

PROJECT NO 3-214

**FINAL ESTIMATE
OF
CULVERTS AND BRIDGES**

(080051)

*including Bladen Co # 51
STA # 170+50*

**NORTH CAROLINA
STATE HIGHWAY COMMISSION**

**DIVISION NO 6
COLUMBUS-BLADEN**

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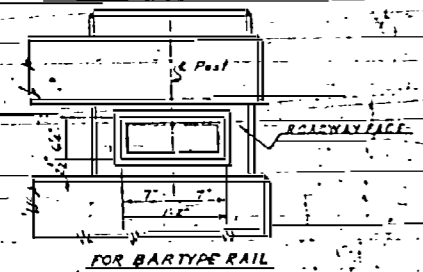
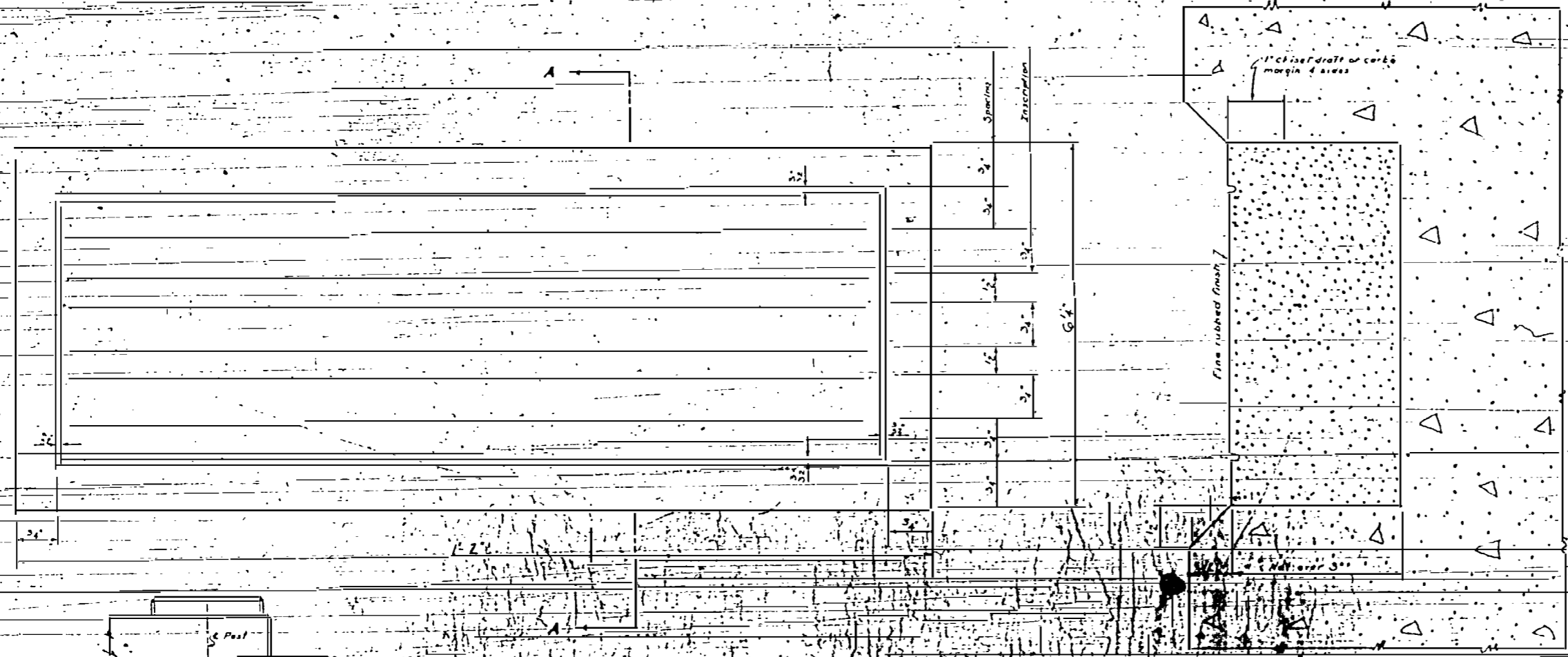
FINAL ESTIMATE ON NORTH CAROLINA STATE PROJECT NO 3-214 STR.
FOR SIX BRIDGES AND ONE BOX CULVERT, INCLUDING A BRIDGE
OVER CAPE FEAR RIVER BETWEEN NC 87 AND
NC. 53 NEAR ACME NORTH CAROLINA.
COLUMBUS - BLADEN COUNTIES
DIVISION NO. 6

CONTRACTOR: M. MEEKIN CONSTRUCTION COMPANY
CHERAW, S. C.

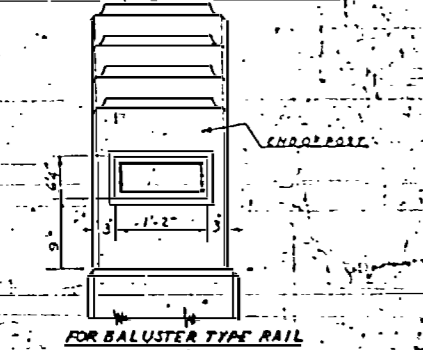
Contract Let - Date	September 19, 1951
Work Started - Date	November 13, 1951
Work Completed - Date	October 6, 1953
L. E. WHITFIELD	DIVISION ENGINEER
J. C. PARKIN	RESIDENT ENGINEER
J. O. BROWN	MASONRY INSPECTOR
R. M. O'BERRY	MASONRY INSPECTOR

NOTE:
The final survey note books, properly marked and described, submitted herewith as a part of this final estimate are as follows:
5 Diaries showing the Resident Engineer's daily record of forces and equipment, working days, weather conditions, and all important events connected to the work.
2 Masonry Books showing culvert and bridge sketches, calculations and quantities.

NO.	DATE	BY	REVISION
1	10-1-52	J.C.	REVISED



ELEVATION



LOCATION DETAIL FOR NAME PLATES

BLADEN COUNTY
STATE PROJECT 3-214
1952

DETAIL SHOWING CORRECT WORDING

SECTION AA

GENERAL NOTE

The name plates are required for each bridge on each right hand and left hand approaches to the bridge. 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 the appearance. Exposed face of plates to have a fine rubbed finish.
Letters shall be solid black, 1/2" high, italical, Western Roman Style. The spacing shall be as shown in the Detail Showing the Correct Spacing.
The entire cost of the name plates, complete in place, shall be included in the contract price bid for class 'A' concrete.

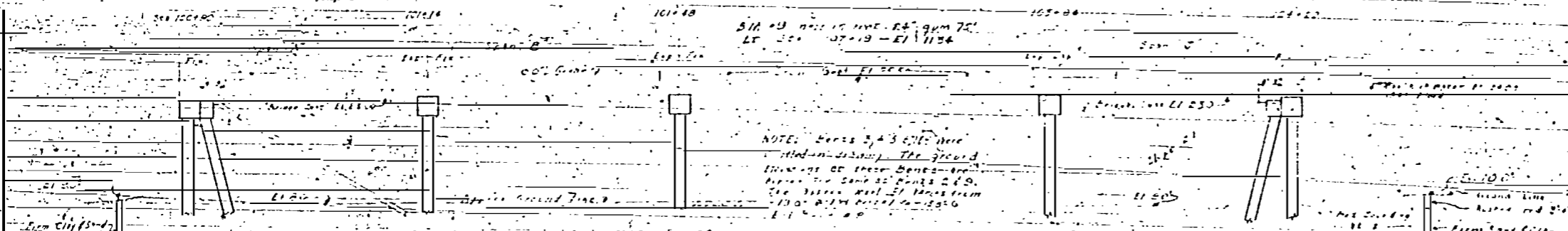
Bladen # 51

PROJECT NO. 3-214
COLUMBUS-BLADEN COUNTY
STATION: 84+50 - 0
102+50 - 0
112+00 - 0

STATE OF NORTH CAROLINA
STATE HIGHWAY DEPARTMENT
PUBLIC WORKS COMMISSION
STANDARD
NAME PLATES
FOR
CONCRETE BRIDGES

SPECIAL	APPROVED	DATE
BY	J.C.	10-1-52
STANDARD		

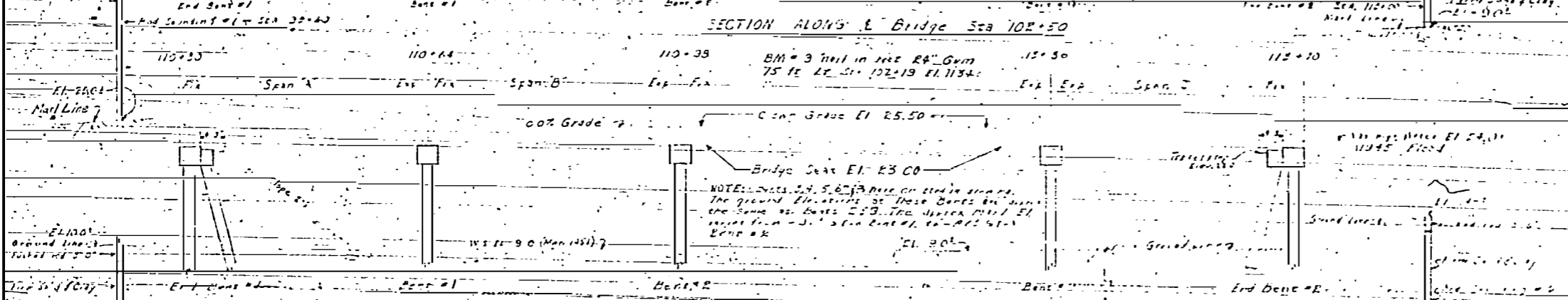
PROJECT NO.	DATE	REVISION	BY
3	N.C. 3-214	5-11-51	



NOTE: Bents 3, 4 & 5 are here shown in section. The ground elevations of these bents are higher than those of Bent 2. The bridge seat elevation is 25.50. The ground line is shown in the drawing.

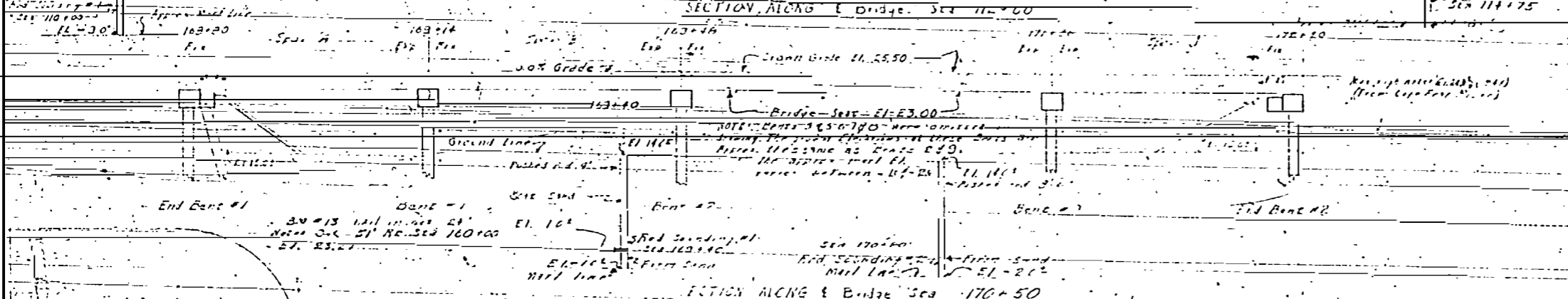
NOTE: The contractor will be required to drive and test piles for bridge at Sta. 102+50 and one for bridge at Sta. 112+00. The contractor shall drive the same size and section as the 18" x 18" concrete piles. The test piles shall be installed in the ground as specified by the Engineer. See Specs.

TEST PILES: 18" x 18" concrete piles to be driven at Sta. 102+50, Sta. 112+00 and Sta. 112+50. (B-1000)



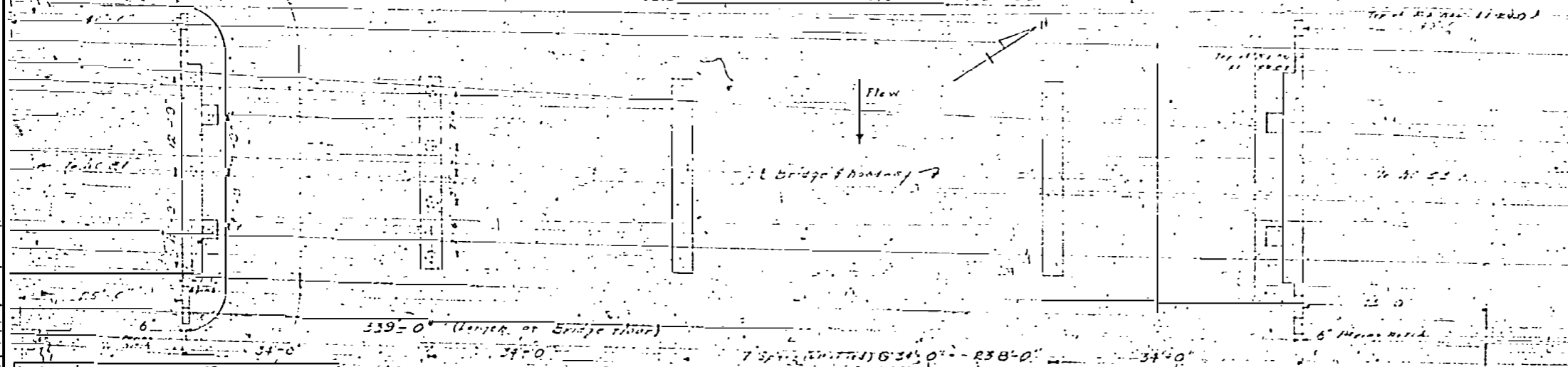
TOTAL BILL-OF-MATERIAL STA. 102+50

CLASS A	125.0	125.00		
CLASS B	11.0	11.00		
CLASS C	1.0	1.00		
CLASS D	1.0	1.00		
CLASS E	1.0	1.00		
CLASS F	1.0	1.00		
CLASS G	1.0	1.00		
CLASS H	1.0	1.00		
CLASS I	1.0	1.00		
CLASS J	1.0	1.00		
CLASS K	1.0	1.00		
CLASS L	1.0	1.00		
CLASS M	1.0	1.00		
CLASS N	1.0	1.00		
CLASS O	1.0	1.00		
CLASS P	1.0	1.00		
CLASS Q	1.0	1.00		
CLASS R	1.0	1.00		
CLASS S	1.0	1.00		
CLASS T	1.0	1.00		
CLASS U	1.0	1.00		
CLASS V	1.0	1.00		
CLASS W	1.0	1.00		
CLASS X	1.0	1.00		
CLASS Y	1.0	1.00		
CLASS Z	1.0	1.00		
Sup. Structure	125.0	125.00		
End Bents	11.0	11.00		
9 Bents	60.3	135.12		
18" x 18" Piles	10.536	10.536		
Apex Cords	37	99		
Total	227.836	227.836		



TOTAL BILL-OF-MATERIAL STA. 170+50

Sup. Structure	112.0	112.00		
End Bents	11.0	11.00		
9 Bents	60.3	135.12		
18" x 18" Piles	10.536	10.536		
Apex Cords	37	99		
Total	220.836	220.836		



PROJECT NO. 3-214
 COLUMBUS-BLADEN COUNTY
 STATION: 102+50
 112+00
 170+50

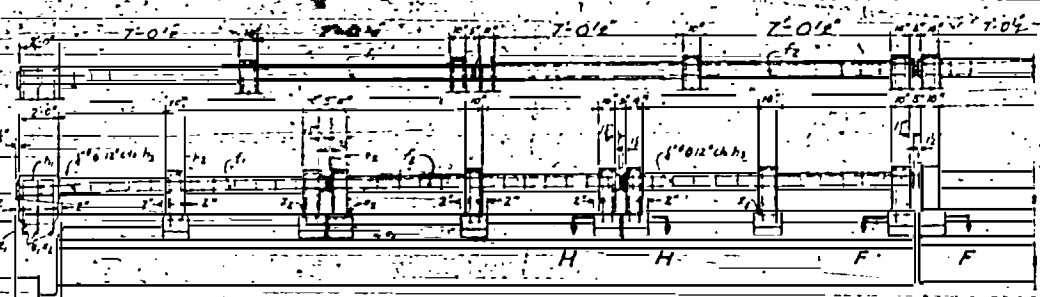
STATE OF NORTH CAROLINA
 STATE HIGHWAY AND
 PUBLIC WORKS COMMISSION
 GENERAL DRAWING
 CAPE FEAR RIVER
 OVERFLOW BRIDGES
 AUG 1951

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

PLAN 5

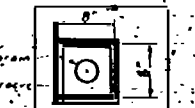
NO.	DATE	REVISION
1	N.C.	3-21-14

NOTE: Drawing notes are for same shall be interpreted in accordance with requirements of Sec 203 of the Specifications, final and approved methods shall be as prescribed in Sec 303 of the Specifications.



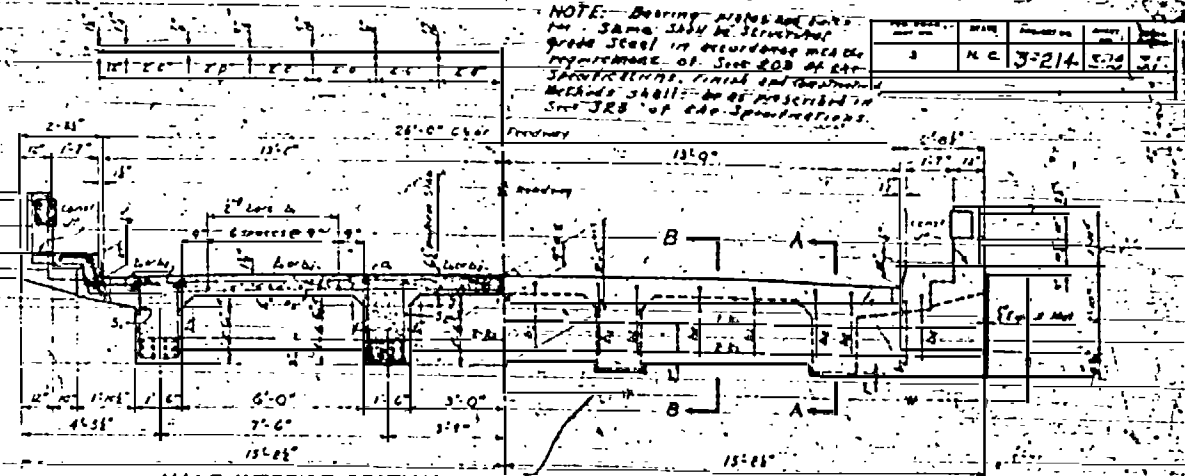
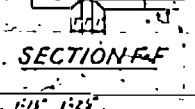
ELEVATION

SECTION H-H



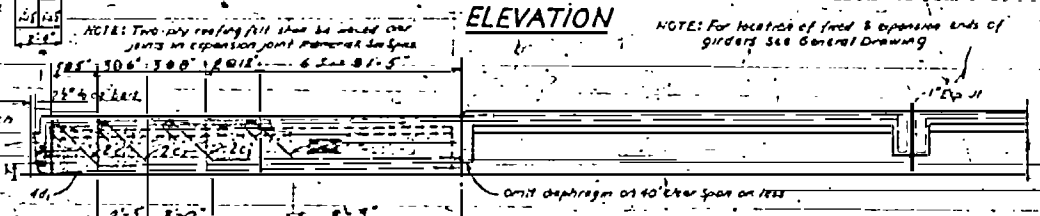
DETAIL OF DRIP BEAD

SECTION F-F



HALF INTERIOR SECTION

HALF END VIEW



SECTION A-A

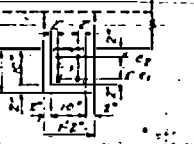
SECTION B-B

END POST



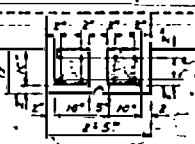
END POST

SINGLE POST



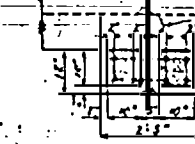
SINGLE POST

DOUBLE POST

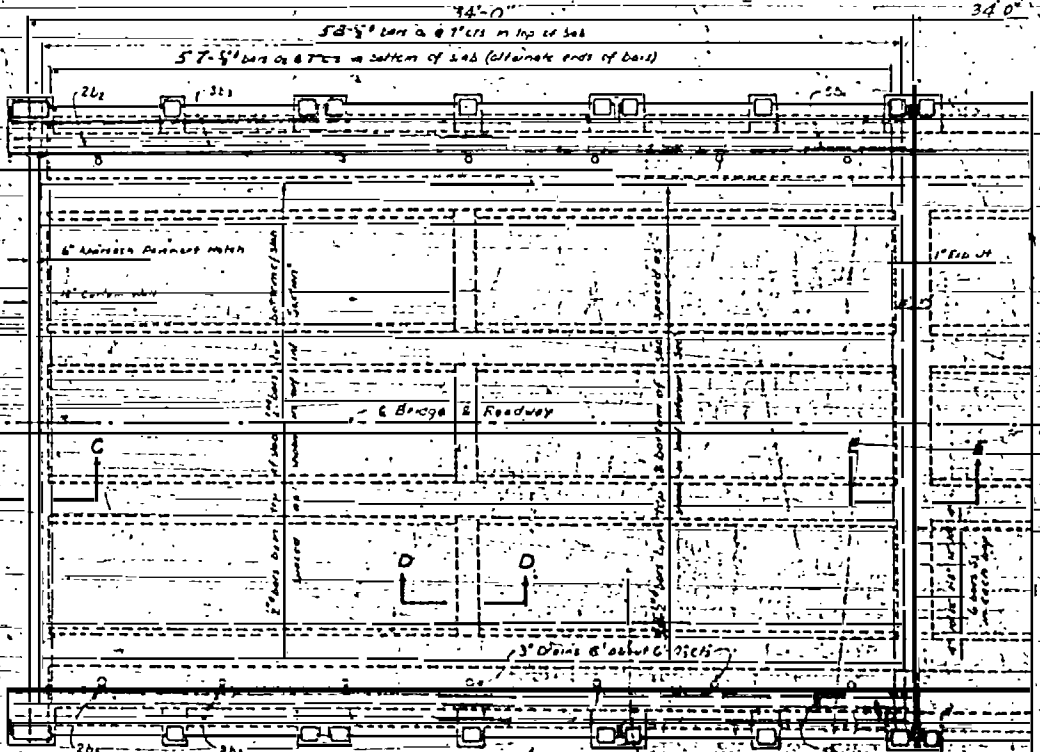


DOUBLE POST

DOUBLE POST AT BENT



DOUBLE POST AT BENT



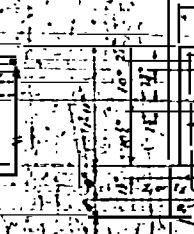
PLAN

SECTION C-C (POST AND BENT)



SECTION C-C (POST AND BENT)

SECTION D-D



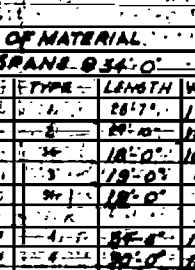
SECTION D-D

SECTION E-E



SECTION E-E

GIRDER DETAIL



GIRDER DETAIL

SECTION THRU CURB



DESIGN DATA

Specifications: A.A.S.H.O.
 Assumed Live Load: HS-20
 Impact Allowance: See Specifications
 Reinforcing steel in Tension: 60,000 lbs per sq in
 Reinforcing steel in Compression: 40,000 lbs per sq in
 Concrete in Compression: 3,000 lbs per sq in
 Shear: Class A Concrete
 90 lbs per cu yd

GENERAL NOTE

CONCRETE: Class A concrete using the 3/4" size No. 5 coarse aggregate shall be used throughout.
 CHAMBERS: All exposed corners of concrete shall be chamfered. Chamfering shall be done in one operation, allowing no time for set to take place between them.

REINFORCING STEEL: All reinforcing steel shall be determined by the engineer. All dimensions shall be to the center of bars. The spacing of bars shall be as shown on plans. Spacing shall be permitted.

DIMENSION JOINT MATERIAL: Expansion material may be either rubber compound or cork forming to the requirements of A.A.S.H.O. Spec. 103.

ANCHOR BOLTS: A drawing of anchor bolts shall be submitted to the engineer for approval.

NAME PLATES: Two name plates shall be placed on the bridge at the side of each span and shall be placed at the end of the bridge.

MATERIAL AND WORKMANSHIP: All materials shall be in accordance with the North Carolina State Highway and Public Works Department.

BILL OF MATERIAL

10 SPANS @ 34'-0"

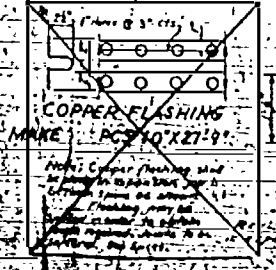
BAR	SIZE	TYPE	LENGTH	WEIGHT
1	5/8"	1	26'-7"	1729.1
2	5/8"	2	26'-0"	1678.4
3	5/8"	3	18'-0"	1074.6
4	3/4"	4	18'-0"	1074.6
5	1/2"	5	18'-0"	1074.6
6	1/2"	6	18'-0"	1074.6
7	1/2"	7	18'-0"	1074.6
8	1/2"	8	18'-0"	1074.6
9	1/2"	9	18'-0"	1074.6
10	1/2"	10	18'-0"	1074.6
11	1/2"	11	18'-0"	1074.6
12	1/2"	12	18'-0"	1074.6
13	1/2"	13	18'-0"	1074.6
14	1/2"	14	18'-0"	1074.6
15	1/2"	15	18'-0"	1074.6
16	1/2"	16	18'-0"	1074.6
17	1/2"	17	18'-0"	1074.6
18	1/2"	18	18'-0"	1074.6
19	1/2"	19	18'-0"	1074.6
20	1/2"	20	18'-0"	1074.6
21	1/2"	21	18'-0"	1074.6
22	1/2"	22	18'-0"	1074.6
23	1/2"	23	18'-0"	1074.6
24	1/2"	24	18'-0"	1074.6
25	1/2"	25	18'-0"	1074.6
26	1/2"	26	18'-0"	1074.6
27	1/2"	27	18'-0"	1074.6
28	1/2"	28	18'-0"	1074.6
29	1/2"	29	18'-0"	1074.6
30	1/2"	30	18'-0"	1074.6

PROJECT NO. 111

COLUMBUS - BLADEN COUNTY

STATION: 108+00 TO 118+00

STATE OF NORTH CAROLINA
 STATE HIGHWAY AND PUBLIC WORKS COMMISSION
 STANDARD REINFORCED CONCRETE DECK GIRDER SPAN FOR ROAD BRIDGE



COPPER FLASHING

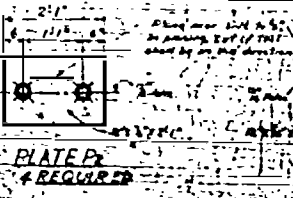


PLATE B

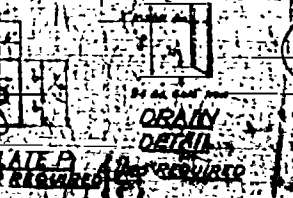
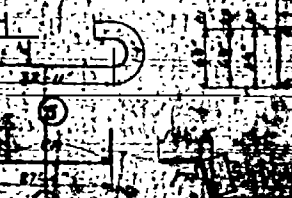
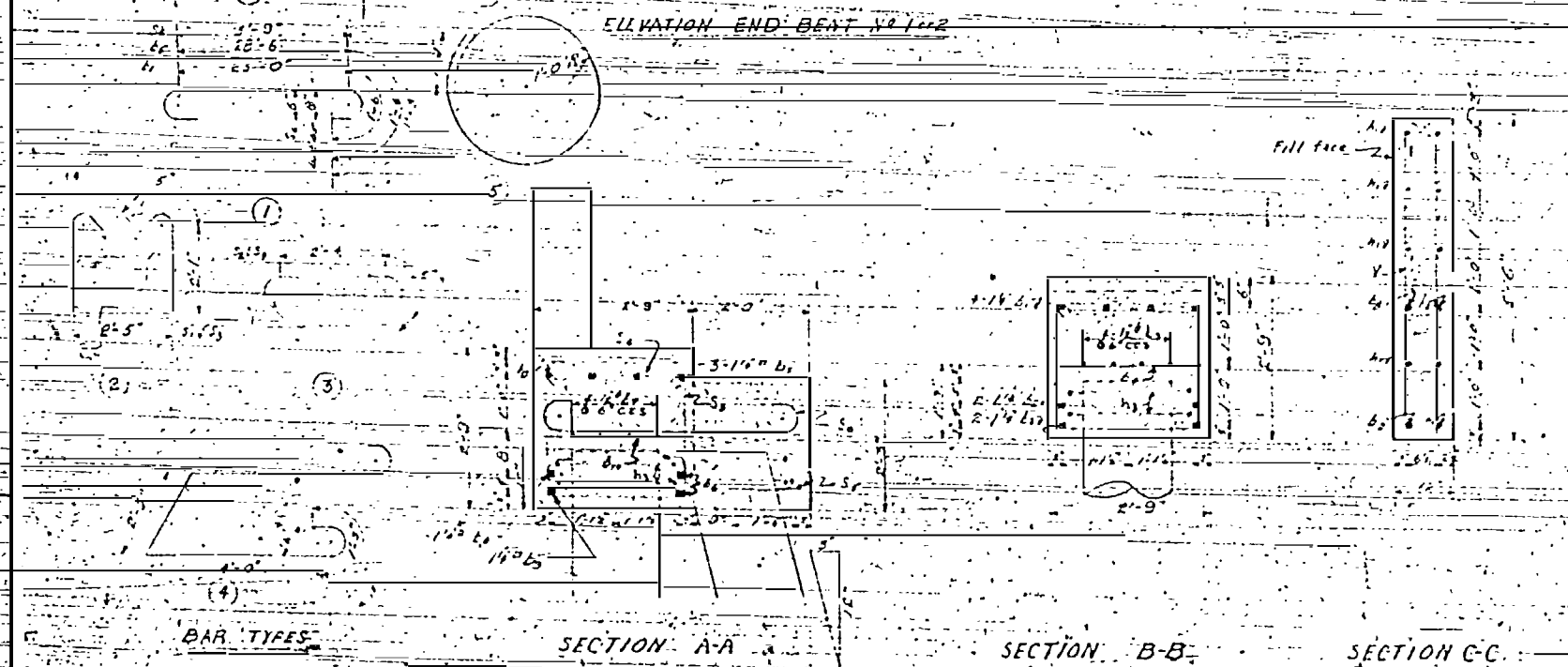
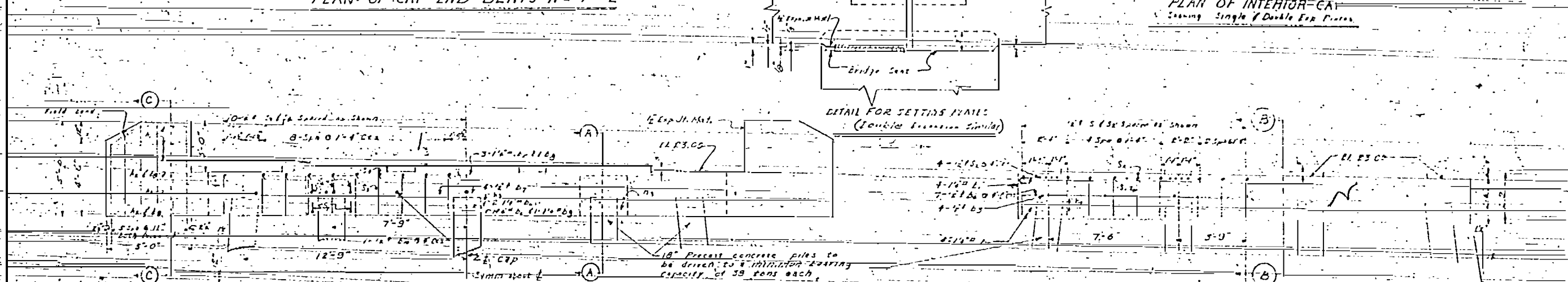
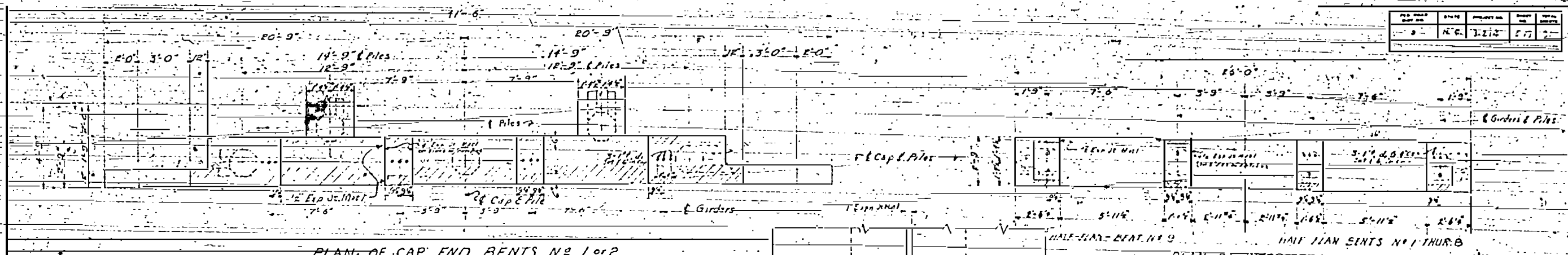


PLATE A



DRAIN DETAIL

PROJECT NO.	DATE	SCALE	BY	CHECKED
102-50	7-27-51	1/4" = 1'-0"	J.P.	J.P.



BILL OF MATERIALS END BENT						BILL OF MATERIALS INT. BENT					
Bar No.	Size	Type	Length	Wt.	Remarks	Bar No.	Size	Type	Length	Wt.	Remarks
1a	1 1/2"	1	21'-6"	502		1a	1 1/2"	1	28'-0"	533	
1b	3"	1	23'-0"	462		1b	4"	1	25'-0"	545	
2a	1 1/2"	1	15'-7"	33		2a	1 1/2"	1	25'-0"	49	
2b	1 1/2"	1	41'-2"	219		2b	1 1/2"	1	2'-5"	11	
2c	1 1/2"	1	41'-2"	219		2c	1 1/2"	1	2'-5"	11	
2d	1 1/2"	1	2'-5"	11		2d	1 1/2"	1	2'-5"	11	
3a	1 1/2"	2	7'-5"	50		3a	1 1/2"	2	7'-5"	84	
3b	1 1/2"	3	3'-2"	42		3b	1 1/2"	3	3'-2"	70	
3c	1 1/2"	4	18'-0"	53		3c	1 1/2"	4	18'-0"	53	
3d	1 1/2"	1	6'-3"	38		3d	1 1/2"	1	6'-3"	38	
3e	1 1/2"	1	3'-0"	26		3e	1 1/2"	1	3'-0"	26	
4a	1 1/2"	1	4'-0"	31		4a	1 1/2"	1	4'-0"	31	
4b	1 1/2"	1	7'-9"	41		4b	1 1/2"	1	7'-9"	41	
4c	1 1/2"	1	8'-0"	53		4c	1 1/2"	1	8'-0"	53	
4d	1 1/2"	1	3'-2"	26		4d	1 1/2"	1	3'-2"	26	

Reinforcing Steel - lbs. 1512
Class A Concrete - cu. yd. 6.7
18" Precast Concrete Piles - No. 1
Front Steel - Bent # 3 only - 1416

Concrete displaced by Air
heads has been deducted.

Only 4 bars on bents with double expansion (part 19)

PROJECT NO. 102-50
COUNTY OF BLADEN COUNTY
STATION: 102+50
112+50
170+50
INTERIOR END BENTS

STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION

SUBSTRUCTURE

JULY 1951

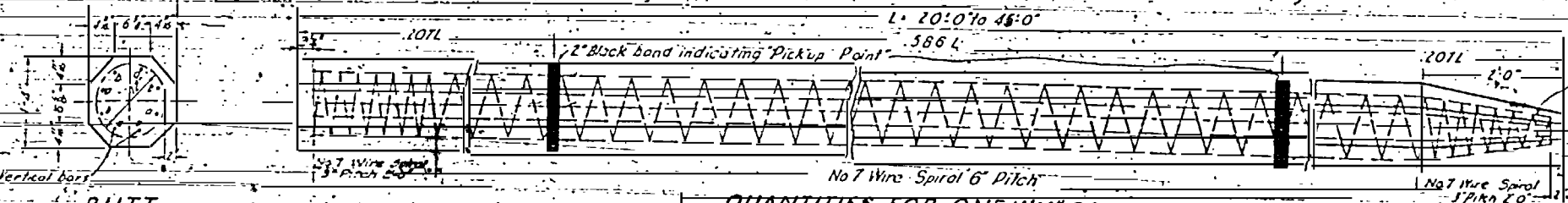
DESIGNED BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

1-4" OCTAGONAL PILE

PROJECT NO.	3-214
DATE	1-20-51

GENERAL NOTE

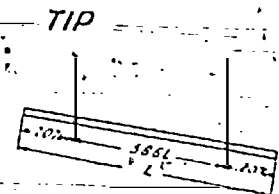
Concrete shall be Class 2. Coarse aggregate shall consist of crushed stone only, standard size No. 3. All reinforcing steel shall be deformed bars. No splices of bars will be permitted. The usual lapping shall be used to the vertical bars at intervals of not more than 2'-0". In driving piles a method approved by the Engineer shall be used, whereby the head of the pile is not damaged. All material and workmanship shall conform to the specifications of the North Carolina State Highway and Public Works Commission.



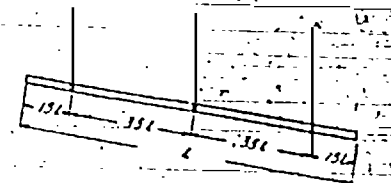
Weight of #7 wire is considered as .0356 lbs per ft.
 American Steel and Wire Co's Standard.
 Concrete per lin ft of pile = 0.0345 Cu Yds.
 Concrete in point = 0.035 Cu Yds.
 Wire per lin ft of pile = 6" pitch = 0.532 lbs.
 Wire per lin ft of pile = 3" pitch = 1.053 lbs.
 Wire in Tip = 1.2 lbs.

QUANTITIES FOR ONE 1-4" OCTAGONAL PILE

Length	VERTICAL REIN. BARS			TOTAL REIN. ST. LBS.	CONCRETE CU YDS.	PILE WT. TONS	TWO PICKUP POINTS		THREE PICKUP POINTS	
	Bar No.	Size	Length				2071	586 L	151	151
20'-0"	8	4"	19'-7"	163	1.04	2.11	4'-2"	11'-8"		
25'-0"	8	4"	24'-7"	213	1.31	2.65	5'-2"	14'-8"		
30'-0"	8	4"	29'-7"	256	1.58	3.20	6'-2"	17'-7"		
35'-0"	8	4"	34'-7"	304	1.85	3.75	7'-3"	20'-6"		
40'-0"	8	4"	39'-7"	352	2.13	4.31	8'-3"	23'-5"		
45'-0"	8	4"	44'-7"	400	2.40	4.86	9'-4"	26'-4"		
50'-0"	8	4"	49'-7"	448	2.67	5.41	10'-4"	29'-3"		
55'-0"	8	4"	54'-7"	496	2.94	5.96	11'-4"	32'-2"		
60'-0"	8	4"	59'-7"	544	3.21	6.51	12'-4"	35'-1"		

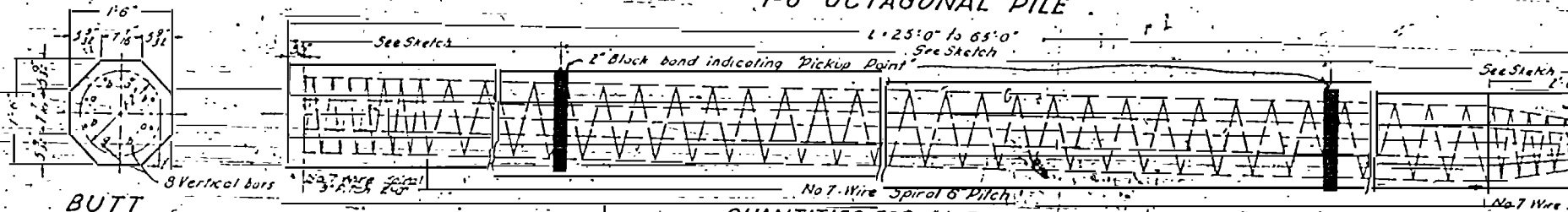


METHOD OF PICKING UP PILES UNDER 60 FEET 2 PICKUP POINTS



METHOD OF PICKING UP PILES 60 FEET AND OVER 3 PICKUP POINTS

1-6" OCTAGONAL PILE



Concrete per half of pile = 0.069 Cu Yds.
 Concrete in point = 0.016 Cu Yds.
 Wire per half of pile = 6" pitch = 0.518 lbs.
 Wire per half of pile = 3" pitch = 1.223 lbs.
 Wire in Tip = 1.0 lbs.

QUANTITIES FOR ONE 1-6" OCTAGONAL PILE

Length	VERTICAL REIN. BARS			TOTAL REIN. ST. LBS.	CONCRETE CU YDS.	PILE WT. TONS	TWO PICKUP POINTS		THREE PICKUP POINTS	
	Bar No.	Size	Length				2071	586 L	151	151
25'-0"	8	4"	24'-7"	213	1.31	2.65	5'-2"	14'-8"		
30'-0"	8	4"	29'-7"	256	1.58	3.20	6'-2"	17'-7"		
35'-0"	8	4"	34'-7"	304	1.85	3.75	7'-3"	20'-6"		
40'-0"	8	4"	39'-7"	352	2.13	4.31	8'-3"	23'-5"		
45'-0"	8	4"	44'-7"	400	2.40	4.86	9'-4"	26'-4"		
50'-0"	8	4"	49'-7"	448	2.67	5.41	10'-4"	29'-3"		
55'-0"	8	4"	54'-7"	496	2.94	5.96	11'-4"	32'-2"		
60'-0"	8	4"	59'-7"	544	3.21	6.51	12'-4"	35'-1"		
65'-0"	8	4"	64'-7"	592	3.48	7.06	13'-4"	38'-0"		

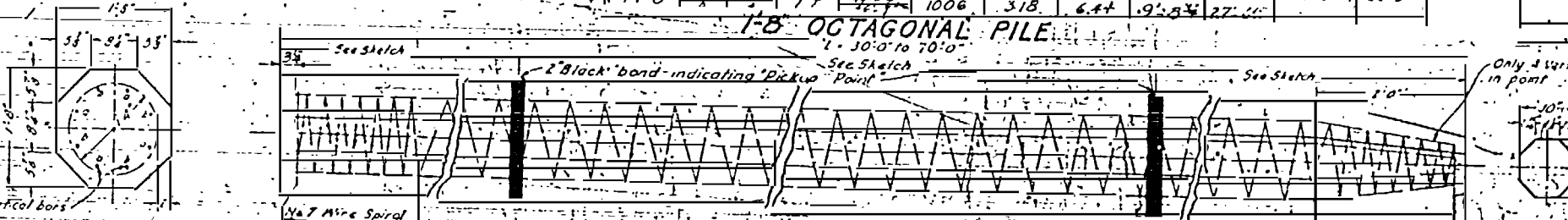
TIP

DETAIL OF BARS "b" FOR 1-4, 1-6 AND 1-8 PILES

QUANTITIES FOR ONE 1-6" OCTAGONAL PILE

Length	VERTICAL REIN. BARS			TOTAL REIN. ST. LBS.	CONCRETE CU YDS.	PILE WT. TONS	TWO PICKUP POINTS		THREE PICKUP POINTS	
	Bar No.	Size	Length				2071	586 L	151	151
25'-0"	8	4"	24'-7"	213	1.31	2.65	5'-2"	14'-8"		
30'-0"	8	4"	29'-7"	256	1.58	3.20	6'-2"	17'-7"		
35'-0"	8	4"	34'-7"	304	1.85	3.75	7'-3"	20'-6"		
40'-0"	8	4"	39'-7"	352	2.13	4.31	8'-3"	23'-5"		
45'-0"	8	4"	44'-7"	400	2.40	4.86	9'-4"	26'-4"		
50'-0"	8	4"	49'-7"	448	2.67	5.41	10'-4"	29'-3"		
55'-0"	8	4"	54'-7"	496	2.94	5.96	11'-4"	32'-2"		
60'-0"	8	4"	59'-7"	544	3.21	6.51	12'-4"	35'-1"		
65'-0"	8	4"	64'-7"	592	3.48	7.06	13'-4"	38'-0"		

1-8" OCTAGONAL PILE



Concrete per lin ft of pile = 0.0951 Cu Yds.
 Concrete in point = 0.15 Cu Yds.
 Wire per lin ft of pile = 6" pitch = 0.705 lbs.
 Wire per lin ft of pile = 3" pitch = 1.403 lbs.
 Wire in tip = 1.2 lbs.

QUANTITIES FOR ONE 1-8" OCTAGONAL PILE

Length	VERTICAL REIN. BARS			TOTAL REIN. ST. LBS.	CONCRETE CU YDS.	PILE WT. TONS	TWO PICKUP POINTS		THREE PICKUP POINTS	
	Bar No.	Size	Length				2071	586 L	151	151
30'-0"	8	4"	29'-7"	256	1.58	3.20	6'-2"	17'-7"		
35'-0"	8	4"	34'-7"	304	1.85	3.75	7'-3"	20'-6"		
40'-0"	8	4"	39'-7"	352	2.13	4.31	8'-3"	23'-5"		
45'-0"	8	4"	44'-7"	400	2.40	4.86	9'-4"	26'-4"		
50'-0"	8	4"	49'-7"	448	2.67	5.41	10'-4"	29'-3"		
55'-0"	8	4"	54'-7"	496	2.94	5.96	11'-4"	32'-2"		
60'-0"	8	4"	59'-7"	544	3.21	6.51	12'-4"	35'-1"		
65'-0"	8	4"	64'-7"	592	3.48	7.06	13'-4"	38'-0"		
70'-0"	8	4"	69'-7"	640	3.75	7.61	14'-4"	40'-9"		

TIP

SUMMARY OF PILES

No.	Length	Diameter	Concrete Cu Yds.	Pile Weight Tons
2070	45'-0"	1-4"	139.8	34224
1610	35'-0"	1-6"	108.1	27596
1288	28'-0"	1-6"	84.0	21640
300	23'-0"	1-6"	19.9	5300
600	28'-0"	1-6"	39.8	10160
REINFORCING STEEL LBS.			77200	
CONCRETE CU YDS.			307.6	
PILE WEIGHT TONS			7720	

PROJECT NO. 3-214
 COLUMBUS-BLADE COUNTY
 102+50
 STATION: 112+00
 116+80
 265+60
 331+90

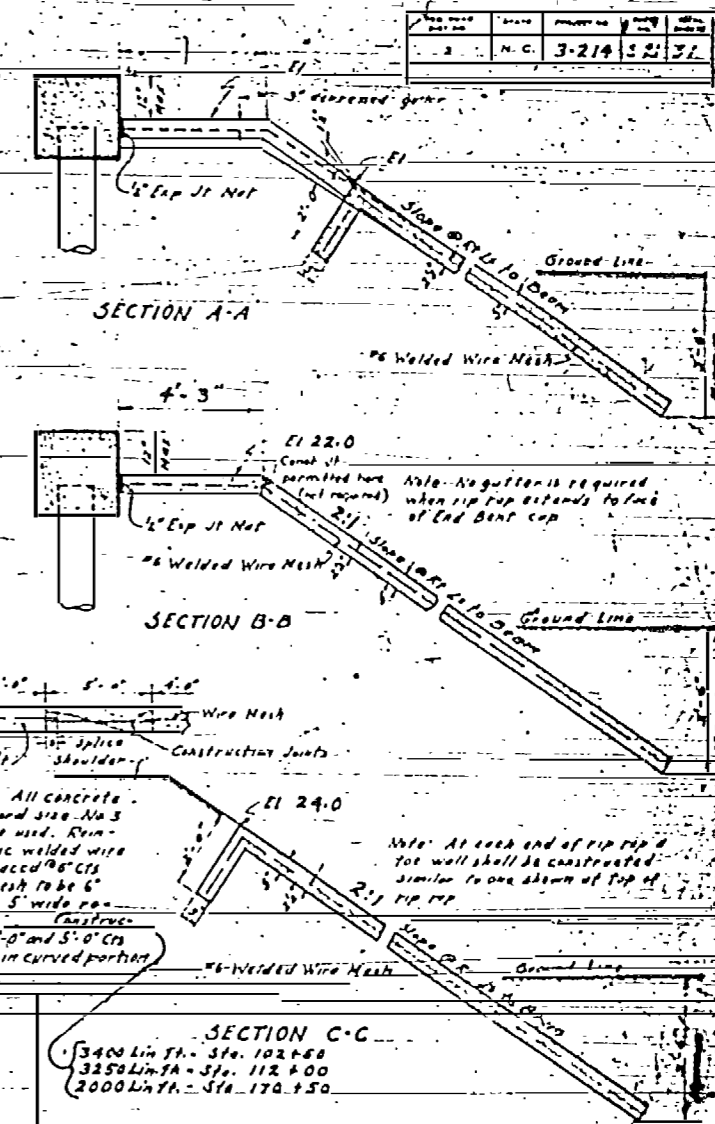
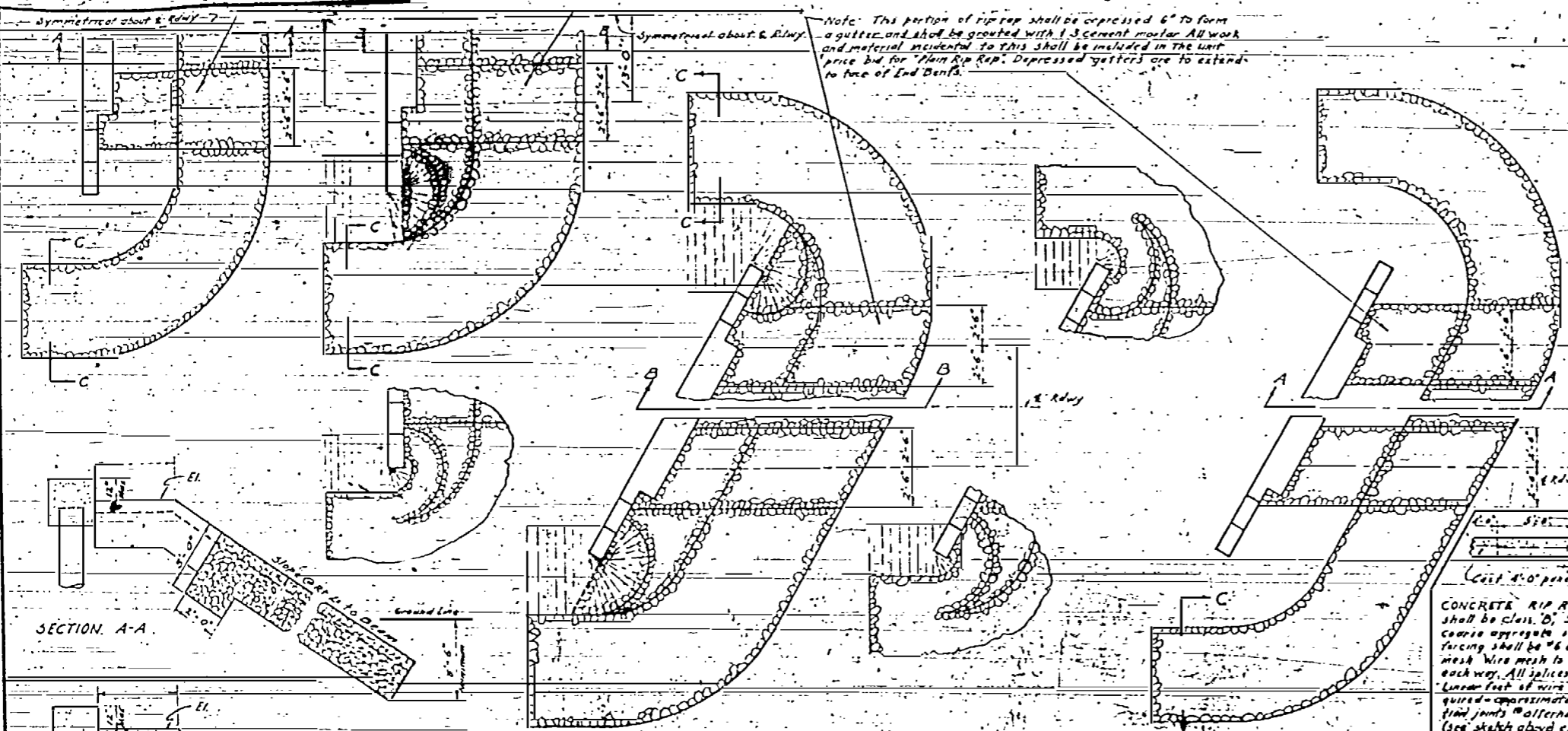
STATE OF NORTH CAROLINA
 STATE HIGHWAY AND
 PUBLIC WORKS COMMISSION

STANDARD
 PRE-GOST
 12 C 415.5
 10/1/51

APPROVED	DATE
DESIGNED BY	DATE
CHECKED BY	DATE
DRAWN BY	DATE

PROJECT NO.	DATE	REVISED	BY	DATE
3-214	12-31			

Note: The portion of rip rap shall be depressed 6" to form a gutter and shall be grouted with 1:3 cement mortar. All work and material incidental to this shall be included in the unit price bid for Plain Rip Rap. Depressed gutters are to extend to face of End Benches.

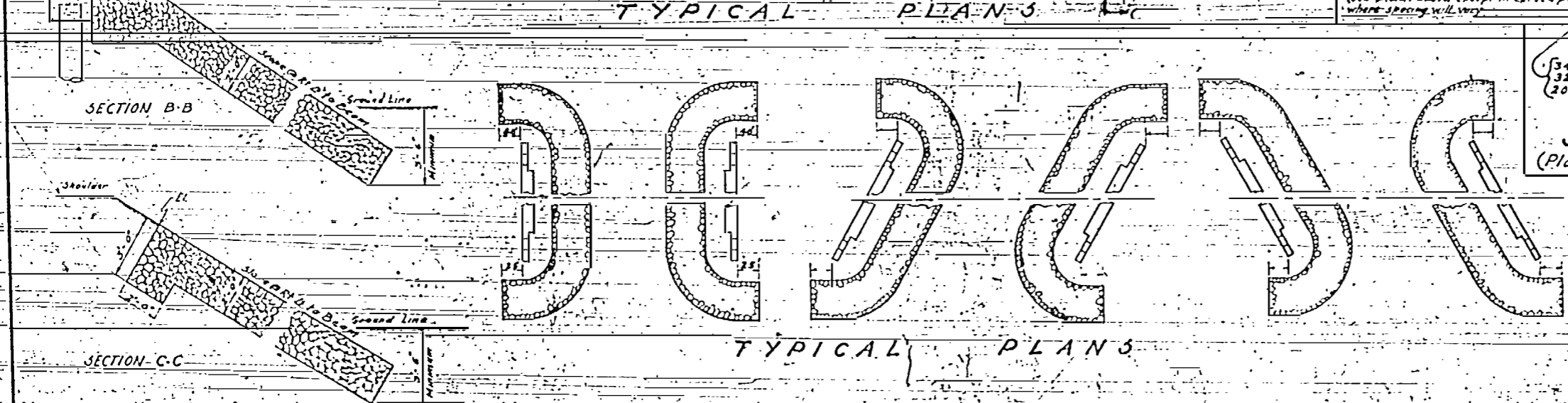


CONCRETE RIP RAP - All concrete shall be class 'D' standard size. No 5 coarse aggregate shall be used. Reinforcing shall be #6 electric welded wire mesh. Wire mesh to be spaced #6 cts each way. All splices of mesh to be 6" long. Splices of wire mesh 5' wide required - approximately 4'-0" and 5'-0" cts (see sketch above except in curved portion where spacing will vary).

SECTION C-C
 3400 Lin Ft. - Sta. 102+50
 3250 Lin Ft. - Sta. 112+00
 2000 Lin Ft. - Sta. 170+50

SECTIONS FOR CONCRETE RIP RAP
 (Plan of concrete rip rap similar to that shown for plain rip rap)

PROJECT NO. 3-214
 COLUMBUS-BLADEN COUNTY
 STATION: 102+50
 112+00
 170+50



Note: At each end of rip rap a toe wall shall be constructed similar to one shown at top of rip rap.

PLAIN RIP RAP DETAILS

APPROVAL	DATE
STANDARD	DATE

STATE OF NORTH CAROLINA
 STATE HIGHWAY AND
 PUBLIC WORKS COMMISSION

**STANDARD
 RIP RAP
 DETAILS**

OCT 1947

Revised for county job # 1015 dated 12-20-48

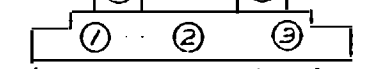
BRIDGE Bladen Co 51

STA 170+50

NC 3-218 18 54

END BENT N°1

Book N° 7 Page N° 30



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28'	0	28	20-2	75
2	"	"	"	20-1/2	85.7
3	"	"	"	20-1	100
4	"	"	"	20-3/4	109.1
5	"	"	"	CA 271	Refused
TOTALS			09	139.1	

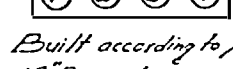
3/4 Pile Cut Off 7
1 Pile Cut off @ 1'0" 1.0
Pile Quantity = 140.8

REINFORCING STEEL
5-28" Precast conc. piles plus 1700
Deduct for CA Cut Off
1/4 (63) of b bars @ (1.502)8
1/4 (63) wire mesh @ (1.228) = 2
Net Pile Steel 1638 Lbs
Reinf steel End Bent N°1 2631
TOTAL 3739 Lbs

CLASS "A" CONCRETE
Plans 106 Cu Yds

BENT N°1

Book N° 7 Page N° 31



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

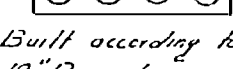
Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	200-12	938
2	"	"	"	300-12	107.1
3	"	"	"	200-12	938
4	"	"	"	200-12	938
TOTALS			0	112'	

REINFORCING STEEL
Plans 1512
4-28" Precast Conc. Piles 1360
TOTAL 2872 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

BENT N°4

Book N° 7 Page N° 34



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	200-12	938
2	"	18	262	"	"
3	"	0	28	250-12	101.4
4	"	0	"	"	"
TOTALS			18	110.2'	

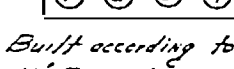
REINFORCING STEEL
4-28" Precast conc. piles plus 1360
Deduct for 18 cut off
1/4 (133) of b bars @ (1.502)8
1/4 (53) wire mesh @ (1.228) = 5
Net Pile Steel 1355
Reinf steel Bent N°4 1512
TOTAL 2867 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

PILE PILE QUANTITY
NET LENGTH 110.2'
3/4 Pile Cut Off 1.35
1 Pile Cut off @ 1'0" 1.00
PILE QUANTITY 112.55

BENT N°2

Book N° 7 Page N° 32



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

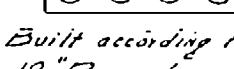
Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	300-12	107.1
2	"	"	"	250-12	101.4
3	"	"	"	"	"
4	"	"	"	"	"
TOTALS			0	112'	

REINFORCING STEEL
Plans 1512
4-28" Precast conc. piles 1360
TOTAL 2872 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

BENT N°5

Book N° 7 Page N° 35



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

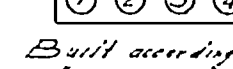
Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	200-12	938
2	"	"	"	"	"
3	"	"	"	"	"
4	"	"	"	150-12	833
TOTALS			0	112'	

REINFORCING STEEL
Plans 1512
4-28" Precast Conc. piles 1360
TOTAL 2872 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

BENT N°3

Book N° 7 Page N° 33



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

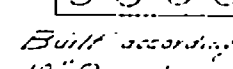
Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	300-12	107.1
2	"	"	"	700-12	128.1
3	"	"	"	300-12	107.1
4	"	"	"	300-12	107.1
TOTALS			0	112'	

REINFORCING STEEL
Plans 1512
4-28" Precast conc. piles 1360
TOTAL 2872 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

BENT N°6

Book N° 7 Page N° 36



Built according to plans
18" Precast conc. piles
Hammer: N°1 Vulcan

Pile N°	Length	Cut Off	Net Length	Last Blows	Bearing
1	28	0	28	100-12	682
2	"	"	"	"	"
3	"	"	"	"	"
4	"	"	"	"	"
TOTALS			0	112'	

REINFORCING STEEL
Plans 1512
4-28" Precast conc. piles 1360
TOTAL 2872 Lbs.

CLASS "A" CONCRETE
Plans 67 Cu Yds.

SUPERSTRUCTURE
Book N° 7 Page N° 43
Built according to plans
CLASS "A" CONCRETE
Plans 412 Cu Yds.
REINFORCING STEEL
Plans 128,254 Lbs.

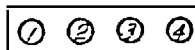
A DIFFERENTIAL CURBS
Book N° 7 Page N° 43
Built according to plans
CLASS "A" CONCRETE
Plans 3.7 Cu Yds.
REINFORCING STEEL
Plans 99 Lbs.

Computed by: J.C. R. K.
Checked by: D. O. Smith

BRIDGE
STA. 170+50

Bladen Co 51

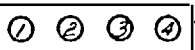
NO. 5212 49.54

BENT N° 7
Book N° 7  Page N° 37

Built according to plans
18" Precast conc. piles
Hammer: N° 1 Vulcan.
Pile N° Length Cut Off Net Length Last Blows Bearing
1 28 0 28 200-12 938
2
3
4
TOTALS 0 112'

REINFORCING STEEL
Plans 1512
4-28' Precast conc. piles 1360
TOTAL 2872 Lbs.

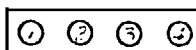
CLASS A CONCRETE
Plans 6.7 Cu Yds.

BENT N° 8
Book N° 7  Page N° 38

Built according to plans
18" Precast conc. piles
Hammer: N° 1 Vulcan.
Pile N° Length Cut Off Net Length Last Blows Bearing
1 28 0 28 400-12 115.4
2 300-12 107.1
3
4
TOTALS 0 112'

REINFORCING STEEL
Plans 1512
4-28' Precast conc. piles 1360
TOTAL 2872 Lbs.

CLASS A CONCRETE
Plans 6.7 Cu Yds.

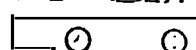
BENT N° 9
Book N° 7  Page N° 39

Built according to plans
18" Precast conc. piles
Hammer: N° 1 Vulcan.
Pile N° Length Cut Off Net Length Last Blows Bearing
1 28 13 267 Refusal
2 . 0 28 400-12 115.4
3 . 0 28 " "
4 . 07 27.3 " "
TOTALS 20 110.0'

3/4 Pile Cut Off 1.5
2 Piles cut off @ 1'-0" 20
Pay Quantity 1135

REINFORCING STEEL
4-28' Precast conc. piles plans 1360
Deduct for 2.0' Cut Off
1/4 (1160) of 6 bars @ (1502) = 5
1/4 (146) wire mesh @ (1220) = 5
Net Pile Steel 1355 Lbs
Reinf. steel for Bent N° 9 1416
TOTAL 2771 Lbs.

CLASS A CONCRETE
Plans 6.7 Cu Yds.

END BENT N° 2
Book N° 7  Page N° 40

Built according to plans
18" Precast conc. piles
Hammer: N° 1 Vulcan.
Pile N° Length Cut Off Net Length Last Blows Bearing
1 28 0 28 150-12 833
2 . 0 28 " "
3 . 12 268 Refusal
4 . 22 258 " "
5 . 25 255 " "
TOTALS 59 134.1'

3/4 Pile Cut Off 1.12
3 Piles cut off @ 1'-0" 300
Pay Quantity 141.52'

REINFORCING STEEL
5-28' Precast conc. piles plans 1700
Deduct for 5.9' Cut Off
1/4 (4072) of 6 bars @ (1502) = 17
1/4 (.23) wire mesh @ (0.618) = 17
1/4 (4.09) wire mesh @ (1220) = 17
Net Pile steel 1683 Lbs
Reinf. steel End Bent N° 2 2041
TOTAL 3724 Lbs.

CLASS A CONCRETE
Plans 10.6 Cu Yds.

SUMMARY OF QUANTITIES

BOOK N° 7 PAGE N° 44

ITEM	SHEET N°	CLASS A CONC. CU YDS.	REINF. STEEL LBS	18" PRECAST CONC. PILES LIN FT	CONC. RIP-RAP SQ. YDS.	UNTR. TIMBER TEST PILES N°
End Bent N° 1	48	106	3739	14080		
Bent N° 1	-	6.7	2872	11200		
" " 2	-	6.7	2872	11200		
" " 3	-	6.7	2872	11200		
" " 4	-	6.7	2867	112.55		
" " 5	-	6.7	2872	11200		
" " 6	-	6.7	2872	11200		
" " 7	49	6.7	2872	11200		
" " 8	-	6.7	2872	11200		
" " 9	-	6.7	2771	11350		
End Bent N° 2	-	106	3724	14152		
Superstructure	48	4120	128254			
Approach Curbs	-	3?	99			
End Bents 1 & 2	50					
TOTALS		1272	161,558	1,292.37	1,024.16	0

See B. & N° 7 Page 44 for breakdown
of concrete cost conc. piles

EXTRA WORK ORDER N° 3-330
BOOK N° 7 PAGE N° 62

Description of Work:
(1) Driving concrete test pile in place
pile N° 2, Bent N° 3, Sta. 170+50. Extra Cost Price \$22036
(2) Driving two 32' unloaded timber test
piles Sta. 170+50 & one at Sta. 331+90. Extra Cost Price 31560
TOTAL EXTRA COST FOR EXTRA WORK ORDER N° 3-330 = 53596

Computed by: G. O. Smith
Checked by: J. C. Perkins

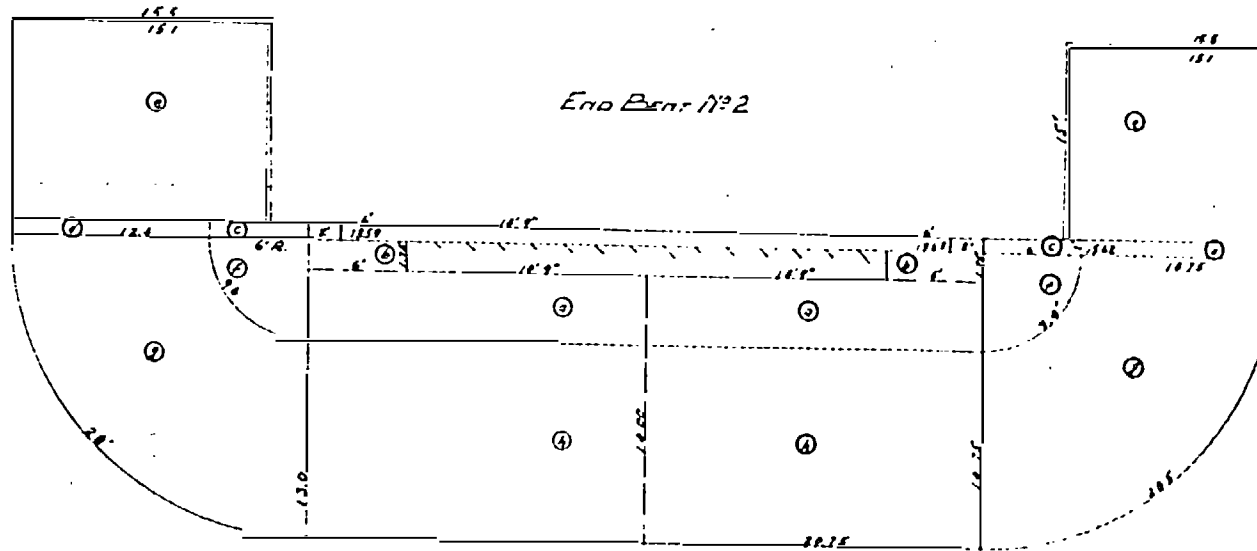
Book No 7 STA 170+50 Page No 42
 CONCRETE RIP RAP END BENTS No 1 & 2

Bladen Co # 51

NC 3-214 50 51

- a = 4(2.5)(2.5) = 186.30
- b = 4(6.38)(2) = 51.04
- c = 4(5.62)(2) = 44.96
- d = 4(3.75)(1) = 90.00
- e = 4(2)(1) = 24.00
- f = 4π(6)² = 113.10
- g = 4(2.5)(1) = 100.00
- h = 2(2.75)(2.5) = 147.50
- h = 2(2.75)(4.0) = 236.00
- i = 4(2.75)(3.0)(2.5) = 222.50
- j = 4(2.075)(2.5) = 207.50
- Top wall = 2(5.4)(1.50) + 2(6.1)(1.50) = 389.32
- Wind Ext. = 4[(6.2)](2.4) = 86.40

9,220.12 Sq Ft
 1,024.46 Sq Yds



END BENT No 1

- a = 2(20.75)(4.25) = 176.38
- b = 2(1.75)(4) = 21.00
- c = 2(1)(4) = 12.00
- d = 1(14) + 1(12) = 28.00
- e = 15(16.0)(1.0)(1.0) = 477.00
- f = 2π(6)² = 56.55
- g = 12(4)(2.75)(1.4) + (9.4)(2.5)(1.4)(2) = 574.40
- h = 2(20.75)(1.0) = 664.00
- Top wall = 2(4.4)(1.00) + (2.9)(1.00) = 96.38
- Wind Ext. = 2[(6.2)](2.4) = 43.20

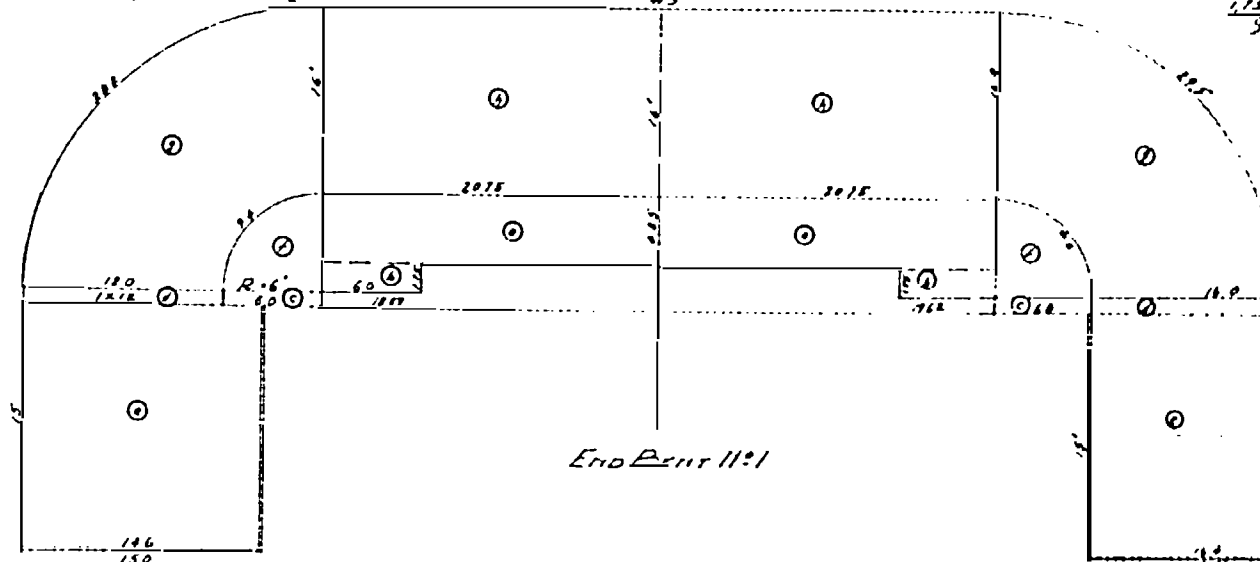
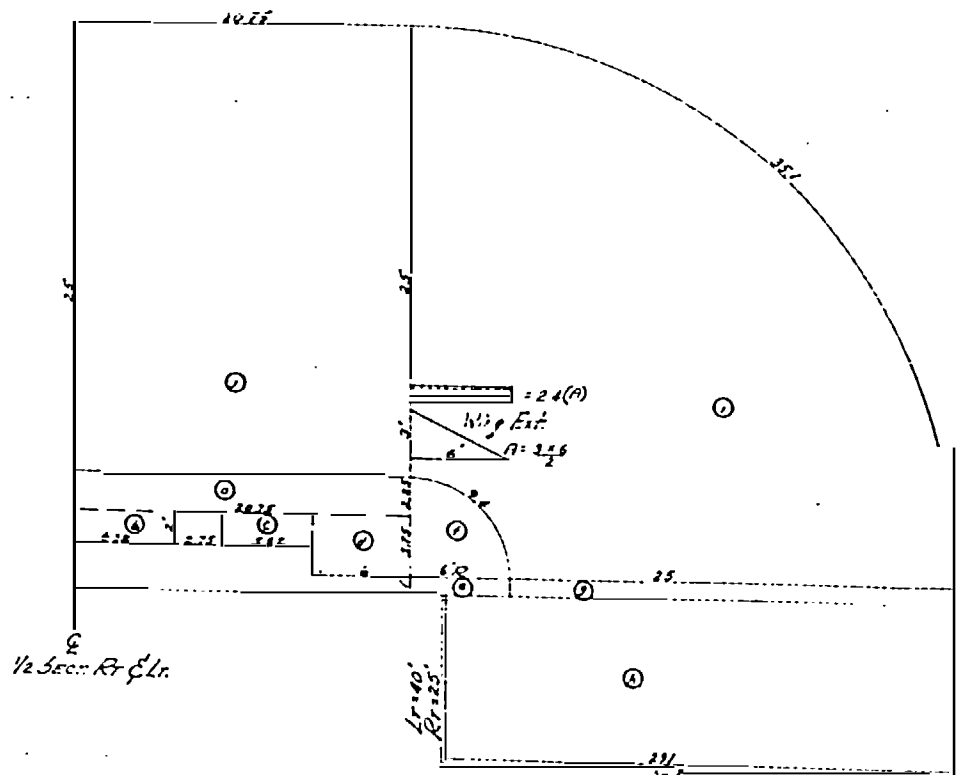
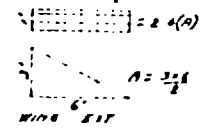
2148.91 = 238.77 Sq Yds
 2148.91 Sq Ft

End Bent No 2

- a = 2(20.75)(4.25) = 176.38
- b = 2(6)(1.75) = 21.00
- c = 2(4)(1) = 12.00
- d = 1(12.75) + 1(12.4) = 27.15
- e = 2(16)(1.0) = 465.00
- f = 2π(6)² = 56.55
- g = 12(4)(2.75)(1.4) + (9.4)(2.5)(1.4)(2) = 574.41
- h = 14(7.5)(1.0)(1.0) + (3.2)(1.0)(1.0) = 95.12
- Top wall = 2(4.4)(1.00) = 43.20
- Wind Ext. = 2[(6.2)](2.4) = 175.432

1,754.32 = 171.92 Sq Yds
 1,754.32 Sq Ft

STA. 331+90
 CONCRETE RIP RAP
 Book No 7 Pages 58 & 59



Computed by:
 G. O. ...
 Checked by:
 J. C. ...