Finance
Purchasing Division
929 N Front St., 10th Floor
Post Office Box 1810
Wilmington, NC 28402-1810

910 341-7830
910 341-7842 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

ADDENDUM NUMBER 1
Front Street Bridge Rehabilitation
BR-AEC-0424
April 4, 2024

To all holders of Bid Documents, please be advised of the following:

BID DATE HAS BEEN EXTENED TO APRIL 15, 2025 @ 2:00 PM

GENERAL CLARIFICATIONS:

Response to questions received.

1. *Are existing bridge plans available?*

Answer: Yes, they are included in this addendum.

2. *Do you have to top flange width of the girders?*

Answer: The existing plans show the existing beam data. Beam sizes vary, and include shapes 24WF76, 27WF102, 30WF116, 36WF170, 36WF160, 36WF150, 36WF135.

3. *As the jacking loads are quite high and large jacks will be needed, can you confirm the factoring. The load table notes that the load is factored, yet in the notes the minimum safe capacity required is 150% of the load specified. It seems that the factoring is applied twice.*

Answer: Prospective bidders should note the units (pounds) associated with the table in the plans. The loads in the table are a 1.25 factor of dead load only for the loads assumed present during jacking. The jacks shall be required to provide 150% of calculated service loads. The contractor shall calculate the anticipated loads and submit them with working drawings as stipulated in the special provision and the jack type and capacity. The jacks shall provide a minimum of 150% of the load specified in the table (per note on the plans) but this does not relieve the contractor of the responsibility to design the jacking scheme. The table in the plans establishes a minimum but the SP requires the contractor to use 150% of the calculated service load (per the contractor's calcs/working drawings).

General Items

1. The contractor will be required to develop and maintain a 2 week look ahead schedule of the required work throughout the duration of the project. This schedule should include anticipated start and completion dates of construction milestones, starting and ending dates of subcontractor work, and anticipated night work. This schedule will be submitted to the Project Manager with the City at the beginning of each work week for the duration of the project.

PLAN MODIFICATIONS:

No plan modifications proposed for Addendum #1.

Acknowledge receipt of this Addendum in the space provided in the Proposal. Failure to do so may disqualify the Bidder.

All other terms and conditions remain unchanged.

Daryle L. Parker, Purchasing Manager
Purchasing Division
END OF ADDENDUM ONE

FED. ROAD DIST. NO.	STATE	STATE PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
14	N.C.	8.23353		1	26
F.A. Proj. USG-1567(3)					

INDEX OF SHEETS

Sheet No. 1. Title Page
" " 2. Typical Cross Section of Improvement
" " 3. Estimate of Quantities

ENG-8-102-64

BRIDGE

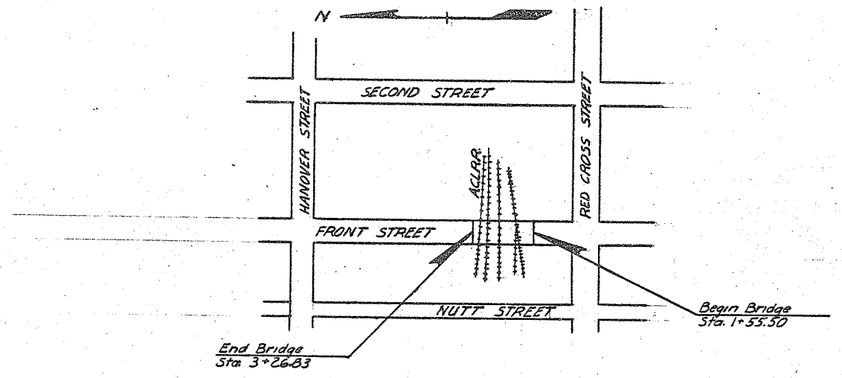
3353

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

NEW HANOVER COUNTY

PROPOSED BRIDGE OVER A.C.L. RAILROAD ON
FRONT STREET IN WILMINGTON



LAYOUT

CONVENTIONAL SIGNS

County Line
Township Line
City or Town Line
Right of Way Line
Survey Line
Property or Exist. Right of Way Line
Fence
Proposed Road
Existing Road
Railroad
Control of Access Line
Slope Stake Line
Bridge
Culvert
Woods
Telephone or Telegraph Pole
Tower Pole and Line
Power Pole
Proposed Right of Way Marker
Existing Right of Way Marker
Guard Rail

APPROVED: L. W. Price
CHIEF ENGINEER

Prepared in Office of
STATE HIGHWAY COMMISSION
RALEIGH, N. C.

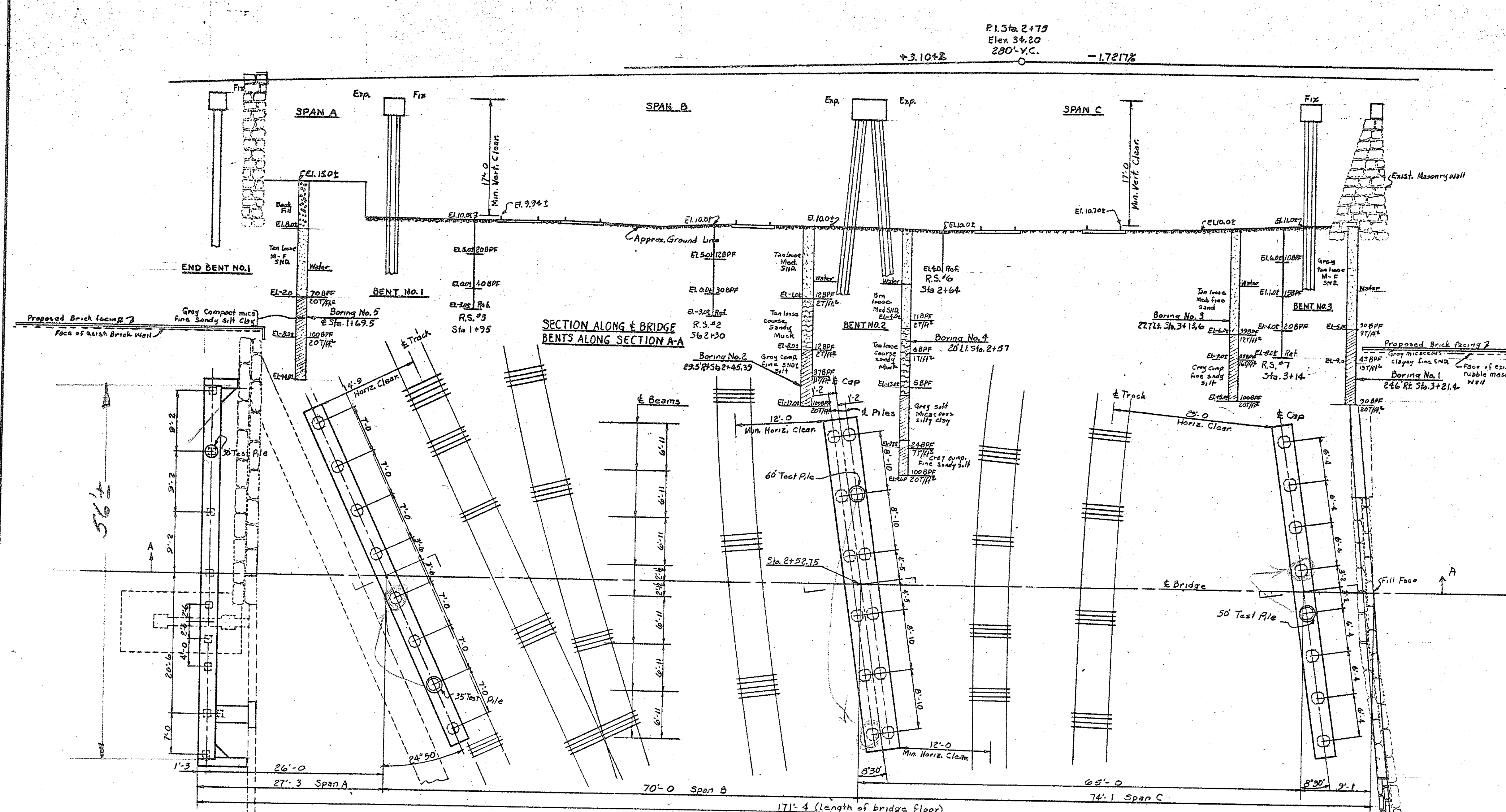
Surveyed by: G.N. Saperstein
Plans Prepared by: Bridge Department
Date: June 26, 1964

State Standard Specifications,
Approved by Bureau Control.

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED: H.J. Nichols
DIVISION ENGINEER DATE

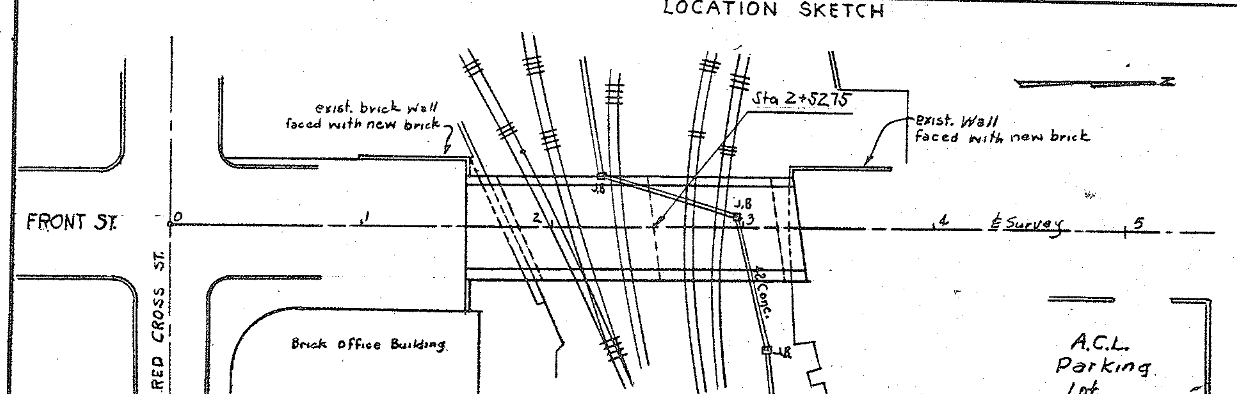
4-18-39



BM #1 Top center stone @ Intersection Red Cross St. & N. Front St. El. 26.07

PLAN

LOCATION SKETCH



DRAWN BY Jack Parker DATE 23 April 1964
CHECKED BY R. W. Martin DATE June 1964

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.

BILL OF MATERIAL

	Reinf. Steel lbs.	Class "A" Conc. cu yds.	Struct. Steel lbs. (Approx)	12" Prestr. Conc. Piles No.	12" Prestr. Conc. Piles lin. ft.	20" Prestr. Conc. Piles (Oct.) No.	20" Prestr. Conc. Piles (Oct.) lin. ft.	1 Bar Metal Rail lin. ft.	Brick Masonry cu. yds.	Unclass. Structure Excav. cu yds
SPAN A	11,325	51.0	22,600					49.92		
SPAN B	28,209	109.6	109,000					140.00		
SPAN C	29,851	132.0	100,400					145.00		
END BENT No 1	4,013	20.2		10	273					
BENT No 1	3,449	17.7				8	245			
BENT No 2	3,535	27.9				12	665			
BENT No 3	3,099	13.7				8	365			
ABUT. EXT. & CAP NORTH END	1,731	25.8						7.27		5
WALLS, BRICK FACING ETC. SOUTH END	1,189	23.2						71.64	9.9	80
BRICK FACING WALL NORTH WEST END	499	8.6						36.58	26.1	10
TOTAL	86,900	*429.7	232,000	10	273	28	1,275	450.41	36.0	95

* Includes 17.8 cu. yds. Class A Concrete using #4 aggregate.

FED. ROAD DIV. NO. 3

F. A. PROJECT

NOTES

Live Load

Assumed live load H20 S16 (44)

For other design data and general n
see sheet SN.

Test Piles

The contractor will be required to
prestr. Conc. test pile in place for E.
test pile shall be paid for as linear
12" concrete piles. The order lengt
concrete piles will be given after
pile has been driven.

The contractor will be required to dr
20" prestr. concrete pile in place for
The test piles shall be paid for as line
20" prestr. concrete piles. The order le
20" prestr. concrete piles will be give
test piles has been driven.

Pile Capacities

Piles for E. Bt. #1 to be driven to a mi
bearing capacity of 30 tons each.
Care shall be exercised in driving the
at E. Bt. #1 as shown on plans on top
footing.

Piles for Bts. #1, 2 & 3 to be driven to a
bearing capacity of 45 tons each.

Traffic

Railroad traffic shall be maintained
See Spec. Provisions.

The existing bridge at the proposed s
removed under a previous contract. Tr
Front Street at the site will be dete

Roadway work to be done by others.

PROJECT No. 8.2335

NEW HANOVER

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMI
RALEIGH

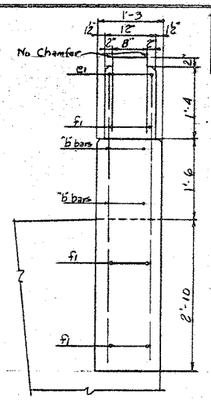
GENERAL DRAWING
FOR BRIDGE ON
FRONT STREET IN WILMINGTO
OVER
ATLANTIC COAST LINE RAILRO

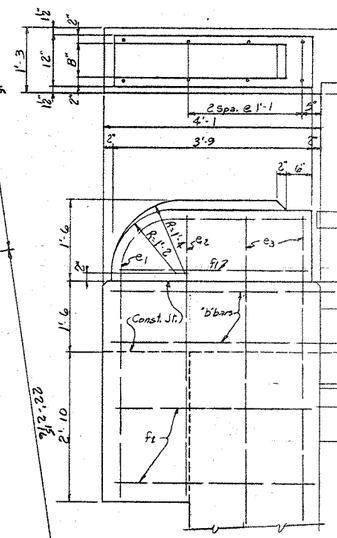
April, 1964

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

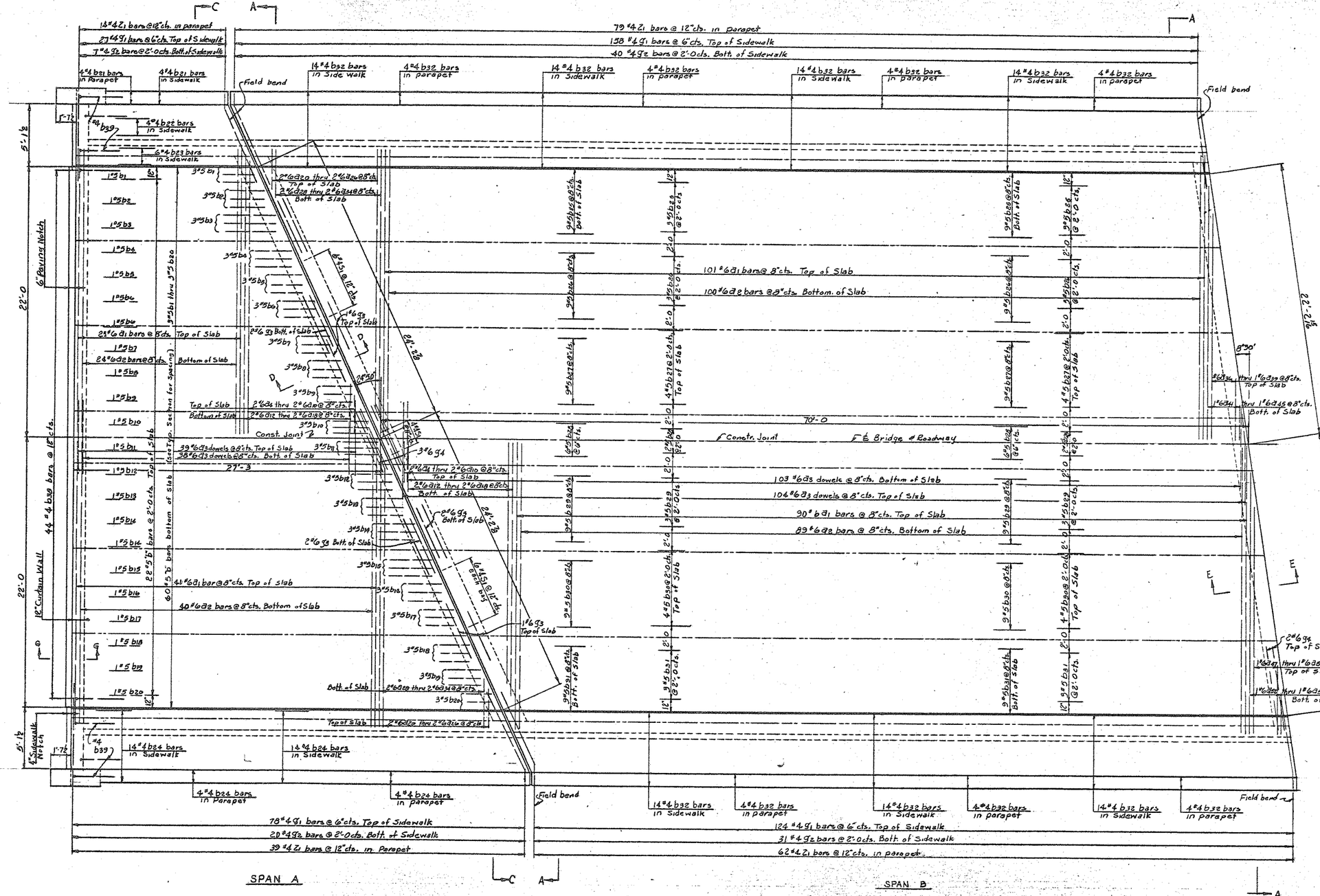
FED. ROAD DIV. NO.	STATE	PROJECT NO.
2	N. C.	B-3

F. A. PROJECT US G-156





END POST DETAILS



PROJECT No. 8233.53

NEW HANOVER COUN

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE
SPAN A & SPAN B

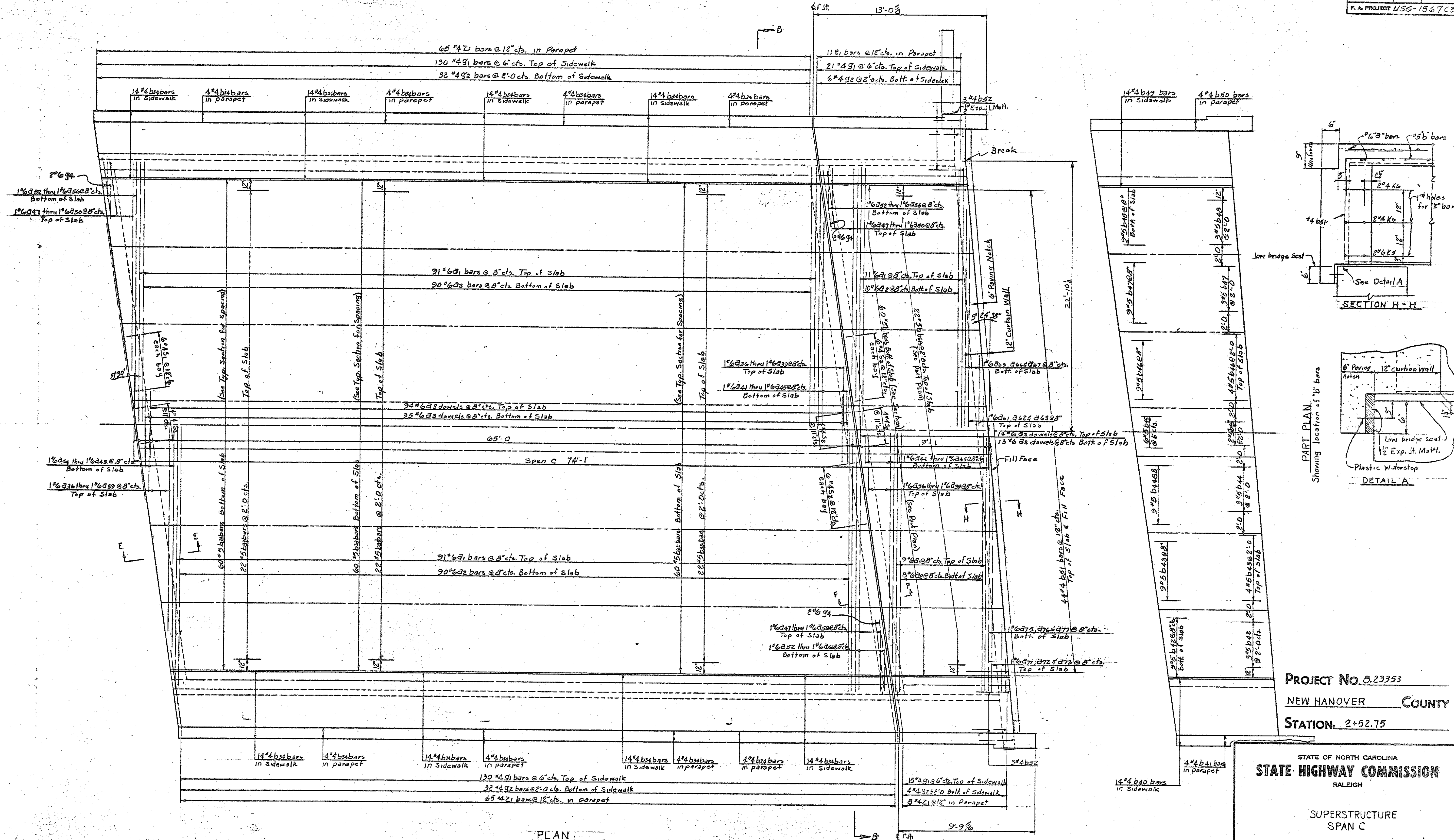
MARCH 1964

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

DRAWN BY Jack Parker DATE 12 March 64
CHECKED BY R. W. Martin DATE June 64

COUNTRYLAND BLUE PRINT CO., CHARLOTTE, N. C.

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	8.23353
F. A. PROJECT	U56-1567(3)	



PROJECT NO. 8.23353

NEW HANOVER COUNTY

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

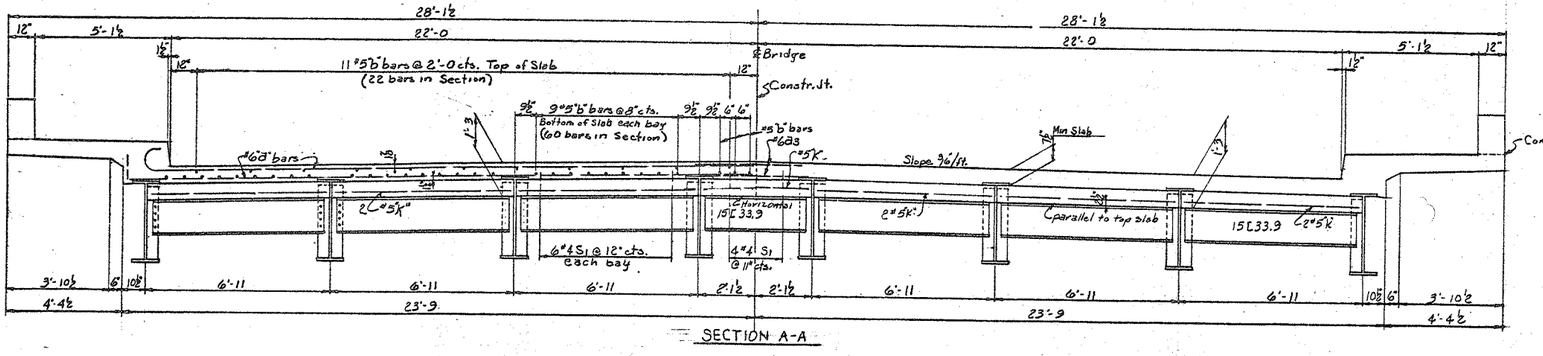
SUPERSTRUCTURE
SPAN C

April, 1964

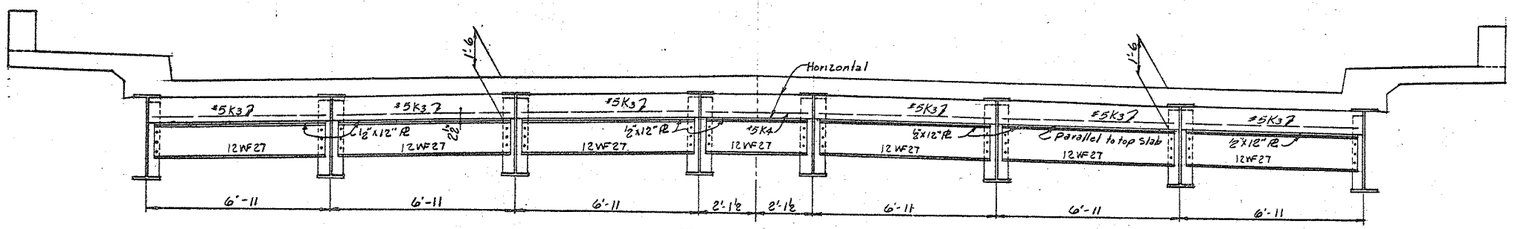
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-4
1			3			TOTAL SHEETS
2			4			26

DRAWN BY Jack Dorkin DATE 16 April 1964
CHECKED BY R. W. Martin DATE June 64

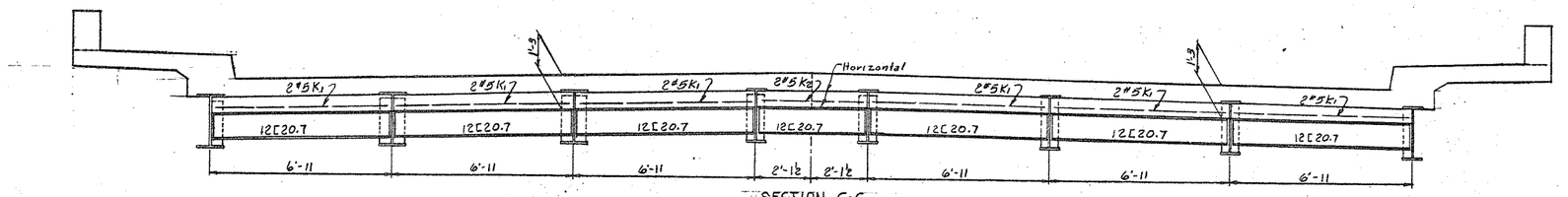
FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N. C.	8.23353
F. A. PROJECT	USG-1567(3)	



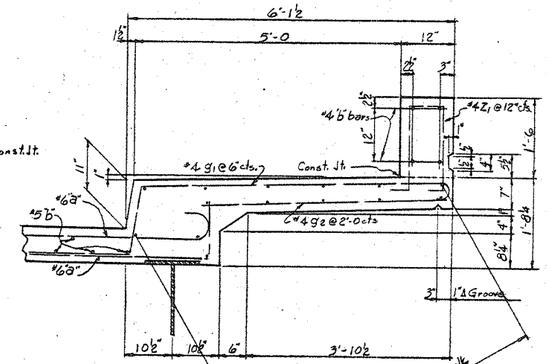
SECTION A-A



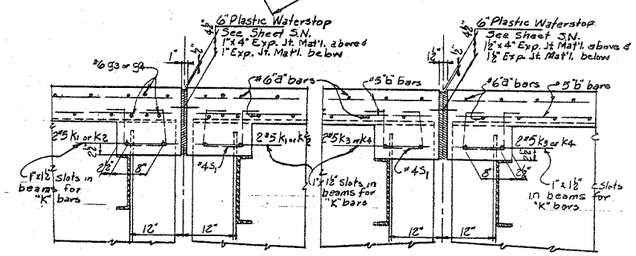
SECTION B-B



SECTION C-C

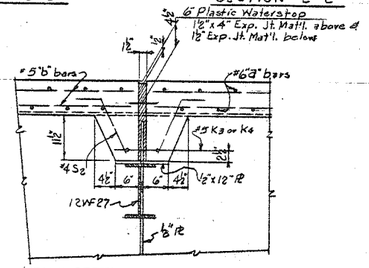


SECTION THRU CURB

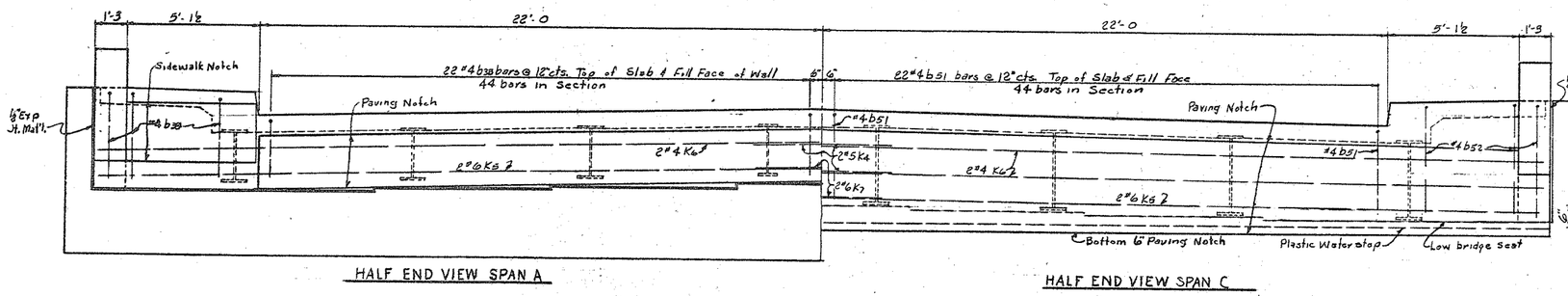


SECTION D-D

SECTION E-E

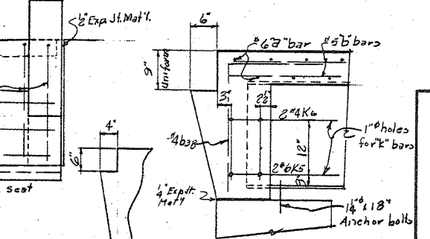


SECTION F-F

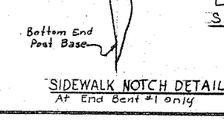


HALF END VIEW SPAN A

HALF END VIEW SPAN C



SECTION G-G



SIDEWALK NOTCH DETAIL
At End Bent #1 only

PROJECT NO 8.23353

NEW HANOVER **COUNTY**

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE SECTIONS

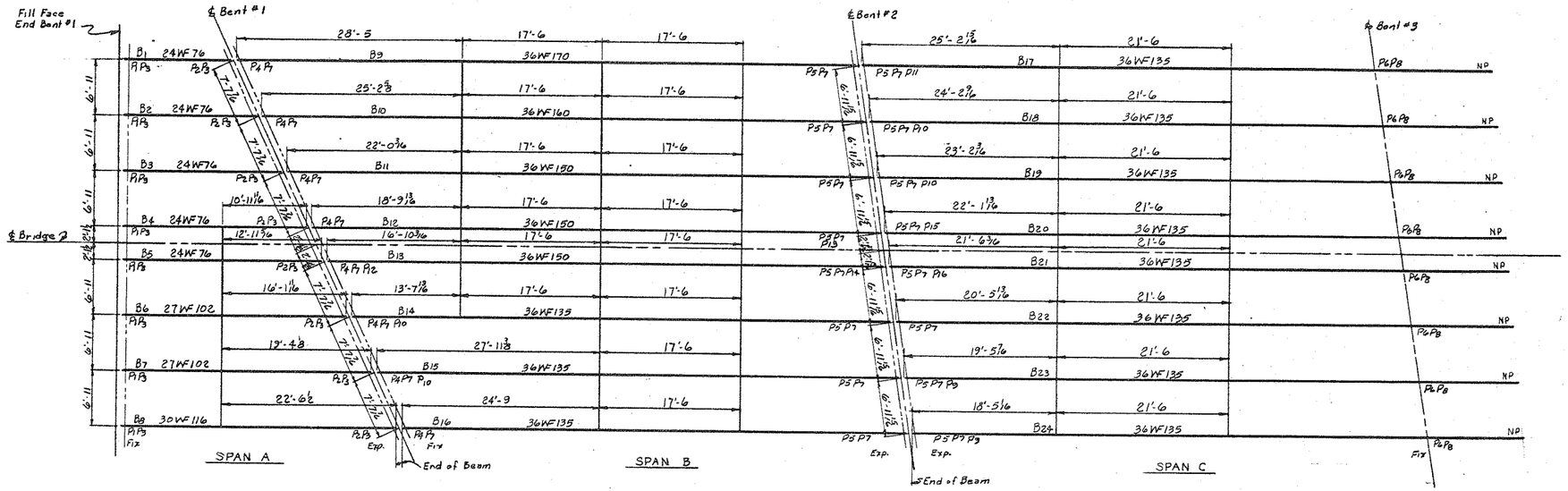
April 1964

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-5
1			3			TOTAL SHEETS
2			4			26

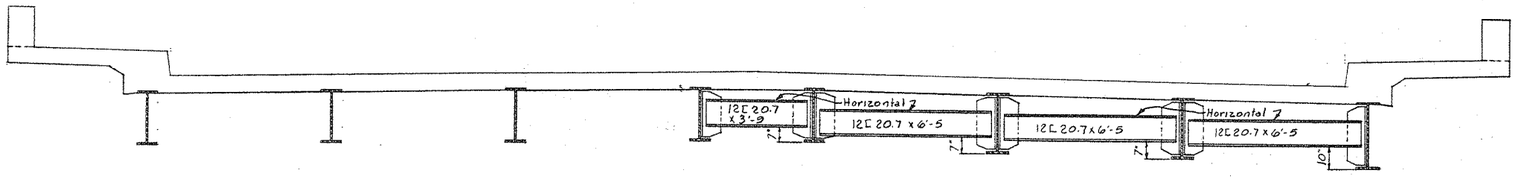
DRAWN BY Jack Parker DATE 14 April 1964
CHECKED BY R. H. Martin DATE June 64

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.-11-49

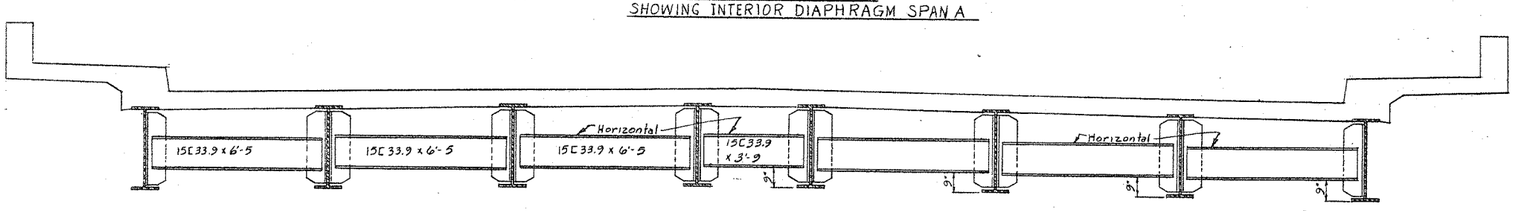
FED. ROAD DIV. NO.	STATE	PROJECT
3	N. C.	8233
F. A. PROJECT	USG-1567(	



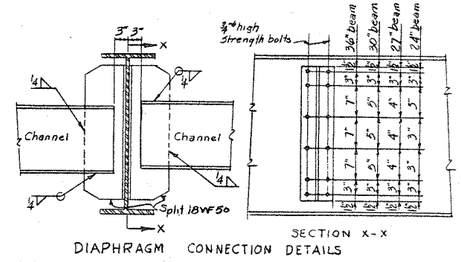
BEAM, DIAPHRAGM, & PLATE LAYOUT



TYPICAL SECTION
SHOWING INTERIOR DIAPHRAGM SPAN A

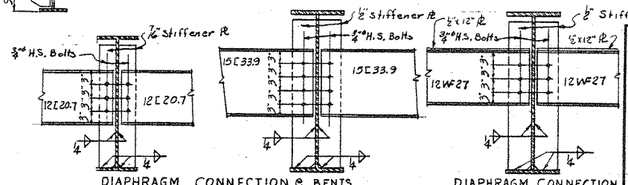


TYPICAL SECTION
SHOWING INTERIOR DIAPHRAGN SPAN B & C



DIAPHRAGM CONNECTION DETAILS

NOTE: Field connection of diaphragms to beam webs to be bolted using ¾" high strength bolts in accordance with the Specifications and Special Provisions.



DIAPHRAGM CONNECTION @ BENTS

DIAPHRAGM CONNECTION @ BENT No. 3

PROJECT NO. 8.23353

NEW HANOVER COUNTY

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STRUCTURAL STEEL DETAILS

April 1964

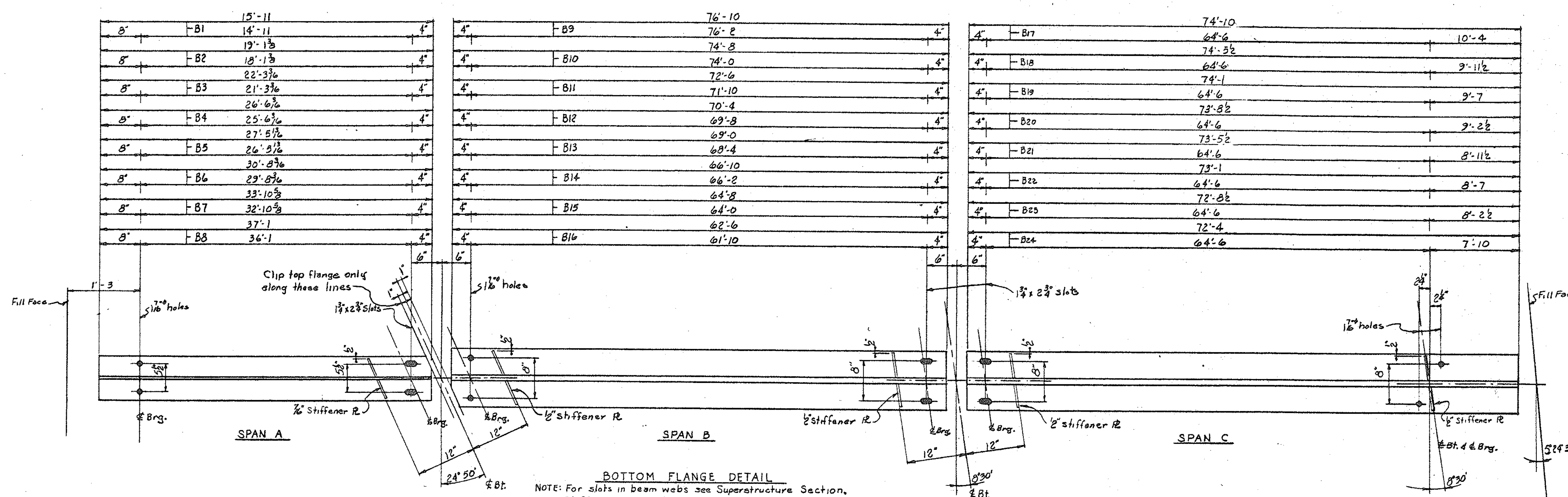
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-6
1			3			TOTAL SHEETS
2			4			26

DRAWN BY Jack Parker DATE 27 April 1964
CHECKED BY R. W. Martin DATE June 64

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.

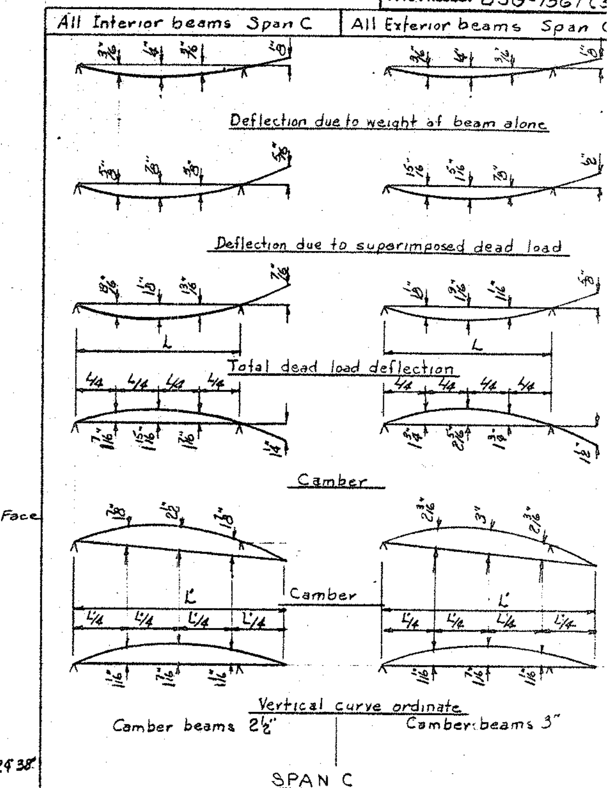
FED. ROAD DIV. NO.	STATE	PROJECT
3	N.C.	8.2335[3]

F. A. PROJECT USG-1567(3)

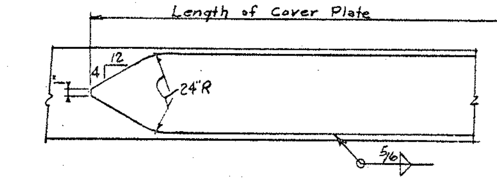


BOTTOM FLANGE DETAIL

NOTE: For slots in beam webs see Superstructure Section. Stiffeners are not required on the End Bent end of beams and on the outside of exterior beams. Stiffeners shall be placed parallel to ends of beams



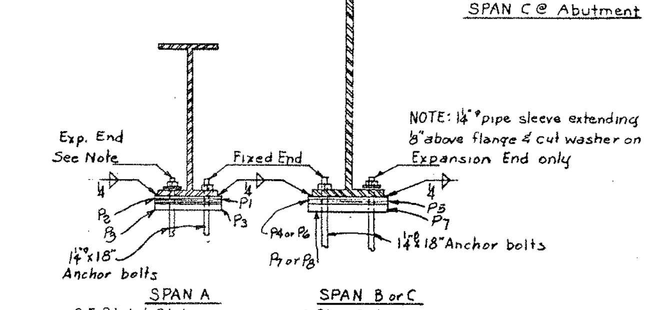
SPAN C
DIAGRAM OF DEAD LOAD DEFLECTIONS



COVER PLATE DETAILS

NOTE: All beams and cover plates shall be of ASTM-A36 grade structural steel. See sheet S.N.

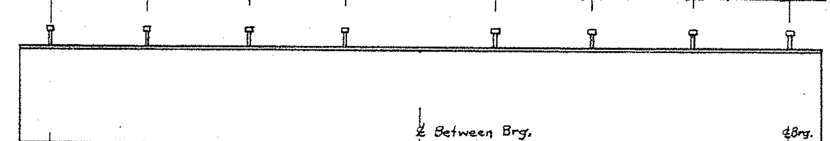
NOTE: 3/4"φ x 4" solid fluxed or granular-flux filled studs either shop welded or field welded. See sheet S.N.



NOTE: 1 1/4"φ pipe sleeve extending 1/8" above flange & cut washer on Expansion End only

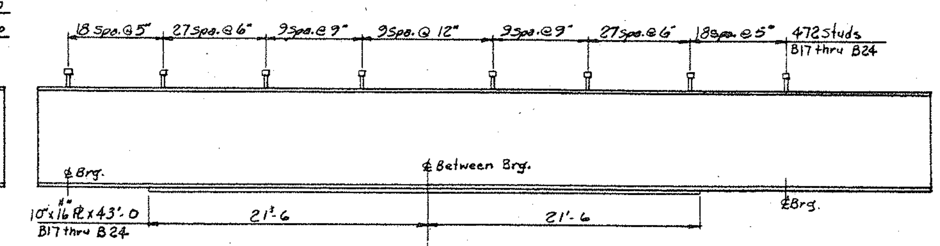
SECTION THRU BEAM

280 Studs	10 spa. @ 9"	10 spa. @ 12"	5 spa. @ 15"	19 spa. @ 18"	5 spa. @ 15"	10 spa. @ 12"	10 spa. @ 9"	B9
520 Studs	21 spa. @ 5"	24 spa. @ 6"	13 spa. @ 9"	13 spa. @ 12"	13 spa. @ 9"	24 spa. @ 6"	21 spa. @ 5"	B10
520 Studs	22 spa. @ 5"	26 spa. @ 6"	11 spa. @ 9"	11 spa. @ 12"	11 spa. @ 9"	26 spa. @ 6"	22 spa. @ 5"	B11
504 Studs	23 spa. @ 5"	23 spa. @ 6"	11 spa. @ 9"	11 spa. @ 12"	11 spa. @ 9"	23 spa. @ 6"	23 spa. @ 5"	B12
488 Studs	19 spa. @ 5"	25 spa. @ 6"	11 spa. @ 9"	11 spa. @ 12"	11 spa. @ 9"	25 spa. @ 6"	19 spa. @ 5"	B13
472 Studs	20 spa. @ 5"	22 spa. @ 6"	11 spa. @ 9"	11 spa. @ 12"	11 spa. @ 9"	22 spa. @ 6"	20 spa. @ 5"	B14
480 Studs	24 spa. @ 5"	22 spa. @ 6"	10 spa. @ 9"	7 spa. @ 12"	10 spa. @ 9"	22 spa. @ 6"	24 spa. @ 5"	B15
240 Studs	10 spa. @ 9"	9 spa. @ 12"	5 spa. @ 15"	11 spa. @ 18"	5 spa. @ 15	9 spa. @ 12"	10 spa. @ 9"	B16



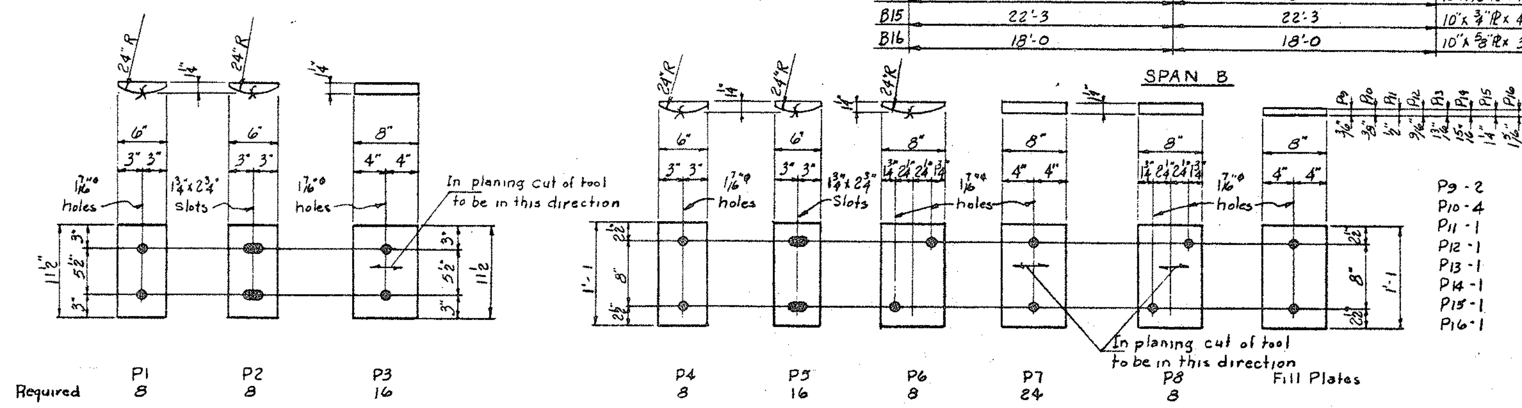
B9	25'-9	25'-9	10" x 1 1/4" ℞ x 51'-6
B10	26'-0	26'-0	10" x 1 3/8" ℞ x 52'-0
B11	25'-6	25'-6	10" x 1 1/16" ℞ x 51'-0
B12	24'-3	24'-3	10" x 15/16" ℞ x 48'-6
B13	23'-3	23'-3	10" x 13/16" ℞ x 46'-6
B14	23'-6	23'-6	10" x 15/16" ℞ x 47'-0
B15	22'-3	22'-3	10" x 3/4" ℞ x 44'-6
B16	18'-0	18'-0	10" x 5/8" ℞ x 36'-0

SPAN B



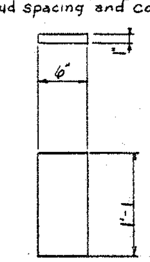
SPAN C

BEAM ELEVATION
Showing stud spacing and cover plates



Required

BEARING PLATE DETAILS



NP
8
NEOPRENE PAD

NOTE: Neoprene pads to be glued to cap under the beams after the end curtain wall has been poured. See Special Provisions.

Note: Payment for Neoprene Pads & Glue included in unit price bid per cu yd for Class "A" Concrete.

DEAD LOAD DEFLECTION																	
	SPAN A								SPAN B								SPAN C
Beam No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Defl. due to weight of beam	0	0	0	0	0	0	0	0	7/16"	3/8"	3/8"	5/16"	5/16"	1/4"	1/4"	3/16"	See Diagram
Defl. due to superimposed dead load	0	1/16"	1/16"	1/8"	3/16"	3/16"	1/4"	3/8"	2 1/4"	1 1/2"	1 3/8"	1 1/4"	1 3/16"	1 3/16"	1 1/16"	1 1/2"	
Total dead load deflection	0	1/16"	1/16"	1/8"	3/16"	3/16"	1/4"	3/8"	2 11/16"	1 7/8"	1 3/4"	1 9/16"	1 1/2"	1 7/16"	1 5/16"	1 11/16"	
Vertical curve ordinate	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	5/16"	3/8"	1 9/16"	1 7/16"	1 3/8"	1 5/16"	1 1/4"	1 3/16"	1 1/16"	1"	
Required Beam Camber	*	*	*	*	*	*	*	3/4"	4 1/4"	3 5/16"	3 1/8"	2 7/8"	2 3/4"	2 5/8"	2 3/8"	2 11/16"	

* No Camber other than natural mill camber required.

DRAWN BY Jack Parker DATE 29 April 1964
CHECKED BY R. W. Melton DATE June 64

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.-11-63

PROJECT NO. 8.23353

NEW HANOVER **COUNTY**

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STRUCTURAL STEEL DETAILS

April, 1964

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
1			3			TOTAL SHEETS
2			4			26

FED. ROAD DIV. NO.	STATE	PROJECT
3	N. C.	8.2536
F. A. PROJECT	USG-1567(3)	

SPAN A

Bar	No.	Size	Type	Length	Weight
a1	66	6	1	24'-1	2387
a2	64	6	2	24'-5	2347
a3	77	6	Str.	6'-0	694
a4	2	6	Str.	20'-8	62
a5	2	6	Str.	17'-9	53
a6	2	6	Str.	14'-10	45
a7	2	6	Str.	12'-0	36
a8	2	6	Str.	9'-1	27
a9	2	6	Str.	6'-3	19
a10	2	6	Str.	3'-4	10
a12	2	6	Str.	21'-4	64
a13	2	6	Str.	18'-6	56
a14	2	6	Str.	15'-7	47
a15	2	6	Str.	12'-8	38
a16	2	6	Str.	9'-10	30
a17	2	6	Str.	6'-11	21
a18	2	6	Str.	4'-1	12
a20	2	6	1	21'-4	64
a21	2	6	1	18'-5	55
a22	2	6	1	15'-6	47
a23	2	6	1	12'-8	38
a24	2	6	1	9'-9	29
a25	2	6	1	6'-11	21
a26	2	6	1	4'-0	12
a28	2	6	2	22'-4	67
a29	2	6	2	19'-6	59
a30	2	6	2	16'-7	50
a31	2	6	2	13'-8	41
a32	2	6	2	10'-10	33
a33	2	6	2	7'-11	24
a34	2	6	2	5'-11	15
b1	4	5	Str.	16'-7	69
b2	4	5	Str.	17'-7	73
b3	4	5	Str.	18'-6	77
b4	4	5	Str.	19'-11	83
b5	4	5	Str.	20'-10	87
b6	5	5	Str.	21'-9	113
b7	4	5	Str.	23'-1	96
b8	4	5	Str.	24'-0	100
b9	4	5	Str.	24'-11	104
b10	4	5	Str.	26'-4	110
b11	4	5	Str.	26'-9	112
b12	4	5	Str.	28'-3	118
b13	4	5	Str.	29'-2	122
b14	5	5	Str.	30'-1	157
b15	4	5	Str.	31'-6	131
b16	4	5	Str.	32'-5	135
b17	4	5	Str.	33'-4	139
b18	4	5	Str.	34'-8	145
b19	4	5	Str.	35'-7	148
b20	4	5	Str.	36'-6	152
b21	8	4	Str.	16'-0	86
b22	4	4	Str.	14'-6	39
b23	6	4	Str.	15'-11	64
b24	36	4	Str.	21'-1	507
b38	44	4	3	5'-0	147
b39	6	4	3	6'-0	84
c1	4	4	4	8'-1	22
c2	4	4	Str.	5'-4	14
c3	8	4	Str.	6'-2	33
f1	12	4	Str.	3'-5	27
g1	105	4	5	8'-9	614
g2	27	4	Str.	4'-7	83
g3	6	6	Str.	25'-10	233
g4	3	6	Str.	5'-0	23
K1	12	5	Str.	7'-3	91
K2	2	5	Str.	4'-4	9
K4	2	5	Str.	4'-0	8
K5	4	6	Str.	28'-0	168
K6	4	4	Str.	28'-0	75
K7	2	6	Str.	4'-6	14
S1	40	4	6	3'-6	94
Z1	53	4	7	5'-0	177

Reinforcing Steel lbs. 11,325
Class "A" Conc. cu. yds. 51.0
1 Bar Metal Rail lin. ft. 49.92
Structural Steel Lbs. 22,600

SPAN B

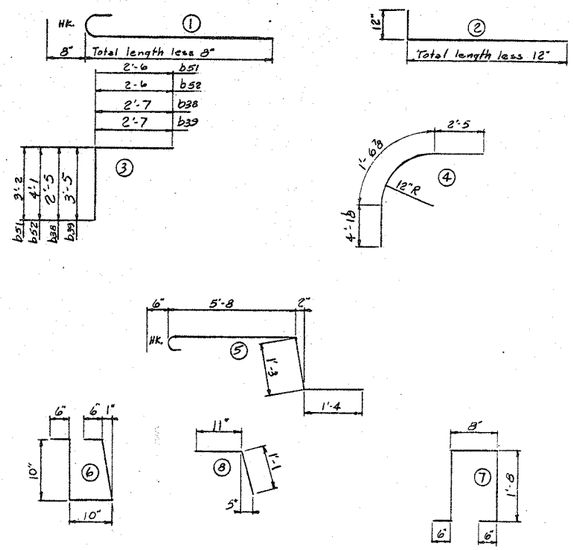
Bar	No.	Size	Type	Length	Weight
a1	191	6	1	24'-1	6909
a2	189	6	2	24'-5	6931
a3	207	6	Str.	6'-0	1863
a4	2	6	Str.	20'-8	62
a5	2	6	Str.	17'-9	53
a6	2	6	Str.	14'-10	45
a7	2	6	Str.	12'-0	36
a8	2	6	Str.	9'-1	27
a9	2	6	Str.	6'-3	19
a10	2	6	Str.	3'-4	10
a12	2	6	Str.	21'-4	64
a13	2	6	Str.	18'-6	56
a14	2	6	Str.	15'-7	47
a15	2	6	Str.	12'-8	38
a16	2	6	Str.	9'-10	30
a17	2	6	Str.	6'-11	21
a18	2	6	Str.	4'-1	12
a20	2	6	1	21'-4	64
a21	2	6	1	18'-5	55
a22	2	6	1	15'-6	47
a23	2	6	1	12'-8	38
a24	2	6	1	9'-9	29
a25	2	6	1	6'-11	21
a26	2	6	1	4'-0	12
a28	2	6	2	22'-4	67
a29	2	6	2	19'-6	59
a30	2	6	2	16'-7	50
a31	2	6	2	13'-8	41
a32	2	6	2	10'-10	33
a33	2	6	2	7'-11	24
a34	2	6	2	5'-11	15
a36	1	6	Str.	19'-1	29
a37	1	6	Str.	14'-7	22
a38	1	6	Str.	10'-2	15
a39	1	6	Str.	5'-8	9
a41	1	6	Str.	21'-4	32
a42	1	6	Str.	16'-10	25
a43	1	6	Str.	12'-4	19
a44	1	6	Str.	7'-11	12
a45	1	6	Str.	3'-5	5
a47	1	6	1	19'-9	30
a48	1	6	1	15'-3	23
a49	1	6	1	10'-10	16
a50	1	6	1	6'-4	10
a52	1	6	2	22'-4	34
a53	1	6	2	17'-10	27
a54	1	6	2	13'-4	20
a55	1	6	2	8'-11	13
a56	1	6	2	4'-5	7
b25	24	5	Str.	39'-6	989
b26	24	5	Str.	38'-5	962
b27	26	5	Str.	37'-3	1010
b28	16	5	Str.	36'-2	604
b29	24	5	Str.	35'-6	889
b30	26	5	Str.	34'-5	933
b31	24	5	Str.	33'-5	836
b32	126	4	Str.	22'-3	1873
g1	282	4	5	8'-9	1648
g2	71	4	Str.	4'-7	217
g3	6	6	Str.	25'-10	233
g4	5	6	Str.	5'-0	38
K1	12	5	Str.	7'-3	91
K2	2	5	Str.	4'-4	9
K3	12	5	Str.	6'-8	83
K4	2	5	Str.	4'-0	8
S1	80	4	6	3'-6	187
Z1	141	4	7	5'-0	471

Reinforcing Steel lbs. 28,209
Class "A" Conc. cu. yds. 109.6
1 Bar Metal Rail lin. ft. 140.00
Structural Steel Lbs. 109,000

SPAN C

Bar	No.	Size	Type	Length	Weight
a1	202	6	1	24'-1	7459
a2	198	6	2	24'-5	7261
a3	216	6	Str.	6'-0	1947
a36	3	6	Str.	19'-1	86
a37	3	6	Str.	14'-7	66
a38	3	6	Str.	10'-2	46
a39	3	6	Str.	5'-8	26
a41	3	6	Str.	21'-4	96
a42	3	6	Str.	16'-10	76
a43	3	6	Str.	12'-4	56
a44	3	6	Str.	7'-11	36
a45	3	6	Str.	3'-5	15
a47	3	6	1	19'-9	89
a48	3	6	1	15'-3	69
a49	3	6	1	10'-10	49
a50	3	6	1	6'-4	29
a52	3	6	2	22'-4	101
a53	3	6	2	17'-10	80
a54	3	6	2	13'-4	60
a55	3	6	2	8'-11	40
a56	3	6	2	4'-5	20
a61	1	6	Str.	16'-6	25
a62	1	6	Str.	9'-5	14
a63	1	6	Str.	2'-4	4
a65	1	6	Str.	20'-0	30
a66	1	6	Str.	12'-11	19
a67	1	6	Str.	5'-11	9
a71	1	6	1	17'-2	26
a72	1	6	1	10'-1	15
a73	1	6	1	3'-0	5
a75	1	6	2	21'-0	32
a76	1	6	2	13'-11	21
a77	1	6	2	6'-11	10
b33	246	5	Str.	22'-10	5859
b34	144	4	Str.	17'-2	1651
b40	14	4	Str.	7'-3	68
b41	4	4	Str.	9'-4	25
b42	12	5	Str.	7'-6	94
b43	13	5	Str.	7'-10	106
b44	12	5	Str.	8'-3	103
b45	8	5	Str.	8'-7	72
b46	13	5	Str.	8'-10	120
b47	12	5	Str.	9'-2	115
b48	12	5	Str.	9'-6	119
b49	14	4	Str.	9'-9	91
b50	4	4	Str.	12'-8	34
b51	44	4	3	5'-8	167
b52	6	4	3	6'-7	26
g1	896	4	5	8'-9	1730
g2	74	4	Str.	4'-7	227
g4	10	6	Str.	6'-0	54
K3	24	5	Str.	6'-8	167
K4	8	5		4'-0	33
K5	4	6	Str.	28'-3	170
K6	8	4	Str.	28'-0	150
K7	2	6	Str.	4'-0	12
S1	40	4	6	3'-6	94
S2	40	4	8	2'-0	53
Z1	149	4	7	5'-0	498
e1	4	4	4	8'-1	22
e2	4	4	Str.	5'-4	14
e3	8	4	Str.	6'-2	33
f1	12	4	Str.	3'-5	27

Reinforcing Steel lbs. 29851
Class "A" Conc. Cu. yds. 132.0
1 Bar Metal Rail lin. ft. 145.00
Structural Steel lbs. 100,400



BAR TYPES
Dimensions are out to out

PROJECT NO. 823353
NEW HANOVER COUNTY
STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

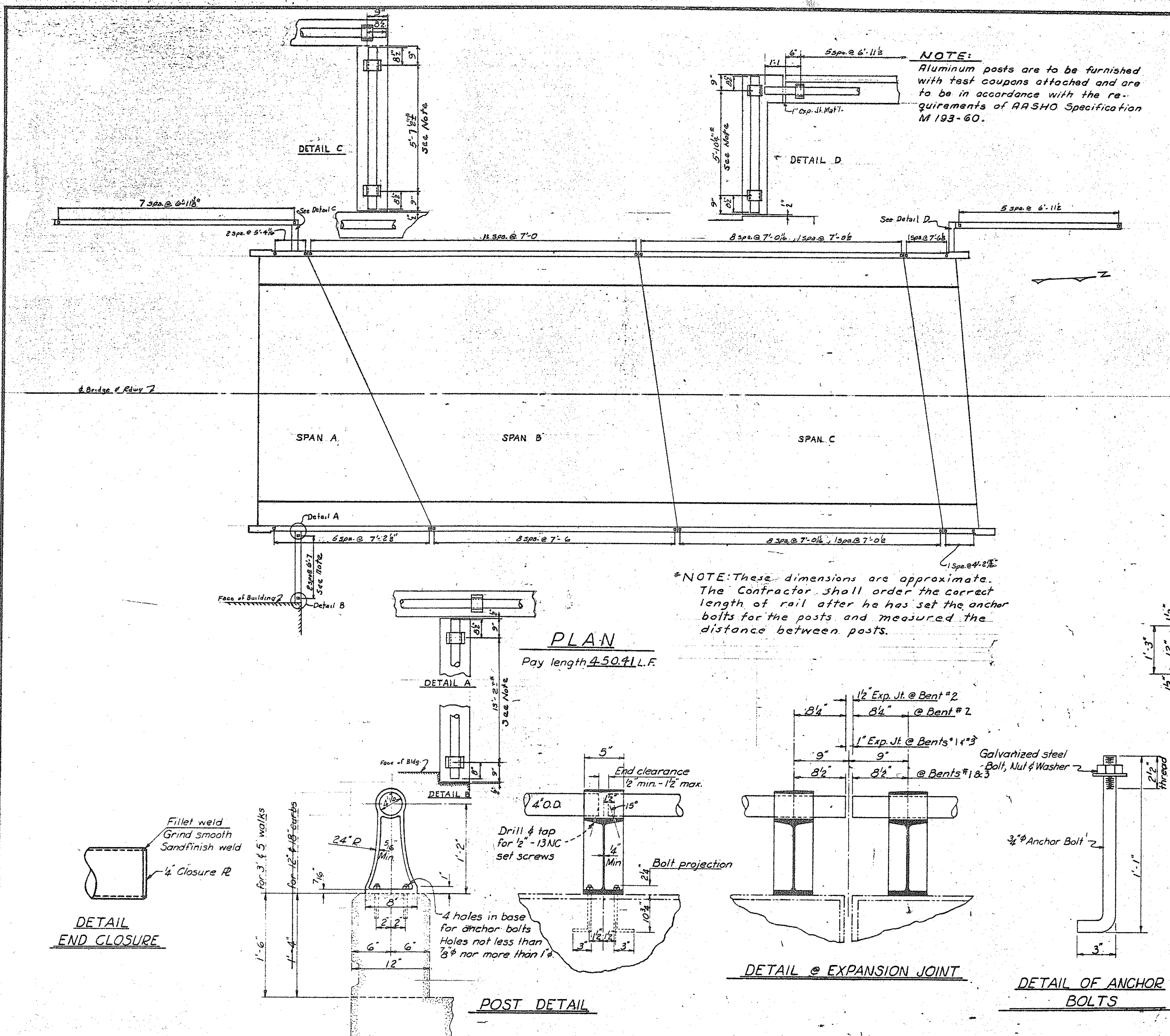
BILL OF MATERIAL

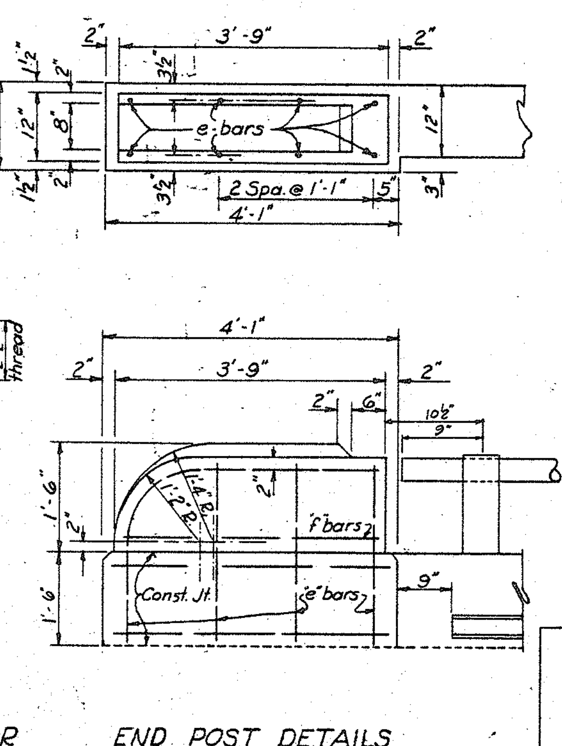
March 1964

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
1			3			TOTAL SHEETS
2			4			26

DRAWN BY Jack Parker DATE 31 March 1964
CHECKED BY R. W. Martin DATE June 1964

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.





At the Contractor's 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.

GENERAL NOTES

Unless noted on the plans, maximum length of rail section to be two panels plus "stick thru."

End of rail to clear face of concrete End Post by 1 1/2" ±.

For double panel runs of rail, set screws shall be set tight at center post and snug at ends to allow for expansion.
For single panel runs, set screw to be tight at one end and snug at other end.

3/4"φ Anchor bolts - hex. nuts and washers to be steel galvanized in accordance with ASTM A-153 and painted with 2 coats of aluminum paint after erection.

Cast posts to be as shown or an approved equal.

Certified Mill reports are required for rails and posts. Shop inspection is not required.

Metal Rail Posts to be set normal to curb grade.

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, but without deductions for spaces between rail sections.

Concrete and reinforcing steel for End Post are included with Superstructure or End Bents.

ALUMINUM RAILS

Aluminum alloys are to be as follows:

Cast Rail Posts	A356 - T6
Round Tubular Rail	6061 - T6 or 6062 - T6
Set Screws	2024 - T4
Closure Plates	6061 - T6 or 6062 - T6

Round Tubular Rails are to be of 4" O.D. with 3/16" minimum wall thickness.

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

Material and galvanizing are to conform to the following specifications:

Cast Rail Post	Malleable cast iron, ASTM A47 Grade 35018, Galvanized to ASTM A123.
or	Cast Steel, AASHO M192-60 Class 70, Galvanized to ASTM A-123.
4" O.D. Rail	Standard 3 1/2" Galvanized Steel Pipe, ASTM A-53
Closure Plates & Shims	Steel, ASTM A-245 Grade C, Galvanized to ASTM A-123
Set Screws	Standard Steel Cap Screws, Galvanized to ASTM A-153.

The cut ends of galvanized pipe railing, the end closure plate weld after grinding smooth and areas adjacent to the weld where spelter coating has been burned by welding shall be thoroughly cleaned by wire brushing to remove all traces of welding flux and loose or cracked spelter after which these cleaned areas shall be given two coats of Zinc paint meeting the requirements of Federal Specification MIL-P26915 (USAF) Type I.

PROJECT NO. 8.23353

NEW HANOVER COUNTY

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STANDARD I BAR METAL RAIL

October 1962

REVISIONS			
NO.	BY	DATE	
1	JLB	5-3-63	

STANDARD	DRAWN BY: W. G. Rogers	DATE Oct. 1962
	CHECKED BY: G. L. Smith Jr.	DATE Oct. 1962
SPECIAL	ASSEMBLED BY: Jack. Corbett	DATE 3 June 1964
	CHECKED BY: R. W. Martin	DATE June 1964

Revision 1: Revised to add note regarding AASHO Spec. M 193-60. 5-3-63 - By JLB ✓ C.B.P.

Column ① Bottom of overhang			Column ② ℄ of Roadway			Column ③ Bottom of overhang		
Dist.	Elev.		Dist.	Elev.		Dist.	Elev.	
	29.423	Fill Face		30.455	Fill Face		29.423	Fill Face
4'-6"	29.545		4'-6"	30.577		4'-6"	29.545	
10'-0"	29.804		10'-0"	30.835		10'-0"	29.804	
1'-9 1/8"	29.848	℄ Bent 1	10'-0"	31.077		10'-0"	30.045	
8'-2 7/8"	30.045		2'-9"	31.140	℄ Bent 1	10'-0"	30.270	
10'-0"	30.270		7'-3"	31.301		3'-8 7/8"	30.349	℄ Bent 1
10'-0"	30.477		10'-0"	31.508		6'-3 1/8"	30.477	
10'-0"	30.667		10'-0"	31.698		10'-0"	30.667	
10'-0"	30.839		10'-0"	31.870		10'-0"	30.839	
10'-0"	30.994		10'-0"	32.026		10'-0"	30.994	
10'-0"	31.132		10'-0"	32.164		10'-0"	31.132	
9'-2 3/8"	31.244	℄ Bent 2	10'-0"	32.285		10'-0"	31.253	
9 5/8"	31.253		2'-9"	32.315	℄ Bent 2	6'-3 9/16"	31.320	℄ Bent 2
10'-0"	31.357		7'-3"	32.388		3'-8 7/16"	31.357	
10'-0"	31.443		10'-0"	32.474		10'-0"	31.443	
10'-0"	31.512		10'-0"	32.543		10'-0"	31.512	
10'-0"	31.564		10'-0"	32.595		10'-0"	31.564	
10'-0"	31.599		10'-0"	32.630		10'-0"	31.599	
10'-0"	31.616		10'-0"	32.647		10'-0"	31.616	
4'-2 3/8"	31.618	℄ Bent 3	7'-9"	32.649	℄ Bent 3	10'-0"	31.616	
5'-9 5/8"	31.616		2'-3"	32.648		1'-3 9/16"	31.615	℄ Bent 3
4'-6 15/16"	31.611	F.F. North Abut.	6'-10"	32.638	F.F. North Abut	7'-9 3/8"	31.602	F.F. North Abut.

DRAWN BY [illegible] DATE June 64
CHECKED BY [illegible] DATE June 1964

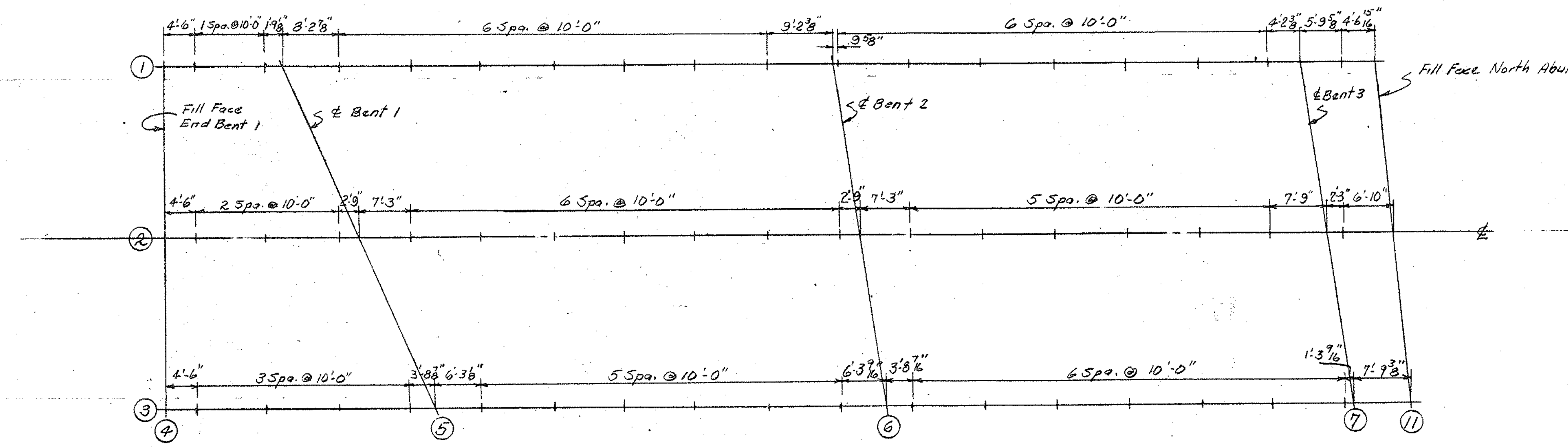
SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.

GRADE DATA

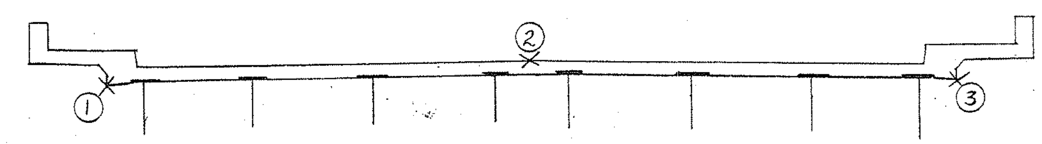
+3.104% PI 2+75 280' V.C. -1.7217%

P.I. Sta. 2+75
P.I. Elev. 34.20
Length of Curve 280'
G1 = +3.104 % G2 = -1.7217 %

FED. ROAD DIV. NO.	STATE	PR...
3	N. C.	8.2...
F. A. PROJECT USG-15...		



PLAN



TYPICAL SECTION

HEADERS

Column ④ Fill Face E.B.1		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 N. Abut	
DIST.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.
Lt. Gutter	30.111	Lt. Gutter	30.556	Lt. Gutter	31.935	Lt. Gutter	32.307	Lt. Gutter		Lt. Gutter		Lt. Gutter		Lt. Gutter	32.298
	30.143		30.610		31.970		32.338								32.329
	30.174		30.663		32.004		32.369								32.360
	30.205		30.717		32.039		32.400								32.391
	30.236		30.770		32.073		32.431								32.422
	30.267		30.824		32.108		32.462								32.453
	30.299		30.877		32.142		32.494								32.484
	30.330		30.930		32.177		32.525								32.515
	30.361		30.983		32.211		32.556								32.545
	30.392		31.035		32.246		32.587								32.576
	30.423		31.088		32.280		32.618								32.607
℄ 22 Spa. @ 2'-0"	30.455	℄ 22 Spa. @ 2'-2 7/16"	31.140	℄ 22 Spa. @ 2'-0 1/4"	32.315	℄ 22 Spa. @ 2'-0 1/4"	32.649							℄ 22 Spa. @ 2'-0 3/8"	32.638
	30.423		31.130		32.287		32.618								32.606
	30.392		31.120		32.259		32.586								32.575
	30.361		31.109		32.231		32.555								32.543
	30.330		31.099		32.203		32.524								32.512
	30.299		31.088		32.175		32.492								32.480
	30.267		31.077		32.146		32.461								32.448
	30.236		31.066		32.118		32.429								32.417
	30.205		31.055		32.090		32.398								32.385
	30.174		31.043		32.062		32.367								32.353
	30.143		31.032		32.034		32.335								32.322
Rt. Gutter	30.111	Rt. Gutter	31.020	Rt. Gutter	32.006	Rt. Gutter	32.303							Rt. Gutter	32.290

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 at 2'-0" intervals normal to ℄ of roadway from the left gutter line to the right gutter line.

NOTE: For Dead Load Deflection See Sheet Showing Structural Steel Details - Sheet S-7

SUPERIMPOSED DEAD LOAD DEFLECTION (inches)

	SPAN A	SPAN B	SPAN C	SPAN D			
INT.							
EXT.							

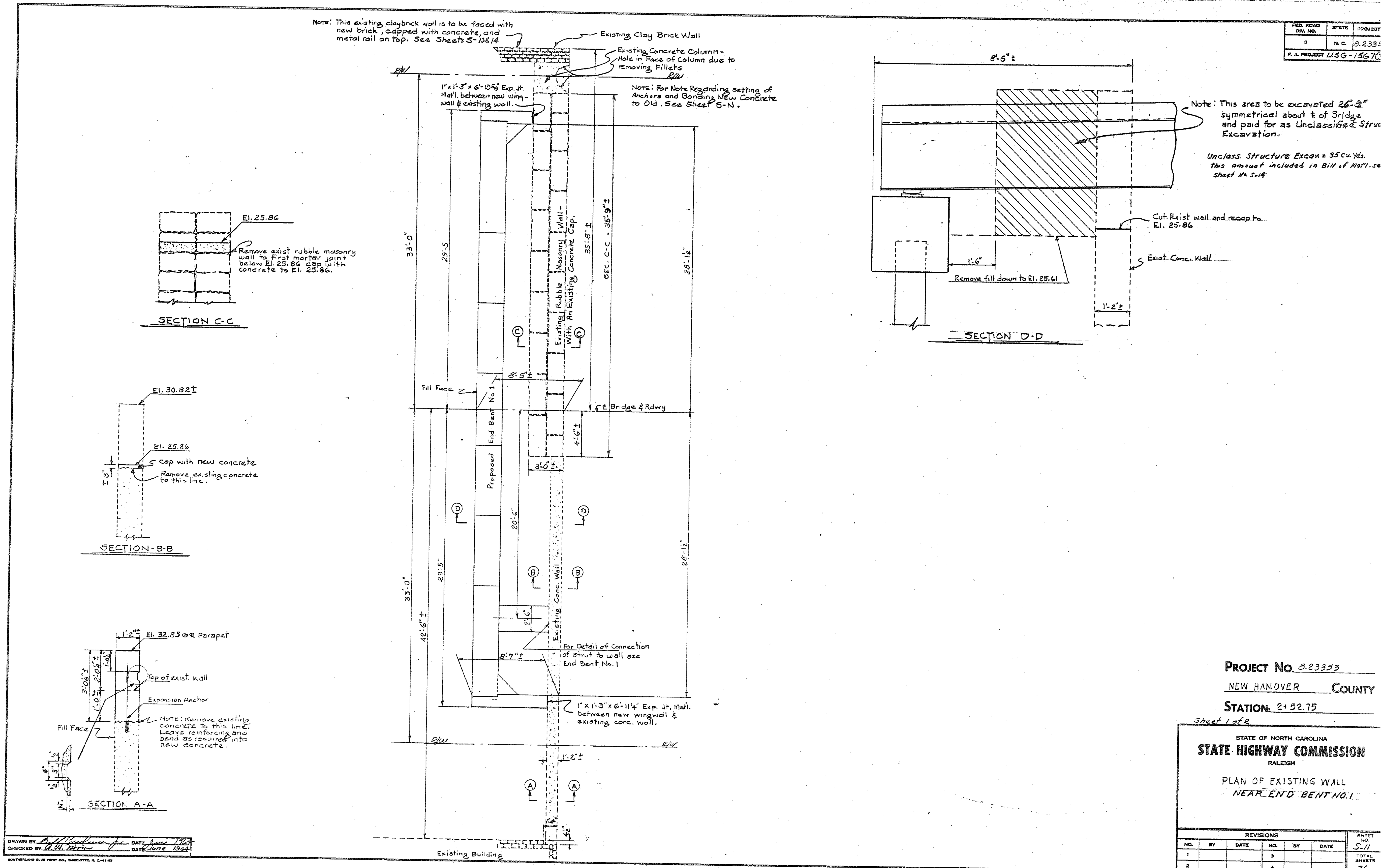
REVISIONS			
NO.	BY	DATE	
1			
2			

PROJECT NO. 8.2335...
NEW HANOVER COU...
STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSI...
RALEIGH.

ELEVATIONS
FOR
SETTING UP
FORMS AND SCREEDS

August



FED. ROAD DIV. NO. 3
STATE N.C.
PROJECT 8.2335
F.A. PROJECT USG-1567
NOTE: This existing claybrick wall is to be faced with new brick, capped with concrete, and metal rail on top. See Sheets S-13 & 14
Existing Clay Brick Wall
Existing Concrete Column - Hole in Face of Column due to removing Fillets
R/W
1"x 1'-3" x 6'-10⅝" Exp. Jt. Mat'l. between new wing-wall & existing wall.
NOTE: For Note Regarding setting of Anchors and Bonding New Concrete to Old, See Sheet S-N.
Existing Rubble Masonry Wall - With An Existing Concrete Cap.
SEC. C-C - 35'-9"±
35'-8"±
33'-0"
29'-5
28'-1½"
8'-5"±
Fill Face
Proposed End Bent No. 1
℄ Bridge & Rdwy
4'-6"±
3'-0"±
20'-6"
2'-6"
Existing Conc. Wall
42'-6"±
8'-7"±
For Detail of Connection of strut to wall see End Bent No. 1
1" x 1'-3" x 6'-11¼" Exp. Jt. Mat'l. between new wingwall & existing conc. wall.
1'-2"±
Existing Building
El. 25.86
Remove exist rubble masonry wall to first mortar joint below El. 25.86 cap with concrete to El. 25.86.
SECTION C-C
El. 30.82±
El. 25.86
Cap with new concrete
Remove existing concrete to this line.
SECTION - B-B
1'-2"±
El. 32.83 @ ℄ Parapet
Top of exist. wall
Expansion Anchor
Fill Face
NOTE: Remove existing concrete to this line. Leave reinforcing and bend as required into new concrete.
SECTION A-A
8'-5"±
Note: This area to be excavated 26'-8" symmetrical about ℄ of Bridge and paid for as Unclassified Struc. Excavation.
Unclass. Structure Excav. = 35 Cu. Yds. This amount included in Bill of Mat'l. - see sheet No. S-14.
Cut Exist wall and recap to El. 25.86
Exist Conc. Wall
1'-6"
Remove fill down to El. 25.61
1'-2"±
SECTION D-D
DRAWN BY Bill Perkins Jr. DATE June 1964
CHECKED BY A.W. Moon DATE June 1964
SOUTHERLAND BLUE PRINT CO. CHARLOTTE, N.C.

PROJECT NO. 8.23353

NEW HANOVER COUNTY

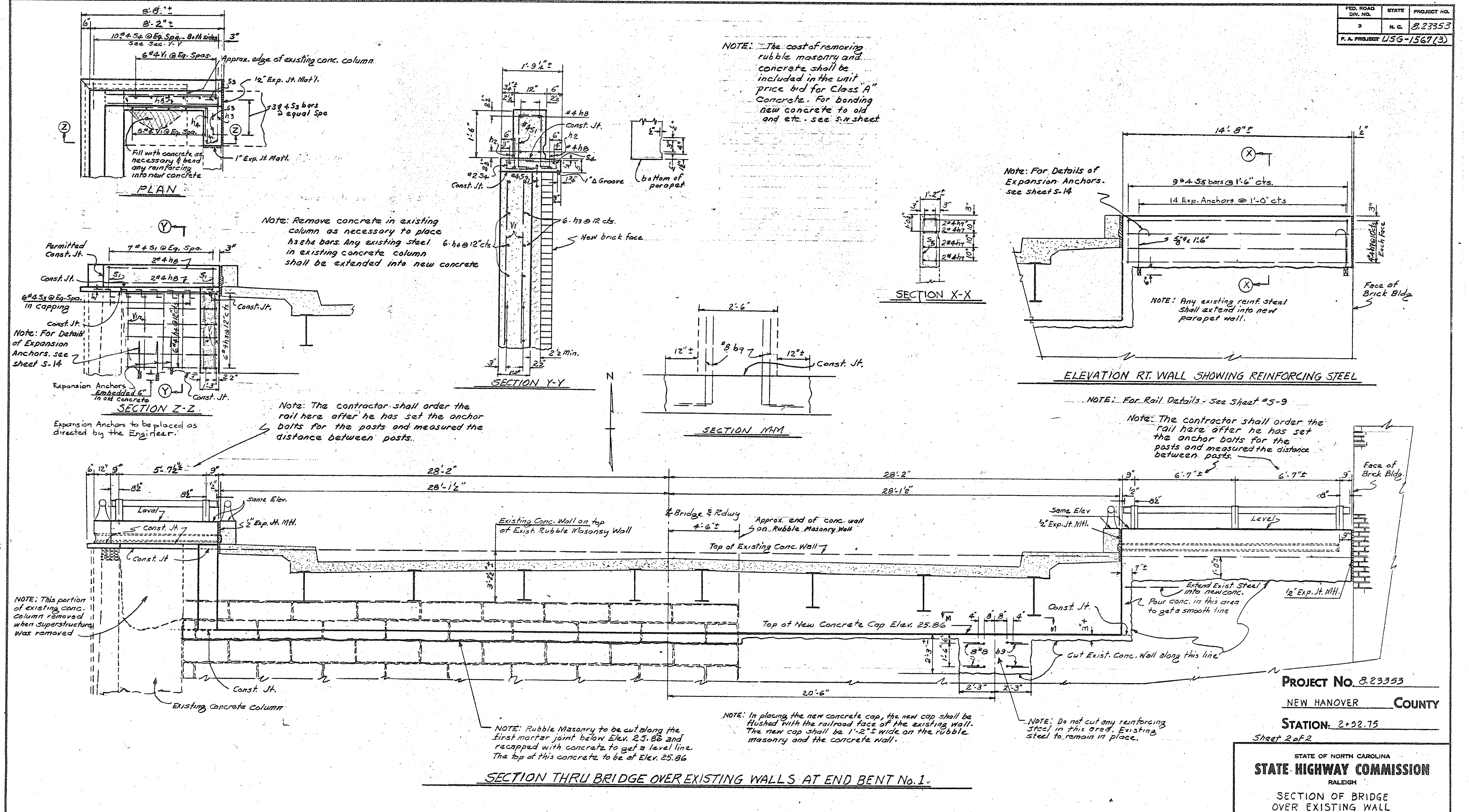
STATION: 2+52.75

Sheet 1 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

PLAN OF EXISTING WALL
NEAR END BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11
1			3			TOTAL SHEETS
2			4			26


PLAN
SECTION Y-Y
SECTION X-X
SECTION Z-Z
SECTION M-M
ELEVATION RT. WALL SHOWING REINFORCING STEEL
SECTION THRU BRIDGE OVER EXISTING WALLS AT END BENT No. 1.
Approx. edge of existing conc. column.
Fill with concrete as necessary & bend any reinforcing into new concrete
1" Exp. Jt. Mat'l.
New brick face
bottom of parapet
Expansion Anchors to be placed as directed by the Engineer.
Note: For Details of Expansion Anchors see sheet S-14
Note: Remove concrete in existing column as necessary to place h3 & h8 bars. Any existing steel in existing concrete column shall be extended into new concrete
NOTE: The cost of removing rubble masonry and concrete shall be included in the unit price bid for Class "A" Concrete. For bonding new concrete to old and etc. - see S-14 sheet
14 Exp. Anchors @ 1'-0" cts.
NOTE: Any existing reinf. steel shall extend into new parapet wall.
Face of Brick Bldg.
NOTE: For Rail Details - See Sheet #S-9
Note: The contractor shall order the rail here after he has set the anchor bolts for the posts and measured the distance between posts.
Existing Conc. Wall on top of Exist. Rubble Masonry Wall
Approx. end of conc. wall on Rubble Masonry Wall
Top of Existing Conc. Wall
Top of New Concrete Cap Elev. 25.86
Cut Exist. Conc. Wall along this line
Extend Exist. Steel into new conc.
Pour conc. in this area to get a smooth line
NOTE: This portion of existing conc. column removed when Superstructure was removed
Existing Concrete Column
NOTE: Rubble Masonry to be cut along the first mortar joint below Elev. 25.86 and recapped with concrete to get a level line. The top of this concrete to be at Elev. 25.86
NOTE: In placing the new concrete cap, the new cap shall be flushed with the railroad face of the existing wall. The new cap shall be 1'-2"± wide on the rubble masonry and the concrete wall.
NOTE: Do not cut any reinforcing steel in this area. Existing steel to remain in place.

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	8.23353
F.A. PROJECT	USG-1567(3)	

PROJECT NO. 8.23353

NEW HANOVER **COUNTY**

STATION: 2+52.75

Sheet 2 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SECTION OF BRIDGE
OVER EXISTING WALL
NEAR END BENT NO. 1

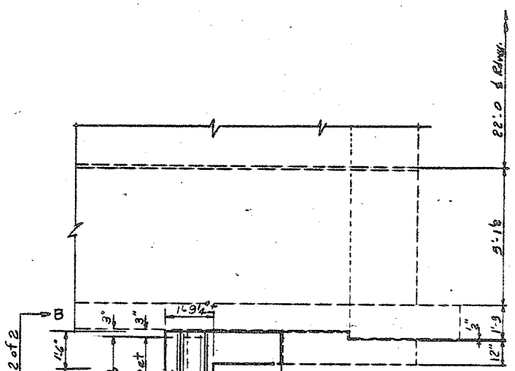
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			26

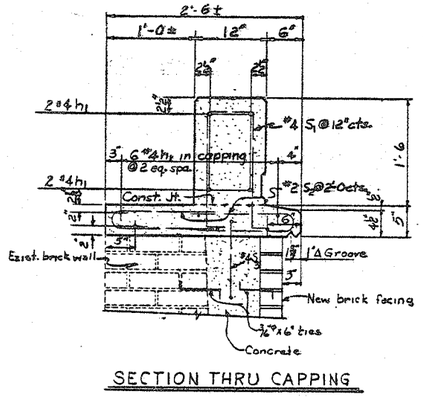
DRAWN BY W.M. [illegible] DATE June '64
CHECKED BY [illegible] DATE June '64

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.

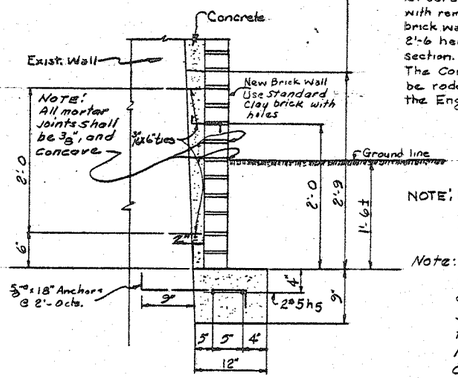
FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N. C.	B.233333

F. A. PROJECT USG-1567(3)





SECTION THRU CAPPING



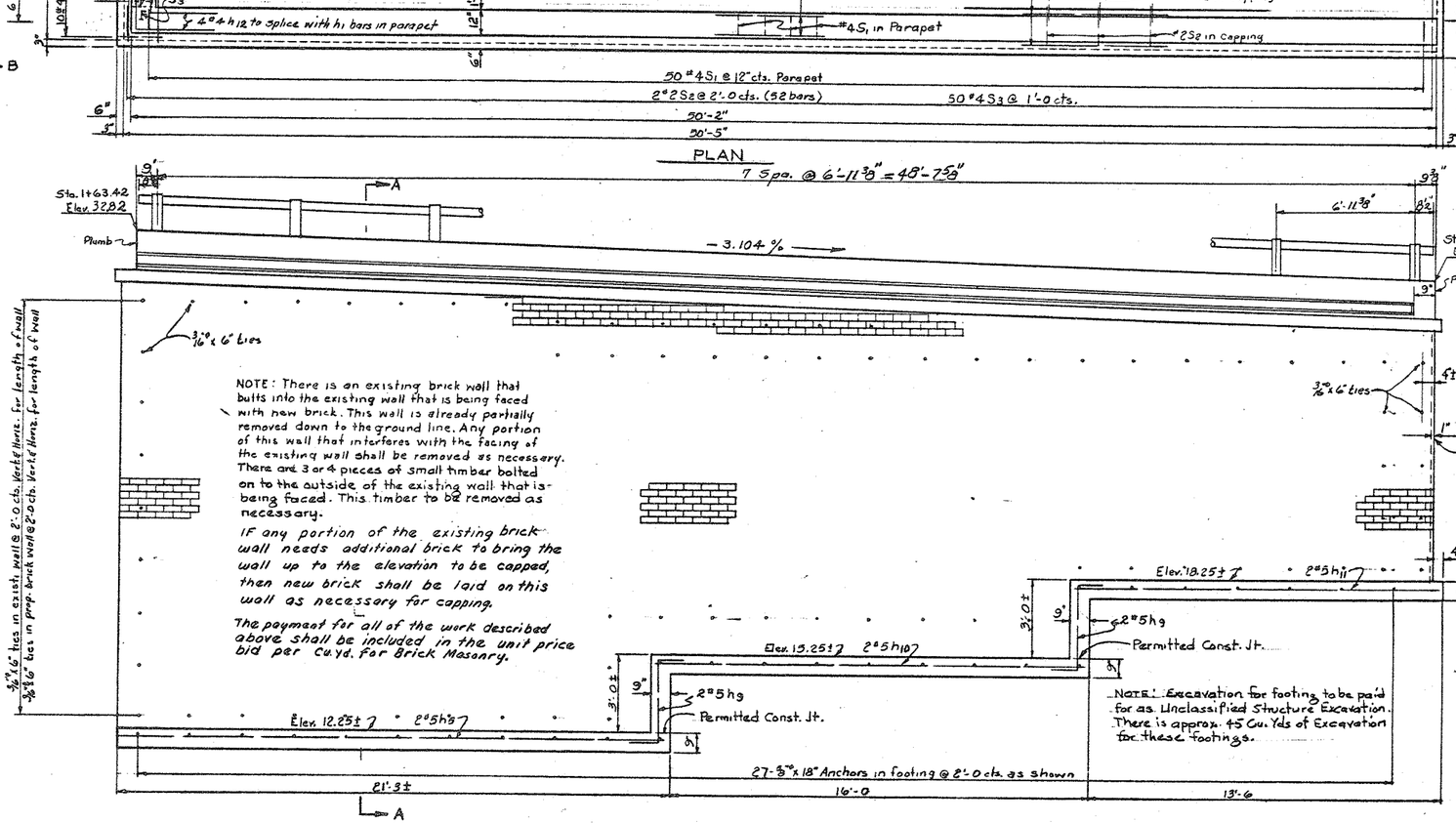
NOTE: Build brick wall to this elevation and let set up for at least 24 hours. Then pour concrete and let set up for at least 48 hours. Then proceed with remaining wall as follows: Complete brick wall. Then pour concrete in sections of 2'-6 height allowing 48 hours between each section.
The Concrete behind this brick facing may be rodded or vibrated as directed by the Engineer.

NOTE: Use No 4 aggregate in all concrete behind new brick wall and capping.

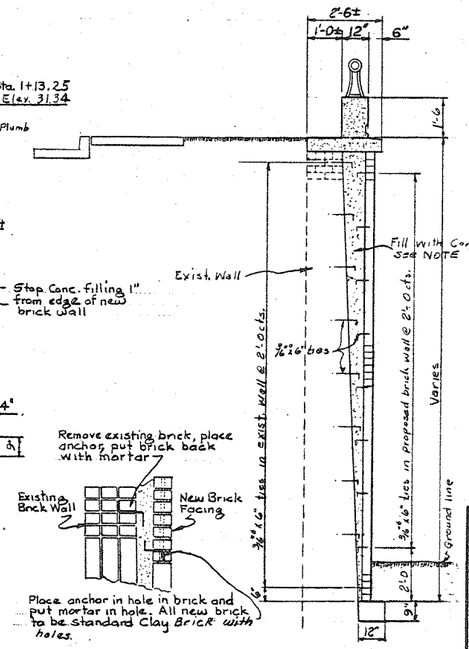
Note: The existing wall to be hosed with water to remove all dirt and small particles before starting brick facing. The pay for this work to be included in the unit price bid per cu. yd. for Brick Masonry.

SECTION THRU LOWER PORTION OF WALL PART SECT- A-A

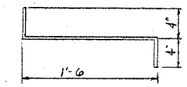
DETAIL OF ⅜"x6" Anchors
No. Req'd. 420
NOTE: ⅜"x6" hot dipped galvanized anchors shall be placed in both existing brick wall and new brick facing. Anchors shall be placed at 2'-0 cts. vertical and horizontal.



ELEVATION



SECTION A-A



DETAIL OF ⅝"x18" Anchors
No. Req'd. 27
NOTE: ⅝" x 18" hot dipped galvanized anchors.

NOTE: The face of the wall is drawn vertical. When the thickness of the concrete filling behind the new brick facing exceeds 6" the brick shall be stepped in as directed by the Engineer.

Note: Payment for all anchors used in facing of all walls shall be included in the unit price bid per Cu.yd. for Brick Masonry.

PROJECT NO. 8.233333

NEW HANOVER **COUNTY**

STATION: 2+52.75

SHEET 1 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

DETAILS OF BRICK FACING OF EXISTING WALLS AT SOUTHWEST END OF BRIDGE

June 1964

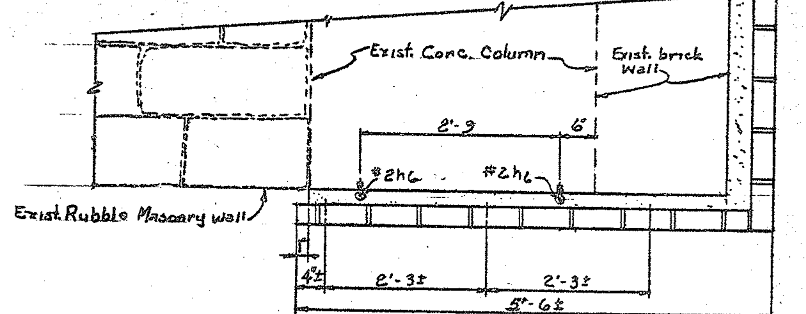
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-13
1			3			TOTAL SHEETS
2			4			26

DRAWN BY: Jack Parker DATE: 11 June 1964
CHECKED BY: A.W. Moore DATE: June '64

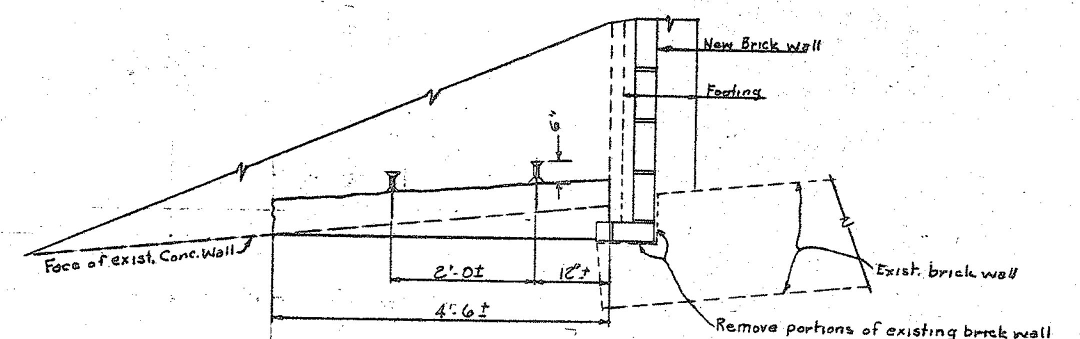
SOUTHERLAND GLAS PRINT CO., CHARLOTTE, N. C.

FED. ROAD DIV. NO.	STATE	PROJECT NO.
2	N.C.	8.23353

F. A. PROJECT USG-1567(3)

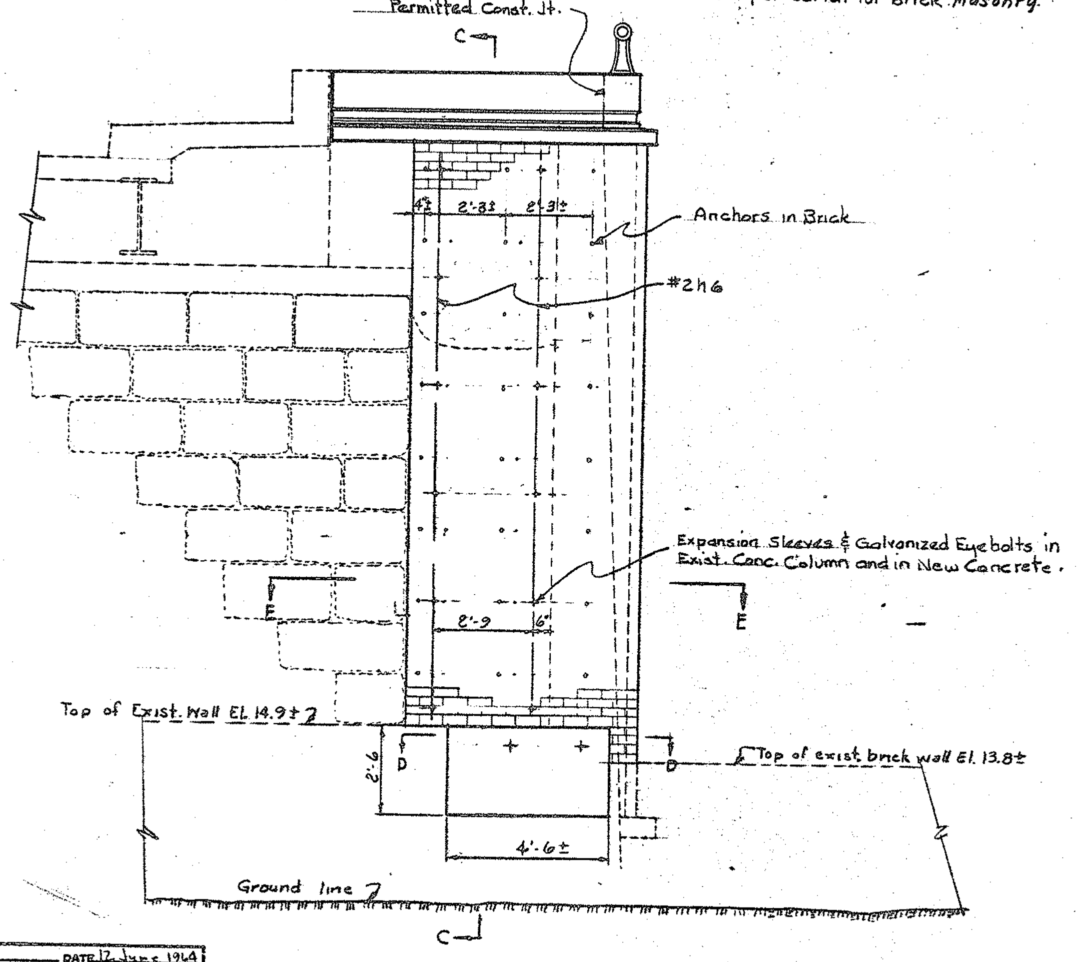


SECTION E-E

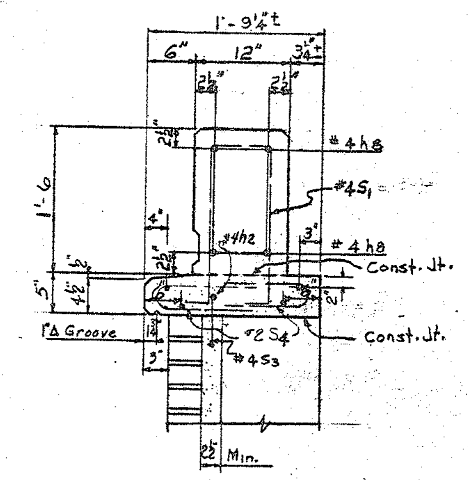


SECTION D-D

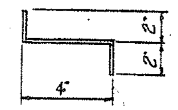
Remove portions of existing brick wall as necessary to clear construction of new brick wall. The pay for this work to be included in the unit price bid per cu.yd. for Brick Masonry.



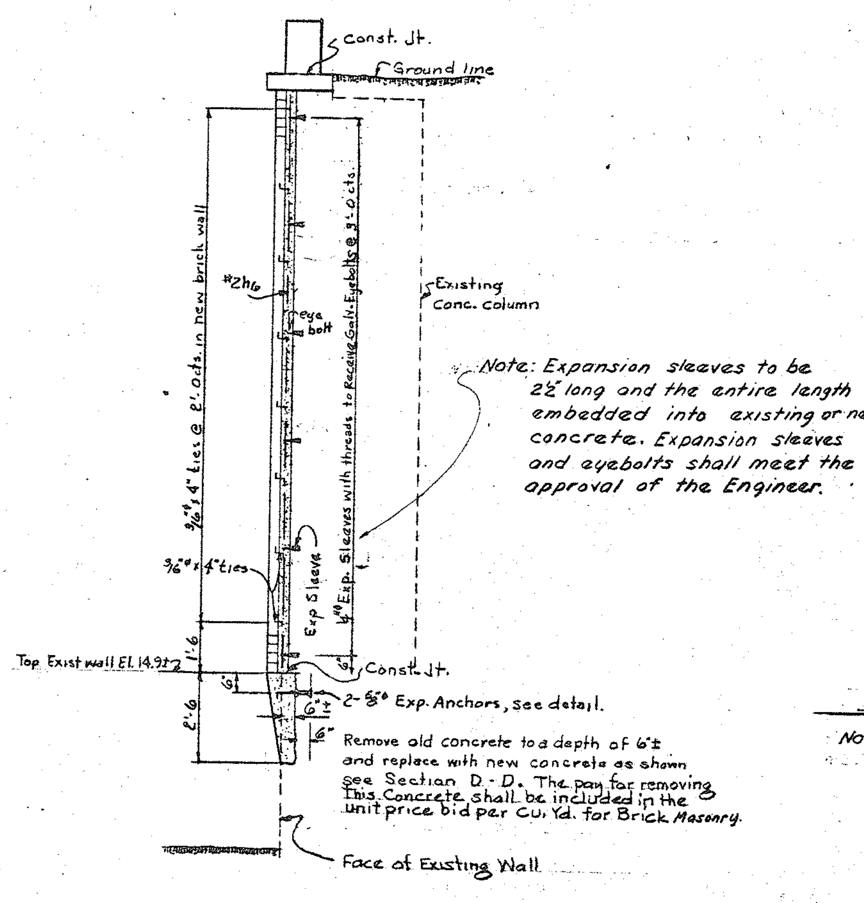
END VIEW B-B



SECTION THRU CAPPING
PART SECTION C-C



DETAIL OF 3/16"x 4" Anchor
No. Reqd: 24
NOTE: 3/16"x 4" hot dipped galvanized steel anchors shall be placed in new brick wall at 2'-0 cts. vertical and horizontal.



Note: Expansion sleeves to be 2½" long and the entire length embedded into existing or new concrete. Expansion sleeves and eyebolts shall meet the approval of the Engineer.

Remove old concrete to a depth of 6"± and replace with new concrete as shown see Section D-D. The pay for removing this Concrete shall be included in the unit price bid per Cu. Yd. for Brick Masonry.

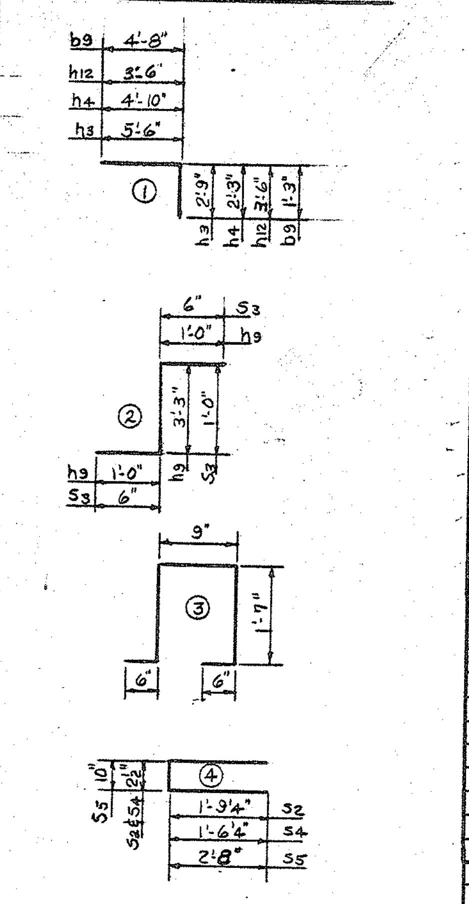
SECTION C-C

NOTES

Brick Masonry - All brick masonry shall be laid in 1:2 Portland Cement Mortar.

Brick - All brick shall be of clay or shale, hard-burned, conforming to the physical requirements of AASHO Specifications M114. Grade SW. Color shall be selected from samples submitted to the Engineer in advance of the commencement of construction.

BAR TYPES



All dimensions are from out to out.

BILL OF MATERIAL

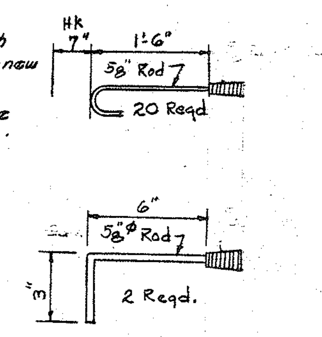
Bar	No.	Size	Type	Length	Weight
h1	20	#4	Str.	26'-1"	348
h2	4	#4	Str.	8'-3"	22
h3	6	#4	1	8'-3"	33
h4	6	#4	1	7'-1"	28
h5	2	#5	Str.	20'-9"	43
h6	2	#2	Str.	16'-0"	5
h7	8	#4	Str.	14'-2"	76
h8	4	#4	Str.	6'-8"	18
h9	4	#5	2	5'-3"	22
h10	2	#5	Str.	16'-3"	34
h11	2	#5	Str.	13'-9"	29
h12	4	#4	1	7'-0"	19
S1	57	#4	3	4'-11"	187
S2	52	#2	4	3'-9"	33
S3	56	#4	2	2'-0"	75
S4	20	#2	4	3'-3"	11
S5	9	#4	4	6'-2"	37
b9	8	#8	1	5'-11"	126
V1	13	#4	Str.	5'-0"	43

Reinforcing Steel lbs.	1189
Class "A" Concrete cu.yds.	23.2*
Brick Masonry Cu.Yds.	9.9
1 Bar Metal Rail Lin.Ft.	71'-7 5/8"
Unclass. Structure Excav. Cu.Yds.	80

*NOTE: Includes 12.2 Cu.Yds. of Class "A" Concrete using #4 Aggregate.

NOTE: The above quantities, Concrete, Brick Masonry & Unclassified Structure Excavation are approximate only. The exact quantities shall be determined by the Engineer in the field.

NOTE: The above Bill of Material includes all quantities necessary for construction, facing with brick, placing handrails, etc. for all walls at South end of Bridge. These quantities are listed on the General Drawing by the title of Walls, Brick Facing & etc. @ South end.



DETAIL OF EXP. ANCHORS

Note: For Expansion Anchor requirements see sheet S-N.
Payment for these two types of Expansion Anchors shall be included in the unit price bid per Cu.Yd. for Class "A" Concrete.

PROJECT NO. 8.23353

NEW HANOVER **COUNTY**

STATION: 2+52.75

SHEET 2 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

DETAILS OF BRICK FACING OF EXISTING WALLS AT SOUTHWEST END OF BRIDGE

June, 1964

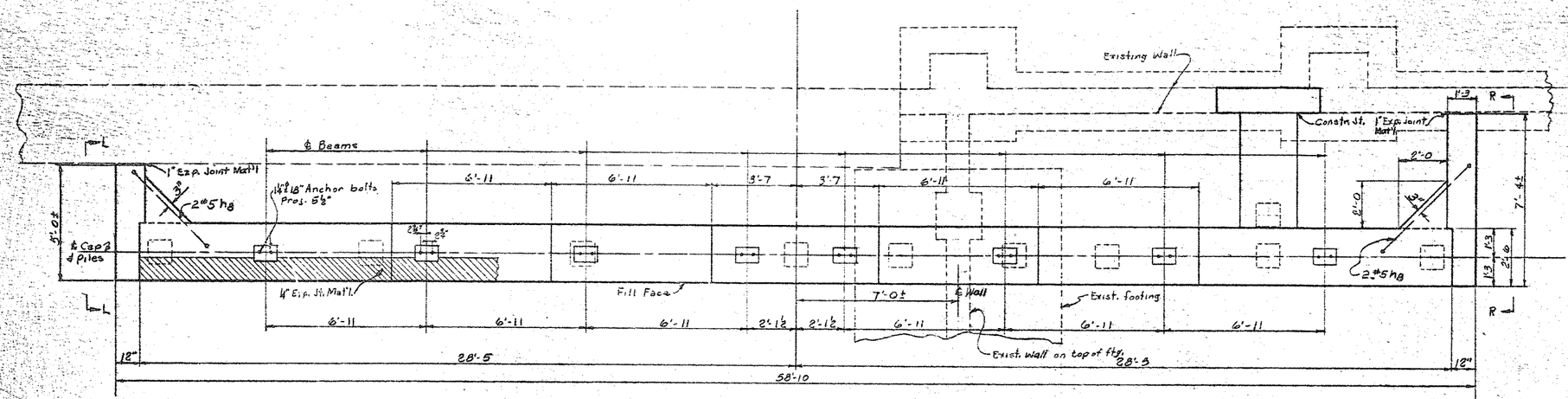
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S-14
TOTAL SHEETS 26

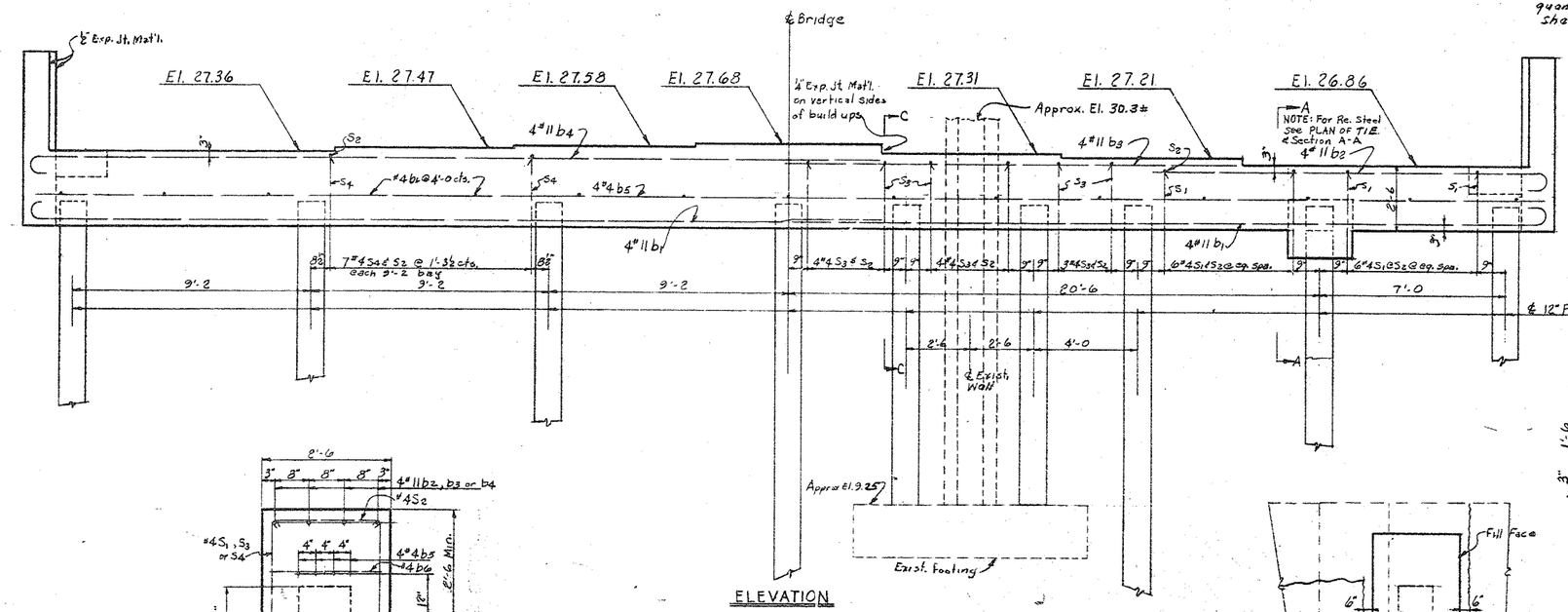
DRAWN BY [illegible] DATE 17 June 1964
CHECKED BY [illegible] DATE June '64

SOUTHLAND BLUE PRINT CO., CHARLOTTE, N. C.

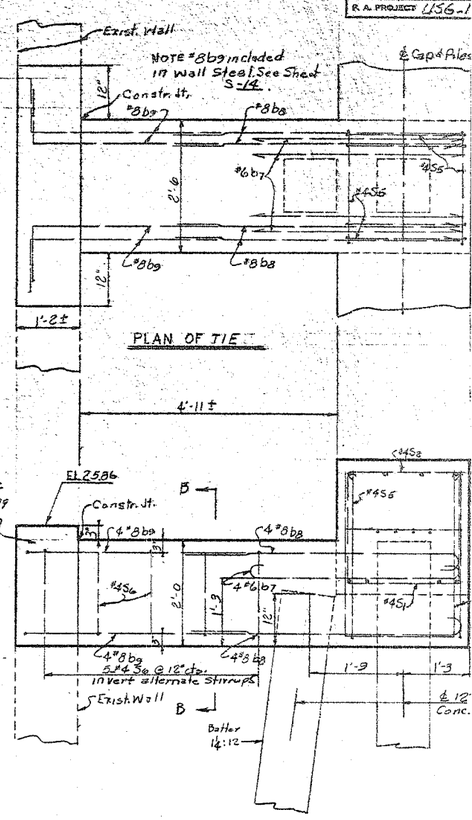
FED. ROAD DIV. NO.	STATE
3	N. C.
R. A. PROJECT	US6-1



PLAN



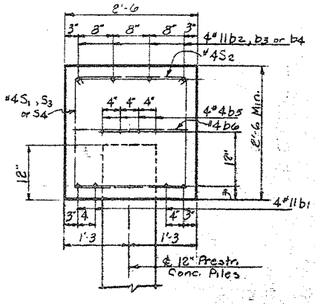
ELEVATION



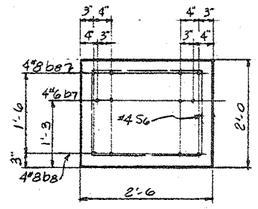
PLAN OF TIE

SECTION A-A

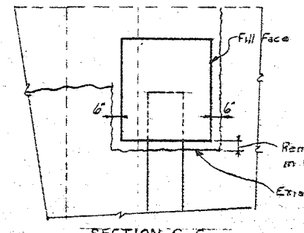
Note: The concrete poured in existing wall here is included in conc. quantity on Sheet #5-14



SECTION THRU CAP



SECTION B-B



SECTION C-C

NOTE: The payment for removing the existing concrete below bottom of End Bent Cap shall be included in the unit price bid for Class "A" concrete.

PROJECT NO. B-2335B

NEW HANOVER Co

STATION: 2+52.75

SHEET 1 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSI
RALEIGH

SUBSTRUCTURE
END BENT #1

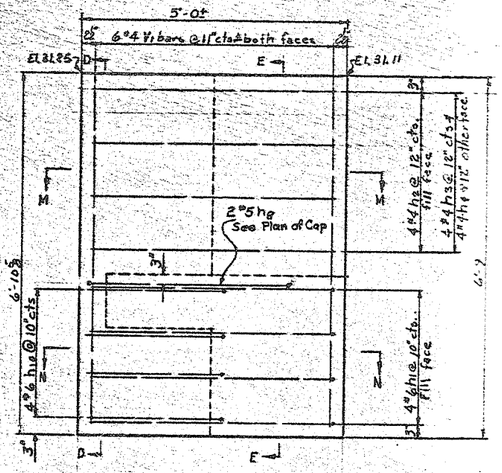
June 1964

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

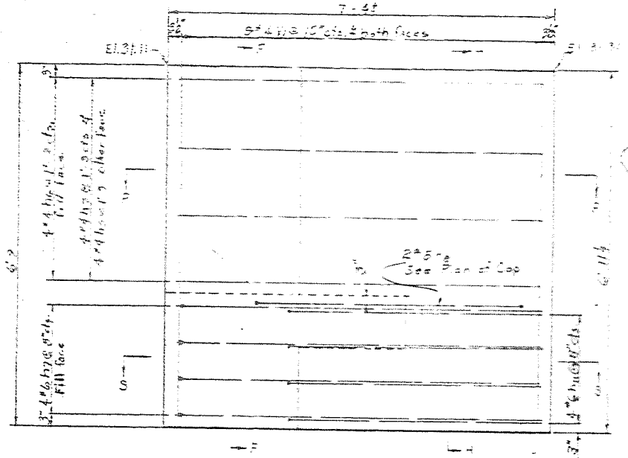
DRAWN BY Jack Parker DATE 3 June 1964
CHECKED BY [illegible] DATE [illegible]

SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.

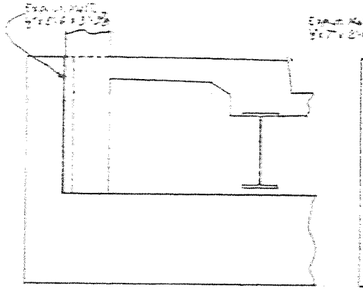
FED. ROAD DIV. NO.	STATE
3rd	NO. C.
P. A. PROJECT	U.S.G.

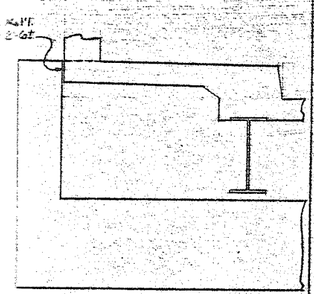


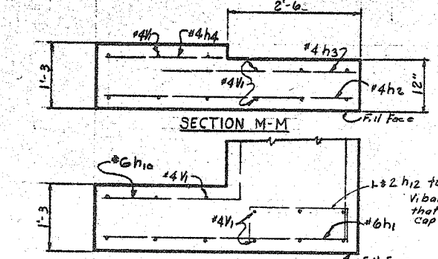
VIEW L-L

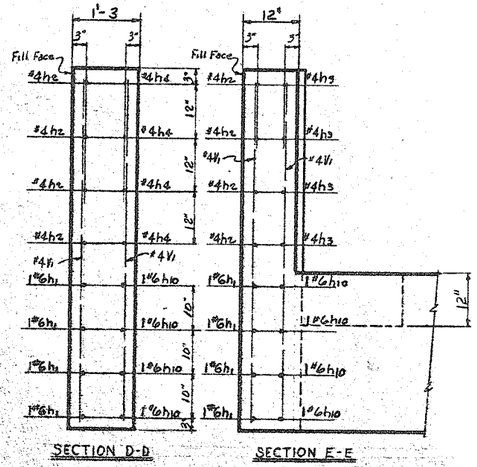


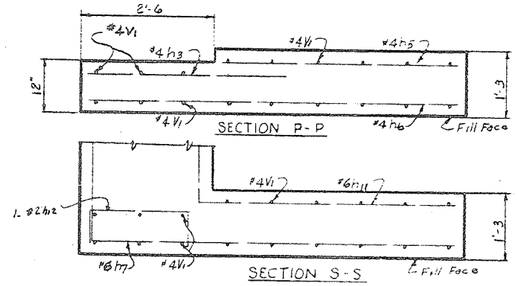
VIEW R-R

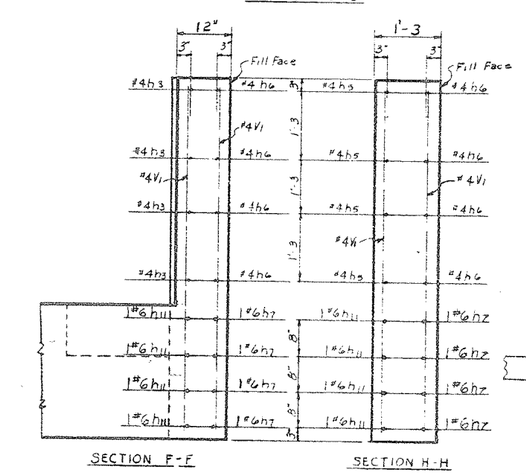


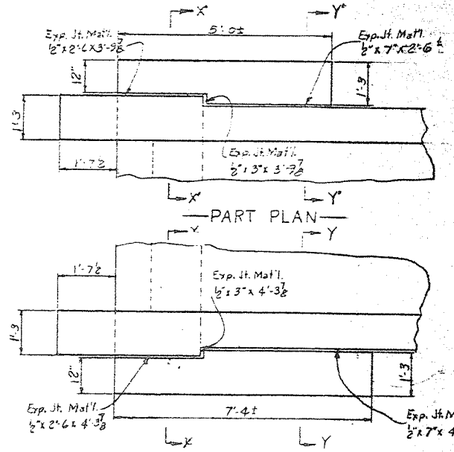


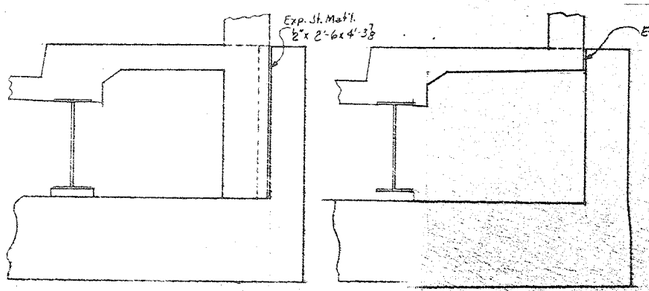








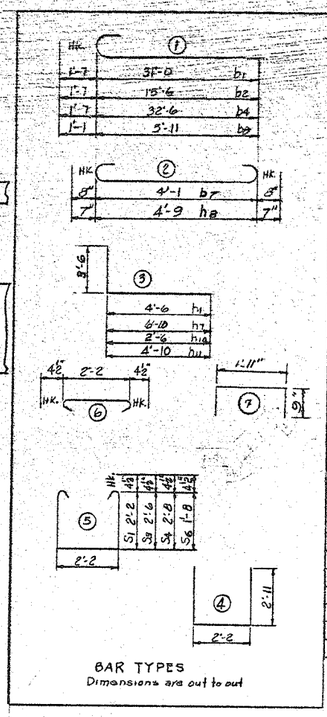




BILL OF MATERIAL
FOR END BENT No. 1

Bar	No.	Size	Type	Length
b1	8	11	1	32'-0"
b2	4	11	1	17'-7"
b3	4	11	Str.	18'-1"
b4	4	11	1	34'-7"
b5	8	4	Str.	30'-0"
b6	13	4	Str.	2'-1"
b7	4	6	2	5'-6"
b8	8	8	1	7'-0"
h1	4	6	3	8'-6"
h2	4	4	Str.	4'-6"
h3	8	4	Str.	4'-9"
h4	4	4	Str.	2'-6"
h5	4	4	Str.	4'-3"
h6	4	4	Str.	7'-0"
h7	4	6	3	10'-6"
h8	4	5	2	5'-1"
h10	4	6	3	@5'-6"
h11	4	6	3	8'-6"
S1	12	4	5	7'-3"
S2	44	4	6	2'-11"
S3	11	4	5	7'-1"
S4	81	4	5	8'-3"
S5	6	4	4	2'-0"
S6	5	4	5	6'-3"
Vi	30	4	Str.	6'-5"
h12	2	2	7	3'-5"

Reinforcing Steel lbs.
Class 'A' Concrete cu. yds.
12" Prestr. Conc. Piles; No.



BAR TYPES
Dimensions are out to out

Note: Concrete displaced by piles has b
deducted

PROJECT NO. 8.23333
NEW HANOVER Co
STATION: 2+32.75
SHEET 2 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSI
RALEIGH

SUBSTRUCTURE
END BENT Nº 1

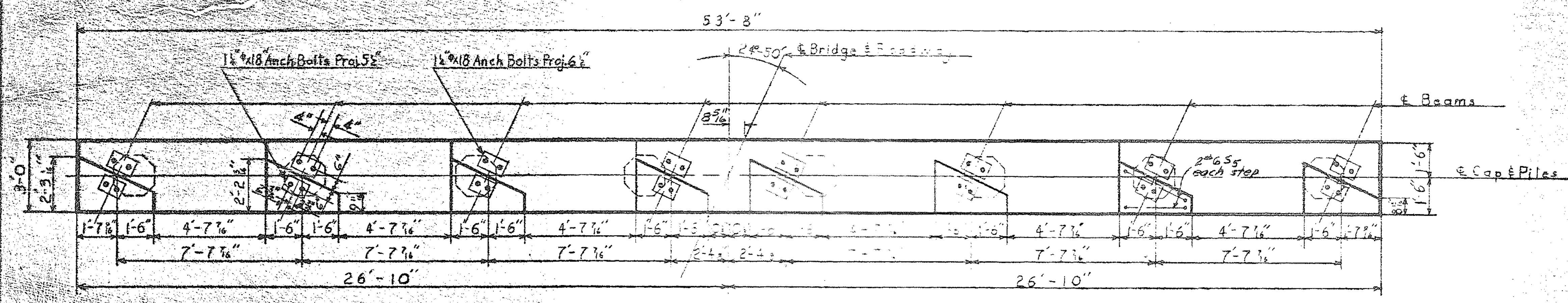
June 1964

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

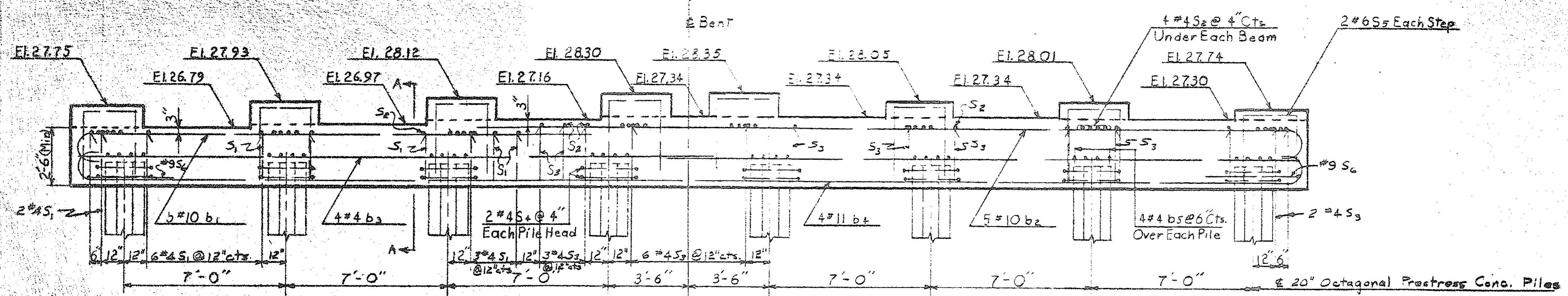
DRAWN BY: [illegible] DATE: 9 June, 1964
CHECKED BY: [illegible] DATE: June '64

SOUTHERN BLUE PRINT CO., CHARLOTTE, N. C.

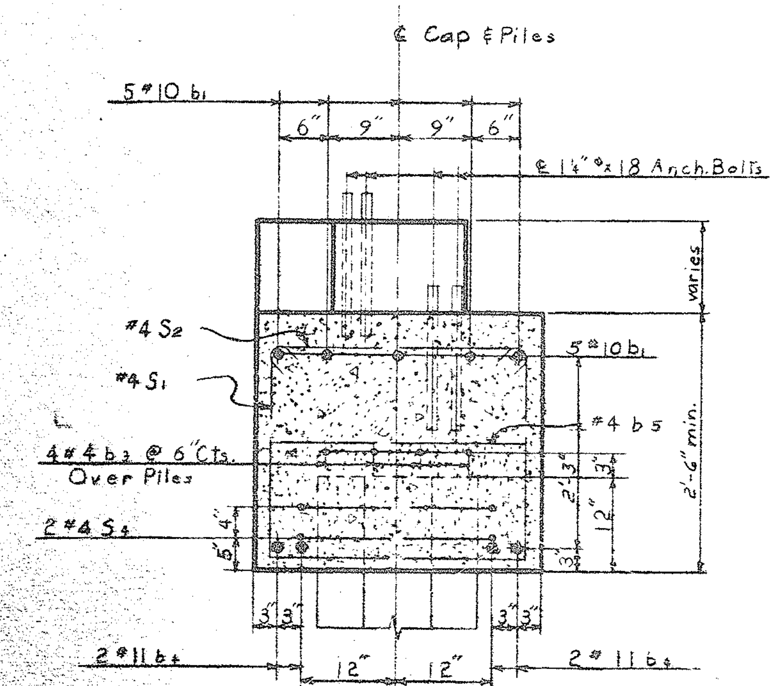
FED. ROAD DIST. NO.	STATE
3	N.C.
F. A. PROJECT U/S…	



PLAN



ELEVATION



SECTION A-A

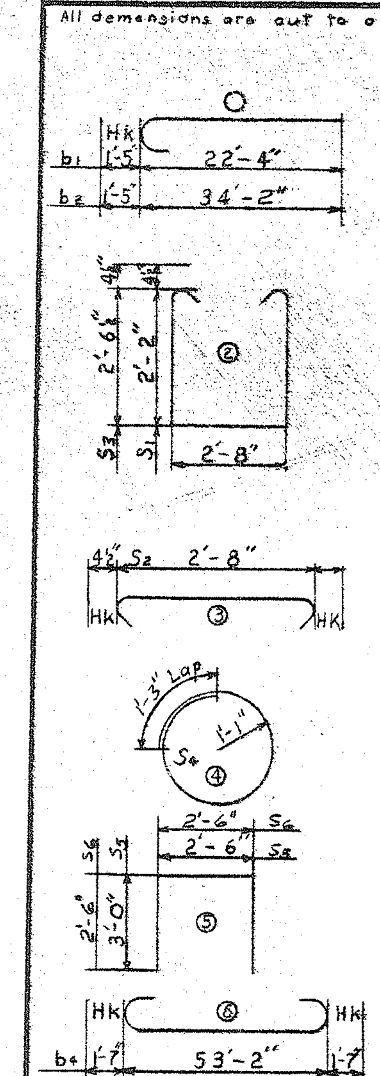
Notes:

Concrete displaced by pile heads has been deducted.

Reinforcing in top of cap may be shifted as necessary to clear anchor bolts

BAR TYPES

All dimensions are out to out.



BILL OF MATE…

FOR BENT NO…

BAR	NO.	SIZE	TYPE	LEN…
b1	5	#10	1	23…
b2	5	#10	1	35…
b3	8	#4	Str.	27…
b4	4	#11	6	56…
b5	32	#4	Str.	2'…
S1	17	#4	2	7'…
S2	29	#4	2	8'…
S3	78	#4	3	3'…
S4	16	#4	4	8'…
S5	16	#6	5	8'…
S6	2	#9	5	7'…

Reinforcing Steel 3,4…

Class "A" Concrete 1…

20" Octag. Prestr. Conc. Pile… Lin. Ft. 245

PROJECT NO. 8.23353…

NEW HANOVER COUNT…

STATION: 2+52.75

STATE OF NORTH CAROLINA

STATE HIGHWAY COMMIS…

RALEIGH

SUBSTRUCTURE
BENT NO. 1

APRIL 1964

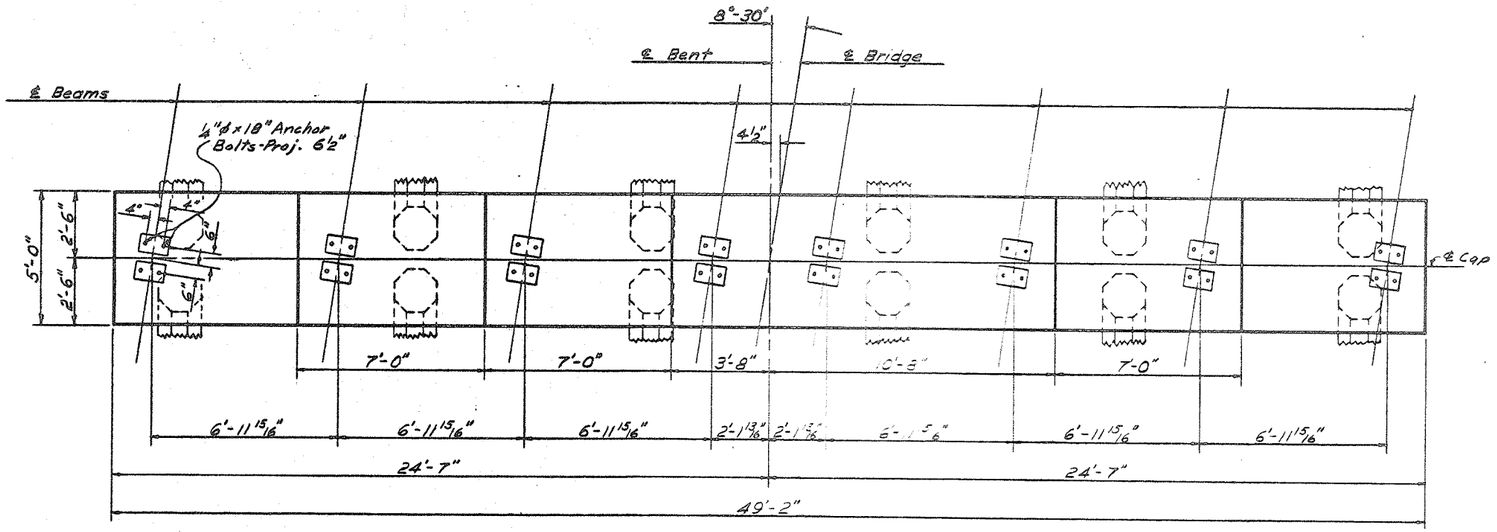
REVISIONS

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

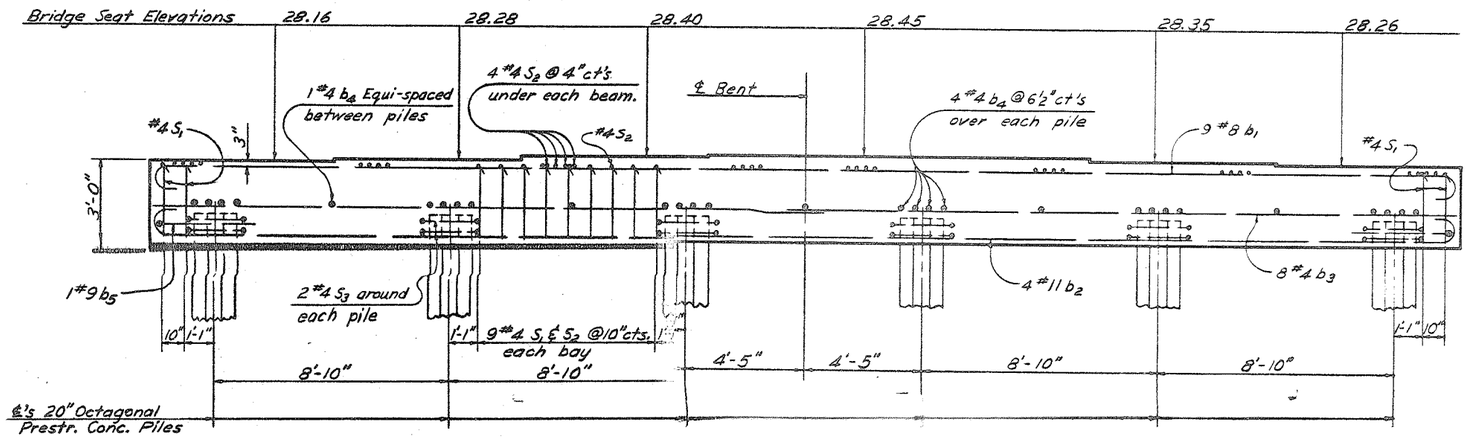
DRAWN BY R.G. [illegible] Jr. DATE April 1964

CHECKED BY [illegible] DATE June 1964

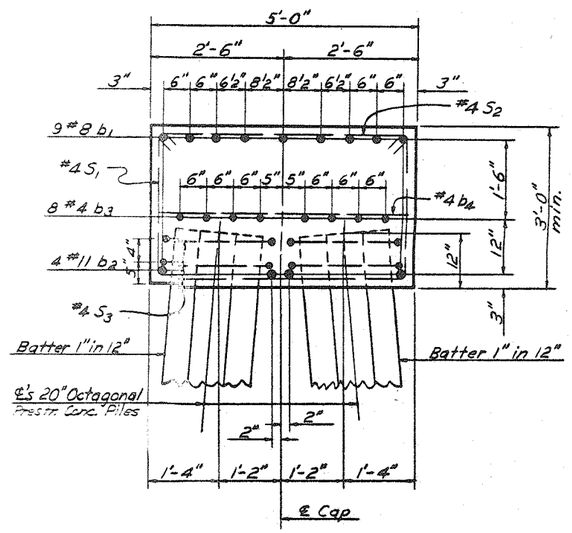
FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	8.2335
F. A. PROJECT	USG-1567(3)	



PLAN



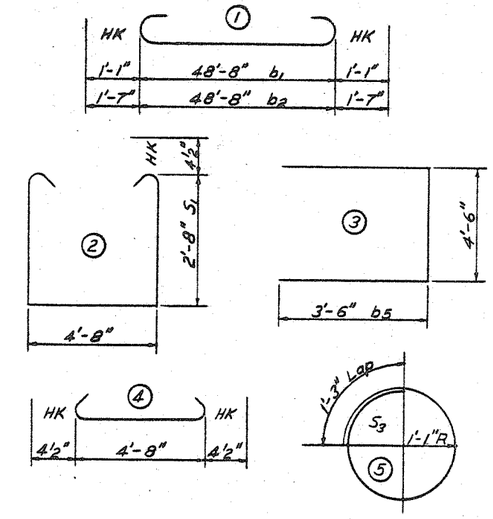
ELEVATION



SECTION THRU CAP

BAR TYPES

All bar dimensions are out to out.



BILL OF MATERIAL

FOR BENT NO. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b_1	9	#8	1	50'-10"	1222
b_2	4	#11	1	51'-10"	1102
b_3	16	#4	Str.	25'-1"	268
b_4	29	#4	Str.	4'-8"	90
b_5	2	#9	3	11'-6"	78
S_1	49	#4	2	10'-9"	352
S_2	81	#4	4	5'-5"	293
S_3	24	#4	5	8'-1"	130

Reinforcing Steel-Lbs = 3,535
Class "A" Concrete-Cu. Yds. = 27.9*
20" Oct. Prestr. Conc. Piles :
No. = 12
L.F. = 665

* Concrete displaced by pile heads has been deducted.

PROJECT NO. 8.2335B

NEW HANOVER COUNTY

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUBSTRUCTURE
BENT NO. 2

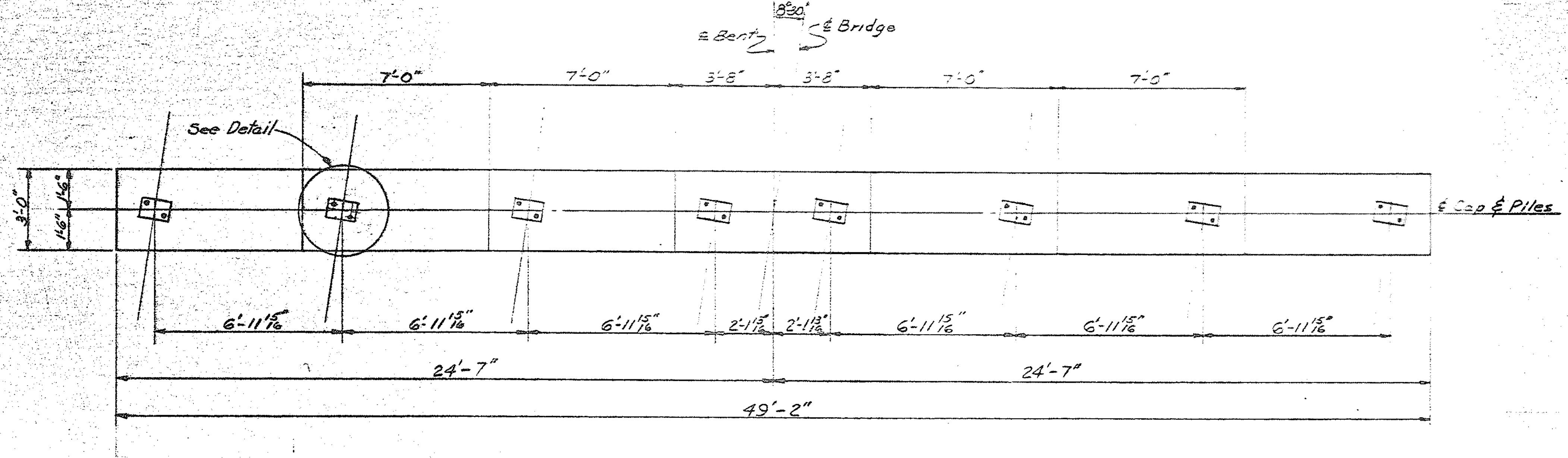
APRIL 1964

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-18
1			3			TOTAL SHEETS
2			4			26

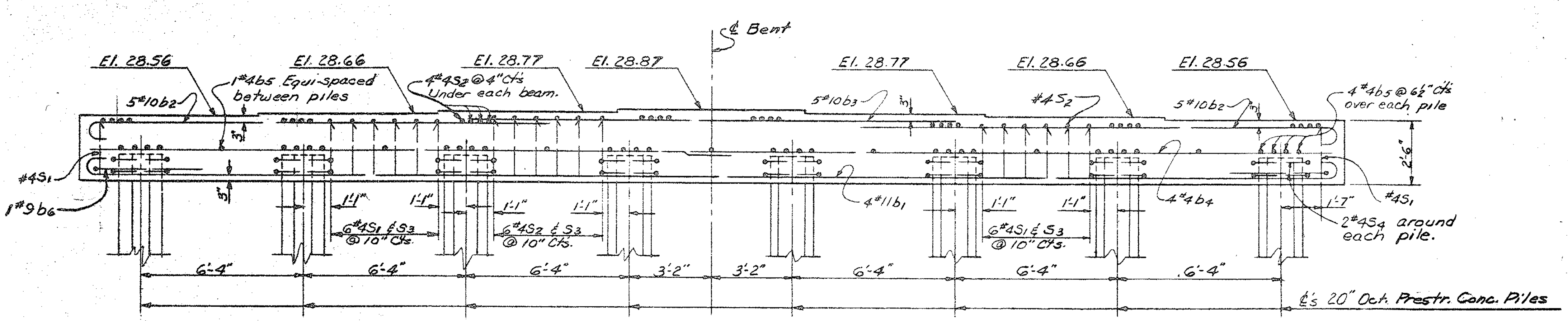
DRAWN BY J. C. CATO DATE April 15, '64
CHECKED BY R. W. Martin DATE June 1964

Southern Photo Print & Supply Co., Greensboro, N. C. #156 800 11-63

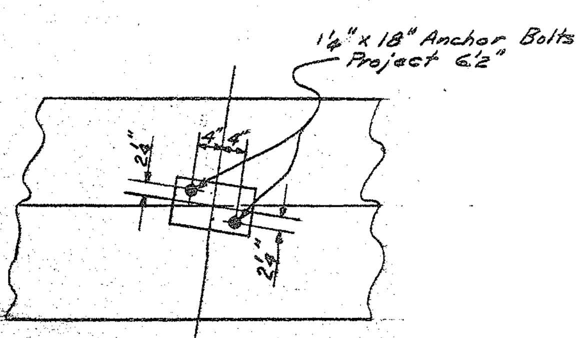
FED. ROAD DIV. NO.	STATE	PROJECT NO.
9	N. C.	8.23353
F. A. PROJECT	USG-1567(3)	



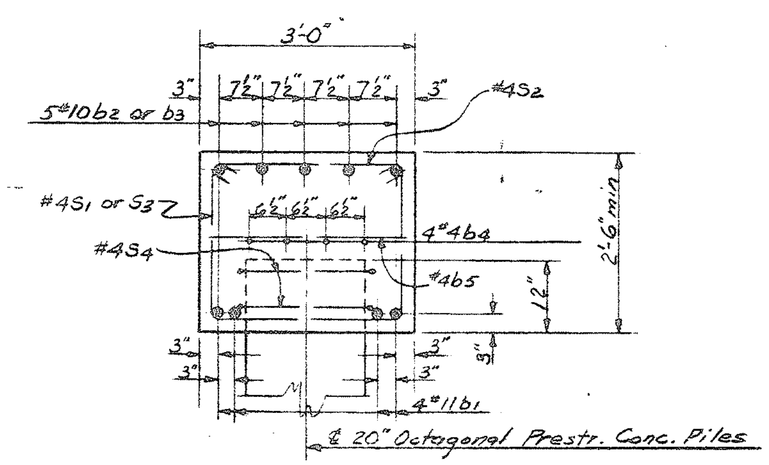
PLAN



ELEVATION



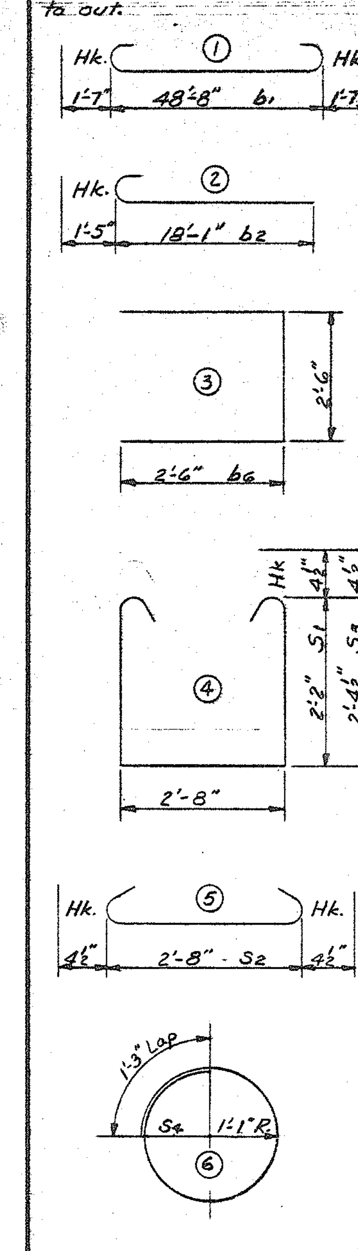
DETAIL



SECTION THRU CAP

BAR TYPES

All bar dimensions are out to out.



BILL OF MATERIAL FOR BENT NO. 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	4	#11	1	51'-10"	1102
b2	10	#10	2	19'-6"	839
b3	5	#10	Str.	19'-0"	409
b4	8	#4	Str.	25'-7"	137
b5	39	#4	Str.	2'-8"	69
b6	2	#9	3	7'-6"	51
S1	26	#4	4	7'-9"	135
S3	18	#4	4	8'-2"	98
S2	76	#4	5	3'-5"	173
S4	16	#4	6	8'-1"	86

Reinforcing Steel - Lbs.	3099
Class "A" Concrete - Cu. Yds. *	13.7
20" Oct. Prestr. Conc. Piles - No. 8 - L.F.	365

* Concrete displaced by pile heads has been deducted.

PROJECT No. 8.23353

NEW HANOVER COUNTY

STATION: 2+52.75

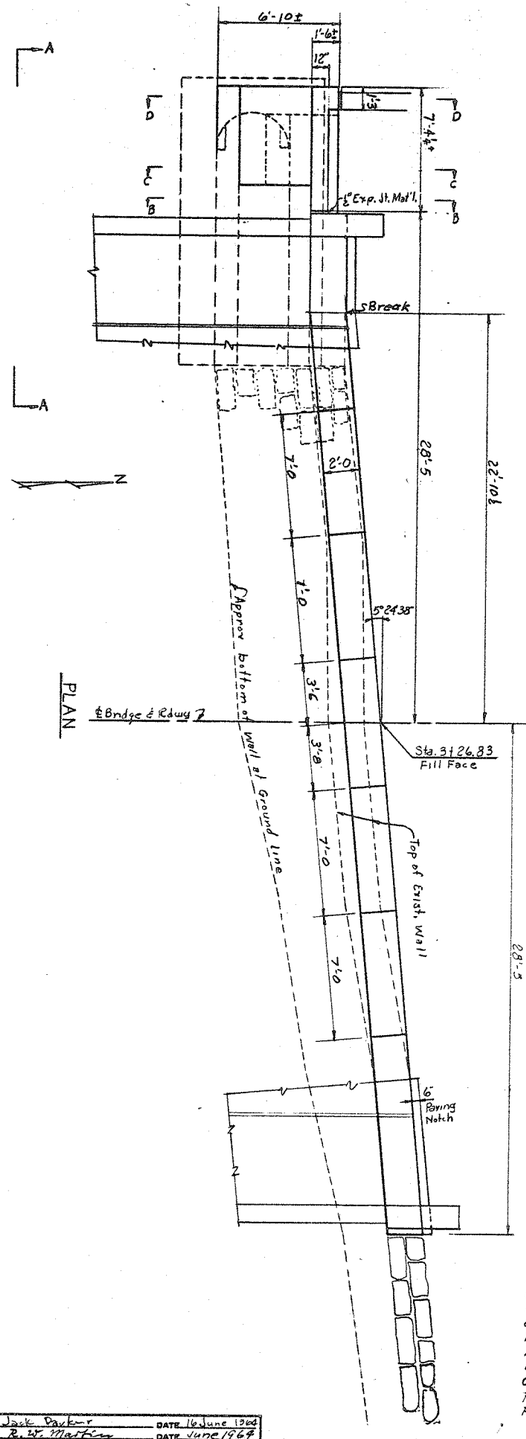
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

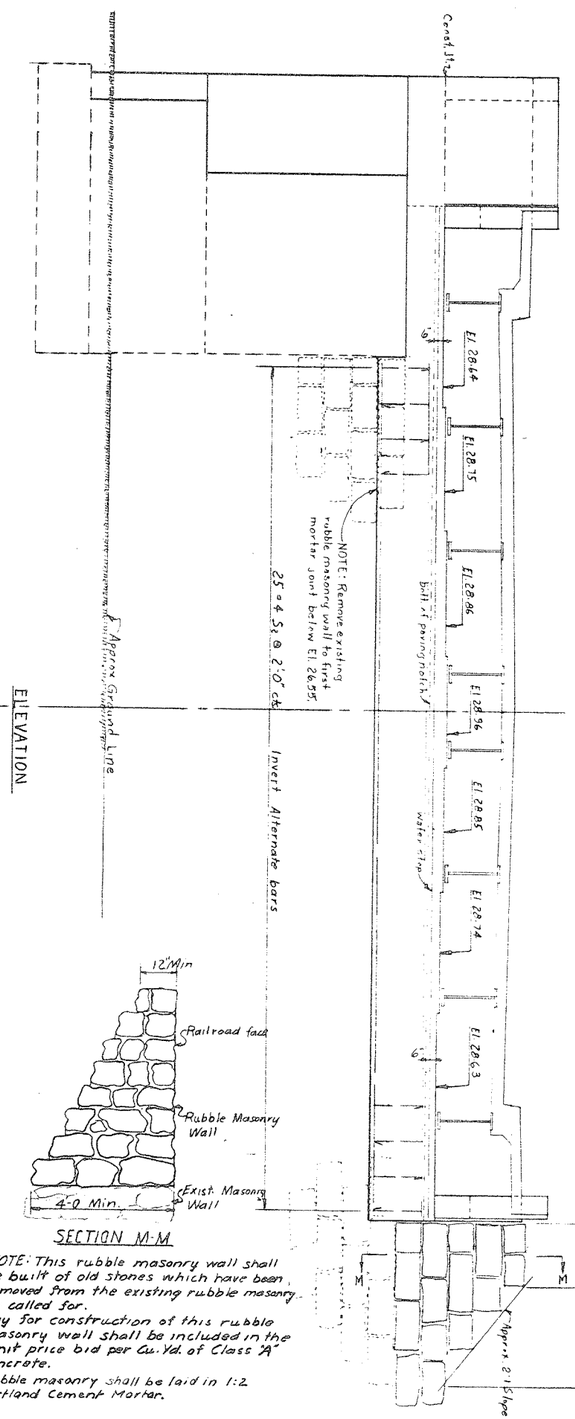
SUBSTRUCTURE
BENT NO. 3

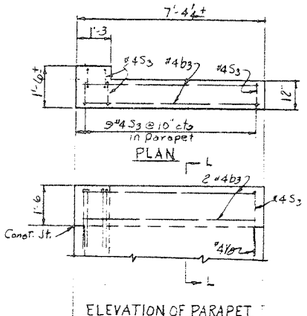
APRIL 1964

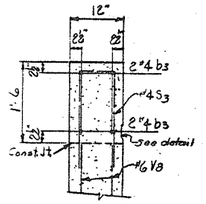
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S.19
1			3			TOTAL SHEETS
2			4			26

DRAWN BY R. Underwood DATE 4-9-64
CHECKED BY R. W. Martin DATE June 1964









FED. ROAD DIV. NO.	STATE	P
3	N. C.	8.
F. A. PROJECT	USG-1	

NOTE: The cost of removing rubble masonry and concrete shall be included in the unit price bid for Class "A" Concrete.
For bonding new concrete to old concrete see sheet S N.

PLAN

ELEVATION

SECTION M-M

NOTE: This rubble masonry wall shall be built of old stones which have been removed from the existing rubble masonry as called for.
Pay for construction of this rubble masonry wall shall be included in the unit price bid per Cu. Yd. of Class "A" Concrete.
Rubble masonry shall be laid in 1:2 Portland Cement Mortar.

PLAN

ELEVATION OF PARAPET

SECTION L-L

DETAIL

VIEW A-A

DETAIL OF CORNER

SECTION X-X

SECTION Y-Y

SECTION Z-Z

PROJECT No. 8.23353

NEW HANOVER COUN

STATION: 2+52.75

SHEET 1 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSIO
RALEIGH

EXISTING ABUTMENTS AND ADDITIONS
AT NORTH END OF BRIDGE

June 1964

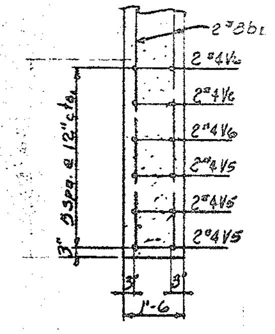
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

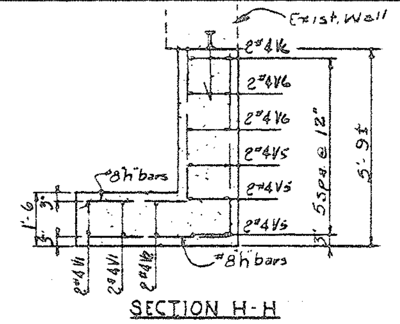
DRAWN BY Jack Parker DATE 16 June 1964
CHECKED BY R. W. Martin DATE June 1964

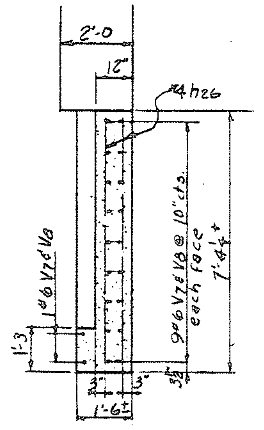
SOUTHERLAND BLUE PRINT CO., CHARLOTTE, N. C.-11-60

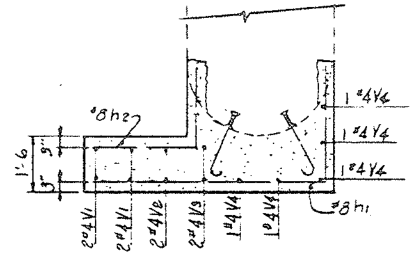
FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	8.23353

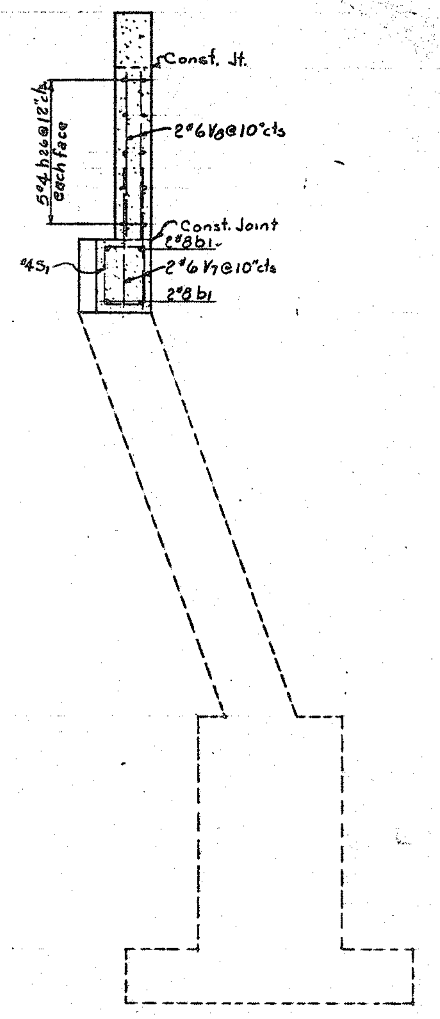
F. A. PROJECT USG-1567(3)

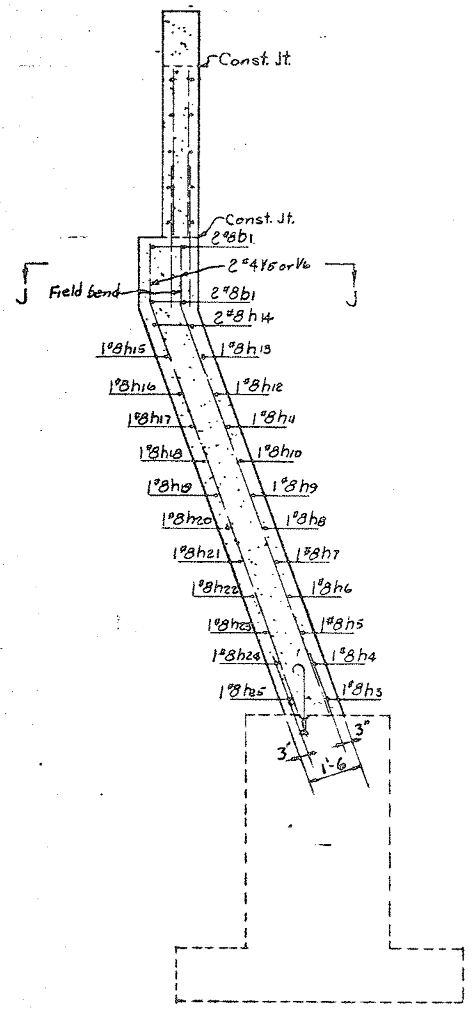


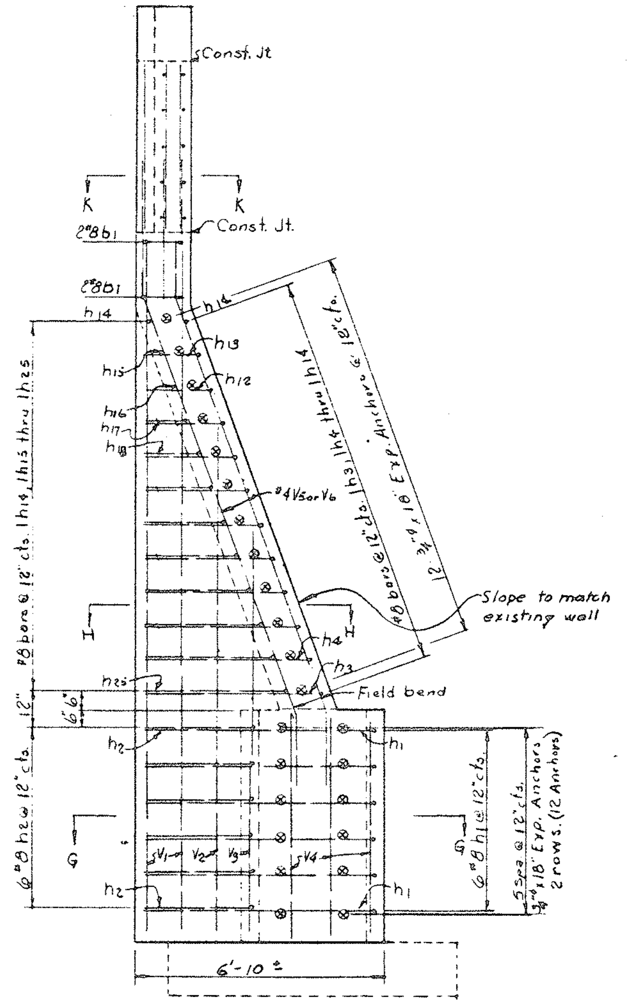


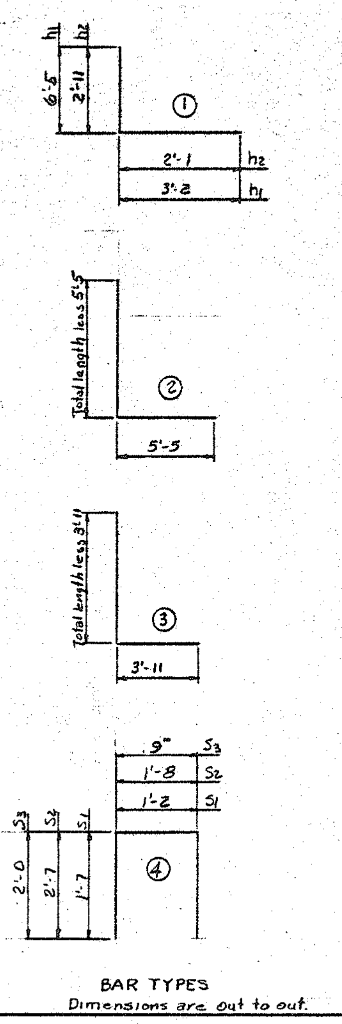








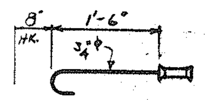




BILL OF MATERIAL

Bar	No.	Size	Type	Length	Weight
b1	4.	8	Str.	18'-0	192
b2	16	4	Str.	25'-3	270
b3	4	4	Str.	7'-0	19
h1	6	8	1	9'-7	154
h2	6	8	1	5'-0	80
h3	1	8	2	10'-7	28
h4	1	8	2	10'-2	27
h5	1	8	2	9'-11	26
h6	1	8	2	9'-6	25
h7	1	8	2	9'-1	24
h8	1	8	2	8'-9	23
h9	1	8	2	8'-5	22
h10	1	8	2	8'-1	22
h11	1	8	2	7'-10	21
h12	1	8	2	7'-5	20
h13	1	8	2	7'-1	19
h14	2	8	Str.	5'-5	29
h15	1	8	3	4'-5	12
h16	1	8	3	4'-9	13
h17	1	8	3	5'-1	14
h18	1	8	3	5'-5	14
h19	1	8	3	5'-8	15
h20	1	8	3	6'-1	16
h21	1	8	3	6'-5	17
h22	1	8	3	6'-9	18
h23	1	8	3	7'-1	19
h24	1	8	3	7'-5	20
h25	1	8	3	7'-9	21
h26	10	4	Str.	6'-11	46
S1	6	4	4	4'-4	17
S2	25	4	4	6'-10	114
S3	11	4	4	4'-9	35
V1	4	4	Str.	19'-5	52
V2	2	4	Str.	14'-6	19
V3	2	4	Str.	11'-6	15
V4	5	4	Str.	6'-3	21
V5	6	4	Str.	15'-0	60
V6	6	4	Str.	13'-9	55
V7	20	4	Str.	4'-3	57
V8	20	4	Str.	4'-6	60

Reinforcing Steel lbs.	1731
Class "A" Concrete cu. yds.	25.8
1 Bar Metal Rail - lin. ft.	7.27
Unclass. Structure Exc. cu. yds.	5



DETAIL OF EXP. ANCHOR

25 req'd.

For Expansion Anchor requirements see Sheet S-N.
Payment for Expansion Anchors shall be included in the unit price bid per cu. yd. of class "A" Concrete.

PROJECT NO. 8.23353

NEW HANOVER **COUNTY**

STATION: 2+52.75

SHEET 2 of 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

EXISTING ABUTMENT AND ADDITIONS
AT NORTH END OF BRIDGE

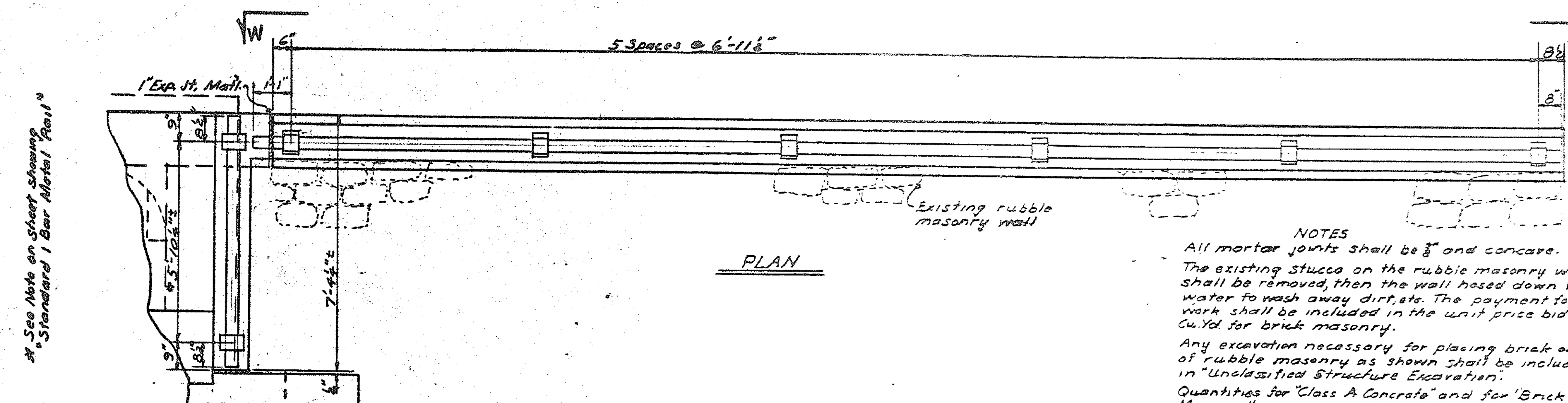
DETAILS AND BILL OF MATERIAL

June 1964

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

SHEET NO. S-21
TOTAL SHEETS 26

DRAWN BY ________ DATE ________
CHECKED BY ________ DATE ________



PLAN

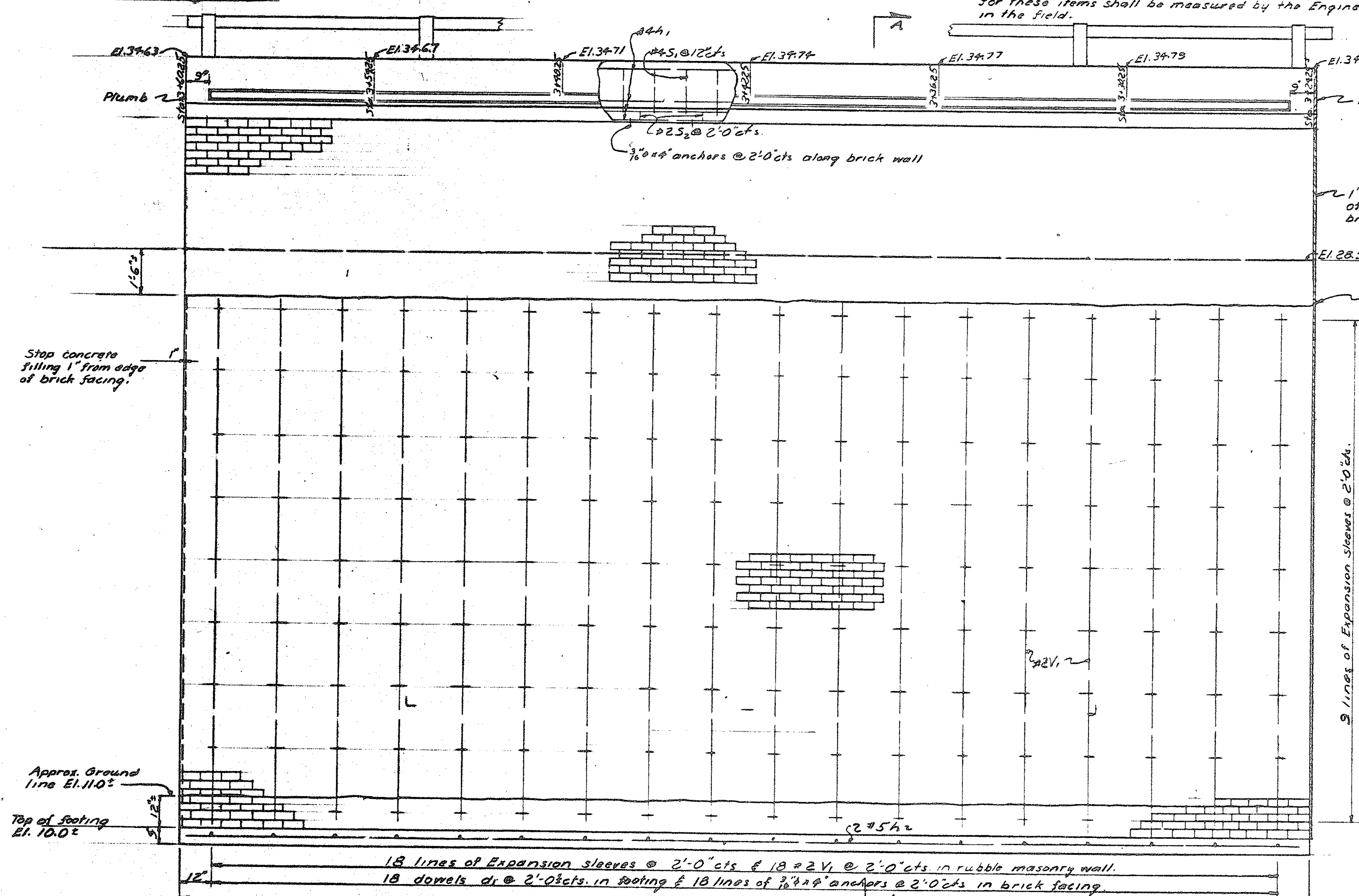
NOTES

All mortar joints shall be ⅜" and concave.

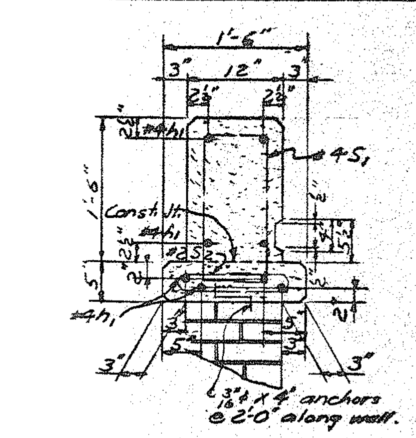
The existing stucco on the rubble masonry wall shall be removed, then the wall hosed down with water to wash away dirt, etc. The payment for this work shall be included in the unit price bid per Cu.Yd. for brick masonry.

Any excavation necessary for placing brick on top of rubble masonry as shown shall be included in "Unclassified Structure Excavation".

Quantities for "Class A Concrete" and for "Brick Masonry" are approximate only. The exact quantities for these items shall be measured by the Engineer in the field.

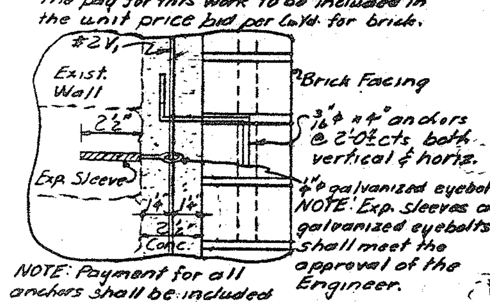


ELEVATION W-W



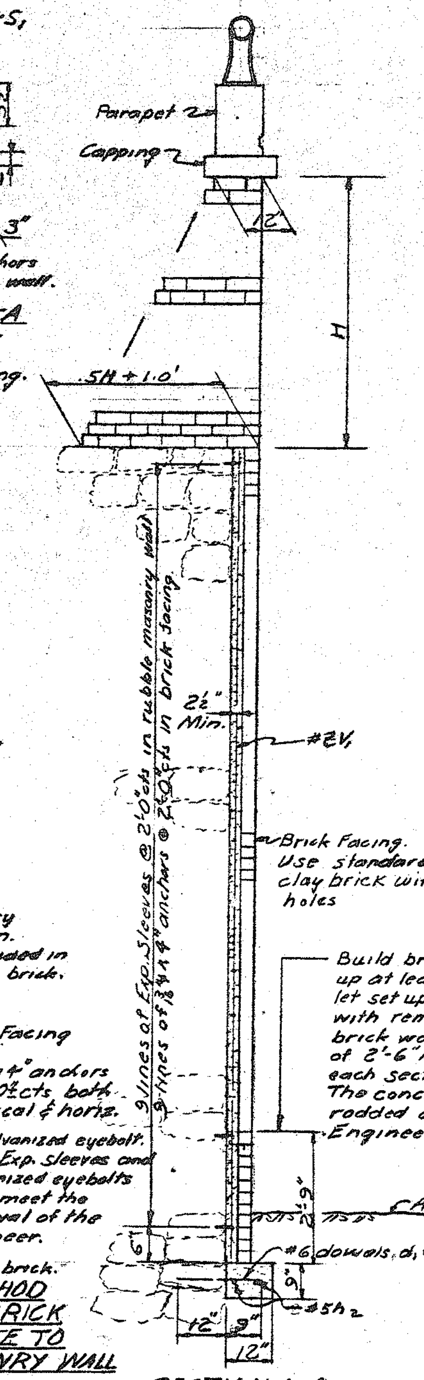
PART SECTION A-A

NOTE: Use #4 aggregate in all concrete behind brick wall and in capping.



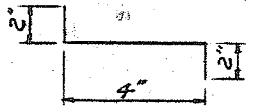
NOTE: Payment for all anchors shall be included in the unit price bid per Cu.Yd. for brick.

DETAIL SHOWING METHOD OF FASTENING NEW BRICK FACING AND CONCRETE TO EXISTING RUBBLE MASONRY WALL



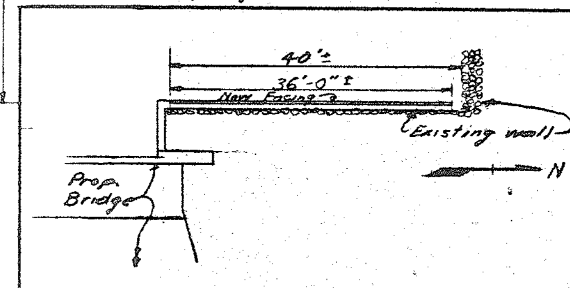
Build brick wall to this elevation and let set up at least 24 hrs. Then pour concrete and let set up for at least 48 hrs. Then proceed with remaining wall as follows: Complete brick wall. Then pour concrete in sections of 2'-6" height allowing 48 hrs. between each section.
The concrete behind this section may be rodded or vibrated as directed by the Engineer.

SECTION A-A



DETAIL OF 3/16" x 4" Anchor

Note: 3/16" anchor to be hot-dipped galvanized steel.



LAYOUT SHOWING LOCATION OF WALL

* Includes 5.6 cu.yds. using No4 aggregate in concrete behind brick wall and in capping.

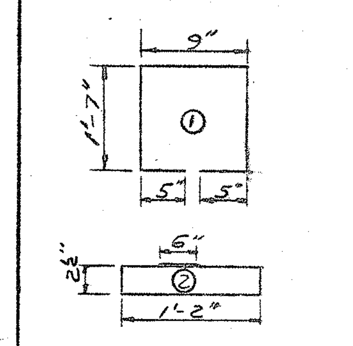
FED. ROAD DIST. NO.	STATE	PROJECT
3	N. C.	8.233…
F.A. Proj. No. USG-156…		

BILL OF MATERIAL FOR ONE WALL

Bar	No.	Size	Type	Length	Weig…
d₁	18	#6	Str.	1'-5"	4…
h₁	16	#4	Str.	18'-7"	19…
h₂	4	#5	Str.	18'-10"	7…
S₁	36	#4	1	4'-9"	11…
S₂	18	#2	2	3'-3"	1…
V₁	18	#2	Str.	16'-6"	5…

Reinforcing Steel - Lbs	49…
Class "A" Concrete - Cu.Yds.	8.…
Brick Masonry - Cu.Yds.	26.…
1 Bar Metal Rail - Lin.Ft.	36.…
Unclass. Structure Excav. Cu.Yds.	1…

BAR TYPES



NOTE: Dimensions are out to out.

PROJECT NO. 8.23353

NEW HANOVER COUNTY

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

DETAILS OF BRICK FACING AND RAISING OF EXISTING WALL AT NORTHWEST END OF BRIDGE

JUNE 1964

SHEET NO. S-22
TOTAL SHEETS 26

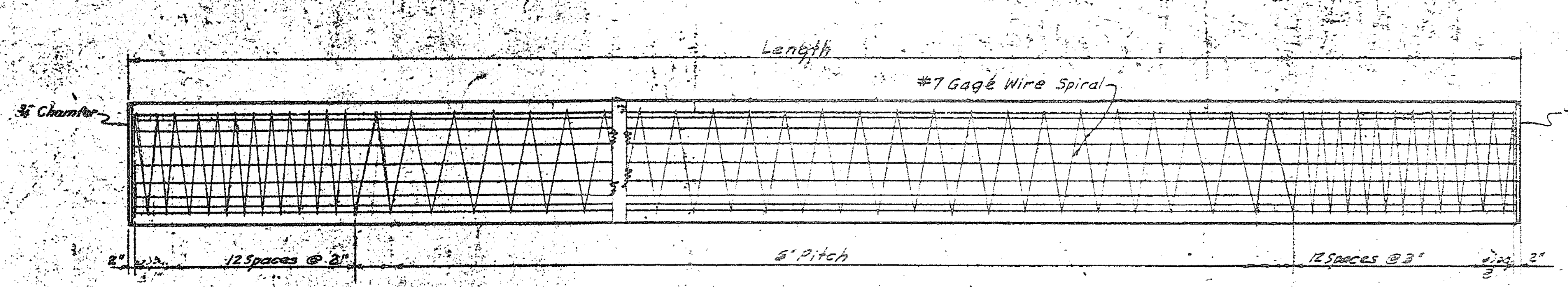
REVISIONS

SPECIAL

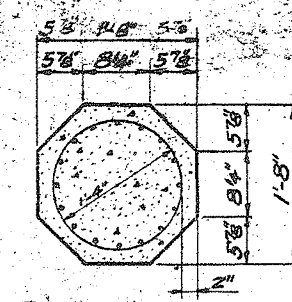
DESIGNED BY Robt. J. Hale DATE June 1964
DRAWN BY Robt. J. Hale DATE June 1964
TRACED BY DATE
CHECKED BY R. W. Martin DATE June 1964

FED. ROAD DIST. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	N. C.	8.23353		

F.A. Proj. No. USG-1567(3)



Pile



TYPICAL SECTION
(Showing 16 Prestressing Cables)

Typical Section

Design Data:
Concrete: - f'c = 5000 Lbs per sq. inch.
fc = 2000 Lbs per sq. inch.
Impact in handling = 50%

PILES REQUIRED	Nº	Size	Length	Lin. ft.
Bent #1	7	20"	30'-0"	210
Bent #1	* 1	20"	35'-0"	35
Bent #3	7	20"	45'-0"	315
Bent #3	* 1	20"	50'-0"	50
Bent #2	11	20"	55'-0"	605
Bent #2	* 1	20"	60'-0"	60

* Indicates Test P[illegible]

GENERAL NOTE:

All prestressing strands shall be 7-wire stress relieved cables in accordance with the specifications. The contractor may, at his option, use any one of the strand sizes and types as listed below, but all cables used in a pile shall be of the same size and type.

Size	Type	No. Cables Req'd.	Area	Ultimate Strength	Applied Prestressing
⅜"	Standard	22	0.0779 □"	20,000 # per cable	14,000 # per cable
⅜"	High Str.	19	0.0840 □"	23,000 # per cable	16,100 # per cable
7/16"	Standard	16	0.1089 □"	27,000 # per cable	18,900 # per cable
7/16"	High Str.	14	0.1152 □"	31,000 # per cable	21,700 # per cable

Cables shall be equally spaced around a circle of the diameter shown in the "Typical Section".

General Note:
In driving piles, a method approved by the engineer shall be used, whereby the head of the pile is not damaged.

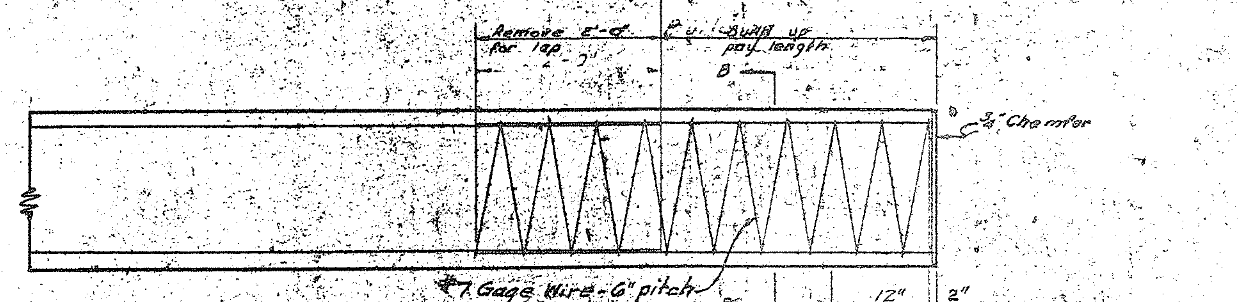
Build-up, where necessary, shall be done in accordance with the specifications, except that the reinforcing steel required in the build-ups shall be included in the contract unit price per foot for the pile and will not be paid for as reinforcing steel.

All material and workmanship as per the specifications of the North Carolina State Highway Commission.

Devices for lifting the piles from the casting beds shall be approved by the Engineer. These devices shall consist of inserts set in the piles to receive threaded eye-bolts, or similar approved devices. The use of loops of cable cast in the piles for use as lifting devices will not be permitted. The use of satisfactory clamps or slings will be permitted where this is practicable without the use of lifting devices cast in the piles. After eye-bolts or other attachments have been removed the openings shall be repaired in a satisfactory manner before delivery to the bridge site in order to obtain a uniform appearance.

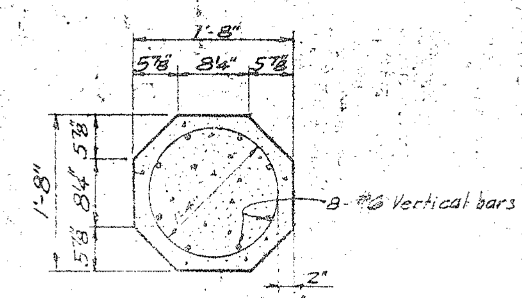
Because of the resulting surface finish, Slip-form method of casting piles will not be permitted.

All prestressing strand shall meet the requirements of ASTM-A416.

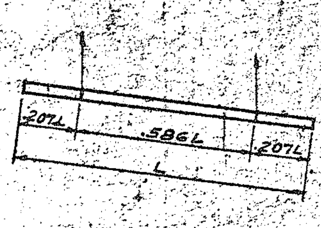


Pile Build up

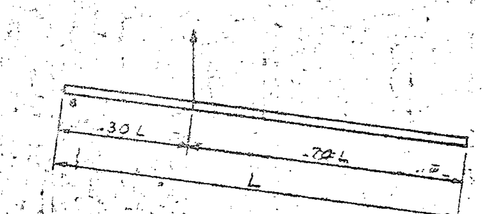
Note: If additional driving is required, 2" pitch shall be used for spiral wire within these limits.



Section B-B

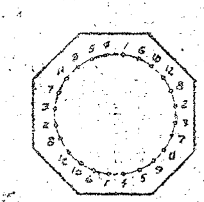


Method of picking up Piles
59 feet to 85 feet
2 pick up points



Method of picking up piles
up to 58 feet
1 pick up point

If cable stress is relieved by burning, the cables shall be burned in opposite pairs as indicated in the typical pattern shown for any number of cables. Burn in opposite pairs and symmetrical about both vertical and horizontal axes. Cables 1-1 shall be burned before 2-2, etc. Not more than 4 cables, say 5-5 and 6-6, may be burned at any one section before these same pairs of cables are burned at both ends of the bed and between each pair of piles in the bed.



Typical Pattern for Burning Cables

QUANTITIES FOR ONE 1'-8" OCTAGONAL						
Length	Concrete	Pile Wt.	One Pickup Point		Two Pickup Points	
	Cu. yds.	Tons	.30L	.70L	.207L	.586L
25'-0"	2.13	4.31	7'-6"	17'-6"		
30'-0"	2.55	5.16	9'-0"	21'-0"		
35'-0"	2.98	6.03	10'-6"	24'-6"		
40'-0"	3.40	6.89	12'-0"	28'-0"		
45'-0"	3.83	7.75	13'-6"	31'-6"		
50'-0"	4.26	8.62	15'-0"	35'-0"		
55'-0"	4.68	9.48	16'-6"	38'-6"		
60'-0"	5.11	10.34			12'-5"	35'-2"
65'-0"	5.53	11.20			13'-5½"	38'-1"
70'-0"	5.96	12.06			14'-6"	41'-0"

PROJECT No. 8.23353
NEW HANOVER COUNTY
STATION: 2+52.75

Rev. Sept. 24, 1963 to show prestressing strand to meet requirements of ASTM-A416 by W.J.R. ✓ A.L.B.
Revised to add notes regarding cables 7-3-62 JLB ✓ KCS
Revised to clarify buildup detail 3/8/60 M.S.B. ✓ BPT
Revised to add notes and sketch regarding burning of cables Jan. 6, 1960 J.E.W. ✓ JDNW
Revised for note regarding slip-form method of casting piles 12-18-59 J.H.B. ✓ RNW
Revised for spacing of wire spiral at ends of pile Nov. 9, 1959 RAS ✓ by [illegible]
Revised to add table of additional Data 5-27-59 RAS ✓ by JLG
Revised for note concerning [illegible] 6-13-57 [illegible] ✓ C.M.T.
Revised for pick up points 3/30/57 by E.F.L. ✓ JAW

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STANDARD
1'-8" PRESTRESSED
OCTAGONAL CONCRETE PILES

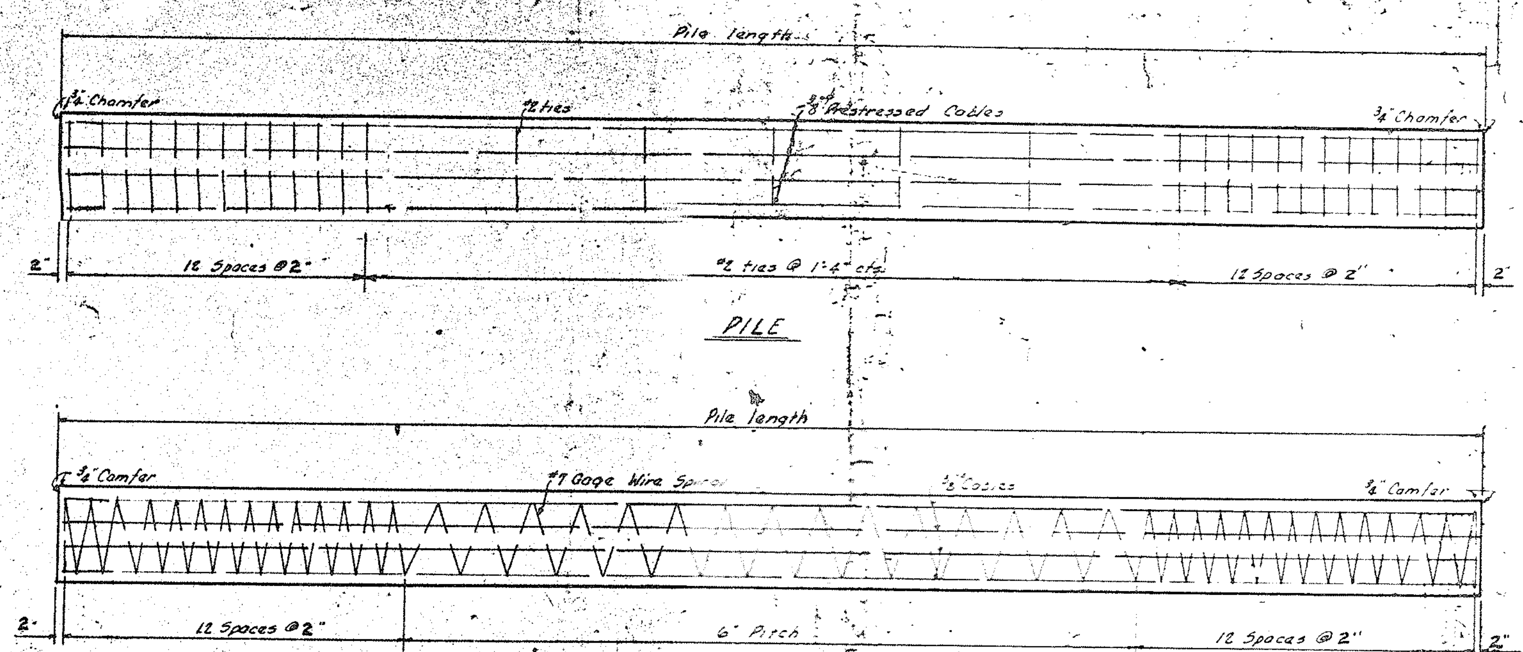
August, 1956

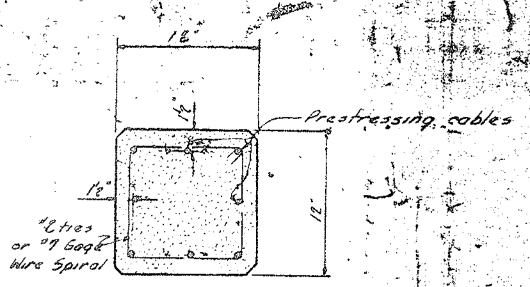
SHEET S-23 OF 26

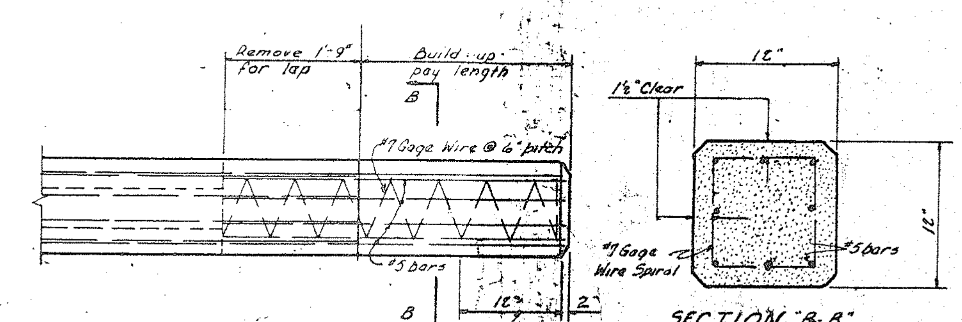
SPECIAL	ASSEMBLED BY [illegible]	DATE [illegible] 1964
	CHECKED BY [illegible]	DATE June 1964
STANDARD	DESIGNED BY J. N. Wall	DATE Aug. 1956
	DRAWN BY	DATE
	TRACED BY	DATE
	CHECKED BY A. L. Barrett	DATE Aug. 1956

FED. ROAD DIST. NO.	STATE	PROJECT NO.
	N. C.	8.23353

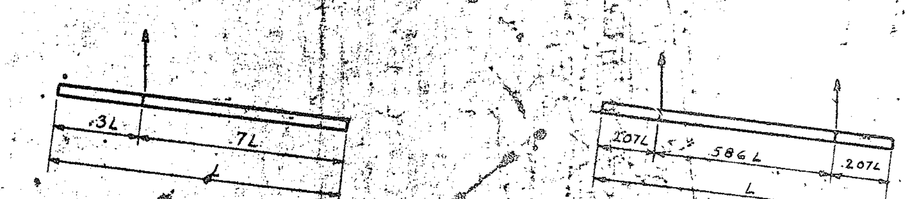
F.A. Proj. No. USG-156 (3





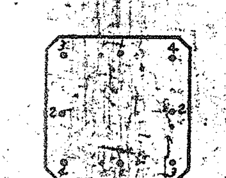


Devices for lifting the piles from the casting beds shall be approved by the Engineer. Where piles will be exposed to view in the structure, inserts set in the piles to receive threaded eye-bolts or similar approved devices shall be used. Loops of cable cast in the pile will not be permitted except for piles for end bents and foundations which will not be exposed to view. The use of satisfactory clamps or slings will be permitted where this is practicable without the use of lifting devices cast in the piles. After eye-bolts or other attachments have been removed, the openings shall be repaired in a satisfactory manner before delivery to the bridge site in order to obtain a uniform appearance. It will not be necessary to remove loops of cable or other lifting devices in piles for end bents and foundations which will not be exposed to view.



Method of picking up piles up to 51 feet
1 pick up point

Method of picking up Piles
52 feet to 70 feet
2 pick up points



TYPICAL PATTERN FOR BURNING CABLES

If cable stress is to be relieved by burning, the cables shall be burned in opposite pairs as indicated in the pattern shown above. Cables 1-1 to be burned before 2-2 etc.
Not more than 4 cables, say 1-1 and 2-2, may be burned at any one section before these same pairs of cables are burned at both ends of the bed and between each pairs of piles in the bed.

Design Data:
Concrete: f'c = 5,000 p.s.i.
fc = 2,000 p.s.i.
Impact in handling = 50%

In driving piles, a method approved by the Engineer shall be used, whereby the head of piles is not damaged.

All material and workmanship as per the Specifications of North Carolina State Highway Commission.

The contractor may use either #2 ties or #7 Wire Spiral as shown.

Build up where necessary shall be done in accordance with the specifications, except that reinforcing steel required in the build-ups be included in the contract unit price per for the pile and will not be paid for as reinforcing steel.

All prestressing strand shall be 7-wire stress relieved cables in accordance with the Specifications. The contractor may, at his option, use either of the two types of listed below; however, all cables in a pile shall be same type:

Type	Area	Ultimate Strength	Applied
⅜" High Strength	0.0840 □"	23,000# per cable	16,10[illegible]
7/16" Standard	0.1089 □"	27,000# per cable	18,90[illegible]

All prestressing strand shall meet the requirements of ASTM-A416.

	No.	Size	Length	Lin. Ft.
End Bent #1	9	12"	27'-0"	243
End Bent #1	* 1	12"	30'-0"	30

* Indicates Test Pile

PROJECT NO. 8.2335

NEW HANOVER COUNT

STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISS
RALEIGH

STANDARD
12" PRESTRESSED CON
PILES

MARCH, 1957

Rev. Sept. 24, 1963 to show prestressing strand to meet requirements of ASTM-A416 by W.J.B. ✓ A.L.B.
Revised to change number of strands & add notes regarding cables 7-3-58 JLB ✓ By NCS
Revised to clarify buildup detail 3/8/60 by M.J.B. ✓ B.R.T.

SPECIAL	ASSEMBLED BY Robt. J. Hale	DATE June 1964
	CHECKED BY W.H. Andrews Jr.	DATE June 1964
	DESIGNED BY	DATE
STANDARD	DRAWN BY	DATE 3-1-57
	TRACED BY	DATE 3-11-57

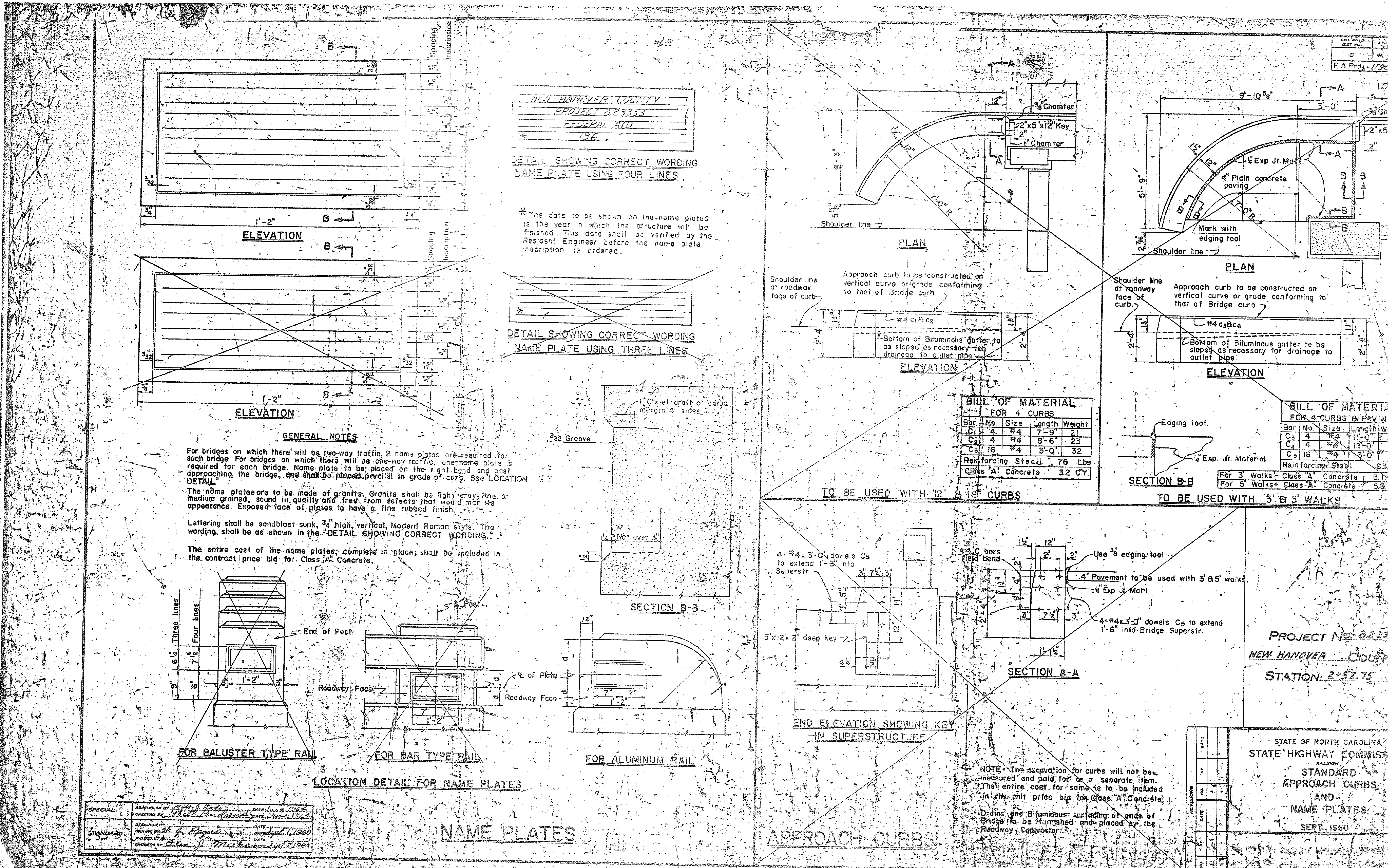
Revised to show pattern for burning cables Jan. 5 1959

Revised for spacing of wire spiral at ends of pile. Nov. 9, 1959 R.A.S. ✓ By R.H.

Revised to change spacing of strands in Typical Section. 7-18-57 F.C.S. ✓ E.L.B.

Revised for note concerning Pick Up. 6-13-57 JAO ✓ L.M.T.

Revised for pick up points. 5/30/57 by E.J.L. ✓ W.K.



*The date to be shown on the name plates is the year in which the structure will be finished. This date shall be verified by the Resident Engineer before the name plate inscription is ordered.

GENERAL NOTES

For bridges on which there will be two-way traffic, 2 name plates are required for each bridge. For bridges on which there will be one-way traffic, one name plate is required for each bridge. Name plate to be placed on the right hand end post approaching the bridge, and shall be placed parallel to grade of curb. See LOCATION DETAIL.

The name plates are to be made of granite. Granite shall be light gray, fine or medium grained, sound in quality and free from defects that would mar its appearance. Exposed face of plates to have a fine rubbed finish.

Lettering shall be sandblast sunk, 3/4" high, vertical, Modern Roman style. The wording shall be as shown in the "DETAIL SHOWING CORRECT WORDING".

The entire cost of the name plates, complete in place, shall be included in the contract price bid for Class "A" Concrete.

BILL OF MATERIAL FOR 4 CURBS

Bar	No.	Size	Length	Weight
C1	4	#4	7'-9"	21
C2	4	#4	8'-6"	23
C3	16	#4	3'-0"	32
Reinforcing Steel			76	Lbs
Class "A" Concrete			3.2	C.Y.

BILL OF MATERIAL FOR 4 CURBS & PAVING

Bar	No.	Size	Length	W
C3	4	#4	11'-0"	
C4	4	#4	12'-0"	
C5	16	#4	3'-0"	
Reinforcing Steel				93
For 3' Walks - Class "A" Concrete				5.1
For 5' Walks - Class "A" Concrete				5.8

NOTE: The excavation for curbs will not be measured and paid for as a separate item. The entire cost for same is to be included in the unit price bid for Class "A" Concrete.

Drains and Bituminous surfacing at ends of Bridge to be furnished and placed by the Roadway Contractor.

PROJECT No. 8.233
NEW HANOVER COUNTY
STATION: 2+52.75

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
STANDARD APPROACH CURBS AND NAME PLATES
SEPT. 1960

F.A. Proj.

SPECIAL — Assembled by / Checked by — Date June 1964
STANDARD — Designed by / Drawn by / Traced by / Checked by — Date Sept. 1, 1960