U.S. 71

SUMMARY OF BRIDGE QUANTITIES

BRIDGE NAME PLATE TITLE	BRIDGE NO.	ITEM	APPROACH SLABS & GUTTERS TYPE A	COMMON EXCAVATION FOR STRS.	ROCK EXCAVATION FOR STRS.	CLASS "A" CONCRETE (AE)	CLASS "S" CONCRETE (AE)	PRECAST SLAB CURB UNIT	PRECAST SLAB INT. UNIT	REINFORCING STEEL	STEEL BEARING PILING (12BP53)	STEEL OR ALUMINUM PLATE GUARD BRIDGE RAILING	STRUCTRAL STEEL IN BEAM SPANS	NAME PLATES	TREATED TIMBER PILING	REMOVAL OF EXISTING BRIDGE STR.	TREATED BRIDGE TIMBER
			EACH	CU. YD.	CU. YD.	CU. YD.	CU. YD.	EACH	EACH	LB.	LIN. FT.	LIN. FT.	LB.	EACH	LIN. FT.	COMP. ITEM	MFBM
LICK CREEK	3673	End Bent 1 & 2	2	85.9	—	—	25.4	—	—	3,640	762.0	—	1,462	1	—	—	—
		Piers 1 & 2	—	296.0	—	123.4	24.0	—	—	12,414	630.0	—	—	—	—	—	—
		Spans 1, 2, & 3	—	—	—	—	173.4	—	—	40,167	—	481.0	254,688	—	—	—	—
		Total For Bridge	2	381.9	—	123.4	222.8	—	—	56,221	1,392.0	481.0	256,150	1	—	—	—
LITTLE RIVER	3674	End Bents 1 & 2	2	85.9	—	—	25.4	—	—	3,640	776.0	—	1,462	1	—	—	—
		Piers 1 thru 8	—	1493.3	524.3	1081.0	96.8	—	—	143,478	—	—	—	—	—	—	—
		Spans 1-3 & 7-9	—	—	—	—	260.4	—	—	60,606	—	722.0	280,181	—	—	—	—
		Spans 4-6	—	—	—	—	173.4	—	—	40,167	—	481.0	255,057	—	—	—	—
		Total For Bridge	2	1581.2	524.3	1081.0	556.0	—	—	247,891	776.0	1203.0	536,700	1	—	100%	—
CHANNEL CROSSING	—	End Bents 1 & 2	—	28.9	—	—	8.5	—	—	1,087	—	—	—	—	235.0	—	—
		Int. Bents 2-7	—	—	—	—	21.3	—	—	3089	—	—	—	—	812.0	—	0.25
		Spans 1 thru 8	—	—	—	—	—	16	16	—	—	254.5	—	—	—	—	—
		Total For Bridge	—	28.9	—	—	29.8	16	16	4,176	—	254.5	—	—	1047.0	—	0.25
TOTALS FOR JOB NO. 3611			4	1992.0	524.3	1204.4	808.6	16	16	308,288	2168.0	1938.5*	792,850	2	1047.0	100%	0.25

* For Basis of payment see sheet 24

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	QUAN.	UNIT
Sp. & 101	Clearing	110.33	Acres
Sp. & 101	Grubbing	42.17	Acres
103	Unclassified Excavation	80,102	Cu. Yd.
Sp. & 103	Unclassified Excavation (Channel Change)	687,357	Cu. Yd.
105	Embankment Material	2,161,827	Cu. Yd.
107	Special Compaction of Earthwork	2,915,640	Cu. Yd.
Sp. & 111	Selected Material (Class SM-2)	51,172	Cu. Yd.
Sp. - 114-1	Removal and Disposal of Fence	865	Rod
Sp. & 202	Gravel Base Course (Class GB-3)	96,631	Ton
501	Prime Coat	40,073	Gal.
Sp. & 503	Class 10 Mineral Aggregate in Bituminous Surface Treatment	1,845	Cu. Yd.
Sp. & 503	Asphalt in Bituminous Surface Treatment	44,287	Gal.
602	Mineral Aggregate in Asphaltic Concrete Hot Mix Base Course (Type 2)	7,687	Ton
602	Asphalt Cement in Asphaltic Concrete Hot Mix Base Course	383	Ton
605	Mineral Aggregate in Asphaltic Concrete Hot Mix Surface Course (Type 3)	5,692	Ton
605	Asphalt Cement in Asphaltic Concrete Hot Mix Surface Course	359	Ton
707	Approach Slabs and Gutters (Type A)	4	Each
Sp. & 801	Common Excavation for Structures	1,992.2	Cu. Yd.
Sp. & 801	Rock Excavation for Structures	524.3	Cu. Yd.
Sp. & 802	Class "A" (AE) Concrete	1,223.6	Cu. Yd.
Sp. & 802	Class "S" (AE) Concrete	808.6	Cu. Yd.
Sp. & 802	15' Precast Slab Curb Units	16	Unit
Sp. & 802	15' Precast Slab Interior Units	16	Unit
803	Reinforcing Steel	308,796	Lb.
Sp. & 804	Steel Bearing Piling (12BP53)	2,168	Lin. Ft.
Sp. - 805-7	Steel or Aluminum Plate Guard Bridge Railing	1,938.5	Lin. Ft.
Sp. & 806	Structural Steel in Beam Spans	792,850	Lb.
812	Bridge Name Plates (Type C)	2	Plate
820	Treated Timber Piling	1,047	Lin. Ft.
Sp. & 909	24" Reinforced Concrete Pipe Culverts (Class III)	62	Lin. Ft.
Sp. & 909	42" Reinforced Concrete Pipe Culverts (Class III)	98	Lin. Ft.
Sp. & 909	48" Reinforced Concrete Pipe Culverts (Class III)	118	Lin. Ft.
909	18" Corrugated Metal Pipe Culverts	82	Lin. Ft.
909	24" Corrugated Metal Pipe Culverts	64	Lin. Ft.
909	36" Corrugated Metal Pipe Culverts	74	Lin. Ft.
Sp. & 917	Guard Fence (Type A)	49,307.10	Lin. Ft.
Sp. - 920-4	Seeding	14.50	Acres
923	Right-of-Way Markers	159	Each
1002	Removal and Disposal of Concrete Pavement	941	Sq. Yd.
Sp. - 1008-2	Maintenance of Traffic	90%	Comp. Item
Sp. & 1006	Removal of Existing Bridge Structures	100%	Comp. Item
Sp.	Riprap	189,778	Cu. Yd.
Sp.	Backing for Riprap	93,260	Cu. Yd.
Sp.	Water for Grass	210.6	M-Gal.
Sp.	Permanent Standard Fixed Barricades	2	Each
819	Treated Bridge Timber	0.25	MFBM

REMOVAL & DISPOSAL OF FENCE

STATION	STATION	LOCATION	LENGTH
			RODS
287+43.50	305+45	Rt. & Lt.	43
325+55	325+65	Rt. & Lt.	12
329+16	329+32	Rt. & Lt.	12
338+97	339+09	Rt. & Lt.	13
349+66	351+16	Rt. & Lt.	15
359+18	360+48	Rt. & Lt.	26
365+46	365+60	Rt. & Lt.	12
372+21	372+81	Rt. & Lt.	9
365+67	378+64	Rt	30
378+56	379+25	Rt. & Lt.	58
379+10	379+50	Rt. & Lt.	42
383+20	383+88	Rt. & Lt.	12
415+70	426+18	Rt.	52
431+15	431+95	Rt. & Lt.	25
435+28	436+45	Rt. & Lt.	12
554+82	554+82	Rt. & Lt.	15
563+15	563+25	Rt. & Lt.	14
[illegible]	588+50	Rt.	125
[illegible]	607+00	Lt.	148
[illegible]	609+88	Lt.	140
			865

SEEDING & WATER

STATION	STATION	SEEDING	WATER
		ACRES	M - GAL.
298+43.50	318+00	2.15	31.3
318+00	348+00	1.14	16.6
348+00	378+00	1.60	23.2
378+00	408+00	1.66	24.1
408+00	438+00	0.98	14.2
438+00	468+00	1.20	17.4
468+00	498+00	1.20	17.4
498+00	528+00	1.19	17.3
528+00	558+00	1.20	17.4
558+00	588+00	1.18	17.2
588+00	607+00	1.00	14.4
		14.50	210.6

NOTE: Emulsified asphalt to be applied to all seeded areas.

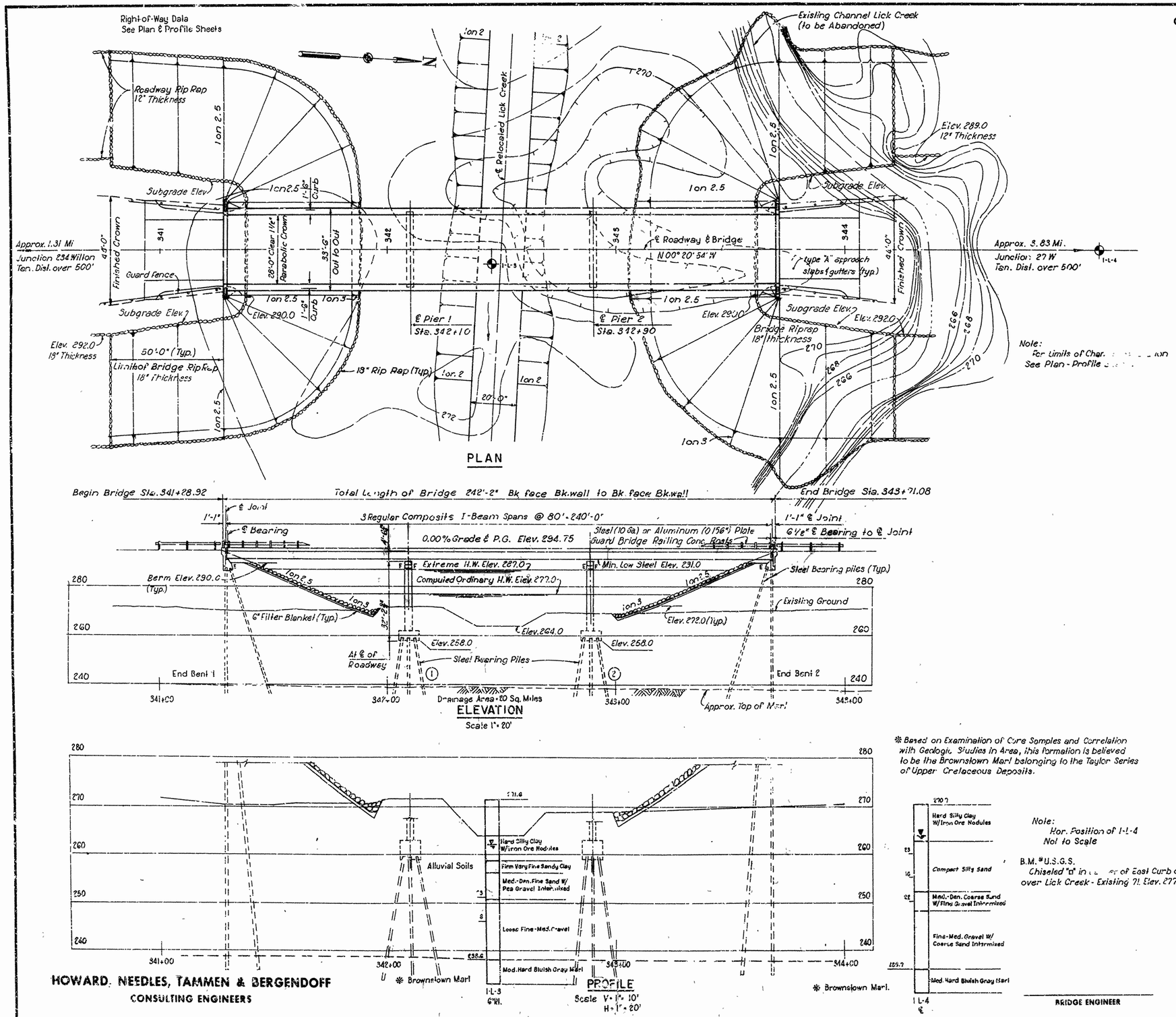
PERMANENT STANDARD FIXED BARRICADES

LOCATION	NUMBER	LIN. FT.
South End of Existing Little River Bridge * 2 Panels Guard Fence	1	28.5
North End of Existing Little River Bridge * 2 Panels Guard Fence	1	28.5
Total	2	57.0

* Place Guard Fence 4.0 feet in front of Fixed Barricade.

[illegible] REEDER, JAMMEN & BERGENDOFF
CONSULTING ENGINEERS
NEW YORK

CORPS OF ENGINEERS CONTRACT NO. DA-34-066-CIVENG-62-1312
JOB NO. 3611



Notes:
Design Specifications A. A. S. H. O. 1961
Unit Stresses
Class A Concrete (n-15) 840 P.S.I.
Class S Concrete (n-10) 1200 P.S.I.
Reinforcing Steel 20,000 P.S.I.
Structural Steel (A-36) 20,000 P.S.I.

Design Loading - A.A.S.H.O. H 20-S16-44

Specifications Arkansas State Highway Commission "Standard Specifications for Highway Construction" Edition of 1959.

Note:
For Details of End Bents See Drwg. # 20
For Details of Piers See Drwg. # 22
For Details of Superstructure See Drwg. # 15030
For Details of Approach Slabs See Drwg. # 1898

All piling shall be 12 BP 53 Steel Bearing piles as follows:
Piers - Minimum bearing capacity of 45 tons per pile driven a minimum of 5' into Marl.
Abutments - Minimum bearing capacity of 40 tons per pile driven a minimum of 3' into Marl.

All Concrete shall be poured in the dry. Exposed corners shall be chamfered ¾" unless otherwise noted.
In general, construction joints shall be horizontal and shall be provided with keys not less than 1½" high covering the middle third of both dimensions.

All concrete shall be air entrained.

All guardrail shall be steel or aluminum plate guard bridge railing; for details see standard drawing # 14990 sheet 24.

* Based on Examination of Core Samples and Correlation with Geologic Studies in Area, this Formation is believed to be the Brownstown Marl belonging to the Taylor Series of Upper Cretaceous Deposits.

B.M. # U.S.G.S.
Chiseled "a" in ... of East Curb of Bridge over Lick Creek - Existing 71. Elev. 277.65.

Notes:
Numbers on the left of test borings indicate the number of blows of a 140 lb. hammer dropped 30" required to drive a 2" ϕ standard split barrel 12". Penetration less than 12" is denoted by 2/6" (blows per penetration).
Elevations to left of borings indicate top of firm Marl. The Symbol (▼) indicates water table at 24 hours unless another time is shown.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

BRIDGE ENGINEER

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK ARKANSAS

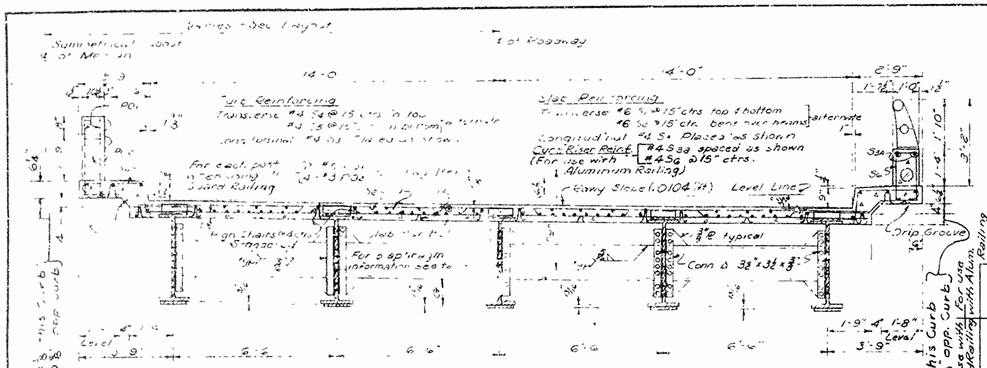
MILLWOOD RESERVOIR CROSSING
U.S. HIGHWAY 71

LAYOUT OF BRIDGE OVER LICK CREEK
PROFILE OF BORINGS

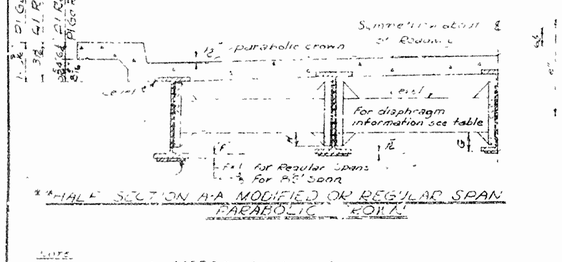
DRAWN BY RCK DATE 11-2-62
TRACED BY ____ DATE ____
CHECKED RDH DATE 1-15-63
SCALE As shown

BRIDGE NO. 3673

DRAWING NO. ~~19~~ Drwg. No. 12628

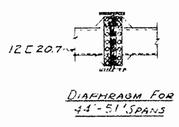


SECTION A-A OF REGULAR SPAN - SLOPED RDWY.
(For Spans Make All Beams of Equal Depth)

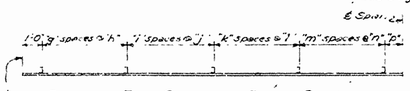


* HALF SECTION A-A MODIFIED OR REGULAR SPAN PARABOLIC RDWY.

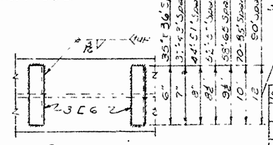
Note: See drawing No 14990 for location of section A-A, section B-B and Variables a, b, c, and d.



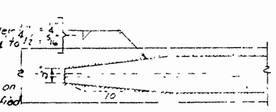
DIAPHRAGM FOR 44'-51' SPANS



SPACING FOR CHANNEL SHEAR CONNECTORS

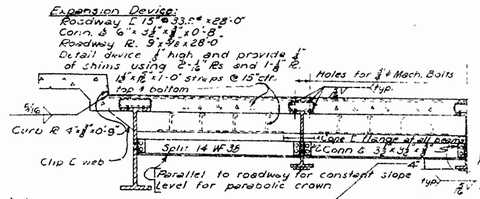


DETAILS OF SHEAR CONNECTORS
Scale 1" = 1'-0"



DETAILS OF COVER PLATES
Scale: ½" = 1'-0"

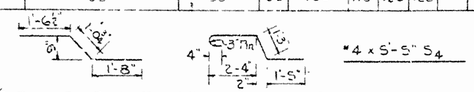
Omit shear connectors on outside beams of modified spans when using beams shown to right of heavy line.



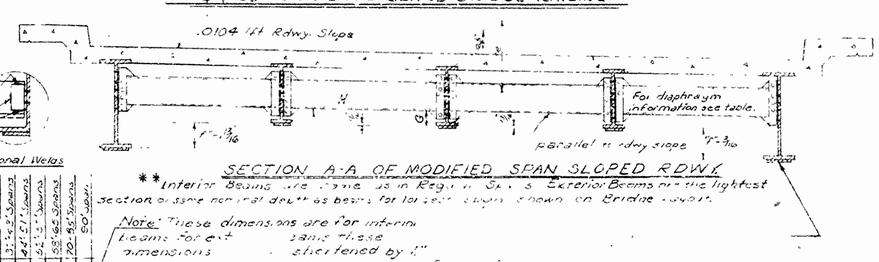
** HALF SECTION B-B MODIFIED OR REGULAR SPANS

Except when using 21 WF 62, see Dwg. No. 14990.

Optional Welds



* S4 & S5 FOR PLATE GUARD BRIDGE RAILING



** SECTION A-A OF MODIFIED SPAN SLOPED RDWY.

** Interior Beams are same as in Regular Span. Exterior Beams are the lightest section of same nominal depth as beams for longest span shown on Bridge Layout.

Note: These dimensions are for interior beams for exterior dimensions same as these shortened by 1"

VARIABLES OF SHEAR CONNECTOR SPACING

SPAN	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	65	70	75	80	85	90
a	12	14	9	10	9	10	10	12	8	8	8	9	8	8	15	12	11	10	10	14	13	12	7		9	10	12	12	11	12	7	
b	4'	4	5'	5	5	5	5	5	5	7	7	7	6"	6"	6	7"	7"	7"	7	7	7	7	9"	9"	9"	9	10"	9"	11	11"	15"
c	12	8	9	11	13	13	12	13	10	7	9	8	7	8	8	8	1	10	9	9	10	11	11	9	7	7	9	9	10	9	9
d	5"	5	6"	6	6"	6"	6"	6"	6"	8	8	8"	7"	8"	7"	8	7"	9	9"	9"	9"	8"	8"	11"	11"	11"	12"	13"	13"	17"
"k"	10	10	7	7	8	5	6	6	9	8	7	8	10	9	10	6	13	9	9	7	8	8	8	8	9	8	7	6	7	8	6
"l"	7	6	8	9	9	7	7	7	7	10	10	9	9	9	9	12	9"	11	11"	11"	9	10	11	14	14	14	13	15	12	15	16	21
m	6	6	5	4	4	7	7	7	7	5	5	5	7	7	8	5	6	6	4	6	5	5	5	5	5	4	5	7	5	5	6
"n"	10	8	7	7	12"	10	10	10	9	12"	12	12"	11	11	11	13	12"	12"	14"	14	12	13	14"	14"	16"	16	12	17	15"	16	21"	21"
"o"	0	0	0	0	0	0	0	0	0	0	0	0	0	6"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Stud shear connectors, granular flux filled, solid fluxed, or equal may be used in place of the channels shown at the following ratios: ½" diameter stud in place of 3" channels, ⅝" diameter stud in place of 4" channels. The studs shall be 4" long and attached and welded to the beam flanges in accordance with recommendations of the manufacturer. Channel sections will be used as basis for measurement of structural steel in shear connectors.

NOTE

This drawing is to be used with drawing no 14990 in general notes and drawing no 14990.

This drawing is a modification of Drawing 5477.

All steel in Composite I-Beam Spans shall be ASTM A 36 Steel unless otherwise noted.

Deflection of exterior beam is for regular spans only.

SPAN	Regular Span Beam	Cover Plate Interior	Cover Plate Exterior	"t" Spacing for Alternate Cover a	b	c	Modified Span Exterior Beams Requiring Cover Pl. Beam	Cover Pl.	"t" Spacing for Plate Guard Railings a	b	c	"e"	Dead Load Deflection Int	Dead Load Deflection Ext.	Strut Spacing No @ α	Values of "t" and Dead Load Defl. for outside beams of modified spans 24WF68 t	Δ	27WF84 t	Δ	30WF99 t	Δ	33WF118 t	Δ	36WF135 t	Δ
35	21WF62	6"x½"x22'-0"	5"x½"x19'-0"	8'-4	5'-4	2	24WF68	4"x⅜"x12'-0"	5'-7	5'-8"	4	2'-2⅛"	⅜"	9/16"	2@17'-6"	5/16	1/16	6¾	7/16	9¾	1/4	1'-0¼	⅜"	1'-5¼	1/16
36	21WF62	7"x7/16"x23'-0"	6"x½"x20'-0"	6'-8	7'-0	3	24WF68	4"x⅜"x15'-0"	5'-7	5'-11"	4	2'-6⅛"	½"	⅝"	2@18'-6"	5/16	2"	6¾	3/8	9¾	1/4	1'-0¼	3/16	1'-5¼	1/16
37	24WF68	7"x½"x21'-0"	6"x7/16"x18'-0"	[illegible]	[illegible]	3			6'-1"	5'-11	4	2'-5⅛"	⅜"	9/16"	2@19'-0"	5/16	3/8	6¾	7/16	9¾	5/16	1'-0¼	3/16	1'-5¼	1/4
38	24WF68	6"x½"x22'-0"	5"x½"x20'-0"	[illegible]	1'-6"	3			6'-1"	5'-12"	4		⅜"	9/16"	2@19'-6"			7¾	1/16		5/16	1	1/4	1'-0¼	3/16
39	24WF68	7"x½"x24'-0"	6"x½"x22'-0"	[illegible]	7'-4	3			5'-7	5'-4"	5		7/16	⅝"	2@19'-6"			7	1/8		1/2		3/16		3/16
40	24WF76	6"x½"x23'-0"	5"x½"x20'-0"	7'-8	7'-8	3	27WF84	4"x⅜"x12'-0"	5'-8	5'-6	5		7/16	⅝"	2@20'-0"			7	1/8		3/8		1/4		3/16
41	24WF76	6"x⅝"x25'-0"	6"x½"x20'-0"	7'-8	8'-0	3			4"x⅜"x14'-0"	5'-9"	5'-8	5	½"	11/16"	3@13'-8			7	1/8		3/8		1/4		1/4
42	24WF76	7"x⅝"x26'-0"	6"x⅝"x24'-0"	5'-7"	8'-2	3			5'-8"x17'-0	5'-10	5'-10"	5	½"	¾"	3@14'-0"			7	1/8		3/8		5/16		1/4
43	24WF76	7"x⅝"x28'-0"	7"x⅝"x26'-0"	8'-8	9'-4"	3	27WF84	6"x⅜"x20'-0"	5'-11	6'-0	5	2'-5⅛"	½"	¾"	3@11'-3"	5/16	5/8	6¾	1/2	9¾	3/8	1'-0¼	3/16	1'-5¼	1/16
44	27WF84	7"x½"x26'-0"	6"x½"x22'-0"	8'-5"	8'-0	3			5'-6¼	6'-11"	5	2'-5⅝"	½"	11/16"	3@14'-8"			3¾	3/16	9¾	7/16	9¾	3/8	9¾	5/16
45	27WF84	7"x⅝"x26'-0"	7"x½"x24'-0"	7'-0"	7'-1	4	30WF99	4"x⅜"x13'-0"	5'-5"	5'-6	6		½"	⅝"	3@15'-0"				1/8		7/16		1/2		5/16
46	27WF84	7"x⅝"x28'-0"	7"x7/16"x26'-0"	7'-0	7'-4	4	30WF99	4"x⅜"x15'-0"	5'-8"	5'-7"	6		½"	11/16"	3@15'-6"				1/8		1/2		3/8		3/8
47	27WF94	8"x½"x28'-0"	8"x7/16"x28'-0"	7'-6"	[illegible]	4	30WF99	5"x⅜"x18'-0"	5'-8	5'-9"	6		⅝"	⅝"	3@15'-2"				1/8		11/16"		1/2		1/16
48	27WF94	8"x½"x27'-0"	6"x½"x24'-0"	7'-9	7'-9	4	30WF99	6"x⅜"x21'-0"	5'-11	5'-10"	6		⅝"	⅝"	3@16'-0"				1/8		¾"		9/16		1/16
49	27WF94	8"x⅝"x29'-0"	8"x⅝"x27'-0"	7'-8	8'-3	4	30WF99	7"x7/16"x24'-0"	5'-11	6'-0"	6		⅝"	⅝"	3@16'-4"				1/8		¾"		⅝"		1/16
50	27WF94	8"x⅝"x30'-0"	8"x⅝"x29'-0"	7'-10"	8'-0"	4	30WF99	7"x½"x26'-0"	5'-11	6'-2	6		⅝"	⅝"	3@16'-8"				1/8		13/16"		11/16"		1/16
51	27WF94	8"x⅝"x31'-0"	8"x⅝"x29'-0"	8'-0"	8'-4	4	30WF99	8"x⅝"x28'-0"	6'-2	6'-3"	6	2'-8⅛"	¾"	1"	3@17'-0"			3¼	1/8	9¾	7/16	9¾	3/8	9¾	1/16
52	30WF99	9"x⅝"x32'-0"	9"x½"x29'-0"	8'-2"	8'-0	4	33WF118	4"x⅜"x12'-0"	5'-7	5'-8"	7	2'-11⅛"	11/16"	15/16"	3@17'-4"						4¾"	3/4	5/8	3/8	1/16
53	30WF99	9"x⅝"x33'-0"	9"x½"x30'-0"	7'-4	8'-0	5	33WF118	4"x⅜"x15'-0"	5'-8	5'-9"	7	2'-11⅛"	¾"	1"	3@17'-8"						4¾"	7/16	5/8	3/8	1/16
54	30WF99	9"x⅝"x35'-0"	9"x½"x32'-0"	[illegible]	[illegible]	5	33WF118	5"x⅜"x21'-0"	6'-0"	5'-10"	7	2'-11⅛"	¾"	1¼"	3@18'-0"						4¾"	8		3/8	1/4
55	30WF99	9"x⅝"x35'-0"	9"x½"x34'-0"	[illegible]	[illegible]	5	33WF118	7"x½"x24'-0"	6'-11	6'-0"	7	2'-11⅛"	13/16"	1⅛"	3@18'-4"						4¾"	13/16	5/8	3/8	1/4
56	30WF108	9"x¾"x35'-0"	8"x¾"x34'-0"	[illegible]	7'-10"	5	36WF135	7"x½"x26'-0"	6'-0"	6'-2"	7	2'-11⅛"	¾"	1⅛"	3@18'-8"						4"	13/16	9/16	3/8	1/4
57	30WF108	9"x¾"x35'-0"	9"x¾"x34'-0"	[illegible]	[illegible]	5	36WF135	8"x½"x27'-0"	6'-0	6'-3"	7	2'-11⅛"	¾"	1⅛"	3@19'-0"						4"	13/16	9/16	3/8	1/4
58	33WF118	9"x¾"x38'-0"	9"x¾"x36'-0"	[illegible]	8'-2"	5	36WF135	4"x⅜"x17'-0"	5'-9"	5'-8"	8	3'-2⅛"	13/16"	1⅛"	3@19'-4"									3/8	1/16
59	33WF118	9"x¾"x39'-0"	9"x¾"x37'-0"	[illegible]	8'-4"	5	36WF135	6"x⅜"x21'-0"	6'-11	5'-9"	8	3'-2⅛"	¾"	1⅛"	3@19'-8"									3/8	1/16
60	33WF118	9"x¾"x39'-0"	9"x¾"x37'-0"	[illegible]	8'-8"	5	36WF135	9"x⅜"x24'-0"	6'-11	5'-10"	8	3'-2⅛"	¾"	1⅛"	4@20'-0"									3/16	1/16
70	36WF135	10"x¾"x45'-0"	10"x¾"x43'-0"	7'-11	8'-3	7			5'-8"	6'-0	10	3'-5¾"	¾"	1⅛"	4@17'-6"										
75	36WF150	10"x¾"x48'-0"	10"x¾"x46'-0"	8'-5"	8'-5	7			6'-1	6'-0	10	3'-5⅛"	1"	1⅛"	4@15'-3"										
80	[illegible]	10"x¾"x46'-0"	[illegible]	8'-5	8'-0	8			6'-11	6'-0	11	3'-5¾"	1⅛"	2⅛"	4@20'-0"										
85	[illegible]		[illegible]	8'-0	8'-0	8			6'-11	6'-0	12			2⅛"	5@17'-0"										
	36WF194	10"x¾"x47'-0"	[illegible]	[illegible]	8'-5	8			6'-11	6'-0	12	3'-5¾"	1⅛"	[illegible]	5@17'-5"										
90	36WF230	12"x¾"x12'-0"	[illegible]	6'-5	8'-11	8			6'-11	6'-11	12	3'-5¾"	1 1/16"	2⅛"	5@18'-0"										

LOADING: H20-S16 (A.S.H.O. 1961) and Special Interstate Loading (2-24000# axles spaced 4'-0 centers)

	Interior Beam	Exterior Beam
1. Dead Load:		
a. To W Beam -	524#/ft + 1.1 (wt/ft of W)	529#/ft + 1.1 (wt/ft of W)
b. To Composite Beam		
(1) Plate Guard Br. Railing	90#/ft	90#/ft
(2) Aluminum Br. Railing -	142#/ft	142#/ft
2. Live Loads:		
a. To each Comp. Beam -	1.182 wheels + Impact	1.156 wheels + Impact

UNIT STRESSES

Class S Concrete (n=10)	1,200 psi
Structural Steel (A-36)	20,000 psi
Reinforcing Steel	20,000 psi

DIAPHRAGM TABLE

SPAN LENGTHS	Channel Size	Regular Span Ext. Bm. No. Rivets	Regular Span Int. Bm. No. Rivets	Modified Span Ext. bm. No. Rivets	Modified Span Int. Bm. No. Rivets	G	H
35'-43'	12 C 20.7	5	5	5	5	3½"	2¼"
44'-51'	12 C 20.7	7	7	7	7	7"	5"
52'-75'	15 C 33.9	8	8	8	8	7"	5"
80'-90'	15 C 33.9	8	8	8	8	8"	5"

Bridge Manual Standard Drawing 3-7-2

DETAILS OF STANDARD
35'-90' COMPOSITE I-BEAM SPANS
28' CLEAR ROADWAY 1'-6" & 1'-7½" CURBS
ROADWAY: 1½" Parabolic Crown 0.0104 ft SLOPE
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

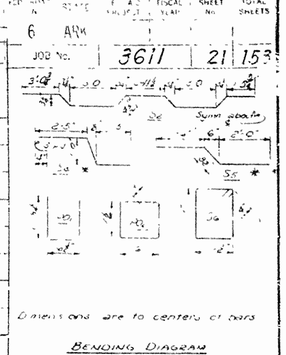
RE-DRAWN BY GM DATE 31 Oct 61
TRACED BY ___ DATE ___
RE-CHECKED BY JCH DATE 19 Sep 61
SCALE ½" = 1'-0" or As Shown

K. P. Carlson
BRIDGE ENGINEER

BRIDGE NO.
DRAWING NO. 15030

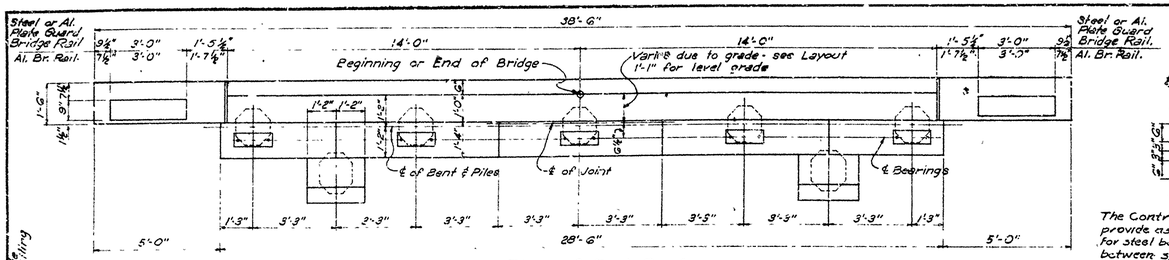
FILE DWG 12528-B

Carr. & Sec. No.	Route	Fiscal Year	Sheet No.	Total Sheets
6	ARK			
JOB No. 3611			21	153



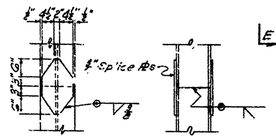
BENDING DIAGRAM

JOB NO. 3611



Plan of End Bent

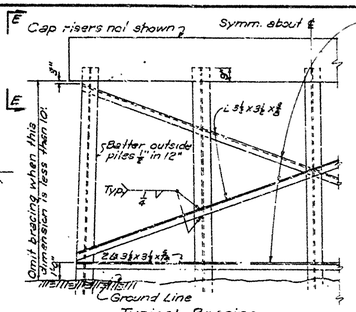
Sloped or Crowned Roadway



The Contractor at his own expense may provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 feet.

Pile Splice Detail

Scale: 1/2" = 1'-0"



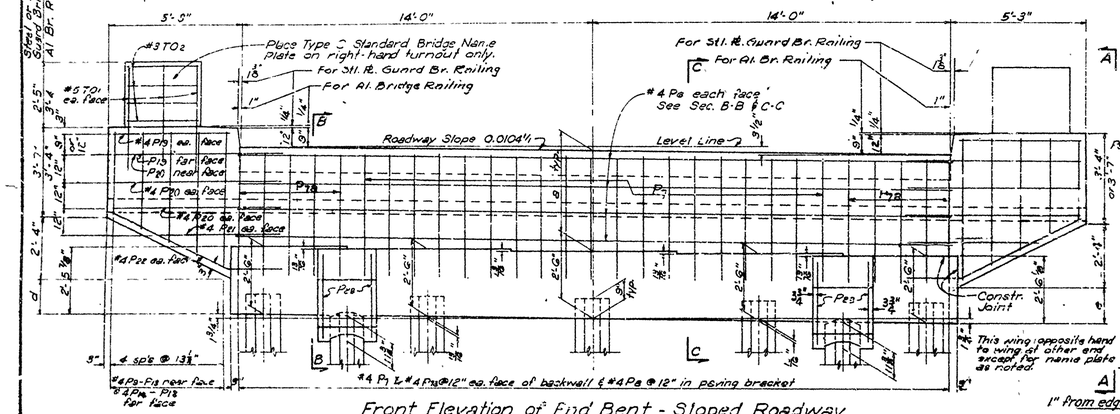
Typical Bracing Intermediate H Pile Bent

Scale: 1/4" = 1'-0"

The lengths of bracing members shall be determined in the field. Each member shall be one continuous angle and shall be welded to the steel bearing piles as shown. Angle bracing shall be measured and paid for as "Structural Steel in Beam Spans"

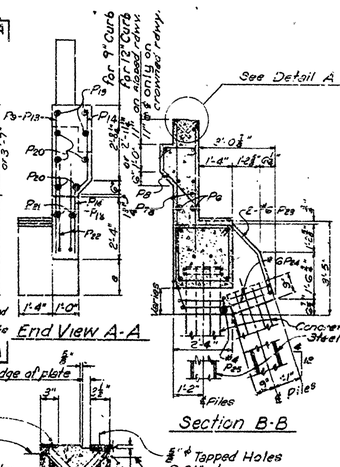
VARIABLES

Span	Beams Interior	Beams Exterior	Sloped Roadway a	b	c	d	e	f	g	Crowned Roadway a	h	j	k	m
35'-36'	21WF62	21WF62	2'-5½"	–	–	1		–	–	2'-5½"	–	0'-4"	–	–
		24WF68		3½	2"	3⅛		2'-2⅛"	2"		3⅛"	3½"	2'-10½"	4"
		27WF84		6½	4½"	6½		2'-11½"	5"		6½"	6½"	3'-1½"	7"
		30WF99		9½	7½"	9½		3'-2½"	8"		9½"	9½"	3'-3½"	10"
		33WF118		12½	10½"	12½		3'-5½"	11"		12½"	12½"	3'-7½"	13"
35'-36'	21WF62	33WF135	2'-5½"	15½"	13½"	15½		3'-9½"	13"	2'-5½"	15½"	15½"	3'-9½"	15"
37'-43'	24WF68/76	24WF68/76	2'-8½"	–	–	3"		–	–	2'-8½"	–	3½"	–	–
		27WF84		3½	2½"	6⅛"		2'-8⅛"	2"		3½"	3½"	2'-10½"	4"
		30WF99		6½	4½"	9½"		2'-11½"	5"		6½"	9½"	3'-1½"	7"
		33WF118		9½	8½"	12½"		3'-2½"	8"		9½"	12½"	3'-4½"	10"
37'-43'	24WF68/76	30WF135	2'-8½"	12½"	10½"	15½"		3'-5½"	11"	2'-8½"	12½"	15½"	3'-6½"	13"
44'-51'	27WF84-94	27WF84-94	2'-11½"	–	–	6½"		–	–	2'-11½"	–	6½"	–	–
		30WF99		3½	2"	9½"		2'-8½"	2"		3½"	9½"	3'-10½"	4"
		33WF118		6½	5½"	12½"		3'-0"	5"		7"	12½"	3'-1½"	7"
44'-51'	27WF84-94	33WF135	2'-11½"	9½"	7½"	15½"		3'-2½"	6"	2'-11½"	9½"	15½"	3'-3½"	10"
52'-55'	30WF99	30WF99	3'-2½"	–	–	9½"		–	–	3'-2½"	–	9½"	–	–
		33WF118		4"	2½"	12½"		2'-9½"	2"		4½"	12½"	2'-10½"	4"
52'-55'	30WF99	33WF135	3'-2½"	6½"	4½"	15½"		2'-11½"	5"	3'-2½"	6½"	15½"	3'-1½"	7"
56'-57'	30WF108	30WF108	3'-2½"	–	–	9½"		–	–	3'-2½"	–	9½"	–	–
56'-57'	30WF108	33WF118	3'-2½"	3½"	2½"	12½"		2'-9½"	2"	3'-2½"	4"	12½"	2'-10½"	4"
56'-57'	30WF108	36WF135	3'-2½"	6½"	4½"	15½"		2'-11½"	5"	3'-2½"	6½"	15½"	3'-0½"	7"
58'-60'	33WF118	33WF118	3'-5½"	–	–	12½"		–	–	3'-5½"	–	12½"	–	–
58'-60'	33WF118	36WF135	3'-5½"	3½"	1½"	15½"		2'-8½"	2"	3'-5½"	3½"	15½"	2'-9½"	3"
62'	33WF130	33WF130	3'-5½"	–	–	12½"		–	–	3'-5½"	–	12½"	–	–
62'	33WF130	36WF135	3'-5½"	3½"	1½"	15½"		2'-8½"	2"	3'-5½"	3½"	15½"	2'-9½"	3"
70'	36WF135	36WF135	3'-8½"	–	–	15½"		–	–	3'-8½"	–	15½"	–	–
80'	36WF170	36WF170	3'-8½"	–	–	15½"		–	–	3'-8½"	–	15½"	–	–



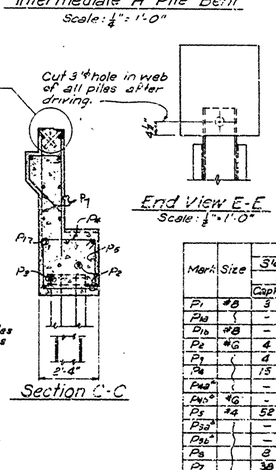
Front Elevation of End Bent - Sloped Roadway

Cap W shown with batter piles. Batter piles occur at end bents only



End View A-A

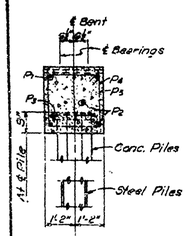
Section B-B



End View E-E

Scale: 1/2" = 1'-0"

Section C-C



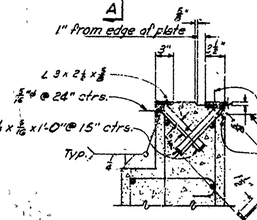
Section D-D

At Intermediate Bent

Cap dimensions not shown same as for Front Elev. of End Bent - Sloped Rdwy.

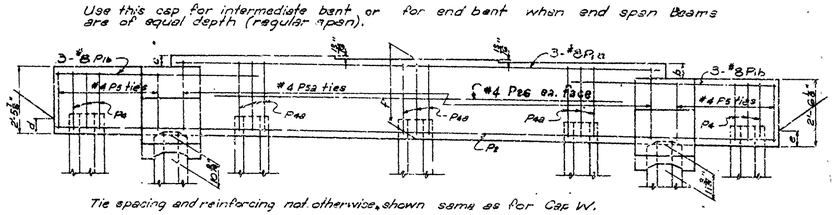
Elevation of Cap W - Sloped Roadway

Use this cap for intermediate bent or for end bent when end span beams are of equal depth (regular span).



Detail A

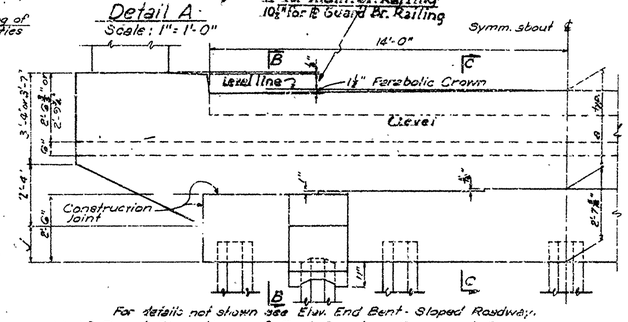
Scale: 1" = 1'-0"



Tie spacing and reinforcing not otherwise shown same as for Cap W.

Elevation of Cap X - Sloped Roadway

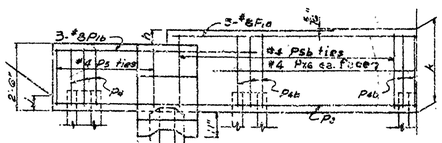
Use this cap for end bent when end span interior beams are of less depth than exterior beams (modified span)



For details not shown see Elev. End Bent - Sloped Roadway.

Half Front Elevation of End Bent - Crowned Roadway

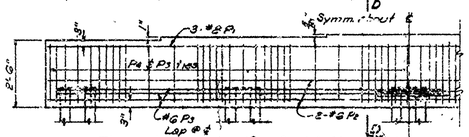
Cap Y shown with batter piles. Batter piles occur at end bents only.



Tie spacing and reinforcing not otherwise shown same as for Cap Y.

Half Elevation of Cap Z - Crowned Roadway

Use this cap for end bent when end span interior beams are of less depth than exterior beams (modified span).



Tie spacing same as for Cap W - Sloped Rdwy.

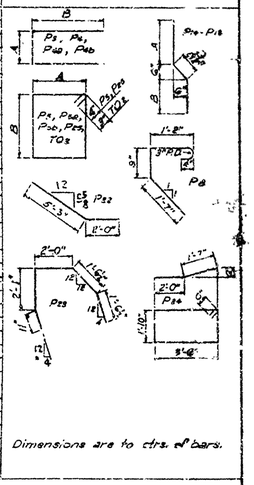
Half Elevation of Cap Y - Crowned Roadway

Use this cap for intermediate bent or for end bent when end span beams are of equal depth (regular span).

BAR LIST

Mark	Size	Number Per Bent: Sloped Rdwy. End Cap W	Sloped Rdwy. End Cap X	Sloped Rdwy. Int. Cap W	Sloped Rdwy. Int. Cap Y	Crowned Rdwy. End Cap Z	Crowned Rdwy. Int. Cap Y	Length	A	B	Pin Dia.
P1	#8	3	–	3	3	–	3	28'-2"			Str.
P1a		–	3	–	–	3	–	19'-2"			
P1b	#8	–	6	–	–	6	–	8'-0"			
P2	#6	4	4	4	4	4	4	28'-2"			Str.
P3		4	4	4	4	4	4	31'-6"	1'-7"	15'-0"	2½"
P4		15	6	15	15	6	15	6'-1"	1'-11½"	2'-11½"	
P4a*		–	9	–	–	–	–	6'-1"+2½"		2'-11½"+½"	2½"
P4b*	#6	–	–	–	–	9	–	6'-1"+2½"m		2'-11½"m	2½"
P5	#4	52	16	52	52	16	52	8'-3"		2'-11½"	1½"
P5a*		–	36	–	–	–	–	8'-3"+2½"		2'-11½"+½"	
P5b*		–	–	–	–	56	–	8'-3"+2½"m	1'-11½"	2'-11½"m	1½"
P6		8	8	–	8	8	–	26'-0"			Str.
P7		38	38	–	38	38	–	6'-11"			Str.
P7a*		*0	20	–	20	20	–	8'-11"+m			Str.
P8		29	29	–	29	29	–	4'-0"			1½
P8a*		2	2	–	2	2	–	3'-0"			Str.
P9		2	2	–	2	2	–	3'-6"			
P11*		2	2	–	2	2	–	4'-0"			
P12*		2	2	–	2	2	–	4'-6"			
P13*		2	2	–	2	2	–	5'-0"			Str.
P14*		2	2	–	2	2	–	3'-3"	2'-4"	2'-2½"	1½
P15*		2	2	–	2	2	–	3'-9"		0'-8"	
P16*		2	2	–	2	2	–	4'-3"		1'-2½"	
P17*		2	2	–	2	3	–	4'-9"		1'-8½"	
P18*		2	2	–	2	2	–	5'-3"	2'-4"	2'-2½"	1½
P19		6	6	–	6	6	–	4'-11"			Str.
P20		10	10	–	10	10	–	6'-9"			
P21		4	4	–	4	4	–	5'-0"			Str.
P22	#4	4	4	–	4	4	–	7'-3"			1½"
P23	#6	4	4	–	4	4	–	8'-0"			2½"
P24	#6	4	4	–	4	4	–	11'-3"			2½"
P25	#4	2	2	–	2	2	–	5'-4"	0'-5"	1'-11½"	1½
P26	#4	–	2	–	–	2	–	16'-0"	–	–	Str.
TO1	#5	12	2	–	12	12	–	5'-2"			Str.
TO2	#3	8	8	–	8	8	–	6'-11"	0'-6"	2'-9"	1½

Bending Diagram



* For Steel or Aluminum Plate Guard Bridge Railing add 3" to lengths of bars P9 - P18. Increase dimension A 3" for bars P4 to P13.

△ For values of "g" and "m" see table of variable dimensions

Notes

All concrete to be Class S. All exposed corners to have ¾" chamfer unless otherwise noted.

△ All piling shall be driven to a minimum capacity of 40 tons per pile. Piling shall be either 12 3P 53, 16" octagonal precast concrete piles, or concrete filled metal shell piles, as shown on the layout.

Intermediate bents not to be used for spans over 45'.

All Structural Steel except steel piles shall be ASTM A-36 Steel.

This Drawing is a modification of Dwg. 5477 A.

△ Piling Revision 8-14-62 RWM

DETAILS OF STANDARD PILE BENTS FOR 35' TO 80' COMPOSITE I-BEAM SPANS 28' CLEAR ROADWAY 1'-6" OR 1'-7½" CURBS

Roadway: 1½" Parabolic Crown or 0.0104 1/1 Slope

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

R.E. - DRAWN BY: EAH DATE: 3-8-62

TRACED BY: DATE:

R.E. CHECKED BY: DATE:

SCALE: 3/16" = 1'-0" and as noted

L. P. Nelson
BRIDGE ENGINEER

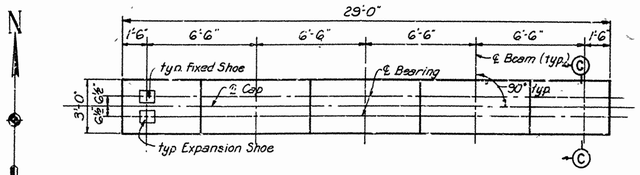
BRIDGE NO. 3673

DRAWING NO. 12529

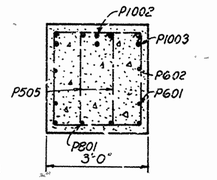
267

CORPS OF ENGINEERS CONTRACT NO. DA-34-066-CIVENG-62-1312
JOB 3611

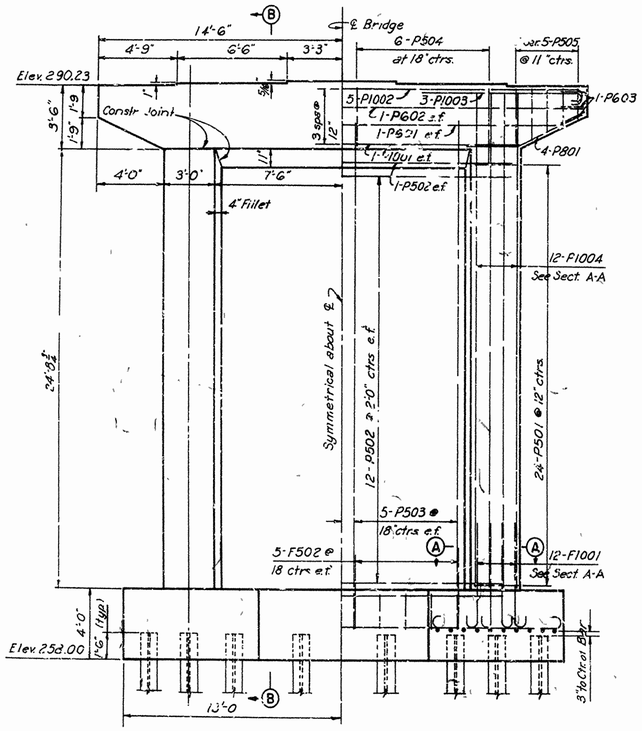
22/153



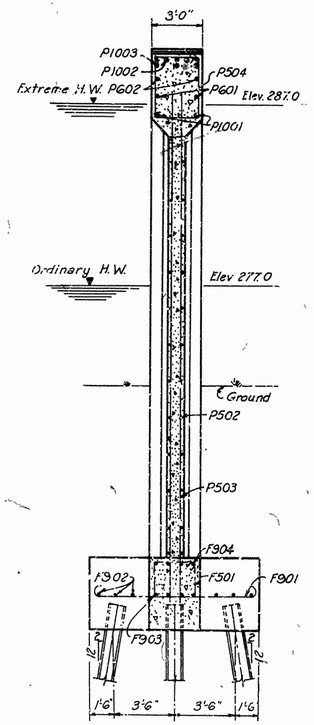
PLAN CAP BEAM



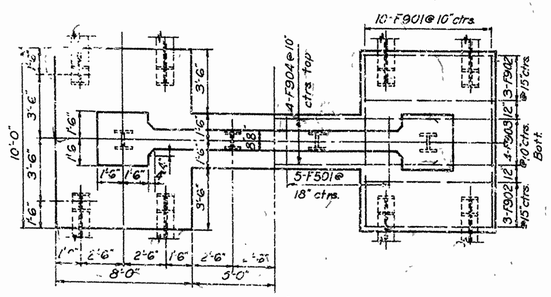
SECTION C-C
Scale 1/4" = 1'-0"



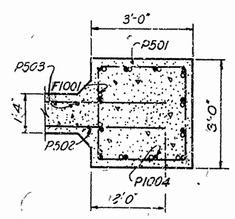
PIER ELEVATION
Scale 1/4" = 1'-0"



SECTION B-B
Scale 1/4" = 1'-0"



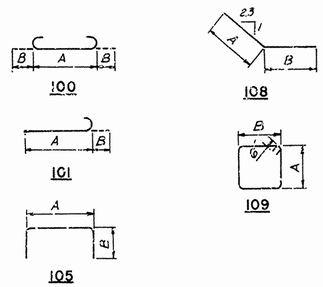
FOOTING PLAN
Scale 1/4" = 1'-0"



SECTION A-A
Scale 1/4" = 1'-0"

REINFORCING BAR LIST

MARK	SIZE	NUMBER	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT (POUNDS)
FOOTING REINFORCING							
F501	5	10	10'-0"	100	2'-0"	2'-6"	
F502	5	20	4'-0"	Str.			
F901	9	20	12'-0"	100	9'-6"	1'-3"	
F902	9	12	10'-0"	100	7'-6"	1'-3"	
F903	9	4	28'-0"	100	25'-6"	1'-3"	
F904	9	4	19'-0"	Str.			
F1001	10	24	7'-8"	101	6'-3"	1'-5"	
					total for 2 Piers		588.4
					total Per Pier		294.2
PIERS REINFORCING							
P501	5	48	11'-6"	109	2'-7 1/2"	2'-7 1/2"	
P502	5	26	19'-0"	Str.			
P503	5	20	26'-0"	Str.			
P504	5	12	12'-6"	109	3'-1 1/2"	2'-7 1/2"	
P505	5	4 Set 5	7'-6"-10'-8"	109	1'-6"-3'-1"	1'-9"	
P601	6	2	25'-6"	Str.			
P602	6	2	28'-6"	Str.			
P603	6	6	7'-6"	105	2'-6"	2'-6"	
P801	8	8	7'-7"	108	4'-3"	3'-4"	
P1001	10	2	20'-6"	Str.			
P1002	10	5	31'-4"	100	28'-6"	1'-5"	
P1003	10	6	12'-11"	101	11'-6"	1'-5"	
P1004	10	24	27'-9"	Str.			
					total for 2 Piers		12,414
					total Per Pier		6,207



Notes:

For type and placement of shoes see layout sheet 19

Pier 2 shown, Pier 1 similar except both shoes fixed. For details of Anchor Bolt Placement see Common Detail Sheet (Std. Dwg. No. 1-8890).

Use Class "S" Concrete (f'c = 3000 p.s.i.) for Cap Beam.

Use Class "A" Concrete (f'c = 2100 p.s.i.) for Shafts, webs and footings.

Chamfer all exposed corners 3/4".

Piling shall be 12 BP53 and shall be driven to a minimum bearing of 45 tons per pile.

All clearance to main Reinforcing 3" except as shown.

Use 40 Diameters lap for all bar splices.

BRIDGE ENGINEER

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK ARKANSAS

MILLWOOD RESERVOIR CROSSING
U.S. HIGHWAY 71

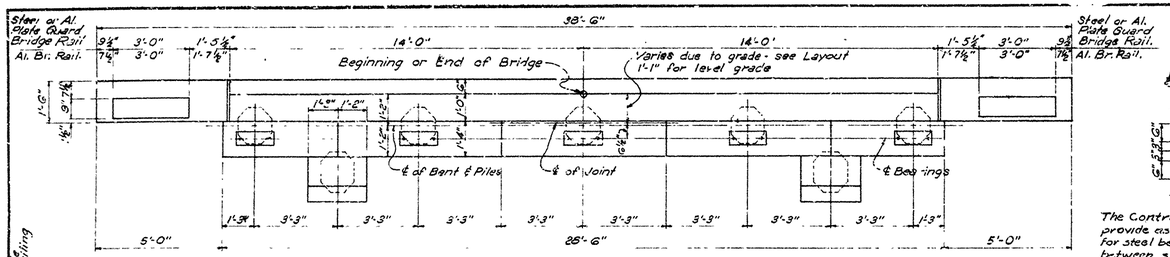
LICK CREEK PIERS

DRAWN BY RCV DATE 11-22-62
TRACED BY ____ DATE ____
CHECKED RPM DATE 12-1-62
SCALE As Shown

BRIDGE NO. 3673

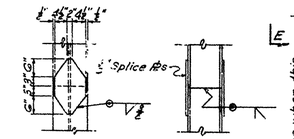
DRAWING NO. ~~22~~ 12580

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
	ARK.				
JOB No.		3611	23	153	



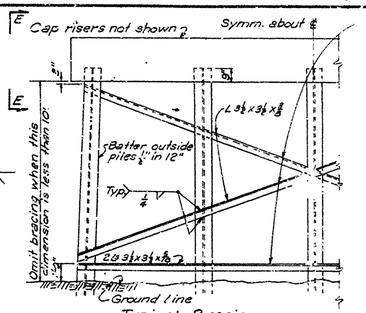
Plan of End Bent

Sloped or Crowned Roadway



Pile Splice Detail

Scale: 1/2" = 1'-0"



Typical Bracing

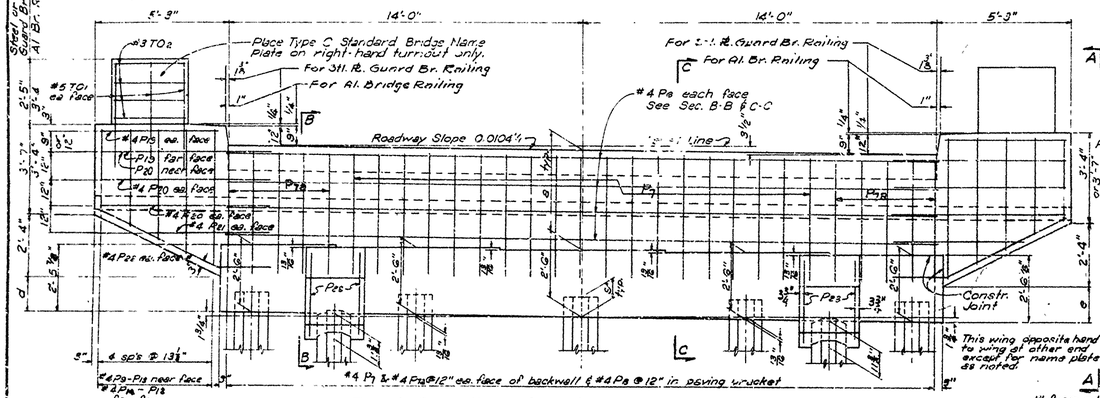
Intermediate ⅄ Pile Bent

Scale: 1/4" = 1'-0"

The lengths of bracing members shall be determined in the field. Each member shall be one continuous angle and shall be welded to the steel bearing piles as shown. Angle bracing shall be measured and paid for as "Structural Steel in Beam Spans"

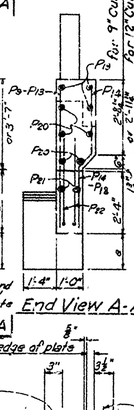
VARIABLES

Span	Beams Interior	Beams Exterior	Sloped Roadway a	b	c	d	e	f	g	Crowned Roadway a	h	j	k	m
35'-36'	21WF62	21WF62	2'-5 1/2"	–	–	1		–	–	2'-5 1/2"	–	0 1/8"	–	–
		24WF68		3 1/4"	2"	3 1/4"		2'-8 1/4"	2"		3 1/4"	3 3/8"	2'-10 1/4"	6"
		27WF84		6 1/4"	4 1/2"	6 1/2"		2'-11 1/2"	5"		6 1/2"	6 3/8"	3'-4 1/2"	7"
		30WF99		9 1/2"	7 3/4"	9 7/8"		3'-2 1/8"	8"		9 7/8"	9 3/8"	3'-3 3/8"	10"
		33WF118		12 3/4"	10 3/4"	12 3/4"		3'-5 3/4"	11"		12 3/4"	12 3/8"	3'-7 1/8"	13"
35'-36'	21WF62	36WF135	2'-5 1/2"	15 1/4"	13 1/2"	15 3/8"		3'-8 3/8"	13"	2'-5 1/2"	15 3/8"	15 3/8"	3'-9 1/2"	15"
37'-43'	24WF68-76	24WF68-76	2'-8 1/2"	–	–	3 1/4"	0	–	–	2'-8 1/2"	–	3 3/8"	–	–
		27WF84		3 1/4"	2 1/4"	6 1/4"		2'-8 1/4"	2"		3 1/4"	6 1/2"	2'-10 1/4"	4"
		30WF99		6 1/4"	4 1/2"	9 1/2"		2'-11 1/2"	5"		6 1/2"	9 7/8"	3'-1 1/8"	7"
		33WF118		9 3/4"	8 1/4"	12 3/4"		3'-2 3/4"	8"		9 3/4"	12 3/4"	3'-4 3/4"	10"
37'-43'	24WF68-76	36WF135	2'-8 1/2"	12 3/4"	10 3/4"	15 1/4"		3'-5 3/4"	11"	2'-8 1/2"	12 3/4"	15 3/8"	3'-6 3/4"	13"
44'-51'	27WF84-94	27WF84-94	2'-11 1/2"			6 3/4"				2'-11 1/2"		6 3/8"		
		30WF99		3 3/4"	2"	9 3/4"		2'-8 3/4"	2"		3 3/4"	9 3/8"	2'-10 3/4"	4"
		33WF118		6 3/4"	5 1/4"	12 3/4"		2'-9 3/4"	5"		7"	12 3/8"	3'-1 1/8"	7"
44'-51'	27WF84-94	36WF135	2'-11 1/2"	9 3/4"	7 1/4"	15 3/8"		2'-9 3/4"	8"	2'-11 1/2"	9 3/8"	15 3/8"	3'-3 3/8"	10"
52'-55'	30WF99	30WF99	3'-2 1/4"	–	–	9 3/4"		–	–	3'-2 1/4"	–	9 7/8"	–	–
		33WF118		4"	2 3/4"	12 1/4"		2'-11 3/4"	2"		4 1/8"	12"	2'-10 1/2"	4"
52'-55'	30WF99	36WF135	3'-2 1/4"	6 1/4"	4 1/2"	15 1/4"		2'-11 1/2"	5"	3'-2 1/4"	6 1/2"	15 1/8"	3'-1 1/8"	7"
56'-57'	30WF108	33WF118	3'-2 1/4"	3 3/4"	2 3/4"	12 1/4"		2'-9 3/4"	2"	3'-2 1/4"	4"	12 1/8"	2'-10 1/2"	4"
56'-57'	30WF108	36WF135	3'-2 1/4"	6 1/4"	4 1/2"	15 1/4"		2'-11 1/2"	5"	3'-2 1/4"	6 1/8"	15 1/8"	3'-0 1/2"	7"
58'-60'	33WF118	33WF118	3'-5 1/4"	–	–	12 1/4"		–	–	3'-5 1/4"	–	12 1/8"	–	–
58'-60'	33WF118	36WF135	3'-5 1/4"	3 3/4"	1 3/4"	15 1/4"		2'-8 3/4"	2"	3'-5 1/4"	3 7/8"	15 1/8"	2'-9 1/2"	3"
63'	33WF130	33WF130	3'-5 3/4"	–	–	12 3/4"		–	–	3'-5 3/4"	–	12 7/8"	–	–
65'	36WF130	36WF135	3'-5 3/4"	3 1/4"	1 1/4"	15 1/8"		2'-11 1/2"	2"	3'-5 3/4"	3 7/8"	15 1/8"	2'-9 1/2"	3"
70'	36WF135	36WF135	3'-6"	–	–	15 1/8"		–	–	3'-8"	–	15 1/8"	–	–

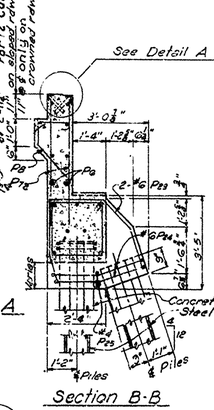


Front Elevation of End Bent - Sloped Roadway

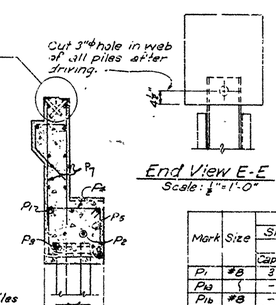
Cap W shown with batter piles. Batter piles occur at end bents only



End View A-A



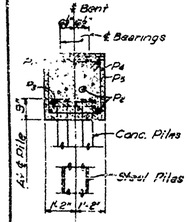
Section B-B



End View E-E

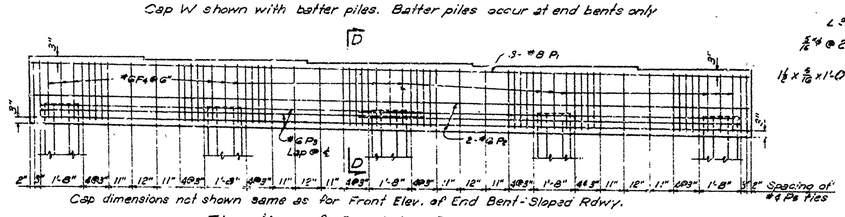
Scale: 1/4" = 1'-0"

Section C-C



Section D-D

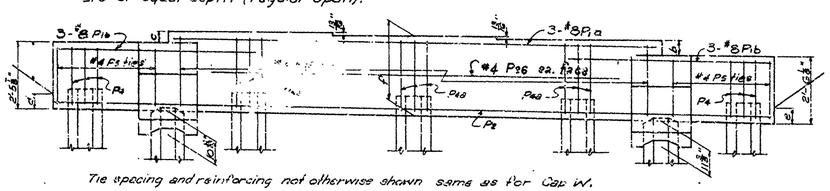
At intermediate Bent



Cap dimensions not shown same as for Front Elev. of End Bent - Sloped Rdwy.

Elevation of Cap W - Sloped Roadway

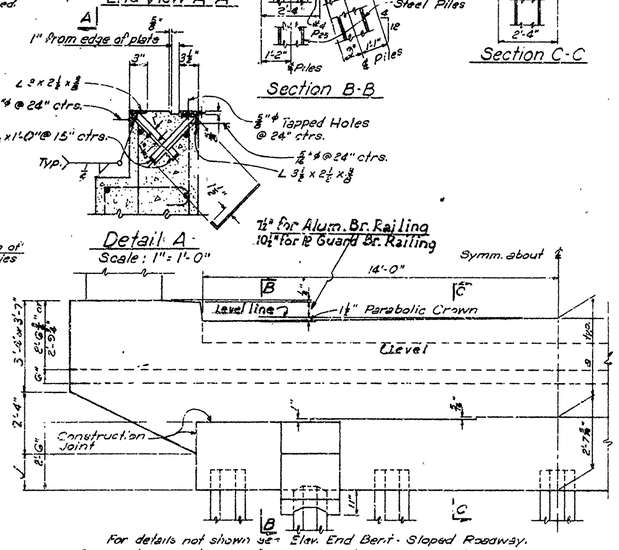
Use this cap for intermediate bent or for end bent when end span beams are of equal depth (regular span).



Tie spacing and reinforcing not otherwise shown same as for Cap W.

Elevation of Cap X - Sloped Roadway

Use this cap for end bent when end span interior beams are of less depth than exterior beams (modified span).



Detail A

Scale: 1" = 1'-0"

For details not shown see Elev. End Bent - Sloped Roadway.

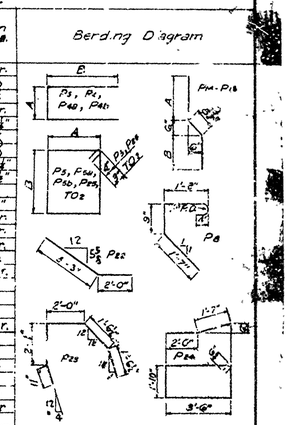
Half Front Elevation of End Bent - Crowned Roadway

Cap Y shown with batter piles. Batter piles occur at end bents only.

BAR LIST

Mark	Size	Number Per Bent: Sloped Rdwy. End CapW	Sloped Rdwy. End CapX	Sloped Rdwy. Int. CapW	Sloped Rdwy. Int. CapY	Crowned Rdwy. End CapZ	Crowned Rdwy. End CapY	Crowned Rdwy. Int. CapZ	Crowned Rdwy. Int. CapY	Length	A	B	Pin Dia.
P1	#8	3	–	3	3	–	–	–	–	28'-6"			Str.
P1a		–	3	–	–	3	–	–	–	19'-2"			
P1b	#8	–	6	–	–	6	–	–	–	21'-7"			
P2	#6	4	4	4	4	4	4	–	–	26'-1"			Str.
P3		4	4	4	4	4	4	–	–	31'-6"	1'-7"	15'-0"	2 1/2"
P4		15	6	15	6	15	6	–	–	6'-1"	1'-11 1/2"	2'-11 1/2"	
P4a*		–	9	–	–	–	–	–	–	3'-11 1/2"		2'-11 1/2"	
P4b*	#6	–	–	–	9	–	–	–	–	3'-11 1/2"		2'-11 1/2"	2 1/2"
P5	#4	52	16	52	32	16	5	–	–	8'-9"		2'-11"	1 1/2"
P5a*		–	–	36	–	–	–	–	–	8'-9" + 2d		2'-11" + 3d	
P5b*		–	–	–	–	36	–	–	–	8'-9" + 2d	1'-11 1/2"	2'-11 1/2" + 3d	1 1/4"
P6		8	8	–	8	8	–	–	–	28'-0"			Str.
P7		38	38	–	38	38	–	–	–	8'-11"			Str.
P7a*		20	20	–	20	20	–	–	–	8'-11" + m			Str.
P8		29	29	–	29	29	–	–	–	8'-0"			1 1/4"
P9*		2	2	–	2	2	–	–	–	3'-0"			Str.
P10*		2	2	–	2	2	–	–	–	3'-6"			
P11*		2	2	–	2	2	–	–	–	4'-0"			
P12*		2	2	–	2	2	–	–	–	4'-6"			
P13*		2	2	–	2	2	–	–	–	5'-0"			Str.
P14*		2	2	–	2	2	–	–	–	3'-3"	2'-4"	0'-2 1/2"	1 1/4"
P15*		2	2	–	2	2	–	–	–	3'-9"		0'-2 1/2"	
P16*		2	2	–	2	2	–	–	–	4'-3"		1'-2 1/2"	
P17*		2	2	–	2	2	–	–	–	4'-9"		1'-8 1/2"	
P18*		2	2	–	2	2	–	–	–	5'-3"	2'-4"	2'-2 1/2"	1 1/4"
P19		6	6	–	6	6	–	–	–	4'-11"			Str.
P20		10	10	–	10	10	–	–	–	4'-9"			
P21		4	4	–	4	4	–	–	–	5'-0"			Str.
P22	#4	4	4	–	4	4	–	–	–	7'-3"			1 1/4"
P23	#6	4	4	–	4	4	–	–	–	8'-0"			2 1/2"
P24	#6	4	4	–	4	4	–	–	–	11'-8"			2 1/2"
P25	#4	2	2	–	2	2	–	–	–	5'-4"	0'-5"	1'-11 1/2"	1 1/4"
P26	#4	–	2	–	–	2	–	–	–	10'-0"	–	–	Str.
TO1	#5	12	12	–	12	12	–	–	–	5'-2"			Str.
TO2	#3	8	8	–	8	8	–	–	–	6'-11"	0'-6"	2'-9"	1 1/4"

Bending Diagram



Dimensions are to ct-s. of bars.

* For Steel or Aluminum Plate Guard Bridge Railing add 3" to lengths of bars P3 - P18; Increase dimension A 3" for bars P4 to P13.

△ For values of "g" and "m" see table of variable dimensions

Notes

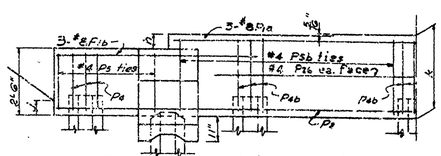
All concrete to be Class S. All exposed corners to have 3/4" chamfer unless otherwise noted.

△ All piling shall be driven to a minimum capacity of 36 tons per pile. Piling shall be either 12 BP 53, 16" octagonal precast concrete piles, or concrete filled metal shell piles, as shown on the layout.

Intermediate bents not to be used for spans over 45'.

All Structural Steel except steel piles shall be ASTM A-36 Steel.

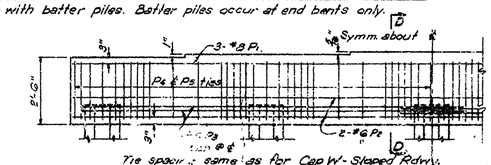
This Drawing is a modification of Dwg. 5477 A.



Tie spacing and reinforcing not otherwise shown same as for Cap Y.

Half Elevation of Cap Z - Crowned Roadway

Use this cap for end bent when end span interior beams are of less depth than exterior beams (modified span).



Tie spacing same as for Cap W - Sloped Rdwy.

Half Elevation of Cap Y - Crowned Roadway

Use this cap for intermediate bent or for end bent when end span beams are of equal depth (regular span).

△ Piling Revision 8-14-62 RWM

DETAILS OF STANDARD PILE BENTS FOR 35' TO 70' COMPOSITE I-BEAM SPANS 28' CLEAR ROADWAY 1'-6" OR 1'-7 1/2" CURBS

Roadway: 1 1/2" Parabolic Crown or 0.0104'/' Slope

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

R.E. - DRAWN BY: E.A.W. DATE: 3-8-62

TRACED BY: DATE:

R.E. CHECKED BY: DATE:

SCALE: 3/8" = 1'-0" and as noted

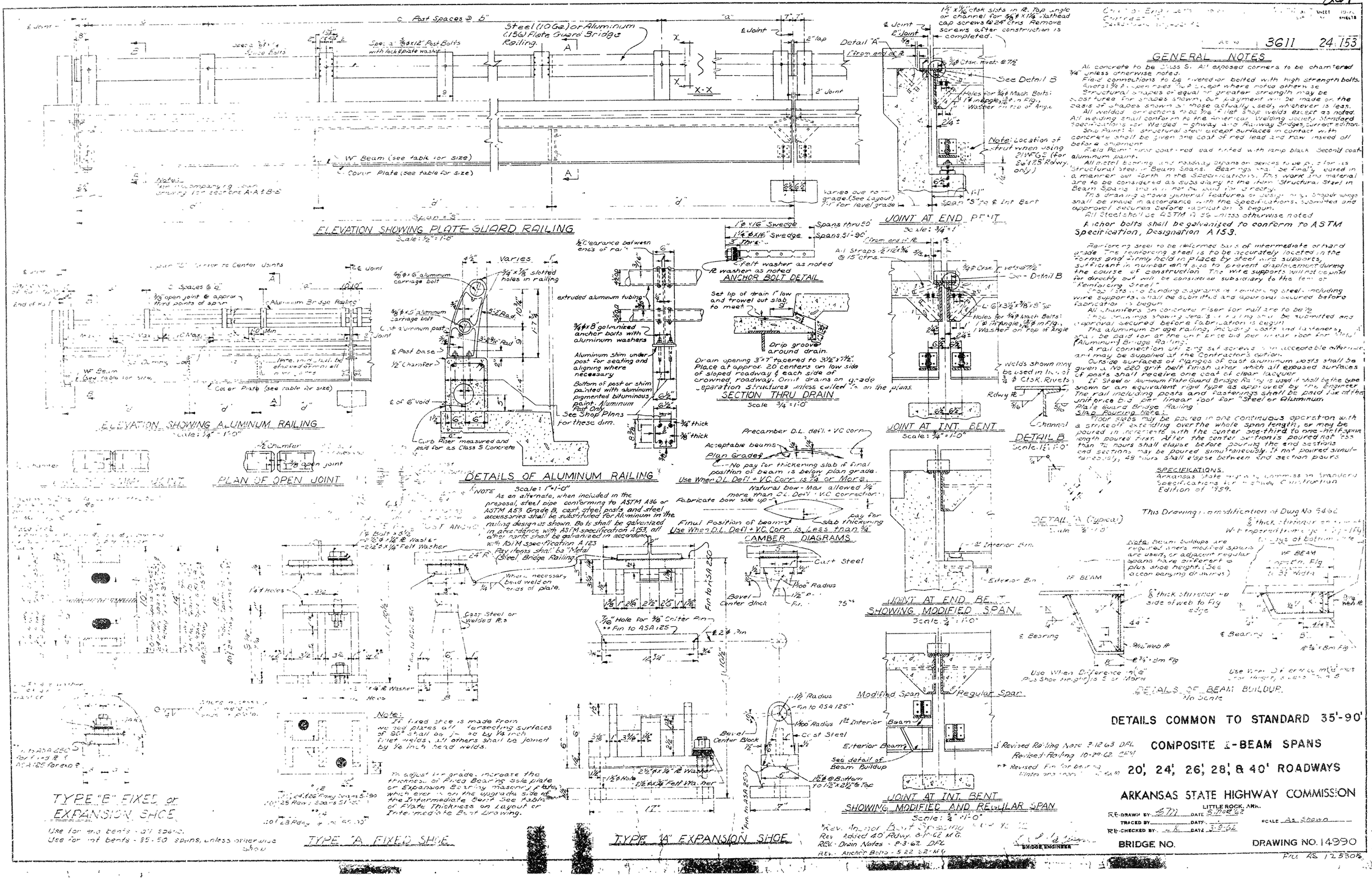
L. P. Carlson

BRIDGE ENGINEER

BRIDGE NO.

DRAWING NO. 15030A

FILE AS 125A04



3611 24.153

GENERAL NOTES

All concrete to be Class S. All exposed corners to be chamfered 3/4" unless otherwise noted.

Field connections to be riveted or bolted with high strength bolts. Rivets: 3/4 ⌀ open holes 1/16" except where noted otherwise.

Structural shapes or equal in greater strength may be substituted for shapes shown, but payment will be made on the basis of shapes shown or those actually used, whichever is less.

All welded connections to be 3/16" fillet shop welds except as noted. All welding shall conform to the American Welding Society Standard Specifications for Welded Highway and Railway Bridges, Current edition.

Shop Paint: All structural steel except surfaces in contact with concrete shall be given one coat of red lead and raw linseed oil before shipment.

Field Paint: First coat red lead tinted with lamp black. Second coat aluminum paint.

All metal bearing and roadway plates on series to be paid for as "Structural Steel" or "Beam Spans". Bearings shall be finally seated in a manner set forth in the Specifications. This work and material are to be considered as subsidiary to the item "Structural Steel in Beam Spans" and is not to be paid for separately.

This drawing shows general features of design only. Shop drawings shall be made in accordance with the Specifications, submitted and approval secured before fabrication is begun.

All Steel shall be ASTM A 36 unless otherwise noted.

Anchor bolts shall be galvanized to conform to ASTM Specification, Designation A 153.

Reinforcing steel to be deformed bars of intermediate or hard grade. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item of "Reinforcing Steel".

Copies of a bending diagram of reinforcing steel, including wire supports, shall be submitted and approval secured before fabrication is begun.

All chamfers on concrete riser for rail are to be 1/2".

Shop drawings showing details of railing shall be submitted and approval secured before fabrication is begun.

The aluminum bridge railing, including posts and fasteners, shall be paid for at the unit price bid per linear foot for "Steel (Aluminum) Bridge Railing".

A rail connection utilizing set screws is an acceptable alternate and may be supplied at the Contractor's option.

Outside surfaces of flanges of cast aluminum posts shall be given a No 220 grit belt finish after which all exposed surfaces of posts shall receive one coat of clear lacquer.

If Steel or Aluminum Plate Guard Bridge Railing is used it shall be type shown or an equivalent rigid type as approved by the Engineer. The rail including posts and fasteners shall be paid for at the unit price bid per linear foot for "Steel or Aluminum Plate Guard Bridge Railing".

Slab Pouring Note:

Floor slabs may be poured in one continuous operation with a strike off extending over the whole span length, or may be poured in increments with the center one-third to one-half span length poured first. After the center section is poured not less than 72 hours shall elapse before pouring the end sections and sections may be poured simultaneously. If not poured simultaneously, 48 hours shall elapse between end section pours.

SPECIFICATIONS.
Arkansas State Highway Commission Standard Specifications for Highway Construction Edition of 1959.

This Drawing is a modification of Dwg No 5466

DETAILS COMMON TO STANDARD 35'-90' COMPOSITE I-BEAM SPANS 20', 24', 26', 28', & 40' ROADWAYS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

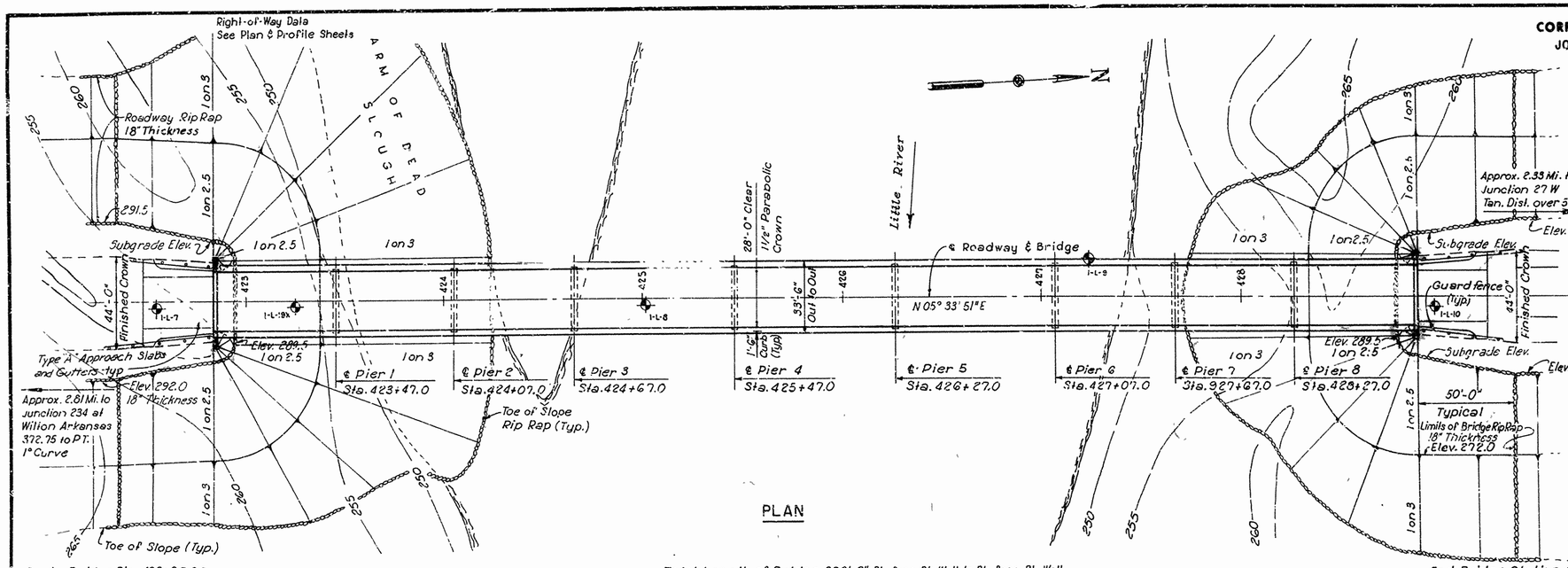
RE-DRAWN BY: DATE 5-7-62
TRACED BY: DATE
RE-CHECKED BY: DATE 5-9-62
SCALE: As Shown

BRIDGE NO.

DRAWING NO. 14990

FILE AS 125306

CORPS OF ENGINEERS CONTRACT NO DA-34-066-CIVENG-62-1312
JOB NO. 3611



Notes:
Design Specifications A.A.S.H.O. 1961
Unit Stresses.
Class A Concrete (n-15) - 840 P.S.I.
Class S Concrete (n-10) 1200 P.S.I.
Reinforcing Steel 20,000 P.S.I.
Structural Steel (A-36) 20,000 P.S.I.

Design Loading - A.A.S.H.O. H 20-S16-44

Specifications Arkansas State Highway Commission "Standard Specifications for Highway Construction" Edition of 1959

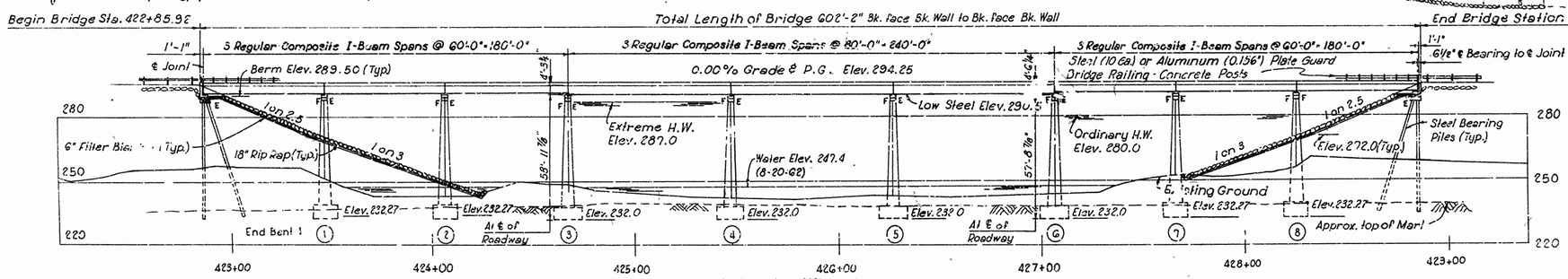
Note:
For Details of End Bents See Drwg #20
For Details of Piers See Drwg #27
For Details of Superstructure See Drwg. #15030 & #14990
For Details of Approach Slabs See Drwg. #1898

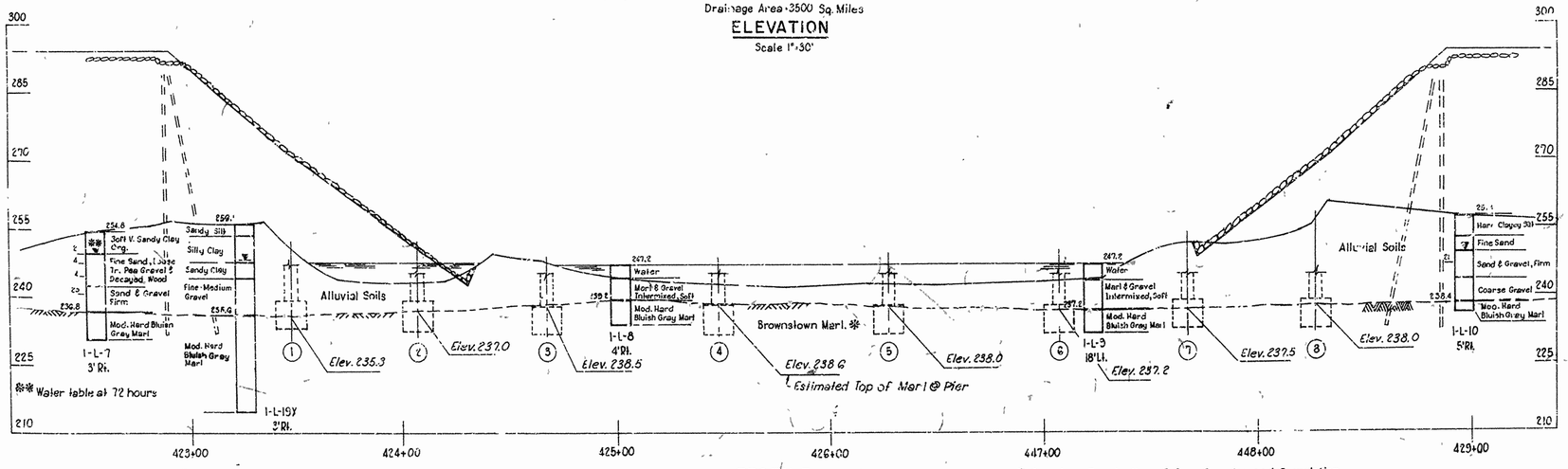
Abutments: All piling shall be 12BP53 Steel Bearing Piles with bearing capacity of 36 tons per pile driven a minimum of 3' into Marl.
Piers: All footings shall be set into firm undisturbed Marl; Piers 1,2,7,& 8 a minimum of 3 feet, Piers 3,4,5 & 6 a minimum of 5 feet. Maximum design bearing pressure on Marl - 50 tons per sq. ft.

All Concrete shall be poured in the dry. Exposed corners shall be chamfered 3/4" unless otherwise noted.
In general construction joints shall be horizontal and shall be provided with keys not less than 1½" high covering the middle third of both dimensions.

All Concrete shall be air entrained.

All guardrail shall be steel or aluminum plate guard bridge railing; for details see standard drawing #14990 sheet 24.





Notes:
Numbers on the left of test borings indicate the number of blows of a 140 lb. hammer dropped 30" required to drive a 2" ⌀ standard split barrel 12". Penetration less than 12" is denoted by 70/6" (blows per penetration)
Elevations to left of borings indicate top of Firm Marl. The Symbol (▼) indicates water table at 24 hours unless another time is shown.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

B.M. U.S.G.S.
Chiseled "B" in Curb @ S.W. Corner of Existing Bridge over Little River @ U.S. 71
Elev. 280.73.

* Based on Examination of Core Samples and Correlation with Geologic Studies in Area, this formation is believed to be the Brownstown Marl belonging to the Taylor Series of Upper Cretaceous Deposits.

BRIDGE ENGINEER

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK ARKANSAS

MILLWOOD RESERVOIR CROSSING
U.S. HIGHWAY 71

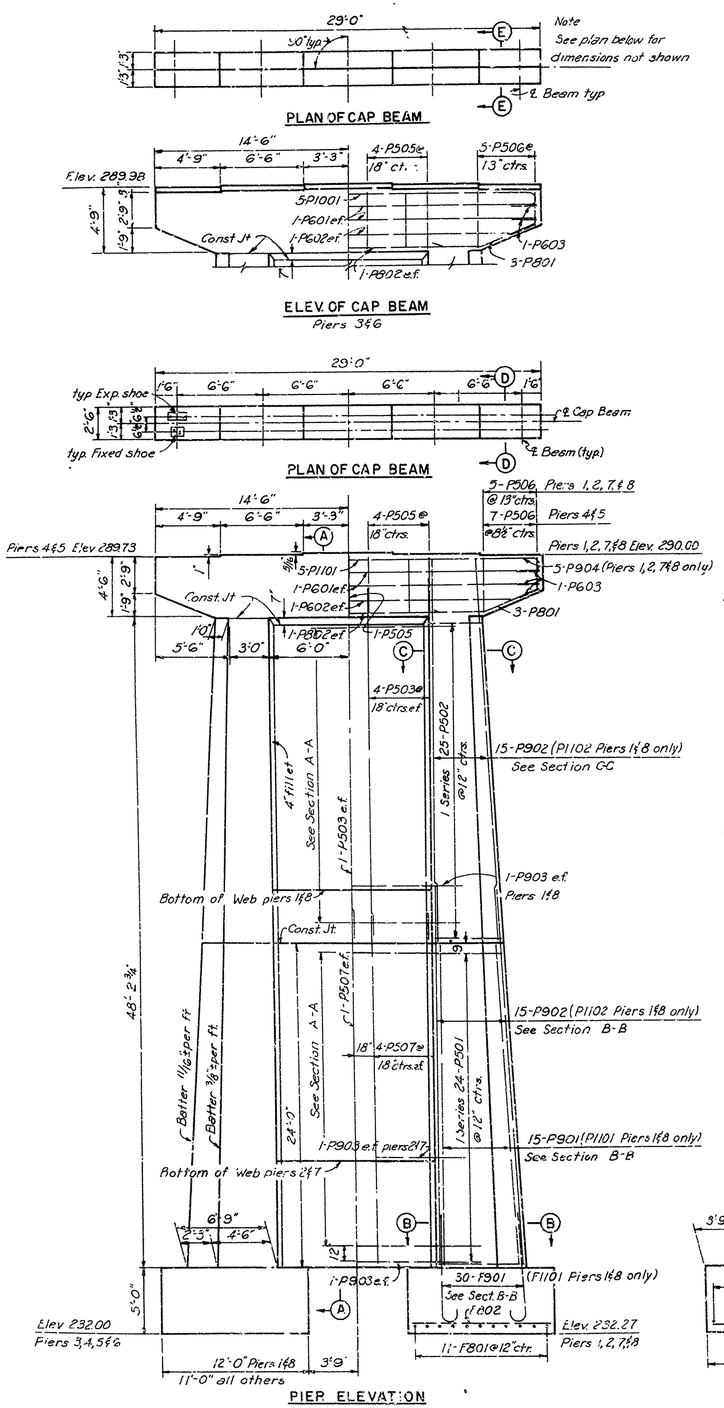
LAYOUT OF BRIDGE OVER LITTLE RIVER
PROFILE OF BORINGS

DRAWN BY ARV DATE 12-7-62 CHECKED LAH DATE 1-15-63
TRACED BY ____ DATE ____ SCALE As Shown

BRIDGE NO. 36.74 DRAWING NO. ~~26~~ 12 531

CORPS OF ENGINEERS CONTRACT NO. DA-34-066-CIVENG-62-1312
JOB 3611

(27-135)



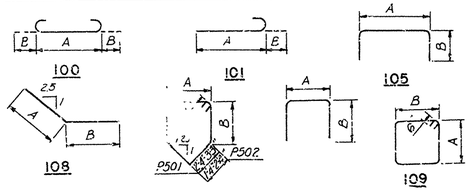
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

REINFORCING BAR LIST

MARK	SIZE	NUMBER	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT (POUNDS)
REINFORCING PIERS 4 & 5							
[illegible]	5	2 Ser. 24	16'-2" to 20'-11"	139	3'-9"-5'-1"	5'-5"-4'-2"	
P502	5	2 Ser. 25	11'-2" to 15'-10"	139	2'-2"-3'-7"	2'-8"-3'-4"	
P503	5	18	26'-3"	Str.			
P504	5	26	16'-0"	Str.			
P505	5	9	13'-7"	109	2'-1½"	4'-2"	
P506	5	2 Ser. 7	10'-0" to 13'-5"	109	2'-1½"	2'-4½"-4'-1"	
P507	5	18	26'-3"	Str.			
P508	5	24	16'-0"	Str.			
P601	6	4	28'-6"	Str.			
P602	6	2	25'-0"	Str.			
P603	6	6	7'-1"	105	2'-1"	2'-6"	
P801	8	6	8'-7"	108	4'-7"	4'-0"	
P802	8	2	20'-0"	Str.			
P901	9	30	23'-6"	Str.			
P902	9	60	28'-0"	Str.			
P903	9	2	19'-6"	Str.			
P1101	11	5	31'-8"	100	28'-6"	1'-7"	
					total one pier		13,402
					total two piers		26,804
REINFORCING PIERS 3 & 6							
P501	5	2 Ser. 24	16'-2" to 20'-11"	139	3'-8"-5'-1"	3'-5"-4'-2"	
P502	5	2 Ser. 25	11'-2" to 15'-10"	139	2'-2"-3'-7"	2'-8"-3'-4"	
P503	5	18	26'-3"	Str.			
P504	5	26	16'-0"	Str.			
P505	5	9	13'-7"	109	2'-1½"	4'-2"	
P506	5	2 Ser. 5	10'-0" to 13'-5"	109	2'-1½"	2'-4½"-4'-1"	
P507	5	18	26'-3"	Str.			
P508	5	24	16'-0"	Str.			
P601	6	4	28'-6"	Str.			
P602	6	2	25'-0"	Str.			
P603	6	6	7'-1"	105	2'-1"	2'-6"	
P801	8	6	8'-7"	108	4'-7"	4'-0"	
P802	8	2	20'-0"	Str.			
P901	9	30	23'-6"	Str.			
P902	9	60	28'-0"	Str.			
P903	9	2	19'-6"	Str.			
P1001	10	5	31'-4"	100	28'-6"	1'-5"	
					total one pier		13,172
					total two piers		26,344

REINFORCING BAR LIST

MARK	SIZE	NUMBER	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT (POUNDS)
FOOTING REINFORCING PIERS 1 & 8							
F901	9	32	11'-6"	Str.			
F902	9	24	15'-6"	Str.			
F1101	11	60	10'-3"	101	8'-8"	1'-7"	
					total one pier		5,783
					total two piers		11,566
FOOTING REINFORCING PIERS 2,3,4,5,6, & 7							
F801	8	22	12'-6"	Str.			
F802	8	26	10'-6"	Str.			
F901	9	60	9'-3"	101	8'-0"	1'-3"	
					total one pier		3,350
					total Six Piers		20,100
REINFORCING PIERS 1 & 8							
P501	5	2 Ser. 24	16'-2" to 20'-11"	139	3'-8"-5'-1"	3'-5"-4'-2"	
P502	5	2 Ser. 25	11'-2" to 15'-10"	139	2'-2"-3'-7"	2'-8"-3'-4"	
P503	5	18	22'-0"	Str.			
P504	5	20	16'-0"	Str.			
P505	5	9	13'-7"	109	2'-1½"	4'-2"	
P506	5	2 Ser. 5	10'-0" to 13'-5"	109	2'-1½"	2'-4½"-4'-1"	
P601	6	4	28'-6"	Str.			
P602	6	2	25'-0"	Str.			
P603	6	6	7'-1"	105	2'-1"	2'-6"	
P801	8	6	8'-7"	108	4'-7"	4'-0"	
P802	8	2	20'-0"	Str.			
P903	9	2	19'-6"	Str.			
P904	9	5	31'-0"	100	28'-6"	1'-3"	
P1102	11	60	28'-6"	Str.			
P1103	11	30	23'-6"	Str.			
					total one pier		16,674
					total two piers		33,348
REINFORCING PIERS 2 & 7							
P501	5	2 Ser. 24	16'-2" to 20'-11"	139	3'-8"-5'-1"	3'-5"-4'-2"	
P502	5	2 Ser. 25	11'-2" to 15'-10"	139	2'-2"-3'-7"	2'-8"-3'-4"	
P503	5	18	22'-0"	Str.			
P504	5	26	16'-0"	Str.			
P505	5	9	13'-7"	109	2'-1½"	4'-2"	
P506	5	2 Ser. 5	10'-0"-13'-5"	109	2'-1½"	2'-4½"-4'-1"	
P507	5	18	18'-0"	Str.			
P508	5	16	16'-0"	Str.			
P601	6	4	28'-6"	Str.			
P602	6	2	25'-0"	Str.			
P603	6	6	7'-1"	105	2'-1"	2'-6"	
P801	8	6	8'-7"	108	4'-7"	4'-0"	
P802	8	2	20'-0"	Str.			
P901	9	30	23'-6"	Str.			
P902	9	60	28'-0"	Str.			
P903	9	2	19'-6"	Str.			
P904	9	5	31'-0	100	28'-6"	1'-3"	
					total one pier		12,657
					total two piers		25,314



Notes:

For type ℄ placement of shoes see layout sheet #26.

For details of Anchor Bolt placement see Common Details sheet (Std. Drwg. # 14990).

Use Class "S" Concrete (f'c = 3,000 p.s.i.) for Cap Beams.

Use Class "A" Concrete (f'c = 2,100 p.s.i.) for Shafts, Webs, and footing.

Chamfer all exposed corners 3/4".

All clearance to main reinforcing 3", except as shown.

All bar splices shall be 40 bar diameters

For stations at ℄s of Piers see layout sheet #26.

BRIDGE ENGINEER

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK ARKANSAS

MILLWOOD RESERVOIR CROSSING
U.S. HIGHWAY 71

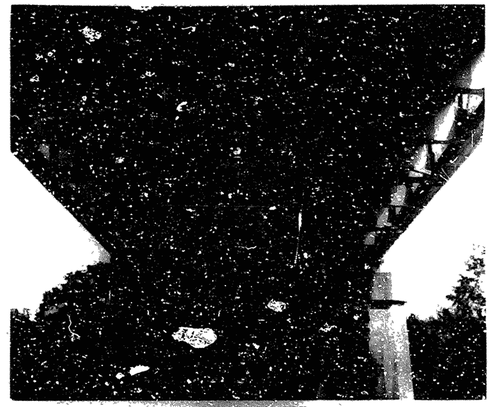
LITTLE RIVER PIERS

DRAWN BY RCV DATE 12-6-62
TRACED BY DATE
CHECKED RRM DATE 12-8-62
SCALE 3/16" = 1'-0" as Shown

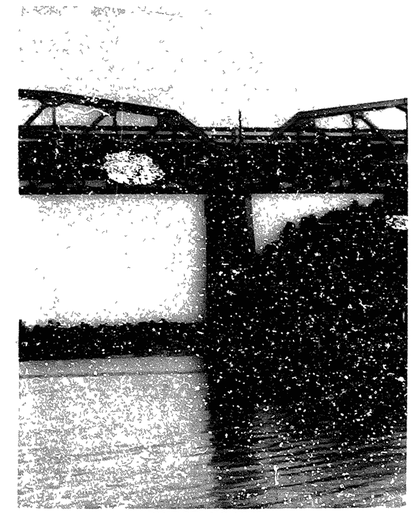
BRIDGE NO. 3674

DRAWING NO. 27-
11 12532

BRIDGE NO 1757
VIEW LOOKING NORTH



BRIDGE NO 1757
UNDERSIDE VIEW LOOKING NORTH



BRIDGE NO 1757
GENERAL VIEW OF PIER

BRIDGE NO 1757
GENERAL VIEW

BRIDGE NO 1757
GENERAL VIEW

Note:
The bridge pictured on this sheet is to be demolished as a part of the construction contract.
Complete plans for this Bridge are available and may be examined at the office of the Arkansas State Highway Commission, Little Rock, Arkansas.
The photographs are intended solely to present general views of the structure. This bridge must be examined by the contractor to determine exact conditions to be met during demolition.
See Special Provisions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

BRIDGE ENGINEER

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK ARKANSAS

MILLWOOD RESERVOIR CROSSING
U.S. 71

EXISTING BRIDGE ON U.S. 71

DRAWN BY RET DATE 12-2-63
TRACED BY ___ DATE ___
CHECKED RCV DATE 12-2-63
SCALE ___

BRIDGE NO. 3674
DRAWING NO. ~~35~~ 12533