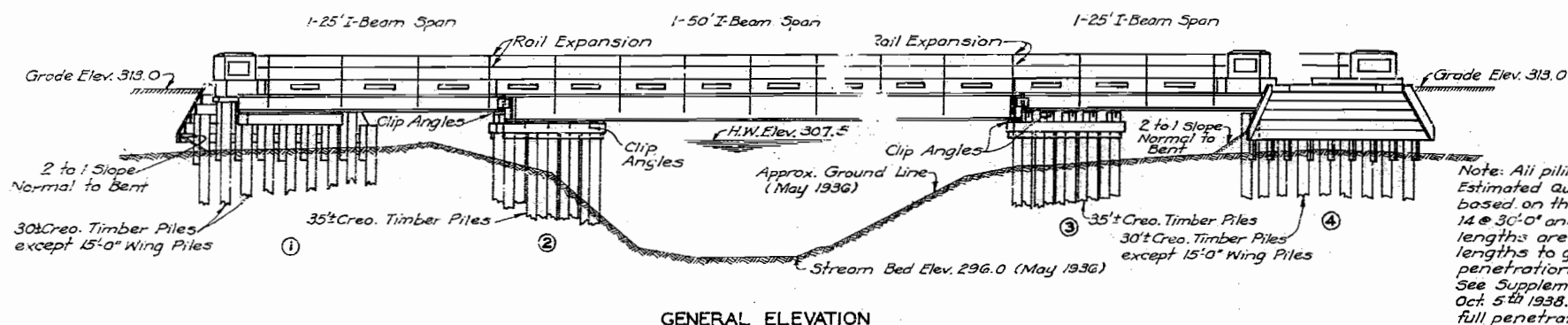


MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	ERS-C(1) (R53)	1935		

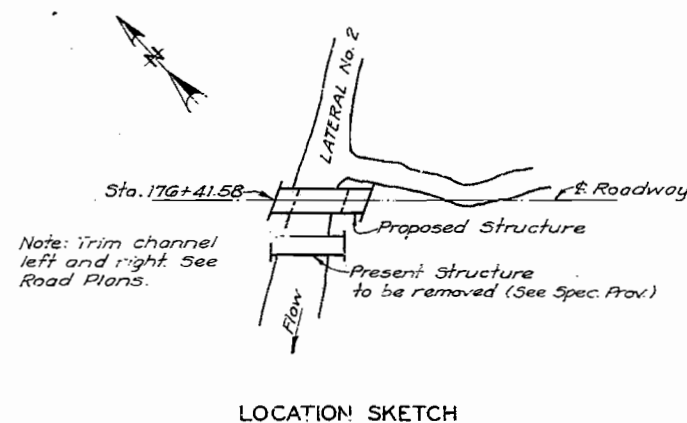
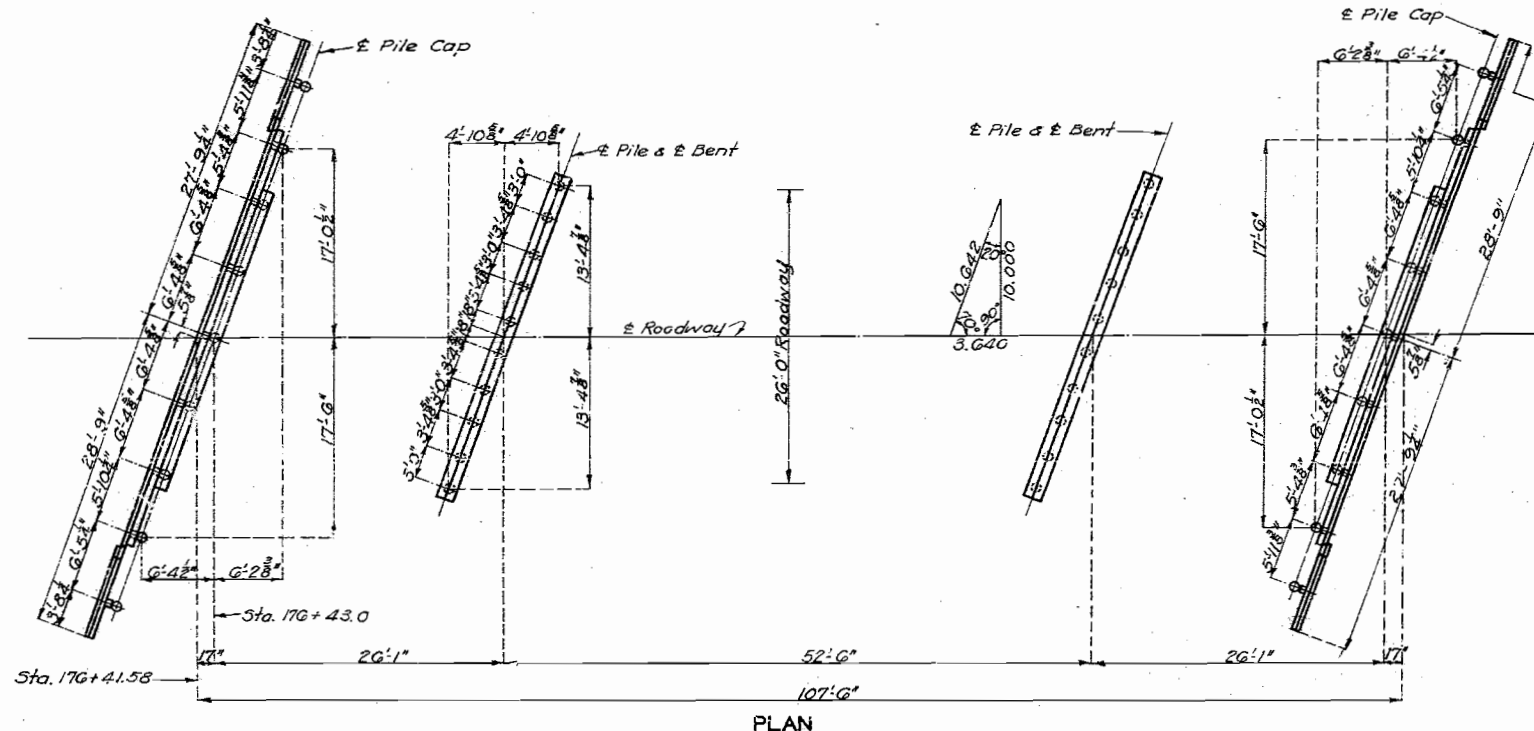


Note: All piling shall be creosoted timber. Estimated quantities shown on plans are based on the following lengths: 4 @ 15' 0", 14 @ 30' 0" and 20 @ 35' 0". These indicated lengths are approximate only. Proper lengths to give required bearing and/or penetration to be determined by Contractor. See Supplemental Specifications issued Oct. 5th 1938. All wing piles to be driven to full penetration of lengths given on plans. All other piles shall be driven to sustain a load of at least 17 ton per pile and with tips to at least Elev. 281.0.

Two timber test piles shall be driven, one near bent No. 1 and one near bent No. 3 or one near bent No. 2 and one near bent No. 4.

GENERAL NOTES:-

- Design Specifications A.A.S.H.O.-1935.
- Loading H-15.
- Structural Steel Stress 18,000#/sq. in.
- Reinforcing Steel Stress 18,000#/sq. in.
- Concrete Class "B" 3000#/sq. in.
- Creosoted Timber 1600#/sq. in.
- Excavation for structure shall be in accordance with Specification 1 of Standard Specifications issued November 12, 1935 and will be allowed for all bents within the horizontal limits shown and noted on these design plans, Sheet No. 3.
- All concrete to be Class "B".
- All concrete shall be proportioned by the weight proportioning method. Exposed edges to be beveled $\frac{1}{4}$ " where no other bevel is noted.
- Bar supports and spacers will be required for reinforcing steel in superstructure. See Standard C-110R1.
- Where rubber compound is specified on plans for use in partition and expansion joints, the pre-molded joint shall be securely stitched to one face of concrete with copper wire.
- All timber shall be creosoted and shall be either "Dense Longleaf or Shortleaf Structural Square Edge and Sound Southern Yellow Pine" or "Close-grained Select Structural Douglas Fir of the West Coast Region". All timber shall be rough full-sawn except as noted in timber bill for pile caps. Slight variations in sawing shall be in accordance with grading rules. All timber shall be cut to billed lengths and shapes and shall be bored as shown before treating. All backing plank are billed long (6') and are to be re-cut and fitted in the field. Payment will be based on the theoretical quantities of material in the finished structure.
- Field holes for drift pins shall be field bored $\frac{1}{4}$ ". Unless otherwise noted, all other field holes in timber shall be field bored $\frac{1}{8}$ ".
- Where bolts with countersunk heads are indicated on plans, cut washers shall be used under heads. 0.6 washers shall be used under heads of other bolts and under nuts of all bolts on timber.
- Cost of substructure hardware will be included in price bid for timber in place.
- Protection caps shall be placed on heads of all piles of pile bents in accordance with Specification 22-8 of Supplemental Specifications issued Oct. 5, 1938.
- I-Beams with fastenings, spacers, handrail, handrail posts with fastenings, clip angles, and cap plates on end bents with fastenings will be paid for as structural steel.
- Beam flanges shall be squared up at all points of bearing.
- Detail shop drawings for all structural steel shall be submitted to the State Highway Department in duplicate and shall be approved before material is ordered or work started.
- Qualification of welding operators and electrodes for welding shown on plans will not be required.
- Paint: Shop, none; field, contact surfaces of bolted field connections one coat red lead and surfaces inaccessible after erection three coats of red lead. No other paint to be applied by Contractor. Red lead required shall be furnished by the Contractor. Payment for cleaning and painting such surfaces will be included in unit price bid for structural steel.
- Rivets $\frac{3}{4}$ ", holes $\frac{1}{2}$ ", except in handrail where rivets shall be $\frac{5}{8}$ ", holes $\frac{1}{2}$ ". Field connections for handrail channels shall be $\frac{5}{8}$ " button head bolts and for connection of rail to rail posts shall be $\frac{5}{8}$ " machine bolts, holes $\frac{1}{2}$ ". All other field connections shall be riveted except as noted.
- Drainage Area 125 Sq. Miles - Rolling.



ESTIMATED QUANTITIES			
Item	Substr.	Superstr.	Total
Class 1 Excavation for Structures Cu.Yds.	21		21
Class 2 Excavation for Structures Cu.Yds.			
Class "B" Concrete Cu.Yds.		85.8	85.8
Fabricated Structural Steel Lbs.		71000	71000
Reinforcing Steel Lbs.		18450	18450
Creosoted Timber Piles in Place Lin.Ft.	1180		1180
Timber Test Piles Lin.Ft.	85		85
Creosoted Timber F.B.M.	4900		4900

Note: All excavation for bridge will be paid for as Class 1 Excavation for Structure.

B.M. Elev. 306.37 N.I.R. 8" Persimmon 25' Lt. Sta. 172+22, U.S.G.S. Datum.

BRIDGE OVER LATERAL NO. 2

STATE ROAD FROM QULIN TO CAMPBELL

ABOUT 8.5 MILES S.E. OF QULIN

PROJECT NO. ER 5-C(1) (R53) STA. 176+41.58

DUNKLIN COUNTY

SUBMITTED BY *N.R. Lacy* DATE 7/3/39
APPROVED BY *C.W. Brown* DATE 7/3/39
CHIEF ENGINEER

STD. C-110R1

G-424R

11-2-38

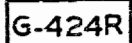
Drawn Jan. 1937 by J.B.J.
Traced Feb. 1937 by C.A.F.
Checked Mar. 1937 by H.A.M.
Assembled June 1939 by J.G.-G.W.
Checked June 1939 by D.K.M.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 3.

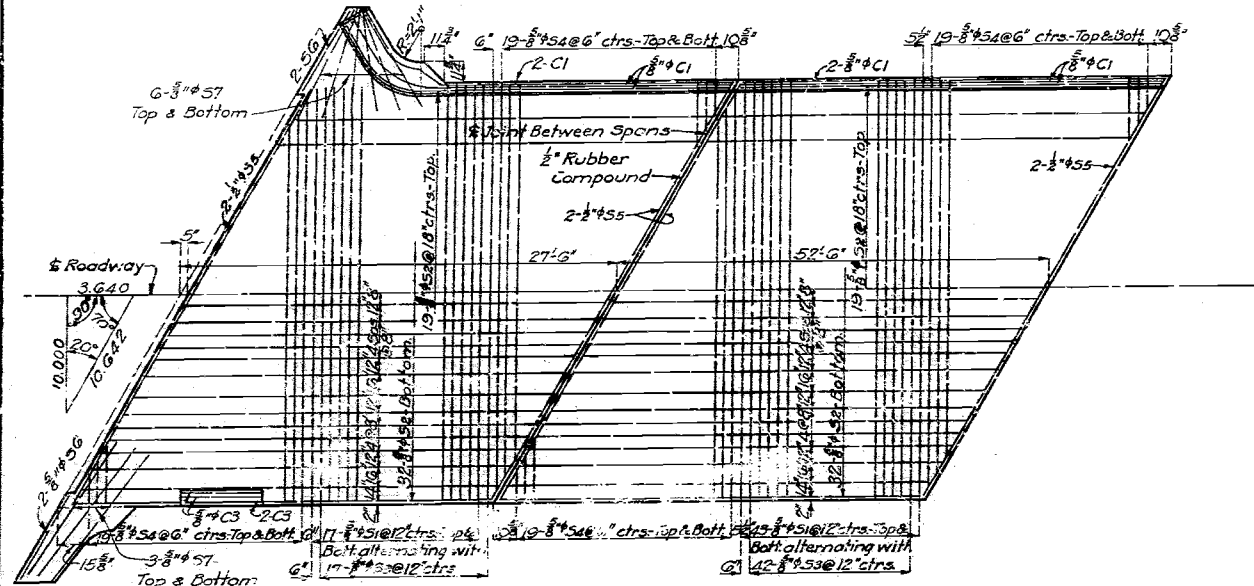
466

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	TOTAL SHEETS
5	MO.	ER-5-C(1) (R53)	19	



MISSOURI STATE HIGHWAY DEPARTMENT

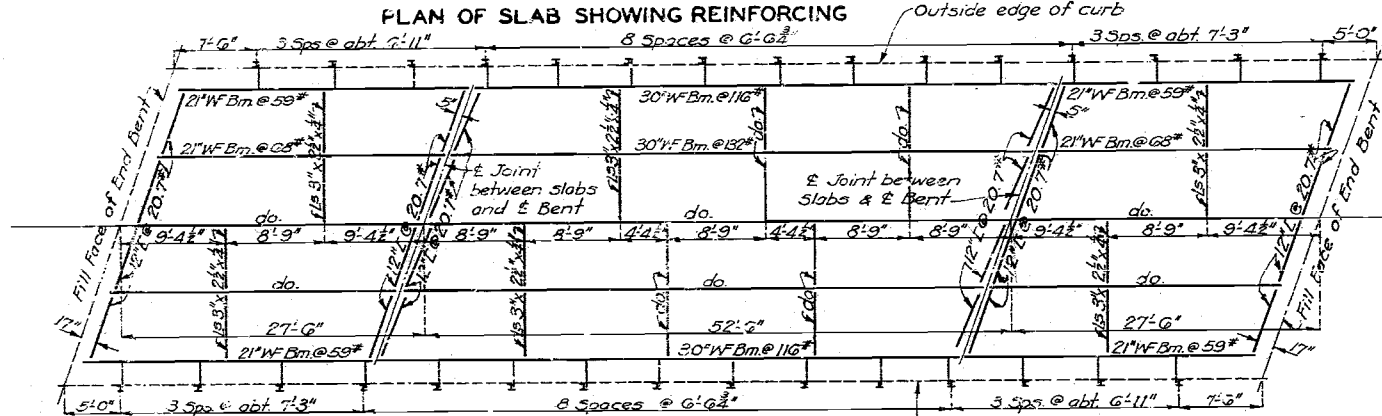
Note: Space between bars C2 at approximately 12" centers in curbs between outlets and at ends.



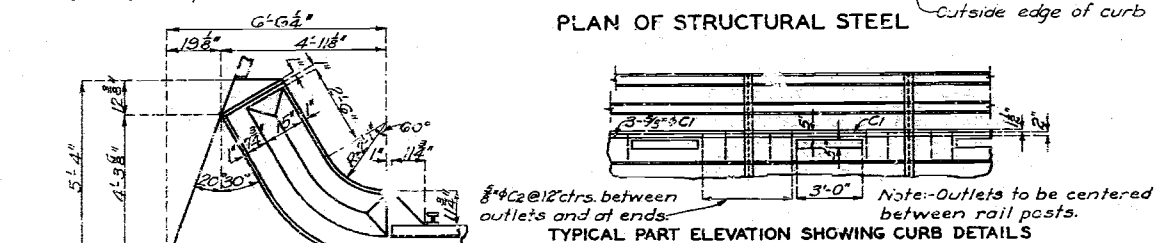
SPANS (1-2) & (3-4)

SPAN (2-3)

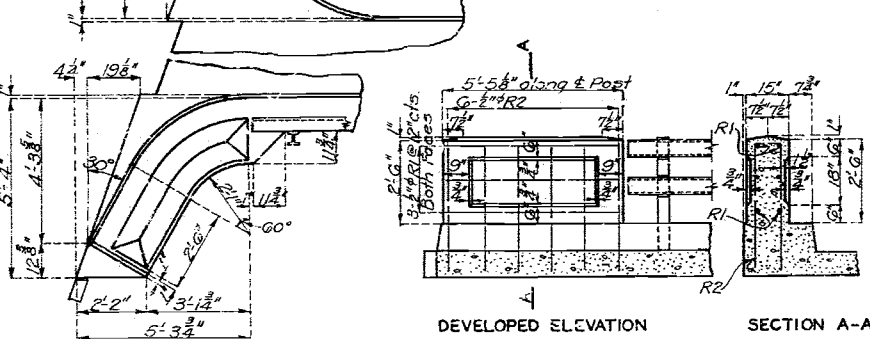
PLAN OF SLAB SHOWING REINFORCING



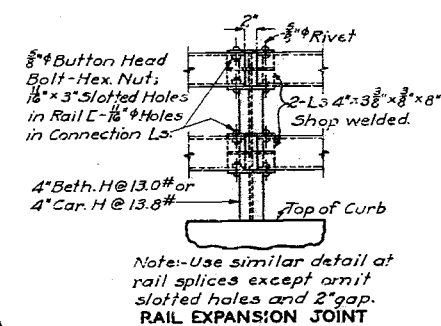
PLAN OF STRUCTURAL STEEL



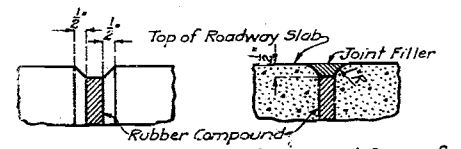
TYPICAL PART ELEVATION SHOWING CURB DETAILS



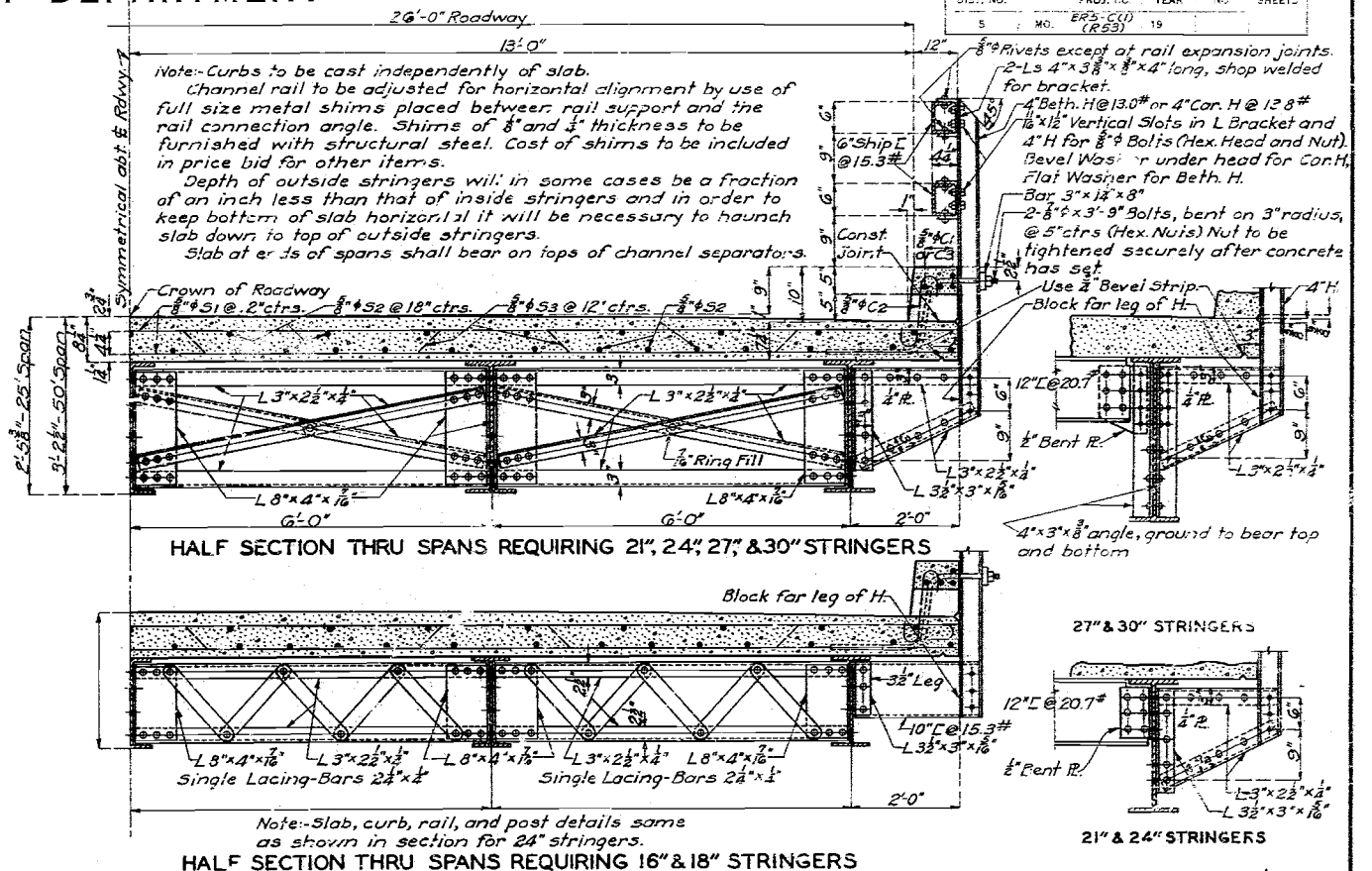
DETAILS OF END POST



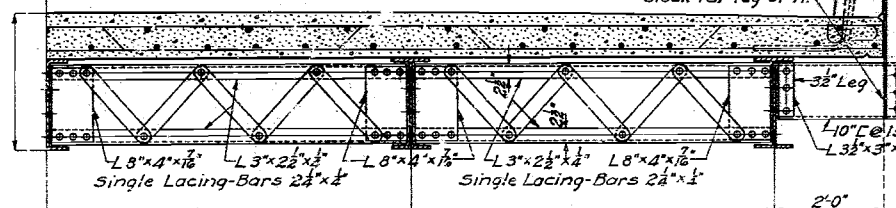
DETAIL OF RUBBER COMPOUND OVER STRINGERS AT EXPANSION JOINTS



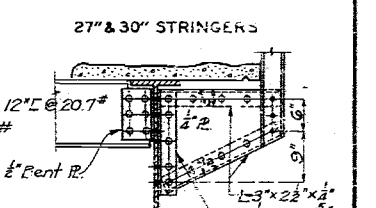
DETAILS OF RUBBER COMPOUND JOINTS



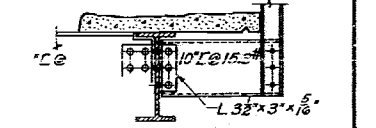
HALF SECTION THRU SPANS REQUIRING 21, 24, 27, & 30" STRINGERS



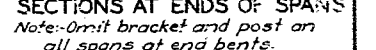
HALF SECTION THRU SPANS REQUIRING 16" & 18" STRINGERS



27" & 30" STRINGERS



21" & 24" STRINGERS



16" & 18" STRINGERS

SECTIONS AT ENDS OF SPANS
Note: Omit bracket and post on all spans at end bents.

BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE									
No.	Size	Length	Mark	Location	Bending Sketches and Cutting Diagrams				
"I"	3"	2'-0"	C1	Curb					
"K"	3"	2'-0"	C2	"					
"R"	3"	28'-6"	C3	"					
"L"	3"	27'-9"	S1	Slab					
"M"	3"	52'	"	"					
"O"	3"	30'-3"	S3	"					
"P"	3"	34'-6"	S4	"					
"Q"	3"	29'-3"	S5	"					
"S"	3"	7'-0"	S6	"					
"T"	3"	9'-6"	S7	"					
"U"	3"	4'-9"	R1	Rail Post					
"V"	3"	8'-3"	R2	"					
"W"	3"	26'-6"	G8	"					
"X"	3"	27'-3"	G6	"					
"Y"	3"	102'	G2	"					
"Z"	3"	27'-3"	G4	"					
"AA"	3"	42'	G3	"					
"AB"	3"	38'	G1	"					
"AC"	3"	4'	G5	"					
"AD"	3"	8'	G7	"					

Note: Floor slab to be brought to grade and dead load deflection taken care of by increasing slab thickness. Depth of slab at outside face of curb to be kept uniform and bottom surface of slab warped between curb and outside beam to obtain required thickness at beam. Payment will be allowed for additional concrete required for thickening slab. This additional concrete is included in "Estimated Quantities."

DEFLECTION DIAGRAM

BRIDGE OVER LATERAL NO. 2

STATE ROAD FROM QULIN TO CAMPBELL
ABOUT 8.5 MILES S.E. OF QULIN
PROJECT NO. ER 5-C(1)(R53) STA. 176+41.58

DUNKLIN COUNTY

G-424R

Sheet No. 3 of 3

Note: This drawing is not to scale. Follow dimensions.

Drawn Oct. 1938 by N.W.R.
Traced Nov. 1938 by C.A.F.
Checked Dec. 1938 by J.M.M.
Assembled June 1939 by J.G. - G.W.
Checked June 1939 by D.D.M.

468

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
5	MO	ERS-C(1) (R53)	19		

GENERAL NOTES:-

Excavation for structure shall be in accordance with Specification I of Standard Specifications issued November 12, 1935 and will be allowed for all bents within the horizontal limits shown and noted on these design plans, Sheet No. 3.

Where rubber compound is specified on plans for use in partition and expansion joints, the premoulded joint shall be securely stitched to one face of concrete with copper wire.

Field holes for drift pins shall be field bored $\frac{11}{16}$ " ϕ . Unless otherwise noted, all other field holes in timber shall be field bored $\frac{3}{4}$ " ϕ .

Where bolts with countersunk heads are indicated on plans, cut washers shall be used under heads. O.G. washers shall be used under heads of other bolts and under nuts of all bolts on timber.

Cost of substructure hardware will be included in price bid for timber in place. Protection caps shall be placed on heads of all piles of pile bents in accordance with Specification 22-8 of Supplemental Specifications issued Oct. 5, 1938. I-BEAMS with fastenings, spacers, handrail, handrail posts with fastenings, clip angles, and cap plates on end bents with fastenings will be paid for as structural steel.

Detail shop drawings for all structural steel shall be submitted to the State Highway Department in duplicate and shall be approved before material is ordered or work started.

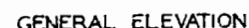
Qualification of welding operators and electrodes for welding shown on plans will not be required.

Paint: Shop, non-Field, contact surfaces of bolted field connections one coat red lead and surfaces inaccessible after erection three coats of red lead. No other paint to be applied by Contractor. Red lead required shall be furnished by the Contractor. Payment for cleaning and painting such surfaces will be included in unit price bid for structural steel.

Rivets $\frac{3}{8}$ " ϕ holes $\frac{15}{16}$ " ϕ except in handrail where rivets shall be $\frac{5}{8}$ " ϕ , holes $\frac{11}{16}$ " ϕ .

Field connections for handrail channels shall be 3" button head bolts and for connection of rail to rail posts shall be 3" machine bolts, holes 16". R: other field connections shall be riveted except as noted.

Drainage Area 125 Sq. Miles - Rolling.



PILE DATA			
BENT No.	PILE No.	DEPTH IN FEET	TOWS BEARING
1	1	15	Wing
1	2	32	234
1	3	30	210
1	4	30	249
1	5	30	234
1	6	32	249
1	7	30	280
1	8	32	174
1	9	15	Wing
2	1	30	220
2	2	31	249
2	3	29	210
2	4	29	203
2	5	29	249
2	6	29	210
2	7	29	214
2	8	28	234
2	9	29	210
2	10	29	176
3	1	31	200
3	2	28	221
3	3	31	221
3	4	30	214
3	5	29	234
3	6	30	271
3	7	29	221
3	8	28	214
3	9	30	239
3	10	31	223
4	1	15	Wing
4	2	32	210
4	3	32	200
4	4	32	249
4	5	31	214
4	6	31	221
4	7	32	339
4	8	32	203
4	9	15	Wing
TOTAL		1088	

NOTE:- Piles are numbered from Left to Right

QUANTITIES			
Item	Sub.fr.	Superstr.	Total
Class 1 Excavation for Structures Cu.Yds.	26.5		26.5
Class 2 Excavation for Structures Cu.Yds.	-		-
Class "B" Concrete Cu.Yds.		85.8	85.8
Fabricated Structural Steel Lbs.		72500	72500
Reinforcing Steel Lbs.		18450	18450
Cresosoted Timber Piles in Place Lin.Ft.	1688		1688
Timber Test Piles Lin.Ft.	85		85
Cresosoted Timber F.B.M.	4900		4900

Note: All excavation for bridge will be paid for as Class 1 Excavation for Structure.

B.M. Elev. 306.37 N.I.R. 8" Persimmon 25' Lt. Sta. 172+22, U.S.G.S Datum

STATE ROAD FROM OULIN TO CAMPBELL

ABOUT 8.5 MILES S.E. OF QULIN

PROJECT NO. ER 5-C(1) (R53) STA. 176+41.58

DUNKLIN COUNTY

SUBMITTED BY N.R. Jack DATE 7/3/39
 APPROVED BY C.W. Brown DATE 7/3/39

STD.C-110RI
G-424R

Drawn Jan. 1937 by J.B.I.
Traced Feb. 1937 by C.R.F. Assembled June 1939 by J.G.-G.W.
Checked Mar. 1937 by H.H.M. Checked June 1939 by D.K.M.

Note:-This drawing is not to scale. Follow dimensions.

Sheet No. 1A of 2

FINAL PLANS

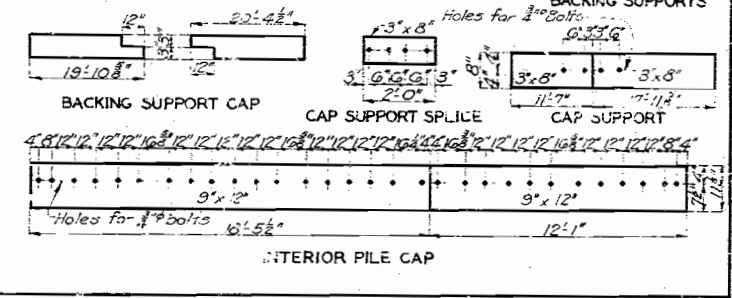
11-2-38

MISSOURI STATE HIGHWAY DEPARTMENT

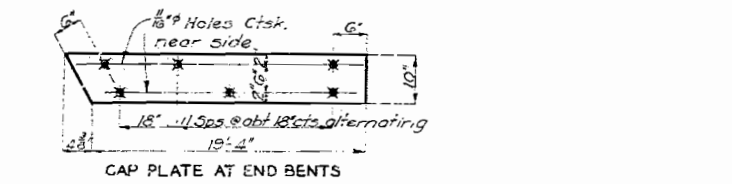
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	ER-5-C(1) (R53)	19		

FINAL PLANS

SUBSTRUCTURE TIMBER BILL						SHADING AND BORING SKETCHES
PIECE	NO.	SIZE	LENGTH	REMARKS		
Backing Plank	1	2	4x12	21'-10 1/2"	Cut to length	
"	2	10	4x12	19'-7 1/2"	"	
"	3	2	4x12	15'-5 1/2"	"	
"	4	2	4x12	13'-10 1/2"	"	
"	5	2	4x12	21'-3 1/2"	"	
"	6	2	4x12	18'-8 1/2"	"	
"	7	2	4x12	13'-3 1/2"	"	
"	8	2	4x12	10'-8 1/2"	"	
"	9	2	4x12	18'-0 1/2"	"	
"	10	2	4x12	15'-5 1/2"	"	
"	11	2	4x12	10'-0 1/2"	"	
Edge Support	4	4x12	10'-5 1/2"	Cut to length & shape		
Shoulder Plank	2	4x8	12'-2"	"		
"	2	4x8	14'-2"	"		
Backing Support	14	6x6	6'-0"	"		
"	4	6x6	4'-0"	"		
Backing Support Cap	2	6x6	19'-10 1/2"	"		
"	2	6x6	20'-4 1/2"	"		
Pile Cap	2	12x12	25'-0 1/2"	Cut to length *		
"	4	9x12	18'-5 1/2"	"		
"	4	9x12	12'-1"	"		
Cap Support	4	3x8	11'-7"	"		
"	4	3x8	17'-11 1/2"	"		
Cap Support Splice	4	3x8	2'-0"	"		
Bearing Blocks	10	9x9	2'-3"	"		



Note: Pile caps to be classified as "Beams and Stringers". All other timber to be classified as "Joists and Plank" * 525 to exactly 1 1/2" depth.



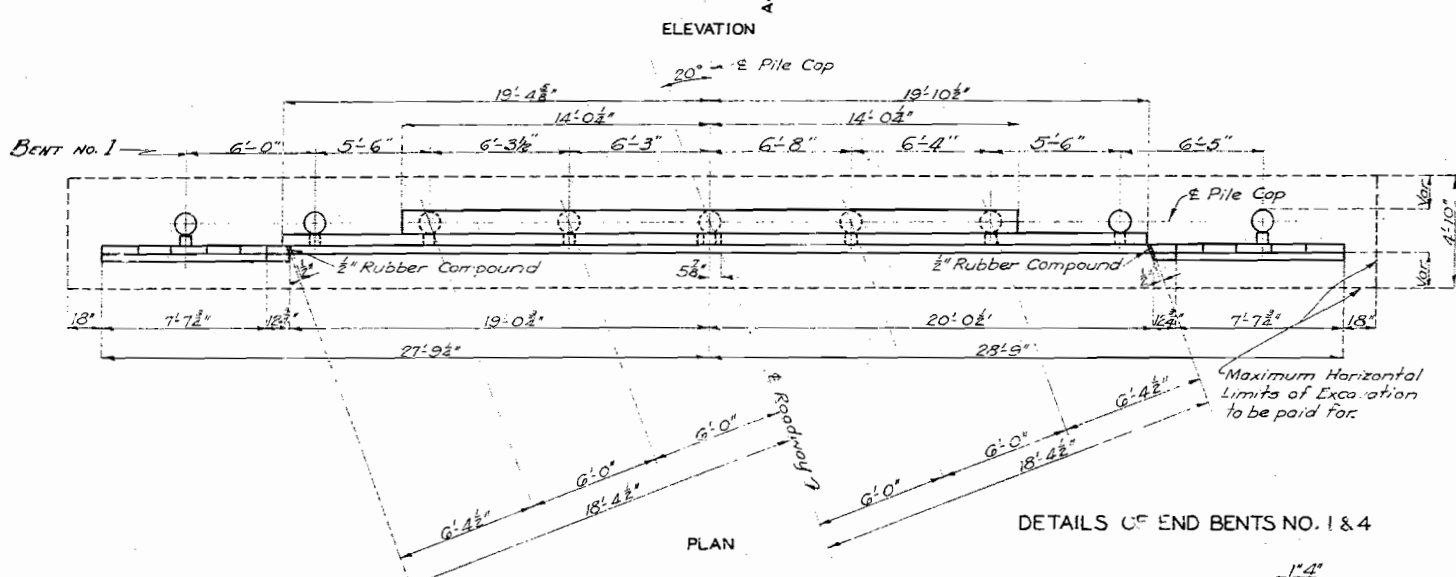
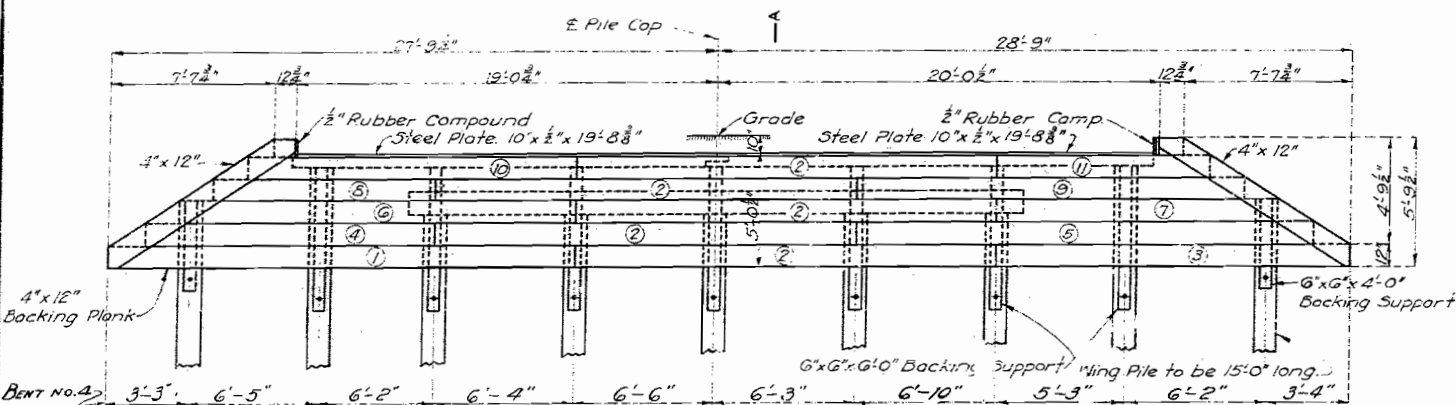
PILE CUT-OFF ELEVATIONS	
BENT NO.	CUT-OFF ELEV.
1&4 (Bearing Piles)	309.46
1&4 (Flg. & Piles)	311.63
1&4 (Wind Piles)	310.13
2&3 (Bearing Piles)	308.65

BRIDGE OVER LATERAL NO. 2

STATE ROAD FROM QULIN TO CAMPBELL
ABOUT 8.3 MILES S.E. OF QULIN
PROJECT NO ER 5-C(1) (R53) STA 176+41.58

DUNKLIN COUNTY

G-424R



DETAILS OF END BENTS NO. 1 & 4

Note: Cost of Timber headers complete in place to be included in price bid for concrete.

Note: Any irregularity in alignment of piling in end bents to be corrected by facing one surface of the GxG backing support so as to place the surface of the backing in a true plane and eliminate any strain on the backing plank. Splice in backing plank to be made at center of GxG backing support and to be alternated as shown.

Note: An approved alternate may be substituted for cast iron cone shown.

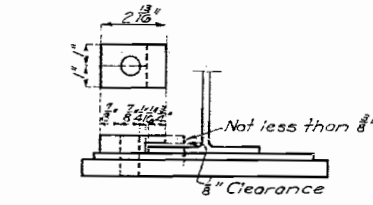
DETAIL OF TIMBER HEADER ATTACHMENT



DETAILS OF BEARING AT END BENTS

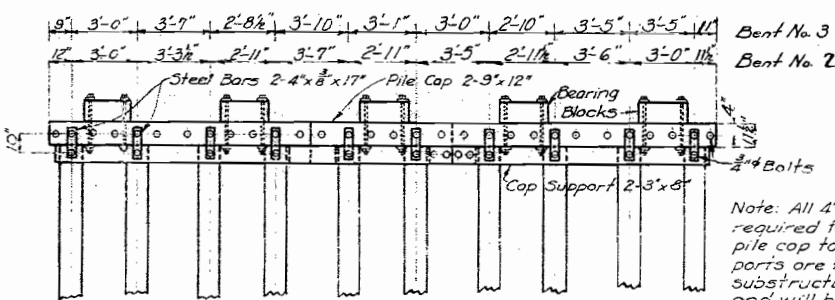
Note: Holes in Gx4x8 clip angles to be drilled in field to match holes shop punched in stringers.

Note: All bearing plates shall be straightened to plane surfaces. Pile caps 12x18" may be substituted for 2-9x12" pile caps shown.



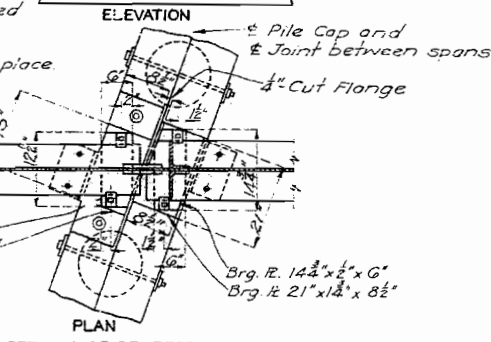
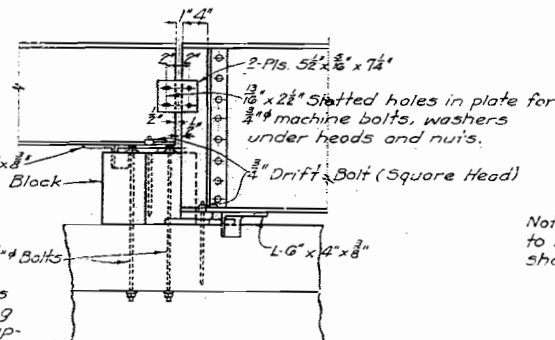
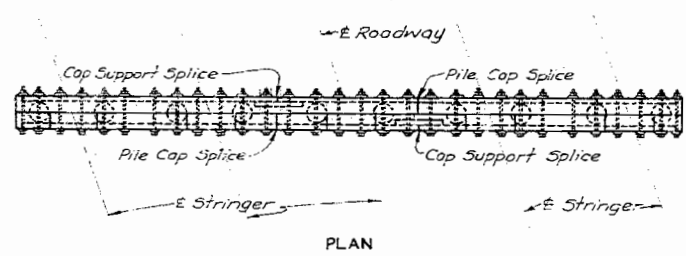
Note: Cast iron clamps used on bearing plates to have 1/8" clearance at flange of beam to allow for expansion. All clamps to have 3/8" bored holes. Use two clamps only on each I-Beam at end bents.

DETAILS OF FLANGE CLAMP



Note: All 4x8x17" bars required for attaching pile cap to pile cap supports are to be considered substructure hardware and will be included in price bid for timber in place.

DETAILS OF INTERMEDIATE BENTS NO. 2 & 3



DETAILS OF BEARINGS

Drawn June 1939 by J.G.
Traced June 1939 by G.W.
Checked June 1939 by D.K.M.-H.D.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 A of 2.

FINAL PLANS