

# MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	33	
SEC./SUR.		TWP. 43N RGE. 5E			

## GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. - 1983 + Interims thru 1985  
 Load Factor Design  
 Design Loading:  
 HS20-44 15/sq. ft. Future Wearing Surface  
 Earth 120 lb./sq. ft. Equivalent Fluid Pressure 30' low ft.  
 Superstructure: Simply supported non-composite for Dead Load; Continuous composite for Live Load.

## Design Unit Stresses:

Class B Concrete (Substructure)  $f'_c = 3,000$  psi  
 Class B1 Concrete (Safety Barrier Curb)  $f'_c = 4,000$  psi  
 Class B2 Concrete (Superstructure except Prestressed Girders and Safety Barrier Curb)  $f'_c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Steel Pile  $f_b = 90,000$  psi  
 For Prestressed Girder Stresses, see Girder Sheet.

Minimum clearances to reinforcing steel shall be 1 1/2" unless otherwise shown.

All joint filler shall meet the requirements of Std. Spec. 1057.2.4 except as noted.

Bearings shall be 60 durometer Neoprene Pads.

## ESTIMATED QUANTITIES

ITEM	SUBSTR.	ERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	80	80
Class 2 Excavation	Cu. Yd.	202	202
Structural Steel Piles (10")	Lin. Ft.	696	696
Class B Concrete	Cu. Yd.	245.0	245.0
Slab on Concrete I-Girders, see Spec. Prov.	Sq. Yd.		1293
Safety Barrier Curb	Lin. Ft.	593	593
Laminated Neoprene Bearing Pads	Each	50	50
Prestressed Concrete I-Girders (55' Span)	Each	25	25
Reinforcing Steel (Grade 60)	Lb.	31,700	31,700
Slab Drains	Each	21	21
Vertical Drain at End Bents	Each	2	2

Note: Cost of furnishing, fabricating and installing Neoprene Bearing Pads complete in place, will be paid for at the contract unit price for Laminated Neoprene Bearing Pads per each. All reinforcement in the end bents is included with superstructure quantities.

Note: Live load construction joints in end bents is included in the estimated superstructure quantities for Slab on Concrete I-Girders, see spec. prov.

## ESTIMATED QUANTITIES FOR ALTERNATE SLABS

TYPE OF SLAB	REINF. (LBS.)	CONC. (CU. YD.)
Cast-In-Place Conventional Forms	85,760	7930
Precast Panel Forms	51,540	7930

Note: The table of Estimated Quantities for Alternate Slabs represents the quantities used by the state in preparing the cost estimate for concrete slabs. Variations may be encountered in these estimated quantities but these variations cannot be used for an adjustment in the Contract Unit Price per square yard of Alternate Slab used.

See Special Provisions for alternate methods of forming slab.

Precast panel quantities based on skewed end panels.

\* Based on minimum top flange thickness and minimum joint filler thickness.

B.M. No. 139 - 80d Spike in Power Pole @ Swallow Rd. & Exist. Rt. 21 - 162' Rt. of Sta. 205+48 @ Northbound Lanes. Elev. 586.30  
 No. 141 - 80d Spike in 18" Sycamore Tree 126' Lt. of Sta. 222+70 @ Northbound Lanes. Elev. 626.55

## BRIDGE OVER ROCK CREEK

STATE ROAD FROM ROUTE 141 TO OTTO

ABOUT 4.2 MILES NORTH OF OTTO

PROJECT NO. F-21-2(25)

STA. 211+62.10 (NBL)

JOB NO. 6-U-21-17

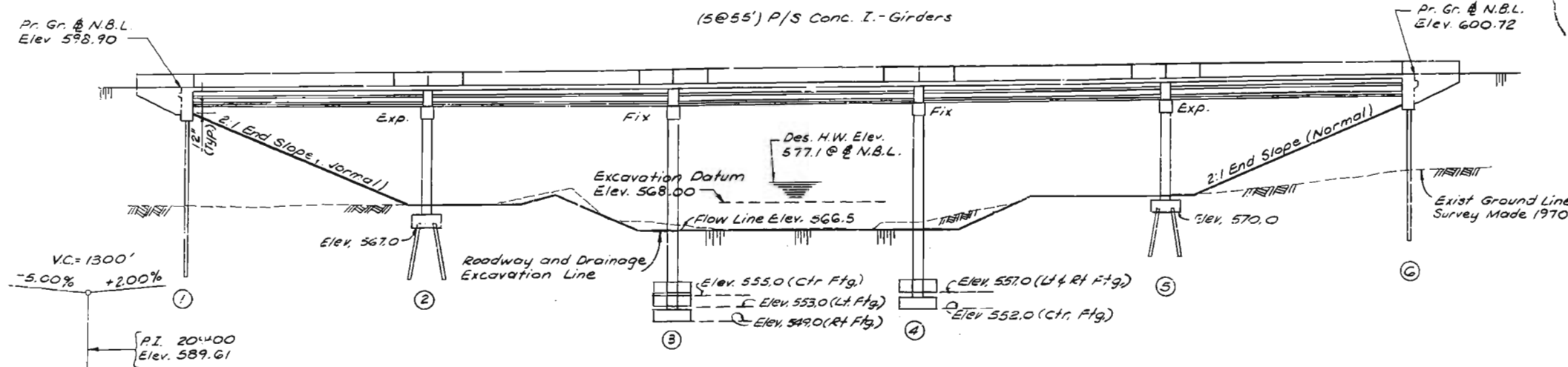
RTE. 21 NBL

JEFFERSON

COUNTY

DATE 6/15/87

STD.  
 STD. 706.35  
 A-2958



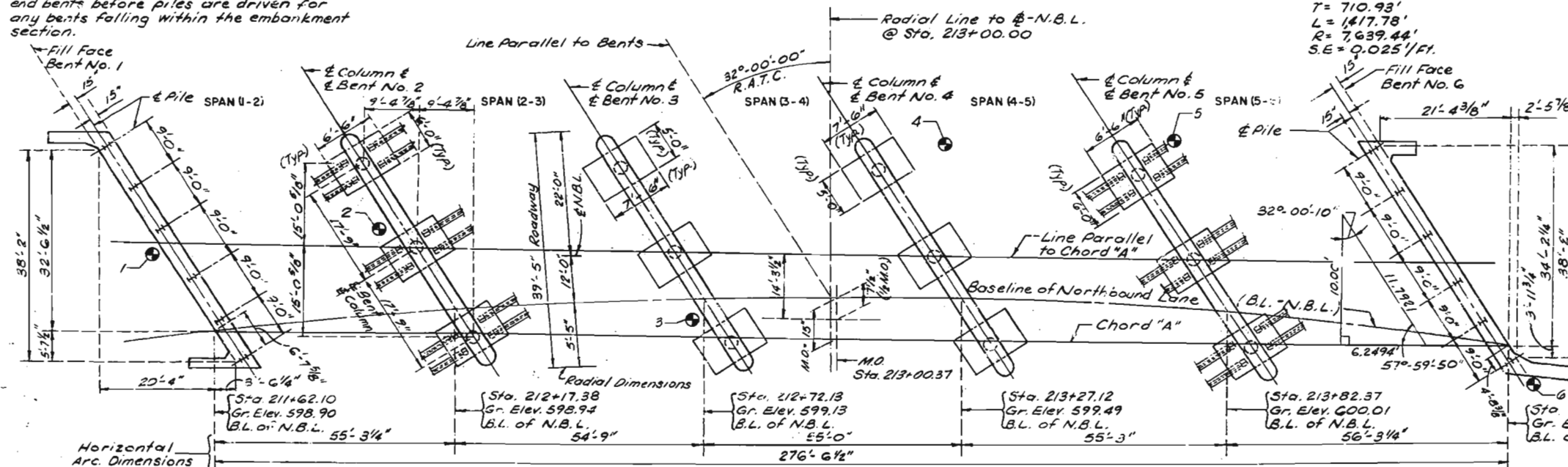
## GENERAL ELEVATION

Note: Compacted roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25' in back of the fill face of the end bents before piles are driven for any bents falling within the embankment section.

Note: For Boring Data, See Sheet 2.  
 • Indicates Boring Location.

## CURVE DATA

P.I. Sta. 216+27.91  
 $\Delta = 102^\circ 38' 11''$   
 $D = 0^\circ 45'$   
 $T = 710.93'$   
 $L = 1417.78'$   
 $R = 7,639.44'$   
 $S.E. = 0.025'/ft.$



## PLAN

## HYDROLOGIC DATA

Drainage Area	= 6.7 sq. mi. (Hilly)
Des. Discharge	= 7330 c.f.s.
Des. H.W. Elev.	= 577.1
Frequency	= 50 yrs.

## BASIC FLOOD DATA

Design Discharge	= *
H.W. Elev.	= *

\* Basic flood exceeded by flood of record.

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

## PILE & FOOTING DATA

BENT NO.	1	2	3	4	5	6
Pile Type & Size	HPD42	HPD42			HPD42	HPD42
Number	6	12			12	6
Approximate Length	37	13			11	31
Design Bearing	52	55			53	52
Hammer Energy Required	11,300	11,900			11,900	11,300
Foundation Material			Rock	Rock		
Design Bearing			9.5	9.1		

Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
 All piles shall be driven to practical refusal.

Sheet No. 1 of 2

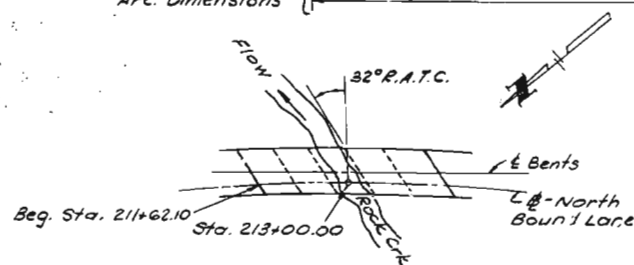
SEE FINAL PLANS

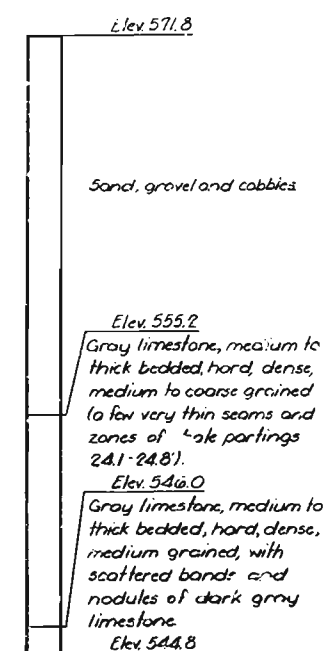
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DETAILED Dec. 1979 By J.M.

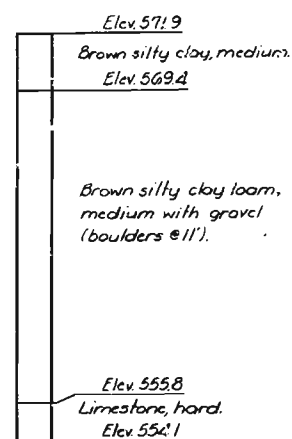
CHECKED JAN. 1980 By K.R.B.

LOCATION SKETCH

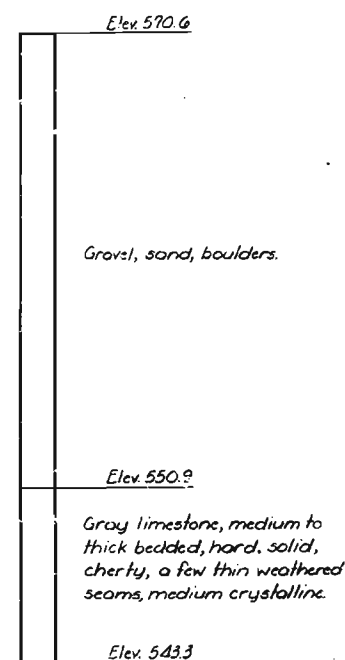




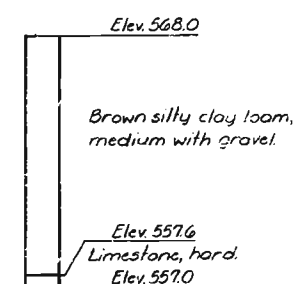
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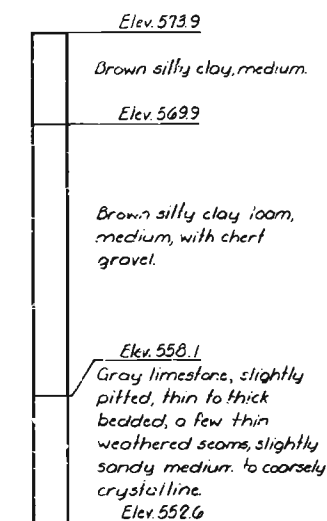
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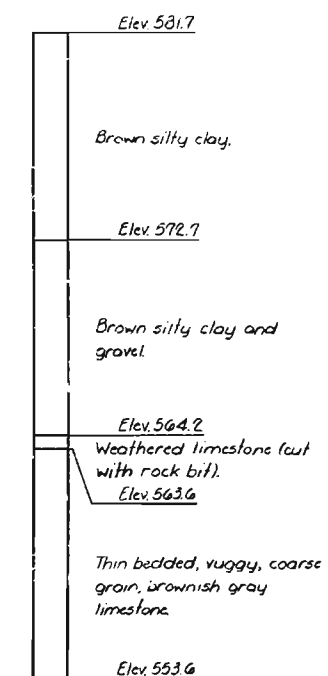
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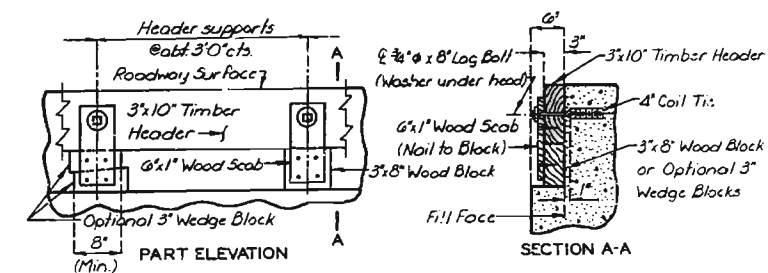


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(Core)



⑥  
(Core)

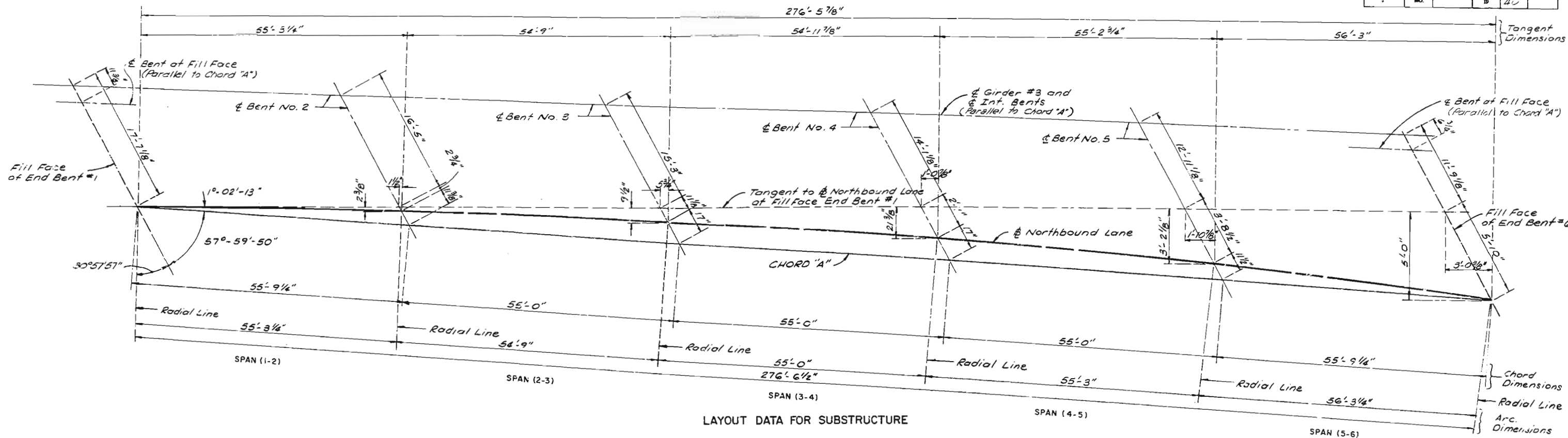
## BORING DATA



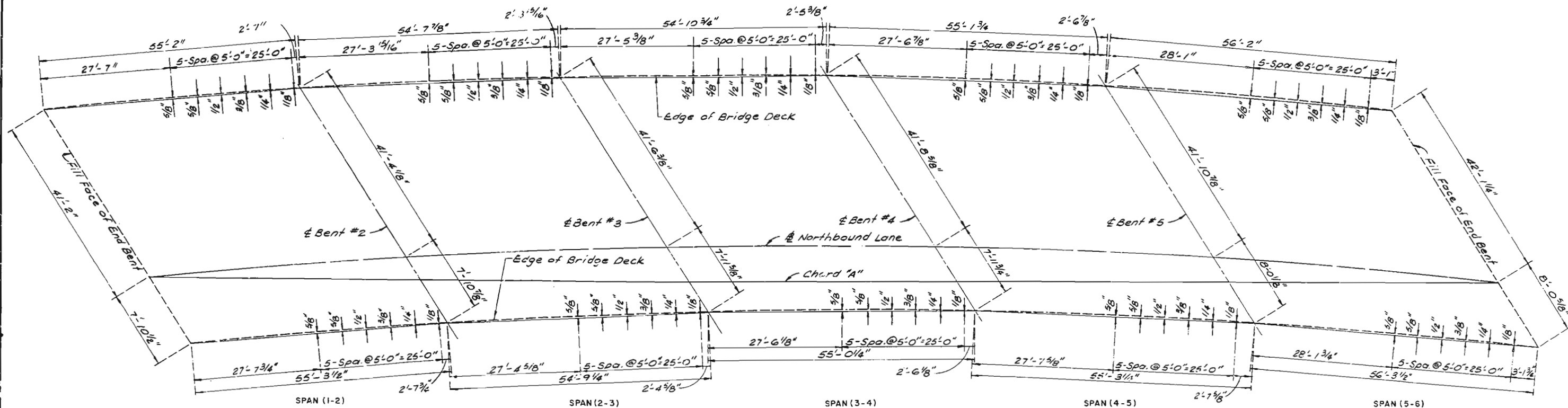
### DETAILS OF TIMBER HEADER AT END BENTS

Note: Cost of Timber Headers complete in place to be included in contract unit price for concrete.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		10	40	



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



Note: All dimensions shown are horizontal.

DETAILED Dec. 1979  
CHECKED Jan. 1980

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

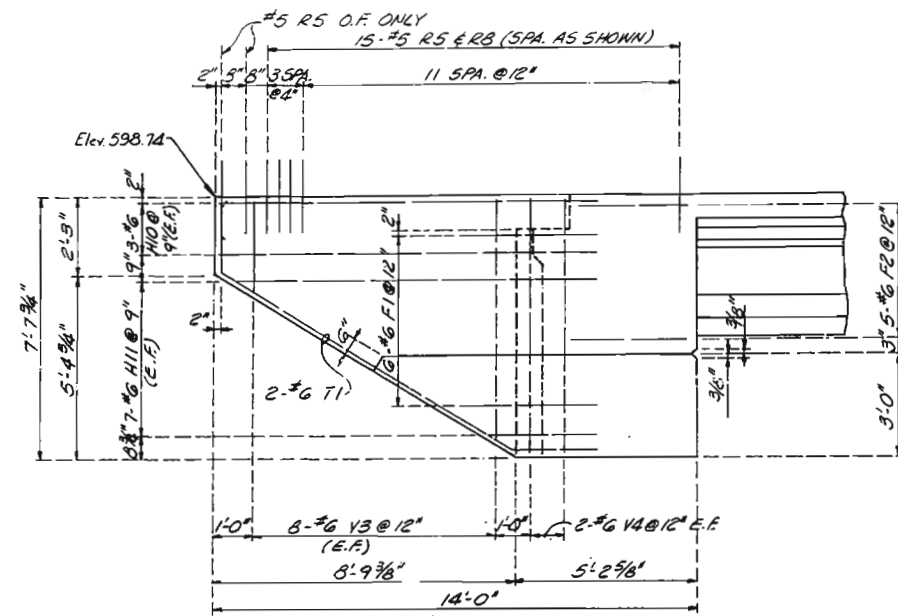
PLAN OF SLAB SHOWING CURVE ORDINATES

Sheet No. 3 of 21

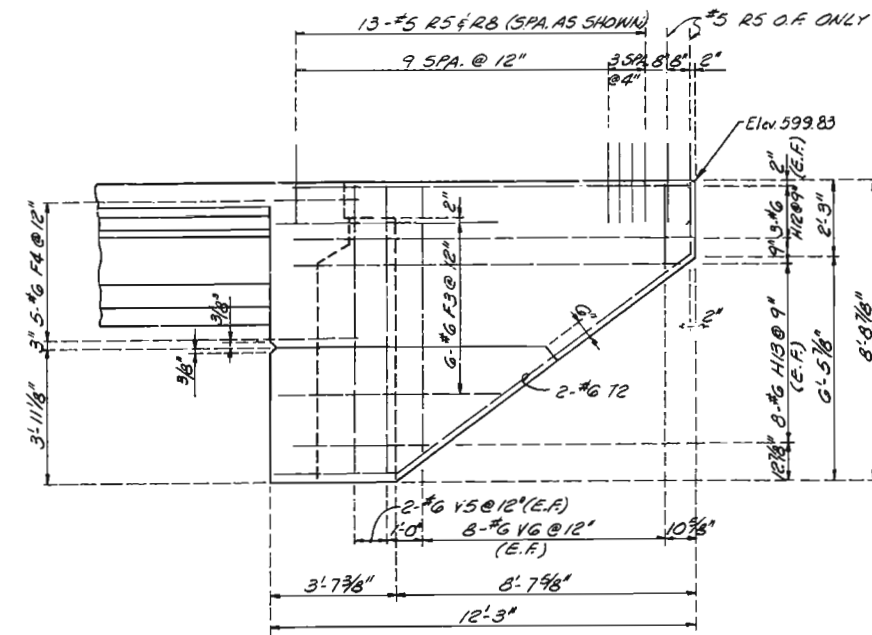
JEFFERSON COUNTY

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	41	

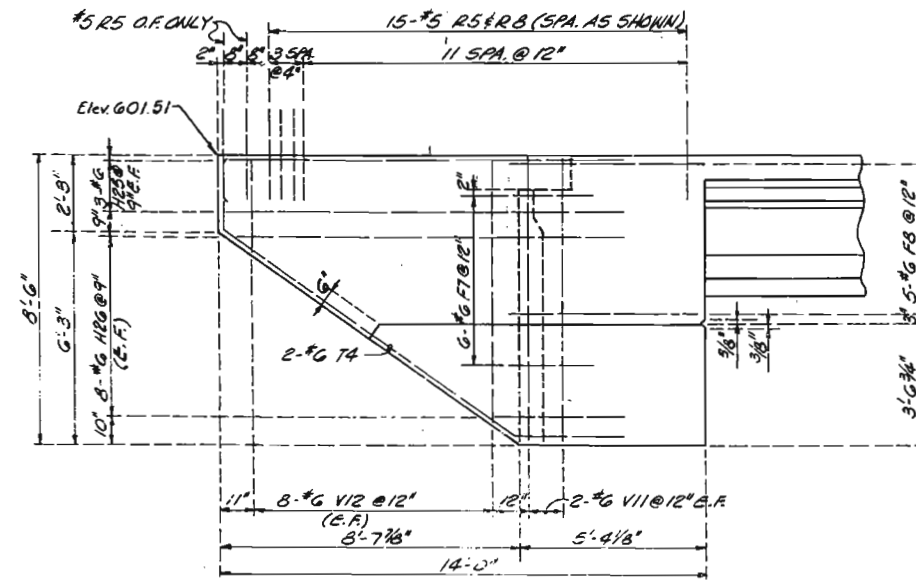


ELEVATION D-D

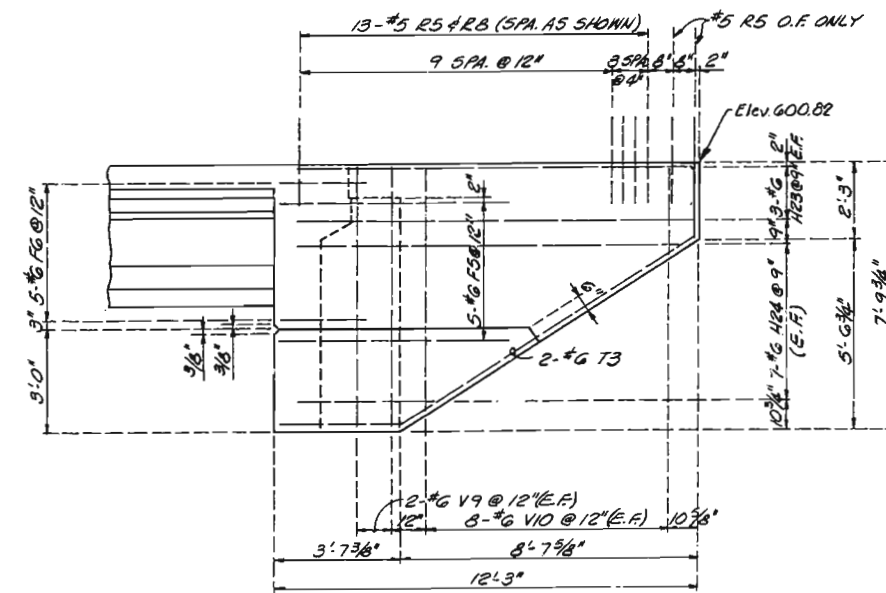


ELEVATION E-E

BENT NO. 1



ELEVATION F-F



ELEVATION G-G

BENT NO. 6

# DETAILS OF WINGWALLS

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

DATE: Dec. 12, 79  
CHECKED: Jan. 19, 80

Sheet No. 4 of 21

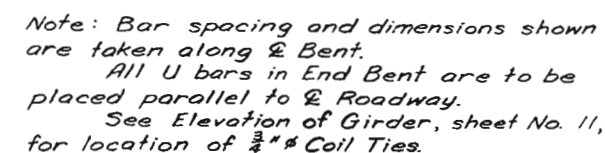
JEFFERSON

COUNTY

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STANDARD 55.39.5.2 S.B.	REVISED
SEPT. 1975	

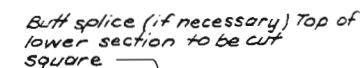
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Note: All concrete in the end bent above top of beam and below top of slab shall be Class B2.



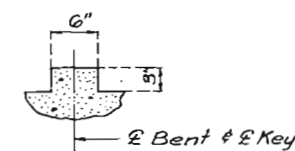
Note: Strands at end of girder shall be field bent or, if necessary, cut in field to maintain 1 1/2" minimum clearance to fill face of end bent.



A diagram of a truss structure. It consists of a rectangular frame with a horizontal member at the top and a horizontal member at the bottom. A diagonal member connects the top-left corner to the bottom-right corner. A horizontal reaction force, indicated by a triangle pointing to the right, is applied at the bottom-right support. The angle between the horizontal reaction force and the horizontal member is labeled  $\theta$ .

Note: Bend F1 & F3 bars in field to clear prestressed beam flanges.

Note: See sheet No. 18 for details of barrier rail. Barrier rail bars R5 & R8 shall be cast in end bent concrete as shown on sheet No. 18.



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

Sheet No. 5 of 21

COUNTY

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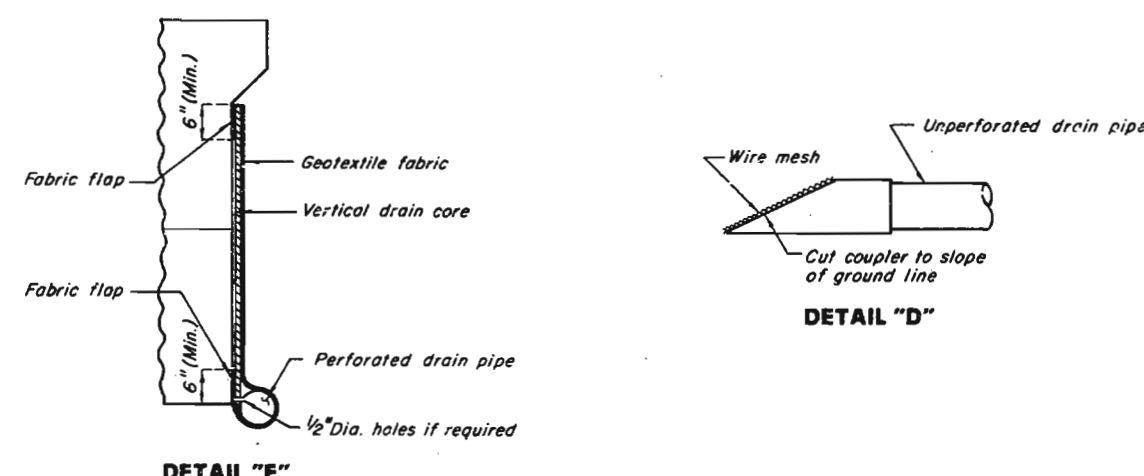
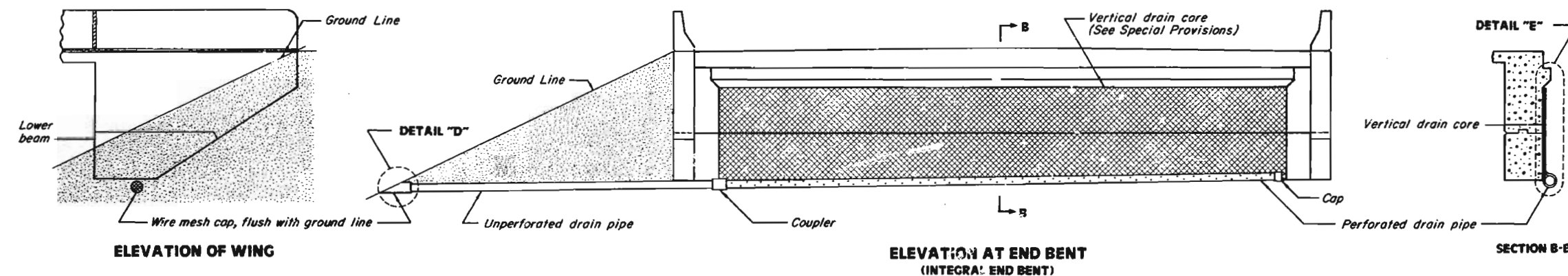
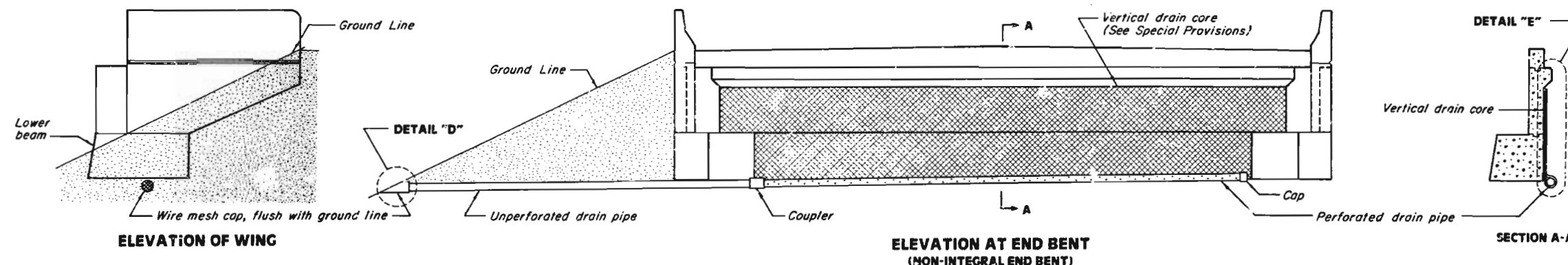
DETAILED Dec. 1979  
CHECKED Jan. 1980

# GENERAL NOTES:

DRAIN PIPE MAY BE EITHER 6" DIAMETER CORRUGATED METALLIC COATED STEEL PIPE UNDERDRAIN, 4" DIAMETER CORRUGATED POLY VINYL 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, ALSO MISSING THE LOWER BEAM OF END BENT BY 1/4" (SEE ELEVATION AT END BENT)

PERFORATED PIPE SHALL BE PLACED AT FILL FACE SIDE AT THE BOTTOM OF END BENT AND PLAIN PIPE SHALL BE USED WHERE THE VERTICAL DRAIN ENDS TO THE EXIT AT GROUND LINE.



## VERTICAL DRAIN AT END BENTS

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

Sheet No. 6 of 21

JEFFERSON COUNTY

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#4 265

Revised MAR. 1987  
Abul Vert. Drain MARCH 1986

DETAILED Mar. 1987  
CHECKED Mar. 1987



Hand-drawn structural drawing of a rectangular frame. The drawing includes the following labels and dimensions:

- Top reinforcement:  $\#10 \times 42$  Bottom 2" For 12"
- Top horizontal reinforcement:  $\#6 D2$
- Bottom horizontal reinforcement:  $\#6 D2$
- Vertical reinforcement:  $\#6 D3$
- Overall dimensions: 18" (width), 18" (height), 3'-0" (width), 3'-6" (height), 6'-0" (width), 6'-6" (height)

18"

Prestressed Girder

9"

1" Joint Filler

1" Brq. Pad

See Elevation for Step

SECTION B-B  
(Typ.)

5

MQ

19

44

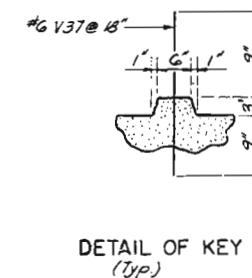
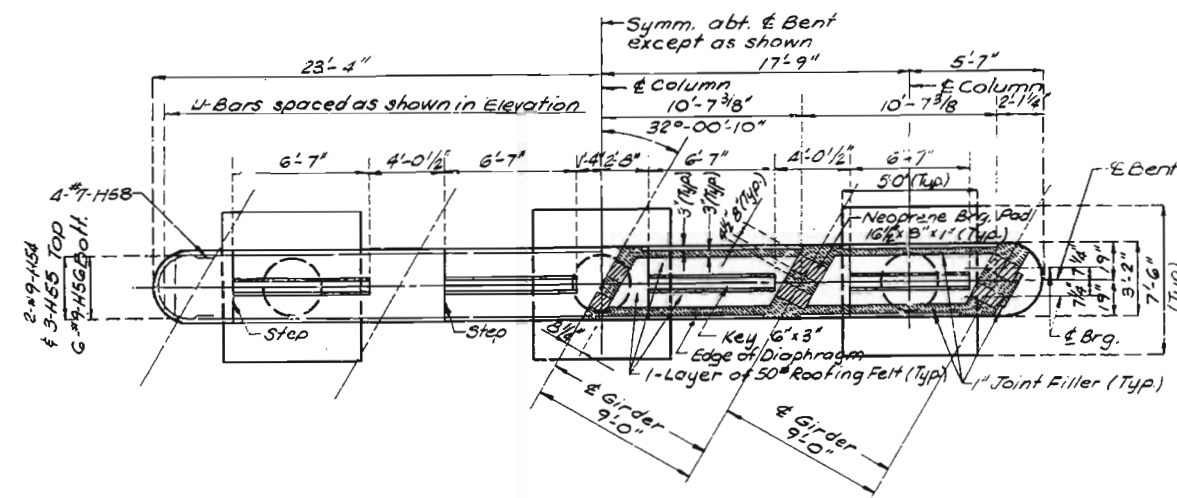
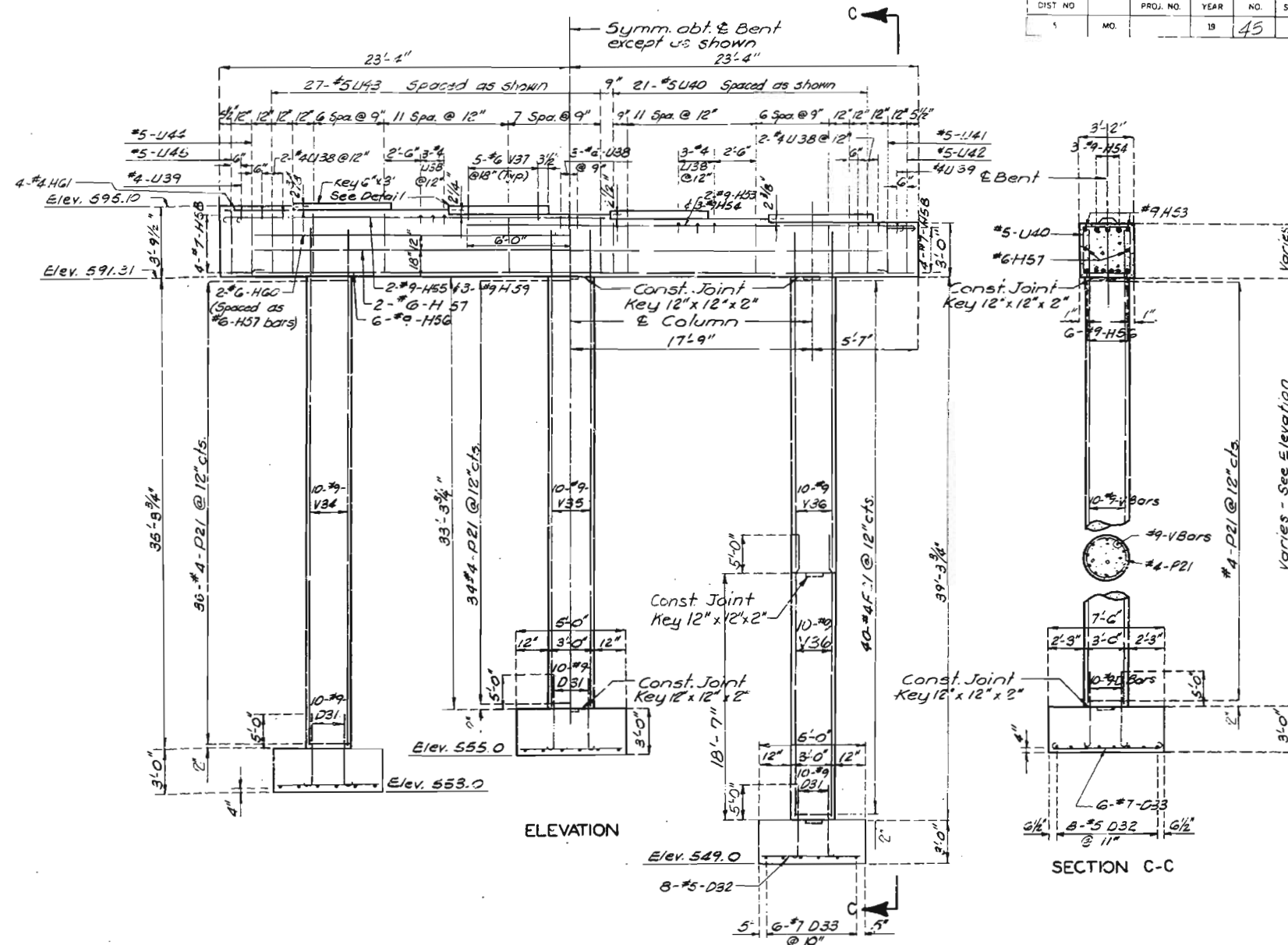
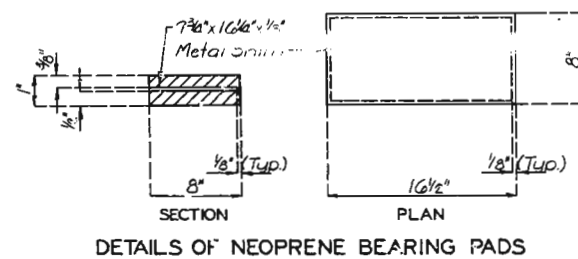
SECTION C-C

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Note: For details of "coprene Bearing Pads see Sheet No. 8.

A - 2958

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	45	



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

Sheet No. 8 of 21

JEFFERSON COUNTY

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471 868

STD. 19.5  
JAN. 1965  
REVISED  
JUNE 1974

DETAILED Dec. 1979  
CHECKED Jan. 1980

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

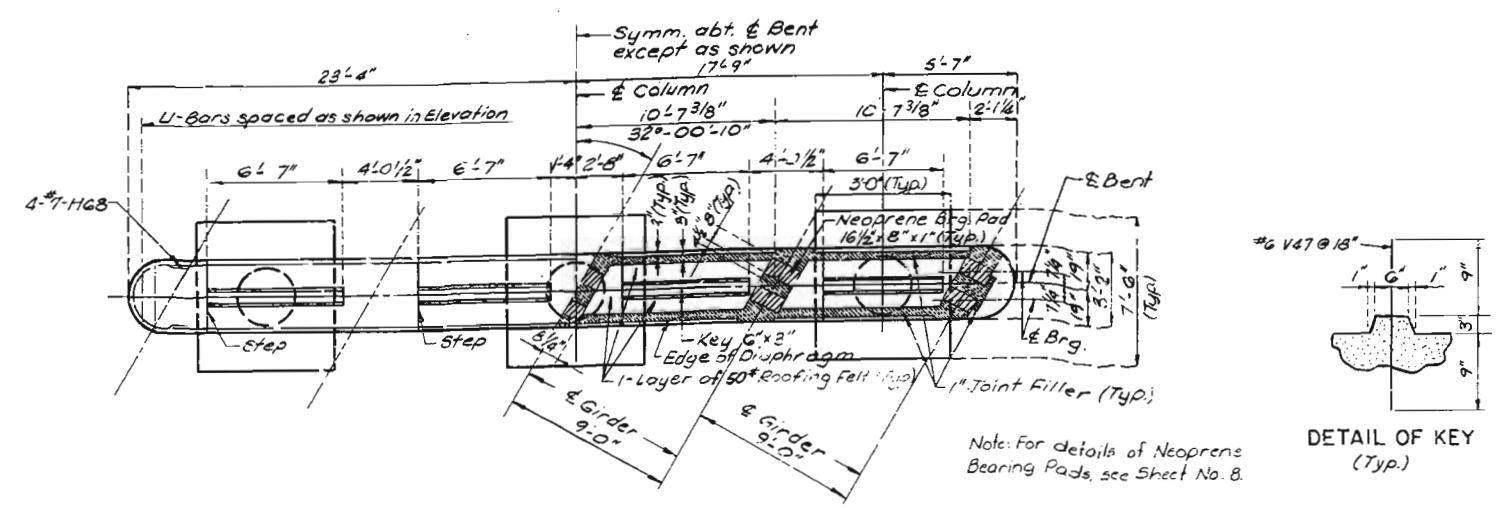
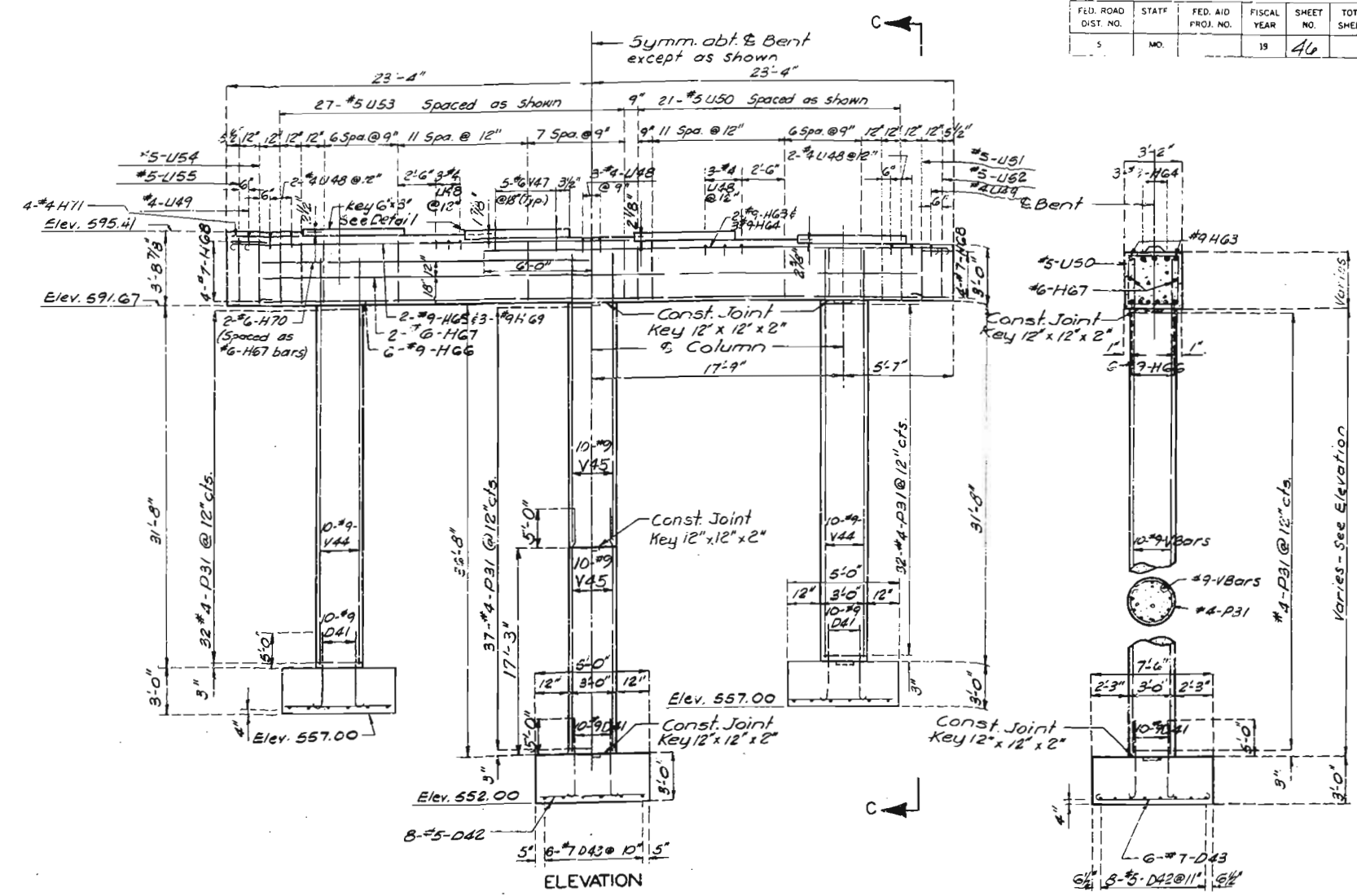
Sheet No. 9 of 21

JEFFERSON

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FED. ROAD DIST. NO.	STAT.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	46	



PLAN  
DETAILS OF INTERMEDIATE BENT NO. 4

Note: For details of Neoprene Bearing Pads, see Sheet No. 8

DETAIL OF KEY  
(Typ.)

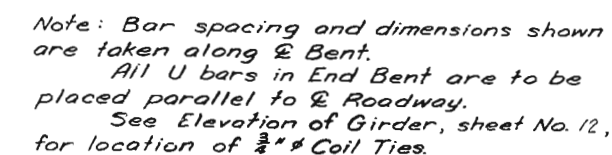
STD. 19.5	REVISED
JAN. 1965	JUNE 1974

DETAILED Dec. 1979  
CHECKED Jan. 1980

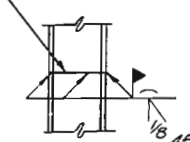
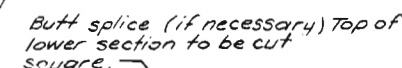
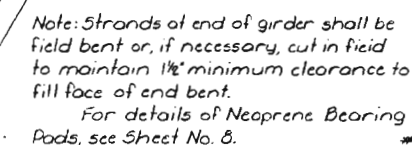


**Note:** This drawing is not to scale. Follow dimensions.

717210

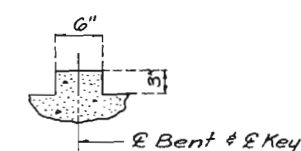


Note: All concrete in the end bent above top of beam and below top of slab shall be Class B2.



SECTION C-C

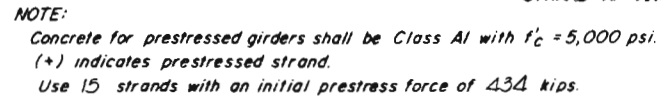
Note: Bend F5 and F7 bars in field to clear prestressed beam flanges.



### DETAIL OF KEYED CONSTRUCTION JOINT

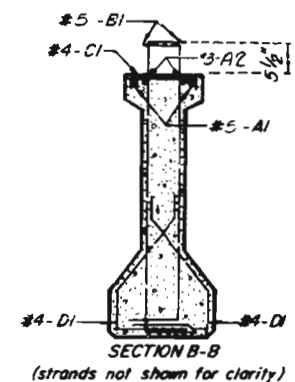
Note: See sheet No.18 for details of barrier rail. Barrier rail bars R5 & R8 shall be cast in end bent concrete as shown on sheet No.18.

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

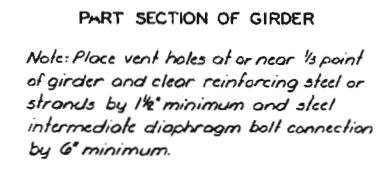
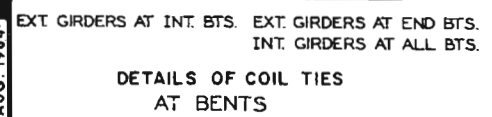


**NOTE:**

All dimensions are out to out.  
Where deflecting strands interfere with placement, some in-place bending may be necessary.  
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures stirrups and tie dimensions.  
Actual lengths are measured along centerline bar to the nearest inch.  
Minimum clearance to reinforcing shall be 1".  
All reinforcement shall be Grade 60.



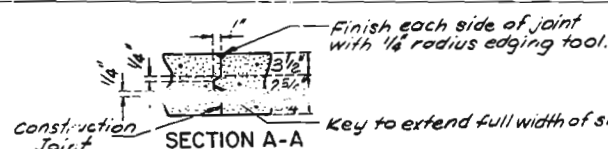
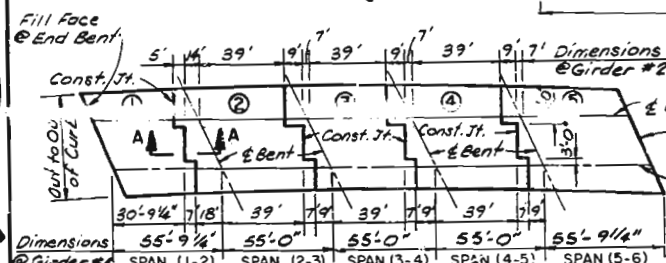
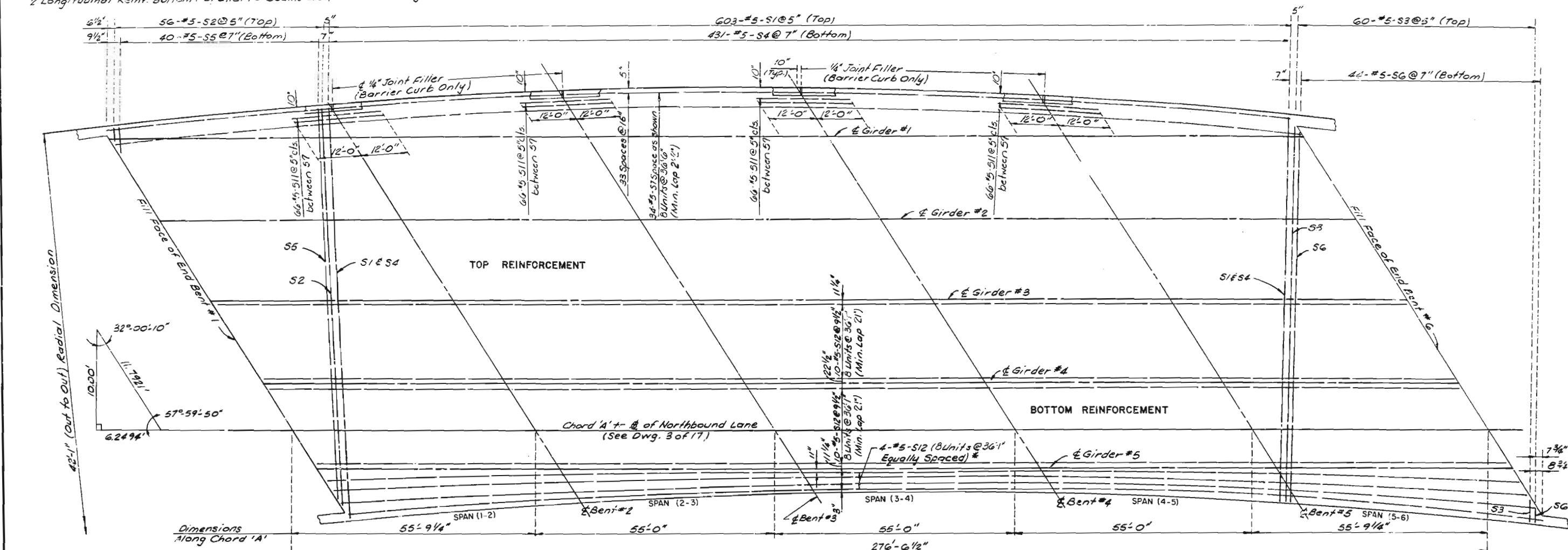
**NOTE:**  
Cost of  $\frac{3}{4}$ " coil tie rods placed in diaphragms is included in contract unit price for prestressed concrete members.  
Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until girders are erected and then replaced by coil tie rods.



Note: For location of coil ties, see  
Sheets No. 5, 11 & 13.



Placement Notes - Reinforcement  
 1. Transverse Reinf. Top & Bottom Perpendicular to Chord 'A'.  
 2. Longitudinal Reinf. Bottom Parallel to Beams except in Overhang \*



PLAN OF SLAB SHOWING REINFORCEMENT  
 (Cast-In-Place Conventional Forms)

Note: If girder camber is different from that shown in the Camber Diagram, it shall be necessary to adjust the slab haunches, increase the slab thickness or to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Note: Concrete in the slab haunches is included in the Estimated Quantities for Alternate Slabs as Class B2 Concrete. The slab is to be built parallel to grade and to the minimum thickness indicated.

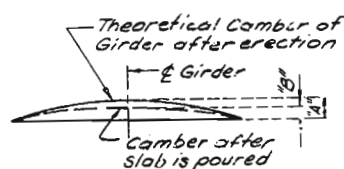
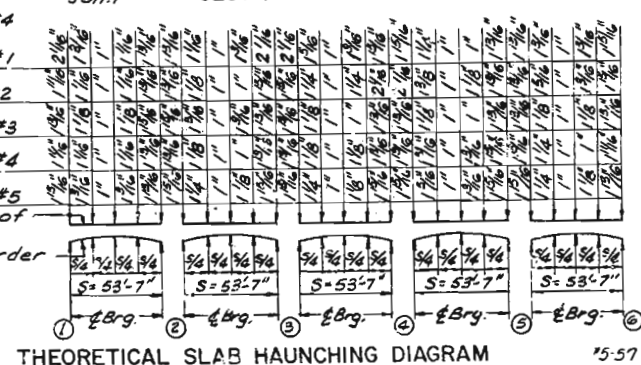
Basic Sequence	Sequence of Pours				
	1	2	3	4	5
Alternate 'A' Pours	1+2	3	4	5	End
Alternate 'B' Pours	1+2+3	4	5	End	
Alternate 'C' Pour	1+2+3+4+5	End			

SLAB POURING SEQUENCE

Notes: 1) The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours and shall pour and satisfactorily finish the slab pours at a rate of not less than 25 cubic yards per hour.

2) The diaphragm at all bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

3) Intermediate diaphragms within spans may be poured with construction joint between diaphragm and slab or monolithic with slab.

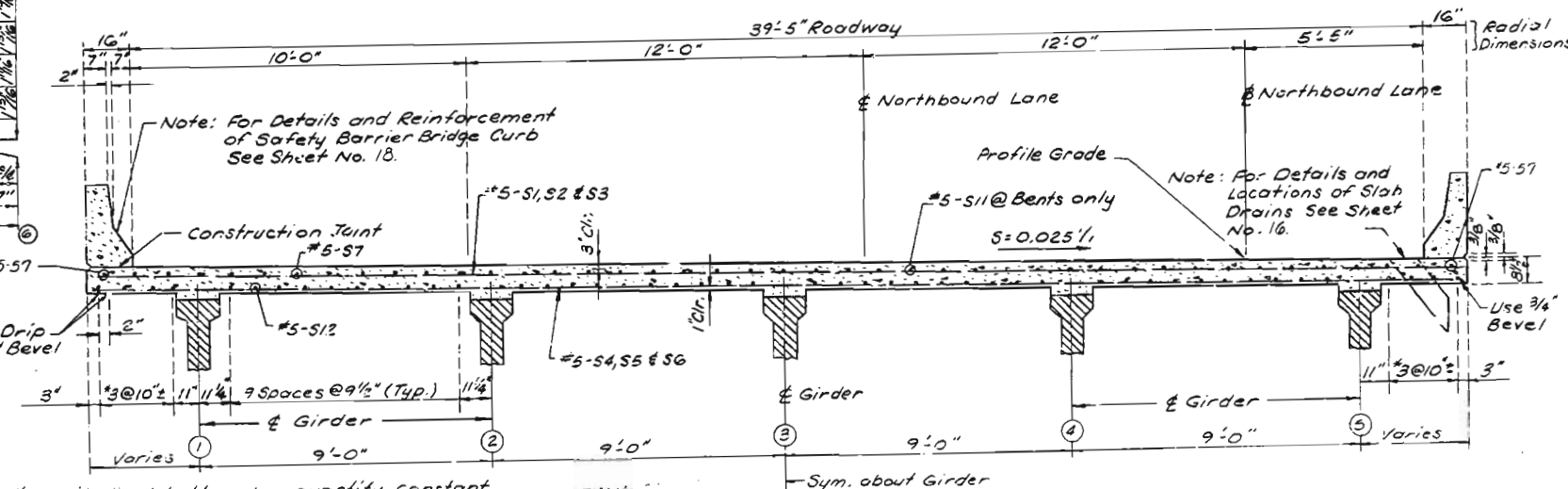


CAMBER DIAGRAM

Note: Camber at 1/4 point of girder is equal to 0.7125 camber at 1/2 Girder.

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

Girder	All Spans	"A"	"B"
Ext.	1/8"	3/4"	
Int.	1/8"	3/8"	



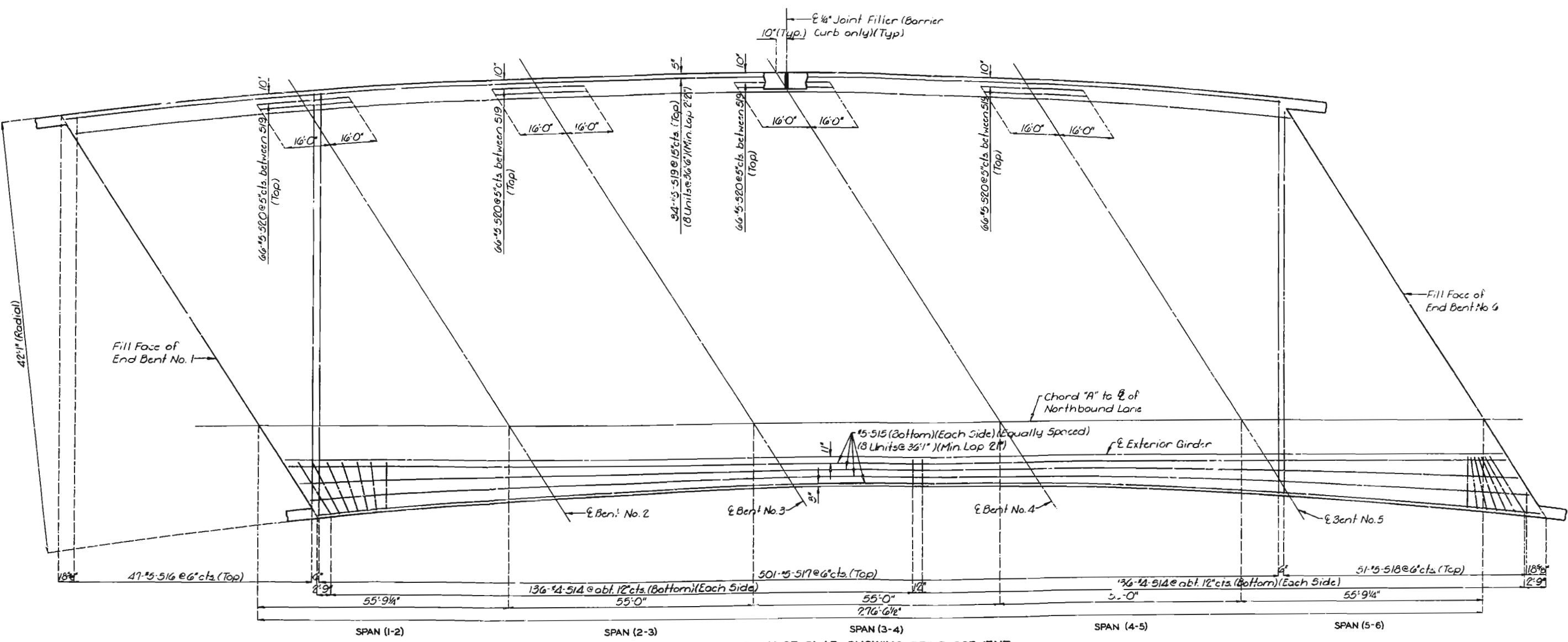
TYPICAL SECTION

JEFFERSON

COUNTY

A-2958





Note: 516, 517 & 518 bars shall be placed perpendicular to Chord "A".

PLAN OF SLAB SHOWING REINFORCEMENT  
(Precast Panel Forms)

423 274

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	53	

# GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8"x4".

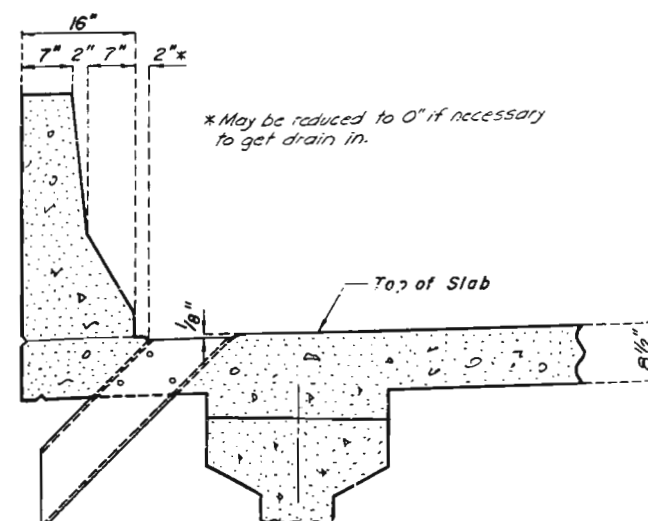
THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.

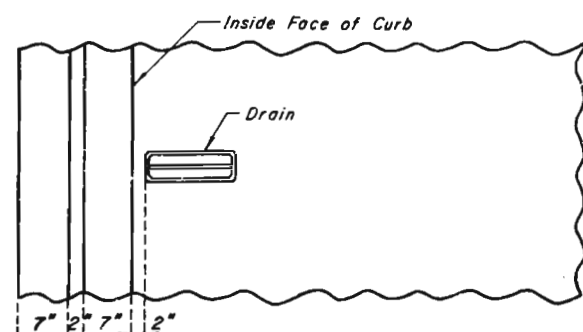
SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

THE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

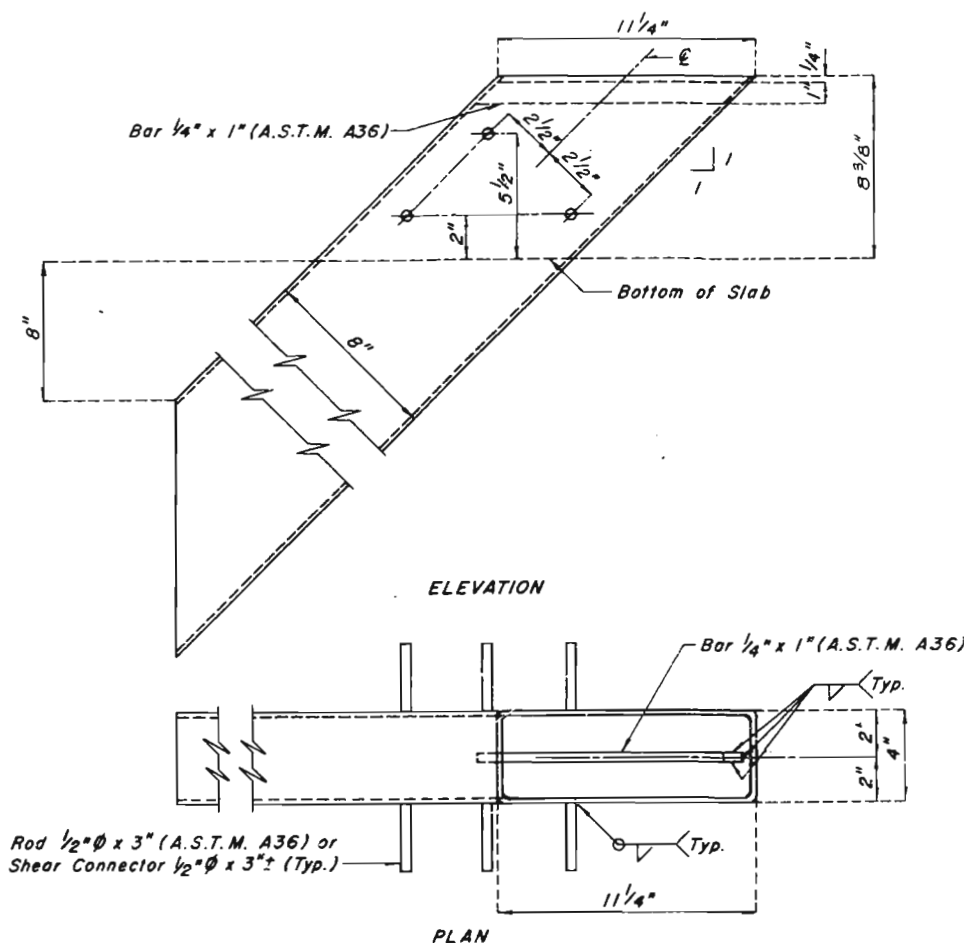
SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.



PART ELEVATION OF SLAB

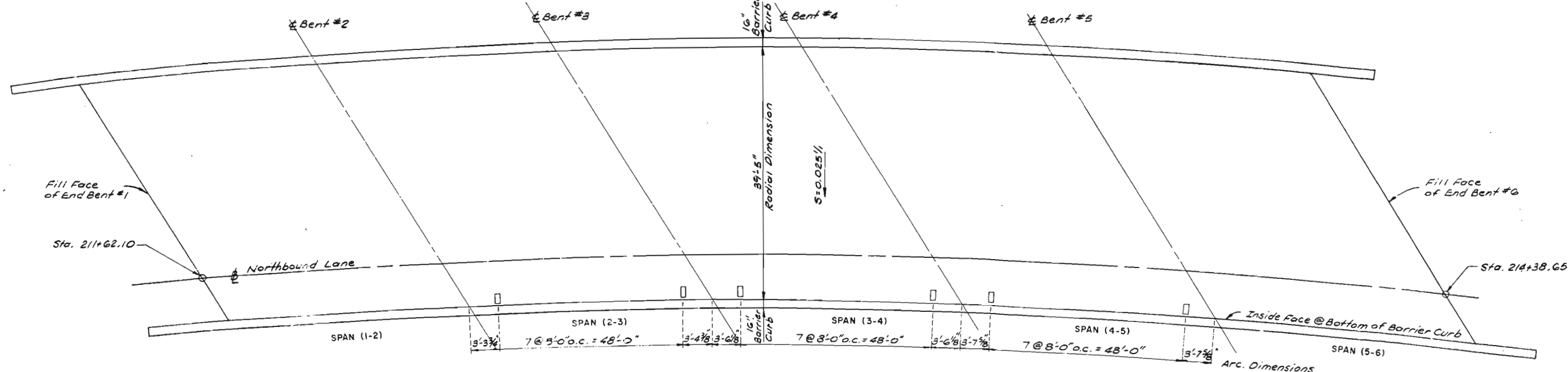


PART PLAN OF SLAB



PLAN

## SLAB DRAIN DETAILS



LOCATION OF SLAB DRAINS

Note: All longitudinal dimensions shown are horizontal dimensions at edge of slab.

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

DETAILED Dec. 1979  
CHECKED Jan. 1980

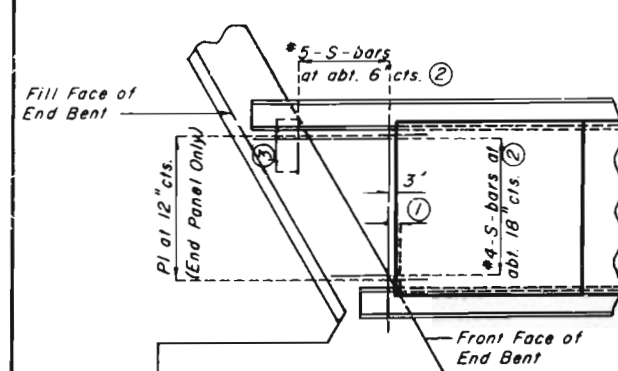
Sheet No. 16 of 21

JEFFERSON

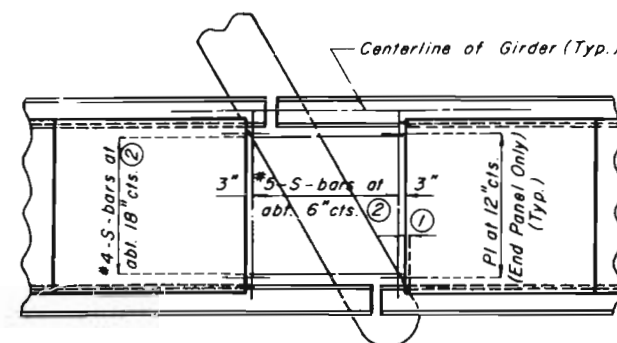
COUNTY

A-2958

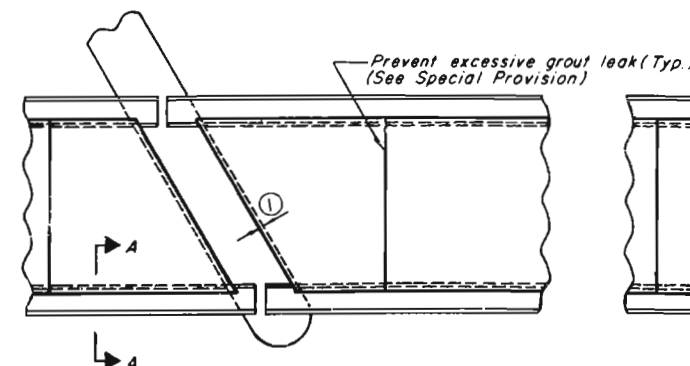
STATE	PROJ NO	SHEET NO
MO		54



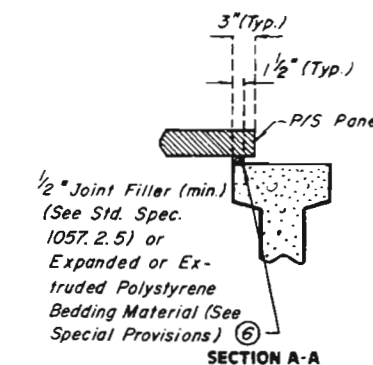
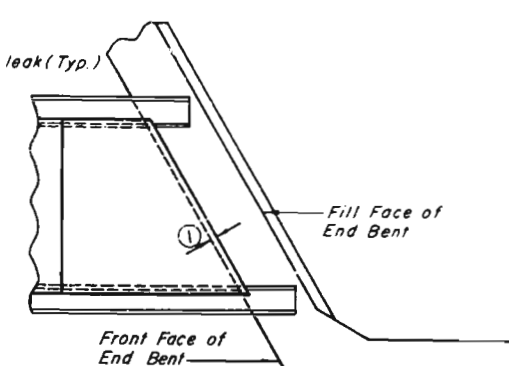
PANELS - SQUARED ENDS



PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PANELS - SKEWED ENDS



NOTE:  
USE SLAB HAUNCHING DIAGRAM ON SHEET NO. 14 FOR DETERMINING THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL WITHIN THE LIMITS NOTED BELOW.

#### GENERAL NOTES:

##### PRESTRESSED PANELS:

CONCRETE FOR PRESTRESSED PANELS SHALL BE CLASS A1 WITH  $F_c = 5,000$  PSI,  $F_t = 3,500$  PSI.

THE TOP SURFACE OF ALL PANELS SHALL RECEIVE A SCORED FINISH WITH A DEPTH OF SCORING OF 1/4 INCH PERPENDICULAR TO THE PRESTRESSING STRANDS IN THE PANEL (SEE SPECIAL PROVISIONS).

PRESTRESSING TENDON SHALL BE HIGH-TENSILE STRENGTH UNCOATED SEVEN-WIRE (7) LOW RELAXATION STRANDS FOR PRESTRESSED CONCRETE CONFORMING TO AASHTO M203 EXCEPT THAT NOMINAL DIAMETER OF STRAND = 3/8 INCH AND NOMINAL AREA = 0.085 SQ. IN. AND MINIMUM ULTIMATE STRENGTH = 23,000 LBS. (270 KSI). LARGER STRANDS MAY BE USED WITH THE SAME SPACING AND INITIAL TENSION.

INITIAL PRESTRESSING FORCE = 17.2 KIPS/STRAND.

THE METHOD AND SEQUENCE OF RELEASING THE STRANDS SHALL BE SHOWN ON THE SHOP DRAWINGS.

SUITABLE ANCHORAGE DEVICES FOR LIFTING PANELS MAY BE CAST IN PANELS PROVIDED THEY ARE SHOWN ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER. PANEL LENGTHS SHALL BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE SHOP DRAWINGS.

WHEN SQUARE END PANELS ARE USED AT SKEWED BENTS IT IS REQUIRED THAT THE SKEWED PORTION BE CAST FULL DEPTH. NO SEPARATE PAYMENT WILL BE MADE FOR THE ADDITIONAL CONCRETE AND REINFORCING REQUIRED.

MINIMUM JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL THICKNESS SHALL BE 1/2 INCH. THICKER JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL MAY BE USED ON ONE OR BOTH SIDES OF THE GIRDER TO REDUCE CAST-IN-PLACE CONCRETE THICKNESS, WITHIN TOLERANCES. NO MORE THAN 2 INCHES TOTAL THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL SHALL BE USED.

THE SAME THICKNESS OF JOINT FILLER MATERIAL SHALL BE USED UNDER ANY ONE EDGE OF ANY PANEL AND THE MAXIMUM CHANGE IN THICKNESS BETWEEN ADJACENT PANELS SHALL BE 1/4 INCH. THE POLYSTYRENE BEDDING MATERIAL MAY BE CUT TO MATCH HAUNCH HEIGHT ABOVE TOP OF FLANGE.

AT THE CONTRACTOR'S OPTION THE VARIATION IN SLAB THICKNESS OVER PRESTRESSED PANELS MAY BE ELIMINATED OR REDUCED BY INCREASING AND VARYING THE GIRDER TOP FLANGE THICKNESS. DIMENSIONS SHALL BE SHOWN ON THE SHOP DRAWINGS.

##### REINFORCING STEEL:

ALL DIMENSIONS ARE OUT TO OUT.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2 INCH UNLESS OTHERWISE SHOWN.

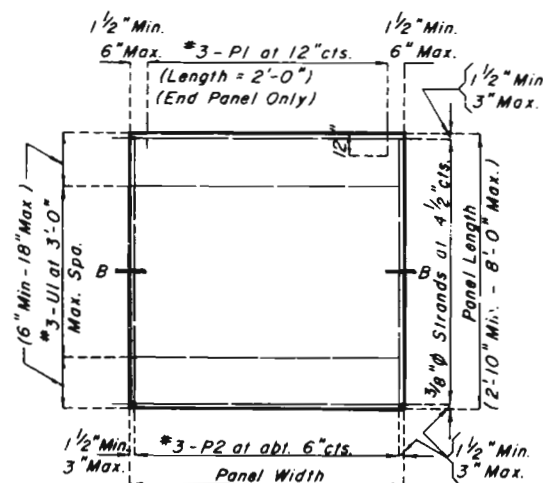
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE C.R.S.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, STIRRUP AND TIE DIMENSIONS.

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

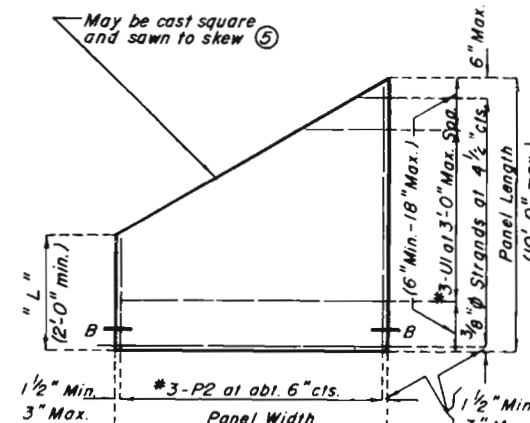
THE PRESTRESSED PANEL QUANTITIES ARE NOT INCLUDED IN THE TABLE OF ESTIMATED QUANTITIES FOR ALTERNATE SLABS.

IF U1 BARS INTERFERE WITH PLACEMENT OF SLAB STEEL, U1 LOOPS MAY BE BENT OVER AS NECESSARY TO CLEAR SLAB STEEL.

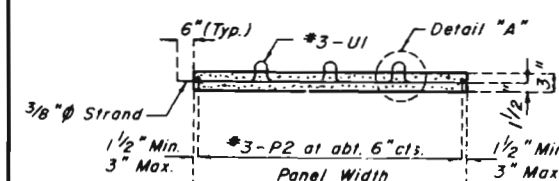
WELDED WIRE FABRIC OR WELDED DEFORMED BAR MATS PROVIDING A MINIMUM AREA OF REINFORCING PERPENDICULAR TO STRANDS OF 0.22 SQ. IN./FT. WITH SPACING PARALLEL TO STRANDS SUFFICIENT TO INSURE PROPER HANDLING MAY BE USED IN LIEU OF THE #3-P2 BARS SHOWN. WIRE OR BAR DIAMETER SHALL NOT BE LARGER THAN 0.375 INCHES.



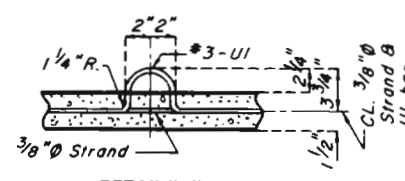
PLAN OF PRECAST PRESTRESSED PANEL



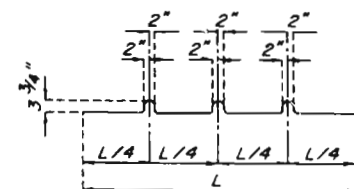
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION B-B

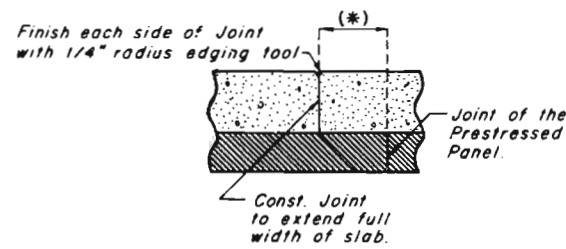


DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

#3-U1 BARS MAY BE ORIENTED AT RIGHT ANGLES TO LOCATION AND SPACING SHOWN. U1 BARS SHALL BE PLACED BETWEEN P1 BARS.



PERMISSIBLE CONST. JOINT

(\*) ADJUST THE PERMISSIBLE CONST. JOINT TO A CLEARANCE OF 6 INCHES MIN. FROM THE JOINTS OF THE PRESTRESSED PANELS.

#### NOTE:

① END PANEL TO BE DIMENSIONED 1 1/2 INCHES INSIDE FACE OF DIAPHRAGM.

② S-BARS SHOWN ARE BOTTOM STEEL IN SLAB BETWEEN PANELS AND USED WITH SKEWED END PANELS ONLY.

COST OF S-BARS SHALL BE INCLUDED IN PRICE BID FOR SLAB PER SQ. YD.

S-BARS ARE NOT LISTED IN BILL OF REINFORCING.

SUPPORT FROM DIAPHRAGM FORMS REQUIRED UNDER OPTIONAL SKEWED END UNTIL CAST-IN-PLACE CONCRETE HAS REACHED 3,000 PSI COMPRESSIVE STRENGTH.

③ EXTEND S-BARS 18 INCHES BEYOND FRONT FACE OF END BENT ONLY.

SLAB EXTERIOR GIRDER HAUNCH TO BE THE SAME AS CAST-IN-PLACE.

SLAB THICKNESS OVER PRESTRESSED PANELS VARIES DUE TO GIRDER CAMBER.

④ IN ORDER TO MAINTAIN MINIMUM SLAB THICKNESS IT MAY BE NECESSARY TO RAISE THE GRADE UNIFORMLY THROUGHOUT THE STRUCTURE. NO PAYMENT WILL BE MADE FOR ADDITIONAL LABOR OR MATERIALS REQUIRED FOR NECESSARY GRADE ADJUSTMENT.

⑤ ANY STRAND 2'-0" OR SHORTER SHALL HAVE A #4 REINFORCING BAR ON EACH SIDE OF IT CENTERED BETWEEN STRANDS. STRANDS 2'-0" OR SHORTER MAY THEN BE DEBONDED AT FABRICATOR'S OPTION.

⑥ ALL PANEL SUPPORT PADS SHALL BE GLUED TO THE GIRDER. WHEN SUPPORT THICKNESS EXCEEDS 1 1/2 INCH THE PADS SHALL BE GLUED TOP AND BOTTOM. THE GLUE USED SHALL BE THE TYPE RECOMMENDED BY THE PANEL SUPPORT PADS MANUFACTURER.

#### DETAILS OF PRECAST PRESTRESSED PANELS

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

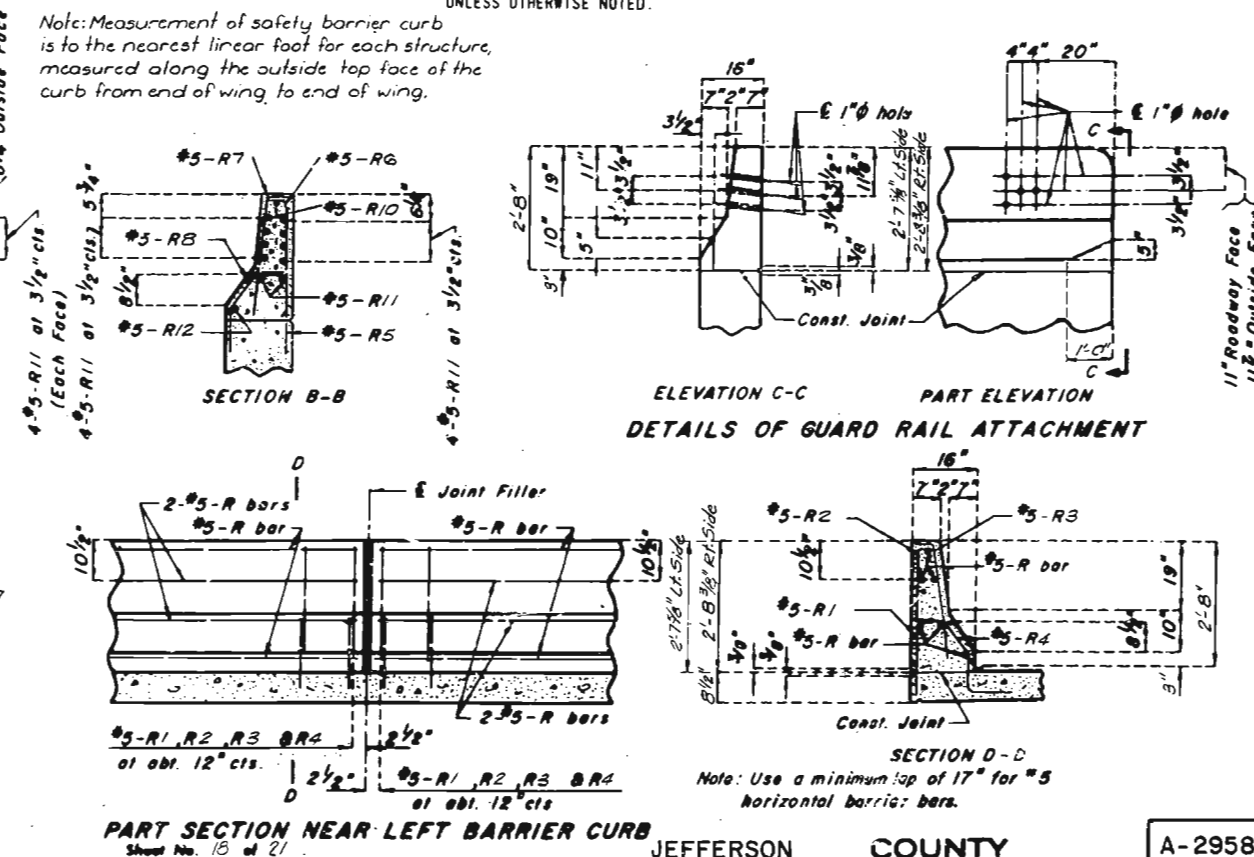
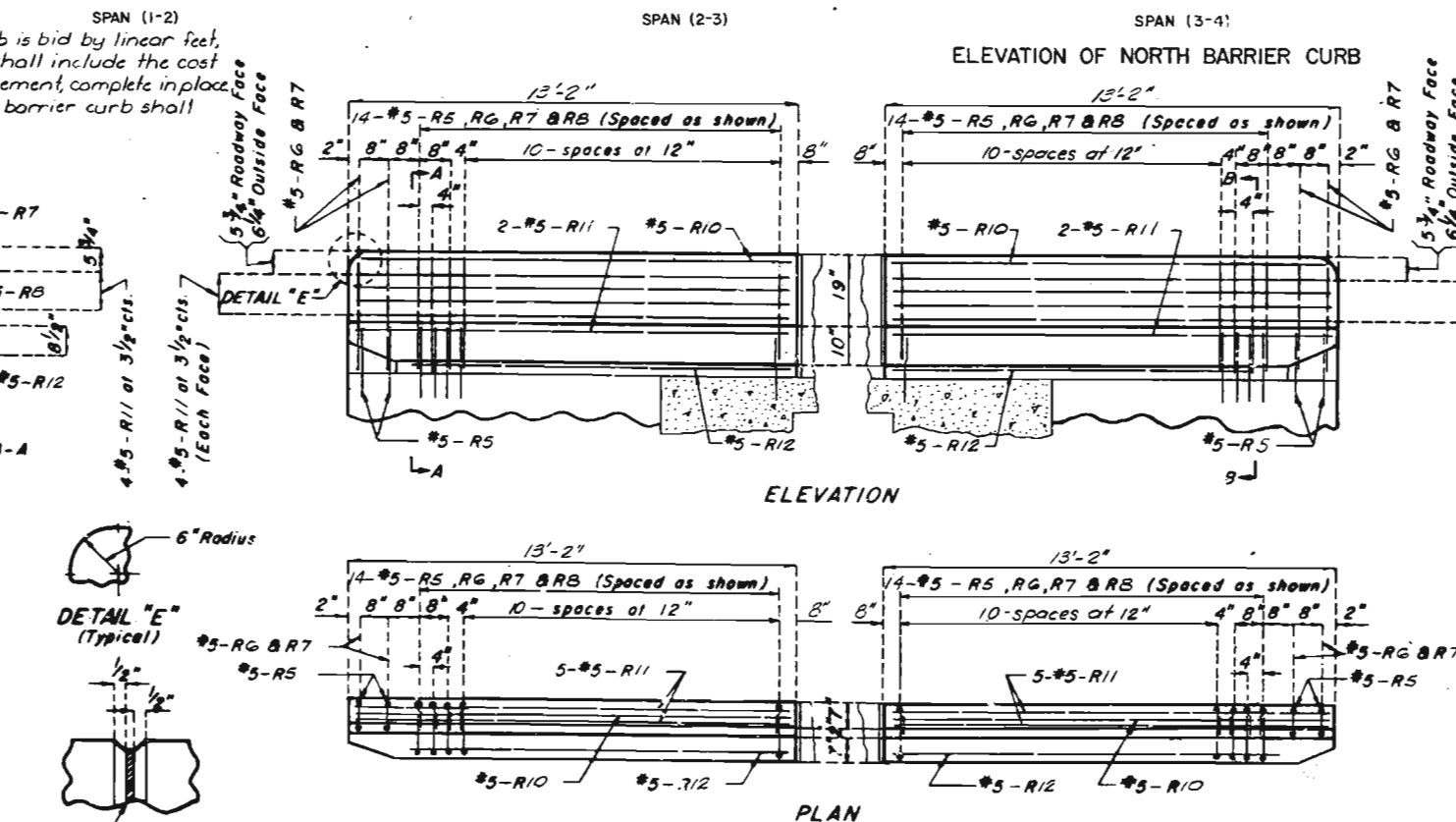
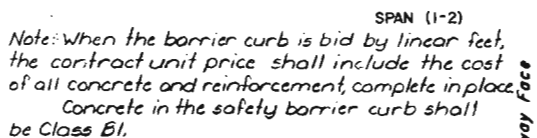
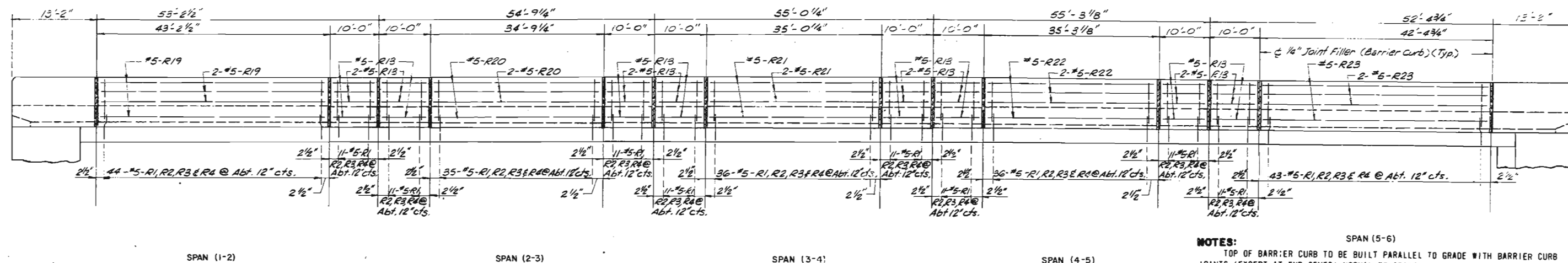
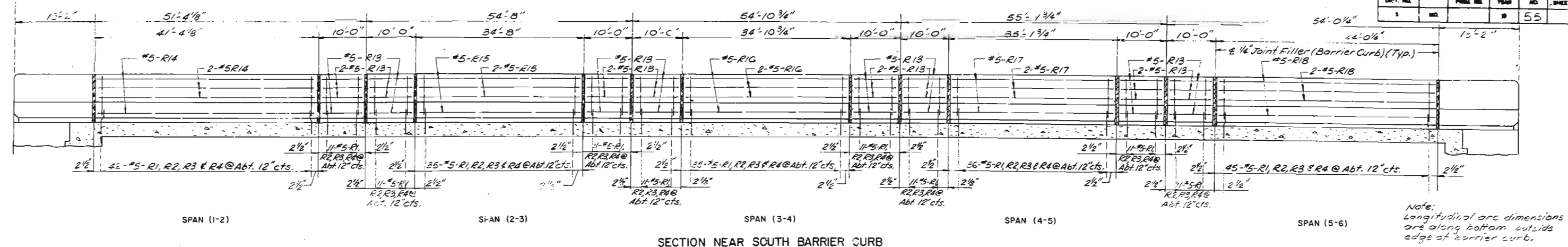
Sheet No. 17 of 21

JEFFERSON COUNTY

A-2958

PRESTRESS  
P/C-P/S PANEL (3")  
REVISED  
JULY 1983  
AUG. 1984  
CHECKED Mar. 1987  
DETAILED Mar. 1987

FED. ROAD DIST. NO.	STATE	FED. AID FUND NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MO.		19	55	



727-18

REVISED  
OCT. 1978  
MAY 1974  
STC 90.8

SHAPE 6  
SHAPE 7  
SHAPE 8  
SHAPE 9  
SHAPE 10  
SHAPE 11  
SHAPE 12  
SHAPE 13  
SHAPE 14  
SHAPE 15  
SHAPE 16  
SHAPE 17  
SHAPE 18  
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SHAPE 23  
SHAPE 24  
SHAPE 25  
SHAPE 26  
SHAPE 27  
SHAPE 28  
SHAPE 29  
SHAPE 30  
SHAPE 31  
SHAPE 32

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	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.
3	9 H64	Beam		17	X				29	2								29 2	29 2	298					
2	9 H65	Beam		17	X				24	3								25 6	25 6	173					
6	9 H66	Beam		20	X				43	6								43 6	43 6	888					
2	6 H67	Beam		20	X				43	6								43 6	43 6	131					
8	7 H68	Beam		7	X				3	11	2	11						9 5	9 5	154					
2	9 H69	Beam		17	X				25	5								26 8	26 8	272					
13	4 U48	Beam		11 S	X						6	2	11		6			3 11	3 9	33					
2	4 U49	Beam		11 S	X						6	2	8		6			3 8	3 6	7					
21	5 U50	Beam		13 S	X				2	11	2	9	2	11	2	9		12 3	11 11	261					
1	5 U51	Beam		13 S	X				2	10	2	9	2	10	2	9		12 1	11 9	12					
1	5 U52	Beam		13 S	X				1	9	2	9	1	9	2	9		9 11	9 7	10					
27	5 U53	Beam		13 S	X				2	11	3	1	2	11	3	1		12 11	12 7	354					
1	5 U54	Beam		13 S	X				2	10	3	1	2	10	3	1		12 9	12 5	13					
1	5 U55	Beam		13 S	X				1	9	3	1	1	9	3	1		10 7	10 3	11					
2	6 H70	Beam		20	X				43	6								43 6	43 6	131					
20	6 V47	Beam		20	X				1	9								1 9	1 9	53					
4	4 H71	Beam		20	X				4	0								4 0	4 0	11					
Int. Bent No. 5																									
30	9 D11	Footings		17	X				7	8								8 11	8 11	910					
12	6 D12	Footings		11	X						3	2		16	3	2		7 8	7 5	134					
12	6 D13	Footings		11	X						3	5		16	3	5		8 2	7 11	143					
30	9 V24	Columns		20	X				22	1								22 1	22 1	2253					
57	4 P11	Columns		16	X				2	9								9 6	9 6	362					
2	9 H43	Beam		17	X				27	9								29 0	29 0	197					
2	9 H44	Beam		17	X				29	2								30 5	30 5	310					
2	9 H45	Beam		17	X				22	5								24 11	24 11	169					
6	9 H46	Beam		20	X				43	6								43 6	43 6	888					
2	6 H47	Beam		20	X				43	6								43 6	43 6	131					
8	7 H48	Beam		7	X				3	11	2	11						9 5	9 5	154					
3	9 H49	Beam		17	X				24	3								25 6	25 6	260					
13	4 U28	Beam		11 S	X						6	2	11		6			3 11	3 9	33					
2	4 U29	Beam		11 S	X						6	2	8		6			3 8	3 6	5					
23	5 U30	Beam		13 S	X				2	11	2	9	2	11	2	9		12 3	11 11	286					
1	5 U31	Beam		13 S	X				2	10	2	9	2	10	2	9		12 1	11 9	12					
1	5 U32	Beam		13 S	X				1	9	2	9	1	9	2	9		9 11	9 7	10					
25	5 U33	Beam		13 S	X				2	11	3	1	2	11	3	1		12 11	12 7	323					
1	5 U34	Beam		13 S	X				2	10	3	1	2	10	3	1		12 9	12 5	13					
1	5 U35	Beam		13 S	X				1	9	3	1	1	9	3	1		10 7	10 3	11					
2	6 H50	Beam		20	X				43	6								43 6	43 6	131					
SUPERSTRUCTURE																									
End Bent No. 1																									
6	6 F1	Diaphragm		23 S					14	3	4		14		12		7	5 8	5 6	41					
5	6 F2	Diaphragm		14 S						5	3	2	7			2	2	1	4 9	7 10	59				
6	6 F3	Diaphragm		23 S					14	5	10		14		6.5		12.4	7	12	8 2	8 2	74			
5	6 F4	Diaphragm		21 S					2	7	4	3				2	2	1	4 9	6 10	6 6	49			
5	5 H41	Diaphragm		23					15			18		15		8		12		4 0	4 0	21			
4	6 H1	Diaphragm	E	20					48	8										48 8	48 8	293			
3	6 H2	Diaphragm		20					3	2										3 2	3 2	15			
3	6 H3	Diaphragm		23					15			15					1	1	7.5	3 6	2 6	11			
12	6 H4	Diaphragm		20					8	10										8 10	8 10	160			
3	6 H5	Diaphragm		20					48	8										48 8	48 8	220			
4	6 H6	Beam		20					27	1										27 1	27 1	163			
4	6 H7	Beam		20					24	7										24 7	24 7	148			
4	6 H8	Beam		20					48	8										48 8	48 8	293			
2	6 H9	Beam		20					48	8										48 8	48 8	147			
6	6 H10	Wing		20					11	7.5										11 8	11 8	105			
14	6 H11	Wing		20		V	2		11	4.5										11 5	11 5				
Incr. = 14.75 in.																									
6	6 H12	Wing		20					4	0										4 0	4 0	162			



# COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	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.
16	G H13	Wing	20					V 2	11	3										11	3	11	3			
		Incr. = 12.0 in.							4	3										4	3	4	3	136		
13	S U1	Beam	11	S						4	8	2	7	4	8					11	11	11	8	219		
17	S U2	Beam	11	S						5	4	2	7	5	4					11	3	3	0	231		
4	U3	Beam	13	S					2	7	2	9	2	7	2	9				11	5	11	2	50		
8	U4	Beam	13	S					2	7	3	0	2	7	3	0				11	11	11	8	32		
3	U5	Beam	11	S						3	7	2	7	3	7					9	9	9	7	19		
40	S U6	Diaphragm	E 11	S						4	3	2	7	4	3					11	1	11	0	459		
66	G U7	Diaphragm	E 19	S					4	3	4	9								9	0	8	11	334		
5	U26	Beam	13	S					2	7	3	5	2	7	3	5				12	9	12	6	42		
6	S V1	Diaphragm	20						4	8										4	8	4	8	29		
4	S V2	Diaphragm	20						5	1										5	1	5	1	31		
16	G V3	Wing	20					V 2	6	10.5										6	11	6	11			
		Incr. = 7.5 in.							2	6										2	6	2	6	113		
4	G V4	Wing	20						7	4										7	4	7	4	44		
4	G V5	Wing	20						8	5										8	5	8	5	51		
16	G V6	Wing	20					V 2	7	10.5										7	11	7	11			
		Incr. = 9.0 in.							2	7.5										2	8	2	8	127		
2	G T1	Wing	25						2	0	9	11	3	1			5	3	8	5	15	0	14	11	45	
2	G T2	Wing	25						2	0	10	7	3	1			6	4	8	6	15	8	15	7	47	
		End Bent No. 6																								
5	G F5	Diaphragm	23	S						14	5	11.5		14		7				12	8	4	8	4	63	
5	G F6	Diaphragm	21	S					2	7	6	5				2	2			16.5	9	0	8	8	65	
6	G F7	Diaphragm	23	S						14	3	4		14		12.4		6.5		12.4	6.5	5	8	5	7	50
5	G F8	Diaphragm	14	S						4	4	2	7				2	2		16.5	6	11	6	11	52	
5	S H51	Diaphragm	23							15		15		6		12		8		12	4	0	4	0	21	
6	G H14	Diaphragm	E 20						49	8										49	8	49	8	449		
3	G H15	Diaphragm	20						2	3										2	3	2	3	11		
3	G H16	Diaphragm	20						3	3										3	3	3	3	15		
12	G H17	Diaphragm	20						8	10										8	10	8	10	160		
3	G H18	Diaphragm	20						49	8										49	8	49	8	224		
4	G H19	Beam	20						24	6										24	6	24	6	148		
4	G H20	Beam	20						29	0										29	0	29	0	169		
4	G H21	Beam	20						49	8										49	8	49	8	299		
3	G H22	Beam	20						49	8										49	8	49	8	150		
6	G H23	Wing	20						11	6										11	6	11	6	104		
14	G H24	Wing	20					V 2	11	3										11	3	11	3			
		Incr. = 14.0 in.							4	3										4	3	4	3	163		
6	G H25	Wing	20						11	6										11	6	11	6	104		
16	G H26	Wing	20					V 2	11	3.5										11	4	11	4			
		Incr. = 12.5 in.							4	0										4	0	4	0	124		
16	S U8	Beam	11	S						4	6	2	7	4	6					11	7	11	4	189		
15	S U9	Beam	11	S						5	0	2	7	5	0					12	7	12	4	193		
12	U10	Beam	13	S					2	7	2	9	2	7	2	9				11	5	11	2	90		
9	U11	Beam	13	S					2	7	3	0	2	7	3	0				11	11	11	8	70		
1	U12	Beam	11	S						3	3	2	7	3	3					9	1	8	11	6		
36	S U3	Diaphragm	E 11	S						4	3	2	7	4	3					11	1	10	8	401		
67	G U14	Diaphragm	E 19	S					4	3	4	9								9	0	8	11	397		
3	U21	Beam	13	S					2	7	3	3.5	2	7	3	3.5				12	6	12	3	24		
6	S V7	Diaphragm	20						4	6										4	6	4	6	29		
4	S V8	Diaphragm	20						5	0										5	0	5	0	31		
4	G V9	Wing	20						7	6										7	6	7	6	46		
16	G V10	Wing	20					V 2	7	0.25										7	1	7	1			
		Incr. = 7.5 in.							2	6										2	6	2	6	115		
4	G V11	Wing	20						8	2.5										8	3	8	3	50		
16	G V12	Wing	20					V 2	7	8.25										7	9	7	9			
		Incr. = 8.25 in.							2	7										2	7	2	7	124		
2	G T3	Wing	25						2	0	10	0	3	0				5	5	8	5	15	0	14	11	45
2	G T4	Wing	25						2	0	10	5	3	0				6	1	8	5.5	15	5	15	4	46

# COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	N.T. 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.		
64	G H27	Int. Bent Diaph.		20					8	8									8	8	834						
64	G H28	Int. Bent Diaph.		20					9	8									9	8	414						
64	G H29	Int. Bent Diaph.		28					10	2	1								2	11	190						
32	G H30	Int. Bent Diaph.		23					15		13					8	12	2	9	2	9	92					
48	G H31	Int. Bent Diaph.		23					15		13	15	8	12	8	12	4	0	4	0	200						
32	G V13	Int. Bent Diaph.		20					4	0							4	0	4	0	134						
64	G U15	Int. Bent Diaph.	E	28	S						2	0	4	0	12				7	0	649						
192	G U16	Int. Bent Diaph.	E	28	S						2	0	4	0	12				7	0	610	377					
		C-I-P SLAB																									
603	S S1	Slab	E	20					41	9									41	9	41	9	2625				
56	S S2	Slab	E	20		V	1		40	3									40	3	40	3					
		Incr. = 8.375 in.								22									1	10	1	10	123				
60	S S3	Slab	E	20		V	1		40	4									40	4	40	4					
		Incr. = 7.75 in.							2	2									2	2	2	2	133				
431	S S4	Slab	E	20					41	9									41	9	41	9	1870				
40	S S5	Slab	E	20		V	1		40	1									40	1	40	1					
		Incr. = 11.625 in.							2	3									2	3	2	3	88				
44	S S6	Slab	E	20		V	1		40	1									40	1	40	1					
		Incr. = 10.625 in.							2	0									2	0	2	0	96				
272	S S7	Slab	E	20					36	6									36	6	36	6	1035				
264	S S1	Slab	E	20					24	0									24	0	24	0	640				
264	S S2	Slab	E	20					26	1									26	1	26	1	1445				
		BARRIER CURB																									
563	S R1	Barrier Curb	E	19	S					17		6							1	11	1	10	1077				
563	S R2	Barrier Curb	E	19	S				2	6		3.5							2	10	2	8	1525				
563	S R3	Barrier Curb	E	15	S				2	6		3.5							2	10	2	8	1525				
563	S R4	Barrier Curb	E	27	S						6		11		9		7	9	6.5	2	9	2	7	1522			
64	S R5	Barrier Curb	E	19	S				2	0		6							2	6	2	5	161				
64	S R6	Barrier Curb	E	19	S				2	6		3.5							2	10	2	8	178				
64	S R7	Barrier Curb	E	15	S				2	6		3.5							2	6		3	2	10	2	8	178
56	S R8	Barrier Curb	E	27	S						6		11		14.5			9	6.5	2	8	2	7	151			
4	S R10	Barrier Curb	E	20					12	7										12	7	12	7	52			
40	S R11	Barrier Curb	E	20					12	11										12	11	12	11	539			
4	S R12	Barrier Curb	E	20					11	10										11	10	11	10	44			
98	S R13	Barrier Curb	E	20					9	9										9	9	9	9	397			
6	S R14	Barrier Curb	E	20					41	1										39	0	39	0	257			
6	S R15	Barrier Curb	E	20					34	5										34	5	34	5	216			
6	S R16	Barrier Curb	E	20					34	8										34	8	34	8	217			
6	S R17	Barrier Curb	E	20					34	11										34	11	34	11	219			
6	S R18	Barrier Curb	E	20					43	9										39	11	39	11	272			
6	S R19	Barrier Curb	E	20					42	11										39	3	39	2	268			
6	S R20	Barrier Curb	E	20					34	6										34	6	34	6	216			
6	S R21	Barrier Curb	E	20					34	9										34	9	34	9	218			
6	S R22	Barrier Curb	E	20					35	0										35	0	35	0	220			
6	S R23	Barrier Curb	E	20					42	1										40	1	40	1	223			



427 280

STD. 90.8.5  
MAY 1974  
REVISED  
MAY 1984

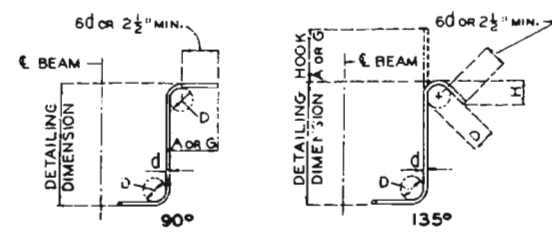
DETAILED May 1985  
CHECKED May 1985

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

Sheet No. 21 of 21

JEFFERSON COUNTY

A-2958



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"

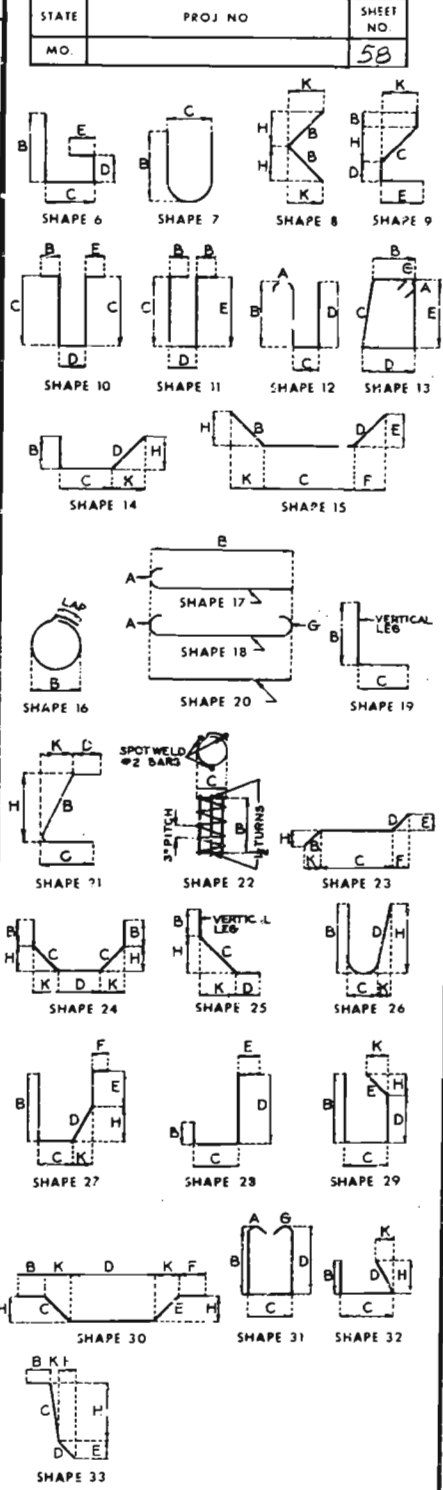
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

END HOOK DIMENSIONS				
BAR SIZE	180° HOOKS			
	GRADE 40		GRADE 60	
	A OR G	J	A OR G	J
#3	5"	2-3/4"	5"	3"
#4	6"	3-1/2"	6"	4"
#5	7"	4-1/2"	7"	5"
#6	8"	5-1/4"	8"	6"
#7	9"	6-1/4"	10"	7"
#8	10"	7"	11"	8"
#9	12"	8"	15"	11-1/4"
#10	13"	9"	17"	12-3/4"
#11	14"	10"	19"	14-1/4"
#14	21-2"	20-1/2"	21-2"	20-1/2"

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 1/4".  
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

# COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIABLES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
									B	C	D	E	F	H	K								
		PRECAST PANEL SLAB																					
544	4514	SLAB		E20				V 4	2	0										2	0	2	0
		Incr. = 0.125 in.							3	9										3	9	3	9
64	5515	SLAB		E20					36	1										36	1	36	1
47	5516	SLAB		E20				V 1	2	1										2	1	2	1
		Incr. = 10.125 in.							40	8										40	8	40	8
501	5517	SLAB		E20					41	9										41	9	41	9
51	5518	SLAB		E20				V 1	2	1										2	1	2	1
		Incr. = 9.375 in.							41	1										41	1	41	1
272	5519	SLAB		E20					36	6										36	6	36	6
264	5520	SLAB		E20					32	0										32	0	32	0



## BENDING DIAGRAMS

# MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	MAF-21-2(25)	19	38	
SEC./SUR.		TWP 43N RGE. 5E			

## GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. - 1983 + Interims thru 1985  
 Load Factor Design  
 Design Loading:  
 HS20-44 1.5/sq. ft. Future Wearing Surface  
 Earth 120 lb/cu. ft. Equivalent Fluid Pressure 30 lb/cu. ft.  
 Superstructure: Simply supported non-composite for Dead Load; Continuous composite for Live Load.

Design Unit Stresses:  
 Class B Concrete (Substructure)  $f'_c = 3,000$  psi  
 Class B1 Concrete (Safety Barrier Curb)  $f'_c = 4,000$  psi  
 Class B2 Concrete (Superstructure except Prestressed Girders and Safety Barrier Curb)  $f'_c = 4,000$  psi  
 Reinforcing Steel (Grade 60)  $f_y = 60,000$  psi  
 Steel Pile  $f_b = 9000$  psi  
 For Prestressed Girder Stresses, see Girder Sheet.

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

All joint filler shall meet the requirements of Std. Spec. 10572.2 except as noted.

Bearings shall be 60 durometer Neoprene Pads.

## QUANTITIES

ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	80.57	80.57
Class 2 Excavation	Cu. Yd.	202	202
Structural Steel Piles (10")	Lin. Ft.	721	721
Class B Concrete	Cu. Yd.	246	246
Slab on Concrete I-Girders, see Spec. Prov.	Sq. Yd.	1293	1293
Safety Barrier Curb	Lin. Ft.	0	0
Laminated Neoprene Bearing Pads	Each	50	50
Prestressed Concrete I-Girders (55' Span)	Each	25	25
Reinforcing Steel (Grade 60)	Lb.	32530	32530
Slab Drains	Each	21	21
Vertical Drain at End Bents	Each	2	2
Slipform Safety Barrier Curb	Lin. Ft.	593	593
Test Holes	Ft.	32	32
Class II Excavation +50%	Cu. Yd.	17	17

All reinforcement in the end bents is included with superstructure quantities.  
 All concrete between upper and lower construction joints in end bents is included in the estimated superstructure quantities for Slab on Concrete I-Girders, see Spec. Prov.

## QUANTITIES FOR Slab

TYPE OF SLAB	REINF. (LBS.) EPOXY	PLAIN	CONC. (CU. YD.)
Precast Panel Forms	51,540	7930	377.8 *

Note: The table of Estimated Quantities for Alternate Slabs represents the quantities used by the state in preparing the cost estimate for concrete slabs. Variations may be encountered in these estimated quantities but these variations cannot be used for an adjustment in the Contract Unit Price per square yard of Alternate Slab used.

See Special Provisions for alternate methods of forming slab.  
 Precast panel quantities based on skewed end panels.  
 \* Based on minimum top flange thickness and minimum joint filler thickness.

Note: Cost of furnishing, fabricating and installing Neoprene Bearing Pads complete in place, will be paid for at the contract unit price for Laminated Neoprene Pads per each.

B.M. Northwest corner of bridge on top of Barrier Wall ("D" Chisel Square)  
 Elev. 602.54

## BRIDGE OVER ROCK CREEK

STATE ROAD FROM ROUTE 141 TO OTTO

ABOUT 4.2 MILES NORTH OF OTTO

PROJECT NO. MAF-21-2(25)

STA. 211+62.10 (#NBL)

JOB NO. 6-U-21-17

RTE. 21 NBL

JEFFERSON

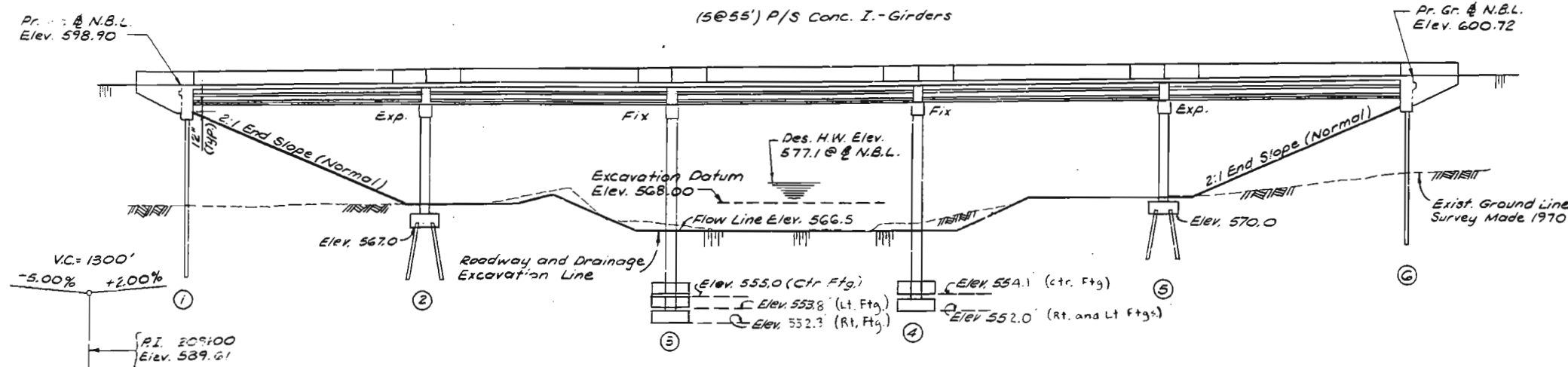
COUNTY

DATE 6/15/87

STD.

STD. 706.33

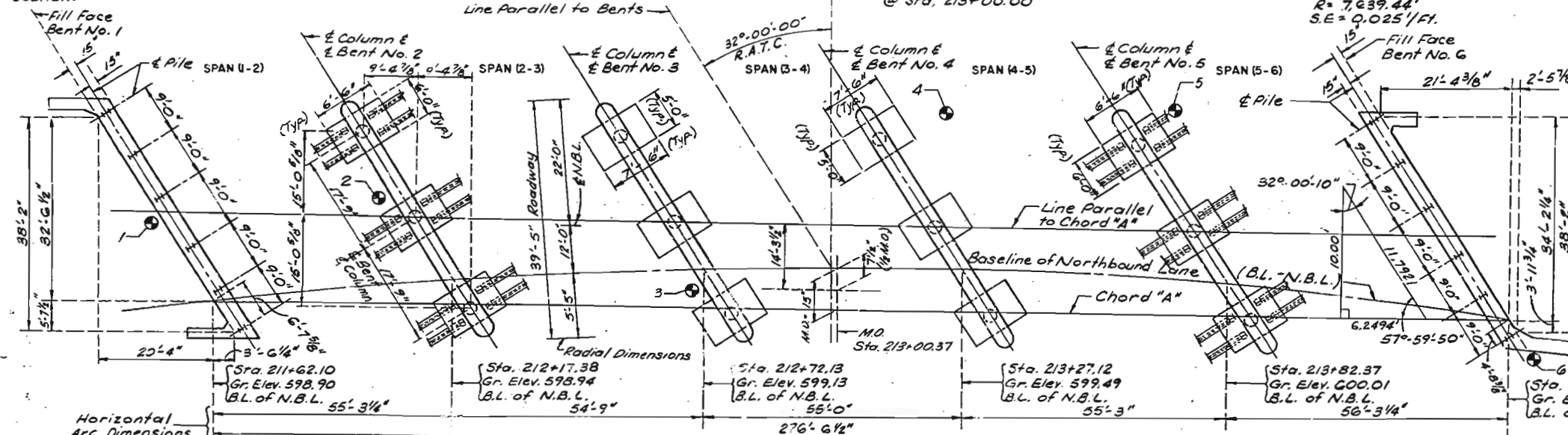
A-2958



## GENERAL ELEVATION

Note: Compacted roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25' in back of the fill face of the end bents before piles are driven for any bents falling within the embankment section.

Note: For Boring Data, See Sheet 2.  
 \* Indicates Boring Location.



## PLAN

HYDROLOGIC DATA	
Drainage Area	= 6.7 sq. mi. (Hilly)
Des. Discharge	= 7380 c.f.s.
Des. H.W. Elev.	= 577.1
Frequency	= 50 yrs.
BASIC FLOOD DATA	
Design Discharge	= *
H.W. Elev.	= *

\* Basic flood exceeded by flood of record.

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

PILE & FOOTING DATA		1	2	3	4	5	6
BEARING PILE	BENT NO.	1	2	3	4	5	6
	Pile Type & Size	HPI0X42	HPI0X42			HPI0X42	HPI0X42
	Number	6	12			12	6
	Average Length	Ft.	38	12		13	33
	Design Bearing	Tons	52	53		53	52
SPREAD FOOTING	Hammer Energy Required	Ft./Lbs.	11,800	11,900		11,900	11,800
	Foundation Material			Rock	Rock		
	Design Bearing	Tons/Sq. Ft.			9.5	9.1	

Minimum energy requirement of hammer based on plan length and design bearing value of piles.  
 All piles shall be driven to practical refusal.

Sheet No. 1A of 21.

DESIGNED Dec. 1979 By J.D.  
 DETAILED Dec. 1979 By J.M.  
 CHECKED JAN. 1980 By K.R.B.

## LOCATION SKETCH



416 282

STD. 19.5  
JAN. 1965  
REVISED  
JUNE 1974

DETAILED Dec. 1979  
CHECKED Jan. 1980

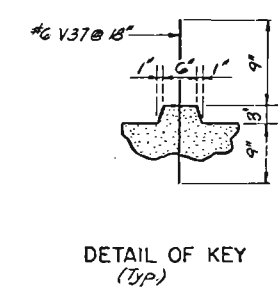
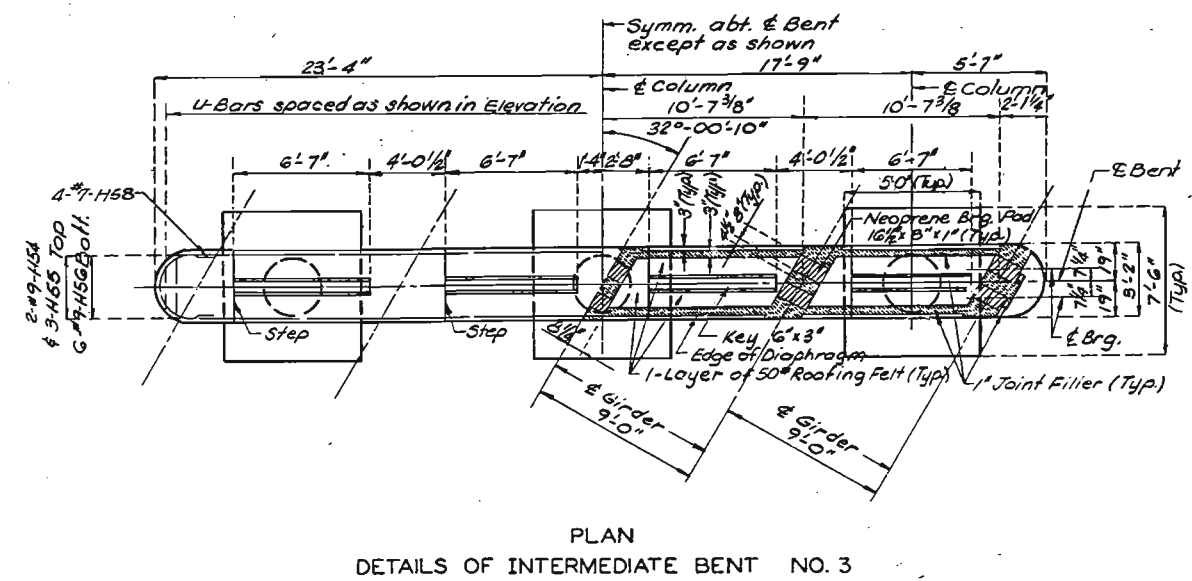
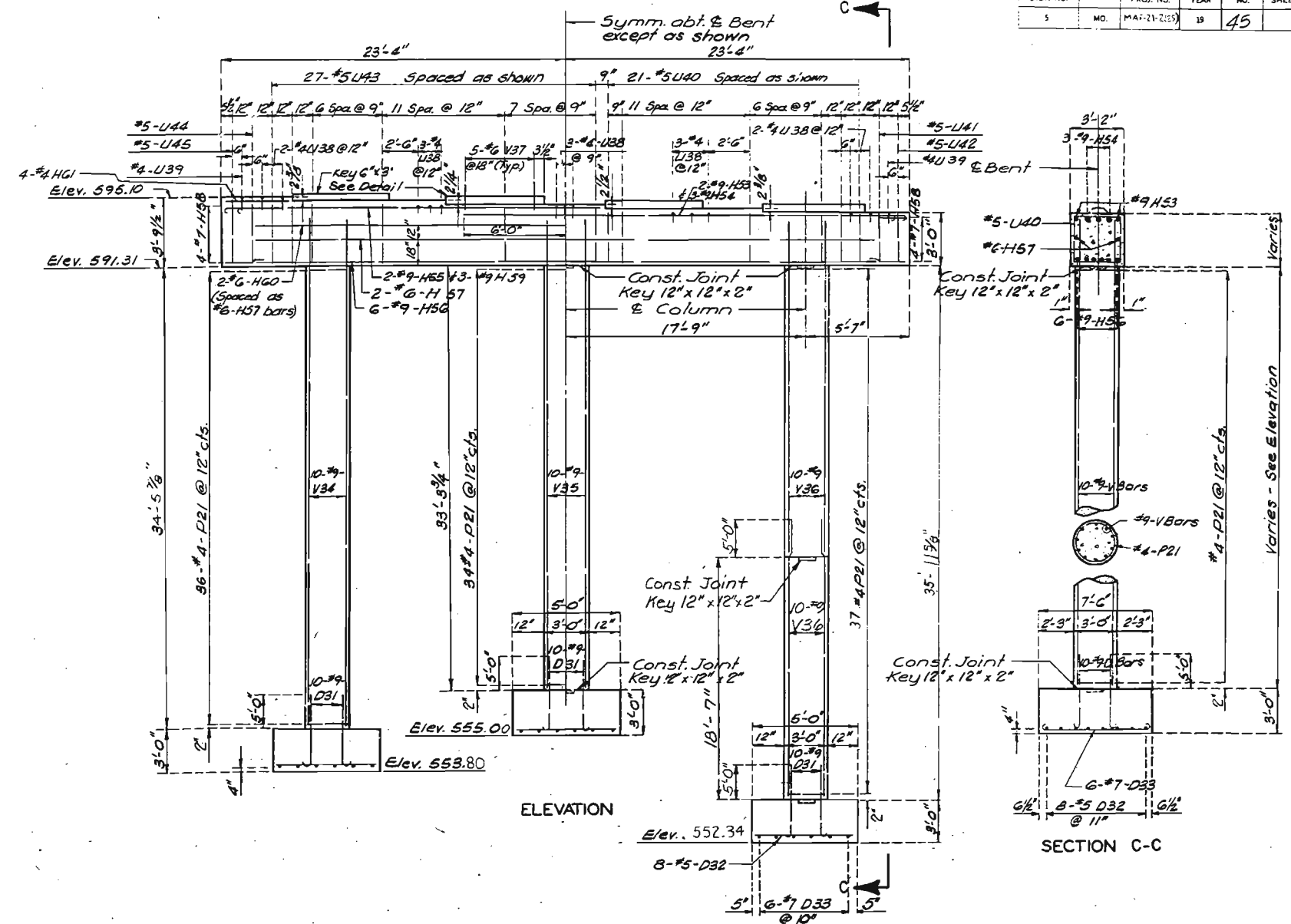
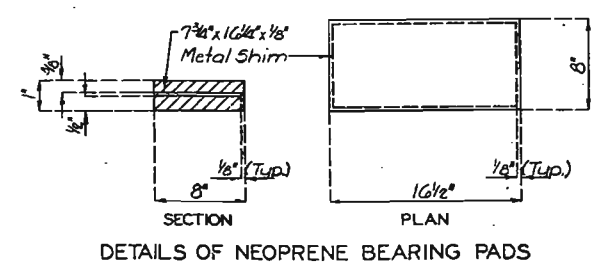
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 8A of 21

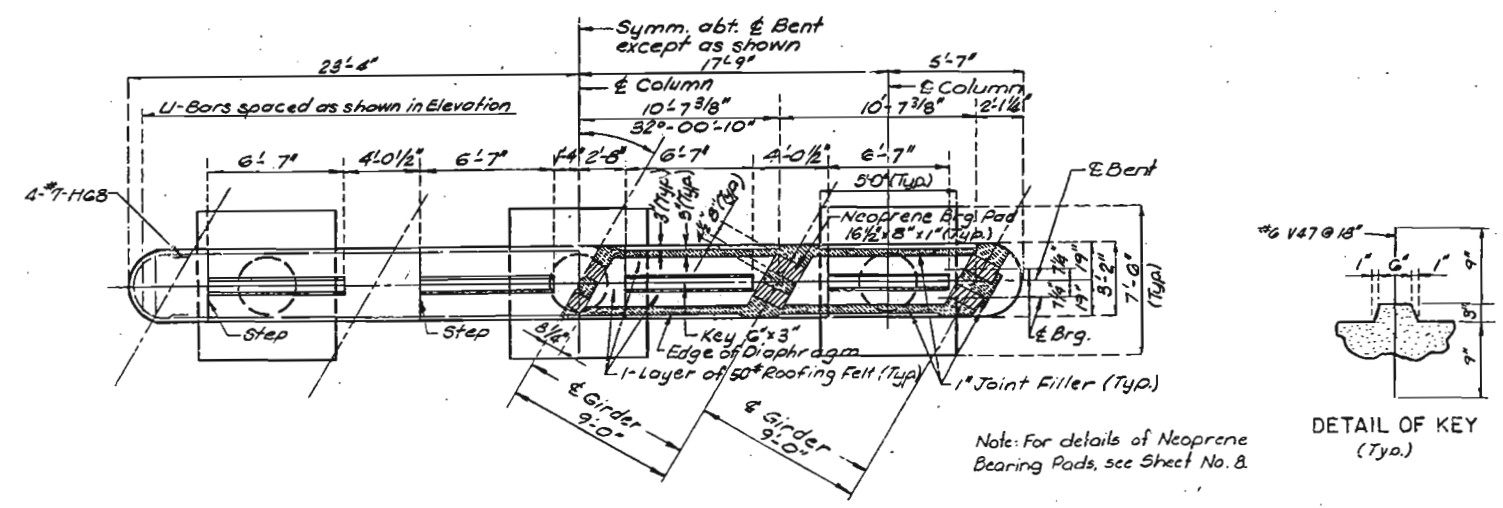
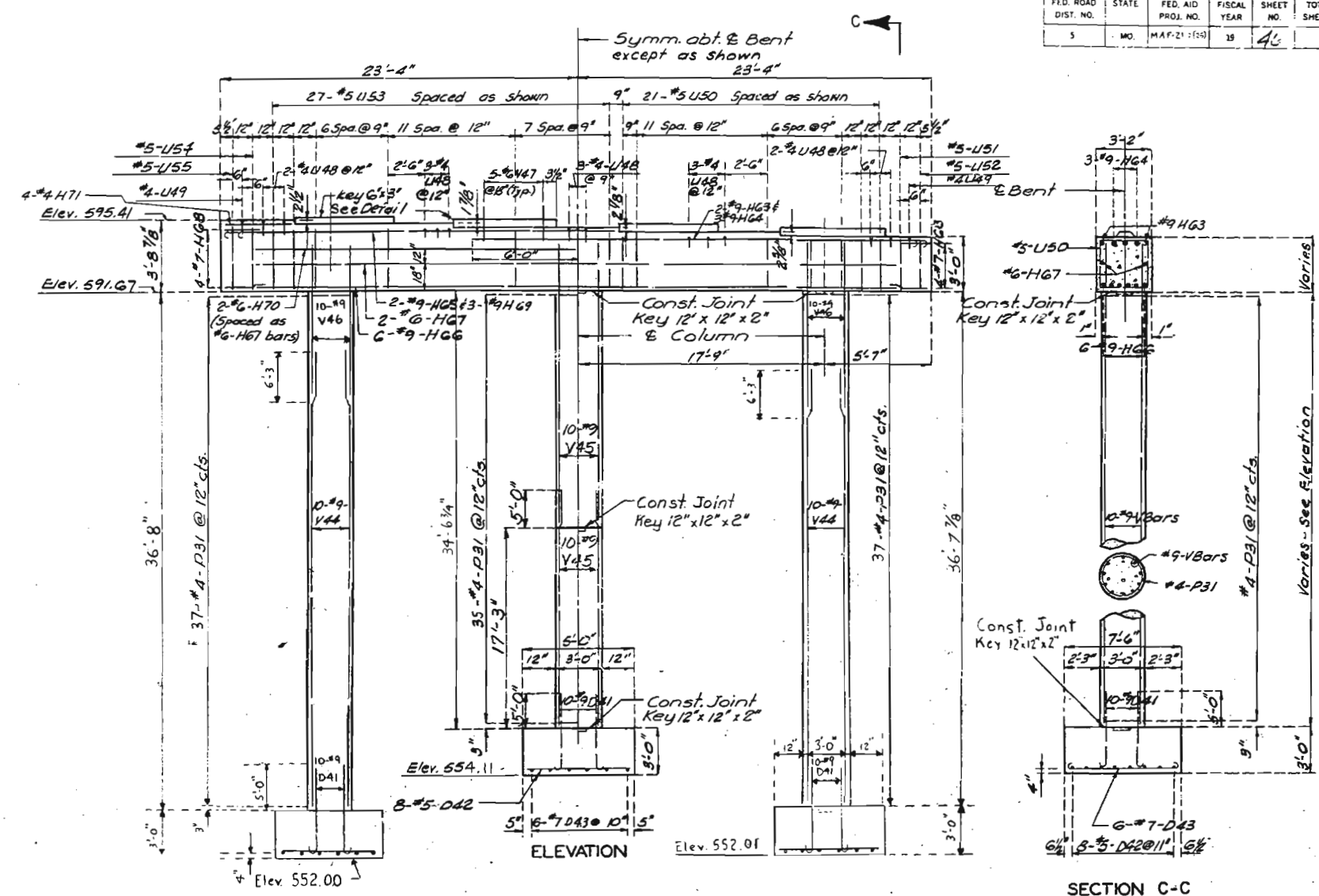
JEFFERSON COUNTY

A-2958

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	MAF-21-2(25)	19	45	



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	MAP-21 (1980)	19	46	



PLAN  
DETAILS OF INTERMEDIATE BENT NO. 4

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

Sheet No. 9A of 21

JEFFERSON COUNTY

A-2958

STD. 19.5  
JAN. 1965  
REVISED  
JUNE 1974  
471 283

DETAILED Dec. 1979  
CHECKED Jan. 1980

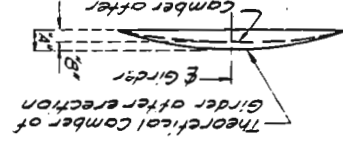
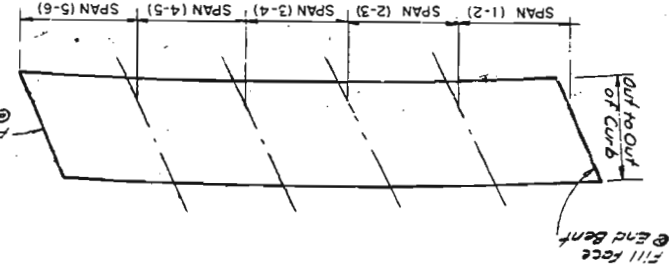
204

CHECKED Jan. 1950  
Dec. 1979

- Notes: 1) The contractor shall furnish an approved rebar order to rebar the set of the concrete to 2.5 hours and shall pour and set the concrete to 2.5 hours and a rate of not less than 25 cubic yards per hour of 2 hours before the slab is poured.
- 2) The diaphragm of all bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.
- 3) Intermediate diaphragms within spans may be poured with construction joint between diaphragm and slab or monolithic with slab.

SLAB POURING SEQUENCE

Sequence of Pours	
Direction	1 + 2 + 3 + 4 + 5
End to End	

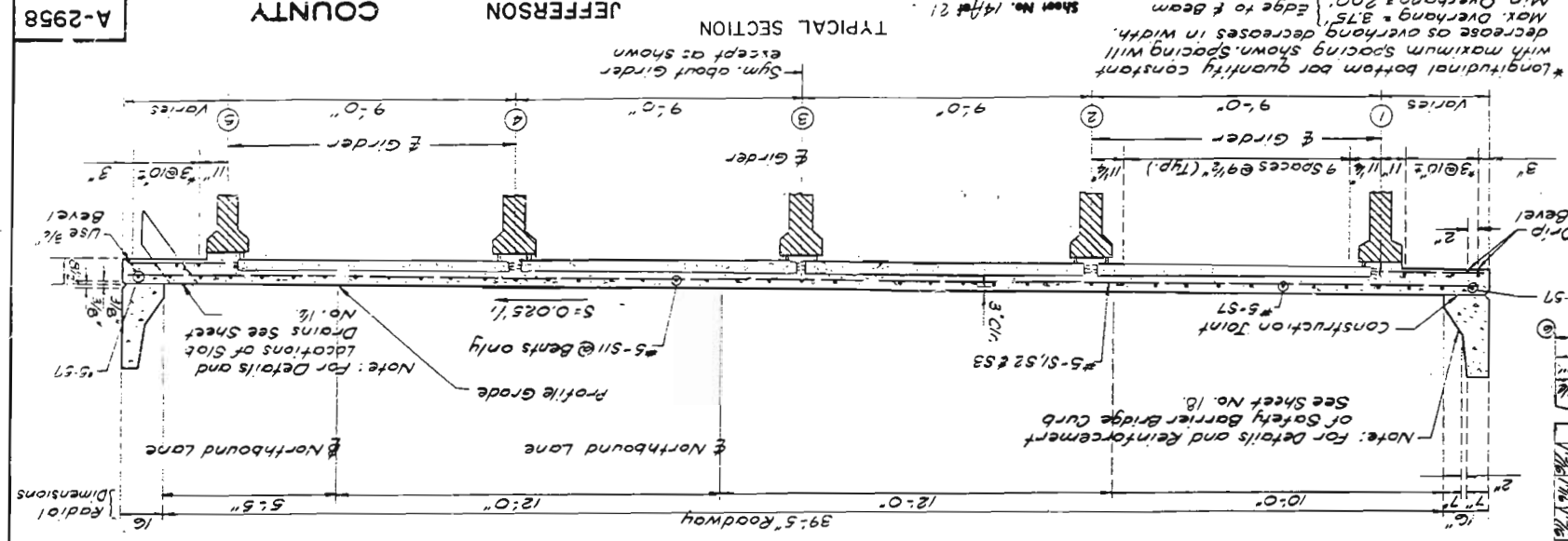


CAMBER DIAGRAM	
All Spans	1/8" 3/4" 5/8"
Ext.	1/8" 3/4" 5/8"
Int.	1/8" 3/4" 5/8"

Note: Camber of 1/4 point of girder is equal to 0.7125 camber of 1/2 girder.

THEORETICAL SLAB HAUNCHING DIAGRAM

Girder #	Span	Top of Girder	Bottom of Slab	Top of Slab	Bottom of Slab
1	1-2	1/8"	1/8"	1/8"	1/8"
2	2-3	1/8"	1/8"	1/8"	1/8"
3	3-4	1/8"	1/8"	1/8"	1/8"
4	4-5	1/8"	1/8"	1/8"	1/8"
5	5-6	1/8"	1/8"	1/8"	1/8"



Note: If girder camber is shown in the camber diagram, it shall be necessary to adjust the estimated quantities in the camber diagram, if it shall be necessary to adjust the slab haunches in the slab haunches is included in the camber diagram, increase the slab thickness or to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

\*Longitudinal bottom bar quantity constant with maximum spacing shown. Spacing will decrease as overhang decreases in width. Max. Overhang = 3.75' Edge to f beam M.N. Overhang = 2.00'

FED. ROAD	STATE	FED. AID	PROJ. NO.	YEAR	SHEET	TOTAL
5	12	12	12	12	12	12



COMPLETE BILL OF REINFORCING STEEL																
NO. REQD.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							
									B	C	D	E	F	H	K	NOMINAL
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
		SUBSTRUCTURE														
		Int. Bent No. 2														
30	9 D1	Footings		17	X			7	8							5 11 3 11 910
12	6 D2	Footings		17	X				5	2		16	3	2		7 8 7 5 134
12	6 D3	Footings		17	X				5	5		16	3	5		8 2 7 11 143
30	9 V14	Columns		20	X			23	10							23 10 23 10 2431
65	2 F1	Columns		16	X			2	9							9 6 9 6 400
2	4 H41	Beam		20	X			21	9	2	9					21 9 21 9 65
2	9 H44	Beam		17	X			22	6 3/4							22 10 23 10 102
5	9 H35	Beam		17	X			22	5							25 6 25 6 260
6	9 H36	Beam		20	X			43	6							43 6 43 6 888
2	6 H37	Beam		20	X			43	6							43 6 43 6 131
8	7 H38	Beam		7	X			3	11	2	11					9 5 9 5 154
2	9 H39	Beam		17	X			27	9							29 0 29 0 197
13	4 U18	Beam		11	S					6	2	11		6		3 11 3 9 23
2	4 U19	Beam		11	S					6	2	8		6		3 2 3 6 5
23	6 U20	Beam		13	S			2	11	2	9	2	11	2	9	12 3 11 11 286
1	5 U21	Beam		13	S			2	10	2	9	2	10	2	9	12 1 11 9 13
1	5 U22	Beam		13	S			1	9	2	9	1	9	2	9	9 11 9 7 10
25	5 U23	Beam		13	S			2	11	3	2	2	11	3	2	13 1 12 9 332
1	5 U24	Beam		13	S			2	10	3	2	2	10	3	2	12 11 12 7 13
1	5 U25	Beam		13	S			1	9	3	2	1	9	3	2	10 9 10 5 11
3	9 H40	Beam		17	X			24	2							30 5 30 5 310
4	4 H51	Beam		20	X			2	6							2 6 2 6 7
		Int. Bent No. 3														
30	9 D31	Footings		7	X			7	5							5 11 3 11 910
24	5 D32	Footings		20	X			4	9							4 9 4 9 119
18	7 D33	Footings		13	X			7	3							8 11 8 11 328
10	9 V34	Columns		20	X			38	1							38 1 38 1 1295
10	9 V35	Columns		20	X			36	1							36 1 36 1 1227
20	9 V36	Columns		20	X			23	7							23 7 23 7 1604
107	4 P21	Columns		16	X			2	9							9 6 9 6 679
2	9 H53	Beam		17	X			27	9							29 0 29 0 197
3	9 H54	Beam		17	X			29	2							30 5 30 5 310
2	9 H55	Beam		17	X			24	3							25 6 25 6 173
6	9 H56	Beam		20	X			43	6							43 6 43 6 888
2	6 H57	Beam		20	X			43	6							43 6 43 6 131
8	7 H58	Beam		7	X			3	11	2	11					9 5 9 5 154
3	9 H59	Beam		17	X			25	5							25 8 26 3 272
13	4 U38	Beam		11	S					6	2	11		6		3 11 3 9 23
2	4 U39	Beam		11	S					6	2	8		6		3 8 3 6 5
21	5 U40	Beam		13	S			2	11	2	9	2	11	2	9	12 3 11 11 286
1	5 U41	Beam		13	S			2	10	2	9	2	10	2	9	12 1 11 9 13
1	5 U42	Beam		13	S			1	9	2	9	1	9	2	9	9 11 9 7 10
27	5 U43	Beam		13	S			2	11	3	1	2	11	3	1	12 11 12 7 13
1	5 U44	Beam		13	S			2	10	3	1	2	10	3	1	10 9 10 5 11
1	5 U45	Beam		13	S			1	9	3	1	1	9	3	1	10 7 10 3 11
2	6 H60	Beam		20	X			43	6							43 6 43 6 131
20	6 V37	Beam		20	X			1	9							1 9 1 9 55
4	4 H61	Beam		20	X			4	0							4 0 4 0 11
		Int. Bent No. 4														
30	9 D41	Footings		17	X			7	8							5 11 3 11 910
24	5 D42	Footings		20	X			4	9							4 9 4 9 119
18	7 D43	Footings		13	X			7	3							8 11 8 11 328
20	9 V46	Columns		20	X			11	3							11 3 11 3 765
20	9 V47	Columns		20	X			34	6							34 6 34 6 2346
20	9 V48	Columns		20	X			22	3							22 3 22 3 1513
109	4 P31	Columns		16	X			2	9							9 6 9 6 692
2	9 H63	Beam		17	X			27	9							29 0 29 0 197

COMPLETE BILL OF REINFORCING STEEL																									
NO. REQD.	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.
1	9 H64	Beam		17	X			25	5								29 2	29 2	295						
3	9 H65	Beam		17	X			24	3								25 6	25 6	172						
6	9 H66	Beam		20	X			43	6								43 6	43 6	888						
2	6 H67	Beam		20	X			43	6								43 6	43 6	131						
8	7 H68	Beam		7	X			3	11	2	11						9 5	9 5	154						
3	9 H69	Beam		17	X			25	5								26 6	26 6	272						
13	4 U45	Beam		11	S					6	2	11		6			3 11	3 9	35						
2	4 U47	Beam		11	S					6	2	8		6			3 8	3 6	7						
21	5 U50	Beam		13	S			2	11	2	9	2	11	2	9		12 3	11 11	261						
1	5 U51	Beam		13	S			2	10	2	9	2	10	2	9		12 1	11 9	12						
1	5 U52	Beam		13	S			1	9	2	9	1	9	2	9		9 11	9 7	10						
27	5 U53	Beam		13	S			2	11	3	1	2	11	3	1		12 11	12 7	354						
1	5 U54	Beam		13	S			2	10	3	1	2	10	3	1		12 9	12 5	13						
1	5 U55	Beam		13	S			1	9	3	1	1	9	3	1		10 7	10 3	11						
2	6 H70	Beam		20	X			43	6								43 6	43 6	131						
20	6 V47	Beam		20	X			1	9								1 9	1 9	53						
4	4 H71	Beam		20	X			4	0								4 0	4 0	11						
		Int. Bent No. 5																							
30	9 D11	Footings		17	X			7	8								8 11	8 11	910						
12	6 D12	Footings		11	X					3	2		16	3	2		7 8	7 5	134						
12	6 D13	Footings		11	X					3	5		16	3	5		8 2	7 11	143						
30	9 V24	Columns		20	X			22	1								22 1	22 1	2253						
57	4 P11	Columns		16	X			2	9								9 6	9 6	360						
2	9 H43	Beam		17	X			27	9								29 0	29 0	197						
3	9 H44	Beam		17	X			29	2								30 5	30 5	310						
3	9 H45	Beam		17	X			22	5								24 11	24 11	163						
6	9 H46	Beam		20	X			43	6								43 6	43 6	888						
2	6 H47	Beam		20	X			43	6								43 6	43 6	131						
8	7 H48	Beam		7	X			3	11	2	11						9 5	9 5	154						
3	9 H49	Beam		17	X			24	3								25 6	25 3	260						
13	4 U28	Beam		11	S					6	2	11		6			3 11	3 9	53						
2	4 U29	Beam		11	S					6	2	8		6			3 8	3 6	5						
23	5 U30	Beam		13	S			2	11	2	9	2	11	2	9		12 3	11 11	286						
1	5 U31	Beam		13	S			2	10	2	9	2	10	2	9		12 1	11 9	12						
1	5 U32	Beam		13	S			1	9	2	9	1	9	2	9		9 11	9 7	10						
25	5 U33	Beam		13	S			2	11	3	1	2	11	3	1		12 11	12 7	354						
1	5 U34	Beam		13	S			2	10	3	1	2	10	3	1		12 9	12 5	13						
1	5 U35	Beam		13	S			1	9	3	1	1	9	3	1		10 7	10 3	11						
2	6 H50	Beam		20	X			43	6								43 6	43 6	131						
		SUPERSTRUCTURE																							
		End Bent No. 1																							
6	6 F1	Diaphragm		23	S					14	3	4		14		7	5 6	5 6	41						
5	6 F2	Diaphragm		14	S					5	3	2	7		2	2	1 4.9	7 10	7 10	59					
6	6 F3	Diaphragm		23	S					14	5	10		14		6.5	12.4	7	12	8 2	8 2	74			
5	6 F4	Diaphragm		21	S			2	7	4	3				2	2	1 4.9	6 10	6 6	49					
5	5 H41	Diaphragm		23	S					15		18		15		8	12	4	0	4 0	21				
4	6 H1	Diaphragm	E	20				48	8									48 8	48 8	293					
3	6 H2	Diaphragm		20				3	2									3 2	3 2	15					
3	6 H3	Diaphragm		23				15		15								2 6	2 6	11					
12	6 H4	Diaphragm		20				8	10									8 10	8 10	160					
3	6 H5	Diaphragm		20				48	8									48 8	48 8	220					
4	6 H6	Beam		20				27	1									27 1	27 1	163					
4	6 H7	Beam		20				24	7									24 7	24 7	148					
4	6 H8	Beam		20				48	8									48 8	48 8	293					
2	6 H9	Beam		20				48	8									48 8	48 8	147					
6	6 H10	Wing		20				11	7.5									11 8	11 8	105					
14	6 H11	Wing		20		V	2	11	4.5									11 5	11 5						
		Incr. = 1475 in.						4	0									4 0	4 0	162					
6	6 H12	Wing		20				11	5.5									11 6	11 6	104					



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

SIZE OF 180° HOOKS (GRADE 40 KSI)	SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)
D = 5d FOR #3 THRU #11	D = 6d FOR #3 THRU #8
D = 10d FOR #14 AND #13	D = 8d FOR #9, #10 AND #11
	D = 10d FOR #14 AND #18

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO  
BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOK  
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  $D = 5d$ .

Note: Two Additional R13 Dors are 11-1-1 and 2 not 11 for testing.

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

Sheet No. 30 of 21

JEFFERSON COUNTY

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