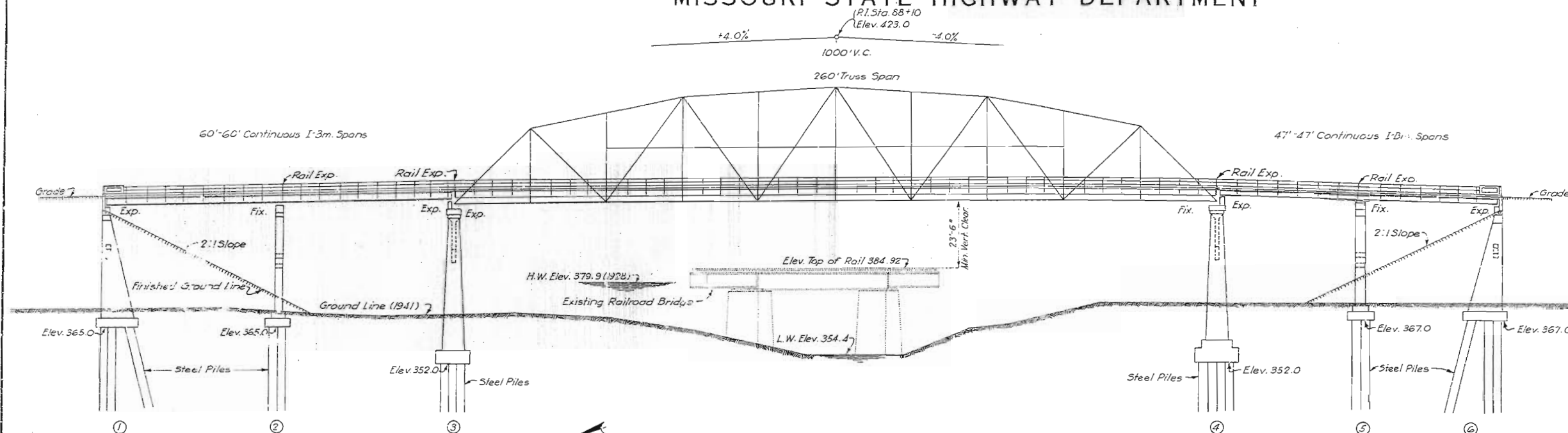
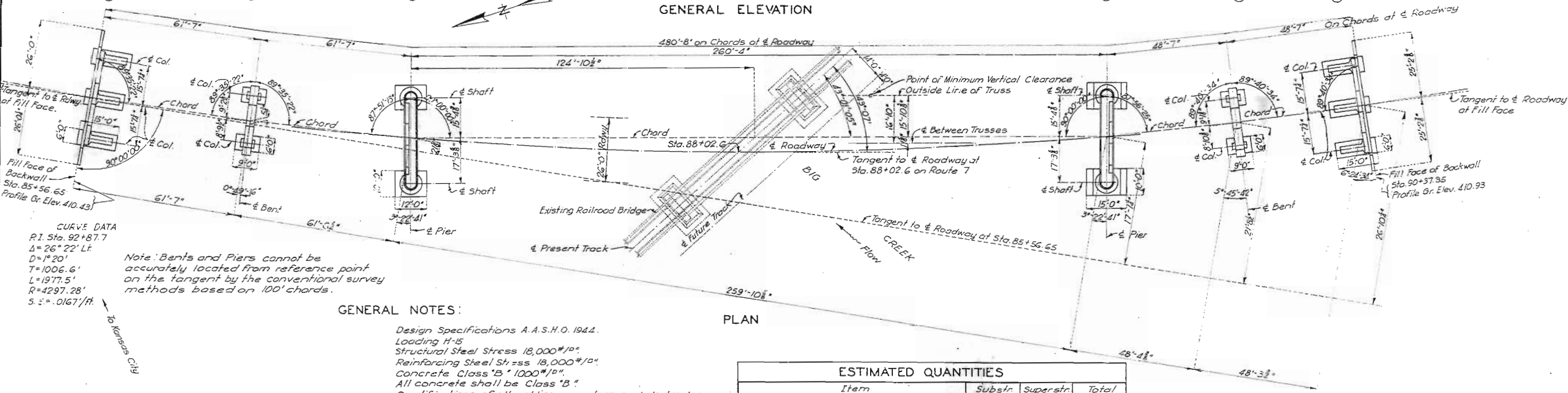


MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	78-21(6) (R.F. 7)	19		



GENERAL ELEVATION



PLAN

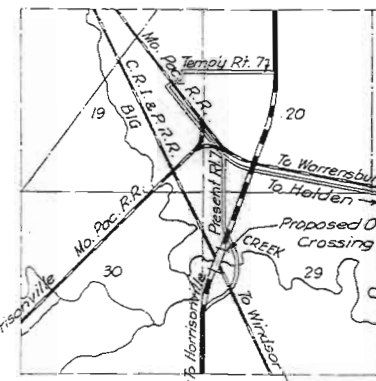
GENERAL NOTES:

Design Specifications A.A.S.H.O. 1944.
 Loading H-15
 Structural Steel Stress 18,000#/sq.
 Reinforcing Steel Stress 18,000#/sq.
 Concrete Class "B" 1000#/cu.
 All concrete shall be Class "B".
 Qualifications of all welding operators and electrodes will be required in accordance with Specifications, except that a proper certification of electrodes previously qualified will be acceptable.
 Rivets 2" except where otherwise noted.
 Paint: Shop, none; Field, Contact surfaces of bolted field connections one coat of red lead and surfaces inaccessible after erection three coats of red lead. Blast plates one coat of an approved asphaltic primer and a second coat of an approved asphaltic paint. All other exposed surfaces one coat brown, second coat aluminum tinted blue and final coat aluminum. Payment for cleaning and painting such surfaces shall be included in price bid for material painted.
 Where joint filler is specified it shall conform with the requirements for Premoulded Material Filler as given in Section 38-19A(11) of the Standard Specifications.
 A rubbed surface finish will be required on all exposed surfaces of curbs, concrete end posts and on outside faces of roadway slab.
 Falsework for span over existing railroad tracks shall be constructed with a minimum vertical clearance of 21'-0" from top of rails and minimum lateral clearance of 9'-0" from centerline of track.

ESTIMATED QUANTITIES

Item	Substr.	Superstr.	Total
Class 1 Excavation for Structures Cu.Yds.	710		710
Class 2 Excavation for Structures Cu.Yds.	191		191
Class "B" Concrete Cu.Yds.	736.7	327.5	1064.2
Fabricated Structural Steel (Truss Span) Lbs.		485580	485580
Fabricated Structural Steel (I-Beam Spans) Lbs.		146590	146590
Steel Castings Lbs.		2880	2880
Gray Iron Alloy Castings Lbs.		1980	1980
Reinforcing Steel Lbs.	51890	78980	130870
Fabricated Wrought Iron (Blast Plates) Lbs.		5560	5560
Fabricated Wrought Iron (Drains) Lbs.		920	920
6" Metal Pipe Lin. Ft.	44		44
8" Metal Pipe Lin. Ft.	167		167
Steel Piling in place Lin. Ft.	3706		3706
Steel Pile Cut-Offs Lin. Ft.	402		402

Note: Excavation for bridge made above Elev. 358.0 will be paid for as Class 1 Excavation for Structures. Excavation for bridge made below Elev. 358.0 will be paid for as Class 2 Excavation for Structures.



LOCATION SKETCH

Designed May 1947 By R.A.C.
 Drawn May 1947 By H.T.B.
 Traced May 1947 By J.T.F.
 Checked May 1947 By R.A.B. & N.W.R.

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

Sheet No. 1 of 14.

B.M. Elev. 383.66 - S.E. Corner North Abutment of R.R. Bridge.

BRIDGE OVER C. R. I. & P. R. R. AND BIG CR.

STATE ROAD FROM PLEASANT HILL SOUTH
 AT PLEASANT HILL
 PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65

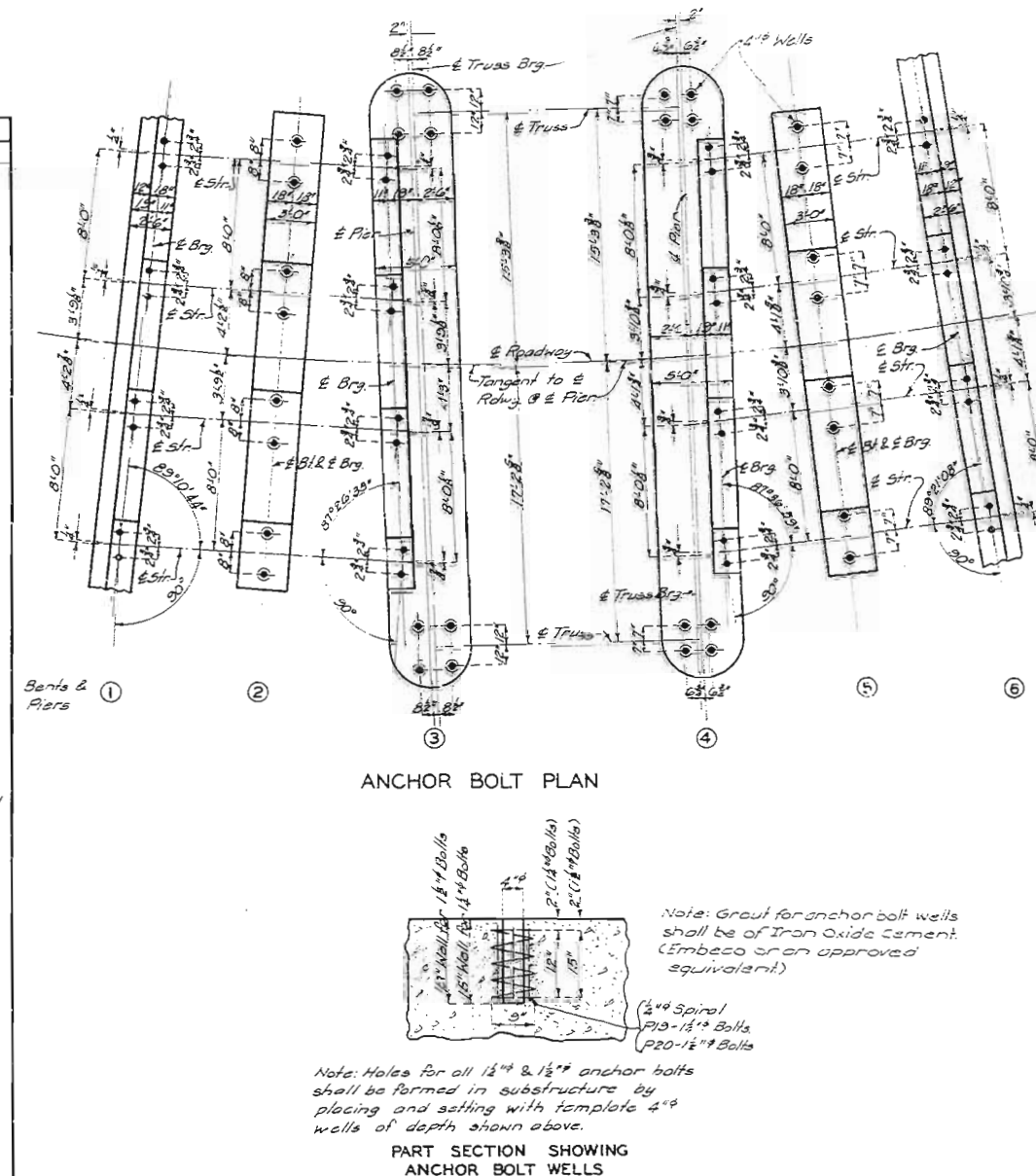
CASS COUNTY

SUBMITTED BY: U.W. Enelow DATE: 3/8/1948
 APPROVED BY: C.W. Brown DATE: 3/8/1948
 BRIDGE ENGINEER
 CHIEF ENGINEER

STD-C10193

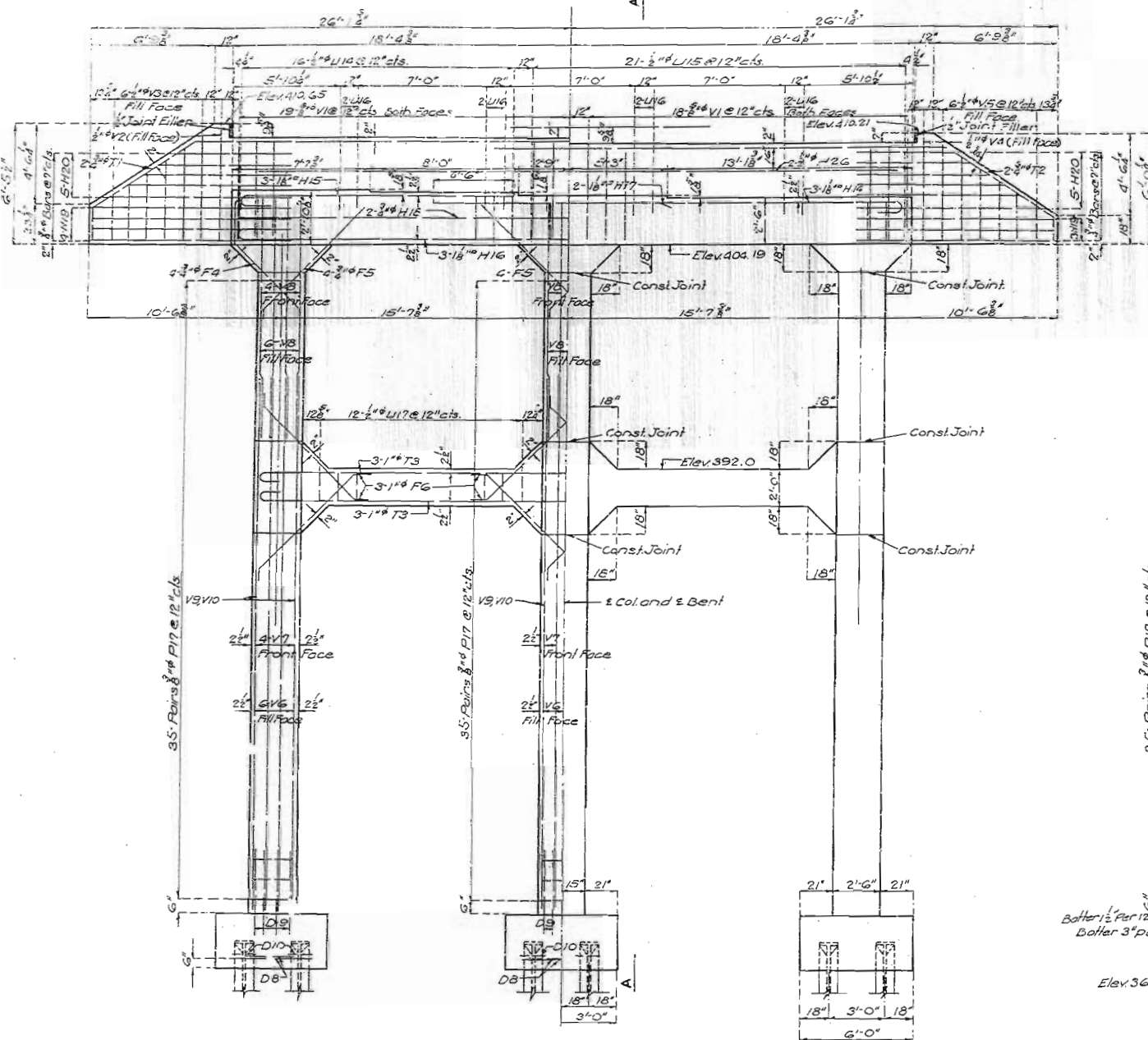
L-23

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-2116; (FG-7)	19		

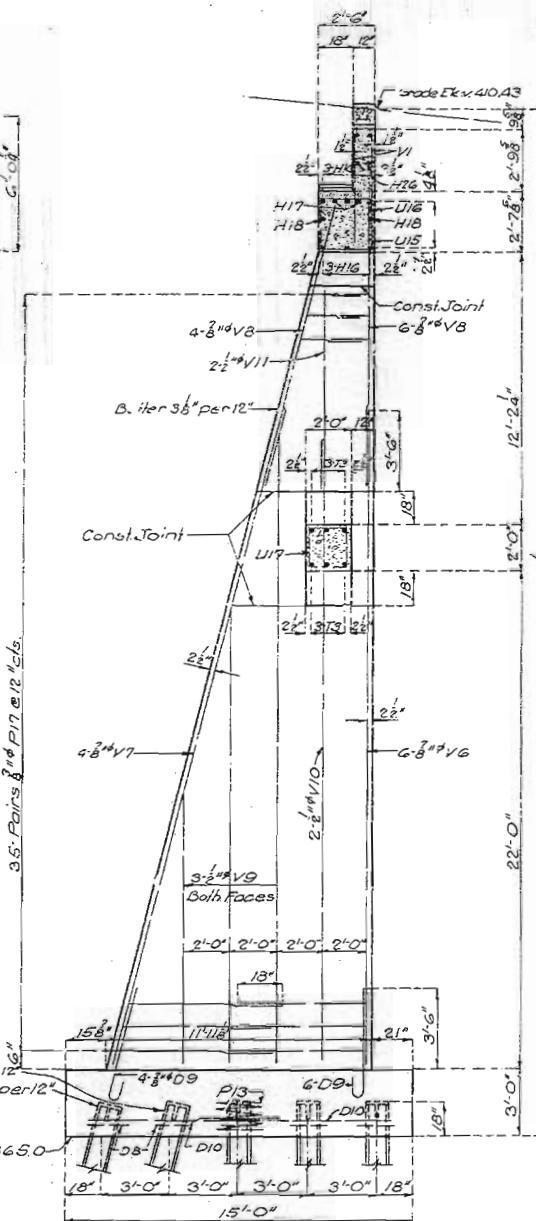


CASS COUNTY

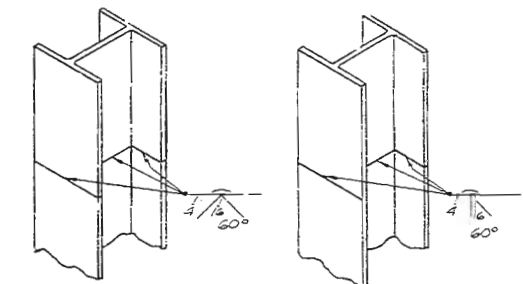
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	PC-701(6) (2-7)	19		



ELEVATION



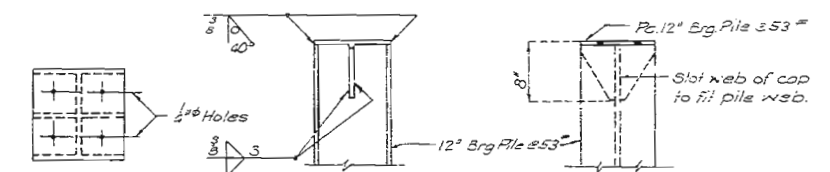
SECTION A-A



Thus if welded in
flat position

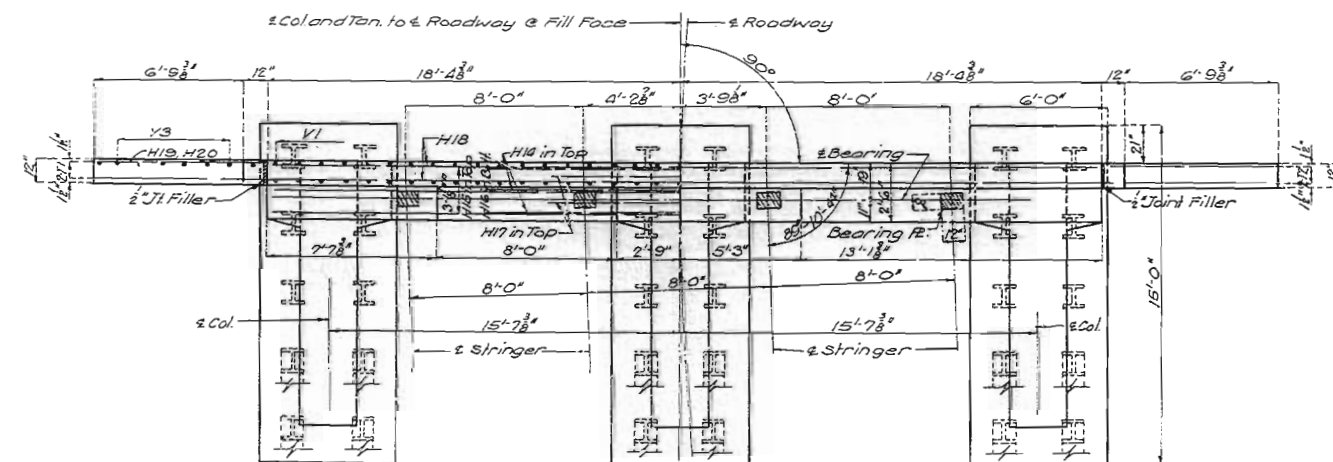
Thus if welded in vertical position
(Top of lower section to be cut square)

BUTT SPLICE FOR STEEL PILING

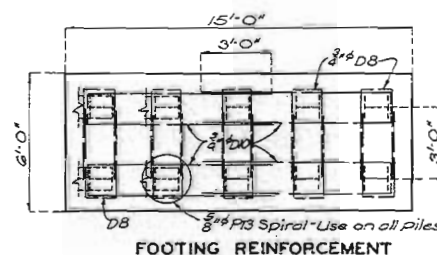


PLAN OF PILE CAP

DETAILS OF PILE CAP



PLAN



FOOTING REINFORCEMENT

DETAILS OF BENT NO. 1

BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK

STATE ROAD FROM PLEASANT HILL SOUTH

AT PLEASANT HILL

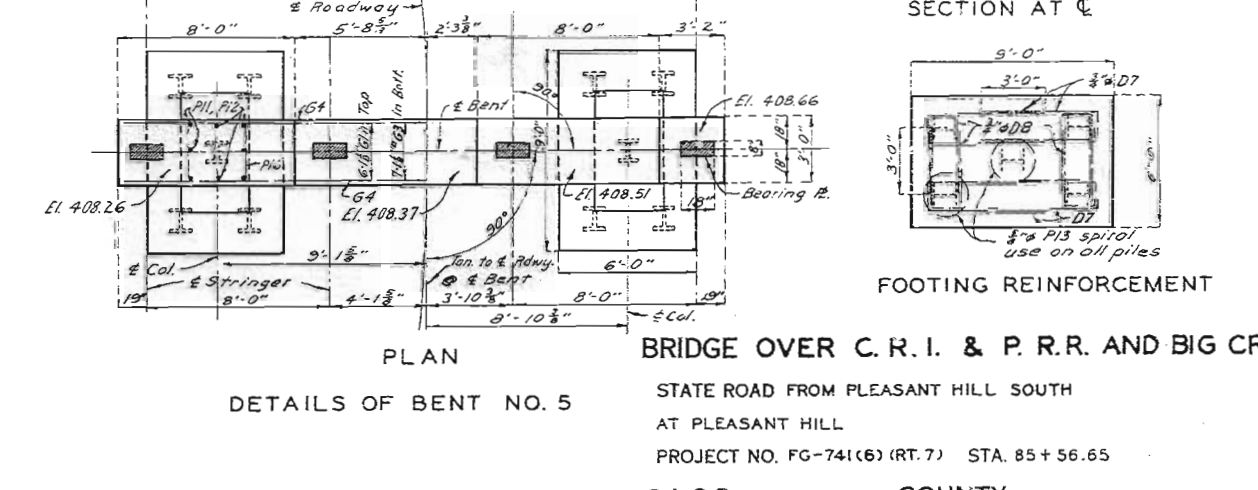
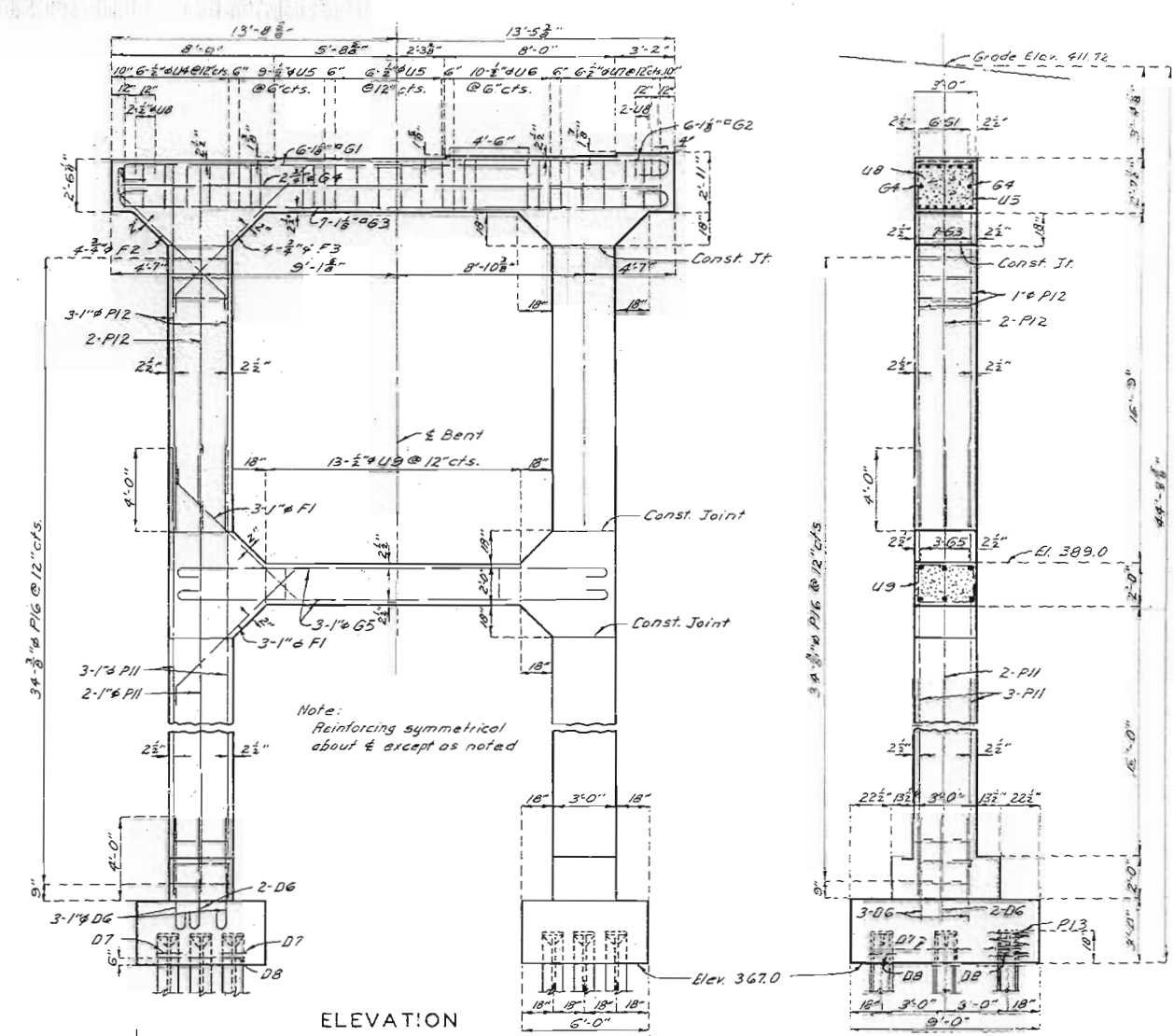
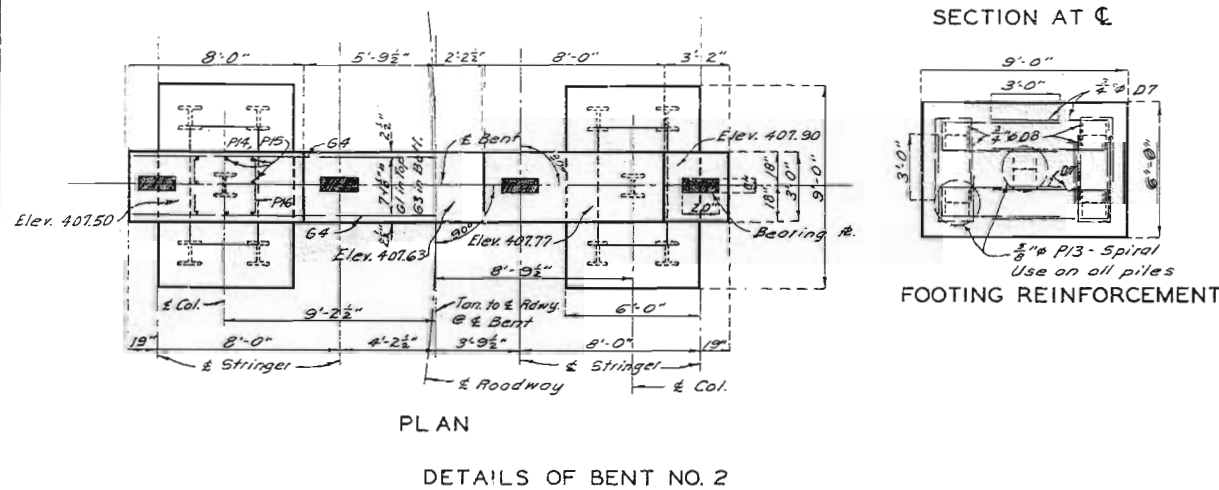
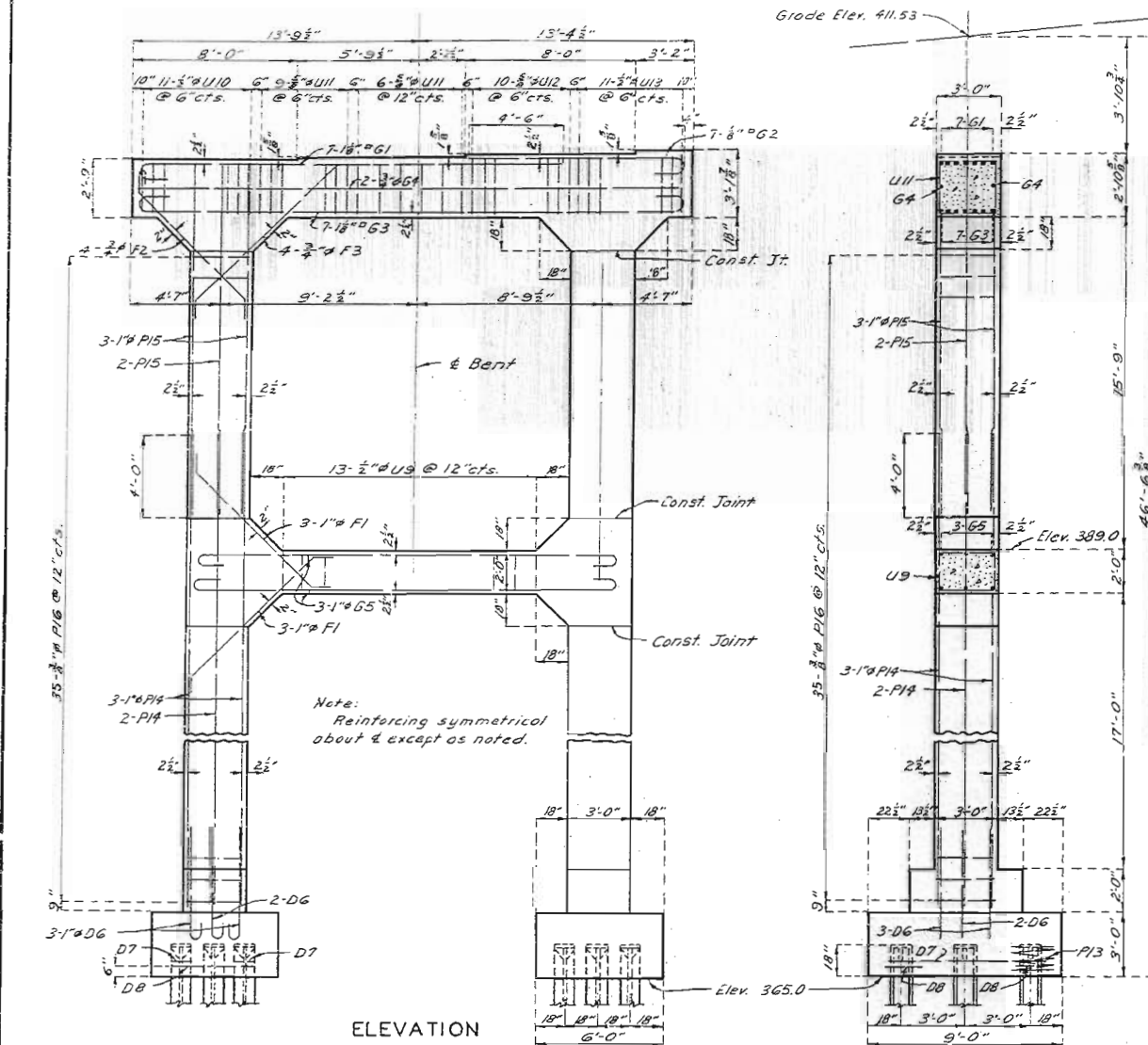
PROJECT NO. FG-741(6)(RT. 7) STA. 85+56.65

CASS

COUNTY

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-741(6) (RT. 7)	19		



BRIDGE OVER C. R. I. & P. R. R. AND BIG CREEK
STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65
CASS COUNTY

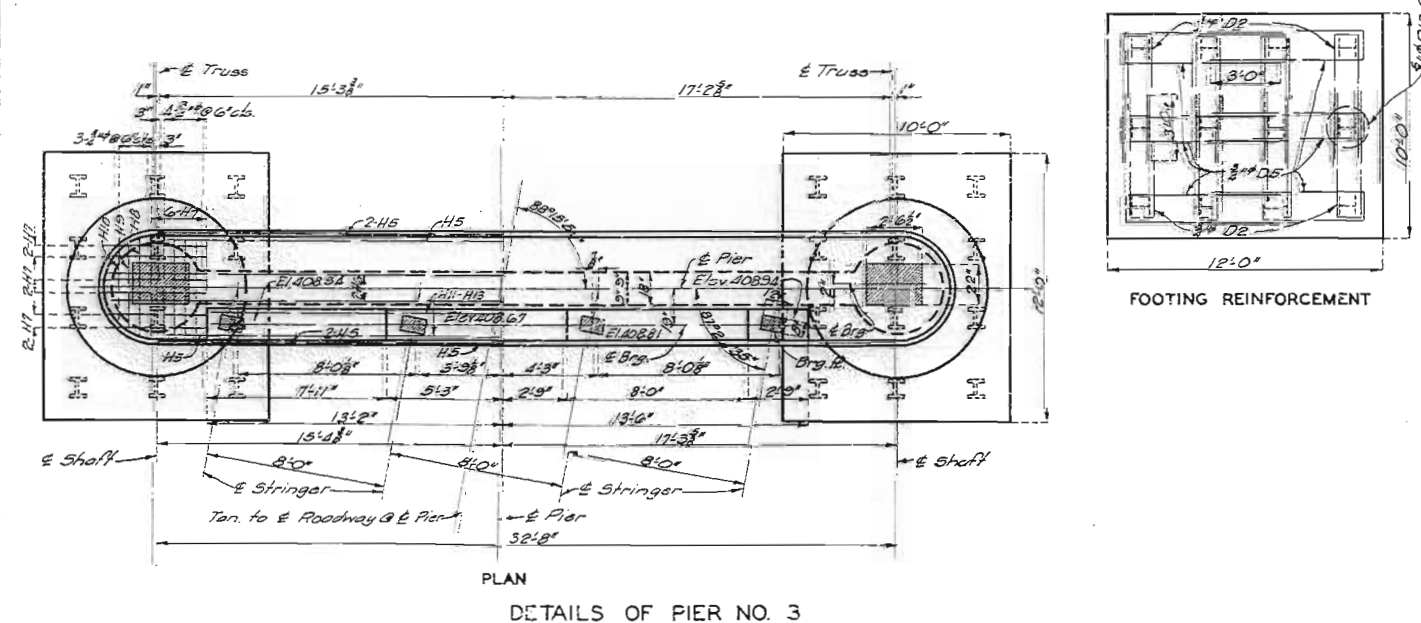
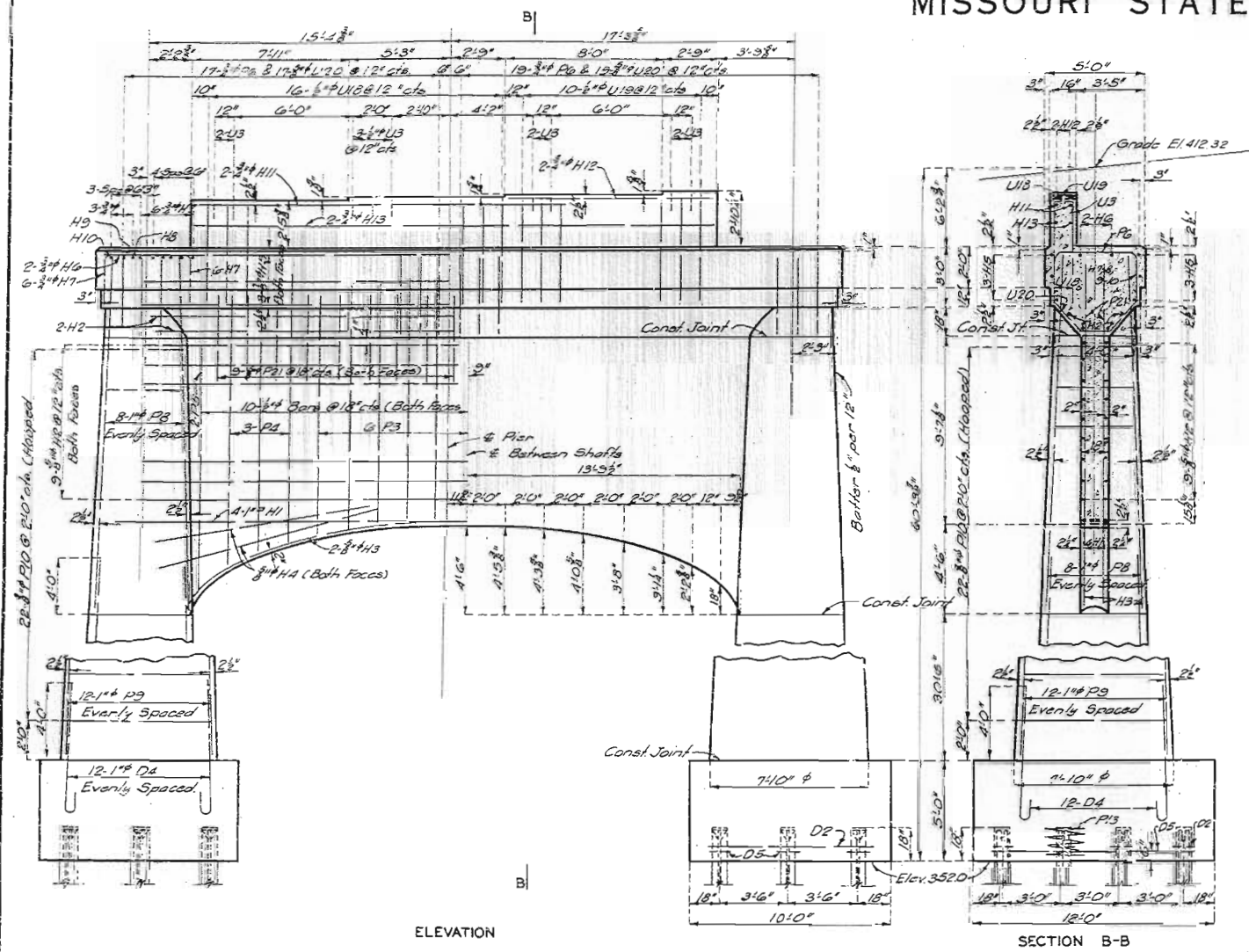
Designed April 1947 by R.A.C.
Drawn May 1947 by R.E.S.
Traced July 1947 by S.G.S.
Checked Jan. 1948 by N.M.R.

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

Sheet No. 4 of 14.

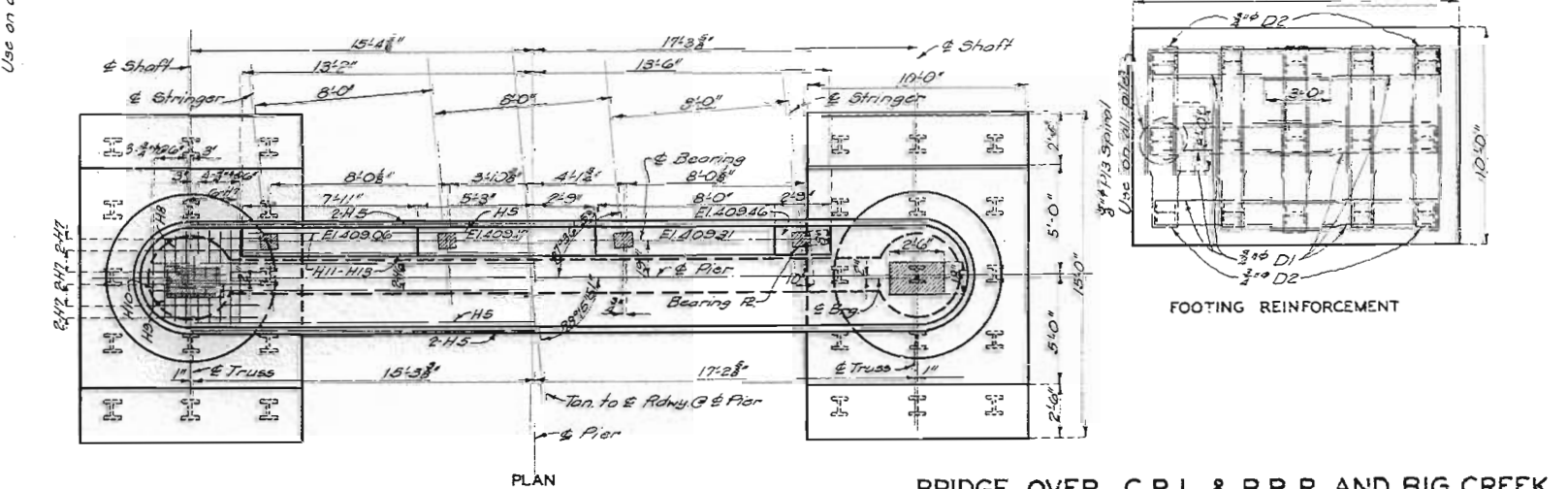
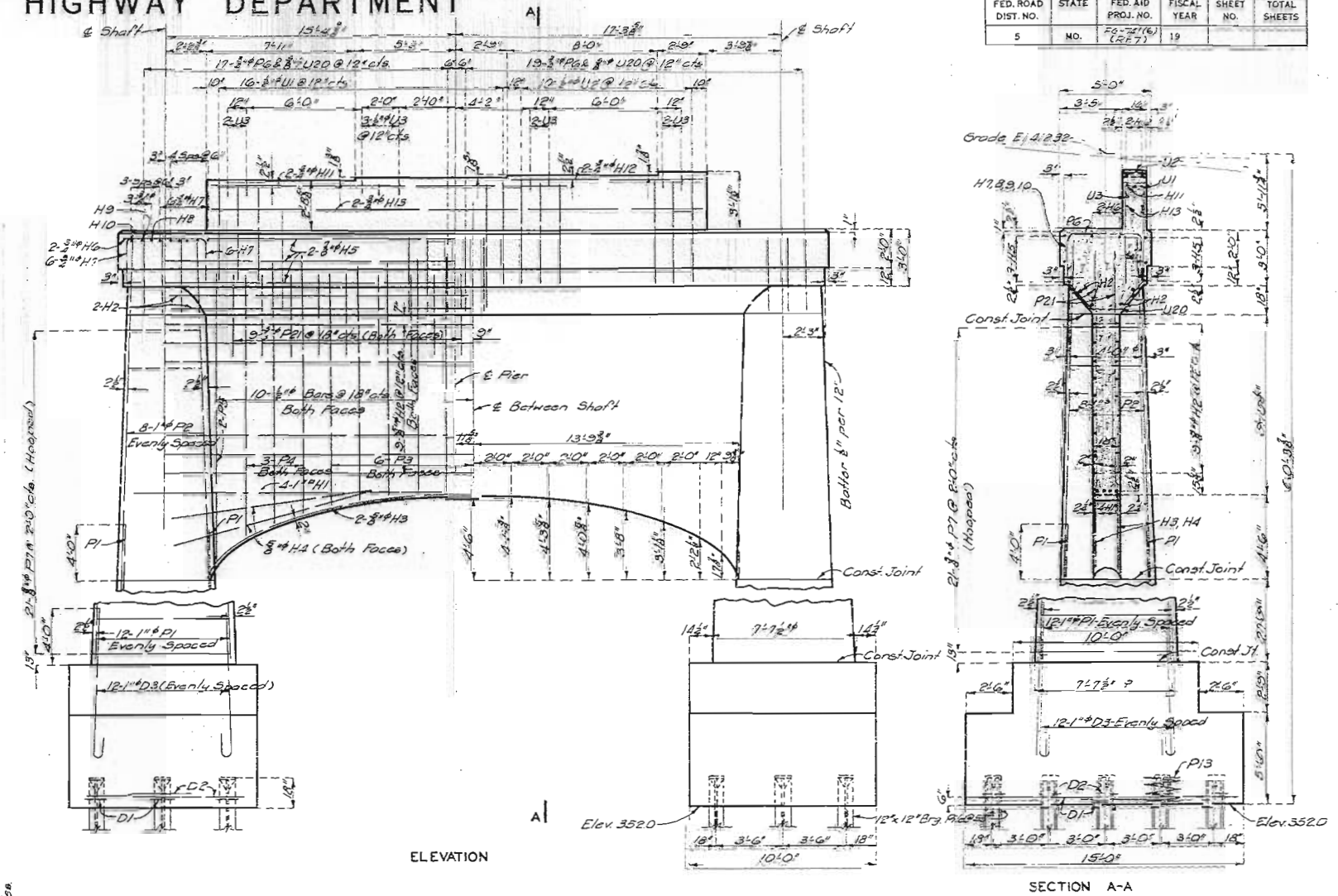
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-741(6) (RT. 7)	19		



Designed April 1947 by R.A.C.
 Drawn May 1947 by R.E.S.
 Traced June 1947 by J.N.N.
 Checked Jan. 1948 by N.W.R.

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



DETAILS OF PIER NO. 4

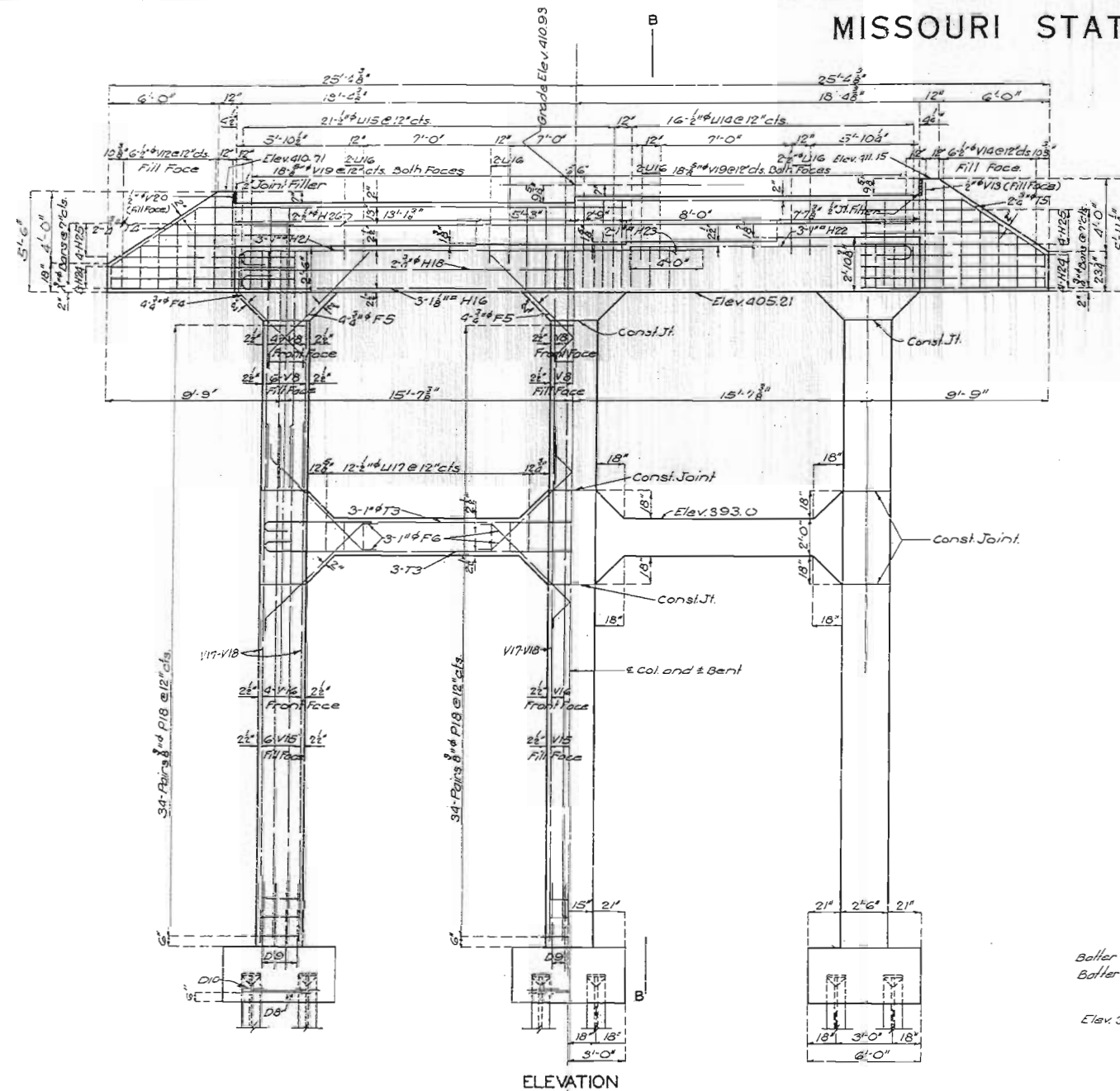
BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK

STATE ROAD FROM PLEASANT HILL SOUTH
 AT PLEASANT HILL
 PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65

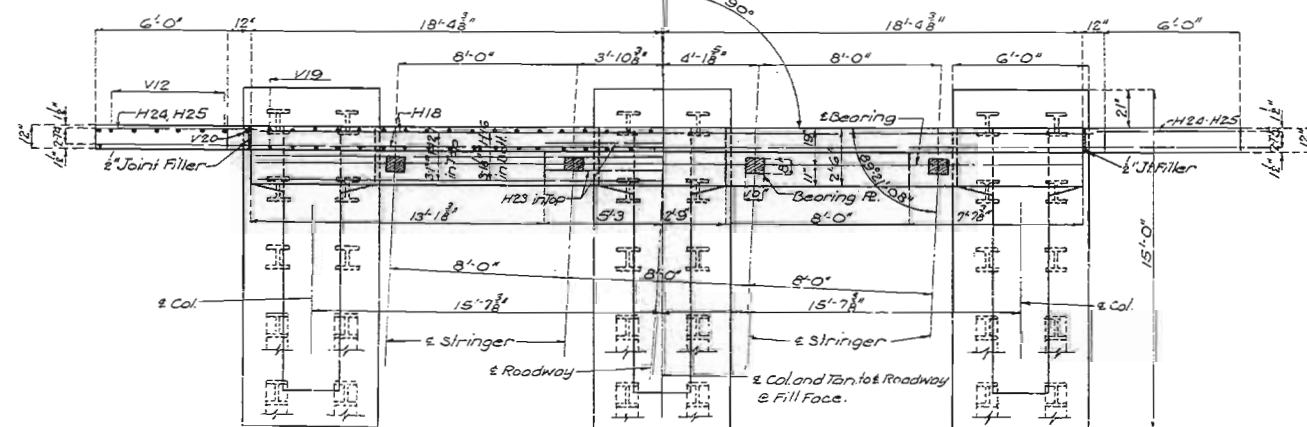
CASS COUNTY

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	3-72(16) (Rt. 7)	19		

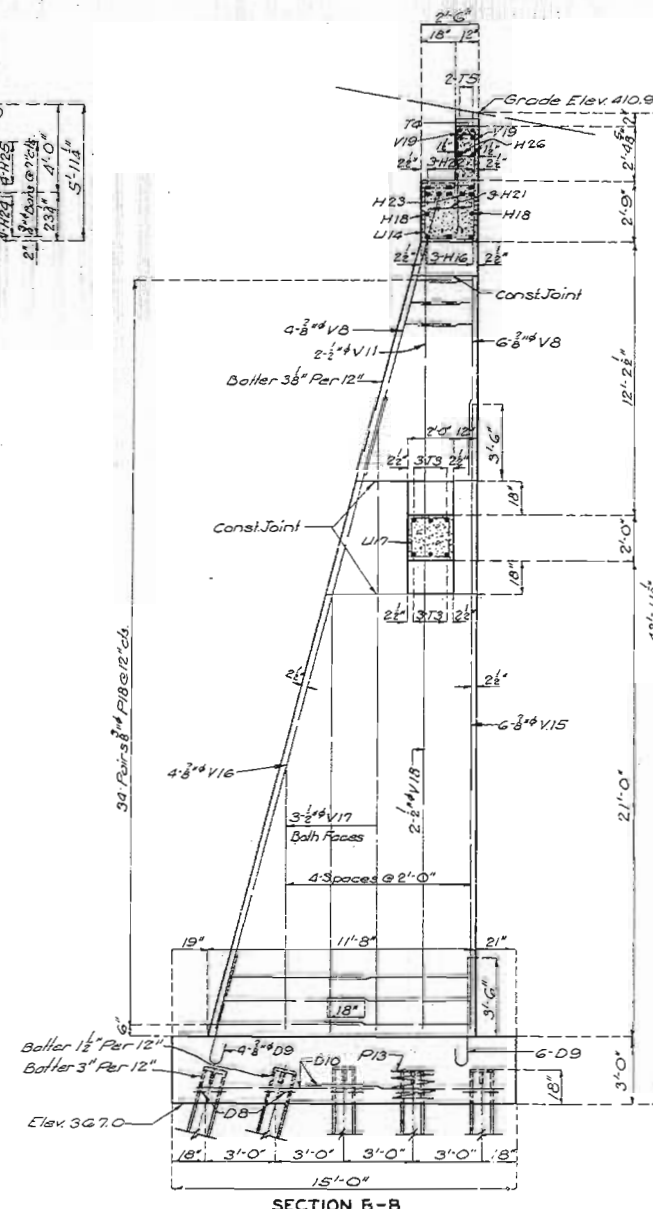


ELEVATION

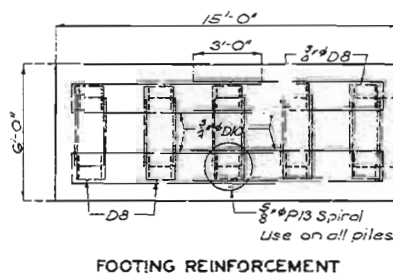


PLAN

DETAILS OF BENT NO. 6



SECTION B-B



FOOTING REINFORCEMENT

BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK

STATE ROAD FROM PLEASANT HILL SOUTH

AT PLEASANT HILL

PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65

CASS

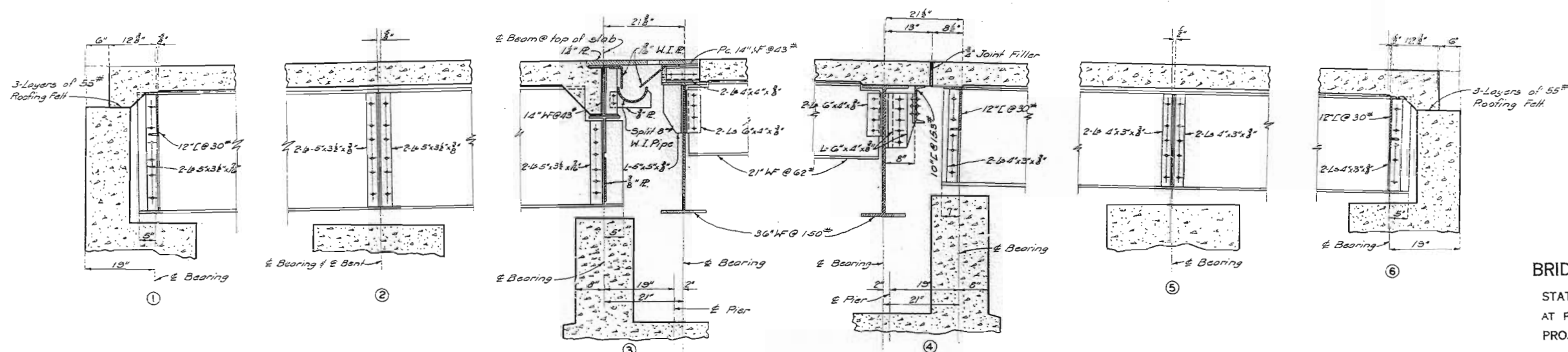
COUNTY

Designed April 1947 by R.A.C.
Drawn May 1947 by R.E.S.
Traced June 1947 by K.R.W.
Checked Jan 1948 by N.M.R.

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

Sheet No. 6 of 14

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
5	MO.	FG-701(6) (27)	19		

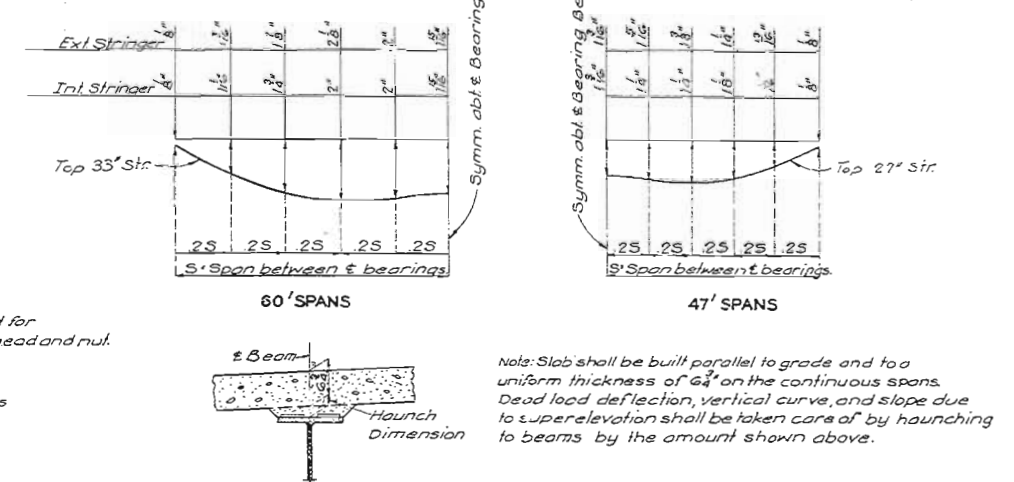
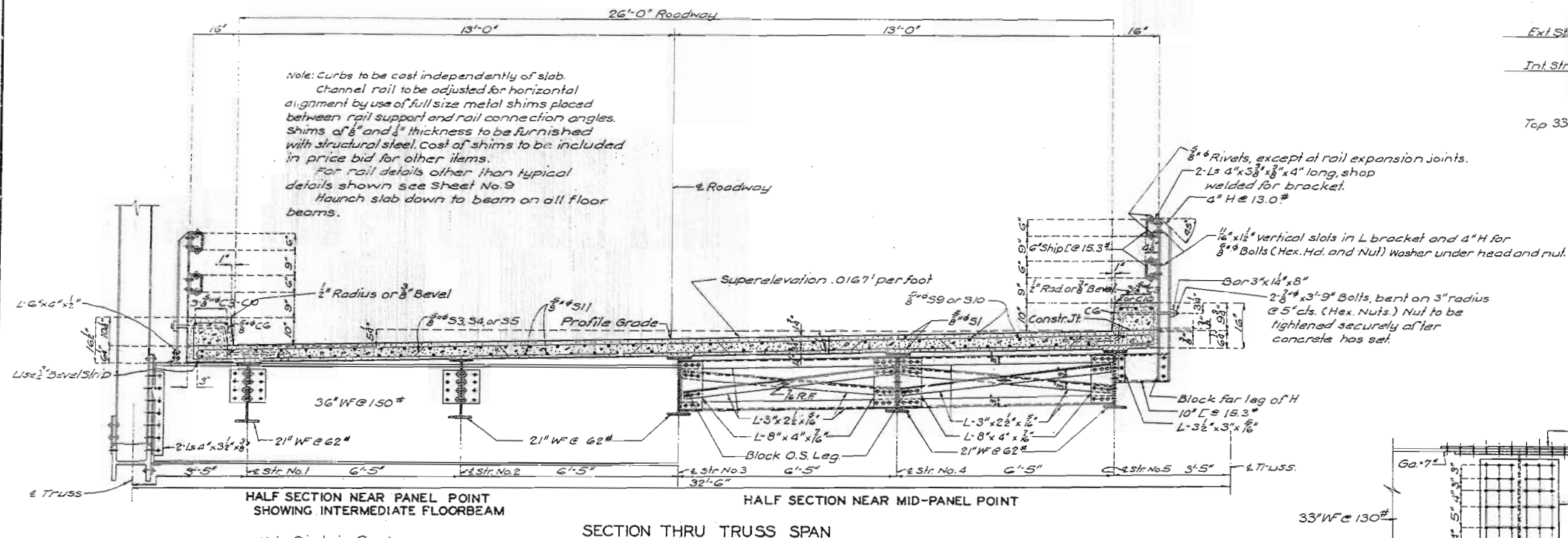


Note: This drawing is not to scale. Follow dimensions.

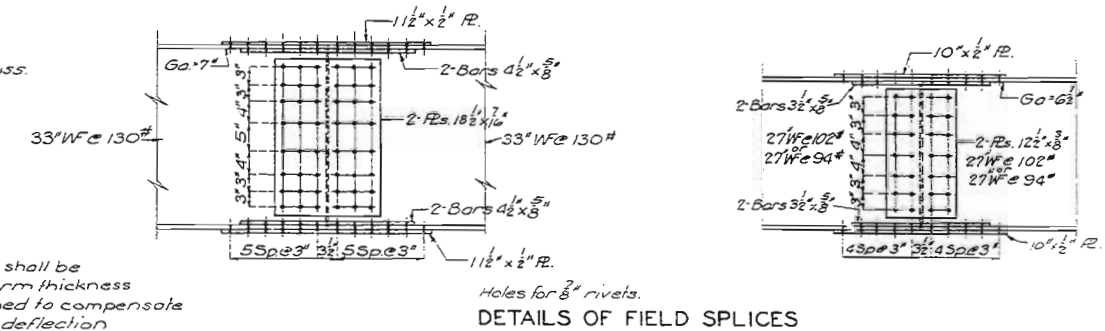
CASS COUNTY

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	20-21(6) (22-7)	19		



SLAB HAUNCHING DIAGRAM - CONTINUOUS SPANS

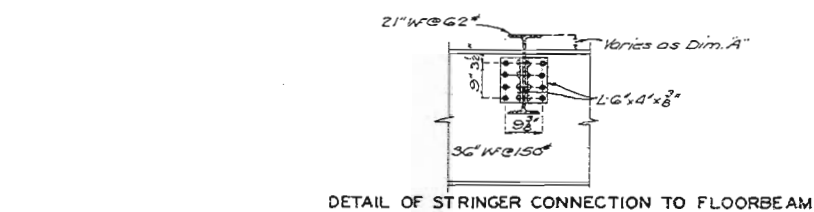


DETAILS OF FIELD SPLICES

Str. No.	Dim. \bar{A}^n
1	1^1
2	1^3
3	2^3
4	4^1
5	5^1

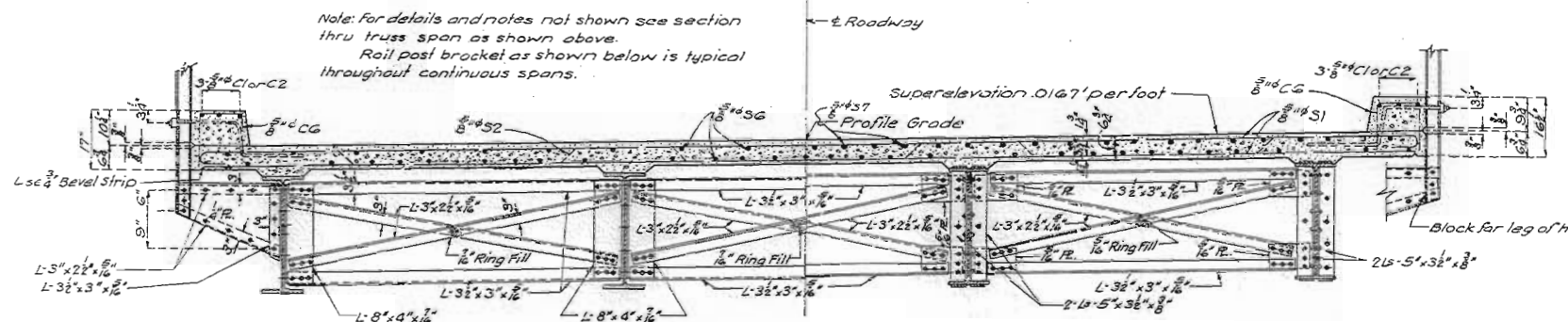
TABLE OF DIMENSIONS

Note: Slab on the truss span shall be built to grade and to a uniform thickness of 6 1/2". Slab shall be haunched to compensate for a maximum dead load deflection of 1/4" in the stringers and 1/8" in the floorbeam, slope due to super-elevation, and vertical curve.



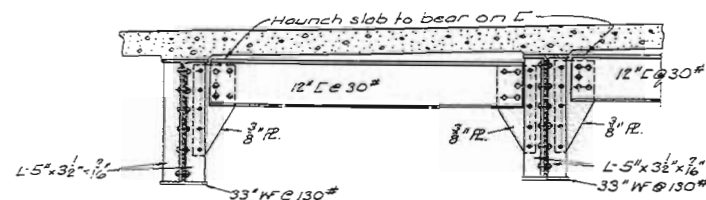
DETAIL OF STRINGER CONNECTION TO FLOORBEAM

Note: For details and notes not shown see section thru truss span as shown above.
Rail post bracket as shown below is typical throughout continuous spans.

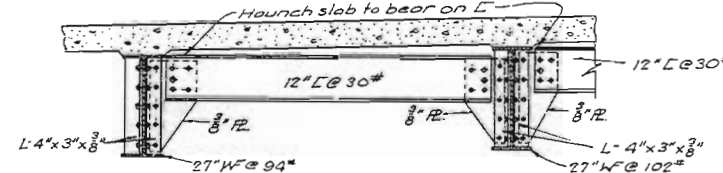


HALF SECTION NEAR INTERMEDIATE DIAPHRAGM
60'-60' CONTINUOUS SPANS
(Section thru 47'-47' continuous spans similar)

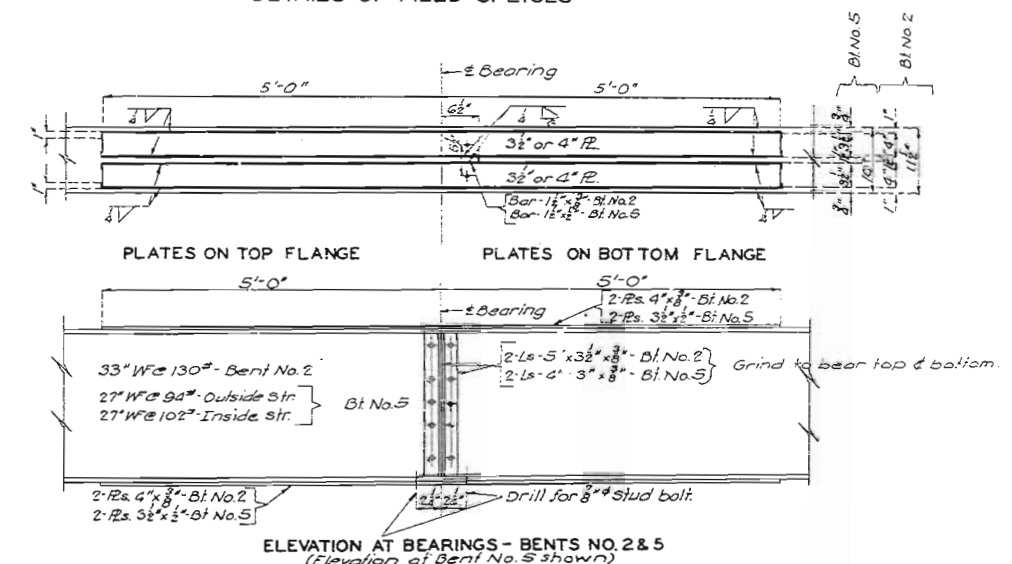
HALF SECTION AT BENT NO. 2
(Section at Bent No. 5 similar)



PART SECTION AT BENT NO. 1



PART SECTION AT PIER NO. 4
(Section of Bent No. 6 similar)



WELDING DETAILS FOR COVER PLATES OVER BENTS NO.2&5

BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK

STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6)(RT. 7) STA. 85+56.65

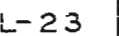
CASS COUNTY

Designed Feb. 1947 by R.A.C.
Drawn April 1947 by H.T.B.
Traced May 1947 by R.R.W.
Checked Nov. 1947 by N.Y.R.

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

Sheet No.8 of 14

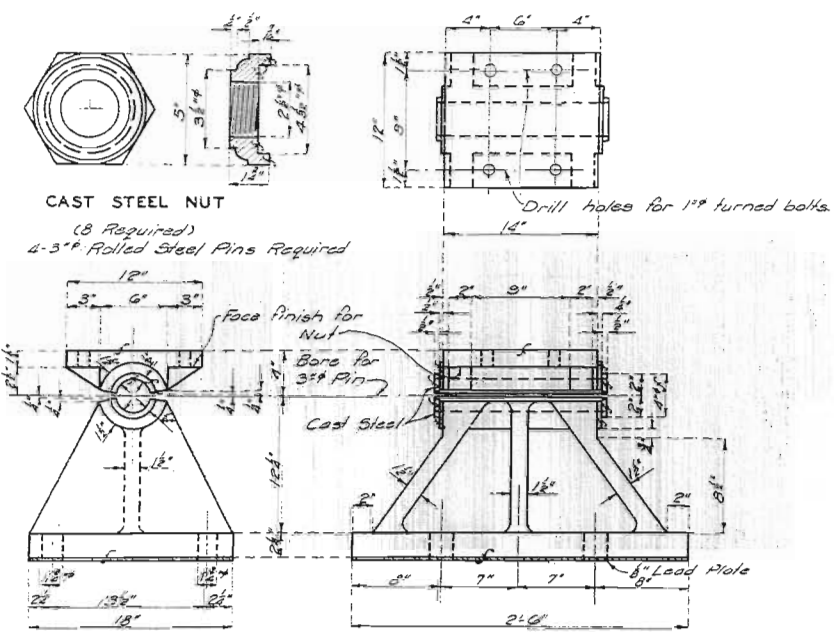
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5	MO.	12-71	19		



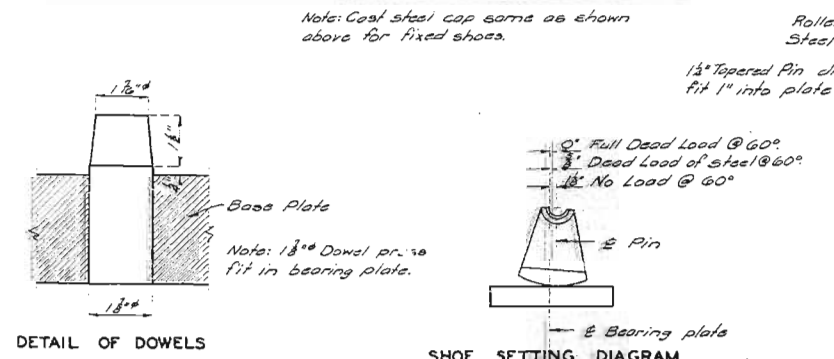
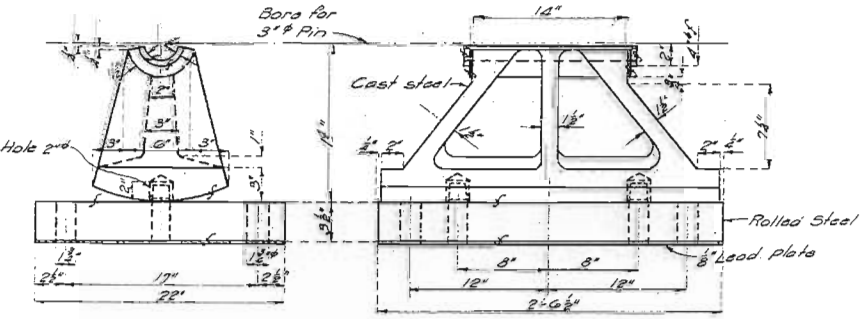
Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

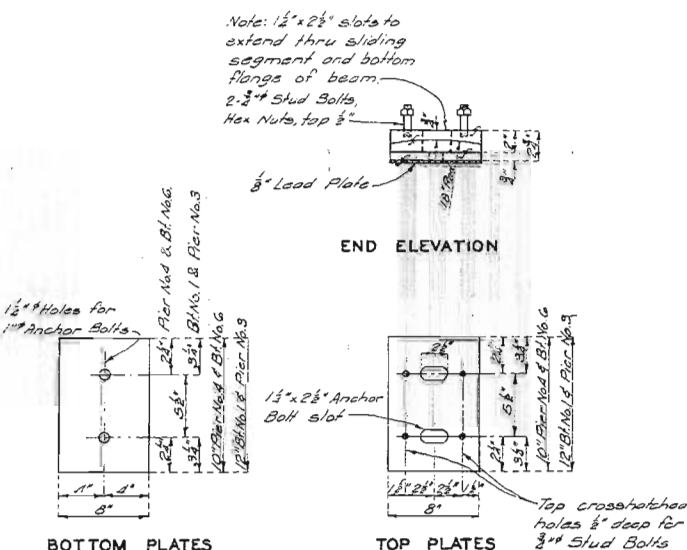
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-741(6) (RT. 7)	19		



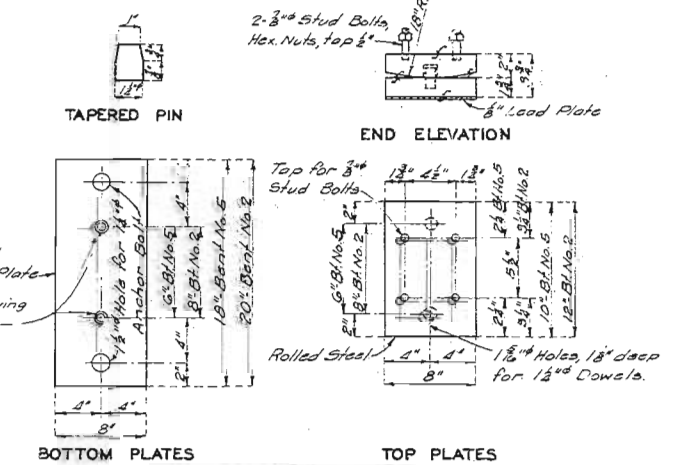
DETAILS OF FIXED SHOES FOR TRUSS SPAN
AT PIER NO. 4
(2 Sets Required)



DETAILS OF EXPANSION SHOES FOR TRUSS SPAN
AT PIER NO. 3
(2 Sets Required)

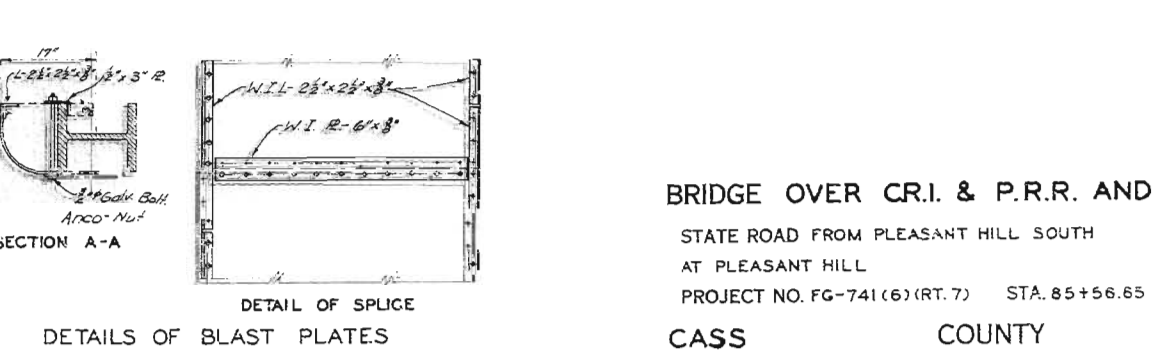
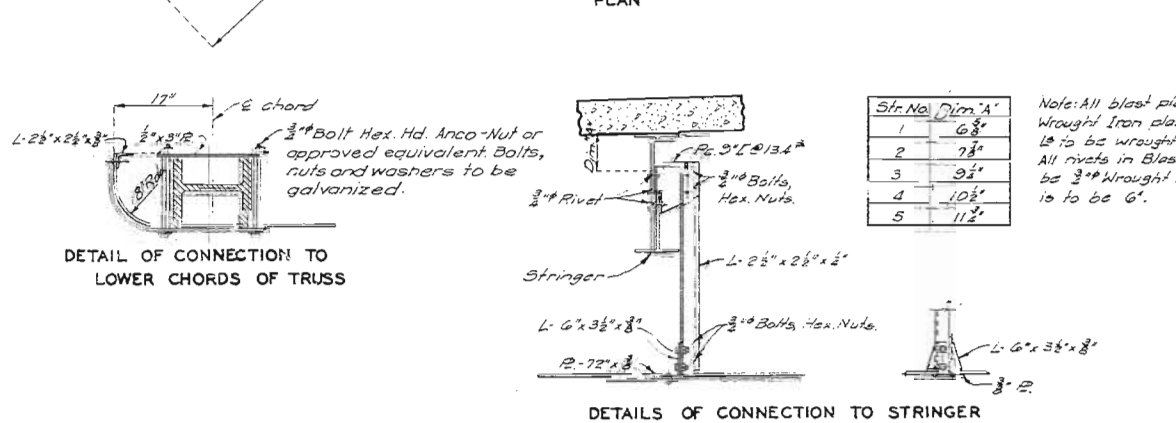
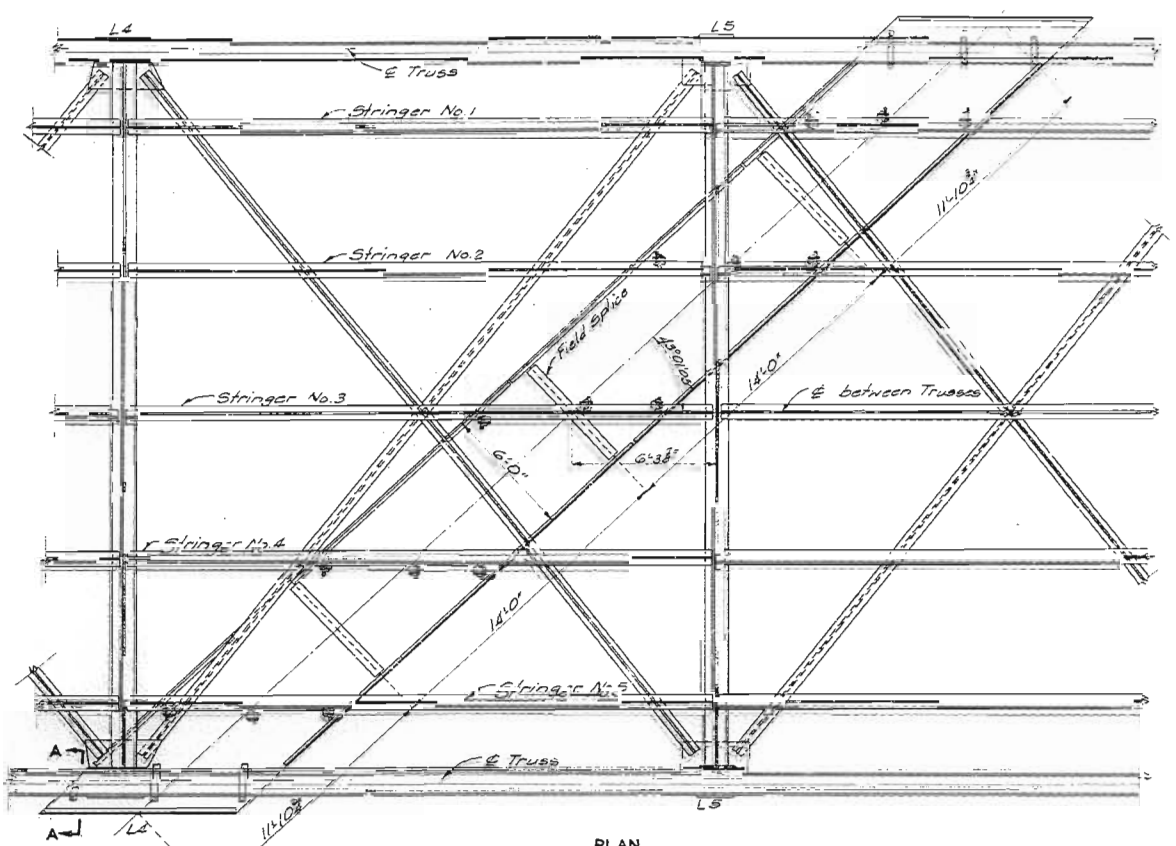


DETAILS OF BEARING PLATES FOR BEAM SPANS
AT BENTS NO. 1 & 6 AND PIERS NO. 3 & 4
(5 Sets Required - Bent No. 1 & Pier No. 3)
(8 Sets Required - Pier No. 4 & Bent No. 6)



DETAILS OF BEARING PLATES FOR BEAM SPANS
AT BENTS NO. 2 & 5
(4 Sets Required - Bent No. 2)
(4 Sets Required - Bent No. 5)

Notes:
All fillets shall have 3" radius.
Finish all surfaces marked "F".
Bearing castings at Bents No. 1 & 6 and Piers No. 3 & 4 shall be either grey iron alloy or cast steel.
Anchor bolts for bearing plates at Bents No. 1 & 6 and Piers No. 3 & 4 shall be 1" swaged bolts, no heads or nuts and shall extend 10" into concrete. Top ends of anchor bolts shall be above the top of casting but not higher than 2" below top surface of bottom flange of beam.
Anchor bolts for bearing plates at Bents No. 2 & 5 shall be 1 1/2" swaged bolts with hex. nuts and shall extend 12" into concrete.
Anchor bolts for shoes at Piers No. 3 & 4 shall be 1 1/2" swaged bolts with hex. nuts and shall extend 16" into concrete.
All pins, bolts, nuts, dowels, and rolled plates will be paid for as structural steel.
Cost of lead plates shall be included in price bid for other items.
All finished surfaces shall be painted with one coat of white lead and tallow.
See Specifications for field coatings.



BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK
STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6)(RT. 7) STA. 85+56.65
CASS COUNTY

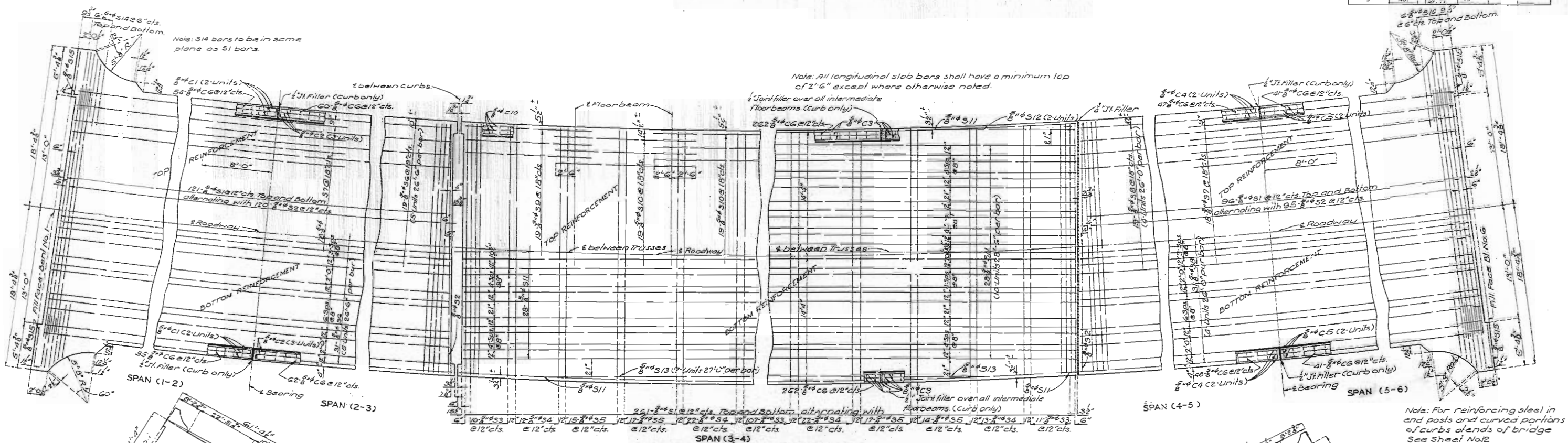
Designed Apr. 1947 by R.A.C.
Drawn Apr. 1947 by H.T.B.
Traced Apr. 1947 by J.N.N.
Checked Nov. 1947 by N.N.R.

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

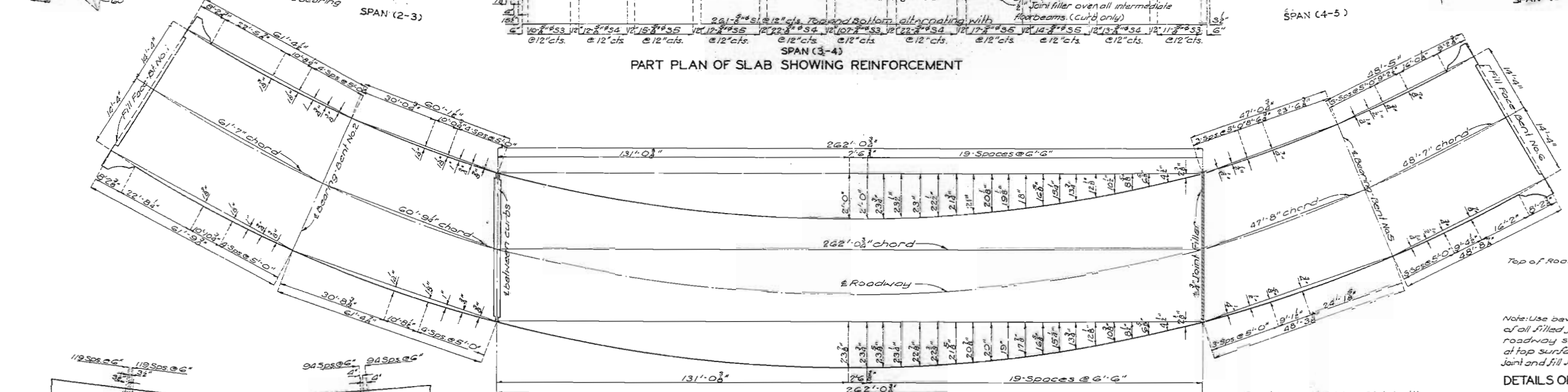
Sheet No. 10 of 12

MISSOURI STATE HIGHWAY DEPARTMENT

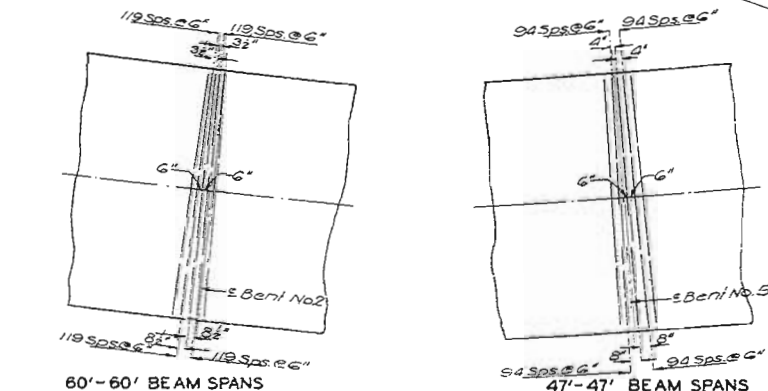
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5	MO.	70-2-111 (27-7)	19		



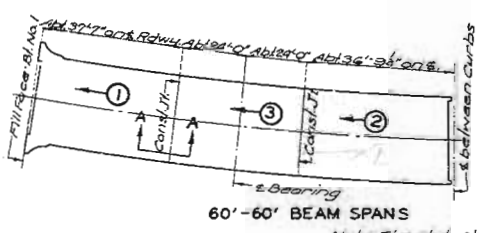
PART PLAN OF SLAB SHOWING REINFORCEMENT



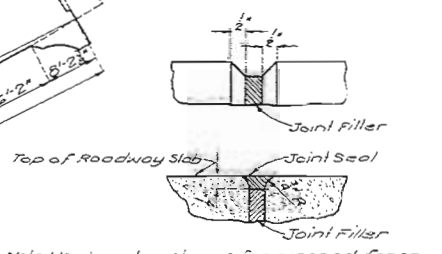
PART PLAN OF SLAB SHOWING ORDINATES



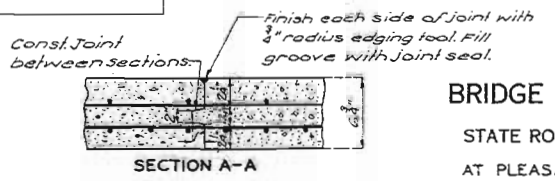
DETAILS SHOWING METHOD OF FANING TRANSVERSE BARS



SLAB POURING SEQUENCE



DETAILS OF BEVEL FOR FILLED JOINTS



SECTION A-A



CONSTRUCTION JOINT TRUSS SPAN (PERMISSIBLE)

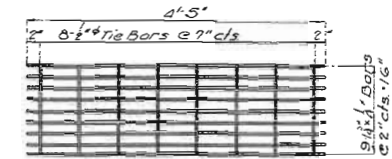
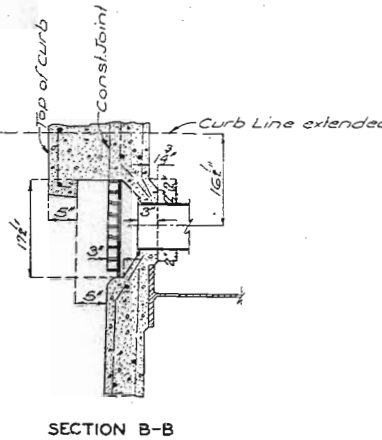
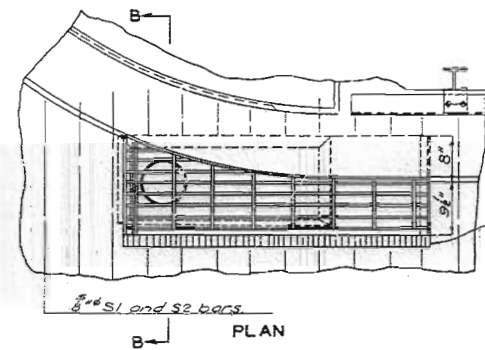
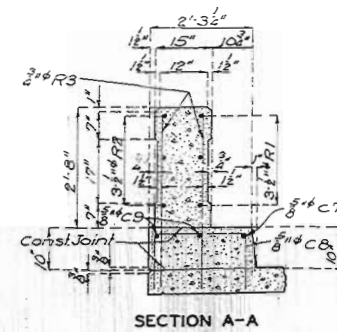
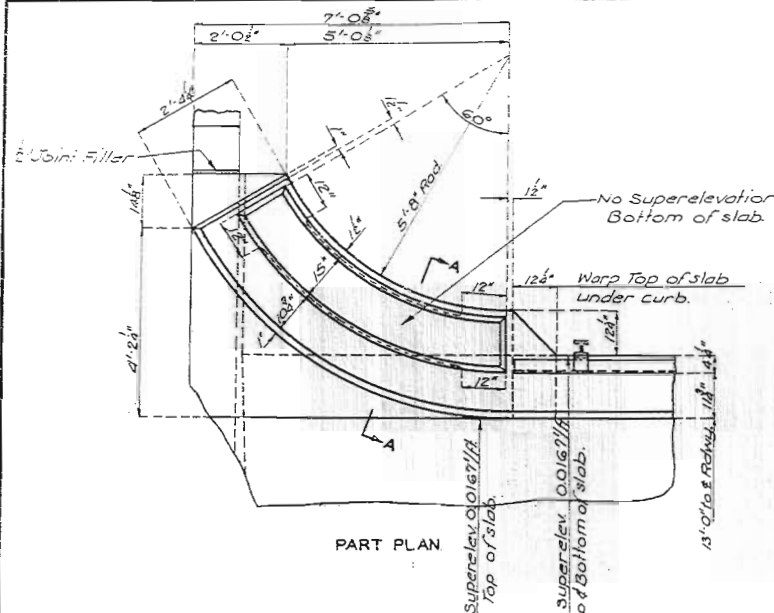
BRIDGE OVER C. R. I. & P. R. R. AND BIG CREEK
STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65
CASS COUNTY

Designed Feb. 1947 by R.A.C.
Drawn May 1947 by H.T.S.
Traced July 1947 by K.R.M.
Checked Nov. 1947 by N.H.R.

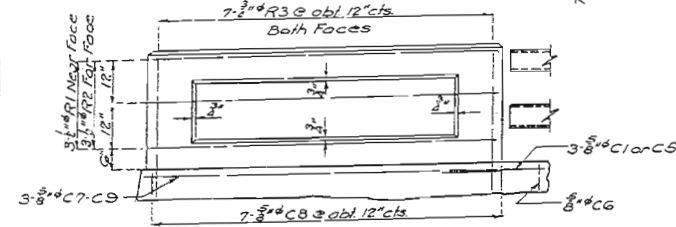
Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

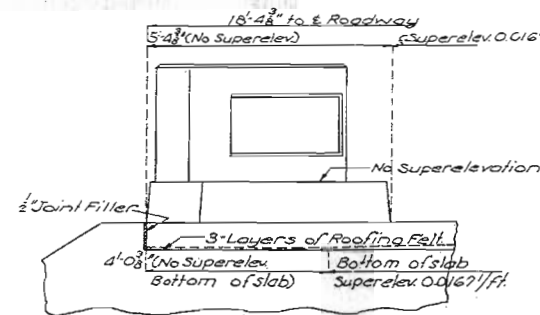
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-741(6) (RT. 7)	19		



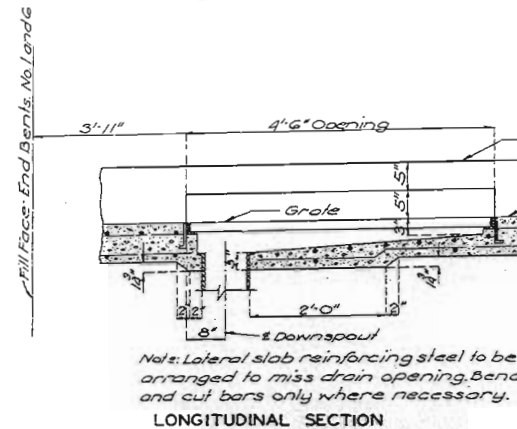
PLAN OF GRATES
(2' Required)
Note: Grates will be paid for as Fabricated Structural Steel.
Details for anchoring grates securely in place shall be submitted to the Engineer for approval before grates are fabricated.



DEVELOPED ELEVATION OF END POST SHOWING REINFORCEMENT



PART END ELEVATION



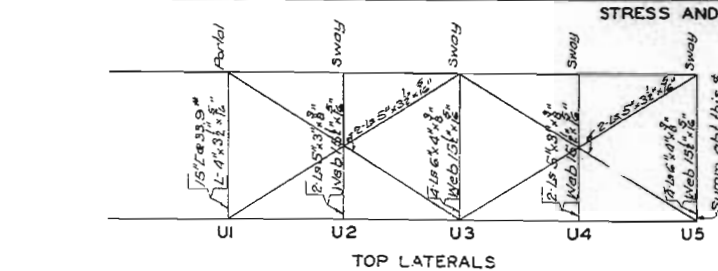
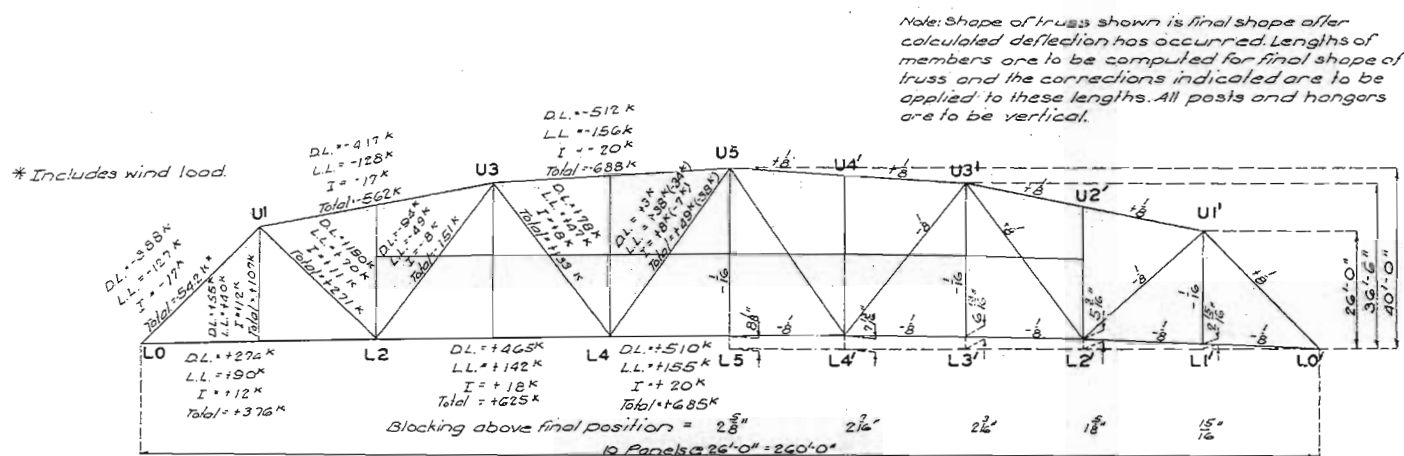
DETAILS OF DRAINS AT LEFT SIDE OF ROADWAY - BENTS NO. 1 & 6
(Drain at Bent No. 1 shown)

PART SECTION AT END OF GRATE

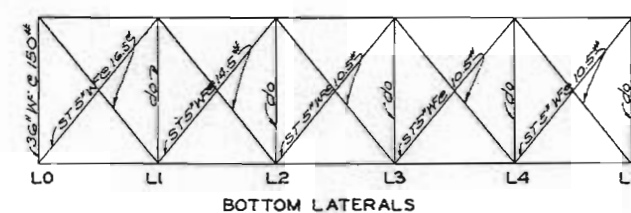
Note: All 12 Ga. metal used in drainage system, all bars, angles, plates, bolts, and expansion bolts used in fastening 12 Ga. metal pipes to concrete shall be galvanized.

Expansion bolts to be National Lead Co. Cinch Anchor Type II, with two units or an approved equivalent.
For details of connection of 8" split pipe to structural steel of Pier No. 3 See Sheet No. 9 of 14.

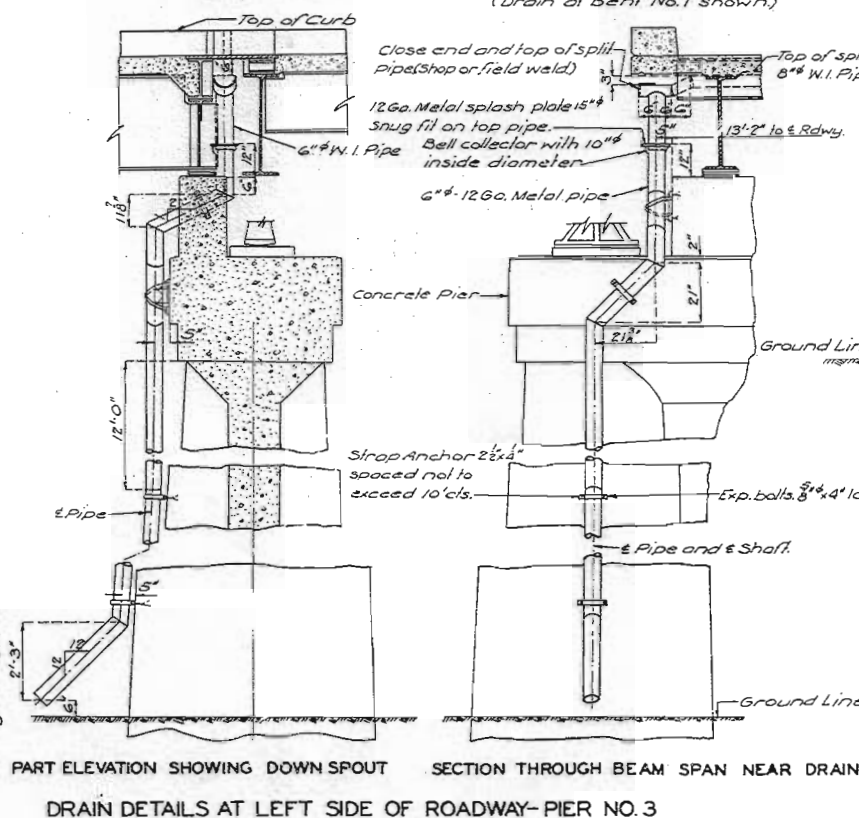
TYPICAL DETAILS OF FLARED END POST



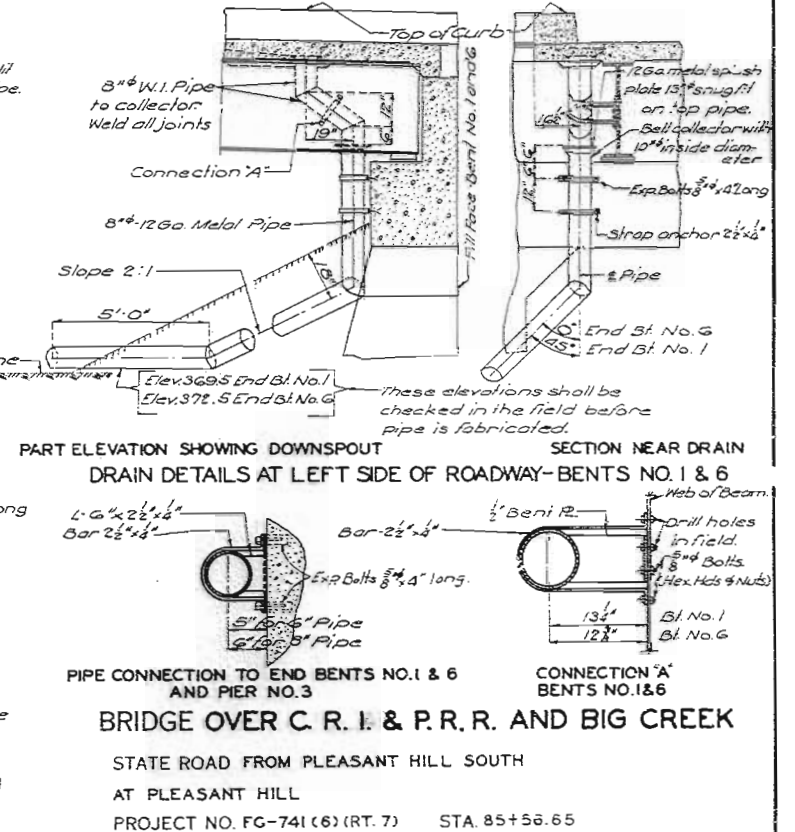
TRUSS DETAILS



BOTTOM LATERALS

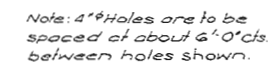


DRAIN DETAILS AT LEFT SIDE OF ROADWAY - PIER NO. 3



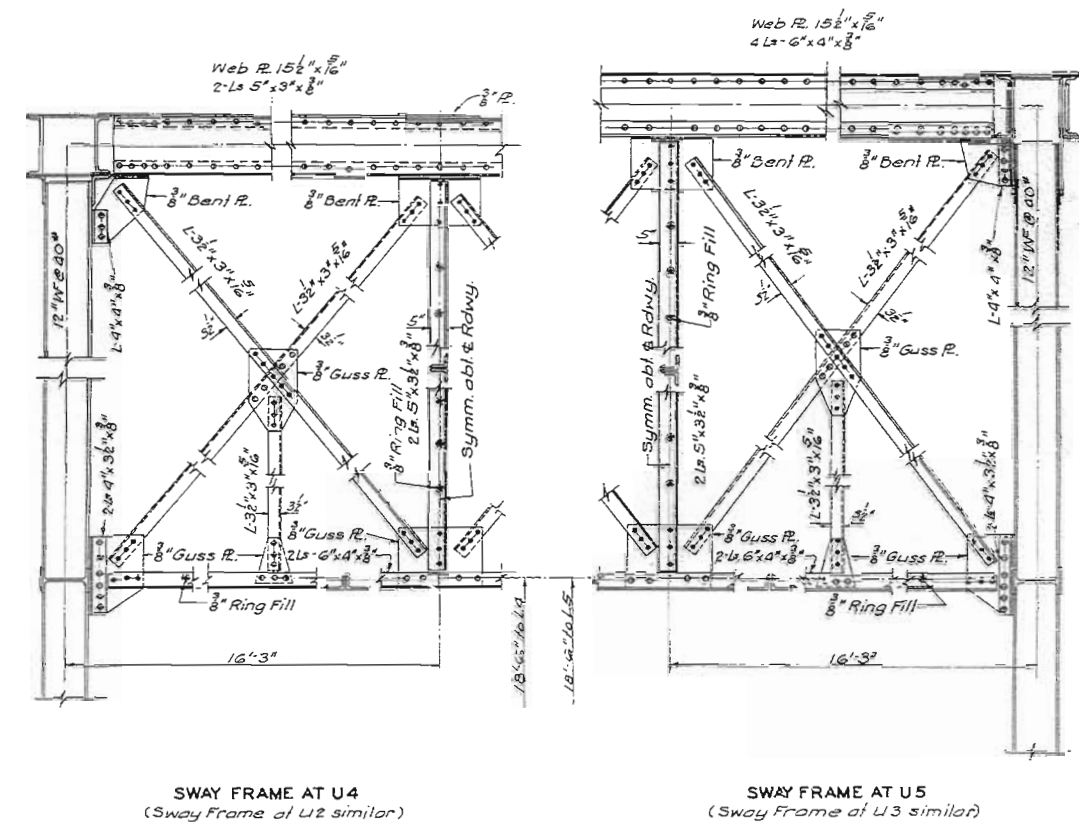
PIPE CONNECTION TO END BENTS NO. 1 & 6 AND PIER NO. 3
BRIDGE OVER C. R. I. & P. R. R. AND BIG CREEK
STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65
CASS COUNTY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	0-74176 (R17)	19		



Sheet No 13 of 14

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	MO-24115 (R.F. 7)	19		



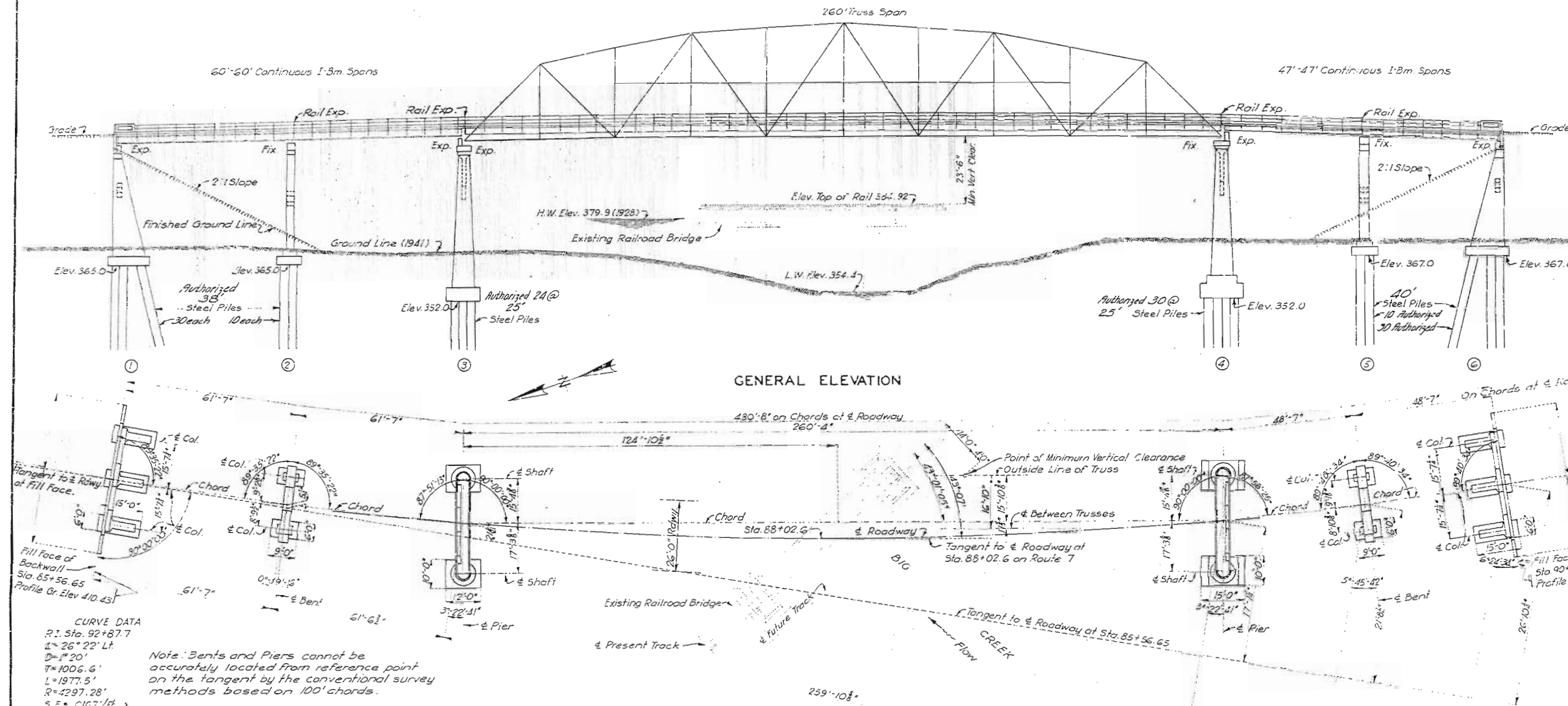
L-23

Sheet No.: of 4

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	77-74(16)	19		

FINAL PLANS



Note: All piling are 2" Brg. Pile @ 53" and conform with details and notes on Sheet No. 3 of these design plans. All piles are driven to practical refusal or into sand, gravel, boulders, shale, or bed rock, and will maintain a load of at least 20 tons per pile. Estimated quantities shown on plans are 40 @ 35'-0", 54 @ 25'-0".

Lengths as authorized by the Engineer and furnished by the Contractor: Bents 1 and 2, 40 @ 35'; Bents 3 and 4, 54 @ 25'; Bents 5 and 6, 40 @ 40'. Total Length authorized = 4470 lin. ft.

GENERAL NOTES:

Design Specifications A.A.S.H.O. 1944
 Loading H-15
 Structural Steel Stress 18,000#/sq.
 Reinforcing Steel Stress 18,000#/sq.
 Concrete Class "B" 1000#/sq.
 All concrete shall be Class "B".
 Qualifications of all welding operators and electrodes will be required in accordance with Specifications, except that a proper certification of electrodes previously qualified will be acceptable.
 Rivets 3/4" except where otherwise noted.
 Point: Snap, none; Field, contact surfaces of bolted field connections one coat of red lead and surfaces inaccessible after erection three coats of red lead. Blast plates one coat of an approved asphaltic primer and a second coat of an approved asphaltic paint. All other exposed surfaces one coat red lead, second coat brown third coat aluminum tinted blue and final coat of aluminum. Payment for all coats excepting first coat red lead is included in price bid for material painted. See C.O. No. 3.
 Where joint filler is specified it shall conform with the requirements for Premolded Material Filler as given in Section 35-19A(11) of the Standard Specifications.
 A rubbed surface finish will be required on all exposed surfaces of curbs, concrete and posts and on outside faces of roadway slab.
 Falsework for span over existing railroad tracks shall be constructed with a minimum vertical clearance of 21'-0" from top of rails and minimum lateral clearance of 9'-0" from centerline of track.

PLAN

FINAL QUANTITIES			
Item	Substr.	Superstr.	Total
Class 1 Excavation for Structures Cu.Yds.	706.5		706.5
Class 2 Excavation for Structures Cu.Yds.	190.5		190.5
Class "B" Concrete Cu.Yds.	736.7	327.5	1064.2
Fabricated Structural Steel (Truss Span) Lbs.		490450	490450
Fabricated Structural Steel (I-Beam Spans) Lbs.		147320	147320
Steel Castings Lbs.		2850	2850
Gray Iron Alloy Castings Lbs.		1040	1040
Reinforcing Steel Lbs.	51890	78980	130870
Fabricated Wrought Iron (Blast Plates) Lbs.		5150	5150
Fabricated Wrought Iron (Drains) Lbs.		1040	1040
6" Metal Pipe Lin.Ft.	43		43
8" Metal Pipe Lin.Ft.	169		169
Steel Piling in place Lin.Ft.	3872		3872
Steel Pile Cut-Offs Lin.Ft.	598		598
Red Lead Painting Lump Sum		1	1

Note: Excavation for bridge made above Elev. 358.0 will be paid for as Class 1 Excavation for Structures. Excavation for bridge made below Elev. 358.0 will be paid for as Class 2 Excavation for Structures.

EXCAVATION		
Bent No.	Class 1 Excav.	Class 2 Excav.
1	122.4	
2	46.8	
3	143.7	86.67
4	249.6	104.00
5	45.2	
6	99.0	
Total	706.7	190.67
PAY	706.5	190.5

STEEL BEARING PILES 12" H 53 lbs.		
Bent No.	Lin. Ft. In Place	Lin. Ft. Cut-Off
1	99.7	143
2	33.6	44
3	42.1	109
4	60.4	146
5	35.0	50
6	109.4	106
TOTALS	3872	598

B.M. Elev. 383.65 - S.E. Corner North Abutment of R.R. Bridge.
 B.M. Elev. 410.66 - NW Cor. Rt. Waywall Bent #1, Bridge Sta. 85+56.65
BRIDGE OVER C. R. I. & P. R. R. AND BIG CR.
 STATE ROAD FROM PLEASANT HILL SOUTH
 AT PLEASANT HILL
 PROJECT NO. FG-74(16) (RT. 7) STA. 85+56.65
CASS COUNTY

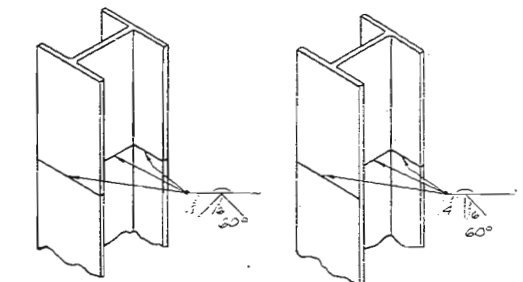
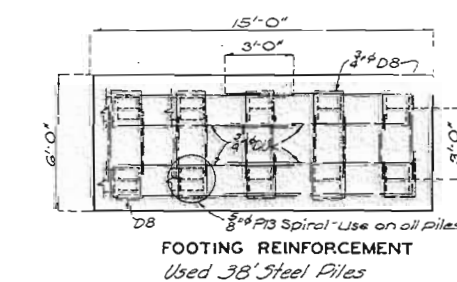
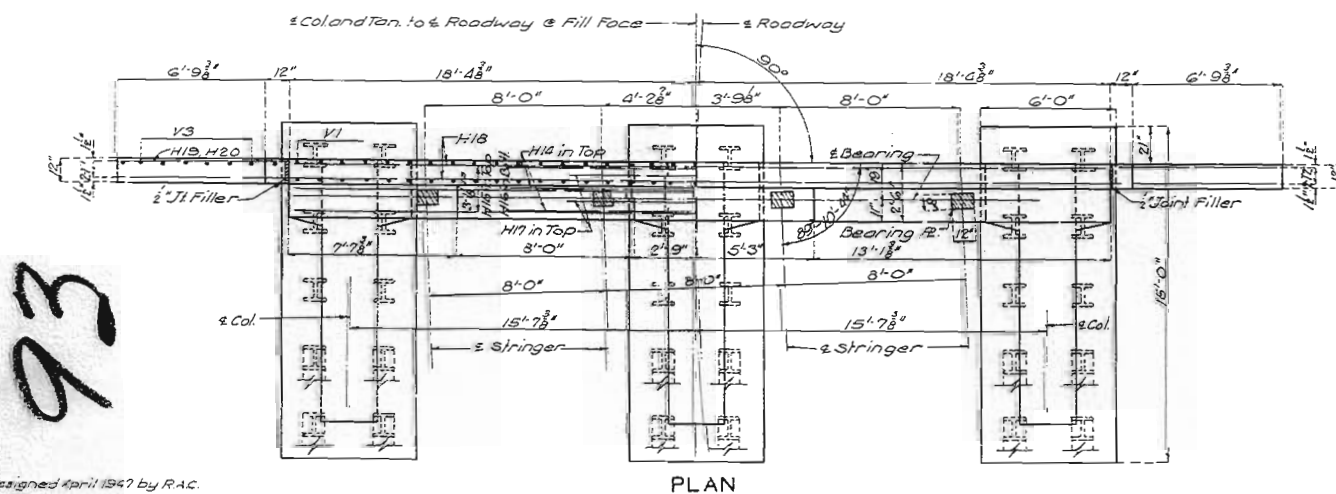
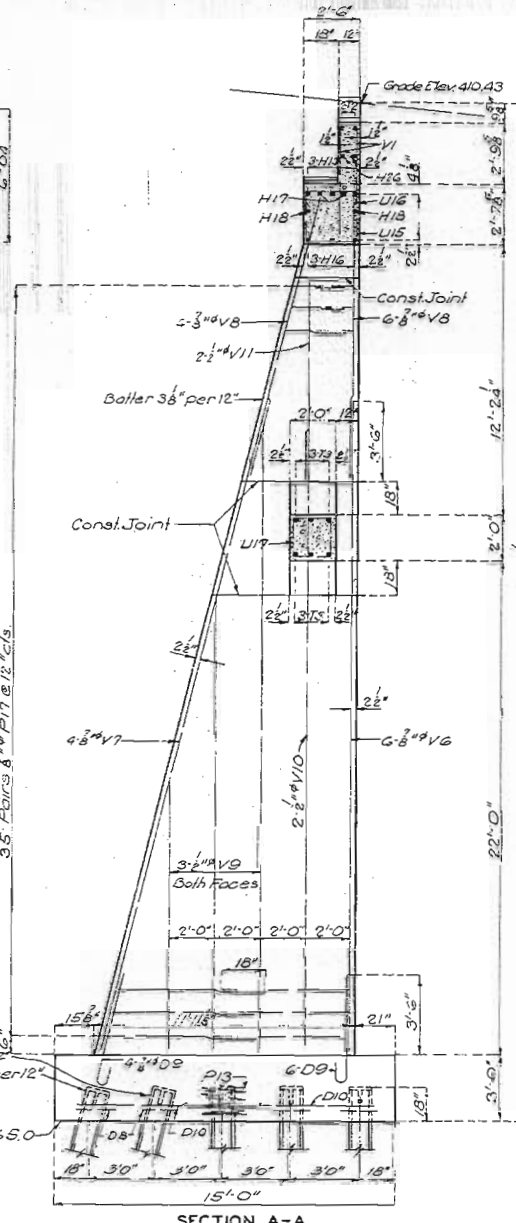
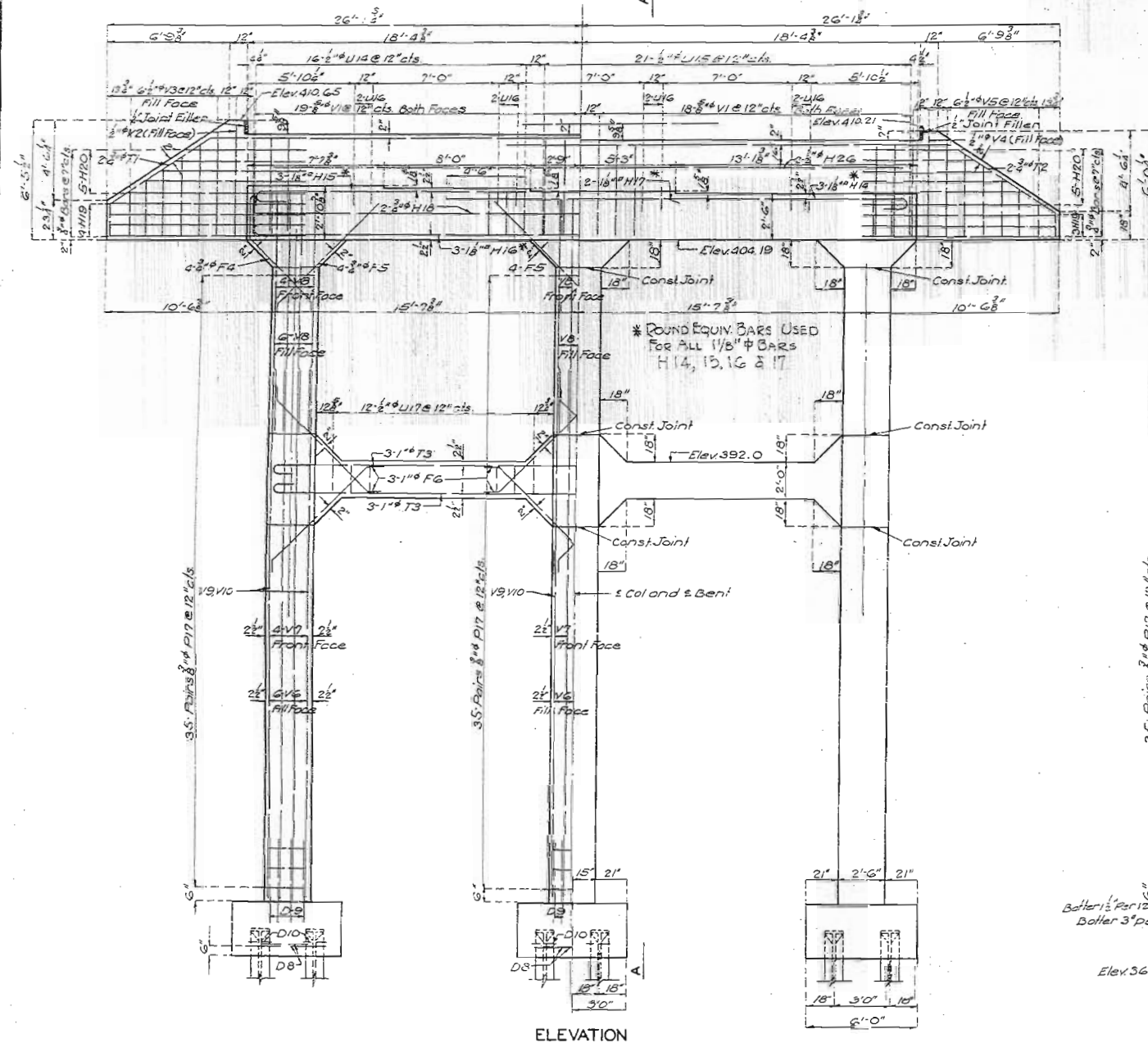
DESIGNED BY: U. W. Enlow DATE: 3/8/1948
 DRAWN BY: C. W. Brown DATE: 3/8/1948
 CHECKED BY: R. B. & J. W. R.

STD-C110R3
 L-23

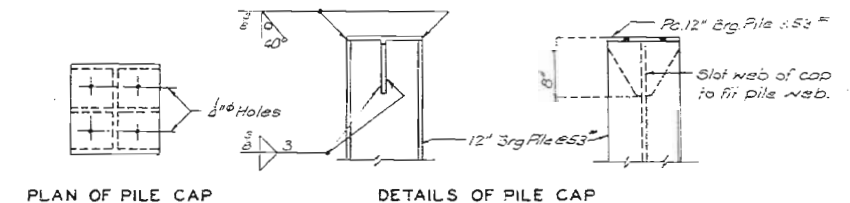
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-741(6) (RT. 7)	19		

FINAL PLANS



BUTT SPLICE FOR STEEL PILING



BRIDGE OVER C.R.I. & P.R.R. AND BIG CREEK

STATE ROAD FROM PLEASANT HILL SOUTH

AT PLEASANT HILL

PROJECT NO. FG-741(6) (RT. 7) STA. 85+56.65

CASS

COUNTY

L-23

FINAL PLANS

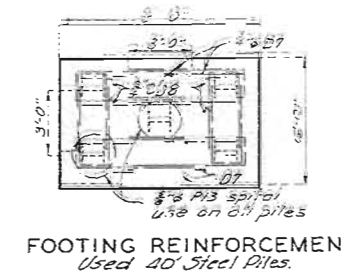
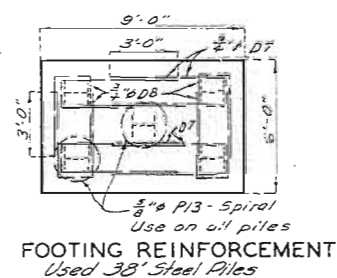
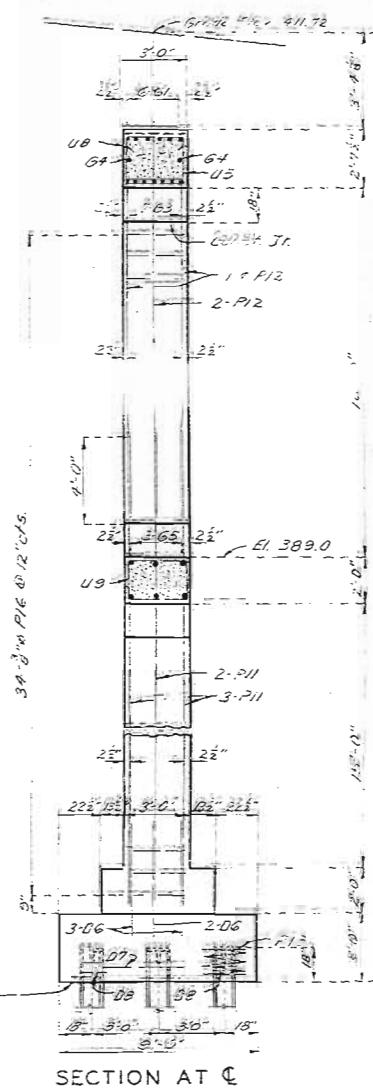
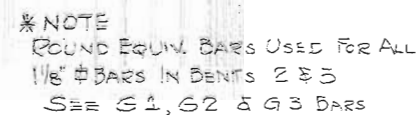
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 3 A of 5

Designed April 1947 by R.A.C.
Drawn May 1947 by R.E.S.
Traced June 1947 by K.W.N.
Checked Jan. 1963 by N.W.R.

93

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
5	MO.	PA-77 (RI 77)	19		



BRIDGE OVER C. R. I. & P. R.R. AND BIG CREEK
STATE ROAD FROM PLEASANT HILL SOUTH
AT PLEASANT HILL
PROJECT NO. FG-741(6) (RT. 7) STA. 85 + 56.65
CASS COUNTY

Designed April 1947 by P.A.C.
Drawn May 1947 by R.E.S.
Traced July 1947 by S.G.S.
Checked Jan. 1948 by N.W.R.

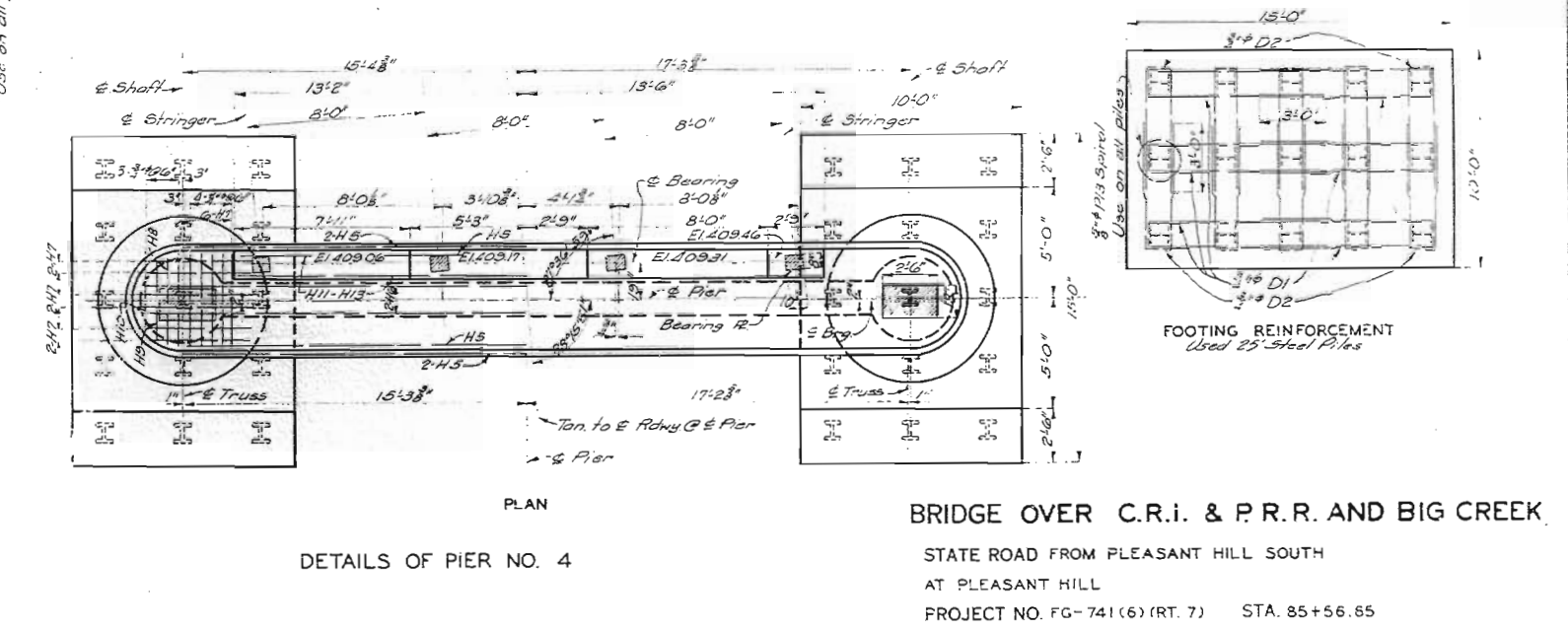
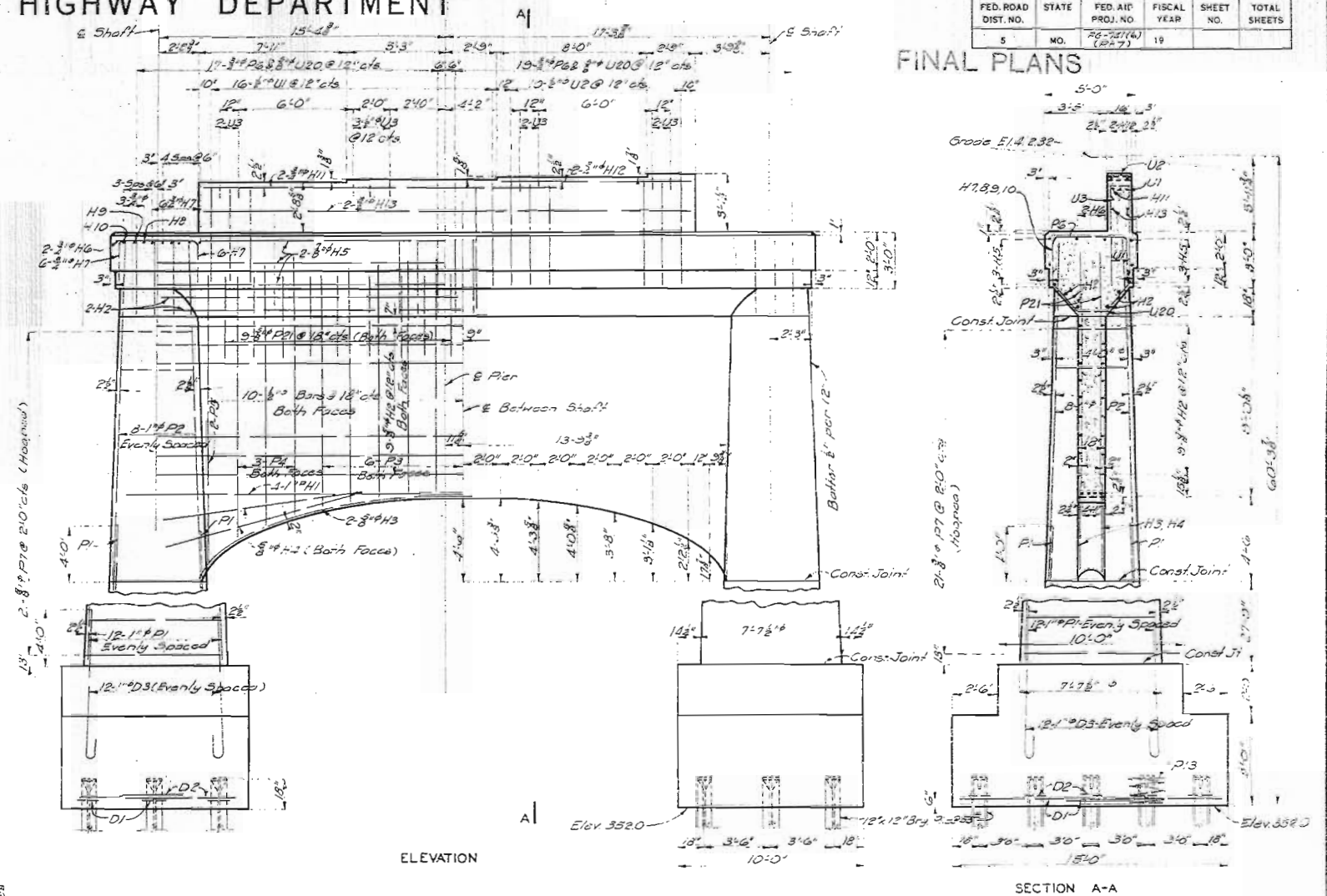
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4A of 5.

FINAL PLANS

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FG-751(6) (PA7)	19		



Note: This drawing is not to scale. Follow dimensions

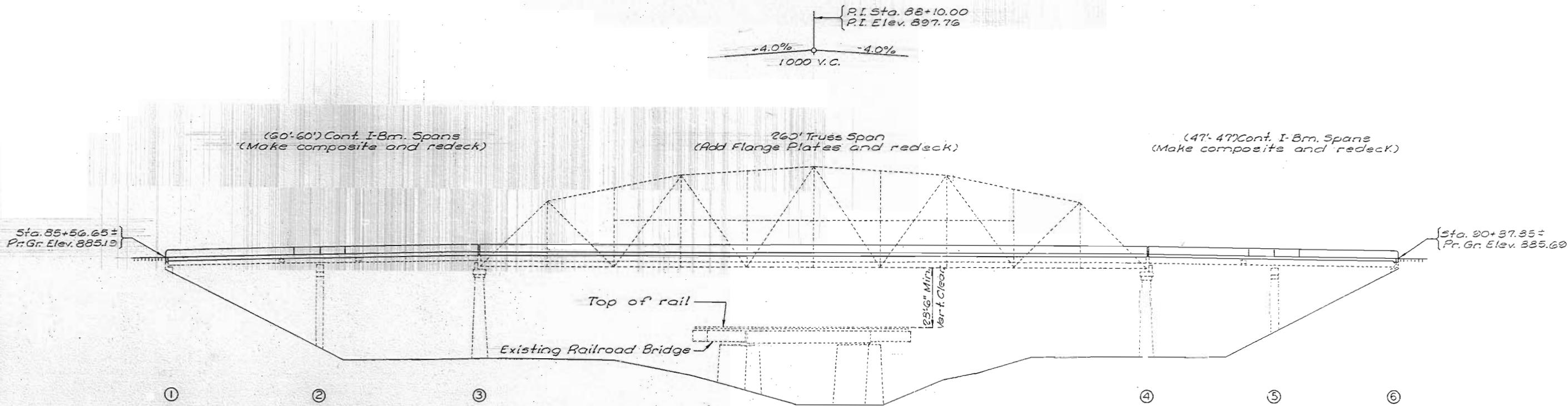
Sheet No 5A of 5

FINAL PLANS

L-23

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	14	



Note: Profile Grade and stationing are along Roadway.

GENERAL DEVELOPED ELEVATION

GENERAL NOTES:

- Design Specifications (Redecking only):
A.A.S.H.T.O. - 1977 Load Factor Design
- Design Loading:
H15-44 - 15" / sq. ft. Future Wearing Surface
- Design Unit Stresses:
Class B1 Concrete (Substructure) $f'_c = 4,000$ psi
Class B1 Concrete (Safety Barrier Curb) $f'_c = 4,000$ psi
Class B2 Concrete (Superstructure except Safety Barrier Curb) $f'_c = 4,000$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi
Structural Carbon Steel $f_y = 36,000$ psi
Fabricated Structural Carbon Steel:
Field connections, High Strength Bolts $\frac{3}{4}" \phi$, holes $\frac{13}{16}" \phi$ except as noted.
- Paint:
Paint, System C, see Special Provisions.
- Construction Clearance:
A minimum vertical clearance of 23'6" from top of rails shall be maintained during construction.
- Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1" unless otherwise shown.
- Existing Work:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.
- Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars.

ESTIMATED QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Removal of Existing Bridge Deck	Sq. Ft.	13,825	13,825
Non-Destructive Testing	Lin. Ft.	37	37
Class B1 Concrete	Cu. Yd.	80.8	81.8
Class B2 Concrete	Cu. Yd.	344.1	344.1
Elastomeric Expansion Joint Seal (4.0 inches)	Lin. Ft.	26	26
Preformed Compression Expansion Joint Seal (2.5 inches)	Lin. Ft.	26	26
Reinforcing Steel (Grade 60)	Lb.	40,280	40,280
Reinforcing Steel (Epoxy Coated)	Lb.	70,440	70,440
Fabricated Structural Carbon Steel	Lb.	2,610	2,610
Special Work	Lump Sum	1	1
Painting (System C) Green (See Special Provisions)	Lump Sum	1	1

Note: Cost of any required excavation for bridge shall be included in contract unit price for other items.
For removal of existing drainage system see Special Provisions.
Cost of furnishing and installing slab drains shall be included in the contract price bid for other items.

LONGITUDINAL DIMENSIONS:
Longitudinal dimensions are based on dimensions shown on original design plans.

HORIZONTAL CURVE DATA:
P.I. Sta. 92+37.7
 $\Delta = 26^\circ 22' 14''$
 $D = 1^\circ 20'$
 $T = 1006.6'$
 $L = 1977.5'$
 $R = 4297.28$
 $S.E. = .01671/f_t$

B.M. Elev. 885.20 N.W. Cor. Rt. Wing @ Sta. 85+56.65 (U.S.G.S. Datum)

BRIDGE OVER ST LOUIS SOUTH WESTERN RAILWAY CO. & BIG CREEK
STATE ROAD FROM PLEASANT HILL TO HARRISONVILLE
ABOUT 0.75 MILES SOUTH OF PLEASANT HILL

PROJECT NO. EHS-455(14) STA. 85+56.65±
JOB NO. 4-S-7-332 RTE. 7
CASS COUNTY

STD.
STD. 706.30
L-23R

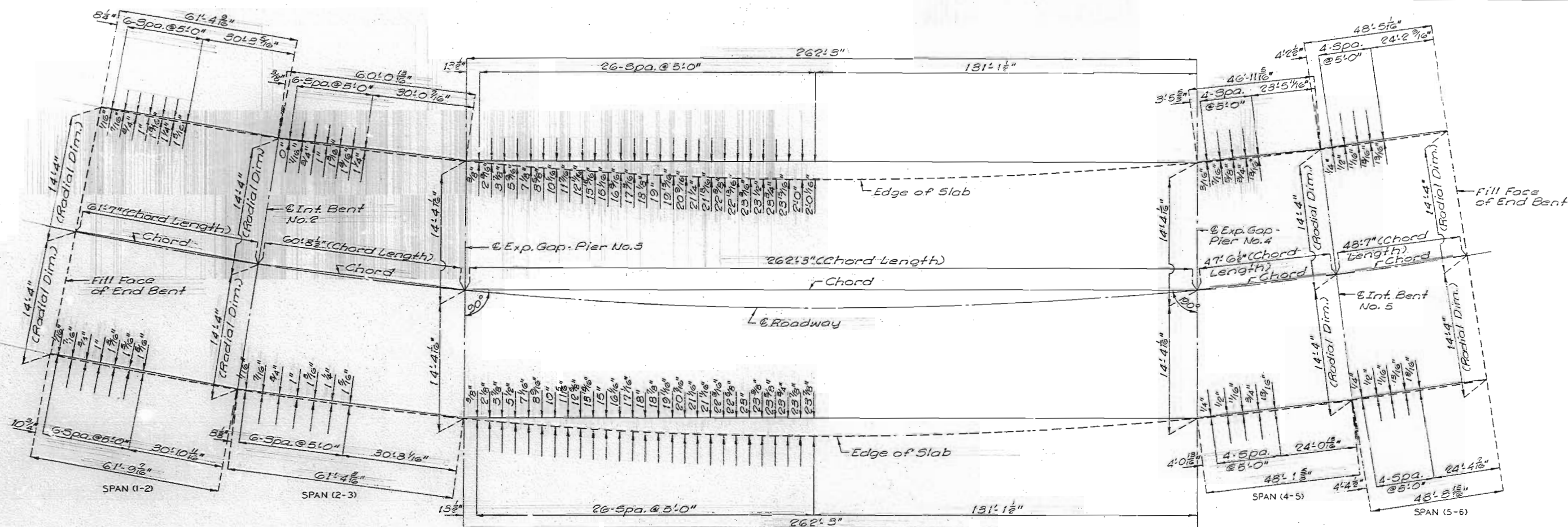
DESIGNED JUNE 1980
DETAILED AUG 1980
CHECKED SEPT. 1980

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

Sheet No. 1 of 11

DATE 12/15/83

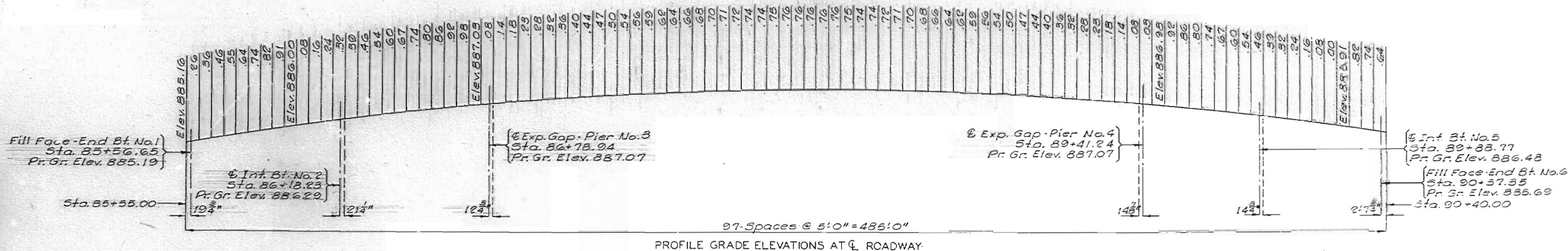
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	15	



PLAN OF SLAB SHOWING CURB ORDINATES

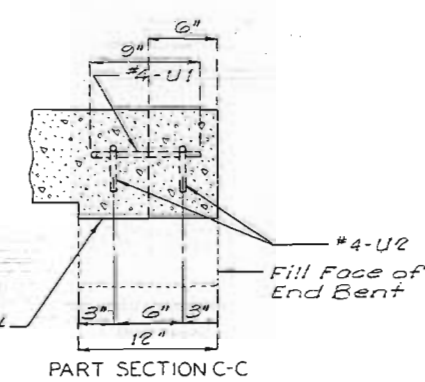
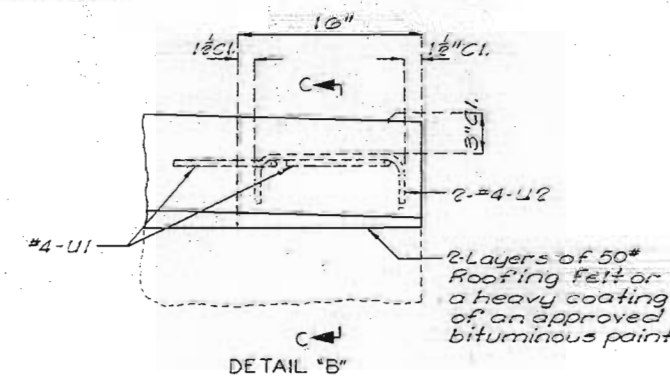
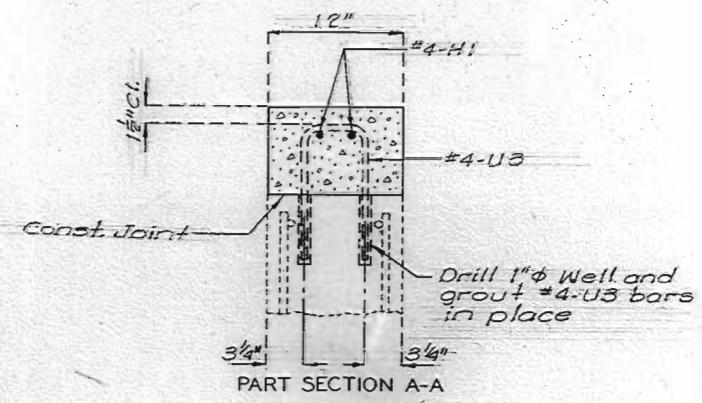
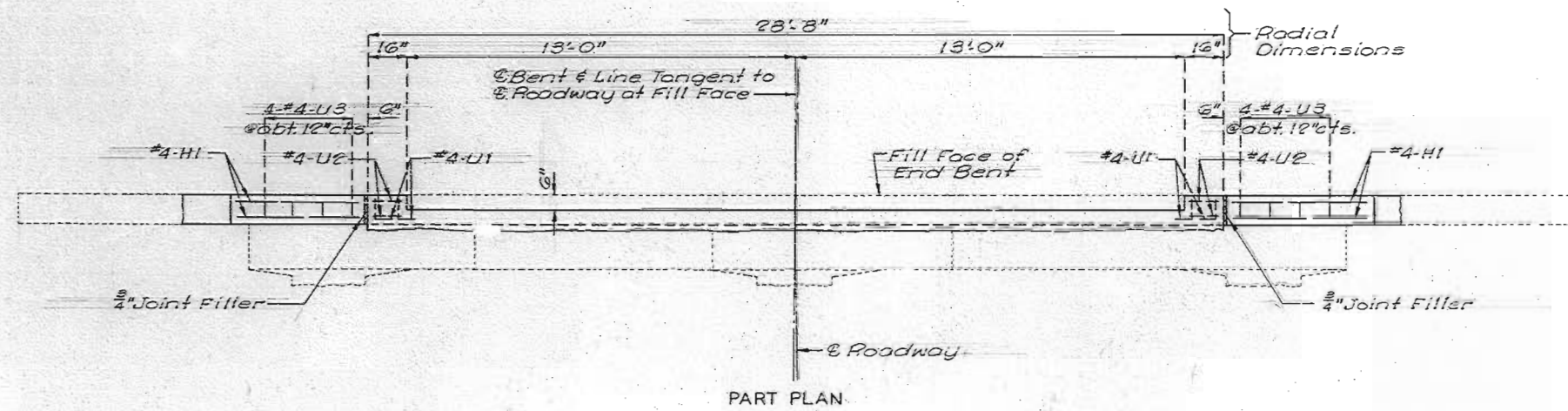
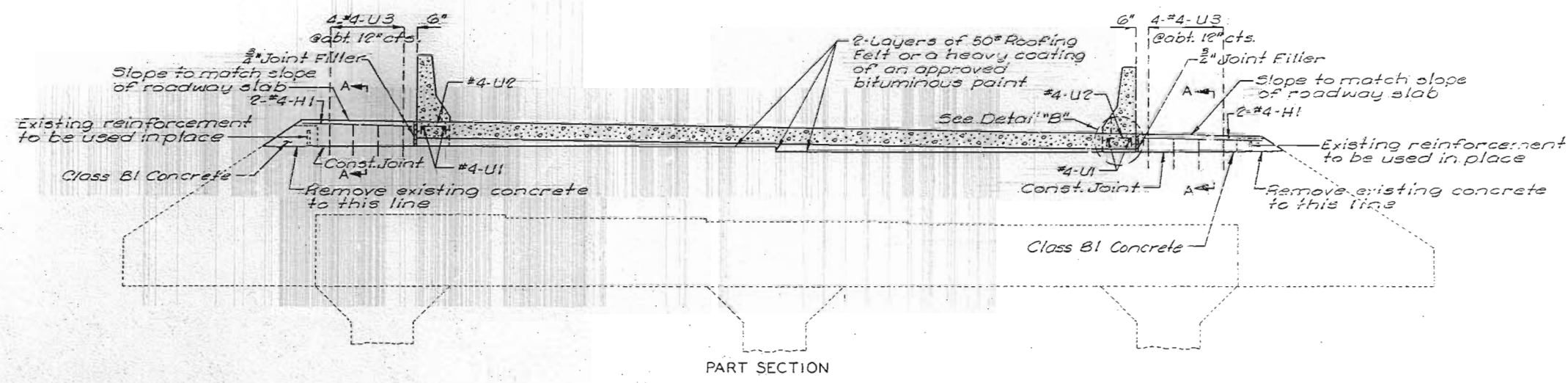


Note: Dimensions shown are horizontal.
Dimensions are based on dimensions shown on original design plans.



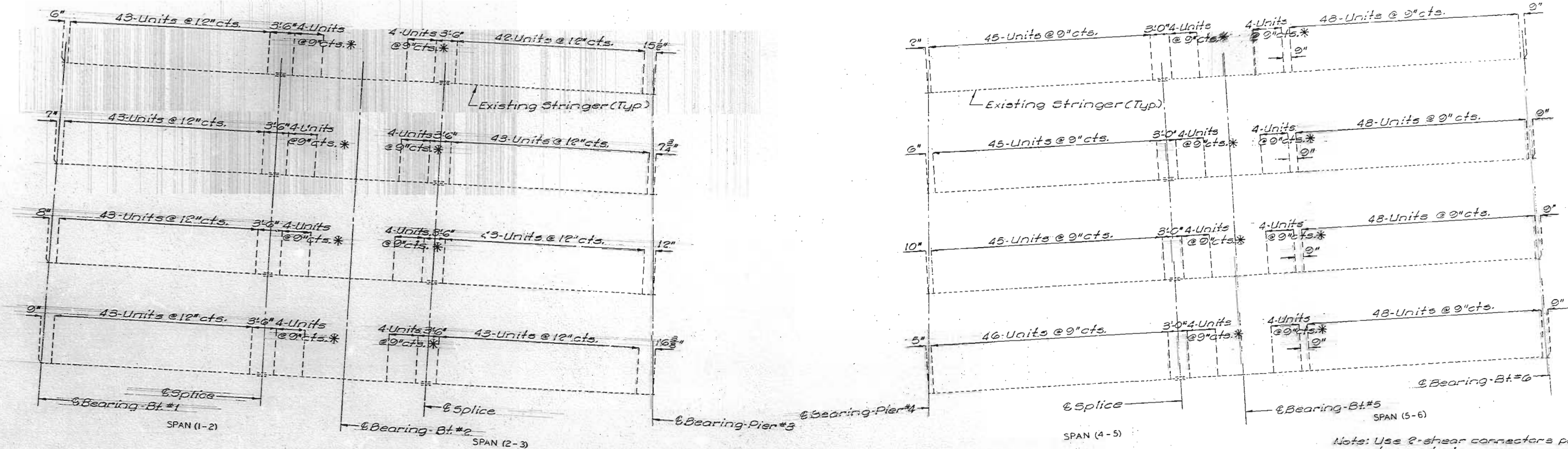
PROFILE GRADE ELEVATIONS AT ROADWAY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	16	



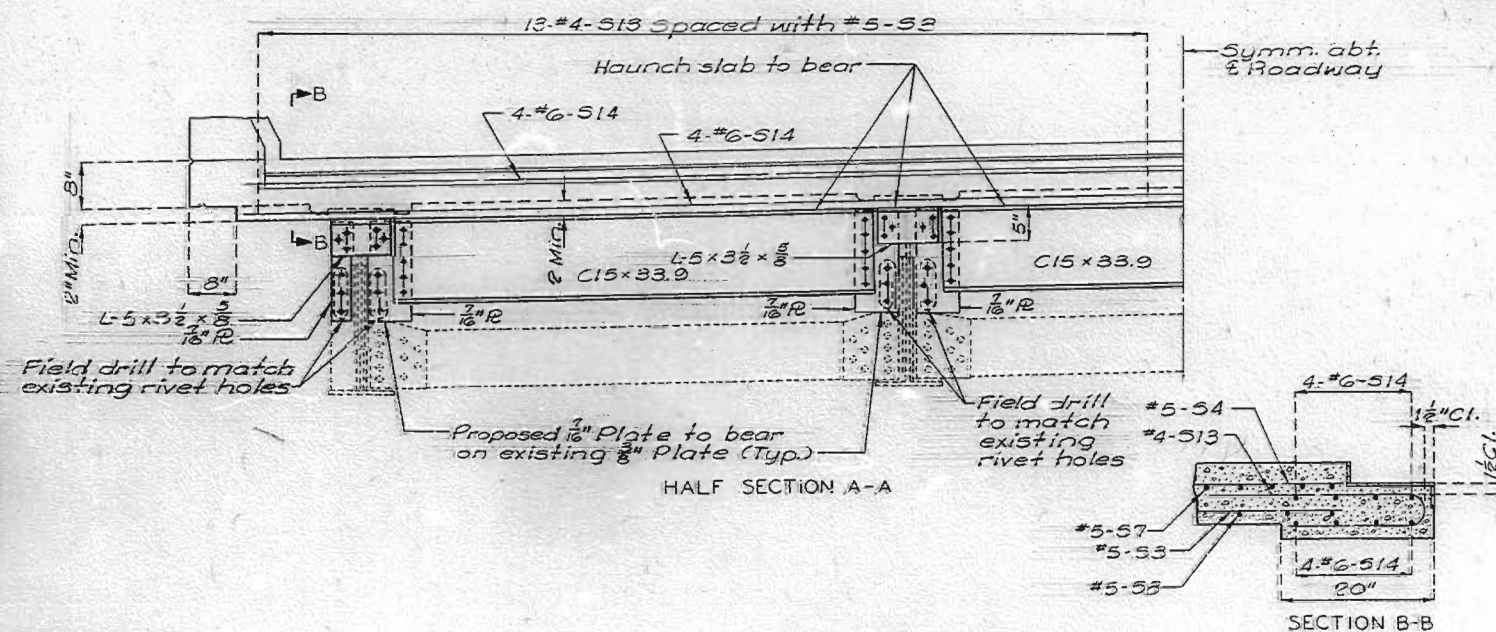
DETAILS AT END BENTS
(END BENT NO.1 SHOWN- END BENT NO.6 SIMILAR)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	17	

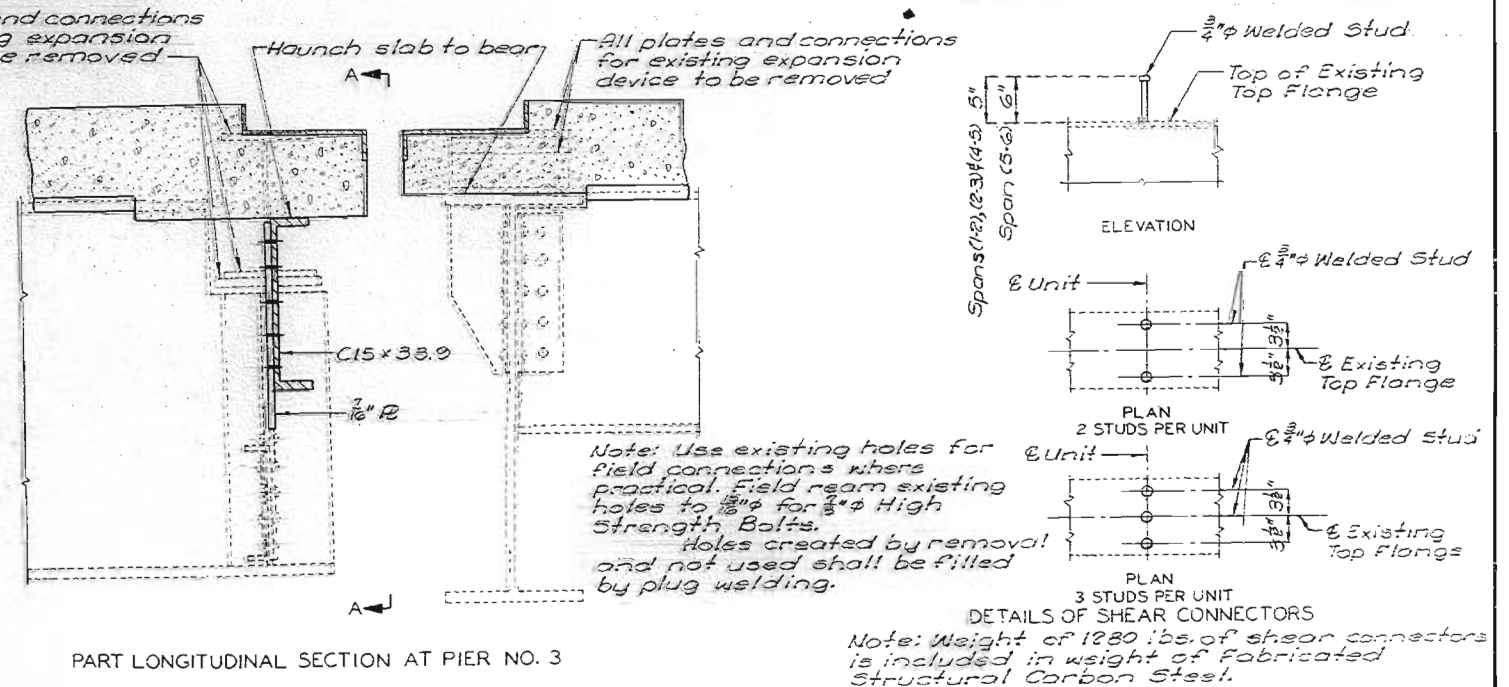


PART PLAN OF STRUCTURAL STEEL SHOWING SHEAR CONNECTOR SPACING

Note: Use 2" shear connectors per unit except as noted.
Shear connectors to be 5" x 3/4" except Span (5-6) use 6" x 3/4" shear connectors.
* indicates 3 shear connectors per unit.



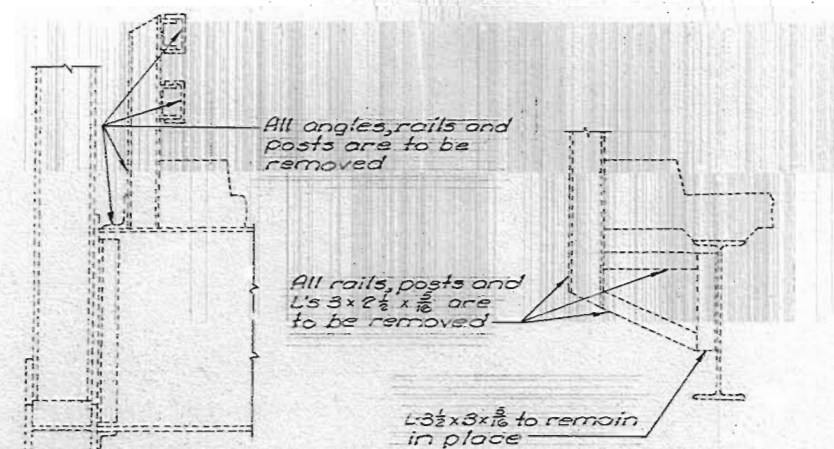
DETAILS FOR W F BEAM SPANS



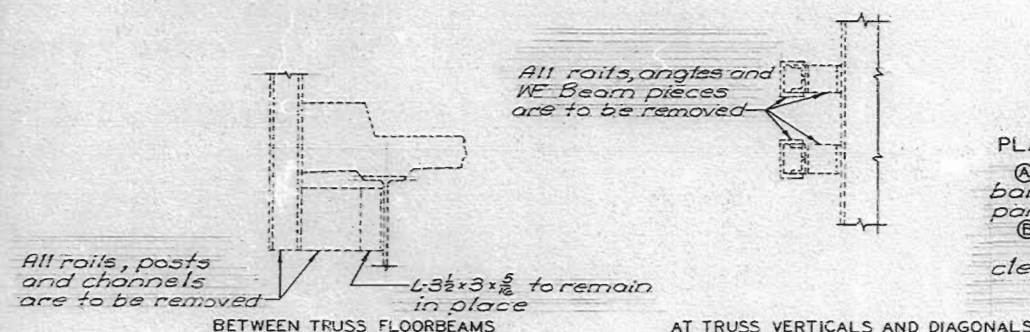
PART LONGITUDINAL SECTION AT PIER NO. 3

Note: Use existing holes for field connections where practical. Field ream existing holes to 1 1/2" for 3/4" High Strength Bolts. Holes created by removal and not used shall be filled by plug welding.

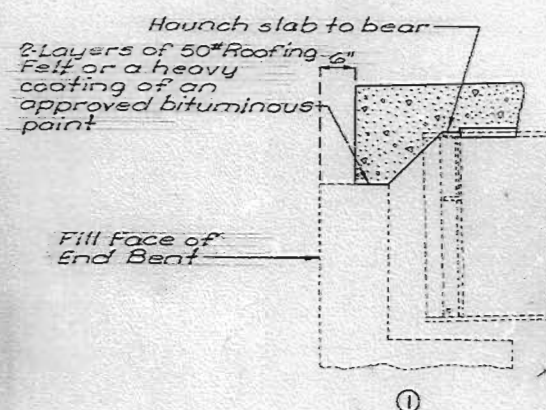
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	18	



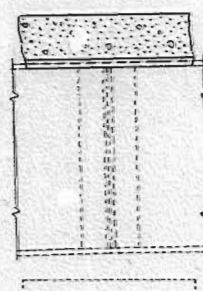
AT TRUSS FLOORBEAMS



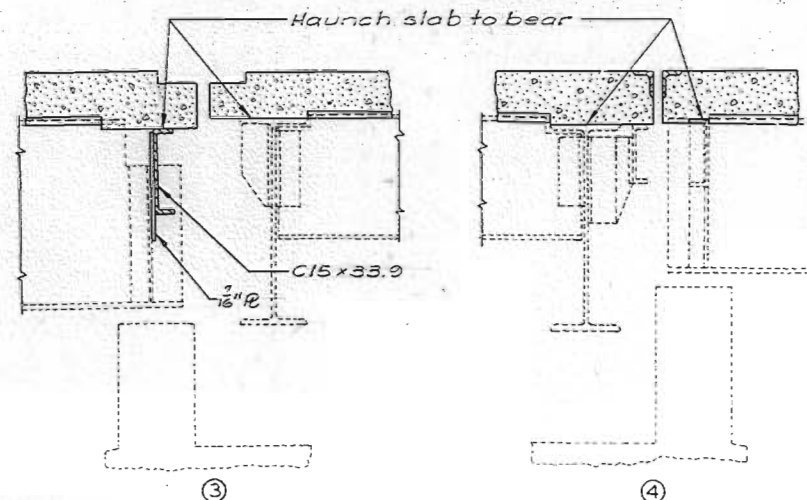
DETAILS FOR REMOVAL OF EXISTING GUARD RAIL



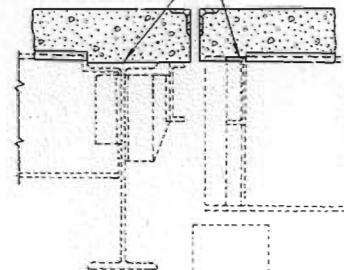
①



②

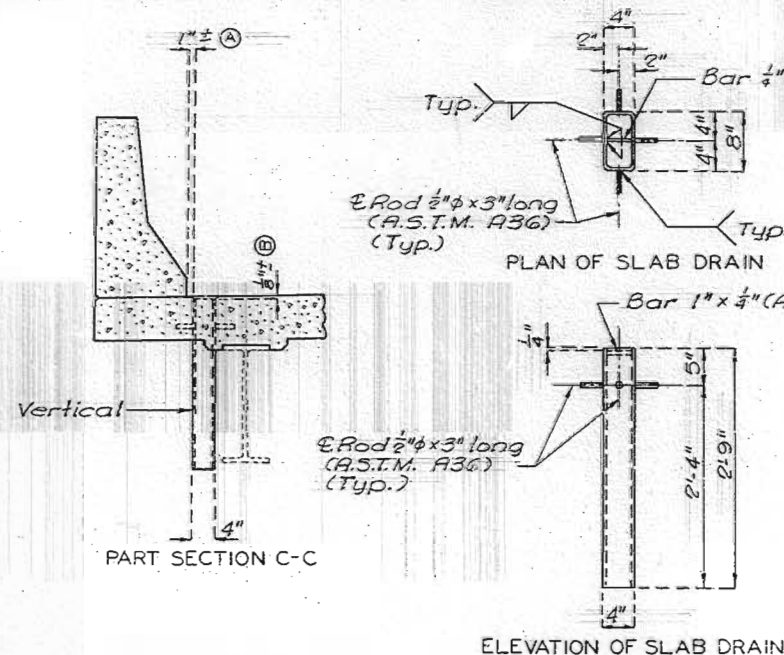


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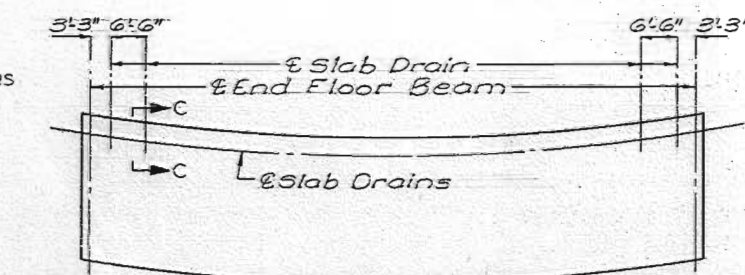


④

LONGITUDINAL SECTION



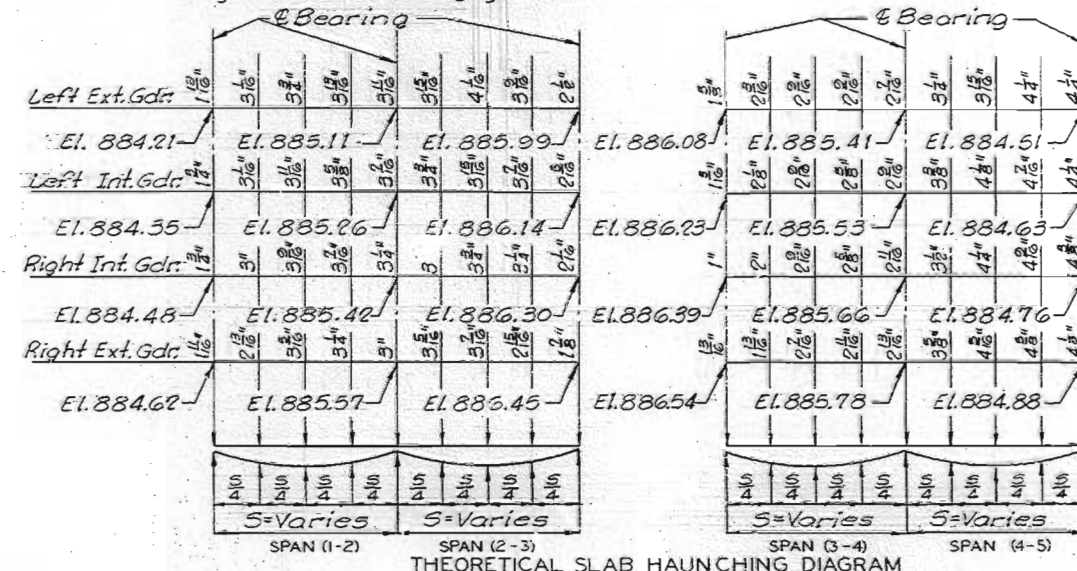
ELEVATION OF SLAB DRAIN



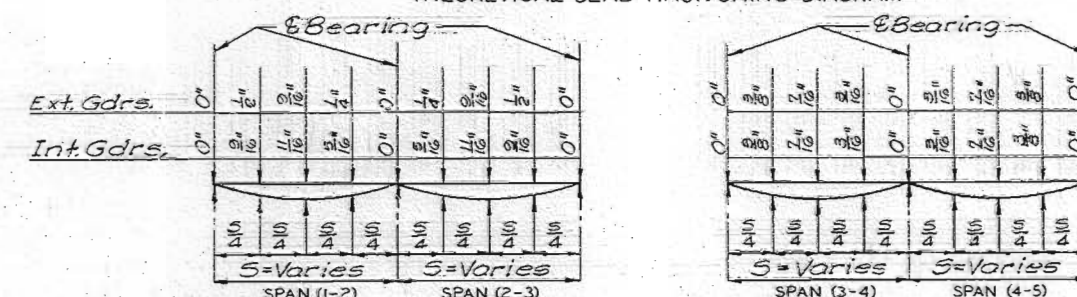
PLAN OF SLAB SPAN (3-4)-SHOWING LOCATION OF SLAB DRAINS
 (A) Place slab drains 1" from roadway face of barrier curb. Slab drains to be placed approximately parallel to roadway face of barrier curb.
 (B) Recess slab drains 1/8" below roadway surface. Shift reinforcing in field where necessary to clear drains.

Note: Slab drains may be fabricated of either 1/2" Welded Sheets of A.S.T.M. A36 steel, from 1/4" Structural Steel Tubing A.S.T.M. A500 or A501 or from A120 pipe schedule 40 with a minimum wall thickness of 0.322".
 The Drains shall be galvanized in accordance with A.S.T.M. A123.
 Outside dimensions of Drains are 8"x4".
 Shop drawings will not be required for Slab Drains.

Note: The elevations shown in the Theoretical Slab Haunching Diagram are at the bottom of the top flange of the WF beam, these elevations were used for calculating the slab haunches. If the actual elevations or deflections differ from those shown the slab haunches are to be adjusted accordingly.

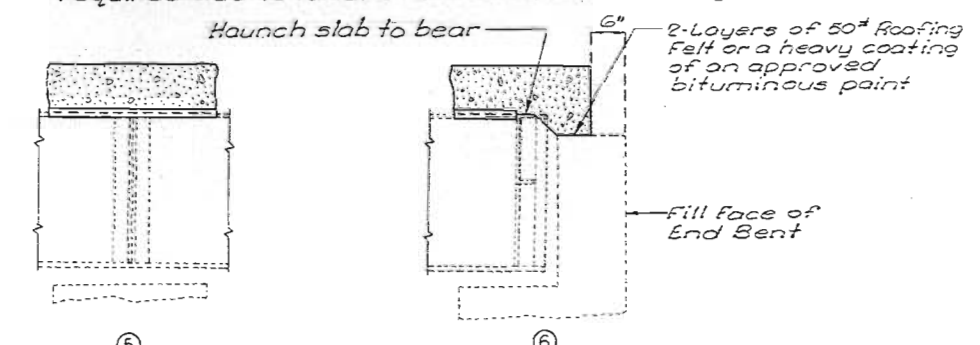


THEORETICAL SLAB HAUNCHING DIAGRAM

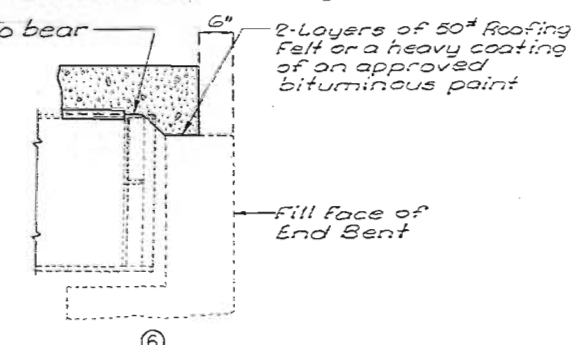


Note: 14.2% of dead load deflection is due to the weight of the structural steel.
 Note: 11.3% of dead load deflection is due to the weight of the structural steel.

DEAD LOAD DEFLECTION DIAGRAM
 Note: No direct payment will be made for any additional labor or materials required due to variations encountered in stringer elevations or deflections.



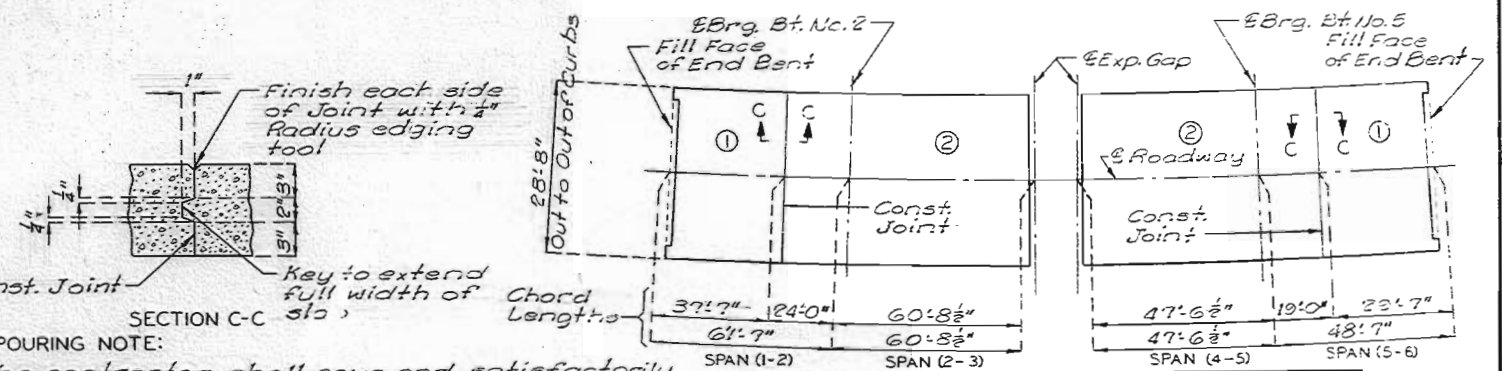
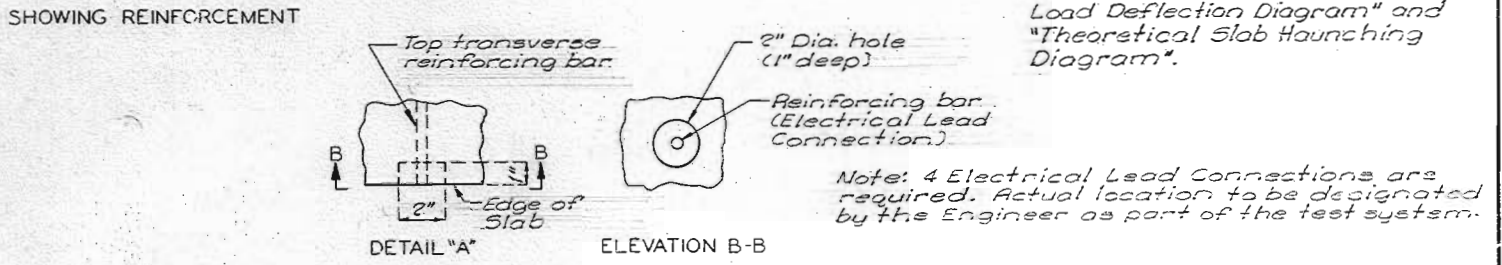
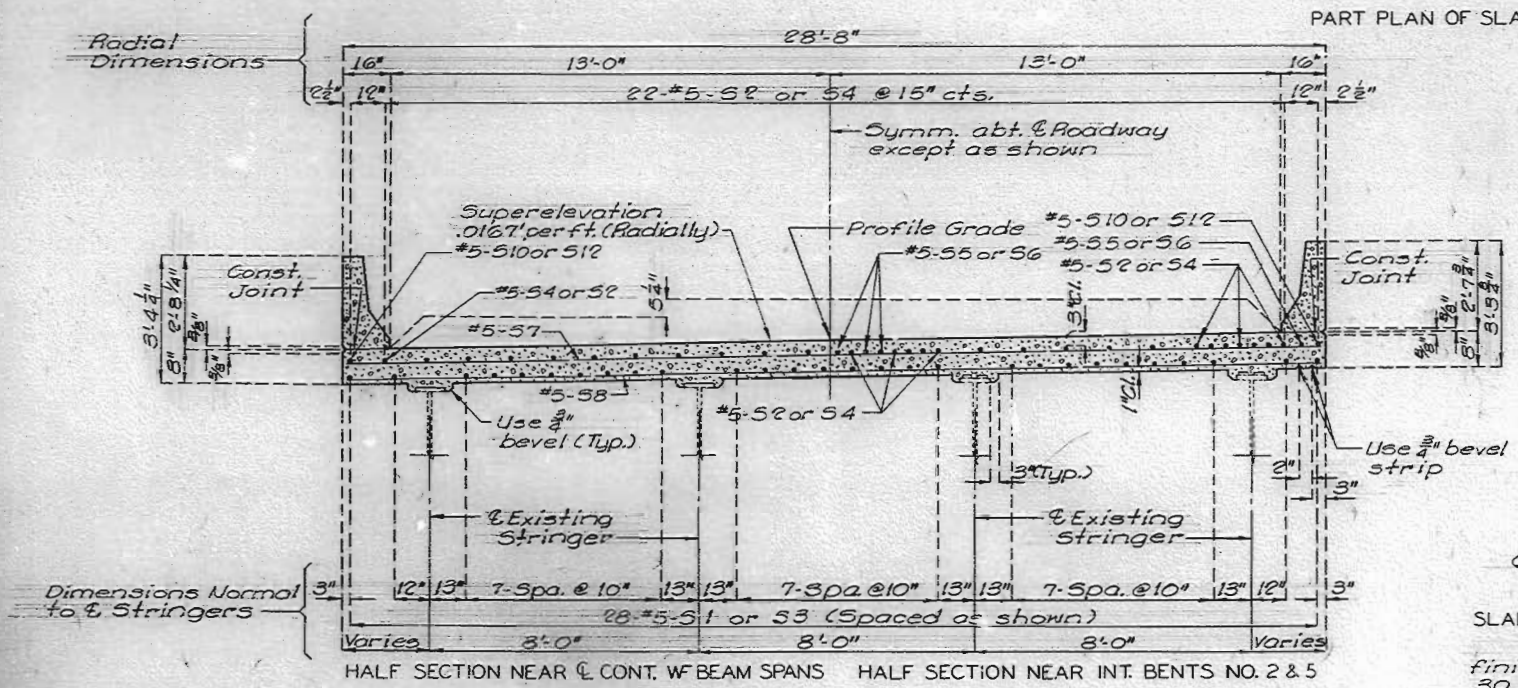
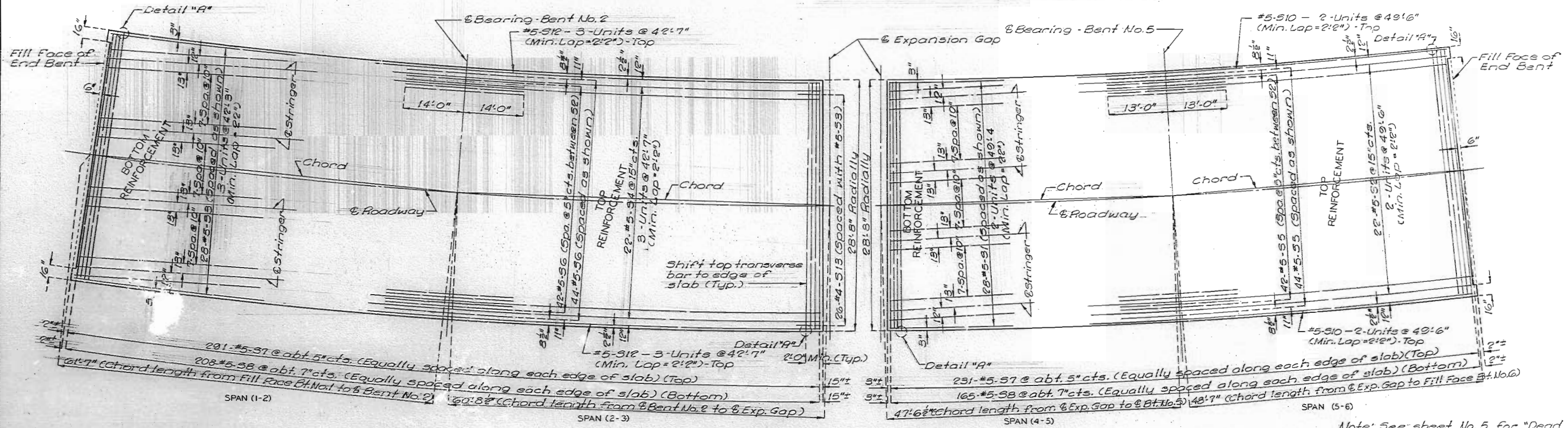
⑤



⑥

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

Note: Longitudinal Reinforcing Steel shall be placed so that ends are not more than 1" from vertical leg of angle or vertical plate of Expansion Device.



SLAB POURING NOTE:
The contractor shall pour and satisfactorily finish the slab pours at a rate of not less than 30 cubic yards per hour unless he elects to use an approved retarder to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 25 cubic yards per hour.

Basic Sequence	SEQUENCE OF POURS	
	Direction	
Alternate "A" Pours	1	2
	End To ?	1 To End
	1 + 2	End To End

POURING SEQUENCE

DETAILED JUNE 1980
CHECKED AUG. 1980

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

DETAILS FOR WF BEAM SPANS

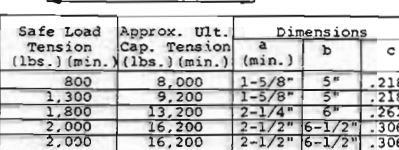
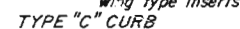
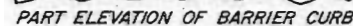
Sheet No. 6 of 11

CASS COUNTY

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NOTE: All dimensions are at right angles.
Expansion gap and dimension "A" shall be increased $\frac{3}{16}$ " for each 10° fall in temperature and decreased $\frac{3}{16}$ " for each 10° rise in temperature.



DETAILS OF ALTERNATE WING TYPE THREADED INSERT

(Machine bolts need only be used to secure the Wing Type Threaded Inserts to the steel plate until the concrete has attained 3,000 p.s.i.)

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT PIER NO. 3

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

Sheet No. 8 of 11

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GENERAL NOTES:

THE EXPANSION JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SHOWN ON THE SHOP DRAWINGS AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE CERTIFIED NUTS AND BOLTS FOR THE ANCHOR STUDS OR WING TYPE THREADED INSERTS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. NO. 5 BARS FOR ANCHORS SHALL BE STRUCTURAL GRADE STEEL. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 5 BARS SHOWN.

SEE SPECIAL PROVISIONS FOR PAINTING

ANCHOR BOLTS IN THE BARRIER CURB SHALL BE CAST-IN-PLACE, GROUTED OR CONE-EXPANSION TYPE. HOLES IN THE BARRIER CURB FOR ANCHORS SHALL NOT BE DRILLED UNTIL THE CONCRETE IS AT LEAST 7 DAYS OLD.

PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60°F. THE EXPANSION GAP AND OTHER DIMENSIONS SHALL BE ADJUSTED DURING INSTALLATION FOR COMPLIANCE WITH ANY TEMPERATURE CHANGE.

CONTACT SURFACE OF STEEL TO ALUMINUM SHALL BE INSULATED WITH THE MATERIAL SPECIFIED ON THE SHOP DRAWINGS.

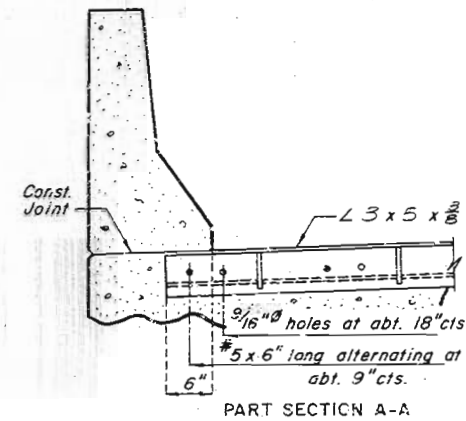
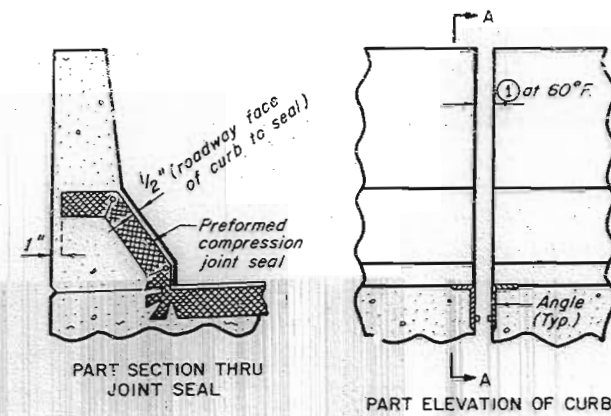
FURNISHING AND INSTALLING THE ELASTOMERIC EXPANSION JOINT SEAL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

FEB. 13 1982 1 AL-RIL 1982

DETAILED JULY 1983
CHECKED July 1983

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	22	



NOTES FOR PREFORMED COMPRESSION JOINT SEAL:

STRUCTURAL STEEL FOR EXPANSION DEVICE SHALL BE FABRICATED IN ONE SECTION EXCEPT THAT WHEN THE LENGTH IS OVER 50' SPlicing IS PERMISSIBLE.

THE EXPANSION DEVICE SHALL BE BENT TO CONFORM TO CROWN AND GRADE OF ROADWAY.

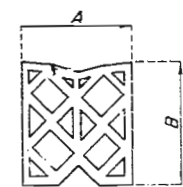
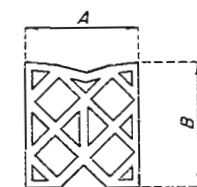
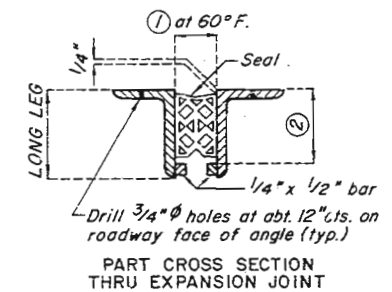
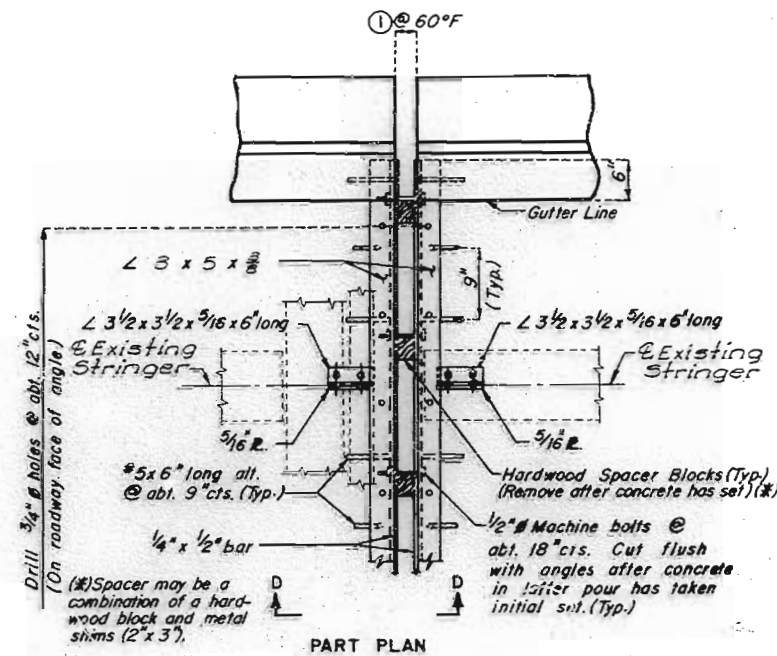
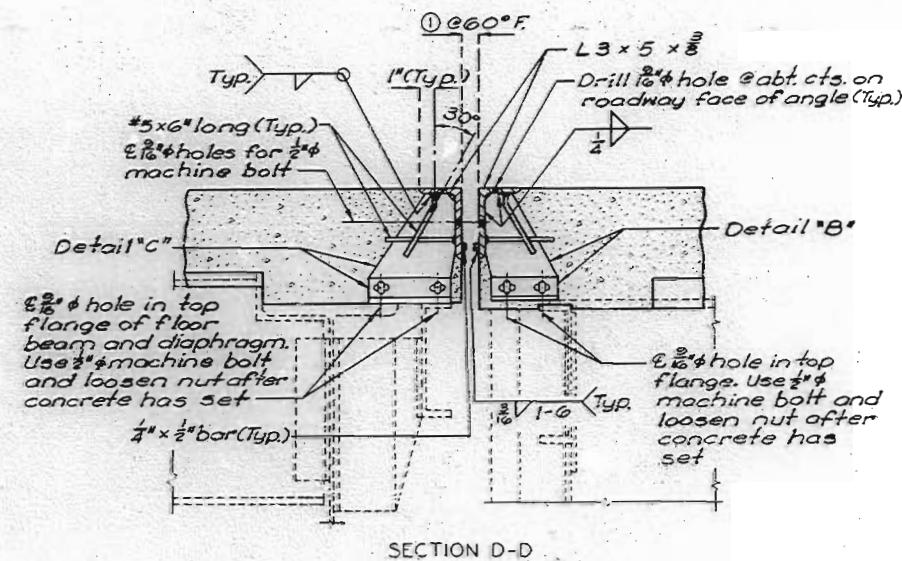
NO. 5 BARS FOR EXPANSION DEVICE SHALL BE STRUCTURAL GRADE.

APPROVED STUD WELDED ANCHORS (C-1010 THRU C-1020) OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF NO. 5 BARS SHOWN.

PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60° F.

DIMENSION ① SHALL BE INCREASED $\frac{3}{16}$ " FOR EACH 10° FALL IN TEMPERATURE AND DECREASED $\frac{3}{16}$ " FOR EACH 10° RISE IN TEMPERATURE AT INSTALLATION.

SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS OF COMPRESSION JOINT SEAL.



TYPE A1 TYPE B3

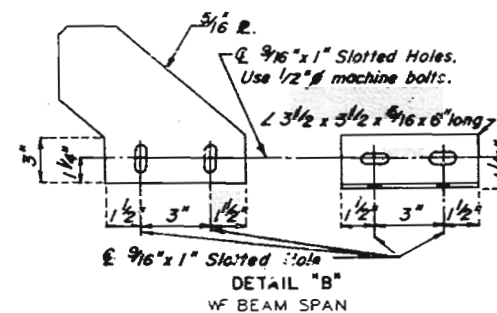
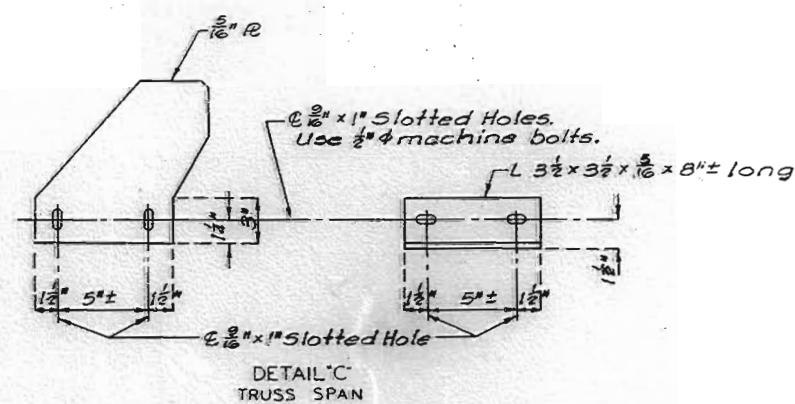
TABLE OF TRANSVERSE BRIDGE SEAL DIMENSIONS					
TYPE	"A" (WIDTH)	"B" (HEIGHT)	①	②	MAX. LIMIT OF COMPRESSIBILITY
AI OR B3	2.5"	NOT LESS THAN "A"	1 5/8"	"B" + 1/2"	46%
AI OR B3	3.0"	NOT LESS THAN "A"	1 7/8"	"B" + 1/2"	43%
AI OR B3	3.5"	NOT LESS THAN "A"	2 1/4"	"B" + 1/2"	42%
AI OR B3	4.0"	NOT LESS THAN "A"	2 5/8"	"B" + 1/2"	42%
AI OR B3	4.5"	NOT LESS THAN "A"	2 3/4"	"B" + 1/2"	40%
AI OR B3	5.0"	NOT LESS THAN "A"	2 7/8"	"B" + 1/2"	40%

AT PIER NO 4

SIZE OF ARMOR ANGLE:

VERTICAL LEG OF ANGLE SHALL BE A MINIMUM OF "B" + 1 1/4" HORIZONTAL LEG OF ANGLE SHALL BE A MINIMUM OF 3". MINIMUM THICKNESS OF ANGLE SHALL BE 3/8" FOR SEAL WIDTHS THROUGH 3.5" AND 1/2" FOR SEAL WIDTHS GREATER THAN 3.5".

IN LIEU OF THE SPECIFIED SEAL, THE NEXT LARGER SEAL MAY BE SUBSTITUTED. DIMENSIONS AND LIMITS SHALL CORRESPOND TO THE ACTUAL SEAL INSTALLED.



DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT PIER NO. 4

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

Sheet No. 9 of 11

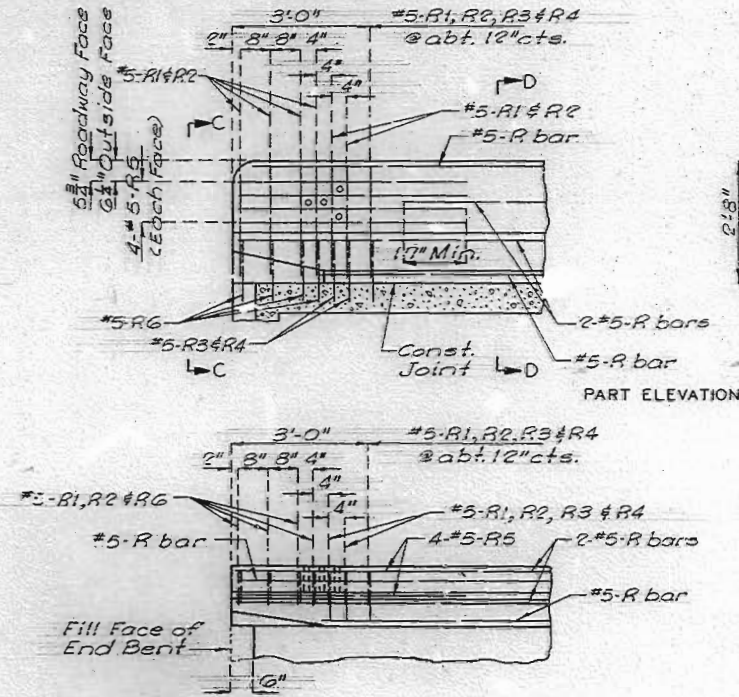
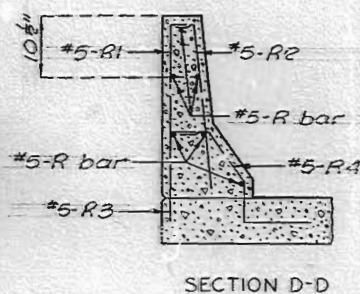
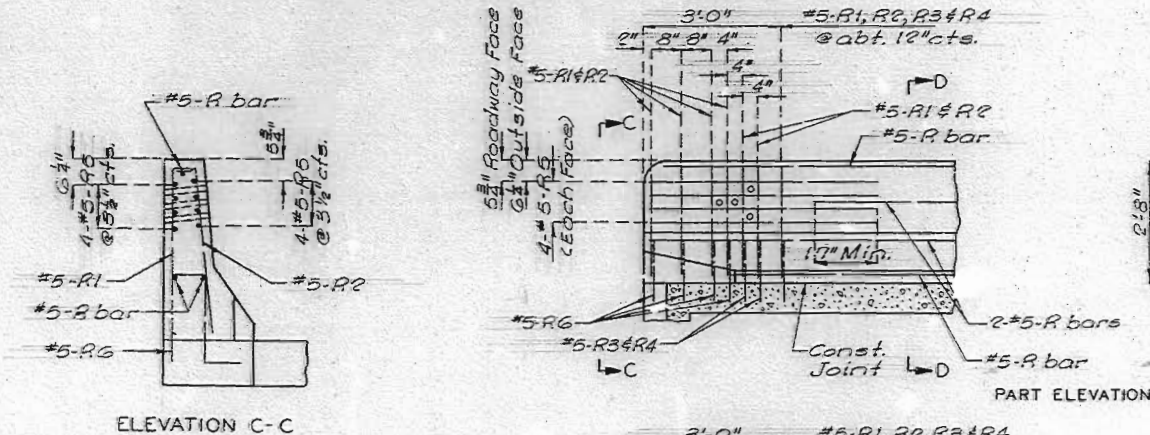
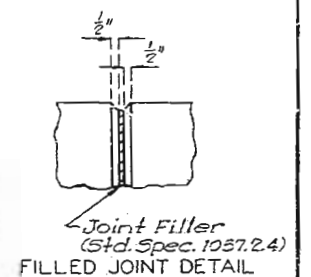
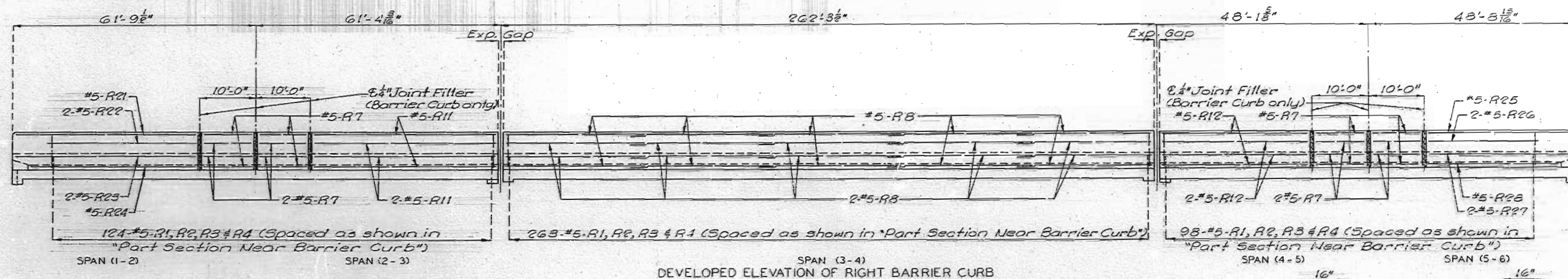
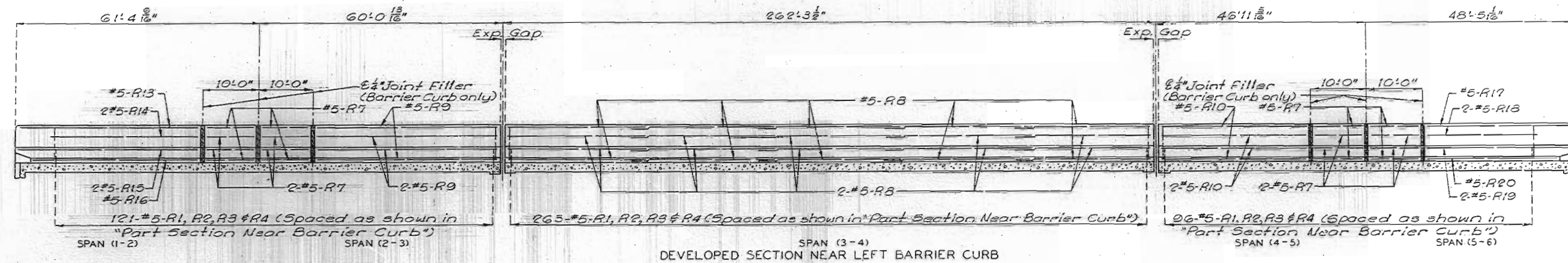
CASS

COUNTY

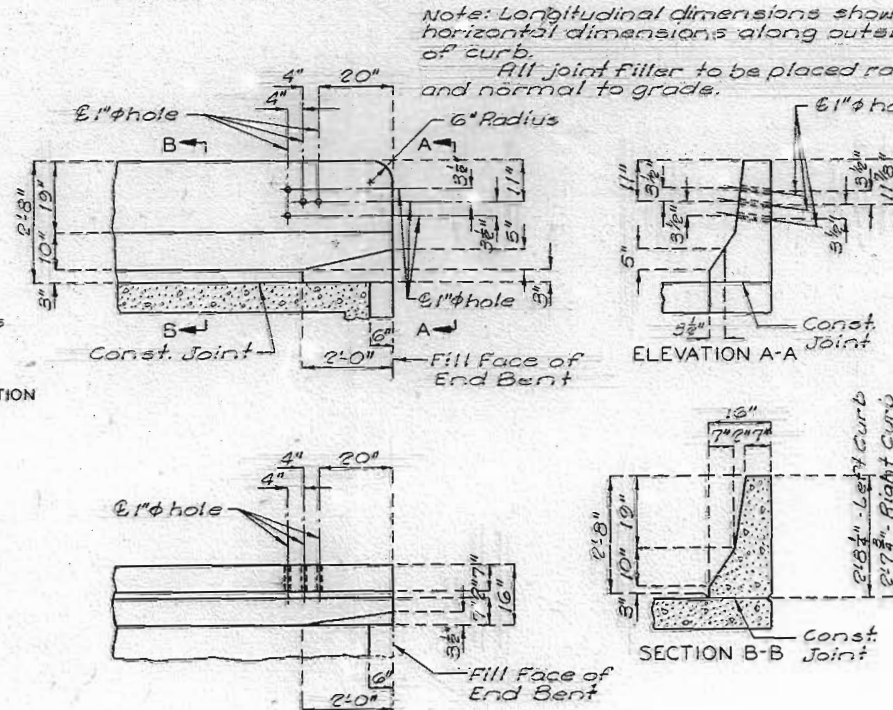
L-23R

Detailed NOV. 1983
Checked NOV. 1983
OCT. 1983

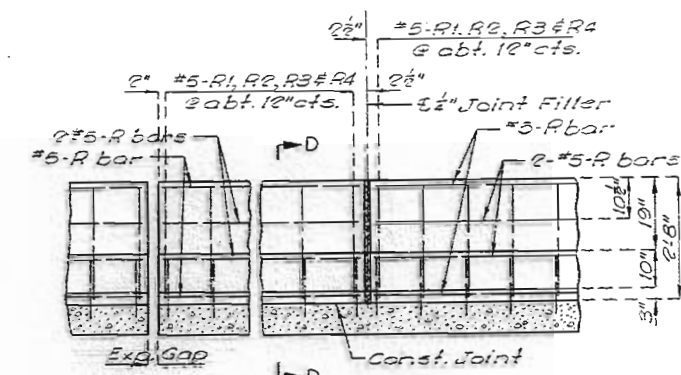
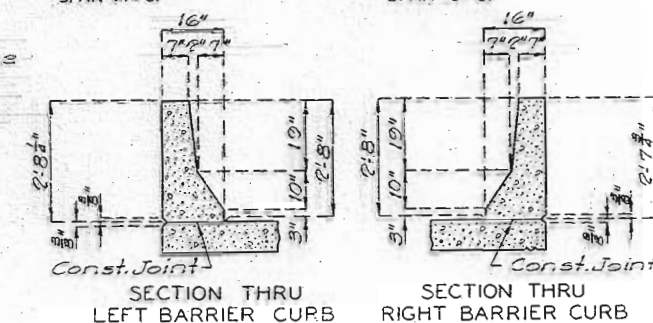
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	23	



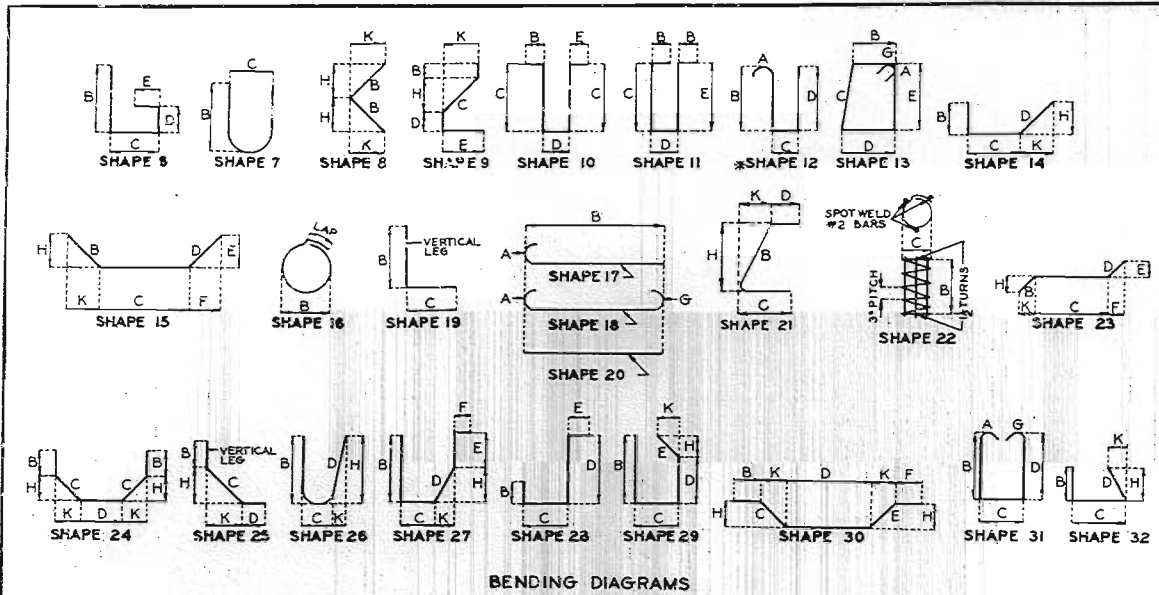
DETAILS OF BARRIER CURB AT END BENTS



Note: Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.
All exposed edges of barrier curb shall have 1/2" radius or 3/8" bevel unless otherwise noted.
All concrete for barrier curb to be Class B1.



Note: Use a minimum lap of 17" for #5 horizontal barrier bars.



COMPLETE BILL OF REINFORCING STEEL																									
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHA. NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH FT.IN.	ACTUAL LENGTH FT.IN.	WEIGHT LBS.						
									B		C		D		E					F		H		K	
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.
		SUBSTRUCTURE																							
		END BENTS NO 166																							
8	4H1	BACKWALL		20	X				4	6.000							4	6	24						
8	4U1	SLAB		19	S	X			9.000	12.000							21	20	9						
8	4U2	SLAB		10	S	X				4.000	13.000						21	19	8						
16	4U3	BACKWALL		10	S	X				2	0.000	6.000					4	6	46						
		SUPERSTRUCTURE																							
989	5R1	BARRIER CURB	E	19	S				2	6.000	3.500						2	10	2751						
989	5R2	BARRIER CURB	E	15	S				2	6.125	3.500			2	6.000	3.000	2	10	2837						
973	5R3	BARRIER CURB	E	19	S				17.000	6.000							23	22	1861						
973	5R4	BARRIER CURB	E	27	S					6.000		11.125	7.000	12.000	9.125	6.375	3	0	2875						
32	5R5	BARRIER CURB	E	20					5	0.000							5	0	167						
16	5R6	BARRIER CURB	E	10	S				6.000	17.000	6.000						3	10	58						
50	5R7	BARRIER CURB	E	20					9	9.000							9	9	508						
60	5R8	BARRIER CURB	E	20					53	6.000							53	6	3348						
6	5R9	BARRIER CURB	E	20					49	8.000							49	8	311						
6	5R10	BARRIER CURB	E	20					36	7.000							36	7	229						
6	5R11	BARRIER CURB	E	20					50	11.000							50	11	319						
6	5R12	BARRIER CURB	E	20					37	9.000							37	9	236						
1	5R13	BARRIER CURB	E	20					50	10.000							50	10	53						
2	5R14	BARRIER CURB	E	20					47	8.000							47	8	99						
2	5R15	BARRIER CURB	E	20					51	1.000							51	1	107						
1	5R16	BARRIER CURB	E	20					49	5.000							49	5	52						
1	5R17	BARRIER CURB	E	20					37	11.000							37	11	40						
2	5R18	BARRIER CURB	E	20					34	10.000							34	10	73						
2	5R19	BARRIER CURB	E	20					38	2.000							38	2	80						
1	5R20	BARRIER CURB	E	20					36	6.000							36	6	38						
1	5R21	BARRIER CURB	E	20					51	3.000							51	3	53						
2	5R22	BARRIER CURB	E	20					48	2.000							48	2	100						
2	5R23	BARRIER CURB	E	20					51	6.000							51	6	107						
1	5R24	BARRIER CURB	E	20					49	8.000							49	8	52						
1	5R25	BARRIER CURB	E	20					38	2.000							38	2	40						
2	5R26	BARRIER CURB	E	20					35	1.000							35	1	73						
2	5R27	BARRIER CURB	E	20					38	5.000							38	5	80						
1	5R28	BARRIER CURB	E	20					36	9.000							36	9	38						
56	5S1	SLAB		20					49	4.000							49	4	2881						
44	5S2	SLAB	E	20					49	6.000							49	6	2272						
84	5S3	SLAB		20					42	3.000							42	3	3702						
66	5S4	SLAB	E	20					42	7.000							42	7	2931						
44	5S5	SLAB	E	20					26	0.000							26	0	1193						
44	5S6	SLAB	E	20					28	0.000							28	0	1285						
1150	5S7	SLAB	E	20					28	5.000							28	5	34084						
792	5S8	SLAB		20					28	5.000							28	5	23474						
4	5S10	SLAB		20					49	6.000							49	6	207						
6	5S12	SLAB		20					42	7.000							42	7	266						
26	4S13	SLAB	E	26					3	0.000	4.000	17.000			17.000		4	6	78						
8	6S14	SLAB		20					27	1.000							27	1	325						
140	5S15	SLAB		20					53	11.000							53	11	7873						
110	5S16	SLAB	E	20					54	3.000							54	3	6224						
396	5S17	SLAB	E	20					14	0.000							14	0	5782						
10	5S18	SLAB		20					54	3.000							54	3	566						
10	5S19	SLAB		20					53	11.000							53	11	562						
4	5S20	SLAB		20					53	5.000							53	5	223						
2	5S21	SLAB		20					50	6.000							50	6	105						
		NOTE: 2 EXTRA																							
		R7 BARS ARE																							
		INCLUDED IN BAR																							
		LIST FOR TESTING																							
		PURPOSES.																							
		END OF BAR LIST																							

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	24	

STIRRUP HOOK DIMENSIONS
 GRADES 40-50-60 KSI

BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

SIZE OF 180° HOOKS (GRADE 40 KSI)
 D = 5d FOR #3 THRU #11
 D = 10d FOR #14 AND #18

SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)
 D = 6d FOR #3 THRU #8
 D = 8d FOR #9, #10 AND #11
 D = 10d FOR #14 AND #18

END HOOK DIMENSIONS

BAR SIZE	GRADE 40		GRADE 60		ALL GRADES
	A OR G	J	A OR G	J	
#3	5"	2-3/4"	5"	3"	6"
#4	6"	3-1/2"	6"	4"	8"
#5	7"	4-1/2"	7"	5"	10"
#6	8"	5-1/4"	8"	6"	12"
#7	9"	6-1/4"	10"	7"	14"
#8	10"	7"	11"	8"	16"
#9	12"	8"	15"	11-1/4"	19"
#10	13"	9"	17"	12-3/4"	22"
#11	14"	10"	19"	14-1/4"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"
#18	21-11"	21-3"	21-11"	21-3"	31-5"

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
 E - EPOXY COATED REINFORCEMENT.
 S - STIRRUP.
 X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
 V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
 NO. EA. - NUMBER OF BARS OF EACH LENGTH.
 NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
 ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
 * ALL HOOKS AND BENDS FOR SHAPE NO. 12 - GRADE 40 (ONLY) ARE BASED ON D = 5d.

STD. 90.8.5
 MAY 1974
 REVISED
 NOV. 1979

DETAILED SEPT. 1980
 CHECKED SEPT. 1980

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

Sheet No. 11 of 11

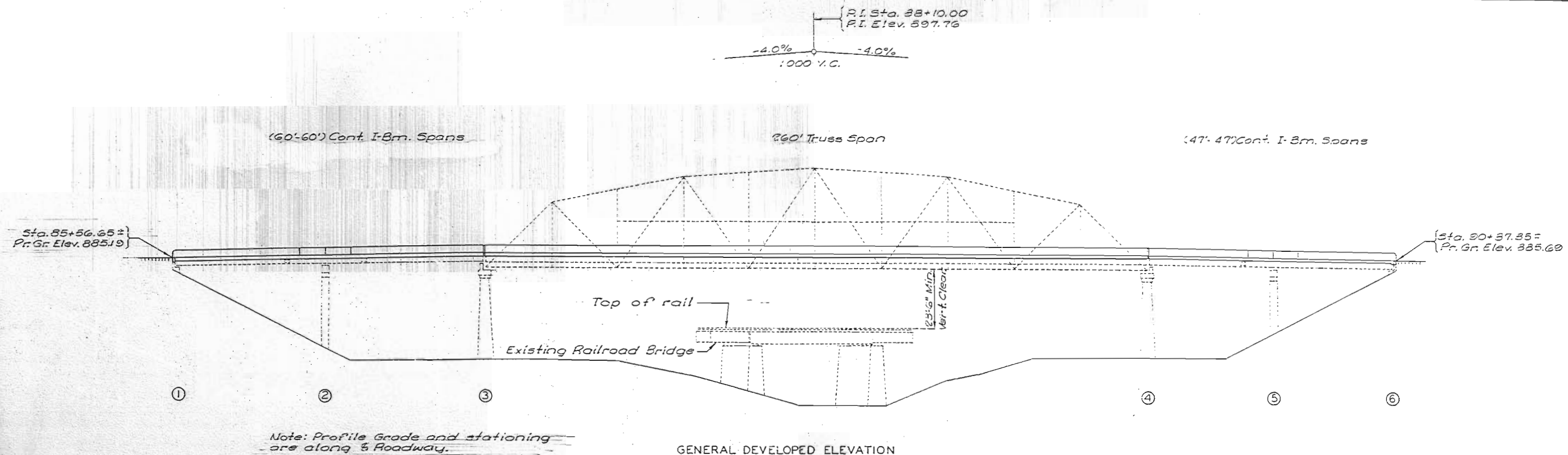
CASS COUNTY

L-23R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	BHS-455(4)	15	14	



GENERAL NOTES:

Design Specifications (Redecking only):
A.R.S.H.T.O. - 1977 Load Factor Design

Design Loading:
H15-44 - 15#/sq. ft. Future Wearing Surface

Design Unit Stresses:

Class B1 Concrete (Substructure) $f'_c = 4,000$ psi
Class B1 Concrete (Safety Barrier Curb) $f'_c = 4,000$ psi
Class B2 Concrete (Superstructure except Safety Barrier Curb) $f'_c = 4,000$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi
Structural Carbon Steel $f_y = 36,000$ psi
Fabricated Structural Carbon Steel:
Field connections, High-Strength Bolts $\frac{3}{4}"$,
holes $\frac{1}{16}"$ except as noted.

Paint:

Paint, System C, see Special Provisions.

Construction Clearance:

A minimum vertical clearance of 23'6" from top of rails maintained during construction.

Reinforcing Steel:

Minimum clearance to reinforcing steel $\frac{1}{2}"$ unless otherwise shown.

Existing Work:

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

Bars bonded in old concrete not removed cleanly stripped and embedded into new concrete where possible. If length is available, old bars extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars.

ESTIMATED QUANTITIES

ITEM	SUBSTR.	SUPERSTR.	TOTAL
Removal of Existing Bridge Deck	Sq. Ft.	13,825	13,825
Non-Destructive Testing	Lin. Ft.	37	37
Class B1 Concrete	Cu. Yd.	80.8	81.8
Class B2 Concrete	Cu. Yd.	344.3	344.3
Elastomeric Expansion Joint Seal (4.0 inches)	Lin. Ft.	26	26
Preformed Compression Expansion Joint Seal (2.5 inches)	Lin. Ft.	26	26
Reinforcing Steel (Grade 60)	Lb.	40,280	40,280
Reinforcing Steel (Epoxy Coated)	Lb.	70,440	70,440
Fabricated Structural Carbon Steel	Lb.	2,690	2,690
Special Work	Lump Sum	1	1
Painting (System C) Green (See Special Provisions)	Lump Sum	1	1
Repair welds	Lump Sum		\$104,48

Note: Cost of any required excavation for bridge included in contract unit price for other items.
For removal of existing drainage system see Special Provisions.
Cost of furnishing and installing slab drains included in the contract price bid for other items.

LONGITUDINAL DIMENSIONS:

Longitudinal dimensions are based on dimensions shown on original design plans.

HORIZONTAL CURVE DATA:

P.I. Sta. 88+87.7
 $\Delta = 26^\circ 22' 44"$ Lt.
 $D = 1^\circ 20'$
 $T = 1006.6'$
 $L = 1977.5'$
 $R = 4297.28'$
 $S.E. = .01671/f.t.$

B.M. = S.E. Cor. Conc. Beam Bt. #1
18' Lt. Sta. 85+57 Elev. 881.26
B.M. = N.E. Cor. Conc. Beam Bt. #6
18' Lt. Sta. 90+37 Elev. 882.16

BRIDGE OVER ST LOUIS SOUTH WESTERN
RAILWAY CO. & BIG CREEK

STATE ROAD FROM PLEASANT HILL TO HARRISONVILLE

ABOUT 0.75 MILES SOUTH OF PLEASANT HILL

PROJECT NO. BHS-455(4) STA. 85+56.65±

JOB NO. 4-S-7-332

RTE. 7

CASS

COUNTY

DATE 12/15/83

DESIGNED JUNE 1980
DETAILED AUG 1980
CHECKED SEPT. 1980

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

Sheet No. 1A of 11

STD.
STD. 706.30
L-23R

General Notes:

Design Specifications:
2002 - AASHTO LFD (17th Edition) Standard Specifications
Bridge Deck rating = 7

Design Loading:
H15-44 (1944 & 1977)
HS20-44 (New Construction)
15#/sq. ft. Future Wearing Surface

Design Unit Stresses:
Class B-1 Concrete (Safety Barrier Curb, Slab, Diaphragm and Wings) $f'c = 4,000$ psi
Reinforcing Steel (Grade 60) $fy = 60,000$ psi

Joint Filler:
All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

Miscellaneous:
Protective coating for concrete bents and piers (Urethane) shall be applied as shown on the bridge plans and in accordance with Sec 711.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface (Roadway Item).

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

Contractor shall verify all dimensions in field before ordering new material.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

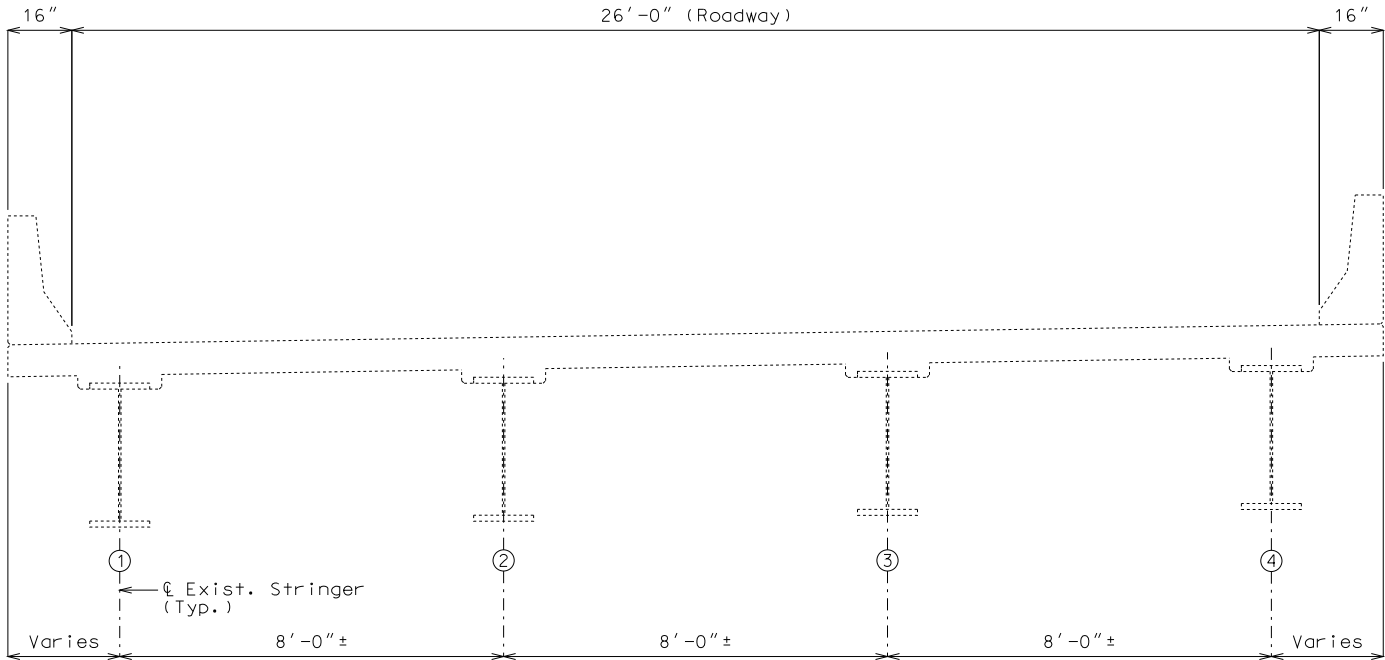
Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Traffic Handling:
Structure to be closed during construction.

Estimated Quantities		
Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	104
Partial Removal of Substructure Concrete	lump sum	1
Remove and Replace Barrier Curb	linear foot	40
Removal of Existing Bearings	each	16
Class B-1 Concrete	cu. yard	23.7
Substructure Repair (Formed)	sq. foot	40
Substructure Repair (Unformed)	sq. foot	20
Reinforcing Steel (Epoxy Coated)	pound	5,180
Protective Coating - Concrete Bents and Piers (Urethane)	lump sum	1
Vertical Drain at End Bents	each	2
Remove and Replace Truss Bearing	each	2
Laminated Neoprene Bearing Pad Assembly	each	8
Strip Seal Expansion Joint System	linear foot	52

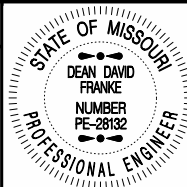
Method of forming the slab shall be in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
U.I.P. AND REHABILITATE EXISTING (60'-60') CONTINUOUS COMPOSITE WIDE FLANGE SPANS
(260') TRUSS (47'-47') CONTINUOUS COMPOSITE WIDE FLANGE SPANS



TYPICAL SECTION THRU SLAB
CONTINUOUS COMPOSITE WIDE FLANGE SPANS

REPAIRS TO BRIDGE: RTE 7 OVER
ABANDONED RR & BIG CREEK
STATE ROAD FROM RTE. 58 TO RTE. P
ABOUT 0.6 MILE SOUTH OF RTE. 58
STA. 85+56.65± (Match Existing)



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
11/25/2013

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 1

COUNTY CASS

JOB NO.
J4P2191B

CONTRACT ID.

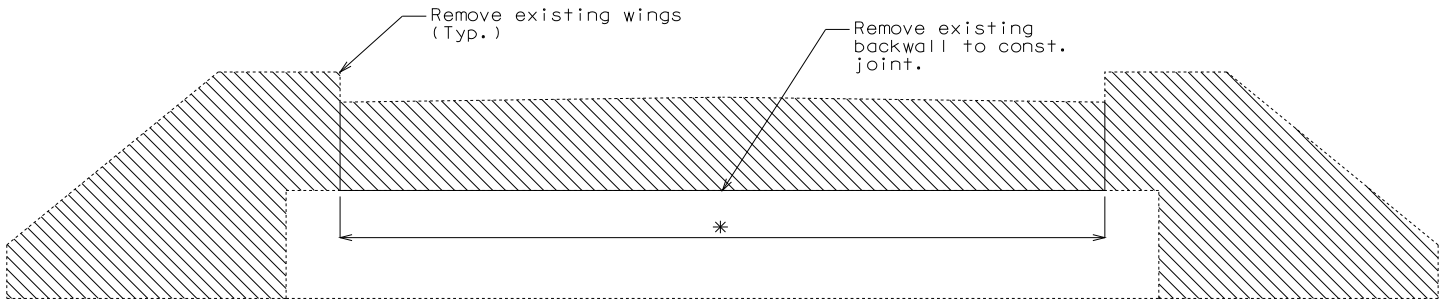
PROJECT NO.

BRIDGE NO.
L00232

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

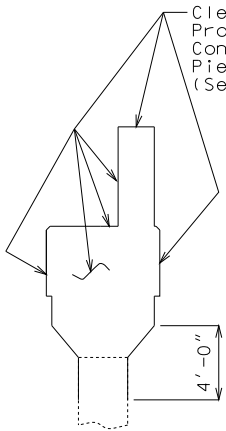
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



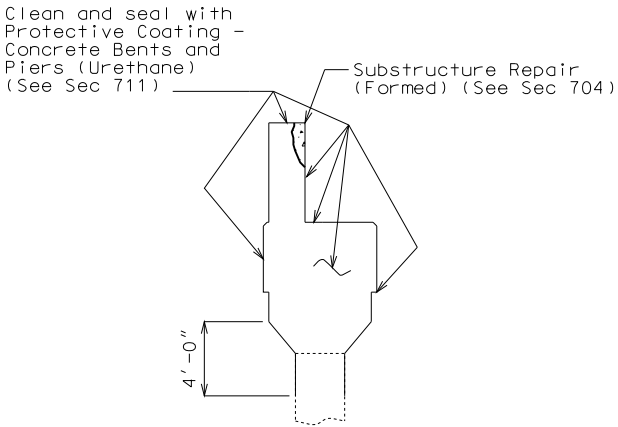
DETAILS OF CONCRETE REMOVAL @ END BENTS NO. 1 & 6

Note:
The cost of concrete removal as shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete. Vertical backwall reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar in accordance with Sec 704.

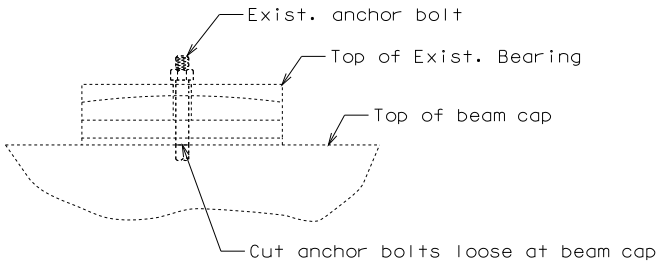
* A smooth, level surface shall be provided.



TYPICAL SECTION THRU PIER 3 SHOWING PROTECTIVE COATING

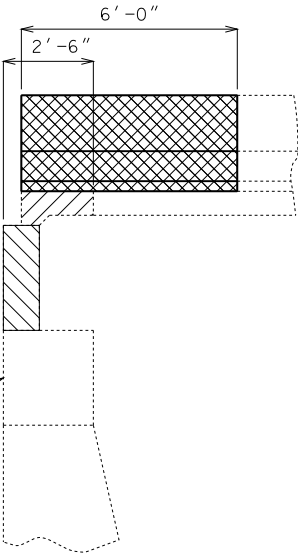


TYPICAL SECTION THRU PIER 4 SHOWING PROTECTIVE COATING & SUBSTRUCTURE REPAIR (FORMED)



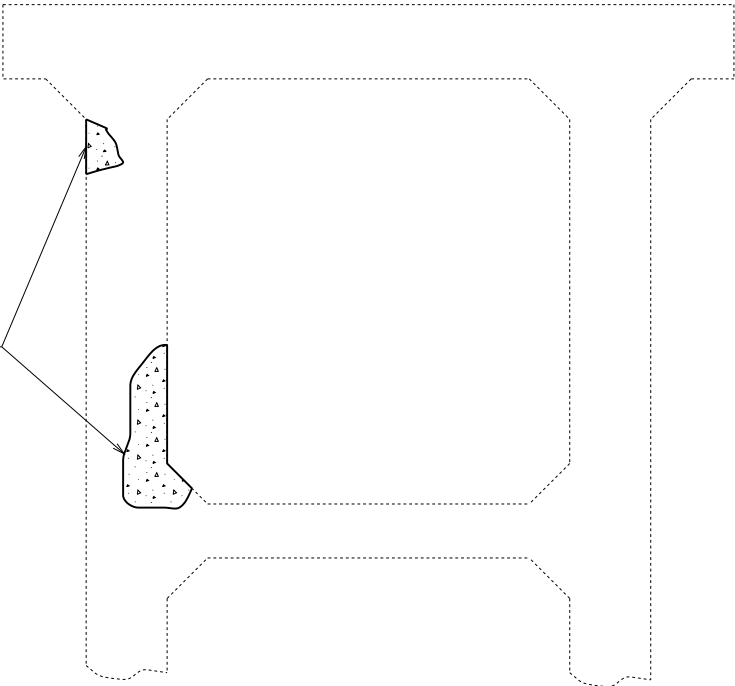
END ELEVATION @ END BENTS NO. 1 & 6 SHOWING ANCHOR BOLT CUTS

Notes:
Cost of cutting anchor bolts and leaving existing bearings will be considered completely covered by the contract unit price for Removal of Existing Bearings.
The temporary supports shall be capable of safely supporting a service load DL & construction load of 46 kips (Bent No. 1) & 35 kips (Bent No. 6) (factor of safety not included). See Special Provisions.



DETAILS OF CONCRETE REMOVAL OF BACKWALL AND SLIDING SLAB @ END BENTS NO. 1 & 6

Note:
The cost of concrete removal as shown will be considered completely covered by the contract unit price for pay items mentioned.



ELEVATION OF BENT NO. 2 SHOWING SUBSTRUCTURE REPAIR (UNFORMED)



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DATE PREPARED
11/25/2013

ROUTE 7 STATE MO
DISTRICT BR SHEET NO. 2

COUNTY CASS
JOB NO. J4P2191B
CONTRACT ID.

PROJECT NO.

BRIDGE NO. L00232

DESCRIPTION

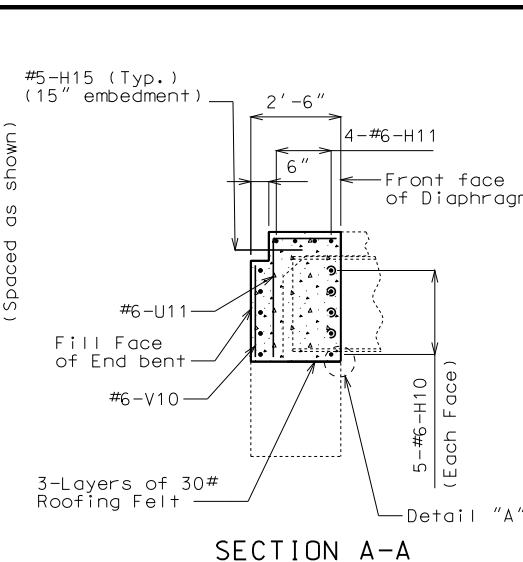
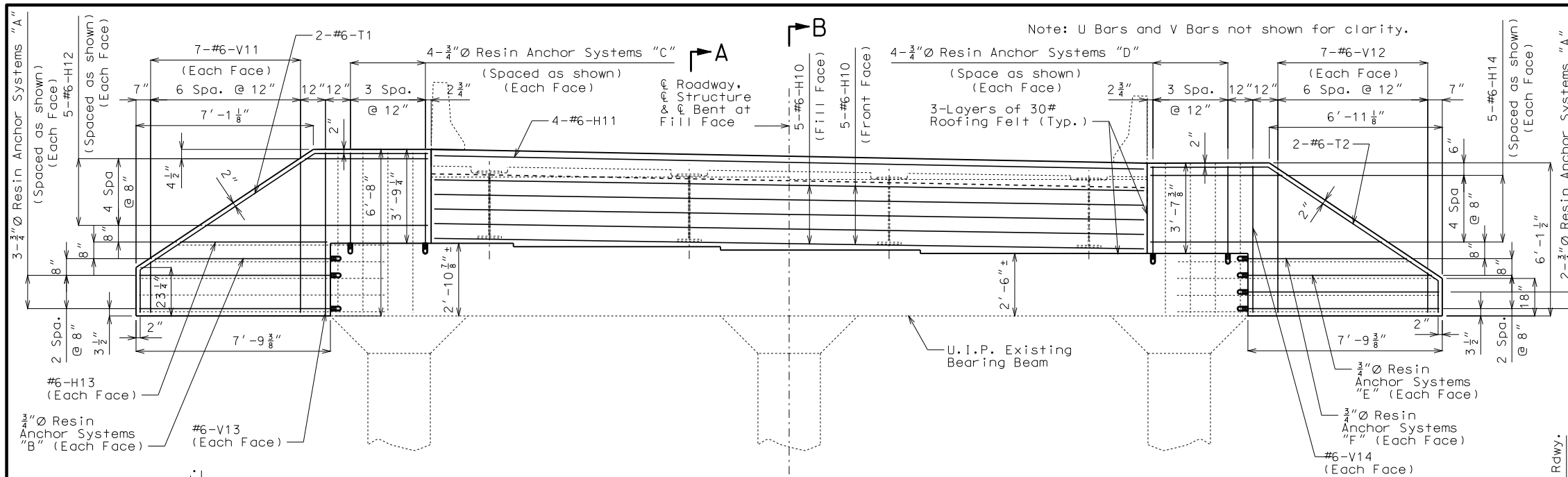
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

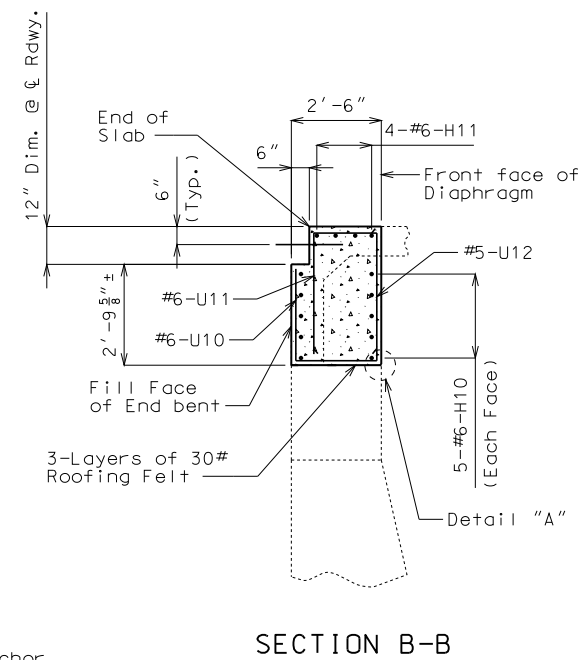
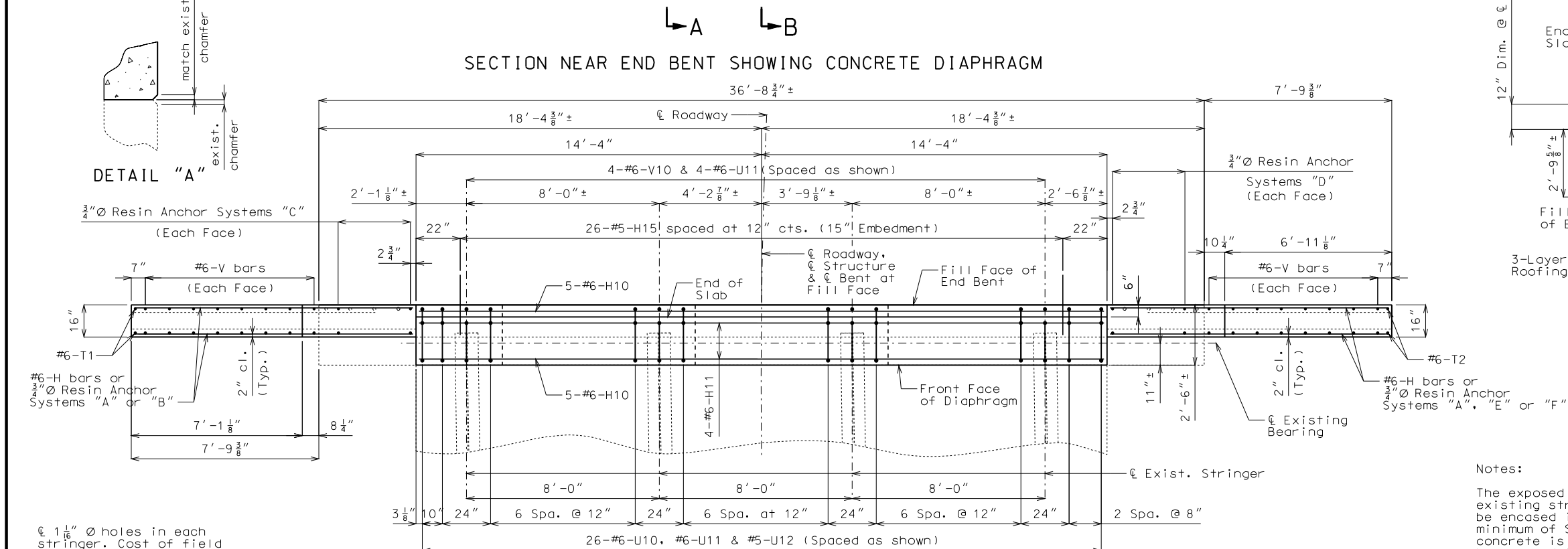
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT

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SECTION NEAR END BENT SHOWING CONCRETE DIAPHRAGM



Notes:

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price Class B-1 Concrete.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

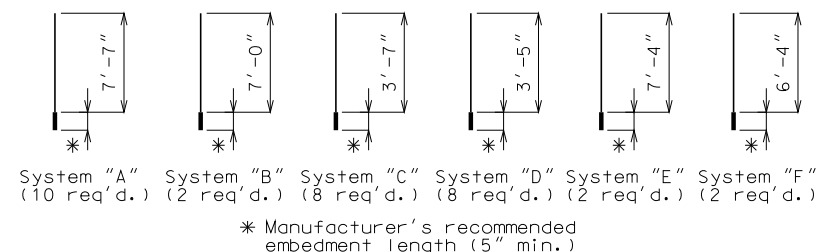
Cost of furnishing and installing the resin anchor system, complete in place, will be considered completely covered by the contract unit price for Class B-1 Concrete.

The minimum embedment depth in concrete with $f'c = 4,000$ psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

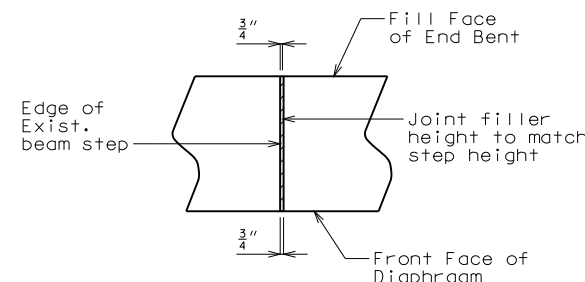
A #6 Grade 60 reinforcing bar shall be substituted for the $\frac{3}{4}$ " \emptyset threaded rod.

$\emptyset 1\frac{1}{8}$ " \emptyset holes in each stringer. Cost of field drilling holes in existing webs will be considered completely covered by the contract unit price for Class B-1 Concrete.

DETAIL OF WEB HOLES AT END OF STRINGER

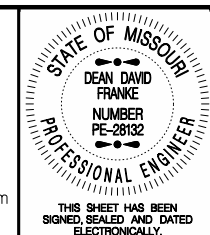


DETAILS OF END BENT NO. 1



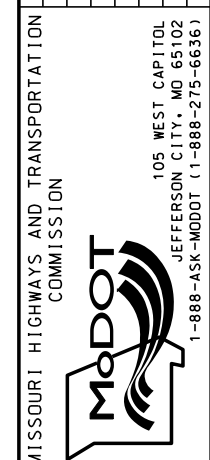
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 3 of 13



DATE PREPARED 11/25/2013	
ROUTE 7	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CASS	
JOB NO. J4P2191B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. L00232	

DESCRIPTION	DATE



Detailed July 2013
Checked Sep. 2013



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
11/25/2013

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 4

COUNTY CASS

JOB NO. J4P2191B

CONTRACT ID.

PROJECT NO.

BRIDGE NO. L00232

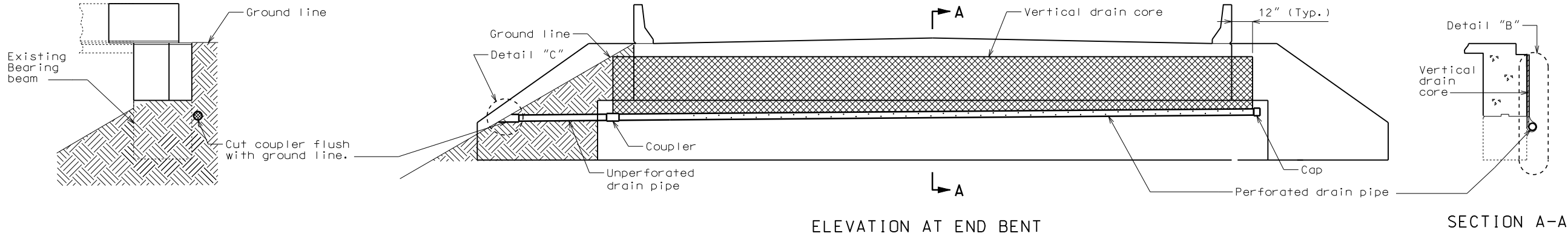
DESCRIPTION	DATE

DATE

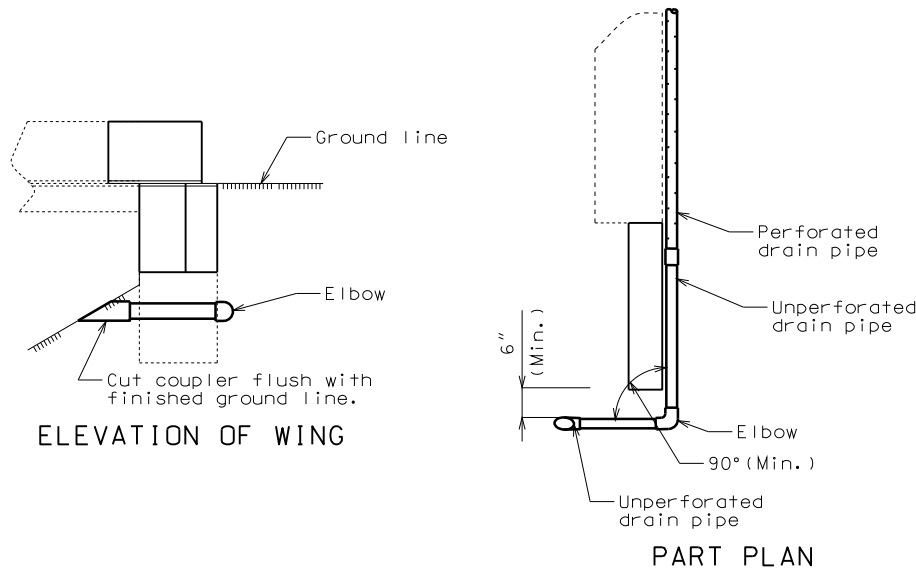
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITAL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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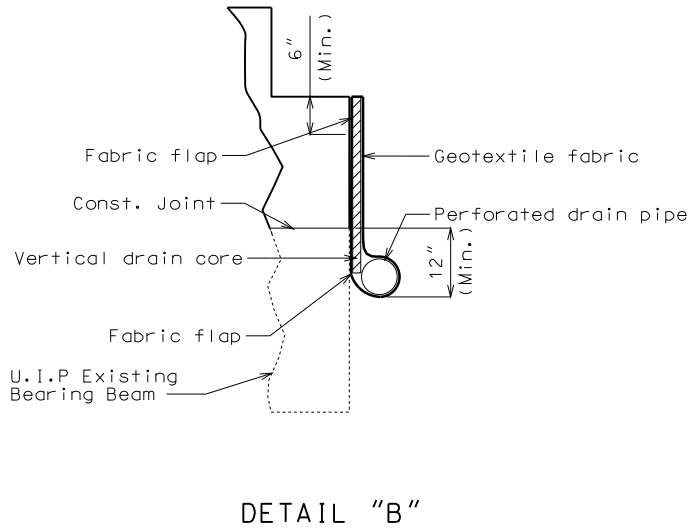
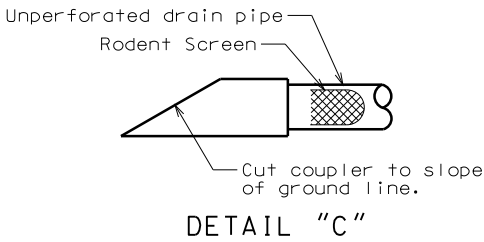


ELEVATION OF WING



OPTIONAL BENT DRAIN (*)

(*) Only if rock is encountered at outside of wing.



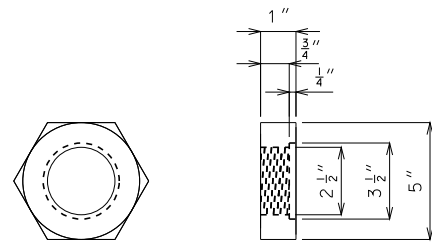
Notes:

Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

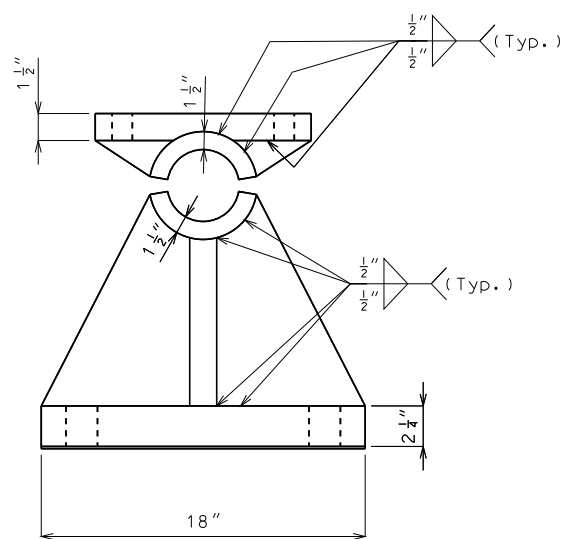
Place drain pipe at fill face of end bent and slope to lowest grade of ground line. (See elevation at end bent.)

Perforated pipe shall be placed at fill face side at 12" (Min.) below top of bearing beam and plain pipe shall be used where the vertical drain ends to the exit at ground line.

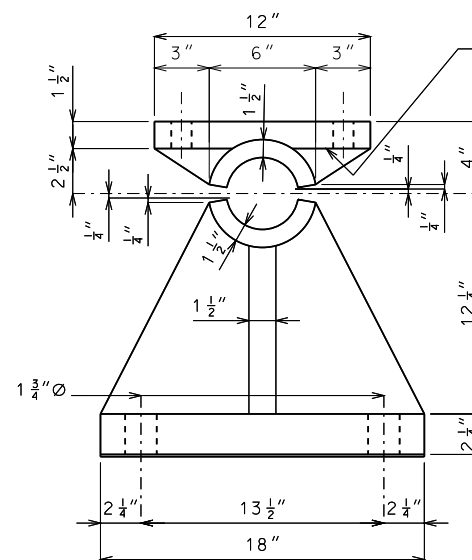
VERTICAL DRAIN AT END BENTS



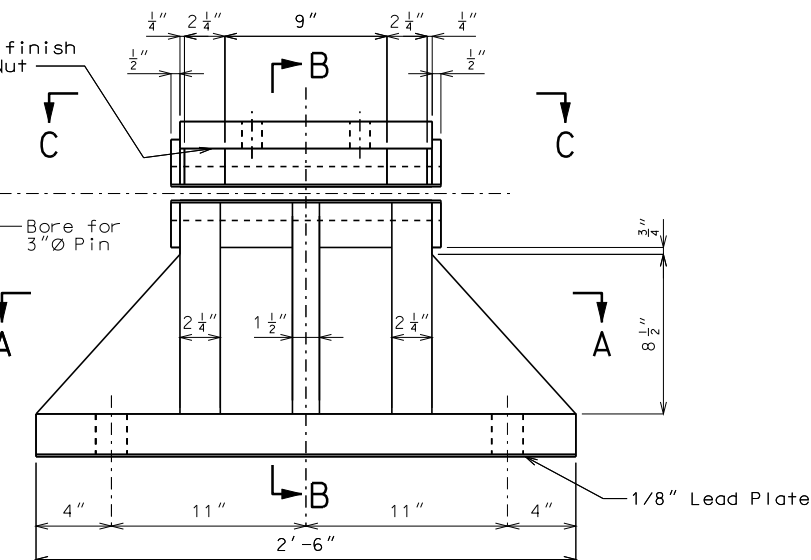
NUT DETAILS



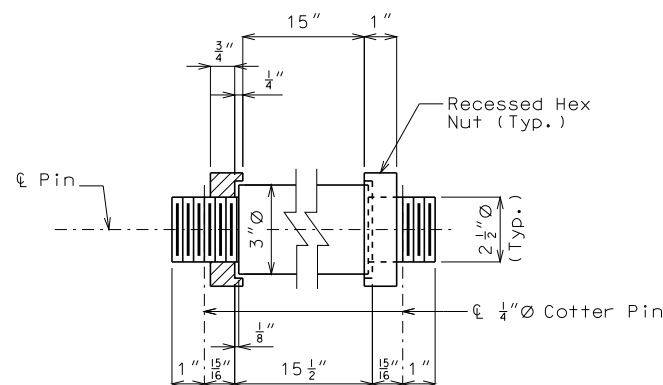
SECTION B-B
(welding)



SECTION B-B



ELEVATION VIEW



PIN DETAILS

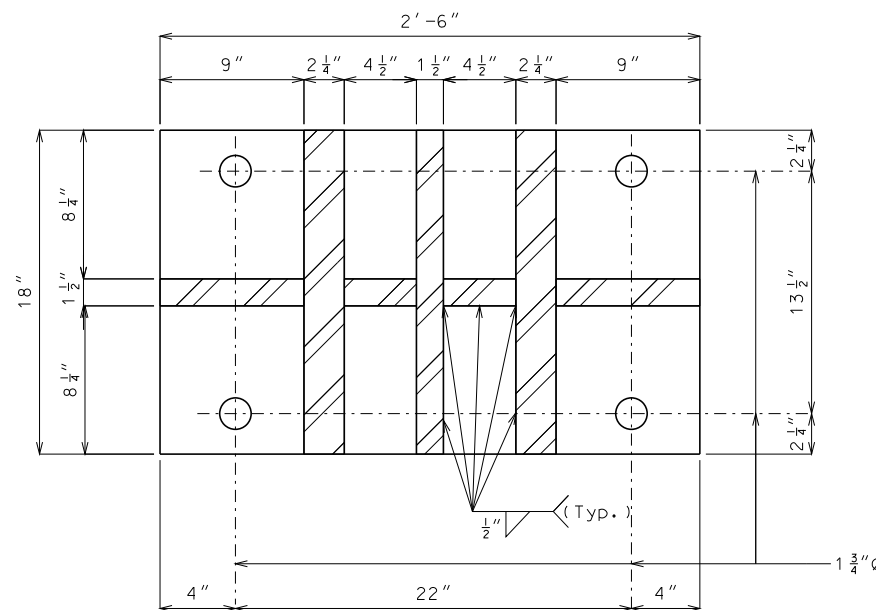
Notes:

Pin shall be in accordance with ASTM A 276, UNS S21800 (Nitronic 60 or equal) with 50 ksi yield point and Sec 1080.

Cotter Pins shall be in accordance with ASTM A 276, Type 316 stainless steel and Sec 1080.

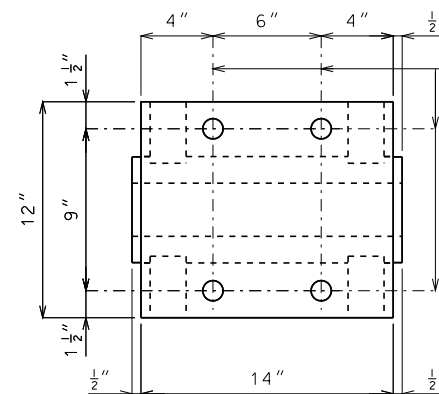
Hex Nuts shall be ASTM A 276, Type 316, or ASTM A 276 UNS S21800 (Nitronic 60 or equal).

Pins, Pin Holes, and Surface Finish shall be in accordance with Sec 1080.



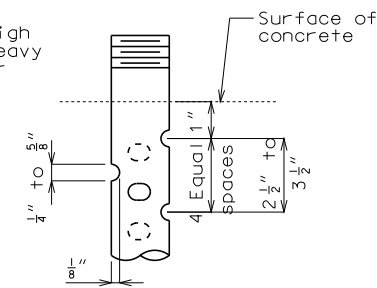
SECTION A-A

DETAILS OF FIXED SHOES FOR TRUSS SPAN AT PIER NO. 4



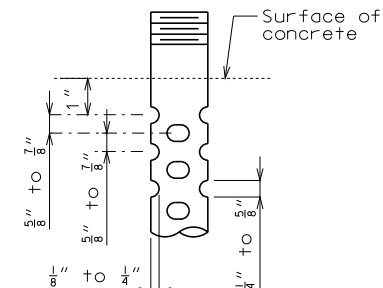
SECTION C-C

1 1/16" Ø hole for 1" Ø High Strength bolt with heavy hex nut & lock washer

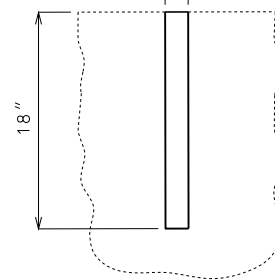


DETAIL OF 3/4" Ø THRU 2 1/2" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS



Anchor Bolt Well
(See Sec. 712)



DETAIL OF ANCHOR BOLT WELL

Notes:

All structural steel shall be ASTM A709 Grade 50.

Anchor bolts for shoes at Pier No. 4 shall be 1 1/2" Ø swaged bolts with hex nuts and shall extend 15" into concrete. Burr threads after tightening.

Pin shall be in accordance with ASTM A 276, UNS S21800 (Nitronic 60 or equal) with 50 hsi yieldpoint and Sec 1080.

Fixed Shoes Protective Coatings:

Protective Coating: System H in accordance with Sec 1080.

Field Coats: The color of the field coats shall be Gray. The cost of the intermediate and finish field coats will be considered completely covered by the contract unit price for Remove and Replace Truss Bearing.

At the option of the contractor, the intermediate and finish field coats may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

Cost of fixed shoes and anchor bolts, complete in place, shall be considered completely covered by the contract unit price for Remove and Replace Truss Bearing.

The temporary supports shall be capable of safely supporting a service load DL of 360 kips per bearing (factor of safety not included). See Special Provisions.

Two sets of shoe assemblies required.



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
11/25/2013

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 7

COUNTY CASS

JOB NO. J4P2191B

CONTRACT ID.

PROJECT NO.

BRIDGE NO. L00232

DESCRIPTION

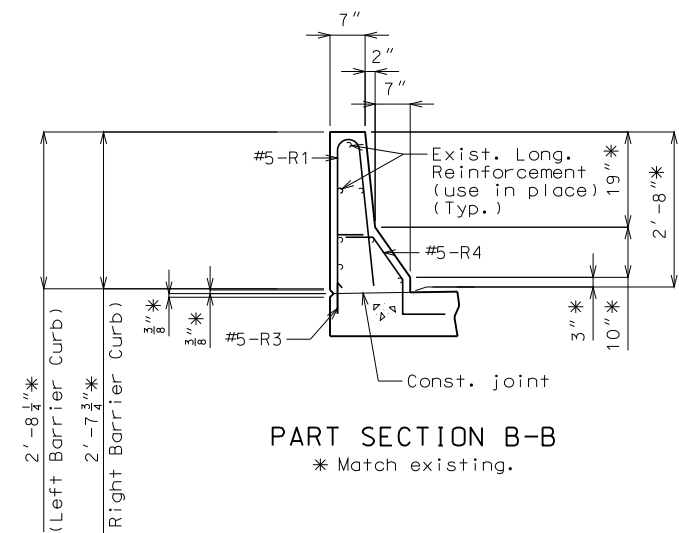
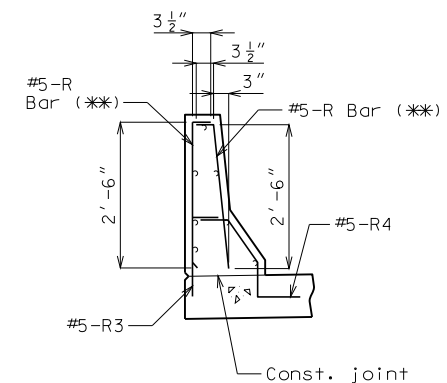
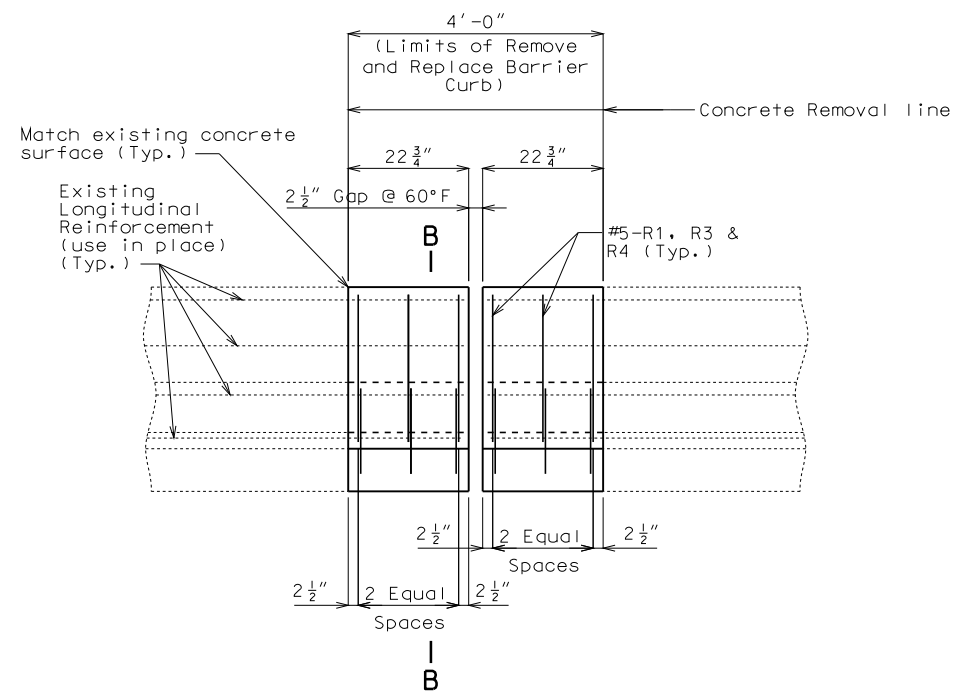
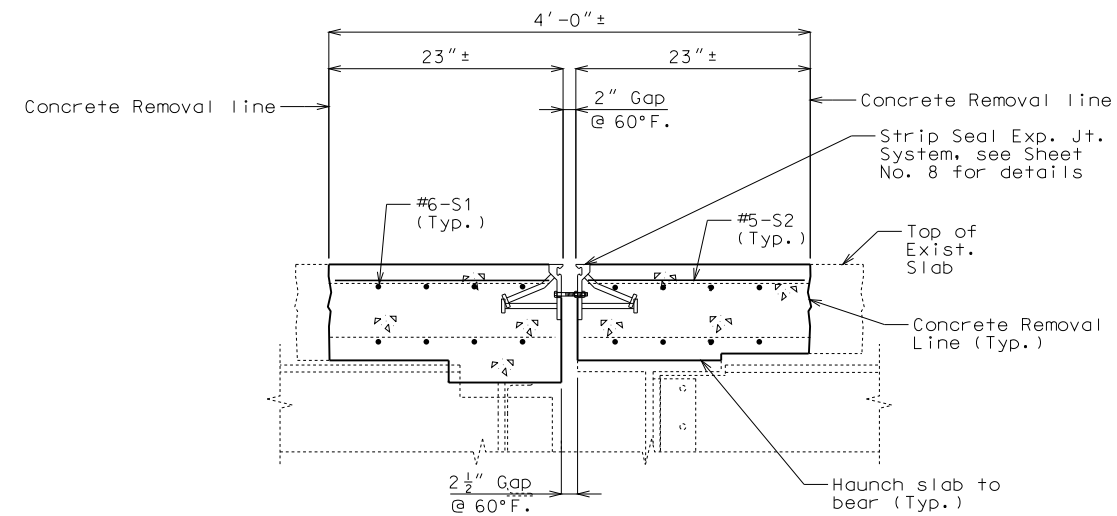
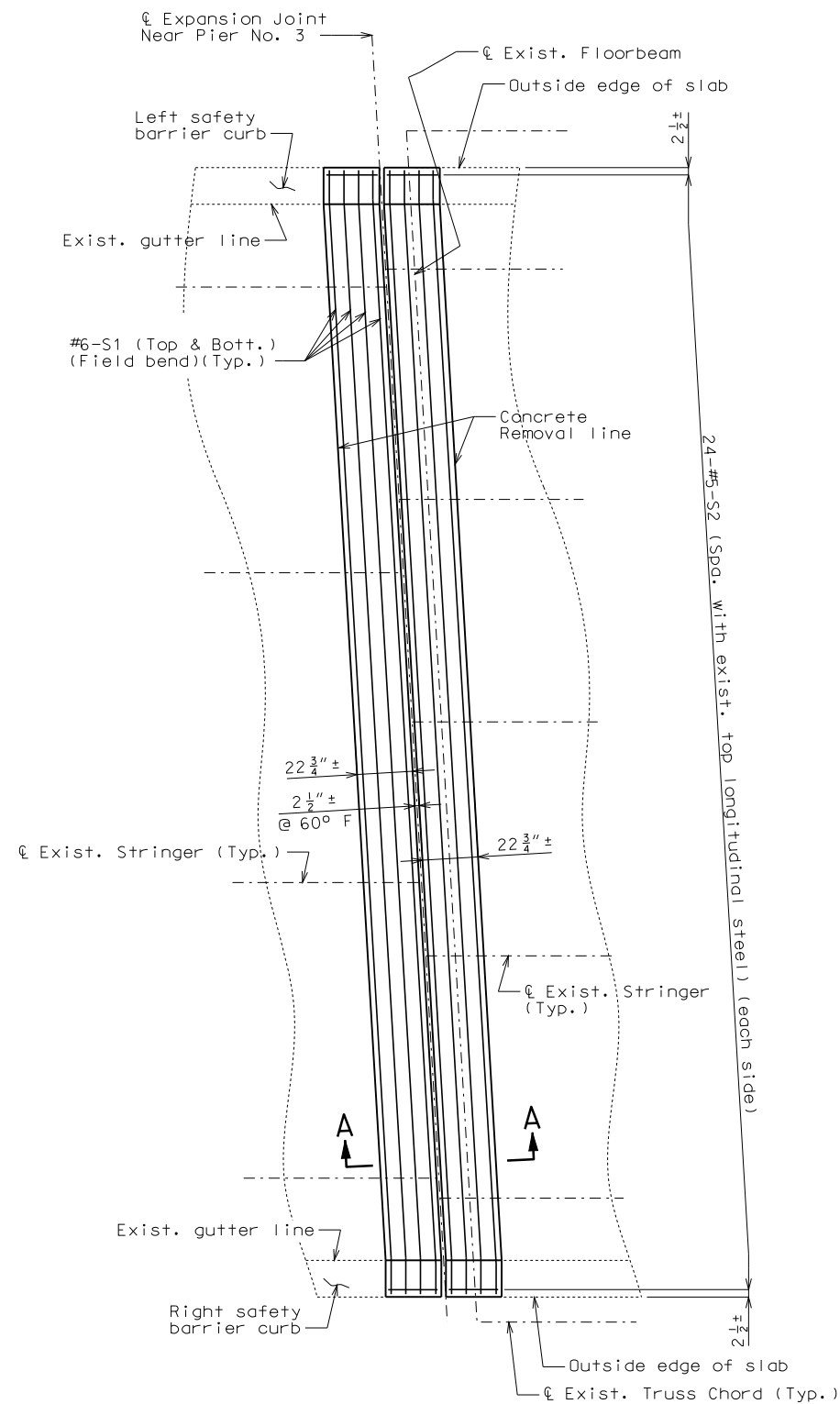
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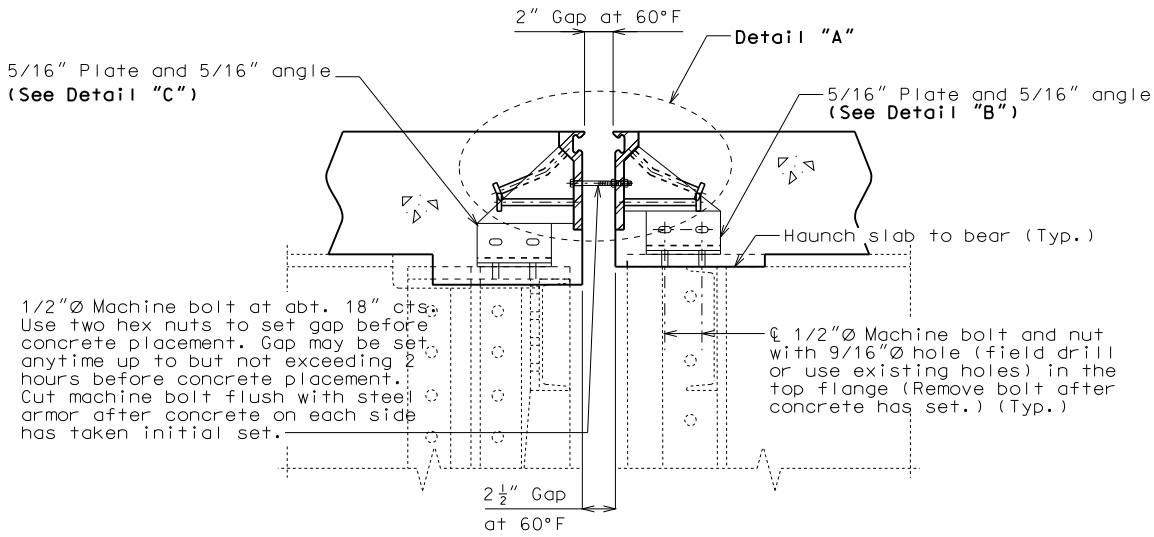
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION



105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

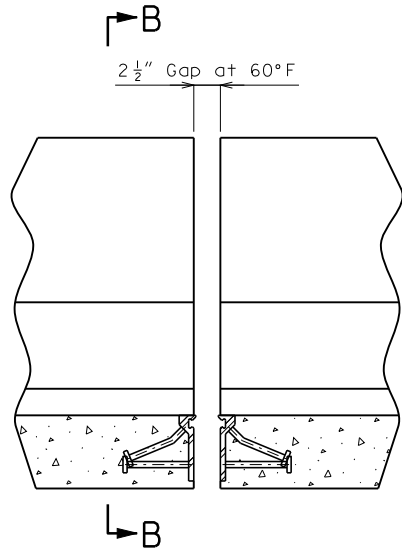
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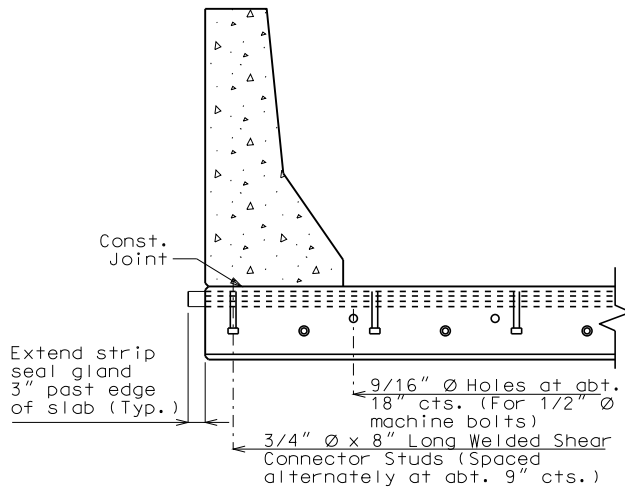
SECTION A-A

Note: Strip seal gland not shown for clarity.



Note: Strip seal gland not shown for clarity.

PART ELEVATION OF BARRIER CURB



PART SECTION B-B

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for stage construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

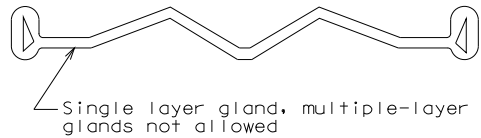
Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/16" for each 10° fall or rise in temperature at installation.

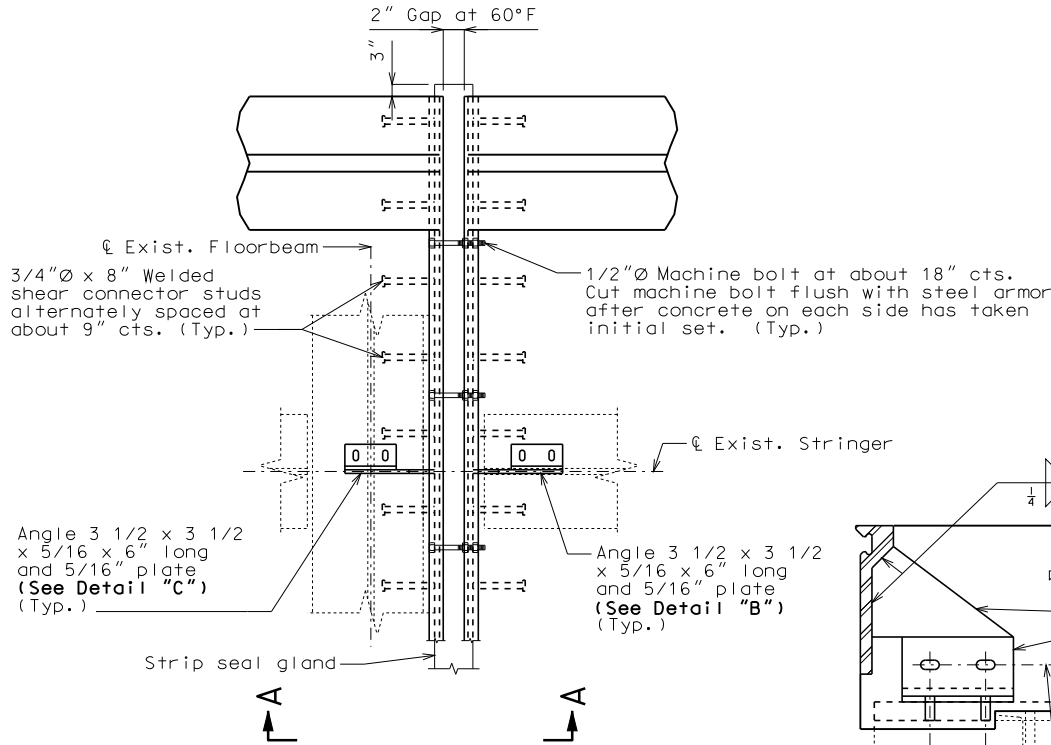
Longitudinal reinforcing steel shall be placed so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.



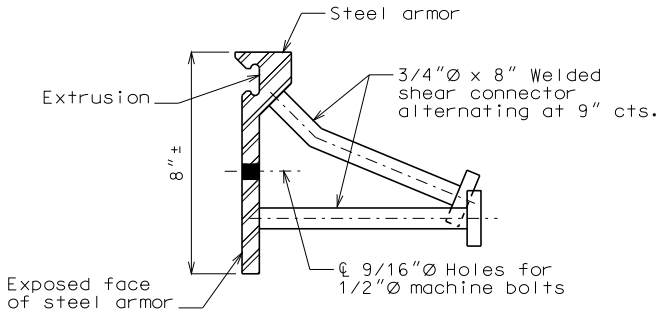
Strip seal gland size = 3"

DETAIL OF GLAND

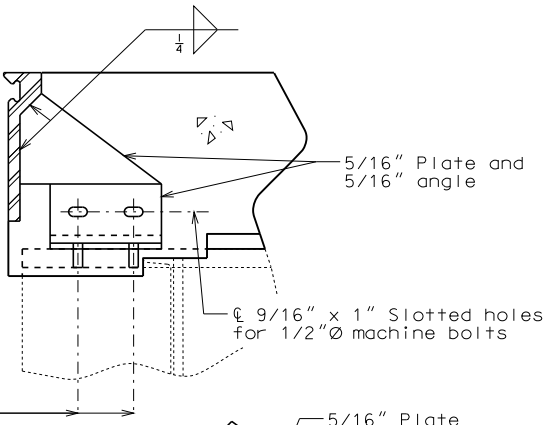


PART PLAN

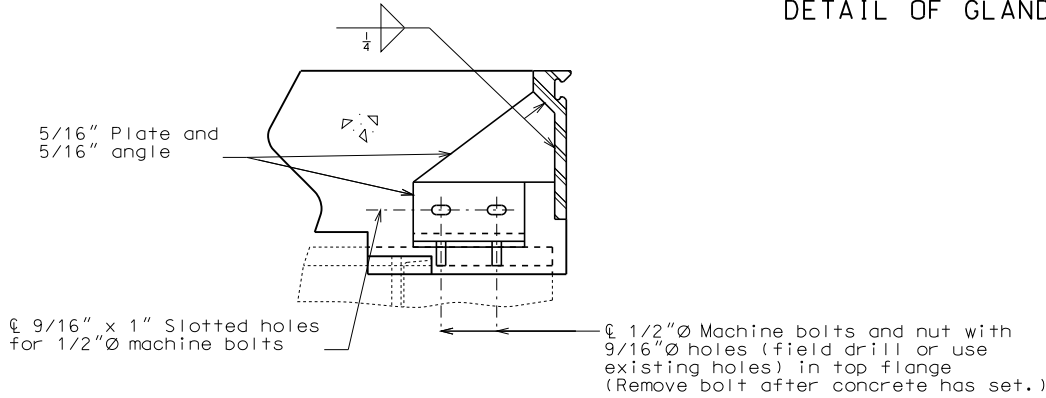
1/2"Ø Machine bolts and nut with 9/16"Ø holes (field drill or use existing holes) in top flange (Remove bolt after concrete has set.)



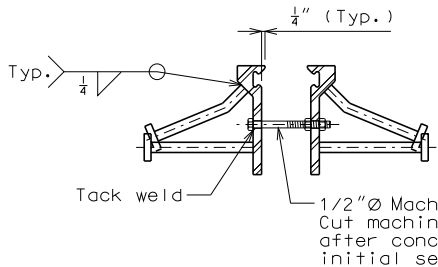
DETAIL OF JOINT ARMOR



DETAIL "B"



DETAIL "C"



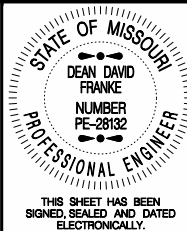
DETAIL "A"

DETAILS OF STRIP SEAL AT PIER NO. 4

Detailed July 2013
Checked Sep. 2013

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

Sheet No. 10 of 13



DATE PREPARED
11/25/2013

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 10

COUNTY CASS

JOB NO. J4P2191B

CONTRACT ID.

PROJECT NO.

BRIDGE NO. L00232

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

1-888-ASK-MODOT (1-888-275-6636)

105 WEST CAPITAL

JEFFERSON CITY, MO 65102

REV.

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MEMORANDUM

Missouri Department of Transportation
Bridge Division
Central Office

TO: Tom Markway
Truman Road Project Office

CC/ATT: Dan Niec - ao - kc
Dave Ahlvers - co - cm
Rhonda Luck - co - br
Chad Daniel - co - br
Bill Dunn - co - br
Kent Nelson - co - br (2)
Brandon Cracraft - kc - cm

FROM: Dean Franke *ddf*
Structural Project Manager

DATE: May 15, 2014

SUBJECT: Change Order
Bridge No. L00232
Rte 7
Job No. J4P2191B, Cass County
February 2014 Letting

Please find attached half-sized print for bridge sheet no. 7 for the above referenced structure.

This change order is for correcting dimensions and welding size per RFI request from DeLong's Inc.

ddf
Attachments



MEMORANDUM

Missouri Department of Transportation
Bridge Division
Central Office

TO: Tom Markway
Truman Road Project Office

CC/ATT: Dan Niec - ao - kc
Dave Ahlvers - co- cm
Rhonda Luck - co - br
Chad Daniel- co- br
Bill Dunn - co -br
Kent Nelson - co - br (2)
Brandon Cracraft - kc -cm

FROM: Dean Franke *ddf*
Structural Project Manager

DATE: July 3, 2014

SUBJECT: Change Order
Bridge No. L00232
Rte 7
Job No. J4P2191B, Cass County
February 2014 Letting

Please find attached half-sized print for bridge sheet no. 13 for the above referenced structure.

This change order is for correcting B dimension on the K4 bar in the curb.

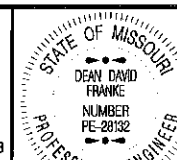
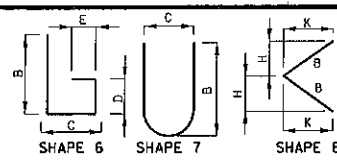
ddf
Attachments

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS														NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
										B		C		D		E		F		H		K					
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
			END BENT 1																								
12	6	H10	DIAPHRAGM	E 20						28	5.000								28	5	28	5				512	
4	6	H11	DIAPHRAGM	E 20						28	5.000								28	5	28	5				171	
10	6	H12	WING	E 20				V 2		8	11.000								8	11	8	11					
			INCREMENT =							4	11.000								4	11	4	11				104	
			12.000 INCH																								
2	6	H13	WING	E 20						5	11.000								5	11	5	11				18	
10	6	H14	WING	E 20				V 2		9	3.000								9	3	9	3					
			INCREMENT =							5	3.000								5	3	5	3				109	
			12.000 INCH																								
26	5	H15	DIAPHRAGM	E 20						2	6.000								2	6	2	6				68	
2	6	T1	DIAPHRAGM	E 25 S						20.250	8	4.625	4	5.750			4	7.750	6	11.750	14	7	14	6			44
2	6	T2	DIAPHRAGM	E 25 S						15.000	8	2.375	4	8.625			4	6.625	6	9.750	14	2	14	1			42
26	6	U10	DIAPHRAGM	E 11							2	6.625	2	3.000	2	6.625				7	4	7	1				277
30	6	U11	DIAPHRAGM	E 19						3	6.000			21.000					5	3	5	1				229	
26	5	U12	DIAPHRAGM	E 11							3	6.000			21.000	3	6.000			8	9	8	6				231
4	6	V10	DIAPHRAGM	E 20						2	6.000								2	6	2	6				15	
14	6	V11	WING	E 20				V 2		6	0.000								6	0	6	0					
			INCREMENT =							2	0.000								2	0	2	0				84	
			8.000 INCH																								
14	6	V12	WING	E 20				V 2		5	7.000								5	7	5	7					
			INCREMENT =							19.000									0	19	0	19				75	
			8.000 INCH																								
2	6	V13	WING	E 20						5	4.000								6	4	6	4				19	
2	6	V14	WING	E 20						5	9.000								5	9	5	9				17	
			END BENT 6																								
8	6	H60	DIAPHRAGM	E 20						28	5.000								28	5	28	5				341	
4	6	H61	DIAPHRAGM	E 20						28	5.000								28	5	28	5				171	
10	6	H62	WING	E 20				V 2		8	6.000								8	6	8	6					
			INCREMENT =							4	6.000								4	6	4	6				98	
			12.000 INCH																								
2	6	H63	WING	E 20						5	3.000								5	3	5	3				16	
8	6	H64	WING	E 20				V 2		8	1.000								8	1	8	1					
			INCREMENT =							5	1.000								5	1	5	1				79	
			12.000 INCH																								
26	5	H65	DIAPHRAGM	E 20						2	6.000								2	6	2	6				68	
4	6	V60	DIAPHRAGM	E 20						23.000									0	23	0	23				12	
12	6	V61	WING	E 20				V 2		4	11.000								4	11	4	11					
			INCREMENT =							19.000									0	19	0	19				59	
			8.000 INCH																								
14	6	V62	WING	E 20				V 2		2	0.000								6	0	6	0					
			INCREMENT =							2	0.000								2	0	2	0				84	
			8.000 INCH																								
2	6	V63	WING	E 20						5	5.000								5	5	5	5				16	
2	6	T61	DIAPHRAGM	E 25 S						15.000	7	6.750	4	5.000			4	2.375	6	3.500	13	3	13	2			40
2	6	T62	DIAPHRAGM	E 25 S						20.250	7	7.500	4	4.625			4	2.750	6	4.125	13	8	13	7			41
26	6	U60	DIAPHRAGM	E 11							23.000	2	3.000	23.000					6	1	5	9				225	
30	6	U61	DIAPHRAGM	E 19						2	10.000			21.000					4	7	4	5				199	
26	5	U62	DIAPHRAGM	E 11							2	10.000			21.000	2	10.000			7	5	7	2			194	
			SLAB																								

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS																NOMINAL LENGTH		ACTUAL LENGTH		WEIGHT
										B		C		D		E		F		H		K								
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	LBS.		
32	6	S1	SLAB	E	20					28	5.000									28	5	28	5	1366						
96	5	S2	SLAB	E	20					19.000										0	19	0	19	159						
			BARRIER CURB																											
24	5	R1	BARRIER CURB	E	26					2	6.000	4.250	2	6.125			2	6.000	3.000	5	2	5	2	129						
24	5	R3	BARRIER CURB	E	19	S				17.000	6.000								0	23	0	22	46							
24	5	R4	BARRIER CURB	E	27	S					6.000	11.125	7.000	12.000	9.125	6.375	3	0	2	10	71									
																			6	2										
60	5	K2	BARRIER CURB	E	14	S				5.125	11.125	18.000				2.000	17.875	2	10	2	9	172								
24	5	K4	BARRIER CURB	E	7					6.000	6.000							0	0	0	0	156								
26	5	K9	BARRIER CURB	E	20					5	9.000							5	9	5	9	156								
4	5	K11	BARRIER CURB	E	8					2	2.125					2	2.000	2.375	4	4	4	4	18							
			TOTALS																											
5				E																										
6				E																										
			TOTAL																											
			TOTAL	E																										
			Slab on Girder																											
5				E																			720							
6				E																			4463							
			TOTAL																				5183							
			Safety Barrier Curb																											
5				E																			918							
			TOTAL																											



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
7/3/2014

ROUTE 7 STATE MO

DISTRICT BR SHEET NO. 13

COUNTY CASS

JOB NO. J4P2191B

CONTRACT ID.

PROJECT NO.

BRIDGE NO. L00232

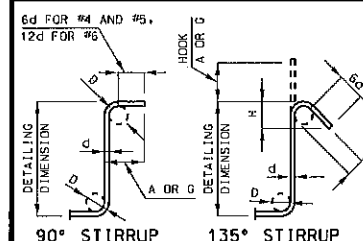
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

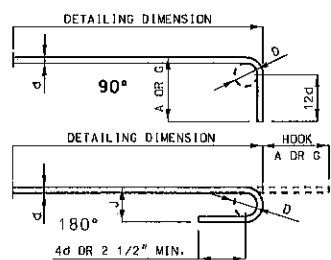
105 WEST CAPITAL
JEFFERSON CITY, MO 65102
1-888-ASK-MDOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

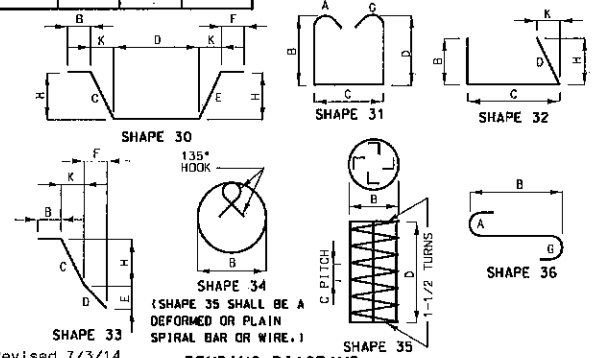
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR D	90° HOOKS A OR D	
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

TWO ADDITIONAL #5-K9 & #6-H10 ARE INCLUDED IN THE BAR BILL FOR TESTING.

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 90 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPIRALS OR SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.



Detailed Nov. 2013
Checked Nov. 2013

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

Sheet No. 13 of 13

Revised 7/3/14