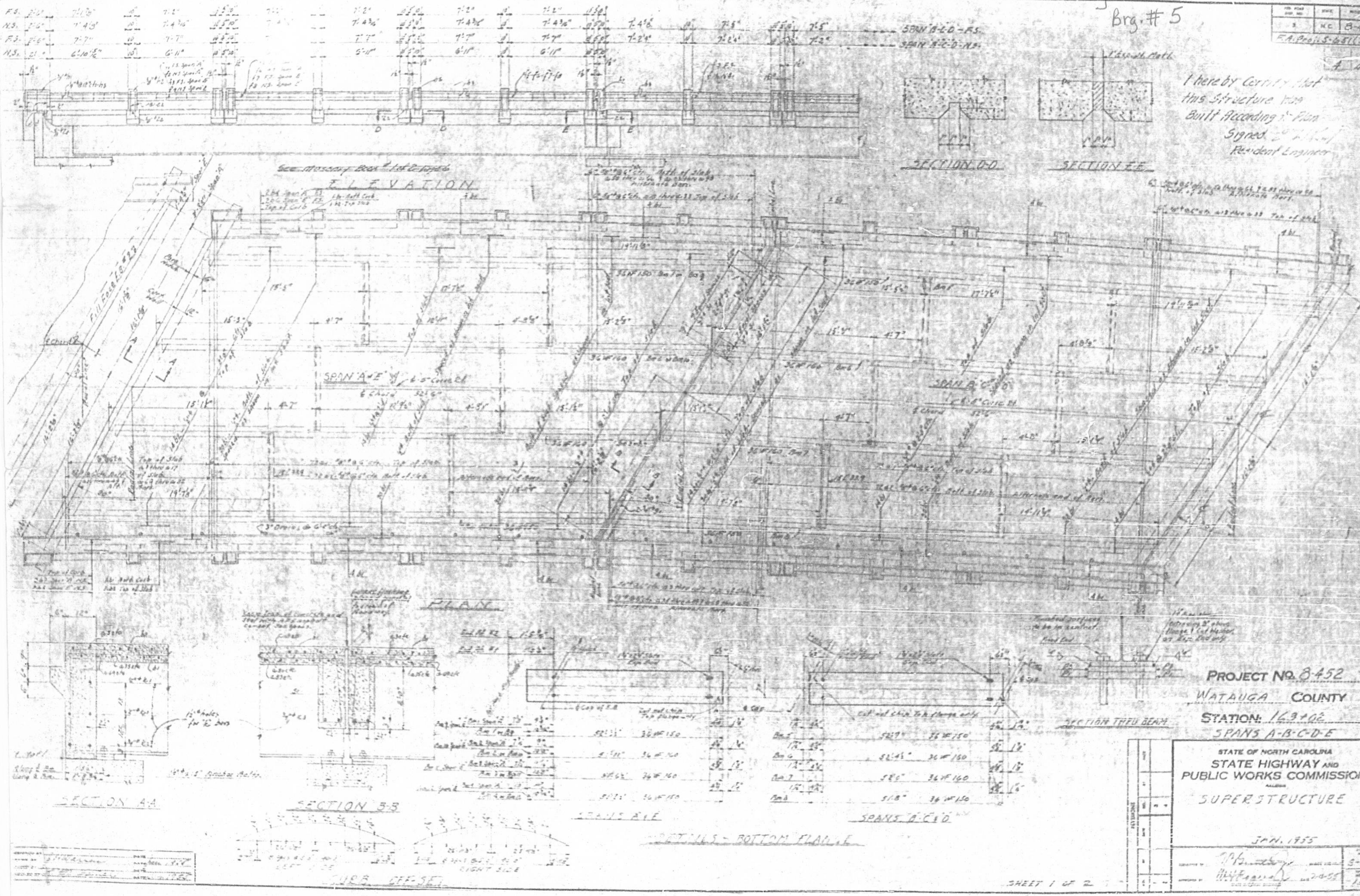
Watauga Co.

Brg. # 5

	STATE	PROJECT NO.
1	N.C.	8-452

F.A. Proj. S-651(3)

I hereby Certify that
this Structure was
Built According to Plan
Signed
Resident Engineer



SPAN A-C-D-F.S.
SPAN A-C-D-N.S.
SECTION D-D
SECTION E-E
ELEVATION
PLAN
SPAN 'A' & 'E'
SPAN 'B' 'C' 'D'
36" WF 150
36" WF 160
SECTION A-A
SECTION B-B
SPANS A & E
SPANS B C & D
DETAILS - BOTTOM FLANGE
SECTION THRU BEAM
LEFT SIDE
RIGHT SIDE
CURB OFF-SET

PROJECT NO. 8-452

WATAUGA COUNTY

STATION: 163+02

SPANS A-B-C-D-E

STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION
RALEIGH

SUPERSTRUCTURE

JAN. 1955

2-4-55

S-2

15

SHEET 1 OF 2

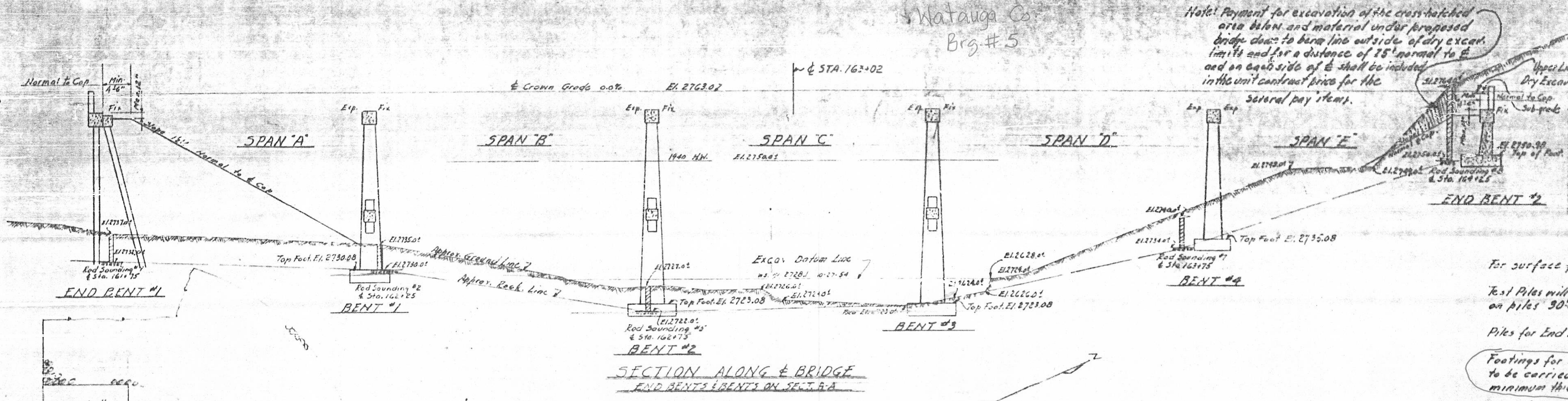
Watauga Co.
Brg #5

FED. ROAD DIV. NO.	STATE	PROJECT NO.
3	N.C.	8-48

F.A. Proj. S-651 (3)

SHEET NO.	TOTAL SHEETS
3	40

Note: Payment for excavation of the cross-hatched area below and material under proposed bridge down to berm line outside of dry excav. limits and for a distance of 25' normal to ℄ and on each side of ℄ shall be included in the unit contract price for the several pay items.



Normal to Cap
Min. 4'-6"
Fix
℄ Crown Grade 0.0% El. 2763.02
℄ STA. 163+02
SPAN "A"
SPAN "B"
SPAN "C"
SPAN "D"
SPAN "E"
Exp.
Fix
1940 H.W. El. 2750.65
Slope 1½:1 Normal to ℄ Cap
Approx. Ground Line
Approx. Rock Line
Excav. Datum Line
Top Foot. El. 2730.08
Top Foot. El. 2723.08
Top Foot. El. 2735.08
Rod Sounding #1 ℄ Sta. 161+75
Rod Sounding #2 ℄ Sta. 162+25
Rod Sounding #5 ℄ Sta. 162+75
Rod Sounding #7 ℄ Sta. 163+75
Rod Sounding #8 ℄ Sta. 164+25
Upper Limit for Dry Excavation
Normal to Cap
Sub-grade
El. 2750.90 Top of Foot.
END BENT #1
BENT #1
BENT #2
BENT #3
BENT #4
END BENT #2
15'-0"

SECTION ALONG ℄ BRIDGE
END BENTS & BENTS ON SECT. B-B

NOTES

Assumed Live Load H15-S12-44

Piles for End Bent #1 shall be driven to a minimum bearing capacity of 28 Tons each.

Computed foundation load for
Bent #1 = 3.75 Tons per sq. ft.
Bent #2 = 3.50 " " " "
Bent #3 = 3.50 " " " "
Bent #4 = 4.00 " " " "
End Bent #2 = 3.25 " " " "

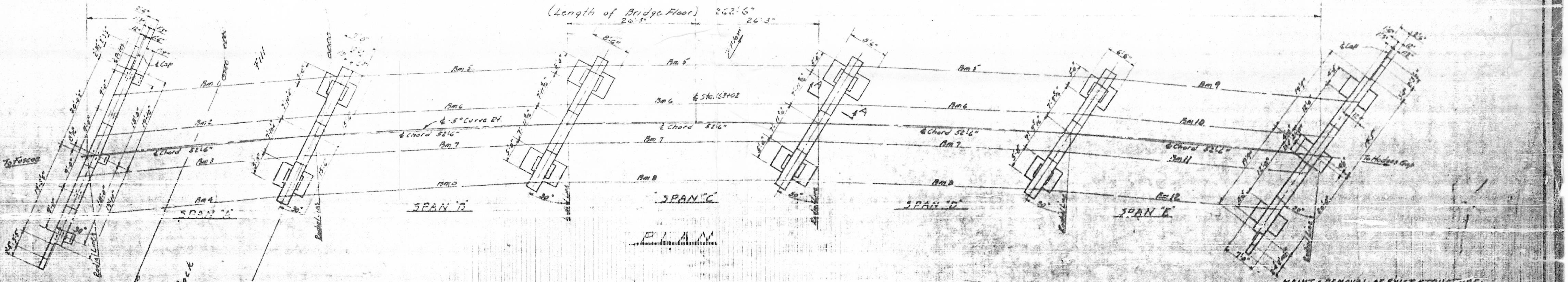
For surface finish requirements, see Special Provisions.

Test Piles will not be required. Order list to be based on piles 30'-0" long.

Piles for End Bent #1 to be driven thru roadway fill.

Footings for Bents #1-#2-#3 & #4 and End Bent #2 to be carried at least 12" into rock with minimum thickness as shown.

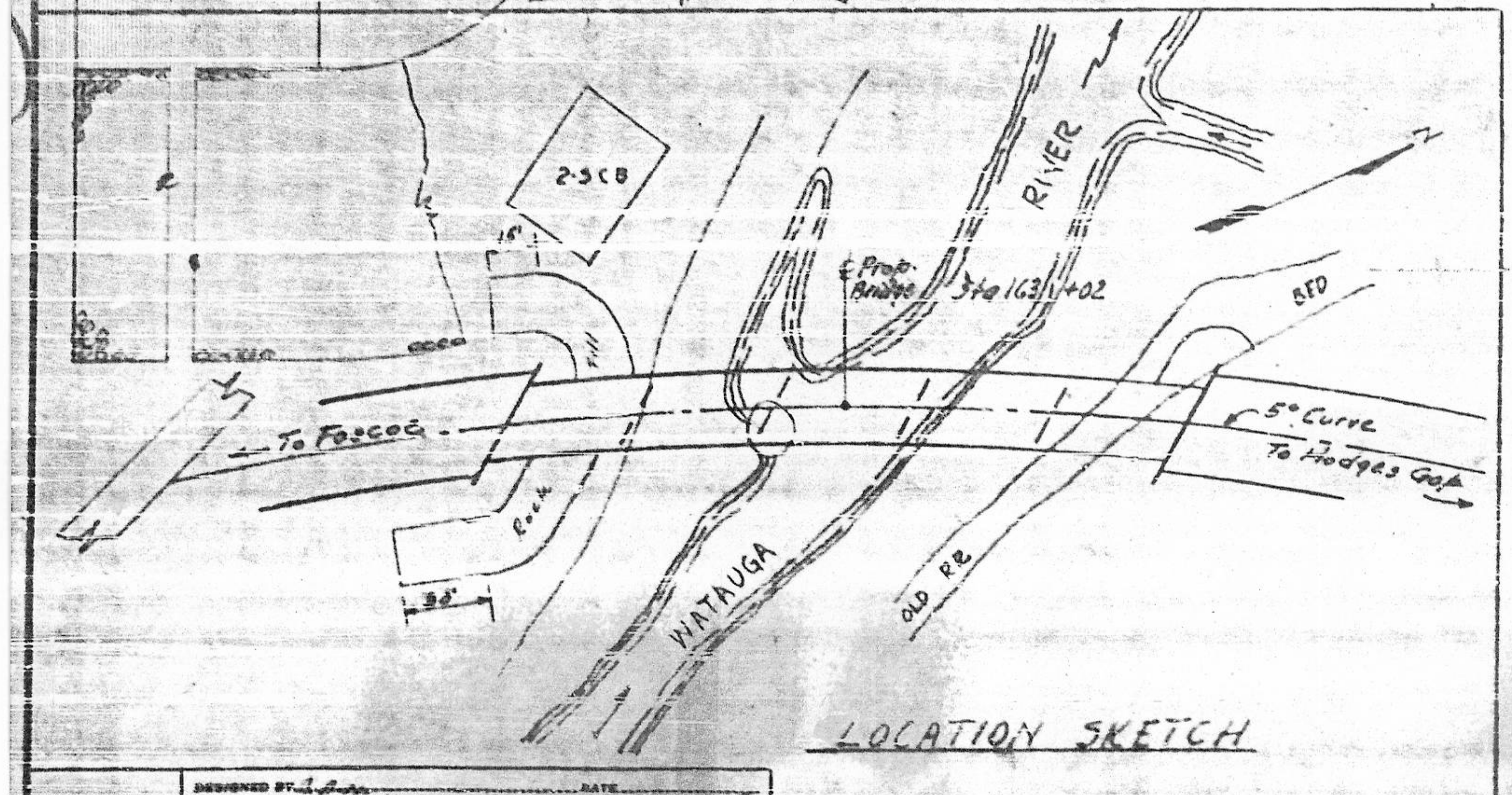
For other Design Data & General Notes see Sheet S-4.



(Length of Bridge Floor) 262'-6"
26'-3"
26'-3"
Fill
Rock
To Foscoe
To Hodges Gap
℄ 5° Curve Rt.
℄ Chord 52'-6"
℄ Sta. 163+02
Bm 1
Bm 2
Bm 3
Bm 4
Bm 5
Bm 6
Bm 7
Bm 8
Bm 9
Bm 10
Bm 11
Bm 12
℄ Cap
Radial Line
SPAN "A"
SPAN "B"
SPAN "C"
SPAN "D"
SPAN "E"

PLAN

MAINT. & REMOVAL OF EXIST. STRUCTURE:
After serving as a temporary crossing the existing structure, located 250'± down stream and consisting of 1 @ 36' & 3 @ 40' I-Bm Spans on concrete abuts & piers, shall be removed as follows:-
Superstructure - Completely.
Piers to stream bed.
Remove top of abut. wings down to bridge seat elevation. See Spec's.



30'-0"
2-SCB
℄ Prop. Bridge Sta. 163+02
RIVER
WATAUGA
OLD RR
BFD
To Foscoe
5° Curve
To Hodges Gap
Rock
36'

LOCATION SKETCH

I here by Certify that this Structure was built according to Plans.

Signed E. F. King Jr.
Resident Engineer

See Masonry Book #1 of 2 Page 19
B.M. - No. 10 - X-Mark on corner of Concrete Foundation of Store Bldg. 65' Lt. Sta. 161+90 - Elev. 2753.14

TOTAL BILL OF MATERIAL

	Class "A" Conc. Cu. Yds.	Reinf. Steel Lbs.	Struct. Steel Approx. Lbs.	12" @ 53# Steel H Piles No.	12" @ 53# Steel H Piles Lin. Ft.	Steel H Piles splices cut off		Excav. Cu. Yds. Dry	Excav. Cu. Yds. Wet	Excav. Cu. Yds. Dry @ $3.00	Excav. Cu. Yds. Wet @ $3.00	Maint. & Rem'l. of Exist. Struct. Lump Sum	Excav. Cu. Yds. Wet @ $4.00
Superstructure	245.1	49527	17500±		261'-0¼"								
End Bent #1	14.0	2786		8	~~240~~	2	12'-8¼"						
Bent #1	[illegible]	~~[illegible]~~	-6697					[illegible]	23.0	23.0			4.6
Bent #2	42.9	6958						31.9	[illegible]				
Bent #3	42.9	6858							[illegible]				
Bent #4	~~[illegible]~~	~~4810~~	-5061					[illegible]		60	26		
End Bent #2	~~[illegible]~~	3780						[illegible]		52			
Approach Curb	2.49 ~~5.2~~	76											
TOTAL	~~244.0~~	80821	17500±	8	~~240~~ 261-0¼	2	12'-8¼	[illegible] 2740	55 88.4	11.2	256	Lump Sum	4.6

PROJECT No. 8-452
WATAUGA COUNTY
STATION: 163+02

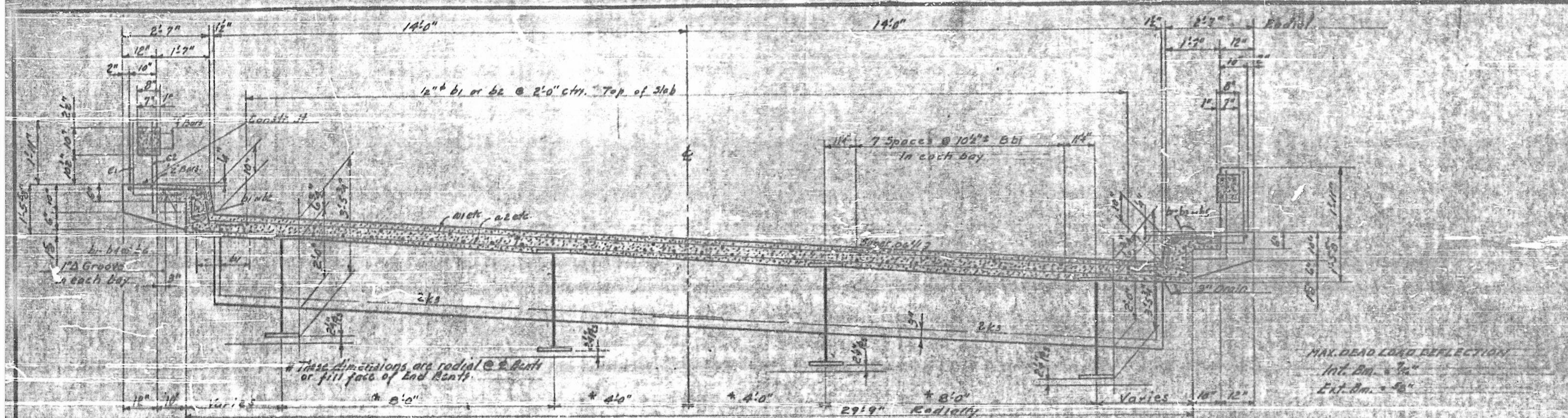
STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION
RALEIGH
GENERAL DRAWING
BRIDGE OVER WATAUGA RIVER
ON COUNTY ROAD
BETWEEN FOSCOE & HODGES GAP
JAN. 1955

S-1

DESIGNED BY
DRAWN BY
CHECKED BY
DATE Jan. 1955

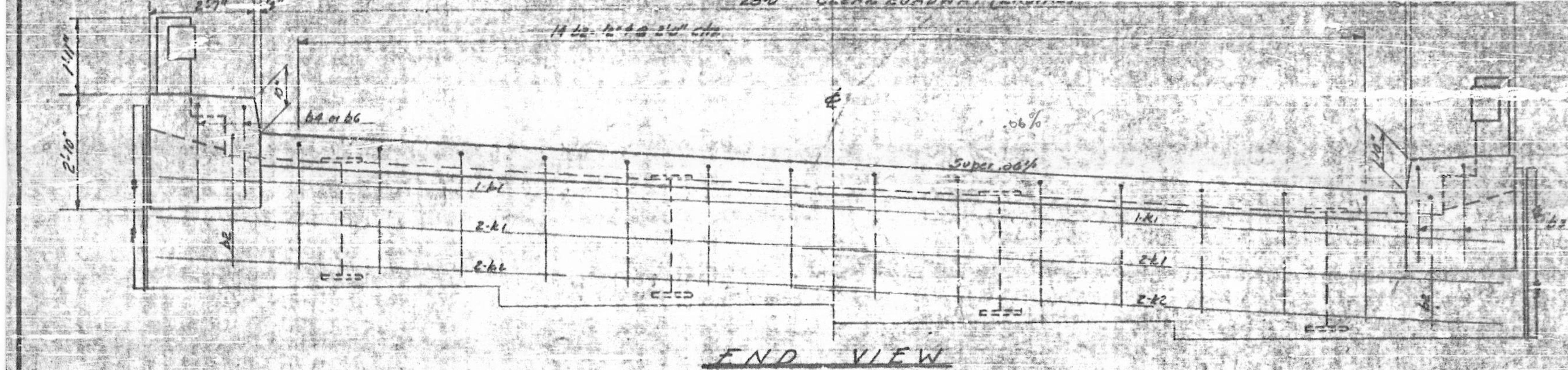
Fed. Road Dist. No.	State	Project No.	
3	N.C.	8-452	

F.A. Proj. S-651(3)

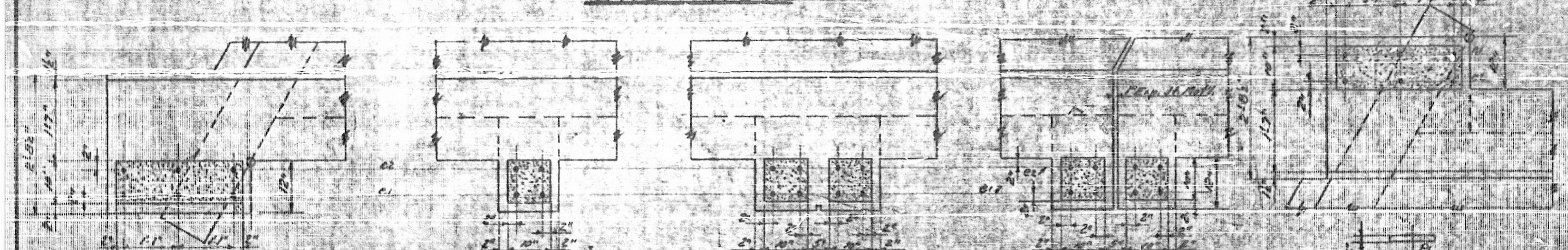

2'-7"
14'-0"
14'-0"
Radial
1/2"φ b1 or b2 @ 2'-0" ctrs. Top of Slab
7 Spaces @ 10½" = Bbl in each bay
Conduit
Super. .06%
3" Drain
3/4" V Groove in each Bay
* These dimensions are radial @ ℄ Bents or fill face of End Bents
varies
*8'-0"
*4'-0"
*4'-0"
*8'-0"
29'-9" Radially
Varies
MAX. DEAD LOAD DEFLECTION
Int. Bm. = 7/16"
Ext. Bm. = 7/16"

INTERIOR SECTION

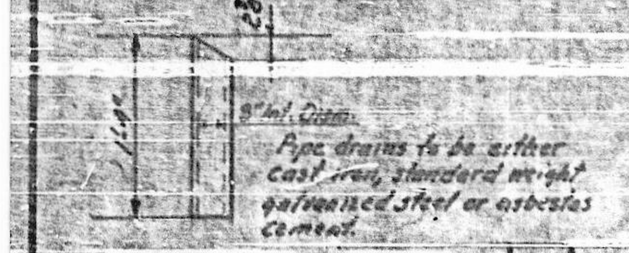
28'-0" CLEAR ROADWAY (RADIAL)


14 Lin. ½"φ @ 2'-0" ctrs.
b4 or b6
.06%
Super. .06%
1-k1
2-k1
2-k2
2'-10"
1'-4"

END VIEW

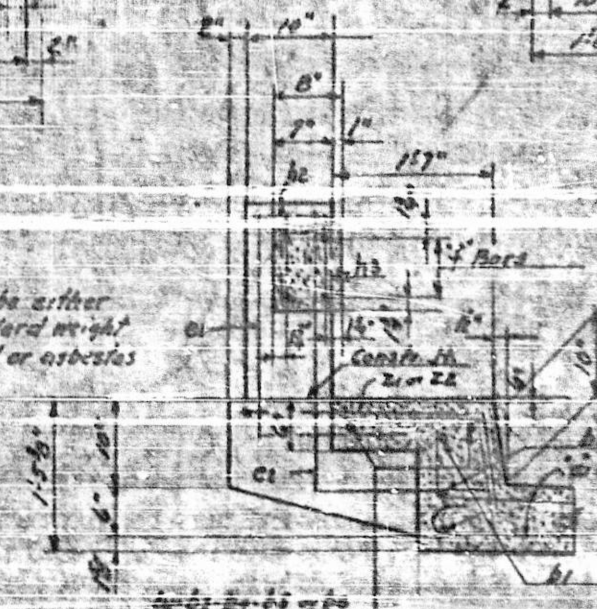

2'-9½"
2'-6"
2'-10"
1'-0"
1'-8"
2'-5"
Exp. Jt. Matl.

POST DETAILS

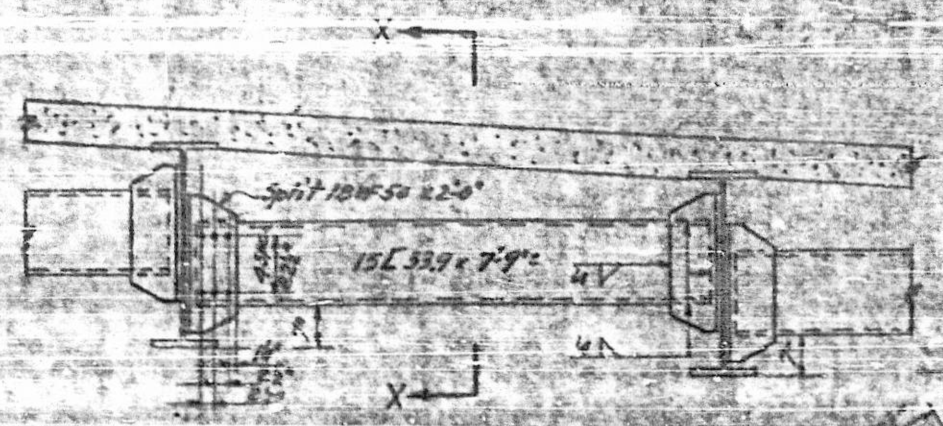

4" Int. Diam.
Pipe drains to be either cast iron, standard weight galvanized steel or asbestos cement.

DRAIN DETAIL

Required - 45


10"
8"
1'-7"
Conduit
Bars
b1
b2 b3 b4 b6

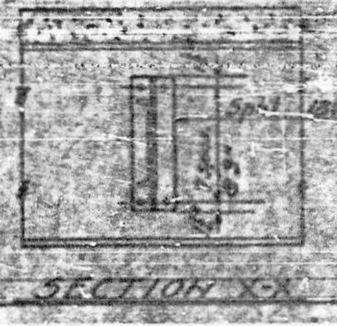
SECTION THRU CURB


Split 10WF50 x 2'-0"
15[33.9 x 7'-9"
X
X

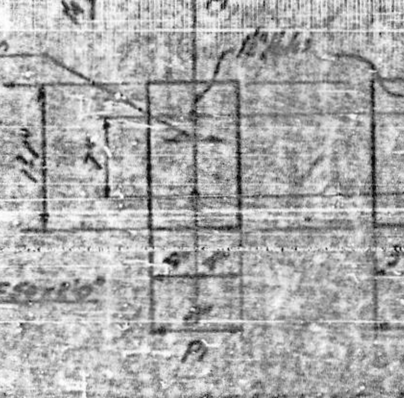
PART INTERIOR SECTION

Showing Diaphragm

NOTE: At the Contractor's option, shop connection of split 10WF to channels may be either welded or riveted using ¾"φ rivets. Field connection of diaphragms to beams shall be bolted using ²⁵⁄₃₂" turned bolts or ¾" high strength bolts in accordance with the AASHO Spec's.


Split 10WF50 x 2'-0"

SECTION X-X


Place star side in this direction
1"φ Holes
1½" x 2½" Slots
P1
P2
P3
6"
6"

BEARING PLATE DETAILS

Required

Pl. P1 - 40 - 6" x 14" x 1'-1"
Pl. P2 - 20 - 6" x 1" x 1'-1"
Pl. P3 - 20 - 6" x 1" x 1'-1"

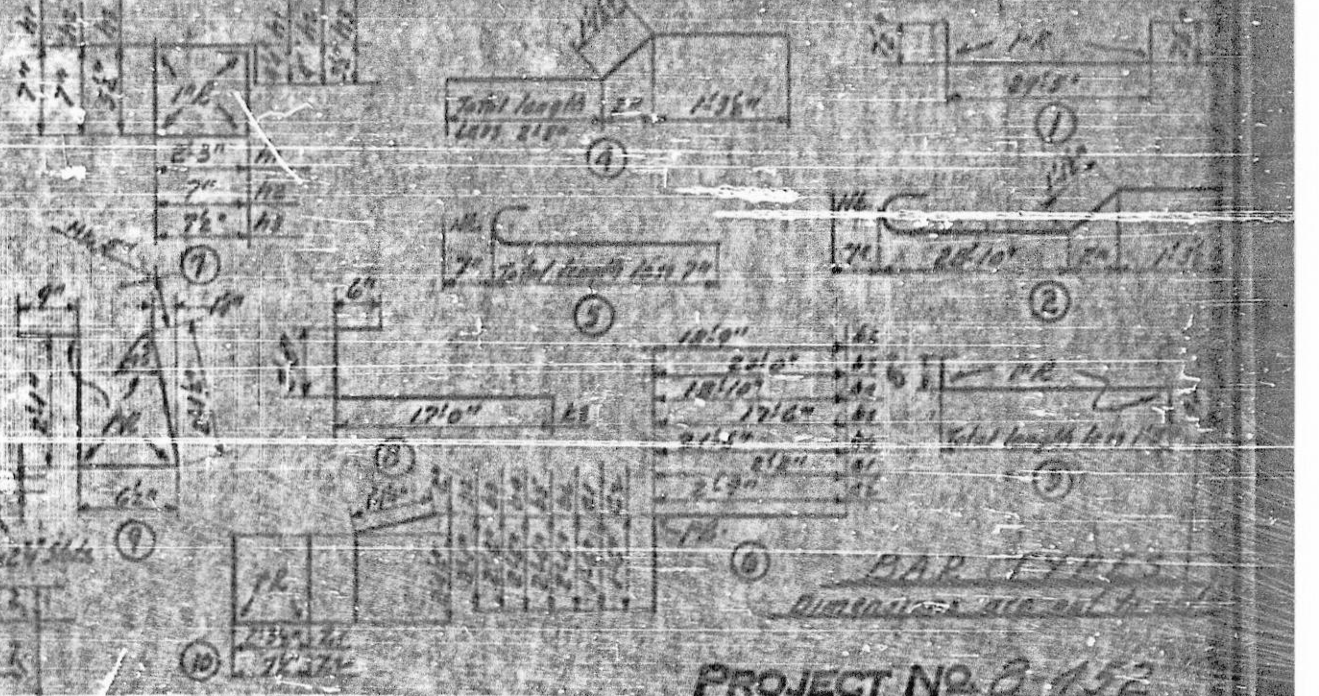
Holes @ 9" Ctrs.

COPPER FLASHING

NOTE: Copper flashing to be placed in accordance with the Specs. Copper flashing shall be placed in the expansion joints between spans as shown.

BILL OF MATERIAL - FIVE SPANS

Bar	No.	Size	Type	Length	Weight	Bar	No.	Size	Type	Length	Weight	Bar	No.	Size	Type	Length	Weight
a1	365	⅝"φ	1	30'-9"	11676	a49	5	⅝"φ	4	4'-9"	24	a91	5	[illegible]	5	4'-9"	[illegible]
a2	360	⅝"φ	2	31'-10"	11952	a50	5			29'-10"	156	a92	5	[illegible]	5	3'-7"	[illegible]
a3	10	⅝"φ	3	28'-5"	296	a51	5			28'-3"	147						
a4	10			26'-7"	277	a52	5			26'-7"	139	b1	740	[illegible]	[illegible]	12'-9"	[illegible]
a5	10			25'-10"	[illegible]	a53	5			24'-11"	130	b2	22		6	21'-10"	[illegible]
a6	10			23'-0"	240	a54	5			23'-3"	121	b3	2			22'-0"	[illegible]
a7	10			21'-2"	221	a55	5			21'-8"	113	b4	2			21'-4"	[illegible]
a8	10			19'-6"	204	a56	5			20'-0"	104	b5	2			[illegible]	[illegible]
a9	10			17'-9"	185	a57	5			18'-4"	96	b6	2	[illegible]	6	24'-8"	[illegible]
a10	10			15'-9"	164	a58	5			16'-8"	87						
a11	10			13'-11"	145	a59	5			15'-0"	78	c1	124	[illegible]	6	[illegible]	[illegible]
a12	10			12'-1"	126	a60	5			13'-4"	70	c2	124	[illegible]	6	4'-3"	[illegible]
a13	10			10'-3"	107	a61	5			11'-9"	61						
a14	10			8'-5"	88	a62	5			10'-1"	53	h1	4	[illegible]	[illegible]	[illegible]	[illegible]
a15	10			6'-8"	70	a63	5			8'-5"	44	h2	4			18'-9"	[illegible]
a16	10			4'-9"	50	a64	5			6'-10"	36	h3	4			17'-3"	[illegible]
a17	10			3'-0"	30	a65	5			5'-2"	27	h4	4			1'-0"	[illegible]
a18	10			28'-3"	295	a66	5	[illegible]	4	3'-6"	18	[illegible]	8			16'-9"	[illegible]
a19	10			26'-7"	277							[illegible]	8			17'-2"	[illegible]
a20	10			24'-11"	260							[illegible]	8			17'-9"	[illegible]
a21	10			23'-3"	242	a69	5	[illegible]	5	27'-10"	145	[illegible]	8			16'-3"	[illegible]
a22	10			21'-7"	225	a70	5			26'-2"	137	[illegible]	[illegible]			15'-4"	412
a23	10			19'-11"	208	a71	5			[illegible]	127	[illegible]	36	[illegible]	[illegible]	16'-10"	405
a24	10			18'-3"	190	a72	5			22'-10"	119						
a25	10			16'-7"	174	a73	5			21'-2"	110	g1	16	[illegible]	[illegible]	6'-6"	[illegible]
a26	10			15'-0"	156	a74	5			19'-6"	99						
a27	10			13'-4"	139	a75	5			17'-10"	89	[illegible]	4	[illegible]	7	6'-3"	[illegible]
a28	10			11'-8"	122	a76	5			15'-10"	80	[illegible]	86	[illegible]	7	3'-0"	[illegible]
a29	10			10'-0"	104	a77	5			13'-6"	70	[illegible]	[illegible]	[illegible]	7	[illegible]	[illegible]
a30	10			8'-5"	88	a78	5			[illegible]	60						
a31	10			6'-9"	70	a79	5			9'-9"	51	k1	72	[illegible]	[illegible]	22'-0"	160
a32	10			5'-2"	54	a80	5			8'-0"	42	k2	8	[illegible]	[illegible]	20'-4"	290
a33	10	[illegible]	3	3'-7"	[illegible]	a81	5			[illegible]	[illegible]						
						a82	5			4'-8"	23						
a35	5	⅝"φ	4	30'-2"	157	a83	5			27'-8"	145	s1	192	[illegible]	9	5'-1"	752
a36	5			28'-6"	149	a84	5			26'-2"	137						
a37	5			26'-6"	138	a85	5			24'-6"	128	s2	4	[illegible]	10	3'-9"	[illegible]
a38	5			24'-9"	129	a86	5			22'-10"	119	s3	86	[illegible]	10	7'-1"	632
a39	5			22'-11"	120	a87	5			21'-2"	111						
a40	5			21'-2"	111	a88	5			19'-6"	102						
a41	5			19'-3"	100	a89	5			17'-10"	93	Reinforcing Steel		Lb.			4951[illegible]
a42	5			17'-5"	91	a90	5			16'-2"	85	Class "A" Concrete		Cu. Yd.			295
a43	5			15'-8"	82	a91	5			14'-6"	77	Structural Steel		Lb.			1750[illegible]
a44	5			13'-9"	72	a92	5			12'-11"	68						
a45	5			12'-0"	63	a93	5			11'-3"	59						
a46	5			10'-3"	54	a94	5			9'-8"	50						
a47	5			8'-4"	43	a95	5			8'-0"	42						
a48	5	⅝"φ	4	6'-6"	34	a96	5	[illegible]	4	6'-5"	33						


Total length
1'-3⅝"
24'-5"
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
Total length
17'-0"
18'-0"

BAR TYPES

Dimensions are out to out

PROJECT No. 8-452
WATAUGA COUNTY
STATION: 163+02
SPANS A-B-C-D-E

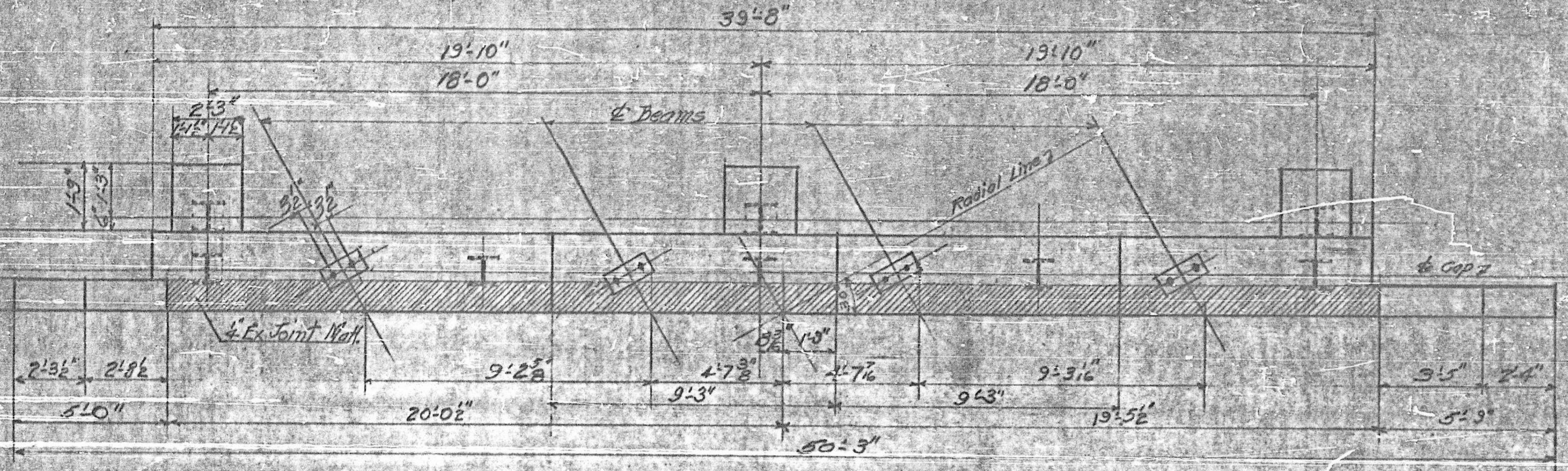
STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION
SUPERSTRUCTURE
JAN. 1955

SPECIAL
Checked by
Jan. 1955

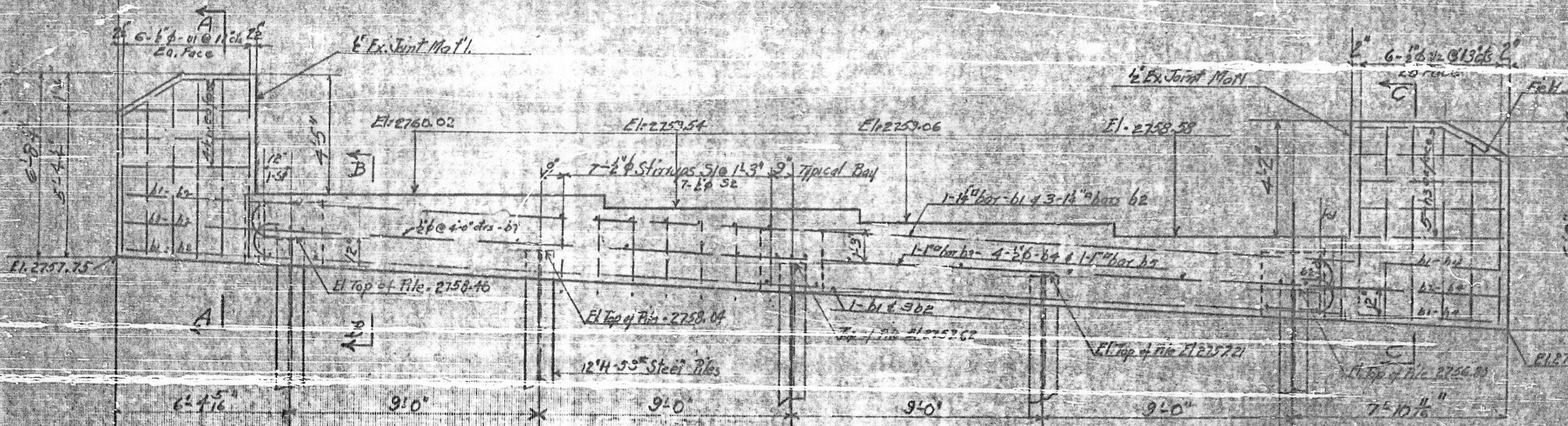
SHEET 2 OF 2

F.A. Proj. S-651(3)

N.C.

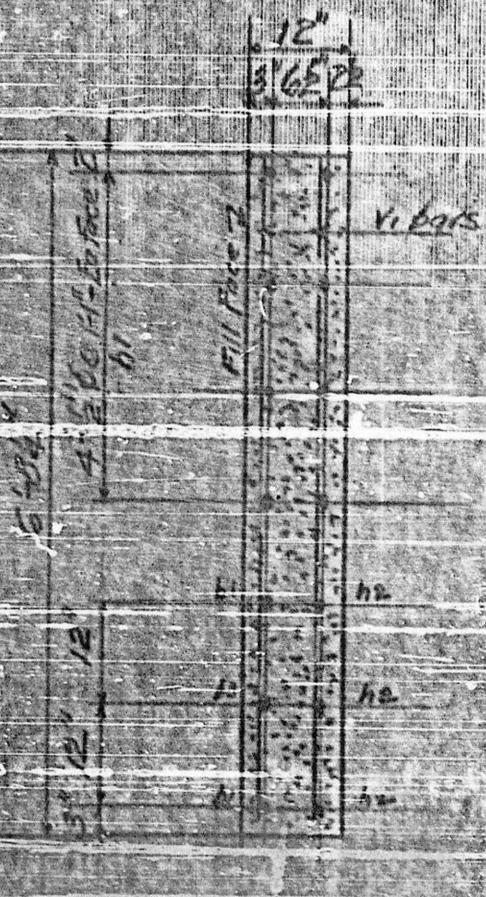

39'-8"
19'-10"
18'-0"
19'-10"
18'-0"
2'-3"
℄ Beams
Radial Line
℄ Cap
½" Ex. Joint Mat'l.
2'-3½"
2'-8½"
9'-2⅝"
4'-7⅞"
9'-3"
9'-3"
9'-3 1/16"
3'-5"
2'-4"
5'-0"
20'-0½"
19'-5½"
5'-9"
50'-3"

PLAN OF CAP

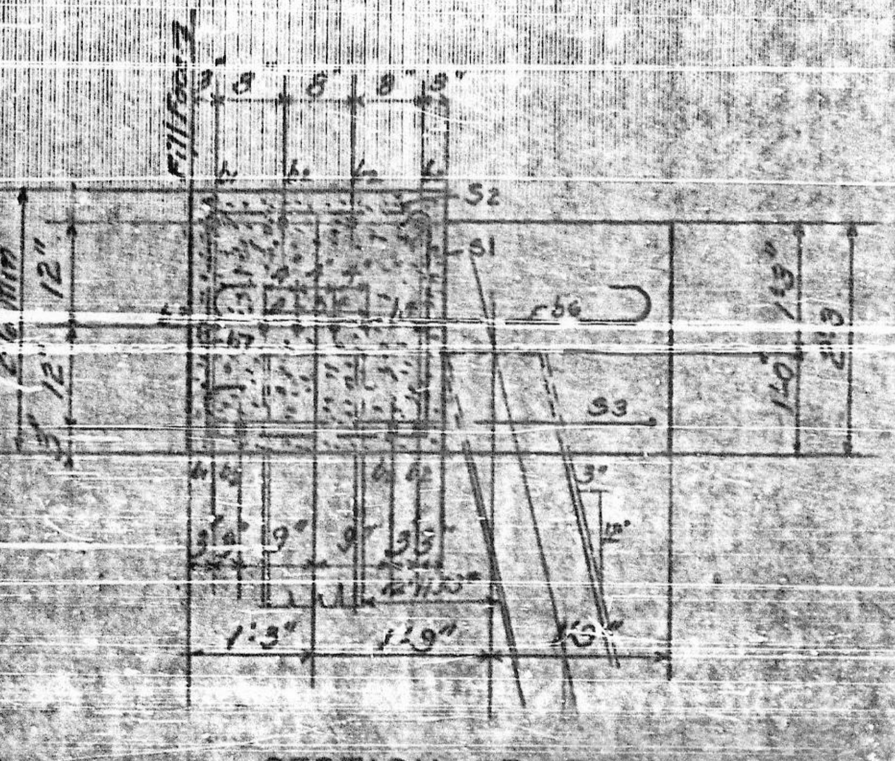

A
½" Ex. Joint Mat'l.
El. 2760.02
El. 2759.54
El. 2759.06
El. 2758.58
7-¼"φ Stirrups S1 @ 1'-3"
Typical Bay
1-1¼"φ bar-b1 & 3-1¼"φ bars b2
1-1"φ bar b3 - 4-¾"φ b4 & 1-1"φ bar b5
1-b1 & 3-b2
El. 2757.75
El. Top of Pile - 2758.46
El. Top of Pile - 2758.04
El. Top of Pile - 2757.62
El. Top of Pile 2757.21
El. Top of Pile 2756.80
El. 2755.42
12" H 53# Steel Piles
Field Bend
6'-4 5/16"
9'-0"
9'-0"
9'-0"
7'-10 11/16"
B
C

NOTE - Piles for End Bent No. 1 shall be driven to a minimum bearing capacity of 28 Tons each.

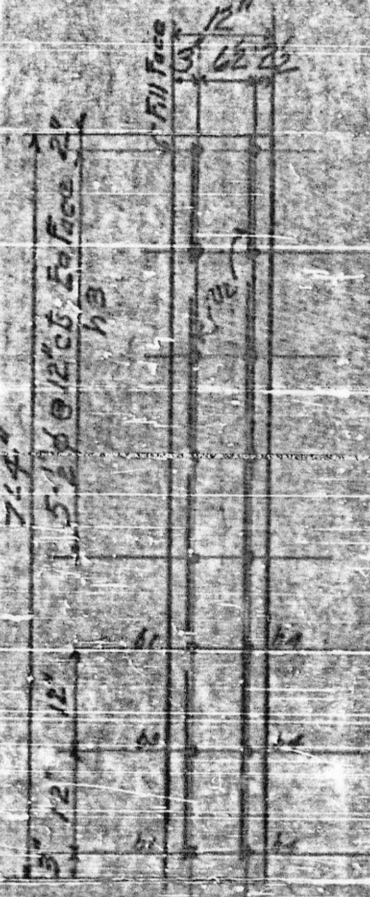
FILL FACE ELEVATION


12"
Fill Face
v1 bars
h1
h2
h3
h4

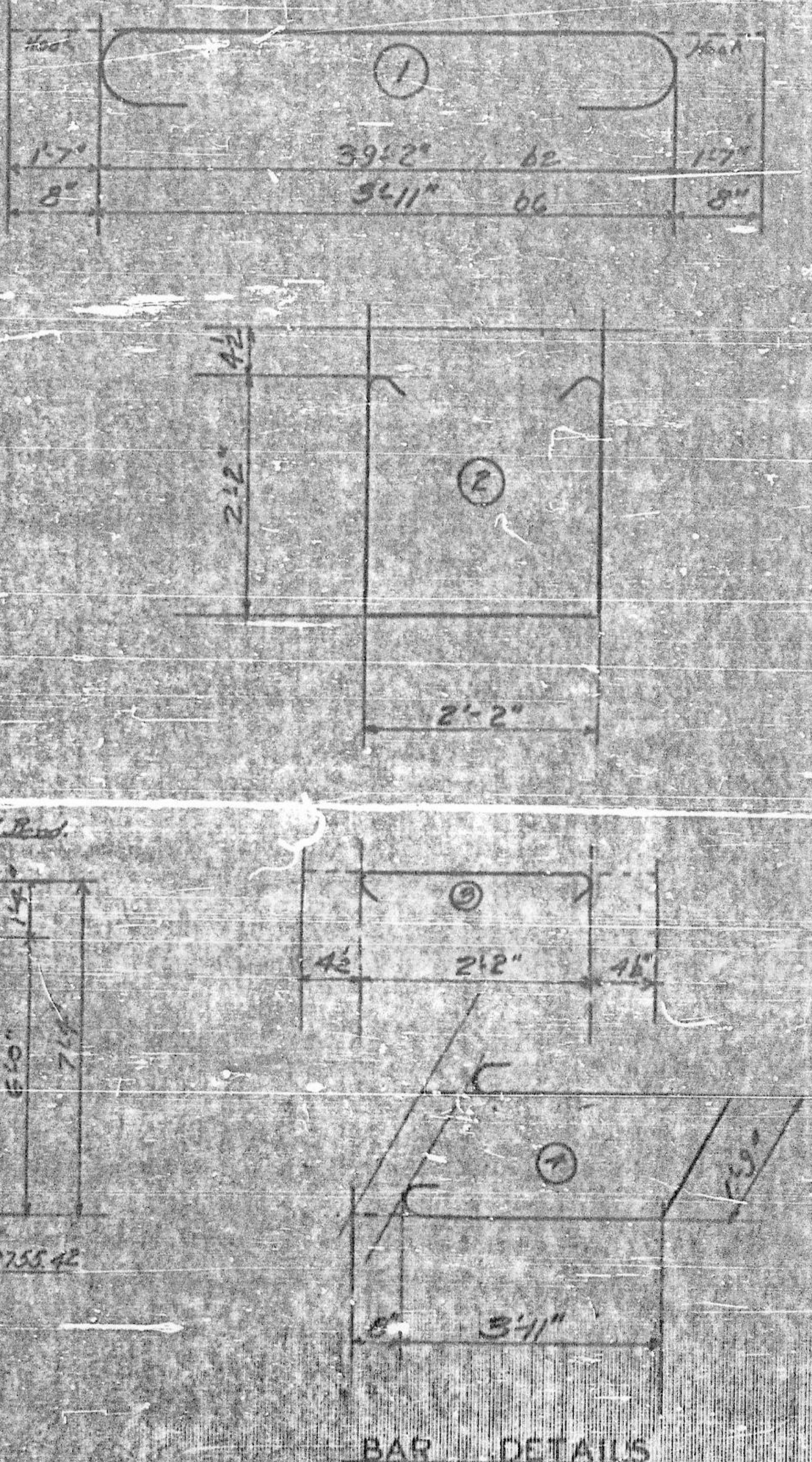
SECTION A-A


Fill Face
S2
S1
S3
b6
2'-6" Min.
12"
1'-3"
1'-9"

SECTION B-B


12"
Fill Face
h3
b1
7'-4"

SECTION C-C


①
39'-2"
34'-11"
1'-7"
8"
②
2'-2"
③
2'-8"
④
3'-11"

BAR DETAILS

All dimensions are Out to Out

BILL OF MATERIAL 10
FOR END BENT NO 1

Bar	Number	Size	Type	Length	Weight
b1	2	1¼"φ	Str	49'-8"	33
b2	6	1¼"φ	1	41'-4"	1318
b3	1	1"φ	Str	49'-8"	16
b4	8	¾"φ	Str	20'-6"	1
b5	1	1"φ	Str	39'-2"	135
b6	9	⅝"φ	1	5'-8"	71
b7	8	½"φ	Str	2'-2"	12
h1	8	⅝"φ	Str	4'-9"	25
h2	3	⅝"φ	Str	6'-3"	12
h3	10	⅝"φ	Str	3'-5"	36
h4	3	⅝"φ	Str	7'-4"	1
v1	12	⅝"φ	Str	6'-4"	51
v2	12	⅝"φ	Str	6'-8"	5
s1	30	⅜"φ	2	7'-3"	145
s2	39	⅜"φ	3	3'-11"	59
s3	9	½"φ	4	10'-11"	29

Reinforcing Steel Lbs 27
Class A Concrete Cu.Yds 14.0
12" H 53# Steel Piles - No. 8 - Lin. Ft. 240
261.04

Build-ups for 2 Piles
1 @ 2'-0" & 1 @ 1'-6"

$$\frac{2(2.25 \times 2.5 \times 2.5)}{27} = 1.04 \text{ C.Y.}$$

Say 1.0 C.Y.

Reinf Steel in Build-ups

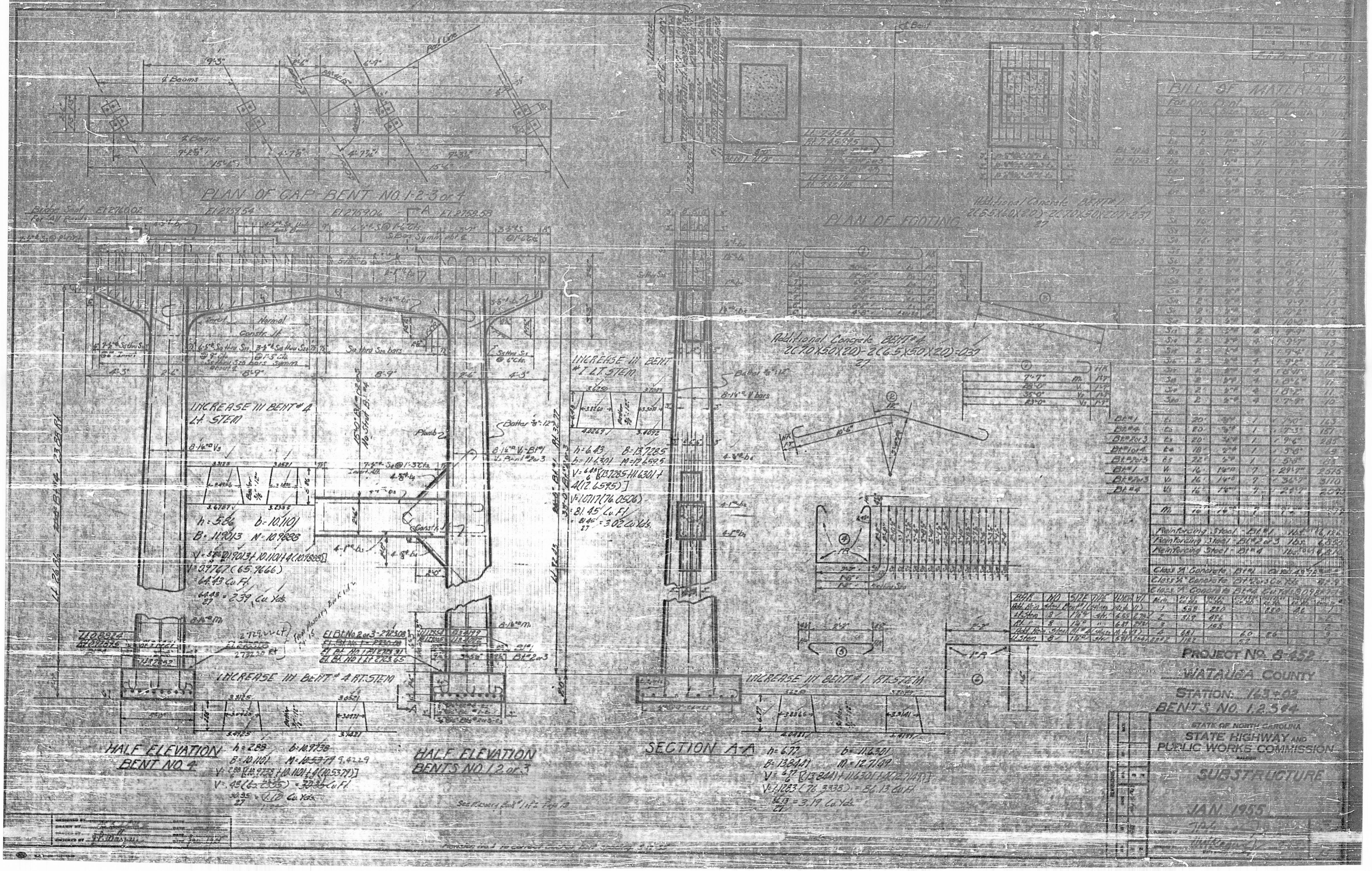
4-⅝"φ @ 4'-9" = 29 lbs
4-½"φ @ 9'-1" = 24
53 lbs

PROJECT No. 8-452
Watauga COUNTY
STATION: 163 + 02
End Bent No 1

STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION
RALEIGH

SUBSTRUCTURE

SPECIAL
Checked by W. Warren
Date Jan. 1931


PLAN OF CAP-BENT NO. 1-2-3 or 4
PLAN OF FOOTING
HALF ELEVATION BENT NO 4
HALF ELEVATION BENTS NO 1 2 or 3
SECTION A-A
INCREASE IN BENT # 4 LT. STEM
INCREASE IN BENT # 4 RT. STEM
INCREASE IN BENT #1 LT. STEM
INCREASE IN BENT #1 RT. STEM
Additional Concrete BENT #4
Additional Concrete BENT #1
BILL OF MATERIAL
For One Bent
Reinforcing Steel - Bt #1
Reinforcing Steel - Bt #2 or 3
Reinforcing Steel - Bt #4
Class "A" Concrete
Batter
Plumb
Normal Constr. Jt.

PROJECT NO. 8-452

WATAUGA COUNTY

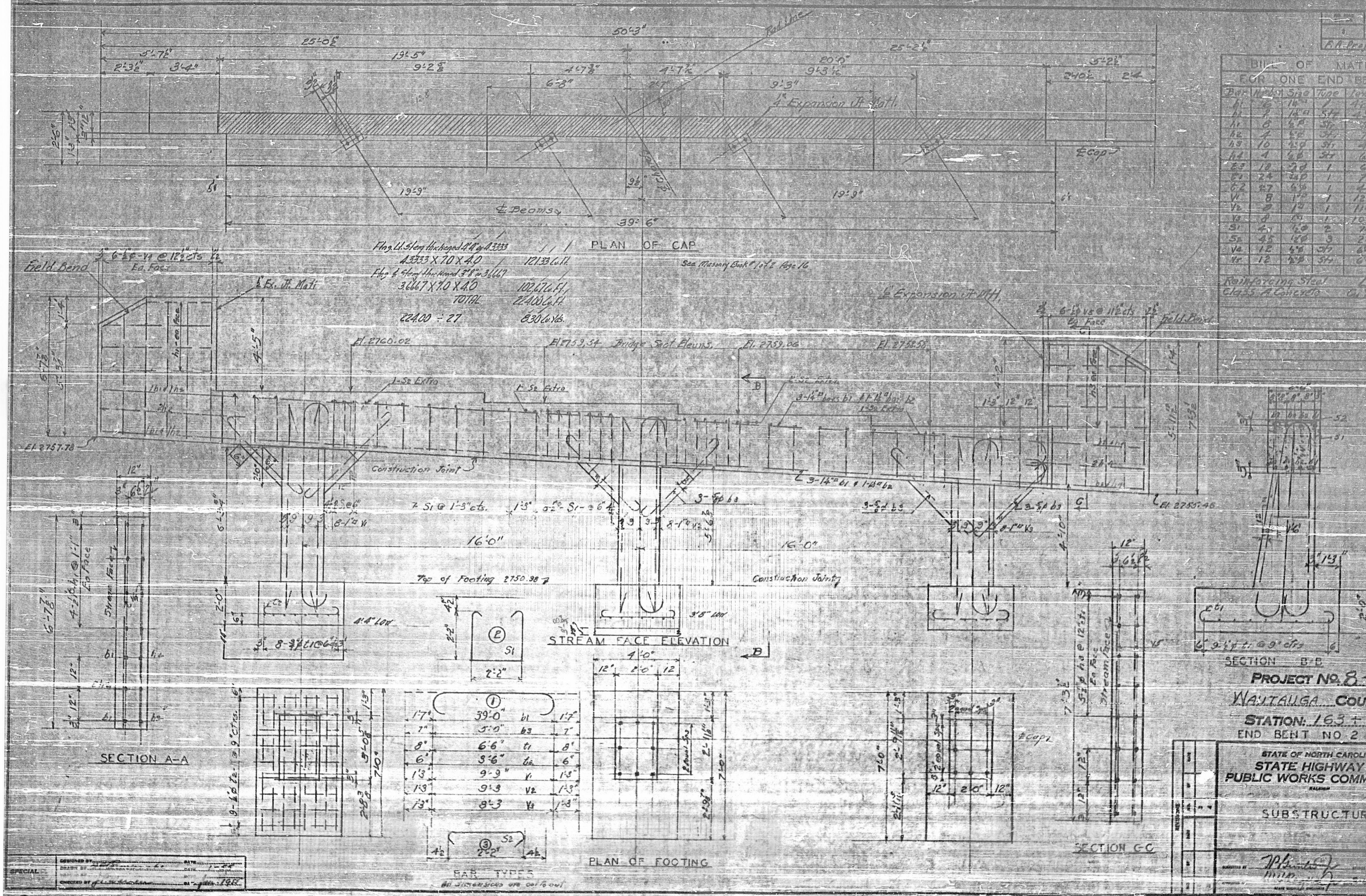
STATION: 143+02

BENTS NO. 1,2,3 & 4

STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION

SUBSTRUCTURE

JAN. 1955



PLAN OF CAP
50'-3"
25'-0½"
25'-2½"
5'-7½"
19'-5"
2'-3½"
3'-4"
9'-2⅞"
4'-7⅞"
4'-7½"
9'-3½"
20'-0"
6'-8"
9'-3"
2'-4"
5'-2½"
2'-4½"
Rail Line
1" Expansion Jt. Matl.
℄ Cap
℄ Beams
19'-9"
19'-9"
39'-6"
2'-6"
Field Bend
6-⅝"□ V4 @ 12½" cts. Ea. Face
½" Ex. Jt. Matl.
½" Expansion Jt. Mat.
6-⅝"□ V5 @ 11½" cts. Ea. Face
Field Bend
El. 2760.02
El. 2759.54 Bridge Seat Elevns.
El. 2759.06
El. 2758.58
El. 2757.78
El. 2755.46
1-S2 Extra
1-S2 Extra
1-S2 Extra
1-S2 Extra
3-1⅛"□ bars b1 & 1-1⅛"□ bar b2
Construction Joint
7 S1 @ 1'-3" cts.
2-⅝" S1 @ 6"
3-⅞"□ b3
3-⅞"□ b3
3-⅞"□ b3
8-1"□ V1
8-1"□ V2
8-1"□ V3
3-1⅛"□ b1 & 1-1⅛"□ b2
16'-0"
16'-0"
Top of Footing 2750.98
Construction Joint
4'-4" Low
3'-5" Low
8-¾"□ t1 @ 6¾"
STREAM FACE ELEVATION
SECTION A-A
4-2½"□ h1 @ 1'-1" Ea. Face
Stream Face
b1
b2
SECTION B-B
9-¾"□ t1 @ 9" cts.
SECTION C-C
5-⅝"□ h3 @ 1'-2" cts. Ea. Face
Stream Face
PLAN OF FOOTING
4'-0"
7'-0"
2'-0"
12"
9-⅝"□ t2 @ 9" cts.
BAR TYPES
① 39'-0" b1 1'-7"
5'-0" b3 7"
6'-6" t1 8"
3'-6" t2 6"
9'-9" V1 1'-3"
9'-3" V2 1'-3"
8'-3" V3 1'-3"
② S1 2'-2"
③ S2 2'-2" 4½"
All dimensions are out to out

Ftng. Lt. Stem thickened 4'-4" or 4.3333
4.3333 X 7.0 X 4.0 121.33 Cu. Ft.
Ftng. ℄ Stem thickened 3'-8" or 3.6667
3.6667 X 7.0 X 4.0 102.67 Cu. Ft.
TOTAL 224.00 Cu. Ft.
224.00 ÷ 27 8.30 Cu. Yds.

See Masonry Book # 1072 Page 16

	N.C.	8-4
F.A. Proj. S-651(3)		

BILL OF MATERIAL

FOR ONE END BENT #2

Bar	Number	Size	Type	Length	Weight
b1	16	1⅛"□	1	42'-2"	134
b2	2	1⅛"□	Str	43'-3"	82
h1	6	⅝"□	Str	[illegible]	26
h2	4	⅝"□	Str	7'-2"	13
h3	10	½"□	Str	4'-10"	3
h4	4	⅝"□	Str	6'-3"	17
b3	18	⅞"□	1	6'-2"	11
t1	24	¾"□	1	7'-10"	28
t2	27	⅝"□	1	4'-6"	9
V1	8	1"□	1	12'-3"	33
V2	8	1"□	1	11'-9"	62
V3	8	1"□	1	10'-9"	24
S1	4	½"□	2	7'-3"	19
S2	45	½"□	3	2'-11"	86
V4	12	⅝"□	Str	6'-5"	51
V5	12	⅝"□	Str	6'-10"	53

Reinforcing Steel Lbs. 378

Class A Concrete Cu. Yds. 83

3190

PROJECT NO. 8-452

WATAUGA COUNTY

STATION: 163 + 02

END BENT NO 2

STATE OF NORTH CAROLINA
STATE HIGHWAY AND
PUBLIC WORKS COMMISSION
RALEIGH

SUBSTRUCTURE

SPECIAL

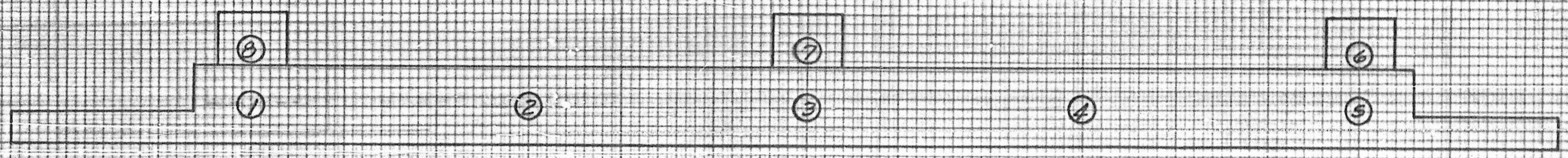
DESIGNED BY DATE
DRAWN BY DATE 1-28
CHECKED BY DATE 1928

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	N.C.	8-452	1953	17	10

ED. PROJ. NO. S-651 (3)

PILE RECORD END BENT Nº 1

BRIDGE STA. 163+02



Pile No	Length	Cut Off	Pay Length	Drop	Av. Pen. Last 5 Blows	Bearing	Splices
1	30' ✓	0 ✓	30'0" ✓	15	¼"	31.58	
2	30' ✓	0 ✓	30'0" ✓	15	¼"	31.58	
3	35' ✓	2'10" ✓	32'2" ✓	15	Refusal		
4	35' ✓	2'7¾" ✓	32'4¼" ✓	15	"		
5	35' ✓	2'0½" ✓	32'11½" ✓	15	"		
6	35' ✓	1'7" ✓	33'5" ✓	15	"		
7	37' ✓	1'7" ✓	35'5" ✓	15	5/16"	29.63	1 ✓
8	36'9" ✓	2'0 ✓	34'9" ✓	15	3/16"	33.68	1 ✓
	273'9" ✓	12'8¼" ✓	261'0¾" ✓				2 ✓

Note:

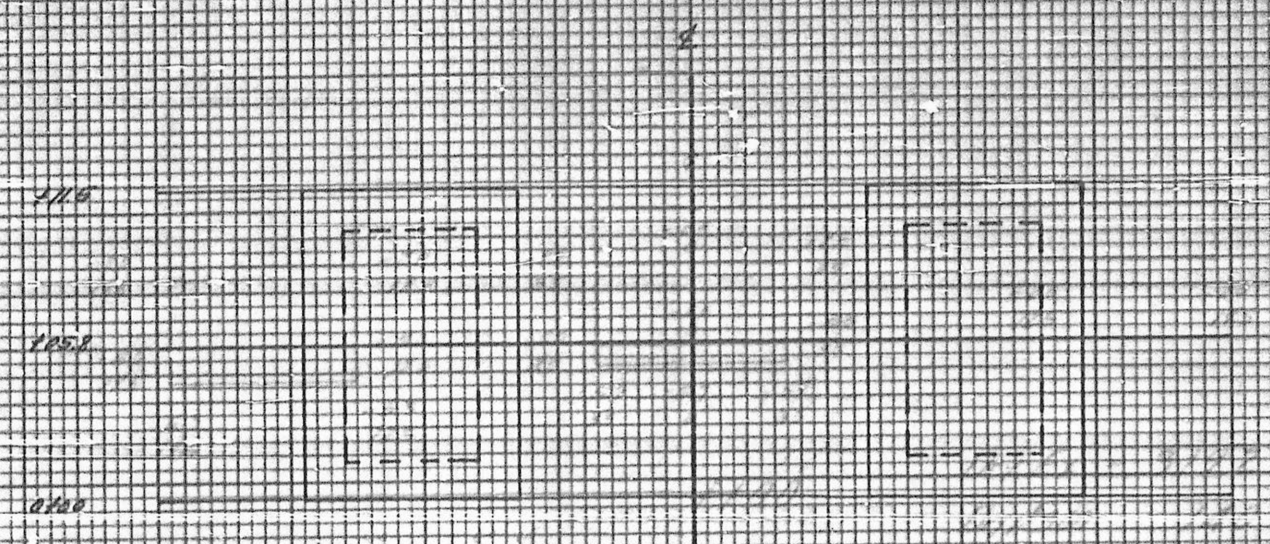
Gravity Hammer Weight 2000'
Used according to instructions
from P.H. Gunter.

See Masonry Book # 1 of 2 Page No. 6

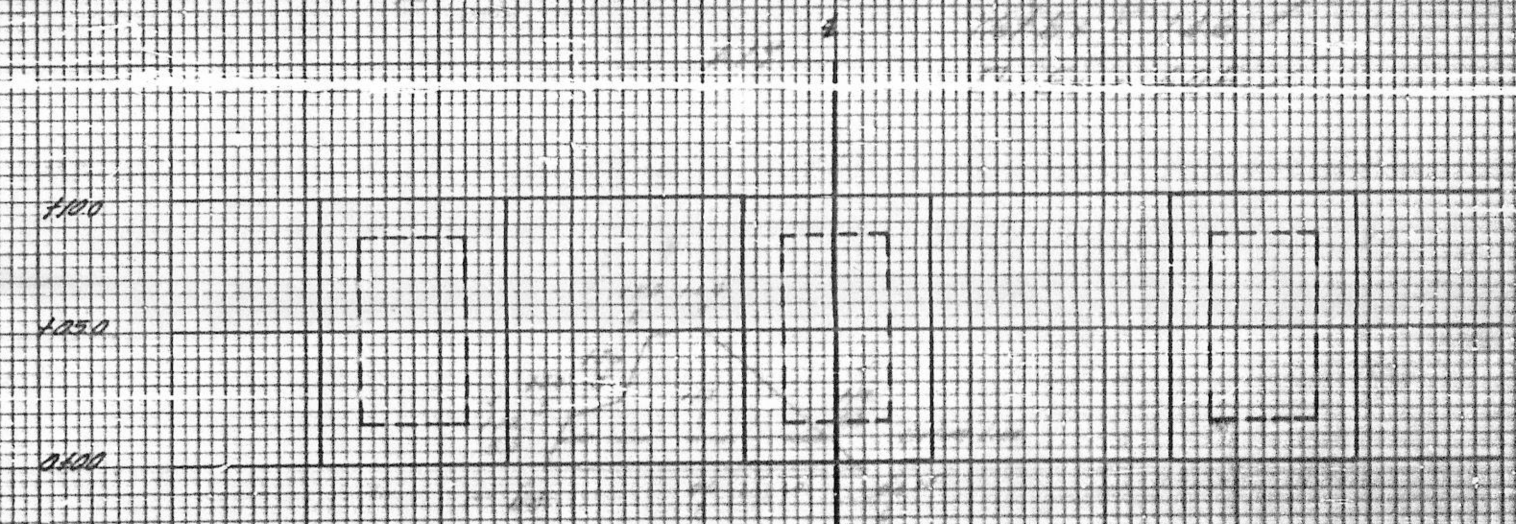
PLATE 3 CROSS SECTION C. F. & R. & E. STANDARD
[illegible] AND PRINTED IN U. S. A.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8-452	18	40
F. A. PROJ. NO.	5-651 (3)		

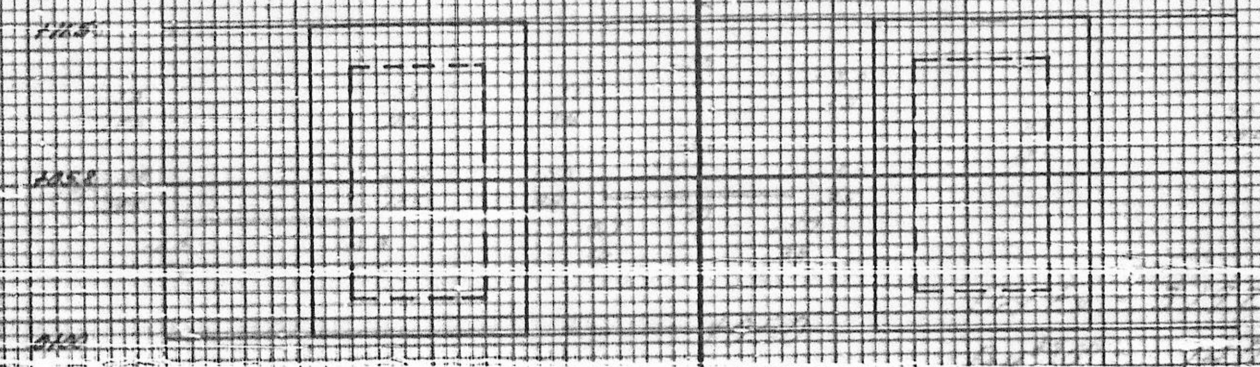
BRIDGE STA. 163+02
BENTS LAYOUT


111.6
105.8
0100

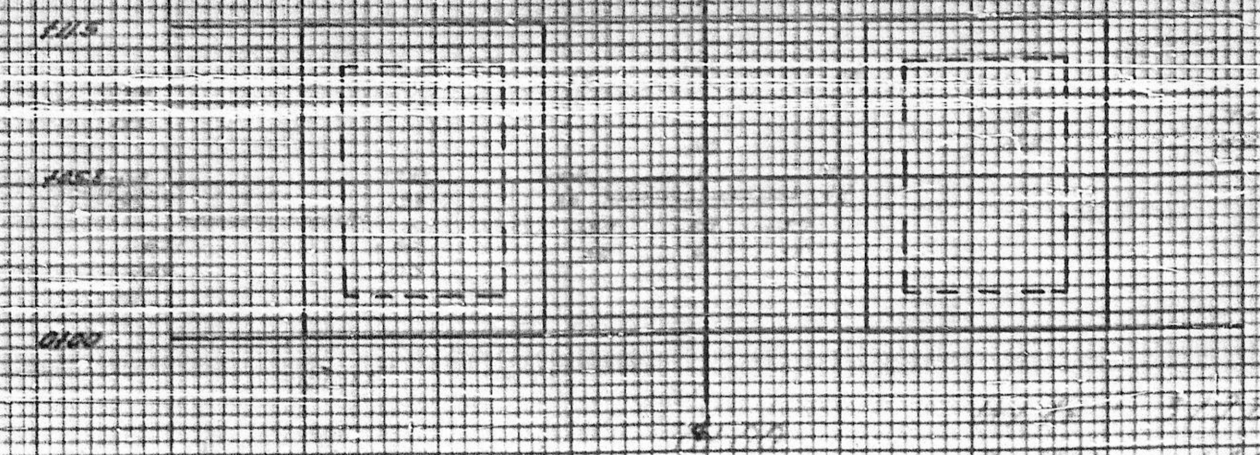
BENT No 3


+100
+050
0100

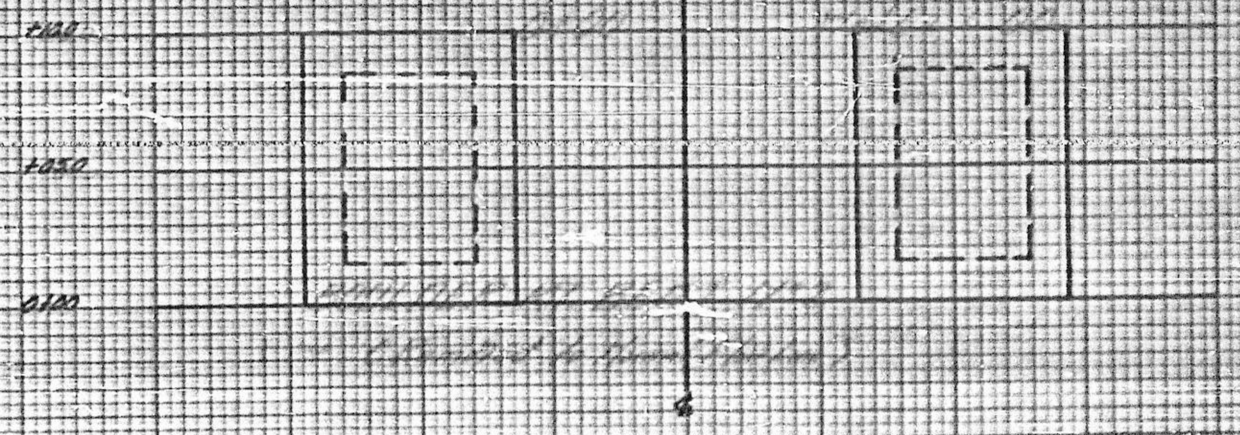
END BENT No 2


112.5
105.8
0100

BENT No 2


111.5
105.8
0100

BENT No 1


+100
+050
0100

BENT No 4

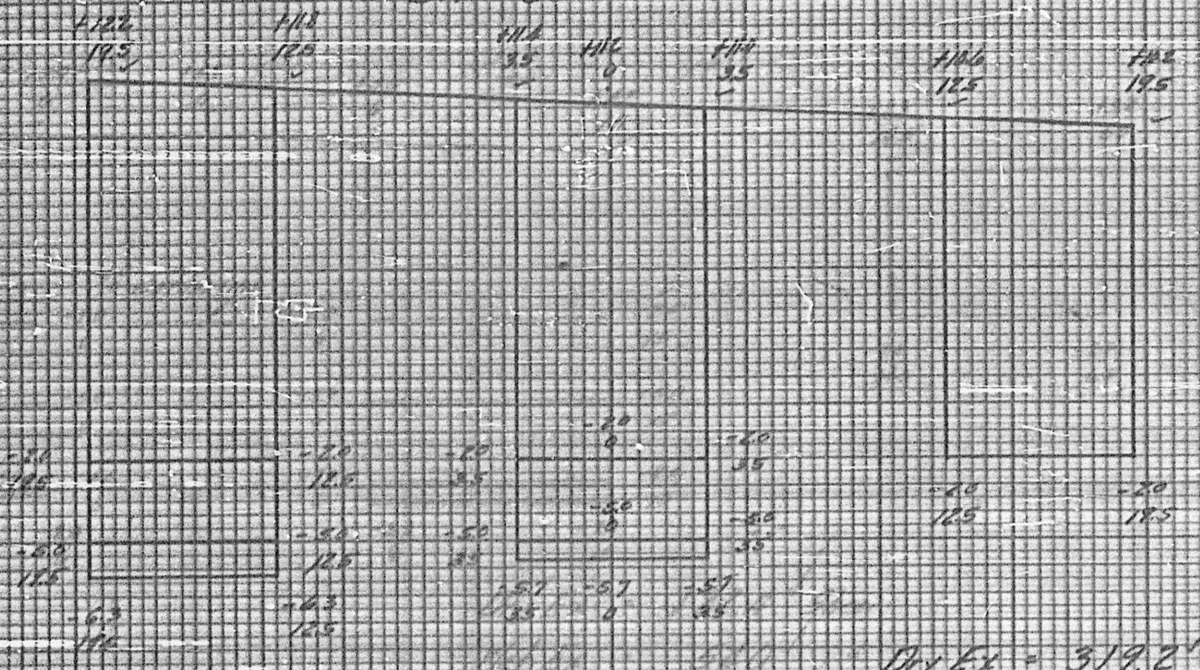
See Masonry Book # 1 of 2 Page No 7 - 91

PLATE 3-CROSS SECTION U.P.R.&R.L. STANDARD
KEUFFEL & ESSER CO. NEW YORK

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8-452	19	20

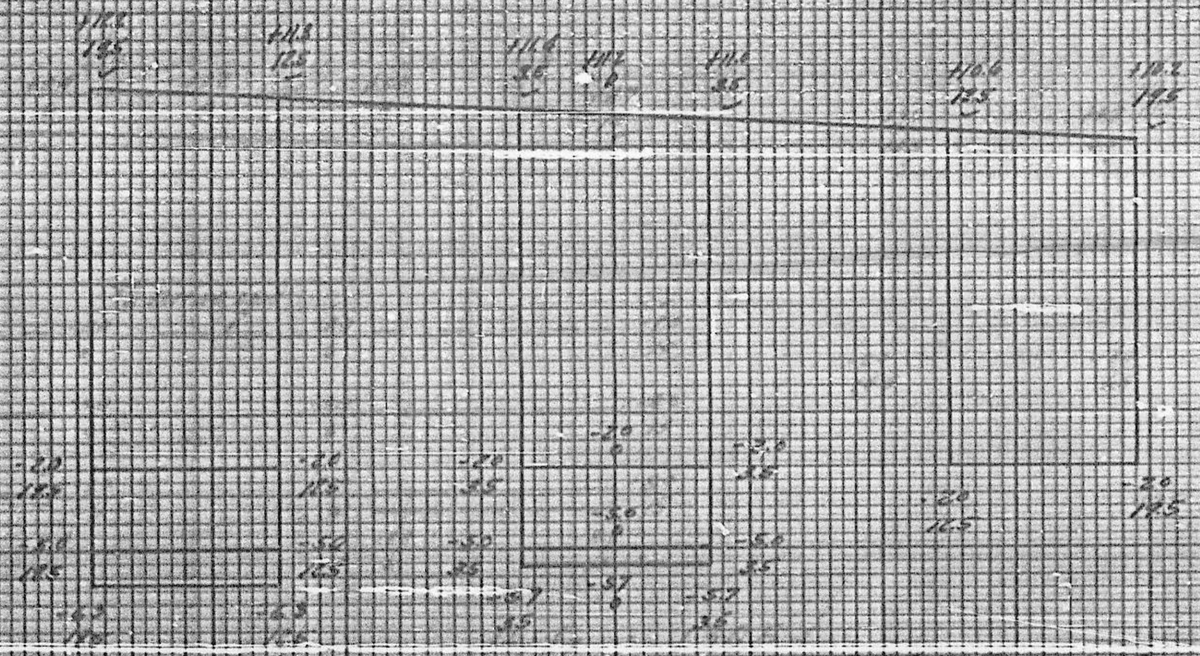
F.A. PROJ. NO. 5-65 (3)

BRIDGE STA 163+02



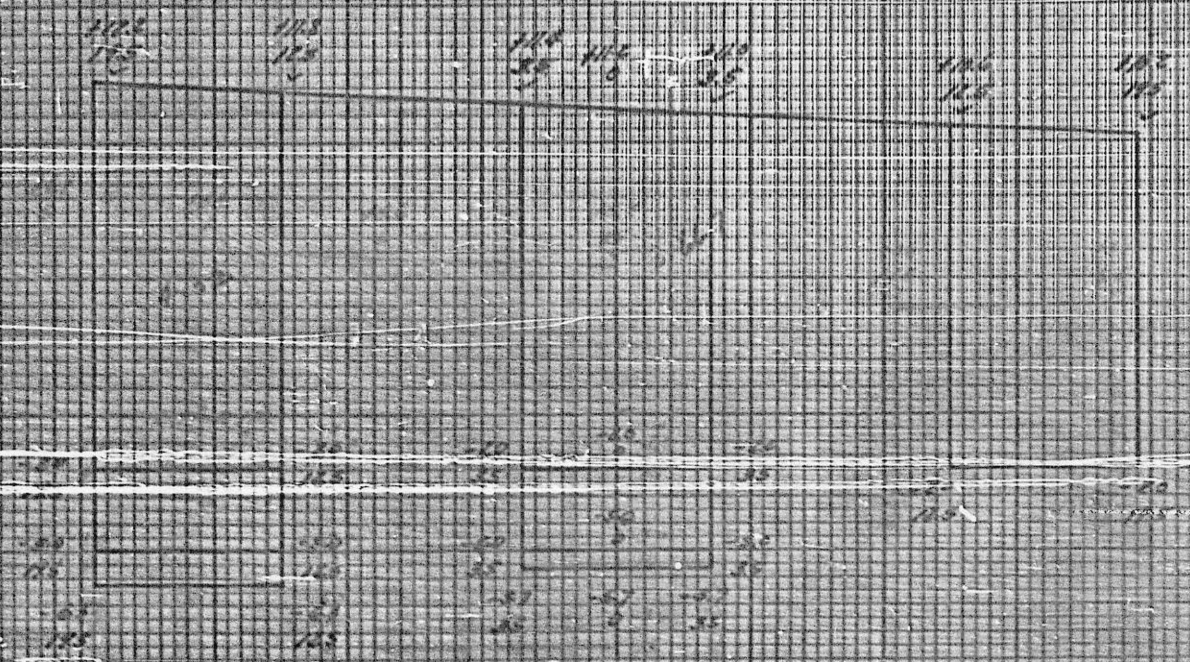
+100

Dry Ex = 319.2 ✓ Shear
Dry+300 14.0 ✓ "



+050

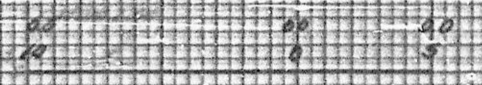
Dry Ex = 319.2 ✓
Dry+300 = 14.0 ✓



0+00

Dry Ex = 319.2 ✓ Shear
Dry+300 = 14.0 ✓

END BENT No 2

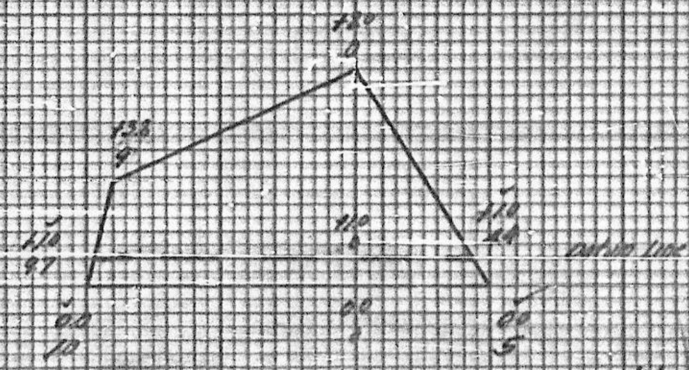


+28

Wet Ex = 0.0

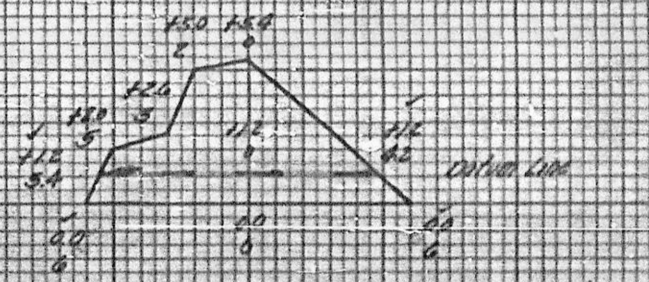
+27

Dry Ex = 0.0



+19

Wet Ex = 12.6 ✓
Dry Ex = 60.5 ✓

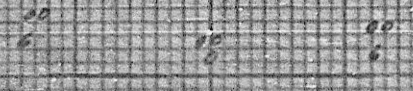


+05

Wet Ex = 13.0 ✓
Dry Ex = 21.8 ✓

+01

Dry Ex 0.0



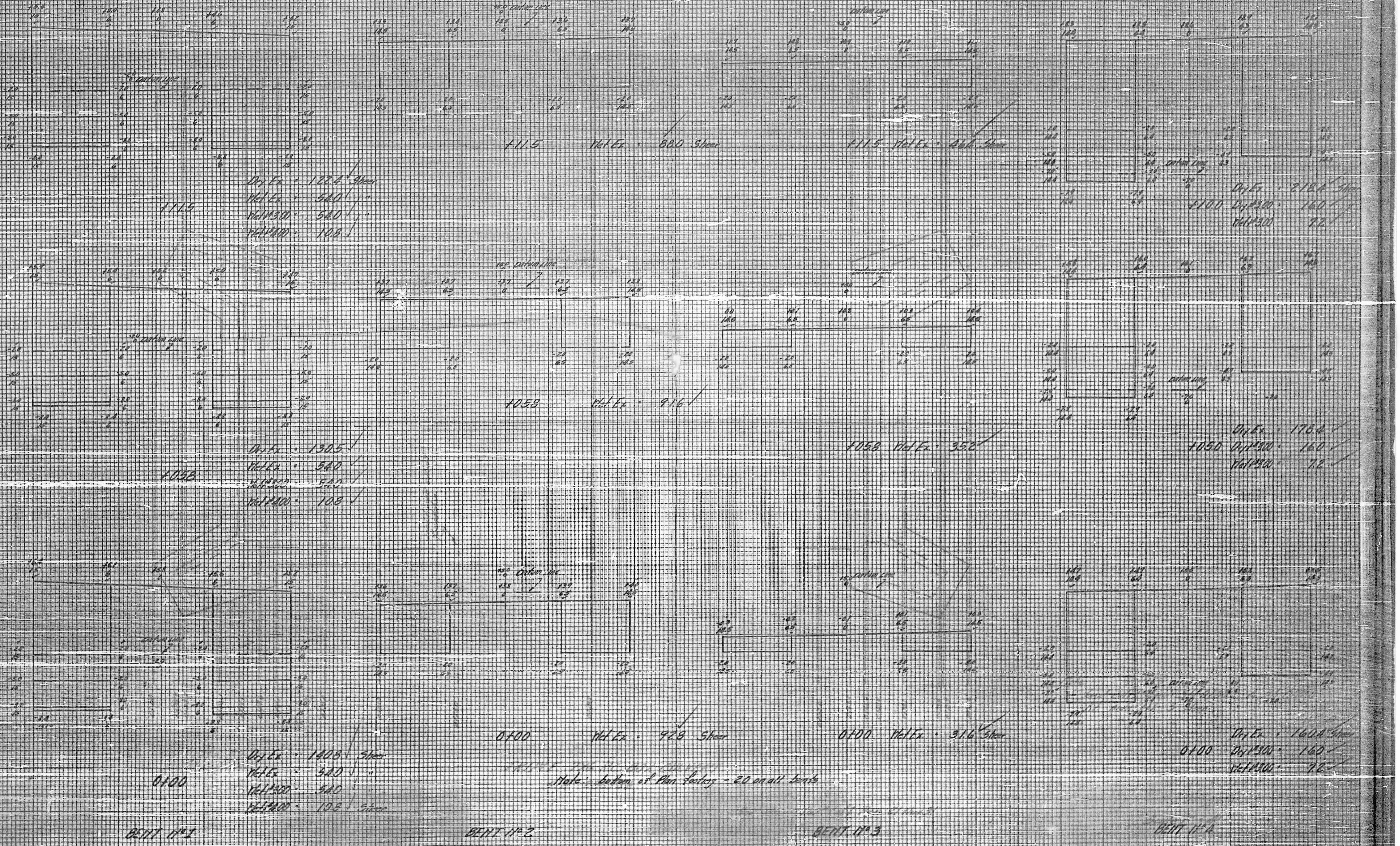
0+00

Wet Ex = 0.0

BOULDER RT. BENT No 2
(Removed to [illegible])

[illegible] No. 7-91

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8-452	20	40
F.A. PROJ NO. S-451(3)			



datum line
+11.5
Dry Ex : 122.4 Shear
Wet Ex : 54.0
Wet №300 : 54.0
Wet №400 : 10.8
+11.5 Wet Ex : 88.0 Shear
+11.5 Wet Ex : 46.4 Shear
+10.0 Dry Ex : 218.4 Shear
Dry №300 : 16.0
Wet №300 : 7.2
+05.8
Dry Ex : 130.5
Wet Ex : 54.0
Wet №300 : 54.0
Wet №400 : 10.8
+05.8 Wet Ex : 91.6
+05.8 Wet Ex : 35.2
+05.0 Dry Ex : 176.4
Dry №300 : 16.0
Wet №300 : 7.2
0+00
Dry Ex : 140.8 Shear
Wet Ex : 54.0
Wet №300 : 54.0
Wet №400 : 10.8 Shear
0+00 Wet Ex : 92.8 Shear
0+00 Wet Ex : 31.6 Shear
0+00 Dry Ex : 160.4 Shear
Dry №300 : 16.0
Wet №300 : 7.2
BENT № 1
BENT № 2
BENT № 3
BENT № 4

Note: bottom of Plan footing - 2.0 on all bents

PLATE 3. CROSS SECTION C. P. B. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.