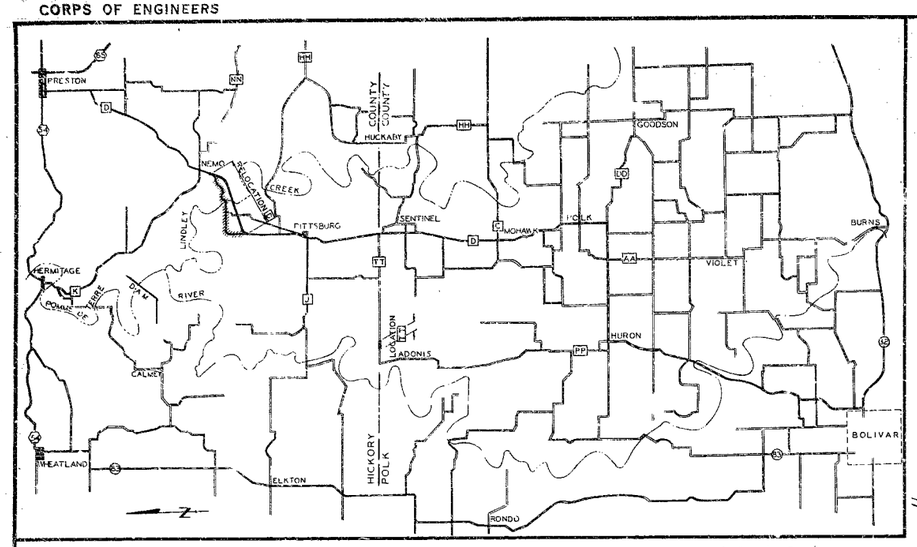
CORPS OF ENGINEERS

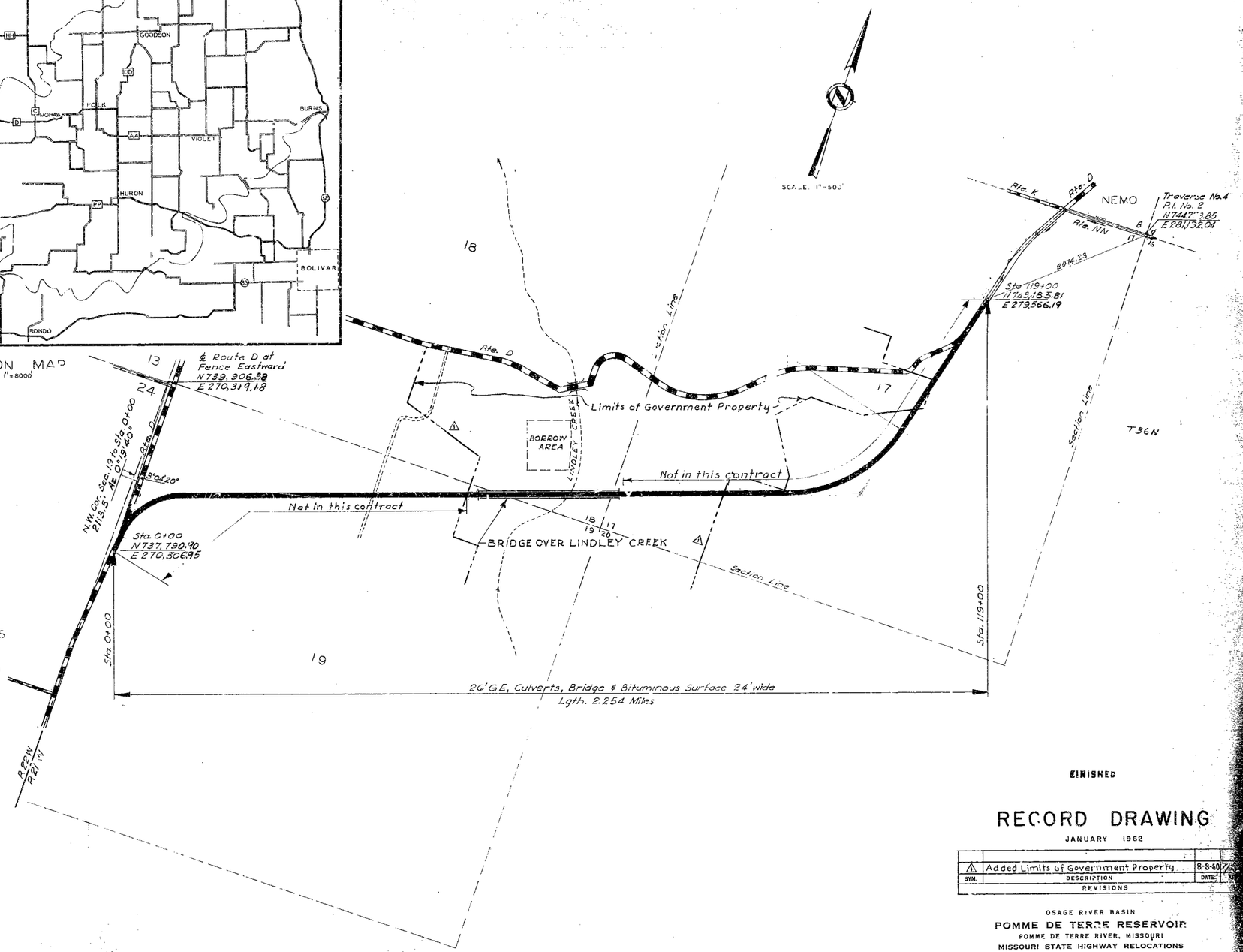
U. S. ARMY



LOCATION MAP
SCALE: 1"=8000'

INDEX

FILE NO.	DESCRIPTION
0-10-591	LOCATION SHEET
0-10-592 TO 0-10-595	OMITTED
0-10-596	PLAN AND PROFILE STA. 24+00 TO STA. 48+00
0-10-597	PLAN AND PROFILE STA. 48+00 TO STA. 84+00
0-10-598 TO 0-10-601	OMITTED
0-10-602	PLAN AND PROFILE STA. 42+00 TO STA. 47+40
0-10-603 TO 0-10-610	OMITTED
0-10-611	PLAN, ELEVATION, AND SOUNDINGS
0-10-612	BILL OF REINFORCING STEEL
0-10-613	DETAILS OF END BENTS 1 AND 20
0-10-614	DETAILS OF INTERMEDIATE BENTS 2, 18, 19
0-10-615	DETAILS OF INTERMEDIATE BENTS 3 THRU 17
0-10-616	DETAILS OF INTERMEDIATE BENTS 3 THRU 17
0-10-617	PLAN OF STRUCTUAL STEEL
0-10-618	PLAN OF SLAB REINFORCING STEEL
0-10-619	DETAILS OF STRUCTURAL STEEL
0-10-620	DETAILS OF HANDRAIL



FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE
	REVISIONS	
⚠	Added Limits of Government Property	8-8-60

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK
ROUTE D

FINISHED

LOCATION SHEET

IN 30 SHEETS — SHEET NO. 1 — SCALE: AS SHOWN

U. S. ARMY ENGINEER DISTRICT
KANSAS CITY

KANSAS CITY, MO.
MAY 1960

SUBMITTED:	RECOMMENDED:	APPROVED:
H. Bradford	Louis A. Beal	L. E. Lawrence
CHIEF, PROJECTS DESIGN BRANCH	CHIEF, ENGINEERING DIV.	COL., C.E., DISTRICT ENG.

DRAWN BY	TRACED BY	CHECKED BY	FILE NO.
CLO	CLO	JJW HICKORY	596 0-10-591

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

FINISHED

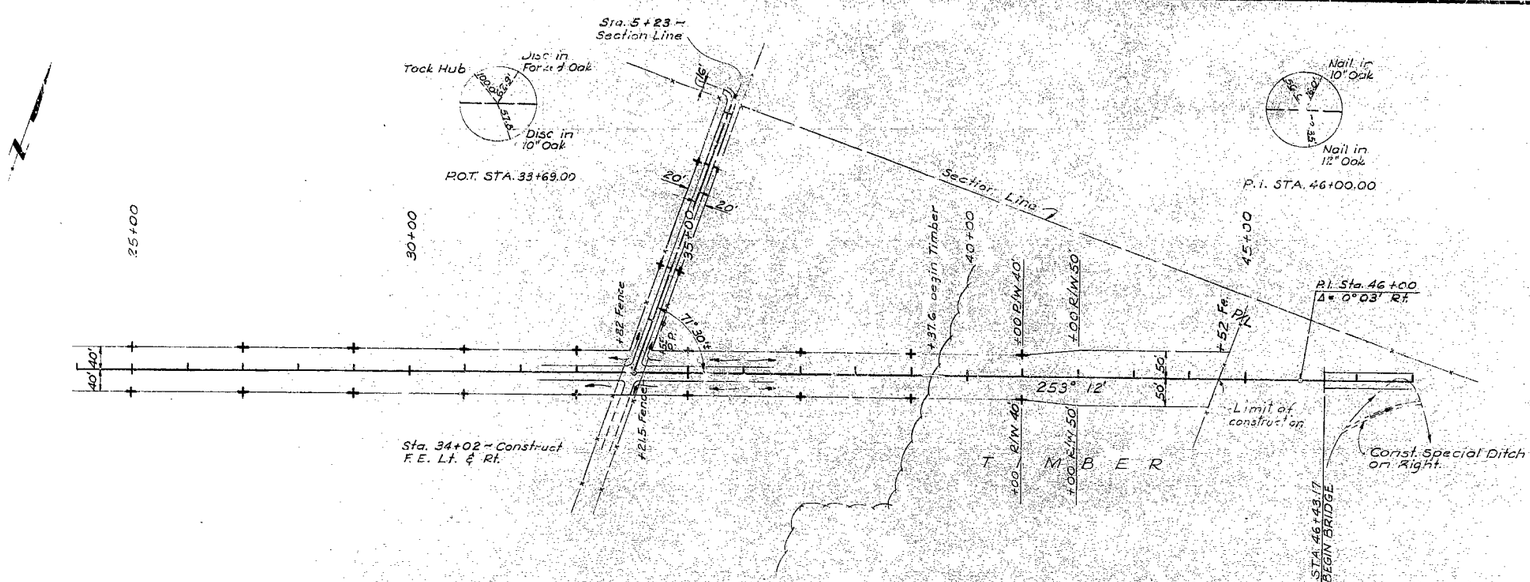
1 of 14

220

651 29-1

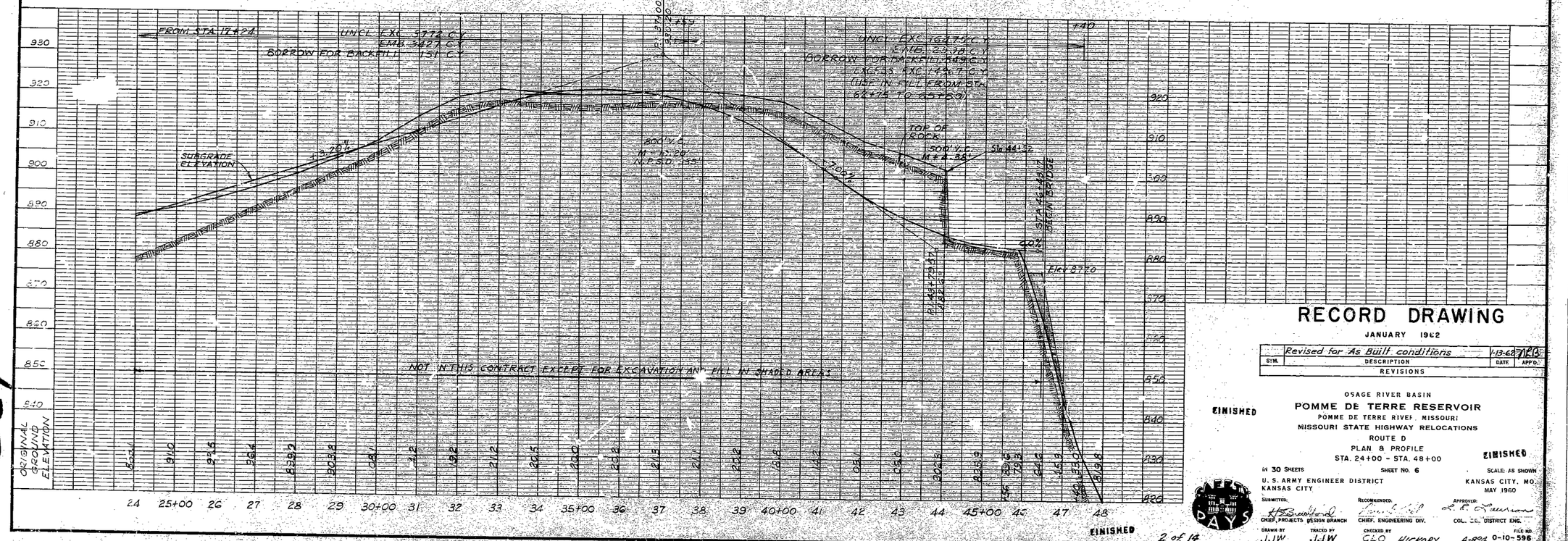
CORPS OF ENGINEERS

U. S. ARMY



B.M.#P-3,~2 Braced Nails in South Side Power Pole, 30' Lt. Sta. 34+35 ~ 919.64.

B.M.#P-4,~2 Braced Nails in West Side 30" Oak Tree, 36' Lt. Sta. 44+70 ~ 898.17



RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	Revised for As Built conditions	1-13-62	TEC

REVISIONS

FINISHED

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

ROUTE D

PLAN & PROFILE

STA. 24+00 ~ STA. 48+00

FINISHED

IN 30 SHEETS SHEET No. 6 SCALE: AS SHOWN

U. S. ARMY ENGINEER DISTRICT KANSAS CITY KANSAS CITY, MO. MAY 1960

SUBMITTED:	RECOMMENDED:	APPROVED:
CHIEF, PROJECTS DESIGN BRANCH	CHIEF, ENGINEERING DIV.	COL., CE, DISTRICT ENG.

DRAWN BY	TRACED BY	CHECKED BY		FILE NO.
J.I.W.	J.J.W.	C.L.O.	HICKORY	A-894 0-10-596

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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651

29-1

CORPS OF ENGINEERS

U.S. ARMY

BORROW AREA
Grade to Drain

600'

300'

50+00

55+00

60+00

65+00

70+00

75+00

80+00

TIMBER

CREEK

LINDLEY

Section Line

18 | 17
19 | 20

Sta. 62+20 to Sta. 64+00 - Construct Special Ditch on Lt.

+14 Rock Bluff

Section Line

For location of Guard Rail at Bridge Approaches see Guard Rail Detail Sheet.

Power Transmission Line

H. Frame Timber Structure

253°15'

TIMBER

STA. 62+26.63 END BRIDGE

Sta. 68+45 - DA 3.12 of 0.7 Land - Construct 18" Pipe Culvert

P.I. Sta. 70+72.3
Δ = 9°07' Lt.

NOT IN THIS CONTRACT

Nail and Washer in E. Side 12" Oak.

Nail and Washer in W. Side 20" Oak Tree

Nail and Washer in W. Side 70" Oak Tree

Head Braced Nails E. side Tran. Pole most Easterly.

P.I. STA. 70+72.3

Sta. 79+40 - Const. F.E. Lt. & Rt. with 12" Pipe under Lt. F.E. & 15" Pipe under Rt. F.E.

Sta. 80+65 to Sta. 83+30 Construct Guard Rail Lt. & Rt.

P.I.

P.C. 83+11.25

±00 R/W 50'

±00 R/W 40'

±00 R/W 40'

±00 R/W 40'

±00 R/W 120'

±00 R/W 40'

±00 R/W 30'

±00 R/W 30'

±00 R/W 40'

253°08'

TIMBER

Sta. 80+70 to 82+60 - const. special 4 ft. flat bottom ditch Rt. on 1.0% grade.

HOLLY F. KINCAID

Sta. 82+66 - DA 8.1 Ac. of 0.7 Land Construct 60" C.M. Pipe Culv. with beveled ends on 15° Skew. Rt. Abd. Place 18" of Riprap on fill Slopes below Elev. 877.6

B.M.# P-5, - 2 Braced Nails in South Side 36" Sycamore Tree 15' Lt. Sta. 56+70 - 801.56

B.M.# P-6, - 2 Braced Nails in North Side 14" Maple Tree on ℄ Sta. 60+45 - 799.00

B.M.# P-8, - 2 Braced Nails in S.E. Side of East Pole of Transmission Line, 41' Lt. Sta. 70+72.3 - 917.74

B.M.# P-7, - 2 Braced Nails in South Side 12" Oak Tree 70' Lt. Sta. 65+40 872.58

+15 UNCL. EXC. 163 C.Y.
EMB. 21355 C.Y.
BORROW 7820 C.Y.
OBTAIN 14057 C.Y. FROM CUT STA. 69+50 TO 67+40

+89 UNCL. EXC. 4465 C.Y.
EMB. 4657 C.Y.
BORROW FOR BACKFILL 1256 C.Y.

+14 UNCL. EXC. 13182 C.Y.
EMB. 14350 C.Y.
BORROW FOR BACKFILL 9126 C.Y.

+07 TO STA. 102+00

500' V.C.
M = 4.6

0.0%

Elev. 879.6

STA. 62+26.63 END BRIDGE

Elev. 881.5

Obtain Material From Contour

BRIDGE EXCEPTION

900' V.C.
M = 12.38
N.P.S.D. 545'

4.0%

TOP OF ROCK

800' V.C.
M = 11.60'

P.I. 82+50.00
838.00

4.0%

Lt. F.E. 869.9

Lt. F.L. 865.7

NOT IN THIS CONTRACT EXCEPT FOR FULL ROUND ABUTMENT

ORIGINAL GROUND ELEVATION

900 890 880 870 860 850 840 830 820 810

48 49 50+00 51 52 53 54 55+00 56 57 58 59 60+00 61 62 63 64 65+00 66 67 68 69 70+00 71 72 73 74 75+00 76 77 78 79 80+00 81 82 83 84

No.	DESCRIPTION	DATE	APP'D.
	REVISIONS		
Stic.	Revised for As Built conditions	4-13-62	TMRP

RECORD DRAWING
JANUARY 1962

FINISHED

OSAGE RIVER BASIN
POMME DE TERRE RESERVOIR
POMME DE TERRE RIVER, MISSOURI
MISSOURI STATE HIGHWAY RELOCATIONS
ROUTE D
PLAN & PROFILE
STA. 48+00 - STA. 84+00

FINISHED

IN 30 SHEETS | SHEET NO. 7 | SCALE: AS SHOWN

U.S. ARMY ENGINEER DISTRICT, KANSAS CITY — KANSAS CITY, MO., JAY 1960

SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH
RECOMMENDED: CHIEF, ENGINEERING DIV.
APPROVED: COL. C.E. DISTRICT ENG.

DRAWN BY JJW | TRACED BY IJW | CHECKED BY CLO HICKORY | FILE NO. A-894 0-10-597

FINISHED 3 of 14

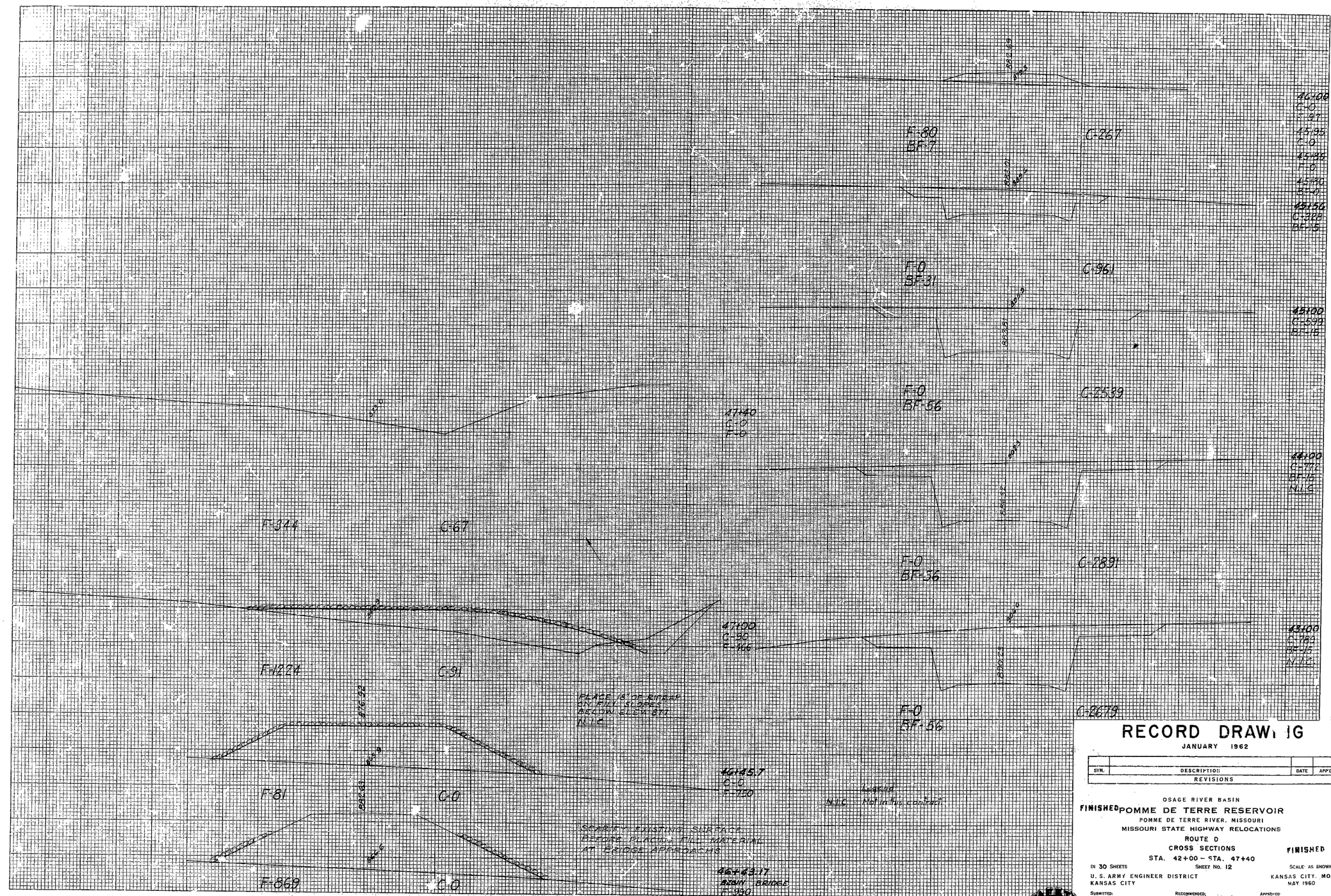
PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

222

651 29-1

CORPS OF ENGINEERS

U. S. ARMY



223

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	REVISIONS		

OSAGE RIVER BASIN

FINISHED

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

ROUTE D

CROSS SECTIONS

STA. 42+00 - STA. 47+40

FINISHED

IN 30 SHEETS SHEET NO. 12 SCALE: AS SHOWN

U. S. ARMY ENGINEER DISTRICT KANSAS CITY, MO.
KANSAS CITY MAY 1960

SUBMITTED: H.H.B. CHIEF, PROJECTS DESIGN BRANCH

RECOMMENDED: CHIEF, ENGINEERING DIV.

APPROVED: COL. C.E., DISTRICT ENG.

DRAWN BY EEH TRACED BY HHB CHECKED BY JJW HICKORY 4-394 FILE NO. 0-10-602

FINISHED

4 of 14

PAYS

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

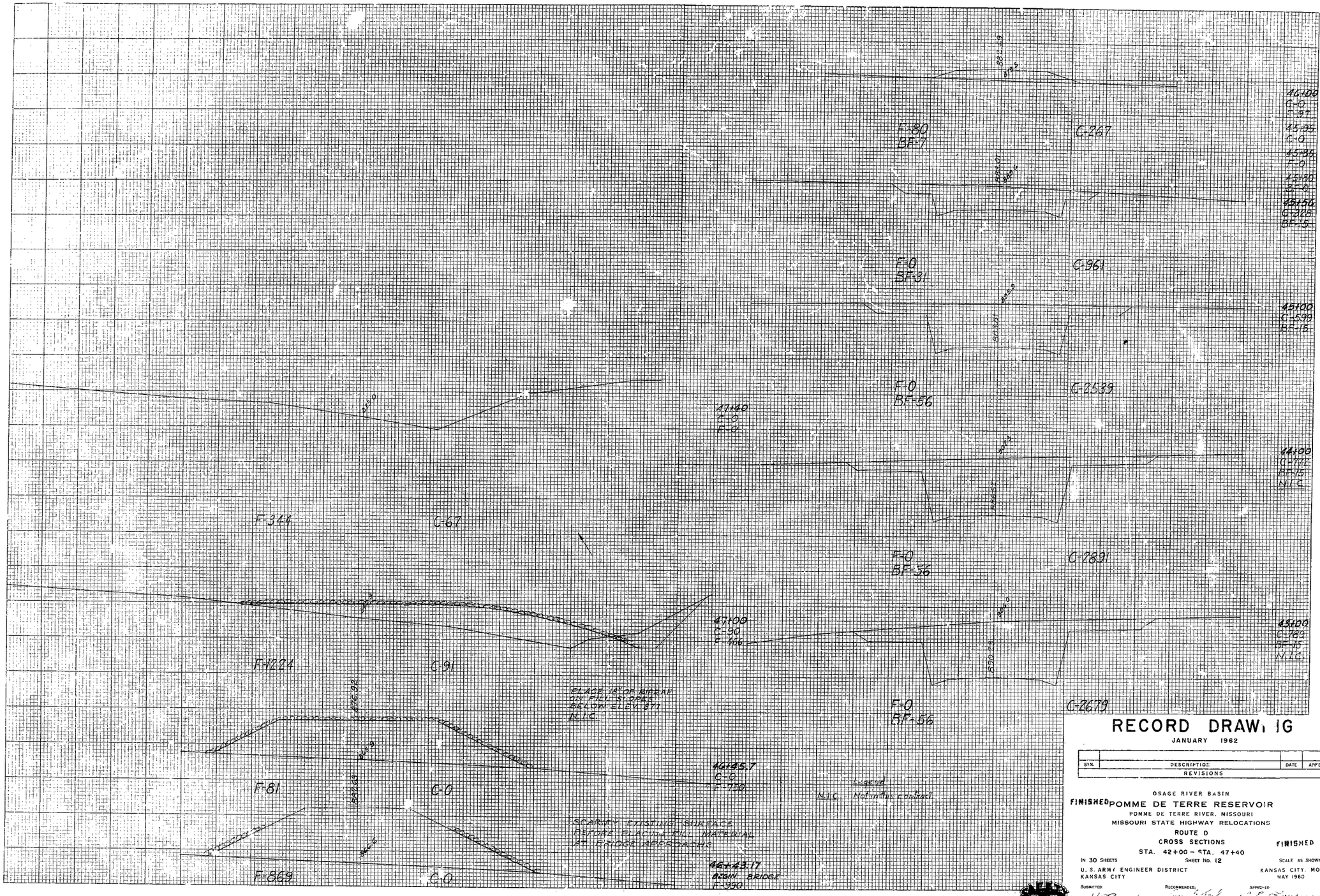
194H

UNCLASSIFIED

651

CORPS OF ENGINEERS

U. S. ARMY



223

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	REVISIONS		

OSAGE RIVER BASIN

FINISHED POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

ROUTE D

CROSS SECTIONS

FINISHED

STA. 42+00 - STA. 47+40

IN 30 SHEETS SHEET NO. 12 SCALE AS SHOWN

U. S. ARMY ENGINEER DISTRICT KANSAS CITY, MO.

KANSAS CITY MAY 1960

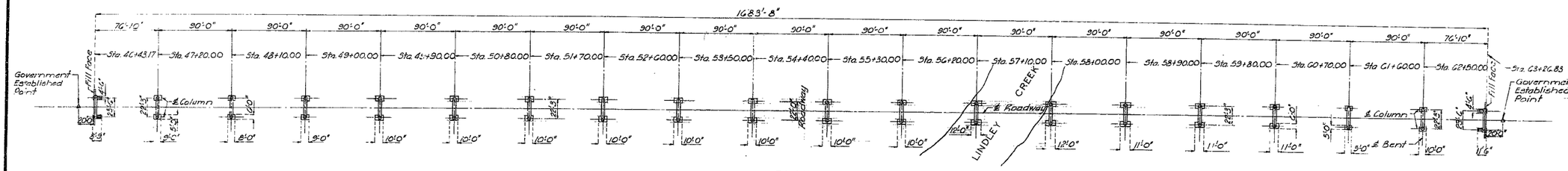
SUBMITTED:	RECOMMENDED:	APPROVED:
CHIEF, PROJECTS DESIGN BRANCH	CHIEF, ENGINEERING DIV.	COL., C.E., DISTRICT ENG.

DRAWN BY EEH TRACED BY HHB CHECKED BY JJW HICKORY FILE NO. 0-10-602

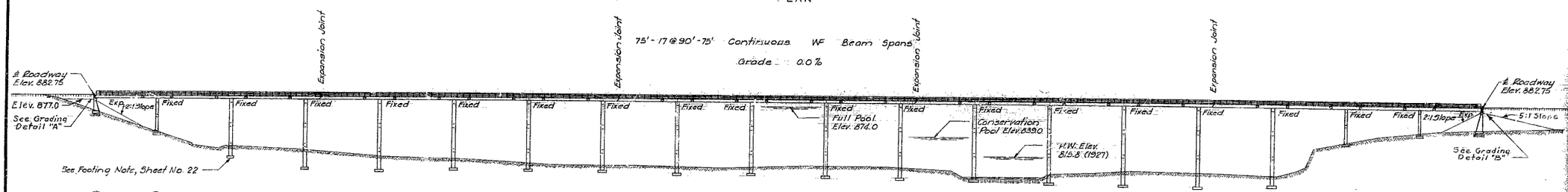
PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

CORPS OF ENGINEERS

U. S. ARMY

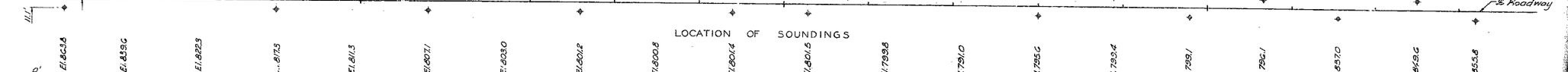


PLAN

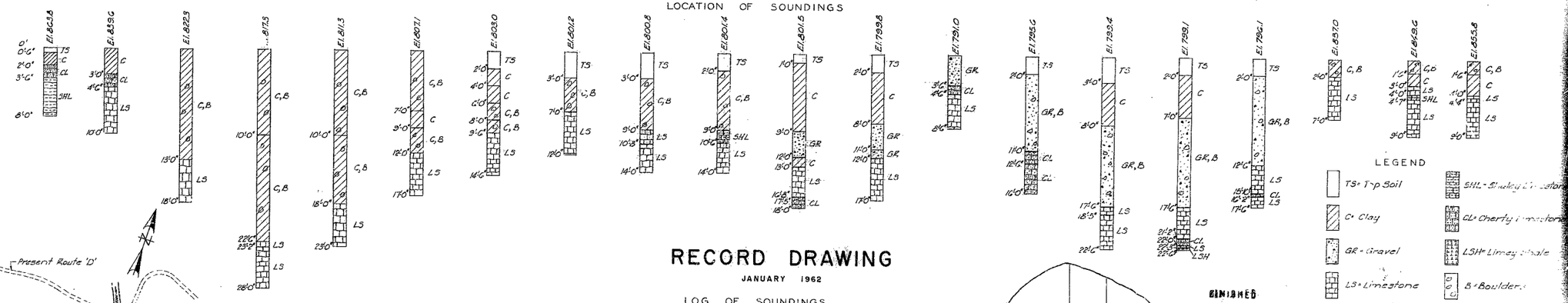


	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳
Unit Bearing Pressures (Kips/Sq. Ft.) (Vertical + Horizontal Load)	12	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	13

GENERAL ELEVATION



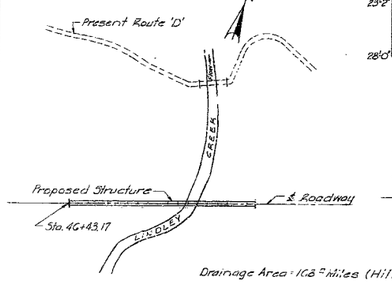
LOCATION OF SOUNDINGS



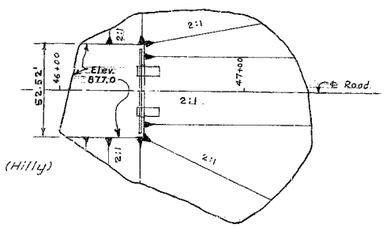
LEGEND

TS = Top Soil
C = Clay
GR = Gravel
LS = Limestone
SHL = Shirley Limestone
CL = Cherty Limestone
LSH = Limey Shale
B = Boulders

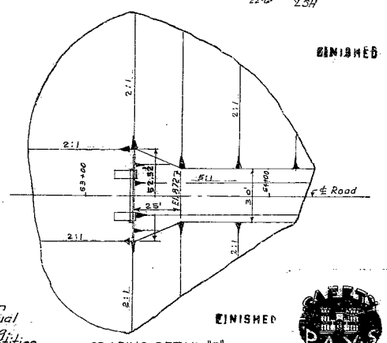
LOCATION SKETCH



GRADING DETAIL "A"



GRADING DETAIL "B"



RECORD DRAWING

JANUARY 1962

LOG OF SOUNDINGS

ESTIMATED QUANTITIES

Item		Substr.	Superstr.	Total
Class 1 Excavation for Structures	Cu. Yds.	1206.2	—	1208.2
Class 2 Excavation for Structures	Cu. Yds.	571.1	—	571.1
Reinforcing Steel	Lbs.	586,428 △	264,630	851,058 △
Steel Castings	Lbs.	—	2470	2470
Fabricated Structural Steel	Lbs.	—	1,423,840	1,423,840
Concrete	Cu. Yds.	2185.2 △	921.0	3,106.2 △
Portland Cement	Barrels			4,723
Painting on Structural Steel	Tons		714	714

Note: Excavation for bridge made above Elev. 793.0 will be paid for as Class 1 Excavation for Structures.

Excavation for bridge made below Elev. 793.0 will be paid for as Class 2 Excavation for Structures.

Estimated Excavation quantities are computed from ground line elevations as shown or from Excavation Datum, where Excavation Datum is above the ground line. The Contracting Officer shall determine actual ground elevations at each footing before the Contractor begins excavating. Actual ground elevations shall be used in computing excavation quantities for final payment.

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

FINISHED

FINISHED

SYM.	DESCRIPTION	DATE	APPD.
	Revised for as-built conditions.	4-13-62	tB
△	Rev. Substr. Conc. & Reinf. Steel Quantities	7-14-62	

REVISIONS

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

PLAN, ELEVATION, AND SOUNDINGS FINISHED

IN 30 SHEETS — SHEET NO. 21 — SCALE: NONE

U. S. ARMY ENGINEER DISTRICT, KANSAS CITY — KANSAS CITY, MO. — MAY 1960

SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH — RECOMMENDED: Louis A. Earl, CHIEF, ENGINEERING DIV. — APPROVED: C. E. Laurion, COL., C.E., DISTRICT ENG.

DRAWN BY RFH — TRACED BY LEH — CHECKED BY RHK — FILE NO. A-992 0-10-611

5 of 14 DAYS

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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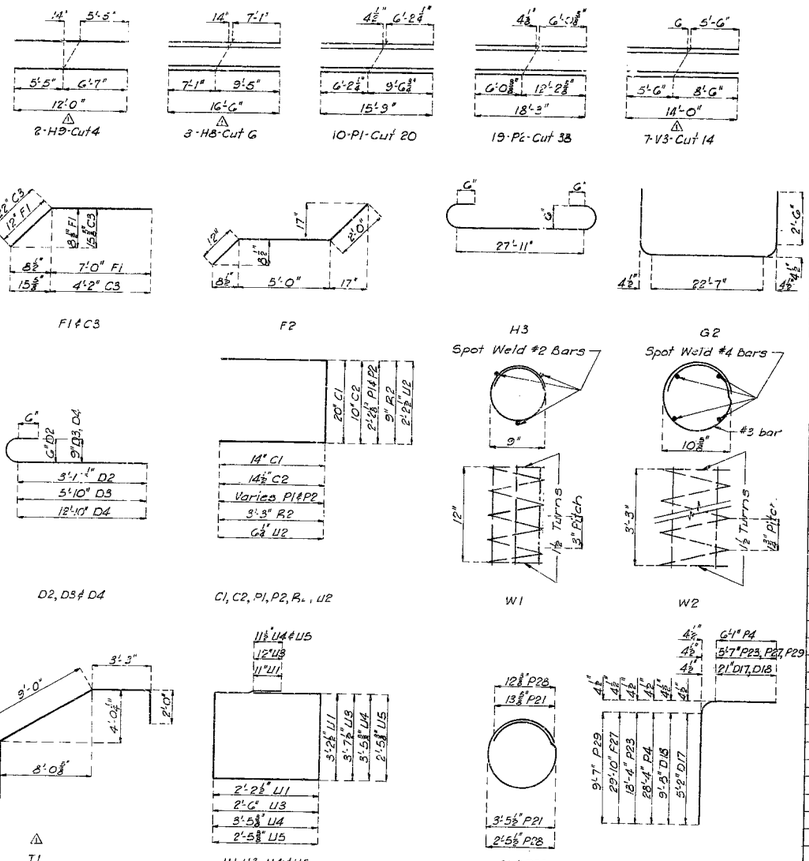
CORPS OF ENGINEERS

U.S. ARMY

COMPLETE BILL OF REINFORCING STEEL

NO	SIZE	LENGTH	MARK	LOCATION
		SUPERSTRUCTURE		
20	#5	4'-0"	C1	End Curb
2@82	#5	3'-5"	C2	Curb
2	#5	6'-10"	C3	End Curb
36	#5	26'-3"	C4	Curb 75'-0" Span
234	#6	31'-3"	C5	" 90'-0" Span
24	#6	17'-9"	C6	" 18'-0" Span
48	#6	36'-3"	C7	" 72'-0" Span
24	#4	3'-9"	R1	End Post
20	#5	7'-3"	R2	" "
1152	#5	24'-3"	S1	Slab
390	#5	29'-0"	S2	"
576	#5	20'-0"	S3	"
40	#5	2'-6"	S4	"
1521	#5	29'-3"	S5	"
468	#5	28'-9"	S6	"
		END BENT NO 1		
20	#6	4'-0"	D1	Footing
8	#6	8'-0"	F1	Col. Haunch
8	#6	8'-0"	F2	" "
2	#6	26'-3"	H1	Backwall
2	#4	26'-3"	H2	"
3	#6	30'-6"	H3	Beam
2	#6	28'-6"	H4	"
8	#11	28'-6"	H5	"
2	#4	29'-0"	H6	Backwall
△ 18	#6	10'-0"	H7	Wing
△	#6	16'-6"	H8	"
△	#6	12'-0"	H9	"
4	#6	19'-6"	H10	Backwall
20	#3	15'-9"	P1	Column
△ 4	#6	19'-0"	T1	Wing
29	#5	11'-9"	U1	Beam
10	#4	3'-3"	U2	"
46	#4	6'-0"	V1	Backwall
12	#4	7'-0"	V2	"
△ 7	#4	14'-0"	V3	Wing
12	#6	14'-6"	V6	Column
8	#6	14'-3"	V5	"
8	#4	11'-3"	V8	"
8	#2	19'-9"	W1	A.B. Well
		INTERMEDIATE BENTS NO. 2,18 & 19		
36	#8	8'-3"	D15	Footing Bt. 2 & 18
56	#8	4'-3"	D16	"
48	#11	8'-3"	D17	"
32	#11	12'-0"	D18	"
18	#8	9'-3"	D19	" 19
16	#6	22'-3"	G1	Cap & Tie Beam
30	#11	28'-9"	G2	Cap
12	#6	16'-6"	G3	"
8	#9	25'-0"	G6	Tie Beam 2 & 18
12	#9	24'-3"	G7	" " 2 & 18
16	#11	17'-9"	P22	Column 2 & 18
16	#11	23'-6"	P23	" 2 & 18
16	#11	26'-3"	P24	" 2
16	#11	28'-1"	P25	" 18
8	#11	29'-3"	P26	" 19
8	#11	35'-3"	P27	" 19
208	#5	8'-9"	P28	"
12	#11	15'-9"	P29	"
204	#5	15'-3"	U3	Cap
40	#4	10'-9"	U5	Tie Beam 2 & 18
76	#2 #3	18'-0" 10'-6"	W2	A.B. Spirals

BENDING SKETCHES & CUTTING DIAGRAMS



NO	SIZE	LENGTH	MARK	LOCATION
		INTERMEDIATE BENTS NO. 3 THRU 17		
360	#11	8'-3"	D3	Footing
100	#11	14'-6"	D4	"
22	#6	7'-3"	D5	" Bt 3
22	#6	8'-3"	D6	" 4
88	#7	9'-3"	D7	" 5,6,7,8
44	#9	11'-3"	D8	" 13,14
34	#6	5'-3"	D10	" 3,4
80	#7	5'-3"	D11	" 5,6,7,8
144	#8	5'-3"	D12	" 9,10,11,12,15,16,17
88	#8	9'-3"	D13	" 9,10,11,12
66	#8	10'-3"	D14	" 15,16,17
48	#9	5'-3"	D9	" 13,14
90	#6	22'-3"	G1	Cap & Tie Beam
120	#11	28'-9"	G2	Cap
90	#6	16'-6"	G3	"
300	#9	25'-0"	G4	Tie Beam
120	#9	25'-0"	G5	" "
180	#11	27'-8"	P3	Column
180	#11	34'-2"	P4	"
312	#11	32'-9"	P5	" 5 thru 17
48	#11	27'-9"	P6	" 3 & 4
24	#11	19'-9"	P7	" 3
24	#11	32'-9"	P8	" 4
24	#11	29'-9"	P9	" 5
24	#11	27'-9"	P10	" 6
24	#11	51'-9"	P11	" 9
24	#11	30'-9"	P12	" 10
24	#11	33'-9"	P13	" 11
24	#11	34'-9"	P14	" 12
24	#11	35'-9"	P15	" 13
24	#11	36'-9"	P16	" 14
24	#11	40'-9"	P17	" 15
24	#11	41'-9"	P18	" 16
24	#11	39'-9"	P19	" 17
45	#11	28'-9"	P20	" 7 & 8
2@93	#5	12'-0"	P21	"
1020	#5	13'-3"	U3	Cap
570	#4	14'-9"	U4	Tie Beam
360	#4 #3	18'-0" 10'-6"	W2	A.B. Spiral
		END BENT NO. 20		
20	#7	5'-3"	D2	Footing
8	#6	8'-0"	F1	Col. Haunch
8	#6	8'-0"	F2	" "
2	#6	26'-3"	H1	Backwall
2	#4	26'-3"	H2	"
3	#6	30'-6"	H3	Beam
2	#6	28'-6"	H4	"
8	#11	28'-6"	H5	"
2	#4	29'-0"	H6	Backwall
△ 18	#6	10'-0"	H7	Wing
△ 3	#6	16'-6"	H8	"
△ 2	#6	12'-0"	H9	"
4	#6	19'-6"	H10	Backwall
38	#3	18'-3"	P2	Column
△ 4	#6	19'-0"	T1	Wing
29	#5	11'-9"	U1	Beam
10	#4	3'-3"	U2	"
46	#4	6'-0"	V1	Backwall
12	#4	7'-0"	V2	"
△ 7	#4	14'-0"	V3	Wing
12	#7	23'-6"	V6	Column
8	#7	24'-0"	V7	"
12	#4	20'-3"	V9	"
8	#2	19'-9"	W1	A.B. Well

Note: All dimensions are center to center.

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

FINISHED

GENERAL NOTES

Design Specifications: A.A.S.H.O. - 1957 (Modified to permit a ⅔ shape factor in computing wind on round columns) and Criteria for Prestressed Concrete Bridges.

Loading: H15-S12-44

Structural Steel Stress: 18,000 #/□"

Reinforcing Steel Stress: 20,000 #/□" Tension
16,000 #/□" Compression

Prestressing Steel Stress: 116,000 #/□" Initial
87,000 #/□" Final

Concrete Stress: 1200 #/□"

Rivets ⅞" ϕ; holes 15/16" ϕ except where otherwise noted. Qualification of welding operators will be required. Field connections except as noted in handrail details bolted with high tensile bolts. Final pay weight for fabricated structural steel will be based on the use of field rivets except for bolted connections specified for handrail.

Paint: Shop, none; Field, contact surfaces of bolted field connections one coat of red lead. All other exposed surfaces first coat red lead, second coat brown, third coat aluminum. Payment for cleaning and all painting will be made under unit price bid for Painting.

All loose, shelly or disintegrated rock shall be removed and the footings placed on or into hard, solid, undisturbed rock. If soft rock or shale is encountered, the footings shall be carried at least 18" into and cast against vertical faces of same.

FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	REVISIONS		
	Revised for as-built conditions		
△	Changed bars H7, H8, H9, T1 and V3		

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

BILL OF REINFORCING STEEL

FINISHED

IN 30 SHEETS SHEET NO. 22 SCALE AS SHOWN

U. S. ARMY ENGINEER DISTRICT KANSAS CITY, MO
KANSAS CITY MAY 1960

SUBMITTED: H.E. Brassfield, CHIEF, PROJECTS DESIGN BRANCH
RECOMMENDED: Arthur G. Clark, CHIEF, ENGINEERING DIV.
APPROVED: R. G. Hewitson, COL., C.E., DISTRICT ENG.

DRAWN BY R.E.H. TRACED BY E.E.H. CHECKED BY R.H.K. W.C.A. J.S. FILE NO. 57-39-2 0-10-612

6 of 12

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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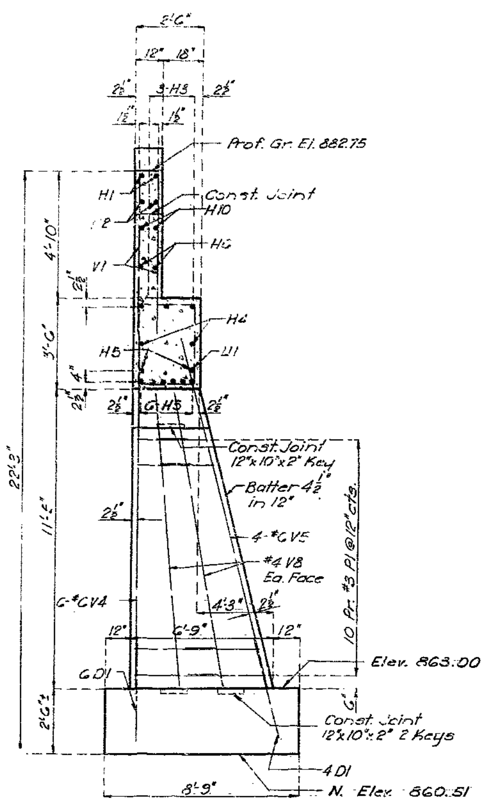
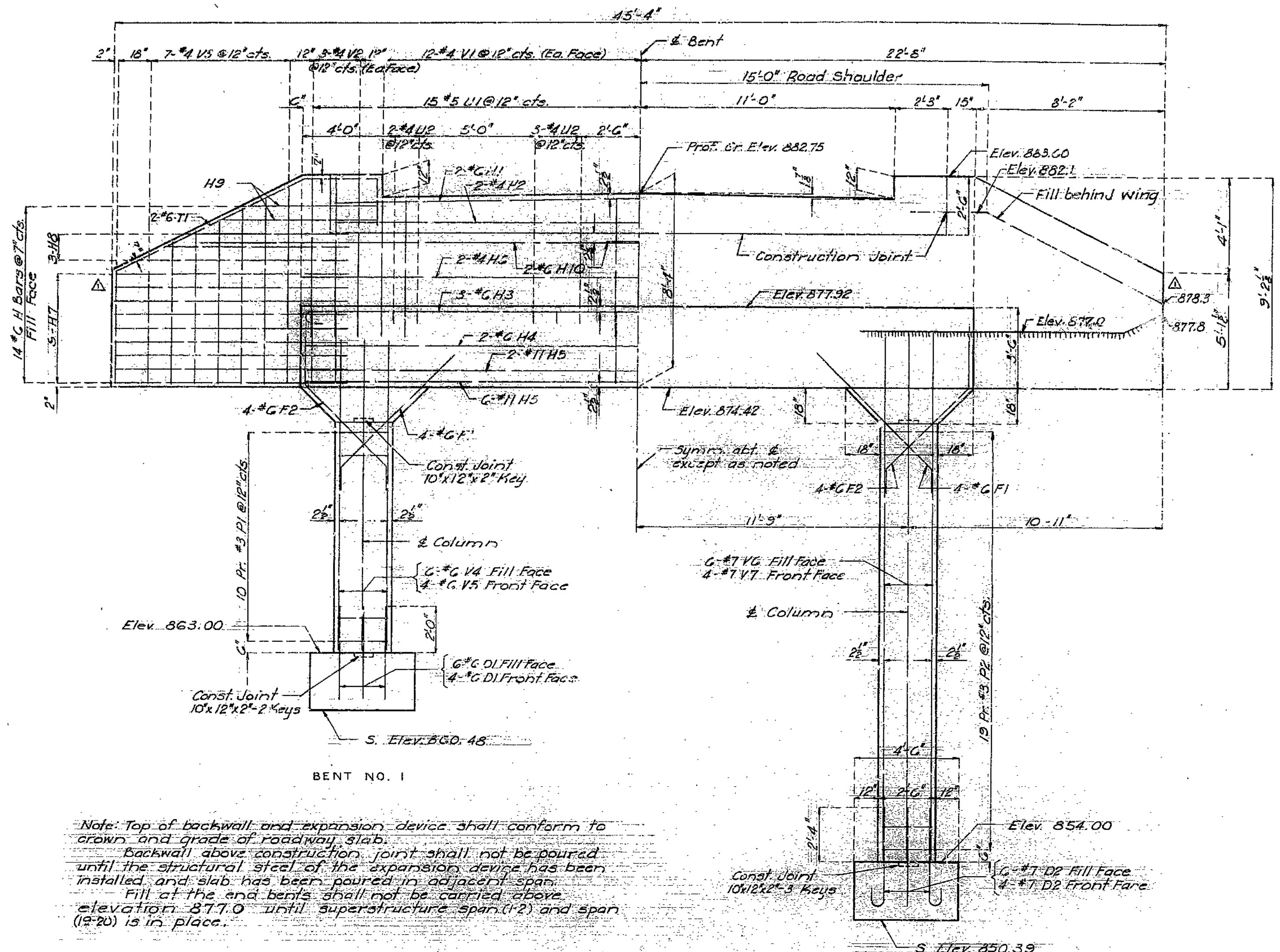
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS



SECTION AT ℄ END BENT NO. 1



BENT NO. 1

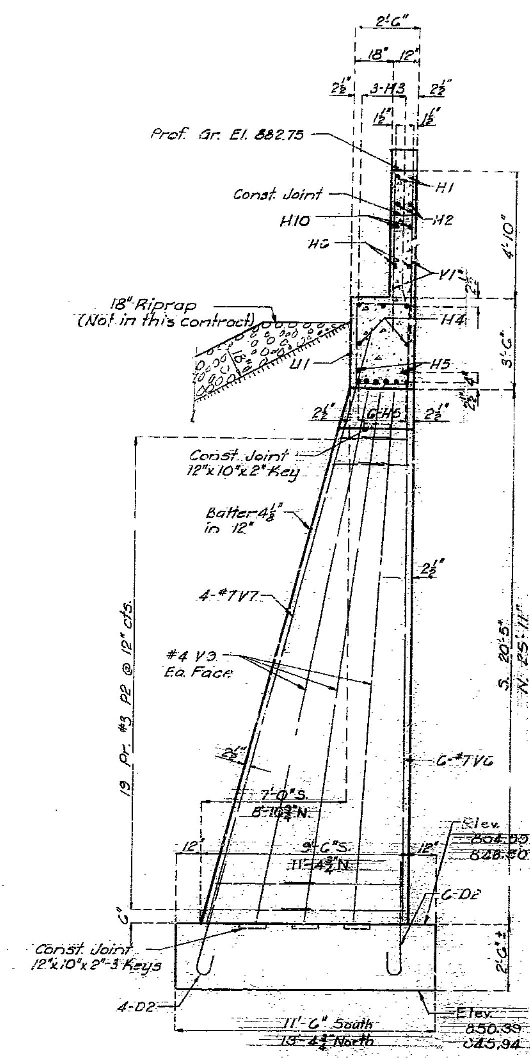
Note: Top of backwall and expansion device shall conform to crown and grade of roadway slab.

Backwall above construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.

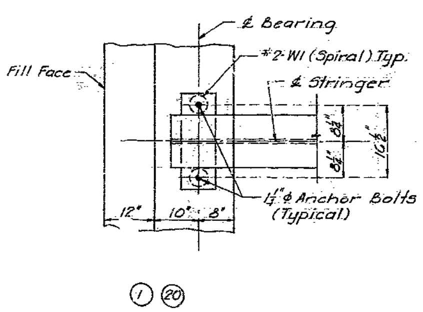
Fill at the end bents shall not be carried above elevation 877.0 until superstructure span (1-2) and span (19-20) is in place.

ELEVATION

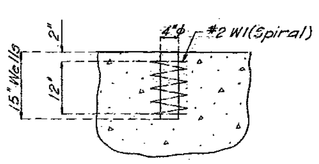
BENT NO. 20



SECTION AT ℄ END BENT NO. 20

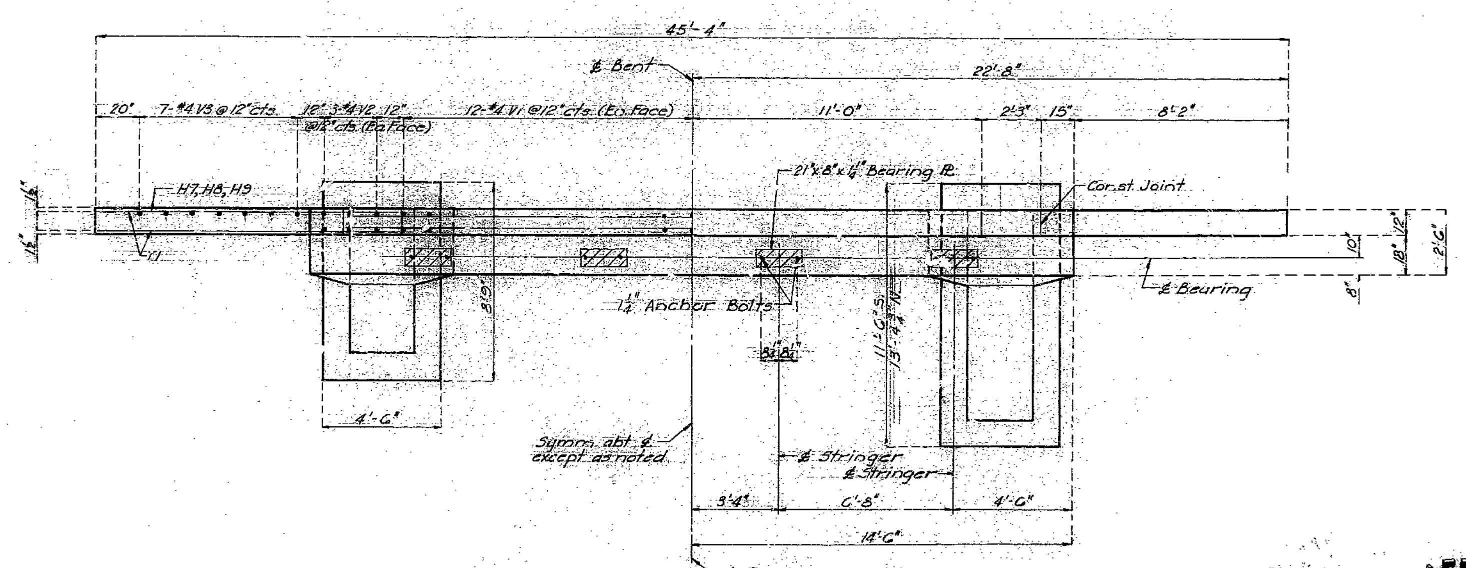


PART ANCHOR BOLT PLAN



Note: Anchor bolts set in wells as shown. See Specifications for setting Anchor Bolts.

DETAIL OF SPIRAL AROUND ANCHOR BOLTS



BENT NO. 1 PLAN BENT NO. 20

DETAILS OF END BENTS NO. 1 & NO. 20

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

ESTIMATED QUANTITIES FOR BENTS 1 AND 20				
Bent No.	Concrete	Reinf. Steel	Excavation Class 1	Class 2
1	36.60 Cu. Yds.	3832 Lbs.	—	—
20	60.2 Cu. Yds.	4707 Lbs.	—	—

FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	Revised for as-built conditions	1-12-62	Y.C.B.
△	1½:1 Wing Slope Changed to 2:1 Slope	7-14-60	

REVISIONS

OSAGE RIVER BASIN
POMME DE TERRE RESERVOIR
POMME DE TERRE RIVER, MISSOURI
MISSOURI STATE HIGHWAY RELOCATIONS
BRIDGE OVER LINDLEY CREEK
DETAILS OF END BENTS 1 AND 20

FINISHED

IN 30 SHEETS SHEET NO. 23 SCALE: NONE

U. S. ARMY ENGINEER DISTRICT KANSAS CITY — KANSAS CITY, MO. MAY 1960

SUBMITTED: H. Bradford, CHIEF, PROJECTS DESIGN BRANCH — RECOMMENDED: Louis G. Feil, CHIEF, ENGINEERING DIV. — APPROVED: L. E. Laurion, COL., C.E., DISTRICT EN

DRAWN BY REH. TRACED BY REH. CHECKED BY R.H.K. HICKORY A-874 0-10-613

FINISHED

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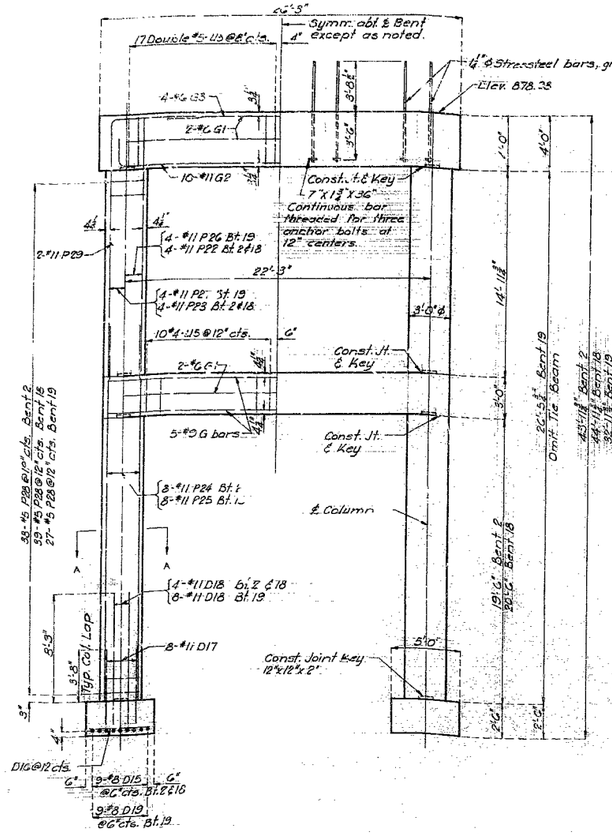
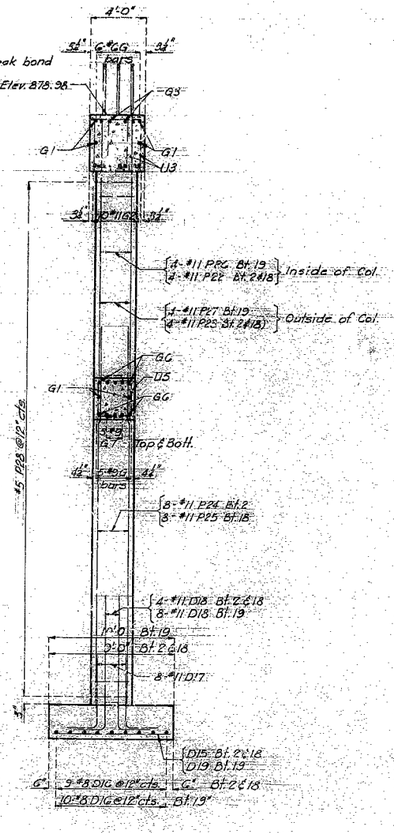
CORPS OF ENGINEERS

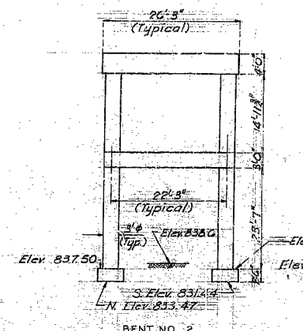
U. S. ARMY



ELEVATION



SECTION AT ℄



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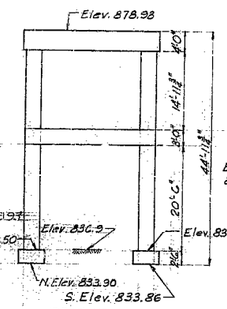
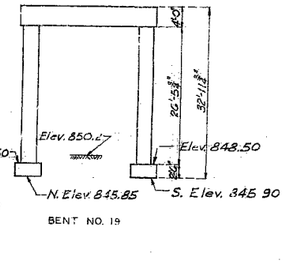
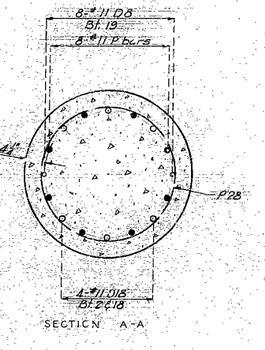


BENT NO. 18

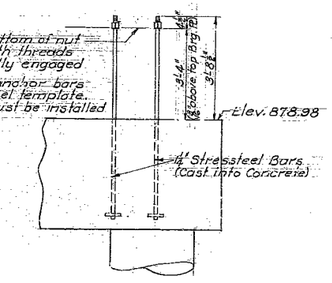


BENT NO. 19

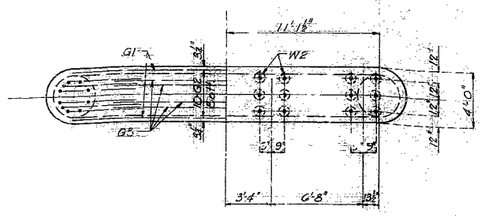
ESTIMATED QUANTITIES FOR BENTS 2, 18 & 19				
Bent No.	Concrete	Reinf. Steel	Excavation Class 1	Excavation Class 2
2	53.1 Cu.Yds.	11425 Lbs.		
18	50.55 "	11600 "		
19	38.64 "	9507 "		



SECTION A-A



PLACING DETAIL FOR ANCHOR BARS
(For all intermediate Bents)



PLAN

DETAILS OF INTERMEDIATE BENTS NO. 2, 18, 19

FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	Revised for As Built conditions.	4-3-62	TKB
	REVISIONS		

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

DETAILS OF INTERMEDIATE BENTS 2, 18, 19 FINISHED

IN 30 SHEETS | SHEET NO. 24 | SCALE: NONE

U. S. ARMY ENGINEER DISTRICT, KANSAS CITY | KANSAS CITY, MO. MAY 1960

SUBMITTED: H. E. Bradford, CHIEF, PROJECTS DESIGN BRANCH
RECOMMENDED: Kenneth L. Eisel, CHIEF, ENGINEERING DIV.
APPROVED: L. E. Lawson, COL., C.E., DISTRICT EN.

DRAWN BY REH | TRACED BY REH | CHECKED BY RHK HICKEY | FILE NO. K-894 0-10-614

FINISHED

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NOTE: THIS DRAWING IS NOT TO SCALE, FOLLOW DIMENSIONS

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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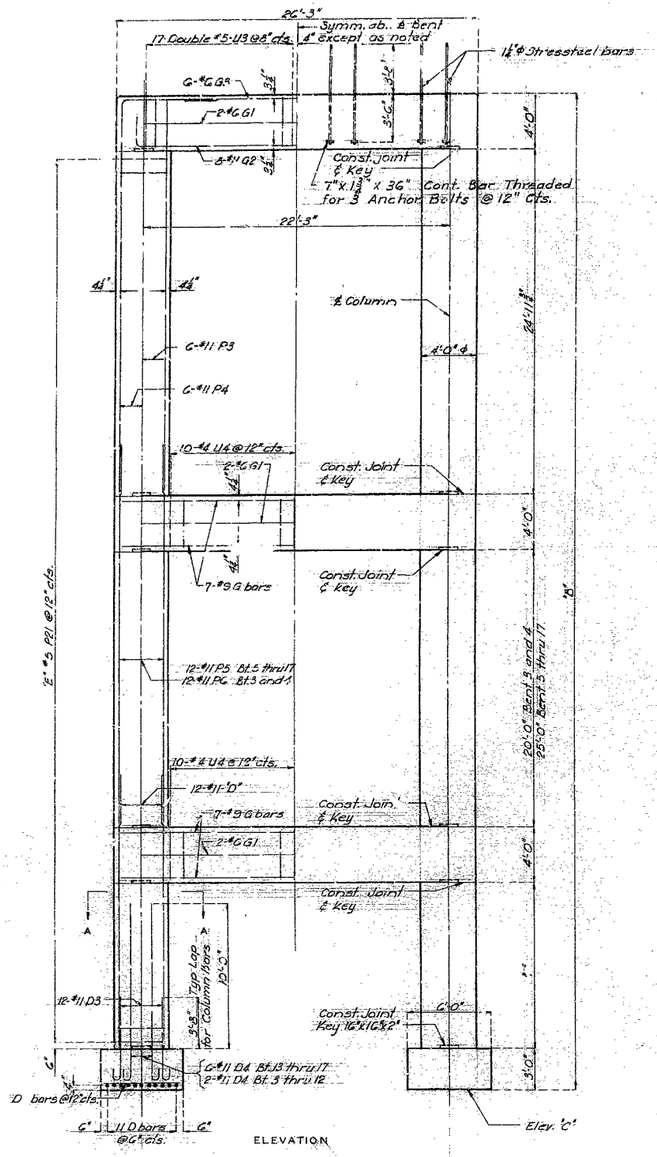
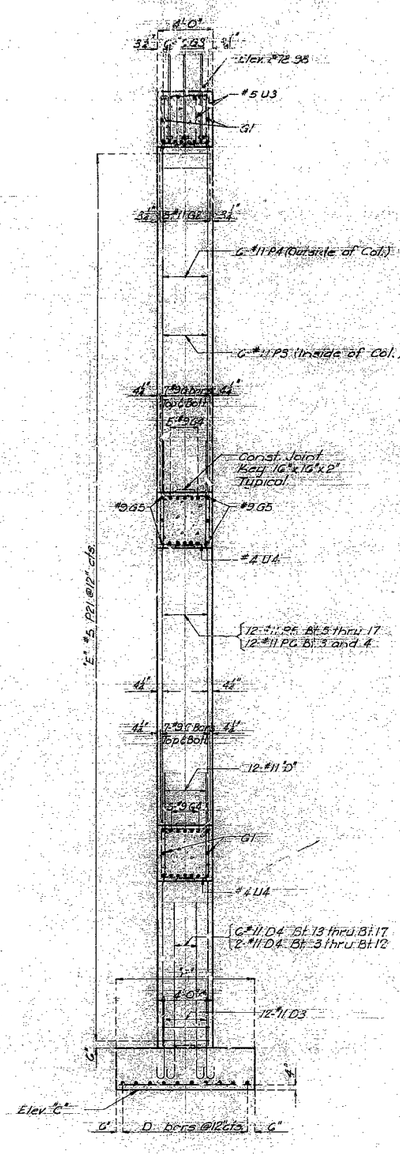
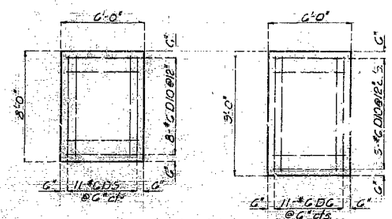
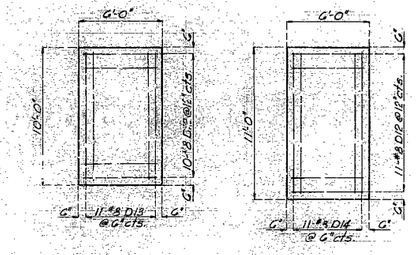
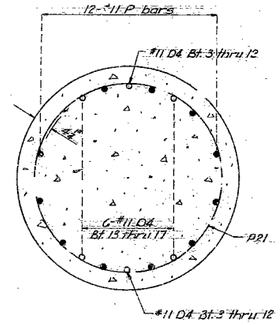








DETAILS OF FOOTINGS



SECTION A-A

DETAILS OF INTERMEDIATE BENTS NO. 3 THRU 17

FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	REVISIONS		
	Revised for As Built Conditions	1-13-62	TLB

OSAGE RIVER BASIN
POMME DE TERRE RESERVOIR
POMME DE TERRE RIVER, MISSOURI
MISSOURI STATE HIGHWAY RELOCATIONS
BRIDGE OVER LINDLEY CREEK
DETAILS OF INTERMEDIATE BENTS 3 THRU 17

FINISHED

IN 30 SHEETS — SHEET No. 25 — SCALE: NONE

U. S. ARMY ENGINEER DISTRICT, KANSAS CITY — KANSAS CITY, MO. MAY 1960

SUBMITTED: H.S. Bradford, CHIEF, PROJECTS DESIGN BRANCH
RECOMMENDED: Louis A. Geib, CHIEF, ENGINEER, KS DIV.
APPROVED: S. E. Dawson, COL., C.E., DISTRICT ENG.

DRAWN BY R.E.H. — TRACED BY R.E.H. — CHECKED BY R.H.K. HICKORY — A-394 — J. No. 0-10-615

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

FINISHED

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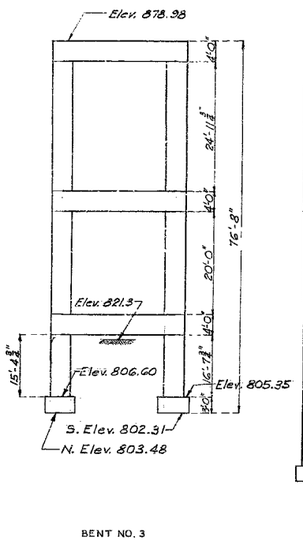
651 29-1

CORPS OF ENGINEERS

U. S. ARMY



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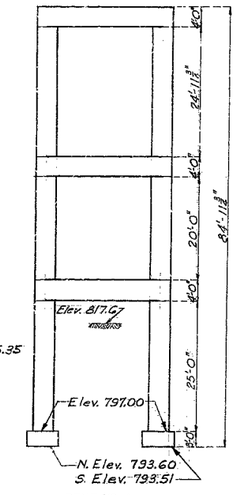

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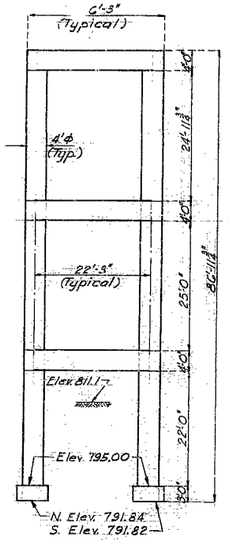

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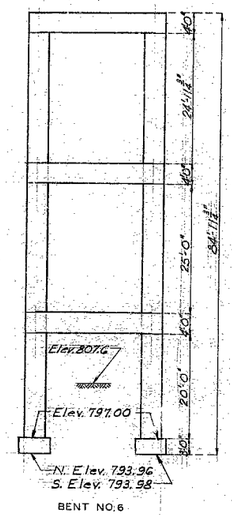

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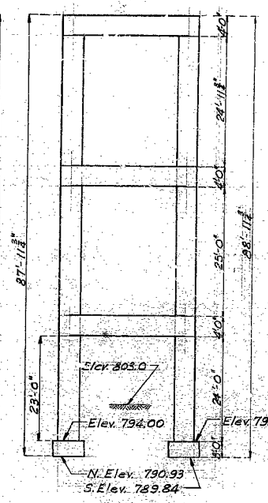

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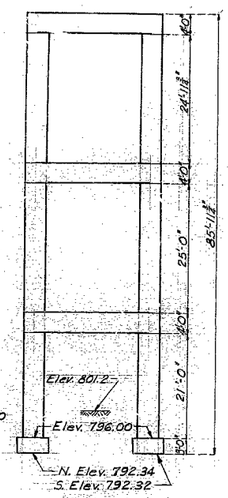

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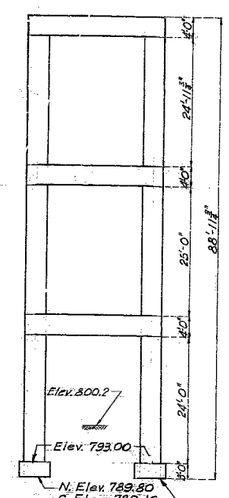

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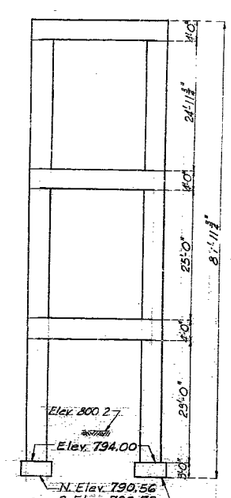

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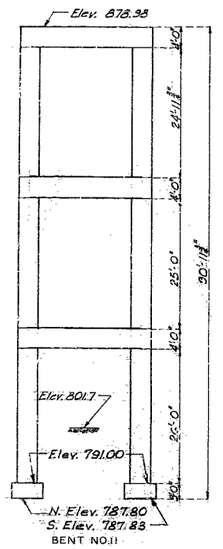

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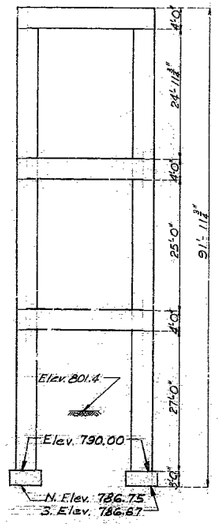

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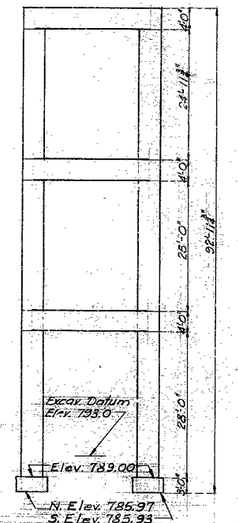

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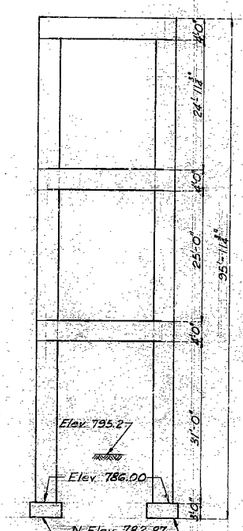

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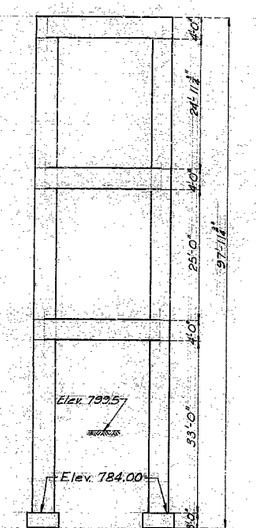

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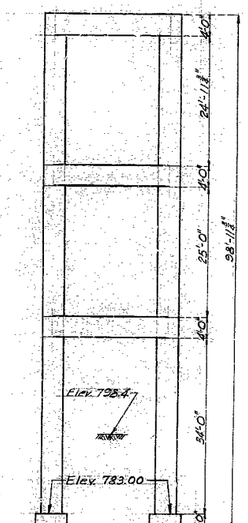

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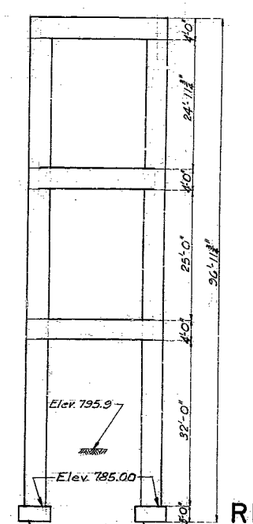

BENT NO. 17

N = North
S = South

ESTIMATED QUANTITIES FOR BENTS 3 THRU 17

Bent No.	Concrete	Reinf. Steel	Excavation Class 1	Excavation Class 2
3	12.81 Cu Yds	19462 Lbs		
4	124.08 " "	21493 "		
5	126.23 " "	22015 "		
6	123.86 " "	21710 "		
7	127.45 " "	21862 "		
8	129.51 " "	21862 "		
9	129.65 " "	22513 "		
10	128.00 " "	22361 "		
11	130.01 " "	22818 "		
12	130.97 " "	22971 "		
13	134.09 " "	24186 "		
14	137.18 " "	24443 "		
15	135.88 " "	24589 "		
16	138.42 " "	24741 "		
17	137.05 " "	24437 "		

DETAILS OF INTERMEDIATE BENTS NO. 3 THRU 17

FINISHED

NOTE: THIS DRAWING IS NOT TO SCALE, FOLLOW DIMENSIONS

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FINISHED

RECORD DRAWING

JANUARY 1962

STM.	REVISIONS DESCRIPTION	DATE	APP'D.
	Revised for As Built condition.	4-13-62	RB

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

DETAILS OF INTERMEDIATE BENTS 3 THRU 17

FINISHED

IN 30 SHEETS | SHEET NO. 26 | SCALE: 1 INCH

U. S. ARMY ENGINEER DISTRICT
KANSAS CITY

KANSAS CITY, MO.
MAY 1960

SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH

RECOMMENDED: CHIEF, ENGINEERING DIV.

APPROVED: COL., C.E., DISTRICT ENG.

DRAWN BY REH | TRACED BY REH | CHECKED BY HHS HICKORY | P.E. NO. A-2834 | 0-10-616

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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1-4-A

CORPS OF ENGINEERS

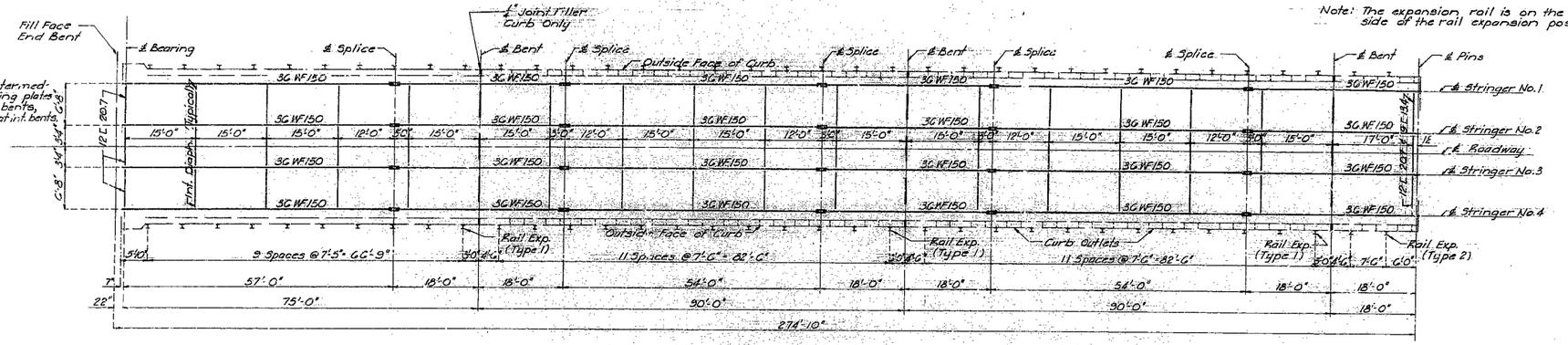
U. S. AR

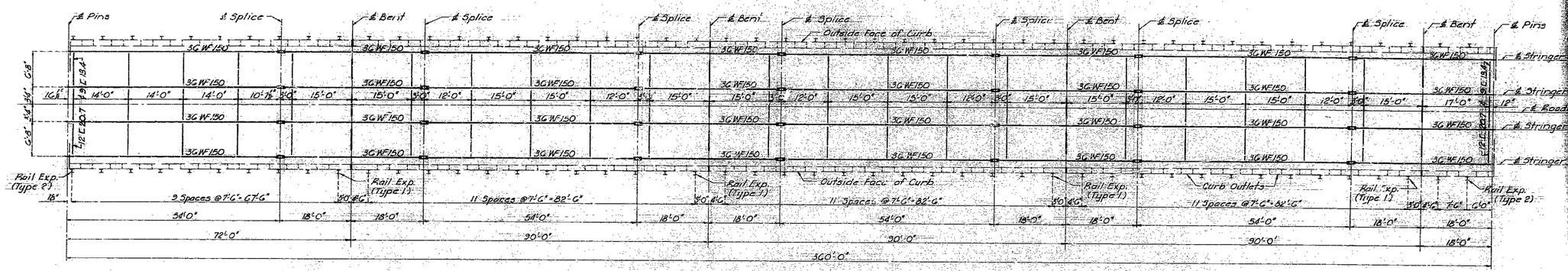
Material - Structural Steel

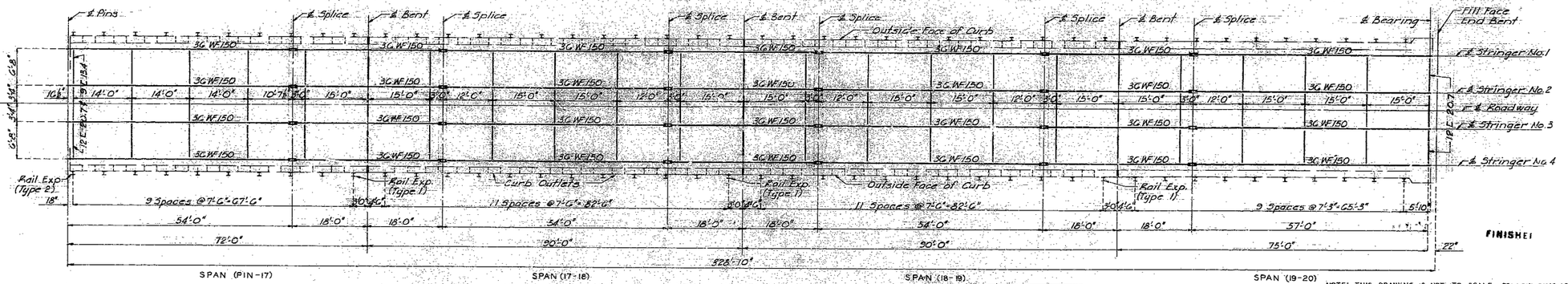
ASTM-A373 Beams over intermediate bents bearing plates of intermediate bents, Stiffener plates at int. bents

ASTM-A7 All other.

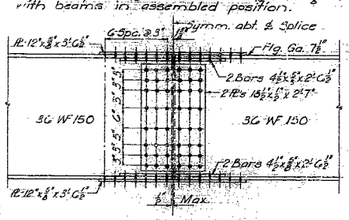
Note: The expansion rail is on the arrow side of the rail expansion post.



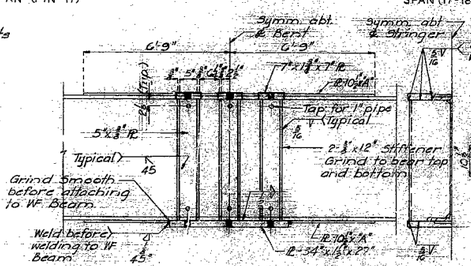




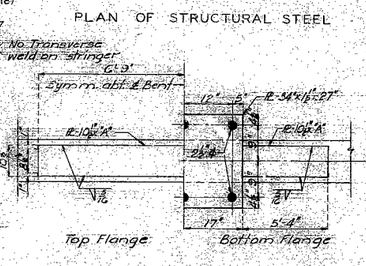
Note: Subpunch 11/16" ø and ream to 13/16" ø for 7/8" rivets with beams in assembled position.



DETAILS OF FIELD SPLICES



DETAILS OVER INTERMEDIATE BENTS



WELDING DETAILS FOR COVER PLATES

PLAN OF STRUCTURAL STEEL

TABLE OF "A" DIMENSIONS

LOCATION	OUTSIDE STR.	INSIDE STR.
℄ 2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

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

SYM.	DESCRIPTION	DATE	APPD.
	REVISIONS		

RECORD DRAWING

JANUARY 1962

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

PLAN OF STRUCTURAL STEEL

FINISHED

IN 30 SHEETS — SHEET No. 27 — SCALE: AS NOTED

U. S. ARMY ENGINEER DISTRICT KANSAS CITY — KANSAS CITY, MO. MAY 1960

SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH — RECOMMENDED: CHIEF, ENGINEERING DIV. — APPROVED: COL. C.E. DISTRICT ENG.

DRAWN BY REH — TRACED BY REH — CHECKED BY RH.K. HICKORY — FILE NO. 894 0-10-617

FINISHED

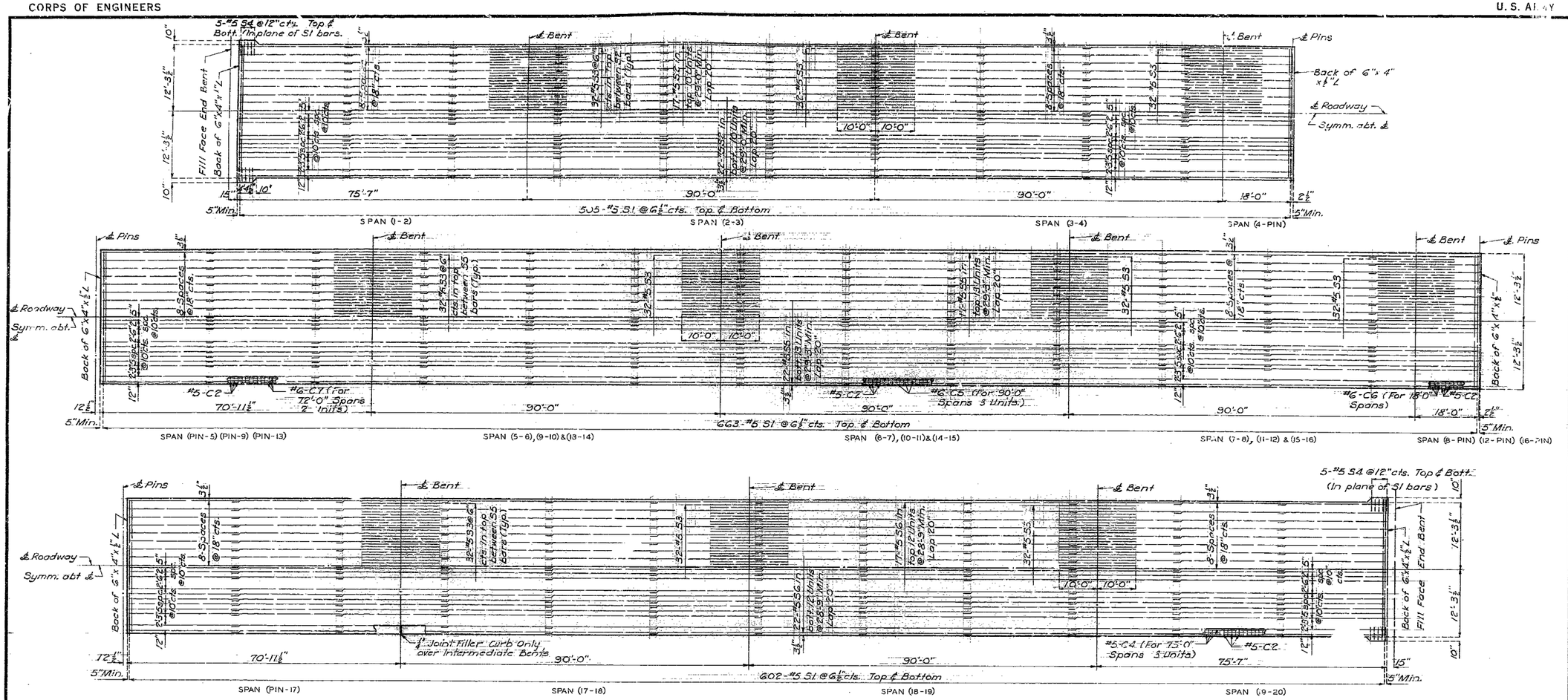
11 of 14

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

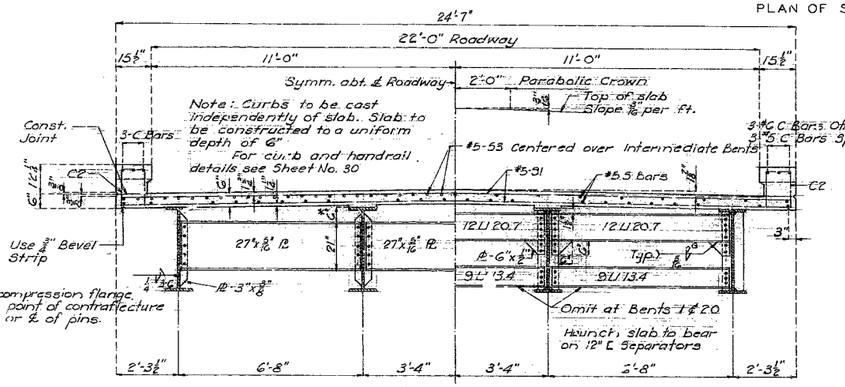
230

154H

651



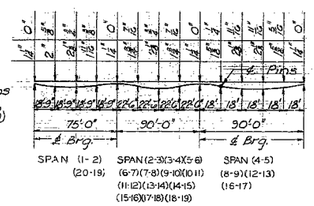
PLAN OF SLAB SHOWING REINFORCING STEEL



HALF SECTION SHOWING INTERMEDIATE DIAPHRAGMS

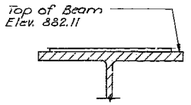
HALF SECTION SHOWING END CHANNEL SEPARATORS

Note: Provide curb openings in Span (2-3) thru Span (18-19) between handrail posts. See Sheets 27 and 30.



Note: Slab shall be built parallel to grade and to a minimum thickness of 6".
Dead load deflection and roadway crown shall be taken care of by haunching to stringers by the amounts shown in above diagram. These haunches are based on top of beam Elev. 882.11 at center line of bearing. These elevations shall be checked and corrections made to haunches for any deviation from theoretical top of beam elevation.
The concrete in the slab haunches is included in the "Estimated Quantities."

SLAB HAUNCHING DIAGRAM



TOP OF BEAM ELEVATION
(At all bents)

Note: For Slab Pouring Sequence see Sheet No. 30.

FINISHED

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	REVISIONS		

OSAGE RIVER BASIN
POMME DE TERRE RESERVOIR
POMME DE TERRE RIVER, MISSOURI
MISSOURI STATE HIGHWAY RELOCATIONS
BRIDGE OVER LINDLEY CREEK FINISHED
PLAN OF SLAB REINFORCING STEEL

IN 30 SHEETS SHEET No. 28 SCALE: AS SHOWN
U.S. ARMY ENGINEER DISTRICT KANSAS CITY, KANSAS CITY, MO. MAY 1960

SUBMITTED: H.C. Bradford CHIEF, PROJECTS DESIGN BRANCH
RECOMMENDED: Louis J. Circle CHIEF, ENGINEERING DIV.
APPROVED: S. E. Quinton COL., C.E., DISTRICT ENGR.

DRAWN BY E.G.R. TRACED BY E.G.R. CHECKED BY R.H.K. HICKMAN
A-11-0-618

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

FINISHED

12 of 14

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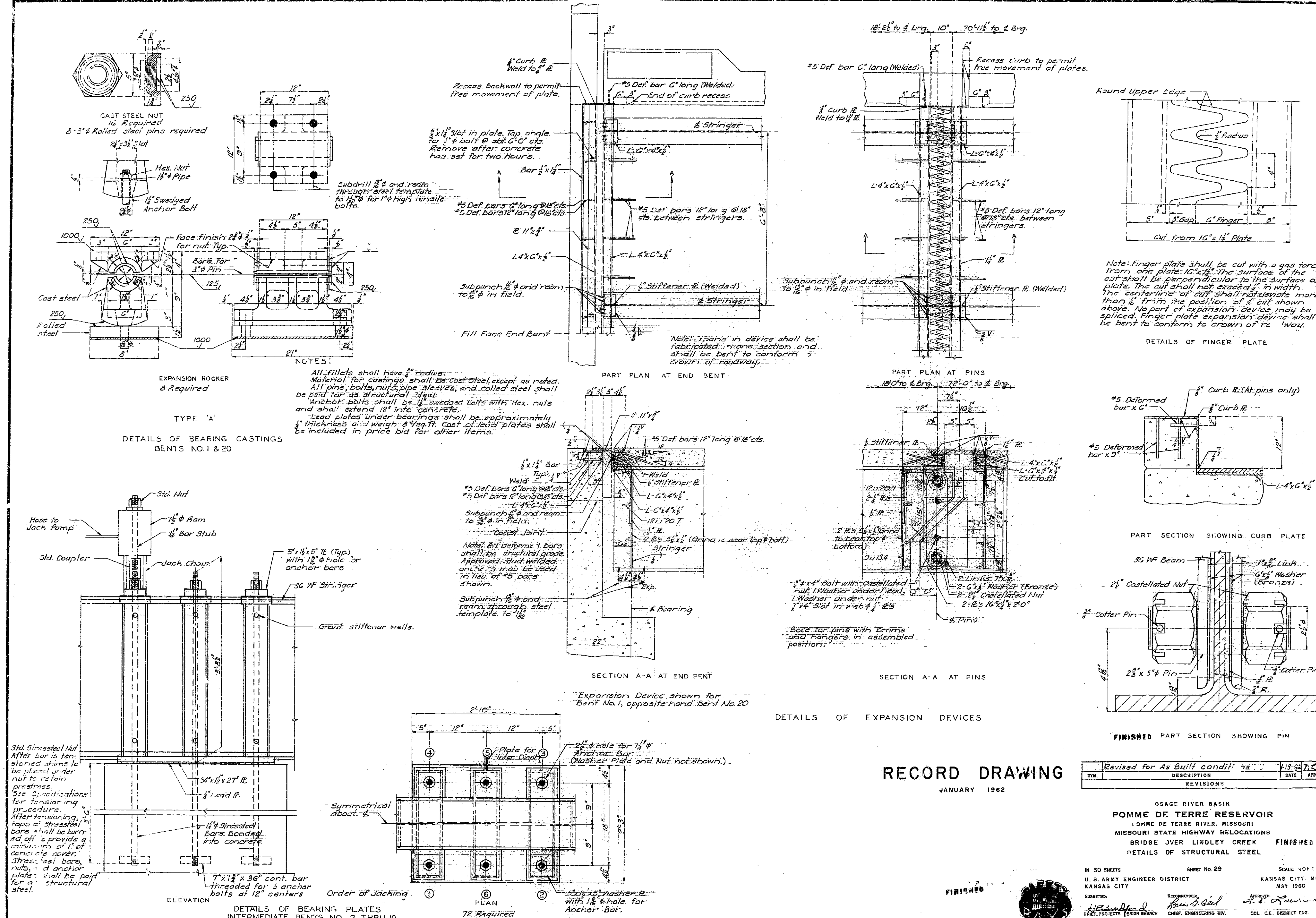
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS



NOTES:
All fillets shall have ¼" radius.
Material for castings shall be Cast Steel, except as noted.
All pins, bolts, nuts, pipe sleeves, and rolled steel shall be paid for as structural steel.
Anchor bolts shall be 1¼" swedged bolts with Hex. nuts and shall extend 12" into concrete.
Lead plates under bearings shall be approximately ⅛" thickness and weigh 8#/sq.ft. Cost of lead plates shall be included in price bid for other items.

Note: Finger plate shall be cut with a gas torch from one plate 16"x1½". The surface of the cut shall be perpendicular to the surface of plate. The cut shall not exceed ⅛" in width. The centerline of cut shall not deviate more than ⅛" from the position of ¢ cut shown above. No part of expansion device may be spliced. Finger plate expansion device shall be bent to conform to crown of roadway.

Note: Expansion device shall be fabricated in one section and shall be bent to conform to crown of roadway.

RECORD DRAWING
JANUARY 1962

SYM.	DESCRIPTION	DATE	APPD.
	Revised for As Built conditions	4-13-62	

REVISIONS

OSAGE RIVER BASIN
POMME DE TERRE RESERVOIR
POMME DE TERRE RIVER, MISSOURI
MISSOURI STATE HIGHWAY RELOCATIONS
BRIDGE OVER LINDLEY CREEK
DETAILS OF STRUCTURAL STEEL

FINISHED

IN 30 SHEETS — SHEET No. 29 — SCALE: NONE
U. S. ARMY ENGINEER DISTRICT, KANSAS CITY — KANSAS CITY, MO. MAY 1960
SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH — RECOMMENDED: CHIEF, ENGINEERING DIV. — APPROVED: COL. C.E., DISTRICT ENG.
DRAWN BY R.E.H. — TRACED BY R.E.H. — CHECKED BY R.H.K. — HICKORY A-34 9-10-619

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

13 of 14

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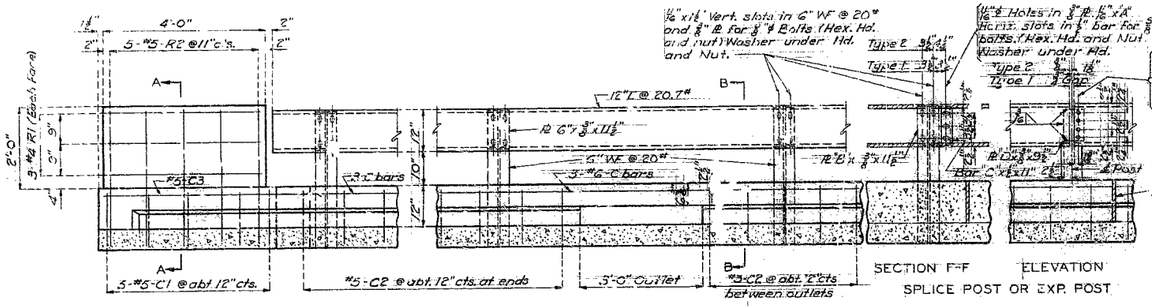
CORPS OF ENGINEERS

U. S. ARMY



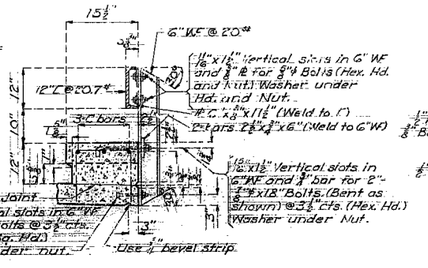
ELEV. CONCRETE END POST — FIXED POST — FIXED POST — SECTION F-F — ELEVATION

SPLICE POST OR EXP. POST

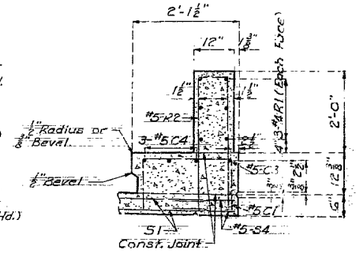
Note: Outlet to be centered in handrail panels as shown on Sheet No. 27.

Note A: splice posts and expansion posts are Type 1 except posts on each side of pinned expansion joint which are Type 2. See Sheet No. 21.

MARK	TYPE 1	TYPE 2
"A"	2"	3½"
"B"	9½"	10¼"
"C"	3½"	5"
"D"	6"	7½"



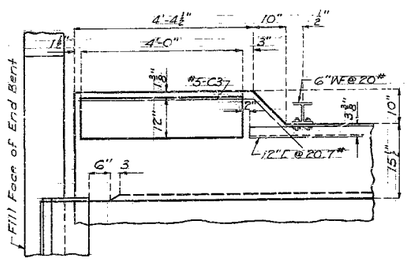
SECTION B-B



SECTION A-A

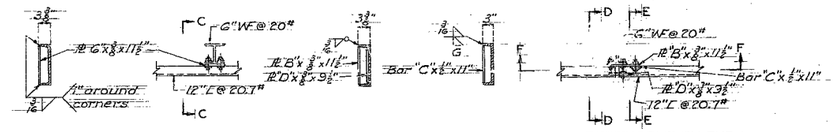
GENERAL NOTES:

All exposed edges of End Posts to be beveled ¼".



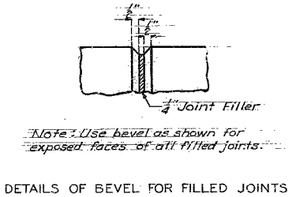
PLAN OF END POST

Note: Channel rail to be adjusted for horizontal alignment by use of "cut size metal shims placed between 6"WF and connection. Shims ¼" ø and ¼" thickness to be included in price bid for other items.



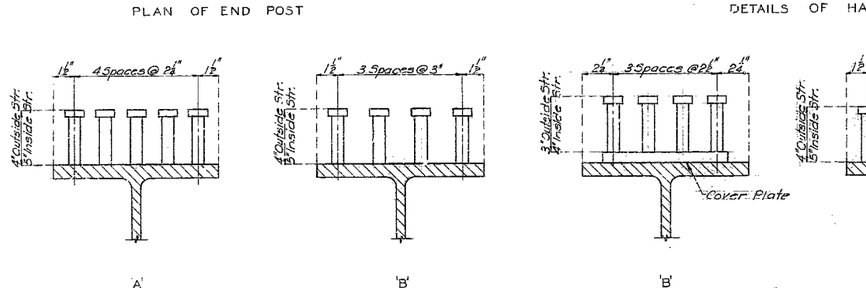
PART SECTION C-C — FIXED RAIL CONNECTION — PART SECTION D-D — PART SECTION E-E — RAIL SPLICE - RAIL EXP.

DETAILS OF HANDRAIL



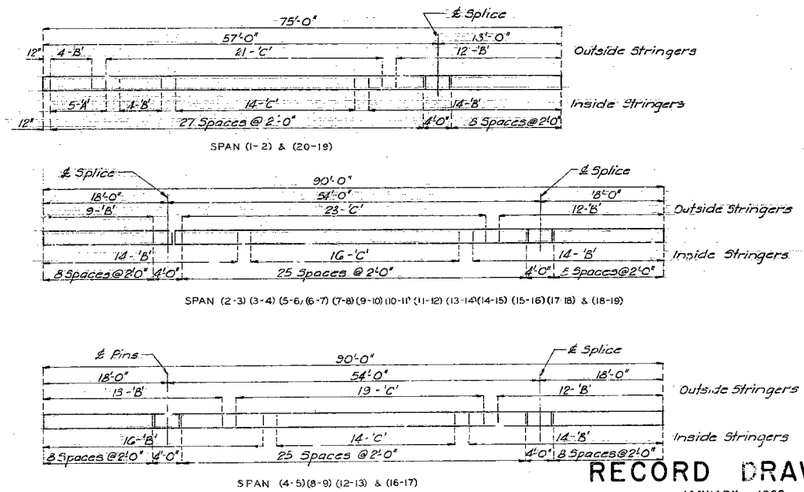
Note: Use bevel as shown for exposed faces of all filled joints.

DETAILS OF BEVEL FOR FILLED JOINTS



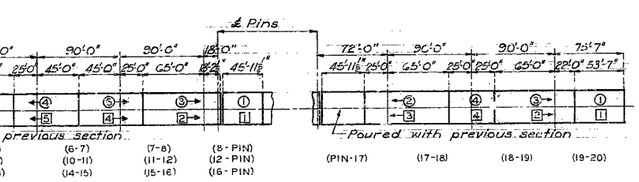
Note: All shear connectors shall be ¾" ø studs automatically end welded in the shop.

DETAILS OF SHEAR CONNECTORS



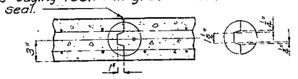
FINISHED

Note: The slab shall be poured in sections of the lengths shown and in the sequence indicated by the numbers ①②③... or, as an alternate, by the numbers 1 2 3... in each series of spans. The separate pours shall progress in the direction indicated by the arrows. The pour may be in either direction if no arrow is shown. Longitudinal construction joints will not be perm. cd.



SLAB POURING SEQUENCE

Finish each side of joint with ¾" radius edging tool. Fill groove with joint seal.



DETAIL OF SLAB CONST. JOINT

FINISHED

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

14 of 14

RECORD DRAWING

JANUARY 1962

SYM.	DESCRIPTION	DATE	APP'D.
	Revised for As Built conditions	4-13-62	KB
	REVISIONS		

OSAGE RIVER BASIN

POMME DE TERRE RESERVOIR

POMME DE TERRE RIVER, MISSOURI

MISSOURI STATE HIGHWAY RELOCATIONS

BRIDGE OVER LINDLEY CREEK

DETAILS OF HANDRAIL

FINISHED

IN 30 SHEETS — SHEET No. 30 — SCALE: 1/2" = 1'-0"

U. S. ARMY ENGINEER DISTRICT, KANSAS CITY — KANSAS CITY, MO. MAY 1960

SUBMITTED: CHIEF, PROJECTS DESIGN BRANCH — RECOMMENDED: CHIEF, ENGINEERING DIV. — APPROVED: COL., C.E., DIST. ENG.

DRAWN BY E.G.R. — TRACED BY E.G.R. — CHECKED BY R.H.K. HICKORY — FILE NO. 0-10-620

PRICHARD COMPANY, INC. INDEPENDENCE, MISSOURI

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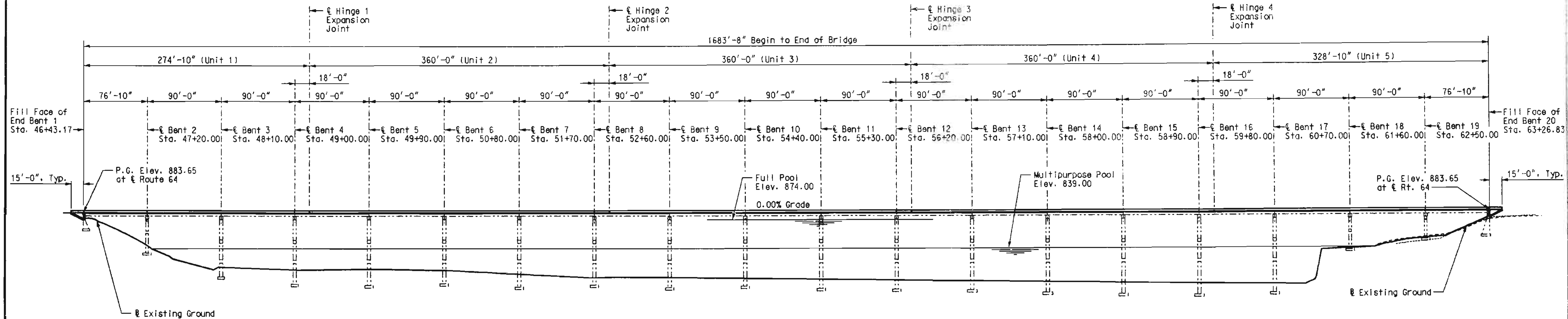
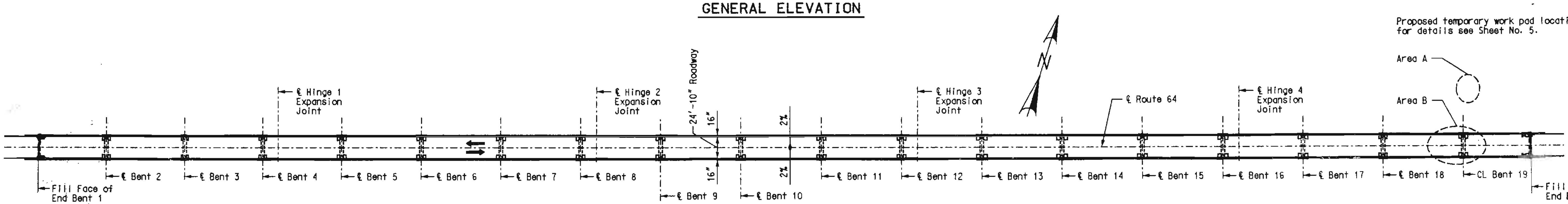
State	Proj. No.	Sheet No.
MO		B1
SEC. 17/18/19	TWP. 36N	RGE. 21W

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(UIP) (75'-0", 17 @ 90'-0", 75'-0") Continuous Composite Wide Flange Beam Spans
No Skew

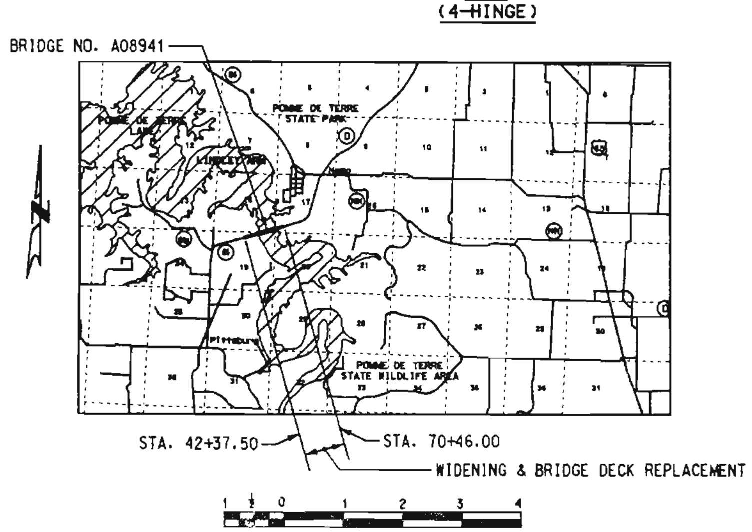


GENERAL ELEVATION



SPAN (1-2) SPAN (2-3) SPAN (3-4) SPAN (4-HINGE) SPAN (HINGE-5) SPAN (5-6) SPAN (6-7) SPAN (7-8) SPAN (8-HINGE) SPAN (HINGE-9) SPAN (9-10) SPAN (10-11) SPAN (11-12) SPAN (12-HINGE) SPAN (HINGE-13) SPAN (13-14) SPAN (14-15) SPAN (15-16) SPAN (16-HINGE) SPAN (HINGE-17) SPAN (17-18) SPAN (18-19) SPAN (19-20)

PLAN



LOCATION MAP

EXISTING PLANS NOTE

Elevations have been adjusted (+ 0.456 feet) from existing bridge "As Built Plans" to match 2001 Survey Datum.

Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in the scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

BENCHMARKS

Top NE corner of concrete wingwall (Pavement side) on the East End and South side of the Bridge over Pomme de Terre Lake, Lindley Branch.
Elev. 884.056

Top center @ Northerly end of concrete wingwall @ Southwest corner of Bridge (West side of Lake) over Pomme de Terre Lake, Lindley Branch.
Set cut 't'.
Elev. 884.109

STATE OF MISSOURI BAKUL B. DESAI NUMBER E-27084 12/22/03

WIDENING OF:
BRIDGE OVER POMME DE TERRE LAKE

STATE ROAD FROM RTE. NN S.W. TO RTE. 64B
1.5 MILES SOUTHWEST OF ROUTE NN
PROJECT NO. STA. 46+43.17
JOB NO. J8S0654 RTE. 64
HICKORY COUNTY
DATE 12/30/03

STD. 706.35
STD. 609.00
A08941

Detailed SEP 2003
Checked OCT 2003
HNTB

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

22-DEC-2003 09:16 ...Precast Deck\drawings\p01.dgn

State	Proj. No.	Sheet No.
MO		B2

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2002 AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A.

DESIGN LOADINGS:
HS15-44: Stringers and Substructure
HS20-44: Deck
Earth 120#/Cu. Ft. Equivalent Fluid Pressure = 45#/Cu. Ft.
Fatigue Stress Cycles - Case II.
Superstructure: Continuous composite for live load.

DESIGN UNIT STRESSES:
Class B-1 Concrete (Substructure) f'c = 4,000 psi.
Class B-1 Concrete (Closure Pour & Barrier Curb) f'c = 4,000 psi.
Silica Fume concrete f'c = 4,000 psi.
Precast Slab Panel grout f'c = 2,500 psi (prior to opening to traffic)
Reinforcing Steel Grade 60 Fy = 60,000 psi.
Structural Carbon Steel (ASTM A709 Grade 36) Fy = 36,000 psi.
Post-Tensioning Bars (Grade 150) Fy = 150 ksi.

FABRICATED STEEL CONNECTIONS:
Field connections, high strength bolts $\frac{7}{8}$" Dia., holes $\frac{15}{16}$" Dia., except as noted.
High strength bolts, nuts and washers will be sampled for quality assurance as specified in Standard Specification 106 and Field Section (FS-712) from Materials Manual.

STRUCTURAL STEEL:
Fabricated structural carbon steel shall be ASTM A709, Grade 36, except as noted.

WELDING:
For welded connections, use minimum weld sizes as per Missouri Standard Specifications for Highway Construction, unless shown otherwise.

WIDEN, EXTENSION, AND REPAIR:
Outline of old work is indicated by dashed lines. Heavy lines indicate new work.
Dimensions contained in these plans are based on the "As Built Plans". Contractor shall verify all dimensions in field before ordering new steel.
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, unless otherwise noted.
The contractor shall use one of the resin anchor systems listed in the general special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the general special provisions.
Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for Class B-1 Concrete (Substr).
The resin anchor systems shall have a minimum ultimate pullout strength as specified below, in concrete with f'c = 4,000 psi. See Special Provisions.

DIAMETER	BAR SIZE	EMBEDDED LENGTH (in new concrete)	PULLOUT (lbs.)
$\frac{5}{8}$"	#4, #5	18"	15,500
$\frac{3}{4}$"	#6	24"	20,400

REINFORCING STEEL:
Minimum clearance to the reinforcing steel shall be 1½", unless otherwise shown.

JOINT FILLER:
All joint filler shall meet the requirements of Section 1057.2.4 of the Missouri Standard Specifications, except as noted.

PROTECTIVE COATING:
System G by the contractor (See Special Provisions).

FIELD COAT (EXISTING STEEL):
All exposed and accessible surfaces of the existing structural steel shall be cleaned and coated with System G prime coat in accordance with Section 712 and the Special Provisions. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.
Field Coat: The color of the finish coat shall be Gray (Federal Standard #26373. The cost of the intermediate coat shall be included in the contract unit price per sq. foot of intermediate Field Coat (System G) Gray. The cost of the finish coat shall be included in the contract unit price per sq. foot of Finish Field Coat (System G) Gray. (See Special Provisions.)
The Contractor is responsible for the containment and disposal of any materials resulting from the surface preparation and recoating of the existing steel stringers (including top flanges), diaphragms, and other miscellaneous appurtenances. See Special Provisions.

BEARINGS:
Bearings at end bents require cleaning, lubricating and coating, see Special Provisions.

NON-DESTRUCTIVE TESTING:
Welds at existing cover plates and existing stringer post-tension anchor plates require non-destructive testing, see Special Provisions.

PRECAST SLAB PANELS:
Concrete for precast slab panels shall be Class A1 with f'c = 5,000 psi, f'ci = 5,000 psi.

All reinforcement shall be epoxy coated.

The top surface of all panels shall receive a scored finish with a depth of scoring of $\frac{1}{8}$" perpendicular to the CL of Route 64 (see Special Provisions).

Suitable anchorage devices for lifting may be cast in panels, provided they are shown on the shop drawings and approved by the engineer.

Panels shall be set on joint filler in accordance with Section 1057.2.5 of Mo. Std. Spec. or polystyrene bedding material.

POST-TENSIONING BARS:
All bars shall conform to to the requirements of ASTM A722 Grade 150. Anchorage systems and blockout details shall be determined by the post-tensioning system used. The contrator shall adjust dimensions and reinforcing as required.
Maximum jacking stress = 0.75 f's
Maximum stress after seating = 0.70 f's
P.T. . Where noted in plans, denotes Post-Tensioned.

TEMPORARY BRIDGE:
To accomodate openings in deck at closure pour locations and joint between precast slab panels and existing deck, steel plates (or other approved device) shall be used.
Prior to removal of any portion of the deck or end bent backwalls, shop drawings and calculations indicating size and thickness of plates shall be submitted to the Engineer for approval. See Special Provisions.

SILICA FUME CONCRETE WEARING SURFACE:
In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. No payment will be allowed for additional labor, materials or equipment for variations in thickness of wearing surface.

CONSTRUCTION NOTE:
"Rivet Replacement at Field Splices" shall be completed prior to beginning bridge deck removal and placing of precast slab panels, see Sheet No. 11.
Contractor shall remove portions of deck immediately above existing stringer post-tension anchor plates for a visual inspection at least 1 week prior to placement of Precast Slab Panels at bent locations.

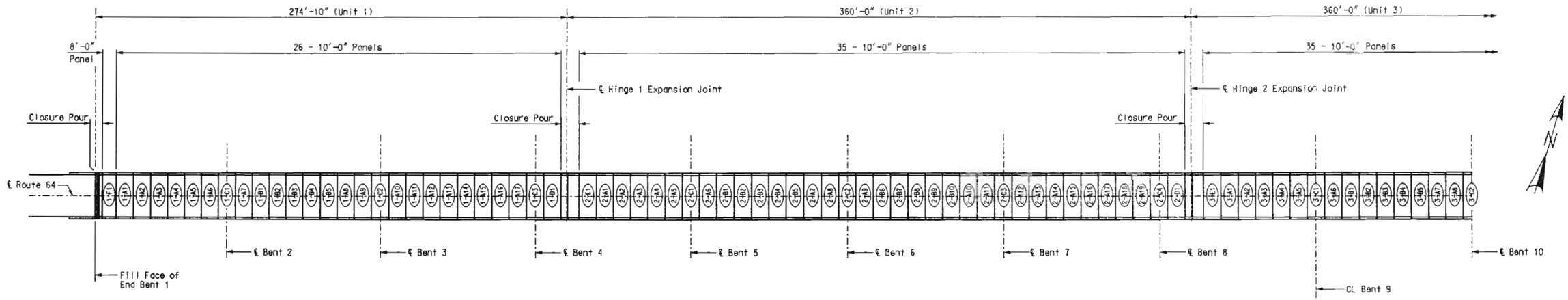
STATE OF MISSOURI
BAKUL B. DESAI
NUMBER E-27084
REGISTERED PROFESSIONAL ENGINEER
12/22/03

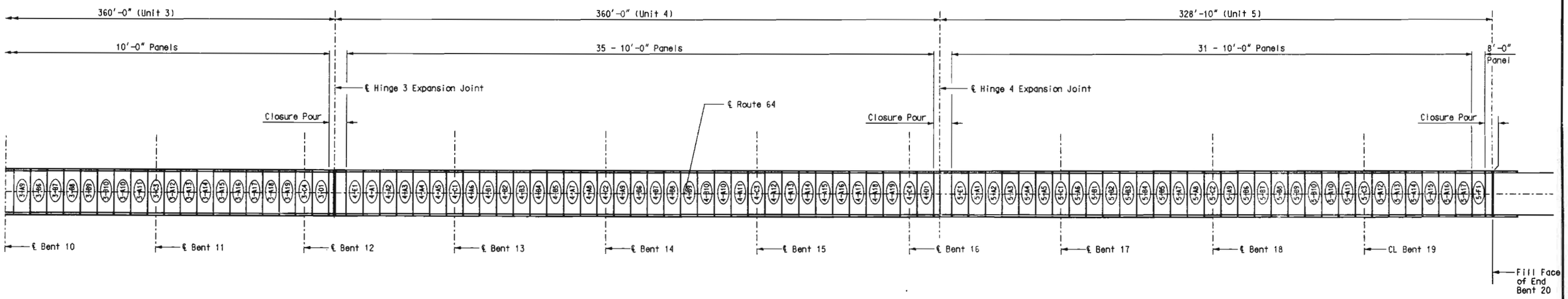
ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Removal of Existing Bridge Deck	Sq. Ft.	-	41,406	41,406
Partial Removal of Substructure Concrete	Lump Sum	1	-	1
Class 1 Excavation	Cu. Yds.	70	-	70
* Temporary Shoring	Lump sum	-	-	1
Bridge Approach Slab (Bridge)	Sq. Yds.	-	153	153
* Rock Fill (Special)	Cu. Yds.	-	-	855
Substructure Repair (Formed)	Sq. Ft.	18	-	18
Substructure Repair (Unformed)	Sq. Ft.	20	-	20
Protective Coating - Concrete Bents (Deleterious Agents)	Lump sum	1	-	1
Class B-1 Concrete (Substr)	Cu. Yds.	25.4	-	25.4
Class B-1 Concrete (Closure Pour & Barrier Curb)	Cu. Yds.	-	43.6	43.6
Precast Concrete Slab Panels (with intergal Barrier Curbs)	Sq. Yds.	-	4,999	4,999
Silica Fume Concrete Wearing Surface	Sq. Yds.	-	4,614	4,614
Strip Seal Expansion Device	Lin. Ft.	-	56	56
Post-Tension System	Lump Sum	-	1	1
Reinforcing Steel (Bridges)	Lbs.	3,180	-	3,180
Mechanical Bar Splice	Each	56	528	584
Reinforcing Steel (Epoxy Coated)	Lbs.	2,100	12,980	15,080
Expansion Device (Finger Plate)	Lin. Ft.	-	100	100
Fabricated Structural Carbon Steel (Misc.)	Pound	-	190	190
Cleaning, Lubricating and Coating Bearing	Each	-	8	8
Slab Drain	Each	-	292	292
Surface Preparation for Recoating Structural Steel	Sq. Ft.	-	65,700	65,700
Field Application of Inorganic Zinc Primer	Sq. Ft.	-	65,700	65,700
Intermediate Field Coat (System G) Gray	Sq. Ft.	-	58,900	58,900
Finish Field Coat (System G) Gray	Sq. Ft.	-	16,500	16,500
Transporting Lead Contaminated Residue to Storage Area	Lump Sum	-	-	1
Transporting Lead Contaminated Residue to the Smelter	Lump Sum	-	-	1
Disposal of Lead Contaminated Residue	Lump Sum	-	-	1
Non-Destructive Testing	Lin. Ft.	-	420	420
Hanger Retrofit at Hinges	Each	-	16	16
Rivet Replacement at Field Splices	Each	-	448	448
Removal of Existing Shear Connectors	Lump Sum	-	-	1
Installation of Shear Connectors	Each	-	11,868	11,868

Notes:
The quantities for "Surface Preparation for Recoating Structural Steel" and "Field Application of Inorganic Zinc Primer" include the entire length of all Stringers.
The intermediate field coat shall be applied to the surfaces of all structural steel except those surfaces to be in contact with concrete shall not receive the intermediate coat. The intermediate coat shall also be applied to the end bent bearings.
The finish field coat shall include the exterior stringers. The limits of the exterior stringers shall include the bottom of the top exterior flanges, the top of the bottom exterior flanges, the exterior web area, the exterior face of the top and bottom flanges, and the bottom of the bottom flange. Areas of steel to be in contact with concrete shall not receive the finish coat.
The surfaces of all structural steel located under expansion joints shall be field coated with intermediate and finish coats for a distance of 10 feet from the center line of the joint. Within this limit, the items to be field coated shall include all surfaces of stringers, bearings, diaphragms, stiffeners and miscellaneous structural steel items. Areas of steel to be in contact with concrete shall not receive the field coats.
The limits of the field coatings shall be masked to provide crisp, straight lines and to prevent overspray on adjacent areas.
* The quantities for "Rock Fill (Special)" and " Temporary Shoring" are based on Contractors work area as shown in the plans. If Contractor does not use workpad as shown in plans, then these items shall be underrun as determined by the Engineer. See Special Provisions.
The lump sum quantity for "Protective Coating - Concrete Bents (Deleterious Agents)" includes End Bent 1 and End Bent 20, to the limits shown.

State	Proj. No.	Sheet No.
MO		03





PLAN OF CONSTRUCTION

PROPOSED OVERALL CONSTRUCTION SEQUENCE

1. Construct End Bent Modifications to backwalls as detailed, using temporary steel plate across backwall and expansion joint. Complete "Rivet Replacement at Field Splices" as detailed , prior to beginning deck replacement. See Special Provisions.
2. Place panels in Span (1-2) (See Plan of Construction).
3. Set strip seal joint at End Bent 1 and cast closure pour.
4. Place panels in Span (2-3).
5. Place panels for Spans (3-4), (4-Hinge), and (Hinge-5)
6. Install hanger retrofit at hinge. Set finger joint in Span (4-5) and cast closure pour.
7. Place panels for Spans (5-6) thru (8-9).
8. Repeat step 6 for Span (8-Hinge) and (Hinge-9).
9. Repeat steps 7 & 8 for Units 3 and 4.
10. Place panels in Span (16-Hinge) and (Hinge-17).
11. Repeat step 6 for Span (16-Hinge) and (Hinge-17).
12. Place panels for Spans (17-18) and (18-19).
13. Place panels for Span (19-20).
14. Set strip seal joint at End Bent 20 and cast closure pour.
15. Place wearing surface on bridge deck.
16. Construct approach slab, wingwalls and barrier at End Bents 1 and 20. Utilize staged construction to coordinate with placement of wearing surface.

SLAB PANEL DESIGNATION

STATE OF MISSOURI
FRANK P. BLAKEMORE III
NUMBER E-2000147855
REGISTERED PROFESSIONAL ENGINEER
12/12/03

Detailed OCT 2003
Checked NOV 2003
HNTB

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

Sheet No. 3 of 35

PROPOSED OVERALL CONSTRUCTION SEQUENCE

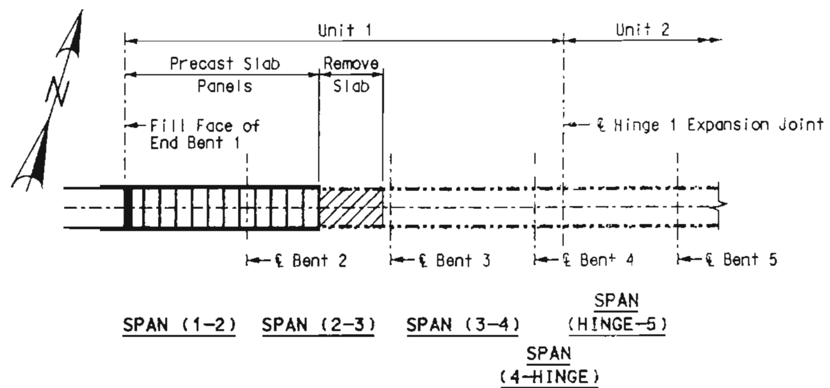
HICKORY COUNTY

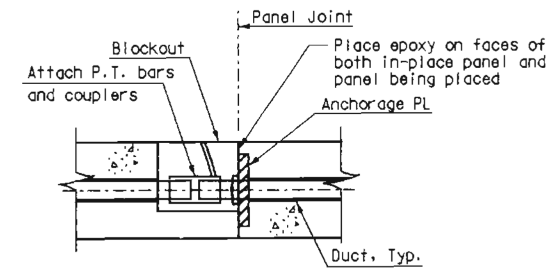
A08941

State	Proj. No.	Sheet No.
MO		B4

PROPOSED NIGHTLY CONSTRUCTION SEQUENCE

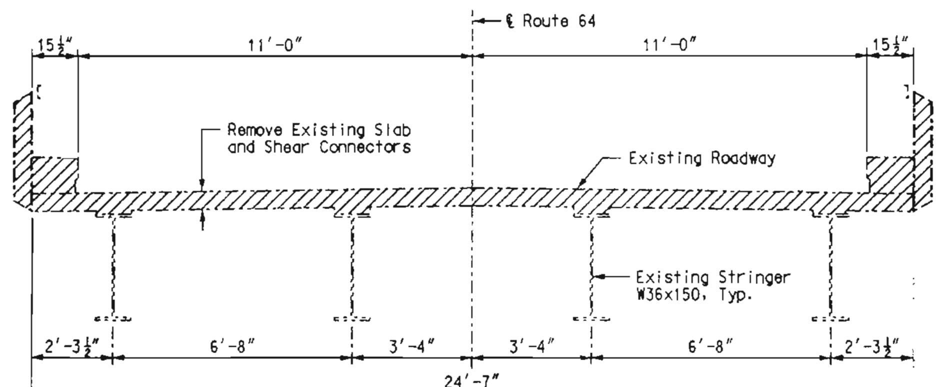
1. Close entire bridge at 7 p.m.
2. Remove guardrail, curb, and slab (except directly over stringers). (Remove onlydeck area that will be replaced that night.)



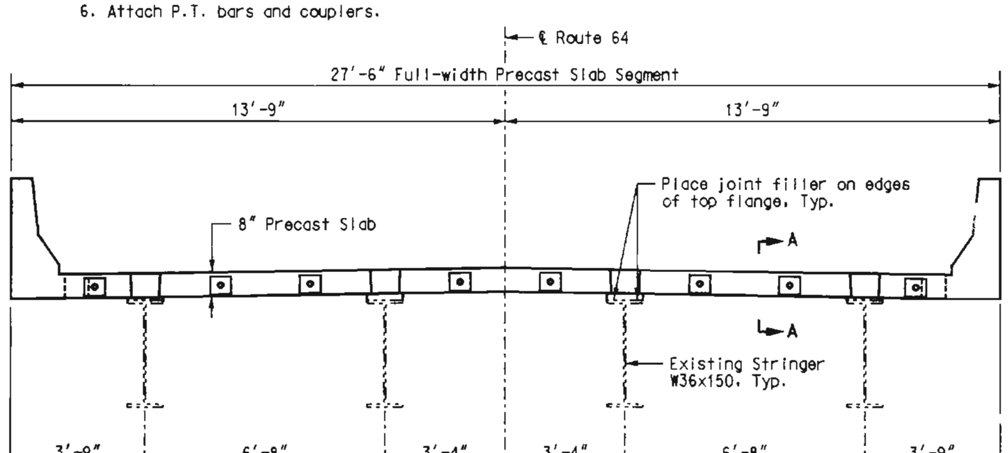


SECTION A-A

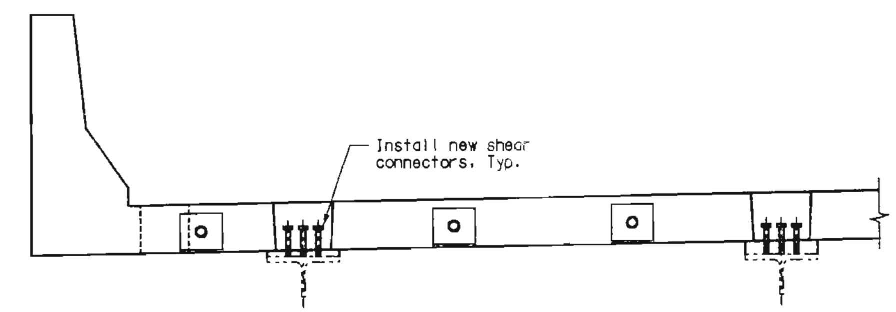
3. Using approved equipment, remove slab directly over top flange of stringers. (See Special Provisions)
4. Remove existing shear connectors and clean and prime coat top flange of stringers.



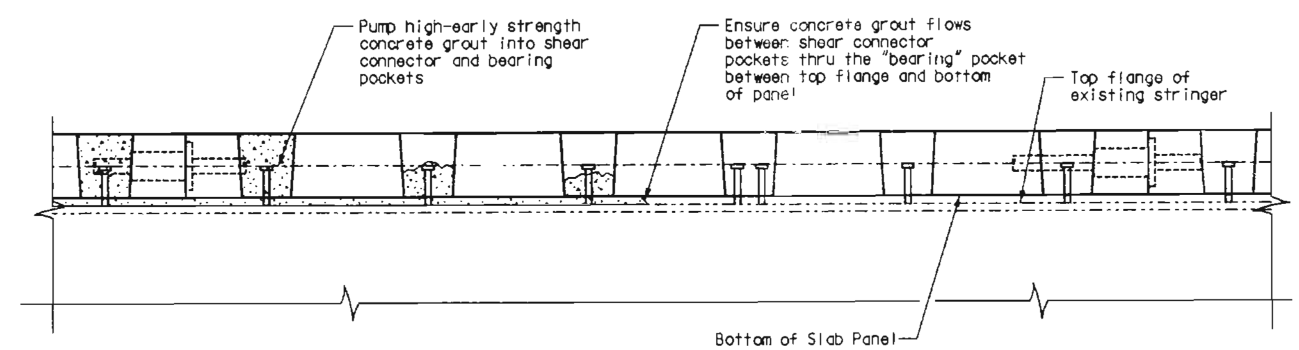
5. Place joint filler material on edges of top flange and then place full-width precast slab panel on stringers. Level and align slab panel as required. (See Special Provisions)
6. Attach P.T. bars and couplers.



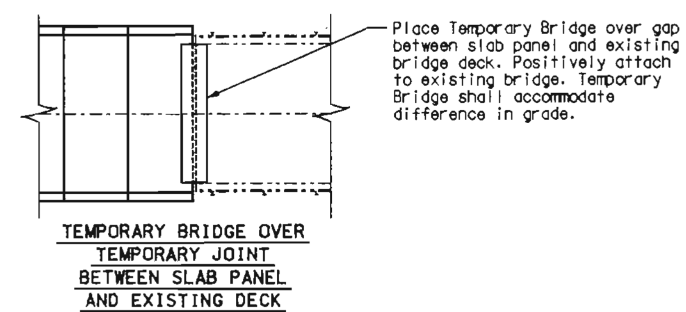
7. Apply epoxy on match cast faces of both in-place panel and panel being placed.
8. Move panel being placed into final position and begin stressing P.T. bars. P.T. bars shall be stressed in pairs symmetric about center line of bridge.
9. Repeat steps 5-8 for each slab panel placed.
10. After all P.T. bars are fully stressed, install new shear connectors to stringer top flanges.



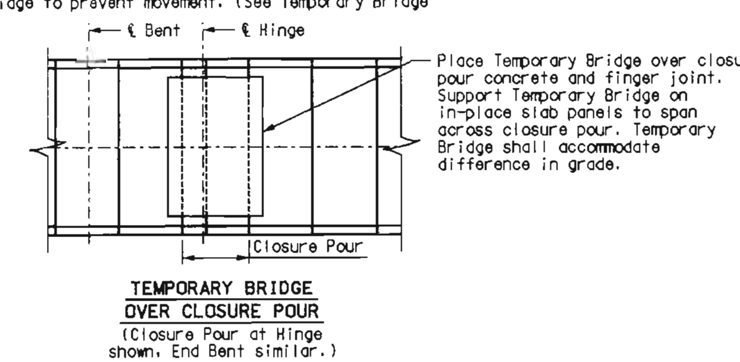
11. Begin pumping high-early strength concrete grout into shear connector and "bearing" pockets. Ensure that concrete grout flows between shear connector pockets thru the "bearing" pocket (between the top flange and bottom of panel). After the "bearing" pocket has been filled, finish placing the concrete grout in shear connector pocket, move to next shear connector pocket, and repeat procedure. Place concrete grout in blockouts for P.T. bar couplers.



12. Place Temporary Bridge over gap between slab panel and existing bridge deck. Positively attach Temporary Bridge to existing bridge to prevent movement. (See Temporary Bridge Special Provisions)



TEMPORARY BRIDGE OVER TEMPORARY JOINT BETWEEN SLAB PANEL AND EXISTING DECK



TEMPORARY BRIDGE OVER CLOSURE POUR
(Closure Pour at Hinge shown, End Bent similar.)

13. Put traffic control devices in place between existing curb and new safety barrier curb.
14. Open entire bridge at 7 a.m.
15. Grout PT Bars upon completion of each span.

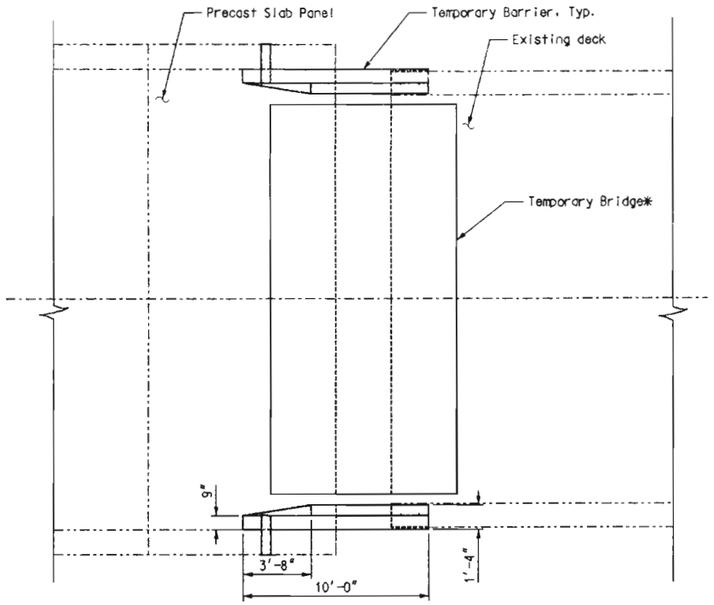
STATE OF MISSOURI — FRANK P. BLAKEMORE III — E-2000147856 — REGISTERED PROFESSIONAL ENGINEER — 12/12/03

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

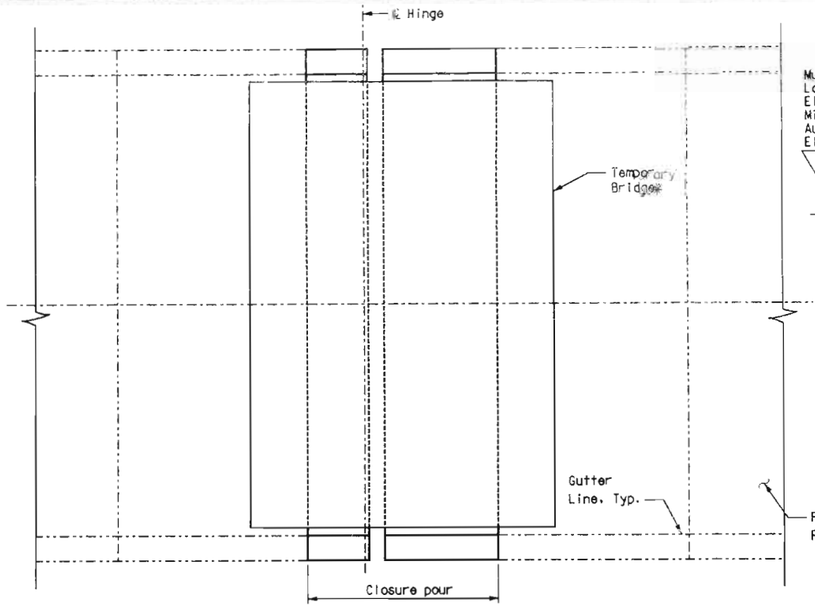
Detailed	OCT 2003	HNTB	Sheet No. 4 of 35	PROPOSED NIGHTLY CONSTRUCTION SEQUENCE
Checked	NOV 2003			HICKORY COUNTY — A08941

USER: jthompson PLOTTED: 10-DEC-2003 16:08 K:\3341\PART 64 Precast Deck\drawings\p05a.dgn

State	Proj. No.	Sheet No.
MO		55

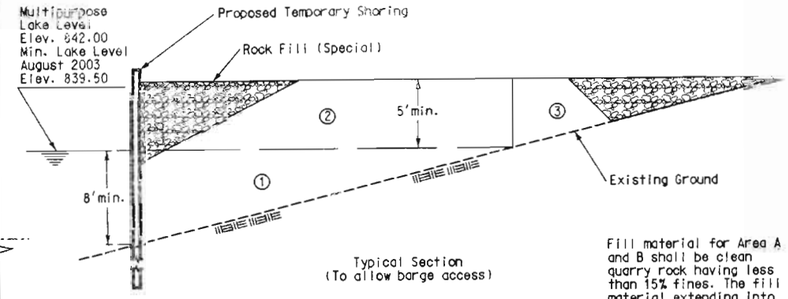


TEMPORARY BRIDGE OVER TEMPORARY JOINT BETWEEN SLAB PANEL AND EXISTING DECK



TEMPORARY BRIDGE OVER CLOSURE POUR

(Closure Pour at Hinge shown, End Bent similar.)



Typical Section (To allow barge access)

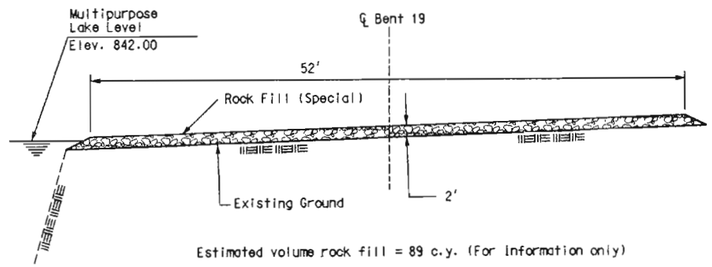
Fill material for Area A and B shall be clean quarry rock having less than 15% fines. The fill material extending into the lake shall be removed after construction, and the foot print of fill material in the lake shall be restored to the original conditions.

For Information only:

① Fill below Multipurpose Lake Level=288 c.y.
② Fill above Multipurpose Lake Level=361 c.y.
③ Fill above Land=115 c.y.

DETAIL OF TEMPORARY WORK PAD (AREA A)

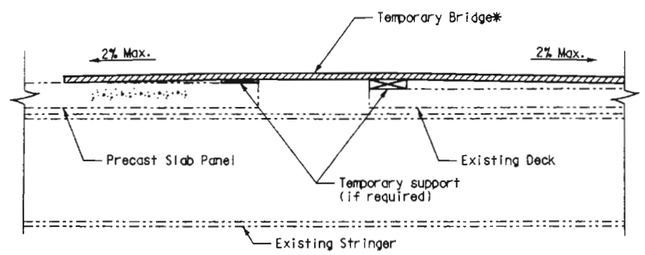
Notes:
Temporary Work Pad dimensions shown are for information only. Contractor shall submit for approval, design calculations and details of temporary shoring and fill. See Temporary Shoring Special Provision. Contrator shall submit for approval, details and procedures of placing and removing fill. Contractor shall submit for approval, to U.S. Army Corps of Engineers, drawings indicating limits of Temporary Work Pad (Area A).



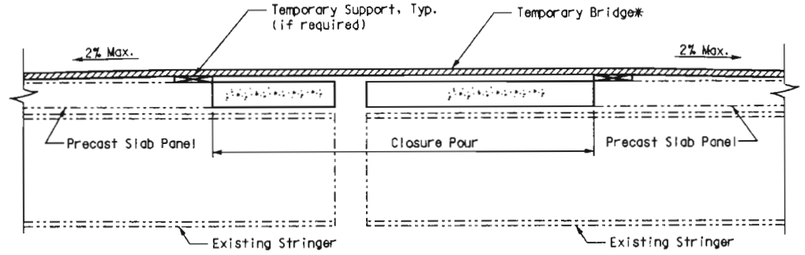
Estimated volume rock fill = 89 c.y. (For information only)

DETAIL OF TEMPORARY WORK PAD (AREA B)

Notes:
Temporary Work Pad dimensions shown are for information only. Contractor shall submit for approval, details and procedures of placing and removing fill. Contractor shall submit for approval, to U.S. Army Corps of Engineers, drawings indicating limits of Temporary Work Pad (Area B)

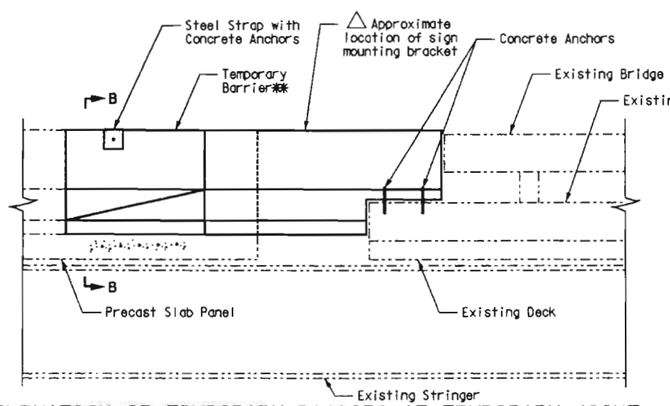


SECTION OF TEMPORARY BRIDGE AT TEMPORARY JOINT



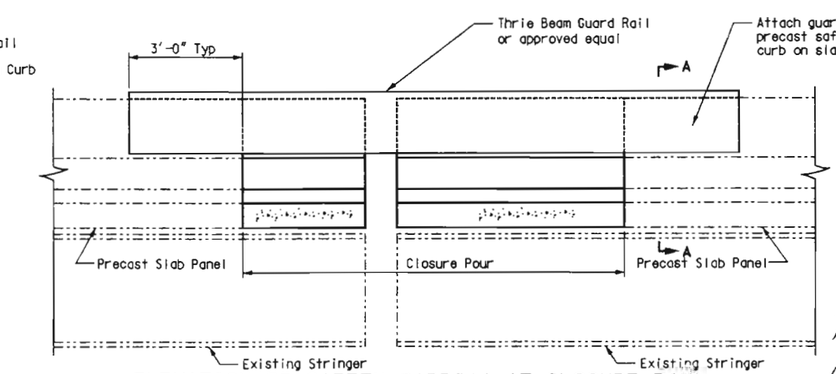
SECTION OF TEMPORARY BRIDGE AT CLOSURE POUR

(Closure Pour at Hinge shown, End Bent similar.)



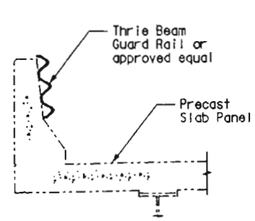
ELEVATION OF TEMPORARY BARRIER AT TEMPORARY JOINT

△ Provide mounting bracket for traffic control sign, see roadway plans for sign details.

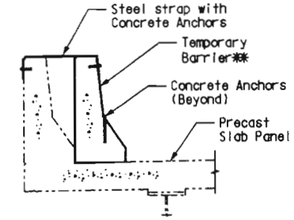


ELEVATION OF SAFETY BARRIER AT CLOSURE POUR

(Closure Pour at Hinge shown, End Bent similar.)



SECTION A-A



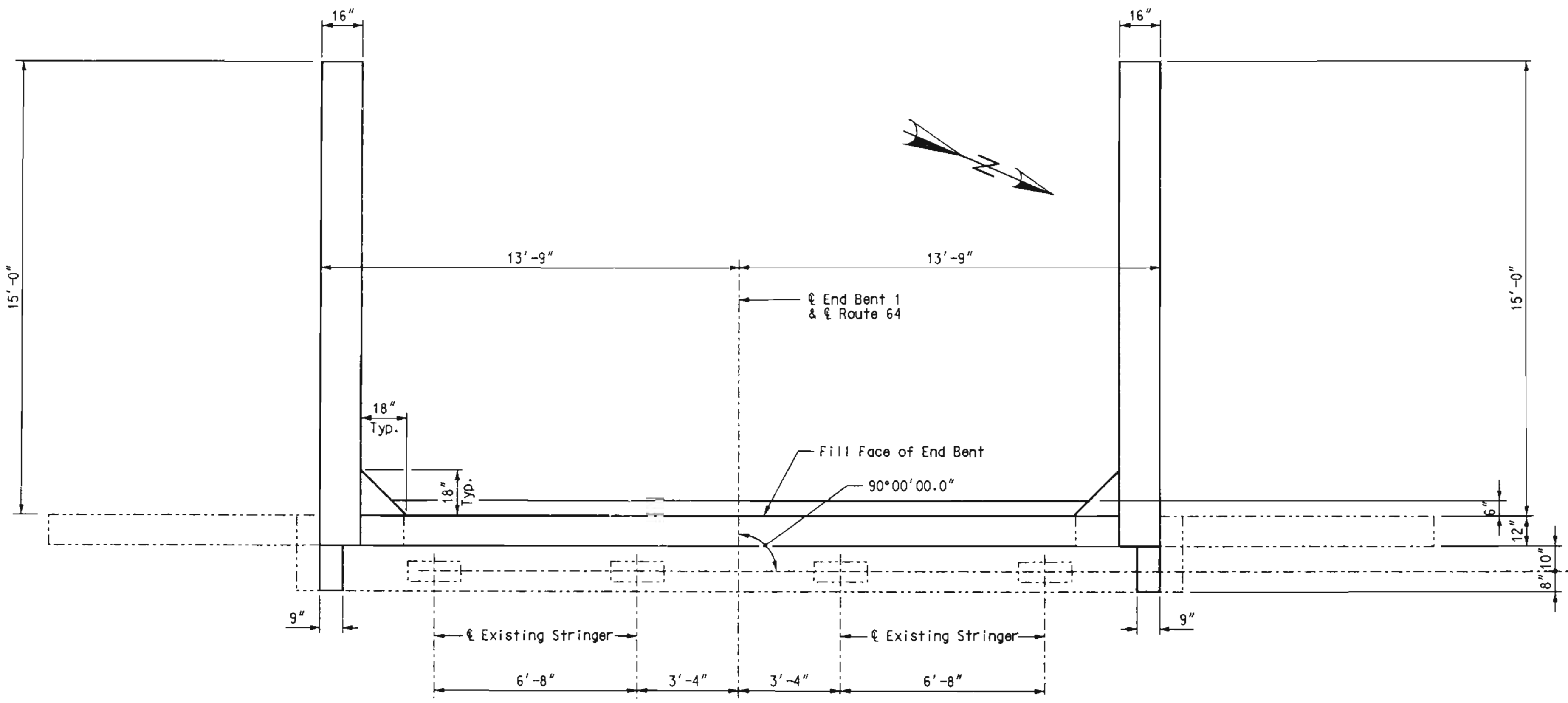
SECTION B-B

Notes:
* Temporary Bridge shown is schematic only. See General Notes and Special Provisions. Payment will be considered subsidiary to other items of work.
** Temporary Barrier shown is schematic only. See General Notes and Special Provisions for Temporary Bridge. Payment will be considered subsidiary to other items of work.
Thrie beam guardrail (or approved equal) at closure pour shall remain in place until the cast-in-place safety barrier curb has achieved full design strength. Contractor shall submit shop drawings for approval showing attachment of thrie beam guard rail to precast panel barrier curb. payment will be considered subsidiary to other items of work.

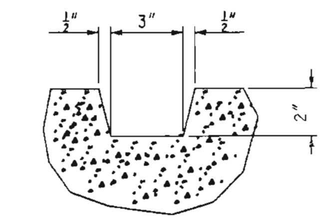
CONSTRUCTION DETAILS

STATE OF MISSOURI FRANK P. BLACKMORE, III PE-2001047856 REGISTERED PROFESSIONAL ENGINEER 12/22/03

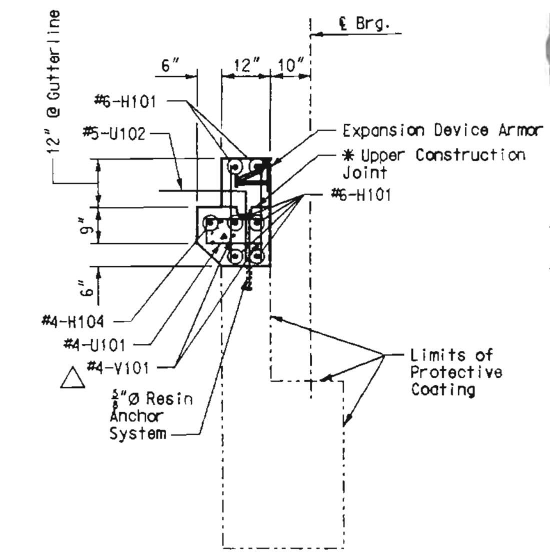
State	Proj. No.	Sheet No.
MO		B6



PLAN



DETAIL OF UPPER CONST. JOINT

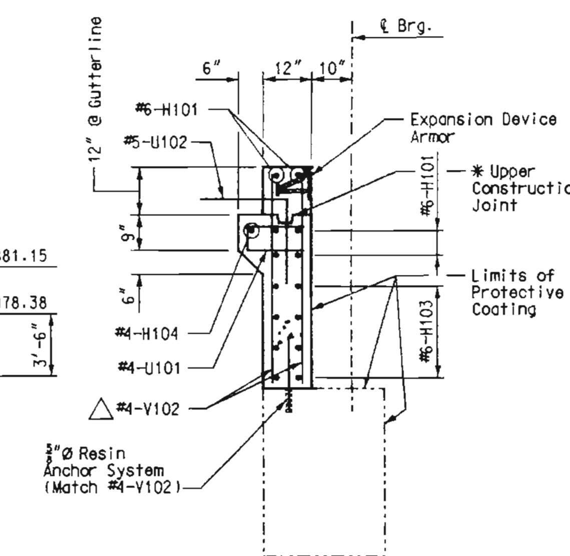


SECTION A-A

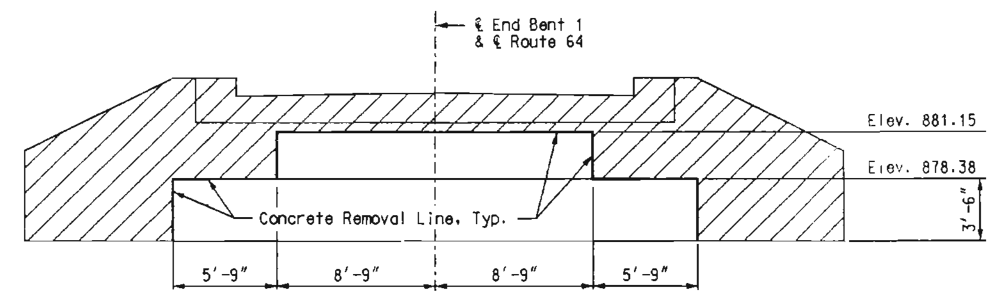
* Pour concrete above upper construction joint after expansion device is placed.

△ Lap #4-V101 and #4-V102 with existing #4 reinforcing a minimum of 15" (30 diameters).

‡ Lap #6-H103 with existing reinforcing a minimum of 24".



SECTION B-B

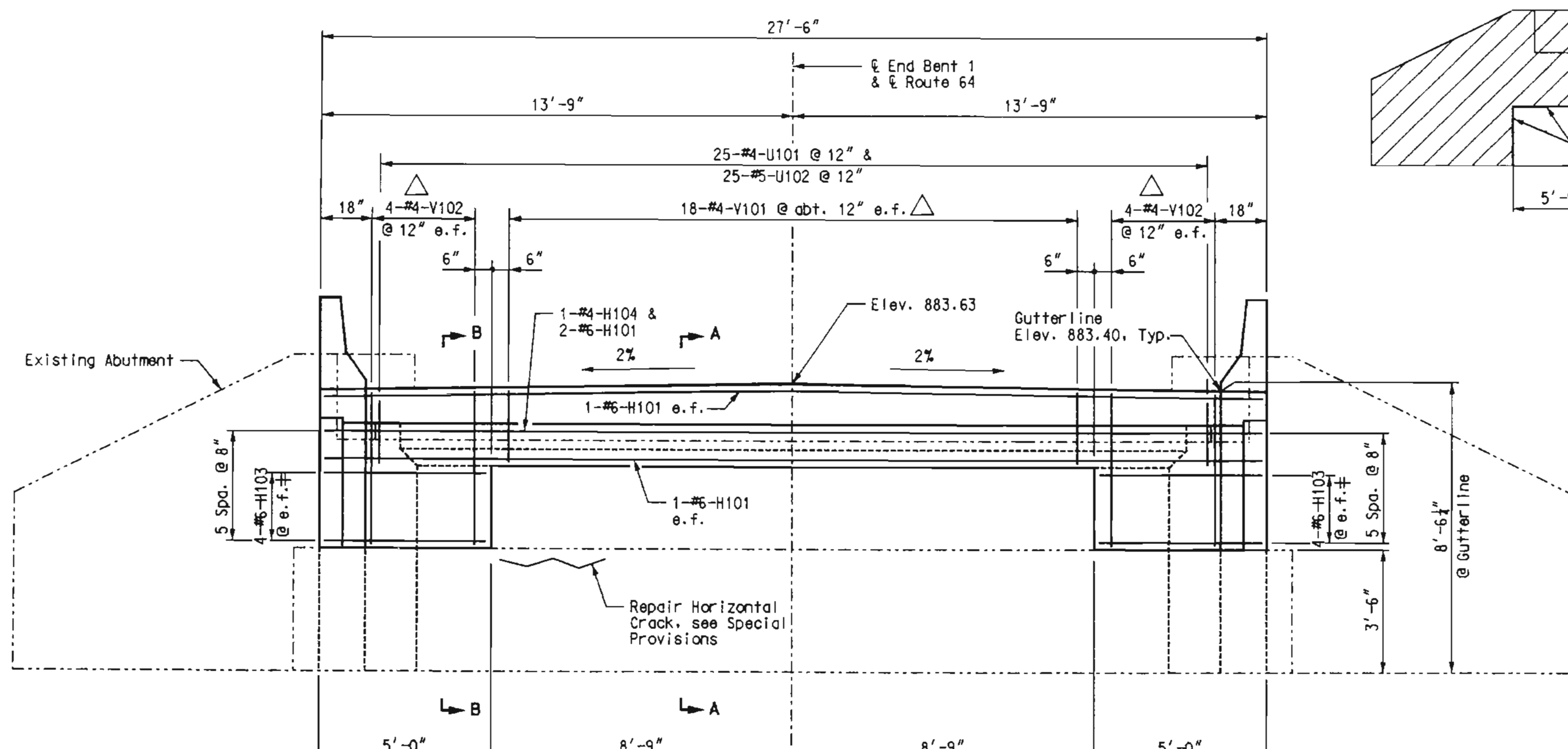


REMOVAL LIMITS

(Looking Backstation)

Area to be removed

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint



ELEVATION

(Looking Backstation)

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1		
ITEM	UNITS	QUANTITY
Class 1 Excavation	Cu. Yds.	35
Substructure Repair (Formed)	Sq. Ft.	4
Class B-1 Concrete (Substr.)	Cu. Yds.	12.7
Reinforced Steel (Bridges)	Lbs.	1,590
Reinforcing Steel (Epoxy Coated)	Lbs.	1,080

Notes:

The Substructure Quantities are included in the Estimated Quantities table on Sheet No. 2.

Existing bearings to be cleaned, lubricated and coated, see Special Provisions.

For Wingwall Details, see Sheet No. 8.

For Safety Barrier Curb Details, see Sheet No. 29.

Footings are not shown for clarity.

Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).

Place resin anchor systems to clear any existing horizontal or vertical reinforcing.

e.f. denotes each face

STATE OF MISSOURI — FRANK P. BLAKEMORE, III — NUMBER E-2000147856 — REGISTERED PROFESSIONAL ENGINEER

12/22/03

END BENT 1 MODIFICATIONS

USER: jthompson PLOTTED: 22-DEC-2003 09:17

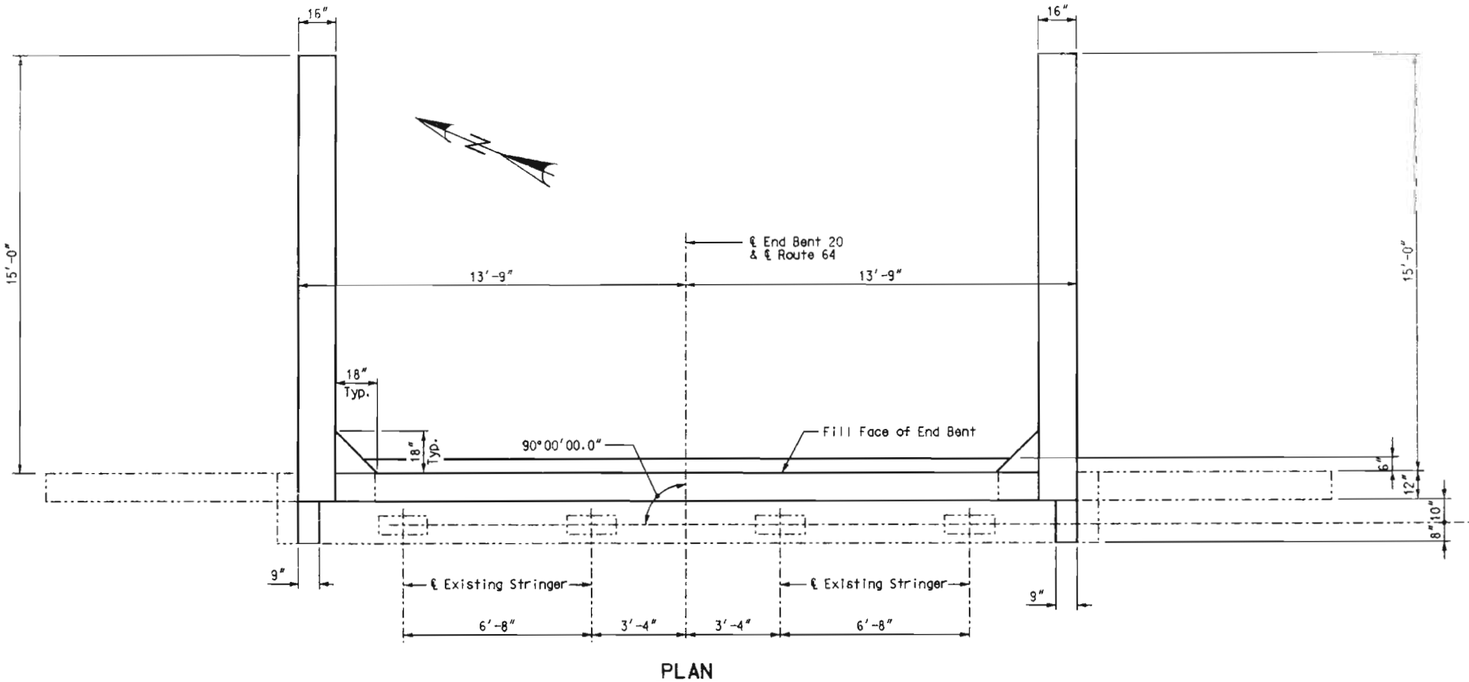
Detailed SEP 2003
Checked OCT 2003

HNTB

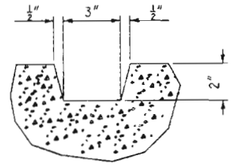
Note: This drawing is not to scale. Follow Dimensions.

HICKORY COUNTY | A08941

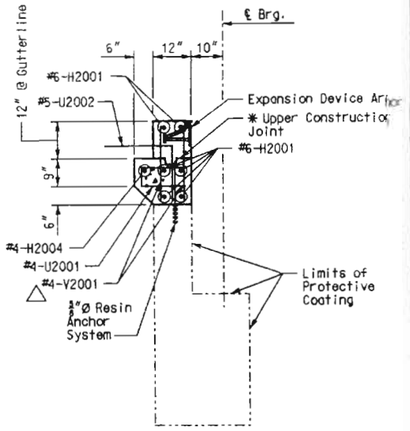
State	Proj. No.	Sheet No.
MO		87



PLAN



DETAIL OF UPPER CONST. JOINT

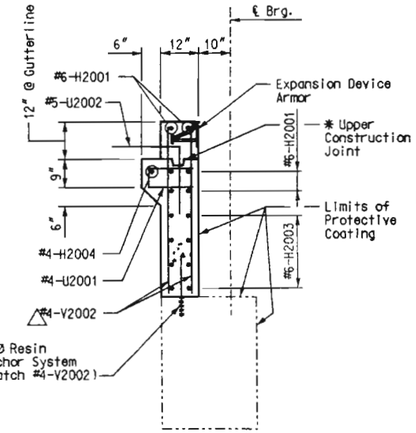


SECTION A-A

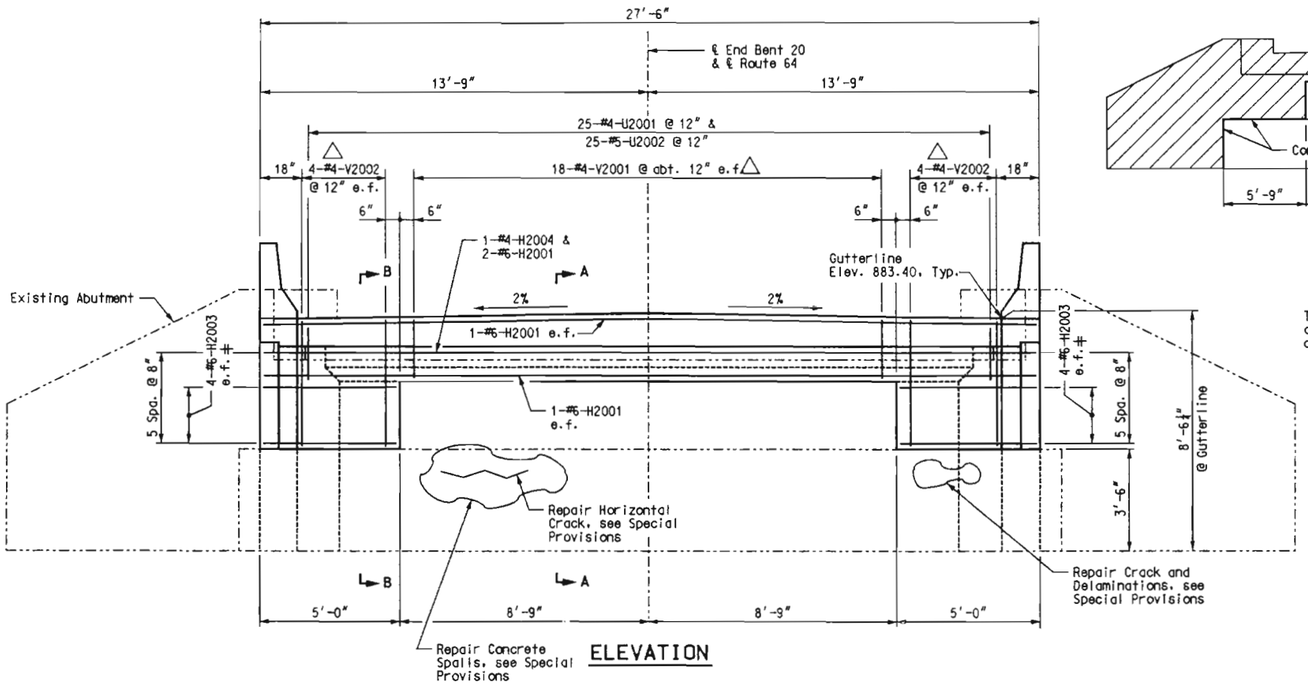
* Pour concrete above upper construction joint after expansion device is placed.

△ Lap #4-V2001 and #4-V2002 with existing #4 reinforcing a minimum of 15" (30 diameters).

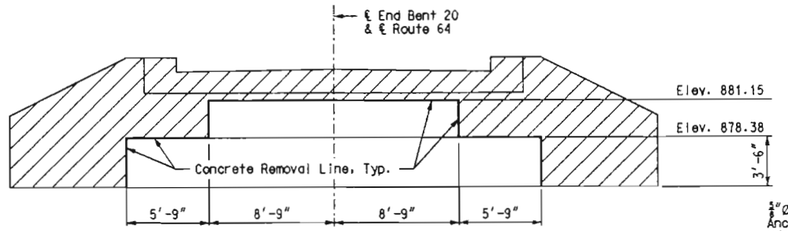
‡ Lap #6-H2003 with existing reinforcing a minimum of 24".



SECTION B-B



ELEVATION



REMOVAL LIMITS

Area to be removed

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 20		
ITEM	UNITS	QUANTITY
Class 1 Excavation	Cu. Yds.	35
Substructure Repair (Formed)	Sq. Ft.	14
Substructure Repair (Unformed)	Sq. Ft.	20
Class B-1 Concrete (Substr.)	Cu. Yds.	12.7
Reinforced Steel (Bridges)	Lbs.	1,590
Reinforcing Steel (Epoxy Coated)	Lbs.	1,020

Notes:
The Substructure Quantities are included in the Estimated Quantities table on Sheet No. 2.
Existing bearings to be cleaned, lubricated and coated, see Special Provisions.
For Wingwall Details, see Sheet No. 8.
For Safety Barrier Curb Details, see Sheet No. 29.
Footings are not shown for clarity.
Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).
Place resin anchor systems to clear any existing horizontal or vertical reinforcing.
e.f. denotes each face

END BENT 20 MODIFICATIONS

STATE OF MISSOURI
FRANK P. BLANCHARD, III
NUMBER
E-2003147555
REGISTERED PROFESSIONAL ENGINEER
12/12/03

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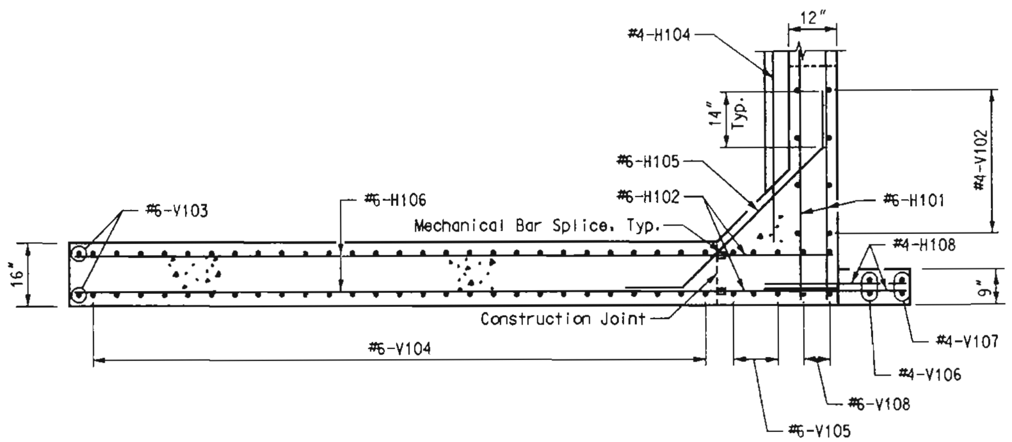
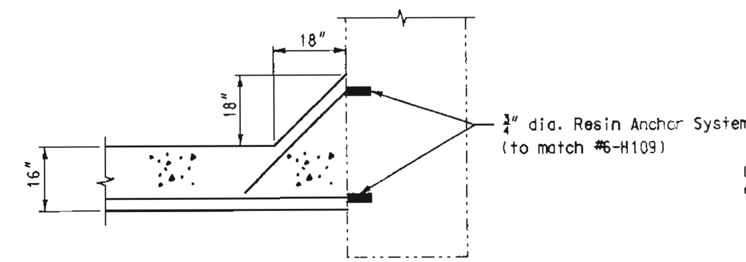
HICKORY COUNTY A08941

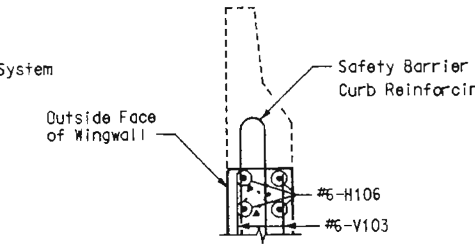
State	Proj. No.	Sheet No.
MO		B8



SECTION A-A



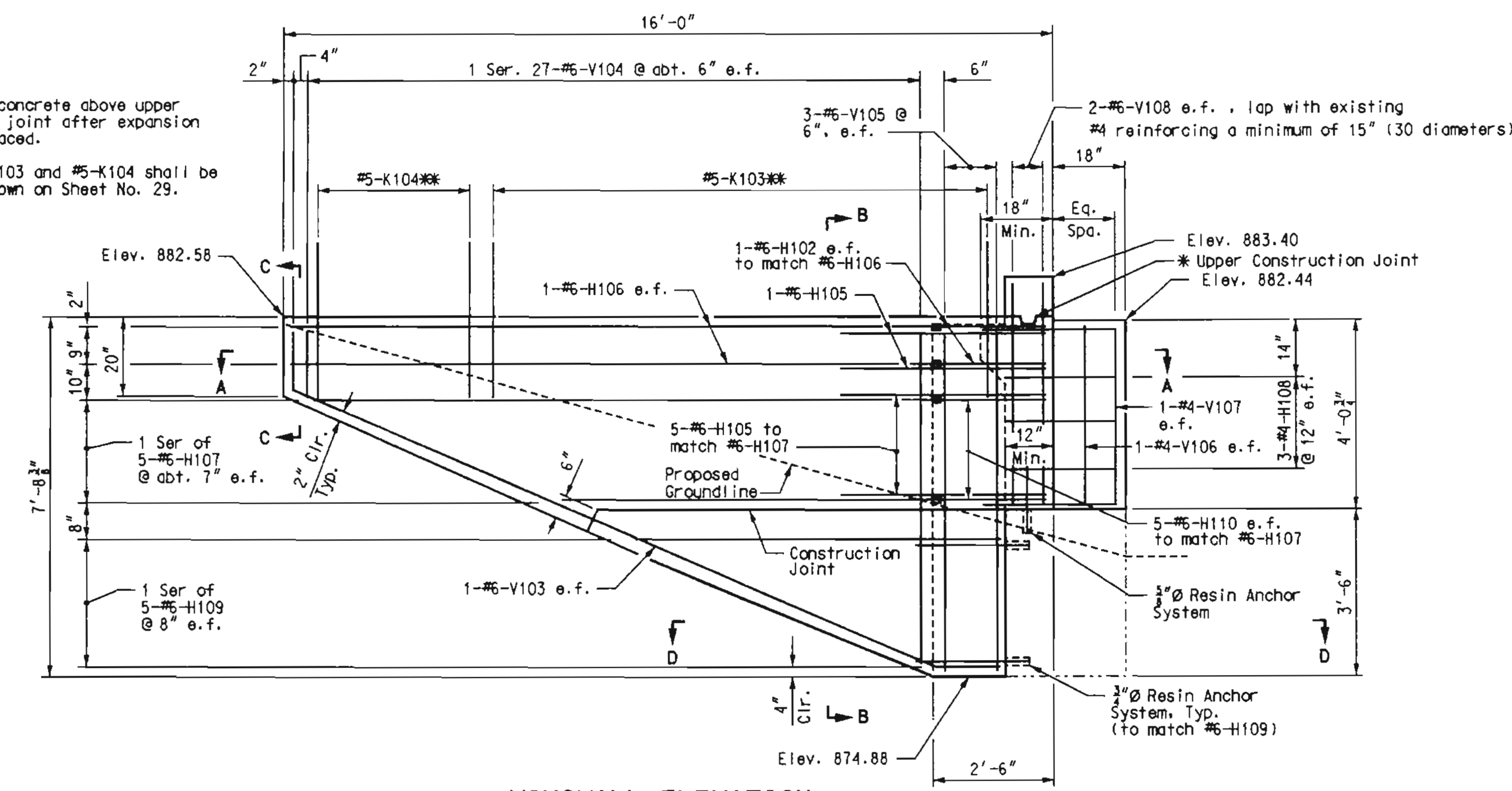
SECTION D-D



SECTION C-C

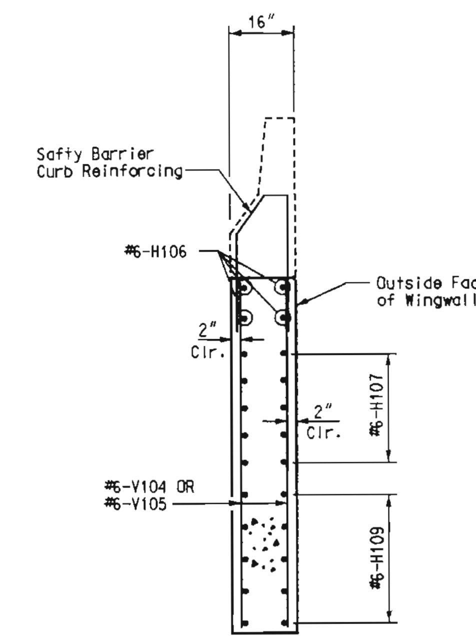
Note:
* Pour concrete above upper construction joint after expansion device is placed.

** #5-K103 and #5-K104 shall be spaced as shown on Sheet No. 29.



WINGWALL ELEVATION

End Bent 1 Right Side Shown (Left Side Opposite)
End Bent 20 Left Side Shown (Right Side Opposite)



SECTION B-B

STATE OF MISSOURI
FRANK P. BLAKEMORE, III
NUMBER E-2000147856
REGISTERED PROFESSIONAL ENGINEER
12/22/03

Notes:
Bar Marks shown are for End Bent 1 using "100" series Bar Marks. End Bent 20 is similar, except use "2000" series Bar Marks.
e.f. denotes each face.
For Safety Barrier Curb Details, see Sheet No. 29.
Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).
Place resin anchor systems to clear any existing horizontal or vertical reinforcing.

WINGWALL DETAILS
END BENTS 1 AND 20

USER: jthompson
PLOTTED: 22-DEC-2003 10:10

Detailed SEP 2003
Checked OCT 2003

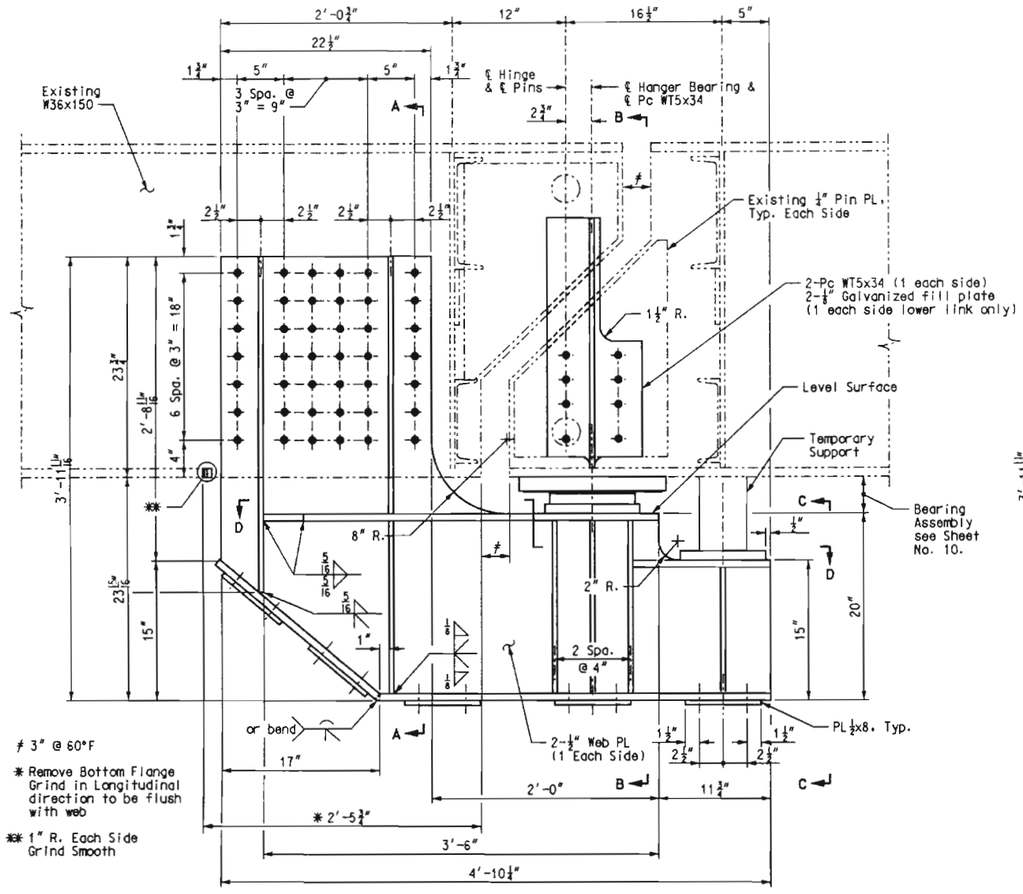
HNTB

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

HICKORY COUNTY

A08941

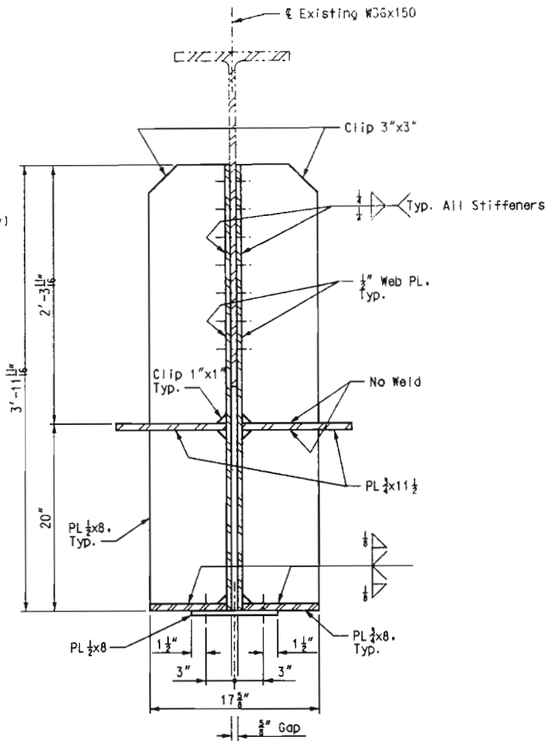
State	Proj. No.	Sheet No.
MO		09



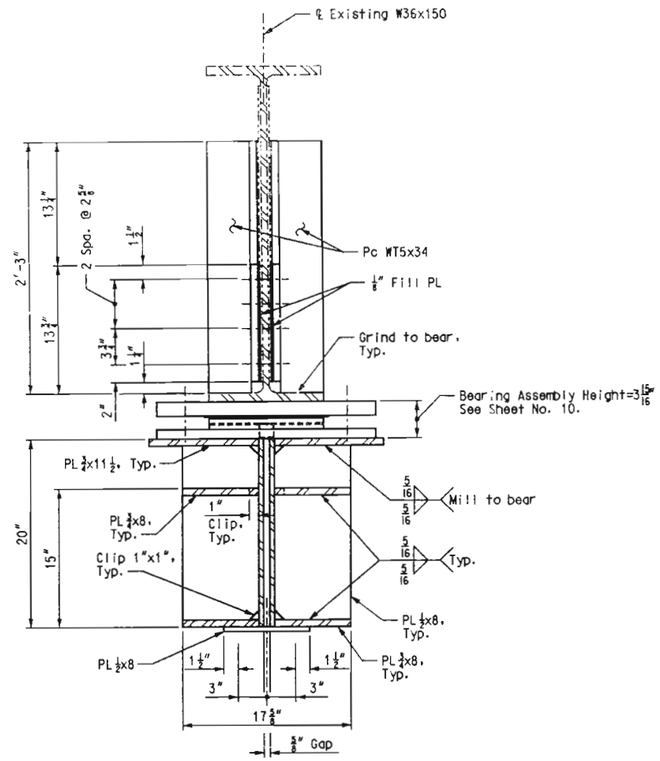
* Remove Bottom Flange Grind in Longitudinal direction to be flush with web

** 1" R. Each Side Grind Smooth

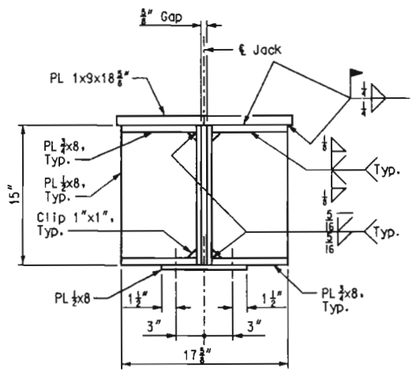
ELEVATION AT HINGE



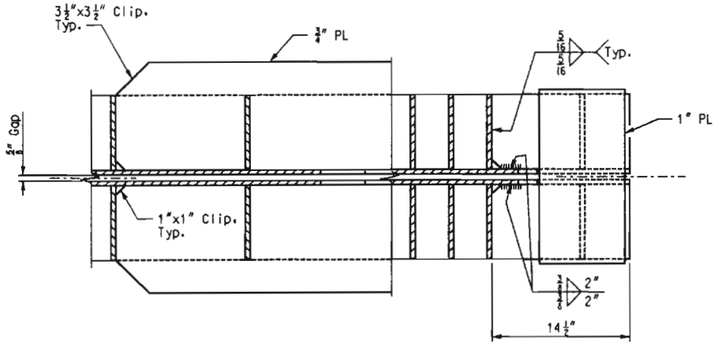
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:

All structural steel shall be ASTM A709, Grade 36.

All bolts shall be ⅞"Ø ASTM A325 H.S. bolts, holes 15/16"Ø.

Payment for the hanger bearing assembly, bottom flange removal and materials shown on this sheet shall be included in the contract unit price for Hanger Retrofit at Hinges.

All hanger retrofit materials shall be coated similar to existing stringers and comply with hanger bearing requirements.

No construction equipment shall be located on supported span while span is temporarily supported.

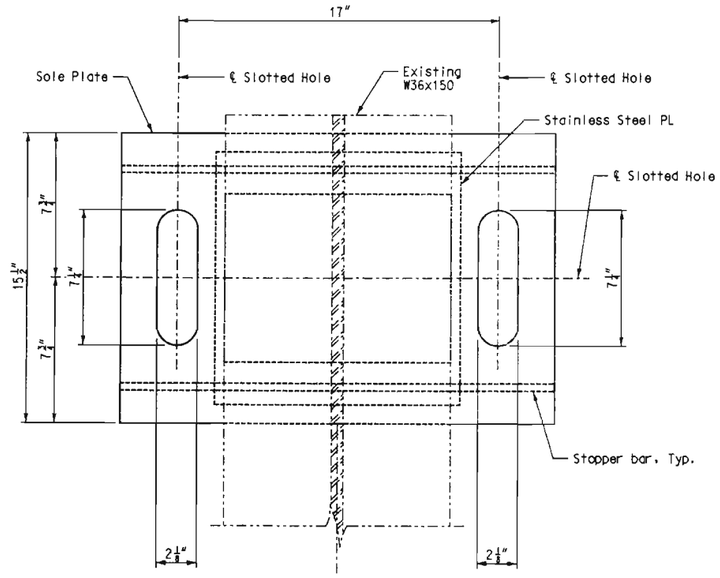
REPLACEMENT OF HANGER RETROFIT AT HINGES SEQUENCE:

1. Remove bottom flange of support stringer, grind in longitudinal direction to be flush with web as shown in Elevation at Hinge.
2. Attach hanger bracket.
3. Jack stringers.
4. Remove existing links and pins.
5. Clean and prime coat.
6. Install new bearings, attach Pc WT5x34 and lower stringers onto bearings.

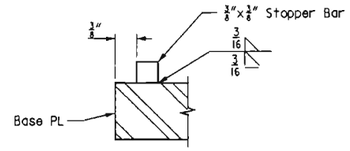
STATE OF MISSOURI
FRANK P. [illegible]
NUMBER
E-2000147556
REGISTERED PROFESSIONAL ENGINEER
12/08/03

DETAILS OF HANGER RETROFIT AT HINGES

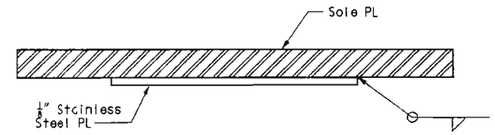
State	Proj. No.	Sheet No.
MO		B10

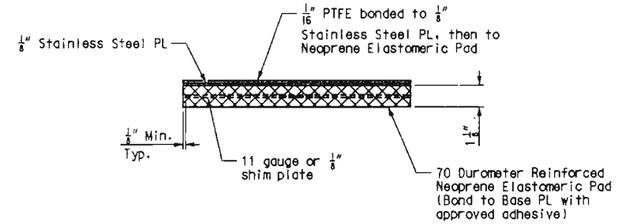


PART PLAN

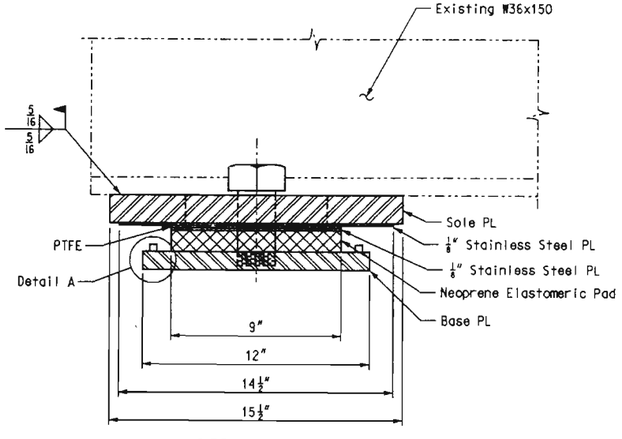


DETAIL A

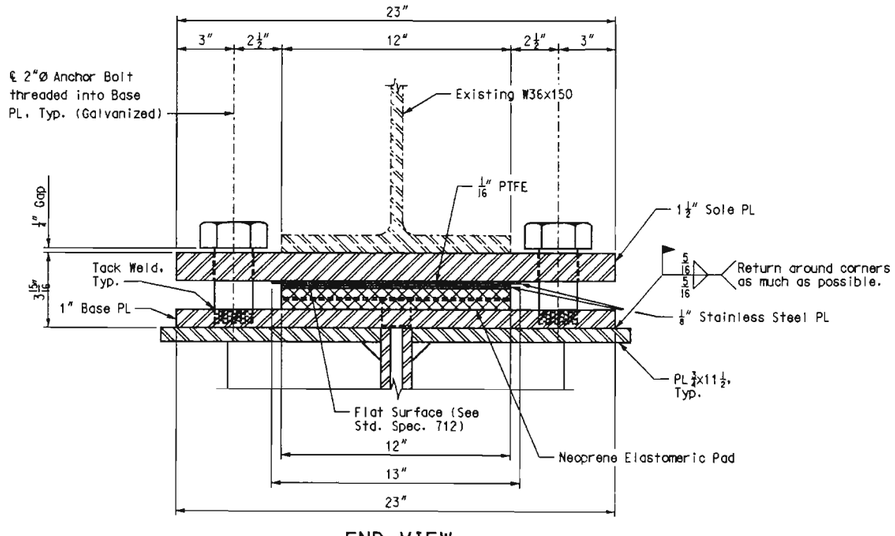




NEOPRENE ELASTOMERIC PAD



SIDE VIEW



END VIEW

Note:
Stopper Bar not shown for clarity.

Notes:

Provide a ⅜"x⅜" stopper bar to prevent the loss of support due to creeping of the PTFE bearings from under stringers at expansion bearings.

To prevent sliding, the neoprene pad shall be bonded to the base plate as approved by the bearing manufacturer for bonding neoprene to steel.

The bottom face of the ⅛" stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.

Anchor bolts shall be ASTM A709 Grade 50 steel.

The sole plate and base plate shall be furnished with the bearing and field welded to the stringers.

Structural steel for the sole plate and base plate shall be ASTM A709 Grade 36.

Payment for the sole plate, masonry plate, anchor bolts, stainless steel plates, PTFE and Neoprene elastomeric pad, (bearing assembly), shall be included in the cost of the Hanger Retrofit at Hinges.

Sole plate and base plate shall be coated similar to existing stringers.

STATE OF MISSOURI
FRANK P. BLACKMORE III
E-2000147856
12/17/03

DETAILS OF HANGER BEARING AT HINGES

HICKORY COUNTY A08941

Detailed SEP 2003
Checked OCT 2003
HNTB

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

Sheet No. 10 of 35

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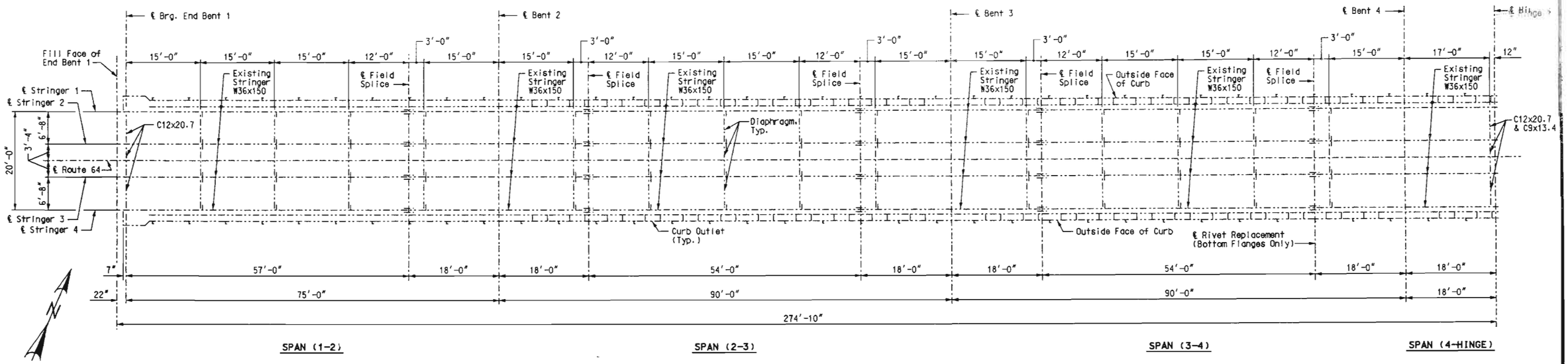
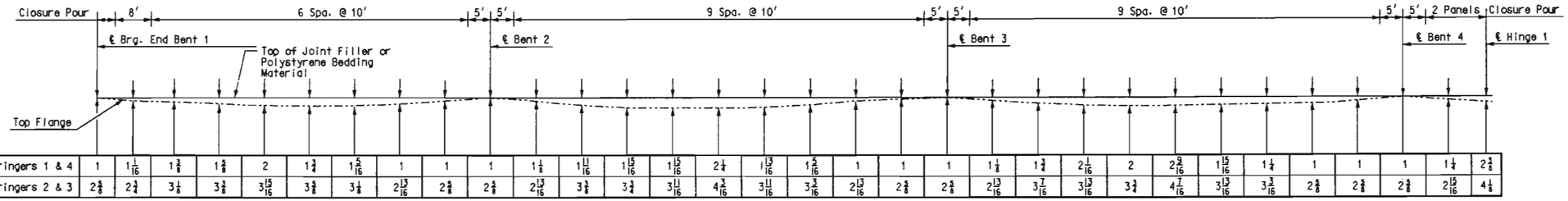
State	Proj. No.	Sheet No.
MO		811





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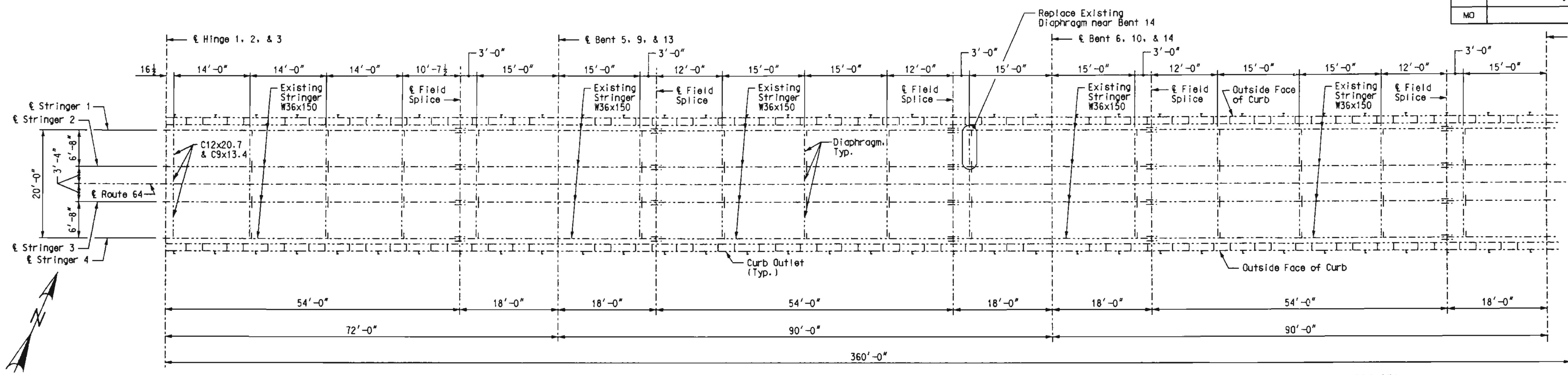
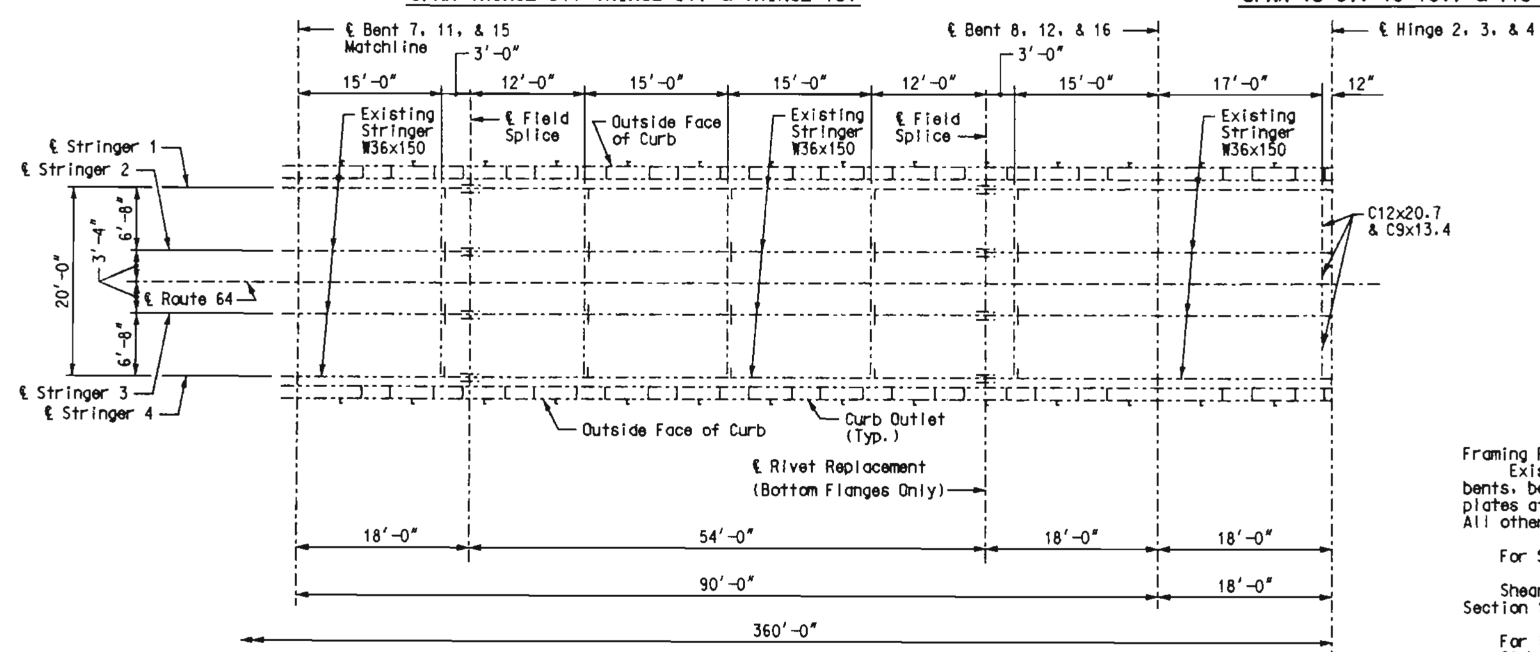
State	Proj. No.	Sheet No.
MO		B12



SPAN (HINGE-5), (HINGE-9), & (HINGE-13)

SPAN (5-6), (9-10), & (13-14)

SPAN (6-7), (10-11), & (14-15)



SPAN (7-8), (11-12), & (15-16)

SPAN (8-HINGE), (12-HINGE), & (16-HINGE)

Framing Plan Notes:
Existing structural steel stringers over intermediate bents, bearing plates at intermediate bents, and stiffener plates at intermediate bents are ASTM-A373 material. All other structural steel is ASTM-A7 material.

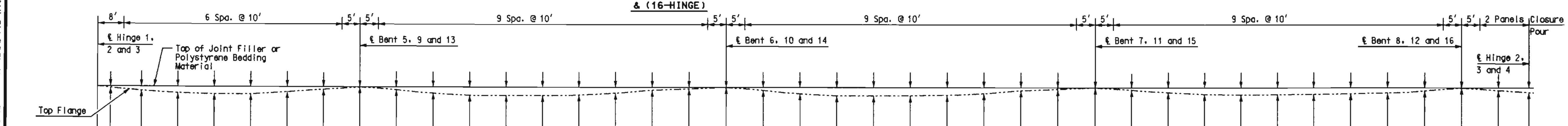
For Shear Connector Details, See Sheet No. 11.

Shear connectors shall meet the requirements of Section 1037 of the Missouri Standard Specifications.

For location of slab panel drain attachment holes see Slab Panel Drain Details, Sheet No. 24.

Estamatied Joint Filler Thickness Notes:

All values are given in inches and are for information only. Estimated Joint Filler thicknesses shown are based on an erection analysis assuming 30' of existing deck is removed and 30' of Precast Slab Panels are replaced each work period. A 10' gap (one panel width) between the existing deck and Precast Slab Panels is assumed to occur at the end of each work period. Closure pours occur after all Precast Slab Panels in the span are erected. A maximum of ¼" (at midspan) has been added to stringers 2 & 3 values to evenly distribute the Slab Panel load to the stringers. The Contractor shall perform an erection analysis to determine joint filler thickness and shall submit details and calculations to the Engineer for approval.



Total	Stringers 1&4	2½	2 7/16	2½	1 15/16	1 7/16	1 1/16	1	1	1⅛	1 11/16	2	1 15/16	2¼	1 13/16	1 5/16	1	1	1	1⅛	1 11/16	1 15/16	1 15/16	2¼	1 13/16	1 5/16	1	1	1	1⅛	1 13/16	2⅛	2⅛	2 11/16	2⅛	1½	1	1	1	1 3/16	2¼
	Stringers 2&3	4¼	4 3/16	4⅜	3 13/16	3¼	2⅞	2 11/16	2⅝	2¾	3⅜	3¾	3 11/16	4 3/16	3 11/16	3 3/16	2 13/16	2⅝	2⅝	2 13/16	3⅜	3¾	3 11/16	4 3/16	3⅝	3 3/16	2¾	2⅝	2⅝	2 13/16	3½	3⅞	3⅞	4⅝	4	3⅜	2¾	2⅝	2⅝	2⅞	4

SPAN (HINGE-5), (HINGE-9), & (HINGE-13)

SPAN (5-6), (9-10), & (13-14)

SPAN (6-7), (10-11), & (14-15)

SPAN (7-8), (11-12), & (15-16) SPAN (8-HINGE), (12-HINGE), & (16-HINGE)

ESTIMATED JOINT FILLER THICKNESS

STATE OF MISSOURI — FRANK P. BLAKEMORE, III — E-2000147856 — REGISTERED PROFESSIONAL ENGINEER — 12/22/03

FRAMING PLAN AND STRINGER DEFLECTIONS
UNITS 2, 3, AND 4

Detailed SEPT 2003
Checked NOV 2003
HNTB

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

Sheet No. 12 of 35

HICKORY COUNTY A08941

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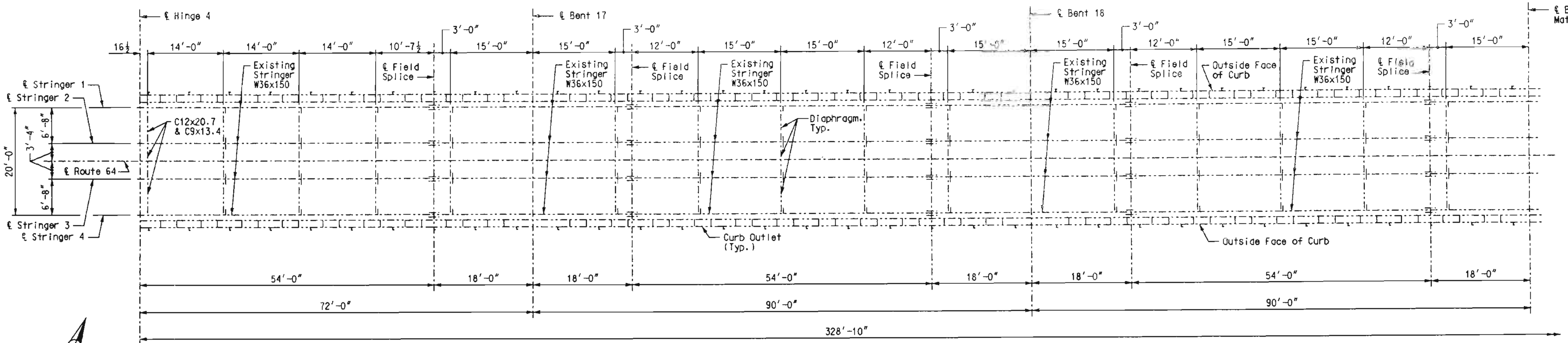
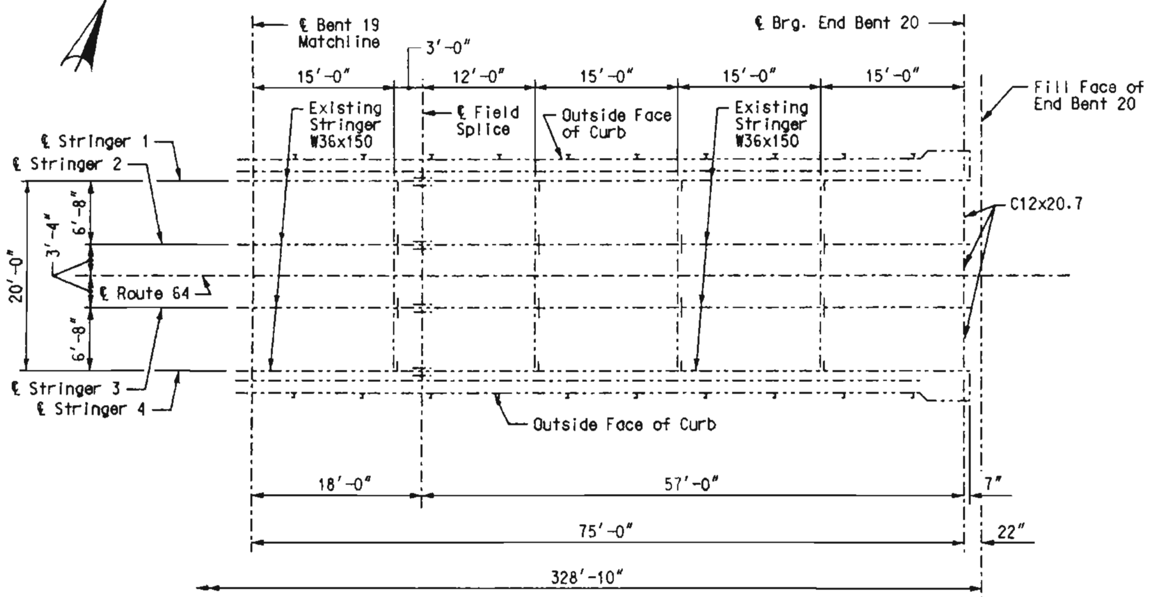
State	Proj. No.	Sheet No.
MO		513



SPAN (HINGE-17) SPAN (17-18) SPAN (18-19)



SPAN (19-20)

Framing Plan Notes:

Existing structural steel stringers over intermediate bents, bearing plates at intermediate bents, and stiffener plates at intermediate bents are ASTM-A373 material. All other structural steel is ASTM-A7 material.

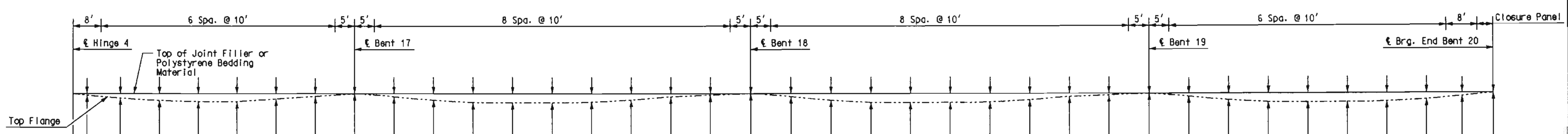
For Shear Connector Details, See Sheet No. 11.

Shear Connectors shall meet the requirements of Section 1037 of the Missouri Standard Specifications.

For location of slab panel drain attachment holes see Slab Panel Drain Details, Sheet No. 24.

Estamatied Joint Filler Thickness Notes:

All values are given in inches and are for information only. Estimated Joint Filler thicknesses shown are based on an erection analysis assuming 30' of existing deck is removed and 30' of Precast Slab Panels are replaced each work period. A 10' gap (one panel width) between the existing deck and Precast Slab Panels is assumed to occur at the end of each work period. Closure pours occur after all Precast Slab Panels in the span are erected. A maximum of ¼" (at midspan) has been added to stringers 2 & 3 values to evenly distribute the Slab Panel load to the stringers. The Contractor shall perform an erection analysis to determine joint filler thickness and shall submit details and calculations to the Engineer for approval.



Total	Stringers 1 & 4	2 3/8	2 1/8	2 9/16	2	1 7/16	1 1/16	1	1	1 1/8	1 11/16	2	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 11/16	1 15/16	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 11/16	1 15/16	1 7/8	2	1 9/16	1 3/16	1	1
	Stringers 2 & 3	4 1/8	4 1/8	4 7/16	3 7/8	3 5/16	2 13/16	2 5/8	2 5/8	2 3/4	3 7/16	3 3/4	3 11/16	4 3/16	3 11/16	3 3/16	2 13/16	2 5/8	2 5/8	2 13/16	3 3/8	3 3/4	3 11/16	4 1/8	3 5/8	3 3/16	2 3/4	2 5/8	2 5/8	2 13/16	3 3/8	3 11/16	3 11/16	3 13/16	3 3/8	2 15/16	2 11/16	2 5/8

SPAN (HINGE-17) SPAN (17-18) SPAN (18-19) SPAN (19-20)

ESTIMATED JOINT FILLER THICKNESS

STATE OF MISSOURI FRANK P. BLAKEMORE, III NUMBER E-2000147856 REGISTERED PROFESSIONAL ENGINEER 12/22/03

FRAMING PLAN AND STRINGER DEFLECTIONS UNIT 5

Detailed SEPT 2003
Checked NOV 2003
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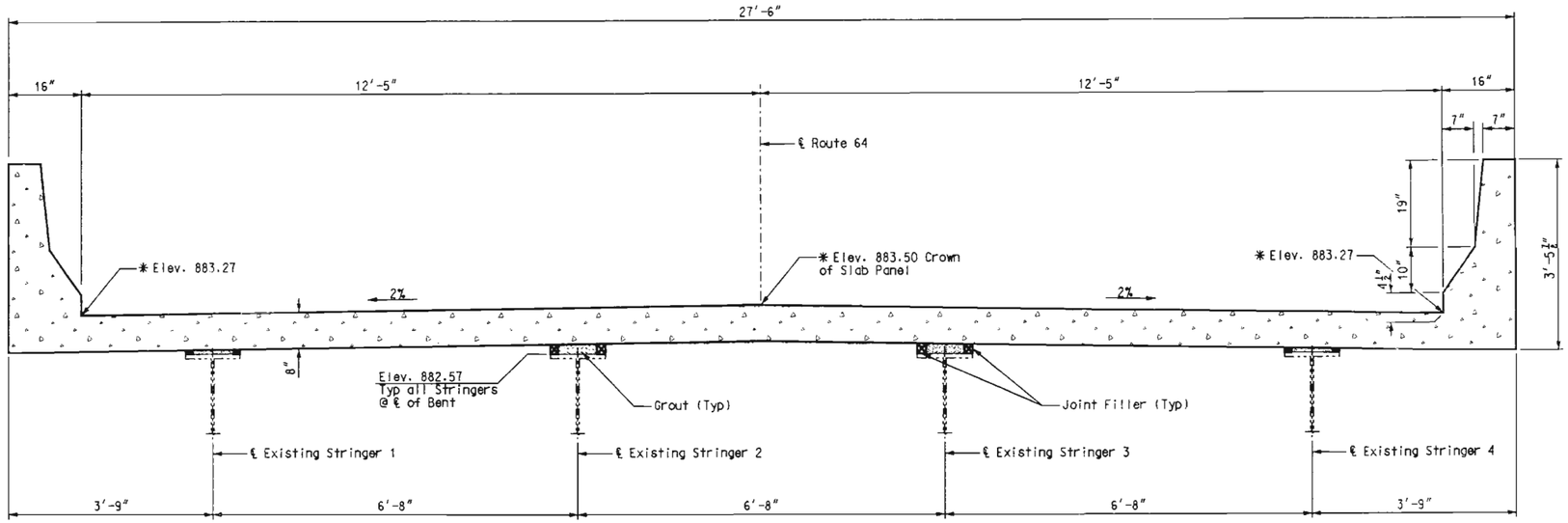
Note: This drawing is not to scale. Follow Dimensions

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO		B14

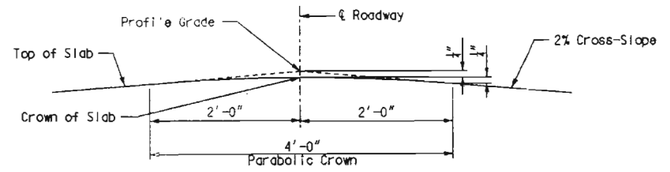


TYPICAL SECTION SHOWING ELEVATIONS

* Elevations are at top of slab panels and do not include wearing surface.

PRECAST SLAB PANELS GENERAL NOTES:

1. The joint filler or polystyrene bedding material shall be cut to the required haunch height above top of flange to maintain top of slab panel elevations as shown. The joint filler or polystyrene bedding material shall be cut so that slab panels bear fully on all existing stringer flanges.
2. The surface of joint filler shall be cut to match bridge cross slope.
3. Joint filler shall be one piece thickness, not acceptable to build thickness up in layers. Minimum joint filler or polystyrene bedding material thickness shall be 1 inch, except over splice plates or cover plates where minimum thickness shall be ½ inch.
4. All panel support pads (joint filler or polystyrene bedding material) shall be glued to the stringer. When support thickness exceeds 1½ inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.
5. Joint filler shall be 1½ inch wide for thickness up to 2 inches, width of joint filler over 2 inches thickness shall be thickness minus ½ inch.
6. Adjustment in the wearing surface thickness, joint filler or polystyrene bedding material thickness, or grade will be necessary if the stringer deflection after panel placement differs from plan deflection. No payment will be made for additional labor or materials for the adjustment.



SLAB CROWN DETAIL

STATE OF MISSOURI
FRANK D. BLACKMORE III
2000147858
REGISTERED PROFESSIONAL ENGINEER
12/2/03

TOP OF SLAB PANEL ELEVATIONS

HICKORY COUNTY A08941

Detailed OCT 2003
Checked OCT 2003
HNTB

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

Sheet No. 14 of 35

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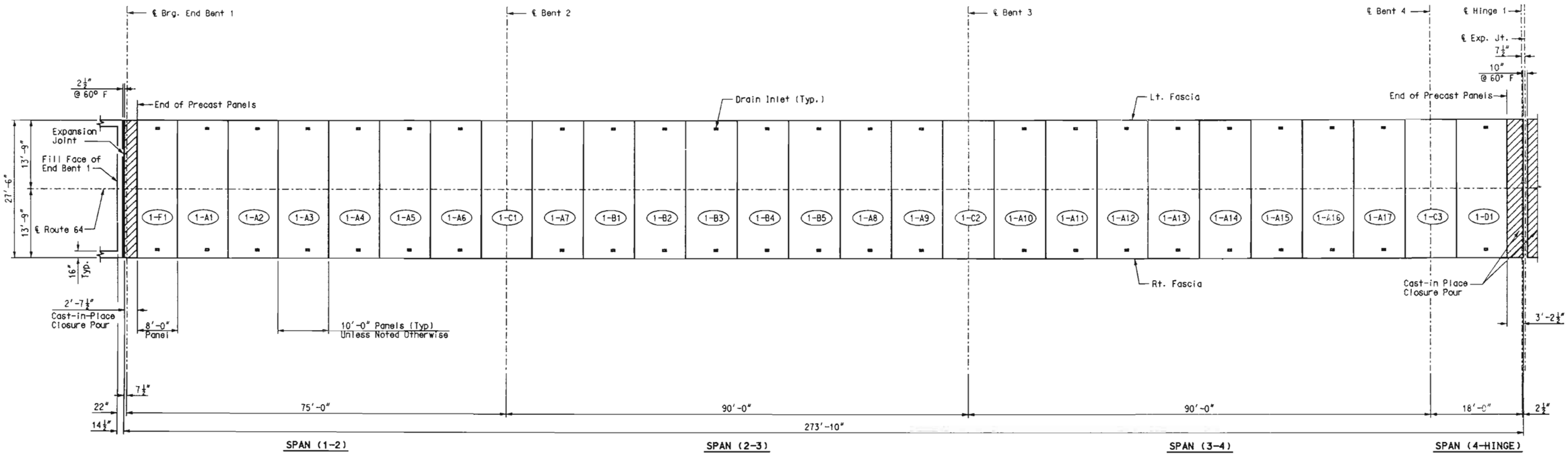
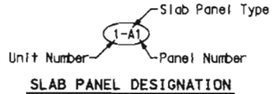
State	Proj. No.	Sheet No.
MO		8A6



PLAN



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. 22.
For Safety Barrier Curb Details, see Sheet No. 25 and 28.
For Slab Drain Details, see Sheet No. 24.
For Closure Pour Details, See Sheet No. 26
For Expansion Joint Details, see Sheet No. 30 and 31.
Longitudinal dimensions are measured horizontally.

SLAB PANEL LAYOUT
UNIT 1

Detailed OCT 2003
Checked NOV 2003

HNTB

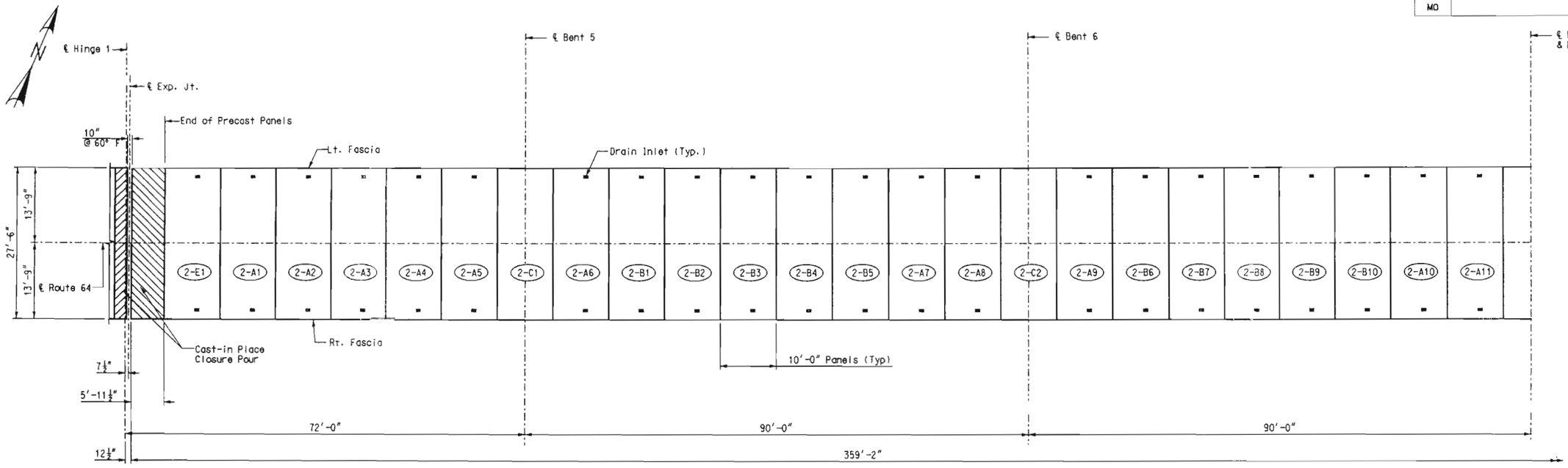
Note: This drawing is not to scale. Follow Dimensions.

Sheet No. 15 of 35

HICKORY COUNTY

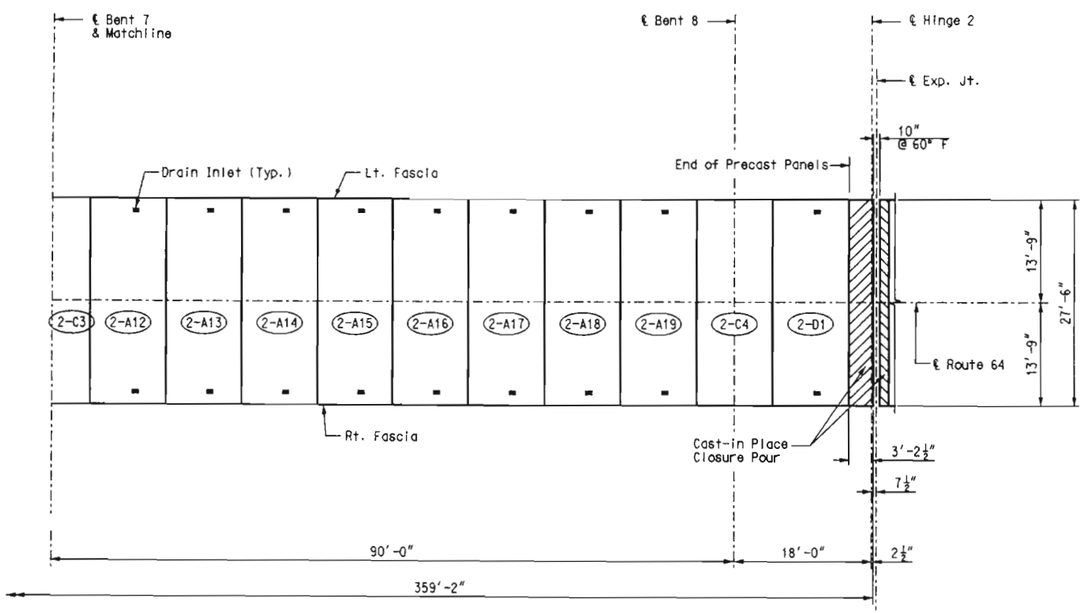
A08941

State	Proj. No.	Sheet No.
MO		B16



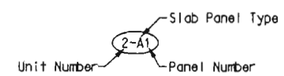
SPAN (HINGE-5) SPAN (5-6) SPAN (6-7)

PLAN



SPAN (7-8) SPAN (8-HINGE)

PLAN



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. 22.
For Safety Barrier Curb Details, see Sheet No. 25 and 28.
For Slab Drain Details, see Sheet No. 24.
For Closure Pour Details, See Sheet No. 26
For Expansion Joint Details, see Sheet No. 30 and 31.
Longitudinal dimensions are measured horizontally.

STATE OF MISSOURI
FRANK P. BLAKEMORE, III
NUMBER E-2000147855
REGISTERED PROFESSIONAL ENGINEER
12/12/03

SLAB PANEL LAYOUT
UNIT 2

HICKORY COUNTY A08941

Detailed OCT 2003
Checked NOV 2003

HNTB

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

Sheet No. 16 of 35

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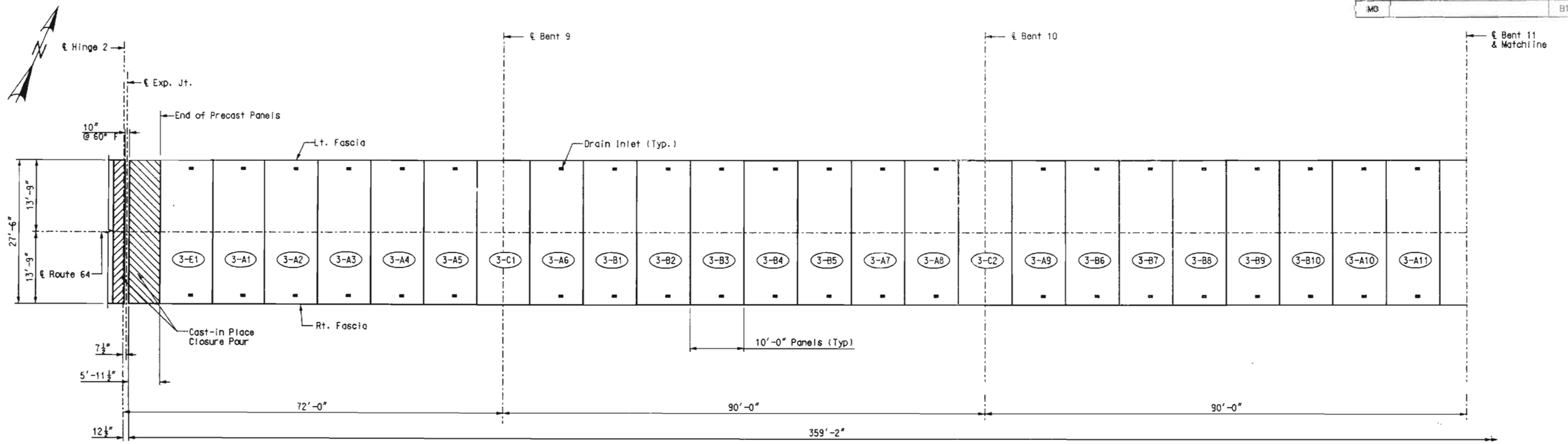
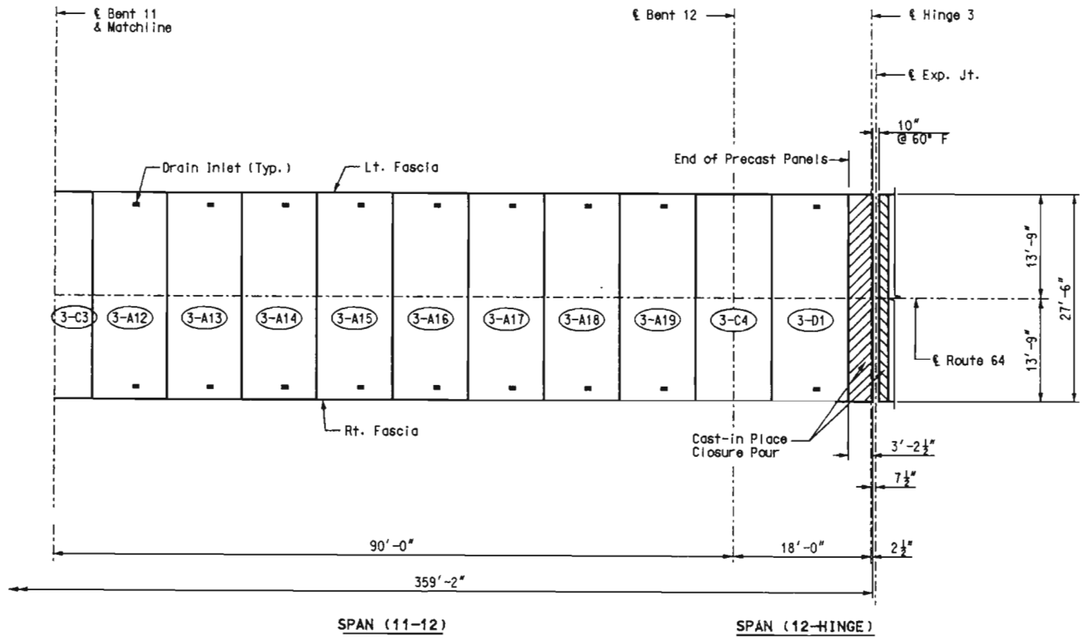
State	Proj. No.	Sheet No.
MO		B17



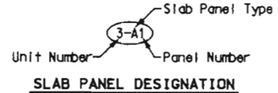
SPAN (HINGE-9) SPAN (9-10) SPAN (10-11)

PLAN



SPAN (11-12) SPAN (12-HINGE)

PLAN



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. 22.
For Safety Barrier Curb Details, see Sheet No. 25 and 28.
For Slab Drain Details, see Sheet No. 24.
For Closure Pour Details, See Sheet No. 26
For Expansion Joint Details, see Sheet No. 30 and 31.
Longitudinal dimensions are measured horizontally.

STATE OF MISSOURI FRANK P. BLADOWSKI III E-2000147856 REGISTERED PROFESSIONAL ENGINEER
12/16/03

SLAB PANEL LAYOUT
UNIT 3

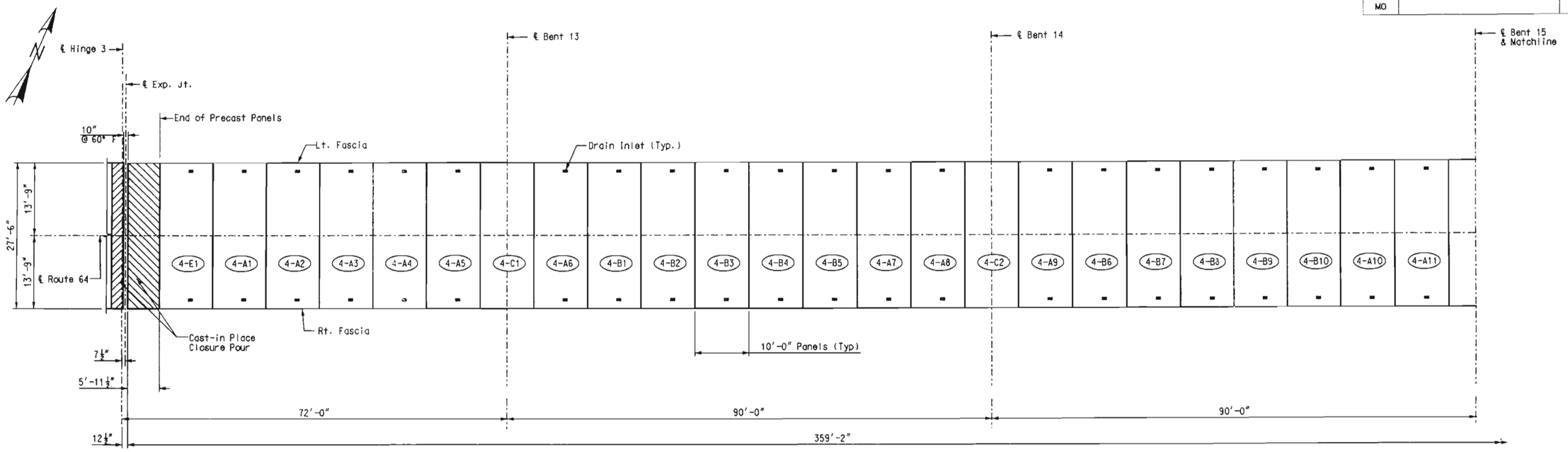
Detailed OCT 2003
Checked NOV 2003
HNTB

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

Sheet No. 17 of 35

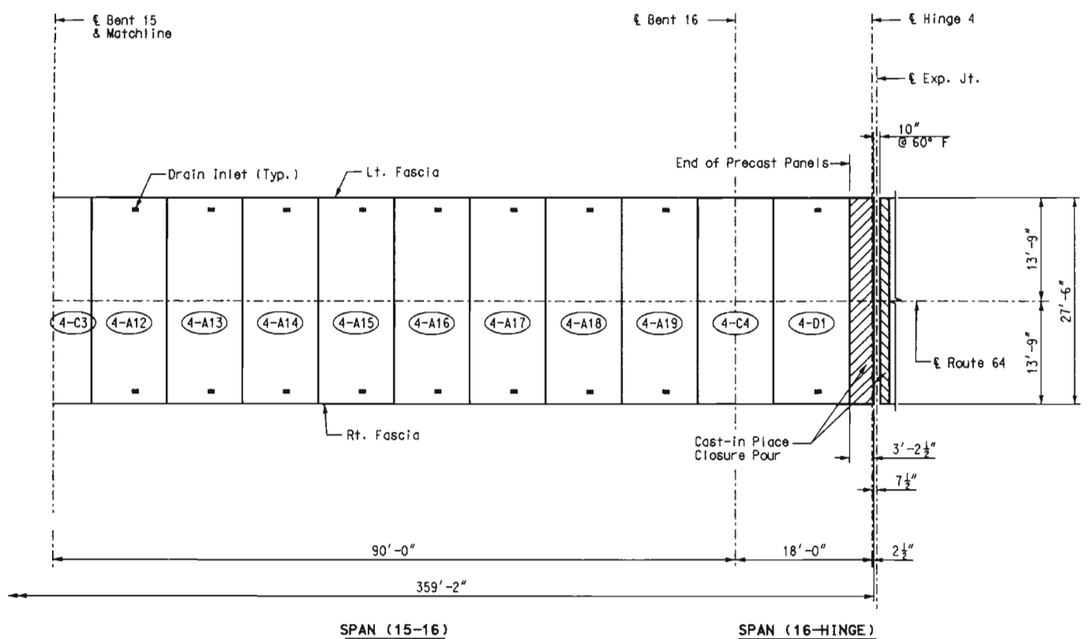
HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO		B18



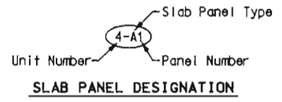
SPAN (HINGE-13) SPAN (13-14) SPAN (14-15)

PLAN



SPAN (15-16) SPAN (16-HINGE)

PLAN



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. 22.
For Safety Barrier Curb Details, see Sheet No. 25 and 28.
For Slab Drain Details, see Sheet No. 24.
For Closure Pour Details, See Sheet No. 26
For Expansion Joint Details, see Sheet No. 30 and 31.
Longitudinal dimensions are measured horizontaliy.

STATE OF MISSOURI
FRANK D. BLANCHARD III
E-2000147856
REGISTERED PROFESSIONAL ENGINEER
12/12/03

SLAB PANEL LAYOUT
UNIT 4

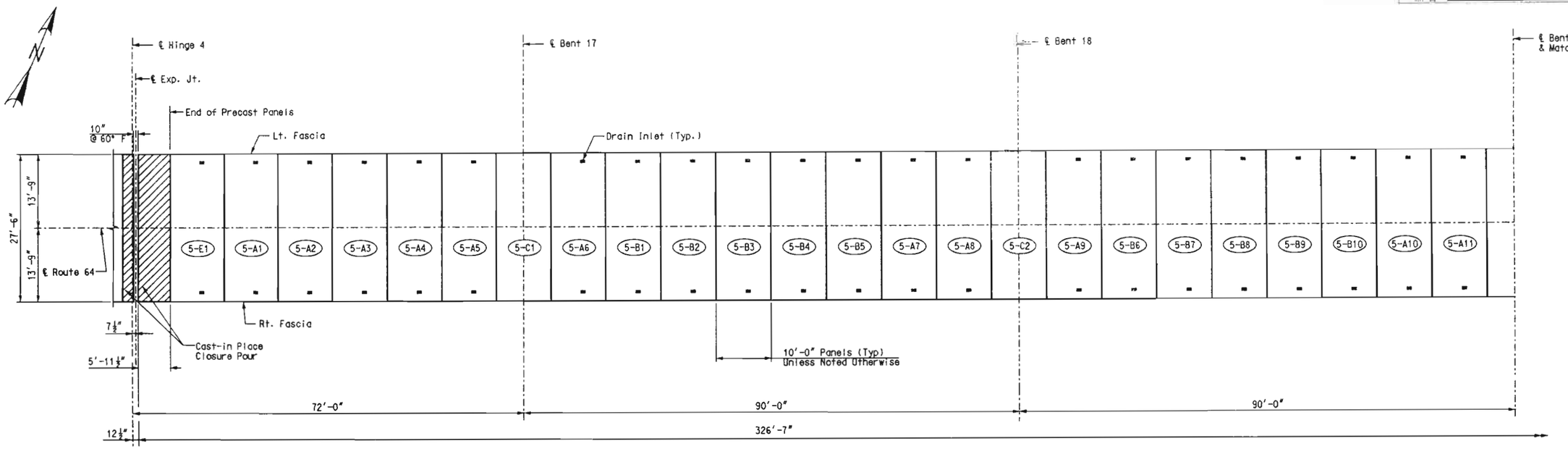
HICKORY COUNTY A08941

USER: Thompson
PLOTTED: 10-DEC 2003 16:11 K:\KJ\5348\KA 64 Precast Deck\drawings\p15.dgn

Detailed OCT 2003
Checked NOV 2003 HNTB

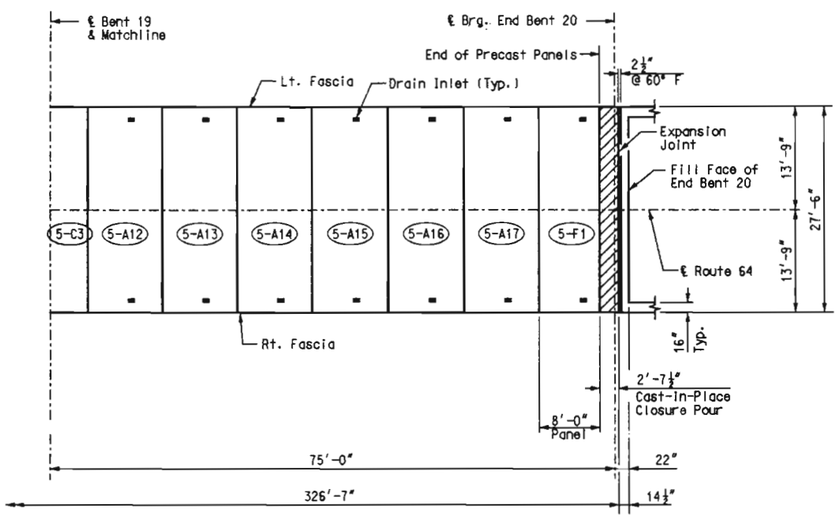
Note: This drawing is not to scale. Follow Dimensions.

State	Proj. No.	Sheet No.
MO		B19



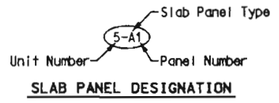
SPAN (HINGE-17) SPAN (17-18) SPAN (18-19)

PLAN



SPAN (19-20)

PLAN



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. 22.
For Safety Barrier Curb Details, see Sheet No. 25 and 28.
For Slab Drain Details, see Sheet No. 24.
For Closure Pour Details, See Sheet No. 26
For Expansion Joint Details, see Sheet No. 30 and 31.
Longitudinal dimensions are measured horizontally.

STATE OF MISSOURI
FRANK P. BLANCHETTE, JR.
NUMBER E-2000147856
REGISTERED PROFESSIONAL ENGINEER
12/12/03

SLAB PANEL LAYOUT UNIT 5

HICKORY COUNTY A08941

Detailed OCT 2003
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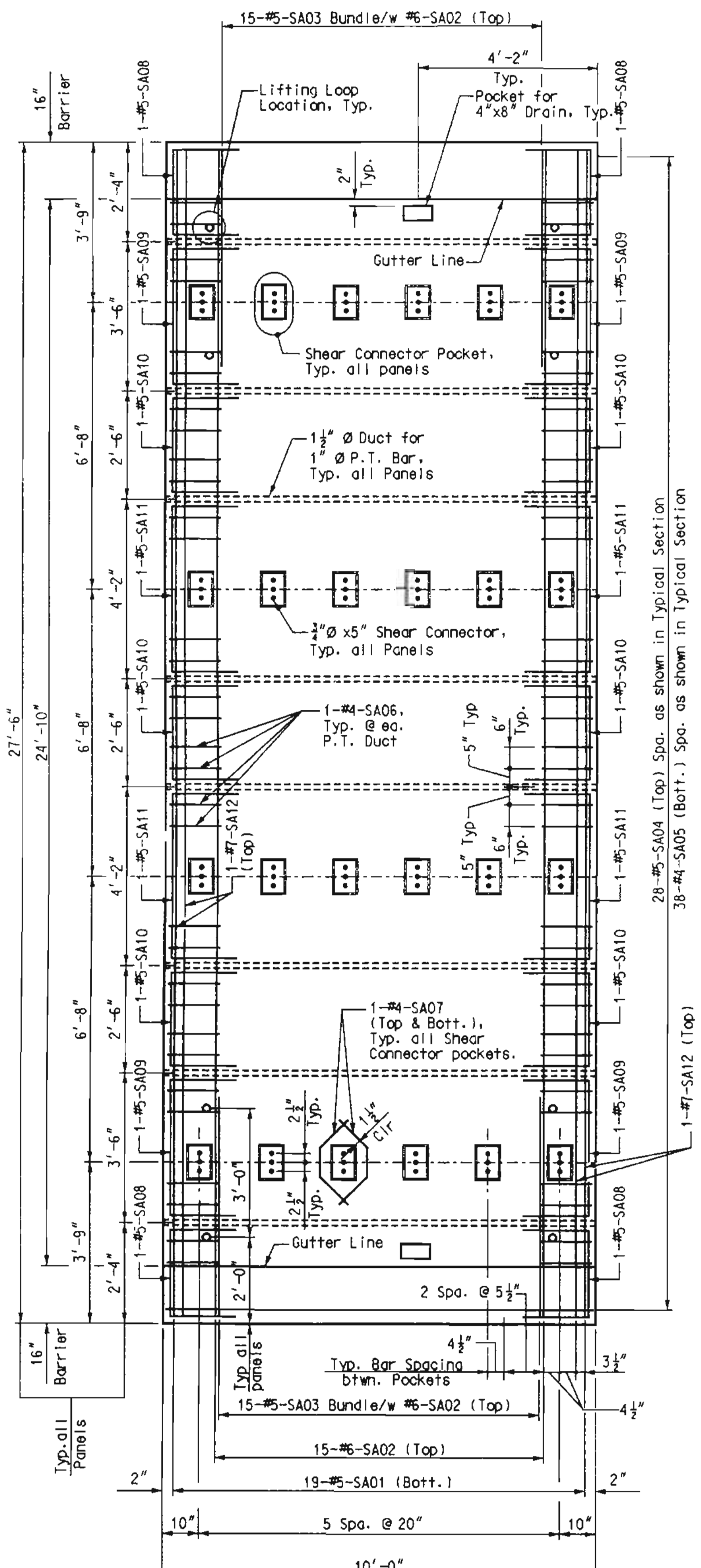
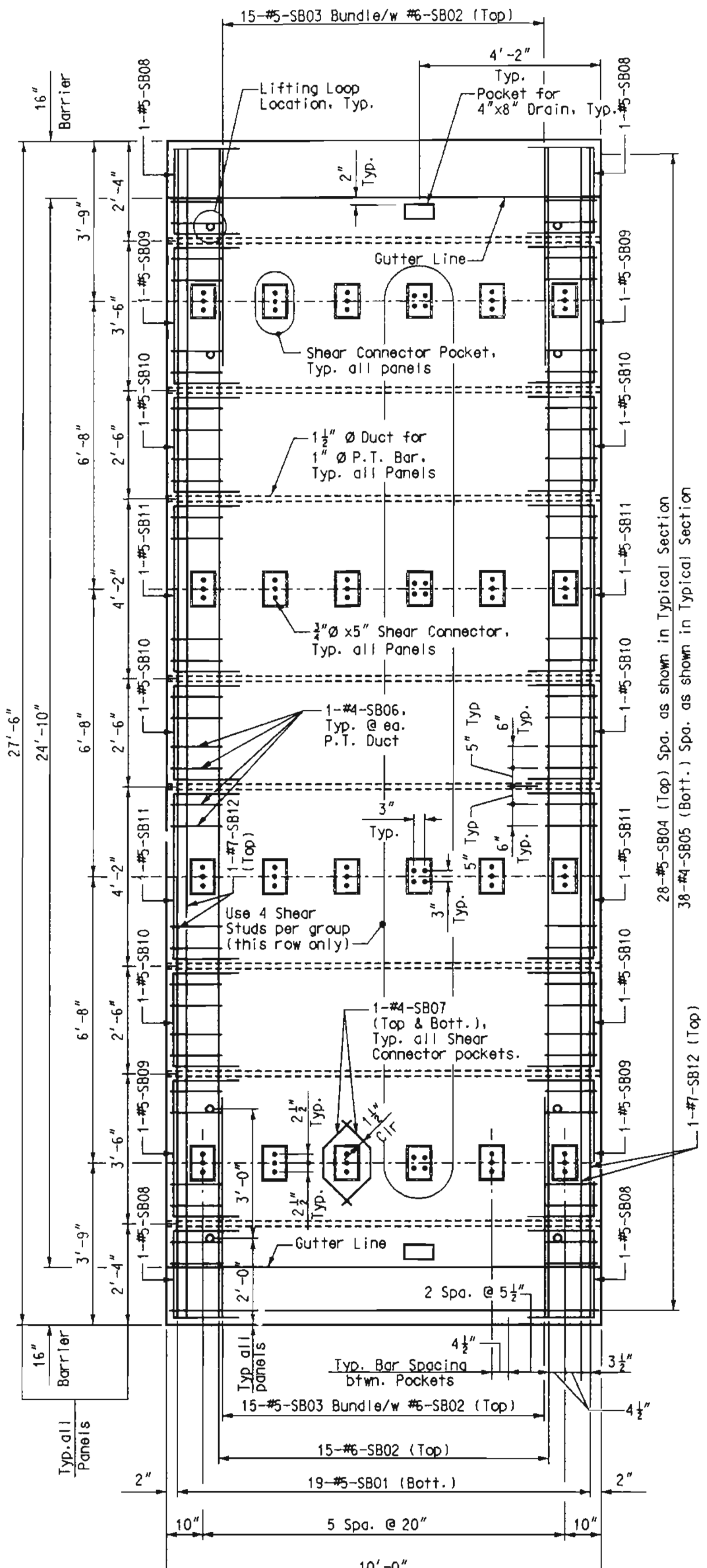
Note: This drawing is not to scale. Follow Dimensions.

State	Proj. No.	Sheet No.
MO		B20



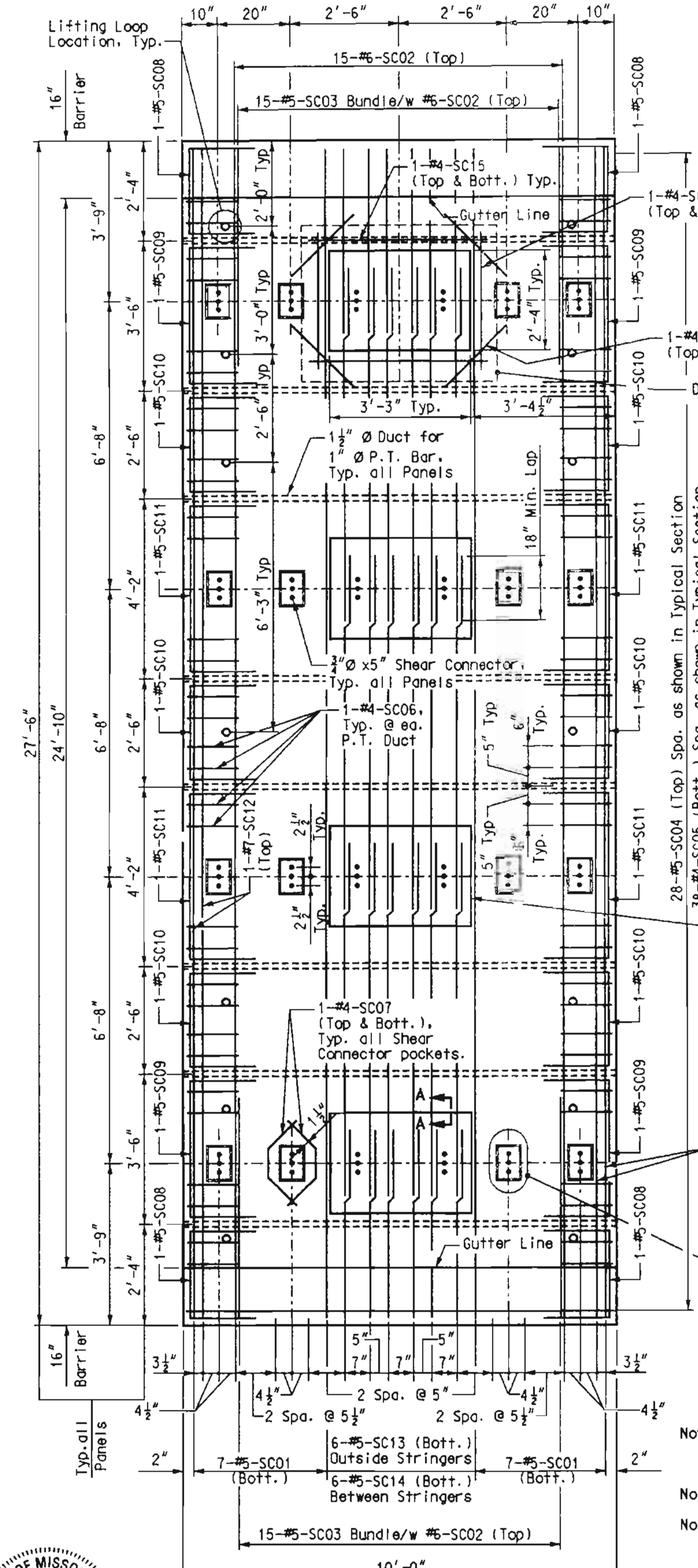
PANEL TYPE A

Note: Barrier Reinforcing not shown for clarity.



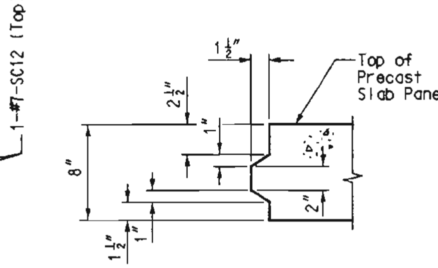
PANEL TYPE B

Note: Barrier Reinforcing not shown for clarity.



PANEL TYPE C

Note: Barrier Reinforcing not shown for clarity.



SECTION A-A

Notes:
For Barrier Reinforcing see Sheet No. 25.
For Typical Section, see Sheet No. 22.
For Shear Connector Details, see Sheet No. 11.
For Shear Connector Pocket Details, see Sheet No. 22.
For Shear Key Details, see Sheet No. 23.
For Drain Details, see Sheet No. 24.
P.T. bar and coupler blockouts not shown for clarity.
At Contractors option, Panel Type C may be constructed cast-in-place at no additional cost to owner.

SLAB PANEL TYPES A, B, AND C

HICKORY COUNTY A08941

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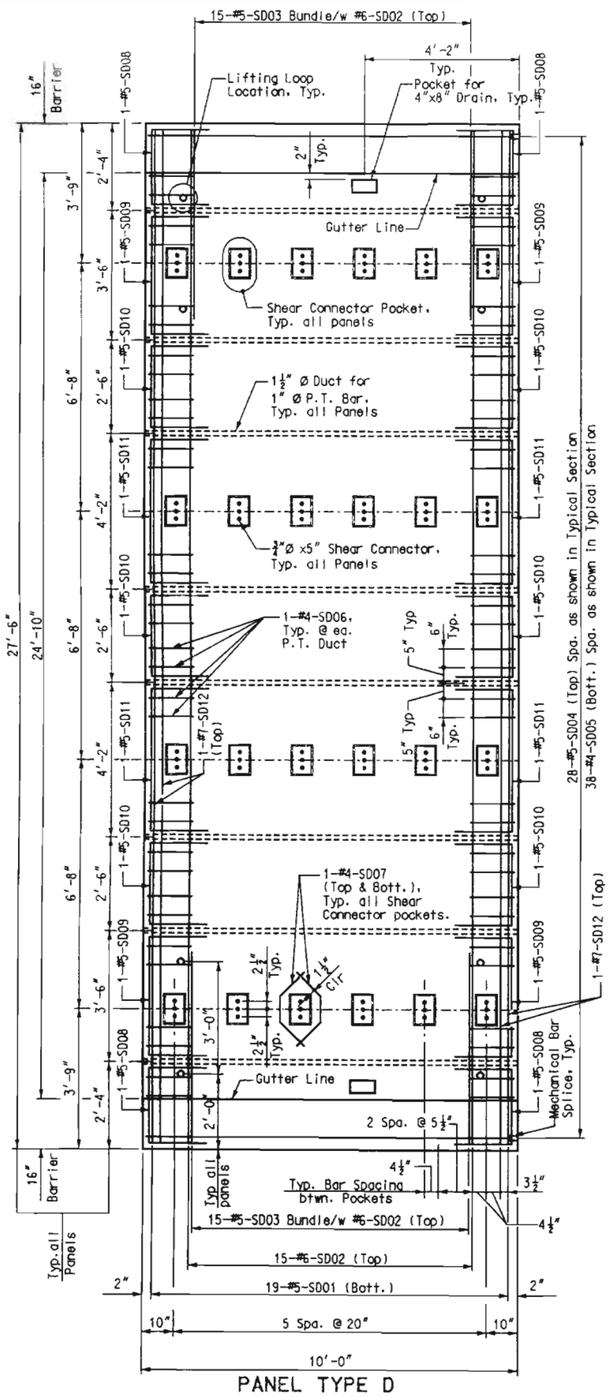
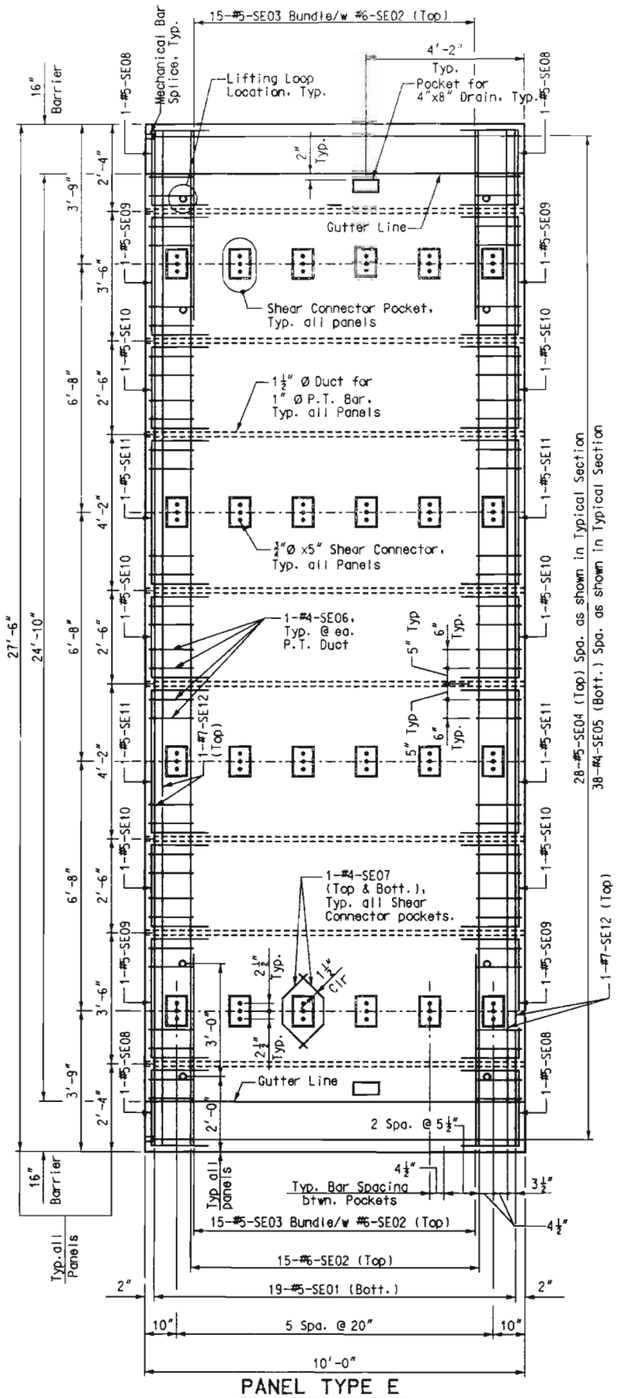
Note: This drawing is not to scale. Follow Dimensions.



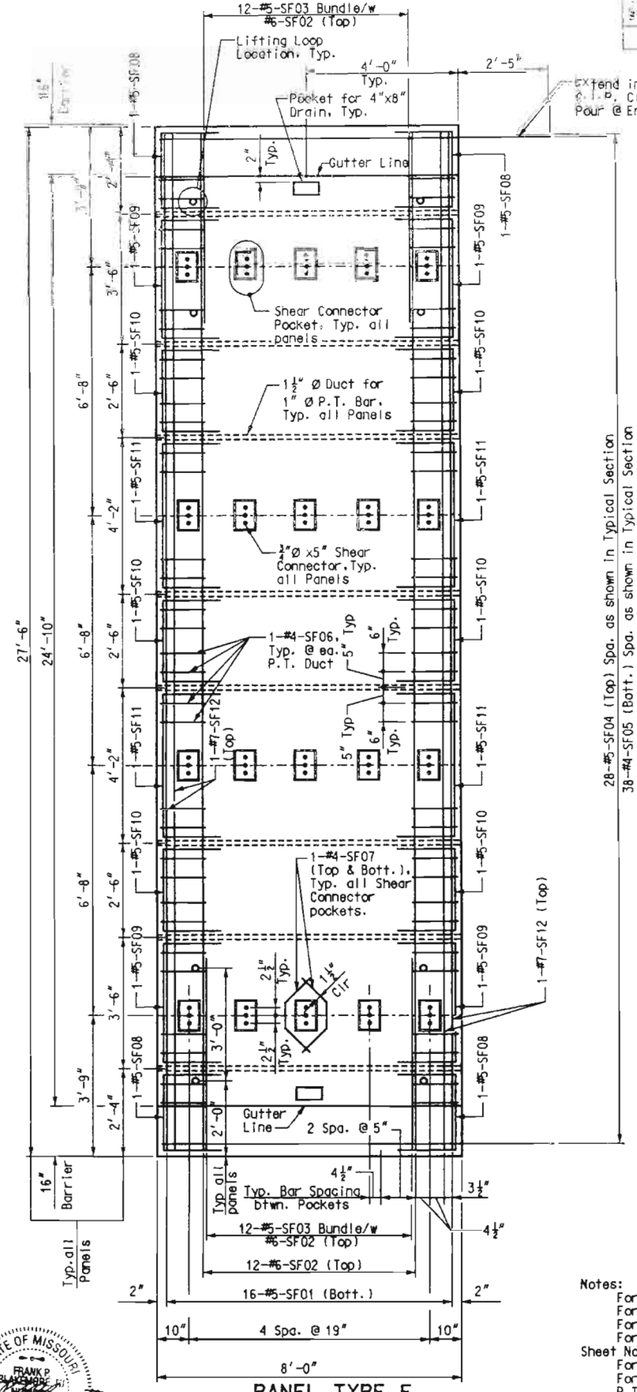
PANEL TYPE D

Note: Barrier Reinforcing not shown for clarity.



PANEL TYPE E

Note: Barrier Reinforcing not shown for clarity. Panel Type E is identical to Panel Type D except for orientation of shear keys and Mechanical Bar Splices.



PANEL TYPE F

Note: Barrier Reinforcing not shown for clarity.

Notes:
For Barrier Reinforcing, see Sheet 25.
For Typical Section, see Sheet No. 22.
For Shear Key Details, see Sheet No. 23.
For Shear Connector Pocket Details, see Sheet No. 22.
For Shear Connector Details see Sheet 11.
For Slab Drain Details, see Sheet No. 24.
P.T. bar coupler blockouts not shown for clarity.

STATE OF MISSOURI
FRANK P. BUSCHMANN
NUMBER E-2000147858
REGISTERED PROFESSIONAL ENGINEER
12/22/03

SLAB PANEL TYPES D, E AND F

State	Proj. No.	Sheet No.
MO		B21

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

Sheet No. 21 of 35

HICKORY COUNTY

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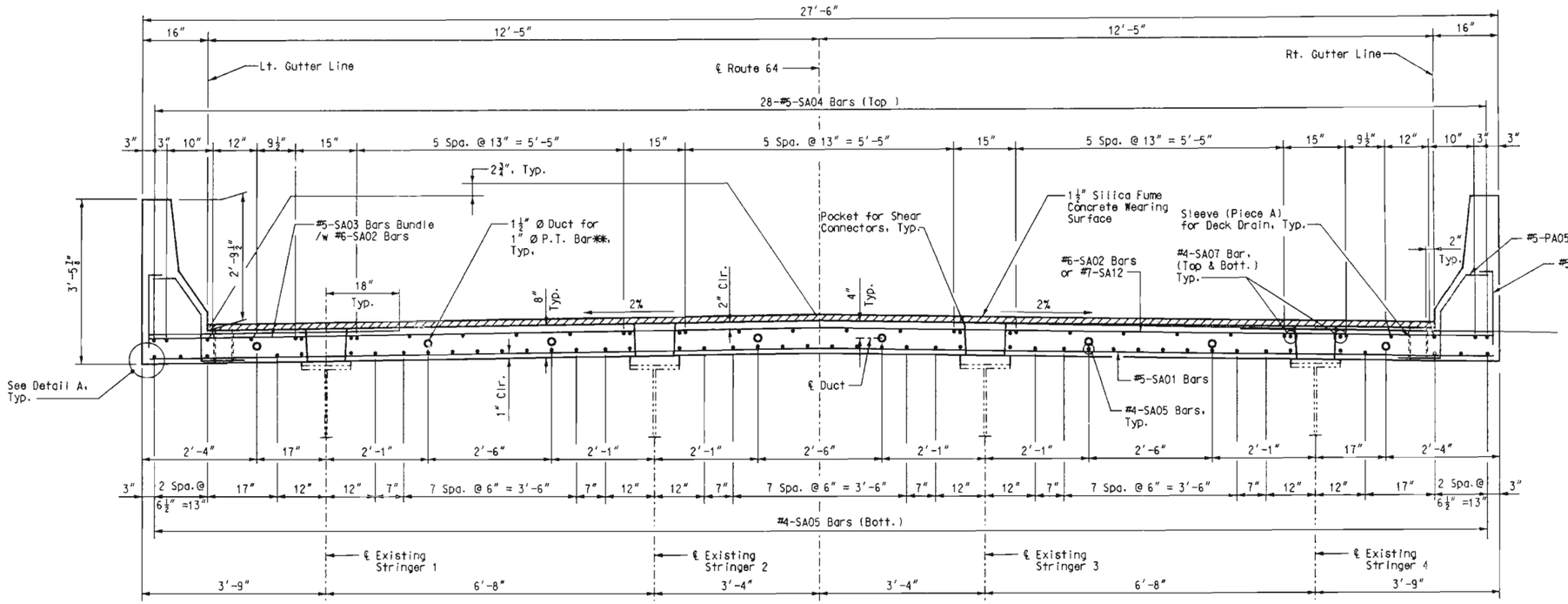
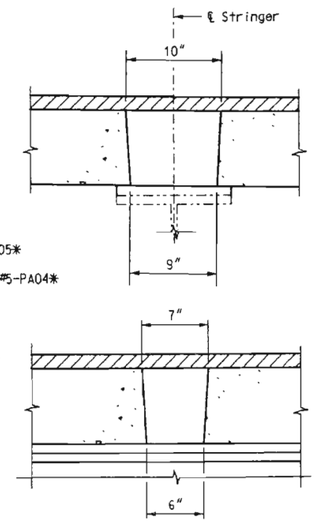
State	Proj. No.	Sheet No.
MO		B22

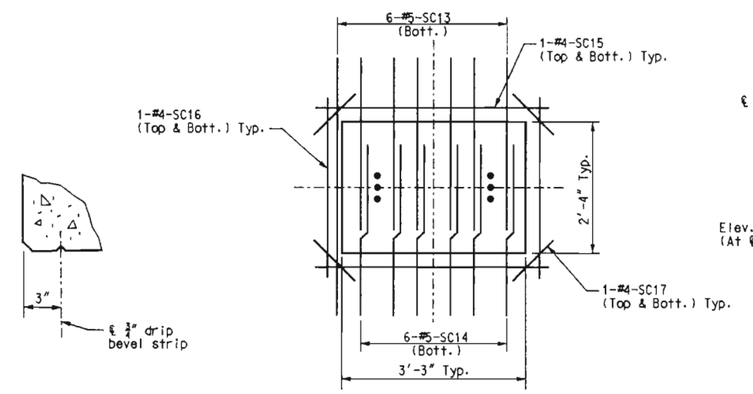




SHEAR CONNECTOR POCKET DETAILS

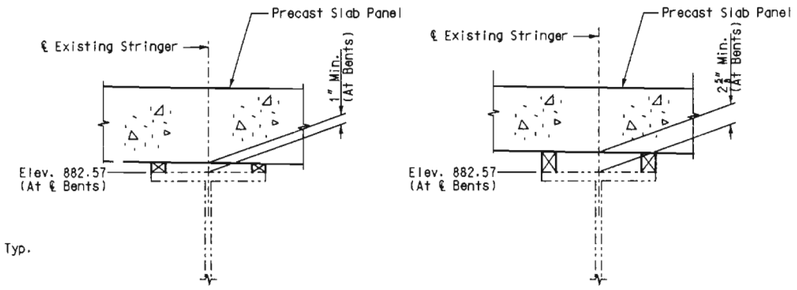
TYPICAL SECTION

Bar Marks shown are for Panel A. Panels B thru F are similar, except use "SB" thru "SF" series.



DETAIL A

DETAIL B

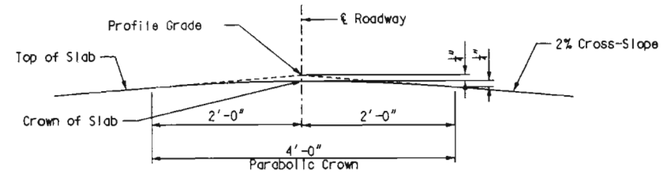


STRINGER 1 OR 4

STRINGER 2 OR 3

TYPICAL HAUNCH DETAIL

Note:
If haunch depth exceeds 3", shear connector length shall be increased. Field verify haunch depths prior to placement of precast slab panels. No payment will be made for additional shear connector length, or concrete required for variable haunch.



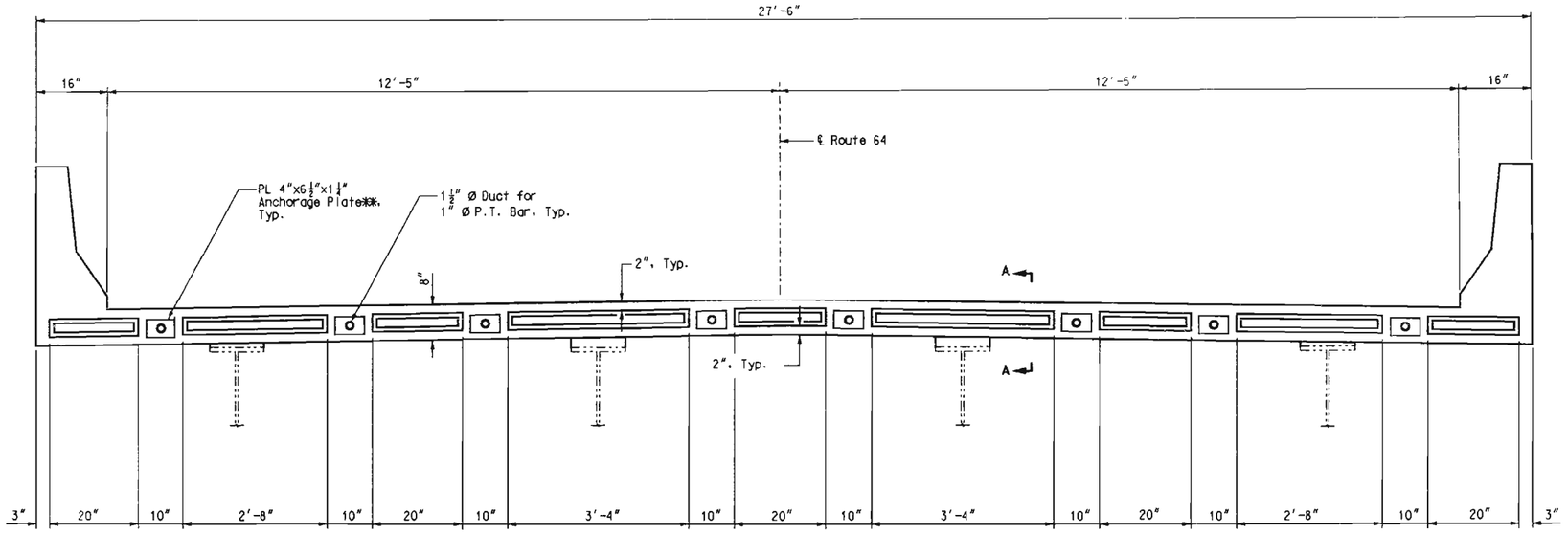
SLAB CROWN DETAIL

Notes:
For Slab Panel Layouts, see Sheet No. 15 thru 19.
For Slab Panel Types, see Sheet No. 20 and 21.
For location of Detail B, see Sheet No. 20.
** Post-Tensioned Bars shall be stressed to 0.65 f's.
For Shear Key Details, see Sheet No. 23.
For Shear Connector Details, see Sheet No. 11.
For Safety Barrier Curb Details, see Sheet No. 25.
* For spacing of #5-PA04 and #5-PA05 bars, see Safety Barrier Curb Elevation, Sheet No. 25.

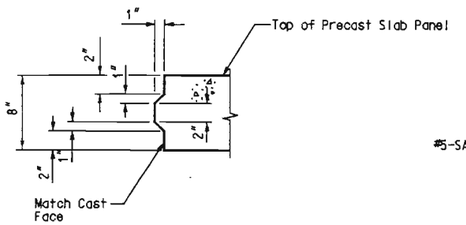
STATE OF MISSOURI FRANK P. [illegible] 2000147856 REGISTERED PROFESSIONAL ENGINEER
12/12/03

SLAB PANEL CROSS SECTION

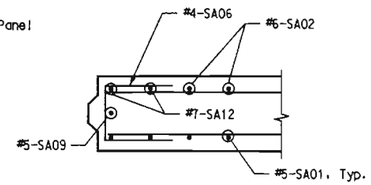
State	Proj. No.	Sheet No.
MO		B23



TYPICAL SECTION SHOWING SHEAR KEYS

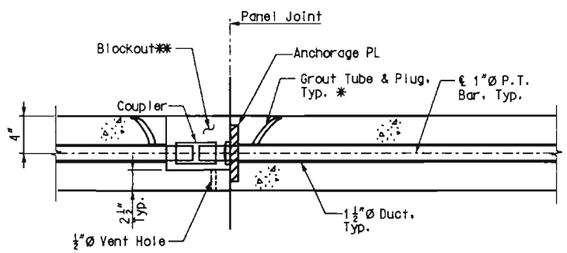


SECTION A-A

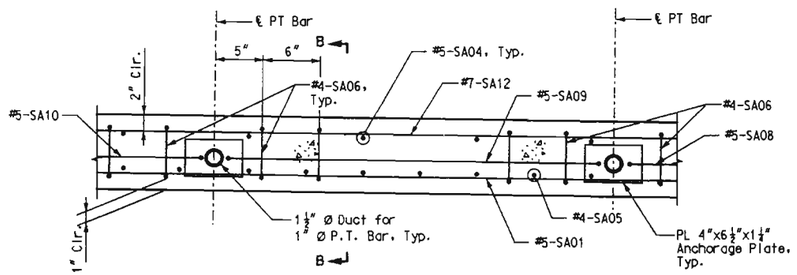


SECTION B-B

Note: Bars Shown for Panel Type A. Other Panels Similar.



P.T. BARS IN PRECAST SLAB PANELS



TYPICAL REINFORCING AT END OF PANEL DETAIL

Note: Bars shown for Panel Type A. Other panels similar.

STATE OF MISSOURI
FRANK P. BLACKMORE, III
NUMBER E-2000147556
REGISTERED PROFESSIONAL ENGINEER
12/1/03

Note:
For slab reinforcing, See Sheet Nos. 20, 21 and 22.

* Grout Tube and Plug shall be capable of withstanding traffic loads. See Special Provisions.

** Anchorage System and blockout details shall be determined by the post-tensioning system used.

SLAB PANEL SHEAR KEY DETAILS

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

HICKORY COUNTY

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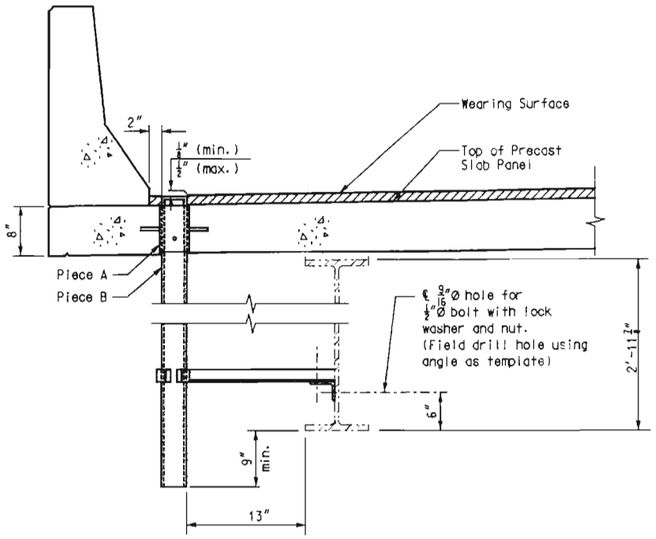
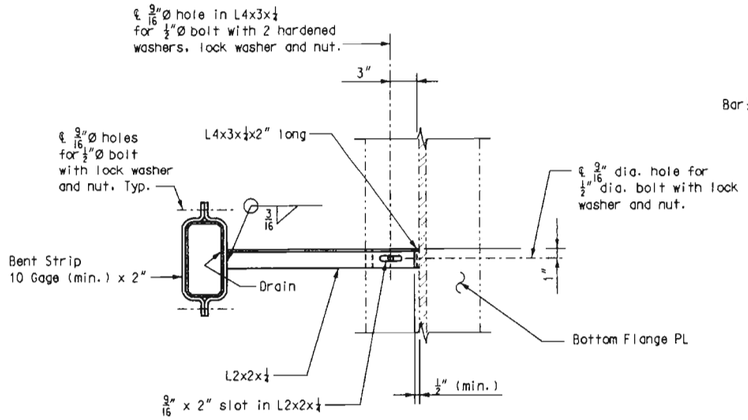
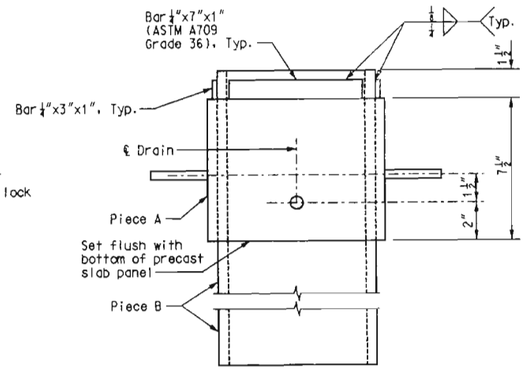
State	Proj. No.	Sheet No.
MO		B24



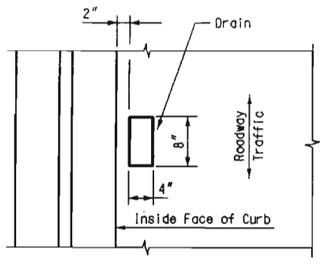
PART ELEVATION OF SLAB AT DRAIN



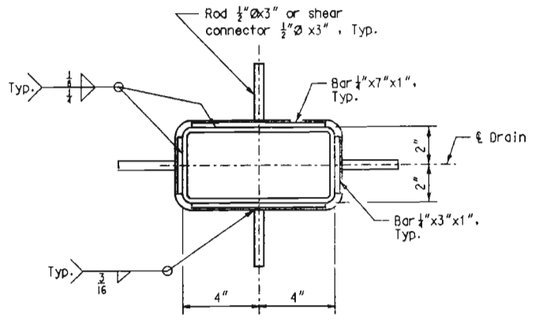
PART SECTION SHOWING BRACKET ASSEMBLY



ELEVATION OF DRAIN



PART PLAN OF SLAB AT DRAIN



PLAN OF DRAIN

Notes:
For Slab Drain location, see Slab Panel Layouts, Sheet No. 15 thru 19.
Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709, Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.
Slab drain bracket assembly shall be ASTM A709, Grade 36 steel.
Outside dimensions of drains are 8" x 4".
Locate drain blockouts in the slab panels by dimensions shown in the Part Plan of Slab at Drain.
The slab drains and bracket assembly shall be galvanized in accordance with ASTM A123.
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.
Shop drawings will not be required for slab drains and the bracket assembly.
Install slab drains in panels prior to wearing surface placement.

STATE OF MISSOURI
FRANK P. BLANCHARD III
E-2000147856
REGISTERED PROFESSIONAL ENGINEER
12/12/03

SLAB PANEL DRAIN DETAILS

HICKORY COUNTY A08941

Detailed OCT 2003
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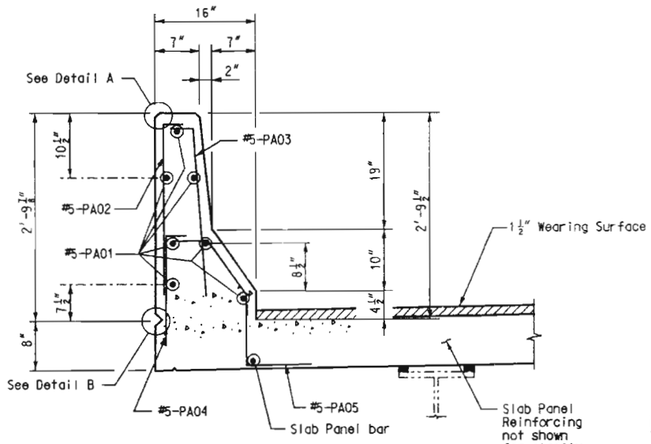
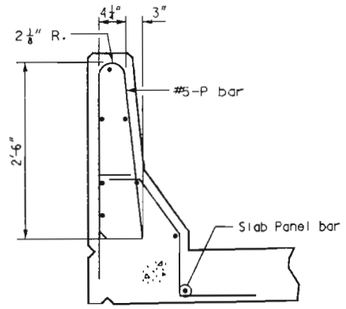
Note: This drawing is not to scale. Follow Dimensions.

State	Proj. No.	Sheet No.
MO		B25



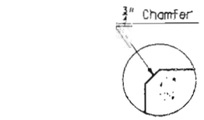
SAFETY BARRIER CURB SECTION

Notes:
Bar Marks shown are for Panel A. Panels B thru F are similar, except use "B00" thru "F00" series Bar Marks.
The cross-sectional area above the slab panel = 2.44 sq. ft.

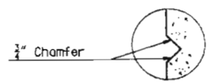


P-BAR PERMISSIBLE ALTERNATE SHAPE

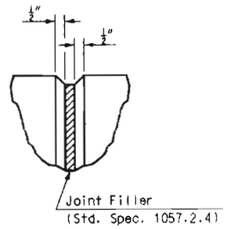
The PX02 and PX03 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)
X = Panel Type



DETAIL A

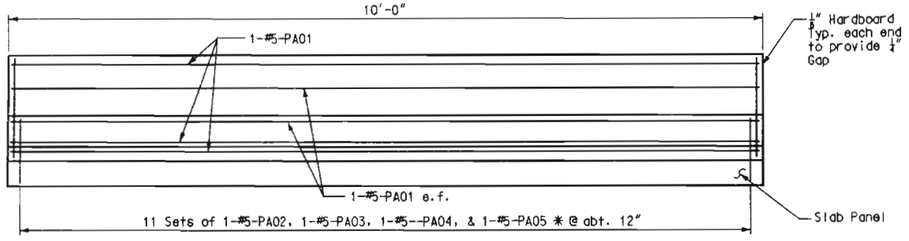


DETAIL B



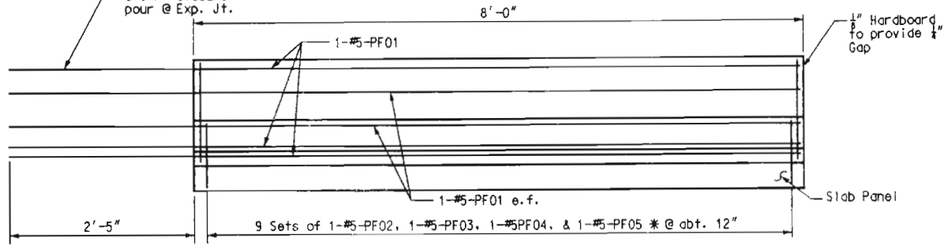
FILLED JOINT DETAIL

Note:
Fill gaps between barrier on panels after completion of each unit.



SAFETY BARRIER ELEVATION AT PANELS A, B, C, D OR E

Notes:
Bar Marks shown are for Panel A. Panels B thru E are similar, except use "B00" thru "E00" series Bar Marks.
The cross-sectional area above the slab panel = 2.44 sq. ft.



SAFETY BARRIER ELEVATION AT PANELS F

(Shown at End Bent 1.
End Bent 20 opposite hand.)

Notes:
For safety barrier curb details at end bents, see Sheet No. 29.
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at End Bents) normal to grade.
All exposed edges of safety barrier curb shall have either a ½" radius or a ½" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.
* Adjust spacing of Bar PA05 thru PF05 to clear pocket for deck drain in slab panels.
e.f. denotes each face.

SLAB PANEL SAFETY BARRIER CURB DETAILS

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

Sheet No. 25 of 35

HICKORY COUNTY

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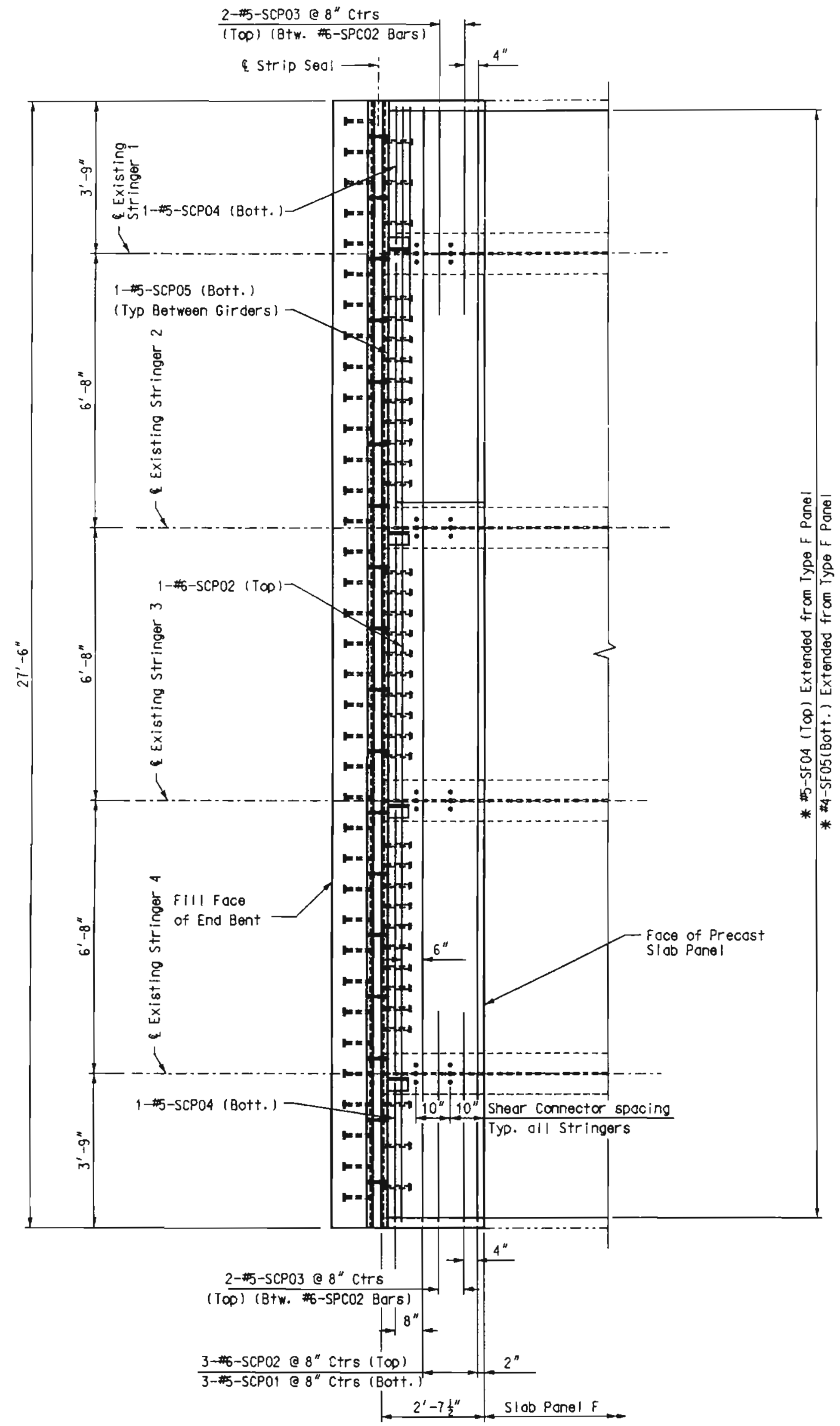
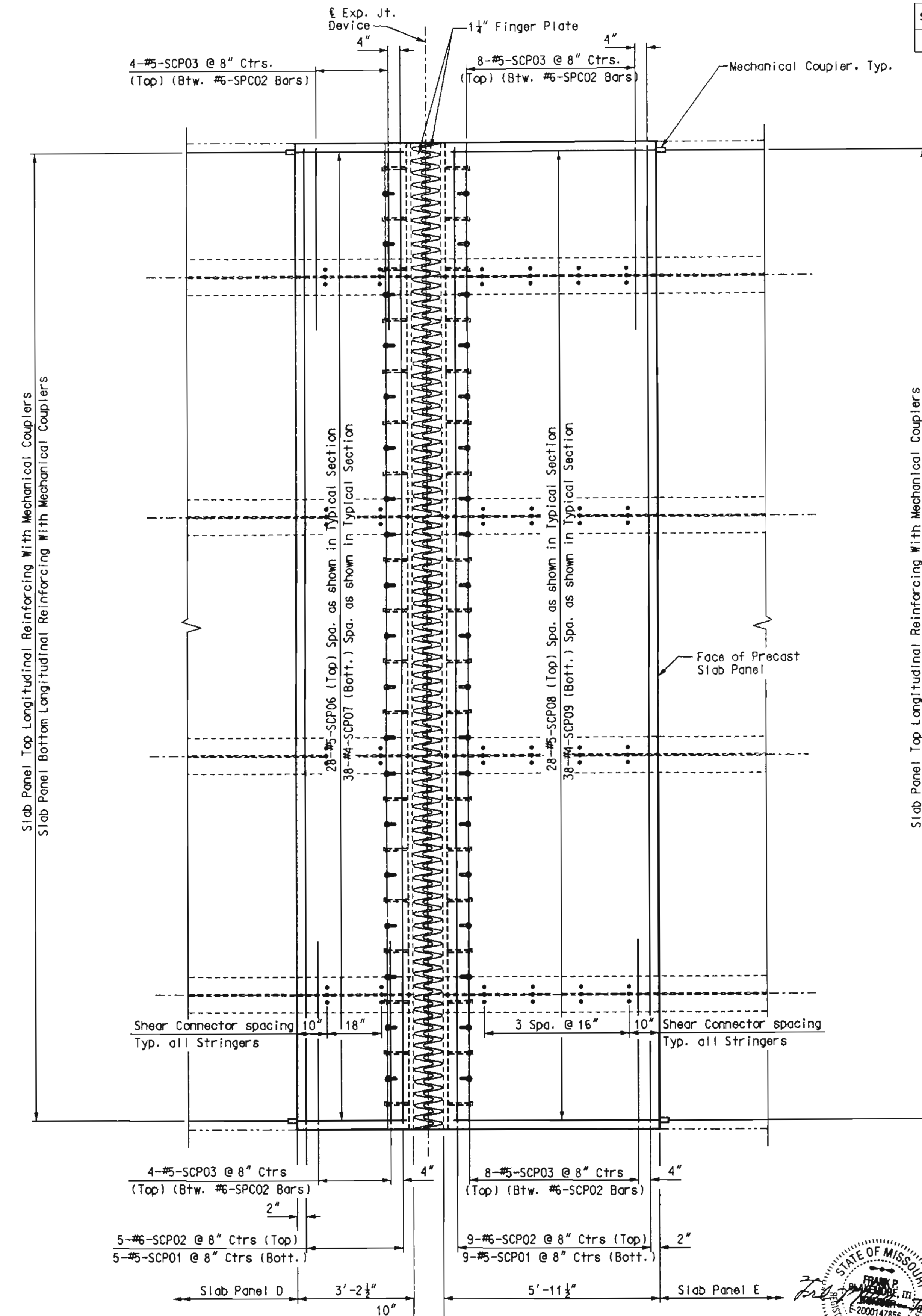
State	Proj. No.	Sheet No.
MO		B26



CLOSURE POUR AT END BENT



* Field Bend as Required to Clear Expansion Joint Shear Connectors.

CLOSURE POUR AT HINGE

STATE OF MISSOURI — FRANK P. ... III — E-2000147856 — REGISTERED PROFESSIONAL ENGINEER — 12/12/03

Notes:
For details of strip seal at end bents, See Sheet No. 31.
For details of finger joints, See Sheet No. 30.

CLOSURE POUR DETAILS

HICKORY COUNTY A08941

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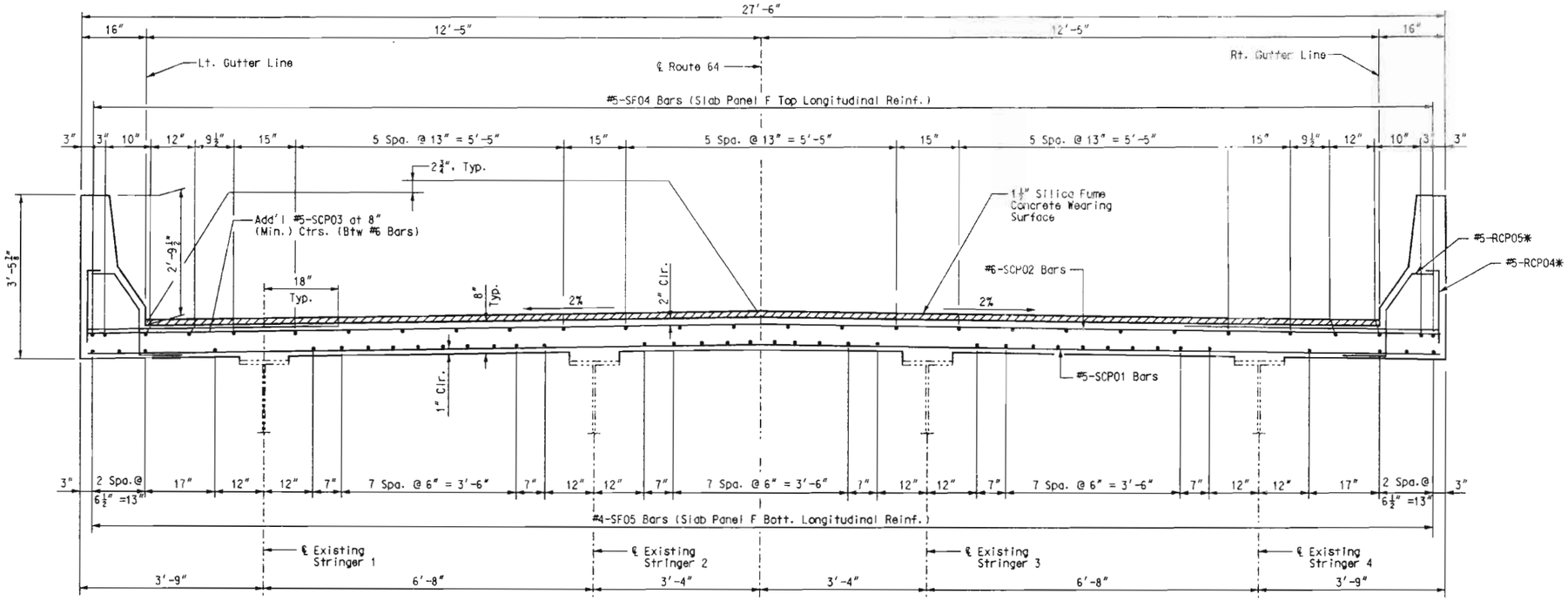
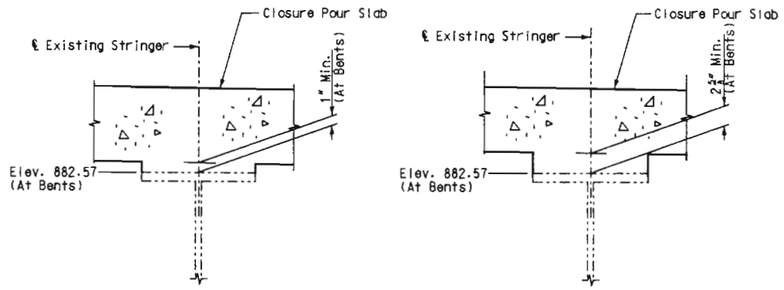
Note: This drawing is not to scale. Follow Dimensions.

State	Proj. No.	Sheet No.
MO		B27



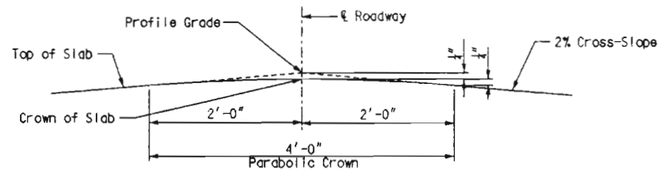
TYPICAL SECTION
(Shown at End Bent)



STRINGER 1 OR 4 STRINGER 2 OR 3

TYPICAL HAUNCH DETAIL

Note:
If haunch depth exceeds 3", shear connector length shall be increased. Field verify haunch depths prior to placement of closure pour slab. No payment will be made for additional shear connector length, or concrete required for variable haunch.



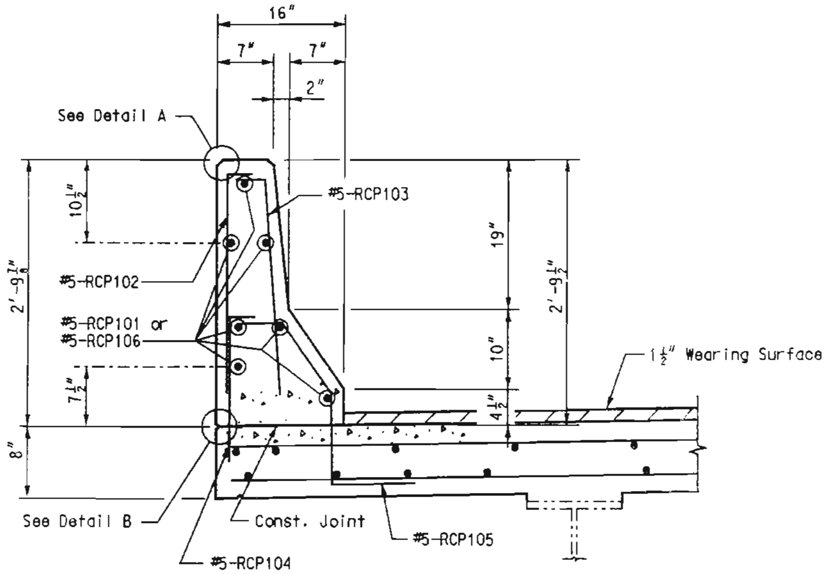
SLAB CROWN DETAIL

Notes:
For Closure Pour Details, see Sheet No. 26
For Safety Barrier Curb Details, see Sheet No. 28.
* For spacing of #5-RCP04 and #5-RCP05 bars, see Safety Barrier Curb Elevation, Sheet No. 28.
Bar Marks shown are for Closure Pour at End Bent.
Closure Pours at Hinge are similar.

STATE OF MISSOURI FRANK P. CLAYCOMB III NUMBER E-2000147856 REGISTERED PROFESSIONAL ENGINEER
12/19/03

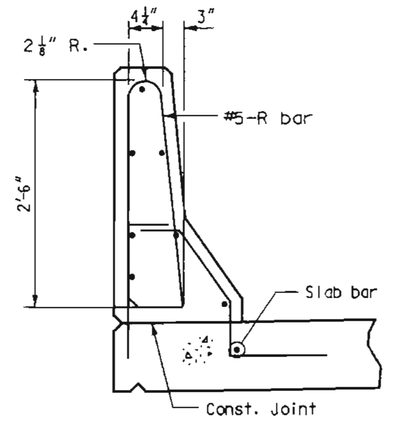
CLOSURE POUR CROSS SECTION

State	Proj. No.	Sheet No.
MO		B28



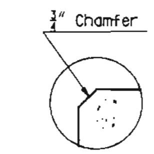
SAFETY BARRIER CURB SECTION

Notes:
The cross-sectional area above the slab = 2.44 sq. ft.

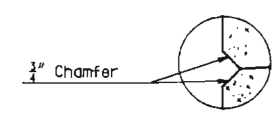


R-BAR PERMISSIBLE ALTERNATE SHAPE

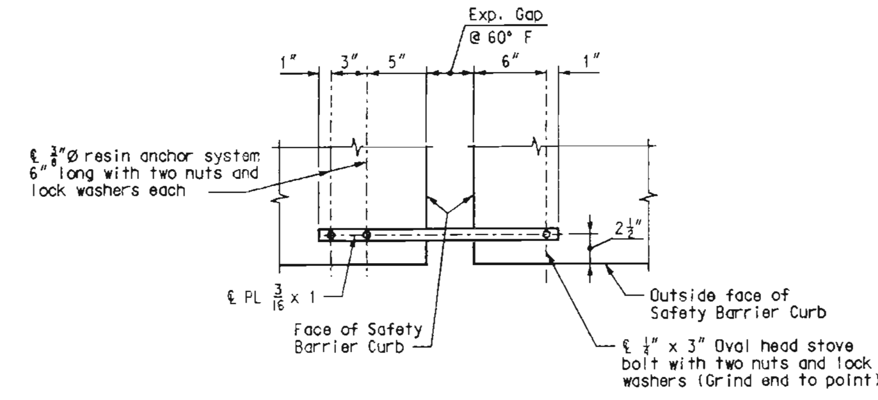
The RCP102 and RCP103 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)



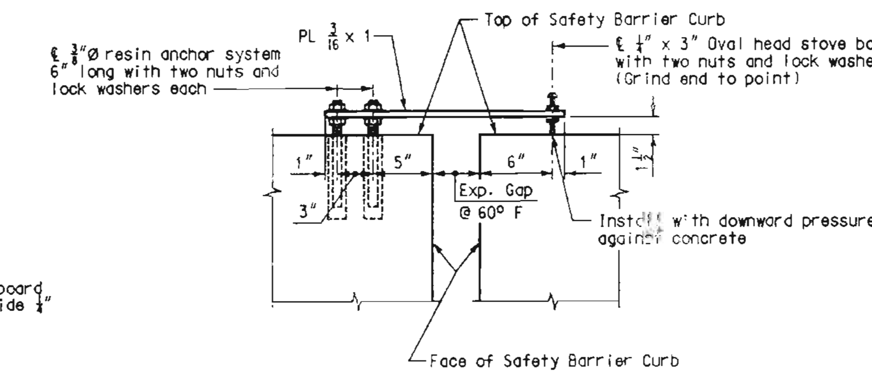
DETAIL A



DETAIL B

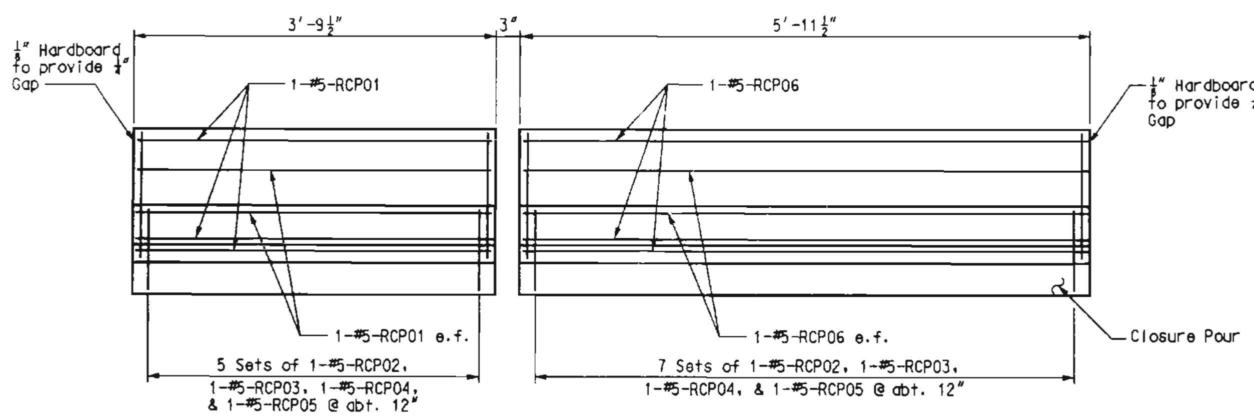


PART PLAN OF BARRIER CURB SHOWING MOVEMENT GAUGE



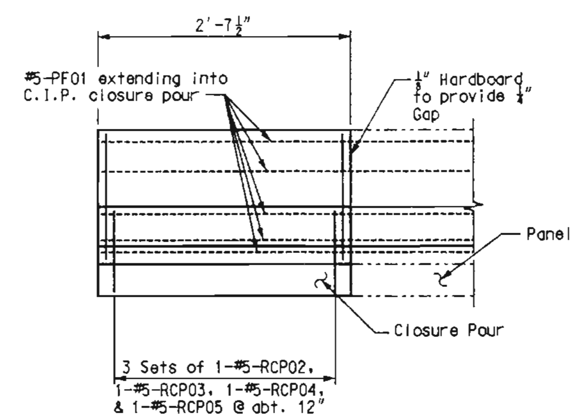
PART ELEVATION OF BARRIER CURB SHOWING MOVEMENT GAUGE

Notes:
A movement gauge shall be provided on right side of bridge at all safety barrier curb expansion joints.
All steel shall be galvanized in accordance with ASTM A153
Cost of movement gauge complete in place shall be included in contract unit price for Class B-1 Concrete (Closure Pour & Barrier Curb).



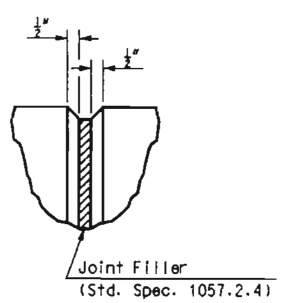
SAFETY BARRIER ELEVATION AT C.I.P. CLOSURE POURS

(Hinge 1 shown, Hinges 2, 3, and 4 similar.)



SAFETY BARRIER ELEVATION AT C.I.P. CLOSURE POURS

(End Bent 1 shown, End Bent 20 similar.)



FILLED JOINT DETAIL

Note:
Fill joint between barrier on slab panel and cast-in-place barrier at closure pours.

Notes:
For safety barrier curb details at end bents, see Sheet No. 29.
Top of safety barrier curb shall be built parallel to grade.
All exposed edges of safety barrier curb shall have either a ½" radius or a ¾" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.

STATE OF MISSOURI FRANK P. BLAKEMORE, III NUMBER E-2000147856 REGISTERED PROFESSIONAL ENGINEER 12/2/03

DETAILS OF SAFETY BARRIER CURB AT CLOSURE POURS

Detailed OCT 2003
Checked NOV 2003
HNTB

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

HICKORY COUNTY A08941

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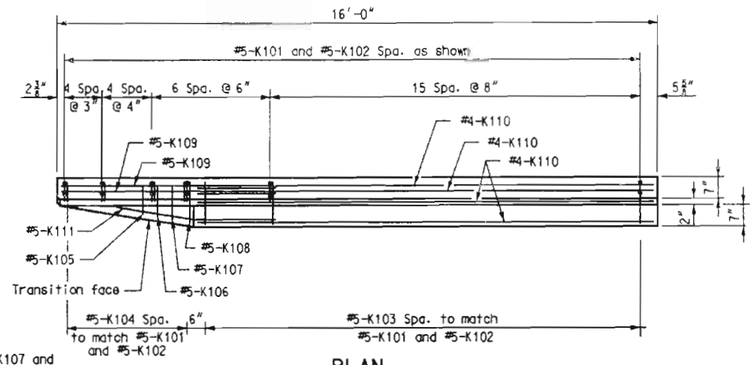
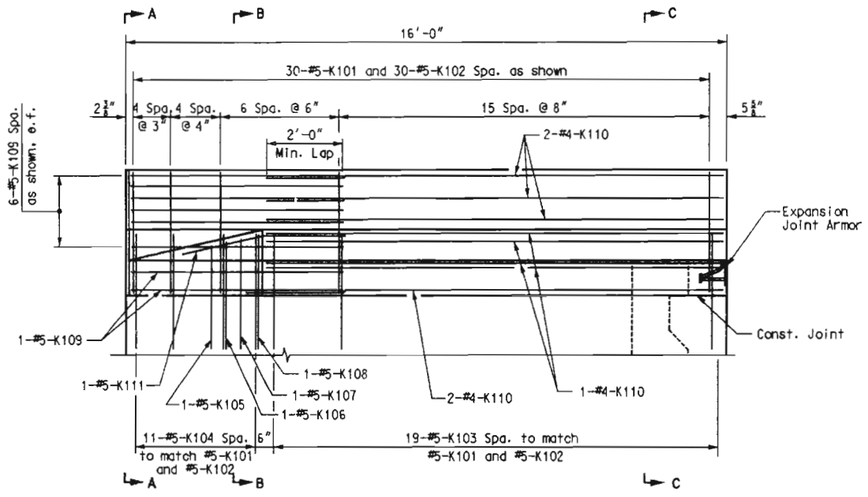


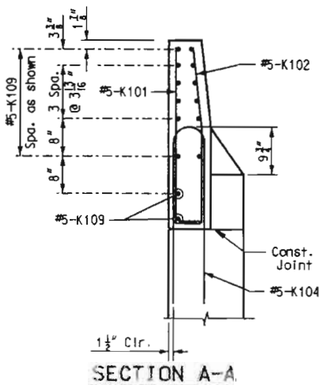
PLAN

Notes:
#5-K105, #5-K106, #5-K107 and #5-K108 are spaced with #5-K104 bars.
Fit #5-K111 bar to follow transition face of curb.

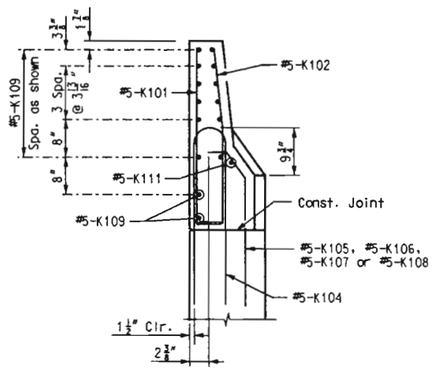


BARRIER ELEVATION

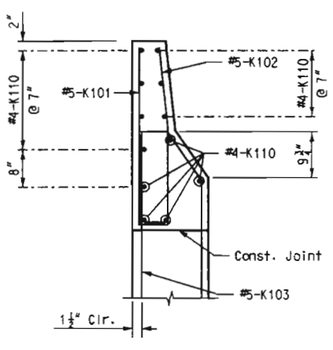
End Bent 1. Left side shown (Right side opposite)



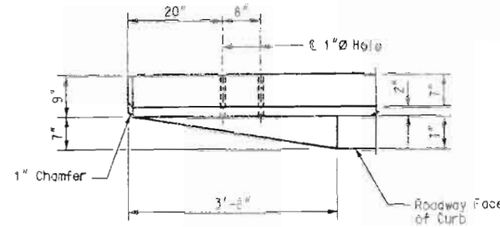
SECTION A-A



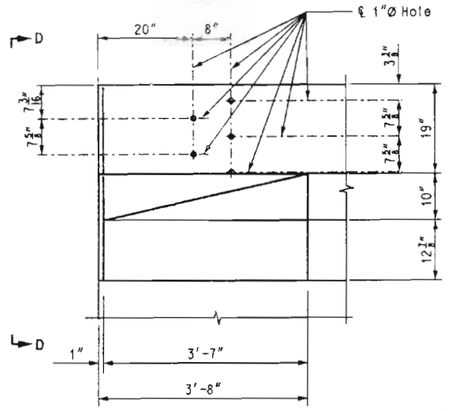
SECTION B-B



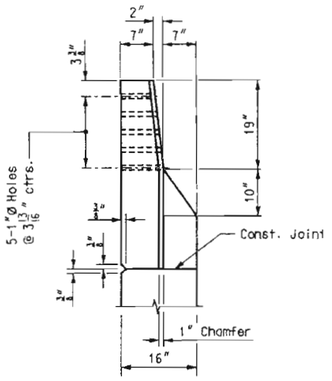
SECTION C-C



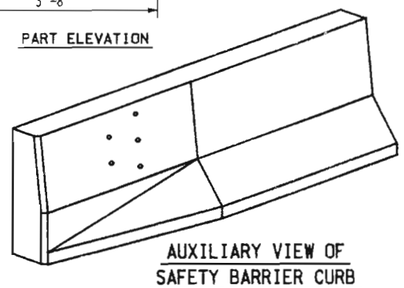
PART PLAN



PART ELEVATION



VIEW D-D



AUXILIARY VIEW OF SAFETY BARRIER CURB

DETAILS OF GUARD RAIL ATTACHMENT

Notes:
For typical barrier curb section, see Sheet No. 28.
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at End Bents) normal to grade.
All exposed edges of safety barrier curb shall have either a ½" radius or a ½" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.
Provide Guard Rail Attachment at Left and Right Barriers.
For Expansion Joint Details, see Sheet No. 31.
Bar Marks shown are for End Bent 1 using "100" series Bar Marks. End Bent 20 is identical, except use "2000" series Bar Marks.

STATE OF MISSOURI FRANK P. ALVAREZ III NUMBER E-2000147856 REGISTERED PROFESSIONAL ENGINEER

12/2003

DETAILS OF SAFETY BARRIER CURB AT END BENTS

HICKORY COUNTY A08941

Detailed OCT 2003
Checked NOV 2003
HNTB

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

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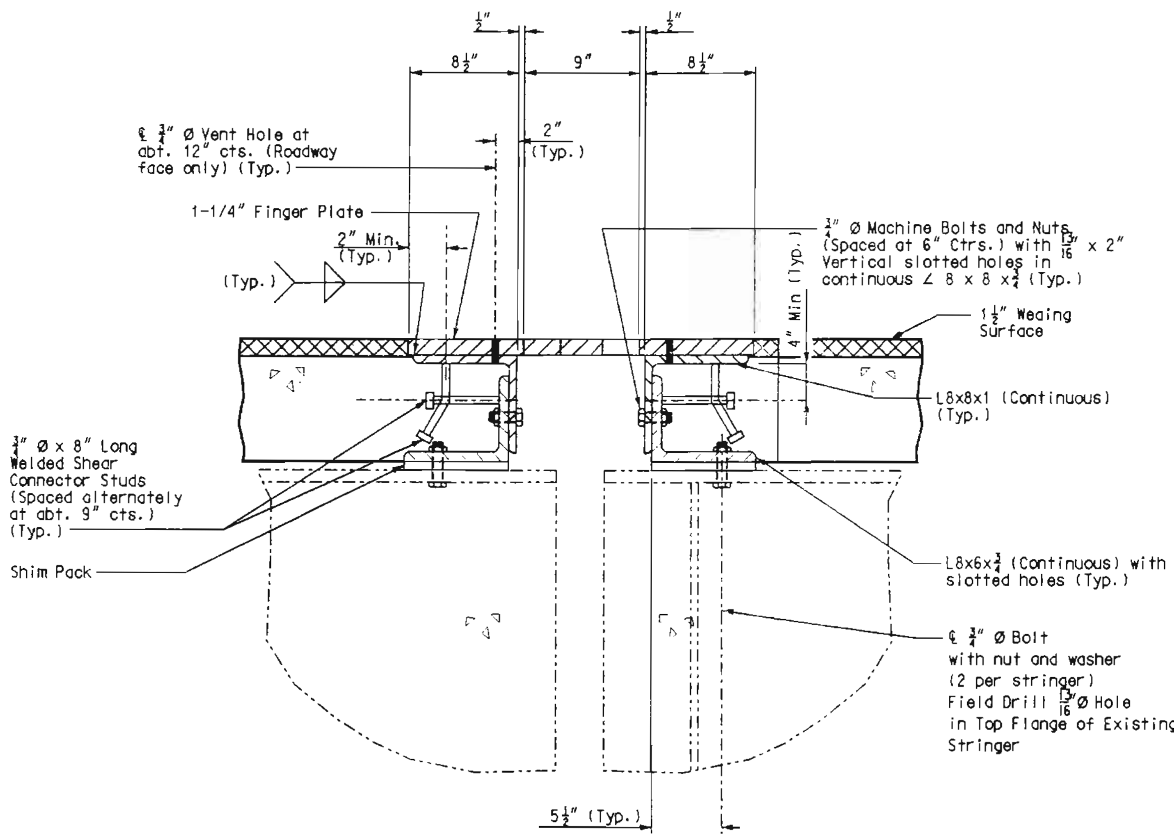
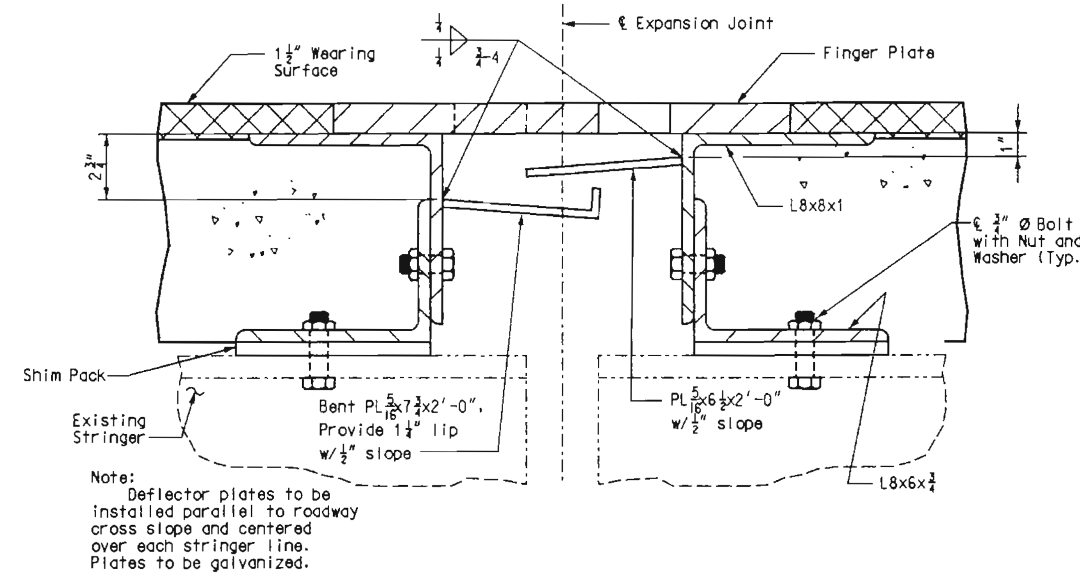


PART SECTION THRU EXPANSION JOINT



DEFLECTOR PLATES AT EACH STRINGER LINE

GENERAL NOTES:

Finger plate shall be cut with a machine guided gas torch from one plate. The plate from which fingers are cut may be spliced before fingers are cut. The surface of cut shall be perpendicular to the surface of the plate. The cut shall not exceed 1/8" in width. The centerline of cut shall not deviate more than 1/16" from the position of centerline of cut shown. No splicing of finger plate or finger plate assembly will be allowed after fingers are cut.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased ¼" for each 10°F fall and decreased ¼" for each 10°F rise in temperature at installation.

Structural steel for the expansion device and curb plate 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.

Payment for furnishing, coating or galvanizing and installing structural steel for the expansion device will be made at the contract unit price for Expansion Device (Finger Plate) per lin. ft.

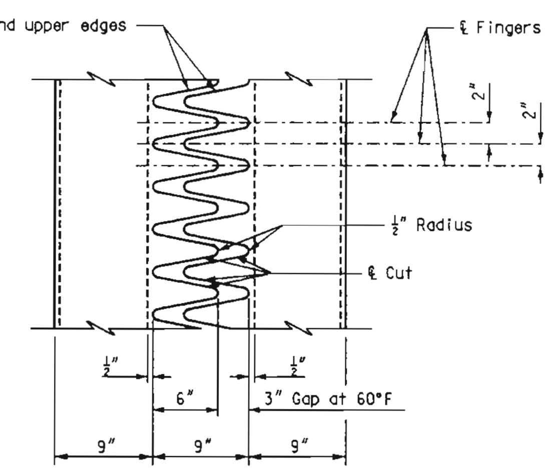
Concrete shall be forced under and around finger plate supporting hardware, studs, angles and bars. Proper consolidation shall be achieved by localized internal vibration.

1-1/4" Finger Plate and ∠ 8 x 8 x¾ shall be bent to conform to crown of roadway.

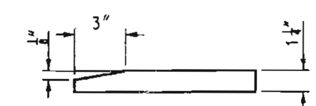
Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1"± from vertical Leg 8x6x3/4 angle at expansion device.

Material for the expansion device shall be ASTM A709 Grade 36 structural steel. Anchors for the expansion device shall be approved stud welded anchors (C1010 thru C1020).

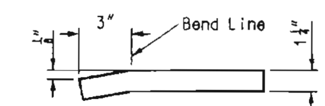
Provide galvanized shims and beveled shims under L8x6x3/4 at existing stringers.



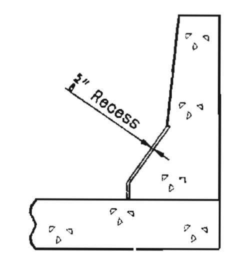
TYPICAL PLAN OF PLATE



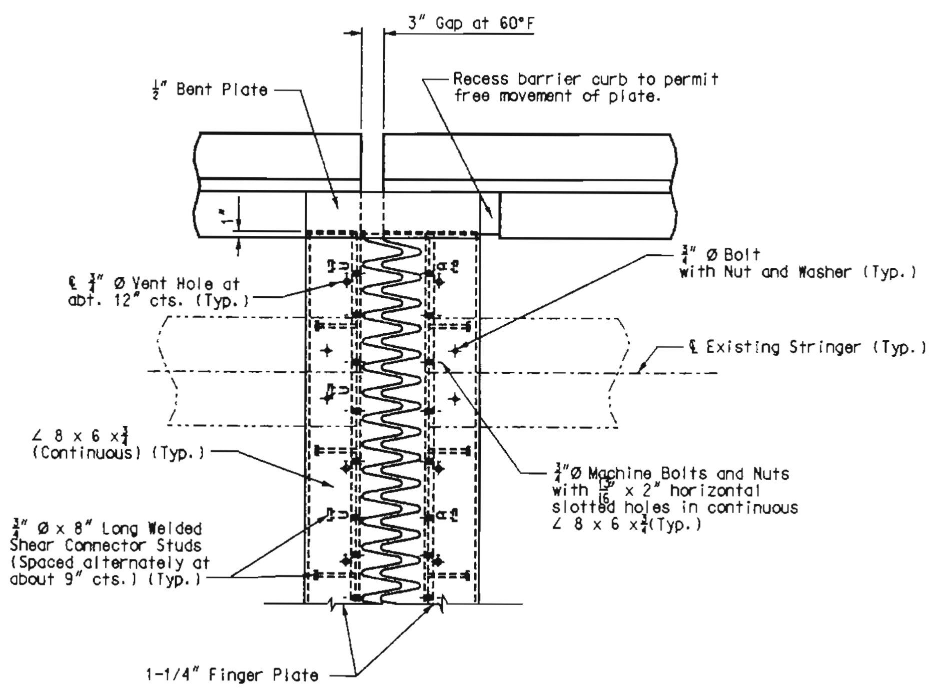
FINGER DETAIL



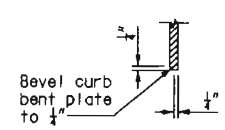
OPTIONAL FINGER DETAIL



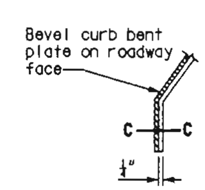
PART SECTION B-B



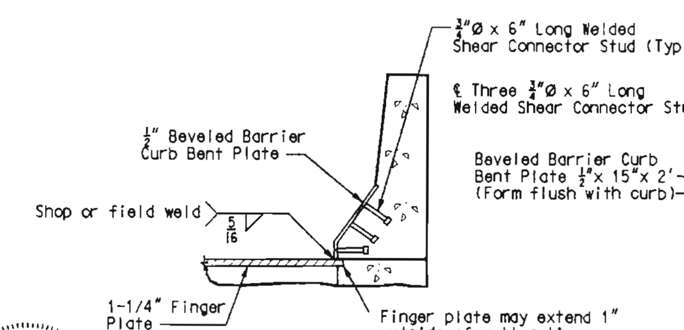
PART PLAN OF EXPANSION DEVICE



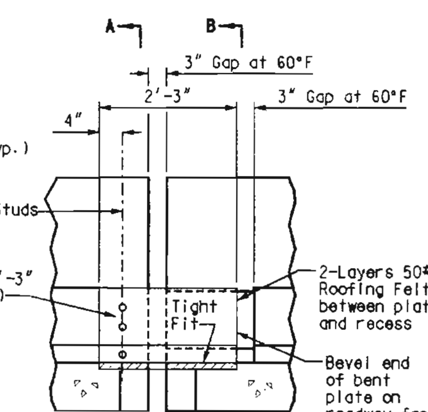
SECTION C-C



PART ELEVATION AT END OF BEVELED CURB BENT PLATE



PART SECTION A-A



PART ELEVATION OF BARRIER CURB

STATE OF MISSOURI
FRANK P. BLAKEMORE, III
E-2000147856
PROFESSIONAL ENGINEER
12/12/03

DETAILS OF FINGER JOINTS AT HINGES

HICKORY COUNTY A08941

Detailed OCT 2003
Checked NOV 2003
HNTB

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

USER: jthompson
PLOTTED: 10-DEC-2003 16:13

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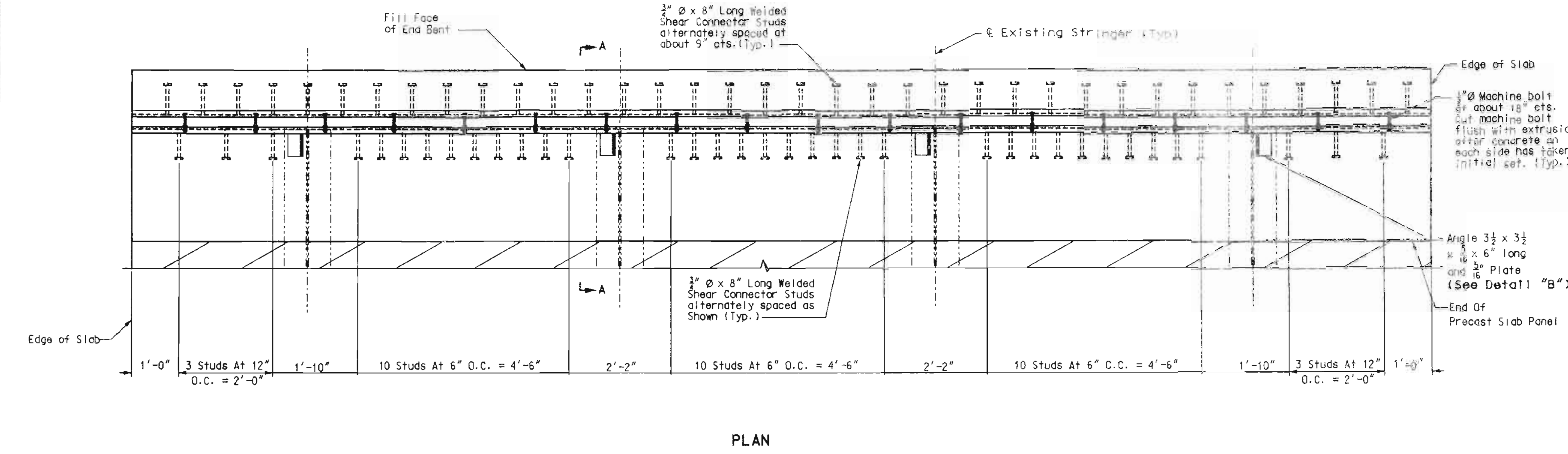
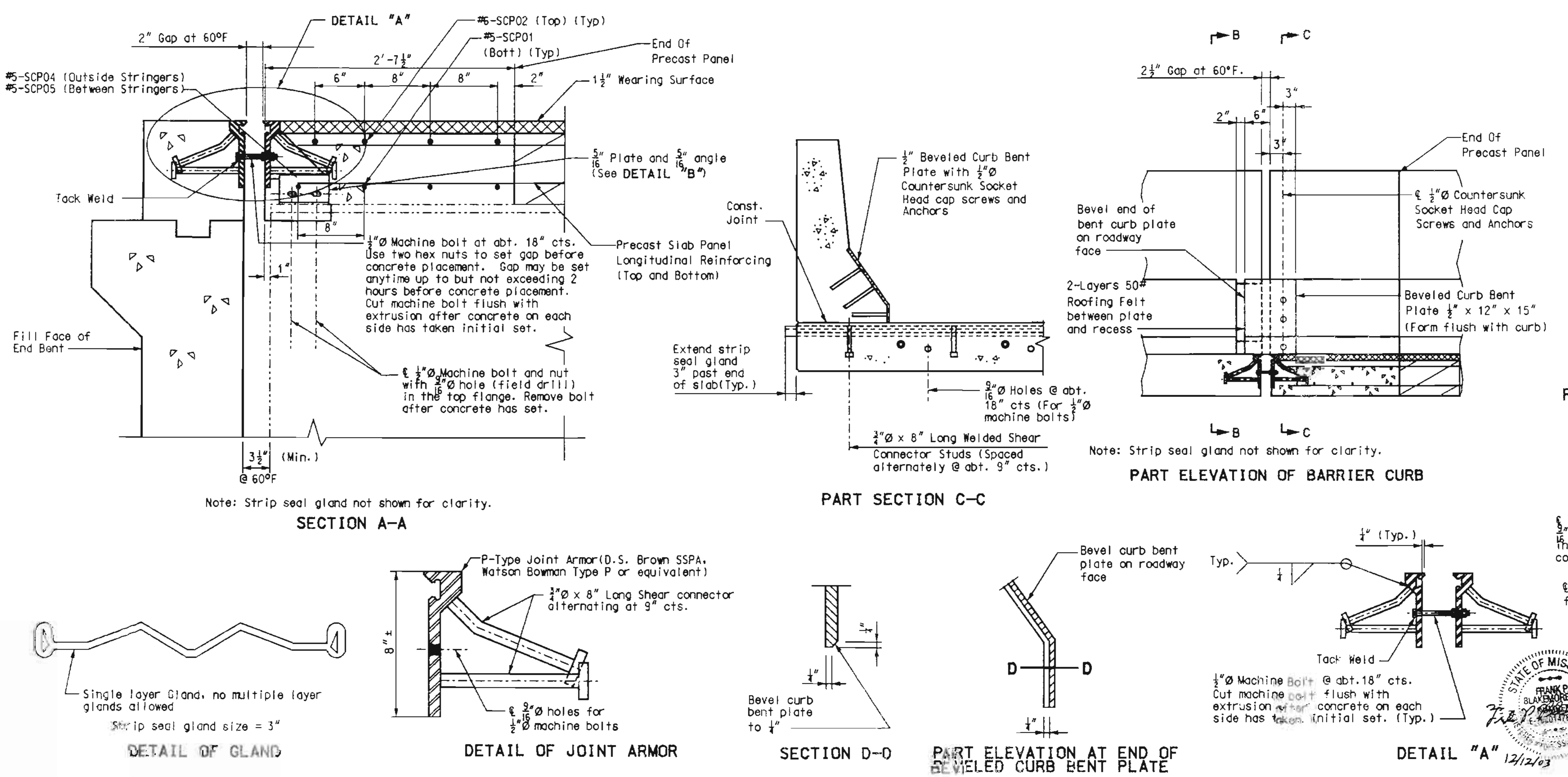
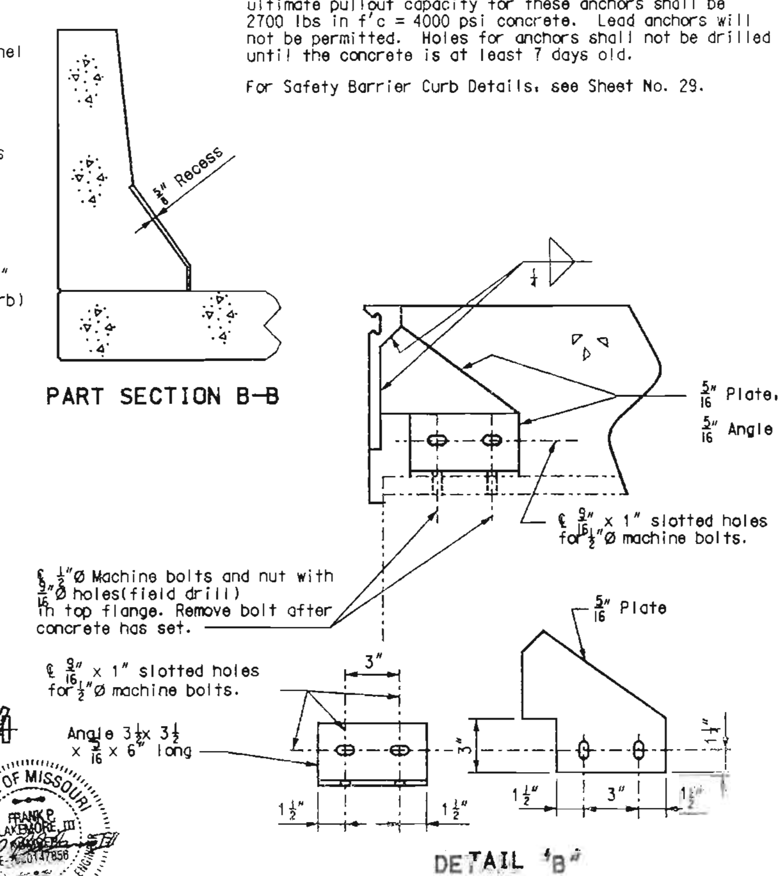
MO		831







GENERAL NOTES:

The expansion device shall be fabricated and installed in accordance with the recommendations of the manufacturer, and as set forth in the Special Provisions.

The contractor must verify all dimensions prior to fabrication.

All welds shall conform to Section 712 of the Missouri Standard Specifications.

Splices of steel extrusion shall develop full strength.

All steel shall be ASTM A709 Grade 36, except steel extrusions shall be ASTM A709 Grade 50W or Grade 36.

Neoprene Strip Seal shall meet ASTM D-2628.

Anchors for the extrusions or armor shall be approved welded studs (C1010 thru C1020).

Structural steel for the expansion device and curb plate 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.

Payment for furnishing, coating or galvanizing and placing steel extrusions, miscellaneous structural steel, barrier curb plates, and neoprene strip seal shall be made under the contract unit price for Strip Seal Expansion Device.

Plan dimensions are based on installation at 60°F. The gap shall be increased 1/8" for each 10° fall in temperature and decreased 1/8" for each 10° rise in temperature from the installation temperature.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1"± from vertical leg of extrusion at Expansion Device.

Concrete shall be forced under and around strip seal extrusions and studs. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Curb Plate anchors shall be a drilled cone expansion or a cast-in-place wing type threaded insert. The minimum ultimate pullout capacity for these anchors shall be 2700 lbs in f'c = 4000 psi concrete. Lead anchors will not be permitted. Holes for anchors shall not be drilled until the concrete is at least 7 days old.

For Safety Barrier Curb Details, see Sheet No. 29.

STATE OF MISSOURI — FRANK P. BLAKEMORE III — PROFESSIONAL ENGINEER — 12/12/03

DETAILS OF STRIP SEALS AT END BENTS

Detailed: OCT 2003
Checked: NOV 2003

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

HICKORY COUNTY

A08941

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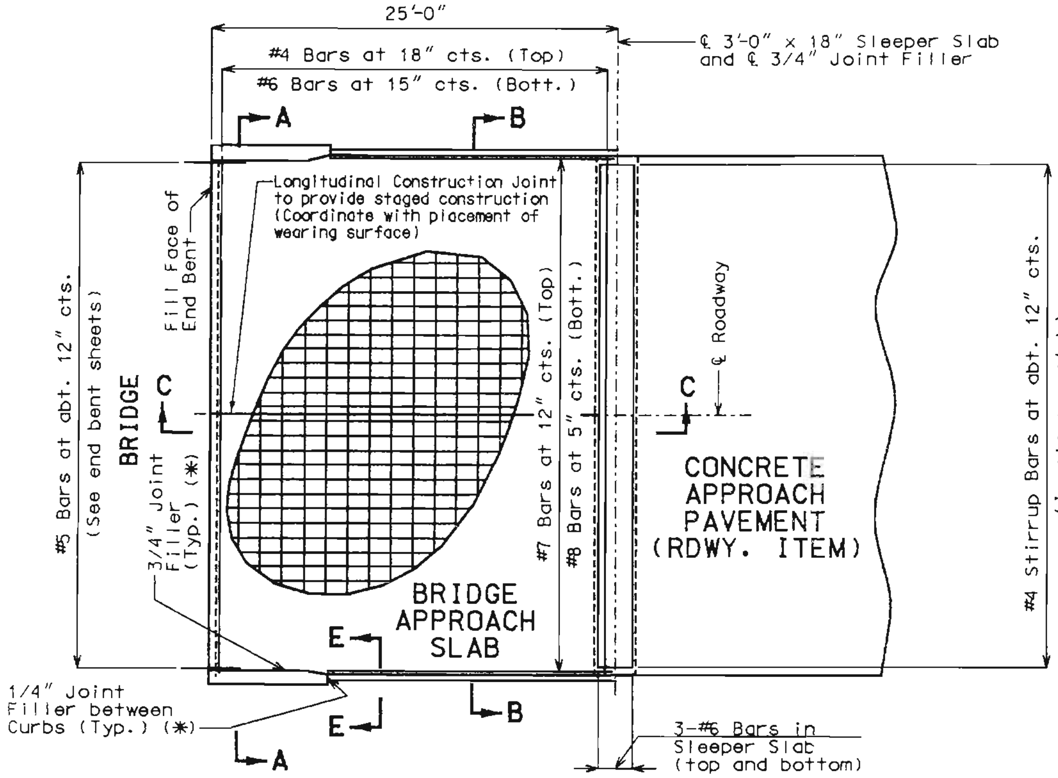
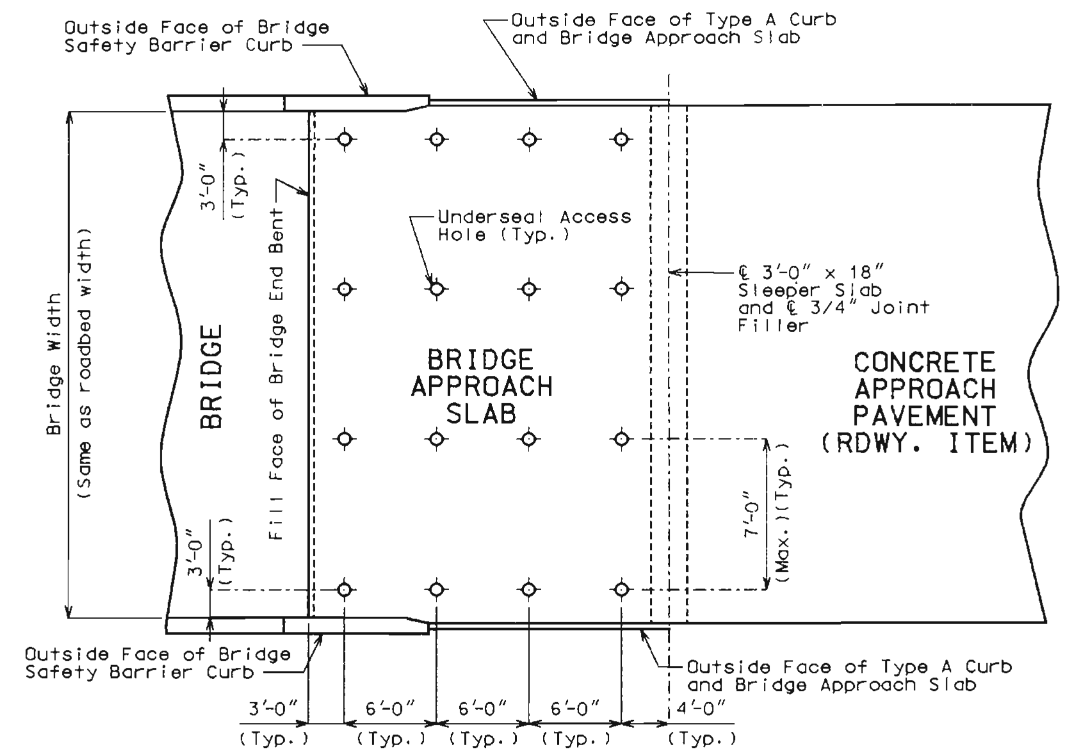
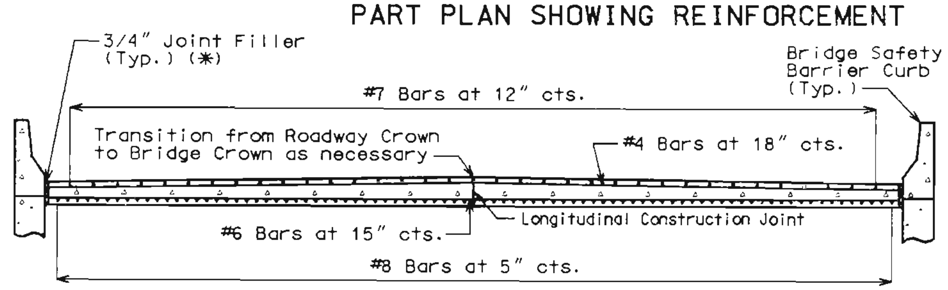


PART PLAN SHOWING REINFORCEMENT

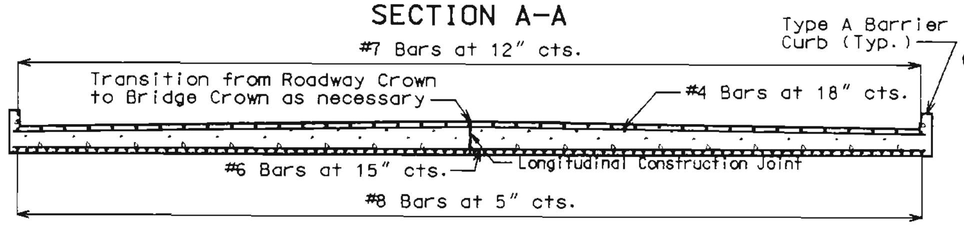


PART PLAN

(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

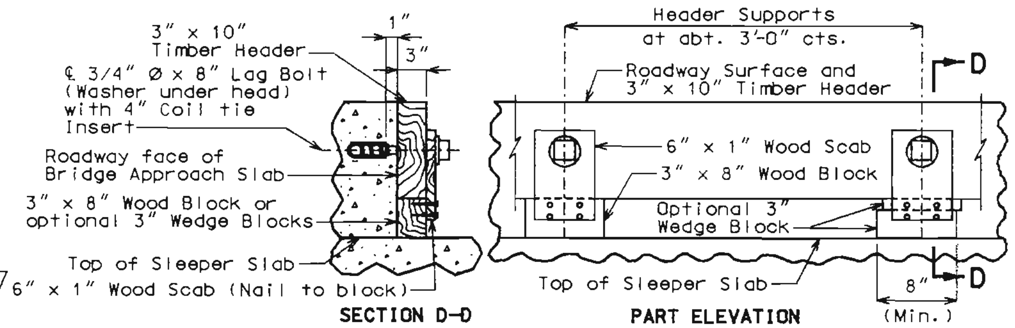


SECTION A-A



SECTION B-B

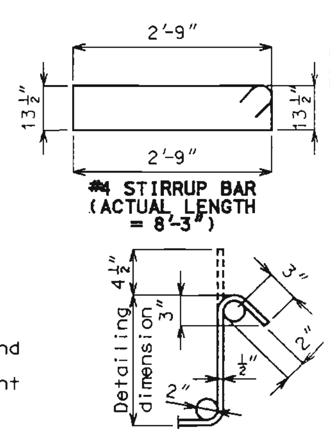
Note: With the approval of the Engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



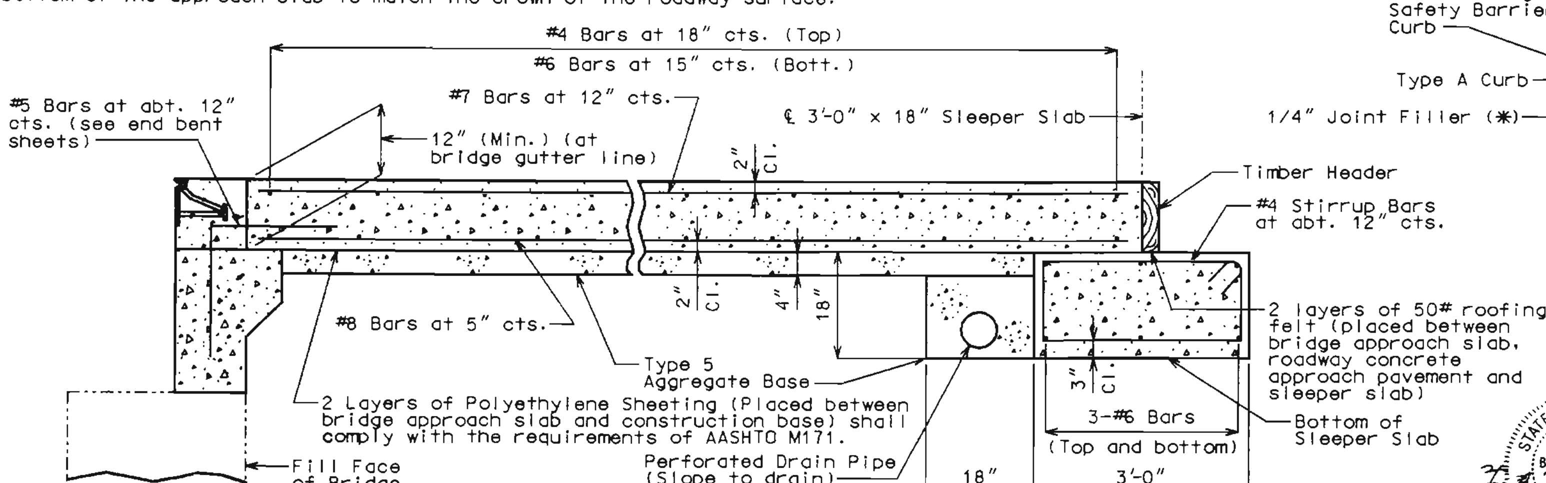
Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER

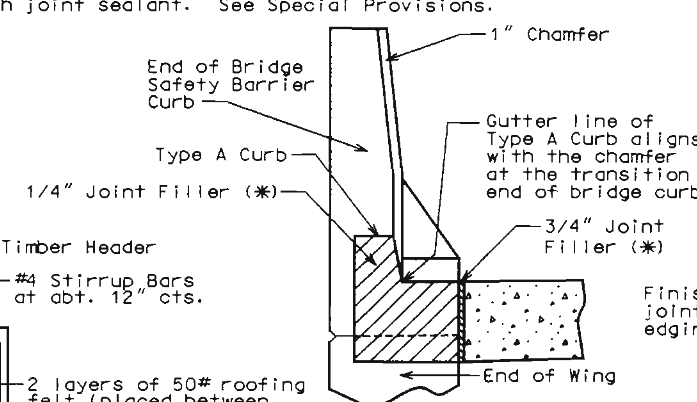
(✱) Use 3/4" Joint Filler between vertical face of Approach Slab and roadway face of Safety Barrier Curb/Wing, except at the end of Safety Barrier Curb/Wing face use 1/4" Joint Filler. Seal joint with joint sealant. See Special Provisions.



Note:
Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).

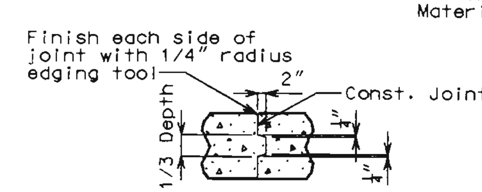


SECTION C-C



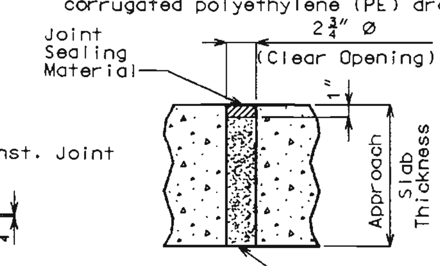
SECTION E-E

(BETWEEN CURBS)



CONST. JOINT DETAIL

(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Section 503 (f'c = 4,000 psi) of the Missouri Standard Specifications.

All joint filler shall meet the requirements of Section 1057.2.5 of the Missouri Standard Specifications, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 60,000 psi.

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 26" respectively.

Mechanical bar splices will be permitted and shall develop at least 125 percent of the specified yield strength of the reinforcing bars being spliced. The contractor shall furnish the Engineer the manufacturer's certification that this requirement is met and is required to follow the manufacturer's recommendation for installation.

Mechanical bar splices shall be epoxy coated in accordance with Section 710 of the Missouri Standard Specifications.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with center line Route 64.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type A Curb, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, shall be considered as completely covered under the contract unit price for Bridge Approach Slab (Bridge), per square yard.

For Concrete Approach Pavement details, see roadway plans.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

When a lap splice is required for the use of a mechanical bar splice, the minimum lap length shall be 40" for transverse approach slab bar splices.

At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired according to Section 710.3.3 of the Missouri Standard Specifications.

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

STATE OF MISSOURI — FRANK P. BLAKEMORE, III — NUMBER E-20014755 — REGISTERED PROFESSIONAL ENGINEER — 12/2/03

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

BRIDGE APPROACH SLAB DETAILS

HICKORY COUNTY A08941

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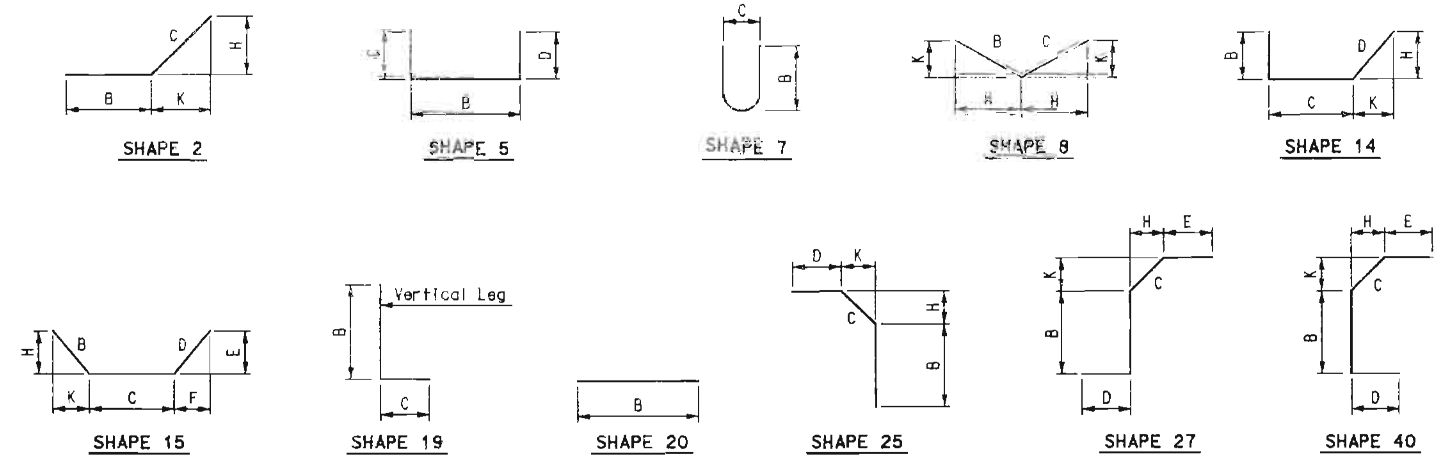
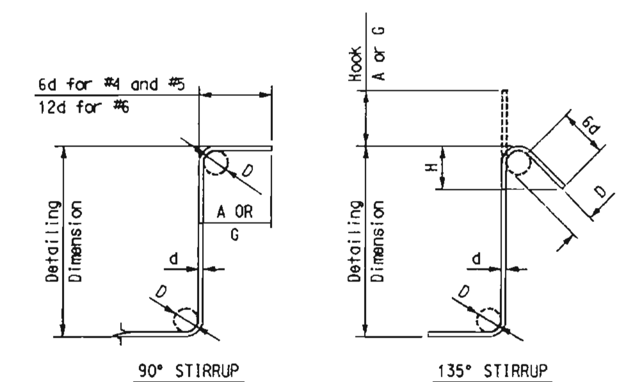
MO		833

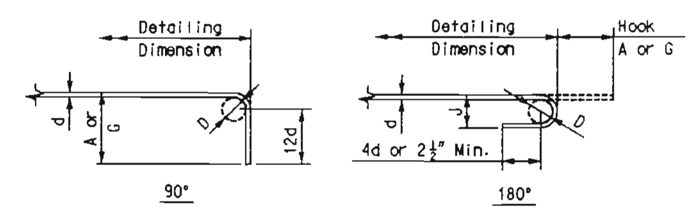
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. (SIZE MARK)	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B (FT. IN.)	C (FT. IN.)	D (FT. IN.)	E (FT. IN.)	F (FT. IN.)	H (FT. IN.)	K (FT. IN.)	NOMINAL LENGTH (FT. IN.)	ACTUAL LENGTH (FT. IN.)	WEIGHT (LBS.)
		END BENT 1																
6	6H101	Backwall	E	20		X			27'-2"							27'-2"	27'-2"	245
8	6H102	Backwall	E	20		X			2'-3"							2'-3"	2'-3"	27
16	6H103	Backwall	E	19		X			6'-4"	18"						7'-10"	7'-9"	186
1	4H104	Backwall	E	20		X			24'-6"							24'-6"	24'-6"	16
14	6H105	Wingwall	E	15		X			14"	4'-4"	14"	9 7/8"	9 7/8"	9 7/8"	9 7/8"	6'-8"	6'-8"	140
10	6H106	Wingwall	E	20		X			13'-5"							13'-5"	13'-5"	202
20	6H107	Wingwall		20		X	V	4	7'-10"							7'-10"	7'-10"	313
		Increment = 15 1/2"							13'-0"							13'-0"	13'-0"	
12	4H108	Wingwall		20		X			2'-4"							2'-4"	2'-4"	19
20	6H109	Wingwall		20		X	V	4	3'-4"							3'-4"	3'-4"	189
		Increment = 17 3/4"							9'-3"							9'-3"	9'-3"	
20	6H110	Backwall		20		X			2'-3"							2'-3"	2'-3"	68
25	4U101	Backwall	E	5		X			6"	14"	14"					2'-10"	2'-8"	45
25	5U102	Backwall	E	19		X			2'-0"	2'-0"						4'-0"	3'-11"	102
36	4V101	Backwall	E	20		X			2'-1"							2'-1"	2'-1"	50
18	4V102	Backwall	E	20		X			4'-10"							4'-10"	4'-10"	58
4	6V103	Wingwall		15		X	V	4	14"	14'-3"	19"	7 3/4"	17 3/8"	12 3/4"	5 3/4"	17'-0"	17'-0"	102
108	6V104	Wingwall		20		X			16"							16"	16"	676
		Increment = 2 5/8"							7'-0"							7'-0"	7'-0"	
12	6V105	Wingwall		20		X			7'-2"							7'-2"	7'-2"	129
4	4V106	Wingwall		20		X			3'-8"							3'-8"	3'-8"	10
4	4V107	Wingwall		5		X			3'-10"	2'-10"	2'-10"					9'-6"	9'-4"	25
8	6V108	Wingwall		20		X			4'-10"							4'-10"	4'-10"	58
		END BENT 20																
6	6H2001	Backwall	E	20		X			27'-2"							27'-2"	27'-2"	245
8	6H2002	Backwall	E	20		X			2'-3"							2'-3"	2'-3"	27
16	6H2003	Backwall	E	19		X			6'-4"	18"						7'-10"	7'-9"	186
1	4H2004	Backwall	E	20		X			24'-6"							24'-6"	24'-6"	16
14	6H2005	Wingwall	E	15		X			14"	4'-4"	14"	9 7/8"	9 7/8"	9 7/8"	9 7/8"	6'-8"	6'-8"	140
8	6H2006	Wingwall	E	20		X			13'-5"							13'-5"	13'-5"	161
20	6H2007	Wingwall		20		X	V	4	7'-10"							7'-10"	7'-10"	313
		Increment = 15 1/2"							13'-0"							13'-0"	13'-0"	
12	4H2008	Wingwall		20		X			2'-4"							2'-4"	2'-4"	19
20	6H2009	Wingwall		20		X	V	4	3'-4"							3'-4"	3'-4"	189
		Increment = 17 3/4"							9'-3"							9'-3"	9'-3"	
20	6H2010	Backwall		20		X			2'-3"							2'-3"	2'-3"	68
25	4U2001	Backwall	E	5		X			6"	14"	14"					2'-10"	2'-8"	45
25	5U2002	Backwall	E	19		X			2'-0"	2'-0"						4'-0"	3'-11"	102
36	4V2001	Backwall	E	20		X			2'-1"							2'-1"	2'-1"	50
16	4V2002	Backwall	E	20		X			4'-10"							4'-10"	4'-10"	52
4	6V2003	Wingwall		15		X	V	4	14"	14'-3"	19"	7 3/4"	17 3/8"	12 3/4"	5 3/4"	17'-0"	17'-0"	102
108	6V2004	Wingwall		20		X			16"							16"	16"	676
		Increment = 2 5/8"							7'-0"							7'-0"	7'-0"	
12	6V2005	Wingwall		20		X			7'-2"							7'-2"	7'-2"	129
4	4V2006	Wingwall		20		X			3'-8"							3'-8"	3'-8"	10
4	4V2007	Wingwall		5		X			3'-10"	2'-10"	2'-10"					9'-6"	9'-4"	25
8	6V2008	Wingwall		20		X			4'-10"							4'-10"	4'-10"	58

* Two additional #4-V102 and #6-H106 are included in the bar list for testing.







END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES: 180° HOOKS HOOK A OR G	ALL GRADES: 180° HOOKS J	ALL GRADES: 90° HOOKS HOOK A OR G
#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"

STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK: HOOK A OR G	135° HOOK: HOOK A OR G	135° HOOK: 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.

Notes:
All standard hooks and bends other than 180 degree are to be bent with the 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.
V = Bar dimensions vary in equal increments between dimesions shown on this line and the following line.
No. Each = 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.
Payweights are based on actual lengths.
Reinforcing Steel (Grade 60) fy = 60,000 psi.

STATE OF MISSOURI FRANK P. BLAKEMORE III NUMBER E-2000147856 REGISTERED PROFESSIONAL ENGINEER 12/22/03

Detailed OCT 2003
Checked NOV 2003
HNTB

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

BILL OF REINFORCING STEEL

HICKORY COUNTY

A08941

State	Proj. No.	Sheet No.
MO		B34

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. (Size / Mark)	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	B (ft. in.)	C (ft. in.)	D (ft. in.)	E (ft. in.)	F (ft. in.)	H (ft. in.)	K (ft. in.)	Nominal Length (ft. in.)	Actual Length (ft. in.)	Weight (lbs.)
PANEL A & SAFETY BARRIER CURB (91 Req'd.)																		
19	5SA01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6SA02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5SA03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5SA04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4SA05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4SA06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4SA07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5SA08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SA09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SA10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SA11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SA12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
14	5PA01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5PA02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5PA03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5PA04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5PA05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL B & SAFETY BARRIER CURB (45 Req'd.)																		
19	5SB01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6SB02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5SB03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5SB04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4SB05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4SB06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4SB07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5SB08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SB09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SB10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SB11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SB12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
14	5PB01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5PB02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5PB03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5PB04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5PB05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL C & SAFETY BARRIER CURB (18 Req'd.)																		
14	5SC01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	397
16	6SC02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	653
32	5SC03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	170
28	5SC04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4SC05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4SC06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
64	4SC07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	114
4	5SC08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SC09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SC10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SC11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SC12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
12	5SC13	Slab Panel	E	20					4'-4"							4'-4"	4'-4"	54
18	5SC14	Slab Panel	E	20					8'-2"							8'-2"	8'-2"	153
16	4SC15	Slab Panel	E	20					5'-3"							5'-3"	5'-3"	56
16	4SC16	Slab Panel	E	20					3'-9"							3'-9"	3'-9"	40
32	4SC17	Slab Panel	E	20					2'-0"							2'-0"	2'-0"	43
14	5PC01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5PC02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5PC03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5PC04	Barrier	E	19	S				17"	6"						23"	22"	42

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. (Size / Mark)	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	B (ft. in.)	C (ft. in.)	D (ft. in.)	E (ft. in.)	F (ft. in.)	H (ft. in.)	K (ft. in.)	Nominal Length (ft. in.)	Actual Length (ft. in.)	Weight (lbs.)
PANEL C & SAFETY BARRIER CURB (CONT.)																		
22	5PC05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL D & SAFETY BARRIER CURB (4 Req'd.)																		
19	5SD01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6SD02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5SD03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5SD04	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	294
38	4SD05	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	256
64	4SD06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4SD07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5SD08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SD09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SD10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SD11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SD12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
14	5PD01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5PD02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5PD03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5PD04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5PD05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL E & SAFETY BARRIER CURB (4 Req'd.)																		
19	5SE01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6SE02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5SE03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5SE04	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	294
38	4SE05	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	256
64	4SE06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4SE07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5SE08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SE09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SE10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SE11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SE12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
14	5PE01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5PE02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5PE03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5PE04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5PE05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL F & SAFETY BARRIER CURB (2 Req'd.)																		
16	5SF01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	453
12	6SF02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	490
24	5SF03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	127
28	5SF04	Slab Panel	E	20					10'-3"							10'-3"	10'-3"	299
38	4SF05	Slab Panel	E	20					10'-3"							10'-3"	10'-3"	260
64	4SF06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
80	4SF07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	143
4	5SF08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5SF09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5SF10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5SF11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7SF12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
14	5PF01	Barrier	E	20					10'-3"							10'-3"	10'-3"	150
18	5PF02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	50
18	5PF03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	53
18	5PF04	Barrier	E	19	S				17"	6"						23"	22"	34
18	5PF05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	55

Detailed OCT 2003
Checked NOV 2003
HNTB

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

State of Missouri — Frank P. Blakemore III — Number E-2000147856 — Registered Professional Engineer

BILL OF REINFORCING STEEL

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO		

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. (SIZE MARK)	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
CIP SLAB & SAFETY BARRIER CURB AT END BENT (2 REQUIRED)																		
3	5SCP01	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	85
4	6SCP02	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	163
4	5SCP03	Closure Pour	E	20					5'-1"							5'-1"	5'-1"	21
2	5SCP04	Closure Pour	E	20					3'-5"							3'-5"	3'-5"	7
3	5SCP05	Closure Pour	E	20					6'-4"							6'-4"	6'-4"	20
6	5RCP02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	17
6	5RCP03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	18
6	5RCP04	Barrier	E	19	S				17"	6"						23"	22"	11
6	5RCP05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	18
CIP SLAB & SAFETY BARRIER CURB AT HINGE (PANEL D SIDE) (4 REQUIRED)																		
5	5SCP01	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	142
5	6SCP02	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	204
8	5SCP03	Closure Pour	E	20					5'-1"							5'-1"	5'-1"	42
28	5SCP06	Closure Pour	E	20					3'-1"							3'-1"	3'-1"	90
38	4SCP07	Closure Pour	E	20					3'-1"							3'-1"	3'-1"	78
14	5RCP01	Barrier	E	20					3'-6"							3'-6"	3'-6"	51
10	5RCP02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	28
10	5RCP03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	30
10	5RCP04	Barrier	E	19	S				17"	6"						23"	22"	19
10	5RCP05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	30
CIP SLAB & SAFETY BARRIER CURB AT HINGE (PANEL E SIDE) (4 REQUIRED)																		
9	5SCP01	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	255
9	6SCP02	Closure Pour	E	20					27'-2"							27'-2"	27'-2"	367
16	5SCP03	Closure Pour	E	20					5'-1"							5'-1"	5'-1"	85
30	5SCP08	Closure Pour	E	20					5'-10"							5'-10"	5'-10"	170
38	4SCP09	Closure Pour	E	20					5'-10"							5'-10"	5'-10"	148
14	5RCP02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	39
14	5RCP03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	41
14	5RCP04	Barrier	E	19	S				17"	6"						23"	22"	27
14	5RCP05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	43
14	5RCP06	Barrier	E	20					5'-8"							5'-8"	5'-8"	83
CIP SAFETY BARRIER AT END BENT 1 (1 REQUIRED)																		
60	5K101	Barrier	E	19	S				3'-5"	5 1/8"						3'-11"	3'-9"	235
60	5K102	Barrier	E	14	S				5 1/8"	23 1/8"	18"			2"	17 7/8"	3'-11"	3'-9"	235
38	5K103	Barrier	E	40	S				5 1/8"	12"	3'-6 3/4"	2'-8 7/8"		9 7/8"	6 7/8"	7'-9"	7'-6"	297
22	5K104	Barrier	E	7					3'-6 3/4"	6"						7'-4"	7'-4"	168
2	5K105	Barrier	E	25	S				2'-8 7/8"	6 3/4"	4 3/8"			5 1/2"	4"	3'-8"	3'-7"	7
2	5K106	Barrier	E	25	S				2'-8 7/8"	7 7/8"	4 3/8"			6 1/2"	4 1/2"	3'-10"	3'-8"	8
2	5K107	Barrier	E	25	S				2'-8 7/8"	9 5/8"	4 3/8"			7 7/8"	5 1/2"	3'-11"	3'-10"	8
2	5K108	Barrier	E	25	S				2'-8 7/8"	11 1/4"	4 3/8"			9 1/4"	6 1/2"	4'-1"	3'-11"	8
30	5K109	Barrier	E	20					5'-7"							5'-7"	5'-7"	175
24	4K110	Barrier	E	20					12'-1"							12'-1"	12'-1"	194
2	5K111	Barrier	E	8					2'-2 1/8"	2'-2 1/8"				2'-2"	2 3/8"	4'-5"	4'-5"	9
CIP SAFETY BARRIER AT END BENT 20 (1 REQUIRED)																		
60	5K2001	Barrier	E	19	S				3'-5"	5 1/8"						3'-11"	3'-9"	235
60	5K2002	Barrier	E	14	S				5 1/8"	23 1/8"	18"			2"	17 7/8"	3'-11"	3'-9"	235
38	5K2003	Barrier	E	40	S				5 1/8"	12"	3'-6 3/4"	2'-8 7/8"		9 7/8"	6 7/8"	7'-9"	7'-6"	297
22	5K2004	Barrier	E	7					3'-6 3/4"	6"						7'-4"	7'-4"	168
2	5K2005	Barrier	E	25	S				2'-8 7/8"	6 3/4"	4 3/8"			5 1/2"	4"	3'-8"	3'-7"	7
2	5K2006	Barrier	E	25	S				2'-8 7/8"	7 7/8"	4 3/8"			6 1/2"	4 1/2"	3'-10"	3'-8"	8
2	5K2007	Barrier	E	25	S				2'-8 7/8"	9 5/8"	4 3/8"			7 7/8"	5 1/2"	3'-11"	3'-10"	8
2	5K2008	Barrier	E	25	S				2'-8 7/8"	11 1/4"	4 3/8"			9 1/4"	6 1/2"	4'-1"	3'-11"	8
28	5K2009	Barrier	E	20					5'-7"							5'-7"	5'-7"	163
24	4K2010	Barrier	E	20					12'-1"							12'-1"	12'-1"	194
2	5K2011	Barrier	E	8					2'-2 1/8"	2'-2 1/8"				2'-2"	2 3/8"	4'-5"	4'-5"	9

* Two additional #5-K109 are included in the bar list for testing.

BILL OF REINFORCING STEEL

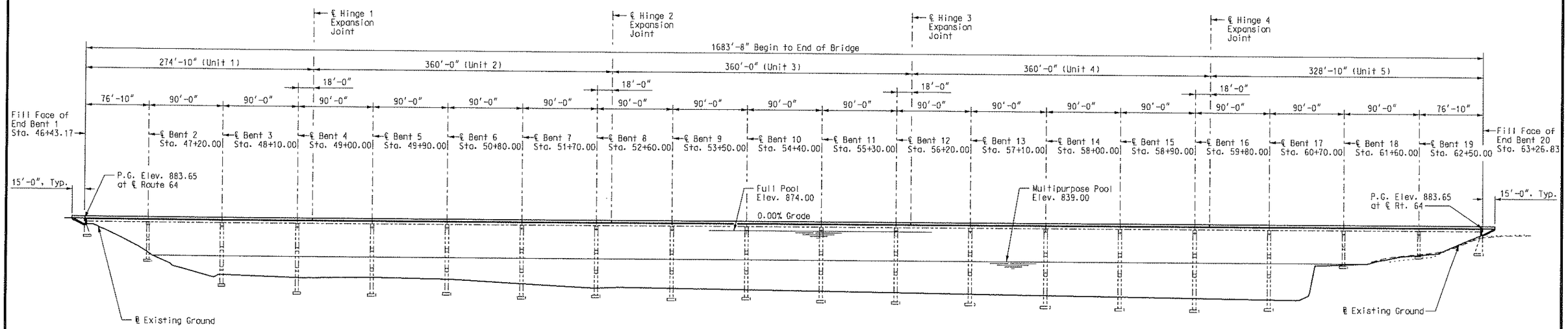
NO. REQ'D.	MARK NO. (SIZE MARK)	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
	TOTALS																	
	4																	108
	4		E															87,426
	5																	0
	5		E															249,604
	6																	3,070
	6		E															105,037
	7																	0
	7		E															36408
END BENTS WITH SAFETY BARRIER																		
	4																	108
	4		E															332
	5																	0
	5		E															204
	6																	3,070
	6		E															1,565
	7																	0
	7		E															0
PRECAST SLAB PANEL WITH SAFETY BARRIER																		
	4																	0
	4		E															87,802
	5																	0
	5		E															240,326
	6																	0
	6		E															100,862
	7																	0
	7		E															36,408
CLOSURE POUR WITH SAFETY BARRIER																		
	4																	0
	4		E															1,292
	5																	0
	5		E															9,074
	6																	0
	6		E															2,610
	7																	0
	7		E															0

STATE OF MISSOURI
FRANK P. BLAKEMORE III
NUMBER E-2000147856
REGISTERED PROFESSIONAL ENGINEER
12/22/03

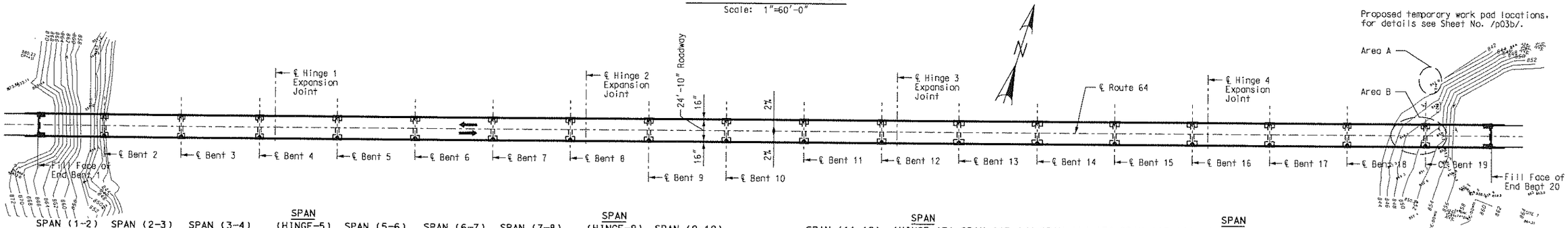
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B1
SEC. 17/18/19	TWP. 36N	RGE. 21W

(UIP) (75'-0", 17 @ 90'-0", 75'-0") Continuous Composite Wide Flange Beam Spans
No Skew



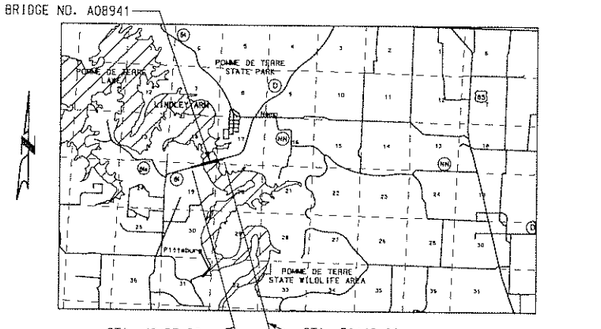
GENERAL ELEVATION
Scale: 1"=60'-0"



PLAN
Scale: 1"=60'-0"

Proposed temporary work pad locations, for details see Sheet No. /p03b/.

BRIDGE NO. A08941



LOCATION MAP

BENCHMARKS

Set in concrete barrier wall on the East End and North Side of the Bridge over Pomme de Terre Lake.
Lindley Branch.
Elev. 886.230

Set in concrete barrier wall West End and South side of the Bridge over Pomme de Terre Lake.
Lindley Branch.
Elev. 886.200

FINAL PLANS

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SIGNATURE _____ DATE _____

WIDENING OF:
BRIDGE OVER POMME DE TERRE LAKE

STATE ROAD FROM RTE. NN S.W. TO RTE. 64B
1.5 MILES SOUTHWEST OF ROUTE NN
PROJECT NO. STA. 46+43.17
JOB NO. J8S0654 RTE. 64
HICKORY COUNTY
DATE

STD. 706.35
STD. 609.00
A08941

Compiled by Regin Belisle
Checked by Dallas Russell

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

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B2

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2002 AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A.

DESIGN LOADINGS:
HS15-44: Stringers and Substructure
HS20-44: Deck
Earth 120#/Cu. Ft. Equivalent Fluid Pressure = 45#/Cu. Ft.
Fatigue Stress Cycles - Case II.
Superstructure: Continuous composite for live load.

DESIGN UNIT STRESSES:
Class B-1 Concrete (Substructure) f'c = 4,000 psi.
Class B-1 Concrete (Closure Pour & Barrier Curb) f'c = 4,000 psi.
Silica Fume concrete f'c = 4,000 psi.
Precast Slab Panel grout f'c = 2,500 psi (prior to opening to traffic)
Reinforcing Steel Grade 60 Fy = 60,000 psi.
Structural Carbon Steel (ASTM A709 Grade 36) Fy = 36,000 psi.
Post-Tensioning Bars (Grade 150) Fy = 150 ksi.

FABRICATED STEEL CONNECTIONS:
Field connections, high strength bolts $\frac{7}{8}$" Dia., holes $\frac{15}{16}$" Dia., except as noted.
High strength bolts, nuts and washers will be sampled for quality assurance as specified in Standard Specification 106 and Field Section (FS-712) from Materials Manual.

STRUCTURAL STEEL:
Fabricated structural carbon steel shall be ASTM A709, Grade 36, except as noted.

WELDING:
For welded connections, use minimum weld sizes as per Missouri Standard Specifications for Highway Construction, unless shown otherwise.

WIDEN, EXTENSION, AND REPAIR:
Outline of old work is indicated by dashed lines. Heavy lines indicate new work.
Dimensions contained in these plans are based on the "As Built Plans". Contractor shall verify all dimensions in field before ordering new steel.
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, unless otherwise noted.
The contractor shall use one of the resin anchor systems listed in the general special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the general special provisions.
Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for Class B-1 Concrete (Substr).
The resin anchor systems shall have a minimum ultimate pullout strength as specified below, in concrete with f'c = 4,000 psi. See Special Provisions.

DIAMETER	BAR SIZE	EMBEDDED LENGTH (in new concrete)	PULLOUT (lbs.)
$\frac{5}{8}$"	#4, #5	18"	15,500
$\frac{1}{2}$"	#6	24"	20,400

REINFORCING STEEL:
Minimum clearance to the reinforcing steel shall be 1½", unless otherwise shown.

JOINT FILLER:
All joint filler shall meet the requirements of Section 1057.2.4 of the Missouri Standard Specifications, except as noted.

PROTECTIVE COATING:
System G by the contractor (See Special Provisions).

FIELD COAT (EXISTING STEEL):
All exposed and accessible surfaces of the existing structural steel shall be cleaned and coated with System G prime coat in accordance with Section 712 and the Special Provisions. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.
Field Coat: The color of the finish coat shall be Gray (Federal Standard #26373. The cost of the intermediate coat shall be included in the contract unit price per sq. foot of intermediate Field Coat (System G) Gray. The cost of the finish coat shall be included in the contract unit price per sq. foot of Finish Field Coat (System G) Gray. (See Special Provisions.)
The Contractor is responsible for the containment and disposal of any materials resulting from the surface preparation and recoating of the existing steel stringers (including top flanges), diaphragms, and other miscellaneous appurtenances. See Special Provisions.

BEARINGS:
Bearings at end bents require cleaning, lubricating and coating, see Special Provisions.

NON-DESTRUCTIVE TESTING:
Welds at existing cover plates and existing stringer post-tension anchor plates require non-destructive testing, see Special Provisions.

PRECAST SLAB PANELS:
Concrete for precast slab panels shall be Class B1 with f'c = 5,000 psi, f'ci = 5,000 psi.

All reinforcement shall be epoxy coated.

The top surface of all panels shall receive a scored finish with a depth of scoring of ¼" perpendicular to the CL of Route 64 (see Special Provisions).

Suitable anchorage devices for lifting may be cast in panels, provided they are shown on the shop drawings and approved by the engineer.

Panels shall be set on joint filler in accordance with Section 1057.2.5 of Mo. Std. Spec. or polystyrene bedding material.

POST-TENSIONING BARS:
All bars shall conform to to the requirements of ASTM A722 Grade 150. Anchorage systems and blockout details shall be determined by the post-tensioning system used. The contractor shall adjust dimensions and reinforcing as required.
Maximum jacking stress = 0.75 f's
Maximum stress after seating = 0.70 f's
P.T. , Where noted in plans, denotes Post-Tensioned.

TEMPORARY BRIDGE:
To accomodate openings in deck at closure pour locations and joint between precast slab panels and existing deck, steel plates (or other approved device) shall be used.
Prior to removal of any portion of the deck or end bent backwalls, shop drawings and calculations indicating size and thickness of plates shall be submitted to the Engineer for approval. See Special Provisions.

SILICA FUME CONCRETE WEARING SURFACE:
In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. No payment will be allowed for additional labor, materials or equipment for variations in thickness of wearing surface.

FINAL PLANS

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SIGNATURE _____ DATE _____

FINAL QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Removal of Existing Bridge Deck	Sq. Ft.	-	41,406	41,406
Partial Removal of Substructure Concrete	Lump Sum	1	-	1
Class 1 Excavation	Cu. Yds.	70	-	70
* Temporary Shoring	Lump sum	-	-	1
Bridge Approach Slab (Bridge)	Sq. Yds.	-	153	153
* Rock Fill (Special)	Cu. Yds.	-	-	279
Substructure Repair (Formed)	Sq. Ft.	0	-	0
Substructure Repair (Unformed)	Sq. Ft.	19	-	19
Protective Coating - Concrete Bents (Deleterious Agents)	Lump sum	1	-	1
Class B-1 Concrete (Substr)	Cu. Yds.	25.4	-	25.4
Class B-1 Concrete (Closure Pour & Barrier Curb)	Cu. Yds.	-	43.6	43.6
Precast Concrete Slab Panels (with intergal Barrier Curbs)	Sq. Yds.	-	4,999	4,999
Silica Fume Concrete Wearing Surface	Sq. Yds.	-	4,614	4,614
Strip Seal Expansion Device	Lin. Ft.	-	56	56
Post-Tension System	Lump Sum	-	1	1
Reinforcing Steel (Bridges)	Lbs.	3,180	-	3,180
Mechanical Bar Splice	Each	56	528	584
Reinforcing Steel (Epoxy Coated)	Lbs.	2,100	12,980	15,080
Expansion Device (Finger Plate)	Lin. Ft.	-	100	100
Fabricated Structural Carbon Steel (Misc.)	Pound	-	190	190
Cleaning, Lubricating and Coating Bearing	Each	-	8	8
Slab Drain	Each	-	292	292
Surface Preparation for Recoating Structural Steel	Sq. Ft.	-	75,000	75,000
Field Application of Inorganic Zinc Primer	Sq. Ft.	-	75,000	75,000
Intermediate Field Coat (System G) Gray	Sq. Ft.	-	68,300	68,300
Finish Field Coat (System G) Gray	Sq. Ft.	-	19,400	19,400
Transporting Lead Contaminated Residue to Storage Area	Lump Sum	-	-	1
Transporting Lead Contaminated Residue to the Smelter	Lump Sum	-	-	1
Disposal of Lead Contaminated Residue	Lump Sum	-	-	1
Non-Destructive Testing	Lin. Ft.	-	420	420
Hanger Retrofit at Hinges	Each	-	16	16
Rivet Replacement at Field Splices	Each	-	0	0
Removal of Existing Shear Connectors	Lump Sum	-	-	1
Installation of Shear Connectors	Each	-	11,868	11,868

Notes:
The quantities for "Surface Preparation for Recoating Structural Steel" and "Field Application of Inorganic Zinc Primer" include the entire length of all Stringers.
The intermediate field coat shall be applied to the surfaces of all structural steel except those surfaces to be in contact with concrete shall not receive the intermediate coat. The intermediate coat shall also be applied to the end bent bearings.
The finish field coat shall include the exterior stringers. The limits of the exterior stringers shall include the bottom of the top exterior flanges, the top of the bottom exterior flanges, the exterior web area, the exterior face of the top and bottom flanges, and the bottom of the bottom flange. Areas of steel to be in contact with concrete shall not receive the finish coat.
The surfaces of all structural steel located under expansion joints shall be field coated with intermediate and finish coats for a distance of 10 feet from the center line of the joint. Within this limit, the items to be field coated shall include all surfaces of stringers, bearings, diaphragms, stiffeners and miscellaneous structural steel items. Areas of steel to be in contact with concrete shall not receive the field coats.
The limits of the field coatings shall be masked to provide crisp, straight lines and to prevent overspray on adjacent areas.
* The quantities for "Rock Fill (Special)" and " Temporary Shoring" are based on Contractors work area as shown in the plans. If Contractor does not use workpad as shown in plans, then these items shall be underrun as determined by the Engineer. See Special Provisions.
The lump sum quantity for "Protective Coating - Concrete Bents (Deleterious Agents)" includes End Bent 1 and End Bent 20, to the limits shown.

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

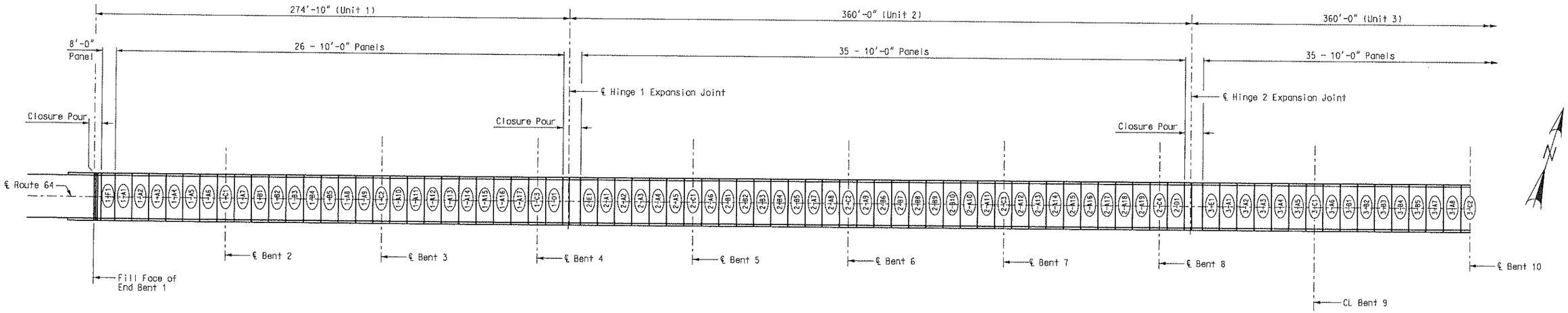
Compiled by Regin Bellsle
Checked by Dallas Russell

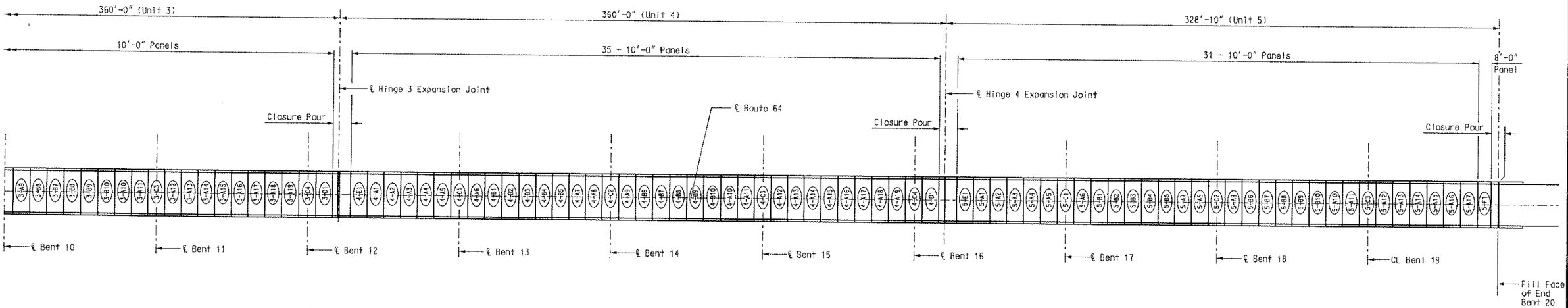
Note: This drawing is not to scale. Follow Dimensions.

GENERAL NOTES AND FINAL QUANTITIES

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B3



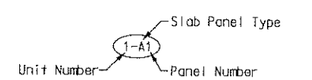


PLAN OF CONSTRUCTION

Scale: 1"=30'-0"

PROPOSED OVERALL CONSTRUCTION SEQUENCE

1. Construct End Bent Modifications to backwalls as detailed, using temporary steel plate across backwall and expansion joint.
2. Place panels in Span (1-2) (See Plan of Construction).
3. Set strip seal joint at End Bent 1 and cast closure pour.
4. Place panels in Span (2-3).
5. Place panels for Spans (3-4), (4-Hinge), and (Hinge-5)
6. Install hanger retrofit at hinge. Set finger joint in Span (4-5) and cast closure pour.
7. Place panels for Spans (5-6) thru (8-9).
8. Repeat step 6 for Span (8-Hinge) and (Hinge-9).
9. Repeat steps 7 & 8 for Units 3 and 4.
10. Place panels in Span (16-Hinge) and (Hinge-17).
11. Repeat step 6 for Span (16-Hinge) and (Hinge-17).
12. Place panels for Spans (17-18) and (18-19).
13. Place panels for Span (19-20).
14. Set strip seal joint at End Bent 20 and cast closure pour.
15. Place wearing surface on bridge deck.
16. Construct approach slab, wingwalls and barrier at End Bents 1 and 20. Utilize staged construction to coordinate with placement of wearing surface.



SLAB PANEL DESIGNATION

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Compiled by Regin Belisle
Checked by Dallas Russell

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

PROPOSED OVERALL CONSTRUCTION SEQUENCE

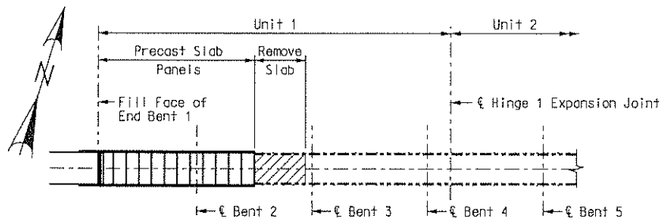
HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B4

PROPOSED NIGHTLY CONSTRUCTION SEQUENCE

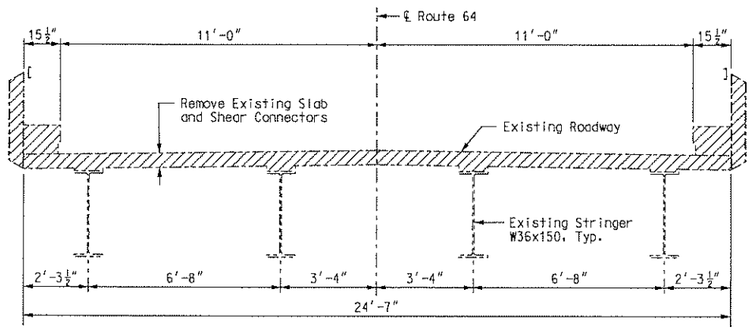
1. Close entire bridge at 7 p.m.

2. Remove guardrail, curb, and slab (except directly over stringers). (Remove onlydeck area that will be replaced that night.)



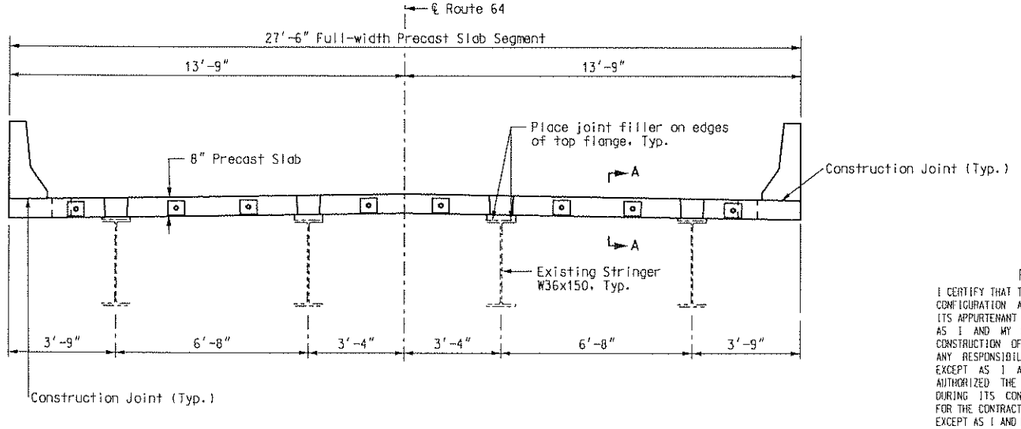
3. Using approved equipment, remove slab directly over top flange of stringers. (See Special Provisions)

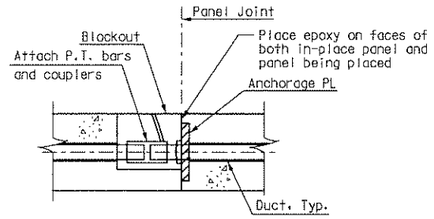
4. Remove existing shear connectors and clean and prime coat top flange of stringers.



5. Place joint filler material on edges of top flange and then place full-width precast slab panel on stringers. Level and align slab panel as required. (See Special Provisions)

6. Attach P.T. bars and couplers.





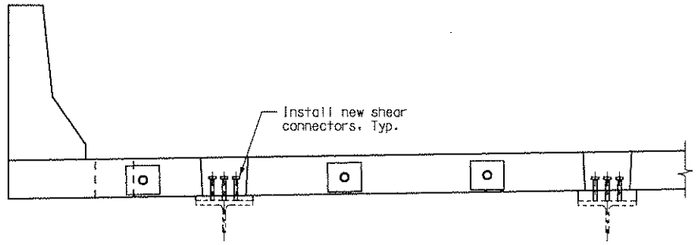
SECTION A-A

7. Apply epoxy on match cast faces of both in-place panel and panel being placed.

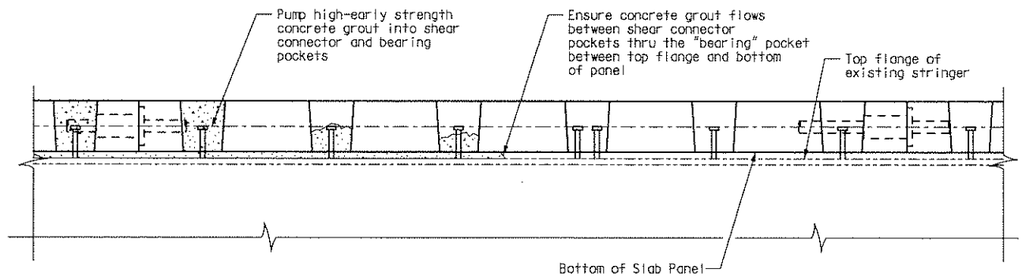
8. Move panel being placed into final position and begin stressing P.T. bars. P.T. bars shall be stressed in pairs symmetric about center line of bridge.

9. Repeat steps 5-8 for each slab panel placed.

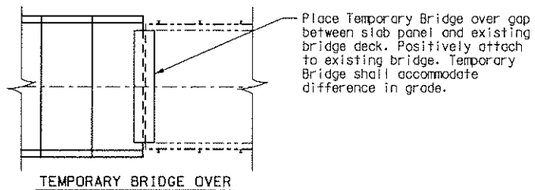
10. After all P.T. bars are fully stressed, install new shear connectors to stringer top flanges.



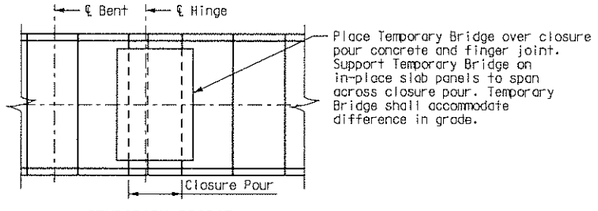
11. Begin pumping high-early strength concrete grout into shear connector and "bearing" pockets. Ensure that concrete grout flows between shear connector pockets thru the "bearing" pocket (between the top flange and bottom of panel). After the "bearing" pocket has been filled, finish placing the concrete grout in shear connector pocket, move to next shear connector pocket, and repeat procedure. Place concrete grout in blockouts for P.T. bar couplers.



12. Place Temporary Bridge over gap between slab panel and existing bridge deck. Positively attach Temporary Bridge to existing bridge to prevent movement. (See Temporary Bridge Special Provisions)



TEMPORARY BRIDGE OVER TEMPORARY JOINT BETWEEN SLAB PANEL AND EXISTING DECK



TEMPORARY BRIDGE OVER CLOSURE POUR
(Closure Pour at Hinge shown, End Bent similar.)

13. Put traffic control devices in place between existing curb and new safety barrier curb.

14. Open entire bridge at 7 a.m.

15. Grout PT Bars upon completion of each span.

FINAL PLANS

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SIGNATURE _____ DATE _____

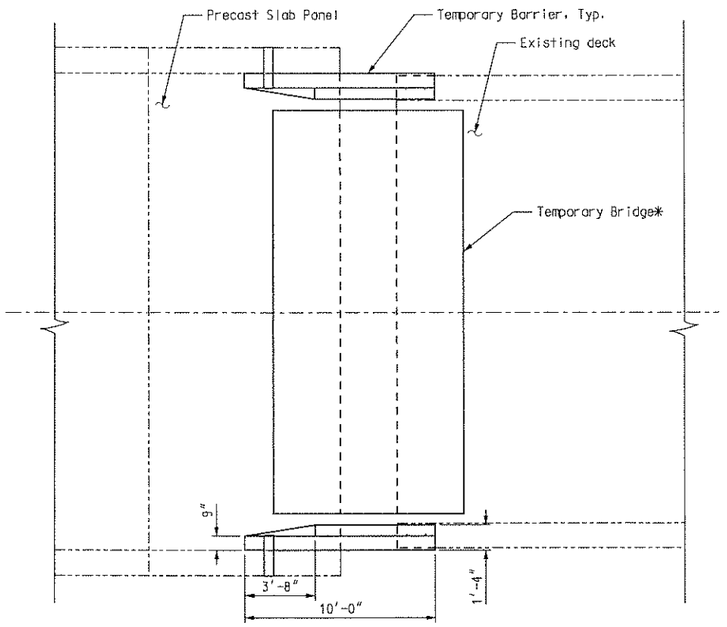
Compiled by Regin Bellsle
Checked by Dallas Russell

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

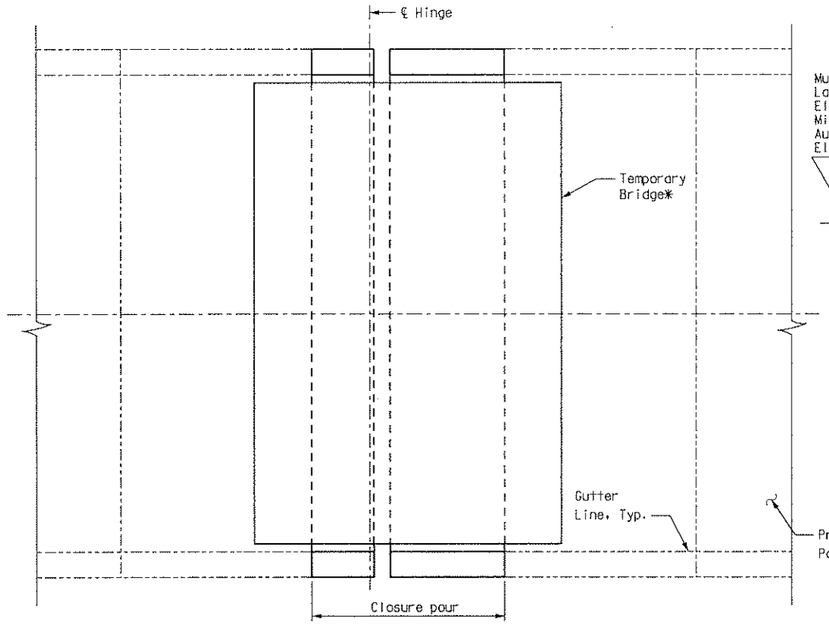
PROPOSED NIGHTLY CONSTRUCTION SEQUENCE

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B5

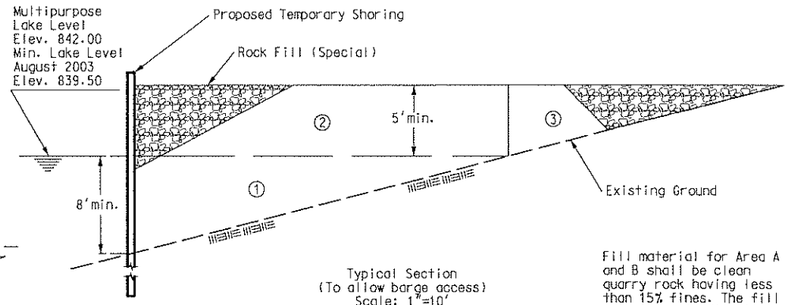


TEMPORARY BRIDGE OVER TEMPORARY JOINT BETWEEN SLAB PANEL AND EXISTING DECK



TEMPORARY BRIDGE OVER CLOSURE POUR

(Closure Pour at Hinge shown, End Bent similar.)



Typical Section
(To allow barge access)
Scale: 1"=10'

For Information only:

① Fill below Multipurpose Lake Level=288 c.y.
② Fill above Multipurpose Lake Level=361 c.y.
③ Fill above Land=115 c.y.

Fill material for Area A and B shall be clean quarry rock having less than 15% fines. The fill material extending into the lake shall be removed after construction, and the foot print of fill material in the lake shall be restored to the original conditions.

DETAIL OF TEMPORARY WORK PAD (AREA A)

Notes:
Temporary Work Pad dimensions shown are for information only. Contractor shall submit for approval, design calculations and details of temporary shoring and fill. See Temporary Shoring Special Provision. Contrator shall submit for approval, details and procedures of placing and removing fill. Contractor shall submit for approval, to U.S. Army Corps of Engineers, drawings indicating limits of Temporary Work Pad (Area A).

FINAL PLANS

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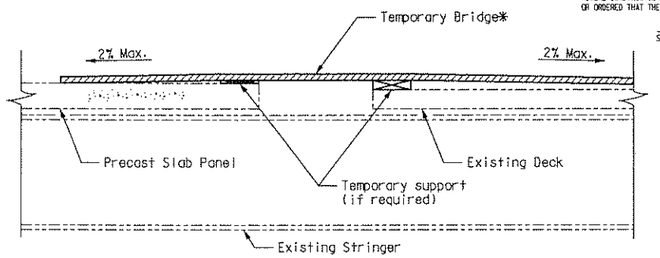
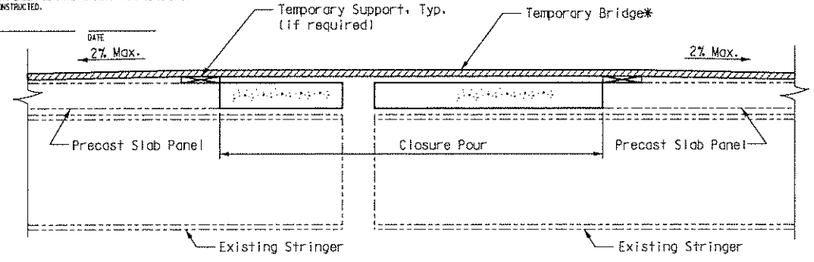
SIGNATURE DATE

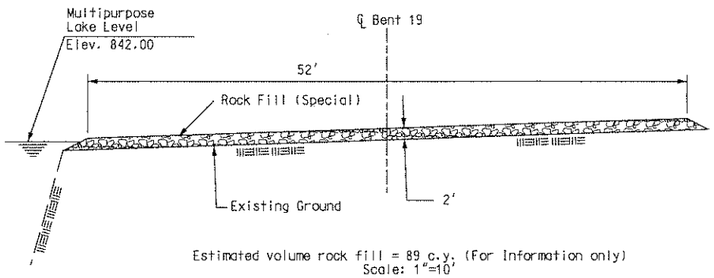


SECTION OF TEMPORARY BRIDGE AT TEMPORARY JOINT



SECTION OF TEMPORARY BRIDGE AT CLOSURE POUR

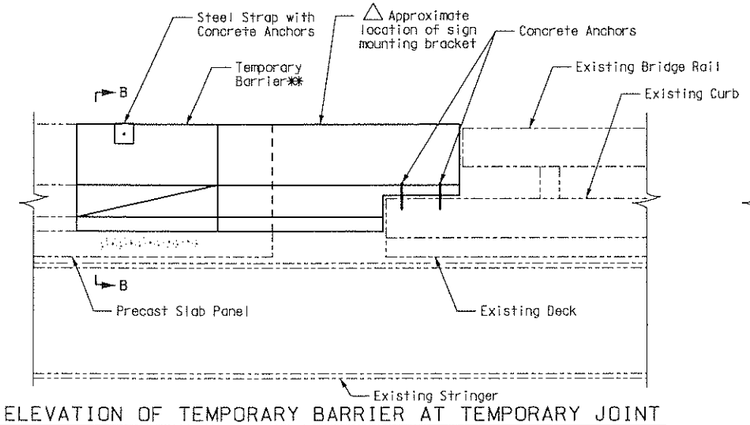
(Closure Pour at Hinge shown, End Bent similar.)



Estimated volume rock fill = 89 c.y. (For Information only)
Scale: 1"=10'

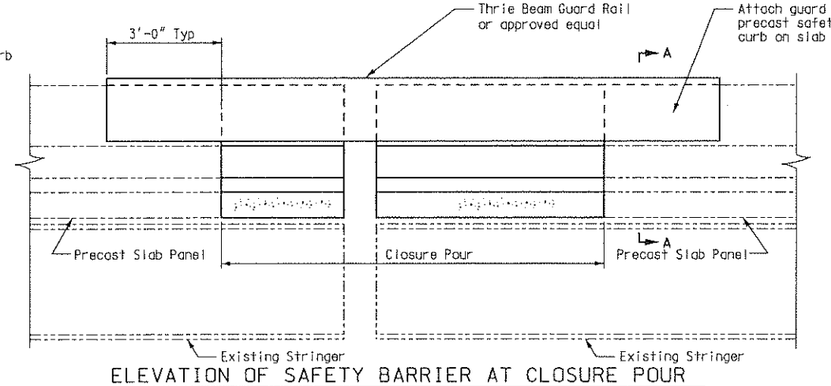
DETAIL OF TEMPORARY WORK PAD (AREA B)

Notes:
Temporary Work Pad dimensions shown are for information only. Contractor shall submit for approval, details and procedures of placing and removing fill. Contractor shall submit for approval, to U.S. Army Corps of Engineers, drawings indicating limits of Temporary Work Pad (Area B)



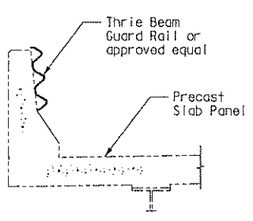
ELEVATION OF TEMPORARY BARRIER AT TEMPORARY JOINT

△ Provide mounting bracket for traffic control sign, see roadway plans for sign details.

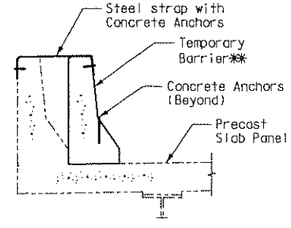


ELEVATION OF SAFETY BARRIER AT CLOSURE POUR

(Closure Pour at Hinge shown, End Bent similar.)



SECTION A-A



SECTION B-B

Notes:
* Temporary Bridge shown is schematic only. See General Notes and Special Provisions. Payment will be considered subsidiary to other items of work.
** Temporary Barrier shown is schematic only. See General Notes and Special Provisions for Temporary Bridge. Payment will be considered subsidiary to other items of work.
Thrie beam guardrail (or approved equal) at closure pour shall remain in place until the cast-in-place safety barrier curb has achieved full design strength. Contractor shall submit shop drawings for approval showing attachment of thrie beam guard rail to precast panel barrier curb, payment will be considered subsidiary to other items of work.

CONSTRUCTION DETAILS

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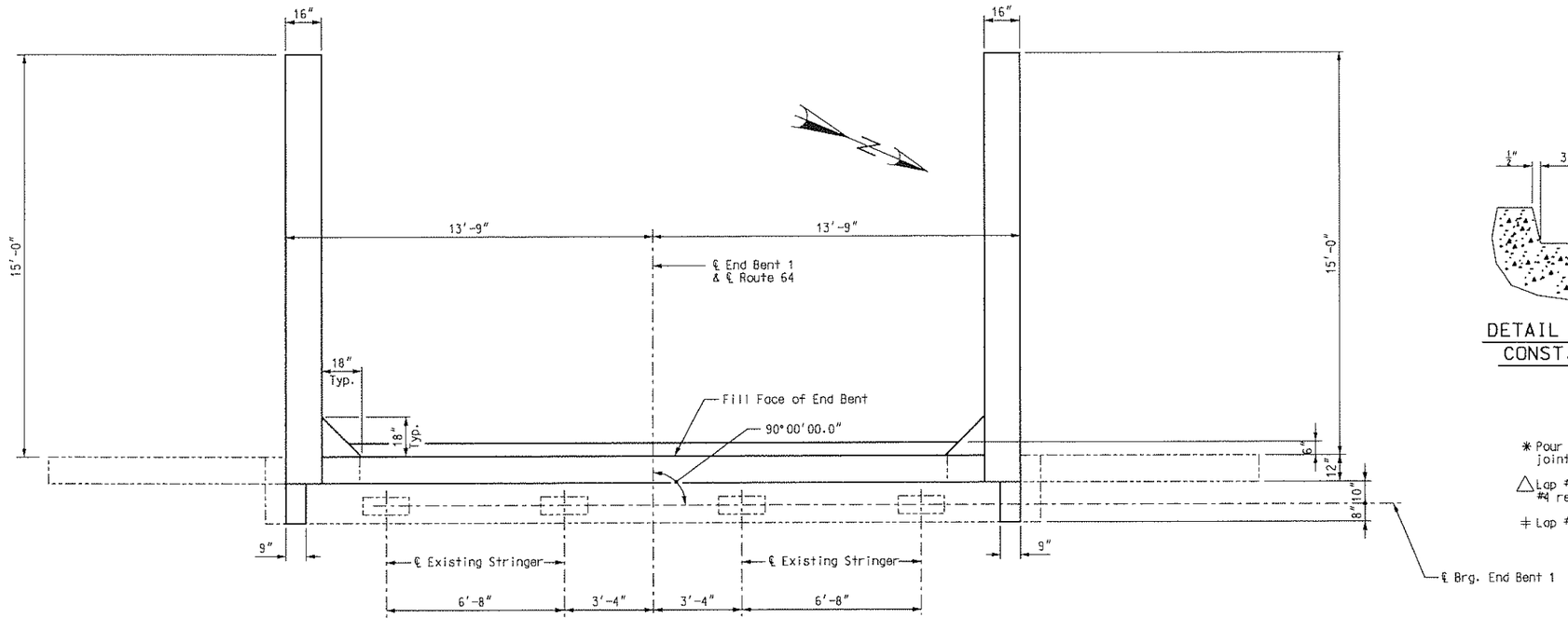
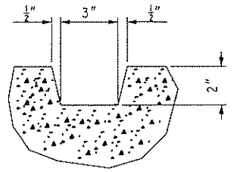
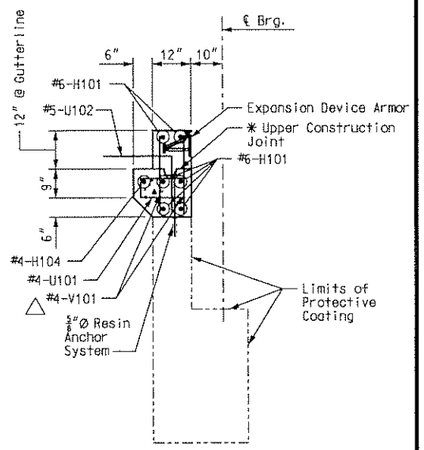


PLAN

Scale: $\frac{1}{8}$"=1'-0"



DETAIL OF UPPER CONST. JOINT



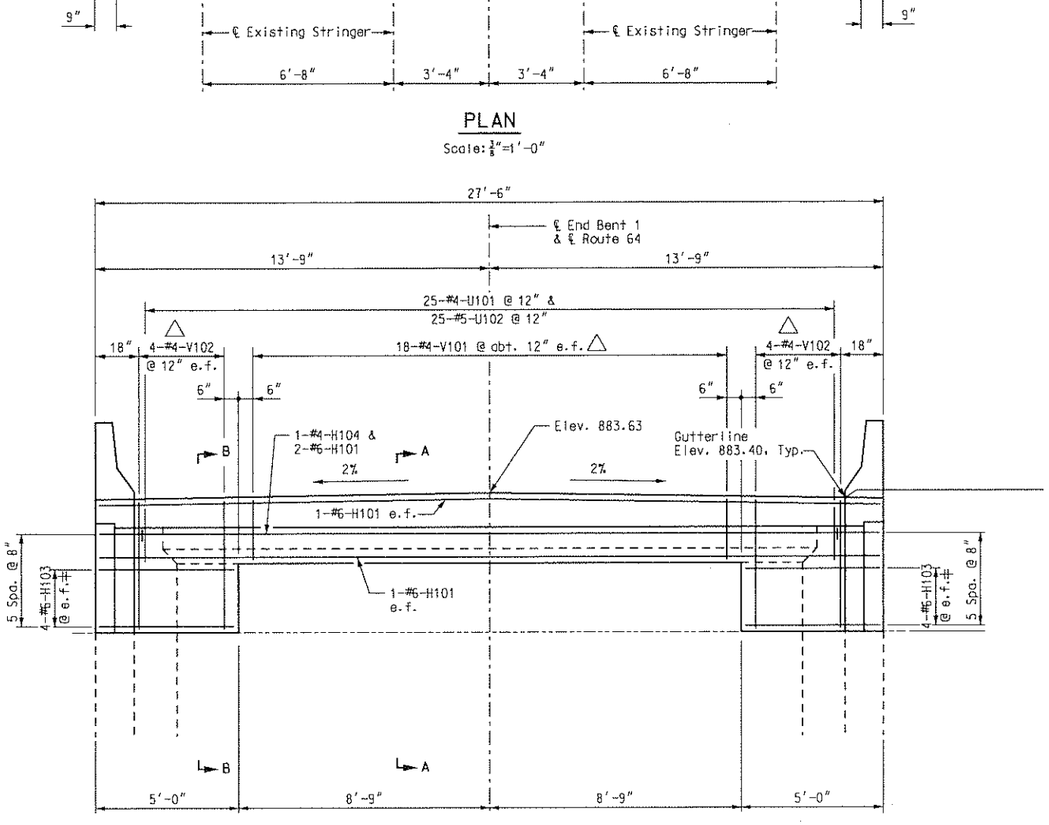
SECTION A-A

Scale: $\frac{1}{2}$"=1'-0"

* Pour concrete above upper construction joint after expansion device is placed.

△ Lap #4-V101 and #4-V102 with existing #4 reinforcing a minimum of 15" (30 diameters).

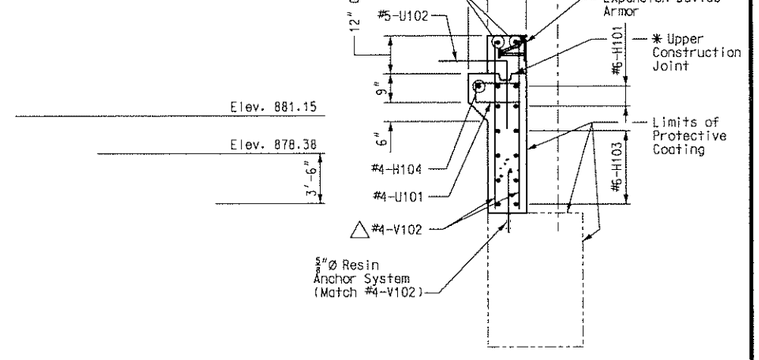
‡ Lap #6-H103 with existing reinforcing a minimum of 24".



ELEVATION

(Looking Backstation)

Scale: $\frac{3}{8}$"=1'-0"



SECTION B-B

Scale: $\frac{1}{2}$"=1'-0"

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1		
ITEM	UNITS	QUANTITY
Class 1 Excavation	Cu. Yds.	35
Substructure Repair (Formed)	Sq. Ft.	0
Substructure Repair (Unformed)	Sq. Ft.	7
Class B-1 Concrete (Substr.)	Cu. Yds.	12.7
Reinforced Steel (Bridges)	Lbs.	1,590
Reinforcing Steel (Epoxy Coated)	Lbs.	1,080

Notes:

The Substructure Quantities are included in the Estimated Quantities table on Sheet No. /p02/.

Existing bearings to be cleaned, lubricated and coated, see Special Provisions.

For Wingwall Details, see Sheet No. /p06/.

For Safety Barrier Curb Details, see Sheet No. /p25/.

Footings are not shown for clarity.

Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).

Place resin anchor systems to clear any existing horizontal or vertical reinforcing.

e.f. denotes each face

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

END BENT 1 MODIFICATIONS

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

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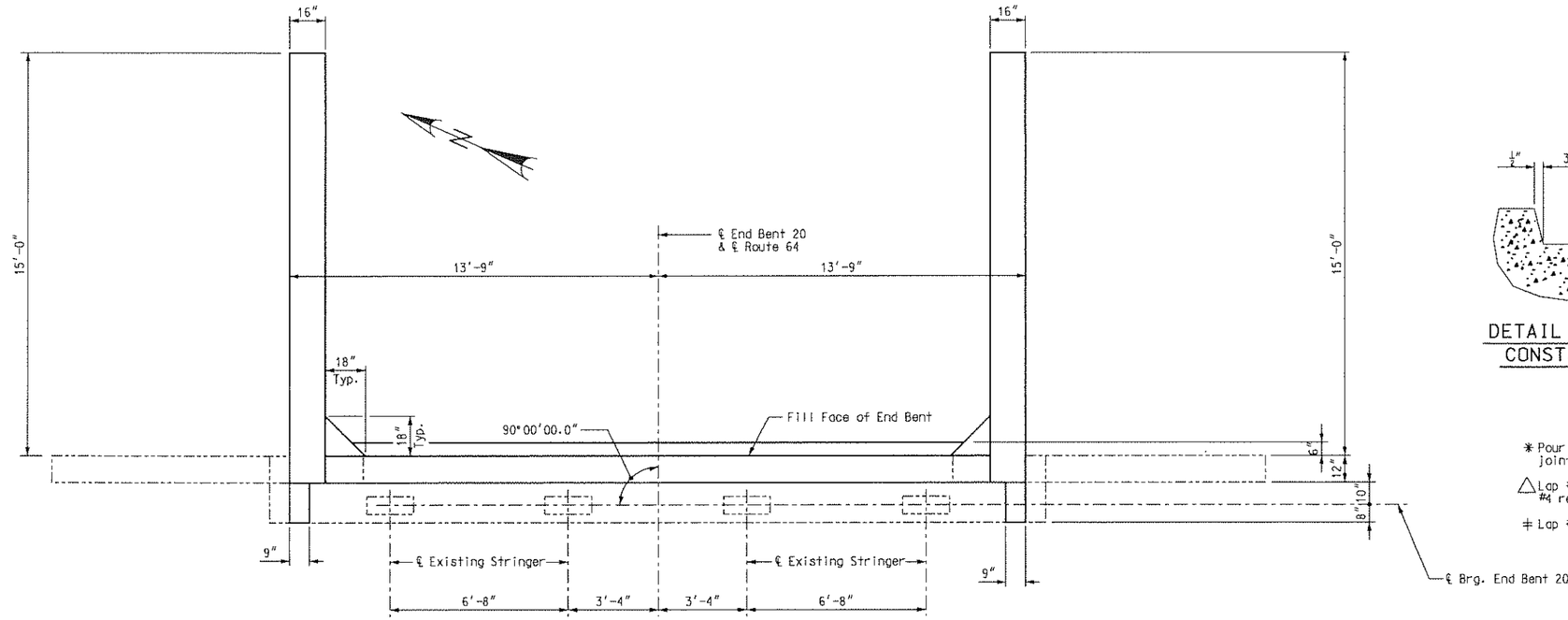
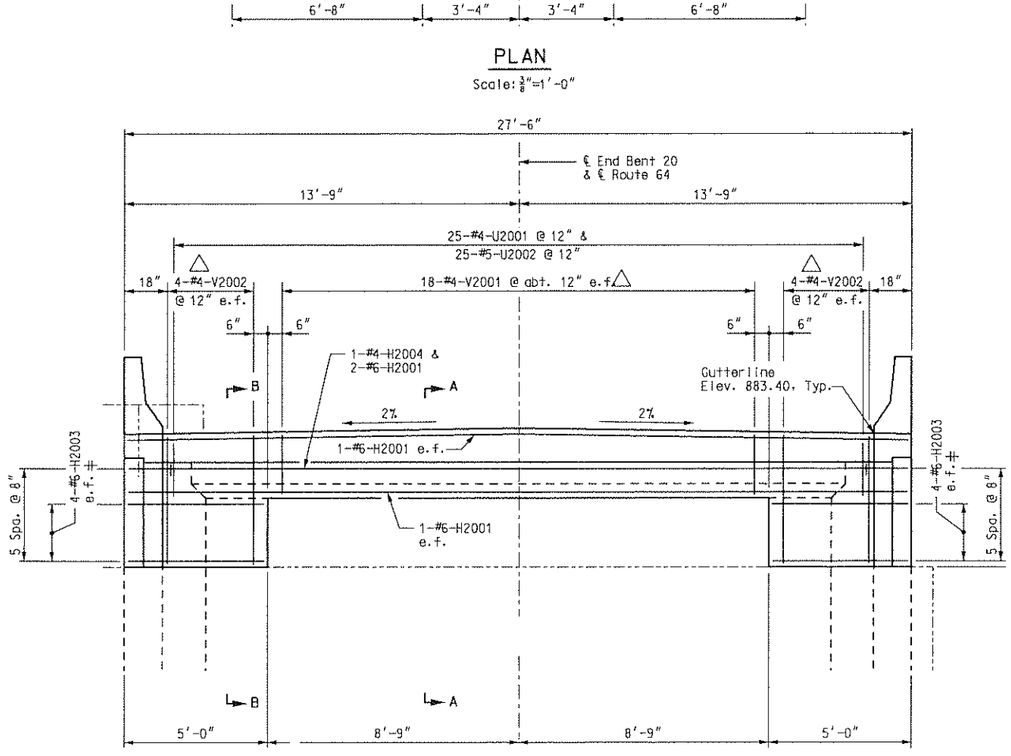
MO	FAS-S935(2)	87



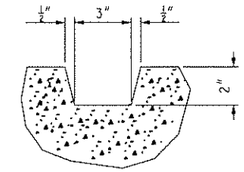
PLAN

Scale: $\frac{3}{8}$"=1'-0"

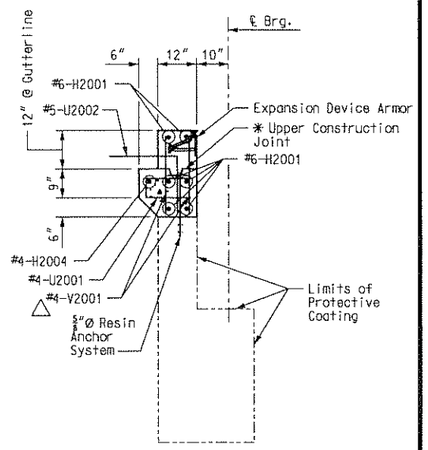


ELEVATION

Scale: $\frac{3}{8}$"=1'-0"



DETAIL OF UPPER CONST. JOINT



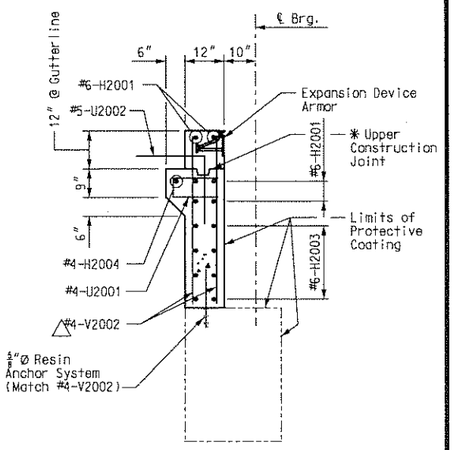
SECTION A-A

Scale: $\frac{1}{2}$"=1'-0"

✱ Pour concrete above upper construction joint after expansion device is placed.

△ Lap #4-V2001 and #4-V2002 with existing #4 reinforcing a minimum of 15" (30 diameters).

‡ Lap #6-H2003 with existing reinforcing a minimum of 24".



SECTION B-B

Scale: $\frac{1}{2}$"=1'-0"

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 20		
ITEM	UNITS	QUANTITY
Class 1 Excavation	Cu. Yds.	35 ✓
Substructure Repair (Formed)	Sq. Ft.	0 ✓
Substructure Repair (Unformed)	Sq. Ft.	12 ✓
Class B-1 Concrete (Substr.)	Cu. Yds.	12.7 ✓
Reinforced Steel (Bridges)	Lbs.	1,590 ✓
Reinforcing Steel (Epoxy Coated)	Lbs.	1,020 ✓

Notes:

The Substructure Quantities are included in the Estimated Quantities table on Sheet No. /p02/.

Existing bearings to be cleaned, lubricated and coated, see Special Provisions.

For Wingwall Details, see Sheet No. /p06/.

For Safety Barrier Curb Details, see Sheet No. /p25/.

Footings are not shown for clarity.

Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).

Place resin anchor systems to clear any existing horizontal or vertical reinforcing.

e.f. denotes each face

END BENT 20 MODIFICATIONS

FINAL PLANS

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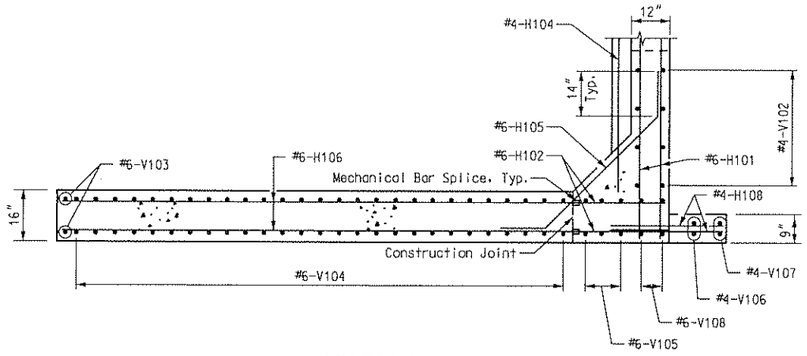
SIGNATURE _____ DATE _____

Compiled by Regin Belisle
Checked by Dallas Russell

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

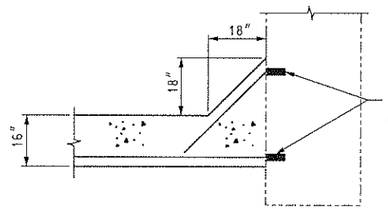
HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	88



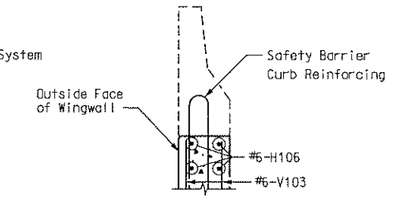
SECTION A-A

Scale: $\frac{1}{2}$"=1'-0"



SECTION D-D

Scale: $\frac{1}{2}$"=1'-0"

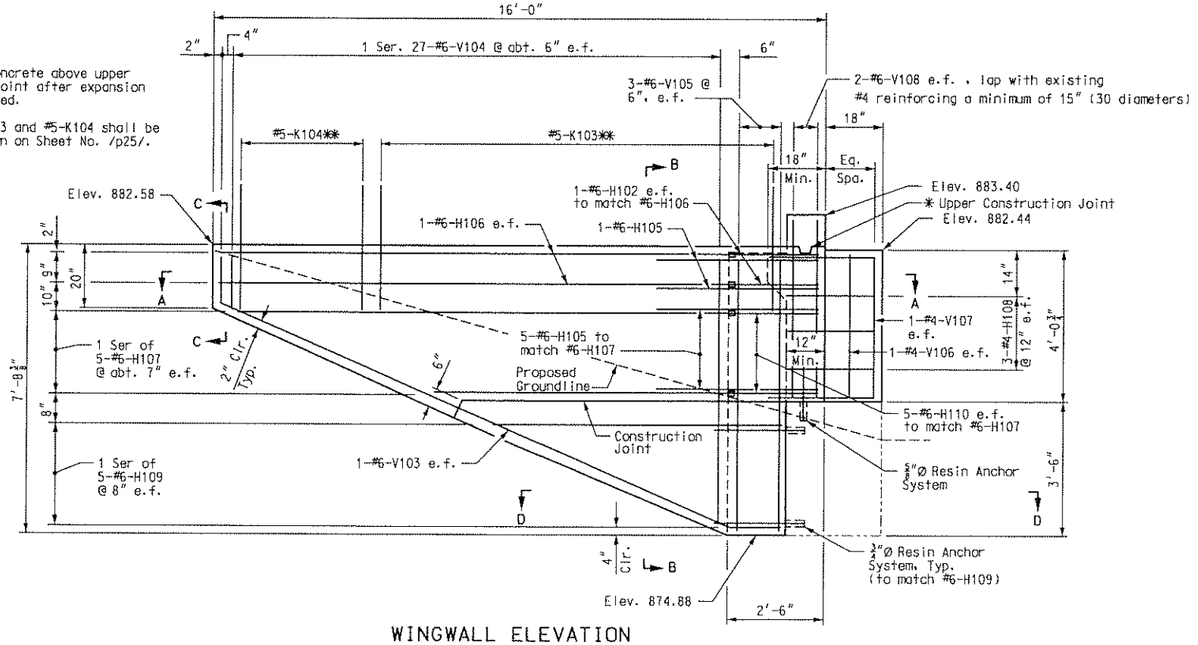


SECTION C-C

Scale: $\frac{1}{2}$"=1'-0"

Note:
* Pour concrete above upper construction joint after expansion device is placed.

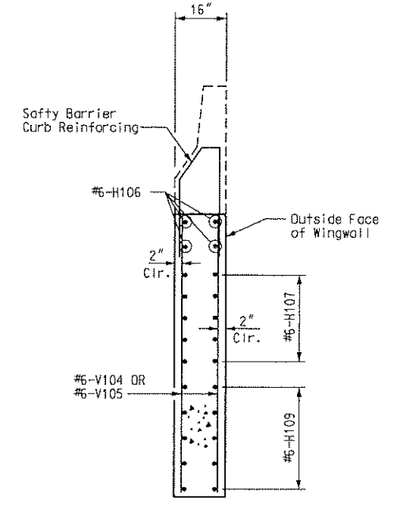
** #5-K103 and #5-K104 shall be spaced as shown on Sheet No. /p25/.



WINGWALL ELEVATION

End Bent 1 Right Side Shown (Left Side Opposite)
End Bent 20 Left Side Shown (Right Side Opposite)

Scale: $\frac{1}{2}$"=1'-0"



SECTION B-B

Scale: $\frac{1}{2}$"=1'-0"

FINAL PLANS

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SIGNATURE _____ DATE _____

Notes:
Bar Marks shown are for End Bent 1 using "100" series Bar Marks. End Bent 20 is similar, except use "2000" series Bar Marks.
e.f. denotes each face.
For Safety Barrier Curb Details, see Sheet No. /p25/.
Cost for furnishing and installing the resin anchor systems, complete in place, shall be included in the Class B-1 Concrete (Substr.).
Place resin anchor systems to clear any existing horizontal or vertical reinforcing.

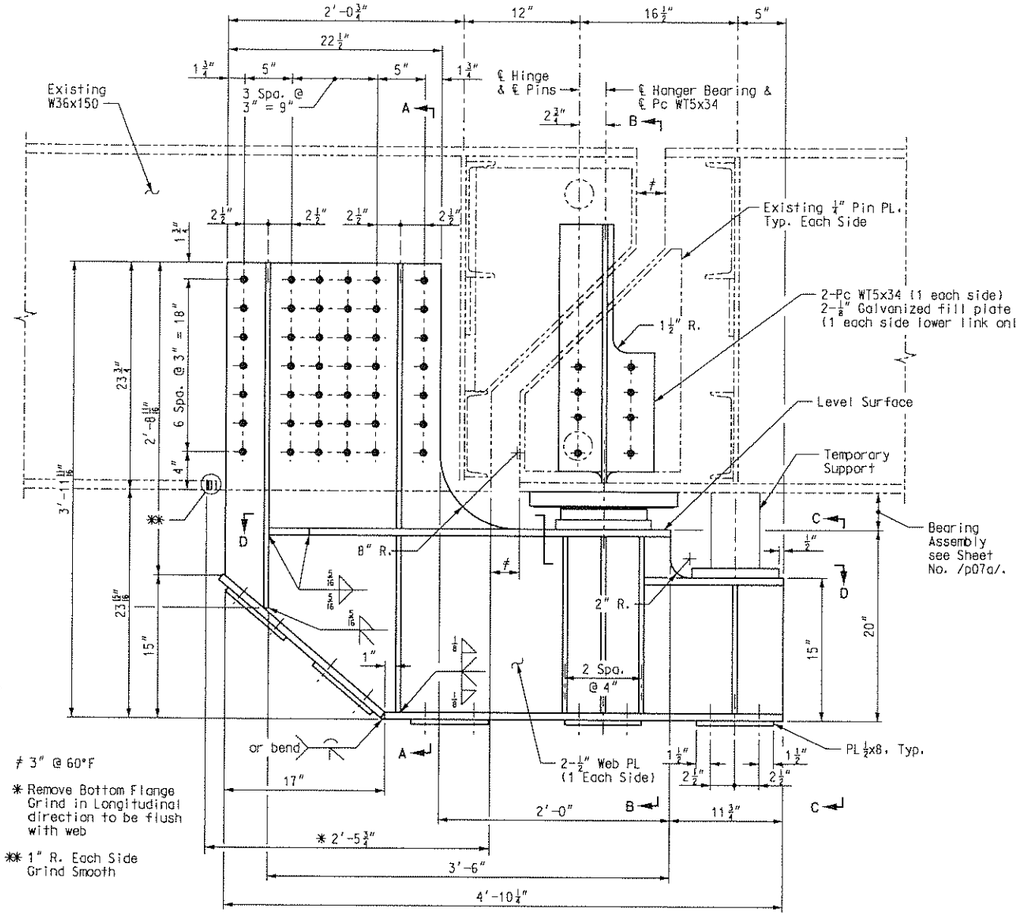
WINGWALL DETAILS
END BENTS 1 AND 20

Compiled by Regin Belisle
Checked by Dallas Russell

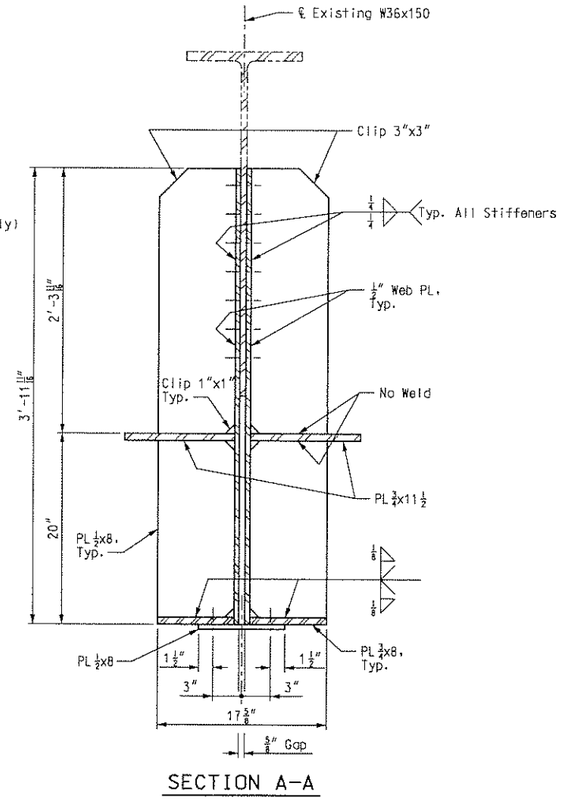
Note: This drawing is not to scale. Follow Dimensions.

HICKORY COUNTY A08941

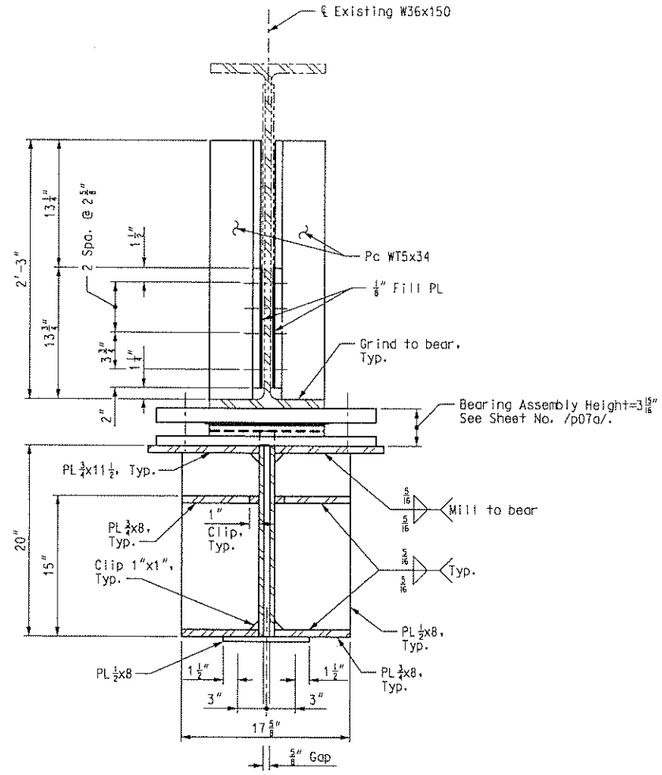
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	89



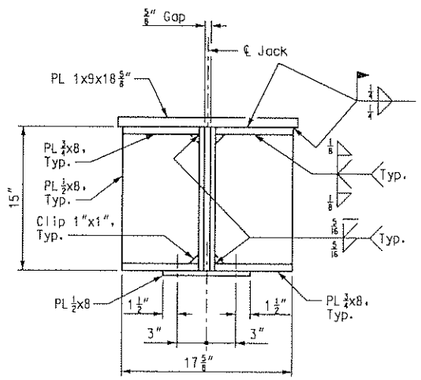
ELEVATION AT HINGE



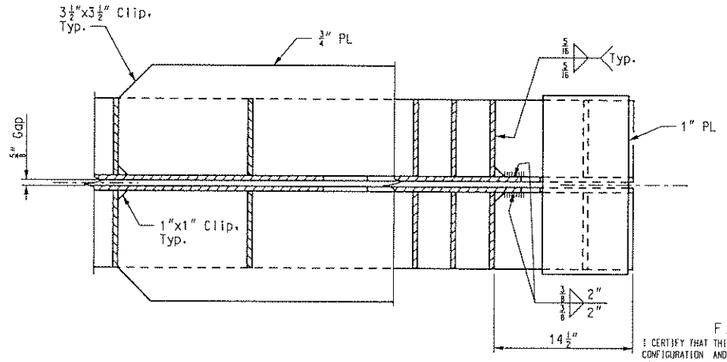
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:
All structural steel shall be ASTM A709, Grade 36.
All bolts shall be ⅞"Ø ASTM A325 H.S. bolts, holes 15/16"Ø.
Payment for the hanger bearing assembly, bottom flange removal and materials shown on this sheet shall be included in the contract unit price for Hanger Retrofit at Hinges.
All hanger retrofit materials shall be coated similar to existing stringers and comply with hanger bearing requirements.
No construction equipment shall be located on supported span while span is temporarily supported.

REPLACEMENT OF HANGER RETROFIT AT HINGES SEQUENCE:

1. Remove bottom flange of support stringer, grind in longitudinal direction to be flush with web as shown in Elevation at Hinge.
2. Attach hanger bracket.
3. Jack stringers.
4. Remove existing links and pins.
5. Clean and prime coat.
6. Install new bearings, attach Pc WT5x34 and lower stringers onto bearings.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

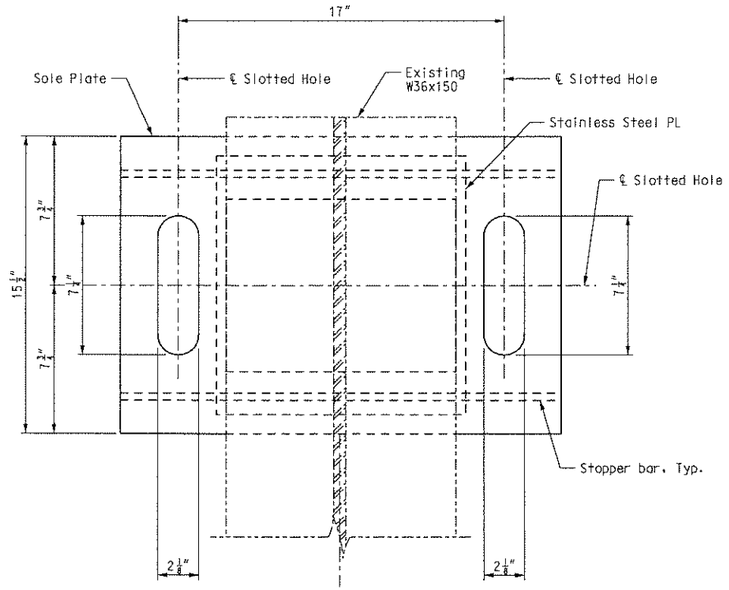
DETAILS OF HANGER RETROFIT AT HINGES

Compiled by Regin Belisle
Checked by Dallas Russell

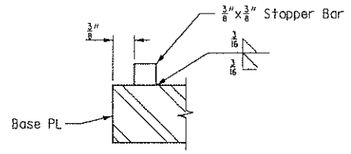
Note: This drawing is not to scale. Follow Dimensions.

HICKORY COUNTY A08941

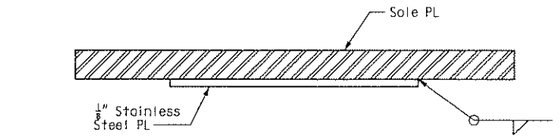
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B10

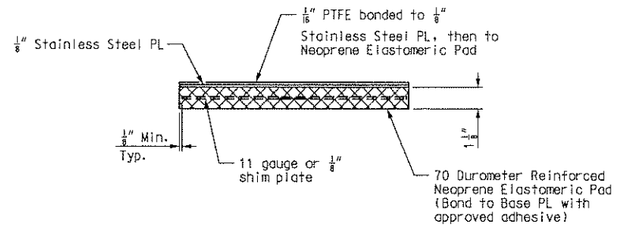


PART PLAN

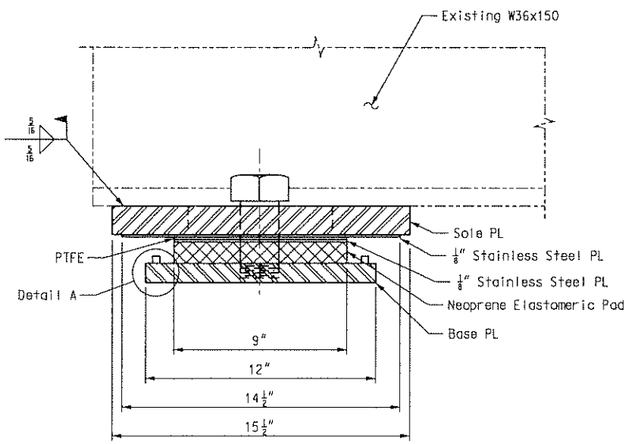


DETAIL A

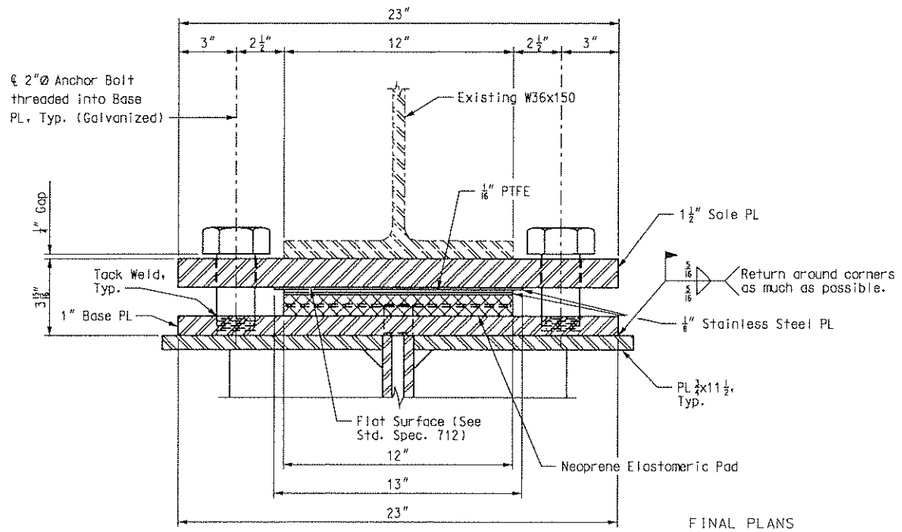




NEOPRENE ELASTOMERIC PAD



SIDE VIEW



END VIEW

Note:
Stopper Bar not shown for clarity.

FINAL PLANS

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SIGNATURE _____ DATE _____

Notes:

Provide a ⅜"x⅜" stopper bar to prevent the loss of support due to creeping of the PTFE bearings from under stringers at expansion bearings.

To prevent sliding, the neoprene pad shall be bonded to the base plate as approved by the bearing manufacturer for bonding neoprene to steel.

The bottom face of the ⅛" stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.

Anchor bolts shall be ASTM A709 Grade 50 steel.

The sole plate and base plate shall be furnished with the bearing and field welded to the stringers.

Structural steel for the sole plate and base plate shall be ASTM A709 Grade 36.

Payment for the sole plate, masonry plate, anchor bolts, stainless steel plates, PTFE and Neoprene elastomeric pad, (bearing assembly), shall be included in the cost of the Hanger Retrofit at Hinges.

Sole plate and base plate shall be coated similar to existing stringers.

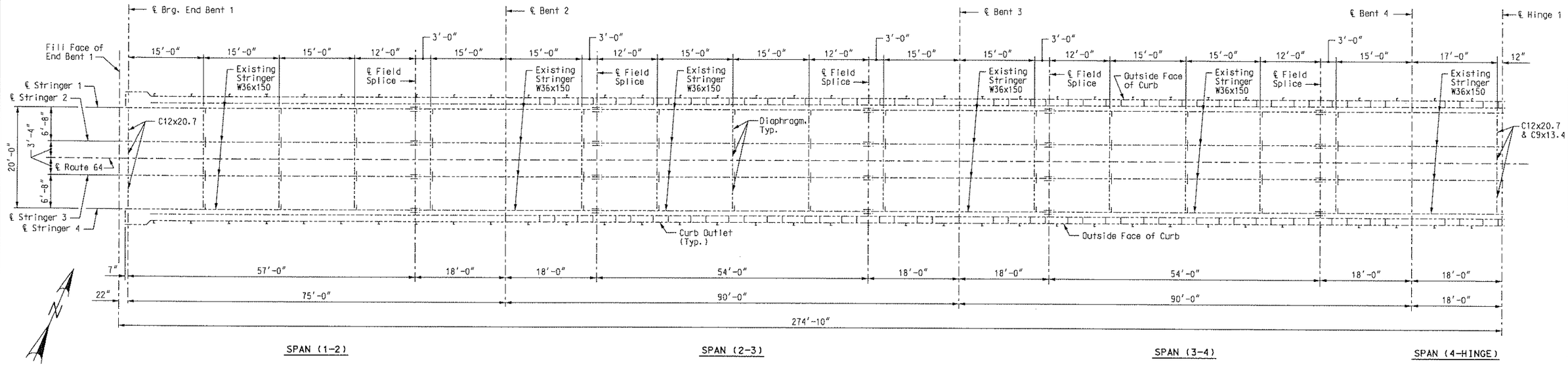
DETAILS OF HANGER BEARING AT HINGES

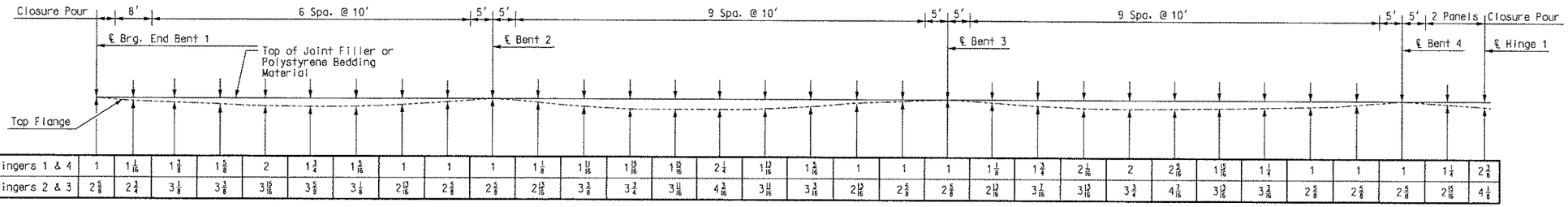
Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B11



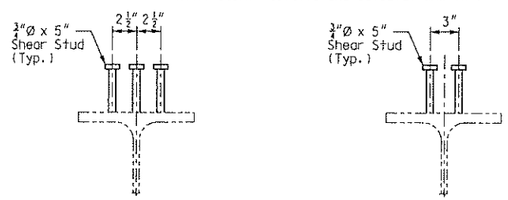


Total	Stringers 1 & 4	1	1 1/16	1 1/8	1 5/8	2	1 3/4	1 5/16	1	1	1	1 1/8	1 11/16	1 15/16	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 3/4	2 1/16	2	2 9/16	1 15/16	1 1/4	1	1	1	1 1/2	2 3/8
	Stringers 2 & 3	2 5/8	2 3/4	3 1/8	3 3/8	3 15/16	3 5/8	3 1/8	2 13/16	2 5/8	2 5/8	2 13/16	3 3/8	3 3/4	3 11/16	4 3/16	3 11/16	3 3/16	2 13/16	2 5/8	2 5/8	2 13/16	3 7/16	3 13/16	3 3/4	4 7/16	3 13/16	3 3/16	2 5/8	2 5/8	2 5/8	2 15/16	4 1/8

SPAN (1-2) SPAN (2-3) SPAN (3-4) SPAN (4-HINGE)

ESTIMATED JOINT FILLER THICKNESS

Notes:
All values are given in inches and are for information only. Estimated Joint Filler thicknesses shown are based on an erection analysis assuming 30' of existing deck is removed and 30' of Precast Slab Panels are replaced each work period. A 10' gap (one panel width) between the existing deck and Precast Slab Panels is assumed to occur at the end of each work period. Closure pours occur after all Precast Slab Panels in the span are erected. A maximum of ½" (at midspan) has been added to stringers 2 & 3 values to evenly distribute the Slab Panel load to the stringers. The Contractor shall perform an erection analysis to determine joint filler thickness and shall submit details and calculations to the Engineer for approval.



SHEAR CONNECTOR DETAILS

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE DATE

Notes:
Existing structural steel stringers over intermediate bents, bearing plates at intermediate bents, and stiffener plates at intermediate bents are ASTM-A373 material. All other structural steel is ASTM-A7 material.

Shear connectors shall meet the requirements of Section 1037 of the Missouri Standard Specifications.

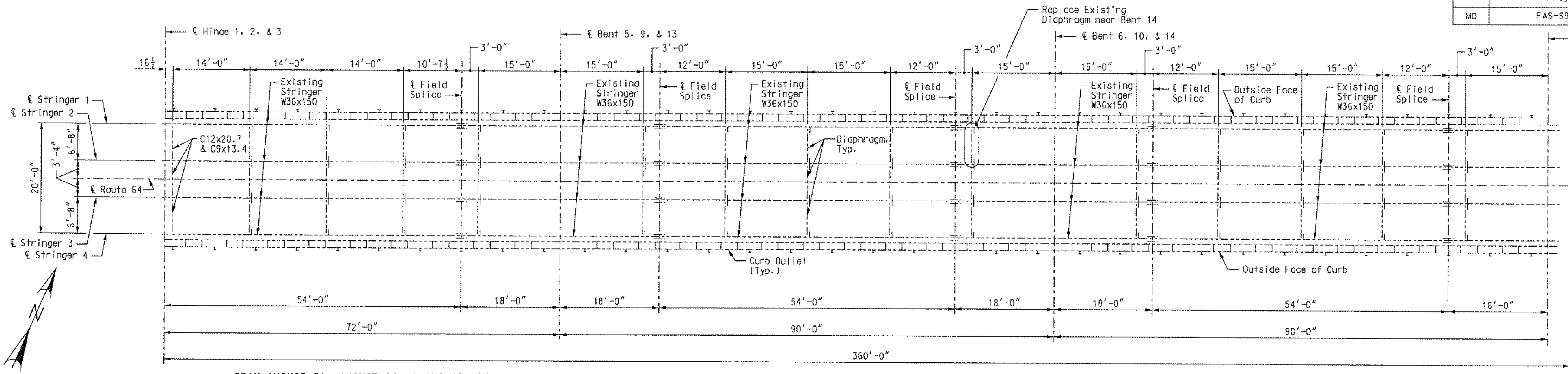
For location of slab panel drain attachment holes see Slab Panel Drain Details, Sheet No. /p20/.

FRAMING PLAN AND STRINGER DEFLECTIONS
UNIT 1

Compiled by Regin Belisle
Checked by Dallas Russell

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

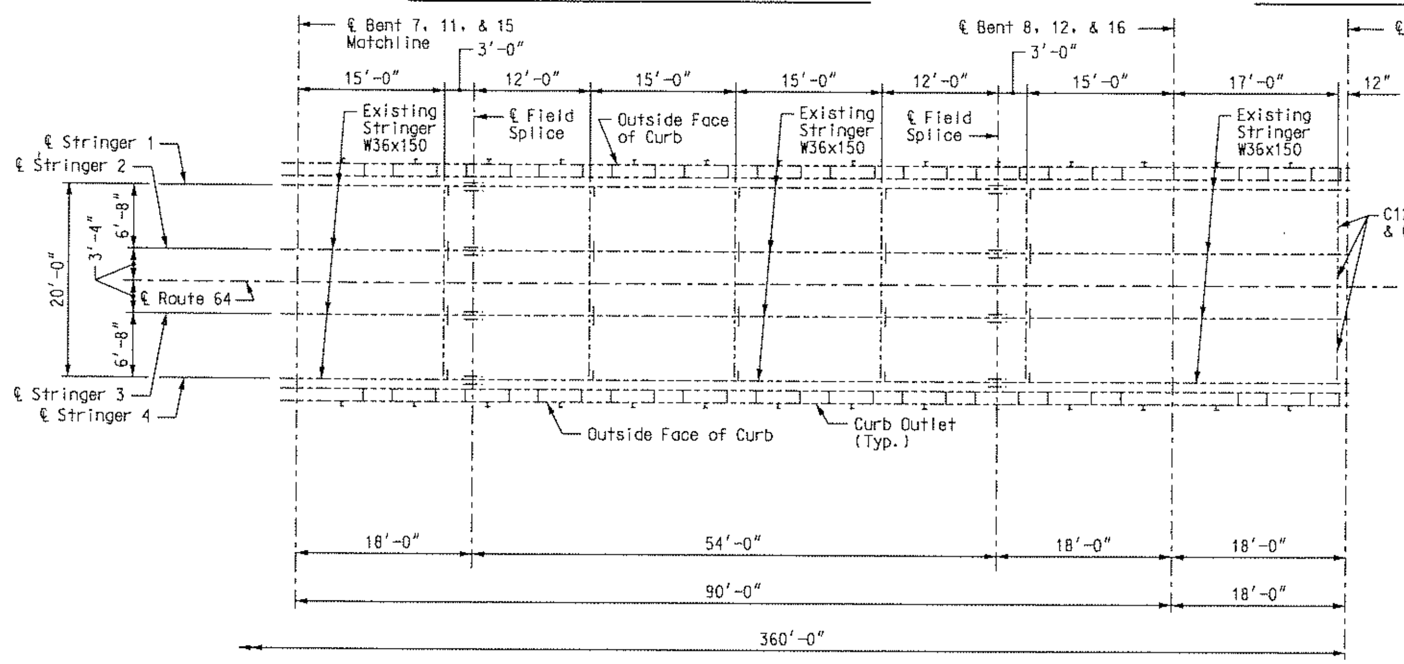
HICKORY COUNTY A08941



SPAN (HINGE-5), (HINGE-9), & (HINGE-13)

SPAN (5-6), (9-10), & (13-14)

SPAN (6-7), (10-11), & (14-15)



SPAN (7-8), (11-12), & (15-16)

SPAN (8-HINGE), (12-HINGE), & (16-HINGE)

Framing Plan Notes:

Existing structural steel stringers over intermediate bents, bearing plates at intermediate bents, and stiffener plates at intermediate bents are ASTM-A373 material. All other structural steel is ASTM-A7 material.

For Shear Connector Details, See Sheet No. /p08/.

Shear connectors shall meet the requirements of Section 1037 of the Missouri Standard Specifications.

For location of slab panel drain attachment holes see Slab Panel Drain Details, Sheet No. /p20/.

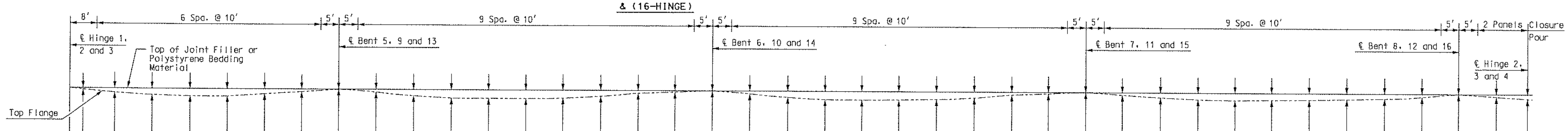
FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE ____________ DATE ____________

Estamatied Joint Filler Thickness Notes:

All values are given in inches and are for information only. Estimated Joint Filler thicknesses shown are based on an erection analysis assuming 30' of existing deck is removed and 30' of Precast Slab Panels are replaced each work period. A 10' gap (one panel width) between the existing deck and Precast Slab Panels is assumed to occur at the end of each work period. Closure pours occur after all Precast Slab Panels in the span are erected. A maximum of ¼" (at midspan) has been added to stringers 2 & 3 values to evenly distribute the Slab Panel load to the stringers. The Contractor shall perform an erection analysis to determine joint filler thickness and shall submit details and calculations to the Engineer for approval.



Total											
Total	Stringers 1&4	2 1/2	2 7/16	2 1/2	1 15/16	1 7/16	1 1/16	1	1	1 1/8	1 11/16
Total	Stringers 2&3	4 1/4	4 3/16	4 3/8	3 13/16	3 1/4	2 7/8	2 11/16	2 5/8	2 3/4	3 3/8

Total											
Total	Stringers 1&4	2	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 11/16
Total	Stringers 2&3	3 3/4	3 11/16	4 3/16	3 11/16	3 3/16	2 13/16	2 5/8	2 5/8	2 13/16	3 3/8

Total											
Total	Stringers 1&4	1 15/16	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 13/16
Total	Stringers 2&3	3 3/4	3 11/16	4 3/16	3 5/8	3 3/16	2 3/4	2 5/8	2 5/8	2 13/16	3 1/2

Total											
Total	Stringers 1&4	2 1/8	2 1/8	2 11/16	2 1/8	1 1/2	1	1	1	1 3/16	2 1/4
Total	Stringers 2&3	3 7/8	3 7/8	4 5/8	4	3 3/8	2 3/4	2 5/8	2 5/8	2 7/8	4

SPAN (HINGE-5), (HINGE-9), & (HINGE-13) SPAN (5-6), (9-10), & (13-14) SPAN (6-7), (10-11), & (14-15) SPAN (7-8), (11-12), & (15-16) SPAN (8-HINGE), (12-HINGE), & (16-HINGE)

ESTIMATED JOINT FILLER THICKNESS

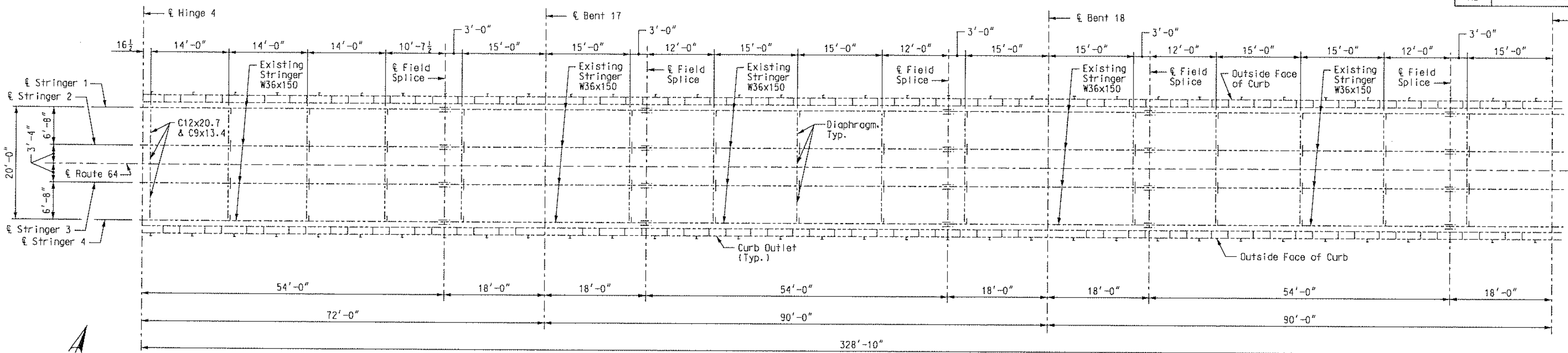
FRAMING PLAN AND STRINGER DEFLECTIONS UNITS 2, 3, AND 4

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B13



SPAN (HINGE-17)

SPAN (17-18)

SPAN (18-19)

FINAL PLANS

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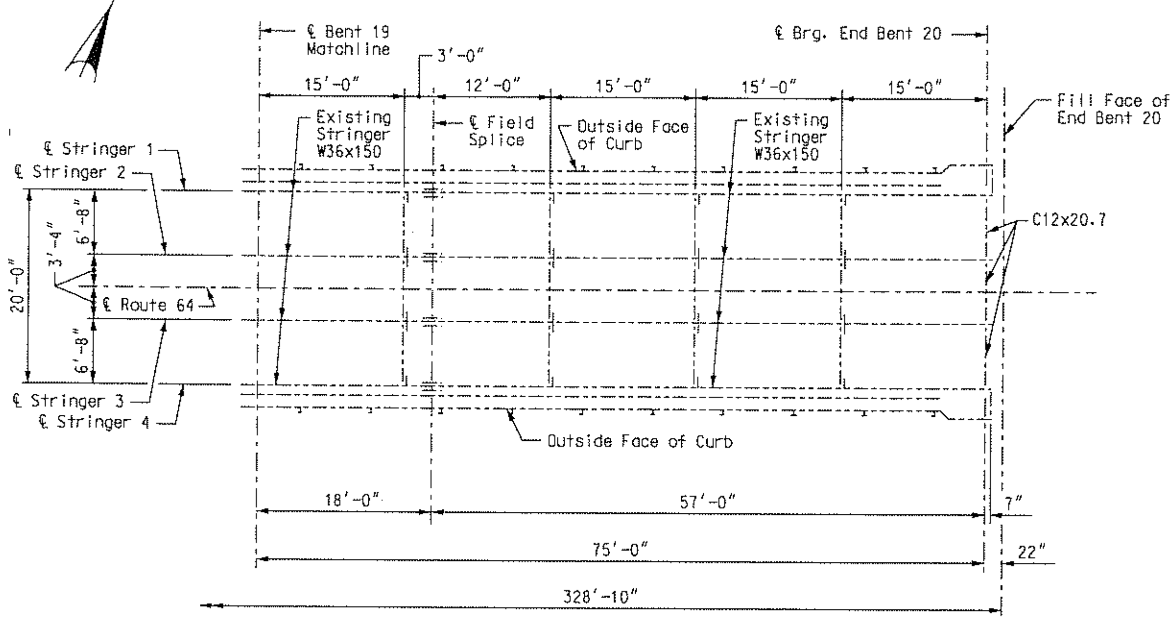
SIGNATURE　　　　DATE



SPAN (19-20)

Framing Plan Notes:

Existing structural steel stringers over intermediate bents, bearing plates at intermediate bents, and stiffener plates at intermediate bents are ASTM-A373 material. All other structural steel is ASTM-A7 material.

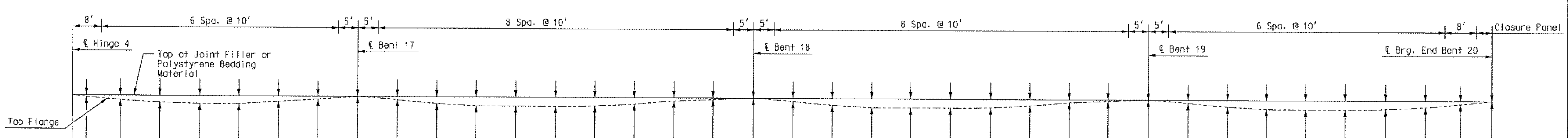
For Shear Connector Details, See Sheet No. /p08/.

Shear Connectors shall meet the requirements of Section 1037 of the Missouri Standard Specifications.

For location of slab panel drain attachment holes see Slab Panel Drain Details, Sheet No. /p20/.

Estamatied Joint Filler Thickness Notes:

All values are given in inches and are for information only. Estimated Joint Filler thicknesses shown are based on an erection analysis assuming 30' of existing deck is removed and 30' of Precast Slab Panels are replaced each work period. A 10' gap (one panel width) between the existing deck and Precast Slab Panels is assumed to occur at the end of each work period. Closure pours occur after all Precast Slab Panels in the span are erected. A maximum of ¼" (at midspan) has been added to stringers 2 & 3 values to evenly distribute the Slab Panel load to the stringers. The Contractor shall perform an erection analysis to determine joint filler thickness and shall submit details and calculations to the Engineer for approval.



Total	Stringers 1 & 4	2 3/8	2 3/8	2 9/16	2	1 7/16	1 1/16	1	1	1 1/8	1 11/16	2	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 11/16	1 15/16	1 15/16	2 1/4	1 13/16	1 5/16	1	1	1	1 1/8	1 11/16	1 15/16	1 7/8	2	1 9/16	1 3/16	1	1
	Stringers 2 & 3	4 1/8	4 1/8	4 7/16	3 7/8	3 5/16	2 13/16	2 5/8	2 5/8	2 3/4	3 7/16	3 3/4	3 11/16	4 3/16	3 11/16	3 3/16	2 13/16	2 5/8	2 5/8	2 13/16	3 3/8	3 3/4	3 11/16	4 1/8	3 5/8	3 3/16	2 3/4	2 5/8	2 5/8	2 13/16	3 3/8	3 11/16	3 11/16	3 13/16	3 3/8	2 15/16	2 11/16	2 5/8

SPAN (HINGE-17)　　SPAN (17-18)　　SPAN (18-19)　　SPAN (19-20)

ESTIMATED JOINT FILLER THICKNESS

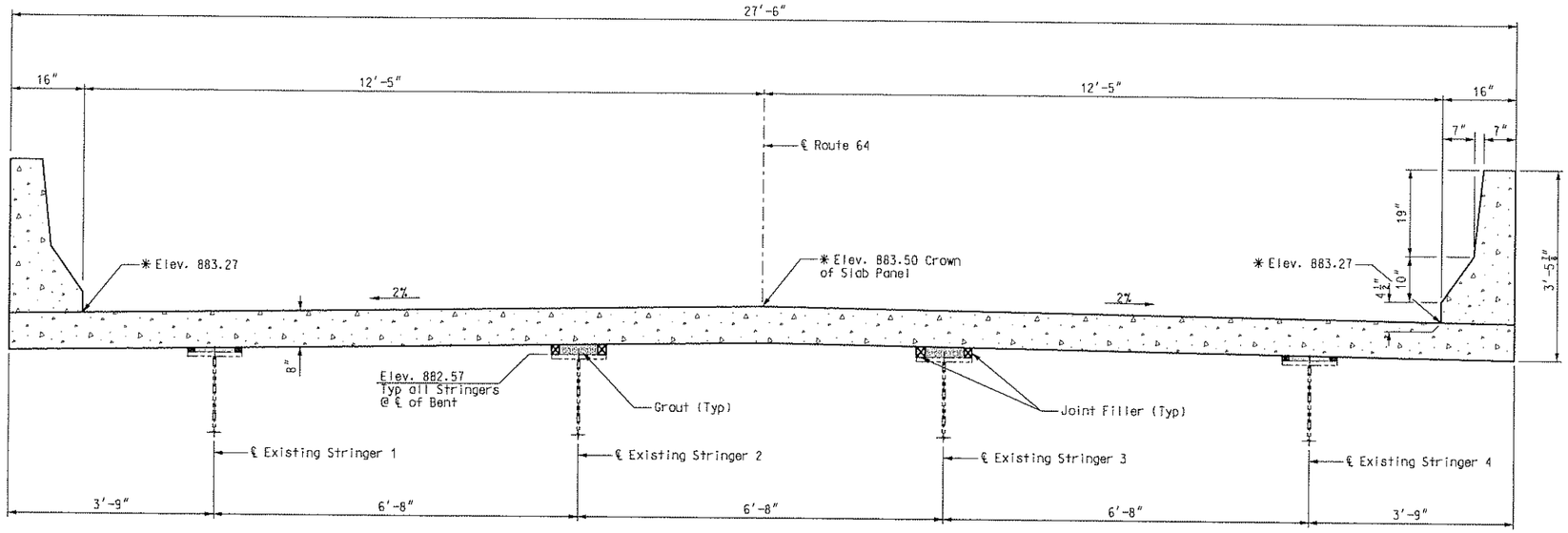
FRAMING PLAN AND STRINGER DEFLECTIONS UNIT 5

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY　A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B14



TYPICAL SECTION SHOWING ELEVATIONS

Scale: $\frac{1}{2}$" = 1'

✱ Elevations are at top of slab panels and do not include wearing surface.

PRECAST SLAB PANELS GENERAL NOTES:

1. The joint filler or polystyrene bedding material shall be cut to the required haunch height above top of flange to maintain top of slab panel elevations as shown. The joint filler or polystyrene bedding material shall be cut so that slab panels bear fully on all existing stringer flanges.

2. The surface of joint filler shall be cut to match bridge cross slope.

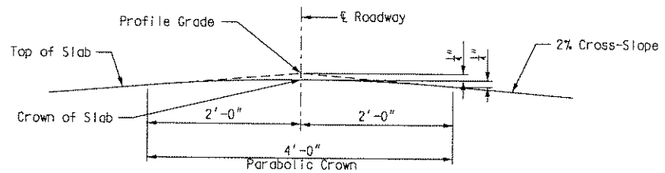
3. Joint filler shall be one piece thickness, not acceptable to build thickness up in layers. Minimum joint filler or polystyrene bedding material thickness shall be 1 inch, except over splice plates or cover plates where minimum thickness shall be $\frac{3}{4}$ inch.

4. All panel support pads (joint filler or polystyrene bedding material) shall be glued to the stringer. When support thickness exceeds $1\frac{1}{2}$ inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

5. Joint filler shall be $1\frac{1}{2}$ inch wide for thickness up to 2 inches, width of joint filler over 2 inches thickness shall be thickness minus $\frac{1}{2}$ inch.

6. Adjustment in the wearing surface thickness, joint filler or polystyrene bedding material thickness, or grade will be necessary if the stringer deflection after panel placement differs from plan deflection. No payment will be made for additional labor or materials for the adjustment.

7. At contractors option, dry pack grout may be used in place of joint filler at no additional cost to owner.



SLAB CROWN DETAIL

FINAL PLANS

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SIGNATURE _____ DATE _____

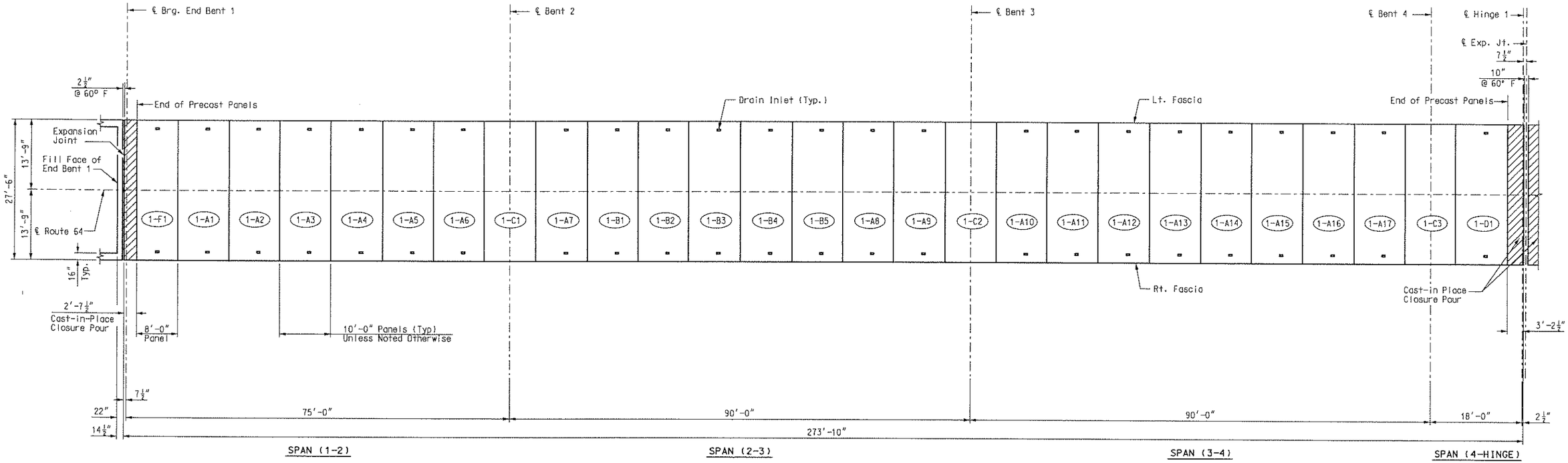
Compiled by Regin Belisle
Checked by Dallas Russell

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

TOP OF SLAB PANEL ELEVATIONS

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-5935(2)	B15



PLAN

Scale: 1"=10'-0"

FINAL PLANS

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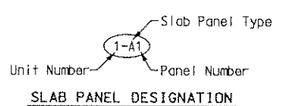


SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. /p18/.
For Safety Barrier Curb Details, see Sheet No. /p21/ and /p23/.
For Slab Drain Details, see Sheet No. /p20/.
For Closure Pour Details, See Sheet No. /p22/
For Expansion Joint Details, see Sheet No. /p24/ and /p26/.
Longitudinal dimensions are measured horizontally.

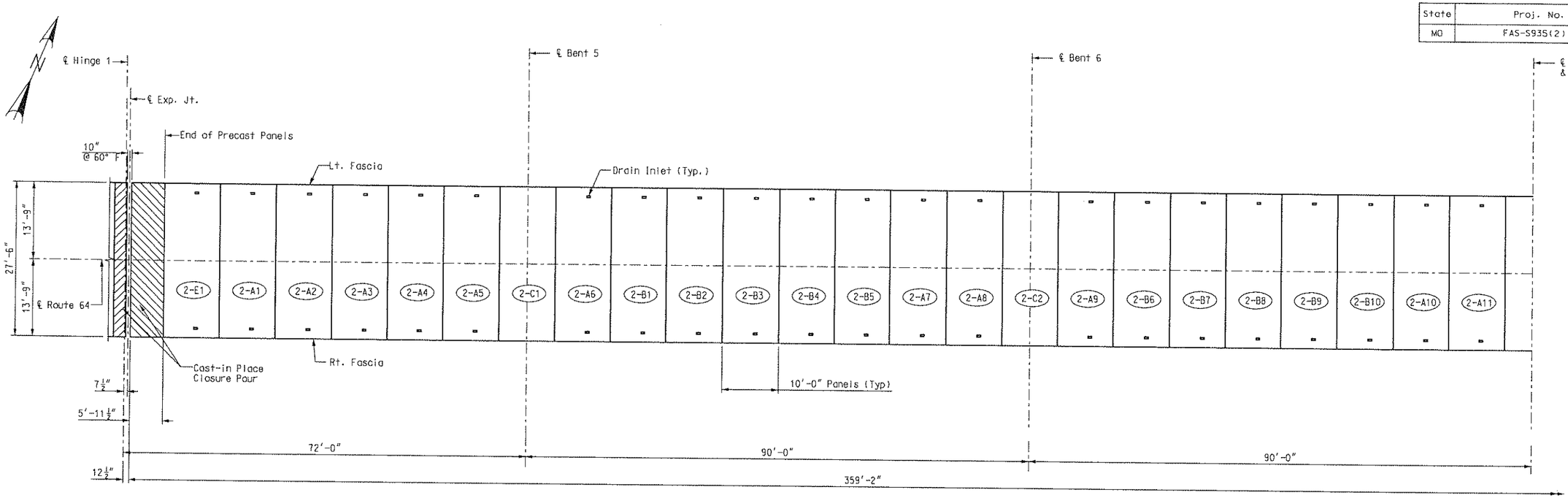
SLAB PANEL LAYOUT
UNIT 1

Compiled by Regin Belisle
Checked by Dallas Russell

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

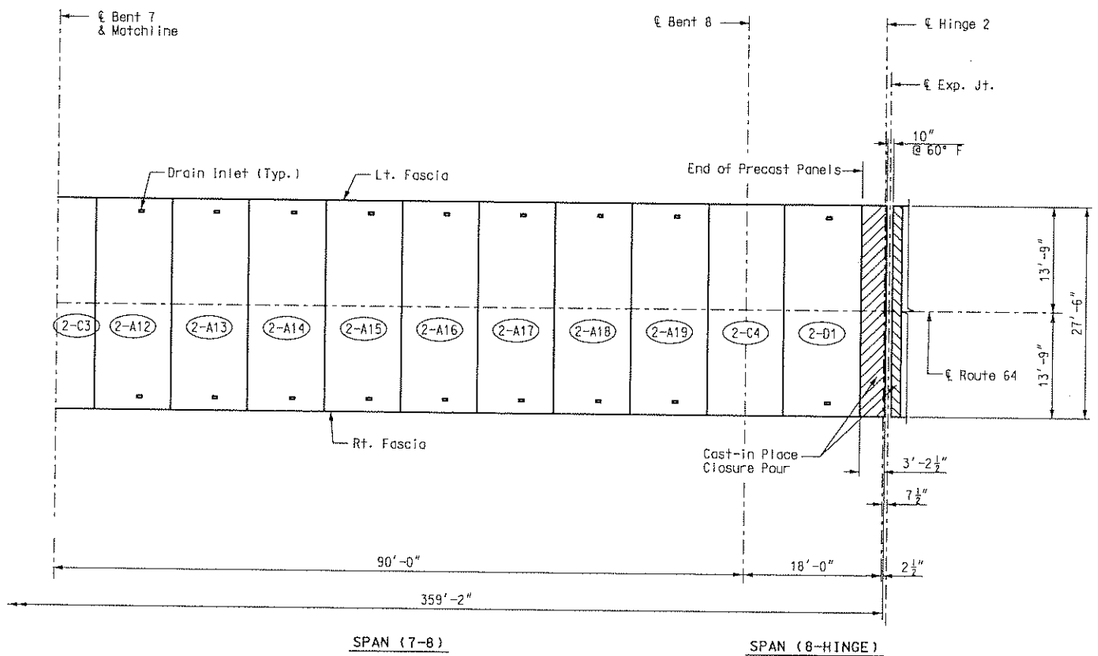
HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B16



PLAN

Scale: 1"=10'-0"



PLAN

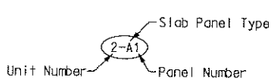
Scale: 1"=10'-0"

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

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____



SLAB PANEL DESIGNATION

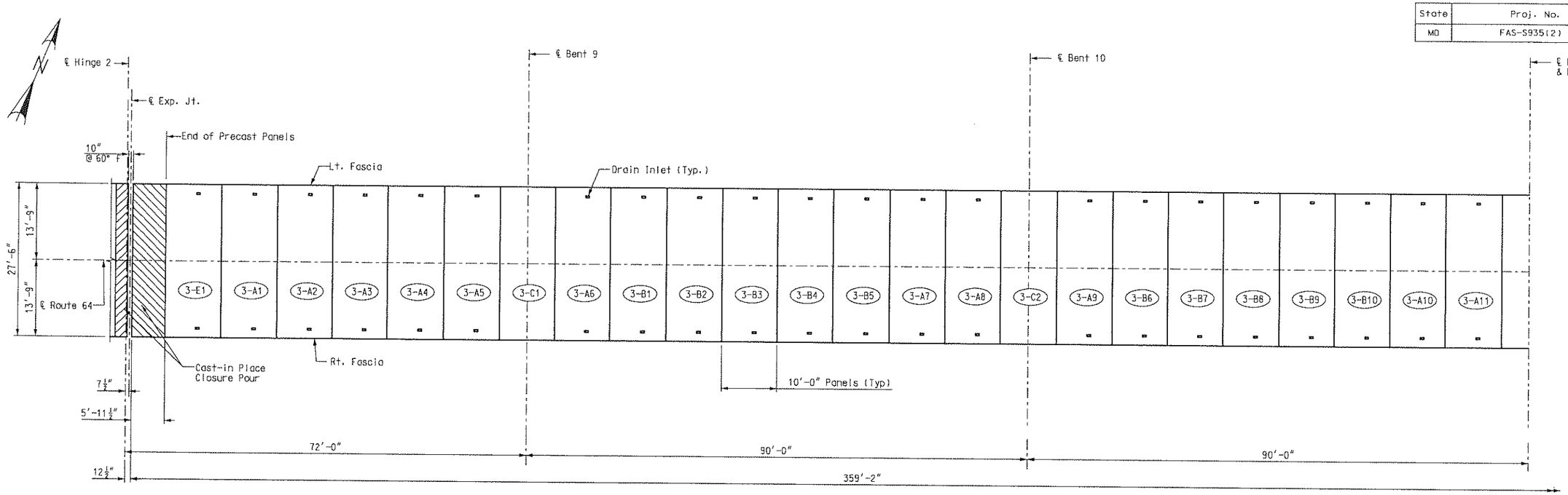
Notes:
For Typical Section, see Sheet No. /p18/.
For Safety Barrier Curb Details, see Sheet No. /p21/ and /p23/.
For Slab Drain Details, see Sheet No. /p20/.
For Closure Pour Details, See Sheet No. /p22/
For Expansion Joint Details, see Sheet No. /p24/ and /p26/.
Longitudinal dimensions are measured horizontally.

SLAB PANEL LAYOUT
UNIT 2

Compiled by Regin Berliste
Checked by Dallas Russell

HICKORY COUNTY A08941

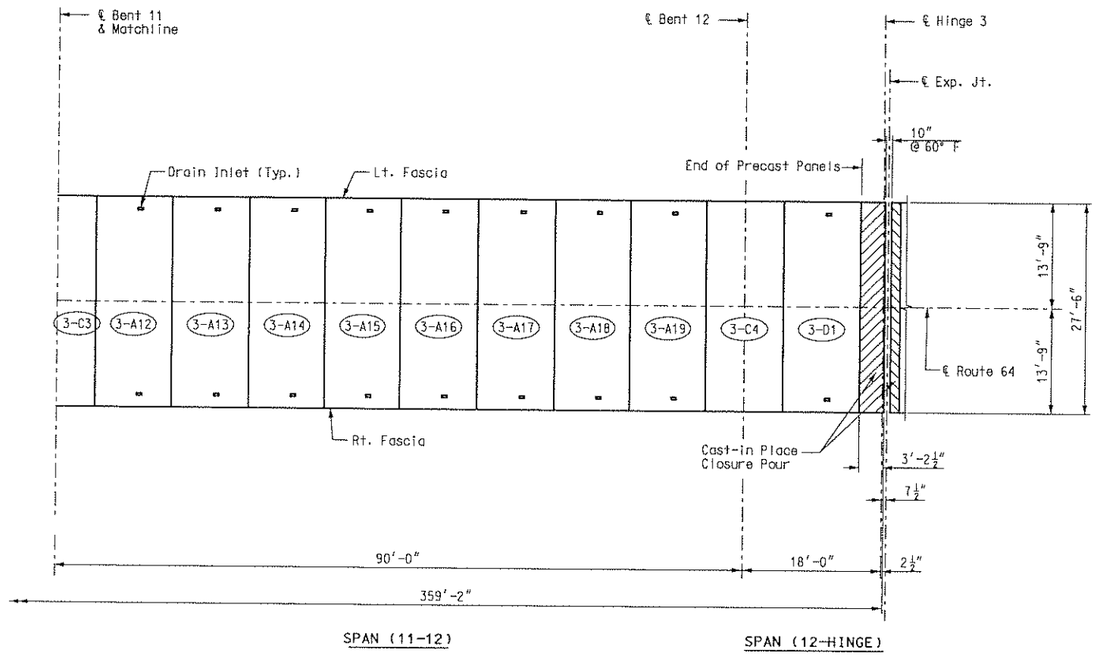
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B17



SPAN (HINGE-9) SPAN (9-10) SPAN (10-11)

PLAN

Scale: 1"=10'-0"



SPAN (11-12) SPAN (12-HINGE)

PLAN

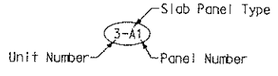
Scale: 1"=10'-0"

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

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE DATE



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. /p18/.
For Safety Barrier Curb Details, see Sheet No. /p21/ and /p23/.
For Slab Drain Details, see Sheet No. /p20/.
For Closure Pour Details, See Sheet No. /p22/
For Expansion Joint Details, see Sheet No. /p24/ and /p26/.
Longitudinal dimensions are measured horizontally.

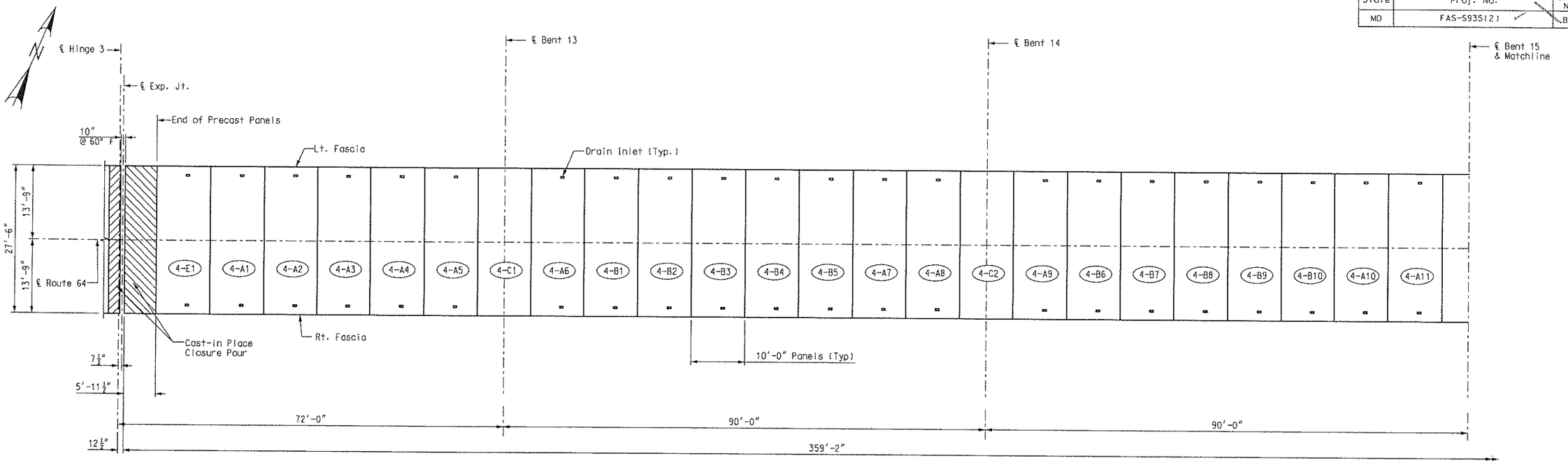
SLAB PANEL LAYOUT
UNIT 3

HICKORY COUNTY

A08941

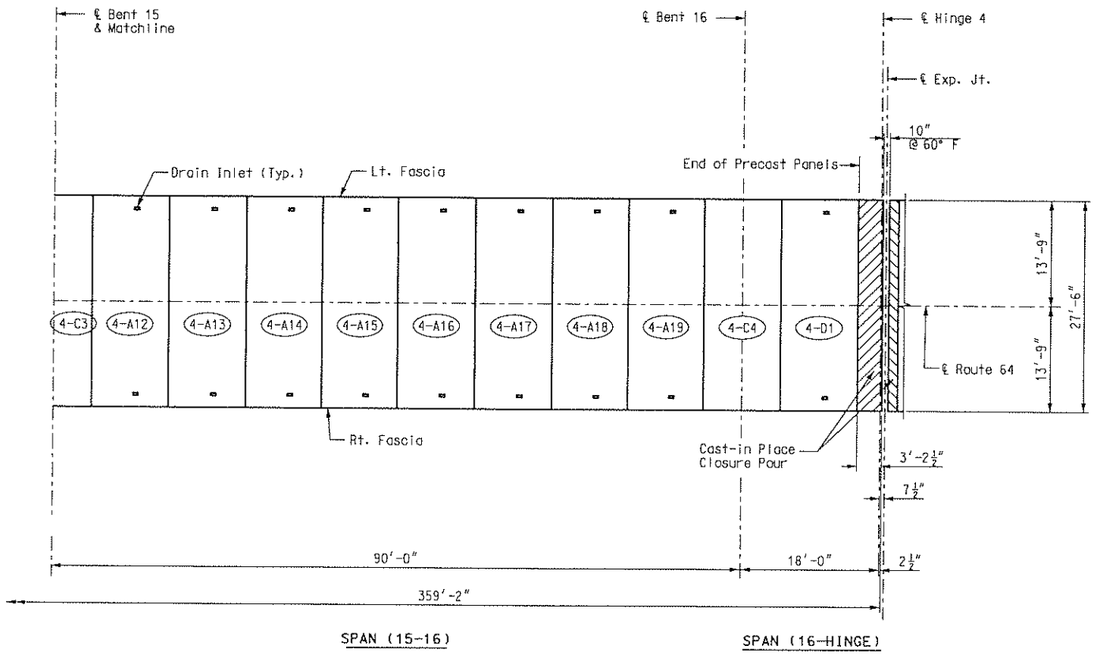
Compiled by Regin Beliste
Checked by Dallas Russell

State	Proj. No.	Sheet No.
MO	FAS-S93S(2)	B18



PLAN

Scale: 1"=10'-0"



PLAN

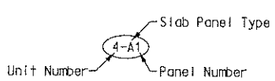
Scale: 1"=10'-0"

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

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. /p18/.
For Safety Barrier Curb Details, see Sheet No. /p21/ and /p23/.
For Slab Drain Details, see Sheet No. /p20/.
For Closure Pour Details, See Sheet No. /p22/
For Expansion Joint Details, see Sheet No. /p24/ and /p26/.
Longitudinal dimensions are measured horizontally.

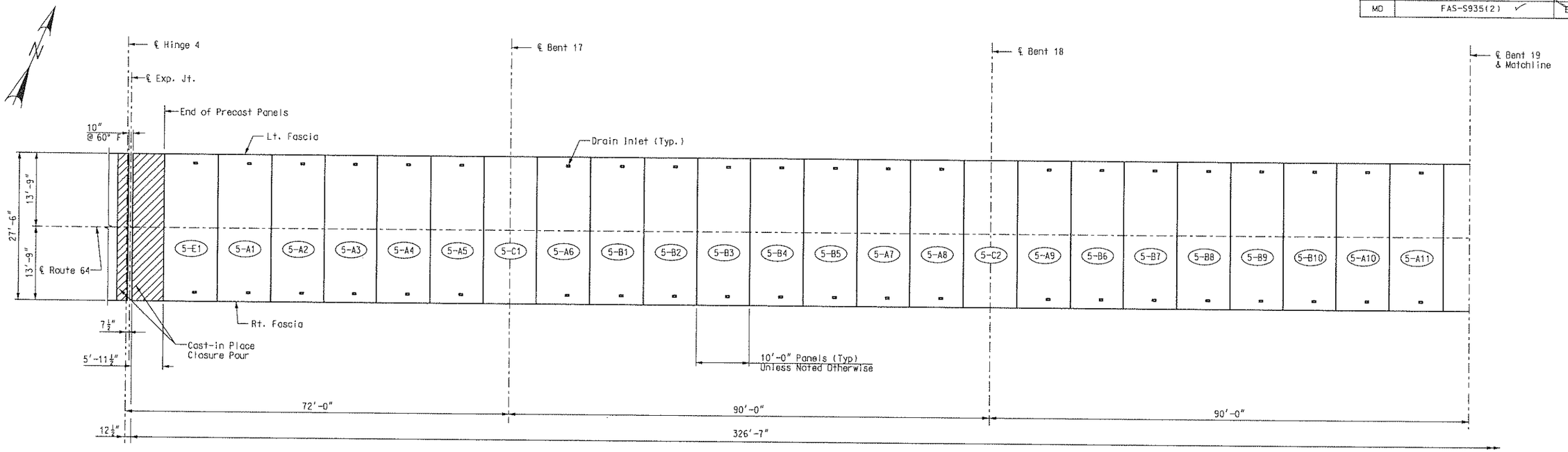
SLAB PANEL LAYOUT
UNIT 4

Compiled by Regin Beliste
Checked by Dallas Russell

Sheet No. 18 of 35

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B19



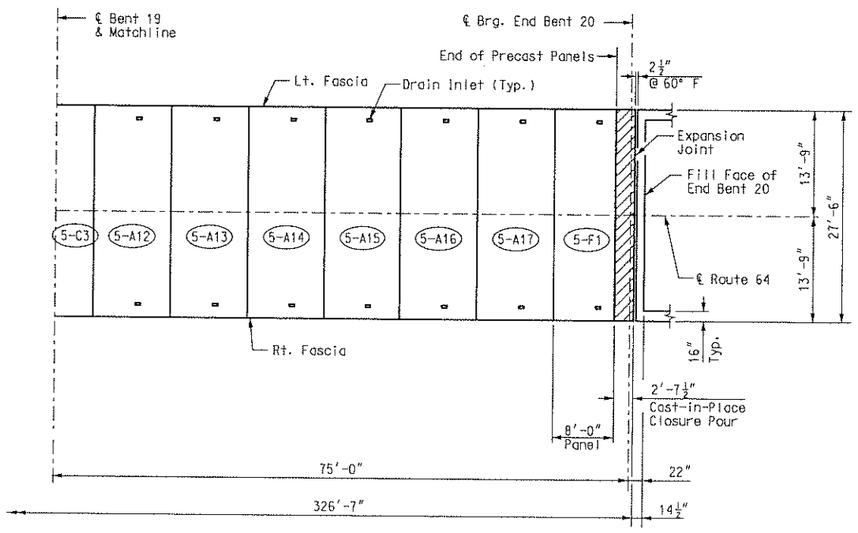
SPAN (HINGE-17)

SPAN (17-18)

SPAN (18-19)

PLAN

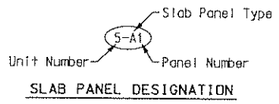
Scale: 1"=10'-0"



SPAN (19-20)

PLAN

Scale: 1"=10'-0"



SLAB PANEL DESIGNATION

Notes:
For Typical Section, see Sheet No. /p18/.
For Safety Barrier Curb Details, see Sheet No. /p21/ and /p23/.
For Slab Drain Details, see Sheet No. /p20/.
For Closure Pour Details, See Sheet No. /p22/
For Expansion Joint Details, see Sheet No. /p24/ and /p26/.
Longitudinal dimensions are measured horizontally.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

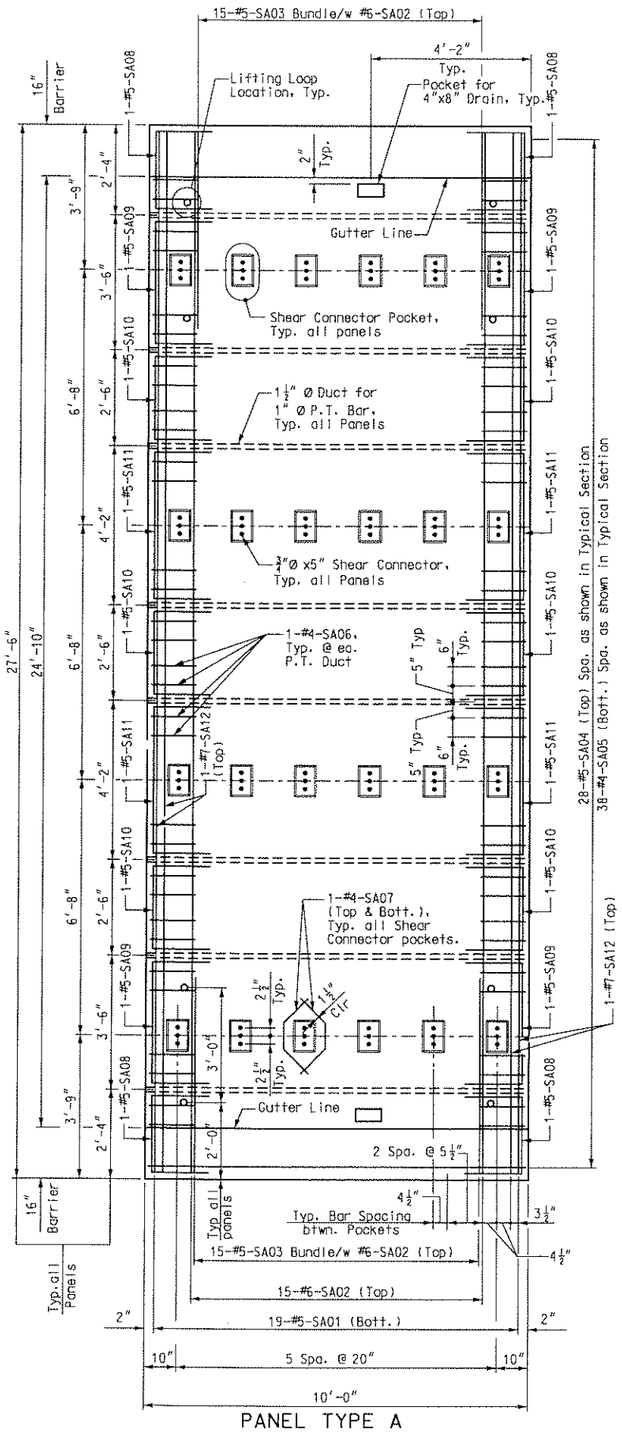
Compiled by Regin Belisle
Checked by Dallas Russell

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

SLAB PANEL LAYOUT
UNIT 5

HICKORY COUNTY A08941

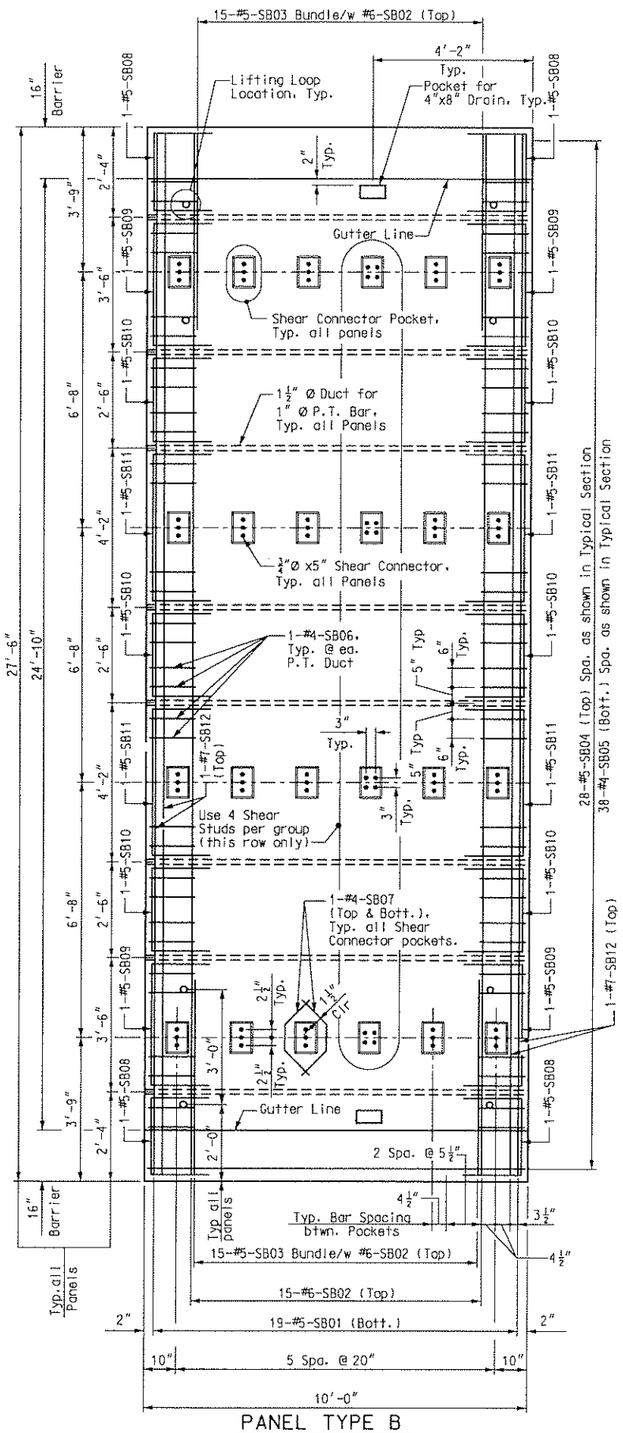
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	820



PANEL TYPE A

Note: Barrier Reinforcing not shown for clarity.

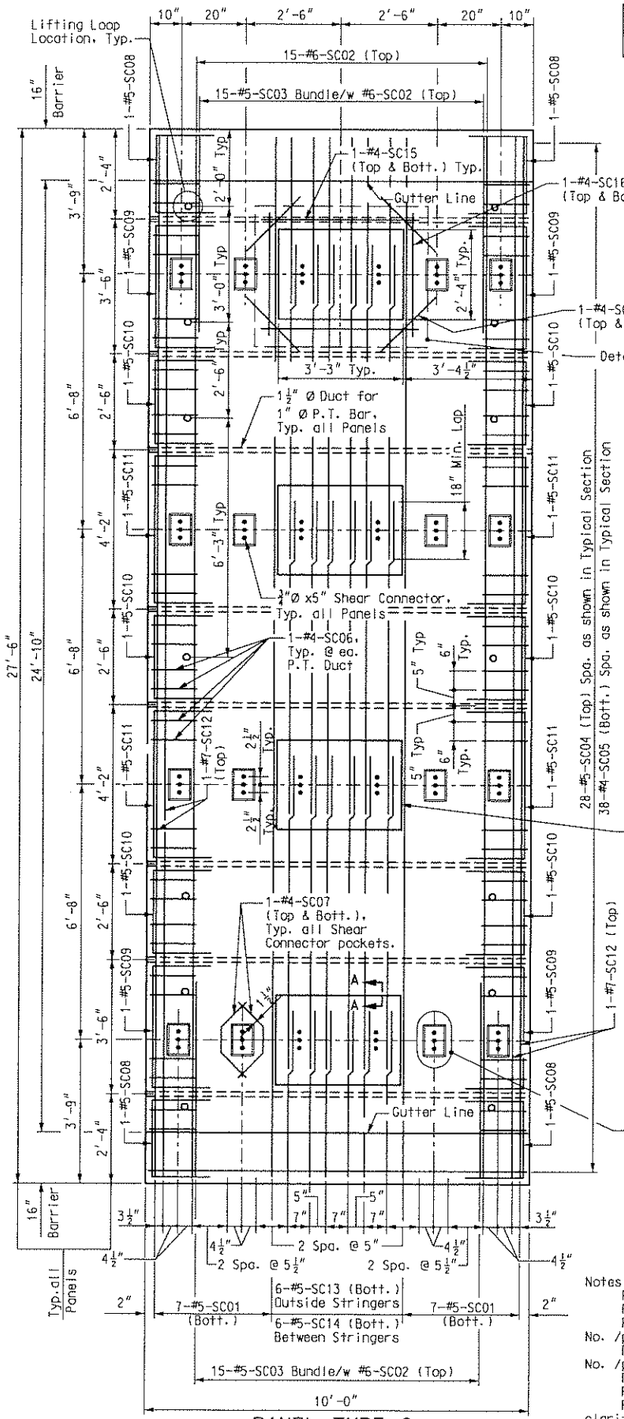
Scale: ½"=1'-0"



PANEL TYPE B

Note: Barrier Reinforcing not shown for clarity.

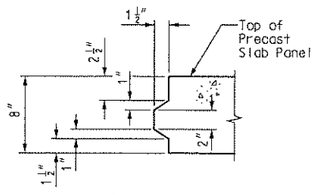
Scale: ½"=1'-0"



PANEL TYPE C

Note: Barrier Reinforcing not shown for clarity.

Scale: ½"=1'-0"



SECTION A-A

Scale: 1½" = 1'

FINAL PLANS

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SIGNATURE _____ DATE _____

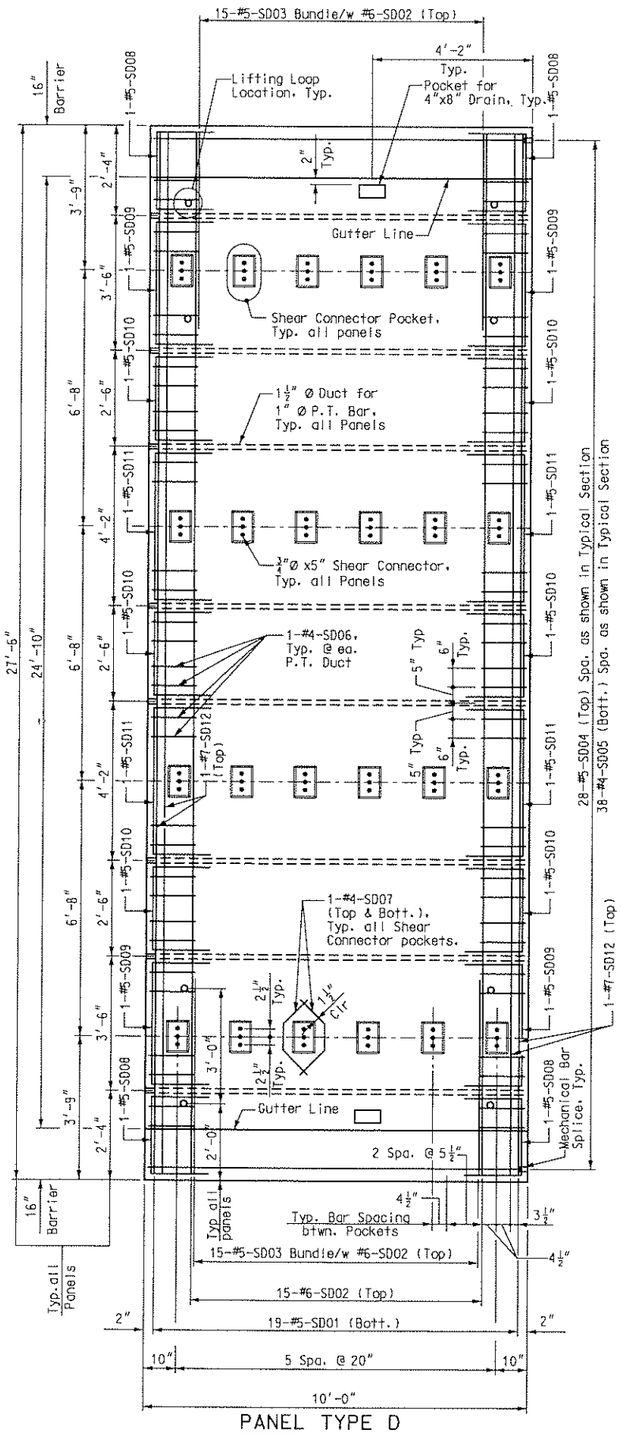
Notes:
For Barrier Reinforcing see Sheet No. /p21/.
For Typical Section, see Sheet No. /p18/.
For Shear Connector Details, see Sheet No. /p08/.
For Shear Connector Pocket Details, see Sheet No. /p18/.
For Shear Key Details, see Sheet No. /p19/.
For Drain Details, see Sheet No. /p20/.
P.T. bar and coupler blockouts not shown for clarity.
At Contractors option, Panel Type C may be constructed cast-in-place at no additional cost to owner.

SLAB PANEL TYPES A, B, AND C

Compiled by Regin Belisle
Checked by Dallas Russell

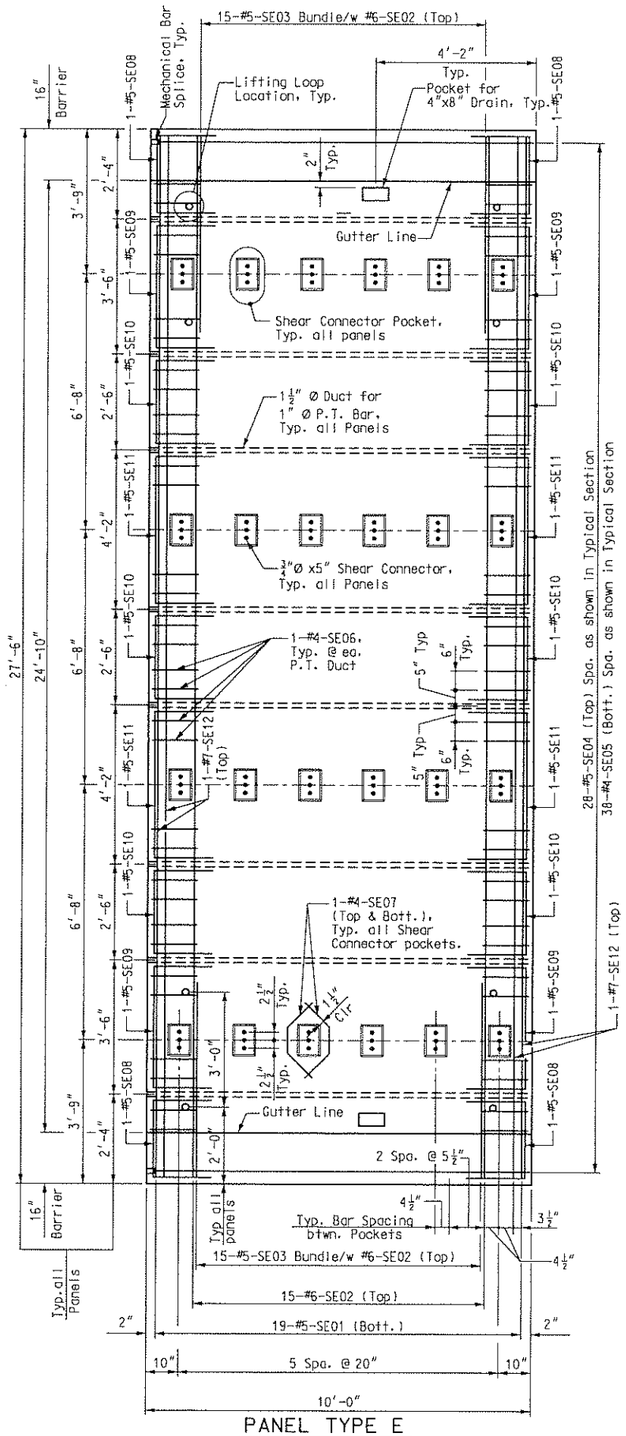
Note: This drawing is not to scale. Follow Dimensions.

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B21



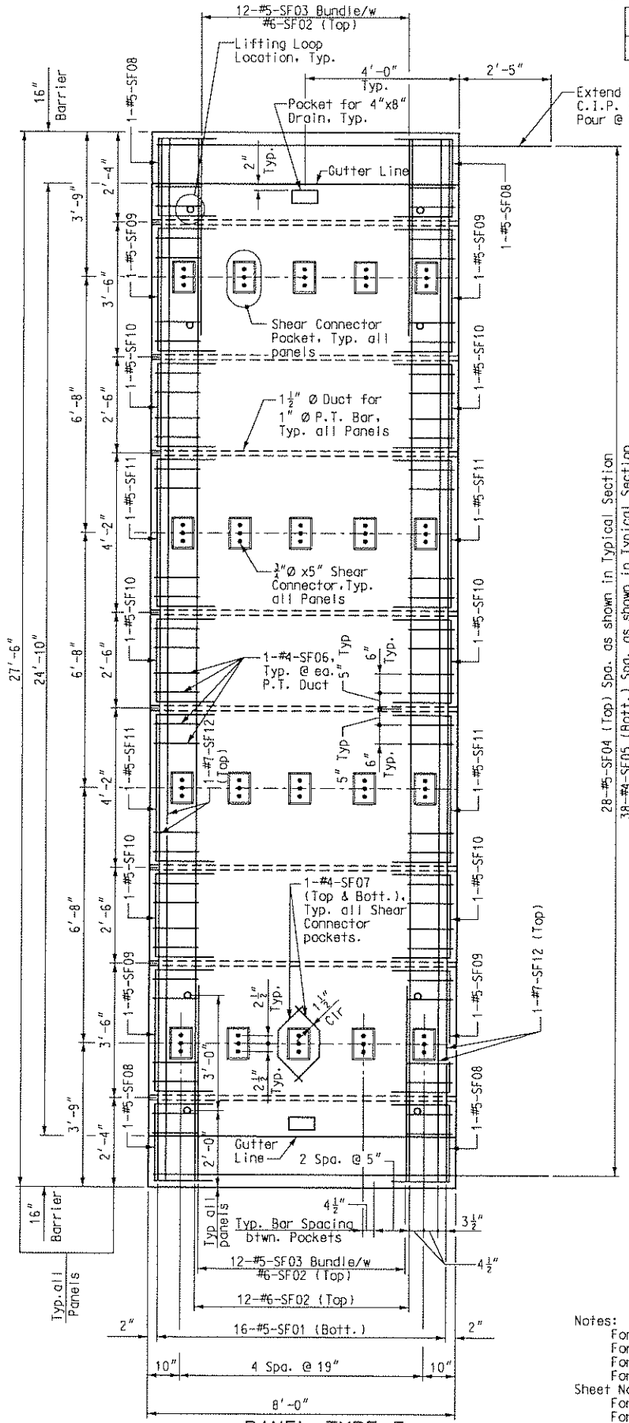
PANEL TYPE D

Scale: ½"=1'-0"
Note: Barrier Reinforcing not shown for clarity.



PANEL TYPE E

Scale: ½"=1'-0"
Note: Barrier Reinforcing not shown for clarity. Panel Type E is identical to Panel Type D except for orientation of shear keys and Mechanical Bar Splices.



PANEL TYPE F

Scale: ½"=1'-0"
Note: Barrier Reinforcing not shown for clarity.

FINAL PLANS

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SIGNATURE _____ DATE _____

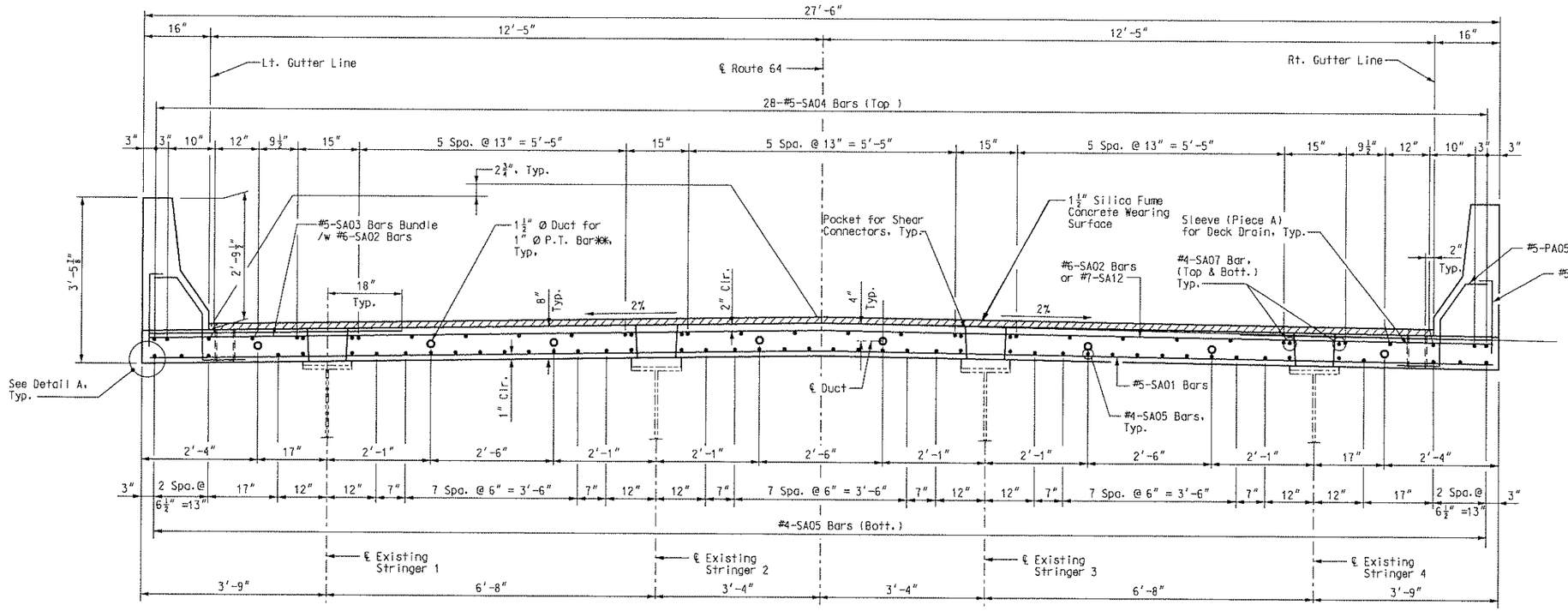
Notes:
For Barrier Reinforcing, see Sheet /p21/.
For Typical Section, see Sheet No. /p18/.
For Shear Key Details, see Sheet No. /p19/.
For Shear Connector Packet Details, see Sheet No. /p18/.
For Shear Connector Details see Sheet /p08/.
For Slab Drain Details, see Sheet No. /p20/.
P.T. bar coupler blockouts not shown for clarity.

SLAB PANEL TYPES D, E AND F

Compiled by Regin Belisle
Checked by Dollas Russell

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

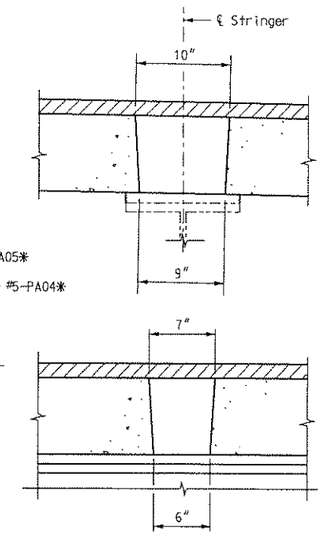
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	822



TYPICAL SECTION

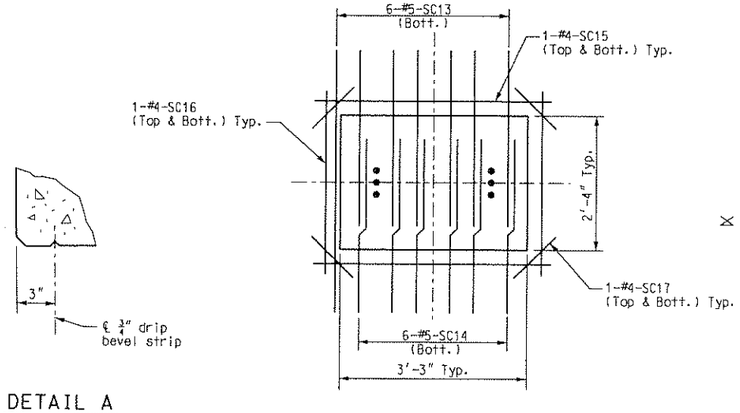
Scale: ¾" = 1'

Bar Marks shown are for Panel A. Panels B thru F are similar, except use "SB" thru "SF" series.



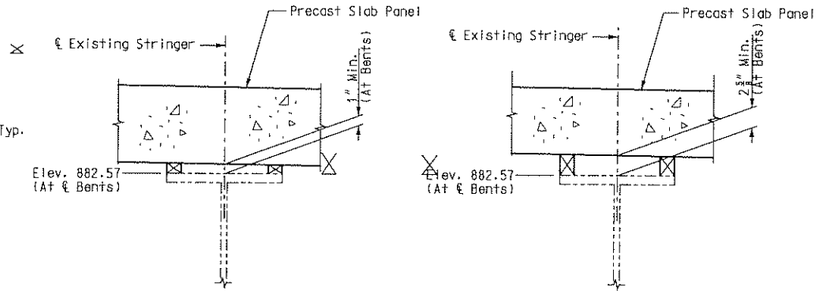
SHEAR CONNECTOR POCKET DETAILS

Scale: 1½"=1'-0"



DETAIL A

DETAIL B

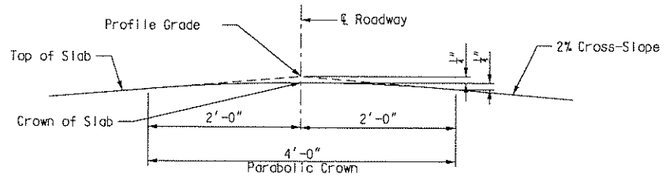


STRINGER 1 OR 4

STRINGER 2 OR 3

TYPICAL HAUNCH DETAIL

Note:
If haunch depth exceeds 3", shear connector length shall be increased. Field verify haunch depths prior to placement of precast slab panels. No payment will be made for additional shear connector length, or concrete required for variable haunch.



SLAB CROWN DETAIL

Notes:
For Slab Panel Layouts, see Sheet No. /p12/ thru /p16/.
For Slab Panel Types, see Sheet No. /p17/ and /p17a/.
For location of Detail B, see Sheet No. /p17/.
** Post-Tensioned Bars shall be stressed to 0.65 f's.
For Shear Key Details, see Sheet No. /p19/.
For Shear Connector Details, see Sheet No. /p08/.
For Safety Barrier Curb Details, see Sheet No. /p21/.
* For spacing of #5-PA04 and #5-PA05 bars, see Safety Barrier Curb Elevation, Sheet No. /p21/.

FINAL PLANS

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Checked by Dallas Russell

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

SLAB PANEL CROSS SECTION

HICKORY COUNTY

A08941

State	Proj. No.	Sheet No.
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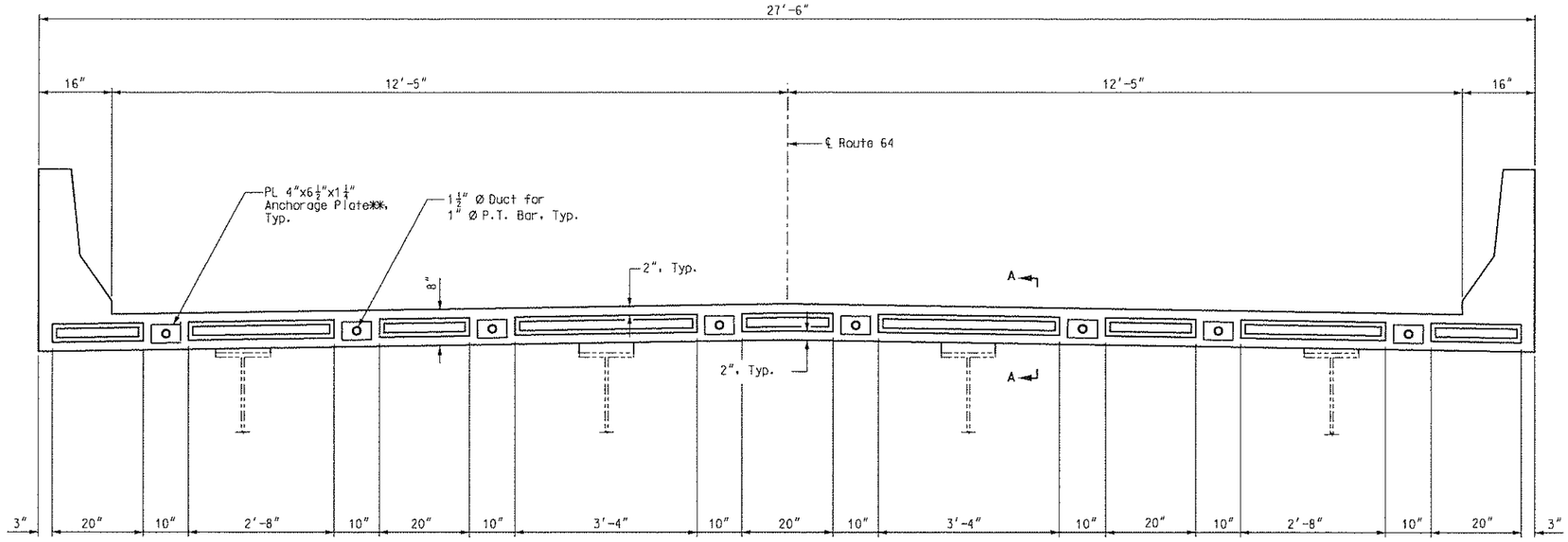
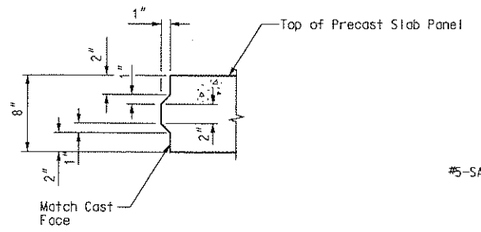


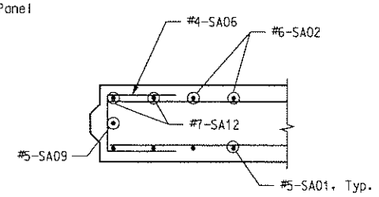
TYPICAL SECTION SHOWING SHEAR KEYS

Scale: ¾" = 1'



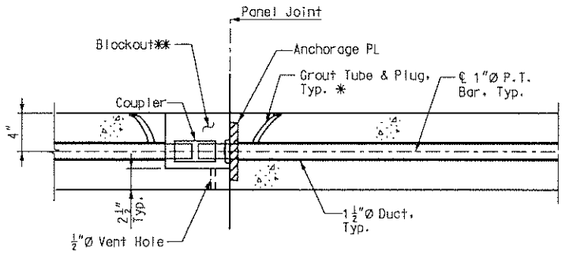
SECTION A-A

Scale: 1½" = 1'

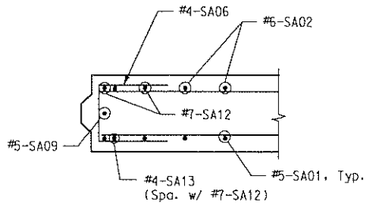


SECTION B-B

Note: Bars Shown for Panel Type A. Other Panels Similar.

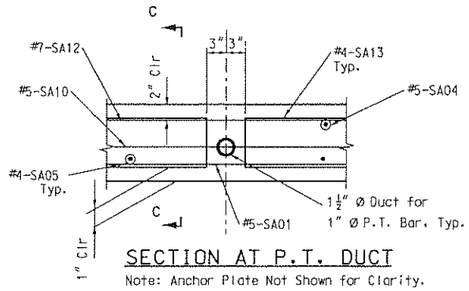


P.T. BARS IN PRECAST SLAB PANELS



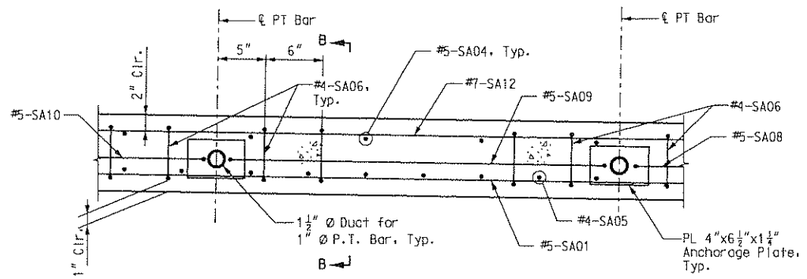
SECTION C-C AT ANCHORAGE

Note: Bars Shown for Panel Type A. Other Panels Similar. Anchor Plate Not Shown for Clarity.



SECTION AT P.T. DUCT

Note: Anchor Plate Not Shown for Clarity.



TYPICAL REINFORCING AT END OF PANEL DETAIL

Scale: 1½" = 1'

Note: Bars shown for Panel Type A. Other panels similar.

Note:
For slab reinforcing, See Sheet Nos. /p17/, /p17a/ and /p18/.

* Grout Tube and Plug shall be capable of withstanding traffic loads. See Special Provisions.

** Anchorage System and blockout details shall be determined by the post-tensioning system used.

SLAB PANEL SHEAR KEY DETAILS

FINAL PLANS

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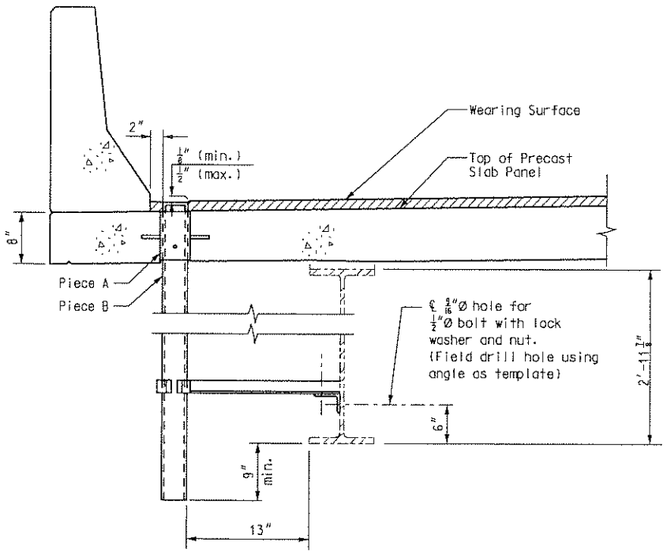
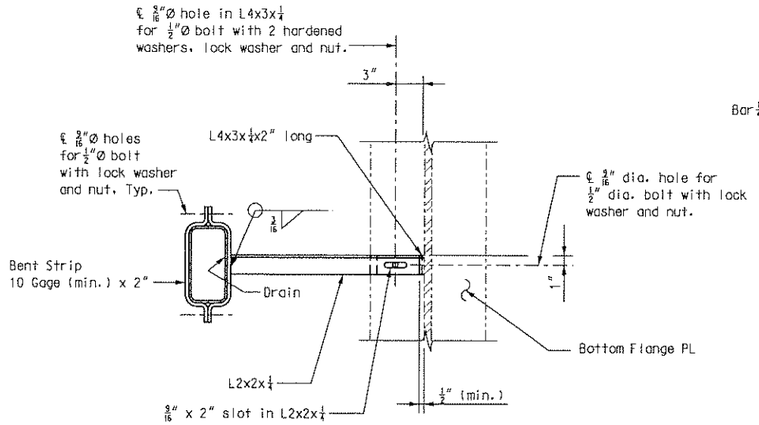
SIGNATURE _____ DATE _____

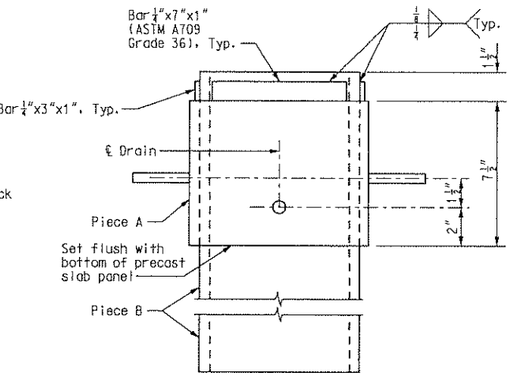
State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B24



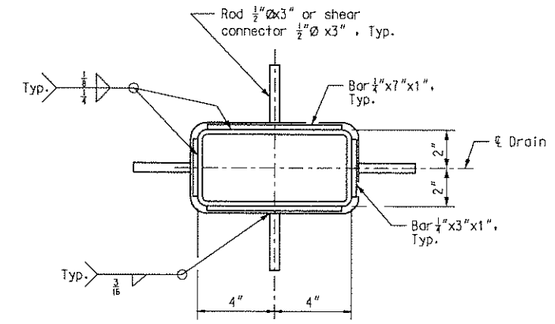
PART ELEVATION OF SLAB AT DRAIN
Scale: 1"=1'-0"



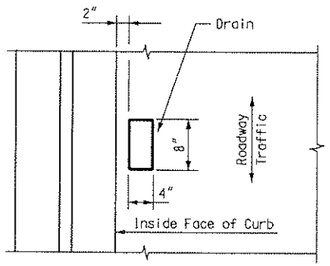
PART SECTION SHOWING BRACKET ASSEMBLY
Scale: 1"=1'-0"



ELEVATION OF DRAIN
Scale: 3"=1'-0"



PLAN OF DRAIN
Scale: 3"=1'-0"



PART PLAN OF SLAB AT DRAIN
Scale: 1"=1'-0"

FINAL PLANS

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SIGNATURE _____ DATE _____

Notes:
For Slab Drain location, see Slab Panel Layouts, Sheet No. /p12/ thru /p16/.
Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709, Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.
Slab drain bracket assembly shall be ASTM A709, Grade 36 steel.
Outside dimensions of drains are 8" x 4".
Locate drain blockouts in the slab panels by dimensions shown in the Part Plan of Slab at Drain.
The slab drains and bracket assembly shall be galvanized in accordance with ASTM A123.
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.
Shop drawings will not be required for slab drains and the bracket assembly.
Install slab drains in panels prior to wearing surface placement.

SLAB PANEL DRAIN DETAILS

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

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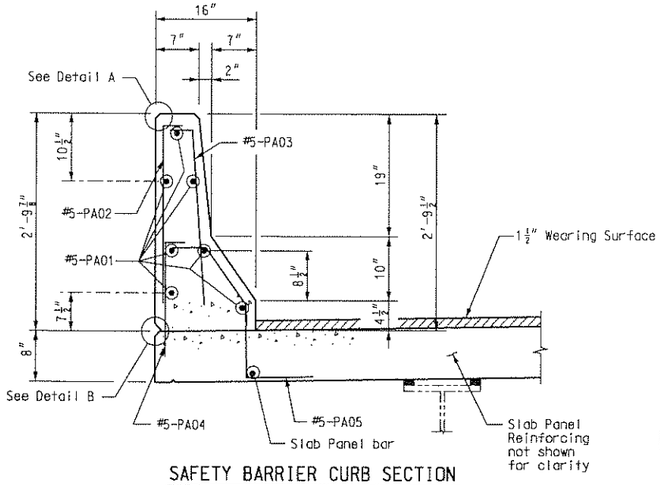
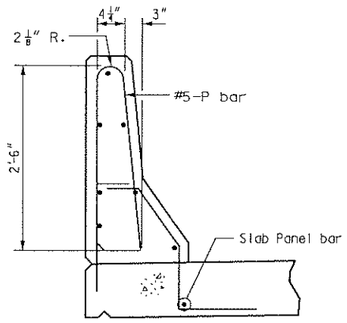


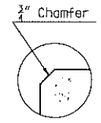
SAFETY BARRIER CURB SECTION

Notes:
Bar Marks shown are for Panel A. Panels B thru F are similar, except use "B00" thru "F00" series Bar Marks.
The cross-sectional area above the slab panel = 2.44 sq. ft.

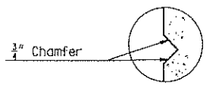


P-BAR PERMISSIBLE ALTERNATE SHAPE

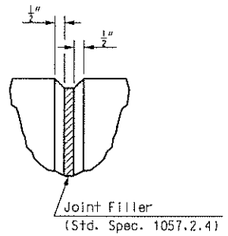
The PX02 and PX03 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)
X = Panel Type



DETAIL A

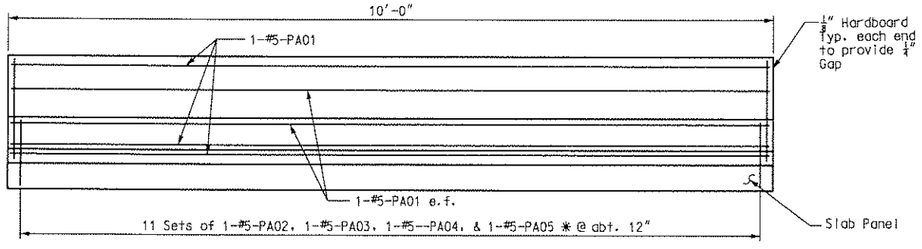


DETAIL B



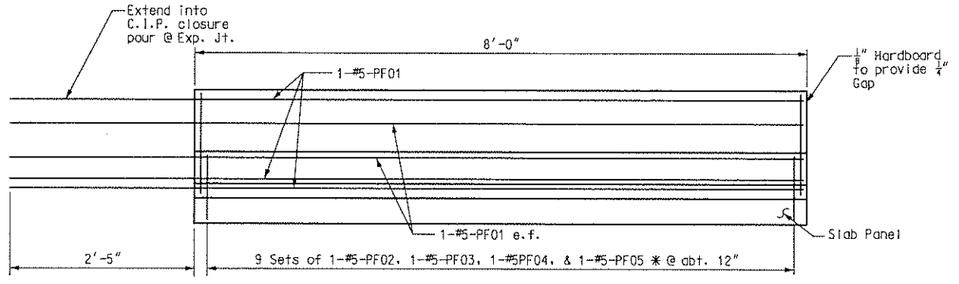
FILLED JOINT DETAIL

Note:
Fill gaps between barrier on panels after completion of each unit.



SAFETY BARRIER ELEVATION AT PANELS A, B, C, D OR E

Notes:
Bar Marks shown are for Panel A. Panels B thru E are similar, except use "B00" thru "E00" series Bar Marks.
The cross-sectional area above the slab panel = 2.44 sq. ft.



SAFETY BARRIER ELEVATION AT PANELS F

(Shown at End Bent 1, End Bent 20 opposite hand.)

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Notes:
For safety barrier curb details at end bents, see Sheet No. /p25/.
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at End Bents) normal to grade.
All exposed edges of safety barrier curb shall have either a ½" radius or a ⅜" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.
* Adjust spacing of Bar PA05 thru PF05 to clear pocket for deck drain in slab panels.
e.f. denotes each face.

SLAB PANEL SAFETY BARRIER CURB DETAILS

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

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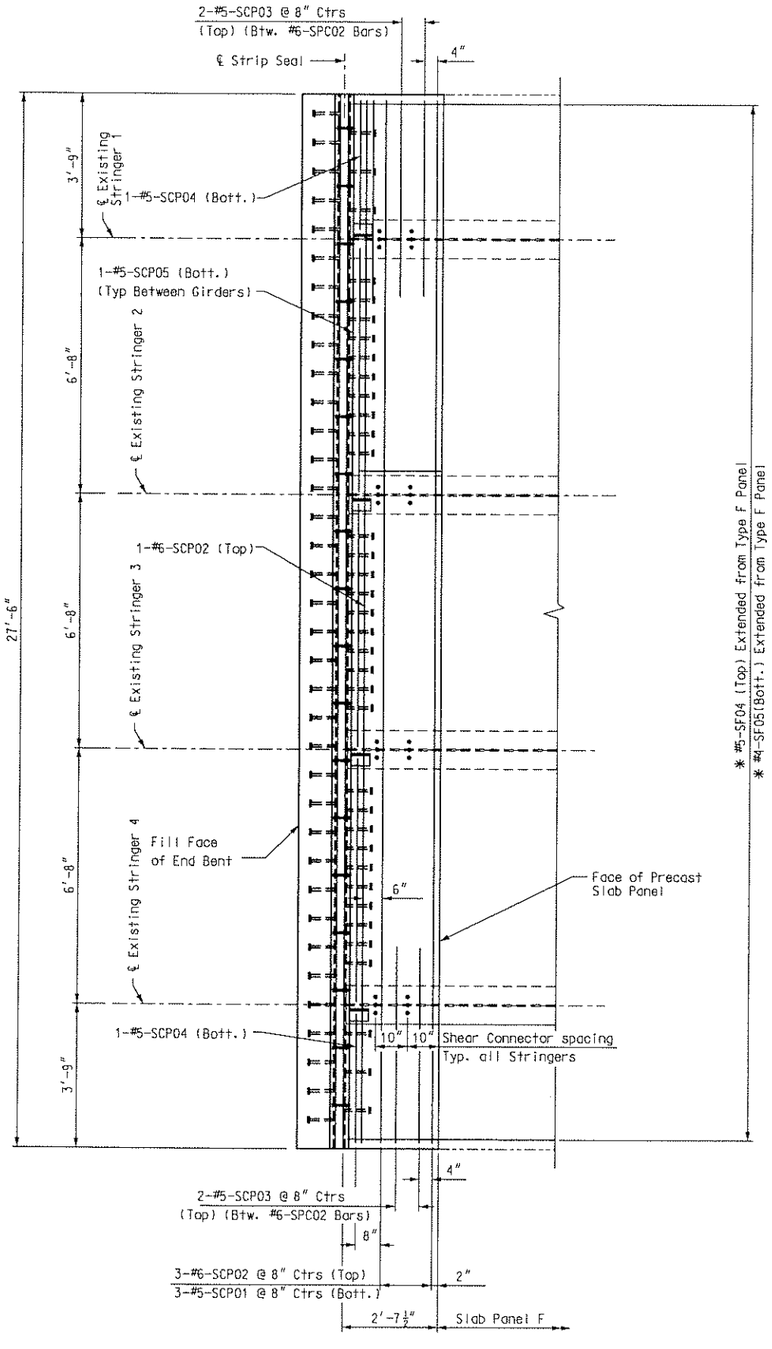
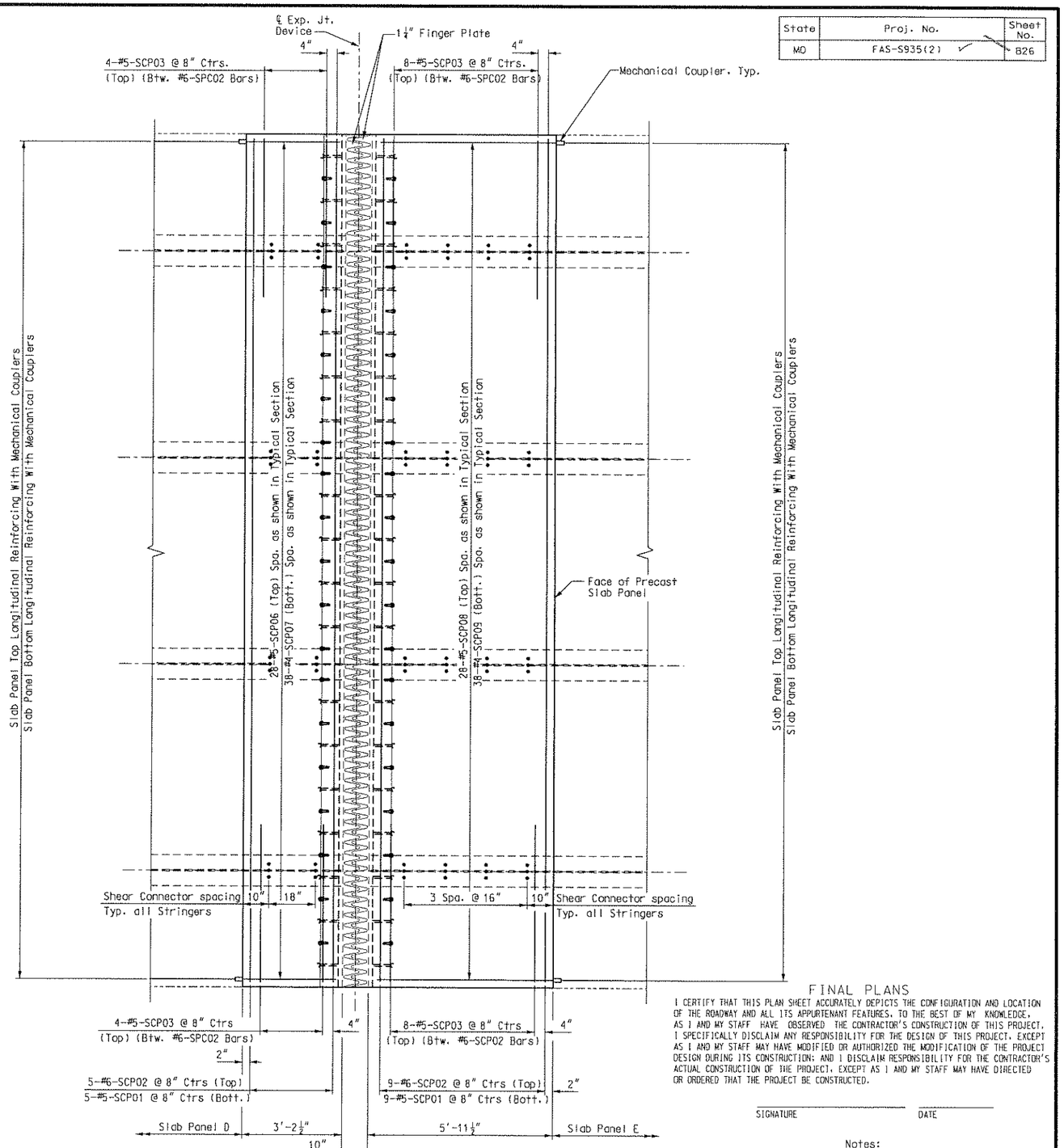


CLOSURE POUR AT END BENT

Scale: ½"=1'-0"



CLOSURE POUR AT HINGE

Scale: ½"=1'-0"

* Field Bend as Required to Clear Expansion Joint Shear Connectors.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT, I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Notes:
For details of strip seal at end bents, See Sheet No. /p26/.
For details of finger joints, See Sheet No. /p24/.

CLOSURE POUR DETAILS

Compiled by Regin Bellisle
Checked by Dallas Russell

HNTB

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

Sheet No. 26 of 35

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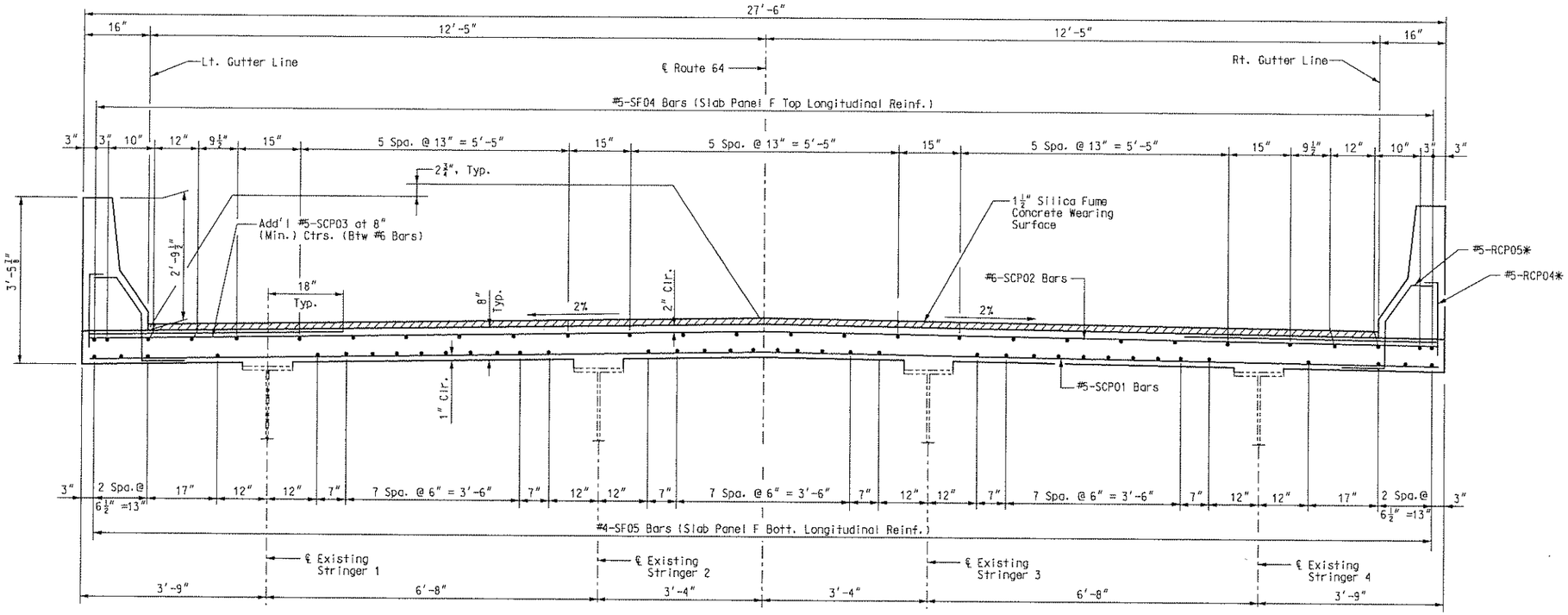
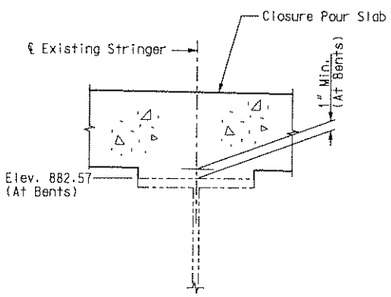
MO	FAS-S935(2) ✓	B27

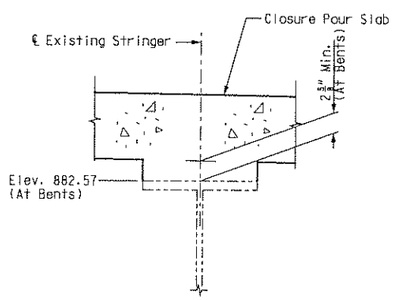


TYPICAL SECTION

(Shown for End Bent)



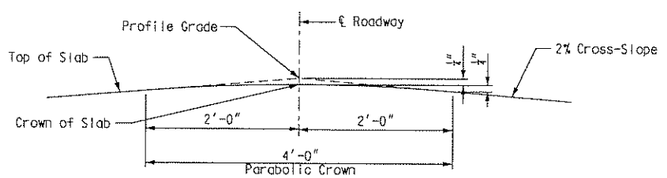
STRINGER 1 OR 4



STRINGER 2 OR 3

TYPICAL HAUNCH DETAIL

Note:
If haunch depth exceeds 3", shear connector length shall be increased. Field verify haunch depths prior to placement of closure pour slab. No payment will be made for additional shear connector length, or concrete required for variable haunch.



SLAB CROWN DETAIL

Notes:
For Closure Pour Details, see Sheet No. /p22/
For Safety Barrier Curb Details, see Sheet No. /p23/.
* For spacing of #5-RCP04 and #5-RCP05 bars, see Safety Barrier Curb Elevation, Sheet No. /p23/.
Bar Marks shown are for Closure Pour at End Bent.
Closure Pours at Hinge are similar.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Compiled by Regin Belisle
Checked by Dallas Russell

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

CLOSURE POUR CROSS SECTION

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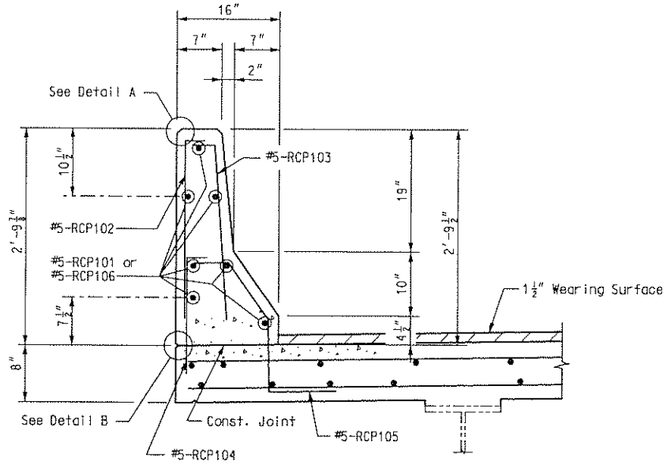
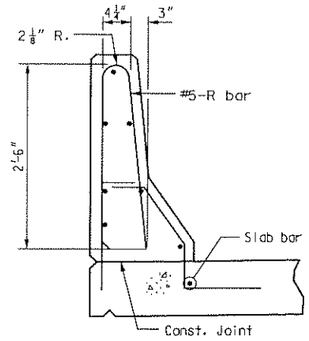


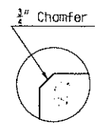
SAFETY BARRIER CURB SECTION

Notes:
The cross-sectional area above the slab = 2.44 sq. ft.

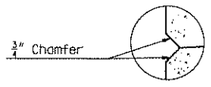


R-BAR PERMISSIBLE ALTERNATE SHAPE

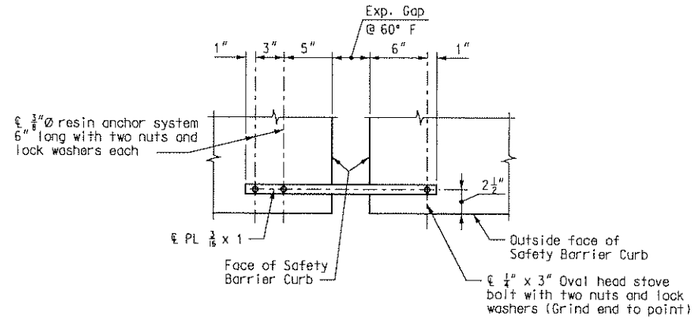
The RCP102 and RCP103 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)



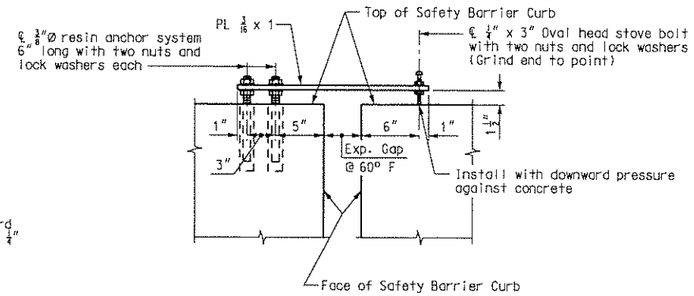
DETAIL A



DETAIL B

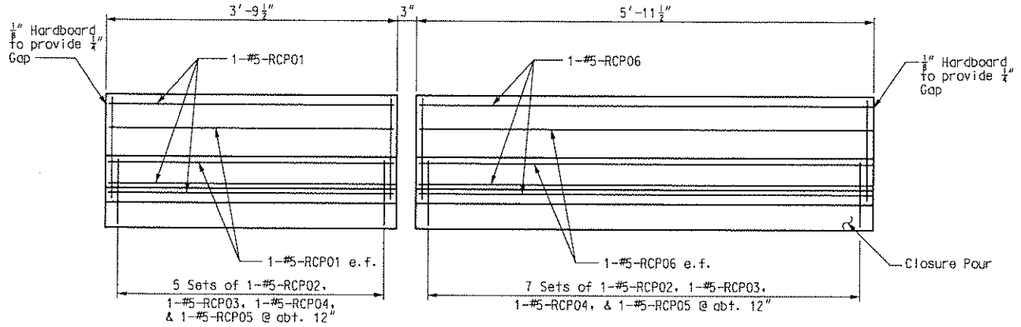


PART PLAN OF BARRIER CURB
SHOWING MOVEMENT GAUGE

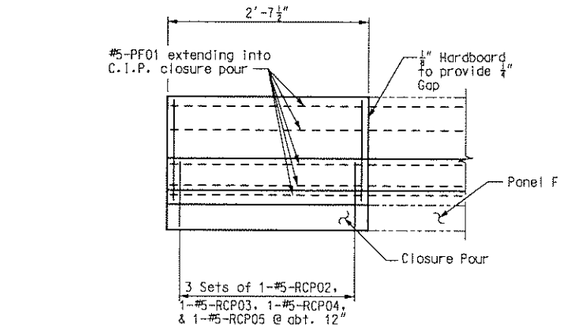


PART ELEVATION OF BARRIER CURB
SHOWING MOVEMENT GAUGE

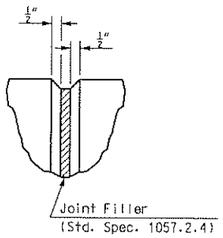
Notes:
A movement gauge shall be provided on right side of bridge at all safety barrier curb expansion joints.
All steel shall be galvanized in accordance with ASTM A153
Cost of movement gauge complete in place shall be included in contract unit price for Class B-1 Concrete (Closure Pour & Barrier Curb).



SAFETY BARRIER ELEVATION AT C.I.P. CLOSURE POURS
(Hinge 1 shown, Hinges 2, 3, and 4 similar.)



SAFETY BARRIER ELEVATION AT C.I.P. CLOSURE POURS
(End Bent 1 shown, End Bent 20 similar.)



FILLED JOINT DETAIL

Note:
Fill joint between barrier on slab panel and cast-in-place barrier at closure pours.

FINAL PLANS

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SIGNATURE _____ DATE _____

Notes:
For safety barrier curb details at end bents, see Sheet No. /p25/.
Top of safety barrier curb shall be built parallel to grade.
All exposed edges of safety barrier curb shall have either a ½" radius or a ⅝" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.

DETAILS OF SAFETY BARRIER CURB
AT CLOSURE POURS

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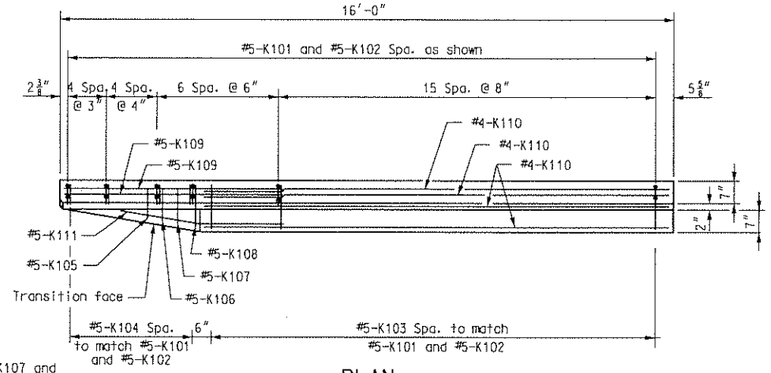
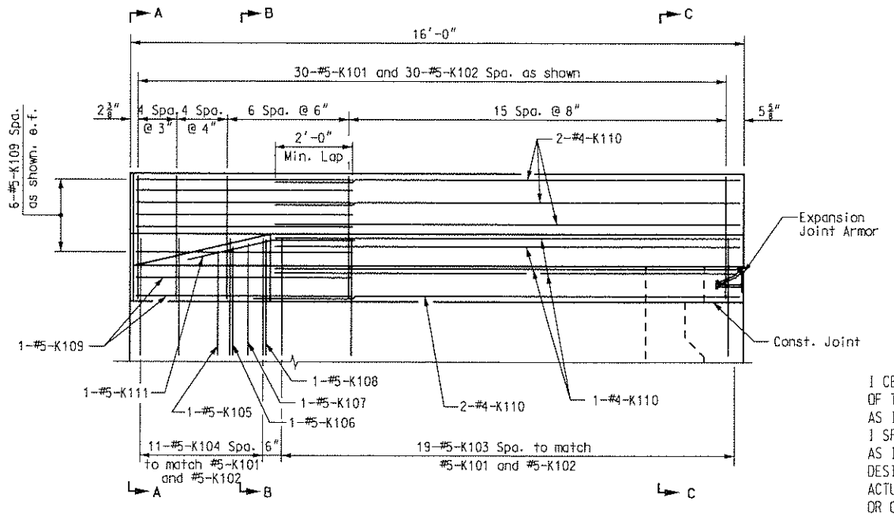


PLAN

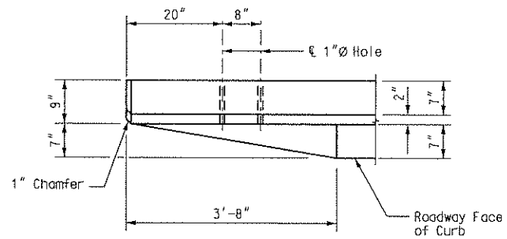
Notes:
#5-K105, #5-K106, #5-K107 and #5-K108 are spaced with #5-K104 bars.
Fit #5-K111 bar to follow transition face of curb.



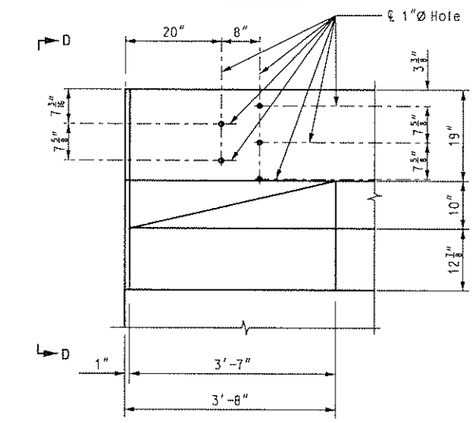
BARRIER ELEVATION

End Bent 1, Left side shown (Right side opposite)

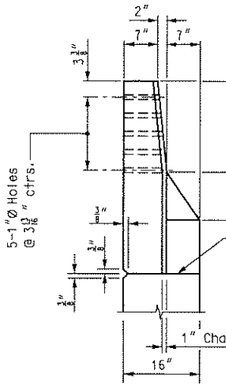
Scale: $\frac{1}{2}$"=1'-0"



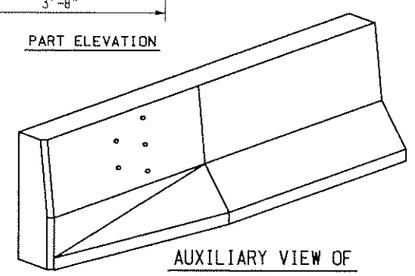
PART PLAN



PART ELEVATION



VIEW D-D



AUXILIARY VIEW OF SAFETY BARRIER CURB

DETAILS OF GUARD RAIL ATTACHMENT

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

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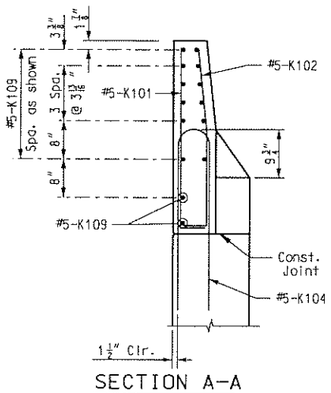
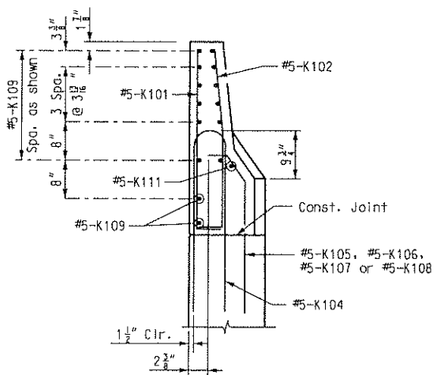


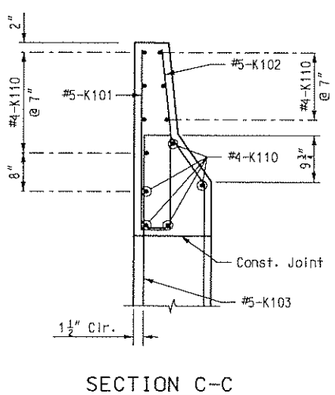
SECTION A-A

Scale: $\frac{3}{4}$"=1'-0"



SECTION B-B

Scale: $\frac{3}{4}$"=1'-0"



SECTION C-C

Scale: $\frac{3}{4}$"=1'-0"

Notes:
For typical barrier curb section, see Sheet No. /p23/.
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at End Bents) normal to grade.
All exposed edges of safety barrier curb shall have either a $\frac{1}{2}$" radius or a $\frac{1}{2}$" bevel, unless otherwise noted.
Concrete in the safety barrier curb shall be Class B-1.
Provide Guard Rail Attachment at Left and Right Barriers.
For Expansion Joint Details, see Sheet No. /p26/.
Bar Marks shown are for End Bent 1 using "100" series Bar Marks. End Bent 20 is identical, except use "2000" series Bar Marks.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

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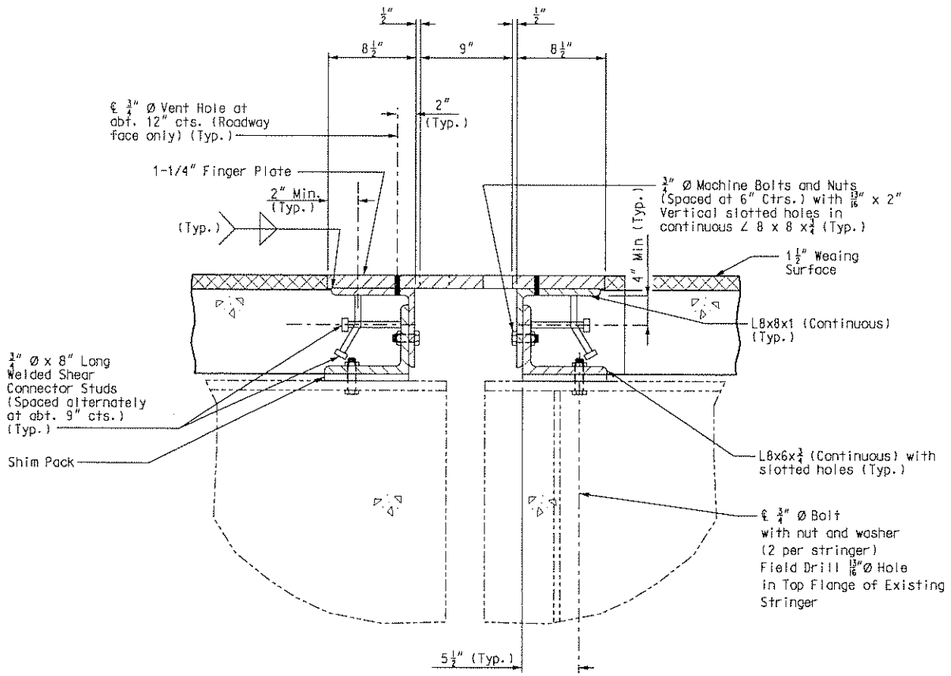
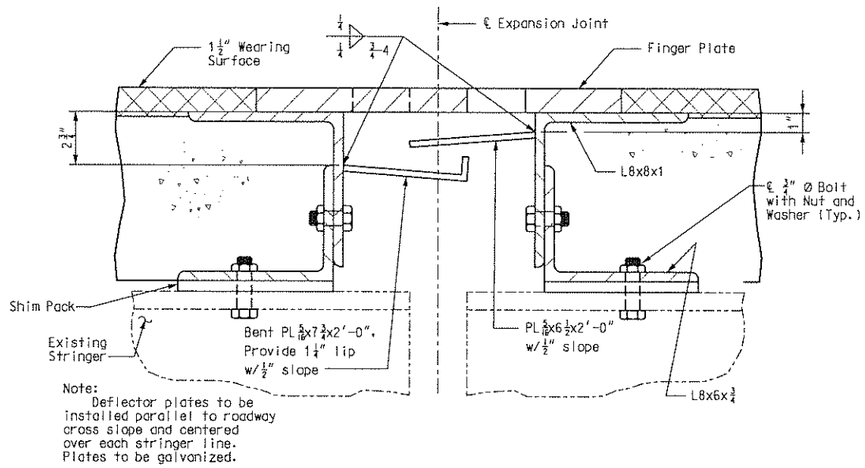


PART SECTION THRU EXPANSION JOINT

Scale: 1½"=1'-0"



Note:
Deflector plates to be installed parallel to roadway cross slope and centered over each stringer line. Plates to be galvanized.

DEFLECTOR PLATES AT EACH STRINGER LINE

Scale: 3"=1'-0"

GENERAL NOTES:

Finger plate shall be cut with a machine guided gas torch from one plate. The plate from which fingers are cut may be spliced before fingers are cut. The surface of cut shall be perpendicular to the surface of the plate. The cut shall not exceed ¼" in width. The centerline of cut shall not deviate more than 1/16" from the position of centerline of cut shown. No splicing of finger plate or finger plate assembly will be allowed after fingers are cut.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased ¼" for each 10°F fall and decreased ¼" for each 10°F rise in temperature at installation.

Structural steel for the expansion device and curb plate 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.

Payment for furnishing, coating or galvanizing and installing structural steel for the expansion device will be made at the contract unit price for Expansion Device (Finger Plate) per lin. ft.

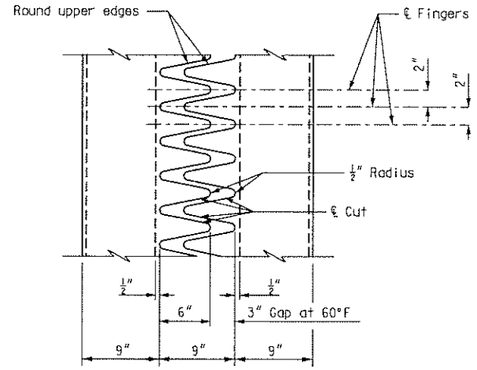
Concrete shall be forced under and around finger plate supporting hardware, studs, angles and bars. Proper consolidation shall be achieved by localized internal vibration.

1-1/4" Finger Plate and ∠ 8 x 8 x¾ shall be bent to conform to crown of roadway.

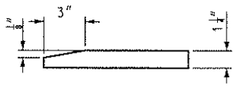
Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1"± from vertical Leg 8x6x3/4 angle at expansion device.

Material for the expansion device shall be ASTM A709 Grade 36 structural steel. Anchors for the expansion device shall be approved stud welded anchors (C1010 thru C1020).

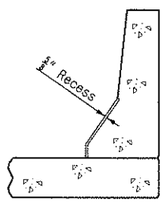
Provide galvanized shims and beveled shims under L8x6x3/4 at existing stringers.



TYPICAL PLAN OF PLATE



FINGER DETAIL



PART SECTION B-B

FINAL PLANS

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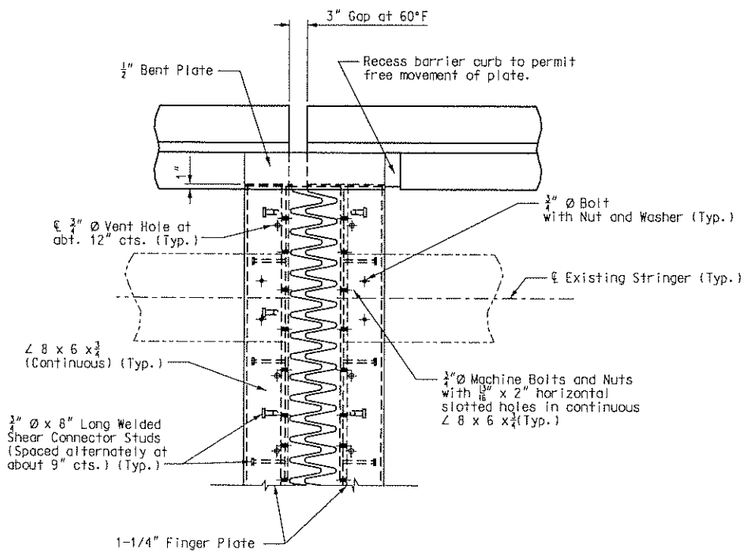
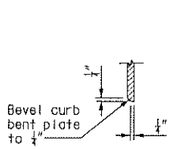
SIGNATURE _____ DATE _____

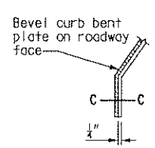


PART PLAN OF EXPANSION DEVICE

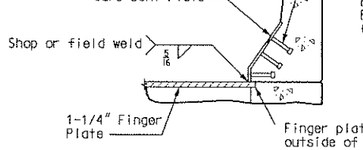
Scale: ¾"=1'-0"



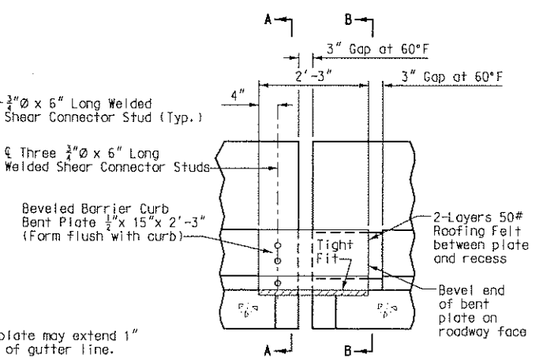
SECTION C-C



PART ELEVATION AT END OF BEVELED CURB BENT PLATE



PART SECTION A-A



PART ELEVATION OF BARRIER CURB

Compiled by Regin Belisle
Checked by Dallas Russell

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

Sheet No. 30 of 35

DETAILS OF FINGER JOINTS AT HINGES

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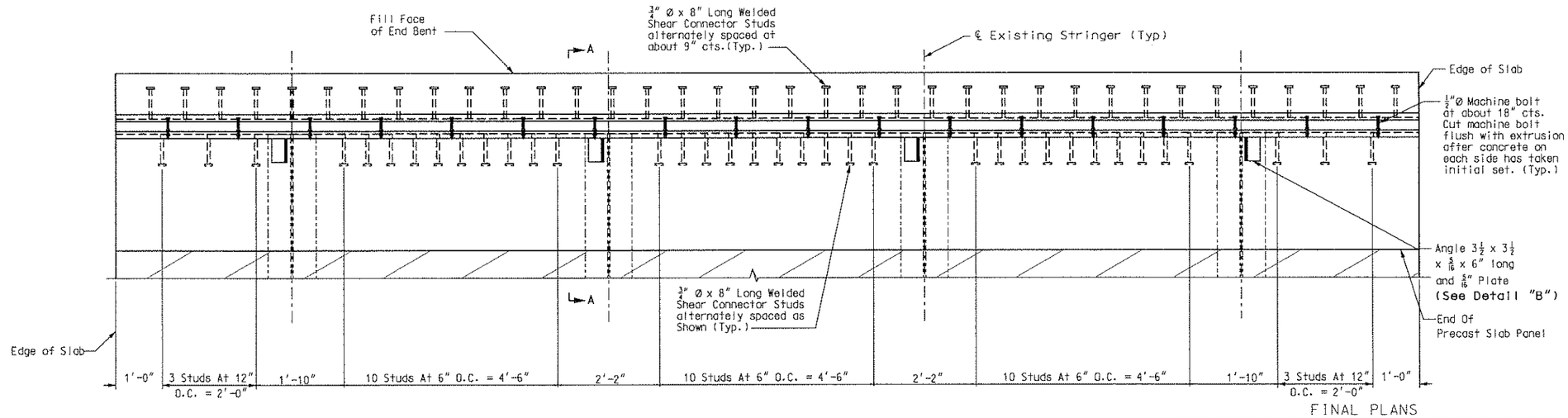

PLAN

GENERAL NOTES:

The expansion device shall be fabricated and installed in accordance with the recommendations of the manufacturer, and as set forth in the Special Provisions.

The contractor must verify all dimensions prior to fabrication.

All welds shall conform to Section 712 of the Missouri Standard Specifications.

Splices of steel extrusion shall develop full strength.

All steel shall be ASTM A709 Grade 36, except steel extrusions shall be ASTM A709 Grade 50W or Grade 36.

Neoprene Strip Seal shall meet ASTM D-2628.

Anchors for the extrusions or armor shall be approved welded studs (C1010 thru C1020).

Structural steel for the expansion device and curb plate 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.

Payment for furnishing, coating or galvanizing and placing steel extrusions, miscellaneous structural steel, barrier curb plates, and neoprene strip seal shall be made under the contract unit price for Strip Seal Expansion Device.

Plan dimensions are based on installation at 60°F. The gap shall be increased $\frac{1}{8}$" for each 10° fall in temperature and decreased $\frac{1}{8}$" for each 10° rise in temperature from the installation temperature.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1"± from vertical leg of extrusion at Expansion Device.

Concrete shall be forced under and around strip seal extrusions and studs. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Curb Plate anchors shall be a drilled cone expansion or a cast-in-place wing type threaded insert. The minimum ultimate pullout capacity for these anchors shall be 2700 lbs in f'c = 4000 psi concrete. Lead anchors will not be permitted. Holes for anchors shall not be drilled until the concrete is at least 7 days old.

For Safety Barrier Curb Details, see Sheet No. /p25/.

FINAL PLANS

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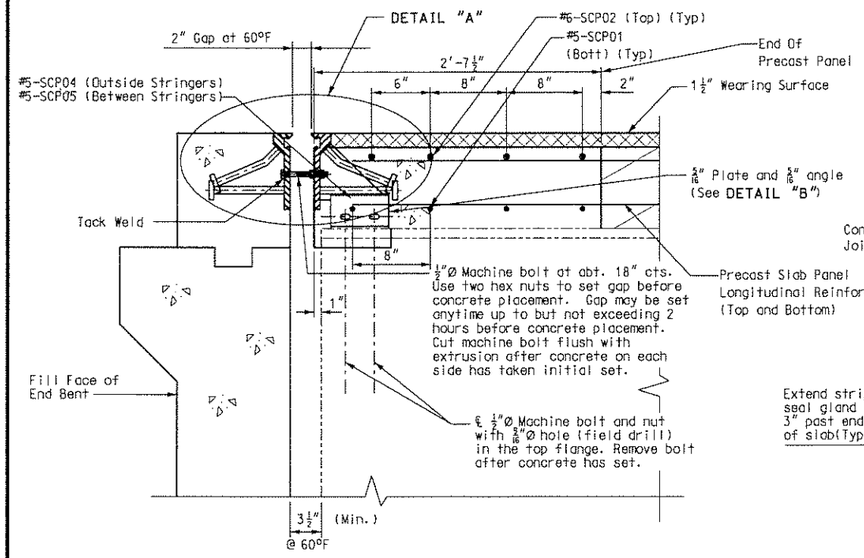
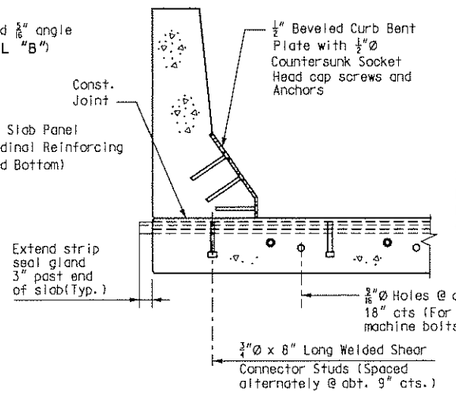
SIGNATURE _____ DATE _____

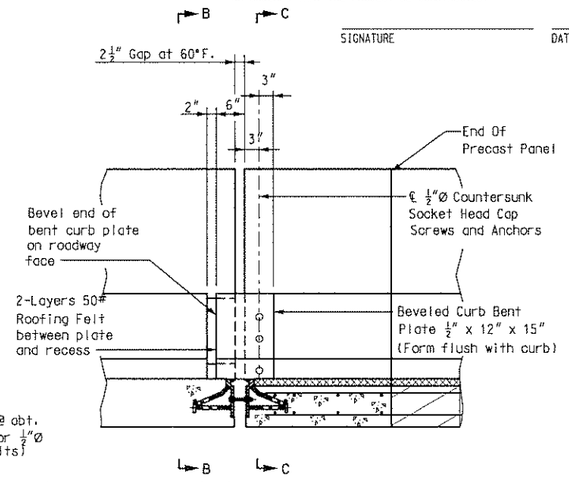


Note: Strip seal gland not shown for clarity.

SECTION A-A

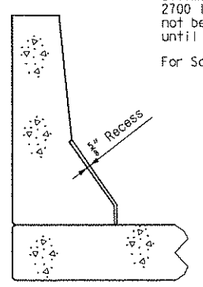


PART SECTION C-C

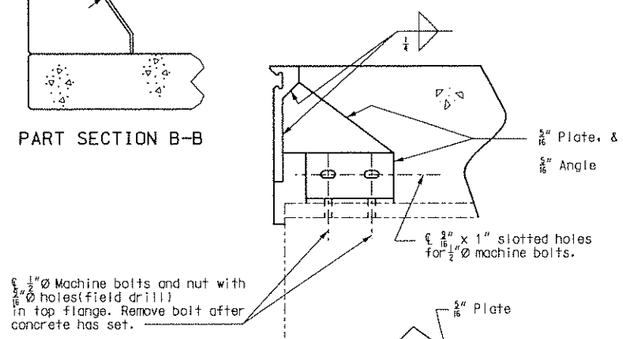


Note: Strip seal gland not shown for clarity.

PART ELEVATION OF BARRIER CURB

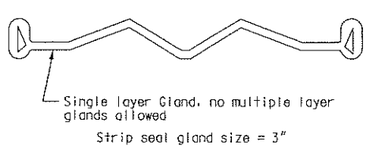


PART SECTION B-B

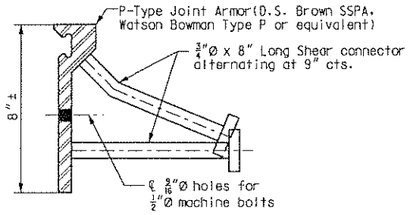


DETAIL "B"

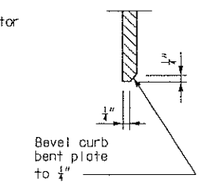
DETAILS OF STRIP SEALS AT END BENTS



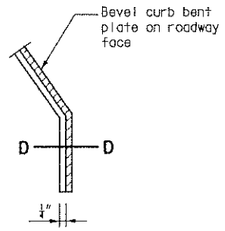
DETAIL OF GLAND



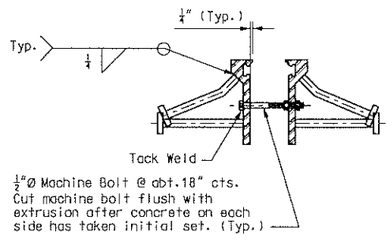
DETAIL OF JOINT ARMOR



SECTION D-D



PART ELEVATION AT END OF BEVELED CURB BENT PLATE



DETAIL "A"

Compiled by Regin Belisle
Checked by Dallas Russell

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

HICKORY COUNTY A08941

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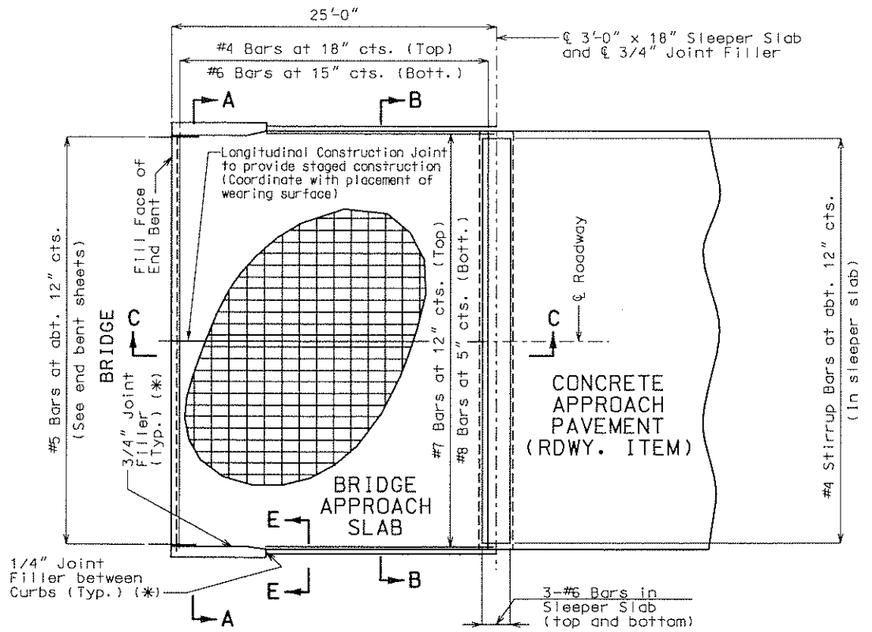
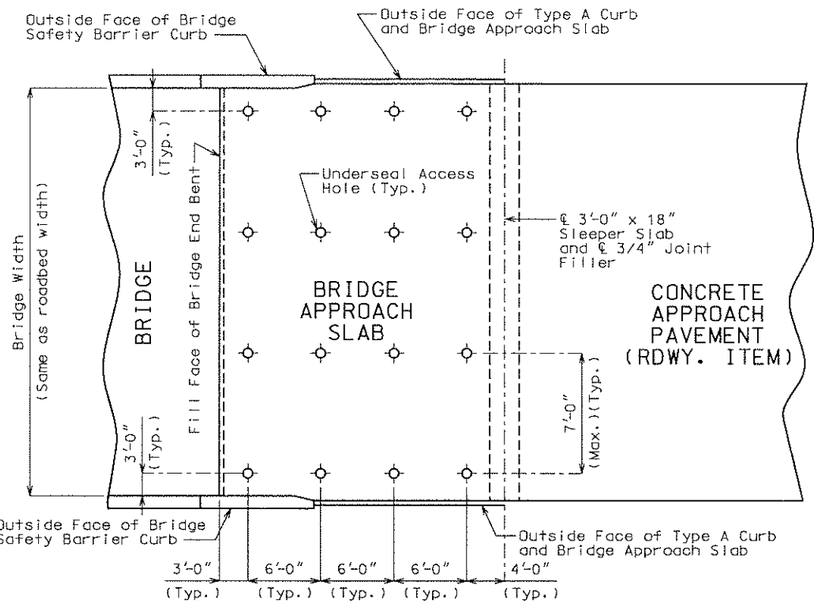
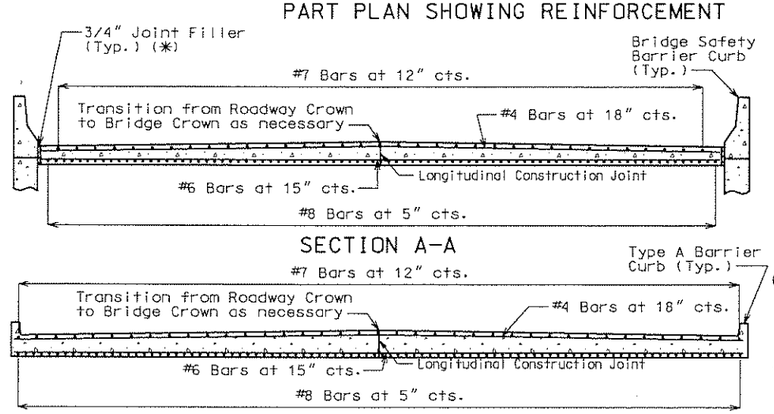


PART PLAN SHOWING REINFORCEMENT



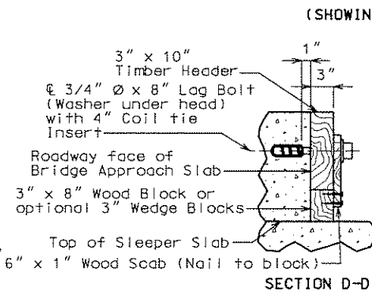
PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



SECTION A-A

SECTION B-B

Note: With the approval of the Engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.

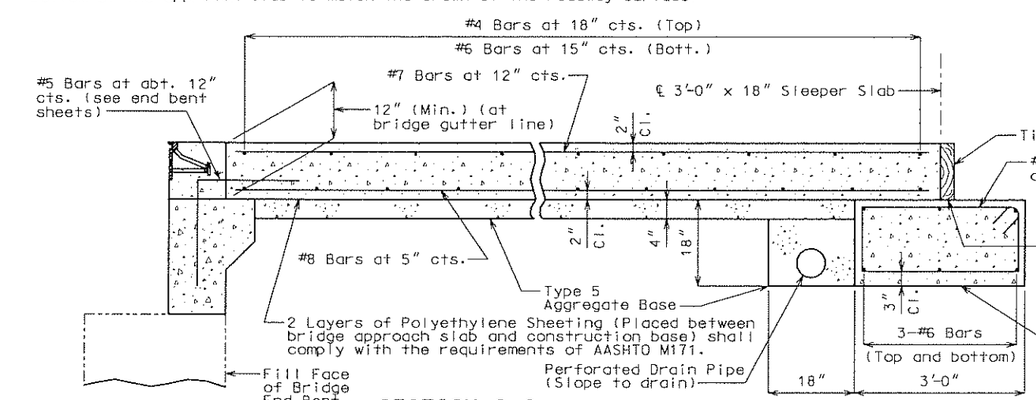


SECTION D-D PART ELEVATION

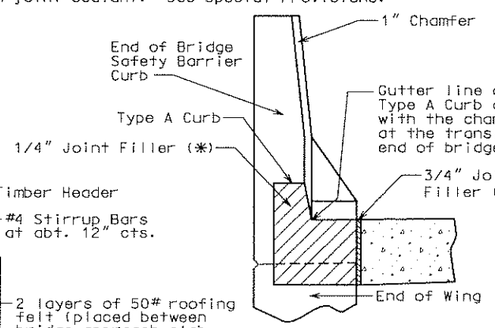
Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER

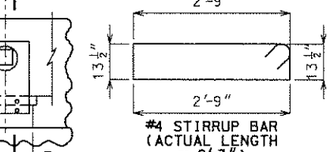
(*) Use 3/4" Joint Filler between vertical face of Approach Slab and roadway face of Safety Barrier Curb/Wing, except at the end of Safety Barrier Curb/Wing face use 1/4" Joint Filler. Seal joint with joint sealant. See Special Provisions.



SECTION C-C



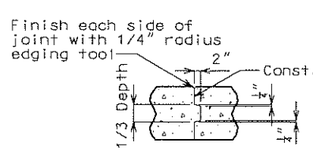
SECTION E-E
(BETWEEN CURBS)



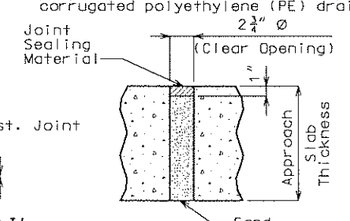
#4 STIRRUP BAR
(ACTUAL LENGTH = 8'-3")

TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

Note:
Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



CONST. JOINT DETAIL
(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Section 503 (f'c = 4,000 psi) of the Missouri Standard Specifications.

All joint filler shall meet the requirements of Section 1057.2.5 of the Missouri Standard Specifications, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 60,000 psi.

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 26" respectively.

Mechanical bar splices will be permitted and shall develop at least 125 percent of the specified yield strength of the reinforcing bars being spliced. The contractor shall furnish the Engineer the manufacturer's certification that this requirement is met and is required to follow the manufacturer's recommendation for installation.

Mechanical bar splices shall be epoxy coated in accordance with Section 710 of the Missouri Standard Specifications.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures. Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with center line Route 64.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type A Curb, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, shall be considered as completely covered under the contract unit price for Bridge Approach Slab (Bridge), per square yard.

For Concrete Approach Pavement details, see roadway plans.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

When a lap splice is required for the use of a mechanical bar splice, the minimum lap length shall be 40" for transverse approach slab bar splices.

At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired according to Section 710.3.3 of the Missouri Standard Specifications.

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

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Compiled by Regin Belisle
Checked by Dallas Russell

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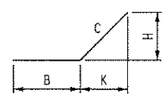
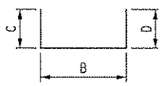
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 1																									
6	6H	101	Backwall	E	20		X			27′	-2″													27′	-2″	27′	-2″	245
8	6H	102	Backwall	E	20		X			2′	-3″													2′	-3″	2′	-3″	27
16	6H	103	Backwall	E	19		X			6′	-4″	18″												7′	-10″	7′	-9″	186
1	4H	104	Backwall	E	20		X			24′	-6″													24′	-6″	24′	-6″	16
14	6H	105	Wingwall	E	15		X			14″		4′	-4″	14″		9 1/8″		9 1/8″		9 1/8″		9 1/8″		6′	-8″	6′	-8″	140
10	6H	106	Wingwall	E	20		X			13′	-5″													13′	-5″	13′	-5″	202
20	6H	107	Wingwall		20		X	V	4	7′	-10″													7′	-10″	7′	-10″	313
			Increment = 15 1/2″							13′	-0″													13′	-0″	13′	-0″	
12	4H	108	Wingwall		20		X			2′	-4″													2′	-4″	2′	-4″	19
20	6H	109	Wingwall		20		X	V	4	3′	-4″													3′	-4″	3′	-4″	189
			Increment = 17 3/4″							9′	-3″													9′	-3″	9′	-3″	
20	6H	110	Backwall		20		X			2′	-3″													2′	-3″	2′	-3″	68
25	4U	101	Backwall	E	5		X			6″		14″		14″										2′	-10″	2′	-8″	45
25	5U	102	Backwall	E	19		X			2′	-0″	2′	-0″											4′	-0″	3′	-11″	102
36	4V	101	Backwall	E	20		X			2′	-1″													2′	-1″	2′	-1″	50
18	4V	102	Backwall	E	20		X			4′	-10″													4′	-10″	4′	-10″	58
4	6V	103	Wingwall		15		X	V	4	14″		14′	-3″	19″		7 3/4″		17 3/8″		12 3/4″		5 3/4″		17′	-0″	17′	-0″	102
108	6V	104	Wingwall		20		X			16″														16″		16″		676
			Increment = 2 5/8″							7′	-0″													7′	-0″	7′	-0″	
12	6V	105	Wingwall		20		X			7′	-2″													7′	-2″	7′	-2″	129
4	4V	106	Wingwall		20		X			3′	-8″													3′	-8″	3′	-8″	10
4	4V	107	Wingwall		5		X			3′	-10″	2′	-10″	2′	-10″									9′	-6″	9′	-4″	25
8	6V	108	Wingwall		20		X			4′	-10″													4′	-10″	4′	-10″	58
			END BENT 20																									
6	6H	2001	Backwall	E	20		X			27′	-2″													27′	-2″	27′	-2″	245
8	6H	2002	Backwall	E	20		X			2′	-3″													2′	-3″	2′	-3″	27
16	6H	2003	Backwall	E	19		X			6′	-4″	18″												7′	-10″	7′	-9″	186
1	4H	2004	Backwall	E	20		X			24′	-6″													24′	-6″	24′	-6″	16
14	6H	2005	Wingwall	E	15		X			14″		4′	-4″	14″		9 1/8″		9 1/8″		9 1/8″		9 1/8″		6′	-8″	6′	-8″	140
8	6H	2006	Wingwall	E	20		X			13′	-5″													13′	-5″	13′	-5″	161
20	6H	2007	Wingwall		20		X	V	4	7′	-10″													7′	-10″	7′	-10″	313
			Increment = 15 1/2″							13′	-0″													13′	-0″	13′	-0″	
12	4H	2008	Wingwall		20		X			2′	-4″													2′	-4″	2′	-4″	19
20	6H	2009	Wingwall		20		X	V	4	3′	-4″													3′	-4″	3′	-4″	189
			Increment = 17 3/4″							9′	-3″													9′	-3″	9′	-3″	
20	6H	2010	Backwall		20		X			2′	-3″													2′	-3″	2′	-3″	68
25	4U	2001	Backwall	E	5		X			6″		14″		14″										2′	-10″	2′	-8″	45
25	5U	2002	Backwall	E	19		X			2′	-0″	2′	-0″											4′	-0″	3′	-11″	102
36	4V	2001	Backwall	E	20		X			2′	-1″													2′	-1″	2′	-1″	50
16	4V	2002	Backwall	E	20		X			4′	-10″													4′	-10″	4′	-10″	52
4	6V	2003	Wingwall		15		X	V	4	14″		14′	-3″	19″		7 3/4″		17 3/8″		12 3/4″		5 3/4″		17′	-0″	17′	-0″	102
108	6V	2004	Wingwall		20		X			16″														16″		16″		676
			Increment = 2 5/8″							7′	-0″													7′	-0″	7′	-0″	
12	6V	2005	Wingwall		20		X			7′	-2″													7′	-2″	7′	-2″	129
4	4V	2006	Wingwall		20		X			3′	-8″													3′	-8″	3′	-8″	10
4	4V	2007	Wingwall		5		X			3′	-10″	2′	-10″	2′	-10″									9′	-6″	9′	-4″	25
8	6V	2008	Wingwall		20		X			4′	-10″													4′	-10″	4′	-10″	58

✱ Two additional #4-V102 and #6-H106 are included in the bar list for testing.

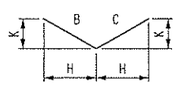


SHAPE 2

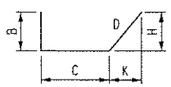


SHAPE 5

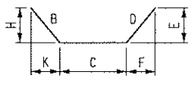
SHAPE 7



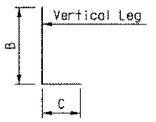
SHAPE 8



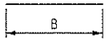
SHAPE 14



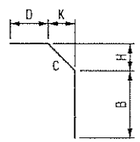
SHAPE 15



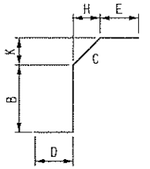
SHAPE 19



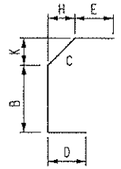
SHAPE 20



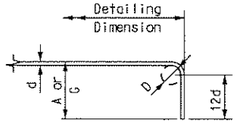
SHAPE 25



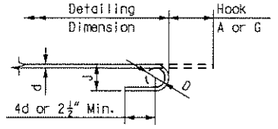
SHAPE 27



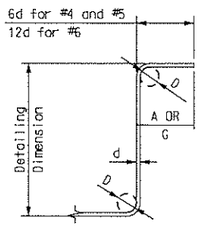
SHAPE 40



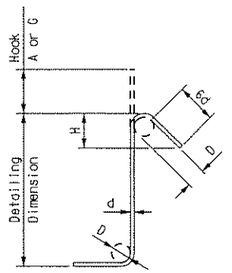
90°



180°



90° STIRRUP



135° STIRRUP

END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS HOOK A OR G	180° HOOKS J	90° HOOKS HOOK A OR G
#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″

STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK 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.

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Notes:
All standard hooks and bends other than 180 degree are to be bent with the 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.
V = Bar dimensions vary in equal increments between dimesions shown on this line and the following line.
No. Each = 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.
Payweights are based on actual lengths.
Reinforcing Steel (Grade 60) fy = 60,000 psi.

Compiled by Regin Belisle
Checked by Dallas Russell

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

BILL OF REINFORCING STEEL

HICKORY COUNTY A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2)	B34

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
PANEL A & SAFETY BARRIER CURB (91 Req'd.)																			
19	5	SA01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6	SA02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5	SA03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5	SA04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4	SA05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4	SA06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4	SA07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5	SA08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SA09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SA10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SA11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SA12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
16	4	SA13	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PA01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5	PA02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5	PA03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5	PA04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5	PA05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL B & SAFETY BARRIER CURB (45 Req'd.)																			
19	5	SB01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6	SB02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5	SB03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5	SB04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4	SB05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4	SB06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4	SB07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5	SB08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SB09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SB10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SB11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SB12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
16	4	SB13	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PB01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5	PB02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5	PB03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5	PB04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5	PB05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL C & SAFETY BARRIER CURB (18 Req'd.)																			
14	5	SC01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	397
16	6	SC02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	653
32	5	SC03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	170
28	5	SC04	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	282
38	4	SC05	Slab Panel	E	20					9'-8"							9'-8"	9'-8"	245
64	4	SC06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
64	4	SC07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	114
4	5	SC08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SC09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SC10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SC11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SC12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
12	5	SC13	Slab Panel	E	20					4'-4"							4'-4"	4'-4"	54
18	5	SC14	Slab Panel	E	20					8'-2"							8'-2"	8'-2"	153
16	4	SC15	Slab Panel	E	20					5'-3"							5'-3"	5'-3"	56
16	4	SC16	Slab Panel	E	20					3'-9"							3'-9"	3'-9"	40
32	4	SC17	Slab Panel	E	20					2'-0"							2'-0"	2'-0"	43
16	4	SC18	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PC01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5	PC02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5	PC03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5	PC04	Barrier	E	19	S				17"	6"						23"	22"	42

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
PANEL C & SAFETY BARRIER CURB (CONT.)																			
22	5	PC05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL D & SAFETY BARRIER CURB (4 Req'd.)																			
19	5	SD01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6	SD02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5	SD03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5	SD04	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	294
38	4	SD05	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	256
64	4	SD06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4	SD07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5	SD08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SD09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SD10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SD11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SD12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
16	4	SD13	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PD01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5	PD02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5	PD03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5	PD04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5	PD05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL E & SAFETY BARRIER CURB (4 Req'd.)																			
19	5	SE01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	538
15	6	SE02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	612
30	5	SE03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	159
28	5	SE04	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	294
38	4	SE05	Slab Panel	E	20					10'-1"							10'-1"	10'-1"	256
64	4	SE06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
96	4	SE07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	171
4	5	SE08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SE09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SE10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SE11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SE12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
16	4	SE13	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PE01	Barrier	E	20					9'-8"							9'-8"	9'-8"	141
22	5	PE02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	61
22	5	PE03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	65
22	5	PE04	Barrier	E	19	S				17"	6"						23"	22"	42
22	5	PE05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	67
PANEL F & SAFETY BARRIER CURB (2 Req'd.)																			
16	5	SF01	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	453
12	6	SF02	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	490
24	5	SF03	Slab Panel	E	20					5'-1"							5'-1"	5'-1"	127
28	5	SF04	Slab Panel	E	20					10'-3"							10'-3"	10'-3"	299
38	4	SF05	Slab Panel	E	20					10'-3"							10'-3"	10'-3"	260
64	4	SF06	Slab Panel	E	5					5 1/2"	14"	14"					2'-10"	2'-7"	110
80	4	SF07	Slab Panel	E	15					12"	8"	12"	8 1/2"	8 1/2"	8 1/2"	8 1/2"	2'-8"	2'-8"	143
4	5	SF08	Slab Panel	E	5					2'-0"	18"	18"					5'-0"	4'-9"	20
4	5	SF09	Slab Panel	E	5					3'-2"	18"	18"					6'-2"	5'-11"	25
6	5	SF10	Slab Panel	E	5					2'-2"	18"	18"					5'-2"	4'-11"	31
4	5	SF11	Slab Panel	E	5					3'-10"	18"	18"					6'-10"	6'-7"	27
4	7	SF12	Slab Panel	E	20					27'-2"							27'-2"	27'-2"	222
16	4	SF18	Slab Panel	E	5					4 1 /2"	8"	8"					1'-9"	1'-7"	17
14	5	PF01	Barrier	E	20					10'-3"							10'-3"	10'-3"	150
18	5	PF02	Barrier	E	19	S				2'-6"	3 1/2"						2'-10"	2'-8"	50
18	5	PF03	Barrier	E	2					3 1/2"	2'-6"				2'-5 7/8"	3"	2'-10"	2'-10"	53
18	5	PF04	Barrier	E	19	S				17"	6"						23"	22"	34
18	5	PF05	Barrier	E	27	S				8 1/2"	11"	12"	6"		6 3/8"	9 1/4"	3'-2"	2'-11"	55

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES. TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT. EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Compiled by Regin Bellsie
Checked by Dallas Russell

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

BILL OF REINFORCING STEEL

HICKORY COUNTY

A08941

State	Proj. No.	Sheet No.
MO	FAS-S935(2) ✓	B35

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
CIP SLAB & SAFETY BARRIER CURB AT END BENT (2 REQUIRED)																												
3	5	SCP01	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		85
4	6	SCP02	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		163
4	5	SCP03	Closure Pour	E	20					5′-1″														5′-1″		5′-1″		21
2	5	SCP04	Closure Pour	E	20					3′-5″														3′-5″		3′-5″		7
3	5	SCP05	Closure Pour	E	20					6′-4″														6′-4″		6′-4″		20
6	5	RCP02	Barrier	E	19	S				2′-6″		3 1/2″												2′-10″		2′-8″		17
6	5	RCP03	Barrier	E	2					3 1/2″		2′-6″								2′-5 7/8″		3″		2′-10″		2′-10″		18
6	5	RCP04	Barrier	E	19	S				17″		6″												23″		22″		11
6	5	RCP05	Barrier	E	27	S				8 1/2″		11″		12″		6″				6 3/8″		9 1/4″		3′-2″		2′-11″		18
CIP SLAB & SAFETY BARRIER CURB AT HINGE (PANEL D SIDE) (4 REQUIRED)																												
5	5	SCP01	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		142
5	6	SCP02	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		204
8	5	SCP03	Closure Pour	E	20					5′-1″														5′-1″		5′-1″		42
28	5	SCP06	Closure Pour	E	20					3′-1″														3′-1″		3′-1″		90
38	4	SCP07	Closure Pour	E	20					3′-1″														3′-1″		3′-1″		78
14	5	RCP01	Barrier	E	20					3′-6″														3′-6″		3′-6″		51
10	5	RCP02	Barrier	E	19	S				2′-6″		3 1/2″												2′-10″		2′-8″		28
10	5	RCP03	Barrier	E	2					3 1/2″		2′-6″								2′-5 7/8″		3″		2′-10″		2′-10″		30
10	5	RCP04	Barrier	E	19	S				17″		6″												23″		22″		19
10	5	RCP05	Barrier	E	27	S				8 1/2″		11″		12″		6″				6 3/8″		9 1/4″		3′-2″		2′-11″		30
CIP SLAB & SAFETY BARRIER CURB AT HINGE (PANEL E SIDE) (4 REQUIRED)																												
9	5	SCP01	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		255
9	6	SCP02	Closure Pour	E	20					27′-2″														27′-2″		27′-2″		367
16	5	SCP03	Closure Pour	E	20					5′-1″														5′-1″		5′-1″		85
30	5	SCP08	Closure Pour	E	20					5′-10″														5′-10″		5′-10″		170
38	4	SCP09	Closure Pour	E	20					5′-10″														5′-10″		5′-10″		148
14	5	RCP02	Barrier	E	19	S				2′-6″		3 1/2″												2′-10″		2′-8″		39
14	5	RCP03	Barrier	E	2					3 1/2″		2′-6″								2′-5 7/8″		3″		2′-10″		2′-10″		41
14	5	RCP04	Barrier	E	19	S				17″		6″												23″		22″		27
14	5	RCP05	Barrier	E	27	S				8 1/2″		11″		12″		6″				6 3/8″		9 1/4″		3′-2″		2′-11″		43
14	5	RCP06	Barrier	E	20					5′-8″														5′-8″		5′-8″		83
CIP SAFETY BARRIER AT END BENT 1 (1 REQUIRED)																												
60	5	K101	Barrier	E	19	S				3′-5″		5 1/8″												3′-11″		3′-9″		235
60	5	K102	Barrier	E	14	S				5 1/8″		23 1/8″		18″						2″		17 7/8″		3′-11″		3′-9″		235
38	5	K103	Barrier	E	40	S				5 1/8″		12″		3′-6 3/4″		2′-8 7/8″				9 7/8″		6 7/8″		7′-9″		7′-6″		297
22	5	K104	Barrier	E	7					3′-6 3/4″		6″												7′-4″		7′-4″		168
2	5	K105	Barrier	E	25	S				2′-8 7/8″		6 3/4″		4 3/8″						5 1/2″		4″		3′-8″		3′-7″		7
2	5	K106	Barrier	E	25	S				2′-8 7/8″		7 7/8″		4 3/8″						6 1/2″		4 1/2″		3′-10″		3′-8″		8
2	5	K107	Barrier	E	25	S				2′-8 7/8″		9 5/8″		4 3/8″						7 7/8″		5 1/2″		3′-11″		3′-10″		8
2	5	K108	Barrier	E	25	S				2′-8 7/8″		11 1/4″		4 3/8″						9 1/4″		6 1/2″		4′-1″		3′-11″		8
30	5	K109	Barrier	E	20					5′-7″														5′-7″		5′-7″		175
24	4	K110	Barrier	E	20					12′-1″														12′-1″		12′-1″		194
2	5	K111	Barrier	E	8					2′-2 1/8″		2′-2 1/8″								2′-2″		2 3/8″		4′-5″		4′-5″		9
CIP SAFETY BARRIER AT END BENT 20 (1 REQUIRED)																												
60	5	K2001	Barrier	E	19	S				3′-5″		5 1/8″												3′-11″		3′-9″		235
60	5	K2002	Barrier	E	14	S				5 1/8″		23 1/8″		18″						2″		17 7/8″		3′-11″		3′-9″		235
38	5	K2003	Barrier	E	40	S				5 1/8″		12″		3′-6 3/4″		2′-8 7/8″				9 7/8″		6 7/8″		7′-9″		7′-6″		297
22	5	K2004	Barrier	E	7					3′-6 3/4″		6″												7′-4″		7′-4″		168
2	5	K2005	Barrier	E	25	S				2′-8 7/8″		6 3/4″		4 3/8″						5 1/2″		4″		3′-8″		3′-7″		7
2	5	K2006	Barrier	E	25	S				2′-8 7/8″		7 7/8″		4 3/8″						6 1/2″		4 1/2″		3′-10″		3′-8″		8
2	5	K2007	Barrier	E	25	S				2′-8 7/8″		9 5/8″		4 3/8″						7 7/8″		5 1/2″		3′-11″		3′-10″		8
2	5	K2008	Barrier	E	25	S				2′-8 7/8″		11 1/4″		4 3/8″						9 1/4″		6 1/2″		4′-1″		3′-11″		8
28	5	K2009	Barrier	E	20					5′-7″														5′-7″		5′-7″		163
24	4	K2010	Barrier	E	20					12′-1″														12′-1″		12′-1″		194
2	5	K2011	Barrier	E	8					2′-2 1/8″		2′-2 1/8″								2′-2″		2 3/8″		4′-5″		4′-5″		9

* Two additional #5-K109 are included in the bar list for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
TOTALS																												
	4																											108
	4			E																								92.214
	5																											0
	5			E																								249.604
	6																											3.070
	6			E																								105,037
	7																											0
	7			E																								36408
END BENTS WITH SAFETY BARRIER																												
	4																											108
	4			E																								332
	5																											0
	5			E																								204
	6																											3.070
	6			E																								1,565
	7																											0
	7			E																								0
PRECAST SLAB PANEL WITH SAFETY BARRIER																												
	4																											0
	4			E																								92,590
	5																											0
	5			E																								240.326
	6																											0
	6			E																								100.862
	7																											0
	7			E																								36.408
CLOSURE POUR WITH SAFETY BARRIER																												
	4																											0
	4			E																								1.292
	5																											0
	5			E																								9.074
	6																											0
	6			E																								2.610
	7																											0
	7			E																								0

FINAL PLANS

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Compiled by Regin Bellisle
Checked by Dallas Russell

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

Sheet No. 35 of 35

BILL OF REINFORCING STEEL

HICKORY COUNTY A08941