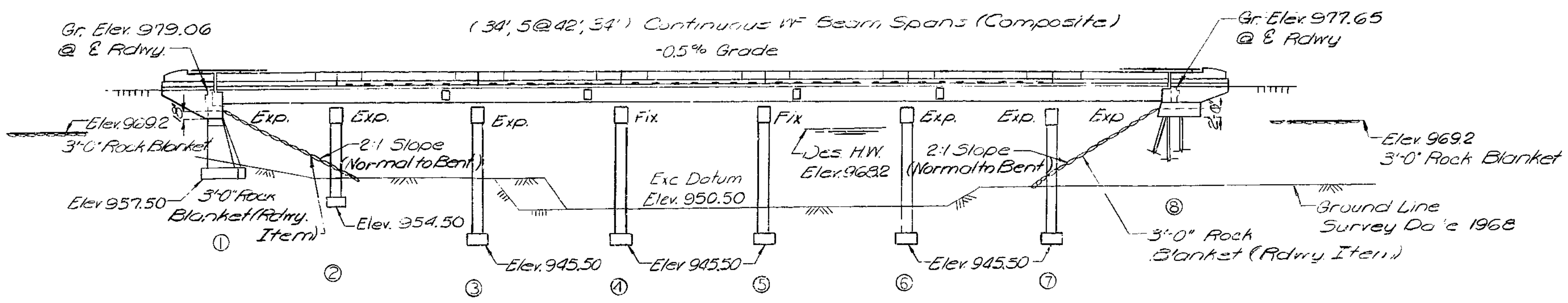
MISSOURI STATE HIGHWAY DEPARTMENT

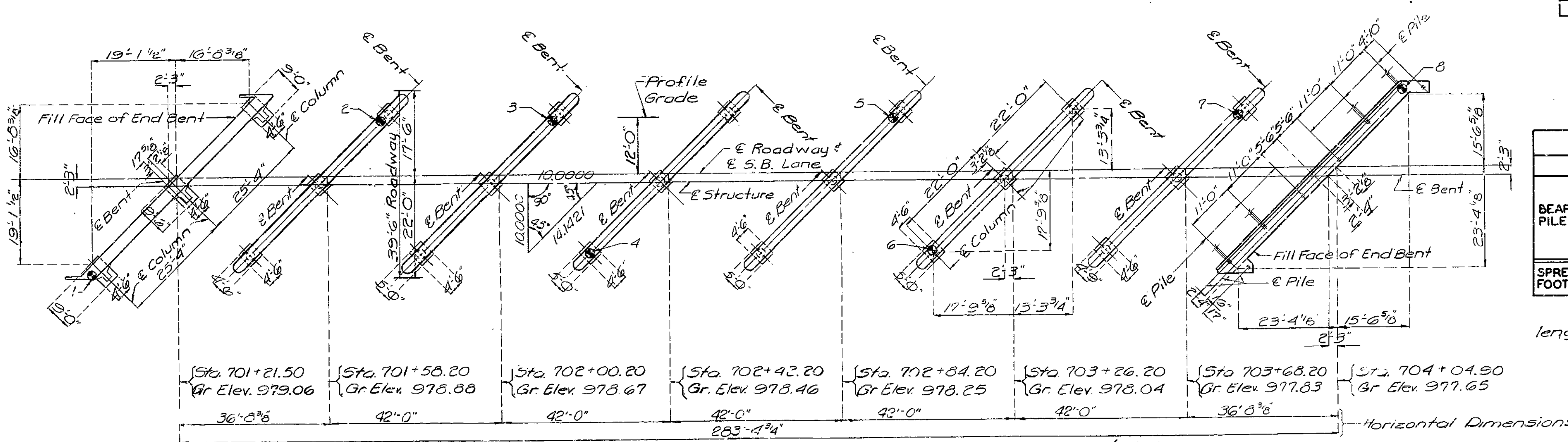
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO.		19	37	



ELEVATION

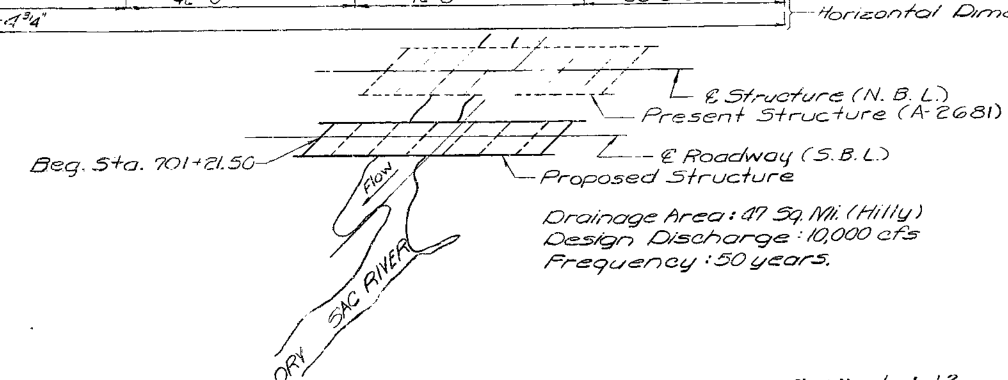
Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bent No. 8 before piles are driven.

Note: All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
Payweight for fabricated steel will be based on welded field splices regardless of type used.



PLAN

Note: ◉ Indicates location of boring.
For boring data see sheet 4 of 12.



Drainage Area: 47 Sq. Mi. (Hilly)
Design Discharge: 10,000 cfs
Frequency: 50 years.

LOCATION SKETCH

GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1969

Design Loading:
HS20-44 15#/sq. ft. Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress: Case I

Design Unit Stresses:
Class B Concrete (substructure) fc = 1,200 psi.
Class B1 Concrete (superstructure) fc = 1,600 psi.
Reinforcing Steel fs = 20,000 psi.
Structural Carbon Steel fs = 20,000 psi.
Steel Piles fb = 9,000 psi.

Fabricated Steel:
Field connections, High Strength Bolts ¾"ϕ, holes 13/16"ϕ except as noted

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1½" unless otherwise noted.

Paint:
Shop, none; Field by contractor in accordance with Std. Specs. 712.12

ESTIMATED QUANTITIES				
ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	275		275
Class 2 Excavation	Cu. Yd.	164		164
Structural Steel Pile (HP 10×42)	Lin. Ft.	208		208
Class B Concrete	Cu. Yd.	298.6		298.6
Class B1 Concrete	Cu. Yd.		332.7	332.7
Reinforcing Steel	Lb.	52430	111,790	164,220
Fabricated Structural Carbon Steel	Lb.		164800	164800
Painting	Ton		81.7	81.7
Bridge Rail (one tube)	Lin. Ft.		586	586
Stl. Reinf. Elastomeric Joint Seal	Lin. Ft.		112	112

PILE & FOOTING DATA									
BENT NO.		1	2	3	4	5	6	7	8
BEARING PILE	Pile Type and Size								HP10×42
	Number								8
	Approximate Length Ft.								26
	Design Bearing Tons								35
	Hammer Energy req'd. Ft. Lbs								8600
SPREAD FOOTINGS	Foundation Material	Rock	Rock	Rock	Rock	Rock	Rock	Rock	—
	Design Bearing Tons/Sq. Ft.	4	7	7	7	7	7	7	—

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

B.M. - Elev. 974.90 □ on N.E. Cor. of East Railing Dry Sac River Bridge 206' Rt. Sta. 699+39

BRIDGE: S.B.L. ROUTE 13 OVER DRY SAC RIVER

STATE ROAD FROM CEDAR VISTA S. TO GREENE CO. LINE

ABOUT 2.5 MILES S. OF BRIGHTON

PROJECT NO. RF-13-2(8) (RTE. 13) **STA.** 701 + 21.50

POLK **COUNTY**

SUBMITTED BY W. D. Carney DATE 10-20-71
BRIDGE ENGINEER

APPROVED BY Robert N. Hunter DATE 10-20-71
CHIEF ENGINEER

STD. 706.30A

A-3029

DESIGNED April 1971 **BY** Cook & Tannous
DETAILED March 1971 **BY** Gilmore
CHECKED March 1971 **BY** Weimholt, Weaver

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

Sheet No. 1 of 12.

468

469

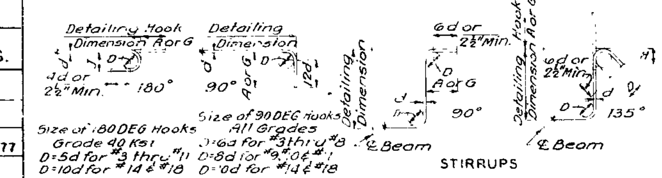
MISSOURI STATE HIGHWAY DEPARTMENT

38

NO. REQD.	SIZE MARK	LOCATION	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EA.	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 NO. 1															
30	6O2	FOOTING	20		X			3 0.000							3 0	3 0	135
7	6F1	WING	15		X			12.000	3 2.000	12.000	11.125	4.500	11.125	4.500	5 2	5 0	53
6	6F2	WING	15		X			12.000	7 1.000	12.000	4.500	11.125	4.500	11.125	9 1	9 1	82
8	6F3	COLUMN	23		X			18.375	5 2.500	12.750	9.000	9.000	13.000	13.000	7 10	7 9	93
16	6F4	COLUMN	15		X			12.000	6 9.000				8.500	8.500	7 9	7 9	186
8	6H16	WING	20		X	V	2	2 7.000							2 7	2 7	
		INCR. = 15.000 IN.						6 4.000							6 4	6 4	56
4	6H17	WING	20		X			11 9.000							11 9	11 9	71
6	6H18	WING	20		X	V	2	7 5.500							7 6	7 6	
		INCR. = 22.000 IN.						11 2.000							11 2	11 2	84
8	6H19	WING	20		X	V	2	2 8.000							2 8	2 8	
		INCR. = 15.375 IN.						6 6.000							6 6	6 6	55
6	6H20	WING	20		X	V	2	7 6.500							7 7	7 7	
		INCR. = 22.500 IN.						11 4.000							11 4	11 4	85
2	6H21	BEAM	20		X			58 4.000							58 4	58 4	175
12	10H22	BEAM	18		X			58 4.000							60 6	60 6	3124
4	10H24	BEAM	20		X			18 9.000							18 9	18 9	323
8	4H25	BACKWALL	20		X			30 0.000							30 0	30 0	160
2	6H26	BACKWALL	20		X			59 0.000							59 0	59 0	177
2	6T2	APRON	19		X			4 7.000	4 10.000						9 5	9 3	28
2	6T3	APRON	19		X			4 6.625	3 0.875						7 8	7 6	23
2	6T6	WING	25		X			22.000	11 6.500	22.000			5 5.625	10 2.000	15 3	15 2	46
2	6T7	WING	25		X			22.000	11 5.875	22.000			5 4.000	10 2.125	15 2	15 1	45
12	4U2	BEAM	10	S	X				6.000	2 10.000					3 10	3 8	29
3	4U4	APRON	10		X				4 4.000	6.000					9 2	9 0	18
3	4U6	APRON	10		X				2 7.000	6.000					5 8	5 6	11
57	4U13	BEAM	13	S	X			2 10.000	2 9.000	2 10.000	2 9.000				11 11	11 8	444
60	3U14	COLUMN	10		X	V	6		2 1.500	2 3.000					6 6	6 4	
		INCR. = 4.000 IN.							3 11.500	2 3.000					10 2	10 0	185
56	5U15	BACKWALL	10	S	X				2 6.000	9.000					5 9	5 7	326
4	4V12	APRON	20		X			4 2.000							4 2	4 [illegible]	11
122	6V15	BACKWALL	20		X			5 10.000							5 10	5 10	1069
20	4V16	WING	20		X	V	2	2 2.500							2 3	2 3	
		INCR. = 6.500 IN.						7 0.500							7 1	7 1	62
8	4V17	WING	20		X			7 5.000							7 5	7 5	40
8	6V18	COLUMN	20		X			15 1.000							15 1	15 1	181
20	4V19	WING	20		X	V	2	2 1.000							2 1	2 1	
		INCR. = 6.250 IN.						6 8.500							6 9	6 9	59
18	6V20	COLUMN	20		X			14 4.000							14 4	14 4	388
4	6V21	COLUMN	20		X			15 4.000							15 4	15 4	92
12	4V22	COLUMN	20		X			11 8.000							11 8	11 8	94
10	2W1	A. B. WELLS	22		X			12.000	9.125						19 9	19 9	33

NO. REQD.	SIZE MARK	LOCATION	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EA.	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.
		INT. BENT NO 2 & 7															
54	8D1	FOOTING	20		X			4 0.000							4 0	4 0	577
8	11H1	BEAM	18		X			52 4.000							54 8	54 8	2324
4	6H2	BEAM	20		X			52 4.000							52 4	52 4	314
14	11H3	BEAM	20		X			52 4.000							52 4	52 4	3893
8	11H4	BEAM	17		X			12 10.000							14 0	14 0	595
4	11H5	BEAM	20		X			15 6.000							15 6	15 6	330
16	7H6	BEAM	7		X			3 10.000	2 6.250						9 0	9 0	294
45	3P1	COLUMN BENT NO. 2	16		X			2 3.000							7 9	7 9	13[illegible]
69	3P1	COLUMN BENT NO. 7	16		X			2 3.000							7 9	7 9	2[illegible]
118	5U7	BEAM	13	S	X			2 7.000	2 3.000	2 7.000	2 3.000				10 8	10 4	1272
4	5U8	BEAM	13	S	X			2 2.500	2 3.000	2 2.500	2 3.000				9 11	9 7	40
16	4U9	BEAM	10	S	X				6.000	2 7.000					3 7	3 5	37
27	8V1	COLUMN BENT NO. 2	20		X			16 11.000							16 11	16 11	1220
27	8V2	COLUMN BENT NO. 7	20		X			24 10.000							24 10	24 10	1790
20	2W1	A. B. WELLS	22		X			12.000	9.125						19 9	19 9	66
		INT. BENT NO 3 & 4															
54	8D1	FOOTING	20		X			4 0.000							4 0	4 0	577
8	11H1	BEAM	18		X			52 4.000							54 8	54 8	2324
4	6H2	BEAM	20		X			52 4.000							52 4	52 4	314
14	11H3	BEAM	20		X			52 4.000							52 4	52 4	[illegible]892
8	11H4	BEAM	17		X			12 10.000							14 0	14 0	595
4	11H5	BEAM	20		X			15 6.000							15 6	15 6	330
16	7H7	BEAM	7		X			3 9.000	2 4.250						8 9	8 9	286
150	3P1	COLUMN	16		X			2 3.000							7 9	7 9	437
118	5U10	BEAM	13	S	X			2 5.000	2 3.000	2 5.000	2 3.000				10 4	10 0	1231
4	5U11	BEAM	13	S	X			2 1.500	2 3.000	2 1.500	2 3.000				9 9	9 5	39
16	4U12	BEAM	10	S	X				6.000	2 5.000					3 5	3 3	35
54	8V3	COLUMN	20		X			26 4.000							26 4	26 4	3797
20	2W1	A. B. WELLS	22		X			12.000	9.125						19 9	19 9	66

STANDARD HOOKS   STIRRUP HOOKS



Size of 180 DEG Hooks Grade 40 Ksi D=5d for #3 thru #11 D=10d for #14 & #18

Size of 90 DEG Hooks All Grades D=6d for #3 thru #8 D=8d for #9, #10 & #11 D=10d for #14 & #18

END HOOK DIMENSIONS			
BAR SIZE	180° HOOKS GRADE 40		90° HOOKS ALL GRADES
	A or G	J	A or G
#3	5"	2¾"	6"
#4	6"	3½"	8"
#5	7"	4½"	10"
#6	8"	5¼"	12"
#7	9"	6¼"	14"
#8	10"	7"	16"
#9	12"	8"	19"
#10	13"	9"	22"
#11	14"	10"	2'-0"
[illegible]	2'-[illegible]	20½"	2'-7"
#18	2'-11"	2'-3"	3'-5"

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 Ksi				
BAR SIZE	D (in.)	90° HOOK HOOK A or G	135° HOOK HOOK A or G	APPROX. H
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	3"	6½"	6½"	4½"

Note: Unless otherwise noted diameter D is the same for all bends and hooks on a bar.

Note: All Standard Hooks and Bends other than 180 DEG. to be bent with same procedure as for 90 DEG. Standard Hooks.

Note: Hooks and bends shall be in accordance with the procedures as shown on this sheet.

Nominal Lengths are based on out to out dimensions shown in bending diagrams and are listed for Fabricators use.

Payweights are based on Actual Lengths.

S~ stirrup.

X~ bar is included in substructure quantities.

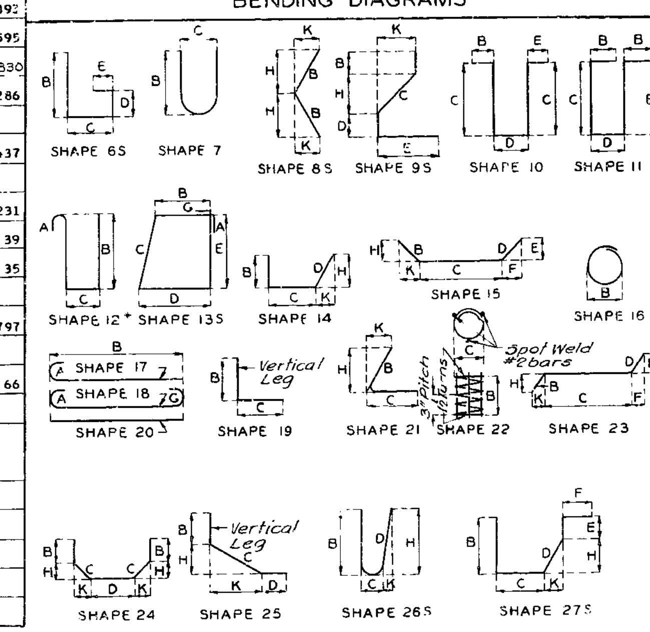
Length ~ Total lengths are measured along centerline bar to the nearest inch.

V~ bar dimensions vary in equal increments between dimensions shown on this line and the following line.

No. Ea. ~ Number of bars of each length.

* All hooks and bends for shape No. 12 (only) are based on D = 5d.

BENDING DIAGRAMS



REVISED JUNE 1970

STD. 90.7 JULY 1969

DETAILED APR. 1971 BY BATES
CHECKED APR 1971 BY Weinholt

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

Sheet No. 2 of 12

POLK COUNTY

A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

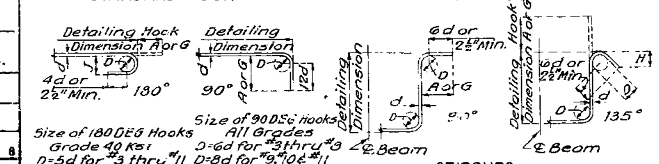
FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	39	

NO. REQD.	MARK NO. SIZE MARK	LOCATION	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EA.	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.
		INT. BENT NO 5 & 6 ✓															
54	8O1	FOOTING	20		X			4 0.000							4 0	4 0	577
8	11H1	BEAM	18		X			52 4.000							54 8	54 8	2324
4	6H2	BEAM	20		X			52 4.000							52 4	52 4	314
14	11H3	BEAM	20		X			52 4.000							52 4	52 4	3893
8	11H4	BEAM	17		X			12 10.000							14 0	14 0	595
4	11H5	BEAM	20		X			15 6.000							15 6	15 6	330
16	7H7	BEAM	7		X			3 9.000	2 4.250						8 9	8 9	286
144	3P1	COLUMN	16		X			2 3.000							7 9	7 9	420
118	5U10	BEAM	13	S	X			2 5.000	2 3.000	2 5.000	2 3.000				10 4	10 0	1231
4	5U11	BEAM	13	S	X			2 1.500	2 3.000	2 1.500	2 3.000				9 9	9 5	39
16	4U12	BEAM	10	S	X				6.000	2 5.000					3 5	3 3	35
54	8V4	COLUMN	20		X			25 11.000							25 11	25 11	3737
20	2W1	A. B. WELLS	22		X			12.000	9.125						19 9	19 9	66
		END BENT NO. 8 ✓															
3	6F1	WING	15		X			12.000	3 2.000	12.000	11.125	4.500	11.125	4.500	5 2	5 0	23
3	6F2	WING	15		X			12.000	7 1.000	12.000	4.500	11.125	4.500	11.125	9 1	9 1	41
8	4H8	BACKWALL	20		X			30 0.000							30 0	30 0	160
2	6H9	BACKWALL	20		X			59 0.000							59 0	59 0	177
8	8H10	BEAM	18		X			57 7.000							59 3	59 3	1266
2	6H11	BEAM	20		X			57 7.000							57 7	57 7	173
4	6H12	WING	20		X			11 9.000							11 9	11 9	71
4	6H13	WING	20		X			7 10.000							7 10	7 10	47
4	6H14	WING	20		X			10 8.000							10 8	10 8	64
2	6T1	WING	25		X			22.000	6 7.750	22.000			2 2.500	6 3.250	10 4	10 3	31
2	6T2	APRON	19		X			4 7.000	4 10.000						9 5	9 3	28
2	6T3	APRON	19		X			4 6.500	3 1.000						7 8	7 6	23
2	6T4	WING	25		X			22.000	7 1.125	22.000			2 2.250	6 9.000	10 9	10 8	32
57	4U1	BEAM	13	S	X			2 10.000	2 8.500	3 4.000	2 8.000				12 4	12 1	460
11	4U2	BEAM	10	S	X				6.000	2 10.000					3 10	3 8	27
5	7U3	BEAM	11		X				3 9.000	2 9.000	6 5.000				12 11	12 7	129
3	4U4	APRON	10		X				4 4.000	6.000					9 2	9 0	18
5	7U5	BEAM	14		X			6 7.500	2 0.000	3 9.250			2 8.000	2 8.000	12 5	12 3	125
3	4U6	APRON	10		X				2 7.000	6.000					5 8	5 6	11
56	5U15	BACKWALL	10	S	X				2 6.000	9.000					5 9	5 7	326
112	6V6	BACKWALL	20		X			4 7.000							4 7	4 7	771
4	4V7	APRON	20		X			4 3.000							4 3	4 3	12
14	4V8	WING	20		X	V	2	2 0.000							2 0	2 0	
		INCR. = 3.875 IN.						3 11.000							3 11	3 11	28
10	4V9	WING	20		X			5 4.000							5 4	5 4	36

NO. REQD.	MARK NO. SIZE MARK	LOCATION	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EA.	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.
2	6V10	BEAM	20		X			2 9.000							2 9	2 9	8
2	6V11	BEAM	20		X			2 10.000							2 10	2 10	9
10	4V13	WING	20		X			5 5.000							5 5	5 5	36
14	4V14	WING	20		X	V	2	2 0.250							2 0	2 0	
		INCR. = 4.250 IN.						4 1.750							4 2	4 2	29
10	2W1	A. B. WELLS	22		X			12.000	9.125						19 9	19 9	33
		SUPERSTRUCTURE															
564	5C1	CURB	10						12.750	13.500	6.000				3 9	3 5	2010
48	5C2	CURB	10						13.250	13.500					3 4	3 1	154
4	5C3	CURB	20					34 10.000							34 10	34 10	145
20	6C4	CURB	20					41 9.000							41 9	41 9	1254
4	5C5	CURB	20					34 9.000							34 9	34 9	145
8	6C6	CURB	20					11 9.000							11 9	11 9	141
8	5R1	END POST	20					4 9.000							4 9	4 9	40
4	5R2	END POST	10						2 8.125	9.000					6 1	5 10	24
4	5R3	END POST	10						2 10.500	9.000					6 6	6 3	26
4	5R4	END POST	10						3 1.000	9.000					6 11	6 8	28
4	5R5	END POST	10						3 2.000	9.000					7 1	6 10	29
4	5R6	END POST	10						3 2.750	9.000					7 3	7 0	29
4	5R7	END POST	10						3 3.375	9.000					7 4	7 1	30
4	5R8	END POST	10						3 4.250	9.000					7 6	7 3	30
8	5R9	END POST	10						3 4.625	9.000					7 6	7 3	60
16	5R10	END POST	10						4 9.000	7.750					10 2	9 11	165
592	5R11	PARAPET	12					2 0.375	8.500						5 4	5 2	3190
70	5R12	PARAPET	10						19.500	8.500	6.000				4 6	4 1	298
8	5R13	PARAPET	20					28 0.000							28 0	28 0	234
96	5R14	PARAPET	20					6 7.000							6 7	6 7	659
40	5R15	PARAPET	20					28 1.000							28 1	28 1	1172
8	5R16	PARAPET	20					27 11.000							27 11	27 11	233
16	5R17	PARAPET	20					7 8.000							7 8	7 8	128
958	6S1	SLAB	20					42 0.000							42 0	42 0	60434
312	6S2	SLAB	20			V	4	40 6.000							40 6	40 6	
		INCR. = 6.000 IN.						2 0.000							2 0	2 0	9958
344	4S3	SLAB	20					35 8.000							35 8	35 8	8195
252	4S4	SLAB	20					16 0.000							16 0	16 0	2693
230	6S5	SLAB	20					57 3.000							57 3	57 3	19778
80	4S6	SLAB	6	S				20.000	6.000	17.000	6.000				4 1	3 9	201
2	6S7	SLAB	20					59 6.000							59 6	59 6	179
8	6S8	SLAB	20					10 11.000							10 11	10 11	131
		END OF BAR LIST															

STANDARD HOOKS

STIRRUP HOOKS



Size of 180 DEG Hooks Grade 40 Ksi
D=5d for #3 thru #11
D=10d for #14 & #18

Size of 90 DEG Hooks All Grades
D=6d for #3 thru #8
D=8d for #9, #10 & #11
D=10d for #14 & #18

STIRRUPS

END HOOK DIMENSIONS			
BAR SIZE	180° HOOKS GRADE 40		90° HOOKS ALL GRADES
	A or G	J	A or G
#3	5"	2¾"	6"
#4	6"	3½"	8"
#5	7"	4½"	10"
#6	8"	5¼"	12"
#7	9"	6¼"	14"
#8	10"	7"	16"
#9	12"	8"	19"
#10	13"	9"	22"
#11	14"	10"	2'-0"
#14	2'-2"	20½"	2'-7"
#18	2'-11"	2'-3"	3'-5"

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
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	3"	6½"	6½"	4½"

Note: Unless otherwise noted diameter D is the same for all bends and hooks on a bar.

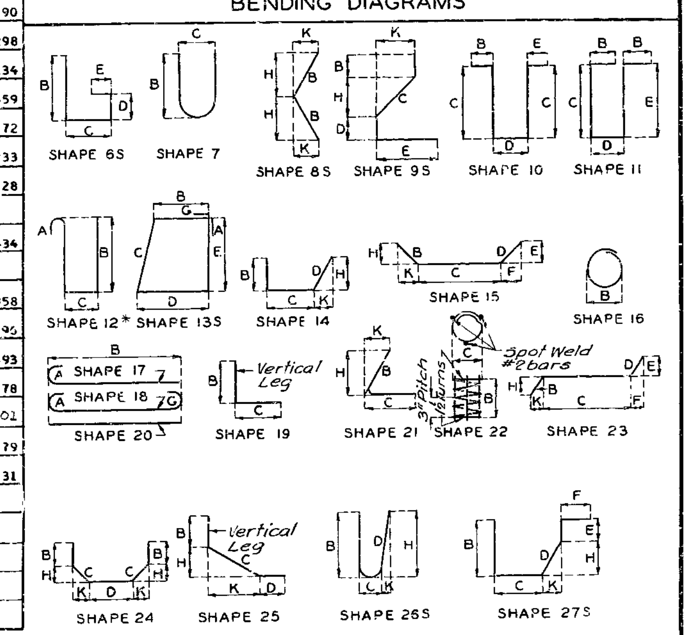
Note: All Standard Hooks and Bends other than 180 DEG. to be bent with same procedure as for 90 DEG. Standard Hooks.

Note: Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal Lengths are based on out to out dimensions shown in bending diagrams and are listed for Fabricators use.
Payweights are based on Actual Lengths.

S~ stirrup.
X~ bar is included in substructure quantities.
Length ~ Total lengths are measured along centerline bar to the nearest inch.
V~ bar dimensions vary in equal increments between dimensions shown on this line and the following line.
No. Ea. ~ Number of bars of each length.

* All hooks and bends for shape No. 12 (on J) are based on D = 5d.

BENDING DIAGRAMS



470

STD. 90.7 JULY 1969 | REVISED JUNE 1970

DETAILED APR. 1971 BY BATES
CHECKED APR. 1971 BY Weimholt

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

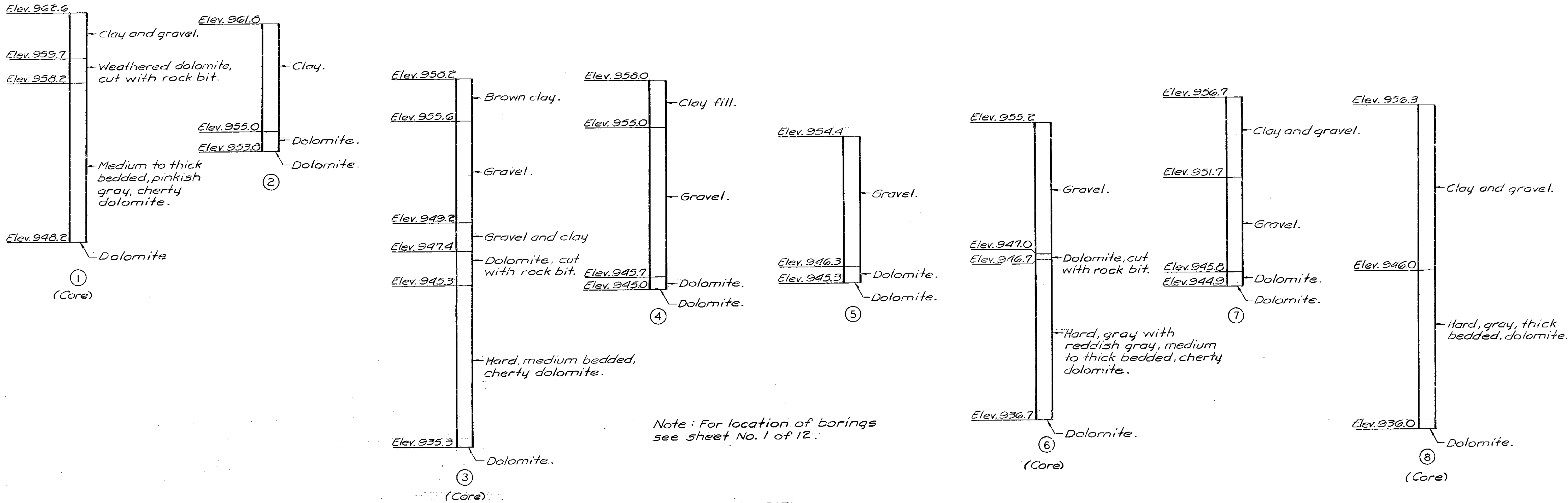
Sheet No. 3 of 12

POLK COUNTY

A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	40	



Note: For location of borings see sheet No. 1 of 12.

BORING DATA

471

DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weaver

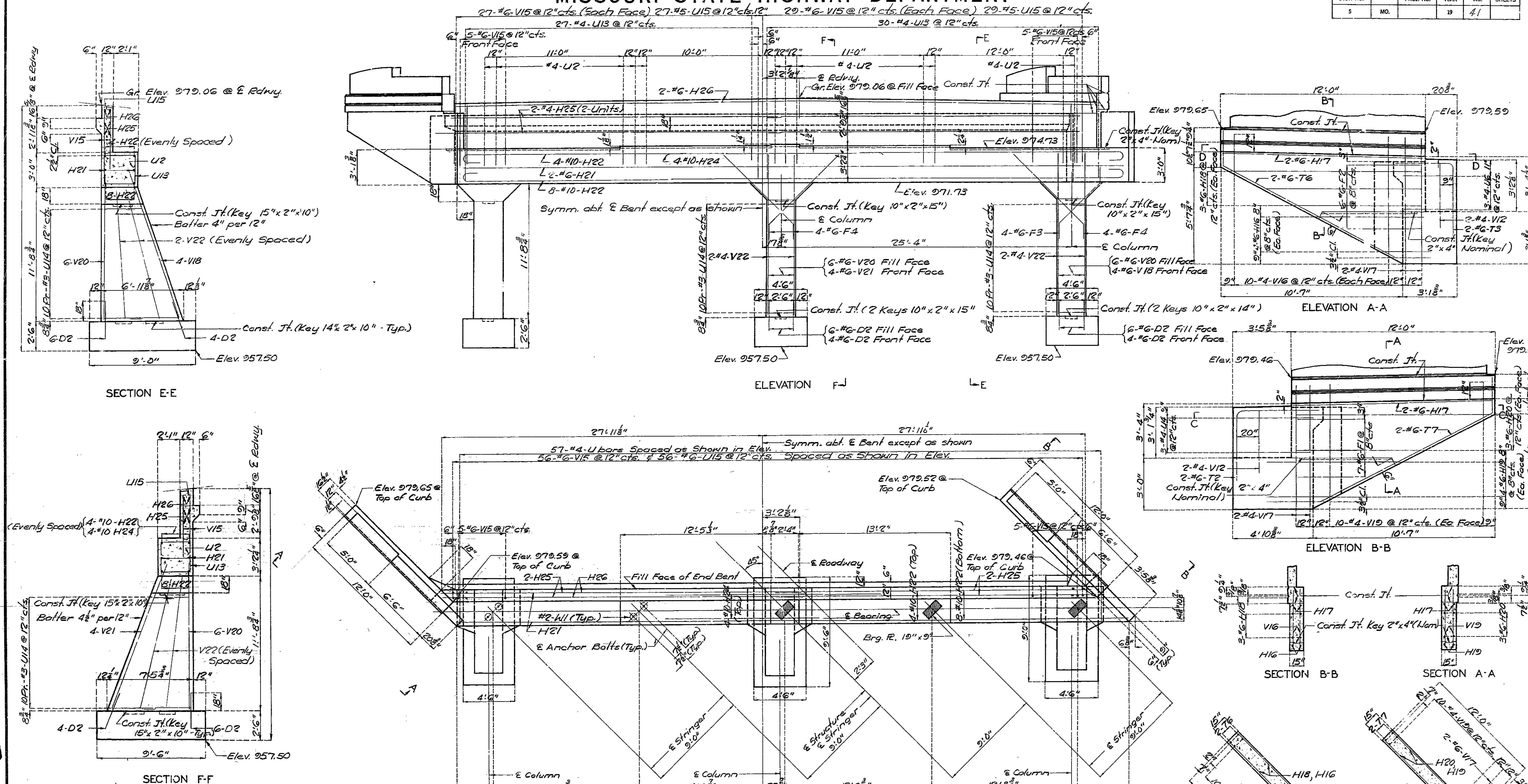
Note: This drawing is not to scale. Follow dimensions.

POLK COUNTY

A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

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



Note: Field bending shall be required at wings for #6-H bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.
See bridge rail sheet for reinforcement of end posts, parapets, and curbs.
Top of backwall and expansion device for End Bents to conform to crown of roadway slab.
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".
See Sheet No. 11 of 12 for details of expansion device.

Note: Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in adjacent span.
Location of reinforcement in backwall shall be altered sufficiently to clear anchor studs for joint by ½" min.

412

DETAILS OF END BENT NO. 1

DETAILED MAR. 1971 BY BATES
CHECKED MAR. 1971 BY WEIMHOLT

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

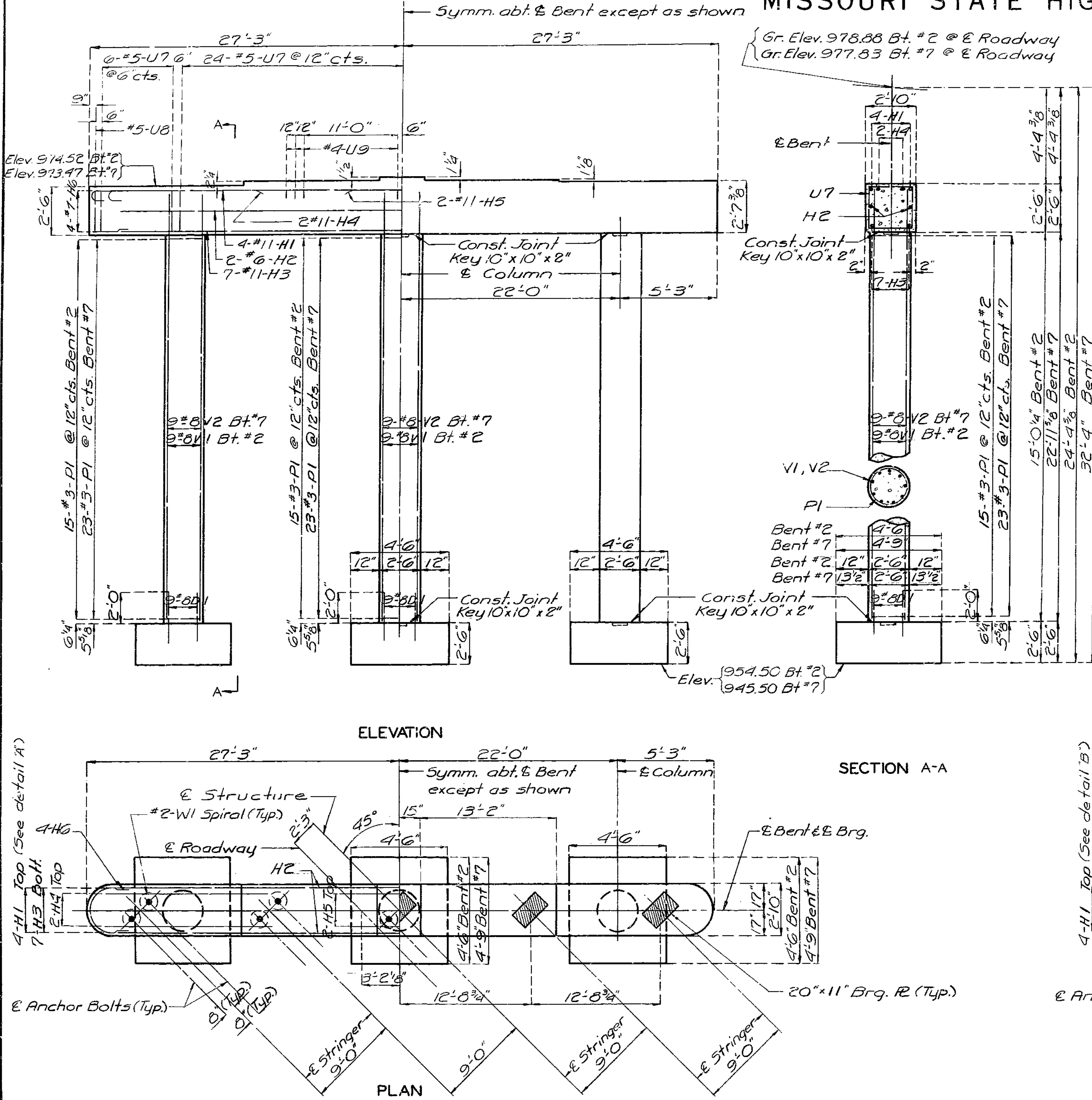
Sheet No. 5 of 12

POLK COUNTY

A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MO.			42	

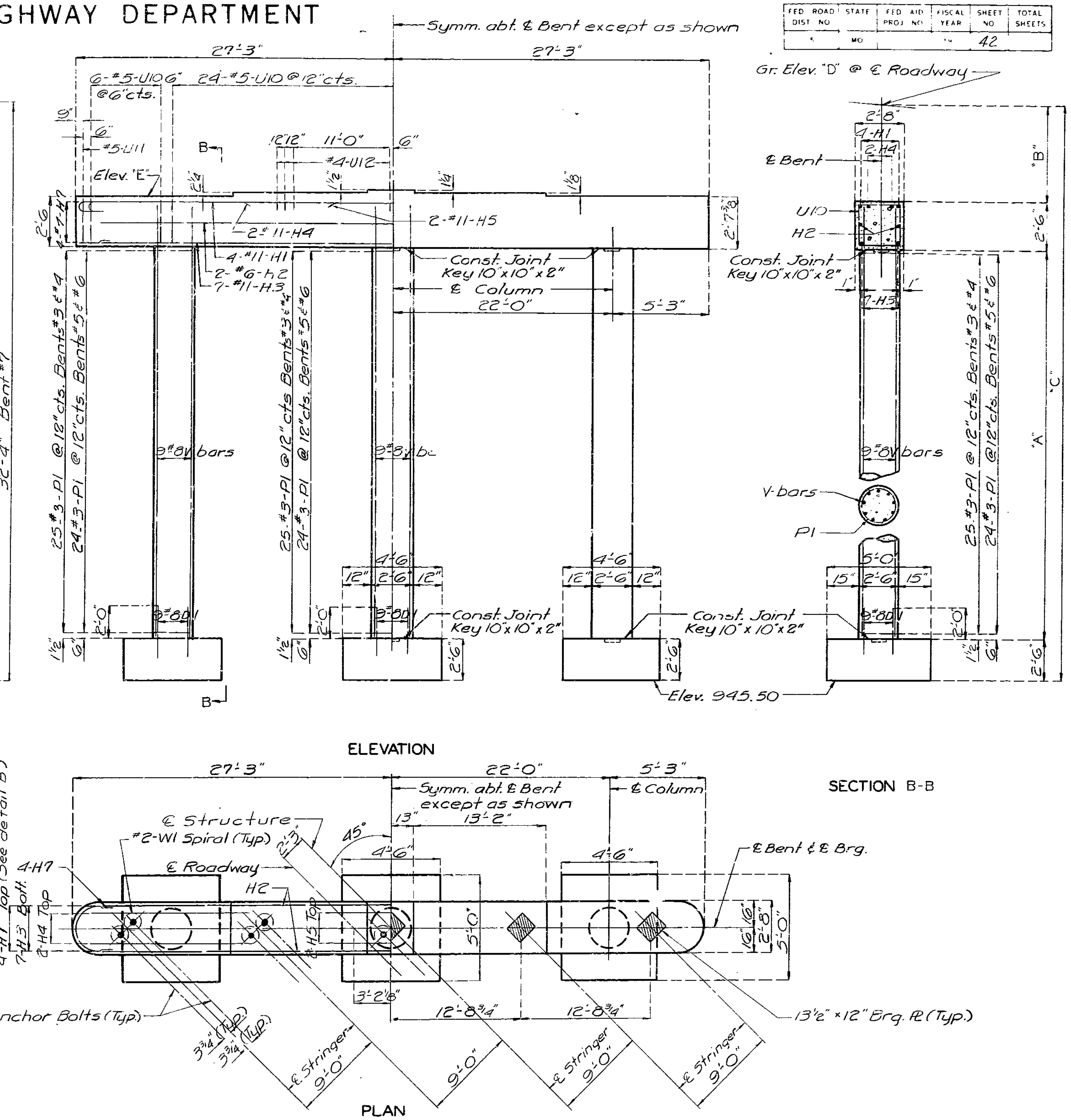


ELEVATION

SECTION A-A

PLAN

DETAILS OF INTERMEDIATE BENTS NO. 2 & 7



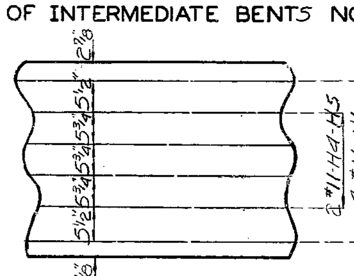
ELEVATION

SECTION B-B

PLAN

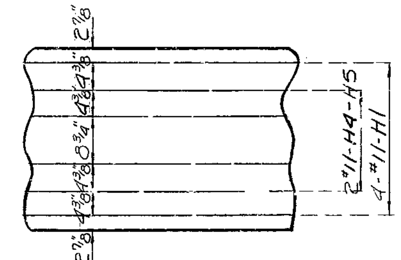
DETAILS OF INTERMEDIATE BENTS NO. 3, 4, 5 & 6

BENT		3	4	5	6
DIMENSION	A	24'-5"	24'-2½"	24'-0"	23'-9½"
	B	3'-9"	3'-9"	3'-9"	3'-9"
	C	33'-2"	32'-11½"	32'-9"	32'-6½"
ELEVATION	D	978.67	978.46	978.25	978.04
	E	974.92	974.71	974.50	974.29
V-BARS		V3	V3	V4	V4



DETAIL 'A'

Note: All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".



DETAIL "B"

DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weaver

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

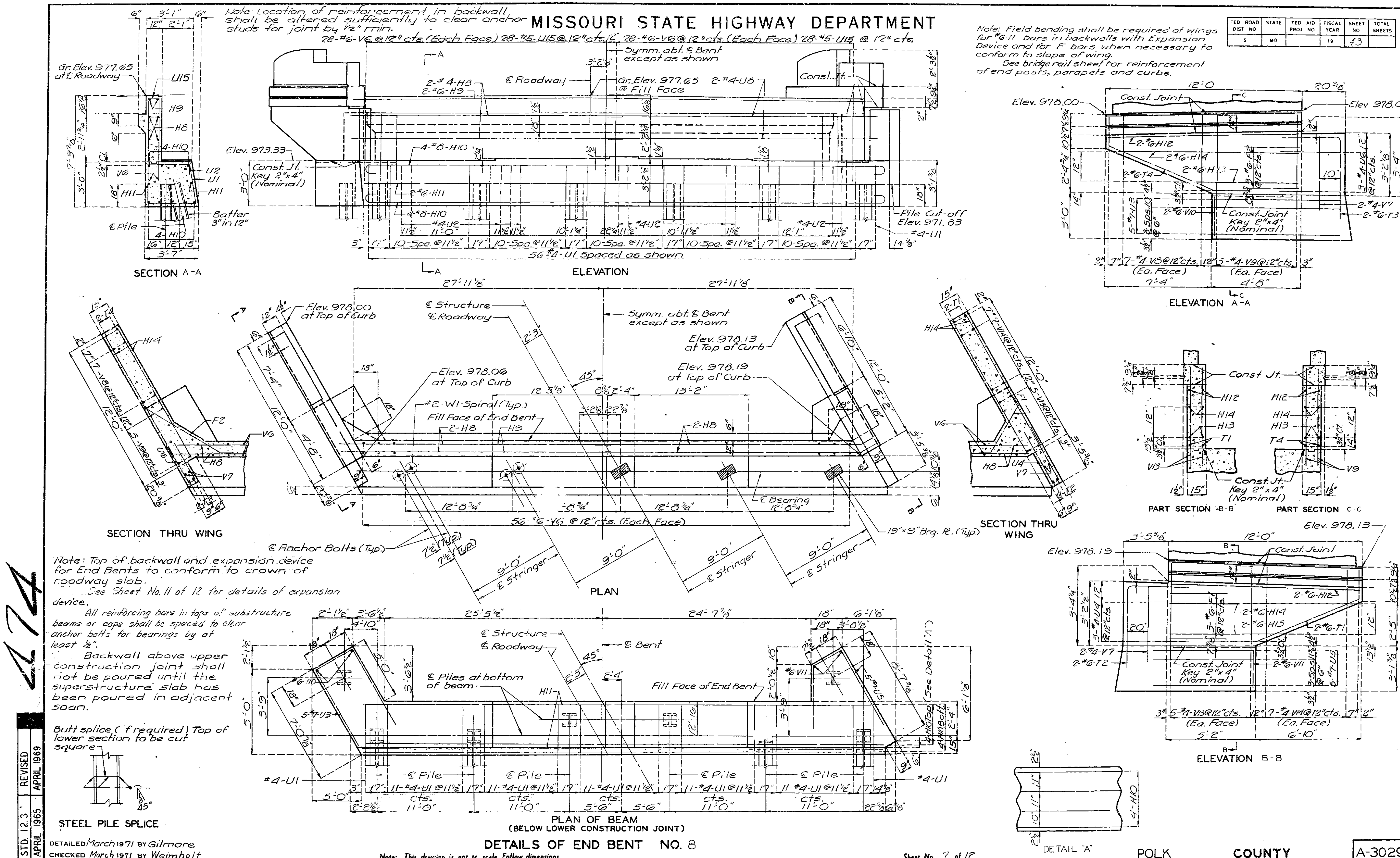
Sheet No. 6 of 12.

POLK COUNTY

A-3029

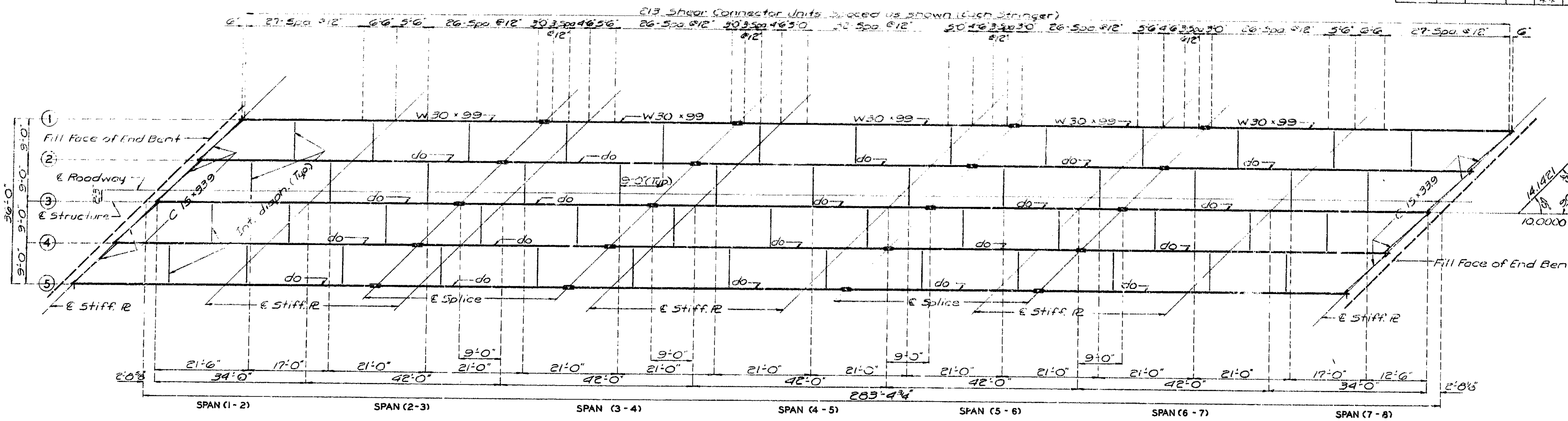
473

NO. 19.6	REVISED
SEPT. 1962	APRIL 1969


MISSOURI STATE HIGHWAY DEPARTMENT
FED ROAD DIST NO 5 | STATE MO | FED AID PROJ NO | FISCAL YEAR 19 | SHEET NO 43 | TOTAL SHEETS
Note: Location of reinforcement in backwall shall be altered sufficiently to clear anchor studs for joint by 1/2" min.
Note: Field bending shall be required at wings for #6-H bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.
See bridge rail sheet for reinforcement of end posts, parapets and curbs.
SECTION A-A
ELEVATION
ELEVATION A-A
SECTION THRU WING
PLAN
SECTION THRU WING
PART SECTION B-B
PART SECTION C-C
ELEVATION B-B
Note: Top of backwall and expansion device for End Bents to conform to crown of roadway slab.
See Sheet No. 11 of 12 for details of expansion device.
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least 1/2".
Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in adjacent span.
Butt splice (if required) Top of lower section to be cut square.
STEEL PILE SPLICE
PLAN OF BEAM
(BELOW LOWER CONSTRUCTION JOINT)
DETAIL "A"
DETAILS OF END BENT NO. 8
DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weimholt
Note: This drawing is not to scale. Follow dimensions.
Sheet No. 7 of 12.
POLK COUNTY
A-3029
STD. 12.3 APRIL 1965
REVISED APRIL 1969
474

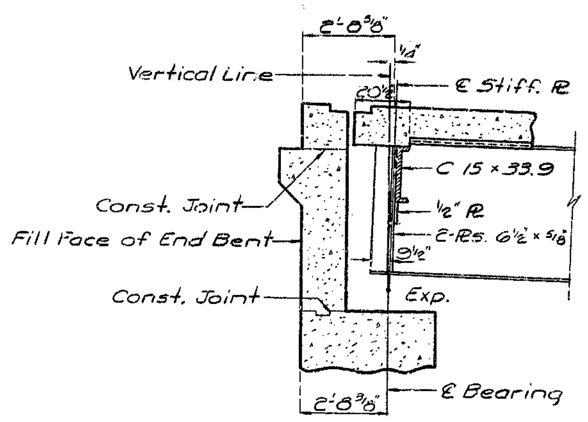
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	44	

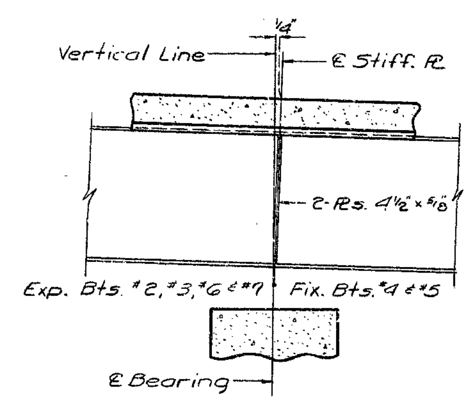


PLAN OF STRUCTURAL STEEL

Note: Longitudinal dimensions shown are taken parallel to grade at crown of roadway.

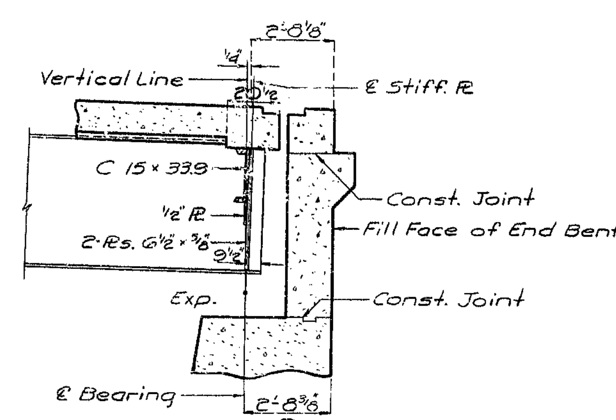


①



②③④⑤⑥ & ⑦

PART LONGITUDINAL SECTION NEAR INTERIOR STRINGER



⑧

475

DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weaver

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

Sheet No. 8 of 12.

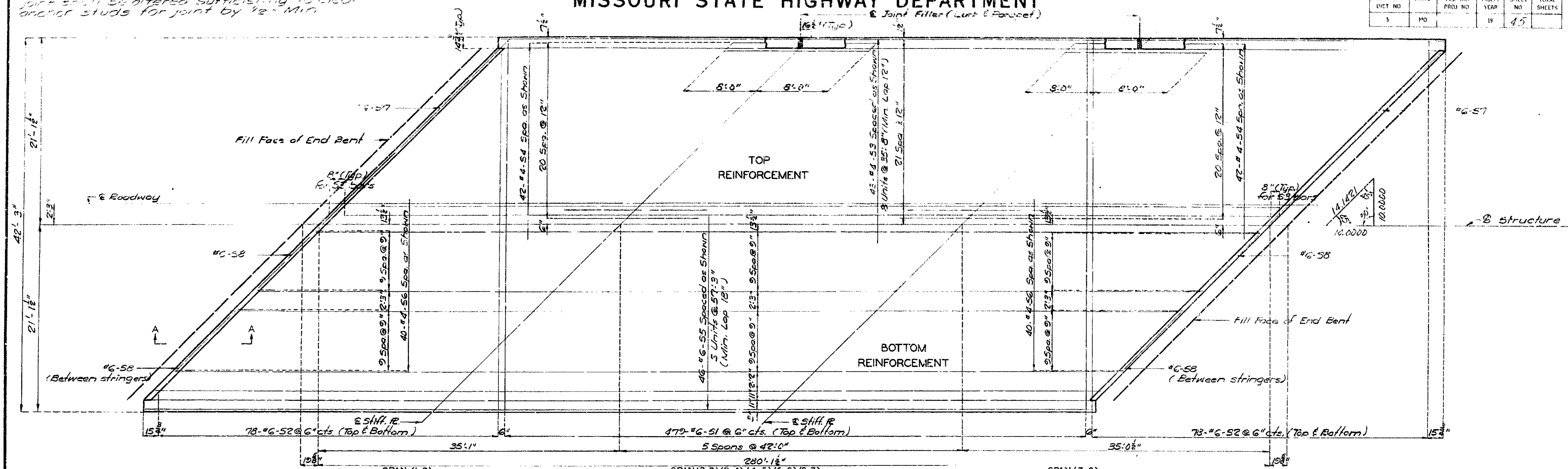
POLK **COUNTY**

A-3029

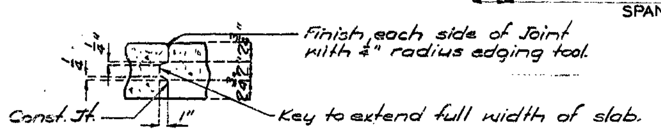
Note: Location of reinforcement in slab at E.D. joint shall be altered sufficiently to clear anchor studs for joint by ½" Min.

MISSOURI STATE HIGHWAY DEPARTMENT

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

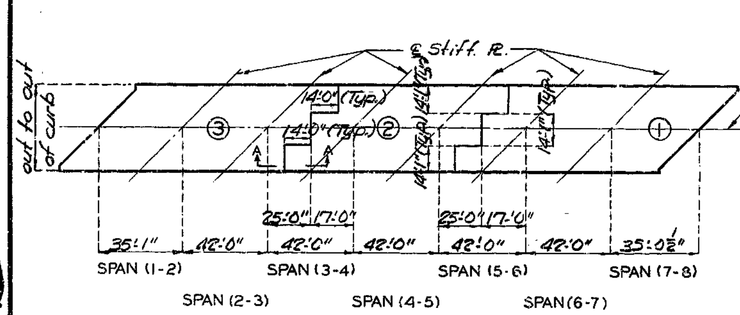


PLAN OF SLAB SHOWING REINFORCEMENT



SECTION A-A

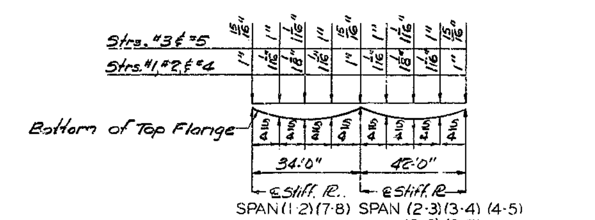
Note: Longitudinal dimensions shown are taken parallel to grade at crown of roadway.
Slab length is based on 1⅞" opening at 60°F for Elastomeric Type Expansion Device.



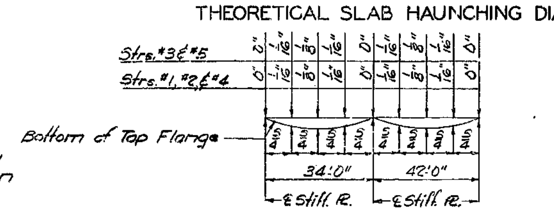
	Sequence of Pours		
	Direction		
Basic	1	2	3
Sequence	End to 2	1 to 3	2 to End
Alternate "A"	1+2		3
Pours	End to 3		2 to End
Alternate "B"	1+2+3		
Pours	End to End		

Note: The contractor shall pour and satisfactorily finish the slab pours at a rate of not less than 25 cubic yards per hour.

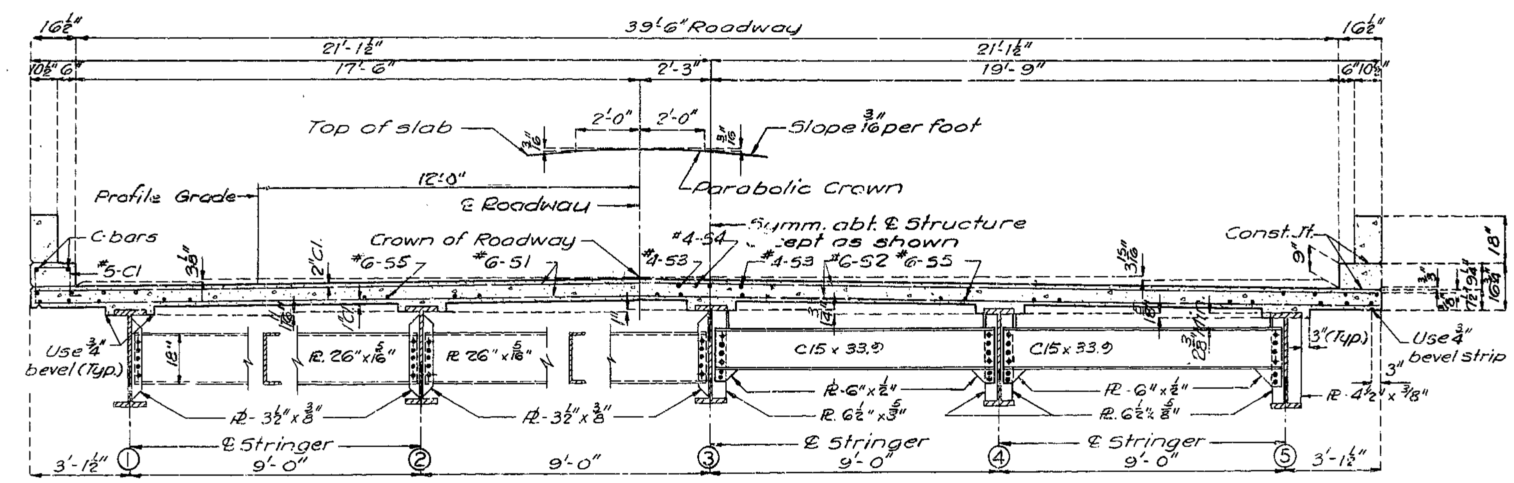
SLAB POURING SEQUENCE



THEORETICAL SLAB HAUNCHING DIAGRAM



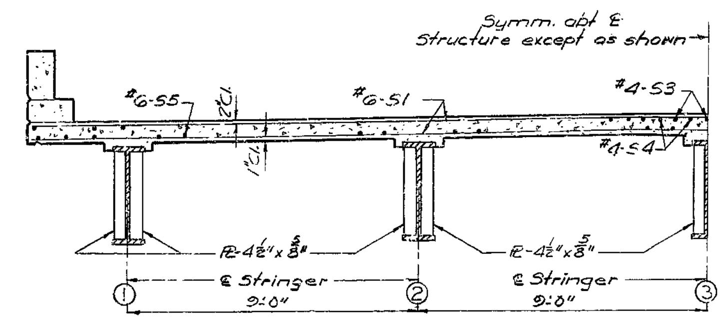
DEAD LOAD DEFLECTION



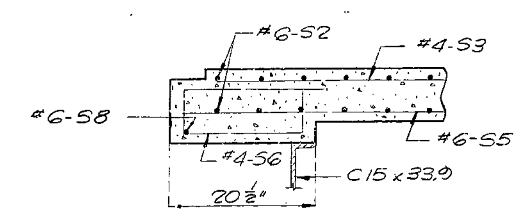
HALF SECTION NEAR INT. DIAPH.

HALF SECTION NEAR END DIAPH.

Note: For details and reinforcement of curb and parapet not shown see sheet No. 12 of 12.



HALF SECTION AT INT. BENT



PART SECTION A-A

DETAILED MAR 1971 BY BATES
CHECKED April 1971 BY Weaver

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

Sheet No. 9 of 12.

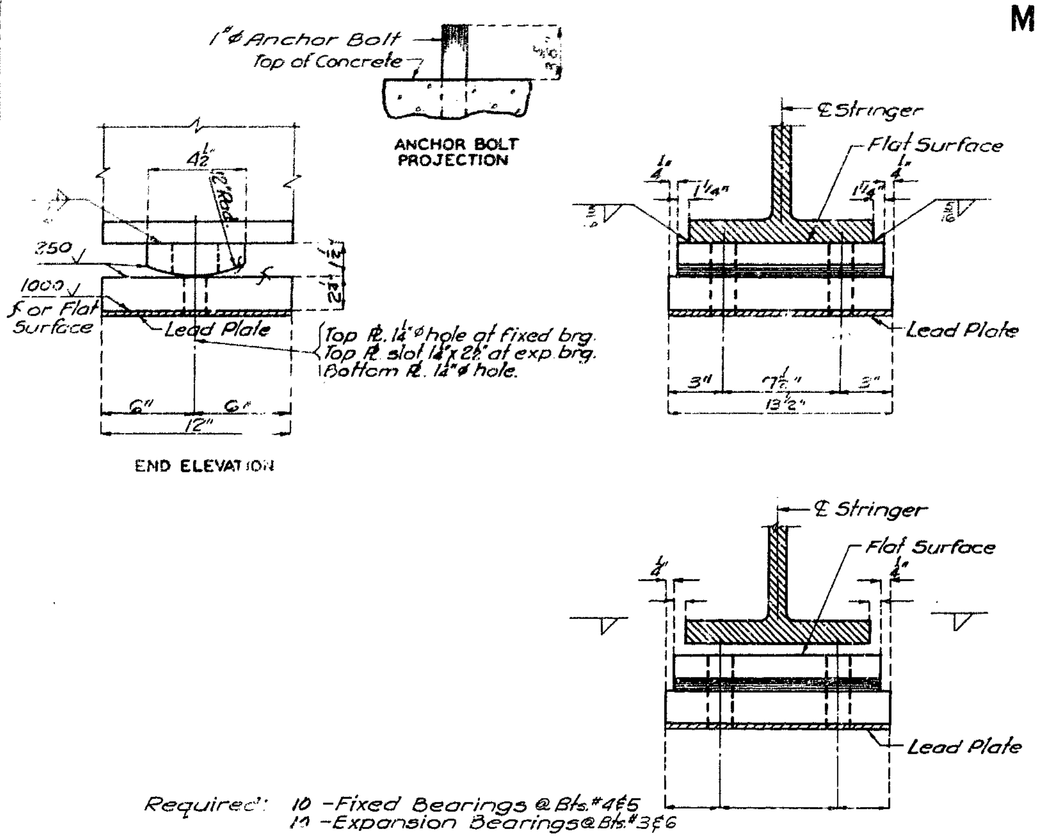
POLK COUNTY

A-3029

476

MISSOURI STATE HIGHWAY DEPARTMENT

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



Required: 10 - Fixed Bearings @ Bts. #4 & 5
10 - Expansion Bearings @ Bts. #3 & 6

TYPE "C" BEARINGS
(Estimated Weight 2477#)

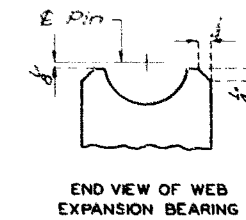
NOTES: TYPE "D" BEARINGS

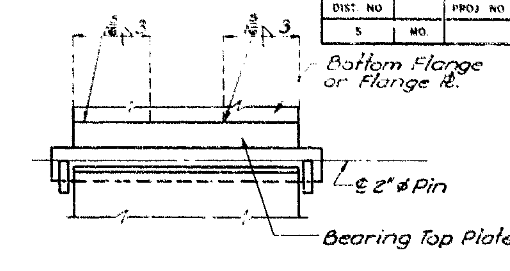
Lead plates under bearings shall be approximately ⅛" thickness and weigh 8#/ sq. ft. Cost of lead plates shall be included in price bid for other items.

"Estimated weight" does not include weight of anchor bolts.

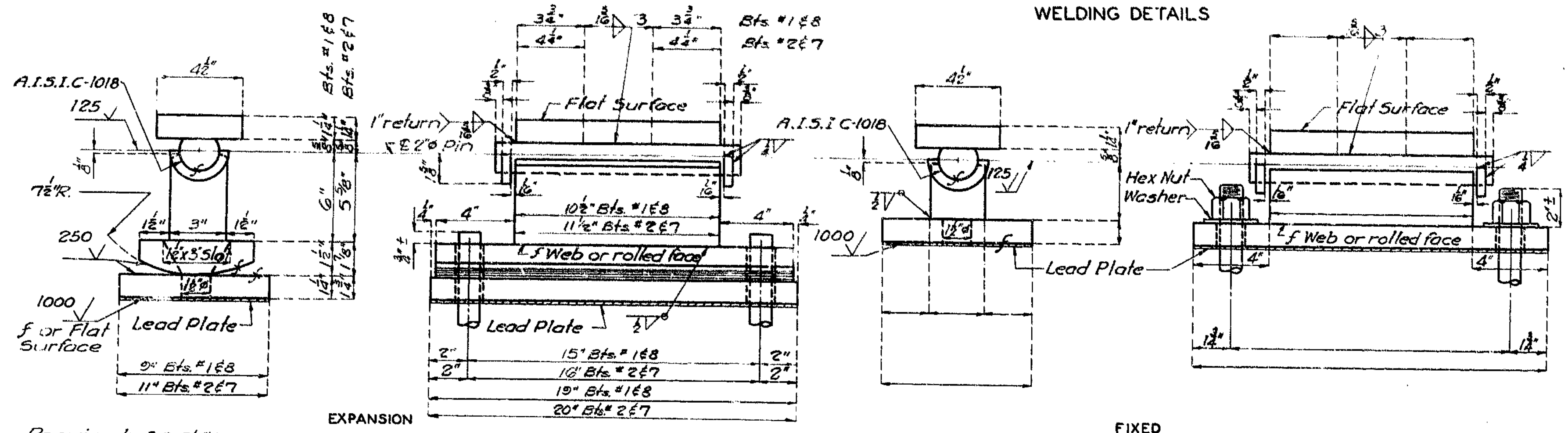
Anchor Bolts for Type "D" Bearings shall be 1¼"ϕ swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.

"f" indicates machine finish surface.





WELDING DETAILS



Required: 5 @ Bt. #1
5 @ Bt. #2
5 @ Bt. #7
5 @ Bt. #8

Required:

TYPE "D" BEARINGS
(Estimated Weight 4100#)

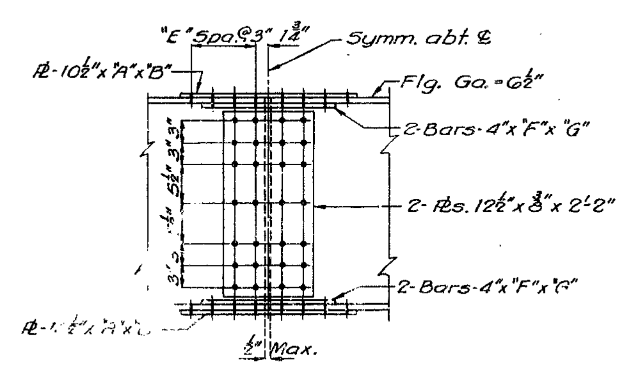
NOTES: TYPE "C" BEARINGS

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.

"Estimated weight" does not include weight of anchor bolts.

Anchor Bolts for Type "C" Bearings shall be 1"ϕ swedged bolts with no heads or nuts and shall extend 10" into concrete. Top of Anchor Bolts shall be set approximately ¼" below top of bearing.

"f" indicates machine finish surface.

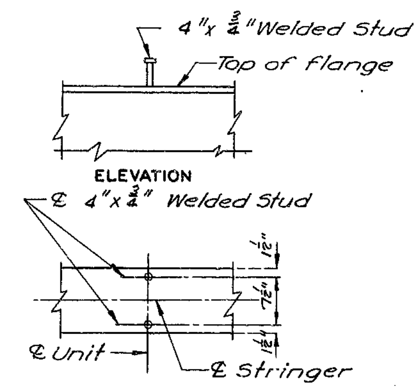


WF SIZE	"A"	"B"	"E"	"F"	"G"
[illegible]	[illegible]/16"	2'-0½"	3	½"	18½"

Note: [illegible] reamed holes for ⅞"ϕ high strength bolts.

DETAIL OF [illegible] WF BEAM SPLICE

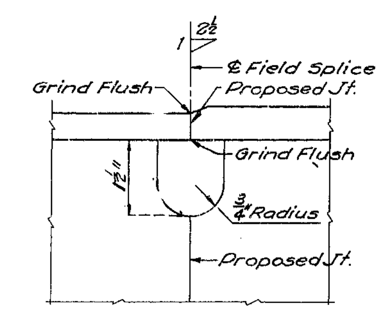
Note: Field splices may be field welded or field bolted.



Note: Weight of 1310# of shear connectors is included in weight of Fabricated Structural Carbon Steel.

DETAILS OF SHEAR CONNECTORS

Note: See Sheet No. 8 of 12 for spacing and location of Shear Connectors.



WELDED FIELD SPLICE

DETAILED MAR. 1971 BY BATES
CHECKED March 1971 BY Weaver

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

Sheet No. 10 of 12.

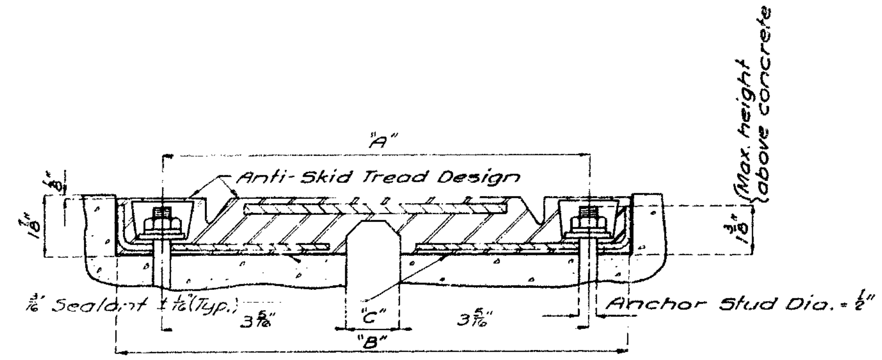
POLK COUNTY

A-3029

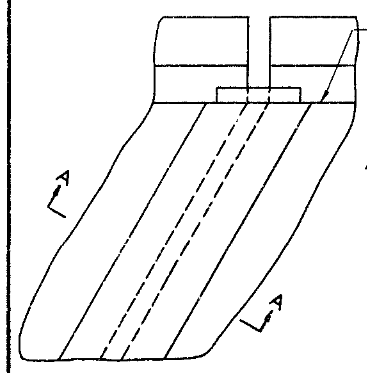
477

MISSOURI STATE HIGHWAY DEPARTMENT

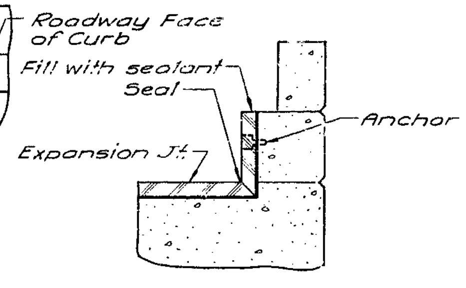
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		71	47	



SECTION A-A



PART PLAN

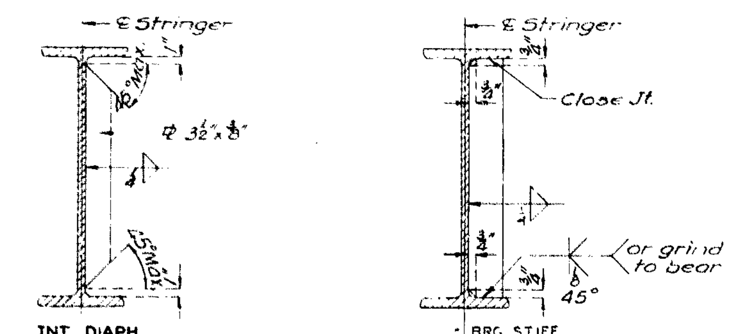


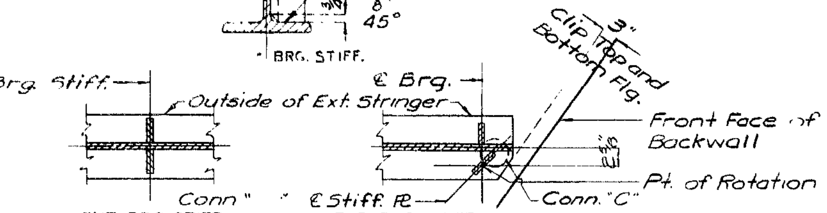
SECTION THRU CURB

Table of Variable Dimensions			
Temp.	Dim. "A"	Dim. "B"	Dim. "C" (Max.)
110°F	7⅝"	9⅝"	1"
90	8"	9¾"	1⅛"
70	8¼"	10"	1⅜"
60	8½"	10¼"	1⅝"
50	8⅝"	10⅜"	2"
40	8¾"	10½"	2⅛"
30	9"	10¾"	2⅜"
10	9¼"	11"	2⅝"
-10°F	9⅝"	11⅜"	3"

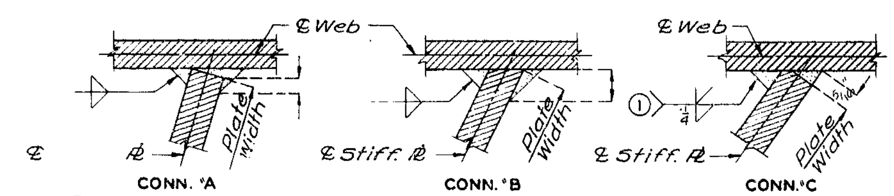
Joint Seal for 2" movement

Note: Plan dimensions are based on installation at 60°F. Expansion joint width shall be adjusted during installation for compliance with the above table. See Special Provisions.





TYPICAL LOCATION DETAILS



① Groove weld penetration = ¼" min.

WELDING DETAILS

Note: The expansion joint shall be set, anchored, bonded and sealed as recommended by the manufacturer and as set forth in the Special Provisions. Anchors shall be cone expansion type. Payment for furnishing and installing the expansion joint, including anchor bolt assembly, shall be made under unit price bid per lineal foot of joint.

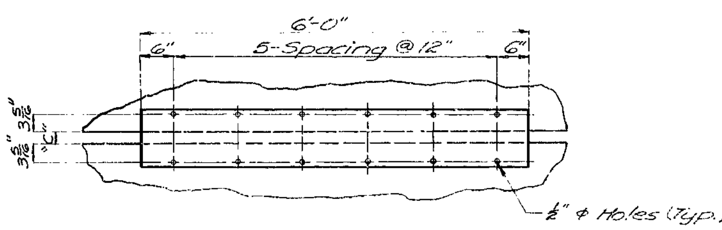
Accurately locate the hole spacing for ½" studs (expanding anchor type), on both sides of the expansion void at a distance of 3⅞" from the edge of the concrete and snap a chalk line on both sides of the expansion void. Layout transverse hole spacing along the chalk line in accordance with the shop drawings and the Typical Layout as shown on this sheet. Insure that the holes are directly opposite each other (square). Drill holes ½" ϕ x 2½" deep.

Holes shall not be drilled nor anchor bolts set until the concrete is at least 7 days old.

First section of expansion joint shall be installed starting at ℄ of roadway.

Tighten all nuts to 40 foot pounds. Retighten to 40 foot pounds 30 minutes after initial tightening.

Wire brush bolt cavity and coat with sealant. Fill cavity with sealant to a depth of ½" and push plug down to snap lock. Scrape off all excess sealant.



PART PLAN SHOWING TYPICAL LAYOUT FOR HOLE SPACING

DETAILS OF STEEL REINFORCED ELASTOMERIC EXPANSION JOINT SEAL

478

STD. 5.3.3	REVISED
JAN. 1971	JULY 1971

DETAILED Mar. 1971 BY Gilmore
CHECKED March 1971 BY Weaver

SHEET NO. 11 OF 12.

POLK COUNTY A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	37	

GENERAL NOTES:

Design Specifications: A.A.S.H.O. - 1969

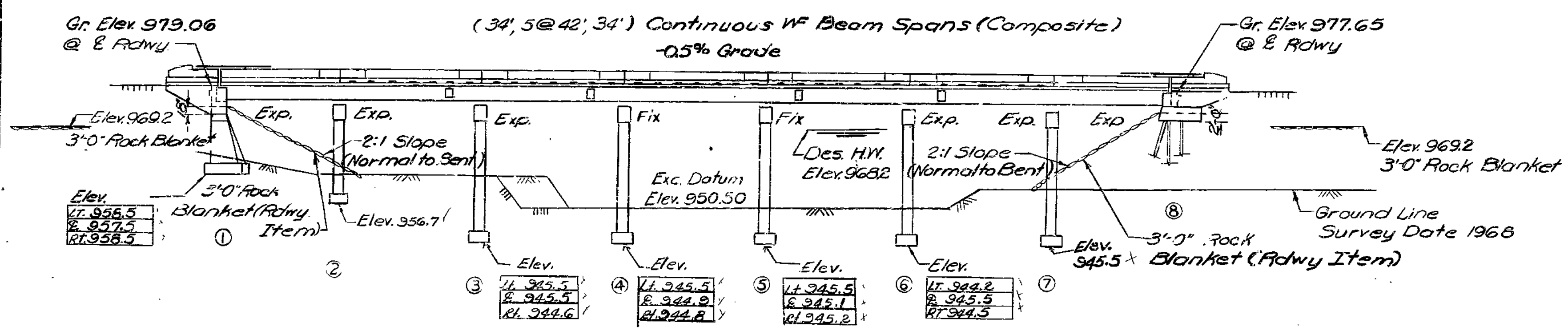
Design Loading:
HS20-44 15#/sq ft Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress: Case I

Design Unit Stresses:
Class B Concrete (substructure) fc = 1,200 psi
Class B1 Concrete (superstructure) fc = 1,600 psi
Reinforcing Steel fs = 20,000 psi.
Structural Carbon Steel fs = 20,000 psi.
Steel Piles fb = 9,000 psi.

Fabricated Steel:
Field connections, High Strength Bolts 3/4"ϕ, holes 13/16"ϕ except as noted

Reinforcing Steel:
Minimum clearance to reinforcing steel is 1½" unless otherwise noted.

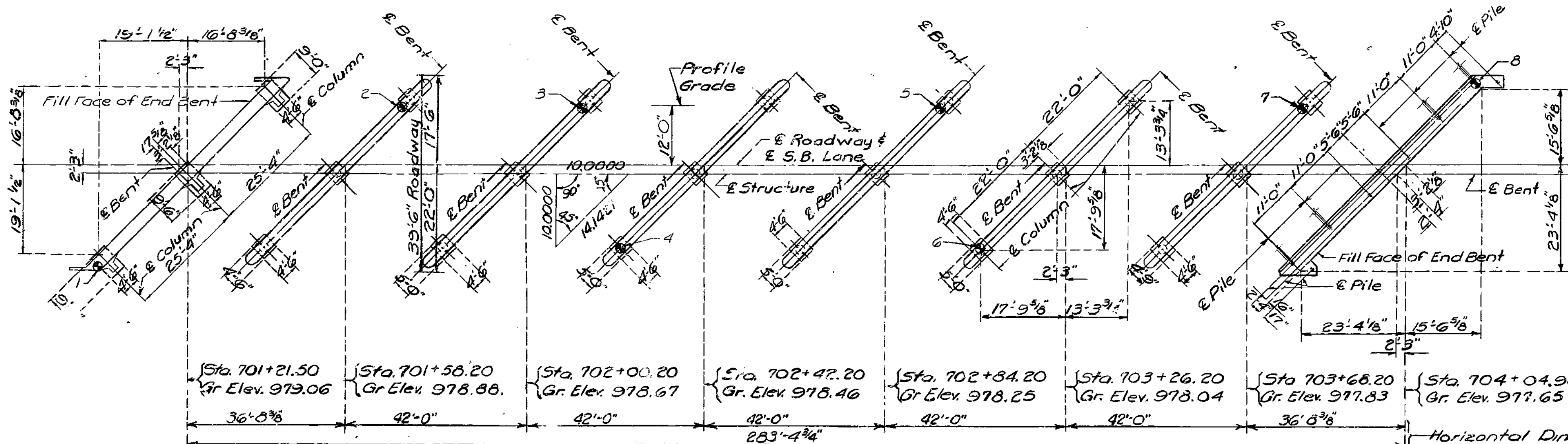
Paint:
Shop, none; Field by contractor in accordance with Std. Specs. 712.12



Note: Compacted roadway fill (full roadway width) was placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bent No. 8 before piles were driven.

Note: All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
Payweight for fabricated steel was based on welded field splices regardless of type used.

FINAL QUANTITIES				
ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	272.5		272.5
Class 2 Excavation	Cu. Yd.	150.5		150.5
Structural Steel Pile (HP 10×42)	Lin. Ft.	209.0		209
Class B Concrete	Cu. Yd.	297.1		297.1
Class B1 Concrete	Cu. Yd.		332.7	332.7
Reinforcing Steel	Lb.	52,430	111,790	164,220
Fabricated Structural Carbon Steel	Lb.		165,950	165,950
Painting	Ton		82.3	82.3
Bridge Rail (one tube)	Lin. Ft.		586	586
Stl. Reinf. Elastomeric Joint Seal	Lin Ft.		113	113
BRIDGE CONTINGENT ITEMS				
Class I Excavation +25%	Cu. Yd.	1.5		1.5
Class II Excavation +50%	Cu. Yd.	5.0		5.0
Test Holes	Lin. Ft.	96.5		96.5
Crevice Concrete	Cu. Yd.	1.5		1.5

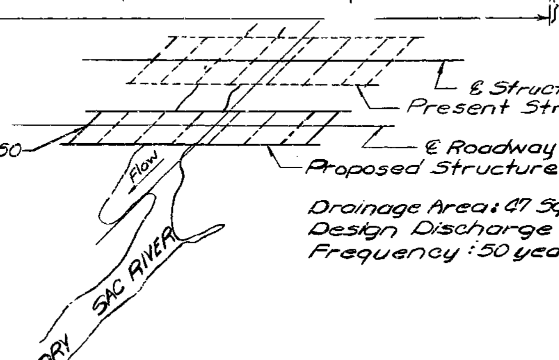


PILE & FOOTING DATA									
BENT NO.		1	2	3	4	5	6	7	8
BEARING PILE	Pile Type and Size								HP10-42
	Number								8
	Actual Length Ft.								25-27
	Design Bearing Tons								35
	Hammer Energy reqd. Ft.Lbs.								8600
SPREAD FOOTINGS	Foundation Material	Rock	Rock	Rock	Rock	Rock	Rock	Rock	~
	Design Bearing Tons/Sq. Ft.	4	7	7	7	7	7	7	~

Minimum energy requirement of hammer based on plan length and design bearing value of piles
All pile were driven to Refusal into Rock

Note: ⊕ Indicates location of boring. For boring data see sheet 4 of 12.

BM - Elev 979.85
□ on N.E. Cor. Rt Curb
63' Rt Sta. 701+00



Drainage Area: 47 Sq. Mi. (Hilly)
Design Discharge: 10,000 cfs
Frequency: 50 years.

BRIDGE: S.B.L. ROUTE 13 OVER DRY SAC RIVER

STATE ROAD FROM CEDAR VISTA S. TO GREENE CO. LINE

ABOUT 2.5 MILES S. OF BRIGHTON

PROJECT NO. F-13-2(8) (RTE 13) **STA.** 701 + 21.50

POLK **COUNTY**

SUBMITTED BY W. M. Carney, BRIDGE ENGINEER, DATE 10-20-71

APPROVED BY Robert N. Hunter, CHIEF ENGINEER, DATE 10-20-71

DESIGNED April 1971 BY Cook & Tannous
DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weimholt, Weaver

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

Sheet No. 1 of 12.3

STD. 700.30A

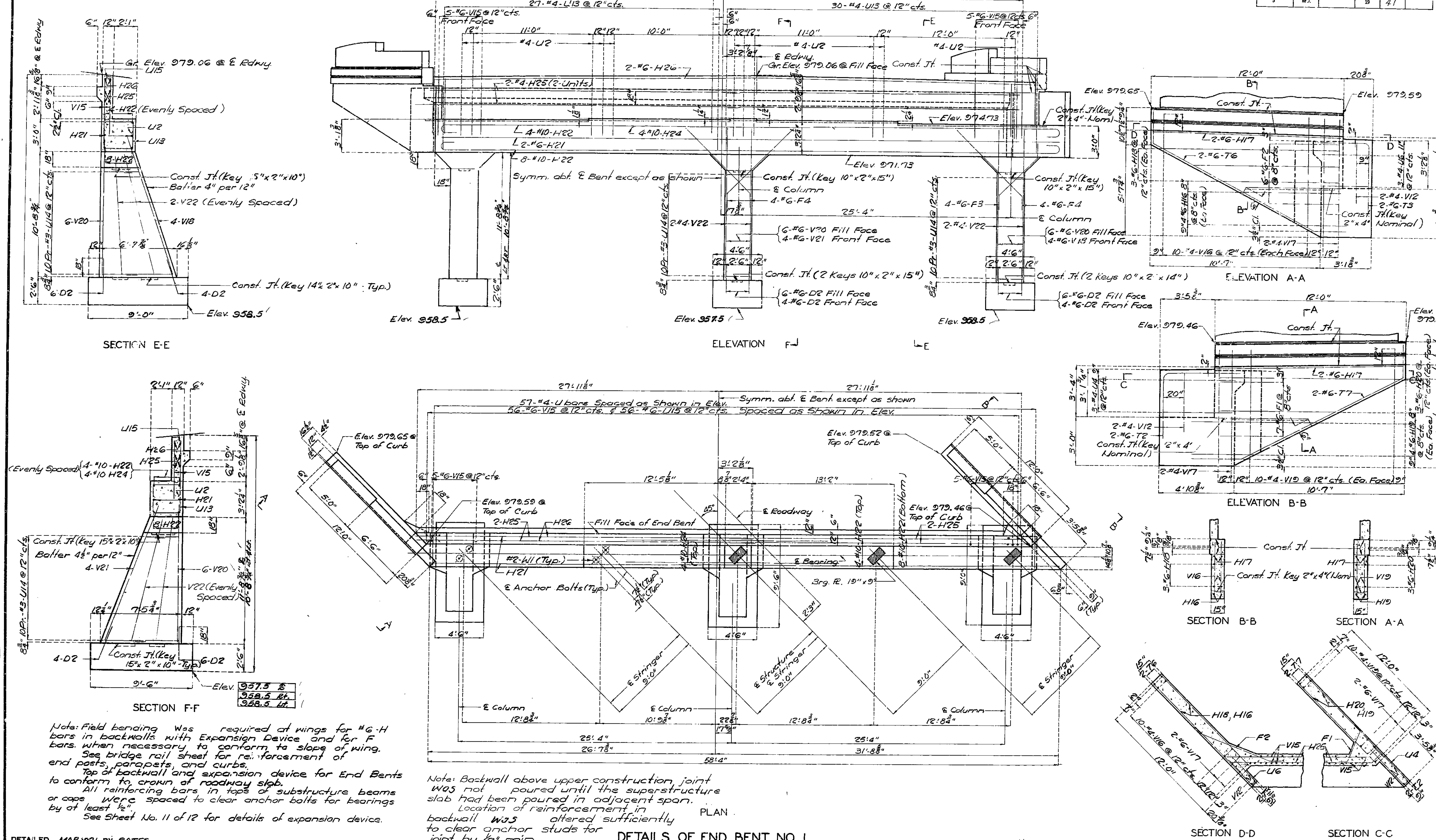
A-3029

480

481

MISSOURI STATE HIGHWAY DEPARTMENT

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



Note: Field bending was required at wings for #6-H bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.
See bridge rail sheet for reinforcement of end posts, parapets, and curbs.
Top of backwall and expansion device for End Bents to conform to crown of roadway slab.
All reinforcing bars in tops of substructure beams or caps were spaced to clear anchor bolts for bearings by at least ½".
See Sheet No. 11 of 12 for details of expansion device.

Note: Backwall above upper construction joint was not poured until the superstructure slab had been poured in adjacent span.
Location of reinforcement in backwall was altered sufficiently to clear anchor studs for joint by ½" min.

DETAILS OF END BENT NO. 1

DETAILED MAR. 1971 BY BATES
CHECKED MAR. 1971 BY WEIMHOLT

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

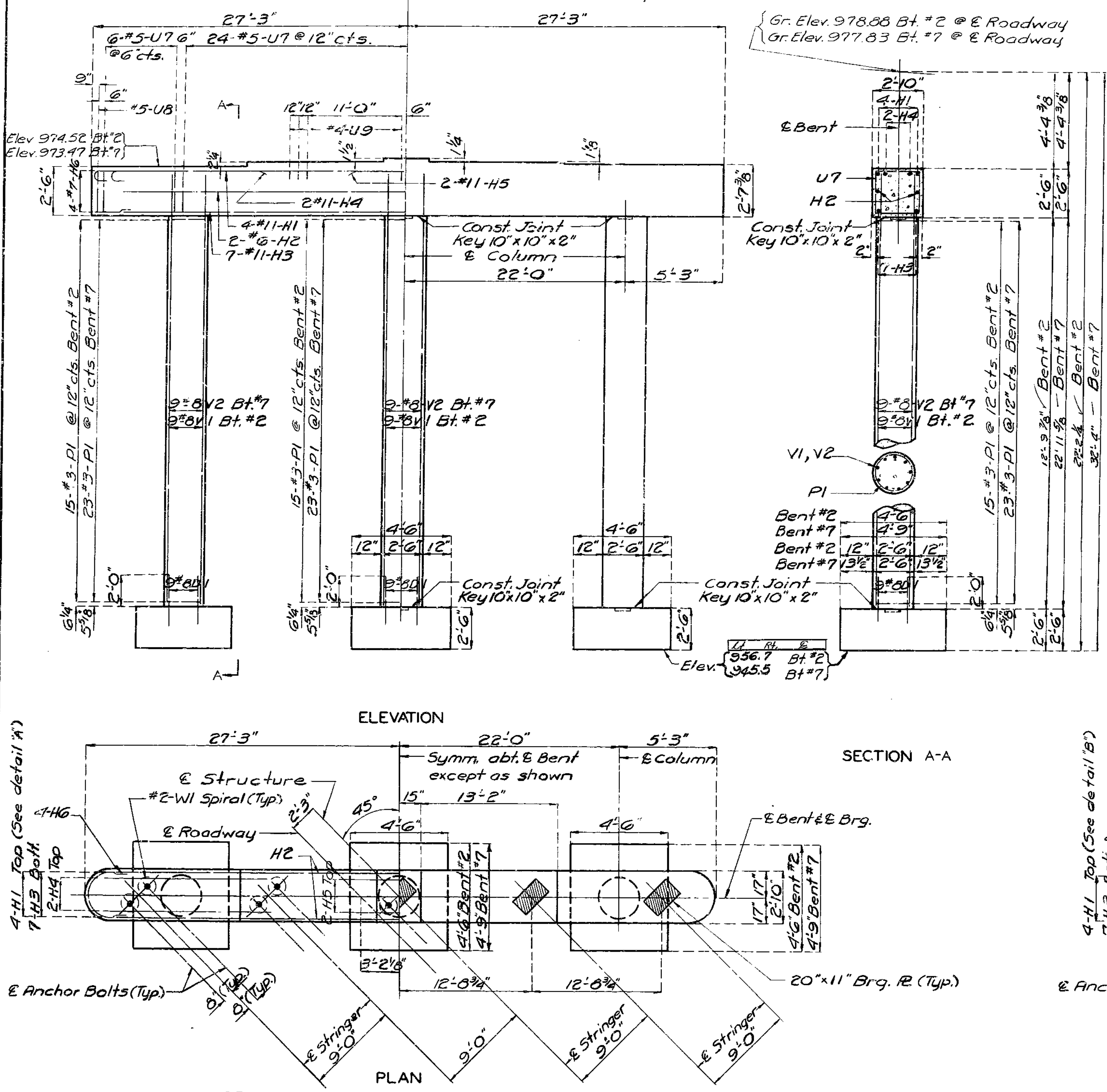
Sheet No. 5A of 12.3

POLK COUNTY

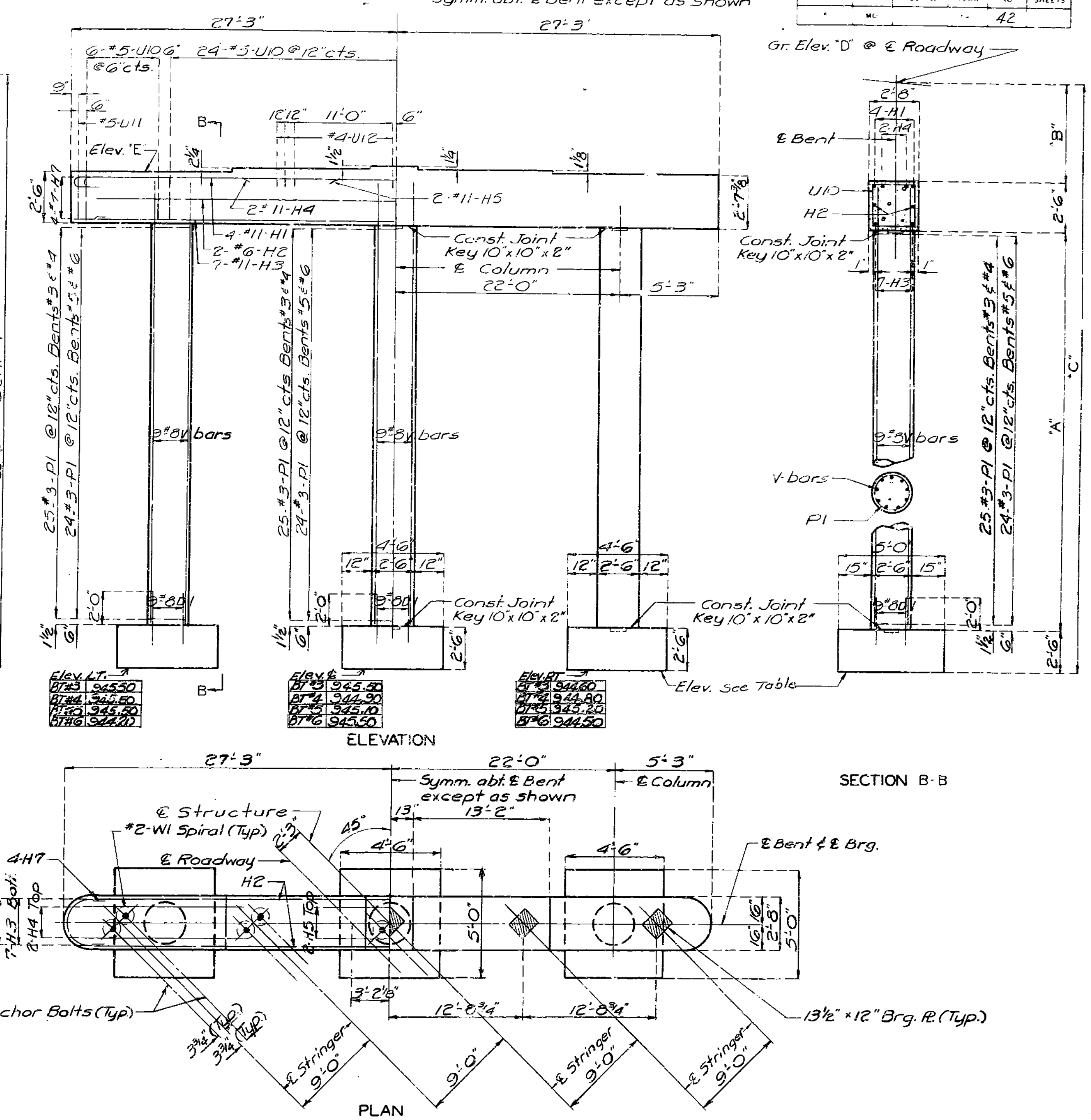
A-3029

MISSOURI STATE HIGHWAY DEPARTMENT

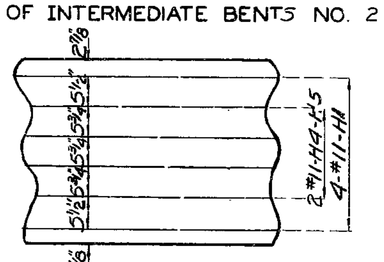
FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	MO			42	



DETAILS OF INTERMEDIATE BENTS NO. 2 & 7

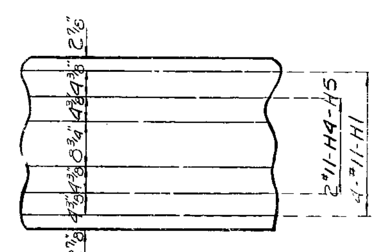


DETAILS OF INTERMEDIATE BENTS NO. 3, 4, 5 & 6



DETAIL 'A'

Note: All reinforcing bars in tops of substructure beams or caps were spaced to clear anchor bolts for bearings by at least ½".



DETAIL "B"

BENT		3	4	5	6
DIMENSION	A	See Table Below			
	B	3'-9"	3'-9"	3'-9"	3'-9"
	C	See Table Below			
ELEVATION	D	978.67	978.46	978.25	978.04
	E	974.92	974.71	974.50	974.29
V-BARS		V3	V3	V4	V4
Lt.	A	24'-5"	24'-2½"	24'-0"	25'-1⅛"
℄	A	24'-5"	24'-9¼"	24'-4⅛"	23'-9⅛"
Rt.	A	25'-3⅛"	24'-11"	24'-3⅝"	24'-9½"
Lt.	C	33'-2"	32'-11½"	32'-9"	33'-10⅛"
℄	C	33'-2"	33'-6⅜"	33'-1⅛"	32'-6½"
Rt.	C	34'-0⅛"	33'-8"	33'-0½"	33'-6½"

Sheet No. 6A of Pt. 3

DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weaver

Note: This drawing is not to scale. Follow dimensions

POLK COUNTY

A-3029

482

NO. 19.6	REVISED
SEPT. 1962	APRIL 1969

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	48	

GENERAL BRIDGE RAIL NOTES:

All bridge rail posts shall be set normal to grade. Aluminum tube bridge rail shall be bent to conform to vertical and horizontal alignment of parapet.

Aluminum washer shims between top of parapet and post base may be used for adjusting bridge rail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.

All parts of bridge rail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.

All fillets 3/4" except as noted.

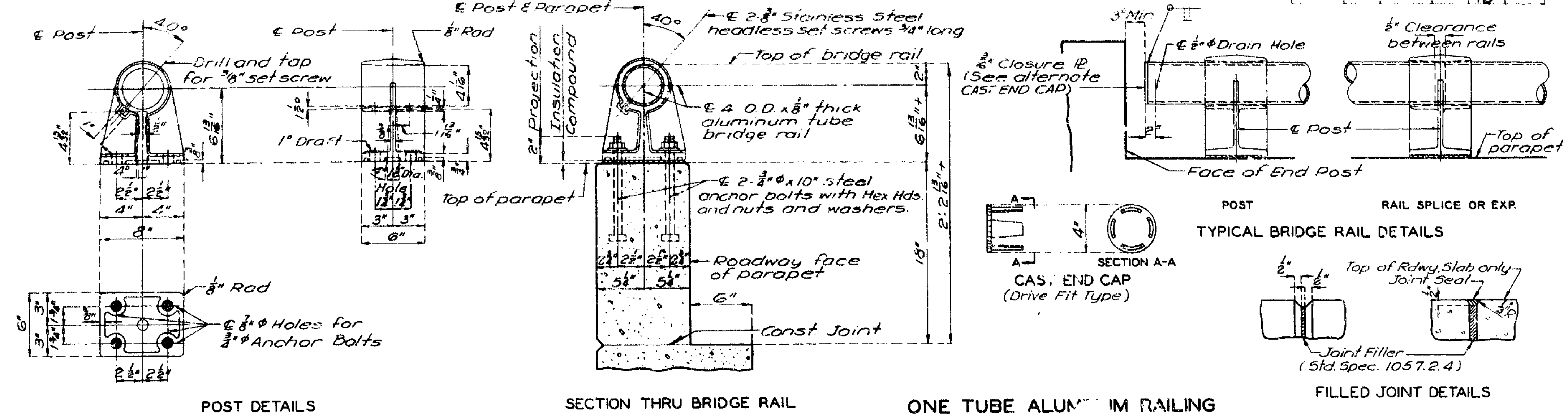
All drafts 3° except as noted.

Omit set screw in side of rail posts adjacent to filled joints in curb and parapet at rail expansion points. Omit set screw in each side of rail post on end bents except where a gap is shown in rail over an expansion device.

Top of curbs and parapet to be built parallel to grade with curb and parapet joints (except at end bents) normal to grade.

Concrete end posts to be vertical.

All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 1/8" bevel unless otherwise noted.



POST DETAILS

SECTION THRU BRIDGE RAIL

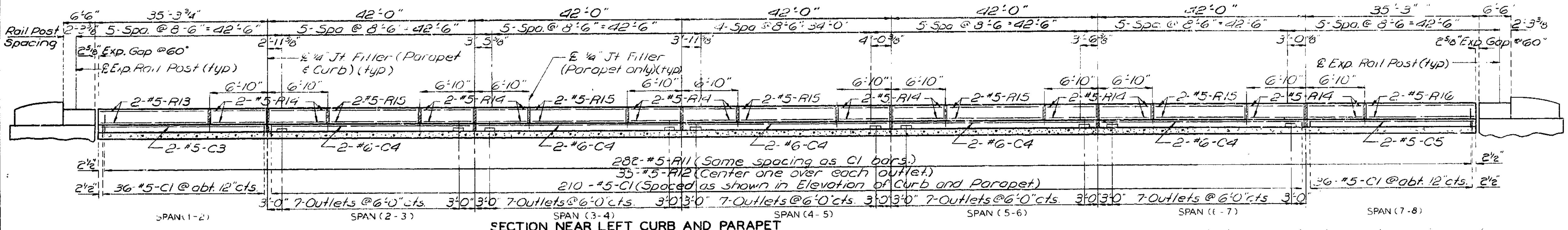
CAST END CAP (Drive Fit Type)

POST — RAIL SPLICE OR EXP.

TYPICAL BRIDGE RAIL DETAILS

FILLED JOINT DETAILS

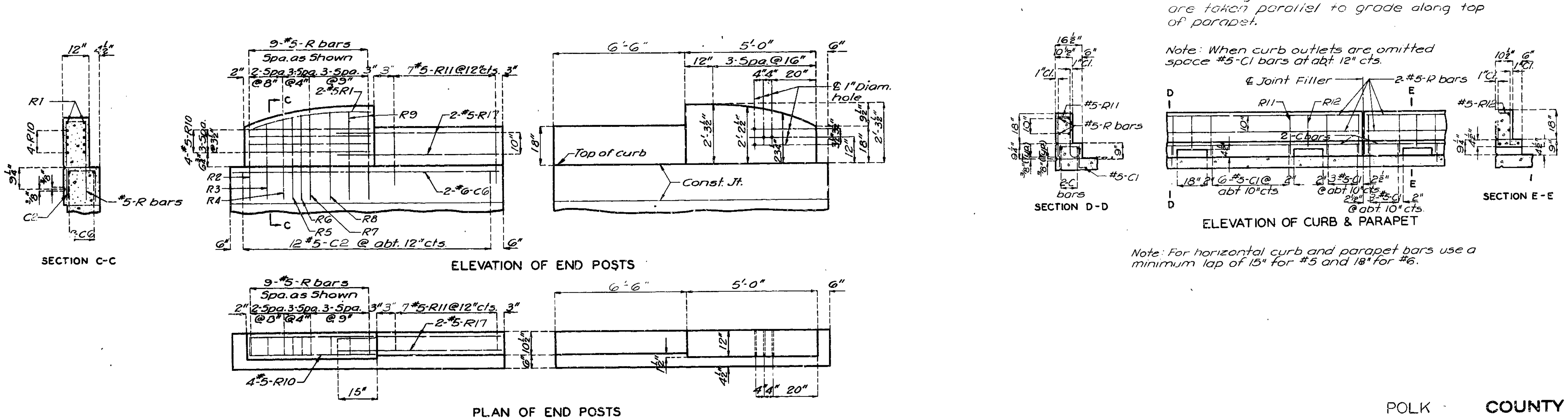
ONE TUBE ALUMINUM RAILING



SECTION NEAR LEFT CURB AND PARAPET

Note: Longitudinal dimensions shown are taken parallel to grade along top of parapet.

Note: When curb outlets are omitted space #5-C1 bars at abt. 12" cts.



SECTION C-C

ELEVATION OF END POSTS

SECTION D-D

ELEVATION OF CURB & PARAPET

SECTION E-E

PLAN OF END POSTS

Note: For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6.

479

STD. 1.5.2 MAR. 1964 REVISED OCT. 1968

DETAILED March 1971 BY Gilmore
CHECKED March 1971 BY Weaver

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

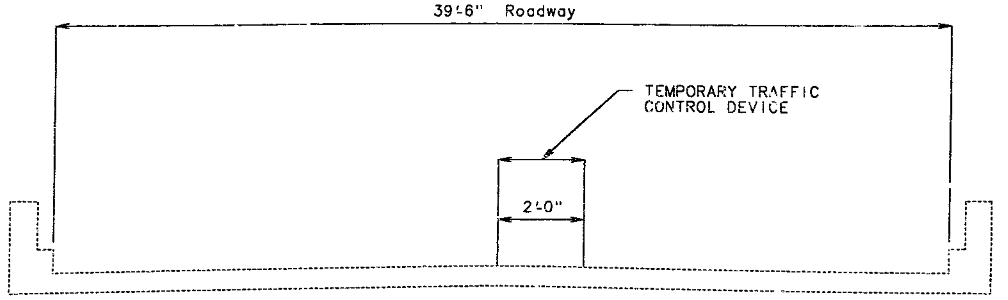
Sheet No. 12 of 12

POLK COUNTY

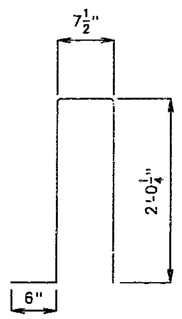
A-3029

STATE	PROJ. NO.	SHEET NO.
MO.	C039-B30(102)M	7
SEC./SUR. 9 TWP. 31W RGE. 22W		

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION



SECTION THRU SLAB



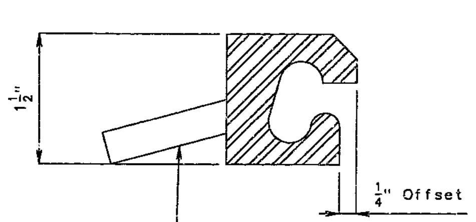
#5-R1 (16-Required)

NOTE: New #5-R1 Bars shall be Epoxy Coated.
All Dimensions are out to out.
Bends shall be in accordance with CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures Stirrup and Tie Dimensions.
Furnishing and installing #5-R1 bars shall be included in the contract unit price bid for "Modification of Existing Expansion Joint".

BENDING DIAGRAM

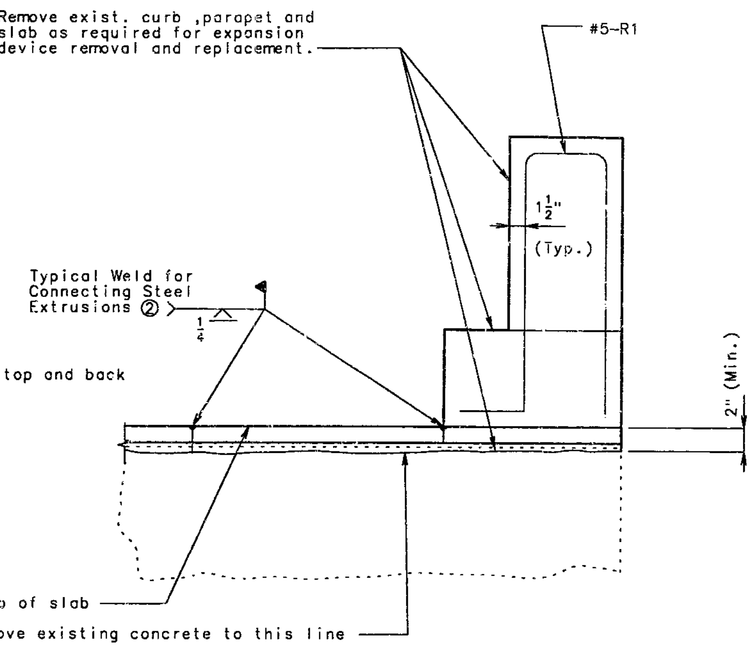
STRIP SEAL GLAND
MOVEMENT RATING 4"

NOTE: The Strip Seal Gland shall extend past the edge of the slab by 3/4".

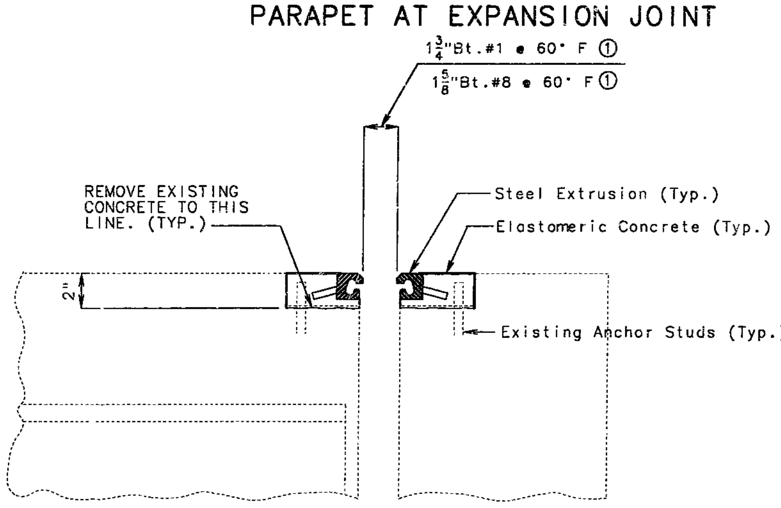


DETAIL OF STEEL EXTRUSION

② Extrusion shall be welded top and back



PART SECTION THRU CURB AND PARAPET AT EXPANSION JOINT



PART SECTION THRU MODIFICATION AT EXISTING EXPANSION DEVICE BTS. NO. 1 & 8.

① Dimensions shall be increased ⅛" for each 10° fall in temperature and decreased ⅛" for each rise in temperature at installation.

GENERAL NOTES:

DESIGN UNIT STRESSES:
Class B1 Concrete f'c 4,000 psi
Reinforcing Steel Grade 60 fy=60,000 psi

OLD WORK:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work."

VERIFY DIMENSIONS:
Contractor shall verify all dimensions in field before ordering new steel.

BARS BONDED IN OLD CONCRETE:
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.

MAINTAIN TRAFFIC:
Maintain one lane of traffic on structure during construction. (See Roadway Plans)

PLAN DIMENSIONS:
Plan dimensions are based on installation at 60 F. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change.

RESIN ANCHOR SYSTEMS:
THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS.
THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS.
COST OF FURNISHING AND INSTALLING THE ANCHOR SYSTEMS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR "STRIP SEAL EXPANSION JOINT SYSTEMS".
THE ½" DIAMETER RESIN ANCHOR SYSTEMS SHALL HAVE A MINIMUM ULTIMATE PULLOUT STRENGTH OF 9800 lbs. IN CONCRETE WITH f'c=4,000 PSI. SEE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES		
ITEM		TOTAL
STRIP SEAL EXPANSION JOINT SYSTEM	LIN. FT.	84
MODIFICATION OF EXISTING EXPANSION JOINT	LIN. FT.	84

NOTE: Cost of B1 concrete & reinforcing steel required to replace removed concrete in curb and parapets shall be included in cost bid for "Modification of Existing Expansion Joint".

NOTES FOR STRIP SEAL:

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

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

All steel shall be A36, except steel extrusions shall be A.S.T.M. A588 or A36.

Payment for steel extrusions, Elastomeric Concrete, furnishing, pointing, cleaning and placing structural steel plates and extrusions shall be made under the contract unit price for " Strip Seal Expansion Joint System".

REPAIRS TO BRIDGE OVER DRY SAC RIVER

STATE ROAD FROM CEDAR VISTA TO GREENE COUNTY LINE
ABOUT 0.5 MILE N. OF GREENE COUNTY LINE
PROJECT NO. C039-B30(102)M STA. 701+21.50
Christian/ JOB NO. J8P0619 RTE. 13
Greene/ POLK COUNTY

STD.
STD.
A30291

352 386

DETAILED JAN. 1994
CHECKED APRIL 1994

DETAILS OF STRIP SEAL EXPANSION DEVICE NEAR BENT NO. 1 & NO. 8.

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

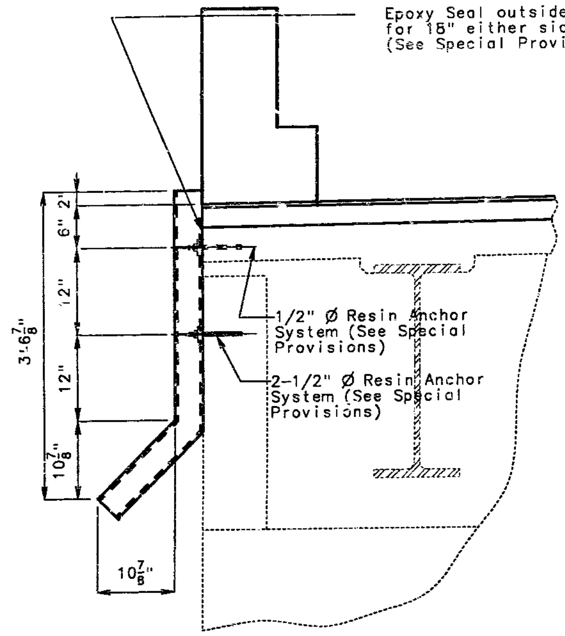
SHEET NO. 1 OF 3

DATE 7/7/94

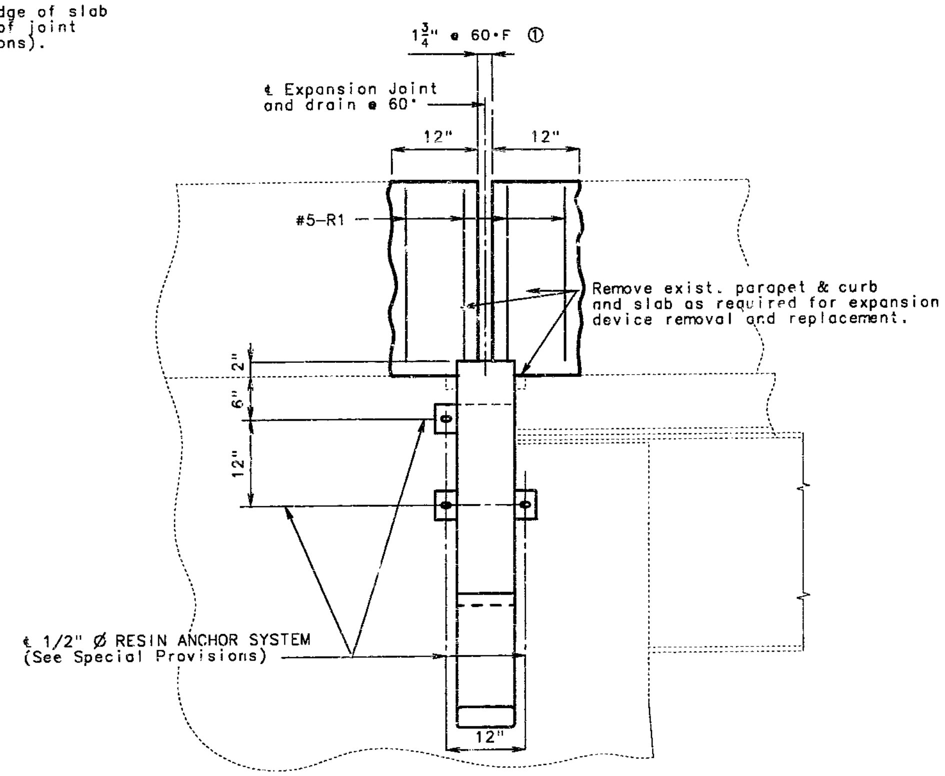
SEE FINAL PLANS

STATE	PROJ. NO.	SHEET NO.
MO.		8

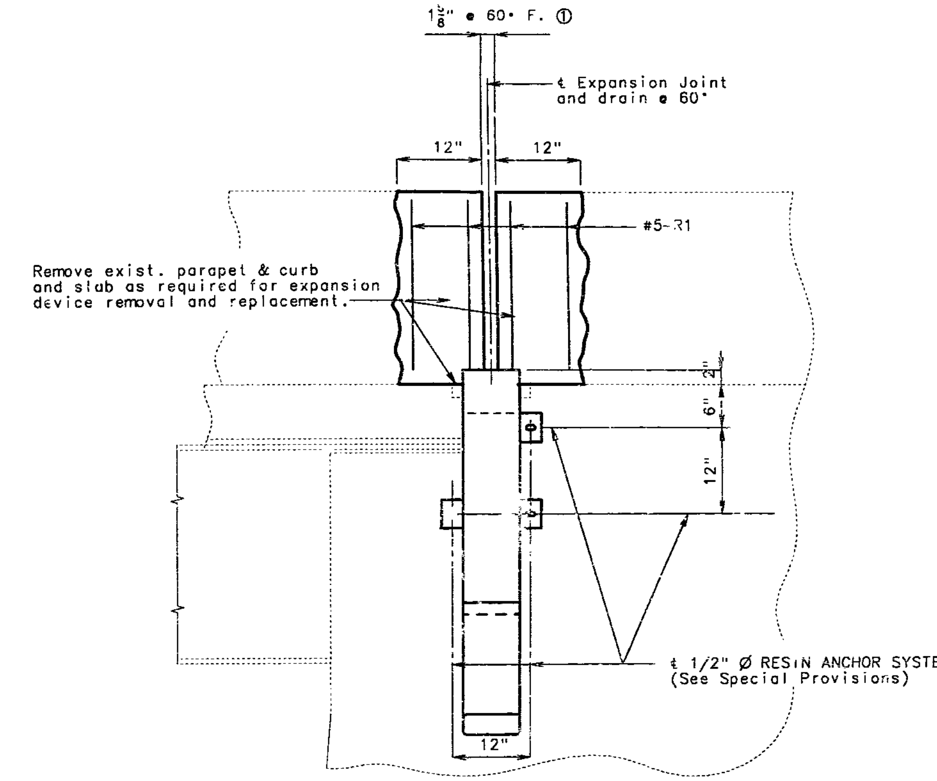
① Dimensions shall be increased $\frac{1}{8}$" for each 10° fall in temperature and decreased $\frac{1}{8}$" for each rise in temperature at installation.



SECTION NEAR EXPANSION SYSTEMS

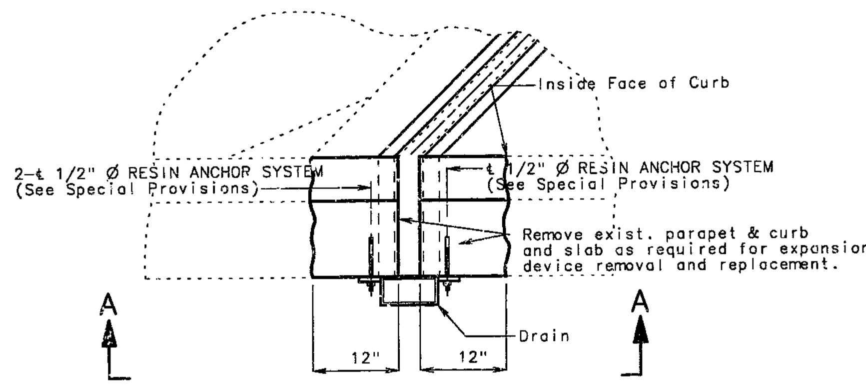


ELEVATION A–A

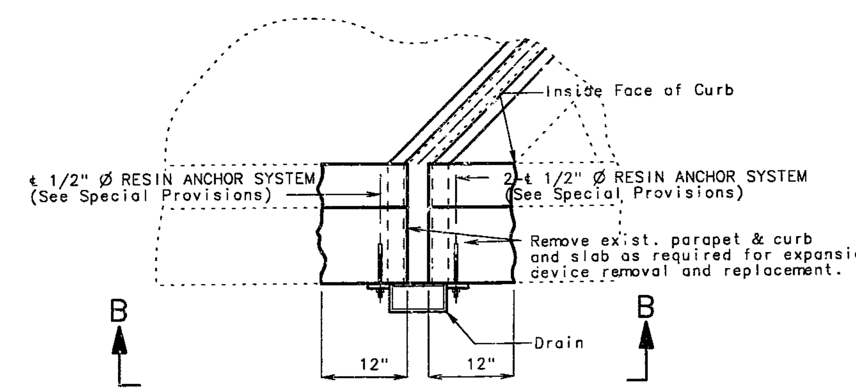


ELEVATION B–B

NOTE: Slab Drain shall be centered at top of Slab Expansion Joint @ 60° F.
For Details of Drains not shown, see sheet no. 3 .
For details and reinforcement of parapet & curb see sheet no. 1.



PART PLAN OF DRAIN ATTACHMENT
BENT NO. 1



PART PLAN OF DRAIN ATTACHMENT
BENT NO. 8

DETAILS OF DRAIN AT EXPANSION DEVICE NEAR END BENT NO.1 & 8
(RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE)

DETAILED JAN. 1994
CHECKED APRIL 1994

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

SHEET NO. 2 OF 3 .

POLK COUNTY

A30291

STATE	PROJ. NO.	SHEET NO.
MO.		9

NOTES FOR EXPANSION DEVICE DRAIN:

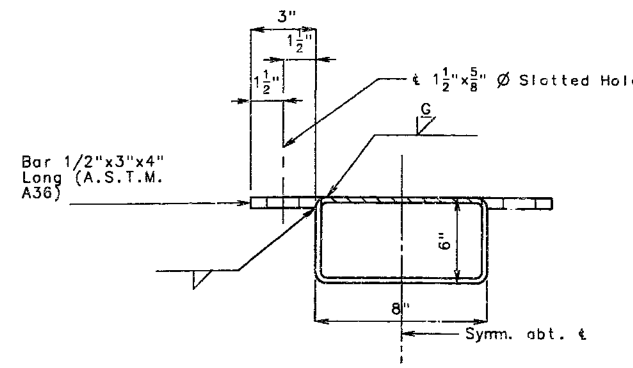
Drains may be fabricated of either 1/4" welded sheets of A.S.T.M. steel or from 1/4" structural steel tubing A.S.T.M. A500 or A501.

Outside dimensions of Drains are 8"x6".

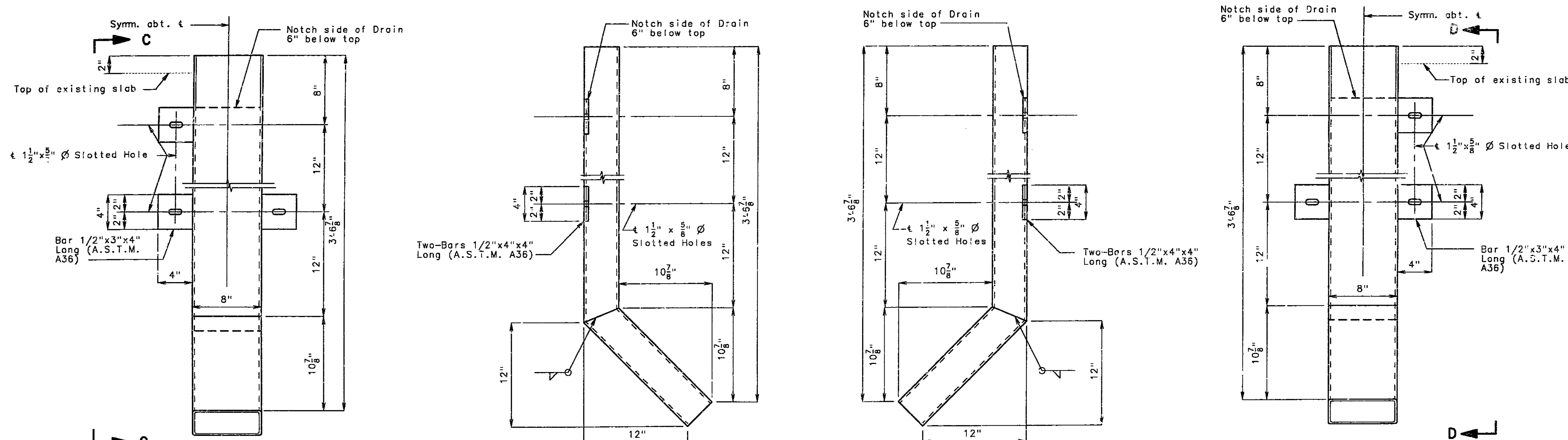
The Drains and Bracket Assembly shall be galvanized in accordance with A.S.T.M. A123.

All Bolts, Hardened Washers, Lock Washers and Nuts shall begalvanized in accordance with A.S.T.M. A153.

Payment for furnishing and installing Expansion Device Drains & Resin Anchor Systems complete in place, shall be included in the contract unit price bid for "Strip Seal Expansion Joint System".



PLAN OF DRAIN AT END BENTS



ELEVATION OF DRAIN AT END BENT NO. 1

ELEVATION C C

ELEVATION D D

ELEVATION OF DRAIN AT END BENT NO. 8

DETAILS OF EXPANSION DEVICE DRAIN AT BENTS NO.1 & 8 (RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE)

NOTE: Slab Drain shall be centered on top of Slab Expansion Joint @ 60° F.

DETAILED JAN. 1994
CHECKED APRIL 1994

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

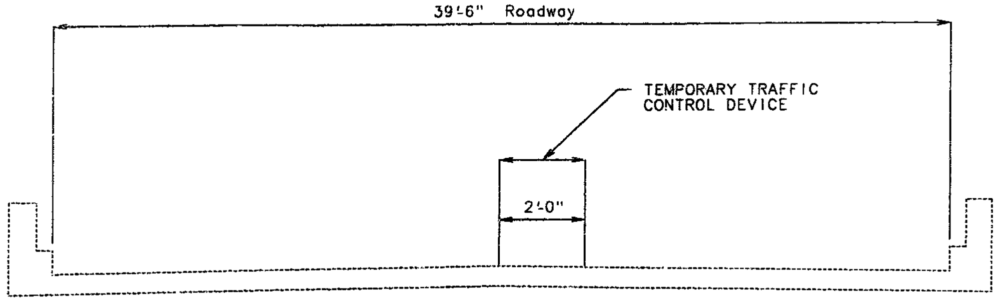
SHEET NO. 3 OF 3.

POLK COUNTY A30291

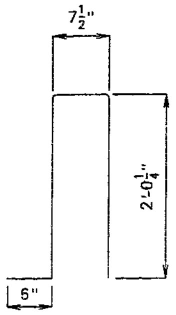
361 5838

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	C039-B30(102)M	7
SEC./SUR. 9 TWP. 31W RGE. 22W		



SECTION THRU SLAB



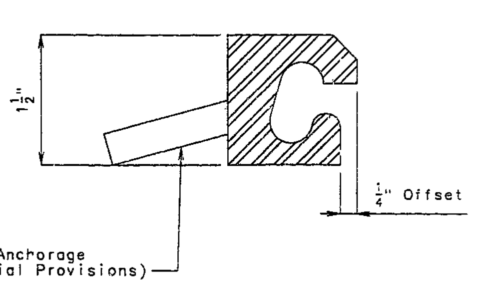
#5-R1 (16-Required)

NOTE: New #5-R1 Bars shall be Epoxy Coated.
All Dimensions are out to out.
Bends shall be in accordance with CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures Stirrup and Tie Dimensions.
Furnishing and installing #5-R1 bars shall be included in the contract unit price bid for "Modification of Existing Expansion Joint".

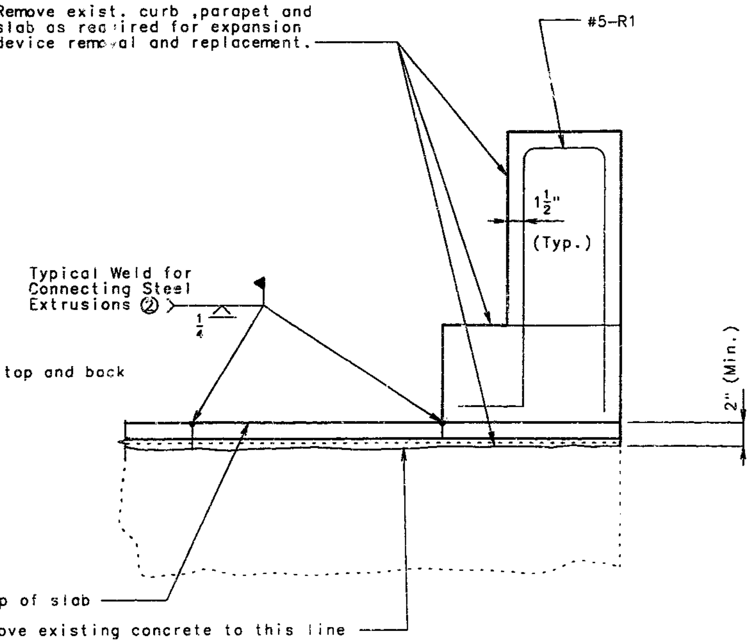
BENDING DIAGRAM

STRIP SEAL GLAND
MOVEMENT RATING 4"

NOTE: The Strip Seal Gland shall extend past the edge of the slab by 3/4".

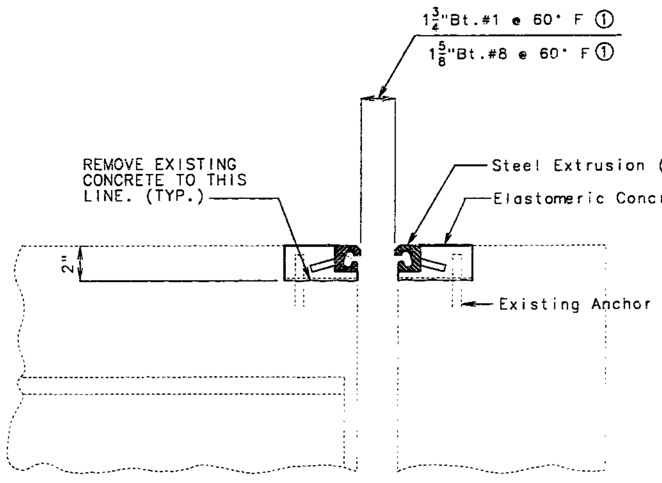


DETAIL OF STEEL EXTRUSION



② Extrusion shall be welded top and back

PART SECTION THRU CURB AND PARAPET AT EXPANSION JOINT



PART SECTION THRU MODIFICATION AT EXISTING EXPANSION DEVICE BTS. NO. 1 & 8.

① Dimensions shall be increased ⅛" for each 10° fall in temperature and decreased ⅛" for each rise in temperature at installation.

GENERAL NOTES:

DESIGN UNIT STRESSES:
Class B1 Concrete f'c 4,000 psi
Reinforcing Steel Grade 60 fy=60,000 psi

OLD WORK:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work."

VERIFY DIMENSIONS:
Contractor shall verify all dimensions in field before ordering new steel.

BARS BONDED IN OLD CONCRETE:
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.

MAINTAIN TRAFFIC:
Maintain one lane of traffic on structure during construction. (See Roadway Plans)

PLAN DIMENSIONS:
Plan dimensions are based on installation at 60° F. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change.

RESIN ANCHOR SYSTEMS:
THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS.
THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS.
COST OF FURNISHING AND INSTALLING THE ANCHOR SYSTEMS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR "STRIP SEAL EXPANSION JOINT SYSTEMS".
THE ½" DIAMETER RESIN ANCHOR SYSTEMS SHALL HAVE A MINIMUM ULTIMATE PULLOUT STRENGTH OF 9800 lbs. IN CONCRETE WITH f'c=4,000 PSI. SEE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES		
ITEM		TOTAL
STRIP SEAL EXPANSION JOINT SYSTEM	LIN. FT.	84
MODIFICATION OF EXISTING EXPANSION JOINT	LIN. FT.	84

NOTE: Cost of B1 concrete & reinforcing steel required to replace removed concrete in curb and parapets shall be included in cost bid for "Modification of Existing Expansion Joint".

NOTES FOR STRIP SEAL:

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

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

All steel shall be A36, except steel extrusions shall be A.S.T.M. A588 or A36.

Payment for steel extrusions, Elastomeric Concrete, furnishing, painting, cleaning and placing structural steel plates and extrusions shall be made under the contract unit price for " Strip Seal Expansion Joint System".

REPAIRS TO BRIDGE OVER DRY SAC RIVER

STATE ROAD FROM CEDAR VISTA TO GREENE COUNTY LINE
ABOUT 0.5 MILE N. OF GREENE COUNTY LINE
PROJECT NO. C039-B30(102)M STA. 701+21.50
JOB NO. J8P0619 RTE. 13
Christian / Greene / POLK COUNTY
DATE 7/7/94

STD.
STD.
A30291

DETAILS OF STRIP SEAL EXPANSION DEVICE NEAR BENT NO. 1 & NO. 8.

DETAILED JAN. 1994
CHECKED APRIL 1994

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

SHEET NO. 1A OF 3

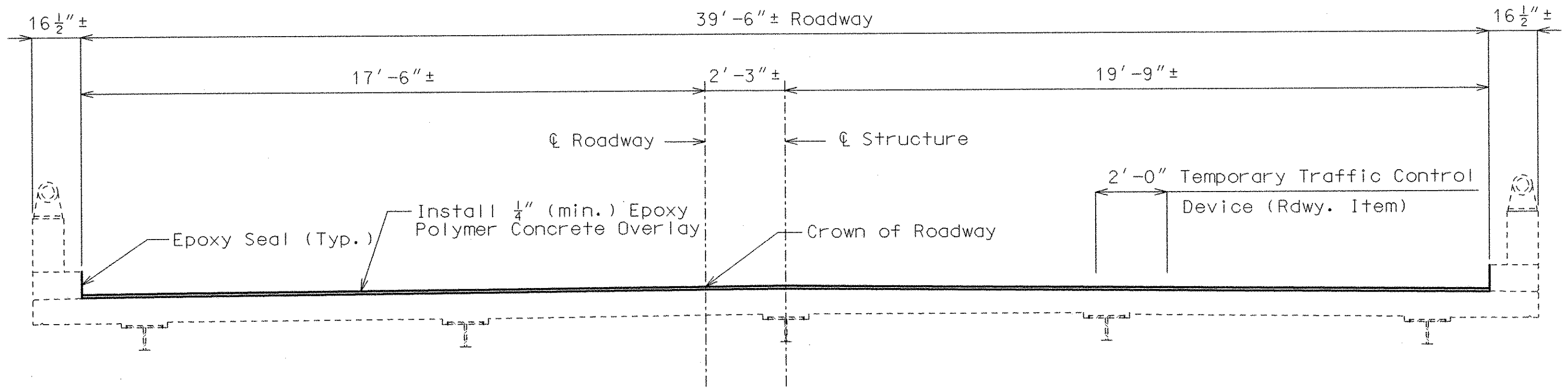
COMPUTED BY B. Brown
CHECKED BY Olle McGowan

362

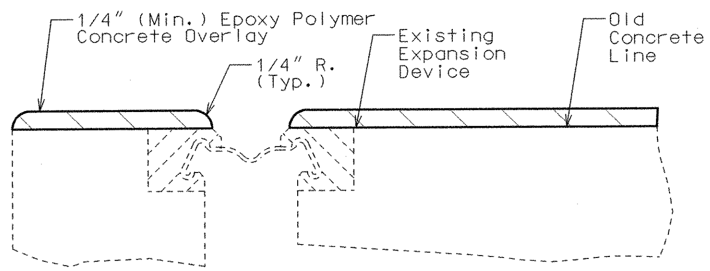
State	Proj. No.	Sheet No.
MO		81
SEC/SUR 9	TWP 31N	RGE 22W

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

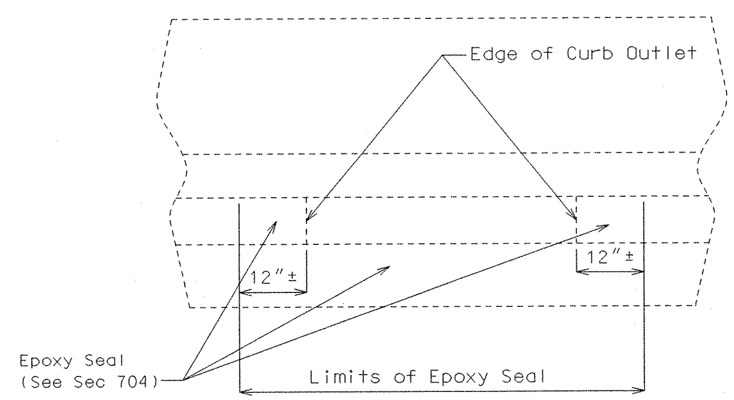
U.I.P. EXISTING (34'-5 @ 42'-34') CONTINUOUS COMP. WF BEAM SPANS



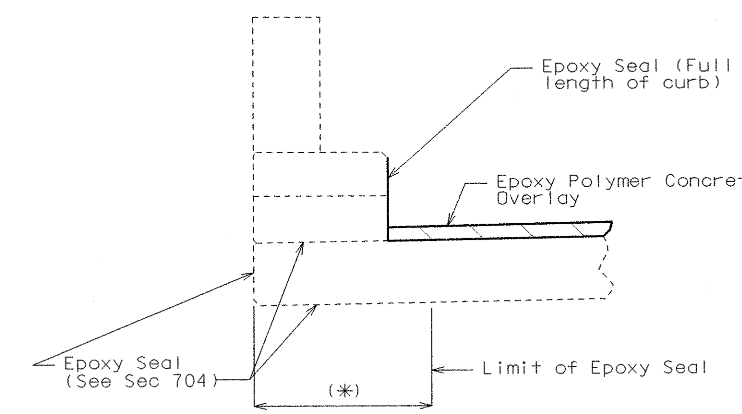
SECTION THRU EXISTING SLAB



PART SECTION THRU EXPANSION JOINTS AT BENTS NO. 1 & 8



TYPICAL ELEVATION OF EXISTING CURB SHOWING OUTLET



TYPICAL SECTION OF EXISTING CURB SHOWING OUTLET

✱ To edge of Exterior Stringer

GENERAL NOTES:

Design Specifications:

2002 - AASHTO 17th Edition

Miscellaneous:

Maintain one lane of traffic on structure during construction. See roadway plans for traffic control.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

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

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

The contractor shall exercise care to ensure spillage over joint edges is prevented and that a neat line is obtained along any terminating edge of the epoxy polymer concrete.

Estimated Quantities		
Item		Total
Epoxy Polymer Concrete Overlay	sq. yard	1,244

STATE OF MISSOURI DANIEL M. SMITH NUMBER E-26965 REGISTERED PROFESSIONAL ENGINEER

DATE 2-22-05

REPAIRS TO BRIDGE OVER DRY SAC RIVER

STATE ROAD FROM RTE. M SOUTH TO GREENE COUNTY LINE
ABOUT 0.5 MILES N.E. OF GREENE COUNTY LINE
PROJECT NO. STA. 701+21.50± (Match Exist.)
JOB NO. J8P0768 RTE. 13 SBL

POLK COUNTY

Date: 2/24/05

A30292

REV.

Detailed Nov. 2004
Checked Dec. 2004

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

Sheet No. 1 of 1

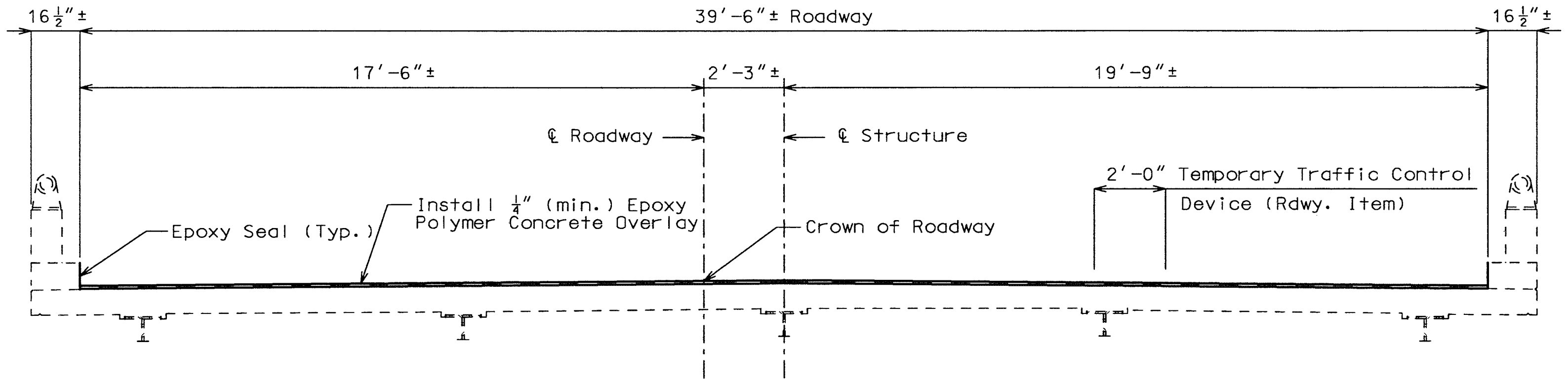
t:\br-proj\taylod2\J8P0768\A30292\A30292_001.dgn 11:20:48 AM 02/22/2005

FINAL PLANS

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

U.I.P. EXISTING (34'-5 @ 42'-34') CONTINUOUS COMP. WF BEAM SPANS

State	Proj. No.	Sheet No.
MO		
SEC/SUR 9	TWP 31N	RGE 22W

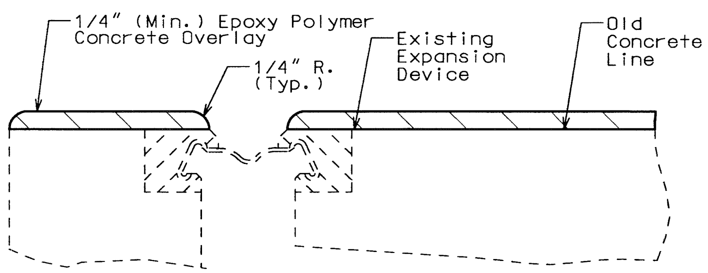


SECTION THRU EXISTING SLAB

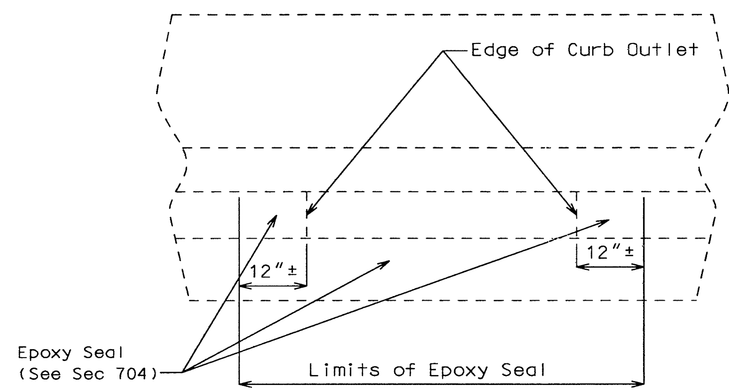
FINAL PLANS

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.

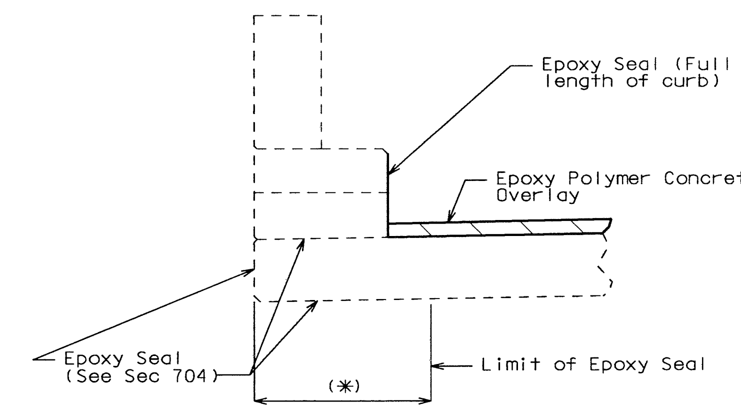
SIGNATURE DATE



PART SECTION THRU EXPANSION JOINTS AT BENTS NO. 1 & 8



TYPICAL ELEVATION OF EXISTING CURB SHOWING OUTLET



TYPICAL SECTION OF EXISTING CURB SHOWING OUTLET

* To edge of Exterior Stringer

GENERAL NOTES:

Design Specifications:

2002 - AASHTO 17th Edition

Miscellaneous:

Maintain one lane of traffic on structure during construction. See roadway plans for traffic control.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

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

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

The contractor shall exercise care to ensure spillage over joint edges is prevented and that a neat line is obtained along any terminating edge of the epoxy polymer concrete.

Estimated Quantities		
Item		Total
Epoxy Polymer Concrete Overlay	sq. yard	1,244

REPAIRS TO BRIDGE OVER DRY SAC RIVER

STATE ROAD FROM RTE. M SOUTH TO GREENE COUNTY LINE
ABOUT 0.5 MILES N.E. OF GREENE COUNTY LINE
PROJECT NO. **STA. 701+21.50± (Match Exist.)**
JOB NO. J8P0768 **RTE. 13 SBL**

POLK COUNTY

Date: / /

A30292

REV.

Prepared by [illegible] 11-17-05
Checked by [illegible] 11/18/05

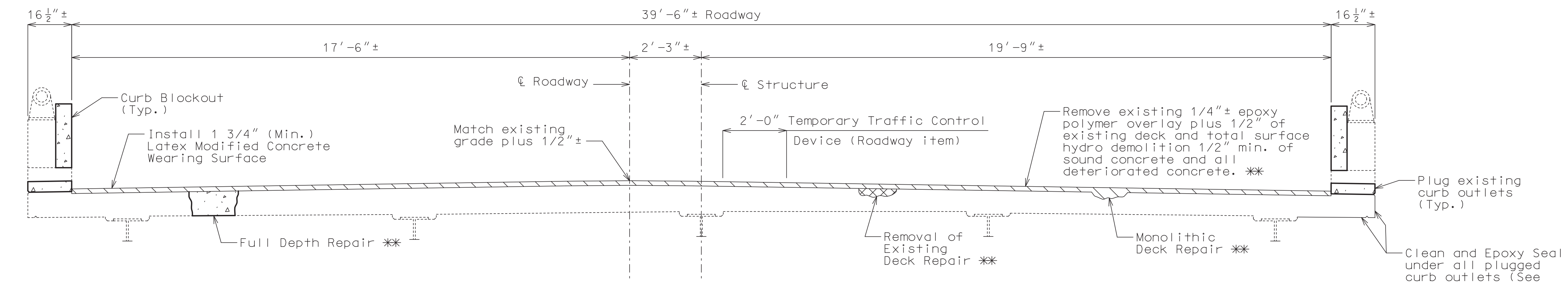
Detailed Nov. 2004
Checked Dec. 2004

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

C:\DOCUME~1\granth.GH\LOCALS~1\Temp\notesC4A9C8\A30292_001.dgn 12:53:34 PM 11/16/2005

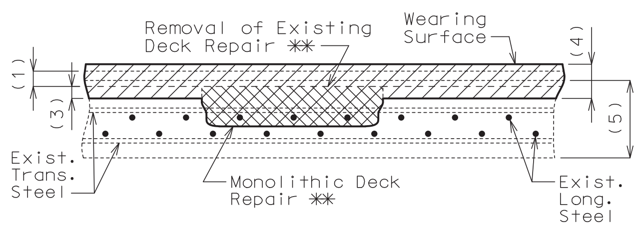
SEC/SUR 9	TWP 31N	RGE 22W

U.I.P. AND REHABILITATE EXISTING (34'-5 @ 42'-34') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS (SKEW: 45° L.A.)

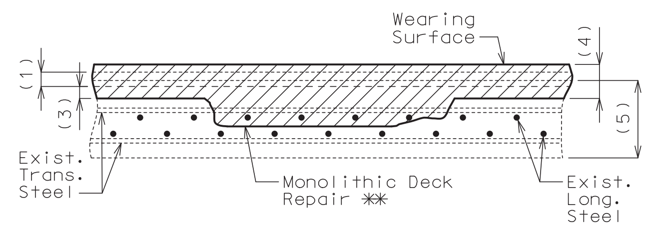


TYPICAL SECTION THRU EXISTING DECK

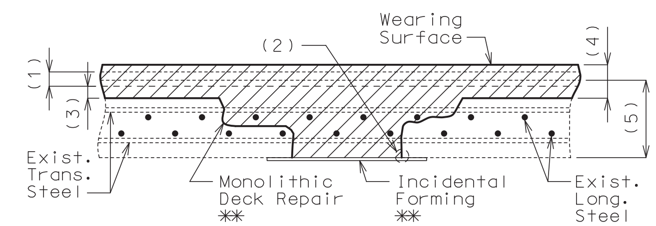
⁂ See special provisions



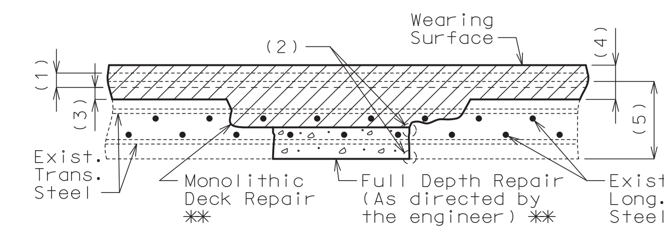
REMOVAL OF EXISTING DECK REPAIR



MONOLITHIC DECK REPAIR



MONOLITHIC DECK REPAIR REQUIRING INCIDENTAL FORMING



MONOLITHIC DECK REPAIR REQUIRING FULL DEPTH REPAIR

GENERAL NOTES:

Design Specifications:

2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating = 6

Design Loading:

HS20-44 (1969 & New Construction)

Design Unit Stresses:

Class B-1 Concrete (Slab & Curb Blockout) f'c = 4000 psi

Reinforcing Steel (Grade 60) fy = 60,000 psi

Joint Filler:

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

Reinforcing Steel:

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

Miscellaneous:

Roadway surfacing adjacent to bridge ends shall match new bridge overlay (Roadway item).

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

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

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

In order to maintain grade and a minimum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure. The cost of furnishing and installing the overlay will be considered completely covered in the contract unit price, including all additional labor, materials or equipment for variations in thickness of overlay.

Traffic Handling:

Traffic to be maintained on structure during construction. See roadway plans for traffic control.

(1) Remove existing wearing surface plus 1/2" of existing deck.

(2) One inch vertical side shall be established outside the deteriorated area.

(3) Total surface hydro demolition of existing deck 1/2" minimum of sound concrete and all deteriorated concrete.

(4) 1 3/4" (Min.) Latex Modified Concrete Wearing Surface

(5) Original depth of deck minus previous scarification.

Estimated Quantities

	Item		Total
	Removal of Epoxy Polymer Concrete Overlay	sq. foot	10,859
	Removal of Existing Deck Repair	sq. foot	25
⁂	Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	112
	Removal of Existing Bearings	each	10
	Remove and Replace Curb and Parapet	linear foot	17
	Latex Modified Concrete Wearing Surface	sq. yard	1213
	Class B-1 Concrete (Superstructure)	cu. yard	10.8
	Curb Blockout	linear foot	608
	Substructure Repair (Formed)	sq. foot	140
	Full Depth Repair	sq. foot	200
	Total Surface Hydro Demolition	sq. yard	1207
	Clean and Epoxy Seal	sq. foot	722
*	Monolithic Deck Repair	cu. yard	12
	Reinforcing Steel (Epoxy Coated)	pound	1300
	Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
	Cored Slab Drains	each	40
	Laminated Neoprene Bearing Pad Assembly	each	10
	Strip Seal Expansion Joint System	linear foot	112

* Monolithic Deck Repair will be made at a fixed unit price (See Special Provisions)

⁂ Includes expansion joint drains at end bents.

Designed Feb. 2019
Detailed Nov. 2018
Checked Mar. 2019

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

REPAIRS TO BRIDGE: ROUTE 13 (SB) OVER DRY SAC RIVER

ROUTE 13 FROM ROUTE M TO GREENE COUNTY LINE
ABOUT 0.5 MILE NE OF GREENE COUNTY LINE
STA. 701+21.50± (MATCH EXISTING)

STD. 706.35
STD. 606.22

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

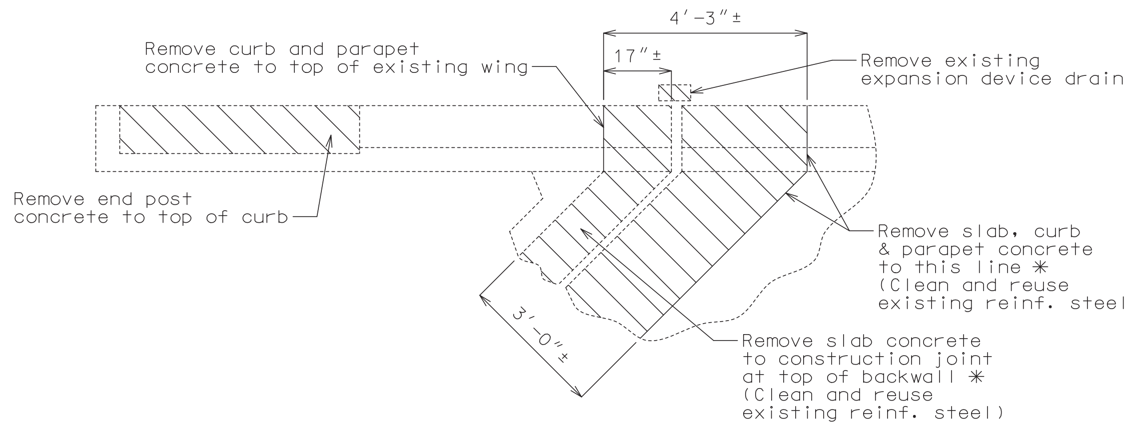
DATE PREPARED	
5/31/2019	
ROUTE 13	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY POLK	
JOB NO. J7P3190E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A30293	

DESCRIPTION

DATE

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

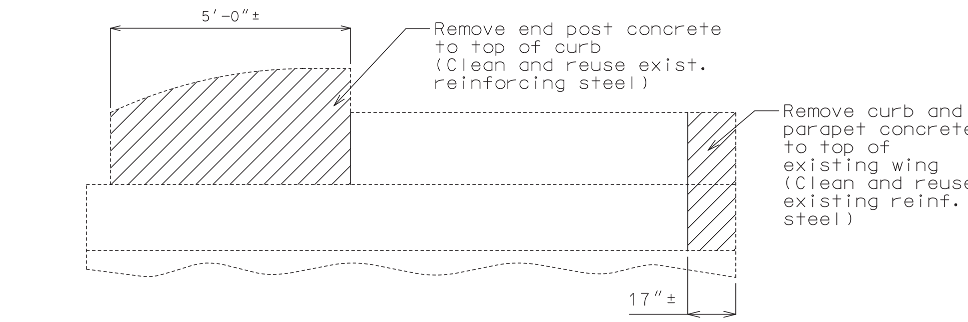
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



PART PLAN SHOWING CONCRETE REMOVAL
AT END BENTS NO. 1 & 8

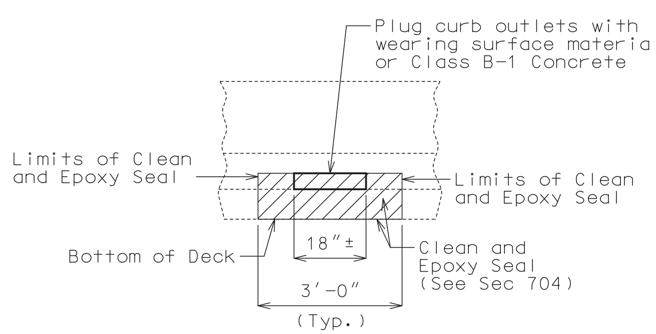
(Left side at End Bent No. 1 shown, right side at End Bent No. 1 and both sides at End Bent No. 8 similar)

✳ Hydro-demolition methods may be used for these concrete removals.



PART ELEVATION SHOWING END POST
CONCRETE REMOVAL

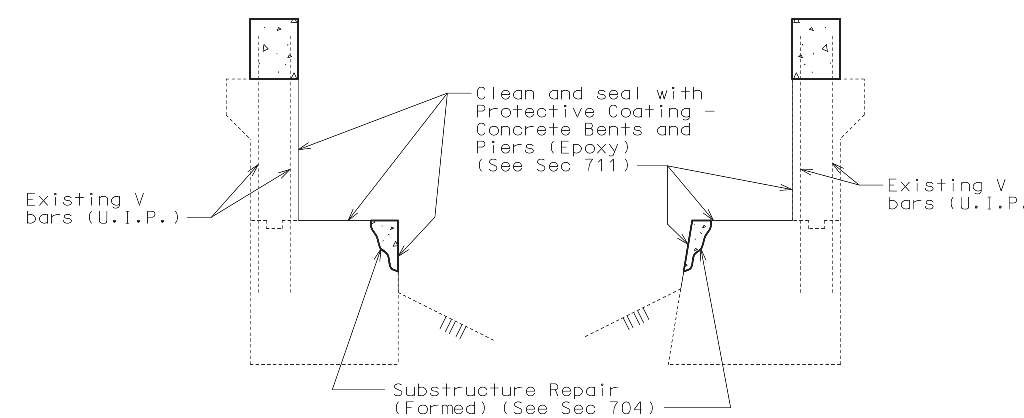
Note:
Cost of removing existing end posts will be considered completely covered by the contract unit price for Curb Blockout. Cost of removing existing curb and parapet for expansion device replacement will be considered completely covered by the contract unit price for Remove and Replace Curb and Parapet.



PART ELEVATION SHOWING
CLEAN AND EPOXY SEAL
AND PLUGGING OF CURB OUTLETS

Note: Cost of labor and materials required to plug all curb outlets will be considered completely covered by the contract unit price for other items.

Estimated material to fill all curb outlets (estimated 70 total) is 2.0 cubic yards.



SECTION THRU END BENTS NO. 1 & 8
SHOWING SUBSTRUCTURE REPAIR
AND PROTECTIVE COATING

REHAB DETAILS

Detailed Nov. 2018
Checked Feb. 2019

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

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	5/31/2019
ROUTE 13	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY	POLK
JOB NO.	J7P3190E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A30293

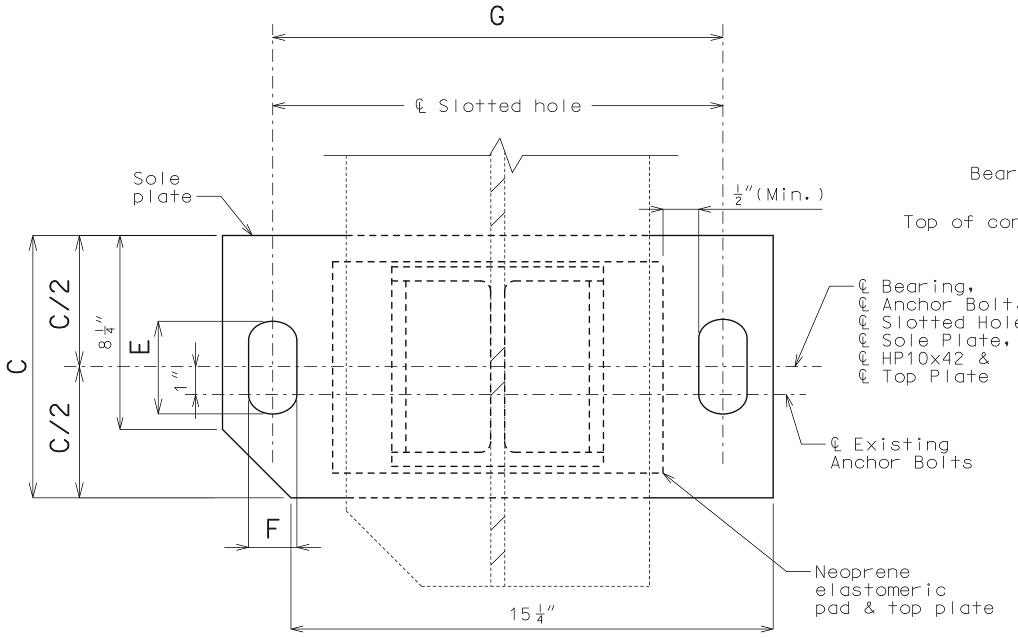
DESCRIPTION

DATE

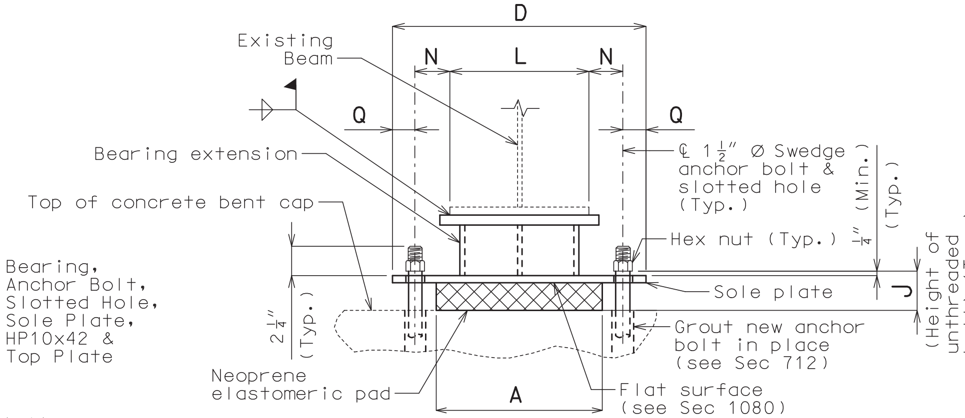
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

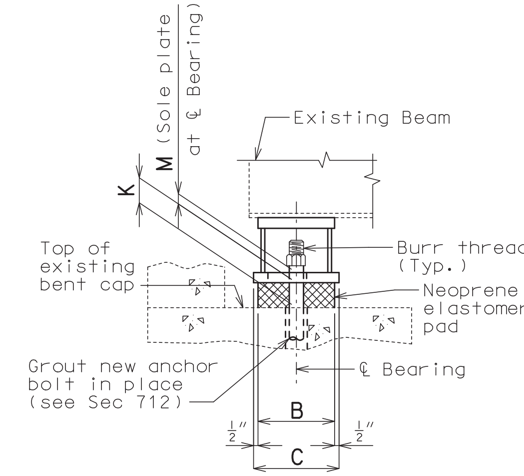
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



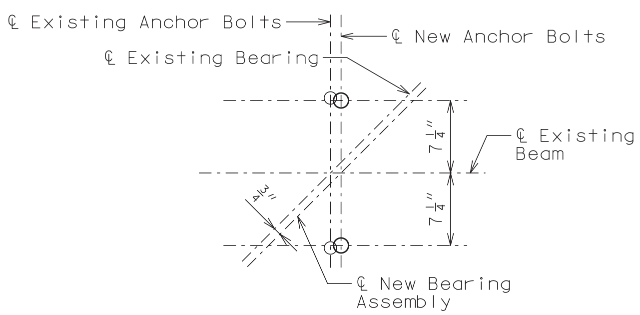
PART PLAN



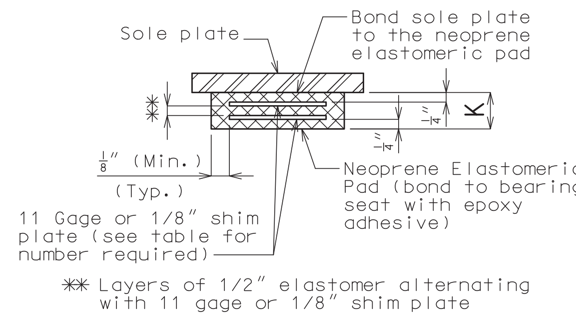
END VIEW



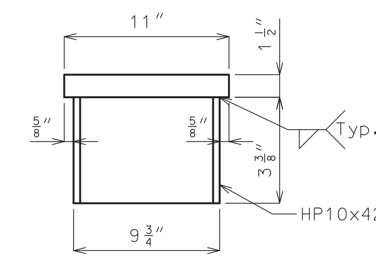
SIDE VIEW



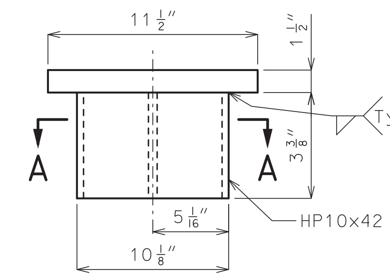
PLAN SHOWING
ANCHOR BOLT LOCATIONS



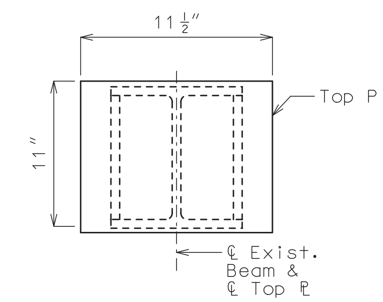
NEOPRENE ELASTOMERIC PAD



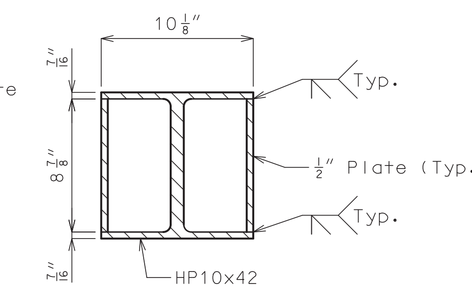
SIDE ELEVATION



END ELEVATION

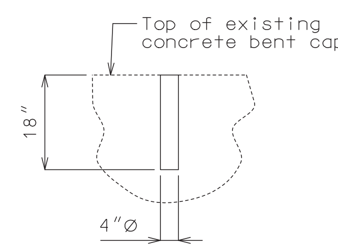


PLAN OF BEARING EXTENSION

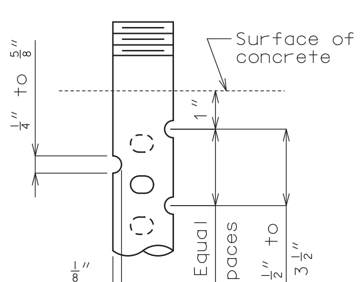


SECTION A-A

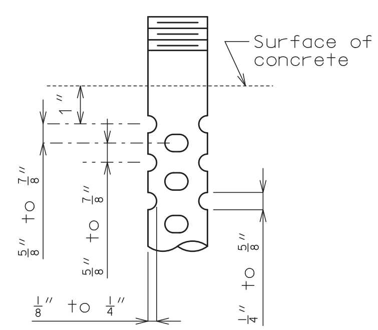
DETAILS OF BEARING EXTENSION



DETAIL OF
ANCHOR BOLT WELL



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



OPTIONAL DETAIL OF 1 3/8"Ø
THRU 2 1/2"Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

EXPANSION BEARINGS																
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	Q	R	NUMBER OF SHIM PLATES *	NUMBER REQUIRED
1	11"	11"	12"	19"	5¾"	1⅝"	14½"	6⅛"	4⅜"	10½"	1½"	2"	2¼"	⅛"	7	5
8	11"	11"	12"	19"	5¾"	1⅝"	14½"	6⅛"	4⅜"	10½"	1½"	2"	2¼"	⅛"	7	5
															TOTAL BEARINGS	10

* The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor bolts shall be 1½" Ø ASTM F1554 Grade 55 swedged bolts and shall extend 15" into the concrete with ASTM A563 Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted **R** for each 10° fall or rise in temperature at installation.

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate and bearing extension shall be ASTM A709 Grade 50. All structural steel for the sole plate, bearing extension, anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

Cost of anchor bolts, drilling, grouting and bearing extension, complete in place, will be considered completely covered by the contract unit price for Laminated Neoprene Bearing Pad Assembly.

The temporary supports shall be capable of safely supporting a dead load service load of 33 kips and a live load of 53 kips per beam if done under traffic (see special provisions).

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY AT END BENTS NO. 1 & 8

Detailed Nov. 2018
Checked Feb. 2019

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

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
5/31/2019	
ROUTE	STATE
13	MO
DISTRICT	SHEET NO.
BR	3
COUNTY	
POLK	
JOB NO.	
J7P3190E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A30293	

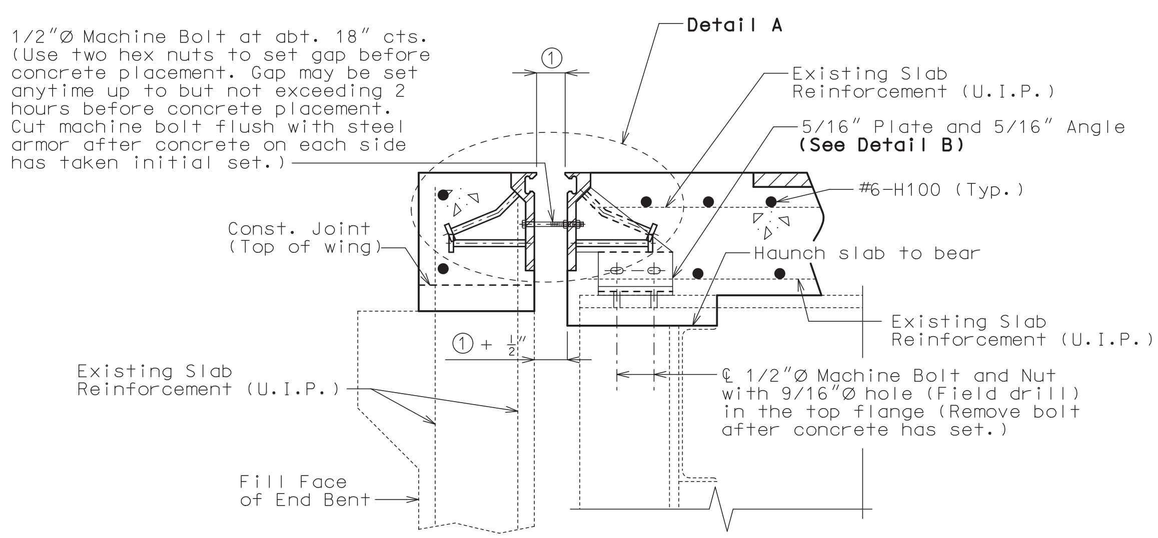
DATE	DESCRIPTION
3/17/15	Revised sole plate dimensions
7/17/17	Revise location of slotted hole

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

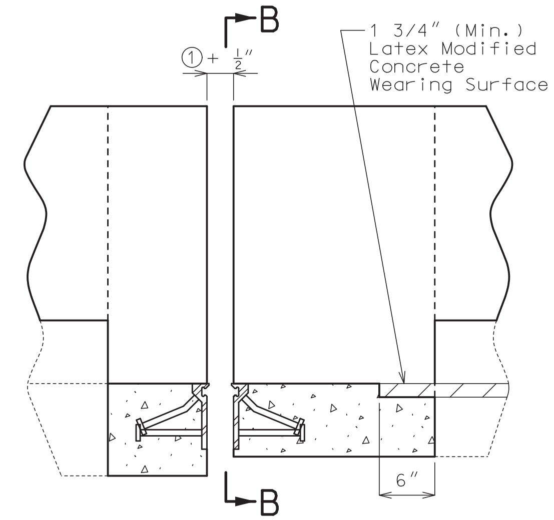
MoDOT

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



SECTION A-A

Note: Strip seal gland not shown for clarity.



Note: Strip seal gland not shown for clarity.

PART ELEVATION OF CURB

GENERAL NOTES:

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

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

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

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

Existing longitudinal reinforcing steel shall be cut or bent so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

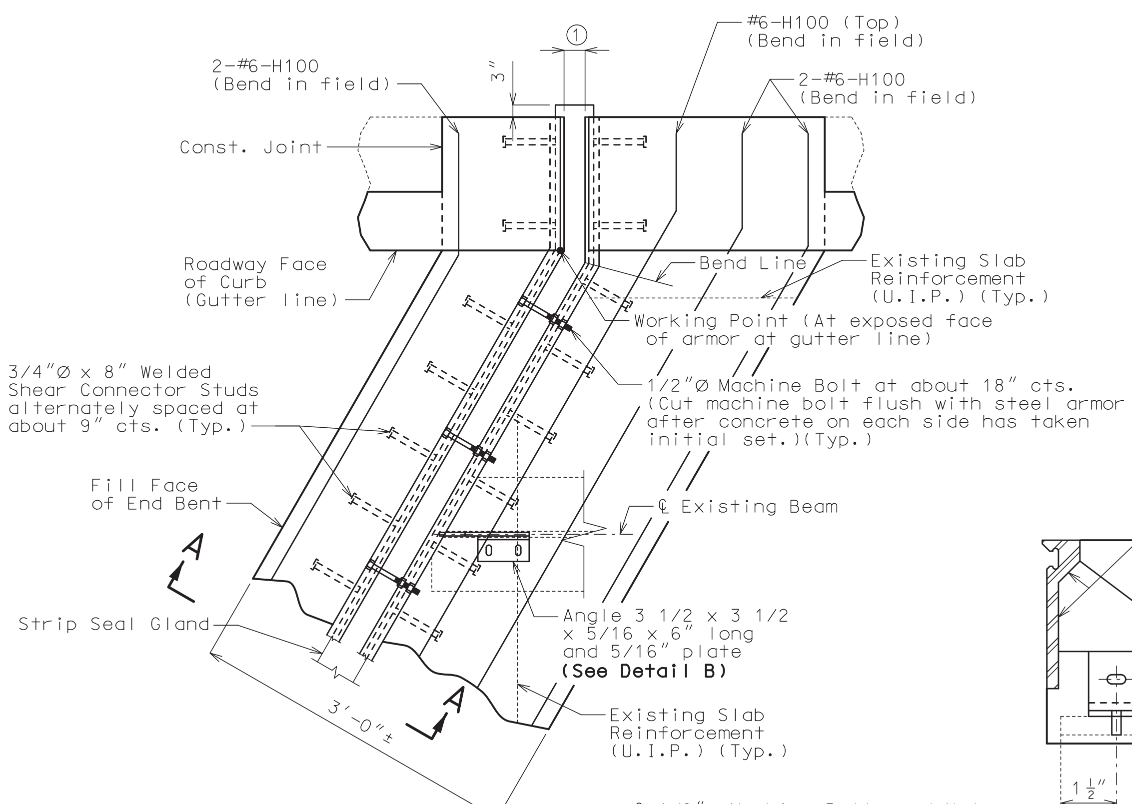
Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

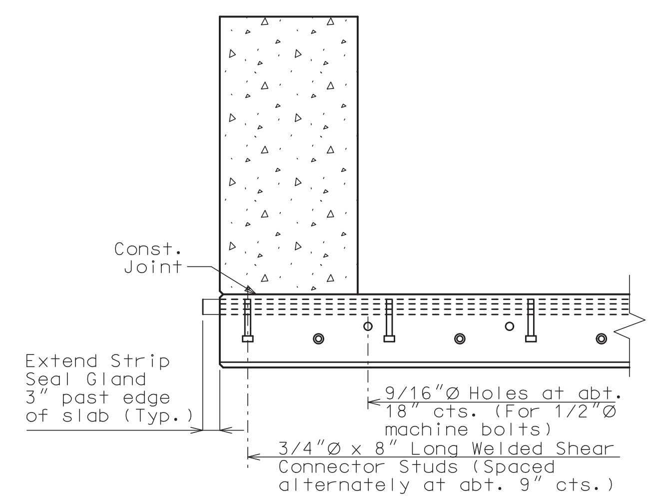
③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

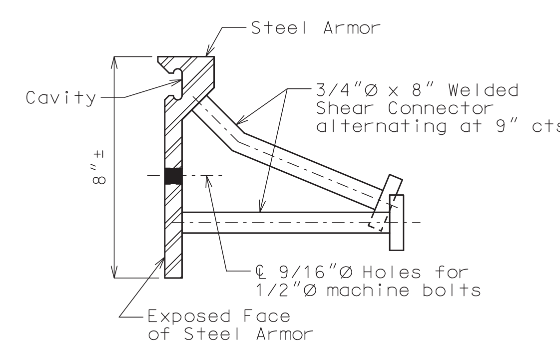
The #6-H100 bars shall be segmented to accommodate stage construction. The total bar length for #6-H100 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-6". Actual bar segment lengths shall be determined by the contractor. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and stage construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Reinforcing Steel (Epoxy Coated). No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.



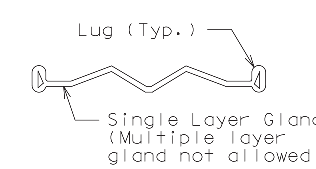
PART PLAN



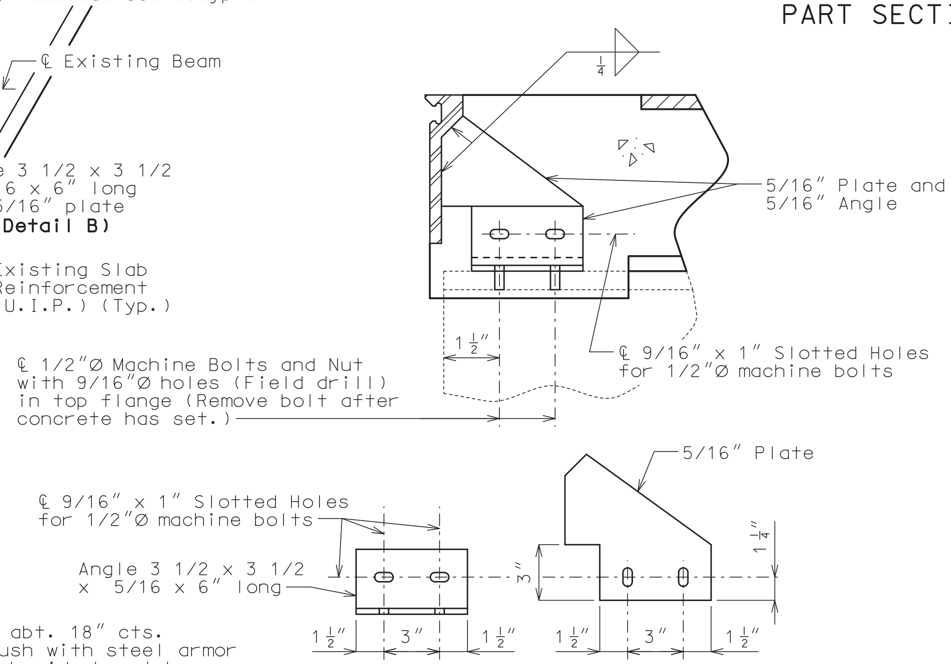
PART SECTION B-B



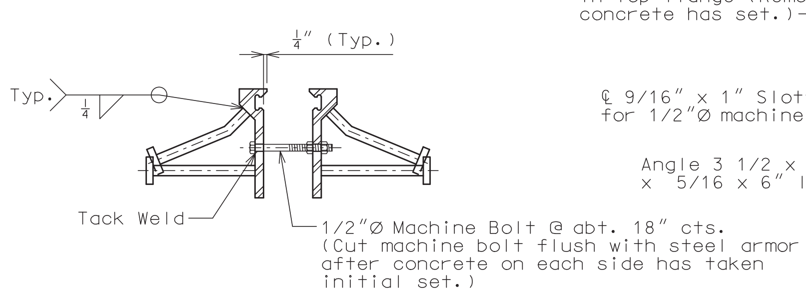
DETAIL OF JOINT ARMOR



DETAIL OF GLAND



DETAIL B



DETAIL A

Table of Allowed Transverse Strip Seal Expansion Joint System

Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	Allowed Installation Gap ① Normal to Joint at RDWY Surface @ Air/Surface Temperature ②						③
			@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
D S Brown	Strip seal L2-400	$1\frac{15}{16}$	$2\frac{1}{4}$"	$2\frac{1}{8}$"	2"	$1\frac{7}{8}$"	$1\frac{3}{4}$"	$1\frac{5}{8}$"	☐
D S Brown	Strip seal L2-500	$1\frac{15}{16}$	$2\frac{1}{4}$"	$2\frac{1}{8}$"	2"	$1\frac{7}{8}$"	$1\frac{3}{4}$"	$1\frac{5}{8}$"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-300	$1\frac{15}{16}$	$2\frac{1}{4}$"	$2\frac{1}{8}$"	2"	$1\frac{7}{8}$"	$1\frac{3}{4}$"	$1\frac{5}{8}$"	☐
Watson Bowman Acme (Wabo)	Strip seal SE-400	$1\frac{15}{16}$	$2\frac{1}{4}$"	$2\frac{1}{8}$"	2"	$1\frac{7}{8}$"	$1\frac{3}{4}$"	$1\frac{5}{8}$"	☐

DETAILS OF STRIP SEAL EXPANSION JOINT SYSTEM AT END BENTS NO. 1 & 8

Detailed Nov. 2018
Checked Feb. 2019

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

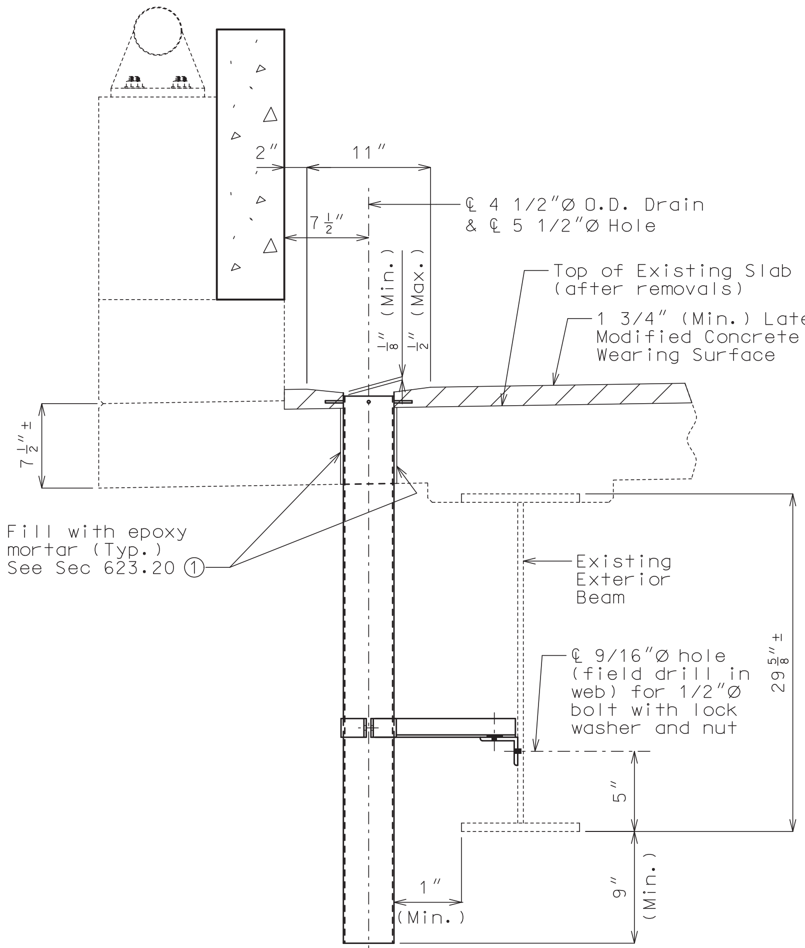
STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	5/31/2019
ROUTE	13
STATE	MO
DISTRICT	BR
SHEET NO.	4
COUNTY	POLK
JOB NO.	J7P3190E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A30293

DESCRIPTION

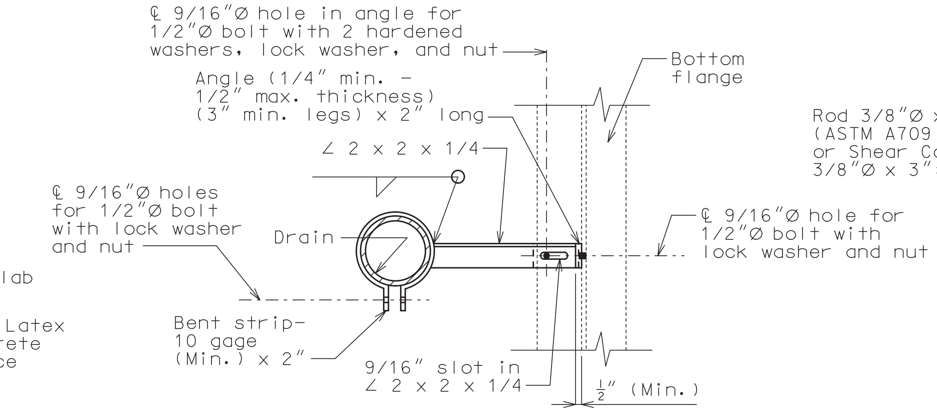
DATE

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

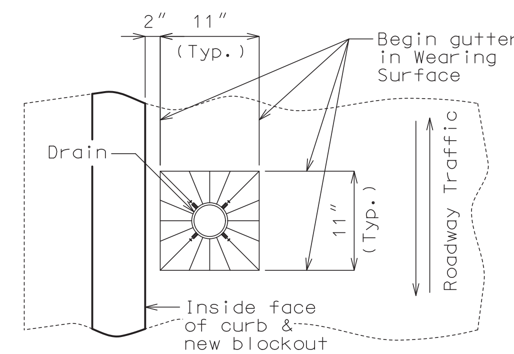


① Use backer rod around drain @ bottom of slab and epoxy inject from the top.

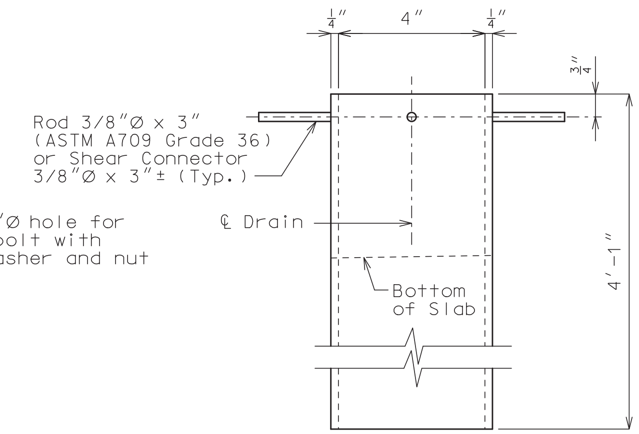
PART SECTION NEAR DRAIN



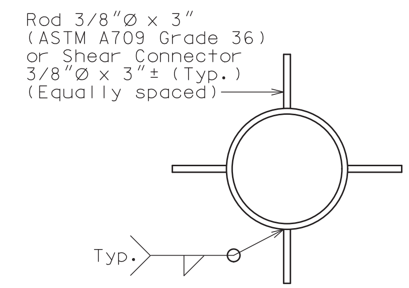
PART SECTION SHOWING BRACKET ASSEMBLY



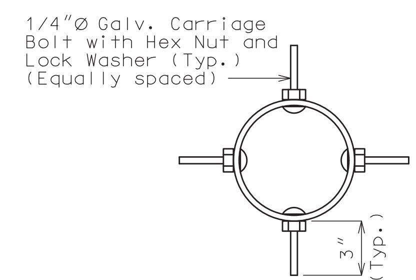
PART PLAN OF SLAB AT DRAIN



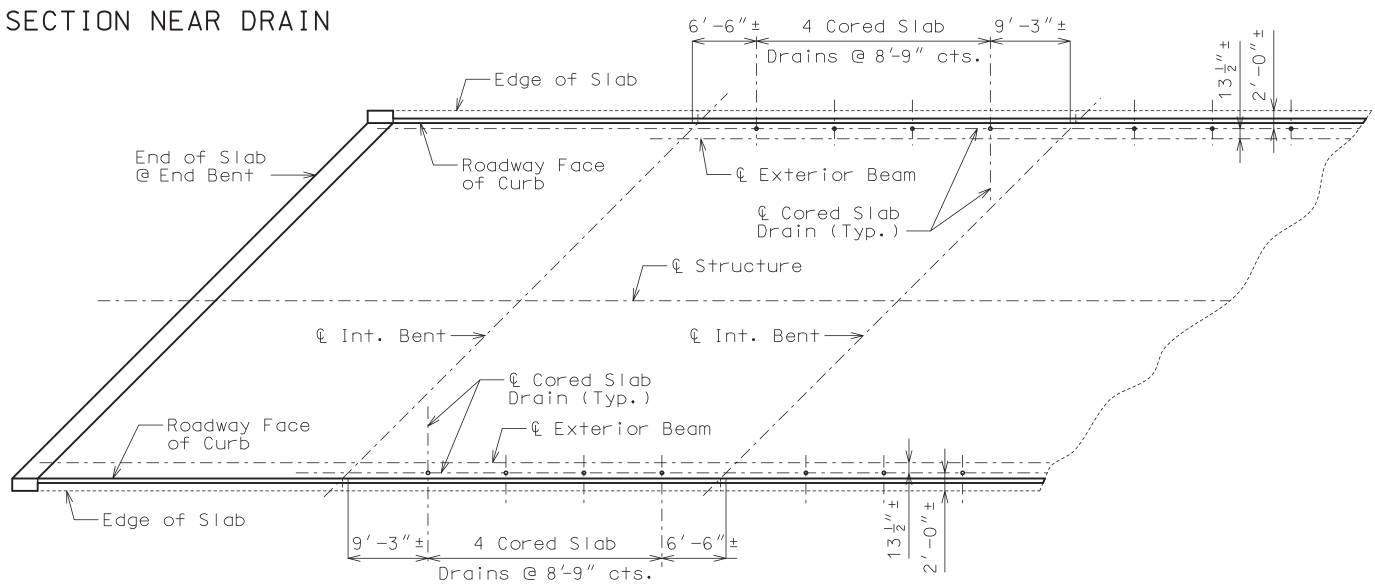
ELEVATION OF DRAIN



PLAN OF DRAIN



PLAN OF OPTIONAL FRP DRAIN



SPAN (1-2)
SPAN (8-7)

SPAN (2-3)
SPAN (3-4)
SPAN (4-5)
SPAN (5-6)
SPAN (6-7)

PART PLAN SHOWING CORED SLAB DRAIN LOCATIONS

General Notes:

Contractor shall have the option to construct either steel or Fiberglass Reinforced Polymer (FRP) slab drains. All drains shall be of same type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

The 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 the slab drains and the bracket assembly.

Cost of cored slab drains, complete in place, will be considered completely covered by the contract unit price for Cored Slab Drain per each.

Holes for slab drains shall be cored. Percussion drilling will not be permitted.

Slab drain locations may be shifted the minimum extent necessary to avoid slab reinforcement and to allow for field drilling bolt hole in web of existing beam for bracket assembly attachment.

Cored slab drains shall be placed vertically.

For details of plugging existing curb outlets, see Sheet No. 1.

Notes for Steel Drain:

Slab drains may be fabricated from 1/4" structural steel pipe ASTM A500 or A501.

The drains shall be galvanized in accordance with ASTM A123.

Drains shall be inserted through slab such that damage to galvanized coating is minimized.

Notes for FRP Drain:

Drains shall be machine filament-wound thermosetting resin pipe meeting the requirements of ASTM D2996 with the following exceptions:

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance. Care shall be taken to avoid damage to exterior coating during installation.

The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be as recommended by the manufacturer to ensure a smooth, chip free cut.

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 5/31/2019	
ROUTE 13	STATE MO
DISTRICT BR	SHEET NO. 5
COUNTY POLK	
JOB NO. J7P3190E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A30293	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

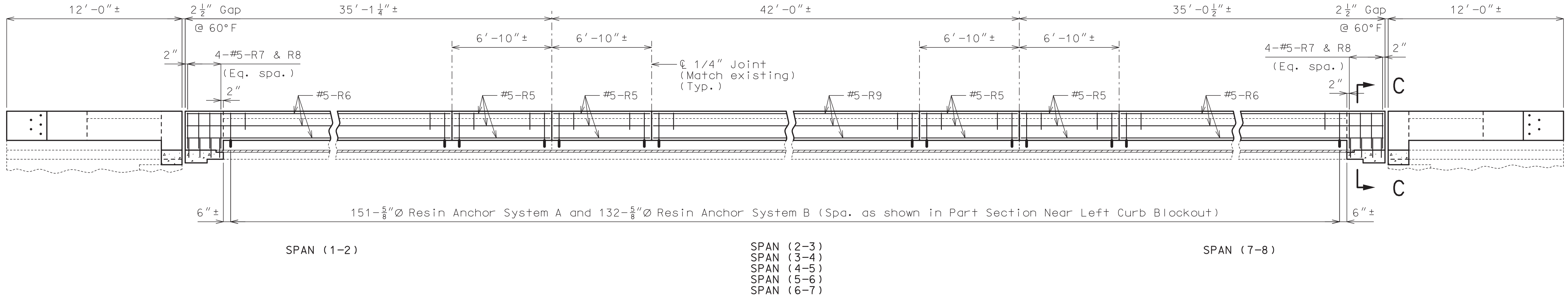
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

CORED SLAB DRAINS

Detailed Nov. 2018
Checked Feb. 2019

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



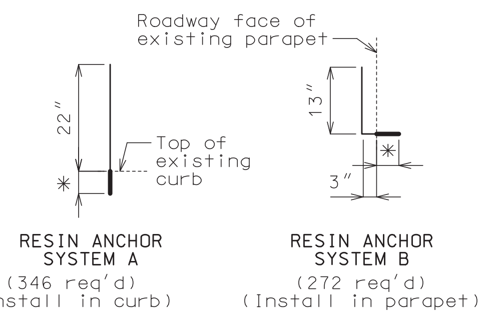
SECTION NEAR LEFT CURB BLOCKOUT

(Right curb blockout similar by 180° rotation)

Notes:

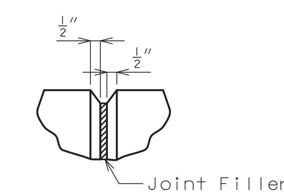
Longitudinal dimensions shown are along grade and are taken at top of parapet.

For details of end post and curb blockout on wings, see Sheet No. 7.

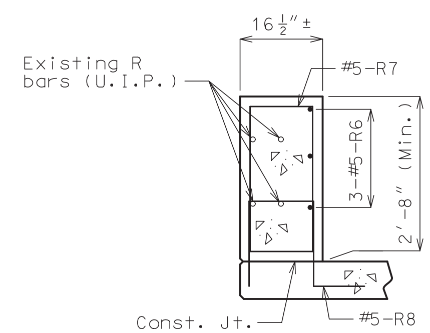


* Use manufacturer's recommended embedment length. (5" minimum embedment)

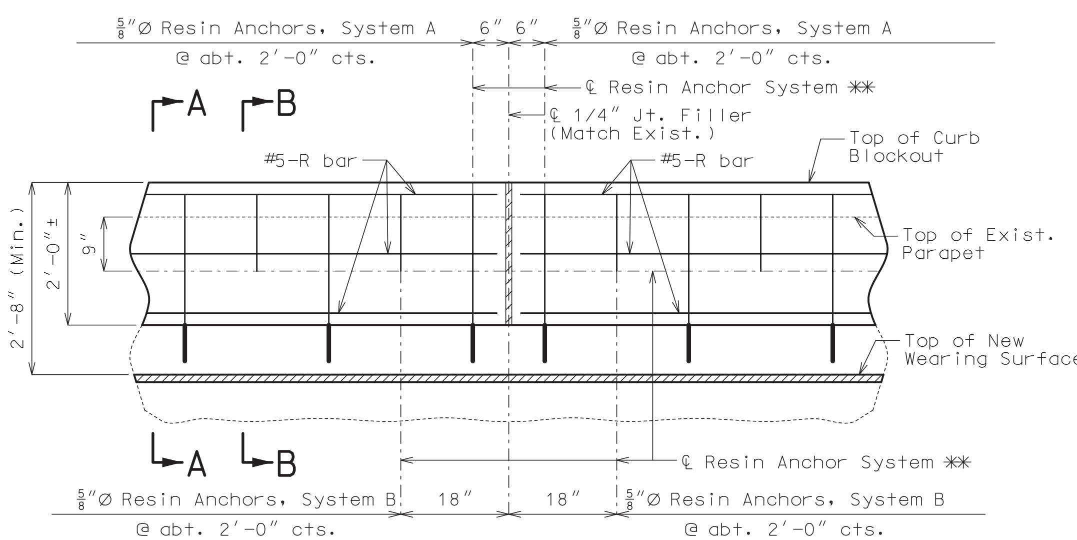
DETAILS OF RESIN ANCHORS



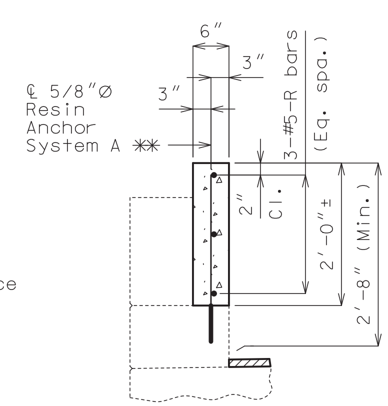
FILLED JOINT DETAIL



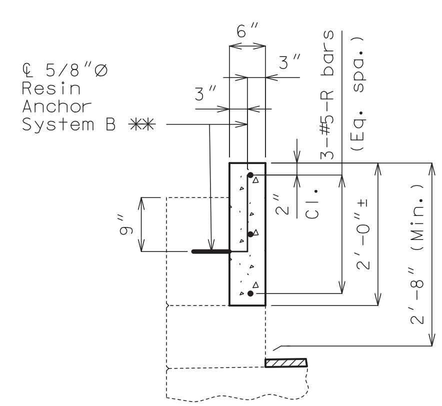
SECTION C-C



PART SECTION NEAR LEFT CURB BLOCKOUT



SECTION A-A



SECTION B-B

Notes:

Concrete in curb blockout shall be Class B-1 with f'c = 4000 psi.

Measurement of curb blockout is to the nearest linear foot, measured at the top outside edge of parapet from end of post to end of post.

All exposed edges of curb blockout shall have 1/2" radius or 3/8" bevel unless otherwise shown.

Payment for concrete, reinforcing steel, resin anchors, and any other work incidental to the curb blockout, complete in place, will be included in the contract unit price for Curb Blockout per linear foot.

Cost of any concrete curb or parapet repair will be included in the contract unit price for Curb Blockout.

All reinforcement shall be epoxy coated.

** Shift resin anchors where necessary to clear existing anchor bolts for bridge rail, miss curb outlets and clear existing reinforcement.

Concrete traffic barrier delineators shall be placed on top of the curb blockout similarly as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Curb Blockout.

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

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

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8"Ø threaded rod.

CURB BLOCKOUT DETAILS

Detailed Nov. 2018
Checked Feb. 2019

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

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

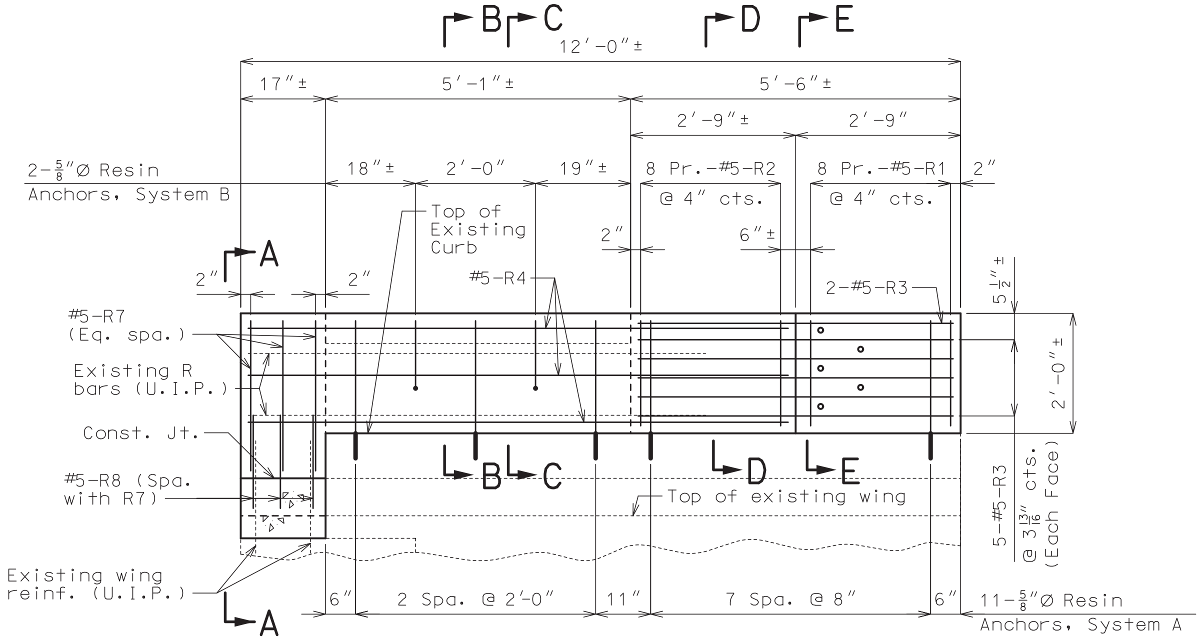
DATE PREPARED	5/31/2019
ROUTE	13
STATE	MO
DISTRICT	BR
SHEET NO.	6
COUNTY	POLK
JOB NO.	J7P3190E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A30293

DESCRIPTION

DATE

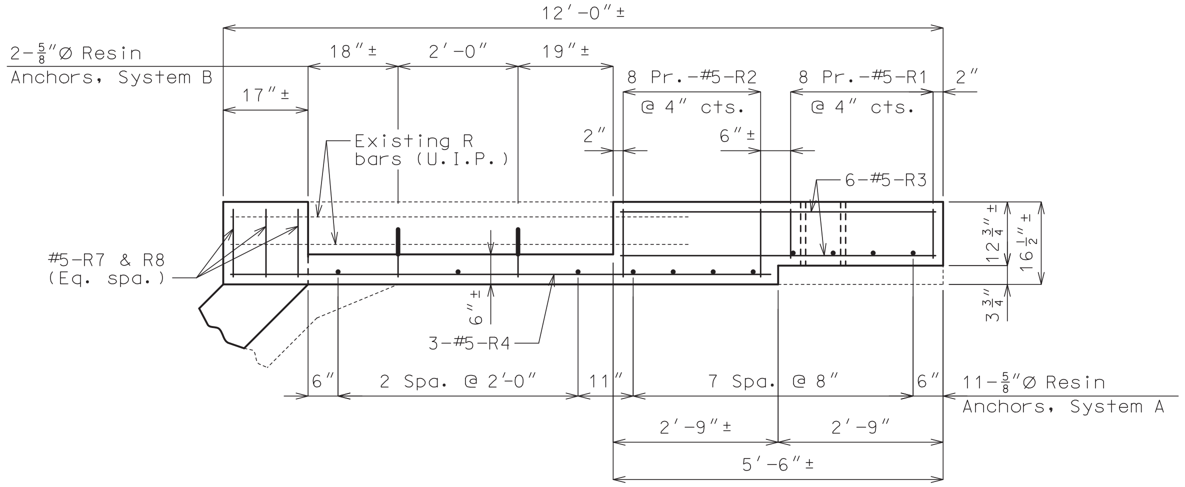
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT



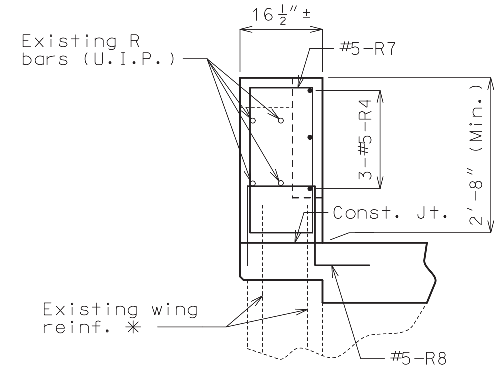
ELEVATION SHOWING LEFT END POST AT END BENT NO. 8

(Right end post at End Bent No. 8 and both end posts at End Bent No. 1 similar)



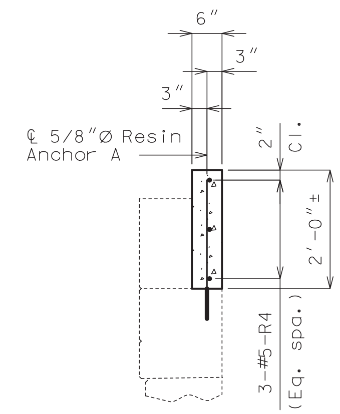
PLAN SHOWING LEFT END POST AT END BENT NO. 8

(Right end post at End Bent No. 8 and both end posts at End Bent No. 1 similar)

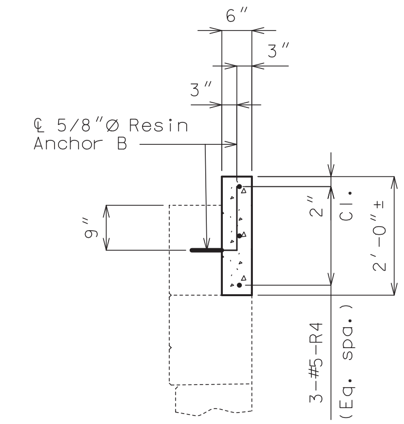


ELEVATION A-A

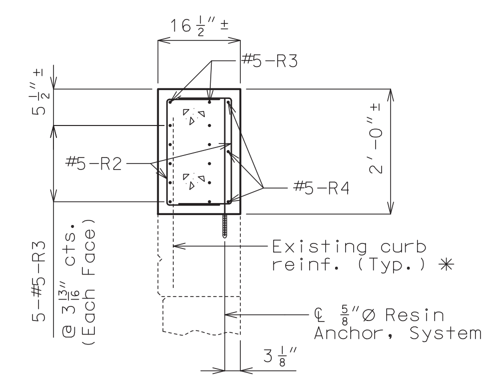
(Strip seal expansion device not shown for clarity)



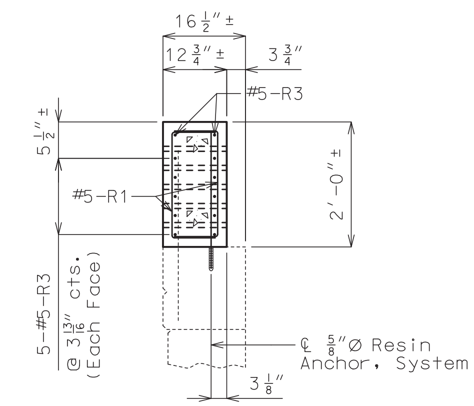
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Notes:

All exposed edges of curb blockout shall have 1/2" radius or 3/8" bevel unless otherwise shown.

Payment for concrete, reinforcing steel, resin anchors, and any other work incidental to the curb blockout and end post, complete in place, will be included in the contract unit price for Curb Blockout per linear foot.

Cost of any concrete curb or parapet repair will be included in the contract unit price for Curb Blockout.

All reinforcement shall be epoxy coated.

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

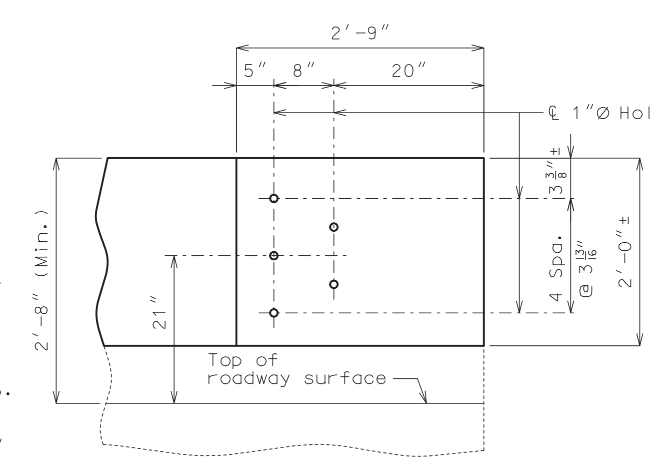
The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8"Ø threaded rod.

For details of Resin Anchors, Systems A & B, see Sheet No. 6.

44 required Resin Anchors, System A, and 8 required Resin Anchors, System B, are included in the resin anchor quantities on Sheet No. 6.

✻ Vertical leg of existing R bar at the outside face shall be cleaned and reused. Horizontal leg and vertical leg at the roadway face shall be removed to one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.



DETAILS OF GUARD RAIL ATTACHMENT

DETAILS OF END POST AT END BENTS NO. 1 & 8

Detailed Nov. 2018
Checked Feb. 2019

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

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	5/31/2019
ROUTE	13
STATE	MO
DISTRICT	BR
SHEET NO.	7
COUNTY	POLK
JOB NO.	J7P3190E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A30293

DESCRIPTION	DATE

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

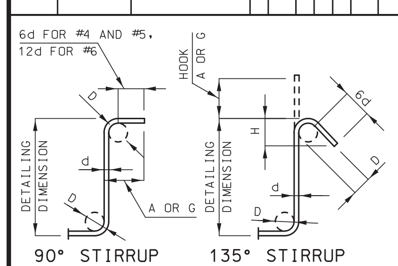
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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.
			END BENTS																									
			1 & 8																									
14	6	H100	SLAB	E	20					61	10.000													61	10	61	10	1301
			CURB																									
			BLOCKOUT																									
64	5	R1	BLOCKOUT	E	10	S							9.750		21.000									3	5	3	2	211
64	5	R2	BLOCKOUT	E	10	S							13.500		21.000									4	0	3	10	256
48	5	R3	BLOCKOUT	E	20					5	3.000													5	3	5	3	263
12	5	R4	BLOCKOUT	E	20					9	0.000													9	0	9	0	113
72	5	R5	BLOCKOUT	E	20					6	7.000													6	7	6	7	494
12	5	R6	BLOCKOUT	E	20					27	11.000													27	11	27	11	349
12	5	R7	BLOCKOUT	E	13	S					13.500	2	6.000		13.500	2	6.000							8	2	7	10	229
28	5	R8	BLOCKOUT	E	28	S					14.000		13.500		14.000		12.000							4	6	4	2	122
30	5	R9	BLOCKOUT	E	20					28	1.000													28	1	28	1	879
			TOTALS																									
	5			E																								2916
	6			E																								1301
			TOTAL																									0
			TOTAL	E																								4217
			Slab on																									
			Girder																									
	5			E																								2916
	6			E																								1301
			TOTAL																									4217

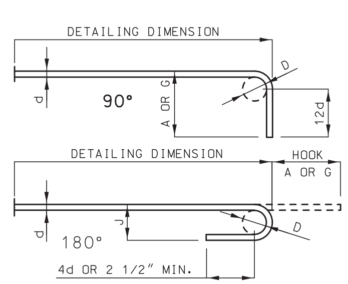
BILL OF REINFORCING STEEL

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.



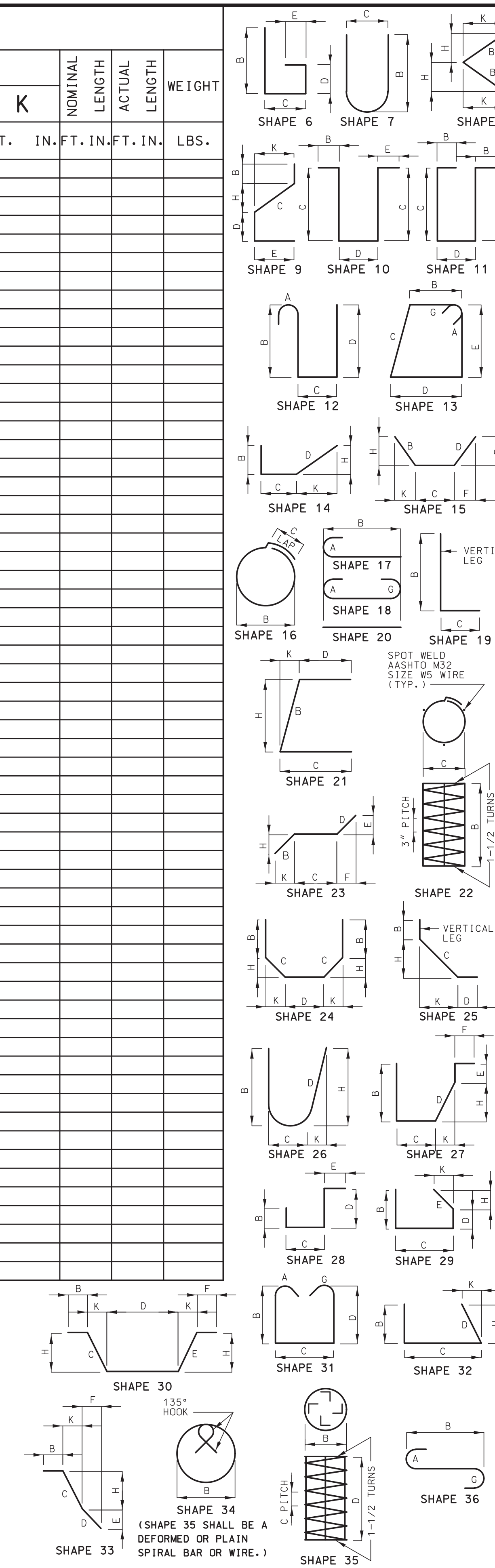
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK: HOOK A OR G	135° HOOK: HOOK A OR G	135° HOOK: APPROX. H
#4	2″	4 1/2″	4 1/2″	3″
#5	2 1/2″	6″	5 1/2″	3 3/4″
#6	4 1/2″	12″	8″	4 1/2″

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



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

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.



BENDING DIAGRAMS

STATE OF MISSOURI
DAVID JAMES HAGEMEYER
NUMBER PE-2007002788
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
5/31/2019	
ROUTE 64	STATE MO
DISTRICT BR	SHEET NO. 8
COUNTY POLK	
JOB NO. J7P3190E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A30293	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

Detailed Apr. 2019
Checked Apr. 2019

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