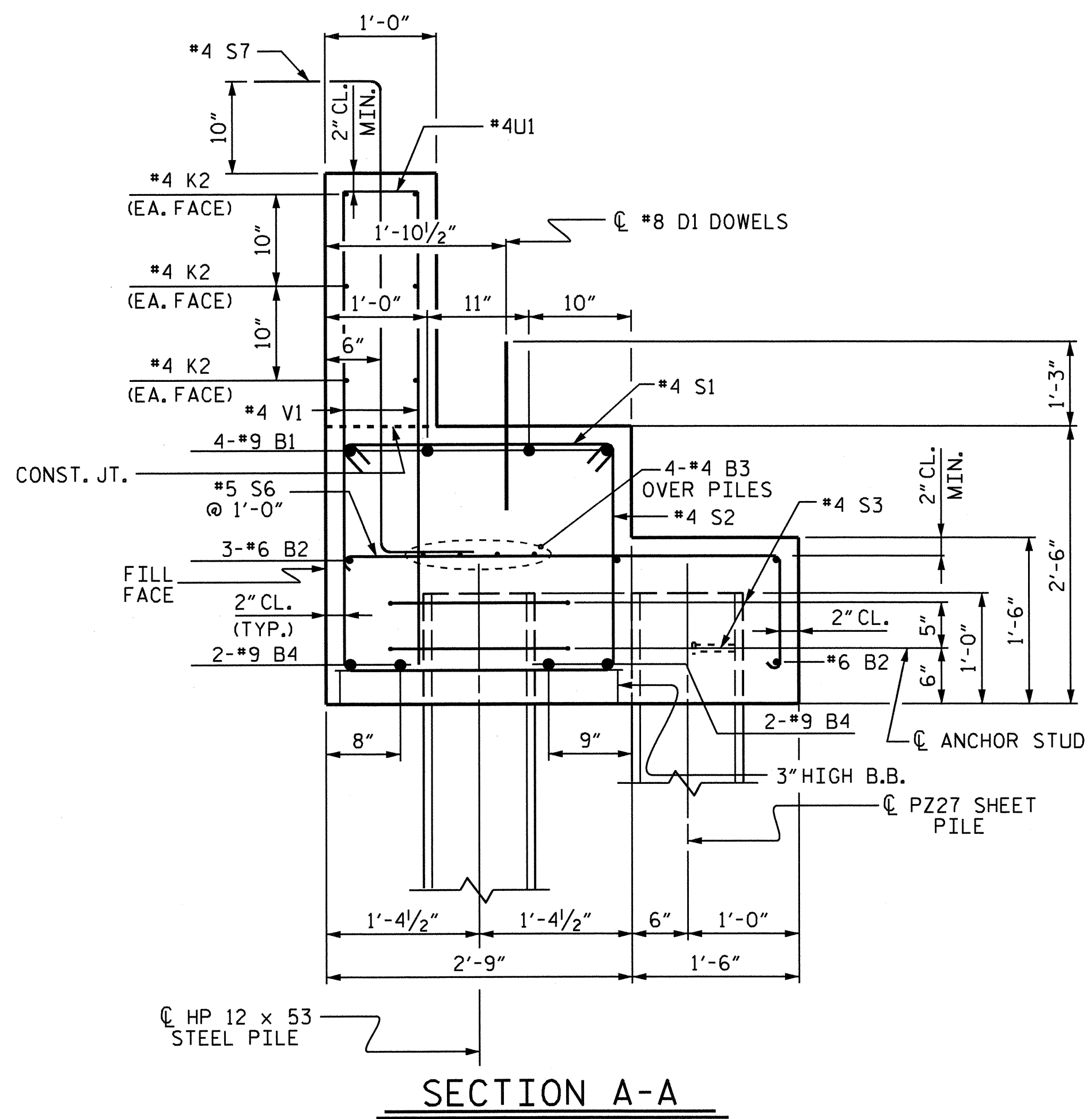
PROJECT NO. B-4668
 WATAUGA COUNTY
 STATION: 19+78.00-L-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1

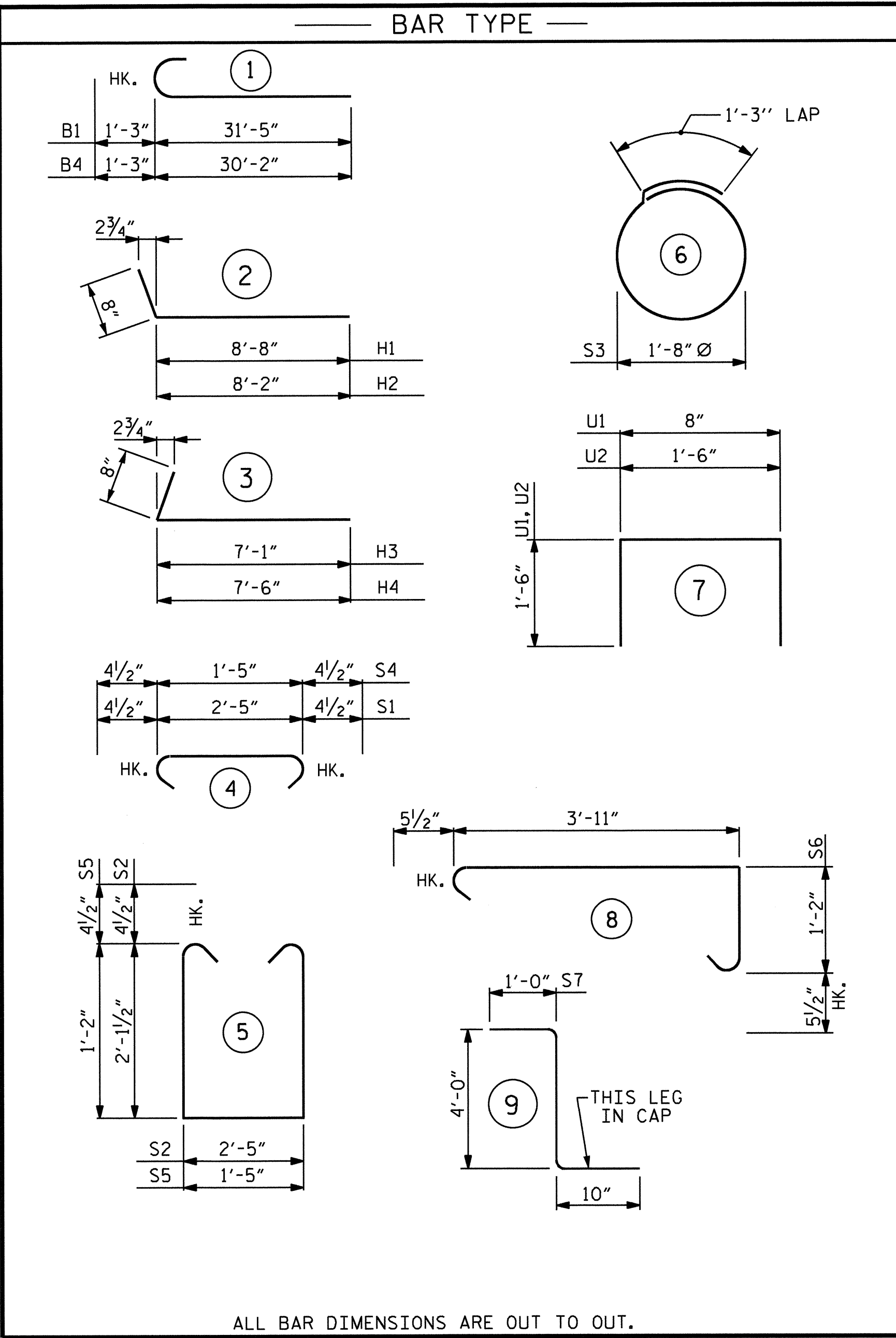
DRAWN BY: D.A. DAVENPORT DATE: 06/20/11
 CHECKED BY: D.A. GLADDEN DATE: 08/24/11



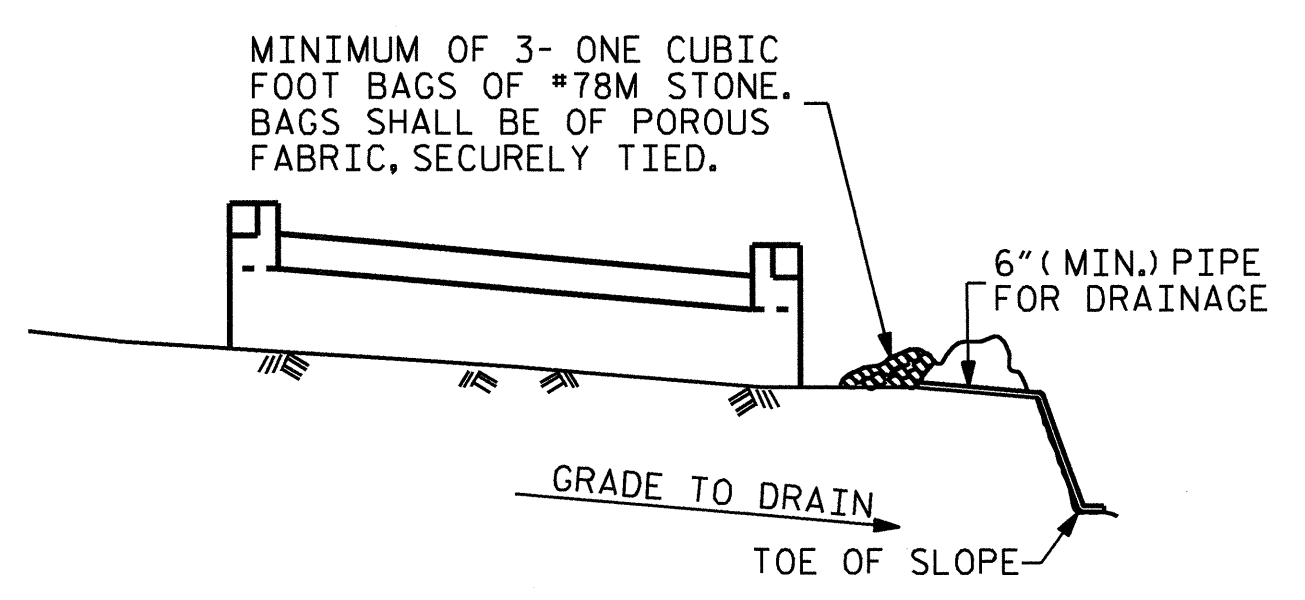
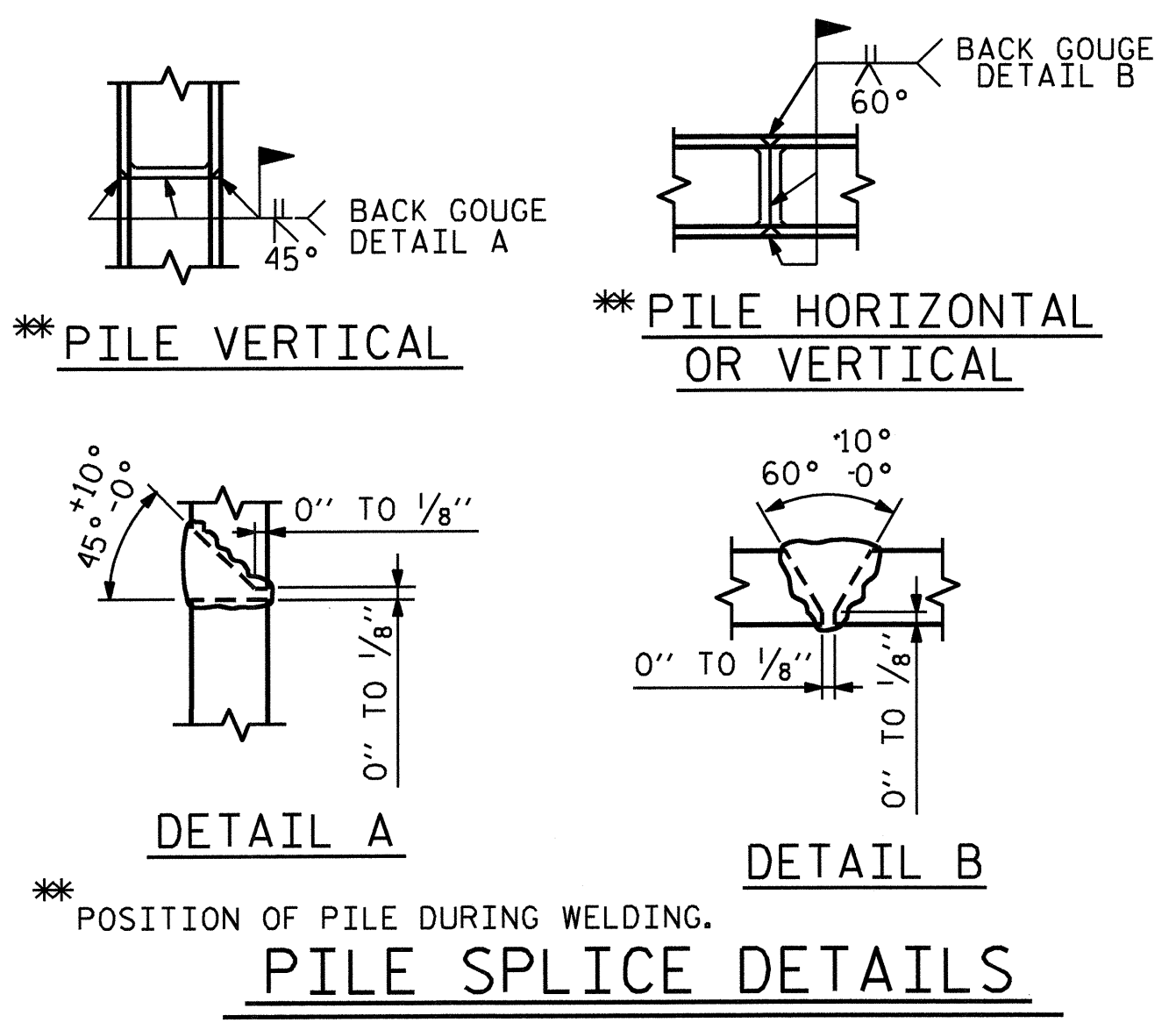
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			20	



LATERAL GUIDE
 (TYPICAL EACH SIDE)



BILL OF MATERIAL FOR END BENT #1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9	1	32'-8"	889	
B2	#6	STR	53'-11"	324	
B3	#4	STR	28'-3"	151	
B4	#9	1	31'-5"	854	
D1	#8	STR	2'-3"	180	
H1	#4	2	9'-4"	12	
H2	#4	2	8'-10"	12	
H3	#4	3	7'-9"	10	
H4	#4	3	8'-2"	11	
K1	#4	STR	3'-8"	20	
K2	#4	STR	28'-3"	226	
S1	#4	4	3'-2"	137	
S2	#4	5	7'-5"	322	
S3	#4	6	6'-6"	87	
S4	#4	4	2'-2"	22	
S5	#4	5	4'-6"	45	
S6	#5	8	6'-0"	332	
S7	#4	9	5'-10"	175	
U1	#4	7	3'-8"	110	
U2	#4	7	4'-6"	12	
V1	#4	STR	4'-2"	251	
V2	#4	STR	6'-2"	82	
REINFORCING STEEL = 4264 LBS					
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP					
	C.Y.			18.4	
POUR #2 BACKWALL, WINGS & COPING					
	C.Y.			6.1	
POUR #3 LATERAL GUIDES					
	C.Y.			0.1	
TOTAL CLASS A CONCRETE					24.6
HP 12 X 53 STEEL PILES					
	NO. 10	LIN. FT.		200	
STEEL SHEET PILES					
	NO. = 47	SO. FT.		770	

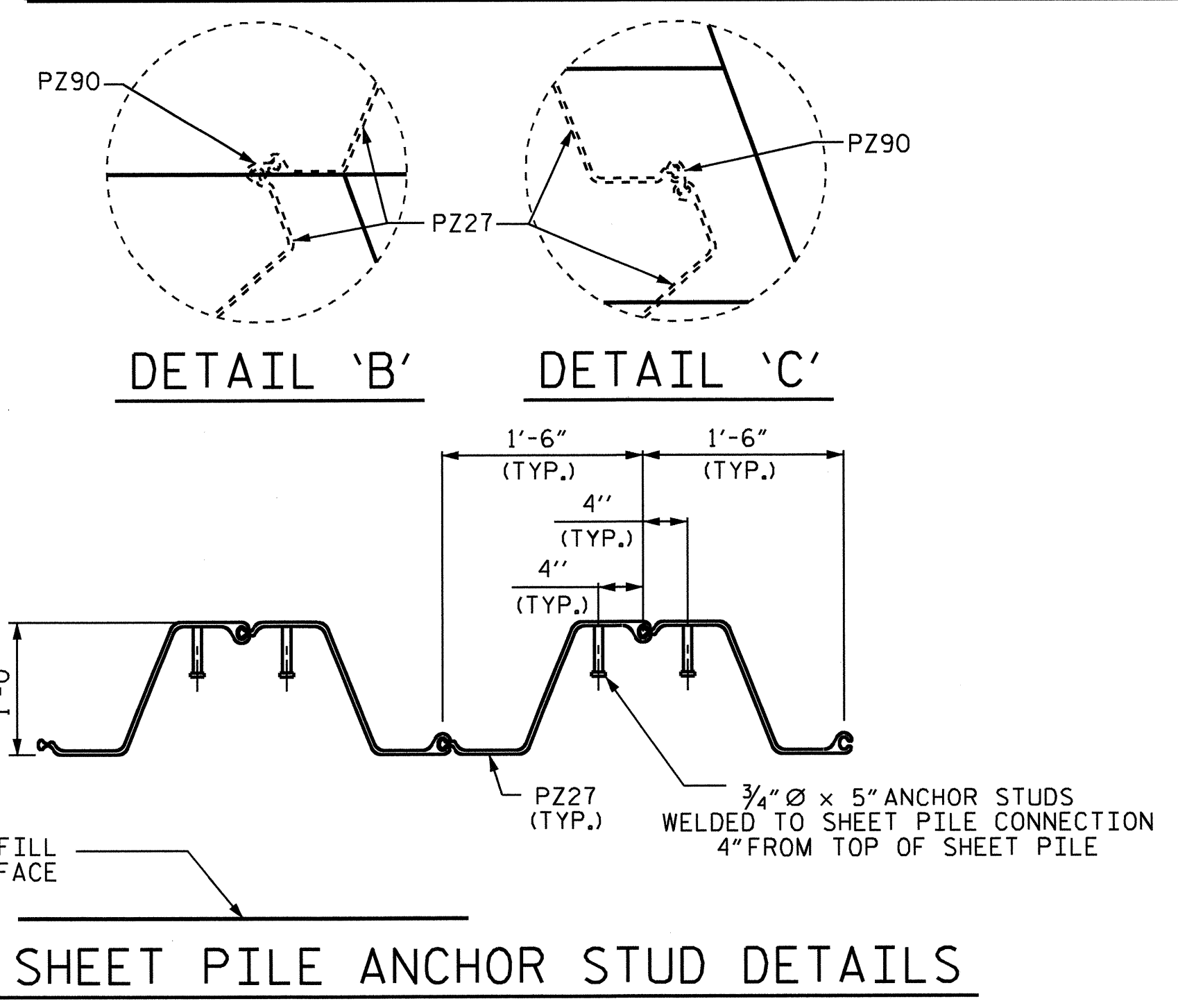


MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

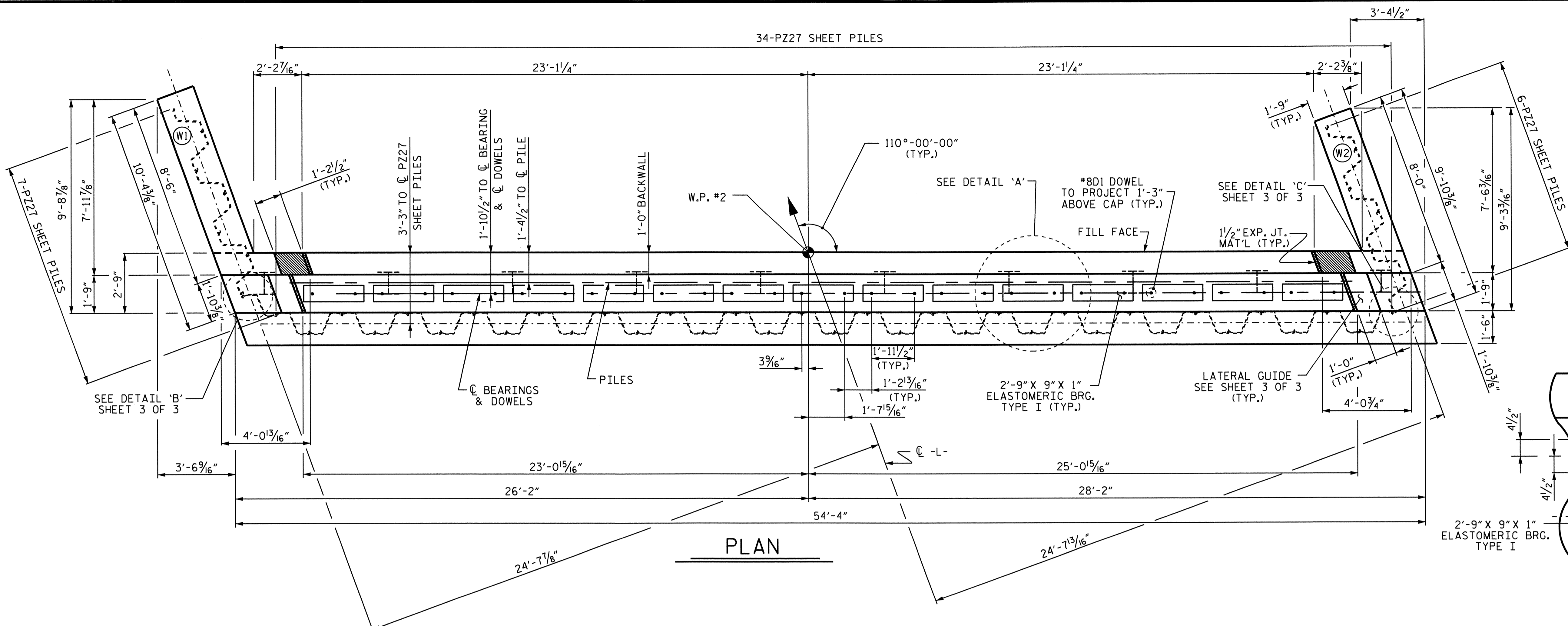
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

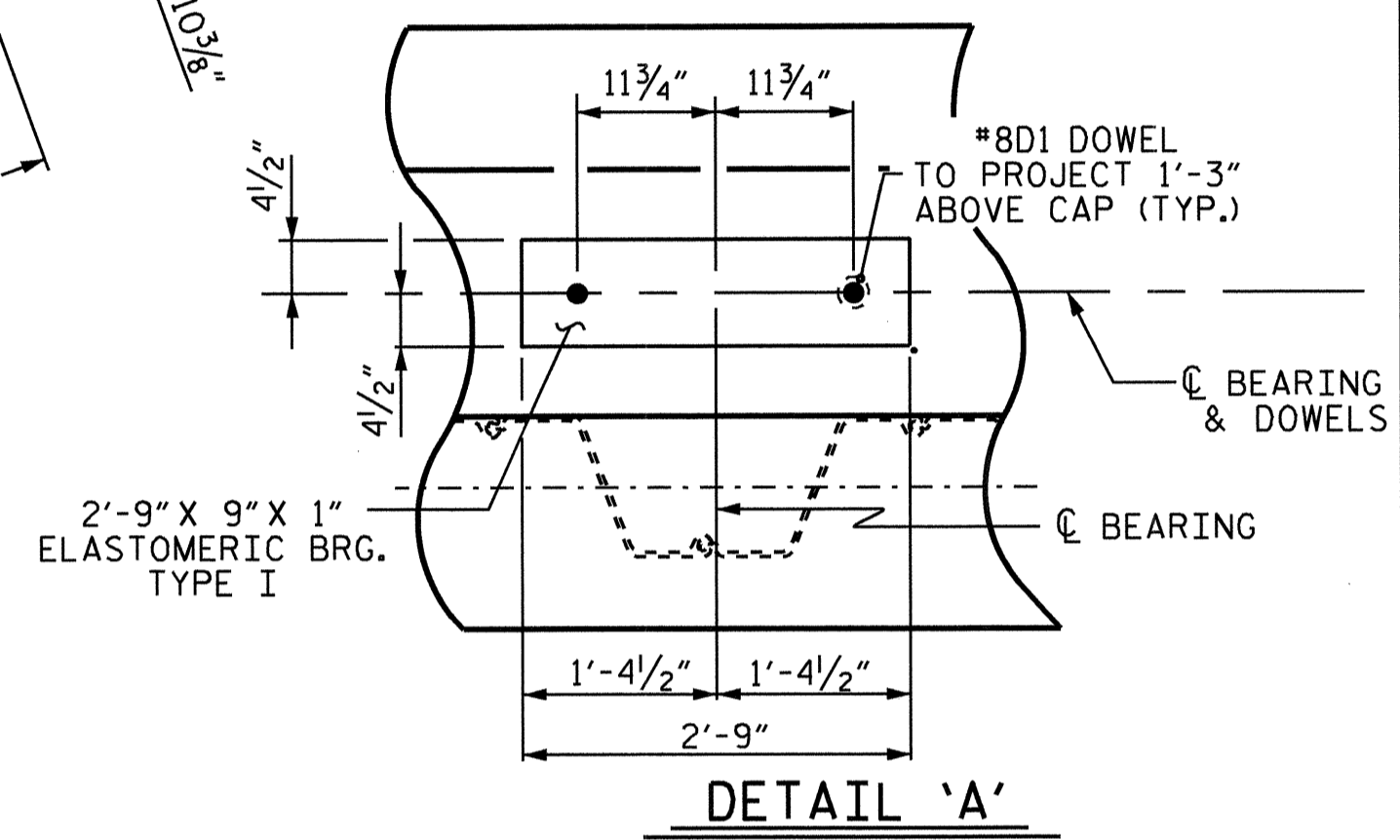


PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO.
SUBSTRUCTURE END BENT #1					S-14
REVISIONS					TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					20



TOP OF PILE ELEVATIONS	
①	2667.929
②	2667.825
③	2667.722
④	2667.619
⑤	2667.516
⑥	2667.413
⑦	2667.310
⑧	2667.207
⑨	2667.103
⑩	2666.000

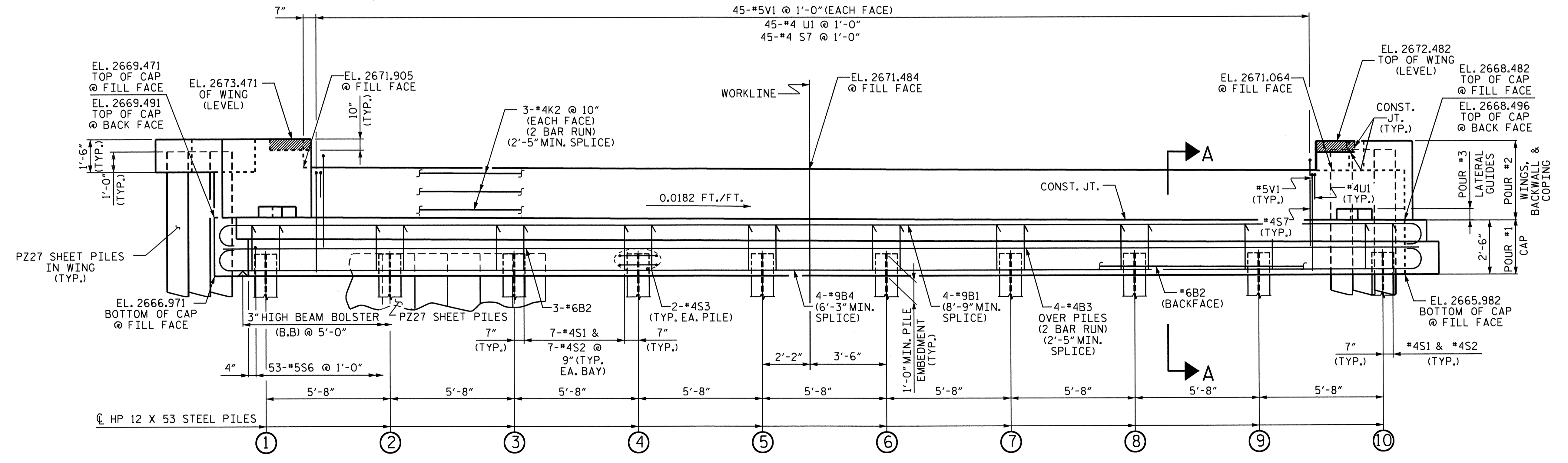


PLAN

DETAIL 'A'

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS 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 SHEET PILES AS REQUIRED FOR THE BRIDGE APPROACH FILLS, SEE APPROACH SLAB SHEET.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



ELEVATION

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-

SHEET 1 OF 3

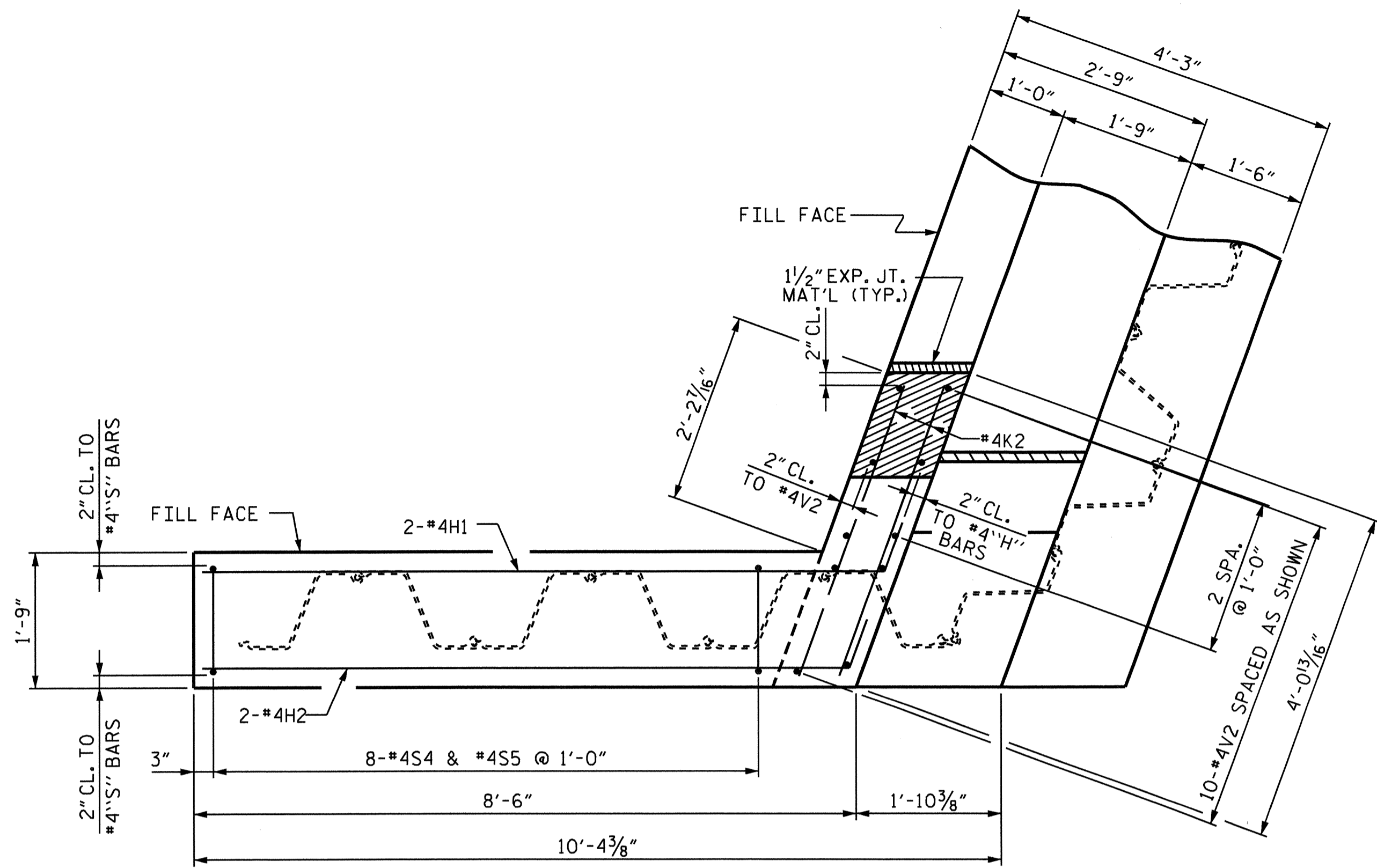
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #2

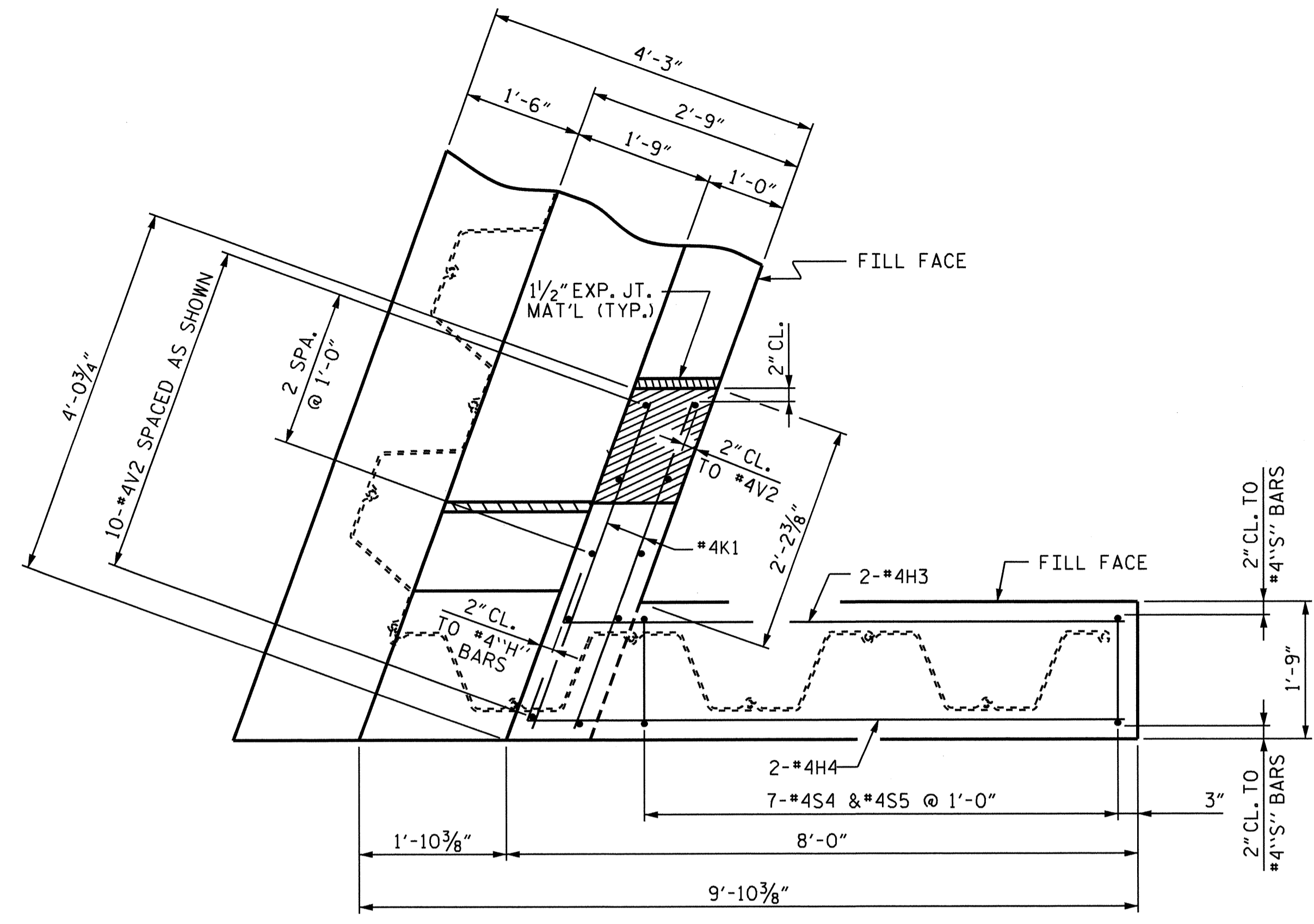
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	20
1			3			
2			4			

SEAL 10730
 ENGINEER
 DAVID DAVENPORT, JR.
 3-23-12

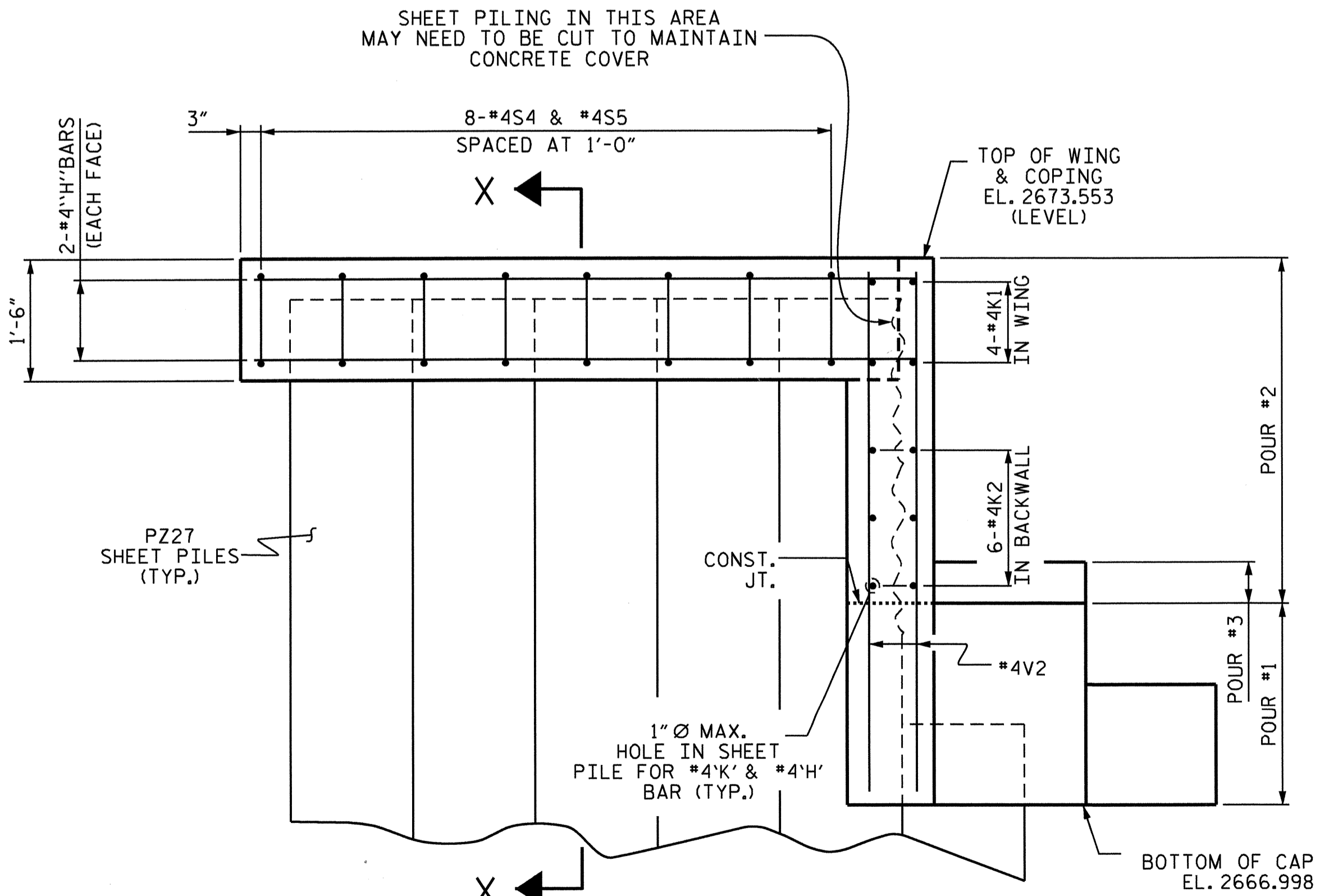
DRAWN BY : D.A. DAVENPORT DATE : 06/22/11
 CHECKED BY : D.A. GLADDEN DATE : 08/25/11



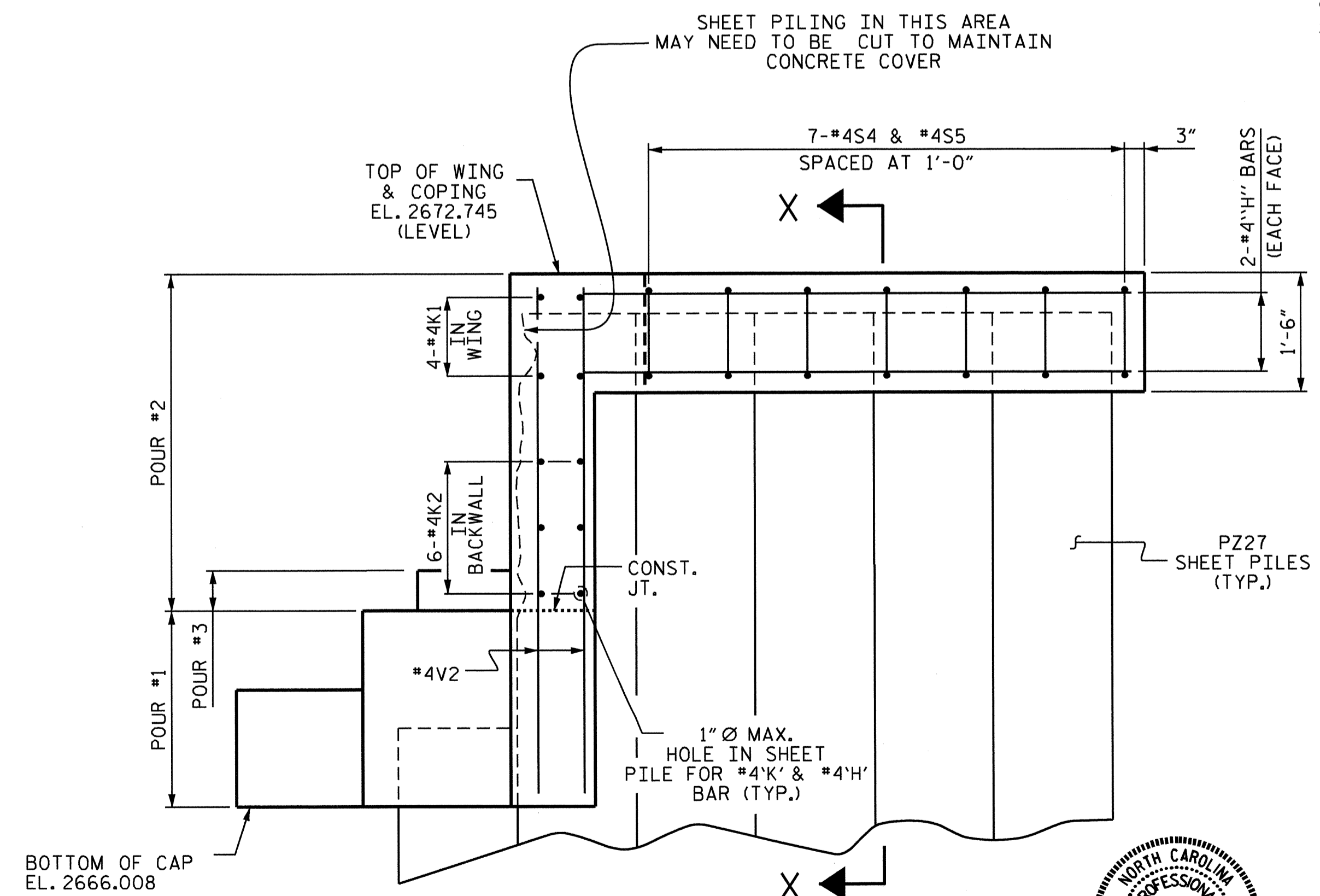
PLAN OF LEFT WING (W1)



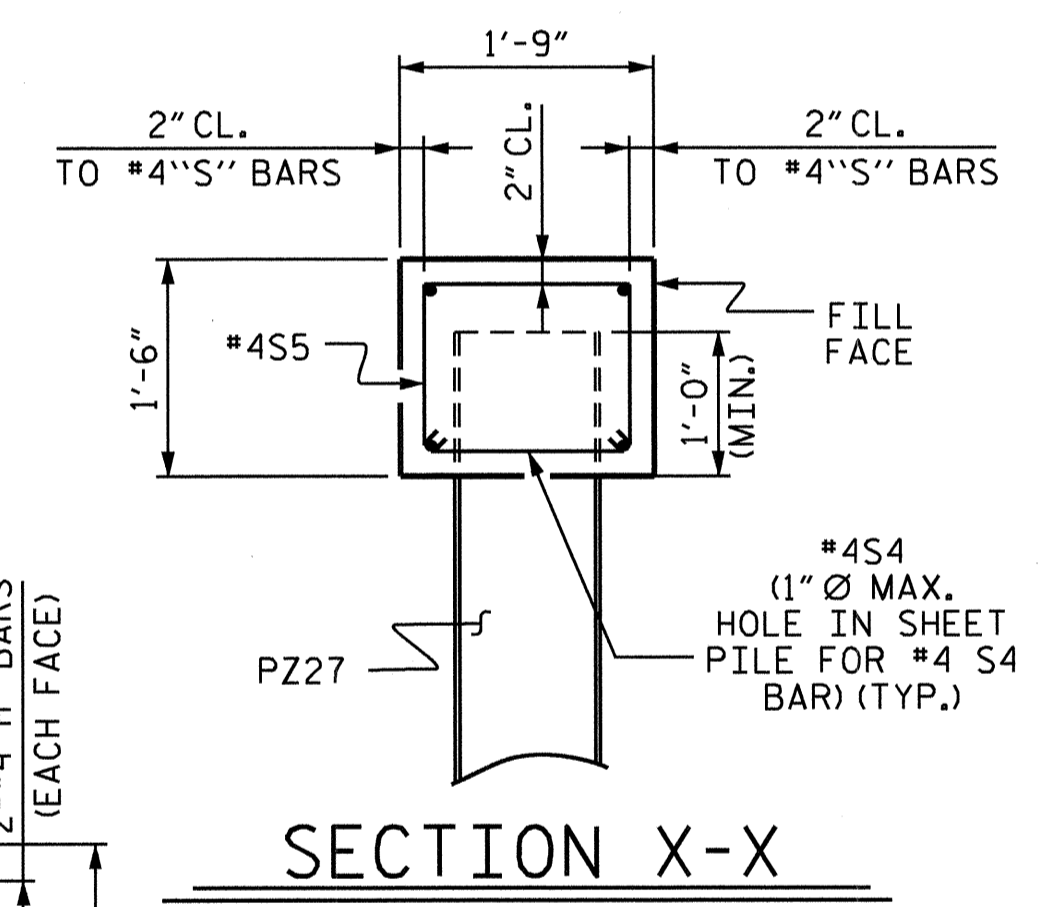
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)



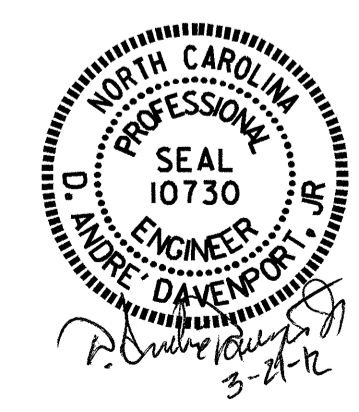
SECTION X-X

SHEET PILING IN THIS AREA MAY NEED TO BE CUT TO MAINTAIN CONCRETE COVER

SHEET PILING IN THIS AREA MAY NEED TO BE CUT TO MAINTAIN CONCRETE COVER

DRAWN BY : D.A. DAVENPORT DATE : 06/22/11
 CHECKED BY : D.A. GLADDEN DATE : 08/25/11

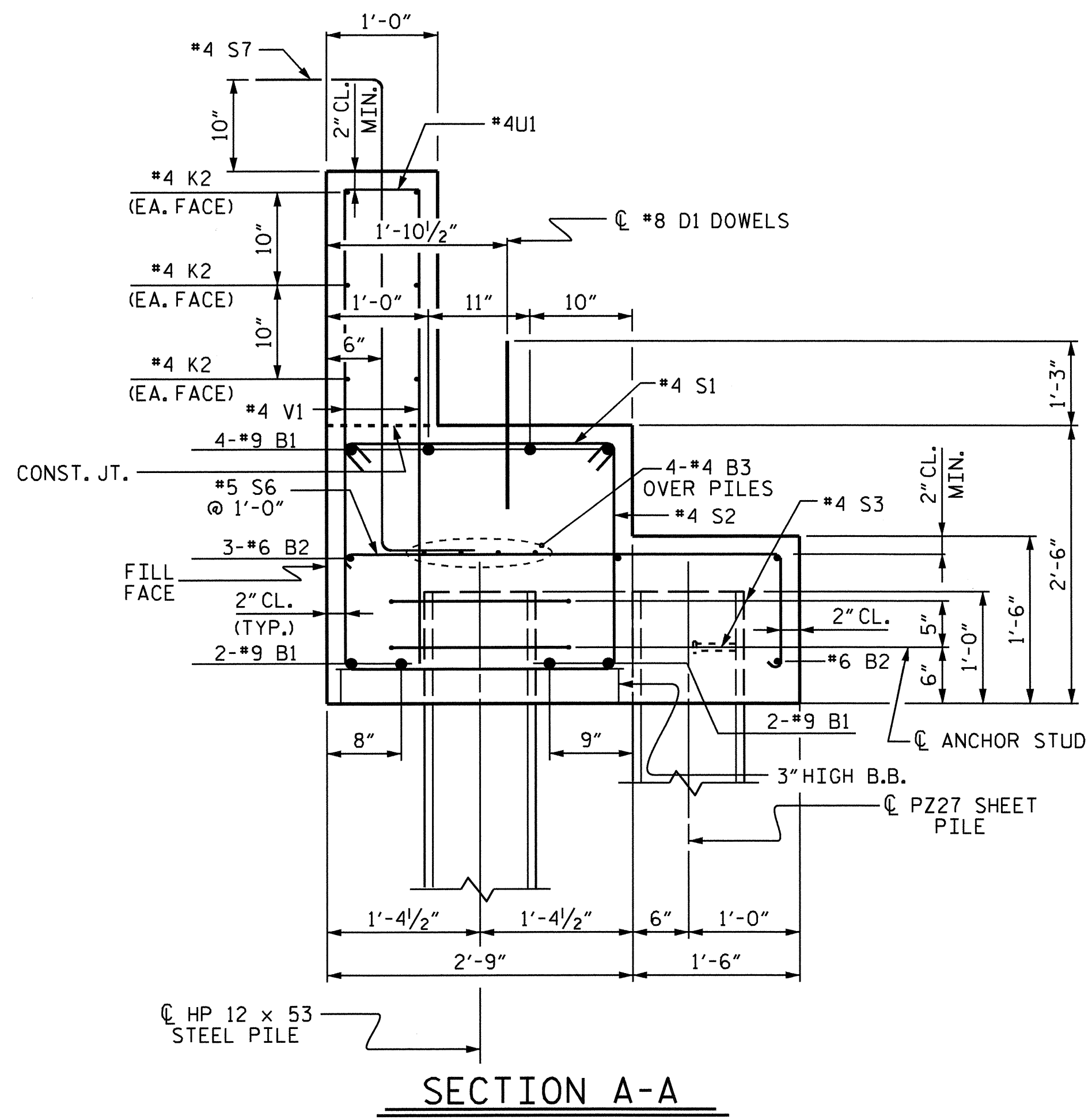
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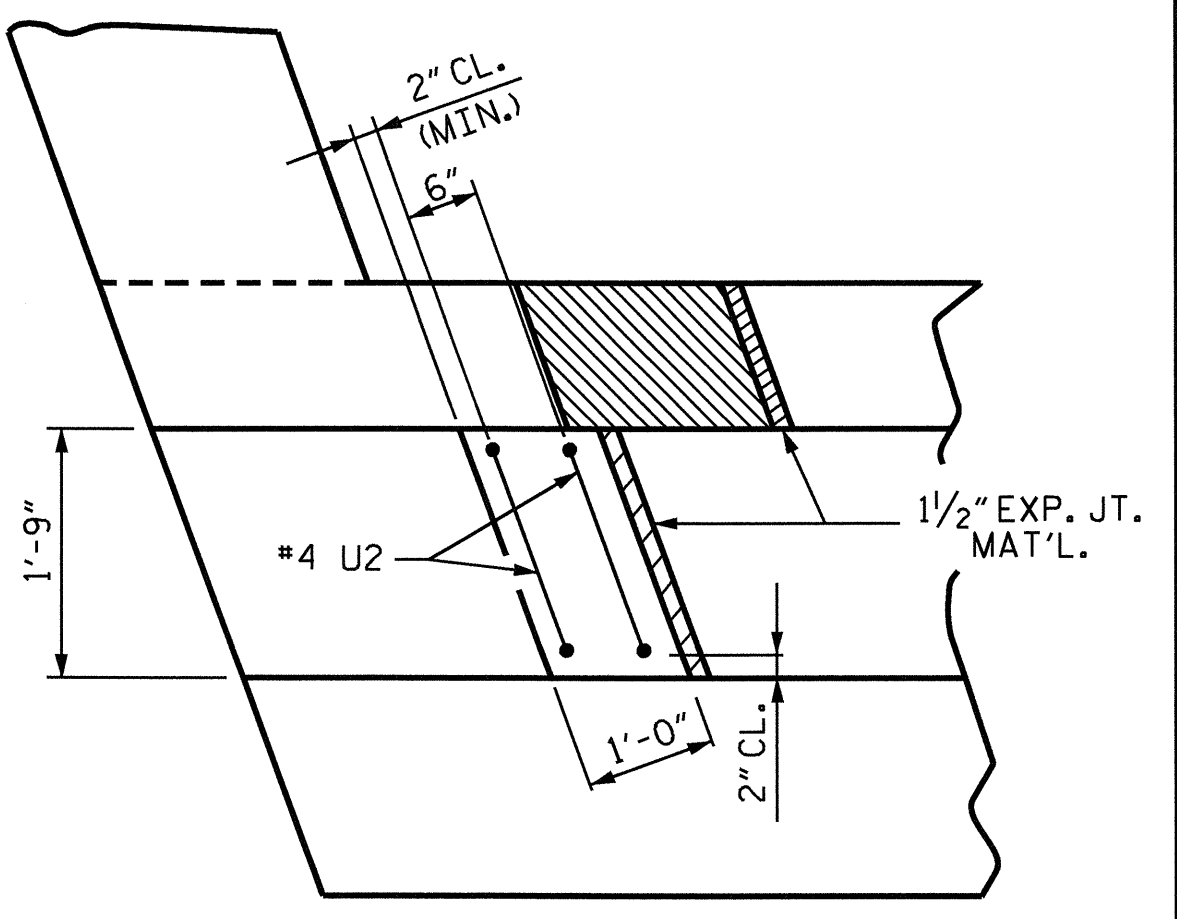
PROJECT NO. B-4668
 WATAUGA COUNTY
 STATION: 19+78.00-L-

SHEET 2 OF 3
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2

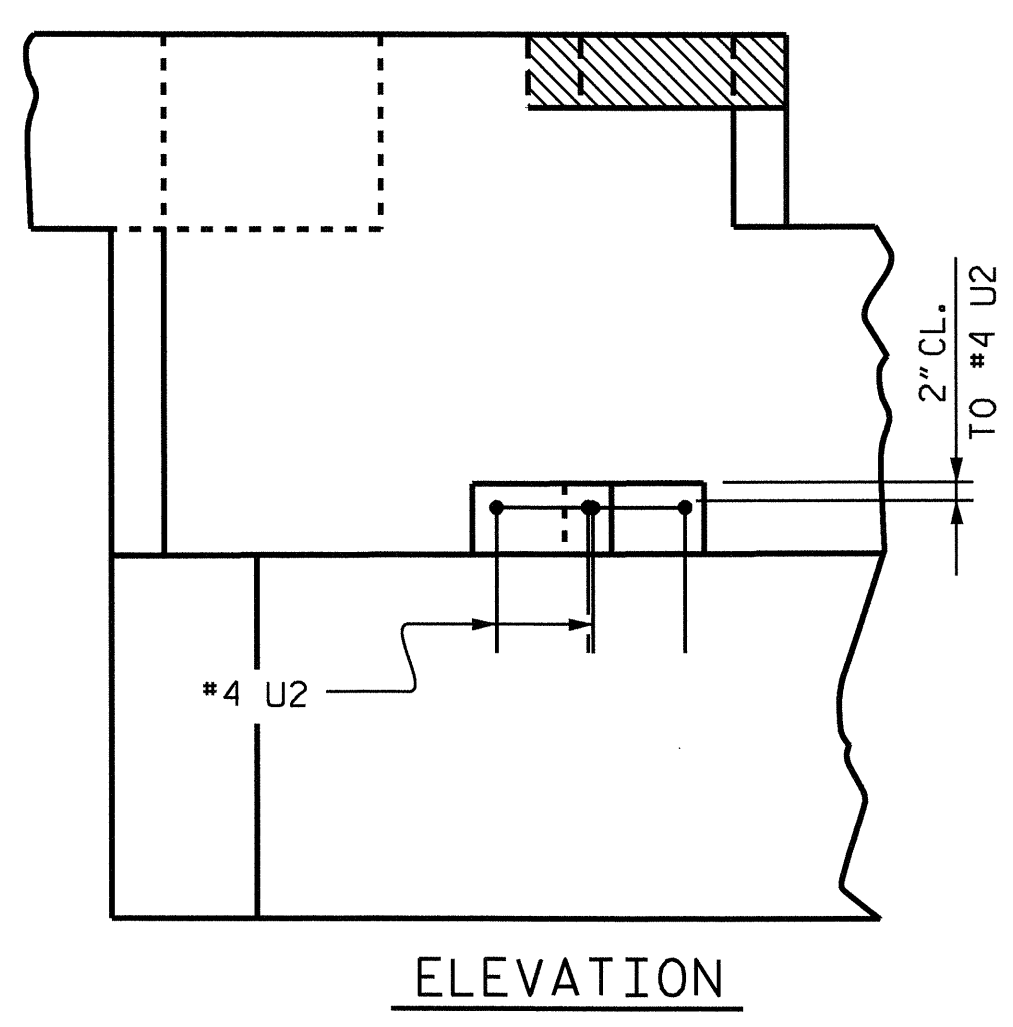
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			20



SECTION A-A



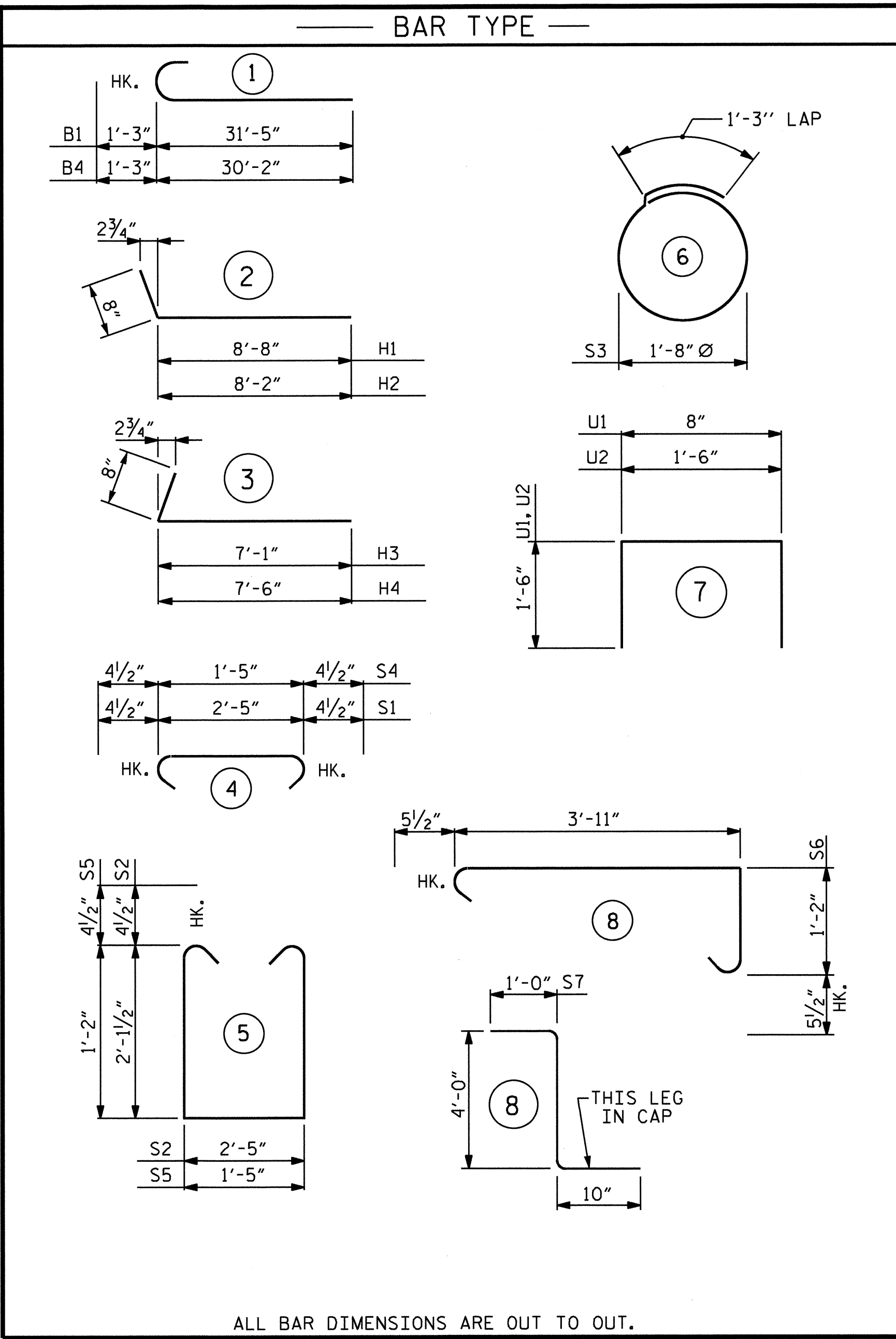
PLAN



ELEVATION

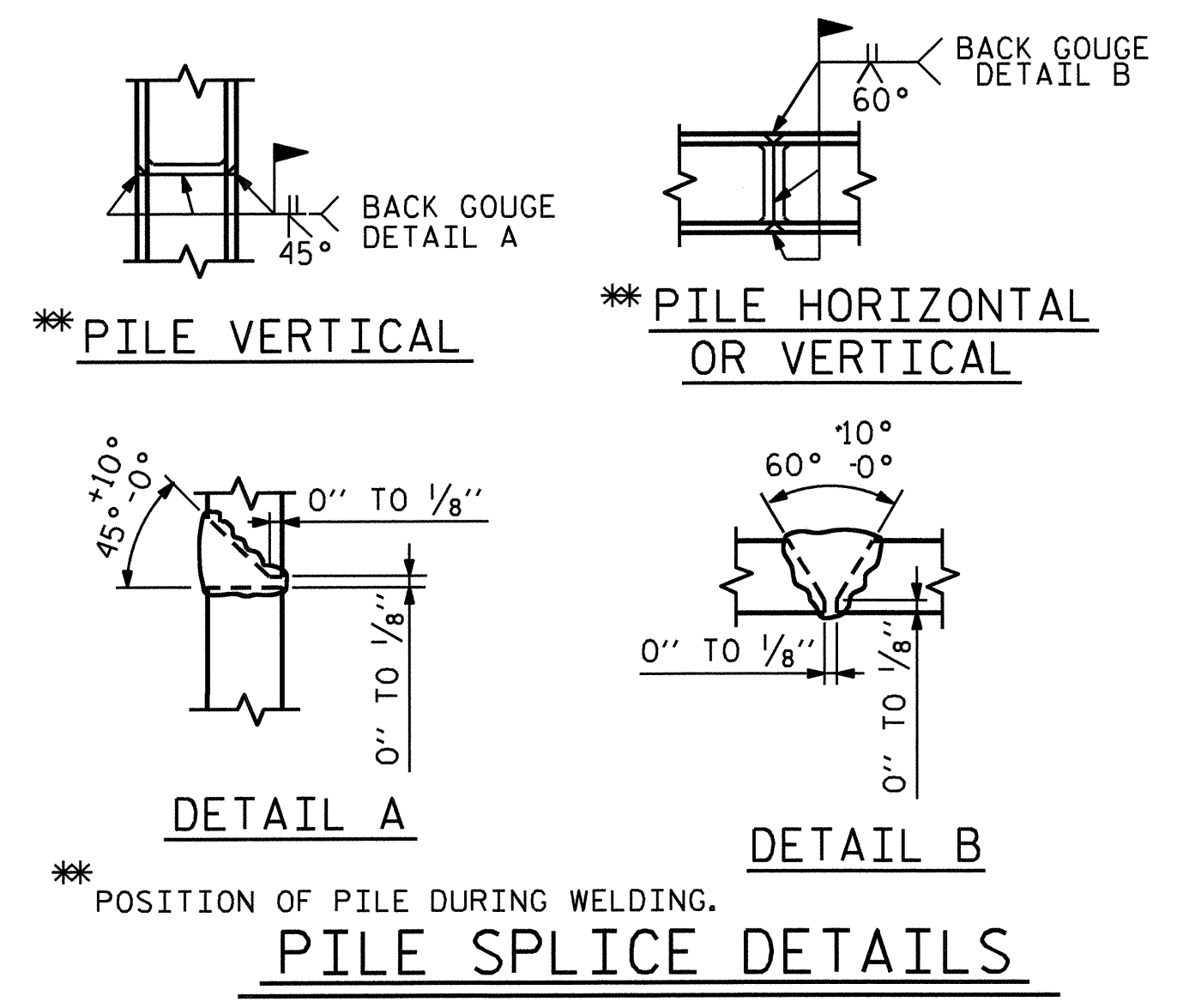


LATERAL GUIDE
(TYPICAL EACH SIDE)

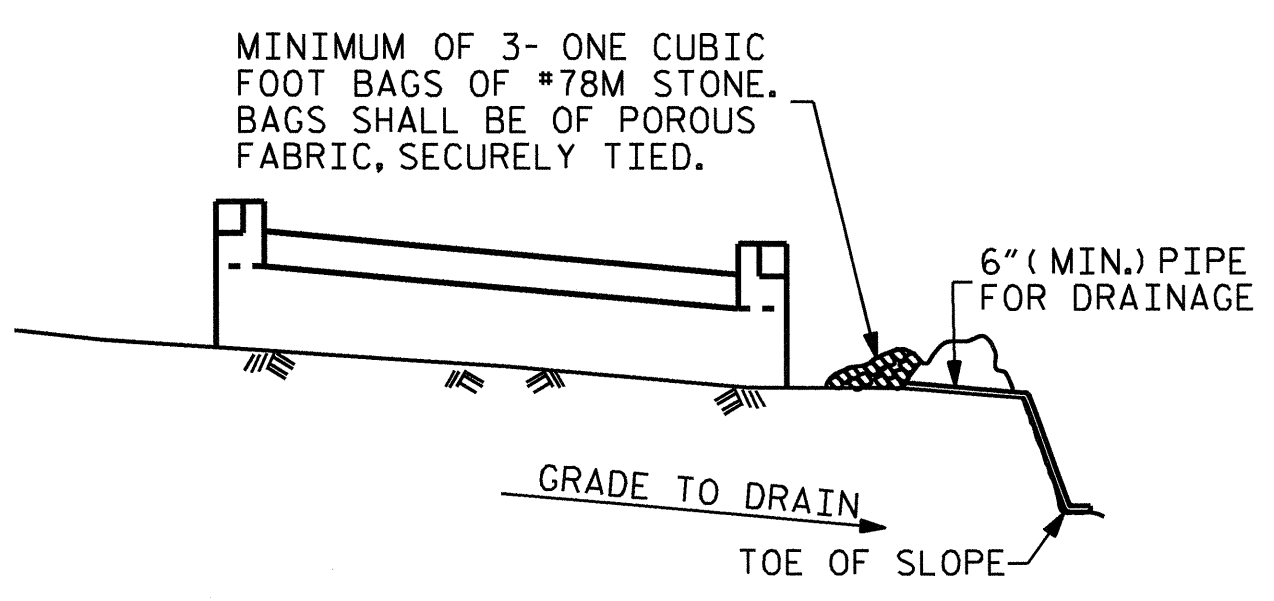


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR END BENT #2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8	STR	32'-8"	889	
B2	#6	STR	53'-11"	324	
B3	#4	STR	28'-3"	151	
B4	#9	STR	31'-5"	854	
D1	#8	STR	2'-3"	180	
H1	#4	STR	9'-4"	12	
H2	#4	STR	8'-10"	12	
H3	#4	STR	7'-9"	10	
H4	#4	STR	8'-2"	11	
K1	#4	STR	3'-8"	20	
K2	#4	STR	28'-3"	226	
S1	#4	STR	3'-2"	137	
S2	#4	STR	7'-5"	322	
S3	#4	STR	6'-6"	87	
S4	#4	STR	2'-2"	22	
S5	#4	STR	4'-6"	45	
S6	#5	STR	6'-0"	332	
S7	#4	STR	5'-10"	175	
U1	#4	STR	3'-8"	110	
U2	#4	STR	4'-6"	12	
V1	#4	STR	4'-2"	251	
V2	#4	STR	6'-2"	82	
REINFORCING STEEL				=	4264 LBS
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP					
	C.Y.				18.4
POUR #2 BACKWALL, WINGS & COPING					
	C.Y.				6.1
POUR #3 LATERAL GUIDES					
	C.Y.				0.1
TOTAL CLASS A CONCRETE				C.Y.	24.6
HP 12 X 53 STEEL PILES					
	NO. 10	LIN. FT.			200
STEEL PILE POINTS					
	EACH				10
STEEL SHEET PILES					
	NO. = 47	SQ. FT.			780



PILE SPLICE DETAILS

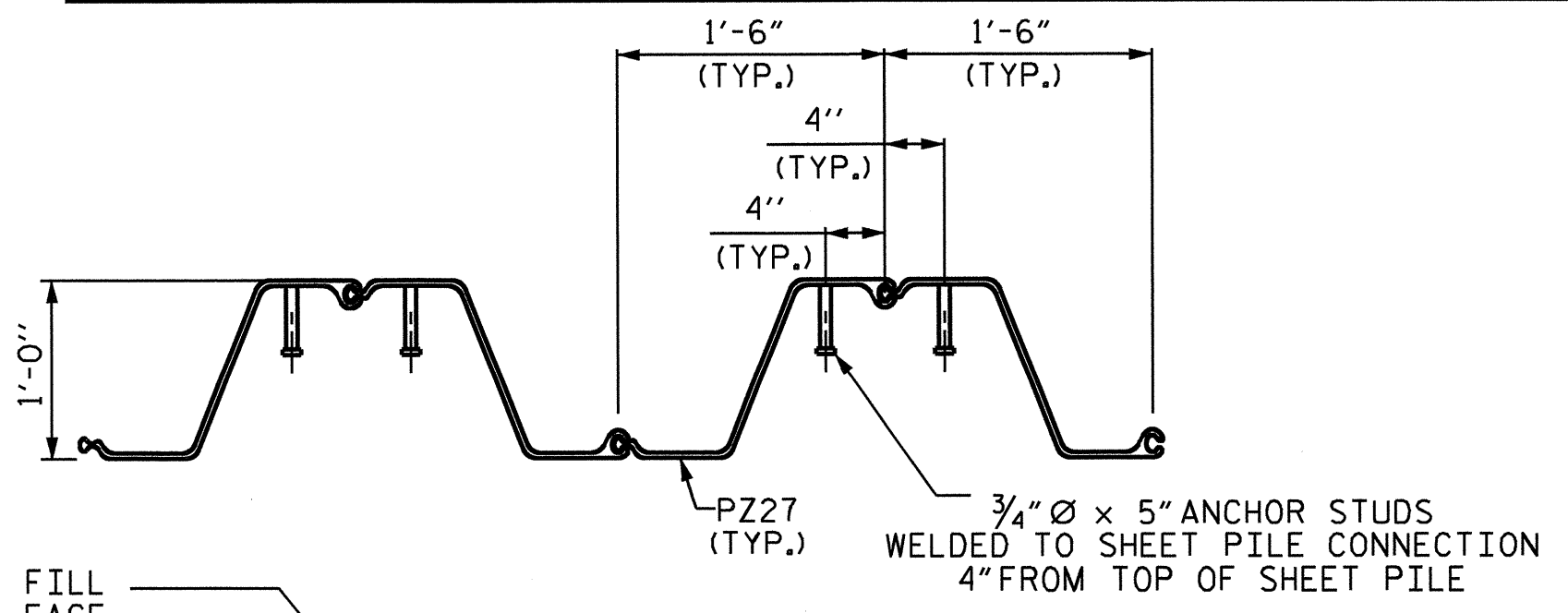


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

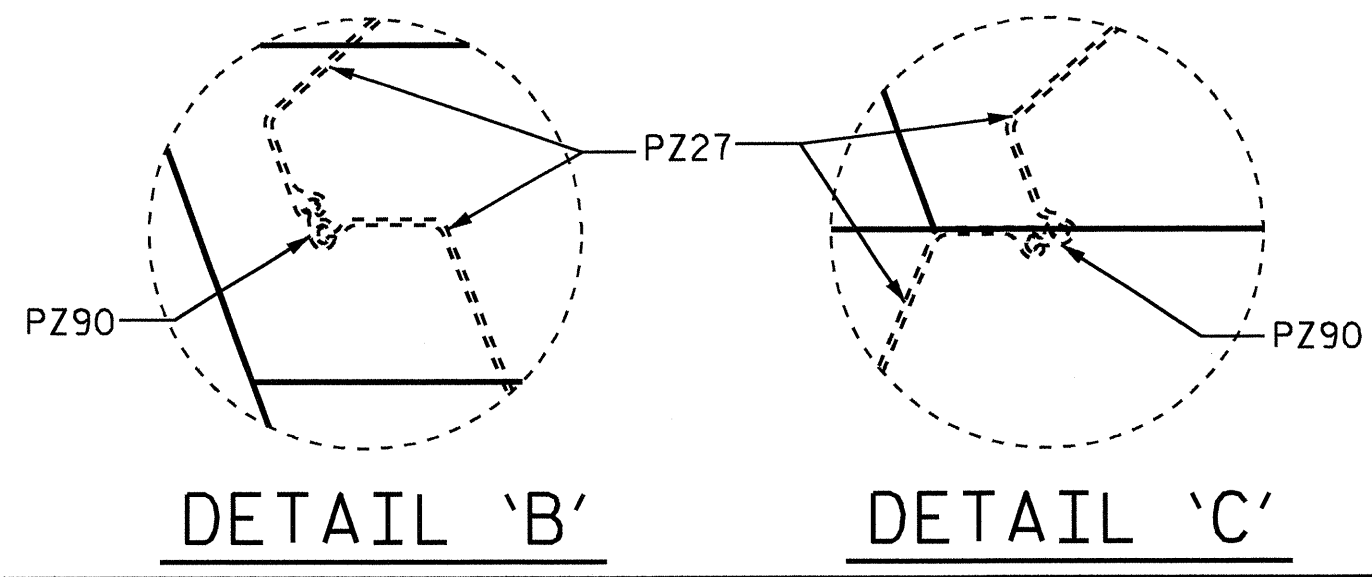
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETEIORATED AND LOST THEIR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

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TEMPORARY DRAINAGE AT END BENT



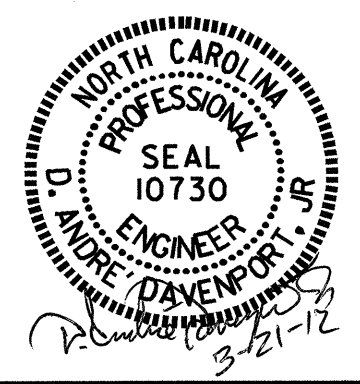
SHEET PILE ANCHOR STUD DETAILS



DETAIL 'B' DETAIL 'C'

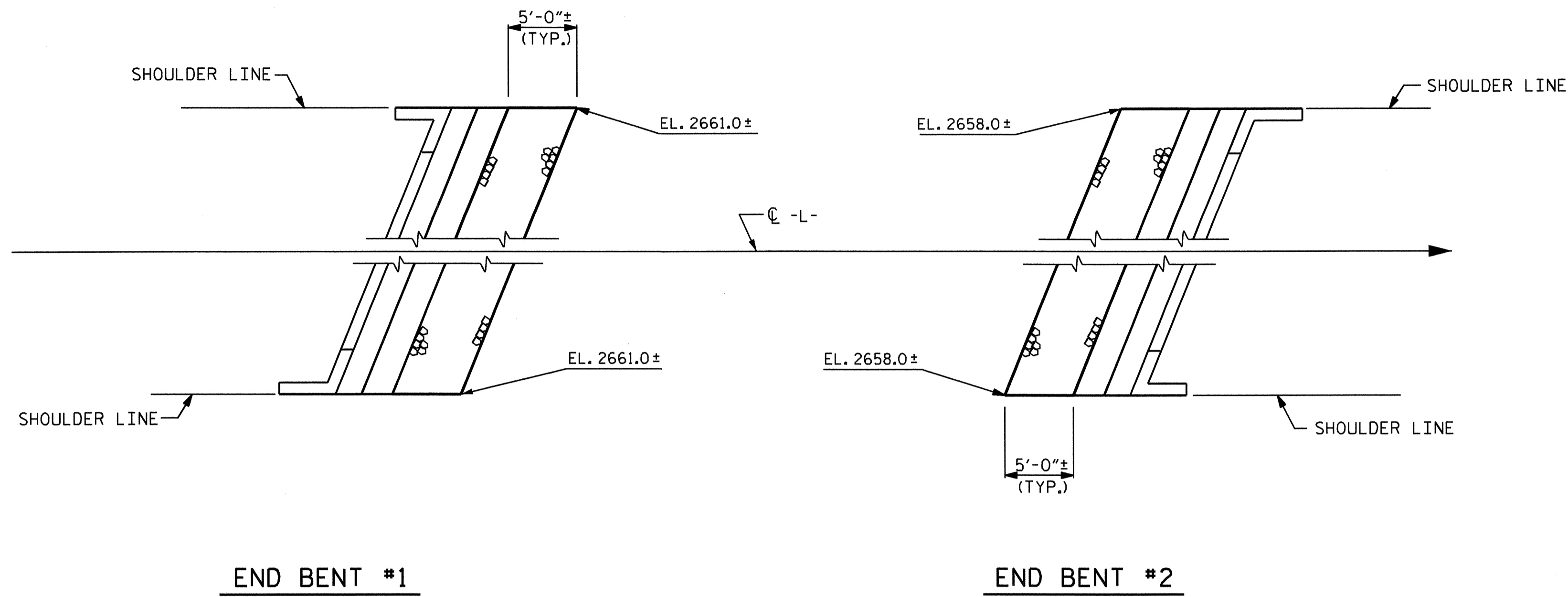
PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-
 SHEET 3 OF 3

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



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

TOTAL SHEETS: 20

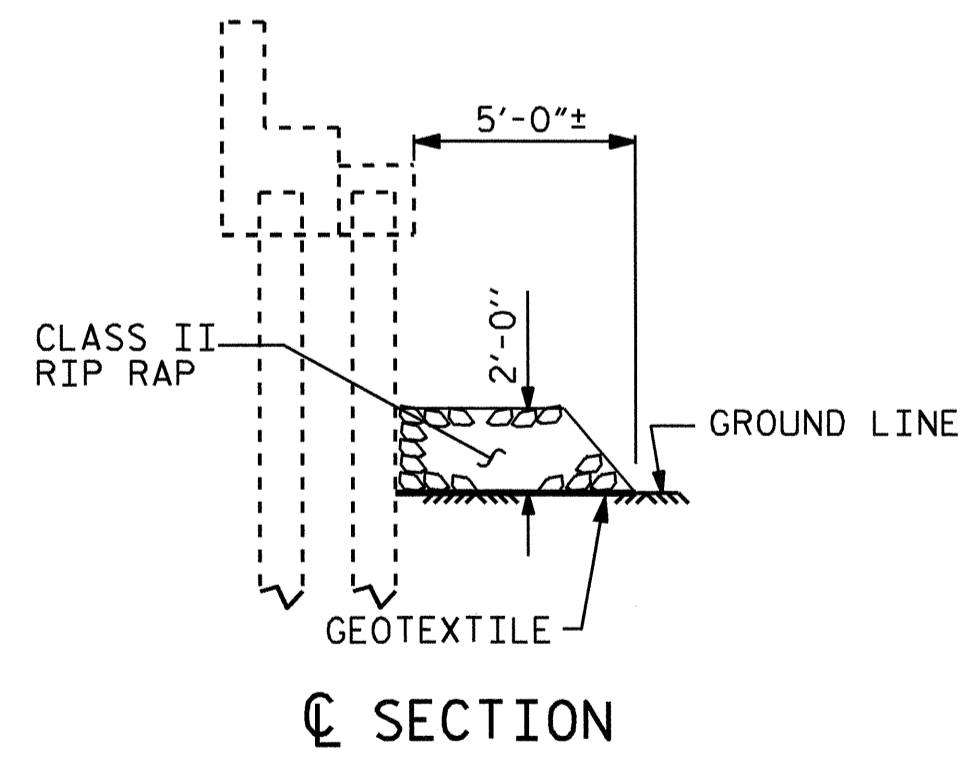


END BENT #1

END BENT #2

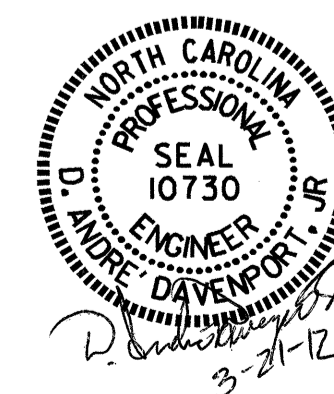
PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 19+78.00-L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	27	30
END BENT 2	27	30
TOTAL	54	60



SECTION

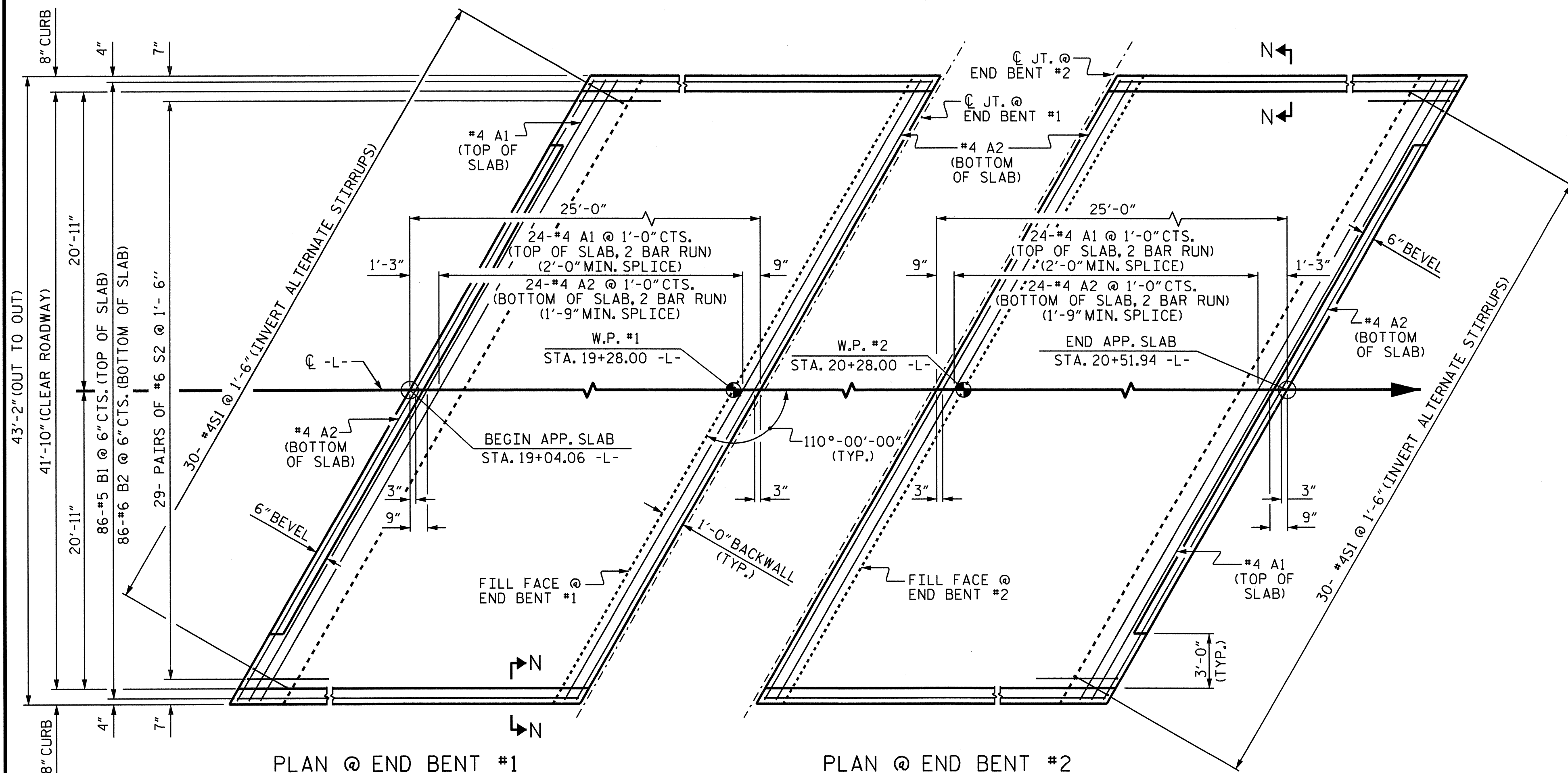
PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00-L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
= RIP RAP DETAILS =					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					20

ASSEMBLED BY : D.A. DAVENPORT	DATE : 03-11
CHECKED BY : W.B. HILL	DATE : 06/11
DRAWN BY : REK 1/84	REV. 10/17/00 RWW/LES
CHECKED BY : RDU 1/84	REV. 5/11/06R TLA/GM
	REV. 10/1/11 MAA/GM

21-MAR-2012 07:41
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PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS
 "H" BARS IN DEADMAN ARE NOT SHOWN FOR CLARITY

NOTES

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

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

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

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

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

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

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

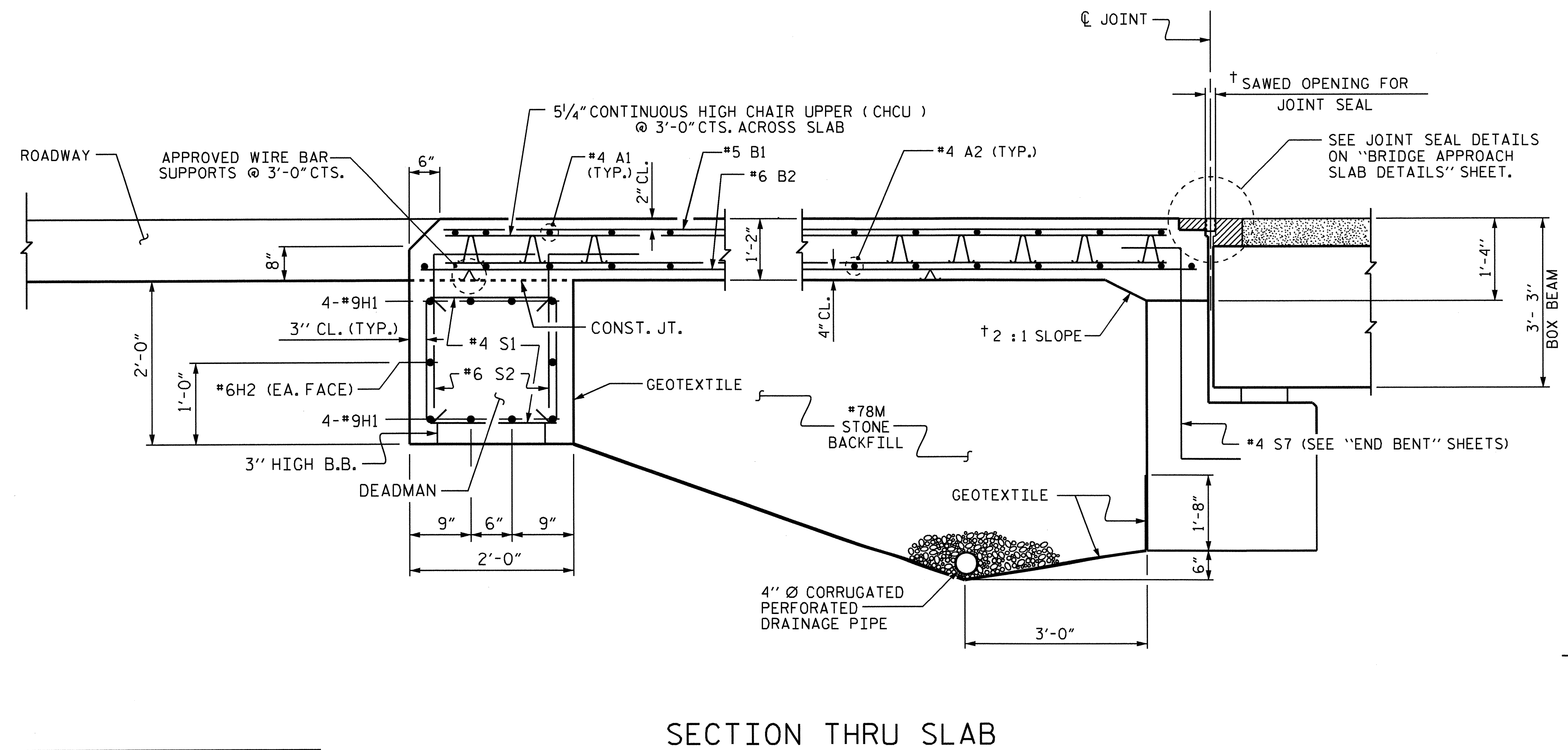
APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWS AFTER THE CASTING OF THE BARRIER RAIL.

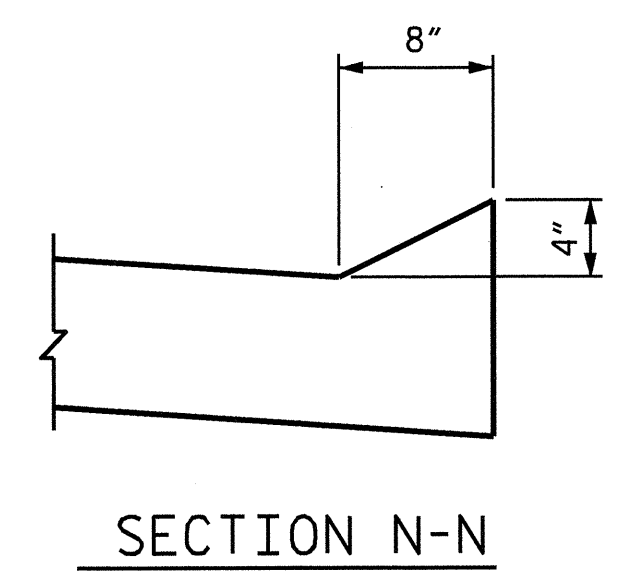
BILL OF MATERIAL

APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	23'-10"	796
A2	52	#4	STR	23'-8"	822
*B1	86	#5	STR	23'-8"	2123
B2	86	#6	STR	24'-7"	3175
H1	8	#9	STR	45'-6"	1238
H2	2	#6	STR	45'-6"	137
S1	30	#4	1	5'-6"	110
S2	58	#6	2	4'-1"	356
REINFORCING STEEL				LBS.	5838
*EPOXY COATED REINFORCING STEEL				LBS.	2919
DEADMAN POUR #1				C. Y.	6.8
APPROACH SLAB POUR#2				C. Y.	40.9
CLASS AA CONCRETE TOTAL				C. Y.	47.7

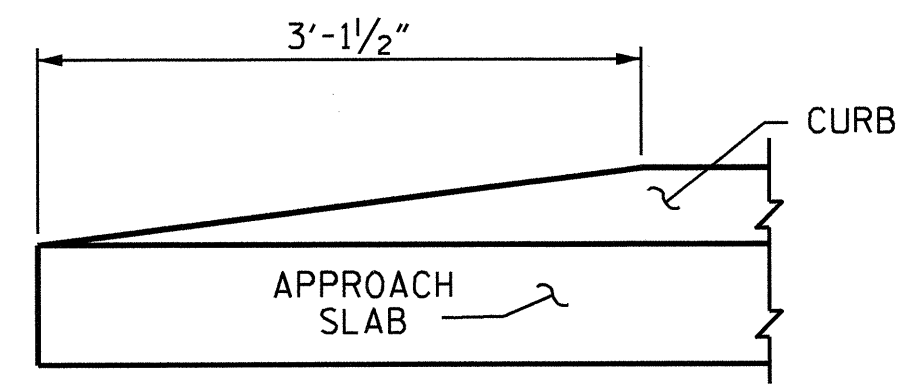
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	23'-10"	796
A2	52	#4	STR	23'-8"	822
*B1	86	#5	STR	23'-8"	2123
B2	86	#6	STR	24'-7"	3175
H1	8	#9	STR	45'-6"	1238
H2	2	#6	STR	45'-6"	137
S1	30	#4	1	5'-6"	110
S2	58	#6	2	4'-1"	356
REINFORCING STEEL				LBS.	5838
*EPOXY COATED REINFORCING STEEL				LBS.	2919
DEADMAN POUR #1				C. Y.	6.8
APPROACH SLAB POUR#2				C. Y.	40.9
CLASS AA CONCRETE TOTAL				C. Y.	47.7



SECTION THRU SLAB

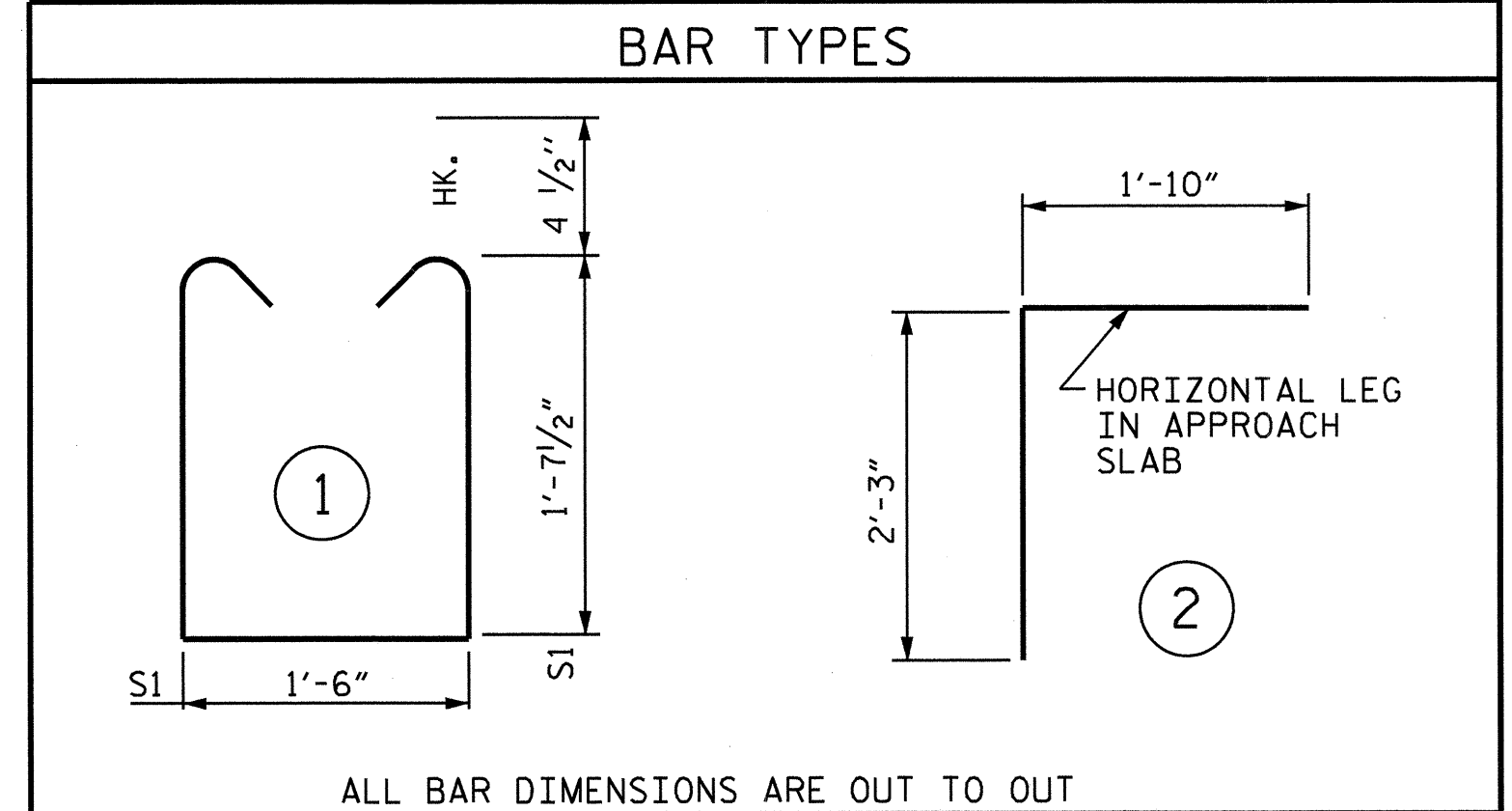


SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



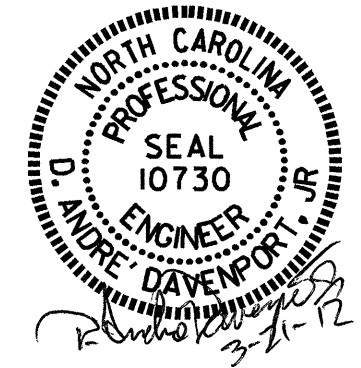
ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4668
WATAUGA COUNTY
 STATION: 19+78.00 -L-

SHEET 1 OF 2

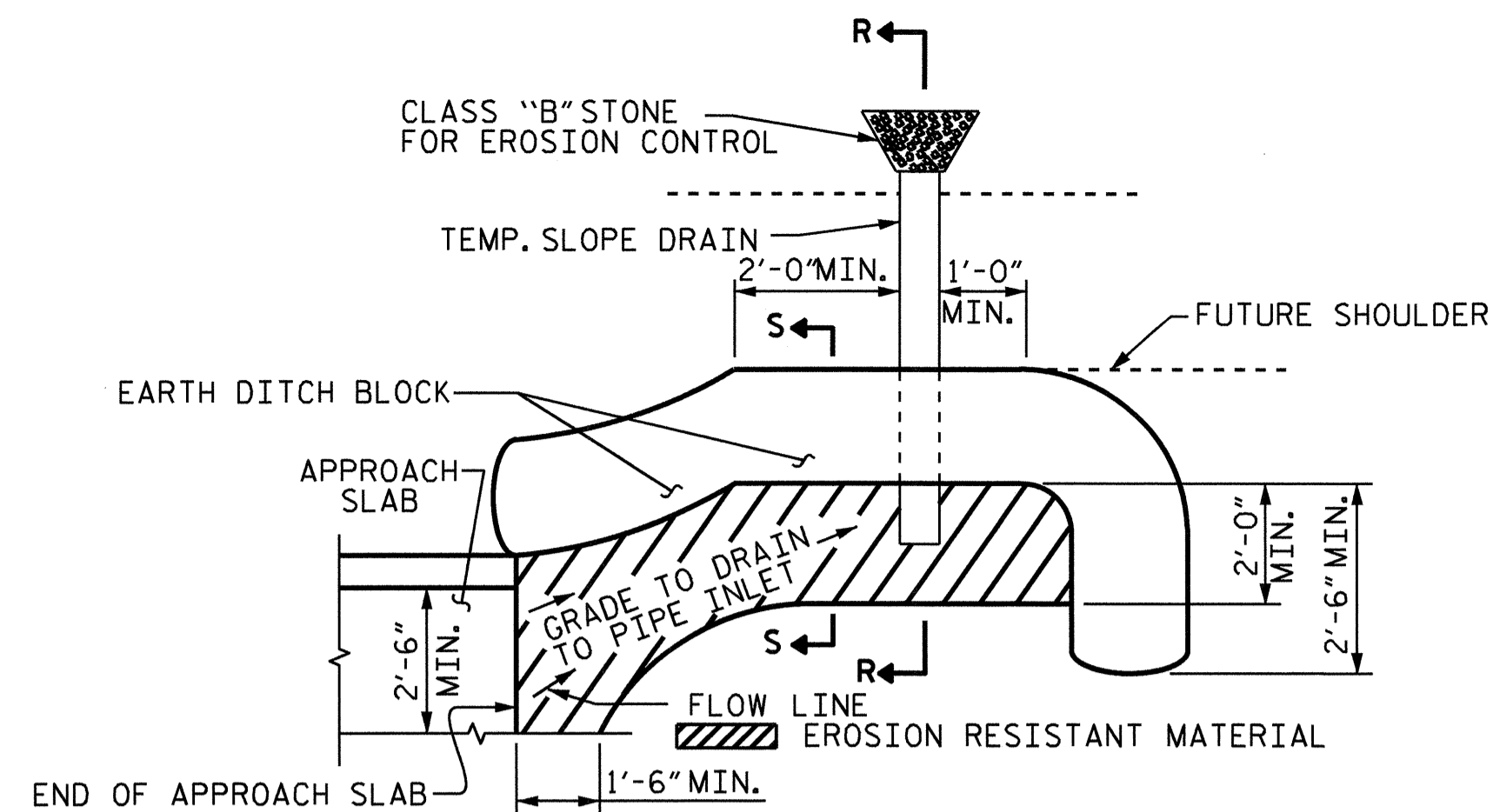
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT



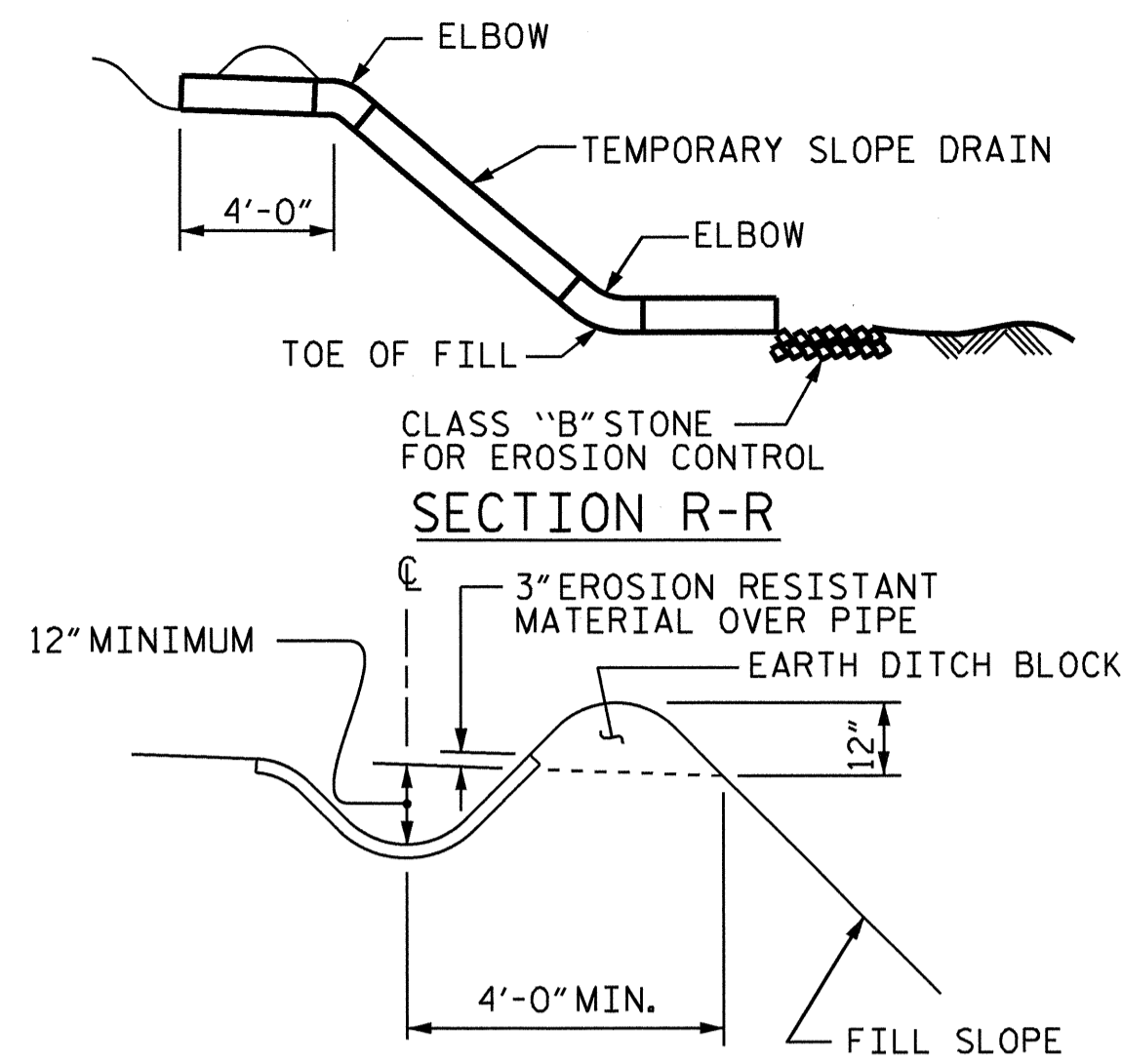
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY: W. B. HILL DATE: 04/11
 CHECKED BY: D. A. GLADDEN DATE: 08/11
 DRAWN BY: EEM 3/95 REV. 9/27/11 MAA/GM
 CHECKED BY: VAP 3/95 REV. 10/1/11 MAA/GM

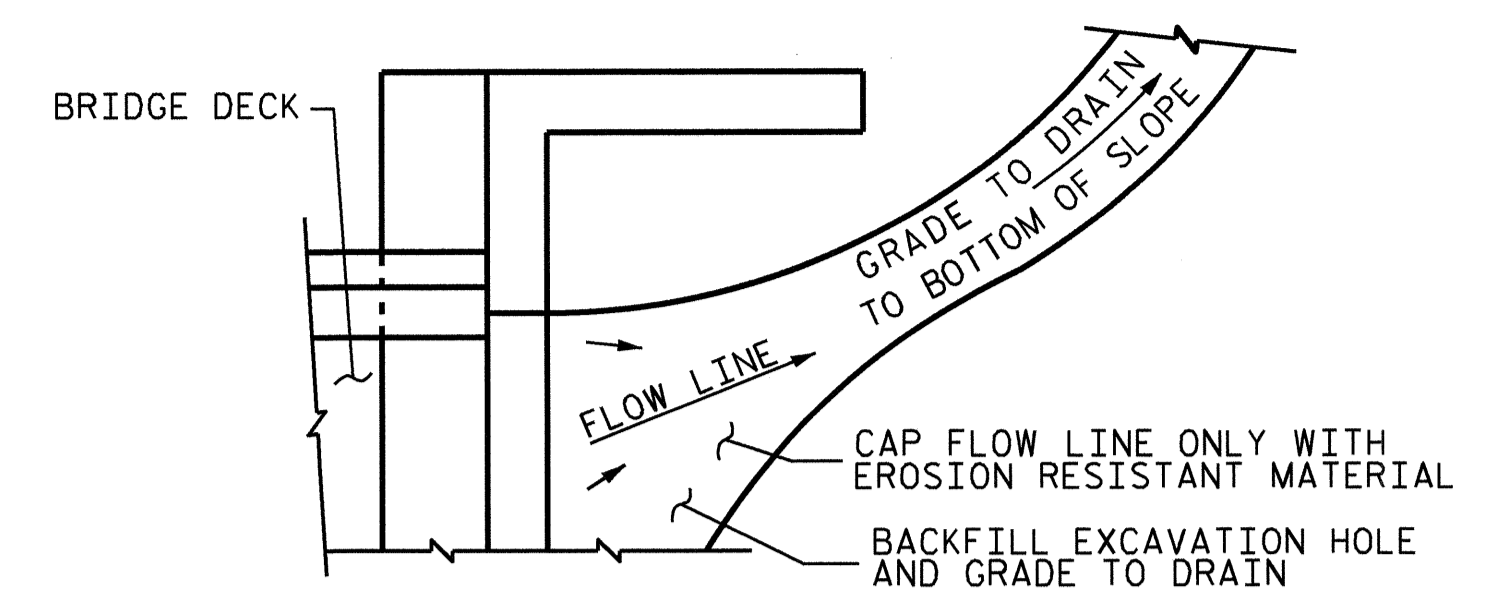


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

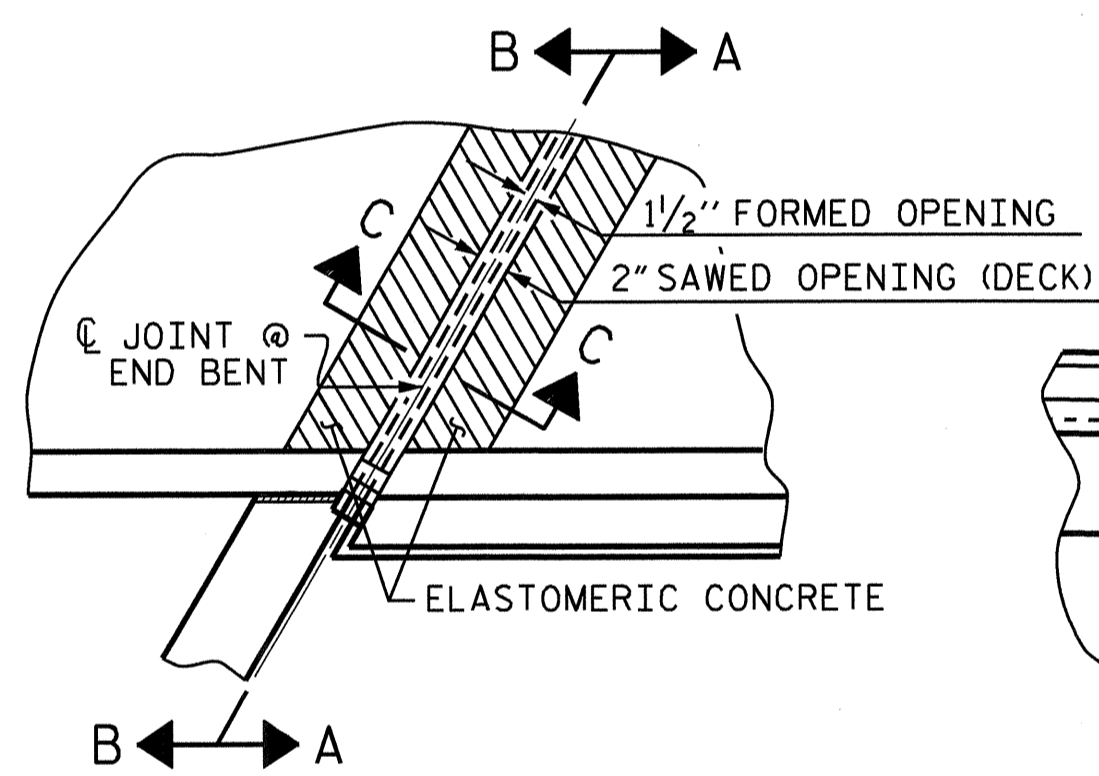


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

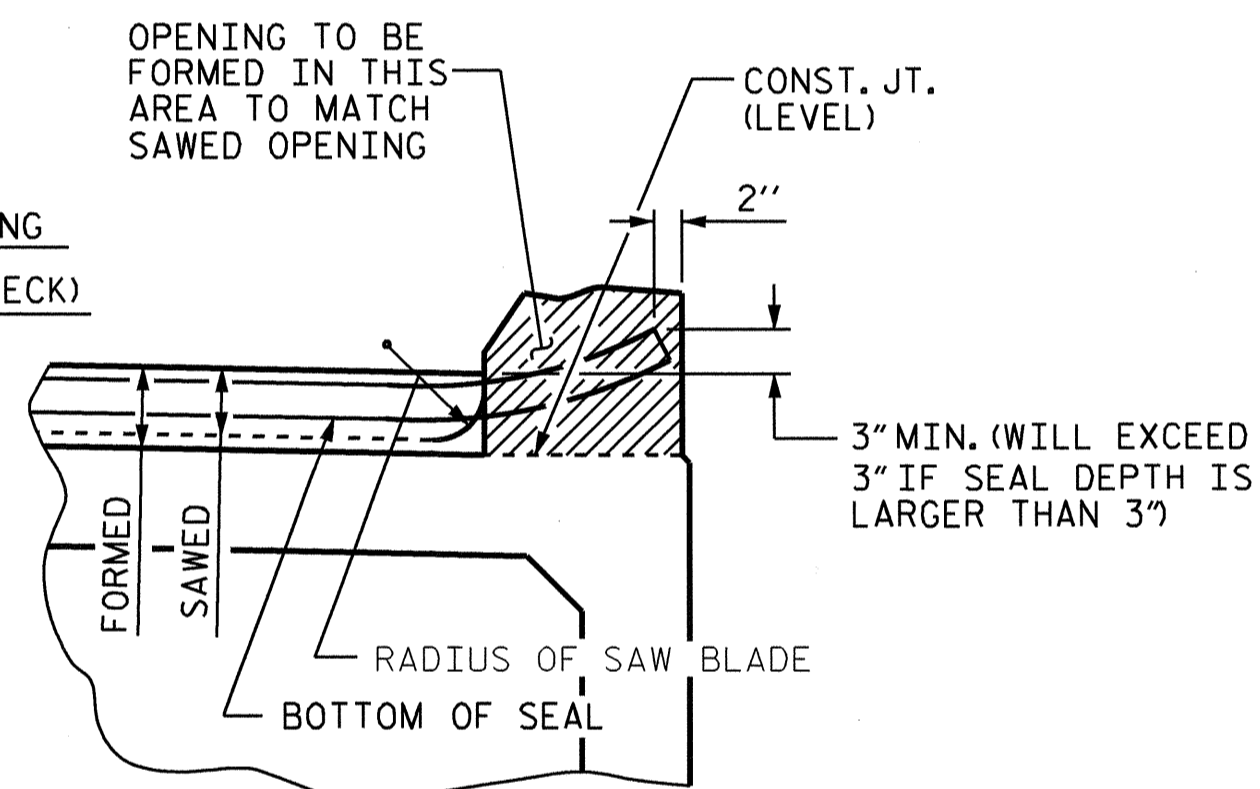
TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

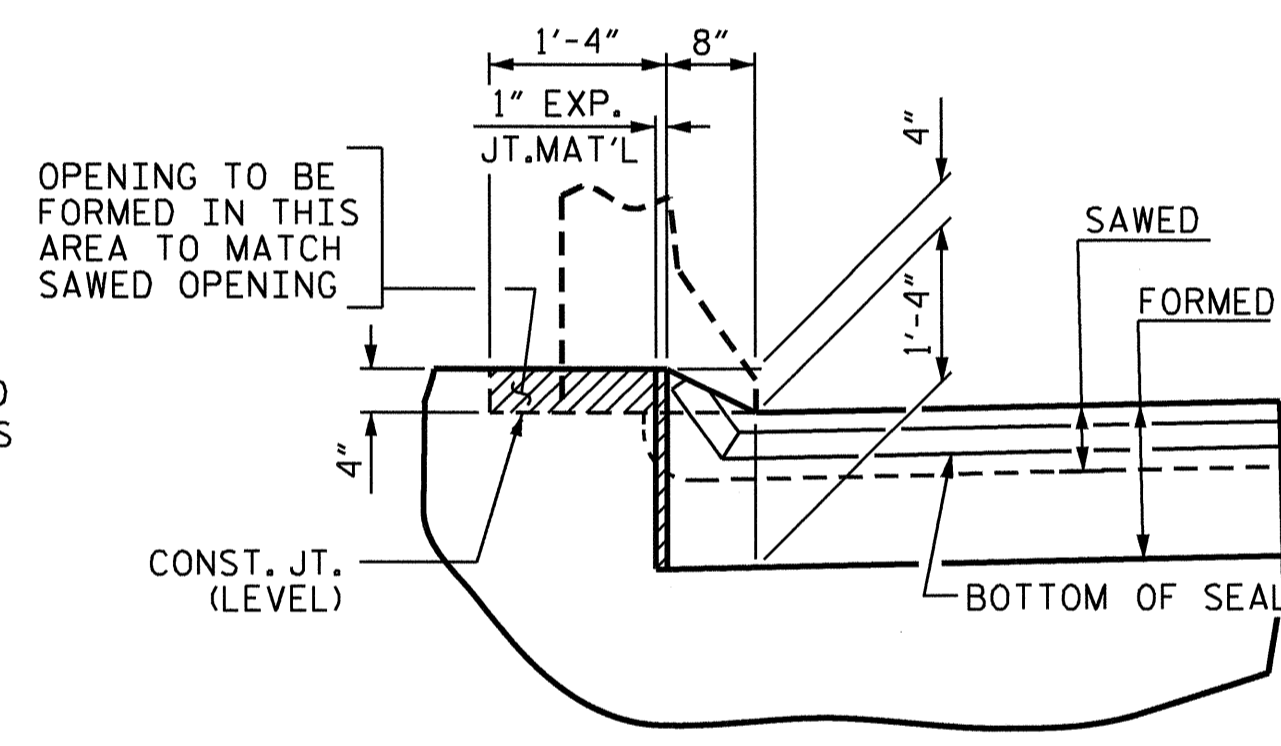
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



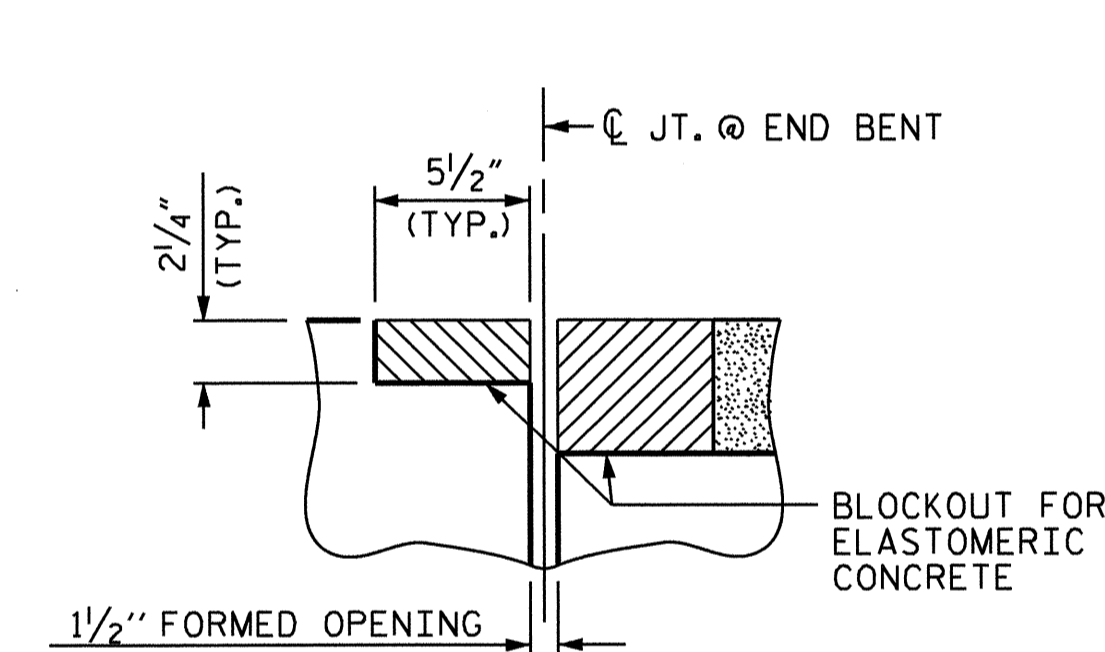
PLAN



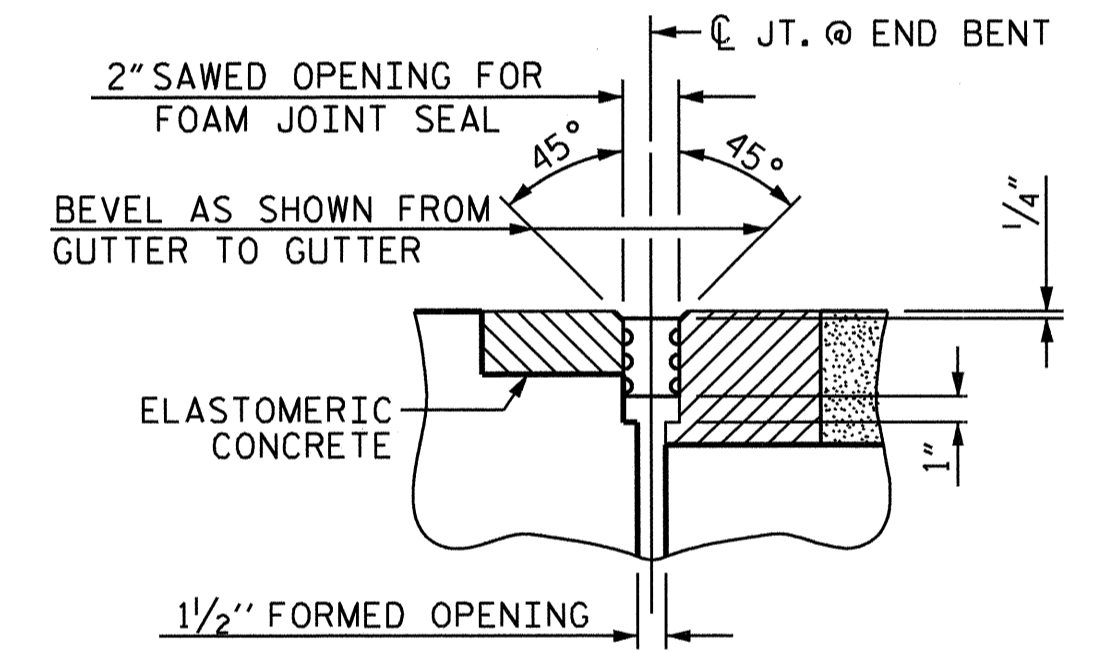
SECTION A-A



SECTION B-B



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



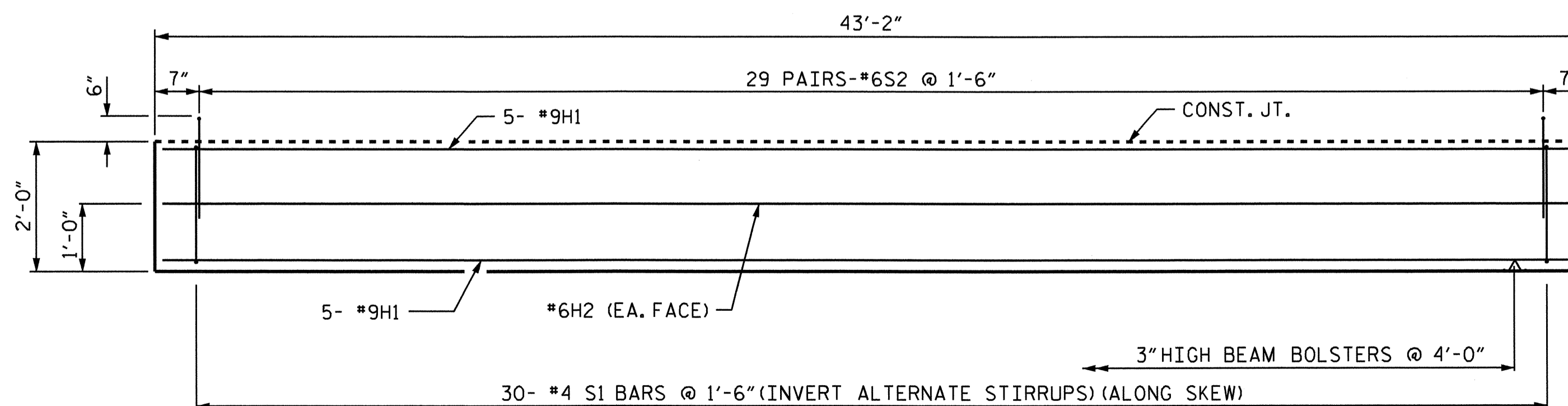
SECTION C-C
FOAM JOINT SEAL
(FIXED)

JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	14.0
2	14.0
TOTAL	28.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



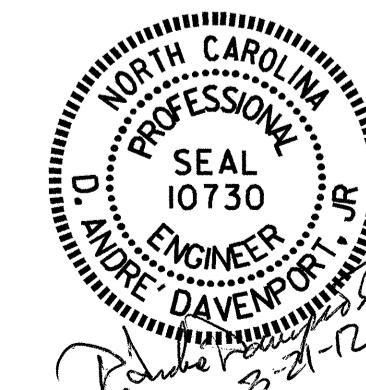
DEADMAN ELEVATION

PROJECT NO. B-4668
WATAUGA COUNTY
STATION: 19+78.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB DETAILS



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

ASSEMBLED BY :	W. B. HILL	DATE :	04/11
CHECKED BY :	D. A. GLADDEN	DATE :	08/11
DRAWN BY :	FCJ 11/88	REV. 5/7/03	RWW/JTE
CHECKED BY :	ARB 11/88	REV. 5/10/06RRR	MAA/KMM
		REV. 10/1/11	MAA/GM

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 2006 "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, AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

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 GIRDERS, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS 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. 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.

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. FINS 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