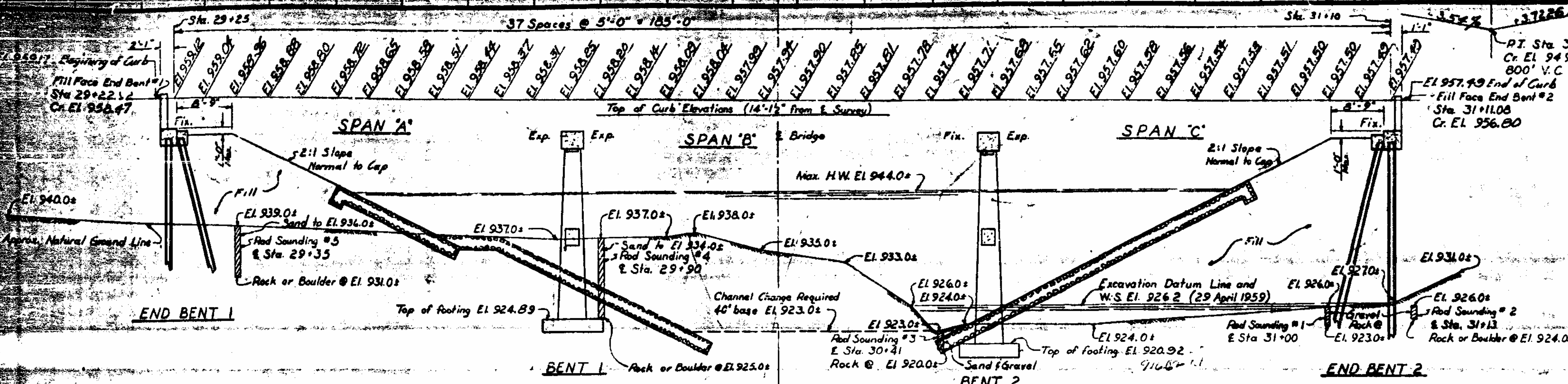
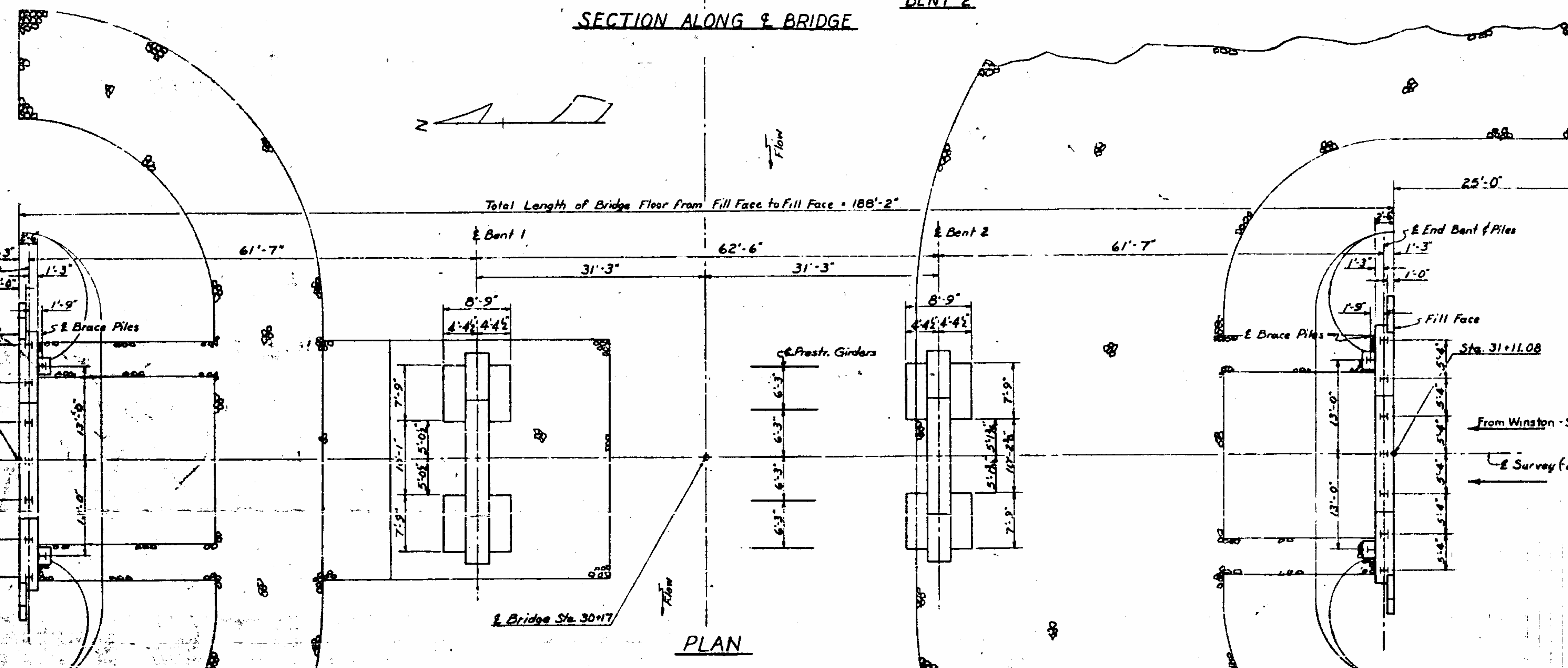
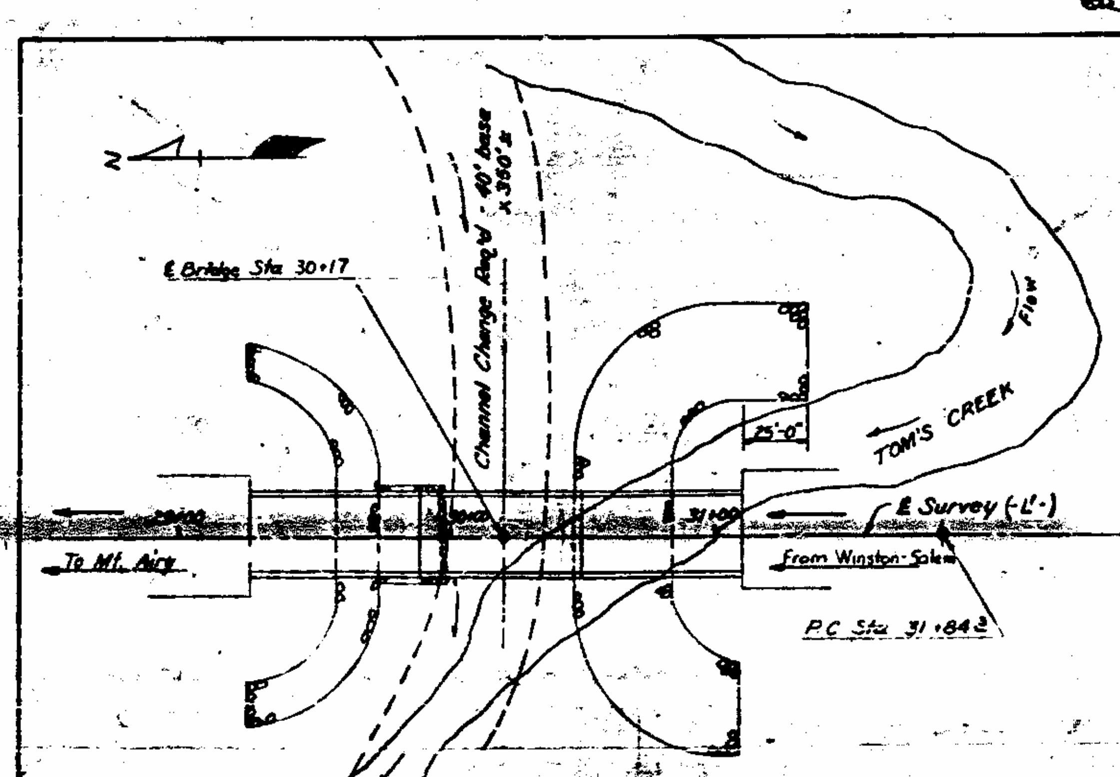


SECTION ALONG ℄ BRIDGE



PLAN



LOCATION SKETCH

SHEET 37 TOTAL 281

F.A. Proj. F-177(1)

TOTAL BILL OF MATERIAL

Exc. Depths		Class "A" Concrete	Reinforcing Steel	45" Prestr. Concrete Girders		12 H 53 Steel Piles		Excavation Wet	Excavation Dry	Plain Rip Rap Class 2	Concrete Rip Rap	[illegible]
		Cu. Yds.	Lbs.	No.	L.F.	No.	L.F.	Cu. Yds.	Cu. Yds.	Sq. Yds.	Sq. Yds.	
	Superstructure	179.5	41417	15	932'-6"	—	—	—	—			
	End Bent 1	11.6	2132	—	—	9	[illegible]	[illegible]	[illegible]	665	[illegible]	[illegible]
	Bent 1	40.9	6851	—	—	—	[illegible]	[illegible]	[illegible]			
6.14	Bent 2	[illegible]	7142	—	—	—	—	[illegible]	[illegible]		[illegible]	
	End Bent 2	11.6	2132	—	—	9	270	[illegible]	—	1280	[illegible]	[illegible]
	Approach Curbs	3.2	76	—	—	—	[illegible]	—	—	—	[illegible]	
6.14	TOTAL	[illegible]	59750	15	932'-6"	18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

NOTES

Assumed Live Load = H20-S16 (44) or Alternate Loading.

For other design data and General Notes see sheet S.N.

Computed foundation load for Bents 1 and 2 equals 3 tons per square foot.

Footings to be carried at least 6" into rock with minimum thickness as shown on plans.

No test piles are required. Order length shall be 25 feet long for End Bent #1 and 30 feet long for End Bent #2.

Piles for End Bents 1 and 2 to be driven through the roadway fill.

Piles for End Bents 1 and 2 to be driven to a minimum bearing capacity of 29 tons each.

Work is not to be started on Bents 1 and 2 until after Channel Change section has been excavated by the roadway contractor.

Excavation for Bent #1 to be measured from surface of cut.

B. M. #9 - 2 Nails in base 15" Sycamore 150' Lt. Sta. 30+20 ℄ - Elev. 940.53

Note: This Str. Built as per plan except as noted. C. K. [illegible]

Note: Slab Elev. Raised 1¾" - See Const. Insp. Report. Dated 8-7-60.

PROJECT No. 8.17542

SURRY - STOKES COUNTY

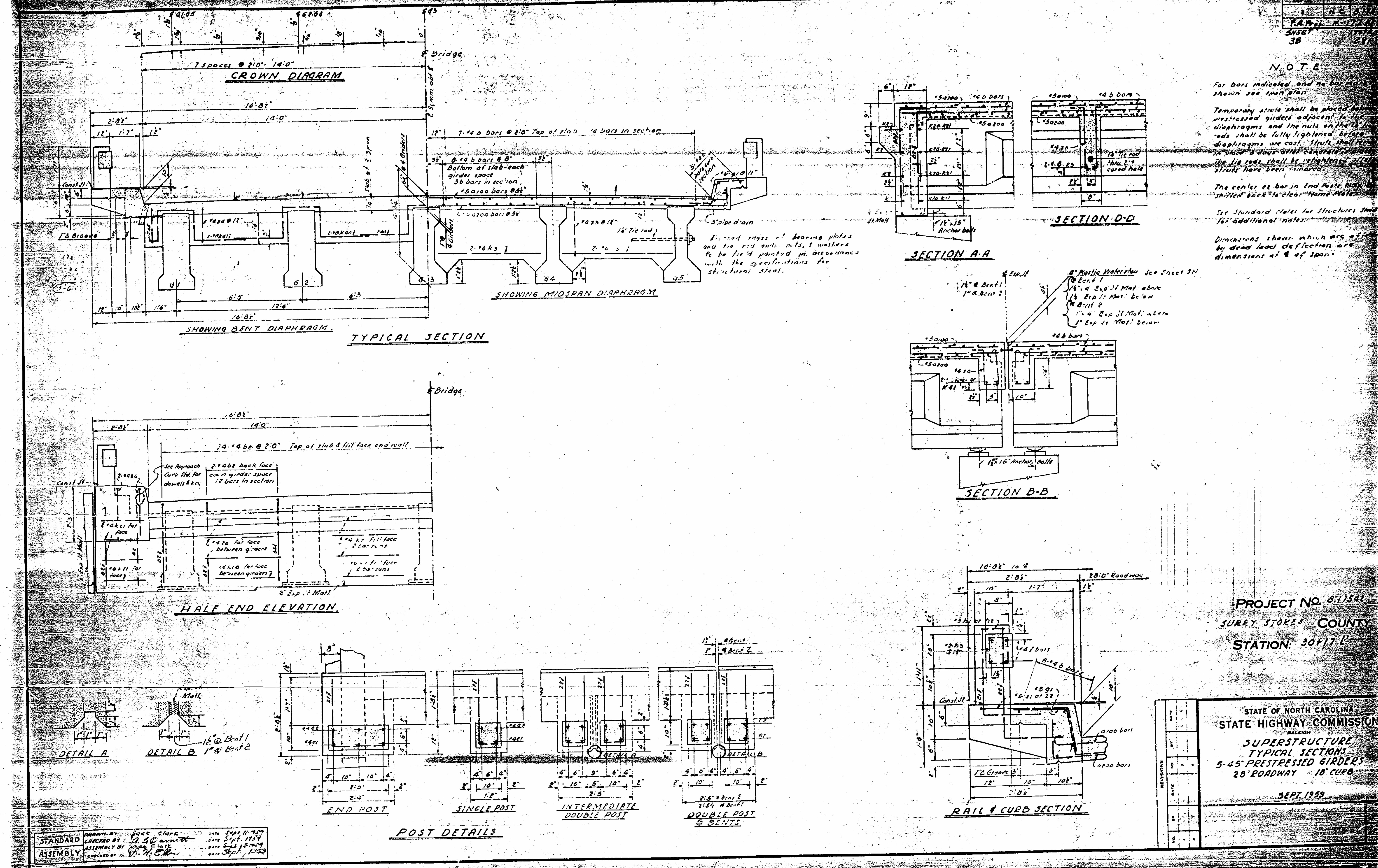
STATION: 30+17 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

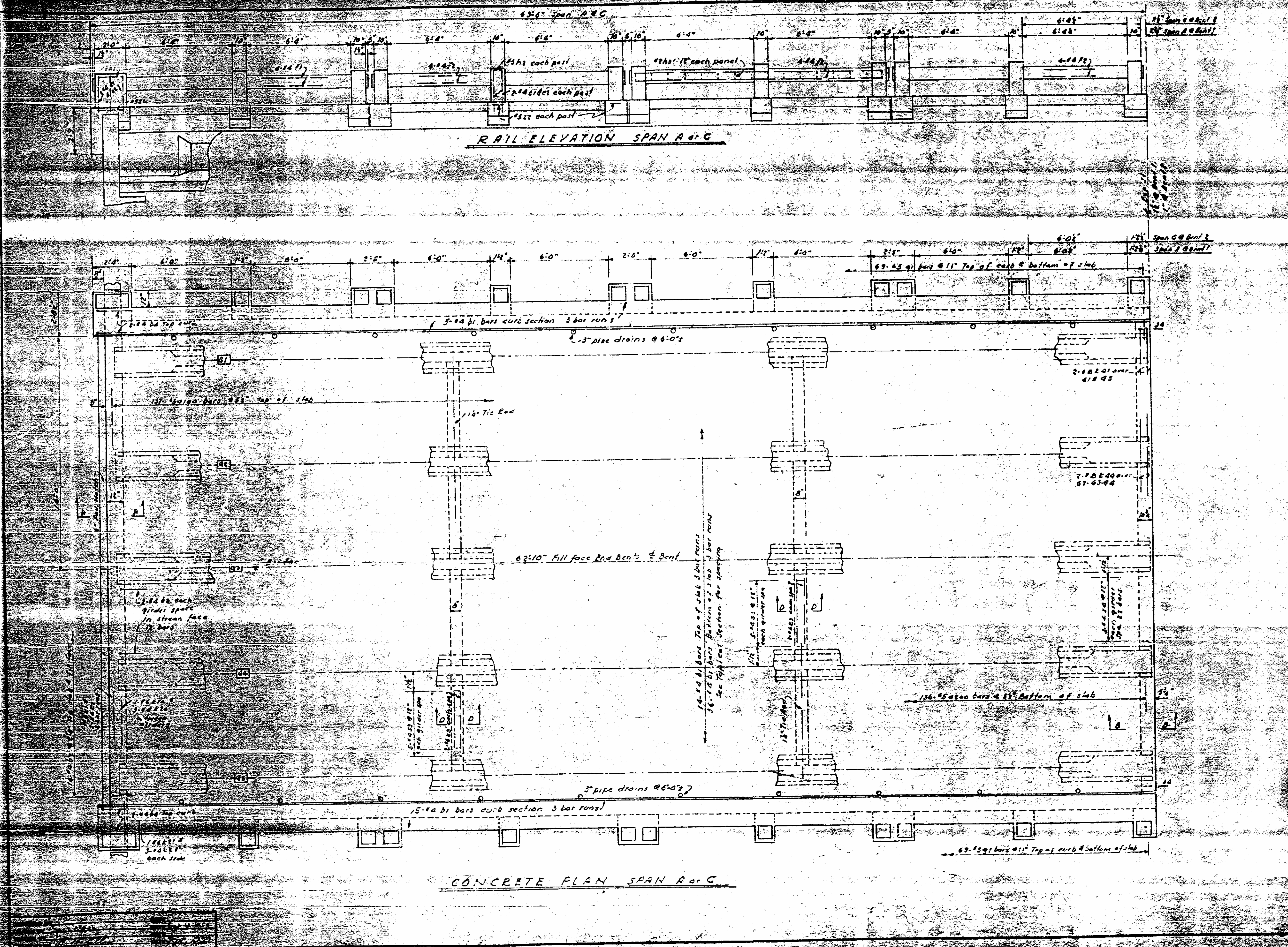
GENERAL DRAWING
BRIDGE OVER TOM'S CREEK
ON LINE -L-

September 1959

Designed by	R. J. Rogers	Date 16 Sept. 1959
Drawn by	R. J. Rogers	Date 17 Sept. 1959
Checked by	P. H. Ellis	Date Sept. 1959


CROWN DIAGRAM
7 spaces @ 2'-0" = 14'-0"
℄ Bridge
SHOWING BENT DIAPHRAGM
SHOWING MIDSPAN DIAPHRAGM
TYPICAL SECTION
7-#4 b bars @ 2'-0" Top of slab 14 bars in section
8-#4 b bars @ 8" Bottom of slab each girder space 36 bars in section
#5 a100 bars @ 5½"
3" pipe drain
1¼" Tie rod
Exposed edges of bearing plates and tie rod ends, nuts, & washers to be field painted in accordance with the specifications for structural steel.
SECTION A-A
SECTION D-D
1½" x 15" Anchor bolts
1¼" Tie rod thru 2" ⌀ cored hole
SECTION B-B
6" Plastic Waterstop See Sheet SN
@ Bent 1
1½" x 4" Exp Jt Mat'l above
1½" Exp Jt Mat'l below
@ Bent 2
1" x 4" Exp Jt Mat'l above
1" Exp Jt Mat'l below
1½" x 15" Anchor bolts
NOTE
For bars indicated and no bar mark shown see span plan.
Temporary struts shall be placed between prestressed girders adjacent to the diaphragms and the nuts on the 1¼" 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 retightened after struts have been removed.
The center e2 bar in End Posts may be shifted back to clear Name Plate.
See Standard Notes for Structures Sheet for additional notes.
Dimensions shown which are effected by dead load deflection are dimensions at ℄ of span.
HALF END ELEVATION
14-#4 b2 @ 2'-0" Top of slab & fill face end wall
See Approach Curb Std. for dowels & key
2-#4 b2 back face each girder space 12 bars in section
4" Exp. Jt Mat'l
DETAIL A
DETAIL B
1½" @ Bent 1
1" @ Bent 2
END POST
SINGLE POST
INTERMEDIATE DOUBLE POST
DOUBLE POST @ BENTS
POST DETAILS
RAIL & CURB SECTION
28'-0" Roadway
1" ∆ Groove
PROJECT NO. 8.17542
SURRY STOKES COUNTY
STATION: 30+17 L
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTIONS
5-45" PRESTRESSED GIRDERS
28' ROADWAY 18" CURB
SEPT. 1959
STANDARD
ASSEMBLY
DRAWN BY Jack Clark DATE Sept. 11-1959
CHECKED BY DATE Sept. 1959
ASSEMBLY BY Jack Clark DATE Sept. 15-1959
CHECKED BY DATE Sept. 1959
SHEET 38
N.C.
F.A. Proj. F-177

F-177 (8)
SHEET 39 TOTAL 681



NOTE

Dead load deflections as follows:

	Girder G1 & G5	Girder G2, G3, G4
Camber-girder alone in place	½"↑	
Deflection due to superimposed D.L.	½"↓	
Final camber	0"	
V.C. Ordinate		

Slab is to be 7½" thick at ℄ of span.

Concrete quantities & bridge seats have been computed to provide for thickening of the slab at the bearings.

PROJECT No. 8.17542

SURRY-STOKES COUNTY

STATION 30+17 L

STATE HIGHWAY COMMISSION

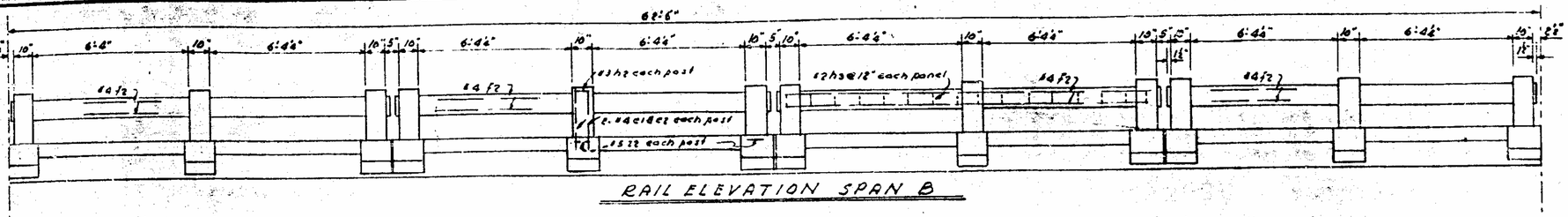
SUPERSTRUCTURE
CONCRETE PLAN
END SPANS A & C

SEPT-1959

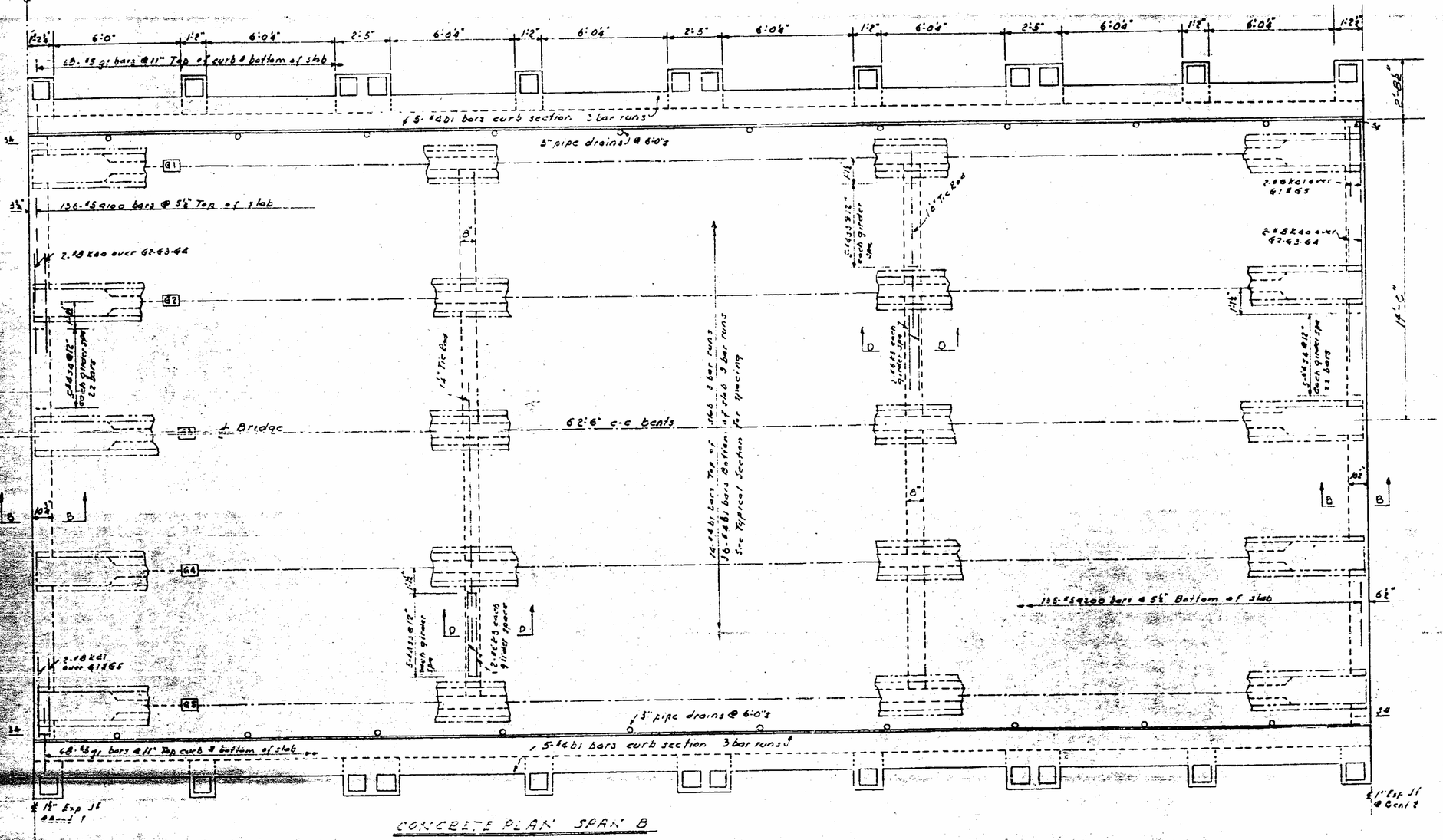
FED. ROAD PROJ. NO.	STATE	PROJECT NO.
9	N.C.	8.17542
N.A. PROJECT	F-177 (8)	
SHEET 40	TOTAL 281	

NOTE

Dead load deflections, camber & vertical curve ordinates same as for Span A or C



RAIL ELEVATION SPAN B



CONCRETE PLAN SPAN B

PROJECT NO. 8.17542
SURRY, STOKES COUNTY
STATION 30+17 L

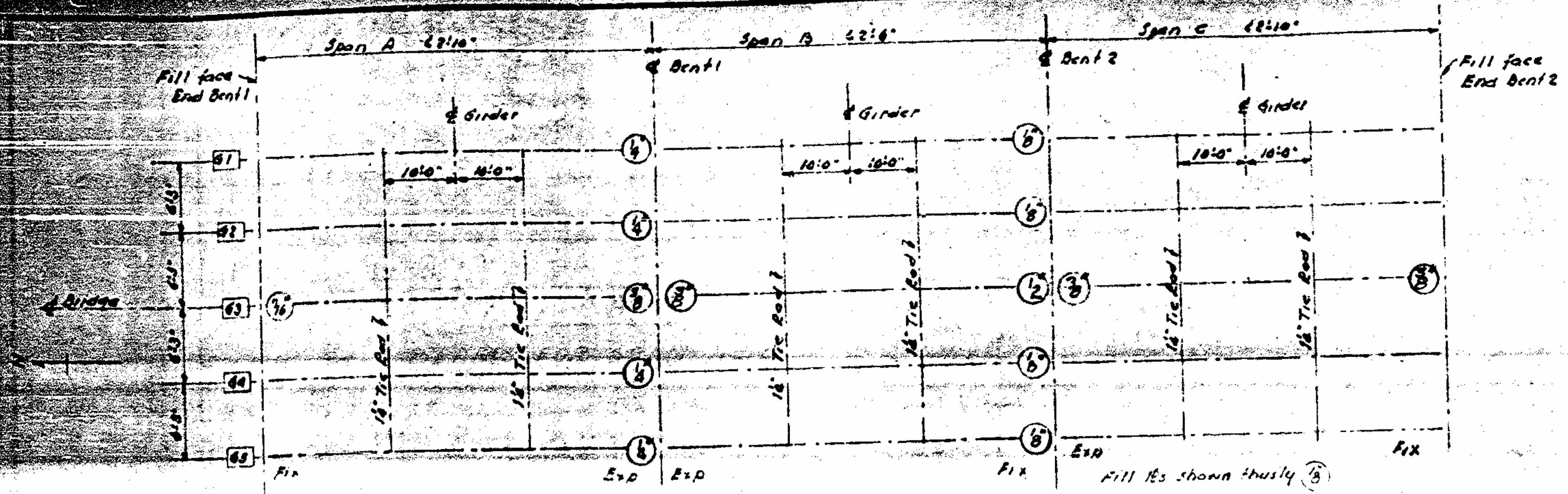
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE
CONCRETE PLAN
INTERIOR SPAN B

SEPT. 1959

NO.	BY	DATE	APP.	BY	DATE
1					
2					

5-59
1972

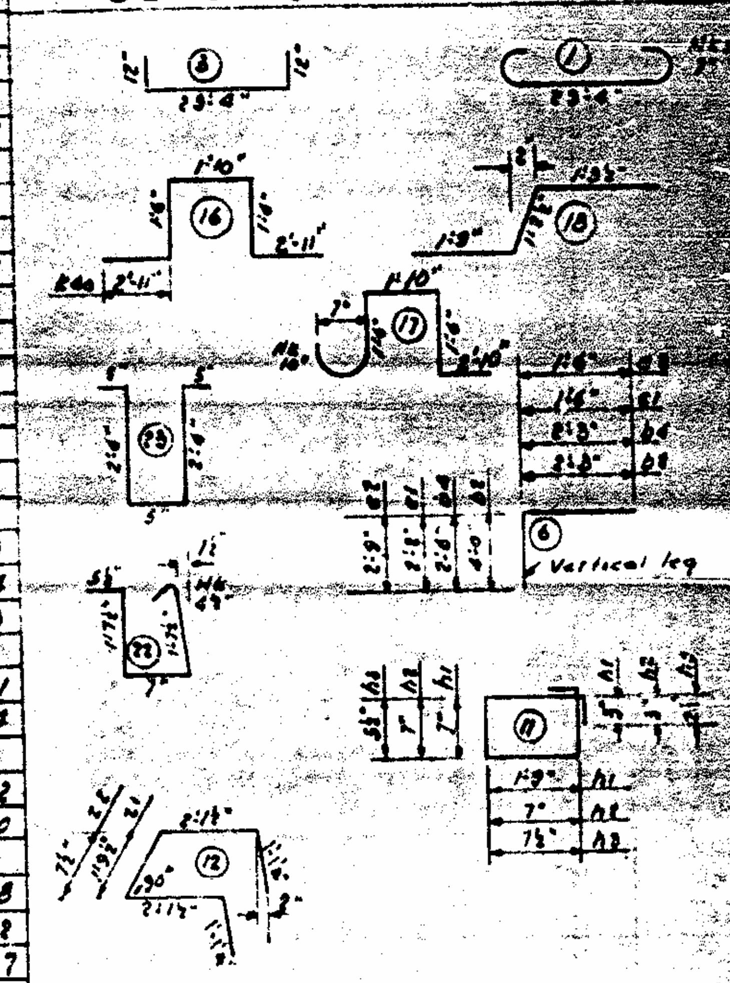


FRAMING PLAN

REINFORCING STEEL- BAR SCHEDULE FOR 3 SPANS

Bar Mk	No. Pcs	Size	Type	Length	Weight
a100	410	#5	1	30'-6"	13043
a200	407	#5	3	31'-4"	13301
g1	412	#5	18	4'-3"	1825
b1	540	#4	Str	21'-9"	7846
b2	52	#4	6	6'-3"	217
b4	8	#4	6	4'-9"	25
k1	4	#6	Str	17'-9"	107
k10	8	#6		4'-0"	48
k11	4	#6		3'-0"	18
k2	12	#4		17'-3"	138
k20	24	#4		4'-6"	72
k21	12	#4		3'-3"	26
k3	48	#6	Str	5'-3	378
k40	24	#8	16	10'-8"	684
k41	16	#8	17	8'-6"	363
s3	120	#4	23	6'-3"	501
s4	88	#4	22	4'-8"	274
e1	148	#4	6	3'-8"	362
e2	148	#4	6	4'-3"	420
h1	4	#3	11	5'-2"	8
h2	68	#3	11	2'-10"	72
h3	388	#2	11	2'-7"	167
z1	4	#5	12	8'-3"	34
z2	68	#5	12	7'-1"	502
f1	16	#4	Str	16'-4"	175
f2	80	#4	Str	15'-2"	810

BENDING DIAGRAMS



Dimensions are out to out

DRAIN DETAIL

Required 60 pcs

SUPERSTRUCTURE QUANTITIES

Class A Concrete	179.5 C.Y.
Reinforcing Steel	41417 Lbs
45" Prestressed Concrete Girders No. 15	332'-6" L.F.

PROJECT No. 817542

SURRY-STOKES COUNTY

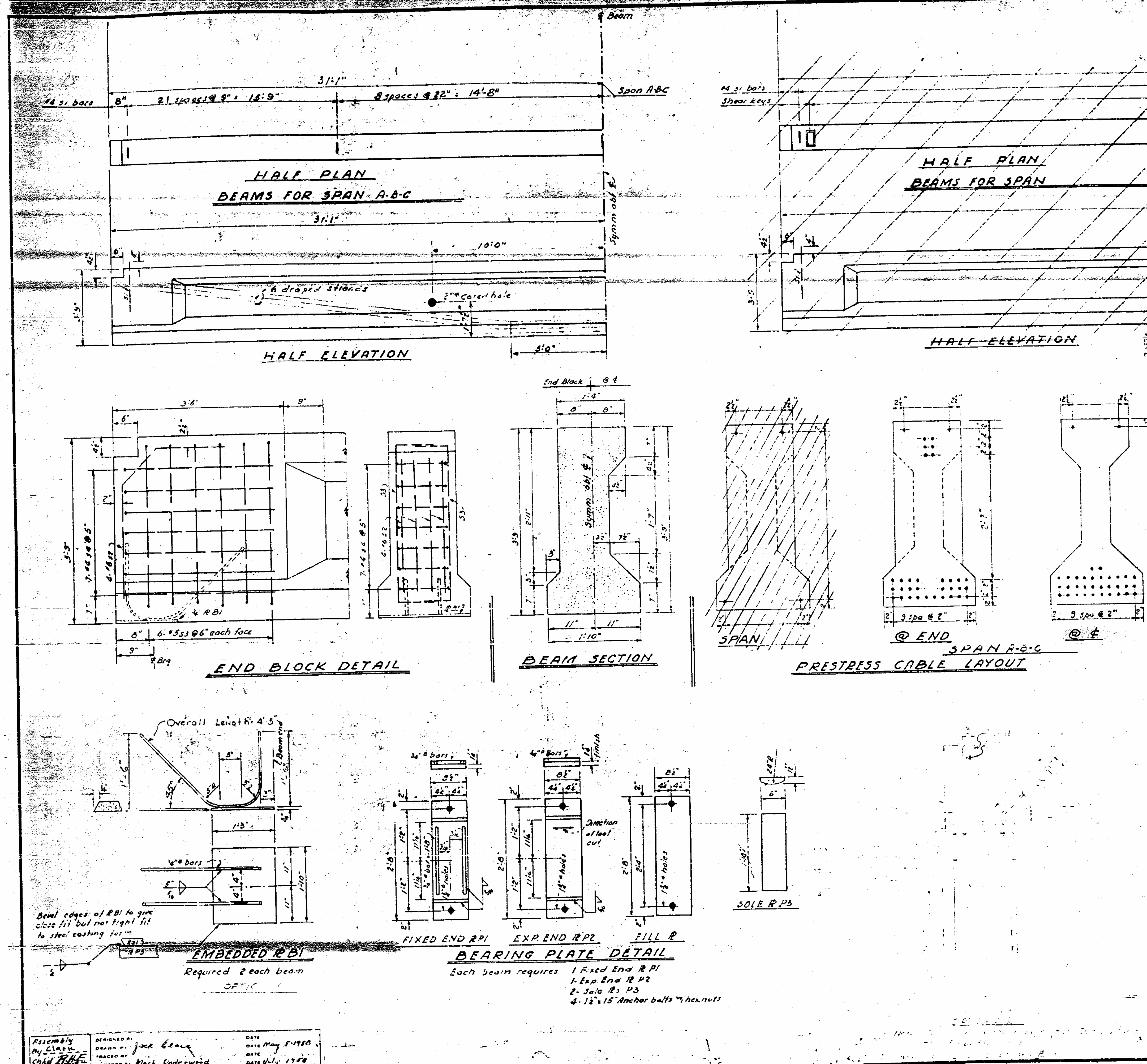
STATION 30+17.1

STATE HIGHWAY COMMISSION

SUPERSTRUCTURE
BILL OF MATERIAL
FRAMING PLAN

SEPT 1959

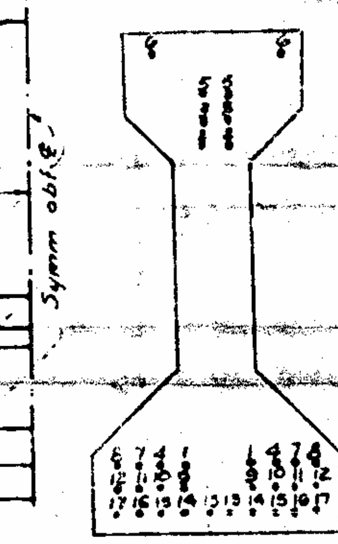
2	N.C.	8.1754[illegible]
F.A. Proj. F-177-(5)		
SHEET 48		TOTAL 281



NOTE

All prestress strands to be 7/16" Stress Relieved Cables. Each cable to be prestressed at 18900 lbs.

Cables to be cut off within 1" of end of beam.



SECTION SHOWING PATTERN FOR BURNING CABLES

No surface finish will be required for prestressed concrete beams. However the outside face of exterior beams shall be carefully cleaned of drippings and other discolorations.

See Standard Notes sheet S-N.

If cable stress is relieved by burning, the following order of burning shall be strictly adhered to:

(1) Bottom cables 1-1
(2) Draped cables 2-2
(3) [illegible] cables [illegible]
(4) Bottom cables 4-4
(5) Draped cables 5-5
(6) Top cables 6-6
(7) Release hold downs

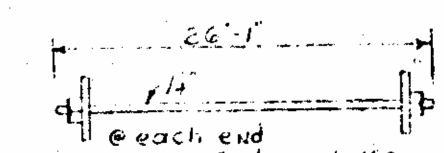
Each pair of cables 1-1 thru 17-17 shall be burned at ends of bed and between all girders before burning any of the next pair of cables. See Specifications and Errata sheets.

REINFORCING STEEL FOR ONE (1) BEAM

	Bar	No	Size	Type	Length	Weight
62'-2" Beam	S1	59	#4	7	8'-6"	335
Beam	S1		#4	7	8'-6"	
Beam	S1		#4	7	8'-6"	
Beam	S1		#4	7	8'-6"	
	S2	8	#6	8	4'-8"	56
	S3	24	#5	6	5'-6"	138
	S4	14	#4	6	7'-4"	69

Bending Diagrams

Dimensions are out to out



@ each end Thread 4'-4" round 1/2" & washer - hex nut

1¼" TIE ROD

Required 6 Complete assemblies as detailed
No Shop Paint Required

QUANTITIES ONE (1) BEAM

Reinforcing Steel		
62'-2" Beam	598	Lbs
Beam		Lbs
Beam		Lbs
Beam		Lbs
5000 psi Concrete		
62'-2" Beam	9.3	C.Y.
Beam		C.Y.
Beam		C.Y.
Beam		C.Y.
7/16" S.R. Cables		
62'-2" Beam	34	No.
Beam		No.
Beam		No.
Beam		No.

BEAMS REQUIRED

15 @ 62'-2"	Length	932'-6"	LF
@	Length		LF
@	Length		LF
@	Length		LF

PROJECT No. 8.17542
SURRY-STOKES COUNTY
STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

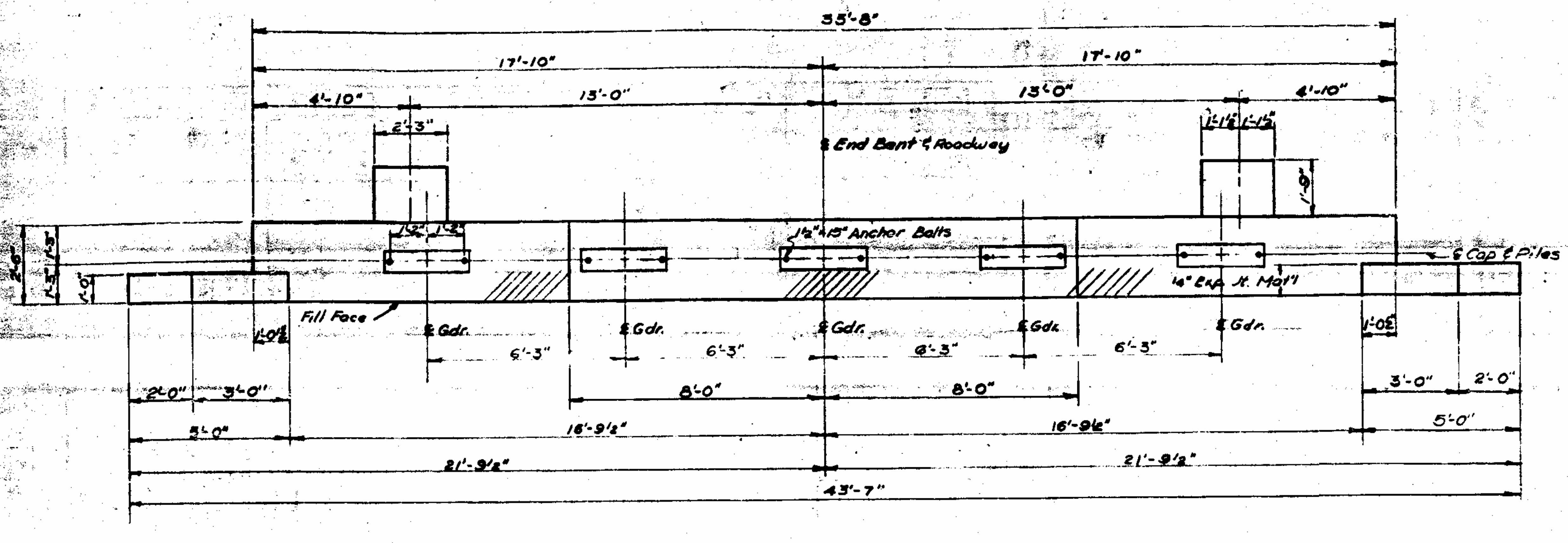
STANDARD 45" PRESTRESSED CONCRETE BEAM

MAY 1958

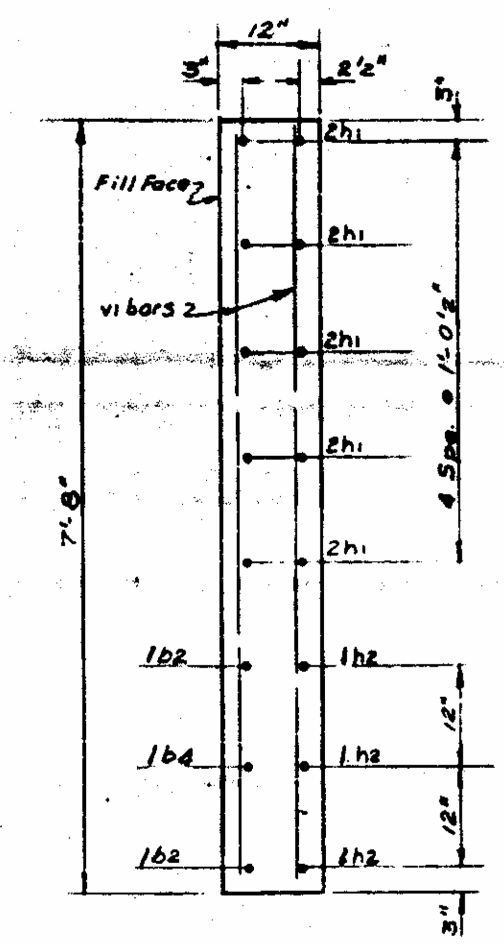
REVISIONS

Assembly By Clark	DESIGNED BY		DATE May 5-1958
Chkd. [illegible]	DRAWN BY Jack Evans		DATE
Date Sept. '58	TRACED BY		DATE
	CHECKED BY Mack Underwood		DATE July 1958

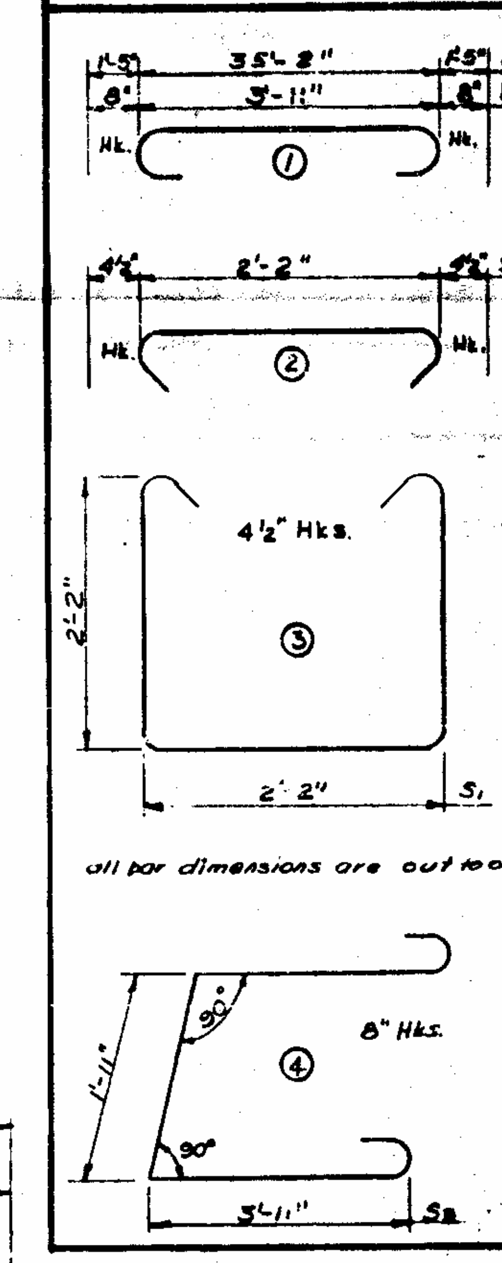
F.A. Proj. - F-177 (1)
Sheet 43 Total 71



PLAN



SECTION B-B

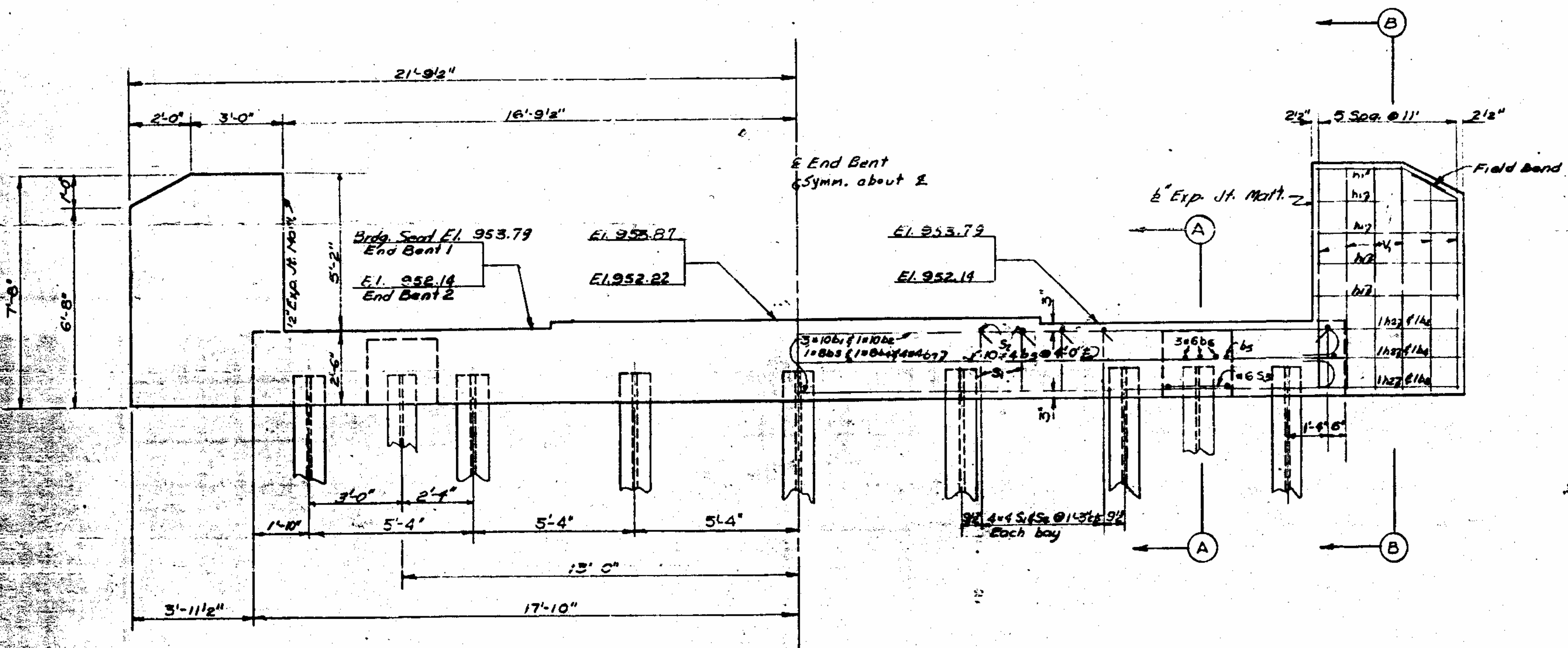


BILL OF MATERIAL

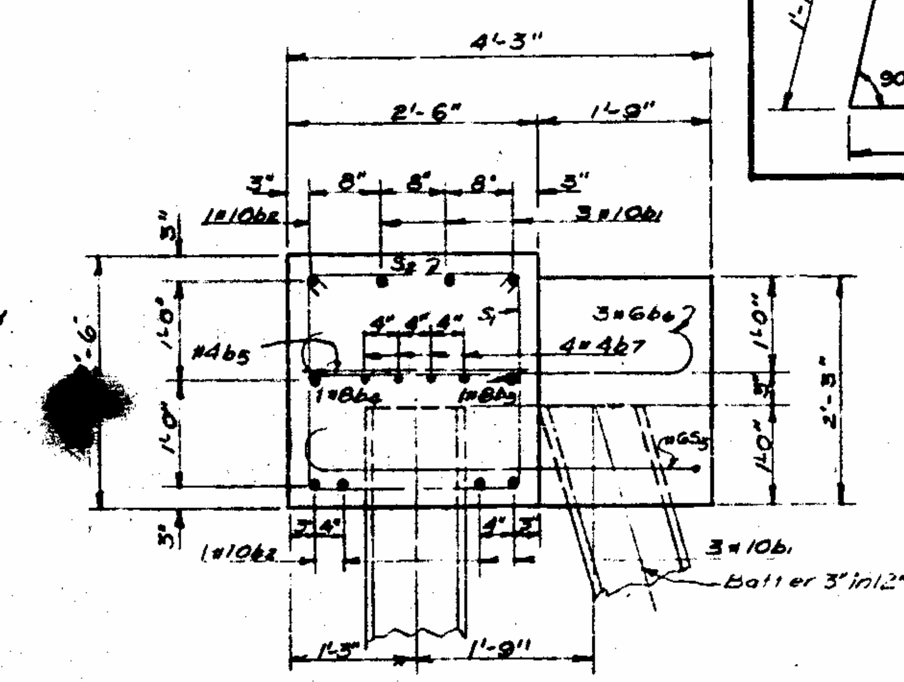
FOR ONE END BENT
TWO REQUIRED

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	6	#10	1	38'-0"	981
b2	2	#10	Str.	43'-3"	372
b3	1	#8	Str.	35'-2"	94
b4	1	#8	Str.	43'-3"	115
b5	10	#4	Str.	2'-2"	14
b6	6	#6	1	5'-3"	47
b7	8	#4	Str.	18'-5"	98
h1	20	#4	Str.	4'-8"	62
h2	6	#4	Str.	5'-5"	21
v1		#4	Str.	7'-4"	118
S1	26	#4	3	7'-3"	126
S2	26	#4	2	2'-11"	51
S3	2	#6	4	11'-1"	35

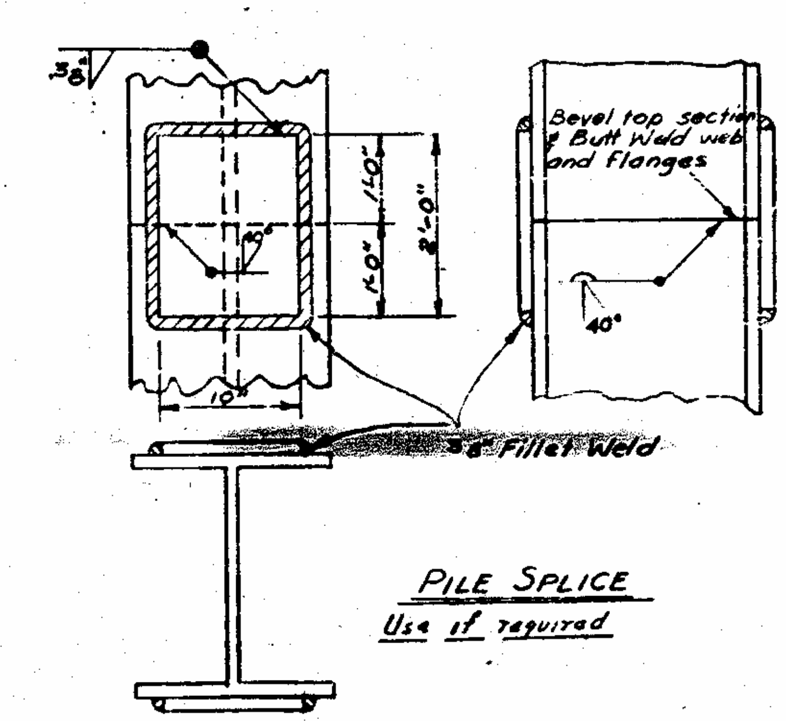
	Reinforcing Steel	2132 Lbs.
	Class "A" Concrete	11.6 c.y.
End Bent 1	12H53 Steel Piles - No. 9	225 L.F.
End Bent 2	12H53 Steel Piles No. 9	270 L.F.



ELEVATION



SECTION A-A ~~Built According to Plan~~



PILE SPLICE
Use if required

Piles to be driven to a minimum bearing capacity of 29 tons each.

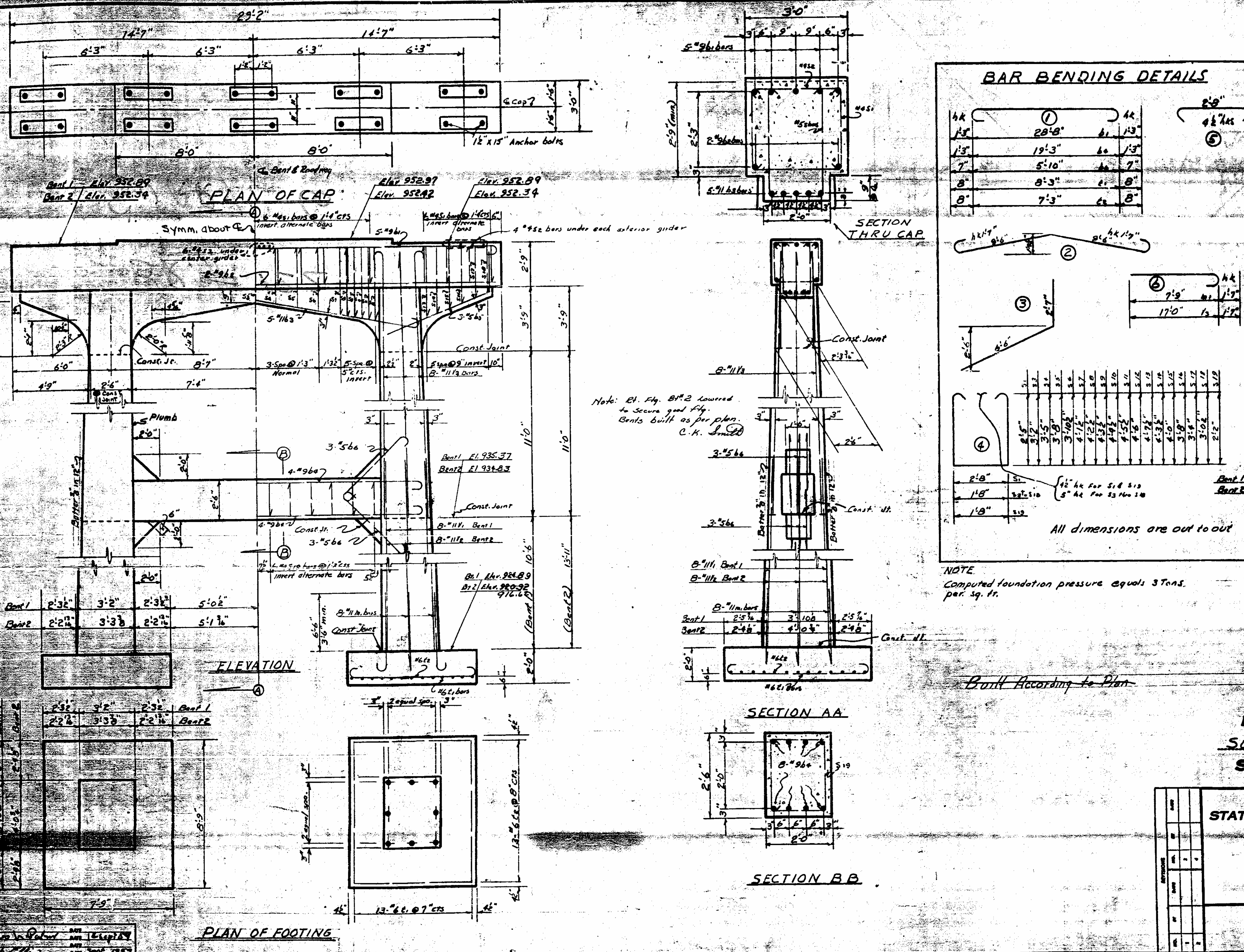
PROJECT No. 8.17542
SURRY-STOKES COUNTY
STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUBSTRUCTURE
END BENT 1 & 2

September 1959

Designed by C. S. Hicks — Date Sept. 1959
Checked by R. H. Ellis — Date Sept. 1959



NOTE
Computed foundation pressure equals 3 Tons. per. sq. ft.

Built According to Plan

S.H.C.				N.C.	8.1754[illegible]
F.A. Proj.					F-177(8)
SHEET 44					TOTAL 21[illegible]

BILL OF MATERIAL

FOR ONE BENT 2 R[illegible]

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	6	#9	1	31'-2"	630
b2	2	#9	Str.	26'-8"	195
b3	5	#11	2	22'-2"	587
b4	8	#9	1	21'-9"	592
b5	6	#5	3	9'-1"	57
b6	12	#5	1	7'-0"	88
s1	19	#4	4	8'-3"	105
s2	14	#4	5	3'-5"	32
s3	1	#5	4	8'-10"	9
s4	2			9'-4"	19
s5				9'-10"	21
s6				10'-3"	21
s7				10'-9"	2[illegible]
s8				10'-11"	2[illegible]
s9				11'-1"	2[illegible]
s10				11'-3"	2[illegible]
s11				11'-5"	2[illegible]
s12				11'-6"	2[illegible]
s13				11'-9"	2[illegible]
s14				11'-1"	2[illegible]
s15				10'-6"	22
s16				9'-10"	21
s17				9'-2"	19
s18	2	#5		8'-7"	16
s19	12	#4	4	6'-9"	5[illegible]
m1	16	#11	6	9'-4"	79[illegible]
t1	26	#6	1	9'-7"	37[illegible]
t2	26	#6	1	8'-7"	33[illegible]
Y1 (Bent 1)	16	#11	Str.	14'-0"	1190
Y2 (Bent 2)	16	#11	Str.	17'-5"	1481
Y3	16	#11	6	18'-7"	158[illegible]

Bent No 1

Class "A" Concrete	C.Y.	40[illegible]
Reinf. Steel	Lbs.	685[illegible]
Dry Excavation	C.Y.	[illegible]
Wet Excavation	C.Y.	[illegible]

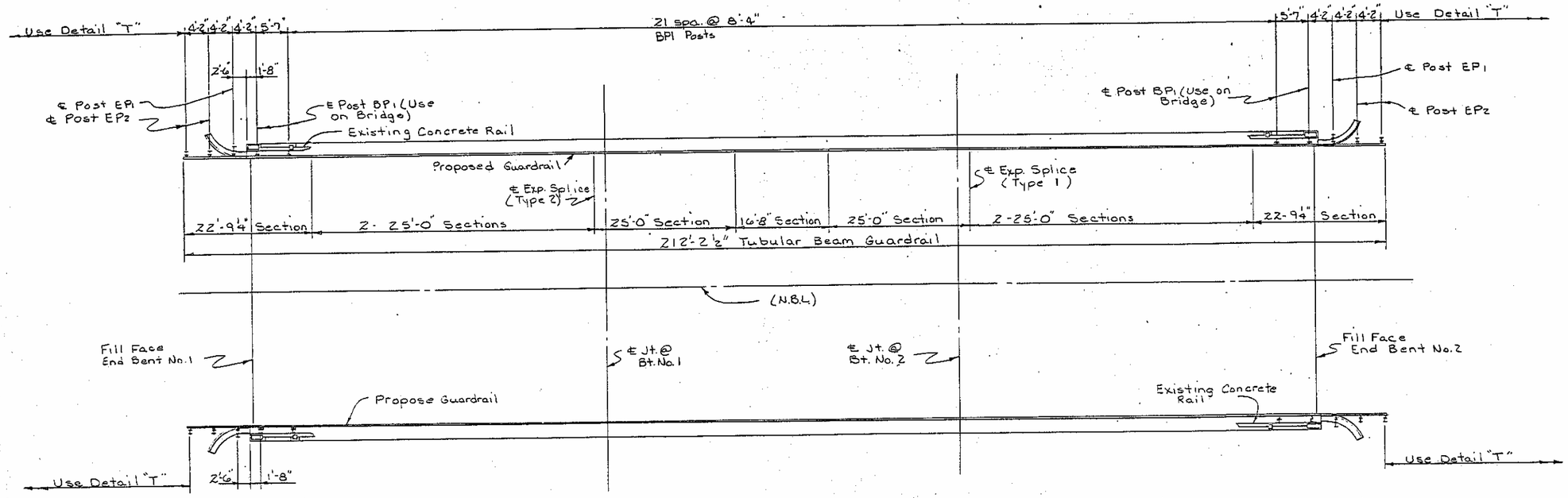
Bent No 2

Class "A" Concrete	C.Y.	44[illegible]
Reinf. Steel	Lbs.	71[illegible]
Wet Excavation	C.Y.	[illegible]
Dry Exc.		[illegible]

PROJECT NO. 8.17542
SURRY-STOKES COUNTY
STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
SUBSTRUCTURE
BENTS 1 & 2
SEPT 1959

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.	6.621031	2-K	
F. A. PROJ. NO.			



PLAN

(Post and Rail spacing shown is Typical both sides)

Approx. No. of Special Attachments Req.'d. = 20

N

DRAWN BY P.A. Mimms DATE 6-R-85
CHECKED BY L. I. BROOKS DATE 5-31-85

PROJECT NO. 6.621031

SURRY COUNTY

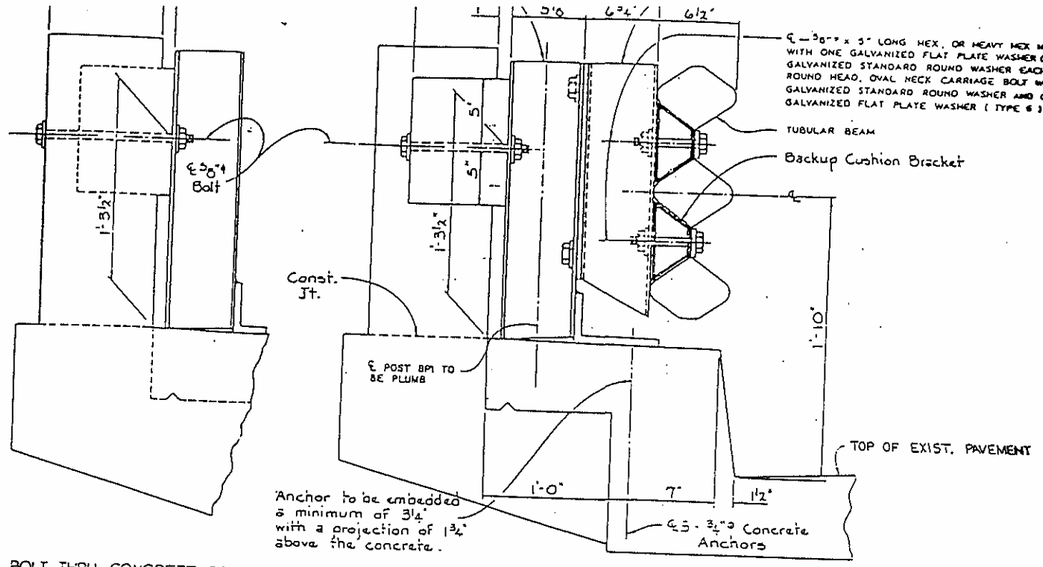
STATION: NBL U.S. 52 OVER TOMS CREEK BR. NO. 122

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETROFIT OF EXISTING BRIDGE RAIL WITH TUBULAR BEAM GUARDRAIL

MAY 1985

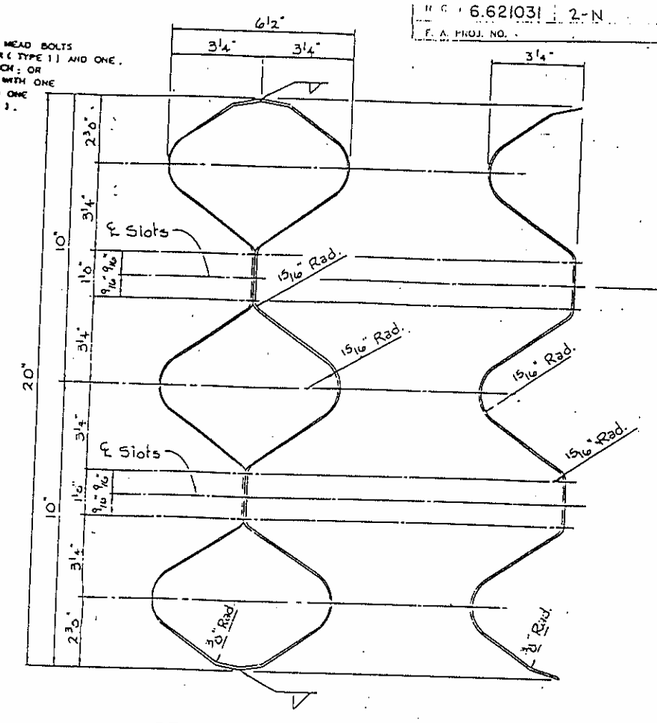
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			



BOLT THRU CONCRETE POST

BOLT THRU CONCRETE RAIL

RETROFIT EXISTING RAIL WITH TUBULAR BEAM



SECTION THRU TUBULAR BEAM

SECTION THRU 20" TRIPLE CORRUGATED BEAM

F. A. PROJ. NO. 6.621031 | 2-N

GENERAL NOTES:

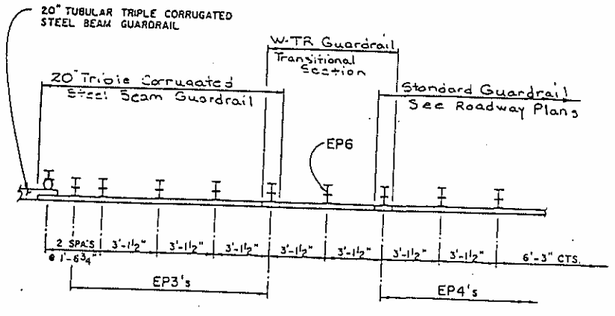
1. 10 GAGE 20" TRIPLE TUBULAR BEAM RAIL SHALL BE USED. FOR RAIL, RA
2. POSTS, BASE ANGLES AND/OR BASE PLATES, NUTS, BOLTS, AND WASHERS, SEE SPECIFICATIONS. TUBES, AND OFFSET BLOCKS SHALL CONFORM TO THE REQUIREMENTS OF A.S AND AFTER FABRICATION, SHALL BE GALVANIZED TO CONFORM TO THE REQUI OF A.S.T.M. A123. SHIMS SHALL MEET THE REQUIREMENTS OF A.S.T.M. A FOR GRADE C OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDA WITH A.S.T.M. A123.
3. VERTICAL SLOTS IN THE 6"ϕ TUBE ALLOW FOR SOME VERTICAL ADJUSTMENT RAIL HEIGHT IN ORDER TO OBTAIN THE CENTERLINE OF RAIL HEIGHT OF 1'-10" ABOVE RIDING SURFACE.
4. POSTS ARE TO BE PLUMB. SHIMS MAY BE USED BENEATH THE ROADWAY EDG OF THE BASE ANGLES AND/OR BASE PLATES AS NECESSARY FOR POST ALIGNM
5. " BP " POST HEIGHT TO BE DETERMINED IN THE FIELD BY THE CONTRACT
6. THE CONTRACTOR SHALL BE PREPARED TO DRILL THROUGH REINFORCING STE TIMES. PROPOSED RAIL POSTS MAY BE SHIFTED SLIGHTLY TO CLEAR REINF STEEL. STANDARD SLOTS MAY BE USED IN THE RAIL TO ALLOW SOME MOVEM
7. POST SPACINGS AS SHOWN ON THE PLANS SHALL BE CHECKED BEFORE HOLES DRILLED IN THE 20" TRIPLE CORRUGATED BEAM. STANDARD SLOTS WILL BE PERMITTED. FIELD PUNCHING OF THE HOLES OR SLOTS WILL NOT BE ALLOW
8. ALL CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISF OF THE ENGINEER.
9. CURVED RAIL USAGE: RAILS ARE TO BE USED ON BRIDGES ON HORIZONAL AND/OR VERTICAL CURVATURE. THE CONTRACTOR MAY AT HIS OPTION HAVE TH REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. EITHER EVENT THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINE
10. A SEALANT WILL BE REQUIRED IN THE AREA OF THE ANCHOR BOLTS AND WIL PLACED IN THE FOLLOWING MANNER:
    A. BEFORE THE BASE PLATE HAS BEEN SET IN PLACE, IF THE GROUT D COMPLETELY FILL THE HOLE, SEAL THE AREA AROUND EACH CONCRETI BOLT TO KEEP MOISTURE FROM ENTERING THE ANCHOR HOLE.
    B. AFTER THE BASE PLATE HAS BEEN SET IN PLACE AND BEFORE THE WASHERS AND NUTS HAVE BEEN PLACED ON THE BOLTS. SEAL THE "HOLE" AREA REMAINING AROUND THE BOLT.

THE SEALANT SHALL BE A ONE-COMPONENT POLYSULFIDE GUN GRADE , MEETIN FEDERAL SPECIFICATION TT-S-230. SEALANT SHALL BE GRAY IN COLOR AND APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION. THE FOLLOW SEALANTS MEET THE ABOVE REQUIREMENTS:
"CONOLASTIC ONE PART", MANUFACTURED BY CONNEBORN-SEBOTO CO., DES PLAINES, ILLINOIS. 60018; "THOROSPAN ONE COMPONENT", MANUFAC BY STANDARD DRY WALL PRODUCTS, INC., MIAMI, FLORIDA. 33166; "NOR ONE COMPONENT", MANUFACTURED BY W. R. GRACE AND CO., CAMBRIDGE, MASS., 02140.

11. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT A.A.S.H.T.O. "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES." ELECTROSLAG WELDING WILL NOT BE PERMITTED.
12. LAP SEAM RAIL JOINTS IN DIRECTION OF TRAFFIC.

CONCRETE ANCHOR NOTES :

1. CONCRETE ANCHORS SHALL CONSIST OF A STUD, THREADED ON ONE END, WITH AND WASHER. THE ANCHORS SHALL BE A "DRILL AND GROUT" SYSTEM SUCH A MASONRY ANCHORING PRODUCTS BY KELKIN-COLD, INC., THE MOLLY PARABOND BY MOLLY FASTENER GROUP, THE H V A ANCHORAGE SYSTEM BY HILTI OR AN EQUAL. EXPANSION ANCHORS WILL NOT BE PERMITTED. CONCRETE ANCHORS PROVIDE A MINIMUM SAFE PULLOUT HOLDING POWER OF 2,875 LBS. FOR A 3/ BOLT OR 4,075 LBS. FOR A 1" ø BOLT BASED UPON 1/4 THE ACTUAL HOLDIN POWER OF THE ANCHOR IN 3,500 LBS. CONCRETE AS DETERMINED BY AN APPR COMMERCIAL TESTING LABORATORY. SATISFACTORY PROOF SHALL BE FURNISH TO THE ENGINEER.
2. STUD BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED TO CONFORM TO TH REQUIREMENTS OF A.S.T.M. A153.
3. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL CONCRETE ANCHORS MAY BE AS AN ALTERNATE FOR THE 3/4" ø AND/OR 1" ø GALVANIZED ANCHORS. THEY CONFORM OR EXCEED THE MECHANICAL REQUIREMENTS SET FORTH ABOVE FOR TH GALVANIZED ANCHORS. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY ENGINEER.
4. THE HOLES SHALL BE PREPARED AND THE ANCHORS SET IN SOUND CONCRETE ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. HOLES FOR THE CONCRETE ANCHORS SHALL BE PERPENDICULAR TO THE SURFAC AND SHALL BE DRILLED WITH A ROTARY OR ROTARY IMPACT DRILL. IMPACT WILL NOT BE PERMITTED.



DETAIL "T"

NOTES (USE WITH POST BP1 ONLY):
1. TUBULAR BEAM POSTS ARE TO BE MOUNTED AGAINST THE EXISTING CONCRETE RAIL.
2. HOLES FOR THE 5/8" ø BOLTS THRU THE EXISTING CONCRETE RAIL OR POST SHALL BE 3/4" ø. HOLES SHALL BE HORIZONTAL AND SHALL BE DRILLED WITH A ROTARY OR ROTARY IMPACT DRILL. IMPACT TOOLS WILL NOT BE PERMITTED.

NOTE (USE WITH POST BP1 OR BP2 ONLY) :
1. 5/8" ø AND/OR 1" ø BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307 AND SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF A.S.T.M. A253.

NOTE (USE WITH POST BP2 OR POST BP3 ONLY) :
1. HOLES FOR THE 1" ø BOLTS THRU THE EXISTING SIDEWALK SHALL BE 1 1/8" ø. ALL HOLES SHALL BE VERTICAL AND SHALL BE DRILLED WITH A ROTARY OR ROTARY IMPACT DRILL. IMPACT TOOLS WILL NOT BE PERMITTED.

PROJECT NO. 6.6210

SURRY, STOKES & FORSYTH (

STATION:

SHEET 1 OF 4

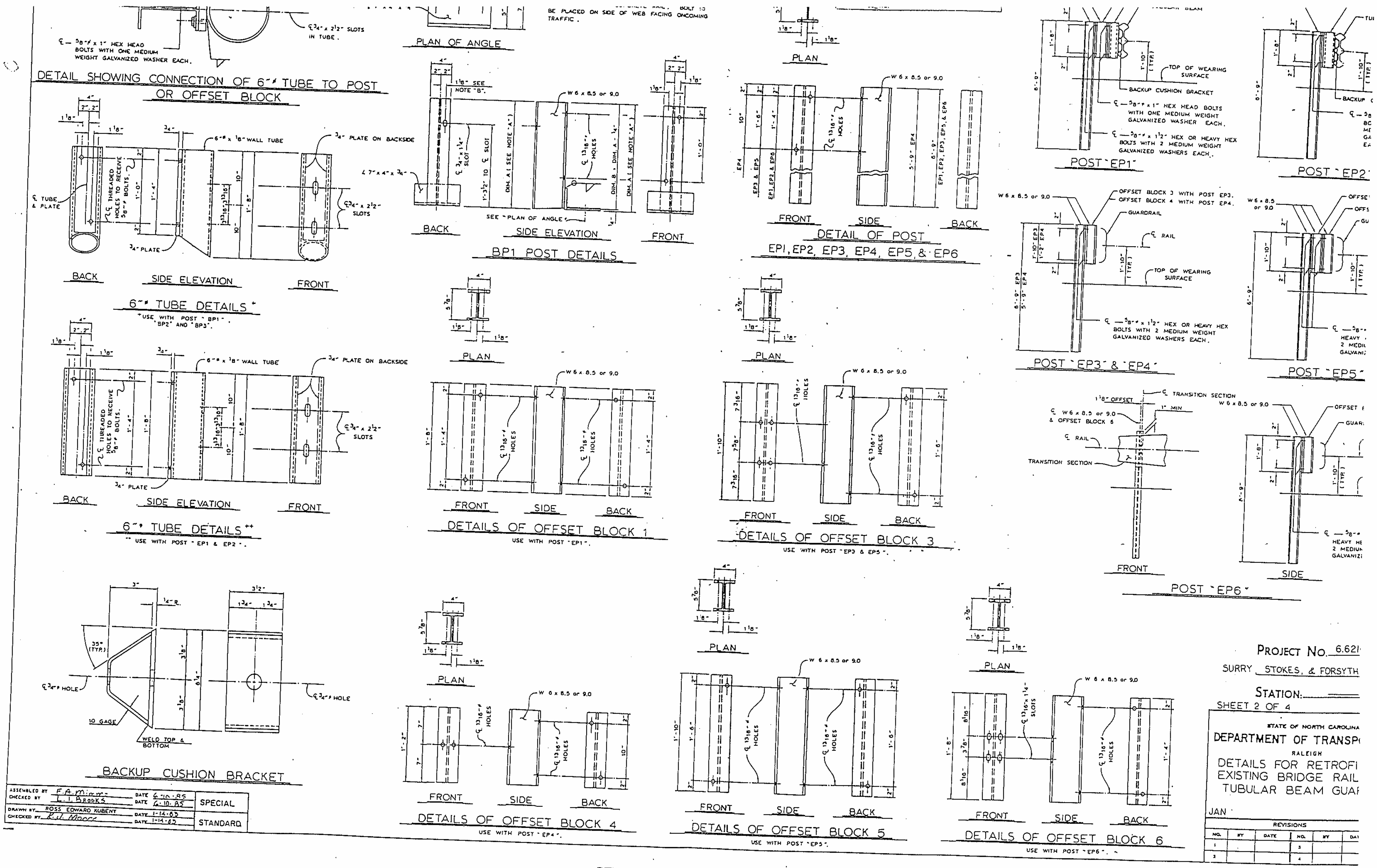
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPO
RALEIGH

DETAILS FOR RETROFIT EXISTING BRIDGE RAIL TUBULAR BEAM GUARD

JAN.

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

ASSEMBLED BY F.A. Mimms	DATE 6-10-85		
CHECKED BY L. I. Brooks	DATE 6-10-85	SPECIAL	
DRAWN BY Roger Edward Kuypers	DATE 1-14-1985		
CHECKED BY R.L. Moore	DATE 1-14-1985	STANDARD	



PROJECT No. 6.621

SURRY, STOKES, & FORSYTH

STATION:

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSP
RALEIGH

DETAILS FOR RETROFI
EXISTING BRIDGE RAIL
TUBULAR BEAM GUA

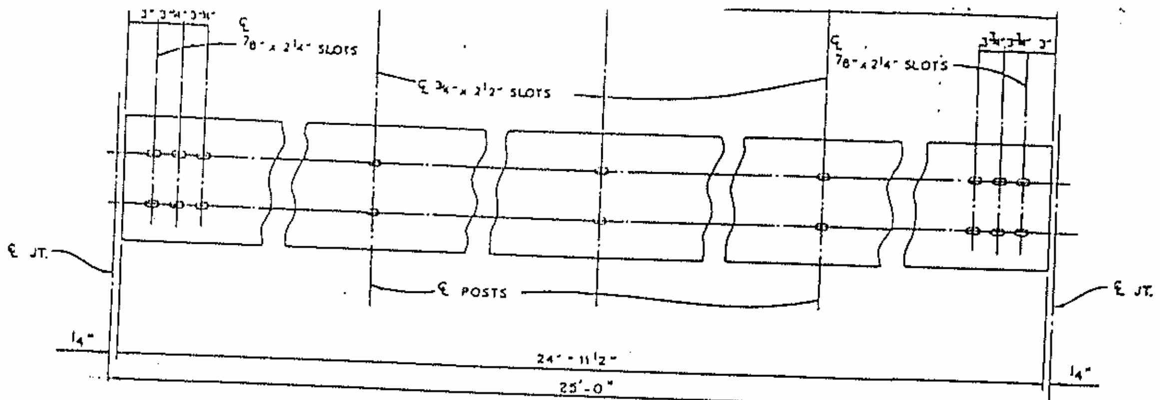
JAN

REVISIONS

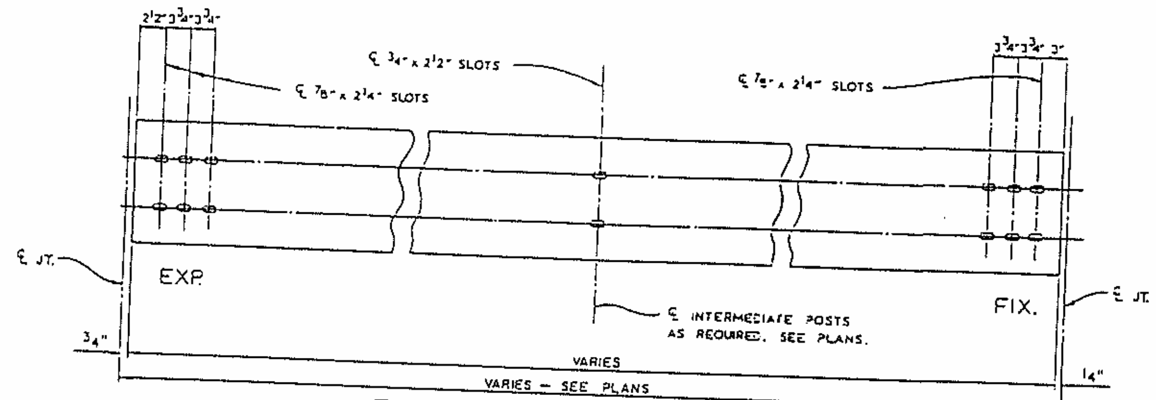
NO.	BY	DATE	NO.	BY	DA
1			3		
2			4		

ASSEMBLED BY F.A. Mimm	DATE 6-10-85	SPECIAL
CHECKED BY L. L. Brooks	DATE 6-10-85	
DRAWN BY ROSS EDWARD KUBENY	DATE 1-14-83	STANDARD
CHECKED BY K. L. Moore	DATE 1-14-83	

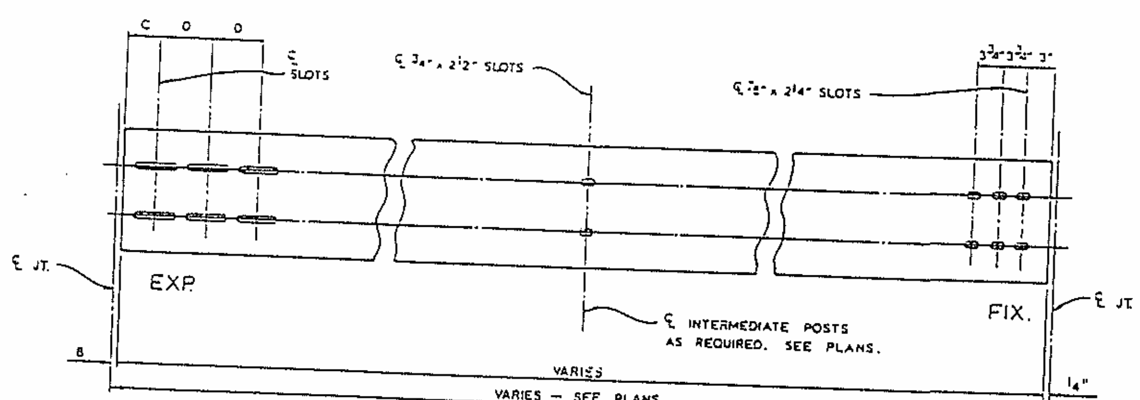
STATE	PROJECT REFERENCE NO.	SHEET
N.C.	6.621031	2-P
F.A. PROJ. NO.		



ELEVATION TUBULAR BEAM
STANDARD RAIL

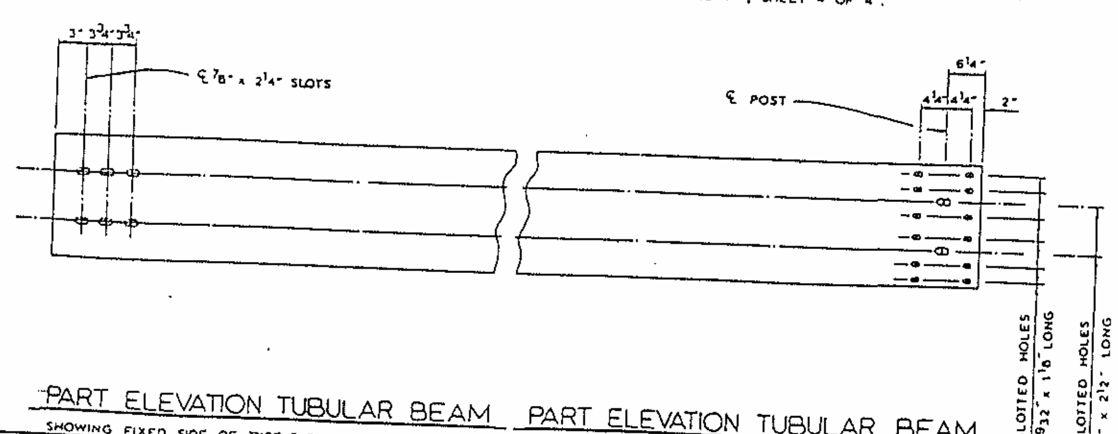


ELEVATION TUBULAR BEAM
EXPANSION RAIL FOR TYPE 1 SPLICE



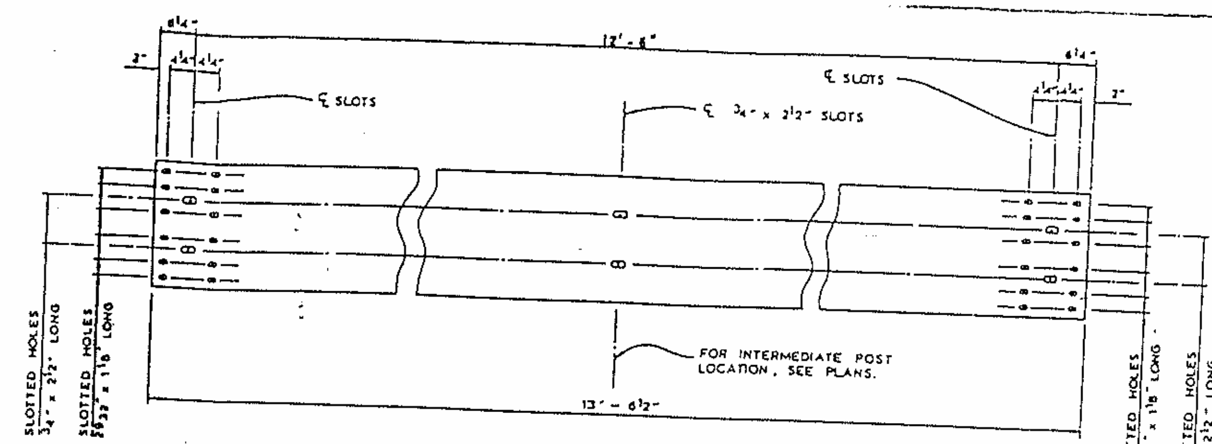
ELEVATION TUBULAR BEAM
EXPANSION RAIL FOR TYPE 2 THRU 5 SPLICE

NOTE: FOR DIM'S. "B", "C", "D", & "SLOT SIZE", SEE "TABLE 1", SHEET 4 OF 4.

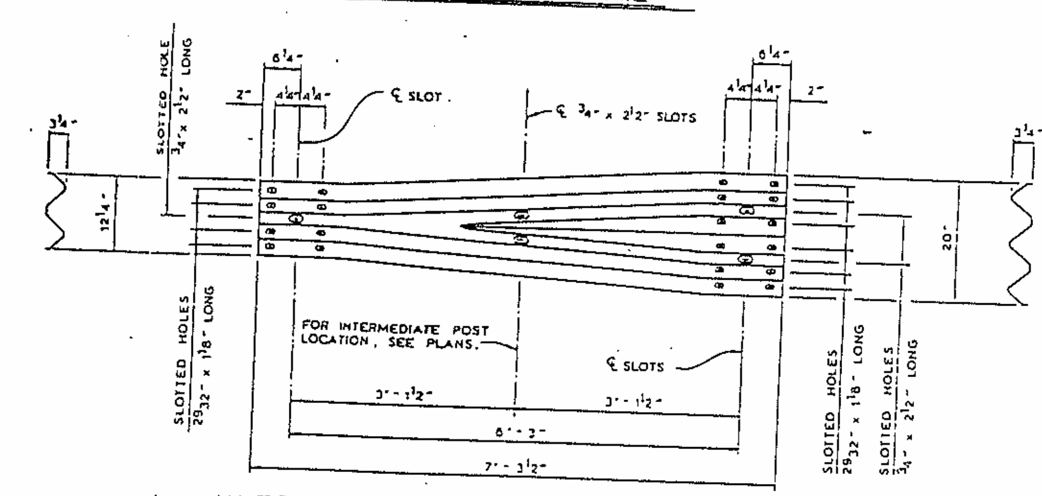


PART ELEVATION TUBULAR BEAM
SHOWING FIXED SIDE OF TYPE 2 THRU 5 EXP. SPLICE

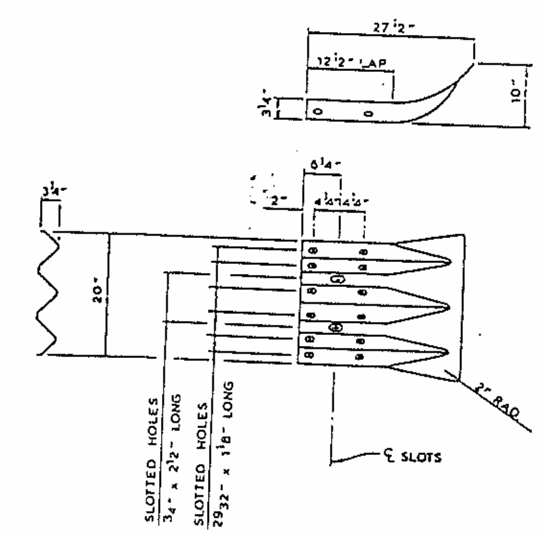
PART ELEVATION TUBULAR BEAM
SHOWING CONNECTION OF TUBULAR BEAM TO 20" TRIPLE CORRUGATED BEAM, TRANSITION SECTION, OR TERMINAL SECTION.



20" TRIPLE CORRUGATED STEEL
BEAM GUARDRAIL



W-TR GUARDRAIL TRANSITIONAL SECTION



TRIPLE CORRUGATED GUARDRAIL
TERMINAL SECTION

PROJECT NO. 6.6210[...]

SURRY, STOKES, & FORSYTH C[...]

STATION: ______

SHEET 3 OF 4

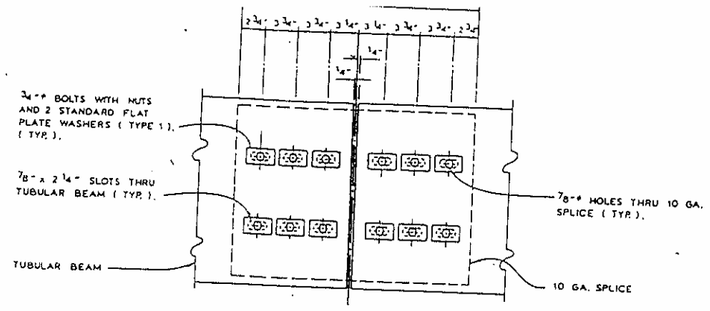
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPO[...]
RALEIGH

DETAILS FOR RETROFIT
EXISTING BRIDGE RAIL
TUBULAR BEAM GUARD[...]

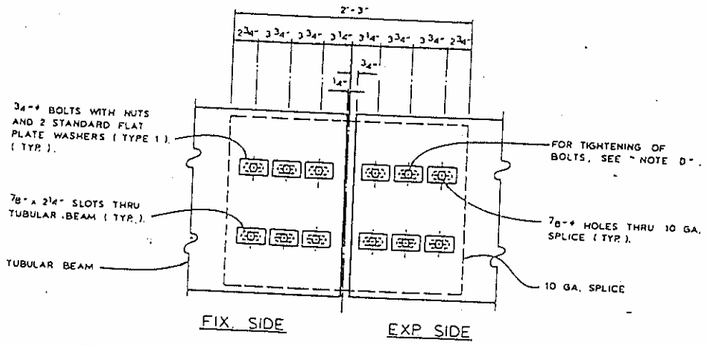
APRIL

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

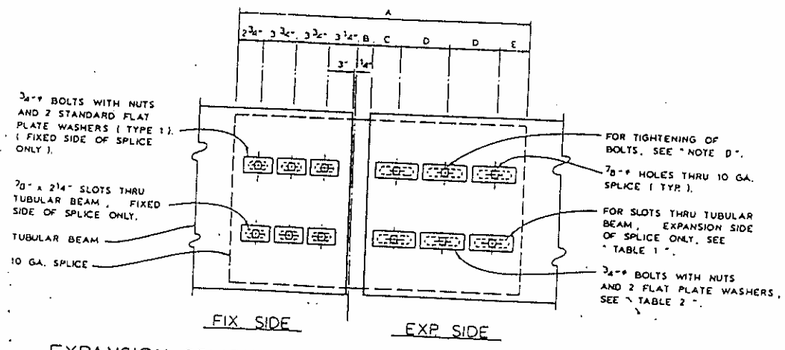
ASSEMBLED BY [illegible]	DATE [illegible]	SPECIAL
CHECKED BY [illegible]	DATE 6-10-93	
DRAWN BY ROSS EDWARD KUBENY	DATE 4-16-80	STANDARD
CHECKED BY [illegible]	DATE 4-17-80	



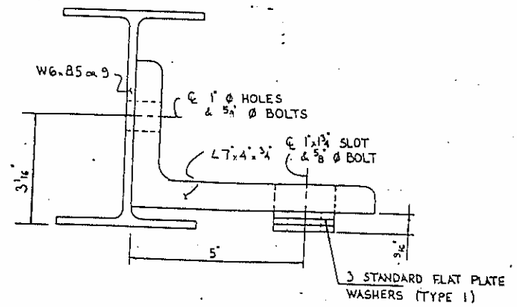
FIXED SPLICE BETWEEN POSTS (TYPE 1)
TUBULAR BEAM SPLICE



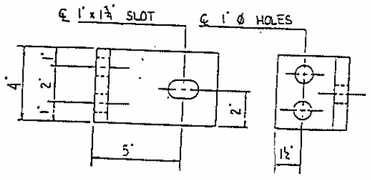
EXPANSION SPLICE BETWEEN POSTS (TYPE 1)
TUBULAR BEAM SPLICE



EXPANSION SPLICE BETWEEN POSTS (TYPE 2 thru 5)
TUBULAR BEAM SPLICE



DETAIL OF SPECIAL ATTACHMENT



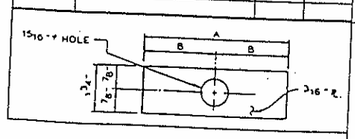
DETAIL OF L 7"x4"x¾"

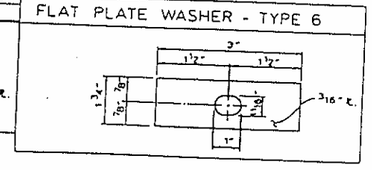
TABLE 1				
DIMENSIONS FOR TYPE 2 THRU 5 EXPANSION SPLICE (TUBULAR BEAM SPLICE BETWEEN POSTS)				
TYPE	2	3	4	5
A	2'-9"	3'-1"	3'-5"	3'-8"
B @ 90°F	1¼"	1½"	1 15/16"	2 3/16"
B @ 60°F	1¾"	2¼"	3"	3½"
B @ 30°F	2¼"	3"	4 1/16"	4 13/16"
C	3 3/8"	4"	4 3/4"	5"
D	5½"	6½"	7½"	8½"
E	3 3/8"	4¼"	4¾"	5"
SLOT SIZE	1"x 4"	1"x 5"	1"x 6"	1"x 7"

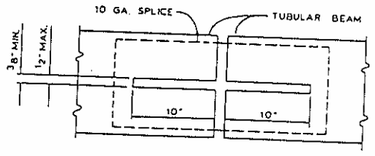
"NOTE D": BOLTS ON EXPANSION SIDE OF TUBULAR BEAM SPLICE SHALL BE TIGHTENED FINGER TIGHT. DOUBLE NUTS SHALL BE USED AND TIGHTENED AGAINST EACH OTHER TO PREVENT THE NUTS FROM BECOMING LOOSE ON THE BOLT.

TABLE 2			
FLAT PLATE WASHER DIMENSIONS			
TYPE	DESCRIPTION	A	B
1	STANDARD WASHER	3"	1½"

TYPE	USE WITH SPLICE	A	B
2	TYPE 2	4½"	2¼"
3	TYPE 3	5½"	2¾"
4	TYPE 4	6½"	3¼"
5	TYPE 5	7½"	3¾"

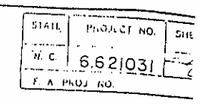






BOTTOM VIEW OF TUBULAR BEAM SPLICE

ASSEMBLED BY E.A. Mimms	DATE 6-10-85	SPECIAL
CHECKED BY L.I. BROOKS	DATE 6-10-85	
DRAWN BY ROSS E XUBENY	DATE 4-16-80	STANDARD
CHECKED BY E.V. Moore	DATE 4-17-80	



STANDARD POST ATTACHMENT

SPECIAL ATTACHMENT FOR POST WHEN BOLT THRU EXISTING RAIL IS TOO CLOSE TO EDGE OF EXISTING POST OR RAIL

TOTAL APPROXIMATE NO. REQUIRED : 135

NOTES

THE NUMBER OF SPECIAL ATTACHMENTS REQUI IS APPROXIMATE AND IS BASED ON PLANS OF THE EXISTING BRIDGES. THE CONTRACTOR SHALL SUPPLY THE NUMBER REQUIRED TO FIT ACTUAL FIELD CONDITIONS.

NO SEPERATE PAYMENT SHALL BE MADE FOR THE SPECIAL ATTACHMENTS, BUT THE COST SHALL BE INCLUDED IN PAYMENT FOR THE VARIOUS GUARDRAIL ITEMS.

STATE	PROJECT NO.	SHE
N. C.	6.62031	
F. A. PROJ. NO.		

PROJECT No. 6.621
SURRY, STOKES, & FORSYTH

STATION:

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSP(
RALEIGH

DETAILS FOR RETROFI EXISTING BRIDGE RAIL TUBULAR BEAM GUAR.

APRIL

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

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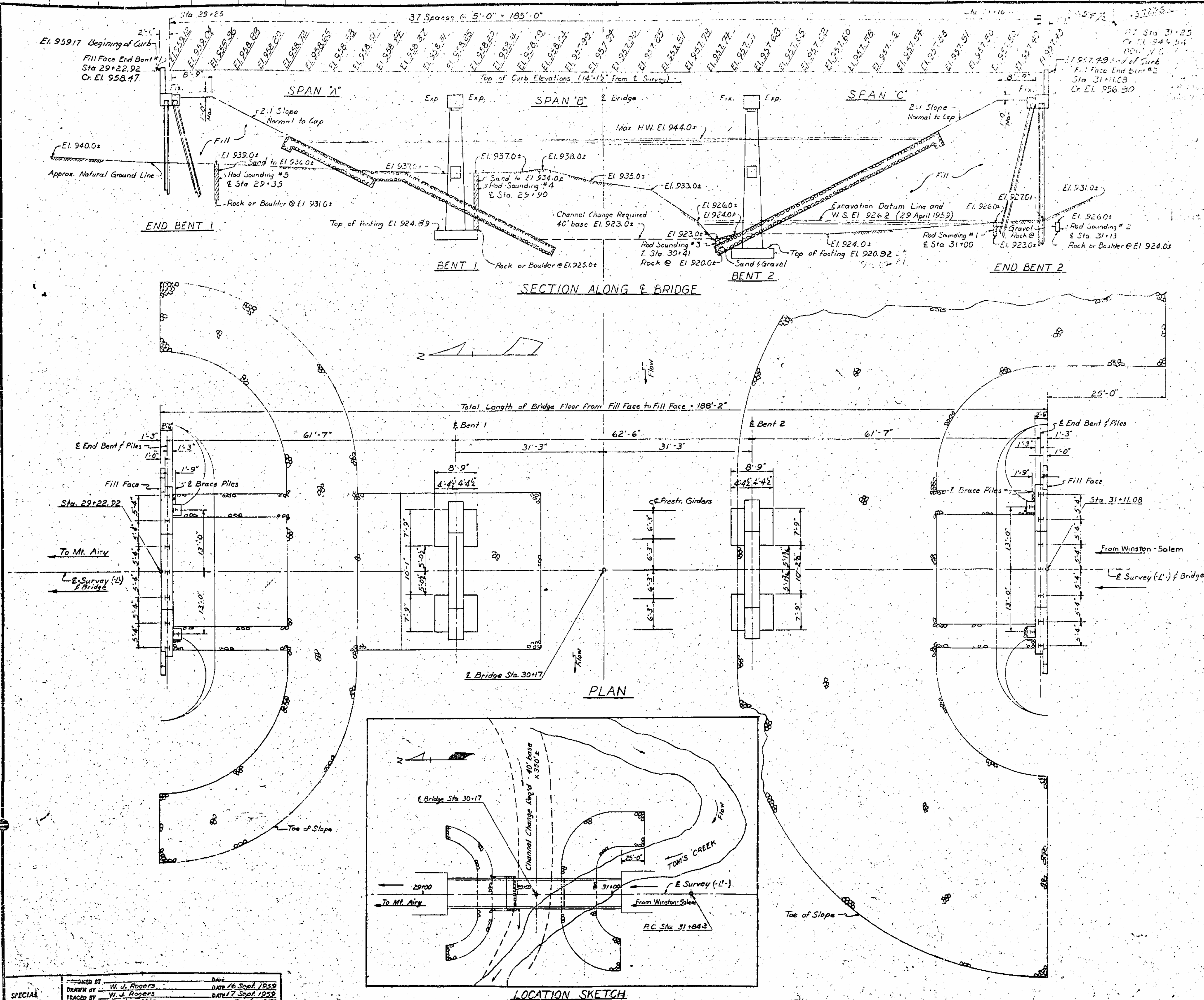


ITEM #4

SHEET	TOTAL
37	281

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	8.17542

F. A. Proj. - F-177 (8)

TOTAL BILL OF MATERIAL

	Class "A" Concrete	Reinforcing Steel	45" Prestr. Concrete Girders		12 H 53 Steel Piles		Excavation Wet	Excavation Dry	Plain Rip Rap Class 2	Concrete Rip Rap	12" H 53 Steel Piles Cut Off
	Cu. Yds.	Lbs.	No.	L.F.	No.	L.F.	Cu. Yds.	Cu. Yds.	Sq. Yds.	Sq. Yds.	
Superstructure	179.5	41417	15	932'-6"						571.47	
End Bent 1	11.6	2132	—	—	9	~~225~~ 223'7"	31.04	100.19	565		1'5"
Bent 1	40.9	6851					35.0	[illegible]			
Bent 2	64.381 ~~44.2~~	7142					[illegible]	43.79		[illegible]	
End Bent 2	11.6	2132			9	~~270~~ 245'10"	[illegible]	—	1250	~~1361~~	24'2"
Approach Curbs	3.2	76								[illegible]	
TOTAL	293.2381 ~~291.6~~	59750	15	932'-6"	18	469'5" ~~495~~	~~80~~ 114.06	~~55~~	~~1815~~	1247.65 1249.23 ~~2010~~	25'7"

or

NOTES

Assumed Live Load - H20 - S16 (44) or Alternate Loading.

For other design data and General Notes see sheet S.N.

Computed foundation load for Bents 1 and 2 equals 3 tons per square foot.

Footings to be carried at least 6" into rock with minimum thickness as shown on plans.

No test piles are required. Order length shall be 25 feet long for End Bent #1 and 30 feet long for End Bent #2.

Piles for End Bents 1 and 2 to be driven through the roadway fill.

Piles for End Bents 1 and 2 to be driven to a minimum bearing capacity of 29 tons each.

Work is not to be started on Bents 1 and 2 until after Channel Change section has been excavated by the roadway contractor.

Excavation for Bent #1 to be measured from surface of cut.

B. M. #9 - 2 Nails in base 15" Sycamore 150' Lt. Sta. 30+20 -L- Elev. 940.53.

Note: This Str. Built as per plan except as noted. C. K. Smith

Note: Slab Elev. Raised 1¾" - See Const. Insp. Report. Dated 8-7-60.

#122 N. ROUND

PROJECT No. 8.17542

SURRY - STOKES **COUNTY**

STATION: 30+17 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

GENERAL DRAWING
BRIDGE OVER TOM'S CREEK
ON LINE -L-

September 1959

SUBMITTED BY [signature] ASSISTANT CHIEF ENGINEER - BRIDGES
APPROVED BY C. W. Lee CHIEF ENGINEER DATE 5/20/60

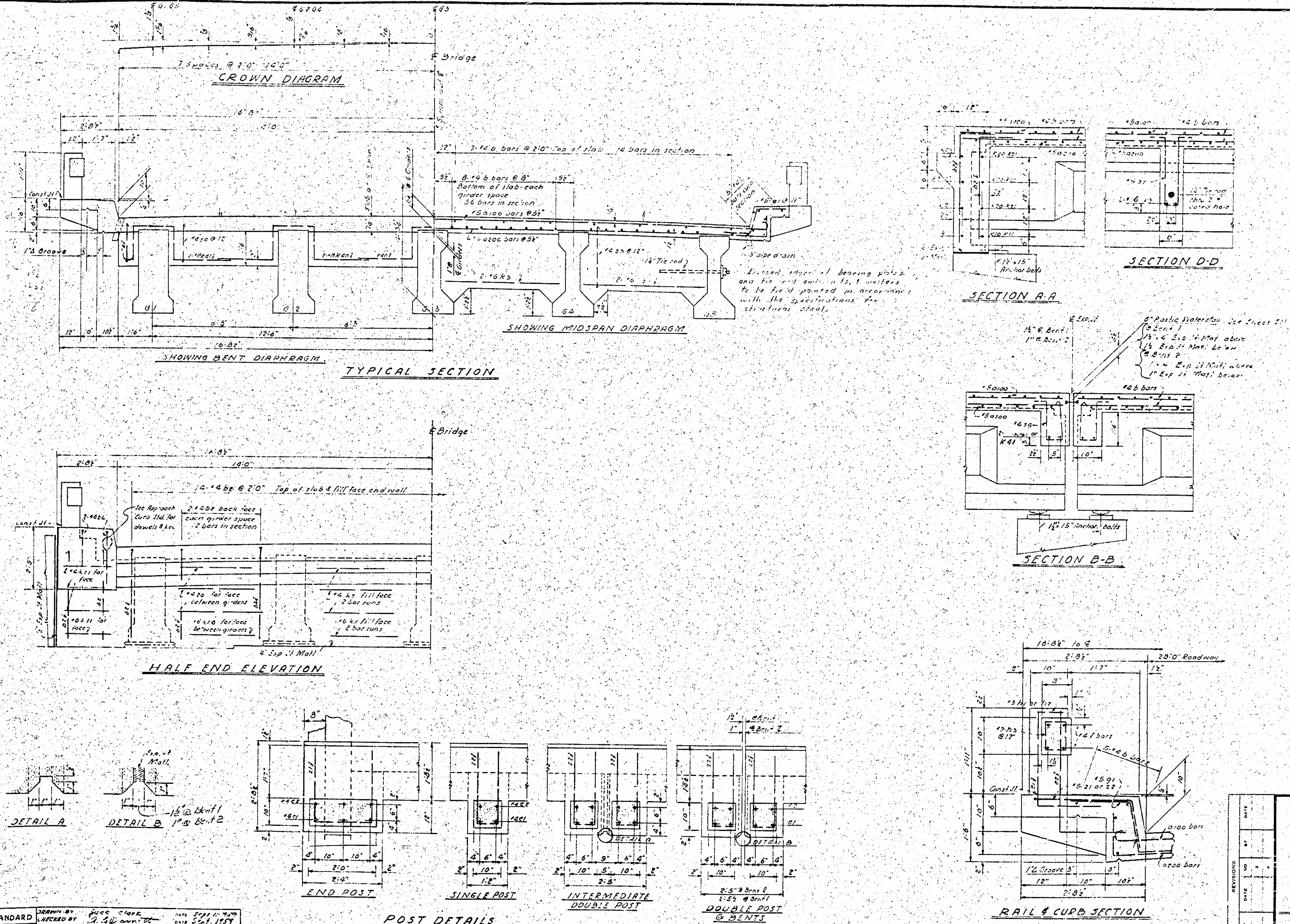
SPECIAL

		DATE
DESIGNED BY	W. J. Rogers	16 Sept. 1959
DRAWN BY	W. J. Rogers	17 Sept. 1959
TRACED BY	W. J. Rogers	17 Sept. 1959
CHECKED BY	H. H. Ellis	Sept. 1959

F.A.P. No.	State	Proj.
3	N. C.	8.17542

F.A.Proj. F-177 (F)

SHEET 38 TOTAL 281



NOTE

For bars indicated and no bar mark shown see span plan.

Temporary struts shall be placed between prestressed girders adjacent to the diaphragms and the nuts on the 1⅛" 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 retightened after the struts have been removed.

The center ez bar in End Posts may be shifted back to clear Name Plate.

See Standard Notes for Structures Sheet for additional notes.

Dimensions shown which are affected by dead load deflection are dimensions at ℄ of Span.

PROJECT NO. 8.17542

SURRY STOKES COUNTY

STATION: 30+17 L'

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

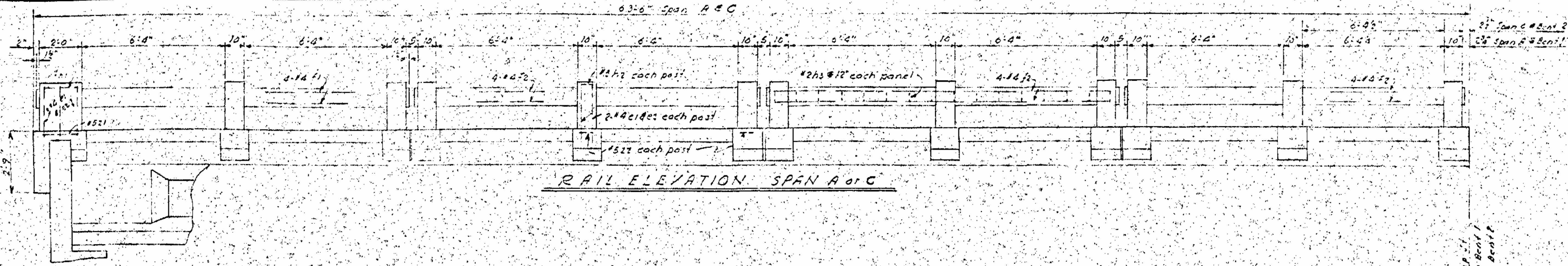
SUPERSTRUCTURE
TYPICAL SECTIONS
5-45" PRESTRESSED GIRDERS
28' ROADWAY 18" CURB

SEPT. 1959

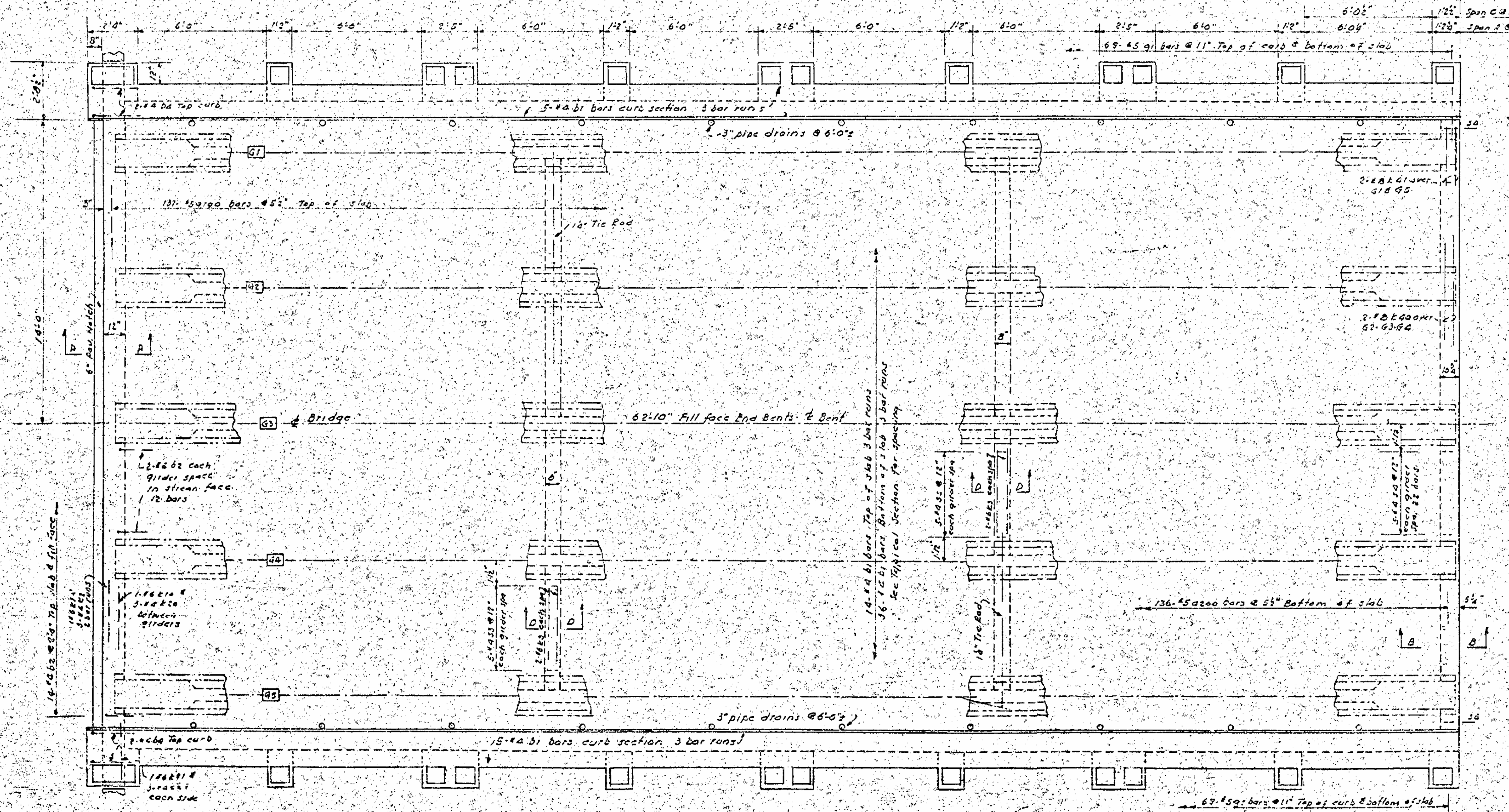
STANDARD ASSEMBLY — Drawn by, Checked by, Assembly by, Checked by — Date Sept. 1959

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N.C.	8.17542
F. A. PROJECT	F-177 (8)	

SHEET 39 TOTAL 281



RAIL ELEVATION SPAN A or C



CONCRETE PLAN SPAN A or C

N O T E

Dead load deflections as follows:

	Girder G1-G5	Girder G2-G3-G4
Camber girder alone in place	½" ↑	½" ↑
Deflection due to superimposed D.L.	½" ↓	7/16" ↓
Final camber	0"	1/16" ↑
V.C. Ordinate	½"	½"

Slab is to be 7¼" thick at ℄ of span

Concrete quantities & bridge seats have been computed to provide for thickening of the slab at the bearings.

PROJECT NO. 8.17542

SURRY. STOKES COUNTY

STATION 30+17 L'

STATE OF NORTH CAROLINA

STATE HIGHWAY COMMISSION

RALEIGH

SUPERSTRUCTURE
CONRETE PLAN
END SPANS A & C

SEPT 1959

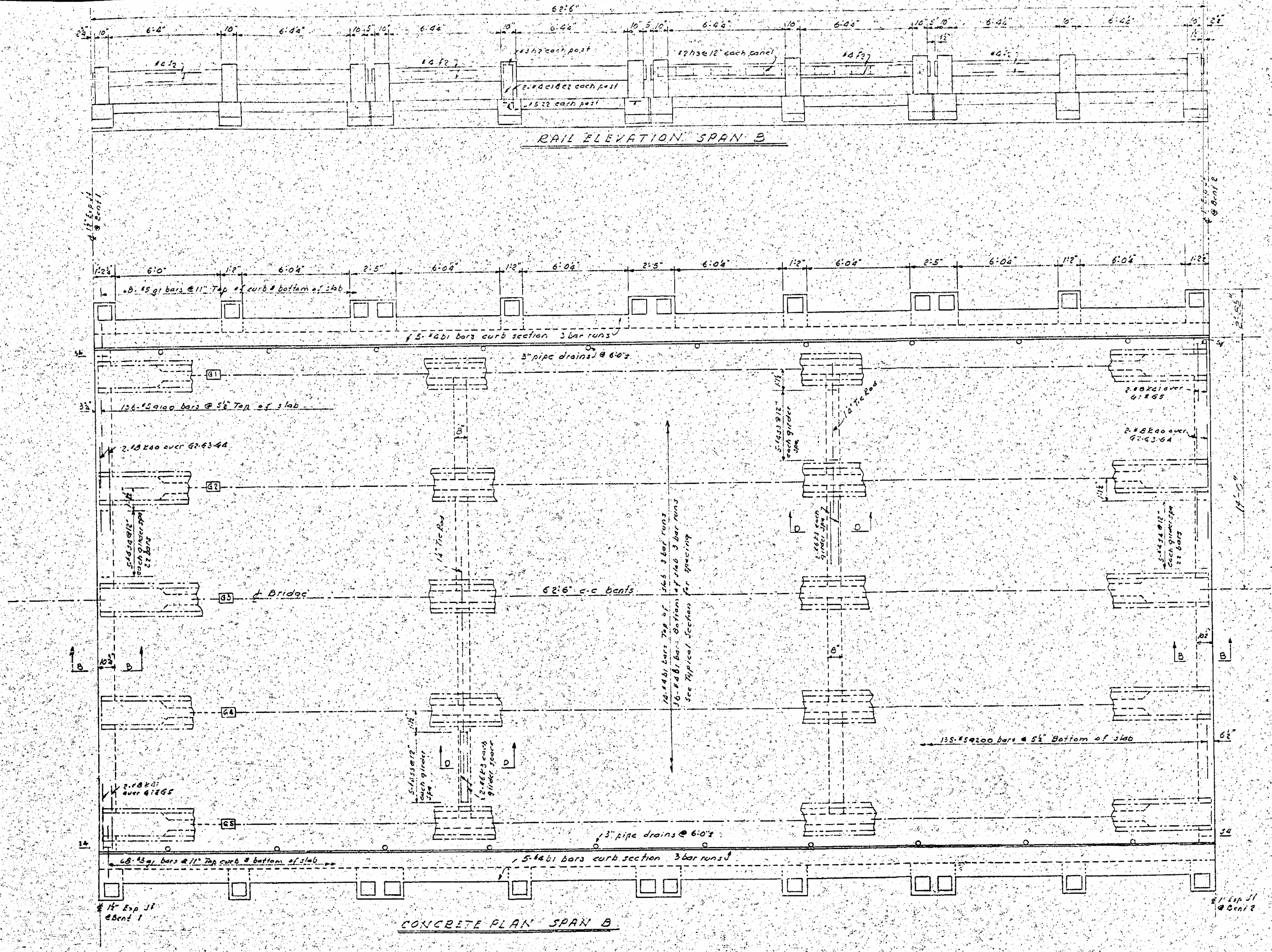
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-39
1			3			TOTAL SHEETS
2			4			172

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N.C.	8.17542
F. A. PROJECT	F. 177 (8)	

SHEET 40 TOTAL 281

N O T E

Dead load deflections, camber & vertical curve ordinates same as for Span A or C



PROJECT No. 8.17542

SURRY STOKES **COUNTY**

STATION: 30+17 L'

STATE OF NORTH CAROLINA

STATE HIGHWAY COMMISSION

RALEIGH

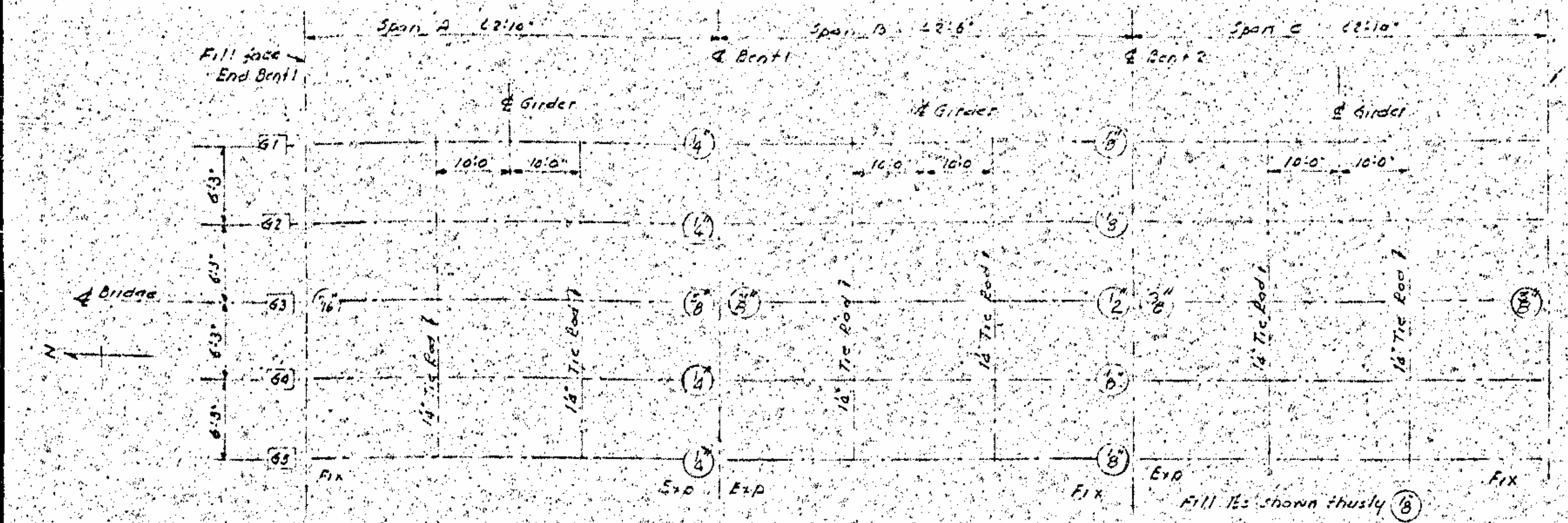
SUPERSTRUCTURE
CONCRETE PLAN
INTERIOR SPAN B

SEPT 1959

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-39
1			3			TOTAL SHEETS
2			4			172

DESIGNED BY ___ DATE ___
DRAWN BY Yark Clark DATE Aug. 15, 1959
TRACED BY ___ DATE ___
CHECKED BY W. W. Ellis DATE Sept. 1959

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N.C.	B.17542
F. A. PROJECT	F-177 (8)	
SHEET 41		TOTAL 231



FRAMING PLAN

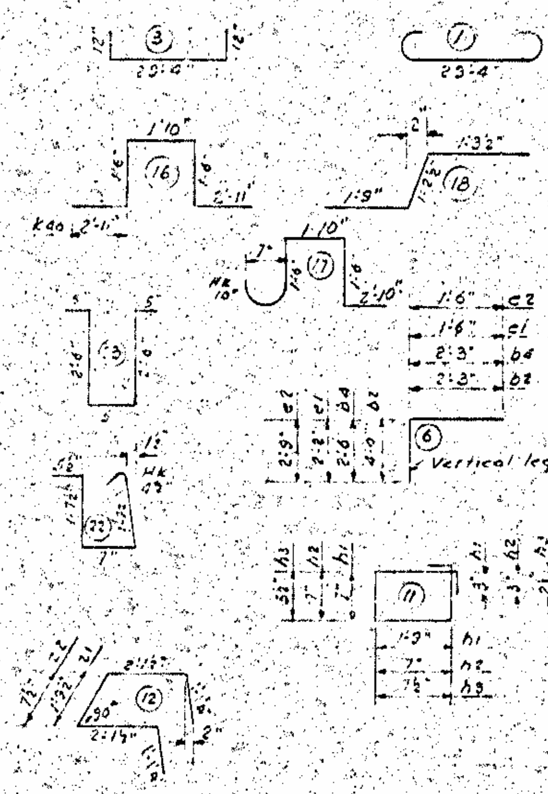
DRAIN DETAIL

Required 60 pcs

REINFORCING STEEL BAR SCHEDULE FOR 3 SPANS

Bar No.	No.	Size	Type	Length	Weight
u100	410	#5	1	30'6"	13043
u200	407	#5	3	31'4"	13301
g1	412	#5	18	4'3"	1826
b1	540	#4	Str	21'9"	7844
b2	52	#4	6	6'3"	217
b4	8	#4	6	4'9"	25
k1	4	#6	Str	17'0"	107
k10	8	#6		4'0"	48
k11	4	#6		3'0"	18
k2	12	#4		17'3"	138
k20	24	#4		4'6"	72
k21	12	#4		3'3"	26
k3	48	#6	Str	5'3"	378
k40	24	#8	16	10'3"	684
k41	16	#8	17	8'6"	363
s3	120	#4	23	6'3"	501
s4	88	#4	22	4'8"	274
e1	148	#4	6	3'8"	362
e2	148	#4	6	4'3"	420
h1	4	#3	11	5'2"	8
h2	68	#3	11	2'10"	72
h3	388	#2	11	2'7"	167
z1	4	#5	12	8'3"	34
z2	68	#5	12	7'1"	502
f1	16	#4	Str	16'4"	175
f2	80	#4	Str	15'2"	810

BENDING DIAGRAMS



Dimensions are out to out

SUPERSTRUCTURE QUANTITIES

Class A Concrete	179.5 C.Y.
Reinforcing Steel	41417 Lbs
45" Prestressed Concrete Girders No 15	932'6" L.F.

PROJECT NO. B.17542

SURRY STOKES **COUNTY**

STATION: 30+17 L'

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL
FRAMING PLAN

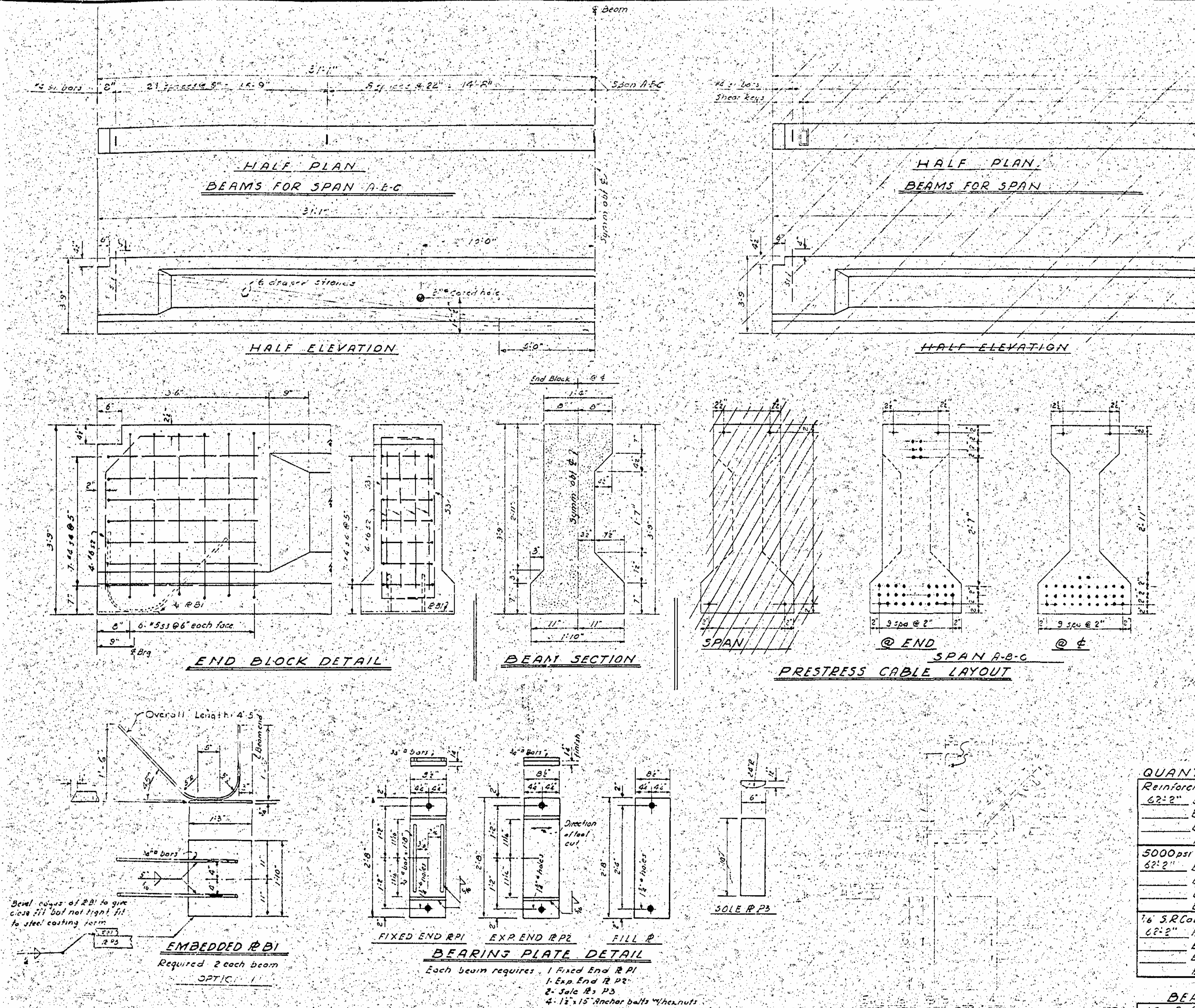
SEPT 1959

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			172

DESIGNED BY	DATE
DRAWN BY Jack Clark	DATE Sept. 10, 1959
TRACED BY	DATE
CHECKED BY R.H. Fils	DATE Sept. 1959

Fed. Road Dist. No.	State	Project No.
3	N. C.	8.17542

F.A. Proj. F-177 (5)
SHEET 42 TOTAL 281

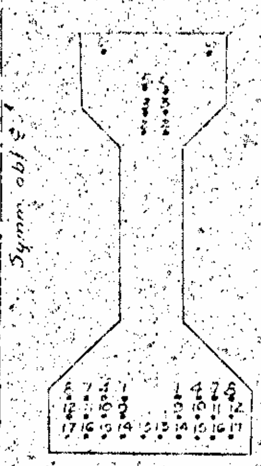


NOTE

All prestress strands to be 7/16" Stress Relieved Cables. Each cable to be prestressed at 18900 lbs.

Cables to be cut off within 1" of end of beam.

No surface finish will be required for prestressed concrete beams, however the outside face of exterior beams shall be carefully cleaned of drippings and other discolorations.



SECTION SHOWING PATTERN FOR BURNING CABLES

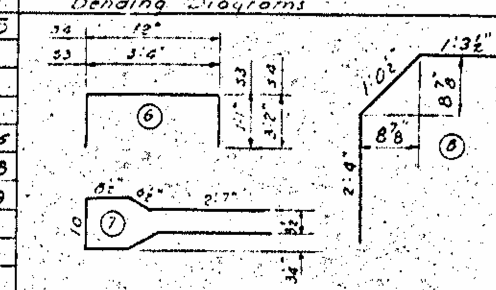
(1) Bottom cables 1-1
(2) Draped cables 2-2
(4) Bottom cables 4-4
(5) Draped cables 5-5
(6) Top cables 6-6
(7) Release hold downs

Each pair of cables 14 thru 17-17 shall be burned at ends of bed and between all girders before burning any of the next pair of cables. See Specifications and Errata sheets.

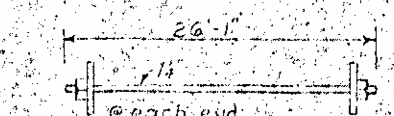
REINFORCING STEEL FOR ONE (1) BEAM

	Bar	No.	Size	Type	Length	Weight
62'-2" Beam	S1	59	#4	7	8'-6"	335
Beam	S1		#4	7	8'-6"	
Beam	S1		#4	7	8'-6"	
Beam	S1		#4	7	8'-6"	
	S2	8	#6	8	4'-8"	56
	S3	24	#5	6	5'-0"	138
	S4	14	#4	6	7'-0"	69

Bending Diagrams



Dimensions are out to out.



1¼" TIE ROD

Required 6 Complete assemblies as detailed. No Shop Paint Required.

QUANTITIES ONE (1) BEAM

Reinforcing Steel		
62'-2" Beam	598	Lbs
Beam		Lbs
Beam		Lbs
Beam		Lbs
5000 psi Concrete		
62'-2" Beam	9.3	C.Y.
Beam		C.Y.
Beam		C.Y.
Beam		C.Y.
7/16" S.R. Cables		
62'-2" Beam	34	No.
Beam		No.
Beam		No.
Beam		No.

BEAMS REQUIRED

15 @ 62'-2"	Length	932'-6"	L.F.
@	Length		L.F.
@	Length		L.F.
@	Length		L.F.

PROJECT NO. 8.17542
SURRY-STOKES COUNTY
STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STANDARD 45" PRESTRESSED CONCRETE BEAM

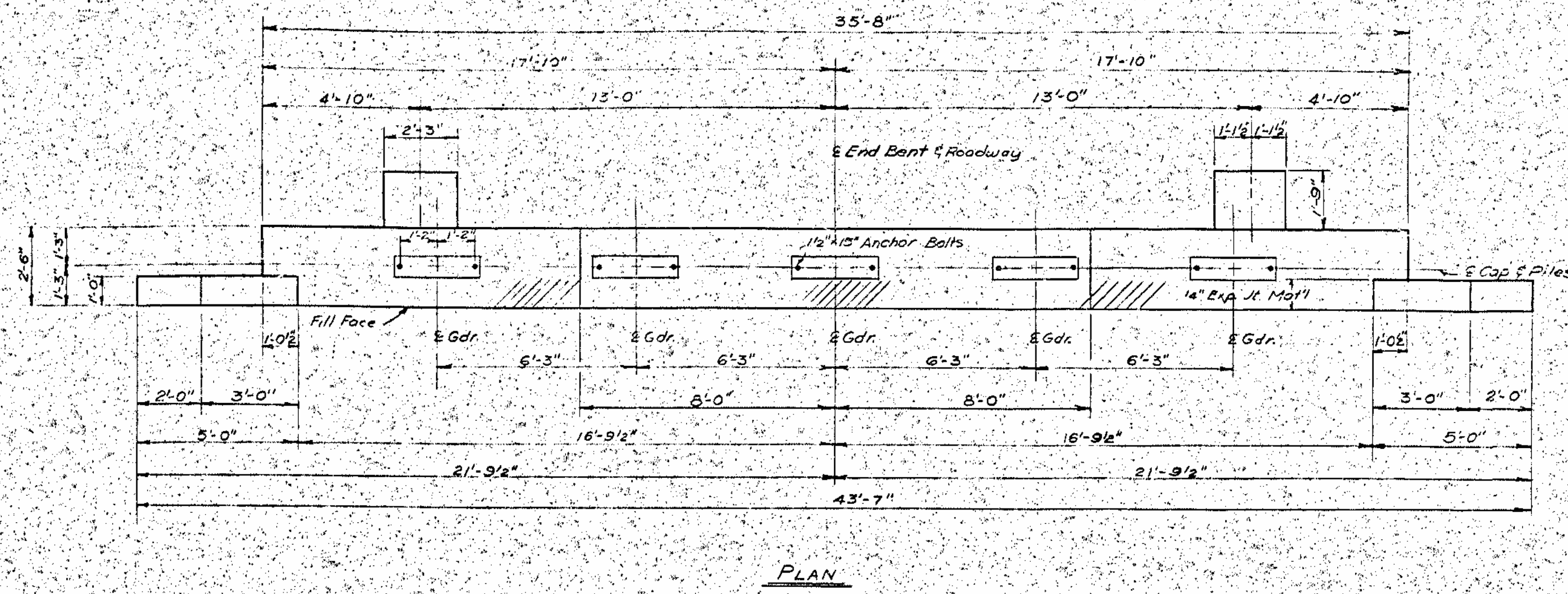
MAY 1958

Sheet No. S-4 Total Sheets 17

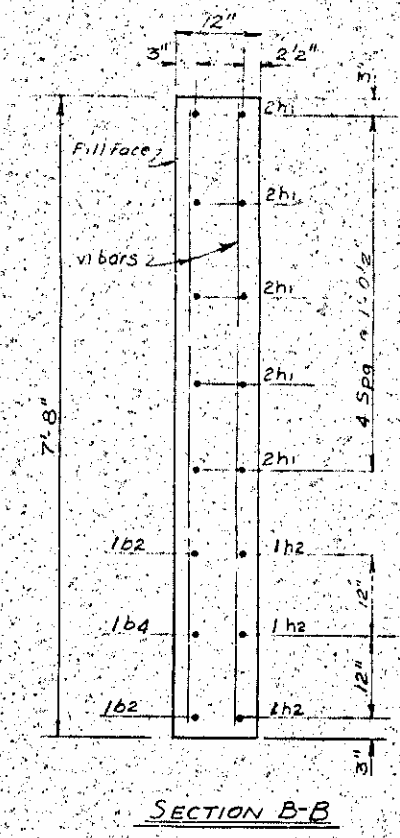
Assembly by Clark, Chkd. R.H.E.; Designed by / Drawn by Jack Clark, Date May 5-1958; Checked by Mack Underwood, Date July 1958

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	8.17542

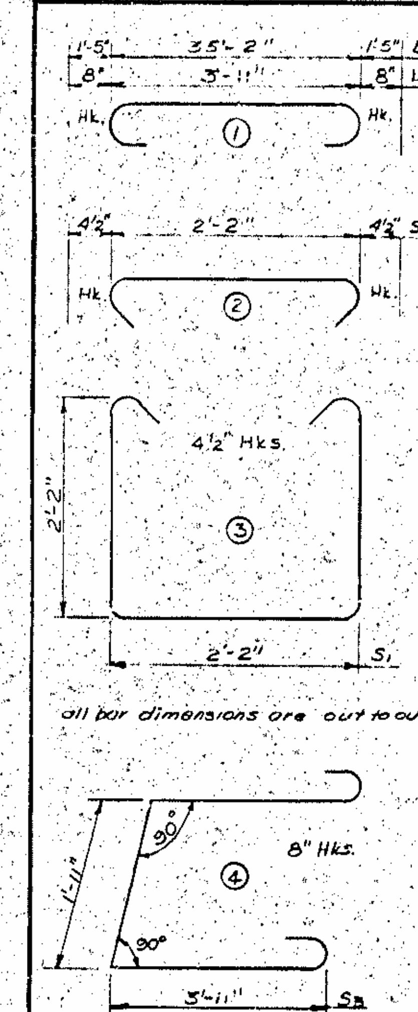
F.A. Proj. – F-177 (8)
SHEET 43 TOTAL 281



PLAN



SECTION B-B



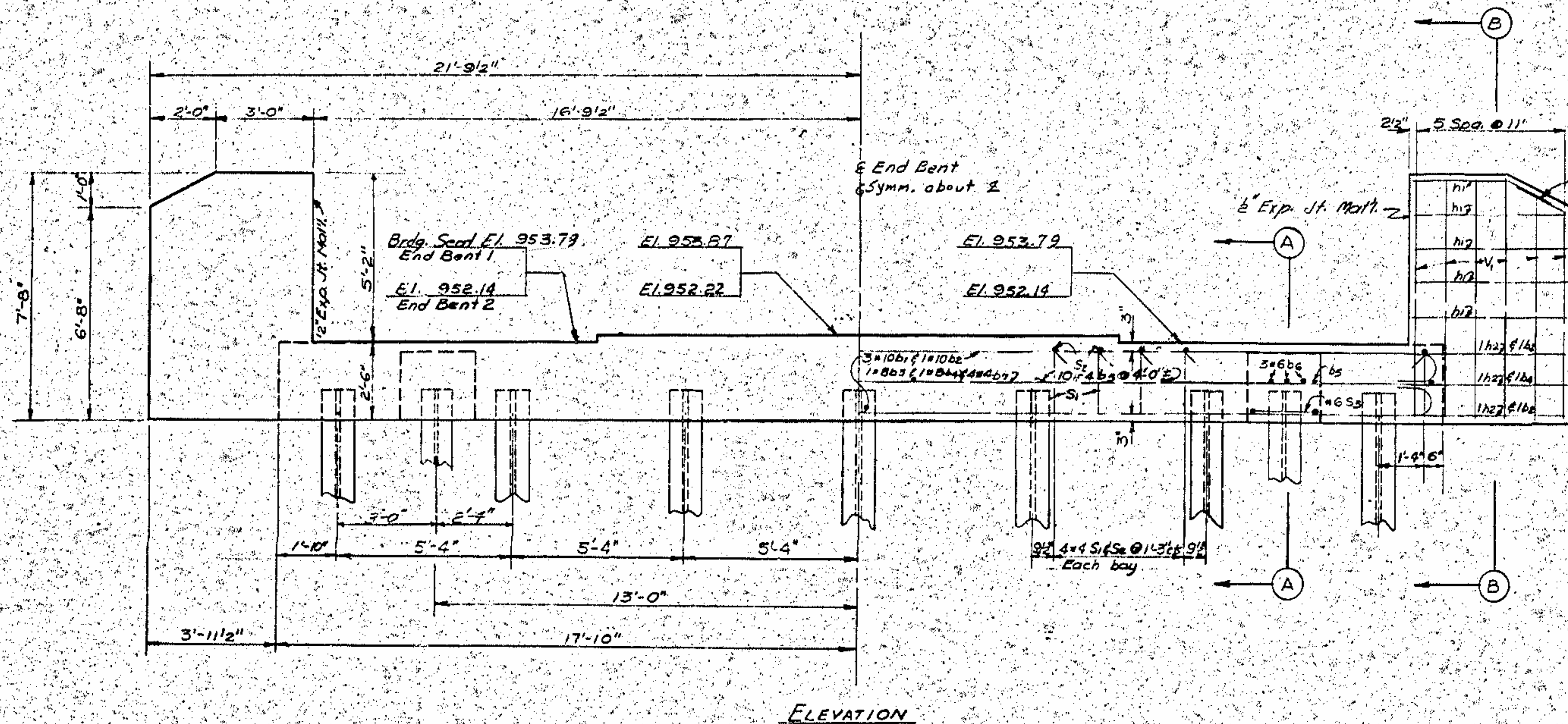
BILL OF MATERIAL

FOR ONE END BENT
TWO REQUIRED

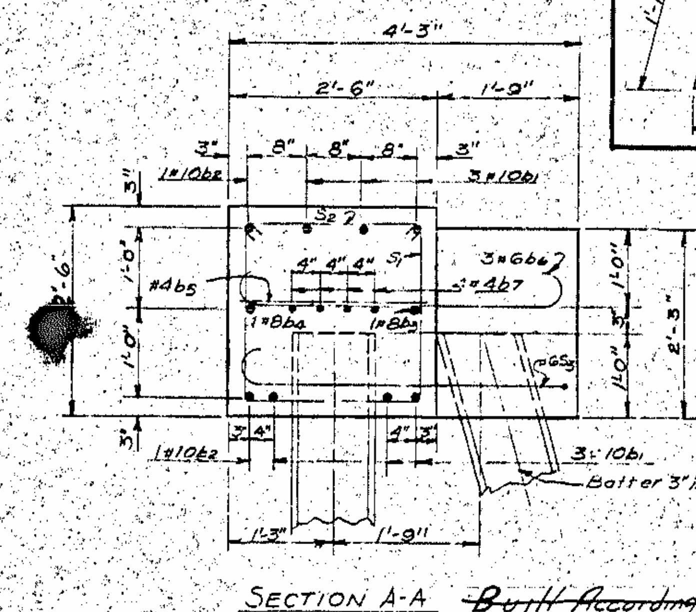
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	6	#10	1	38'-0"	981
b2	2	#10	Str.	43'-3"	372
b3	1	#8	Str.	35'-2"	94
b4	1	#8	Str.	43'-3"	115
b5	10	#4	Str.	2'-2"	14
b6	6	#6	1	5'-3"	47
b7	8	#4	Str.	18'-5"	98
h1	20	#4	Str.	4'-8"	62
h2	6	#4	Str.	5'-3"	21
v1		#4	Str.	7'-4"	118
S1	26	#4	3	7'-3"	126
S2	26	#4	2	2'-11"	51
S3	2	#6	4	11'-1"	33

Reinforcing Steel 2132 Lbs
Class "A" Concrete 11.6 c.y.

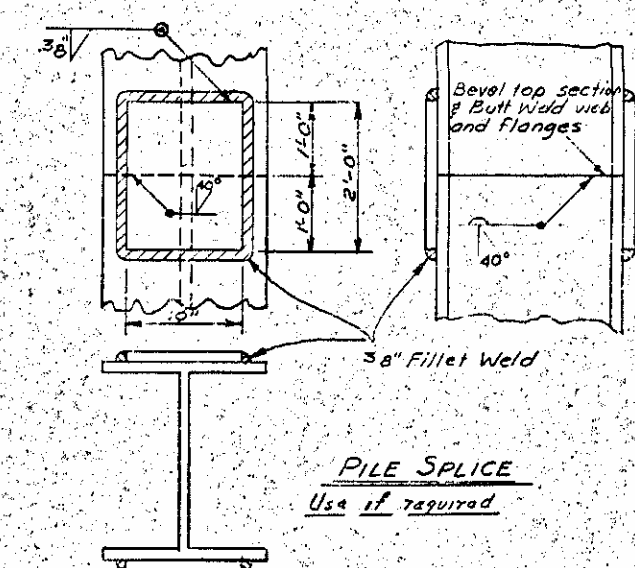
End Bent 1	12H53 Steel Piles – No. 9	~~225~~ 223'7" L.F.
End Bent 2	12H53 Steel Piles No. 9	~~270~~ 245'10" L.F.



ELEVATION



SECTION A-A ~~Built According to Plan~~



PILE SPLICE
Use if required

Piles to be driven to a minimum bearing capacity of 29 tons each.

PROJECT No. 8.17542
Surry-Stokes **COUNTY**
STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUBSTRUCTURE
END BENT 1 & 2

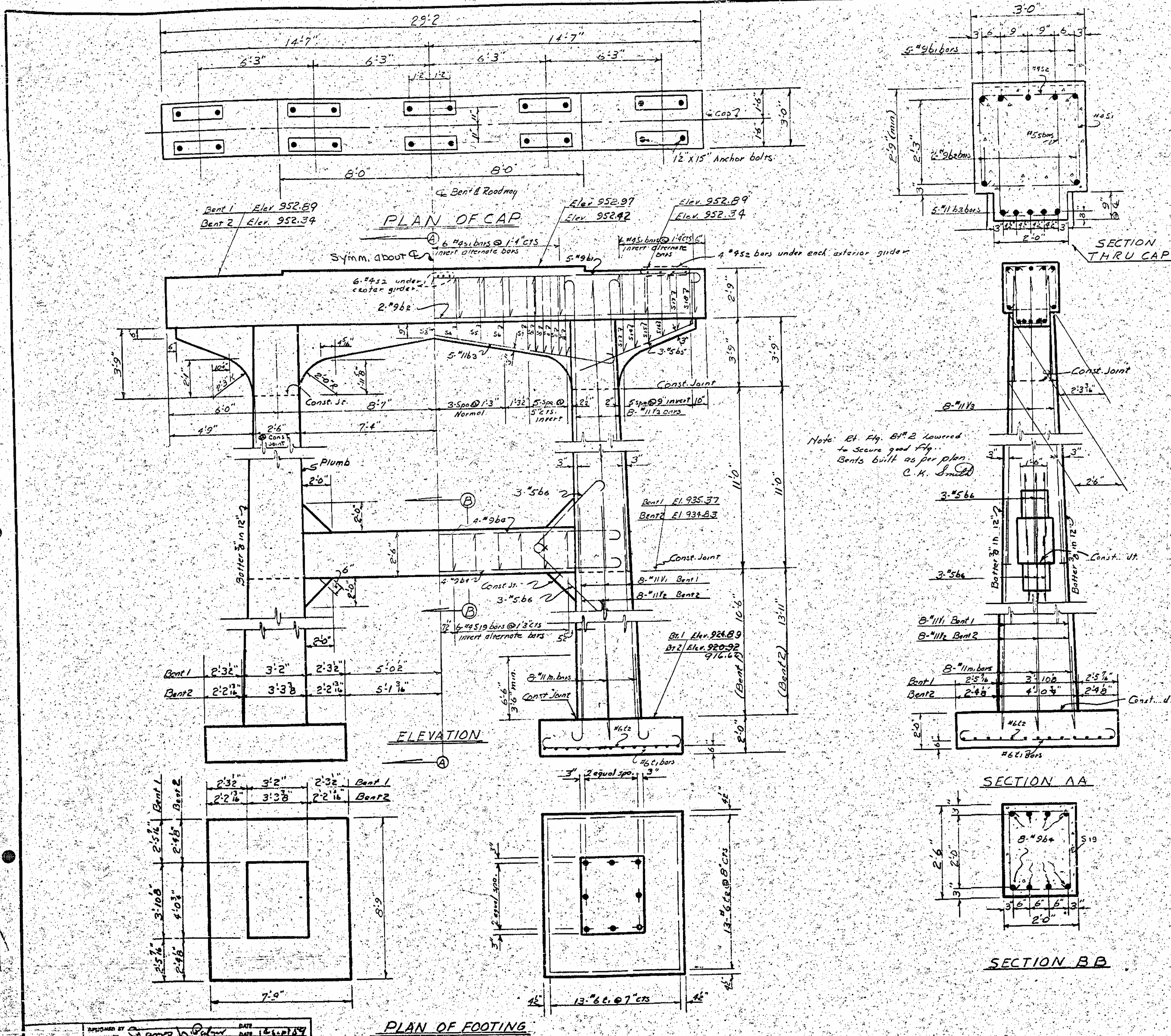
September 1959

SHEET NO. S-42
TOTAL SHEETS 172

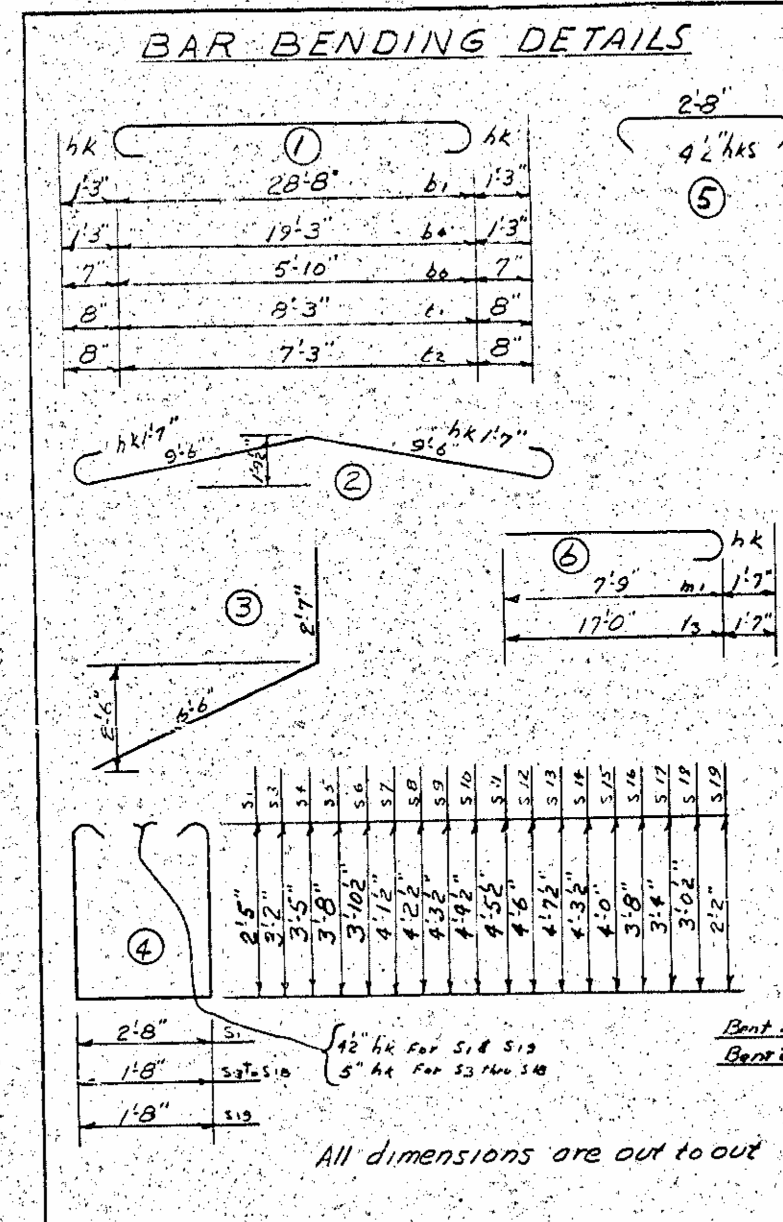
SPECIAL
DESIGNED BY C. S. Hicks
DRAWN BY — DATE Sept. 1959
TRACED BY —
CHECKED BY R. H. Ellis DATE Sept. 1959

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	8.17542
F. A. Proj.	F-177 (8)	

SHEET 44 TOTAL 281



Note: Rt. Ftg. Bt #2 lowered to secure good ftg. Bents built as per plan. C. K. Smith



NOTE
Computed foundation pressure equals 3 Tons per. sq. ft.

BILL OF MATERIAL

FOR ONE BENT 2 REQD.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	5	#9	1	31'-2"	530
b2	2	#9	Str.	28'-8"	195
b3	5	#11	2	22'2"	589
b4	8	#9	1	21'-9"	592
b5	6	#5	3	9'-1"	57
b6	12	#5	1	7'-0"	88
s1	19	#4	4	8'-3"	105
s2	14	#4	5	3'-5"	32
s3	1	#5	4	8'-10"	9
s4	2			9'-4"	19
s5				9'-10"	21
s6				10'-3"	21
s7				10'-9"	22
s8				10'-11"	23
s9				11'-1"	23
s10				11'-3"	23
s11				11'-5"	24
s12				11'-6"	24
s13				11'-9"	25
s14				11'-1"	23
s15				10'-6"	22
s16				9'-10"	21
s17				9'-2"	19
s18	2	#5		8'-7"	18
s19	12	#4	4	6'-9"	54
m1	16	#11	6	9'-4"	793
t1	26	#6	1	9'-7"	374
t2	26	#6	1	8'-7"	335
Bent 1 V1	16	#11	Str.	14'-0"	1190
Bent 2 V2	16	#11	Str.	17'-5"	1481
V3	16	#11	6	18'-7"	1580

Bent No 1		
Class "A" Concrete	C.Y.	40.9
Reinf. Steel	Lbs.	6851
Dry Excavation	C.Y.	100.9 ~~55.0~~
Wet Excavation	C.Y.	31.0 ~~30.0~~
Bent No 2		46.4381
Class "A" Concrete	C.Y.	~~44.2~~
Reinf. Steel	Lbs.	7142
Wet Excavation	C.Y.	~~50.0~~
Dry Exc.		~~69.19~~ 63.79

~~Built According to Plan~~

PROJECT NO. 8.17542

SURRY-STOKES **COUNTY**

STATION: 30+17 L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUBSTRUCTURE
BENTS 1 & 2

SEPT 1959

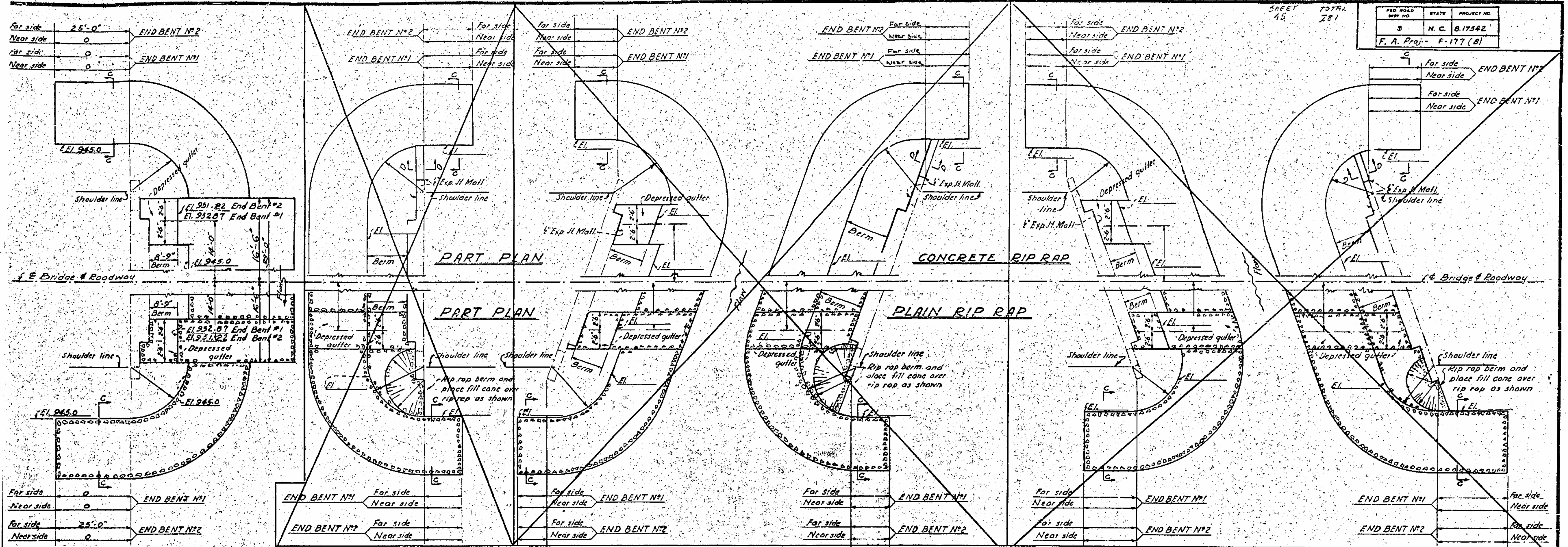
SHEET NO. S-43
TOTAL SHEETS 172

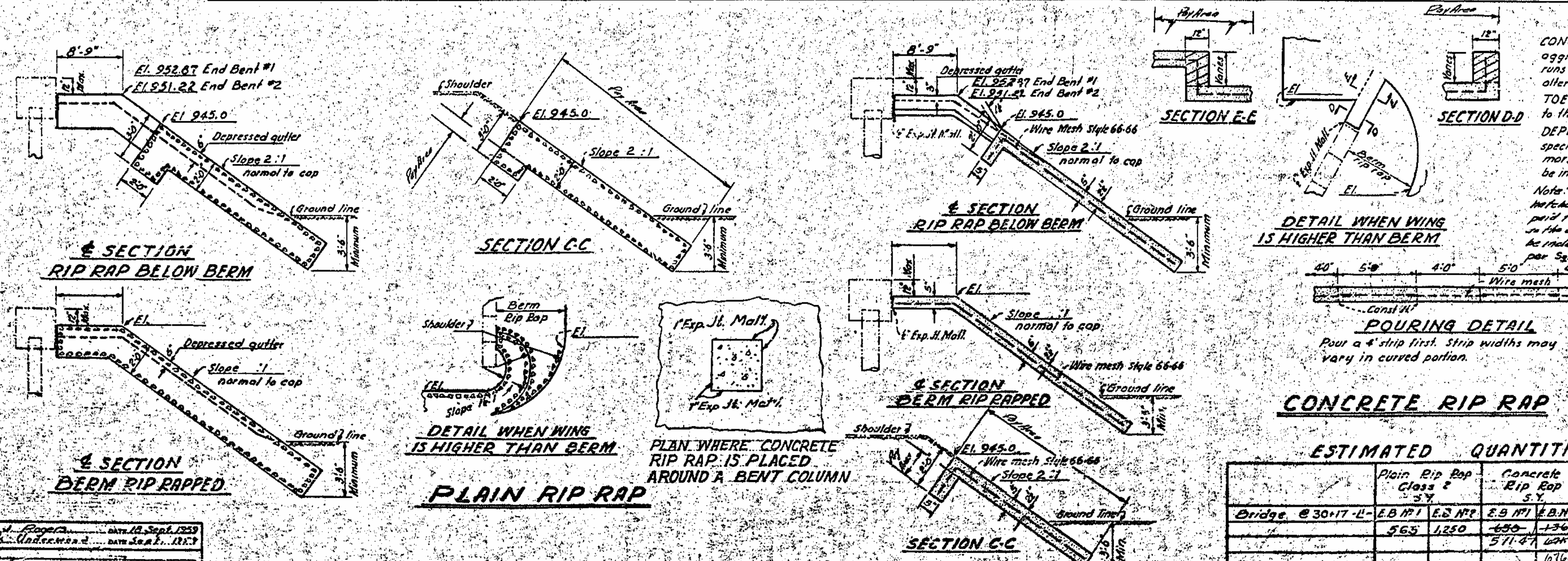
DESIGNED BY	[signature]	DATE	12 Sept 59
DRAWN BY		DATE	
TRACED BY		DATE	
CHECKED BY	R. H. Collins	DATE	Sept. 1959

SPECIAL

Fed. Road Dist. No.	State	Project No.
3	N. C.	8.17542
F. A. Proj.- F-177 (8)		

Sheet 45 Total 281





NOTE

CONCRETE RIP RAP shall be Class "B" Concrete using Std size Nº3 coarse aggregate. Wire mesh reinforcing to be Style 66-66-60" wide. Adjacent runs of wire mesh to lap at least 6". Concrete rip rap to be poured in alternate 4' & 5' strips as shown in Pouring Detail.

TOE WALLS shall be constructed at ends of rip rap similar to that shown for the top of the rip rap.

DEPRESSED GUTTERS to be formed as indicated for type of rip rap specified. Gutter area in Plain Rip Rap to be grouted with 1:3 cement mortar. All work and material incidental to forming and grouting shall be included in the unit price bid for Rip Rap.

Note: Concrete in walls at end bent wings as indicated by cross-hatched areas in section D-D and E-E will not be measured or paid for as a separate item so the entire cost of same shall be included in the price bid per Sq. Yd. for Conc. rip rap.

PROJECT NO. 8.17542

SURRY - STOKES COUNTY

STATION: 30 +17 -L-

ESTIMATED QUANTITIES

	Plain Rip Rap Class 2 S.Y.		Concrete Rip Rap S.Y.		Wire Mesh 60" wide Approx. lin. ft.
Bridge @ 30+17 -L-	E.B Nº1	E.B Nº2	E.B Nº1	E.B Nº2	
	565	1,250	~~650~~	~~1360~~	4020
			571.47	6??.16	
				676.16	

STATE OF NORTH CAROLINA
STATE HIGHWAY AND PUBLIC WORKS COMMISSION
RALEIGH

STANDARD RIP RAP DETAILS

AUGUST 1953

Sheet No. S-44
Total Sheets 172

SPECIAL	Assembled by M. J. Rogers date 18 Sept. 1959 Checked by Mack Underwood date Sept. 1959
STANDARD	Designed by ____ date ____ Drawn by Jack ____ date Aug 18 1953 Traced by ____ date ____ Checked by C. B. Pattern date Sept. 1953

Revision No. 1 - Revised to show wing dimensions from end of End Bent. Oct. 1958. R.T.J. - D.N.W.

STANDARD M-RR-13