421-28-40 B E

SAMPSON

P.I. 179+00
El. 115.74
V.C. 880'

+0.823 %

Fill Face E. Bl. 01
Sta. 178+45.82
Ct. El. 119.03

Wales 18" Min. Normal to Cap

SPAN "A"

Fix

EXP

Fix

SPA

1½:1 Slope Normal to Cap

Fill

R.S. 01
22' Lt. Sta. 177+33 Lt. Lane
El. 93.0±

R.S. 02
22' Lt. Sta. 177+33 Lt. Lane

10 M.P.F.

El. 86.0±

END BENT NO. 1

Top of F.G. El. 89.21

BENT NO. 1

El. 94.0±

El. 93.0±

30 B.P.F.

50 B.P.F.

R.S. 03
16 Lt. Sta. 177+96 Lt. Lane

40 B.P.F.

65 B.P.F.

160 B.P.F.

El. 74.0±

SECTION ALONG
27'0" LEFT C
BENTS ALONG

Length of Bridge

10 B.P.F.

12 B.P.F.

15 B.P.F.

100 B.P.F.

300 B.P.F.

El. 73.0±

R.S. 03
44' Rt. Sta. 176+31 Lt. Lane

40 B.P.F.

100 B.P.F.

300 B.P.F.

70

33'10" Short Chord

℄ Beams

66'7½"

68'0" Shoulde

44'0" A

12'0" Shoulder

Hard Shoulder 4'0"

22'0"

10'0" Min Hor. Clear

8'0"

8'10"

12'8"

4'5"

2'6"

8'10"

17'3"

8'10"

1'3"

6'3"

2'3"

3'42

3'42

2'6"

1'42

1'42

1'42

2'10½"

5'0"

3'42

3'42

To Wilmington

W.P. 01

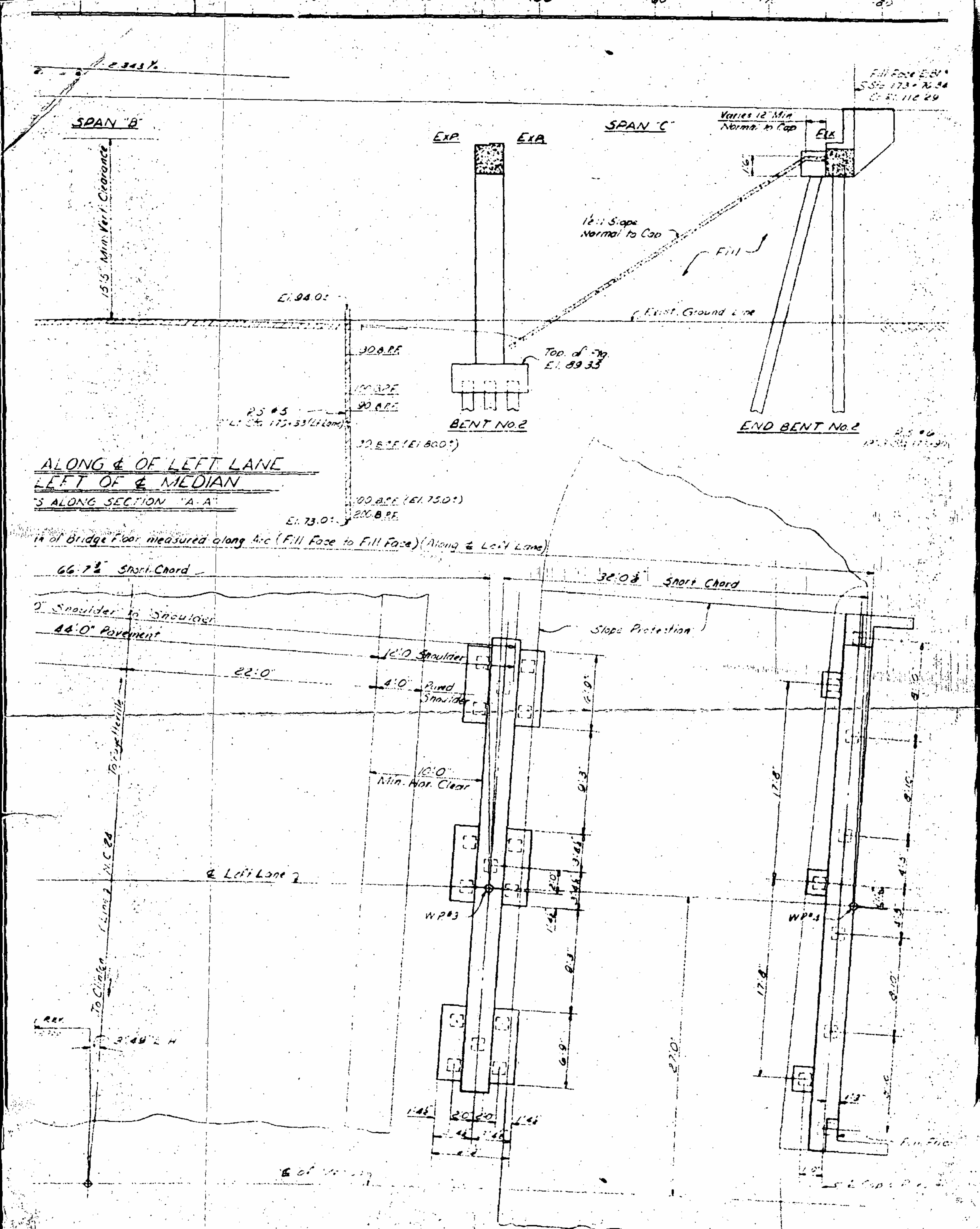
Fill Face

1'0"

S.F. Cap & Piles

173+10.48 P.O.C. Lee
178+54.62 P.O.T.

To Clinton

 SPAN "B"
15'-5" Min. Vert. Clearance
EXP.
EXP.
SPAN "C"
Varies 12" Min. Normal to Cap
Fix
1½:1 Slope Normal to Cap
Fill
Exist. Ground Line
El. 94.0±
90 B.P.F.
100 B.P.F.
90 B.P.F.
Top of Ftg. El. 89.35
BENT No. 2
END BENT No. 2
ALONG ℄ OF LEFT LANE
LEFT OF ℄ MEDIAN
S ALONG SECTION "A-A"
100 B.P.F. (El. 75.0±)
200 B.P.F.
El. 73.0±
of Bridge Floor measured along Arc (Fill Face to Fill Face) (Along ℄ Left Lane)
66'-7½" Short Chord
32'-0⅛" Short Chord
Shoulder to Shoulder
44'-0" Pavement
Slope Protection
12'-0" Shoulder
22'-0"
4'-0" Paved Shoulder
10'-0" Min. Hor. Clear
℄ Left Lane
To Fayetteville
N.C. 24
To Clinton
W.P. #3
W.P. #4
17'-8"
27'-0"
6'-9"
9'-3"
8'-10"
2'-0"
1'-4½"
1'-3"

FED. ROAD CONT. NO.	STATE	PROJECT NO.
3	N. C.	8.1273002
F. A. PROJECT	S-GU-1606 (2)	

SHEET 104 of 185

Fill Face E.B. #2
Sta 173+76.84
C. El. 116.29

PAN C

Varies 12" Min
Norma. to Cap

Fix

NOTE Stations are measured along the ℄ of Median.

Fill

Ground Line

END BENT No 2

Short Chord

Fill Face

I HEREBY CERTIFY THAT THIS STRUCTURE WAS BUILT ACCORDING TO PLANS

SIGNED) RESIDENT ENGINEER

PROJECT NO. 8.1273002

SAMPSON COUNTY

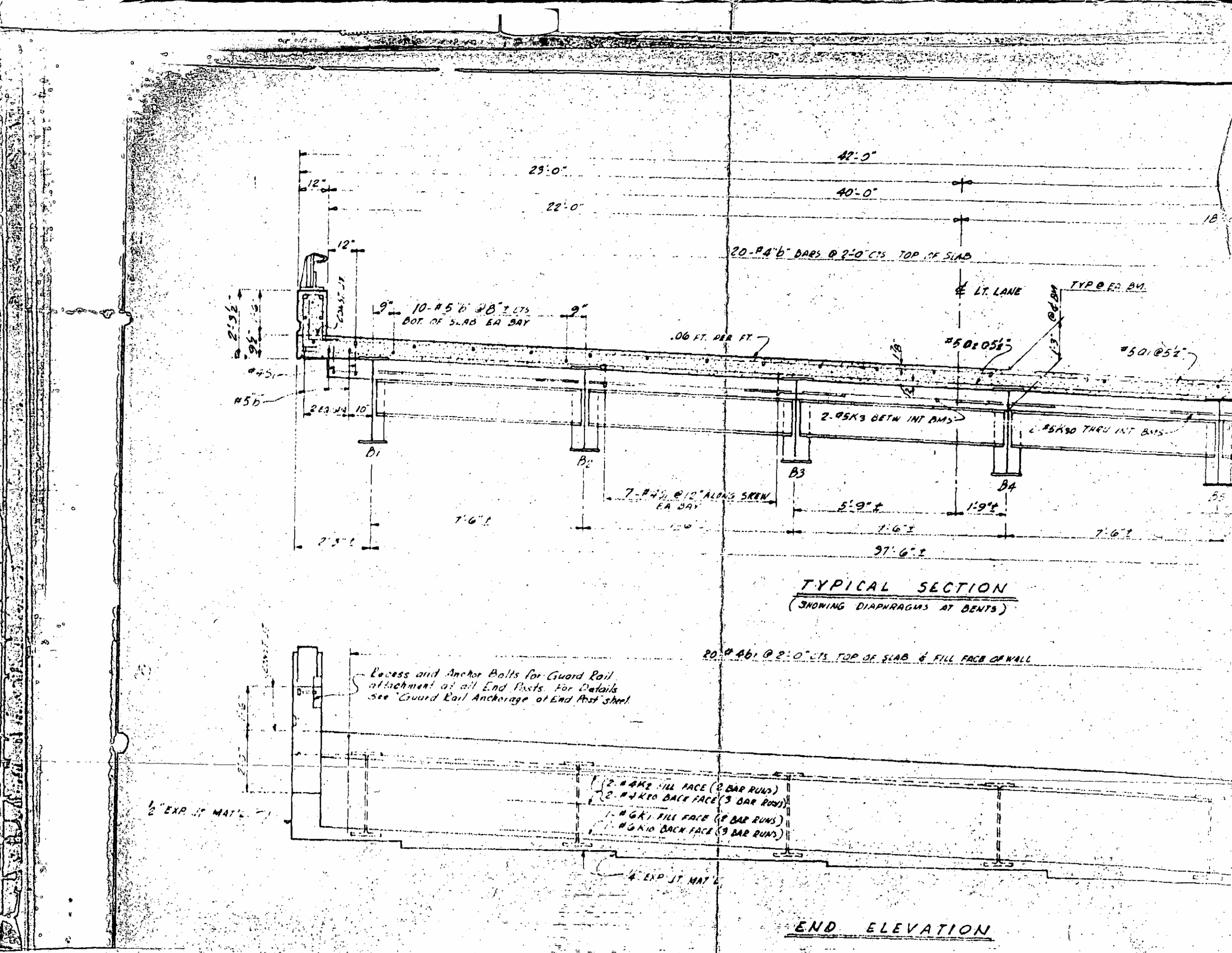
STATION: 173+10.48 P.O.C. L Rev
1008+34.62 P.O.T. Y Rev

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

GENERAL DRAWING
FOR DUAL BRIDGES OVER NC 24
DIV PROJECT, CLINTON BY-PASS
LEFT LANE

MAY 1965

REVISIONS	



TYPICAL SECTION
(SHOWING DIAPHRAGMS AT BENTS)

END ELEVATION

42'-0"
40'-0"
19'-0"
18'-0"
12"
12"
BARS @ 2'-0" C's TOP OF SLAB
℄ LT. LANE
TYP @ EA BM.
TYP @ EA BM
#5 @ 5½"
#5 @ 5½"
8½" SLAB
CONST JT.
8½"
1'-6"
2'-2½"
#4 S.
#5 @
10"
2'-0" SPA
2-#5 K3 OETW INT BMS
2-#5 K20 THRU INT BMS
2-#5 K21 THRU EXT BMS
B3
B4
B5
B6
5'-9" ±
1'-9" ±
7'-6" ±
7'-6" ±
7'-6" ±
37'-6" ±
2'-3" ±

TYPICAL SECTION
(SHOWING DIAPHRAGMS AT BENTS)

BOTTOMS TOP OF SLAB & FILL FACE OF WALL
CONST JT
1'-6"
2'-0"
½ EXP JT MAT'L

END ELEVATION

2-#5b3 (1 SET) UNDER PARAPET

34-#5S2 @ 12" IN PARAPET

4-#4b4 (2 SETS) IN PARAPET

℄ 1° JT. @ BT. #1

9⅛"

8"

12" CURT WALL

6" PAV'T NOTCH

℄ BM. 2

℄ BM. 7

33'-10⅜" SHORT CHORD

84°-59'-08"

℄ LT. LANE

℄ SHORT CHORD

W.P. #1

W.P. #2

A

A

B

B

2'-2⅜"

5½"

2¾"

5½"

66-#5 a1 @ 5½"(-) IN TOP OF SLAB

65-#5a2 @ 5½"(-) IN BOT. OF SLAB

9⅛"

8"

7-#5a121-a127@5½" TOP OF SLAB

5½"

2¾"

5½"

7-#5a131-a137@5½" BOT. OF SLAB

2 #4S1 @ 12" EA. BAY

1'-9⅝"

1'-9⅝" DIAPH

20-#4b2 @ 8'-0" TOP OF SLAB

54-#5b3 SPACING SHOWN IN SECT. (1 SET)

22'-0"

40'-1⅜"

18'-0⅛"

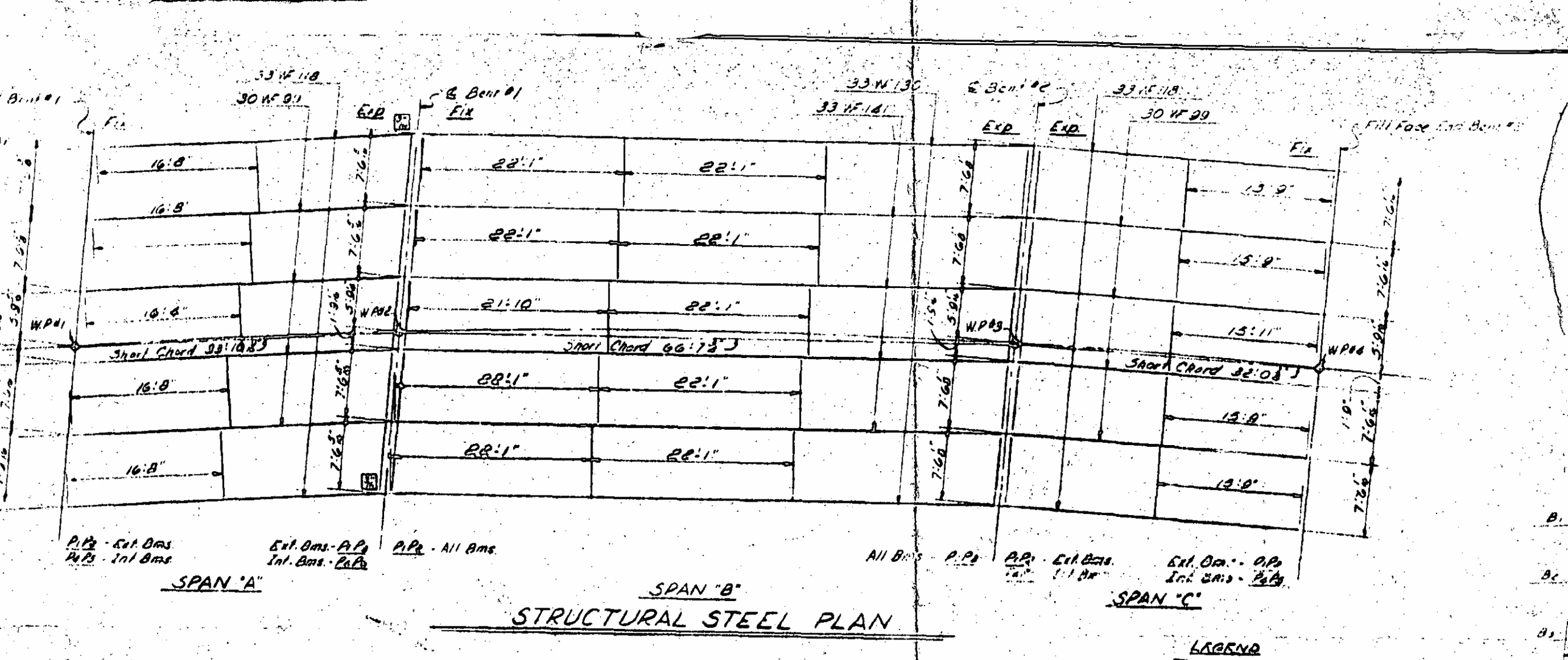
34-#5S2 @ 12" IN PARAPET

2-#5b5 (1 SET) UNDER PARAPET

4-#4b4 (2 SETS) IN PARAPET

PLAN

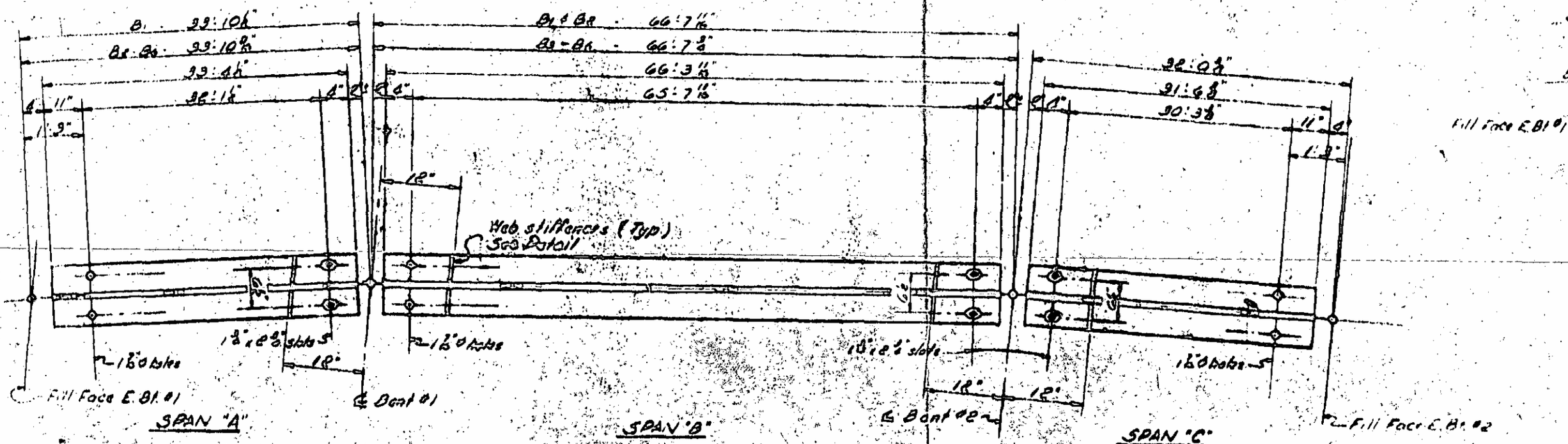
SPAN A - LT. LANE



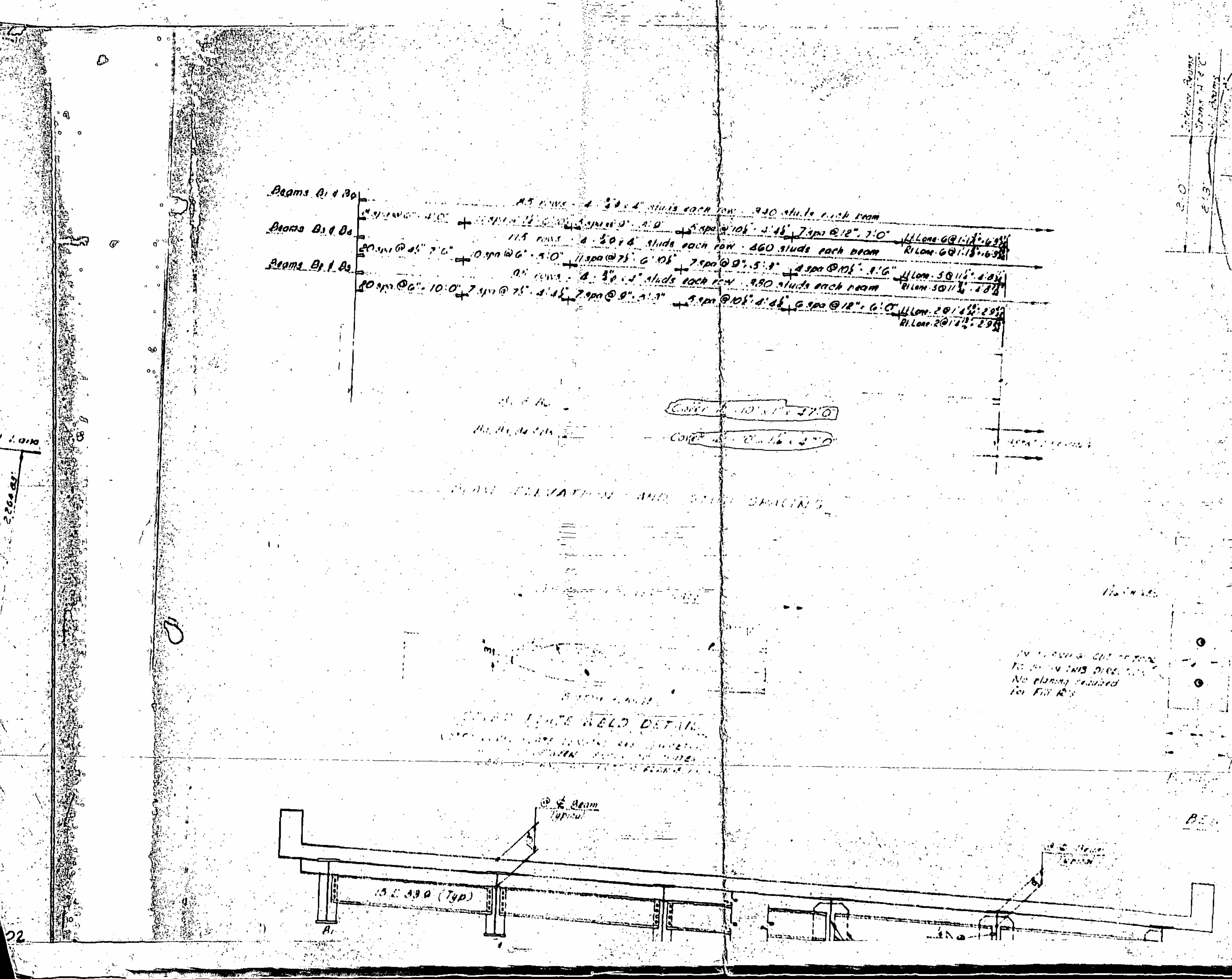
STRUCTURAL STEEL PLAN

LEGEND

[V#] - Indicates Fill Plate required



BOTTOM FLANGE DETAIL


Beams B1 & B6
85 rows - 4 - ¾" x 4" studs each row - 340 studs each beam
5 spa @ 10½" - 4'4½"
7 spa @ 12" - 7'0"
Lt Lane - 6 @ 1'1⅜" - 6'9⅞"
Beams B3 & B4
115 rows - 4 - ¾" x 4" studs each row - 460 studs each beam
10 spa @ 6" - 5'0"
11 spa @ 7½" - 6'10½"
7 spa @ 9" - 5'3"
4 spa @ 10½" - 3'6"
Rt Lane - 6 @ 1'1⅜" - 6'9⅞"
Lt Lane - 5 @ 11⅝" - 4'8⅛"
Rt Lane - 5 @ 11⅝" - 4'8⅛"
Beams B2 & B5
studs each row - 380 studs each beam
20 spa @ 6" - 10'0"
7 spa @ 7½" - 4'4½"
7 spa @ 9" - 5'3"
5 spa @ 10½" - 4'4½"
6 spa @ 12" - 6'0"
Rt. Lane - 2 @ 1'4⅞" - 2'9¾"
15 E 33.9 (Typ)
@ ℄ Beam
Typical
A1
No planing required
for Fill R's
Interior Beams
2'0
2'3"
2264.83'

SHEET 103 OF 137

P.T. 173+00
E. 115.34
880' V.C.

+0.825 %

-2.329 %

Fill Face EB#1
Sta. 172+41.39
Cr El 111.52

Fix

Varies 12° Max Normal to Cap

SPAN "A"

Exp

Fix

SPAN "B"

13'-0" Min Vert Clearance

Exp

Exp

SPAN "C"

Fix

Fill Face EB#2
Sta. 173+94.52
Cr El 116.87

NOTE Stations are measured along ℄ of Median

1½:1 Slope Normal to Cap

Fill

El 910'

El 910'

El 910'

El 910'

El 920'

El 910'

El 910'

El 910'

El 880'

El 870'

El 86.0'

Top of Fig El 88.06

Top of Fig El 88.80

El 880'

El 930'

Existing Ground at ℄

30 BPF

RS #8
℄ Sta. 173+33

30 BPF

30 BPF

100 BPF

260 BPF

El 776.0'

40 BPF

42 BPF

65 BPF

120 BPF

120 BPF

El 730'

RS #9
℄ Sta. 172+80

70 BPF (El 810')

RS #8
℄ Sta. 172+80

70 BPF (El 730')

140 BPF (El 710')

160 BPF (El 660')

160 BPF

El 660'

END BENT No. 1

BENT No. 1

BENT No. 2

END BENT No. 2

SECTION ALONG ℄ OF RIGHT LANE
27'-0" RIGHT OF ℄ MEDIAN
BENT 3 ALONG SECTION "A-A"

15 BPF

RS #7
℄ Sta. 172+33

30 BPF

60 BPF

84 BPF

100 BPF

100 BPF

140 BPF

El. 600'

NOTE: All Rod Soundings Taken 94'Rt of ℄ Median

131'-0 13/16" Length of Bridge Floor along Arc (Fill Face to Fill Face) (Along ℄ Right Lane)

℄ of Median

60'-7 11/16" Short Chord

93'-11" Short Chord

31'-9.5" Short Chord

Slope Protection

68'-0" Shoulder to Shoulder

4'-0" Pavement

12'-0" Shoulder

4'-0" Paved Shoulder

22'-0"

3°49' L.H.

173+10.48 - P.O.C.-L REV.
1008+54.62 - P.O.T. - Y2700

10'-0" Min Hor Clear

℄ Bents

Slope Protection

12'-0" Shoulder

4'-0" Paved Shoulder

22'-0"

10'-0" Min Hor Clear

WP#5

WP#6

WP#7

WP#8

A

A

℄ Right Lane

To Dunn

To Clinton

℄ Fill Face

℄ Cap & Piles

PLAN

I HEREBY CERTIFY THAT THIS STRUCTURE WAS BUILT ACCORDING TO PLAN REVISIONS SIGNATURE AND TITLE
RESIDENT ENGINEER

PROJECT NO. F-273002
SAMPSON COUNTY
STATION: 173+10.48-POC-L REV.
1008+54.62-POT-Y2700

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
DIVISION
CONSTRUCTION OF GRADE AND STRUCTURES FOR DUAL LANES OF U.S. 421 ON PROJECT F-273002 CLINTON BY-PASS
RIGHT LANE

NO	BY	DATE	NO.	BY	DATE
1	C.H.W.S.	7-10-68	3		
2			4		

SHEET NO. S-101
TOTAL SHEETS 134

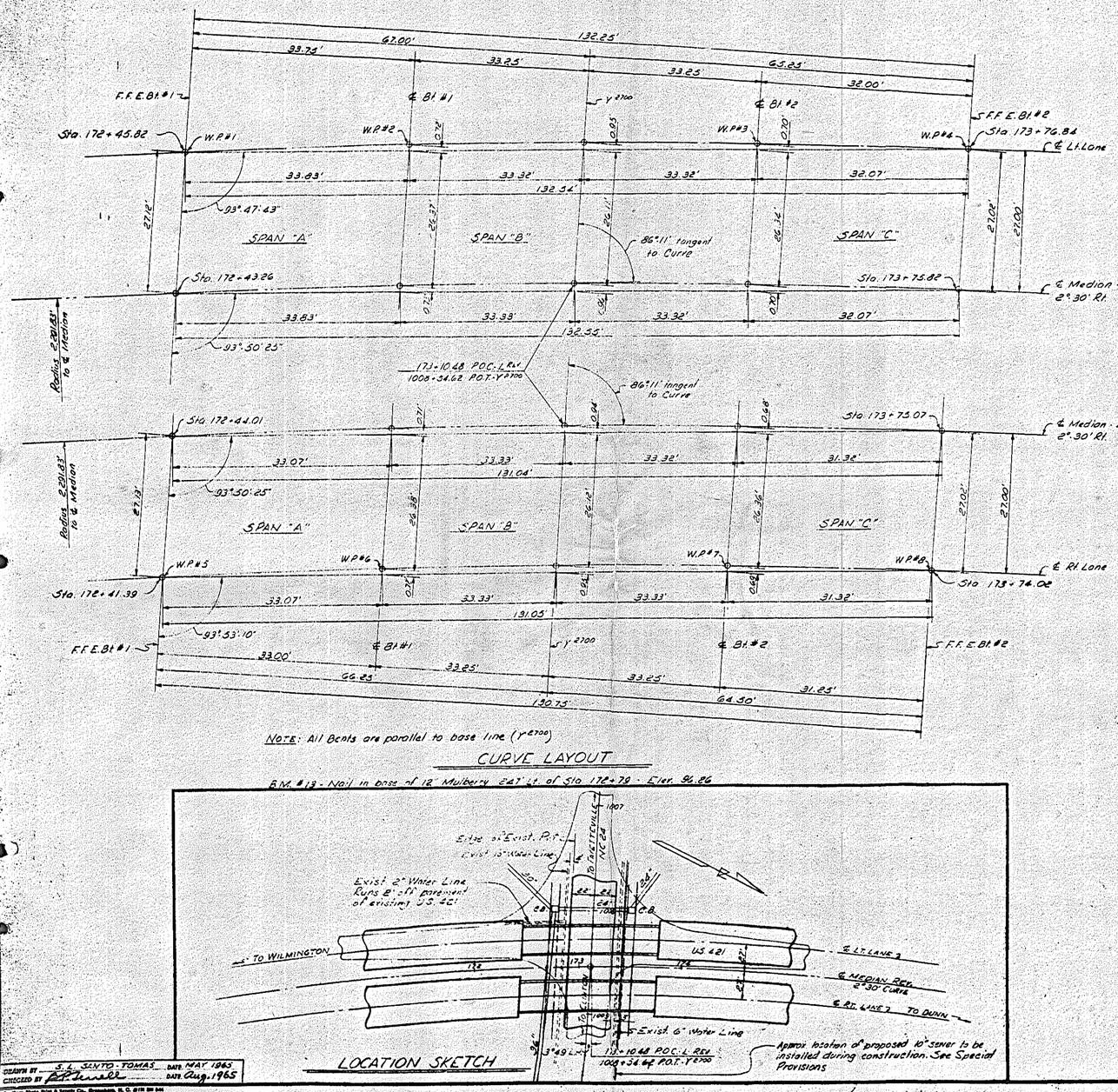
DRAWN BY S. E. SINCLAIR DATE JAN. 1965
CHECKED BY B.F. Miller DATE June 1965

Rev. No. 1 - Revised to show limits of Notes Sheet, Drawn, Traced & Pin

421-28-40 E

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	B-1273002
F. A. PROJECT	S-GU-NHC(2)	

SHEET 105 of 185



CURVE LAYOUT

B.M. #13 - Nail in base of 12" Mulberry 247' ℄ of Sta. 172+78 - Elev. 96.86

LOCATION SKETCH

DRAWN BY S. L. SINTO-TOMAS DATE MAY 1965
CHECKED BY [illegible] DATE Aug. 1965

Southern Plans Print & Supply Co., Greensboro, N. C. (919) 274-3441

NOTES

Assumed Live Load - H20-S16(44) or Alternate Loading
For other design data and general notes, see Sheet S-M.

All piles for End Bents and Interior Bents shall be driven to a minimum bearing capacity of 30 tons each. The contractor shall be responsible for determining lengths of piles required. See Special Provisions. For note regarding alternate type of piles, see Pile Sheet. The contractor will be required to excavate completely through the fill at End Bents before driving End Bent piles. See Sheet S-M.

The roadway contractor will be required to remove the existing pavement and scarify the roadbed to a minimum depth of 2'-0" within the area of the End Bent piles. This note applies to Left Lane Bridge only.

No work shall be started on Interior Bents for Left Lane Bridge until after roadway section has been excavated by the roadway contractor. Unclassified Structure Excavation for Interior Bents shall be measured from surface of road way cut for Left Lane Bridge and from existing ground line for Right Lane Bridge.

The length of Bridge was computed on the basis of no ditch section with the 3:1 fill slope 2'-0" outside of Shoulder.

Traffic on U.S. 421 will be will be detoured and traffic on N.C. 24 will be maintained during construction.

The existing 10" water main located approximately 4' South of the existing pavement of NC 24, the existing 6" water main located approximately 3' North of the existing pavement of NC 24 and the existing 2" water main that runs out from the existing 10" water main 2' off the pavement of the existing U.S 421 shall be protected during construction See Location Sketch for note regarding proposed 10" Sewer

LEFT LANE		12" Square Prestr. Conc. Piles
	No.	Lin. Ft.
End Bent No. 1	9	344'-10"
Bent No. 1	15	336'-0"
Bent No. 2	15	457'-10"
End Bent No. 2	9	360'-0"
Total	48	1501'-8"

TOTAL BILL OF MATERIAL

LEFT LANE	Class "A" Concrete	Reinforcing Steel	Structural Steel	Piles 12" Square Prestr. Conc. Piles		Piles Cylindrical Pipe Shell		Piles Fluted Tubular Steel Shell		Unclassified Structure Excavation	℄ Concrete Slope Protection	One Bar Metal Rail
	Cu. Yds.	Lbs.	Approx. Lbs.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	Cu. Yds.	Sq. Yds.	Lin. Ft.
Superstructure	1735	38,332	121,300								204.87	232.92
End Bent No.1	138	2,961		9	324	9	324	9	324		190	
Bent No.1	96.3	6,167		15	270	15	270	15	270	66.32		
Bent No.2	95.9	6,028		15	270	15	270	15	270	40.81		
End Bent No.2	139	2,937		9	324	9	324	9	324		190	
											190.19	
Total	2774	57,490	121,300	48	1188	48	1188	48	1188	107.13	394.06	232.92

RIGHT LANE	Class "A" Concrete	Reinforcing Steel	Structural Steel	Piles 12" Square Prestr. Conc. Piles		Piles Cylindrical Pipe Shell		Piles Fluted Tubular Steel Shell		Unclassified Structure Excavation	℄ Concrete Slope Protection	One Bar Metal Rail
	Cu. Yds.	Lbs.	Approx. Lbs.	No.	Lin. Ft.	No.	Lin. Ft.	No.	Lin. Ft.	Cu. Yds.	Sq. Yds.	Lin. Ft.
Superstructure	1715	38,002	120,300								204.87	229.84
End Bent No.1	138	2,883		8	432	8	432	8	432		190	
Bent No.1	96.1	6,101		15	405	15	405	15	405	69.56		
Bent No.2	96.3	6,027		15	405	15	405	15	405	69.55		
End Bent No.2	137	2,950		9	270	9	270	9	270		190	
											193.19	
Total	2754	57,033	120,300	48	1,332	48	1,332	48	1,332	113.55	398.06	229.84

RIGHT LANE		12" Square Prestr. Conc. Piles
	No.	Lin. Ft.
End Bent No. 1	9	433'-0"
Bent No. 1	15	403'-4"
Bent No. 2	15	387'-1"
End Bent No. 2	9	360'-0"
Total	48	1583'-5"

PROJECT NO. B-1273002

SAMPSON COUNTY

STATION: 173+10.48 P.O.C.-L Rev.
1008+34.62 P.O.T. Y2700

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

GENERAL DRAWING FOR DUAL BRIDGES OVER NC24 ON PROJECT CLINTON BY-PASS LEFT AND RIGHT LANE

MAY 1965

REVISIONS						STRUCT. NO.
NO.	BY	DATE	NO.	BY	DATE	S-103
1			3			TOTAL SHEETS
2			4			134

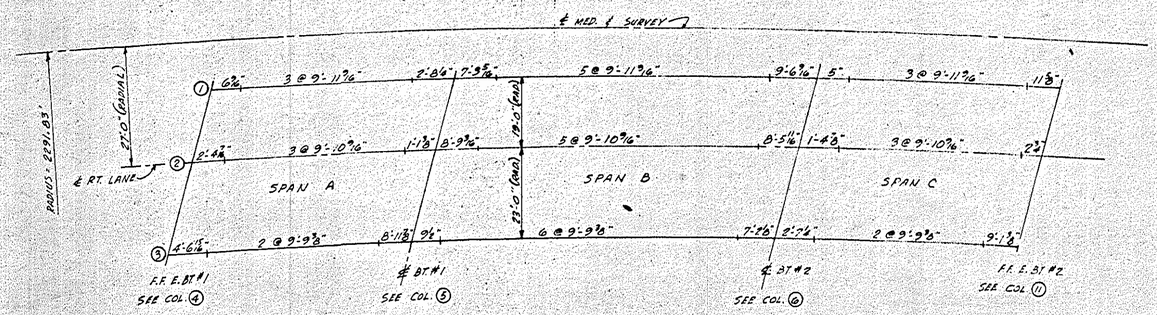
Column (1) Bottom of overhang			Column (2) Ext Roadway			Column (3) Bottom of overhang		
Dist.	Elev.		Dist.	Elev.		Dist.	Elev.	
	112.197			111.919	P.I. Pure		109.882	P.I. Pure
6⅝"	.193	172+65.79	2'-4⅝"	.905	172+65.79	4'-6⅛"	.856	172+65.79
3@ 9-11⅜"	.136		2@ 9'-10⅜"	.848		2@ 9'-9⅜"	.799	
	.075			.787			.737	172+65.79
	112.010	172+73.79		.722	172+73.79	8'-11⅞"	.679	℄ BENT #1
2'-8¼"	111.995	℄ BENT #1	1'-1⅞"	.715	℄ BENT #1	9½"	.673	172+73.79
7'-3⅝"	.942	172+83.79	8'-9⅛"	.654	172+83.79		.605	
	.870			.581			.593	
	.795			.506			.457	
	.716			.427			.378	
	.693			.345			.298	
	.547	173+33.79		.258	173+33.79		.209	173+33.79
9'-6⅝"	.461	℄ BENT #2	8'-5½"	.181	℄ BENT #2	7'-2⅛"	.143	℄ BENT #2
5"	.457	173+43.79	1'-4⅞"	.168	173+43.79	2'-7⅞"	.119	173+43.79
	.363			111.075			109.026	
3@ 9-11⅜"	.266		3@ 9'-10⅜"	110.978		2@ 9'-9⅜"	108.929	173+63.79
	.165	173+73.79		.877	173+73.79	9'-1⅜"	108.835	FILL FACE
11⅜"	111.159	FILL FACE	2⅜"	110.875	FILL FACE			

GRADE DATA +0.825% P.I. -2.343%

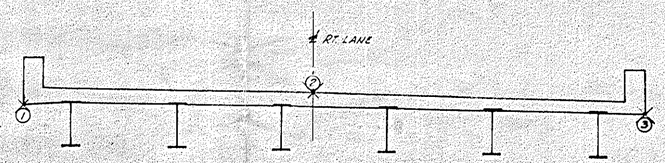
P.I. Sta. 173+00
P.I. Elev. 115.74
Length of Curve 880'
G1 = +0.825 % G2 = -2.343 %

FED. ROAD DWG. NO.	STATE	PROJECT NO.
9	N.C.	B-1273002
F. A. PROJECT	C-EU-1906(3)	

SHEET 106 of 185



PLAN



TYPICAL SECTION

HEADERS

Column (4) Fill Face ℄ B1		Column (5) ℄ Bent 1		Column (6) ℄ Bent 2		Column (7) ℄ Bent 3		Column (8) ℄ Bent 4		Column (9) ℄ Bent 5		Column (10) ℄ Bent 6		Column (11) Fill Face ℄ B2	
Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.
Lt. Gutter	118.989	Lt. Gutter	112.785	Lt. Gutter	112.253	Lt. Gutter		Lt. Gutter		Lt. Gutter		Lt. Gutter		Lt. Gutter	111.348
2'-0⅛"	.870	2'-0⅛"	.666	2'-0"	.134									2'-0"	.828
2'-0⅛"	.751		.547		112.015										.709
2'-0⅛"	.632		.428		111.896										.590
2'-0⅛"	.513		.309		.777										.471
2'-08"	.394		.190		.658										.352
	.273		112.071		.538										.233
	.156		111.952		.419										111.113
	112.038		.834		.300										110.994
℄	111.919	℄	.715	2'-0⅝"	.181									℄	.875
	.800		.596	2'-0⅛"	111.062										.756
	.681		.477	2'-0⅛"	110.943										.636
	.562		.358	2'-0⅛"	.824										.517
	.443		.239	2'-0⅛"	.705										.398
	.324	2'-0⅛"	.120	2'-0⅛"	.586									2'-0"	.279
	.205	2'-0⅜"	111.001	2'-0⅛"	.467									2'-0⅛"	.160
	111.086	2'-0⅜"	110.882	2'-0⅛"	.348									2'-0⅛"	110.040
	110.967	2'-0⅜"	.763	2'-0⅛"	.229									2'-0⅛"	109.921
	.849	2'-0⅛"	.645	2'-0⅛"	110.110									2'-0⅛"	.802
2'-0⅛"	.729	2'-0⅛"	.526	2'-0⅛"	109.991									2'-0⅛"	.683
Rt. Gutter	118.611	Rt. Gutter	110.407	Rt. Gutter	109.872									Rt. Gutter	109.568

Elevations shown in columns 1 thru 11 are final required elevations of the completed structure. In setting up the form and screed elevations provisions must be made for deflections where required.

For columns 4 thru 11 given elevations are vertical distances radial from the left gutter line to the right gutter line.

SUPERIMPOSED DEAD LOAD DEFLECTION (inches)

	SPAN A	SPAN B	SPAN C
LEFT	8"	1⅝"	8"
EXT.	8"	1⅝"	16"

PROJECT NO. B.1273002
SAMPSON COUNTY
STATION 173+10.48 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

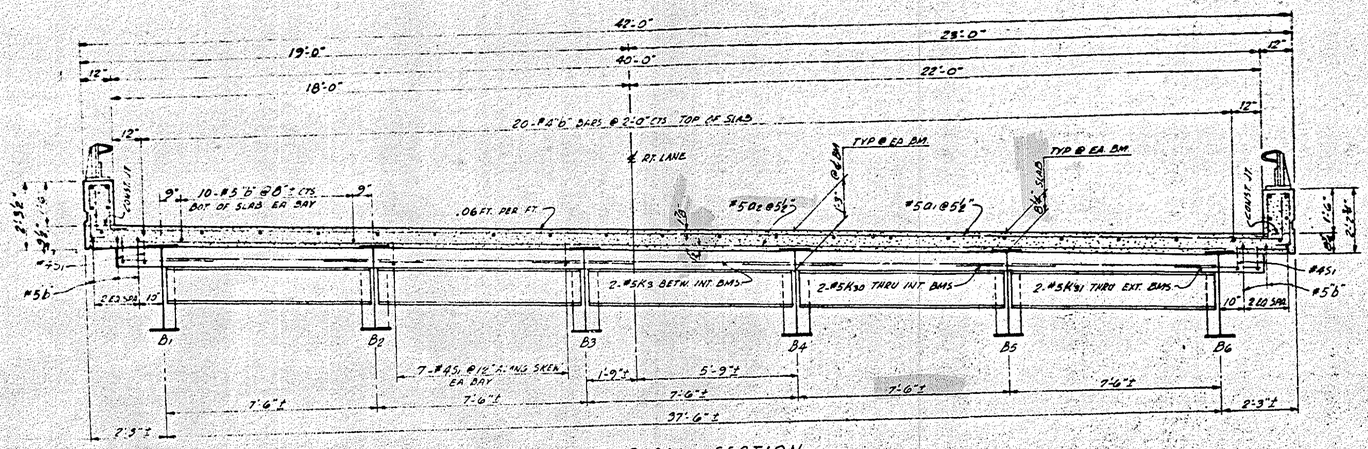
ELEVATIONS FOR SETTING UP FORMS AND SCREEDS
RT. LANE
1962

APPROVED

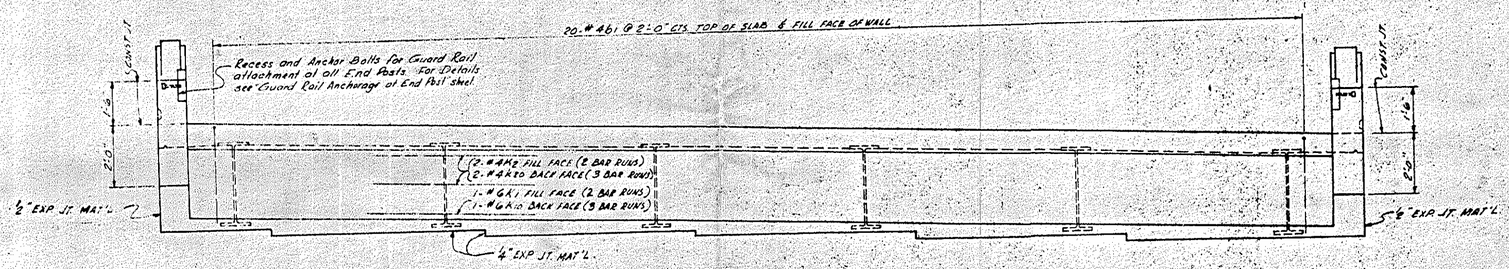
SHEET NO. S-104
TOTAL SHEETS 194

REVISIONS: NO. | BY | DATE

DRAWN BY: E.C. HILBERT JR. DATE: MAY '65
CHECKED BY: GEORGE B. WAINE DATE: MAY '65



TYPICAL SECTION
(SHOWING DIAPHRAGMS AT BENTS)



END ELEVATION

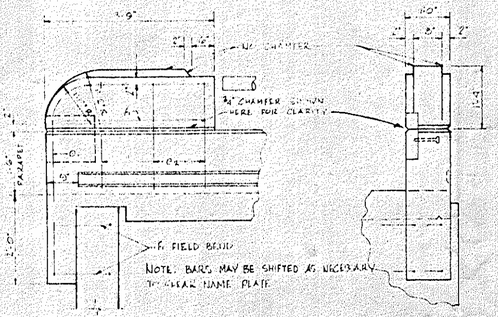
PROJECT NO. 8.1273002
SAMPSON COUNTY
STATION: 173+10.48-L-
RT. LANE

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

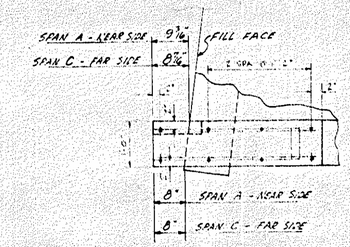
SUPERSTRUCTURE
STANDARD TYPICAL SECTION
40' ROADWAY - 6 STEEL BEAMS
MARCH 1965

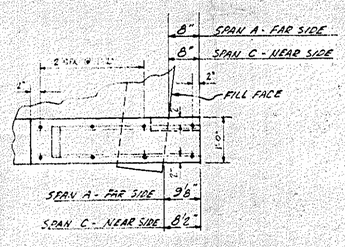
REVISIONS						BRIDGE NO.
NO.	BY	DATE	NO.	BY	DATE	5-106
1			3			TOTAL SHEETS
2			4			19

DRAWN BY: E.D. ALFORD, JR. DATE APR. '65
CHECKED BY: GEORGE B. WYNNE DATE MAY, '65

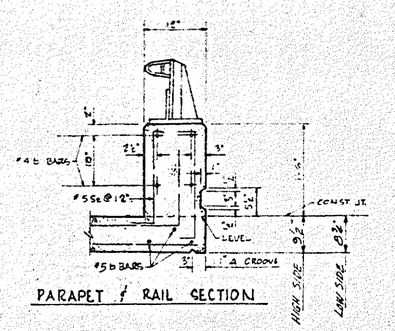


END POST DETAILS

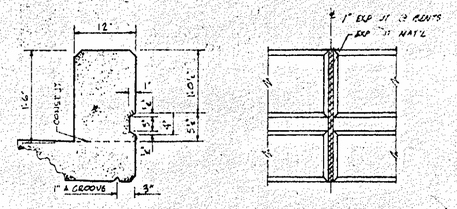




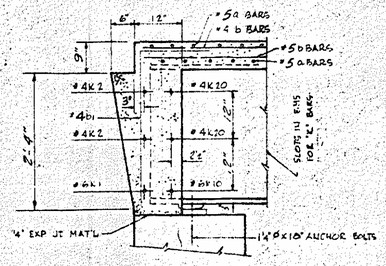
END POST DETAILS



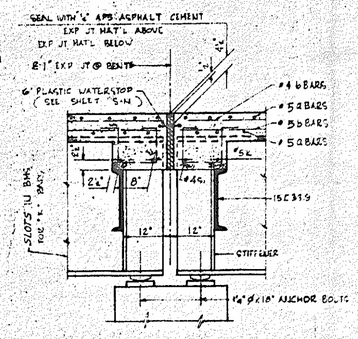
PARAPET & RAIL SECTION



DETAIL RAIL BASE GROOVE



SECTION A-A



SECTION B-B

ASSUMED LIVE LOAD H 20-S16 (44 OR ALTERNATE LOADING).
CONCRETE IN COMPRESSION 1,350 LBS PER SQ IN
REINFORCING STEEL IN TENSION 20,000 LBS PER SQ IN
STEEL IN EXTREME FIBER OF STRUCTURAL STEEL 20,000 LBS PER SQ IN
FOR OTHER DESIGN DATA AND GENERAL NOTES SEE SHEET 2-A
FOR BAR MARKS INDICATED AND NOT SHOWN SEE CONCRETE PLAN FOR THE DIFFERENT SPANS.
EXPANSION JOINTS TO BE KEPT FREE OF CONCRETE AND SEALED WITH ¼" APB ASPHALT CEMENT.

2		6-1-65	
1		4-6-65	
FED. ROAD DIST. NO.	STATE	PROJECT NO.	
SHEET 109 OF 194			

PROJECT NO. 8.1273002
SAMPSON COUNTY
STATION: 173+10.48 -L-
RT. LANE

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

1 BM SUPERSTRUCTURE DETAILS FOR ONE BAR METAL RAIL

MARCH 1965

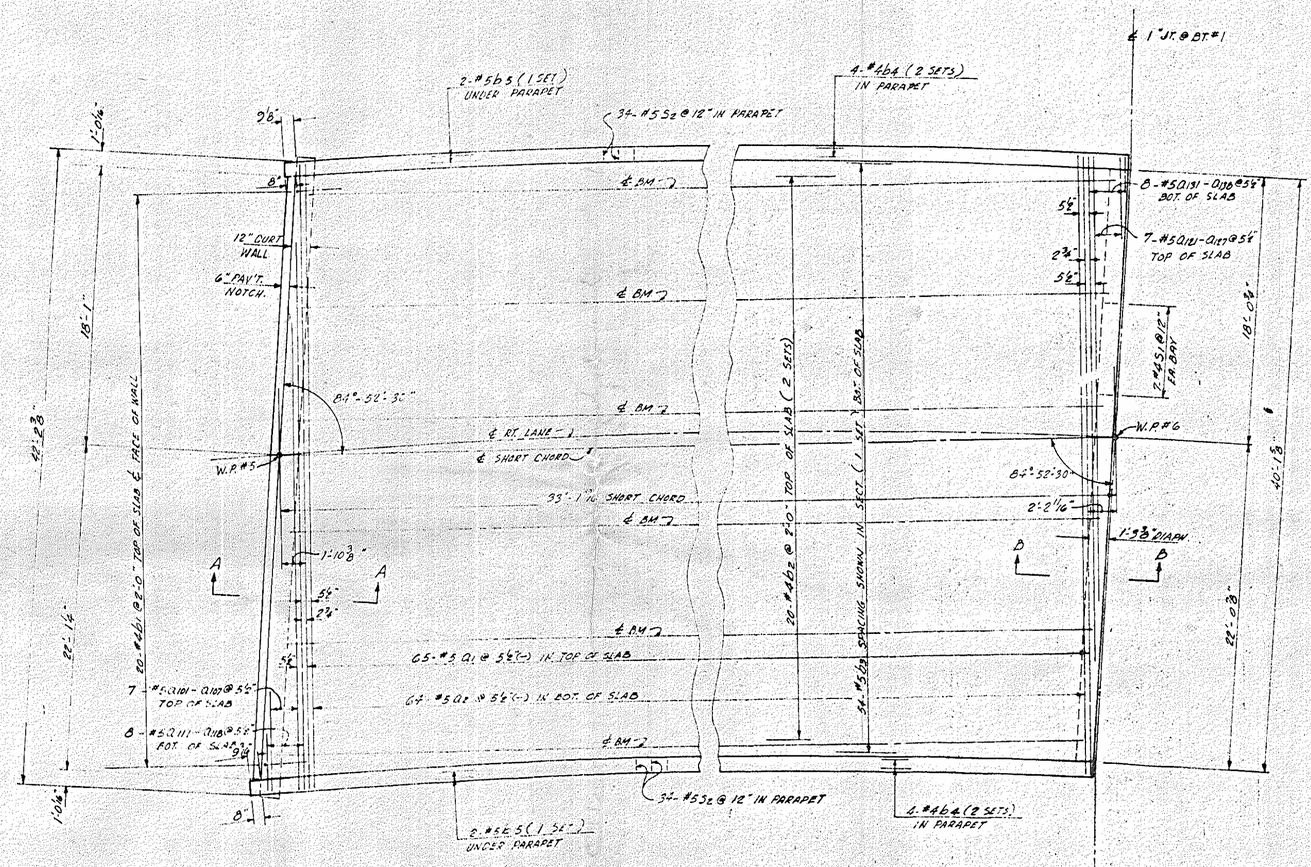
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		5-107
1			3				TOTAL SHEETS
2			4				194

SPECIAL	DESIGNED BY	DATE
	DRAWN BY E. G. ALFORD, JR.	DATE APR. '65
	TRACED BY	DATE
	CHECKED BY GEORGE B. WYNNE	DATE MAY '65

Courtesy Thate Print & Supply Co., Greensboro, N. C. 8131 MD 626

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N. C.	B-1273002
F. A. PROJECT	G-6U-1000(2)	

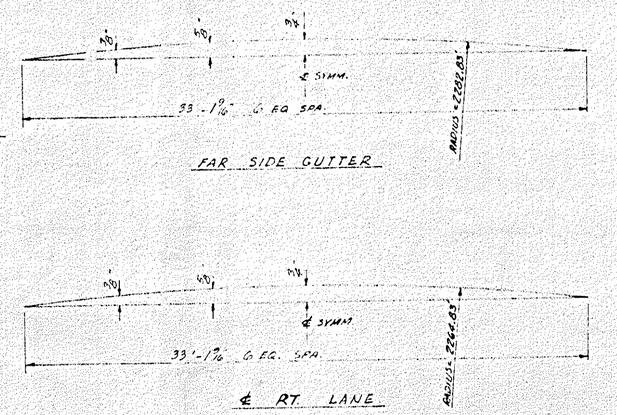
SHEET 110 of 185



PLAN

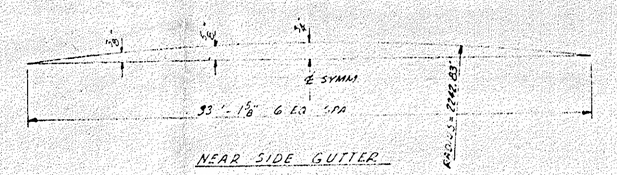
SPAN A - RT. LANE

NOTE: POSTS AND RAIL ARE NOT SHOWN.



FAR SIDE GUTTER

℄ RT. LANE



NEAR SIDE GUTTER

CURVE OFFSETS

NOTE: SHORT CHORD IS MEASURED FROM FILL FACE OF 2. BT. #1 TO ℄ BT. #1.

NOTE: "Q" BARS SHALL BE PLACED PERPENDICULAR TO THE ℄ LANE SHORT CHORD & SPACED ALONG THE SHORT CHORD.

PROJECT NO. B-1273002

SAMPSON COUNTY

STATION: 173 + 10.48 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE

SPAN A
RIGHT LANE

APRIL 1965

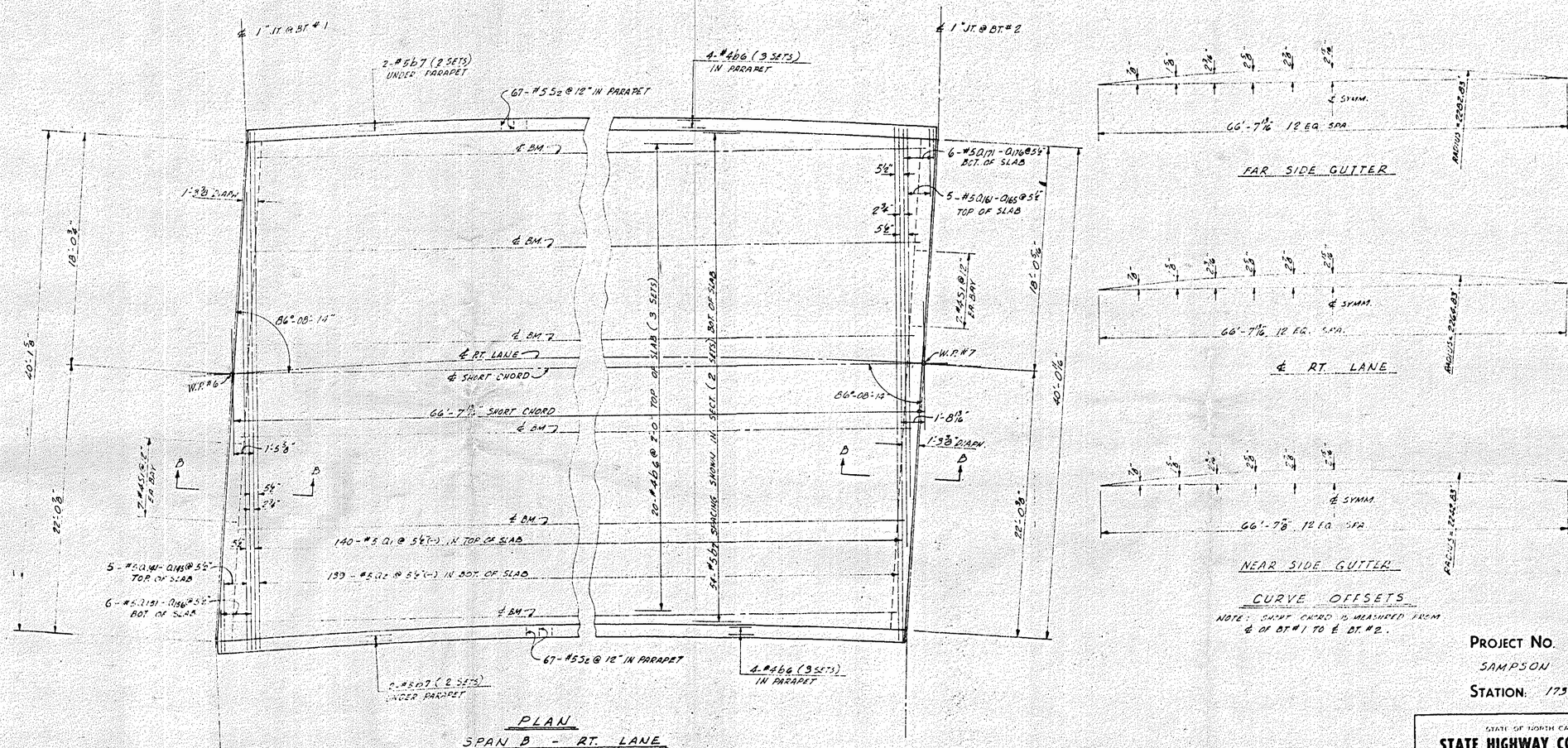
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2					

SHEET NO. 5-108
TOTAL SHEETS 194

DRAWN BY E. G. RIVERO, JR. DATE APR. '65
CHECKED BY GEORGE B. WYNNE DATE MAY '65

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	B1273002
F. A. PROJECT	S-50-1(20)4(2)	

SHEET 111 of 185



PLAN

SPAN B - RT. LANE

NOTE: POSTS AND RAIL ARE NOT SHOWN.

CURVE OFFSETS

NOTE: SHORT CHORD IS MEASURED FROM ℄ OF BT #1 TO ℄ OF BT. #2.

NOTE: "a" BARS SHALL BE PLACED PERPENDICULAR TO THE ℄ LANE SHORT CHORD & SPACED ALONG THE SHORT CHORD.

PROJECT NO. B.1273002

SAMPSON COUNTY

STATION: 173+10.48 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE

SPAN B

RIGHT LANE

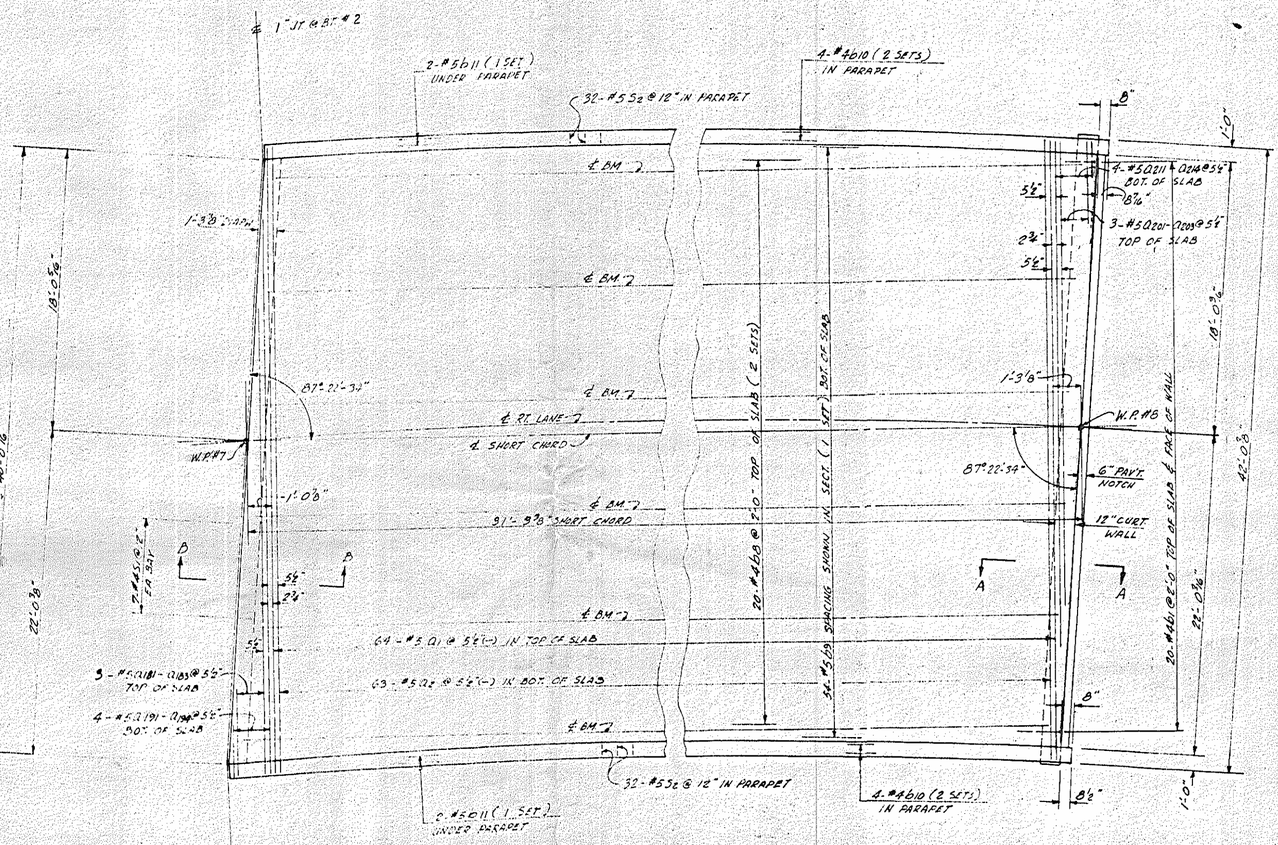
APRIL 1965

REVISIONS						SHEET NO.
NO	BY	DATE	NO	BY	DATE	S-109
1			3			TOTAL SHEETS
2			4			134

DRAWN BY A. G. ALFORD JR. DATE APR. '65
CHECKED BY GEORGE B. NEWKIRK DATE MAY '65

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	B-1273002
F. A. PROJECT	B-240-1(20)(2)	

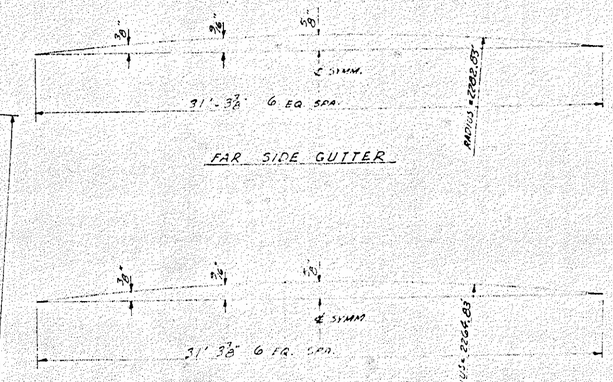
SHEET 112 of 185

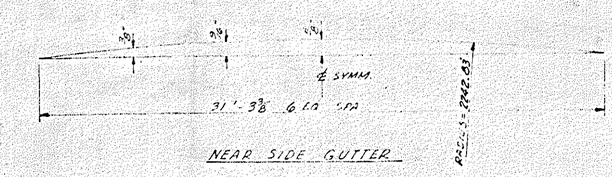


PLAN

SPAN C - RT. LANE

NOTE: POSTS AND RAIL ARE NOT SHOWN.





NEAR SIDE GUTTER

CURVE OFFSETS

NOTE: SHORT CHORD IS MEASURED FROM ℄ BT. #2 TO FILE FACE OF E. BT. #2.

NOTE: "a" BARS SHALL BE PLACED PERPENDICULAR TO THE ℄ LANE SHORT CHORD & SPACED ALONG THE SHORT CHORD.

PROJECT NO. B.1273002

SAMPSON COUNTY

STATION: 173+10.48 -L-

STATE OF NORTH CAROLINA

STATE HIGHWAY COMMISSION

RALEIGH

SUPERSTRUCTURE

SPAN C

RIGHT LANE

APRIL 1965

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

SHEET NO. S-110

TOTAL SHEETS 134

DRAWN BY: E. G. ALLRED, JR. DATE APR '65

CHECKED BY: GEORGE B. WYNNE DATE MAY '65

SHEET NO. S-109

TOTAL SHEETS 134

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	B-1273002
F.A. PROJECT	S-60-1600(2)	

SHEET 113 of 185

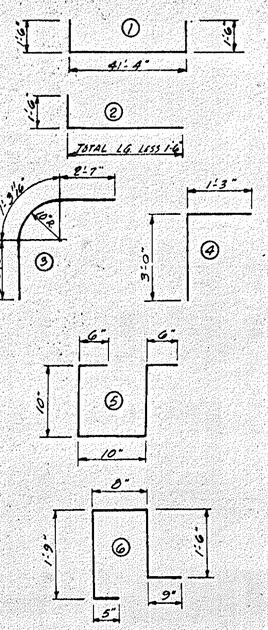
Bar	No.	Size	Type	Length	Wt.
Q1	269	#5	1	44'-4"	12438
Q2	266	#5	STR	41'-8"	11560
Q101	1	#5	2	97'-2"	99
Q102				92'-1"	93
Q103				27'-0"	26
Q104				21'-10"	23
Q105				16'-9"	17
Q106				11'-7"	12
Q107	1	#5	2	6'-6"	7
Q111	1	#5	STR	38'-2"	40
Q112				33'-3"	35
Q113				28'-2"	29
Q114				23'-0"	24
Q115				17'-11"	19
Q116				12'-10"	13
Q117				7'-8"	8
Q118	1	#5	STR	2'-7"	3
Q121	1	#5	2	37'-2"	39
Q122				32'-1"	33
Q123				27'-0"	28
Q124				21'-10"	23
Q125				16'-9"	17
Q126				11'-7"	12
Q127	1	#5	2	6'-6"	7
Q131	1	#5	STR	38'-2"	40
Q132				33'-3"	35
Q133				28'-2"	29
Q134				23'-0"	24
Q135				17'-11"	19
Q136				12'-10"	13
Q137				7'-8"	8
Q138	1	#5	STR	2'-7"	3
Q141	1	#5	2	35'-7"	37
Q143				30'-10"	30
Q145				22'-0"	23
Q146				15'-3"	16
Q145	1	#5	2	8'-5"	9
Q151	1	#5	STR	37'-4"	39
Q152				30'-10"	32
Q153				24'-0"	25
Q154				17'-3"	18
Q155				10'-5"	11
Q156	1	#5	STR	3'-8"	4

Bar	No.	Size	Type	Length	Wt.
Q111	1	#5	2	35'-7"	37
Q162				28'-9"	30
Q163				22'-0"	23
Q164				15'-2"	16
Q165	1	#5	2	8'-8"	9
Q171	1	#5	STR	37'-4"	39
Q172				30'-9"	32
Q173				24'-0"	25
Q174				17'-2"	18
Q175				10'-4"	11
Q176	1	#5	STR	3'-6"	4
Q181	1	#5	2	92'-6"	94
Q182	1	#5	2	22'-6"	23
Q183	1	#5	2	12'-6"	13
Q191	1	#5	STR	35'-9"	37
Q192	1	#5	STR	26'-1"	27
Q193	1	#5	STR	16'-1"	17
Q194	1	#5	STR	6'-1"	6
Q201	1	#5	2	32'-6"	34
Q202	1	#5	2	22'-5"	23
Q203	1	#5	2	12'-5"	13
Q211	1	#5	STR	35'-9"	37
Q212	1	#5	STR	26'-0"	27
Q213	1	#5	STR	16'-0"	17
Q214	1	#5	STR	5'-11"	6

Bar	No	Size	Type	Length	Wt.
b1	40	#4	4	4'-3"	114
b2	40	#4	STR	17'-1"	456
b3	54	#5	STR	32'-9"	1845
b4	14	#4	STR	17'-5"	166
b5	4	#5	STR	35'-6"	140
b6	84	#4	STR	23'-8"	1291
b7	116	#5	STR	34'-2"	4134
b8	40	#4	STR	16'-1"	430
b9	54	#5	STR	30'-11"	1741
b10	16	#4	STR	16'-6"	176
b11	4	#5	STR	31'-7"	132
e1	8	#4	3	7'-4"	39
e2	24	#4	STR	8'-6"	40
f1	24	#4	STR	3'-5"	55
f2	156	#4	5	3'-6"	365
f3	246	#5	6	5'-1"	1410
K1	4	#6	STR	82'-1"	133
K10	6	#6	STR	15'-5"	139
K2	8	#4	STR	21'-8"	116
K20	12	#4	STR	14'-11"	120
K3	40	#5	STR	7'-3"	302
K30	92	#5	STR	3'-10"	128
K4	16	#5	STR	3'-0"	50

REINFORCING STEEL	LBS	33,002

CLASS "A" CONCRETE				CU. YDS.
SPAN	SLAB	PARAPET	END POSTS	TOTAL
A	42.7	3.7	3	46.7
B	73.1	7.3		80.4
C	40.5	3.6	3	44.4
TOTAL				171.5



BAR TYPES

ALL DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-1273002

SAMPSON COUNTY

STATION: 173 + 10.48 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

BILL OF MATERIAL
RIGHT LANE

APRIL 1965

SHEET NO. S-111
TOTAL SHEETS 136

REVISIONS: NO. DATE; NO. DATE; NO. DATE

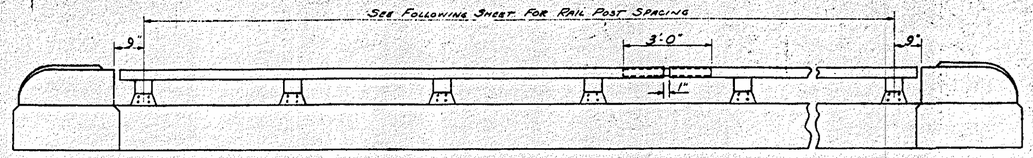
SPECIAL

DESIGNED BY ... DATE ...
DRAWN BY E.G. ALFORD, JR. DATE APR. '65
TRACED BY ... DATE ...
CHECKED BY GEORGE B. WYNNE DATE MAY '65

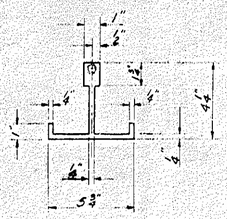
FED. ROAD DIST. NO.	STATE	STATE PROJ. NO.
3	N. C.	B-1273002

F. A. PROJECT S-GU-1602(4)

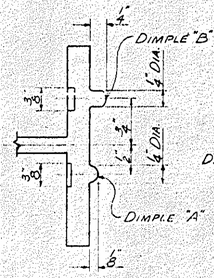
SHEET 120 OF 160 SHEETS



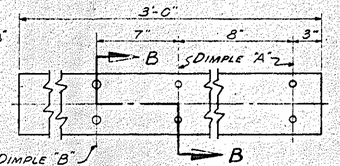
ELEVATION

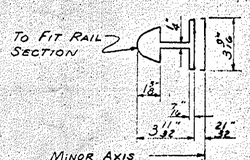


PLAN



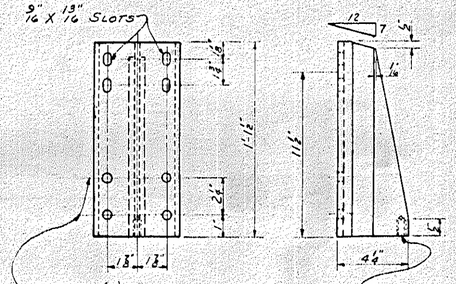
SECTION B-B





BAR SECTION

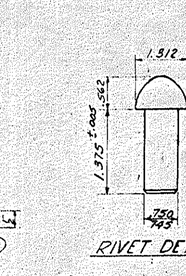
EXPANSION BAR DETAILS



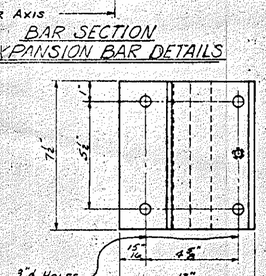
FRONT ELEVATION

SIDE ELEVATION

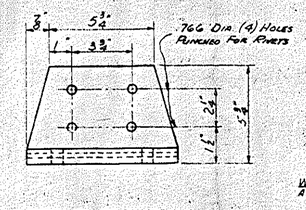
DETAILS OF POST



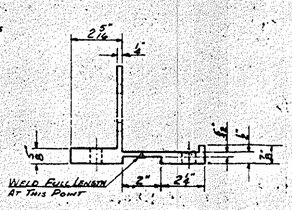
RIVET DETAIL



PLAN

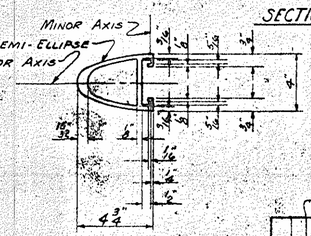


FRONT ELEVATION

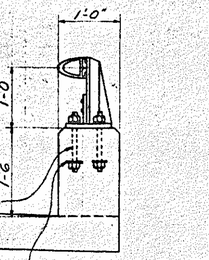


SIDE ELEVATION

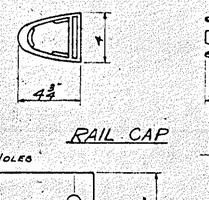
POST BASE DETAILS



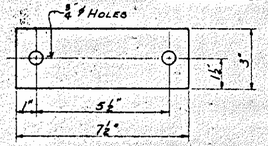
RAIL SECTION



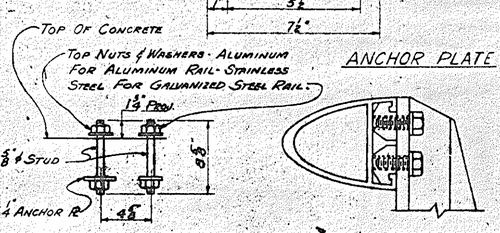
SECTION THRU PARAPET & RAIL



RAIL CAP

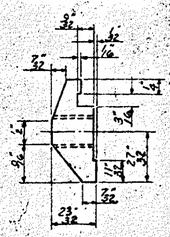


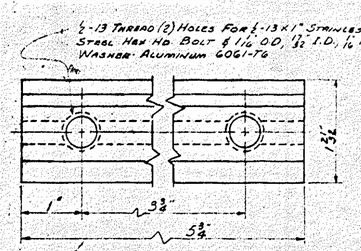
ANCHOR PLATE



ANCHOR ASSEMBLY

CLAMP & RAIL ASSEMBLY





CLAMP BAR DETAIL
(2 REQUIRED PER POST)

AT THE CONTRACTORS OPTION METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES & RAILS, EXPANSION BARS, CLAMP BARS & ALUMINUM NUTS SHALL BE A.S.T.M. B 211 ALLOY 6061 OR 6062-T6.
MATERIAL FOR ALUMINUM WASHER SHALL BE A.S.T.M. B 209 ALLOY ALCLAD 2024-T3.
MATERIAL FOR RIVETS SHALL BE A.S.T.M. B316 ALLOY 6061 OR 6062-T6. RIVETS SHALL BE BUTTON HEAD & CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS.
RAIL POST & POST BASE: A.S.T.M. A36 GRADE STRUCTURAL STEEL - GALVANIZED TO A.S.T.M. A-123.
RAIL & EXPANSION BAR: A.S.T.M. A36 GRADE STRUCTURAL STEEL GALVANIZED TO A.S.T.M. A-123.
CLOSURE PLATES & SHIMS: STEEL A245 GRADE C - GALVANIZED TO A.S.T.M. A123
NUTS & WASHERS FOR TOP END OF ANCHOR ASSEMBLY FOR STEEL RAIL SHALL BE TYPE 430 STAINLESS STEEL.

THE CUT ENDS OF GALVANIZED STEEL RAILING AFTER GRINDING SMOOTH, SHALL BE GIVEN TWO COATS OF ZINC PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE I.

GENERAL NOTES.

1. RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF FOUR POSTS.
2. END OF RAIL TO CLEAR FACE OF CONCRETE END POST BY 1" ±.
3. MATERIAL FOR ANCHOR STUDS SHALL BE TYPE 430 STAINLESS STEEL WITH MINIMUM 70,000 P.S.I. ULTIMATE STRENGTH. THREADS TO BE ROLLED & NOT CUT. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK NUTS, CLASS 2B THREAD. ANCHOR PLATES SHALL BE A.S.T.M A7 OR A36. MACHINE SCREWS FOR RAIL ATTACHMENT SHALL BE STAINLESS STEEL.
4. CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS & POSTS. SHOP INSPECTION IS NOT REQUIRED.
5. METAL RAIL POSTS TO BE SET NORMAL TO CURB GRADE.
6. METHOD OF MEASUREMENT FOR METAL RAILS: UNLESS OTHERWISE STATED THE LENGTH OF METAL RAILS, TO BE PAID FOR, SHALL BE THE CONTINUOUS HORIZONTAL LENGTH MEASURED FROM INSIDE TO INSIDE OF CONCRETE POSTS ALONG OUTSIDE OF PARAPET.

PAY LENGTH: 249.94' RT. LANE
PAY LENGTH: 252.92' LT. LANE

PROJECT NO. B-1273002

SAMPSON COUNTY

STATION: 173 + 10.48

RT. OR LT. LANE

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STANDARD 1 BAR METAL RAIL

JULY 1964

SHEET NO. S-118
TOTAL SHEETS 134

DRAWN BY: E. G. ALFARD, JR. DATE: APR. '65
CHECKED BY: GEORGE E. WYNNE DATE: MAY '65

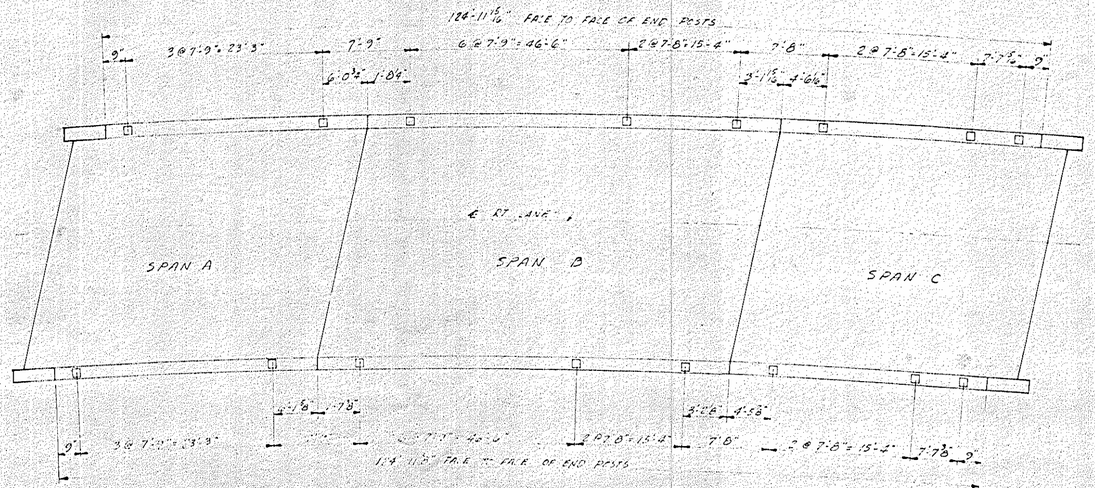
STANDARD RDU-7-23-64 V-6x R.H.

REVISIONS

NO.	BY	DATE
1		
2		
3		
4		

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N. C.	B-1273002
F. A. PROJECT	S-5U-1606(3)	

SHEET 121 of 185



PLAN SHOWING RAIL POST SPACING

NOTE: DIMENSIONS SHOWN ARE HORIZONTAL ARC LENGTHS MEASURED ALONG OUTSIDE OF PARAPET.

PROJECT NO. B-1273602

SAMPSON COUNTY

STATION: 173+10.48

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

RAIL POST SPACING
RT LANE
APRIL 1965

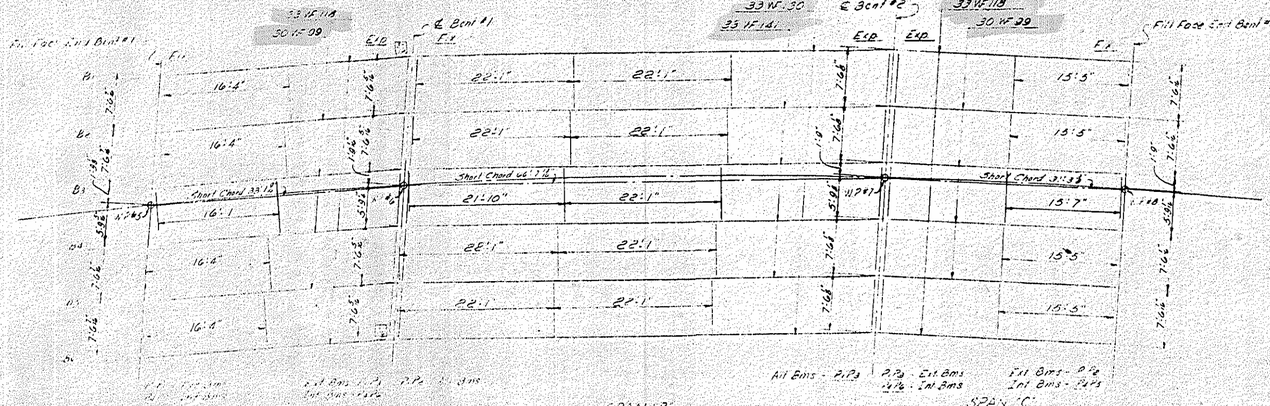
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	5.119	
1			3			TOTAL SHEETS	
2			4			194	

DRAWN BY R.G. ALFORD, JR. DATE 4-65 C.E.
CHECKED BY GEORGE KLAYMAN DATE MAY 65 G.S.

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	B1273002

F. A. PROJECT S-50-1600(4)

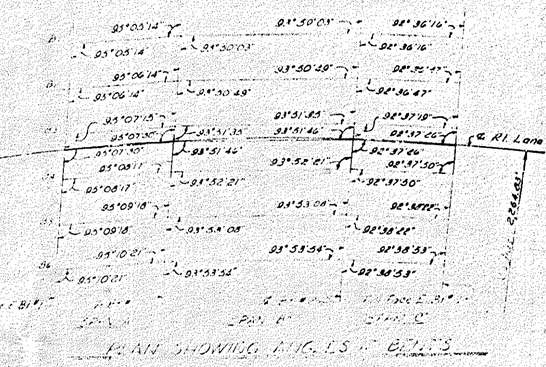
SHEET 123 of 185



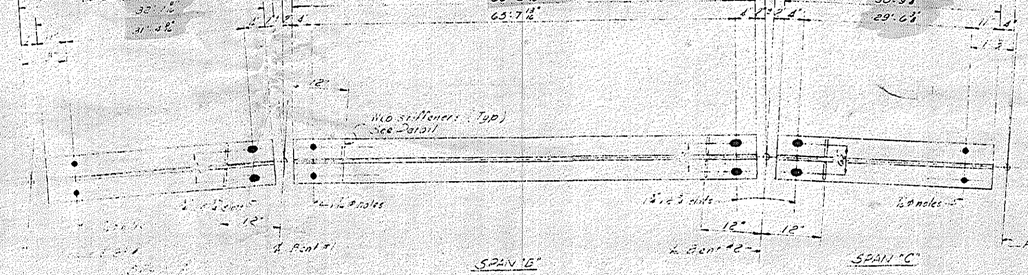
STRUCTURAL STEEL PLAN

E.S.E.U.

Indicates Fill Plate required



PLAN SHOWING ANGLES OF BEAMS



BOTTOM FLANGE DETAIL

(Typ. Flange noted)

NOTE

The contractor may, at his option and without change in the contract price, fit structural steel (see specifications) at the interior diaphragm connections to the beam web and welded to the beam flanges of the welded plate interior diaphragm connections shown.

NOTE

In lieu of the welding procedure for shop and field welds indicated for the interior diaphragm connections, the contractor may at his option, shop weld the connector plates to the beam ends and field weld the channels to the connector plates. Special care in handling the beams must be observed if connector plates are shop welded to the beam webs.

PROJECT NO. B1273002

COUNTY

STATION: 173+62.48 - POL

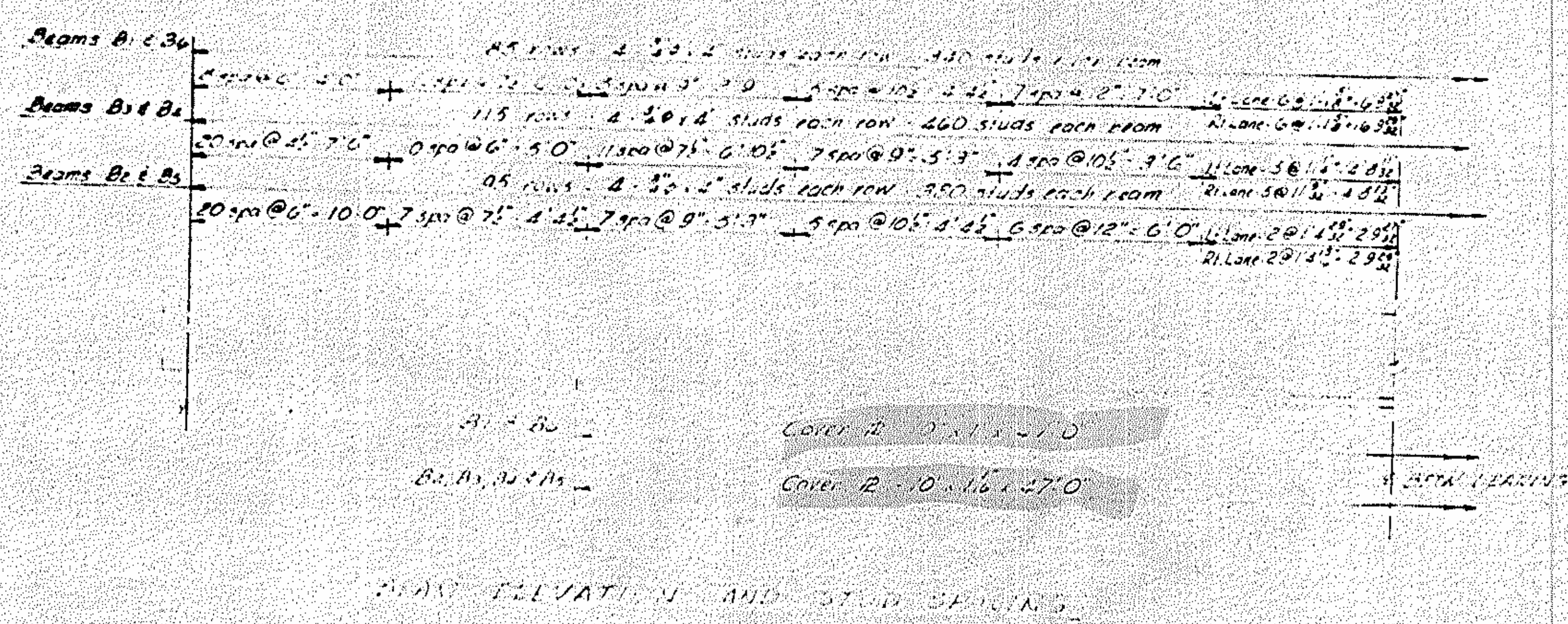
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

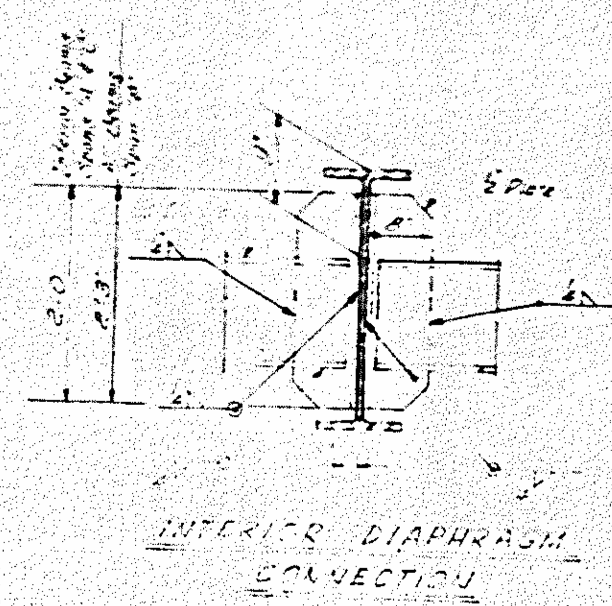
SIMPLE STRUCTURE
STRUCTURAL STEEL
RIGHT LANE

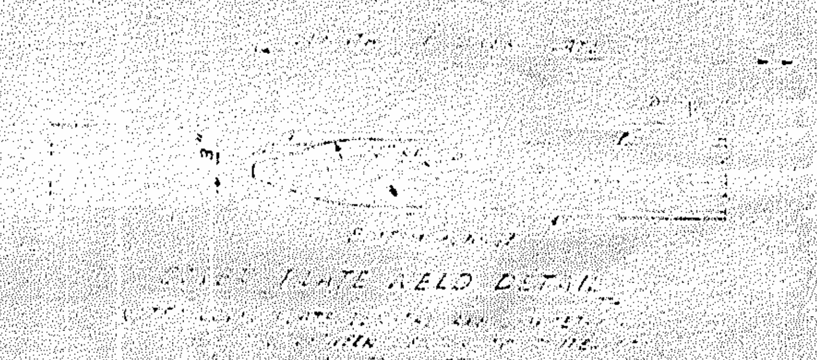
1965

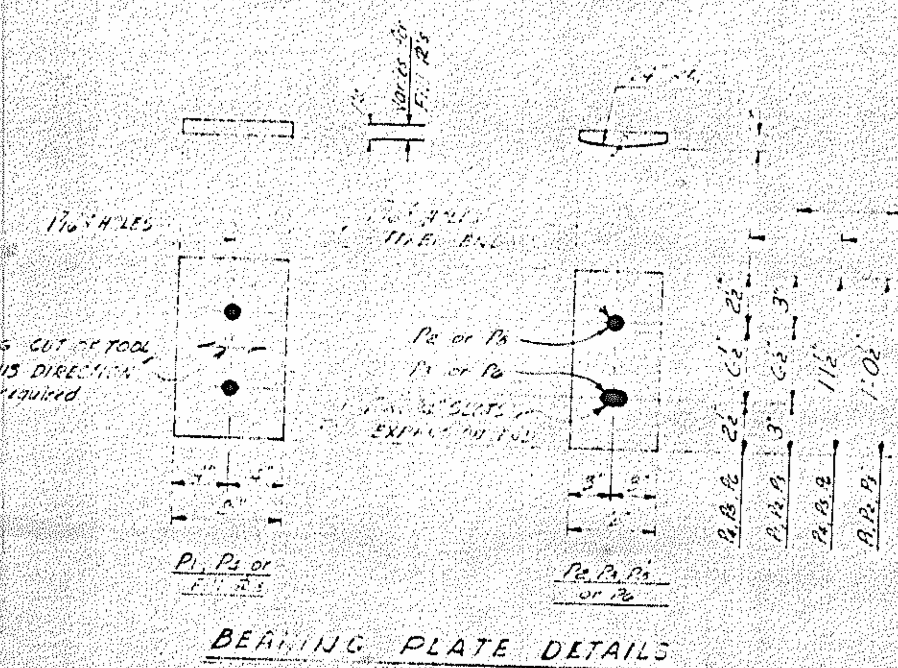
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-121
1			3				TOTAL SHEETS
2			4				185

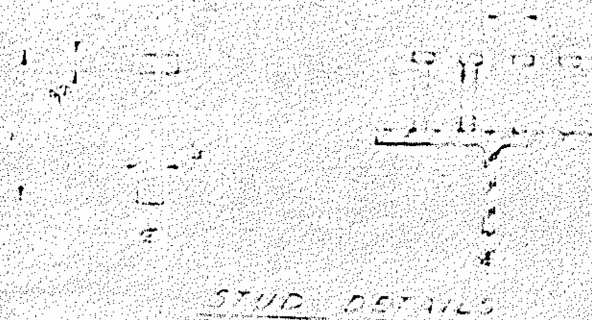
DATE MAY 1965

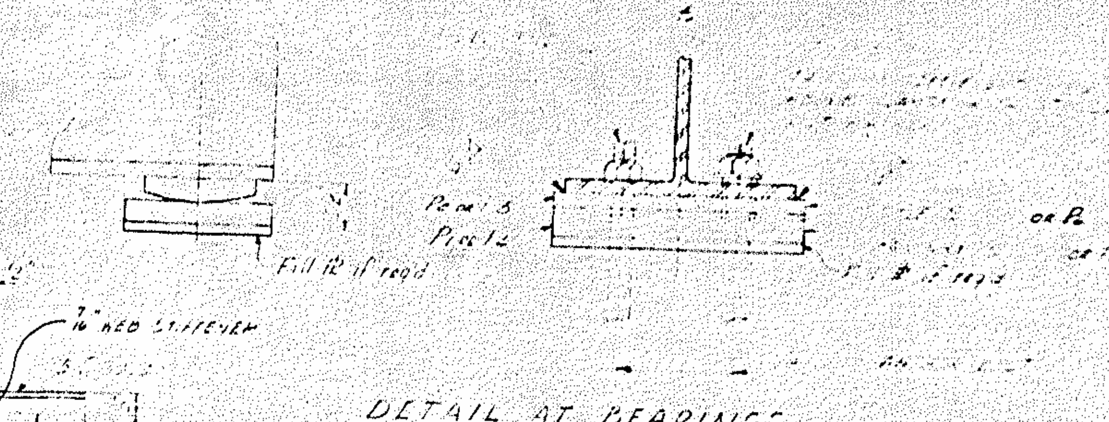


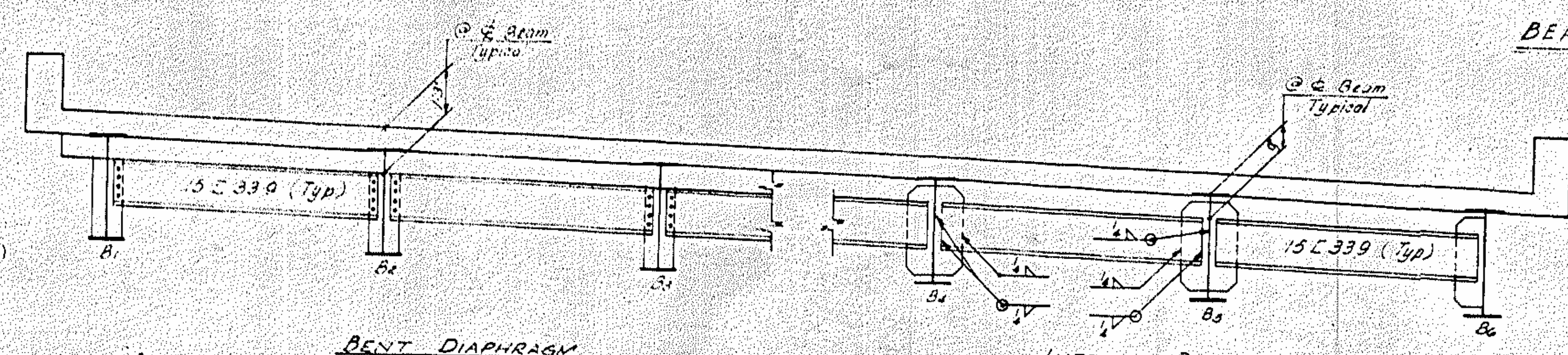




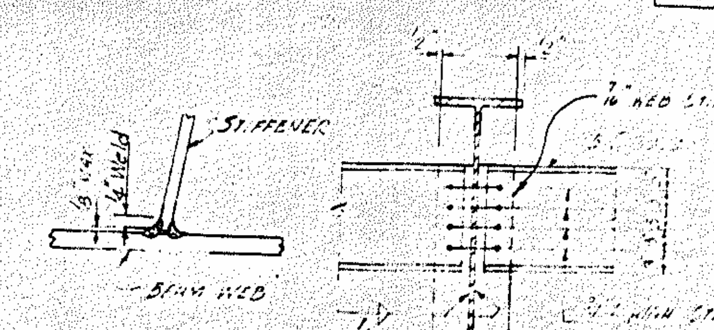








TYPICAL SECTION



DIAPHRAGM CONNECTION AT BENT AND DETAIL WEB STIFFENER

BEARING PLATES REQUIRED

20 - P1	8" x 1 1/4" x 1'-0 1/2"	Plane finish to 1 1/4"
10 - P2	6" x 1 1/4" x 1'-0 1/2"	As detailed
10 - P3	6" x 1 1/4" x 1'-0 1/2"	As detailed
16 - P4	8" x 1 1/4" x 11 1/2"	Plane finish to 1 1/4"
8 - P5	6" x 1 1/4" x 11 1/2"	As detailed
8 - P6	6" x 1 1/4" x 11 1/2"	As detailed

FILL PLATES REQUIRED

2 - 8" x 3/16" x 1'-0 1/2"

NOTE: One set of above R's required for each lane.

STRUCTURAL STEEL APPROXIMATE WEIGHT = 121,300 LBS. LT. LANE / 120,300 LBS. RT. LANE

DEAD LOAD DEFLECTIONS AND BEAM CAMBER

		Deflection due to weight of beam	Deflection due to superimposed dead load	Total dead load deflection	Vertical Curve ordinate	Super elevation	Camber
SPAN "A"	EXTERIOR BMS.	0"	1/8" LT 1/8" RT	1/8" LT 1/8" RT	1/16"	-1/16"	0"
	INTERIOR BMS.	0"	3/16" LT 1/8" LT	3/16" LT 1/8" RT	1/16"	-1/16"	0"
SPAN "B"	EXTERIOR BMS.	1/4"	1 1/16"	1 1/16"	1/4"	-1/16"	1 1/4"
	INTERIOR BMS.	1/4"	1 1/4"	1 1/2"	1/4"	-3/16"	1 3/16"
SPAN "C" LT. LANE	EXTERIOR BMS.	0"	1/8"	1/8"	1/16"	-3/16"	0"
	INTERIOR BMS.	0"	3/16"	3/16"	1/16"	-1/16"	0"
SPAN "C" RT. LANE	EXTERIOR BMS.	0"	1/16"	1/16"	1/16"	-1/16"	0"
	INTERIOR BMS.	0"	1/8"	1/8"	1/16"	-1/16"	0"

PROJECT NO. 8.1273002
SAMPSON COUNTY
STATION: 173+10.48 - POC - L - LEFT & RIGHT LANE

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

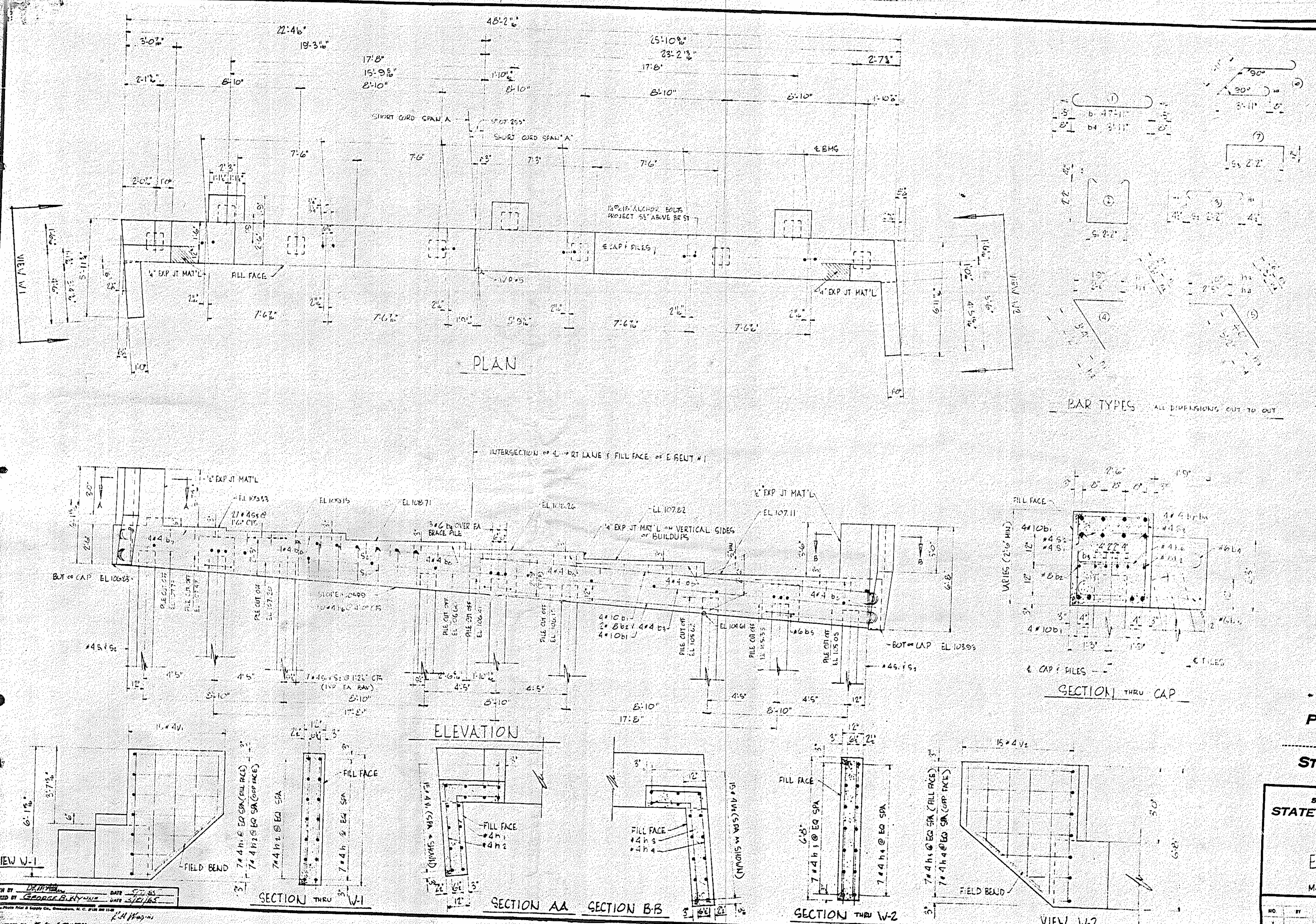
STRUCTURAL STEEL

MARCH 1965

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

SHEET NO. S-122
TOTAL SHEETS 134

DESIGNED BY		DATE
DRAWN BY	S. L. SANTO-TOMAS	DATE APRIL 1965
TRACED BY		DATE
CHECKED BY	GEORGE B. WYNNE	DATE MAY 1965



BILL OF MATERIAL					
FOR ONE BENT ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	8	#10	1	50'9"	1747
b2	2	#8	STR	47'-11"	256
b3	8	#4	STR	24'7"	131
b4	9	#6	1	5'3"	71
b5	3	#6	6	11'-1"	50
b6	10	#4	STR	2'2"	14
b7	4	#4	TK	5'6"	15
b8	4	#4	STR	8'9"	24
b9	4	#4	STR	6'3"	17
h1	7	#4	4	5'-1"	24
h2	7	#4	4	6'-8"	31
h3	7	#4	5	6'4"	30
h4	7	#4	5	7'-7"	35
S1	37	#4	2	7'2"	179
S2	37	#4	3	2'11"	72
S3	27	#4	7	4'2"	65
V1	15	#4	STR	5'10"	58
V2	15	#4	STR	6'5"	64

REINFORCING STEEL LBS 3953 ✓

*CLASS "A" CONC. CU YDS 15.8 ✓

PILES NO. 9 LIN FT ~~132~~ 435'-0"

* CONC DISPLACED BY SQUARE PILE HEADS HAS BEEN DEDUCTED

FED ROAD DIST NO.	STATE	PROJECT NO.
3	N.C.	8 1273

F. A. PROJECT S-50-1606(2)

SHEET 126 of 185

PROJECT NO. 8 1273002

.... COUNTY

STATION: 173 + 10.48 RIGHT LANE

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

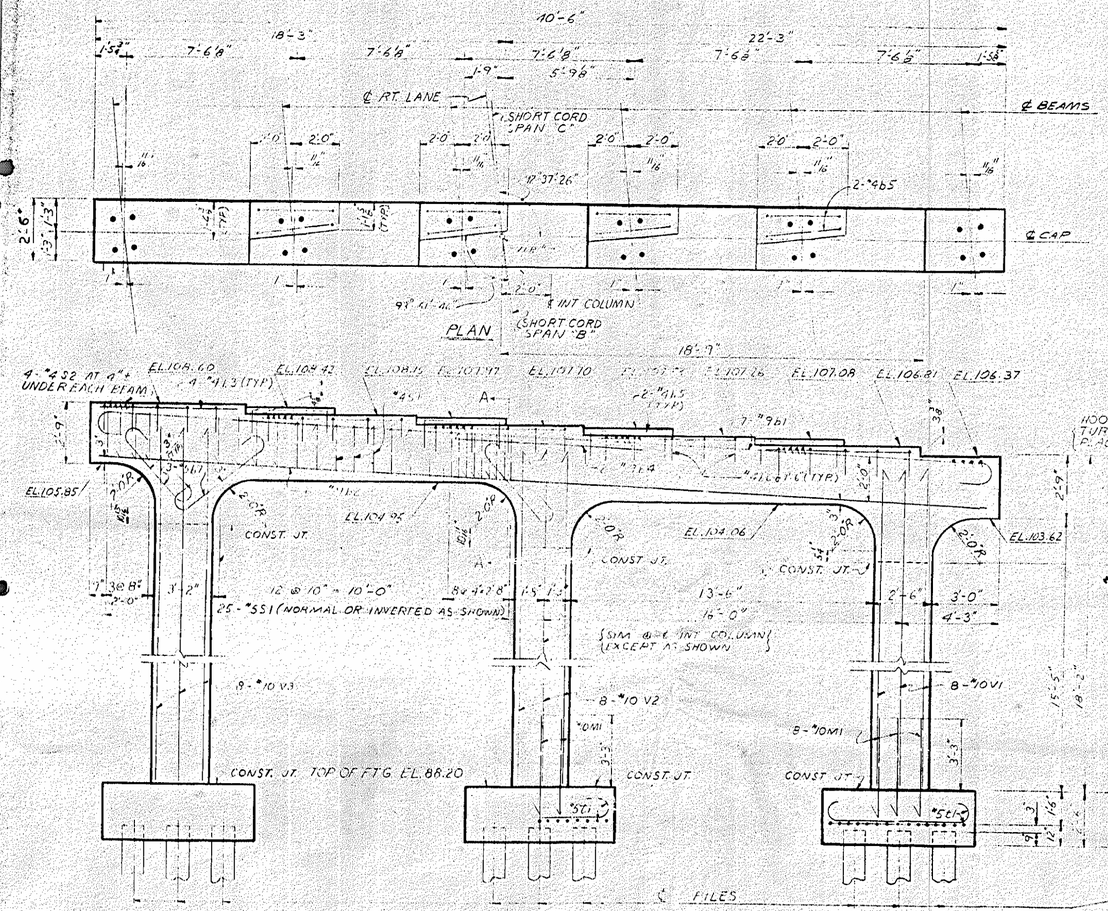
END BENT # 1

MAY 1965

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-124
1			3			TOTAL
2			4			134

DRAWN BY D. D. Miller DATE 5/7/65
CHECKED BY George B. Hynne DATE 5/21/65
Southern Photo Print & Supply Co., Greensboro, N. C.

K. H. Wagner
CHECKED BY K. H. Wagner DATE
Southern Photo Print & Supply Co., Greensboro, N. C.



BAR TYPES

(ALL DIMENSIONS ARE OUT TO OUT)

(1)

1'-5"	4'-7"	M1			
1'-5"	1'-7"	V1			
1'-5"	1'-9"	V2			
1'-5"	1'-11"	V3			

(2)

4½"	2'-2"	S2	4½"

(3)

1'-3"	40'-2"	61	1'-3"
7"	6'-3"	11	7"
7"	5'-0"	67	7"

(4)

2'-2"	S1

(5)

3'-8"	65	
2'-2"	66	

BILL OF MATERIAL

ONE BENT ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	1	#9		4'-8"	1015
B1	6	#9	STR	40'-2"	819
B3	10	#4	STR	6'-7"	98
B4	2	#9	STR	8'-0"	58
B5	9	#6	6	5'-2"	28
B6	25	#4	5	4'-2"	70
B7	14	#5	3	6'-2"	116
J1		#	6	7'-[illegible]	39
S2	24	#4	5	2'-11	47
V1	8	#10	1	1[illegible]	660
V2	8	#10	1	20'-5"	733
V3	8	#10	1	2[illegible]	779
M1	4	#10	1	6'-0"	620
E1	70	#5	3	7'-5"	696

REINFORCING STEEL LBS. = 5,027

CLASS A CONC	CU. YDS.
POUR #1	12.2*
POUR #2	10.1
POUR #3	13.7
TOTAL	36.3*

PILES

NO 15	LIN FT. ~~225~~ 987'-1"

* NOTE: CONCRETE DISPLACED BY PRESTRESS PILE HEADS HAS BEEN DEDUCTED.

STATE	N.C.
F. A. PROJECT	[illegible]

SHEET 128 OF 185

PROJECT NO. 8.1273002

SAMPSON **COUNTY**

STATION: 173+10.48 L REV.

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

BENT #2
RIGHT LANE

MAY 1965

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-126
1			3			TOTAL SHEETS
2			4			194

DRAWN BY: [illegible] DATE: MAY 65
CHECKED BY: [illegible] DATE: May 1965

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N.C.	B-1273002
F. A. PROJECT S-GW-1006(2)		

SHEET 129 of 185

BILL OF MATERIAL
ONE BENT ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
L1	8	#10	6	50'6"	1738
L2	4	#6	6	3'-3"	71
b3	10	#4	STR	2'-2"	14
b4	5	#7	STR	24'-6"	130
b5	2	#8	STR	47-8	255
b6	1	#6	3	11'-1"	50
S1	7	#4	7	7'-3"	179
S2	37	#4	5	2'-11"	72
S3	19	#4	4	3'-7"	81
V1	15	#4	STR	3'-7"	58
V2	15	#4	STR	6'-4"	64
A1	7	#4	1	5'-3"	25
A2	7	#4	1	6'-7"	31
A3	7	#4	2	6'-5"	30
A4	7	#4	7	7'-9"	36
b7	4	#4	STR	10'-0"	27
b8	12	#4	STR	5'-9"	70
b9	4	#4	STR	7'-0"	19

REINFORCING STEEL .85 × 2950

CLASS A CONC CU YDS = 15.7

PILES

NO. = 9	LIN. FT. ~~270~~ 360'-0"

* CORK DISPLACED BY SQUARE PILE HEADS HAS BEEN DEDUCTED

PROJECT NO. 8.1273002

SAMPSON **COUNTY**

STATION: 173+10.48

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

END BENT NO2
RIGHT LANE

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	SHEET NO. 4-127
1			3			TOTAL SHEETS 194
2			4			

DRAWN BY SULLIVAN J.J. DATE MAY 63
CHECKED BY GEORGE R. WILKINS DATE JUNE 63