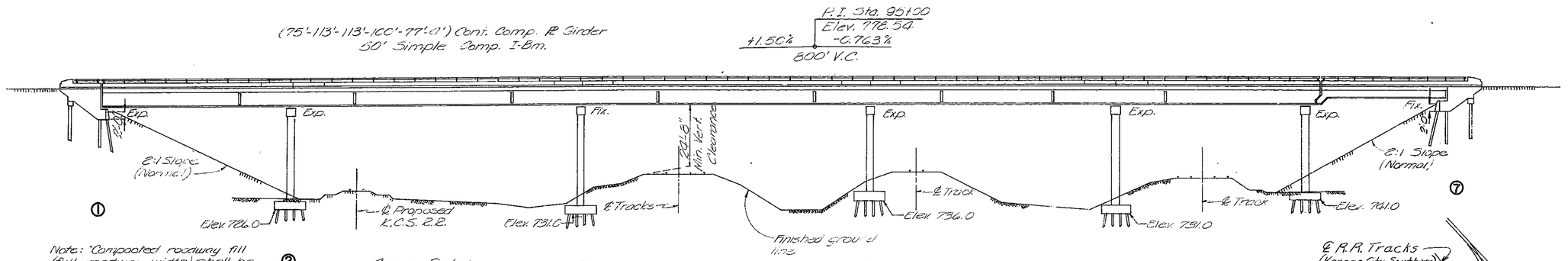
MISSOURI STATE HIGHWAY DEPARTMENT

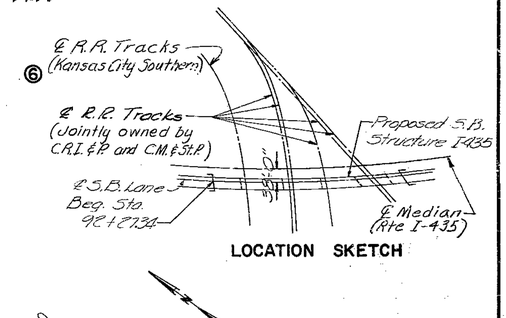
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	75	



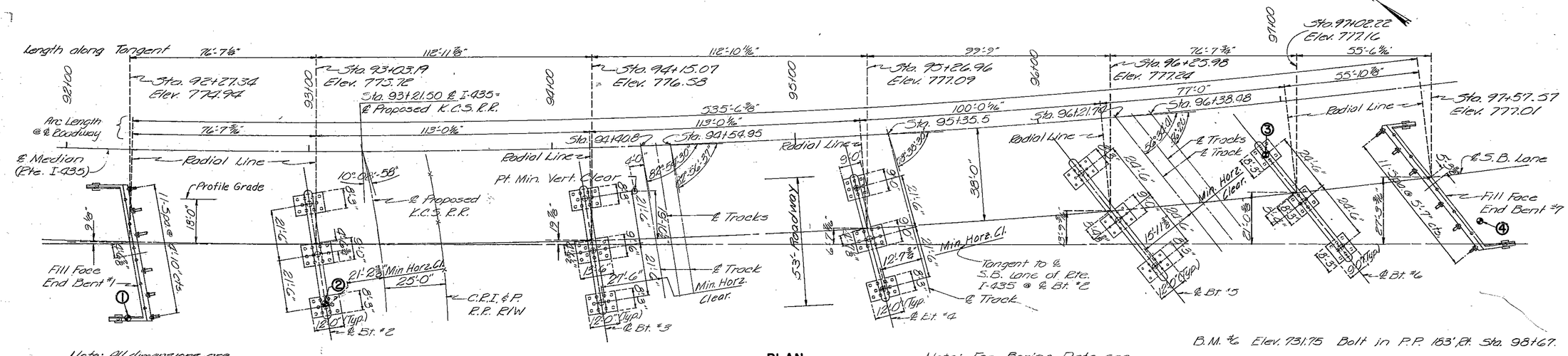
ELEVATION

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 Bents before piles are driven." Bents No. 1 & 7. Prebore holes thru compacted fill for piles at Bents No. 1 & 7. Cost of preboring and backfilling shall be included in unit price bid for piles in place.

Curve Data:
℄ Median (Rte. I-435)
P.I. - 85+18.13
Δ - 90°56' Lt.
D. - 1°30'
T. - 1925.64'
L. - 2128.89'
R. - 3819.83'
S.E. - .04' (60 MPH)
(Chord Definition)



LOCATION SKETCH



PLAN

Note: All dimensions are Horizontal distances
Elevations shown are for top of slab at ℄ Lane.

Note: See special provisions for optional use of Precast Concrete, Prestressed Concrete, or Timber piles on interior bents only.
Minimum hammer energy required for Precast Concrete piles is 8,000 ft. lbs. except at bents No. 4 and No. 6 where the minimum hammer energy is 8,300 ft. lbs.

Note: For Boring Data see Sheet No. 2 of 29.
"◕ Indicates locations of borings."
For General Notes, Estimated Quantities, and Pile and Footing Data see Sheet No. 2 of 29.

B.M. ℄ Elev. 731.75 Bolt in P.P. 163' Rt. Sta. 98+67.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.
JACKSON COUNTY

STD. 52.01
STD. 52.02
STD. 54.00
A-1683

SUBMITTED BY W. D. Carney BRIDGE ENGINEER DATE Feb. 23, 1968
APPROVED BY M. J. Snider CHIEF ENGINEER DATE Feb. 23, 1968

503

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Pope	DETAILED J. Carter
DESIGN CK. A.C. Latham	DETAIL CK. C. Phillips

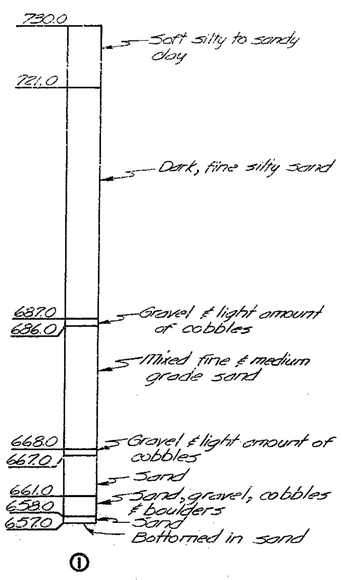
Note: This drawing is not to scale. Follow dimensions.

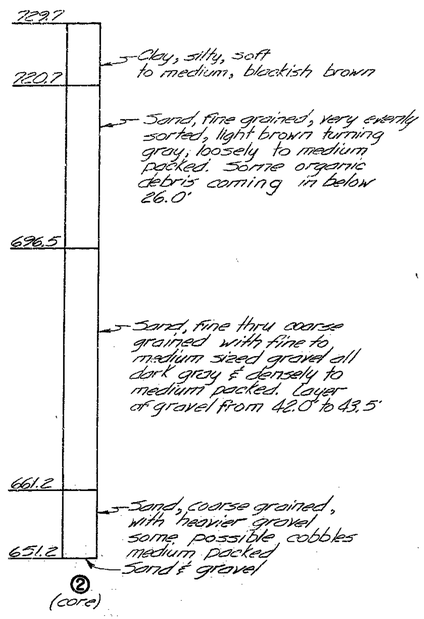
Sheet No. 1 of 29.

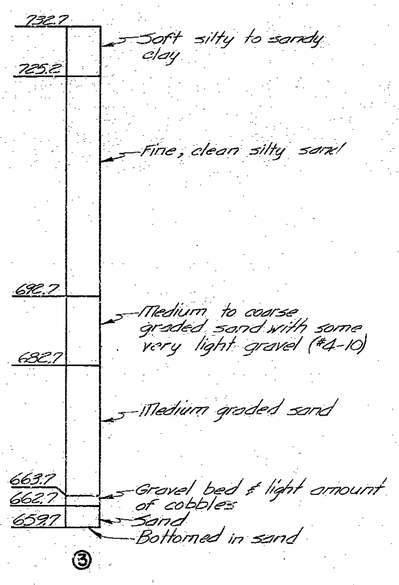
SEE FINAL PLANS FOR AS-BUILT LINES

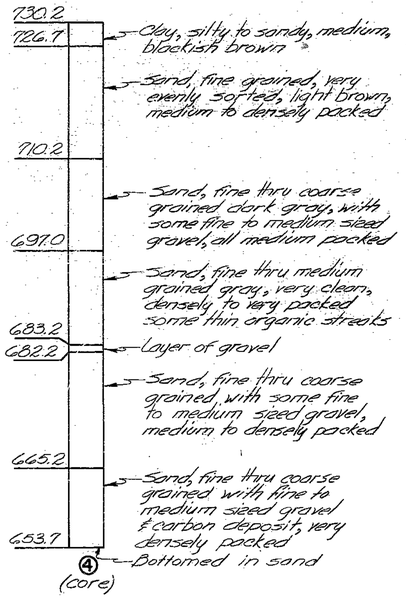
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	76	









Note: for location of borings see sheet No. 1 of 29

GENERAL NOTES:

SPECIFICATIONS:
A.A.S.H.O. - 1965

DESIGN LOADING:
HS20-44 Military Loading (15#/sq. ft. Future Wearing Surface)
Earth - 120#
Fatigue Loading: A.W.S. D2.0-66 Formulae 5b, 15b, & 16b.

DESIGN UNIT STRESSES
Class B Concrete (substructure) fc = 1,200 psi
Class B1 Concrete (superstructure) fc = 1600 psi
Reinforcing Steel fs = 20,000 psi
Structural Steel (A.S.T.M. A36-66) fs = 20,000 psi

SURFACE SEAL
Superstructure deck to be surface sealed.

FABRICATED STEEL
Field connections, High Strength Bolts ¾"Ø, holes 15/16"Ø except as noted.

PAINTING
Paint: Shop, nor. Field, by contractor in accordance with Std. Spec. 553.4.(1).

CONSTRUCTION CLEARANCE
A minimum vertical clearance of 21'-0" from top of rails and a minimum lateral clearance of 17'-0" centered on tracks shall be maintained during construction.

WELDING
Details of welded joints shown are for manual arc welding except as noted.
The minimum size of fillet welds shall be in accordance with A.W.S. D2.0-66, article 217(b) except the minimum size fillet weld connecting parts carrying primary stress shall be ¼".

32 JAM. 4-25-68 33

PILE DATA

BENT NO.	1	2	3	4	5	6	7
Type	Foundation	Foundation	Foundation	Foundation	Foundation	Foundation	Foundation
Kind	C.I.P. 14"	C.I.P. 14"	C.I.P. 14"	C.I.P. 14"	C.I.P. 14"	C.I.P. 14"	C.I.P. 14"
Number	14	(31)	33	32	(32)	24	14
Approximate Length Ft.	80	80	85	90	95	95	85
Design Bearing Tons	30.0	28.7	29.6	29.9	29.8	30.0	30.0
Min. Tip Penetration Elev.	691.0	710.0	710.0	710.0	710.0	710.0	691.0
Pile Standard	52.02	52.02	52.02	52.02	52.02	52.02	52.02
Hammer Energy required Ft.Lbs.	8,000	8,000	8,000	8,000	8,000	8,000	8,000

Note: Minimum energy requirement of hammer based on plan length of piles.
All piles shall be driven to the minimum penetration and to not less than the design bearing noted.

ESTIMATED QUANTITIES

	ITEM		SUBSTR.	SUPERSTR.	TOTAL
	Class I Excavation for Structures	Cu. Yd.	555		555
*	Cast-in-Place Concrete Piles	Lin. Ft.	9,395		9,395
	Class B Concrete	Cu. Yd.	526.5		526.5
	Class B1 Concrete	Cu. Yd.		869.6	869.6
	Reinforcing Steel	Lb.	106,960	267,660	374,620
	Painting	Tons		324	324
	Fabricated Structural Carbon Steel (WF-BM. span)	Lb.		52,540	52,560
	Fabricated Structural Carbon Steel (PL Gdr. span)	Lb.		600,880	600,880
	Bridge Rail (Single tube type)	Lin. Ft.		1049	1049
	Conduit System (On Structures)	Lump Sum			1

* Note: See Special Provisions for optional use of Precast Concrete, Prestressed Concrete or 15" Treated Timber Piles on Interior Bents.
All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
No payment for excavation will be allowed at End Bents No. 1 and 7.
Excavation will be allowed from the finished ground line at Bent No. 6.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-1(52)RTE. I-435) STA. 92+27.34 S.B.L.
JACKSON COUNTY

A-1683

504

BURGWIN & MARTIN
CONSULTING ENGINEERS
DESIGNED C. Page DETAILED E. Hohn
DESIGN CK. A.G. Latham DETAIL CK. C.D. Albert

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

SEE FINAL PLANS BROWN LINES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	77	

MISSOURI STATE HIGHWAY DEPARTMENT

BILL OF REINFORCING STEEL

END BENT NO. 1

NO.	SIZE	LENGTH	MARK	LOCATION
12	5	4'3"	D1	Wing
16	4	2'9"	D2	"
8	4	10'0"	D3	"
12	7	29'9"	H1	Beam
4	6	20'0"	H3	
4	6	29'0"	H4	Backwall
16	4	28'9"	H5	"
4	6	14'9"	H9	Wing
16	6	14'6"	H10	"
12	4	8'0"	H11	"
7	6	7'0"	H13	Beam
7	6	6'3"	H14	"
4	6	19'6"	T1	Wing
4	6	11'0"	T2	"
46	4	12'3"	U11	Beam
2	4	12'6"	U12	"
14	4	4'0"	U19	"
12	6	2'9"	U10	"
12	7	14'0"	U11	"
6	7	6'-"	U12	"
114	5	8'3"	V1	Backwall
4	4	10'3"	V2	Wing
28	4	12'6"	V3	"
4	4	7'6"	V4	"

BENT NO. 2

NO.	SIZE	LENGTH	MARK	LOCATION
69	11	7'3"	D21	Footing
16	9	11'9"	D23	"
8	11	11'9"	D24	"
4	9	21'9"	D25	"
2	11	23'3"	D26	"
18	7	8'0"	D27	"
11	7	8'9"	D28	"
2	11	12'3"	H21	Beam
7	10	13'3"	H22	"
2	6	17'9"	H23	"
6	6	26'0"	H24	"
10	10	12'3"	H25	"
5	10	12'6"	H26	"
4	11	14'0"	H27	"
9	9	6'6"	H28	"
2	6	12'0"	H29	"

BENT NO. 2 (Cont'd)

NO.	SIZE	LENGTH	MARK	LOCATION
11	7	7'6"	H201	Beam
2	9	9'0"	H202	"
4	9	10'0"	H203	"
3	9	10'9"	H204	"
18	10	26'9"	H205	"
2	11	26'3"	H206	"
105	3	9'6"	P21	Column
20	6	14'0"	U21	Beam
13	6	14'9"	U22	"
24	6	15'9"	U23	"
12	6	16'6"	U24	"
5	6	17'3"	U25	"
8	6	18'0"	U26	"
2	4	2'9"	U27	"
2	4	3'6"	U28	"
6	4	4'3"	U29	"
69	11	38'6"	V21	Column
12	2	19'9"	W1	A.B. Wells

BENT NO. 3

NO.	SIZE	LENGTH	MARK	LOCATION
4	9	21'9"	D25	Footing
12	7	9'3"	D38	"
41	10	7'0"	D31	"
24	11	7'0"	D21	"
16	10	8'0"	D34	"
12	10	13'3"	D35	"
2	7	13'0"	D36	"
16	10	11'9"	D37	"
8	9	27'6"	H33	"
9	8	6'6"	H34	"
2	8	8'6"	H35	"
4	8	9'6"	H36	"
3	8	10'0"	H37	"
2	6	21'9"	H38	"
8	6	25'9"	H39	"
12	7	7'6"	H201	"
10	10	27'9"	H301	"
4	10	14'0"	H302	"
5	11	12'6"	H303	"
93	3	9'6"	P21	Column
2	4	2'9"	U27	Beam
2	4	3'6"	U28	"
4	4	4'3"	U29	"
16	6	15'0"	U31	"
18	6	15'9"	U32	"
24	6	16'6"	U33	"
14	6	17'6"	U34	"
5	6	18'3"	U35	"

BENT NO. 3 (Cont'd)

NO.	SIZE	LENGTH	MARK	LOCATION
8	6	19'0"	U36	Beam
24	11	35'0"	V32	Column
41	10	34'0"	V33	"
12	2	19'9"	W1	A.B. Wells
8	9	11'9"	D23	Footing
8	11	11'9"	D24	"
2	9	21'9"	D25	"
2	11	23'3"	D26	"
8	7	8'0"	D27	"
21	7	8'9"	D28	"
20	11	7'3"	D21	"
2	8	19'0"	D32	"
90	10	7'0"	D44	"
2	6	17'9"	H23	Beam
4	11	26'9"	H41	"
9	10	13'3"	H42	"
10	10	12'6"	H43	"
9	11	12'9"	H44	"
9	9	6'9"	H45	"
3	9	10'6"	H46	"
4	9	10'0"	H47	"
2	9	9'0"	H48	"
6	6	26'6"	H49	"
11	7	7'6"	H201	"
16	10	28'3"	H401	"
2	6	7'0"	H402	"
81	3	9'6"	P21	Column
18	2	19'9"	W1	A.B. Wells

BENT NO. 4

NO.	SIZE	LENGTH	MARK	LOCATION
8	9	11'9"	D23	Footing
8	11	11'9"	D24	"
2	9	21'9"	D25	"
2	11	23'3"	D26	"
8	7	8'0"	D27	"
21	7	8'9"	D28	"
20	11	7'3"	D21	"
2	8	19'0"	D32	"
90	10	7'0"	D44	"
2	6	17'9"	H23	Beam
4	11	26'9"	H41	"
9	10	13'3"	H42	"
10	10	12'6"	H43	"
9	11	12'9"	H44	"
9	9	6'9"	H45	"
3	9	10'6"	H46	"
4	9	10'0"	H47	"
2	9	9'0"	H48	"
6	6	26'6"	H49	"
11	7	7'6"	H201	"
16	10	28'3"	H401	"
2	6	7'0"	H402	"
81	3	9'6"	P21	Column
18	2	19'9"	W1	A.B. Wells

BENT NO. 5

NO.	SIZE	LENGTH	MARK	LOCATION
16	9	11'9"	D23	Footing
8	11	11'9"	D24	"
4	9	21'9"	D25	"
2	11	23'3"	D26	"
16	7	8'0"	D27	"
9	7	8'9"	D28	"
24	9	6'6"	D51	"
24	10	7'0"	D52	"
24	8	6'0"	D53	"
4	9	22'0"	D54	"
10	11	15'9"	H52	Beam
10	10	14'0"	H53	"
9	11	14'3"	H54	"
5	9	7'0"	H55	"
9	10	6'9"	H56	"
2	9	10'-"	H57	"

BENT NO. 5 (Cont'd)

NO.	SIZE	LENGTH	MARK	LOCATION
2	10	11'9"	H53	Beam
2	9	11'9"	H59	"
10	7	7'6"	H201	"
2	10	12'3"	H501	"
1	9	12'0"	H502	"
6	6	30'3"	H503	"
5	9	32'6"	H504	"
2	6	9'0"	H505	"
9	10	32'6"	H506	"
9	11	32'6"	H507	"
2	6	20'0"	H508	"
96	3	9'6"	P21	Column
2	4	2'9"	U27	Beam
2	4	3'6"	U28	"
5	4	4'3"	U29	"
21	6	14'0"	U51	"
16	6	14'9"	U52	"
27	6	15'0"	U53	"
16	6	16'6"	U54	"
6	6	17'3"	U55	"
11	6	18'0"	U56	"
24	10	35'0"	V51	Column
24	9	35'0"	V52	"
24	8	35'0"	V53	"
12	2	19'9"	W1	A.B. Wells

BENT NO. 6

NO.	SIZE	LENGTH	MARK	LOCATION
6	7	8'0"	D27	Footing
12	7	8'9"	D28	"
92	3	5'0"	D61	"
9	7	18'0"	D62	"
16	6	8'0"	D63	"
6	8	8'9"	D64	"
2	8	18'0"	D65	"
10	10	14'0"	H26	Beam
9	9	14'6"	H61	"
12	10	10'3"	H62	"
7	9	13'6"	H63	"
5	7	6'3"	H64	"
2	7	9'9"	H65	"
2	8	11'0"	H66	"
2	7	11'3"	H67	"
2	8	11'6"	H68	"
1	7	11'6"	H69	"
4	8	6'6"	H601	"
6	6	29'9"	H602	"
2	6	19'6"	H603	"
13	9	31'6"	H604	"
5	8	31'6"	H605	"
2	6	9'0"	H607	"
10	7	7'-6"	H201	"
66	3	9'6"	P21	Column
2	4	2'9"	U27	Beam
2	4	3'6"	U28	"
21	4	4'3"	U29	"
15	4	14'0"	U61	"
12	4	14'9"	U62	"
14	4	15'6"	U63	"
12	4	16'3"	U64	"
5	4	17'0"	U65	"
9	4	17'9"	U66	"

BENT NO. 6 (Cont'd)

NO.	SIZE	LENGTH	MARK	LOCATION
92	8	23'9"	V61	Column
12	2	19'9"	W1	A.B. Wells
12	5	5'0"	D71	Footing
16	4	2'9"	D72	"
8	9	10'0"	D73	"
2	6	33'0"	H71	Backwall
4	4	33'0"	H72	"
2	6	33'0"	H73	"
16	7	34'3"	H74	Beam
4	6	33'6"	H75	"
5	6	6'3"	H77	Wing
7	6	6'9"	H80	Backwall
4	6	11'0"	H81	Wing
6	4	8'0"	H82	"
10	6	13'0"	H83	"
4	6	8'9"	T71	Wing
4	6	14'0"	T73	"
57	4	12'3"	U71	Beam
2	4	13'3"	U72	"
16	4	4'0"	U73	"
12	6	2'9"	U74	"
6	7	6'3"	U75	"
12	7	14'0"	U76	"
10	10	14'0"	H26	Beam
9	9	14'6"	H61	"
12	10	10'3"	H62	"
7	9	13'6"	H63	"
5	7	6'3"	H64	"
2	7	9'9"	H65	"
2	8	11'0"	H66	"
2	7	11'3"	H67	"
2	8	11'6"	H68	"
1	7	11'6"	H69	"
4	8	6'6"	H601	"
6	6	29'9"	H602	"
2	6	19'6"	H603	"
13	9	31'6"	H604	"
5	8	31'6"	H605	"
2	6	9'0"	H607	"
10	7	7'-6"	H201	"
66	3	9'6"	P21	Column
2	4	2'9"	U27	Beam
2	4	3'6"	U28	"
21	4	4'3"	U29	"
15	4	14'0"	U61	"
12	4	14'9"	U62	"
14	4	15'6"	U63	"
12	4	16'3"	U64	"
5	4	17'0"	U65	"
9	4	17'9"	U66	"

SUPERSTRUCTURE (Cont'd)

NO.	SIZE	LENGTH	MARK	LOCATION
4	6	41'6"	C14	Curb
6	6	39'9"	C15	"
6	6	39'6"	C16	"
4	6	31'0"	C17	"
6	5	4'0"	L1	Curb
6	5	2'6"	L2	"
2	5	5'9"	L3	"
2	5	6'0"	L4	"
2	5	6'3"	L5	"
2	5	6'3"	L6	"
8	5	4'9"	P1	End Post
8	5	5'6"	P2	" "
8	5	6'0"	P3	" "
4	5	6'6"	P4	" "
4	5	6'9"	P5	" "
8	5	7'0"	P6	" "
1084	5	5'3"	P7	Parapet
95	5	9'3"	P8	"
8	5	11'3"	P9	"
8	5	33'9"	P10	"
12	5	31'9"	P11	"
12	5	31'0"	P12	"
8	5	35'0"	P13	"
8	5	36'3"	P14	"
16	5	26'0"	P15	"
40	5	9'9"	P16	"
8	5	7'3"	P17	"
8	5	33'3"	P18	"
12	5	31'6"	P19	"
12	5	32'6"	P20	"
12	5	32'3"	P21	"
16	6	10'0"	P22	End Post
16	5	10'3"	P23	Parapet
8	5	11'0"	P24	"
8	5	35'9"	P25	"
4	5	5'9"	P26	End Post
8	5	6'3"	P27	" "
636	6	90'0"	S1	Slab
840	4	32'0"	S2	"
4019 → 3942	6	28'6"	S3	"
9	6	30'9"	S4	"
9	6	32'9"	S5	"
220	4	16'0"	S6	"
106	6	25'9"	S7	"
164 → 156	6	30'3"	S8	"
94 → 81	6	31'3"	S9	"
23	4	90'0"	S10	"
112	4	25'6"	S11	"
9	6	7'0"	S12	"
9	6	12'9"	S13	"
9	6	15'6"	S14	"
9	6	28'6"	S15	"
9	6	30'3"	S16	"
9	6	36'0"	S17	"
4	6	38'9"	S18	"
28	6	32'0"	S19	"

SUPERSTRUCTURE

NO.	SIZE	LENGTH	MARK	LOCATION
1115 → 1103	5	3'6"	C1	Curb
4	5	14'9"	C2	"
4	5	38'3"	C3	"
2	5	33'3"	C4	"
4	6	41'3"	C5	"
6	6	37'9"	C6	"
6	6	30'6"	C7	"
4	6	31'3"	C8	"
4	5	21'3"	C9	"
8	5	26'0"	C10	"
4	5	10'9"	C11	"
4	5	38'6"	C12	"
2	5	32'6"	C13	"

505

* Increase due to 4 curb outlets being closed

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-HG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L

JACKSON COUNTY

A-1683

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.R. Pace — DETAILED J.R. Kettler

DESIGN CK. A.B. Lathem — DETAIL CK. C. Phillips

Hooks and Bends shall be in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete structures (A.C.I.-315-65).

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

Sheet No. 3 of 28.

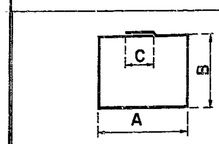
CONSTRUCTION CHANGES NOTED [illegible]

MISSOURI STATE HIGHWAY DEPARTMENT

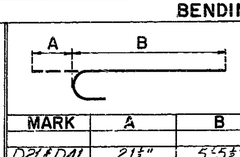
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	78	

COMPLETE BILL OF REINFORCING STEEL (CONT'D)

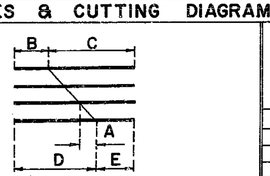
BENDING SKETCHES & CUTTING DIAGRAMS



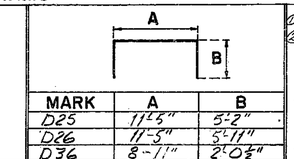
MARK	A	B	C
D3	2'-9"	21"	12"
D73	2'-9"	21"	12"
L3	15"	14"	11"
L4	15"	15"	12"
L5	15"	16"	13"
L6	15"	17"	11"
U1	3'-0"	2'-8"	11"
U2	3'-0⅜"	2'-8"	12½"
U21	3'-3"	3'-3"	12"
U22	3'-3"	3'-7⅜"	11⅜"
U23	3'-3"	4'-0⅜"	13⅜"
U24	3'-3"	4'-5⅜"	13"
U25	3'-3"	4'-10⅜"	12¼"
U26	3'-3"	5'-3⅜"	11¼"
U31	3'-3"	3'-9"	12"
U32	3'-3"	4'-1⅜"	12"
U33	3'-3"	4'-6¼"	11⅝"
U34	3'-3"	4'-11"	14"
U35	3'-3"	5'-3⅜"	13⅛"
U36	3'-3"	5'-8⅜"	12⅛"
U41	3'-3"	3'-3"	12"
U42	3'-3"	3'-7⅜"	12⅜"
U43	2'-2"	3'-11⅜"	12⅛"
U44	3'-3"	4'-4⅜"	12"
U45	3'-3"	4'-9⅜"	11⅜"
U46	3'-3"	5'-2⅜"	13⅜"
U47	2'-2"	4'-4⅛"	11"
U51	3'-3"	3'-3"	12"
U52	3'-3"	3'-7⅜"	12⅛"
U53	3'-3"	4'-0⅜"	11"
U54	3'-3"	4'-5⅜"	13⅜"
U55	3'-3"	4'-9⅜"	13⅛"
U56	3'-3"	5'-2"	13"
U61	3'-3"	3'-3"	12"
U62	3'-3"	3'-7⅜"	12¼"
U63	3'-3"	3'-11⅜"	12⅛"
U64	3'-3"	4'-4⅜"	12¼"
U65	3'-3"	4'-8⅜"	12¼"
U66	3'-3"	5'-1⅜"	12"
U71	3'-0"	2'-8"	11"
U72	3'-5"	2'-8"	13"
U73	3'-0"	3'-0⅜"	11¼"
U74	3'-0"	3'-4⅜"	11⅛"
U75	3'-0"	3'-9⅜"	11¾"
U76	3'-0"	4'-1⅜"	11⅜"
U77	3'-0"	4'-6⅛"	11¾"
U78	3'-5	4'-6⅜"	13¾"



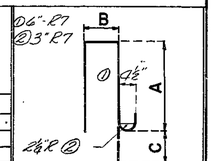
MARK	A	B
D21 & D41	21½"	5'-5½"
D31	21½"	5'-5½"
D33	13"	4'-11"
D32 & D44	13½"	5'-4½"
D33	10"	4'-11"
D51	15"	5'-3"
D52	19½"	5'-4½"
H1	10"	28'-1"
H3	10"	Varies.
H4	10"	29'-2"
H21	21½"	9'-11½"
H22	19½"	10'-7½"
H202	15"	7'-9"
H203	15"	8'-9"
H204	15"	9'-0"
H31	19½"	11'-7½"
H35	13"	7'-5"
H36	13"	8'-5"
H37	13"	9'-2"
H42	19½"	11'-7½"
H46	15"	9'-3"
H47	15"	8'-9"
H48	15"	7'-9"
H51	19½"	14'-4½"
H52	21½"	19'-11½"
H57	15"	9'-3"
H58	19½"	10'-11½"
H59	15"	10'-6"
H501	13½"	10'-7½"
H502	15"	10'-9"
H61	15	13'-3"
H65	10"	8'-11"
H66	13"	19'-11"
H67	10"	10'-5"
H68	13"	10'-5"
H69	10"	10'-8"
H70	10"	33'-5"



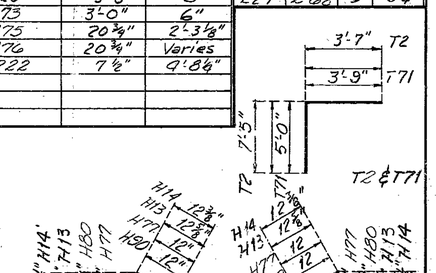
REMARKS	A	B	C	D	E
2-H3 Cut 2	2"	5'-9"	6'-3"	5'-11"	6'-1"
8-H10 Cut 16	21"	13½"	13'-4⅜"	13'-4½"	13½"
5-H83 Cut 5	21"	3'-0"	10'-0"	10'-0"	3'-0"
9-S9-Cut 9	2'-11"	3'-8½"	27'-0⅝"	27'-0⅝"	3'-8½"
9-S5 Cut 9	2'-11"	4'-8½"	28'-0⅝"	28'-0⅝"	4'-8½"
56-S8-Cut 56	11"	2'-9"	27'-6"	27'-6"	2'-9"
81-S9 Cut 81	11"	3'-8½"	27'-6⅝"	27'-6⅝"	3'-8½"
28-S10-Cut 28	9⅝"	3'-11⅜"	36'-0⅝"	36'-0⅝"	3'-11⅜"
9-U11-Cut 12	3"	6'-7½"	7'-4½"	7'-4½"	6'-7½"
12-U82-Cut 12	3"	6'-7½"	7'-4½"	7'-4½"	6'-7½"
14-V3-Cut 28	7"	2'-5½"	10'-0⅝"	10'-0⅝"	2'-5½"
10-V75-Cut 10	6½"	2'-6⅜"	7'-5⅜"	7'-5⅜"	2'-6⅜"
14-V5 Cut 14	8⅜"	2'-6⅛"	11'-11⅜"	11'-11⅜"	2'-6⅛"
26-S19 Cut 26	11"	4'-6⅛"	27'-5⅛"	27'-5⅛"	4'-6⅛"



MARK	A	B
D25	11'-5"	5'-2"
D26	11'-5"	5'-11"
D36	8'-1"	2'-0½"
D42	8'-6"	5'-3"
D62	8'-5"	4'-9½"
D45	8'-5"	4'-9½"
H11	6"	3'-9"
H82	3'-9	6"
U3	3'-0"	6"
U11	20¾"	Varies
U12	20¾"	2'-3⅛"
U27	21"	6"
U28	2'-6"	6"
U29	3'-3"	6"
U73	3'-0"	6"
U75	20¾"	2'-3⅛"
U76	20¾"	Varies
R22	7½"	9'-8½"

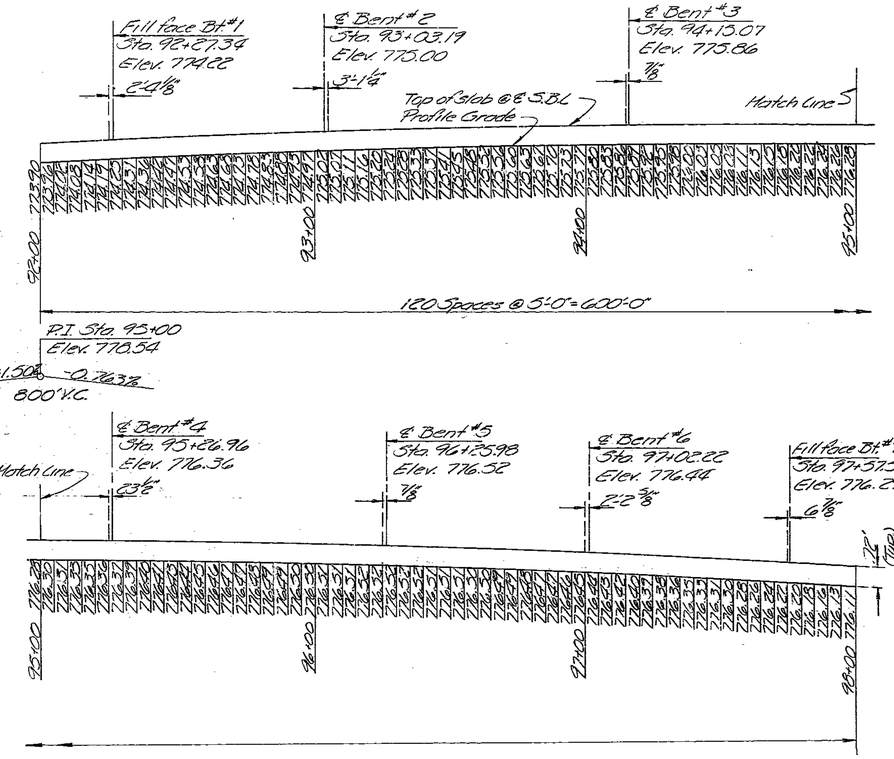


MARK	A	B	C
R2	2'-1⅛"	9"	6¾"
R3	2'-0⅛"	9"	6¾"
R4	2'-1⅞"	9"	6¾"
R5	2'-9"	9"	6"
R6	2'-0⅜"	9"	7⅛"
R7	2'-3½"	7½"	8½"
R26	2'-3"	9"	6"
R27	2'-6⅛"	9"	5⅞"



Note: All dimensions are out to out of bars.

Note: Hooks and bends shall be in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (A.C.I.-315-65).



PROFILE GRADE ELEVATION
(and Top of Slab @ ℄ S.B.L.)

Note: Elevations shown for substructure are of top of slab along ℄ S.B. Conc. All elevations on S.B. Conc. are .72' higher than the elevation of the same station on profile grade.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

506

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.G. Latham	DETAILED Hann & Keffler
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

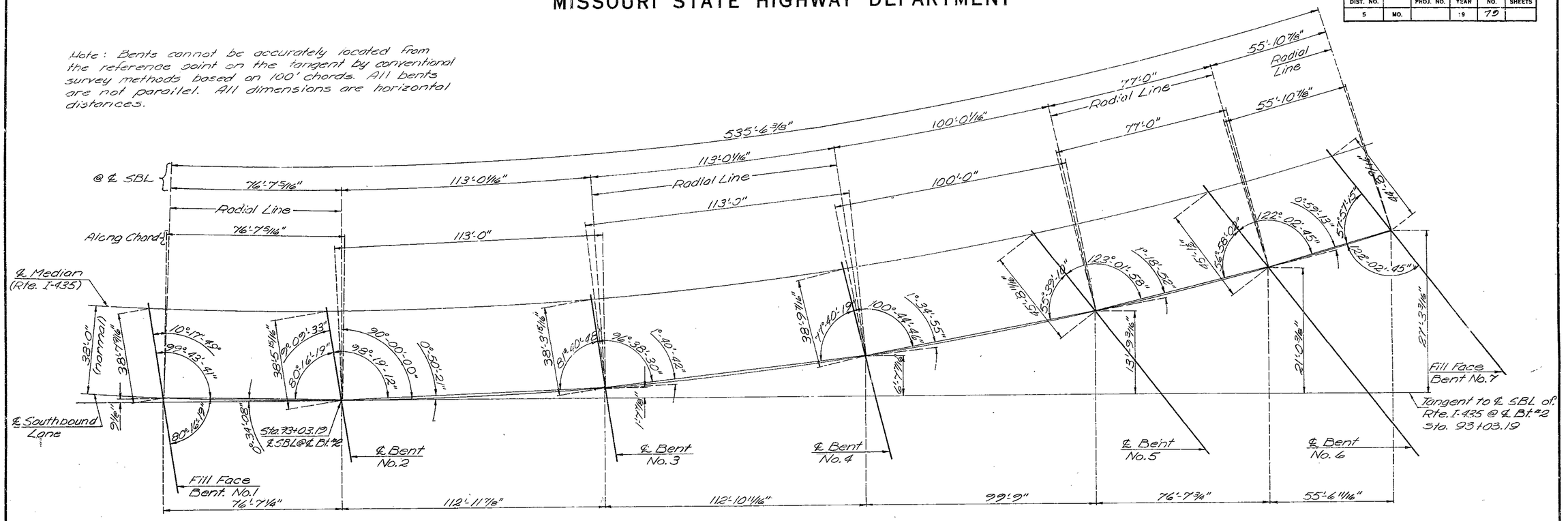
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 29.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	79	

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



SUBSTRUCTURE LAYOUT

CURB OFFSETS

℄ of Interior Bts. or Fill face of End Bts.

Offsets, "b", "c" Summ. abt. ℄ Span

"c" Spaces @ 5'-0"

"a"

Outside face of Left Curb.

Span	1-2	2-3	3-4	4-5	5-6	6-7
"a"	76'-7 5/16"	113'-0 1/16"	100'-7 5/8"	88'-7 1/8"	77'-2 5/8"	56'-0 1/16"
"b"	3'-3 3/4"	18 1/16"	3'-3 1/16"	2'-3 1/16"	3'-7 1/16"	12 1/16"
"c"	7	11	11	8	7	5
Offset #1	3/16"	1/4"	0	3/16"	3/16"	1/4"
#2	1/8"	1 1/16"	1/16"	1 1/16"	1/16"	5/16"
#3	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1/16"
#4	1 1/16"	2 1/4"	2 1/4"	2 1/16"	1 3/4"	1"
#5	2"	3 1/16"	2 1/16"	2 1/4"	2"	1 1/16"
#6	2 1/16"	3 3/16"	3 1/16"	2 3/16"	2 1/16"	1 1/4"
#7	2 1/4"	4"	3 3/16"	2 1/16"	2 1/4"	
#8	2 1/4"	4 3/16"	4 1/16"	3"	2 3/16"	
#9		4 3/16"	4 1/4"	3 1/16"		
#10		4 1/16"	4 3/16"			
#11		5"	4 3/16"			
#12		5"	4 3/16"			

Outside face of Right Curb.

Span	1-2	2-3	3-4	4-5	5-6	6-7
"a"	76'-7 1/8"	112'-11 3/4"	116'-5 3/16"	115'-8 5/16"	76'-5 3/16"	55'-5 5/16"
"b"	3'-3 1/2"	17 7/16"	3'-1 7/8"	2'-11 7/8"	3'-4 5/8"	12'-10 3/8"
"c"	7	11	11	11	7	5
Offset #1	3/16"	1/4"	1/16"	1/2"	3/16"	1/4"
#2	1/8"	1 1/16"	1 3/16"	1 1/4"	1/16"	5/16"
#3	1/4"	1 3/16"	2 1/16"	2"	1 1/4"	1/8"
#4	1 1/8"	2 1/16"	2 3/16"	2 3/4"	1 3/16"	1"
#5	1 1/16"	3"	3 3/16"	3 1/4"	1 1/16"	1 5/8"
#6	2 1/8"	3 1/16"	3 1/16"	3 3/4"	2 1/16"	1 1/4"
#7	2 1/4"	4"	4 1/4"	4 1/4"	2 1/4"	
#8	2 1/4"	4 1/16"	4 3/16"	4 1/2"	2 1/4"	
#9		4 3/16"	4 1/16"	4 1/16"		
#10		4 3/4"	5"	5"		
#11		4 1/16"	5 1/16"	5 1/16"		
#12		4 1/16"	5 1/4"	5 1/16"		

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED C. Page
DESIGN CK. C.D. Albert	DETAIL CK. C.D. Albert

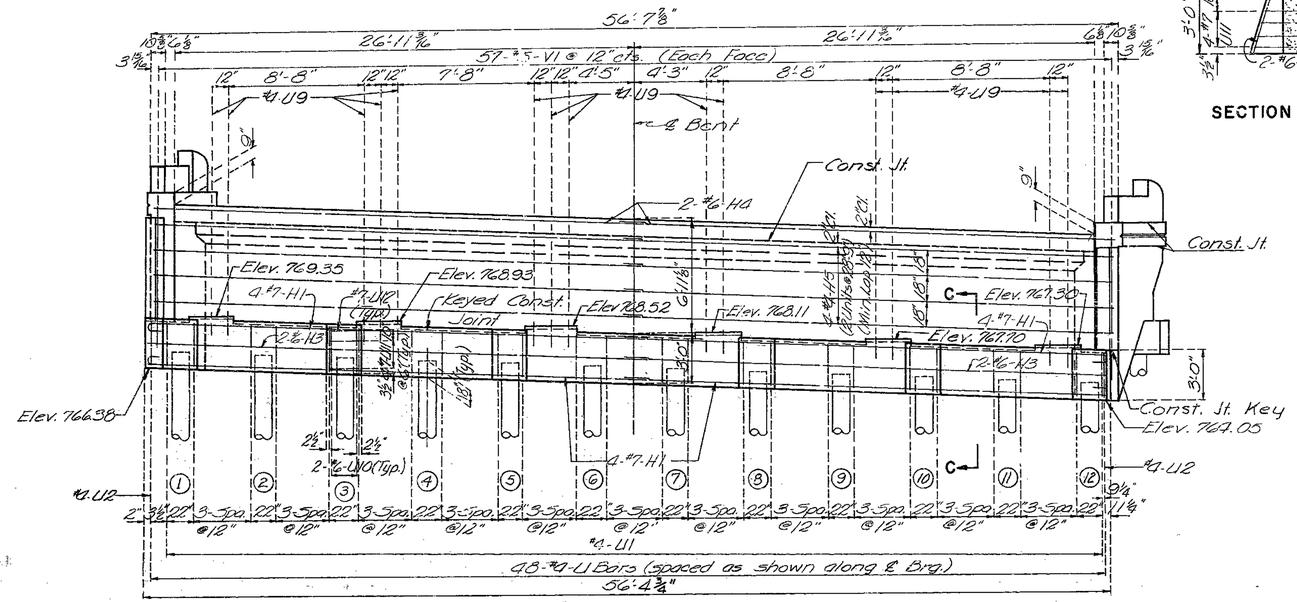
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 5 of 29.

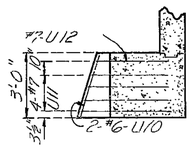
507

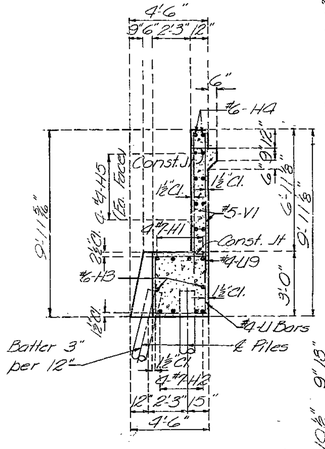
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	80	

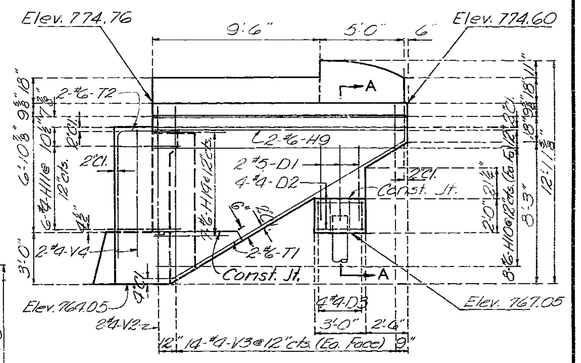


SECTION CC.

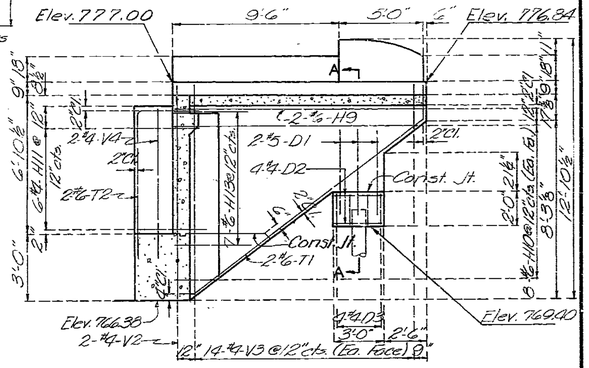


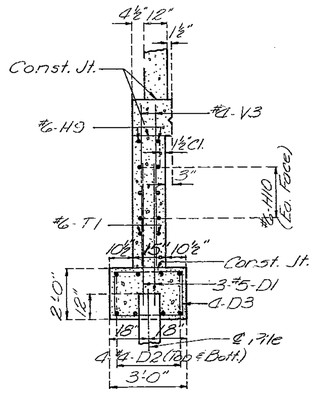


SECTION AT ℄



ELEVATION LEFT WING

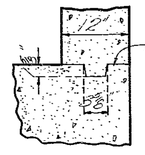




SECTION A-A

ELEVATION RIGHT WING

Note: For handrail, parapet and end post details see sheet No. 28 & 29 of 29.
For Conduit in right wing see details sheet 22 of 29.

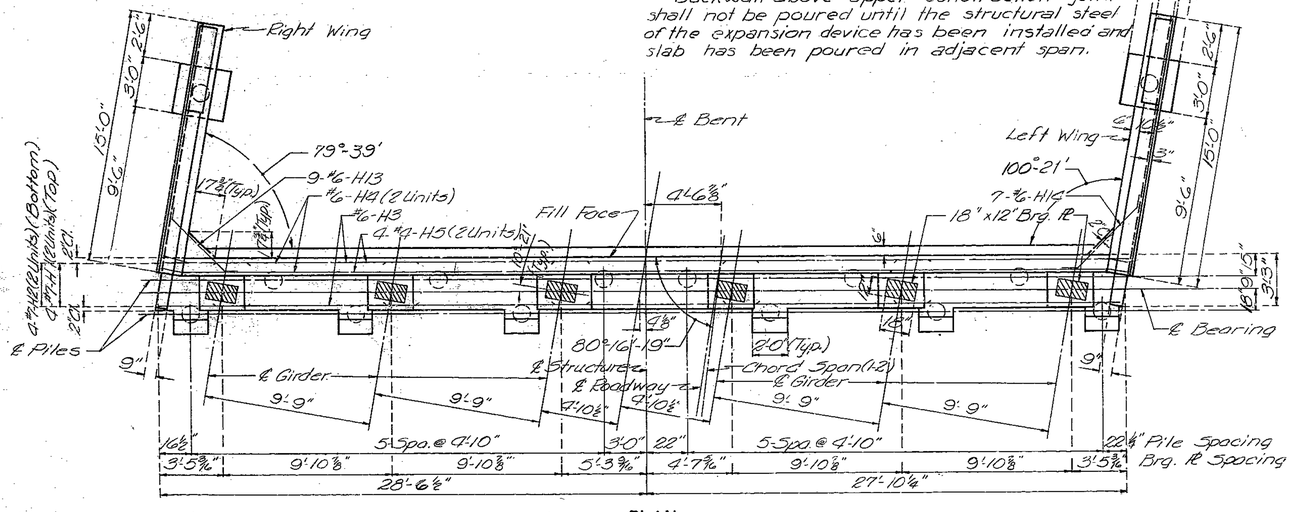


DETAIL OF KEYED CONSTRUCTION JOINT

PILE CUTOFF ELEVATIONS												
Pile No.	1	2	3	4	5	6	7	8	9	10	11	12
Elev.	767.83	767.63	767.93	767.23	767.03	766.83	766.63	766.43	766.23	766.03	765.83	765.63

ELEVATION

Note:
Top of backwall and expansion device for end bent No. 1 to conform to crown of roadway slab.
Backwall above upper construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.



PLAN

DETAILS OF END BENT NO. 1

Note: Fill at end bent shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435)STA. 92 + 27.34 SBL.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED	C. Page	DETAILED	J. Carter
DESIGN CK.	C. Phillips	DETAIL CK.	C. Phillips

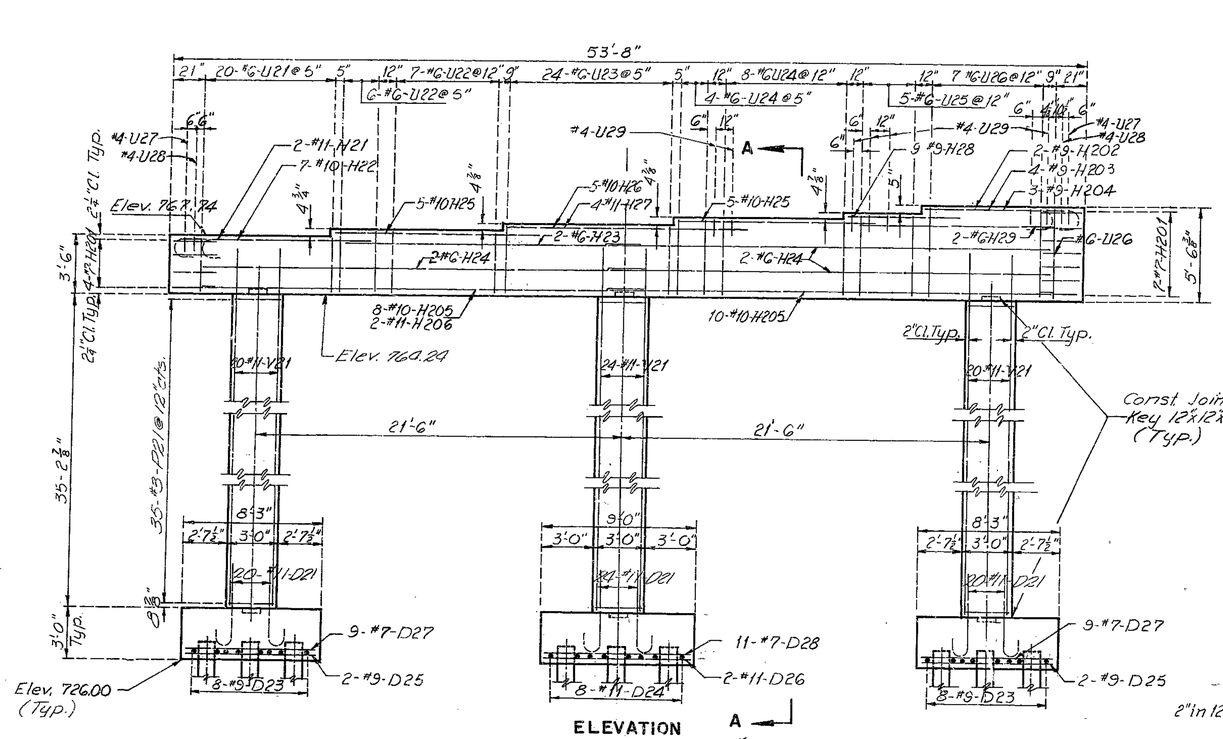
Note: This drawing is not to scale. Follow dimensions.

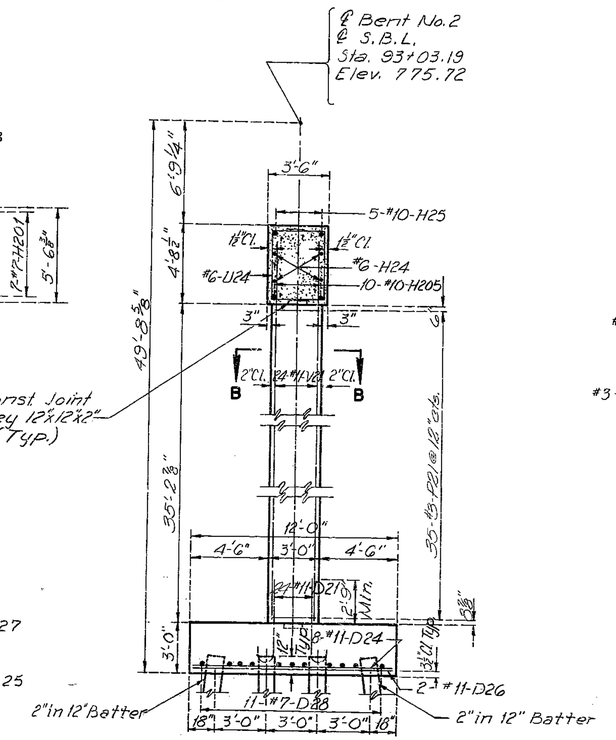
Sheet No. 6 of 29.

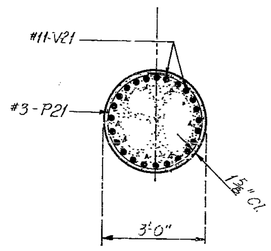
508

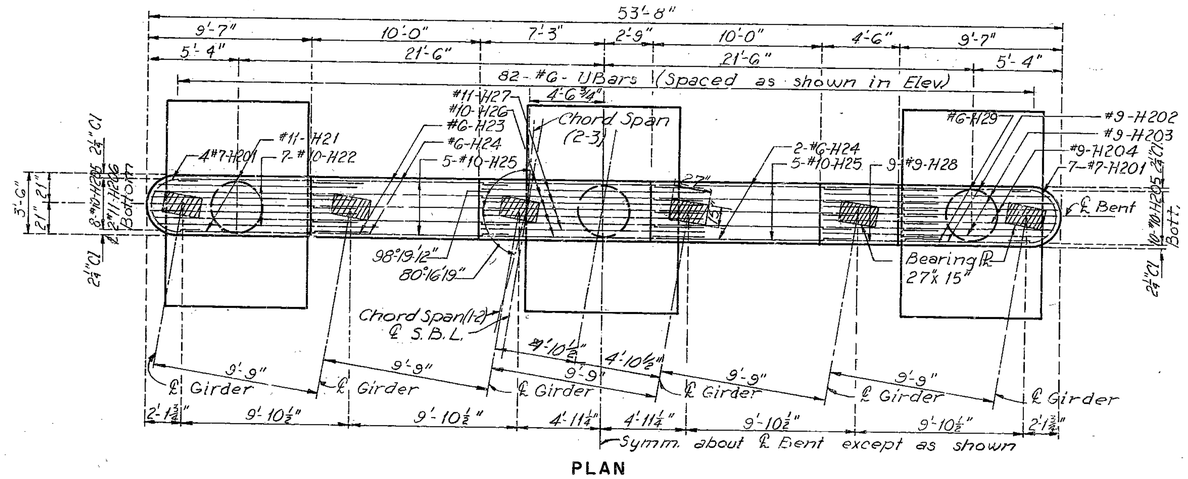
MISSOURI STATE HIGHWAY DEPARTMENT

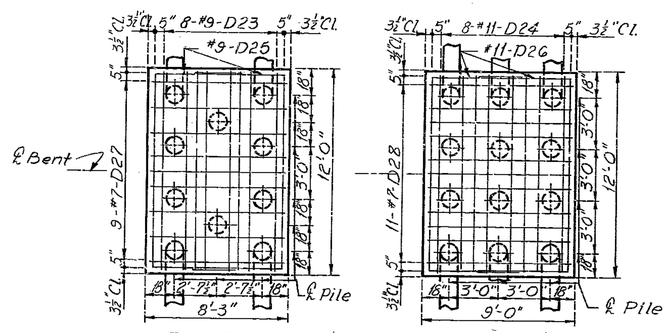
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	81	











DETAILS OF INT. BENT NO. 2

FOOTING PLAN

BRIDGE OVER K.C.S., C.R.I. &P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435)STA. 92+27.34 S.B.L.

JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.G. Latham	DETAILED G.L. Moon
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

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

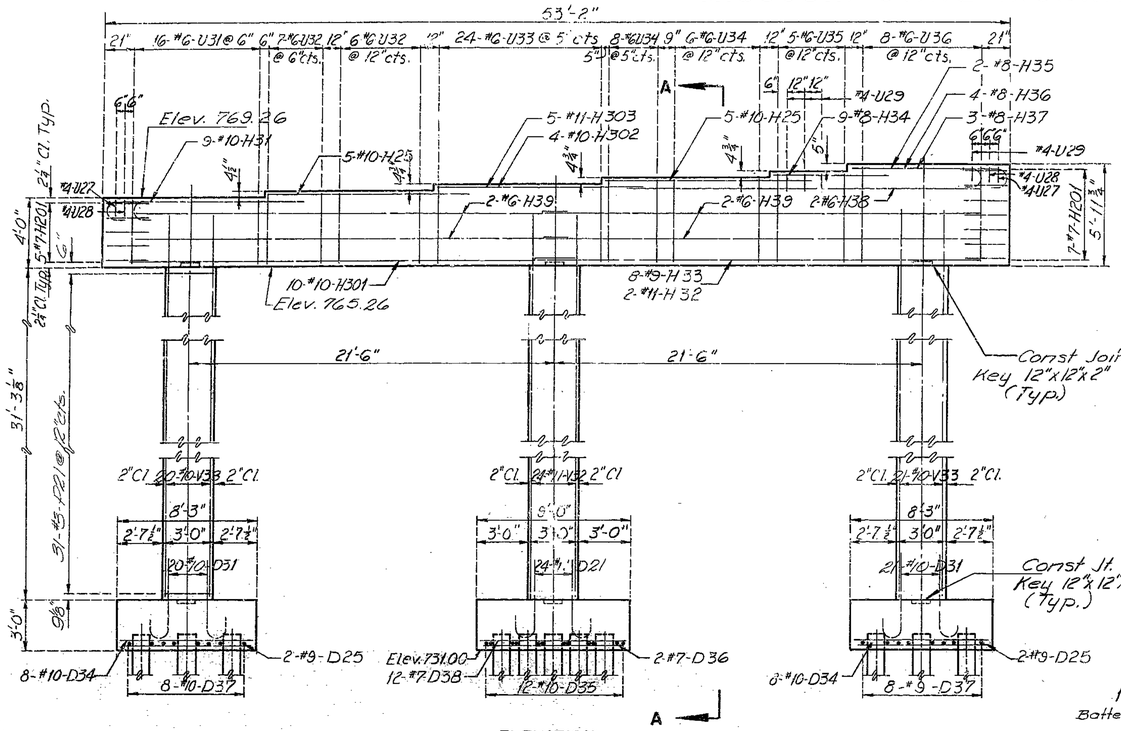
Sheet No. 7 of 29.

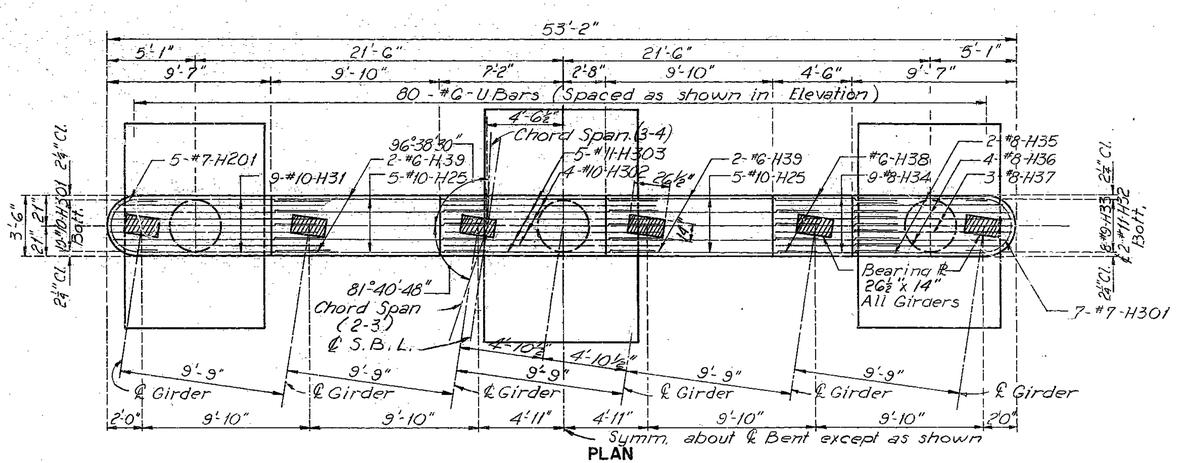
A-1683

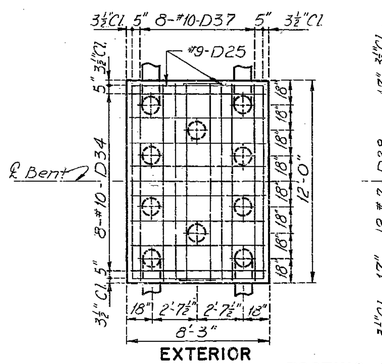
509

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	82	







FOOTING PLAN

DETAILS OF INT. BENT NO. 3

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-HG-435-1(52)RTE.I-435 **STA** 92+27.34 S.B.L.

JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED G.L. Moon
DESIGN CK. A.G. Latham	DETAIL CK. C.D. Albert

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

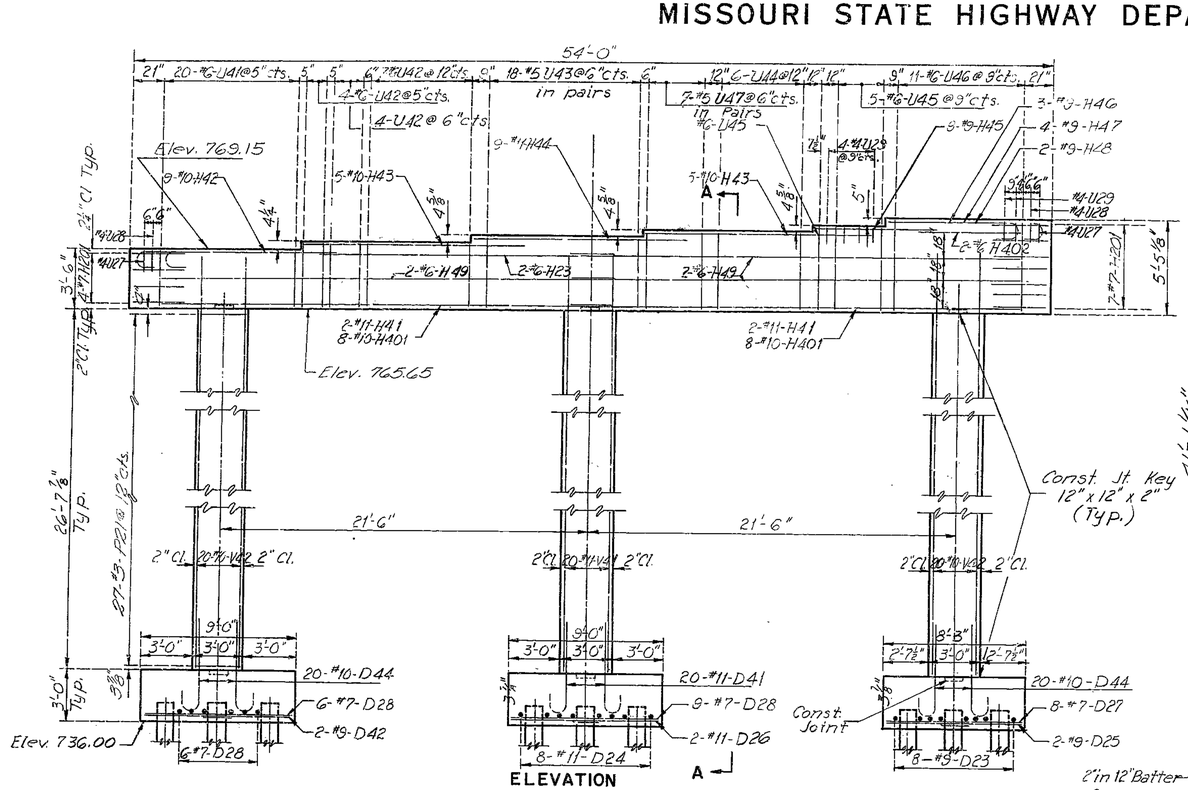
Sheet No. 8 of 29.

A-1683

510

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	83	



BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE.I-435 STA. 92+27.34 S.B.L.

JACKSON COUNTY

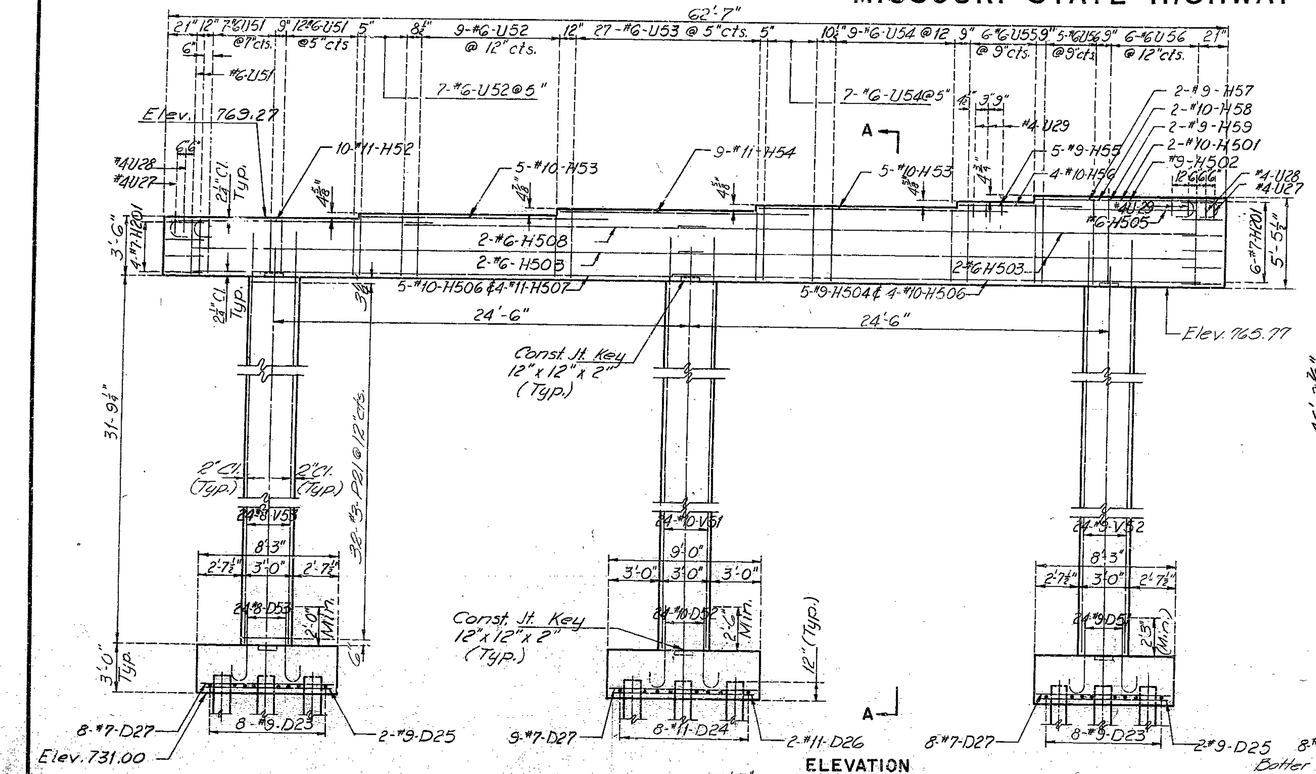
BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.G. Latham	DETAILED G.L. Moon
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

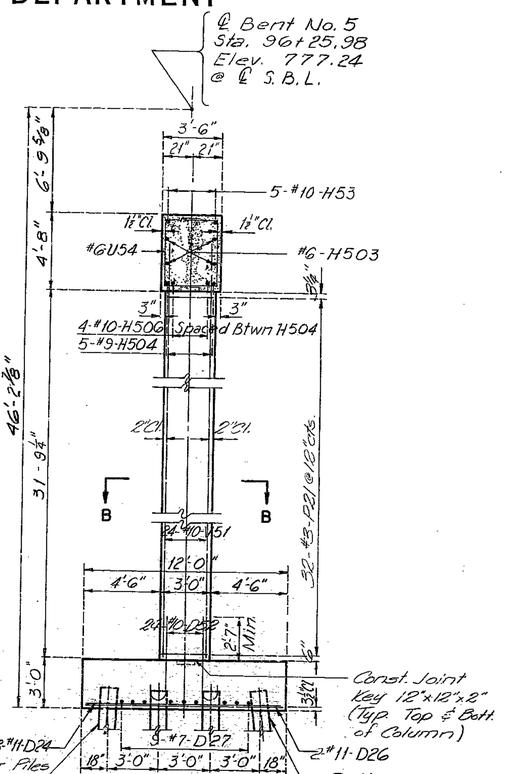
Note: This drawing is not to scale. Follow dimensions.

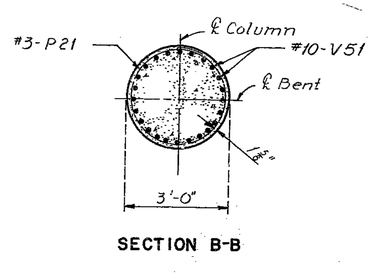
511

MISSOURI STATE HIGHWAY DEPARTMENT

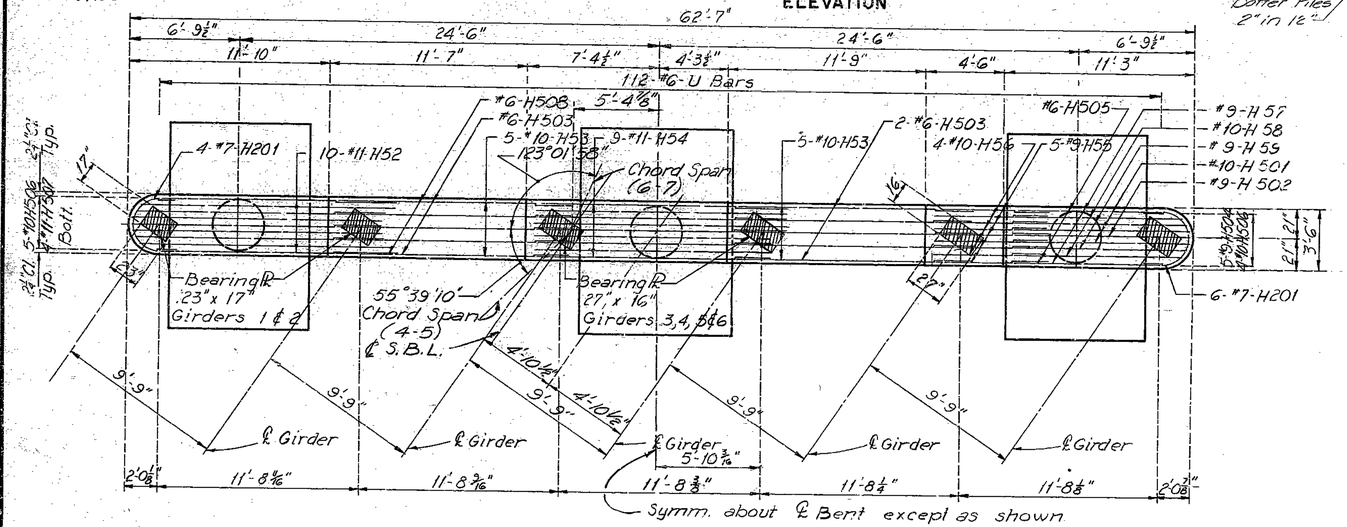
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	84	



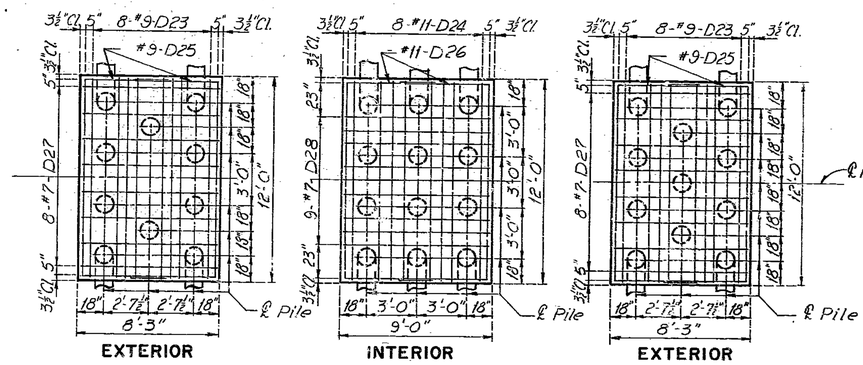




SECTION B-B



PLAN



FOOTING PLAN

DETAILS OF INT. BENT NO. 5

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED GL. Moon
DESIGN CK. A.G. Latham	DETAIL CK. C.D. Albert

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

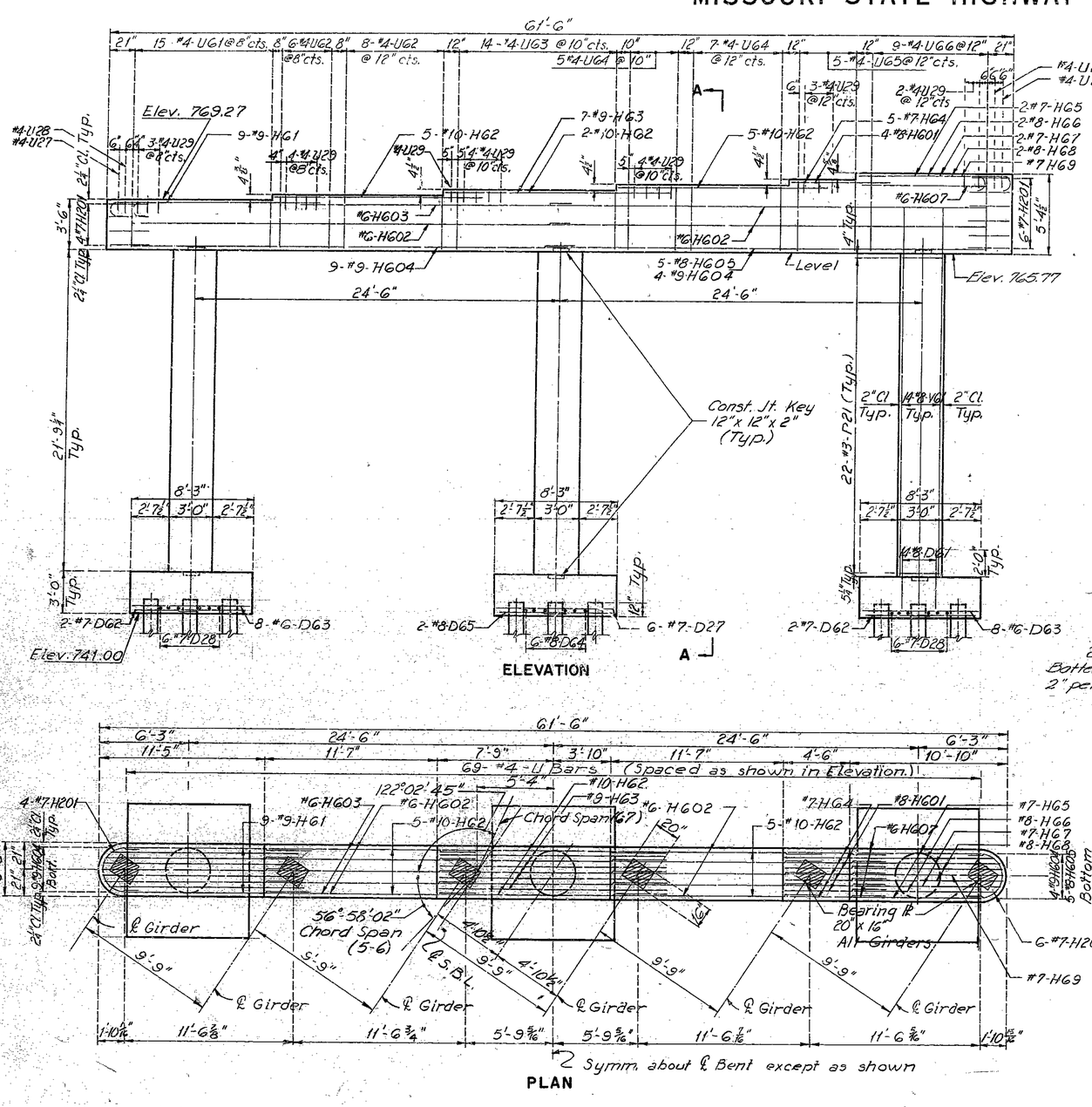
Sheet No. 10 of 29.

A-1683

512

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	85	



DETAILS OF INT. BENT NO. 6

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED A.G. Latham | DETAILED B.L. Moon
DESIGN CK. C. Page | DETAIL CK. C.D. Albert

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

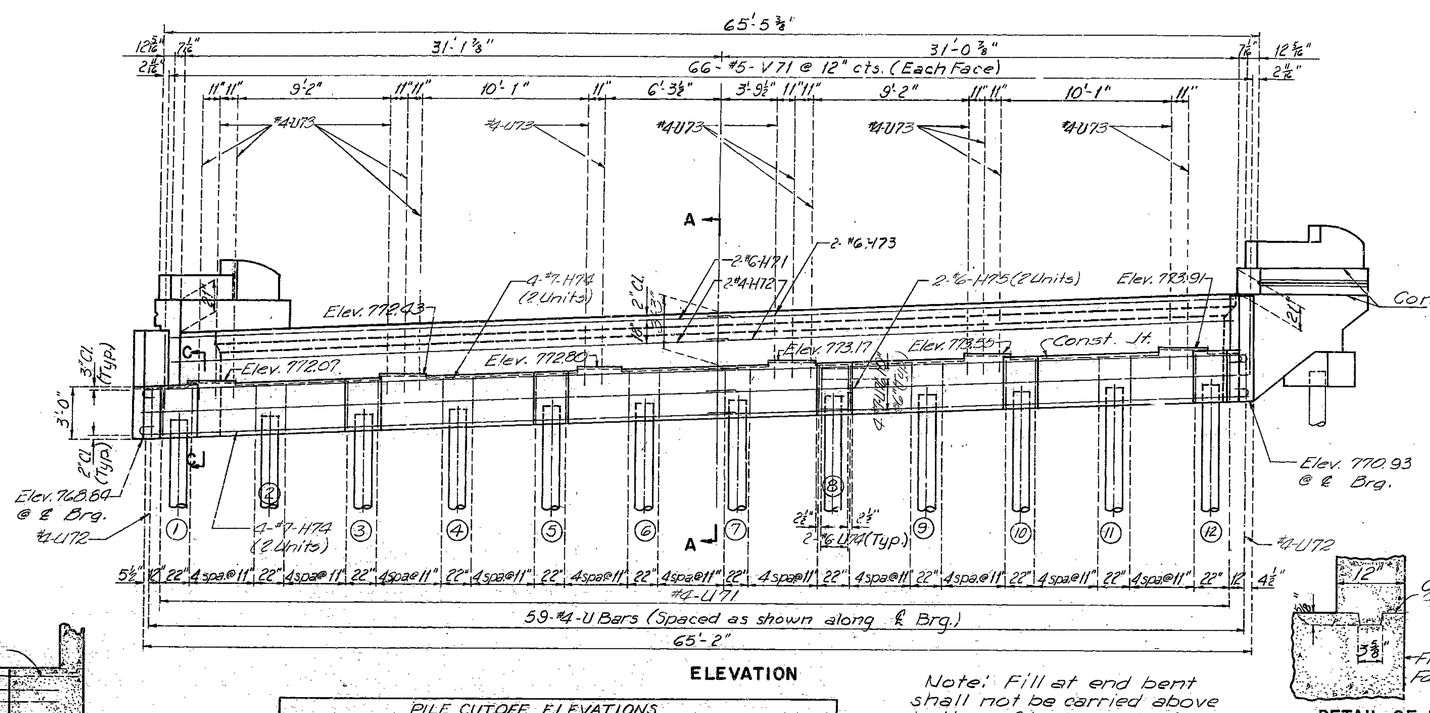
Sheet No. 11 of 29.

A-1683

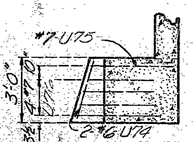
5/3

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	8G	



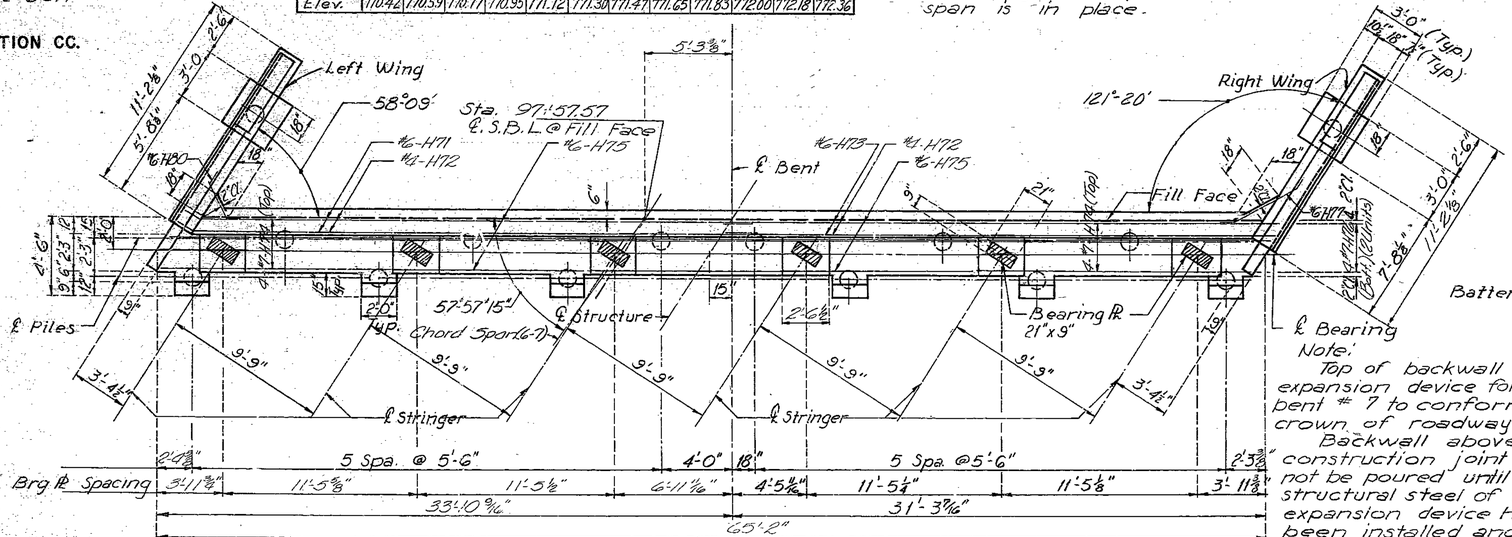
ELEVATION



SECTION CC.

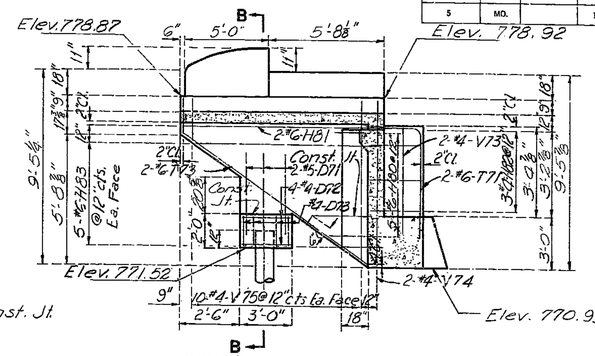
PILE CUTOFF ELEVATIONS												
Pile No.	1	2	3	4	5	6	7	8	9	10	11	12
Elev.	770.42	770.59	770.77	770.95	771.12	771.30	771.47	771.65	771.83	772.00	772.18	772.36

Note: Fill at end bent shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

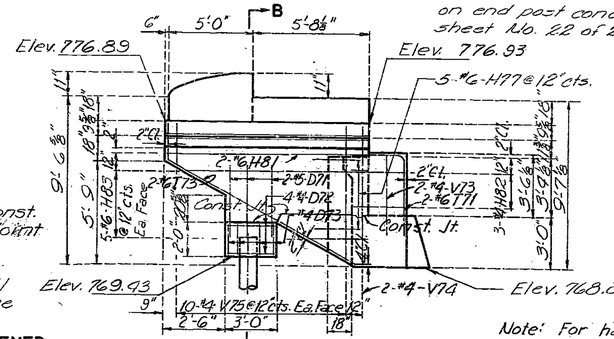


PLAN

Note: For notes and details on end post conduit see sheet No. 22 of 29.



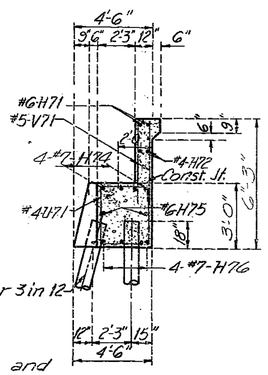
ELEVATION RIGHT WING



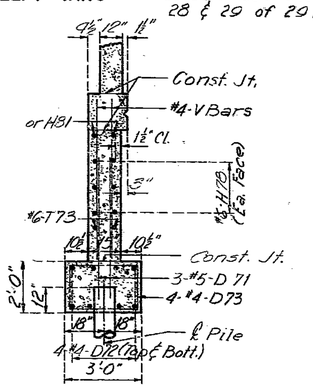
ELEVATION LEFT WING

Note: For handrail, parapet, and end post details see sheet No. 28 & 29 of 29.

DETAIL OF KEYED CONSTRUCTION JOINT



SECTION A-A



SECTION B-B

Note: Top of backwall and expansion device for end bent # 7 to conform to crown of roadway slab.

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

DETAILS OF END BENT NO. 7

BRIDGE OVER K.C.S., C.R.I. & P AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 SBL.

JACKSON COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page DETAILED G.L. Moon
DESIGN CK. A.G. Latham DETAIL CK. C.D. Albert

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

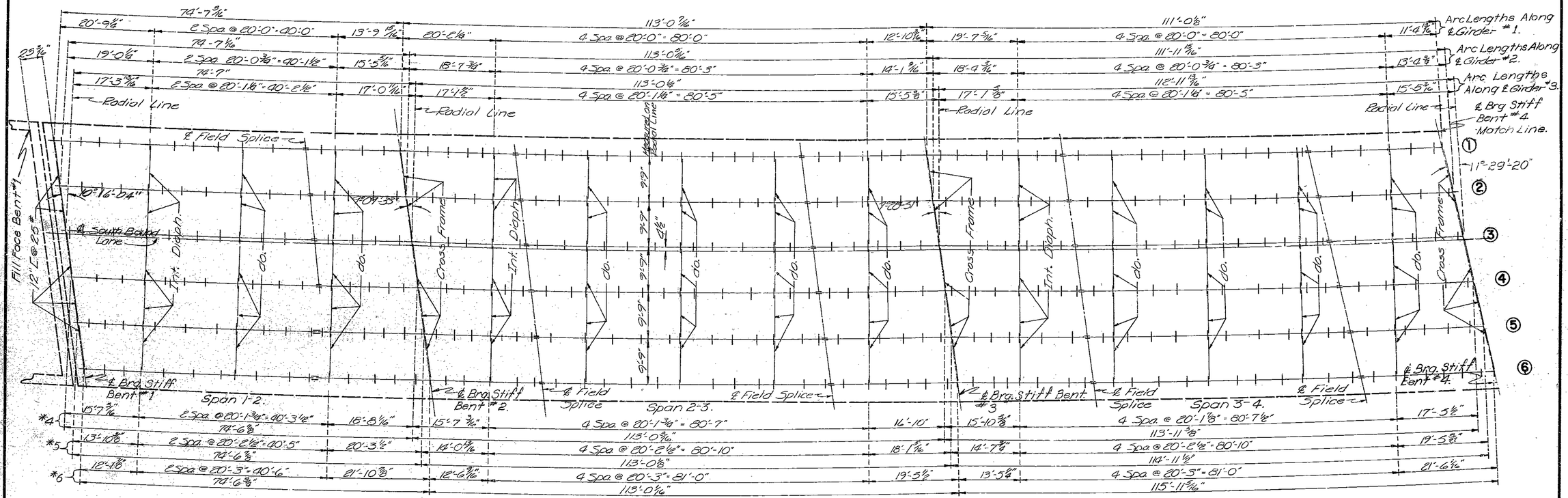
Sheet No. 12 of 29.

A-1683

514

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	87	



*Arc Lengths Along ℄ Girder #4.
*Arc Lengths Along ℄ Girder #5.
*Arc Lengths Along ℄ Girder #6

PLAN OF STRUCTURAL STEEL

Note: Longitudinal dimensions shown are parallel to grade of roadway. Girders and WF are on concentric curves. All Intermediate Diaphragms and the Cross Frames at Bent No. 5 are on radial lines.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. HG-435-1(52)(RTE. I-435) **STA.** 92 + 27.34 S.B.L.
JACKSON **COUNTY**

5/5

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED A.G. Latham	DETAILED J. Carter
DESIGN CK. C. Page	DETAIL CK. C.O. Albert

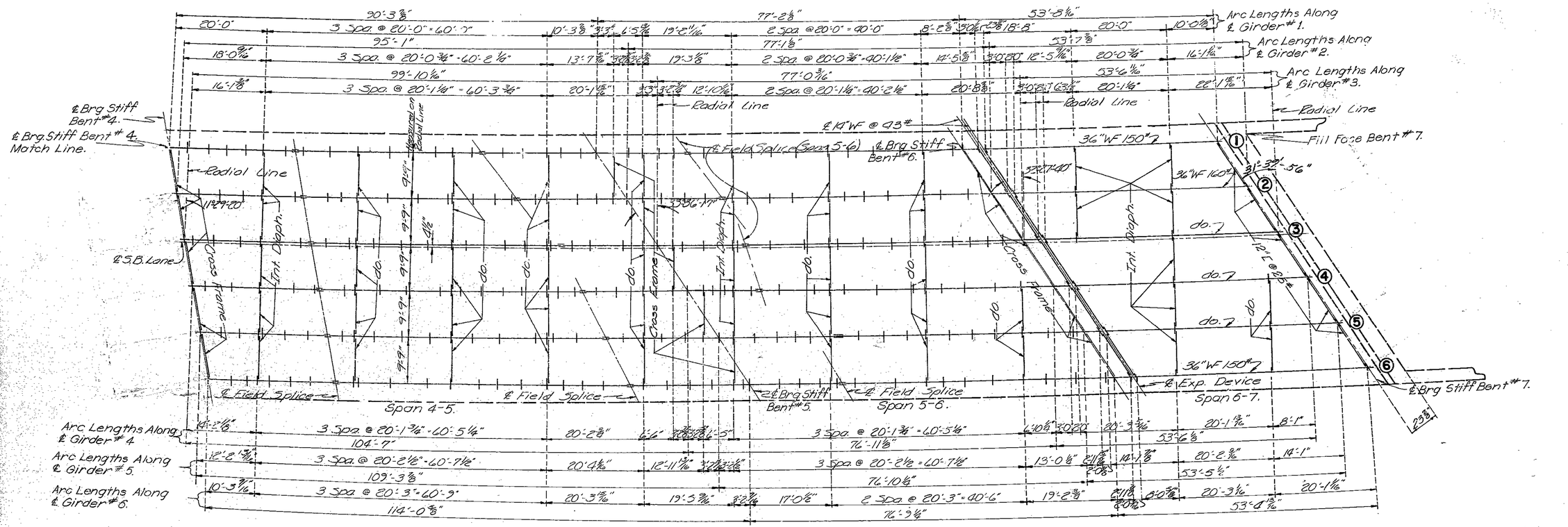
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 13 of 29.

A-1683

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	88	



PLAN OF STRUCTURAL STEEL

Note: Longitudinal dimensions shown are parallel to grade of roadway. Girders and WF are on concentric curves. All Intermediate Diaphragms and the Cross Frames at Bent No. 5 are on radial lines.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. HG-435-1(52)(RTE.I-435) **STA.** 92 + 27.34 S.B.L.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.G. Latham	DETAILED J. Carter
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

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

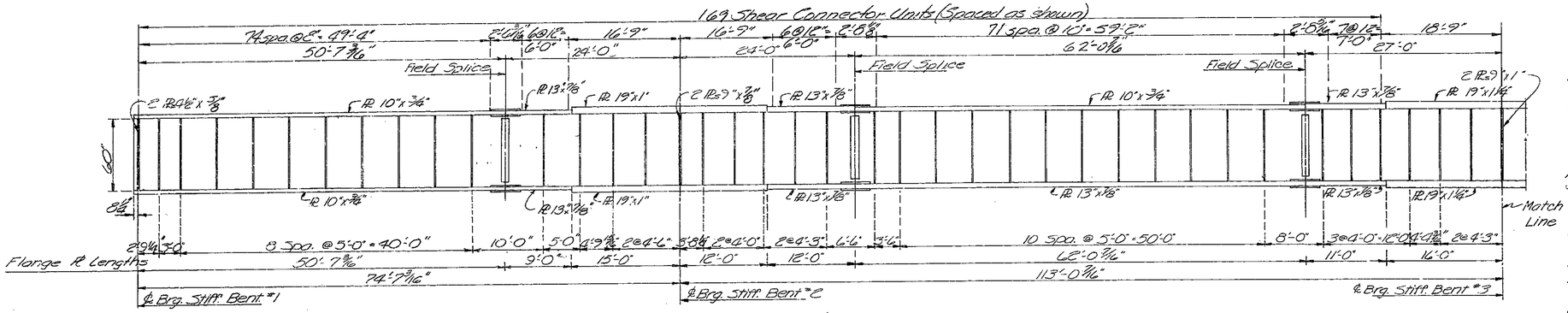
Sheet No. 14 of 29.

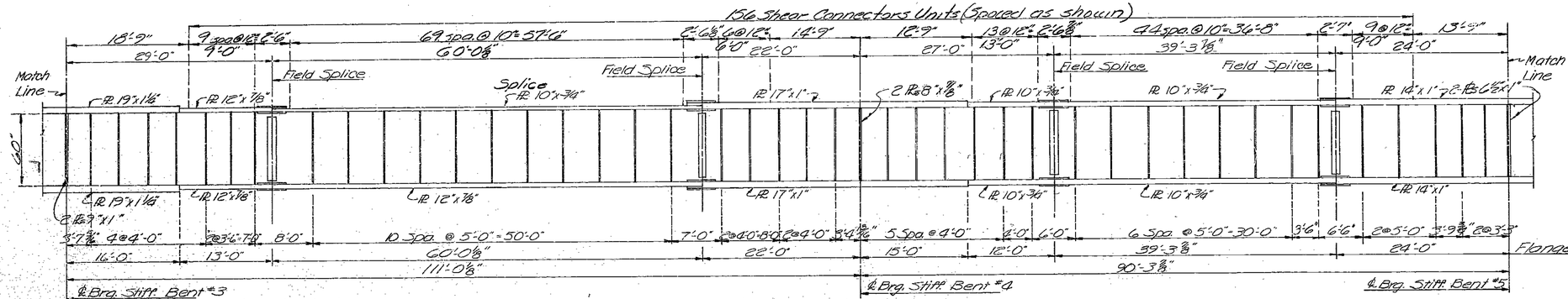
NO CONSTRUCTION DRAWINGS

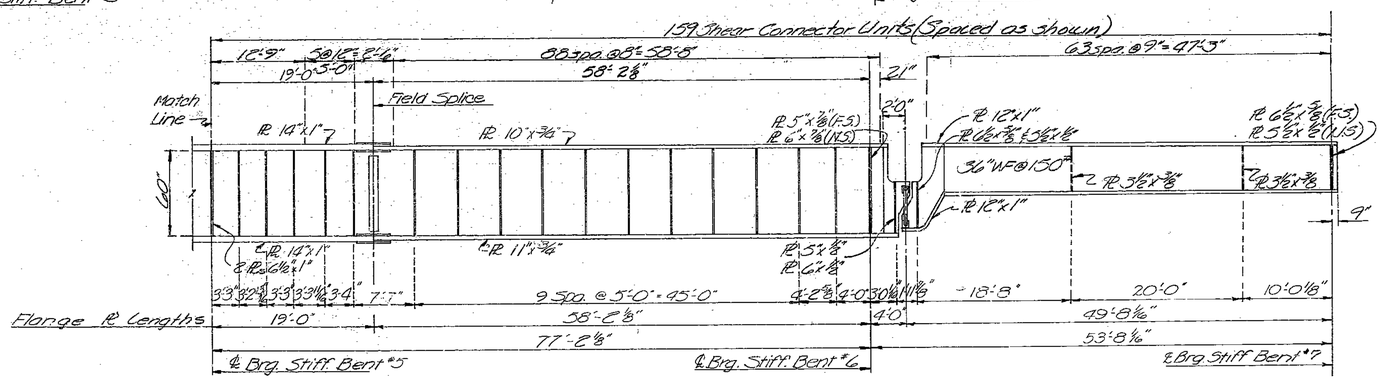
516

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	80	







NO. 1 GIRDER ELEVATION

Note: The following welds will be subject to radiographic inspection.
Shop: All butt welded flange splices
At least 1/3 of each butt welded web splice beginning at points of max. tension.
Field: None
The following welds will be subject to inspection by the magnetic particle procedure.
Shop: At least 10% of each size and type of fillet welds, web to flanges and bearing stiffners, and bearing devices.
The tests shall be located at random in the members so as to be typical for each size and type of weld.
This test procedure may also be used for examination of weld passes and miscellaneous welds not specifically set out, at the discretion of the engineer.
Field: None.

Note: Longitudinal dimensions shown are along the ℄ of the top flange of the girders.
Girders & WF Beams shall be fabricated on horizontal curves. The radius of curve for Girder No. 1 is 9537.955 feet. All intermediate stiffeners are 4"x 5/16".
All web plates are 3/8".
For welding details see sheet No. 24 of 29.
All girders shall be fabricated to conform with the Camber Diagram shown on sht. 26 of 29.
Shop welded web splices may be fabricated by the contractor when detailed on the shop drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.
JACKSON COUNTY

A-1683

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.C. Latham	DETAILED C. Phillips
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

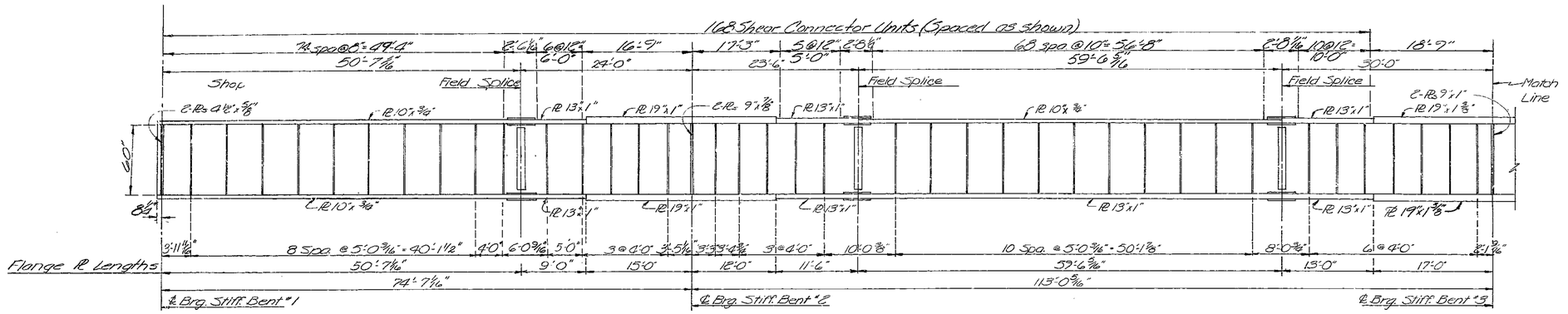
Note: This drawing is not to scale. Follow dimensions.

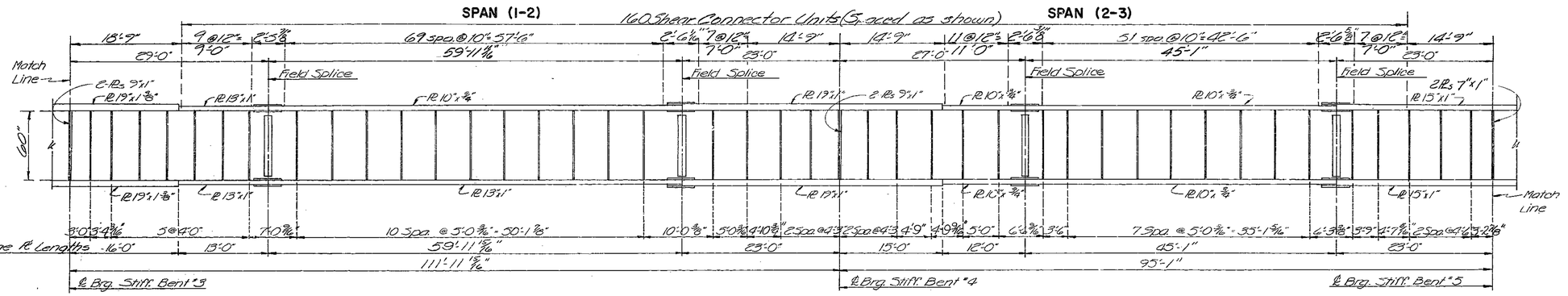
Sheet No. 15 of 29.

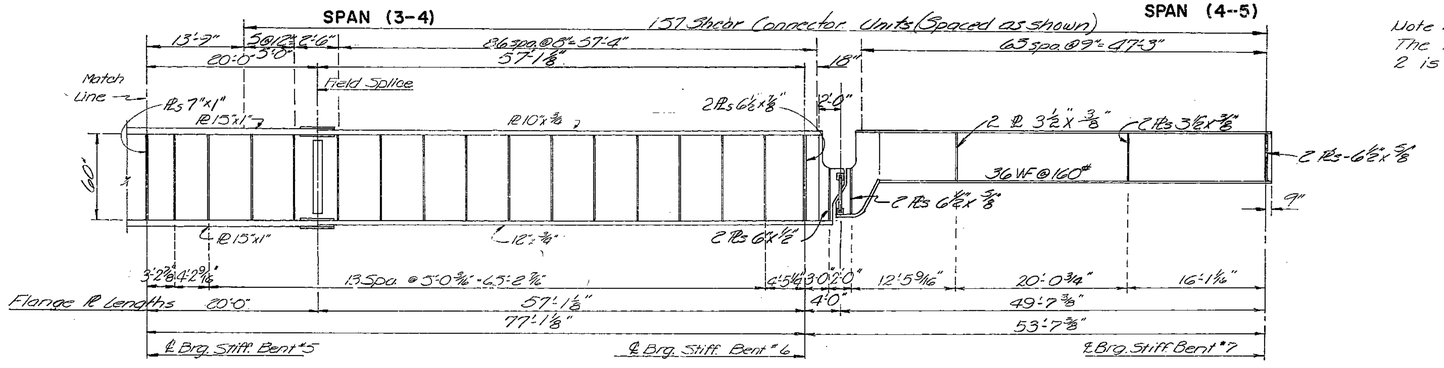
5/7

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	20	







SPAN (5-6)

NO. 2 GIRDER ELEVATION

Note: See note sheet No. 15 of 29. The radius of curve for Girder No. 2 is 3847.705 feet.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.
JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED R.G. Latham	DETAILED C. Phillips
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

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

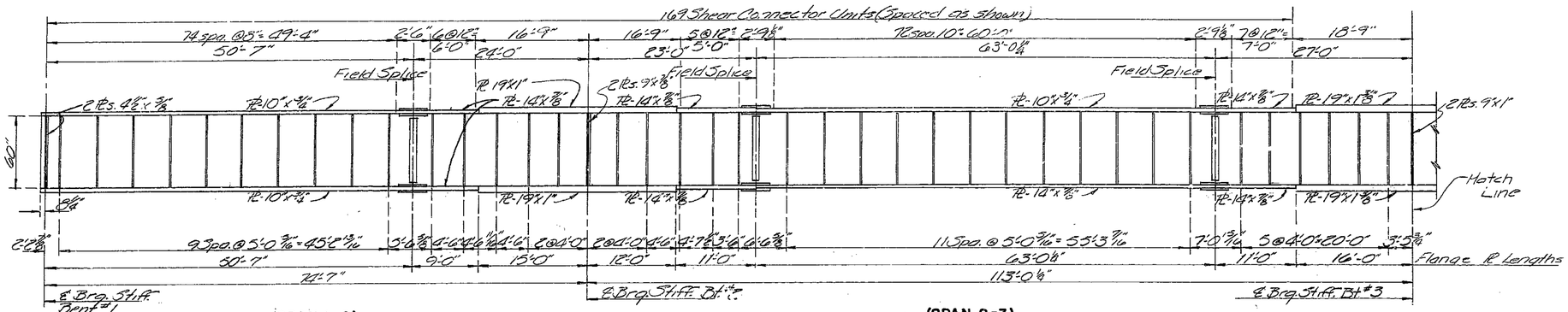
Sheet No. 16 of 29.

A-1683

518

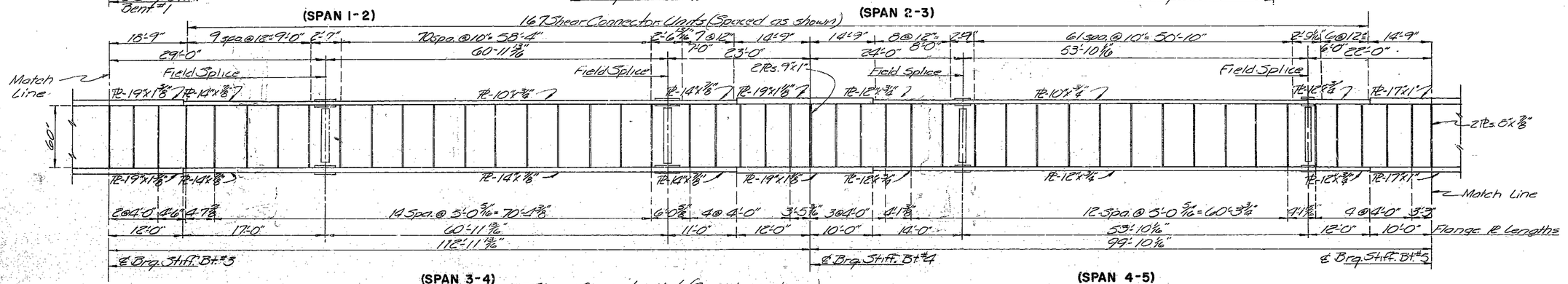
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	51	



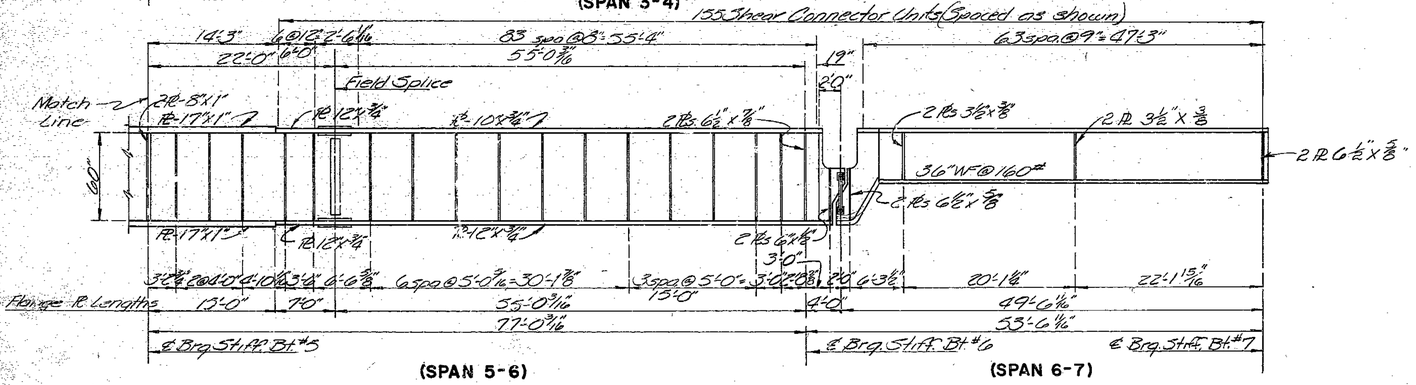
(SPAN 1-2)

(SPAN 2-3)



(SPAN 3-4)

(SPAN 4-5)



(SPAN 5-6)

(SPAN 6-7)

NO. 3 GIRDER ELEVATION

Note : See note sheet No. 15 of 29. The radius of curve for Girder No. 3 is 3857.455 feet.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED C. Phillips
DESIGN CK. A.G. Latham	DETAIL CK. C.D. Albert

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

Sheet No. 17 of 29.

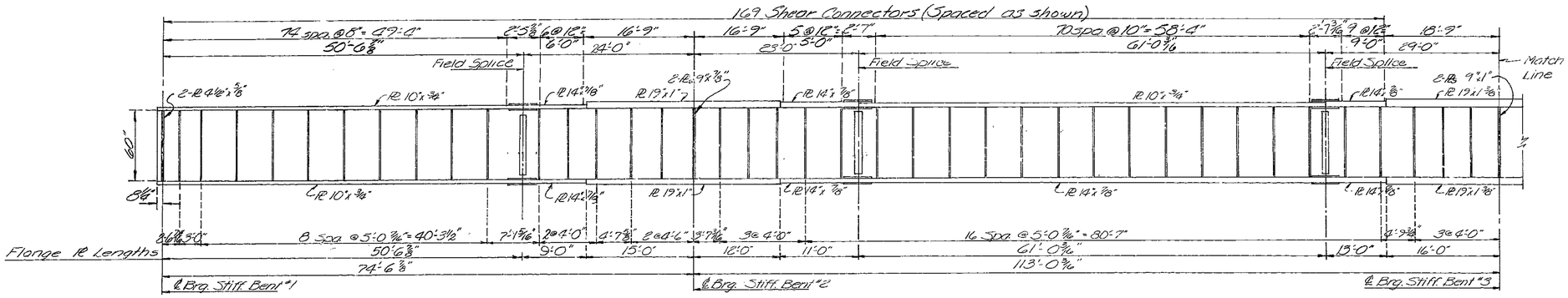
5/9

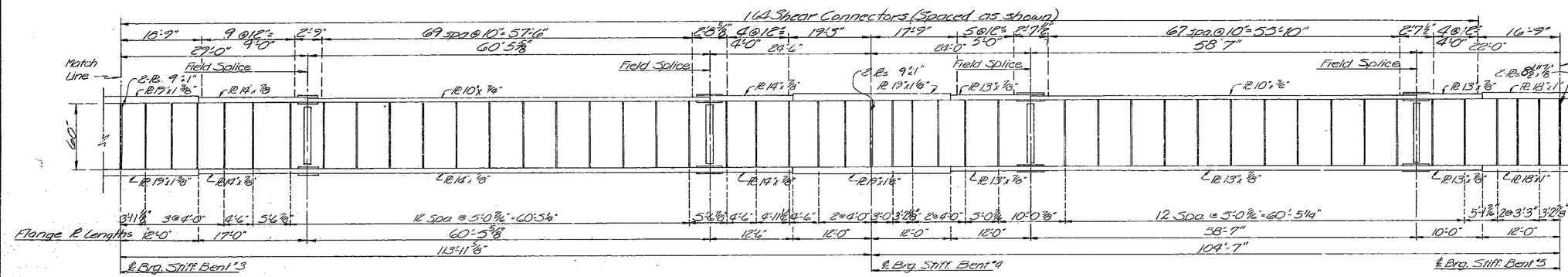
TRACED BY: JOHN P. KETTLER

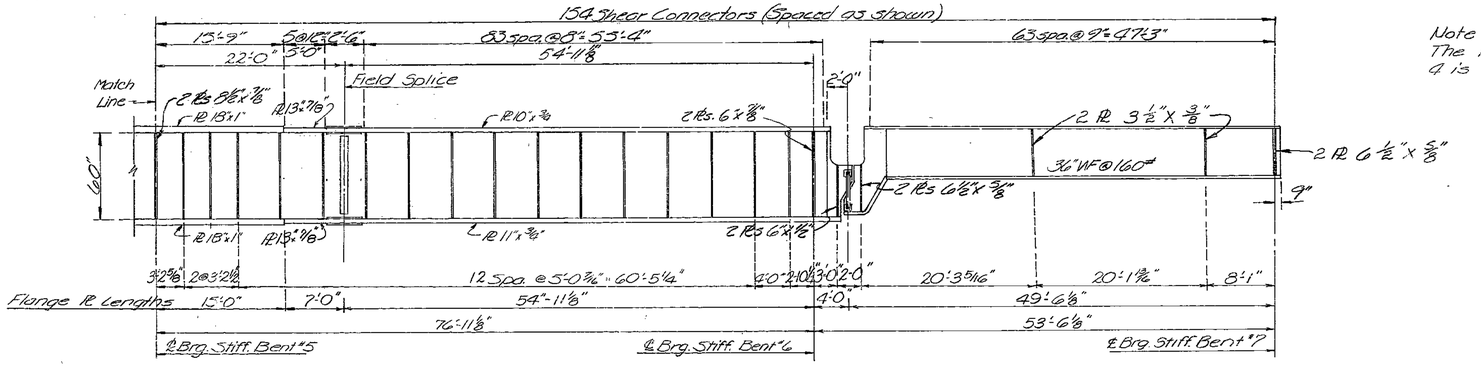
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

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







Note : See note sheet No. 15 of 29. The radius of curve for Girder No. 4 is 38,67.205 feet.

NO. 4 GIRDER ELEVATION

520

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED C. Phillips
DESIGN CK. A.C. Latham	DETAIL CK. C.D. Albert

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

Sheet No. 18 of 29.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

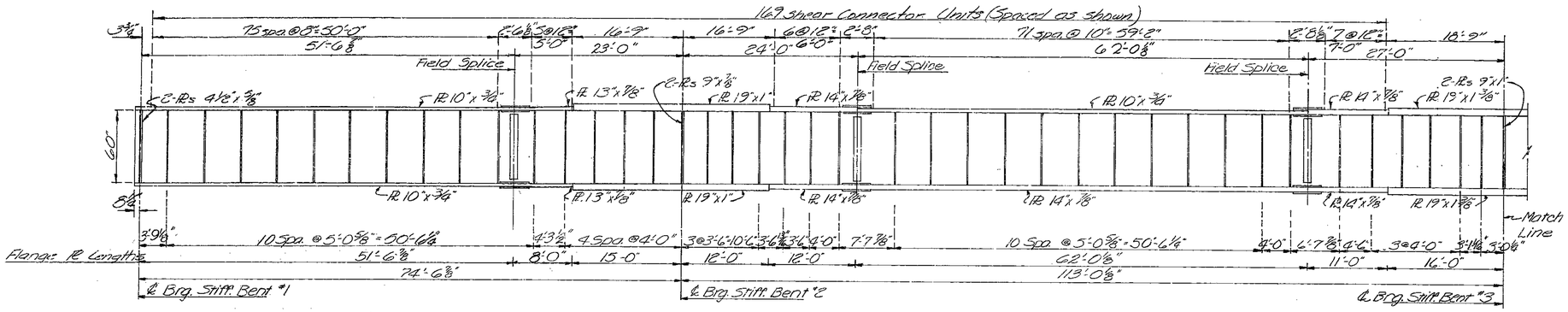
PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.

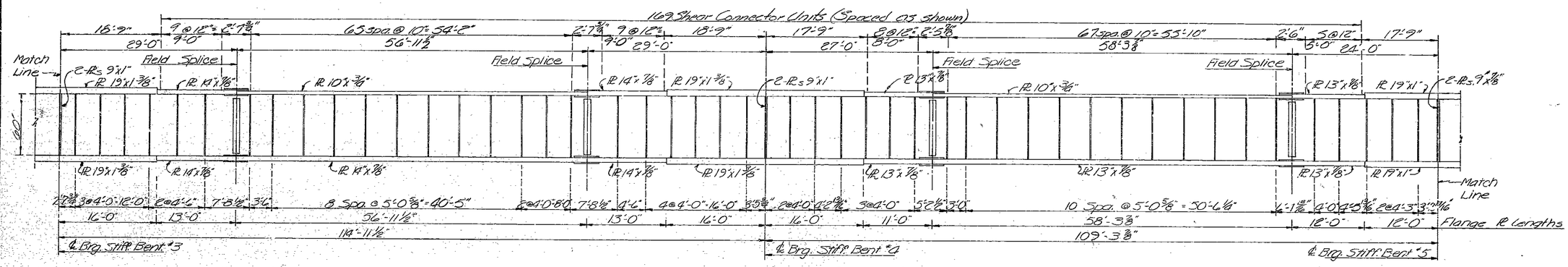
JACKSON COUNTY

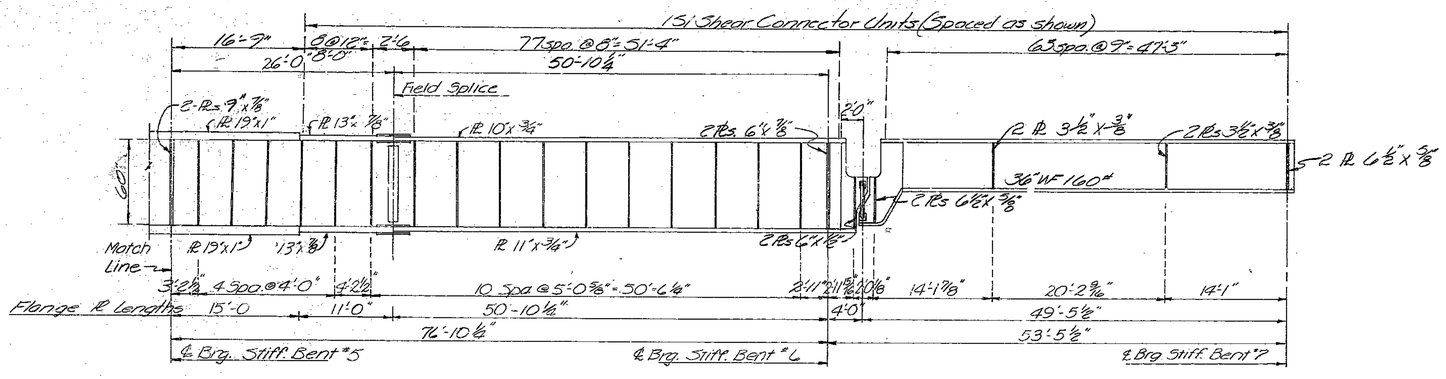
A-1683

MISSOURI STATE HIGHWAY DEPARTMENT

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







Note : See note sheet No. 15 of 29. The radius of curve for Girder No. 5 is 3876.955 feet.

NO. 5 GIRDER ELEVATION

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.P.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. HG-435-1(52)(RTE. I-435) **STA.** 92 + 27.34 S.B.L.

JACKSON **COUNTY**

A-1683

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED	C. Page	DETAILED	B. Thurn
DESIGN CK.	A.G. Lathom	DETAIL CK.	C.D. Albert

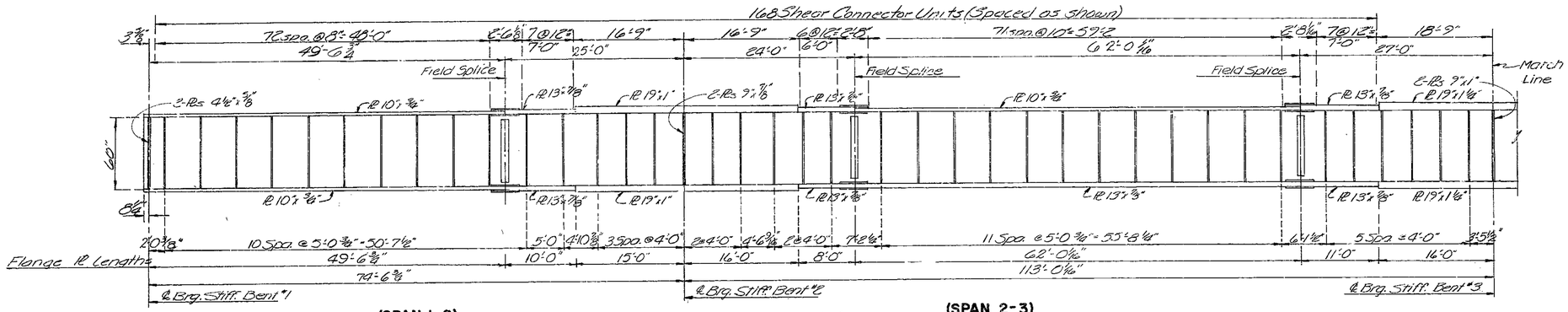
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 19 of 29.

521

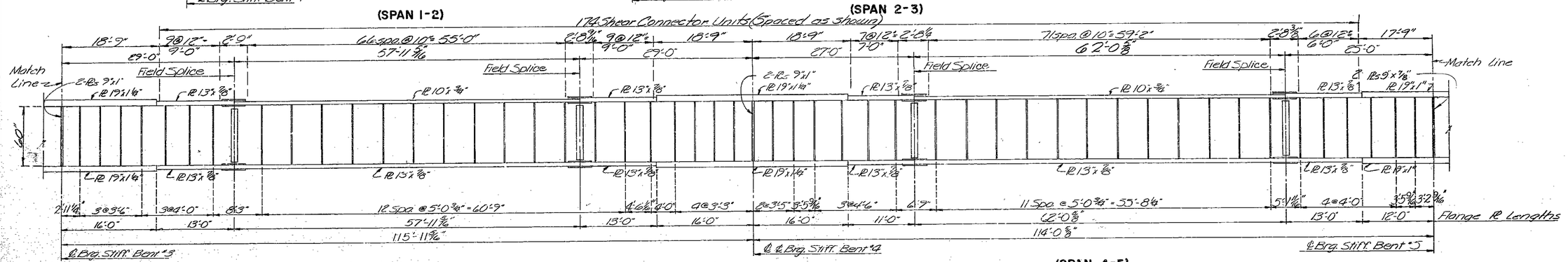
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	94	



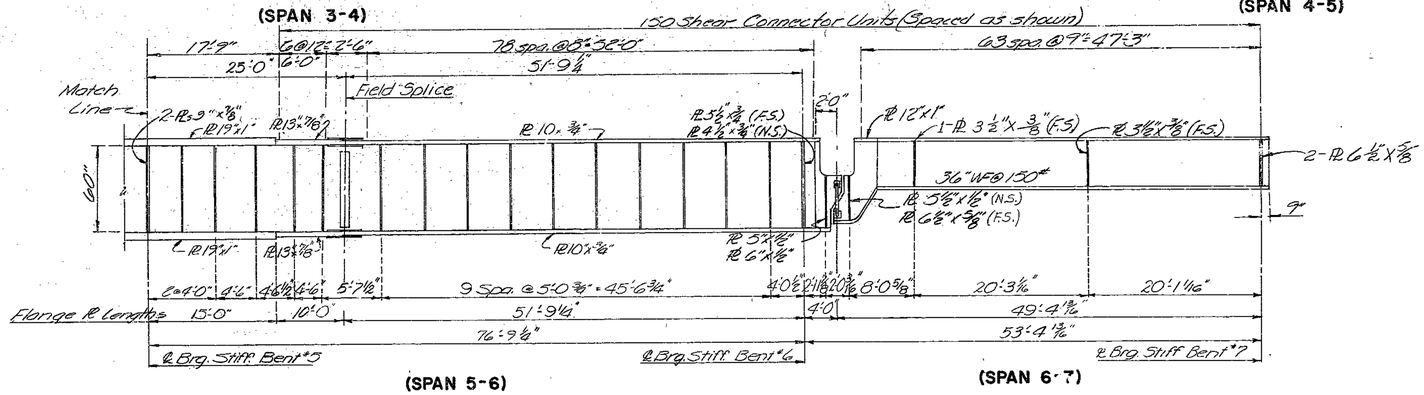
(SPAN 1-2)

(SPAN 2-3)



(SPAN 3-4)

(SPAN 4-5)



(SPAN 5-6)

(SPAN 6-7)

Note : See note sheet No. 15 of 29.
The radius of curve for Girder No. 6 is 3886.705 feet.

NO. 6 GIRDER ELEVATION

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. IG-435-1(52)(RTE I-435) **STA.** 92+27.34 S.B.L.

JACKSON **COUNTY**

A-1683

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.C. Lotham	DETAILED C. Phillips
DESIGN CK. C. Page	DETAIL CK. C.D. Albert

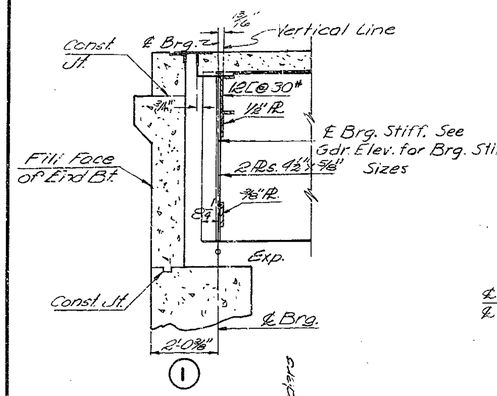
Note: This drawing is not to scale. Follow dimensions.

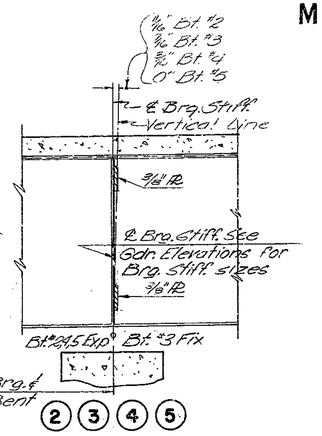
Sheet No. 20 of 29.

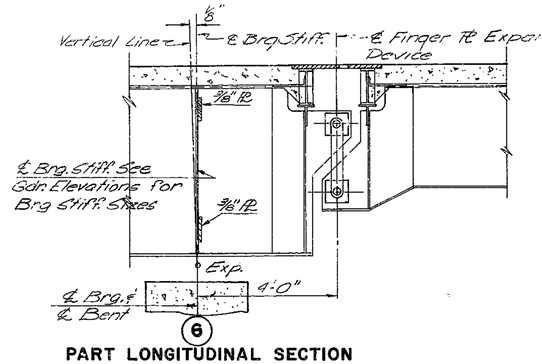
522

MISSOURI STATE HIGHWAY DEPARTMENT

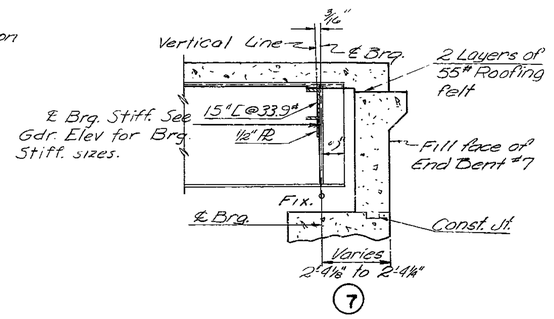
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	95	

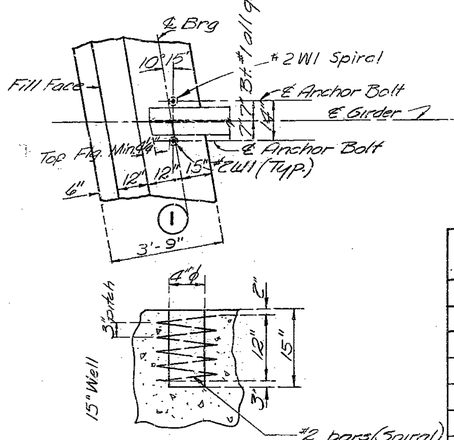




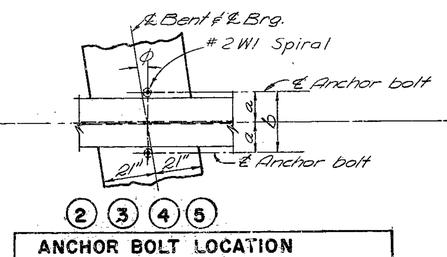


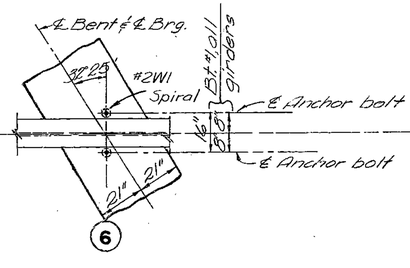
PART LONGITUDINAL SECTION

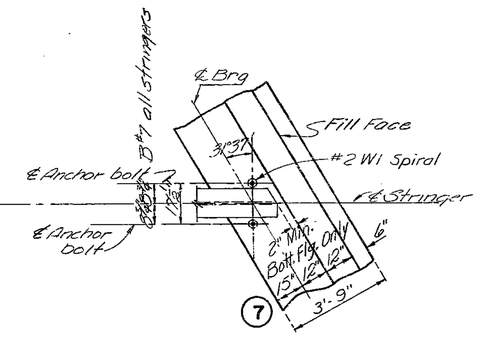




ANCHOR BOLT WELL DETAIL

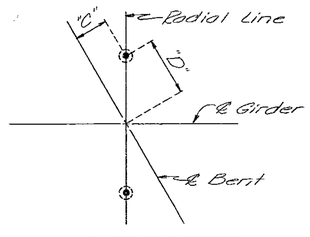






ANCHOR BOLT LOCATION DIMENSIONS				
LOCATION		DIMENSIONS		ANGLE
Bt. No.	Gdr. No.	a.	b.	ϕ
2	1-6	11½"	23"	0°-09'
3	1-6	11½"	23"	7°-28'
4	1	10½"	21"	11°-20'
4	2-6	11½"	23"	11°-20'
5	1-2	9½"	19"	33°-34'
5	3-6	11½"	23"	33°-34'

PART. ANCHOR BOLT PLAN



ANCHOR BOLT LAYOUT

LOCATION		DIMENSION	
Bt. No.	Gdr. No.	"C"	"D"
1	1-6	1⅛"	6⅞"
2	1-6	1⅜"	11⅜"
3	1-6	1⅝"	11⅜"
4	1	2⅛"	10⅜"
4	2-6	2⅜"	11½"
5	1-2	5⅛"	7⅜"
5	3-6	6⅜"	9⅜"
6	1-6	9⅜"	6⅜"
7	1-6	9⅜"	7⅛"

523

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

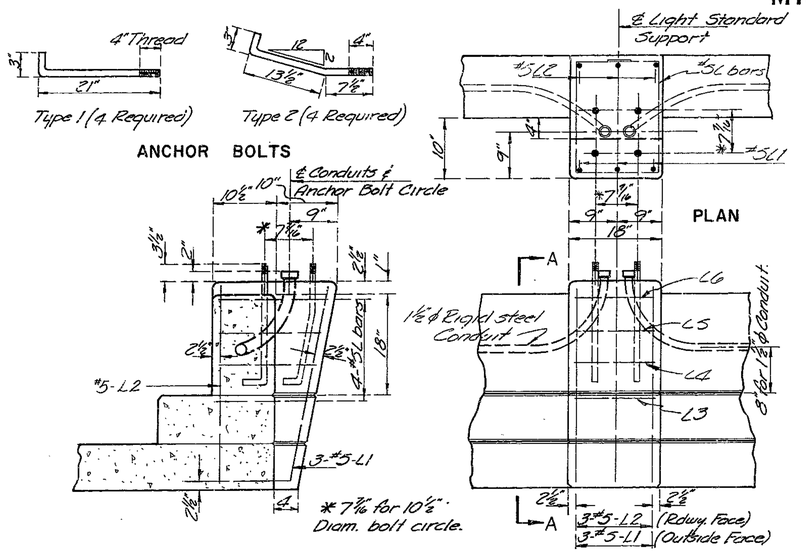
BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.R. Page | DETAILED J.R. Kettler
DESIGN CK. C.D. Albert | DETAIL CK. C.D. Albert

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

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	26	



Note: Cost of furnishing and placing conduit and anchor bolts for lighting standard shall be included in contract unit price of conduit system (on structures).

Light standards, wiring and fixtures to be furnished and installed by others.

All conduit to be rigid galvanized steel with 3" minimum cover in concrete.

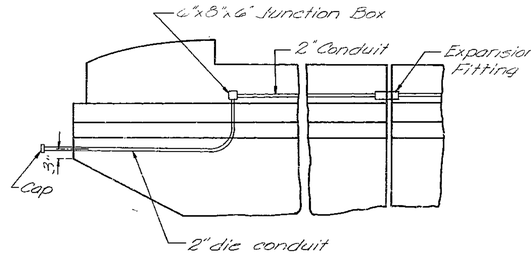
Shift reinforcing steel in field where necessary to clear conduit and junction boxes.

Top of light standard supports to be made horizontal, anchor bolts to be placed vertically.

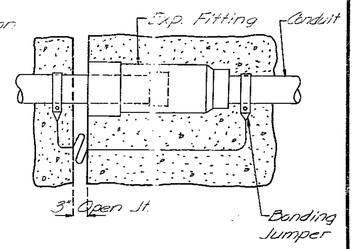
Galvanized Expansion Fittings shall provide a minimum of movement in either direction of 4" at open joints and 1" at filled joints. Fittings shall be equal to O.Z. Elec. Mfg. Co. Expansion Fittings "AX", "EX" with approved bonding jumper."

All parapet junction boxes shall be flush mounted and equal to O.Z. Elec. Mfg. Co. Type "YE".

½" Drain holes shall be provided at low points of conduit and junction boxes.



ELEV. OF RIGHT WING BT. NO. 1
(Rt. Wing Bent #7 Similar)



CONDUIT EXPANSION FITTING

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.

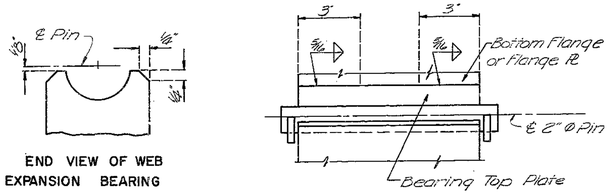
Rockers and pedestals shall be machined after welding.

Where flat surface is indicated, tolerance shall be .003 in./in. in any direction.

Anchor bolts for Type "D" Bearings shall be 1½"ϕ swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.

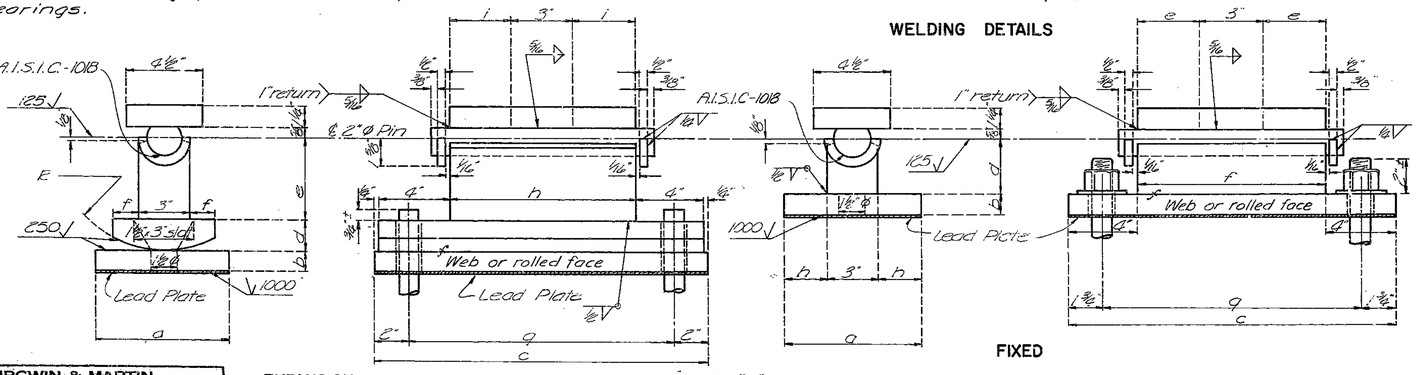
EXPANSION BEARINGS

Location		Dimensions										No. Req.
Bent No.	Girder No.	a	b	c	d	e	f	g	h	i	E	
1	1-6	12"	1⅛"	13"	1 3/16"	5 3/16"	1⅛"	14"	9½"	3½"	7⅛"	6
2	1-6	15"	2 3/16"	27"	2⅛"	8 3/16"	2"	23"	18½"	7½"	10⅛"	6
4	1	13"	2⅛"	25"	2⅛"	8 3/16"	2"	21"	16½"	6½"	10⅛"	1
5	1&2	17"	2 3/16"	23"	2⅛"	8 3/16"	2"	19"	14½"	5 3/16"	10⅛"	2
5	3-6	16"	2⅛"	27"	2⅛"	8 3/16"	2"	23"	18½"	7⅛"	10⅛"	4
6	1-6	16"	2⅛"	20"	2⅛"	8 3/16"	2"	16"	11½"	4½"	10⅛"	6
4	2-6	15"	2 5/16"	27"	2⅛"	8 3/16"	2"	23"	18 1/2"	7 3/4"	10½"	5



FIXED BEARINGS

Location		Dimensions										No. Req.
Bent No.	Girder No.	a	b	c	d	e	f	g	h			
3	1-6	14	2"	26½"	3 1/8"	7 3/8"	18½"	25"	5⅛"			6
7	1-6	9	1½"	21"	3⅛"	5"	13"	17½"	3"			6



TYPE "D" BEARINGS
(Estimated Weight 16,375#)

BRIDGE OVER K.C.S., C.R.I.&P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. HG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.
JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED B. Thurn
DESIGN CK. C.O. Albert	DETAIL CK. C. Phillips

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

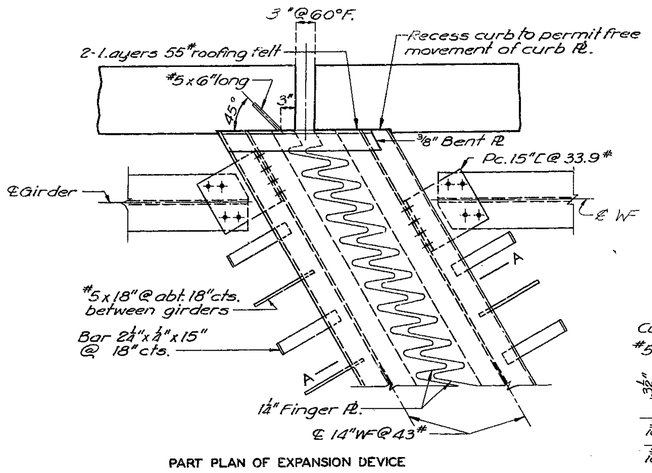
Sheet No. 22 of 29.

A-1683

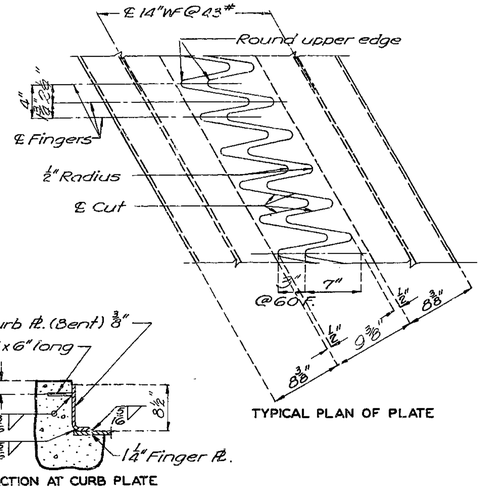
524

MISSOURI STATE HIGHWAY DEPARTMENT

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

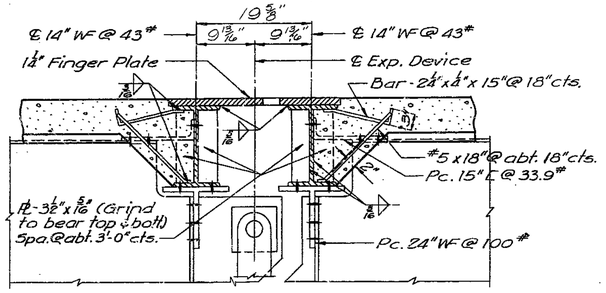


PART PLAN OF EXPANSION DEVICE



TYPICAL PLAN OF PLATE

SECTION AT CURB PLATE



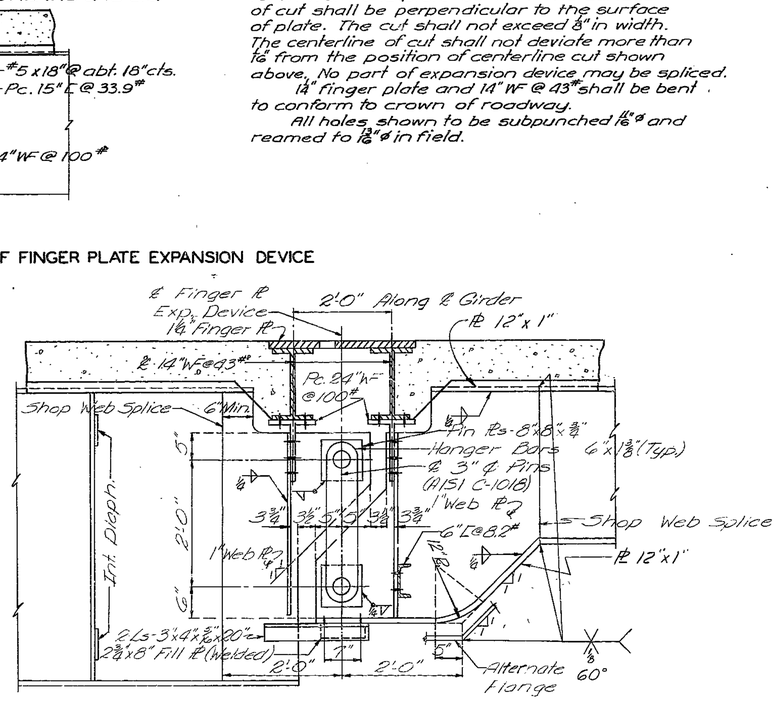
SECTION A-A

Note: Finger plates shall be cut with a gas torch from one plate 26" x 14". The surface of cut shall be perpendicular to the surface of plate. The cut shall not exceed 3/8" in width. The centerline of cut shall not deviate more than 1/16" from the position of centerline cut shown above. No part of expansion device may be spliced.

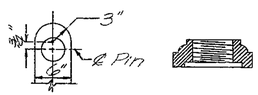
14" finger plate and 14" WF @ 43# shall be bent to conform to crown of roadway.

All holes shown to be subpunched 11/16" ø and reamed to 13/16" ø in field.

DETAILS OF FINGER PLATE EXPANSION DEVICE

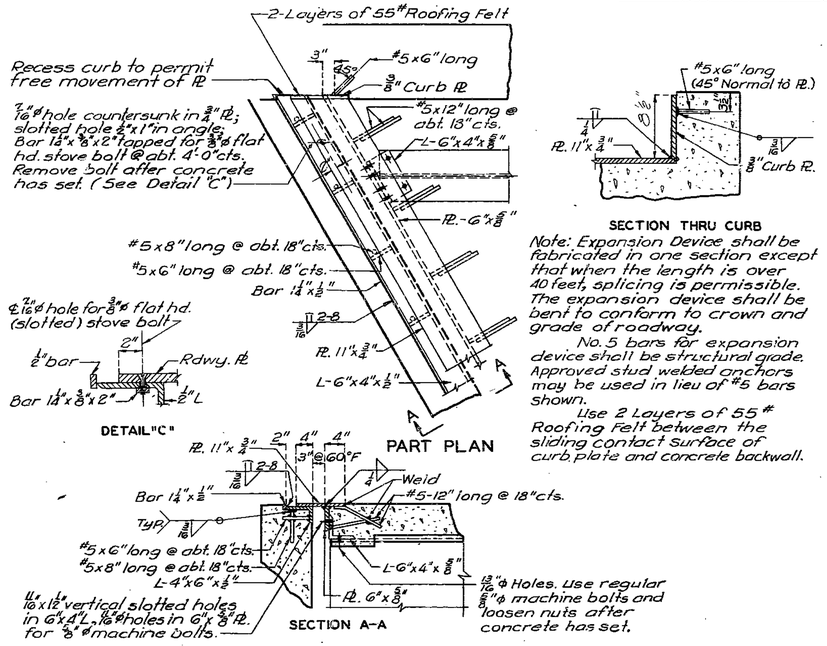


SECTION HANGER CONNECTION



DETAIL OF HANGER BAR

RECESSED PIN NUT (Cast or Pressed Steel)



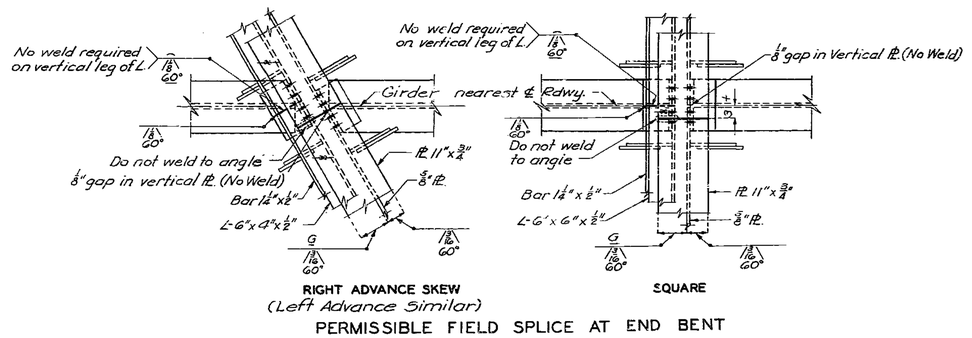
EXPANSION DEVICE AT END BENT NO. 1

SECTION THRU CURB

Note: Expansion Device shall be fabricated in one section except that when the length is over 40 feet, splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.

No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.

Use 2 Layers of 55# Roofing Felt between the sliding contact surface of curb plate and concrete backwall.



PERMISSIBLE FIELD SPLICE AT END BENT

BRIDGE OVER K.C.S., C.R.I.&P. AND C.M.&S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

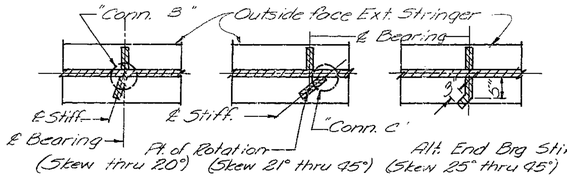
BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED J. Carter
DESIGN CK. C.D. Albert	DETAIL CK. C. Phillips

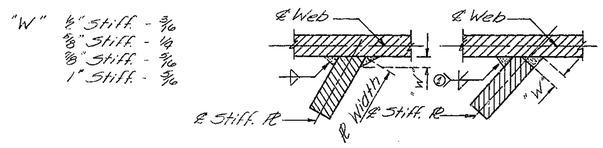
Note: This drawing is not to scale. Follow dimensions.

525

MISSOURI STATE HIGHWAY DEPARTMENT

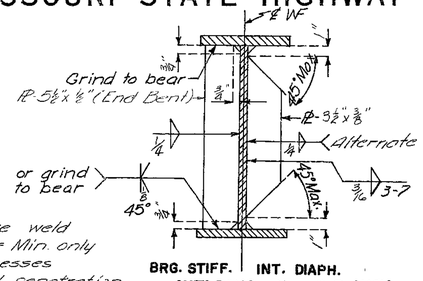
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	28	





"CONN. B" (Bent 1,2,3,4)

"CONN. C" (Bent 6,7)



WELDING DETAILS (WF)

Note: Groove weld penetration = Min. only welding processes having good penetration will be permitted on groove welds.

All Int. Stiffeners Normal to ℄ girder. Stiffener for End diaph. are bent as shown

Note: By approval of the engineer the contractor may omit any shop flange splice, if desired, by extending the heavier flange plate and providing approved modifications of details of field flange splices and elsewhere as required. Payweight in any case will be based on material shown on design plans.

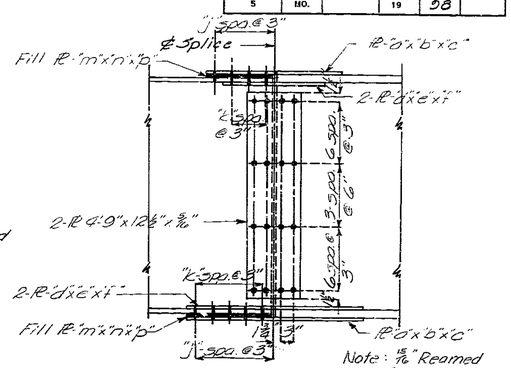
The following welds will be subject to inspection by the magnetic particle procedure.

Shop: At least 10% of each size and type of fillet welds, web to flanges and bearing stiffeners, and bearing devices.

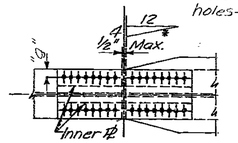
The tests shall be located at random in the members so as to be typical for each size and type of weld.

This test procedure may also be used for examination of weld passes and miscellaneous welds not specifically set out, at the discretion of the engineer.

Field: None

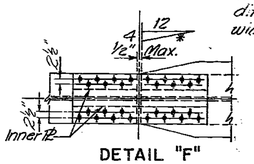


Note: 15/16" Reamed holes-⅞" H.S. Bolts



DETAIL "E"

*Bevel flange when difference in plate widths exceeds 2"



DETAIL "F"

DETAILS OF GIRDER FIELD SPLICE

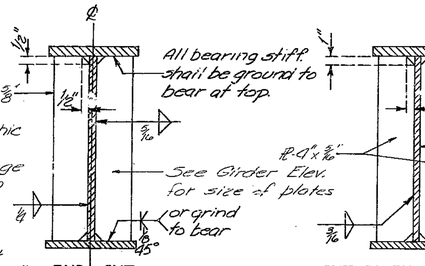
"*" Use Detail "F" for these flange sizes.

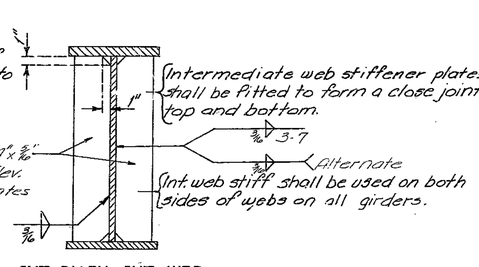
Note: "The following welds will be subject to radiographic inspection."

Shop: "All butt welded flange plates, and shop web splices at hangers."

"Not more than ⅓ of each web splice beginning at a point of maximum tension."

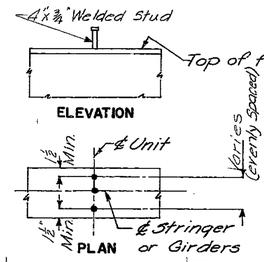
Field: None



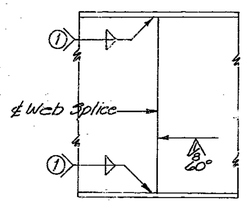


Fillet weld sizes greater than ¾" may be reduced ⅛" if welding is done by submerged arc.

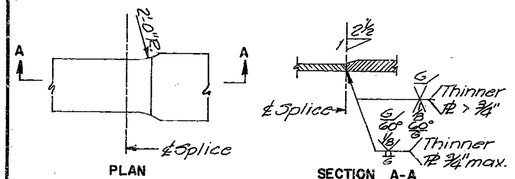
WELDING DETAILS PLATE GIRDER



SHEAR CONNECTOR DETAILS



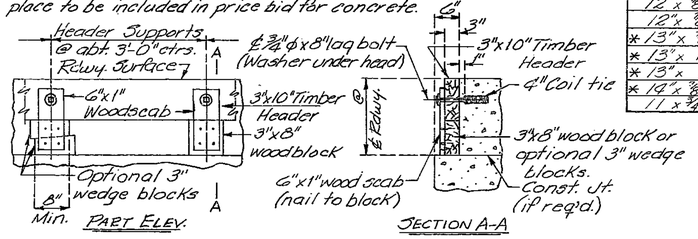
WEB SPLICE



FLANGE SPLICE

MIN. ALLOWABLE FILLET WELDS	
MATERIAL THICKNESS	MIN. SIZE FILLET WELD
To ½" inclusive	3/16
Over ½" to ¾"	¼
Over ¾" to 1½"	5/16
Over 1½" to 2¼"	⅜
Over 2¼" to 6"	½
Over 6"	⅝

NOTE: Cost of timber headers complete in place to be included in price bid for concrete.



TIMBER HEADER DETAILS

TABLE OF FIELD FLANGE SPLICES													
Flange	to Flange	a	b	c	d	e	f	g	j	k	m	n	p
10"x⅜"	10"x⅜"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	—	—	—
10"x⅜"	12"x⅜"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	—	—	—
10"x⅜"	12"x⅝"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	⅛"	12"
10"x⅜"	13"x⅝"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	⅛"	12"
10"x⅜"	13"x1"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	¼"	12"
10"x⅜"	14"x⅝"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	⅛"	12"
10"x⅜"	14"x1"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	¼"	12"
10"x⅜"	15"x1"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	¼"	12"
10"x⅜"	17"x1"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	⅛"	12"
10"x⅜"	19"x1"	10"	⅜	2'-0½"	4"	½"	2'-0½"	2	3	3	10"	⅛"	12"
11"x⅜"	13"x⅝"	11"	⅜	2'-0½"	4½"	½"	2'-0½"	2½	3	3	11"	⅛"	12"
12"x⅜"	12"x¾"	12"	⅜	2'-6½"	5"	½"	2'-6½"	2½	4	4	—	—	—
12"x⅜"	15"x1"	12"	⅜	2'-6½"	5"	½"	2'-6½"	2½	4	4	12"	¼"	15"
12"x⅜"	12"x⅝"	12"	½"	3'-0½"	5"	½"	2'-6½"	2½	5	4	—	—	—
12"x⅜"	17"x1"	12"	½"	3'-0½"	5"	½"	2'-6½"	2½	5	4	12"	⅛"	12"
* 13"x⅜"	13"x⅝"	13"	½"	3'-5½"	5½"	½"	2'-10½"	1½"	5	4	—	—	—
* 13"x1"	13"x1"	13"	½"	4'-0½"	5½"	½"	4'-0½"	1½"	6	6	—	—	—
* 13"x1"	19"x1"	13"	½"	4'-0½"	5½"	⅝"	4'-0½"	1½"	6	6	—	—	—
* 14"x⅜"	14"x⅝"	14"	½"	4'-0½"	6"	½"	3'-5½"	1½"	6	5	—	—	—
11"x¾"	14"x1"	11"	⅜	2'-0½"	4½"	½"	2'-0½"	2½"	3	3	11"	¼"	12"

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

526

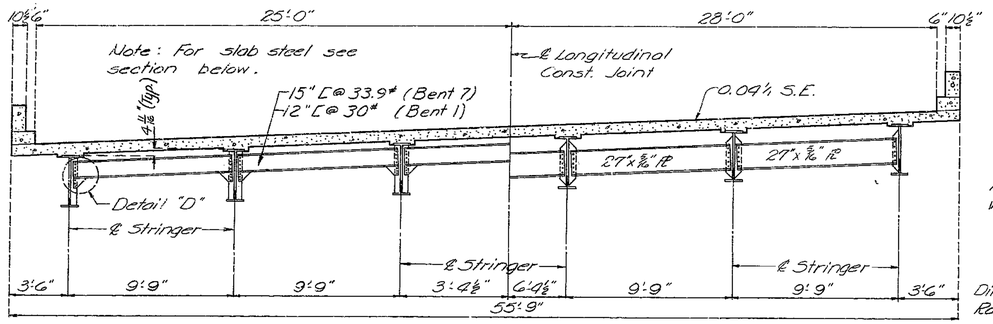
BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED A.G. Latham	DETAILED J. Carter
DESIGN CK. C. Page	DETAIL CK. C. Page

WELDING DETAILS

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

MISSOURI STATE HIGHWAY DEPARTMENT

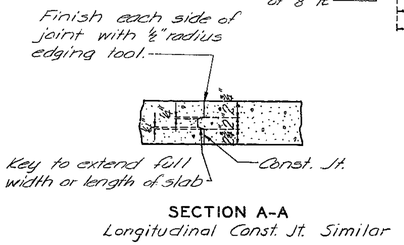
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	25	



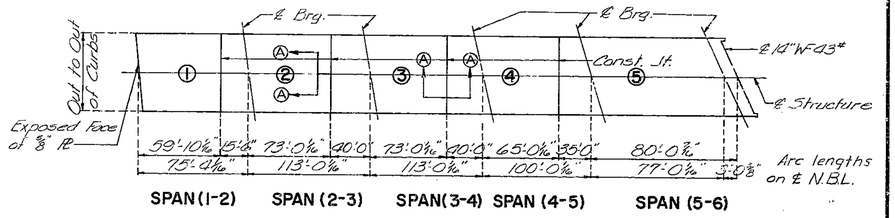
HALF SECTION NEAR END DIAPHRAGM

HALF SECTION NEAR INTERIOR DIAPHRAGM

Dimensions along Radial Lines.



SECTION A-A
Longitudinal Const. Jt. Similar

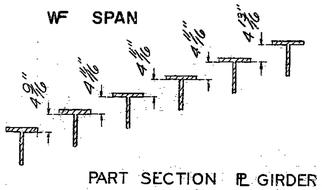


	SEQUENCE OF POURS				
	Direction				
Basic Sequence	1	2	3	4	5
	E. D.	1 To 3	2 To 4	3 To 5	4 To End
Alternate "A" Pours	1 + 2		3	4 + 5	
	End To 3		2 To 4	3 To End	
Alternate "B" Pours	1 + 2 + 3			4 + 5	
	End To 4			3 To End	
Alternate "C" Pours	1 + 2 + 3 + 4 + 5				
	End To End				

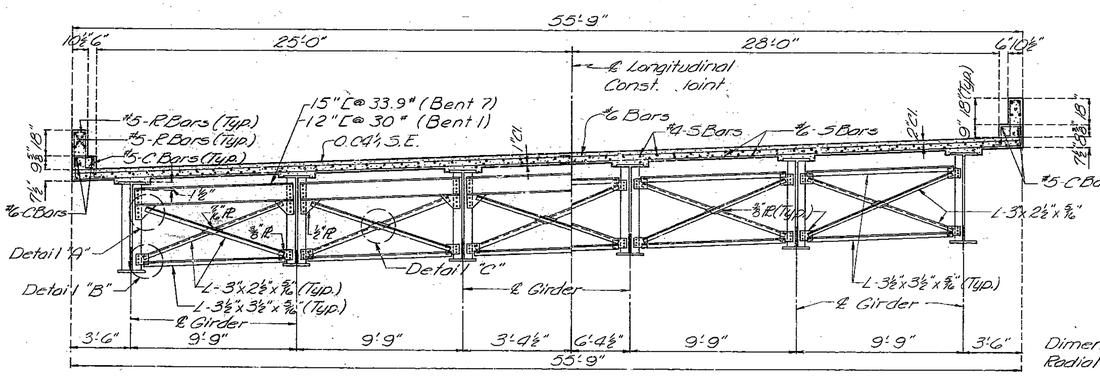
"The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 39 cubic yards per hour unless he elects to use an approved retarder at his own expense to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 25 cubic yards per hour. The contractor shall observe the basic pouring sequence unless he can demonstrate to the engineer that he can pour and satisfactorily finish one of the longer alternate pours. Finishing machine loads will not be permitted on concrete less than 48 hours old."

SLAB POURING SEQUENCE

WF SPAN



PART SECTION ℄ GIRDER SPANS

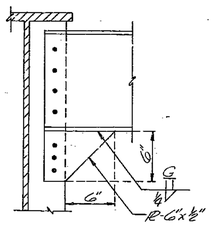


Dimensions along Radial Lines.

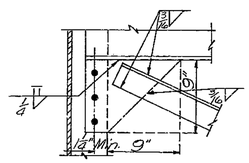
HALF SECTION NEAR END DIAPHRAGM (TYP.)

HALF SECTION NEAR INTERIOR DIAPHRAGM & CROSS FRAME (TYP.)

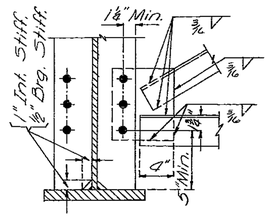
℄ GIRDER SPAN



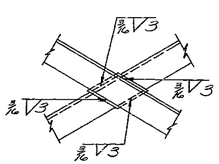
DETAIL "D"



DETAIL "A"



DETAIL "B"



DETAIL "C"

Note: For details and reinforcement of curb and parapet not shown see sheet No. 28 & 29 of 29.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92 + 27.34 S.B.L.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED J. Carter
DESIGN CK. H.G. Lathrom	DETAIL CK. C. Phillips

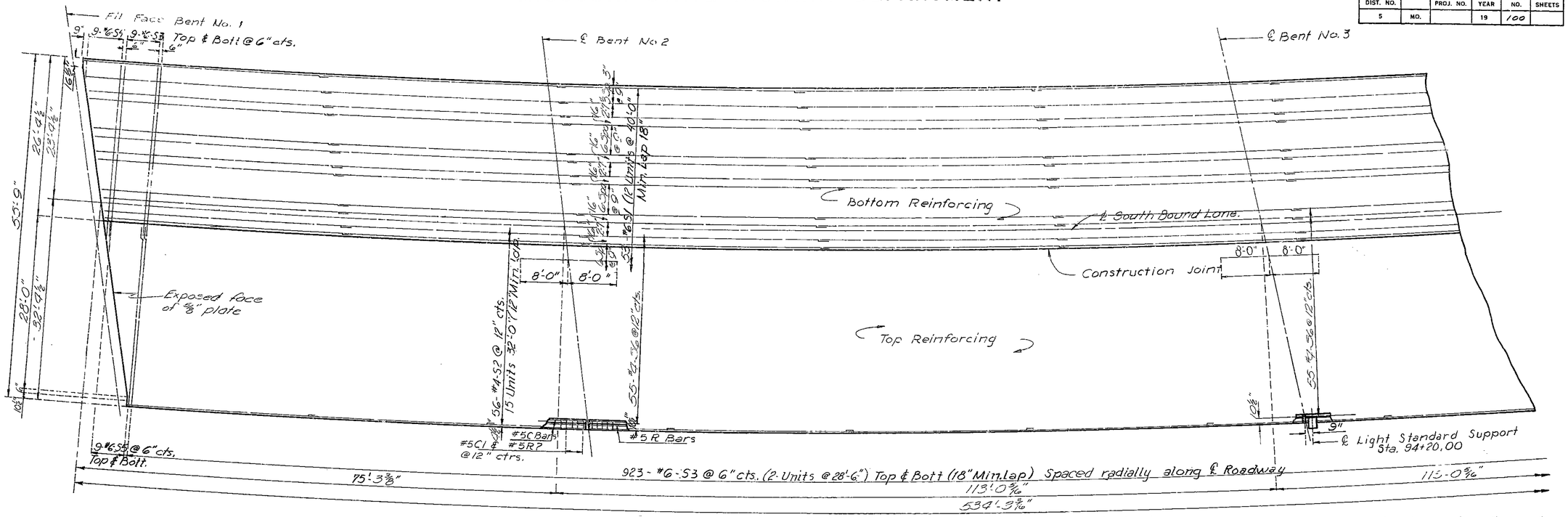
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 25 of 29.

527

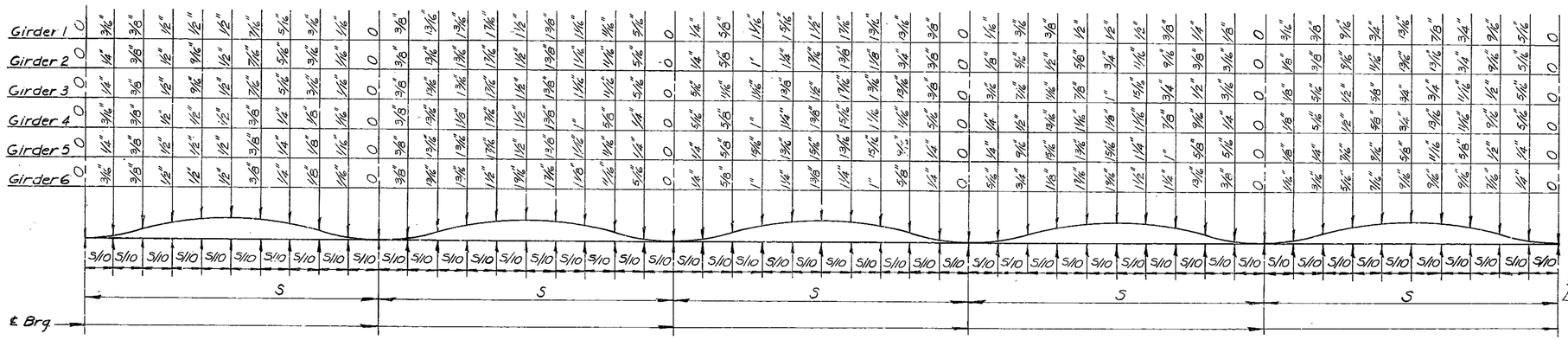
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	100	

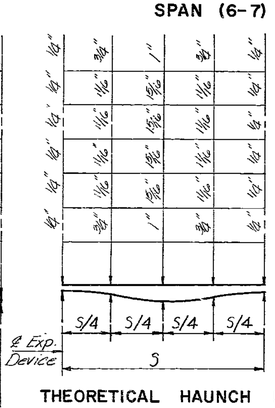


Note: Longitudinal dimensions shown are parallel to grade @ ℄ roadway. Longitudinal reinforcing to be placed on a arc parallel to ℄ roadway. For details and reinforcement of curb and parapet not shown see sheet No. 28 & 29 of 29.

PLAN OF SLAB SHOWING REINFORCEMENT

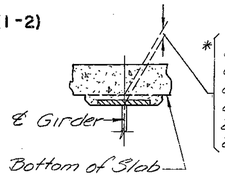


SPAN (6-7)



THEORETICAL HAUNCH DIAGRAM

SPAN (1-2) SPAN (2-3) SPAN (3-4) SPAN (4-5) SPAN (5-6)



* 2 ¼" Gdr. #1
2 ⅜" Gdr. #2
2 ⅜" Gdr. #3
2 ⅜" Gdr. #4
2 ⅜" Gdr. #5
2 ¼" Gdr. #6

*Note: Haunch dimension may vary if girder camber after erection differs from plan camber by more than the % of D.L. deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variable haunching.

CAMBER DIAGRAM

Note: S denotes length of span, for correct lengths see girder elev. Camber includes allowance for vertical curve, dead load deflection for concrete slab and structural steel.

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

Sheet No. 26 of 29.

BRIDGE OVER K.C.S., C.R.I. & P., AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435 IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE.I-435)STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

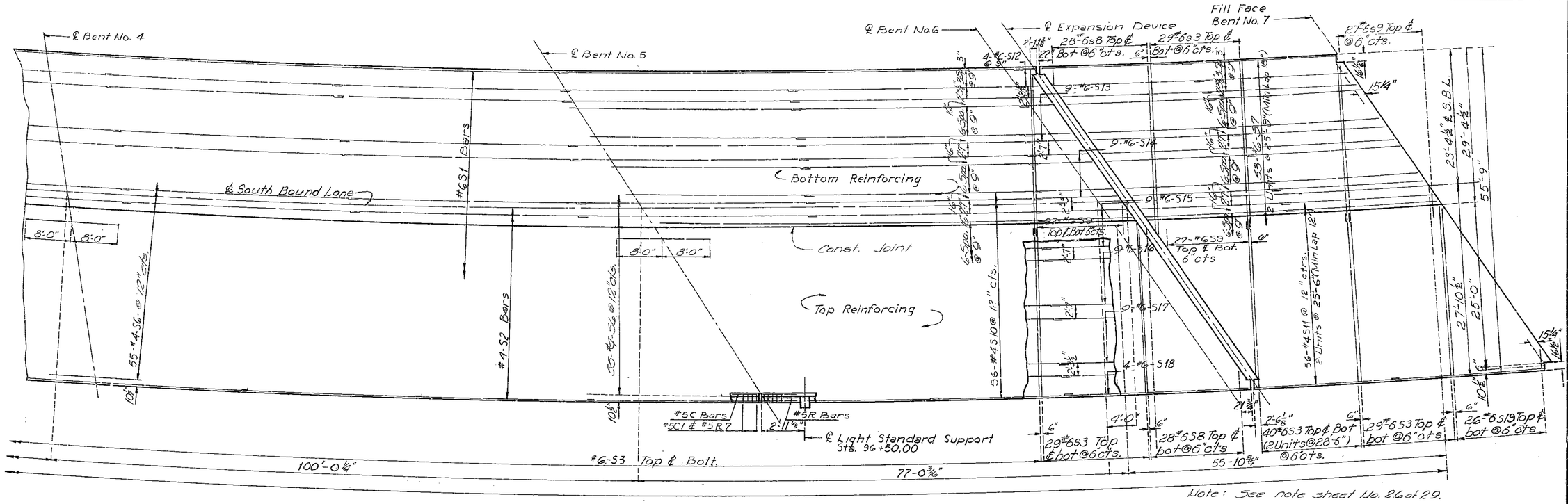
BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED G. Meen
DESIGN CK. A.G. Latham	DETAIL CK. C. Phillips

528

MISSOURI STATE HIGHWAY DEPARTMENT

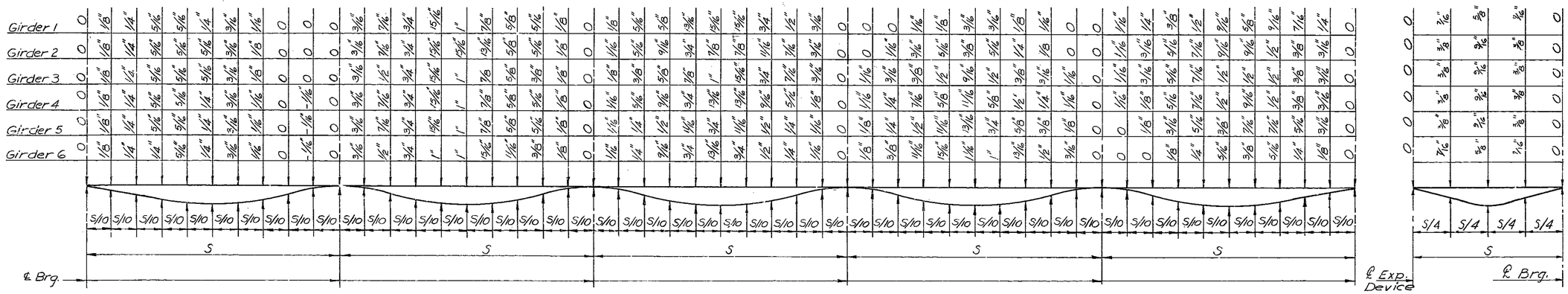
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	101	



Note: See note sheet No. 26 of 29.

529

PLAN OF SLAB SHOWING REINFORCEMENT



SPAN (1-2) SPAN (2-3) SPAN (3-4) SPAN (4-5) SPAN (5-6)

DEAD LOAD DEFLECTION DIAGRAM

Note: S denotes length of span. For correct span lengths see girder elevations.

BRIDGE OVER K.C.S., C.R.I. & P., AND C.M. & S.T.P. R.R.S

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED G. Moon
DESIGN CK. A.G. Lothrop	DETAIL CK. C. Phillips

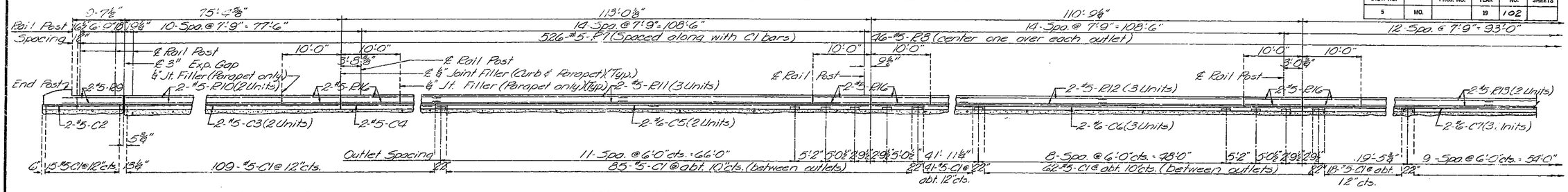
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 27 of 29.

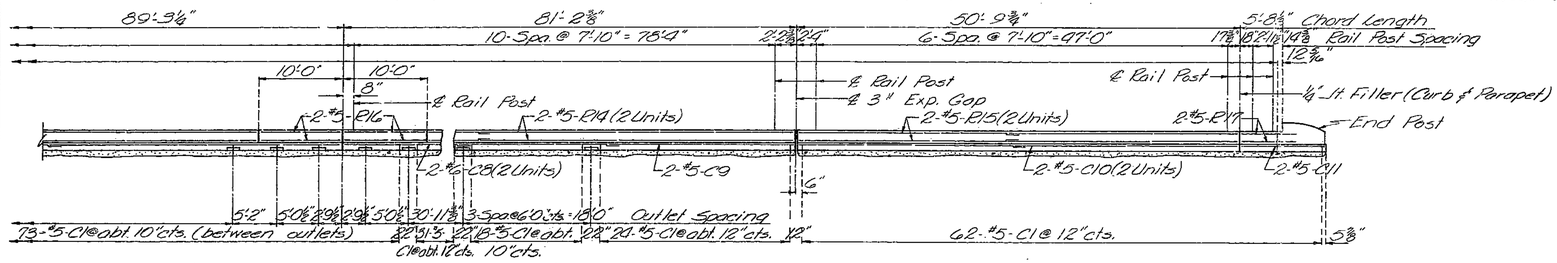
A-1683

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	102	

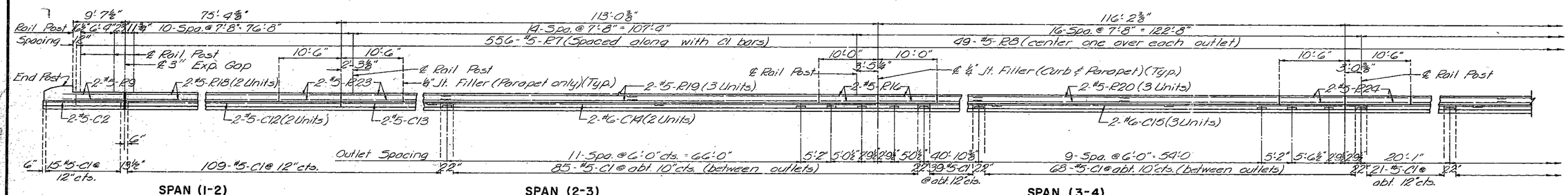


SPAN (1-2) SPAN (2-3) SPAN (3-4)

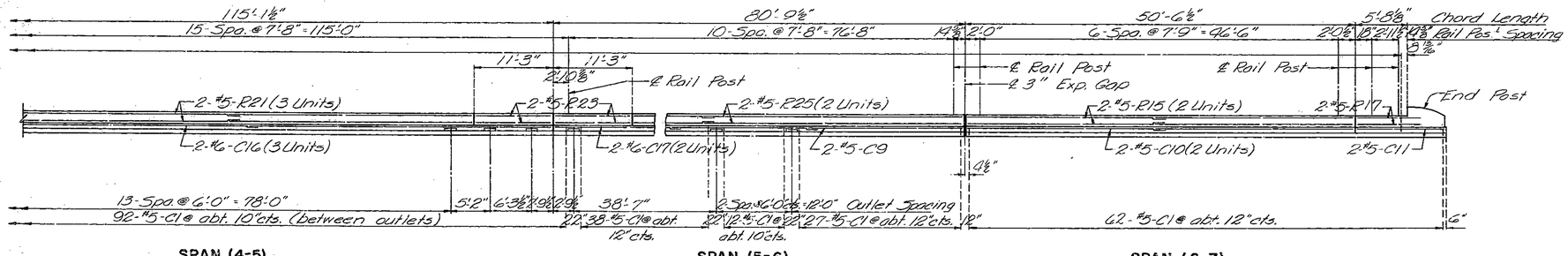


SPAN (4-5) SPAN (5-6) SPAN (6-7)

ELEVATION OF CURB AND PARAPET (Left Side)



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



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

ELEVATION OF CURB AND PARAPET (RIGHT SIDE)

Note: Longitudinal dimensions shown are along ℄ handrail at top of parapet.

530

BRIDGE OVER K.C.S., C.R.I.&P. AND C.M.&S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.

JACKSON COUNTY

A-1683

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C. Page	DETAILED J. Carter
DESIGN CK. A. Latham	DETAIL CK. C. Phillips

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

Note: For location and spacing of C1 bars between outlets see sheet No. 29 of 29. For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6.

Sheet No. 28 of 29.

GENERAL HANDRAIL NOTES:

All handrail posts shall be set normal to grade.

Aluminum tube handrail 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 handrail 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 handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.

The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.

All fillets 1/4" except as noted.

All drafts 3° except as noted.

Pipe rail to be fabricated in a minimum of 2 panel lengths.

Omit set screw on side adjacent to filled Joint in parapet and curb at all expansion posts.

Top of curbs and parapets to be built parallel to grade with curb and parapet Joints (except at end posts) normal to grade.

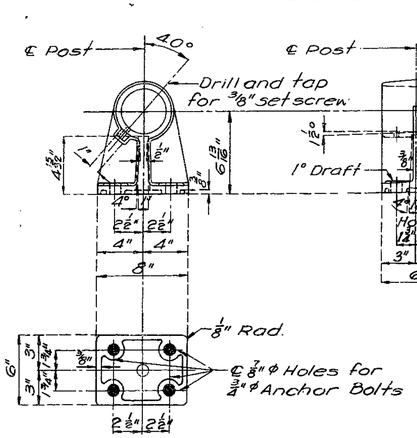
Concrete end posts to be vertical.

All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.

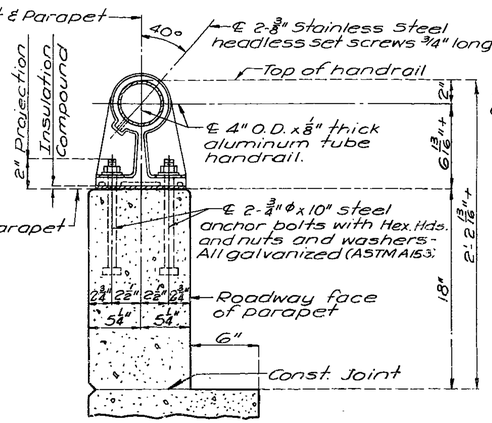
If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.

Integrally cast test coupons and a coat of clear lacquer specified in Std. Spec. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.

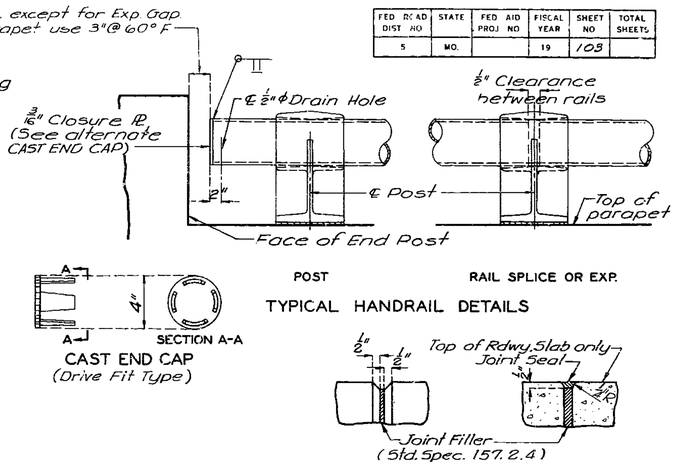
MISSOURI STATE HIGHWAY DEPARTMENT



POST DETAILS

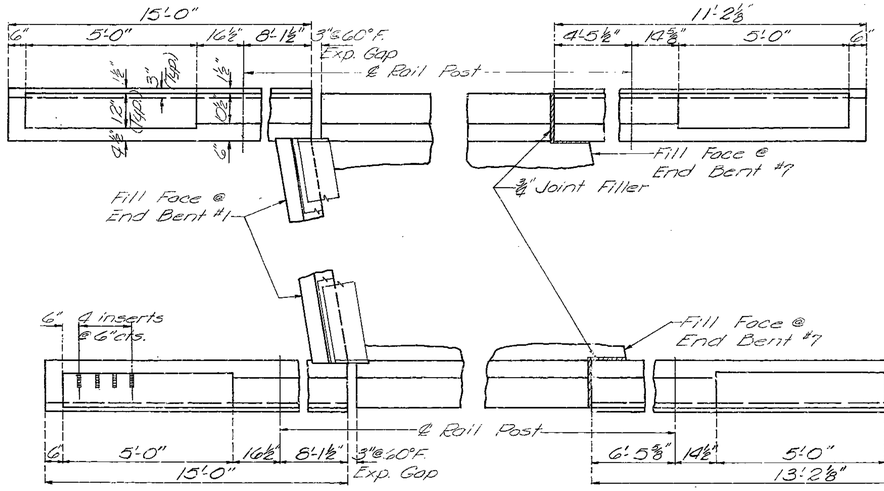


SECTION THRU HANDRAIL

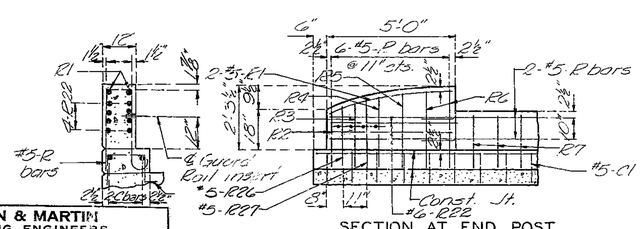


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	103	

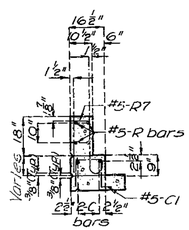
SINGLE TUBE ALUMINUM RAILING



PLAN OF END POST

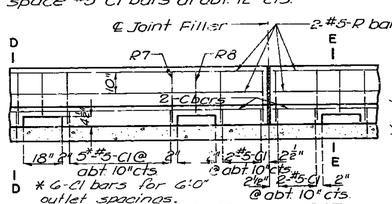


SECTION AT END POST

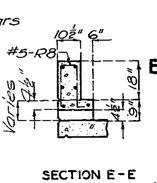


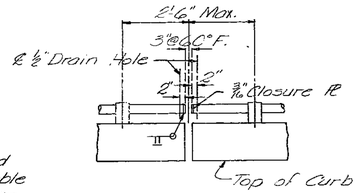
SECTION D-D

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

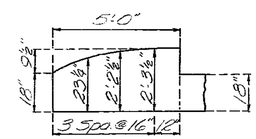


ELEVATION OF CURB & PARAPET





PART RAIL ELEVATION AT EXP. GAP



END POST ORDINATES

Note: Anchors for attaching guard rail shall be 3/4" threaded malleable iron (Galv.) inserts having a Min. depth of 3 1/2" and filled with a plastic closing plug. Cost for furnishing & installing inserts & plugs will be included in price bid for other items.

Note: For elevation of curb & parapet see sheet No. 28 & 29.

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

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-IG-435-1(52)(RTE. I-435)STA. 92+27.34S. B. L.

JACKSON COUNTY

531

STD. 1.5.2	REVISED
MAR. 1964	JAN. 1967

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED J. Carter
DESIGN CK. F.G. Latham	DETAIL CK. C. Phillips

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

Sheet No. 29 of 29

A-1683

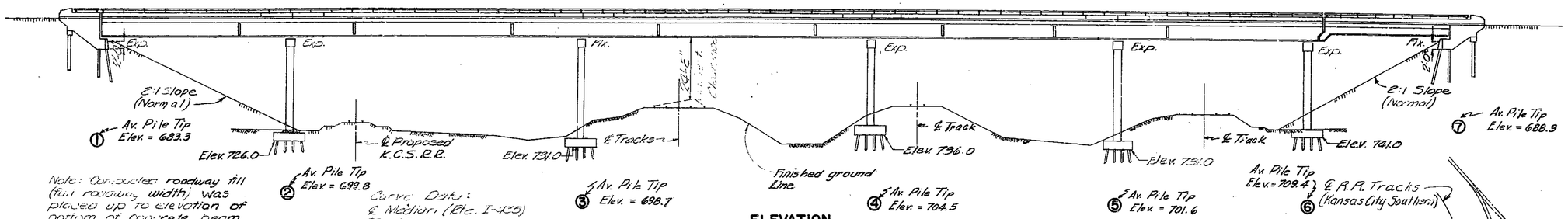
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	75	

FINAL PLANS

(75'-113'-113'-100'-77'-0") Cont. Comp. R.C. Girder
50' Simple Comp. I-Bm.

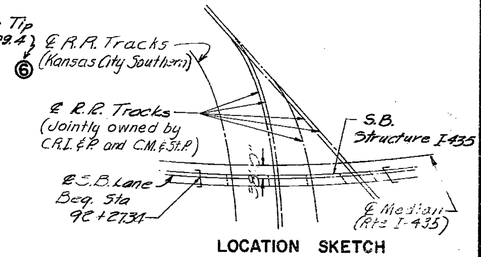
P.I. Sta. 95+00
Elev. 776.50
+1.50% -0.763%
800' V.C.



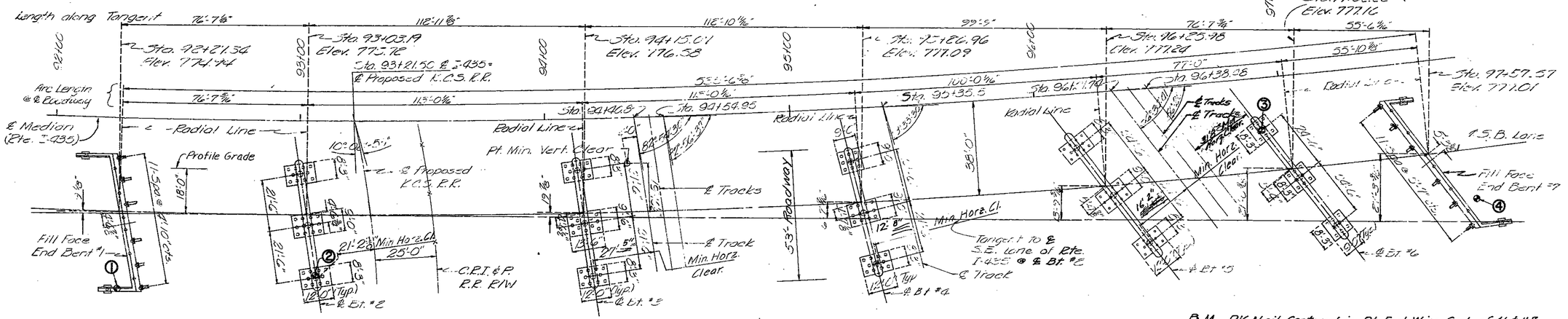
ELEVATION

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 Bents before piles were driven." Berits No. 1 & 7.

Curve Data:
℄ Median (Rte. I-435)
P.I. - 85+18.13
Δ - 90°56' Lt.
D. - 1°30'
T. - 1425.64'
L. - 2128.89'
R. - 3819.83'
S.E. - .04% (60 MPH)
(Chord Definition)



LOCATION SKETCH



PLAN

Note: All dimensions are Horizontal distances
Elevations shown are for top of slab at ℄ Lane.

Note: See special provisions for optional use of Precast Concrete, Prestressed Concrete, or Timber piles on interior bents only.
Minimum behimmer energy required for Precast Concrete piles is 6,000 ft. lbs. except at bents No. 4 and No. 6 where the minimum hammer energy is 8,300 ft. lbs.

Note: For Boring Data see sheet No. 2 of 29.
● Indicates locations of borings.
For General Notes, Estimated Quantities, and Pile and Footing Data see sheet No. 2 of 20.

B.M. PK Nail Centered in Rt. End Wing Curb of Abut. #7, 70' Rt. of Sta. 97+92 — Elev. 778.92

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.
JACKSON COUNTY

SUBMITTED BY W. A. Casey, BRIDGE ENGINEER — DATE Feb. 23, 1968 — FINISHED
APPROVED BY M. J. Snider, CHIEF ENGINEER — DATE Feb. 23, 1968 — FINISHED

STD. 54.00	
A-1683	

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED J. Carter
DESIGN CK. Chatham	DETAIL CK. C. Phillips

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

Sheet No. 1A of 2.

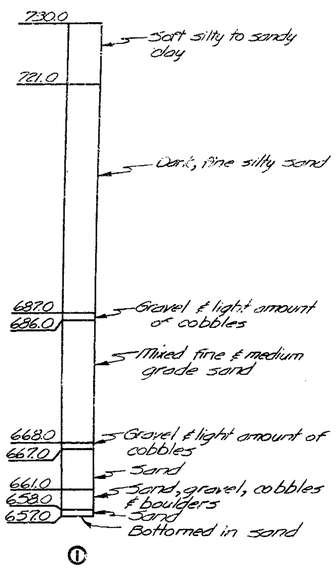
FINAL PLANS

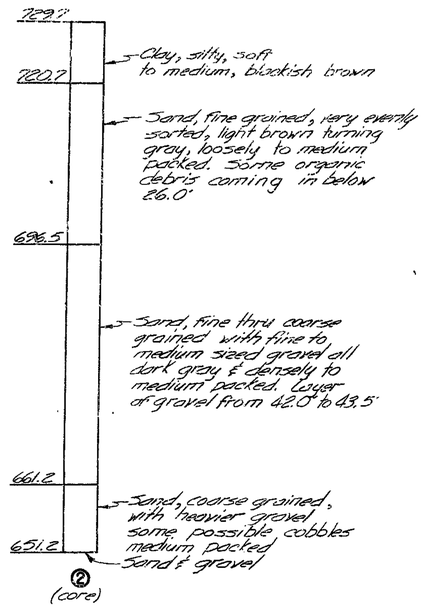
532

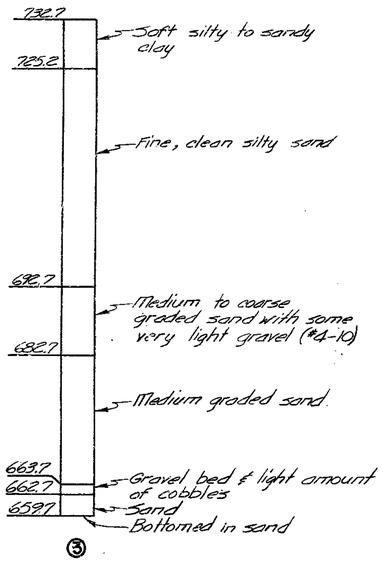
MISSOURI STATE HIGHWAY DEPARTMENT

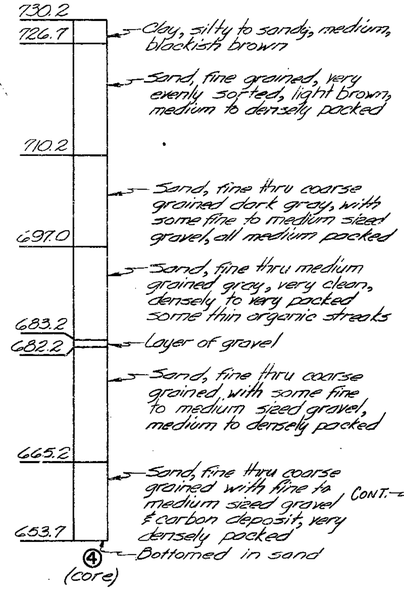
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	76	

FINAL PLANS









Note: for location of borings see sheet No. 1 of 20

GENERAL NOTES:

SPECIFICATIONS:
A. A. S. H. O. - 1965

DESIGN LOADING:
HS20-44 Military Loading (15#/sq. ft. Future Wearing Surface)
Earth-120#
Fatigue Loading: A.W.S. D2.0-66 Formulae 5b, 15b, & 16b.

DESIGN UNIT STRESSES
Class B Concrete (substructure) fc = 1,200 psi
Class B1 Concrete (superstructure) fc = 1600 psi
Reinforcing Steel fs = 20,000 psi
Structural Steel (A.S.T.M. A36-66) fs = 20,000 psi

SURFACE SEAL
Superstructure deck was surface sealed.

FABRICATED STEEL
Field connections. High Strength Bolts ¾"ø, holes ⅞"Ø except as noted.

PAINTING
Paint: Shop, none: Field, by contractor in accordance with Std. Spec 55.4.10.

CONSTRUCTION CLEARANCE
A minimum vertical clearance of 21'-0" from top of rails and a minimum lateral clearance of 17'-0" centered on tracks was maintained during construction.

WELDING
Details of welded joints shown are for manual arc welding except as noted.
The minimum size of fillet welds was in accordance with A.W.S. D2.0-66, article 217(b) except the minimum size fillet weld connecting parts carrying primary stress is ¼".

PILE DATA

BENT NO.	1	2	3	4	5	6	7
Type	Foundation	Foundation	Foundation	Foundation	Foundation	Foundation	Foundation
Kind	10BP42	15" Tr. Tim.	15" Tr. Tim.	15" Tr. Tim.	15" Tr. Tim.	15" Tr. Tim.	10BP42
Number	4	32	33	32	33	24	14
Average Length Ft.	33	27	34	32	30	33	82
Design Bearing Tons	30.0	28.7	29.6	29.9	29.0	30.0	30.0
Min. Tip Penetration Elev.	691.0	710.0	710.0	710.0	710.0	710.0	691.0
Pile Standard							
Hammer Energy Used Ft. Lbs.	39,800	15,000	15,000	15,000	15,000	15,000	39,800

Note: Minimum energy requirement of hammer based on plan length of piles.
All piles were driven to the minimum penetration and to not less than the design bearing noted.

FINAL QUANTITIES

ITEM		TOTAL
Class 1 Excavation for Structures	Cu. Yd.	544
* Cast-in-Place Concrete Piles	Lin. Ft.	0
Class B Concrete	Cu. Yd.	526.5
Class B1 Concrete	Cu. Yd.	813.5
Reinforcing Steel	Lb.	375,080
Painting	Tons	322.6
Fabricated Structural Carbon Steel (WF-BM. span)	Lb.	64,390
Fabricated Structural Carbon Steel (PL Gdr. span)	Lb.	586,260
Bridge Rail (Single tube type)	Lin. Ft.	1,099
Conduit System (On Structures)	Lump Sum	1
15" Treated Timber Pile	Lin. Ft.	4792
CONT. → Steel Piles in Place 10 in** (Contingent 507.01)	Lump Sum	1

** 23.5' paid as Lump Sum. (Feet-in-Place)

* Note: See Special Provisions for optional use of Precast Concrete, Prestressed Concrete or 15" Treated Timber Piles on Interior Bents.
All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
No payment for excavation was allowed at End Bents No. 1 and 7.
Excavation was allowed from the finished ground line at Bent No. 6.

BRIDGE OVER K.C.S., C.R.I. & P. AND C.M. & S.T.P. R.R.S.
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-1(52)(RTE. I-435) STA. 92+27.34 S.B.L.
JACKSON COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C. Page	DETAILED E. Hahn
DESIGN CK. A.G. Latham	DETAIL CK. C.D. Albert

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

Sheet No. 2A of 2

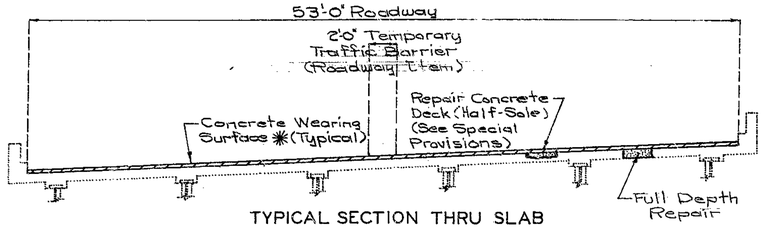
A-1683

533

FINAL PLANS

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ NO	SHEET NO
MO		24
SEC 25	TWP 50N RGE 33W	



TYPICAL SECTION THRU SLAB

ESTIMATED QUANTITIES		
ITEM		TOTALS
Replacement of Expansion Device and Adjacent Concrete	Lin. Ft.	54
Repairing Concrete Deck (Half-Soling)	Sq. Ft.	1970
Full Depth Repair	Sq. Ft.	563
Elastomeric Expansion Joint Seal (2½")	Lin. Ft.	54
Concrete Wearing Surface ✱ (See Special Provisions)	Sq. Yd.	3136
Steel Bar Dam	Each	1

✱ 1¾" (Min.) for latex modified concrete
2¼" (Min.) for low slump concrete

Note: Outline of old work is indicated by light dotted lines.
Heavy lines indicate new work.
Contractor to maintain two lanes of traffic during construction. (See Road Plans)
Bars bonded in old concrete not removed shall be cleanly stripped and reused.

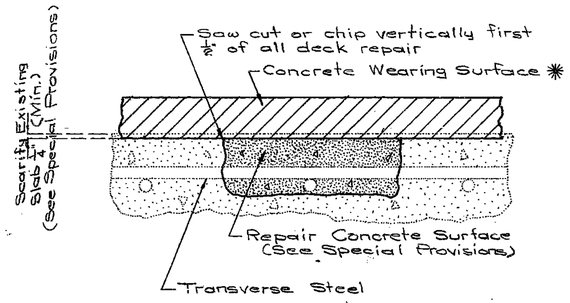
GENERAL NOTES:

Design Specifications: A.A.S.H.T.O-1983 and Interim 1984.

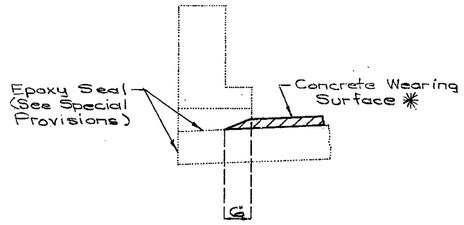
Design Unit Stresses:
Class B2 Concrete f'c=4,000 psi
Reinforcing Steel fy=60,000 psi

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

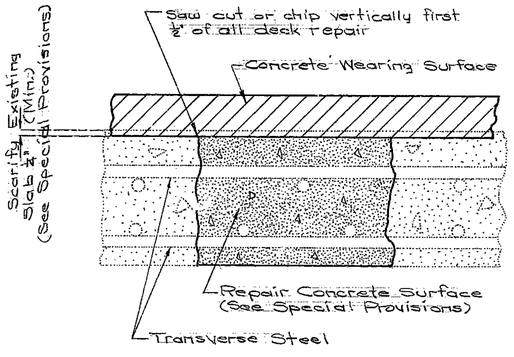
Use Bar Dams at Bt. No. 6.



HALF-SOLED AREA



TYPICAL SECTION AT CURB SHOWING OUTLET



FULL DEPTH REPAIR

328

REPAIRS TO
BRIDGE OVER K.C.S., ST. LOUIS-SOUTHWESTERN & SOO LINE R.R.S.
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IR-IRG-435-1(181) **STA.** 92+27.34 S.B. LANE
JOB NO. 4-I435-686 **RTE.** I-435
JACKSON **COUNTY**
DATE 4/23/86

STD.
STD. 712.40
A-1683R

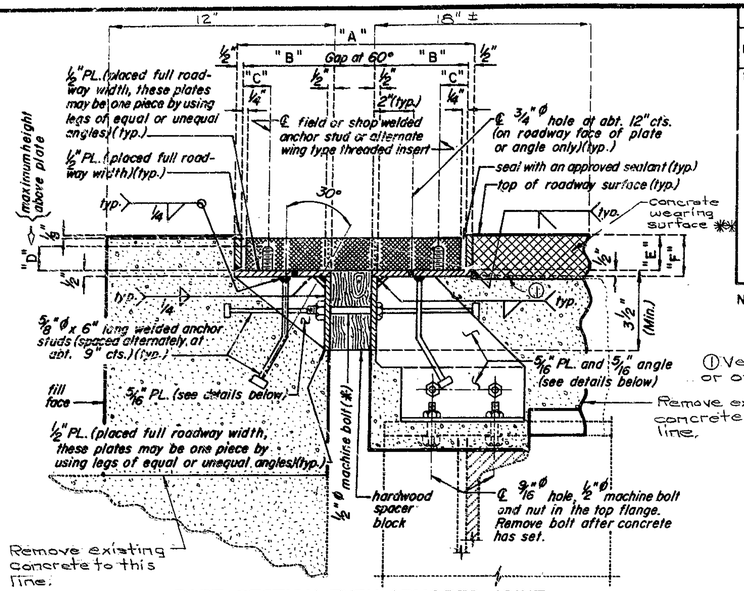
DESIGNED Oct. 1985
DETAILED Oct. 1985
CHECKED Dec. 1985

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

SEE FINAL PLANS

Sheet No. 1 *of* 12

STATE	PROJ NO	SHEET NO
MO		25



PART SECTION THRU ARMORED JOINT

✱✱ 1¾" (Min.) for latex modified concrete
2¼" (Min.) for low slump concrete

TABLE OF DIMENSIONS											
LOCATION	ACCEPTABLE ALTERNATE TYPES	EXP. GAP AT 60°	"A" AT 60°	"B"	"C"	"D"	"E"	"F"	ANCHOR STUDS SIZE	SPA.	"G"
Bt. #1	Acme Trojan TR300	2"	11 5/8"	4 1/4"	1 3/4"	1 1/8"	1 5/8"	2 1/4"	⅝"	12"	40
	Gen-Strip CCL 2½"	2 1/4"	11 3/8"	4 1/4"	1 3/4"	1 1/8"	1 5/8"	2 1/4"	⅝"	12"	65
	Wabo Bendoflex	2"	11½"	4 1/4"	1 3/4"	1 1/4"	1 7/8"	2 3/8"	½"	12"	50
	Fel-Span T30A CS	1 3/4"	11 3/8"	4½"	1 3/4"	1 1/4"	1 7/8"	2 1/8"	1"	12"	50
	On-Flex 25	1 3/8"	11"	4 1/4"	1 3/8"	1 1/4"	1 3/8"	2 1/8"	⅝"	12"	65
	Delastiflex LM300	2"	12 3/8"	4 11/16"	2 3/16"	⅞"	2 5/8"	2 5/8"	½"	9"	45

NOTE: *All dimensions are at right angles.*
Expansion gap and dimension "A" shall be increased ⅛" for each 10° fall in temperature and decreased ⅛" for each 10° rise in temperature.

① Very rough surface by wire comb or other approved texturing device.

GENERAL NOTES:

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

MATERIAL FOR THE ARMORED JOINT SHALL BE A36 STRUCTURAL GRADE STEEL. ANCHORS FOR THE ARMORED JOINT SHALL BE APPROVED STUD WELDED ANCHORS (C1010 THRU C1020).

SEE SPECIAL PROVISIONS FOR PAINTING.

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

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

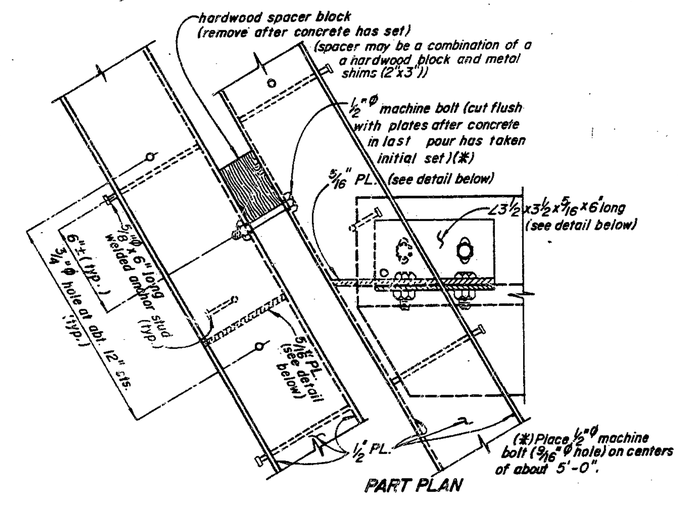
CONTACT SURFACE OF STEEL TO ALUMINUM SHALL BE INSULATED WITH THE MATERIAL SPECIFIED ON THE SHOP DRAWINGS.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT AND CURB PLATES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR EXPANSION JOINT SEAL.

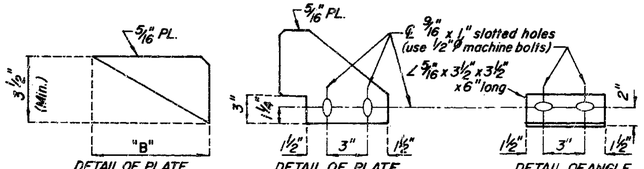
BOLT CAVITIES TO BE FILLED WITH APPROVED SEALANT IN COMPLIANCE WITH MANUFACTURER'S CERTIFICATION.

Plates shall be field adjusted by adding or removing metal shims (2"x3"), as required for temperature correction. The expansion gap shall be adjusted for any temperature correction prior to pouring top of end bent backwall.

Alternate methods of supporting expansion device may be submitted to the engineer for approval.



PART PLAN

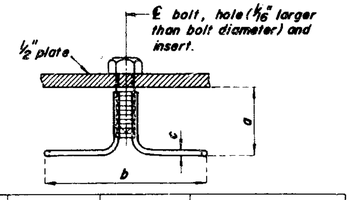


DETAIL OF PLATE

DETAIL OF PLATE

Note: 5/16" plates and angle placed at each girder or stringer.

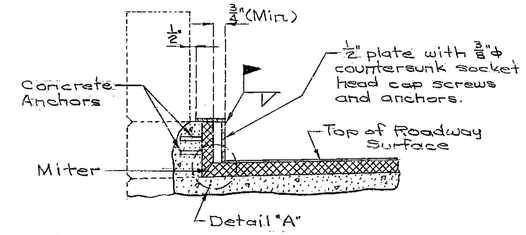
DETAIL OF ANGLE



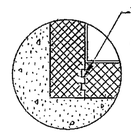
Bolt Diameter	Safe Load Tension (lbs.)(min.)	Approx. Ult. Cap. Tension (lbs.)(min.)	Dimensions a (min.)	b	c
1/2"	800	8,000	1-5/8"	5"	.218"
5/8"	1,300	9,200	1-5/8"	5"	.218"
3/4"	1,800	13,200	2-1/4"	6"	.262"
7/8"	2,000	16,200	2-1/2"	6-1/2"	.306"
1"	2,000	16,200	2-1/2"	6-1/2"	.306"

DETAILS OF ALTERNATE WING TYPE THREADED INSERT

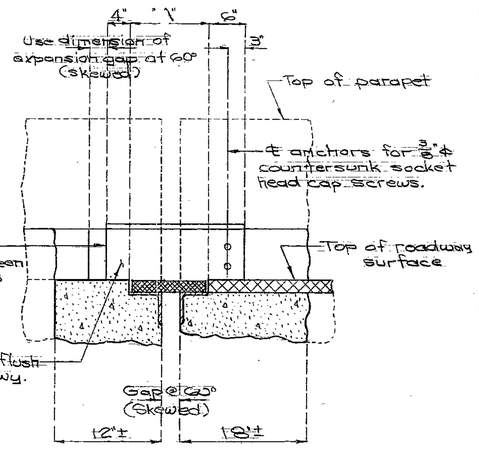
(Machine bolts need only be used to secure the Wing Type Threaded Inserts to the steel plate until the concrete has attained 3,000 p.s.i.)



CURB TREATMENT



DETAIL "A" (ALTERNATE)



PART ELEVATION OF CURB & PARAPET

DETAILED Oct. 1985
CHECKED Dec. 1985

DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 1

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

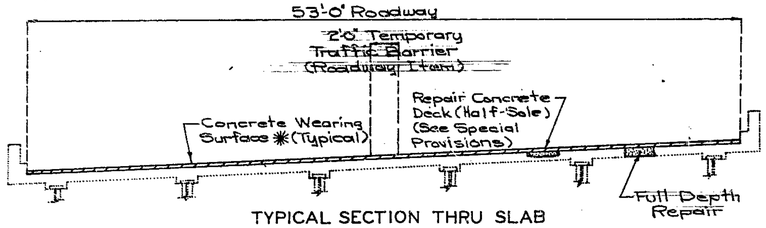
Sheet No. 2 of 2.

JACKSON COUNTY

A-1683R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ NO	SHEET NO
MO		24
SEC 25	TWP 50N	RGE 33W



TYPICAL SECTION THRU SLAB

ESTIMATED QUANTITIES		
ITEM		TOTALS
Replacement of Expansion Device and Adjacent Concrete	Lin. Ft.	54
Repairing Concrete Deck (Half-Soling)	Sq. Ft.	1334
Full Depth Repair	Sq. Ft.	13
Elastomeric Expansion Joint Seal (2½")	Lin. Ft.	54
Concrete Wearing Surface ✱ (See Special Provisions)	Sq. Yd.	3136
Steel Bar Dam	Each	1

✱ 1½" (Min.) for latex modified concrete
2½" (Min.) for low slump concrete

Note: Outline of old work is indicated by light dotted lines.
Heavy lines indicate new work.
Contractor to maintain two lanes of traffic during construction. (See Road Plans)
Bars bonded in old concrete not removed shall be cleanly stripped and reused.

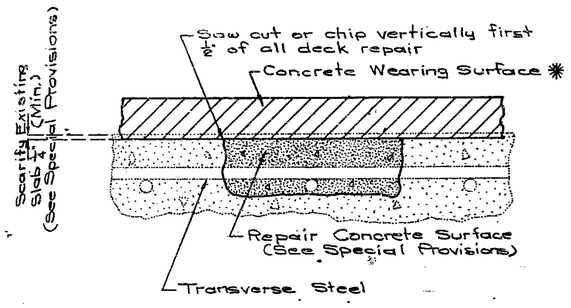
GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. 1983 and Interim 1984.

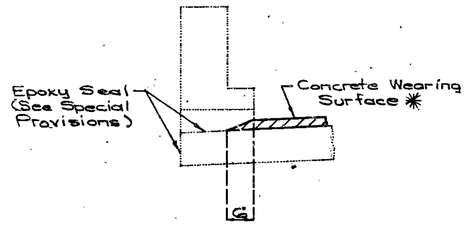
Design Unit Stresses:
Class B2 Concrete f'_c = 4,000 psi
Reinforcing Steel f_y = 60,000 psi

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

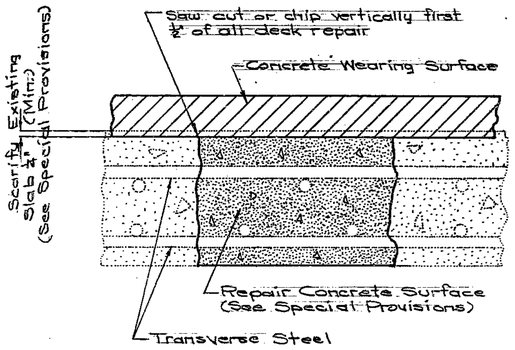
Use Bar Dams at Bt. No. 6.



HALF-SOLED AREA



TYPICAL SECTION AT CURB SHOWING OUTLET



FULL DEPTH REPAIR

REPAIRS TO
BRIDGE OVER K.C.S., ST. LOUIS-SOUTHWESTERN & SOO LINE R.R.S.
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IR-IRG-435-1(181) **STA.** 92+27.34 S.B. LANE
JOB NO. 4-I435-686 **RTE.** I-435
JACKSON **COUNTY**
DATE 4/23/86

STD.
STD. 712.40
A-1683R

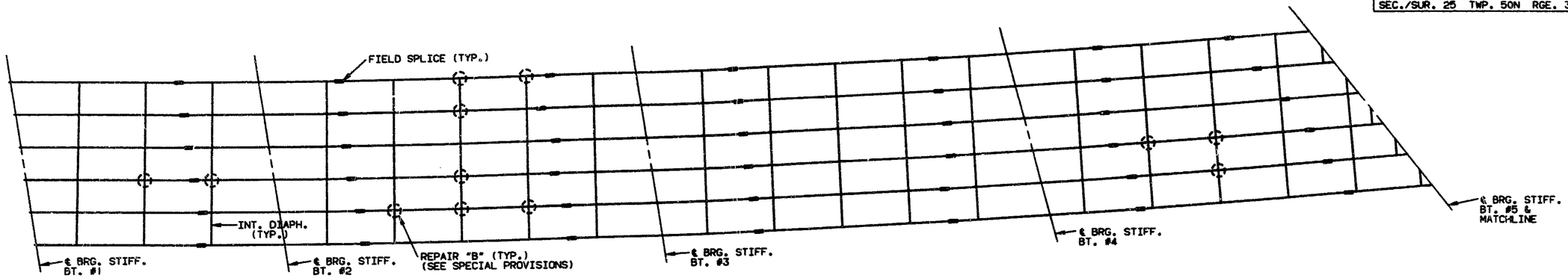
DESIGNED Oct. 1985
DETAILED Oct. 1985
CHECKED Dec. 1985

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

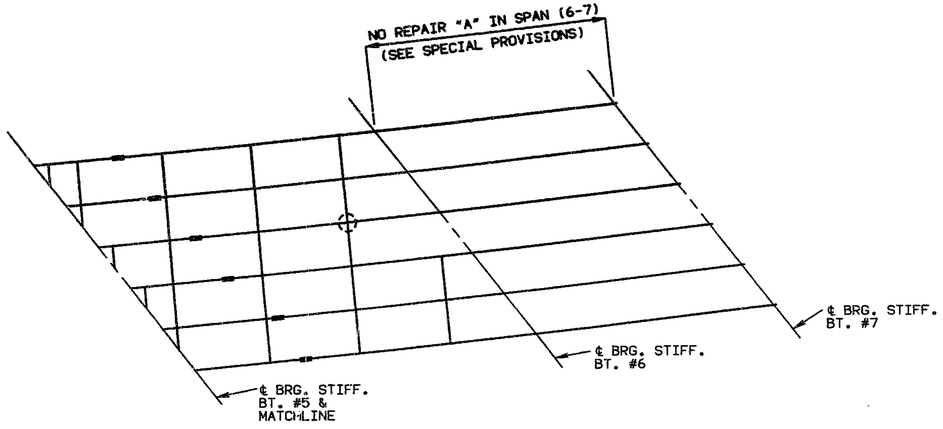
Sheet No. 1A of 2

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	F.A. 435-1(250)	12
SEC./SUR. 25 TWP. 50N RGE. 33W		



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS

GENERAL NOTES:

DESIGN UNIT STRESSES:
STRUCTURAL CARBON STEEL FY=36,000 PSI.

FABRICATED STEEL CONNECTIONS:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS 3/4"Ø, HOLES 13/16"Ø, EXCEPT AS NOTED.

PAINTING:
CALCIUM SULFONATE PAINT SYSTEM BY CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT FOR CALCIUM SULFONATE PAINT SYSTEM SHALL BE GRAY).

TRAFFIC MAINTAINED:
TWO LANES OF TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION.

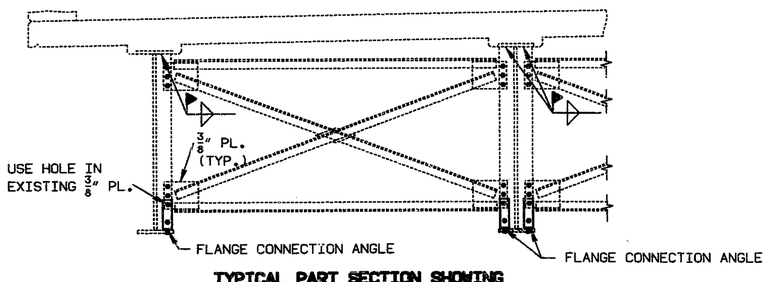
CONSTRUCTION CLEARANCE:
SEE SPECIAL PROVISIONS FOR MINIMUM VERTICAL AND HORIZONTAL CLEARANCE.

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

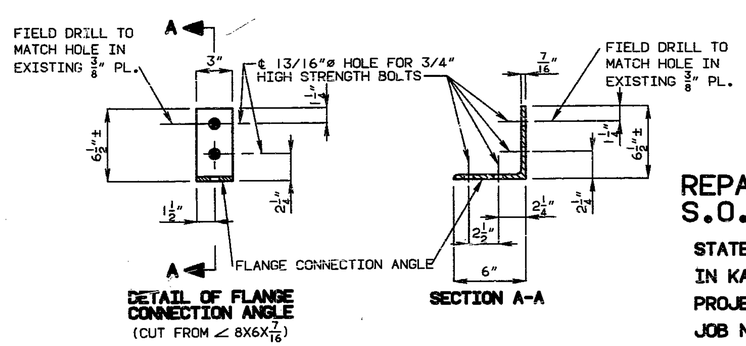
ESTIMATED QUANTITIES

ITEM		TOTAL
MOBILIZATION	LUMP SUM	1
REPAIR "A"	EACH	220
REPAIR "B"	LIN. IN.	130
REPAINTING (CALCIUM SULFONATE SYSTEM)	LUMP SUM	1

NOTE: SEE SPECIAL PROVISIONS FOR MORE INFORMATION PERTAINING TO EACH BID ITEM.



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS REPAIR "A"



DETAIL OF FLANGE CONNECTION ANGLE
(CUT FROM ∠ 8X6X7/16)

SECTION A-A

NOTE: OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATE NEW WORK.

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

DETAILED APR. 1991
CHECKED APR. 1991

SEE FINAL PLANS
SHEET NO. 1 OF 1.

REPAIRS TO BRIDGE OVER K.C.S., S.O.O. AND C.N.W. R.R.

STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. F.A.-435-1(250) STA. 92+27.34 S.B.L.
JOB NO. 4I 1026-435 RTE. I-435
JACKSON COUNTY

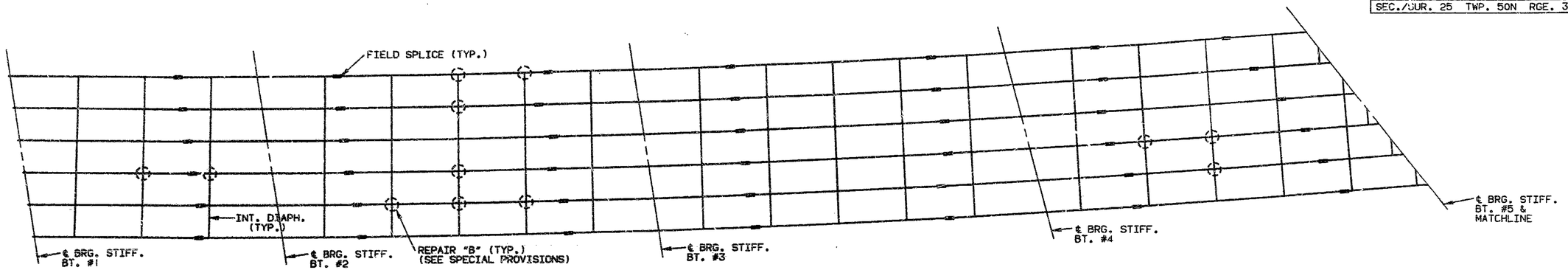
DATE 6/5/91

A-1683R1

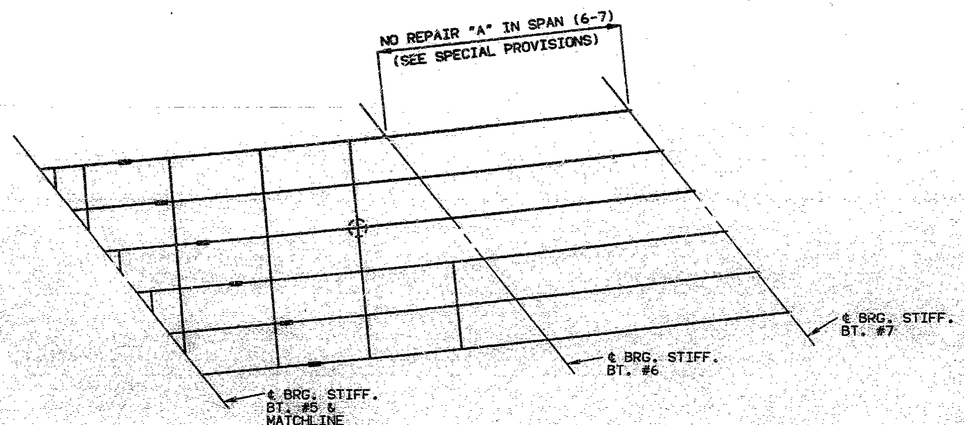
435 216

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	F.A. 435-1(250)	
SEC./SUR. 25 TWP. 50N RGE. 33W		



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS

GENERAL NOTES:

DESIGN UNIT STRESSES:
STRUCTURAL CARBON STEEL FY=36,000 PSI.

FABRICATED STEEL CONNECTIONS:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS 3/4"Ø, HOLES 13/16"Ø, EXCEPT AS NOTED.

PAINTING:
CALCIUM SULFONATE PAINT SYSTEM BY CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT FOR CALCIUM SULFONATE PAINT SYSTEM SHALL BE GRAY).

TRAFFIC MAINTAINED:
TWO LANES OF TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION.

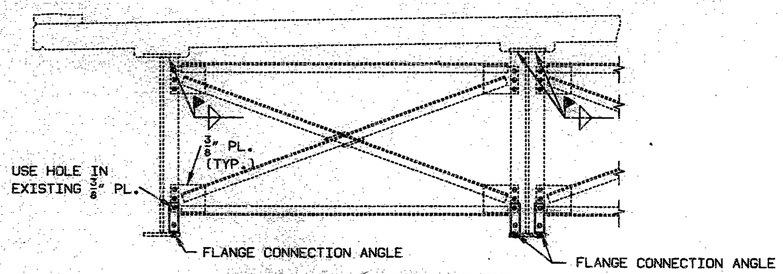
CONSTRUCTION CLEARANCE:
SEE SPECIAL PROVISIONS FOR MINIMUM VERTICAL AND HORIZONTAL CLEARANCE.

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

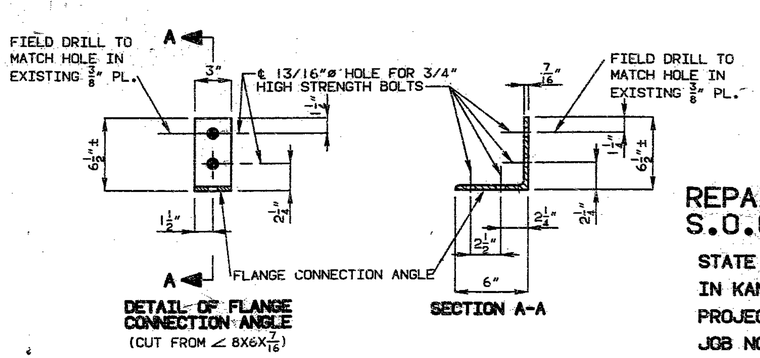
FINAL ~~ESTIMATED~~ QUANTITIES

ITEM		TOTAL
MOBILIZATION	LUMP SUM	1
REPAIR "A"	EACH	220
REPAIR "B"	LIN. IN.	117
REPAINTING (CALCIUM SULFONATE SYSTEM)	LUMP SUM	1

NOTE: SEE SPECIAL PROVISIONS FOR MORE INFORMATION PERTAINING TO EACH BID ITEM.



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS REPAIR "A"



DETAIL OF FLANGE CONNECTION ANGLE (CUT FROM ∠ 8X6X7/16)

SECTION A-A

NOTE: OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATE NEW WORK.

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

DETAILED APR. 1991
CHECKED APR. 1991

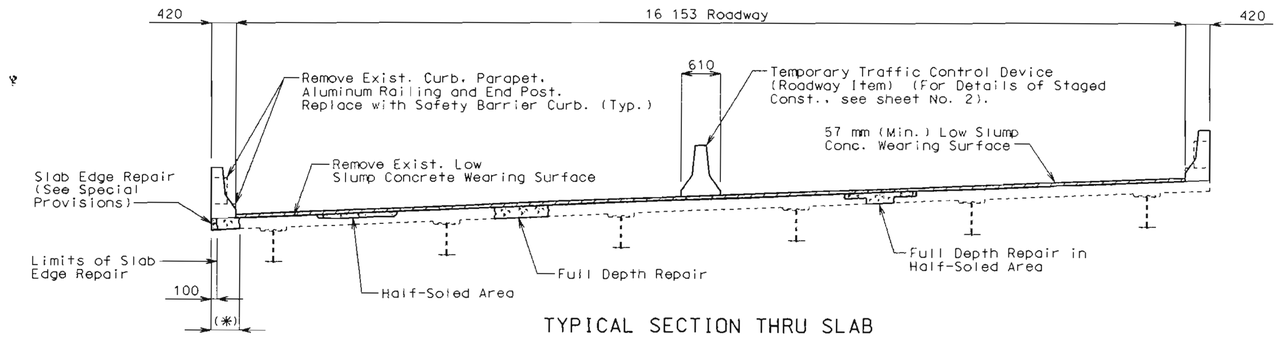
SHEET NO. 1A OF 1.

REPAIRS TO BRIDGE OVER K.C.S., S.O.U. AND C.N.W. R.R.

STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. F.A.-435-1(250) STA. 92+27.34 S.B.L.
JOB NO. 4I 1026-435 RTE. I-435
JACKSON COUNTY
DATE 6/5/91

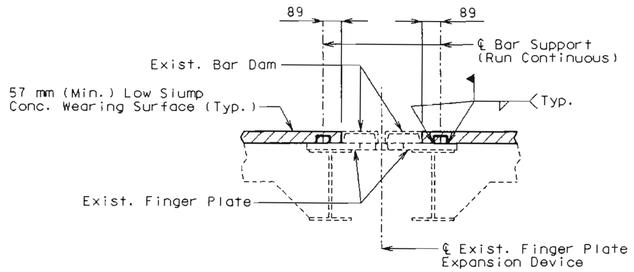
A-1683R1

State	Proj. No.	Sheet No.
MO		125
Sec./Sur. 25	Twp. 50N	Rge. 33W



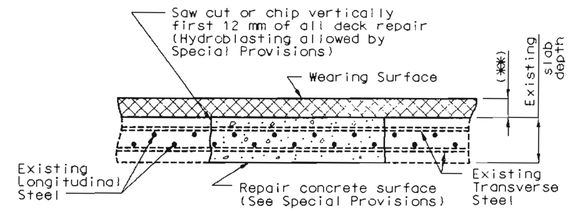
TYPICAL SECTION THRU SLAB

(*) If the dimension exceeds 100 mm the repair extending to the edge of the slab shall be made and paid for as "Full Depth Repair" per square meter. (See Special Provisions)

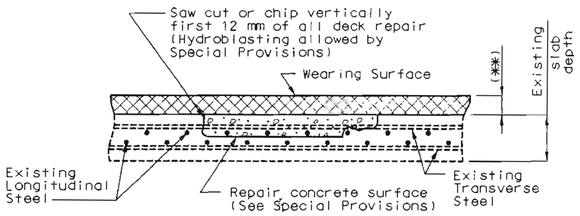


PART SECTION EXISTING FINGER PLATE EXPANSION DEVICE AT BENT NO. 6

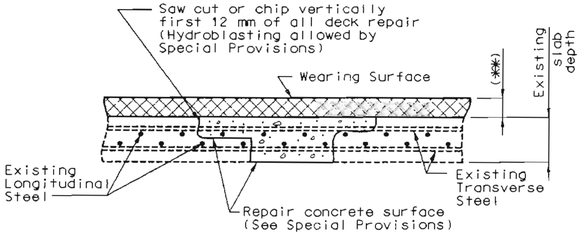
NOTE: Payment for furnishing and installing bar supports complete in place, will be paid for at the contract unit price for Low Slump Concrete Wearing Surface - Metric.



FULL DEPTH REPAIR



HALF-SOLED AREA



FULL DEPTH REPAIR IN HALF-SOLED AREA

(**) 57 mm (Min.) Low Slump Concrete Wearing Surface.

ESTIMATED QUANTITIES

	ITEM		TOTAL
	Curb Removal (Bridges) - Metric	meter	341
	Removal of Low Slump Concrete Wearing Surface - Metric	sq. meter	2623
	Substructure Repair (Unformed) - Metric	sq. meter	4
***	Safety Barrier Curb - Metric	meter	341
	Repairing Concrete Deck (Half-Soling) - Metric	sq. meter	130
	Full Depth Repair - Metric	sq. meter	25
	Slab Edge Repair (Bridges) - Metric	meter	17
	Low Slump Concrete Wearing Surface - Metric	sq. meter	2623
	Type N PTFE Bearings	each	6
	Strip Seal Expansion Device - Metric	meter	16.5
	Modification of Existing Expansion Joint - Metric	meter	16.5
	Conduit System on Structure	lump sum	1
	Fabricated Structural Carbon Steel (Misc.) - Metric	kilogram	8200
	Slab Drain	each	8
	Field Coat (System G) Gray - Metric	megagram	8.2
	Rehabilitation of Existing Wings	Lump Sum	1

*** Safety Barrier Curb shall be Cast-in-Place option or Slip Form option, as shown.

General Notes:

Design Specifications:
AASHTO - 1996
Load Factor Design (Safety Barrier Curb).
Allowable Stress Design (Hanger Plate).

Design Loading:
MS18 Modified.

Design Unit Stresses:
Class B1 Concrete (Safety Barrier Curb) f'c = 28 MPa.
Reinforcing Steel (Grade 420) fy = 420 MPa.
Structural Steel (ASTM A709M Grade 250) fs = 150 MPa.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.

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.

Joint Filler:
All joint filler shall meet the requirements of Section 1057.2.4 of the Missouri Standard Specifications (Metric), except as noted.

Coating: (New Steel Only)

Protective Coating: System G by the contractor.

Prime Coat: The cost of the prime coat shall be included in the contract unit price of the Fabricated Structural Steel. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish coat shall be Gray (Federal Standard #26373). The cost of the intermediate and finish coats shall be included in the contract unit price per Megagram of Field Coat (System G) Gray.

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

Maintain Traffic:
See roadway plans for traffic control during construction.

Verify Dimensions:
Contractor shall verify all dimensions in field before ordering materials.

Roadway Surfacing:
Roadway Surfacing adjacent to bridge ends to match bridge overlay.

Maintain Grade:
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. No payment will be allowed for additional labor, materials or equipment for variations in thickness of overlay.

Miscellaneous:
All dimensions are shown in millimeters (mm) unless otherwise specified.

All elevations are specified in meters (m) except as noted.

Drawings are not to scale. Follow dimensions.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Section 106 of the Missouri Standard Specifications (Metric) and Field Section (FS-712) from Materials Manual.

A minimum vertical clearance of 6.553 m for KCS Railroad and 7.010 m for I & M Rail Link from top of rails and a minimum lateral clearance of 3.048 m from the centerline of track to nearest temporary construction falsework shall be maintained during construction.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

REPAIRS TO:
BRIDGE OVER KCS AND I & M RAIL LINK RAILROADS

STATE ROAD INTERSTATE ROUTE I-435 FROM RTE. 24 TO MISSOURI RIVER

IN KANSAS CITY

PROJECT NO. STA. 2+812.493 (MATCH EXIST.)

JOB. NO. J4I1250 RTE. I-435 (S.B.L.)

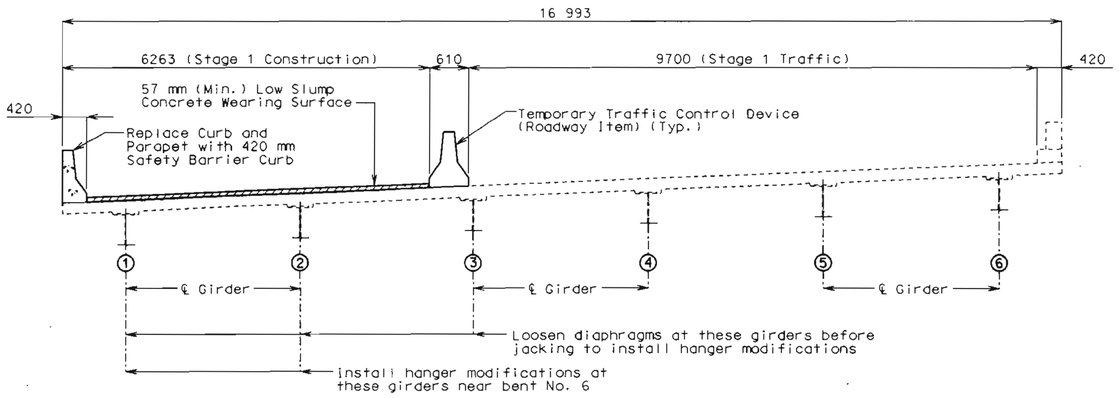
JACKSON COUNTY

Date: 4/7/98

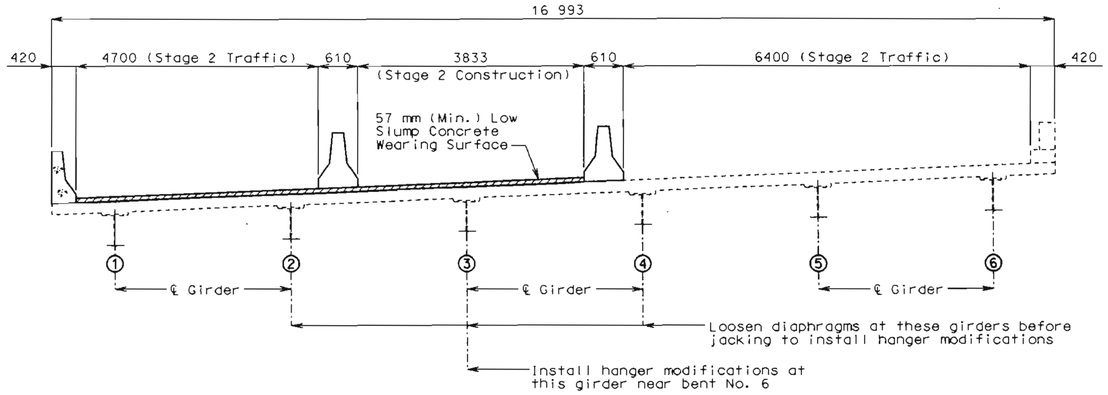
STD. M	
STD. M	
STD. M	
STD. M706.35	
A16833	

Designed Feb. 1998
Detailed Mar. 1998
Checked Mar. 1998

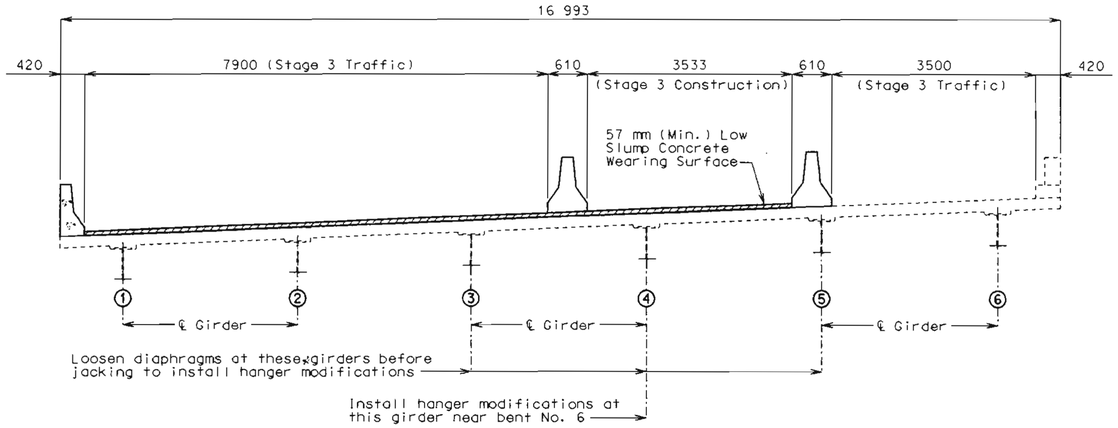
State	Proj. No.	Sheet No.
MO		126



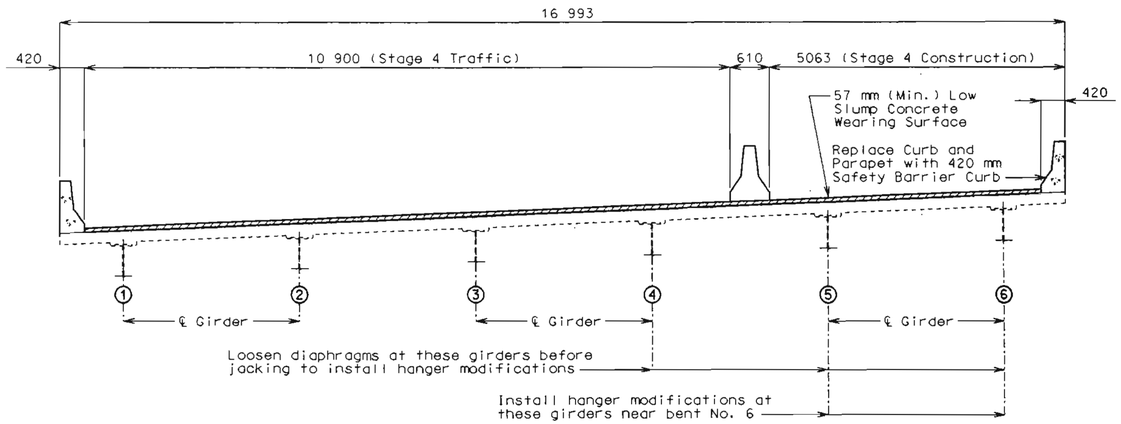
STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



STAGE 3 CONSTRUCTION



STAGE 4 CONSTRUCTION

NOTE:
For details of Hanger Modifications, see sheet No. 4 & 5.

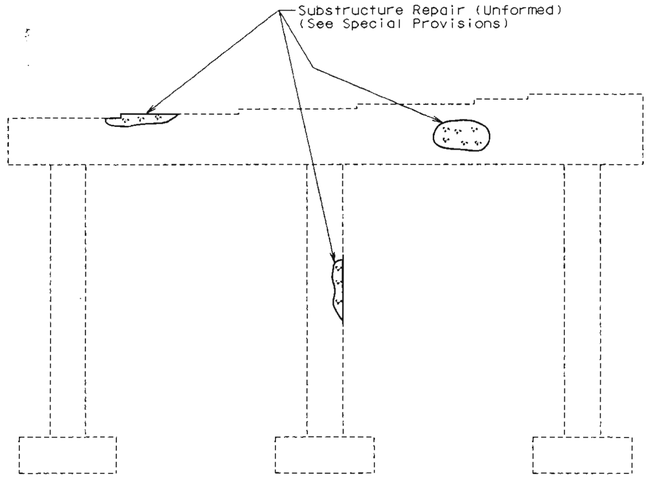
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

DETAILS OF STAGED CONSTRUCTION

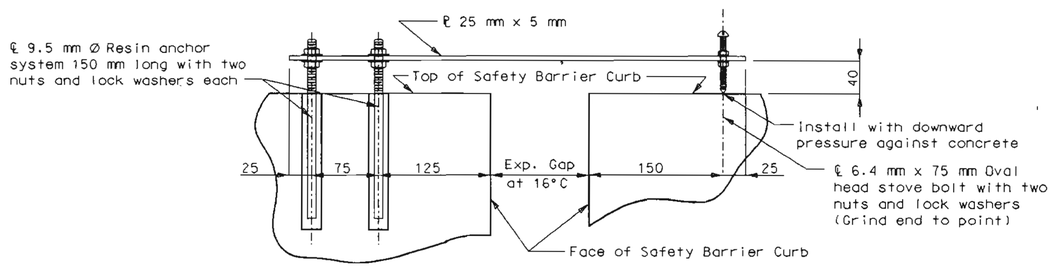
Detailed Mar. 1998
Checked Mar. 1998

State	Proj. No.	Sheet No.
MO		127



TYPICAL DETAIL SHOWING SUBSTRUCTURE REPAIR (UNFORMED)

PART PLAN OF BARRIER CURB SHOWING MOVEMENT GAUGE



PART ELEVATION OF BARRIER CURB SHOWING MOVEMENT GAUGE

Note:

A movement gauge shall be provided on one side of bridge at all safety barrier curb expansion joints.

All steel shall be galvanized.

Cost of movement gauge complete in place shall be included in contract unit price bid for Safety Barrier Curb.

For details of Safety Barrier Curb, see sheet No. 13 & 14.

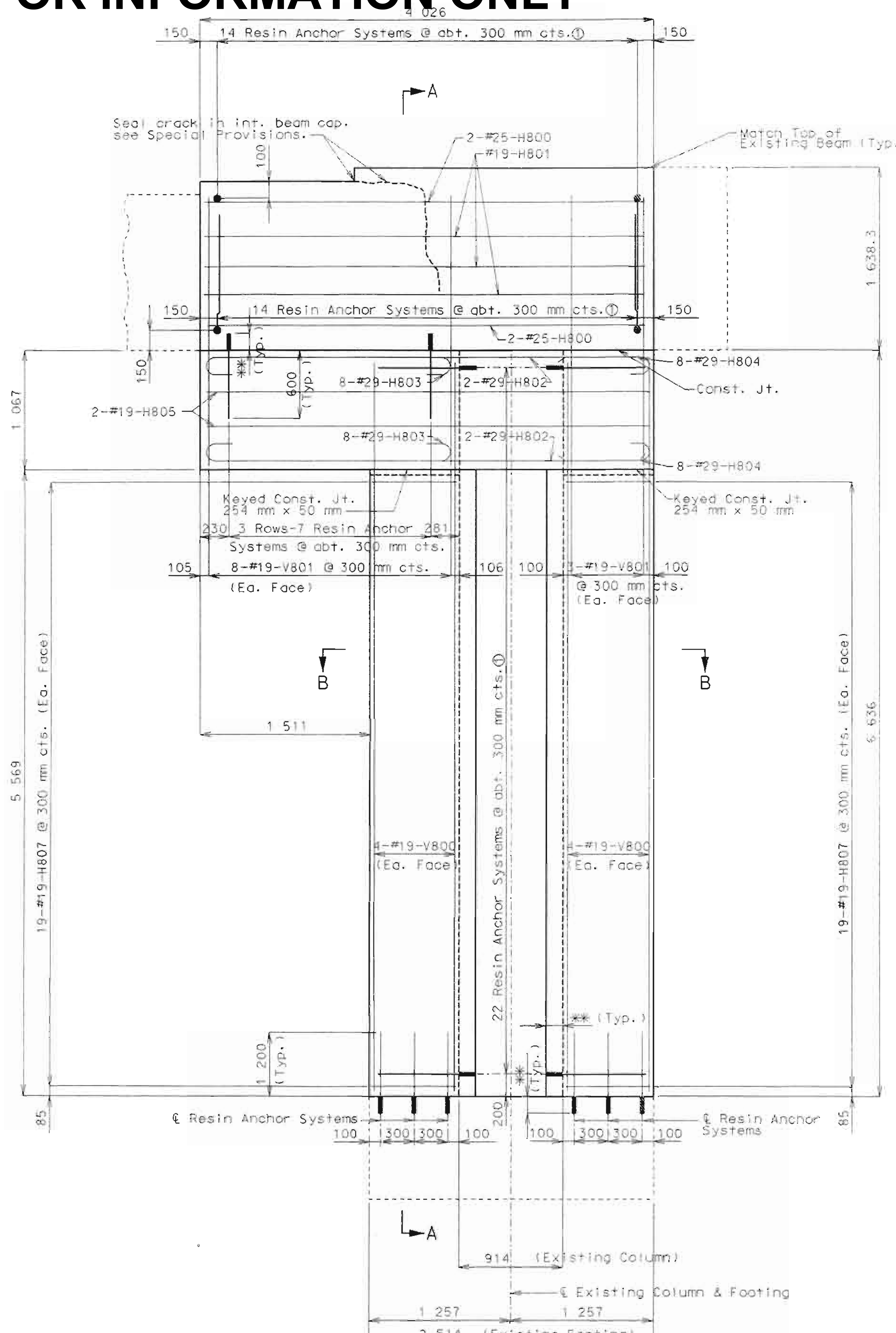
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

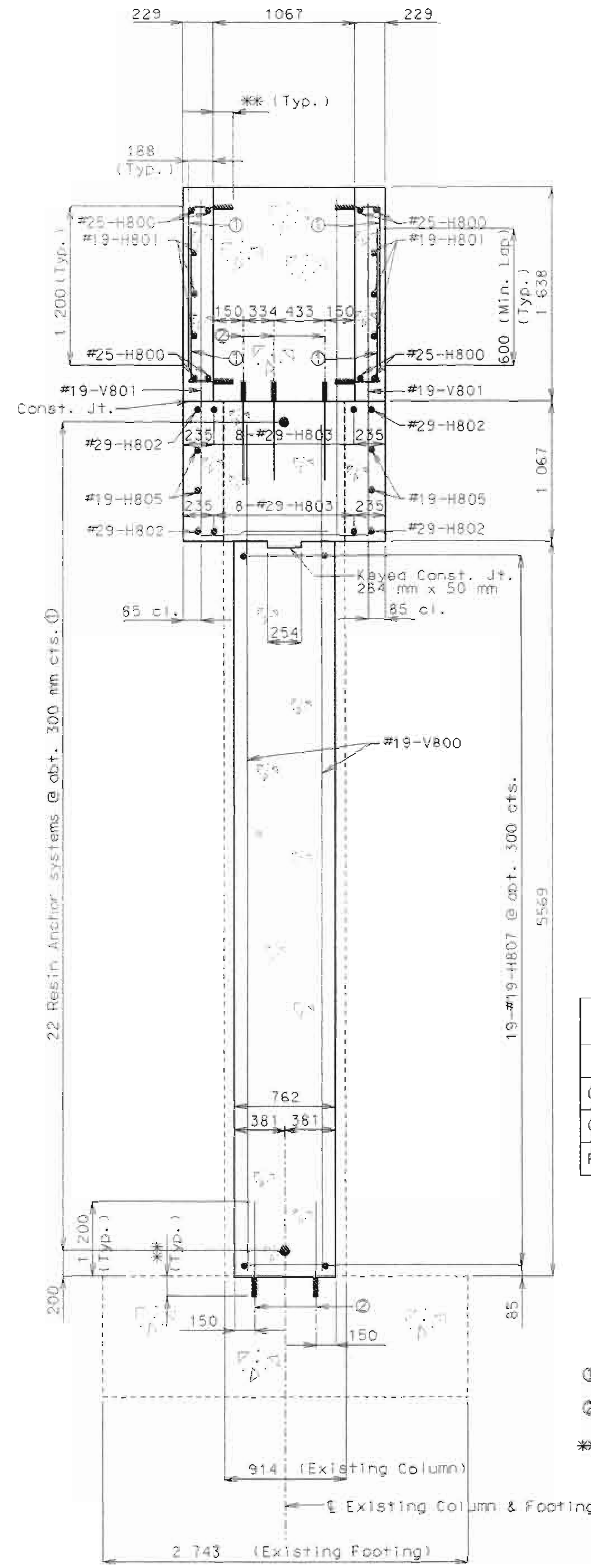
Detailed Mar. 1998
Checked Mar. 1998

State	Proj. No.	Sheet No.
MO		

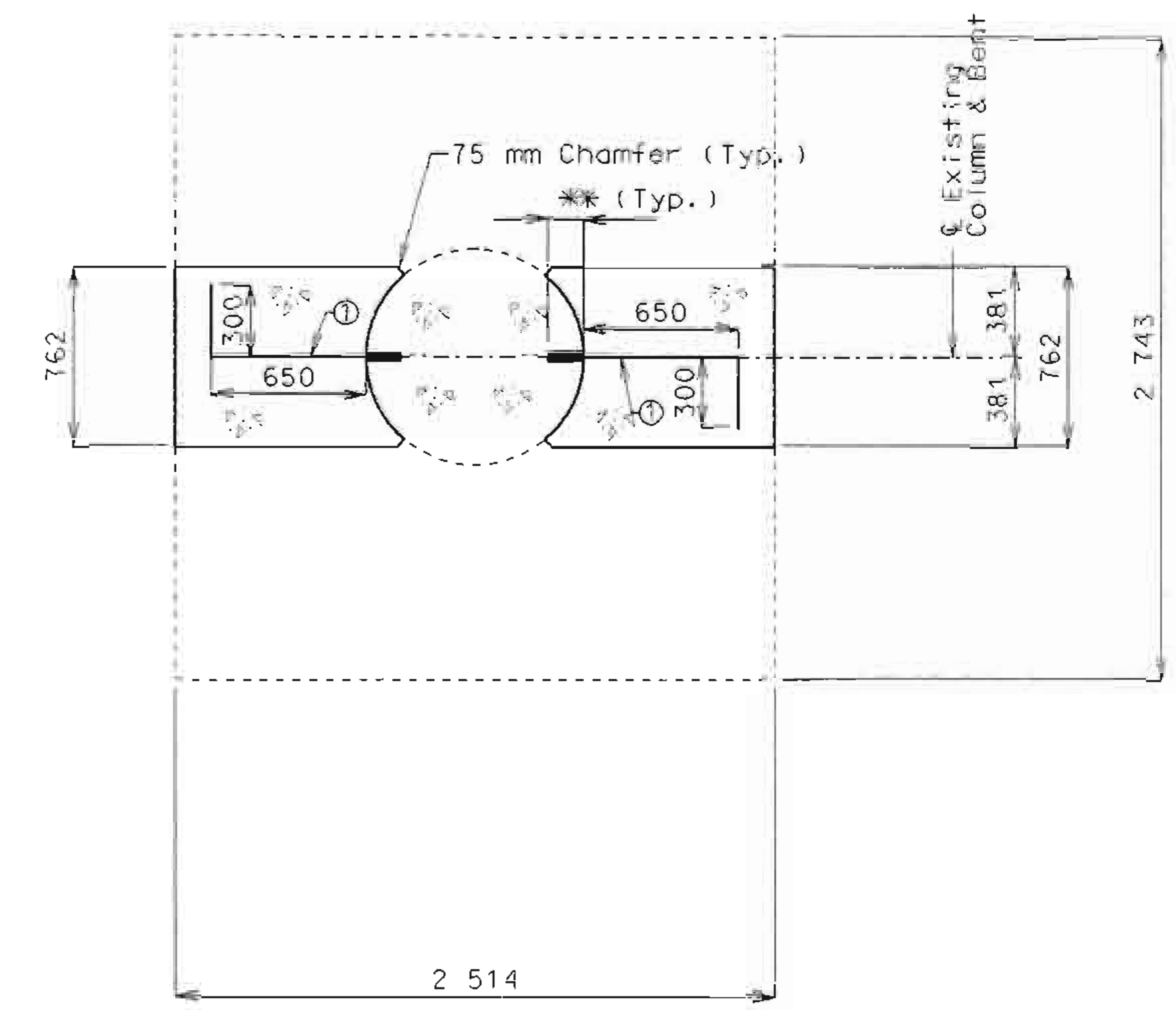
DESIGN UNIT STRESSES:
Class B Concrete f'c = 21 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa



FRONT VIEW



SECTION A-A



SECTION B-B

Note: Reinforcing steel not shown in Section B-B for clarity.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class 1 Excavation	Cu. Meter	10
Class B Concrete (Substr.)	Cu. Meter	16.3
Reinforcing Steel (Bridges)	Kilogram	1140

① #19 (Grade 420) reinforcing bar to be substituted for the 19.1 mm Ø threaded rod stud.
② ℄ Resin Anchors Systems
✱✱ Manufacturer's embedment length.

Note: Minimum clearance to reinforcing steel to be 40 mm unless otherwise shown.
For resin anchor notes see sheet No. 7.
See sheet No. 19B for bill of reinfocing steel.

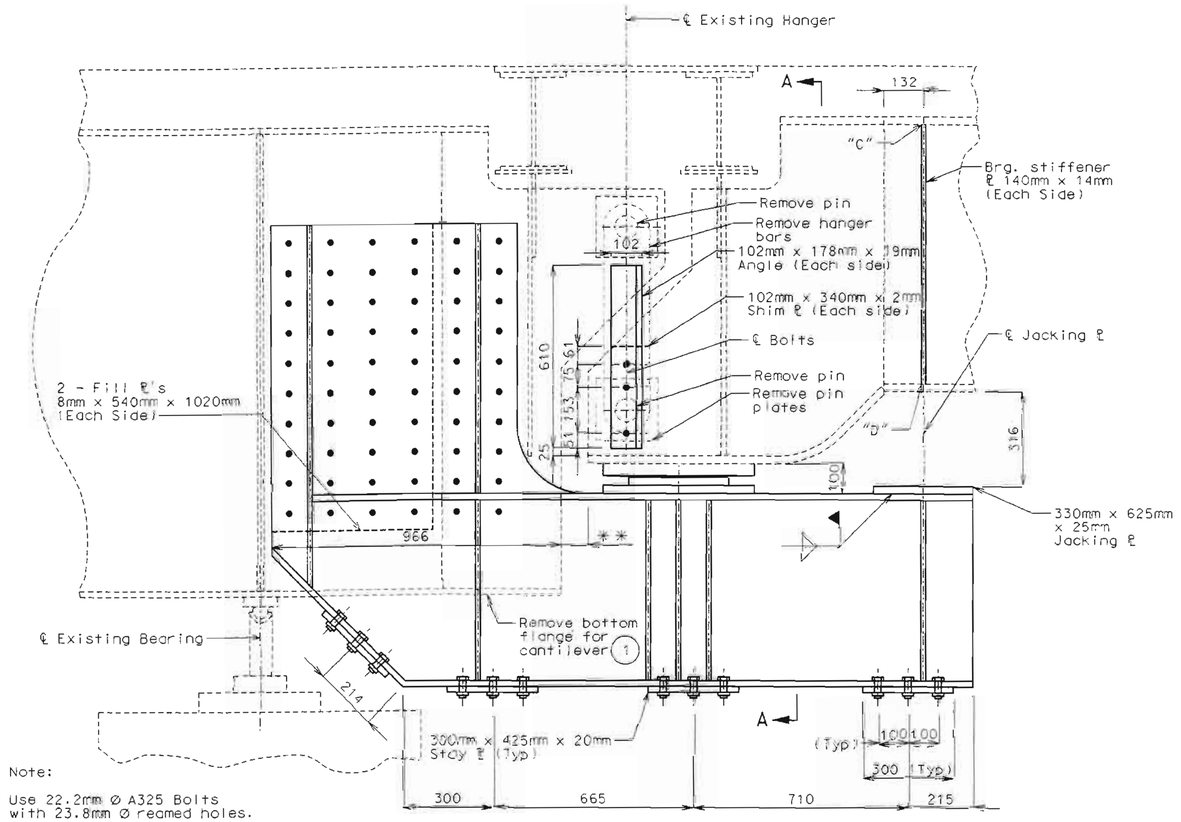
STATE OF MISSOURI Stacy L. McMillan NUMBER E-26873 REGISTERED PROFESSIONAL ENGINEER
DATE 4-4-2000

MODIFICATIONS OF INTERMEDIATE BENT NO. 6 AT RIGHT COLUMN LOOKING DOWN STATION

Detailed Mar. 2000
Checked Mar. 2000

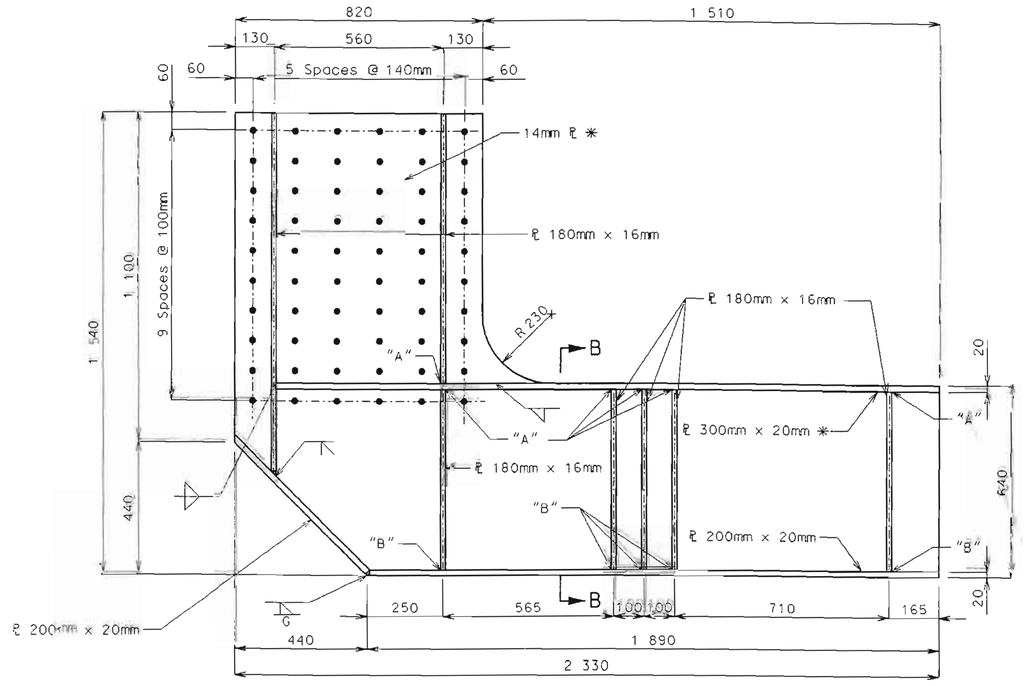
Note: This drawing is not to scale. Follow dimensions.
△3/21/2000 Added Sheet
Sheet No. 3A of 19
JACKSON COUNTY
A16833

State	Proj. No.	Sheet No.
MO		



Note:
Use 22.2mm ∅ A325 Bolts with 23.8mm ∅ reamed holes.

DETAIL OF HANGER MODIFICATION AT BENT 6



DETAIL OF HANGER PLATE

(1) Remove flange by cutting and grinding web smooth at top of flange.

* Indicates plates subject to notch toughness requirements.

** 88.9mm Gap @ 16°C. (Based on original plan dimensions.)

Note: "A", "B", "C" & "D", see sheet No. 5.
For section A-A & B-B, see sheet No. 5.
For welding details not shown see sheet No. 5.
For bearing details, see sheet No. 6.
Outline of old work indicated by light dashed line.
Heavy line indicates new work.
Field verify fill plate thickness and adjust as necessary.

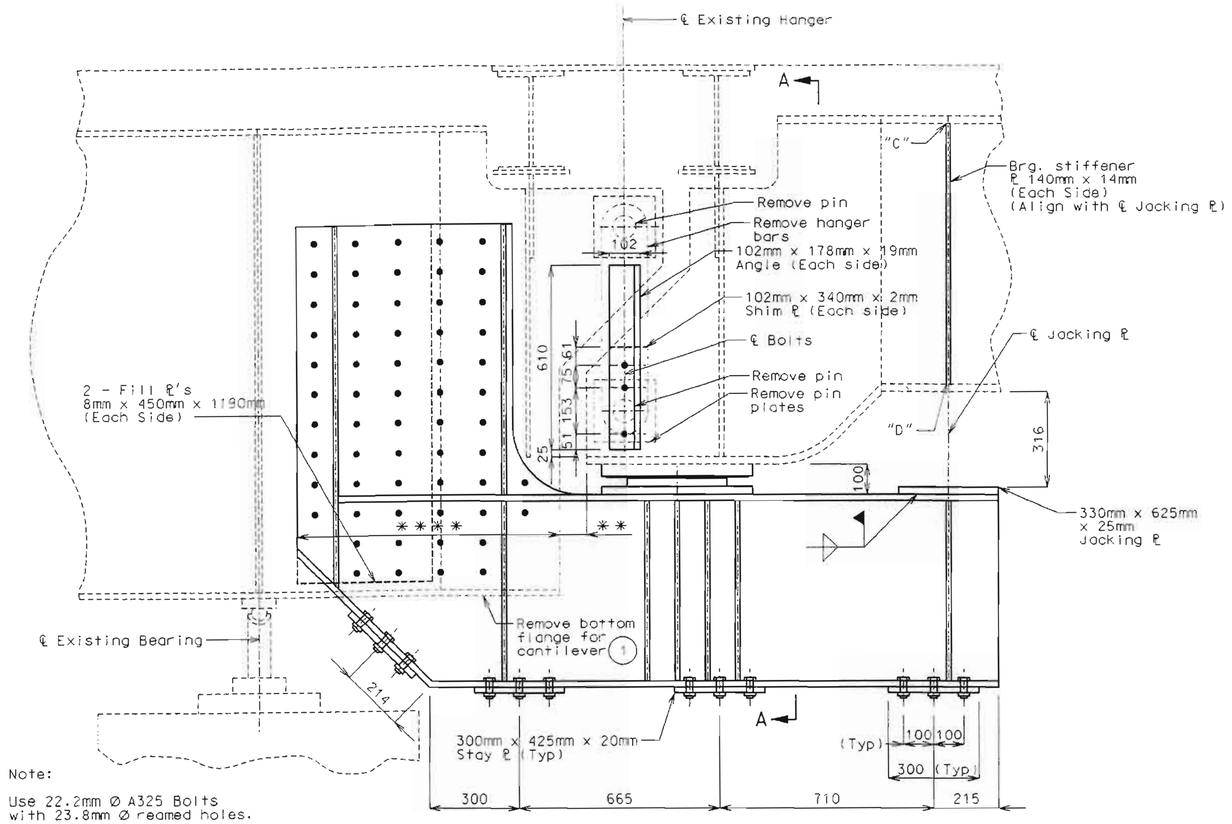
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 1-5-99

2 DELETE THIS SHEET 1-5-99

Detailed Mar. 1998
Checked Mar. 1998

JACKSON COUNTY A16833

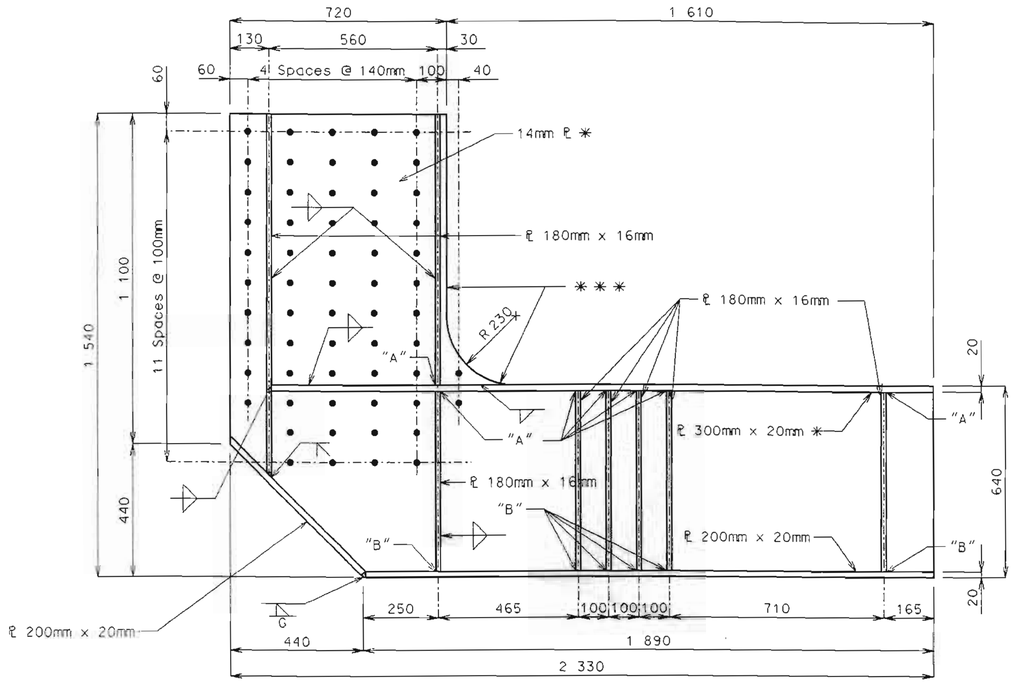
State	Proj. No.	Sheet No.
MO		



Note:

Use 22.2mm Ø A325 Bolts
with 23.8mm Ø reamed holes.

DETAIL OF HANGER MODIFICATION AT BENT 6



DETAIL OF HANGER PLATE

(1) Remove flange by cutting and grinding web smooth at top of flange.

* Indicates plates subject to notch toughness requirements.

** Center bearing for existing closed joint. Theoretical gap @ 16° is 88.9 mm (Based on original plan dimensions).

*** Grind smooth the cut edges.

**** ± 876 mm (Based on field observation for Hanger placement).

Note: "A", "B", "C" & "D", see sheet No. 5.
For section A-A, see sheet No. 5.
For welding details not shown see sheet No. 5.
For bearing details, see sheet No. 6.
Outline of old work indicated by light dashed line.
Heavy line indicates new work.
Field verify fill plate thickness and adjust as necessary.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 1-5-99

Detailed Mar. 1998
Checked Mar. 1998

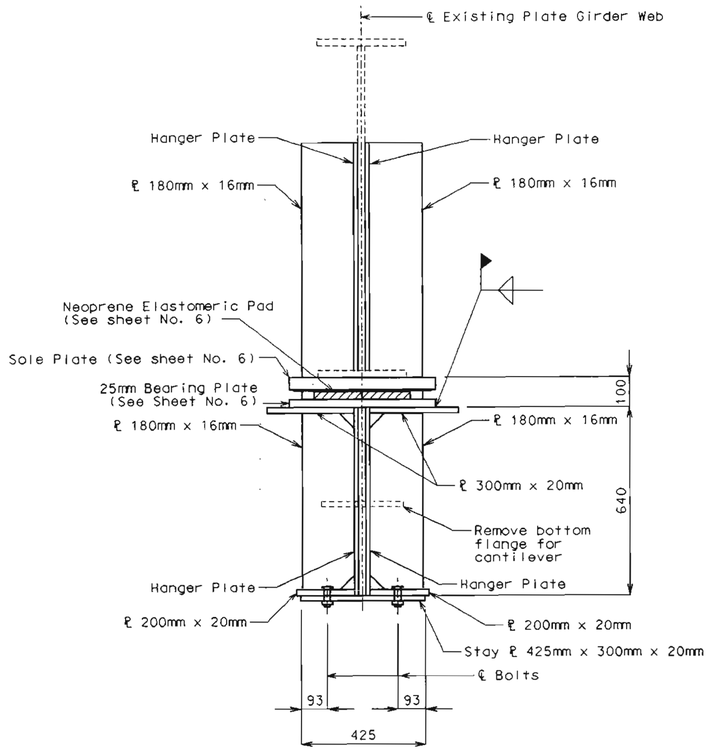
2 REVISED 1-5-99

2 ADD

(Sheet No. 4A of 19)

JACKSON COUNTY A16833

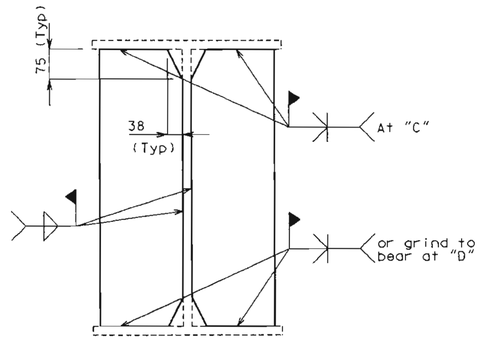
State	Proj. No.	Sheet No.
MO		129



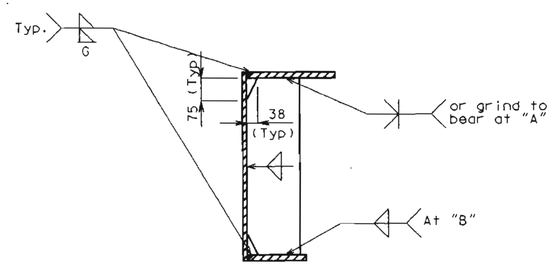
SECTION A-A

Note: For location of Section A-A see sheet No. 4.

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



TYPICAL WELDING DETAILS
FOR STIFF. PLATES TO
EXISTING GIRDER



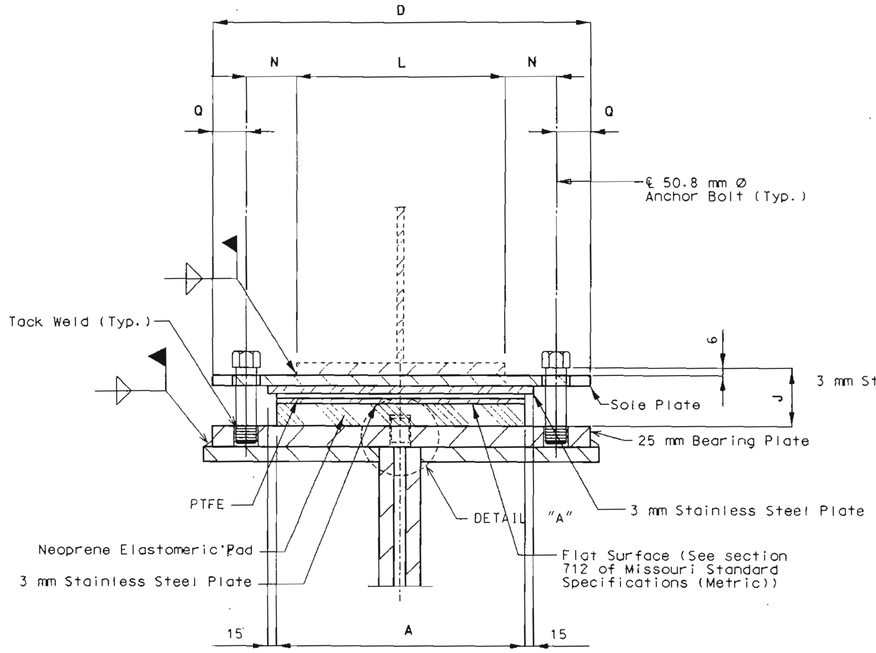
TYPICAL WELDING DETAILS
FOR STIFF. PLATES

STATE OF MISSOURI
Stacy L. McMillen
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

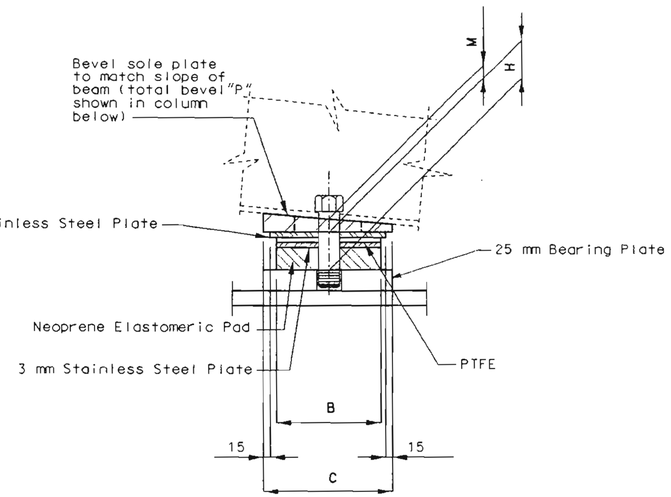
DATE 4-6-98

Detailed Mar. 1998
Checked Mar. 1998

STATE	PROJ. NO.	SHEET NO.
		130



END VIEW



SIDE VIEW

GENERAL NOTES:

Anchor bolts shall be 50.8 mm diameter ASTM A325M steel bolts.

Actual manufacturer's certified mill test reports (chemical and mechanical)shall be provided.

All structural steel for the anchor bolts shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A153.

Neoprene Elastomeric Pads shall be 70 durometer.

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

Structural steel for the sole plate shall be ASTM A709M Grade 250 and shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness).

The accepted quantity of the elastomeric bearing assemblies, complete-in-place, will be paid for at the contract unit price for Type "N" PTFE Bearings, each.

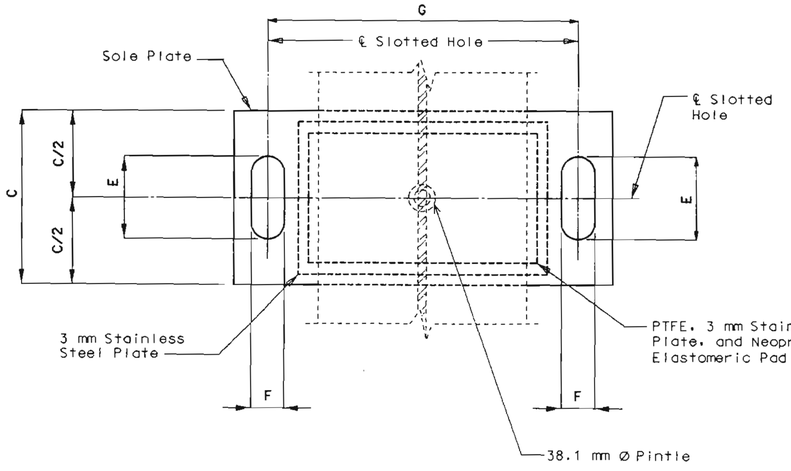
Payment for the sole plate, bearing plate and anchor bolts shall be included in the cost of the bearing assembly. See Special Provisions.

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

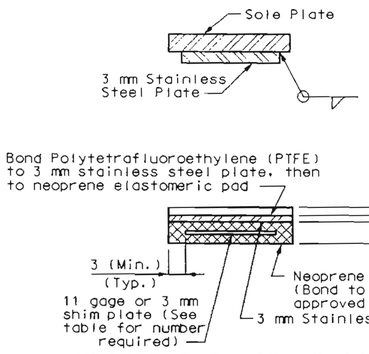
Note: 25 mm bearing plate to be tapped to receive 50.8 mm Ø H.S. Bolt.

The location of the 50.8 mm high strength bolts in relation to the slotted holes in the sole plate shall correspond with the temperature at the time of erection. At 16° C the slotted holes should center on the 50.8 mm high strength bolts.

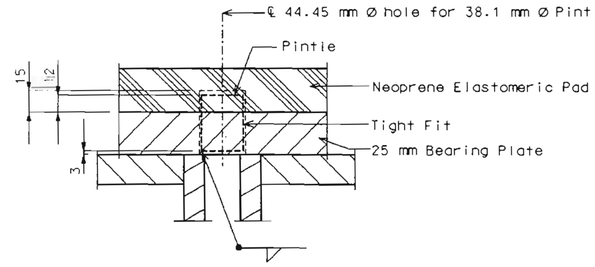
Adjustments of 7 mm for each 5° C temperature rise or fall shall be made.



PART PLAN



NEOPRENE ELASTOMERIC PAD



DETAIL "A"

PTFE SLIDING BEARINGS

BENT NO.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
6	300	330	500	600	180	55	440	35	81	27	304.8	40	67.6	-	80	1	6
																TOTAL BEARINGS	6

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

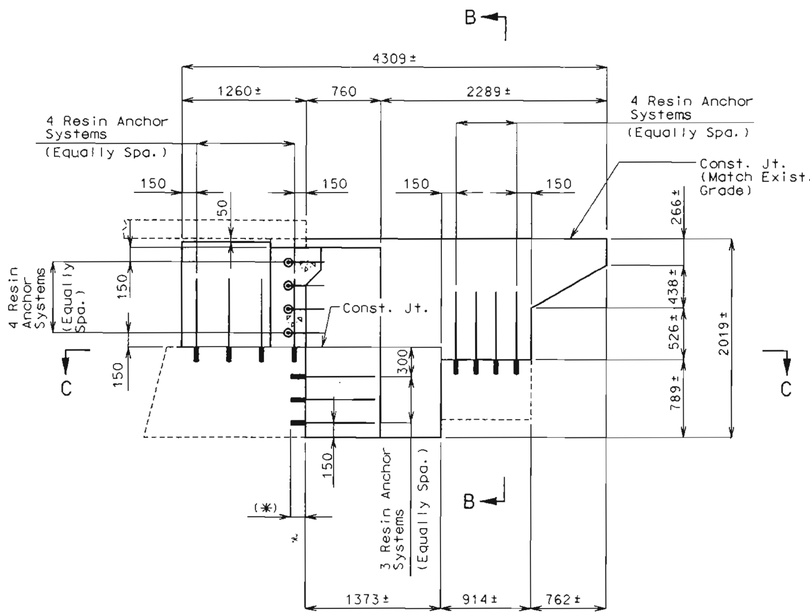
DETAILS OF TYPE "N" PTFE BEARINGS

STATE OF MISSOURI
Stacy L McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 4-6-98

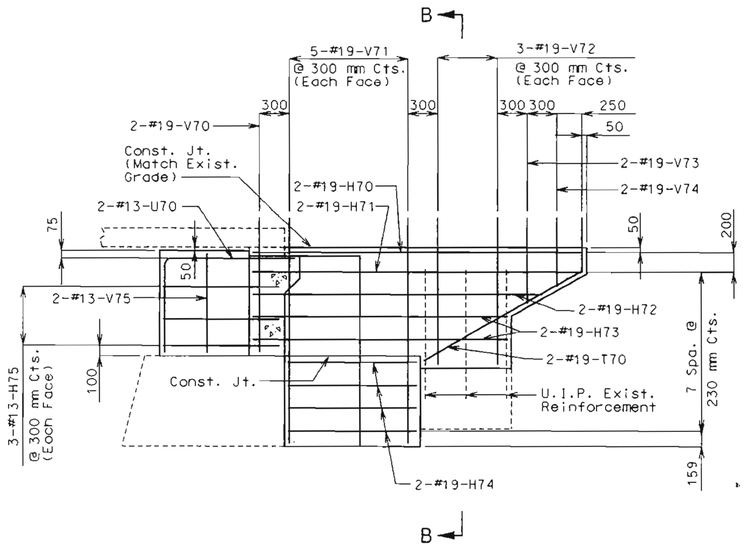
Detailed Mar. 1998
Checked Mar. 1998

JACKSON COUNTY A16833

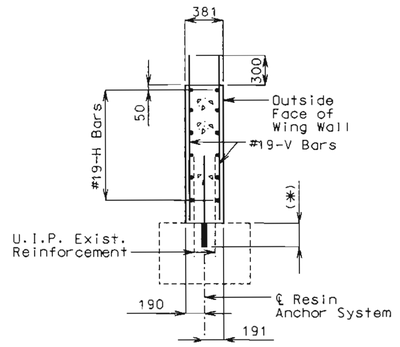
State	Proj. No.	Sheet No.
MO		131



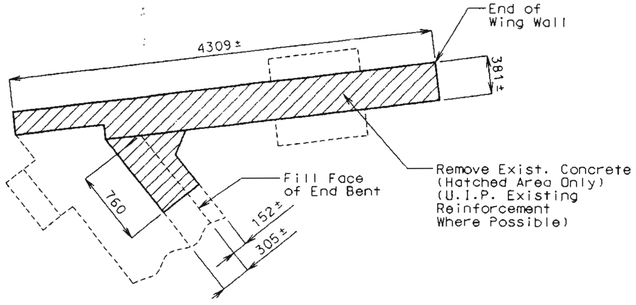
SECTION NEAR WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



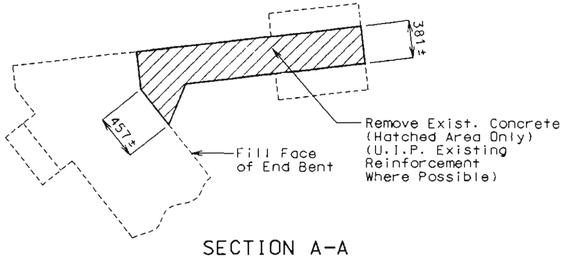
SECTION NEAR WING SHOWING REINFORCEMENT



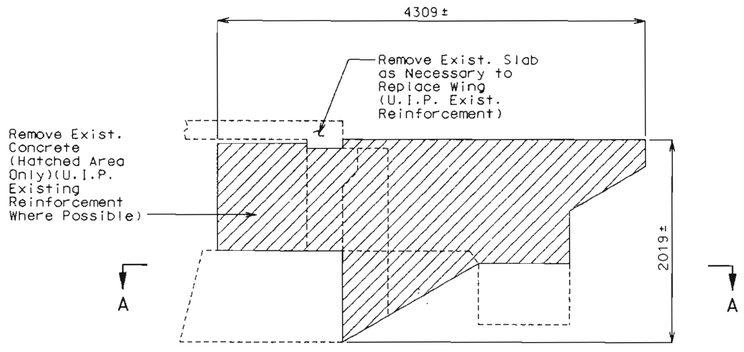
SECTION B-B



PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL



SECTION A-A



SECTION NEAR EXISTING WING SHOWING CONCRETE REMOVAL

NOTE:

For details of Safety Barrier Curb at End Bent No. 7, see sheet No. 16.

The contractor shall use one of the resin anchor systems listed in the job special provisions. These resin anchor systems shall be installed according to the manufacturer's special provisions, 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 Rehabilitation of Existing Wings per Lump Sum.

The 19.1 mm diameter resin anchor systems shall have a minimum ultimate pullout strength of 90.7 kN in concrete with f'c = 28 MPa. see special provisions.

A #19 Grade 420 reinforcing bar 690 mm long (Except as noted) shall be substituted for the 19.1 Ø threaded rod stud.

Cost of removing and replaceing of existing wings, any excavation required, concrete, reinforcement and any additional work or materials necessary to rehabilitate existing wings shall be considered covered under the contract unit price for Rehabilitation of Existing Wings per Lump Sum.

(*) Manufacturers Embedment Length (Typ.)

Work this sheet with sheet No. 8.

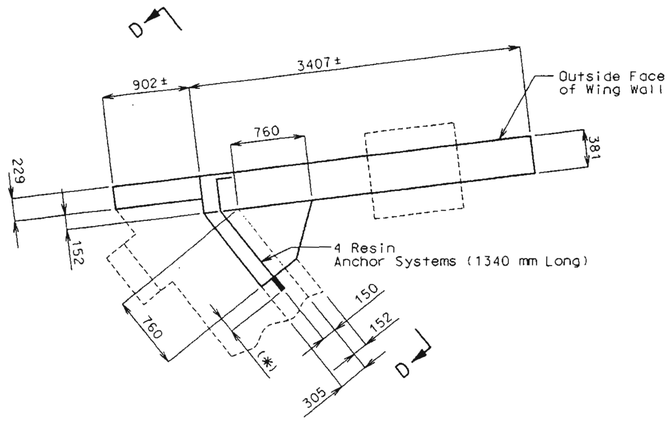
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

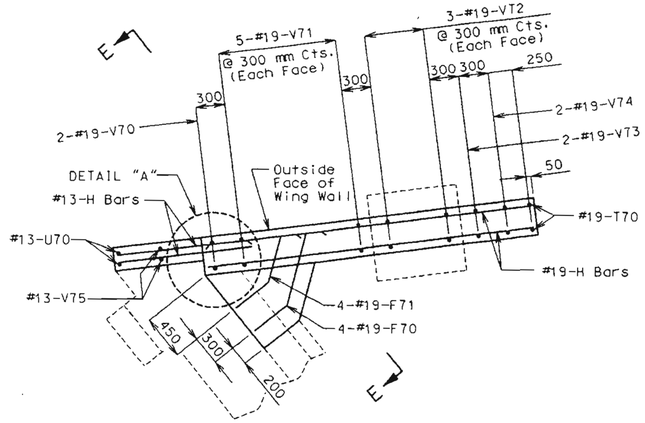
DETAILS SHOWING REHABILITATION OF LEFT WING AT END BENT NO. 7

Detailed Apr. 1998
Checked Apr. 1998

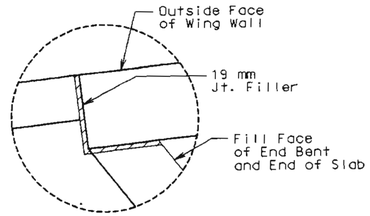
State	Proj. No.	Sht. No.
MO		132



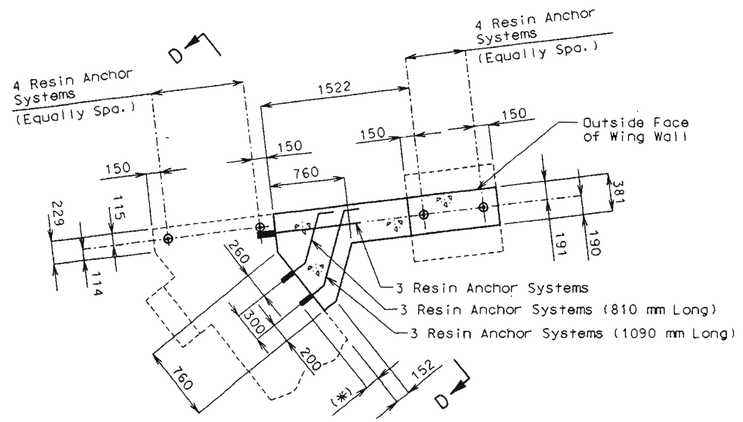
PLAN OF WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



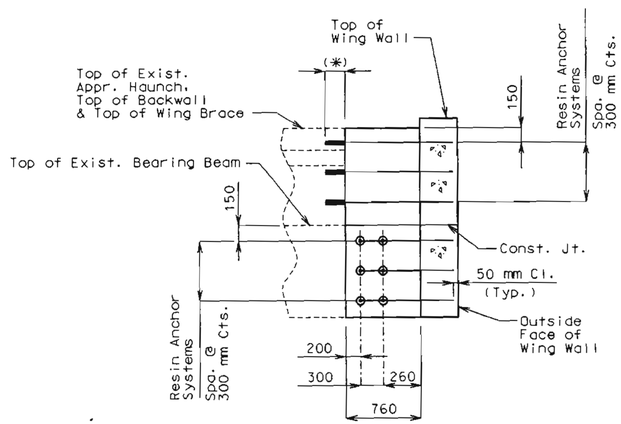
PLAN OF WING SHOWING REINFORCEMENT



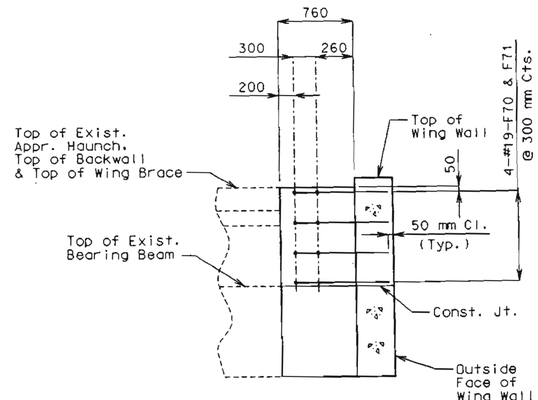
DETAIL "A"



SECTION C-C



SECTION D-D



SECTION E-E

NOTE:

Work this sheet with sheet No. 7.

(*) Manufacturers Embedment Length (Typ.).

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

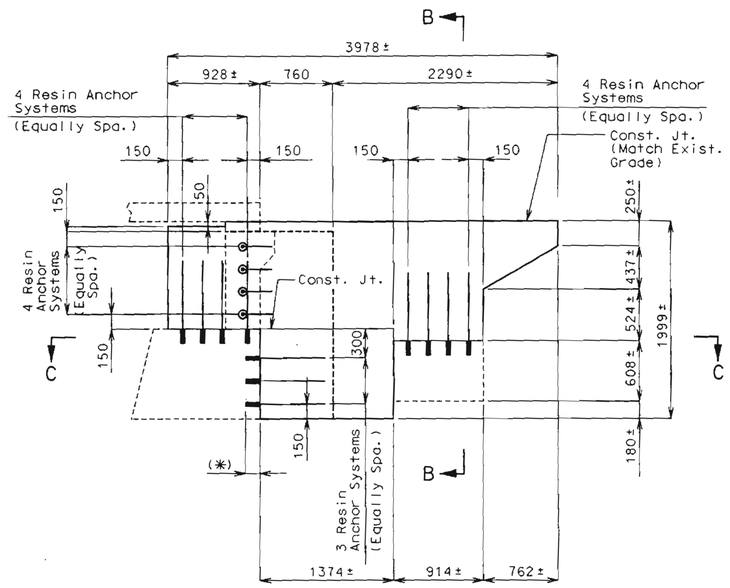
DATE 4-6-98

DETAILS SHOWING REHABILITATION OF LEFT WING AT END BENT NO. 7

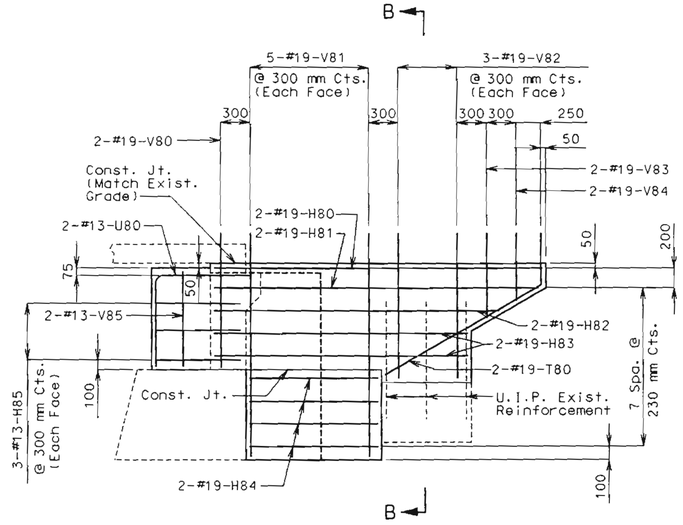
Detailed Apr. 1998
Checked Apr. 1998

JACKSON COUNTY A16833

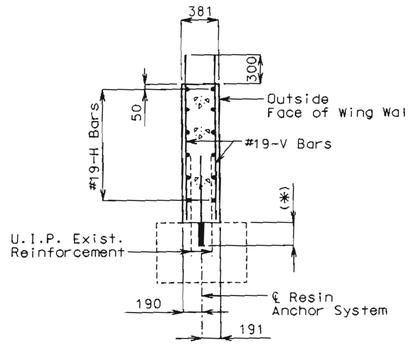
State	Proj. No.	Sheet No.
MO		133



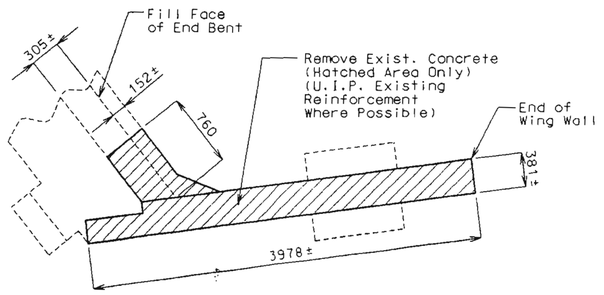
ELEVATION OF WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



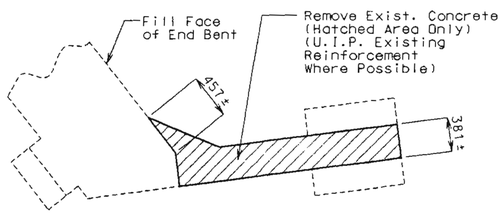
ELEVATION OF WING SHOWING REINFORCEMENT



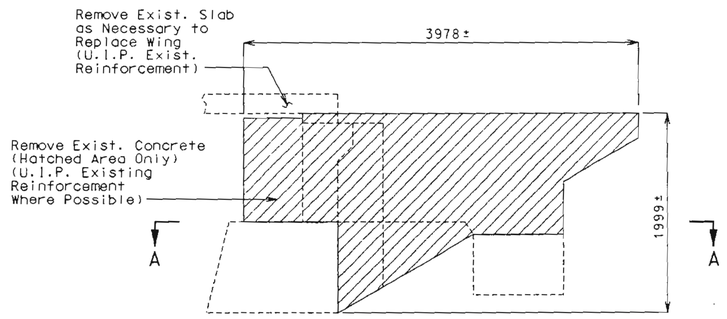
SECTION B-B



PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL



SECTION A-A



ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL

NOTE:

For details of Safety Barrier Curb at End Bent No. 7, see sheet No. 16.

For details of Conduit System on Structure, see sheet No. 18.

The contractor shall use one of the resin anchor systems listed in the job special provisions. These resin anchor systems shall be installed according to the manufacturer's special provisions, 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 Rehabilitation of Existing Wings per Lump Sum.

The 19.1 mm diameter resin anchor systems shall have a minimum ultimate pullout strength of 90.7 kN in concrete with f'c = 28 MPa, see special provisions.

A #19 Grade 420 reinforcing bar 690 mm long (Except as noted) shall be substituted for the 19.1 Ø threaded rod stud.

Cost of removing and replaceing of existing wings, any excavation required, concrete, reinforcement and any additional work or materials necessary to rehabilitate existing wings shall be considered covered under the contract unit price for Rehabilitation of Existing Wings per Lump Sum.

(*) Manufacturers Embedment Length (Typ.).

Work this sheet with sheet No. 10.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

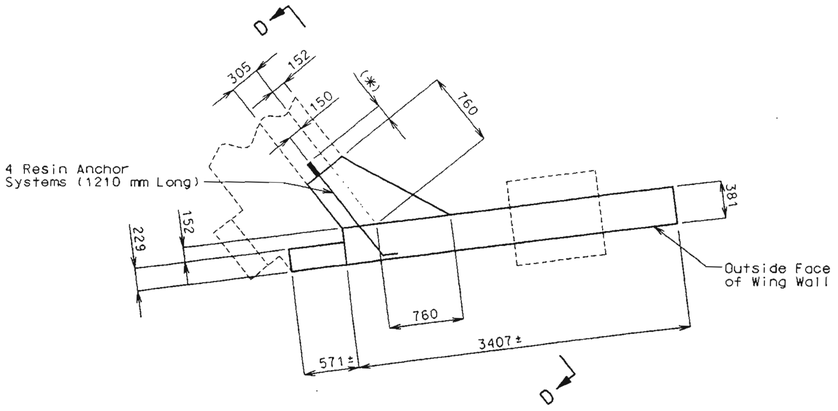
DETAILS SHOWING REHABILITATION OF RIGHT WING AT END BENT NO. 7

Detailed Apr. 1998
Checked Apr. 1998

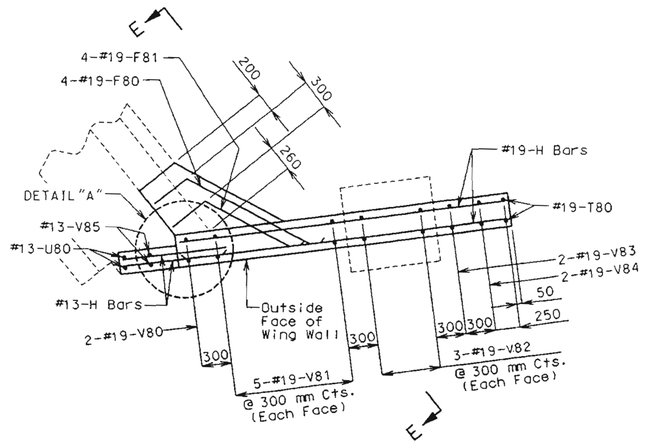
JACKSON COUNTY

A16833

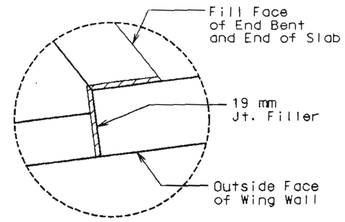
State	Proj. No.	Sheet No.
MO		134



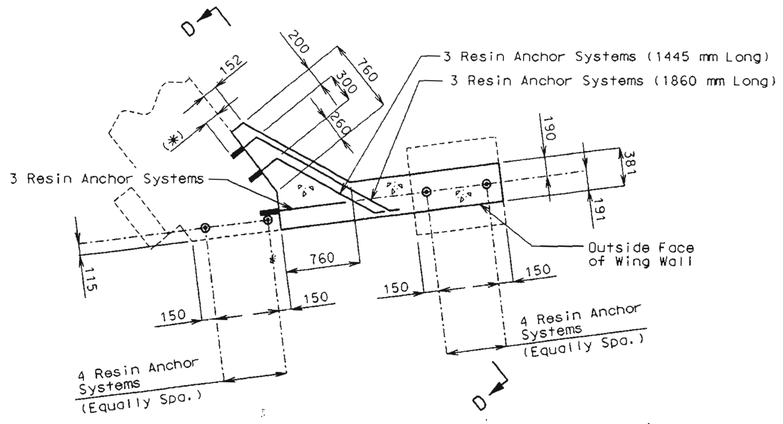
PLAN OF WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



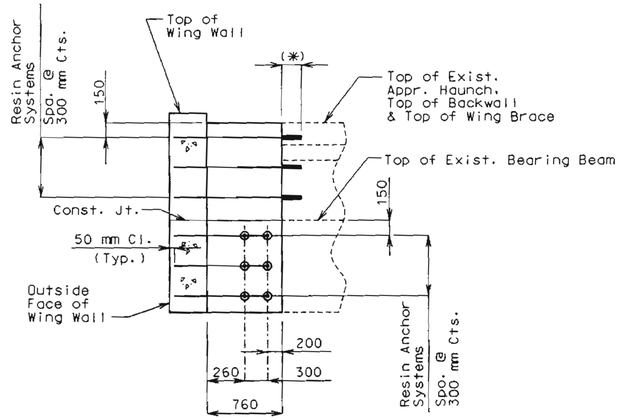
PLAN OF WING SHOWING REINFORCEMENT



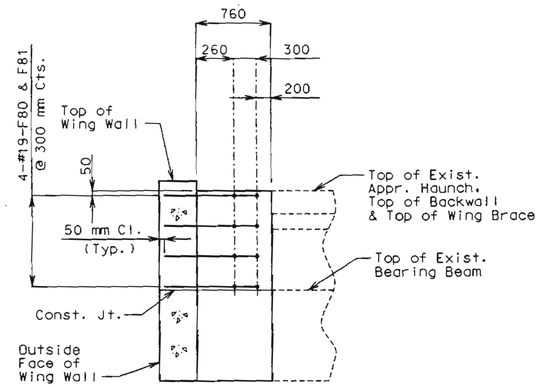
DETAIL "A"



SECTION C-C



SECTION D-D



SECTION E-E

NOTE:

Work this sheet with sheet No. 9.

(*) Manufacturers Embedment Length (Typ.).

Stacy L. McMillan NUMBER E-26873 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI

DATE 4-6-98

DETAILS SHOWING REHABILITATION OF RIGHT WING AT END BENT NO. 7

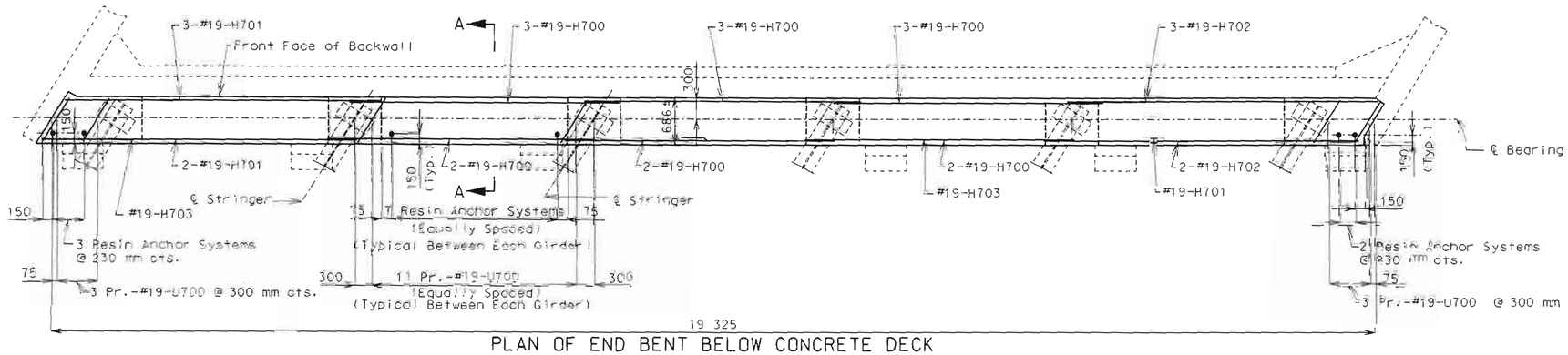
Detailed Apr. 1998
Checked Apr. 1998

JACKSON COUNTY A16833

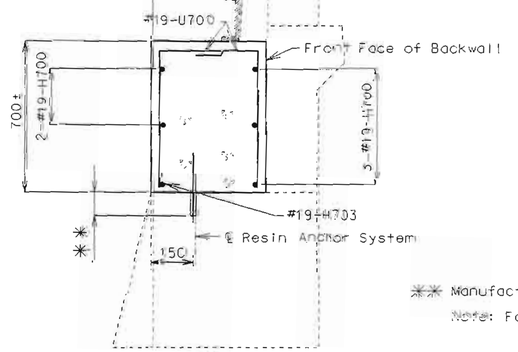
Note: U bars to be placed parallel to stringer.
Min. Lap for H Bars 915 mm.

State	Proj. No.	Sheet No.
MO		

Design Unit Stresses:
Class B1 Concrete f'c = 28 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa



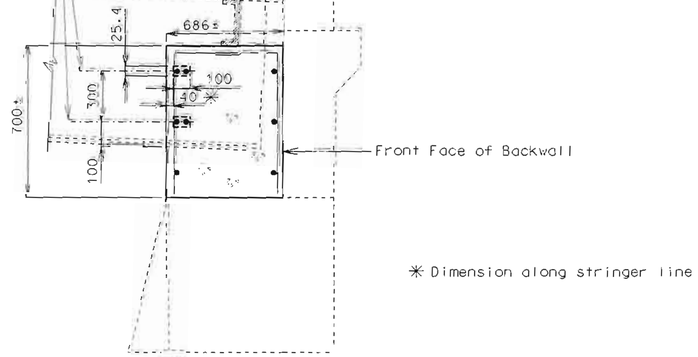
PLAN OF END BENT BELOW CONCRETE DECK



✳✳ Manufactures embedment length

Note: For resin anchor notes see sheet No. 7.

SECTION A-A



✳ Dimension along stringer line

TYPICAL SECTION THRU DIAPHRAGM SHOWING HOLE PLACEMENT IN EXISTING STRINGER

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class B1 Concrete-Metric	Cu. Meter	9.3
Reinforcing Steel (Bridges)-Metric	Kilogram	620

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 7-12-99

DETAILS OF END BENT NO. 7 SHOWING CONCRETE DIAPHRAGM PLACEMENT

Detailed July 1999
Checked July 1999

△3 7/12/99 Added Sheet

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

Sheet No. 10 of 19

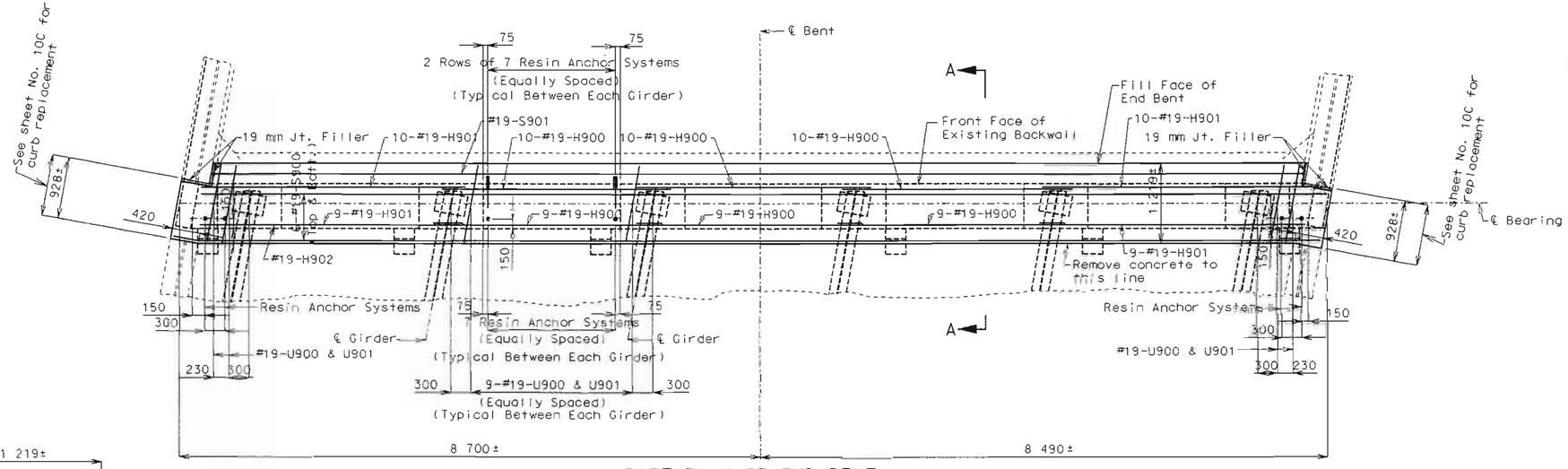
JACKSON COUNTY A16833

State	Proj. No.	Sheet No.
MO		

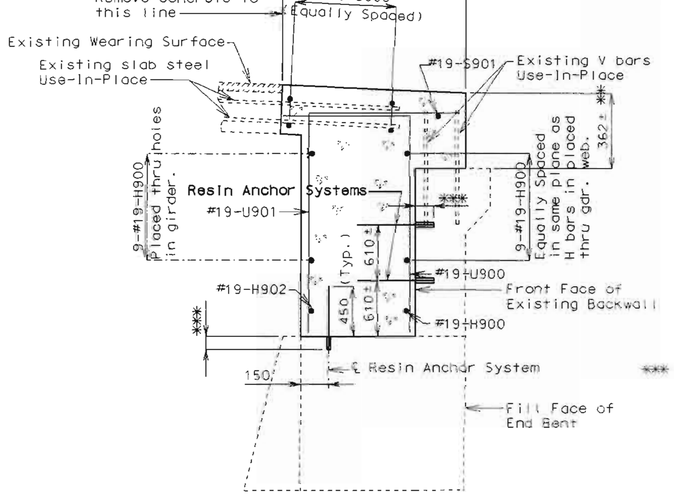
Note: U Bars to be placed parallel to girder.
Min. Lap for H Bars 915 mm.
Curb plate removal on wing barrier curb will require recessed area in curb to be patched with a special motar. See Special Provisions.
For resin anchor notes see sheet No.7.
Traffic handling per engineers approval.
Use mechanical bar splices as required for S bars in stage construction. See Special Provisions.

Design Unit Stresses:
Class B2 Concrete f'c = 28 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa

J4I1250
May 98



PART PLAN OF END BENT



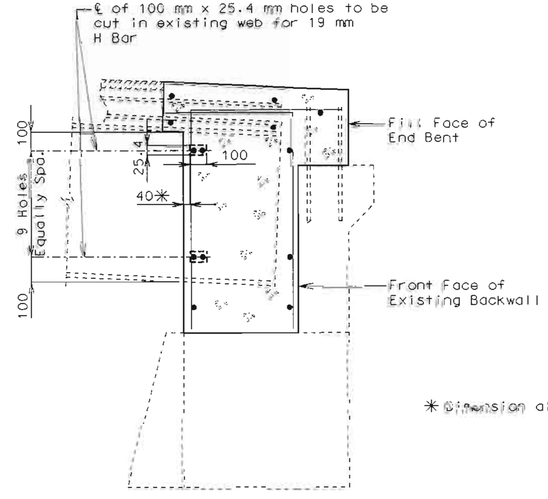
** Match to top of existing wearing surface

*** Manufactures embedment length

SECTION A-A

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class B2 Concrete	Cu. Meter	28.0
Reinforcing Steel (Bridges)	Kilogram	900
Reinforcing Steel (Epoxy Coated)	Kilogram	1130

Note: Removal of existing concrete to be paid for in price for Class B2 Concrete.



TYPICAL SECTION THRU DIAPHRAGM SHOWING HOLE PLACEMENT IN EXISTING STRINGER

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 6-20-2000

DETAILS OF END BENT NO. 1 SHOWING CONCRETE DIAPHRAGM PLACEMENT & END OF SLAB MODIFICATIONS

Detailed Apr. 2000
Checked Apr. 2000

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

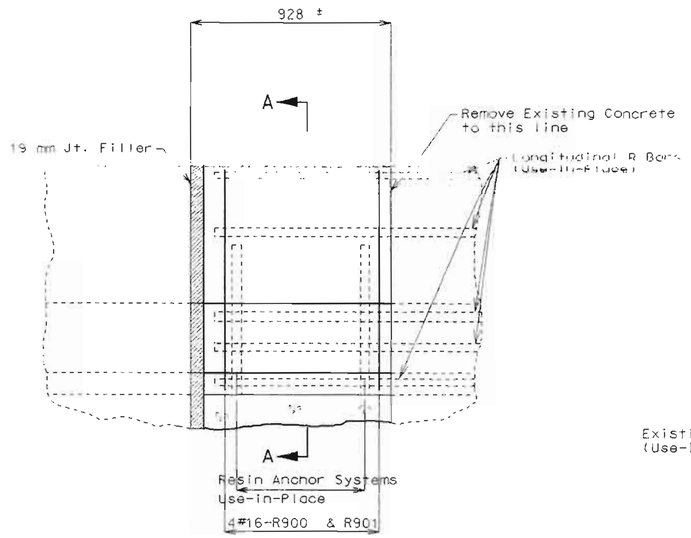
6 Delete this sheet 6/5/2000
5 4/25/2000 Added Sheet
Sheet No. 10B of 19

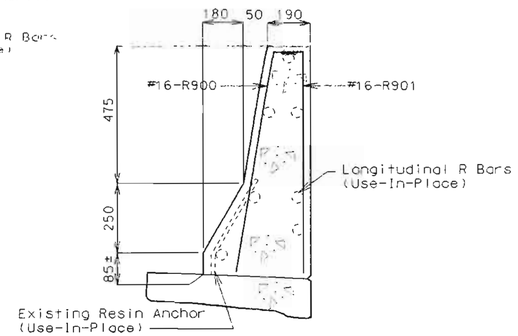
JACKSON COUNTY A16833

REV

T:\bridge\Rough\J4I1250\A16833\a16833_010b.dgn 09:31:58 20 JUN 2000

State	Co.	Sheet No.
MO		





SECTION A-A

DETAIL OF CURB END REPLACEMENT AT END BENTS

Note: For location of detail see sheet No. 10B.

DATE 6-12-2000

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

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

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

Detailed Apr. 2000
Checked Apr. 2000

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

6 Delete this sheet 6/5/2000

5 4/25/2000 Added Sheet

Sheet No. 10C of 19

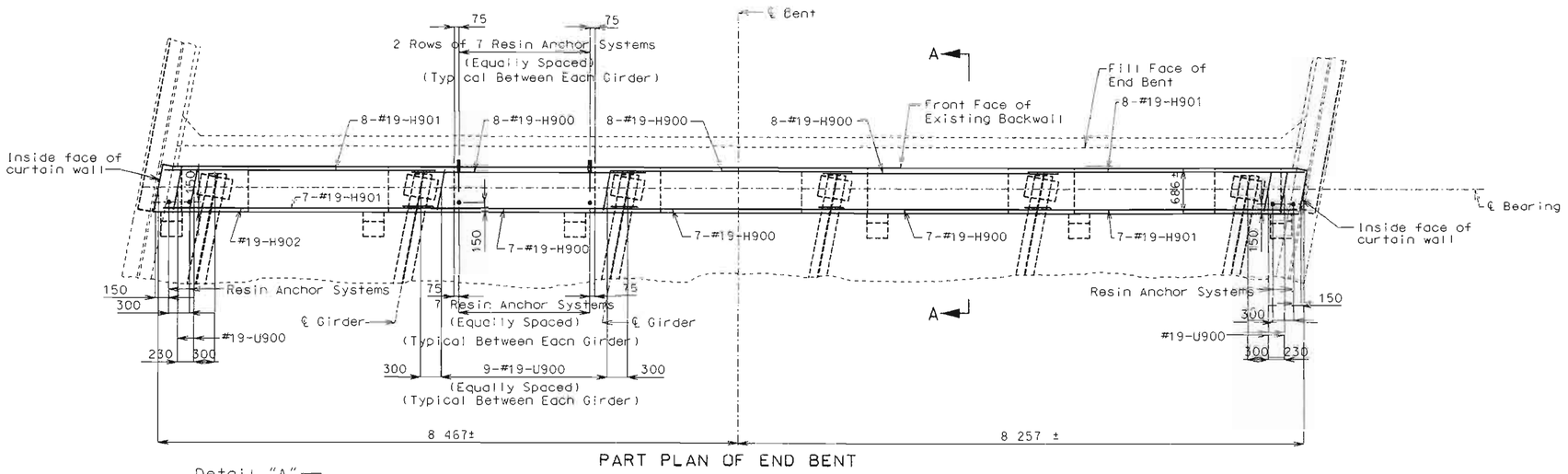
JACKSON COUNTY A16833 REV.

P:\br-proj\laughj\41250\A16833\a16833_0100.dgn 09:32:02 20 JUN 2000

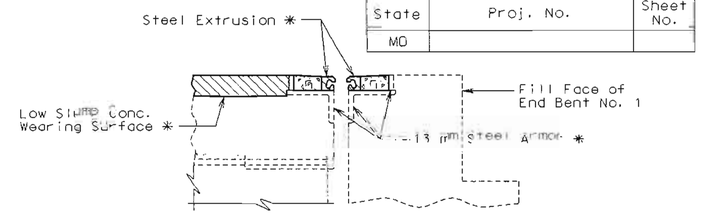
State	Proj. No.	Sheet No.
MO		

Note: U Bars to be placed parallel to girder.
Min. Lap for H Bars 915 mm.
For resin anchor notes see sheet No.7.
Traffic handling per engineers approval.

Design Unit Stresses:
Class B1 Concrete f'c = 28 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa

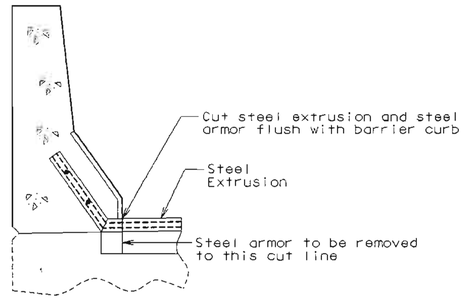


PART PLAN OF END BENT

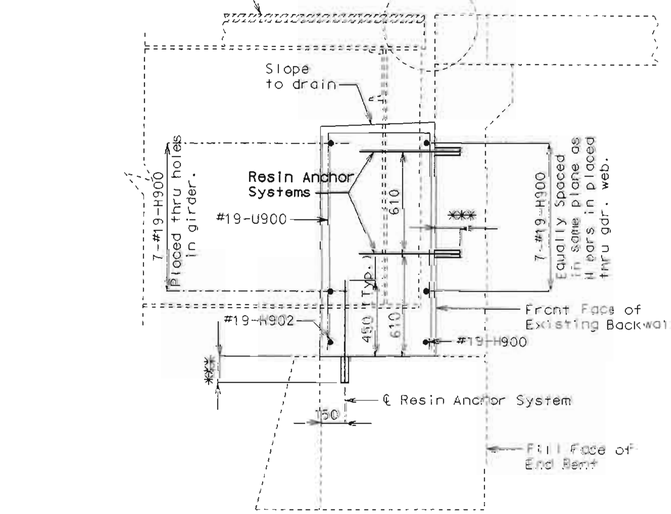


Note: * Remove existing 13 mm steel armor, steel extrusion and low slump concrete wearing surface to sound concrete.

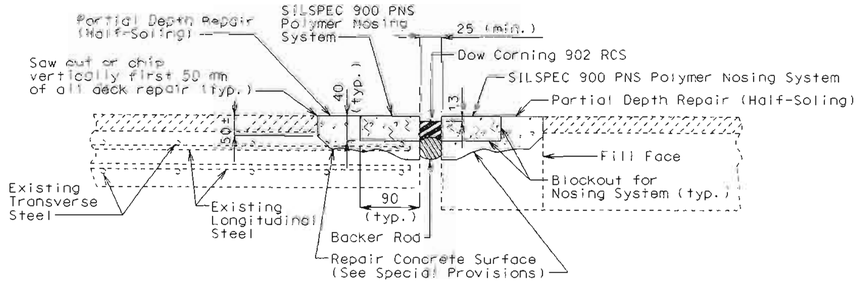
DETAIL "A" SHOWING REMOVAL OF EXISTING EXPANSION DEVICE



DETAIL SHOWING REMOVAL OF EXISTING EXPANSION DEVICE



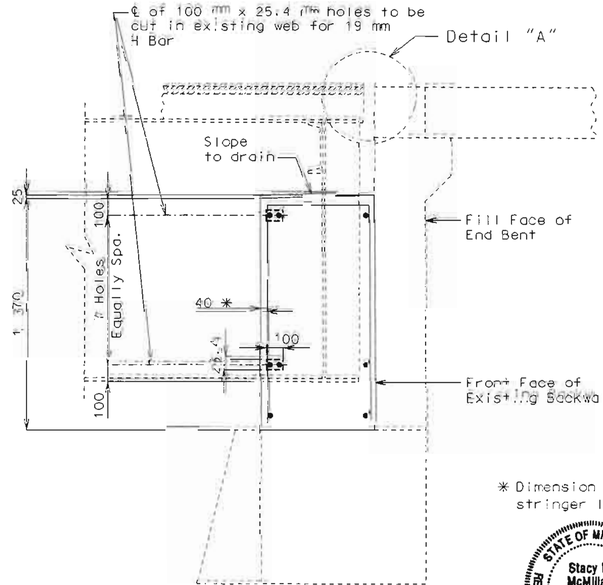
*** Manufactures embedment length



DETAIL "A' SHOWING REPLACEMENT

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class B1 Concrete	Cu. Meter	15.9
Repairing Concrete Deck (Half-Soling)	sq. meter	10.9
Dow Corning/SSI XJS Expansion Joint System	meter	17.0
Reinforcing Steel (Epoxy Coated)	Kilogram	1000

Note: Removal of steel extrusion, steel armor and low slump concrete wearing surface to be paid for in the price bid for Partial Depth Repair.



* Dimension along stringer line.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 6-12-2000

DETAILS OF END BENT NO. 1 SHOWING CONCRETE DIAPHRAGM PLACEMENT & END OF SLAB MODIFICATIONS

Detailed Apr. 2000
Checked Apr. 2000

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

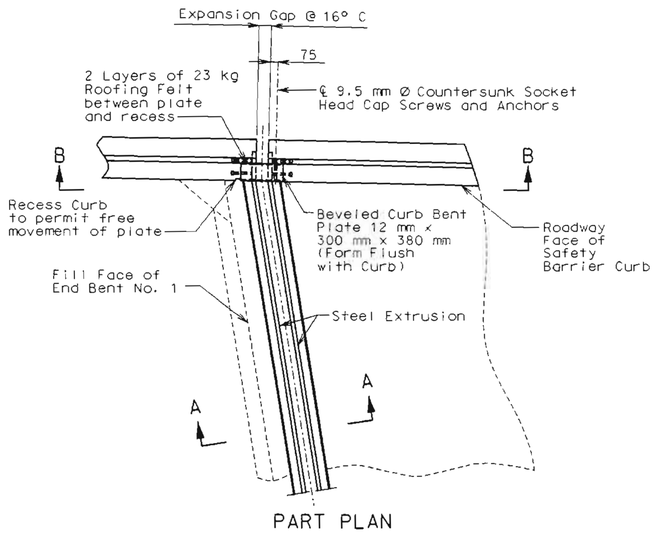
A Add 6/5/00

Sheet No. 100 of 19

JACKSON COUNTY A16833

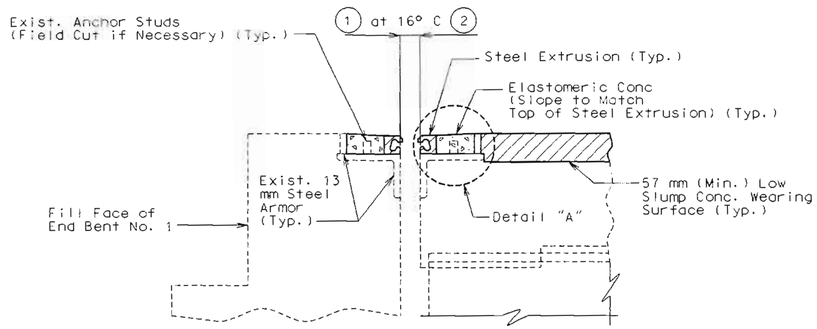
REV

State	Proj. No.	Sheet No.
MO		

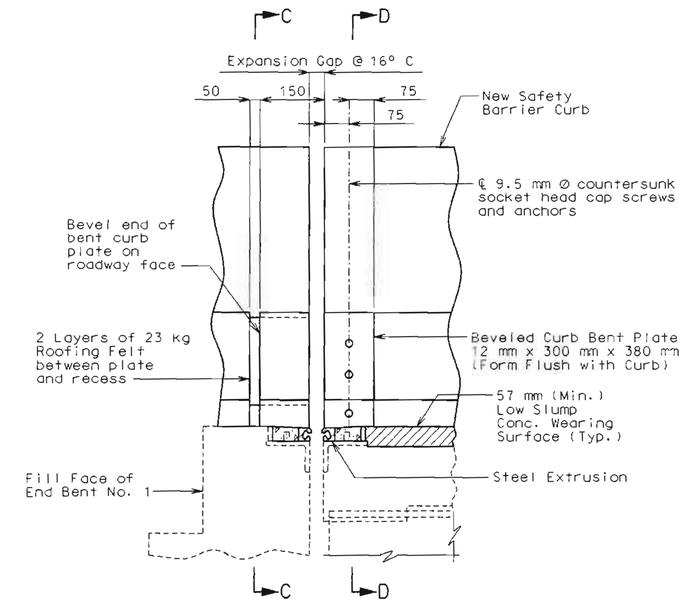


PART PLAN

NOTE: Details of left side shown. Right side is similar.

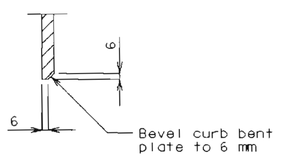


PART SECTION A-A

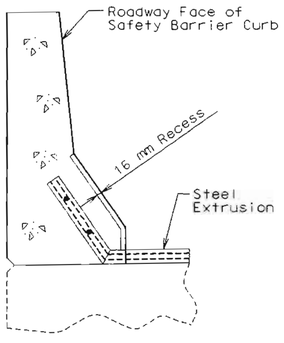


PART SECTION B-B

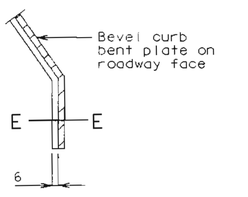
SECTION D-D



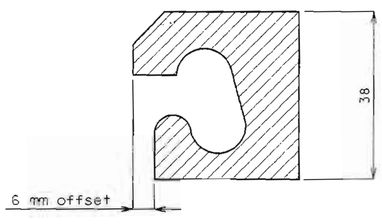
SECTION E-E



SECTION C-C



PART ELEVATION AT END OF BEVELED CURB BENT PLATE



DETAIL OF STEEL EXTRUSION

NOTE:

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

The contractor must verify all dimensions prior to fabrication.

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

All steel shall be ASTM A709M Grade 250, except steel extrusions shall be ASTM A709M Grade 345W or Grade 250.

Neoprene Strip Seal shall meet ASTM D-2628.

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

Payment for steel extrusions, curb plate and neoprene strip seal shall be made under the contract unit price for Strip Seal Expansion Device.

Structural Steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Payment for furnishing, coating or galvanizing and placing Strip Seal Expansion Device shall be included in the contract unit price for Strip Seal Expansion Device.

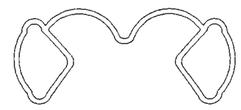
Gap for new strip seal expansion device can not be less than the existing.

Payment of removal of existing expansion device and preparation for installation of new expansion device shall be included in the contract unit price for Modification of Existing Expansion Joint. (See Special Provisions)

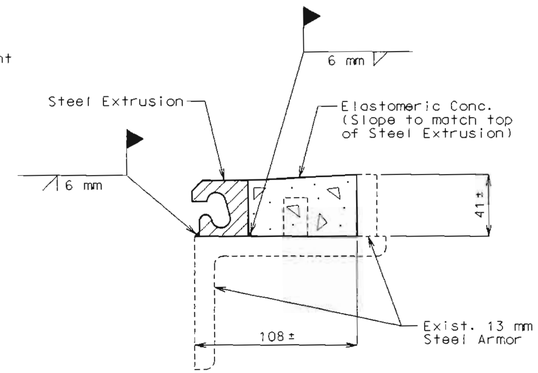
(1) Min. = 34 mm
Max. = 85 mm

Note: Dimension (2) shall be increased 3 mm for each 5° C fall in temperature and decreased 3 mm for each 5° C rise in temperature at installation.

(3) Extrusion shall be welded top and back.



STRIP SEAL GLAND
MOVEMENT RATING 102 mm



DETAIL "A"

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 8-27-98

DETAILS OF STRIP SEAL EXPANSION DEVICE AT END BENT NO. 1

Detailed Mar. 1998
Checked Mar. 1998

1 Revised 8-27-98

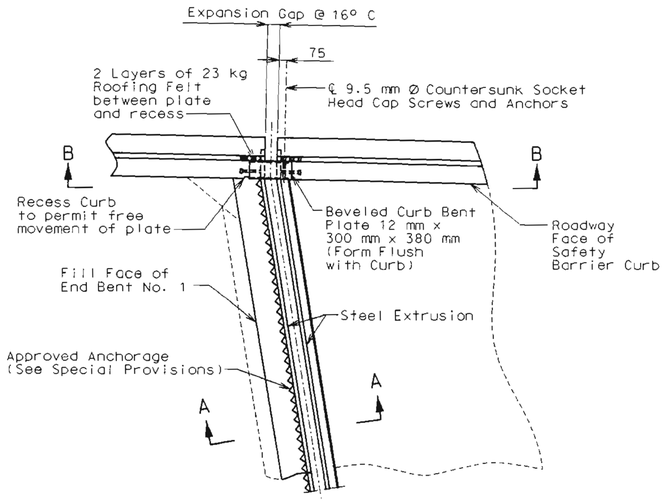
1 Delete

Sheet No. 11 of 19

JACKSON COUNTY

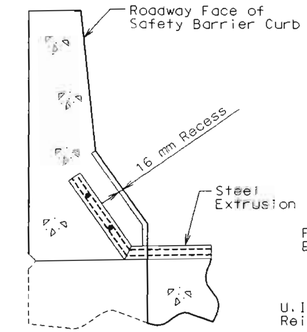
A16833

State	Proj. No.	Sheet No.
MO		

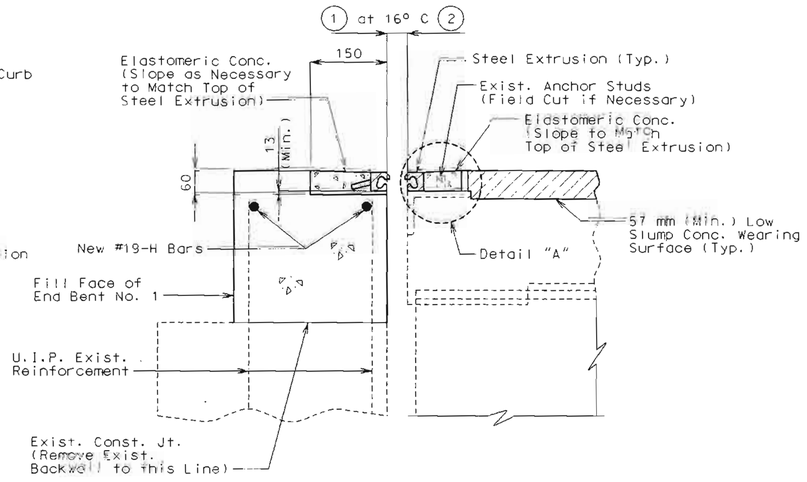


PART PLAN

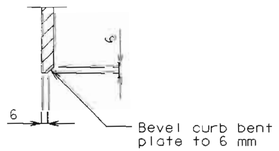
NOTE: Details of left side shown. Right side is similar.



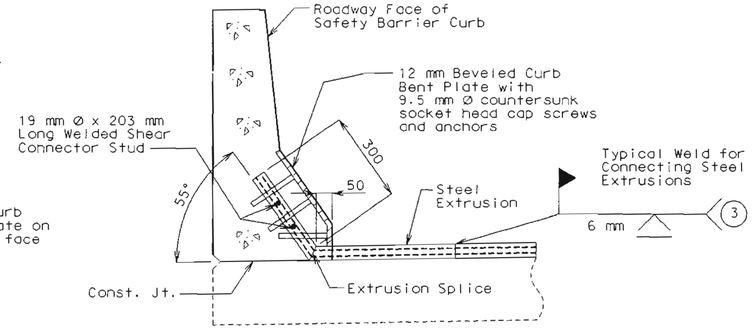
SECTION C-C



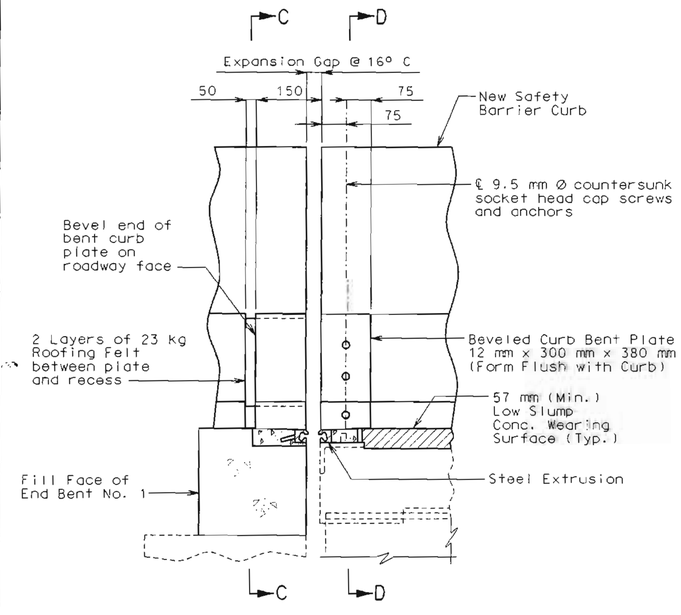
PART SECTION A-A



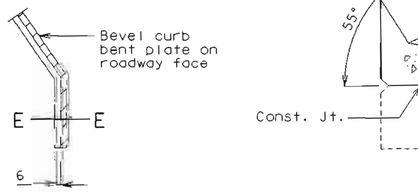
SECTION E-E



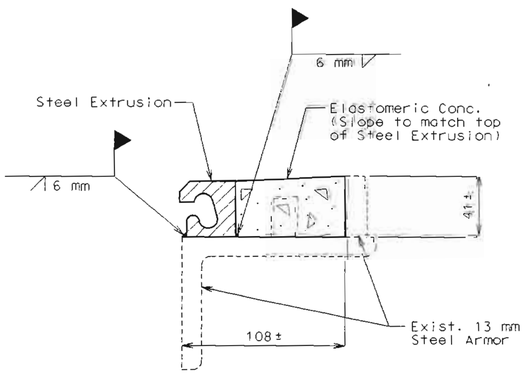
SECTION D-D



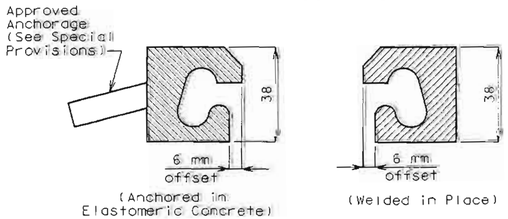
PART SECTION B-B



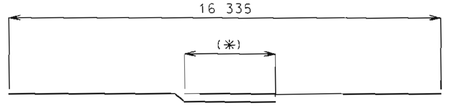
PART ELEVATION AT END OF BEVELED CURB BENT PLATE



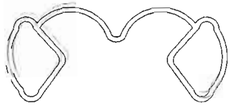
DETAIL "A"



DETAIL OF STEEL EXTRUSIONS



DETAIL OF #19-H BAR (2 REQUIRED)



STRIP SEAL GLAND MOVEMENT RATING 102 mm

NOTE:

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

The contractor must verify all dimensions prior to fabrication.

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

All steel shall be ASTM A709M Grade 250, except steel extrusions shall be ASTM A709M Grade 345W or Grade 250.

Neoprene Strip Seal shall meet ASTM D-2628.

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

Payment for steel extrusions, curb plate and neoprene strip seal shall be made under the contract unit price for Strip Seal Expansion Device.

Structural Steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Payment for furnishing, coating or galvanizing and placing Strip Seal Expansion Device shall be included in the contract unit price for Strip Seal Expansion Device.

Gap for new strip seal expansion device can not be less than the existing.

Payment of removal of existing expansion device and preparation for installation of new expansion device shall be included in the contract unit price for Modification of Existing Expansion Joint. (See Special Provisions)

Payment for removal and replacement of backwall concrete above the upper construction joint and the cleaning of existing reinforcing steel to be used in new concrete shall be covered under the contract unit price for Modification of Existing Expansion Joint.

Replacement backwall concrete above the upper construction joint shall be class B2 f'c = 28 MPa and paid for under the contract unit price for Modification of Existing Expansion Joint.

(1) Min. = 34 mm
Max. = 85 mm

Note: Dimension (2) shall be increased 3 mm for each 5° C fall in temperature and decreased 3 mm for each 5° C rise in temperature at installation.

(3) Extrusion shall be welded top and back.

Note:

New #19-H Bars shall be Epoxy Coated.

Payment for furnishing and installing #19-H Bars shall be included in the contract unit price bid for Modification of Existing Expansion Joint.

(*) Actual bar segments lengths to be determined by contactor to accommodate stage construction. 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 lengths will be determined by the contractor to accommodate manufacturers recommendations for installation and stage construction. The cost of furnishing and installing mechanical bar splices shall be included in the price bid for Modification of Existing Expansion Joint. See Special Provisions for additional requirements of mechanical bar splices. Mechanical bar splices shall be epoxy coated.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 8-27-98

DETAILS OF STRIP SEAL EXPANSION DEVICE AT END BENT NO. 1

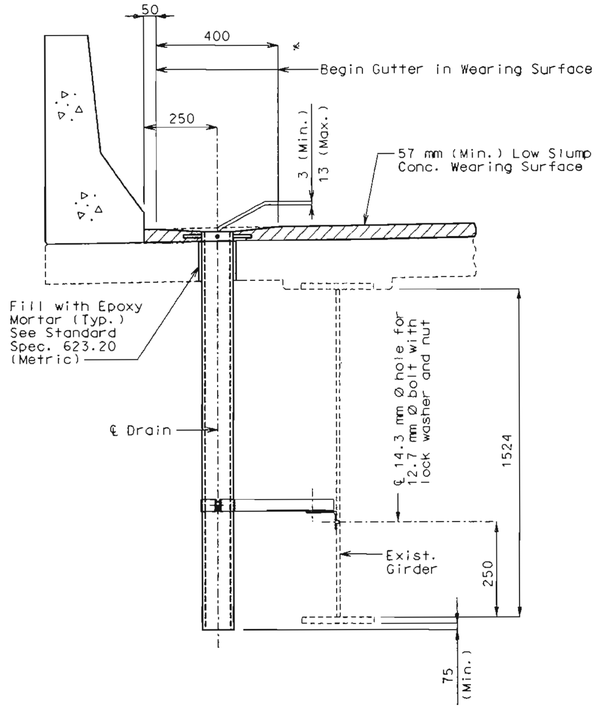
Detailed Aug. 1998
Checked Aug. 1998

1 Revised 8-27-98

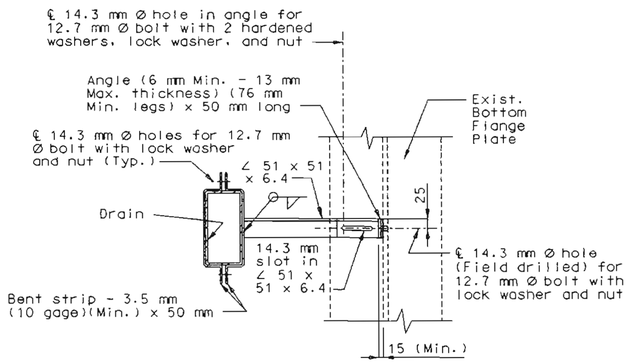
(Sheet No. 11A of 19) 1 Add

JACKSON COUNTY A16833

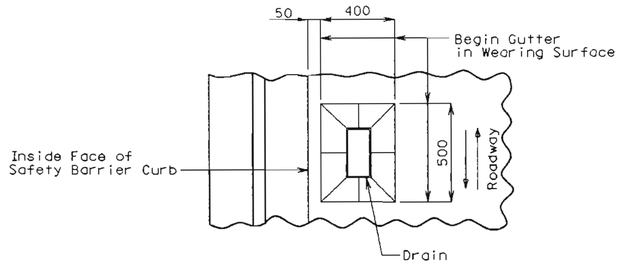
State	Proj. No.	Sheet No.
MO		136



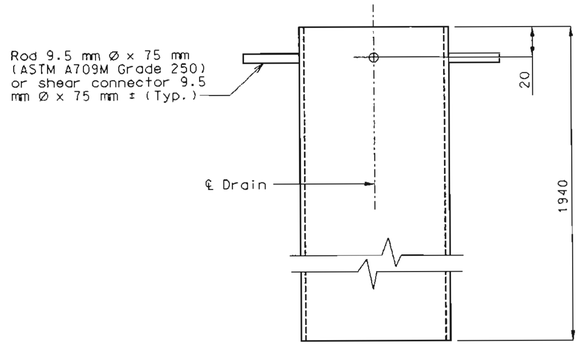
PART SECTION NEAR DRAIN



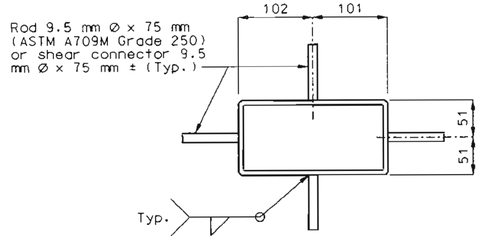
PART SECTION SHOWING BRACKET ASSEMBLY



PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF DRAIN

GENERAL NOTES:

Slab drains may be fabricated of either 6 mm welded sheets of ASTM A709M Grade 250 steel or from 6.4 mm structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 203 mm x 102 mm.

Locate drains in the slab by dimensions shown in Part Section Near Drain.

The drains and bracket assembly shall be galvanized in accordance with ASTM A123.

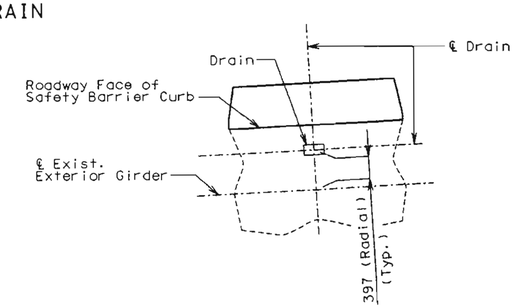
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

Shop drawings will not be required for slab drains and the bracket assembly.

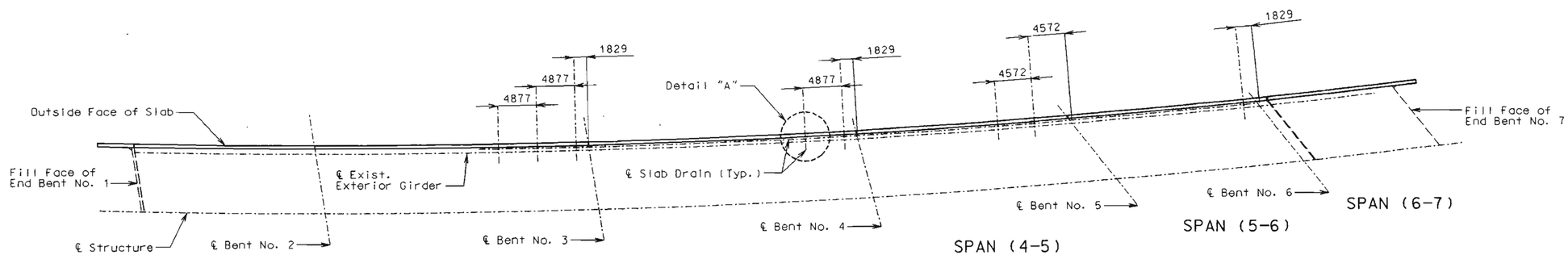
Shift slab drain locations the minimum extent necessary to allow for field drilling hole in web of girder for bracket assembly attachments.

Slab drain spacings are based on layout of original plans. The contractor shall field check the location and clearance of drains so they do not interfere with any existing objects or structures below the bridge.

Payment for slab removal for drain installation and backfilling with epoxy mortar is included in the unit price for Slab Drains, per each.



DETAIL "A"



HALF PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

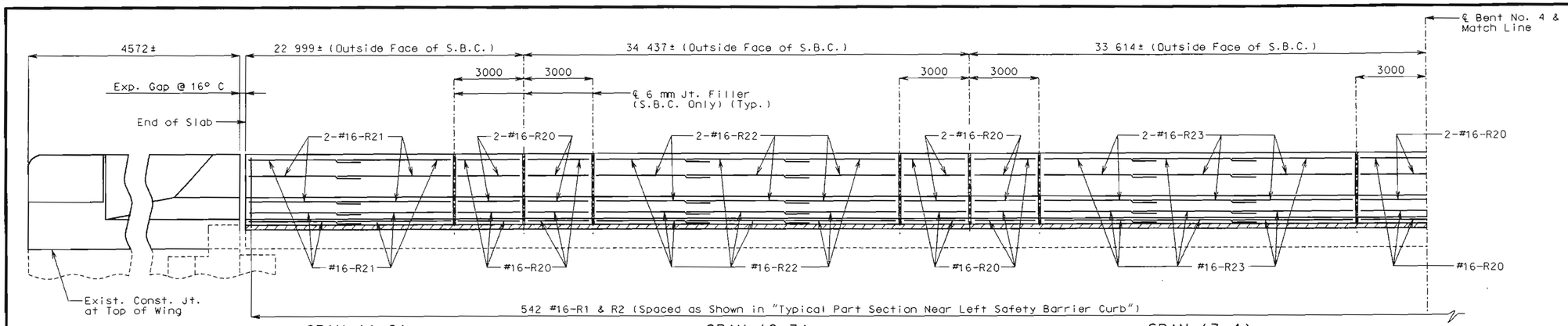
NOTE: Dimensions showing slab drain locations are arc dimensions.

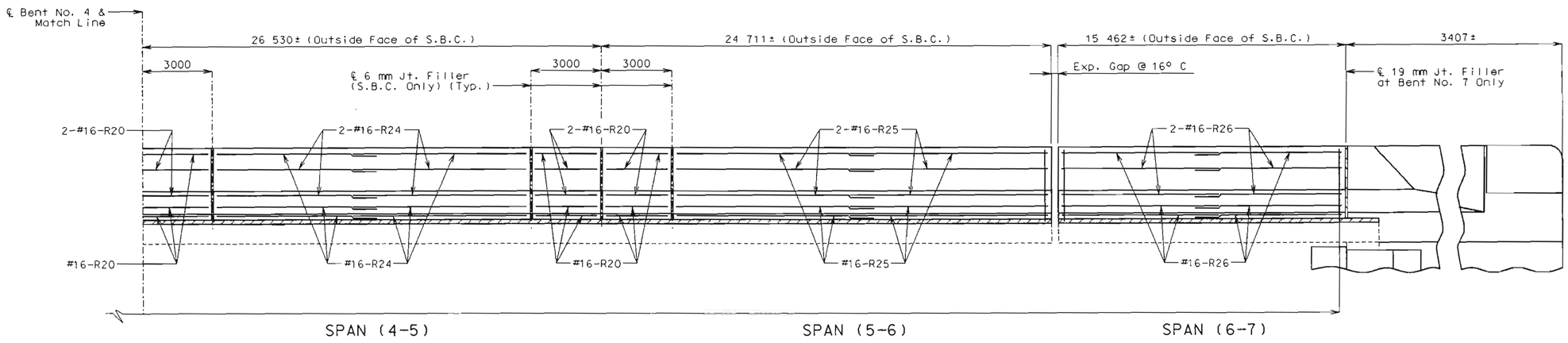
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 4-6-98

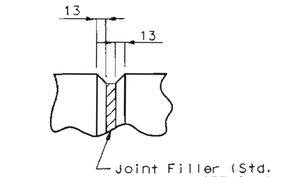
DETAILS OF SLAB DRAINS (LEFT SIDE ONLY)

Detailed Mar. 1998
Checked Mar. 1998

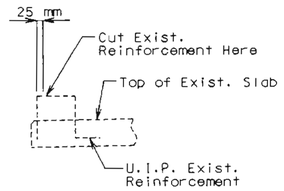
State	Proj. No.	Sheet No.
MO		137



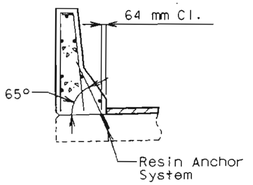




FILLED JOINT DETAIL



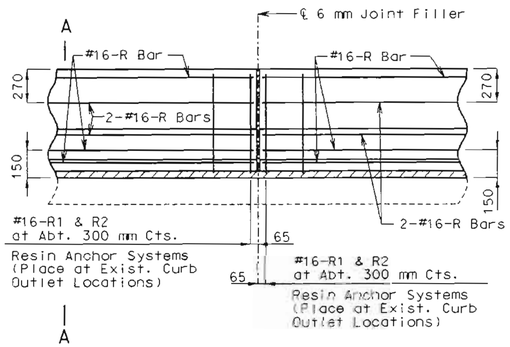
DETAIL "A"



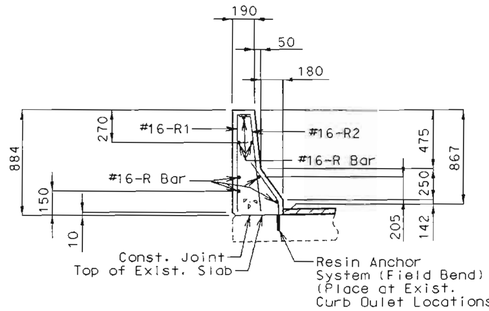
PART SECTION A-A
(OPTIONAL RESIN ANCHORING SYSTEM)

SECTION THRU SLAB SHOWING SAFETY BARRIER CURB (LEFT SIDE)

NOTE: Dimensions shown are arc dimensions along outside face of Safety Barrier Curb.



TYPICAL PART SECTION NEAR LEFT SAFETY BARRIER CURB

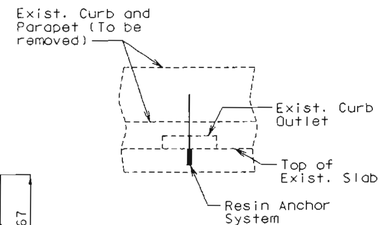


PART SECTION A-A

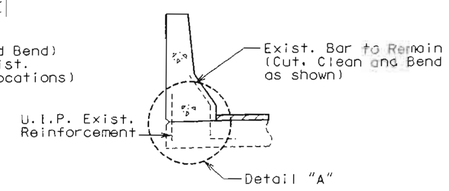
Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 247 743 sq. mm.



DETAIL SHOWING LOCATION OF RESIN ANCHOR SYSTEMS



PART SECTION SHOWING EXISTING REINFORCEMENT

NOTE:

The contractor shall use one of the resin anchor systems listed in the job special provisions. These resin anchor systems shall be installed according to the manufacturer's special provisions, 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 Safety Barrier Curb per meter.

The 15.9 mm diameter resin anchor systems shall have a minimum ultimate pullout strength of 68.9 kN in concrete with f'c = 28 MPa, see special provisions.

An epoxy coated #16 Grade 420 reinforcing bar 690 mm long shall be substituted for the 15.9 Ø threaded rod stud.

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete, reinforcement and resin anchor systems, complete-in-place.

Concrete in the safety barrier curb shall be Class B1 with f'c = 28 MPa.

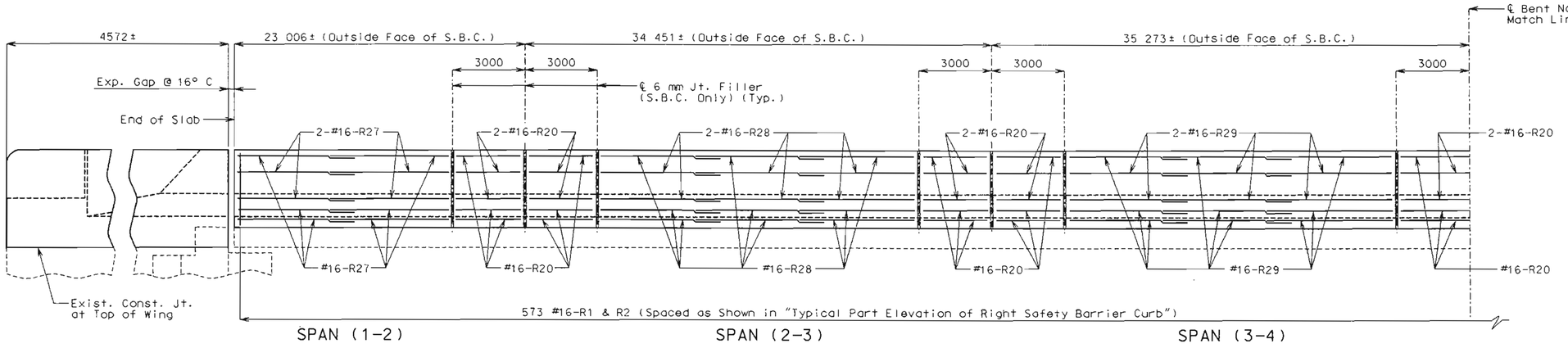
Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

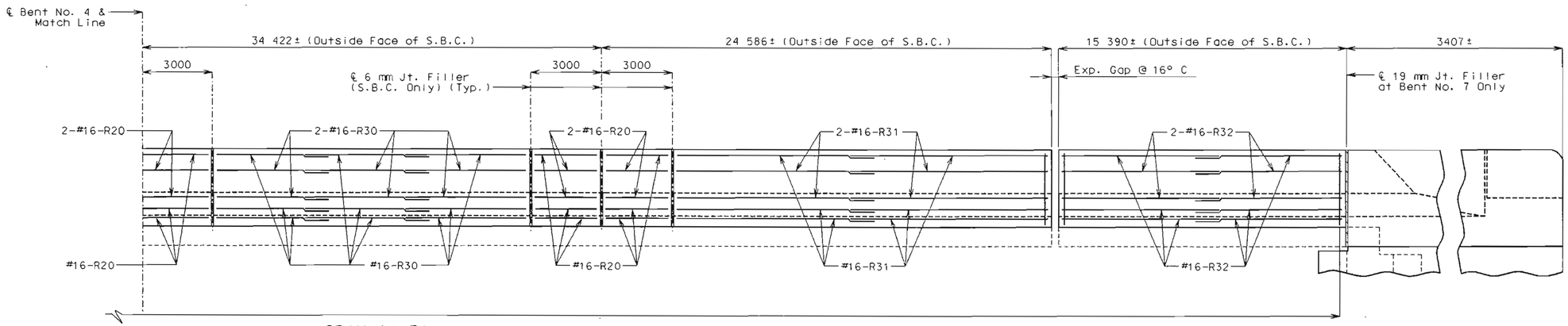
For details of expansion device movement gauge, see sheet No. 3.

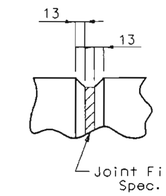
Detailed Mar. 1998
Checked Mar. 1998

JACKSON COUNTY A16833

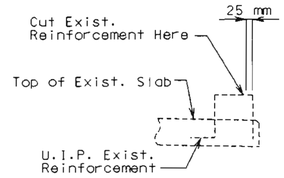
State	Proj. No.	Sheet No.
MO		138



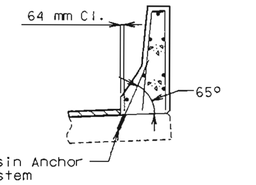




FILLED JOINT DETAIL



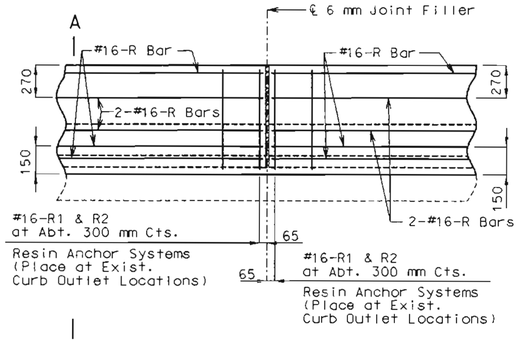
DETAIL "A"



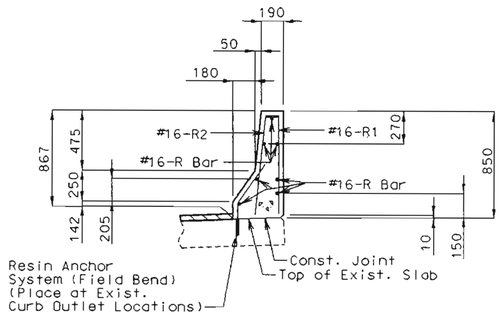
PART SECTION A-A
(OPTIONAL RESIN ANCHORING SYSTEM)

ELEVATION OF SAFETY BARRIER CURB (RIGHT SIDE)

NOTE: Dimensions shown are arc dimensions along outside face of Safety Barrier Curb.



TYPICAL PART ELEVATION OF RIGHT SAFETY BARRIER CURB

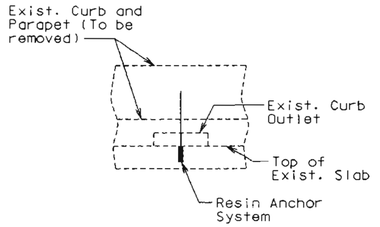


PART SECTION A-A

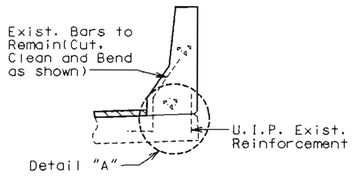
Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 240 687 sq. mm.



DETAIL SHOWING LOCATION OF RESIN ANCHOR SYSTEMS



PART SECTION SHOWING EXISTING REINFORCEMENT

NOTE:

The contractor shall use one of the resin anchor systems listed in the job special provisions. These resin anchor systems shall be installed according to the manufacturer's special provisions, 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 Safety Barrier Curb per meter.

The 15.9 mm diameter resin anchor systems shall have a minimum ultimate pullout strength of 68.9 kN in concrete with f'c = 28 MPa, see special provisions.

An epoxy coated #16 Grade 420 reinforcing bar 690 mm long shall be substituted for the 15.9 Ø threaded rod stud.

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete, reinforcement and resin anchor systems, complete-in-place.

Concrete in the safety barrier curb shall be Class B1 with f'c = 28 MPa.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For details of expansion device movement gauge, see sheet No. 3.

For details of conduit system on structure, see sheet No. 18.

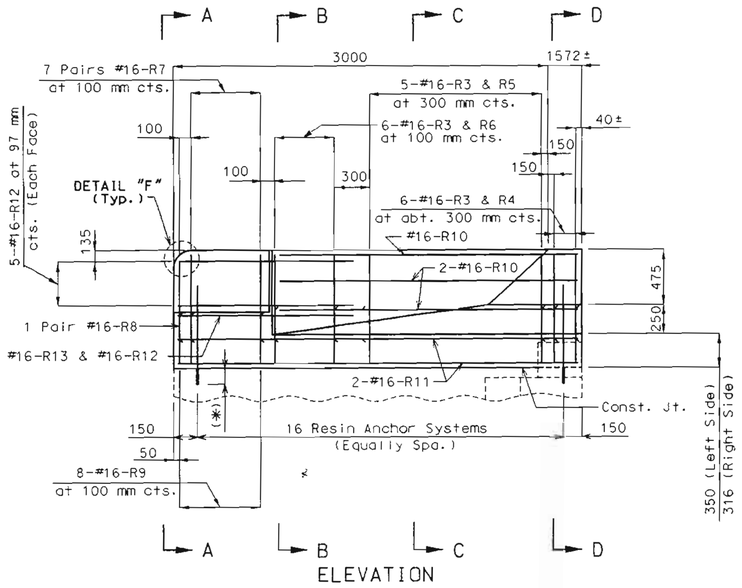
STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

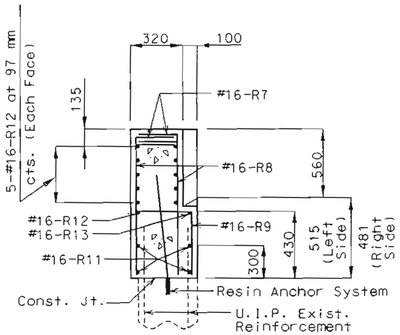
Detailed Mar. 1998
Checked Mar. 1998

bac5m_end_ni Revised: Dec. 1997

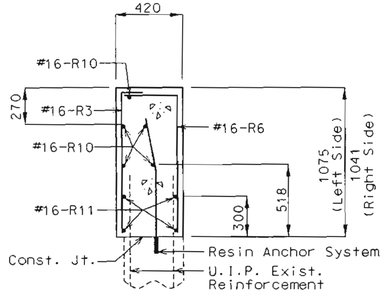
STATE	PROJ. NO.	SHEET NO.
MO.		139



ELEVATION

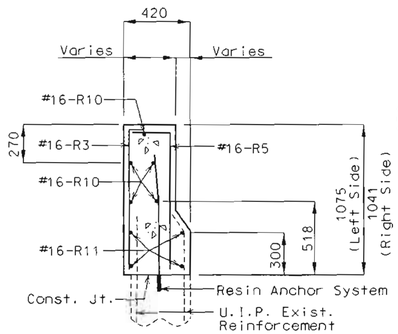


PART SECTION A-A

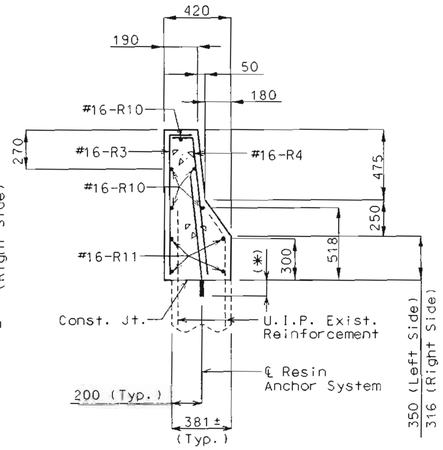


PART SECTION B-B

Note: #16-R12 & R13 bars not shown for clarity.



PART SECTION C-C



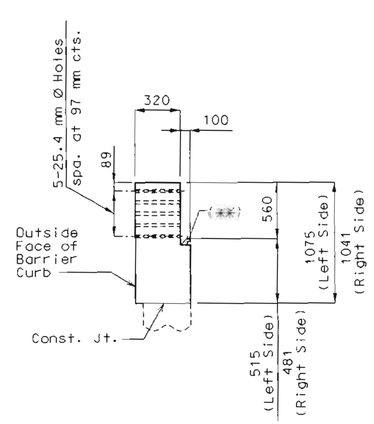
PART SECTION D-D

NOTE:

(*) Manufacturers Embedment Length (Typ.).

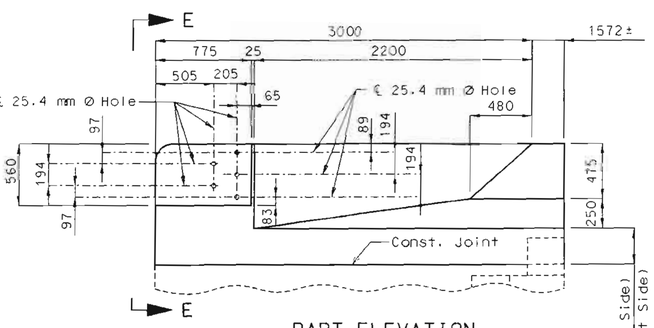
For details of Conduit System on Structure, see sheet No. 18.

For General Notes on Safety Barrier Curb and Resin Anchor Systems, see sheet No. 13.



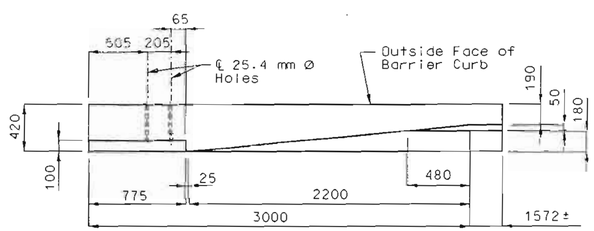
PART ELEVATION E-E

(**) Slope 6 mm toward roadway

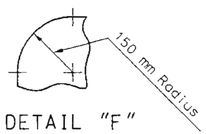


PART ELEVATION

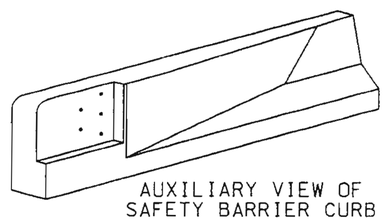
Note: Slip-form option is not allowed for barrier curb at end bents.



PART PLAN
DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "F"



AUXILIARY VIEW OF SAFETY BARRIER CURB

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

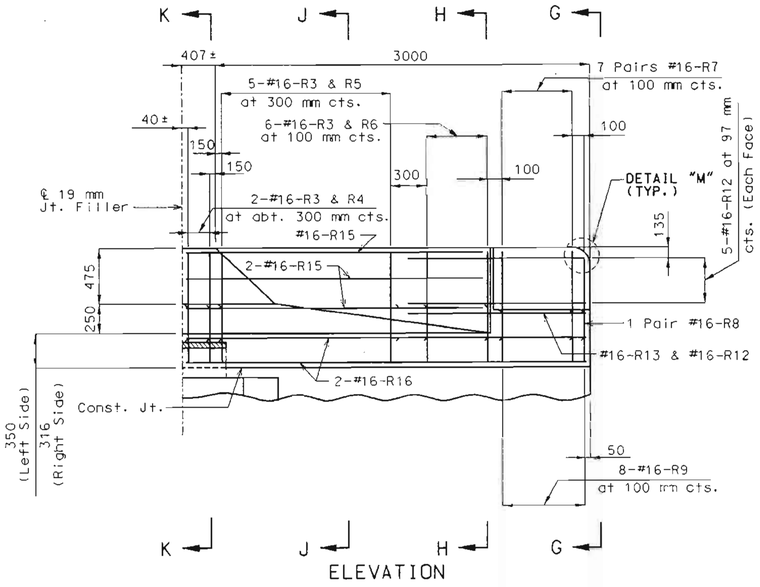
DETAILS OF SAFETY BARRIER CURB AT END BENT NO. 1

(Left barrier curb shown. Right barrier curb similar, Except as shown)

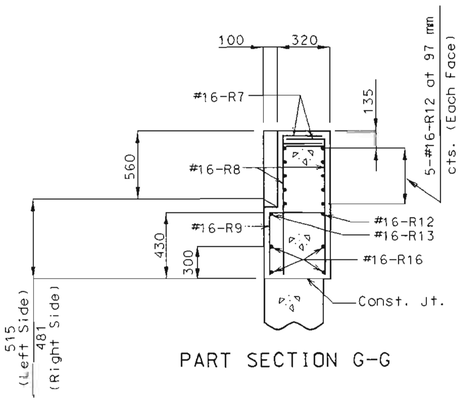
Detailed Mar. 1998
Checked Mar. 1998

bac5m_end_ni Revised: Dec. 1997

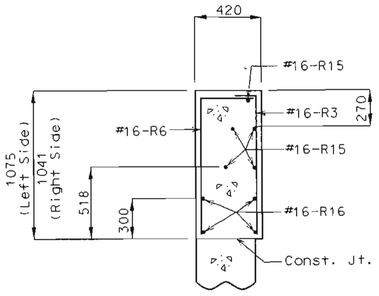
STATE	PROJ. NO.	SHEET NO.
MO.		140



ELEVATION



PART SECTION G-G



PART SECTION H-H

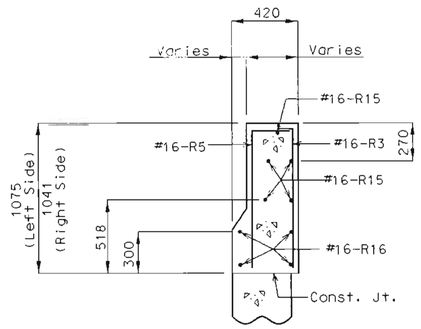
Note: #16-R12 & R13 bars not shown for clarity.

NOTE:

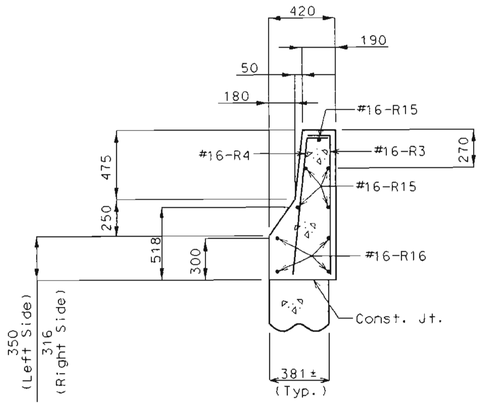
For details of Conduit System on Structure, see sheet No. 18.

For General Notes on Safety Barrier Curb, see sheet No. 13.

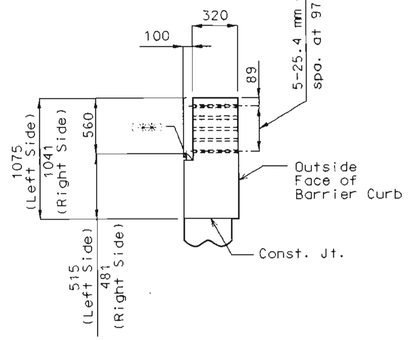
For details of wing removal and replacement at end bent No. 7, see sheet No. 7, 8, 9 & 10.



PART SECTION J-J

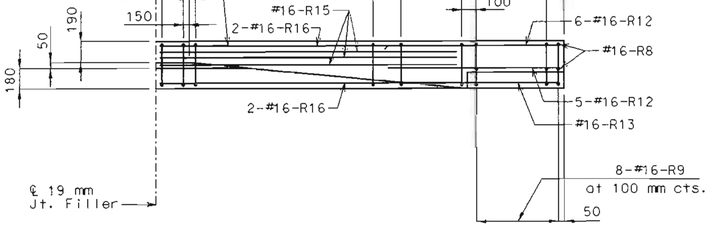


PART SECTION K-K

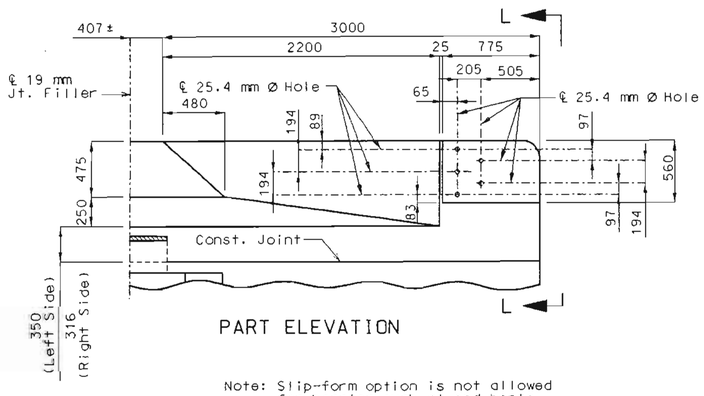


PART ELEVATION L-L

(**) Slope 6 mm toward roadway

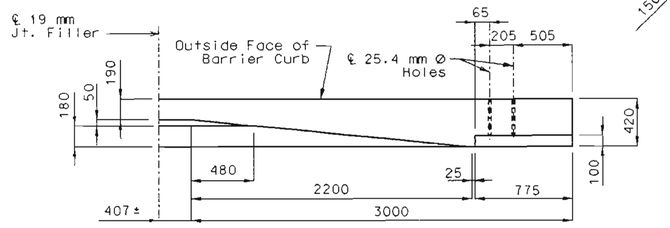


PLAN

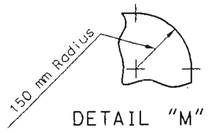


PART ELEVATION

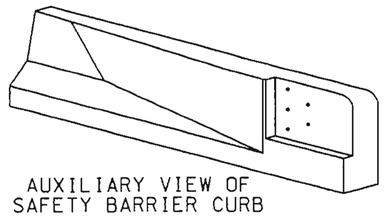
Note: Slip-form option is not allowed for barrier curb at end bents.



PART PLAN
DETAILS OF GUARD RAIL ATTACHMENT



DETAIL "M"



AUXILIARY VIEW OF SAFETY BARRIER CURB

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

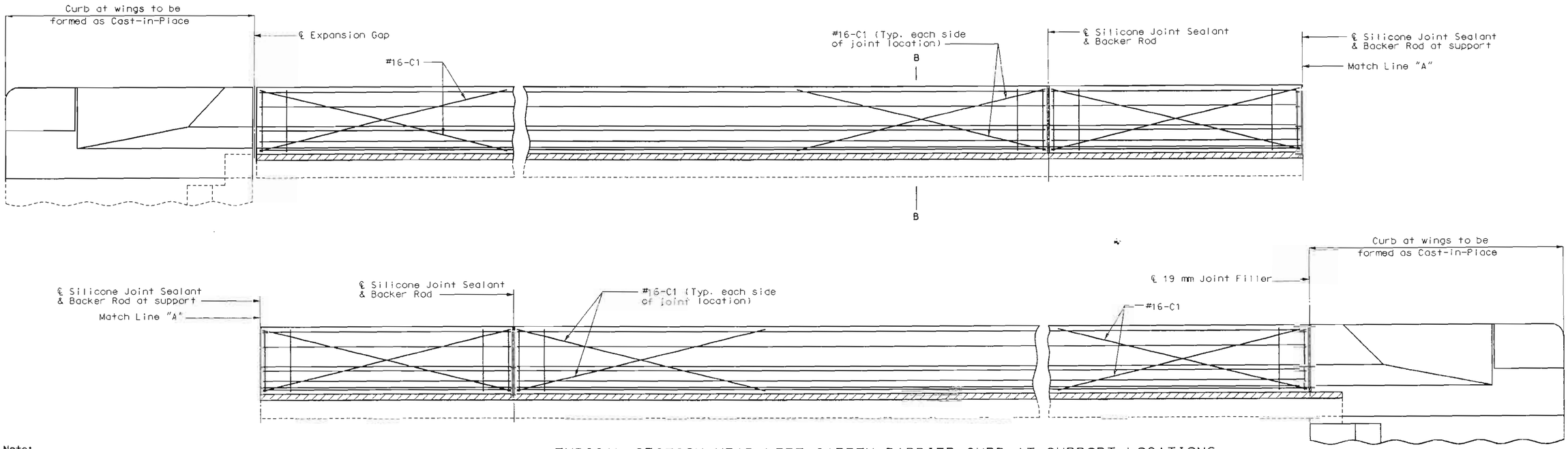
DATE 4-6-98

DETAILS OF SAFETY BARRIER CURB AT END BENT NO. 7

(Left barrier curb shown. Right barrier curb similar. Except as shown)

Detailed Mar. 1998
Checked Mar. 1998

STATE	PROJ. NO.	SHEET NO.
MO.		141



TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete, reinforcement and resin anchor systems, complete-in-place.

Concrete in the safety barrier curb shall be Class B with f'c = 28 MPa.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

Note:

Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler, except at end bents.

Plastic waterstop shall not be used with slip-form option.

Barrier curbs at end bents shall be cast-in-place, slip form option is not allowed.

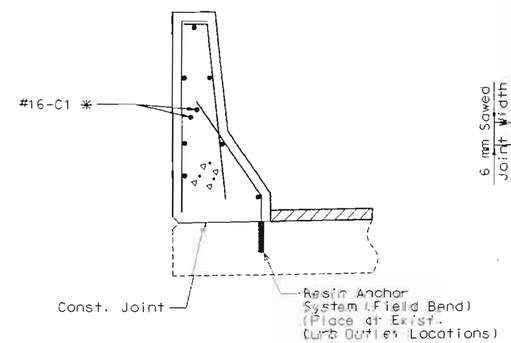
C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

Note:

For details showing Exist. reinforcement and resin anchor systems, see sheet No. 13 & 14.

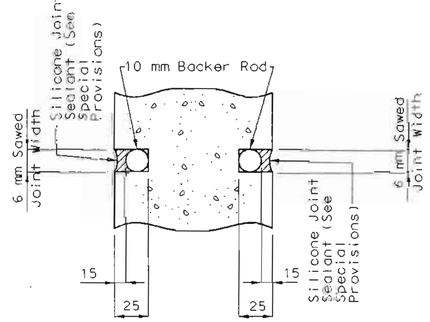
For details of expansion device movement gauge, see sheet No. 3.

For details of conduit system on structure, see sheet No. 18.



PART SECTION B-B

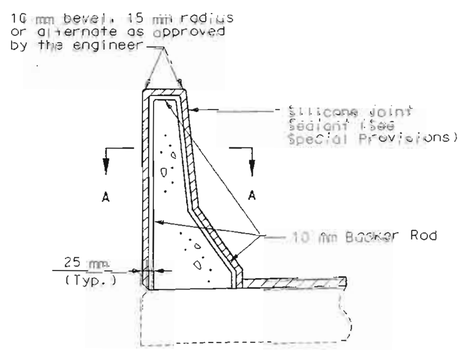
Note: * Each side of joint location.



SECTION A-A

Note:

Cost of silicone joint sealant and backer rod complete in place to be included in the contract unit price for safety barrier curb.



SECTION THRU JOINT

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

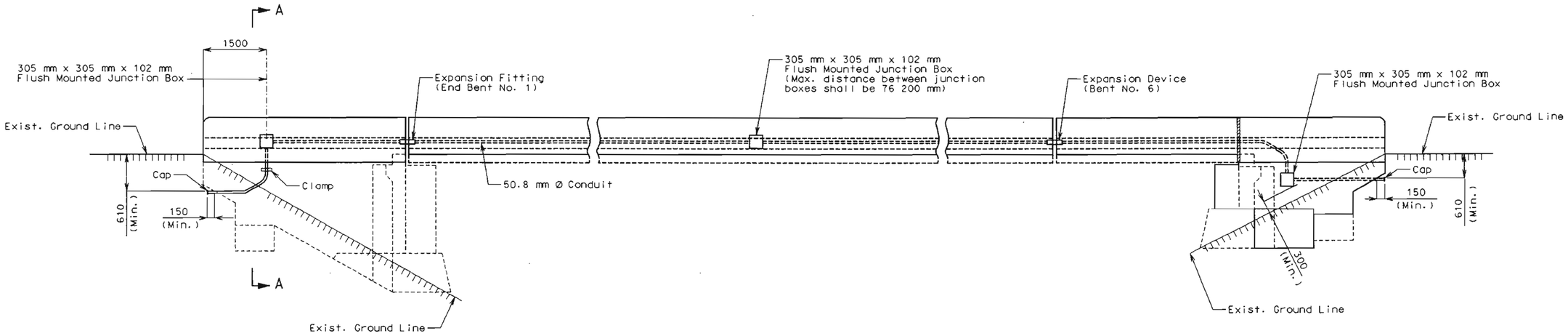
DATE 4-6-98

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

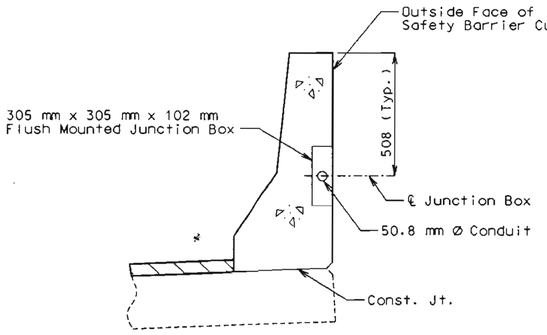
(Left barrier curb shown; right barrier curb similar.)

Detailed Mar. 1998
Checked Mar. 1998

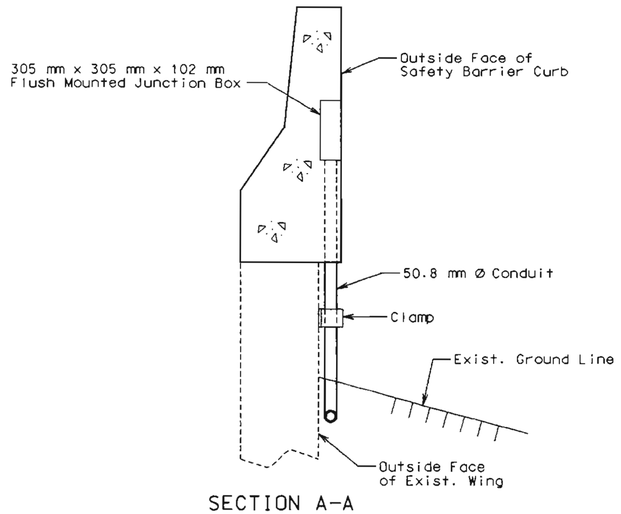
State	Proj. No.	Sheet No.
MO		142



ELEVATION OF RIGHT SIDE SHOWING LOCATION OF 50.8 mm Ø CONDUIT



SECTION OF JUNCTION
BOX IN BARRIER CURB



SECTION A-A

NOTE:

Conduit shall be secured to concrete with clamps at about 1500 mm centers. Concrete anchors for clamps shall be in accordance with Federal Specifications FF-S-325, Group II, Type 4, Class 1 and shall be galvanized in accordance with ASTM 153, B695-91 Class 50 or stainless steel. Minimum embedment in concrete shall be 45 mm. The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications.

NOTE:

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 75 mm minimum cover in concrete. Each section of conduit shall bear the Underwriters' Laboratories, Inc., (UL) label.

Shift reinforcing steel in field where necessary to clear conduit and junction boxes.

Expansion fittings shall provide a minimum movement in either direction of 75 mm at open joints and 13 mm at filled joints. Expansion fittings shall be equal to Carlon Electrical Construction Products or Cantex, Inc.

All end bent and safety barrier curb junction boxes shall be PVC molded flush mounted and equal to Carlon Electrical Construction Products or Cantex, Inc. The conduit terminations shall be permanent or separable.

The terminations and covers shall be of watertight construction and shall meet requirements for NEMA 4 enclosure.

Weepholes shall be provided at appropriate locations to drain any moisture in the conduit system.

Payment for furnishing and installing Conduit System complete in place, will be paid for at the contract unit price for Conduit System on Structure, lump sum.

For details of safety barrier curb at end bents, see sheet No. 15 & 16.

For details of wing removal and replacement at End Bent No. 7, see sheet No. 9 & 10.

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER

DATE 4-6-98

DETAILS OF CONDUIT SYSTEM (RIGHT SIDE ONLY)

Detailed Mar. 1998
Checked Mar. 1998

FOR INFORMATION ONLY

A16834, Sht. 69

barbill_m_s Feb. 1997

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	(E) Epoxy	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
			WING REHAB																
			LEFT SIDE																
4	19	F70	WING		23	S				415	750	360	335	135	245	335	1525	1495	13
4	19	F71	WING		23	S				415	475	360	335	135	245	335	1250	1220	11
4	19	H70	WING	E	20					3325							3325	3325	30
2	19	H71	WING		20					3315							3315	3315	15
2	19	H72	WING		20					2915							2915	2915	13
4	19	H73	WING		20					2565							2565	2565	23
8	19	H74	WING		20					1290							1290	1290	23
6	13	H75	WING		20					1120							1120	1120	7
2	19	T70	WING		23	S				1830	540				1590	910	2370	2355	11
2	13	U70	WING		19	S				950	1310						2260	2235	4
2	19	V70	WING		20					1360							1360	1360	6
10	19	V71	WING		20					2280							2280	2280	51
6	19	V72	WING		20					1490							1490	1490	20
2	19	V73	WING		20					865							865	865	4
2	19	V74	WING		20					690							690	690	3
2	13	V75	WING		20					990							990	990	2
			RIGHT SIDE																
4	19	F80	WING		23	S				420	1420	360	210	295	385	165	2200	2170	19
4	19	F81	WING		23	S				420	980	360	210	295	385	165	1760	1730	15
2	19	H80	WING	E	20					3325							3325	3325	15
2	19	H81	WING		20					3285							3285	3285	15
2	19	H82	WING		20					2885							2885	2885	13
4	19	H83	WING		20					2565							2565	2565	23
8	19	H84	WING		20					1290							1290	1290	23
6	13	H85	WING		20					870							870	870	5
2	19	T80	WING		23	S				1830	520				1585	910	2350	2330	10
2	13	U80	WING		19	S				920	1020						1940	1915	4
2	19	V80	WING		20					1345							1345	1345	6
10	19	V81	WING		20					2260							2260	2260	51
6	19	V82	WING		20					1470							1470	1470	20
2	19	V83	WING		20					850							850	850	4
2	19	V84	WING		20					675							675	675	3
2	13	V85	WING		20					960							960	960	2
			BAR. CURB																
1115	16	R1	BAR. CURB	E	19	S				770	110						880	845	1462
1115	16	R2	BAR. CURB	E	15	S				775	110				770	80	885	855	1480
60	16	R3	BAR. CURB	E	19	S				960	110						1070	1035	96
16	16	R4	BAR. CURB	E	15	S				965	110				960	100	1075	1045	26
20	16	R5	BAR. CURB	E	19	S	V		4	960	250						1210	1175	
			INCREMENT = 30 MM							960	125						1085	1050	35

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	(E) Epoxy	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
24	16	R6	BAR. CURB	E	19	S		V	4	960	335						1295	1260	
			INCREMENT = 10 MM							960	280						1240	1205	46
56	16	R7	BAR. CURB	E	19	S				960	240						1200	1165	101
8	16	R8	BAR. CURB	E	19	S				895	240						1135	1100	14
32	16	R9	BAR. CURB	E	10	S					400	340					1140	1075	53
10	16	R10	BAR. CURB	E	20					3690							3690	3690	57
8	16	R11	BAR. CURB	E	20					4490							4490	4490	56
44	16	R12	BAR. CURB	E	20					1525							1525	1525	104
4	16	R13	BAR. CURB	E	20					760							760	760	5
10	16	R15	BAR. CURB	E	20					2525							2525	2525	39
10	16	R16	BAR. CURB	E	20					3325							3325	3325	52
112	16	R20	BAR. CURB	E	20					2920							2920	2920	508
14	16	R21	BAR. CURB	E	20					10430							10430	10430	227
21	16	R22	BAR. CURB	E	20					10070							10070	10070	328
21	16	R23	BAR. CURB	E	20					9800							9800	9800	319
14	16	R24	BAR. CURB	E	20					10690							10690	10690	232
14	16	R25	BAR. CURB	E	20					11280							11280	11280	245
14	16	R26	BAR. CURB	E	20					8160							8160	8160	177
14	16	R27	BAR. CURB	E	20					10430							10430	10430	227
21	16	R28	BAR. CURB	E	20					10080							10080	10080	329
21	16	R29	BAR. CURB	E	20					10350							10350	10350	337
21	16	R30	BAR. CURB	E	20					10070							10070	10070	328
14	16	R31	BAR. CURB	E	20					11220							11220	11220	244
14	16	R32	BAR. CURB	E	20					8120							8120	8120	176
			SLIP FORM																
80	16	C1	SLIP FORM	E	20					3000							3000	3000	372

State	Proj. No.	Sheet No.
MO		143

Shape 6 Shape 7 Shape 8

Shape 9 Shape 10 Shape 11

Shape 12 Shape 13 Shape 14

Shape 15 Shape 16 Shape 17 Shape 18 Shape 20

Shape 19 Shape 21

Shape 23 Shape 24 Shape 22

Shape 25 Shape 26 Shape 27

Shape 28 Shape 29 Shape 31

Shape 30 Shape 32

Shape 36

Shape 35 Shape 34 Shape 33

(Shape 35 shall be a smooth bar or wire.)

Spot weld AASHTO M32 size W5 wire (typ.)

6d for #10, #13, & #16
12d for #19

90° Stirrup 135° Stirrup

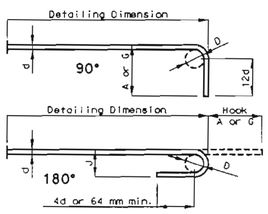
Detailed Apr. 1998
Checked Apr. 1998

STIRRUP HOOK DIMENSIONS (mm)

Grades 300 & 420 MPa

Bar Size	D	90° Hook Hook A or G	135° Hook Hook A or G	135° Hook Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

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



END HOOK DIMENSIONS (mm)

Bar Size	D	All Grades 180° Hooks A or G	180° Hooks J	90° Hook A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Two additional #16-R16 & #19-H70 are included in the bar bill for testing.

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = bar dimensions vary in equal increments between 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 fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
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 mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 4-6-98

BENDING DIAGRAMS

JACKSON COUNTY

A16833

Sheet No. 19 of 19

BILL OF REINFORCING STEEL

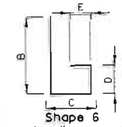
No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
			END BENT 7																
15	19	H700	DIAPHRAGM		20					4410							4410	4410	148
5	19	H701	DIAPHRAGM		20					5030							5030	5030	56
5	19	H702	DIAPHRAGM		20					4750							4750	4750	53
2	19	H703	DIAPHRAGM		20					10080							10080	10080	45
122	19	U700	DIAPHRAGM		19	S				540	685						1225	1175	320

BILL OF REINFORCING STEEL

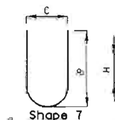
No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg

State	Proj. No.	Sheet No.
MO		

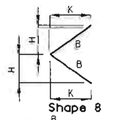
Shape 6



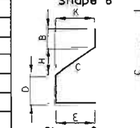
Shape 7



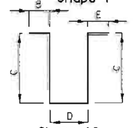
Shape 8



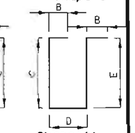
Shape 9



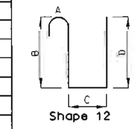
Shape 10



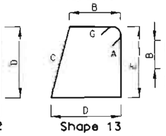
Shape 11



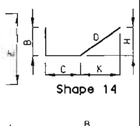
Shape 12



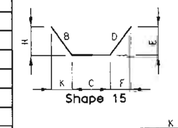
Shape 13



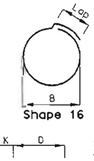
Shape 14



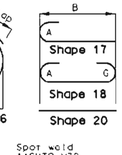
Shape 15



Shape 16



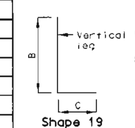
Shape 17



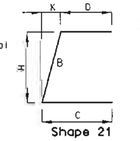
Shape 18

Shape 20

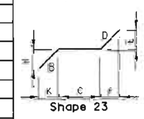
Shape 19



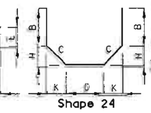
Shape 21



Shape 23

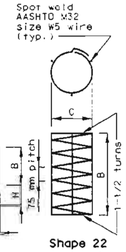


Shape 24

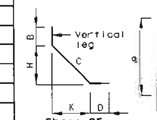


Spot weld AASHTO M32 Size W5 wire (typ.)

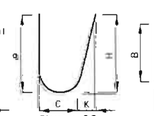
Shape 22



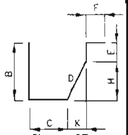
Shape 25



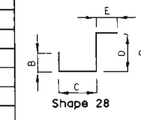
Shape 26



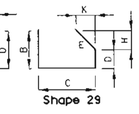
Shape 27



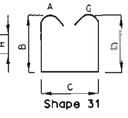
Shape 28



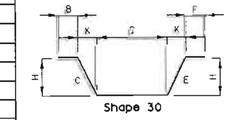
Shape 29



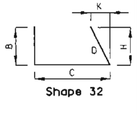
Shape 31



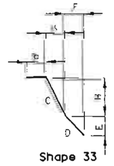
Shape 30



Shape 32



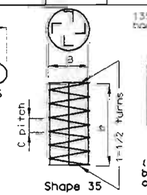
Shape 33



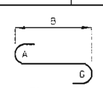
Shape 34

(Shape 35 shall be a smooth bar or wire.)

Shape 35

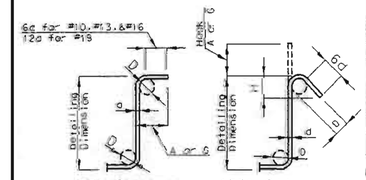


Shape 36



BENDING DIAGRAMS

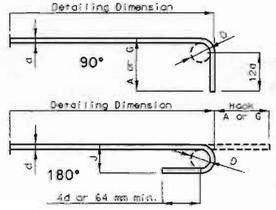
DATE 7-12-99



Detailed July 1999
Checked July 1999

STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook	135° Hook	
		Hook A or G	Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

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



END HOOK DIMENSIONS (mm)				
Bar Size	D	All Grades		
		180° Hooks		90° Hook
		A or G	J	A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = bar dimensions vary in equal increments between 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 fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
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 mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

A7/12/99 Added Sheet Sheet No. 19A of 19

JACKSON COUNTY

A16833

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
			MODIFY BENT NO. 6																
9	25	HB00	BEAM		20		X			3940							3940	3940	125
6	19	HB01	BEAM		20		X			3940							3940	3940	93
4	29	HB02	WEB		18		X			3940							4690	4690	95
16	29	HB03	WEB		18		X			2230							2980	2980	241
16	29	HB04	WEB		20		X			720							720	720	58
4	19	HB05	WEB		20		X			3940							3940	3940	35
76	19	HB07	WEB		20		X			720							720	720	122
16	19	VB00	WEB		20		X			6550							6550	6550	234
22	19	VB01	WEB		19	S	X			2500	1000						3500	3450	170

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg

State MO | Proj. No. | Sheet No.

Shape 6 | Shape 7 | Shape 8

Shape 9 | Shape 10 | Shape 11

Shape 12 | Shape 13 | Shape 14

Shape 15 | Shape 16 | Shape 17 | Shape 18 | Shape 20

Shape 19 | Shape 21

Shape 23 | Shape 24 | Shape 22

Shape 25 | Shape 26 | Shape 27

Shape 28 | Shape 29 | Shape 31

Shape 30 | Shape 32

Shape 36 | Shape 35 | Shape 34 | Shape 33

(Shape 35 shall be a smooth bar or wire.)

BENDING DIAGRAMS

6d for #10,#13,&#16
12d for #19

90° Stirrup | 135° Stirrup

STIRRUP HOOK DIMENSIONS (mm)

Grades 300 & 420 MPa

Bar Size	D	90° Hook A or G	135° Hook A or G	135° Hook Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

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

Detailing Dimension | 90° | 12d | 180° | 4d or 64 mm min.

END HOOK DIMENSIONS (mm)

Bar Size	D	All Grades 180° Hooks A or G	180° Hooks J	90° Hook A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	336	550
#36	305	475	375	600
#43	465	675	550	775

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in superstructure 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 fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
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 mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

STATE OF MISSOURI Stacy L. McMillan NUMBER E-26873 REGISTERED PROFESSIONAL ENGINEER
DATE 4-4-2000

Detailed Mar. 2000
Checked Mar. 2000

3/21/2000 Added Sheet

Sheet No. 19B of 19

JACKSON COUNTY

A16833

barbill_m_s Feb. 1997

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
			MODIFY																
			BENT NO. 1																
			DIAPHRAGM																
57	19	H900	DIAPHRAGM		20					3940							3940	3940	502
38	19	H901	DIAPHRAGM		20					4260							4260	4260	362
1	19	H902	DIAPHRAGM		20					16640							16640	16640	37
19	19	U900	DIAPHRAGM	E	19	S				1960	910						2770	2720	298
49	19	U901	DIAPHRAGM	E	19	S				1960	900						2860	2810	308
			BARRIER CURB																
8	19	R900	BAR. CURB	E	15	S				780	110				775	80	890	850	15
8	19	R901	BAR. CURB	E	19	S				765	110						875	825	15
			SLAB																
12	19	S900	SLAB	E	20					17190							17190	17190	461
1	19	S901	SLAB	E	20					16290							16290	16290	36

BILL OF REINFORCING STEEL

No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg

Shape 6 Shape 7 Shape 8

Shape 9 Shape 10 Shape 11

Shape 12 Shape 13 Shape 14

Shape 15 Shape 16 Shape 17 Shape 18 Shape 20

Shape 19 Shape 21

Spot weld AASHTO M32 size W5 wire (typ.)

Shape 23 Shape 24 Shape 22

Shape 25 Shape 26 Shape 27

Shape 28 Shape 29 Shape 31

Shape 30 Shape 32

Shape 36 Shape 35 Shape 34 Shape 33

(Shape 35 shall be a smooth bar or wire.)

BENDING DIAGRAMS

6d for #10,#13,#16
12d for #19

Hook A or G

Detailing Dimension

90° Stirrup 135° Stirrup

Detailed Apr. 2000
Checked Apr. 2000

STIRRUP HOOK DIMENSIONS (mm)

Grades 300 & 420 MPa

Bar Size	ID	90° Hook Hook A or G	135° Hook Hook A or G	135° Hook Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

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

Detailing Dimension

90°

180°

4d or 64 mm min.

12d

END HOOK DIMENSIONS (mm)

Bar Size	ID	All Grades 180° Hooks A or G	180° Hooks J	90° Hook A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Delete this sheet 6/5/2000

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = bar dimensions vary in equal increments between 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 fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
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 mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

Sheet No. 19C of 19

JACKSON COUNTY

A16833

Stacy L. McMillan NUMBER E-26873 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI

DATE 6-20-2000

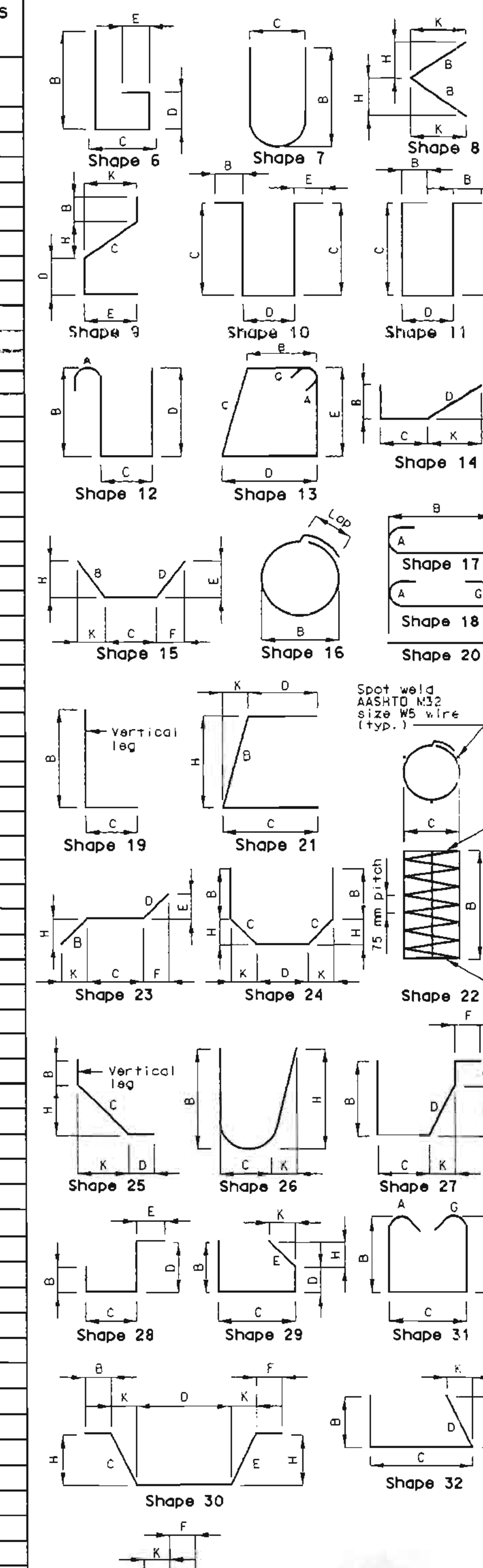
BILL OF REINFORCING STEEL

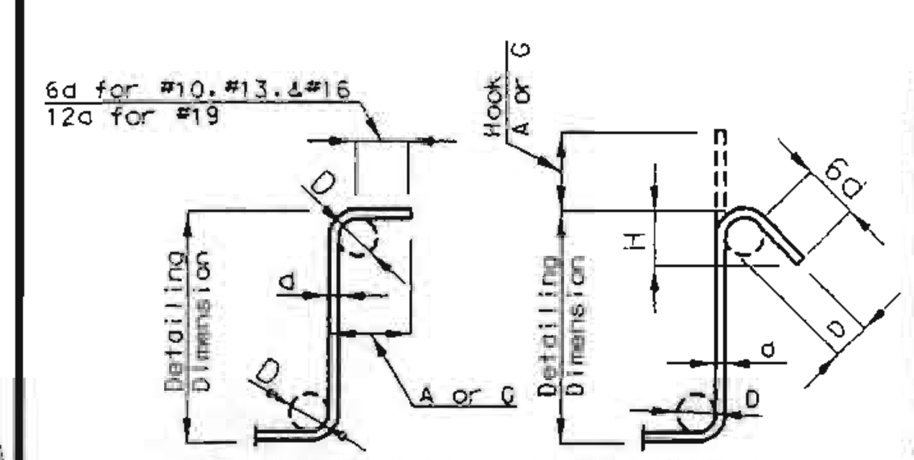
No. Req'd.	Mark No. Size	Mark No. Mark	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	B mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg
			MODIFY																
			BENT NO. 1																
			DIAPHRAGM																
45	19	H900	DIAPHRAGM	E	20					3940							3940	3940	396
30	19	H901	DIAPHRAGM	E	20					4260							4260	4260	286
1	19	H902	DIAPHRAGM	E	20					16640							16640	16640	37
49	19	U900	DIAPHRAGM	E	10	S					1290	615					3195	3100	339
			TOTALS																
	19			E															1058
			TOTAL																0
			TOTAL	E															1058
			Slab on Girder																
	19			E															1058
			TOTAL																1058

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 mm	C mm	D mm	E mm	F mm	H mm	K mm	Nominal Length mm	Actual Length mm	Mass kg

State	Proj. No.	Sheet No.
MO		



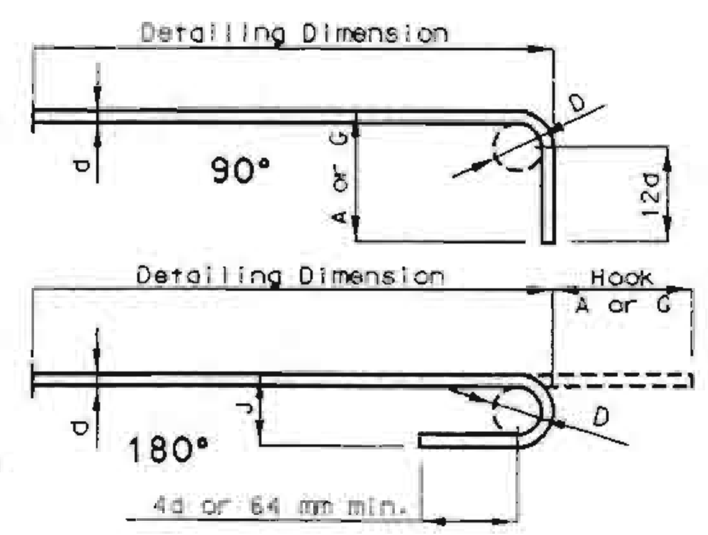


STIRRUP HOOK DIMENSIONS (mm)

Grades 300 & 420 MPa

Bar Size	D	90° Hook: Hook A or G	135° Hook: Hook A or G	135° Hook: Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

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

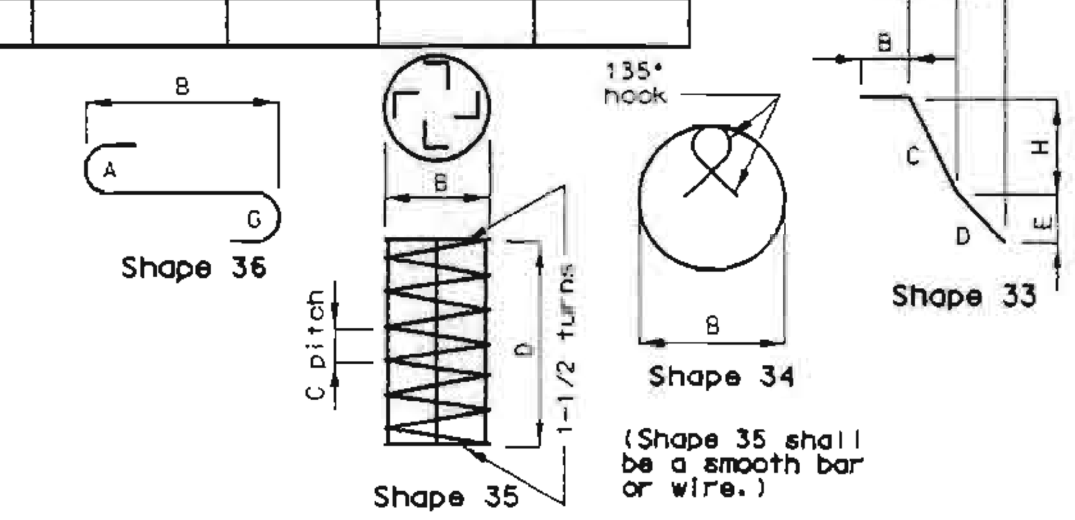


END HOOK DIMENSIONS (mm)

Bar Size	D	All Grades: 180° Hooks A or G	All Grades: 180° Hooks J	All Grades: 90° Hook A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Note:

All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = bar dimensions vary in equal increments between 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 fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
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 mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa



(Shape 35 shall be a smooth bar or wire.)

STATE OF MISSOURI
Stacy L. McMillan
NUMBER E-26873
REGISTERED PROFESSIONAL ENGINEER
DATE 6-20-2000

BENDING DIAGRAMS

Detailed June 2000
Checked June 2000

(Sheet No. 19D of 19) ← 6 Add 6/5/00

JACKSON COUNTY

A16833