STATE OF NORTH CAROLINA

BOARD OF TRANSPORTATION

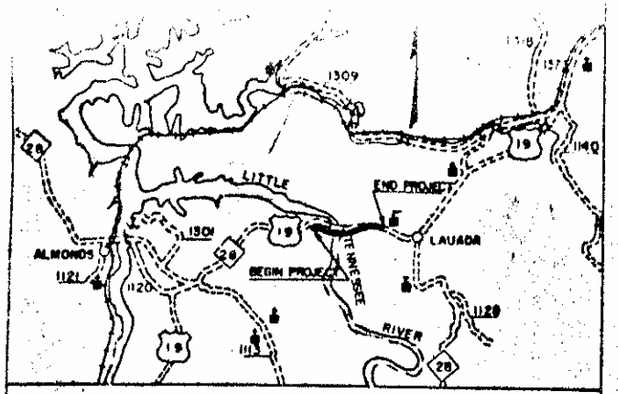
PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

SWAIN COUNTY

LOCATION : BRIDGE OVER LITTLE TENNESSEE RIVER AND APPROACHES ON US 19 NEAR BRYSON CITY

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

T. 8.198901 (A-6C)



SKETCH MAP SHOWING LOCATION OF STATE PROJ. 8.1981901

* USE 1"=100' SCALE ON SHEET NO. 4

GRAPHIC SCALES

PLANS ..... 0 100 200 300 / 0 50 100 150

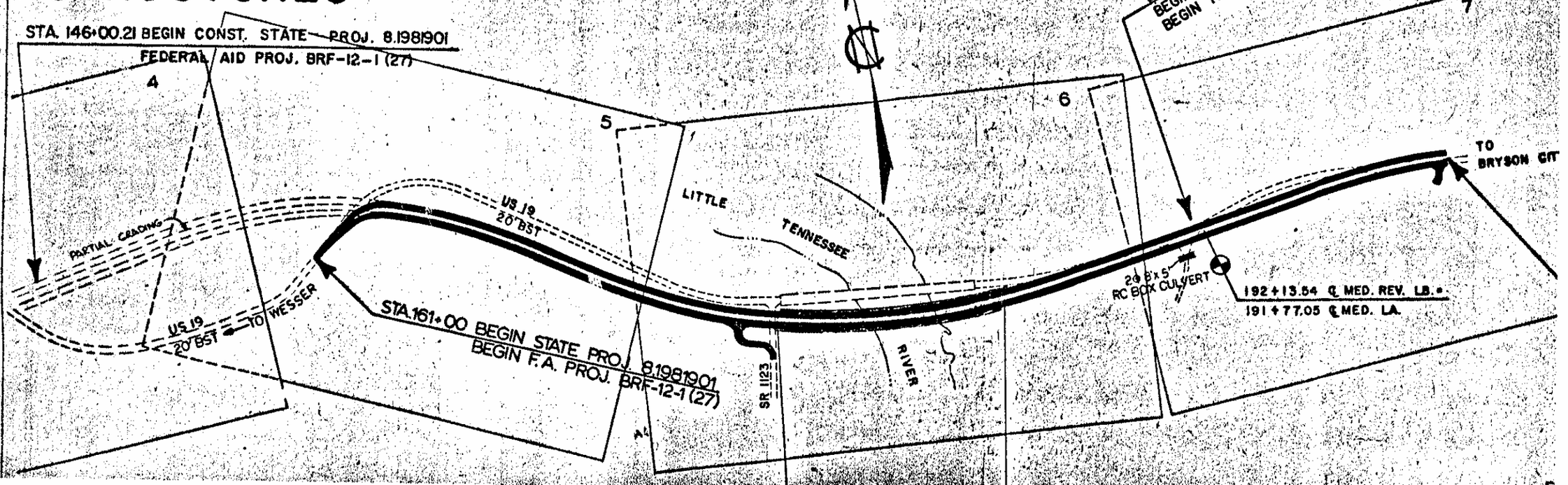
PROFILE (VERT.)..... 0 10 20 30

PROFILE (HOR)..... 0 50 100 150

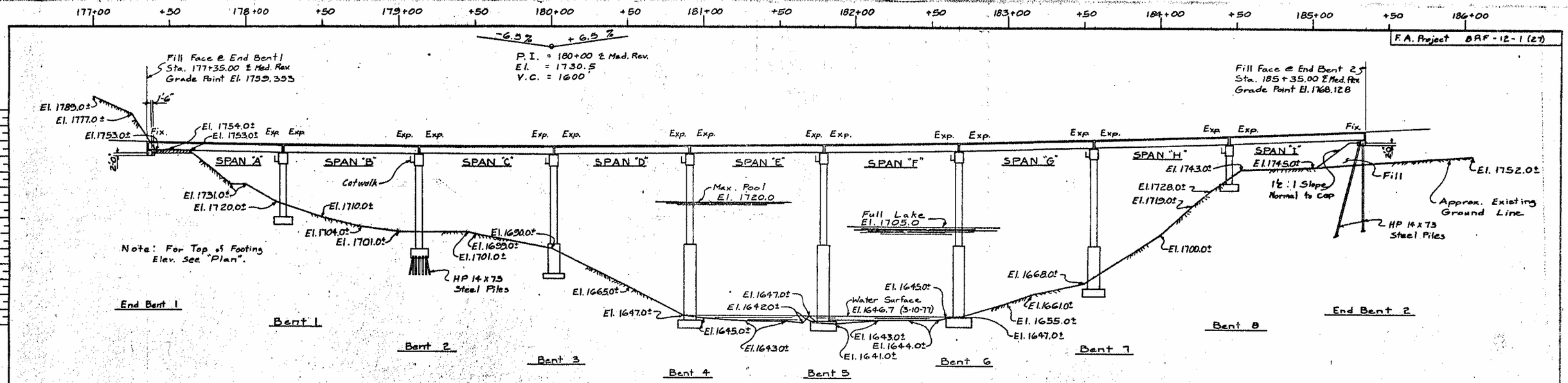
STRUCTURES

STA. 146+00.21 BEGIN CONST. STATE PROJ. 8.198901
FEDERAL AID PROJ. BRF-12-1 (27)

STA. 192+00 END STATE PROJ. 8.198901
END F.A. PROJ. BRF-12-1 (27)
BEGIN STATE PROJ. 8.3019123
BEGIN F.A. PROJ. APD-12-1 (25)

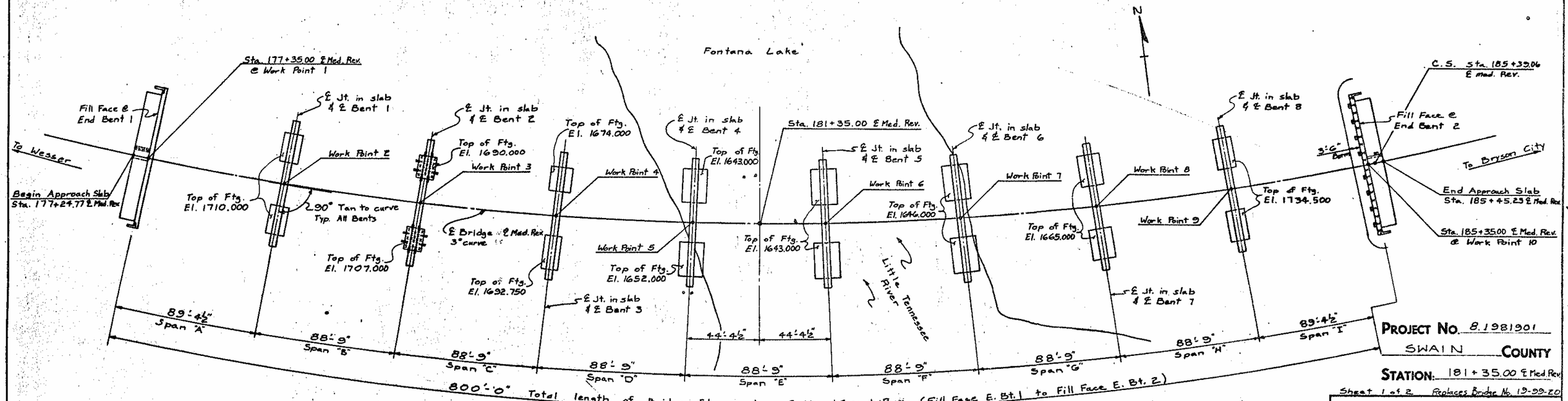


F.A. Project BRF-12-1(27)



SECTION ALONG ℄ BRIDGE

Bents and End Bents on section at right angles to Bents



PLAN

(Catwalks on Bent Caps not shown)

DRAWN BY: J.E. Capps DATE: 5-4-79
CHECKED BY: K.G. Pridgen DATE: Feb. 1980

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35.00 ℄ Med Rev

Sheet 1 of 2 Replaces Bridge No. 19-09-20

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

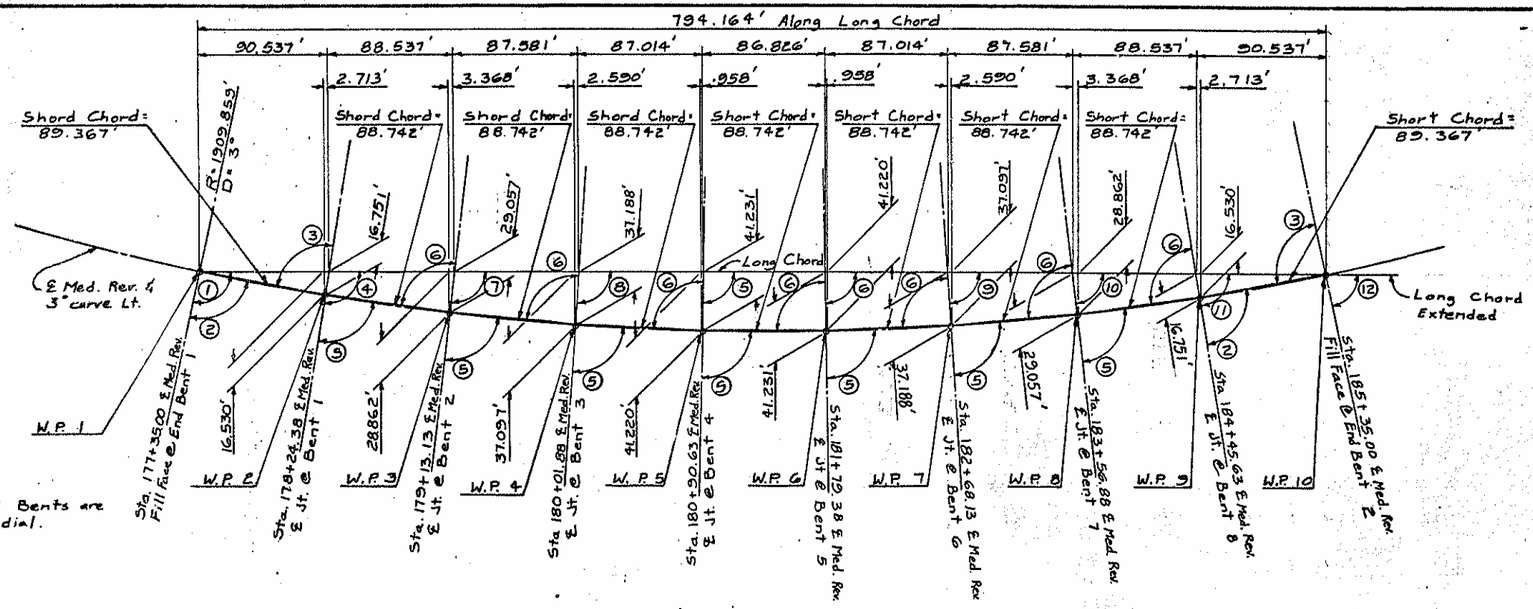
GENERAL DRAWING
BRIDGE OVER LITTLE TENNESSEE RIVER ON US. 19 AND N.C. 28 BETWEEN WESSER AND BRYSON CITY

May 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-1
1			3			TOTAL SHEETS
2			4			77

ANGLES

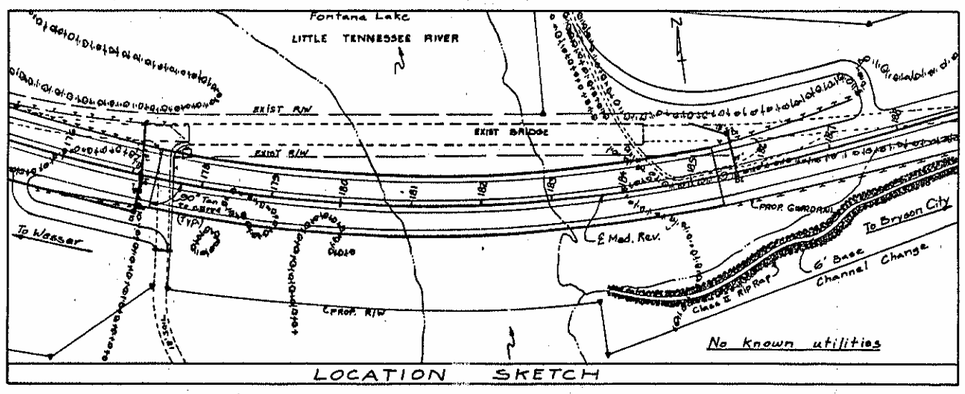
①	102°-00'-00"
②	91°-20'-26"
③	88°-39'-34"
④	99°-19'-08"
⑤	91°-19'-53"
⑥	88°-40'-07"
⑦	96°-39'-23"
⑧	93°-59'-38"
⑨	86°-00'-23"
⑩	83°-20'-38"
⑪	80°-40'-53"
⑫	78°-00'-00"



Note: All Bents are Radial.

LONG CHORD LAYOUT

B.M. = B-16 "D" on SE corner of highway bridge 37' Rt. of Sta. 184+30 ℄ Med. El 1751.48 M.S.L.



LOCATION SKETCH

Design Discharge	= 26,300 cfs
Frequency of Design Flood	= 50 yrs.
Design High Water El.	= 1703
Drainage Area	= 448 sq. mi.
Basic Discharge (Q100)	= 30,500 cfs
Basic High Water El.	= 1710

NOTES

Assumed Live Load = HS20-44 or Alternate Loading

For other design data and general notes, See sheet S-N.

After serving as a temporary crossing the existing structure consisting of 1@45.5' I-beam span 1@186.0', 1@187.0', & 1@186.0' steel deck truss spans & 1@43.5' I-beam span having a 24'0" clear Roadway with concrete slab on R.C. Abuts, S.N. P.# 8 Piers and located 80'± downstream shall be removed. The existing bridge is presently not posted for load limit. Should the structural integrity of the bridge deteriorate during construction of the proposed bridge a load Limit may be posted and may be reduced as found necessary during the life of the project.

Computed Foundation Load for End Bent 1 = 4 tons per sq. ft.

Piles for Bent 2 and End Bent 2 to be driven to a minimum bearing capacity of 50 tons each.

Computed Foundation Load for Bents 1, 3, 4, 5, 6, 7, and 8 = 5 tons per sq. ft.

The material shown in crosshatched area shall be excavated for a distance of 48 ft. each side of center line Roadway as directed by the Engineer. This work will be measured and paid for as Unclassified Structure Excavation.

For Reinforcing Steel Bar Supports, See Special Provisions.

For construction sequence, See Special Provisions.

For Fontana Reservoir elevations and operating guide curve, See Special Provisions.

* The contractor's attention is called to the fact that part of the reinforcing steel for the bents is ASTM A 615 - Grade 60.

A SET OF PLANS OF THE EXISTING STRUCTURE WILL BE AVAILABLE FOR THE CONTRACTOR'S STUDY IN THE OFFICE OF MR. L.W. TEMPLE, HEAD OF STRUCTURE DESIGN, RALEIGH, N.C.

For Reinforced Concrete Deck Slab, see Special Provisions.

For Prestressed Concrete Panels, see Special Provisions.

Footings shall be carried at least 12" into rock with minimum thickness as shown on the plans.

TOTAL BILL OF MATERIAL

	Removal of Exist Structure at Sta. 181+36 ℄ Med. Rev.	Foundation Excavation	Found. Excav. For Bents @ Sta. 181+35 ℄ Med. Rev.	Class AA Concrete	Class A Concrete	Reinforcing Steel *	Reinforced Concrete Deck Slab	Unclassified Structure Excavation	2" Black Steel Pipe Rail	54" Prestressed Concrete Girders	HP 14 x 73 Steel Piles		Concrete Barrier Rail	Linseed Oil Concrete Protection	Bridge Approach Slabs at Sta. 181+35 ℄ Med. Rev.	PREFORMED COMPRESSION JT. SEAL	Elastomeric Bearings
	Lump Sum	Cu. Yds.	Lump Sum		Cu. Yds.	Lbs.	Sq. Ft.	Cu. Yds.	Lin. Ft.	Lin. Ft.	No.	Lin. Ft.	Lin. Ft.	Gal.	Lump Sum	LUMP SUM	Lump Sum
Superstructure							69467			8753.63			1604.00	160			L.S
End Bent 1		35			45.5	7,126		170							L.S.	L.S.	
Bent 1		340			275.9	45,832			101.94								
Bent 2		215			285.0	49,503			101.94		48	960					
Bent 3		285			336.6	67,617			101.94								
Bent 4			L.S.		540.2	108,068			101.94								
Bent 5			L.S		604.2	111,026			101.94								
Bent 6			L.S		594.8	110,607			101.94								
Bent 7		415			457.6	96,393			101.94								
Bent 8		205			238.9	47,472			101.94								
End Bent 2					43.3	7,947					27	675			L.S.	L.S.	
Total	Lump Sum	1495	Lump Sum		3422.0	651,591	69467	170	815.52	8753.63	75	1635	1604.00	160	Lump Sum	LUMP SUM	Lump Sum

DRAWN BY J. E. COPPS DATE 5-8-79
CHECKED BY K.G. PRIDGEN DATE FEB. 1980

PROJECT NO. 8.1981901
SWAIN **COUNTY**
STATION: 181+35.00 ℄ Med. Rev.
Sheet 2 of 2 Replaces Bridge No. 19-902

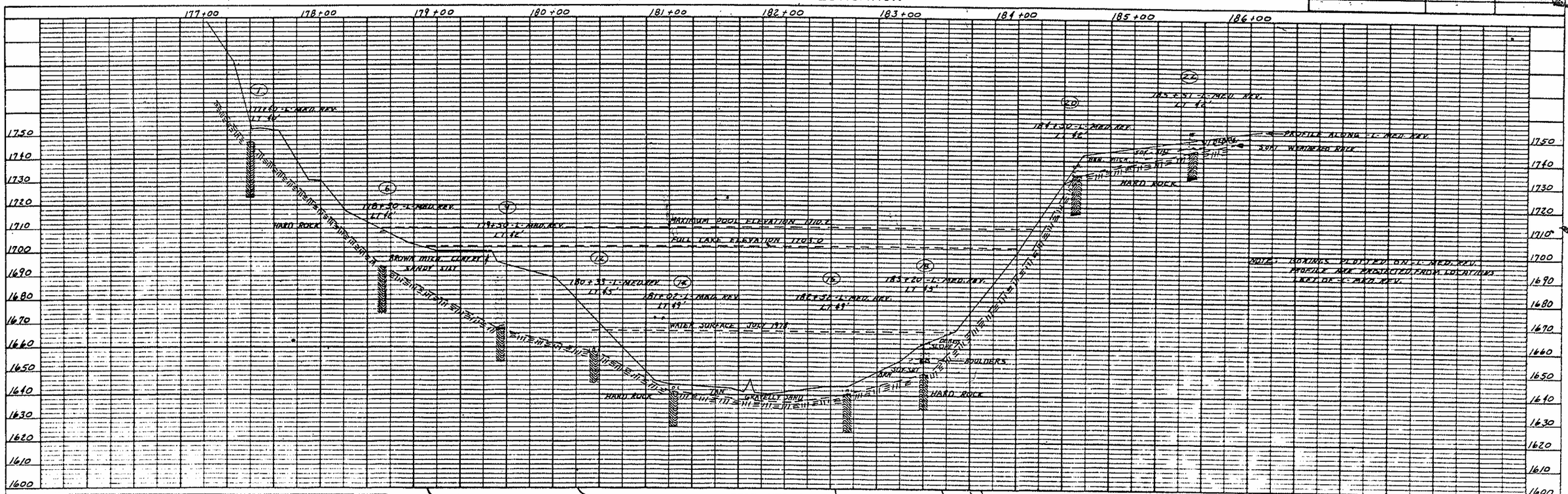
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE OVER LITTLE TENNESSEE RIVER ON U.S. 19 AND N.C. 28 BETWEEN WESSER AND BRYSON CITY
May 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-2
1			3			TOTAL SHEETS
2			4			77

PROJECT: 8.3019101

FOUNDATION INVESTIGATION

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS



SOIL LEGEND AND CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2			A-4	A-5	A-6	A-7		A-4, A-5	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5	A-1, A-2 A-3	A-6, A-7
SYMBOL													
% PASSING #10	50 MX												
#40	30 MX	50 MX	51 MN										
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS
(PASSING #40) LL	6 MX		N.P.	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER	HIGHLY ORGANIC SOILS
PI				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN		
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	20 MX		
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL & SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS			

* PI OF A-7-5 ≤ (LL - 30); PI OF A-7-6 > (LL - 30)

TEXTURE OR GRAIN SIZE

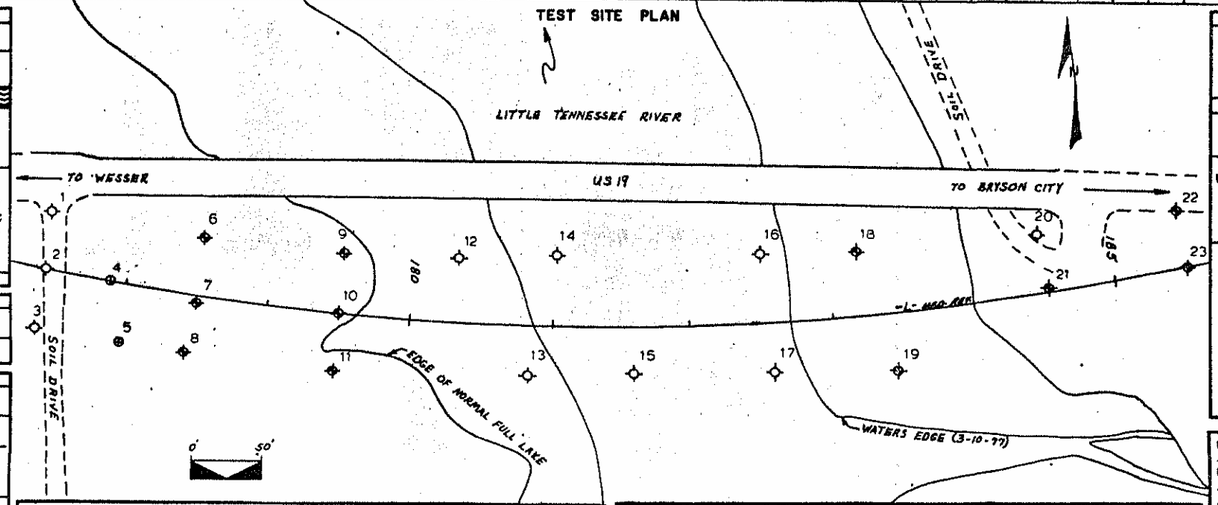
	BOULDER	COBBLE	GRAVEL	COARSE SAND	MED. SAND	FINE SAND	SILT	CLAY
GRAIN SIZE	MM 305	76	2	0.6	0.25	0.2 .05	.005	
	IN 12"	3"						

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	-SATURATED-	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)		SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT	-WET-	
OM — OPTIMUM MOISTURE	-MOIST-	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	-DRY-	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (BPF)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (Q_u) (TONS/FT2)
GENERALLY GRANULAR MATERIAL	VERY LOOSE	< 4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	> 50	
GENERALLY SILT-CLAY MATERIAL	VERY SOFT	< 2	< .25
	SOFT	2 TO 4	.25 TO .5
	MEDIUM STIFF	4 TO 8	.5 TO 1
	STIFF	8 TO 15	1 TO 2*
	VERY STIFF	15 TO 30	2 TO 4
	HARD	> 30	> 4



MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- STRIKE AND DIP OF BEDS
- APPARENT DIP (NORMAL TO _____)
- TEST BORING (SPT, DPT, VST)
- AUGER BORING
- CORE BORING
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION

SAMPLE DESIGNATIONS

- S BULK SAMPLE
- SS SPLIT SPOON SAMPLE
- ST " SHELBY TUBE SAMPLE
- WS WASH SAMPLE

GROUND WATER

- WATER LEVEL IN BORE HOLE { IMMEDIATELY AFTER DRILLING (I.A.D.) / SOON AFTER DRILLING (▽ ____ HRS.) }
- STATIC WATER LEVEL (AFTER 24 HRS.)
- PERCHED WATER (PW), SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEPAGE

ABBREVIATIONS

ALLUV.	ALLUVIUM	REF.	REFER TO
AR	AUGER REFUSAL	RES.	RESIDUAL
BLDR.	BOULDER	S.	SOFT
BPF	BLOWS PER FOOT	SAT.	SATURATED
C	COHESION	SD.	SAND
CALC.	CALCAREOUS	SDY.	SANDY
CL.	CLAY	SED(S).	SEDIMENT(S)
CLY.	CLAYEY	SI.	SILT
COB.	COBBLE	SLI.	SLIGHTLY
CSE.	COARSE	SLTY.	SILTY
DPT	DYNAMIC PENETRATION TEST	SPT	STANDARD PENETRATION TEST
e	VOID RATIO	TP.	TOPSOIL
F	FINE	VST	VANE SHEAR TEST
FOSSIL.	FOSSILIFEROUS	w	MOISTURE CONTENT
FRAC.	FRACTURED	w_L	LIQUID LIMIT
FRAG(S).	FRAGMENT(S)	w_P	PLASTIC LIMIT
GR.	GRAVEL	γ_w	WET WEIGHT(WET)
GS	SPECIFIC GRAVITY	γ_d	DRY DRY WEIGHT
GW	GROUND WATER	REC.	RECOVERY (CORE)
MED.	MEDIUM	JTS./FT.	JOINTS PER FOOT (FREQUANCY)
MIC.	MICACEOUS	EST.	ESTIMATE
MOT.	MOTTLED	QTZ.	QUARTZ
N	BLOW COUNT	WR	WEATHERED ROCK
NS	NO SAMPLE TAKEN		
ORG.	ORGANIC		

ROCK DESCRIPTION

IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED TO BE THAT INDURATED EARTH MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF "WEATHERED ROCK". FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS:

TERM	SYMBOLS		DESCRIPTION
HARD ROCK (HR)	CORED ROCK	INFERRED ROCK LINE [2]	MATERIAL THAT CANNOT BE PENETRATED BY POWER AUGERS, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING SAMPLE.
WEATHERED ROCK (WR)		HARD WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTY USING POWER AUGERS AND YIELDS SPT REFUSAL[1].
		SOFT WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS AND YIELDS SPT VALUES > 100 BPF BUT < SPT REFUSAL.

[1] SPT REFUSAL (ASTM) ≤ 1 INCH OF PENETRATION PER 50 BLOWS.

[2] AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH AUGERS COULD NO LONGER PENETRATE. THE HARD ROCK SYMBOL IS SHOWN WHEN ROCK IS CORED AND ONLY TO THAT DEPTH CORED. A DESCRIPTION OF ROCK IS GIVEN, INCLUDING:

CORE RECOVERY (REC.) - TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

ROCK QUALITY DESIGNATION (RQD) - TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 4" DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

ROCK CORE NOMINAL SIZES: AX CORE ($1^{3}/_{16}$"); BX CORE ($1^{5}/_{8}$"); NX CORE ($2^{1}/_{8}$"); NXWL CORE ($1^{15}/_{16}$")

B.M. "T" ON SE CORNER OF BRIDGE 32' RT STA 186+30-L- ELEV.= 1751.48

DISC:

NOTE: THE SUBSURFACE INFORMATION SUPPLIED ON THIS REPORT IS BASED ON A PRELIMINARY BRIDGE REPORT. A REVIEW OF THE SUBSURFACE CONDITIONS IS NECESSARY IF SIGNIFICANT CHANGES ARE MADE IN THE DESIGN AND/OR LOCATION OF THE PROPOSED STRUCTURE.

SHEET 1 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1901901 F. A. NO.

COUNTY SWAIN ROUTE US 19

BRIDGE ON US 19 -L- MED. REV.

OVER LITTLE TENNESSEE RIVER

D.G. SAFFIT

PROJECT GEOLOGIST J.S. BRITT DRAWN BY L.E. RATTEN

CHECKED BY M.F. KOCH SUBMITTED BY M.F. KOCH

PERSONNEL L.T. PACKER - W.G. MOORE DATE SUBMITTED 06/6/1978

C.D. PENDER

D.L. TOYNER

SHEET NO. S-3

TOTAL SHEETS 77

FORM GEO-01

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-		

BORING NO. 1 BENT NO. ____ COLLAR ELEV. 1751.57
BORING LOC. (STA. & OFFSET) 177+40 40' LT TOTAL DEPTH 27.8'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1751.6							BROWN-TAN MICA. SANDY SILT
1747.8	3.8		RESIDUAL SOIL			CORE 1	REC. 90% RQD 49% 4.5 JTS./FT. QTZ.-MICA. SCHIST
1743.8	7.8		REGAN BX. CORING AT 3.8'			CORE 2	REC. 92% RQD 49% 5.0 JTS./FT. QTZ.-MICA. SCHIST
1738.8	12.8					CORE 3	REC. 98% RQD 59% 3.9 JTS./FT. QTZ.-MICA. SCHIST
1733.8	17.8					CORE 4	REC. 100% RQD 98% 1.8 JTS./FT. QTZ.-MICA. SCHIST
1728.8	22.8					CORE 5	REC. 98% RQD 88% 2.7 JTS./FT. QTZ.-MICA. SCHIST
1723.8	27.8		TERMINATED BORING AT 27.8'				

DATE COMPLETED 7-27-78

BORING NO. 2 BENT NO. ____ COLLAR ELEV. 1754.21
BORING LOC. (STA. & OFFSET) 177+43 ℄ TOTAL DEPTH 27.6'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1754.2							TAN MICA. SANDY SILT
1752.2	2.0		RESIDUAL SOIL				SOFT WEATHERED ROCK EST.
1750.2	4.0		REGAN BX. CORING AT 4.0'			CORE 1	REC. 86% RQD 54% 3.9 JTS./FT. SLI. WEATHERED QTZ.-MICA. SCHIST
1746.2	7.8					CORE 2	REC. 87% RQD 43% 6.4 JTS./FT. QTZ.-MICA. SCHIST
1741.6	12.6					CORE 3	REC. 98% RQD 46% 7.0 JTS./FT. QTZ.-MICA. SCHIST
1736.6	17.6					CORE 4	REC. 100% RQD 88% 2.6 JTS./FT. QTZ.-MICA. SCHIST
1731.6	22.6					CORE 5	REC. 94% RQD 72% 4.7 JTS./FT. QTZ.-MICA. SCHIST
1726.6	27.6		TERMINATED BORING AT 27.6'				

DATE COMPLETED 7-27-78

BORING NO. 3 BENT NO. ____ COLLAR ELEV. 1755.87
BORING LOC. (STA. & OFFSET) 177+41 42' RT. TOTAL DEPTH 29.1'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1755.9							BROWN MICA. SANDY SILT
1753.9	2.0		RESIDUAL SOIL			CORE 1	REC. 75% RQD 14% 7.2 JTS./FT. MICA. SCHIST
1751.5	4.4		REGAN BX. CORING AT 4.0'			CORE 2	REC. 78% RQD 38% 4.6 JTS./FT. MICA. SCHIST
1746.8	9.1					CORE 3	REC. 66% RQD 7% 6.7 JTS./FT. MICA. SCHIST
1741.8	14.1					CORE 4	REC. 94% RQD 78% 3.6 JTS./FT. QTZ.-MICA. SCHIST
1736.8	19.1					CORE 5	REC 100% ROD 94% 3.0 JTS/FT MICA. SCHIST
1731.8	24.1					CORE 6	REC. 100% RQD 92% 2.6 JTS./FT. QTZ.-MICA. SCHIST
1728.8	29.1		TERMINATED BORING AT 29.1'				

DATE COMPLETED 7-27-78

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. 4 BENT NO. ____ COLLAR ELEV. 1730.0±
BORING LOC. (STA. & OFFSET) 177+88 ℄ TOTAL DEPTH 12.0'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1730.0							TAN MICA. CLAYEY SILT W/ BOULDERS
1726.0	4.0		RESIDUAL SOIL				TAN MICA. SANDY SILT
1722.0	8.0						SOFT WEATHERED ROCK EST.
1718.0	12.0		6" AUGER REF. ON ROCK TEETH REFUSAL AT 12.0'				

DATE COMPLETED 7-28-78

BORING NO. 5 BENT NO. ____ COLLAR ELEV. 1727.0±
BORING LOC. (STA. & OFFSET) 178+00 42' RT. TOTAL DEPTH 14.0'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1727.0							BROWN-TAN MICA. CLAYEY SILT
1714.0	13.0		RESIDUAL SOIL				SOFT WEATHERED ROCK EST.
1713.0	14.0		6" AUGER REF. ON ROCK TEETH REFUSAL AT 14.0'				

DATE COMPLETED 7-28-78

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	qu	SHEAR STRENGTH

SHEET 2 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO. ____
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST J.S. BRITT DRAWN BY R.S. JOHNSON
CHECKED BY H.F. KOCH SUBMITTED BY H.F. KOCH
DATE SUBMITTED OCTOBER 6, 1978 FORM: GEO-02

SHEET NO. S-4
TOTAL SHEETS 77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

BORING NO. 6 BENT NO. ____ COLLAR ELEV. 1708.41
BORING LOC. (STA. & OFFSET) 178+50 42' LT TOTAL DEPTH 33.9'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1708.4							BROWN-TAN MICA. CLAYEY SILT
1703.1	5.3	4 6 8	RESIDUAL SOIL				
1698.1	10.3	6 6 7					
1693.7	14.7						
			REGAN BX CORING AT 15.2'			CORE 1	REC. 86% RQD 15% 7.2 JTS./FT. QTZ.-MICA. SCHIST
1689.5	18.9					CORE 2	REC. 100% RQD 96% 2.0 JTS./FT. QTZ.-MICA. SCHIST
1684.5	23.9					CORE 3	REC. 100% RQD 90% 3.0 JTS./FT. QTZ.-MICA. SCHIST
1679.5	28.9					CORE 4	REC. 100% RQD 100% 1.4 JTS./FT. QTZ.-MICA. SCHIST
1674.5	33.9		TERMINATED BORING AT 33.9'				

DATE COMPLETED 7-26-78

BORING NO. 7 BENT NO. ____ COLLAR ELEV. 1710.78
BORING LOC. (STA. & OFFSET) 178+51 3' RT TOTAL DEPTH 30.6'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1710.8							BROWN-TAN MICA. CLAYEY SILT
1705.6	5.2	5 7 7	RESIDUAL SOIL				
1700.6	10.2	8 5 6					
1695.6	15.2	100/4					SOFT WEATHERED ROCK
1695.2	15.6		REGAN BX CORING AT 15.6'			CORE 1	REC. 90% RQD 90% 3.1 JTS./FT. QTZ.-MICA. SCHIST
1690.2	20.6					CORE 2	REC. 100% RQD 100% 1.2 JTS./FT. QTZ.-MICA. SCHIST
1685.2	25.6					CORE 3	REC. 100% RQD 100% 1.6 JTS./FT. QTZ.-MICA. SCHIST
1680.2	30.6		TERMINATED BORING AT 30.6'				

DATE COMPLETED 7-26-78

BORING NO. 8 BENT NO. ____ COLLAR ELEV. 1723.12
BORING LOC. (STA. & OFFSET) 178+48 42' RT. TOTAL DEPTH 36.2'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1723.1							BROWN-TAN MICA. CLAYEY SILT
1717.8	5.3	4 7 6	RESIDUAL SOIL				
1712.8	10.3	6 7 7					
1707.8	15.3	7 10/4					SOFT WEATHERED ROCK
1706.9	16.2		REGAN BX BORING AT 16.2'			CORE 1	REC. 72% RQD 55% 6.1 JTS./FT. QTZ.-MICA. SCHIST
1701.9	21.2					CORE 2	REC. 100% RQD 100% 1.6 JTS./FT. QTZ.-GARNET. MICA. SCHIST
1696.9	26.2					CORE 3	REC. 94% RQD 88% 1.6 JTS./FT. QTZ.-GARNET MICA. SCHIST
1691.9	31.2					CORE 4	REC. 100% RQD 100% 2.2 JTS./FT QTZ.-GARNET MICA. SCHIST
1686.9	36.2		TERMINATED BORING AT 36.2'				

DATE COMPLETED 7-27-78

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	%PASSING #200SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	LL.	PI.	
SS-1	11	6.3 - 7.3	A-4	17	42	22	40	30	8	39	NP	
SS-2	11	11.3 -12.3	A-4	11	44	25	37	26	12	31	NP	

BORING NO. 9 BENT NO. ____ COLLAR ELEV. 1689.35
BORING LOC. (STA. & OFFSET) 179+50 42' LT. TOTAL DEPTH 35.1'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1689.4							
1684.3	5.1	7 8 8	RESIDUAL SOIL			REF. 1	BROWN MICA. SANDY SILT
1679.2	10.1	4 5 8				REF. 2	
1674.3	15.1	6 11 8				REF 2	
1669.3	20.1	7 42/9					SOFT WEATHERED ROCK
1668.2	21.2		REGAN BX CORING AT 21.2'			CORE 1	REC. 97% RQD 67% 3.7 JTS/FT. QTZ.-MICA. SCHIST
1664.3	25.1					CORE 2	REC. 100% RQD 90% 2.0 JTS./FT. QTZ.-MICA SCHIST
1659.3	30.1					CORE 3	REC. 100% RQD 98% 1.0 JTS./FT QTZ.-MICA. SCHIST
1654.3	35.1		TERMINATED BORING AT 35.1'				

DATE COMPLETED 7-25-78

BORING NO. 10 BENT NO. ____ COLLAR ELEV. 1699.01
BORING LOC. (STA. & OFFSET) 179+50 ℄ TOTAL DEPTH 35.7'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1699.0							
1693.2	5.8	8 8 9	RESIDUAL SOIL			SS-1	BROWN MICA. SANDY SILT
1688.2	10.8	4 6 5				SS-2	
1683.2	15.8	5 6 8				REF. 2	
1681.0	18.0						SOFT WEATHERED ROCK EST.
1678.8	20.2					CORE 1	REC. 100% RQD 100% 0.0 JTS/FT
1678.3	20.7		REGAN BX CORING AT 19.2'				REC. 100% RQD 96% 1.4 JTS./FT. QTZ.-MICA. SCHIST
1673.3	25.7					CORE 2	REC. 100% RQD 100% 1.6 JTS./FT. QTZ.-MICA. SCHIST
1668.3	30.7					CORE 3	REC. 100% RQD 100% 0.6 JTS./FT. QTZ.-MICA. SCHIST
1663.3	35.7		TERMINATED BORING AT 35.7'			CORE 4	

DATE COMPLETED 7-24-78

BORING NO. 11 BENT NO. ____ COLLAR ELEV. 1708.60
BORING LOC. (STA. & OFFSET) 179+50 42' RT. TOTAL DEPTH 29.3

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1708.6							
1702.3	6.3	5 7 7	RESIDUAL SOIL				TAN MICA. SANDY SILT
1697.3	11.3	4 7 8					
1693.8	14.8						NO REC. - CORE LIFTER BROKE
1693.5	15.1		REGAN BX CORING AT 15.1'			CORE 2	REC. 97% RQD 81% 2.4 JTS./FT. QTZ.-MICA. SCHIST
1689.3	19.3					CORE 3	REC. 100% RQD 100% 0.4 JTS./FT. QTZ.-MICA. SCHIST
1684.3	24.3					CORE 4	REC. 100% RQD 100% 0.8 JTS./FT. QTZ.-MICA. SCHIST
1679.3	29.3		TERMINATED BORING AT 29.3'				

DATE COMPLETED 7-25-78

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	qu	SHEAR STRENGTH

SHEET 3 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1961701 F. A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST J.S. BRITT DRAWN BY R.S. JOHNSON
CHECKED BY H.F. KOCH SUBMITTED BY H.F. KOCH
DATE SUBMITTED OCTOBER 6, 1978

SHEET No. S-5
TOTAL SHEETS 77

FORM: GEO-02

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
-		

BORING NO. 12 BENT NO. ____ COLLAR ELEV. 1667.8
BORING LOC. (STA. & OFFSET) 180+33 45' LT. TOTAL DEPTH 22.1'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1667.8			BARGE DECK				WATER
1660.6	7.2		RIVER BOTTOM ALLUVIUM				TAN GRAVELLY SAND
1659.6	8.2					CORE 1	REC. 100% ROD 56% 19.0 JTS/FT.
1658.8	9.0		BEGAN EX. COR. NS AT 8.2			CORE 2	REC. 97% ROD 87% 1.0 JTS/FT
1655.7	12.1					CORE 3	REC. 96% ROD 96% 0.6 JTS./FT. QTZ.-GARNET MICA. SCHIST
1650.7	17.1					CORE 4	REC. 90% ROD 90% 0.8 JTS./FT. QTZ.-GARNET MICA. SCHIST
1645.7	22.1		TERMINATED BORING AT 22.1'				

DATE COMPLETED 7-22-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. 13 BENT NO. ____ COLLAR ELEV. 1667.9
BORING LOC. (STA. & OFFSET) 180+84 36' RT. TOTAL DEPTH 24.2'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1667.9			BARGE DECK				WATER
1659.7	7.6		RIVER BOTTOM ALLUVIUM			P.T.	TAN GRAVELLY SAND - SOFT WR EST
1658.3	9.0					CORE 1	REC. 90% ROD 33% 4.7 JTS./FT. QTZ.-MICA. SCHIST
1657.9	9.4		BEGAN EX. CORING AT 9.4			CORE 2	REC. 63% ROD 50% 3.7 JTS./FT.
1654.9	12.4					CORE 3	REC. 88% ROD 76% 1.4 JTS./FT. QTZ.-GARNET MICA. SCHIST
1653.1	14.2					CORE 4	REC. 100% ROD 100% 0.8 JTS./FT QTZ.-GARNET MICA. SCHIST
1648.1	19.2						
1643.1	24.2		TERMINATED BORING AT 24.2'				

DATE COMPLETED 7-23-78

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	W	%PASSING #200SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

BORING NO. 14 BENT NO. ____ COLLAR ELEV. 1666.7
BORING LOC. (STA. & OFFSET) 181+02 49' LT. TOTAL DEPTH 39.5'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1666.7			BARGE DECK				WATER
1643.2	23.5		RIVER BOTTOM ALLUVIUM				TAN GRAVELLY SAND (ALLUVIUM)
1642.6	24.1					CORE 1	REC. 100% ROD 100% 0.9 JTS./FT.
1641.5	25.1		BEGAN EX. CORING AT 24.1			CORE 2	REC. 93% ROD 93% 1.9 JTS./FT. QTZ.-GARNET MICA. SCHIST
1637.3	29.4					CORE 3	REC. 88% ROD 88% 2.0 JTS./FT. QTZ.-GARNET MICA. SCHIST
1632.3	34.4					CORE 4	REC. 100% ROD 94% 1.9 JTS./FT. QTZ.-GARNET MICA. SCHIST
1627.2	39.5		TERMINATED BORING AT 39.5'				

DATE COMPLETED 7-26-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. 15 BENT NO. ____ COLLAR ELEV. 1666.7
BORING LOC. (STA. & OFFSET) 181+58 34' RT. TOTAL DEPTH 27.5'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1666.7			BARGE DECK				WATER
1643.4	23.3		RIVER BOTTOM ALLUVIUM				TAN GRAVELLY SAND (ALLUVIUM)
1642.6	24.1		BEGAN EX. CORING AT 24.1			CORE 1	REC. 100% ROD 76% 3.2 JTS./FT QTZ.-MICA. SCHIST
1639.2	27.5		TERMINATED BORING AT 27.5' (MECHANICAL DIFFICULTIES)				

DATE COMPLETED 7-26-78

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w_n%	q_u	γ	ϕ	q_p	SHEAR STRENGTH

NOTE: BARGE DECK WAS USED AS COLLAR ELEVATION. THE WATER SURFACE IS APPROX. 1 FT. BELOW THE BARGE DECK.

SHEET 4 of 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST J.S. BRITT DRAWN BY R.S. JOHNSON
CHECKED BY H.F. KOCH SUBMITTED BY H.F. KOCH
DATE SUBMITTED OCTOBER 6, 1978 FORM: GEO-OR

SHEET No. 5-6
TOTAL SHEETS 77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	5	

BORING NO. 16 BENT NO. ____ COLLAR ELEV. 1666.9
BORING LOC. (STA. & OFFSET) 182+52 49' LT TOTAL DEPTH 42.2'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1666.9			BARGE DECK				
							WATER
			RIVER BOTTOM				
1642.8	24.1		ALLUVIUM		0-5		TAN GRAVELLY SAND
1641.4	25.5		MEDIUM SIZE CORING AT 25.5'			CORE 1	REC. 55% ROD 31% 6.5 JTS./FT. QTZ.-MICA. SCHIST
1637.2	29.7					2	REC. 83% ROD 74% 3.2 JTS./FT.
1634.9	32.0					CORE 3	REC. 90% ROD 84% 2.4 JTS./FT. QTZ.-MICA. SCHIST
1629.9	37.0					CORE 4	REC. 100% ROD 100% 2.1 JTS./FT. QTZ.-MICA. SCHIST
1624.7	42.2		TERMINATED BORING AT 42.2'				

DATE COMPLETED 7-25-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. 17 BENT NO. ____ COLLAR ELEV. 1667.3
BORING LOC. (STA. & OFFSET) 182+56 35' RT. TOTAL DEPTH 50.1'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1667.3			BARGE DECK				
							WATER
			RIVER BOTTOM				
1643.4	24.1				0-5		BROKEN ROCK - DEBRIS (BLASTING)
1642.1	25.2		MEDIUM SIZE CORING AT 25.2'			CORE 1	REC. 22% ROD 0% 6.0 JTS./FT. BROKEN ROCK, BOULDERS, & SOIL
1638.0	29.3		SOLID ROCK AT 29.3'			CORE 2	REC. 39% ROD 21% 3.6 JTS./FT. BROKEN ROCK, BOULDERS, & GRAVEL
1632.4	34.9						QTZ.-MICA. SCHIST
1627.3	40.0					CORE 3	REC. 53% ROD 23% 5.2 JTS./FT. QTZ.-MICA. SCHIST
1622.2	45.1					CORE 4	REC. 98% ROD 96% 1.8 JTS./FT. QTZ.-MICA. SCHIST
1617.2	50.1		TERMINATED BORING AT 50.1'			CORE 5	REC. 100% ROD 100% 1.0 JTS./FT QTZ.-MICA. SCHIST

DATE COMPLETED 7-25-78

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	LL	PI

BORING NO. 18 BENT NO. ____ COLLAR ELEV. 1668.9
BORING LOC. (STA. & OFFSET) 183+20 45' LT. TOTAL DEPTH 34.7'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1668.9			BARGE DECK				
							WATER
			RIVER BOTTOM				
1664.6	4.3				0-5		BROWN MICA. SANDY SILT W/ BOULDERS (SLOPE DEBRIS)
1660.2	8.7					1	BOULDER - REC. 78%
1657.9	11.0	2 3 R					BROWN MICA. SANDY SILT W/ BOULDERS (SLOPE DEBRIS)
1657.9	11.9						
1653.0	15.9						
1649.2	19.7		MEDIUM SIZE CORING AT 19.7'			CORE 2	REC. 65% ROD 35% 3.5 JTS./FT. QTZ.-GARNET MICA. SCHIST
1643.5	25.4					CORE 3	REC. 100% ROD 85% 2.4 JTS./FT QTZ.-GARNET MICA. SCHIST
1638.2	30.7					CORE 4	REC 100% ROD 92% 0.8 JTS./FT. QTZ.-GARNET MICA. SCHIST
1634.2	34.7		TERMINATED BORING AT 34.7'				

DATE COMPLETED 7-20-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. 19 BENT NO. ____ COLLAR ELEV. 1668.0
BORING LOC. (STA. & OFFSET) 183+40 41' RT. TOTAL DEPTH 34.6'

ELEV. 1680.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1668.0			BARGE DECK				
							WATER
			RIVER BOTTOM				
1663.3	4.7				0-5		BROWN MICA. SANDY SILT W/ BOULDERS (SLOPE DEBRIS)
1657.2	10.8						
1654.6	13.4		MEDIUM SIZE CORING AT 13.4'			CORE 1	REC. 45% ROD 14% 7.1 JTS./FT. MICA. SCHIST BOULDERS - 13.4' TO 18.0'
1649.4	18.6		SOLID ROCK AT 18.6'			CORE 2	REC. 97% ROD 50% 4.6 JTS/FT MICA. SCHIST
1644.8	23.2					3	REC. 100% ROD 72% 2.7 JTS./FT.
1642.6	25.4					CORE 4	REC. 95% ROD 61% 2.2 JTS./FT. MICA. SCHIST
1638.7	29.3					CORE 5	REC. 94% ROD 90% 1.4 JTS./FT MICA. SCHIST
1633.4	34.6		TERMINATED BORING AT 34.6'				

DATE COMPLETED 7-21-78

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	Qu	SHEAR STRENGTH

NOTE BARGE DECK WAS USED AS COLLAR ELEVATION. THE WATER SURFACE IS APPROX. 1FT. BELOW THE BARGE DECK.

SHEET 5 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST J.S BRITT DRAWN BY R.S JOHNSON
CHECKED BY H.F KOCH SUBMITTED BY H.F KOCH
DATE SUBMITTED OCTOBER 6, 1978 FORM GEO-02

SHEET NO. S-7
TOTAL SHEETS 77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

BORING NO. 20 BENT NO. ____ COLLAR ELEV. 1738.45
BORING LOC. (STA. & OFFSET) 184+50 42' LT. TOTAL DEPTH 21.2'

ELEV. 1750.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1738.5							TAN MICA. SANDY SILT W/ BOULDERS (FILL)
1733.8	4.7					1	REC. 100% RQD 27% 6.2 JTS./FT.
1732.3	6.2		BRYAN DX CORING AT 4.7'			CORE 2	REC. 100% RQD 70% 2.8 JTS./FT. QTZ.-MICA. SCHIST
1727.3	11.2					CORE 3	REC. 74% RQD 74% 2.5 JTS./FT.
1724.5	13.9					4	REC. 100% RQD 70% 2.6 JTS./FT.
1722.3	16.2					CORE 5	REC. 100% RQD 90% 1.8 JTS./FT. QTZ.-MICA. SCHIST
1717.3	21.2		TERMINATED BORING AT 21.2'				

DATE COMPLETED 7-20-78

BORING NO. 21 BENT NO. ____ COLLAR ELEV. 1742.66
BORING LOC. (STA. & OFFSET) 184+53 3' LT. TOTAL DEPTH 29.5'

ELEV. 1750.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1742.7							
1738.3	4.4	5 6 11	SEMI-TOTAL				TAN MICA. SANDY SILT W/ BOULDERS (FILL)
1735.9	6.8						SOFT WEATHERED ROCK
1733.2	9.5		BRYAN DX CORING AT 6.8'			CORE 1	REC. 96% RQD 59% 3.5 JTS./FT.
1728.2	14.5					CORE 2	REC. 100% RQD 47% 3.2 JTS./FT. MICA. SCHIST
1723.2	19.5					CORE 3	REC. 100% RQD 84% 1.8 JTS./FT. MICA. SCHIST
1718.2	24.5					CORE 4	REC. 100% RQD 90% 0.8 JTS./FT. MICA. SCHIST
1712.2	29.5		TERMINATED BORING AT 29.5'			CORE 5	REC. 100% RQD 82% 1.2 JTS./FT. MICA. SCHIST

DATE COMPLETED 7-20-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.	
SS-1A	22	3.2-4.2	A-4	36	38	31	36	25	8	29	N.P.	

BORING NO. 22 BENT NO. ____ COLLAR ELEV. 1752.68
BORING LOC. (STA. & OFFSET) 185+51 42' LT. TOTAL DEPTH 19.7'

ELEV. 1760.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1752.7							
1750.0	2.7	20 13 23					BROWN MICA. SANDY SILT W/ BOULDERS (FILL)
1747.0	5.7		REST DUAL			SS-1A	SOFT WEATHERED ROCK EST.
1745.0	7.7					1	REC. 100% RQD 70% 3.0 JTS./FT.
1743.0	9.7		BRYAN DX CORING AT 7.7'			CORE 2	REC. 90% RQD 75% 1.6 JTS./FT. QTZ.-MICA. SCHIST
1738.0	14.7					CORE 3	REC. 100% RQD 100% 0.8 JTS./FT. QTZ.-MICA. SCHIST
1733.0	19.7		TERMINATED BORING AT 19.7'				

DATE COMPLETED 7-19-78

BORING NO. 23 BENT NO. ____ COLLAR ELEV. 1748.3
BORING LOC. (STA. & OFFSET) 185+51 ℄ TOTAL DEPTH 27.8'

ELEV. 1760.0	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1748.3							
1745.5	2.8	4 3 3					BROWN MICA. SANDY SILT W/ BOULDERS (FILL)
1740.2	8.1	4 5 4					
1735.7	12.6						
1734.1	14.2	1 2 3					
1730.5	17.8		BRYAN DX CORING AT 14.2'			CORE 1	REC. 100% RQD 92% 2.3 JTS./FT. QTZ.-MICA. SCHIST
1725.5	22.8					CORE 2	REC. 100% RQD 100% 2.0 JTS./FT. QTZ.-MICA. SCHIST
1720.5	27.8		TERMINATED BORING AT 27.8'			CORE 3	REC. 100% RQD 82% 0.6 JTS./FT. QTZ.-MICA. SCHIST

DATE COMPLETED 7-19-78

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC. (STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	qu	SHEAR STRENGTH	

SHEET 6 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- MED. REV
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST J. S. BRITT DRAWN BY R. S. JOHNSON
CHECKED BY H. F. KOCH SUBMITTED BY H. F. KOCH
DATE SUBMITTED OCTOBER 6, 1978

SHEET No. S-8
TOTAL SHEETS 77

FORM: GEO-02

FOUNDATION INVESTIGATION

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

PROJECT: 8.3019105 (A-6C)

SOIL LEGEND AND CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7							
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	ROCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
(PASSING #40) LL	6 MX		N.P.	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	20 MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL & SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				

* PI OF A-7-5 ≤ (LL - 30). PI OF A-7-6 > (LL - 30)

TEXTURE OR GRAIN SIZE

BOULDER	COBBLE	GRAVEL	COARSE SAND	MED. SAND	FINE SAND	SILT	CLAY
GRAIN SIZE MM 305		76	2	0.6 0.25	0.2 .05	.005	
IN 12"		3"					

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
LL — LIQUID LIMIT	-SATURATED-	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
PLASTIC RANGE (PR)	-WET-	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	-MOIST-	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT	-DRY-	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (SPT)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (q_u) (TONS/FT2)
GENERALLY GRANULAR MATERIAL	VERY LOOSE	< 4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	> 50	
GENERALLY SILT-CLAY MATERIAL	VERY SOFT	< 2	< .25
	SOFT	2 TO 4	.25 TO .5
	MEDIUM STIFF	4 TO 8	.5 TO 1
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	> 30	> 4

TEST SITE PLAN

SEE SHEET NO. 2

ROCK DESCRIPTION

IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED TO BE THAT INDURATED EARTH MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF "WEATHERED ROCK". FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS:

TERM	SYMBOLS		DESCRIPTION
HARD ROCK (HR)	CORED ROCK	INFERRED ROCK LINE [2] (SPT REFUSAL [1])	MATERIAL THAT CANNOT BE PENETRATED BY POWER AUGERS, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING SAMPLE.
WEATHERED ROCK (WR)		HARD WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTY USING POWER AUGERS AND YIELDS SPT REFUSAL [1].
		SOFT WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS AND YIELDS SPT VALUES > 100 BPF BUT < SPT REFUSAL.

[1] SPT REFUSAL (ASTM) ≤ 1 INCH OF PENETRATION PER 50 BLOWS.

[2] AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH AUGERS COULD NO LONGER PENETRATE. THE HARD ROCK SYMBOL IS SHOWN WHEN ROCK IS CORED AND ONLY TO THAT DEPTH CORED. A DESCRIPTION OF ROCK IS GIVEN, INCLUDING:

CORE RECOVERY (REC.) - TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

ROCK QUALITY DESIGNATION (RQD) - TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 4" DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

ROCK CORE NOMINAL SIZES: AX CORE ($1^{3}/_{16}$"); BX CORE ($1^{5}/_{8}$"); NX CORE ($2^{1}/_{8}$"); NXW CORE ($1^{15}/_{16}$")

B.M. ELEVATION: 1751.48, S.E. CORNER OF EXIST. WG BRIDGE, CHISELED SQUARE.

DISC:

NOTE: THE SUBSURFACE INFORMATION SUPPLIED IN THIS REPORT IS BASED ON A PRELIMINARY BRIDGE REPORT. A REVIEW OF THE SUBSURFACE CONDITIONS IS NECESSARY IF SIGNIFICANT CHANGES ARE MADE IN THE DESIGN AND/OR LOCATION OF THE PROPOSED STRUCTURE.

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- STRIKE AND DIP OF BEDS
- APPARENT DIP (NORMAL TO ____)

TEST BORING (SPT / SPT / SPT) — AUGER BORING — CORE BORING — PIEZOMETER INSTALLATION — SLOPE INDICATOR INSTALLATION

SAMPLE DESIGNATIONS

- S BULK SAMPLE
- SS SPLIT SPOON SAMPLE
- ST ____" SHELBY TUBE SAMPLE
- WS WASH SAMPLE

GROUND WATER

- WATER LEVEL IN BORE HOLE (IMMEDIATELY AFTER DRILLING (I.A.D.) / SOON AFTER DRILLING (▽ ____HRS.))
- STATIC WATER LEVEL (AFTER ____HRS.)
- PERCHED WATER (PW), SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEPAGE

ABBREVIATIONS

ALLOY.	ALLUVIUM	REF.	REFER TO
AR	AUGER REFUSAL	RES.	RESIDUAL
BLDR.	BOULDER	SFT.	SOFT
BPF	BLOWS PER FOOT	SAT.	SATURATED
C	COHESION	SD.	SAND
CALC.	CALCAREOUS	SDY.	SANDY
CL.	CLAY	SEC.(S).	SECTION(S)
CLY.	CLAYEY	SLT.	SILT
COB.	COBBLE	SLTY.	SILTY
CSE.	COARSE	SPT	STANDARD PENETRATION TEST
DPT	DYNAMIC PENETRATION TEST	TP	TOPSOIL
E	VOID RATIO	VST	VANE SHEAR TEST
F	FINE	W	MOISTURE CONTENT
FOSSIL.	FOSSILIFEROUS	WT	UNIT WEIGHT(WET)
FRAC.	FRACTURED	WD	UNIT DRY WEIGHT
FRAG(S).	FRAGMENT(S)	Y	UNIT WEIGHT
GR.	GRAVEL	G	SPECIFIC GRAVITY
GS	SPECIFIC GRAVITY	SWR	SOFT WEATHERED ROCK
GW	GROUND WATER	HWR	HARD WEATHERED ROCK
MED.	MEDIUM	∠	ANGLE
MIC.	MICACEOUS	Fe	IRON STAIN
MOT.	MOTTLED	V.	VERY,
N	BLOW COUNT	>	GREATER THAN, OR EQUAL TO
NS	NO SAMPLE TAKEN	<	LESS THAN, OR EQUAL TO
ORG.	ORGANIC	ELEV.	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO.

COUNTY SWAIN ROUTE US 19

BRIDGE ON US 19 -L- & MED. REV.

OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY E.D. McKINLEY

CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER

PERSONNEL WDF, FDM, TPS, MHT, JKR, JSL DATE SUBMITTED 9-79

WRL, MHE, JKR, JSL

FORM: GEO-01

SHEET NO.	TOTAL SHEETS
S-9	77

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.			
F. A. PROJ. NO.			

LITTLE TENNESSEE RIVER

B2-A
B3-A
(2)B3-A
B5-A
(2)B4-A
B7-A
B2-C
B3-C
B4-C
(2)B3-C
B5-C
B5-D
B6-C
(2)B4-C
B7-C
B3-B
B5-B
(2)B3-B
(2)B4-B

APPROXIMATE EDGE OF NORMAL FULL LAKE

CSX

0 30 60
SCALE IN FEET

- ◇ CORE BORING
- ◈ CORE BORING AND STANDARD PENETRATION TEST
- B2 THRU B7 PRE-STRESSED CONCRETE STRUCTURE
- (2)B3 AND (2)B4 STEEL STRUCTURE

PROJECT: B-1981901
COUNTY SWAIN
BRIDGE ON US 19 OVER
LITTLE TENNESSEE RIVER

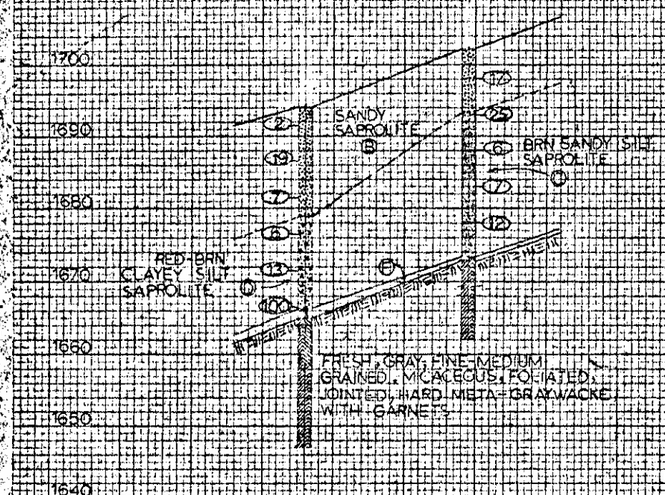
SHEET 5 10

PLATE 3 - CROSS SECTION C.P.R.R. STANDARD
100% RAG PAPER - MADE AND PRINTED IN U.S.A.

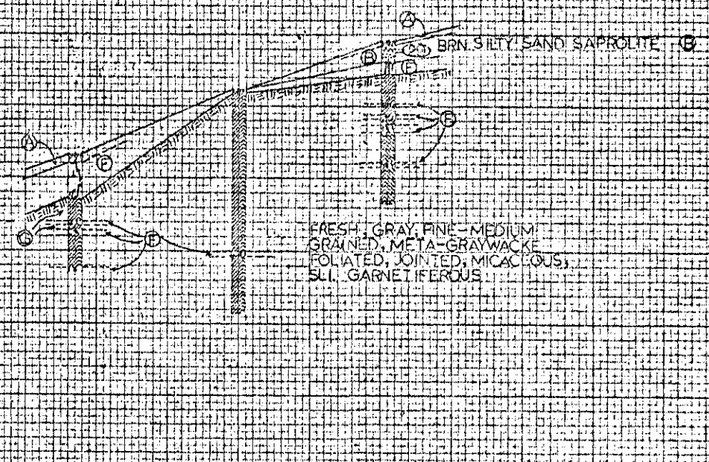
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.			
F. A. PROJ. NO.			

SECTIONS FOR PRE-STRESSED CONCRETE STRUCTURE

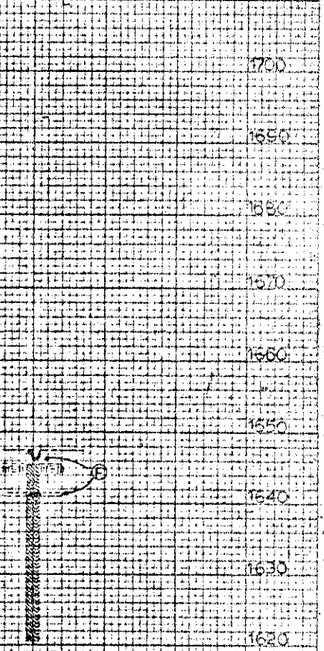
SECTION THROUGH B2-A & B2-C



SECTION THROUGH B3-A, B3-C & B3-B



SECTION B4-C



Ⓐ SOFT SILTY LAKE SEDIMENTS
Ⓑ SANDY SAPROLITE A-2-4 & A-2-6
Ⓒ SANDY SILT SAPROLITE A-4
Ⓓ CLAYEY SILT SAPROLITE A-5
Ⓔ SAND & GRAVEL SEDIMENTS
Ⓕ SOFT AND/OR HARD WEATHERED ROCK
Ⓖ GRAY, FINE-MEDIUM GRAINED META-GRAYWACKE

SCALE IN FEET
0 10 20

PROJECT: B-1981(9)1
COUNTY: SWAIN
SHEET 2 - P.S.R.

SHEET NO. S-11
TOTAL SHEETS 77

PLATE 3 - CROSS SECTION © P. N. A. & S. STANDARDS
100% RAG PAPER - MADE AND PRINTED IN U. S. A.
EUGENE DIETZGEN - 20080

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.			
F. A. PROJ. NO.			

SECTIONS FOR PRE-STRESSED CONCRETE STRUCTURE

SECTION THROUGH B5-A, B5-D, B5-C, B5-E & B5-B

SECTION B6-C

SECTION THROUGH B7-A & B7-C

B5-A 181+80 42'LT

B5-D 181+80 24'LT

B5-C 181+39 ℄

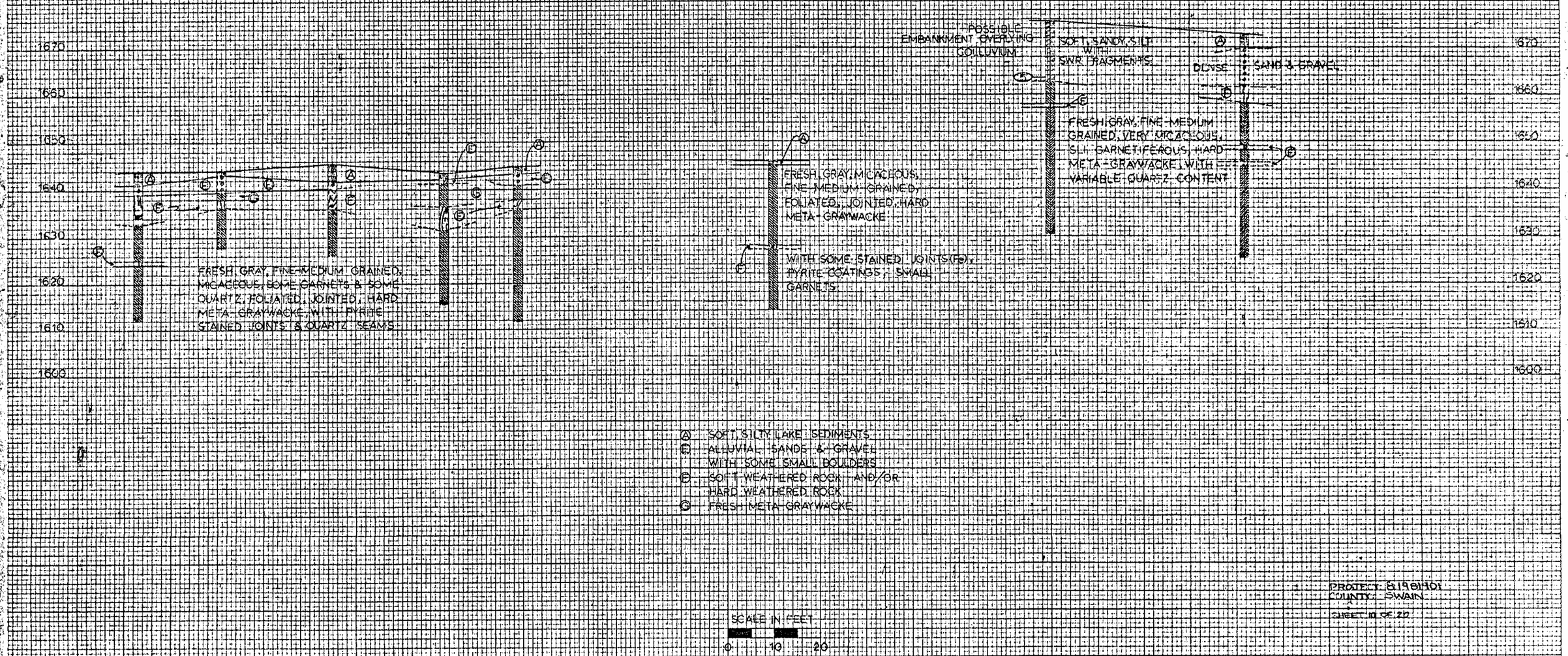
B5-E 181+80 24'RT

B5-B 181+80 45'RT

B6-C 183+67 ℄

B7-A 183+57 42'LT

B7-C 183+57 ℄



Ⓐ SOFT, SILTY LAKE SEDIMENTS

Ⓑ ALLUVIAL SANDS & GRAVEL WITH SOME SMALL BOULDERS

Ⓒ SOFT WEATHERED ROCK AND/OR HARD WEATHERED ROCK

Ⓓ FRESH META-GRAYWACKE

SCALE IN FEET

0 10 20

PROJECT: 8.1961101
COUNTY: SWAIN
SHEET 10 OF 20

SHEET NO. 5-12
TOTAL SHEETS 77

PLATE 3 – CROSS SECTION D.P.R. & N.C. STANDARDS
100% RAGPAPER – MADE AND PRINTED IN U.S.A.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.			
F.A. PROJ. NO.			

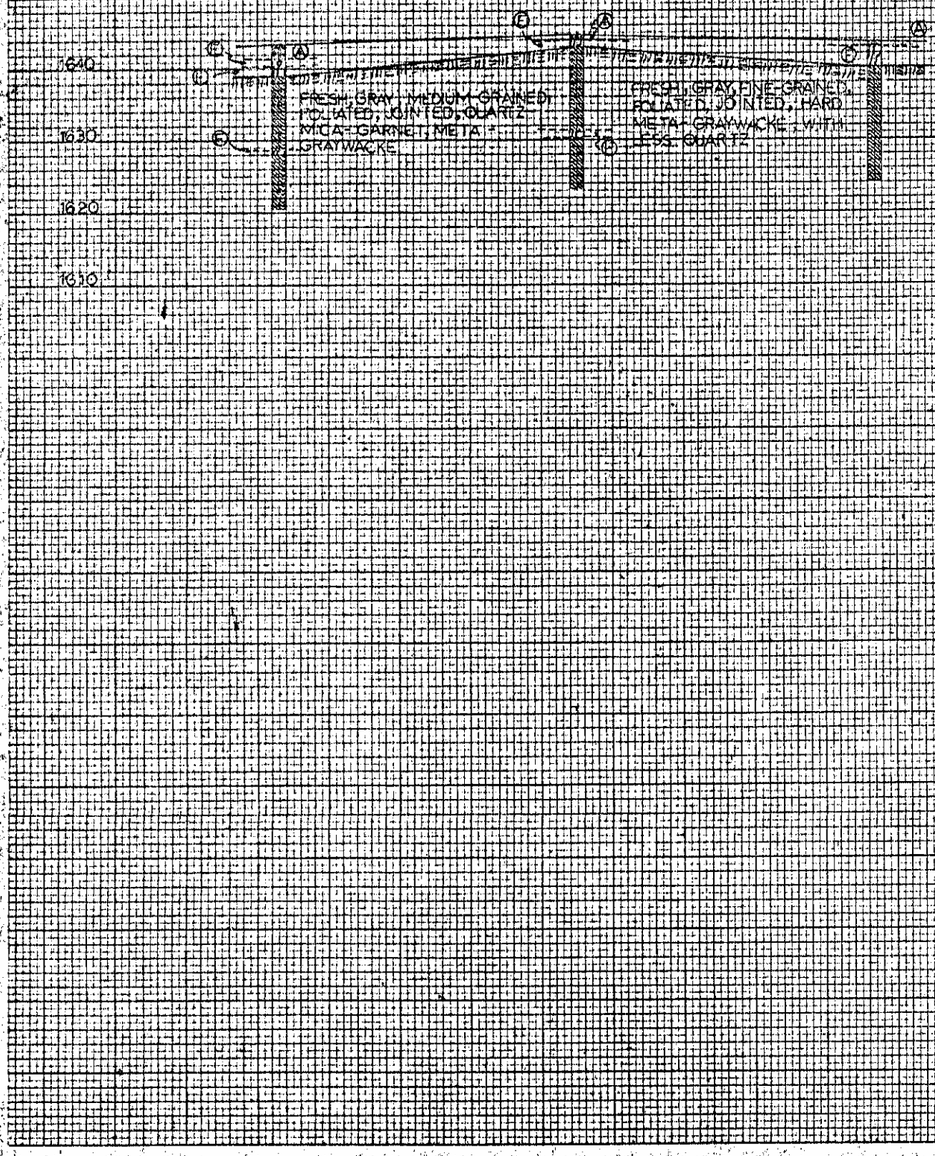
SECTIONS FOR STEEL STRUCTURE

SECTION THROUGH (2)B3-A, (2)B3-C & (2)B3-B

(2)B3-A
B3-35, 42' LT.

(2)B3-C
B3+35, ℄

(2)B3-B
B3-35, 42' RT.

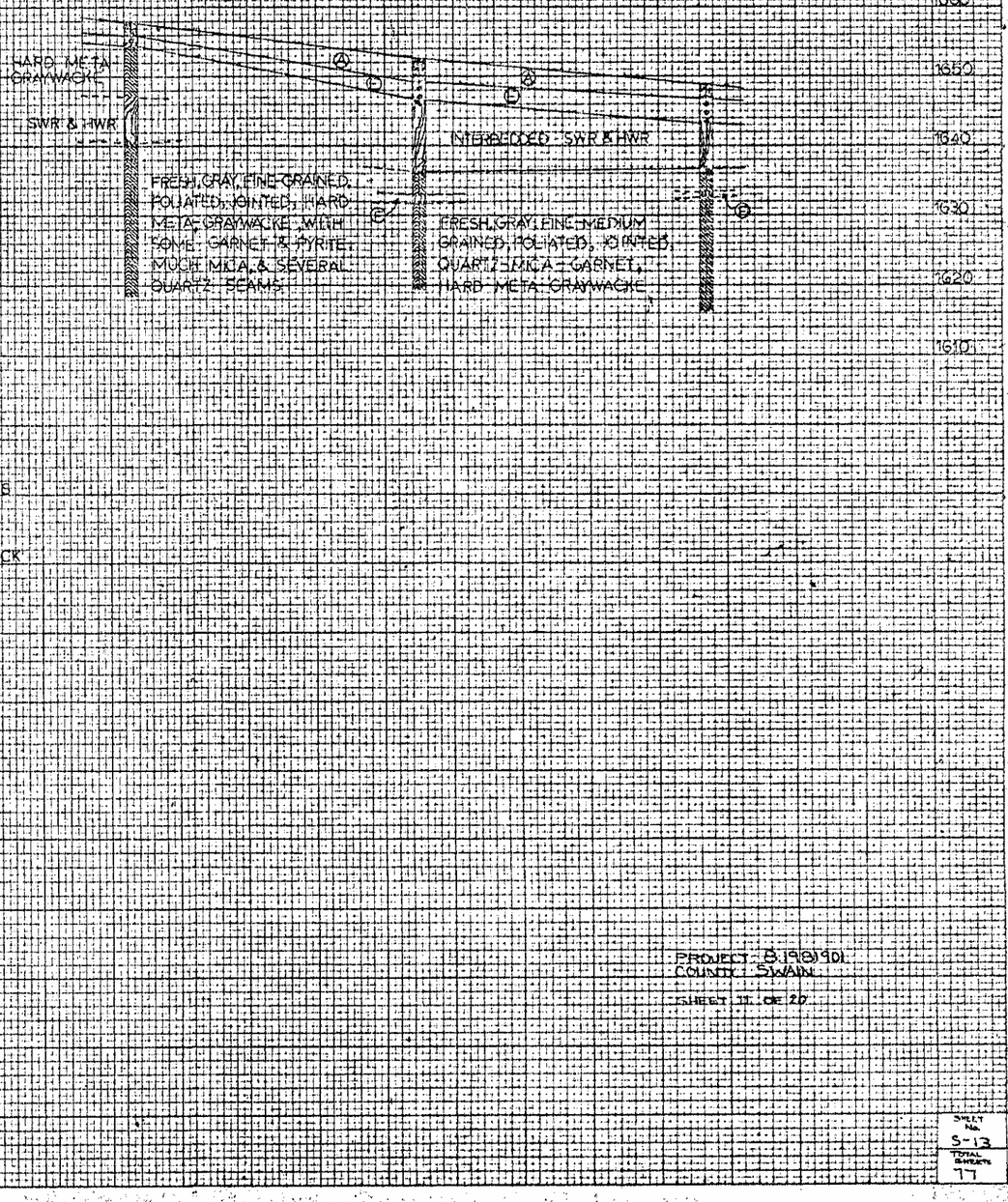


SECTION THROUGH (2)B4-A (2)B4-C & (2)B4-B

(2)B4-A
B4-35, 42' LT.

(2)B4-C
B4-35, ℄

(2)B4-B
B4-35, 42' RT.



Ⓐ BROWN, SOFT, SILTY LAKE SEDIMENTS
Ⓒ ALLUVIAL SANDS & GRAVELS WITH SOME BOULDERS
Ⓔ INTERBEDDED SOFT WEATHERED ROCK & HARD WEATHERED ROCK

SCALE IN FEET
0 10 20

PROJECT: B-1901/01
COUNTY: SWAIN

SHEET 11 OF 20

SHEET NO. S-13
TOTAL SHEETS 17

PLATE 3 - CROSS SECTIONS, R.R. & H.E. STANDARD
100% RAG PAPER - MADE IN U.S.A.
EUGENE DIETZGEN CO.

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1981901	6	14

BORING NO. B2-A BENT NO. 2 COLLAR ELEV. 1703.8'
BORING LOC. (STA. & OFFSET) 179 + 15 24 LT. TOTAL DEPTH 56.8'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1703.8	0		WATER LEVEL ▼				7-3-79
1700							
1694.1	9.7		LAKE BOTTOM				
1690	12.4	1 1 1				SS-1	RED-BRN. SANDY SAPROLITE A-2-4
	17.4	16 7 12					
1680	22.4	5 4 1				SS-2	BRN-RED CLAY SILT SAPROLITE A-5
	27.4	2 2 4				SS-3	
1670	32.4	5 5 8					
	37.4	50/4"				CORE 1	SOFT WEATHERED ROCK
	38.0						
	38.9	20				CORE 2	FRESH GRAY FINE MEDIUM GRAINED HARD META GRAYWACKE MICACEOUS AND GARNETIFEROUS FOLIATED ≥ 45° AND JOINTED (≤ 2 JOINTS PER FOOT)
	43.9					CORE 3	
	48.8					CORE 4	
	53.4					CORE 5	
1647.0	56.8						
1640			CORING TERMINATED AT ELEVATION 1647.0 IN HARD ROCK				

DATE COMPLETED 7-3-79

BORING NO. B2-C BENT NO. 2 COLLAR ELEV. 1705.5'
BORING LOC. (STA. & OFFSET) 179 + 10 2 LT. TOTAL DEPTH 43.7'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1705.5	0		WATER LEVEL ▼				6-29-79
1702.3	3.2		LAKE BOTTOM				
1700	7.4	5 5 12				SS-1	RED-BRN, SILTY, SAND SAPROLITE A-2-5(0)
	12.4	19 14 17				SS-2	
1690	17.4	2 3 3				SS-3	BRN-TAN, SANDY, SILT SAPROLITE A-4
	22.4	1 3 4				SS-4	
1680	27.4	3 5 7				CORE 1	SWR - HWR
	33.4					CORE 2	GRAY, FINE-MEDIUM GRAINED, HARD META-GRAYWACKE, WITH GARNETS & MICA, FOLIATED 24° JOINTED, SWR ZONE 36.1 - 37.1
	34.0					CORE 3	
	38.9						
1661.8	43.7						
1660			CORING TERMINATED AT ELEVATION 1661.8 IN HARD ROCK				
1650							
1640							

DATE COMPLETED 6-29-79

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV. | DEPTH | BLOW COUNT | BLOWS PER FOOT | GW DATA | LOG | SAMP. NO. | DESCRIPTION

DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV. | DEPTH | BLOW COUNT | BLOWS PER FOOT | GW DATA | LOG | SAMP. NO. | DESCRIPTION

DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV. | DEPTH | BLOW COUNT | BLOWS PER FOOT | GW DATA | LOG | SAMP. NO. | DESCRIPTION

DATE COMPLETED _____

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	W	%PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.
SS-1	B2-A	17.9-18.9	A-2-4(0)	19	29	30	50	16	4	40	NP
SS-2	B2-A	27.9-28.9	A-5(3)	6	50	17	42	31	10	42	5
SS-3	B2-A	32.9-33.9	A-5(2)	13	44	16	45	26	10	42	4
SS-1	B2-C	7.9-8.9	A-2-5(0)	17	32	26	49	21	4	41	NP
SS-2	B2-C	12.9-13.9	A-4(0)	25	36	19	56	22	4	35	NP
SS-3	B2-C	22.9-23.9	A-4(2)	7	43	18	49	29	4	35	2
SS-4	B2-C	27.9-28.9	A-4(1)	12	42	20	49	23	8	39	4

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	q_u	γ	e	q_p	SHEAR STRENGTH

SHEET 12 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO. _____
COUNTY SWAIN ROUTE U.S. 19
BRIDGE ON U.S. 19 -L- & MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W. D. FRYE DRAWN BY W. D. FRYE
CHECKED BY F. D. McKINLEY SUBMITTED BY P. WINCHESTER
DATE SUBMITTED 9-79

FORM GEO-02 SHEET NO. 5-14 TOTAL SHEETS 77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-[illegible]	7	77

BORING NO. B3-A BENT NO. 3 COLLAR ELEV. 1705.2
BORING LOC. (STA. & OFFSET) 180+02 23 LT. TOTAL DEPTH 38.0

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1705.2	0		WATER LEVEL	▼			6-26-79
1700							
1690							
1683.3	21.9		LAKE BOTTOM				V. SOFT, SILTY LAKE SEDIMENTS
1680		2/2 2/2 2/2	REC = 100% RQD = 92%			CORE 1	ALTERNATING SWR & HWR
		5/2	REC = 100% RQD = 98%			CORE 2	GRAY, FINE-GRAINED, MICACEOUS, FOLIATED & 45° META-GRAYWACKE. WEATHERED 31.2 - 31.5, 35.1 - 35.6, 37.8 - 38.0
1670			REC = 100% RQD = 71%			CORE 3	
1667.2	38.0		CORING TERMINATED AT ELEVATION 1667.2 IN ROCK				
1660							
1650							
1640							

DATE COMPLETED 6-26-79

BORING NO. B3-C BENT NO. 3 COLLAR ELEV. 1705.2
BORING LOC. (STA. & OFFSET) 180+04 ℄ TOTAL DEPTH 43.7

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1705.2	0		WATER LEVEL	▼			6-27-79
1700							
1692.3	12.9		LAKE BOTTOM				HARD WEATHERED ROCK
	13.2		REC = 100% RQD = 53%			CORE 2	GRAY, FINE-GRAINED META-GRAYWACKE, HIGHLY JOINTED, MANY ALONG FOLIATION (20°-50°), FEW HIGH ANGLE JOINTS, ALL ARE STAINED, FEW SHOW CLAY INFILLING.
1690	13.4		REC = 100% RQD = 42%			CORE 3	
	18.1		REC = 100% RQD = 82%			CORE 4	
	22.5		REC = 100% RQD = 76%			CORE 5	
	24.1		REC = 100% RQD = 82%			CORE 6	FRESH, GRAY, FINE-GRAINED META-GRAYWACKE, VERY MICACEOUS; SLI. GARNETIFEROUS, FOLIATED, JOINTED
	29.0		REC = 100% RQD = 92%			CORE 7	HWR SEAM
	33.9		REC = 100% RQD = 81%			CORE 8	FRESH ROCK SAME AS ABOVE HIGHLY JOINTED 37.6'-37.9'
	38.8		REC = 100% RQD = 96%				
1661.5	43.7		CORING TERMINATED AT ELEVATION 1661.5 IN HARD ROCK				
1660							
1650							
1640							

DATE COMPLETED 6-27-79

BORING NO. B3-B BENT NO. 3 COLLAR ELEV. 1705.2
BORING LOC. (STA. & OFFSET) 180+02 21 RT. TOTAL DEPTH 28.5

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1705.2	0		WATER LEVEL	▼			6-28-79
1699.2	6.0		LAKE BOTTOM			SS-1	V. SOFT, SILTY LAKE SEDIMENTS
	7.5	3	N = 29				BRN. SANDY SAPROLITE A-2-4 (0)
	10.5	15	REC = 97% RQD = 82%			CORE 1	ALTERNATING SWR & HWR
1690	14.0	14	REC = 100% RQD = 38%			CORE 2	FRESH HARD ROCK
	18.8		REC = 100% RQD = 72%			CORE 3	ALTERNATING SWR & HWR
	23.7		REC = 100% RQD = 91%			CORE 4	FRESH, GRAY, FINE-GRAINED, META-GRAYWACKE, FOLIATED 35°-45°, MANY FRACTURES ALONG FOLIATION
1680							HARD WEATHERED ROCK
1676.7	28.6		CORING TERMINATED AT ELEVATION 1676.7 IN HARD ROCK				HARD ROCK SAME AS ABOVE
1670							
1660							
1650							
1640							

DATE COMPLETED 6-28-79

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	%PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	LL	PI
SS-1	B3-B	8.0-9.0	A-2-4 (0)	29	23	45	39	12	4	32	NP

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED _____

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	qu	SHEAR STRENGTH

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F. A. NO. [illegible]
COUNTY SWAIN ROUTE U.S. 19
BRIDGE ON US. 19 -L- ℄ MED. REV
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W. D. FRYE DRAWN BY W. D. FRYE
CHECKED BY F.D. McKINLEY SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79

FORM-GEO-02

SHEET NO.	TOTAL SHEETS
5-13	77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
C [illegible]	[illegible]	2

BORING NO. B4-C BENT NO. 4 COLLAR ELEV. 1703.6
BORING LOC.(STA. & OFFSET) 180+91 ℄ TOTAL DEPTH 83.2'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1703.6	0		WATER LEVEL ▼				7-4-79
1700							
1690							
1680							
1670							
1660							
1647.6	56.0		LAKE BOTTOM				
	57.9		REC. 100% ROD: 100%			CORE 1	SWR - HWR
	59.0		REC. 100% ROD: 95%				FRESH, HARD ROCK (AS BELOW), VERY JOINTED.
1640	63.8		REC. 100% ROD: 98%			CORE 2	0.2' SWR - HWR
	68.7		REC. 100% ROD: 100%			CORE 3	FRESH, GRAY, FINE-GRAINED, MICACEOUS, HARD, META-GRAYWACKE, WITH SEVERAL QUARTZ SEAMS ABOVE ELEV. 1641.1. SLIGHTLY JOINTED (1 JOINT / FT.) AND FOLIATION ANGLE ± 45°, WITH FEW JOINTS STAINED, SOME PYRITE COATED, AND FEW QUARTZ CEMENTED JOINTS.
1630	73.5		REC. 100% ROD: 85%			CORE 4	
	78.4		REC. 100% ROD: 98%			CORE 5	
1620.4	83.2		REC. 100% ROD: 98%			CORE 6	
			BORING TERMINATED AT ELEVATION 1620.4 IN HARD ROCK				
1610							

DATE COMPLETED 7-5-79

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC.(STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

BORING NO. ____ BENT NO. ____ COLLAR ELEV. ____
BORING LOC.(STA. & OFFSET) ____ TOTAL DEPTH ____

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED ____

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	M	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.	

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	Sr	SHEAR STRENGTH	

SHEET 14 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.198901 F. A. NO. [illegible]
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- ℄ MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY F.D. McKINLEY
CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79

SHEET No.	TOTAL SHEETS
5-16	77 --

FORM: GEO-03

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
[illegible]	[illegible]	[illegible]

BORING NO. (2)B3-A BENT NO. 3 COLLAR ELEV. 1689.7
BORING LOC. (STA. & OFFSET) 181+35 42 LT TOTAL DEPTH 69.3'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1689.7	0		WATER LEVEL	▼			9-4-79
1680							
1670							
1660							
1650							
1643.7	46.0		LAKE BOTTOM				SOFT, SILTY LAKE SEDIMENT
1640	50.2						SAND - GRAVEL - BOULDERS
	53.9		REC. = 54% ROD = 100%			CORE 1	SWR & HWR
	56.4		REC. = 100% ROD = 100%			CORE 2	FRESH, GRAY, MED. GRAINED, QUARTZ - MICA, FOLIATED, HARD, META - GRAYEWACKE, SLI JOINTED, SOME SMALL GARNETS.
1630	59.6		REC. = 100% ROD = 100%			CORE 3	0.6' SWR - HWR SEAM
	64.4		REC. = 100% ROD = 97%			CORE 4	FRESH, HARD ROCK (AS ABOVE) WITH LESS QUARTZ AND MORE MICA. (1 JOINT / 2.0 FT.)
1620	69.3		REC. = 100% ROD = 100%			CORE 5	
1610			BORING TERMINATED AT ELEVATION 1620.4 ON HARD ROCK				DATE COMPLETED 9-5-79

BORING NO. (2)B3-C BENT NO. 3 COLLAR ELEV. 1691.7
BORING LOC. (STA. & OFFSET) 181+35 -℄- TOTAL DEPTH 68.4'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1691.7	0		WATER LEVEL	▼			8-30-79
1690							
1680							
1670							
1660							
1650							
1644.7	47.0		LAKE BOTTOM				SOFT, SILTY LAKE SEDIMENT
	48.7						SWR - HWR
1640	53.4		REC. = 97% ROD = 95%			CORE 1	FRESH, GRAY, MED. GRAINED, FOLIATED (∡ ≥ 45°), HARD, META-GRAYEWACKE, WITH QUARTZ - MICA - GARNETS, AND SLI. JOINTED (1 JOINT / 2 FT.).
	58.1		REC. = 100% ROD = 95%			CORE 2	
1630	63.9		REC. = 100% ROD = 83%			CORE 3	0.8' SWR - HWR SEAM
1623.3	68.4		REC. = 100% ROD = 100%			CORE 4	FRESH, HARD ROCK (AS ABOVE), WITH LESS QUARTZ, AND MORE MICA. (1 JOINT / FT.) TO 1627.8, NO OPEN JOINTS BELOW 1627.8.
1620			BORING TERMINATED AT ELEVATION 1623.3 ON HARD ROCK				DATE COMPLETED 8-31-79

BORING NO. (2)B3-B BENT NO. 3 COLLAR ELEV. 1692.2
BORING LOC. (STA. & OFFSET) 181+35 42 RT TOTAL DEPTH 68.1'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1692.2	0		WATER LEVEL	▼			8-29-79
1690							
1680							
1670							
1660							
1650							
1643.7	48.5		LAKE BOTTOM				SOFT SILTY LAKE SEDIMENT
	51.1						SWR - HWR
1640	53.0		REC. = 82% ROD = 76%			CORE 1	FRESH, GRAY, FINE - GRAINED, FOLIATED (∡ ≥ 30°), HARD, META - GRAYEWACKE, WITH MUCH MICA AND SOME SMALL GARNETS, MODERATELY JOINTED (1 JOINT / 0.5 FT.) TO 1633.8 WITH 1 OPEN JOINT BELOW ELEV. 1633.8.
	58.4		REC. = 100% ROD = 100%			CORE 2	
1630	63.2		REC. = 100% ROD = 100%			CORE 3	
1624.1	68.1		REC. = 100% ROD = 100%			CORE 4	
1620			BORING TERMINATED AT ELEVATION 1624.1 ON HARD ROCK				DATE COMPLETED 8-29-79

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	%PASSING #200SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	S%	SHEAR STRENGTH

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F.A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- ℄ MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY F.D. McKINLEY
CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79 FORM: GED-02

SHEET NO.	TOTAL SHEETS
S-17	77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

BORING NO. B5-A BENT NO. 5 COLLAR ELEV. 1705.8
BORING LOC.(STA. & OFFSET) 181+80 42 LT. TOTAL DEPTH 93.8'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMPLE NO.	DESCRIPTION
1705.8	0		WATER LEVEL	▼			7-31-79
1700							
1690							
1680							
1670							
1660							
1650							
1643.8	62.0		LAKE BOTTOM				SOFT SILTY LAKE SEDIMENT
1640	67.1		REC. 85% ROD: 50%				DENSE SAND & GRAVEL
	73.7		REC. 100% ROD: 80%			CORE 1	ALTERNATING, SWR - HWR
1630	78.9		REC. 100% ROD: 75%			CORE 2	FRESH, HARD, GRAY, FINE-MED GRAINED, META-GRAYWACKE; SLI. JOINTED AND FOLIATION OF 25°.
	83.8		REC. 100% ROD: 100%			CORE 3	HWR, VERY FRACTURED
1620	88.8		REC. 100% ROD: 100%			CORE 4	FRESH, HARD ROCK (AS ABOVE); SLI. JOINTED, WITH FEW STAINED (FE.) AND SOME PYRITE COATED. SEVERAL THIN QUARTZ SEAMS.
1612.0	93.8		REC. 100% ROD: 100%			CORE 5	
1610			BORING TERMINATED AT ELEVATION 1612.0 IN HARD ROCK.				
1600							

DATE COMPLETED 7-31-79

BORING NO. B5-B BENT NO. 5 COLLAR ELEV. 1706.7
BORING LOC.(STA. & OFFSET) 181+80 24 LT. TOTAL DEPTH 79.0'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMPLE NO.	DESCRIPTION
1706.7	0		WATER LEVEL	▼			7-25-79
1700							
1690							
1680							
1670							
1660							
1650							
1644.2	62.5		LAKE BOTTOM				SOFT, SILTY, LAKE SEDIMENT
1640	66.8		REC. 85% ROD: 75%				DENSE, SAND & GRAVEL
	69.3		REC. 95% ROD: 87%			CORE 2	SWR - HWR
	74.1		REC. 100% ROD: 100%			CORE 3	FRESH HARD ROCK (AS BELOW).
1627.7	79.0		BORING TERMINATED AT ELEVATION 1627.7 IN HARD ROCK.				SWR - HWR
1620							FRESH, GRAY, HARD, FINE-MED. GRAIN, META-GRAYWACKE; SLI. JOINTED, SOME STAINED, PYRITE AND FOLIATION OF 50°.

DATE COMPLETED 7-30-79

BORING NO. B5-C BENT NO. 5 COLLAR ELEV. 1704.5
BORING LOC.(STA. & OFFSET) 181+79 -℄- TOTAL DEPTH 78.3'

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMPLE NO.	DESCRIPTION
1704.5	0		WATER LEVEL	▼			7-12-79
1700							
1690							
1680							
1670							
1660							
1650							
1645.5	59.0		LAKE BOTTOM				SOFT SILTY LAKE SEDIMENT
1640	65.7		REC. 100% ROD: 87%				DENSE SAND & GRAVEL
	68.4		REC. 100% ROD: 100%			CORE 2	SWR - HWR
1630	73.4		REC. 100% ROD: 100%			CORE 3	FRESH, GRAY, HARD, FINE - CSE. GRAIN, META - GRAYWACKE; WITH FOLIATION OF 40°, SLIGHTLY JOINTED (1 JOINT / FT), FEW STAINED JOINTS AND PYRITE.
1626.0	78.3		BORING TERMINATED AT ELEVATION 1626.2 IN HARD ROCK.				
1620							

DATE COMPLETED 7-12-79

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	M	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.	

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	Gr	SHEAR STRENGTH	

SHEET 16 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F.A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- ℄ MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY F.D. McKINLEY
CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79

SHEET NO.	TOTAL SHEETS
S-18 +	77

FHWA REFERENCE NO.	SHEET NO.	TOTAL SHEETS

BORING NO. B5-E BENT NO. 5 COLLAR ELEV. 1704.4
BORING LOC.(STA. & OFFSET) 181+80 24 RT. TOTAL DEPTH 88.8

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1704.4	0		WATER LEVEL ▼				7-11-79
1700							
1690							
1680							
1670							
1660							
1650							
1643.5	60.9		LAKE BOTTOM				SOFT SILT - SAND SEDIMENT
	61.7						SWR - HWR
1640	64.0		REC. 100% ROD 85%			CORE 2	FRESH, GRAY, HARD, FINE - MED. GRAIN, FOLIATED (± 20°), META - GRAYWACKE. (1 JOINT / 0.3 FT.)
	69.0		REC. 100% ROD 90%			CORE 3	ALTERNATING SWR - HWR, VERY JOINTED.
	74.0		REC. 100% ROD 92%			CORE 4	
1630						CORE 5	HARD, FRESH, ROCK (AS ABOVE), FOLIATION ± 35°, NO OPEN JOINTS ABOVE ELEV 1626.6, SLI. JOINTED ABOVE ELEV. 1622.8, NO OPEN JOINTS BELOW. FEW JOINTS STAINED AND SOME PYRITE COATINGS.
	77.6		REC. 100% ROD 97%			CORE 6	
	82.5		REC. 100% ROD 100%			CORE 7	
1620	83.8		REC. 100% ROD 100%				
1615.6	88.8		BORING TERMINATED AT ELEVATION 1615.6 IN HARD ROCK				
1610							

DATE COMPLETED 7-12-79

BORING NO. B5-B BENT NO. 5 COLLAR ELEV. 1704.8
BORING LOC.(STA. & OFFSET) 181+80 40 RT. TOTAL DEPTH 93.0

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1704.8	0		WATER LEVEL ▼				8-1-79
1700							
1690							
1680							
1670							
1660							
1650							
1644.8	60.0		LAKE BOTTOM				SOFT SILTY LAKE SEDIMENT
	63.6						DENSE SAND & GRAVEL
1640	68.8		REC. 100% ROD 45%			CORE 1	FRESH HARD ROCK (AS BELOW)
	74.0		REC. 100% ROD 57%			CORE 2	SWR - HWR
1630						CORE 3	FRESH, GRAY, HARD, FINE - MED. GRAINED, FOLIATED ± 10° - 45°, MUCH MICA CONTENT, SMALL GARNETS, META - GRAYWACKE; VERY JOINTED ABOVE ELEV. 1630.0, FEW STAINED AND SOME PYRITE COATED. VERY SLI. JOINTED BELOW ELEV. 1630.0 (1 JOINT / 2.0 FT.)
	78.7		REC. 100% ROD 80%			CORE 4	
	83.8		REC. 100% ROD 98%			CORE 5	
1620	88.8		REC. 100% ROD 100%			CORE 6	
1611.8	93.0		REC. 100% ROD 100%				
1610			BORING TERMINATED AT ELEVATION 1611.8 IN HARD ROCK				
1600							

DATE COMPLETED 8-2-79

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC.(STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" 6" 6"	BLOWS PER FOOT 0 50 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED _____

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	M	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	φ	SHEAR STRENGTH

SHEET 17 of 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOLOGY SECTION

STATE PROJECT NO. 8.1981901 F.A. NO. _____
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 - L - & MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY E.D. McKINLEY
CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-7-79

SHEET NO.	TOTAL SHEETS
S-19	77

FORM GEO-03

BORING NO. B6-C BENT NO. 6 COLLAR ELEV. 1702.7

BORING LOC.(STA. & OFFSET) 182+67 ℄ TOTAL DEPTH 88.6

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1702.7	0		WATER LEVEL 8-6-79				
1700							
1690							
1680							
1670							
1660							
1650							
1645.8	56.9		LAKE BOTTOM				
	57.4 / 58.0		REC.=100 % RQD=0 %			CORE 1	DENSE SAND - GRAVEL
1640	63.3		REC.=100 % RQD=100 %			CORE 2	FRESH, GRAY, MICACEOUS, FINE - MEDIUM GRAIN, FOLIATED ± 30° HARD ROCK (META-GRAYWACKE), VERY JOINTED ABOVE ELEVATION 1644.0', AND VERY SLIGHTLY JOINTED BELOW (1 JOINT / 0.5'-1.0') WITH FEW JOINTS STAINED.
	68.2		REC.=100 % RQD=72 %			CORE 3	
1630	72.9		REC.=100 % RQD=100 %			CORE 4	
	78.2		REC.=92 % RQD=84 %			CORE 5	0.1'-0.2' SWR-HWR SEAM
	78.9 / 79.9		REC.=100 % RQD=85 %			CORE 6	FRESH, HARD ROCK, AS ABOVE. JOINTING INCREASES BELOW ELEVATION 1625.0' (1 JOINT / 0.3'-0.5') TO ELEVATION 1619.5', THEN VERY SLIGHTLY JOINTED BELOW.
1620	83.7		REC.=100 % RQD=95 %			CORE 7	
1614.1	88.6		REC.=100 % RQD=96 %			CORE 8	
1610			CORING TERMINATED AT ELEVATION 1614.1 IN HARD ROCK				

DATE COMPLETED 8-8-79

BORING NO. BENT NO. COLLAR ELEV.

BORING LOC.(STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED

BORING NO. BENT NO. COLLAR ELEV.

BORING LOC.(STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	G_s	γ'	e	γ_d	SHEAR STRENGTH

SHEET 18 OF 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.1988901 F.A. NO.

COUNTY SWAIN ROUTE US 19

BRIDGE ON US 19 -L- ℄ MED. REV.

OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY F.D. MCKINLEY

CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER

DATE SUBMITTED 9-79

SHEET NO.	TOTAL SHEETS
S-20	77

FORM GEO-25

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS

BORING NO. (2)B4-A BENT NO. 4 COLLAR ELEV. 1697.3
BORING LOC. (STA. & OFFSET) 182+95 42' LT. TOTAL DEPTH 78.9'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1697.3	0						WATER LEVEL 8-16-79
1657.8	39.5					CORE 1	LAKE BOTTOM SOFT, SILTY LAKE SEDIMENT
	42.4					CORE 2	DENSE SAND & GRAVEL
	43.6						HWR
	44.2					CORE 3	FRESH, HARD ROCK, JOINTED (1 JOINT / 0.5 FT) TO 1653.1
1650	48.0		REC=33% RQD=33%			CORE 4	0.9 SOFT SEAM -- NO RECOVERY
	53.0		REC=100% RQD=100%			CORE 5	1.0 HWR
	58.8		REC=100% RQD=100%			CORE 6	1.4 SWR
1640	63.7		REC=82% RQD=63%			CORE 7	3.1 HWR
	64.5		REC=100% RQD=83%			CORE 8	FRESH, GRAY, FINE-GRAINED, MICACEOUS, HARD, META-GRAYWACKE FOLIATED (ANGLE ≥ 45°), SLIGHTLY JOINTED TO MODERATELY JOINTED (1 JOINT / 0.3'-2.0'), WITH SOME PYRITE AND GARNETS. FEW JOINTS STAINED (FE) AND HEALED WITH QUARTZ.
	69.3		REC=100% RQD=100%			CORE 9	
	74.1		REC=100% RQD=100%			CORE 10	
1618.4	78.9						CORING TERMINATED AT ELEVATION 1618.4 IN HARD ROCK

DATE COMPLETED 8-17-79

BORING NO. (2)B4-C BENT NO. 4 COLLAR ELEV. 1693.5
BORING LOC. (STA. & OFFSET) 182+95 LT. TOTAL DEPTH 74.1'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1693.5	0						WATER LEVEL 8-22-79
1652.5	41.0						LAKE BOTTOM SOFT, SILTY LAKE SEDIMENT
	47.7					CORE 1	DENSE SAND & GRAVEL
1650	53.1		REC=92% RQD=68%			CORE 2	INTERBEDDED SWR-HWR, BROWN, VERY FRACTURED.
	58.4		REC=90% RQD=73%			CORE 3	
	58.8		REC=82% RQD=61%			CORE 4	FRESH, GRAY HARD ROCK
1640	63.8		REC=100% RQD=86%			CORE 5	HWR SEAM
	68.3		REC=100% RQD=96%			CORE 6	FRESH, GRAY, FINE-GRAINED, HARD, META-GRAYWACKE, WITH MUCH MICA, FOLIATION (ANGLE ≥ 45°), SLI. JOINTED (1 JOINT / 0.7 - 1.0 FT.). FEW JOINTS STAINED.
	72.7		REC=95% RQD=91%			CORE 7	
1619.4	74.1		REC=100% RQD=93%			CORE 8	
						CORE 9	
							CORING TERMINATED AT ELEVATION 1619.4 IN HARD ROCK

DATE COMPLETED 8-23-79

BORING NO. (2)B4-B BENT NO. 4 COLLAR ELEV. 1692.8
BORING LOC. (STA. & OFFSET) 182+95 42 RT. TOTAL DEPTH 76.5'

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1692.8	0						WATER LEVEL 8-23-79
1648.8	44.0					CORE 1	LAKE BOTTOM SOFT, SILTY LAKE SEDIMENT
	47.3		REC=100% RQD=6%			CORE 2	DENSE SAND & GRAVEL
	49.3		REC=100% RQD=44%			CORE 3	BROWN HWR VERY JOINTED AND SEVERAL WHITE QUARTZ SEAMS.
1640	53.1		REC=100% RQD=6%			CORE 4	
	53.8		REC=81% RQD=35%			CORE 5	FRESH, HARD ROCK (AS BELOW)
	59.1		REC=100% RQD=81%			CORE 6	BRN. SWR - HWR
1630	64.0		REC=93% RQD=80%			CORE 7	FRESH, GRAY, FINE-MED. GRAINED, HARD, META-GRAYWACKE, WITH MUCH MICA TO ELEV. 1625.7, THEN INCREASING QUARTZ CONTENT, WITH GARNETS THROUGHOUT, FOLIATION ≥ 45°, VERY JOINTED (1 JOINT / 0.3-0.8 FT.) ABOVE ELEV. 1626.0, JOINTS STAINED AND SOME QUARTZ INFILLING.
	67.1		REC=100% RQD=82%			CORE 8	
	69.6		REC=100% RQD=98%			CORE 9	
1620	74.4		REC=100% RQD=100%				
1616.3	76.5						CORING TERMINATED AT ELEVATION 1616.3 IN HARD ROCK

DATE COMPLETED 8-23-79

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	M	% PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED

BORING NO. BENT NO. COLLAR ELEV.
BORING LOC. (STA. & OFFSET) TOTAL DEPTH

ELEV.	DEPTH	BLOW COUNT	BLOWS PER FOOT	GW DATA	LOG	SAMP. NO.	DESCRIPTION

DATE COMPLETED

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	W%	Gs	γ	e	Sr	SHEAR STRENGTH

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. 8.[98]1901 F.A. NO.
COUNTY SWAIN ROUTE US 19
BRIDGE ON US 19 -L- ℄ MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY F.D. McKINLEY
CHECKED BY W.D. FRYE SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79

FORM: GEO-02 SHEET NO. 5-21 TOTAL SHEETS 77

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-1908(4-60)	1	14

BORING NO. B7-A BENT NO. 7 COLLAR ELEV. 1698.9
BORING LOC. (STA. & OFFSET) 183+57 '42 LT. TOTAL DEPTH 68.5

ELEV.	DEPTH	BLOW COUNT 6" / 6" / 6"	BLOWS PER FOOT 0 / 50 / 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1698.9	0		WATER LEVEL ▼				8-14-79
1690							
1680							
1675.6	23.3		LAKE BOTTOM				
1670	30.0		REC=0% RQD=0%				POSSIBLE EMBANKMENT OVERLYING COLLUVIUM.
	34.2	1 0 6	SS			SS-1	SOFT, TAN, SANDY SILT WITH S.W.R. FRAGMENTS, AND OCCASIONAL BOULDERS.
	36.9		REC=100%			CORE 1	
1660	38.9		REC=88% RQD=40%			CORE 2	MODERATELY WEATHERED GRAY
	43.9		REC=100% RQD=14%			CORE 3	SOFT WEATHERED ROCK
	48.7		REC=100% RQD=88%			CORE 4	META-GRAYWACKE, FINE GRAINED, FOLIATED ± 50°, VERY JOINTED, MICACEOUS.
1650			REC=100% RQD=100%			CORE 5	FRESH GRAY META-GRAYWACKE, FINE GRAINED, FOLIATED 20°-50°, MICACEOUS, SLIGHTLY GARNETIFEROUS, HIGH ANGLE JOINTS COMMON.
	53.6					CORE 6	
	58.6		REC=100% RQD=66%			CORE 7	
1640	60.9		REC=100% RQD=38%			CORE 8	FRESH VERY HARD GRAY META-GRAYWACKE (GRAYWACKE), MEDIUM GRAINED, HIGH QUARTZ CONTENT, FOLIATED ± 50°, WITH HIGH ANGLE JOINTS
	64.5		REC=100% RQD=100%			CORE 9	
1630.4	68.5		REC=100% RQD=88%				CORING TERMINATED AT ELEVATION 1630.4 IN HARD ROCK
1620							DATE COMPLETED 8-15-79

BORING NO. B7-C BENT NO. 7 COLLAR ELEV. 1701.4
BORING LOC. (STA. & OFFSET) 183+57 ℄ TOTAL DEPTH 76.2

ELEV.	DEPTH	BLOW COUNT 6" / 6" / 6"	BLOWS PER FOOT 0 / 50 / 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
1701.4	0		LAKE LEVEL ▼				8-10-79
1700							
1690							
1680							
1672.8	28.6		LAKE BOTTOM				SOFT SILTY LAKE SEDIMENTS
1670	33.6						DENSE TO VERY DENSE SAND AND GRAVEL. ALLUVIUM
	43.0		REC=100% RQD=14%			CORE 1	ALTERNATING SWR & HWR
1660	48.6		REC=100% RQD=30%			CORE 2	MEDIUM-HARD GRAY META-GRAYWACKE, FINE-MEDIUM GRAINED, FOLIATED ± 50°
	53.6		REC=100% RQD=79%			CORE 3	HARD WEATHERED ROCK
1650			REC=100% RQD=79%			CORE 4	HARD WEATHERED ROCK
	58.2		REC=100% RQD=100%			CORE 5	MEDIUM-HARD GRAY META-GRAYWACKE FINE-MEDIUM GRAINED FOLIATION VARIABLE 15°-30°, VERY MICACEOUS, SLIGHTLY GARNETIFEROUS, BREAKS EASILY ALONG FOLIATION.
	62.8		REC=100% RQD=55%			CORE 6	
1640	67.6		REC=100% RQD=100%			CORE 7	
	72.2		REC=100% RQD=84%			CORE 8	
1630	72.2						CORING TERMINATED AT ELEVATION 1629.2 IN HARD ROCK
1625.2	76.2						DATE COMPLETED 8-10-79
1620							

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" / 6" / 6"	BLOWS PER FOOT 0 / 50 / 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" / 6" / 6"	BLOWS PER FOOT 0 / 50 / 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED _____

BORING NO. _____ BENT NO. _____ COLLAR ELEV. _____
BORING LOC. (STA. & OFFSET) _____ TOTAL DEPTH _____

ELEV.	DEPTH	BLOW COUNT 6" / 6" / 6"	BLOWS PER FOOT 0 / 50 / 100	GW DATA	LOG	SAMP. NO.	DESCRIPTION
							DATE COMPLETED _____

SOIL CLASSIFICATION AND GRADATION

SAMPLE	LOCATION	DEPTH	AASHO CLASSIFICATION	N	%PASSING #200 SIEVE	COARSE SAND	FINE SAND	SILT	CLAY	L.L.	P.I.	
SS-1	B7-A	34.2-35.7	A-4(1)	5	39	30	32	24	14	32	2	

SOIL PROPERTIES AND TEST RESULTS

SAMPLE	LOCATION	DEPTH	VOLUME	WET WEIGHT	DRY WEIGHT	w%	Gs	γ	e	Sr	SHEAR STRENGTH

SHEET 20 OF 20

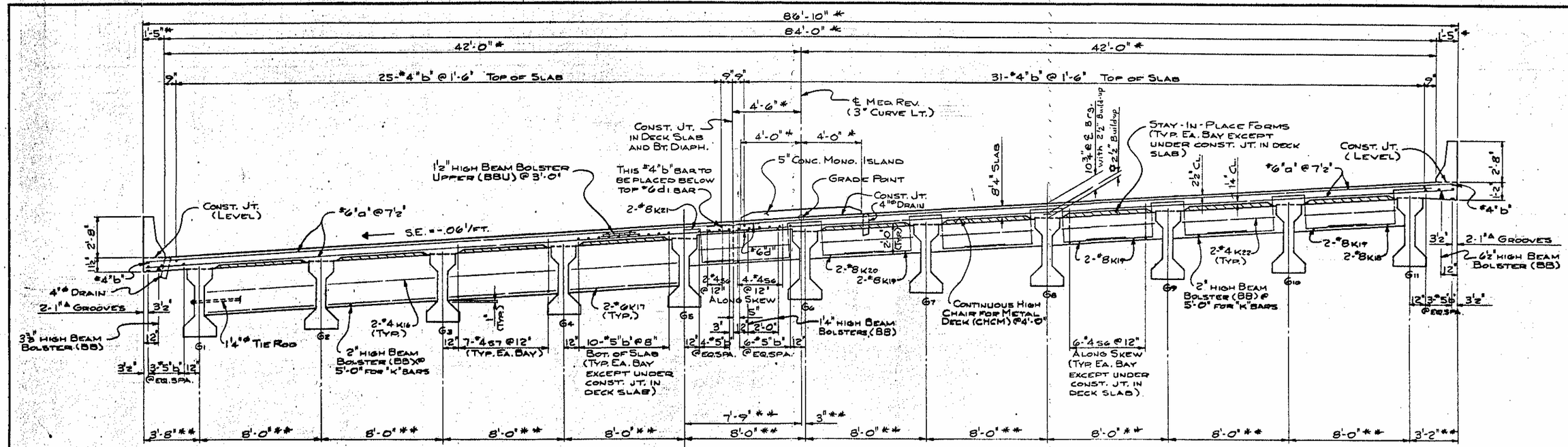
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOLOGY SECTION

STATE PROJECT NO. B-1908(9) F. A. NO. _____
COUNTY SWAIN ROUTE U.S. 19
BRIDGE ON U.S. 19 -L- & MED. REV.
OVER LITTLE TENNESSEE RIVER

PROJECT GEOLOGIST W.D. FRYE DRAWN BY W.D. FRYE
CHECKED BY F.D. McKINLEY SUBMITTED BY P.W. WINCHESTER
DATE SUBMITTED 9-79

FORM GEO-02 | SHEET NO. S-22 | TOTAL SHEETS 77



NOTE: "b" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR DRAINS.

SHOWING INTERMEDIATE DIAPHRAGM

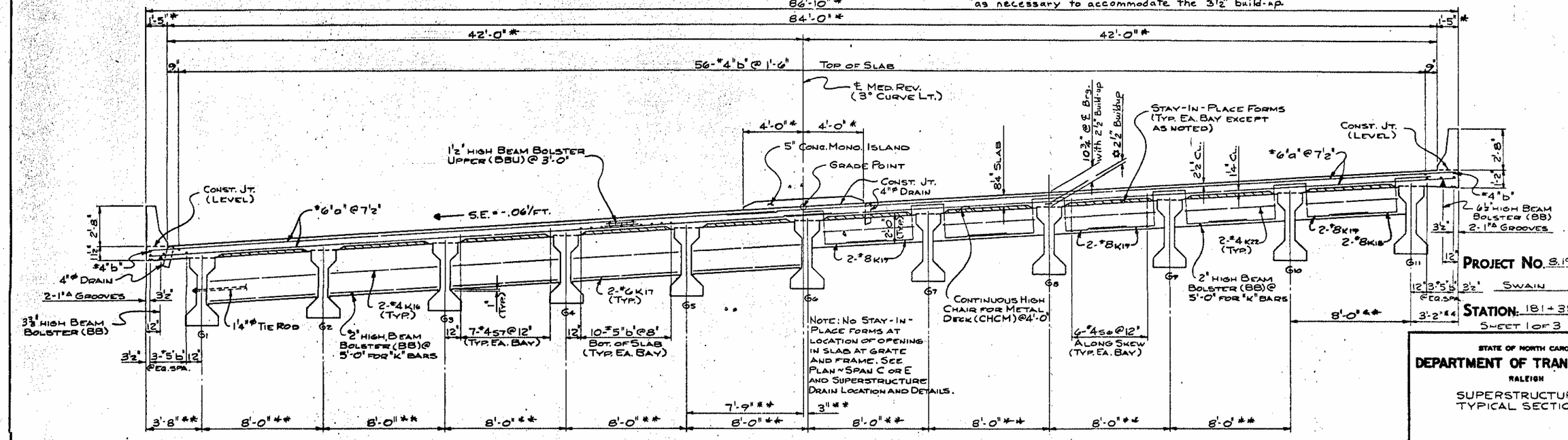
NOTE: INTERMEDIATE DIAPHRAGM IS NOT REQUIRED UNDER CONST. JT. IN DECK SLAB.

SHOWING BENT DIAPHRAGM

* DENOTES RADIAL DIMENSIONS.
** DENOTES RADIAL DIMENSIONS @ WORK POINTS USED FOR BEAM LAYOUT.

TYPICAL SECTIONS
(SPANS A & I)

✡ Note: In the event the Contractor selects to use Precast Prestressed Concrete Panels, the 2½" build-up as shown shall be increased to 3½". Any additional concrete due to an increase in the build-up shall be included in the unit bid price for Reinforced Concrete Deck Slab. Plans will be revised as necessary to accommodate the 3½" build-up.



SHOWING INTERMEDIATE DIAPHRAGM

SHOWING BENT DIAPHRAGM

TYPICAL SECTIONS
(SPANS B THRU H)

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 1 OF 3

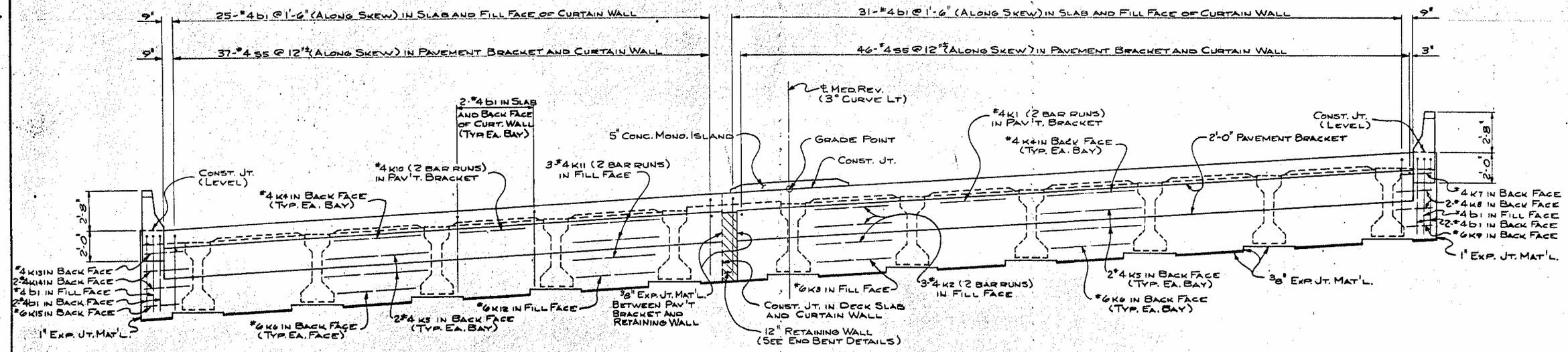
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-23
1			3			TOTAL SHEETS
2			4			77

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J. E. COPPS DATE 7-79



END ELEVATION

ELEVATION @ END BENT #1 SHOWN;
ELEVATION @ END BENT #2 SIMILAR

NOTE: 1/2" EXP. JT. MAT'L. IS REQUIRED BETWEEN END BENT RETAINING WALL AND SUPERSTRUCTURE CURTAIN WALL.

NOTE: K2 & K3 BARS TO PROJECT BOND DISTANCE + 2' BEYOND CONST. JT. INTO LEFT SIDE. K4, K5, & K6 BARS TO BE PLACED THRU CONST. JT. BAY AS SHOWN IN OTHER BAYS.

NOTES

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

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

FOR REINFORCING STEEL BAR SUPPORTS, SEE SPECIAL PROVISIONS.

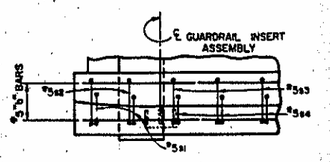
SEE SPECIAL PROVISIONS FOR CONCRETE BARRIER RAIL.

FOR EPOXY COATED REINFORCING STEEL, SEE SPECIAL PROVISIONS.

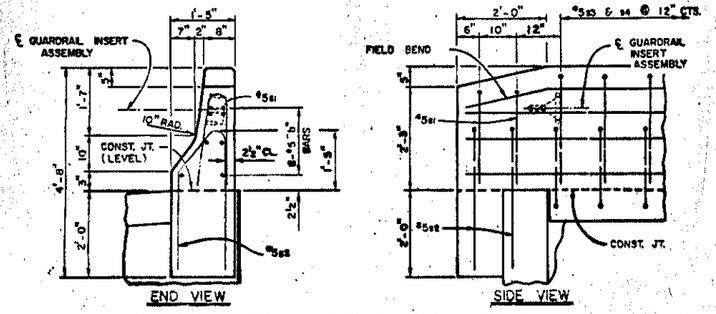
FOR BARS INDICATED AND NO MARK SHOWN, SEE "PLAN" OF SPANS.

BARRIER RAIL AND CONCRETE MONO. ISLAND IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

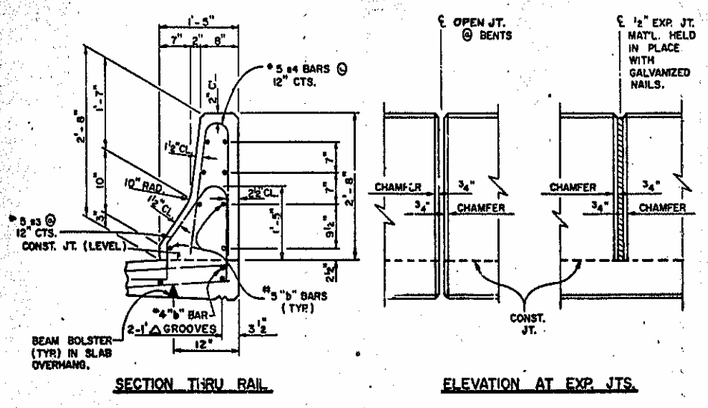
NOTE: SEE STANDARD CURVED END BLOCK, GUARD RAIL ANCHORAGE AND CURB BLOCK SHEET FOR LOCATION OF "C" BARS FOR CURVED END BLOCKS AND GUARD RAIL ANCHORAGE ASSEMBLY.



PLAN



BARRIER RAIL — END OF RAIL DETAILS



BARRIER RAIL DETAIL

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS		
BAR SIZE	SUPERSTRUCTURE AND APPROACH SLABS EXCEPT PARAPET, CURTAIN WALL, AND BARRIER RAIL	PARAPET, CURTAIN WALL AND BARRIER RAIL
#4	1'-2"	1'-7"
#5	1'-5"	2'-0"
#6	1'-10"	2'-7"
#8	3'-4"	4'-7"

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

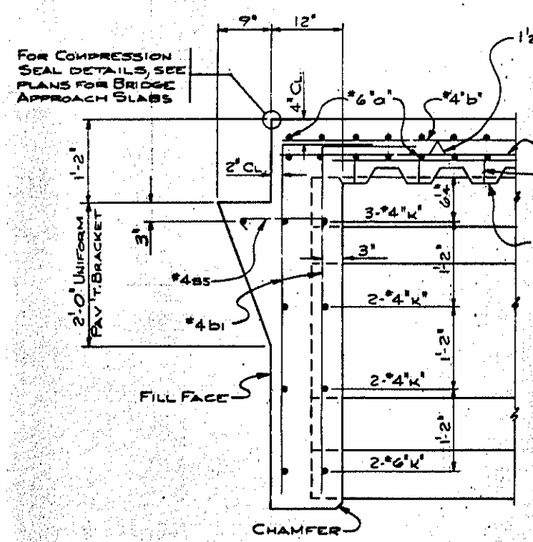
SUPERSTRUCTURE TYPICAL SECTIONS

MAY 1979

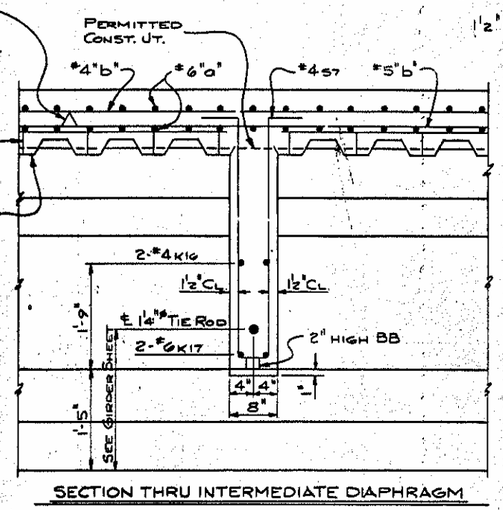
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-24
1			3			TOTAL SHEETS
2			4			77

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. CAPPS DATE 7-79

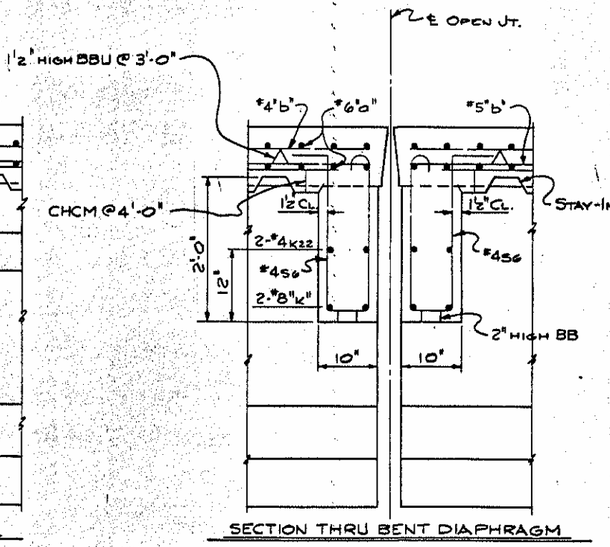
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



SECTION THRU CURTAIN WALL

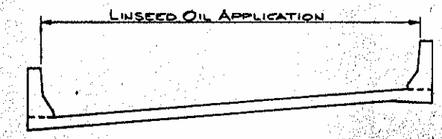


SECTION THRU INTERMEDIATE DIAPHRAGM



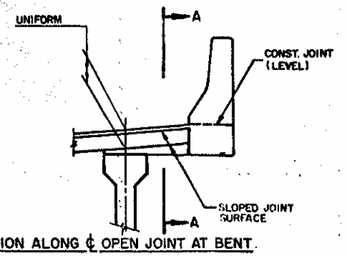
SECTION THRU BENT DIAPHRAGM

Note: Provide continuous high chair for metal deck (CHCM) @ 4'-0" with leg spacing to match the pitch of the form and adequate to support bottom layer of slab reinforcement a clear distance of 1¼" above the top of the Stay-In-Place form.

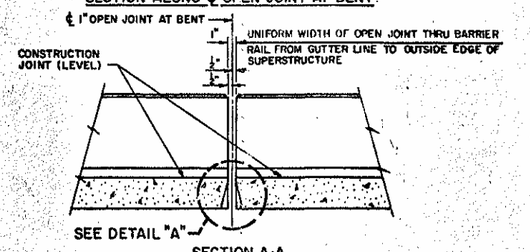


LIMITS OF LINSEED OIL CONCRETE PROTECTION

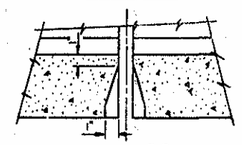
(160 Gals. Req'd.)



SECTION ALONG ℄ OPEN JOINT AT BENT.



SECTION A-A



DETAIL "A"

TYPICAL OPEN JOINT DETAILS

Drawn by K. G. Pridgen: Date May 1979
Checked by J. E. Capps: Date 7-79

Project No. 8.1981901

Swain **County**

Station: 181+35 Med. Rev.

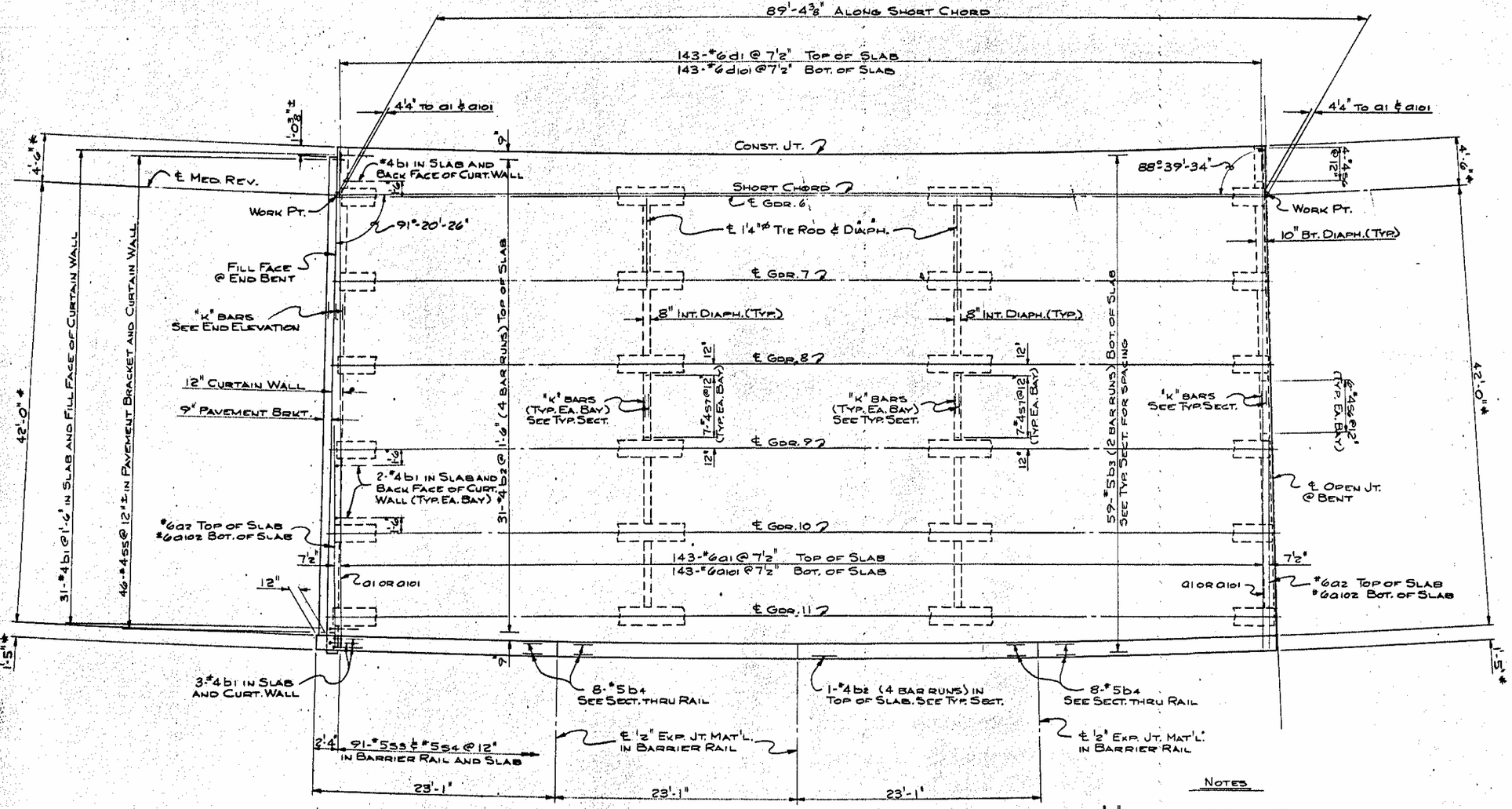
Sheet 3 of 3

State of North Carolina
Department of Transportation and Highway Safety
Raleigh

Superstructure
Typical Sections

May 1979

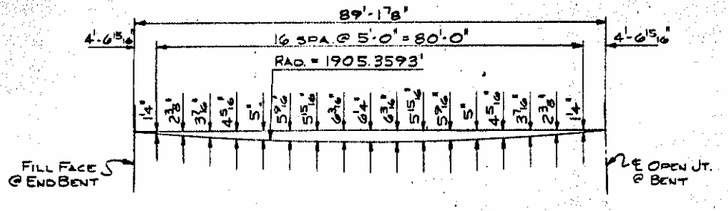
Revisions						Sheet No.
No.	By	Date	No.	By	Date	S-25
1			3			Total Sheets
2			4			97



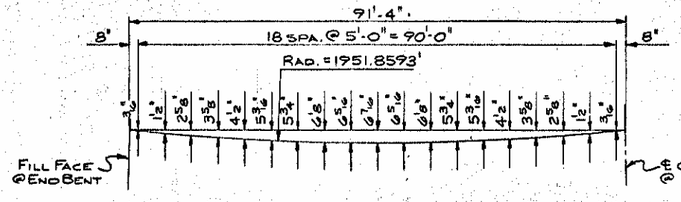
* Denotes Radial Dimensions.

PLAN ~ SPAN A (RIGHT SIDE)

PLAN ~ SPAN I (RIGHT SIDE) SIMILAR



Const. Joint



Right Side Gutter

CURVE OFFSETS

Notes

"a" bars to be placed perpendicular to Short Chord and spaced along Short Chord.

For location of intermediate diaphragms, see "Framing Plan".

See "Concrete Monolithic Island Details" for location and projection of #4 b101 bars to be placed in deck slab.

"d" bars are to be placed in the same plane as "a" bars and are to project 2'-0" beyond const. joint.

For location of drains, see "Drain Location" sheet.

Barrier rail lengths are measured along gutter line.

Project No. 8.1981901

Swain County

Station: 181+35 Med. Rev.

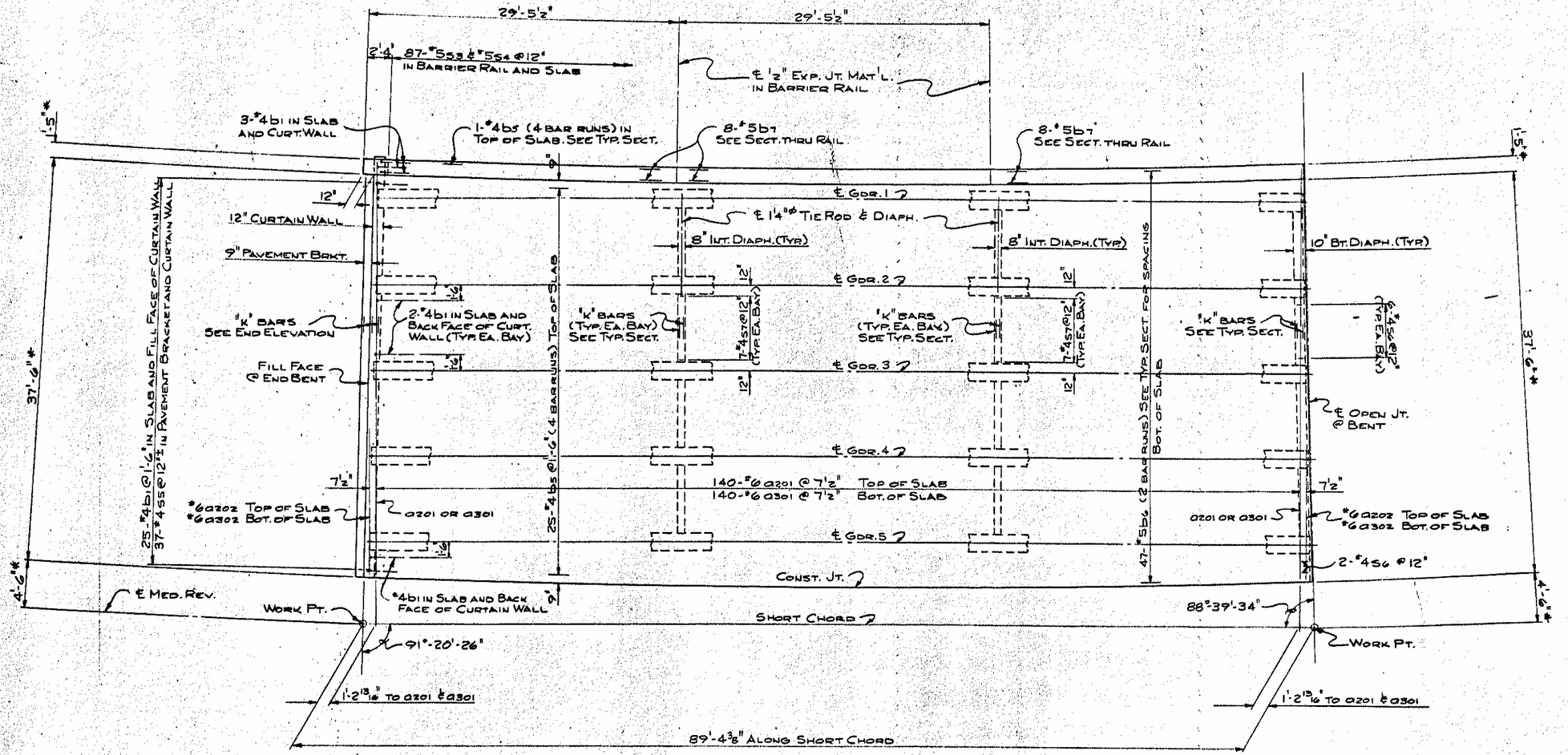
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SPAN A (RIGHT SIDE)
SPAN I (RIGHT SIDE) SIMILAR

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-26
1			3			TOTAL SHEETS
2			4			77

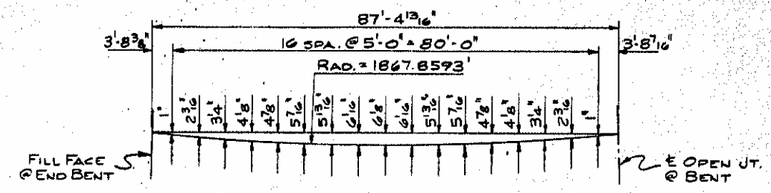
DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. GAPPS DATE 7-79



PLAN ~ SPAN A (LEFT SIDE)

PLAN ~ SPAN I (LEFT SIDE) SIMILAR

* DENOTES RADIAL DIMENSIONS.



LEFT SIDE GUTTER

CURVE OFFSETS

NOTES

'a' BARS TO BE PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG SHORT CHORD.

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN".

FOR LOCATION OF DRAINS, SEE "DRAIN LOCATION" SHEET.

BARRIER RAIL LENGTHS ARE MEASURED ALONG GUTTER LINE.

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. CAPPS DATE 7-79

PROJECT NO. 8.1981901

SWAIN COUNTY

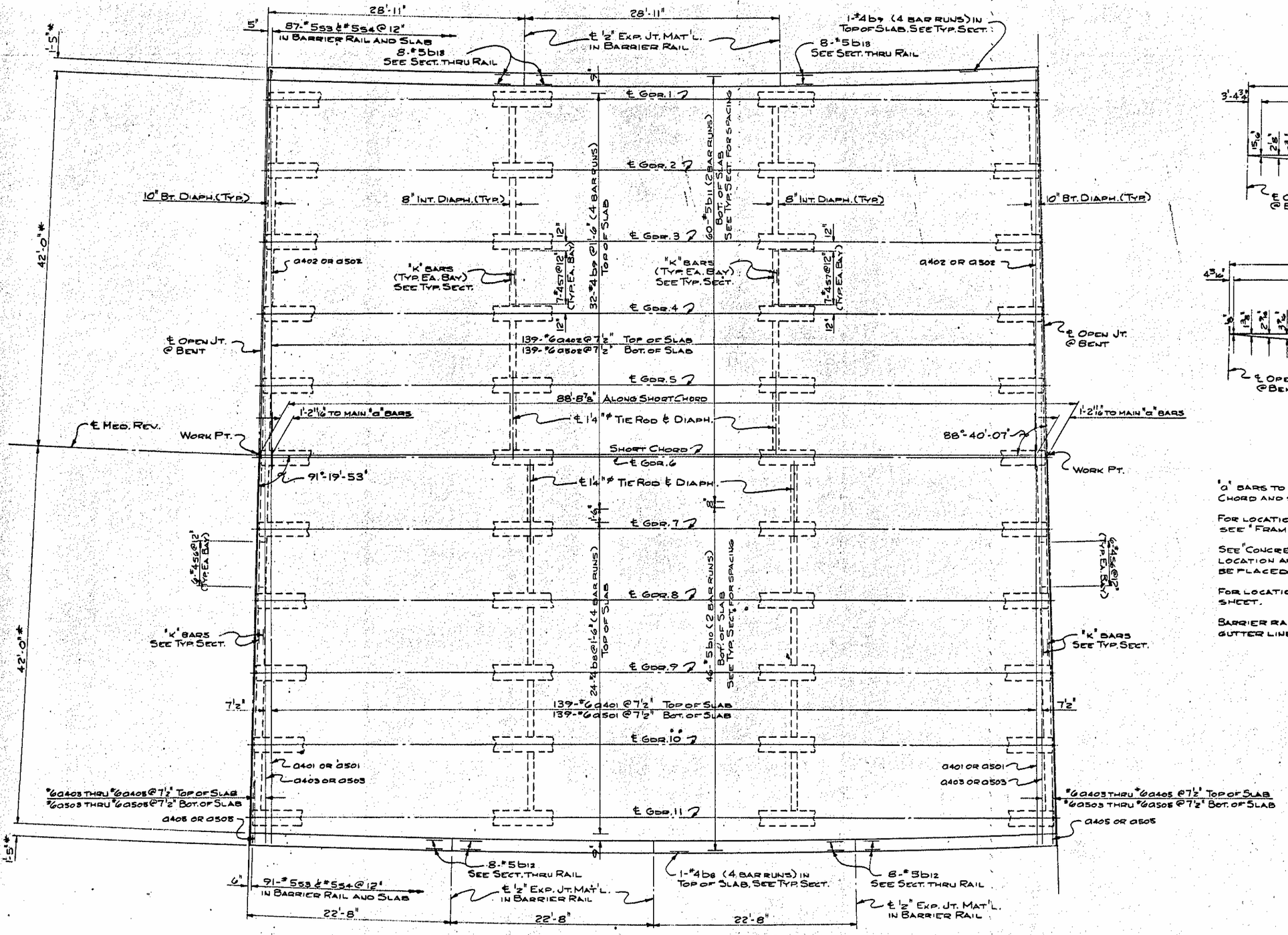
STATION: 181+35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SPAN A (LEFT SIDE)
SPAN I (LEFT SIDE) SIMILAR

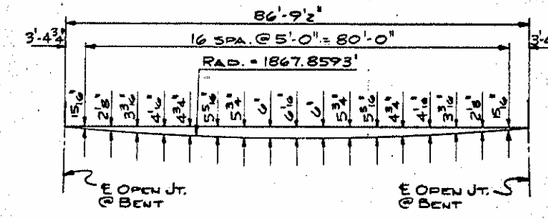
MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-27
1			3			TOTAL SHEETS
2			4			77

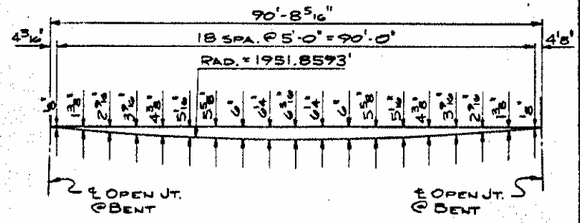


* DENOTES RADIAL DIMENSIONS.

PLAN ~ SPAN B, D, F, G, OR H



LEFT SIDE GUTTER



RIGHT SIDE GUTTER

CURVE OFFSETS

NOTES

'a' BARS TO BE PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG SHORT CHORD.

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE 'FRAMING PLAN'.

SEE "CONCRETE MONOLITHIC ISLAND DETAILS" FOR LOCATION AND PROJECTION OF #4 b101 BARS TO BE PLACED IN DECK SLAB.

FOR LOCATION OF DRAINS, SEE 'DRAIN LOCATION' SHEET.

BARRIER RAIL LENGTHS ARE MEASURED ALONG GUTTER LINE.

PROJECT NO. 8.1981901

SWAIN **COUNTY**

STATION: 181+35 MED. REV.

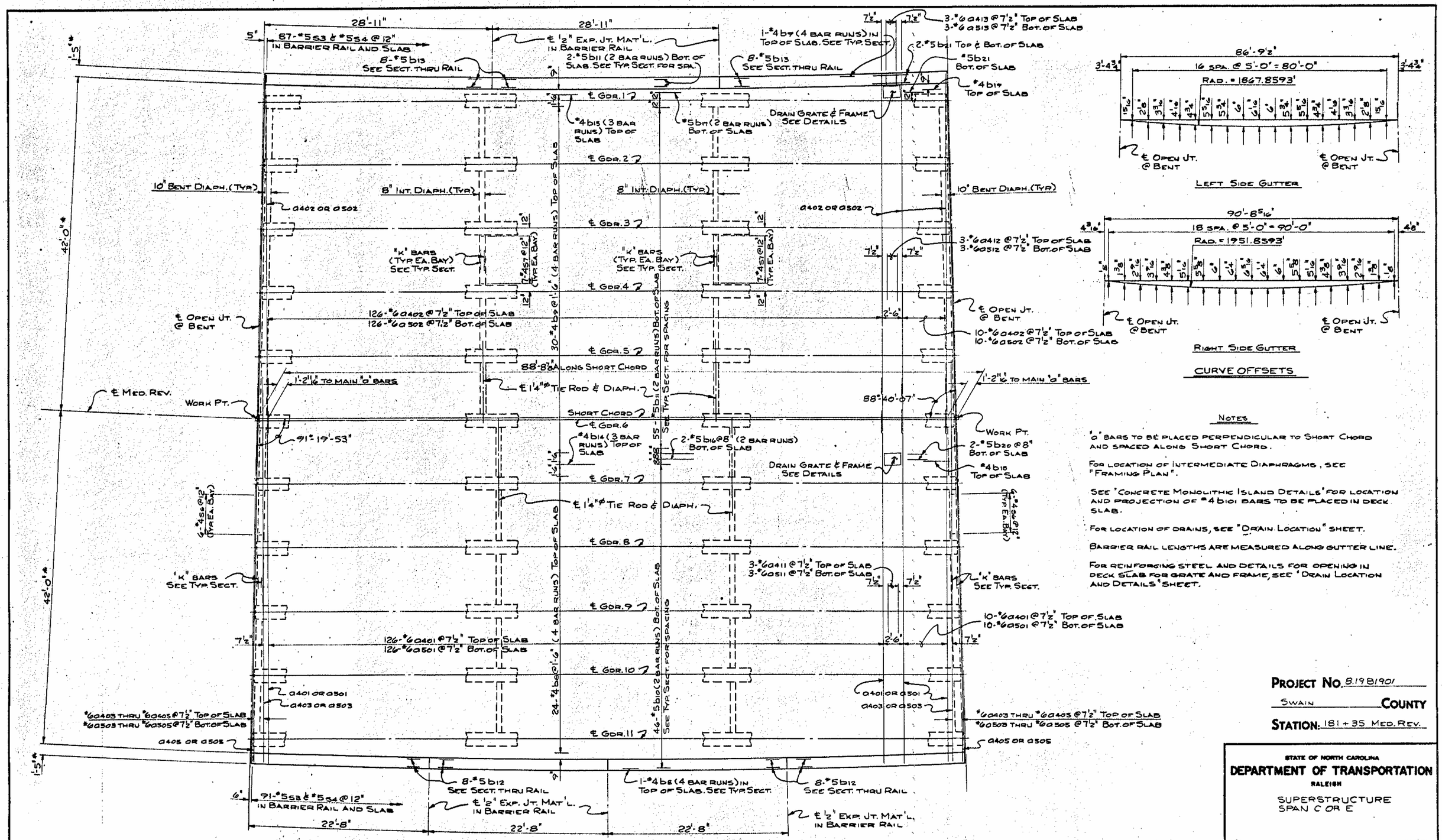
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SPAN B, D, F, G, OR H

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-28
1			3			TOTAL SHEETS
2			4			77

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. CAPPS DATE 7-79



* DENOTES RADIAL DIMENSIONS.

PLAN ~ SPAN C OR E

LEFT SIDE GUTTER

RIGHT SIDE GUTTER

CURVE OFFSETS

NOTES

"a" BARS TO BE PLACED PERPENDICULAR TO SHORT CHORD AND SPACED ALONG SHORT CHORD.

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN".

SEE 'CONCRETE MONOLITHIC ISLAND DETAILS' FOR LOCATION AND PROJECTION OF #4b101 BARS TO BE PLACED IN DECK SLAB.

FOR LOCATION OF DRAINS, SEE "DRAIN. LOCATION" SHEET.

BARRIER RAIL LENGTHS ARE MEASURED ALONG GUTTER LINE.

FOR REINFORCING STEEL AND DETAILS FOR OPENING IN DECK SLAB FOR GRATE AND FRAME, SEE 'DRAIN LOCATION AND DETAILS' SHEET.

DRAWN BY: K. G. PEDERSEN DATE: MAY 1979
CHECKED BY: J. E. CAPPS DATE: 7-79

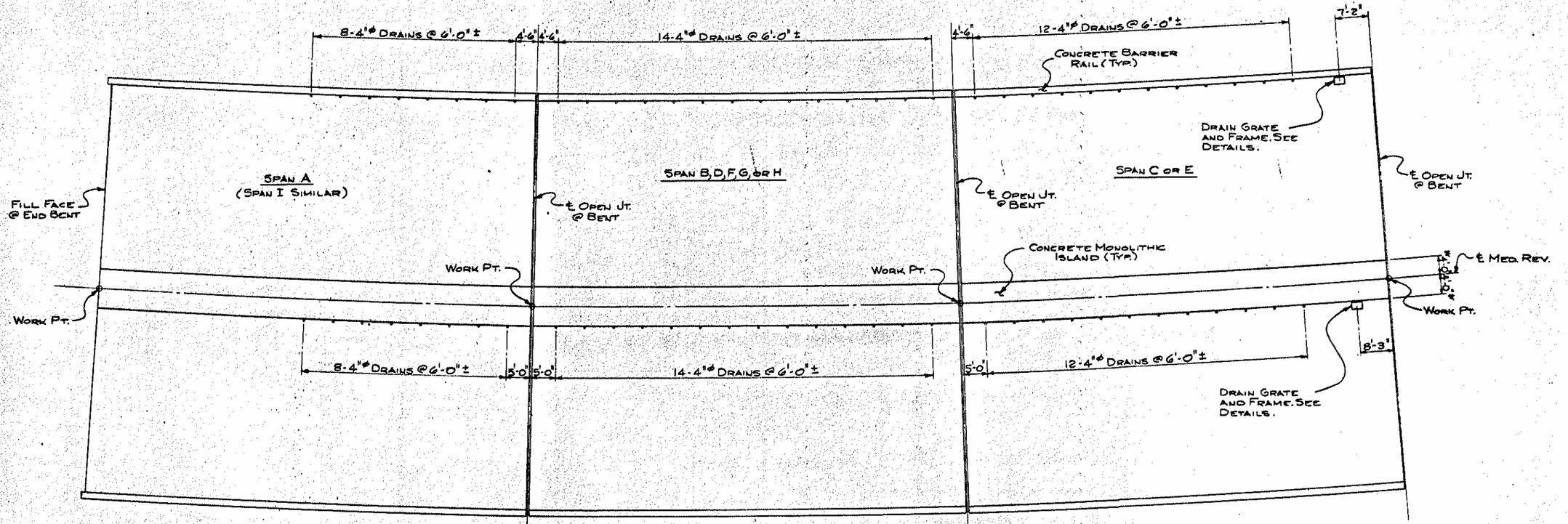
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SPAN C OR E

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-29
1			3			TOTAL SHEETS
2			4			77



PLAN OF BRIDGE

(SHOWING 4"ø DRAIN AND GRATE & FRAME LOCATION)

* DENOTES RADIAL DIMENSIONS.

NOTE: SPACING SHOWN IN "PLAN" FOR DRAINS AND OPENINGS ARE MEASURED ALONG LEFT GUTTER LINE AND RIGHT FACE OF CONC. MONOLITHIC ISLAND.

DRAWN BY K.G. PRIDGEN DATE JUNE 1979
CHECKED BY J.E. Capps DATE 7-79

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

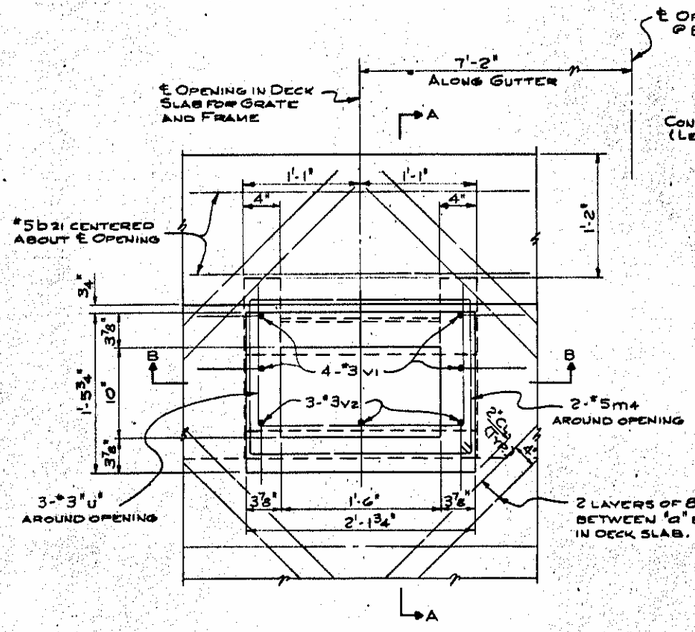
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

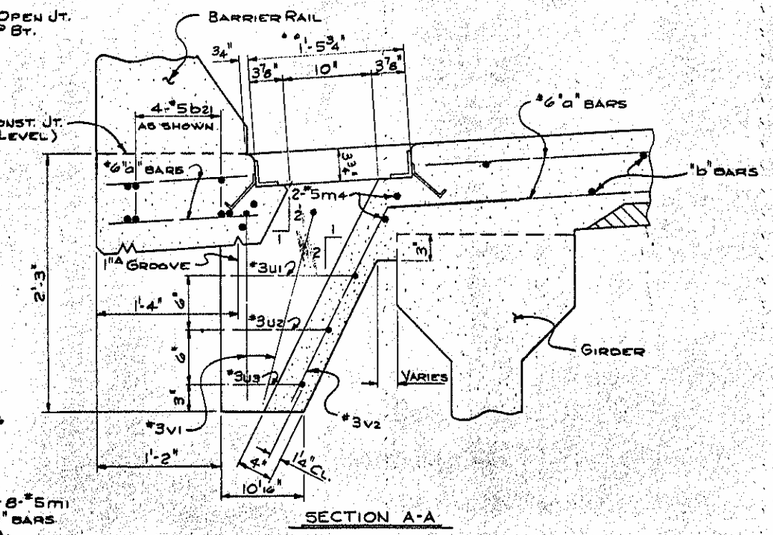
SUPERSTRUCTURE
DRAIN LOCATION

MAY 1979

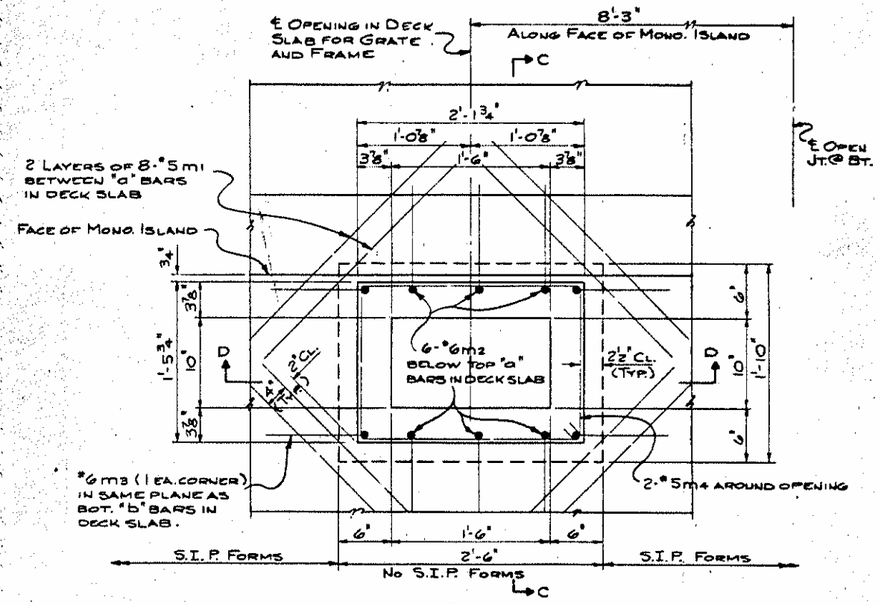
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-30
1			3			TOTAL SHEETS
2			4			77



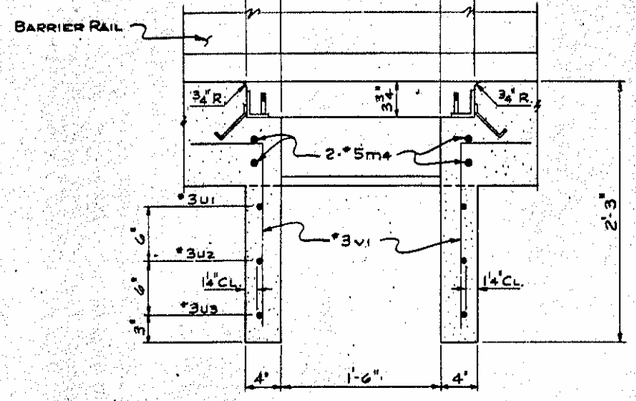
PLAN.



SECTION A-A

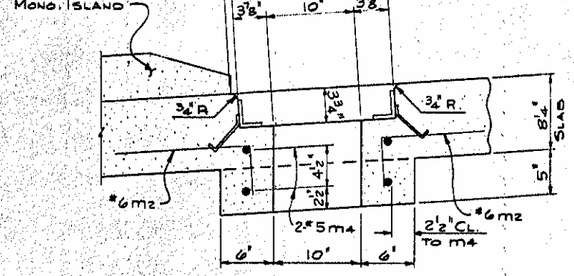


PLAN

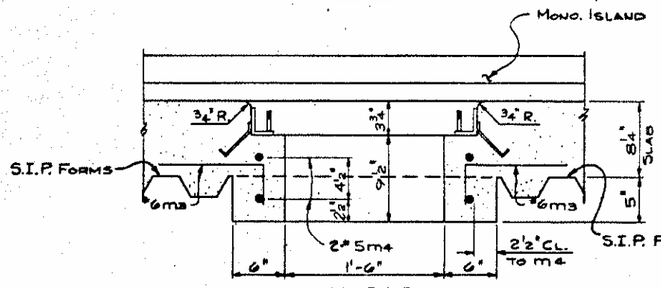


SECTION B-B

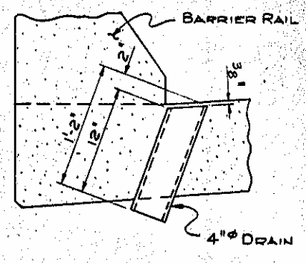
DETAILS OF DRAIN OPENING IN DECK SLAB AT GUTTER
(GRATE NOT SHOWN)



SECTION C-C
(*5m1 BARS NOT SHOWN)

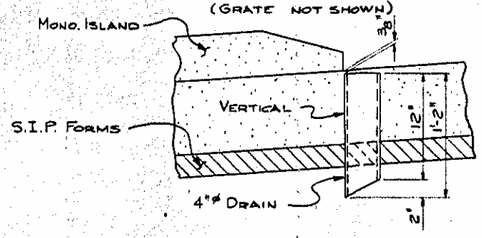


SECTION D-D
(*5m1 BARS NOT SHOWN)



AT GUTTER

DETAILS OF DRAIN OPENING IN DECK SLAB AT CONCRETE MONO. ISLAND
(GRATE NOT SHOWN)



AT MEDIAN

4"℄ DRAIN DETAILS
(220 Drains Req'd.)

Note: The Contractor may submit for approval 4"℄ deck drain details other than those shown on the plans.

Note: Cut holes in S.I.P. forms, as necessary, for drains.

Note: Drains shall be of 4"℄ PVC plastic pipe.

Note: Top of floor drains to be set ⅜" below surface of slab as shown.

Drawn by K.G. Pridgen Date May 1979
Checked by J.E. Capps Date 7-79

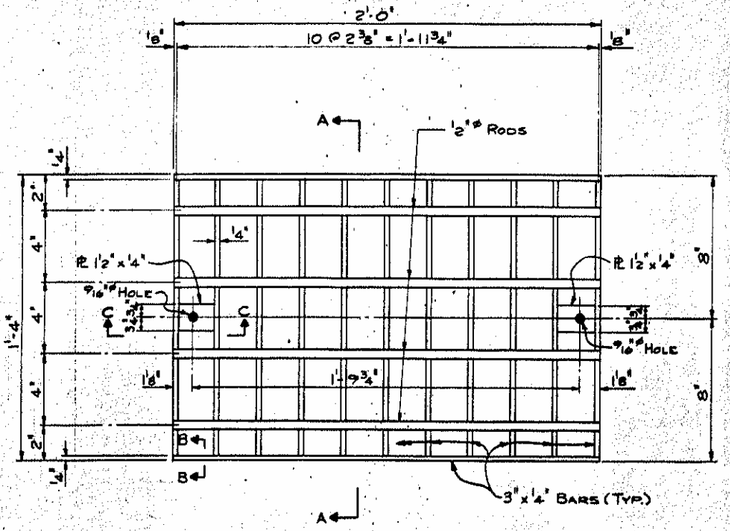
Project No. 8.1981901
Swain **County**
Station: 181+35 Med. Rev.
Sheet 2 of 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

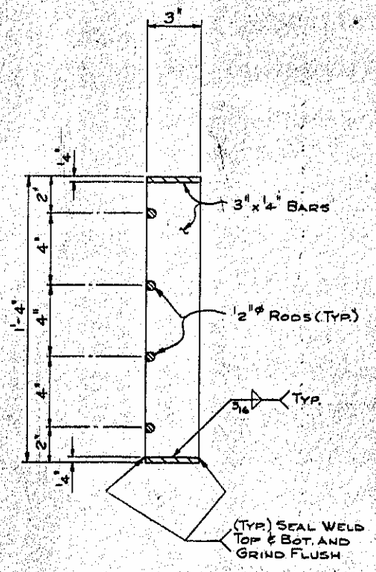
SUPERSTRUCTURE
DRAIN LOCATION
AND DETAILS

May 1979

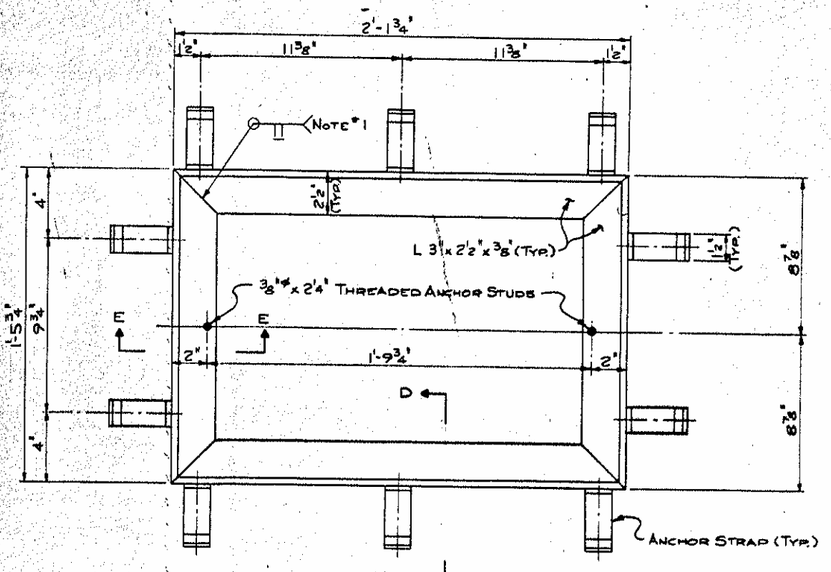
Revisions						Sheet No.
No.	By	Date	No.	By	Date	S-31
1			3			Total Sheets
2			4			77



PLAN OF GRATE.

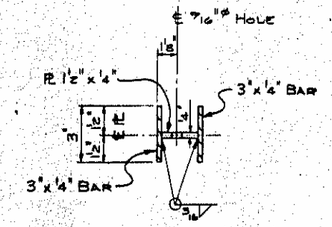


SECTION A-A

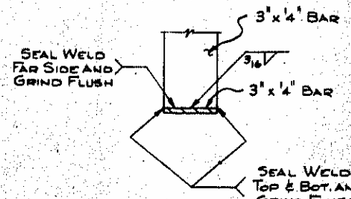


PLAN OF FRAME

NOTE #1 - TYPICAL CORNER WELD. GRIND WELD FLUSH ALONG SURFACE WHERE GRATE WILL REST.

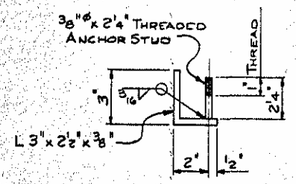


SECTION C-C



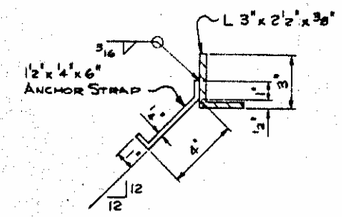
SECTION B-B

(TYPICAL BAR TO BAR WELDS AT CORNERS OF GRATES)

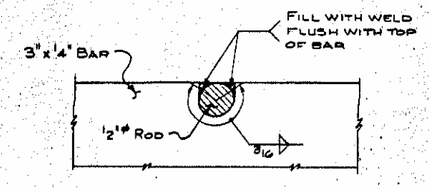


SECTION E-E

NOTE: ANCHOR STUDS SHALL BE FURNISHED WITH HEX. NUT AND STD. WASHER.



SECTION D-D



TYPICAL ROD TO BAR WELD

NOTE: SEAL WELDS AT ENDS OF RODS AND GRIND FLUSH.

NOTES

GRATES AND FRAMES SHALL BE FABRICATED FROM ASTM A36 STRUCTURAL STEEL. GRATES AND FRAMES, INCLUDING HEX. NUTS AND WASHERS, SHALL BE GALVANIZED.

AT THE CONTRACTOR'S OPTION, A GRATE OTHER THAN THAT SHOWN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDED IT HAS THE SAME BASIC OVERALL DIMENSIONS AS THE GRATE SHOWN AND IS DESIGNED TO CARRY AN HS 20 LIVE LOAD WITH 30% IMPACT. THE GRATE SHALL BE GALVANIZED AND HAVE PROVISIONS FOR HOLDING IT TO THE FRAME.

FOR WASHERS, SEE SPECIAL PROVISIONS.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE GRATES AND FRAMES. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR Reinforced Concrete Deck Slab.

NUMBER OF GRATES REQ'D. = 4
NUMBER OF FRAMES REQ'D. = 4

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. CAPPS DATE 7-79

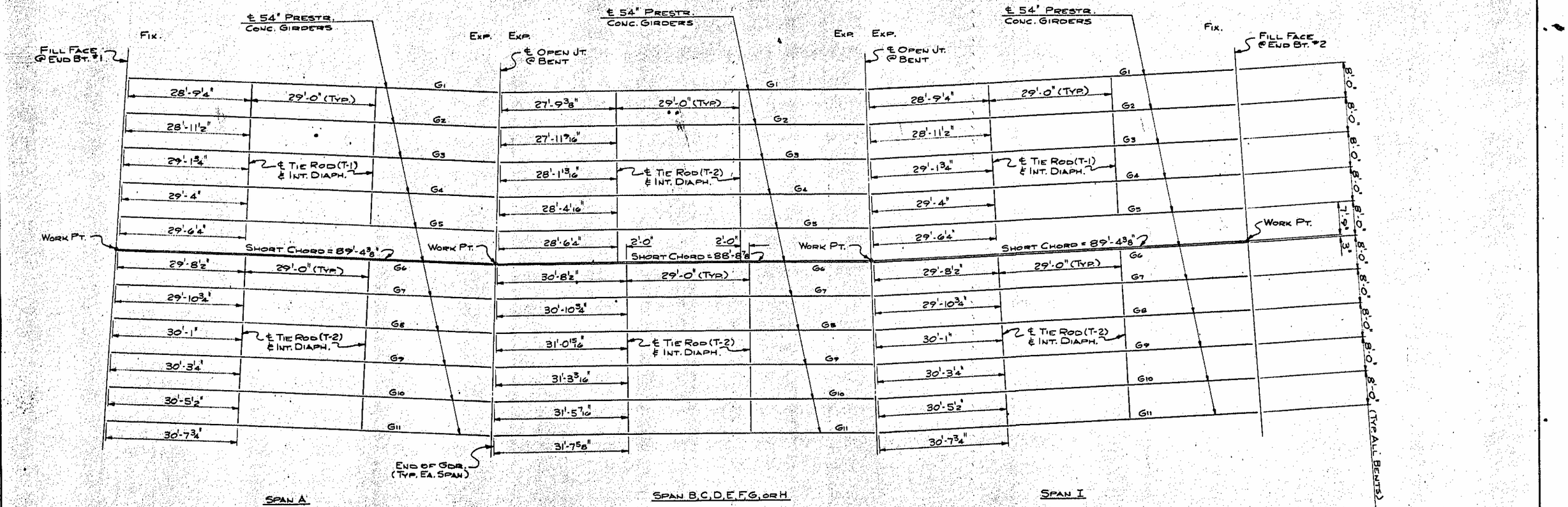
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181 + 35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
GRATES AND FRAMES

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-32
1			3			TOTAL SHEETS
2			4			77



SPAN A

SPAN B,C,D,E,F,G, OR H

SPAN I

FRAMING PLAN

(DIMENSIONS SHOWN ARE HORIZONTAL DIMENSIONS)

BEARING LOCATION AND TYPE	
LOCATION	TYPE
END BENT #1	P-2
N.S. BENT #1	P-2
F.S. BENT #1	P-2
N.S. BENT #2	P-2
F.S. BENT #2	P-1
N.S. BENT #3	P-1
F.S. BENT #3	P-1
N.S. BENT #4	P-1
F.S. BENT #4	P-2
N.S. BENT #5	P-2
F.S. BENT #5	P-2
N.S. BENT #6	P-2
F.S. BENT #6	P-3
N.S. BENT #7	P-3
F.S. BENT #7	P-3
N.S. BENT #8	P-3
F.S. BENT #8	P-4
END BENT #2	P-4

N.S. = NEAR SIDE
F.S. = FAR SIDE

DRAWN BY K.G. PRIDEN DATE MAY 1979
CHECKED BY J.E. Capps DATE 7-79

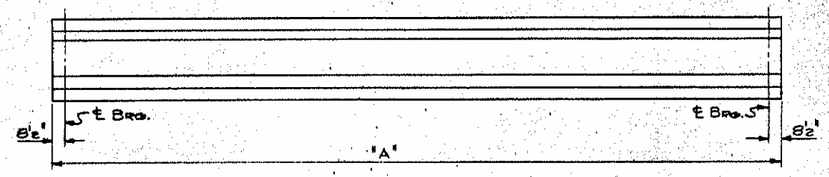
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

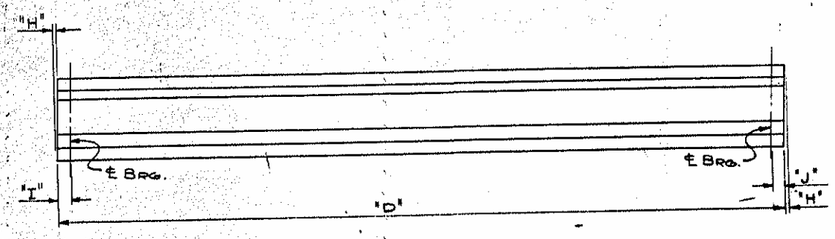
SUPERSTRUCTURE
FRAMING PLAN

MAY 1979

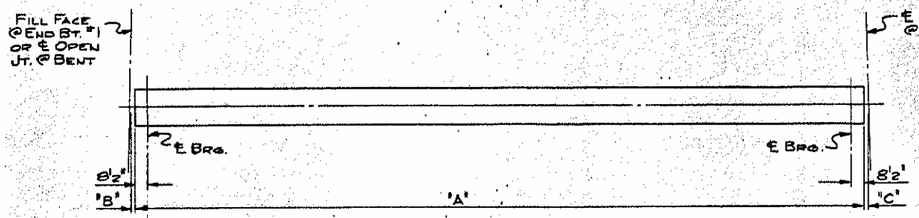
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-33
1			3			TOTAL SHEETS
2			4			77



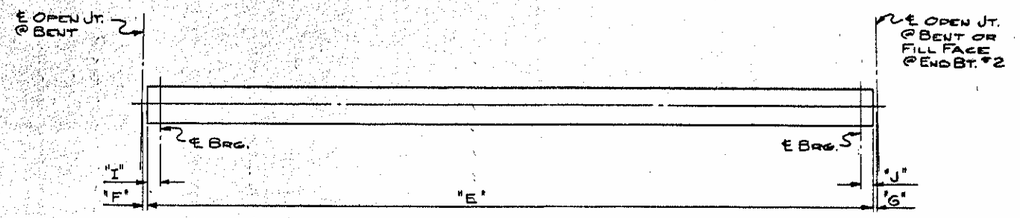
GIRDER ELEVATION ~ SPANS A THRU F



GIRDER ELEVATION ~ SPANS G, H, & I



GIRDER PLAN ~ SPANS A THRU F



GIRDER PLAN ~ SPANS G, H, & I

NOTE: FOR LOCATION OF 2" ø HOLES IN GIRDERS FOR 1¼" ø TIE RODS, SEE STANDARD 54" PRESTR. CONCRETE GIRDER SHEET AND FRAMING PLAN SHEET.

SPAN A			
GIRDER	"A"	"B"	"C"
G1	86'-6 3/4"	9'-2"	1 3/16"
G2	86'-11 3/16"	9'-2"	1'-8"
G3	87'-3 11/16"	9'-2"	1'-8"
G4	87'-8'-8"	9'-2"	1 15/16"
G5	88'-0 7/16"	9'-2"	2"
G6	88'-5 1/16"	9'-2"	2"
G7	88'-9'-2"	9'-2"	2"
G8	89'-1 15/16"	9'-2"	2 1/16"
G9	89'-6 7/16"	9'-2"	2 1/16"
G10	89'-10 7/8"	9'-2"	2'-8"
G11	90'-3 3/8"	9'-2"	2'-8"

88.406

SPANS B THRU F			
GIRDER	"A"	"B"	"C"
G1	86'-6 3/4"	2"	2"
G2	86'-11 3/16"	2"	2"
G3	87'-3 11/16"	2"	2"
G4	87'-8'-8"	2"	2"
G5	88'-0 9/16"	2"	2"
G6	88'-5 1/16"	2"	2"
G7	88'-9'-2"	2"	2"
G8	89'-1 15/16"	2"	2"
G9	89'-6 7/16"	2"	2"
G10	89'-10 7/8"	2"	2"
G11	90'-3 3/8"	2"	2"

SPAN G							
GIRDER	"D"	"E"	"F"	"G"	"H"	"I"	"J"
G1	86'-6 3/4"	86'-6 3/8"	2 3/16"	2 3/16"	1 3/8"	8 5/16"	8 5/16"
G2	86'-11 3/16"	86'-10 5/16"	2 3/16"	2 3/16"	1 3/8"	8 5/16"	8 5/16"
G3	87'-3 11/16"	87'-3 5/16"	2 3/16"	2 3/16"	1 3/8"	8 5/16"	8 5/16"
G4	87'-8'-8"	87'-7 15/16"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G5	88'-0 9/16"	88'-0 1/4"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G6	88'-5 1/16"	88'-4 3/4"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G7	88'-9'-2"	88'-8 5/16"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G8	89'-1 15/16"	89'-1 5/8"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G9	89'-6 7/16"	89'-6 1/8"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G10	89'-10 7/8"	89'-10 1/16"	2 3/16"	2'-8"	1 3/8"	8 5/16"	8 3/8"
G11	90'-3 3/8"	90'-3 1/16"	2 3/16"	2'-8"	1 5/16"	8 5/16"	8 3/8"

SPAN H							
GIRDER	"D"	"E"	"F"	"G"	"H"	"I"	"J"
G1	86'-6 3/4"	86'-6 5/16"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G2	86'-11 3/16"	86'-10 5/8"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G3	87'-3 11/16"	87'-3 1/8"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G4	87'-8 1/8"	87'-7 9/16"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G5	88'-0 9/16"	88'-0"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G6	88'-5 1/16"	88'-4 1/2"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G7	88'-9'-2"	88'-8 5/16"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G8	89'-1 15/16"	89'-1 3/8"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G9	89'-6 7/16"	89'-5 7/8"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G10	89'-10 7/8"	89'-10 5/16"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"
G11	90'-3 3/8"	90'-2 13/16"	2'-4"	2 5/16"	1 3/4"	8'-4"	8 3/16"

SPAN I							
GIRDER	"D"	"E"	"F"	"G"	"H"	"I"	"J"
G1	86'-6 3/4"	86'-5 7/8"	2'-4"	9 15/16"	2'-8"	8 1/16"	8 1/16"
G2	86'-11 3/16"	86'-10 5/16"	2 5/16"	9 15/16"	2'-8"	8 1/16"	8 1/16"
G3	87'-3 11/16"	87'-2 13/16"	2 5/16"	9 15/16"	2'-8"	8 1/16"	8 1/16"
G4	87'-8'-8"	87'-7'-4"	2 3/8"	9 15/16"	2'-8"	8 1/16"	8 1/16"
G5	88'-0 9/16"	87'-11 11/16"	2 7/16"	9 15/16"	2'-8"	8 1/16"	8 1/16"
G6	88'-5 1/16"	88'-4'-4"	2 3/8"	9 15/16"	2'-8"	8'-8"	8 1/16"
G7	88'-9'-2"	88'-8 11/16"	2 3/8"	9 15/16"	2'-8"	8'-8"	8 1/16"
G8	89'-1 15/16"	89'-1'-8"	2 7/16"	9 15/16"	2'-8"	8'-8"	8 1/16"
G9	89'-6 7/16"	89'-5 5/8"	2 7/16"	9 15/16"	2'-8"	8'-8"	8 1/16"
G10	89'-10 7/8"	89'-10 1/16"	2 1/2"	9 15/16"	2'-8"	8'-8"	8 1/16"
G11	90'-3 3/8"	90'-2 9/16"	2 1/2"	9 15/16"	2'-8"	8'-8"	8 1/16"

DRAWN BY K. G. PRIDGEN DATE MAY 1979
CHECKED BY J. E. CARR DATE 7-79

PROJECT NO. 8.1981901

SWAIN COUNTY

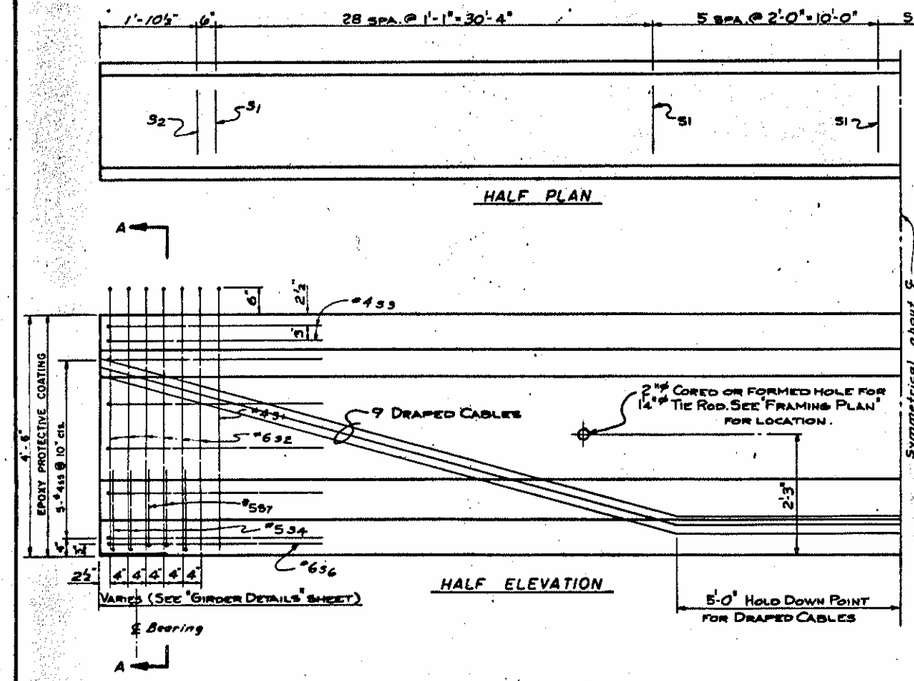
STATION: 181+35 MED. REV.

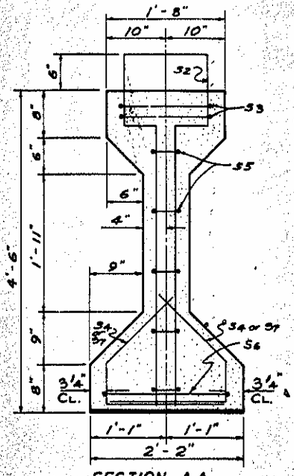
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

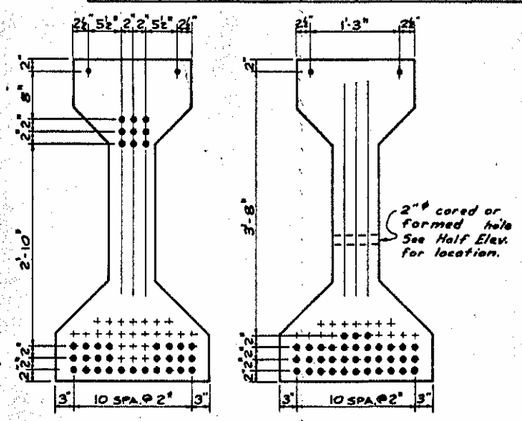
SUPERSTRUCTURE
54" PRESTRESSED CONCRETE
GIRDER DETAILS

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-34
1			3			TOTAL SHEETS
2			4			77



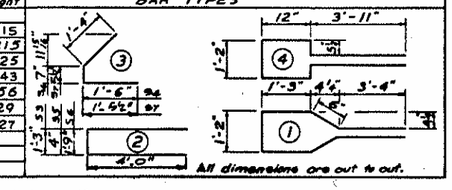




REINFORCING STEEL FOR ONE GIRDER

Bar	No.	Size	Type	Length	Weight
S1	68	#4	1	11'-4"	515
S2	12	#6	4	11'-11"	215
S3	4	#4	2	9'-3"	25
S4	12	#5	3	3'-5"	43
S5	10	#4	2	8'-4"	56
S6	2	#6	2	9'-9"	29
S7	8	#5	3	3'-8"	27

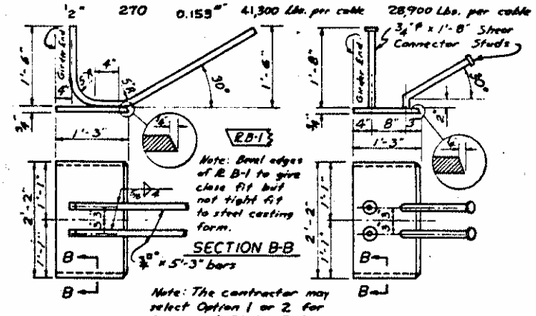
BAR TYPES



NOTES

- ELASTOMER IN ALL BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS. SEE SPECIAL PROVISIONS.
- STEEL PLATES IN LAMINATED BEARINGS SHALL CONFORM TO A.S.T.M. A-36.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- EMBEDDED PLATE B-1 TO BE GALVANIZED.
- CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5500 PSI AT THE AGE OF 28 DAYS.
- ALL PRESTRESSING STRANDS SHALL BE ½" 7-WIRE STRESS RELIEVED GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

SIZE	GRADE	AREA	ULTIMATE STR	APPLIED PRESTRESS
½"	270	0.159"	41,300 Lbs. per cable	28,900 Lbs. per cable



EMBEDDED PLATE B-1 (2 Required for each Girder)

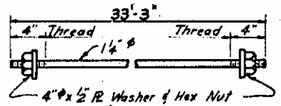
DEAD LOAD DEFLECTIONS AND ORDINATES

Span	Girder	Camber (Girder Alone in Place)	Deflection due to * Superimposed Dead Load	Final Deflection	Vertical Curve Ordinate	Superelevation Ordinate
A thru I	G1	11/16" ↑	1 1/2" ↓	7/16" ↓	15/16" ↓	3/8" ↓

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

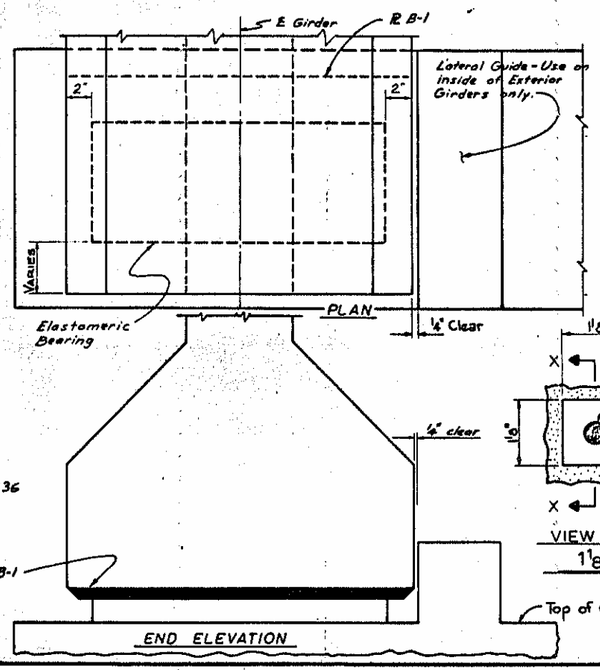
NOTE: GIRDER LENGTHS SHOWN FOR SPANS G THRU I ~ GDR. G1 ARE SLOPE LENGTHS. ENDS OF GIRDERS FOR SPANS G THRU I ~ GDR. G1 TO BE BEVELED. SEE "GIRDER DETAILS" SHEET.

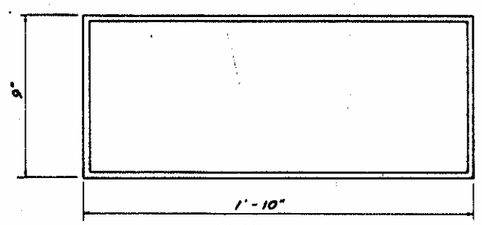
NOTE: FOR 1¼" ø TIE ROD (T-2) DETAILS, SEE GIRDER STANDARD SHEET 3 OF 4.



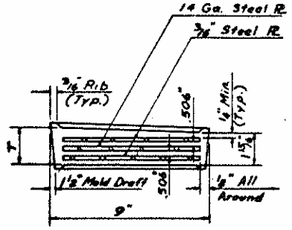
1¼" ø TIE ROD (T-1)

Tie Rod Assembly shall be A.S.T.M. A36 grade structural steel.





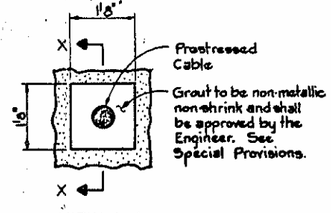
ELASTOMERIC BEARINGS



TYPICAL SECTION

BEAM GRADE %	T (Inches)	BEARING TYPES	
0.00 - 1.00	1 15/16	P-1	44 Req'd.
1.00 - 2.25	2 1/16	P-2	88 Req'd.
2.25 - 3.50	2 3/16	P-3	44 Req'd.
3.50 - 5.00	2 5/16	P-4	22 Req'd.

TOTAL FOR BRIDGE



1⅛" x 1⅛" x 1½" GROUTED RECESS

TYPICAL EACH END OF PRESTR. CABLE

Span	Girder	GIRDERS REQUIRED No.	Length	Total Length
A thru F	G1	6	86'-6⅝"	519'-4⅛"
G thru I	G1	3	86'-6⅝"	259'-8⅛"

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
54" PRESTRESSED
CONCRETE GIRDER
SPANS A THRU I ~ GDR. G1

JULY 1978

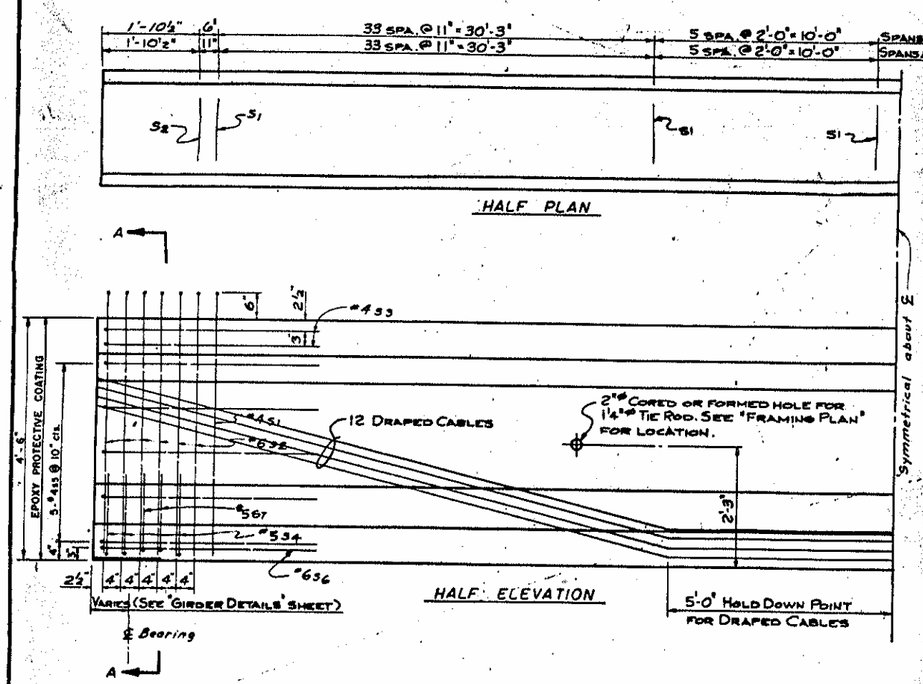
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-35
1			3			TOTAL SHEETS
2			4			77

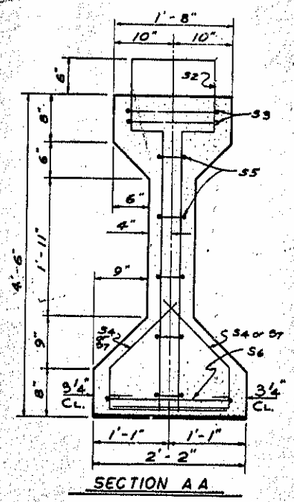
STD. NO. PCG3

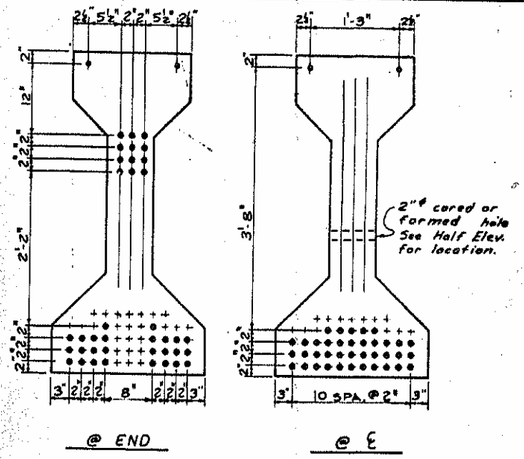
QUANTITIES FOR ONE GIRDER				
Span	Girder	Reinforcing Steel Lbs.	5500 psi Concrete Cu. Yds.	Grade 270 ½" ø S.R. Cables No.
A thru I	G1	910	17.6	38

ASSEMBLED BY K.G. PEDERSEN DATE MAY 1979		SPECIAL
CHECKED BY J. E. Capps DATE 7-79		
DRAWN BY Joel A. Johnson DATE Feb. 1, 1978		STANDARD
CHECKED BY Ralph D. Underwood DATE Feb 1, 1978		

Revised 12-19-78 By: RDU, VAY: G.B.H.
Revised 7-31-78 By: R.E.K. / By: R.D.U.



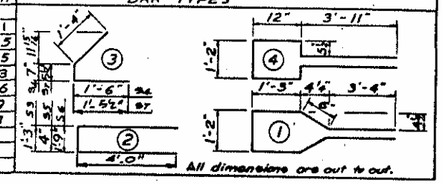




REINFORCING STEEL FOR ONE GIRDER

Bar	No.	Size	Type	Length	Weight
S1	78	#4	1	11'-4"	591
S2	12	#6	4	11'-11"	215
S3	4	#4	2	9'-3"	25
S4	12	#5	3	3'-5"	43
S5	10	#4	2	8'-4"	56
S6	2	#6	2	9'-9"	29
S7	8	#5	3	5'-8"	27

BAR TYPES

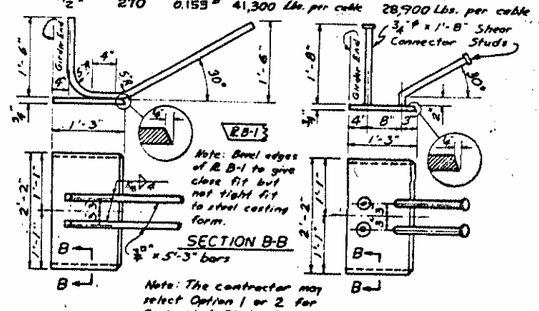


NOTES

- ELASTOMER IN ALL BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS. SEE SPECIAL PROVISIONS.
- STEEL PLATES IN LAMINATED BEARINGS SHALL CONFORM TO A.S.T.M. A-36.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- EMBEDDED PLATE B-1 TO BE GALVANIZED.
- CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5500 PSI AT THE AGE OF 28 DAYS.
- ALL PRESTRESSING STRANDS SHALL BE ½" 7-WIRE STRESS RELIEVED GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

SIZE GRADE AREA ULTIMATE STR APPLIED PRESTRESS

½" 270 0.153 in² 41,300 Lbs. per cable 28,900 Lbs. per cable



EMBEDDED PLATE B-1 (2 Required for each Girder)

DEAD LOAD DEFLECTIONS AND ORDINATES

Span	Girder	Camber (Girder Alone in Place)	Deflection due to * Superimposed Dead Load	Final Deflection	Vertical Curve Ordinate	Superelevation Ordinate
A thru I	G2, G3, & G4	1 11/16" ↑	1 1/4" ↓	7/16" ↑	15/16" ↑	3/8" ↓
A or I	G5	1 11/16" ↑	1 1/8" ↓	7/16" ↑	15/16" ↑	3/8" ↓
B thru H	G5	1 11/16" ↑	1 15/16" ↓	9/16" ↓	15/16" ↑	3/8" ↓

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

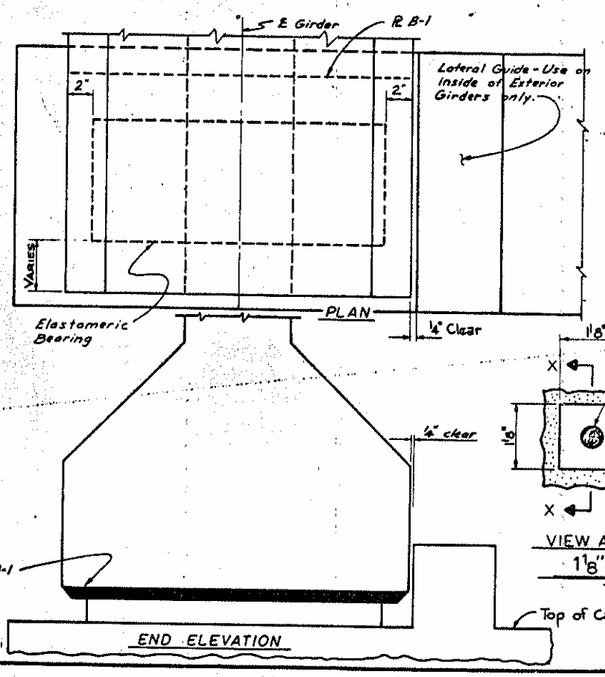
		GIRDERS REQUIRED		
Span	Girder	No.	Length	Total Length
A thru F	G2	6	86'-11 3/16"	521'-7 1/8"
A thru F	G3	6	87'-3 11/16"	523'-10 5/8"
A thru F	G4	6	87'-8 1/8"	526'-0 3/4"
A thru F	G5	6	88'-0 7/16"	528'-3 3/8"
G thru I	G2	3	86'-11 3/16"	260'-9 7/16"
G thru I	G3	3	87'-3 11/16"	261'-11 1/16"
G thru I	G4	3	87'-8 1/8"	263'-0 3/8"
G thru I	G5	3	88'-0 7/16"	264'-1 11/16"

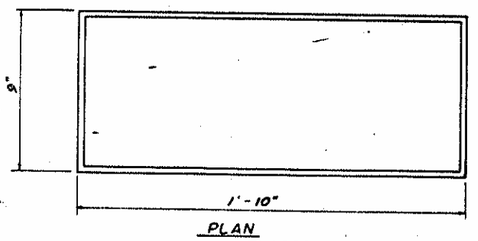
NOTE: GIRDER LENGTHS SHOWN FOR SPANS G THRU I ~ GDRS. G2, G3, G4, & G5 ARE SLOPE LENGTHS. ENDS OF GIRDERS FOR SPANS G THRU I ~ GDRS. G2, G3, G4, & G5 TO BE BEVELED. SEE "GIRDER DETAILS" SHEET.

NOTE: FOR 1¼"ø TIE ROD DETAILS, SEE GIRDER STANDARD SHEETS 1 OF 4 AND 3 OF 4.

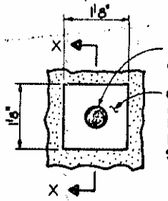
QUANTITIES FOR ONE GIRDER

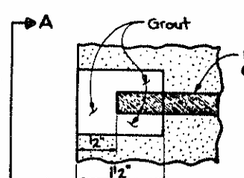
Span	Girder	Reinforcing Steel Lbs.	5500 psi Concrete Cu. Yds.	Grade 270 ½" S.R. Cables No.
A thru I	G2	986	17.6	40
A thru I	G3	986	17.7	40
A thru I	G4	986	17.8	40
A thru I	G5	986	17.9	40

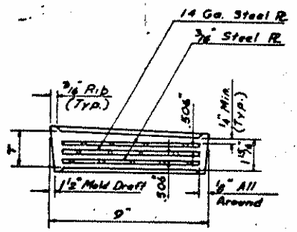




Beam Grade %	T (inches)	Bearing Types
0.00 - 1.00	1 5/16	P-1
1.00 - 2.25	2 1/16	P-2
2.25 - 3.50	2 9/16	P-3
3.50 - 5.00	2 5/16	P-4







ASSEMBLED BY K. G. Pridgen DATE May 1979	SPECIAL
CHECKED BY J. E. Capps DATE 7-79	
DRAWN BY Joel A. Johnson DATE Feb. 1, 1994	
CHECKED BY Ralph D. Underwood DATE Feb. 4, 1994	STANDARD

Revised 10-18-78 Arr. Rpt. rem. G.B.H.
Revised 7-11-78 By R.E.K. Dsv. R.D.U.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV. SHEET 2 OF 4

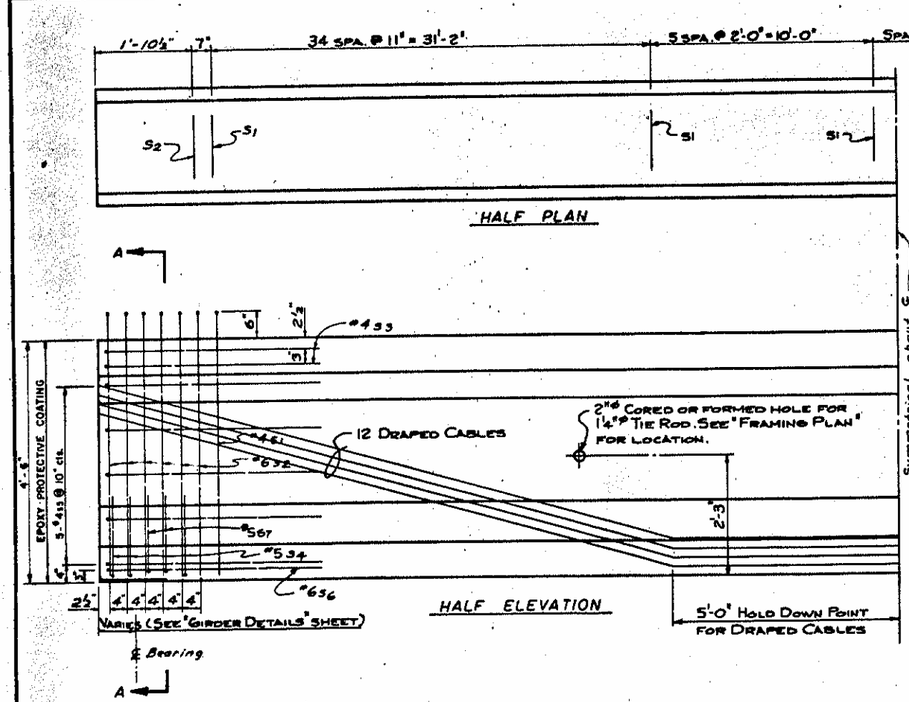
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

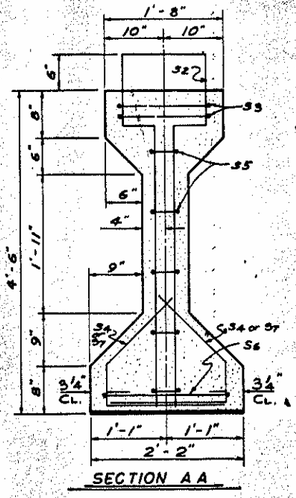
STANDARD
54" PRESTRESSED
CONCRETE GIRDER
SPANS A THRU I ~ GDRS. G2, G3, G4, & G5

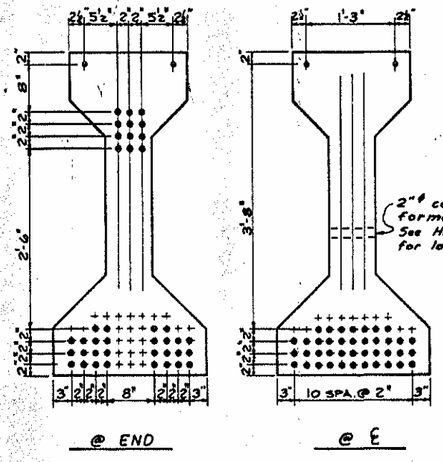
JULY 1978

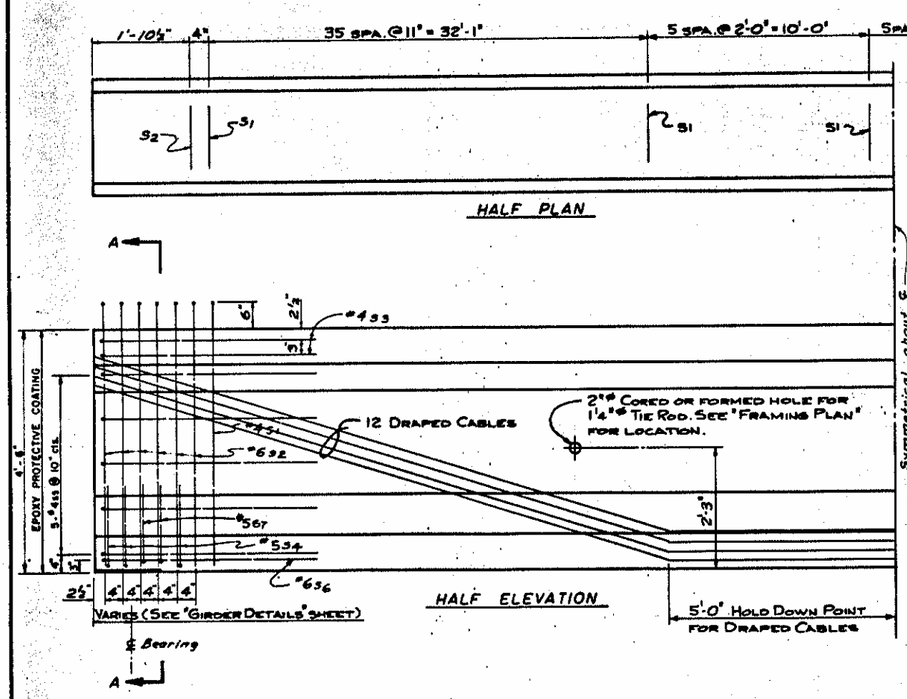
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-36
1			3			TOTAL SHEETS
2			4			77

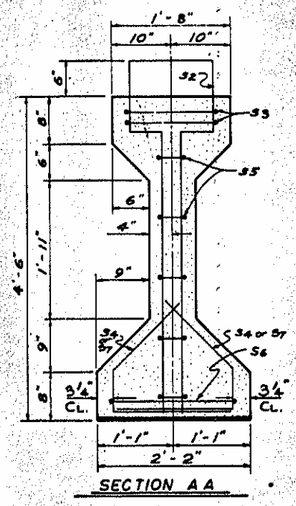
STD. NO. PCG3

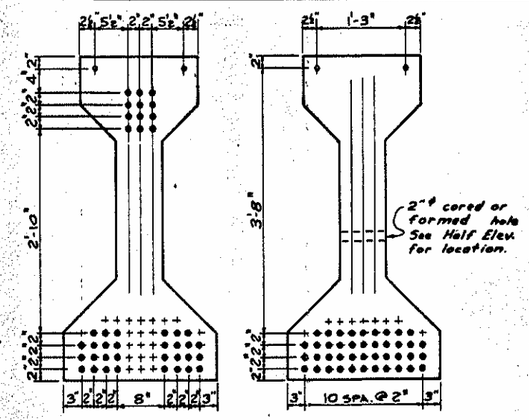





2½" 5½" 2" 2" 5½" 2½"
8" 2" 2" 2



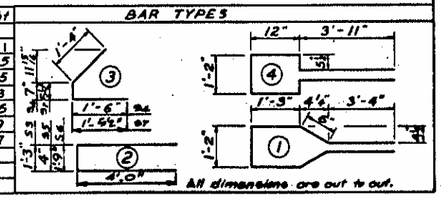




REINFORCING STEEL FOR ONE GIRDER

Bar	No.	Size	Type	Length	Weight
#1	82	#4	1	11'-4"	621
#2	12	#6	4	11'-11"	215
#3	4	#4	2	9'-3"	25
#4	12	#5	3	3'-5"	43
#5	10	#4	2	8'-4"	56
#6	2	#6	2	9'-9"	29
#7	8	#5	3	3'-8"	27

BAR TYPES



NOTES

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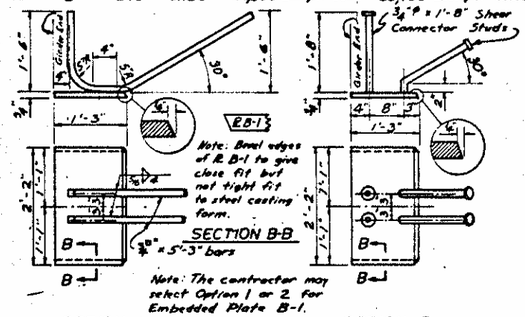
- STEEL PLATES IN LAMINATED BEARINGS SHALL CONFORM TO A.S.T.M. A-36.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.
- FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.
- EMBEDDED PLATE B-1 TO BE GALVANIZED.
- CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5500 PSI AT THE AGE OF 28 DAYS.
- ALL PRESTRESSING STRANDS SHALL BE ½" 7-WIRE STRESS RELIEVED GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

SIZE	GRADE	AREA	ULTIMATE STR	APPLIED PRESTRESS
½"	270	0.153 in²	41,300 Lbs. per cable	28,900 Lbs. per cable



EMBEDDED PLATE B-1 (2 Required for each Girder)

DEAD LOAD DEFLECTIONS AND ORDINATES

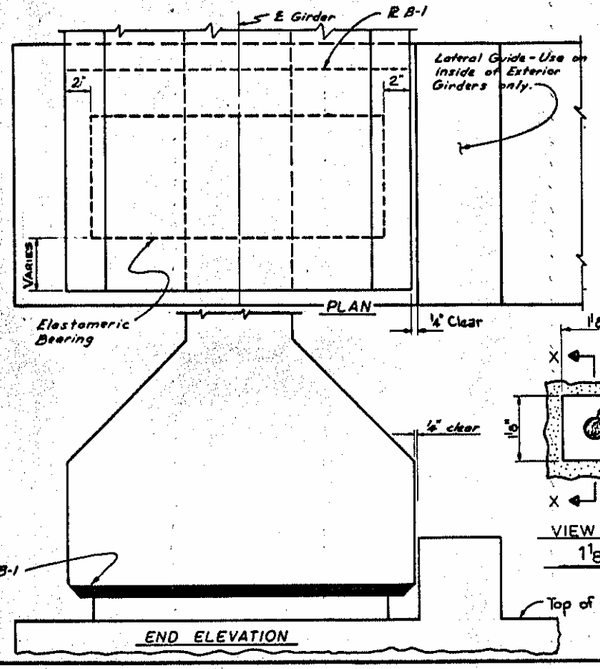
Span	Girder	Camber (Girder Alone in Place)	Deflection due to * Superimposed Dead Load	Final Deflection	Vertical Curve Ordinate	Superelevation Ordinate
A thru I	G9 & G10	1 15/16" ↑	1 7/16" ↓	5/8" ↓	1 5/16" ↓	5/8" ↓
A thru I	G11	1 13/16" ↑	1 1/2" ↓	1 1/16" ↓	1 5/16" ↓	5/8" ↓

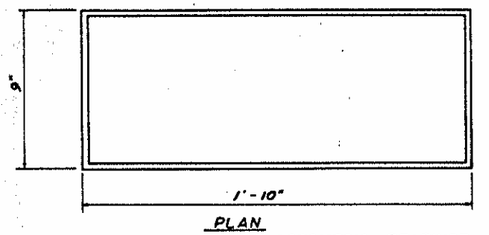
* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

		GIRDERS REQUIRED		
Span	Girder	No.	Length	Total Length
A thru F	G9	6	89'-6 7/16"	537'-2 5/8"
A thru F	G10	6	89'-10 7/8"	539'-5 1/4"
A thru F	G11	6	90'-3 5/8"	541'-8 1/4"
G thru I	G9	3	89'-6 7/16"	268'-7 5/16"
G thru I	G10	3	89'-10 7/8"	269'-8 5/8"
G thru I	G11	3	90'-3 5/8"	270'-10 1/8"

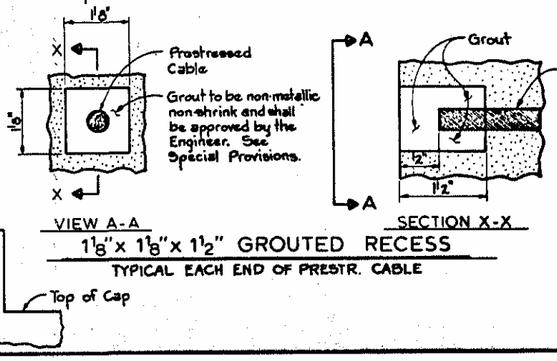
NOTE: GIRDER LENGTHS SHOWN FOR SPANS G THRU I ~ GDRS. G9, G10, & G11 ARE SLOPE LENGTHS. ENDS OF GIRDERS FOR SPANS G THRU I ~ GDRS. G9, G10, & G11 TO BE BEVELED. SEE "GIRDER DETAILS" SHEET.

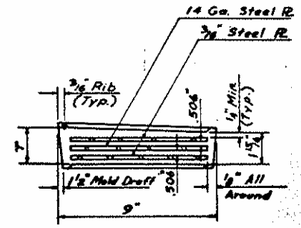
NOTE: FOR 1¼" ø TIE ROD DETAILS, SEE GIRDER STANDARD SHEETS 1 OF 4 AND 3 OF 4.





BEAM GRADE %	T (inches)	BEARING TYPES
0.00 - 1.00	1 1/16	P-1
1.00 - 2.25	2 1/16	P-2
2.25 - 3.50	2 3/16	P-3
3.50 - 5.00	2 5/16	P-4





QUANTITIES FOR ONE GIRDER					
Span	Girder	Reinforcing Steel Lbs.	5500 psi Concrete Cu. Yds.	Grade 270 ½" S.R. Cables No.
A thru I	G9	1016	18.2	44
A thru I	G10	1016	18.2	44
A thru I	G11	1016	18.3	44

Revised 12-14-78 BY: RDU / RH G.B.H.
Revised 7-31-78 BY: R.E.K. / B.W. R.D.U.

ASSEMBLED BY K.G. PRIDGEN DATE MAY 1979 — SPECIAL
CHECKED BY J. E. Capps DATE 7-79
DRAWN BY Joel A. Johnson DATE Feb. 1, 1978 — STANDARD
CHECKED BY Ralph D. Underwood DATE Feb 1, 1978

PROJECT NO. B-1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.
SHEET 4 OF 4

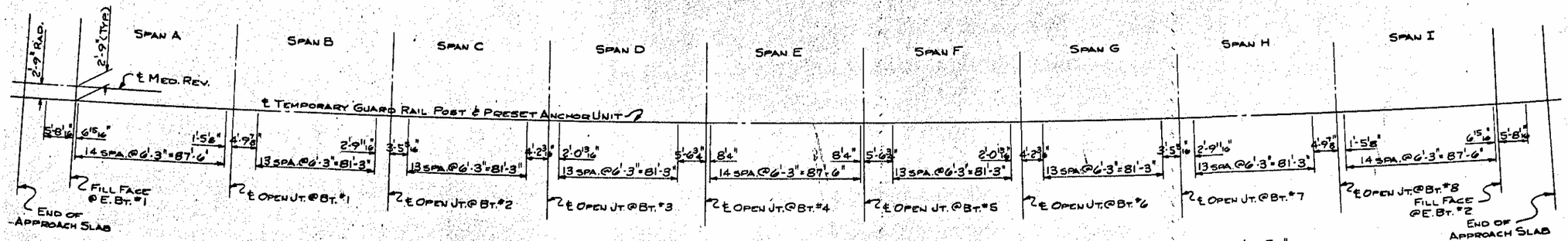
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
54" PRESTRESSED
CONCRETE GIRDER
SPANS A THRU I ~ GDRS. G9, G10, & G11

JULY 1978

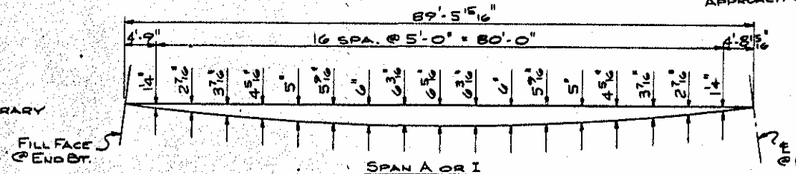
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-38
1			3			TOTAL SHEETS
2			4			77

STD. NO. PCG3

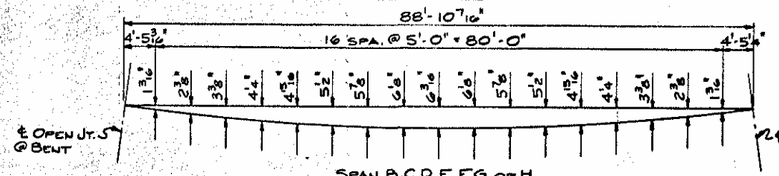


PLAN SHOWING TEMPORARY GUARD RAIL POST & PRESET ANCHOR UNIT SPACING

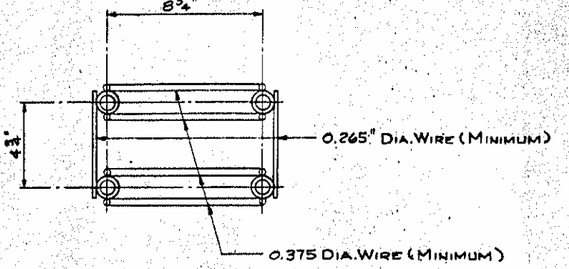
NOTE: SPACING SHOWN TO BE MEASURED ALONG ℄ TEMPORARY GUARD RAIL POST & PRESET ANCHOR UNIT.



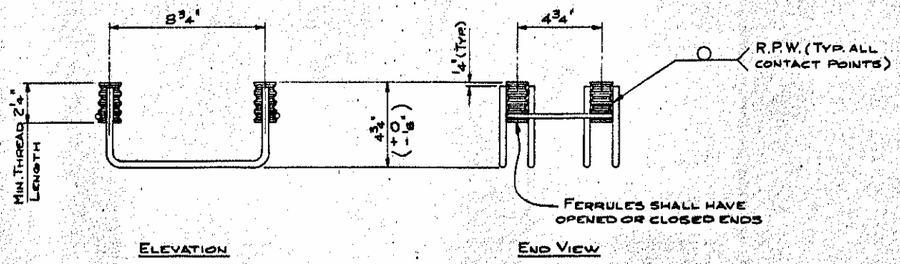
SPAN A OR I



SPAN B, C, D, E, F, G, OR H



PLAN



ELEVATION

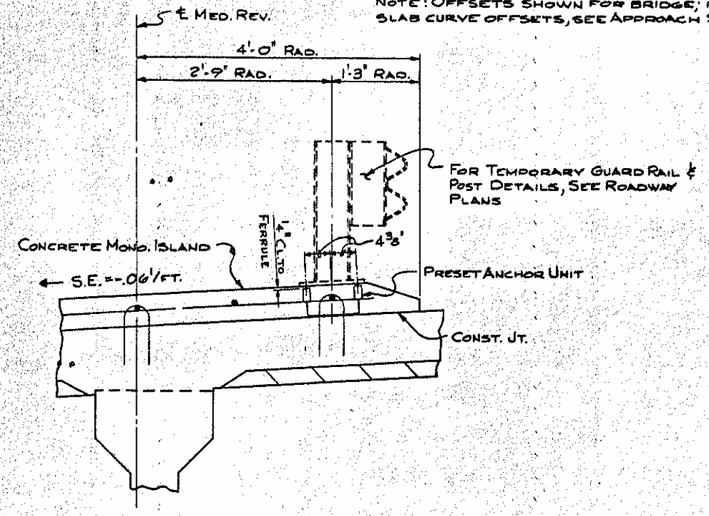
END VIEW

PRESET ANCHOR UNIT

TOTAL NO. REQUIRED = 131 *

CURVE OFFSETS

NOTE: OFFSETS SHOWN FOR BRIDGE; FOR APPROACH SLAB CURVE OFFSETS, SEE APPROACH SLAB DETAILS.



SECTION THRU ISLAND SHOWING PRESET ANCHOR UNIT

(SECTION SHOWN FOR BRIDGE; APPROACH SLAB SIMILAR)

NOTES

THE PRESET ANCHOR UNIT ASSEMBLY SHALL CONSIST OF THE PRESET ANCHOR UNIT, 4 - 7/8"ø x 2'2" LONG TAP BOLTS (FULL THREAD) WITH WASHERS, AND PLUGS FOR FERRULES. THE COST OF THE PRESET ANCHOR UNIT ASSEMBLIES, COMPLETE IN PLACE AND INCLUDING THE INSTALLATION OF THE BOLTS AND WASHERS AFTER THE TEMPORARY GUARD RAIL AND POSTS HAVE BEEN REMOVED, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR REINF. CONCRETE DECK SLAB.

THE 7/8"ø x 2'2" TAP BOLTS (FULL THREAD) SHALL MEET THE REQUIREMENTS OF ASTM A307. THE WASHERS SHALL MEET THE MATERIAL REQUIREMENTS OF A.I.S.I. 1020 AND THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B27.2 FOR TYPE A PLAIN WASHERS, NARROW "N" SERIES.

THE THREADED STEEL FERRULES AND THE PRESET ANCHOR UNIT SHALL BE CAPABLE OF DEVELOPING THE STRENGTH OF THE BOLTS.

THE PRESET ANCHOR UNIT, BOLTS AND WASHERS SHALL BE GALVANIZED. THE BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

AT THE CONTRACTOR'S OPTION STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE GALVANIZED BOLTS AND WASHERS. THEY SHALL MEET OR EXCEED THE REQUIREMENTS OF THE SPECIFICATIONS LISTED ABOVE. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

FERRULES SHALL BE PLUGGED, AS RECOMMENDED BY THE MANUFACTURER, DURING PLACEMENT OF CONCRETE.

AFTER THE TEMPORARY GUARD RAIL AND POSTS HAVE BEEN REMOVED, THE BOLTS WITH WASHERS SHALL BE INSERTED IN THE FERRULES AND TIGHTENED TO SNUG TIGHT. SNUG TIGHT IS DEFINED AS THE TIGHTNESS ATTAINED BY THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. THE BOLTS WITH WASHERS SHALL REMAIN IN THE COMPLETED STRUCTURE.

DRAWN BY K.G. PRIDGEN DATE JUNE 1979
CHECKED BY J.E. Cepps DATE 7-79

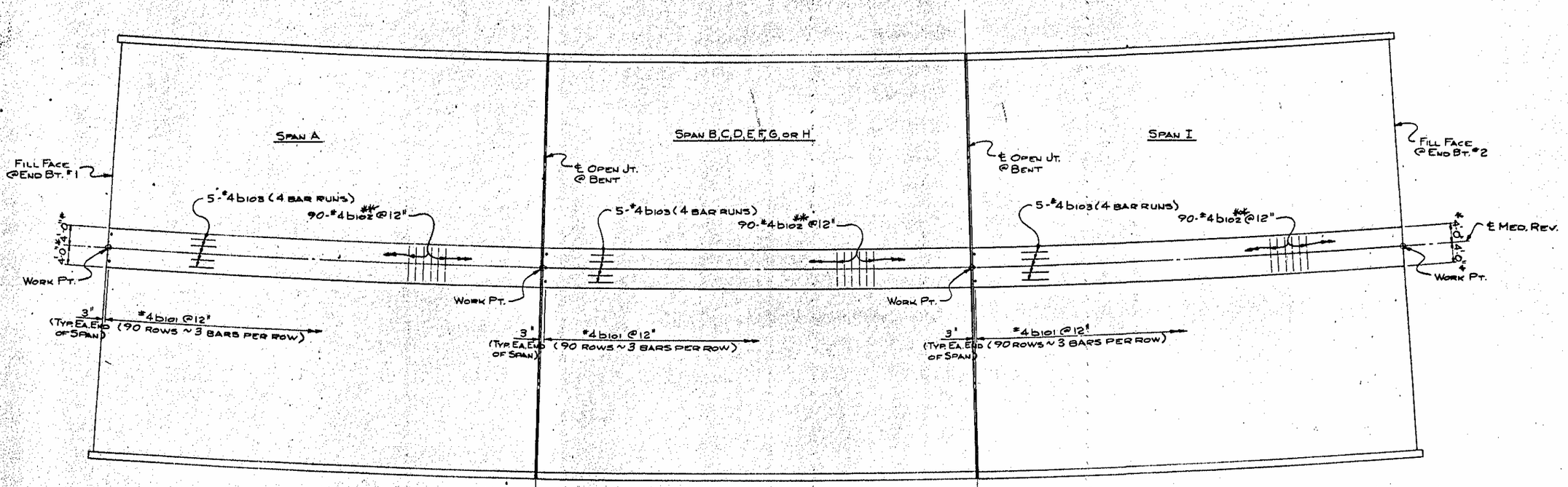
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

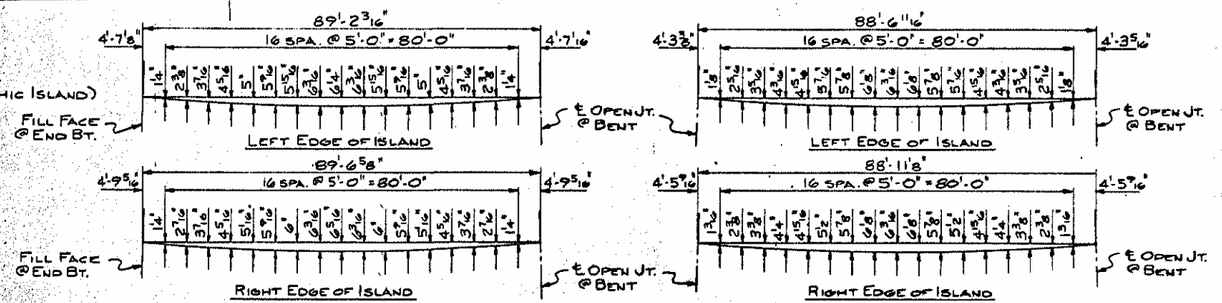
SUPERSTRUCTURE
PRESET ANCHOR UNITS
FOR TEMPORARY GUARD
RAIL FOR BRIDGE AND
APPROACH SLABS

JUNE 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-39
1			3			TOTAL SHEETS
2			4			77



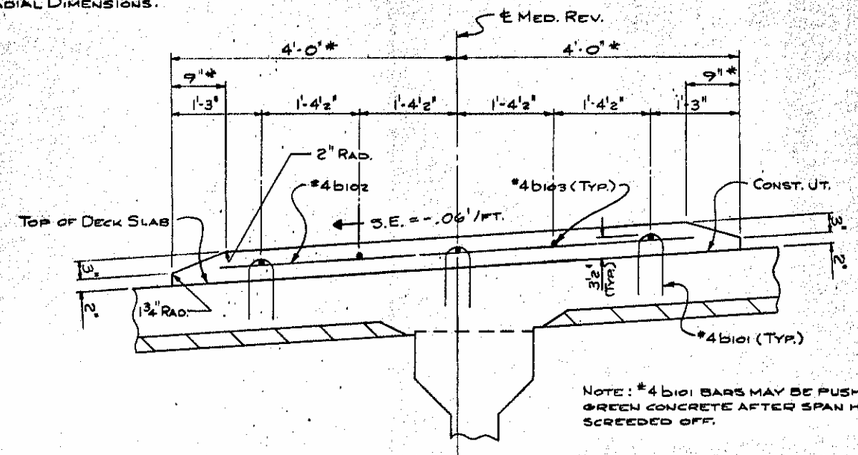
PLAN OF BRIDGE
(SHOWING 5" CONCRETE MONOLITHIC ISLAND)



CURVE OFFSETS ~ SPAN A OR I

CURVE OFFSETS ~ SPAN B,C,D,E,F,G, OR H

* DENOTES RADIAL DIMENSIONS.



SECTION THRU ISLAND

NOTE: *4 b101 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

NOTE: JOINT OPENING IN ISLAND AT BENTS SHALL BE FORMED TO MATCH 1" FORMED OPENING IN DECK SLAB.

**NOTE: *4 b102 BARS TO BE PAIRED WITH EACH ROW OF *4 b101 BARS AS SHOWN IN SECTION THRU ISLAND.

NOTE: FOR LOCATION OF PRESET ANCHOR UNITS, SEE PRESET ANCHOR UNIT SHEET.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CONCRETE MONOLITHIC
ISLAND DETAILS

MAY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-40
1			3			TOTAL SHEETS
2			4			77

DRAWN BY K. G. PRIDGEN DATE MAY 1979
CHECKED BY J. E. CAPPS DATE 7-79

SPAN A OR I (RIGHT SIDE)

BAR	NO.	SIZE	TYPE	LENGTH	WT.
*a1	143	*6	STR.	47'-7"	10,220
*a2	2	*6	STR.	20'-8"	62
a101	143	*6	STR.	47'-7"	10,220
a102	2	*6	STR.	20'-8"	62
b1	45	*4	1	6'-3"	188
*b2	128	*4	STR.	23'-8"	2024
b3	118	*5	STR.	46'-3"	5692
b101	270	*4	14	1'-11"	346
b102	90	*4	STR.	6'-8"	401
b103	20	*4	STR.	23'-3"	311
*d1	143	*6	STR.	4'-0"	859
d101	143	*6	STR.	4'-0"	859
K1	2	*4	STR.	23'-7"	32
K2	6	*4	STR.	25'-7"	103
K3	1	*6	STR.	50'-7"	76
K4	6	*4	STR.	6'-2"	25
K5	12	*4	STR.	7'-2"	57
K6	6	*6	STR.	5'-8"	51
K7	1	*4	STR.	2'-2"	1
K8	2	*4	STR.	2'-8"	4
K9	1	*6	STR.	1'-11"	3
K16	20	*4	STR.	7'-2"	96
K17	20	*6	STR.	7'-2"	215
K18	2	*8	2	10'-2"	54
K19	8	*8	3	15'-10"	338
K20	2	*8	3	17'-4"	93
K22	12	*4	STR.	6'-2"	49
S5	46	*4	4	2'-0"	61
S6	34	*4	5	6'-0"	136
S7	70	*4	6	8'-5"	394
REINFORCING STEEL, LBS.					19,867
EPOXY COATED REINFORCING STEEL, LBS.					13,165
CLASS AA CONCRETE, CU. YDS.					147.5

SPAN A OR I (LEFT SIDE)

BAR	NO.	SIZE	TYPE	LENGTH	WT.
*a201	140	*6	STR.	38'-7"	8113
*a202	2	*6	STR.	10'-3"	31
a301	140	*6	STR.	38'-7"	8113
a302	2	*6	STR.	10'-3"	31
b1	37	*4	1	6'-3"	154
*b5	104	*4	STR.	23'-1"	1604
b6	94	*5	STR.	45'-1"	4420
K4	4	*4	STR.	6'-2"	16
K5	8	*4	STR.	7'-2"	38
K6	4	*6	STR.	5'-8"	34
K10	2	*4	STR.	19'-5"	26
K11	6	*4	STR.	20'-2"	81
K12	1	*6	STR.	38'-8"	58
K13	1	*4	STR.	2'-8"	2
K14	2	*4	STR.	3'-2"	4
K15	1	*6	STR.	2'-5"	4
K16	16	*4	STR.	7'-2"	77
K17	16	*6	STR.	7'-2"	172
K18	2	*8	2	10'-2"	54
K19	6	*8	3	15'-10"	254
K21	2	*8	3	13'-5"	72
K22	8	*4	STR.	6'-2"	33
S5	37	*4	4	2'-0"	49
S6	26	*4	5	6'-0"	104
S7	56	*4	6	8'-5"	315
REINFORCING STEEL, LBS.					14,111
EPOXY COATED REINFORCING STEEL, LBS.					9748
CLASS AA CONCRETE, CU. YDS.					116.7

SPAN B, D, F, G, OR H

BAR	NO.	SIZE	TYPE	LENGTH	WT.
*a401	139	*6	STR.	47'-11"	10004
*a402	139	*6	STR.	40'-5"	8438
*a403	2	*6	STR.	57'-11"	174
*a404	2	*6	STR.	31'-1"	93
*a405	2	*6	STR.	4'-2"	13
a501	139	*6	STR.	43'-11"	9169
a502	139	*6	STR.	44'-5"	9273
a503	2	*6	STR.	57'-11"	174
a504	2	*6	STR.	31'-1"	93
a505	2	*6	STR.	4'-2"	13
*b8	100	*4	STR.	23'-6"	1570
*b7	132	*4	STR.	23'-1"	2035
b10	92	*5	STR.	45'-11"	4406
b11	120	*5	STR.	45'-2"	5653
b101	270	*4	14	1'-11"	346
b102	90	*4	STR.	6'-8"	401
b103	20	*4	STR.	23'-3"	311
K16	40	*4	STR.	7'-2"	191
K17	40	*6	STR.	7'-2"	431
K18	8	*8	2	10'-2"	217
K19	36	*8	3	15'-10"	1522
K22	40	*4	STR.	6'-2"	165
S6	120	*4	5	6'-0"	481
S7	140	*4	6	8'-5"	787
REINFORCING STEEL, LBS.					33633
EPOXY COATED REINFORCING STEEL, LBS.					22,327
CLASS AA CONCRETE, CU. YDS.					251.3

SPAN C OR E

BAR	NO.	SIZE	TYPE	LENGTH	WT.
*a401	136	*6	STR.	47'-11"	9788
*a402	136	*6	STR.	40'-5"	8256
*a403	2	*6	STR.	57'-11"	174
*a404	2	*6	STR.	31'-1"	93
*a405	2	*6	STR.	4'-2"	13
*a411	3	*6	STR.	37'-6"	169
*a412	3	*6	STR.	44'-2"	199
*a413	3	*6	STR.	1'-1"	5
a501	136	*6	STR.	43'-11"	8771
a502	136	*6	STR.	44'-5"	9073
a503	2	*6	STR.	57'-11"	174
a504	2	*6	STR.	31'-1"	93
a505	2	*6	STR.	4'-2"	13
a511	3	*6	STR.	37'-10"	170
a512	3	*6	STR.	44'-10"	202
a513	3	*6	STR.	1'-4"	6
*b8	100	*4	STR.	23'-6"	1570
*b7	124	*4	STR.	23'-1"	1912
b10	92	*5	STR.	45'-11"	4406
b11	114	*5	STR.	45'-2"	5370
*b14	3	*4	STR.	27'-3"	55
*b15	3	*4	STR.	27'-0"	54
b16	4	*5	STR.	40'-6"	169
b17	2	*5	STR.	39'-10"	83
*b18	1	*4	STR.	6'-9"	5
*b19	1	*4	STR.	5'-8"	4
b20	2	*5	STR.	6'-9"	14
b21	5	*5	STR.	5'-8"	30
b101	270	*4	14	1'-11"	346
b102	90	*4	STR.	6'-8"	401
b103	20	*4	STR.	23'-3"	311
K16	40	*4	STR.	7'-2"	191
K17	40	*6	STR.	7'-2"	431
K18	8	*8	2	10'-2"	217
K19	36	*8	3	15'-10"	1522
K22	40	*4	STR.	6'-2"	165
*m1	32	*5	STR.	2'-10"	95
*m2	6	*6	10	2'-7"	23
*m3	4	*6	10	2'-6"	15
*m4	4	*5	11	8'-0"	33
*u1	1	*3	13	4'-3"	2
*u2	1	*3	13	3'-9"	1
*u3	1	*3	13	3'-3"	1
S6	120	*4	5	6'-0"	481
S7	140	*4	6	8'-5"	787
*v1	4	*3	1	2'-4"	4
*v2	3	*3	12	3'-2"	4
REINFORCING STEEL, LBS.					33,622
EPOXY COATED REINFORCING STEEL, LBS.					22,475
CLASS AA CONCRETE, CU. YDS.					251.3

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL SPAN A OR I (RIGHT SIDE)

b4	32	*5	STR.	22'-8"	757
S1	2	*5	7	4'-6"	9
S2	2	*5	8	6'-10"	14
S3	91	*5	9	4'-10"	459
S4	91	*5	7	5'-1"	482
REINFORCING STEEL, LBS.					1721
CLASS AA CONCRETE, CU. YDS.					8.3

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL SPAN A OR I (LEFT SIDE)

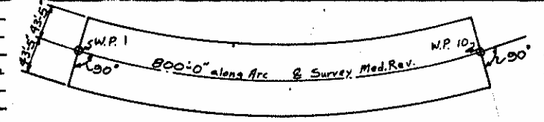
b7	24	*5	STR.	29'-0"	726
S1	2	*5	7	4'-6"	9
S2	2	*5	8	6'-10"	14
S3	87	*5	9	4'-10"	439
S4	87	*5	7	5'-1"	461
REINFORCING STEEL, LBS.					1647
CLASS AA CONCRETE, CU. YDS.					8.0

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL SPAN B, D, F, G OR H

b12	32	*5	STR.	22'-3"	743
b13	24	*5	STR.	28'-6"	713
S3	178	*5	9	4'-10"	897
S4	178	*5	7	5'-1"	944
REINFORCING STEEL, LBS.					3297
CLASS AA CONCRETE, CU. YDS.					16.0

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL SPAN C OR E

b12	32	*5	STR.	22'-3"	743
b13	24	*5	STR.	28'-6"	713
S3	178	*5	9	4'-10"	897
S4	178	*5	7	5'-1"	944
REINFORCING STEEL, LBS.					3297
CLASS AA CONCRETE, CU. YDS.					16.0



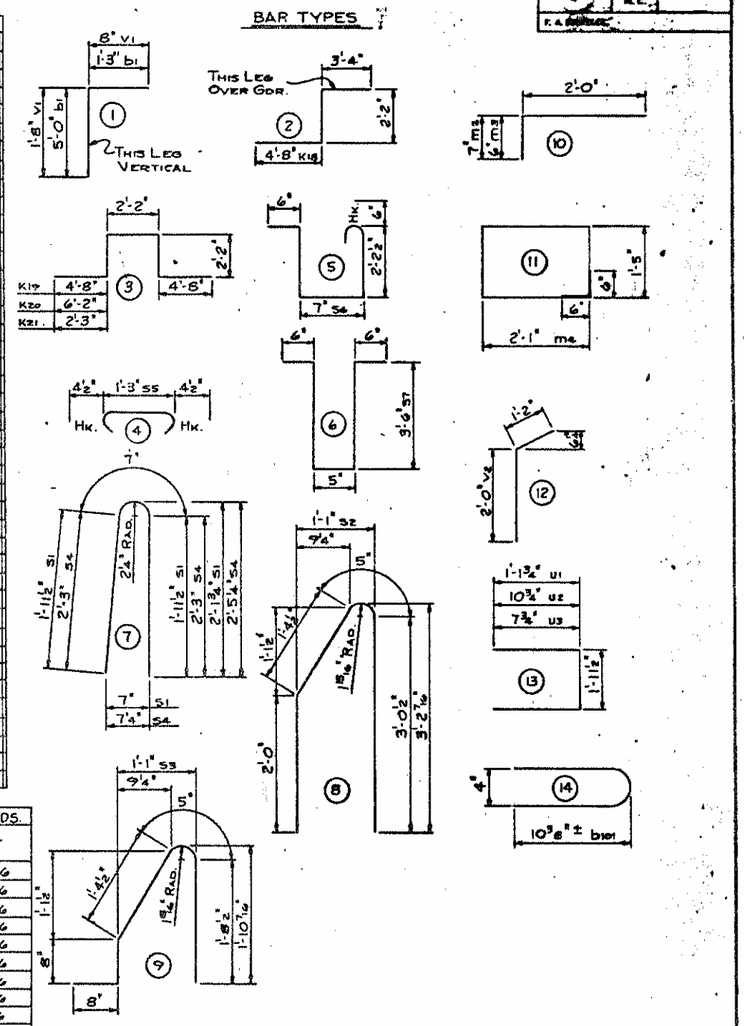
LAYOUT FOR COMPUTING SURFACE AREA OF REINFORCED CONCRETE DECK SLAB

* DENOTES EPOXY COATED REINFORCING STEEL.

NOTE: The cost of the Epoxy Coated Reinforcing Steel shall be included in the price bid for the Reinforced Concrete Deck Slab.

DRAWN BY K.G. PRIDGEN DATE MAY 1979
CHECKED BY J.E. CLAPP DATE 7-1-79

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.
ALL RADII ARE TO OUTSIDE OF BAR.

CLASS AA CONCRETE BREAKDOWN, CU. YDS.

	SLAB RT. SIDE	SLAB LT. SIDE	ISLAND	TOTAL
SPAN A	147.5	116.7	10.4	274.6
SPAN B	251.3		10.3	261.6
SPAN C	251.3		10.3	261.6
SPAN D	251.3		10.3	261.6
SPAN E	251.3		10.3	261.6
SPAN F	251.3		10.3	261.6
SPAN G	251.3		10.3	261.6
SPAN H	251.3		10.3	261.6
SPAN I	147.5	116.7	10.4	274.6
TOTAL **				2380.4

TOTAL BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	CU. YDS.	LBS.	LBS.
SPAN A	274.6	33,978	22,913
SPAN B	261.6	33,633	22,327
SPAN C	261.6	33,622	22,475
SPAN D	261.6	33,633	22,327
SPAN E	261.6	33,622	22,475
SPAN F	261.6	33,633	22,327
SPAN G	261.6	33,633	22,327
SPAN H	261.6	33,633	22,327
SPAN I	274.6	33,978	22,913
TOTAL **	2380.4	303,365	202,411
54" PRESTR. CONCRETE GDRS.		No. 99	8753.63 LIN. FT.
CONCRETE BARRIER RAIL			1604.00 LIN. FT.
LINSEED OIL			160 GALS.
REINFORCED CONCRETE DECK SLAB			69467 SQ. FT.

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED.

FED. ROAD SEQ. NO.	STATE	PROJECT NO.
4 2	N.C.	
F.A. PROJECT		

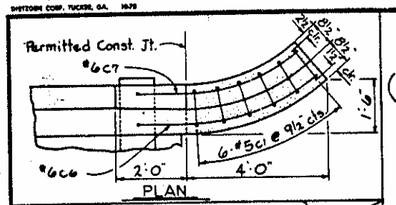
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION 181+35 MED. REV.

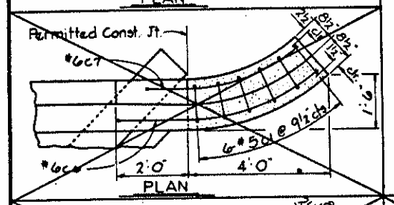
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

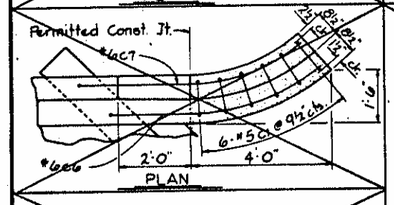
SUPERSTRUCTURE
BILL OF MATERIAL

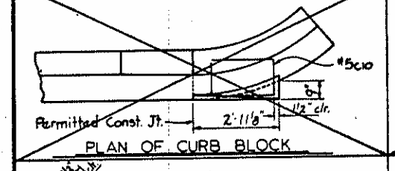
MAY 1979

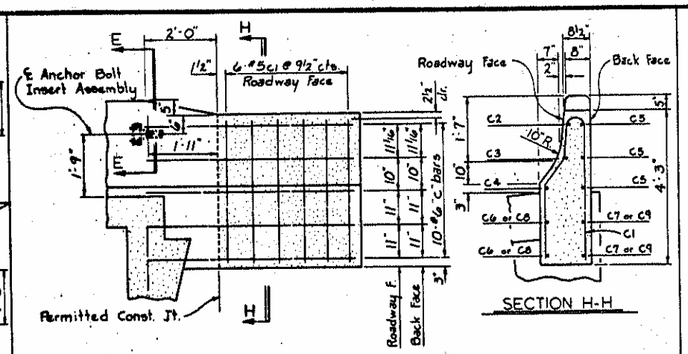
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-41
1			3			TOTAL SHEETS
2			4			77

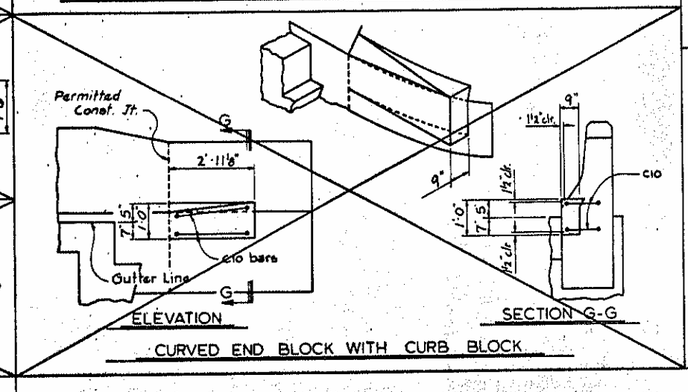


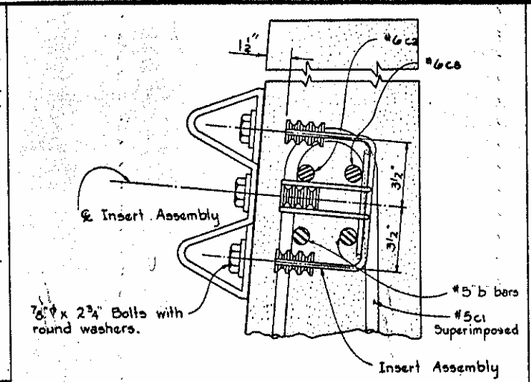


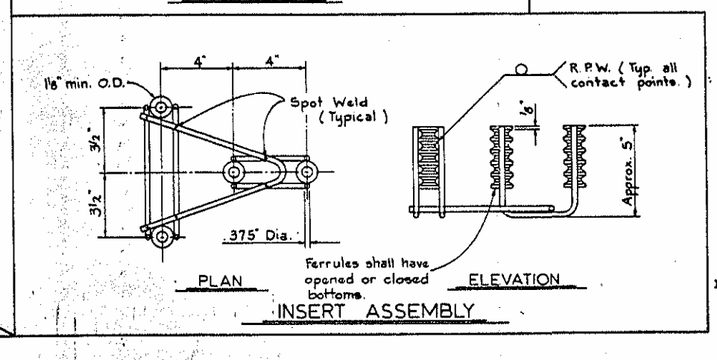








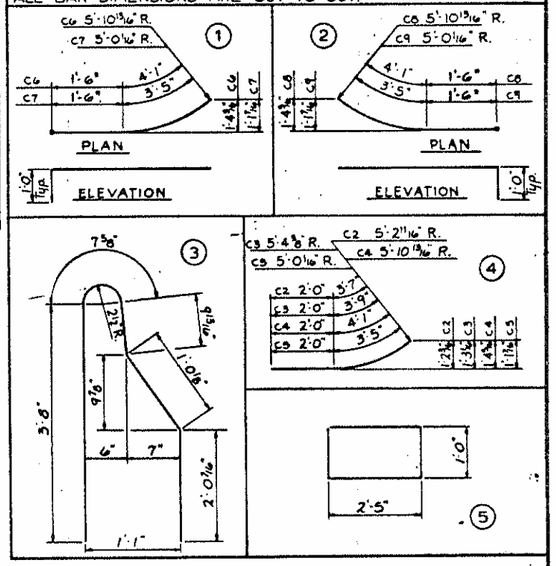




BILL OF MATERIAL FOR FOUR CURVED END BLOCKS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	24	#5	3	8'-2"	204
C2	4	#6	4	5'-7"	34
C3	4	#6	4	5'-9"	35
C4	4	#6	4	6'-1"	37
C5	12	#6	4	5'-5"	98
C6	4	#6	1	5'-7"	34
C7	4	#6	1	4'-11"	30
C8	4	#6	2	5'-7"	34
C9	4	#6	2	4'-11"	30
Reinforcing Steel Lbs.					536
Class A-A Concrete Cu Yds.					2.9

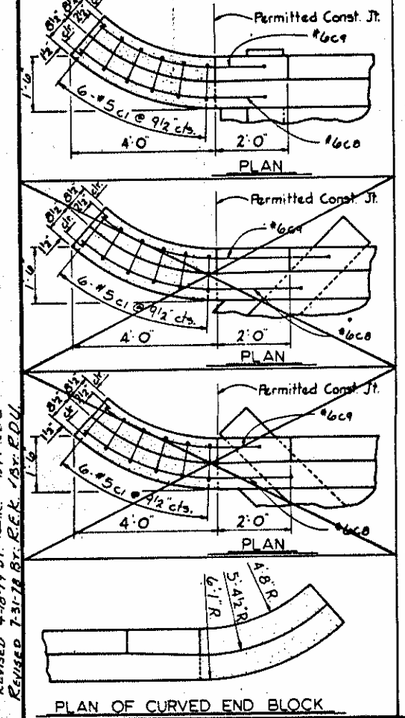
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



NOTES

1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¼".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "AA" CONCRETE.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE PLANS.
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE FOUR CURVED END BLOCKS AND CURB BLOCK, WHEN USED, WHICH INCLUDES CLASS AA CONCRETE, REINFORCING STEEL, EXCAVATION, BACKFILL AND INCIDENTALS NECESSARY FOR THEIR CONSTRUCTION SHALL BE INCLUDED IN THE COST OF THE CONCRETE BARRIER RAIL.
7. GUARDRAIL ANCHORAGE IS REQUIRED AT ALL FOUR CORNERS OF THIS BRIDGE.



BILL OF MATERIAL FOR CURB BLOCK						
	Reinforcing Steel Lbs.					
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
1 Block	C10	2	#5	5	6'-10"	14
2 Blocks	C10	4	#5	5	6'-10"	29
3 Blocks	C10	6	#5	5	6'-10"	43
4 Blocks	C10	8	#5	5	6'-10"	57

TOTAL BILL OF MATERIAL	
Reinforcing Steel - Lbs. -	536
Class "A A" Concrete - Cu. Yds. -	2.9

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 Med. Rev.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CURVED END BLOCK, GUARDRAIL ANCHORAGE, AND CURB BLOCK FOR BARRIER RAIL

JULY 1978

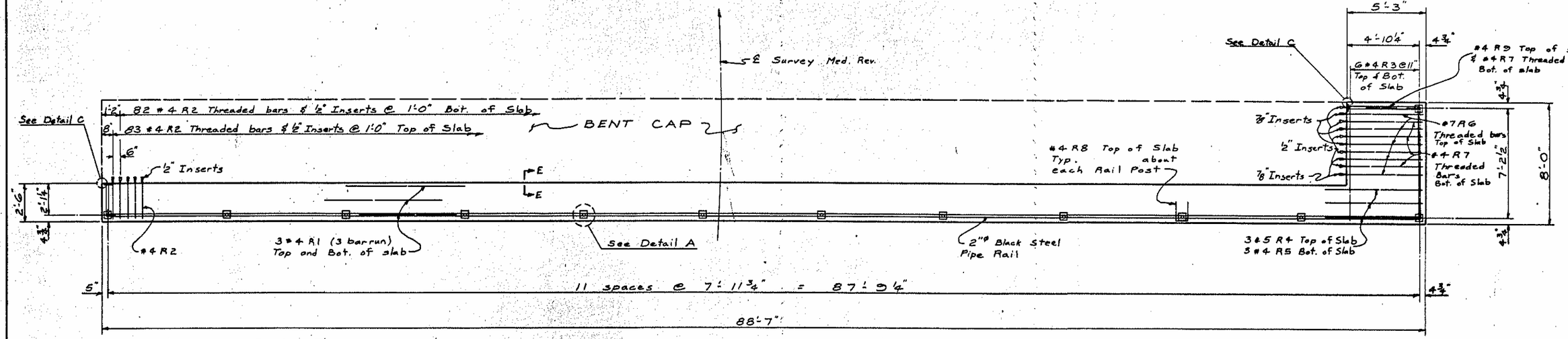
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-42
1			3			TOTAL SHEETS
2			4			77

STD. NO. GRA1

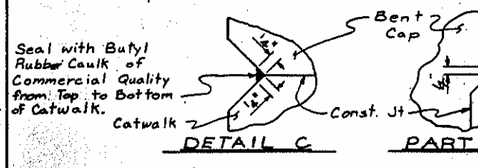
Revised 10-1-79 By: REK / By: D.M.I.
Revised 4-18-79 By: R.E.K. By: EDU
Revised 7-31-78 By: R.E.K. By: EDU

DRAWN BY: ROSS EDWARD KUBENY DATE: 6-16-76
CHECKED BY: R.C. Martin DATE: June-76

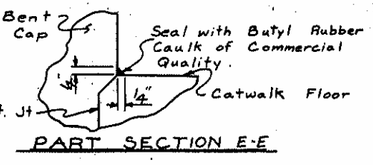
ASSEMBLED BY: K.G. Pridgen DATE: JAN. 1980
CHECKED BY: H.E. MILLER DATE: 2-12-80



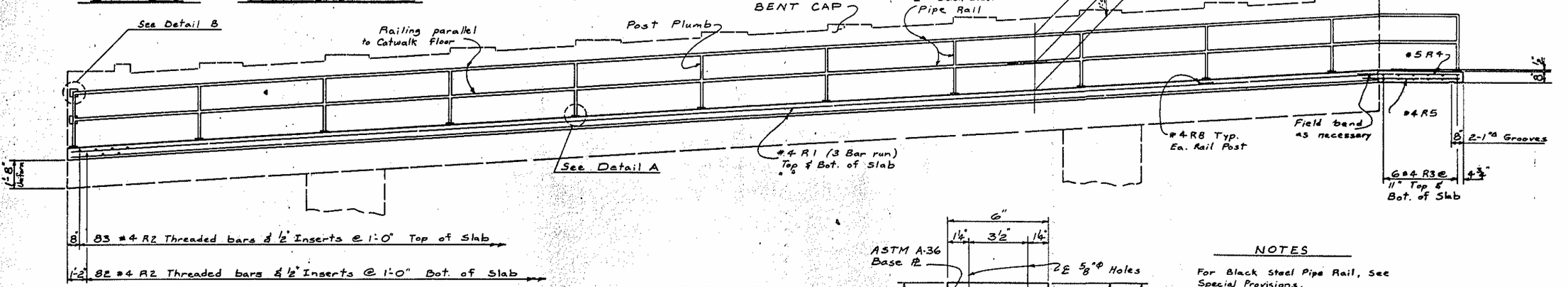
PLAN OF BENT CATWALK



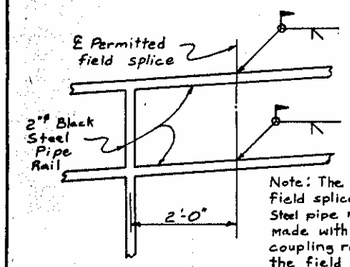
DETAIL C



PART SECTION E-E

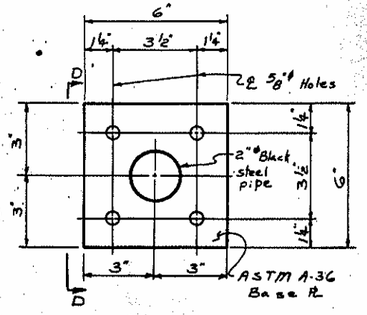


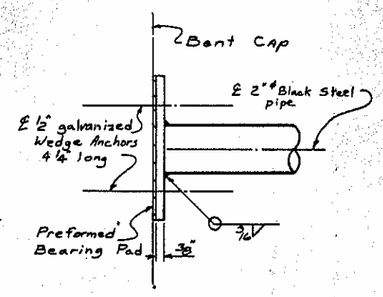
ELEVATION



Note: The permitted field splice in the 2"ϕ Black Steel pipe rail may be made with a Black Steel pipe coupling rather than with the field welded connection shown.

PERMITTED FIELD SPLICE DETAIL

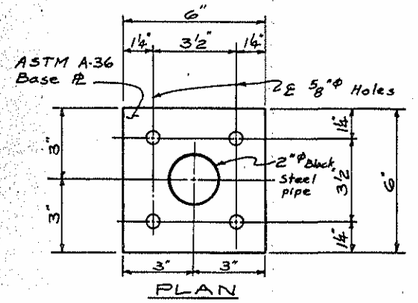




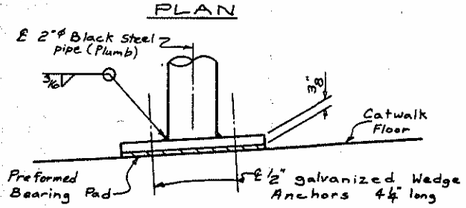
VIEW D-D

DETAIL B

ASTM A-36 Base ℞ No. Req'd. = 17



PLAN



DETAIL A

NOTES

For Black Steel Pipe Rail, See Special Provisions.

For Wedge Anchors, See Special Provisions.

½" Wedge Anchors to be embedded in to concrete 2¾".

No. ½" X 4¼" Wedge Anchors Req'd. = 68

For Reinforcing Steel and Class A Concrete Quantities, See Bill of Mat'l. for each Bent.

Lin. Ft. of 2"ϕ Black Steel Pipe Rail = 101.94

PROJECT NO. 8.1981901

SWAIN **COUNTY**

STATION: 181+35 Med. Rev.

Sheet 1 of 2

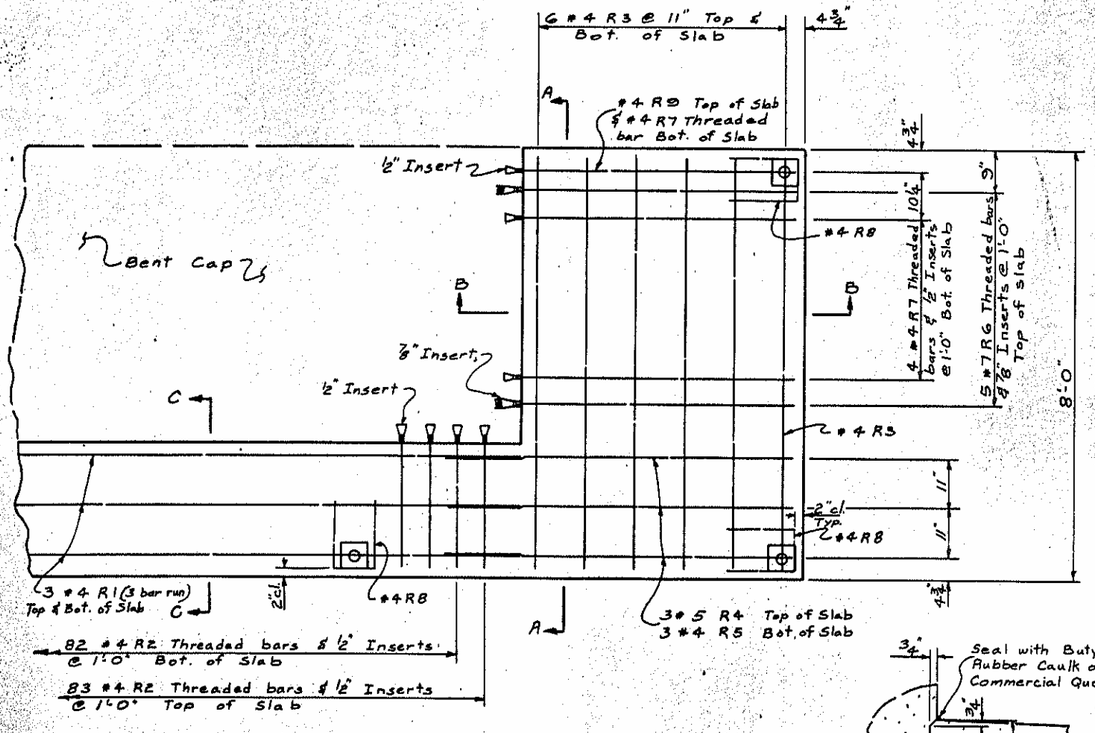
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT CATWALK DETAILS FOR EACH BENT

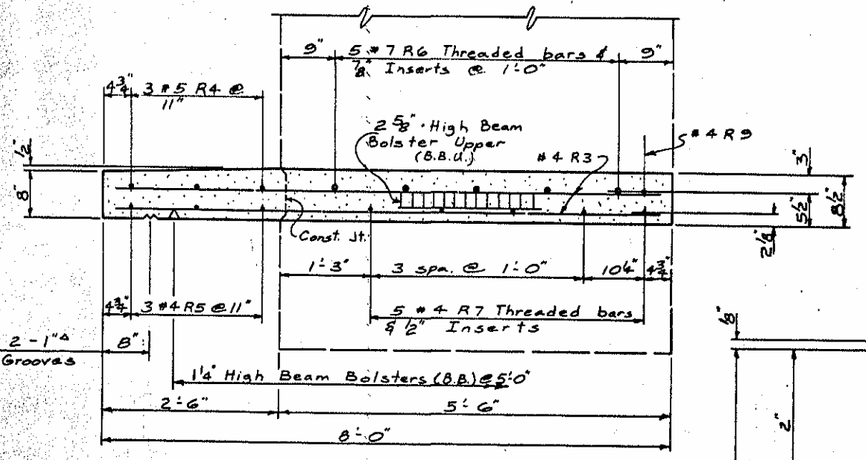
Dec. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-43
1			3			TOTAL SHEETS
2			4			77

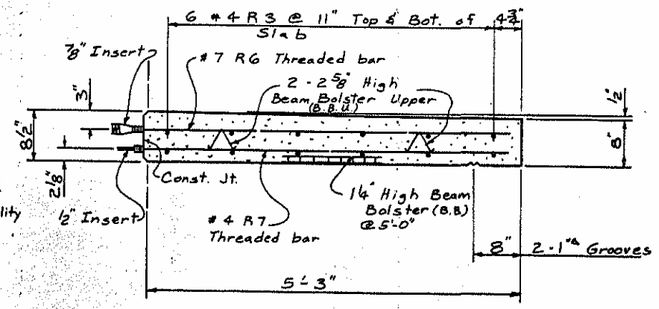
DRAWN BY: J. E. Capps DATE: 12-18-79
CHECKED BY: K.G. Pridgen DATE: JAN. 1980



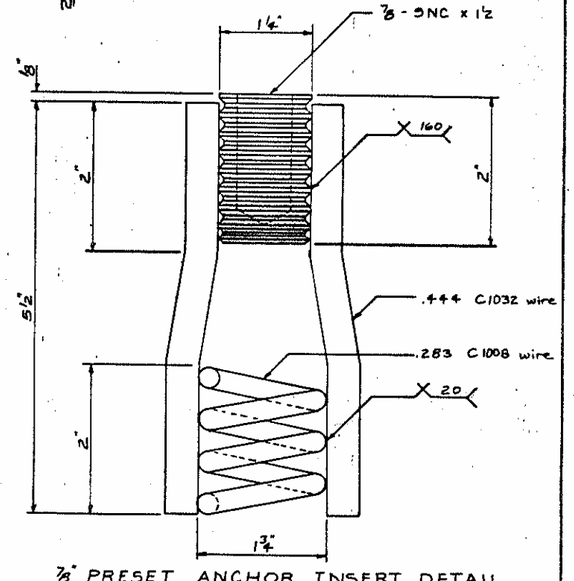
PART PLAN



SECTION A-A



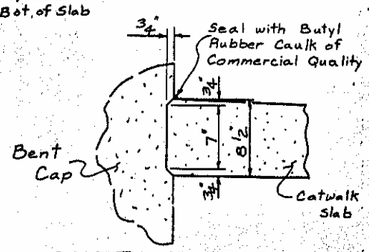
SECTION B-B



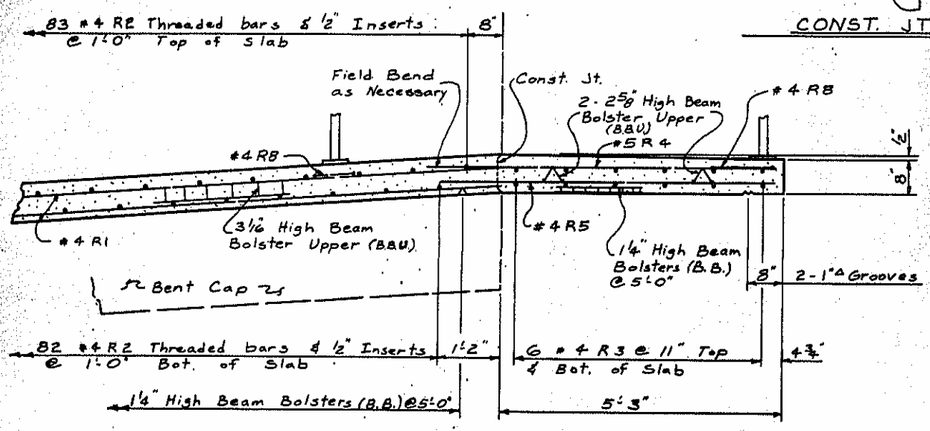
⅞" PRESET ANCHOR INSERT DETAIL

(No. Req'd. = 5)

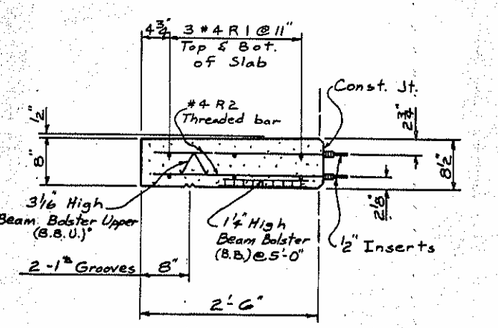
NOTES : ⅞" Preset Anchor Insert shall develop a minimum ultimate tensile pullout strength of 24 kips in 3000 p.s.i. concrete.
Wire - .444 Dia. - ASTM A510 Grade 1032.
Ferrules - ASTM A108 Grade 12L14.



CONST. JT. DETAIL

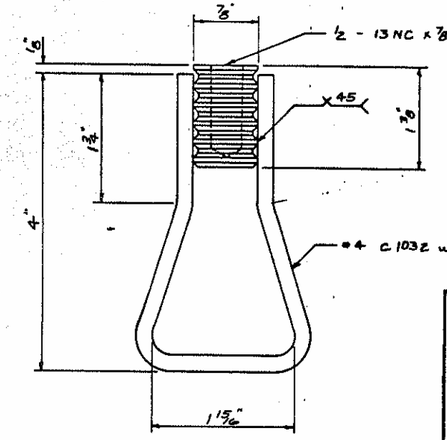


PART ELEVATION



SECTION C-C

Note: No separate payment will be made for furnishing and installing the Preset Anchor Inserts. The entire cost of this work shall be included in the unit contract price bid for Class A Concrete.



½" PRESET ANCHOR INSERT DETAIL

(No. Req'd. = 170)

NOTES : ½" Preset Anchor Insert shall develop a minimum ultimate tensile pullout strength of 10 kips in 3000 p.s.i. concrete.
Wire - #4 Dia. - ASTM A510 Grade 1032.
Ferrules - ASTM A108 Grade 12L14.

PROJECT NO. B-1981901
SWAIN COUNTY
STATION: 181 + 35 Med. Rev.
Sheet 2 of 2

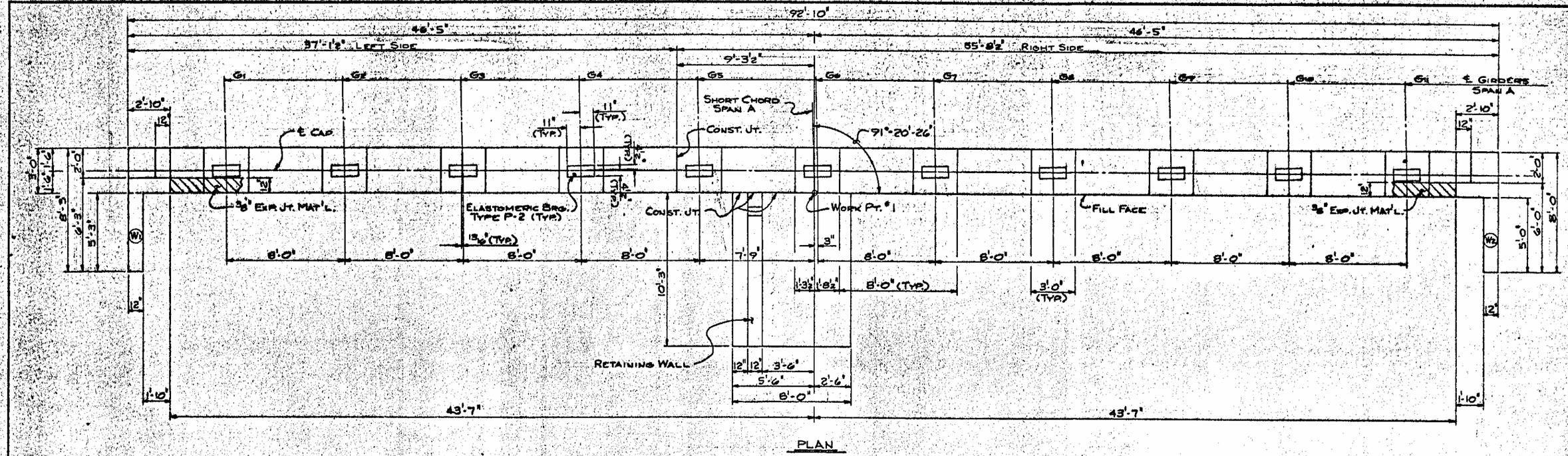
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT CATWALK DETAILS FOR EACH BENT

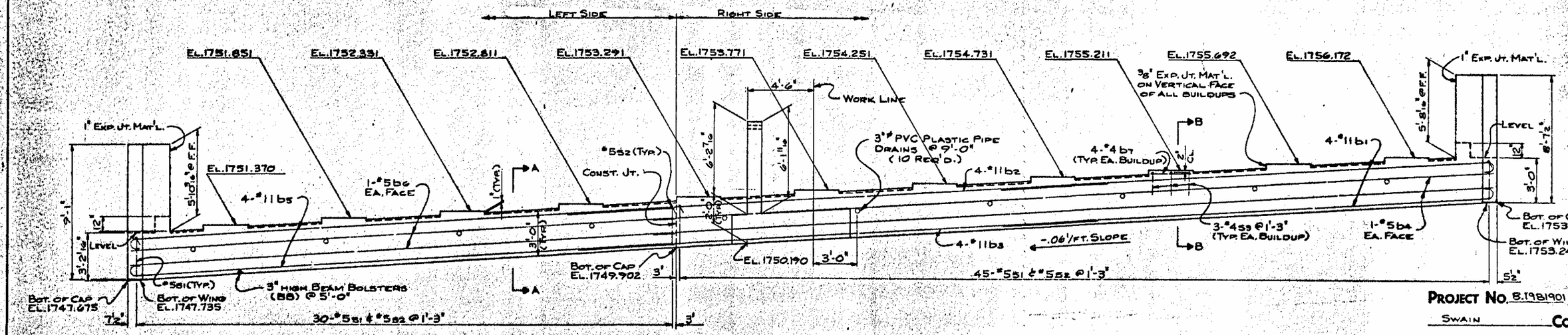
Dec. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-44
1			3			TOTAL SHEETS
2			4			77

DRAWN BY U.E. Cepps DATE 12-79
CHECKED BY K.G. Pridgen DATE JAN. 1980



PLAN



ELEVATION

NOTE: b2 BARS TO PROJECT 7'-5" INTO LEFT SIDE.
b3 BARS TO PROJECT 6'-8" INTO LEFT SIDE.
b4 BARS TO PROJECT 1'-7" INTO LEFT SIDE.

NOTE: PIPE DRAINS MAY BE SHIFTED, IF NECESSARY, TO CLEAR REINFORCING STEEL. FOR "PIPE DRAIN DETAILS", SEE END BENT #2 SHEET 2 OF 3.

NOTE: FOR "SKETCH SHOWING LIMITS OF EPOXY PROTECTIVE COATING" FOR CONCRETE, SEE END BENT #2 SHEET 2 OF 3.

DRAWN BY K.G. PRIDGEN DATE JULY 1979
CHECKED BY C. DARNELL DATE 7-1-79

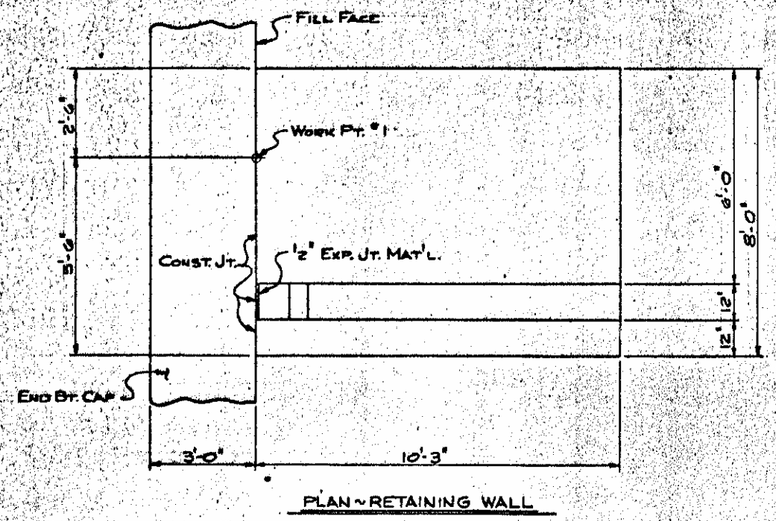
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT #1

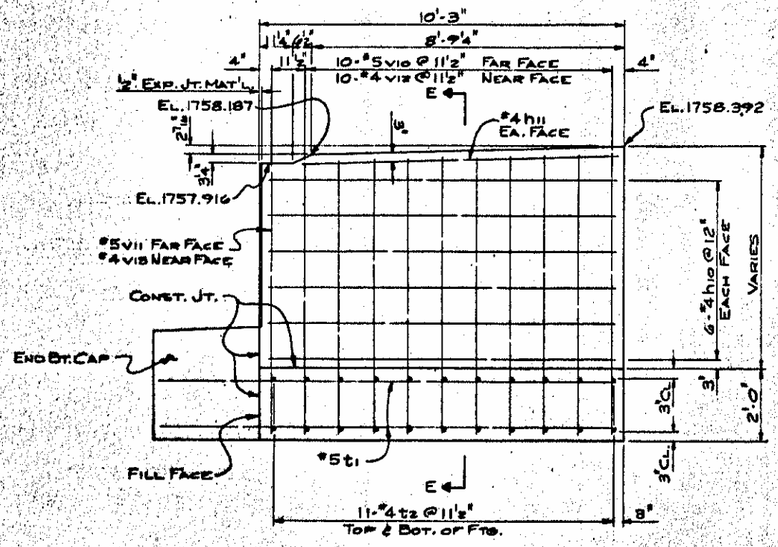
JULY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-45
1			3			TOTAL SHEETS
2			4			77

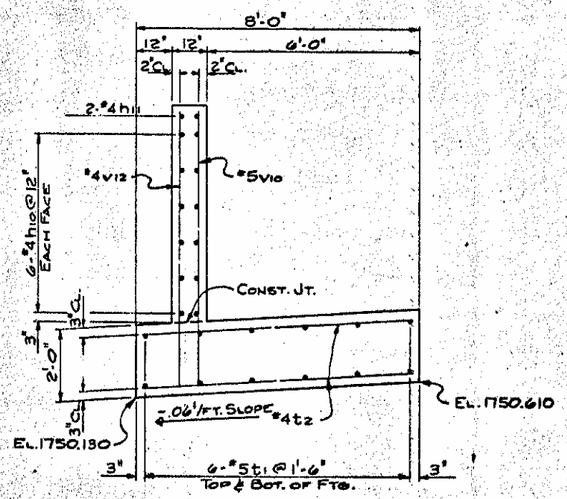


PLAN ~ RETAINING WALL

38-4
1-3
36-1



ELEVATION ~ RETAINING WALL



SECTION E-E

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 2 OF 3

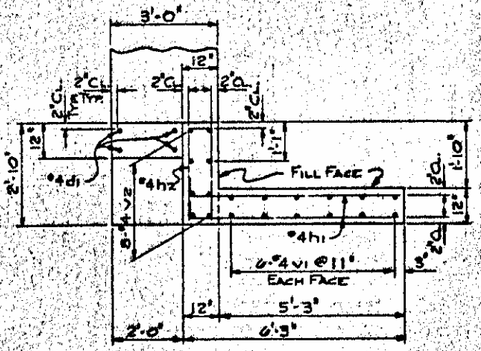
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT #1

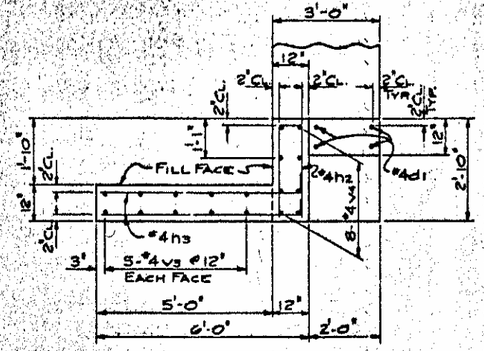
JULY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-46
1			3			TOTAL SHEETS
2			4			77

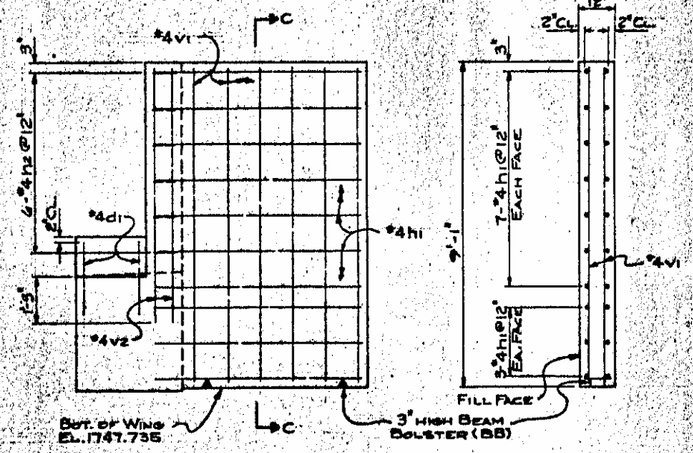
DRAWN BY K. G. FERGUSON DATE JULY 1979
CHECKED BY C. DEMENT DATE 7-1979



PLAN ~ WING W1

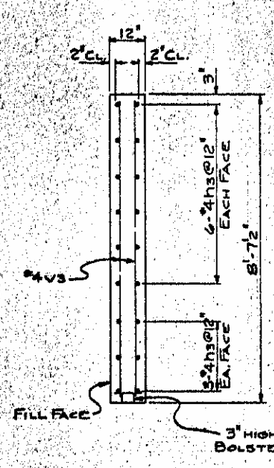


PLAN ~ WING W2

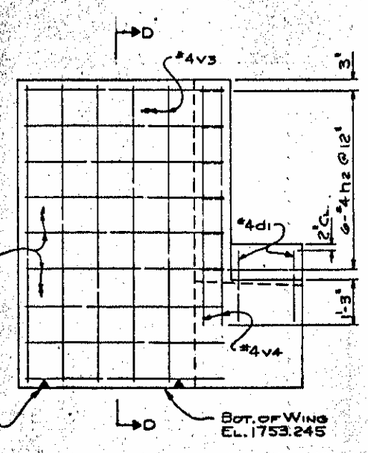


ELEVATION ~ WING W1

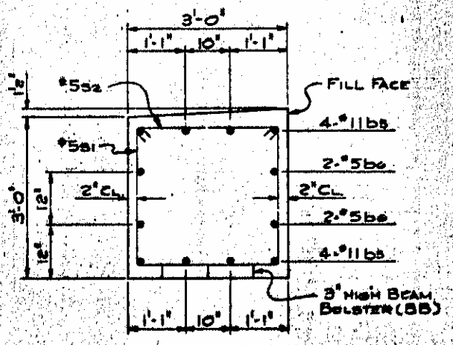
SECTION C-C



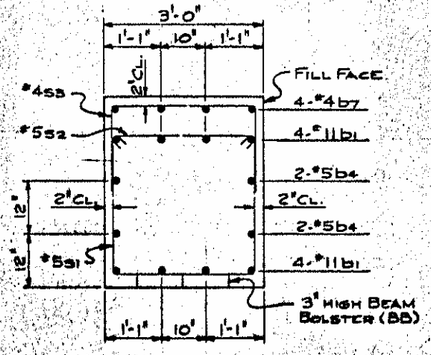
SECTION D-D



ELEVATION ~ WING W2

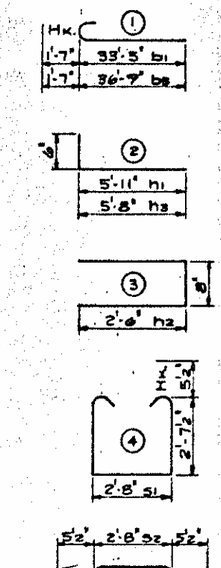


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	8	11	1	35'-0"	1488
b2	4	11	STR.	36'-10"	783
b3	4	11	STR.	35'-4"	751
b4	4	5	STR.	57'-1"	238
b5	8	11	1	38'-4"	1629
b6	4	5	STR.	36'-9"	153
b7	44	4	STR.	2'-8"	76
d1	8	4	STR.	2'-0"	11
h1	20	4	2	6'-5"	86
h2	12	4	3	5'-8"	45
h3	18	4	2	6'-2"	74
h10	12	4	STR.	9'-10"	79
h11	2	4	STR.	8'-9"	12
s1	75	5	4	8'-10"	691
s2	75	5	5	3'-7"	280
s3	33	4	6	5'-2"	114
t1	12	5	STR.	12'-11"	162
t2	22	4	STR.	7'-8"	113
v1	12	4	STR.	6'-9"	70
v2	8	4	STR.	7'-0"	37
v3	10	4	STR.	8'-3"	55
v4	8	4	STR.	6'-8"	36
v10	10	5	STR.	7'-6"	78
v11	1	5	STR.	7'-4"	8
v12	10	4	STR.	7'-6"	50
v13	1	4	STR.	7'-4"	5

REINFORCING STEEL, LBS. 7126

CLASS 'A' CONCRETE, CU.YDS. 45.5

CONCRETE BREAKDOWN	
RIGHT SIDE	30.1 C.Y.
LEFT SIDE	15.4 C.Y.
TOTAL	45.5 C.Y.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 3 OF 3

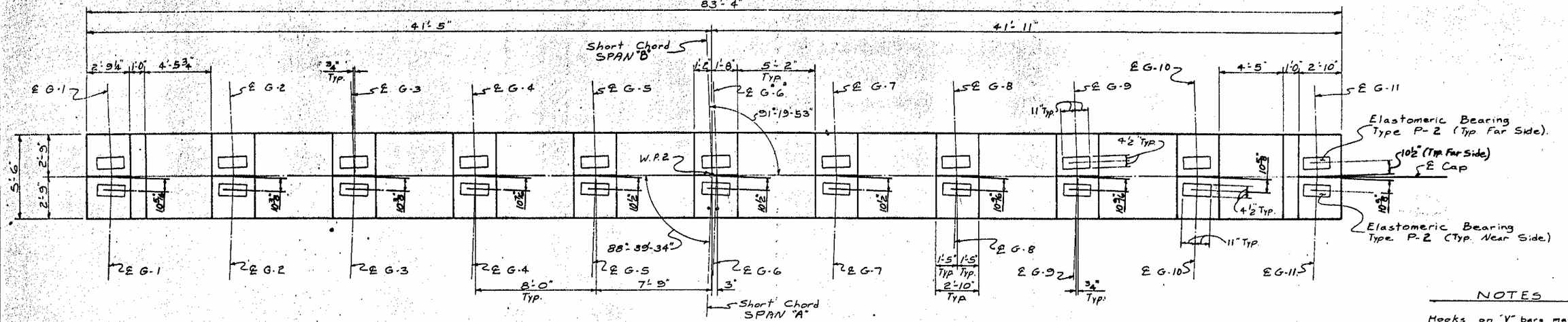
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT #1

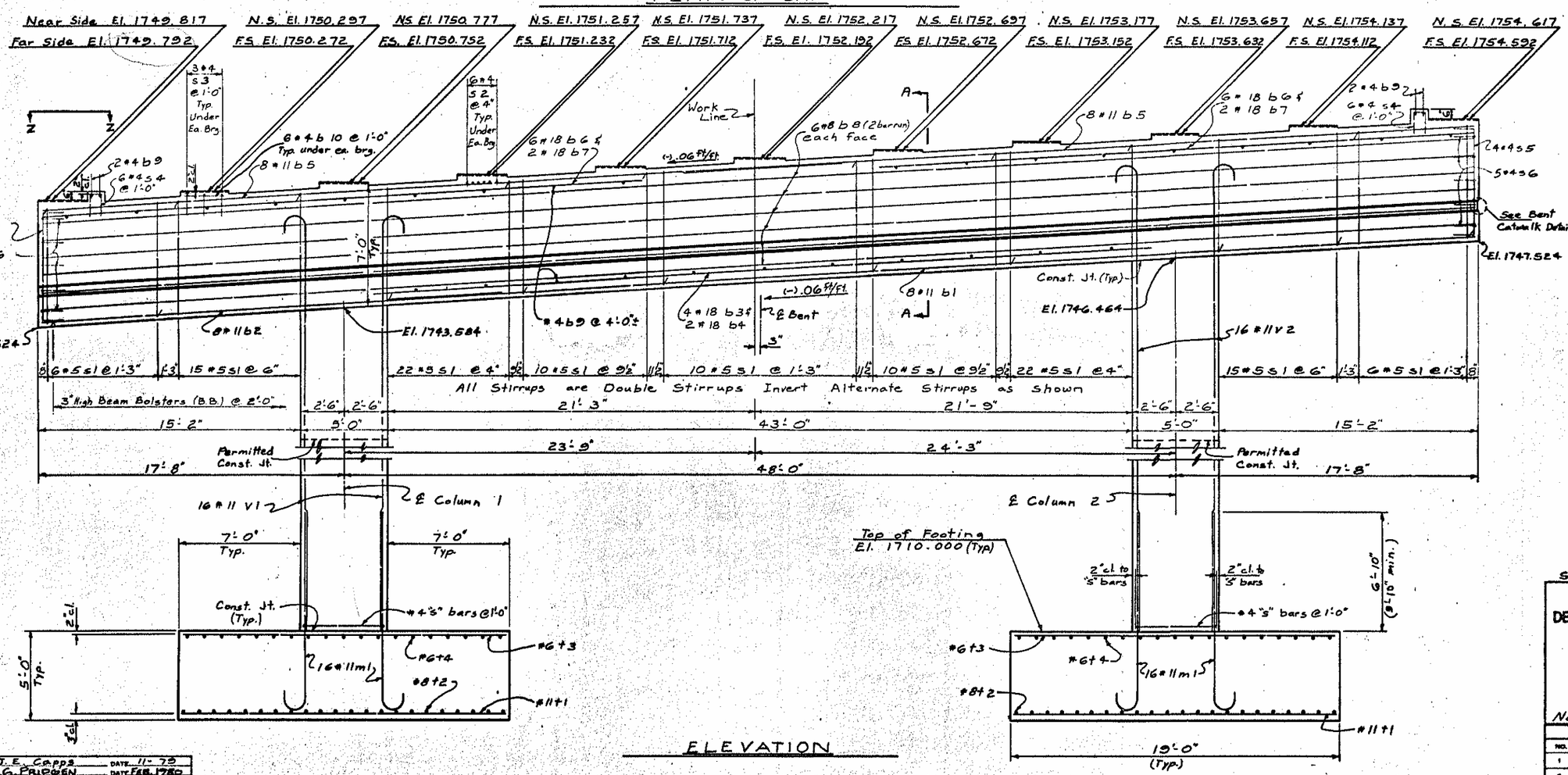
JULY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-47
1			3			TOTAL SHEETS
2			4			77

DRAWN BY K.G. PALMER DATE JULY 1979
CHECKED BY L. Dement DATE 7-1979



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, see "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, see Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S N.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 mcd. Rev.

Sheet 1 of 3

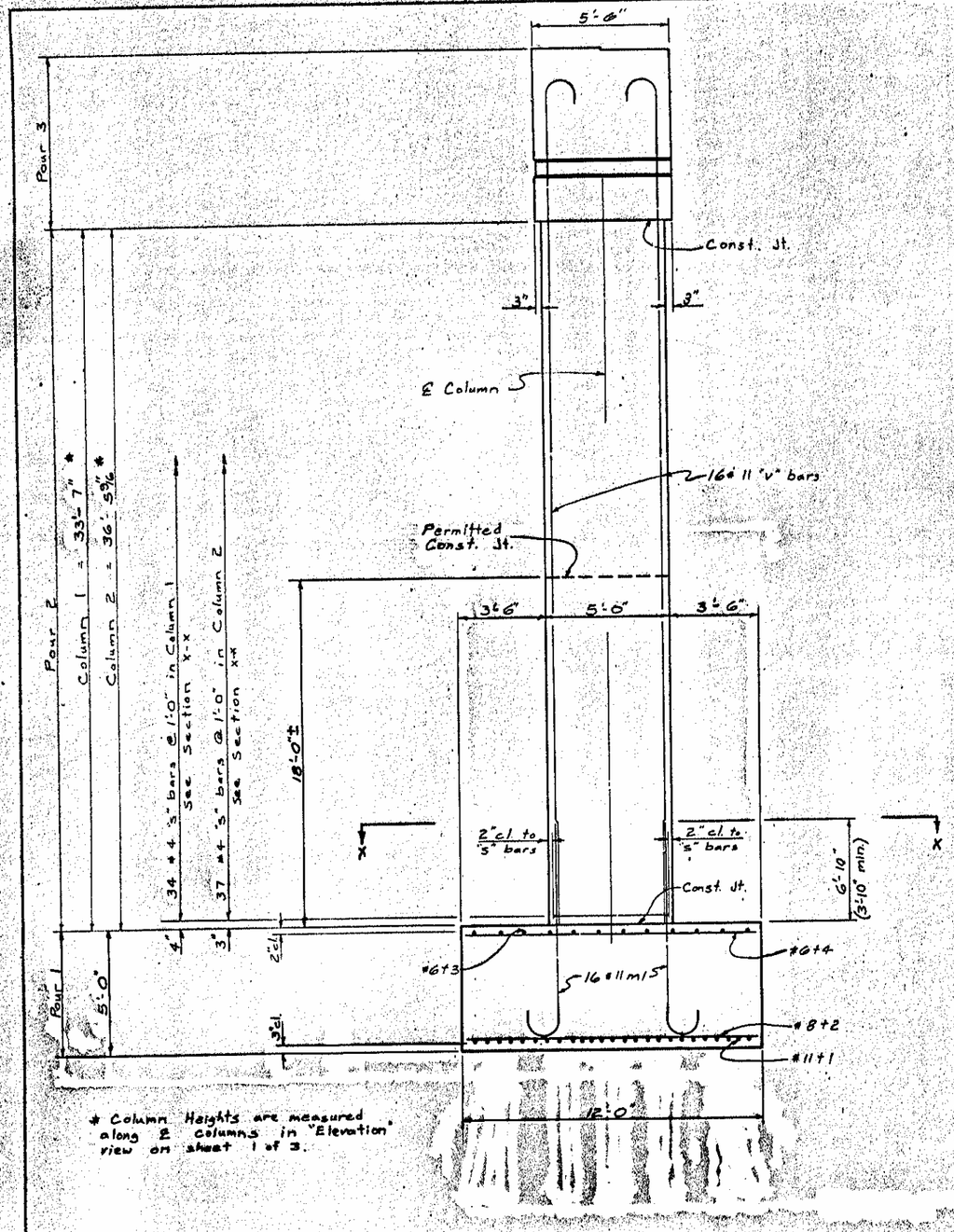
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

Nov. 1979

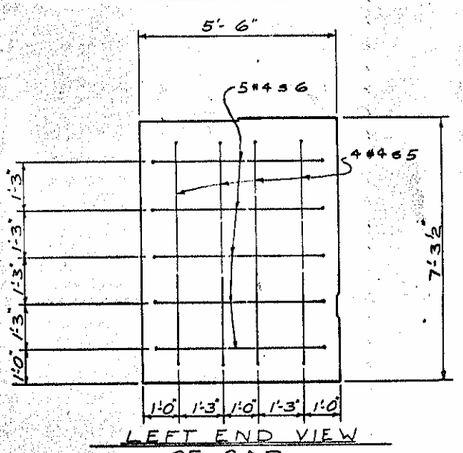
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-48
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J. E. Capps DATE 11-79
CHECKED BY K.G. Pridgen DATE Feb. 1980

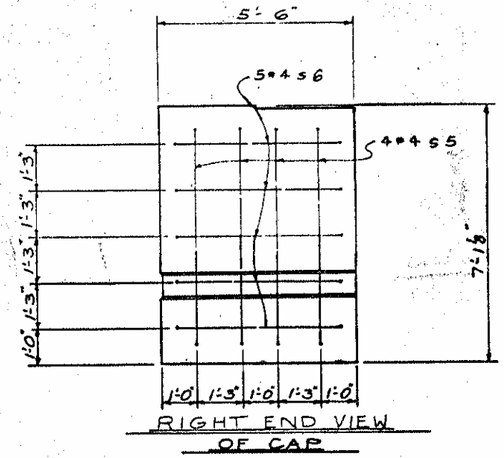


* Column Heights are measured along 2 columns in "Elevation" view on sheet 1 of 3.

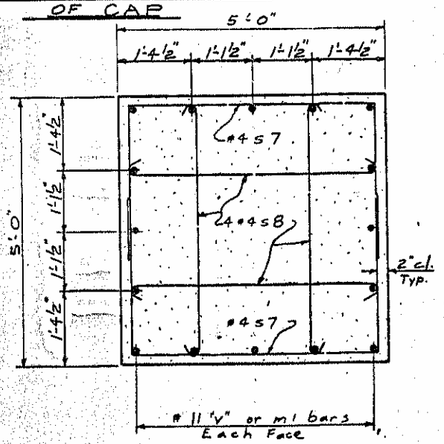
END ELEVATION



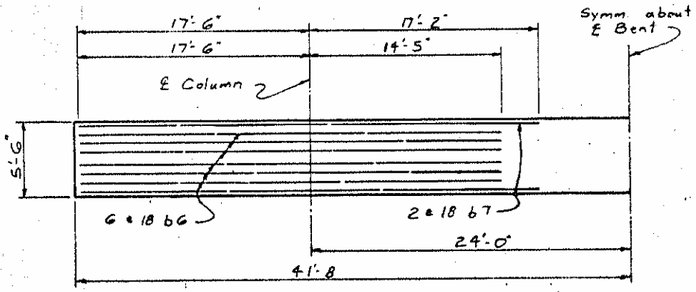
LEFT END VIEW OF CAP



RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP

(Showing reinforcing steel #18 'b' bars in top of cap)

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev.

Sheet 2 of 3

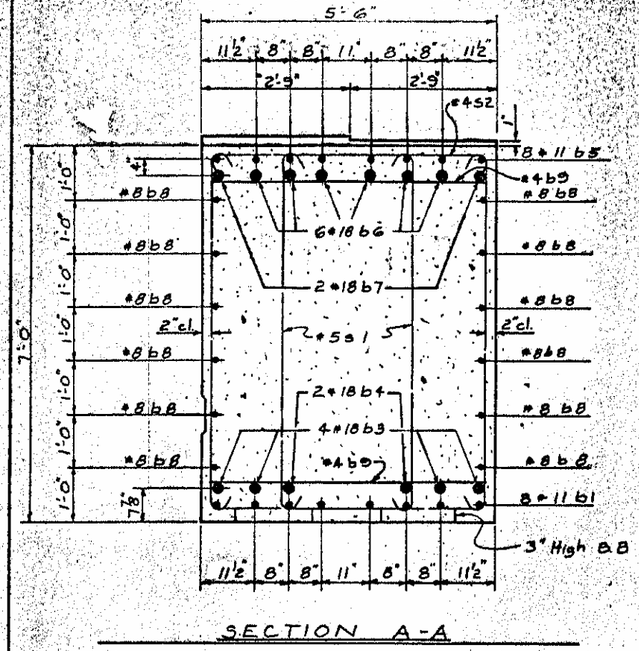
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

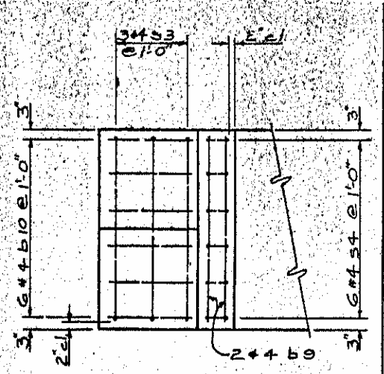
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-49
1			3			TOTAL SHEETS
2			4			77

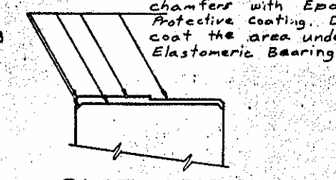
DRAWN BY J. L. LARAS DATE 10-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980



SECTION A-A



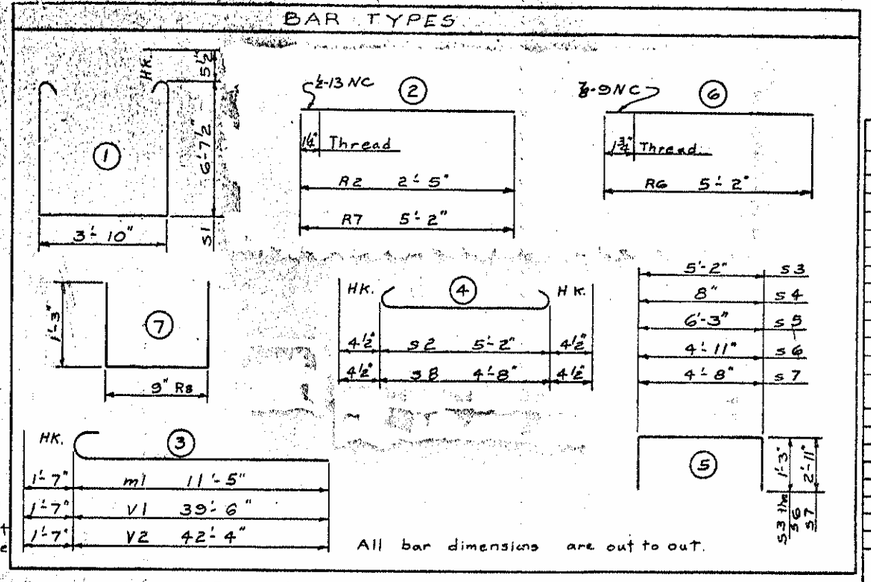
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy Protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES



All bar dimensions are out to out.

* Bars shall be ASTM A615 - Grade 60.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

BILL OF MAT'L CONT.					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
t1	50	#11	str	18'-6"	4915
t2	44	#8	str	11'-6"	1351
t3	24	#6	str	18'-6"	667
t4	38	#6	str	11'-6"	656
V1	16	#11	3	41'-1"	3492
V2	16	#11	3	43'-11"	3733
Total					45832

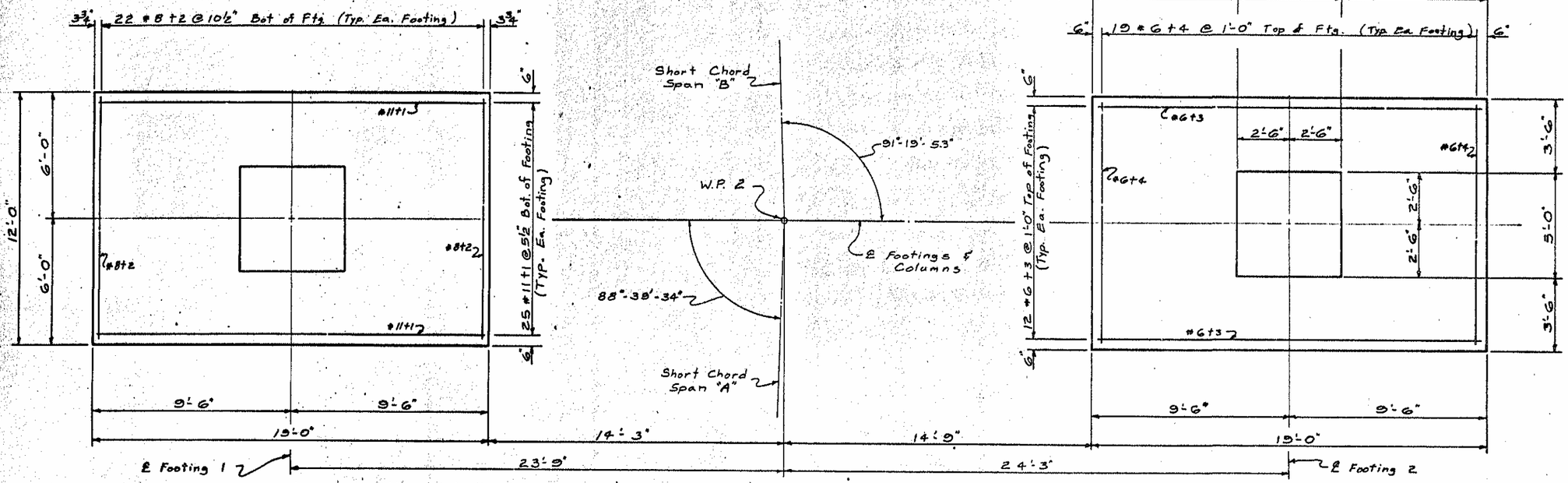
DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	84.4
2 (Columns)	64.8
3 (Cap)	120.2
4 (Catwalk)	6.5
Total	275.9

Reinforcing Steel, lbs.	45832
Class A Concrete, Cu. Yds.	275.5

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

BILL OF MATERIAL
FOR BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str	44'-10"	2439
*b4	2	#18	str	28'-10"	784
*b5	16	#11	str.	46'-1"	3917
*b6	12	#18	str	31'-11"	5209
*b7	4	#18	str	34'-8"	1886
*b8	24	#8	str	43'-10"	2809
b9	33	#4	str.	5'-2"	114
b10	66	#4	str	2'-6"	110
•					
m1	32	#11	3	13'-0"	2210
s1	232	#6	1	18'-0"	4356
s2	66	#4	4	5'-11"	261
s3	33	#4	5	7'-8"	169
s4	12	#4	5	3'-2"	25
s5	8	#4	5	8'-9"	47
s6	10	#4	5	7'-5"	50
s7	142	#4	5	10'-6"	996
s8	284	#4	4	5'-5"	1028
R1	18	#4	str.	28'-6"	343
R2	165	#4	2	2'-5"	266
R3	12	#4	str.	7'-8"	61
R4	3	#5	str.	6'-6"	20
R5	3	#4	str.	6'-3"	13
R6	5	#7	6	5'-2"	53
R7	5	#4	2	5'-2"	17
R8	13	#4	7	3'-3"	28
R9	1	#4	str.	5'-1"	3



PLAN OF FOOTINGS

Note: See Section X-X on sheet 2 of 3 For m1 bar spacing in Footings.

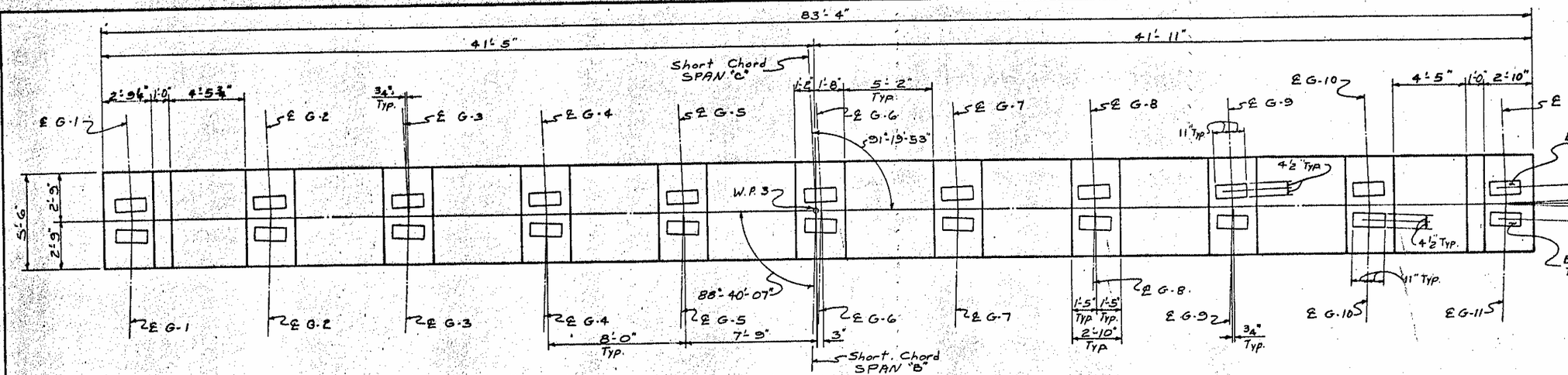
DRAWN BY T. E. CAPPS DATE 10-75
CHECKED BY K. G. PRIDGEN DATE FEB. 1980

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med fcr
Sheet 3 of 3

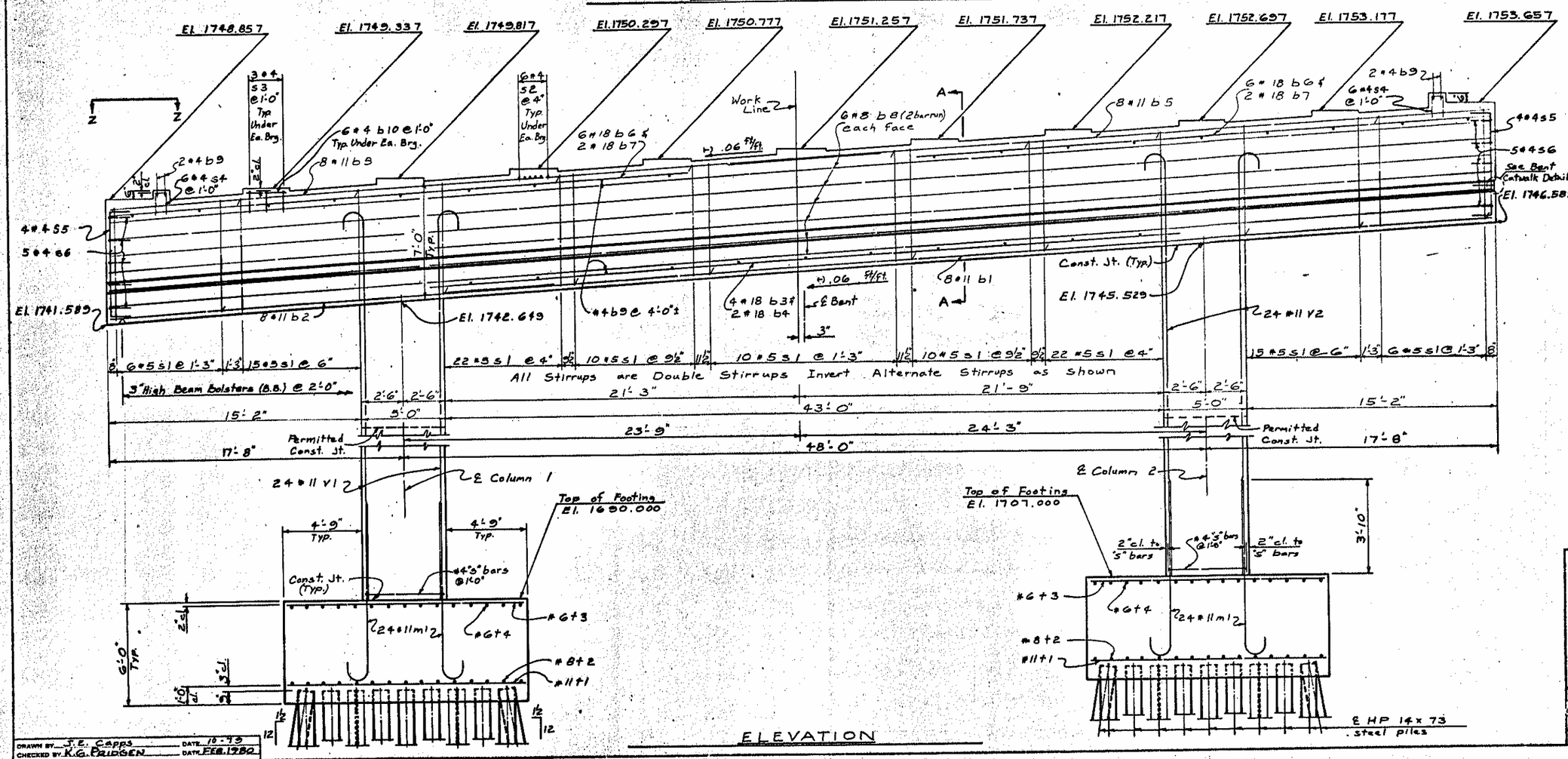
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH
SUBSTRUCTURE
BENT 1

Oct 1979

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-30
1			3			TOTAL SHEETS	
2			4			77	



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, see "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, see Bent Catwalk Details.

For Pile Splice Details, See End Bent 2.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet SN.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 mod. Rev

Sheet 1 of 3

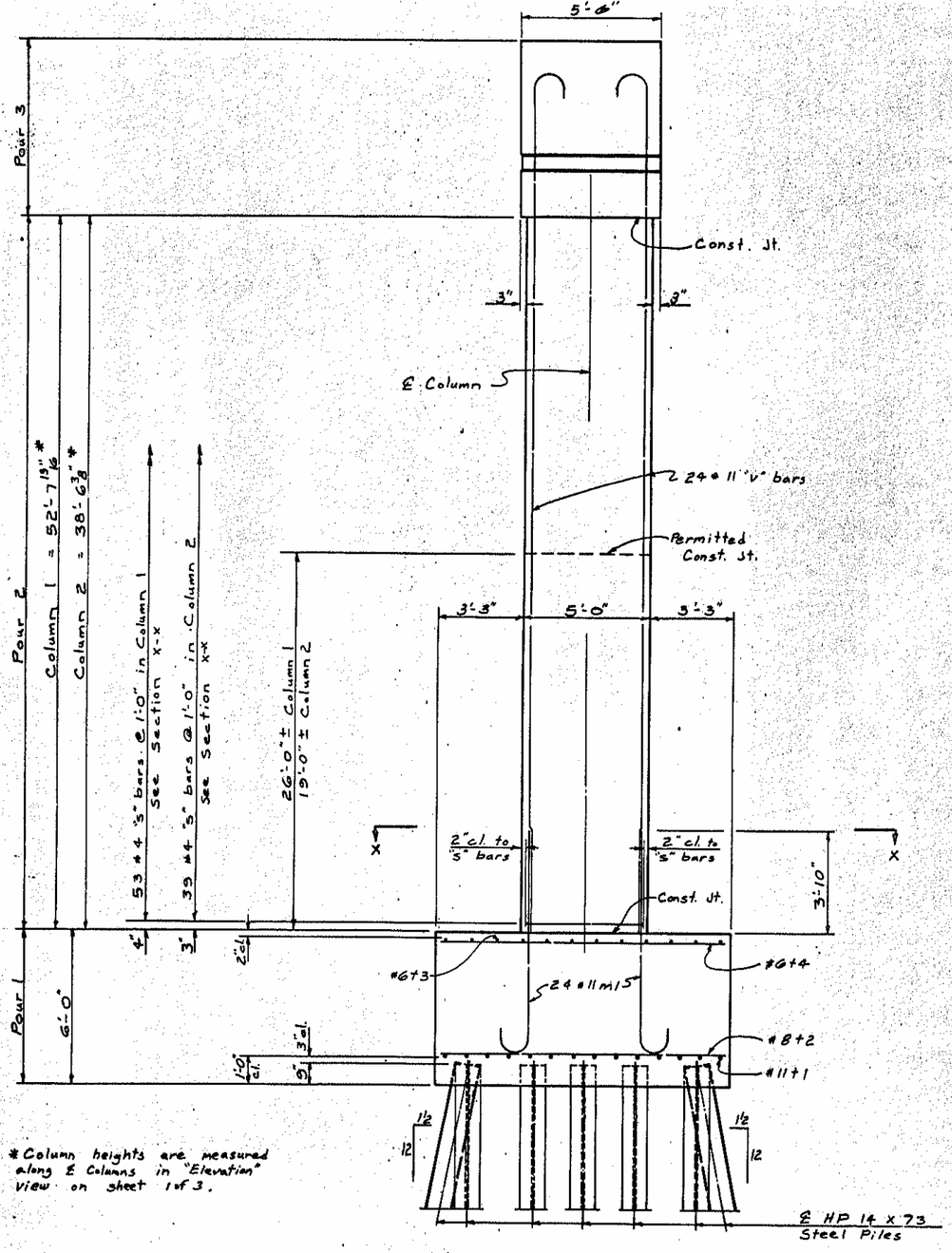
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

Oct. 1979

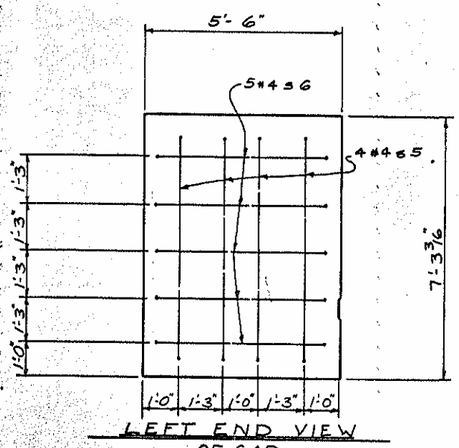
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-51
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J.E. Capps DATE 10-79
CHECKED BY K.G. PEDIGEN DATE FEB. 1980

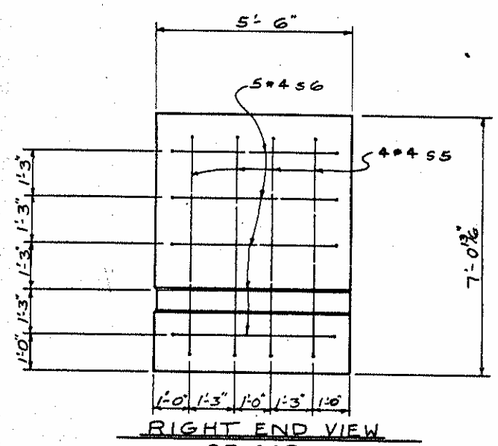


END ELEVATION

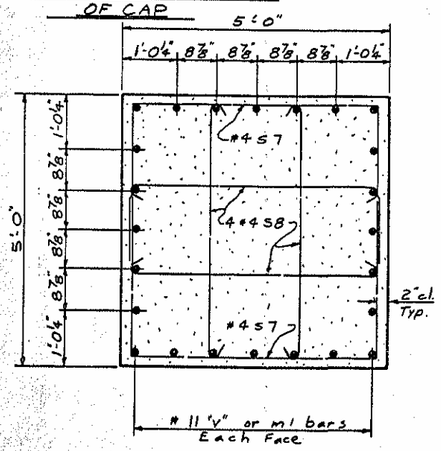
*Column heights are measured along ℄ Columns in "Elevation" view on sheet 1 of 3.



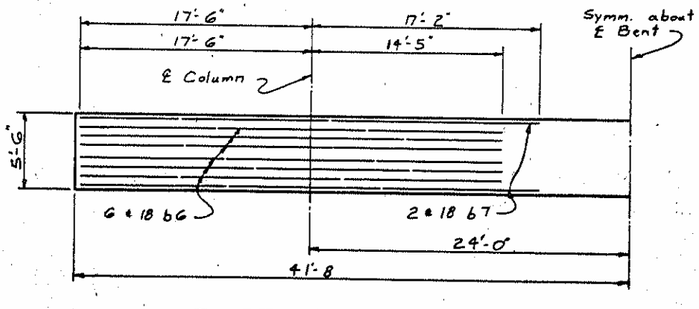
LEFT END VIEW OF CAP



RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP

(Showing reinforcing steel #18 "b" bars in top of cap)

DRAWN BY J. L. Capps DATE 10-79
CHECKED BY K. G. Poidgen DATE Feb 1980

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev.
Sheet 2 of 3

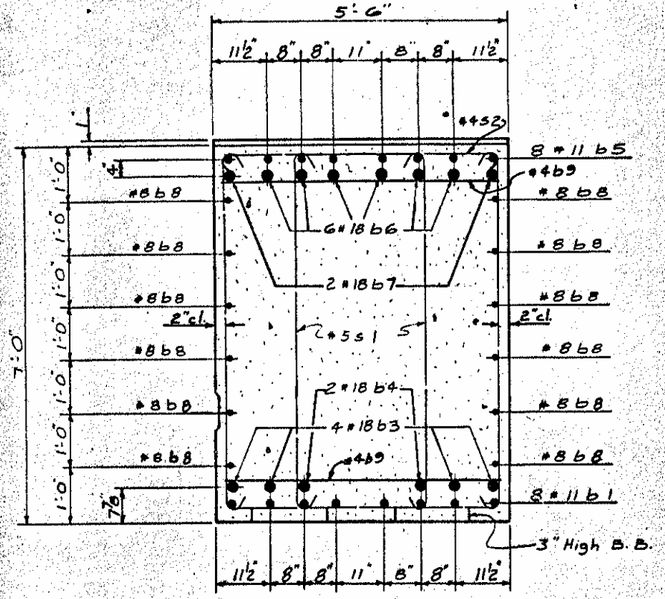
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

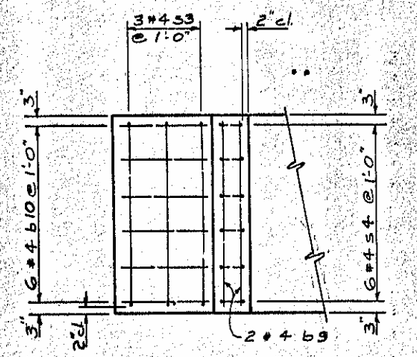
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-32
1			3			TOTAL SHEETS
2			4			77

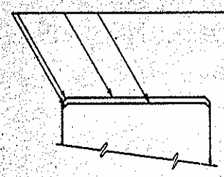
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



SECTION A-A



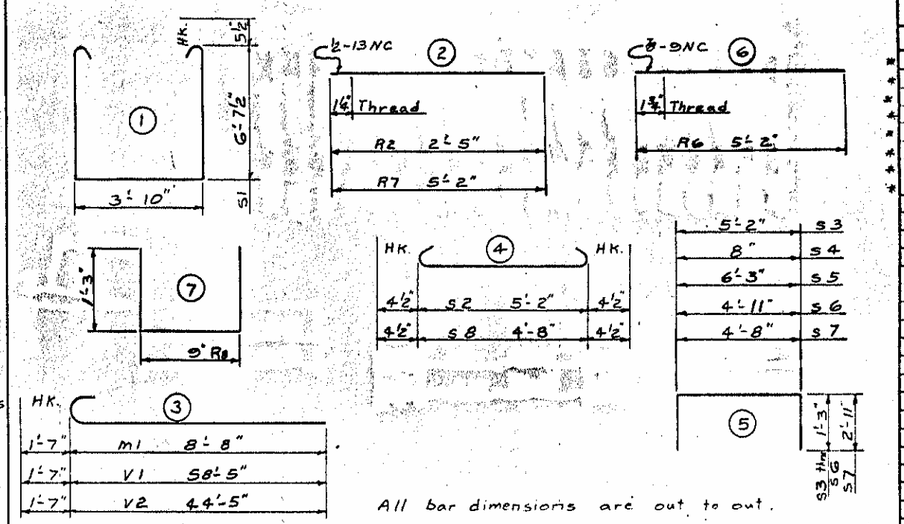
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES



All bar dimensions are out to out.

DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	74.1
2 (Columns)	84.4
3 (Cap)	120.0
4 (Catwalk)	6.5
Total	285.0

Reinforcing Steel, lbs.	49,503
Class A Concrete, Cu. Yds.	285.0

HP 14 x 73 Steel Piles
NO. 48, Lin. Ft. 960

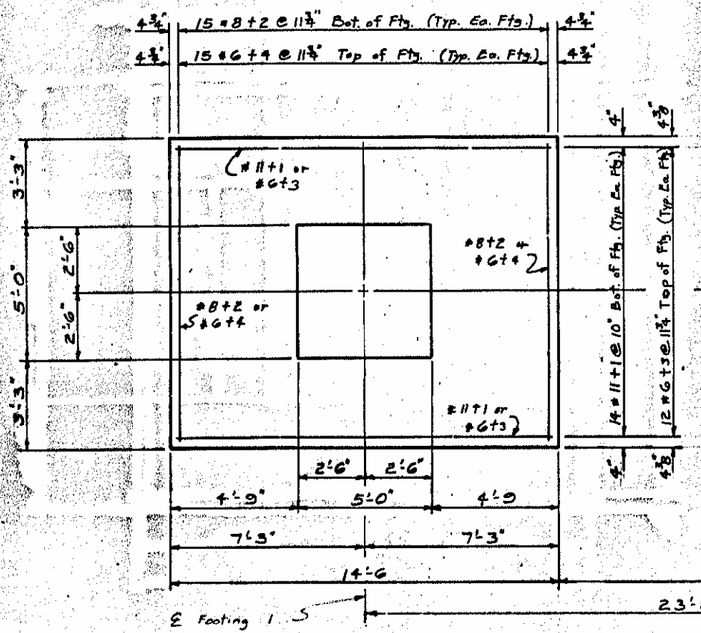
* Bars shall be A.S.T.M. A615 - Grade 60.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

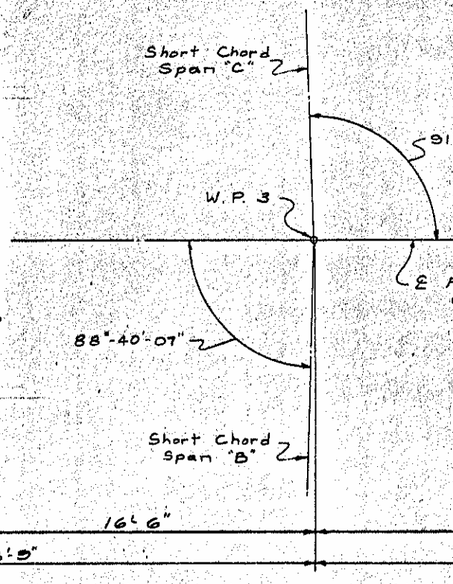
BILL OF MATERIAL

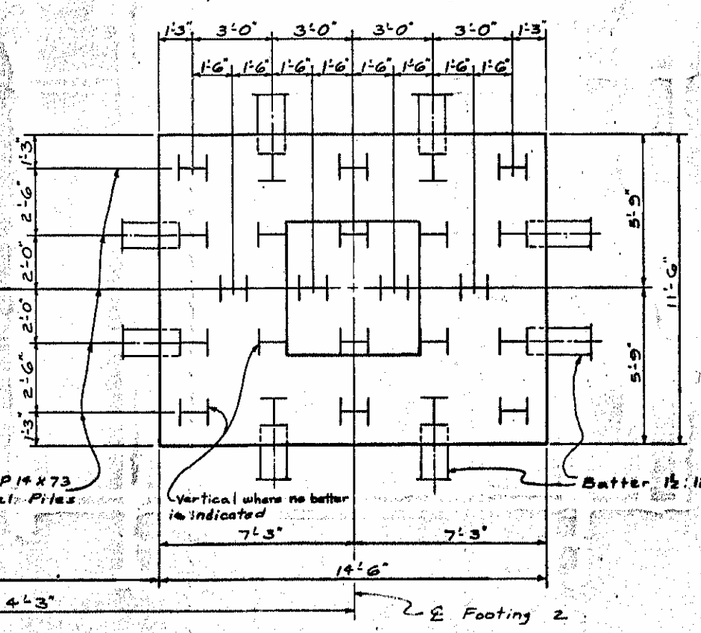
FOR BENT 2

	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*	b1	8	#11	str.	60'-0"	2550
*	b2	8	#11	str.	29'-6"	1254
*	b3	4	#18	str.	44'-10"	2439
*	b4	2	#18	str.	28'-10"	784
*	b5	16	#11	str.	4'-6"	3917
*	b6	12	#18	str.	31'-11"	5209
*	b7	4	#18	str.	34'-8"	1886
*	b8	24	#8	str.	42'-10"	2809
*	b9	3.3	#4	str.	5'-2"	114
*	b10	66	#4	str.	2'-6"	110
	m1	48	#11	3	10'-3"	2614
	s1	232	#5	1	18'-0"	4356
	s2	66	#4	4	5'-11"	261
	s3	33	#4	5	7'-8"	169
	s4	12	#4	5	3'-2"	25
	s5	8	#4	5	8'-9"	47
	s6	10	#4	5	7'-5"	50
	s7	184	#4	5	10'-6"	1291
	s8	368	#4	4	5'-5"	1332
	R1	18	#4	str.	28'-6"	343
	R2	165	#4	2	2'-5"	266
	R3	12	#4	str.	7'-8"	61
	R4	3	#5	str.	6'-6"	20
	R5	3	#4	str.	4'-3"	13
	R6	5	#7	6	5'-2"	53
	R7	5	#4	2	5'-2"	17
	R8	13	#4	7	3'-3"	28
	R9	1	#4	str.	5'-1"	3
	+1	28	#11	str.	14'-0"	2083
	+2	30	#8	str.	11'-0"	881
	+3	24	#6	str.	14'-0"	505
	+4	30	#6	str.	11'-0"	496
	V1	24	#11	3	60'-0"	7651
	V2	24	#11	3	46'-0"	5866
	Total					49,503



Note: See Section X-X on sheet 2 of 3 for m1 bar spacing in footings.





Note: Footings are identical.

PLAN OF FOOTINGS

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 Med. Rev

Sheet 3 of 3

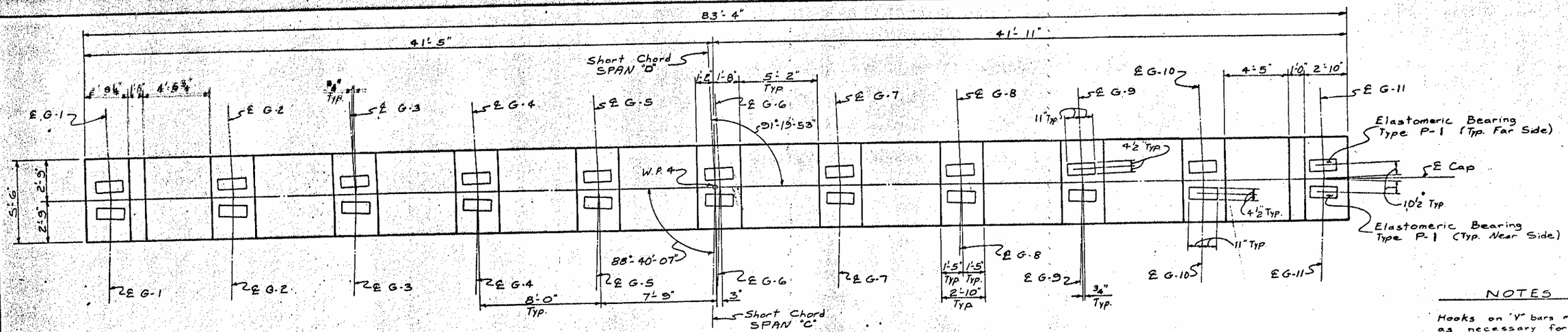
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT 2

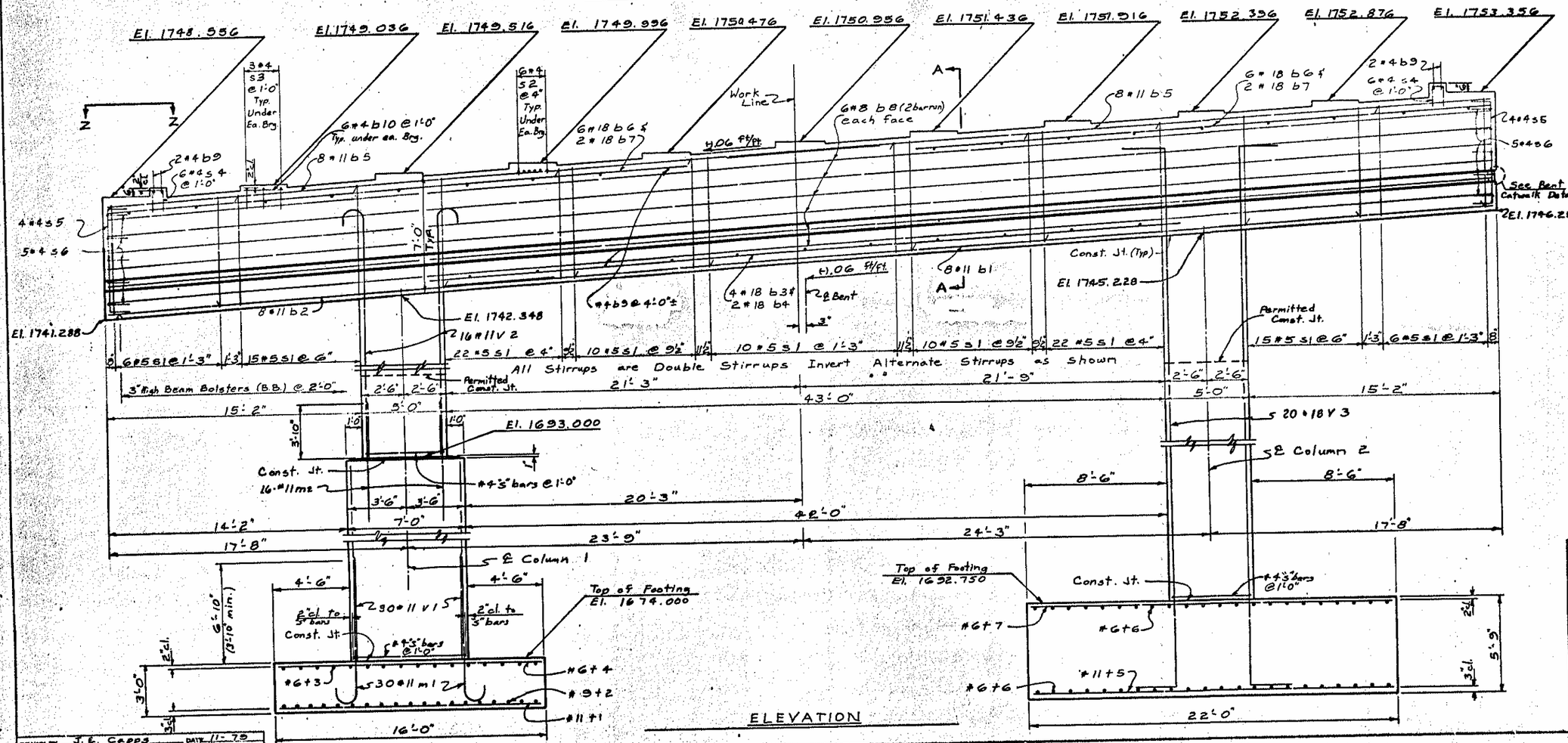
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-53
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J.E. Capps DATE 10-19-79
CHECKED BY K.G. PRIDGEN DATE FEB. 1980



PLAN OF CAP



ELEVATION

NOTES

Hooks on "Y" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, see Bent Catwalk Details.

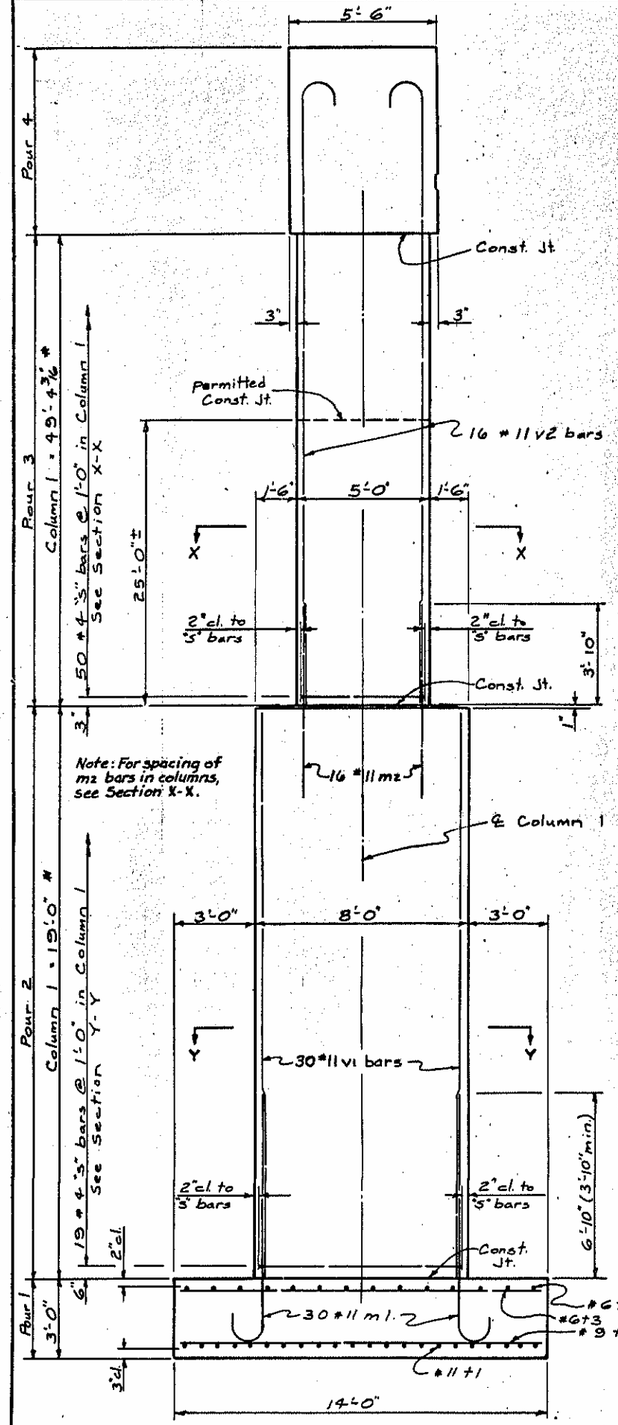
Plans for falsework and forms for this bent cap shall be submitted. See sheet SN.

DRAWN BY: J. E. Capps DATE: 11-79
CHECKED BY: K. G. Pridgen DATE: FEB. 1980

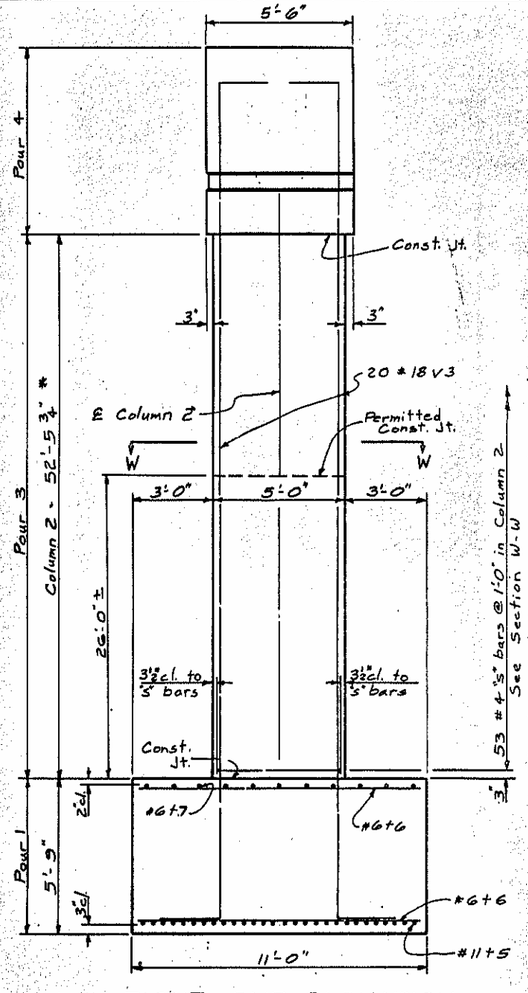
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev.
sheet 1 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 3
Nov. 1979

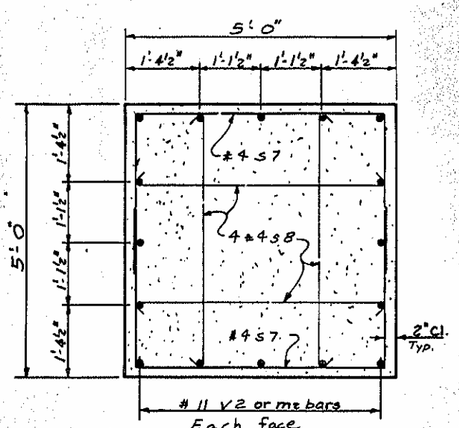
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-54
1			3			TOTAL SHEETS
2			4			77



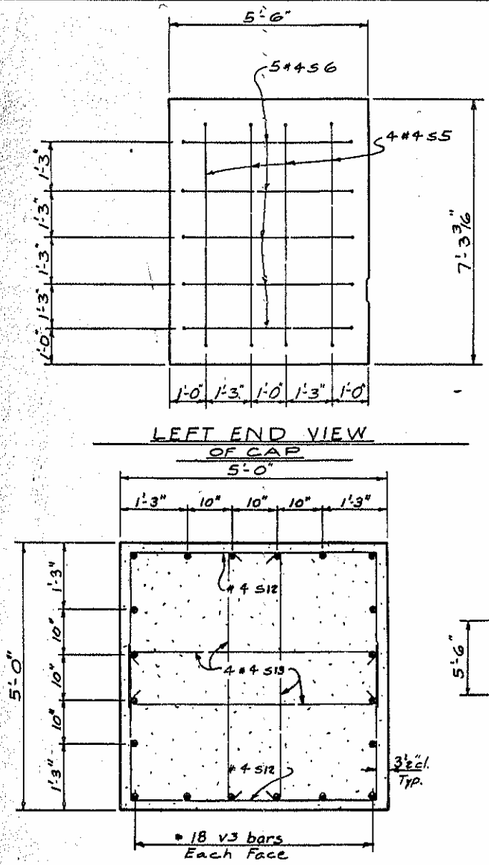
LEFT END ELEVATION



RIGHT END ELEVATION

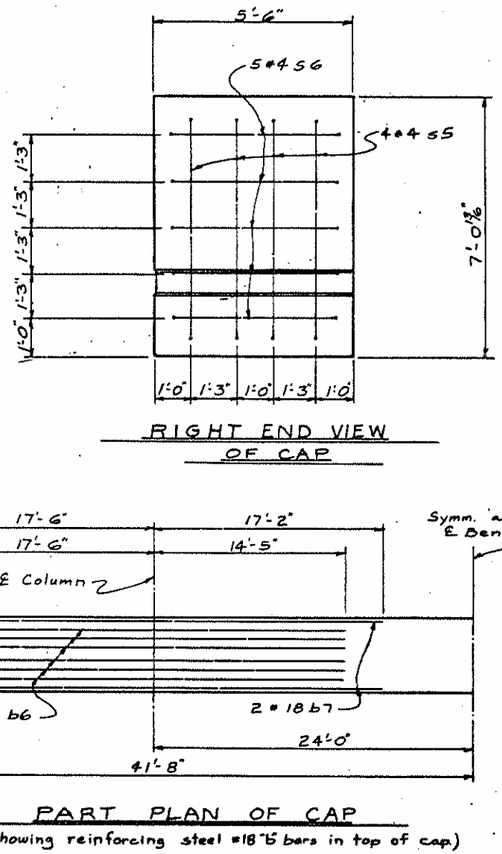


SECTION X-X

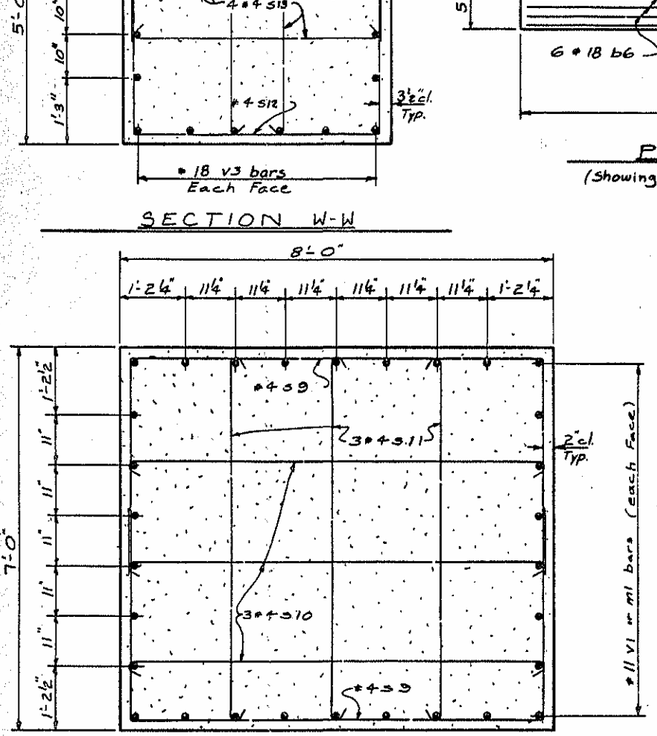


LEFT END VIEW OF CAP

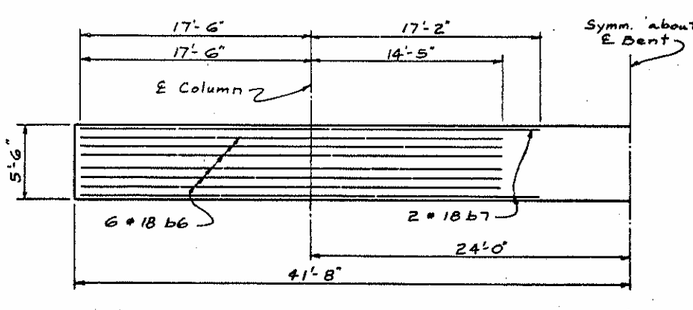
SECTION W-W



RIGHT END VIEW OF CAP



SECTION Y-Y



PART PLAN OF CAP

(Showing reinforcing steel #18 "b" bars in top of cap)

DRAWN BY J. E. Capps DATE 11-79
CHECKED BY K. G. Peidsen DATE FEB. 1980

Column heights are measured along ℄ Columns in "Elevation" view on sheet 1 of 3.

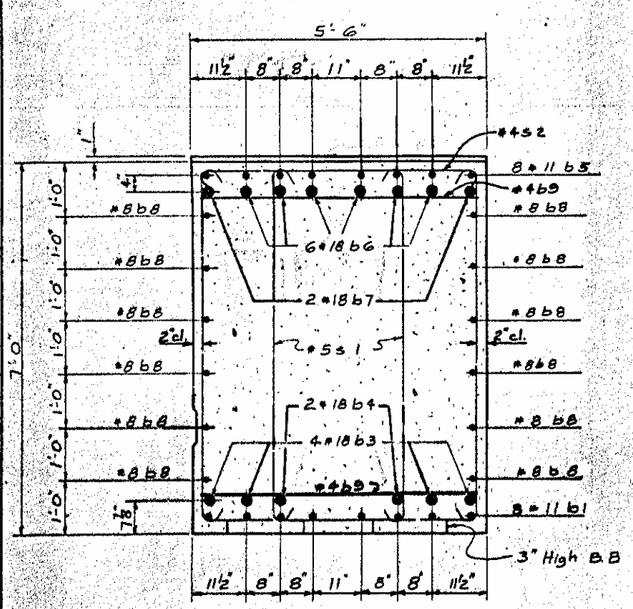
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med Rev.
Sheet 2 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

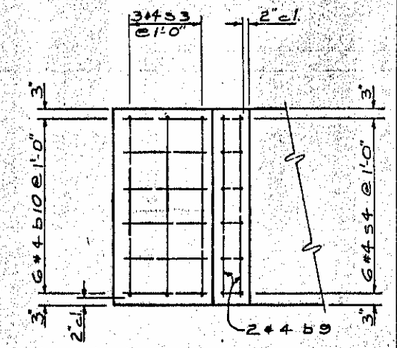
SUBSTRUCTURE
BENT 3

Nov. 1979

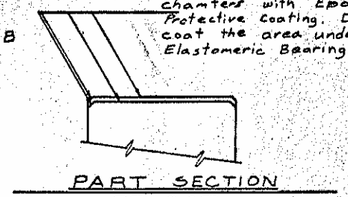
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-55
1			3			TOTAL SHEETS
2			4			77



SECTION A-A



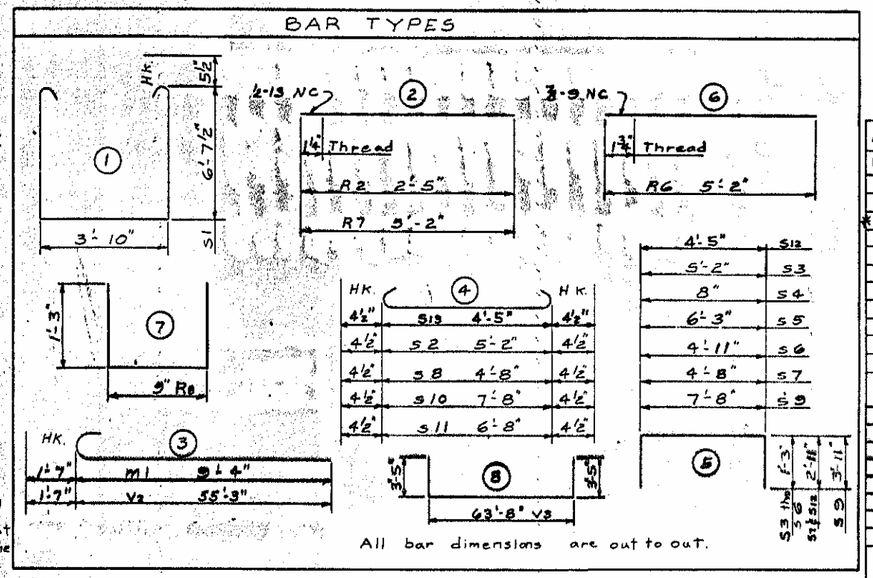
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy Protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES



All bar dimensions are out to out.

* Bars shall be ASTM A615 - Grade 60.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

NOTE: The number 18 bars in the columns have not been shown spliced. These bars shall be spliced using a mechanical coupler. For mechanical butt splicing of reinforcing steel, see Special Provisions. The Contractor may splice these bars at any and all locations to suit his erection techniques subject to the following requirements and the approval of the Engineer: No more than one-half of the vertical reinforcing may be spliced at any one location. Adjacent bar splices shall be staggered a minimum of ten feet. No bar may be spliced within ten feet of the termination of an adjacent bar.

BILL OF MATERIAL CONT.					
BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
v1	30	#11	str	18'-8"	2975
v2	16	#11	str	56'-10"	4831
*v3	20	#18	8	70'-6"	19,176
Total					67,617

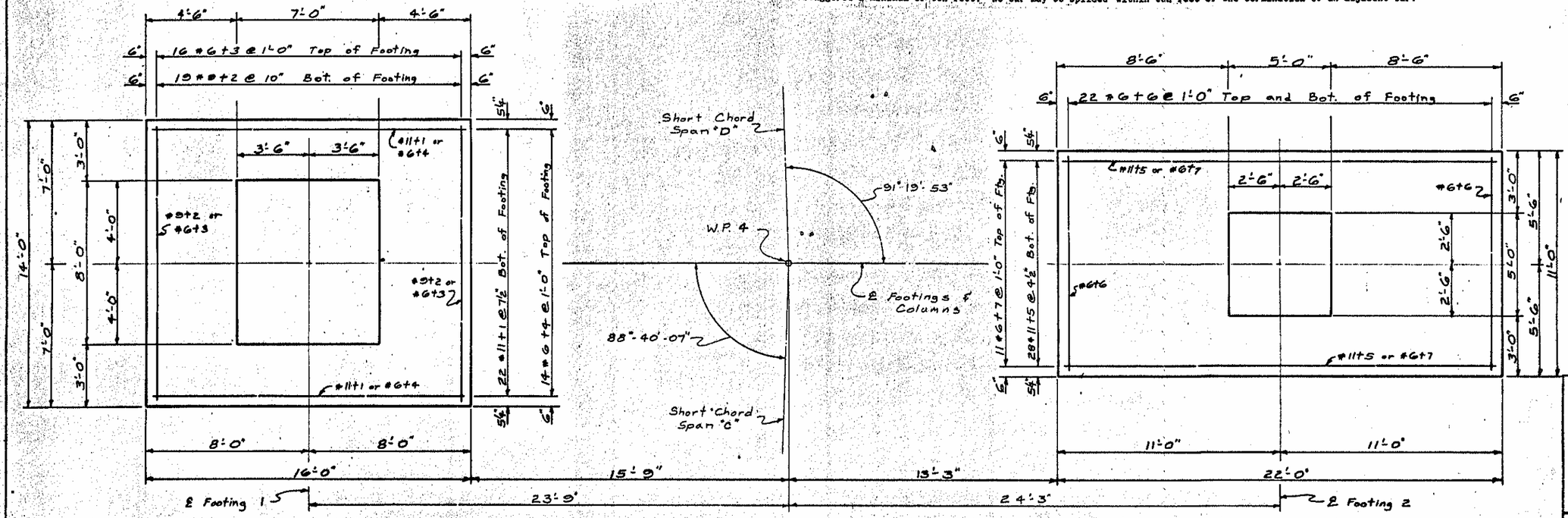
DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	76.4
2 (Columns)	39.4
3 (Columns)	94.3
4 (Cap)	120.0
5 (Catwalk)	6.5
Total	336.6

Reinforcing Steel, lbs.	67,617
Class A Concrete, Cu.Yds.	336.6

BILL OF MATERIAL

FOR BENT 3

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str	44'-10"	2439
*b4	2	#18	str	28'-10"	784
*b5	16	#11	str	46'-1"	3917
*b6	12	#18	str	31'-11"	5209
*b7	4	#18	str	34'-8"	1886
*b8	24	#8	str	43'-10"	2809
b9	33	#4	str	5'-2"	114
b10	66	#4	str	2'-6"	110
m1	30	#11	3	10'-11"	1740
m2	16	#11	str.	7'-8"	652
p1	232	#7	1	18'-6"	4356
s2	66	#4	4	6'-11"	301
s3	33	#4	5	7'-8"	169
s4	12	#4	5	3'-2"	25
s5	8	#4	5	8'-9"	47
s6	10	#4	5	7'-5"	50
s7	100	#4	5	10'-6"	701
s8	200	#4	4	5'-5"	724
s9	38	#4	5	15'-6"	393
s10	57	#4	4	8'-5"	320
s11	57	#4	4	7'-5"	282
s12	106	#4	5	10'-3"	726
s13	212	#4	4	5'-2"	732
R1	18	#4	str.	28'-6"	343
R2	165	#4	2	2'-5"	266
R3	12	#4	str.	7'-8"	61
R4	3	#5	str.	6'-6"	20
R5	3	#4	str.	6'-3"	13
R6	5	#7	6	5'-2"	53
R7	5	#4	2	5'-2"	17
R8	13	#4	7	3'-3"	28
R9	1	#4	str.	5'-1"	3
+1	22	#11	str.	15'-6"	1812
+2	19	#9	str.	13'-6"	872
+3	16	#6	str.	13'-6"	324
+4	14	#6	str.	15'-6"	326
+5	28	#11	str.	21'-6"	3198
+6	44	#6	str.	10'-6"	694
+7	11	#6	str.	21'-6"	355



PLAN OF FOOTINGS

Note: See Sections Y-Y and W-W on sheet 2 of 3 for m1 and v3 bar spacing in footings.

DRAWN BY J. E. Capps DATE 10-79
CHECKED BY K.G. Pridgen DATE Feb 1980

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev

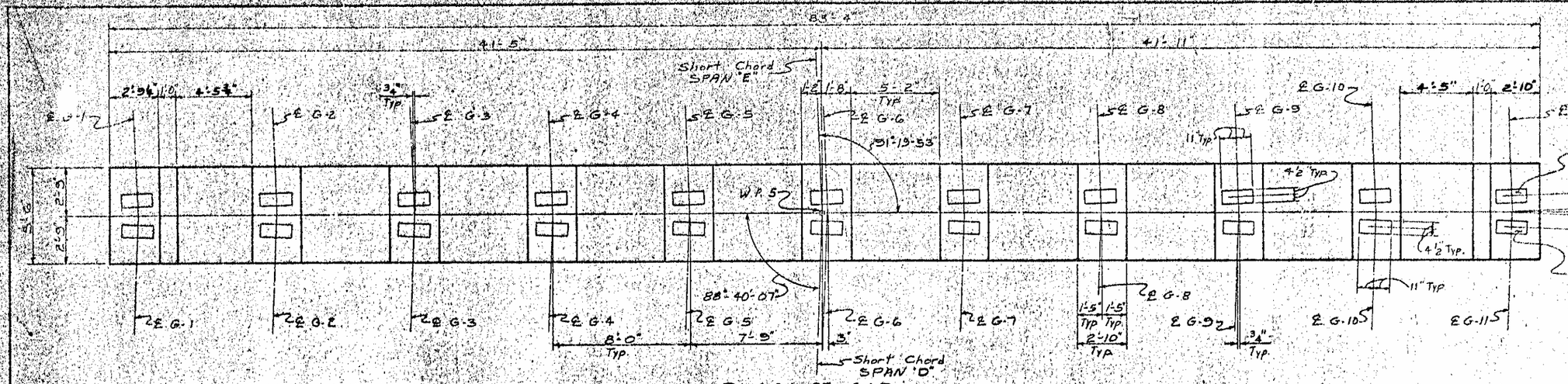
Sheet 3 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT 3

Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-56
1			3			TOTAL SHEETS
2			4			77



NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, See Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet SN.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev

Sheet 1 of 3

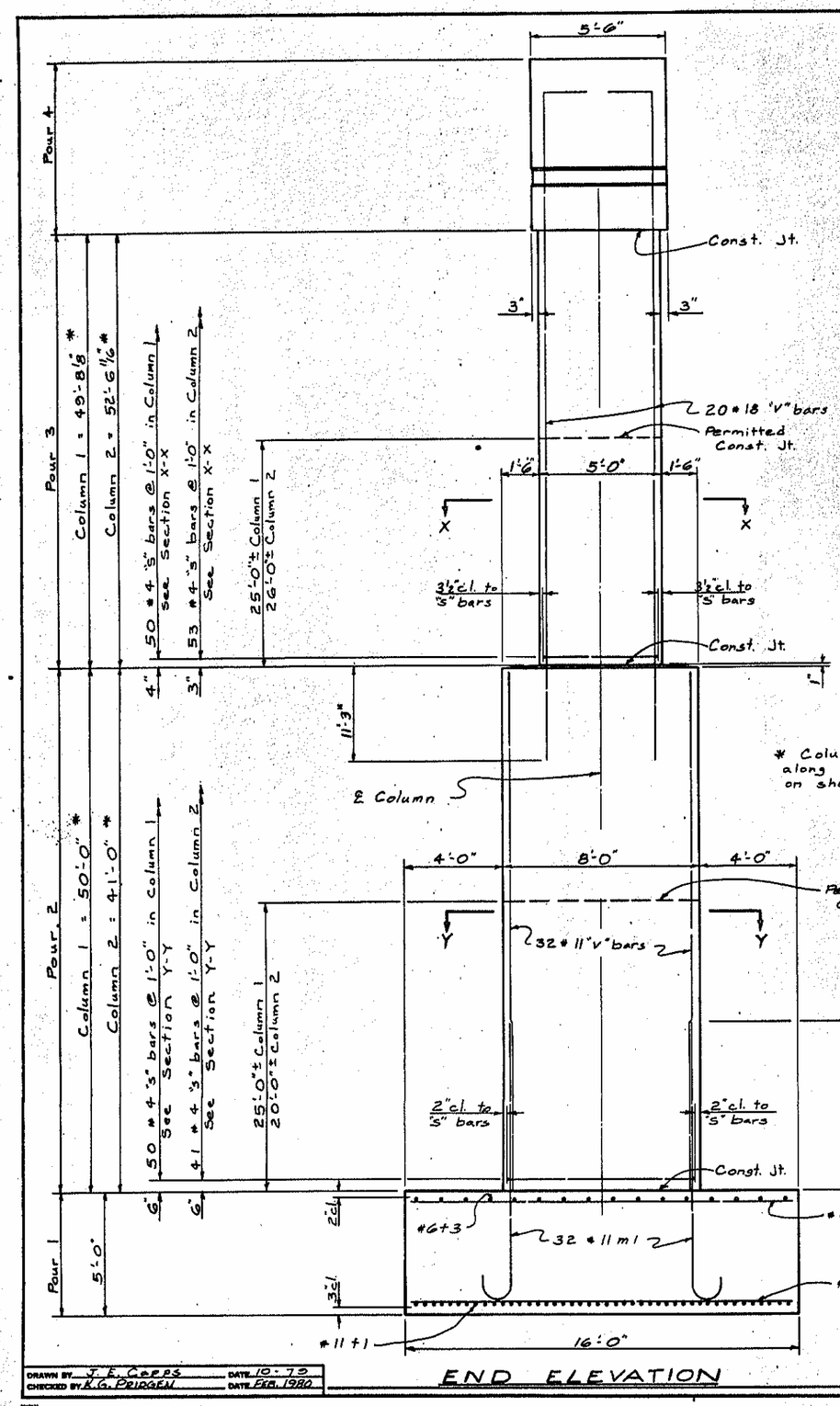
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4.

Oct. 1979

REVISIONS							
NO.	BY	DATE	NO.	BY	DATE	5-57	
1			3				
2			4			77	

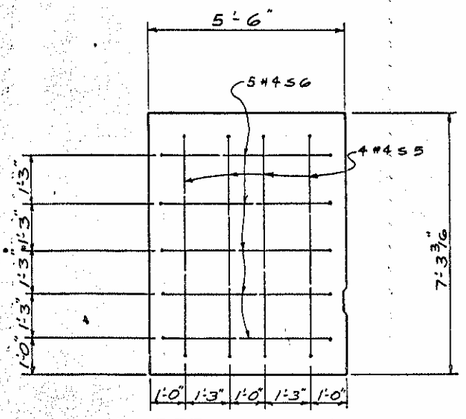
DRAWN BY J. E. Capps DATE 10-79
CHECKED BY K.G. PRIDGEN DATE FEB. 1980



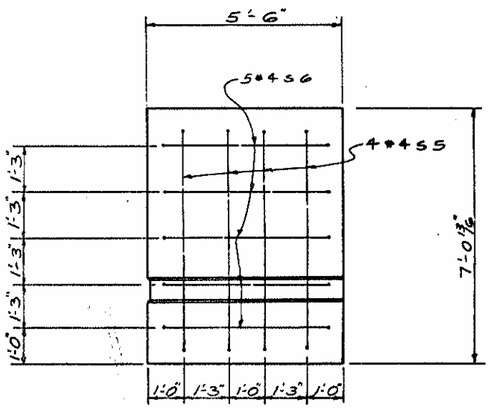
END ELEVATION

DRAWN BY J. E. COPES DATE 10-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980

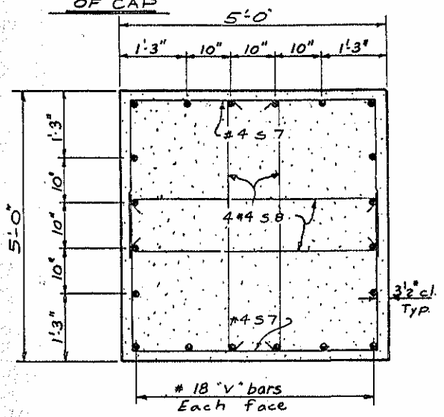
* Column heights are measured along ℄ Columns in "Elevation" View on sheet 1 of 3.



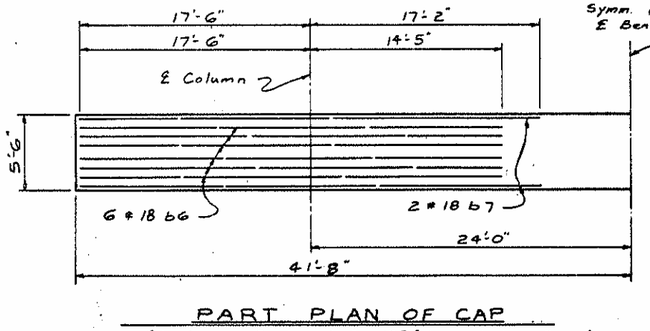
LEFT END VIEW OF CAP



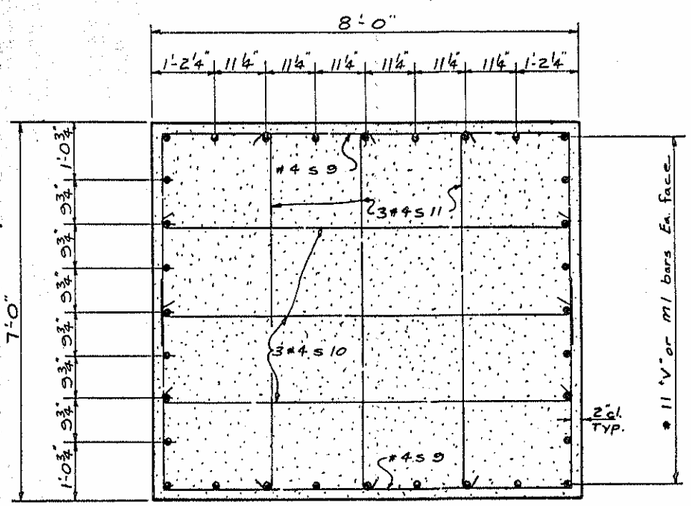
RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP
(Showing reinforcing steel #18 "B" bars in top of cap.)



SECTION Y-Y

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev.
Sheet 2 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

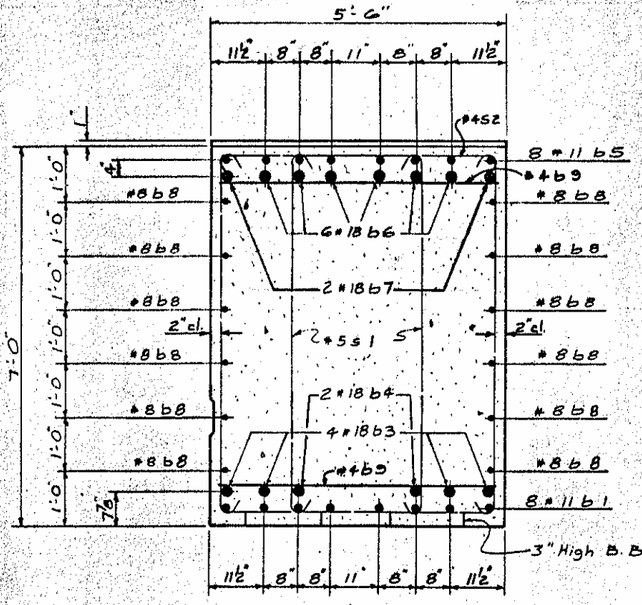
SUBSTRUCTURE
BENT 4

Oct. 1979

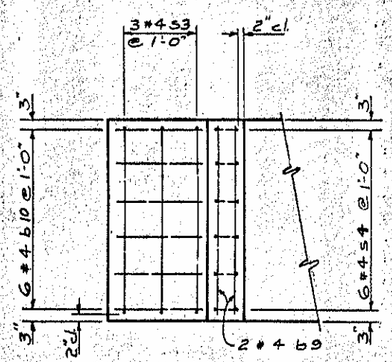
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-58
1			3			TOTAL SHEETS
2			4			77

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F. A. PROJECT		

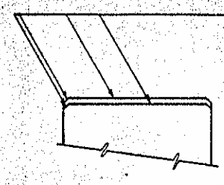
NOTE: The number 18 bars in the columns have not been shown spliced. These bars shall be spliced using a mechanical coupler. For mechanical butt splicing of reinforcing steel, see Special Provisions. The Contractor may splice these bars at any and all locations to suit his erection techniques subject to the following requirements and the approval of the Engineer: No more than one-half of the vertical reinforcing may be spliced at any one location. Adjacent bar splices shall be staggered a minimum of ten feet. No bar may be spliced within ten feet of the termination of an adjacent bar.



SECTION A-A



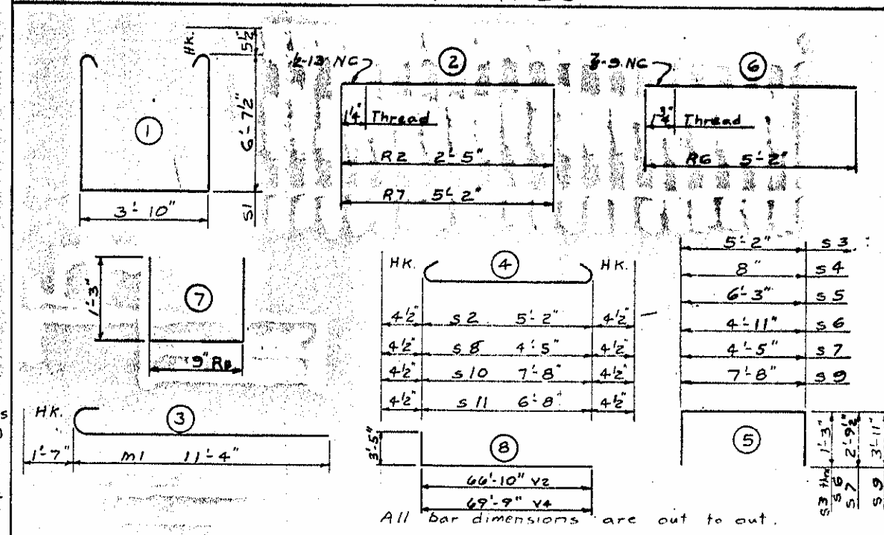
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES



All bar dimensions are out to out.

DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	130.4
2 (Columns)	188.7
3 (Columns)	94.6
4 (Cap)	120.0
5 (Catwalk)	6.5
Total	540.2

Reinforcing Steel, lbs 108,068
Class A Concrete, Cu. Yds 540.2

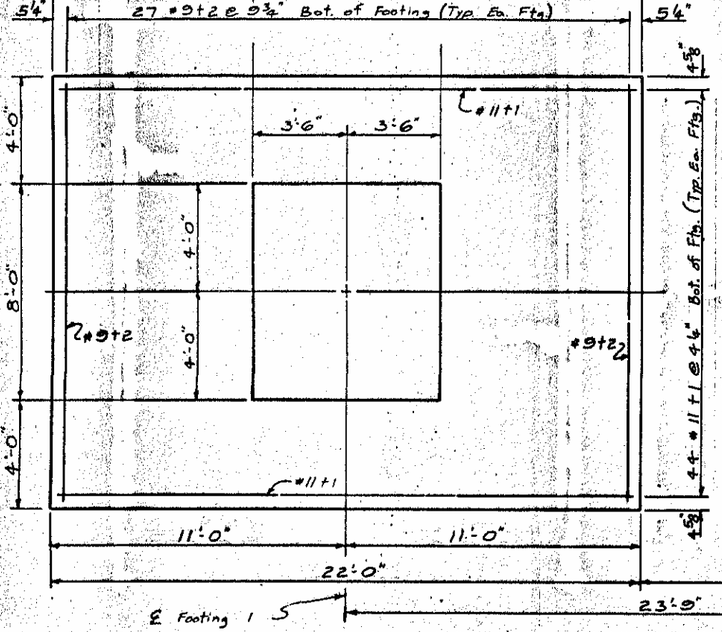
* Bars shall be A.S.T.M.-A615 - Grade 60.

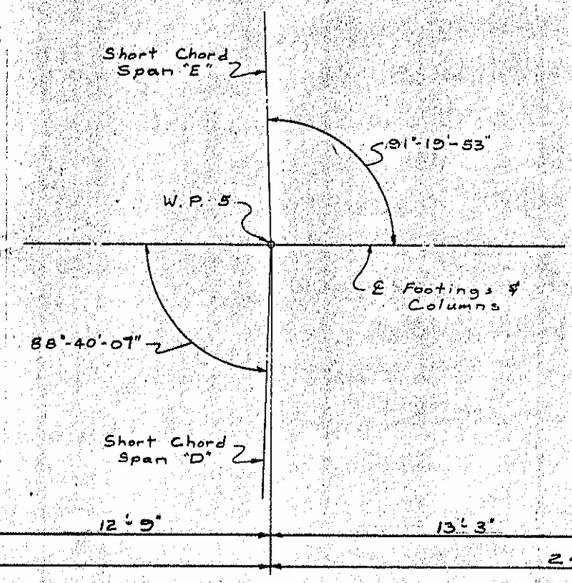
Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

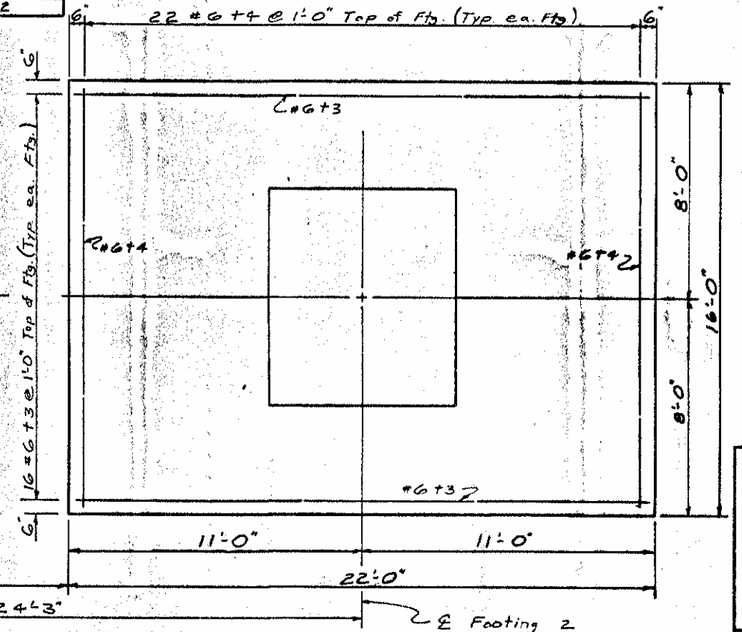
BILL OF MATERIAL

FOR BENT 4

	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*	b1	8	#11	str.	60'-0"	2560
*	b2	8	#11	str.	23'-6"	1254
*	b3	4	#18	str.	44'-10"	2430
*	b4	2	#18	str.	28'-10"	784
*	b5	16	#11	str.	46'-1"	3917
*	b6	12	#18	str.	31'-11"	5209
*	b7	4	#18	str.	34'-8"	1886
*	b8	24	#8	str.	43'-10"	2809
	b9	33	#4	str.	5'-2"	114
	b10	66	#4	str.	2'-6"	110
	m1	64	#11	3	12'-11"	4302
	s1	232	#5	1	18'-0"	4356
	s2	66	#4	4	5'-11"	261
	s3	33	#4	5	7'-8"	169
	s4	12	#4	5	3'-2"	25
	s5	8	#4	5	8'-9"	47
	s6	10	#4	5	7'-5"	50
	s7	206	#4	5	10'-0"	1376
	s8	412	#4	4	5'-2"	1422
	s9	182	#4	5	15'-6"	1884
	s10	273	#4	4	8'-5"	1535
	s11	273	#4	4	7'-5"	1353
	R1	18	#4	str.	28'-6"	343
	R2	165	#4	2	2'-5"	266
	R3	12	#4	str.	7'-8"	61
	R4	3	#5	str.	6'-6"	20
	R5	3	#4	str.	6'-3"	13
	R6	5	#7	6	5'-2"	53
	R7	5	#4	2	5'-2"	17
	R8	13	#4	7	3'-3"	28
	R9	1	#4	str.	5'-1"	3
	t1	88	#11	str.	21'-6"	10052
	t2	54	#9	str.	15'-6"	2846
	t3	32	#6	str.	21'-6"	1033
	t4	44	#6	str.	15'-6"	1024
	V1	32	#11	str.	49'-8"	8444
*	V2	20	#18	8	70'-3"	19108
	V3	32	#11	str.	40'-8"	6914
*	V4	20	#18	8	73'-2"	19901
	Total					108,068







Note: See Section Y-Y on sheet 2 of 3 for m1 bar spacing in footings.

PLAN OF FOOTINGS

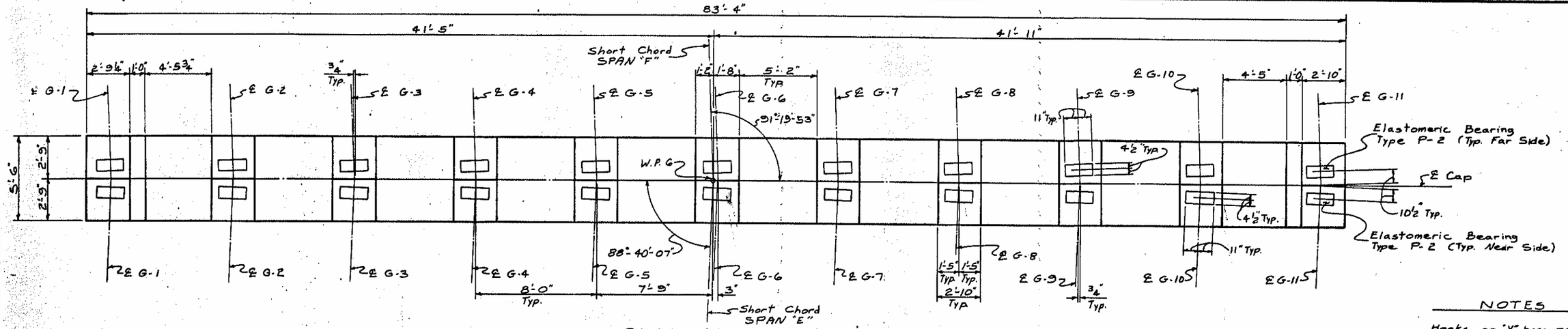
DRAWN BY J. E. CAPPS DATE 10-15-79
CHECKED BY K.G. PRIDDEN DATE FEB. 1980

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 mcd Rev
Sheet 3 of 3

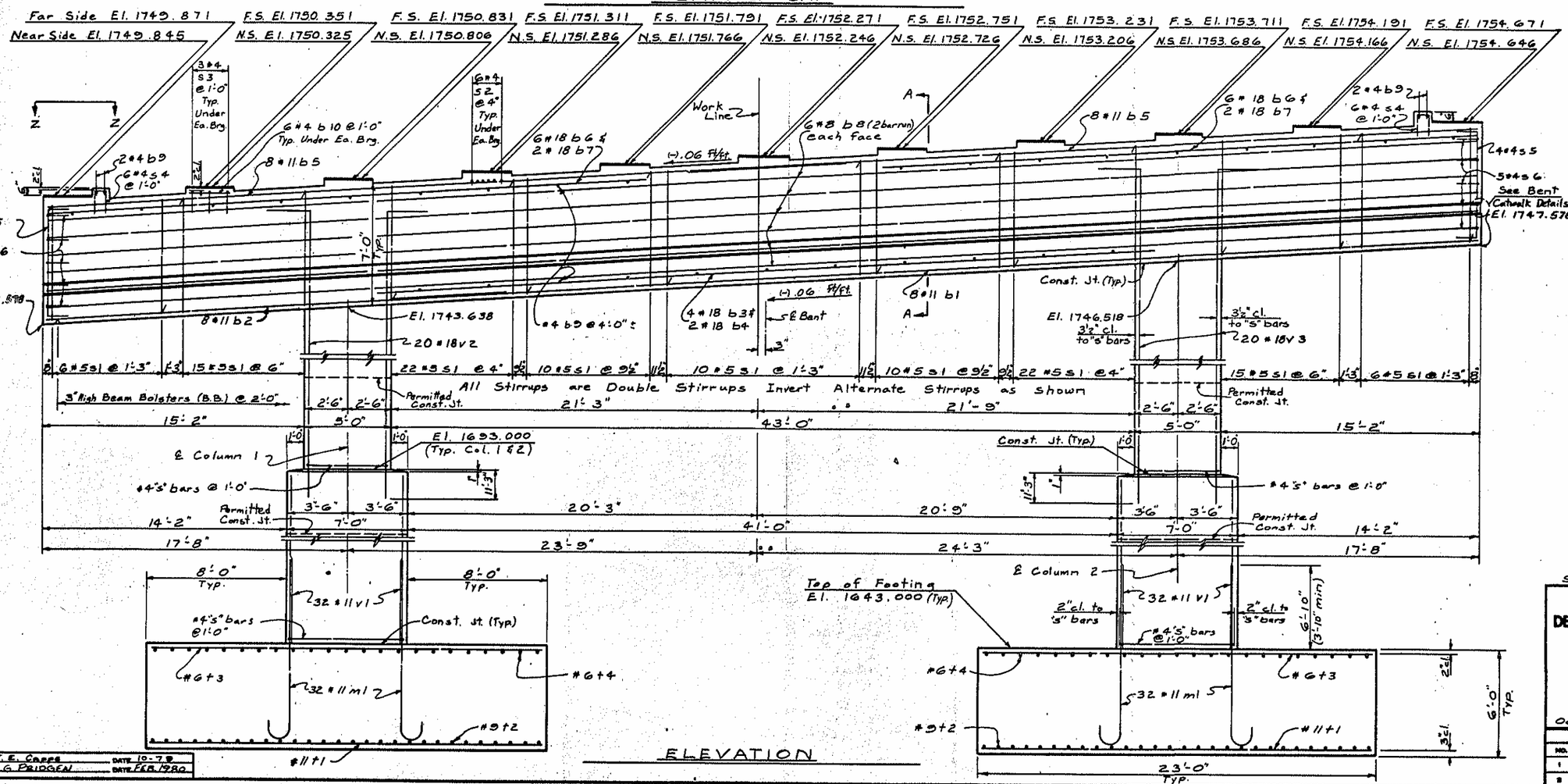
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH
SUBSTRUCTURE
BENT 4

Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-59
1			3			TOTAL SHEETS
2			4			77



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for false work and forms for this bent cap shall be submitted. See Sheet SN.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev.

Sheet 1 of 3

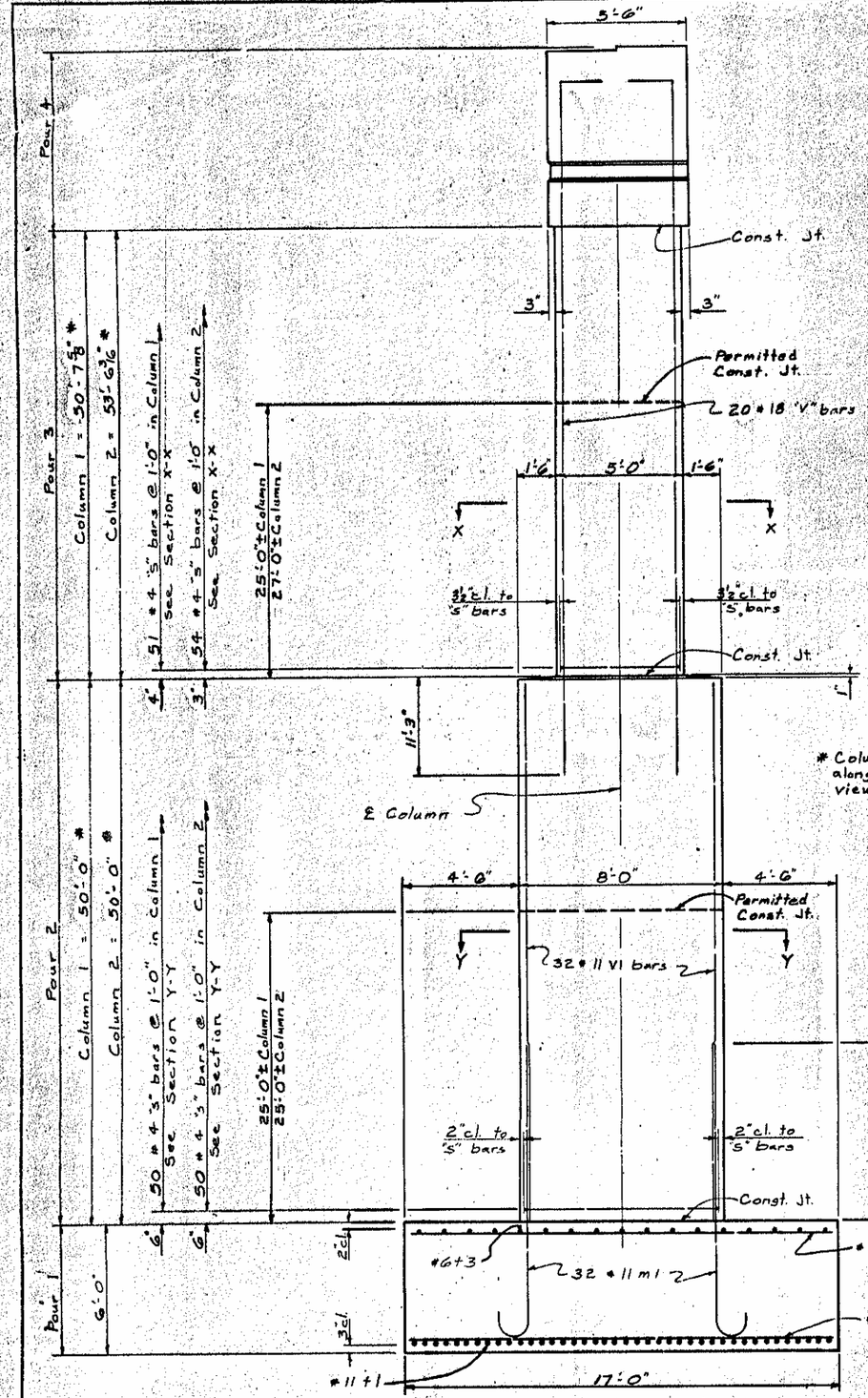
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 5

Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-60
1			3			TOTAL SHEETS
2			4			77

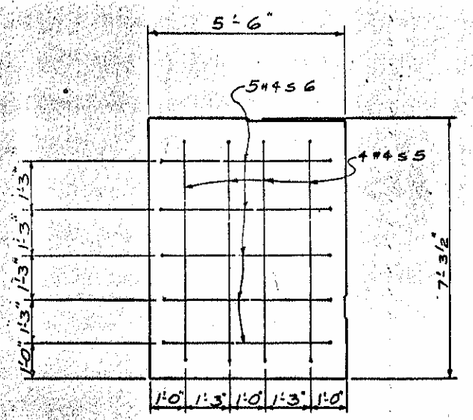
DRAWN BY: T. E. CAPES DATE: 10-79
CHECKED BY: K. G. PRIDGEN DATE: FEB. 1980



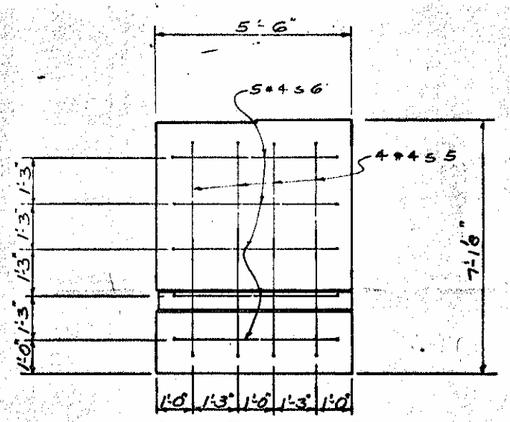
END ELEVATION

DRAWN BY J.E. Cobb DATE 10-72
CHECKED BY K.C. Bridges DATE Feb. 1980

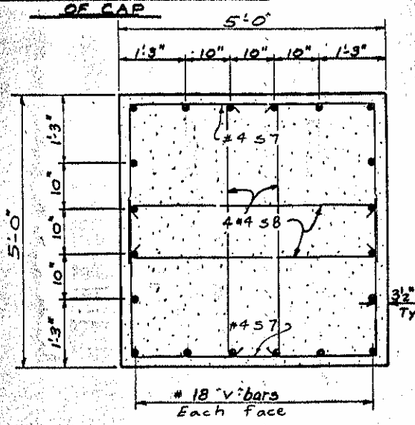
* Column heights are measured along ℄ columns in "Elevation" view on sheet 1 of 3.



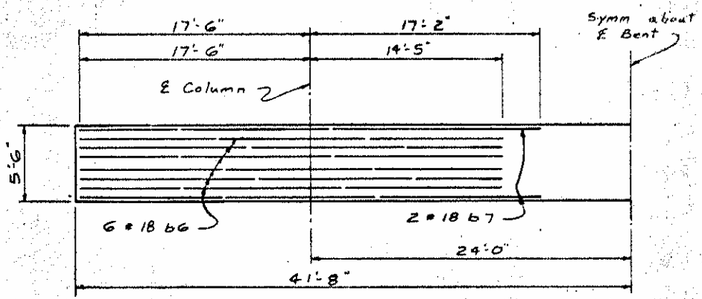
LEFT END VIEW OF CAP



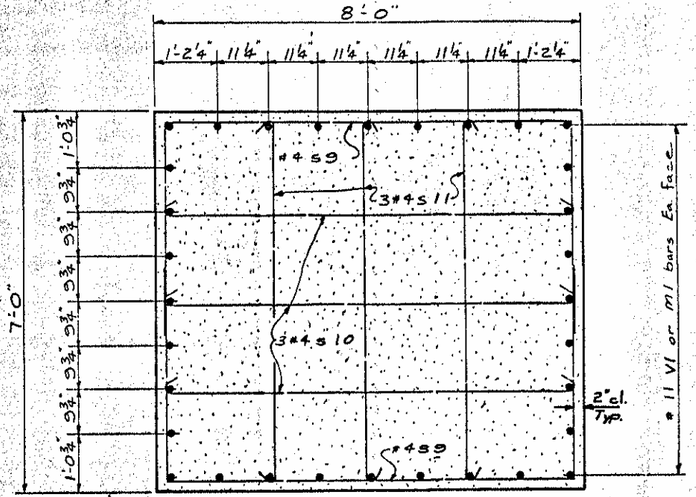
RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP
(Showing reinforcing steel #18 "b" bars in top of cap.)



SECTION Y-Y

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev
Sheet 2 of 3

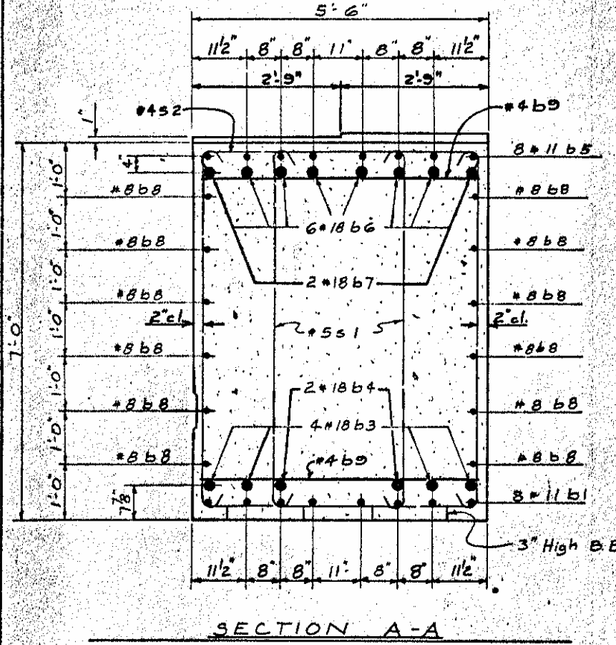
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 5

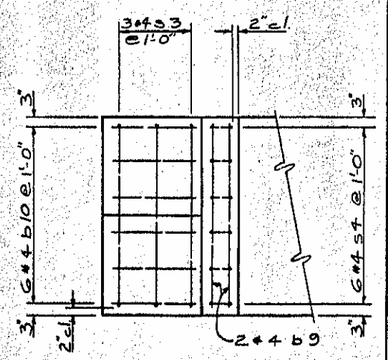
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-61
1			3			TOTAL SHEETS
2			4			77

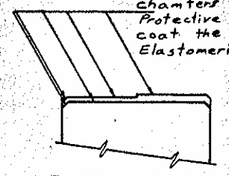
FED. ROAD DIV. NO.	STATE	PROJECT NO.
6	N. C.	
F. A. PROJECT		



SECTION A-A



VIEW Z-Z

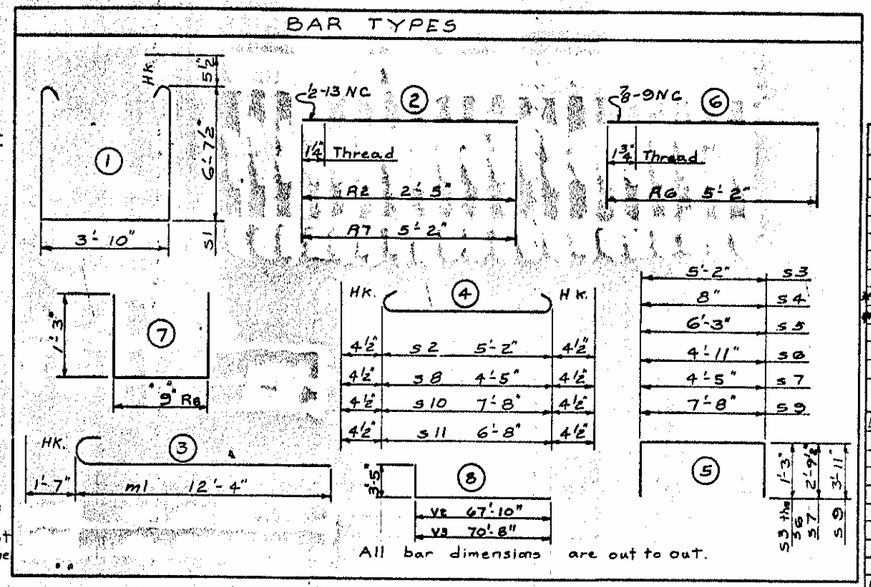


PART SECTION OF CAP

Coat all surface areas of top of cap including chamfers with Epoxy Protective Coating. Do not coat the area under the Elastomeric Bearing.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

BAR TYPES



All bar dimensions are out to out.

* Bars shall be A.S.T.M.-A615-Grade 60.

NOTE: The number 18 bars in the columns have not been shown spliced. These bars shall be spliced using a mechanical coupler. For mechanical butt splicing of reinforcing steel, see Special Provisions. The Contractor may splice these bars at any and all locations to suit his erection techniques subject to the following requirements and the approval of the Engineer: No more than one-half of the vertical reinforcing may be spliced at any one location. Adjacent bar splices shall be staggered a minimum of ten feet. No bar may be spliced within ten feet of the termination of an adjacent bar.

BILL OF MATERIAL CONT.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
t1	80	#11	str	22'-6"	9563
t2	56	#9	str	16'-6"	3142
t3	34	#6	str	22'-6"	1149
t4	46	#6	str	16'-6"	1140
V1	64	#11	str	49'-8"	16,888
*V2	20	#18	8	71'-5"	19,380
*V3	20	#18	8	74'-1"	20,151
Total					111,026

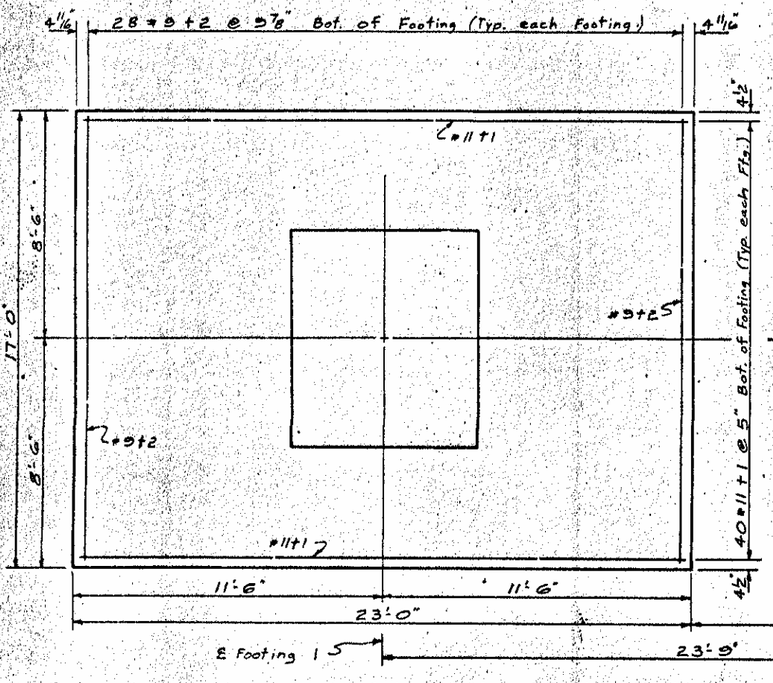
DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	173.8
2 (Columns)	207.4
3 (Columns)	96.4
4 (Cap)	120.1
5 (Catwalk)	6.5
Total	604.2

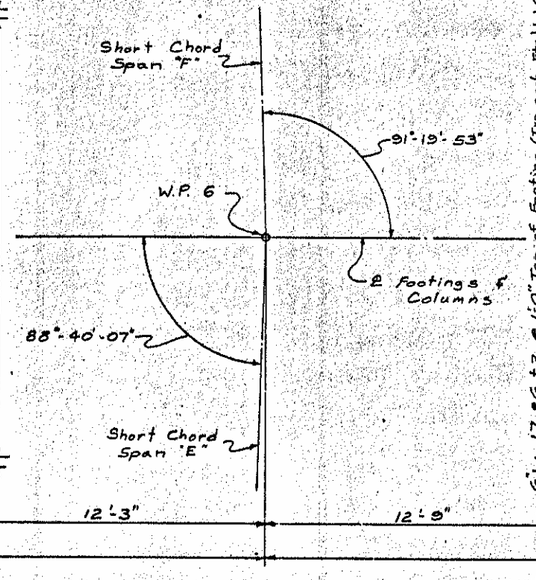
Reinforcing Steel, lbs.	111,026
Class A Concrete, Cu.Yds.	604.2

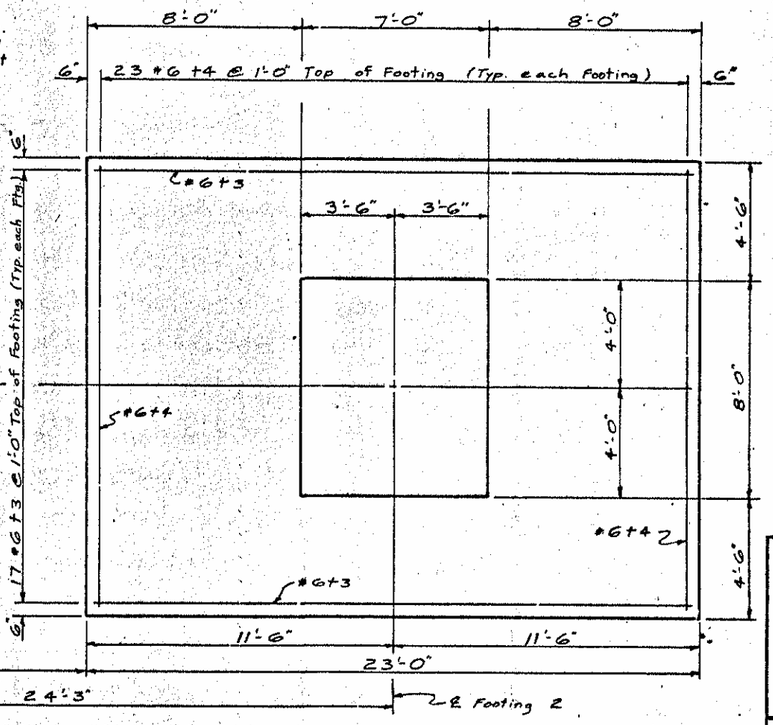
BILL OF MATERIAL

FOR BENT 5

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str	44'-10"	2439
*b4	2	#18	str	28'-10"	784
*b5	16	#11	str	46'-1"	3917
*b6	12	#18	str	31'-11"	5203
*b7	4	#18	str	34'-8"	1886
*b8	24	#8	str	43'-10"	2809
b9	33	#4	str.	5'-2"	114
b10	66	#4	str.	2'-6"	110
m1	64	#11	3	13'-11"	4732
s1	232	#5	1	18'-0"	4356
s2	66	#4	4	5'-11"	261
s3	33	#4	5	7'-8"	169
s4	12	#4	5	3'-2"	25
s5	8	#4	5	8'-9"	47
s6	10	#4	5	7'-5"	50
s7	210	#4	5	10'-0"	1403
s8	420	#4	4	5'-2"	1450
s9	200	#4	5	15'-6"	2071
s10	300	#4	4	8'-5"	1687
s11	300	#4	4	7'-5"	1486
R1	18	#4	str.	28'-6"	343
R2	165	#4	2	2'-5"	266
R3	12	#4	str.	7'-8"	61
R4	3	#5	str.	6'-6"	20
R5	3	#4	str.	6'-3"	13
R6	5	#7	6	5'-2"	53
R7	5	#4	2	5'-2"	17
R8	13	#4	7	3'-3"	28
R9	1	#4	str.	5'-1"	3







PLAN OF FOOTINGS

Note: See Section Y-Y on sheet 2 of 3 for m1 bar spacing in Footings.

DRAWN BY T. E. COATS DATE 10-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med Rev

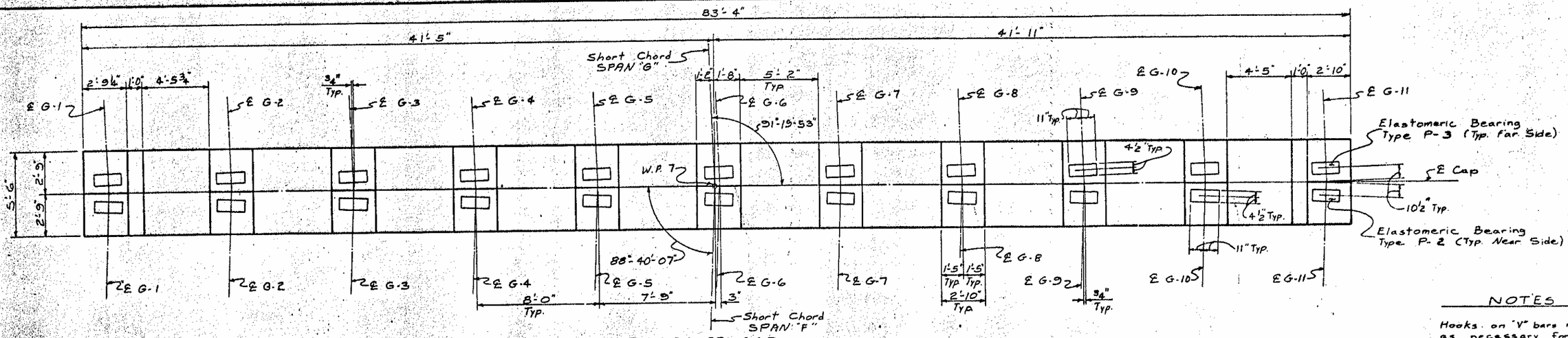
Sheet 3 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

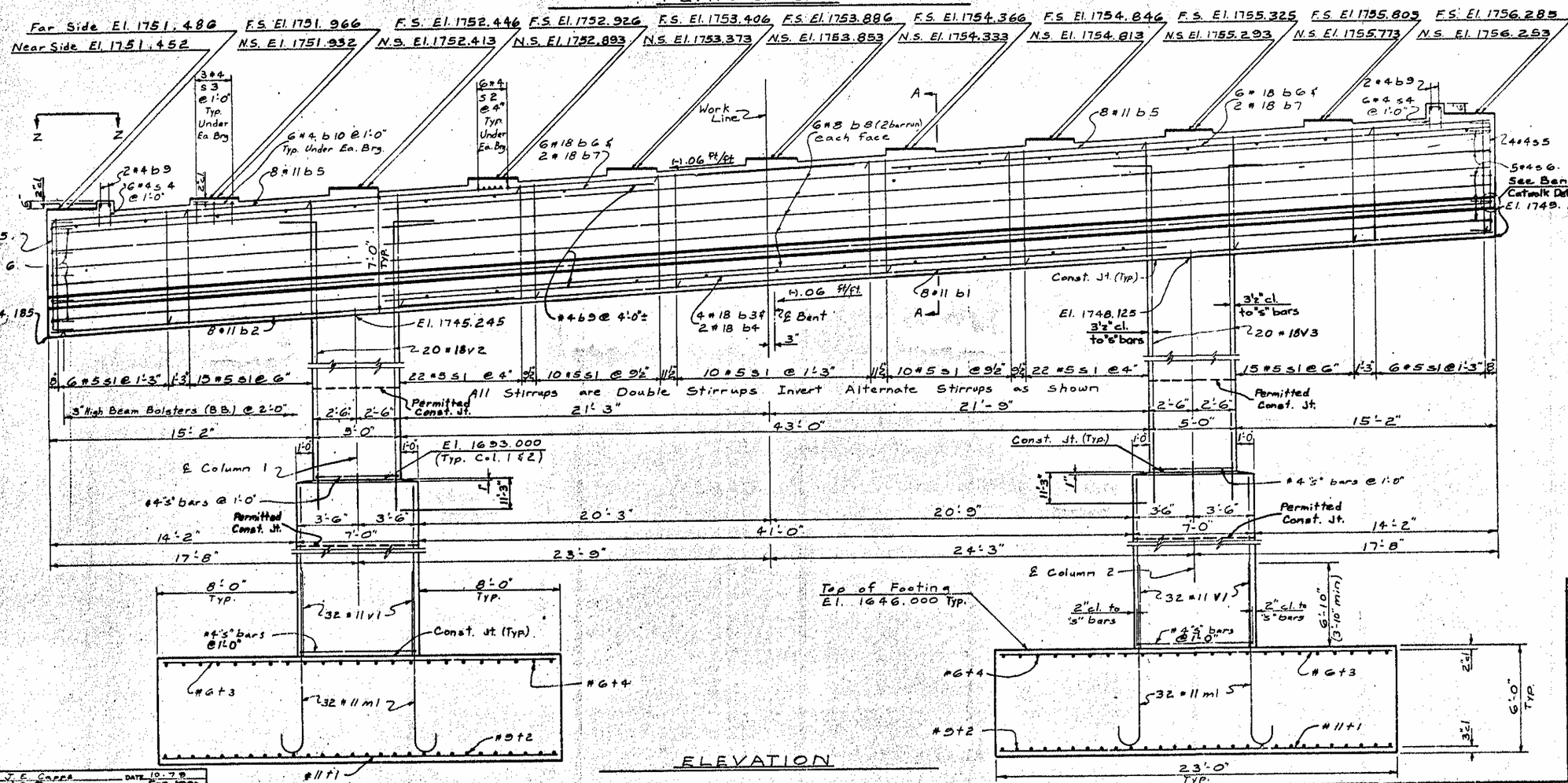
SUBSTRUCTURE
BENT 5

Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-62
1			3			TOTAL SHEETS
2			4			77



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S.N.

DRAWN BY: T.E. Capps DATE: 10-7-9
CHECKED BY: K.G. FRIDGEN DATE: FEB. 1980

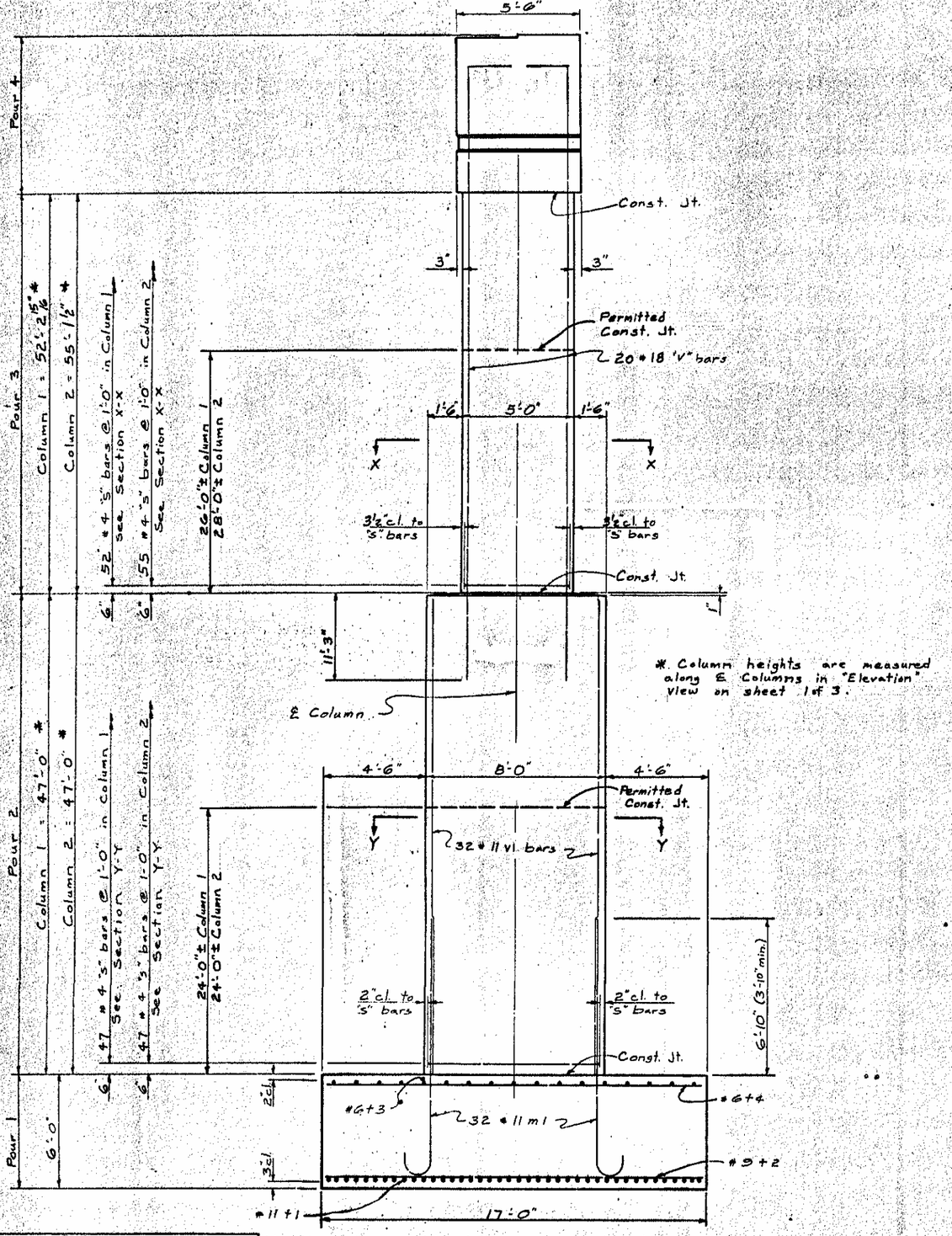
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev

Sheet 1 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 6

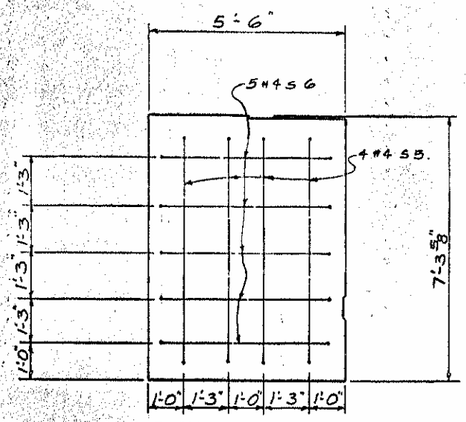
Oct 1979

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		5-63
1			3				TOTAL SHEETS
2			4				77

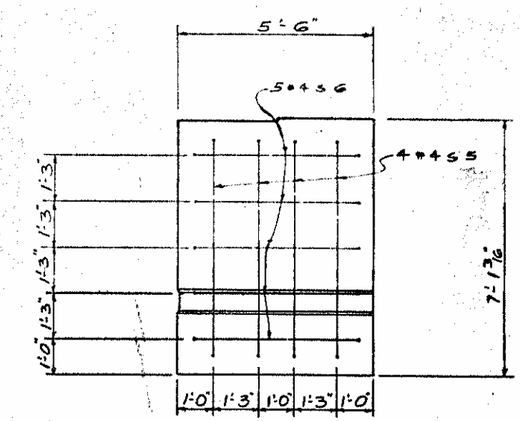


*. Column heights are measured along ℄ Columns in "Elevation" view on sheet 1 of 3.

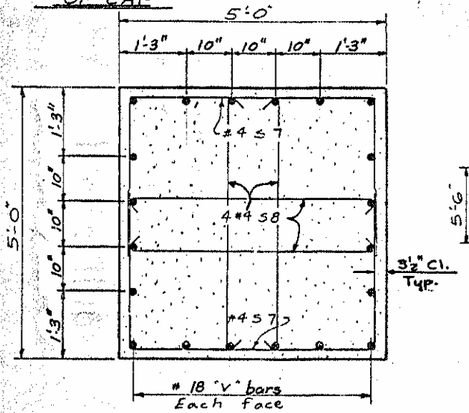
END ELEVATION



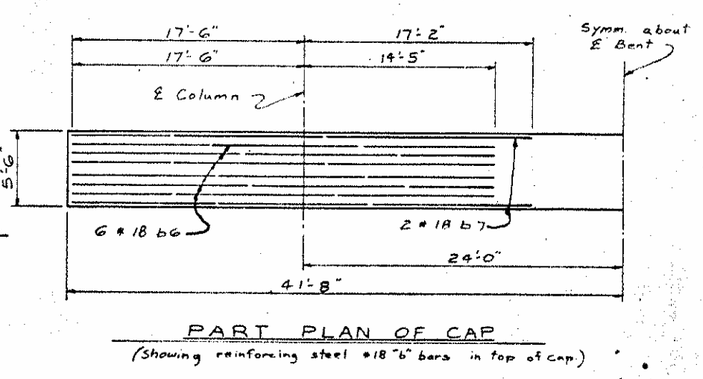
LEFT END VIEW OF CAP



RIGHT END VIEW OF CAP

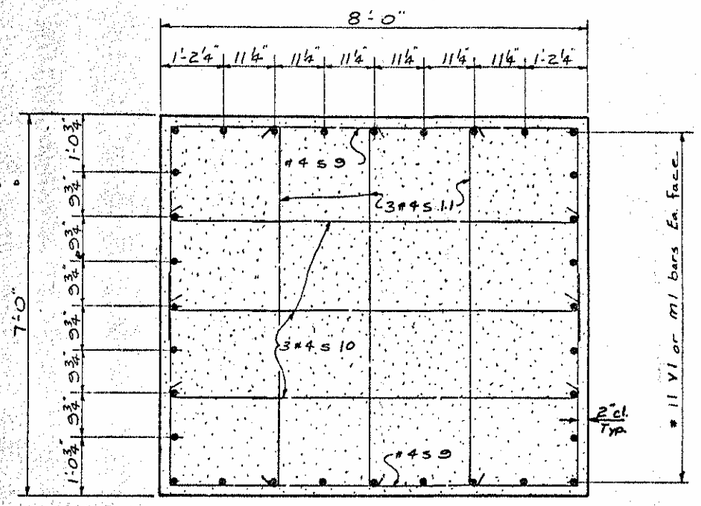


SECTION X-X



PART PLAN OF CAP

(Showing reinforcing steel #18 "b" bars in top of cap.)



SECTION Y-Y

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev

Sheet 2 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

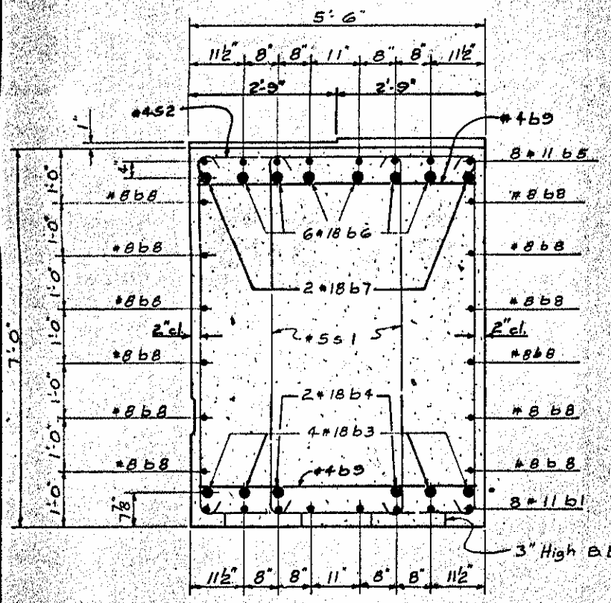
SUBSTRUCTURE
BENT 6

Oct 1979

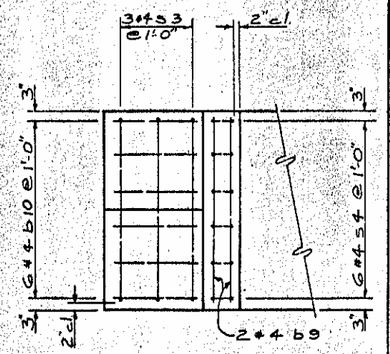
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-64
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J. E. COPPS DATE 10-79
CHECKED BY K. G. PRIDGEN DATE Feb. 1980

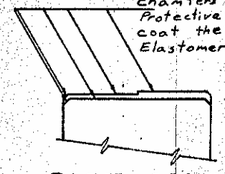
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



SECTION A-A



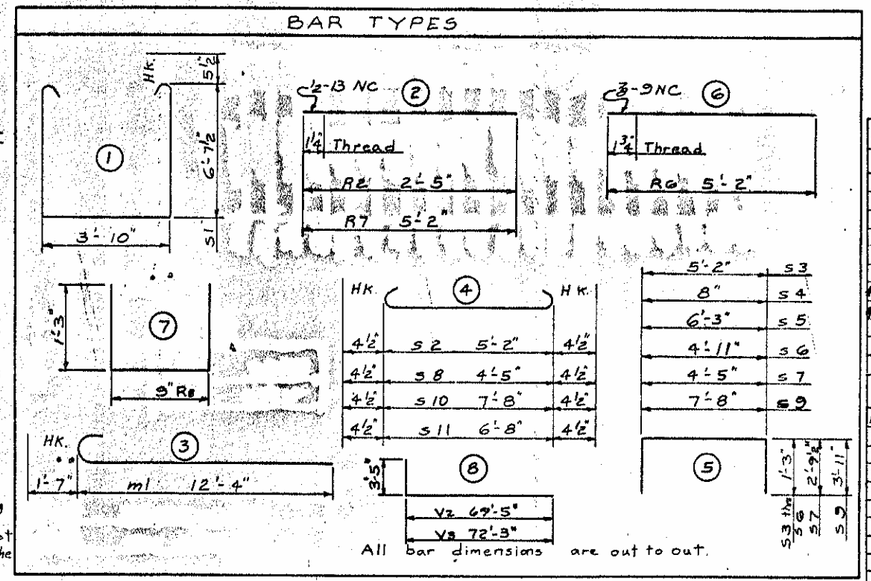
VIEW Z-Z



PART SECTION OF CAP

Coat all surface areas of top of cap including chamfers with Epoxy Protective Coating. Do not coat the area under the Elastomeric Bearing.

BAR TYPES



All bar dimensions are out to out.

* Bars shall be A.S.T.M.-A615-Grade 60.

NOTE: The number 18 bars in the columns have not been shown spliced. These bars shall be spliced using a mechanical coupler. For mechanical butt splicing of reinforcing steel, see Special Provisions. The Contractor may splice these bars at any and all locations to suit his erection techniques subject to the following requirements and the approval of the Engineer: No more than one-half of the vertical reinforcing may be spliced at any one location. Adjacent bar splices shall be staggered a minimum of ten feet. No bar may be spliced within ten feet of the termination of an adjacent bar.

BILL OF MATERIAL CONT.					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
t1	80	#11	str	22'-6"	3543
t2	56	#5	str	16'-6"	3140
t3	34	#6	str	22'-6"	1149
t4	46	#6	str	16'-6"	1140
V1	64	#11	str	46'-8"	15,868
*V2	20	#18	8	72'-10"	19,811
*V3	20	#18	8	75'-8"	20,581
Total					110,607

DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	173.8
2 (Columns)	195.0
3 (Columns)	99.4
4 (Cap)	120.1
5 (Catwalk)	6.5
Total	594.8

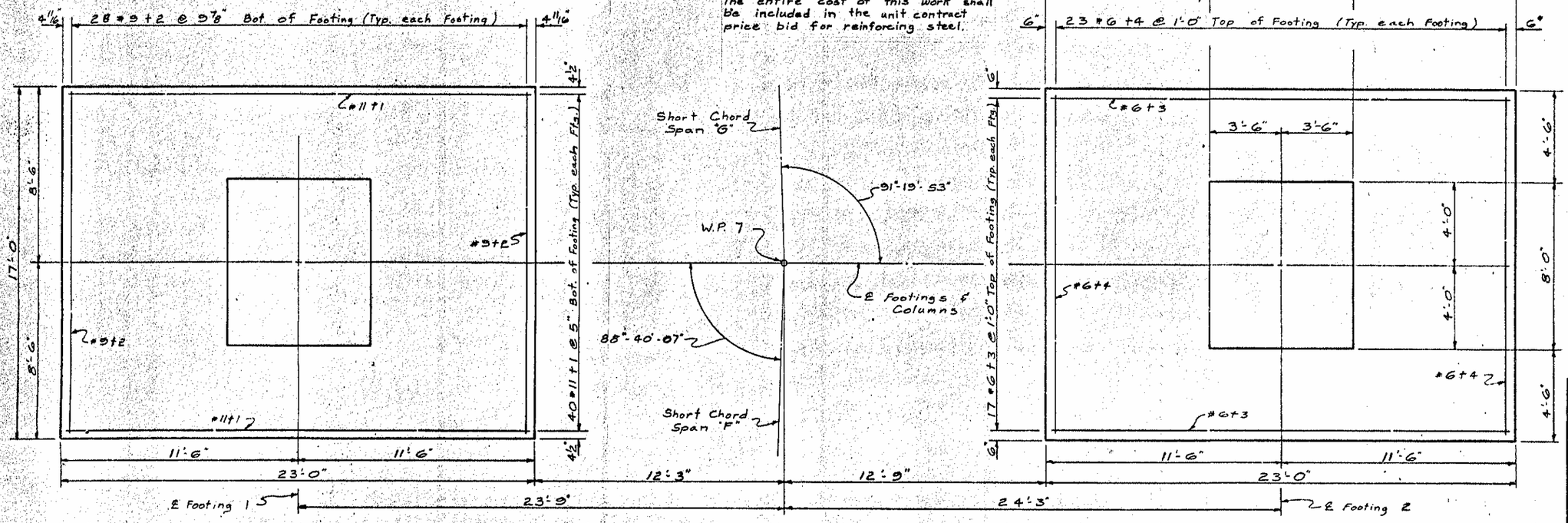
Reinforcing Steel, lbs	110,607
Class A Concrete, Cu Yds	594.8

BILL OF MATERIAL

FOR BENT 6

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str	44'-10"	2439
*b4	2	#18	str	28'-10"	784
*b5	16	#11	str	46'-1"	3917
*b6	12	#18	str	31'-11"	5209
*b7	4	#18	str	34'-8"	1886
*b8	24	#8	str	43'-10"	2809
b9	33	#4	str	5'-2"	114
b10	66	#4	str	2'-6"	110
m1	64	#11	3	13'-11"	4732
s1	232	#5	1	18'-0"	4356
s2	66	#4	4	5'-11"	261
s3	33	#4	5	7'-8"	169
s4	12	#4	5	3'-2"	25
s5	8	#4	5	8'-9"	47
s6	10	#4	5	7'-5"	50
s7	214	#4	5	10'-0"	1430
s8	428	#4	4	5'-2"	1477
s9	188	#4	5	15'-6"	1947
s10	282	#4	4	8'-5"	1586
s11	282	#4	4	7'-5"	1397
A1	18	#4	str.	28'-6"	343
A2	165	#4	2	2'-5"	266
A3	12	#4	str.	7'-8"	61
A4	3	#5	str.	6'-6"	20
A5	3	#4	str.	6'-3"	13
A6	5	#7	6	5'-2"	53
A7	5	#4	2	5'-2"	17
A8	13	#4	7	3'-3"	28
A9	1	#4	str.	5'-1"	3

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.



PLAN OF FOOTINGS

Note: See Section Y-Y on sheet 2 of 3 for m1 bar spacing in Footings.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev

Sheet 3 of 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY

RALEIGH

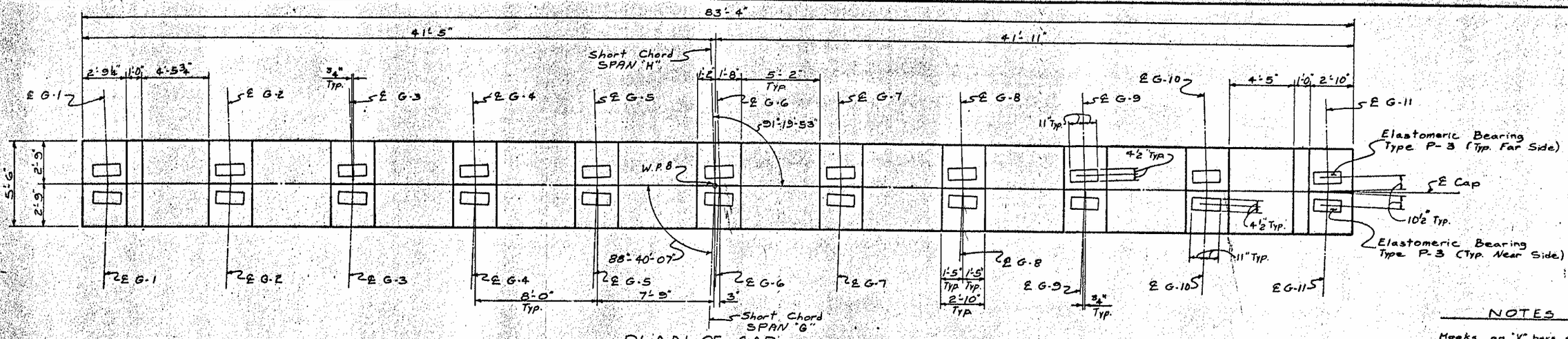
SUBSTRUCTURE BENT 6

Oct. 1979

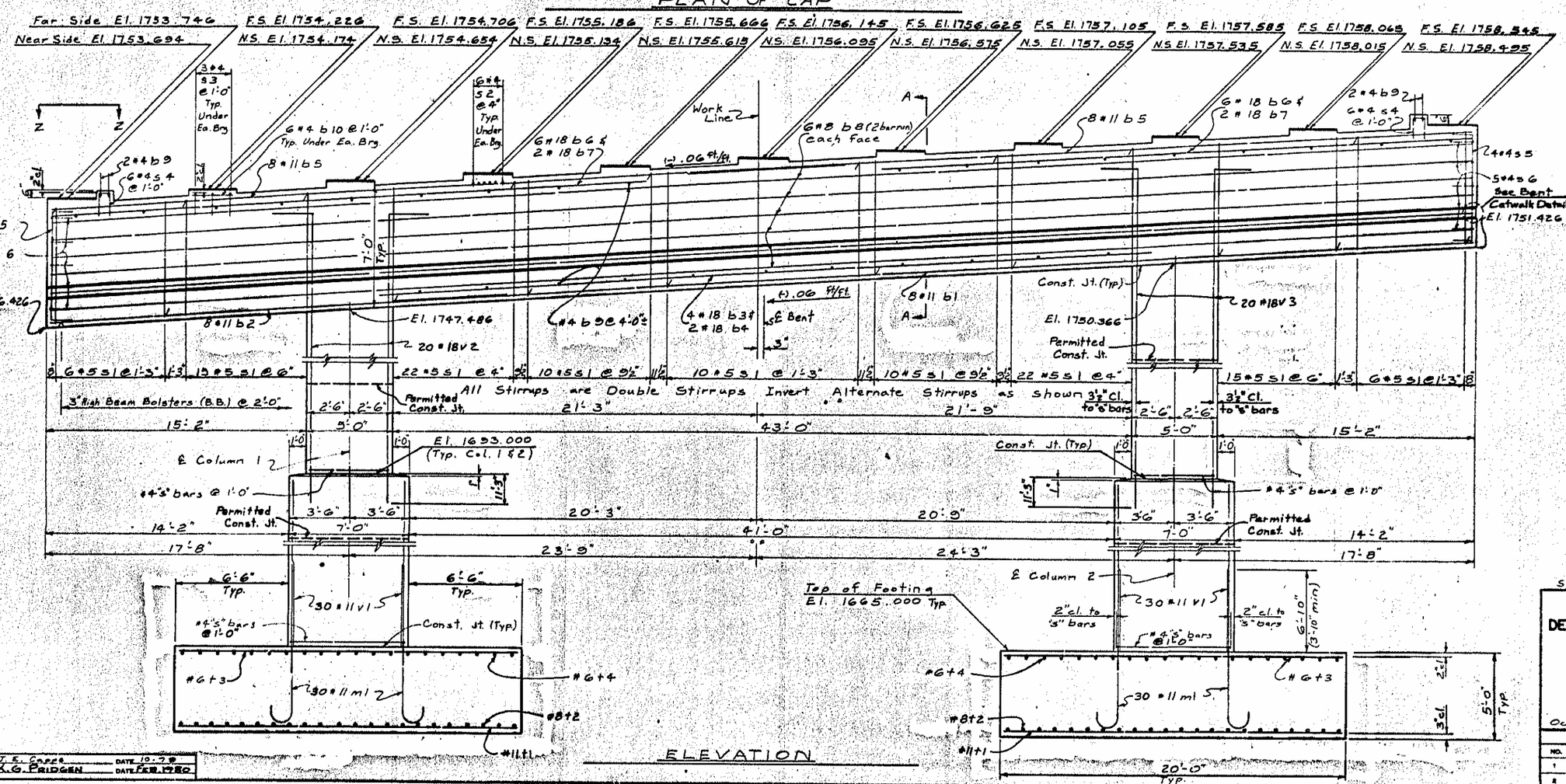
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-65
1			3			TOTAL SHEETS
2			4			77

DRAWN BY: T. E. Capps DATE: 10-79

CHECKED BY: K.G. PRIDGEN DATE: FEB. 1980



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet 5 N.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 mod. Rev

Sheet 1 of 3

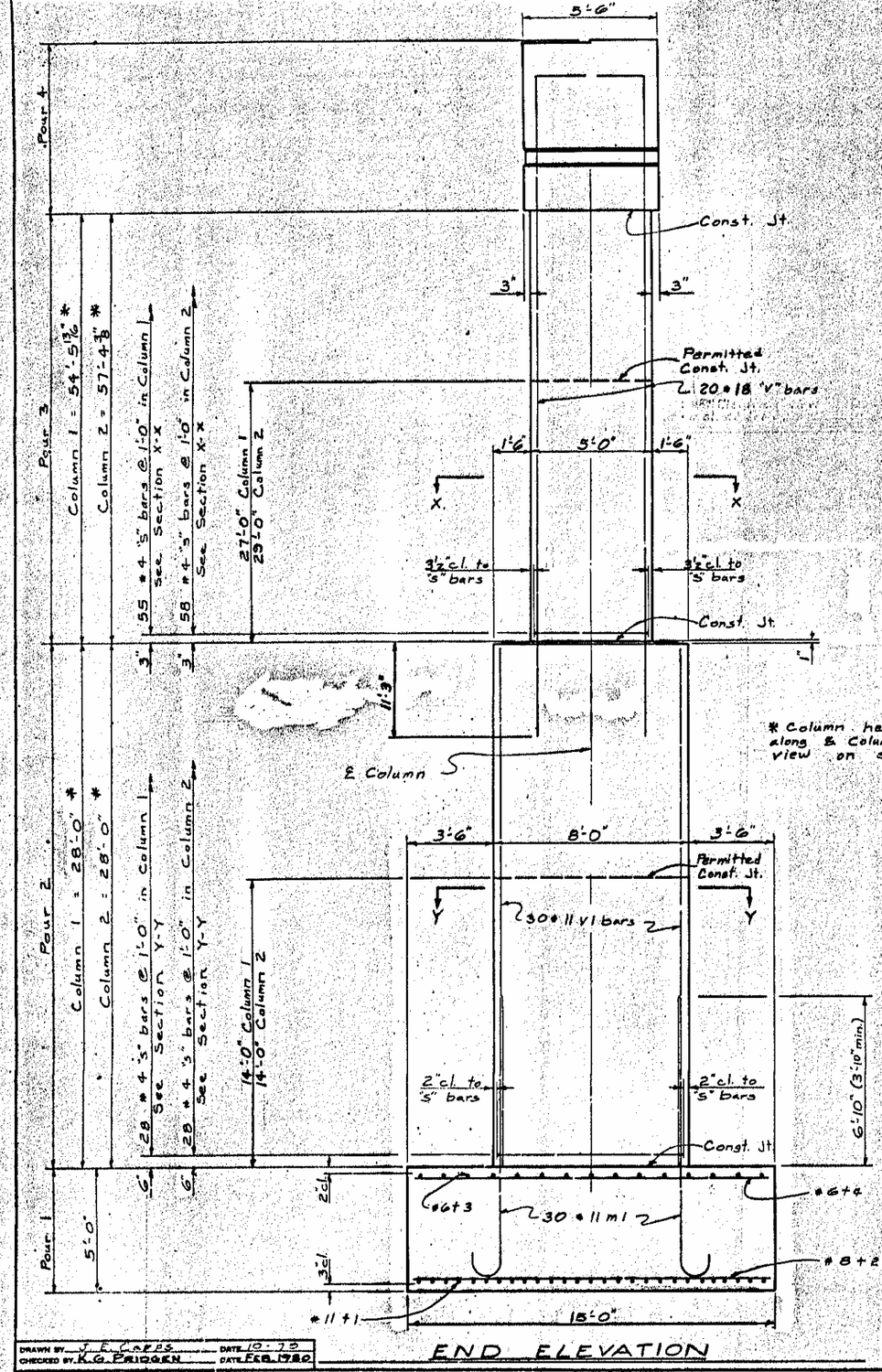
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 7

Oct 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	3-66
1			3			TOTAL SHEETS
2			4			77

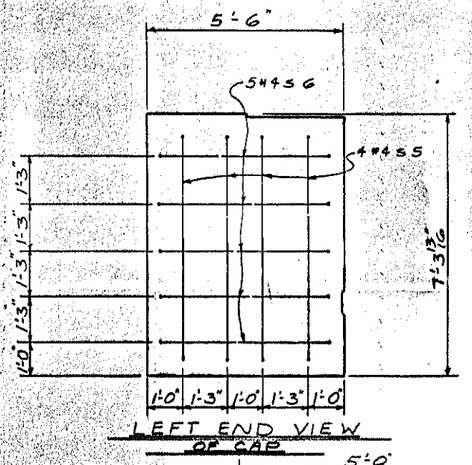
DRAWN BY J. E. CAPPS DATE 10-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980



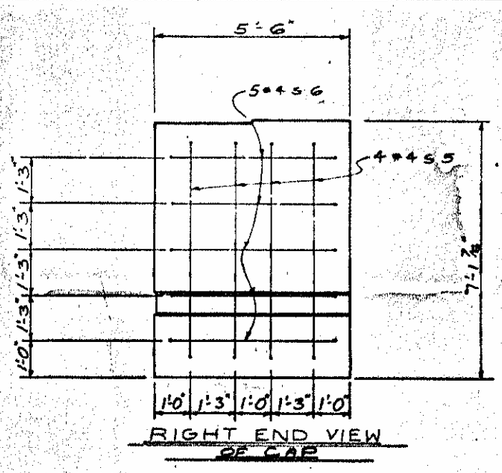
END ELEVATION

DRAWN BY J. E. CAPES DATE 10-73
CHECKED BY K. G. FRIDGEN DATE FEB. 1980

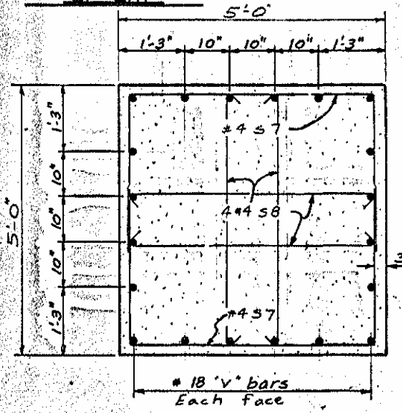
* Column heights are measured along ℄ Columns in "Elevation" view on sheet 1 of 3.



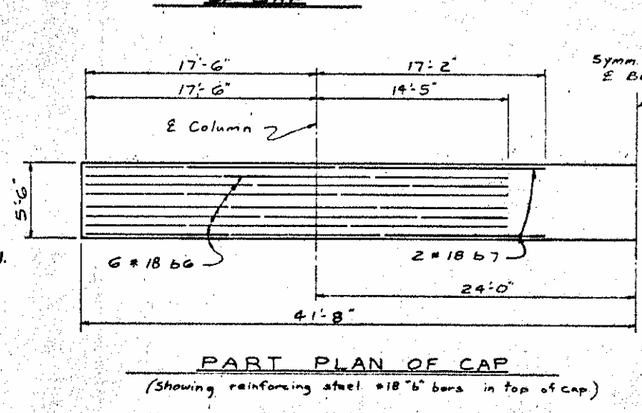
LEFT END VIEW OF CAP



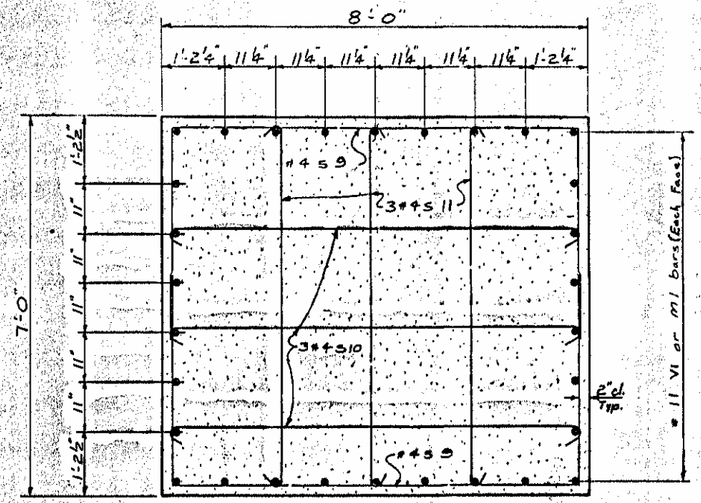
RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP
(Showing reinforcing steel #18 "b" bars in top of cap)



SECTION Y-Y

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med Rev
Sheet 2 of 3

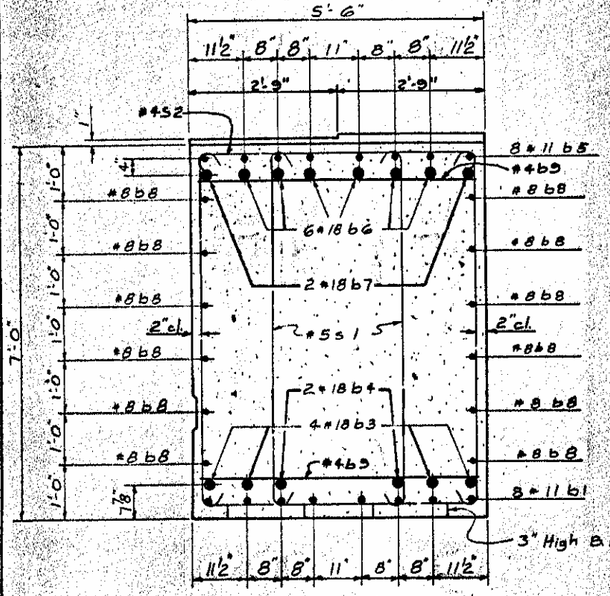
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

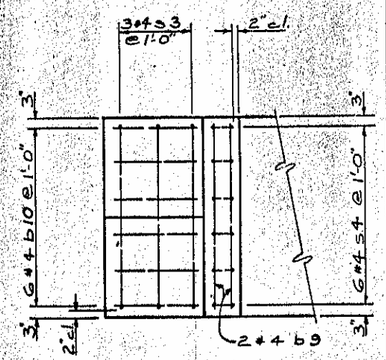
Oct. 1973

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-67
1			3			TOTAL SHEETS
2			4			77

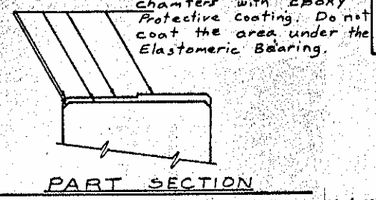
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



SECTION A-A



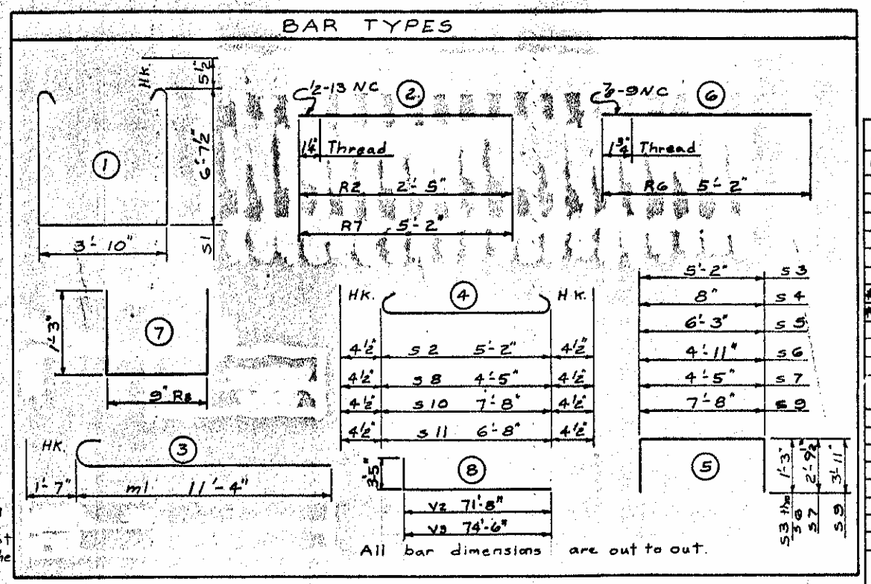
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy Protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES

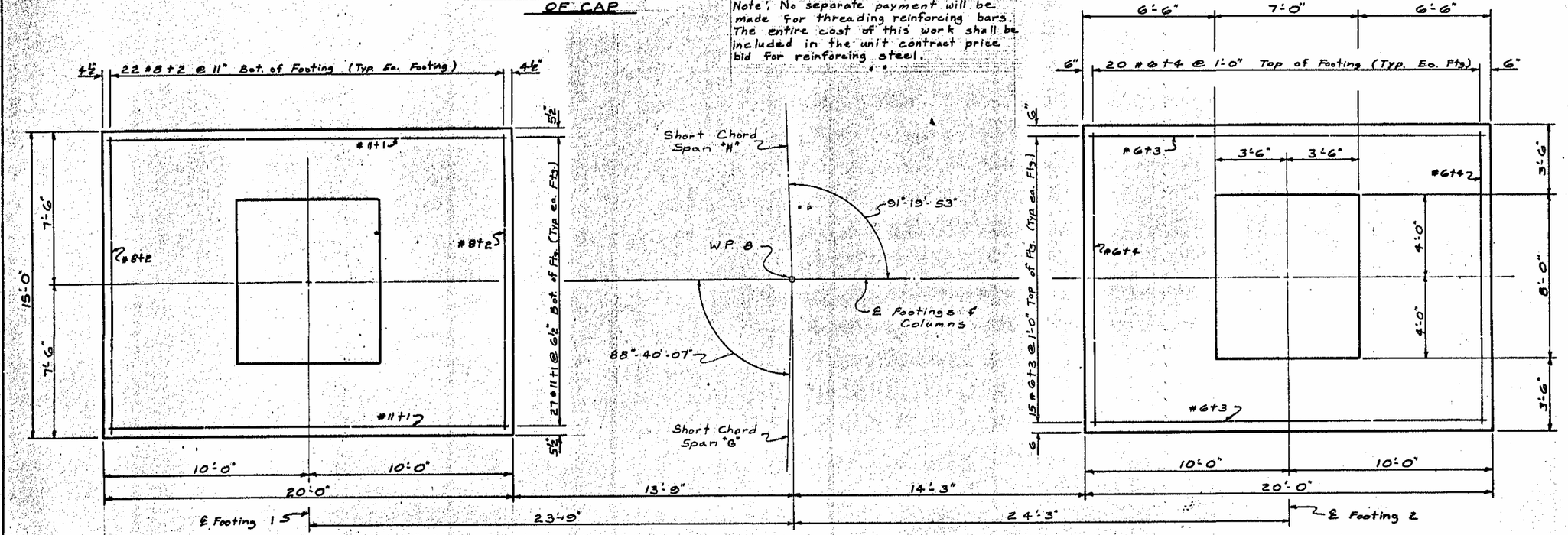


All bar dimensions are out to out.

* Bars shall be ASTM A615 - Grade 60.

NOTE: The number 18 bars in the columns have not been shown spliced. These bars shall be spliced using a mechanical coupler. For mechanical butt splicing of reinforcing steel, see Special Provisions. The Contractor may splice these bars at any and all locations to suit his erection techniques subject to the following requirements and the approval of the Engineer: No more than one-half of the vertical reinforcing may be spliced at any one location. Adjacent bar splices shall be staggered a minimum of ten feet. No bar may be spliced within ten feet of the termination of an adjacent bar.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.



PLAN OF FOOTINGS

Note: See Section Y-Y on sheet 2 of 3 for m1 bar spacing in Footings.

DRAWN BY J. E. CAPPS DATE 10-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980

BILL OF MAT'L. CONT.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
t1	54	#11	str.	19'-6"	5595
t2	44	#8	str.	14'-6"	1703
t3	30	#6	str.	19'-6"	879
t4	40	#6	str.	14'-6"	871
V1	60	#11	str.	27'-8"	8820
#V2	20	#8	8	75'-1"	20,423
*V3	20	#8	8	77'-11"	21,173
				Total	96,393

DIVISION OF CONCRETE

Pour No.	Cubic Yards
1 (Footings)	111.1
2 (Columns)	116.1
3 (Columns)	103.6
4 (Cap)	120.3
5 (Catwalk)	6.5
Total	457.6

Reinforcing Steel, lbs.	96,393
Class A Concrete, Cu. Yds.	457.6

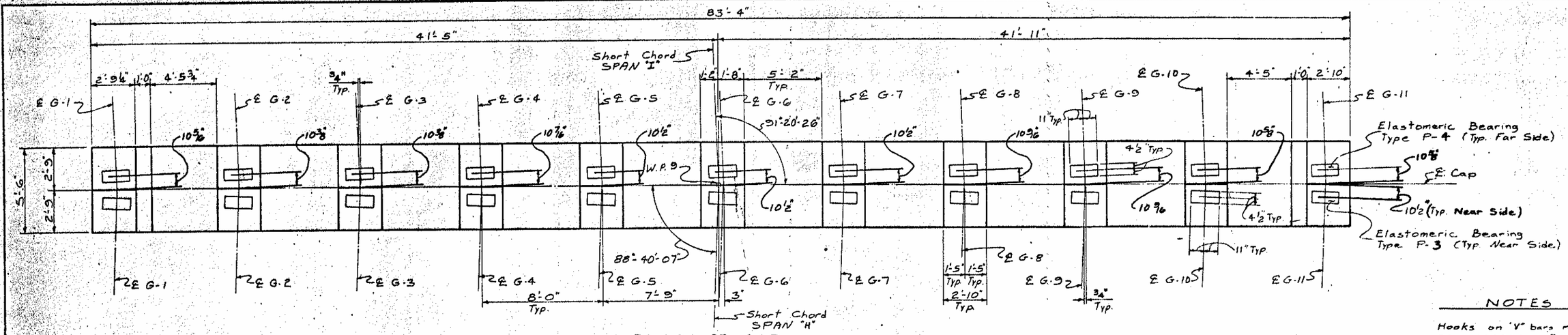
BILL OF MATERIAL FOR BENT 7

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str.	44'-10"	2439
*b4	2	#18	str.	28'-10"	784
*b5	16	#11	str.	46'-1"	3917
*b6	12	#18	str.	31'-11"	5209
*b7	4	#18	str.	34'-8"	1866
*b8	24	#8	str.	43'-10"	2809
b9	33	#4	str.	5'-2"	114
b10	66	#4	str.	2'-6"	110
m1	60	#11	3	12'-11"	4118
s1	232	#5	1	18'-0"	4356
s2	66	#4	4	5'-11"	261
s3	33	#4	5	7'-8"	169
s4	12	#4	5	3'-2"	25
s5	8	#4	5	8'-9"	47
s6	10	#4	5	7'-5"	50
s7	226	#4	5	10'-0"	1510
s8	452	#4	4	5'-2"	1560
s9	112	#4	5	15'-6"	1160
s10	168	#4	4	8'-5"	945
s11	168	#4	4	7'-5"	832
R1	18	#4	str.	28'-6"	343
R2	165	#4	2	2'-5"	266
R3	12	#4	str.	7'-8"	61
R4	3	#5	str.	6'-6"	20
R5	3	#4	str.	6'-3"	13
R6	5	#7	6	5'-2"	53
R7	5	#4	2	5'-2"	17
R8	13	#4	7	3'-3"	28
R9	1	#4	str.	5'-1"	3

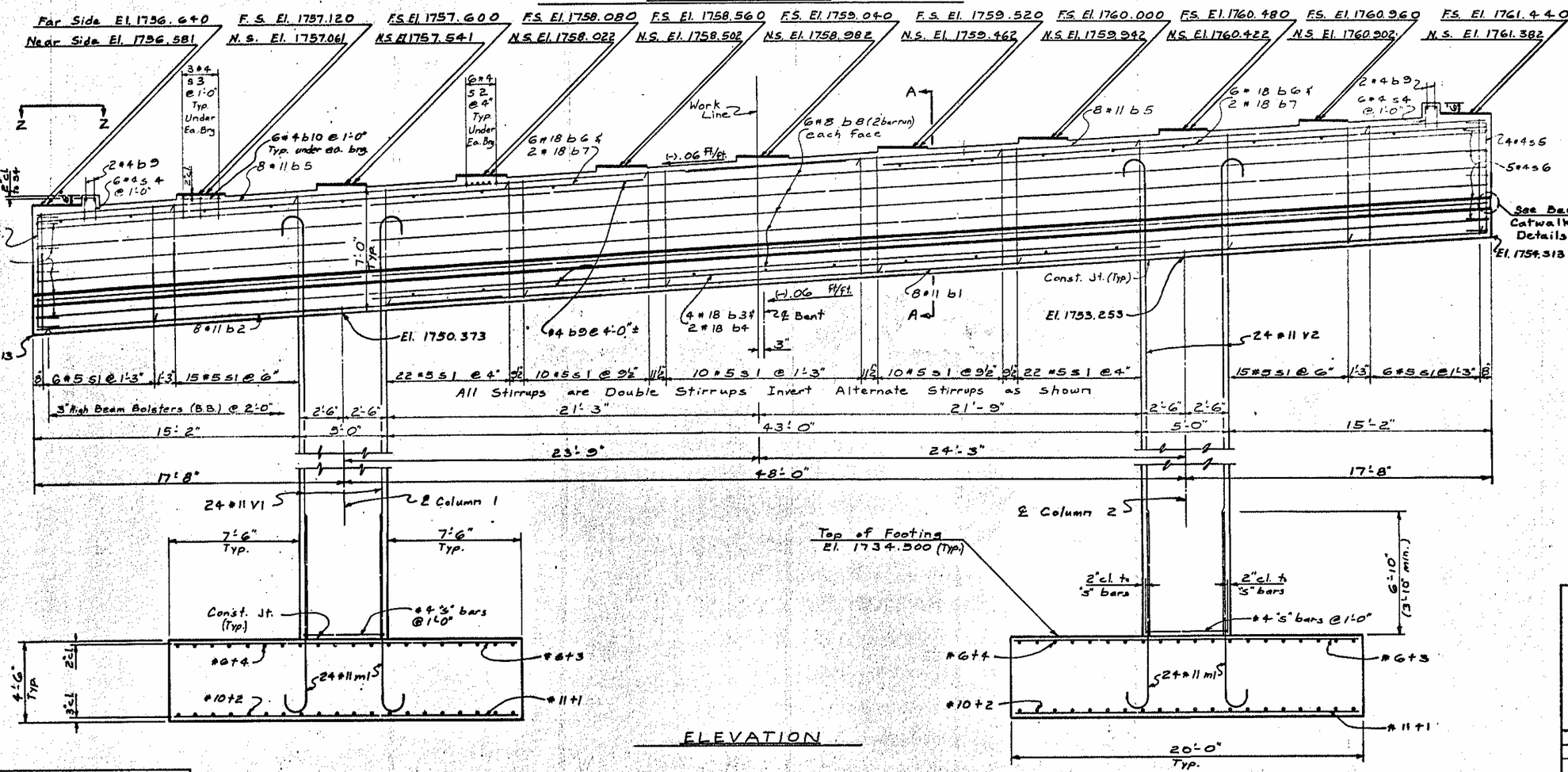
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 med. Rev.
Sheet 3 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH
SUBSTRUCTURE
BENT 7
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-68
1			3			TOTAL SHEETS
2			4			77



PLAN OF CAP



ELEVATION

NOTES

Hooks on 'V' bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S N.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. Rev.

Sheet 1 of 3

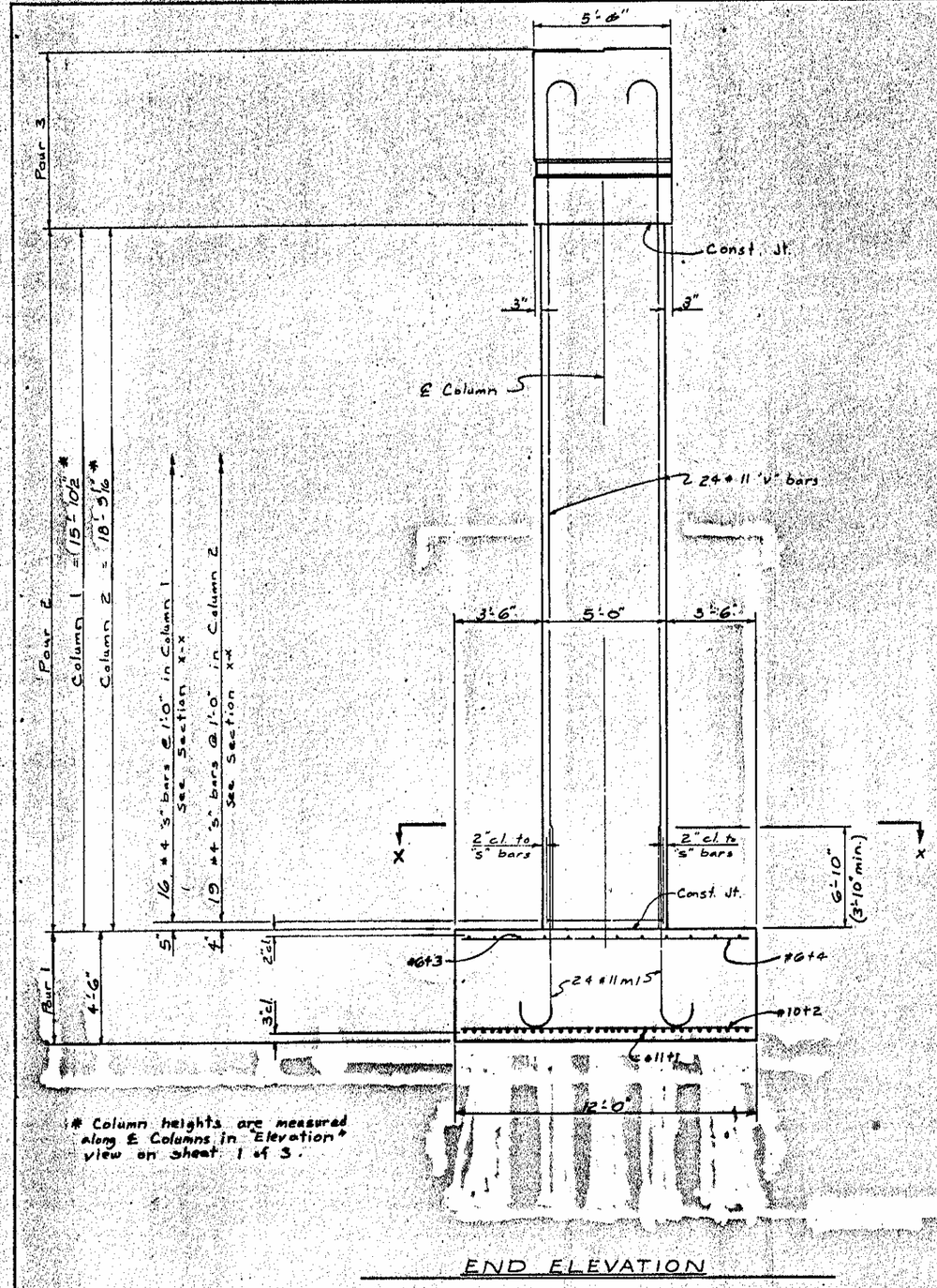
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 8

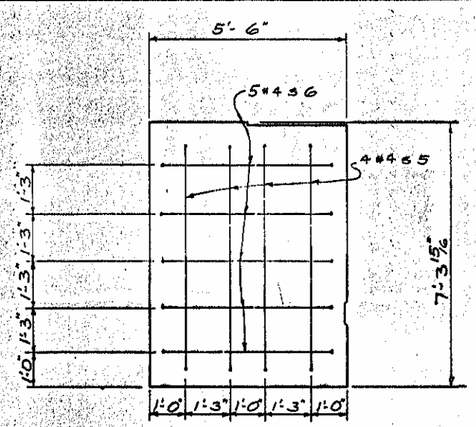
Nov. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-69
1			3			TOTAL SHEETS
2			4			77

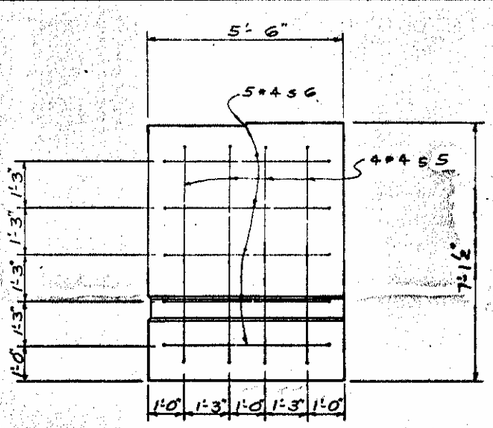
DRAWN BY: J. E. Capps DATE: 11-79
CHECKED BY: K.G. Peidgen DATE: FEB. 1980



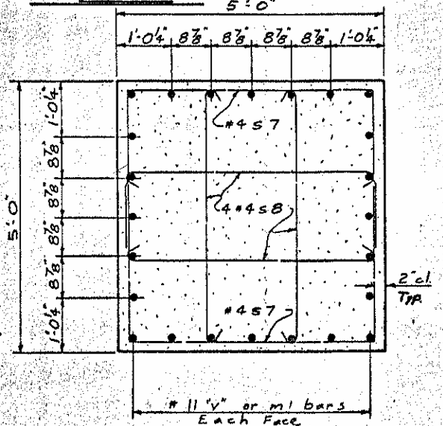
END ELEVATION



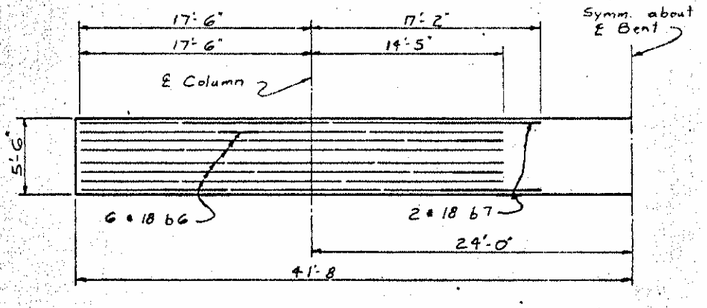
LEFT END VIEW OF CAP



RIGHT END VIEW OF CAP



SECTION X-X



PART PLAN OF CAP

(Showing reinforcing steel #18 "b" bars in top of cap)

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med Rev

Sheet 2 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

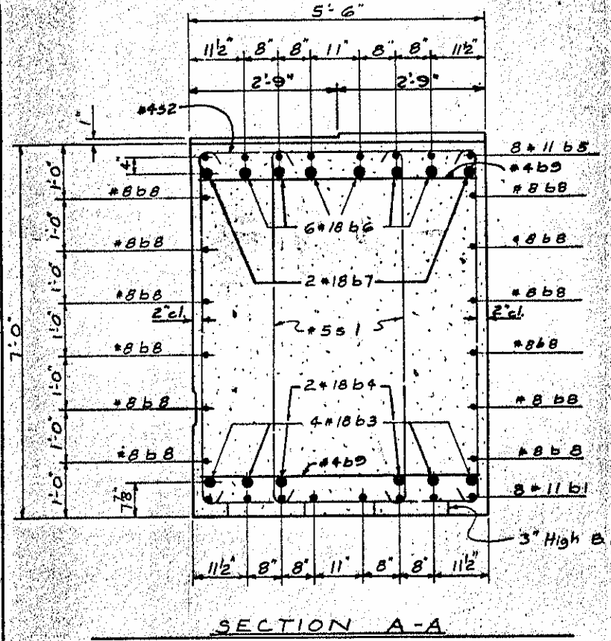
BENT 8

Oct 1979

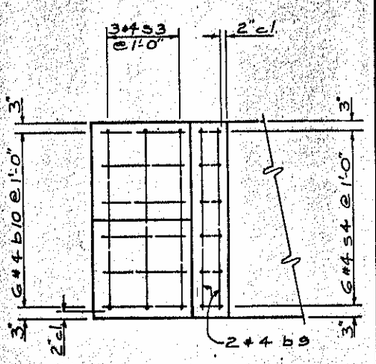
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-70
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J. E. CAPPS DATE 10-79
CHECKED BY K.G. PRIDGEN DATE FEB. 1980

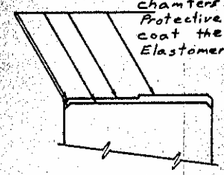
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F. A. PROJECT		



SECTION A-A



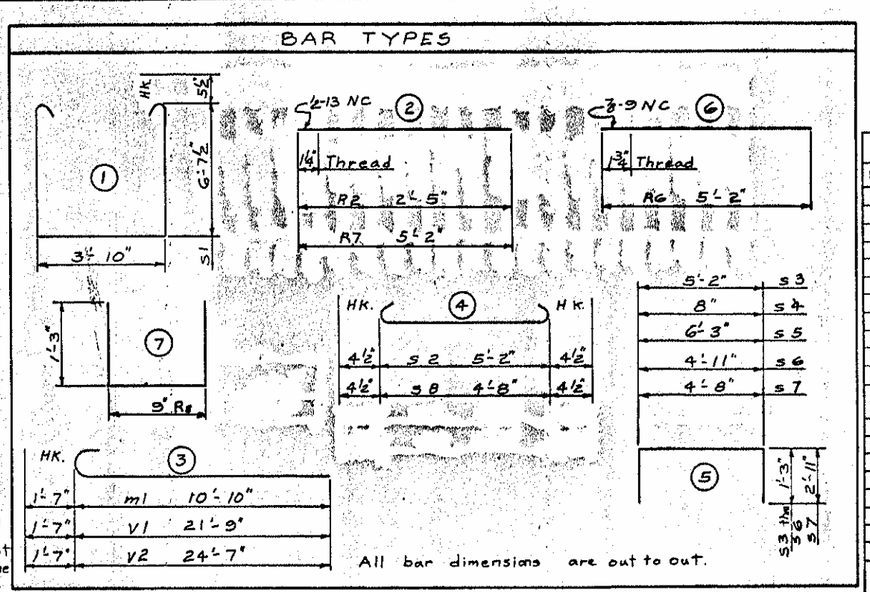
VIEW Z-Z



Coat all surface areas of top of cap including chamfers with Epoxy Protective coating. Do not coat the area under the Elastomeric Bearing.

PART SECTION OF CAP

BAR TYPES



All bar dimensions are out to out.

* Bars shall be ASTM-A615 - Grade 60.

Note: No separate payment will be made for threading reinforcing bars. The entire cost of this work shall be included in the unit contract price bid for reinforcing steel.

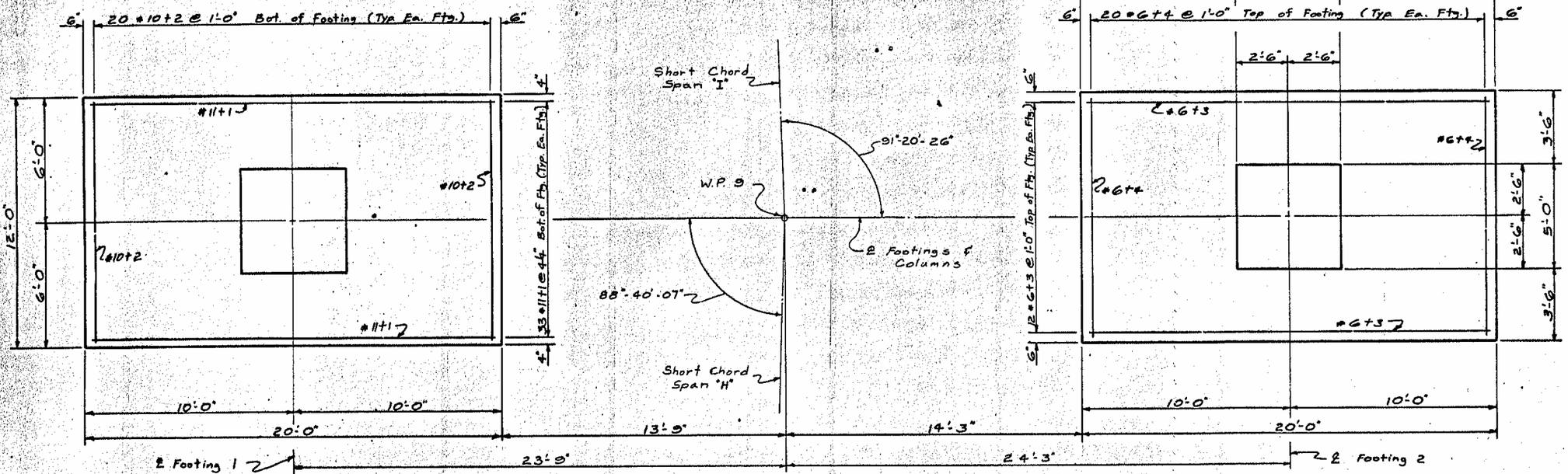
BILL OF MAT'L. CONT.					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
†1	66	#11	str.	19'-6"	6838
†2	40	#10	str.	11'-6"	1979
†3	24	#6	str.	19'-6	703
†4	40	#6	str.	11'-6"	691
V1	24	#11	3	23'-4"	2975
V2	24	#11	3	26'-2"	3337
Total					47,472

DIVISION OF CONCRETE	
Pour No.	Cubic Yards
1 (Footings)	80.0
2 (Columns)	32.1
3 (Cap)	120.3
4 (Catwalk)	6.5
Total	238.9

Reinforcing Steel, lbs.	47,472
Class A Concrete, Cu.Yds.	238.9

BILL OF MATERIAL FOR BENT 8

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*b1	8	#11	str.	60'-0"	2550
*b2	8	#11	str.	29'-6"	1254
*b3	4	#18	str.	44'-10"	2439
*b4	2	#18	str.	28'-10"	784
*b5	16	#11	str.	46'-1"	3917
*b6	12	#18	str.	31'-11"	5209
*b7	4	#18	str.	34'-8"	1886
*b8	24	#8	str.	43'-10"	2809
b9	33	#4	str.	5'-2"	114
b10	66	#4	str.	2'-6"	110
m1	48	#11	3	12'-5"	3167
S1	232	#5	1	18'-0"	4356
S2	66	#4	4	5'-11"	261
S3	33	#4	5	7'-8"	169
S4	12	#4	5	3'-2"	25
S5	8	#4	5	8'-9"	47
S6	10	#4	5	7'-5"	50
S7	70	#4	5	10'-6"	491
S8	140	#4	4	5'-5"	507
R1	18	#4	str.	28'-6"	343
R2	165	#4	2	2'-5"	266
R3	12	#4	str.	7'-8"	61
R4	3	#5	str.	6'-6"	20
R5	3	#4	str.	6'-3"	13
R6	5	#7	6	5'-2"	53
R7	5	#4	2	5'-2"	17
R8	13	#4	7	3'-3"	28
R9	1	#4	str.	5'-1"	3



PLAN OF FOOTINGS

Note: See Section X-X on sheet 2 of 3 For m1 bar spacing in Footings.

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 med. for

Sheet 3 of 3

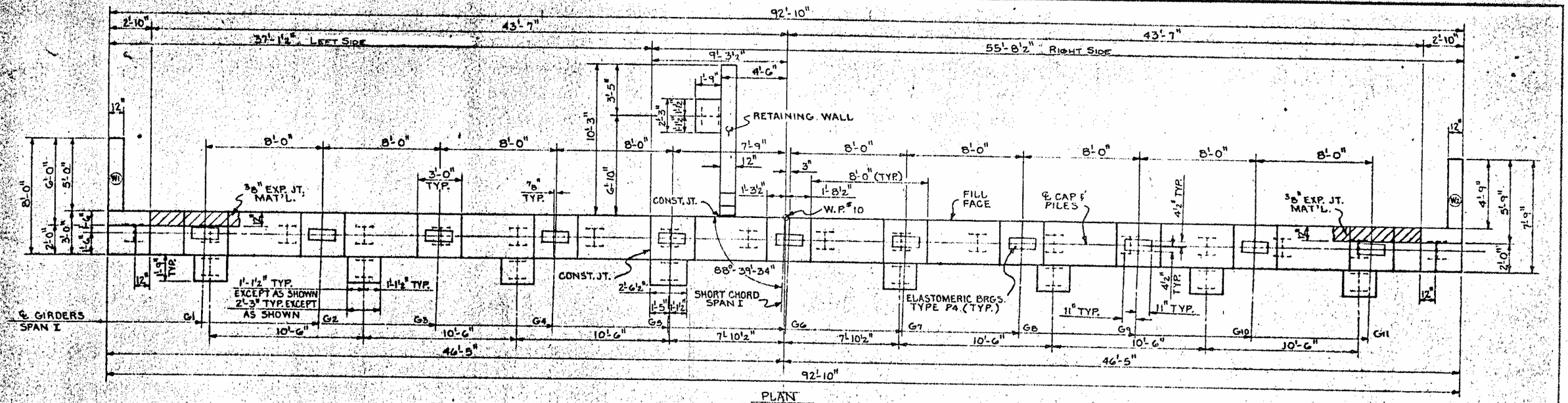
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT 8

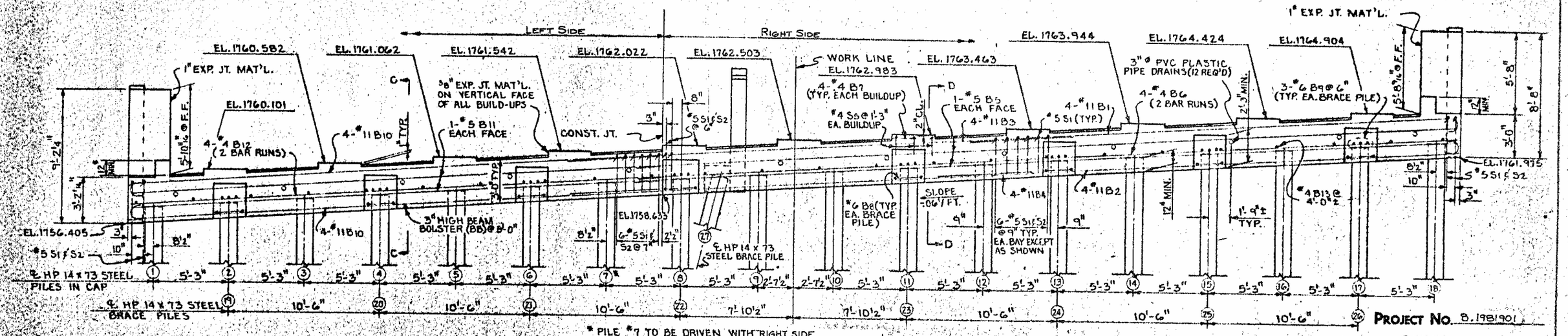
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-71
1			3			TOTAL SHEETS
2			4			77

DRAWN BY J. E. Capps DATE 10-79
CHECKED BY K.G. PRUDDEN DATE FEB. 1980



PLAN



* PILE #7 TO BE DRIVEN WITH RIGHT SIDE.

ELEVATION

	TOP OF PILE ELEVATIONS IN CAP			TOP OF BRACE PILE ELEVATIONS	
①	1757.543	⑩	1760.378	⑲	1757.858
②	1757.858	⑪	1760.693	⑳	1758.488
③	1758.173	⑫	1761.008	㉑	1759.118
④	1758.488	⑬	1761.323	㉒	1759.748
⑤	1758.803	⑭	1761.638	㉓	1760.693
⑥	1759.118	⑮	1761.953	㉔	1761.323
⑦	1759.433	⑯	1762.268	㉕	1761.953
⑧	1759.748	⑰	1762.583	㉖	1762.583
⑨	1760.063	⑱	1762.898	㉗	1759.920

NOTE:
PIPE DRAINS MAY BE SHIFTED IF NECESSARY TO CLEAR REINFORCING STEEL.

NOTE: B3 & B4 BARS TO PROJECT 6'-3" INTO LEFT SIDE.
B6 BARS TO PROJECT 1'-5" INTO LEFT SIDE.
B5 BARS TO PROJECT 1'-7" INTO LEFT SIDE.

DRAWN BY G. CLEMENT DATE 6-1979
CHECKED BY K.G. PERDIKEAS DATE JUNE 1979

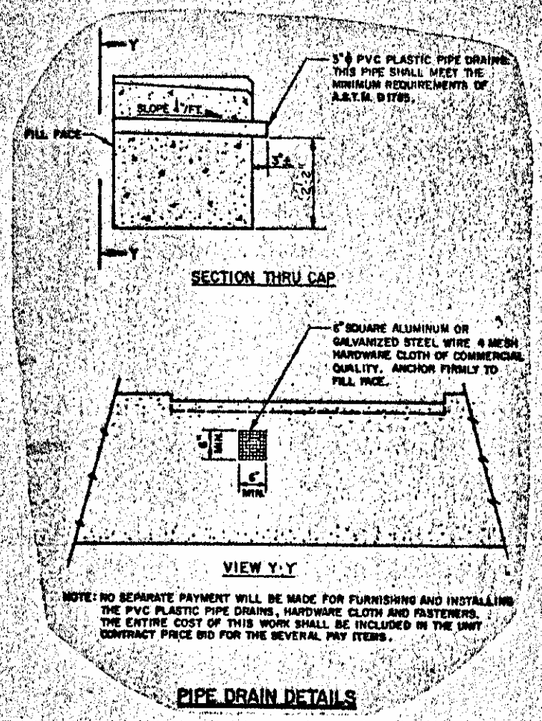
PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED-REV.
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

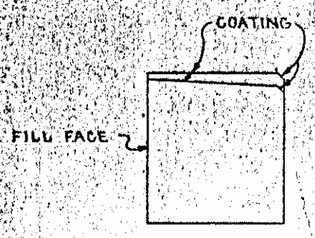
END BENT #2

JUNE 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			77



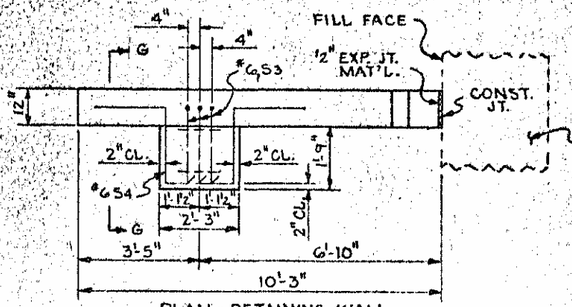
PIPE DRAIN DETAILS



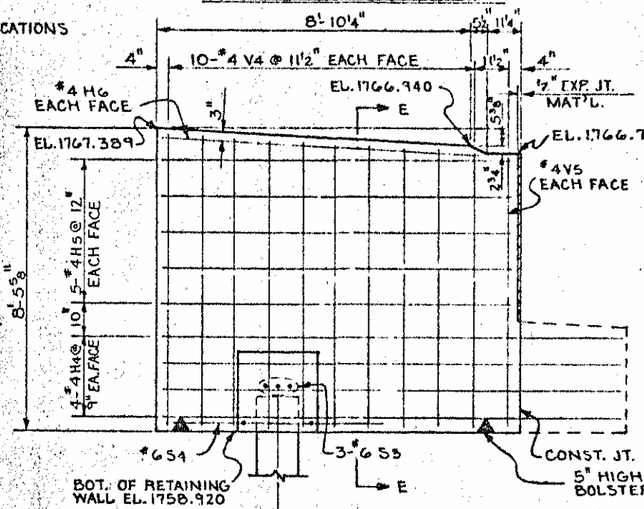
SKETCH SHOWING LIMITS OF EPOXY PROTECTIVE COATING

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

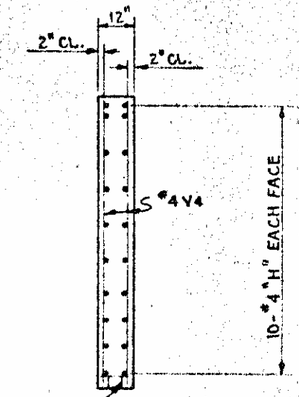
COAT ALL SURFACE AREAS OF THE TOP OF CAP INCLUDING CHAMFERS. DO NOT COAT THE AREA UNDER THE ELASTOMERIC BEARINGS. AREA UNDER CURTAIN WALL MAY OR MAY NOT BE COATED.



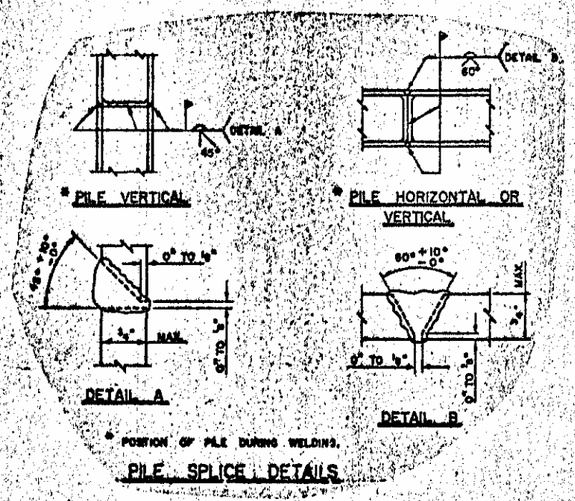
PLAN - RETAINING WALL



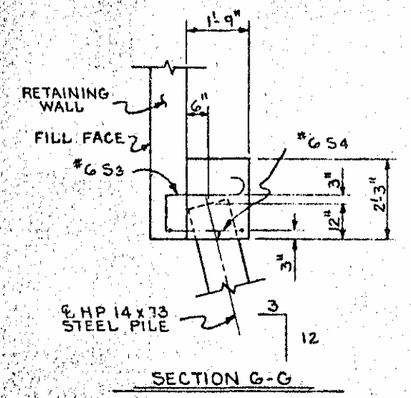
ELEVATION - RETAINING WALL



SECTION E-E



PILE SPLICE DETAILS



SECTION G-G

DRAWN BY: G. DEMENT DATE: 6-1979
CHECKED BY: K.G. PRIBBENOW DATE: JUNE 1979

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.
SHEET 2 OF 3

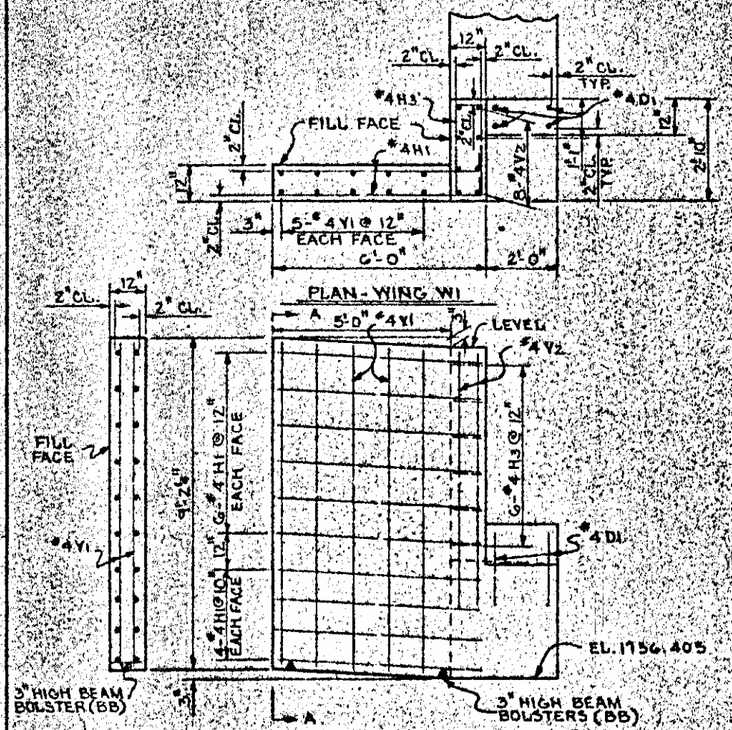
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

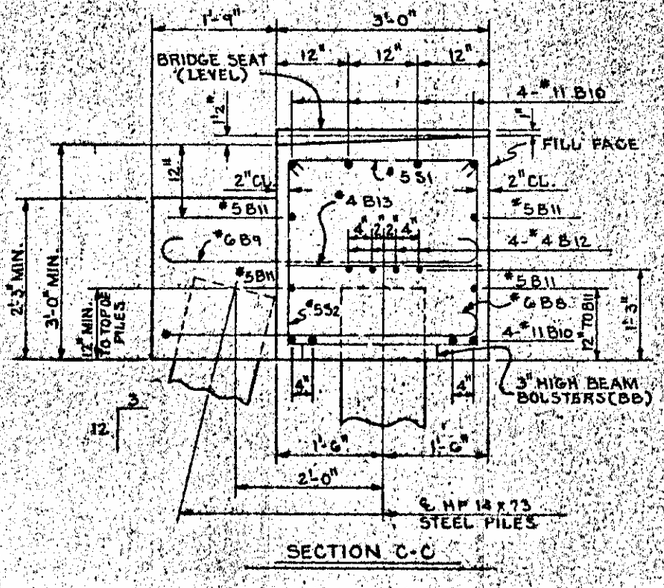
END BENT #2

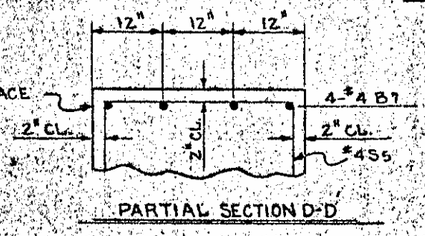
JUNE 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-73
1			3			TOTAL SHEETS
2			4			77

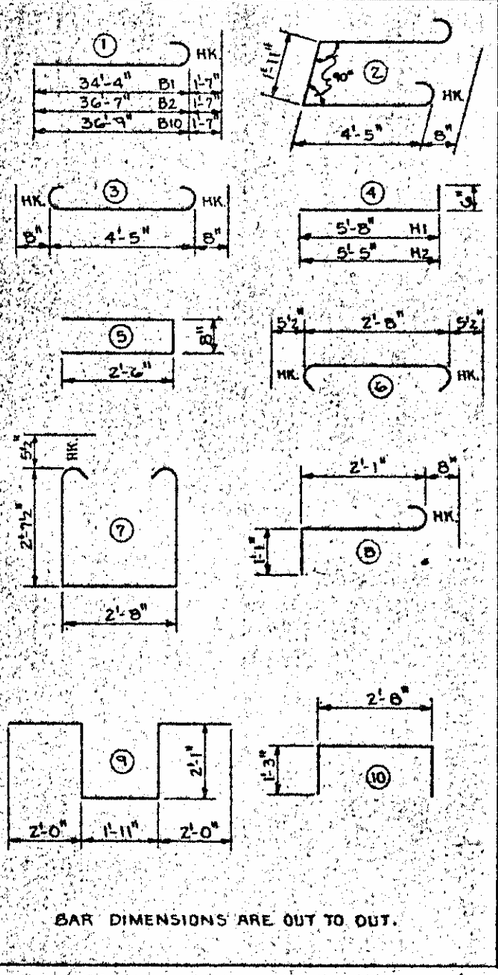
FED. ROAD DIV. NO.	STATE	PROJECT NO.
9	N.C.	
F. A. PROJECT		







BAR TYPES



BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT # 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	11	1	35-11"	762
B2	4	11	1	38'-2"	81
B3	4	11	STR	34'-11"	743
B4	4	11	STR	31'-11"	679
B5	4	5	STR	57'-1"	239
B6	8	4	STR	24'-3"	196
B7	44	4	STR	2'-8"	78
B8	8	6	2	12'-1"	145
B9	24	6	3	5'-1"	207
B10	8	11	1	38'-4"	1627
B11	4	5	STR	36'-9"	153
B12	8	4	STR	19'-3"	103
B13	24	4	STR	2'-8"	43
D1	8	4	STR	2'-0"	11
H1	20	4	4	6'-2"	82
H2	18	4	4	5'-11"	71
H3	12	4	5	6'-8"	45
H4	8	4	STR	12'-11"	69
H5	10	4	STR	9'-10"	66
H6	2	4	STR	8'-10"	12
S1	108	5	6	3'-7"	404
S2	108	5	7	8'-10"	994
S3	2	6	8	2'-10"	17
S4	1	6	9	10'-1"	15
S5	33	4	10	5'-2"	114
Y1	10	4	STR	8'-10"	59
Y2	16	4	STR	6'-11"	74
Y3	10	4	STR	8'-4"	56
Y4	20	4	STR	7'-7"	101
Y5	2	4	STR	7'-5"	10
REINFORCING STEEL, LBS.					7947
CLASS "A" CONCRETE, CU.YDS.					43.3
HP 14 x 73 STEEL PILES					
NO. 27 , LIN. FT.					675

CONCRETE BREAKDOWN

RIGHT SIDE	26.9 CU. YDS.
LEFT SIDE	16.4 CU. YDS.
TOTAL =	43.3 CU. YDS.

PROJECT NO. B-1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 3 OF 3

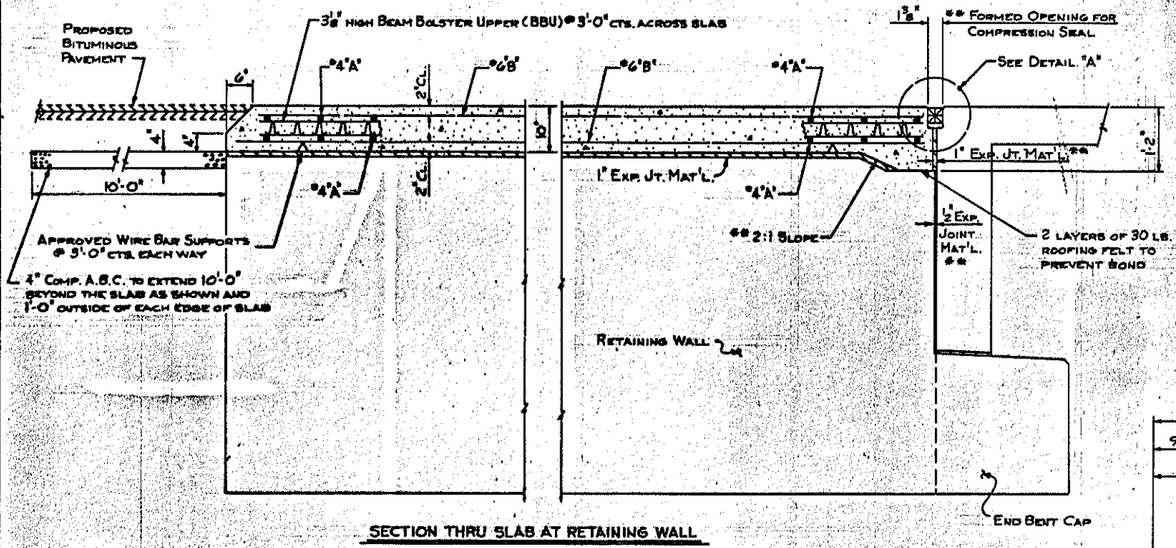
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

END BENT # 2

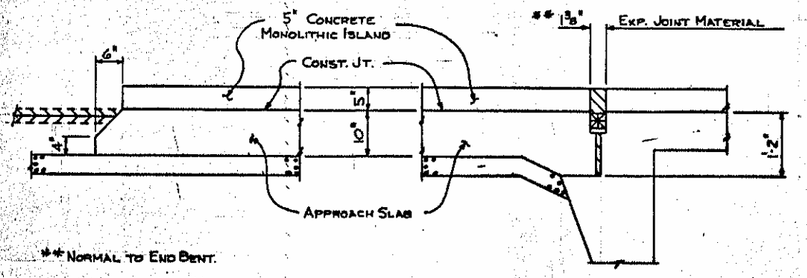
JUNE 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-74
1			3			TOTAL SHEETS
2			4			77

DRAWN BY C. CLEMENT DATE 6-1979
CHECKED BY K.G. FRIDGEN DATE JULY 1979

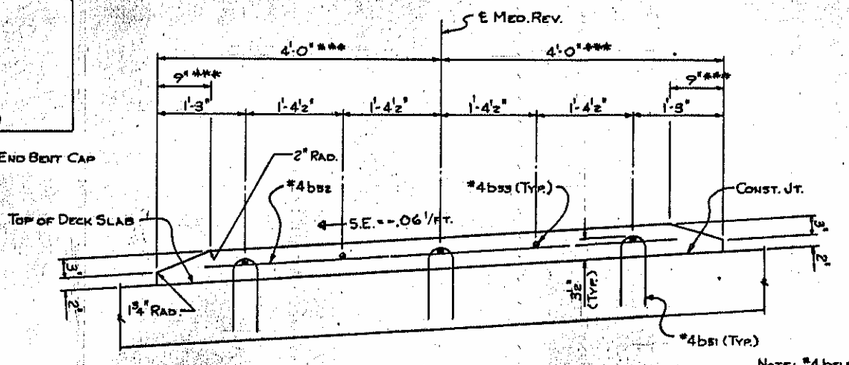


SECTION THRU SLAB AT RETAINING WALL



** NORMAL TO END BENT.

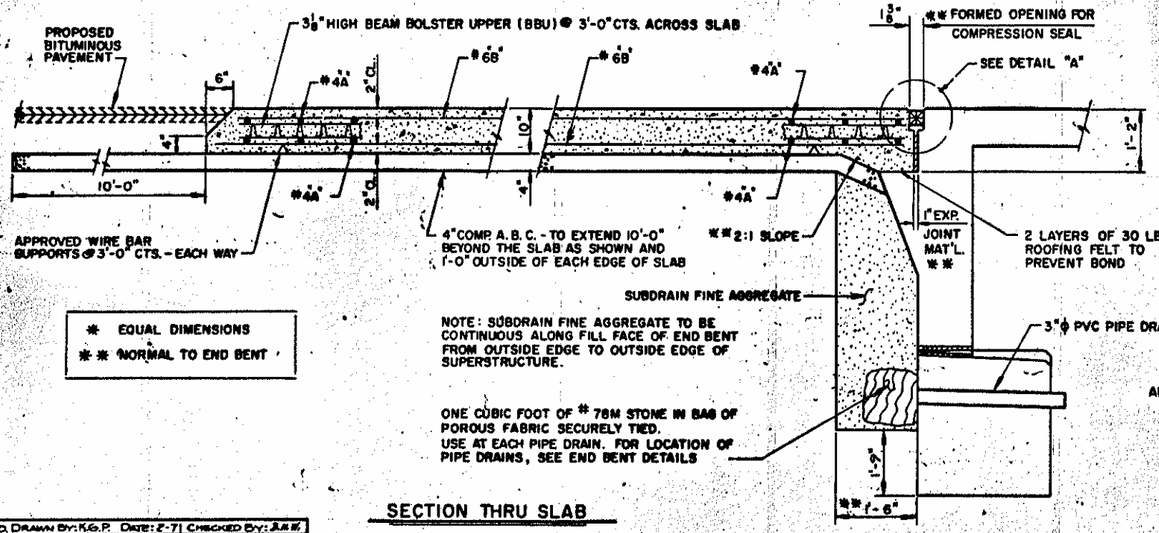
SECTION THRU SLAB AND 5" CONCRETE MONOLITHIC ISLAND



SECTION THRU ISLAND

NOTE: #4 b5l BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB IS SCREEDED OFF.

*** DENOTES RADIAL DIMENSIONS.

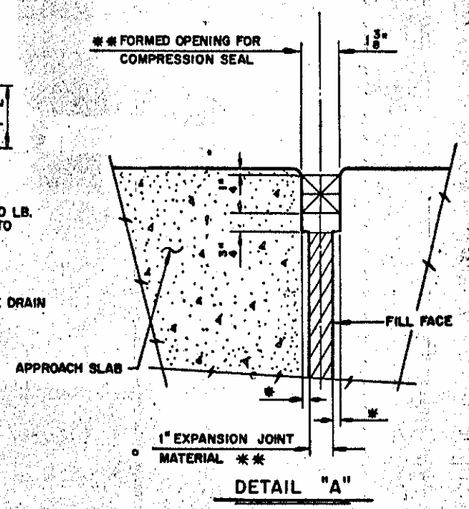


* EQUAL DIMENSIONS
** NORMAL TO END BENT

NOTE: SUBDRAIN FINE AGGREGATE TO BE CONTINUOUS ALONG FILL FACE OF END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF SUPERSTRUCTURE.

ONE CUBIC FOOT OF # 78M STONE IN BAG OF POROUS FABRIC SECURELY TIED. USE AT EACH PIPE DRAIN. FOR LOCATION OF PIPE DRAINS, SEE END BENT DETAILS

SECTION THRU SLAB



DETAIL "A"

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2".

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE CONCRETE ISLAND. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR THE BRIDGE APPROACH SLABS.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT

REVISED 4-1-79 BY: CC M CHECKED BY: R.D.U.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.U.

STD. DRAWN BY: K.G.P. DATE: 2-71 CHECKED BY: J.M.E.
DRAWN BY K. G. PRIDGEN DATE JULY 1979
CHECKED BY J. F. GEPPS DATE 7-79

PROJECT NO. 8.1981901
SWAIN COUNTY
STATION: 181+35 MED. REV.
SHEET 1 OF 3

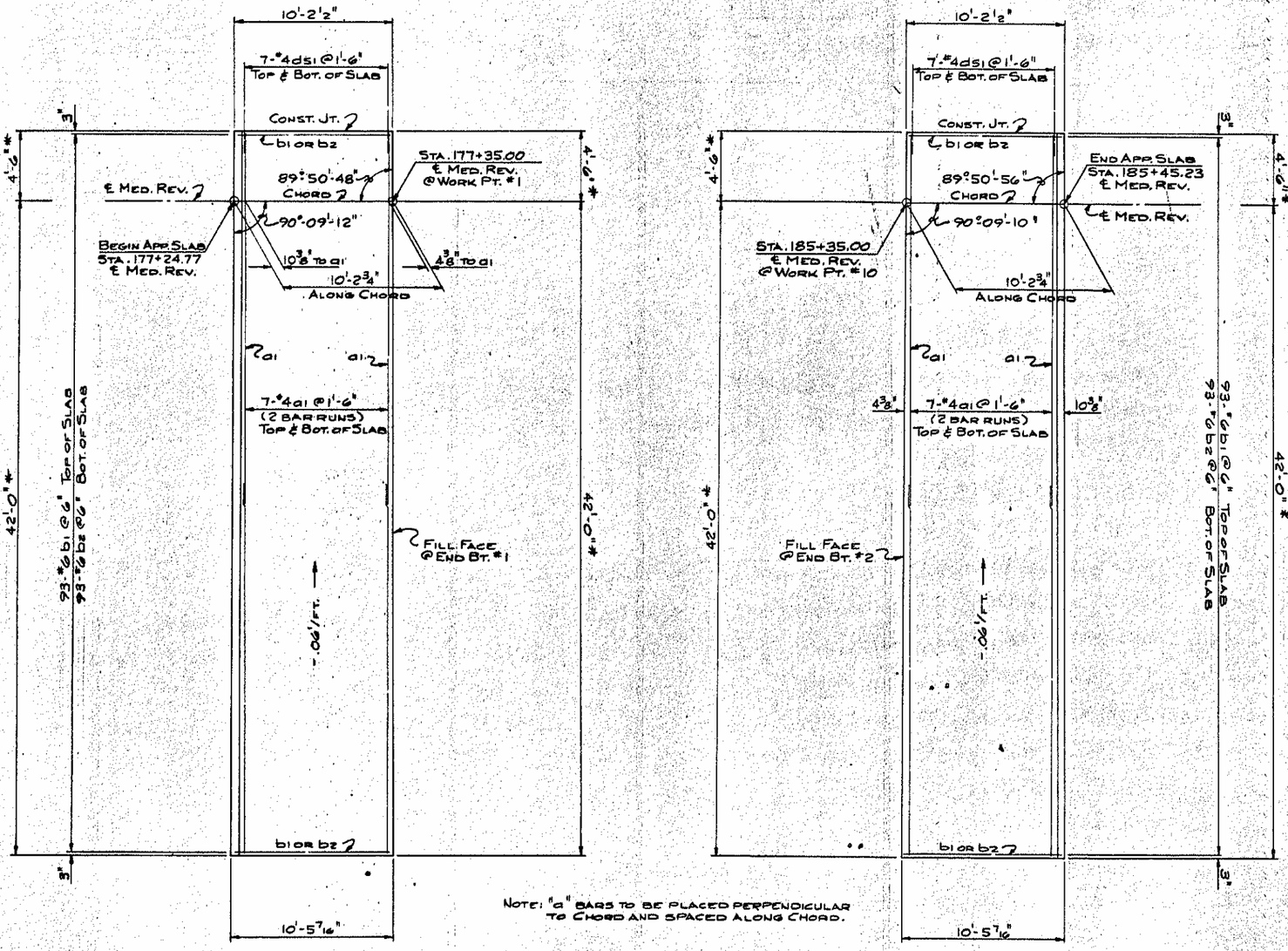
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

JULY 1978

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-73
1			3			TOTAL SHEETS
2			4			77

STD. NO. BAS2



NOTE: "a" BARS TO BE PLACED PERPENDICULAR TO CHORD AND SPACED ALONG CHORD.

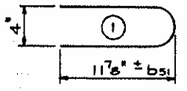
PLAN

BILL OF MATERIAL					
APPROACH SLAB AT END BT. #1 RIGHT SIDE					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
a1	28	4	STR.	23'-8"	443
b1	93	6	STR.	9'-4"	1304
b2	93	6	STR.	9'-9"	1362
ds1	14	4	STR.	2'-8"	25
REINFORCING STEEL, LBS. 3134					
CLASS AA CONCRETE, CU. YDS. 15.2					

BILL OF MATERIAL					
APPROACH SLAB AT END BT. #2 RIGHT SIDE					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
a1	28	4	STR.	23'-8"	443
b1	93	6	STR.	9'-4"	1304
b2	93	6	STR.	9'-9"	1362
ds1	14	4	STR.	2'-8"	25
REINFORCING STEEL, LBS. 3134					
CLASS AA CONCRETE, CU. YDS. 15.2					

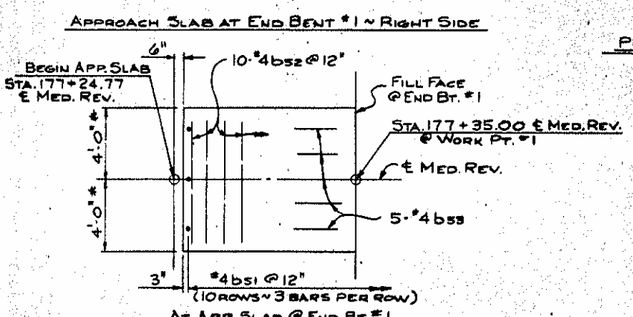
BILL OF MATERIAL					
5" CONCRETE MONOLITHIC ISLAND AT END BT. #1					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
bs1	30	4	1	2'-2"	43
bs2	10	4	STR.	6'-8"	45
bs3	5	4	STR.	9'-4"	31
REINFORCING STEEL, LBS. 119					
CLASS AA CONCRETE, CU. YDS. 1.1					

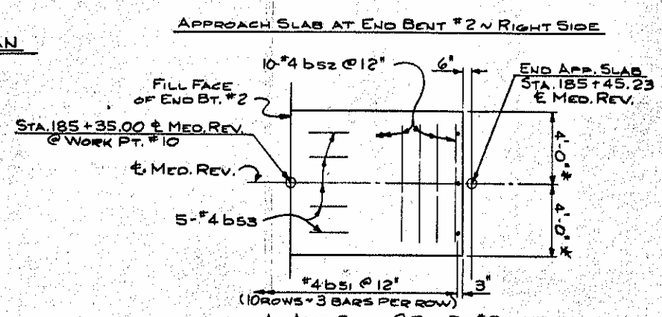
BILL OF MATERIAL					
5" CONCRETE MONOLITHIC ISLAND AT END BT. #2					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
bs1	30	4	1	2'-2"	43
bs2	10	4	STR.	6'-8"	45
bs3	5	4	STR.	9'-4"	31
REINFORCING STEEL, LBS. 119					
CLASS AA CONCRETE, CU. YDS. 1.1					



BAR TYPES

BAR DIMENSIONS ARE OUT TO OUT.





PLAN OF 5" CONCRETE MONOLITHIC ISLAND

* DENOTES RADIAL DIMENSIONS.

NOTE: ALL CURVE OFFSETS ARE NEGLIGIBLE.

NOTE: FOR ISLAND DETAILS, SEE SHEET 1 OF 3.

NOTE: SEE SUPERSTRUCTURE PRESET ANCHOR UNIT SHEET FOR LOCATION OF UNITS FOR TEMPORARY GUARD RAIL ANCHORAGE.

DRAWN BY K. G. PRIDGEN DATE JULY 1979
CHECKED BY J. E. COPPS DATE 7-79

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

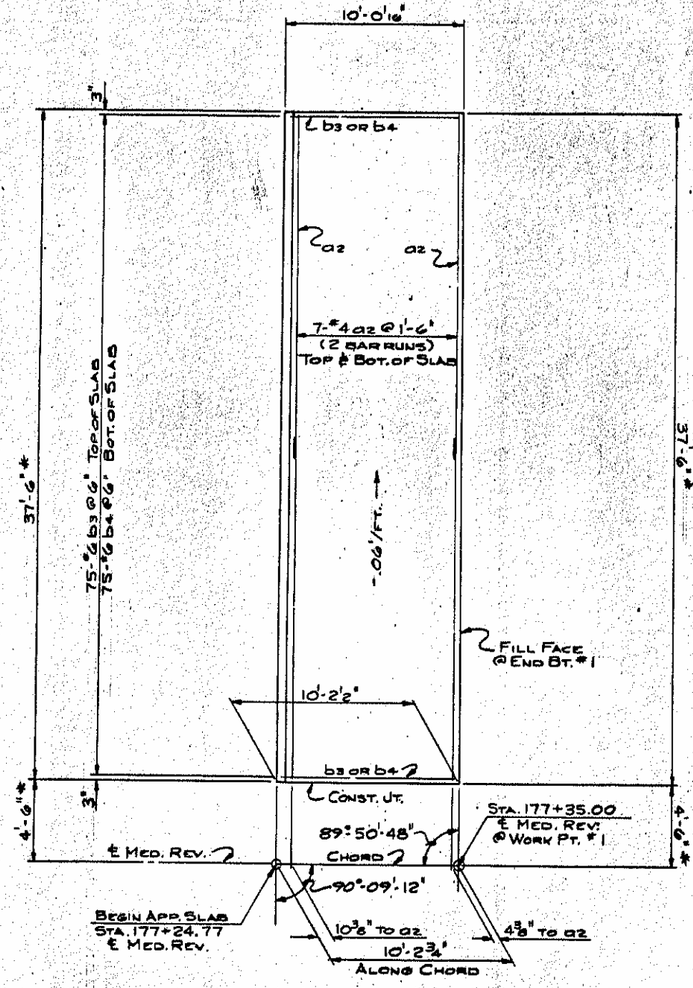
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

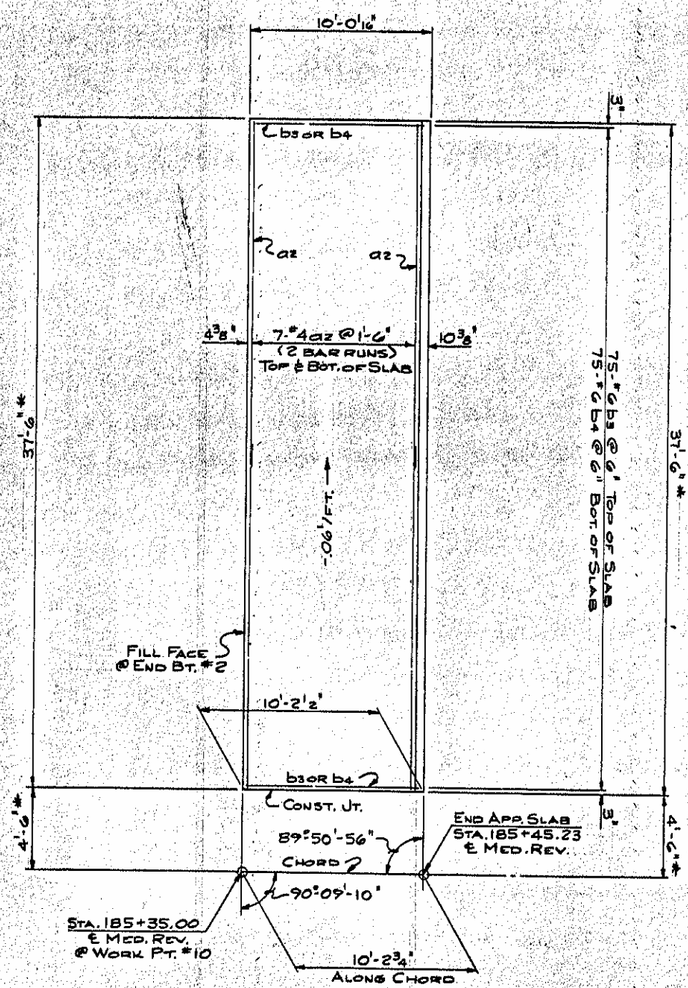
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT
RIGHT SIDE

JULY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-76
1			3			TOTAL SHEETS
2			4			77



APPROACH SLAB AT END BENT #1 ~ LEFT SIDE



APPROACH SLAB AT END BENT #2 ~ LEFT SIDE

PLAN

NOTE: 'a' BARS TO BE PLACED PERPENDICULAR TO CHORD AND SPACED ALONG CHORD.

NOTE: ALL CURVE OFFSETS ARE NEGLIGIBLE.

* DENOTES RADIAL DIMENSIONS.

BILL OF MATERIAL					
APPROACH SLAB AT END BT. #1 LEFT SIDE					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
a2	28	4	STR.	19'-2"	358
b3	75	6	STR.	9'-2"	1033
b4	75	6	STR.	9'-7"	1080
REINFORCING STEEL, LBS. 2471					
CLASS AA CONCRETE, CU. YDS. 12.0					

BILL OF MATERIAL					
APPROACH SLAB AT END BT. #2 LEFT SIDE					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
a2	28	4	STR.	19'-2"	358
b3	75	6	STR.	9'-2"	1033
b4	75	6	STR.	9'-7"	1080
REINFORCING STEEL, LBS. 2471					
CLASS AA CONCRETE, CU. YDS. 12.0					

PROJECT NO. 8.1981901

SWAIN COUNTY

STATION: 181+35 MED. REV.

SHEET 3 OF 3

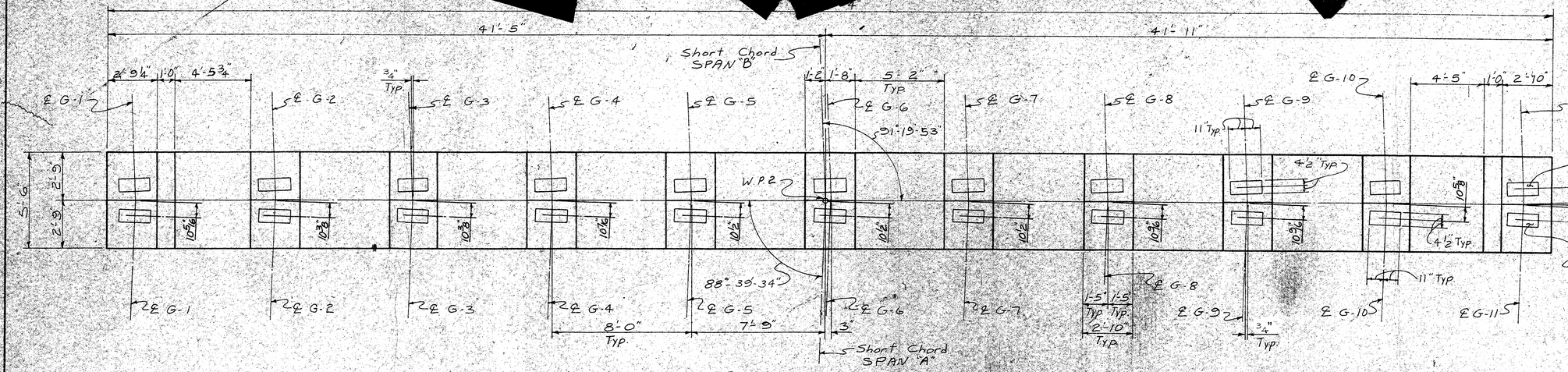
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT LEFT SIDE

JULY 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-77
1			3			TOTAL SHEETS
2			4			77

D. DWN BY K. G. PRIDGEN DATE JULY 1979
C. ICKED BY J. E. Capps DATE 7-79



PLAN OF CAP

Near Side El. 1749.734
Far Side El. 1749.708

N.S. El. 1750.214
F.S. El. 1750.188

N.S. El. 1750.694
F.S. El. 1750.668

N.S. El. 1751.174
F.S. El. 1751.148

N.S. El. 1751.654
F.S. El. 1751.628

N.S. El. 1752.133
F.S. El. 1752.109

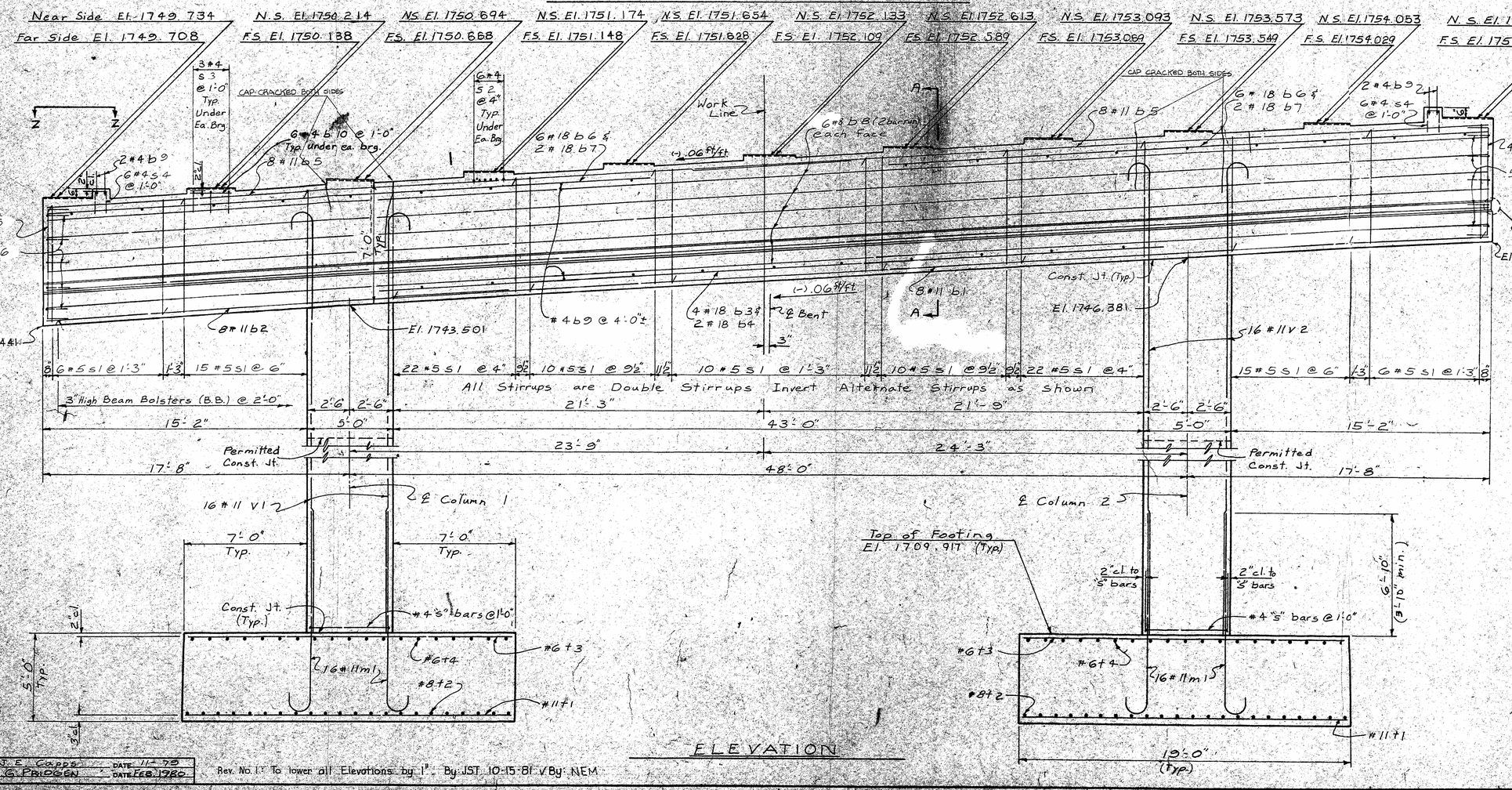
N.S. El. 1752.613
F.S. El. 1752.589

N.S. El. 1753.093
F.S. El. 1753.069

N.S. El. 1753.573
F.S. El. 1753.549

N.S. El. 1754.053
F.S. El. 1754.029

N.S. El. 1754.533
F.S. El. 1754.509



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of this bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, see "Part Plan of Cap" on Sheet 2 of 3.

For location of Preset Anchor Inserts, see Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S N.

Br. # 19-99-20

US19 over Little Tenn River near Lauada

PROJECT NO. 8.1981901

SWAIN **COUNTY**

STATION: 181+35 med. Rev.

Sheet 1 of 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

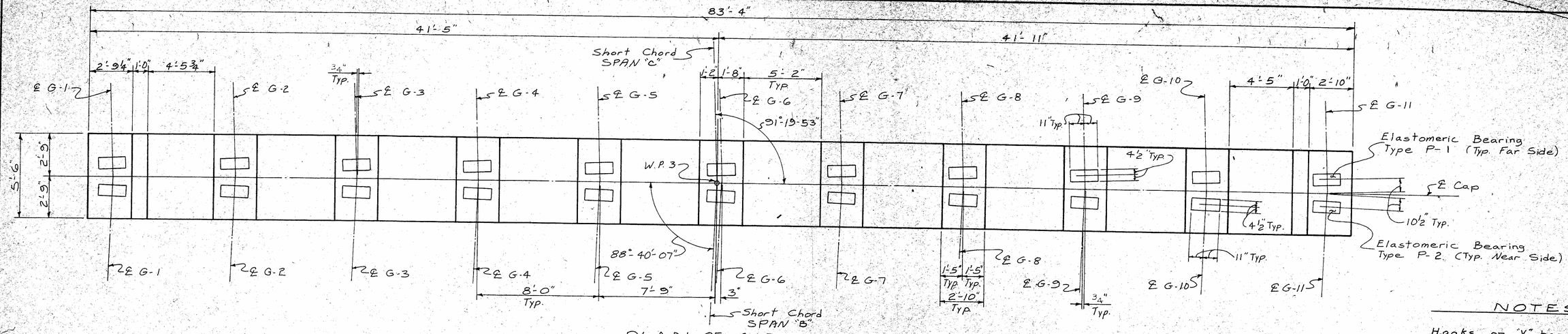
SUBSTRUCTURE
BENT 1

Nov. 1979

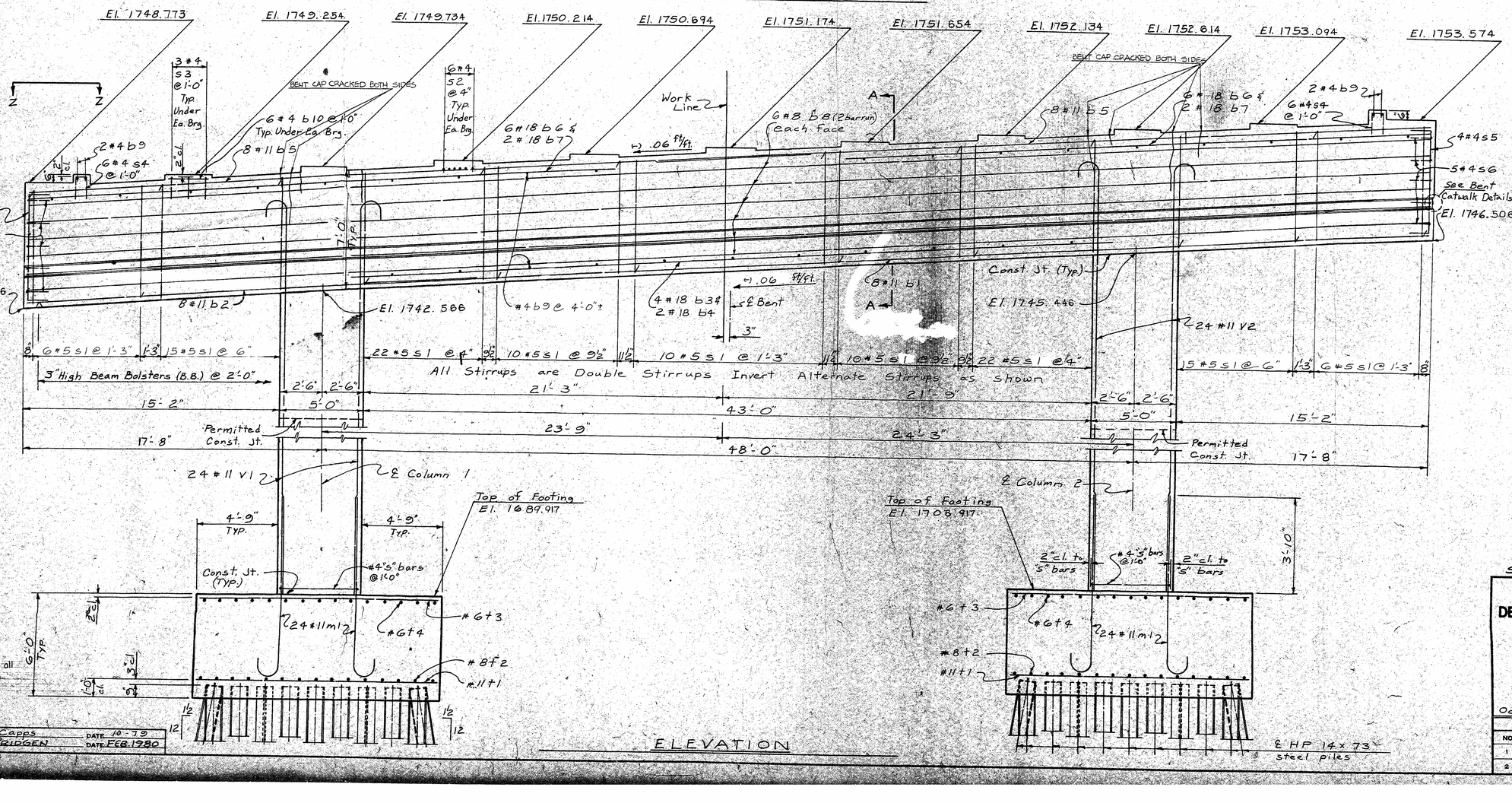
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-48
1.	JST	10-15-81	3.			TOTAL SHEETS
2.			4.			77

DRAWN BY: J. E. Capps DATE: 11-79
CHECKED BY: K. G. PRIDGEN DATE: FEB. 1980

Rev. No. 1: To lower all Elevations by 1'. By: JST 10-15-81 √By: NEM



PLAN OF CAP



ELEVATION

NOTES

H.ooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, see "Part Plan of Cap" on sheet 2.f3

For location of Preset Anchor Inserts, see Bent Catwalk Details.

For Pile Splice Details, see End Bent 2.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet SN.

Rev. No. 1: To lower all Elevations by 1'. By: JST 10-15-81 ✓By: NEM

DRAWN BY: J.E. Capps DATE: 10-79
CHECKED BY: K.G. PRIDGEN DATE: FEB. 1980

PROJECT NO. 8.1981901
SWAIN **COUNTY**
STATION: 181+35 med. Rev.
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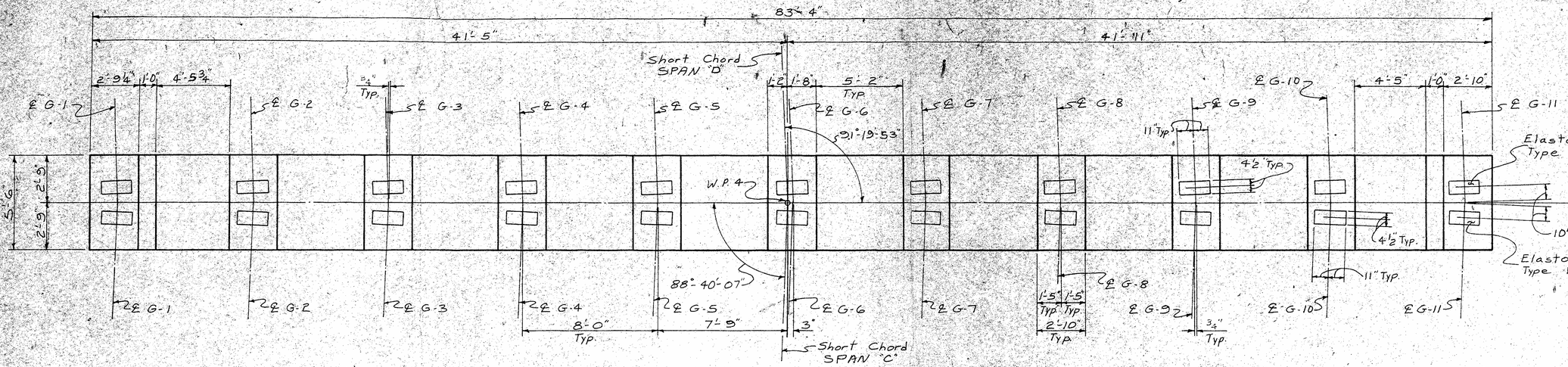
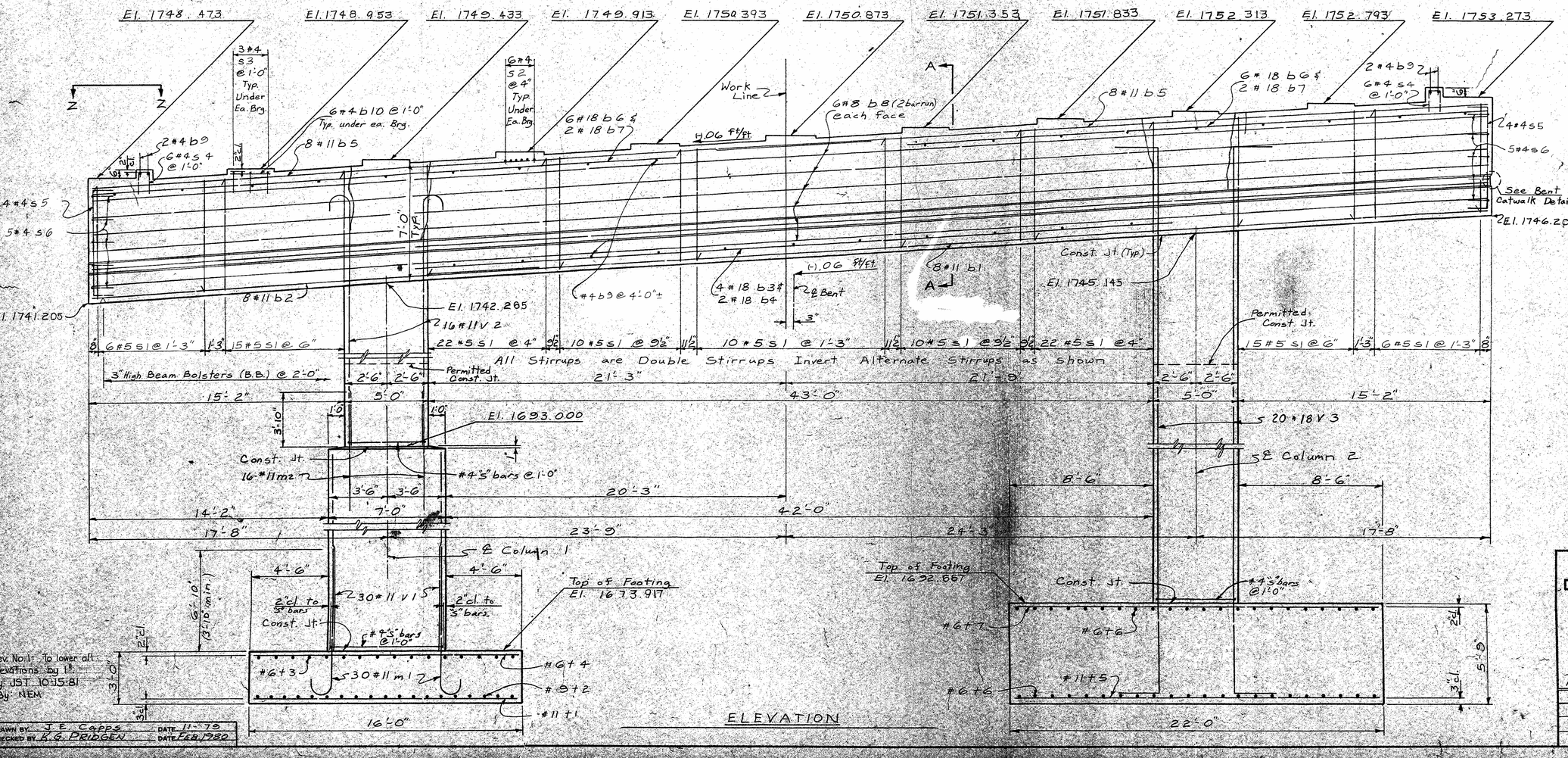
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-51
1	JST	10-15-81	3			TOTAL SHEETS
2			4			77



PLAN OF CAP



NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, see "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, see Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See sheet S.N.

Rev. No. 1 - To lower all Elevations by 1'. By JST 10-15-81 ✓By NEM

DRAWN BY J. E. Capps DATE 11-79
CHECKED BY K. G. PRIDGEN DATE FEB. 1980

PROJECT NO. 8.1981901
SWAIN **COUNTY**
STATION: 181+35 med. Rev.
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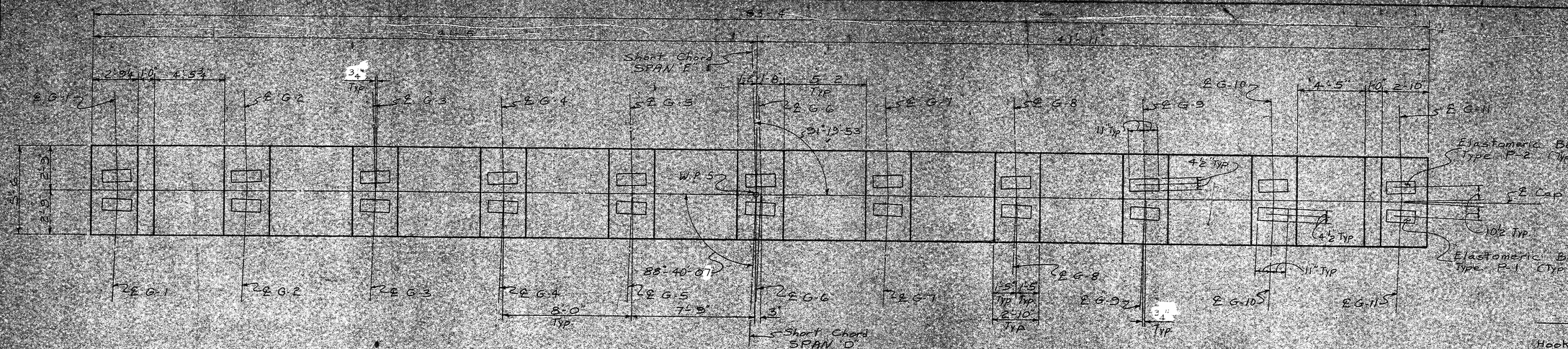
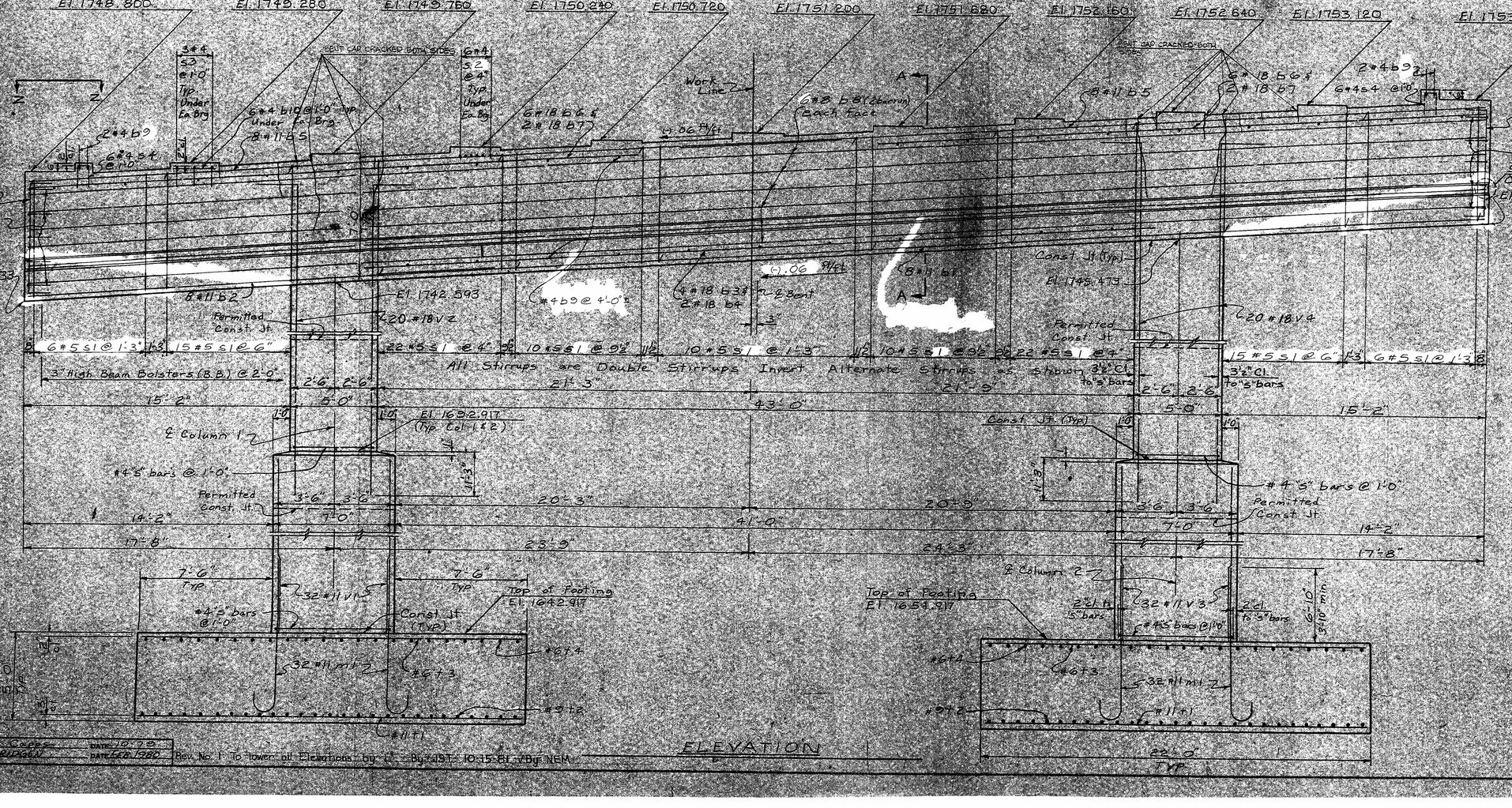
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 3
Nov. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-54
1	JST	10-15-81	3			TOTAL SHEETS
2			4			77



PLAN OF CAP



ELEVATION

NOTES

(Hooks on Y bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, See Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See Part Plan of Cap" on sheet 2 of 3.

For location of Precast Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S.N.

PROJECT NO. 8.1981901

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STATE OF NORTH CAROLINA
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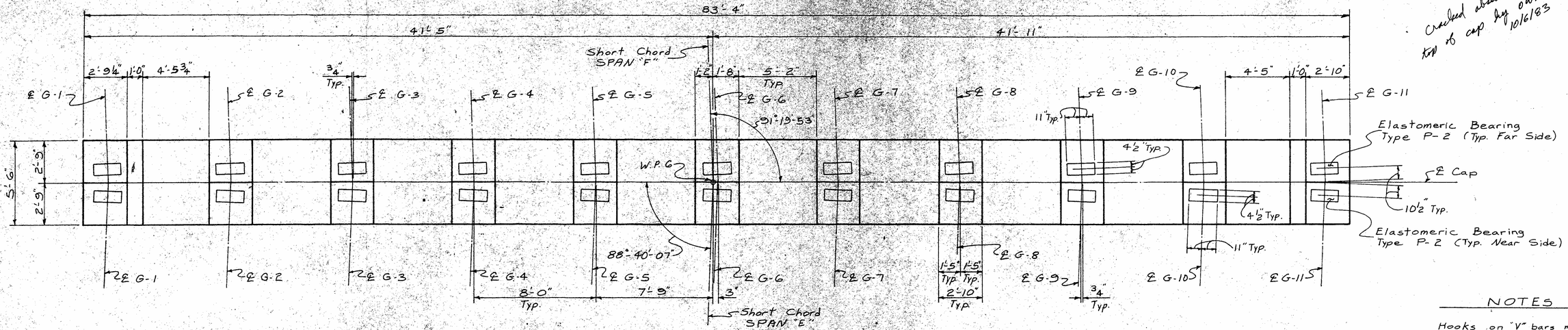
SUBSTRUCTURE
BENT 4.

Oct. 1979

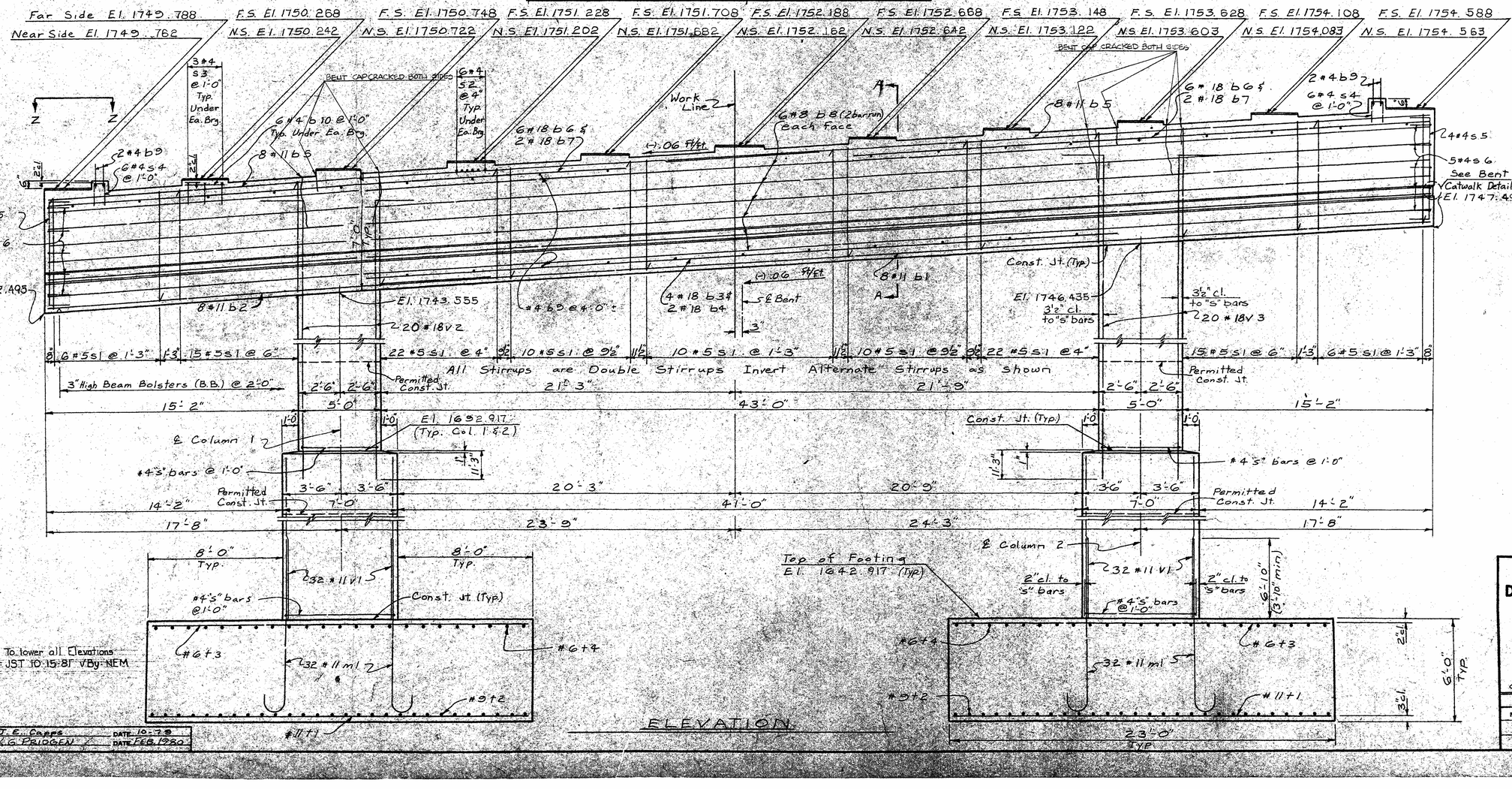
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-57
1	JST	10-15-81	3				TOTAL SHEETS
2			4				77

Drawn By: J. E. Cope Date: 10-79
Checked By: K. G. Pridgen Date: 12-6-1982
Rev. No. 1 To lower all Elevations by .5' By: JST 10-15-81 By: NEM

Cracked shear cross key to cap dwg. 10/16/83



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for false work and forms for this bent cap shall be submitted. See Sheet SN.

Rev. No 1: To lower all Elevations by 1". By: JST 10-15-81 VBy: NEM

DRAWN BY: J. E. Capps DATE: 10-79
CHECKED BY: K.G. Pridgen DATE: FEB. 1980

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SWAIN **COUNTY**
STATION: 181+35 med. Rev.
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STATE OF NORTH CAROLINA
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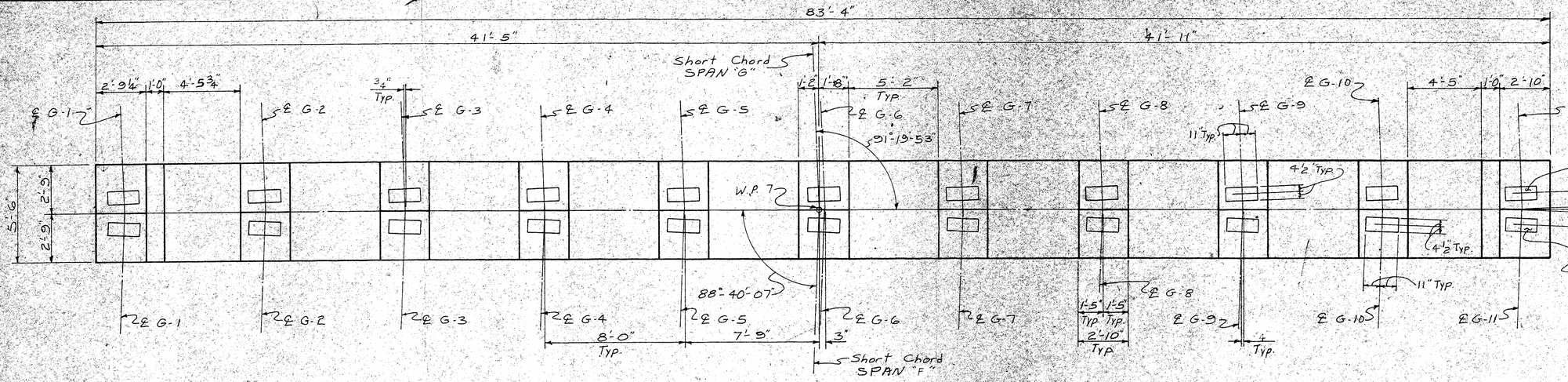
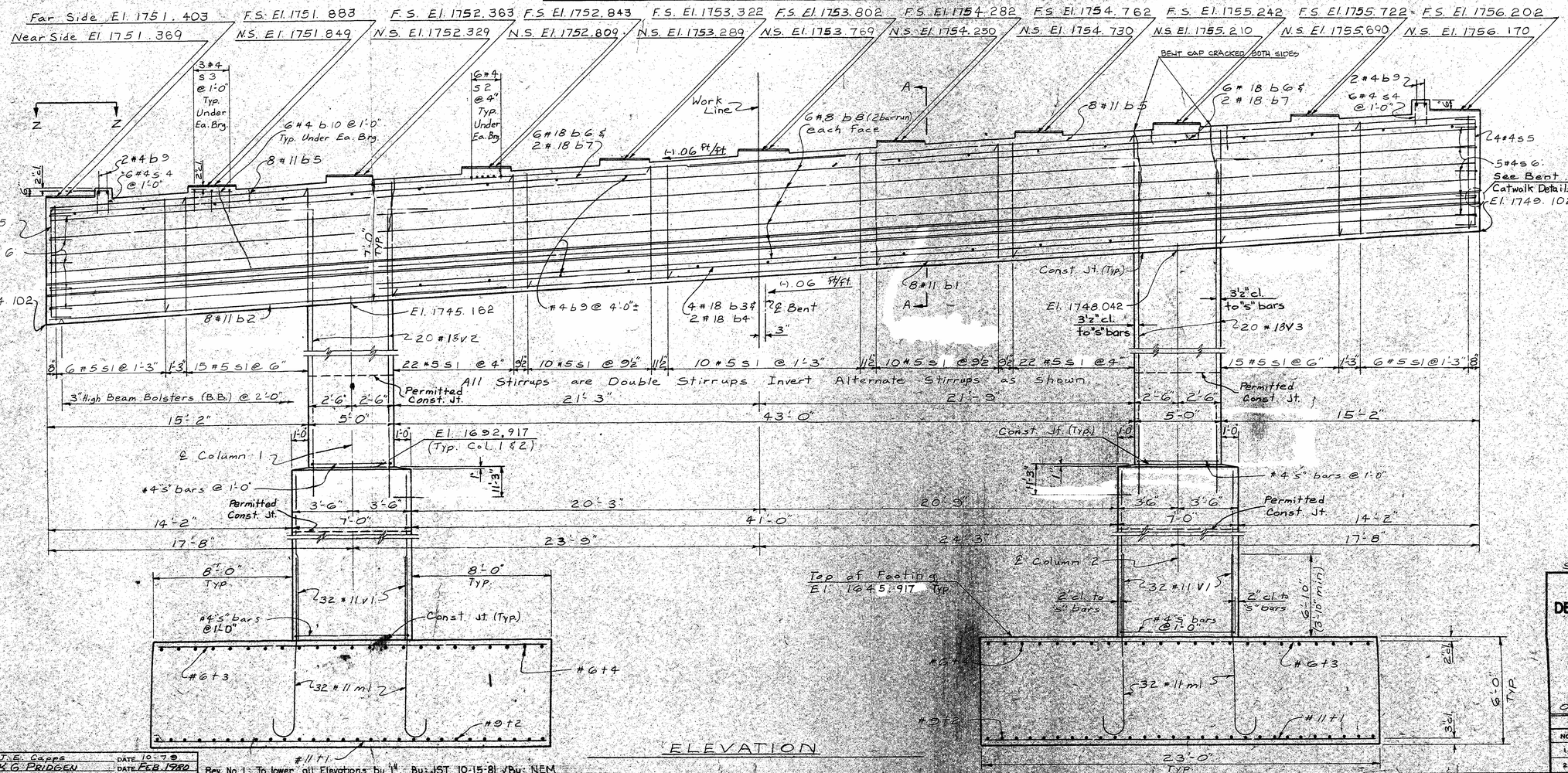
RALEIGH
SUBSTRUCTURE
BENT 5
Oct. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-60
1	JST	10-15-81	3			TOTAL SHEETS
2			4			77



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars See Part Plan of Cap on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet SN.

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SWAIN COUNTY

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RALEIGH

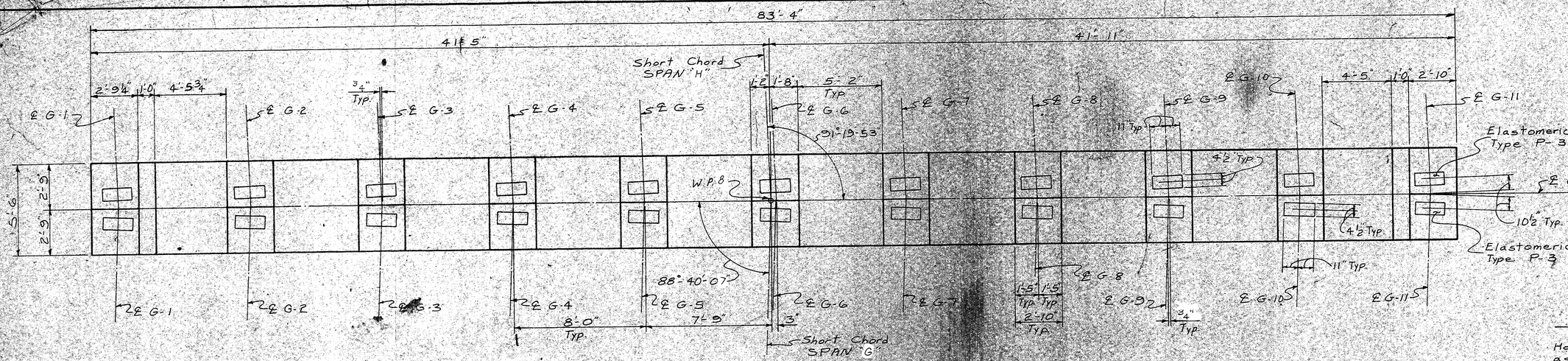
SUBSTRUCTURE
BENT 6

Oct. 1979

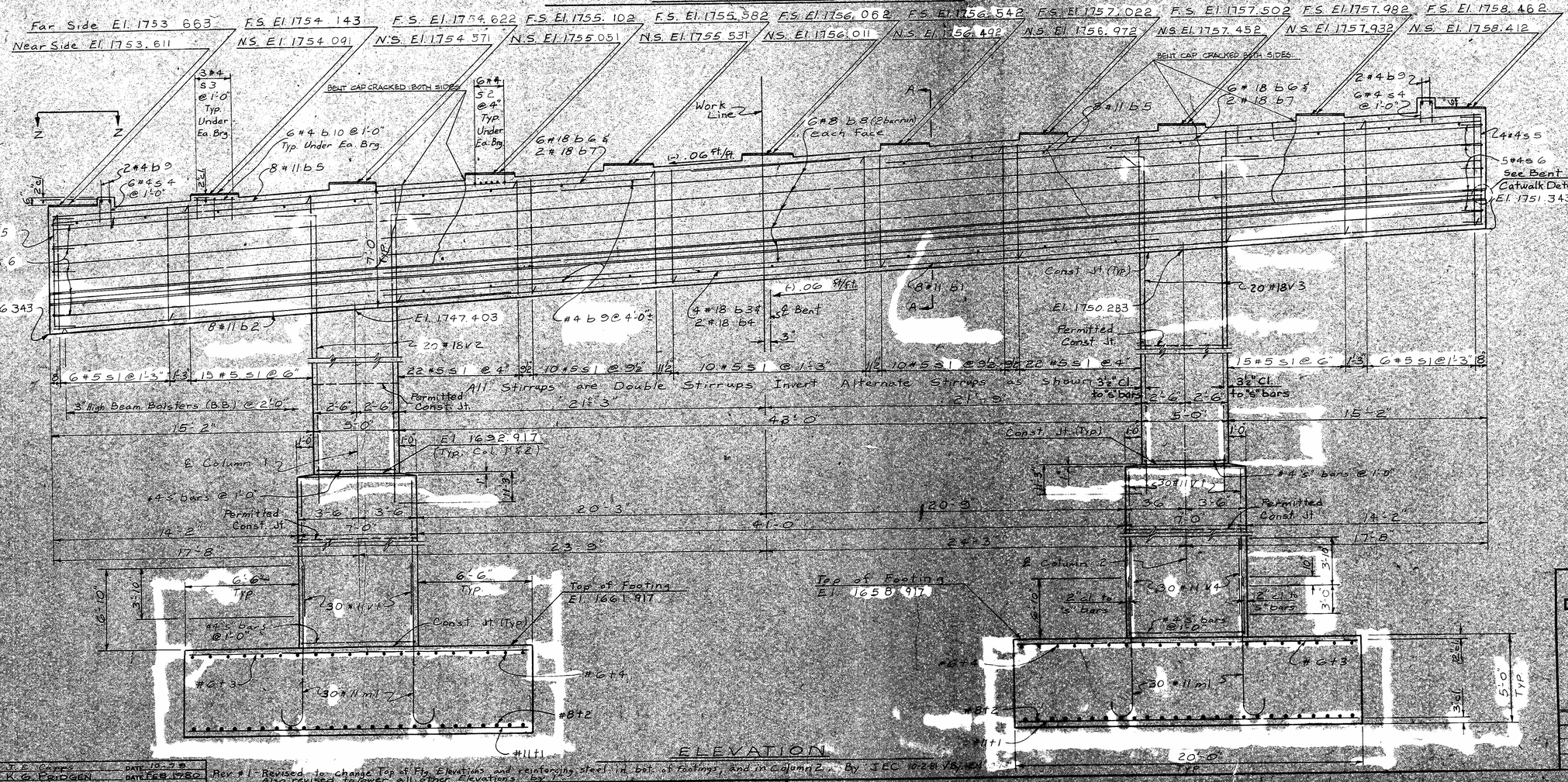
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-63
1.	JST	10-15-81	3			TOTAL SHEETS
2			4			77

DRAWN BY J.E. Capps DATE 10-79
CHECKED BY K.G. PRIDGEN DATE FEB 1980

Rev. No. 1 To lower all Elevations by 1" By: JST 10-15-81 By: NEM



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating, see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars See "Part Plan of Cap" on sheet 2 of 3

For location of Preset Anchor Inserts, see Bent Catwalk Details

Plans for falsework and forms for this bent cap shall be submitted See Sheet S.N.

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SWAIN COUNTY

STATION: 181+35 med Rev.

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STATE OF NORTH CAROLINA
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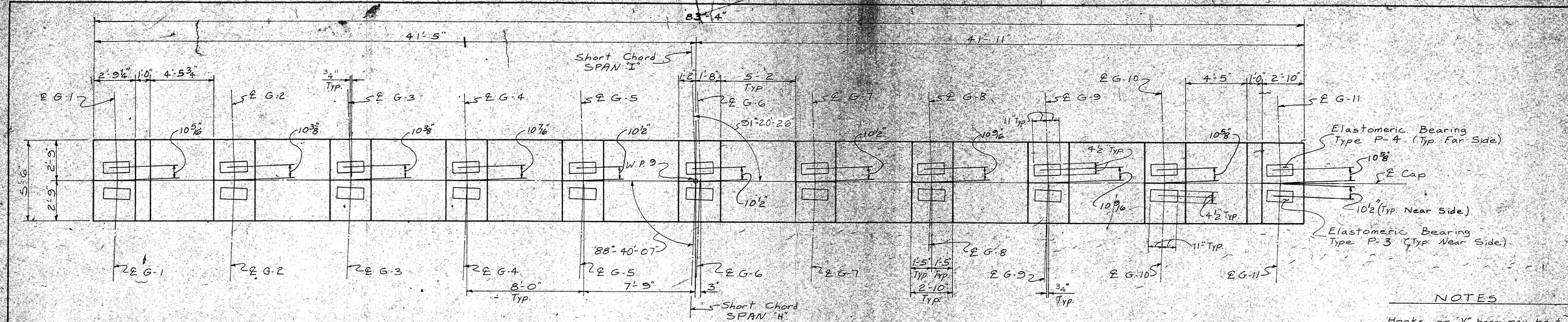
SUBSTRUCTURE BENT 1

Oct. 1979

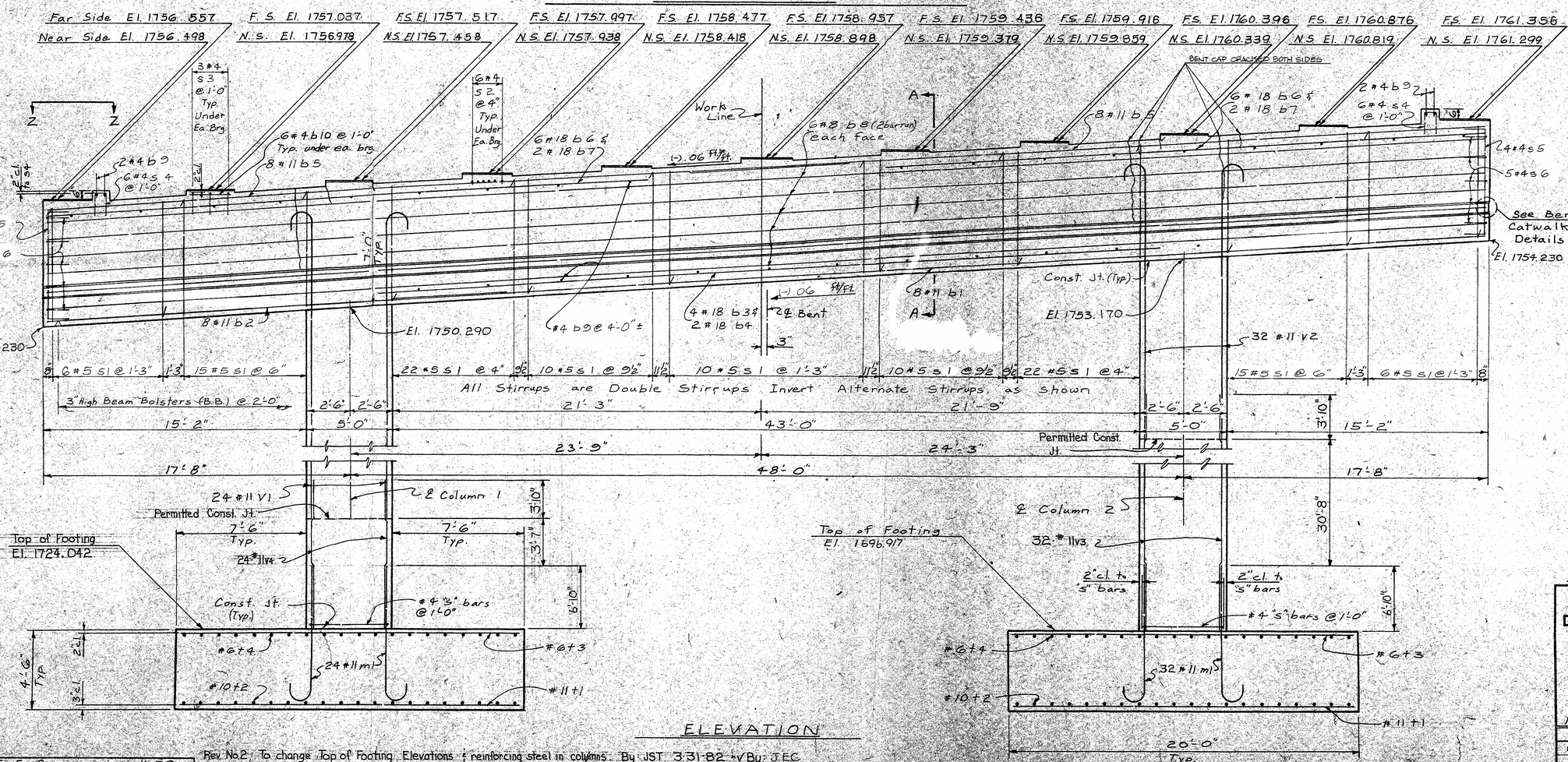
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-46
1	JEC	10-2-81	3				TOTAL SHEETS
2			4				77

DRAWN BY: J. E. CAPPS DATE 10-79
CHECKED BY: K. G. ERDGEN DATE FEB 1980

Rev # 1 - Revised to change Top of Ftg. Elevations and reinforcing steel in bot. of footings, and in Column 2. By JEC 10-2-81 V8, NEV 1979



PLAN OF CAP



ELEVATION

NOTES

Hooks on "V" bars may be turned as necessary for placing reinforcing steel.

For Epoxy Protective Coating see Special Provisions.

The top surface areas of the bent cap shall be cured in accordance with the Standard Specifications except that the Membrane Curing Compound Method shall not be used.

Bars b3 & b4 to be centered about ℄ Bent.

For location of b6 & b7 bars, See "Part Plan of Cap" on sheet 2 of 3.

For location of Preset Anchor Inserts, See Bent Catwalk Details.

Plans for falsework and forms for this bent cap shall be submitted. See Sheet S.N.

DRAWN BY: J. E. Capps DATE: 11-79
CHECKED BY: K. G. Pridgen DATE: FEB. 1980

Rev. No. 2: To change Top of Footing Elevations & reinforcing steel in columns. By: JST 3-31-82 √By: JEC
Rev. No. 1: To lower all Elevations by 1'. By: JST 10-15-81 √By: NEM

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SWAIN COUNTY
STATION: 181+35 med. Rev.

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STATE OF NORTH CAROLINA
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RALEIGH
SUBSTRUCTURE
BENT 8

Nov. 1979

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-69
1	JST	10-15-81	3			TOTAL SHEETS
2	JST	3-31-82	4			77