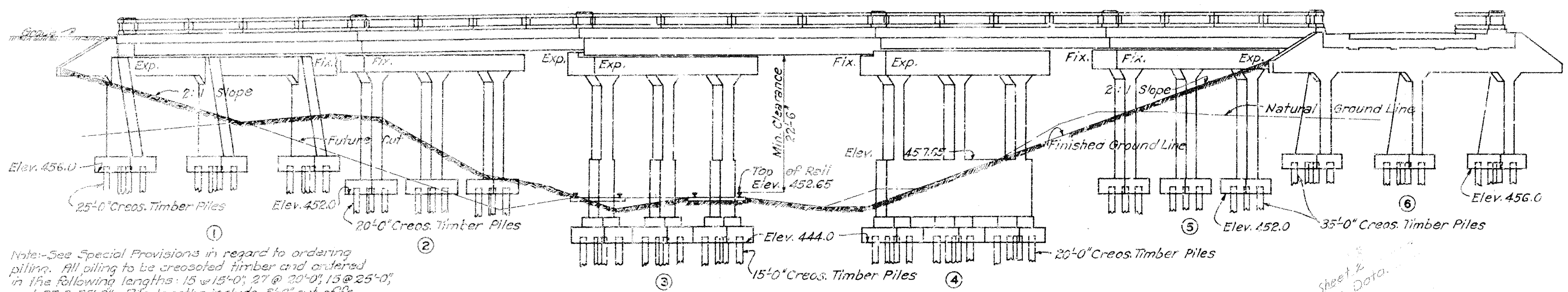
MISSOURI STATE HIGHWAY DEPARTMENT

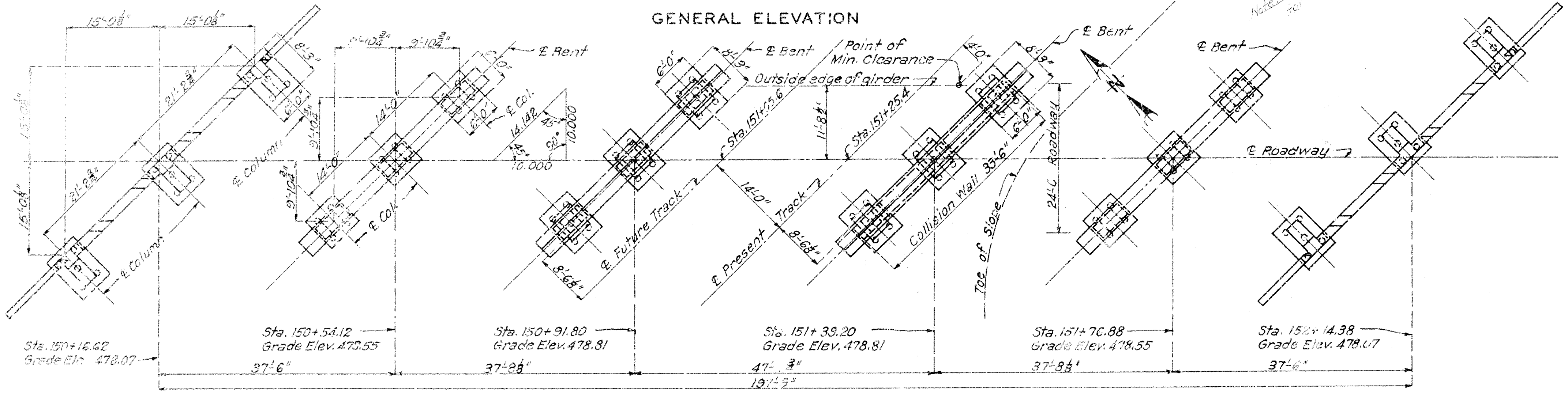
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	NRH256C (R5)	19		

Note:- For details of handrail see "35A", "35B" and "35C" on Std. C-6501R2 and "45B" on Std. C-6502R2 and modify as shown and noted on Sheet No. 5 of 5.



Note:- See Special Provisions in regard to ordering piling. All piling to be creosoted timber and ordered in the following lengths: 15 @ 15'-0", 27 @ 20'-0", 15 @ 25'-0", and 27 @ 35'-0". Pile lengths include 5'-0" cut-offs.

GENERAL ELEVATION

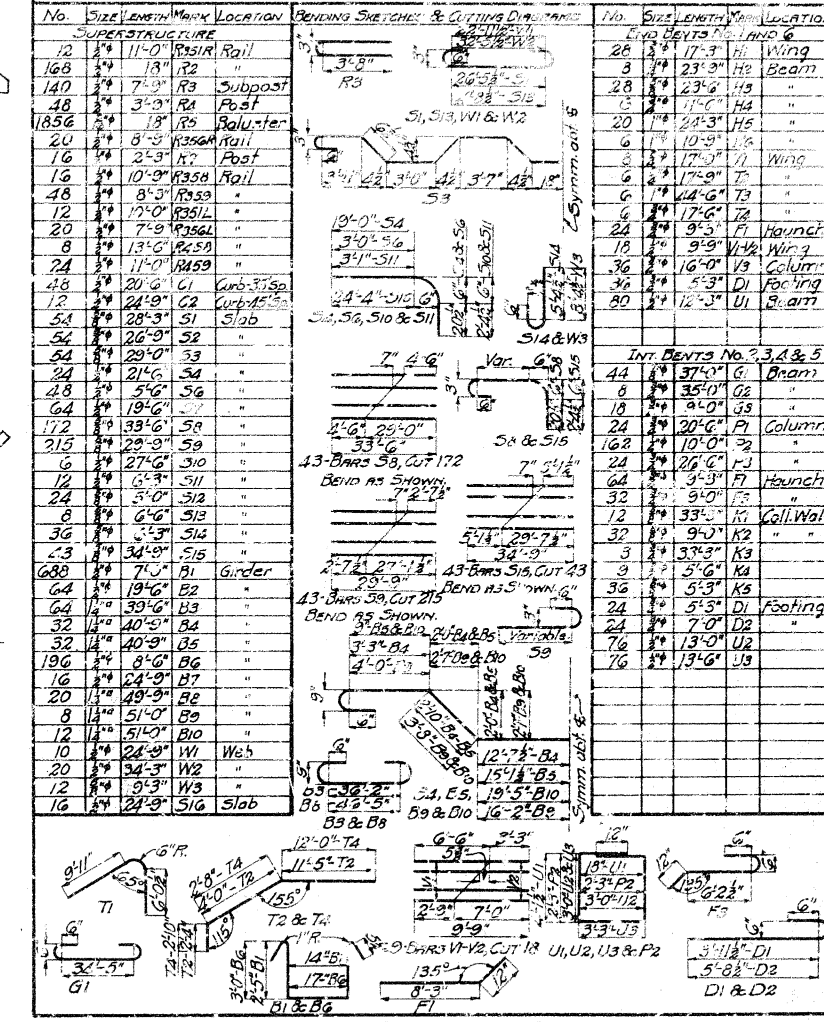


PLAN

COMPLETE BILL OF REINFORCING STEEL

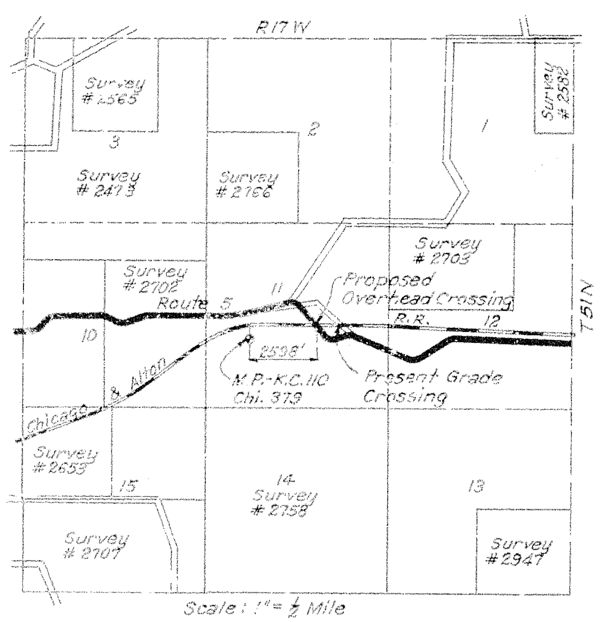
No.	Size	Length	Mark	Location
SUPERSTRUCTURE				
12	½"φ	11'-0"	R351R	Rail
168	½"φ	18"	R2	"
140	½"φ	7'-9"	R3	Subpost
48	½"φ	3'-3"	R4	Post
1856	⅜"φ	18"	R5	Baluster
20	½"φ	8'-9"	R356R	Rail
16	¼"φ	2'-3"	R7	Post
16	½"φ	10'-9"	R358	Rail
48	½"φ	8'-3"	R359	"
12	½"φ	11'-0"	R351L	"
20	½"φ	7'-9"	R356L	"
8	½"φ	13'-6"	R458	"
24	½"φ	11'-0"	R459	"
48	½"φ	20'-6"	C1	Curb-35' Sp.
12	½"φ	24'-9"	C2	Curb-45' Sp.
54	⅝"φ	28'-3"	S1	Slab
54	⅝"φ	26'-9"	S2	"
54	⅝"φ	29'-0"	S3	"
24	½"φ	21'-6"	S4	"
48	½"φ	5'-6"	S6	"
64	½"φ	19'-6"	S7	"
172	⅝"φ	33'-6"	S8	"
215	⅝"φ	29'-9"	S9	"
6	½"φ	27'-6"	S10	"
12	½"φ	6'-3"	S11	"
24	⅝"φ	5'-0"	S12	"
8	⅝"φ	6'-6"	S13	"
36	⅝"φ	6'-3"	S14	"
43	⅝"φ	34'-9"	S15	"
688	½"φ	7'-0"	B1	Girder
64	½"φ	19'-6"	B2	"
64	1¼"□	39'-6"	B3	"
32	1¼"□	40'-9"	B4	"
32	1¼"□	40'-9"	B5	"
196	½"φ	8'-6"	B6	"
16	½"φ	24'-9"	B7	"
20	1¼"□	49'-9"	B8	"
8	1¼"□	51'-0"	B9	"
12	1¼"□	51'-0"	B10	"
10	½"φ	24'-9"	W1	Web
20	½"φ	34'-3"	W2	"
12	⅝"φ	9'-3"	W3	"
16	⅝"φ	24'-9"	S16	Slab

BENDING SKETCHES & CUTTING DIAGRAMS



No.	Size	Length	Mark	Location
END BENTS NO. 1 AND 6				
28	¾"φ	17'-3"	H1	Wing
8	1"φ	23'-3"	H2	Beam
28	¾"φ	23'-6"	H3	"
6	¾"φ	11'-6"	H4	"
20	1"φ	24'-3"	H5	"
6	1"φ	10'-9"	H6	"
8	¾"φ	17'-0"	T1	Wing
6	¾"φ	17'-9"	T2	"
6	1"φ	44'-6"	T3	"
6	¾"φ	17'-6"	T4	"
24	¾"φ	9'-3"	F1	Haunch
18	½"φ	9'-9"	V1-V2	Wing
36	½"φ	16'-0"	V3	Column
36	¾"φ	5'-3"	D1	Footing
80	½"φ	12'-3"	U1	Beam
INT. BENTS NO. 2, 3, 4 & 5				
44	⅞"φ	37'-0"	G1	Beam
8	¾"φ	35'-0"	G2	"
18	¾"φ	9'-0"	G3	"
24	⅞"φ	20'-6"	P1	Column
162	½"φ	10'-0"	P2	"
24	⅞"φ	26'-6"	P3	"
64	¾"φ	9'-3"	F1	Haunch
32	¾"φ	9'-0"	F3	"
12	⅝"φ	33'-3"	K1	Coll. Wall
32	⅝"φ	9'-0"	K2	" "
3	¾"φ	33'-3"	K3	
9	¾"φ	5'-6"	K4	
36	⅝"φ	5'-3"	K5	
24	¾"φ	5'-3"	D1	Footing
24	¾"φ	7'-0"	D2	"
76	½"φ	13'-0"	U2	
76	½"φ	13'-6"	U3	

Note:- Dimensions are given along ℄ of bars and are for computed lengths. Reinforcing bars ¾" or over in diameter, which are bent to an angle greater than 30° shall be of structural grade.



LOCATION SKETCH

Note: See Sheet 2 for Final Quantities

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Excavation Class I	Cu. Yds.	690		690
Concrete 1:2:3 Mix, Class "A"	Cu. Yds.		19.7	19.7
Concrete 1:2:4 Mix, Class "B"	Cu. Yds.	295.7		295.7
Concrete 1:2:3½ Mix, Class "X"	Cu. Yds.		275.5	275.5
Phosphor Bronze Bearing Pls. (Flanged) (8"x17") [illegible] Sets of 5 Plates each.				
Phosphor Bronze Bearing Pls. (Flanged) (8"x20") 4 Sets of 5 Plates each.				
Reinforcing Steel	Lbs.	16,950	68,500	85,450
Creos. Timber Piling	Lin. Ft.	2169		2169
Creos. Timber Pile Cut-offs	Lin. Ft.	252		252

Note:- All bridge excavation to be paid for as Class I Bridge Excavation.
Estimated quantity of creosoted timber piling includes four linear feet per pile as allowance for metal shoes in accordance with Specifications.

GENERAL NOTES:-

Concrete in handrail to be 1:2:3 mix, Class "A". Concrete in slabs, curbs, and girders to be 1:2:3½ mix, Class "X". All other concrete to be 1:2:4 mix, Class "B".

Reinforced concrete deck girder spans shall be constructed full length and width at one operation. No construction joints permitted.

Exposed edges to be beveled ¾" where no other bevel is noted.

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.

Two name plates, type "A" as shown on Std. S-918R, to be furnished and placed by contractor. Cost of name plates to be included in price bid for other items.

Bridge excavation in accordance with Section I of Standard Specifications issued April 1, 1930.

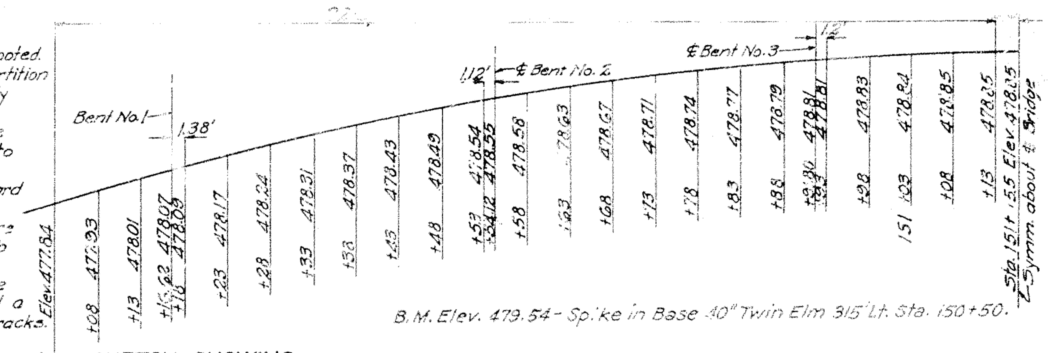
Only sufficient camber to be used in construction to insure against settlement below lines given as finished grade. No permanent camber required in individual spans.

Falsework for spans over existing railroad tracks shall be constructed with a minimum vertical clearance of 20'-0" and a minimum horizontal clearance of 7'-0" from centerline of tracks.

Piling to be driven to sustain a load of 20 ton per pile.

Bar supports and spacers will be required for reinforcing steel in superstructure. See Std. C-110R and Special Provisions.

All concrete shall be proportioned by the weight proportioning method. See Special Provisions.



SKETCH SHOWING GRADE ELEVATIONS

B.M. Elev. 479.54 - Spike in Base 40" Twin Elm 315' Lt. Sta. 150+50.

BRIDGE OVER CHICAGO & ALTON R.R.

STATE ROAD FROM GLASGOW TO FAYETTE
ABOUT 3 MILES EAST OF GLASGOW
PROJECT NO. NRH 256C (R5) STA. 150 + 16.62
HOWARD COUNTY

SUBMITTED BY [signature] BRIDGE ENGINEER DATE 3/20/34
APPROVED BY T. H. Cutler CHIEF ENGINEER DATE 3/20/34

STD. C-110R
STD. C-6501R2
STD. C-6502R2
STD. S-918R

K-382

Drawn Jan. 1934 By J.G.
Traced Jan. 1934 By R.J.G.
Checked Jan. 1934 By W.H.K. & RAB.

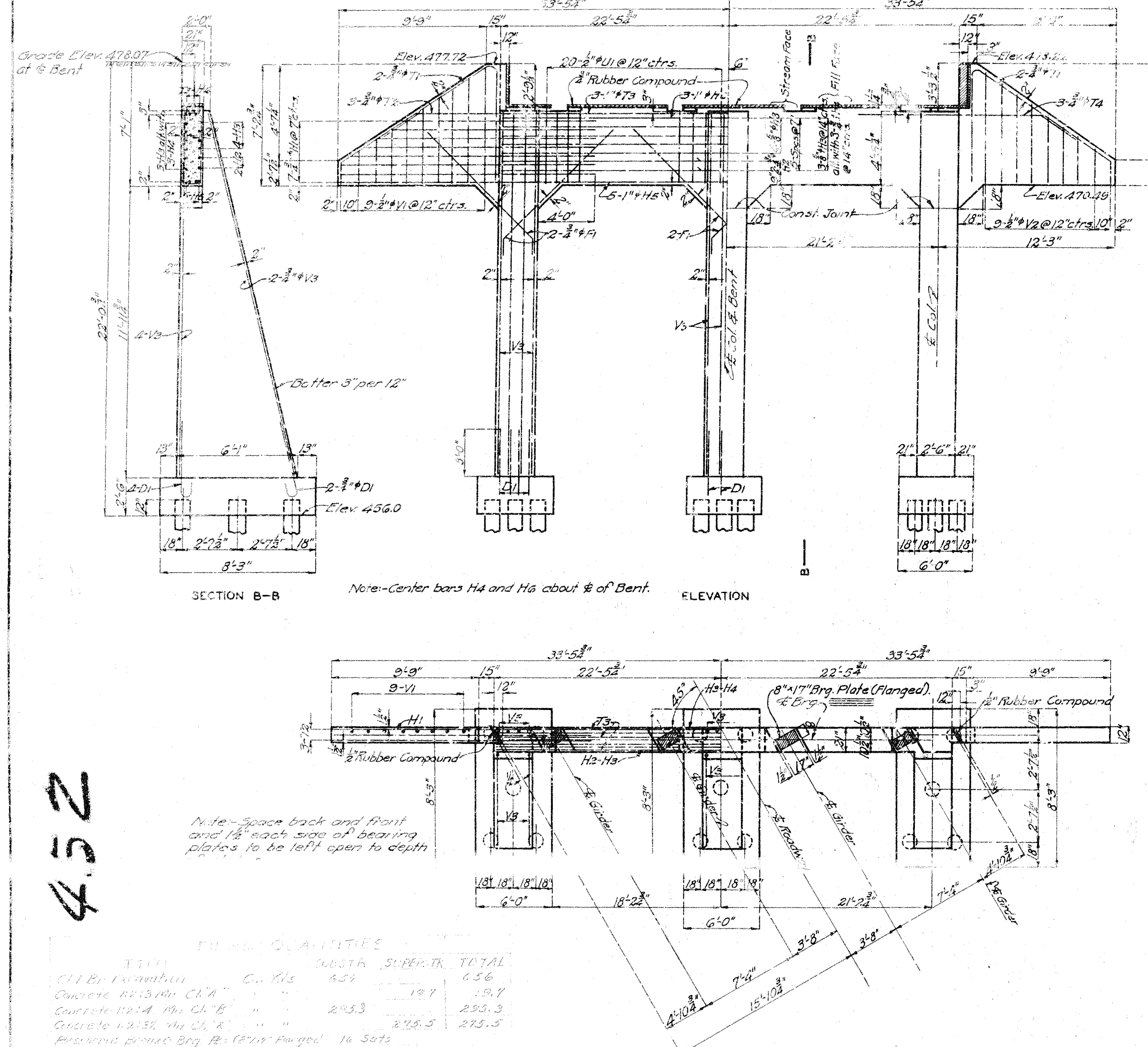
Note:- This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 5.

F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

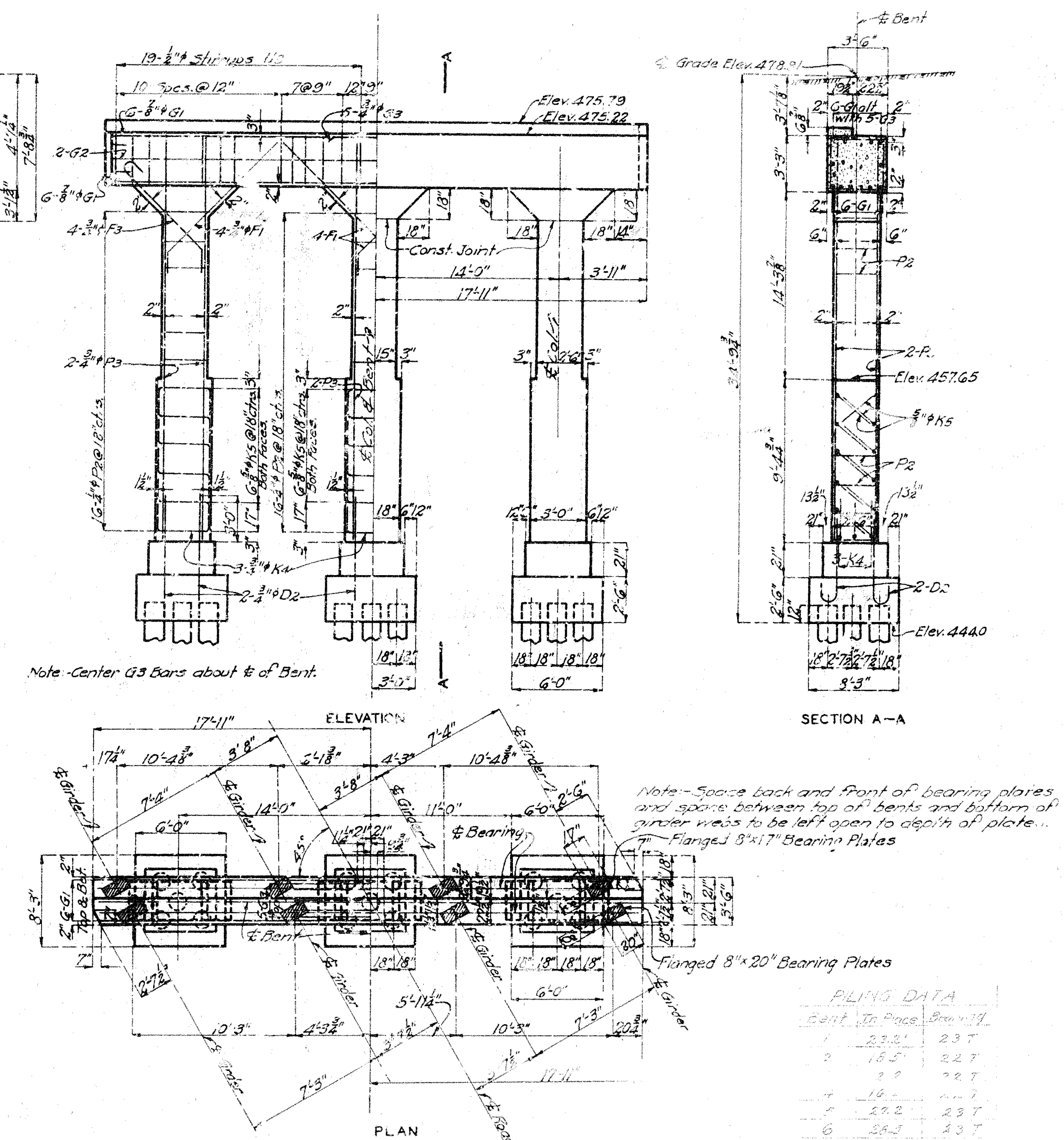
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	NRH256C (R5)	19		



Note:-Center bars H4 and H6 about ℄ of Bent.

Note:-Space back and front and 1½" each side of bearing plates to be left open to depth ...

DETAILS OF END BENTS NO. 1 & 6



Note:-Center G3 Bars about ℄ of Bent.

Note:-Space back and front of bearing plates and space between top of bents and bottom of girder webs to be left open to depth of plate.

DETAILS OF BENT NO. 3

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FINAL QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Cl. 1 Br. Excavation	Cu. Yds.	654		656
Concrete 1:2:3 Mix Cl. "A"	" "		19.7	19.7
Concrete 1:2:4 Mix Cl. "B"	" "	293.3		293.3
Concrete 1:2:3½ Mix Cl. "X"	" "		275.5	275.5
Phosphor Bronze Brg. Pls. (8"x17" Flanged)	16 Sets			
" " " (8"x20" ")	4 Sets			
Reinforcing Steel	Lbs.	16,950	68,500	85,450
Creos. Timber Piling	Lin. Ft.	2108		2108
Creos. Timber Piling Cut-Offs	Lin. Ft.			

PILING DATA

Bent	In Place	Bearing
1	23.2'	23 T
2	18.5'	22 T
[illegible]	[illegible]	22 T
4	16.[illegible]	[illegible]
5	27.2	23 T
6	26.5	23 T

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

BRIDGE OVER CHICAGO & ALTON R.R.

STATE ROAD FROM GLASGOW TO FAYETTE

ABOUT 3.0 MILES EAST OF GLASGOW

PROJECT NO. NRH 256C (R5) STA. 150 + 16.62

HOWARD COUNTY

FINISHED

Assembled Feb. 1934 by I.G.-C.R.F.
Checked Mar. 1934 by R.H.B.
Drawn Sept. 1931 by C.A.F.
Checked Mar. 1934 by R.H.B.

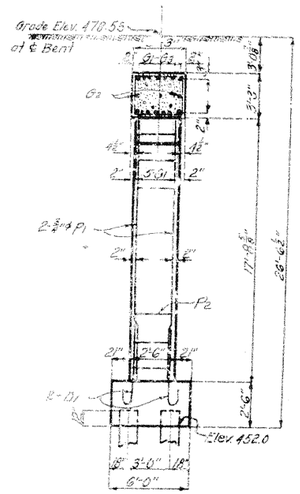
Sheet No. 2 of 5

F.A.

K-382

MISSOURI STATE HIGHWAY DEPARTMENT

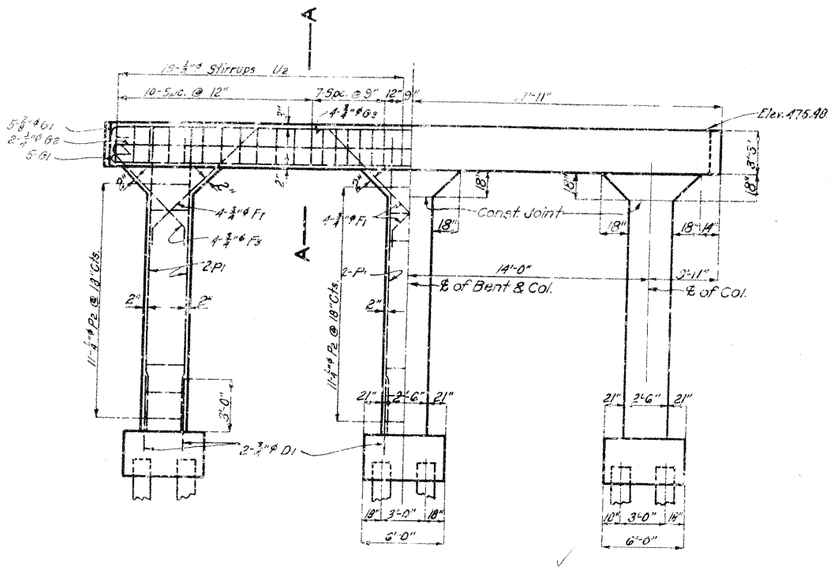
FED. ROAD DIST. NO.	STATE NO.	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
7	MO.	NRH 256C(RS)	3	



SECTION A-A

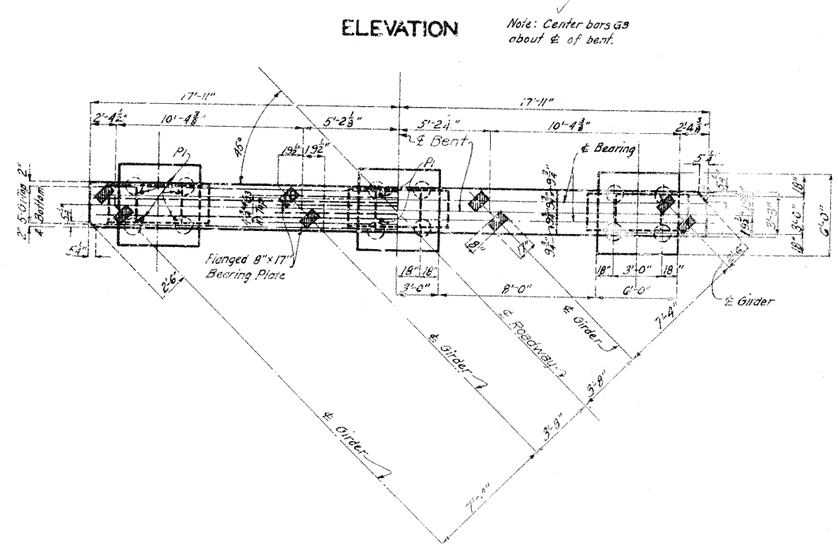
DETAILS OF PILING SHOE

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



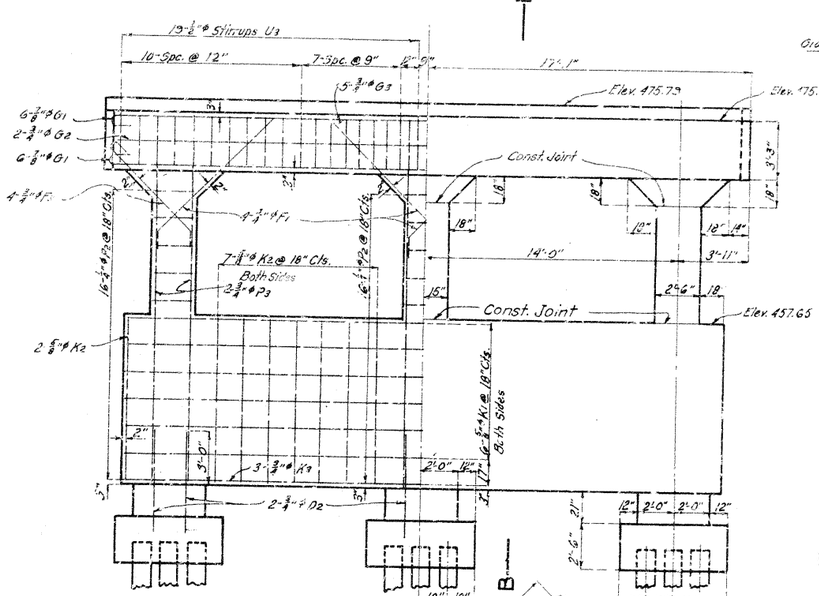
ELEVATION

Note: Center bars G3 about ℄ of bent.

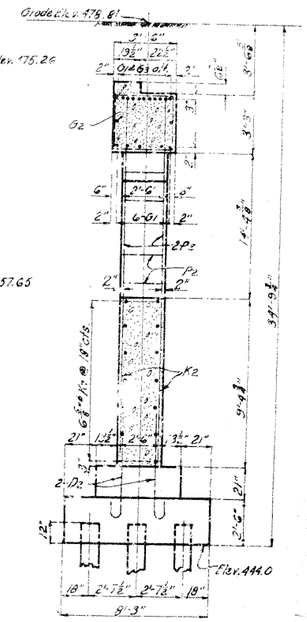


PLAN

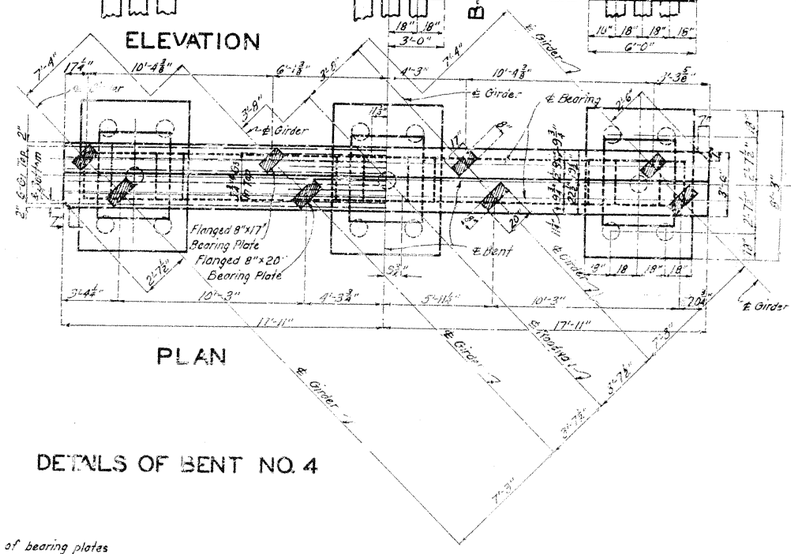
DETAILS OF BENTS NO. 2 & 5



ELEVATION



SECTION B-B



PLAN

DETAILS OF BENT NO. 4

Note: Space back and front of bearing plates and space between top of bents and bottom of girder webs to be left open to depth of plates.

FINISHED

BRIDGE OVER CHICAGO & ALTON R.R

STATE ROAD FROM GLASGOW TO FAYETTE

ABOUT 3.0 MILES EAST OF GLASGOW

PROJECT NO NRH256C(RS) STA. 150 + 16.82

HOWARD COUNTY

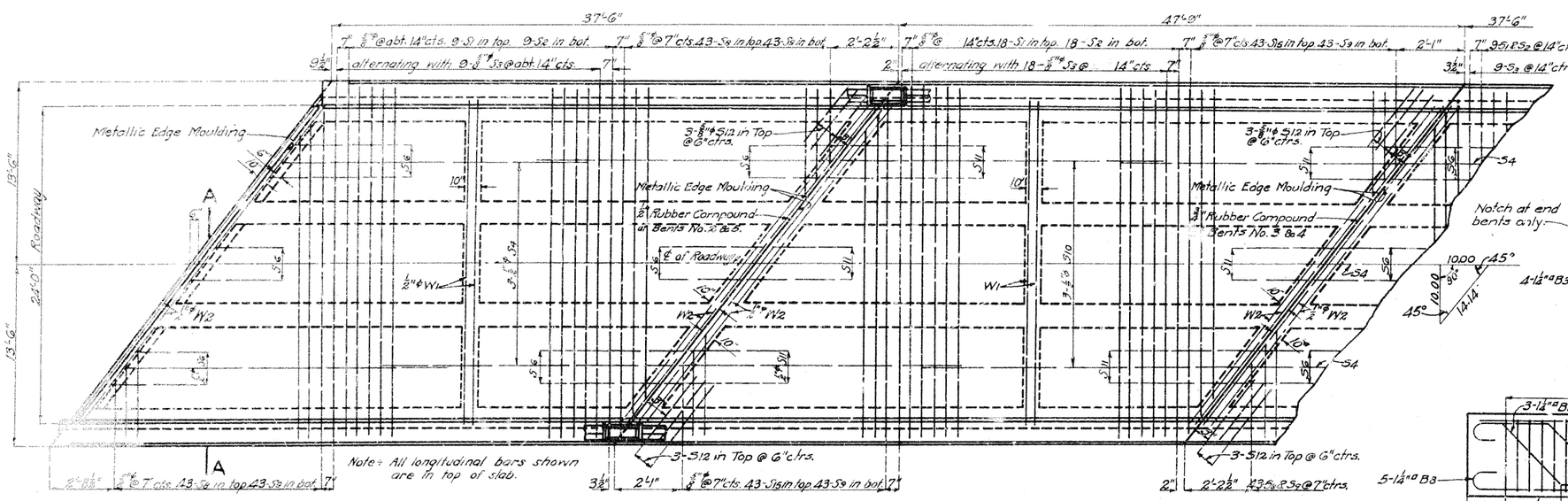
Drawn Sept. 1932 By E.B.
Traced Sept. 1932 By H.V.H. Assembled Feb. 1934 by J.G. & L.M.V.
Checked Mar. 1934 By R.R.B. Checked Mar. 1934 by R.A.B.

Sheet No. 3 of 5 Sheets

F.A. K-382

MISSOURI STATE HIGHWAY DEPARTMENT

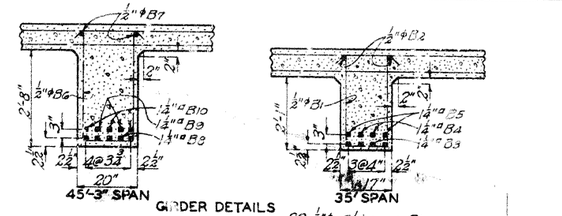
Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
5	140	NRH256C (RS)	19		



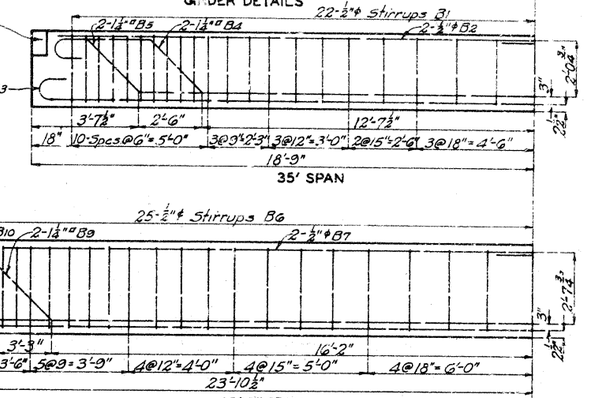
Note:- Superstructure at end bents to be modified as shown on Sheet No. 5.

PLAN OF SLAB SHOWING REINFORCEMENT

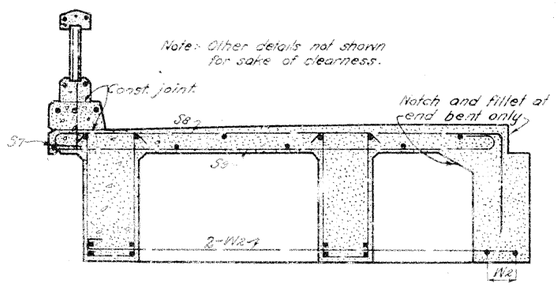
Note:- Top of slab, curbs, rails, top of posts, and bottom of girders shall be constructed parallel to grade. Posts, subposts, and balusters to be vertical.



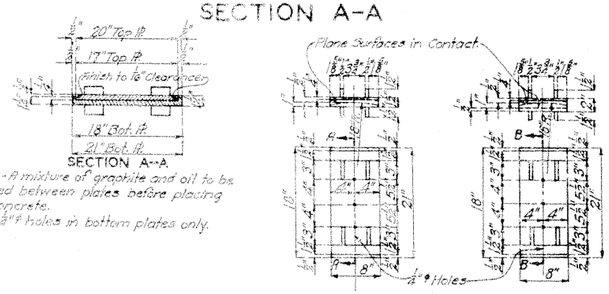
GIRDER DETAILS



GIRDER REINFORCEMENT



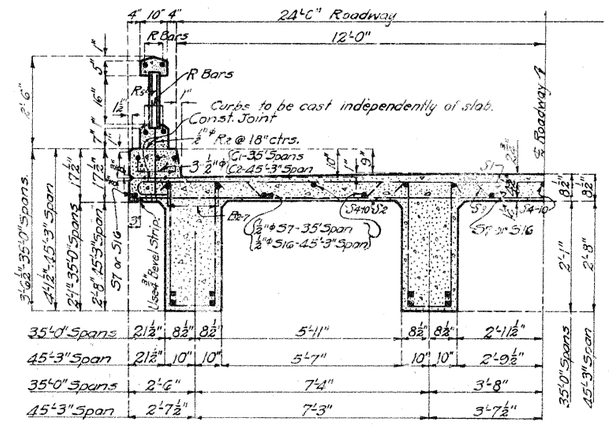
SECTION A-A



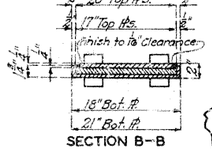
Note:- A mixture of graphite and oil to be placed between plates before placing in concrete.
3-⅞" ϕ holes in bottom plates only.

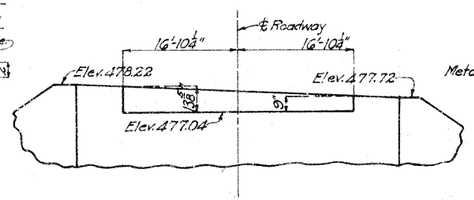
PHOSPHOR BRONZE BEARING PLATES

Note:- 20 Sets of 5-plates each required. Each set consisting of one top plate and one bottom plate for fixed end and one top plate, one Floater plate and one bottom plate for expansion end.



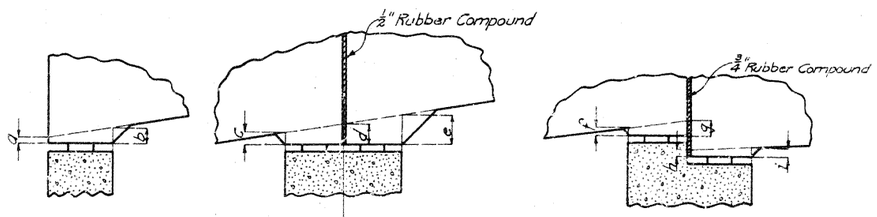
HALF CROSS SECTION





ELEVATION SHOWING APPROACH NOTCHES

Note:- Dimensions are given along face of end bents.



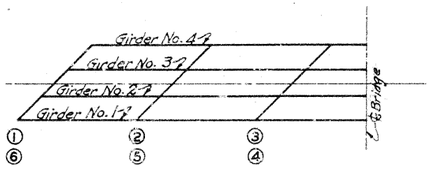
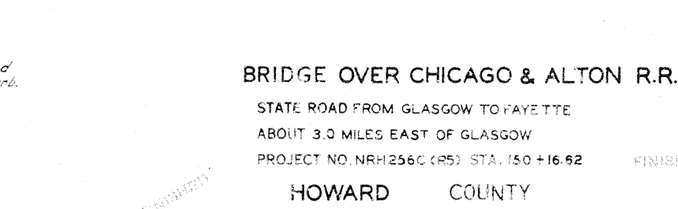


TABLE OF HAUNCH DIMENSIONS									
Bents No.	1 & 6		2 & 5			3 & 4			
Dimensions	a	b	c	d	e	f	g	h	i
Girder No. 1	0"	⅜"	0"	¾"	⅜"	0"	⅜"	0"	⅜"
Girder No. 2	1½"	2⅛"	1"	1¼"	1½"	½"	⅜"	⅜"	2"
Girder No. 3	2⅝"	3⅜"	1⅞"	2⅝"	2⅞"	½"	⅜"	½"	½"
Girder No. 4	4⅛"	4½"	2¾"	2⅞"	3⅜"	1⅝"	1⅝"	1"	1"



DETAIL OF NOTCH FOR APPROACH SLABS

SECTION PARALLEL TO ℄ OF ROADWAY

BRIDGE OVER CHICAGO & ALTON R.R.

STATE ROAD FROM GLASGOW TO FAYETTE

ABOUT 3.0 MILES EAST OF GLASGOW

PROJECT NO. NRH 256C (RS) STA. 150 + 16.62

HOWARD COUNTY

FINISHED

Assembled Feb. 1934 by J.G.-C.A.F.
Checked Mar. 1934 by R.A.S.
Drawn Feb. 1929 by H.S.T.&R.S.M.
Checked Feb. 1929 by C.B.

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

Sheet No. 4 of 5 Sheets F.A.

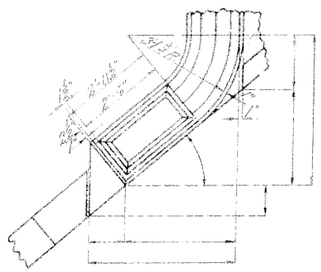
K-382

454

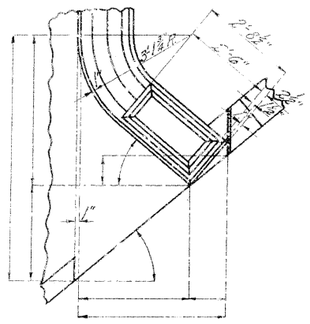
DECK GIRDERS C 815

MISSOURI STATE HIGHWAY DEPARTMENT

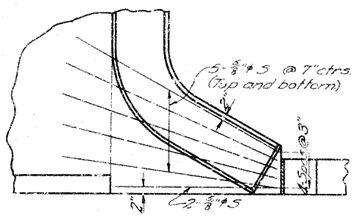
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	NRH 256C (R5)	19		



PLAN SHOWING DIMENSIONS

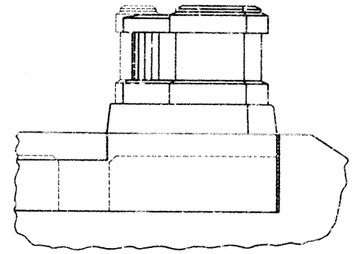


PLAN SHOWING DIMENSIONS

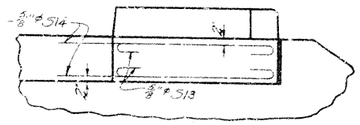


PLAN SHOWING REINFORCING

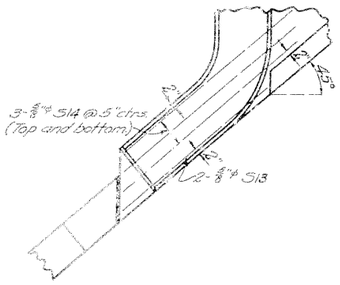
SQUARE END BENT



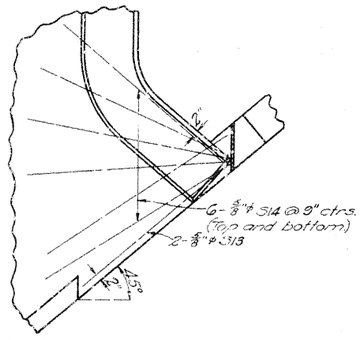
DECK GIRDER SPAN SHOWING POST



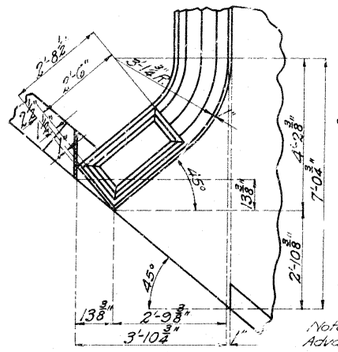
SLAB SPAN SHOWING REINFORCING



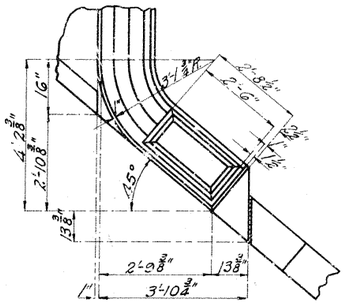
PLAN SHOWING REINFORCING



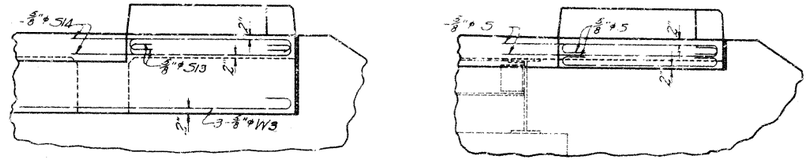
RIGHT ADVANCE SKEW 30° AND OVER



Note:- For reinforcing see Right Advance Skew 30° And Over.



LEFT ADVANCE SKEW 30° AND OVER



DECK GIRDER SPAN SHOWING REINFORCING

I-BEAM SPAN SHOWING REINFORCING

TYPICAL END ELEVATIONS

GENERAL NOTES:

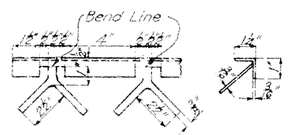
For details of handrail see 35"A", 35"B" and 35"C" on Std. C-G501R2 and 45"B" on Std C-G502R2. Handrail, curb and slab to be modified at end bents as shown on this sheet.

Length of panels between subposts on right-hand rail on 35"A" and left-hand rail on 35"C" to be 7'-8⅜" instead of 7'-2". Use 11 balusters in each panel. Add the letter R to bar mark for all longitudinal rail bars in these panels.

Length of panels between subposts on left-hand rail on 35"A" and right-hand rail on 35"C" to be 6'-8½" instead of 7'-2". Use 10 balusters in each panel. Add the letter L to bar mark for all longitudinal rail bars in these panels.

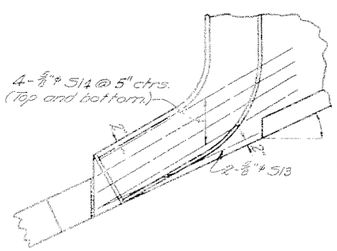
Length of panels between subposts on 45"B" to be 10'-0⅛" instead of 9'-11⅜".

Omit outlets

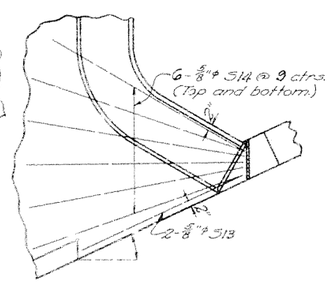


METALLIC EDGE MOULDING

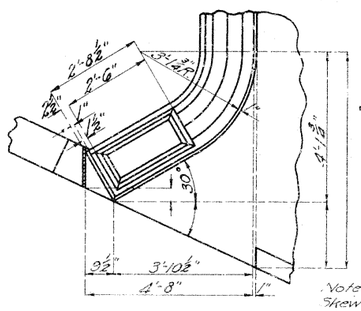
Note: Cost of metallic edge moulding will be included in unit bid price for concrete.



PLAN SHOWING REINFORCING



RIGHT ADVANCE SKEW LESS THAN 30°



Note:- For reinforcing see Right Advance Skew Less Than 30°.

LEFT ADVANCE SKEW LESS THAN 30°

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Assembled Feb. 1934 by J.G.-C.A.F.
Checked March, 1934 by R.A.B.
Drawn April 1932 by C.H.F.
Checked March 1934 by R.A.B.

TYPICAL DETAILS OF CONCRETE RAIL AT END BENT

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

FINISHED

FIN. SHEET

BRIDGE OVER CHICAGO & ALTON R.R.

STATE ROAD FROM GLASGOW TO FAYETTE

ABOUT 3.0 MILES EAST OF GLASGOW

PROJECT NO. NRH256C(R5) STA. 150 + 16.02

HOWARD COUNTY

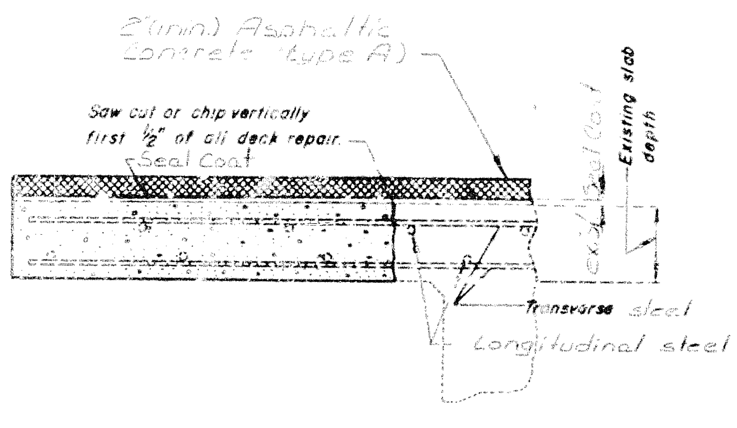
Sheet No. 5 of 5 F.A.

K-382

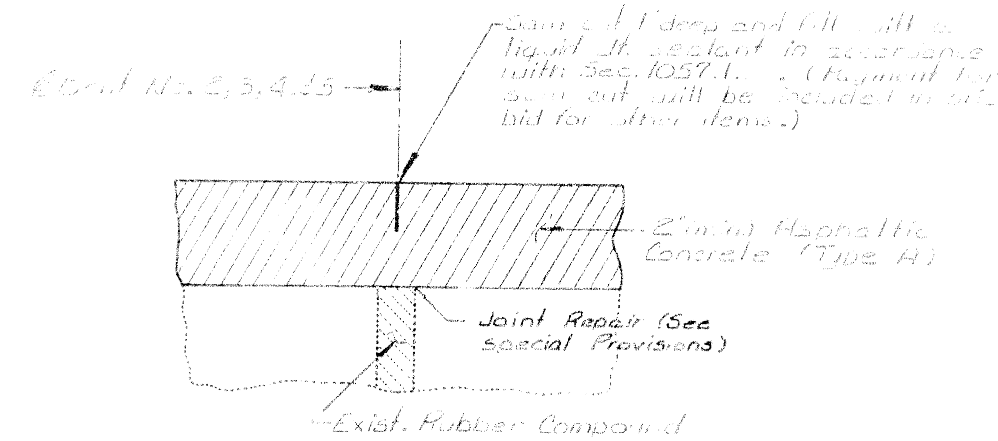
8-26-32

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

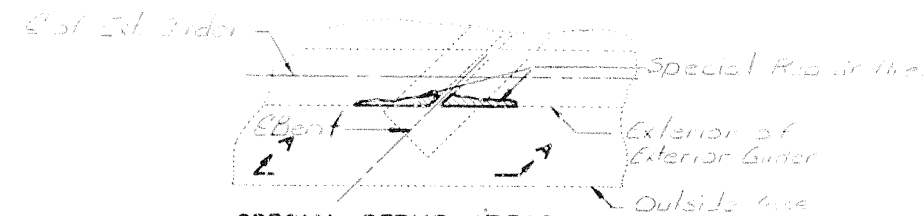
STATE	PROJ. NO.	SHEET NO.
MO.		1
SEC/SUR 11	TWP. 51 N	RGE. 17 W



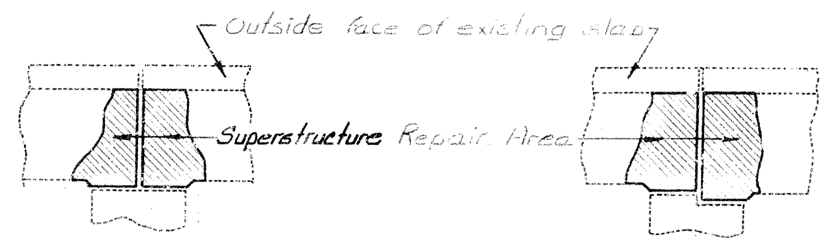
DECK OVERHANG REPLACEMENT



TYPICAL PART SECTION THRU SLAB AT TRANSVERSE JOINTS



SPECIAL REPAIR AREAS
AT BT. 2 & 3 (EAST) AND BT. 4 & 5 (WEST)



SECTION A-A
AT BT. 2 (EAST) & BT. 5 (WEST)

SECTION A-A
AT BT. 3 (EAST) & BT. 4 (WEST)

SPECIAL REPAIR AREAS FOR EXTERIOR GIRDERS

GENERAL NOTES:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

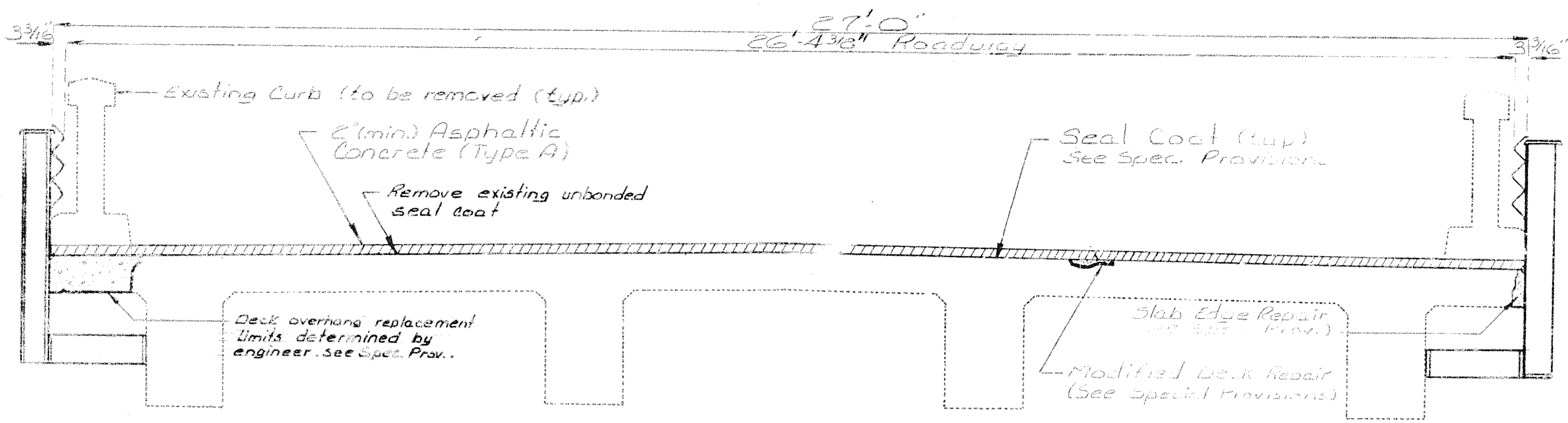
Maintain one lane of traffic during construction. (See Road Plans).

[illegible] yard. [illegible] at a rate of [illegible] tons per square yard.

For General Notes for Thrie Beam Rail see Sheet No. 3.

ESTIMATED QUANTITIES

ITEM	TOTAL
Superstructure Repair (unformed) See Spec. Prov. Sq. Ft.	50
[illegible] Installation Lin. Ft.	336
[illegible] Cement Asphaltic Concrete) [illegible] (Type A Mix) Ton	29
Mineral Aggregate (Asphaltic Concrete) (Type A Mix) Ton	53
[illegible]	25
Slab Overhang Replacement Lin. Ft.	[illegible]
[illegible] Sq. Ft.	[illegible]
Bridge [illegible] Rail (Thrie Beam) Lin. Ft.	393
Bridge Anchor Section (Thrie Beam) Each	4
Polymer Modified Asphalt (Seal Coat) Gal.	210
[illegible]	[illegible]



SECTION THRU SLAB

BRIDGE OVER CHICAGO, MO. & WESTERN R.R.
STATE ROAD FROM GLASGOW TO FAYETTE
ABOUT 2.0 MILES EAST OF GLASGOW
PROJECT NO. F-5-3(22) STA. 150+16.62
JOB NO. 5-P005-308 RTE. 5
HOWARD COUNTY
DATE 11/4/88

DESIGNED MAR. 1955
DETAILED APRIL 1987
CHECKED JUNE 1987

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

Sheet No. 1 of 4

STD.
STD. 606.00
K-382R

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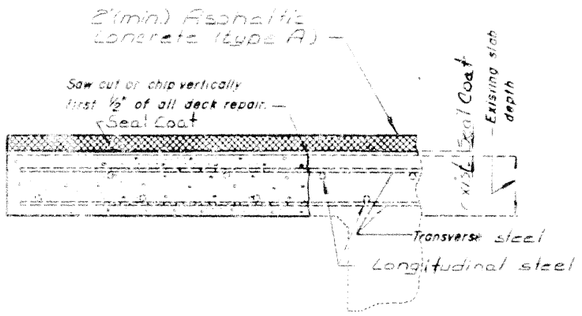
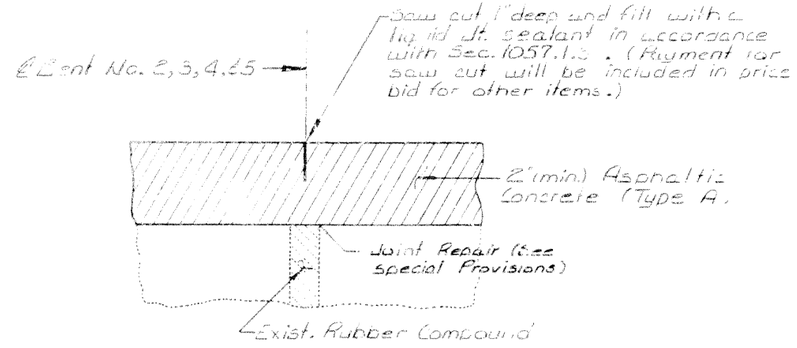
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

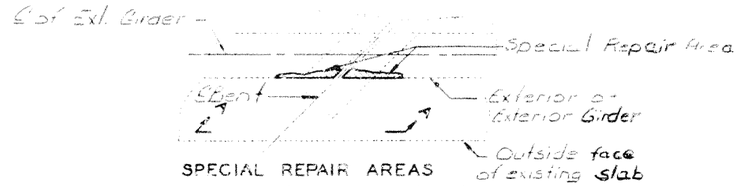
STATE	PROJ. NO.	SHEET NO.
MO	F-5-3(22)	1
SEC SUR 11	TWP 51N	RGE 17W



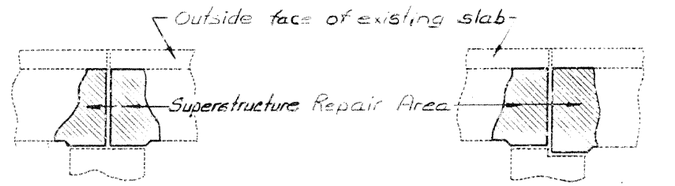
DECK OVERHANG REPLACEMENT



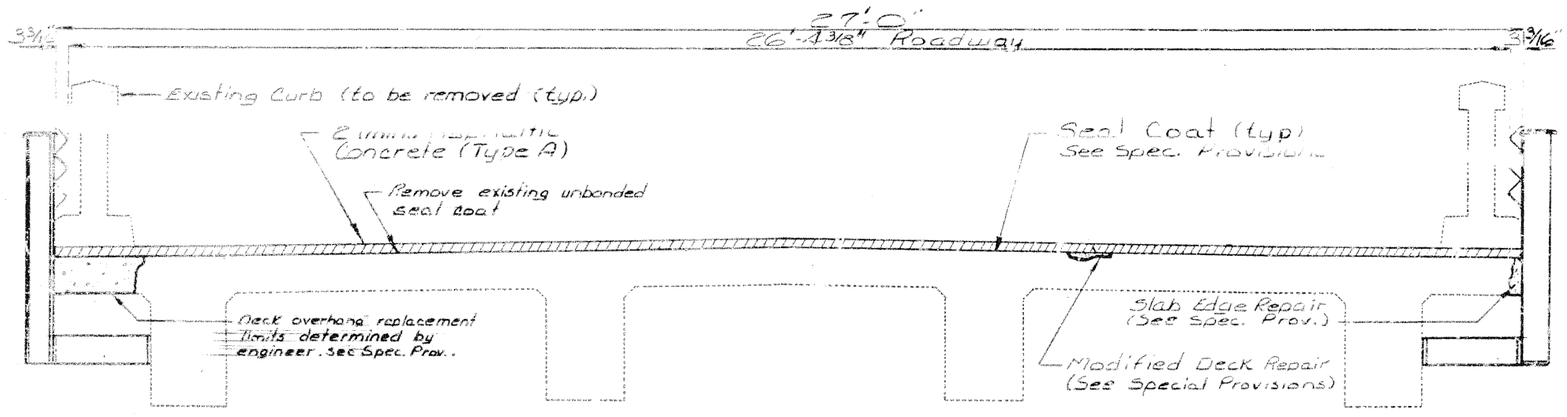
TYPICAL PART SECTION THRU SLAB AT TRANSVERSE JOINTS



SPECIAL REPAIR AREAS
AT BT. 2 & 3 (EAST) AND BT. 4 & 5 (WEST)



SPECIAL REPAIR AREAS FOR EXTERIOR GIRDERS



SECTION THRU SLAB

GENERAL NOTES :

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Maintain one lane of traffic during construction. (See Road Plans).

Polymer Modified Asphalt Emulsion for seal coat shall be Grade CRS 2 (modified) applied at a rate of .35 gal. per square yard.
Cover Aggregate for seal coat shall be applied at a rate of .015 Tons per square yard.

For General Notes for Thrie Beam Rail see sheet No. 3.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Superstructure Repair (unformed) See Spec. Prov.	Sq. Ft.	50
Curb Removal for Thrie Beam Installation	Lin. Ft.	396
Asphalt Cement (Asphaltic Concrete) (60-70) (Type A Mix)	Ton	3.1
Mineral Aggregate (Asphaltic Concrete) (Type A Mix)	Ton	.55
Slab Edge Repair (Bridges)	Lin. Ft.	12
Slab Overhang Replacement	Lin. Ft.	227
Modified Deck Repair	Sq. Ft.	861
Bridge Guard Rail (Thrie Beam)	Lin. Ft.	393
Bridge Anchor Section (Thrie Beam)	Each	4
Polymer Modified Asphalt (Seal Coat)	Gal.	210
Cover Aggregate. See Special Provisions	Ton	9

FINAL PLANS

DESIGNED MAR. 1985
DETAILED APRIL 1987
CHECKED JUNE 1987

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

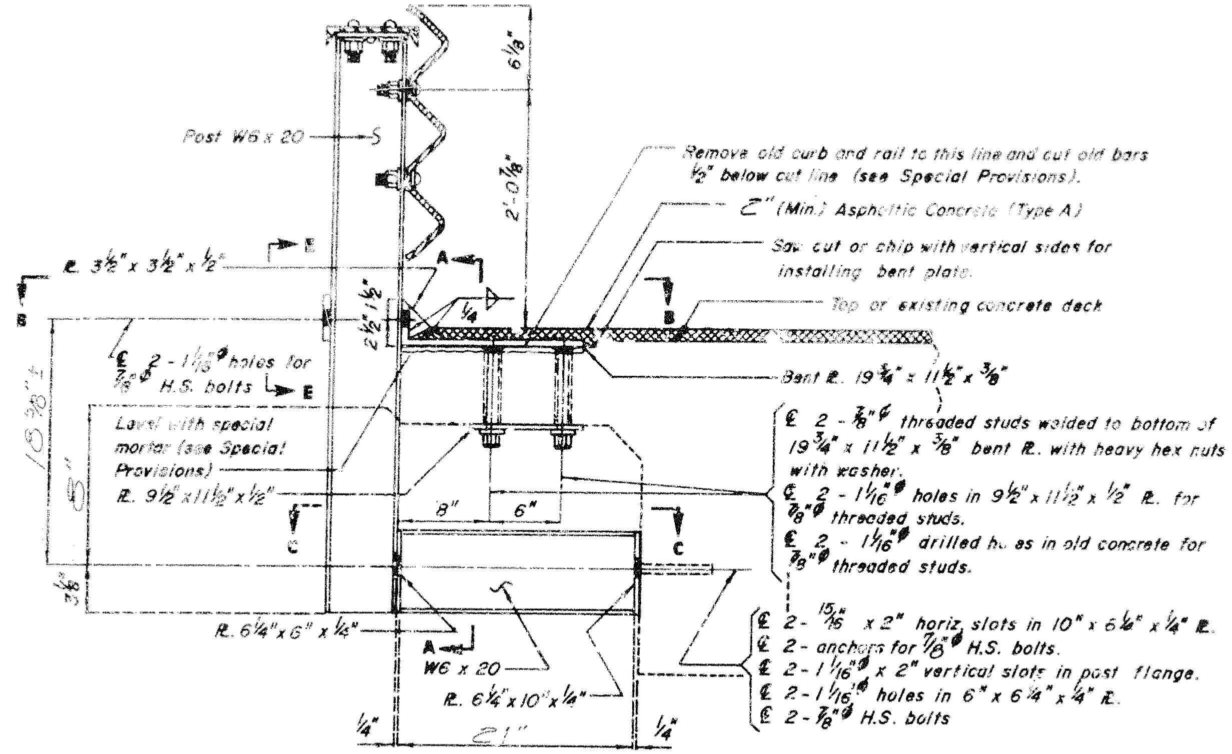
Sheet No. 1 of 4

BRIDGE OVER CHICAGO, MO. & WESTERN R.R.

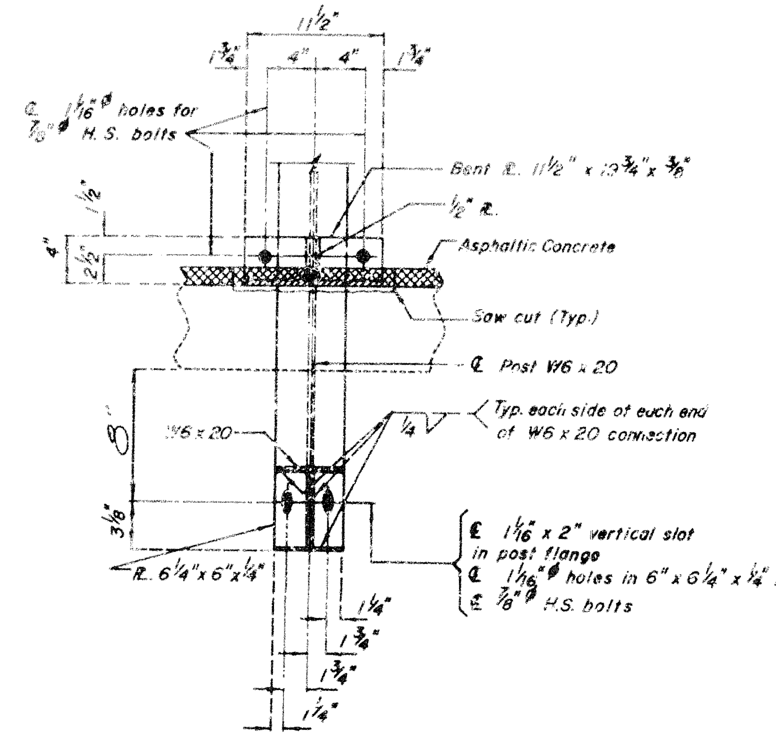
STATE ROAD FROM GLASGOW TO FAYETTE
ABOUT 2.0 MILES EAST OF GLASGOW
PROJECT NO. F-5-3(22) STA. 150+16.62
JOB NO. 5-P005-308 RTE. 5
HOWARD COUNTY
DATE 11/16/88

STD.
STD. 606.00
K-382R

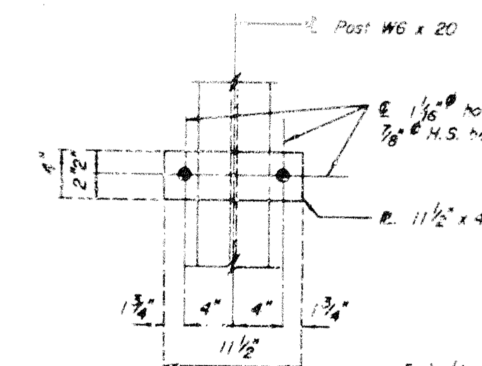
STATE	PROJ. NO.	SHEET NO.
MO		2



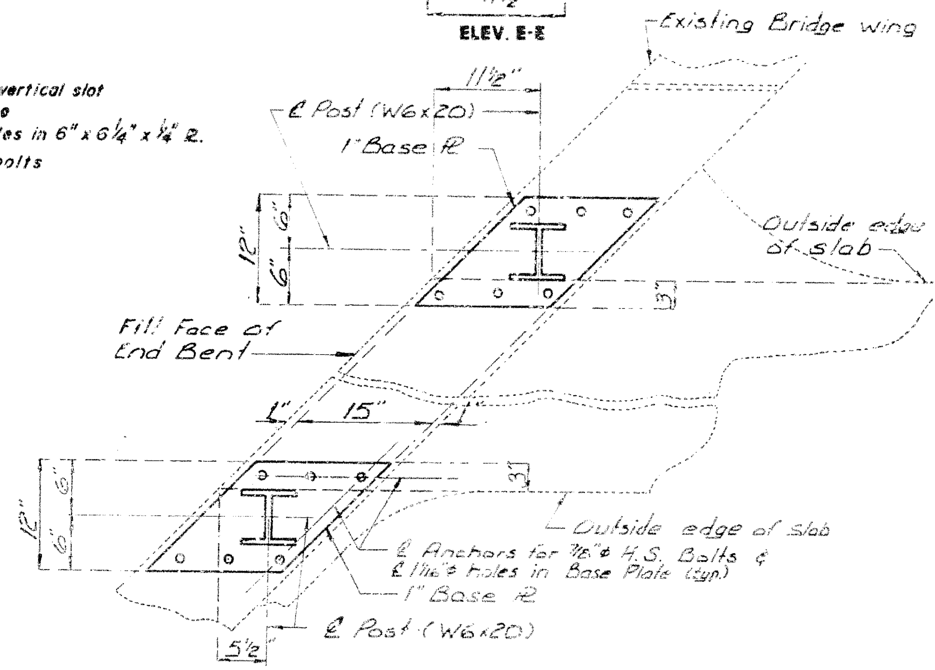
PART SECTION AT RAIL POST



SECTION A-A



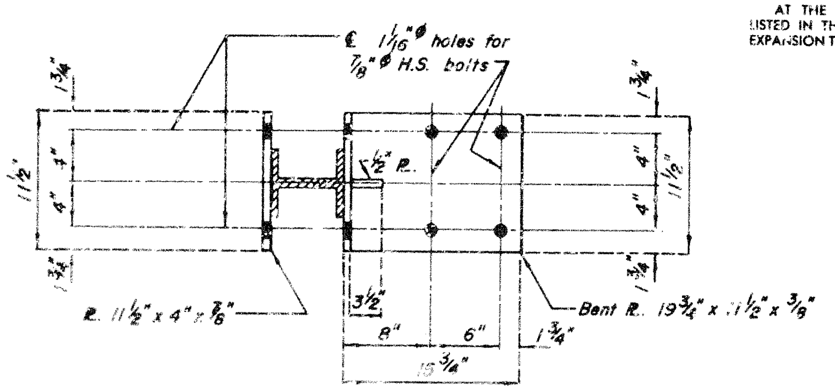
ELEV. E-E



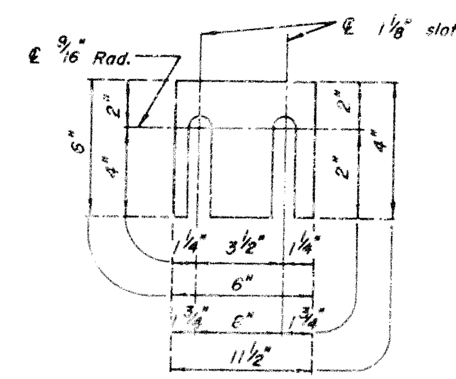
PART PLAN OF RAIL POST AT END BENTS

NOTE:

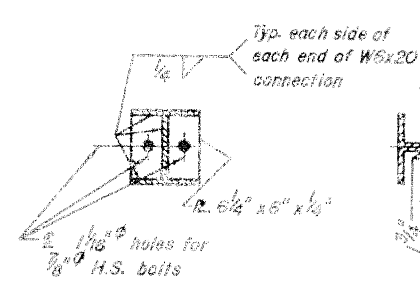
AT THE OPTION OF THE CONTRACTOR ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS MAY BE SUBSTITUTED FOR THE CONE EXPANSION TYPE CONCRETE ANCHORS NOTED ON THE PLANS.



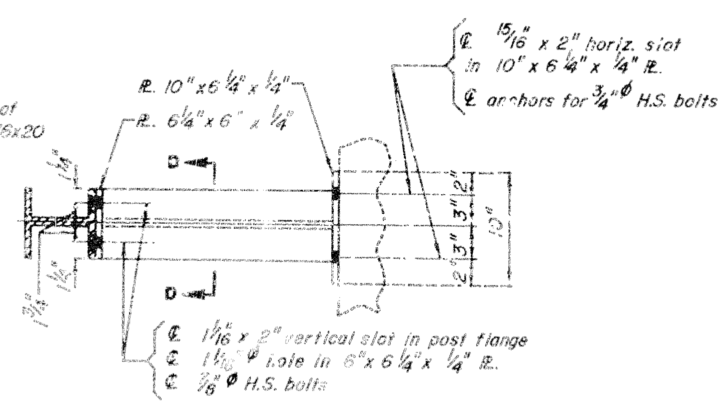
SECTION B-B



DETAIL OF SHIM PLATES



SECTION D-D



SECTION C-C

Note:

Shim plates 6" x 6" x ¹⁄₁₆" may be used between post W6x20 and 6" x 6¼" x ¼" ℞ and shim plates 11½" x 4" x ¹⁄₁₆" may be used between post W6 x 20 and 13¾" x 11½" x ⅜" bent plate as required for horizontal alignment.

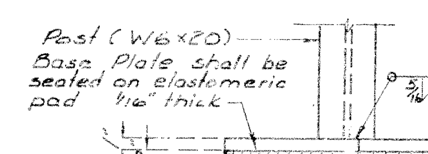
Shim plates may vary in thickness from ¹⁄₁₆" to the thickness required and may be used in multiples.

Shim plates shall be galvanized after fabrication.

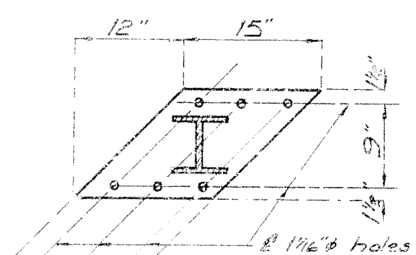
Note:

Concrete anchors shall be the cone expansion type for hot-dip galvanized bolts.

Concrete anchors shall have a certified concrete pull out strength (ultimate load) of at least 15,500 pounds in 3,000 psi concrete.



DETAIL OF POST BASE PLATE



PLAN OF POST BASE PLATE

RAIL POST ATTACHMENT AT END BENTS

Note: Elastomeric Pads may be any elastomeric material, plain or fibered having a hardness (Durometer) 50 or above, as certified by the engineer. Additional pads or half pads may be used in shimming for alignment.

Rehab. (Curb/Deck/Rail) REVISED SEPT. 1986 / SEPT. 1985

DETAILED APRIL 1987
CHECKED JUNE 1987

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

HOWARD COUNTY K-382R

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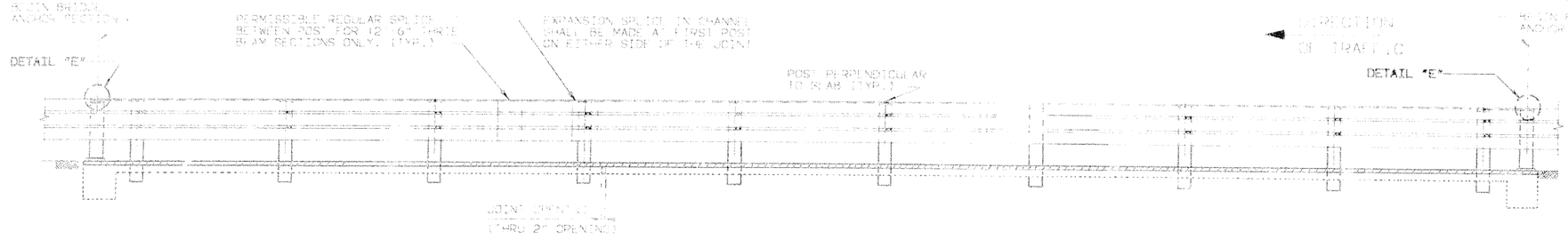
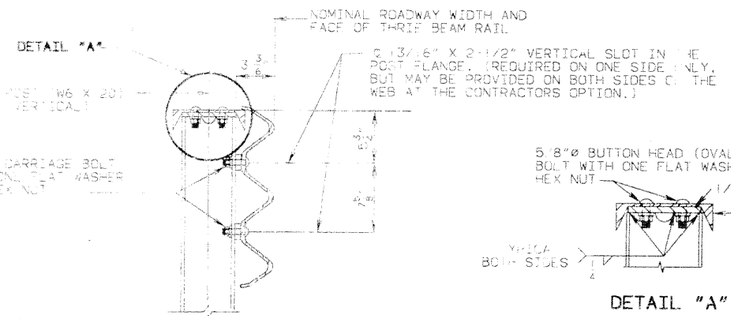
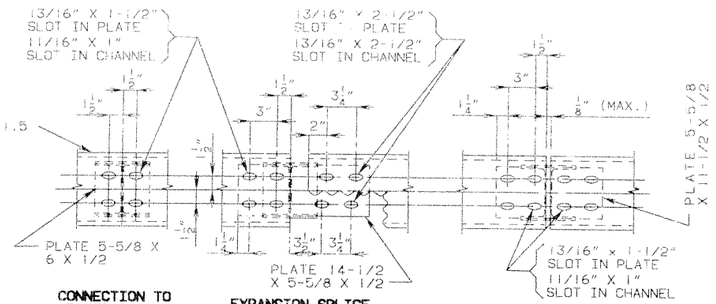


PART SECTION THRU SLAB SHOWING THRIE BEAM RAIL



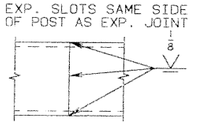
DETAIL "A"



CONNECTION TO BASIC POST

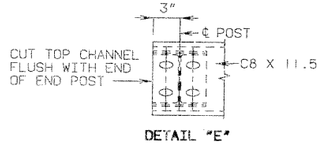
EXPANSION SPLICE

TYPICAL SPLICE



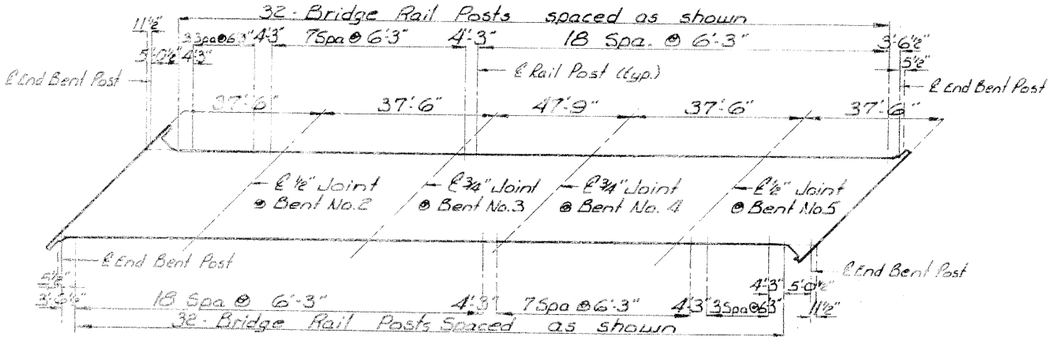
OPTIONAL SPLICE

SHOP OR FIELD SPLICE AT ANY LOCATION (MAX. ONE PER PANEL.)

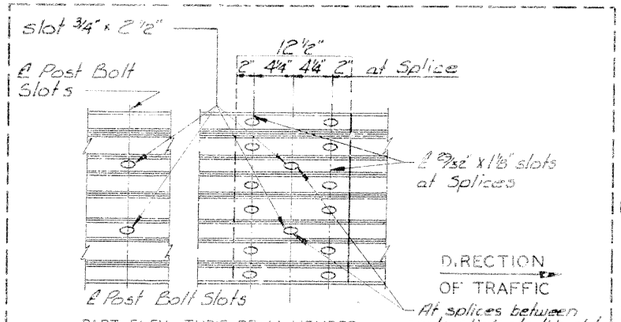


DETAIL "E"

CHANNEL MEMBER DETAILS



RAIL POST SPACING ON STRUCTURE



PART ELEV. THRIE BEAM MEMBER

RAIL SPLICE DETAILS

Note: 5/8"ø X 1¼" Button Head Oval Shoulder Bolts with Hex Nuts at all slots. (thickness of Hex Nuts = 3/8")
Special drilling of Thrie Beam may be read at splices. (all drilling details are to be shown on Shop Drawings)

GENERAL NOTES FOR THRIE BEAM RAIL :

DESIGN AASHTO, 9TH SPECIFICATIONS.

PANEL ENDS OF CHANNEL MEMBERS SHALL BE ATTACHED CONTINUOUS TO A MINIMUM OF FOUR POSTS AND A MAXIMUM OF SIX POSTS (EXCEPT AT THE TRANSITION).

ALL BOLTS, NUTS, WASHERS, PLATES AND ELASTOMERIC MATERIALS ARE CONSIDERED AS PART OF THE THRIE BEAM RAIL FOR PAYMENT.

ALL STEEL CONNECTING BOLTS AND FASTENERS FOR POST, RAILING AND ALL ANCHOR BOLTS, NUTS, WASHERS AND BOTTOM PLATES SHALL BE GALVANIZED AFTER FABRICATION. FOR PROTECTIVE COATING AND MATERIAL REQUIREMENT OF STEEL RAILING, SEE SECTION 1040 OF THE STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION, AND ALIGNED ACCORDING TO SECTION 713 OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE RAIL POSTS SHALL BE ALIGNED BY THE USE OF SHIMS SO THAT IN THE FINAL ADJUSTMENT NO PART SHALL DEVIATE MORE THAN ONE INCH FROM TRUE HORIZONTAL ALIGNMENT. THE SHIMS SHALL BE 3" X 1-3/4" AND PLACED BETWEEN THE POST AND THE THRIE BEAM RAIL. THE THICKNESS OF THE SHIMS SHALL BE DETERMINED BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER BEFORE ORDERING THE MATERIAL FOR THIS WORK.

⚠ *Splices*

AT THE EXPANSION SLOTS IN THE THRIE BEAM RAILS AND CHANNELS, TIGHTENED BOLTS, BACK OFF ONE-HALF TURN AND BURR THREADS.

5/8 INCH BUTTON HEAD OVAL SHOULDER BOLTS WITH HEX NUTS TO BE USED AT ALL SLOTS. (THICKNESS OF HEX NUTS SHALL BE 3/8".)

THRIE BEAM GUARD RAIL TO BE MADE OF STEEL AND SHALL BE 12 GAGE. THE POST, BASE PLATES, CHANNELS AND CHANNEL SPLICE PLATES ARE TO BE FABRICATED FROM A-36 STEEL AND GALVANIZED.

WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN THE BOLT HEAD AND THRIE BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 3/16" MIN.) AND FLAT WITH A 11/16" X 1" SLOT, OR WHEN NECESSARY OF SUCH DESIGN TO FIT THE CONTOUR OF THE BEAM.
(USE A 3" X 1-3/4" X 5/8" RECTANGULAR WASHER BETWEEN THE POST AND THE THRIE BEAM RAIL)

SPECIAL DRILLING OF THE THRIE BEAM MAY BE REQUIRED AT THE SPLICES. (ALL DRILLING DETAILS ARE TO BE SHOWN ON THE SHOP DRAWINGS.)

FABRICATION OF THE STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 712 OF THE STANDARD SPECIFICATIONS.

EXPANSION SPLICES IN THE THRIE BEAM RAIL SHALL BE MADE AT EITHER THE FIRST OR SECOND POST ON EITHER SIDE OF THE JOINT AND ON STRUCTURE AT BRIDGE ENDS. WHEN THE SPLICE IS MADE AT THE SECOND POST, AN EXPANSION SLOT SHALL BE PROVIDED IN THE THRIE BEAM RAIL FOR CONNECTION TO THE FIRST POST TO ALLOW FOR MOVEMENT. IN ADDITION TO THE EXPANSION PROVISIONS AT THESE EXPANSION JOINTS, EXPANSION SPLICES IN THE THRIE BEAM RAIL AND THE CHANNEL SHALL BE PROVIDED AT OTHER LOCATIONS SO THAT THE MAXIMUM LENGTH WITHOUT EXPANSION PROVISIONS DOES NOT EXCEED 200 FT.

⚠ *Tighten bolts at first post, back off one half turn and burr threads.*

REVISED	SEPT. 1988
THRIE BEAM RAIL	
DET. 1976	

DETAILED SEPT. 1988
CHECKED Sept. 1988

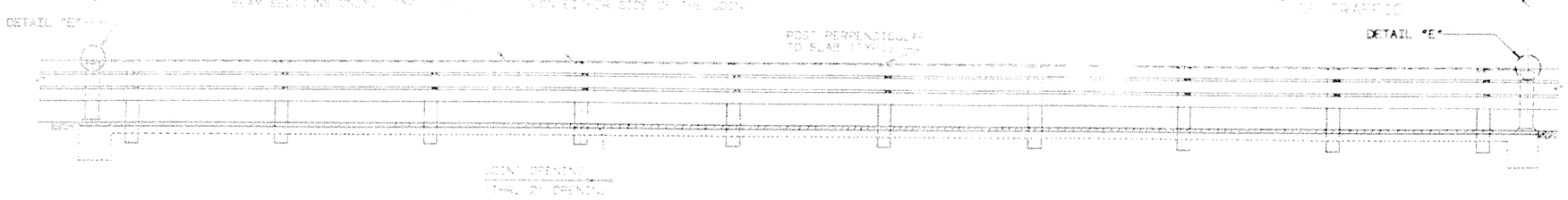
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS. ⚠ Revised 3/15/89

SHEET NO. 3 OF 4

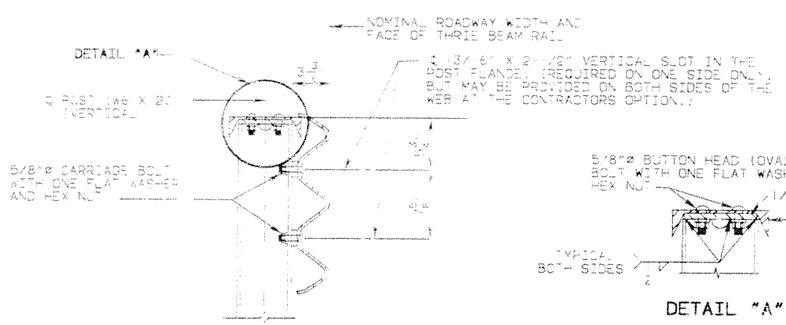
HOWARD COUNTY

K-382R

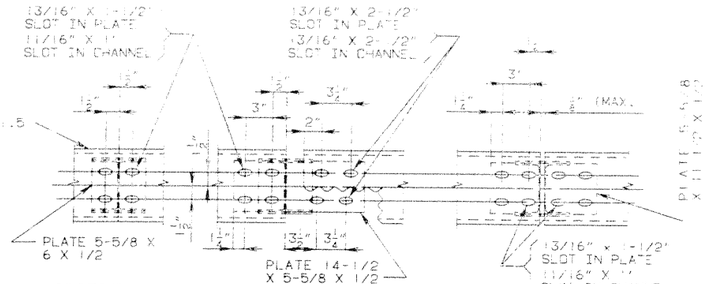
STATE PROJ. NO. SHT.
NO. F-5-3(22) 3

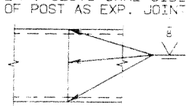


PART SECTION THRU SLAB SHOWING THRIE BEAM RAIL

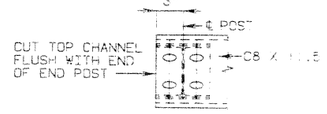


DETAIL "A"



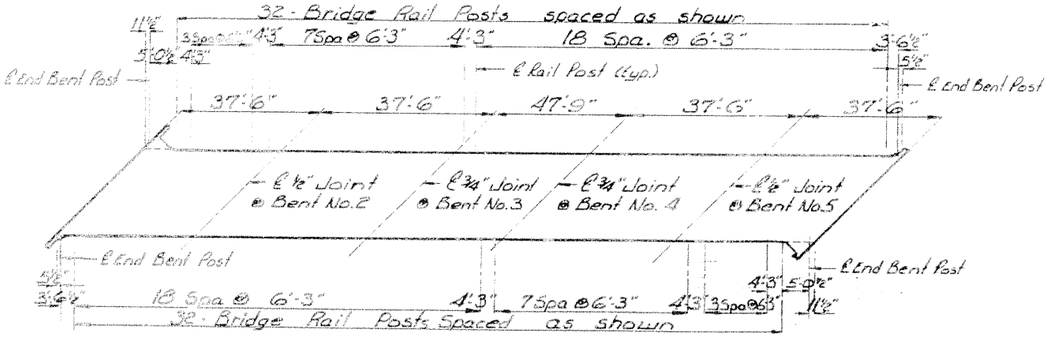


OPTIONAL SPLICE

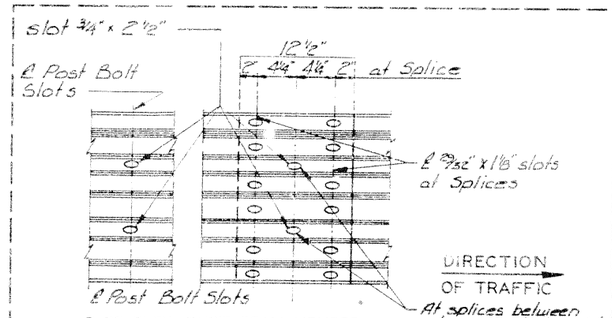


DETAIL "E"

CHANNEL MEMBER DETAILS



RAIL POST SPACING ON STRUCTURE



PART ELEV. THRIE BEAM MEMBER

RAIL SPLICE DETAILS

Note: ⅝"ø x 1¼" Button Head Oval Shoulder Bolts with Hex Nuts at all slots. (Thickness of Hex Nuts = ⅜")
Special drilling of Thrie Beam may be req'd. at splices. (all drilling details are to be shown on Shop Drawings)

GENERAL NOTES FOR THRIE BEAM RAIL

DESIGN AASHTO 1977 SPECIFICATIONS

RAIL LENGTHS OF CHANNEL MEMBERS SHALL BE ATTACHED CONTINUOUSLY TO A MINIMUM OF FOUR POSTS AND A MAXIMUM OF SIX POSTS (EXCEPT AT THE END BENTS).

ALL BOLTS, NUTS, WASHERS, PLATES AND ELASTOMERIC MATERIALS ARE CONSIDERED AS PART OF THE THRIE BEAM RAIL FOR PAYMENT.

ALL STEEL CONNECTING BOLTS AND FASTENERS FOR POST, RAILING AND ALL ANCHOR BOLTS, NUTS, WASHERS, AND BOTTOM PLATES SHALL BE GALVANIZED AFTER FABRICATION FOR PROTECTIVE COATING AND MATERIAL REQUIREMENT OF STEEL RAILING, SEE SECTION 1040 OF THE STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION, AND ALIGNED ACCORDING TO SECTION 7.13 OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE RAIL POSTS SHALL BE ALIGNED BY THE USE OF SHIMS SO THAT IN THE FINAL ADJUSTMENT NO PART SHALL DEVIATE MORE THAN ONE INCH FROM TRUE HORIZONTAL ALIGNMENT. THE SHIMS SHALL BE 3" X 1-3/4" AND PLACED BETWEEN THE POST AND THE THRIE BEAM RAIL. THE THICKNESS OF THE SHIMS SHALL BE DETERMINED BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER BEFORE ORDERING THE MATERIAL FOR THIS WORK.

⚠ Splices

AT THE EXPANSION SLOTS IN THE THRIE BEAM RAILS AND CHANNELS, TIGHTENED BOLTS, BACK OFF ONE-HALF TURN AND BURR THREADS.

5/8 INCH BUTTON HEAD OVAL SHOULDER BOLTS WITH HEX NUTS TO BE USED AT ALL SLOTS. (THICKNESS OF HEX NUTS SHALL BE 3/8".)

THRIE BEAM GUARD RAIL TO BE MADE OF STEEL AND SHALL BE 12 GAGE. THE POST, BASE PLATES, CHANNELS AND CHANNEL SPLICE PLATES ARE TO BE FABRICATED FROM A-36 STEEL AND GALVANIZED.

WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN THE BOLT HEAD AND THRIE BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 5/16" MIN.) AND FLAT WITH A 13/16" X 1" SLOT, OR WHEN NECESSARY OF SUCH DESIGN TO FIT THE CONTOUR OF THE BEAM.
(USE A 3" X 1-3/4" X 5/8" RECTANGULAR WASHER BETWEEN THE POST AND THE THRIE BEAM RAIL.)

SPECIAL DRILLING OF THE THRIE BEAM MAY BE REQUIRED AT THE SPLICES. (ALL DRILLING DETAILS ARE TO BE SHOWN ON THE SHOP DRAWINGS.)

FABRICATION OF THE STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 7.12 OF THE STANDARD SPECIFICATIONS.

EXPANSION SPLICES IN THE THRIE BEAM RAIL SHALL BE MADE AT EITHER THE FIRST OR SECOND POST ON EITHER SIDE OF THE JOINT AND ON STRUCTURE AT BRIDGE ENDS. WHEN THE SPLICE IS MADE AT THE SECOND POST, AN "EXPANSION SLOT" SHALL BE PROVIDED IN THE THRIE BEAM RAIL FOR CONNECTION TO THE FIRST POST TO ALLOW FOR MOVEMENT.

IN ADDITION TO THE EXPANSION PROVISIONS AT THESE EXPANSION JOINTS, EXPANSION SPLICES IN THE THRIE BEAM RAIL AND THE CHANNEL SHALL BE PROVIDED AT OTHER LOCATIONS SO THAT THE MAXIMUM LENGTH WITHOUT EXPANSION PROVISIONS DOES NOT EXCEED 200 FT.

⚠ Tighten bolts at first post, back off one half turn and burr threads.

THRIE BEAM RAIL	REVISED
OCT. 1976	SEPT. 1988

DETAILED SEPT. 1988
CHECKED Sept. 1988

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS. ⚠ Revised 3/15/89

SHEET NO. 3 A OF 4

HOWARD COUNTY

K-382R

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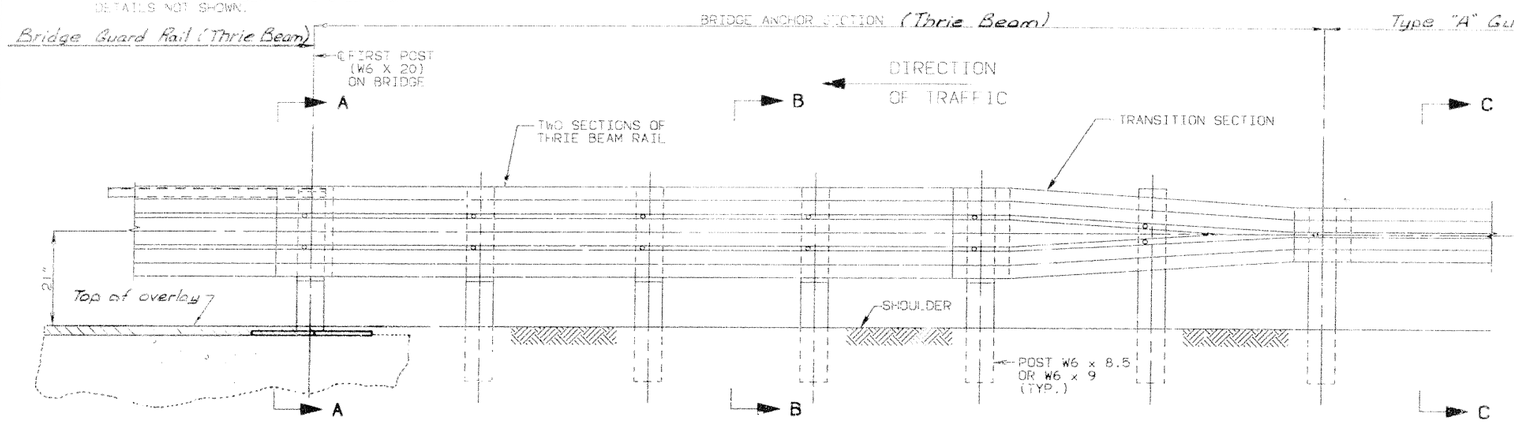
MO.		4

NOTE:
SEE BRIDGE THRIE BEAM RAIL SHEET FOR DETAILS NOT SHOWN.

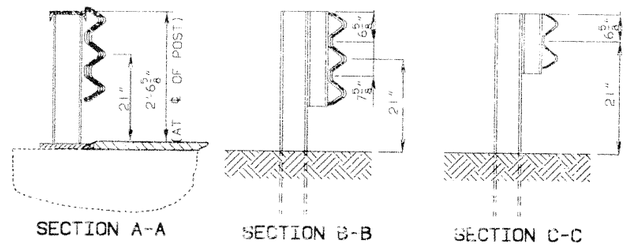
Bridge Guard Rail (Thrie Beam)

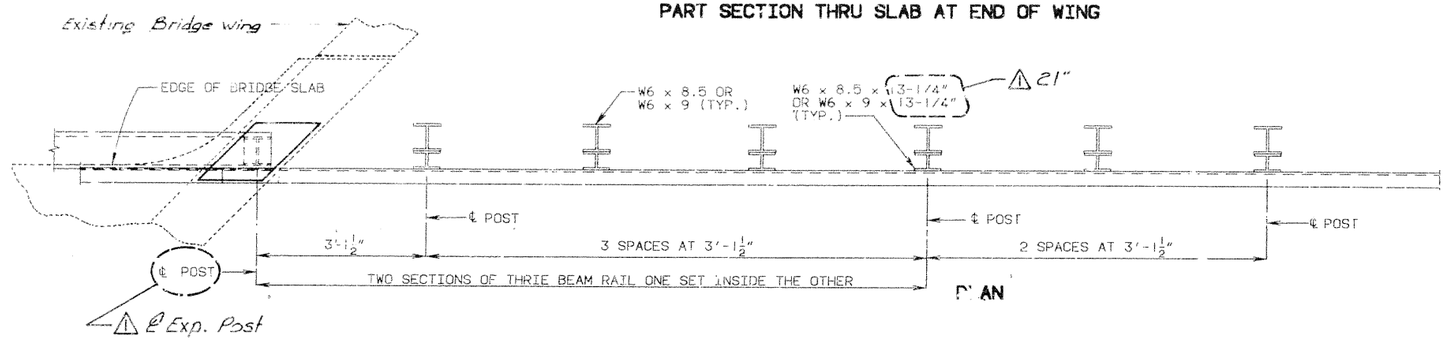
BRIDGE ANCHOR SECTION (Thrie Beam)

Type "A" Guard Rail (Rdwy. Item)



PART SECTION THRU SLAB AT END OF WING





PLAN

NOTES:

DESIGN AASHTO 1977 SPECIFICATIONS (FOR THRIE BEAM RAIL DESIGN ONLY).

THE THRIE BEAM RAIL AND TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 10 GAGE. ZINC COATING SHALL BE TYPE 2.

FOR PROTECTIVE COATING AND MATERIAL REQUIREMENTS, SEE SECTION 1040 OF THE MISSOURI STANDARD SPECIFICATIONS.

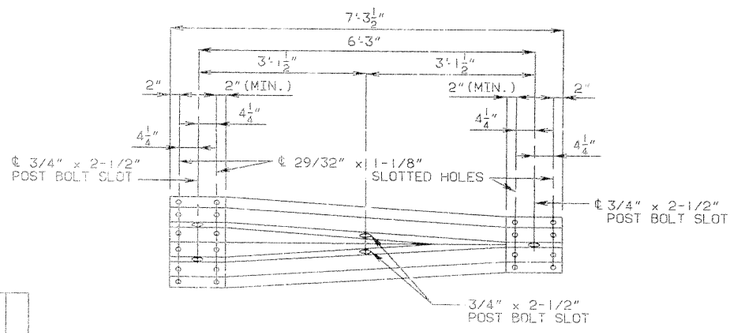
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 3/16" MIN.) AND FLAT, OR WHEN NECESSARY OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE THRIE BEAM RAILING. WASHERS SHALL HAVE A 11/16" x 1" SLOTTED HOLE.

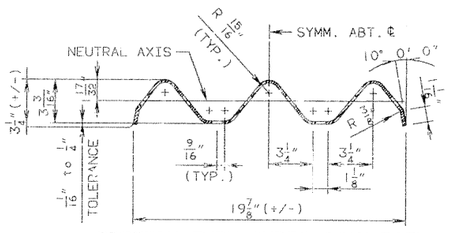
USE 5/8"ø BUTTON-HEAD OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS. (THE THICKNESS OF THE HEX NUTS = 3/8".)

SEE SURVEYS AND PLANS STANDARD DRAWING 606.00 FOR DETAILS NOT SHOWN.

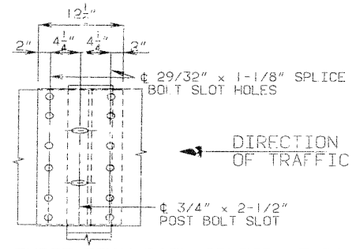
Post to be fabricated from A-36 steel and galvanized.



TRANSITION SECTION



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE AT POST

ANCHOR SEC.	REVISED (1)
AUG. 1988	

DETAILED SEPT 1988
CHECKED Sept 1988

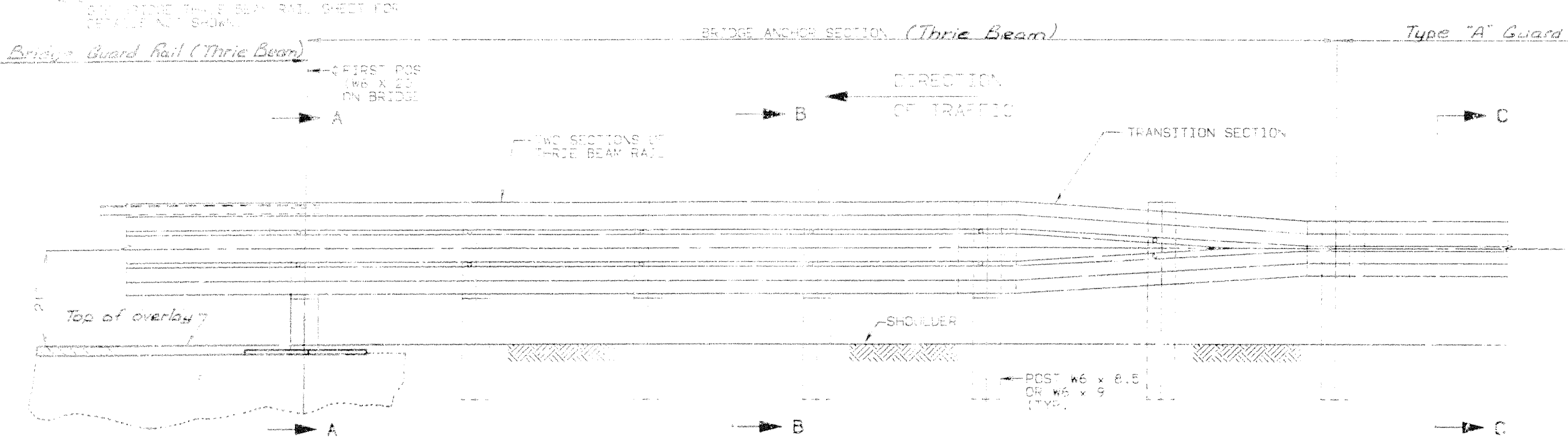
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

⚠ Revised 3/15/89

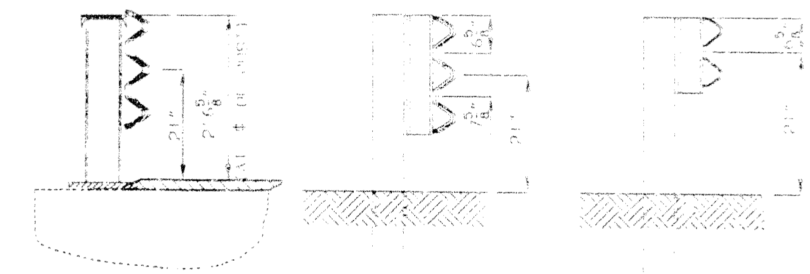
HOWARD COUNTY

K-382R

STATE	PROJ. NO.	SHEET NO.
MO.	F-5-3(22)	4



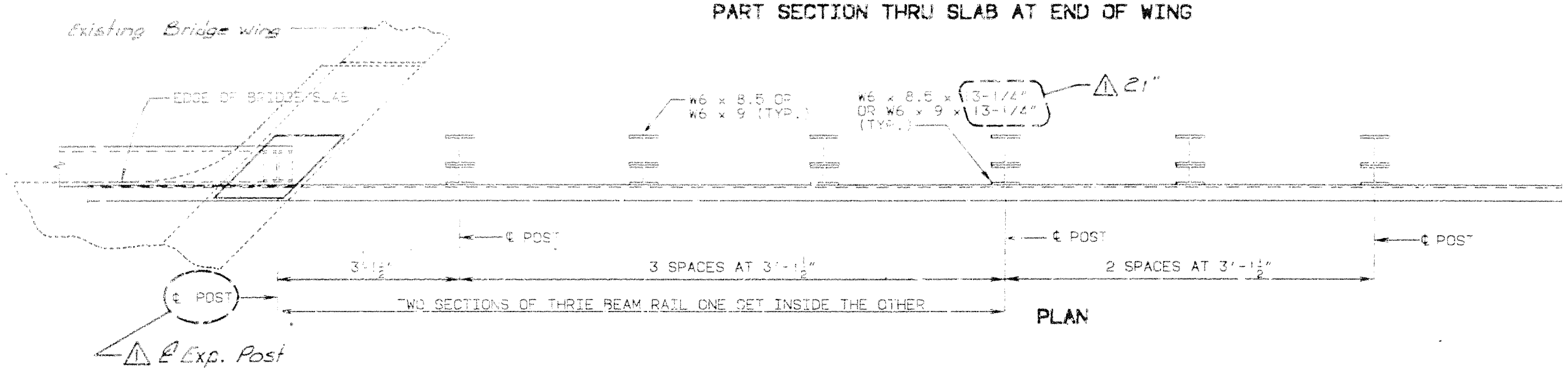
PART SECTION THRU SLAB AT END OF WING



SECTION A-A

SECTION B-B

SECTION C-C



PLAN

NOTES:

DESIGN AASHTO 1977 SPECIFICATIONS (FOR THRIE BEAM RAIL DESIGN ONLY).

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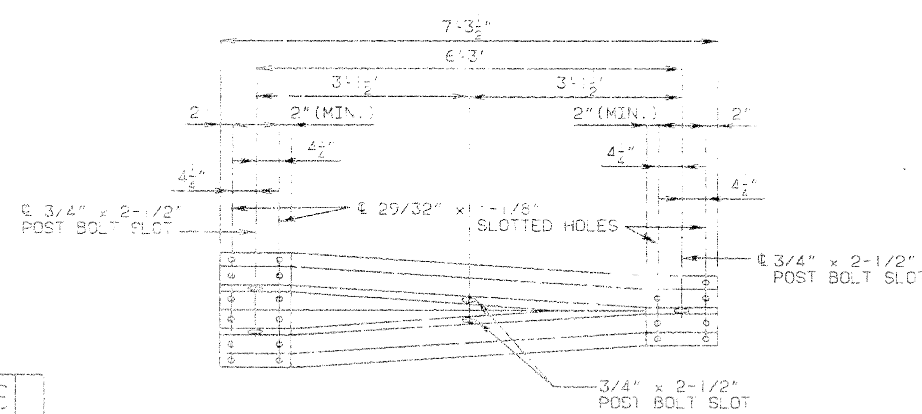
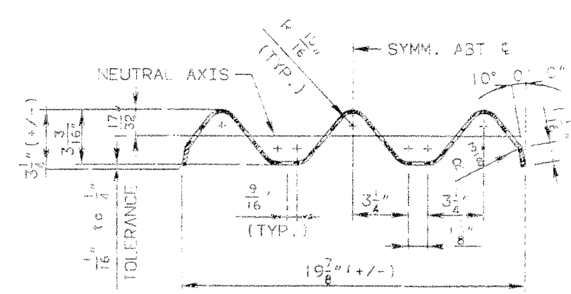
SEE SURVEYS AND PLANS STANDARD DRAWING 606.00 FOR DETAILS NOT SHOWN.

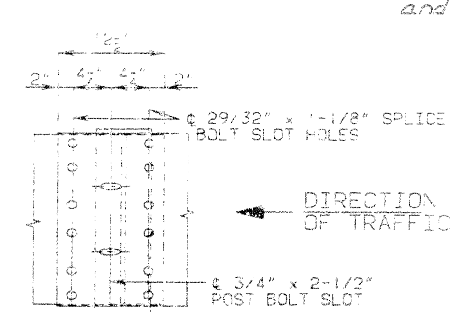
Post to be fabricated from A-36 steel and galvanized.



TRANSITION SECTION



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE AT POST

ANCHOR SEC.	REVISED (1)
AUG. 1988	

DETAILED SEPT 1988
CHECKED *Sept. 1988*

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

⚠ *Revised 3/15/89*

SHEET NO. 4A OF 4

HOWARD COUNTY

K-382 R

482

Missouri Department of Transportation
State Bridge Inspection Report

April 29, 2025
1:35:49PM

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 5794** **BRIDGE: K0382**

GENERAL STRUCTURE INFORMATION

ROUTE:	BU240E	**# SPANS:**	5
FEATURE:	KCS RR	**LANES ON:**	2
STATUS:	A-OPEN	**LANES UNDER:**	0
LOG MILE:	3.498	**COMPASS DIRECTION:**	WEST to EAST
DETOUR:	22.00 MILES	**DIRECTION OF TRAFFIC:**	2-WAY TRAF
NHS:	NO	**FUNCTIONAL CLASS:**	RL-LOCAL
BUILT:	1934	**NBI OWNER:**	MODOT
REHAB:		**NBI MAINTAINED:**	MODOT
LOCATION:	S 11 T 51 R 17 W	**MAINTENANCE DISTRICT:**	CD
LATITUDE:	39 14 4.58 (DMS)	**MAINTENANCE COUNTY:**	HOWARD
LONGITUDE:	92 47 43.80 (DMS)	**SUB AREA:**	7D24

PLACE CODE:	13222 CHARITON
LENGTH:	198 FT 0 IN
MAXIMUM SPAN:	47 FT 5 IN
APPROACH ROADWAY:	22 FT 0 IN
CURB TO CURB:	26 FT 4 IN
OUT TO OUT:	27 FT 0 IN
AADT:	705
AADT YEAR:	2024
AADT TRUCK:	6.4%
FUTURE AADT:	881
FUTURE AADT YEAR:	2044

BRIDGE INSPECTION INFORMATION

DATE:	06/05/2023	**RESPONSIBILITY:**	DISTRICT
FREQUENCY:	24	**CALCULATED INTERVAL**:**	24
TEAM LEADER:	JOE GREEN	**ELEMENT:**	NO
INSPECTOR 2:		**INSPECTOR 4:**	
INSPECTOR 3:			

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

GENERAL INSPECTION COMMENTS

FRACTURE CRITICAL INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

FRACTURE CRITICAL INSPECTION COMMENTS

INDEPTH INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

INDEPTH INSPECTION COMMENTS

SPECIAL INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

SPECIAL INSPECTION COMMENTS

UNDERWATER INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

UNDERWATER INSPECTION COMMENTS

OTHER SPECIAL INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

OTHER UNDERWATER INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 5794** **BRIDGE: K0382**

STRUCTURE POSTING

APPROVED CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:**
COMMENTS:

FIELD CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:** **PROBLEM:** **PROBLEM DIRECTION:**
COMMENTS:

GENERAL COMMENTS/MAJOR RATED ITEMS

GENERAL COMMENTS: (BOWDEJ1, 03/07/2008)--(35'-35'-47'-35'-35') DECK GDR SPANS

[ITEM 58] DECK: 4-POOR CONDITION
RATING : 06/06/2023
COMMENTS: (MADSEJ, 10/05/2015)--APPROXIMATELY 25% SATURATION, DELAMINATIONS, AND SPALLS ON SPAN 1.

[ITEM 59] SUPER: 4-POOR CONDITION
RATING : 06/06/2023
COMMENTS: (GREENA2, 06/06/2023)--CRACKING, SPALLING, AND HEAVY DETERIORATION ON THE EXTERIOR GIRDERS AND DIAPHRAMS. MANY H-CRACKS IN EXTERIOR GIRDERS.

[ITEM 60] SUB: 5-FAIR CONDITION
RATING : 09/30/2019
COMMENTS: (MADSEJ, 10/05/2015)--MANY CRACKS, SPALLS, AND HIGHSTEEL SPALLS THROUGHOUT ALL SUBSTRUCTURE UNITS.
(MEYERM3, 09/30/2019)--100% SL ON CAP STIRRUPS, MOD SL IN PRIMARY STEEL IN CAP

[ITEM 61] BANK/CHANNEL: N-NOT APPLIC NO WATRWAY
RATING : 05/18/2001
COMMENTS: (BOWDEJ1, 02/11/2010)--BRUSHY & VINES - 2008 EAST SLOPE EROSIONS UP TO ABUT 6 CAP, ABUT COLUMN'S NOT PILE

[ITEM 113] SCOUR: N-NOT APPLIC NOT WATERW
RATING : 05/18/2001
EVALUATION TYPE :
COMMENTS:

[ITEM 71] WATERWAY ADEQUACY: NOT APPLICABLE
RATING : 05/18/2001
COMMENTS:

[ITEM 72] APPRRDWY ALIGNMENT: 5 - FAIR
RATING : 05/18/2001
COMMENTS:

RAILING AND APPROACH PAVEMENT COMPONENTS AND RATINGS

[ITEM 36A] BRIDGE RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *05/18/2001* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	THRIE BEAM	BOTH	

[ITEM 36B] TRANSITION RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *05/18/2001* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	THRIE BEAM TO W-BEAM	ALL	

[ITEM 36C] APPROACH RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *05/18/2001* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	W-BEAM	ALL	

[ITEM 36D] RAIL END TREATMENT RATING: *DOESNT MEET CURRNT STND-0* ***RATING :*** *01/26/2004* ***COMMENTS:***

Design_No = k0382

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	TURN DOWN SECTION > 45	ALL	

APPROACH PAVEMENT: *Overall condition assigned for each approach pavemenet component is shown below.

MATERIAL	CONSTRUCTION	DIRECTION	CONDITION*	COMMENTS
ASPHALT	BITUMINOUS MAT	BOTH	GOOD	

DRAINAGE, EXPANSION DEVICES, BANK/SLOPE, AND DECK PROTECTIVE COMPONENTS

DECK PROTECTIVE COMPONENTS:

SERIES TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	THICKNESS	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
MAIN SERIES-1	*WEARING SURFACE*	*ASPHALT*	*BITUMINOUS MAT*	*1.5 IN*			*FAIR*
	DECK PROTECTION	*NOTAPPLICABLE*	*NONE*				
	MEMBRANE	*NOTAPPLICABLE*	*NONE*				
	SECONDARY DECK PROTECTION	*LIQUID SEALANT*	*INTERNALLY SEALED*		*2021*	*PAVON INDECK*	

COMMENT:

DRAINAGE COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS

EXPANSION DEVICE COMPONENTS:

SUB UNIT-#	SUB LABEL	COMPONENT	MATERIAL	CONSTRUCTION	GAP	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION

COMMENT:

BANK/SLOPE PROTECTION COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS

DECK COMPONENTS

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-1	*DECK*	*REINFORCED CONCRETE*	*CAST-IN-PLACE*	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	THROUGHOUT		MODERATE		
DETERIORATION	OVERHANGS		MODERATE		
EFFLORESCENCE	THROUGHOUT		LIGHT		
SATURATION	THROUGHOUT		MODERATE	25 %	
TRANSVERSE CRACKS	THROUGHOUT		MANY		

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-2	*DECK*	*REINFORCED CONCRETE*	*CAST-IN-PLACE*	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

DELAMINATION	THROUGHOUT		MODERATE	
DETERIORATION	OVERHANGS		MINOR	
EFFLORESCENCE	THROUGHOUT		LIGHT	
SATURATION	THROUGHOUT		MINOR	10 %
SPALLS	RANDOM		FEW	
TRANSVERSE CRACKS	THROUGHOUT		MANY	

MAIN SPANS-3 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	THROUGHOUT		MODERATE		
DETERIORATION	OVERHANGS		MODERATE		
EFFLORESCENCE	THROUGHOUT		LIGHT		
SATURATION	THROUGHOUT		MODERATE	25 %	(MEYERM3, 02/06/2020)--HARD TO JUDGE THIS FROM UNDERNEATH DUE TO THE BUILD UP OF RAILROAD SUIT
TRANSVERSE CRACKS	THROUGHOUT		MANY		

MAIN SPANS-4 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	THROUGHOUT		FEW		
DETERIORATION	OVERHANGS		MINOR		
EFFLORESCENCE	THROUGHOUT		LIGHT		
SATURATION	THROUGHOUT		MINOR	10 %	
TRANSVERSE CRACKS	THROUGHOUT		MANY		

MAIN SPANS-5 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	THROUGHOUT		MODERATE		
DETERIORATION	OVERHANGS		MODERATE		
EFFLORESCENCE	THROUGHOUT		LIGHT		
SATURATION	THROUGHOUT		MINOR	10 %	
TRANSVERSE CRACKS	THROUGHOUT		MANY		

SUPERSTRUCTURE COMPONENTS

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
MAIN SERIES-1	*SIMPLE SPAN*	*REINFORCED CONCRETE*	*DECK GIR*		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-1	NON-COMPOSITE	37 FT 6 IN	NO	(SIMPSB, 07/26/2004)--GIRDERS BRACKETED @ CAPS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	DIAPHRAGMS		HEAVY		
DETERIORATION	EXTERIOR GIRDERS		HEAVY		
HORIZONTAL CRACKS	EXTERIOR GIRDERS		MANY		
LEACHING	DIAPHRAGMS		LIGHT		
SPALLS	ENDS		LARGE		(GREENA2, 06/06/2023)--HEAVY DESENTEGRATION ON THE EAST GIRDER AT THE BEARING AREA
VERTICAL CRACKS	DIAPHRAGMS		FEW		
VERTICAL CRACKS	THROUGHOUT		MANY		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-2	NON-COMPOSITE	37 FT 8 IN	NO	(SIMPSB, 07/26/2004)--GIRDERS BRACKETED @ CAPS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	ENDS		MODERATE		(MADSEJ, 10/05/2015)--EXTERIOR GIRDERS.

HORIZONTAL CRACKS	EXTERIOR GIRDERS		MANY	
VERTICAL CRACKS	THROUGHOUT		FINE	

MAIN SPANS-3 NON-COMPOSITE 47 FT 5 IN NO (SIMPSB, 07/26/2004)--GIRDERS BRACKETED @ CAPS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	ENDS		MODERATE		(MADSEJ, 10/05/2015)--EXTERIOR GIRDERS.
HORIZONTAL CRACKS	EXTERIOR GIRDERS		MANY		
LEACHING	DIAPHRAGMS		LIGHT		
VERTICAL CRACKS	DIAPHRAGMS		FEW		
VERTICAL CRACKS	THROUGHOUT		FINE		

MAIN SPANS-4 NON-COMPOSITE 37 FT 8 IN NO (SIMPSB, 07/26/2004)--GIRDERS BRACKETED @ CAPS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	ENDS		MODERATE		(MADSEJ, 10/05/2015)--EXTERIOR GIRDERS.
EFFLORESCENCE	EXTERIOR GIRDERS		LIGHT		
HORIZONTAL CRACKS	EXTERIOR GIRDERS		MANY		
VERTICAL CRACKS	DIAPHRAGMS		FEW		
VERTICAL CRACKS	THROUGHOUT		FINE		

MAIN SPANS-5 NON-COMPOSITE 37 FT 6 IN NO (SIMPSB, 07/26/2004)--GIRDERS BRACKETED @ CAPS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	ENDS		MODERATE		(MADSEJ, 10/05/2015)--EXTERIOR GIRDERS.
EFFLORESCENCE	DIAPHRAGMS		MEDIUM		
TRANSVERSE CRACKS	DIAPHRAGMS		MANY		
VERTICAL CRACKS	GIRDER ENCASEMENT		OPEN		
VERTICAL CRACKS	THROUGHOUT		FINE		
VERTICAL CRACKS	GIRDER ENCASEMENT		OPEN		
VERTICAL CRACKS	THROUGHOUT		FINE		

SUBSTRUCTURE COMPONENTS

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
ABUTMENT-1	*LA-45 DEGREES*	*44 FT 11 IN*	*REINFORCED CONCRETE*	*OPEN CONCRETE*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
VERTICAL CRACKS	THROUGHOUT		FEW		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
HIGH STEEL SPALLS	THROUGHOUT		FEW		
FOOTING	REINFORCED CONCRETE	TIMBER PILE			
STRAIGHT WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
DETERIORATION	THROUGHOUT		MODERATE		
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
BENT-2	*LA-45 DEGREES*	*35 FT 10 IN*	*REINFORCED CONCRETE*	*MULTIPLE COLUMN*		*(ZENTZA1, 06/03/2010)--GIRDERS BRACKETED - SEVERE SECTION LOSS ON BRACKETS*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
HIGH STEEL SPALLS	THROUGHOUT		MANY		
SPALLS	THROUGHOUT		MANY		
VERTICAL CRACKS	THROUGHOUT		MANY		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REBAR EXPOSED	THROUGHOUT		FEW		
SPALLS	THROUGHOUT		FEW		
VERTICAL CRACKS	THROUGHOUT		FEW		
FOOTING	REINFORCED CONCRETE	TIMBER PILE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-3 — LA-45 DEGREES — 35 FT 10 IN — REINFORCED CONCRETE — MULTIPLE COLUMN — (ZENTZA1, 06/03/2010)--GIRDERS BRACKETED - SEVERE SECTION LOSS ON BRACKETS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	BOTTOM		MODERATE		
DETERIORATION	THROUGHOUT		MODERATE		
HIGH STEEL SPALLS	THROUGHOUT		MANY		
HORIZONTAL CRACKS	BOTTOM		MANY		
REBAR EXPOSED	BOTTOM		MANY		
REBAR SECTION LOSS	THROUGHOUT		SEVERE		(MEYERM3, 02/06/2020)--100% AT COLUMN 2 (MEYERM3, 02/06/2020)--STIRRUPS
SPALLS	BOTTOM		MANY		
VERTICAL CRACKS	THROUGHOUT		FEW		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
HIGH STEEL SPALLS	TOP		FEW		
VERTICAL CRACKS	THROUGHOUT		MANY		
FOOTING	REINFORCED CONCRETE	TIMBER PILE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-4 — LA-45 DEGREES — 35 FT 10 IN — REINFORCED CONCRETE — MULTIPLE COLUMN — (ZENTZA1, 06/03/2010)--GIRDERS BRACKETED - SEVERE SECTION LOSS ON BRACKETS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
HIGH STEEL SPALLS	THROUGHOUT		FEW		
HORIZONTAL CRACKS	BOTTOM		FEW		
SPALLS	THROUGHOUT		FEW		
VERTICAL CRACKS	THROUGHOUT		FEW		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REBAR EXPOSED	TOP		FEW		
SPALLS	TOP		LARGE		
VERTICAL CRACKS	TOP		FEW		
FOOTING	REINFORCED CONCRETE	TIMBER PILE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
COLLISION WALL	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

BENT-5 LA-45 DEGREES 35 FT 10 IN REINFORCED CONCRETE MULTIPLE COLUMN (ZENTZA1, 06/03/2010)--GIRDERS BRACKETED - SEVERE SECTION LOSS ON BRACKETS

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DELAMINATION	THROUGHOUT		MODERATE		
HIGH STEEL SPALLS	THROUGHOUT		FEW		
SPALLS	THROUGHOUT		LARGE		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DELAMINATION	TOP		MANY		
SPALLS	TOP		FEW		
VERTICAL CRACKS	TOP		OPEN		
FOOTING	REINFORCED CONCRETE	TIMBER PILE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

ABUTMENT-6 LA-45 DEGREES 44 FT 11 IN REINFORCED CONCRETE OPEN CONCRETE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EROSION	BOTTOM		1INOR UNDERMININ(		(ZENTZA1, 06/03/2010)--NE CORNER
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FOOTING	REINFORCED CONCRETE	TIMBER PILE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
STRAIGHT WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
BACKWALL	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EXPANSION BEARING	BRONZE	SLIDING FLAT PLATE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

OVER/UNDER ROUTES CLEARANCE INFORMATION

CLEARANCES OVER DECK

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 5794** **BRIDGE: K0382**

CLEARANCES UNDER BRIDGE

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
1	KCS RR			8 FT 6 IN		12882

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	22 FT 6 IN			

STRUCTURE PAINT INFORMATION

CONDITION: **RUST AMOUNT :** **STEEL TONS :** 0

ORIGINAL PAINT	CONTRACT REPAINT	DEPARTMENT REPAINT	
PAINT TYPE :	**PAINT TYPE :**	**PAINT TYPE :**	**MANUFACTURE :**
NAME :	**NAME :**	**NAME :**	**SURFACE PREP :**
PAINT COLOR :	**PAINT COLOR :**	**PAINT COLOR :**	
PAINT YEAR :	**PAINT YEAR :**	**PAINT YEAR :**	
MILS :	**MILS :**	**MILS :**	

REQUESTED WORK ITEMS

GENERAL WORK COMMENTS:

RESPONSIBILITY	*LOCATION*	*ITEM*	*CATEGORY*	*PRIORITY*	*DATE*	*WORK ITEM COMMENT*
DISTRICT ROUTINE	SLOPE	FILL HOLES	SLOPE	2	09/30/2009	(BOWDEJ1, 02/11/2010)--LARGE WASHOUT N.E. CORNER @ ABUT 6 (NO PILE EXPOSED)
DISTRICT ROUTINE	SLOPE	CUT BRSH&TREES SPAYVINES	SLOPE	2	10/05/2015	
DISTRICT SPECIAL	ROADWAY SURFACE	SEAL DECK WITH IN DECK	DECK	3	08/17/2024	

UTILITY ATTACHMENTS

UTILITY	*OWNER*	*METHOD*	*MEASUREMENT TYPE*	*VALUE*	*NUMBER*	*UTILITY ATTACHMENT COMMENT*

PROGRAM NOTES INFORMATION

YEAR	PROJECT #	MONTH LET	YEAR LET	ITEMS	COMMENT

Design_No = k0382

COMPUTER GENERATED RATINGS AND DEFICIENCY ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

Rated Item	Rating	Rating Date
[Item 67] Structure Evaluation Rating:	4-MEETS MINIMUM TOLERABLE	6/7/2023
[Item 68] Deck Geometry Rating:	5-BETTER THAN MINIMUM	7/22/2019
[Item 69] Underclearance:	4-MEETS MINIMUM TOLERABLE	2/20/2003
Sufficiency Rating:	56.1%	1/16/2025
Deficiency:	STRUCTURAL	6/7/2023
Funding Eligibility:		----
Estimated New Structure Length:		----
Estimated Structure Cost:		----
Estimated Total Project Cost:		----
Year of Cost Estimate:		----

NOTE: The above structure length and cost estimates are computer generated using algorithims in the TMS system. These algorthims are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.

ADVANCED SIGN INFORMATION

SIGN #	SIGN TYPE	PROBLEM	PROBLEM DIRECTION
1			

OUTFALL INSPECTION INFORMATION

 # OUTFALLS: **INSPECTOR:**

STATUS: **DATE:**

NOTES:

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

April 29, 2025
1:41:00pm

COUNTY : HOWARD **BRIDGE :** K0382 R **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 4/18/2025 **SUBMITTAL YEAR :** 2025

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	CD
3	County	HOWARD
8	Federal ID No.	5794
27	Year Built	1934
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	STATE HIGHWAY AGENCY
22	Structure Owner	STATE HIGHWAY AGENCY
33	Br. Median Code	NO MEDIAN
37	Historical Significance	NOT ELIGIBLE FOR NR OF HP
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	YES

ROUTE DESIGNATION INFORMATION

5A	Record Type	ROUTE CARRIED 'ON' STRUCT
5B	Route Signing Prefix	MO
5C	Designated Level of Service	BUSINESS
5D	Route Number	00240
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	BU 240 E
12	Base Hwy. Network	NO
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	09-RURAL LOCAL
28A	Lanes on Structure	02
100	STRAHNET Designation	RTE NOT A DEFENSE HWY
104	National Highway System	NOT ON NHS
105	Federal Lands Highway	NOT APPLICABLE
110	Designated Nat. Network	NO

STRUCTURE LOCATION INFORMATION

4	Place	CHARITON
	Code	13222
9	Location	S 11 T 51 N R 17 W
11	Milepoint	3.52 miles
16	Latitude	39 D 14 M 5 S
17	Longitude	92 D 47 M 44 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	705
30	AADT Year	2024
102	Direction of Traffic	2-WAY TRAFFIC
109	AADT Truck Percent	6%
114	Future AADT	881
115	Future AADT Year	2044

UNDERRECORD INFORMATION

6	Features Intersected	KCS RR
42B	Type of Service Under	RAILROAD
28B	Lanes Under Structure	00
54A	Vert. Clearance Ref.	RAIL ROAD
54B	Vert. Clearance	22 Ft. 6 In.
55A	Rt. Lat Clear Ref.	RAIL ROAD
55B	Rt. Lat Clearance	8 Ft. 6 In.
56	Left Lat Clearance	0 Ft. 0 In.
38	Navigation Control	N/A
39	Nav Vertical Clear	0 Ft. 0 In.
40	Nav Horizontal Clear	0 Ft. 0 In.
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	99 Ft. 99 In.
19	By pass Detour Length	21.88 miles
32	Approach Roadway Width	21 Ft. 12 In.
34	Skew	45.00 Degrees
35	Struct. Flared	NO
47	Total Horiz. Clear	26 Ft. 3 In.
48	Maximum Span Length	47 Ft. 7 In.
49	Structure Length	198 Ft. 2 In.
50A	Left Curb/Sidewalk Width	0 Ft. 0 In.
50B	Right Curb/Sidewalk Width	0 Ft. 0 In.
51	Curb to Curb Br. Width	26 Ft. 3 In.
52	Deck Width (Out-Out)	26 Ft. 11 In.
53	Vert.Clearance Over Deck	99 Ft. 99 In.

Design_No = k0382

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

April 29, 2025
1:41:00pm

COUNTY : HOWARD **BRIDGE :** K0382 R **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 4/18/2025 **SUBMITTAL YEAR :** 2025

LOAD RATING AND POSTING INFORMATION

31	Design Load	H 15
41	Structure Status	OPEN NO RESTRICTIONS
63	Oper. Rating Meth.	LOAD FACTOR
64	Operating Rating	51 Tons.
65	Inventory Rating Meth	LOAD FACTOR
66	Inventory Rating	31 Tons.
70	Bridge Posting Code	=>LEGAL LOADS

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating	56.1 Percent
	Deficiency Rating	STRUCTURAL
	Funding Eligibility	PARTIAL
75A	Proposed Work	REHAB-GENERAL DETERIORAT
75B	Work Done By	Contract
76	New Struc Length	232 Ft. 11 In.
94	Struc Improve Cost	$ 776,000
95	Roadway Improve Cost	$ 78,000
96	Total Project Cost	$ 1,164,000
97	Year of Cost Estimates	2025

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating	MEETS ACCEPTBLE STND
36B	Transition Rail App. Rating	MEETS ACCEPTBLE STND
36C	Approach Rail App. Rating	MEETS ACCEPTBLE STND
36D	Rail End Treat. App. Rating	DOES NOT MEET ACCEPT STND
67	Struc Eval App. Rating	4
68	Deck Geometry App. Rating	5
69	Underclearance App. Rating	4
71	Waterway Adeq. App. Rating	N
72	Approach Road App. Rating	5
113	Scour Assess App. Rating	N

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	CONCRETE
43B	Main struc Constr. Type	TEE BEAM
45	# of Main Spans	5
44A	Appr Struc. Mat type	000
44B	Appr Struc. Cnstr. type	000
46	# of Approach Span	0
107	Deck Mat/Constr.	1 CONCRETE CIP
108A	Wear Surf Mat/Constr.	6 BITUMINOUS
108B	Membrane Mat/Constr.	0 NONE
108C	Deck Protect Mat/Constr.	0 NONE

CONDITION RATING INFORMATION

58	Deck Cond. Rating	4
59	Superstructure Cond. Rating	4
60	Substructure Cond. Rating	5
61	Channel /Channel Protection Cond. Rating	N
62	Culvert Cond. Rating	N

INSPECTION INFORMATION

90	Gen. Insp Date	6 / 23	
91	Gen. Insp. Frequency	24	Months
92A	Frac. Critical Inspection	N	Months
93A	Frac. Critical Insp. Date		
92B	Underwater Inspection	N	Months
93B	Underwater Insp. Date		
92C	Special Inspection	N	Months
93C	Special Inspection Date		

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

FIELD POSTING INFORMATION

Field Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

Design_No = k0382

Bridge Number: K0382R

Route/County: Bus 240/Howard

Asbestos-Containing Material Present?

Yes: ☐ No: ☒

If yes, see report for location(s).

Structural Steel Present?

Yes: ☒ No: ☐

If No, then skip the following.

Lead-Based Paint (LBP) Present?

Yes: ☐ No: ☒

Trusses LBP?

Yes: ☐ No: ☐

Girder LBP?

Yes: ☐ No: ☐

Railing LBP?

Yes: ☐ No: ☒

Pile LBP?

Yes: ☐ No: ☐

Galvanized

MEMORANDUM

Missouri Department of Transportation
Construction and Materials
Central Laboratory

TO: TMS

FROM: Diane Roegge
Environmental Chemist

DATE: January 25, 2016

SUBJECT: Materials
Asbestos Inspection & Heavy Metal Paint Survey
Route Bus 240
Bridge K-0382R
Howard County

We are providing you with the results of the inspection on the above referenced bridge. The inspection report contains an asbestos and a heavy metals survey. The asbestos inspection included identifying suspect asbestos-containing material and NVLAP accredited testing to confirm the presence of asbestos.

Form T746 – This will show if samples were taken, where from, and, if the sample was found to contain asbestos, our estimated quantity of material present. Under the column "Friability Category", this is the meaning for the following:

N-ACM – No asbestos detected.
I NF – Asbestos is present. Material shall be handled carefully by a licensed abatement worker and kept wet if removing as part of a maintenance activity.
II NF – Asbestos is present. If removal is required for the maintenance activity, use an abatement contractor.

In accordance with Missouri Department of Natural Resources' Technical Bulletin "Managing Construction and Demolition Waste" dated January 31, 2003, a heavy metal paint survey has been performed on the above referenced bridge. This survey includes locating concrete which has been painted with something other than traffic paint or graffiti, and testing the painted surface(s) to determine if hazardous heavy metals are present. If the bridge is being removed completely, or the maintenance repairs include removing the painted concrete, then, non-hazardous painted concrete may be used as clean fill materials, if properly handled. You must contact the Central Office Design Division for proper handling of the reported painted surfaces.

Although our survey included observing and sampling all accessible areas, it is possible that potentially hidden asbestos-containing materials may exist within the structure. Should you have any questions regarding these reports, please contact me at (573) 526-4359.

db/fr/dr
http://sp/sites/cm/chemicallab/environmental/shared documents/asbestos/districts/central (cd)/mt/k0382r/dr1601253.docx
Attachments

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
All Suspect ACM

ROUTE:	Bus 240	**SURVEYED BY:**	Frank Reichart and Diane Roegge
MODOT JOB NO.:	J2S2195	**CERTIFICATION #:**	7028011210MOIR11239, F.R.
DISTRICT:	2	**CERTIFICATION #:**	7028011210MOIR7165, D.R.
COUNTY:	Howard	**SITE ADDRESS:**	Over KCS RR (Gateway Western RR), 1.4 miles West of Rt 5
DATE OF SURVEY:	September 10, 2010		(2.2 miles West of Steinmetz)
PARCEL NO.:	Bridge K-0382R	**TYPE(S) OF STRUCTURE(S):**	Bridge

Sample ID	Type of Materials	Location of Material	Friability Category	Field Measure
10MFJR 884	Asphalt Joint Material	4-Wing Wall Joints and Over 2-Abutments	N-ACM	
	Bridge Paint is not a suspect ACM per MSDS's on file.			

N-ACM = Non-Asbestos Containing Material I NF = Category I Nonfriable II NF = Category II Nonfriable F = Friable
NAFD = No Asbestos Fiber Detected * = Tested By Point Count Procedure

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
Nonfriable Asbestos-Containing Materials
(Abatement not required if not made friable during demolition.)

ROUTE: Bus 240
MODOT JOB NO.: J2S2195
DISTRICT: 2
COUNTY: Howard
DATE OF TESTS: September 13, 2010
PARCEL NO.: Bridge K-0382R

TESTED BY: Frank Reichart and Diane Roegge
CERTIFICATION #: 7028011210MOIR11239, F.R.
CERTIFICATION #: 7028011210MOIR7165, D.R.
SITE ADDRESS: Over KCS RR (Gateway Western RR), 1.4 miles West of Rt 5 (2.2 miles West of Steinmetz)
TYPE(S) OF STRUCTURE(S): Bridge

Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
		None Located	I NF			

All necessary work to handle this material is the contractor's responsibility.

I NF = Category I Nonfriable

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
All materials requiring removal or special handling.

ROUTE:	Bus 240	**TESTED BY:**	Frank Reichart and Diane Roegge
MODOT JOB NO.:	J2S2195	**CERTIFICATION #:**	7028011210MOIR11239, F.R.
DISTRICT:	2	**CERTIFICATION #:**	7028011210MOIR7165, D.R.
COUNTY:	Howard	**SITE ADDRESS:**	Over KCS RR (Gateway Western RR), 1.4 miles West of Rt 5
DATE OF TESTS:	September 13, 2010		(2.2 miles West of Steinmetz)
PARCEL NO.:	Bridge K-0382R	**TYPE(S) OF STRUCTURE(S):**	Bridge

Bid Item No.	Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
			None Located	F			
			None Located	II NF			

I NF = Category I Nonfriable II NF = Category II Nonfriable F = Friable * = Tested By Point Count Procedure

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Metals Survey Report of Painted Concrete, Block, Brick Surfaces for Clean Fill Purposes

ROUTE: Bus 240
MODOT JOB NO.: J2S2195
DISTRICT: 2
COUNTY: Howard
SURVEYED BY: Frank Reichart
DATE OF SURVEY: September 10, 2010

TESTED BY: N/A
DATE OF TESTS: N/A
PARCEL NO.: Bridge K-0382R
SITE ADDRESS: Over KCS RR (Gateway Western RR), 1.4 miles West of Rt 5 (2.2 miles West of Steinmetz)
TYPE(S) OF STRUCTURE(S): Bridge

Sample ID	Color/Location of Material/Substrate	Metals (ppm)							
		As	Cr	Pb	Cd	Se	Ba	Hg	Ag
	No samples taken. No painted surfaces located.								

All results are by XRF unless otherwise indicated: a = USEPA SW-846 Method 3050
b = USEPA SW-846 Method 7471

Expiration Date: **1/12/2011**

Certificate Number: 7028011210MOIR11239

Training Date: **1/12/2010**

Missouri State Certificate for Asbestos Related Occupations

issued by Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
Phone (573) 751-4817

Francis J. Reichart

has successfully completed the requirements for certification as a INSPECTOR. This Missouri State Certification is subject to review and the director may deny, suspend or revoke the certification per RSMo chapter 643.230.

3/18/2010
Date

James L. Kavanaugh
Director of Air Pollution Control Program

Expiration Date: **1/12/2011** Certificate Number: 7028011210MOIR7165

Training Date: **1/12/2010**

Missouri State Certificate for Asbestos Related Occupations

issued by Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
Phone (573) 751-4817

Diane R. Roegge

has successfully completed the requirements for certification as a INSPECTOR. This Missouri State Certification is subject to review and the director may deny, suspend or revoke the certification per RSMo chapter 643.230.

3/18/2010
Date

James L. Kavanaugh
Director of Air Pollution Control Program

PILING DATA

FED. ROAD DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1)	1948		

DIV. NO.	COUNTY	ROUTE	SEC. NO.
5	Howard	3	

FINAL PLANS

FOOTING NO 1 - BENT NO 1

833.0 - Plan - Top ftng. & as built.
831.5 Plan - Pile butts
830.6 As built Pile butts
829.0 Plan - Bottom ftng.
828.1 As built - Bottom ftng.

Pay Pile from Tip Elev. to Elev. 831.5 (See letter dated April 1, 1947 Div. Engr. MSHD. to C.E. Maxwell & Son)

Pile No 1 - 831.5	811.5	= 20.0'	or	20'
2 - 831.5	810.2	= 21.3	"	21
3 - 831.5	810.6	= 20.9	"	21
4 - 831.5	810.8	= 20.7	"	21
5 - 831.5	810.6	= 20.9	"	21
Lin. Ft. Pile				104

Note: Pile #1 cutoff to elev. 830.6
Pile #2 Cutoff to elev. 829.25*
Pile #3 used as driven
Pile #4 used as driven
Pile #5 used as driven

* 9-1¼" □ steel bars 3'-8" long used to reinforce a conc. splice

FOOTING NO 3 - BENT NO 1

833.0 Plan - Top ftng & as built
831.5 Plan - Pile butts
830.0 Pile butts - As built
829.0 Bottom ftng. - Plan
827.5 Bottom ftng. - As built

Pay Pile from Tip Elev. to Elev. 831.5 (See letter dated April 1, 1947 Div. Engr. Mo. State Highway To C.E. Maxwell & Son)

Pile No 12 - 831.5	811.8	= 19.7'	or	20'
13 - 831.5	811.5	= 20.0	"	20'
14 - 831.5	811.4	= 20.1	"	20
15 - 831.5	811.8	= 19.7	"	20
16 - 831.5	810.4	= 21.1	"	21
17 - 831.5	810.6	= 20.9	"	21
Lin. Ft. Pile				122'

Note: All Pile cut off to Elev. 830.0

FOOTING NO 2 - BENT NO 1

833.0 Top ftng. - Plan and as built
831.5 Pile butts - Plan
830.0 Pile butts - As built
829.0 Bottom ftng. - Plan
827.5 Bottom ftng. - As built

Pay Pile from Tip Elev. to Elev. 831.5 (See letter Refered to above.)

Pile No 6 - [illegible].5	810.7	= 20.8'	or	21'
7 - [illegible].5	810.3	= 21.2		21
8 - 831.5	810.4	= 21.1		21
9 - 831.5	810.5	= 21.0		21
10 - 831.5	811.5	= 20.0		20
11 - 831.5	810.8	= 20.7		21
Lin. Ft. Pile				125

Note: Pile #6 Cutoff to elev. 830.0
#7 " " " 830.0
#8 " " " 830.0
#9 " " " 830.0
#10 " " " 830.0
#11 " " " 830.0

FOOTING NO 4 - BENT NO 1

833.0 - Plan top ftng. & as built
831.5 - Pile butts - Plan
830.0 Pile butts - As built
829.0 Bottom ftng. - Plan
827.5 Bottom ftng. - as built

Pay Pile from Tip Elev. to Elev. 831.5 (See letter Refered to above)

Pile No 18 - 831.5	810.7	= 20.8	or	21'
19 - 831.5	811.1	= 20.4		20'
20 - 831.5	810.4	= 21.1		21
21 - 831.5	810.2	= 21.3		21
22 - 831.5	809.9	= 21.6		22
Lin. Ft. Pile				105'

Note: Piles No. 18, 19 and 20 cut off to Elev. 830.0
Pile No 21 used as driven
Pile No 22 cutoff to Elev. 829.49 and 9-1¼" □ steel bars 2'-10" long used to reinforce a concrete splice.

FOOTING NO 1 - BENT 6

829.5 - Top ftng. - Plan & As built
828.0 - Pile Butts - Plan & As built
825.5 - Bottom ftng. Plan & as built

Pay Pile from Cutoff Elev. of 828.0 to Tip Elev.

Pile No 1* - 827.9	807.92	= 20.0	or	20'
2 - 828.0	808.1	= 19.9	"	20'
3 - 828.0	808.6	= 19.4	"	19'
4 - 828.0	808.6	= 19.4	"	19'
5 - 828.0	808.8	= 19.2	"	19'
Lin. Ft. Pile				97'

* Pile No 1 used as driven remainder of Pile cutoff to Elev. 828.0

FOOTING NO 3 - BENT NO 6

829.5 - Top ftng. - Plan and as built
828.0 - Pile cutoff - Plan
825.5 - Bottom ftng. - Plan
Bottom ftng. - As built

Pay Piling from Elev. 828.0 to Tip Elev. (See Letter)

Pile No 12 = 828.0	807.5	= 20.5	or	21'
13 - 828.0	807.6	= 20.4	"	20'
14 - 828.0	808.2	= 19.8	"	20'
15 - 828.0	808.3	= 19.7	"	20'
16 - 828.0	808.1	= 19.9	"	20'
17 - 828.0	808.1	= 19.9	"	20'
Lin. Ft. Piling				121'

Note: Pile No 12 & 13 used as driven. Remainder cutoff to Elev. 828.0

FOOTING NO 2 - BENT NO 6

829.5 - Top ftng. - Plan & as built
828.0 - Pile cutoff - Plan
825.5 - Bottom ftng. - Plan
Bottom ftng. - As built

Pay Piling from Elev. 828.0 to Tip Elev. (See Letter dated Apr. 1, 1947, Div. Engr. MSHD to C.E. Maxwell & Son)

Pile No 6 - 828.0	807.9	= 20.1	or	20'
7 - 828.0	807.7	= 20.3	"	20'
8 - 828.0	808.6	= 19.4	"	19'
9 - 828.0	808.4	= 19.6	"	20'
10 - 828.0	808.6	= 19.4		19'
11 - 828.0	808.3	= 19.7	"	20
Lin. Ft. Pile				118

Note: Piles No 6 & 7 used as driven. Remainder cutoff to Elev. 828.0

FOOTING NO 4 - BENT NO. 6

829.5 - Top ftng. - Plan & As built
828.0 - Pile cutoff - Plan
825.5 - Bottom ftng. - Plan
Bottom ftng. - As built

Pay Pile from Elev. 828.0 to Tip Elev. (See Letter)

Pile No 18 - 828.0	806.7	= 21.3	or	21'
19 - 828.0	806.7	= 21.3	"	21'
20 - 828.0	807.6	= 20.4	"	20'
21 - 828.0	807.4	= 20.6	"	21'
22 - 828.0	807.7	= 20.3	"	20'
Lin. Ft. Pile				103'

Note: All Pile used as driven. No cut off.

SUMMARY

Bent No	Ftng. No	Lin. Ft. Pile
1	1	104
	2	125
	3	122
	4	105
6	1	97
	2	118
	3	121
	4	103
Total Lin. Ft. Pile		895

FINISHED

K462

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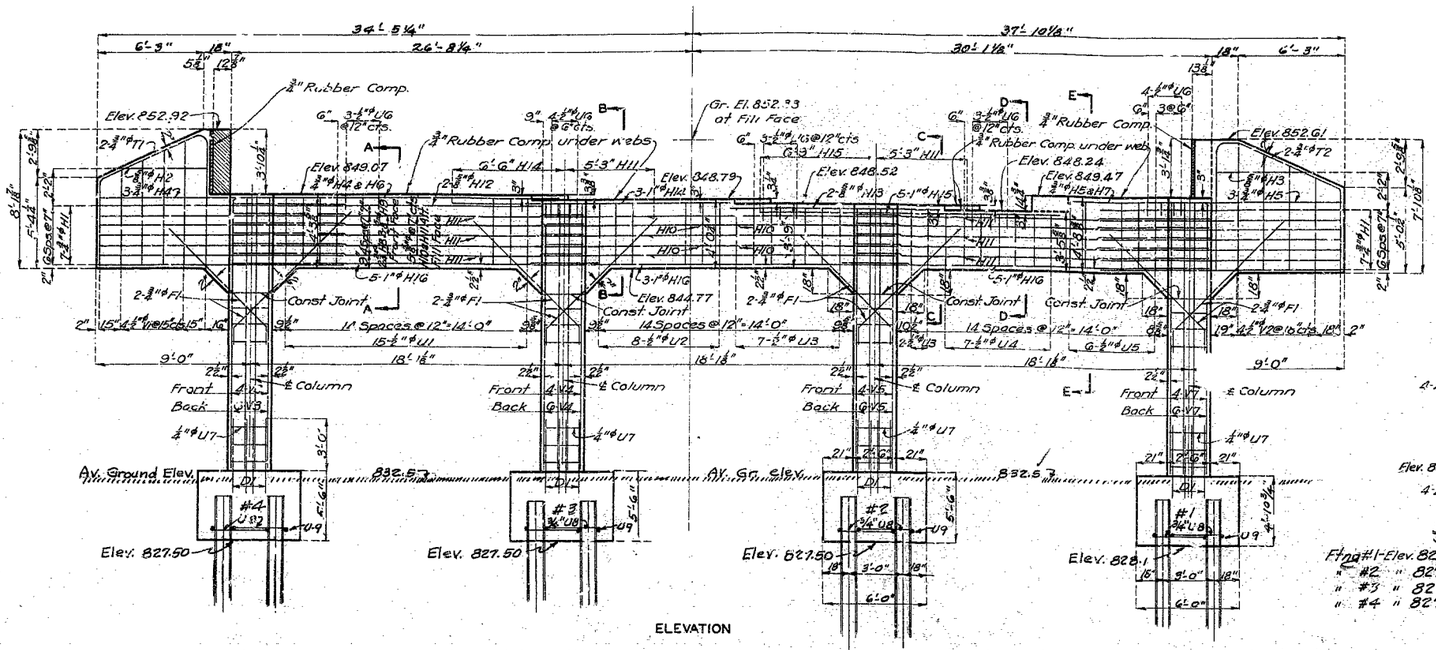
FINAL PLANS

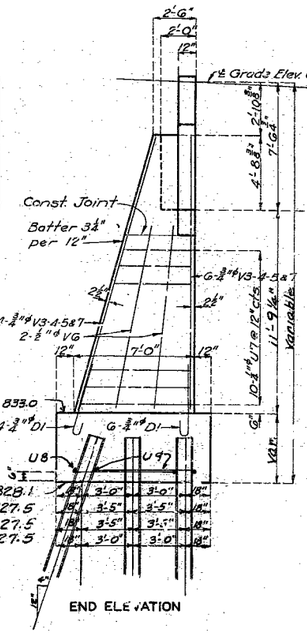
Sheet No. 2A of 7.

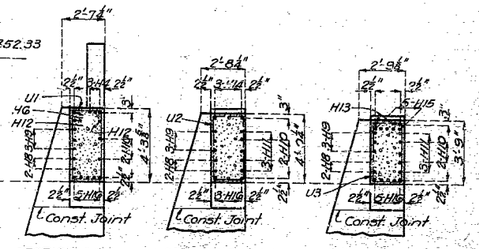
MISSOURI STATE HIGHWAY DEPARTMENT

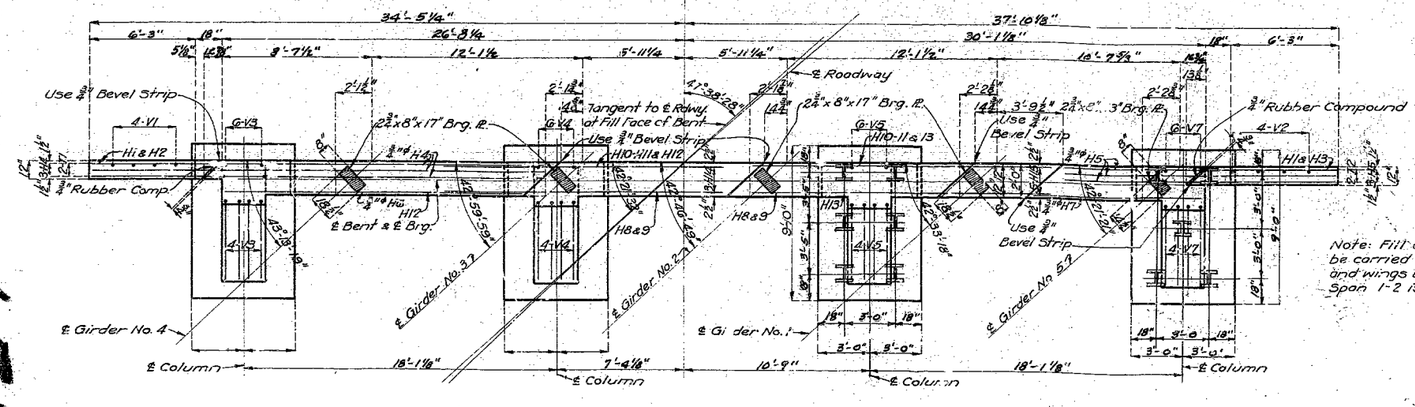
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM-331-E(1)(R3)	19		

FINAL PLANS

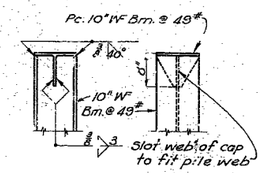


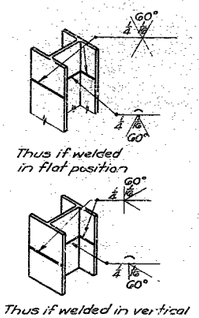






Note: Fill at End Bent No. 1 shall not be carried above bottom of beam and wings until superstructure Span 1-2 is in place.





DETAILS OF END BENT NO. 1

537

Designed Mar. 1941 by J.C.S.
Drawn Mar. 1941 by J.C.S.
Traced Mar. 1941 by G.W.
Checked April 1941 by RAB.

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

BUREAU OF CONSTRUCTION MAR 28 1948 HIGHWAY DEPT.

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240 FINISHED

IN ARMSTRONG

PROJECT NO. FAGM 331-E (1)(R3) STA. 187+64.03

HOWARD FINISHED COUNTY FINISHED

K-962

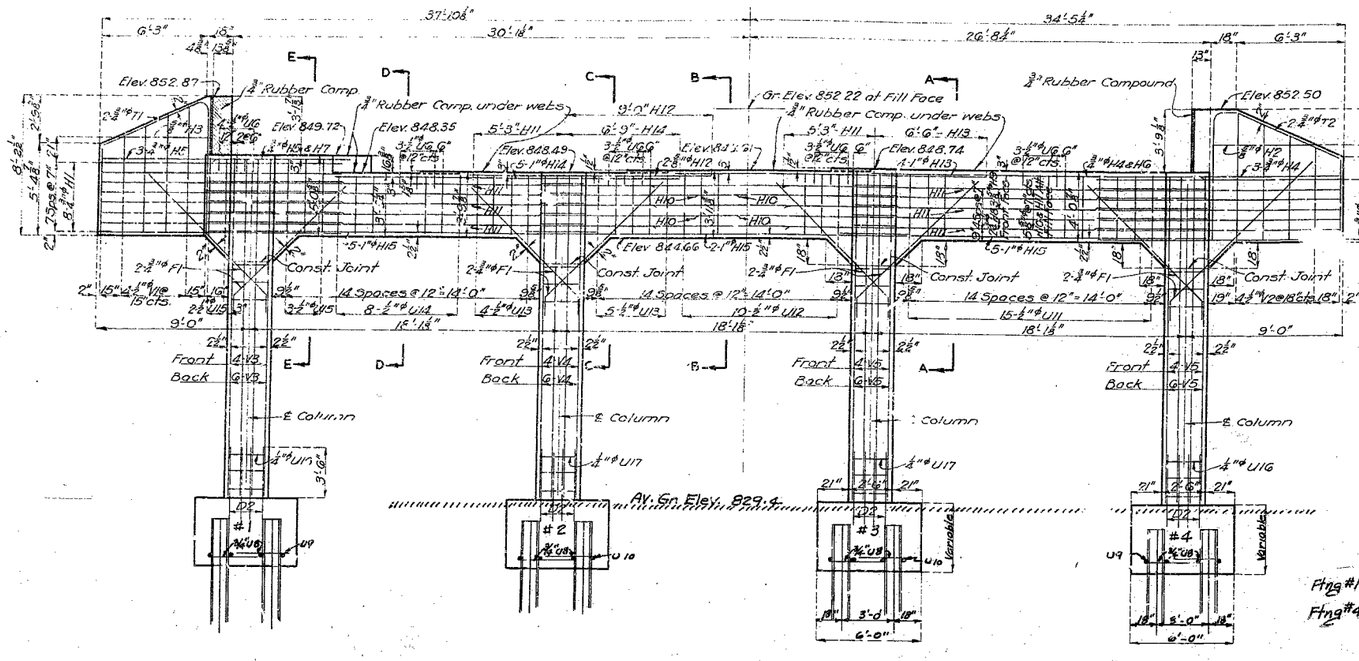
Sheet No. 3A of 7

FINAL PLANS Revised 2-28-42.

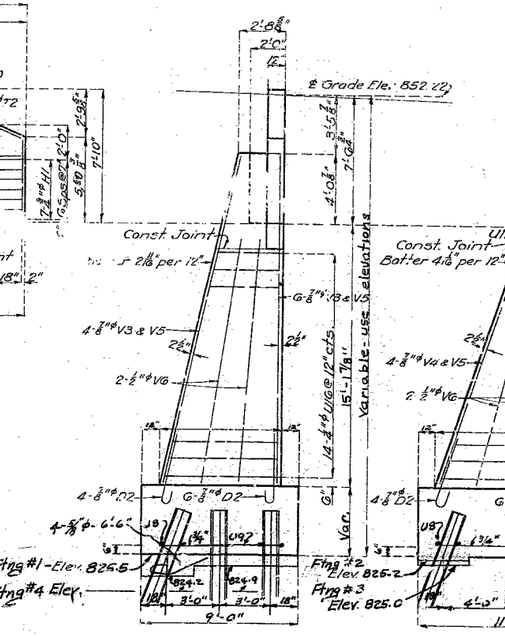
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGH331-E(1)(R3)	49		

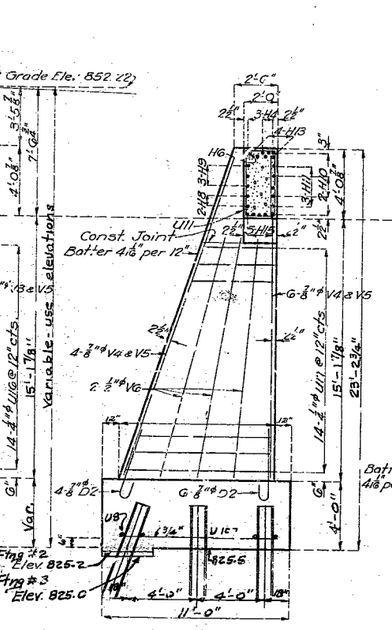
FINAL PLANS



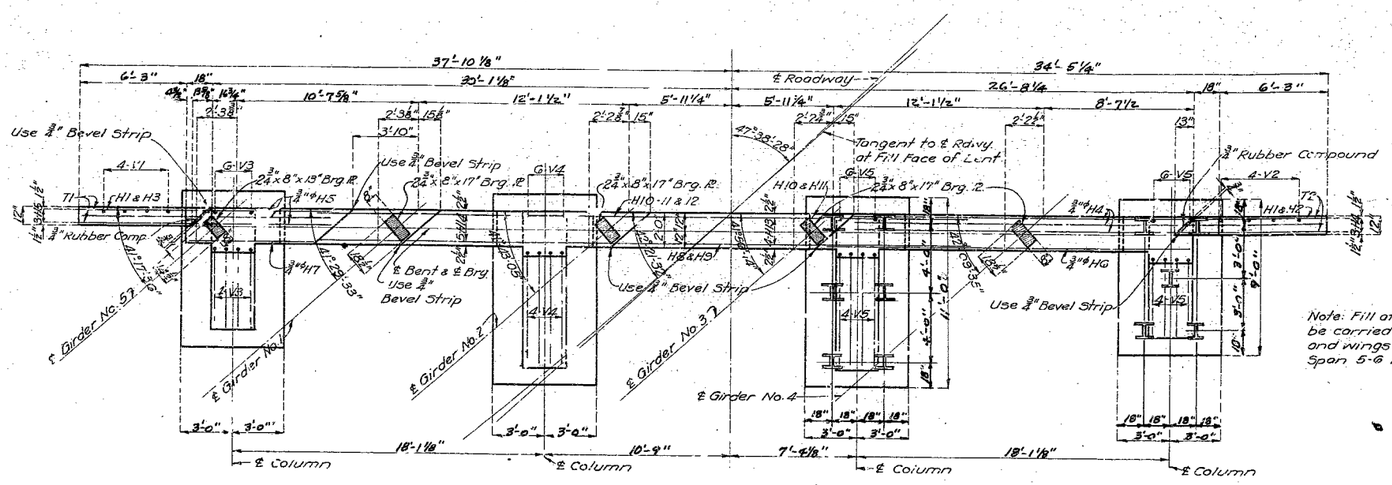
ELEVATION



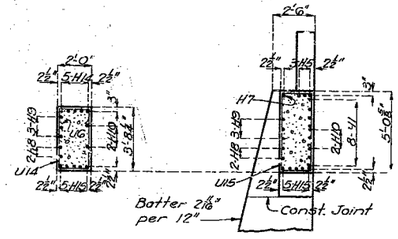
END ELEVATION



SECTION A-A



PLAN



SECTION D-D SECTION E-E

Note: Fill at End Bent No. 6 shall not be carried above bottom of beam and wings until superstructure Span 5-6 is in place.

BUREAU OF CONSTRUCTION MAR 23 1948 HIGHWAY DEPT.

FINISHED

DETAILS OF END BENT NO. 6

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGH 331-E(1)(R3) STA. 187+64.03
HOWARD COUNTY

FINISHED

Designed Mar. 1941 by J.C.S.
Drawn Mar. 1941 by J.C.S.
Traced Apr. 1941 by G.W.
Checked April 1941 by J.C.S.

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

Sheet No. 4A of 7.

K-962

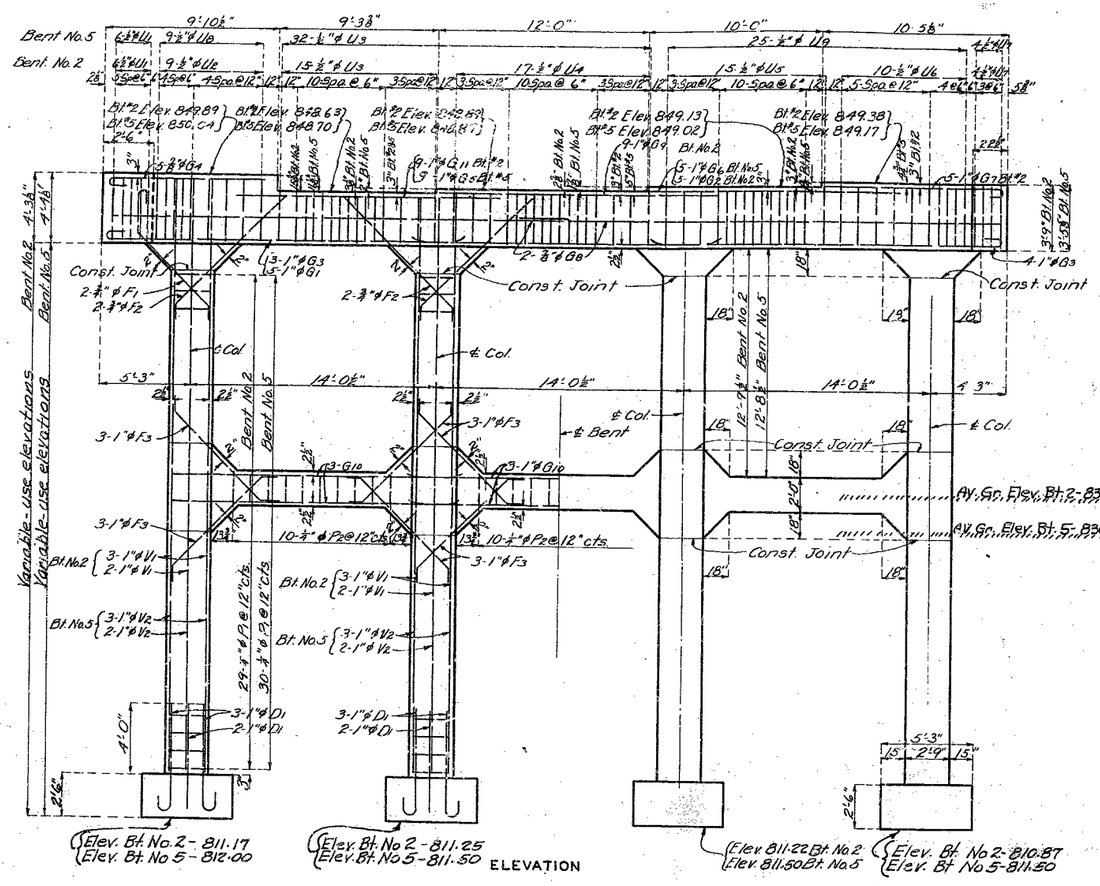
538

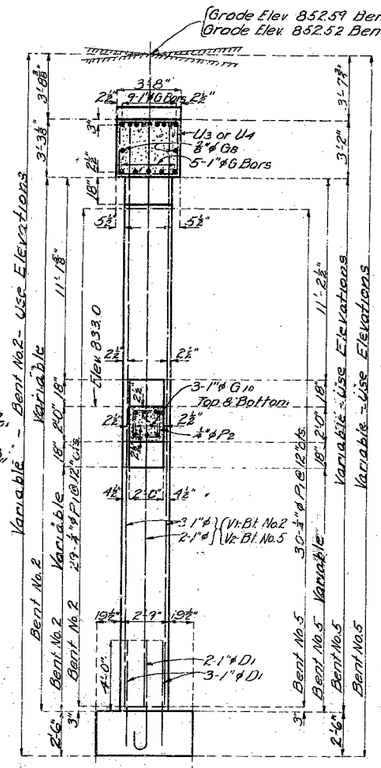
FINAL PLANS

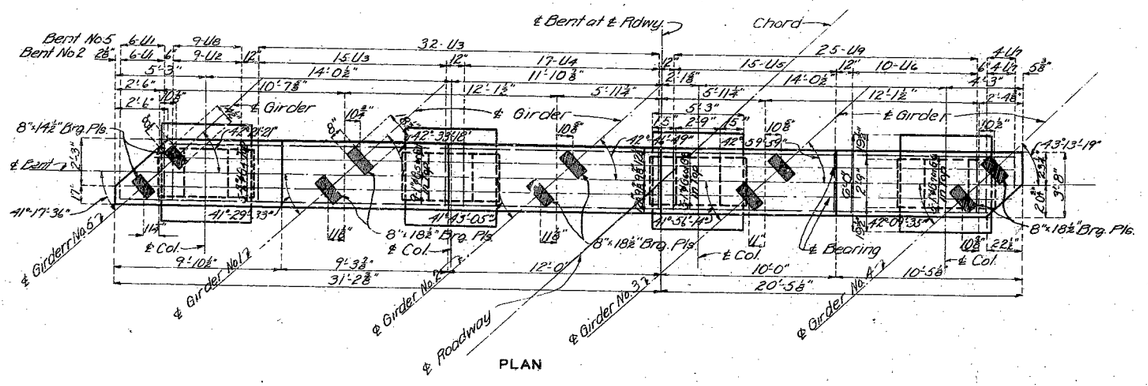
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1)(R3)	19		

FINAL PLANS







DETAILS OF BENTS NO. 2 & 5

Designed Feb. 1941 by J.C.S.
Drawn Mar. 1941 by C.S.A.
Traced Mar. 1941 by R.M.S.
Checked Apr. 1941 by N.W.R.

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

Sheet No. 5 of 11.

BUREAU OF CONSTRUCTION
MAR 20 1948
HIGHWAY DEPT.

BRIDGE OVER C. & A. R.R. FINISHED

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY FINISHED FINISHED

K-962

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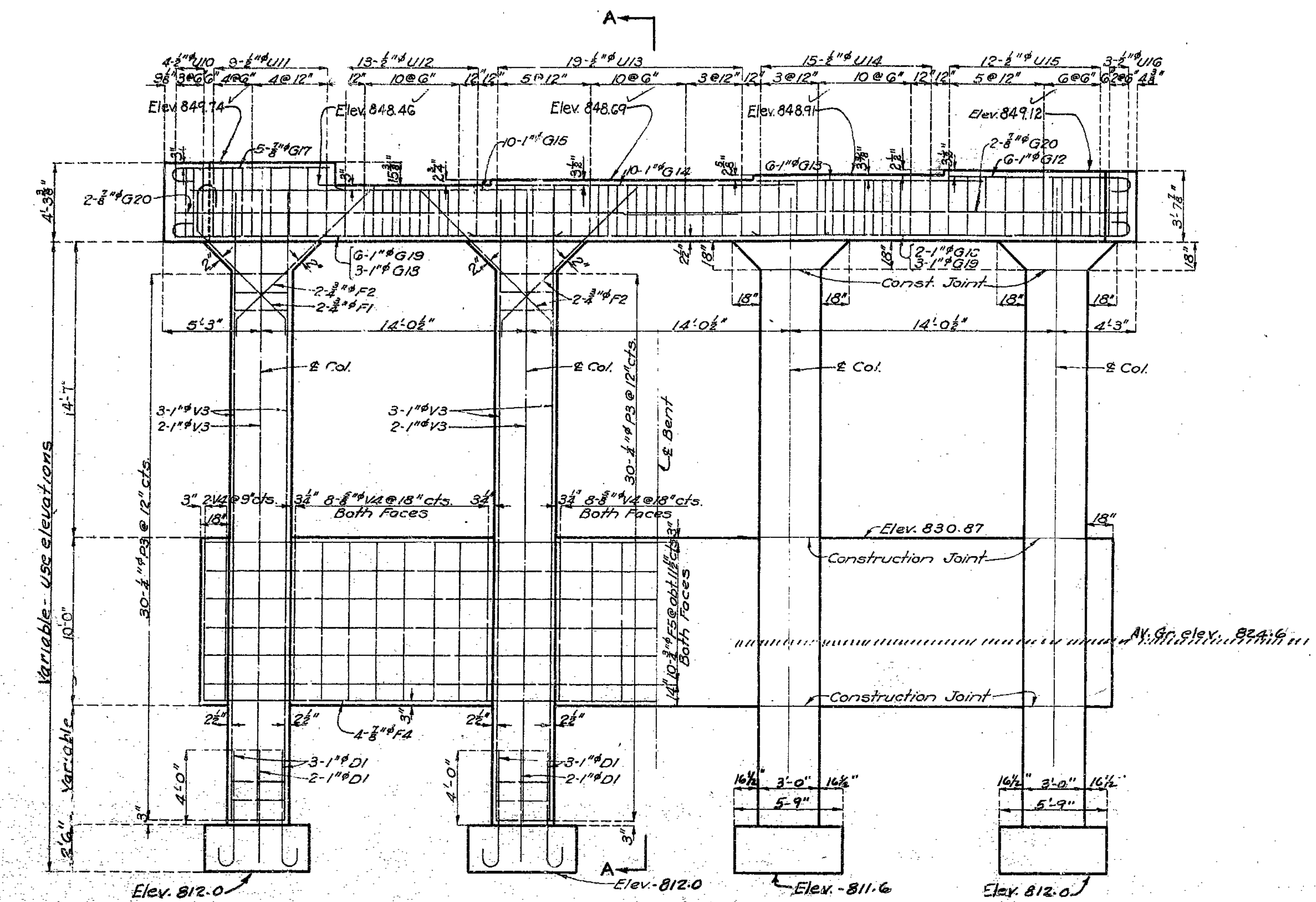
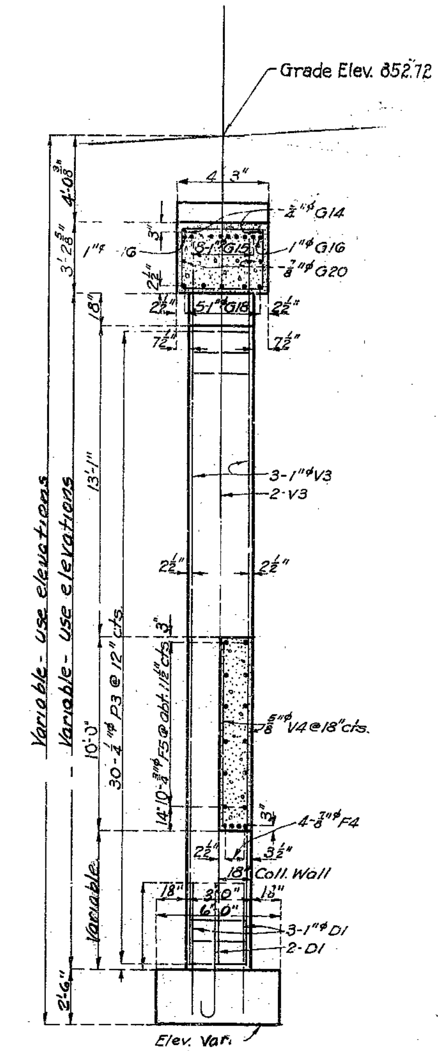
FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

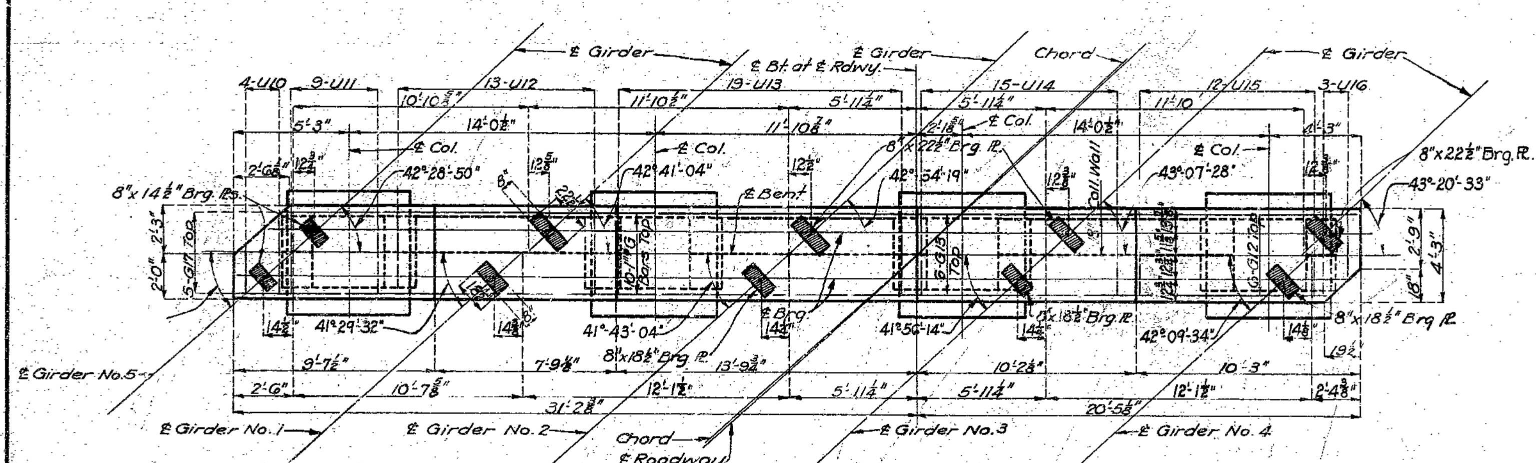
FINAL PLANS



ELEVATION



SECTION A-A



PLAN

DETAILS OF BENT NO. 3

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1) (R3) STA. 187+64.03

HOWARD COUNTY

K-962

Designed Feb. 1941 by J.C.S.
Drawn March 1941 by C.S.A.
Traced March 1941 by G.W.
Checked April 1941 by N.W.R.

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

Sheet No. 6A of 7

FINAL PLANS

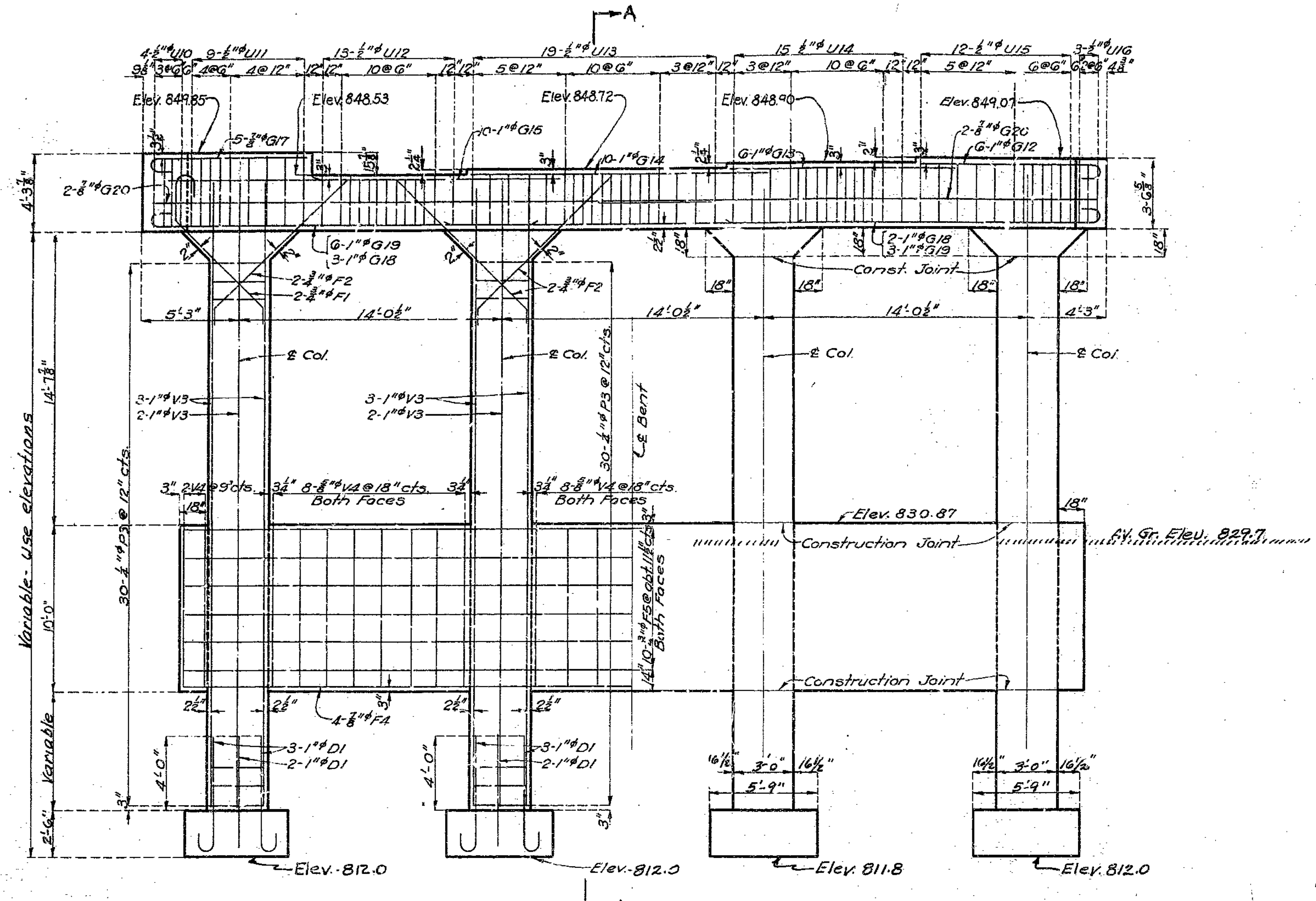
Revised 2-28-42.

540

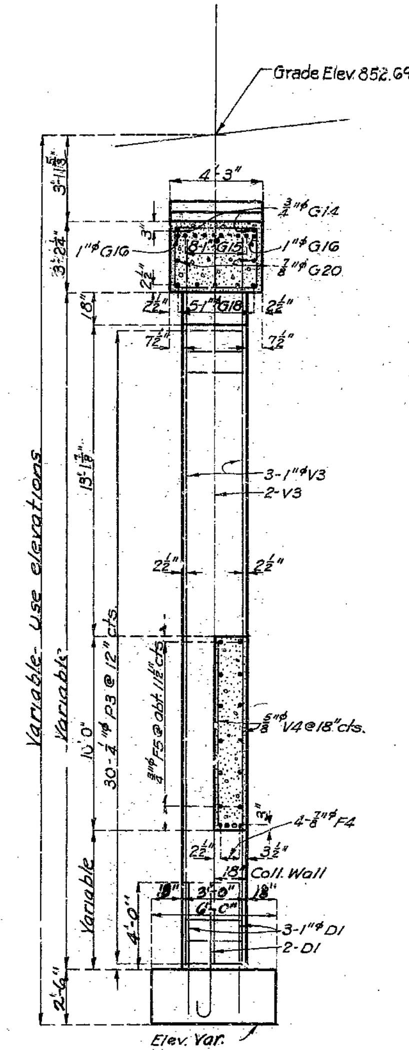
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (R3)	19		

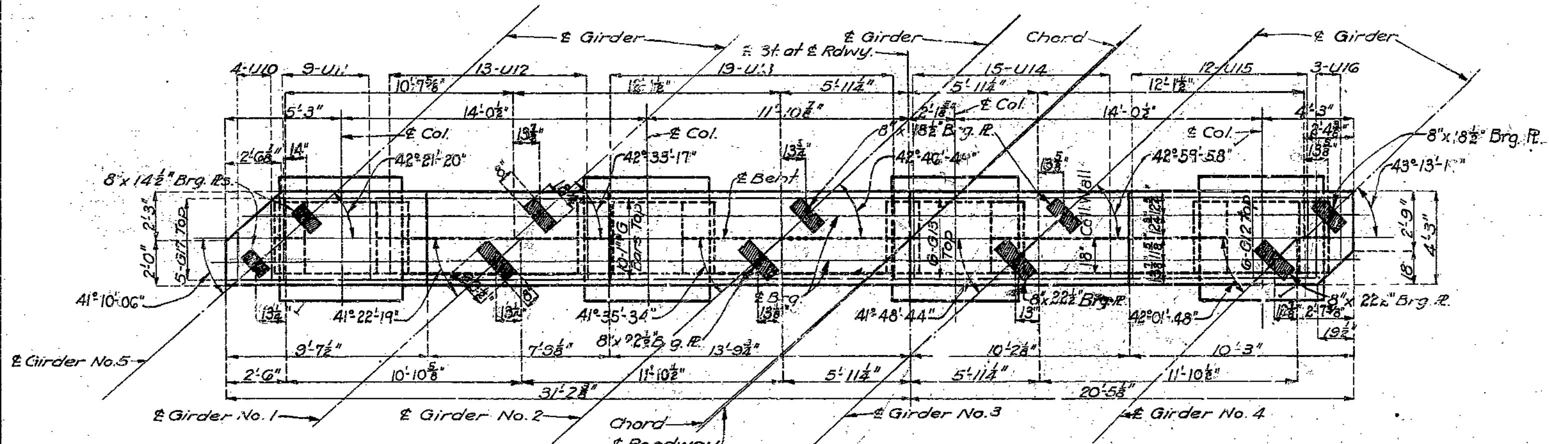
FINAL PLANS



ELEVATION



SECTION A–A



PLAN

DETAILS OF BENT NO. 4

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1) (R3) STA. 187+64.03

HOWARD COUNTY

K-962

Designed Feb. 1941 by J.C.S.
Drawn March 1941 by C.S.A.
Traced March 1941 by G.W.
Checked April 1941 by N.W.R.

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

Sheet No. 7A of 7

FINAL PLANS

Revised 2-28-42.

FINISHED

BUREAU OF CONSTRUCTION MAR 23 1948 HIGHWAY DEPT.

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MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	Mo.	FAGH 331-E(1)(R3)	19		

SPAN (1-2)

SPAN (2-3)

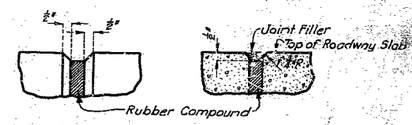
SPAN (3-4)

SPAN (4-5)

SPAN (5-6)

Note: For details of flared ends See Sheet No. 11 of 11.

Note: For Section A-A see Sheet No. 9 of 11.



Note: Use bevel as shown for exposed faces of all joints consisting of rubber compound except at top surface of roadway slab. Use edging tool with ½" Radius at top surface of roadway slab each side of rubber compound joint and fill flush with joint filler as shown.

DETAIL OF BEVEL FOR RUBBER COMPOUND JOINTS

PLAN SHOWING REINFORCING IN SIDEWALK & ROADWAY SLABS

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

Designed Jan. 1941 by J.C.S.
Drawn Feb. 1941 by C.S.A.
Traced Mar. 1941 by J.T.F.
Checked Apr. 1941 by R.A.C.

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGH 331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY

NO CONSTRUCTION CHANGES

Sheet No. 7 of 11.

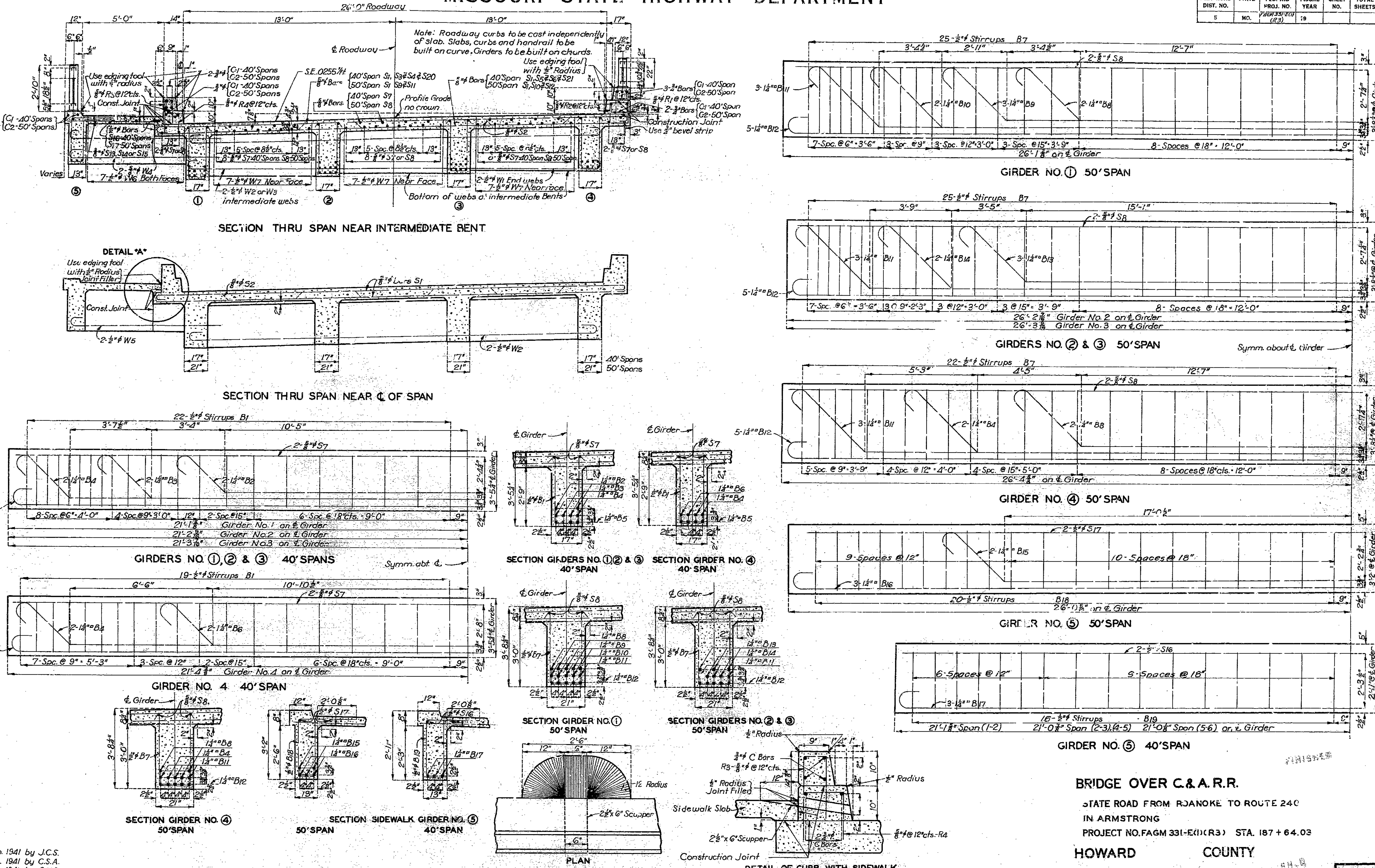
K-962

Revised 2-28-42.

530

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (R3)	19		



531

FINISHED

BRIDGE OVER C.& A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1)(R3) STA. 187 + 64.03

HOWARD COUNTY

Designed Feb. 1941 by J.C.S.
Drawn Feb. 1941 by C.S.A.
Traced Mar. 1941 by C.N.S.
Checked Apr. 1941 by R.A.C.

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

Sheet No. 8 of 11

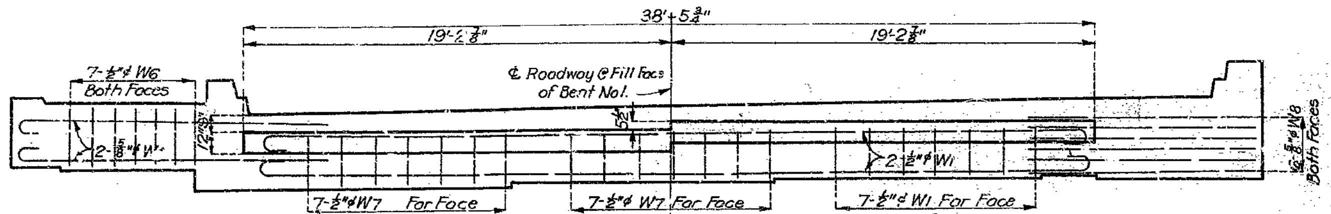
NO CONSTRUCTION CHANGES

K-962

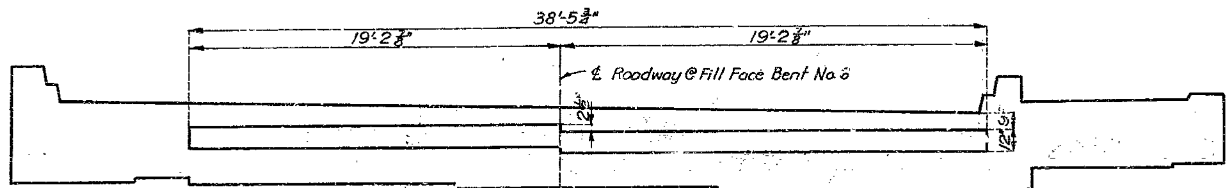
Revised 2-28-42.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (R3)	19		

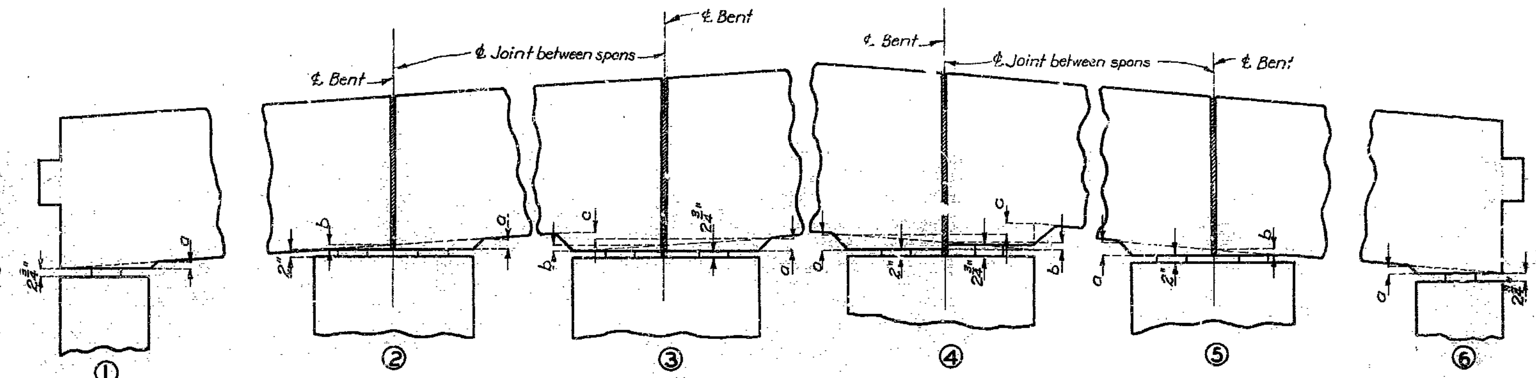


VIEW OF APPROACH NOTCH AT BENT NO. ①



VIEW OF APPROACH NOTCH AT BENT NO. ⑥

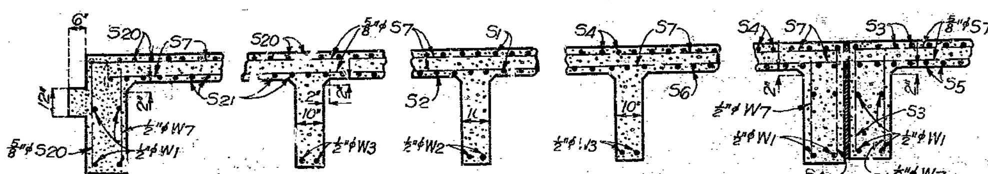
Note: Web reinforcing similar to that shown at Bent No.1
Pavement support to be constructed Horizontal.



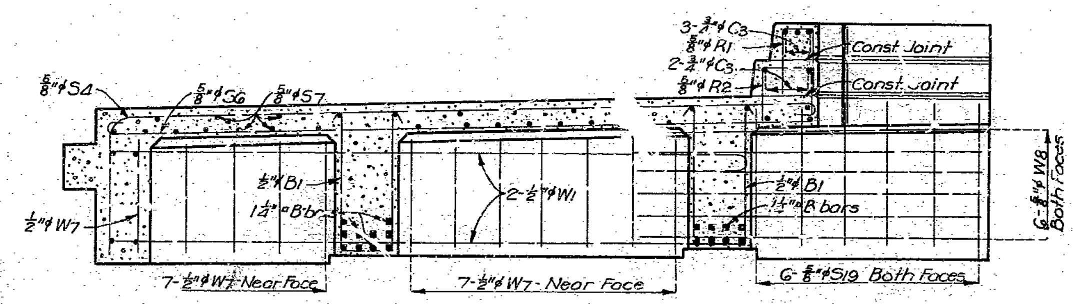
DETAILS OF GIRDER HAUNCHES

SCHEDULE OF HAUNCH DIMENSIONS

Girder	Bent No.1	Bent No.2		Bent No.3			Bent No.4			Bent No.5		Bent No.6
	a	a	b	a	b	c	a	b	c	a	b	a
No.1	1/2"	1/2"	1/4"	1/4"	1/8"	2 3/4"	3/8"	3/8"	2 7/8"	3/8"	[illegible]	3/8"
No.2	3/8"	3/8"	1/4"	1/4"	1/8"	2 7/8"	1/2"	3/8"	2 3/4"	1/2"	1/4"	1/2"
No.3	3/8"	3/8"	1/4"	1/8"	1/8"	2 7/8"	1/2"	[illegible]	2 3/4"	1/2"	1/4"	1/2"
No.4	3/8"	1/4"	1/8"	0"	0"	3"	3/8"	3/8"	2 5/8"	1/2"	1/4"	1/2"
No.5	1/2"	1/2"	1/4"	1/4"	1/8"	2 3/4"	3/8"	1/4"	2 3/8"	3/8"	1/4"	3/8"



TYPICAL PART SECTION ALONG ℄ ROADWAY



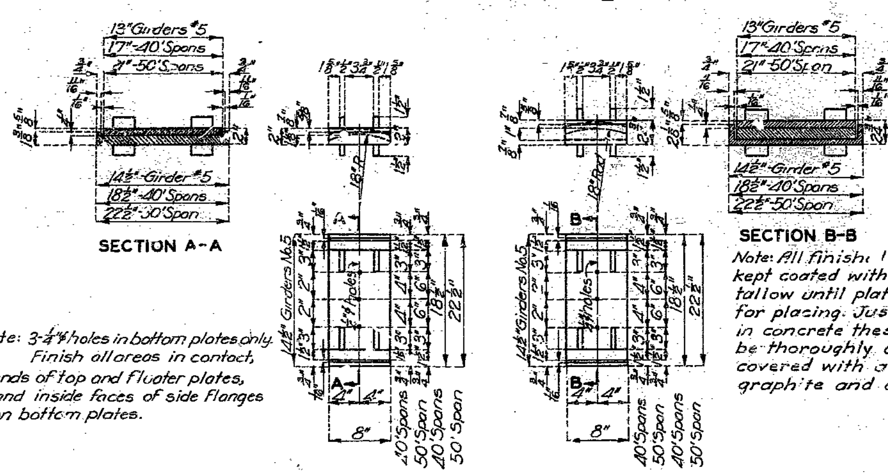
SECTION A-A
(See Sheet 7 of 11)

Note: Bottom of girders, top and bottom of slab, top of curbs and posts shall be constructed parallel to grade.

All bearings shall be horizontal.

Space between top of end bents and bottom of end web and girders shall be filled with rubber compound except space in front of plates which may be left open to depth of bearings.

Space between bottom of webs and girders and the top of intermediate bents to be left open to the depth of plates.



Note: 3/4" φ holes in bottom plates only. Finish all areas in contact, ends of top and floater plates, and inside faces of side flanges on bottom plates.

FIXED END

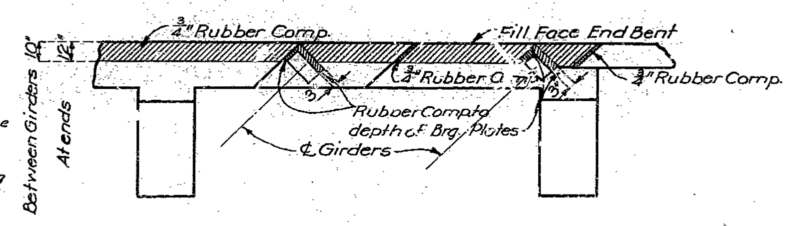
EXPANSION END

Note: All finished surfaces shall be kept coated with white lead and tallow until plates are prepared for placing. Just prior to placing in concrete these surfaces shall be thoroughly cleaned and covered with a mixture of graphite and oil.

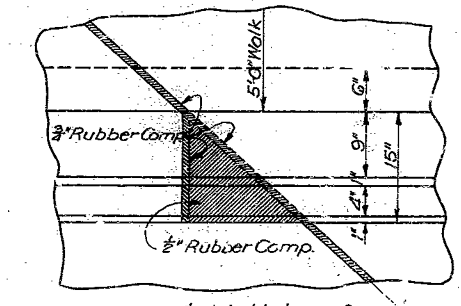
GRAY IRON ALLOY BEARING PLATES

Required:- For Girders No.5; 5 Sets of 8"x13" Plates. (Flanged)
For 40' Spans; 16 Sets of 8"x17" Plates. (Flanged)
For 50' Span; 4 Sets of 8"x21" Plates. (Flanged)
Each Set consisting of 1 Top Plate and 1 Bottom Plate For Fixed End and 1 Top Plate, 1 Floater Plate and 1 Bottom Plate For Expansion End.

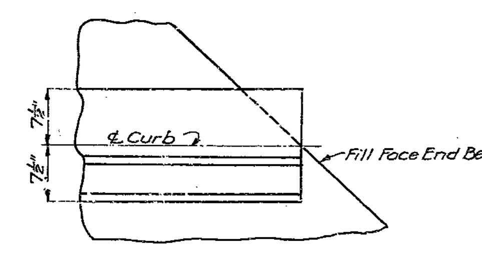
Note: All bearing plates shall be gray Iron Alloy. Substitution of cast steel is not permissible.



DETAIL OF RUBBER COMPOUND AT BEARINGS ON END BENTS



DETAILS AT INTERMEDIATE BENTS



DETAILS AT END BENTS

DETAILS OF ROADWAY CURB ON LEFT

532

FINISHED

BRIDGE OVER C.&A.R.R.
STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1) (R3) STA. 187+64.03
HOWARD COUNTY

Designed Feb. 1941 by J.C.S.
Drawn Mar. 1941 by C.S.A.
Traced Mar. 1941 by C.N.S.
Checked Apr. 1941 by R.A.C.

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

Sheet No. 9 of 11.

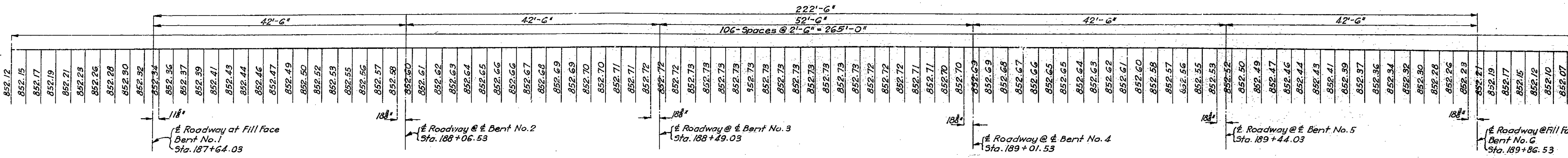
NO CONSTRUCTION CHANGES

K-962

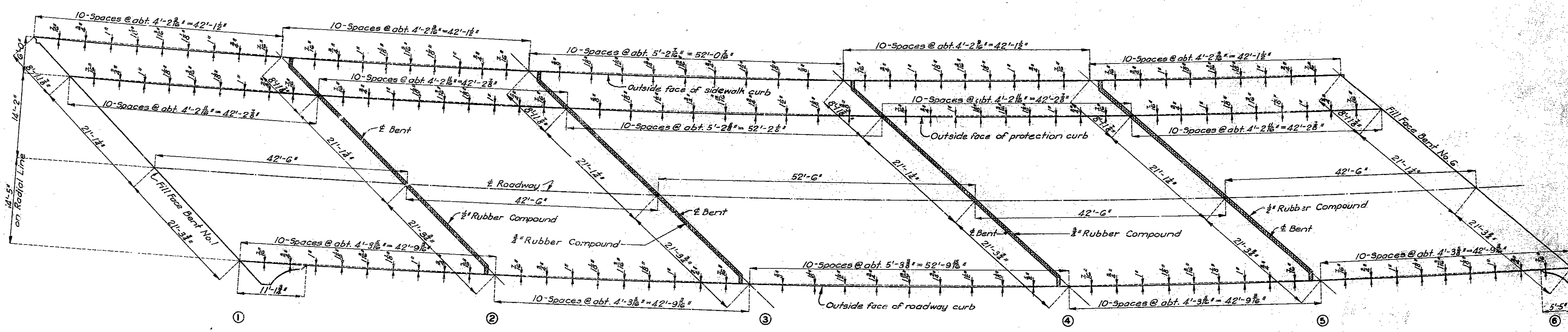
Revised 2-28-42.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM331-E(1) (R3)	19		



GRADE ELEVATION AT ℄ ROADWAY



CURVE ORDINATES

Note: For details of flare See Sheet No. 11 of 11.

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240

IN ARMSTRONG

PROJECT NO. FAGM331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY

Designed Feb. 1941 by J.C.S.
Drawn Feb. 1941 by C.S.A.
Traced Mar. 1941 by J.T.F.
Checked Apr. 1941 by R.A.C.

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

Sheet No. 10 of 11. NO CONSTRUCTION CHANGES

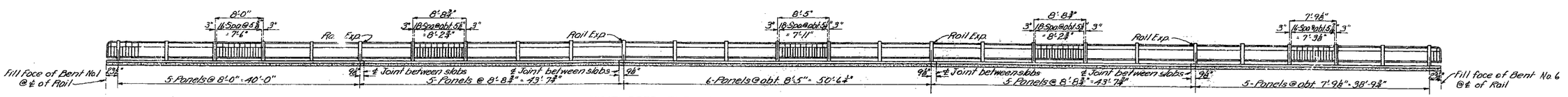
K-962

Revised 2-28-42.

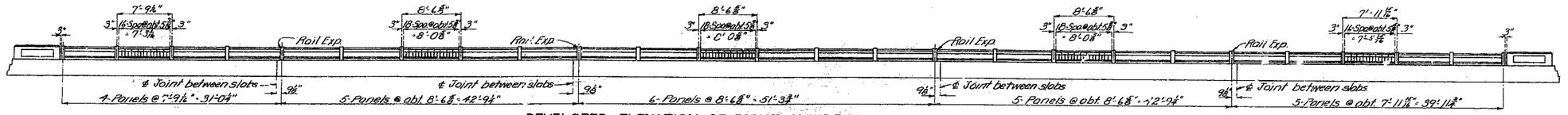
533

MISSOURI STATE HIGHWAY DEPARTMENT

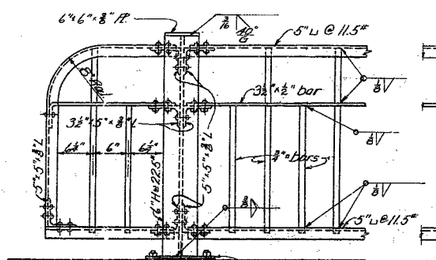
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (R3)	19		



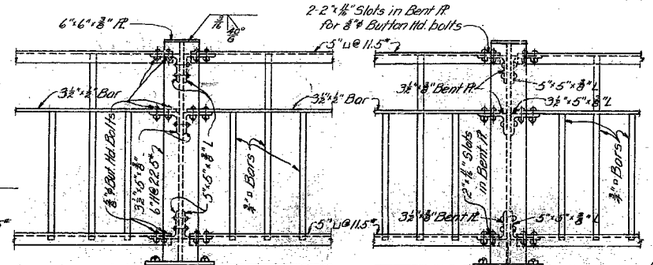
DEVELOPED ELEVATION OF LEFT HANDRAIL



DEVELOPED ELEVATION OF RIGHT HANDRAIL

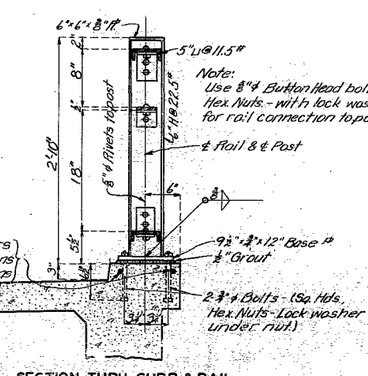


DETAILS OF POST AT END OF BRIDGE FOR LEFT RAIL

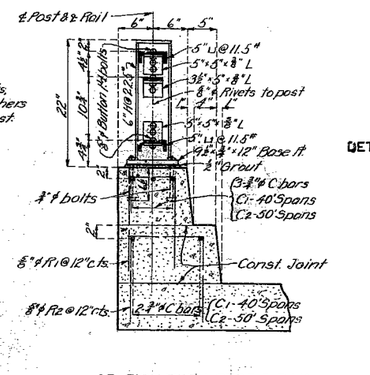


TYPICAL DETAILS FOR INTERMEDIATE POST

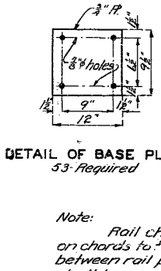
TYPICAL DETAILS FOR POSTS AT EXPANSION JOINTS



SECTION THRU CURB & RAIL ON LEFT



SECTION THRU CURB & RAIL ON RIGHT



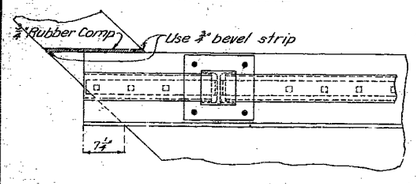
DETAIL OF BASE PLATE
53 Required

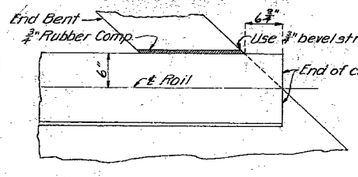
Note:
Rail channels and 3½"x½" bars shall be bent on chords to 1° vertical and horizontal curve between rail posts. The 3½"x½" longitudinal bar shall be punched for the long ⅞" ø bars but not for the shorter vertical bars. The bottom 5" channel shall be punched for all vertical bars which shall be extended ½" thru the web. No punching of top channel web for vertical bars will be permitted. All posts and ⅞" ø bars shall be vertical. The bottom of posts shall be beveled to fit base plates placed parallel with grade. All panels shall be marked and identified as to their location in the structure. See Special Provisions.

All parts of rail, including posts, washers and bolts shall be galvanized after fabrication. See Special Provisions for method of galvanizing and basis of payment.

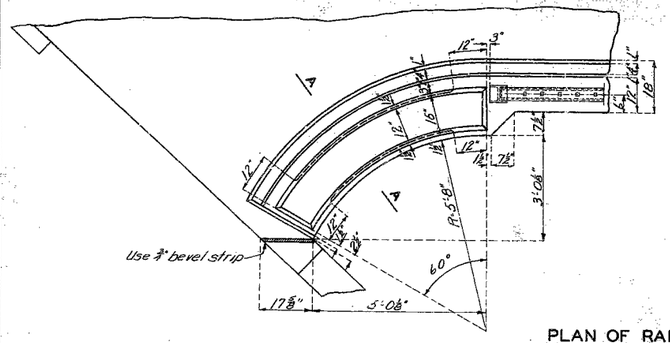
Grout to be made from an approved brand of expansive cement.

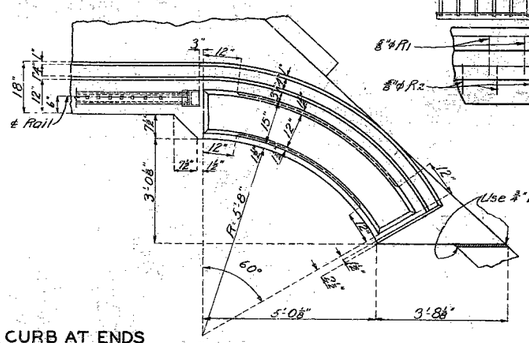
Ends of concrete posts shall be vertical and tops parallel to grade.



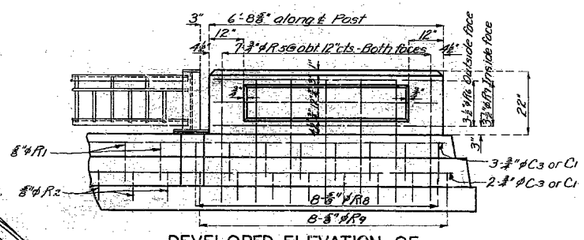


PLAN OF RAIL & CURB AT ENDS OF BRIDGE ON LEFT

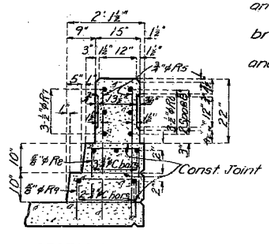




PLAN OF RAIL & CURB AT ENDS OF BRIDGE ON RIGHT



DEVELOPED ELEVATION OF END POST



SECTION A-A

534

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240

IN ARMSTRONG

PROJECT NO. FAGM 331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY

NO CONSTRUCTION CHANGES

FINISHED

K-962

Designed Feb. 1941 by J.C.S.
Drawn Mar. 1941 by C.S.A.
Traced Mar. 1941 by R.M.S.
Checked Apr. 1941 by F.A.C.

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

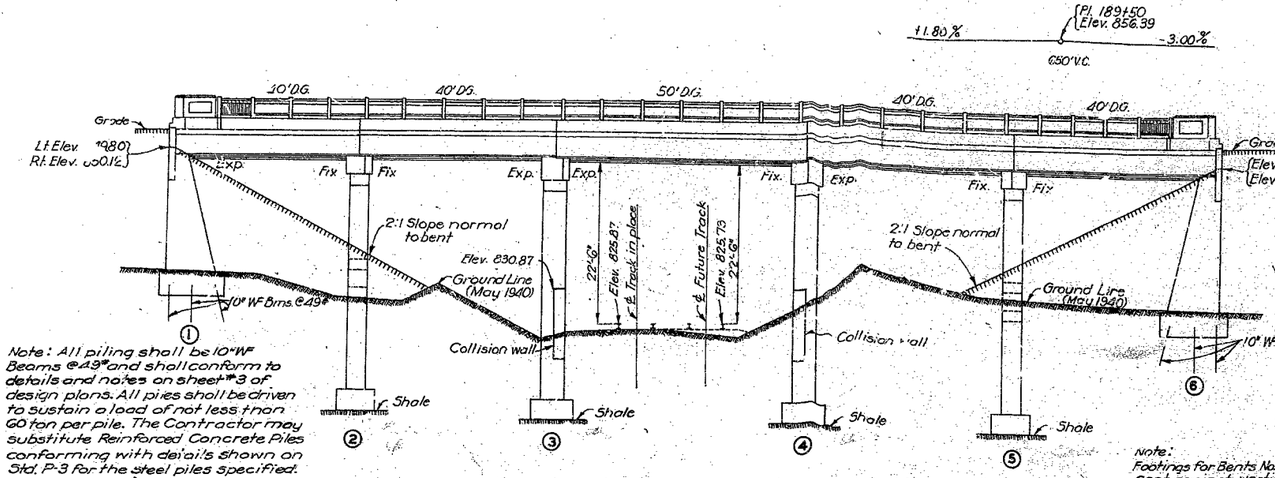
Sheet No. 11 of 11

Revised 2-28-42.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	(F.3)	19		

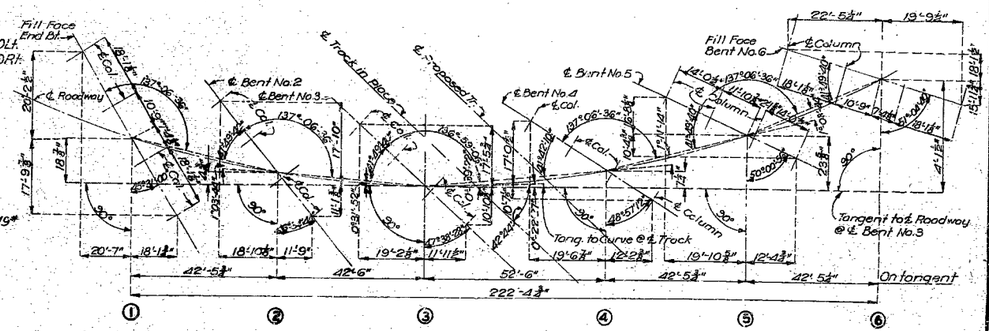
FINAL PLANS



GENERAL ELEVATION

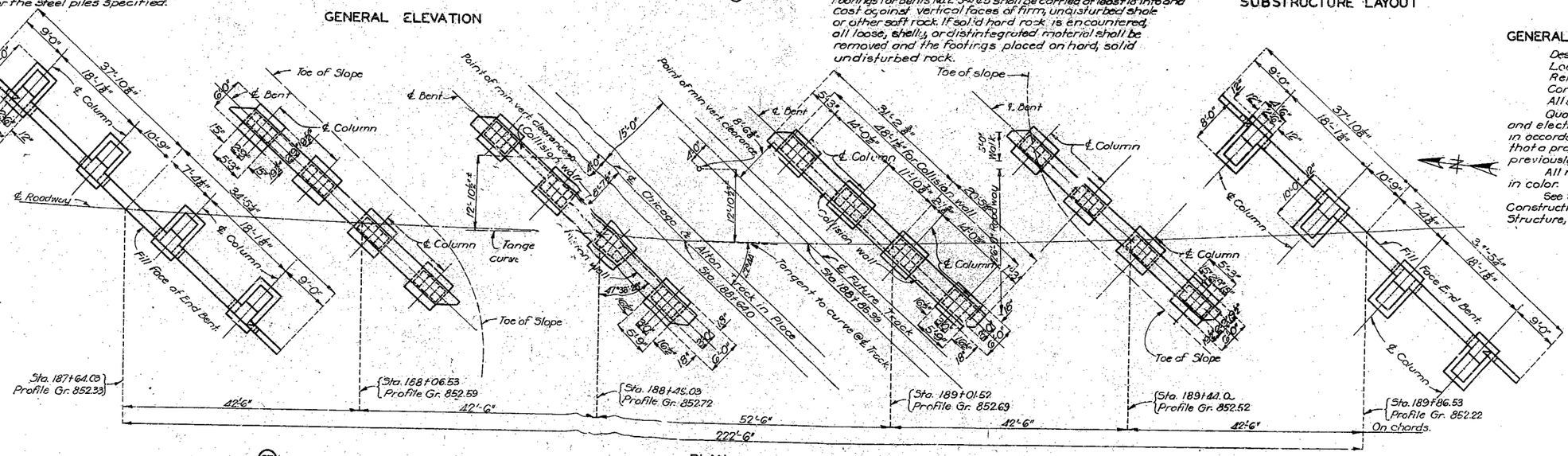
Note: All piling shall be 10"WF Beams @49# and shall conform to details and notes on sheet #3 of design plans. All piles shall be driven to sustain a load of not less than 60 ton per pile. The Contractor may substitute Reinforced Concrete Piles conforming with details shown on Std. P-3 for the steel piles specified.

Note: Bents cannot be accurately located from reference point on the tangent by the conventional survey methods based on 100' chords.



SUBSTRUCTURE LAYOUT

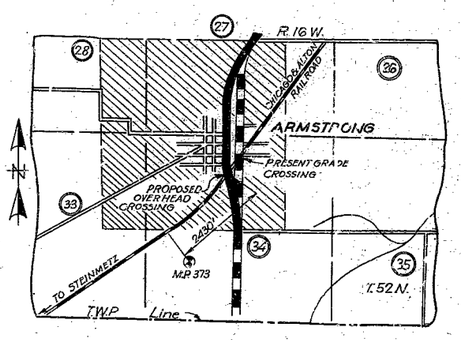
Note:
Footings for Bents No. 2-3-4 & 5 shall be carried at least 18" into and cast against vertical faces of firm, undisturbed shale or other soft rock. If solid hard rock is encountered, all loose, shelly, or disintegrated material shall be removed and the footings placed on hard, solid undisturbed rock.



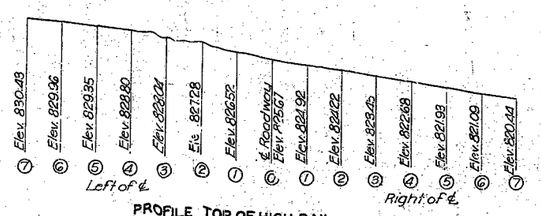
PLAN

GENERAL NOTES:-

Design Specifications A.A.S.H.O. 1939
Loading H-20
Reinforcing Steel Stress 18,000 #/sq. in.
Concrete Class "B" 900 #/sq. in.
All concrete shall be Class "B"
Qualification of all welding operators and electrodes for welding will be required in accordance with Specifications except that a proper certification of electrodes previously qualified will be acceptable.
All rubber compound shall be gray in color.
See Special Provisions relative to Construction Clearances, Excavation for Structure, Structural Steel Handrail, etc.



LOCATION SKETCH



PROFILE TOP OF HIGH RAIL

Note: This drawing is not to scale. Follow dimensions

Curve Data.
P.I. Sta. 188+65.7
Δ = 14°48' Lt.
D = 2°30'
R = 2292.01'
T = 297.7'
L = 592.0
S.E. = 0.0255' per Ft.

Designed Feb. 1941 by J.C.S
Drawn Feb. 1941 by C.S.A
Traced Feb. 1941 by C.N.S
Checked Feb. 1941 by N.W.R.

FINAL QUANTITIES

Item		Substr.	Superstr.	Total
Class I Excavation for Structures	Cu. Yds.	994.9		994.9
Class "B" Concrete	Cu. Yds.	534.5	438.7	973.2
Class I Exc. below Plan Elev.	Cu. Yds.	27.0		27.0
Reinforcing Steel	Lbs.	48,270	107,650	155,920
Steel Piles in Place	Lin. Ft.	895		895
Gray Iron Alloy Castings	Lbs.		4860	4860
22" Structural Steel Handrail	Lin. Ft.		209	209
34" Structural Steel Handrail	Lin. Ft.		221	221

B.M. Elev. 827.97 - N. & W. in root 26" Locust 275' Lt. Sta. 188+45

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240 FINISHED

IN ARMSTRONG

PROJECT NO. FAGM 331-E(1)(R.3) STA. 187+64.03

HOWARD COUNTY

SUBMITTED BY M. R. Sack BRIDGE ENGINEER DATE 4/15/41 FINISHED

APPROVED BY C. W. Brown CHIEF ENGINEER DATE 4/15/41 FINISHED

STD. P-3
STD. C-110 R.2
K-962

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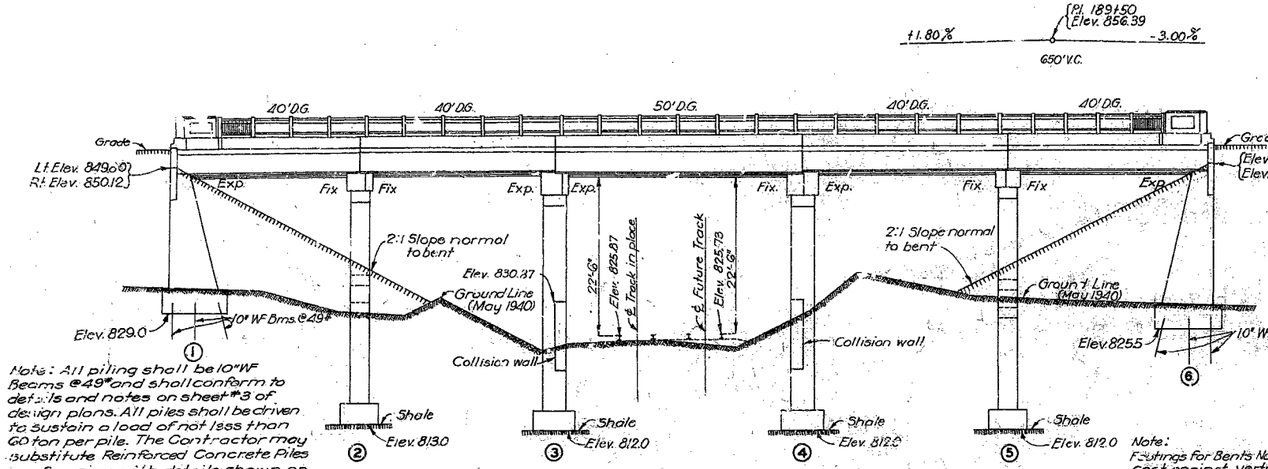
Sheet No. 11 of 7

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

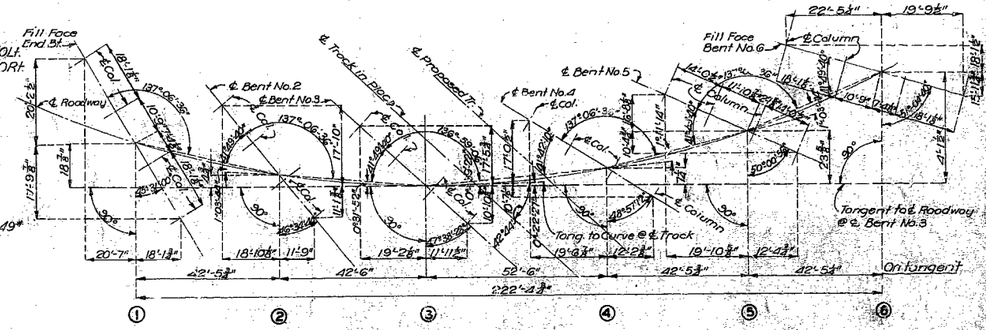
FED. ROAD DIST. NO.	STATE	FED. AID P.O.J. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (R3)	19		



Note: All piling shall be 10" WF Beams @ 49" and shall conform to details and notes on sheet #3 of design plans. All piles shall be driven to sustain a load of not less than 60 ton per pile. The Contractor may substitute Reinforced Concrete Piles conforming with details shown on Std. P-3 for the steel piles specified.

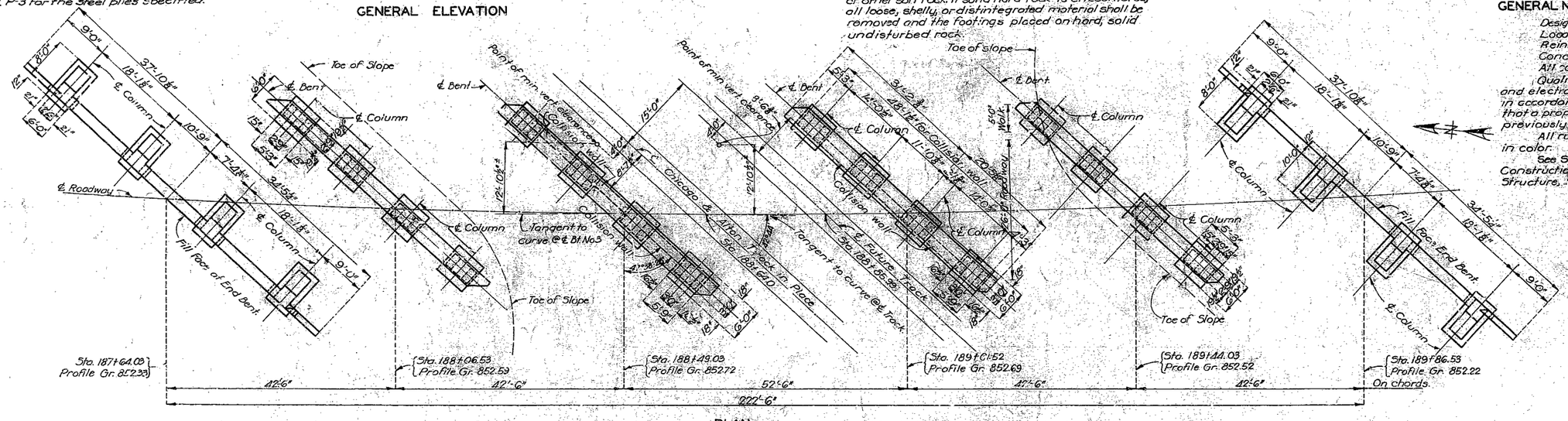
GENERAL ELEVATION

Note: Bents cannot be accurately located from reference point on the tangent by the conventional survey methods based on 100' chords.



SUBSTRUCTURE LAYOUT

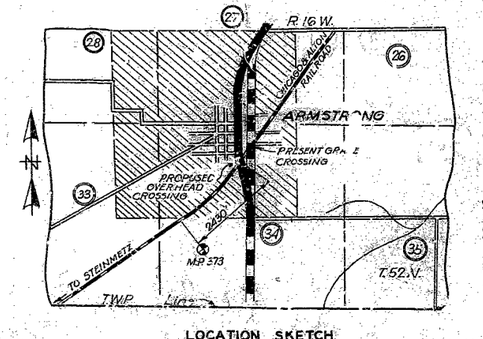
Note:
Footings for Bents No. 2-3-4 & 5 shall be carried at least 18" into and cast against vertical faces of firm, undisturbed shale or other soft rock. If solid hard rock is encountered, all loose, shelly, or disintegrated material shall be removed and the footings placed on hard, solid undisturbed rock.



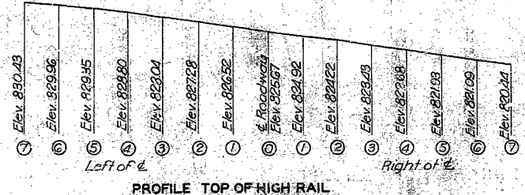
PLAN

GENERAL NOTES-

Design Specifications A.A.S.H.O. 1939.
Loading H-15
Reinforcing Steel Stress 18,000 #/sq. in.
Concrete Class "B" 900 #/sq. in.
All concrete shall be Class "B".
Qualification of all welding operators and electrodes for welding will be required in accordance with Specifications except that a proper certification of electrodes previously qualified will be acceptable.
All rubber compound shall be gray in color.
See Special Provisions relative to Construction Clearances, Excavation for Structure, "Structural Steel Handrail" etc.



LOCATION SKETCH



PROFILE TOP OF HIGH RAIL

Note: This drawing is not to scale. Follow dimensions

Curve Data.
P.I. Sta. 188+65.7
Δ = 14°48' Lt.
D = 2°30'
R = 2292.01'
T = 297.7'
L = 592.0
S.E. = 0.0.5" per. ft.

Designed Feb. 1941 by J.C.S
Drawn Feb. 1941 by C.S.A
Traced Feb. 1941 by C.N.S
Checked Feb. 1941 by N.N.R.

ESTIMATED QUANTITIES

Item		Substr.	Superstr.	Total
Class I Excavation for Structures	Cu. Yds.	930		930
Class "B" Concrete	Cu. Yds.	531.8	438.7	970.5
Reinforcing Steel	Lbs.	47,770	107,650	155,420
Steel Piles in Place	Lin. Ft.	880		880
Gray Iron Alloy Castings	Lbs.		4860	4860
22" Structural Steel Handrail	Lin. Ft.		209	209
34" Structural Steel Handrail	Lin. Ft.		221	221

B.M. Elev. 827.37 - N. & W. in root 26" Locust 275' Lt. Sta. 188+45

BRIDGE OVER C. & A. R.R. FINISHED

STATE ROAD FROM ROANOKE TO ROUTE 240

IN ARMSTRONG

PROJECT NO. FAGM 331-E(1)(R3) STA. 187+64.03

HOWARD FINISHED COUNTY

SUBMITTED BY: M. R. Sack, BRIDGE ENGINEER, DATE 4/15/41 FINISHED

APPROVED BY: C. H. Brown, CHIEF ENGINEER, DATE 4/15/41

STD. P-3
STD. C-110 R.2
K-962

SEE FINAL PLANS BROWN-LINES

Sheet No. 1 of 11

Revised 2-25-42

425

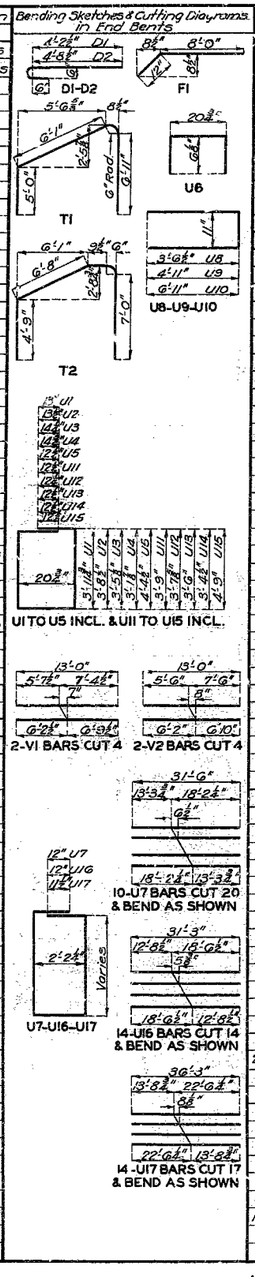
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
—					
5	MO.	FAGM331-E(1) (R3)	19		

COMPLETE BILL OF REINFORCING STEEL

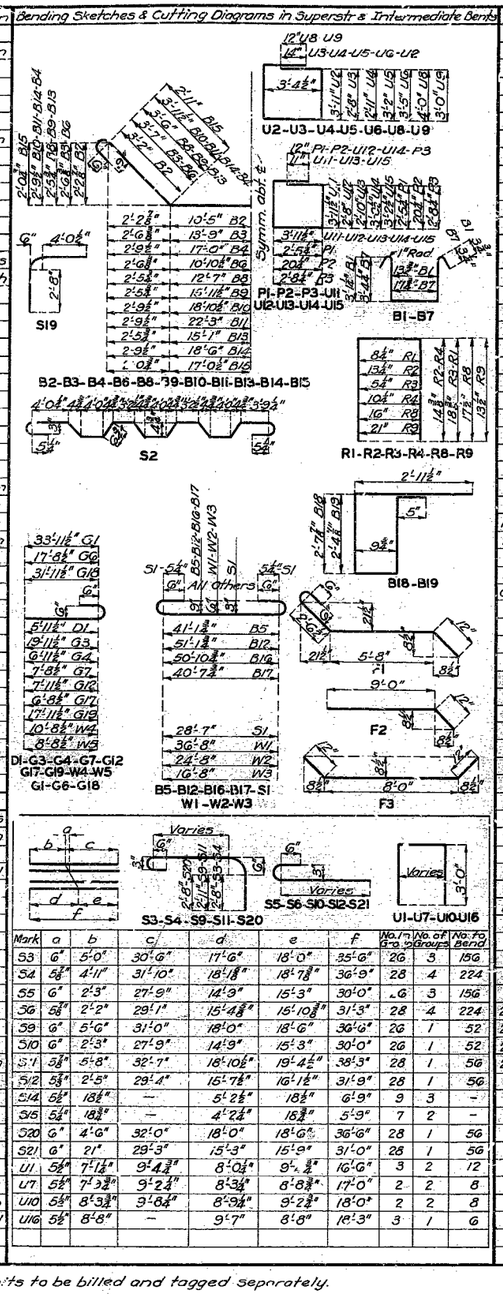
No.	Size	Length	Mark	Location
End Bent No. 1				
40	⅝"ø	5'-6"	D1	Footings
16	¾"ø	9'-0"	F1	Columns
14	¾"ø	4'-3"	H1	Wing
1	⅝"ø	6'-0"	H2	"
1	⅝"ø	5'-0"	H3	"
3	¾"ø	26'-0"	H4	"
3	¾"ø	15'-9"	H5	"
1	¾"ø	17'-3"	H6	Beam
1	¾"ø	9'-9"	H7	"
6	¾"ø	21'-0"	H8	"
9	⅝"ø	20'-6"	H9	"
4	⅝"ø	29'-6"	H10	"
6	⅝"ø	10'-6"	H11	"
2	⅝"ø	16'-0"	H12	"
2	⅝"ø	12'-0"	H13	"
3	1"ø	16'-3"	H14	"
5	1"ø	17'-9"	H15	"
13	1"ø	21'-6"	H16	"
2	¾"ø	19'-0"	T1	Wing
2	¾"ø	20'-0"	T2	"
15	⅝"ø	12'-6"	U1	Beam
8	⅝"ø	12'-0"	U2	"
9	½"ø	11'-6"	U3	"
7	½"ø	11'-0"	U4	"
6	½"ø	13'-3"	U5	"
17	½"ø	2'-9"	U6	"
20	⅝"ø	31'-6"	U7	Column
20	¾"ø	8'-0"	U8	Footings
16	¾"ø	10'-3"	U9	"
2	¾"ø	13'-0"	V1	Wing
2	¾"ø	13'-0"	V2	"
10	¾"ø	15'-9"	V3	Column
10	¾"ø	15'-6"	V4	"
10	¾"ø	15'-3"	V5	"
16	½"ø	11'-0"	V6	"
10	¾"ø	16'-3"	V7	"
End Bent No. 6				
40	⅝"ø	6'-0"	D2	Footing
16	¾"ø	9'-0"	F1	Column
15	¾"ø	14'-3"	H1	Wing
1	⅝"ø	5'-9"	H2	"
1	⅝"ø	6'-0"	H3	"
3	¾"ø	27'-0"	H4	"
3	¾"ø	14'-6"	H5	"
1	¾"ø	21'-0"	H6	Beam
1	¾"ø	7'-3"	H7	"
6	¾"ø	21'-3"	H8	"
9	⅝"ø	21'-0"	H9	"
4	⅝"ø	30'-3"	H10	"
6	⅝"ø	10'-6"	H11	"
2	⅝"ø	9'-6"	H12	"
4	1"ø	18'-6"	H13	"
5	1"ø	20'-0"	H14	"
12	1"ø	22'-0"	H15	"
2	¾"ø	19'-0"	T1	Wing
2	¾"ø	20'-0"	T2	"
16	½"ø	2'-9"	U6	Beam
20	¾"ø	8'-0"	U8	Footing
8	¾"ø	10'-9"	U9	"
8	¾"ø	14'-9"	U10	"
15	⅝"ø	12'-0"	U11	Beam
10	½"ø	11'-9"	U12	"
9	½"ø	11'-6"	U13	"
8	½"ø	11'-3"	U14	"
5	½"ø	14'-0"	U15	"

Bending Sketches & Cutting Diagrams in End Bents



No.	Size	Length	Mark	Location
End Bent No. 6 (Cont'd.)				
14	½"ø	31'-3"	U16	Column
18	½"ø	36'-3"	U17	"
2	⅝"ø	13'-0"	V1	Wing
2	¾"ø	13'-0"	V2	"
10	¾"ø	19'-9"	V3	Column
10	¾"ø	18'-3"	V4	"
20	¾"ø	19'-0"	V5	"
20	¾"ø	14'-0"	V6	"
Int. Bents No. 2 & 5				
64	1"ø	7'-3"	D1	Footings
8	¾"ø	10'-6"	F1	Haunch
24	¾"ø	10'-0"	F2	"
72	1"ø	10'-0"	F3	"
10	1"ø	35'-3"	G1	Beam
5	1"ø	12'-0"	G2	"
14	1"ø	21'-3"	G3	"
10	⅝"ø	8'-3"	G4	"
9	1"ø	29'-9"	G5	"
5	1"ø	19'-0"	G6	"
5	1"ø	9'-0"	G7	"
8	¾"ø	26'-6"	G8	"
9	1"ø	16'-6"	G9	"
30	1"ø	16'-6"	G10	Tie Beam
9	1"ø	17'-9"	G11	Beam
236	¾"ø	10'-9"	P1	Column
60	¾"ø	7'-9"	P2	Tie Beam
6	½"ø	16'-6"	U1	Beam
9	½"ø	15'-9"	U2	"
47	½"ø	13'-3"	U3	"
17	½"ø	13'-9"	U4	"
16	½"ø	14'-3"	U5	"
10	½"ø	14'-9"	U6	"
4	½"ø	17'-0"	U7	"
9	½"ø	15'-9"	U8	"
25	½"ø	13'-9"	U9	"
32	1"ø	32'-9"	V1	Column
32	1"ø	34'-0"	V2	"
Int. Bents No. 3 & 4				
64	1"ø	7'-3"	D1	Footings
8	¾"ø	10'-6"	F1	Haunch
24	¾"ø	10'-0"	F2	"
16	⅝"ø	25'-9"	F4	Coll. Wall
80	¾"ø	25'-6"	F5	" "
12	1"ø	9'-3"	G12	Beam
12	1"ø	14'-6"	G13	"
20	1"ø	18'-0"	G14	"
20	1"ø	16'-0"	G15	"
10	⅝"ø	8'-0"	G17	"
10	1"ø	33'-3"	G18	"
18	1"ø	13'-3"	G19	"
8	⅝"ø	26'-6"	G20	"
240	¼"ø	11'-9"	P3	Column
4	½"ø	18'-0"	U10	Beam
18	½"ø	16'-9"	U11	"
26	½"ø	14'-3"	U12	"
38	½"ø	14'-6"	U13	"
30	½"ø	15'-0"	U14	"
24	½"ø	15'-3"	U15	"
3	½"ø	18'-3"	U16	"
64	1"ø	33'-9"	V3	Column
112	⅝"ø	9'-9"	V4	Coll. Wall

Bending Sketches & Cutting Diagrams in Superstr. & Intermediate Bents



Mark	a	b	c	d	e	f	No. in Group	No. of Groups	No. to Bend
S3	6"	5'-0"	30'-6"	17'-6"	18'-0"	35'-6"	26	3	156
S4	5⅝"	4'-11"	31'-10"	18'-1⅞"	18'-7⅞"	36'-9"	28	4	224
S5	6"	2'-3"	27'-9"	14'-3"	15'-3"	30'-0"	6	3	156
S6	5⅝"	2'-2"	29'-1"	15'-4⅞"	15'-10⅜"	31'-3"	28	4	224
S9	6"	5'-6"	31'-0"	18'-0"	18'-6"	36'-6"	26	1	52
S10	6"	2'-3"	27'-9"	14'-9"	15'-3"	30'-0"	26	1	52
S11	5⅝"	5'-8"	32'-7"	18'-10⅝"	19'-4½"	38'-3"	28	1	56
S12	5⅝"	2'-5"	29'-4"	16'-7⅛"	16'-11½"	31'-9"	28	1	56
S14	5⅝"	18⅛"	—	5'-2½"	18½"	6'-9"	3	3	—
S15	5⅝"	18⅛"	—	4'-2½"	18⅜"	5'-9"	7	2	—
S20	6"	4'-6"	32'-0"	18'-0"	18'-6"	36'-6"	28	1	56
S21	6"	21"	29'-3"	15'-3"	15'-9"	31'-0"	28	1	56
U1	5⅝"	7'-1½"	9'-4¾"	8'-0½"	9'-1½"	16'-6"	3	2	12
U7	5⅝"	7'-3⅜"	9'-2¼"	8'-3½"	8'-8¾"	17'-0"	2	2	8
U10	5⅝"	8'-3⅜"	9'-8¼"	8'-9½"	9'-2½"	18'-0"	2	2	8
U16	5⅝"	8'-8"	—	9'-7"	8'-8"	18'-3"	3	1	6

No.	Size	Length	Mark	Location
Superstructure				
134	⅝"ø	30'-3"	S1	Slab
63	⅝"ø	31'-3"	S2	"
78	⅝"ø	35'-6"	S3	"
112	⅝"ø	36'-9"	S4	"
78	⅝"ø	20'-0"	S5	"
112	⅝"ø	31'-3"	S6	"
400	⅝"ø	22'-6"	S7	"
100	⅝"ø	27'-6"	S8	"
26	⅝"ø	36'-6"	S9	"
26	⅝"ø	30'-0"	S10	"
28	⅝"ø	38'-3"	S11	"
28	⅝"ø	31'-9"	S12	"
388	¾"ø	5'-6"	S13	Walk
27	⅝"ø	6'-9"	S14	"
14	⅝"ø	5'-9"	S15	"
40	½"ø	22'-0"	S16	"
10	½"ø	27'-0"	S17	"
24	⅝"ø	7'-6"	S18	Flare
24	⅝"ø	7'-6"	S19	"
28	⅝"ø	36'-6"	S20	Slab
28	⅝"ø	31'-0"	S21	"
40	½"ø	39'-3"	W1	Web
10	½"ø	27'-3"	W2	"
20	½"ø	19'-3"	W3	"
40	⅝"ø	12'-0"	W4	"
10	½"ø	10'-0"	W5	"
140	½"ø	2'-3"	W6	"
210	½"ø	2'-6"	W7	"
24	⅝"ø	10'-0"	W8	"
680	½"ø	8'-0"	B1	30' SPAN Girders 1-2-3-4
24	1¼"ø	30'-6"	B2	40' SPAN Girders 1-2-3
24	1¼"	38'-0"	B3	30' SPAN Girders 1-2-3
34	1¼"ø	45'-3"	B4	50' SPAN Girders 1-2-3-4
64	1¼"ø	44'-6"	B5	40' SPAN Girders 1-2-3-4
8	1¼"ø	32'-3"	B6	40' SPAN Girder 4
194	½"ø	8'-9"	B7	30' SPAN Girders 1-2-3-4
4	1¼"ø	35'-6"	B8	50' SPAN Girder 4
3	1¼"ø	42'-3"	B9	50' SPAN Girder 3
2	1¼"ø	49'-0"	B10	50' SPAN Girder 2
12	1¼"ø	55'-9"	B11	50' SPAN Girders 1-2-3-4
20	1¼"ø	54'-6"	B12	50' SPAN Girders 1-2-3-4
6	1¼"ø	40'-6"	B13	50' SPAN Girder 1-2-3
4	1¼"ø	48'-3"	B14	50' SPAN Girder 1-2-3
2	1¼"ø	43'-3"	B15	30' SPAN SW Girder #5
3	1¼"ø	54'-3"	B16	45' SPAN SW Girder #5
12	1¼"ø	44'-0"	B17	30' SPAN SW Girder #5
40	½"ø	9'-6"	B18	40' SPAN S.W. Girder #5
128	½"ø	9'-0"	B19	40' SPAN S.W. Girder #5
84	¾"ø	22'-9"	C1	Curbs
26	¾"ø	27'-9"	C2	"
10	¾"ø	24'-9"	C3	"
209	⅝"ø	3'-9"	R1	Curb
209	⅝"ø	3'-6"	R2	"
223	⅝"ø	3'-6"	R3	"
223	¾"ø	3'-3"	R4	"
28	¾"ø	3'-9"	R5	Post
6	½"ø	5'-9"	R6	"
6	½"ø	6'-9"	R7	"
16	⅝"ø	4'-3"	R8	Curb
16	⅝"ø	4'-0"	R9	"

Note: Bars in the above units to be billed and tagged separately.

Drawn Apr. 1941 by C.S.A
Traced Apr. 1941 by G.W.
Checked Apr. 1941 by N.W.R-R.A.B-R.A.C.-L.C.B.

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

Sheet No. 2 of 11.

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY

SEE FINAL PLANS FOR FINISH

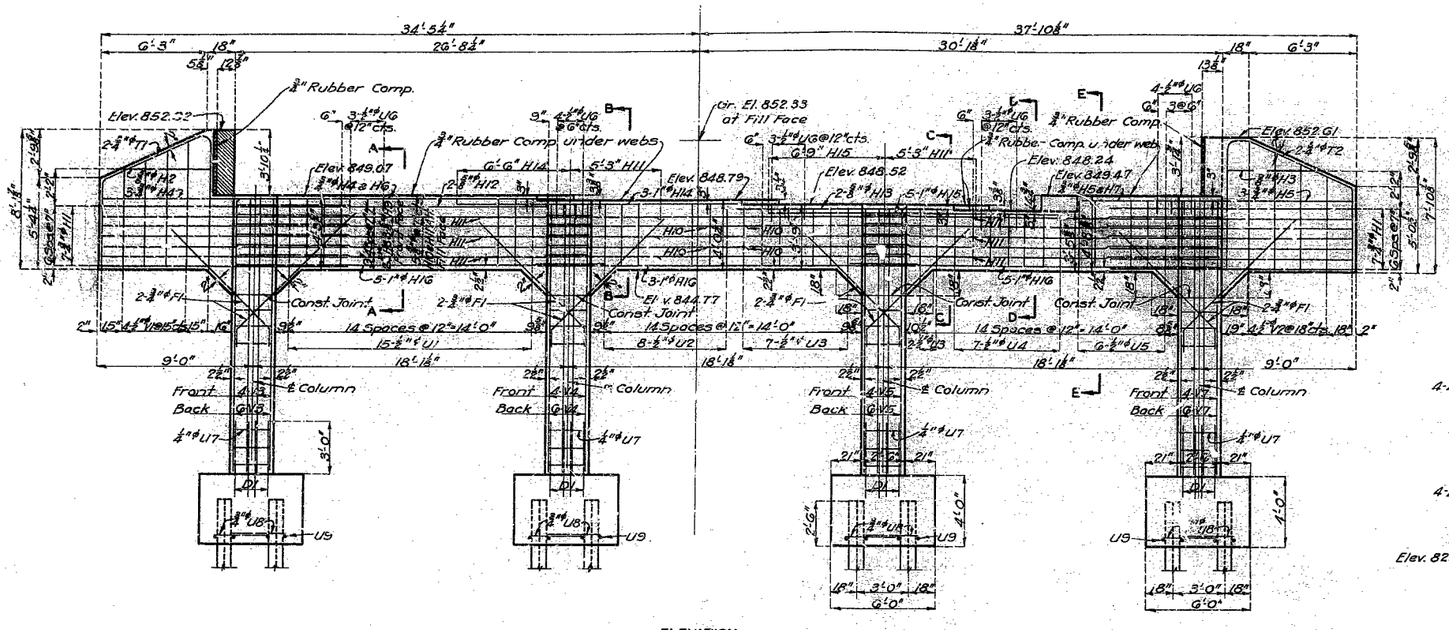
K-962

Revised 2-28-42.

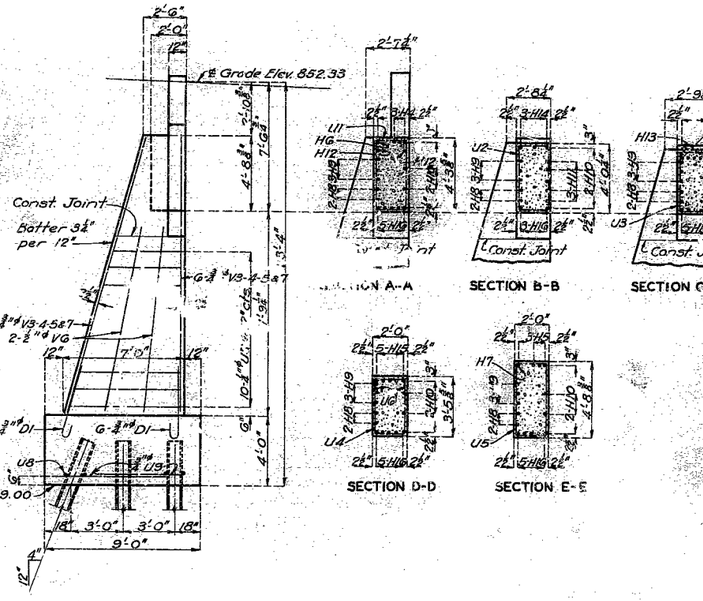
525

MISSOURI STATE HIGHWAY DEPARTMENT

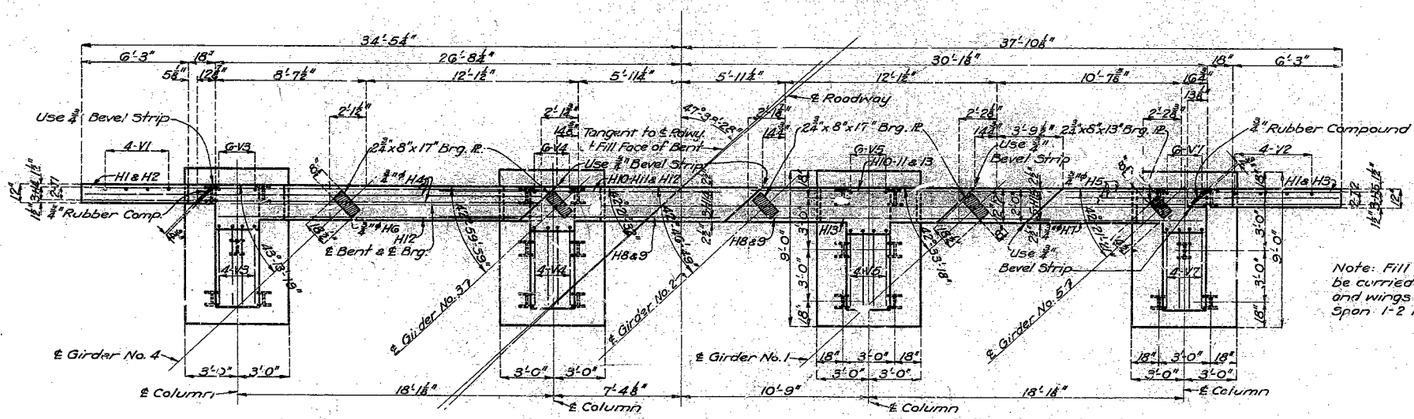
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331 (E) (R3)	19		



ELEVATION

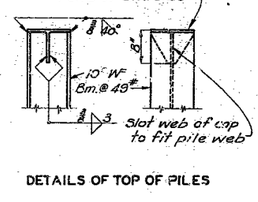


END ELEVATION

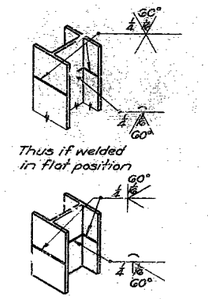


PLAN

Note: Fill at End Bent No. 1 shall not be carried above bottom of beam and wings until superstructure Span 1-2 is in place.



DETAILS OF TOP OF PILES



Thus if welded in vertical position. Top of lower section to be cut square.

BUTT SPLICE FOR STEEL PILING

DETAILS OF END BENT NO. 1

FINISHED

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240

IN ARMSTRONG

PROJECT NO. FAGM 331-E (1) (R3) STA. 187+64.03 FINISHED

HOWARD COUNTY FINISHED

SEE FINAL PLANS BROWN-LINES FINISHED

K-962

526

Designed Mar. 1941 by J.C.S.
Drawn Mar. 1941 by J.C.S.
Traced Mar. 1941 by G.W.
Checked April 1941 by R.A.B.

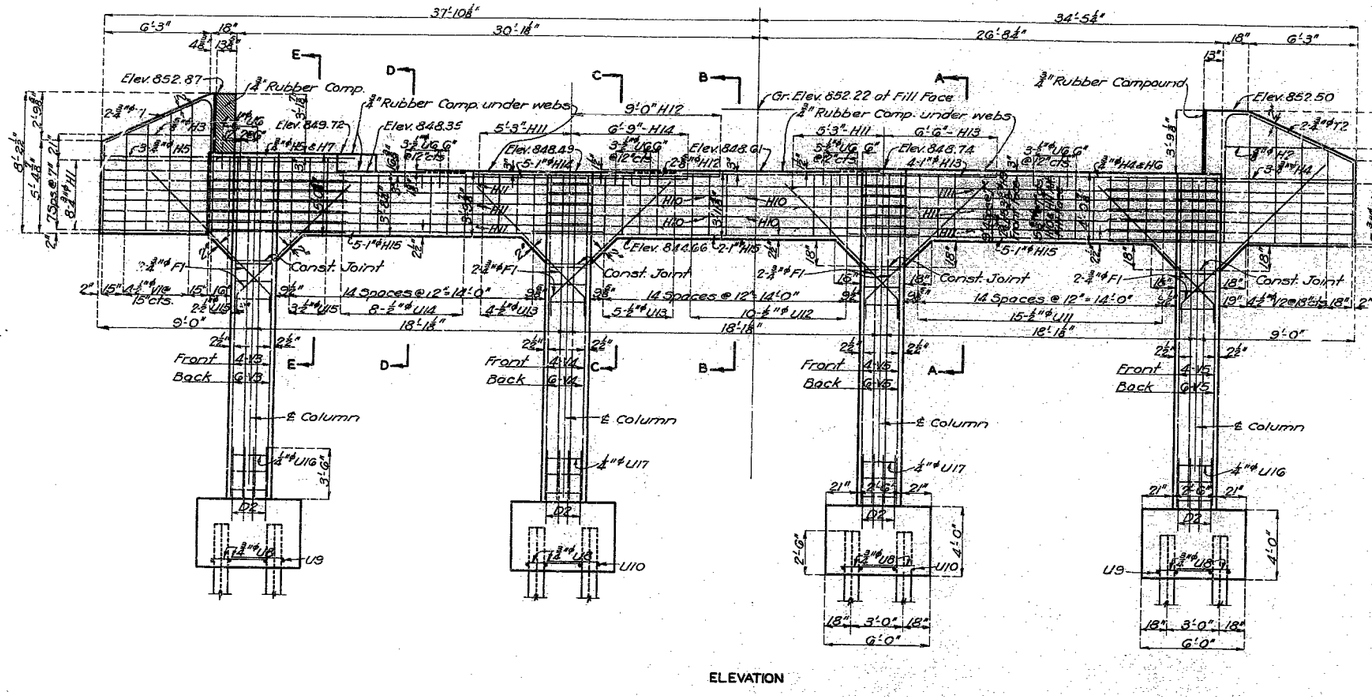
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 3 of 11.

Revised 2-28-42.

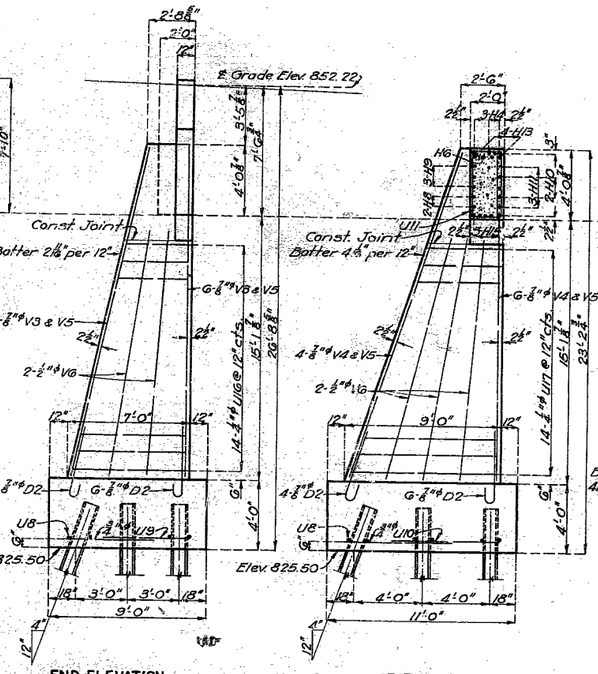
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAPAGH331-E(1)(R3)	10		

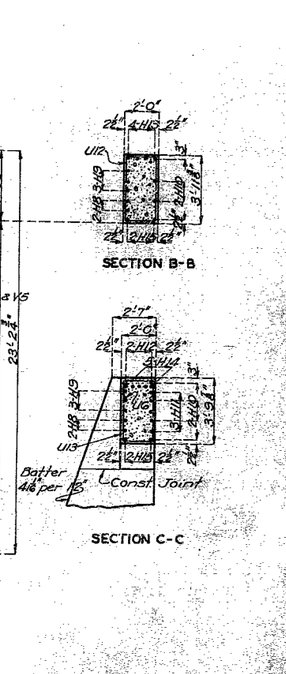


ELEVATION

PLAN



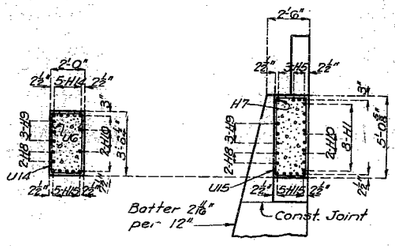
END ELEVATION



SECTION A-A

SECTION B-B

SECTION C-C



SECTION D-D

SECTION E-E

Note: Fill at End Bent No. 6 shall not be carried above bot. of beam and wings until superstructure Span 5-6 is in place.

FINISHED

BRIDGE OVER C. & A. R. R.

STATE ROAD FROM ROANOKE TO ROUTE 240

IN ARMSTRONG

PROJECT NO. FAGH 331-E(1)(R3) STA. 187+64.03 FINISHED

HOWARD FINISHED COUNTY FINISHED

SEE FINAL PLANS BROWN-LINES

K-962

DETAILS OF END BENT NO. 6

Designed Mar. 1941 by J.C.S.
Drawn Mar. 1941 by J.C.S.
Traced Apr. 1941 by G.W.
Checked April 1941 by J.C.S.

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

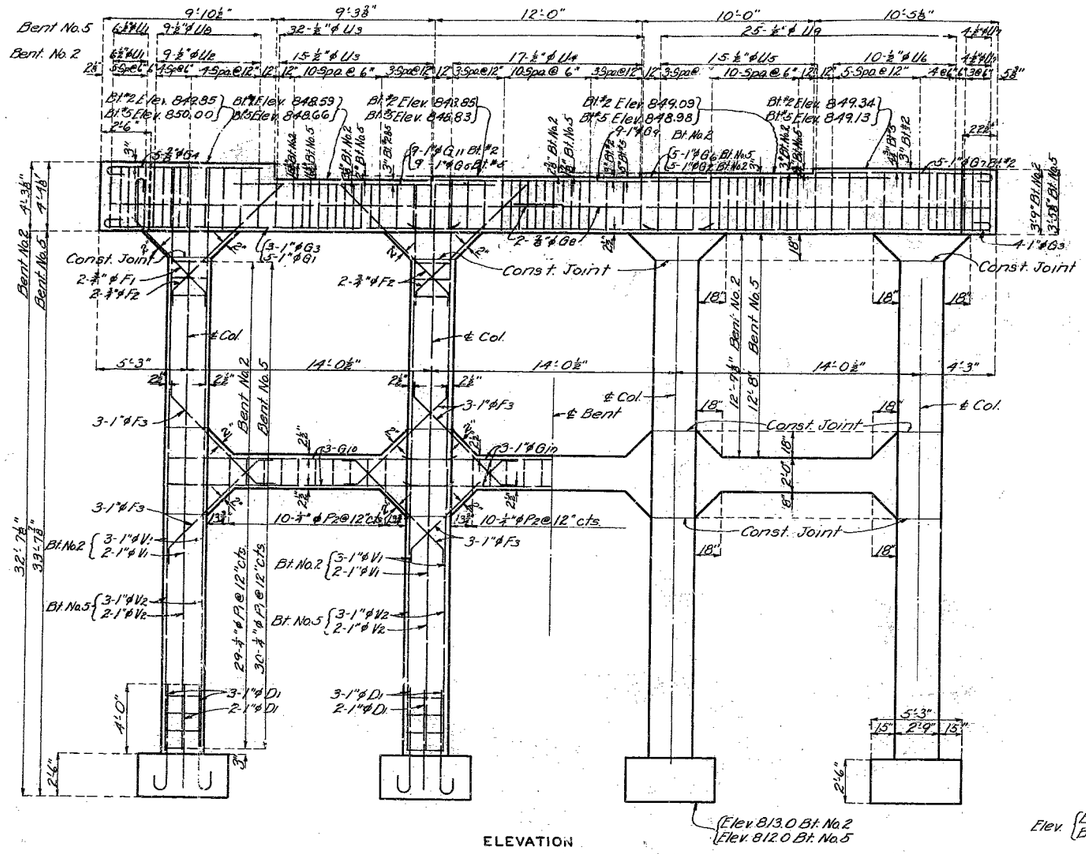
Sheet No. 4 of 11

Revised 2-28-42

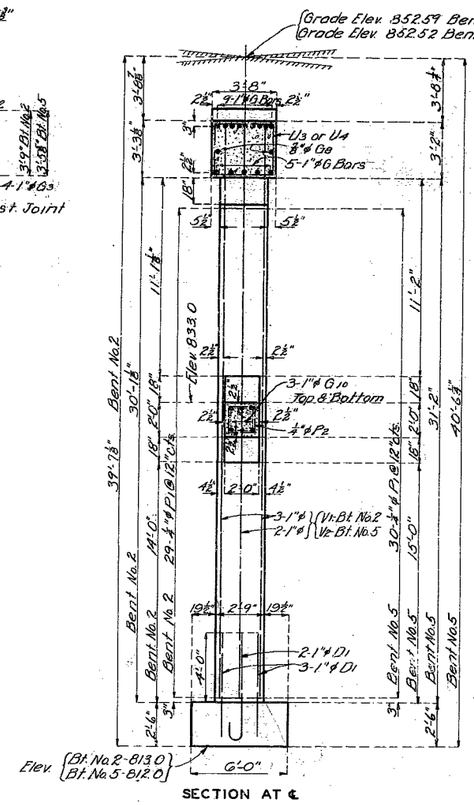
527

MISSOURI STATE HIGHWAY DEPARTMENT

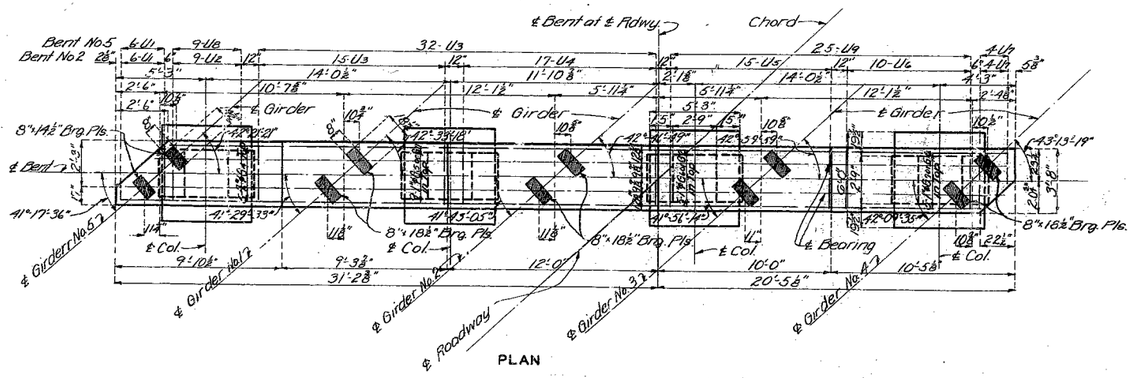
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1) (K3)	19		



ELEVATION



SECTION AT ℄



PLAN

DETAILS OF BENTS NO. 2 & 5

528

Designed Feb. 1941 by J.C.S.
Drawn Mar. 1941 by C.S.P.
Traced Mar. 1941 by R.M.S.
Checked Apr. 1941 by N.W.R.

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

FINISHED

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1) A. 187+64.03 FINISHED
HOWARD COUNTY FINISHED

SEE FINAL PLANS BROWN-LINES

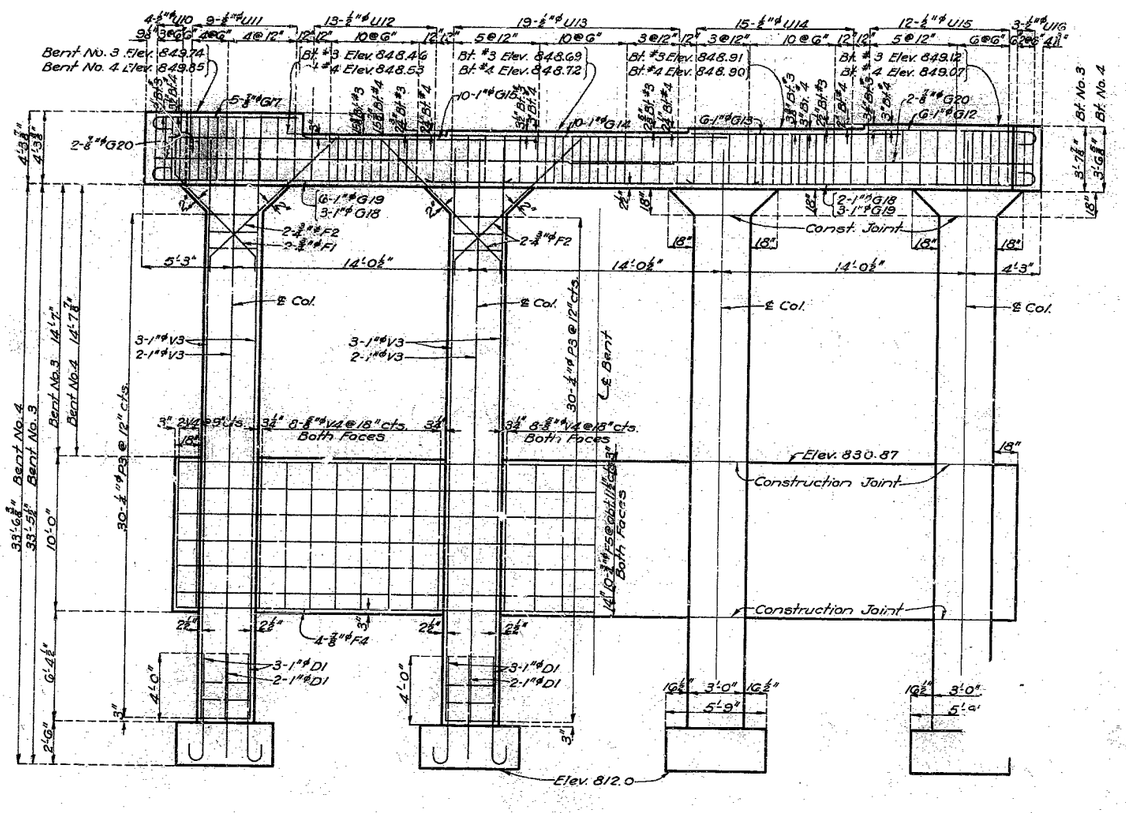
K-962

Sheet No. 5 of 11.

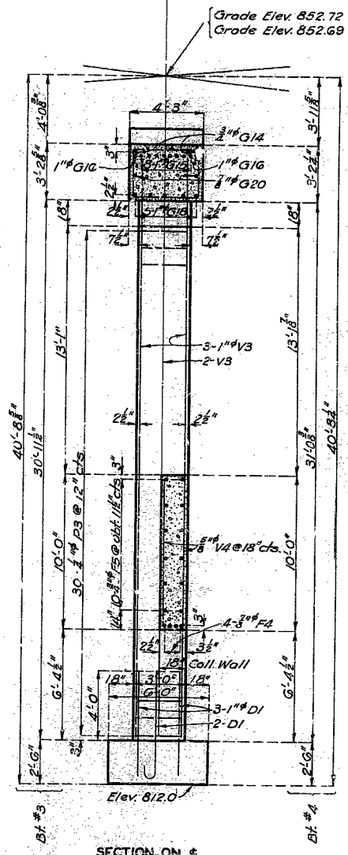
Revised 2-28-42.

MISSOURI STATE HIGHWAY DEPARTMENT

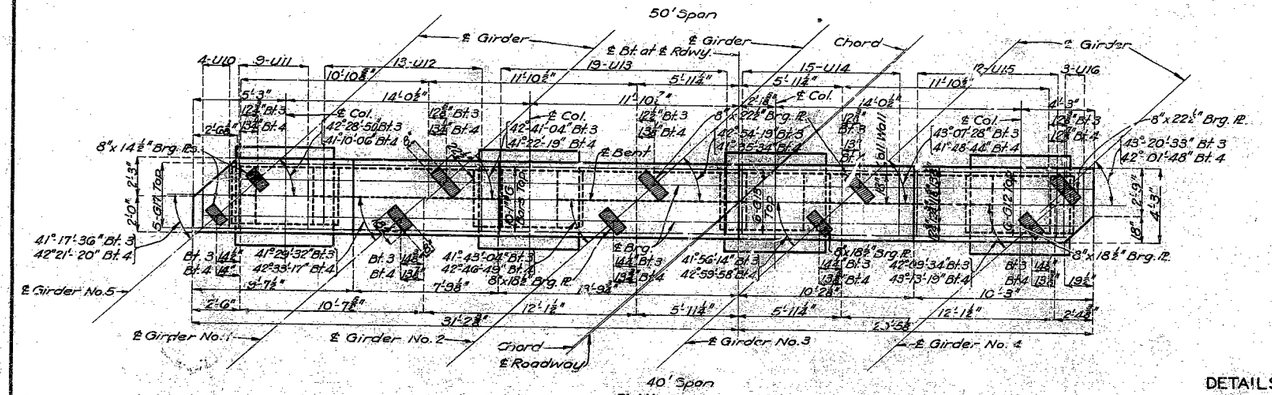
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAGM 331-E(1)(R3)	19		



ELEVATION



SECTION ON ℄



PLAN

DETAILS OF BENTS NO. 3 & 4

Designed Feb. 1941 by J.C.S.
Drawn March 1941 by C.S.A.
Traced March 1941 by G.W.
Checked April 1941 by N.W.R.

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

BRIDGE OVER C. & A. R.R.

STATE ROAD FROM ROANOKE TO ROUTE 240
IN ARMSTRONG
PROJECT NO. FAGM 331-E(1)(R3) STA. 187+64.03

HOWARD COUNTY

Sheet No. 6 of 11. SEE FINAL PLANS BROWN-LINES

K-962

Revised 2-28-42.

529

Missouri Department of Transportation
State Bridge Inspection Report

April 29, 2025
1:37:14PM

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 6009** **BRIDGE: K0962**

GENERAL STRUCTURE INFORMATION

ROUTE: MO3S
FEATURE: KSC RR
STATUS: A-OPEN
LOG MILE: 69.329
DETOUR: 22.00 MILES
NHS: NO
BUILT: 1941
REHAB:
LOCATION: S 34 T 52 R 16 W
LATITUDE: 39 15 58.97 (DMS)
LONGITUDE: 92 42 4.03 (DMS)

 # SPANS: 5
LANES ON: 2
LANES UNDER: 0
COMPASS DIRECTION: NORTH to SOUTH
DIRECTION OF TRAFFIC: 2-WAY TRAF
FUNCTIONAL CLASS: RL-MAJOR COLLECTOR
NBI OWNER: MODOT
NBI MAINTAINED: MODOT
MAINTENANCE DISTRICT: CD
MAINTENANCE COUNTY: HOWARD
SUB AREA: 7D24

PLACE CODE: 01954 ARMSTRONG CITY
LENGTH: 223 FT 0 IN
MAXIMUM SPAN: 52 FT 6 IN
APPROACH ROADWAY: 26 FT 0 IN
CURB TO CURB: 26 FT 0 IN
OUT TO OUT: 29 FT 8 IN
AADT: 1775
AADT YEAR: 2024
AADT TRUCK: 17.3%
FUTURE AADT: 2219
FUTURE AADT YEAR: 2044

BRIDGE INSPECTION INFORMATION

DATE: 06/05/2023 **RESPONSIBILITY:** DISTRICT
FREQUENCY: 24 **CALCULATED INTERVAL**:** 24
TEAM LEADER: JOE GREEN **ELEMENT:** NO
INSPECTOR 2: **INSPECTOR 4:**
INSPECTOR 3:

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

GENERAL INSPECTION COMMENTS

FRACTURE CRITICAL INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

FRACTURE CRITICAL INSPECTION COMMENTS

INDEPTH INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

INDEPTH INSPECTION COMMENTS

SPECIAL INSPECTION INFORMATION

DATE: 03/26/2024 **RESPONSIBILITY:** BRIDGEDIV **CATEGORY:** QUALITY ASSURANCE
FREQUENCY: 999 **CALCULATED INTERVAL**:** **NBI:** NO
TEAM LEADER: JESSE ELSEMAN **INSPECTOR 3:** **METHOD:** VISUAL
INSPECTOR 2: TERRY L SHUNAMON **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

SPECIAL INSPECTION COMMENTS

UNDERWATER INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

UNDERWATER INSPECTION COMMENTS

OTHER SPECIAL INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

OTHER UNDERWATER INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 6009** **BRIDGE: K0962**

STRUCTURE POSTING

APPROVED CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:**
COMMENTS:

FIELD CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:** **PROBLEM:** **PROBLEM DIRECTION:**
COMMENTS:

GENERAL COMMENTS/MAJOR RATED ITEMS

GENERAL COMMENTS: (BOWDEJ1, 03/07/2008)--(40'-40'-50'-40'-40') CONC DECK GDR SPANS

[ITEM 58] DECK: 3-SERIOUS CONDITION **COMMENTS:** (ELSEMJ, 03/28/2024)--80% SATURATION IN SPANS 1 & 3. SEVERAL AREAS COULD BENEFIT FROM REPAIR.
RATING : 06/10/2021

[ITEM 59] SUPER: 5-FAIR CONDITION **COMMENTS:** (TRAMPA, 11/08/2017)--MINOR CRACKS AND SATURATION; GDR END/DIAPH DETER;
RATING : 05/18/2001

[ITEM 60] SUB: 6-SATISFACTORY CONDITION **COMMENTS:** (MADSEJ, 09/26/2013)--MINOR SPALLING THROUGHOUT ALL UNITS
RATING : 05/18/2001

[ITEM 61] BANK/CHANNEL: N-NOT APPLIC NO WATRWAY **COMMENTS:** (BOWDEJ1, 03/22/2005)--MINOR SLOPE EROSION E. BANK
RATING : 05/18/2001

[ITEM 113] SCOUR: N-NOT APPLIC NOT WATERW **COMMENTS:**
RATING : 05/18/2001
EVALUATION TYPE :

[ITEM 71] WATERWAY ADEQUACY: NOT APPLICABLE **COMMENTS:**
RATING : 05/18/2001

[ITEM 72] APPRRDWY ALIGNMENT: 6-SATISFACTORY **COMMENTS:**
RATING : 05/18/2001

RAILING AND APPROACH PAVEMENT COMPONENTS AND RATINGS

[ITEM 36A] BRIDGE RAILING RATING: *DOESNT MEET CURRNT STND-0* ***RATING :*** *08/12/2004* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
REINFORCED CONCRETE	CURB	BOTH	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
DETERIORATION	THROUGHOUT		MODERATE	
REBAR EXPOSED	THROUGHOUT		MODERATE	

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
REINFORCED CONCRETE	SIDEWALKS	RIGHT	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
SCALING	TOP		MEDIUM	

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
STEEL	ORNAMENTAL	BOTH	

[ITEM 36B] TRANSITION RAILING RATING: *NOT PROVIDED-0* ***RATING :*** *05/18/2001* ***COMMENTS:***

[ITEM 36C] APPROACH RAILING RATING: *NOT PROVIDED-0* ***RATING :*** *11/21/2017* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	W-BEAM	ALL	(SIMPSB, 07/27/2004)--NOT STANDARD

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
COLLISION DAMAGE	THROUGHOUT		MINOR	(BOWDEJ1, 10/14/2009)--N.E. END

[ITEM 36D] RAIL END TREATMENT RATING: *NOT PROVIDED-0* ***RATING :*** *05/18/2001* ***COMMENTS:***

APPROACH PAVEMENT: *Overall condition assigned for each approach pavemenet component is shown below.

MATERIAL	CONSTRUCTION	DIRECTION	CONDITION*	COMMENTS
ASPHALT/CONCRETE	BITUMINOUS MAT/SLAB	BOTH	FAIR	

DRAINAGE, EXPANSION DEVICES, BANK/SLOPE, AND DECK PROTECTIVE COMPONENTS

DECK PROTECTIVE COMPONENTS:

SERIES TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	THICKNESS	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
MAIN SERIES-1	*WEARING SURFACE*	*ASPHALT*	*CINDER SEAL*	*.5 IN*	*2009*		*VERY GOOD*

COMMENT: (MADSEJ, 09/26/2013)--LOOKS NEW IN 2013

	DECK PROTECTION	*NOTAPPLICABLE*	*NONE*			

COMMENT:

	MEMBRANE	*NOTAPPLICABLE*	*NONE*			

COMMENT:

	SECONDARY DECK PROTECTION	*LIQUID SEALANT*	*INTERNALLY SEALED*		*2021*	*PAVON INDECK*

COMMENT:

MAIN SERIES-2	*WEARING SURFACE*	*ASPHALT*	*CINDER SEAL*		*2009*	

COMMENT:

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
DEBONDING	THROUGHOUT		MINOR	

	DECK PROTECTION	*NOTAPPLICABLE*	*NONE*			

COMMENT:

	MEMBRANE	*NOTAPPLICABLE*	*NONE*			

COMMENT:

	SECONDARY DECK PROTECTION	*LIQUID SEALANT*	*INTERNALLY SEALED*		*2021*	*PAVON INDECK*

COMMENT:

DRAINAGE COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
DRAINAGE	*STEEL*	*MODOT PIPE DRAIN*		

COUNTY: HOWARD DISTRICT: CD CLASS: STATBR FED-ID: 6009 BRIDGE: K0962

EXPANSION DEVICE COMPONENTS:

SUB UNIT-#	SUB LABEL	COMPONENT	MATERIAL	CONSTRUCTION	GAP	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION

COMMENT:

BANK/SLOPE PROTECTION COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS

DECK COMPONENTS

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-1	DECK	REINFORCED CONCRETE	CAST-IN-PLACE	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	AT JOINTS		MODERATE		
MAP CRACKS	RANDOM		MANY		
PATCHES	THROUGHOUT		MANY		
SATURATION	THROUGHOUT		HEAVY	80 %	
SCALING	THROUGHOUT		LIGHT		(SIMPSB, 07/27/2004)--UNDERSIDE

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION
MAIN SPANS-2	DECK	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	AT JOINTS		MODERATE		
MAP CRACKS	RANDOM		MANY		
PATCHES	THROUGHOUT		MANY		
SATURATION	THROUGHOUT		HEAVY	70 %	
SCALING	THROUGHOUT		MODERATE		

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION
MAIN SPANS-3	DECK	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	AT JOINTS		MODERATE		
PATCHES	THROUGHOUT		MANY		
SATURATION	THROUGHOUT		HEAVY	70 %	
SCALING	THROUGHOUT		LIGHT		
TRANSVERSE CRACKS	RANDOM		FEW		

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION
MAIN SPANS-4	DECK	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	AT JOINTS		MODERATE		
PATCHES	THROUGHOUT		MANY		
SATURATION	THROUGHOUT		MODERATE	25 %	
SCALING	THROUGHOUT		LIGHT		
TRANSVERSE CRACKS	RANDOM		FEW		

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION
MAIN SPANS-5	DECK	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	AT JOINTS		MODERATE		(ZENTZA1, 06/03/2010)--ALL JOINTS LEAKING
PATCHES	THROUGHOUT		MANY		
SATURATION	THROUGHOUT		MODERATE	30 %	

SCALING	THROUGHOUT	LIGHT
TRANSVERSE CRACKS	RANDOM	FEW

SUPERSTRUCTURE COMPONENTS

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
MAIN SERIES-1	SIMPLE SPAN	REINFORCED CONCRETE	DECK GIR		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-1	NON-COMPOSITE	42 FT 6 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DELAMINATION	GIRDERS		MINOR		
DETERIORATION	DIAPHRAGMS		MODERATE		(ZENTZA1, 06/03/2010)--DIAPHRAGMS UNDER SIDEWALK BREAKING UP
DETERIORATION	OVERHANGS		MODERATE		
LEACHING	THROUGHOUT		LIGHT		
REBAR EXPOSED	DIAPHRAGMS		MINOR		
SPALLS	GDR1		FEW		
VERTICAL CRACKS	RANDOM		FEW		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-2	NON-COMPOSITE	42 FT 6 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
COLLISION DAMAGE	GIRDERS		MINOR		(ELSEMJ, 03/28/2024)--GDR #5 NEAR BENT 4
DELAMINATION	GIRDERS		MODERATE		(ELSEMJ, 03/28/2024)--GDR #2 NEAR BENT 4
DETERIORATION	DIAPHRAGMS		MODERATE		
DETERIORATION	OVERHANGS		MODERATE		
DIAGONAL CRACKS	ENDS		FINE		
LEACHING	THROUGHOUT		LIGHT		
SPALLS	ENDS		FEW		
SPALLS	RANDOM		MINOR		(MADSEJ, 09/26/2013)--DECK SHIFTING ON SKEW 2 IN., CAUSING SPALL @ BT. #2 GIRDER ANI NORTH ABUTMENT
VERTICAL CRACKS	RANDOM		FEW		

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION
MAIN SERIES-2	SIMPLE SPAN	REINFORCED CONCRETE	DECK GIR

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-3	NON-COMPOSITE	52 FT 6 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	DIAPHRAGMS		MODERATE		
DETERIORATION	OVERHANGS		MODERATE		
DIAGONAL CRACKS	ENDS		FINE		
HORIZONTAL CRACKS	EXTERIOR GIRDERS		FEW		
LEACHING	THROUGHOUT		LIGHT		
SPALLS	ENDS		FEW		
VERTICAL CRACKS	RANDOM		FEW		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-4	NON-COMPOSITE	42 FT 6 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	DIAPHRAGMS		MODERATE		
DETERIORATION	ENDS		MODERATE		
DIAGONAL CRACKS	ENDS		FINE		
SPALLS	ENDS		FEW		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-5	NON-COMPOSITE	42 FT 6 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	DIAPHRAGMS		MODERATE		
DETERIORATION	ENDS		MODERATE		
DIAGONAL CRACKS	ENDS		FINE		
SPALLS	ENDS		FEW		

SUBSTRUCTURE COMPONENTS

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
ABUTMENT-1	*RA-42 DEGREES*	*55 FT 8 IN*	*REINFORCED CONCRETE*	*OPEN CONCRETE*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DETERIORATION	THROUGHOUT		MODERATE		
EFFLORESCENCE	THROUGHOUT		MINOR		

COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REBAR EXPOSED	COLUMN		FEW		
SPALLS	COLUMN		FEW		

FOOTING	REINFORCED CONCRETE	H-PILE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
STRAIGHT WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
PACK RUST	THROUGHOUT		HEAVY		

BENT-2	*RA-42 DEGREES*	*51 FT 7 IN*	*REINFORCED CONCRETE*	*MULTIPLE COLUMN*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REBAR EXPOSED	THROUGHOUT		MINOR		
REBAR SECTION LOSS	BOTTOM		INITIAL		
SPALLS	THROUGHOUT		MODERATE		

COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REBAR EXPOSED	RANDOM		FEW		(ELSEMJ, 03/28/2024)--2 STURRIPS RUSTED IN TWO
RUST STAINS	COLUMN		FEW		
SPALLS	COLUMN		MODERATE		
VERTICAL CRACKS	COLUMN		MEDIUM		

FOOTING	REINFORCED CONCRETE	SPREAD

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
TIE BEAM	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
PACK RUST	THROUGHOUT		MODERATE		

BENT-3	*RA-42 DEGREES*	*51 FT 7 IN*	*REINFORCED CONCRETE*	*MULTIPLE COLUMN*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DELAMINATION	BOTTOM		MODERATE		
HORIZONTAL CRACKS	RANDOM		FEW		
REBAR EXPOSED	BOTTOM		MINOR		
REBAR SECTION LOSS	BOTTOM		INITIAL		
SPALLS	BOTTOM		MODERATE		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
RUST STAINS	COLUMN		FEW		
SPALLS	COLUMN		MODERATE		
VERTICAL CRACKS	COLUMN		MEDIUM		
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
COLLISION WALL	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
HIGH STEEL SPALLS	RANDOM		FEW		
VERTICAL CRACKS	THROUGHOUT		FEW		
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
PACK RUST	THROUGHOUT		MODERATE		

BENT-4 RA-42 DEGREES 51 FT 7 IN REINFORCED CONCRETE MULTIPLE COLUMN

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DETERIORATION	RANDOM		MINOR		
SPALLS	BOTTOM		FEW		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
HIGH STEEL SPALLS	RANDOM		FEW		
RUST STAINS	COLUMN		FEW		
SPALLS	COLUMN		FEW		
VERTICAL CRACKS	COLUMN		MINOR		
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EXPOSED	TOP		PARTIAL		
COLLISION WALL	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
PACK RUST	THROUGHOUT		MODERATE		

BENT-5 RA-42 DEGREES 51 FT 7 IN REINFORCED CONCRETE MULTIPLE COLUMN

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DETERIORATION	RANDOM		MINOR		
HORIZONTAL CRACKS	RANDOM		MANY		

LEACHING	RANDOM		MINOR		
REBAR EXPOSED	RANDOM		FEW		
REBAR SECTION LOSS	BOTTOM		MODERATE		
SPALLS	RANDOM		LARGE		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
RUST STAINS	COLUMN		FEW		
SPALLS	COLUMN		MODERATE		
VERTICAL CRACKS	COLUMN		MEDIUM		
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
TIE BEAM	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
PACK RUST	THROUGHOUT		MODERATE		

ABUTMENT-6 RA-42 DEGREES 55 FT 8 IN REINFORCED CONCRETE OPEN CONCRETE

CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
ASSOCIATED COMPONENT	***MATERIAL***	***CONSTRUCTION***			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
DELAMINATION	THROUGHOUT		MODERATE		
DETERIORATION	THROUGHOUT		MODERATE		
HORIZONTAL CRACKS	THROUGHOUT		MANY		
REBAR EXPOSED	THROUGHOUT		FEW		(ELSEMJ, 03/28/2024)--ADV SEC LOSS IN OUTER BAR ONE OUTER BAR RUSTED IN TWO. MOD SEC LOSS IN SECOND ROW OF REBAR.
SPALLS	THROUGHOUT		MINOR		
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
REBAR EXPOSED	COLUMN		FEW		
SPALLS	COLUMN		MODERATE		
FOOTING	REINFORCED CONCRETE	H-PILE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
STRAIGHT WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
FIXED BEARING	STEEL	CURVED PLATE(ROTATING			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
PACK RUST	THROUGHOUT		MODERATE		

OVER/UNDER ROUTES CLEARANCE INFORMATION

CLEARANCES OVER DECK

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT

COUNTY: HOWARD **DISTRICT: CD** **CLASS: STATBR** **FED-ID: 6009** **BRIDGE: K0962**

CLEARANCES UNDER BRIDGE

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
1	KSC RR			8 FT 6 IN		13345

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	22 FT 6 IN			

STRUCTURE PAINT INFORMATION

CONDITION: **RUST AMOUNT :** **STEEL TONS :** 0

ORIGINAL PAINT	CONTRACT REPAINT	DEPARTMENT REPAINT	
PAINT TYPE :	**PAINT TYPE :**	**PAINT TYPE :**	**MANUFACTURE :**
NAME :	**NAME :**	**NAME :**	**SURFACE PREP :**
PAINT COLOR :	**PAINT COLOR :**	**PAINT COLOR :**	
PAINT YEAR :	**PAINT YEAR :**	**PAINT YEAR :**	
MILS :	**MILS :**	**MILS :**	

REQUESTED WORK ITEMS

GENERAL WORK COMMENTS:

RESPONSIBILITY	LOCATION	ITEM	CATEGORY	PRIORITY	DATE	WORK ITEM COMMENT
DISTRICT ROUTINE	ROADWAY SURFACE	REPAIR CONCRETE > 50 SF	DECK	3	11/08/2017	
DISTRICT SPECIAL	ROADWAY SURFACE	SEAL DECK WITH IN DECK	DECK	3	08/17/2024	

UTILITY ATTACHMENTS

UTILITY	OWNER	METHOD	MEASUREMENT TYPE	VALUE	NUMBER	UTILITY ATTACHMENT COMMENT

PROGRAM NOTES INFORMATION

YEAR	PROJECT #	MONTH LET	YEAR LET	ITEMS	COMMENT

Design_No = k0962

COMPUTER GENERATED RATINGS AND DEFICIENCY ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

Rated Item	Rating	Rating Date
[Item 67] Structure Evaluation Rating:	5-BETTER THAN MINIMUM	3/19/2002
[Item 68] Deck Geometry Rating:	4-MEETS MINIMUM TOLERABLE	12/29/2004
[Item 69] Underclearance:	4-MEETS MINIMUM TOLERABLE	2/20/2003
Sufficiency Rating:	56.7%	3/29/2024
Deficiency:	STRUCTURAL	10/4/2019
Funding Eligibility:	PARTIAL	----
Estimated New Structure Length:	256 FT.	----
Estimated Structure Cost:	$1,113,938	----
Estimated Total Project Cost:	$1,670,907	----
Year of Cost Estimate:	2025	----

NOTE: The above structure length and cost estimates are computer generated using algorithims in the TMS system. These algorthims are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.

ADVANCED SIGN INFORMATION

SIGN #	SIGN TYPE	PROBLEM	PROBLEM DIRECTION
1			

OUTFALL INSPECTION INFORMATION

 # OUTFALLS: **INSPECTOR:**

STATUS: **DATE:**

NOTES:

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

April 29, 2025
1:42:47pm

COUNTY : HOWARD **BRIDGE :** K0962 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 4/18/2025 **SUBMITTAL YEAR :** 2025

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	CD
3	County	HOWARD
8	Federal ID No.	6009
27	Year Built	1941
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY-PEDESTRIAN
21	Structure Maintenance	STATE HIGHWAY AGENCY
22	Structure Owner	STATE HIGHWAY AGENCY
33	Br. Median Code	NO MEDIAN
37	Historical Significance	NOT ELIGIBLE FOR NR OF HP
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	YES

ROUTE DESIGNATION INFORMATION

5A	Record Type	ROUTE CARRIED 'ON' STRUCT
5B	Route Signing Prefix	MO
5C	Designated Level of Service	MAINLINE
5D	Route Number	00003
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	MO 3 S
12	Base Hwy. Network	NO
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	07-RURAL MAJOR COLLECTOR
28A	Lanes on Structure	02
100	STRAHNET Designation	RTE NOT A DEFENSE HWY
104	National Highway System	NOT ON NHS
105	Federal Lands Highway	NOT APPLICABLE
110	Designated Nat. Network	NO

STRUCTURE LOCATION INFORMATION

4	Place	ARMSTRONG CITY
	Code	01954
9	Location	S 34 T 52 N R 16 W
11	Milepoint	69.73 miles
16	Latitude	39 D 15 M 59 S
17	Longitude	92 D 42 M 4 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	1775
30	AADT Year	2024
102	Direction of Traffic	2-WAY TRAFFIC
109	AADT Truck Percent	17%
114	Future AADT	2219
115	Future AADT Year	2044

UNDERRECORD INFORMATION

6	Features Intersected	KSC RR
42B	Type of Service Under	RAILROAD
28B	Lanes Under Structure	00
54A	Vert. Clearance Ref.	RAIL ROAD
54B	Vert. Clearance	22 Ft. 6 In.
55A	Rt. Lat Clear Ref.	RAIL ROAD
55B	Rt. Lat Clearance	8 Ft. 6 In.
56	Left Lat Clearance	0 Ft. 0 In.
38	Navigation Control	N/A
39	Nav Vertical Clear	0 Ft. 0 In.
40	Nav Horizontal Clear	0 Ft. 0 In.
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	99 Ft. 99 In.
19	By pass Detour Length	21.88 miles
32	Approach Roadway Width	25 Ft. 11 In.
34	Skew	42.00 Degrees
35	Struct. Flared	NO
47	Total Horiz. Clear	25 Ft. 11 In.
48	Maximum Span Length	52 Ft. 6 In.
49	Structure Length	223 Ft. 1 In.
50A	Left Curb/Sidewalk Width	4 Ft. 11 In.
50B	Right Curb/Sidewalk Width	0 Ft. 0 In.
51	Curb to Curb Br. Width	25 Ft. 11 In.
52	Deck Width (Out-Out)	29 Ft. 6 In.
53	Vert.Clearance Over Deck	99 Ft. 99 In.

Design_No = k0962

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

April 29, 2025
1:42:47pm

COUNTY : HOWARD **BRIDGE :** K0962 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 4/18/2025 **SUBMITTAL YEAR :** 2025

LOAD RATING AND POSTING INFORMATION

31	Design Load	H 15
41	Structure Status	OPEN NO RESTRICTIONS
63	Oper. Rating Meth.	ALLOWABLE STRESS
64	Operating Rating	57 Tons.
65	Inventory Rating Meth	ALLOWABLE STRESS
66	Inventory Rating	30 Tons.
70	Bridge Posting Code	=>LEGAL LOADS

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating	56.7 Percent
	Deficiency Rating	STRUCTURAL
	Funding Eligibility	PARTIAL
75A	Proposed Work	REHAB-GENERAL DETERIORAT
75B	Work Done By	Contract
76	New Struc Length	255 Ft. 11 In.
94	Struc Improve Cost	$ 1,114,000
95	Roadway Improve Cost	$ 111,000
96	Total Project Cost	$ 1,671,000
97	Year of Cost Estimates	2025

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating	DOES NOT MEET ACCEPT STND
36B	Transition Rail App. Rating	DOES NOT MEET ACCEPT STND
36C	Approach Rail App. Rating	DOES NOT MEET ACCEPT STND
36D	Rail End Treat. App. Rating	DOES NOT MEET ACCEPT STND
67	Struc Eval App. Rating	5
68	Deck Geometry App. Rating	4
69	Underclearance App. Rating	4
71	Waterway Adeq. App. Rating	N
72	Approach Road App. Rating	6
113	Scour Assess App. Rating	N

APPROVED POSTING INFORMATION

Approved Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	CONCRETE
43B	Main struc Constr. Type	TEE BEAM
45	# of Main Spans	5
44A	Appr Struc. Mat type	000
44B	Appr Struc. Cnstr. type	000
46	# of Approach Span	0
107	Deck Mat/Constr.	1 CONCRETE CIP
108A	Wear Surf Mat/Constr.	6 BITUMINOUS
108B	Membrane Mat/Constr.	0 NONE
108C	Deck Protect Mat/Constr.	0 NONE

CONDITION RATING INFORMATION

58	Deck Cond. Rating	3
59	Superstructure Cond. Rating	5
60	Substructure Cond. Rating	6
61	Channel /Channel Protection Cond. Rating	N
62	Culvert Cond. Rating	N

INSPECTION INFORMATION

90	Gen. Insp Date	6 / 23	
91	Gen. Insp. Frequency	24	Months
92A	Frac. Critical Inspection	N	Months
93A	Frac. Critical Insp. Date		
92B	Underwater Inspection	N	Months
93B	Underwater Insp. Date		
92C	Special Inspection	N	Months
93C	Special Inspection Date		

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

FIELD POSTING INFORMATION

Field Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

Design_No = k0962

Bridge Number: K0962

Route/County: 3/Howard

Asbestos-Containing Material Present?

Yes: ☐ No: ☒

If yes, see report for location(s).

Structural Steel Present?

Yes: ☐ No: ☒

If No, then skip the following.

Lead-Based Paint (LBP) Present?

Yes: ☐ No: ☐

Trusses LBP?

Yes: ☐ No: ☐

Girder LBP?

Yes: ☐ No: ☐

Railing LBP?

Yes: ☐ No: ☐

Pile LBP?

Yes: ☐ No: ☐

MEMORANDUM

Missouri Department of Transportation
Construction and Materials
Central Laboratory

TO: TMS

FROM: Diane Roegge
Environmental Chemist

DATE: June 16, 2016

SUBJECT: Materials
Asbestos Inspection & Heavy Metal Paint Survey
Route 3
Bridge K-0962
Howard County

We are providing you with the results of the inspection on the above referenced bridge. The inspection report contains an asbestos and a heavy metals survey. The asbestos inspection included identifying suspect asbestos-containing material and NVLAP accredited testing to confirm the presence of asbestos.

Form T746 – This will show if samples were taken, where from, and, if the sample was found to contain asbestos, our estimated quantity of material present. Under the column "Friability Category", this is the meaning for the following:

N-ACM – No asbestos detected.
I NF – Asbestos is present. Material shall be handled carefully by a licensed abatement worker and kept wet if removing as part of a maintenance activity.
II NF – Asbestos is present. If removal is required for the maintenance activity, use an abatement contractor.

In accordance with Missouri Department of Natural Resources' Technical Bulletin "Managing Construction and Demolition Waste" dated January 31, 2003, a heavy metal paint survey has been performed on the above referenced bridge. This survey includes locating concrete which has been painted with something other than traffic paint or graffiti, and testing the painted surface(s) to determine if hazardous heavy metals are present. If the bridge is being removed completely, or the maintenance repairs include removing the painted concrete, then, non-hazardous painted concrete may be used as clean fill materials, if properly handled. You must contact the Central Office Design Division for proper handling of the reported painted surfaces.

Although our survey included observing and sampling all accessible areas, it is possible that potentially hidden asbestos-containing materials may exist within the structure. Should you have any questions regarding these reports, please contact me at (573) 526-4359.

db/fr/dr
http://sp/sites/cm/chemicallab/environmental/shared documents/asbestos/districts/central (cd)/mt/k0962/dr1606162.docx
Attachments

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
All Suspect ACM

ROUTE: 3
MODOT JOB NO.: N/A
DISTRICT: CD
COUNTY: Howard
DATE OF SURVEY: June 16, 2016
PARCEL NO.: Bridge K-0962

SURVEYED BY: Diane Roegge
CERTIFICATION #: 7118110315MOIR7165
SITE ADDRESS: Over Kansas City Southern Railroad (KCS RR)
TYPE(S) OF STRUCTURE(S): Bridge

Sample ID	Type of Materials	Location of Material	Friability Category	Field Measure
16MD1R 400	Asphalt Joint Material	8-Sidewall, 4-Deck and Sidewalk, and 4-Curb Joints	N-ACM	
	Bridge Paint is not a suspect ACM per MSDS's on file.			

N-ACM = Non-Asbestos Containing Material I NF = Category I Nonfriable II NF = Category II Nonfriable F = Friable
NAFD = No Asbestos Fiber Detected * = Tested By Point Count Procedure

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
Nonfriable Asbestos-Containing Materials
(Abatement not required if not made friable during demolition.)

ROUTE:	3	**TESTED BY:**	Frank Reichart and Diane Roegge
MODOT JOB NO.:	N/A	**CERTIFICATION #:**	7118110315MOIR7165, D.R.
DISTRICT:	CD	**CERTIFICATION #:**	7118110315MOIR11239, F.R.
COUNTY:	Howard	**SITE ADDRESS:**	Over Kansas City Southern Railroad (KCS RR)
DATE OF TESTS:	June 28, 2016	**TYPE(S) OF STRUCTURE(S):**	Bridge
PARCEL NO.:	Bridge K-0962		

Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
		None Located	I NF			

All necessary work to handle this material is the contractor's responsibility.

I NF = Category I Nonfriable

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Asbestos Survey Report
All materials requiring removal or special handling.

ROUTE:	3	**TESTED BY:**	Frank Reichart and Diane Roegge
MODOT JOB NO.:	N/A	**CERTIFICATION #:**	7118110315MOIR7165, D.R.
DISTRICT:	CD	**CERTIFICATION #:**	7118110315MOIR11239, F.R.
COUNTY:	Howard	**SITE ADDRESS:**	Over Kansas City Southern Railroad (KCS RR)
DATE OF TESTS:	June 28, 2016	**TYPE(S) OF STRUCTURE(S):**	Bridge
PARCEL NO.:	Bridge K-0962		

Bid Item No.	Sample ID	Type of Material	Location of Material	Friability Category	Field Measure	Asbestos Type	Percent
			None Located	II NF			
			None Located	F			

I NF = Category I Nonfriable II NF = Category II Nonfriable F = Friable * = Tested By Point Count Procedure

MISSOURI DEPARTMENT OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
Metals Survey Report of Painted Concrete, Block, Brick Surfaces for Clean Fill Purposes

ROUTE: 3
MODOT JOB NO.: N/A
DISTRICT: CD
COUNTY: Howard
SURVEYED BY: Diane Roegge
DATE OF SURVEY: June 16, 2016

TESTED BY: N/A
DATE OF TESTS: N/A
PARCEL NO.: Bridge K-0962
SITE ADDRESS: Over Kansas City Southern Railroad (KCS RR)
TYPE(S) OF STRUCTURE(S): Bridge

Sample ID	Color/Location of Material/Substrate	Metals (ppm)							
		As	Cr	Pb	Cd	Se	Ba	Hg	Ag
	No samples taken. No painted surfaces located.								

All results are by XRF unless otherwise indicated: a = USEPA SW-846 Method 3050
b = USEPA SW-846 Method 7471

Expiration Date **12/2/2016**

Training Date: **11/3/2015**

Certificate Number: 7118110315MOIR7165

Missouri State Certificate for Asbestos Related Occupations

issued by Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
Phone (573) 751-4817

Diane R. Roegge

has successfully completed the requirements for certification as a INSPECTOR. This Missouri State Certification is subject to review and the director may deny, suspend or revoke the certification per RSMo chapter 643.230.

12/3/2015
Date

Director of Air Pollution Control Program