FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	193	19	69	

A

Vertical Curve.
P.C. Sta. 37+00. El. 559.6
P.I. " 37+50.
P.T. " 38+00. El. 556.0

100' Vertical Curve.

Sta. 37+90

Standard Superstructure-A-850.

Crown of Roadway - El. 556.0

50'0" Clear Span

8'-0"

Extreme High Water. Elev. 548.4

Springing Line Elev. 545.5

Elev. 544.0

Gravel.

Solid Rock.

Point Extrados and inside of Spandrel wall with a heavy coat of pitch.

2" Dia. pipe weep holes just above ground line. Two in arch ring and one in each wing.

Solid Rock.

Elev. 542.5

Carry Footings 6" into Solid Rock.

Elev. 549.23

Note. Channel to be cleaned to rock 50'0" above and below bridge; Not included in bridge contract.

GENERAL ELEVATION

GENERAL NOTES.
All general notes on Standard A-850 apply to this drawing.
Concrete in Abutments 1:3:5 mix

ESTIMATED QUANTITIES.

Location.	Concrete Cu. Yd. 1:2:3	Reinf. Steel.
Handrail.	5.6	850
Spandrel Fill.		600
Arch Ring.		6940
Wings.		1390
Abutments.	35.8	1560
Total.	41.4	11,340

Symmetrical about ℄

BAR BILL.

No.	Size.	Length.	Mark.	Remarks.
6	3/4" sq.	15'-7"	V1	See Sketch.
8	3/4" sq.	11'-9"	V2	" "
4	3/4" sq.	10'-3"	V3	" "
8	3/4" sq.	7'-8"	V4	" "
8	3/4" sq.	8'-3"	V5	" "
12	3/4" sq.	6'-8"	V6	" "
10	3/4" sq.	6'-1"	V7	" "
2	3/4" sq.	5'-6	V8	Straight
2	3/4" sq.	8'-6"	V9	"
2	3/4" sq.	11'-9"	V10	"
8	3/4" sq.	13'-2"	V11	See Sketch.
4	3/4" sq.	11'-4"	V12	" "
6	3/4" sq.	7'-6"	V13	" "
8	3/4" sq.	5'-5"	V14	" "
10	3/4" sq.	7'-1"	V15	" "
2	3/4" sq.	3'-6"	V16	Straight
4	3/4" sq.	8'-6"	V17	"
2	3/4" sq.	16'0"	H1	"
2	3/4" sq.	13'-9"	H2	"
8	3/4" sq.	20'0"	B1	"
66	3/4" sq.	7'-0"	B2	"
66	3/4" sq.	7'-7"	B3	Hooked

No.	Size.	Length.	Mark.	Remarks.
2	3/4" sq.	17'-6"	H3	Bend in field
10	3/4" sq.	16'-3"	H4	Straight
4	3/4" sq.	15'-9"	H5	"
6	3/4" sq.	7'-6"	H6	"
2	3/4" sq.	16'-6"	H7	"
2	3/4" sq.	9'-6"	H8	"
2	3/4" sq.	19'-6"	H9	Bend in field
8	3/4" sq.	13'-0"	H10	Straight
2	3/4" sq.	9'-6"	H11	"
8	3/4" sq.	5'-6"	H12	"
20	3/4" sq.	5'-6"	F1	"
12	3/4" sq.	4'-4"	F2	"
12	3/4" sq.	3'-11"	F3	"
6	3/4" sq.	16'-3"	F4	"
70	3/4" sq.	4'-8"	F5	"
18	3/4" sq.	2'-11	F6	"
6	3/4" sq.	6'-6"	F7	"
6	3/4" sq.	7'-0"	F8	"
13	3/4" sq.	3'-0"	D1	"

HALF PLAN-EAST ABUT.

HALF PLAN-WEST ABUT.

SECTION B-B

ELEVATION-EAST WING.

SECTION A-A

SECTION C-C.

ELEVATION-WEST WING.

SECTION D-D.

SECTION THRU WEST. ABUT.

Note- Surface of rock to be left rough and thoroughly cleaned before concrete is poured.

SECTION THRU EAST ABUT.

SECTION THRU ARCH RING AT SPANDREL WALL.

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER REED'S CREEK

STATE ROAD - IRONTON TO SALEM
ABOUT 1½ MI. FROM BELLVIEW
PROJECT No. 193 (RT. 32) STA. 37+90

IRON COUNTY

Submitted by C. H. Mann BRIDGE ENGINEER
Approved by [illegible] STATE HIGHWAY ENGINEER

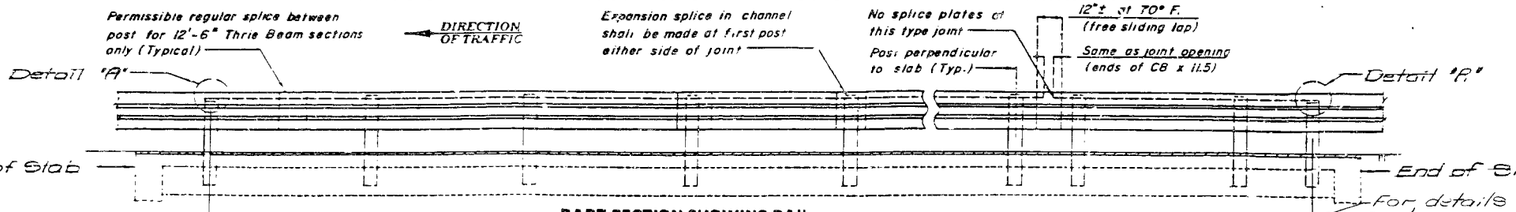
A-850
G-269

Drawn Apr., 1922 by Hwk.
Ch'k'd Aug., 1922 by J.W.C.

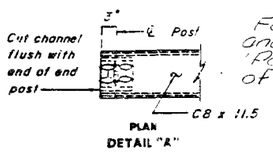
022

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

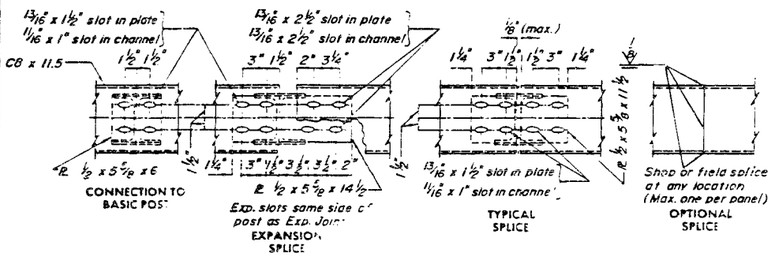
STATE	PROJ. NO.	
MO		F
SUR 834	TWP. 35N	RGE. 3E



PART SECTION SHOWING RAIL



DETAIL "A"



CHANNEL MEMBER DETAILS

ESTIMATED QUANTITIES	
ITEM	TOTAL
Bridge Guard Rail (Thrie Beam) Lin. Ft.	100
Curb Removal for Thrie Bm. Installation Lin. Ft.	120
Bridge Anchor Section (Thrie Beam) Each	4

Note:
Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

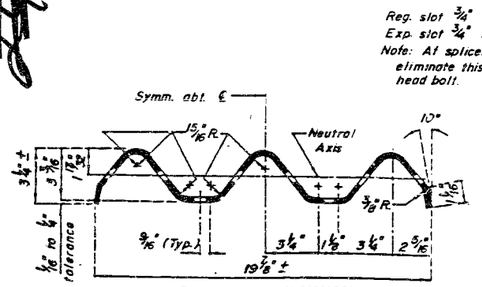
NOTE:

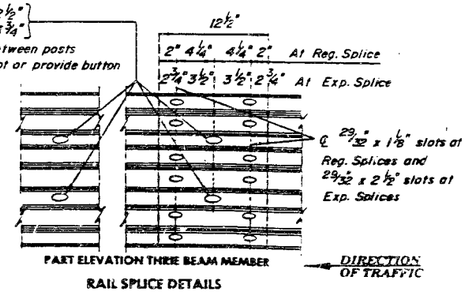
Maintain one lane of traffic during construction.

Light dashed lines indicate old work. Heavy lines indicate new work.

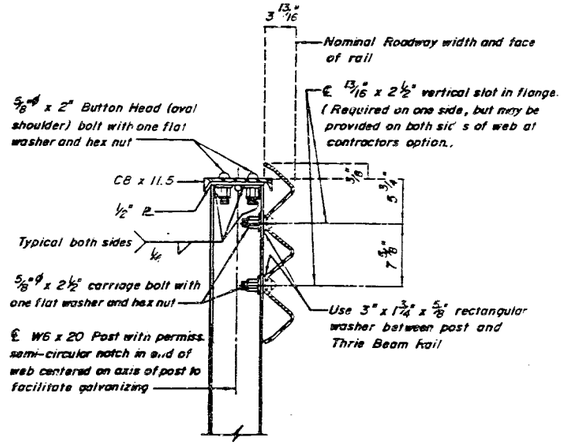
Contractor shall verify all dimensions in field before ordering materials.

Roadway surfacing shall be used to build the existing riding surface on the bridge up to the elevation of the top of the existing concrete curbs (Edwy. Item)





RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

DESIGNED Dec. 1989
DETAILED Dec. 1989
CHECKED Dec. 1989

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

SEE FINAL Sheet No. 1 of 4

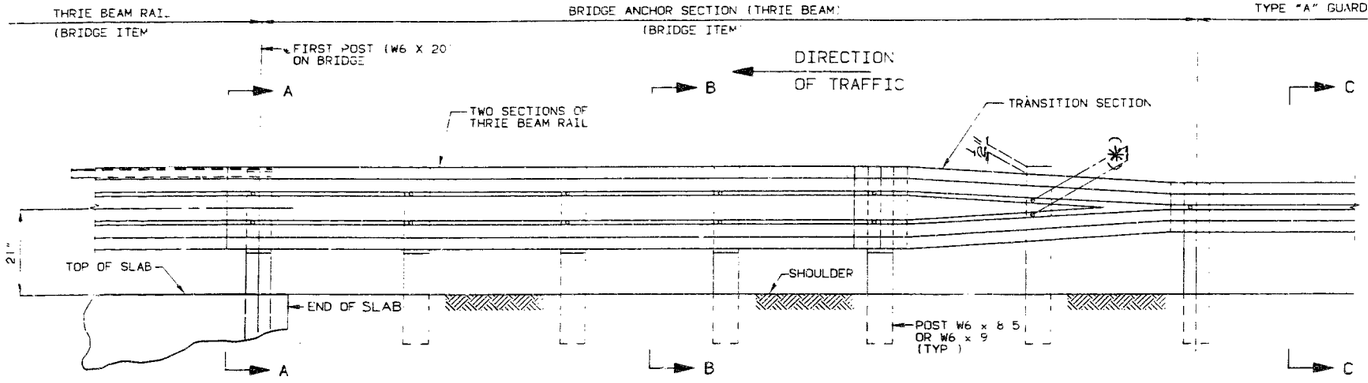
REPAIRS TO
BRIDGE OVER REEDS CREEK
STATE ROAD FROM DENT CO. LINE TO RTE. 21
ABOUT 1.5 MILES WEST OF BELLEVILLE
PROJECT NO. F-32-2(11)Sec A **STA.** 37 + 90
JOB NO. 6-P-32-838 **RTE.** 32
IRON **COUNTY**
DATE 12/27/89

STD. 606.00
STD.
G-269R

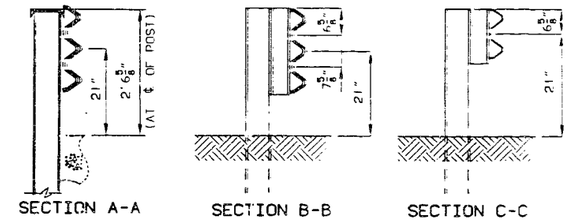
NOTE

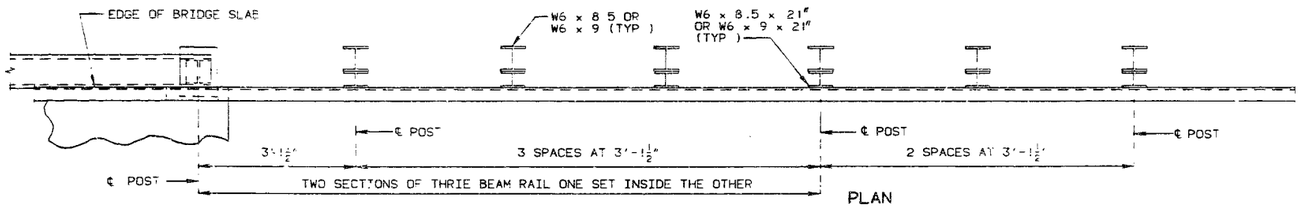
SEE BRIDGE THRIE BEAM RAIL SHEET FOR DETAILS NOT SHOWN

STATE	PROJ NO	SHEET NO
MO		2



PART SECTION AT END OF SLAB





PLAN

NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS (FOR THRIE BEAM RAIL DESIGN ONLY.)

THE THRIE BEAM RAILS AND THE TRANSITION SECTION FOR THE BRIDGE ANCHOR SECTION SHALL BE MADE OF STEEL, AND SHALL BE 12 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

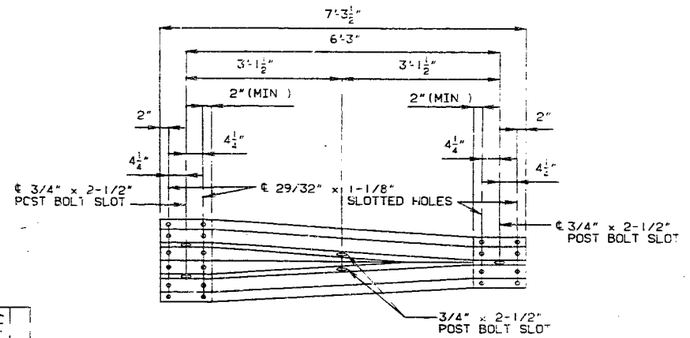
WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 3/16" MIN.) AND FLAT, OR WHEN NECESSARY OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE THRIE BEAM RAILING. WASHERS SHALL HAVE A 11/16" x 1" SLOTTED HOLE

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

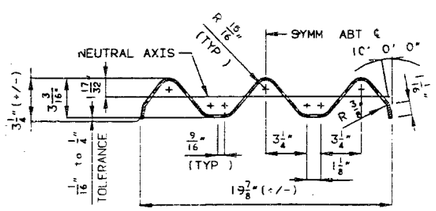
ALL LAP SPLICES SHALL BE MADE IN THE DIRECTION OF TRAFFIC

SEE MISSOURI STANDARD PLANS DRAWING 606.00 FOR DETAILS NOT SHOWN

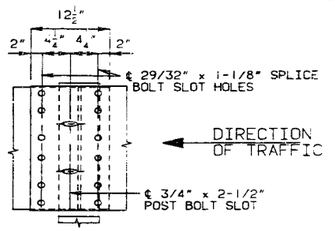
(*) VERIFY BY RAIL TRANSITION PRODUCER



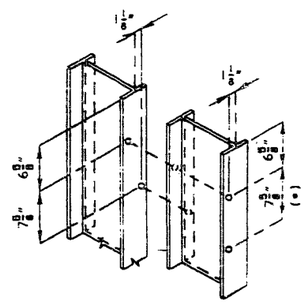
TRANSITION SECTION



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE AT POST



(ALL HOLES 13/16" DIAMETER)

HOLE PUNCHING DETAILS

(FOR STEEL POST & BLOCKS)

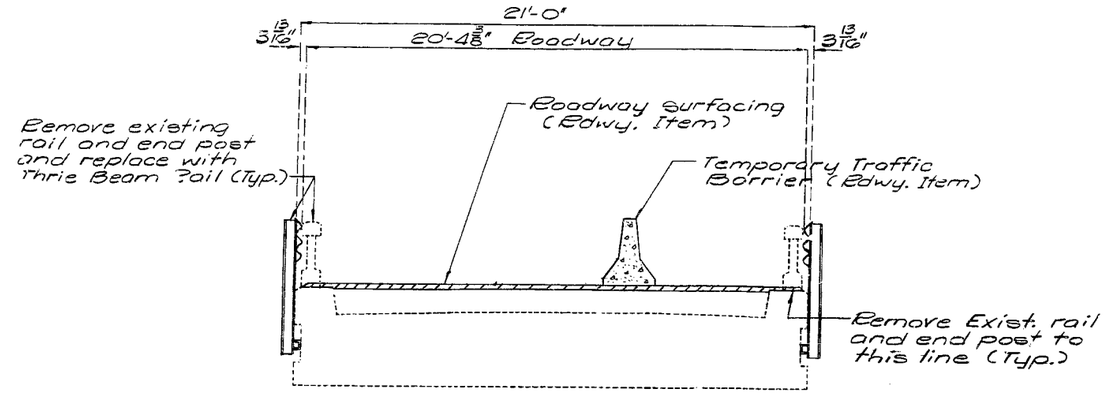
ANCHOR SEC	REVISED (1)
AUG 1988	

DETAILED Dec. 1989
CHECKED Dec. 1989

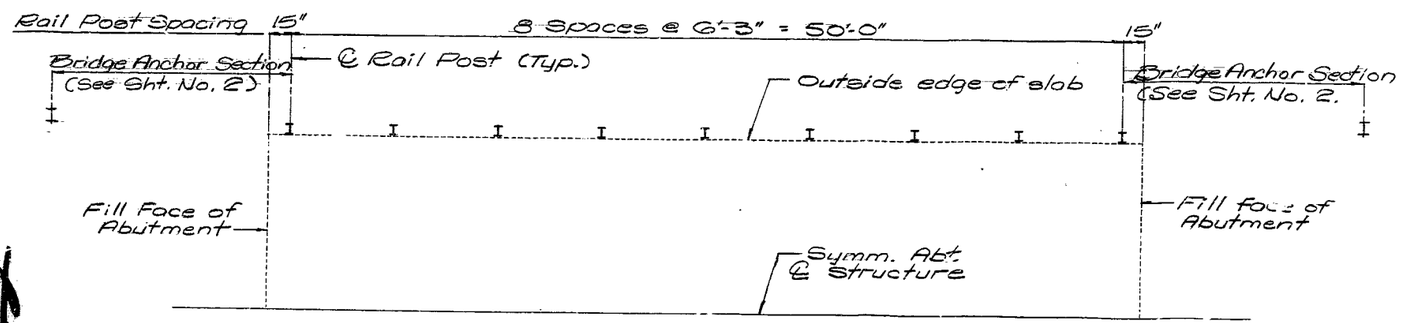
NOTE THIS DRAWING IS NOT TO SCALE FOLLOW DIMENSIONS

IRON COUNTY G-269R

STATE	PROJ. NO	SHEET NO.
MO	[illegible]	3



TYPICAL SECTION



HALF PLAN OF SLAB SHOWING RAIL POST SPACING

GENERAL NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS.

PANEL 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 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.

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

USE 5/8 INCH BUTTON HEAD, OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS. (THICKNESS OF HEX NUTS = 3/8".

THRIE BEAM GUARD RAIL ON THE BRIDGE SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. 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.

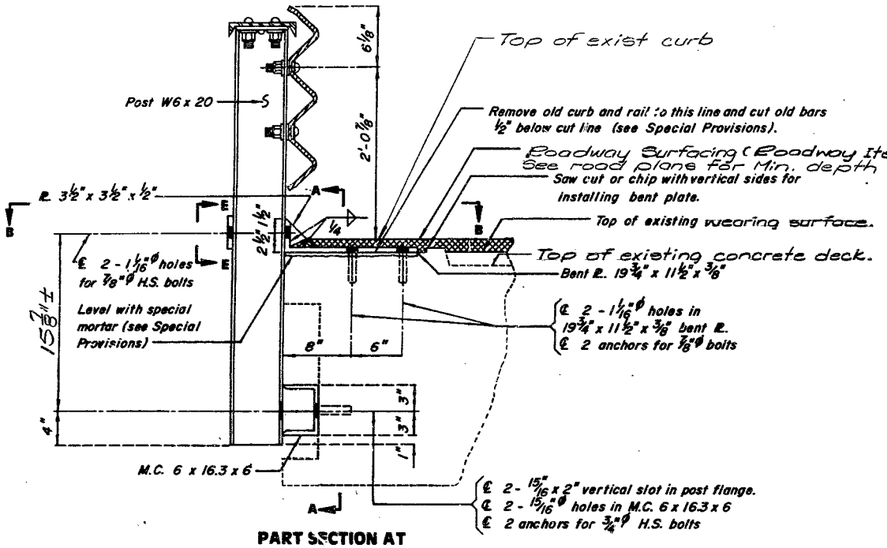
EXPANSION SPLICES IN THE THRIE BEAM RAIL SHALL BE MADE AT EITHER THE FIRST OR SECOND POST ON EITHER SIDE OF THE JOINT AND ON STRUCTURE AT BRIDGE ENDS. WHEN THE SPLICE IS MADE AT THE SECOND POST, AN EXPANSION SLOT SHALL BE PROVIDED IN THE THRIE BEAM RAIL FOR CONNECTION TO THE FIRST POST TO ALLOW FOR MOVEMENT.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

DETAILED Dec 19 89
CHECKED Dec 19 89

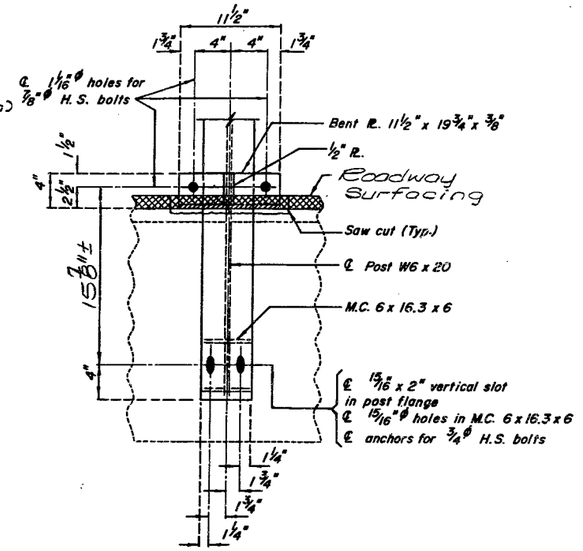
Note: This drawing is not to scale. Follow dimensions.

IRON COUNTY G-269R

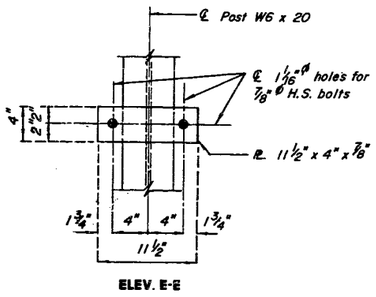
STATE	PROJ NO	SHEET NO
MO		4



PART SECTION AT RAIL POST



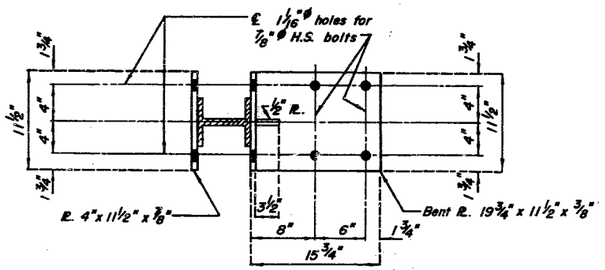
SECTION A-A



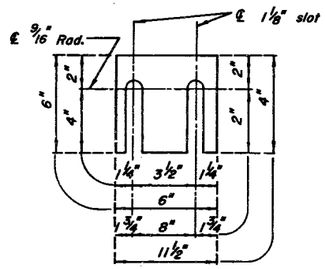
ELEV. E-E

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

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.

Note:

Shim plates 6" x 6" x 1/16" may be used between M.C. 6 x 16.3 x 6" and old concrete and shim plates 11 1/2" x 4" x 1/16" may be used between post W6 x 20 and 19 3/4" x 11 1/2" x 3/8" 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.

100

Revised (T-BM DECK GDR)	SEPT. 1985
REVISED	SEPT. 1986

DETAILED Dec., 1989
CHECKED Dec., 1989

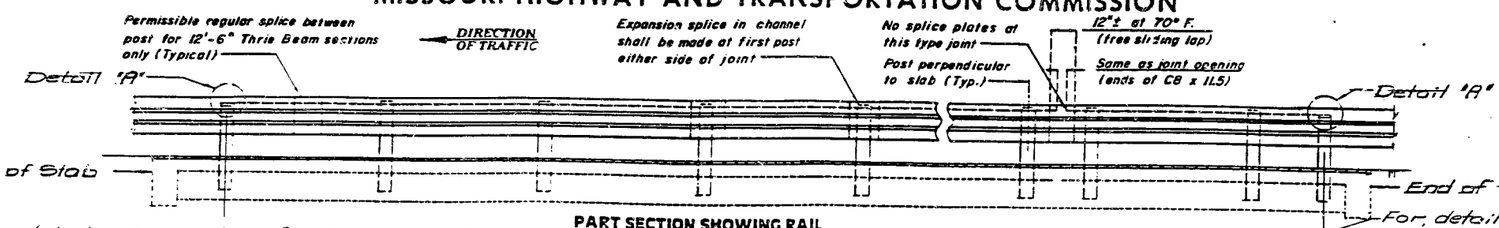
Note: This drawing is not to scale. Follow dimensions.

IRON **COUNTY**

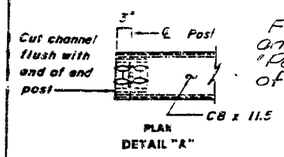
G-269R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

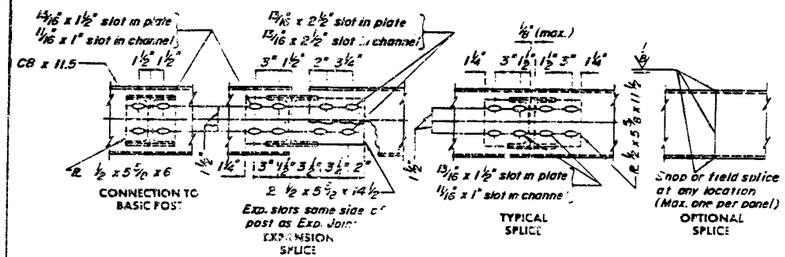
STA.	Proj. No. 6P 838-32	SHEET NO.
MO	Job No. 6P 838-32	6S
SJR 834	TWP 35N	RGE 3E



PART SECTION SHOWING RAIL



PLAN
DETAIL "A"



CHANNEL MEMBER DETAILS

FINAL QUANTITIES		
ITEM		TOTAL
Bridge Guard Rail (Thrie Beam)	Lin. Ft.	100
Curb Removal for Thrie Bm. Installation	Lin. Ft.	120
Bridge Anchor Section (Thrie Beam)	Each	4
Contingent Item		
Repair Bridge Damage (Force Account)	Each	524.23

Note:
Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

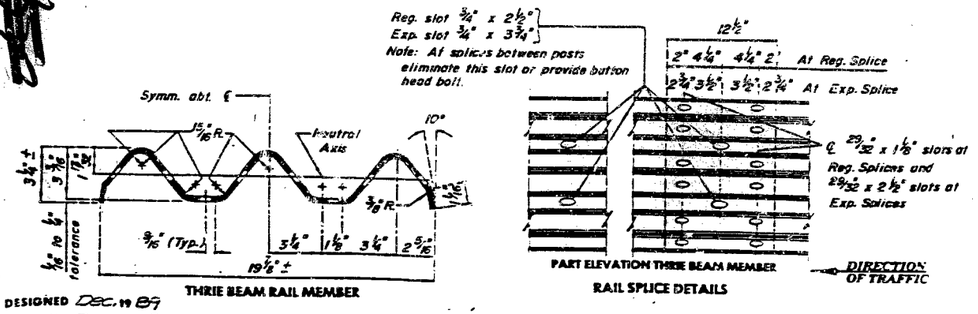
NOTE:

Maintain one lane of traffic during construction.

Light dashed lines indicate old work. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

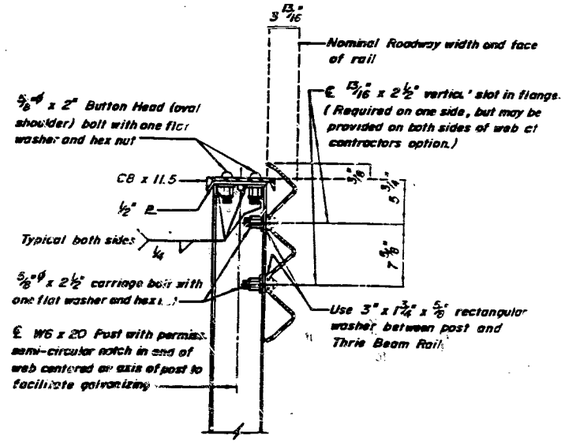
Roadway surfacing shall be used to build the existing riding surface on the bridge up to the elevation of the top of the existing concrete curbs (Rdwy. Item).



THRIE BEAM RAIL MEMBER

PART ELEVATION THRIE BEAM MEMBER

RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

REPAIRS TO
BRIDGE OVER REEDS CREEK

STATE ROAD FROM DENT CO. LINE TO RTE. 21

ABOUT 1.5 MILES WEST OF BELLEVILLE

PROJECT NO. 6P838-32-Sec A **STA.** 37 + 90

JOB NO. 6P 838-32 **RTE.** 32

IRON **COUNTY**

DATE 12/27/89

STD.	606.00
STD.	
	G-269R

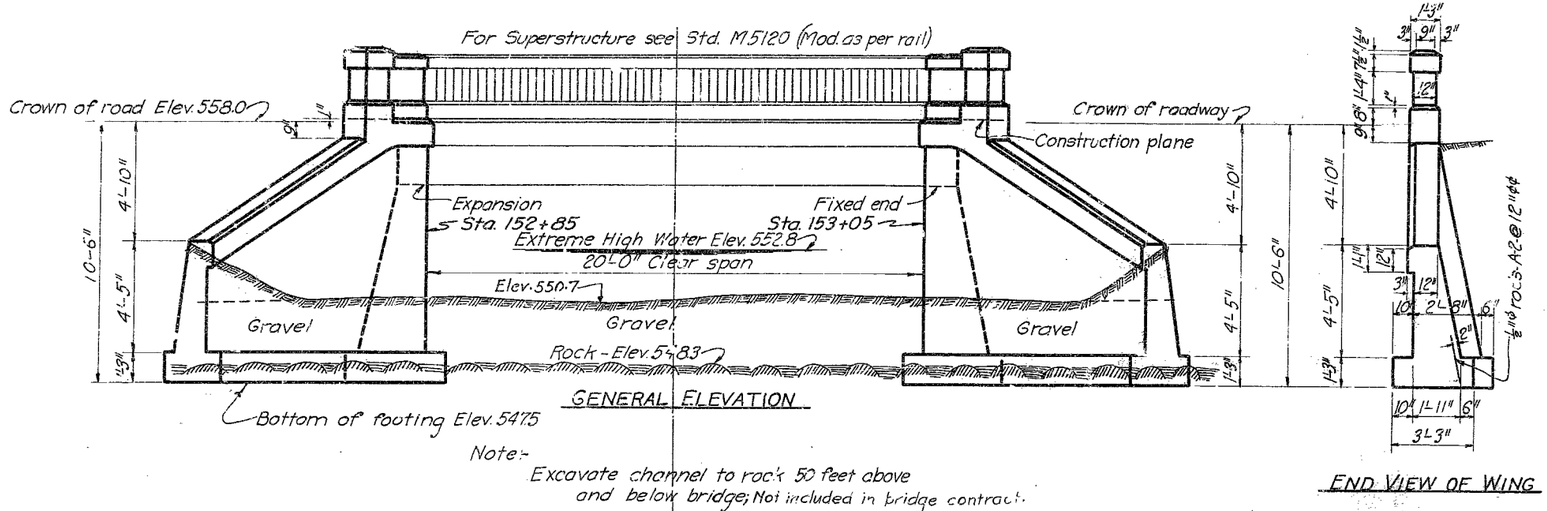
DESIGNED Dec. 19 89
DETAILED Dec. 19 89
CHECKED Dec. 19 89

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

Sheet No. 1 And 2

101

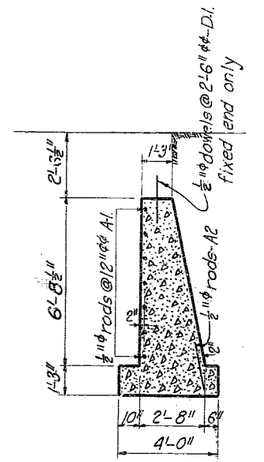
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	193	1922	70	



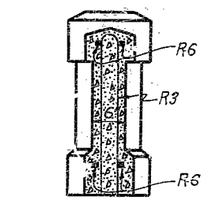
GENERAL ELEVATION

Note:- Excavate channel to rock 50 feet above and below bridge; Not included in bridge contract.

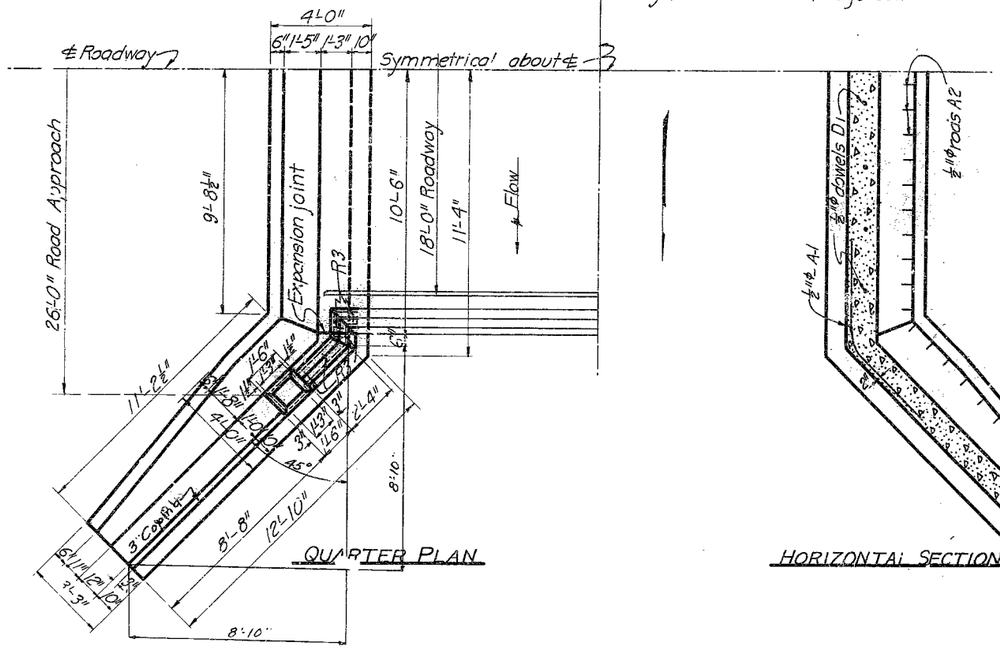
END VIEW OF WING



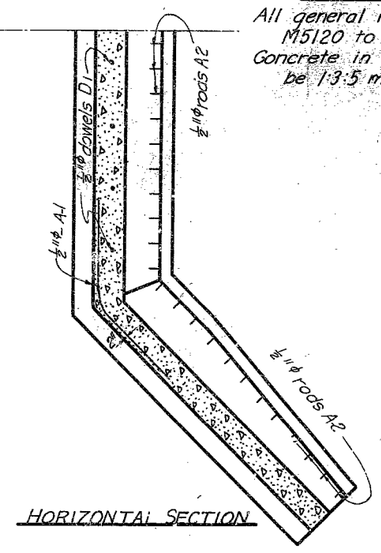
SECTION ON ℄



SECTION THRU RAIL ON TOP OF WING



QUARTER PLAN



HORIZONTAL SECTION

GENERAL - NOTES

All general notes on standard drawing M5120 to apply on this drawing. Concrete in wings and abutment to be 1:3:5 mix.

ESTIMATED QUANTITIES

Description	Rail	Slab and Curb	Abutments and Wings	Total
1:2:3 Concrete	31 cu yd			31 cu yds.
1:2:4 "		293 cu yds.		293 cu yds.
1:3:5 "			59.4 cu. yds.	59.4 cu yd.
Rein. Steel	510 lbs.	2700 lbs.	290 lbs.	3500 lbs.

BAR - BILL

No.	Size	Length	Mark	Remarks
8	½" ϕ	2'-0"	D1	Dowels
28	½" ϕ	8'-0"	A1	Bend in place
88	½" ϕ	2'-0"	A2	Straight
Changes in superstructure steel as given on Std. M5120.				
Length of R1 bars changed to 21'0"				
No. of R3 bars changed to 24.				
Add 16 R6 bars ½" ϕ 3'-6" long. Bars are in rail over wing corresponding to R1 bars.				

Drawn April, 1922 by J.O.H.
Ch'k'd Apr. , 1922 by J.W.C.

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER McCLURG BRANCH

STATE ROAD FROM IRONTON TO SALEM

ABOUT 4 MI. FROM BELLVIEW

PROJECT No. 193 (PT. 32) STA. 152+85

IRON COUNTY

Submitted by C. H. Wann BRIDGE ENGINEER

Approved by [illegible] STATE HIGHWAY ENGINEER

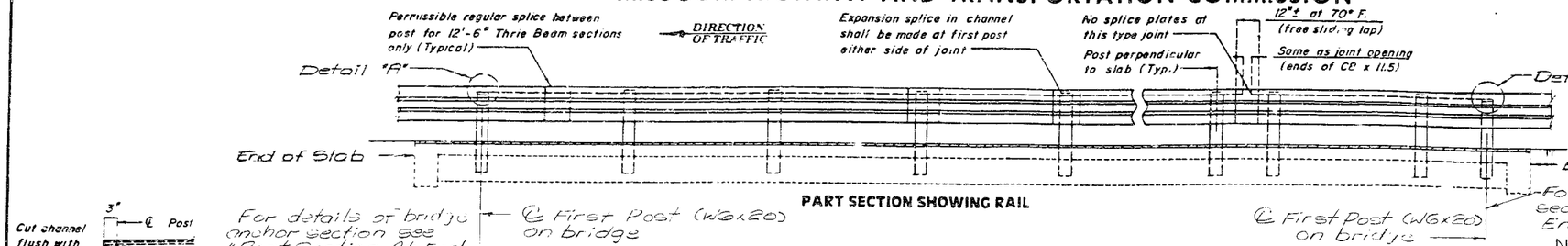
M5120

G270

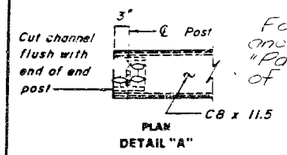
271

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

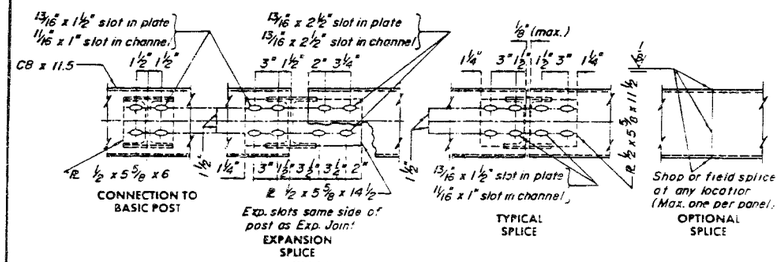
STATE	PROJ. NO.	SHEET NO.
MO		1
SUR 2184	TWP 35N	RGE 2E



PART SECTION SHOWING RAIL



PLAN
DETAIL "A"



CHANNEL MEMBER DETAILS

ESTIMATED QUANTITIES	
ITEM	TOTAL
Bridge Guard Rail (Thrie Beam) Lin.Ft.	38
Curb Removal for Thrie Bm. Installation Lin.Ft.	46
Bridge Anchor Section (Thrie Beam) Each	4

Note:
"Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

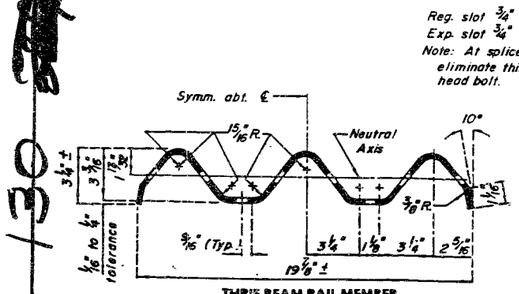
NOTE:

Maintain one lane of traffic during construction.

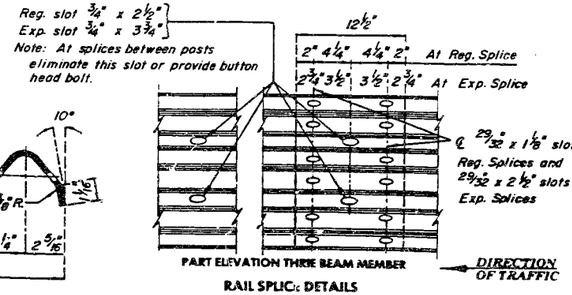
Light dashed lines indicate old work. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

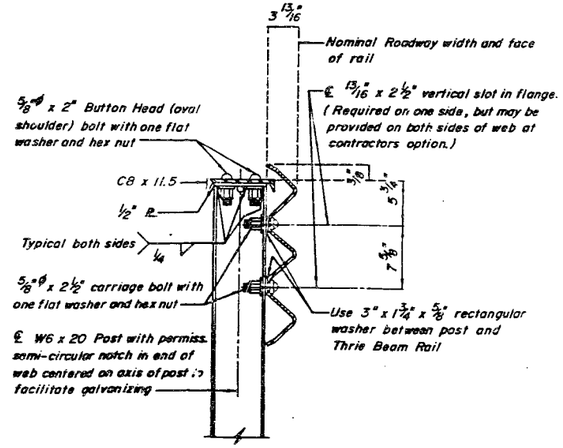
Remove an equivalent thickness of the existing asphalt mat prior to the placement of roadway surfacing across the bridge. (Rdwy. Item)



THRIE BEAM RAIL MEMBER



PART ELEVATION THRIE BEAM MEMBER
RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

REPAIRS TO
BRIDGE OVER BRANCH OF CEDAR CREEK
STATE ROAD FROM DENT CO. LINE TO ROUTE 21
ABOUT 4 MILES WEST OF BELLEVIEW
PROJECT NO. F-32-2(11),Sec A **STA.** 152 + 83.75
JOB NO. 6-P-32-838 **RTE.** 32
IRON **COUNTY**
DATE 12/27/89

STD. 506.00	
STD.	
G-270R	

DESIGNER Dec. 19 89
DETAILED Dec. 19 89
CHECKED Dec. 19 89

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

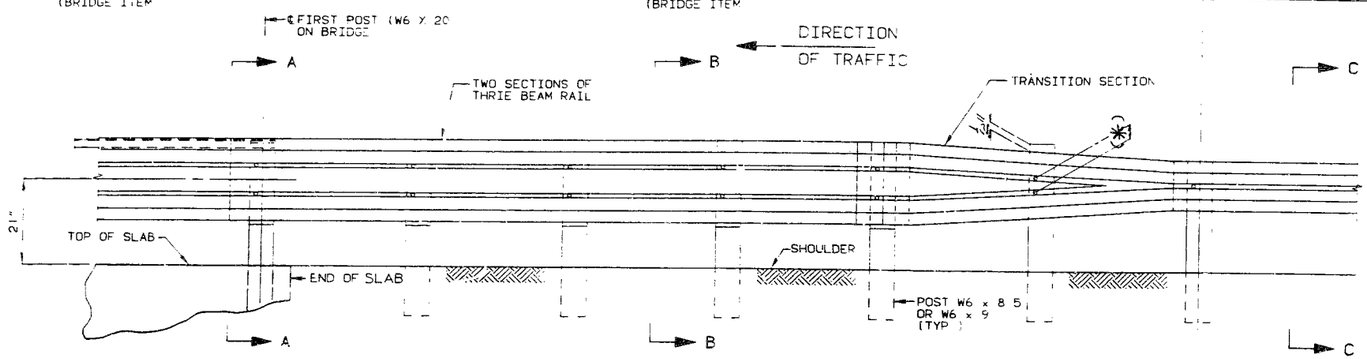
SEE FINAL PLANS

Sheet No. 1 of 4

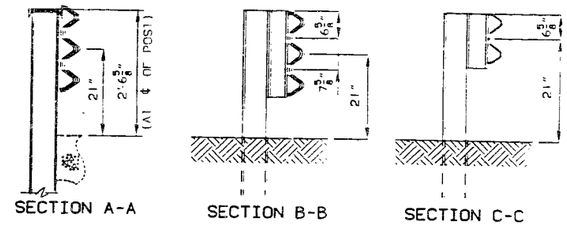
130

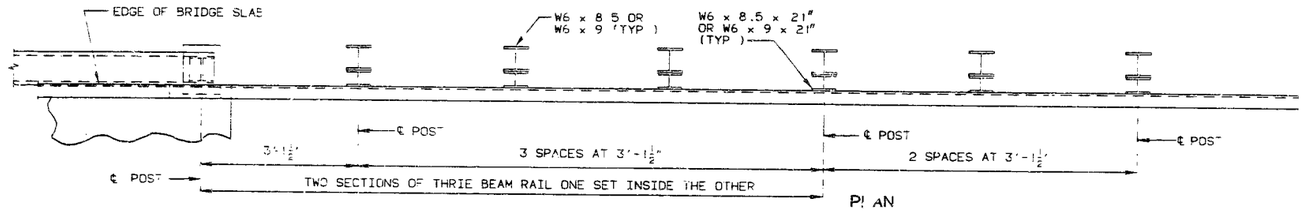
NOTE
SEE BRIDGE THRIE BEAM RAIL SHEET FOR DETAILS NOT SHOWN

STATE	PROJ NC	SHEET NC
MO		7

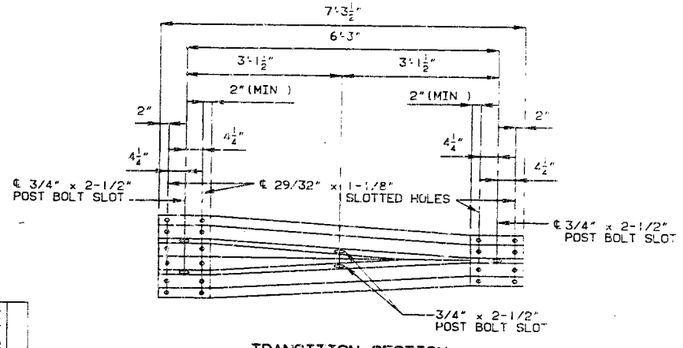


PART SECTION AT END OF SLAB

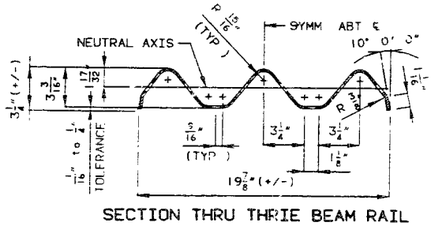




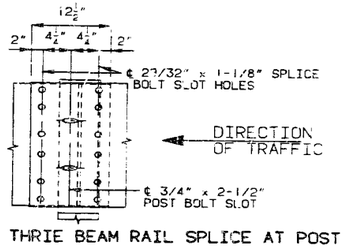
PLAN



TRANSITION SECTION



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE AT POST

NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS (FOR THRIE BEAM RAIL DESIGN ONLY).

THE THRIE BEAM RAILS AND THE TRANSITION SECTION FOR THE BRIDGE ANCHOR SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 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.

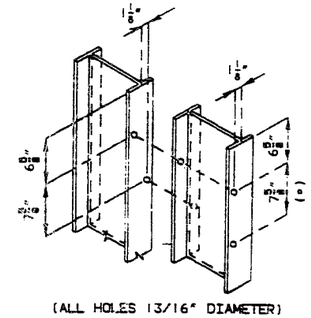
WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 3/16" MIN.) AND FLAT, OR WHEN NECESSARY OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE THRIE BEAM RAILING. WASHERS SHALL HAVE A 11/16" x 1" SLOTTED HOLE.

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

ALL LAP SPLICES SHALL BE MADE IN THE DIRECTION OF TRAFFIC.

SEE MISSOURI STANDARD PLANS DRAWING 606.00 FOR DETAILS NOT SHOWN.

(*) VERIFY BY RAIL TRANSITION PRODUCER



(ALL HOLES 13/16" DIAMETER)

HOLE PUNCHING DETAILS
(FOR STEEL POST & BLOCKS)

REVISED (1)	
ANCHOR SEC. AUG 1988	

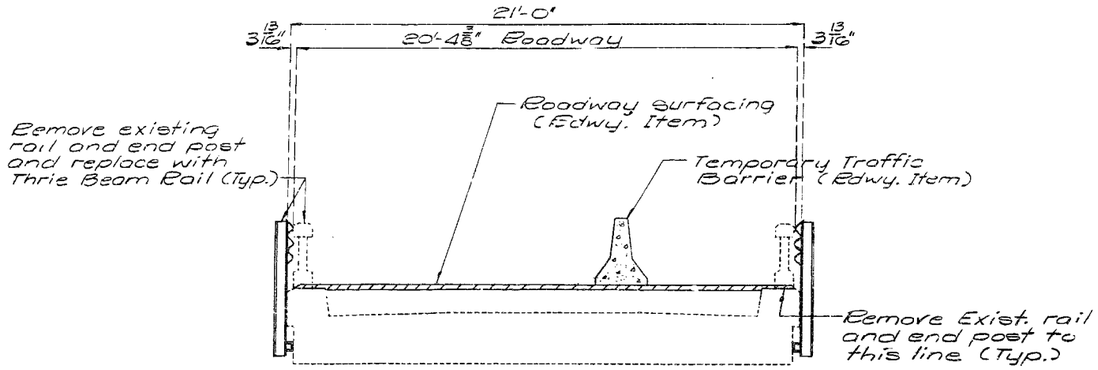
DETAILED Dec. 1989
CHECKED Dec. 1989

NOTE THIS DRAWING IS NOT TO SCALE FOLLOW DIMENSIONS

IRON COUNTY

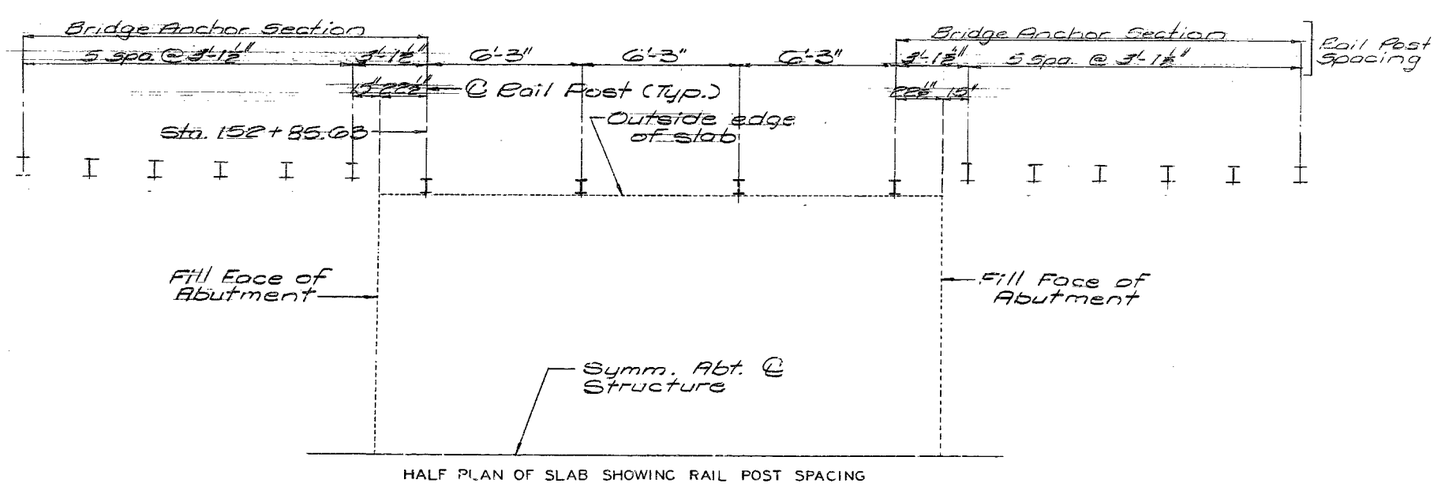
G-270R

STATE	PROJ. NO	SHEET NO
MO		8



TYPICAL SECTION

Note: For Details of Bridge Anchor Section see Sht. # 2.



HALF PLAN OF SLAB SHOWING RAIL POST SPACING

GENERAL NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS.

PANEL 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 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.

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

USE 5/8 INCH BUTTON HEAD, OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS. (THICKNESS OF HEX NUTS = 3/8".

THRIE BEAM GUARD RAIL ON THE BRIDGE SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. 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.

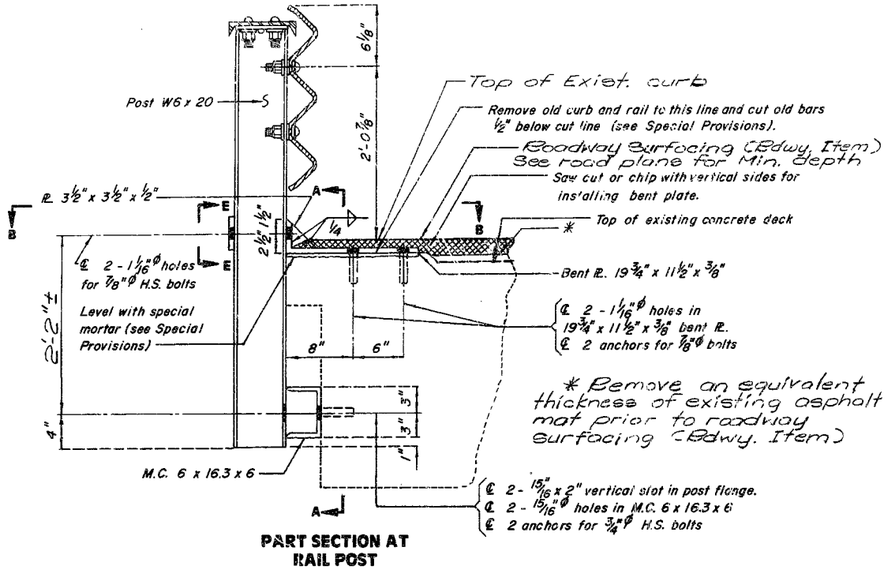
DETAILED Dec 1989
CHECKED Dec 1989

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

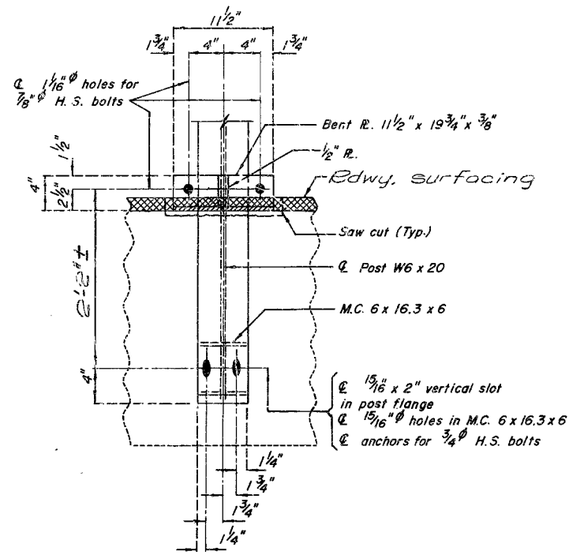
IRON COUNTY

G-270R

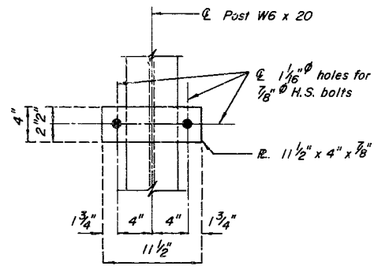
STATE	PROJ. NO	SHEET NO
MO		9



PART SECTION AT RAIL POST



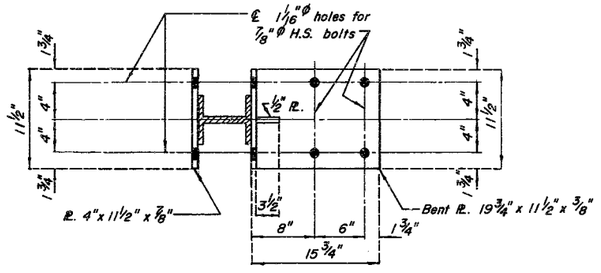
SECTION A-A



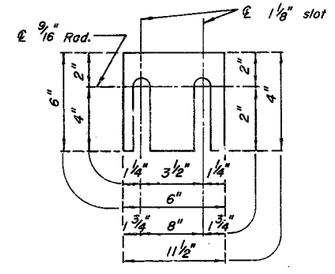
ELEV. E-E

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

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.

Note:

Shim plates 6" x 6" x 1/16" may be used between M.C. 6 x 16.3 x 6" and old concrete and shim plates 11½" x 4" x 1/16" may be used between post W6 x 20 and 19¾" 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.

133

Rehab. (T-BM/DECK GDR) SEPT. 1985 REVISED SEPT. 1988

DETAILED Dec. 1989
CHECKED Dec. 1989

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

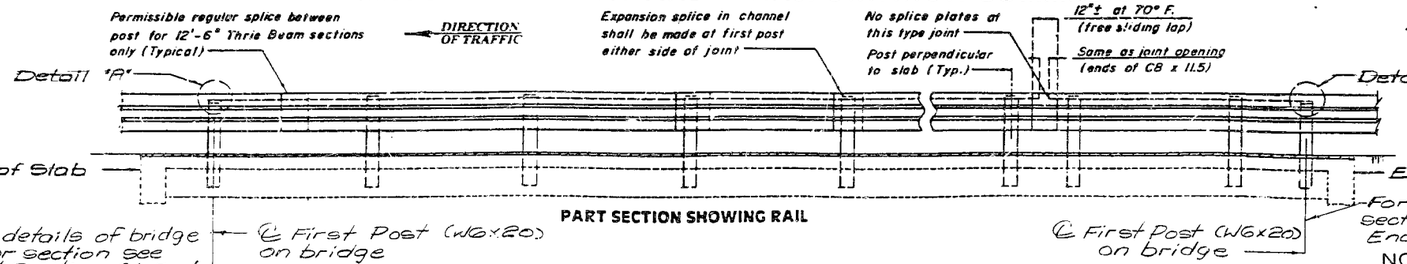
Sheet No. 4 of 4

IRON **COUNTY**

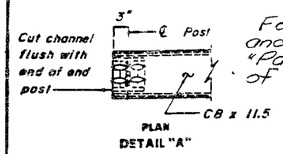
G-270R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

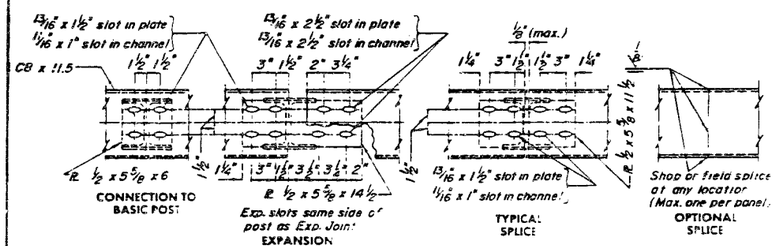
STATE	PROJ. No. 6P 838-32	SHEET NO
MO	JOB No. 6P 838-32	66
SUR 2184	TWP 35N	RGE 2E



PART SECTION SHOWING RAIL



DETAIL "A"



CHANNEL MEMBER DETAILS

FINAL QUANTITIES	
ITEM	TOTAL
Bridge Guard Rail (Thrie Beam) Lin.Ft.	38
Curb Removal for Thrie Bm. Installation Lin.Ft.	46
Bridge Anchor Section (Thrie Beam) Each	4

Note:
Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

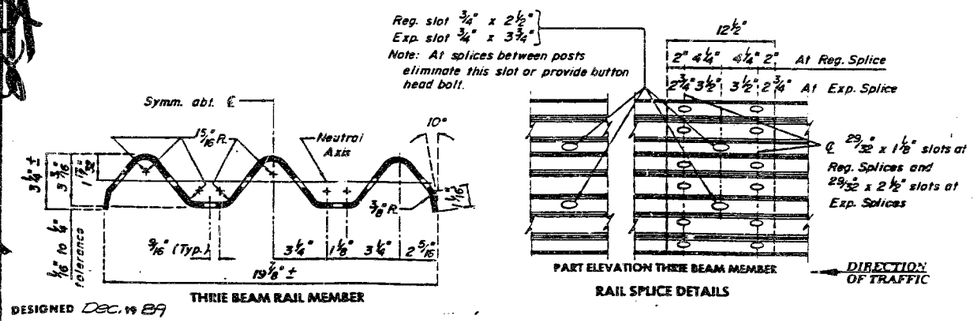
NOTE:

Maintain one lane of traffic during construction.

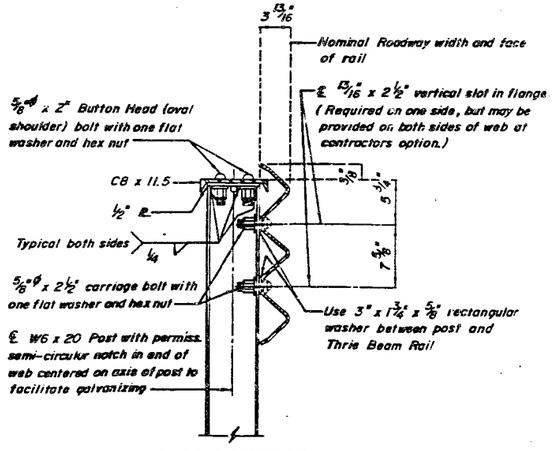
Light dashed lines indicate old work. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

Remove an equivalent thickness of the existing asphalt mat prior to the placement of roadway surfacing across the bridge. (Rdwy. Item)



RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

REPAIRS TO
BRIDGE OVER BRANCH OF CEDAR CREEK
STATE ROAD FROM DENT CO. LINE TO ROUTE 21
ABOUT 4 MILES WEST OF BELLEVIEW
PROJECT NO. 6P838-32 Sec A **STA.** 152 + 83.75
JOB NO. 6P 838-32 **RTE.** 32
IRON **COUNTY**
DATE 12/27/89

STD. 606.00	
STD.	
G-270R	

134

DESIGNED Dec. 19 89
DETAILED Dec. 19 89
CHECKED Dec. 19 89

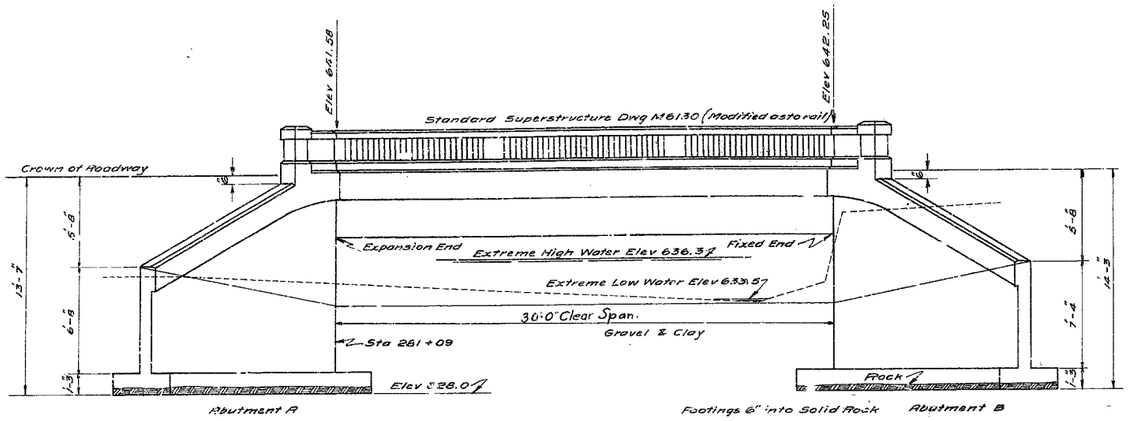
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1A of 4

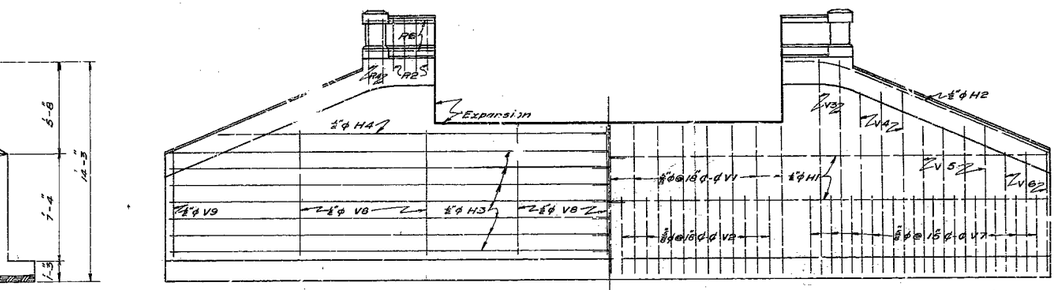
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	193	19	72	

A

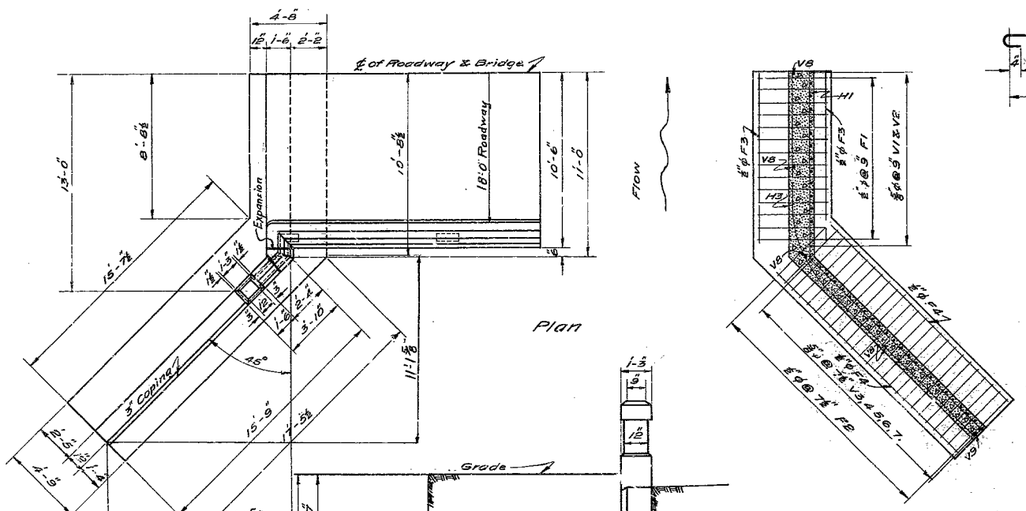
9

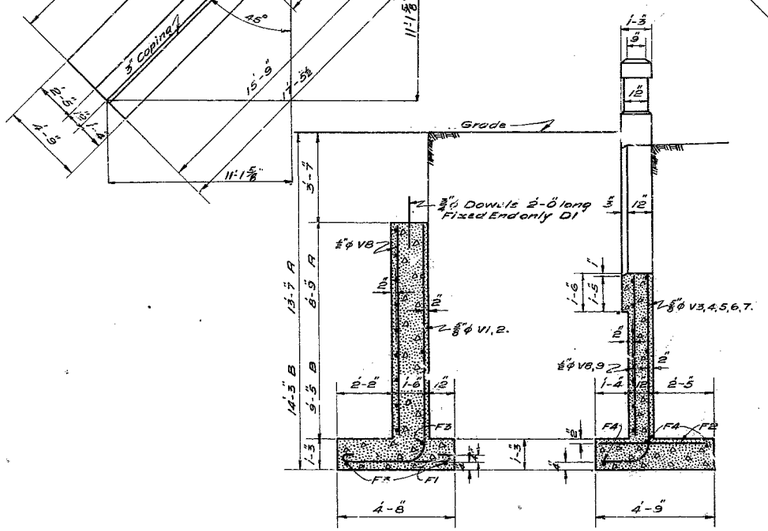


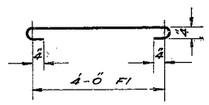
Elevation

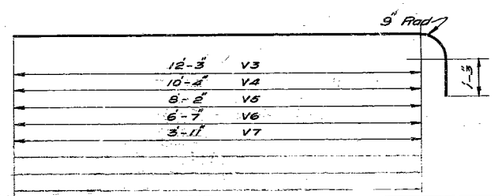


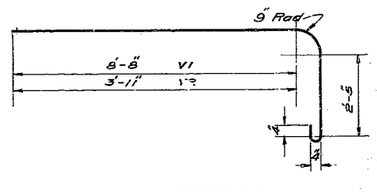
Developed Elevation











Bill of Reinforcing Steel

No	Size	Mark	Length	Remarks
30	⅝"ϕ	V1	13'-1	See Sketch
28	⅝"ϕ	V2	8'-4"	" "
8	⅝"ϕ	V3	14'-6"	" "
12	⅝"ϕ	V4	12'-3"	" "
16	⅝"ϕ	V5	10'-7"	" "
12	⅝"ϕ	V6	3'-0"	" "
48	⅝"ϕ	V7	6'-11"	" "
14	½"ϕ	V8	7'-9"	Straight
4	½"ϕ	V9	6'-5"	"
8	½"ϕ	H1	26'-6"	Bent in field
4	½"ϕ	H2	16'-0"	" " "
28	½"ϕ	H3	27'-0"	" " "
4	½"ϕ	H4	24'-0"	" " "
56	½"ϕ	F1	5'-8"	See Sketch
100	½"ϕ	F2	4'-5"	Straight
6	½"ϕ	F3	20'-6"	"
12	½"ϕ	F4	15'-3"	"
8	½"ϕ	D1	2'-0"	Dowels

Estimated Quantities

Handrail	1:2:3	5.9	Cu Yds.
Beam & Slab	1:2:4	36.5	Cu Yds.
Abuts & Wings	1:2:4	69.7	Cu Yds
Reinforcing Steel	(Superstructure)	7370	Lbs.
Reinforcing Steel	(Abuts & Wings)	3110	Lbs.

General Notes :-

All general notes on Standard Dwg M6130 to apply to this bridge.
Concrete in Abutment & Wings 1:2:4 Mix.

Change in Superstructure Steel as given on Standard Dwg M6130.
Length of R1 bars decreased to 31'-2" long.
Number of R8 bars increased to 28.
Add 16 - R6 bars 5'-6 long 3'-3" long in rail over Wing corresponding to R1 bars.

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER KEESLING ~~BRANCH~~

STATE ROAD FROM IRONTON TO SALEM

ABOUT 7⅛ MI. FROM BELLEVIEW

PROJECT No. 193 (RT.32) STA. 281+09

IRON COUNTY

SUBMITTED BY C. H. Mann BRIDGE ENGINEER

APPROVED BY [illegible] STATE HIGHWAY ENGINEER

M6130

G272

DRAWN May 1922 BY C.F.B.

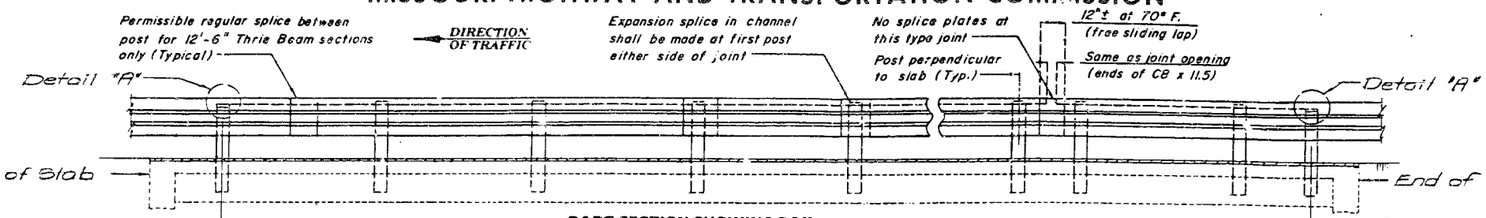
CH'K'D May 1922 BY C. C. H.

275

BUCKERT CO. ST. L. MO.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

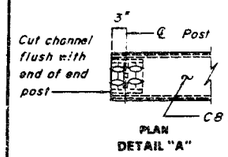
STATE	PROJ NO	SHEET NO
MO		12
SEC 32	TWP 35N RGE 2E	



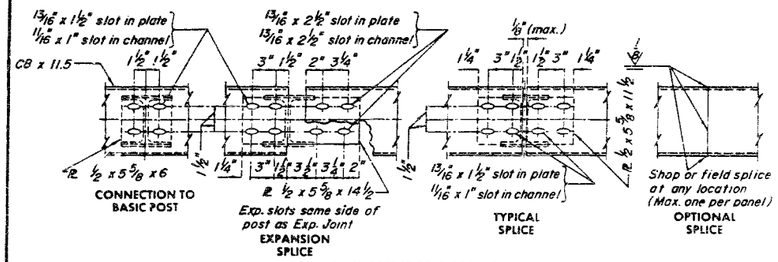
PART SECTION SHOWING RAIL

For details of bridge anchor section see "Part Section At End of Slab" Sht. No. 2.

For details of bridge anchor section see "Part Section At End of Slab" Sht. No. 2.



PLAN DETAIL "A"



CHANNEL MEMBER DETAILS

ESTIMATED QUANTITIES	
ITEM	TOTAL
Bridge Guard Rail (Thrie Beam) Lin.Ft.	57
Curb Removal for Thrie Bm. Installation Lin.Ft.	82
Bridge Anchor Section (Thrie Beam) Each	4

Note:
"Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

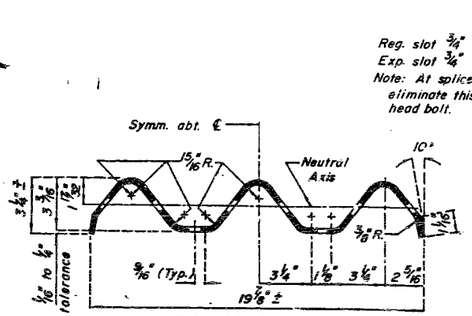
NOTE:

Maintain one line of traffic during construction.

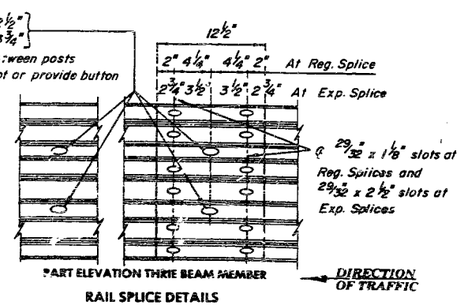
Light dashed lines indicate old work. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

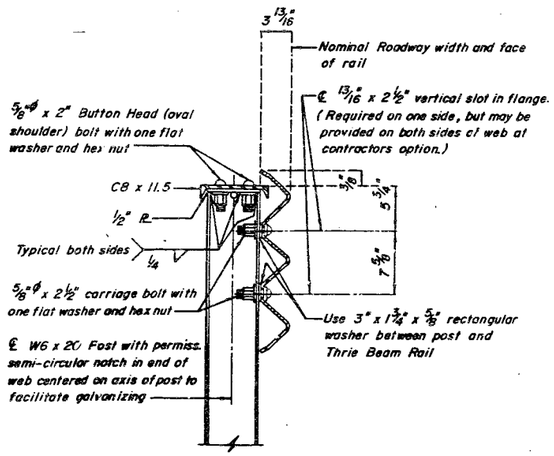
Roadway surfacing shall be used to build the existing riding surface on the bridge up to the elevation of the top of the existing concrete curbs (Rdwy. Item).



THRIE BEAM RAIL MEMBER



RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

REPAIRS TO
BRIDGE OVER KEESLING BRANCH

STATE ROAD FROM DENT CO. LINE TO RTE. 21

ABOUT 7.5 MILES WEST OF BELLEVIEW

PROJECT NO. F-32-2(11)Sec A **STA.** 281 + 07.5

JOB NO. 6 - P - 32 - 838 **RTE.** 32

IRON **COUNTY**

DATE 12/27/89

STD.
STD. 606.00
G-272R

DESIGNED Dec. 1989
DETAILED Dec. 1989
CHECKED Dec. 1989

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

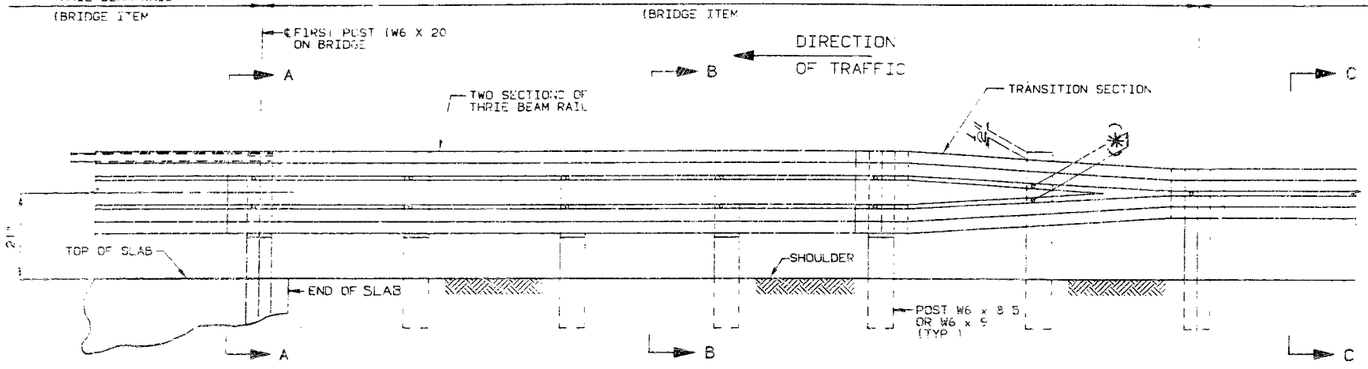
SIGNAL PLANS
Sheet No. 1 of 4

132

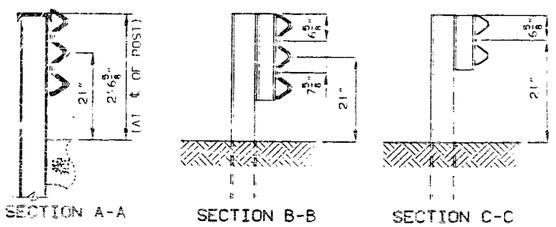
NOTE
SEE GRIDGE THRIE BEAM RAIL SHEET FOR DETAILS NOT SHOWN

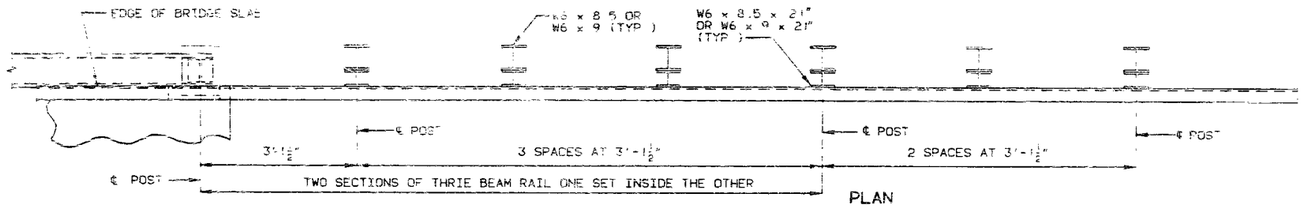
STATE	PROJ NO	SHEET NO
MO		13

THRIE BEAM RAIL (BRIDGE ITEM | BRIDGE ANCHOR SECTION (THRIE BEAM (BRIDGE ITEM | TYPE "A" GUARD RAIL (ROADWAY ITEM)



PART SECTION AT END OF SLAB





PLAN

NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS (FOR THRIE BEAM RAIL DESIGN ONLY).

THE THRIE BEAM RAILS AND THE TRANSITION SECTION FOR THE BRIDGE ANCHOR SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 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.

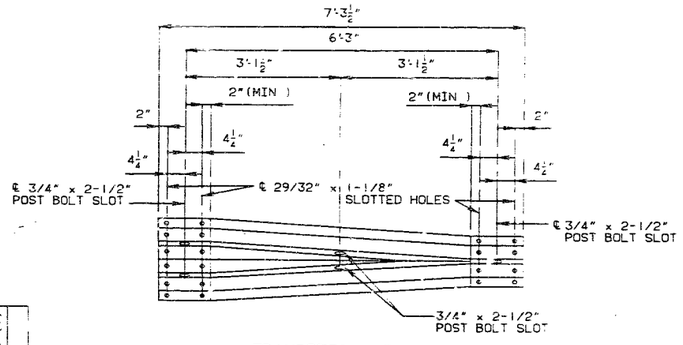
WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" x 1-3/4" X 3/16" MIN.) AND FLAT, OR WHEN NECESSARY OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE THRIE BEAM RAILING. WASHERS SHALL HAVE A 11/16" x 1" SLOTTED HOLE.

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

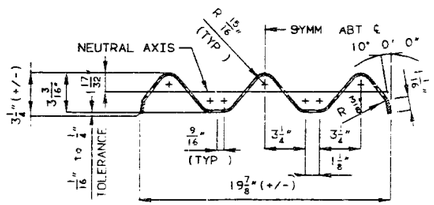
ALL LAP SPLICES SHALL BE MADE IN THE DIRECTION OF TRAFFIC.

SEE MISSOURI STANDARD PLANS DRAWING 606.00 FOR DETAILS NOT SHOWN.

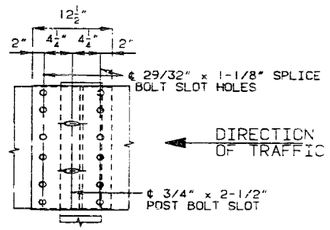
(*) VERIFY BY RAIL TRANSITION PRODUCER



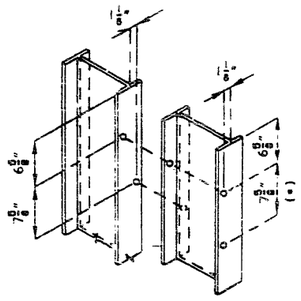
TRANSITION SECTION



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE AT POST



(ALL HOLES 13/16" DIAMETER)

HOLE PUNCHING DETAILS
(FOR STEEL POST & BLOCKS)

REVISED (1)
ANCHOR SEC AUG 1988

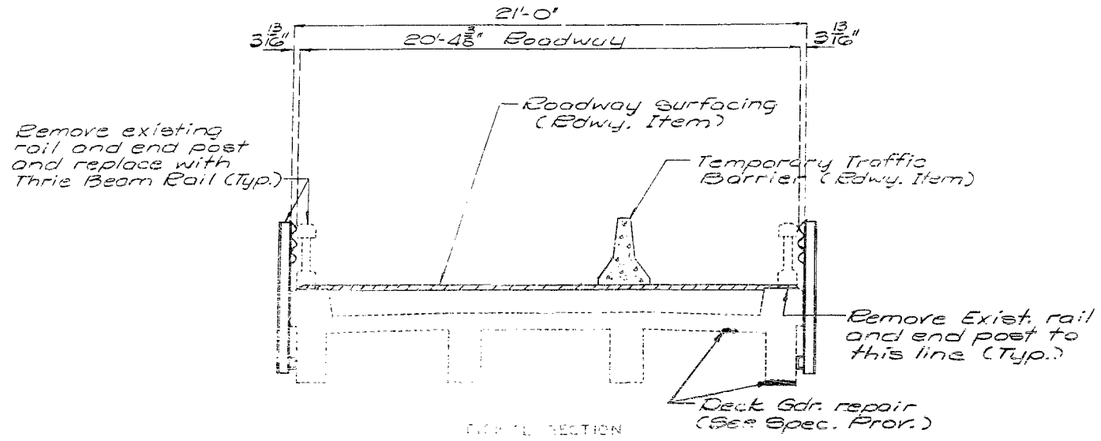
DETAILED Dec. 1989
CHECKED Dec. 1989

NOTE THIS DRAWING IS NOT TO SCALE FOLLOW DIMENSIONS

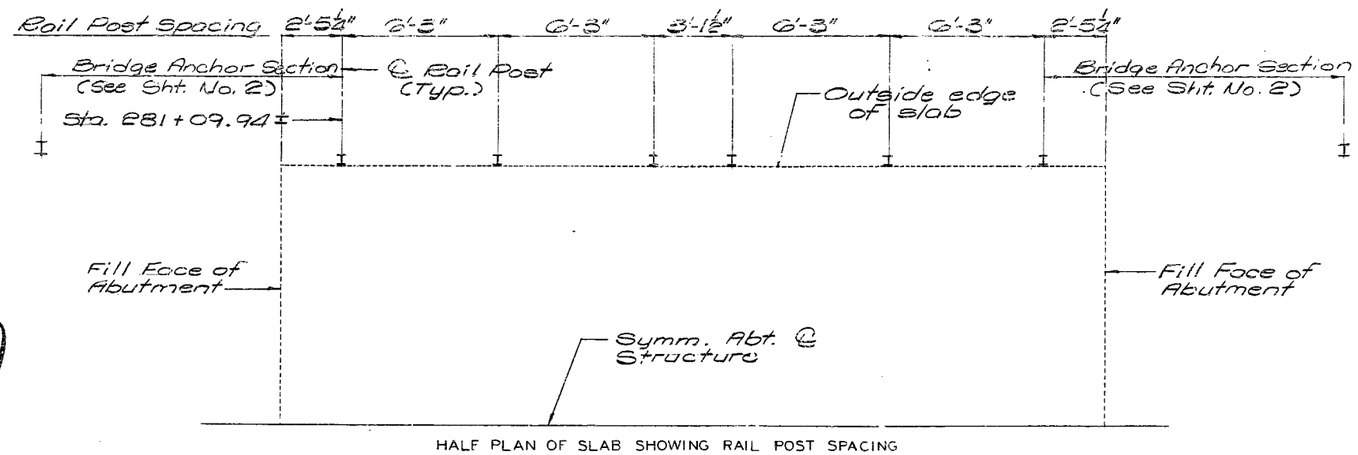
IRON COUNTY

G-272R

STATE	PROJ. NO	SHEET NO
MO		14



TYPICAL SECTION



HALF PLAN OF SLAB SHOWING RAIL POST SPACING

GENERAL NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS.

PANEL 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 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.

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

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

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

WASHERS SHALL BE USED AT ALL 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.

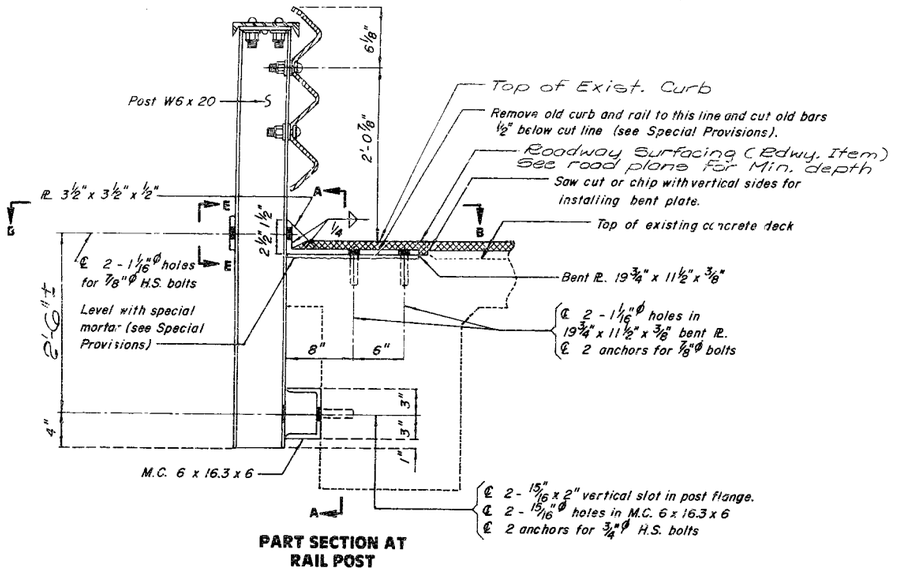
1990

DETAILED Dec 1989
CHECKED Dec 1989

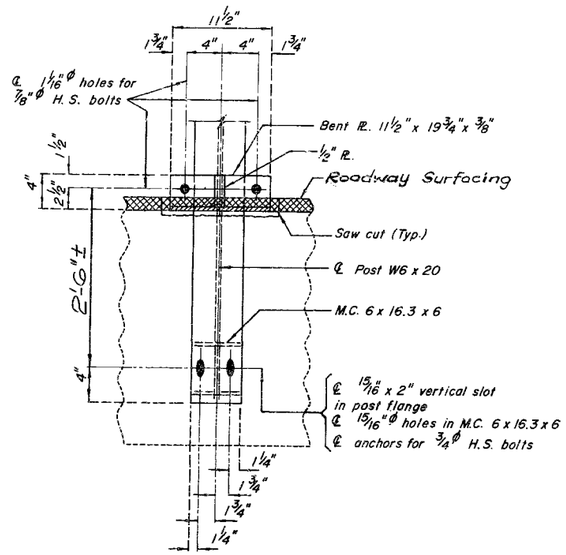
Note: This drawing is not to scale. Follow dimensions.

IRON COUNTY G-272R

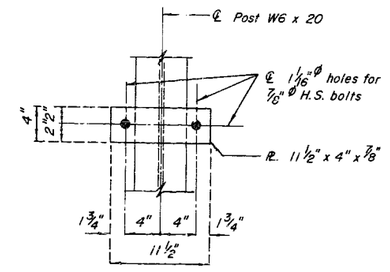
STATE	PROJ NO	SHEET NO
MO		15



PART SECTION AT RAIL POST



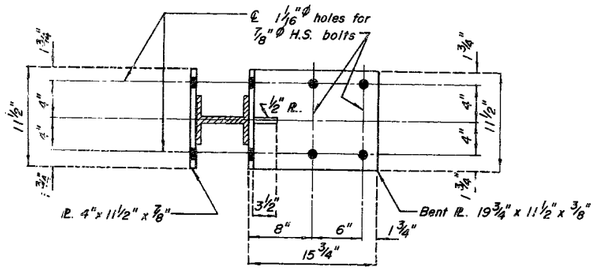
SECTION A-A



ELEV. E-E

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.

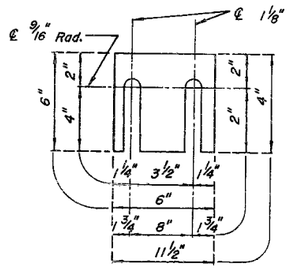


SECTION B-B

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 SHIM PLATES

Note:

Shim plates 6" x 6" x 1/16" may be used between M.C. 6 x 16.3 x 6" and old concrete and shim plates 11½" x 4" x 1/16" may be used between post W6 x 20 and 19¾" 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.

141

REVISED	SEPT. 1986
Rehab. (T-BM/DECK GDR)	SEPT. 1985

DETAILED Dec. 19 89
CHECKED Dec. 19 89

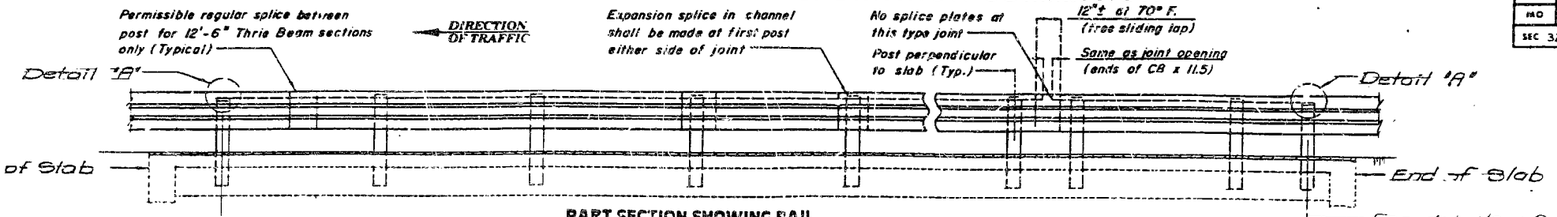
Note: This drawing is not to scale. Follow dimensions.

IRON COUNTY

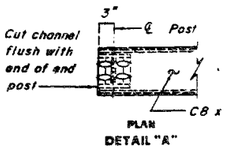
G-272R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

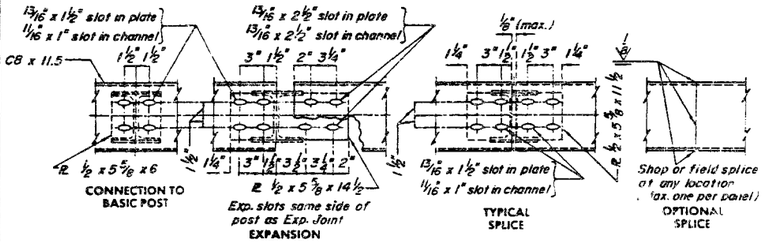
STATE	PROJ. No. GP 838-32	SHEET NO
MO	JOB No. GP 38-32	67
SEC 32	TWP 35N	RGE 2E



PART SECTION SHOWING RAIL



PLAN
DETAIL "A"



CHANNEL MEMBER DETAILS

FINAL QUANTITIES		
ITEM		TOTAL
Bridge Guard Rail (Thrie Beam)	Lin. Ft.	57
Curb Removal for Thrie Bm. Installation	Lin. Ft.	82
Bridge Anchor Section (Thrie Beam)	Each	4

Note:
Curb Removal for Thrie Beam Installation" shall include end posts & baluster rails from End of Curb to End of Curb. Rails & end post shall be removed to top of existing curbs.

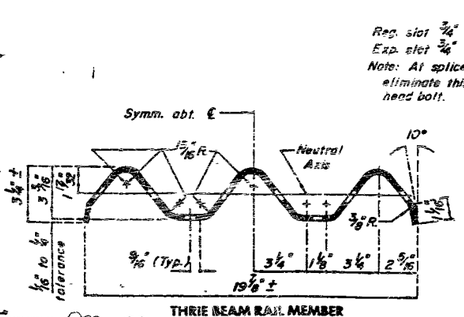
NOTE:

Maintain one lane of traffic during construction.

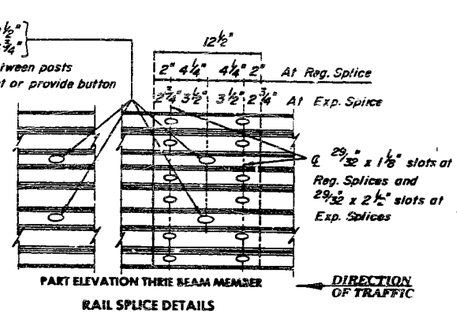
Light dashed lines indicate old work. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

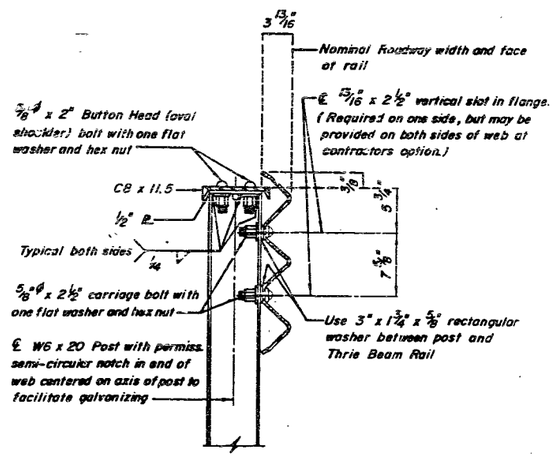
Roadway surfacing shall be used to build the existing riding surface on the bridge up to the elevation of the top of the existing concrete curbs (Rdwy. Item)



THRIE BEAM RAIL MEMBER



RAIL SPLICE DETAILS



PART SECTION AT RAIL POST

REPAIRS TO
BRIDGE OVER KEESLING BRANCH
STATE ROAD FROM DENT CO. LINE TO RTE. E
ABOUT 7.5 MILES WEST OF BELLEVIEW
PROJECT NO. GP 850-32-Sec A **STA.** 281 + 07.5
JOB NO. GP 338-32 **RTE.** 32
IRON **COUNTY**
DATE 12/27/89

DESIGNED Dec. 1989
DETAILED Dec. 1989
CHECKED Dec. 1989

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

Sheet No. 1A of 4

STD.
STD. 606.00
G-272R

G-272R

LOCATION ROUTE 21 WESTERLY TO THE EASTERN BOUNDRY OF THE CLARK NATIONAL FOREST

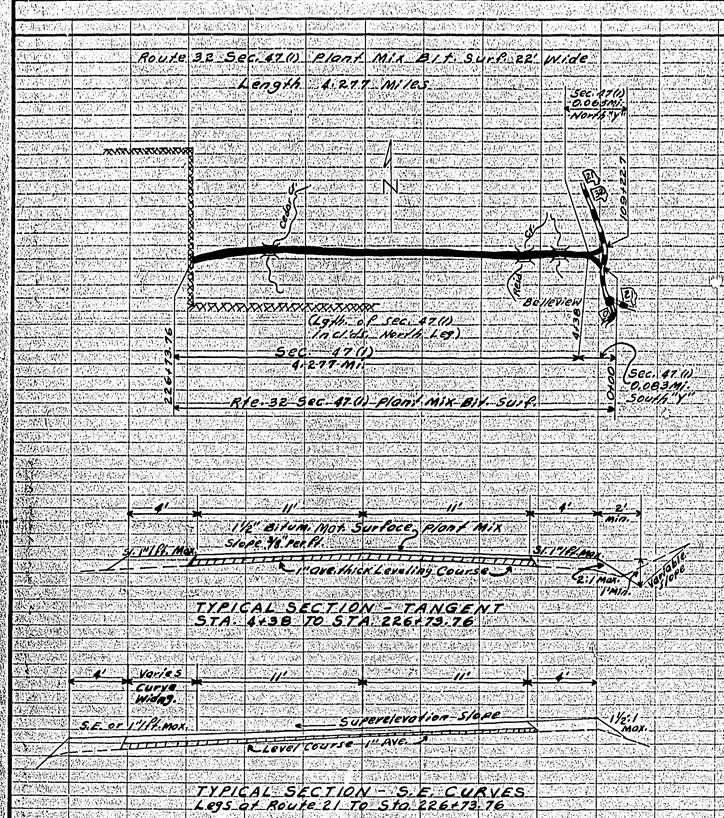
TYPE PLANT MIX BITUMINOUS SURFACE 22 FEET WIDE

MISSOURI STATE HIGHWAY COMMISSION

SUMMARY OF QUANTITIES

FINAL PLANS

FED. ROAD DIST. No.	STATE	PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	MO.	SECTION 47 (1)			
DIST. No.	COUNTY			ROUTE	SEC. No.
6	IRON			32	

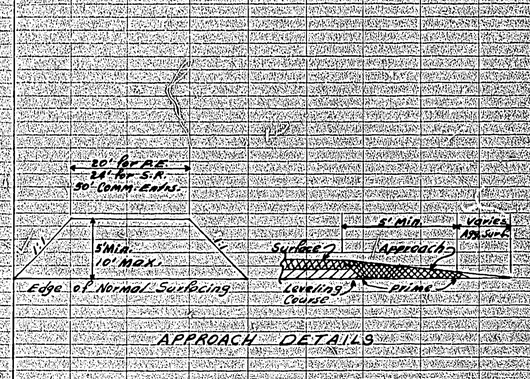


LENGTH OF PROJECT

End of Project	Station	226+73.76	
Beginning of Project	Station	4+38.00	
Apparent Length		22235.76	Feet
Equations and Exceptions:			
Additions			
South "Y" STO. 0+00 TO 4+38		1438.00	*
North "Y" STO. 109+22.7 TO Ref. Ptr.		1344.40	*
(*Not Included in Store Lengths)			
Total Corrections		1344.40	Feet
Net Length of Project		22580.16	Feet
	State Length =	4.277	Miles
	Federal Length =	0	Miles

GENERAL SUMMARY

ITEM NO.	DESCRIPTION	UNIT	TOTAL UNITS	NO. UNITS FED. AID ONLY
23502	Shaping Shoulders	Mi.	4.36	
38064	Surface Material Chat (2)	C.Y.	38	
37207	Primer, RC-0	Gal.	1890	
37015	Sanding Primer	Ton	37	
41067	Bituminous Material (Surf.) (120-150)	Gal.	65310	
41005	Mineral Aggregate (Surf.)	Ton	4455	
41167	Bituminous Material (Leveling) (120-150)	Gal.	8160	
41105	Mineral Aggregate (Leveling)	Ton	556	
87100	Construction Signs	L.S.	1	
	Continental Traffic Control			
	Asphalt Pavement Samples	Ea.	9	



534

Prepared By A.G. SMITH Date Sept. 12 19 63 Checked in Dist. Office By C.E. Hale Date 11/14 1963 Checked in Central Office By [illegible] Date 19 Revised By Date 19

504

MISSING FROM
FINALS

CO. Iron
RTE. 32
[redacted]-PROJ. F 193A
SH# TT

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
MOTE BOOK
NO.
AREAS CHECKED
BY
DATE

TITLE SHEET

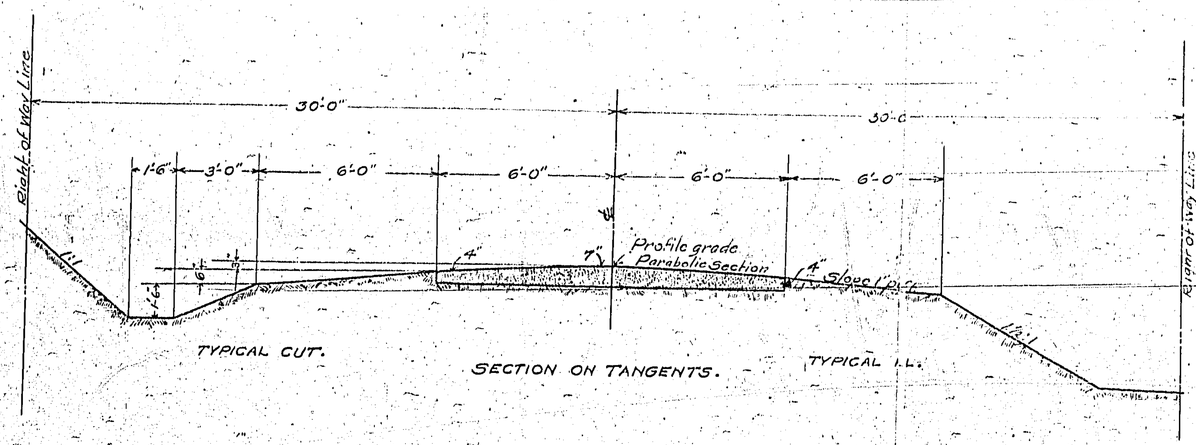
[redacted]

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
MOTE BOOK
NO.
AREAS CHECKED
BY
DATE

1987

(01)

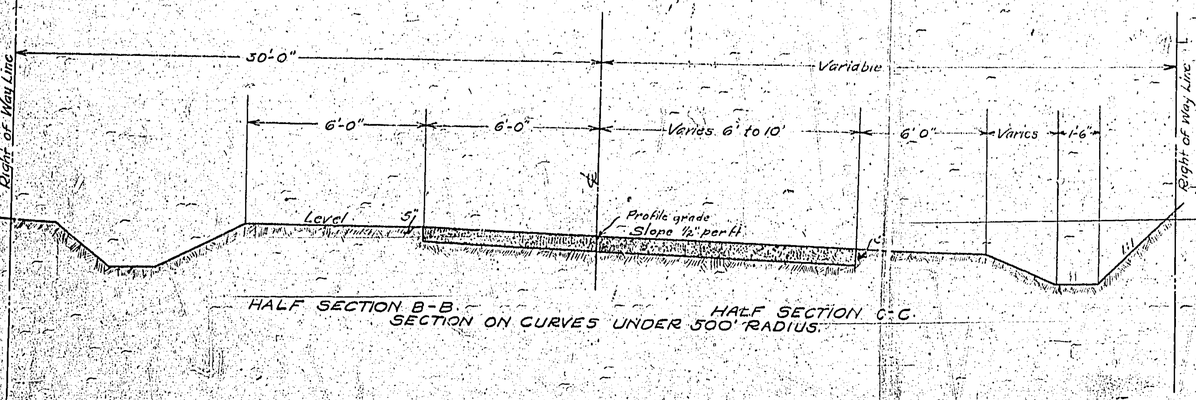
Sheet No.	State	Project	Year		
5	No		1921	2	



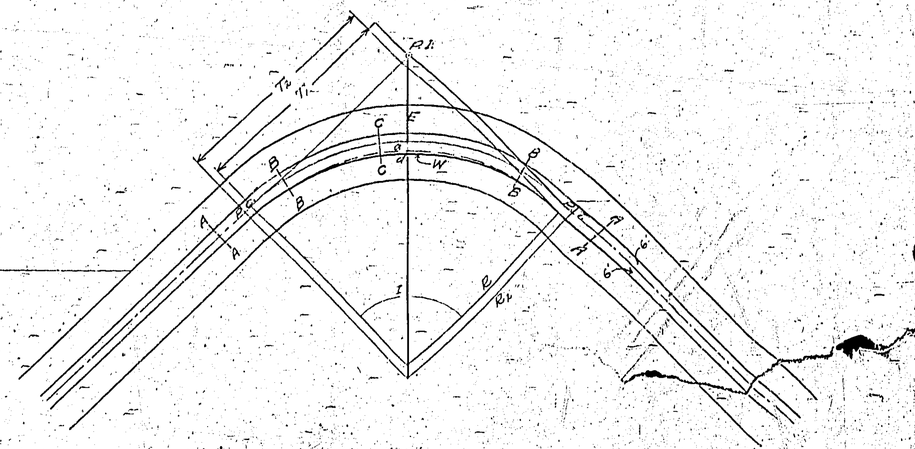
TYPICAL CUT. SECTION ON TANGENTS. TYPICAL F.L.

TYPICAL SECTIONS OF GRAVEL PAVEMENT.

Note: Gravel spread 9" at center and 6" at edges loose measurement should compact to the depths shown; requires approx 1500 cu.yds. per mile.



HALF SECTION B-B. HALF SECTION C-C.
SECTION ON CURVES UNDER 500' RADIUS.



W = 4'-0"
$R_1 = R - 6'-0"$
$E = R \operatorname{exsec} \frac{I}{2}$
$R_2 = R - E \operatorname{exsec} \frac{I}{2}$
$T = R_1 \tan \frac{I}{2}$
$T_2 = R_2 \tan \frac{I}{2}$
$\text{Area (abcda)} = \frac{\pi D^2}{360} (R_1^2 - R_2^2) + (R_1 + R_2)(T_2 - T_1)$
Superelevation begins at Section AA 25' from P.C. or P.T. and attains its full value at Section BB 50' from AA

TYPICAL PLAN OF CURVES UNDER 500' RADIUS

1988

(10)

MISSOURI STATE HIGHWAY DEPARTMENT

ESTIMATE SHEET

Description of paving 12' GRAVEL

Prepared by CST

Date NOVEMBER 23RD 1922.

County of IRON

Length ~~7.57~~ 7.197 miles

Name of road BELLVIEW TO DENT COUNTY

FED. ROAD DIST. NO.	FEDERAL AID PROJ.	STATE ROAD NO.	TOTAL SHEETS	SHEET NO.	COUNTY SHEETS
1	42 B	21	32	27	

EXCAVATION

Station	To Station	Earth	Rock	Borrow	Overhaul	Extra Earth
0+00	13+00	703.4		230.0	433.0	
25+00	38+50	381.5				
38+00	39+50	146.4	52.0	67.5		
39+50	52+00		605.9	1805.0		
52+00	65+00	117.0		18.3	808.0	12.0
65+00	79+50	1079.8				4.0
79+50	88+00	923.8			975.0	5.0
88+00	99+00	601.2		710.0		15.0
99+00	107+00	761.9	10.0			
107+00	117+00	567.3				
117+00	129+00	611.3		1598.0		
129+00	140+00	828.1	10.0			
140+00	150+00	126.7	127.9	1075.0		
150+00	157+00	3.6	394.2	900.0		
157+00	165+20	80.0	54.9	2041.3		
165+20	178+00	450.0				6.0
178+00	189+00	748.9			187.0	15.0
189+00	196+00	346.4				10.0
196+00	203+00	1179.1		1560.0		
203+00	215+00	1423.0		2310.0		
215+00	228+50	545.2				30.0
228+50	231+00	1140.8				
231+00	241+00	1774.1				5.0
241+00	247+50	1625.5				5.0
247+50	253+35	1148.4				
253+35	265+00	986.5				
265+00	278+00	1010.4		110.4	50.0	10.0
278+00	289+00	493.1				
289+00	296+50	863.9				3.0
296+50	308+00	1244.6		1013.0		7.0
308+00	311+50	308.9				12.0
311+50	319+25	871.1				
319+25	326+00	1516.4				5.0
326+00	339+00	1353.2				
339+00	348+00	1543.4				
348+00	358+00	1065.7		80.7		3.0
358+00	367+50	868.9				6.0
367+50	374+00	378.4				
374+00	386+00	881.8				10.0
386+00	397+14	1179.5		19.9		
		1253		110.0	1.20	10.0
		37114	1253	13960	2453.0	173.0

STD. CONCRETE CULV.

Station	Type	Size	Length	Concrete Cubic Yds.	Reinforcing Steel Lbs.
01+71	RM226	6'X4'	50	33.8	3129
17+53	RM224	4'X2.5'	26	13.3	1028
61+00	RM223	3'X2'	28	10.8	935
82+43	RM224	4'X2.5'	24	12.7	960
115+92	RM3210	10'X5'	24	38.1	2950
142+11	RM3210	10'X5'	26	40.2	3134
165+20	RM226	6'X3'	24	16.7	1175
172+43	RM224	4'X2.5'	24	12.7	960
125+00	RM328	8'X4'	26	31.6	2207
204+04	RM224	4'X2.5'	40	17.9	1502
218+71	M226	6'X4'	28	25.5	1878
232+65	RM328	8'X4'	40	43.4	3226
249+25	RM223	3'X2'	32	11.8	1050
253+54	RM3210	10'X5'	40	55.0	4122
279+43	RM225	5'X3'	30	19.3	1424
311+28	RM223	3'X2'	37	13.0	1194
				400.1	31234

STD. PIPE CULVERTS.

Station	15" C.I.P.	18" C.I.P.	24" C.I.P.	Cubic Yds. Concrete
25+77		32		2.2
34+00		32		2.2
56+05		28		2.2
73+61			32	3.4
110+80		28		2.2
133+80		30		2.2
165+80		28		2.2
181+09		30		2.2
185+00		30		2.2
192+00			34	3.4
213+00	30			1.6
222+45		30		2.2
227+10		30		2.2
238+00		30		2.2
242+00		30		2.2
243+68		32		2.2
255+47		40		2.2
262+76	40			1.1/4
267+90			30	3.4
271+25	28'			1.6
275+00		30		2.2
287+00	30			1.6
294+00		30		2.2
308+08		30		2.2
301+54			32	3.4
314+88			34	3.4
322+48		46-18'0		2.2
324+35		36		2.2
328+15		50-12'0		2.2
334+43		44 "		2.2
335+85	28'			1.6
336+81			34	3.4
347+00	30			1.6
137+		28		2.2
	186'0	755'0	162'0	77 C.Y.

STANDARD GUARD RAIL

Sta.-Sta.	Length
30+40-30+60	220.0
197-200	600.0
	820.0

RIP RAP

Sta.-Sta.	Sq. Yds.
41+50-42+50	35.0
54-55	35.0
151+50-153	50.0
	120.0

STAKE UNDERDRAIN

Sta.-Sta.	Length
28+50-29+50	100'0
Vit. Clay Pipe	60.0

SUMMARY

Item	Description	Unit	Quantity
1	Earth Excavation	Cu. Yd.	37188.9
2	Rock Excavation	" "	1283.1
3	Borrow	" "	13960.0
4	Overhaul	Yd. Sta.	2453.0
31	Class 'B' Concrete Masonry	Cu. Yd.	400.1
33	Class 'C' Concrete Masonry	" "	172.2
41	15" Corrugated Iron Pipe	Lin. Ft.	186.0
43	18" " " "	" "	618.0
43A	18" " " " 12 Ga.	" "	140.0
44	24" " " "	" "	162.0
55	Stone Underdrain	" "	100.0
56	12" Vit. Clay Pipe	" "	60.0
67	Rip Rap	Sq. Yd.	120.0
79	Wooden Guard Railing	Lin. Ft.	820.0
80	Gravel Paving Spec. 'C'	Sq. Yd.	5192.0
Sta. 37+90	Bridge		
108	Concrete Masonry Class 'A'	Cu. Yd.	5.6
109	" " " 'B'	" "	105.3
110	" " " 'C'	" "	83.2
112	Reinforcing Steel	Lb.	11340.0
Sta. 152	65' Bridge		
108	Concrete Masonry Class 'A'	Cu. Yd.	3.1
109	" " " 'B'	" "	89.3
110	" " " 'C'	" "	59.4
112	Reinforcing Steel	Lb.	3500.0
Sta. 200	12'		
109	Concrete Masonry Class 'B'	Cu. Yd.	89.0
112	Reinforcing Steel	"	1080.0
116	Structural Steel	"	60970.0
117	Steel Castings	"	1630.0
119	6" R.R.	Lin. Ft.	188.0
121	Yellow Pine Lumber	F.B.M.	12430.0
Sta. 88+02			
108	Concrete Masonry Class 'A'	Cu. Yd.	3.9
109	" " " 'B'	" "	106.2
112	Reinforcing Steel	"	10490.0

GRAVEL PAVING SPEC. "C"

(38800-38) AIR + 2951 XR = 51822.0 Sq. Yds.

9 9

Note: Sta. 0100 is 648+11.9 on Ironton - Caledonia Highway

Thos. Reed Survey - No. 3093

Hubert Russell

Δ 44°88'20"
T 264.8
L 500.5
R 200.0

Robt. Reed Survey - No. 11

Hubert Russell

L. W. Crane Est.

Hubert Russell

Sta. 0+00 Construct Reinforced Concrete Culvert 6'x6' - M. 226 - 30° to ℄ Flows L to R - Elev. of Inlet 580.30 D.A. 80 Acres Hilly

Sta. 1+78.5 Construct Reinforced Concrete Culvert 4'x2 6"x 26' - R.M. - Hubert Russell 224 - 90° to ℄ Flows L to R - Elev. of Inlet - 584.92 D.A. 30 A - Hilly

Sta. 2+46 Construct CI Pipe Culvert 18" x 32' - 90° to ℄ Flows Right D.A. 2 Acres Hilly

Hubert Russell

Δ Rt. 30°50'
D 5°
T 316.0
L 616.6
R 1146.5

Sta. 1+00 Construct CI Pipe Culvert 18" x 32' - 90° to ℄ Flows Right D.A. 4 Acres Hilly

Road 21 - Black Oak Rd. - Rt. of Ironton - Caledonia Road
Elev. 596.97

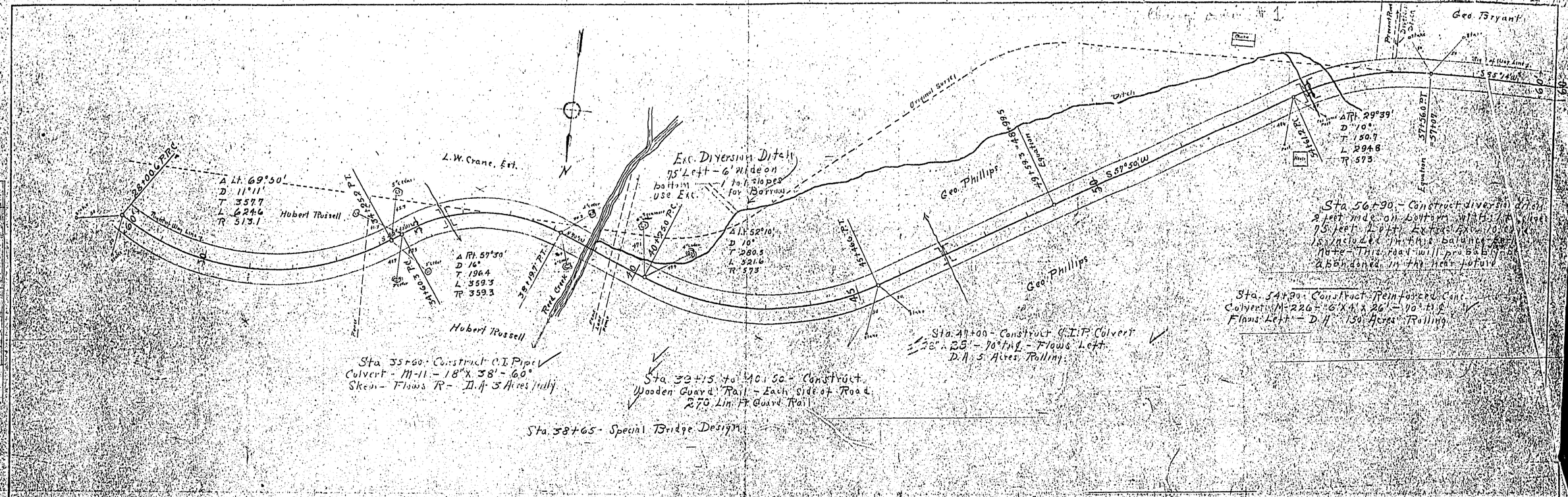
Top of Gravel Road - Rust - Left

Elev. 597.73

Exc. 705.1
Emb. 1216.8
Bor. 330.0
Oth. 433.0

Exc. 536.1
Emb. 543

Exc. 8.9
Emb. 295


L.W. Crane, Est.
Hubert Trussell
Hubert Trussell
Geo. Phillips
Geo. Phillips
Geo. Bryant
Exc. Diversion Ditch
75' Left - 6' Wide on bottom - 1 to 1 slopes for Borrow
use Exc.
Original Surface
Ditch
Road Creek
Present Road
Old Location
Elevation 571.06 PT
Elevation 571.06
Sta. 35+60 - Construct C.I. Pipe Culvert - M-11 - 18" X 38' - 60° Skew - Flows R - D.A. 5 Acres Hilly
Sta. 32+15 to 40+50 - Construct Wooden Guard Rail - Each Side of Road 270 Lin. Ft. Guard Rail
Sta. 38+65 - Special Bridge Design
Sta. 41+00 - Construct C.I.P. Culvert 28" x 28" - 70° Hd. - Flows Left D.A. 5 Acres Rolling
Sta. 56+90 - Construct diversion ditch 2 feet wide on bottom width (As shown) 75 feet Left Extra Exc. 10' Wide Excavated in the balance of Note - This road will pro ... abandoned in the near future
Sta. 54+90 - Construct Reinforced Conc. Culvert M-226 - 6'X4'x 26' - 90° Hd. Flows Left - D.A. 150 Acres Rolling
Sta. 38+65 - Special Bridge Design
Sta. 32+15 to 40+50 - Construct Wooden Guard Rail - Each Side of Road 270 Lin. Ft. Guard Rail
Sta. 41+00 - Construct C.I.P. Culvert 28" x 28" - 70° Hd. - Flows Left D.A. 5 Acres Rolling
Sta. 56+90 - Construct diversion ditch 2 feet wide on bottom width (As shown) 75 feet Left Extra Exc. 10' Wide Excavated in the balance of Note - This road will pro ... abandoned in the near future
Sta. 54+90 - Construct Reinforced Conc. Culvert M-226 - 6'X4'x 26' - 90° Hd. Flows Left - D.A. 150 Acres Rolling
Exc. 910.9
Emb. 220.6
Exc. 203.9
Emb. 152.1
Bal. 154.8
Exc. 676.4
Emb. 570.9
Exc. 95.0
Emb. 6#9.8
Bal. 452.4

Sec 26 - T 8 S N - R 2 E

Sec 25 - T 8 S N - R 2 E

T. E. Wallen

Joe Montgomery

Sta. 19+10 Const. 24" Co. R.C. Pipe

Culvert 33' Long - Headwalls - M.J.T.

90° Hd. - Flow Rt. - Dir. 20 A - Rolling

Sta. 22+89 Const. H. 2.6 x 24

Reinforced Concrete Culvert - M.J.T. 22½°

90° Hd. - Flow Rt. - Dir. 20 A - Rolling

Sta. 9+72 - Const. 28 - Rim 223 - 66" to

Mous Rt. - Elev. at Inlet 588.

Dir. 20 A - Rolling

Sta. 9+00 Construct Reinforced Concrete

EXC - 6010

EMB - 0932

BOR - 1102

Sta. 110+ Build
New 18x28 C.I.P.
M-11 Side Road Drain
Survey No. 3295
Sec. 36 T35N R2E
Sec. 25 T35N R2E
Sec. 26 T35N R2E
Sec. Corner
Wm Roh
Wm Roh
Angle Rt. 0°20'
Angle Rt. 0°39'
N
R/W Line
Fence
Sta. 115+92 Construct 10.75 x 24'
Reinforced Concrete Culvert R.M. 3210
B.M. Root of 36" Black Oak 12' Rt. of 101+20
V.C. 200'
High ground in rear of road

FED. ROAD DIST. NO.	STATE	FED. AID PROJ.	SHEET NO.	TOTAL SHEETS
5	NEV.	1532	7	707

Survey No. 2293

Angle Lt. 2°45'

Angle Lt. 0°45'

Angle Rt. 2°20'

Angle Rt. 0°30'

Sta. 133+50 Construct 18" C.I. Pipe Culvert ~~Extend~~ Head Walls M-11-60° Type-I Flare-Hill

Sec. 26 - T. 35 N. - R. 2 E.

Sta. 137+ Build New M-11 18"-23 C.I.P. Side Road Drain

Sta. 142+11 - 16.6' x 2.00' x 14° Concrete Box Culvert for Pipe-No. 3 & Remove Concrete Wing - RM-3210 - 90° Type-I Flare-Hill

Flow Line Pipe-Inlet 5623.3
Flow Line Pipe-Outlet 5622.3
D.H. 1.50 A-Hilly

Angle Rt 1°45'

Survey 3295

Angle 2°30' Lt.

Survey 2184

Angle Lt 1°30'

Russell

Anderson

160+18.2

177+17.5

Corner of Surveys and Sec. 26

S 89°33' W

S 87°45' W

S 87°43' W

S 89°33' E

Survey 2119

Sec. 26-T35N-R2E

Sta. 172+43 - Construct 5'x3'x24' Reinforced Conc. Culv. R.M. 225 - Outlet Flume 4'x1'R. Elev of Inlet 568.

D.A. 80. Rolling

Rock at this point, makes bottom of the culvert unnecessary. See sketch for saving in quantities.

B.M. — Root of 36" Black Oak 20' Left of 165+65
Elev 563.94

B.M. — Root of 36" Locust 20' Left of 178+36
Elev 580.28

Sta. 152+65 See Special Design by Irrig. Dept.

D.A. 629 Acres Rolling

Sta. 160+18.2 Construct 4'x2'6" S.A. Reinforced Conc. Culv. R.M. 227

9" C.I. Flume Lip R. Elev Inlet 560.2

D.A. 70 Acres Rolling

Exc. 2010
Emb. 2376.5
Borrow Pit 0.5

Exc. 440.2
Emb. 348.6

Exc. 155.5
Fill 537.5
Emb. 410.2

Exc. 515.5
Emb. 430.8

Elev. 590 580 570 560 550

130 135 140 145 150 155 160 165 170 175 180

Survey 2184
C. Alexander
Angle Rt. 0°50'
S 85° 30' W
S 86° 23' W
T.L. Standley
Survey 2119
Sta. 185+00 Construct 18" Corr. Pipe Culvert 30' Long Headwalls
Sta. 195+00 Construct 8x4x26 Reinforced Concrete Culvert
R.M. 328
Cedar Creek
0.80%
1.33%
EL. 566
Exc. 1191
Emb. 14484
Bor. 1560
Exc. 443
Bor. 2310
180
185
190
195
200
205
210

Survey No 2184
Fr. Sec. 34-T35N-R2E
Sec. 33-T35N-R2E
S. Richards
Angle 0°00'
216+00
Angle 6°25' Rt
Sol. Nelson
R/W Line
Present Road
210
215
220
225
230
235
240
Sta. 213+00 – Construct 15" C.I.P. Culvert 30' Long – Headwalls
Sta. 218+11 Construct 6'x4'x23' Reinforced Concrete Culvert M-226 – 90° to ℄ – Flows R to L Elev of Inlet 530± D.A. 80 A. Hilly
Sta. 222+45 – Construct 18" Corr. I. Pipe Culvert 60' Long Headwalls M-11 – 90° to ℄ Flows R to L D.A. 5 A. Rolling
B.M. Root of 6" Cedar 40' Rt. of Sta. 221+00 Elev. 597.12
Excav. 1,145 cu
Embank 930
Excav. 1011
Embank 606

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	193A		11	107

PLAN

SURVEYED
PLOTTED
TRACED
CHECKED

DATE

Angle 0°

Angle 90°

PRESENT ROAD

CEMETERY

SOL. NELSON

241+13 P.O.T.

Rt. of Way Line

Property Way Line

246+59 P.O.T.

House

Barn

Silo

S.A. TRASK

S 60°43' W

240

245

250

255

260

265

270

N

Angle 90°

262+19 P.O.T.

J. MOORE

Sta. 241+68 - Construct 18"x30"
C.I.P. Culvert - M-11 - 90° to ℄
Flows Left - D.A. 5 A. Rolling

Sta. 243+68 - Construct 18"x32"
C.I.P. Culvert - M-11 - 90° to ℄
Flows Left - D.A. 5 A. Rolling

Sta. 249+25 - Construct 3'x2'x32'
Reinforced Conc. Culv. - P.M. 223 -
90° to ℄ Flows Left
Elev. of Inlet 610.5 - D.A. 20 A. Rolling

Sta. 253+51 - Construct 2'x6'x40'
Reinforced Conc. Culvert - Mo. Exc.
M-3212 (sht. rev.) 45° to ℄
Flow: Left - Elev. of Inlet 608.0
D.A. - 300 A. - Rolling

Sta. 262+76 - Construct 15"x40'
C.I.P. Culvert - M-11 - 45° to ℄
Flows Left - D.A. 2 A. Rolling

Sta. 261+90 - Construct 24"x30'
C.I.P. Culvert - M-11 - 30° to ℄
Flows Left - D.A. - 8 A. Rolling

BM - Root 10" - 12" Apple Tree 25' Left of 246+88
Elev. 618.80

Exc. 114.8 c.y.
Emb. 97.2 c.y.

Exc. 97.6
Emb. 99.8
Borrow 1.2

Exc. 101.6
Emb. 83.6
Adj. 5.0

Exc. 403.1
Emb. 404.

0.56%

-0.70%

+2.0%

+6.20%

ORIGINAL GRADE

INLET 621.28
OUTLET 620.78

INLET 621.27
OUTLET 619.5

INLET 621.28
OUTLET 620.3

V.C. 300'

262+76 - Exc. Diversion Ditch
40' Left from Outlet 3' Wide
on Bottom with 1:1 Slopes.
Exc. Inlet 4 Simpson Cut X-Sections
Ext. Exc. - 5.0 c.y.'s

Fl. 640
Fl. 630
Fl. 620
Fl. 610
Fl. 600

240 245 250 255 260 265 270

Sec. 33-T-35N-R2E

Sec. 32-T-35N-R2E

S.D. Brooks

Sta. 2814+40 — See Sheet
Desig. Sheet No. 1289
D.H. Lough

1289

C.O. 2

STATE	FED. AID PROJ. NO.	YEAR	SHEET NO.	TOTAL SHEETS
NO.	193A	54	13	107

Iron County

PLAN — SURVEYED — DRAWN — ALIGNMENT CHECKED — PROFILE CHECKED — QUANTITIES CHECKED — RT. OF WAY CHECKED — NOTE BOOK — SHEET NO. — DATE

Right of way Line Y

N 84°19'W

John Damman

Sta. 302+08 – Construct C.I.P. Culvert
M-11 Headwalls – 18" x 30' – Flows
Left – D.A. – 3 Acres – Hilly

Sta. 307+48 – Construct C.I.P. Culvert
M-11 Headwalls – 24" x 34' – Flows
Left – D.A. – 5 Acres – Hilly

Sta. 311+34 – Construct 3'x2'x31' – Concrete
Culvert – Pr Mi. 223 – 90° to ℄ – Flows Left
D.A. – 10 Acres – Hilly – Elev. of Inlet 712.92

Sta. 314+82 – Construct C.I.P. Culvert
M-11 Headwalls – 24" x 32' – Flows
Left – 90° to ℄ – D.A. 5 Acres – Hilly

N 70°39'W

N 43°41'W

Diversion Ditch

Sta. 322+50 to 329+50 Construct
Wooden Guard Rail – Left side only
700 Lineal Feet

Guard Rail

Sta. 325+00 – Construct C.I.P. Culvert
M-11 Headwalls – 18" x 50' – 12 gauge –
90° to ℄ – Flows Left – D.A. – 3 Acres
Hilly

Sta. 328+48 – Construct C.I.P. Culvert
M-11 Headwalls – 18" x 44' – 12 gauge / 18
90° to ℄ – Flows Left – D.A. – 3 Acres
Hilly

John Dammon

B.M. – Rail 36" W. of ℄ Left of 322+00
Elev. – 746.9

Exc. 1150.50
Emb. 902.30

Exc. 1252.40
Emb 1126.90

Sta. 319+50 – Excess in ditch

Exc. 1420.00
Emb 1565.00
Extra Exc. 333.80

To 336+75

PLATE 1 – PLAN PROFILE O. P. R. & R. C. STANDARD
KRUPP & ESSER CO., NEW YORK

C.O. 2

Iron County

Sec 5-T 34N R2E | Sec. 4-T 34N-R2E

Sec 32-T 35N-R2E | Sec. 31-T 35N-R2E

N.

Olfery Creek Road

Trees Must be removed

John Damman

Present Road

Equation 349+856 = 349+921.9

Sta 332+50 to 335+00 Construct Wooden Guard Rail Left Side only 250 Linear Feet.

Sta 337+28 - Construct C.I.P. Culvert M-11 Headwalls - 90° to ℄ - 18"X34' Flows Left - D.A. - 3 Acres Hilly.

Sta 334+28 - Construct C.I.P. Culvert M-11 Headwalls - 15"X34' 90° to ℄ - Flows Left - D.A. - 1 Acre - Hilly. Contour Location - See X Section

PLAN: SURVEYED | PLOTTED | NOTE BOOK | NO. | DATE | BY | CHECKED | RT. OF WAY CHECKED

PLATE 1 - PLAN-PROFILE - U.P.R.R.A.R.E. STANDARD

FED. PROJ. NO.	STATE	FED. AID ROAD NO.	PROJECT YEAR	SHEET NO.	TOTAL SHEETS
5	Wis.	1733		15	109

J.D. Healy Sta 380 End Proj 193

J D Healy Sta 350 End Sec A Proj 193

Sec 6-T34N-R2E

Sec 31-T34N-R2E

Sta 380 End Proj 193H

J.D. Healy

J.D. Healy

J.D. Healy

Sec 6-T34N-R2E

Sec 31-T34N-R2E

B.M. - Post 0.1 - 30" White Oak - 50' Left of 375+70 Elev. - 914.73

Exc 177.3 yd
Emb 610.5 yd
Borrow 19.5 yd

Exc 519.5
Emb 514.0
Bor 110.0

Exc 414.9
Emb 232.5

F.A.U. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	MO.	193	19 -69-		

17

Vertical Curve.
P.C. Sta. 37+00. El. 559.6
P.I. " 37+50.
P.T. " 38+00. El. 556.0

100' Vertical Curve.

Sta. 38+00

Standard Superstructure - A-850.

Crown of Roadway - El. 556.01

50'0" Clear Span

Extreme High Water. Elev. 548.4 ?

Springing Line Elev. 545.5

Elev. 544.0

Gravel.

Solid Rock.

Elev. 544.25

Solid Rock.

Elev. 542.5

8'

4'-7"

9'-9"

3'-10"

2'-0"

1'-6"

8'-0"

6'-4"

13'-6"

5'-10"

4'-5"

8'-0"

Paint Extrados and inside of Spandrel Wall with a heavy coat of pitch.

9" Dia. pipe weep holes just above ground line. Two in arch ring and one in each wing.

Carry Footings 6" into Solid Rock.

Note. Channel to be cleaned to rock 50'0" above and below bridge; Not included in bridge contract.

GENERAL ELEVATION

Symmetrical about ℄

GENERAL NOTES
All general notes on Standard A-850 apply to this drawing.
Concrete in Abutments 1:3:5 mix

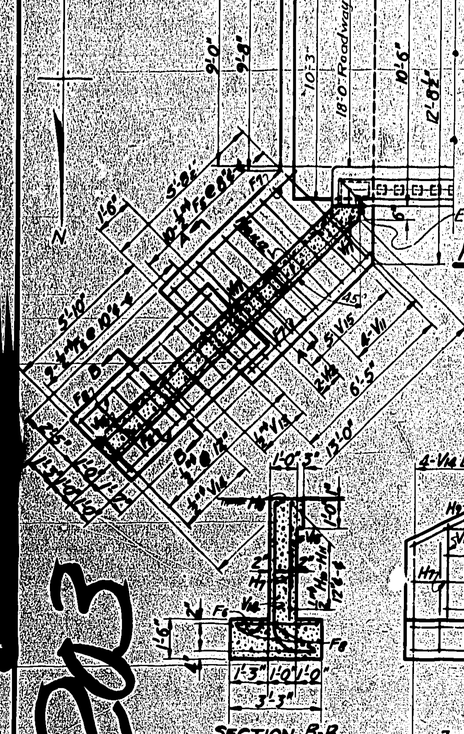
ESTIMATED QUANTITIES

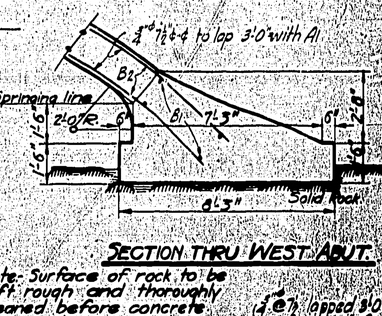
Location	Concrete C.Y.	Reinf. Steel.
Handrail.	5.6	650
Spandrel Wall.	18.4	600
Arch Ring.	51.2	6940
Wings.		1390
Abutments.		2231 1360
Total.	5.6	2231 11340

BAR BILL.

No.	Size.	Length.	Mark.	Remarks.
6	5/8" sq.	15'-7"	V1	See Sketch
8	1" sq.	12'-9"	V2	" "
8	1" sq.	10'-3"	V3	" "
8	1" sq.	7'-8"	V4	" "
8	1" sq.	8'-3"	V5	" "
12	1" sq.	6'-8"	V6	" "
10	1" sq.	6'-1"	V7	" "
2	1" sq.	5'-6"	V8	Straight
2	1" sq.	8'-6"	V9	"
2	1" sq.	11'-9"	V10	"
8	1" sq.	13'-2"	V11	See Sketch
4	1" sq.	11'-4"	V12	" "
6	1" sq.	7'-6"	V13	" "
8	1" sq.	5'-5"	V14	" "
10	1" sq.	7'-1"	V15	" "
2	1" sq.	3'-6"	V16	Straight
4	1" sq.	3'-6"	V17	"
2	1" sq.	16'-0"	H1	"
2	1" sq.	13'-9"	H2	"
8	1" sq.	20'-0"	B1	"
66	5/8" sq.	7'-0"	B2	"
66	5/8" sq.	7'-0"	B3	Hooked

No.	Size.	Length.	Mark.	Remarks.
2	1" sq.	17'-6"	H3	Bend in field
10	1" sq.	16'-3"	H4	Straight
4	1" sq.	12'-9"	H5	"
6	1" sq.	7'-6"	H6	"
2	1" sq.	12'-6"	H7	"
2	1" sq.	9'-6"	H8	"
2	1" sq.	13'-6"	H9	Bend in field
8	1" sq.	13'-0"	H10	Straight
2	1" sq.	9'-6"	H11	"
8	1" sq.	5'-6"	H12	"
70	1" sq.	5'-6"	F1	"
12	1" sq.	2'-4"	F2	"
12	1" sq.	3'-11"	F3	"
6	1" sq.	16'-3"	F4	"
20	1" sq.	4'-8"	F5	"
18	1" sq.	2'-11"	F6	"
6	1" sq.	6'-6"	F7	"
6	1" sq.	7'-0"	F8	"
13	1" sq.	3'-0"	D1	"





MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER REED'S CREEK

STATE ROAD - IRONTON TO SALEM

ABOUT 1½ MI. FROM BELLVIEW

PROJECT No. 193 STA 37+90

IRON COUNTY

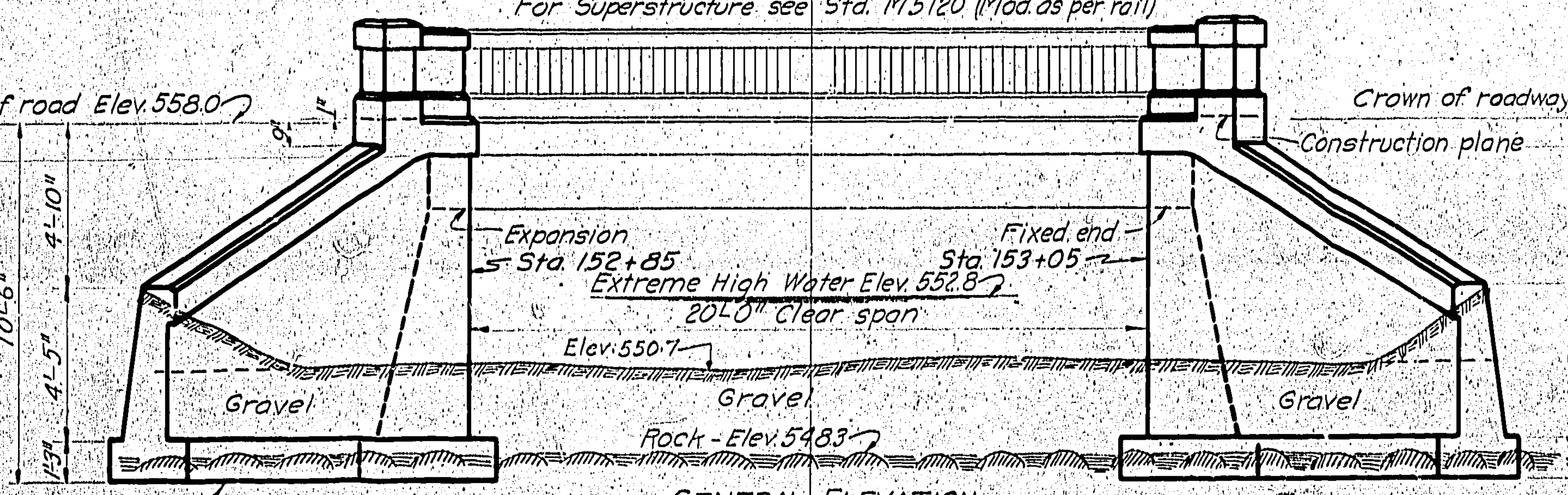
Submitted by C. H. Mann BRIDGE ENGINEER

Approved by [illegible] STATE HIGHWAY ENGINEER

A-650
G-8-64

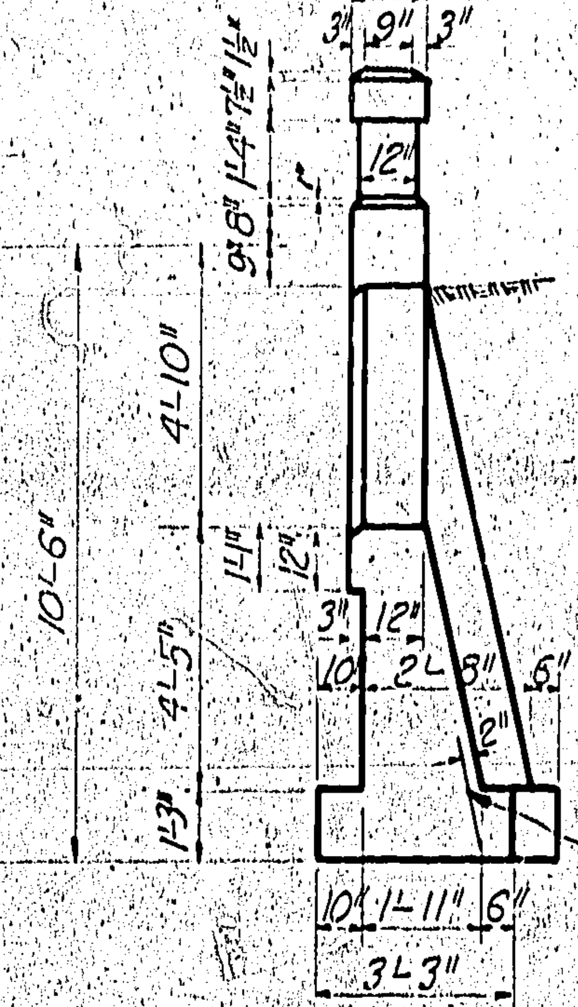
Drawn Apr. 1922 by MMK
Ch'k'd Aug. 1922 by J.W.C.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	193	1922	70	

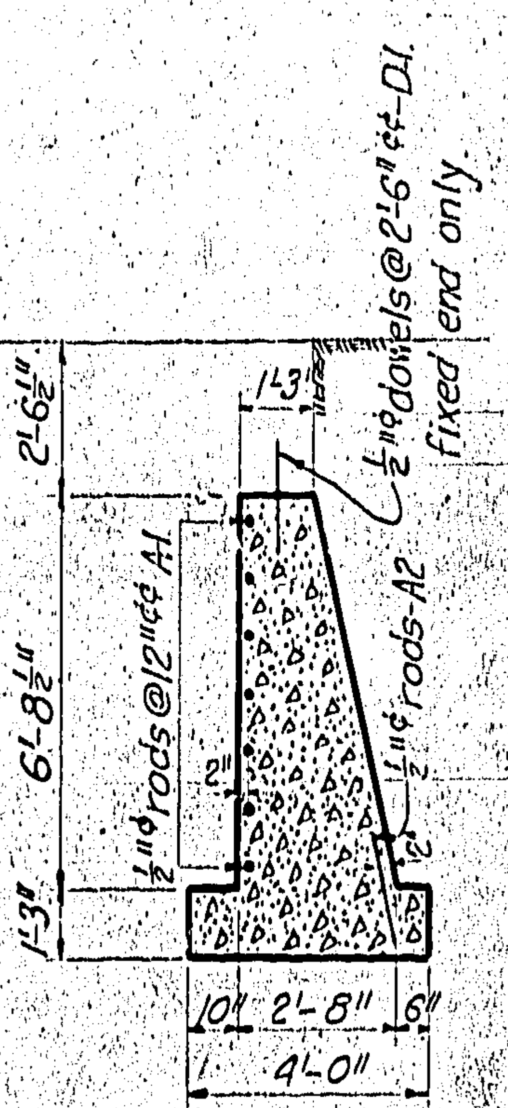


GENERAL ELEVATION

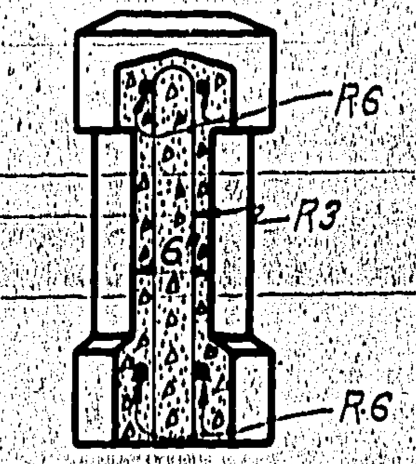
Note:- Excavate channel to rock 50 feet above and below bridge; Not included in bridge contract.



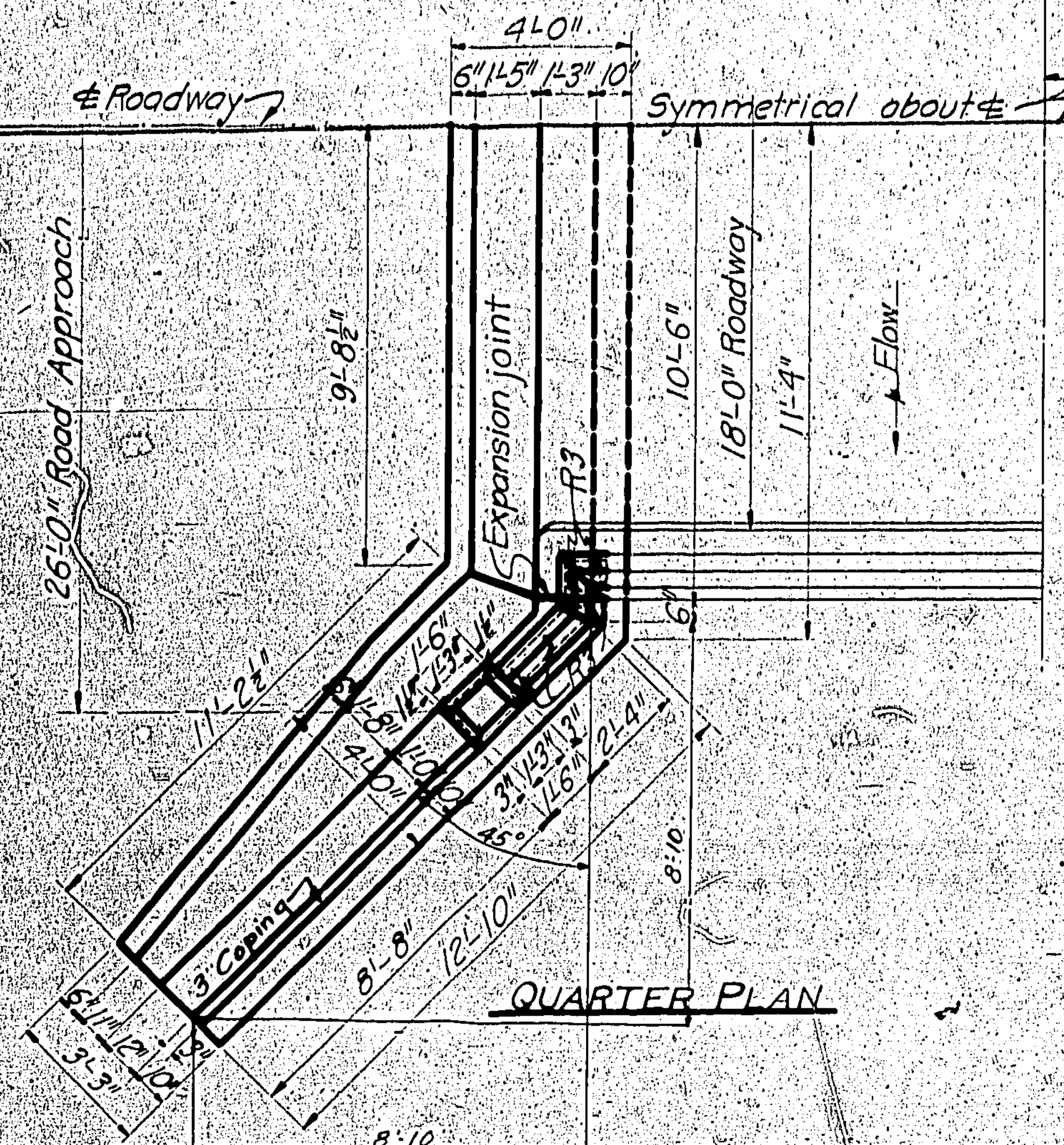
END VIEW OF WING



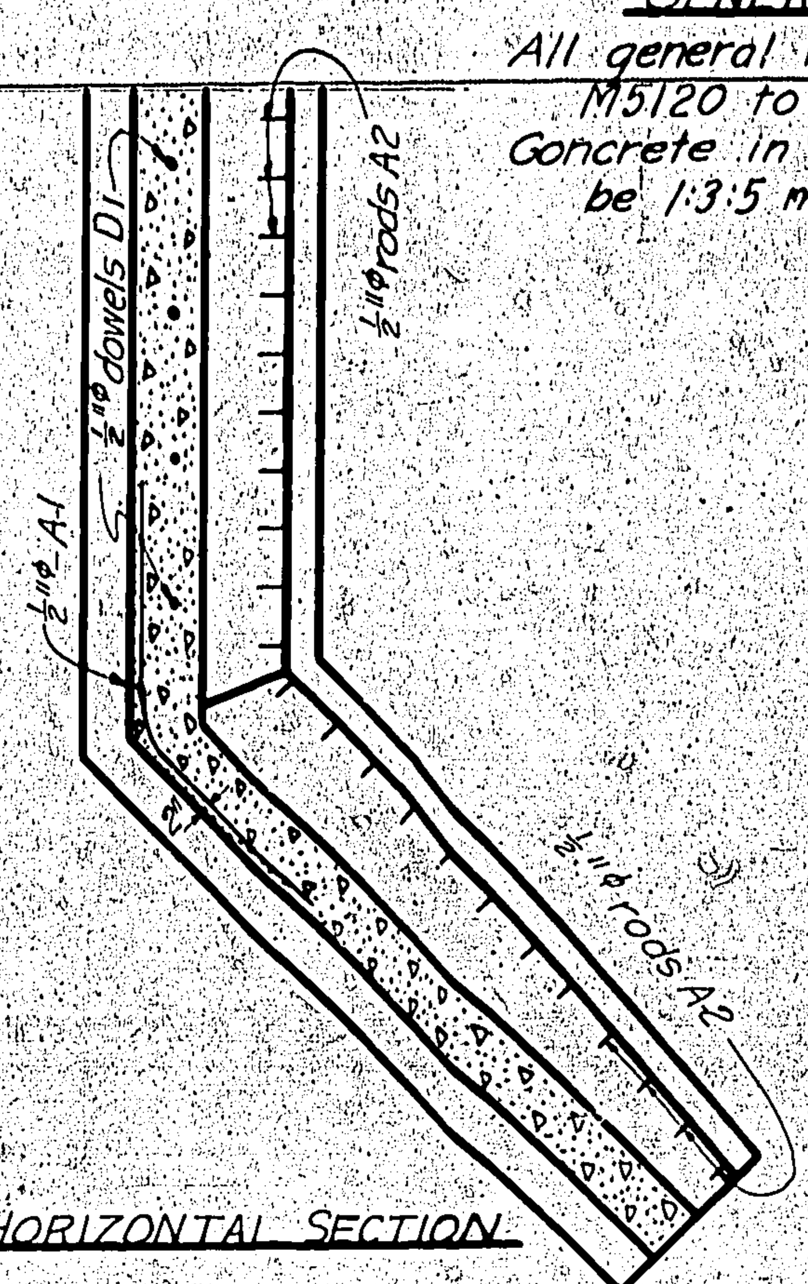
SECTION ON ℄.



SECTION THRU RAIL ON TOP OF WING



QUARTER PLAN



HORIZONTAL SECTION

GENERAL - NOTES

All general notes on standard drawing M5120 to apply on this drawing.
Concrete in wings and abutment to be 1:3:5 mix.

ESTIMATED QUANTITIES				
Description	Rail	Slab and curb	Abutments and Wings	Total
1:2:3 Concrete	3.1 cu. yd.			3.1 cu. yds.
1:2:4 "		29.3 cu. yds.		29.3 cu. yds.
1:3:5 "			59.4 cu. yds.	59.4 cu. yd.
Rein. Steel	510 lbs.	2700 lbs.	290 lbs.	3500 lbs.

BAR - BILL				
No.	Size	Length	Mark	Remarks
8	1/2"φ	2'-0"	D1	Dowels
28	1/2"φ	8'-0"	A1	Bend in place
88	1/2"φ	2'-0"	A2	Straight

Changes in superstructure steel as given on Std. M5120.
Length of R-1 bars changed to 21'-0".
No. of R3 bars changed to 24.
Add 16 R6 bars 1/2"□ - 3'-6" long. Bars are in rail over wing corresponding to R-1 bars.

Drawn April, 1922 by J.O.H.
Ch'k'd Apr., 1922 by J.W.C.

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER McCLURG BRANCH

STATE ROAD FROM IRONTON TO SALEM
ABOUT 4 MI. FROM BELLVIEW
PROJECT No. 193 STA. 152+85

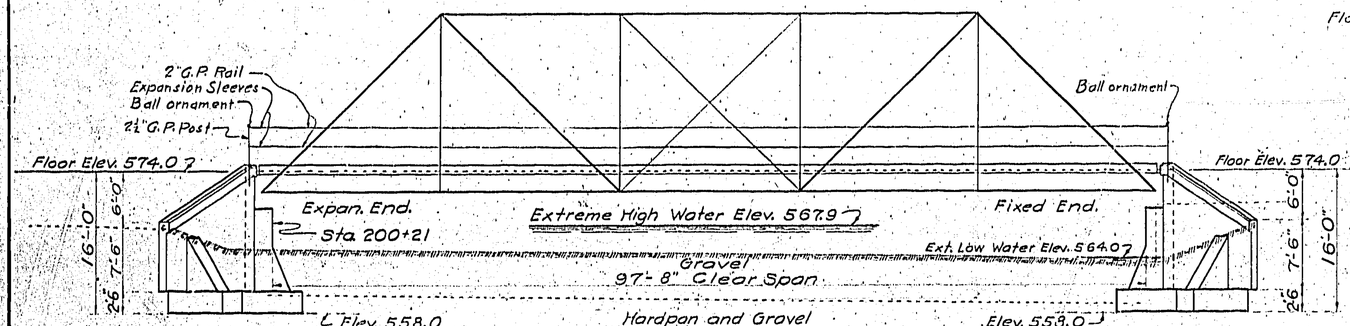
IRON COUNTY

Submitted by [signature] BRIDGE ENGINEER
Approved by [signature] STATE HIGHWAY ENGINEER

M5120
G270

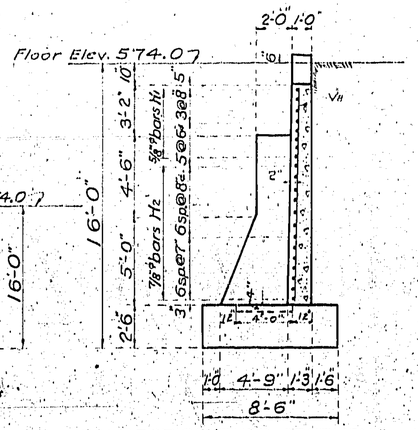
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TO SHT.
6	MO.	193	19	7	

Superstructure as per Standards S 2100

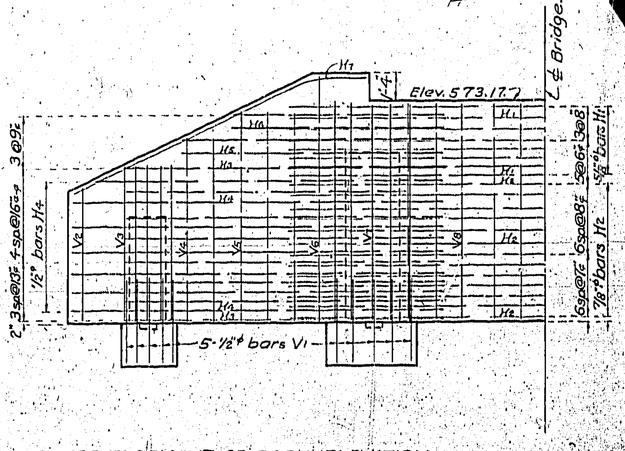


ELEVATION

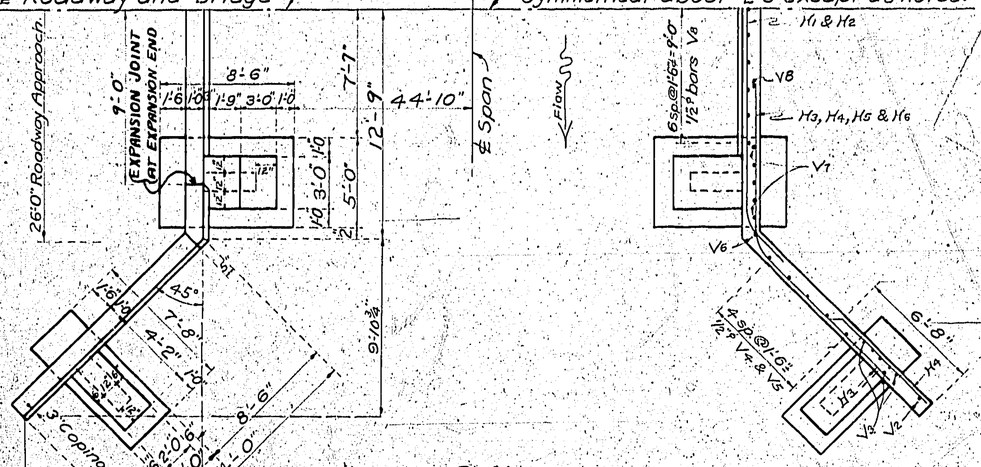
Note. Make backfill on stream of abutment with boulders taken from the stream bed.



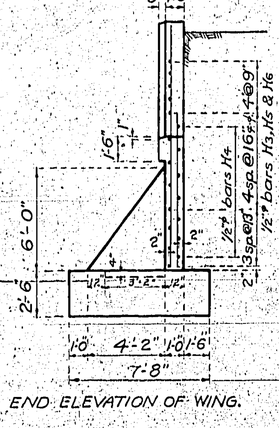
SECTION THRU ABUTMENT.



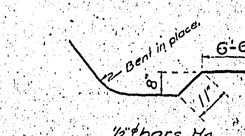
DEVELOPMENT OF BACK ELEVATION



PLAN



END ELEVATION OF WING.



BILL OF REINFORCING STEEL

No	Size	Length	Mark	Remarks
16	5/8"	31'-0"	H1	Bent in place
26	7/8"	31'-0"	H2	" " "
32	1/2"	20'-0"	H3	" " "
28	1/2"	22'-6"	H4	See Sketch
8	1/2"	17'-0"	H5	Bent in place
8	1/2"	14'-0"	H6	" " "
4	1/2"	18'-2"	H7	" " "
40	1/2"	5'-0"	V1	Straight
4	1/2"	7'-4"	V2	"
24	1/2"	8'-6"	V3	"
8	1/2"	10'-4"	V4	"
12	1/2"	11'-9"	V5	"
4	1/2"	13'-8"	V6	"
20	1/2"	12'-4"	V7	"
26	1/2"	12'-4"	V8	"

NOTE

S2100 TO BE FOLLOWED EXCEPT ROADWAY TO BE CHANGED FROM 17'-0" TO 18'-0" BETWEEN CURBS.

GENERAL NOTES

All general notes of Standard S 2100 to apply to this bridge.
All concrete to be 1:2:4 mix.
Rub exposed surfaces free from form marks to a smooth and uniform appearance. No plastering permitted.
Bevel exposed edges ½" where no other bevel is shown.
Reinforcing bars of billet steel, structural grade, of deformed type other than twisted squares. Net sectional areas not less than that of plain bars of the sizes given.
Bars to be blocked to the proper elevation, wired at intersections and positively secured against displacement. Arrangement and spacing to be approved by the engineer before concrete is poured.
All timber to be creosoted dense yellow pine. Floor plank dressed to uniform width and thickness (S1, S1,E)".
EXPANSION JOINTS TO CONSIST OF THREE LAYERS OF TAR PAPER OR A HEAVY COAT OF TAR TO BE APPLIED ON SMOOTHLY TROWELED SURFACE.

ESTIMATED QUANTITIES.	Superstructure	Abutment.
Concrete, 1:2:4 mix., Cu. Yds.		89.0
Reinforcing Steel, Pounds.		4080
Structural Steel, Pounds.	60970	
Steel Castings, Pounds.	1630	
Lumber, Ft. B. M. Creo.	12450	
Gas Pipe Rail, Lin. Feet.	428	

Drawn Apr. 24, 1922 by R.L.T.
Ch'k'd May 1922 by C.C.H.

REVISED AUG. 1 1922 R.L.S. 18' Roadway

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER CEDAR CREEK

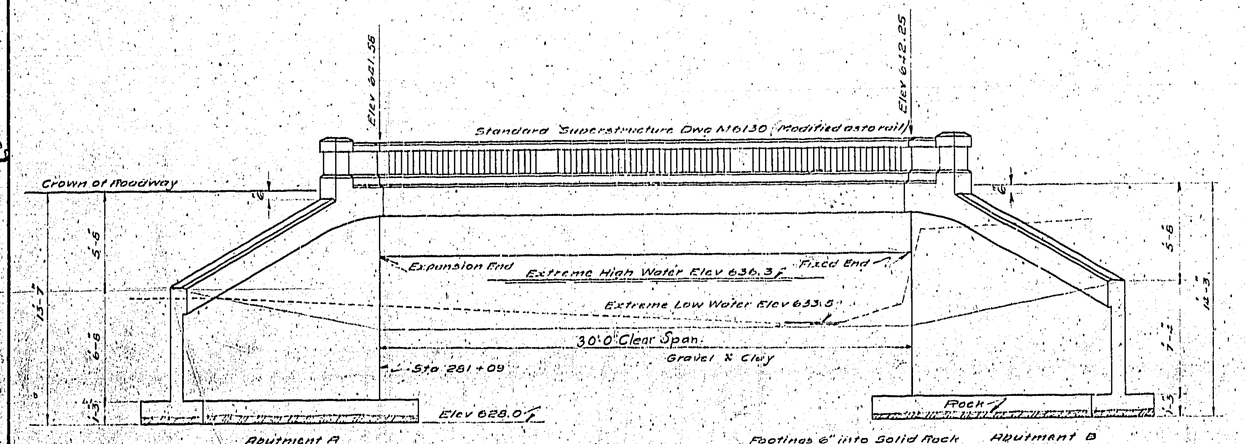
STATE ROAD FROM IRONTON TO SALEM
ABOUT FIVE MILES FROM BELLEVIEW
PROJECT No. 193 STA. 200+21
IRON COUNTY

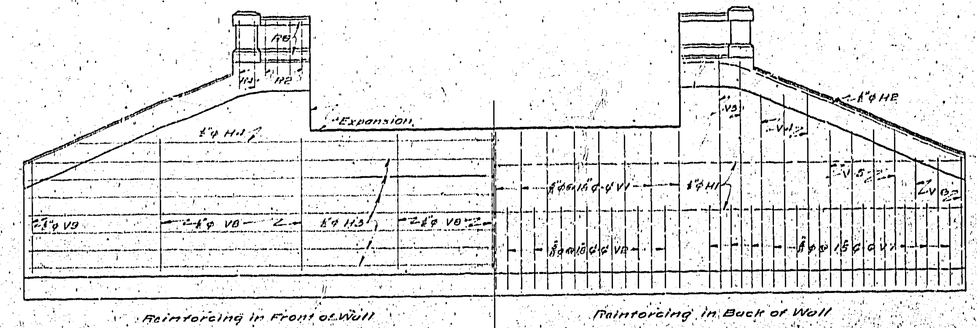
Submitted by C. H. Mann BRIDGE ENGINEER
Approved by C. H. Williams STATE HIGHWAY ENGINEER

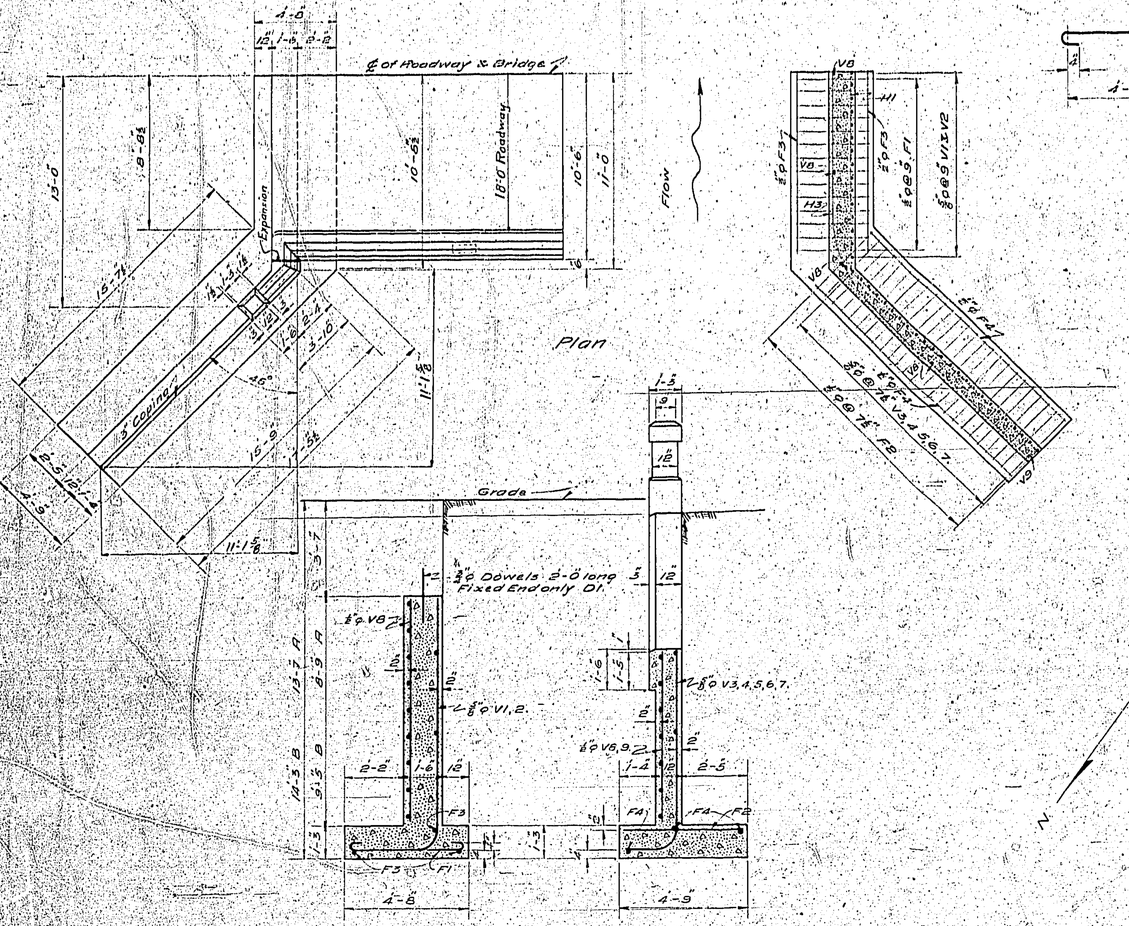
S1.00
S2100
G271

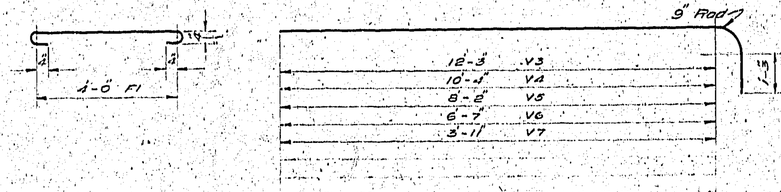
205-2-9

FED. ROAD DIST. No.	STATE	FED. AID PROJECT NO.	SHEET NO.	SHEETS
5	MO	193	19	









Bill of Reinforcing Steel

No	Size	Mark	Length	Remarks
30	⅝" ϕ	V1	13'-1"	See Sketch
28	⅝" ϕ	V2	8'-1"	" "
8	⅝" ϕ	V3	14'-8"	" "
12	⅝" ϕ	V4	12'-3"	" "
16	⅝" ϕ	V5	10'-7"	" "
12	⅝" ϕ	V6	9'-0"	" "
48	⅝" ϕ	V7	6'-11"	" "
14	⅝" ϕ	V8	7'-9"	Straight
4	⅝" ϕ	V9	6'-3"	"
8	⅝" ϕ	H1	26'-6"	Bent in field
4	⅝" ϕ	H2	16'-0"	" " "
28	⅝" ϕ	H3	27'-0"	" " "
4	⅝" ϕ	H4	22'-0"	" " "
56	¾" ϕ	F1	5'-8"	See Sketch
100	⅝" ϕ	F2	4'-5"	Straight
6	⅝" ϕ	F3	20'-6"	"
12	⅝" ϕ	F4	15'-3"	"
8[illegible]	¾" ϕ	D1	2'-0"	Dowels

Estimated Quantities

Handrail	1:2:3	3.9	Cu Yds.
Beam & Slab	1:2:4	36.5	Cu Yds.
Abuts & Wings	1:2:4	29.7	Cu Yds.
Reinforcing Steel	(Superstructure)	7370	Lbs.
Reinforcing Steel	(Abuts & Wings)	3110	Lbs.

General Notes:-

All general notes on Standard Dwg M6130 to apply to this bridge.
Concrete in Abutment & Wings 1:2:4 Mix.

Change in Superstructure Steel as given on Standard Dwg M6130.
Length of F1 bars decreased to 31'-2" long.
Number of R2 bars increased to 28.
Add 10 - R6 bars ⅝" ϕ 3'-9" long in rail over Wing corresponding to R1 bars.

MISSOURI STATE HIGHWAY DEPARTMENT

BRIDGE OVER KEESLING BRANCH

STATE ROAD FROM IRONTON TO SALEM
ABOUT 7½ MI FROM BELLEVIEW
PROJECT NO. 193 STA. 281+09

IRON COUNTY

SUBMITTED BY C. W. Mann BRIDGE ENGINEER
APPROVED BY [illegible] STATE HIGHWAY ENGINEER

M6130
G272

Drawn May 1922 by C.E.B.
Chkd. May 1922 by C.C.J.

BUCKEYE CO. ST. LOUIS