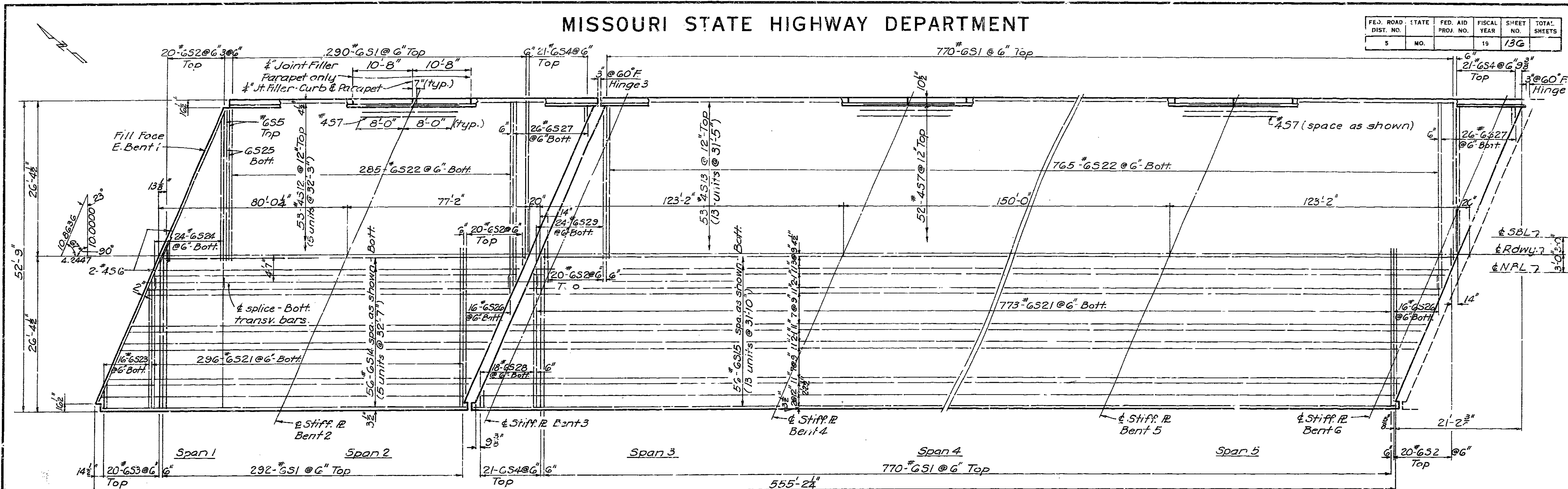


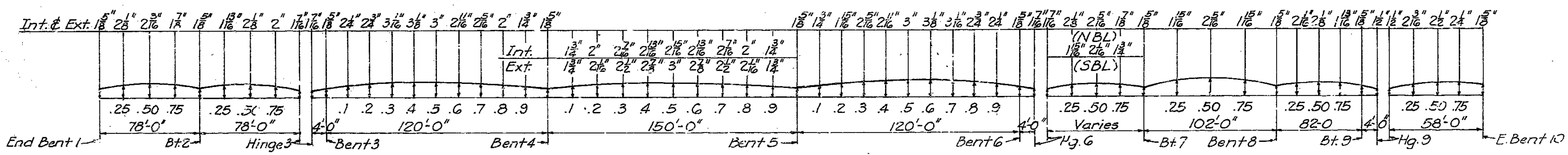
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	136	

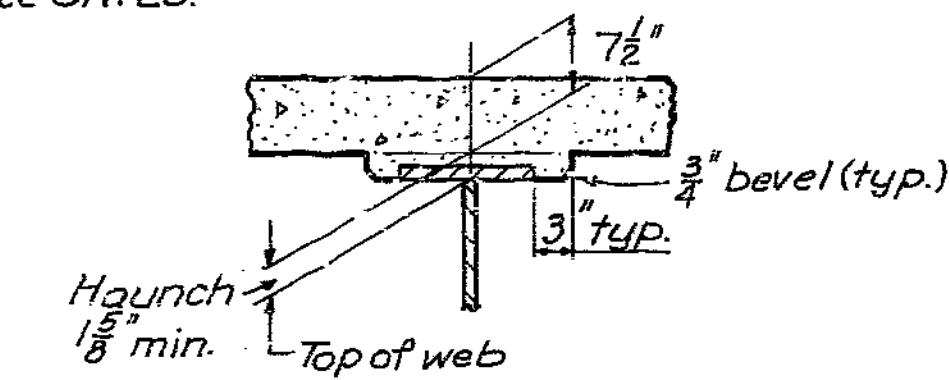


PLAN OF SLAB SHOWING REINFORCEMENT
(Reinforcement for the NBL & SBL are the same except as shown)

Note: Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1" from web of 14WF43 at expansion device.
For reinforcing in curbs and parapet see Sh. 23.
Min. bar lap = 12" for #4, 18" for #6.

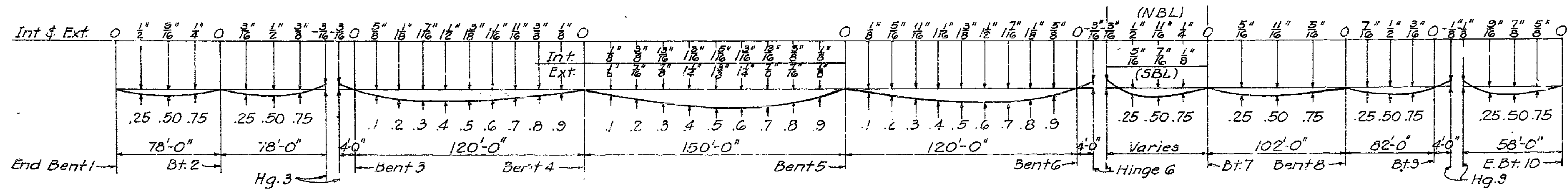


THEORETICAL SLAB HAUNCHING DIAGRAM



TYPICAL HAUNCH

Note: A check of steel elevations after erection may dictate changes in the slab haunching. No payment will be made for additional forming or concrete required.



DEAD LOAD DEFLECTION

D.L. deflection includes % due to weight of structural steel:
Spans 1 & 2 = 14%
" 3, 4 & 5 = 20%
" 6, 7 & 8 = 15%
" 9 = 11%

BRIDGE OVER BIG BLUE RIVER
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IG-435-1(52) (RTE. 1-435) STA. 123+29.48 N.B.L.
122+97.22 S.B.L.
JACKSON COUNTY

DETAILED JUNE 1967 BY JER
CHECKED Oct. 1967 BY DHL

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

Sheet No. 21 of 23.

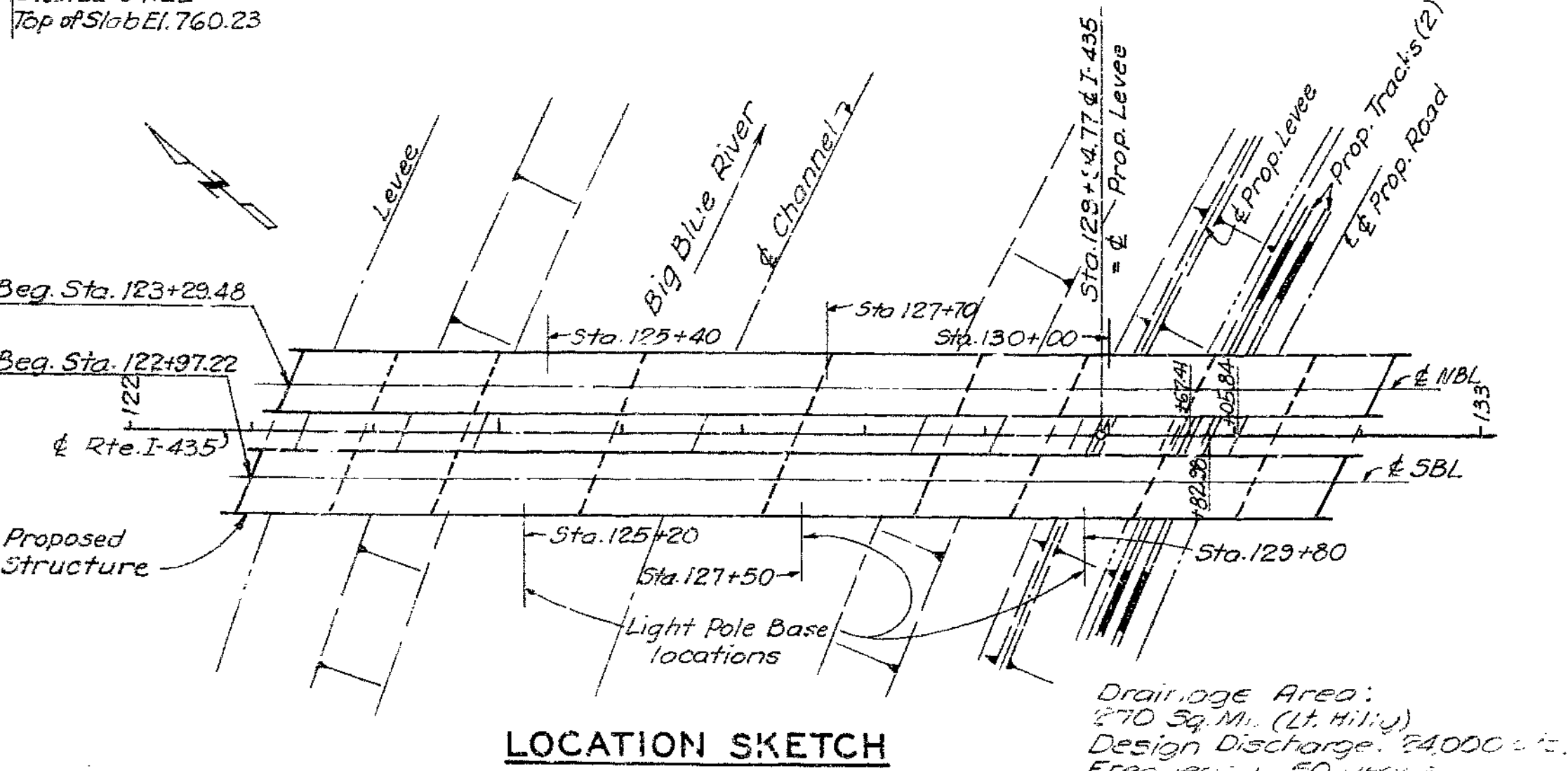
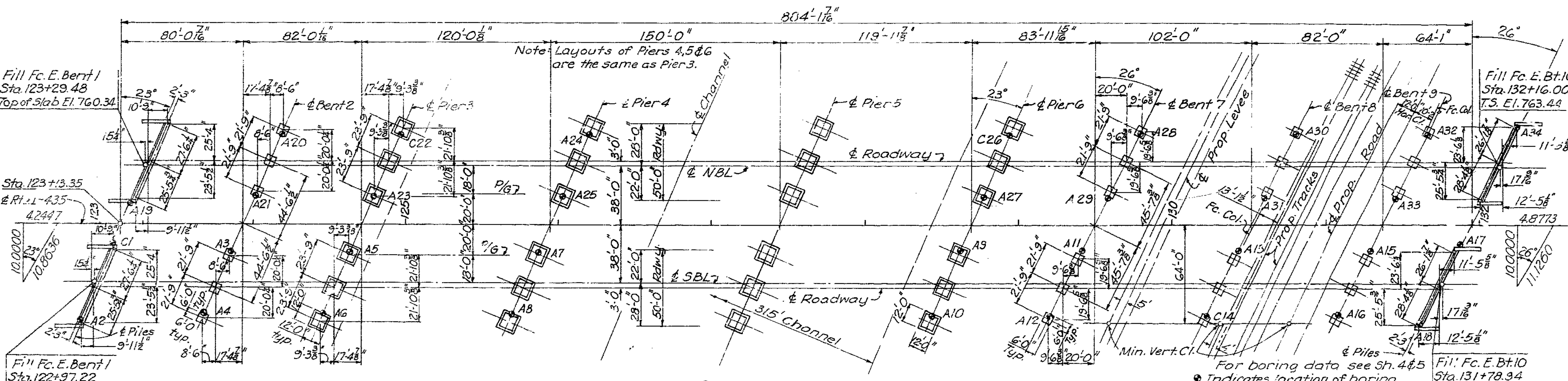
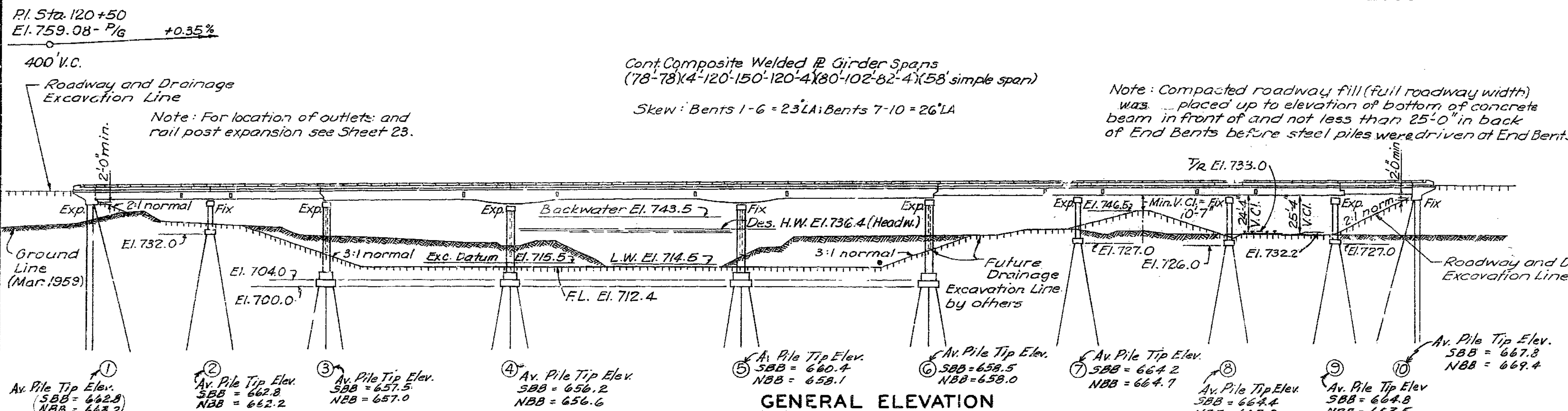
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS
KANSAS CITY, MO.

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	116	

FINAL PLANS



PLAN

Items	QUANTITIES		
	Substr.	Superstr.	Totals
Class 1 Excavation for Structures	Cu. Yd. 2990.0	—	2990.0
Class 2 Excavation for Structures	Cu. Yd. 1999	—	1999
Steel Piles in Place (10")	Lin. Ft. 3087	—	3087
Steel Piles in Place (12")	Lin. Ft. 13655	—	13655
Class B Concrete	Cu. Yd. 2025.6	—	2025.6
Class B Concrete (Seal Course)	Cu. Yd. 512	—	512
Class B1 Concrete	Cu. Yd. —	2578.2	2578.2
Reinforcing Steel	Lb. 2,723,370	854,840	3,578,210
Painting	Ton —	1072.2	1072.2
Fabricate & Structural Carbon Steel	Lb. —	2,159,750	2,159,750
Bridge Rail (Single tube)	Lin. Ft. —	3592	3592
Conduit System (On Structure)	Lump Sum —	—	—
Retarder, Deck	—	397	397

Note: No payment for excavation was allowed at End Bents 1 and 10.

All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.

Seal Course was included in Class B Concrete with a thickness of 18" outside of neat finish of concrete.

Excavation to be equivalent to that from existing ground surface.

PILE DATA					
Bent No.	1 & 10	2	3 & 6	4 & 5	7, 8 & 9
Pile Type and Size	10 BP42	12BP53	12BP53	12BP53	12BP53
Number Total both Lanes	36	24	96	108	72
Average Length	Ft. 85.8	68.6	37.3	37.2	61.4
Design Bearing	Tons 48.5	66.5	60.2	69.3	69.0
Hammer Energy Req. Ft. Lbs.	12,100	11,400	14,100	16,200	16,200

Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).

All pile was driven to practical refusal or more.

General Notes:

Design Specifications: AASHTO-1965

Design Loading:

- HS20-44
- 15# Per sq. ft. Future Wearing Surface Modified 24,000# Tandem Axle
- Earth 120# Equivalent Fluid Pressure 30#
- Fatigue Loading: AWS D 2.0-66 Formulas 15b & 15c (Pl. Gdrs.)

Design Unit Stresses:

- Class B Concrete (Substructure) $f_c = 1,200$ Psi
- Class B1 Concrete (Superstructure) $f_c = 1,600$ Psi
- Reinforcing Steel $f_s = 20,000$ Psi
- Structural Steel (ASTM A36-66) $f_s = 20,000$ Psi
- Steel Pile (ASTM A36-66) $f_b = 9,000$ Psi

Superstructure deck was surface sealed.

Air-entrained concrete was not required for seal course.

Field connections, High Strength Bolts $\frac{3}{4}$ " holes $\frac{1}{8}$ " except as noted.

Details of welded joints shown are for manual arc welding except as noted.

The minimum size of fillet welds in accordance with AWS D2.0-66, Article 2.17(b), except the minimum size fillet weld connecting parts carrying primary stress be $\frac{1}{4}$ ".

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

B.M. Elev. 760.86
 On NE Corner of NE Wing Bent #1
 85' Lt. of Sta. 123+20, & Median.

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. IG-435-1(52) RTE. I-435 STA. 123+29.48 N.B.L. 122+97.22 S.B.L.

JACKSON COUNTY

DESIGNED BY: *W. R. Causey* DATE Feb 23, 1968
 BRIDGE ENGINEER

APPROVED BY: *W. S. ...* DATE Feb 23, 1968
 CHIEF ENGINEER

HARRINGTON AND CORTELYOU
 CONSULTING ENGINEERS KANSAS CITY, MO.

Sheet No. 1A of 7

STD. 54.00
 A-1685



MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	117	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION	BENDING SKETCHES & CUTTING DIAGRAMS				NO.	SIZE	LENGTH	MARK	LOCATION	NO.	SIZE	LENGTH	MARK	LOCATION	
BENTS 7 & 8 NBL & SBL									BENT 9 NBL & SBL					VARIABLE PIER 6 NBL & SBL					
Quantities for One (4 Req'd)									Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					
5	#11	24'-10"	B1	Cap					18	4	3'-10"	U12	Cap	60	4	21'-9"	B22	Web	
8	9	13-11	B2	do					40	4	13-1	U13	do						
9	11	14-6	B3	do					38	4	14-1	U14	do	66	4	12-10	P8	Column	
8	7	7-8	B5	do					2	4	13-5	U24	Cap	72	10	33-0	P19	Column	
8	6	26-10	B6	do					PIERS 4 & 5 NBL & SBL					Quantities for One (2 Req'd)					
14	11	27-6	B7	Cap					Quantities for One (4 Req'd)					Quantities for One (2 Req'd)					
45	11	5-8	D1	Footing					8	7	22-0	B17	Cap	8	7	25-9	B19	do	
24	6	7-10	P4	Footing					4	6	25-7	B18	do	6	7	10-2	B20	Cap	
54	5	13-0	U10	Cap					8	7	25-9	B19	do	6	7	10-2	B20	Cap	
16	5	14-5	U11	do					6	7	10-2	B20	Cap	6	8	23-3	B23	Web	
14	4	3-10	U12	do					4	7	14-2	B24	Cap	4	7	14-2	B24	Cap	
54	5	12-6	U25	do					36	6	10-10	P10	Footing	54	10	10-7	P15	Column	
12	2	19-9	W1	Cap					40	4	33-11	P16	Web	54	10	5-2	P18	Footing	
VARIABLE BENT 7 NBL & SBL					VARIABLE BENT 8 NBL & SBL					VARIABLE PIER 4 NBL & SBL					VARIABLE PIER 5 NBL & SBL				
Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
45	11	25-6	P1	Column	72	3	8-1	P2	Column	60	4	21-9	B22	Web	64	4	21-9	B22	Web
66	3	8-1	P2	Column	45	11	27-6	P3	Column	60	4	14-4	P13	Column	63	4	14-4	P13	Column
BENT 2 NBL & SBL					BENT 3 NBL & SBL					BENT 4 NBL & SBL					BENT 5 NBL & SBL				
Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
9	11	14-6	B3	Cap	18	8	4-0	D3	Footing	54	10	35-1	P17	Column	40	4	31-6	P11	Web
8	7	7-8	B5	do	9	10	5-2	D4	Footing	72	10	5-2	P18	Footing	72	10	5-2	P18	Footing
8	11	24-1	B8	do	48	3	8-1	P2	Column	40	5	7-9	U18	Web	36	5	14-4	U19	Cap
6	8	13-2	B9	do	24	7	7-10	P1	Footing	15	5	14-10	U20	do	2	5	12-4	U21	do
18	10	27-11	B10	do	18	8	19-2	P5	Column	20	4	4-10	U26	Cap	2	4	4-7	U27	Cap
8	6	26-9	B11	Cap	9	10	19-2	P6	Column	12	2	19-9	W1	Cap	12	2	19-9	W1	Cap
BENT 1 NBL & SBL					BENT 6 NBL & SBL					BENT 7 NBL & SBL					BENT 8 NBL & SBL				
Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
9	11	14-6	B3	Cap	18	8	4-0	D3	Footing	54	5	13-0	U10	Cap	63	4	14-4	P13	Column
8	7	7-8	B5	do	9	10	5-2	D4	Footing	62	5	14-5	U11	do	54	10	35-1	P17	Column
8	11	24-1	B8	do	48	3	8-1	P2	Column	2	5	13-5	U23	Cap	40	4	31-6	P11	Web
6	8	13-2	B9	do	24	7	7-10	P1	Footing	72	10	5-2	P18	Footing	72	10	5-2	P18	Footing
18	10	27-11	B10	do	18	8	19-2	P5	Column	12	2	19-9	W1	Cap	40	5	7-9	U18	Web
8	6	26-9	B11	Cap	9	10	19-2	P6	Column	36	5	14-4	U19	Cap	15	5	14-10	U20	do
BENT 9 NBL & SBL					BENT 10 NBL & SBL					BENT 11 NBL & SBL					BENT 12 NBL & SBL				
Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
5	7	7-8	B5	Cap	18	8	4-0	D3	Footing	54	5	13-0	U10	Cap	63	4	14-4	P13	Column
8	6	26-10	B6	do	9	10	5-2	D4	Footing	62	5	14-5	U11	do	54	10	35-1	P17	Column
8	10	24-5	B12	do	48	3	8-1	P2	Column	2	5	13-5	U23	Cap	40	4	31-6	P11	Web
4	8	13-11	B13	do	24	7	7-10	P1	Footing	72	10	5-2	P18	Footing	72	10	5-2	P18	Footing
7	10	14-6	B14	do	18	8	19-2	P5	Column	12	2	19-9	W1	Cap	40	5	7-9	U18	Web
16	9	28-7	B16	Cap	9	10	19-2	P6	Column	36	5	14-4	U19	Cap	15	5	14-10	U20	do
BENT 13 NBL & SBL					BENT 14 NBL & SBL					BENT 15 NBL & SBL					BENT 16 NBL & SBL				
Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
33	9	4-6	D2	Footing	48	3	8-1	P2	Column	54	5	13-0	U10	Cap	63	4	14-4	P13	Column
69	3	8-1	P2	Column	24	6	7-10	P4	Footing	62	5	14-5	U11	do	54	10	35-1	P17	Column
24	6	7-10	P4	Footing	33	9	26-5	P7	Column	2	5	13-5	U23	Cap	40	4	31-6	P11	Web
33	9	26-5	P7	Column	12	2	19-3	W1	Cap	72	10	5-2	P18	Footing	72	10	5-2	P18	Footing
12	2	19-3	W1	Cap	VARIABLE PIER 3 NBL & SBL					VARIABLE PIER 4 NBL & SBL					VARIABLE PIER 5 NBL & SBL				
					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
56	4	21-9	B22	Web	60	4	21-9	B22	Web	64	4	21-9	B22	Web	63	4	14-4	P13	Column
63	4	12-10	P8	Column	72	10	31-7	P12	Column	40	4	31-6	P11	Web	63	4	14-4	P13	Column
72	10	31-7	P12	Column	VARIABLE PIER 6 NBL & SBL					VARIABLE PIER 7 NBL & SBL					VARIABLE PIER 8 NBL & SBL				
					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
56	4	21-9	B22	Web	60	4	21-9	B22	Web	64	4	21-9	B22	Web	63	4	14-4	P13	Column
63	4	12-10	P8	Column	72	10	31-7	P12	Column	40	4	31-6	P11	Web	63	4	14-4	P13	Column
72	10	31-7	P12	Column	VARIABLE PIER 9 NBL & SBL					VARIABLE PIER 10 NBL & SBL					VARIABLE PIER 11 NBL & SBL				
					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)					Quantities for One (2 Req'd)				
56	4	21-9	B22	Web	60	4	21-9	B22	Web	64	4	21-9	B22	Web	63	4	14-4	P13	Column
63	4	12-10	P8	Column	72	10	31-7	P12	Column	40	4	31-6	P11	Web	63	4	14-4	P13	Column

Note: Dimensions shown are out to out of bars

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

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. IG-435-1(52)(RTE. I-435) STA. 123+29.48 N.B.L.
 122+37.22 S.B.L.
 JACKSON COUNTY

No. 20.3 Revised June 1967 / Dec. 1964
 CHECKED Oct 1967 BY WBH

DETAILED July 1967 BY HFC.
 CHECKED Oct 1967 BY WBH

Sheet No. 2 of 23

HARRINGTON AND CORTELYOU
 CONSULTING ENGINEERS KANSAS CITY, MO.

A-1685

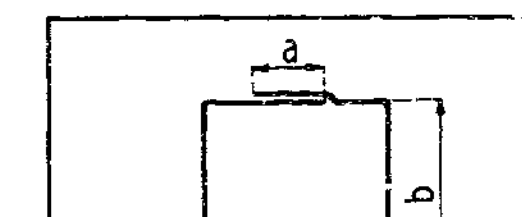
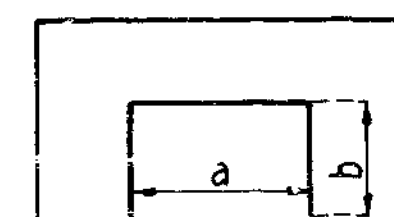
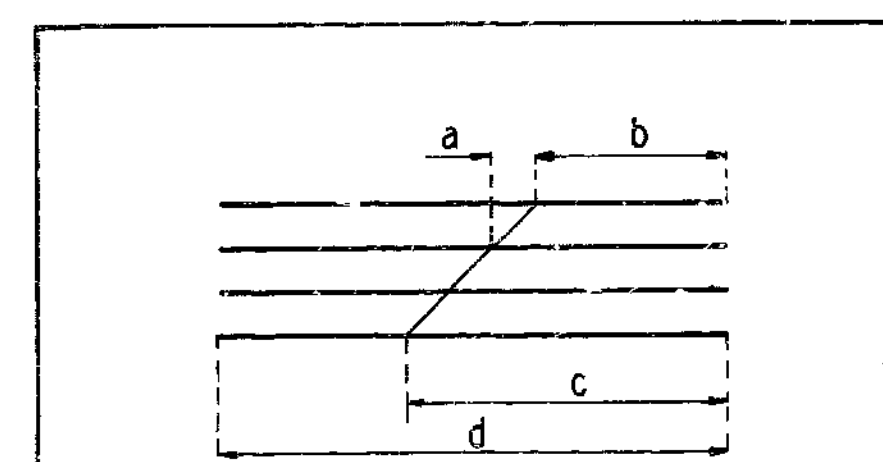
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	118	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION	NO.	SIZE	LENGTH	MARK	LOCATION	NO.	SIZE	LENGTH	MARK	LOCATION
END BENTS 1 & 10 NBL & SBL					VARIABLE EBIO NBL & SBL					SUPERSTRUCTURE				
Quantities for One (4 Reqd)					Quantities for One (2 Reqd)					Quantities for One Lane (2 Reqd)				
30	5	3-3	C1	Curb	4	6	7-9	F3	Fillet	50	6	28-6	S2	Slab Top
4	5	13-8	C2	Curb	4	6	5-8	F4	Fillet	10	6	29-10	S3	do do
4	9	13-11	H5	Beam	8	9	31-0	H9	Beam	3	6	25-7	S5	do do
4	6	13-8	H6	Wing	4	6	29-9	H10	Beam	4	4	27-7	S6	do do
4	5	4-9	R1	End Post	4	6	29-9	H11	Back Wall	260	4	16-0	S7	do do
2	5	6-1	R2	do	12	4	29-6	H12	Back Wall	24	6	29-9	S7	do do
2	5	6-9	R3	do	6	6	20-1	H13	Wings	22	6	28-0	S9	do do
2	5	7-2	R4	do	4	6	5-8	H14	Wings	12	6	30-7	S10	do do
2	5	7-5	R5	do	8	9	22-6	H17	Beam	12	6	28-10	S11	do do
4	5	7-6	R6	End Post	265	4	32-3	S12	do do	689	4	31-5	S13	Slab Top
18	5	5-9	R7	Parapet	4	6	12-0	T3	Wings	280	6	32-7	S14	Slab Bott.
8	5	9-10	R8	Parapet	4	6	9-6	T4	Wings	728	6	31-10	S15	Slab Bott.
2	5	6-4	R20	do	4	6	9-6	T4	Wings	4	4	28-3	S20	Slab
8	6	10-0	R21	do	38	4	12-5	U3	Beam	8	6	25-1	S23	Slab Bott.
5	7	15-2	U1	Wing	18	4	12-10	U5	Beam	12	6	32-9	S24	do do
18	4	3-9	U4	Beam	6	4	7-6	U6	Wings	2	6	30-2	S25	do do
2	5	6-11	R22	Parapet	5	7	13-10	U7	Beam	16	6	23-10	S26	do do
4	6	2-8	V1	Beam	24	4	6-9	V8	Wings	26	6	34-7	S27	do do
12	2	19-9	W1	A Bolt Wells	4	4	5-2	V9	Wings	18	6	26-4	S28	do do
16	4	7-3	V7	Wings	14	6	34-8	S34	do do	24	6	33-1	S29	do do
24	4	6-9	V8	do	2	6	21-0	S35	Slab Bott.	18	6	23-0	S30	do do
5	6	7-6	F1	Fillet	14	6	33-1	S33	do do	14	6	33-10	S31	do do
5	6	5-10	F2	Fillet	4	4	5-2	V9	Wings	10	6	25-7	S32	do do
8	9	30-4	H1	Beam	1858	5	3-6	C3	Curb	13	6	33-1	S33	do do
4	6	28-9	H2	Beam	12	6	28-11	C7	Curb	14	6	34-8	S34	do do
12	4	28-10	H3	Back Wall	2	6	21-0	S35	Slab Bott.	2	6	21-0	S35	Slab Bott.
4	6	29-1	H4	Back Wall	6	4	7-6	U6	Wings	6	#5	12-4	L1	Light Supt
8	6	20-1	H7	Wings	136	5	4-3	R10	do	9	#5	5-9	L2	" "
4	6	5-6	H8	Wings	16	5	37-2	R15	Parapet	9	#5	2-8	L3	" "
8	9	21-10	H16	Beam	3338	6	27-0	S1	Slab Top	4	6	28-11	C7	Curb
4	6	12-8	T1	Wings	477	4	31-9	S16	do do	1858	5	5-3	R9	Parapet
4	6	10-5	T2	Wings	106	4	30-5	S17	Slab Top	136	5	4-3	R10	do
5	7	13-9	U2	Beam	504	6	31-4	S18	Slab Bott.	16	5	37-2	R15	Parapet
34	4	12-5	U3	do	112	6	30-9	S19	do do	1652	6	31-7	S22	Slab Bott.
16	4	12-10	U5	Beam	1682	6	22-5	S21	do do	80	5	10-4	R11	Parapet
8	4	7-6	U6	Wings	1652	6	31-7	S22	Slab Bott.	16	5	30-2	R12	do
SUPERSTRUCTURE					SUPERSTRUCTURE					SUPERSTRUCTURE				
Quantities for One Lane (2 Reqd)					Quantities for One Lane (2 Reqd)					Quantities for One Lane (2 Reqd)				
8	5	30-4	C4	Curb	8	5	30-4	C4	Curb	8	5	30-4	C4	Curb
12	4	29-2	C5	do	12	5	29-2	C5	do	12	5	29-2	C5	do
4	4	6-1	V5	Wings	32	6	32-1	C9	do	32	6	32-1	C9	do
					16	6	38-7	C10	do	16	6	38-7	C10	do
					8	6	39-7	C11	do	8	6	39-7	C11	do
					8	5	40-0	C12	Curb	8	5	40-0	C12	Curb
					1849	5	3-6	C3	Curb	1849	5	3-6	C3	Curb
					8	6	40-0	C8	Curb	8	6	40-0	C8	Curb
					1849	5	5-3	R9	Parapet	1849	5	5-3	R9	Parapet
					135	5	4-3	R10	do	135	5	4-3	R10	do
					16	5	34-7	R16	Parapet	16	5	34-7	R16	Parapet
					3318	6	27-0	S1	Slab Top	3318	6	27-0	S1	Slab Top
					583	4	30-5	S17	Slab Top	583	4	30-5	S17	Slab Top
					616	6	30-9	S19	Slab Bott.	616	6	30-9	S19	Slab Bott.
					1672	6	22-5	S21	do do	1672	6	22-5	S21	do do
					1642	6	31-7	S22	Slab Bott.	1642	6	31-7	S22	Slab Bott.

BENDING SKETCHES & CUTTING DIAGRAMS

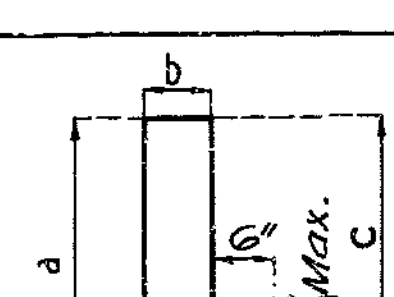
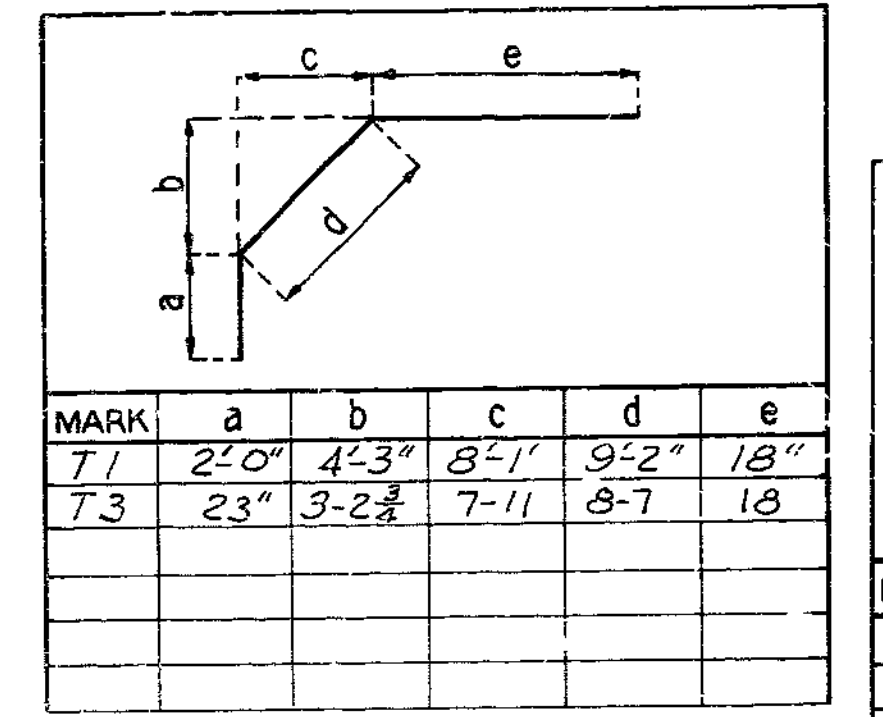


MARK	a	b
C1	15"	12 3/4"
R2	9	2-8
R3	9	3-0
R4	9	3-2 1/2
R5	9	3-4
R6	9	3-4 1/2
R7	8 1/2	2-7
U4	2-9	6
U6	6 1/2	3-6
R20	9 1/2	2-9 1/2
R22	9 1/2	3-1
R21	9 1/2	4-8 1/2

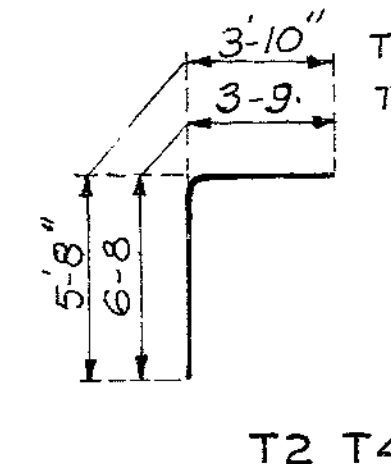
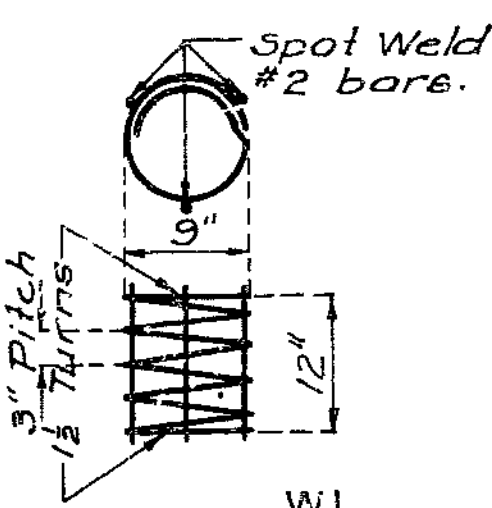
REMARKS	a	b	c	d
4-H7 (cut 8)*	1'-11"	7'-2"	12'-11"	20'-11"
3-H13 (cut 6)*	2'-5 1/2"	7'-7"	12'-6"	20'-1"
10-S2 (cut 50)*	14 1/2"	3'-0 1/2"	13'-7 1/2"	28'-6"
10-S3 (cut 10)*	14 1/2"	3'-8 1/2"	14'-3 1/2"	29'-1"
21-S4 (cut 84)*	14 1/2"	2'-7 1/2"	26'-1 1/2"	28'-9"
12-S8 (cut 24)*	12 1/2"	3'-0 1/2"	14'-4 1/2"	29'-9"
11-S9 (cut 22)*	12 1/2"	3'-2 1/2"	13'-5 1/2"	28'-0"
12-S10 (cut 12)*	12 1/2"	3'-5 1/2"	14'-9 1/2"	30'-7"
12-S11 (cut 12)*	12 1/2"	2'-7 1/2"	13'-10 1/2"	28'-10"

* One End Bent, ea. lane
 † Each lane
 List continued on this sheet

MARK	a	b	c	d	e
T1	2'-0"	4'-3"	8'-1"	9'-2"	18"
T3	23"	3'-2 1/2"	7'-11"	8'-7"	18"

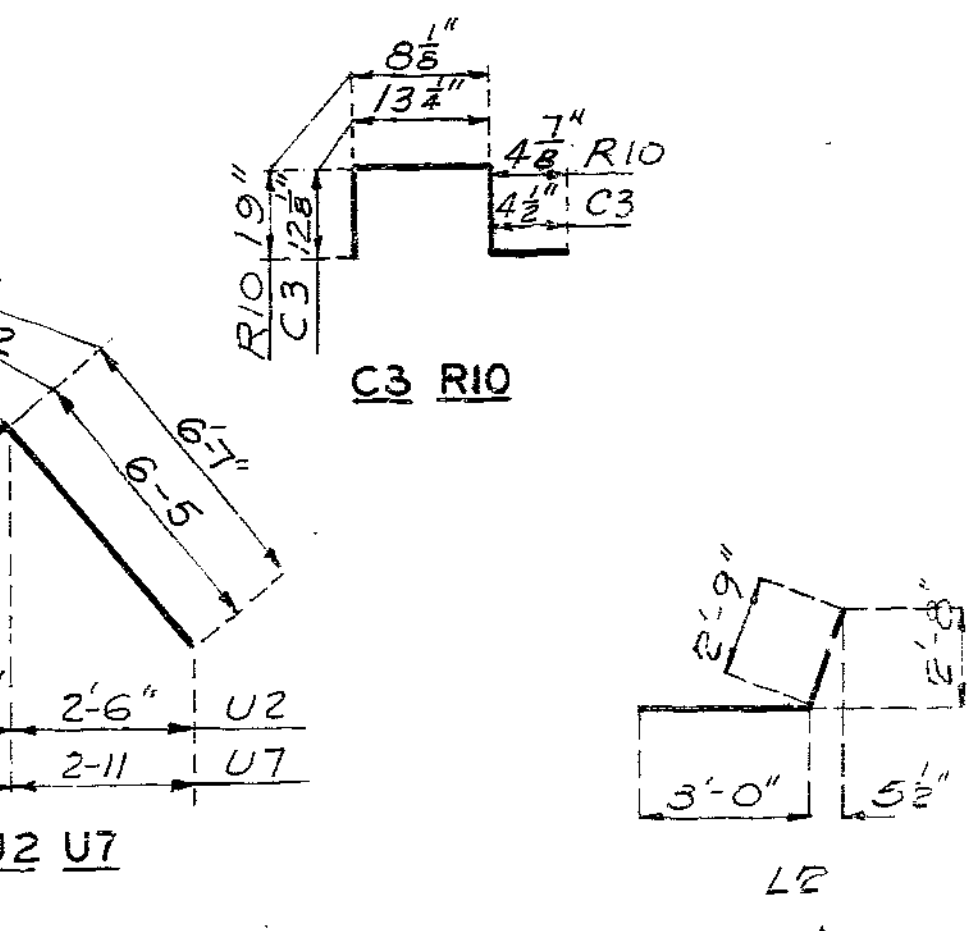
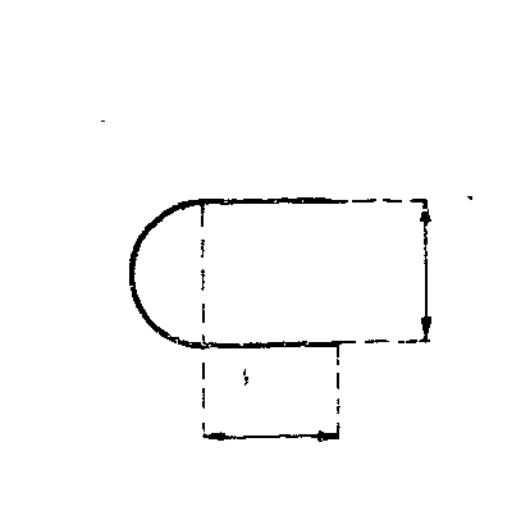
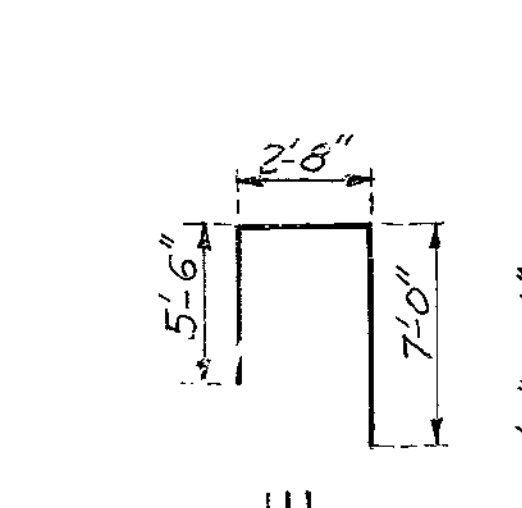
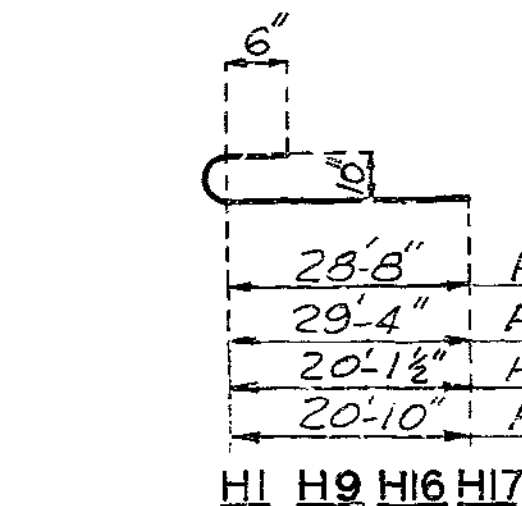
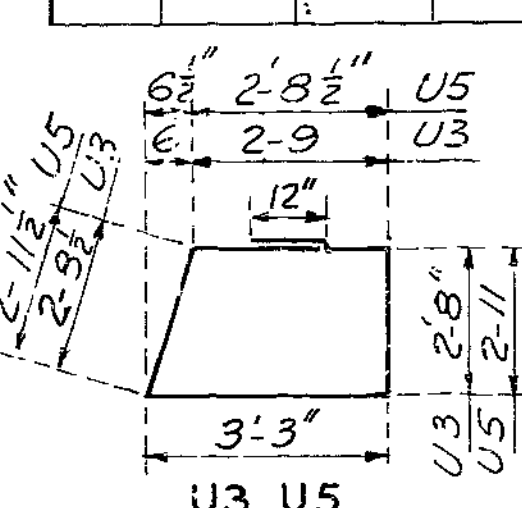


MARK	a	b	c
R9	23 1/2"	8 1/2"	20"



Note: Dimensions shown are out to out of bars.

REMARKS	a	b	c	d
8-S23 (cut 8)*	14 1/2"	3'-8 1/2"	11'-11 1/2"	25'-11"
12-S24 (cut 12)*	14 1/2"	2'-10 1/2"	15'-9 1/2"	32'-9"
8-S26 (cut 16)*	14 1/2"	3'-1 1/2"	11'-3 1/2"	23'-10"
13-S27 (cut 26)*	14 1/2"	2'-6 1/2"	16'-3 1/2"	34'-7"
9-S28 (cut 18)*	14 1/2"	2'-7 1/2"	12'-0 1/2"	26'-4"
12-S29 (cut 24)*	14 1/2"	3'-0 1/2"	15'-1 1/2"	33'-1"
9-S30 (cut 18)*	12 1/2"	2'-9 1/2"	10'-11 1/2"	23'-0"
14-S31 (cut 14)*	12 1/2"	3'-0 1/2"	15'-4 1/2"	33'-10"
10-S32 (cut 10)*	12 1/2"	3'-0 1/2"	12'-3 1/2"	25'-7"
13-S33 (cut 13)*	12 1/2"	3'-8 1/2"	16'-0 1/2"	33'-1"
14-S34 (cut 14)*	12 1/2"	3'-5 1/2"	16'-9 1/2"	34'-8"
8-V3 (cut 16)*	6 1/2"	2'-4"	6'-0"	8'-4"
8-V7 (cut 16)*	4 1/2"	2'-3"	5'-0"	7'-3"
4-L1 (cut 12)	12"	5'-11"	6'-5"	12'-2 1/2"



BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-435-1(52)(RTE. I-435) STA. 123+29.48 N.B.L.
 122+97.22 S.B.L.
 JACKSON COUNTY

No. 90.4 Revised
 Aug. 1963 Dec. 1964

DETAILED July 1967 BY H.F.C.
 CHECKED Oct. 1967 BY H.G.V.

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

Δ - Revised - February 24, 1969

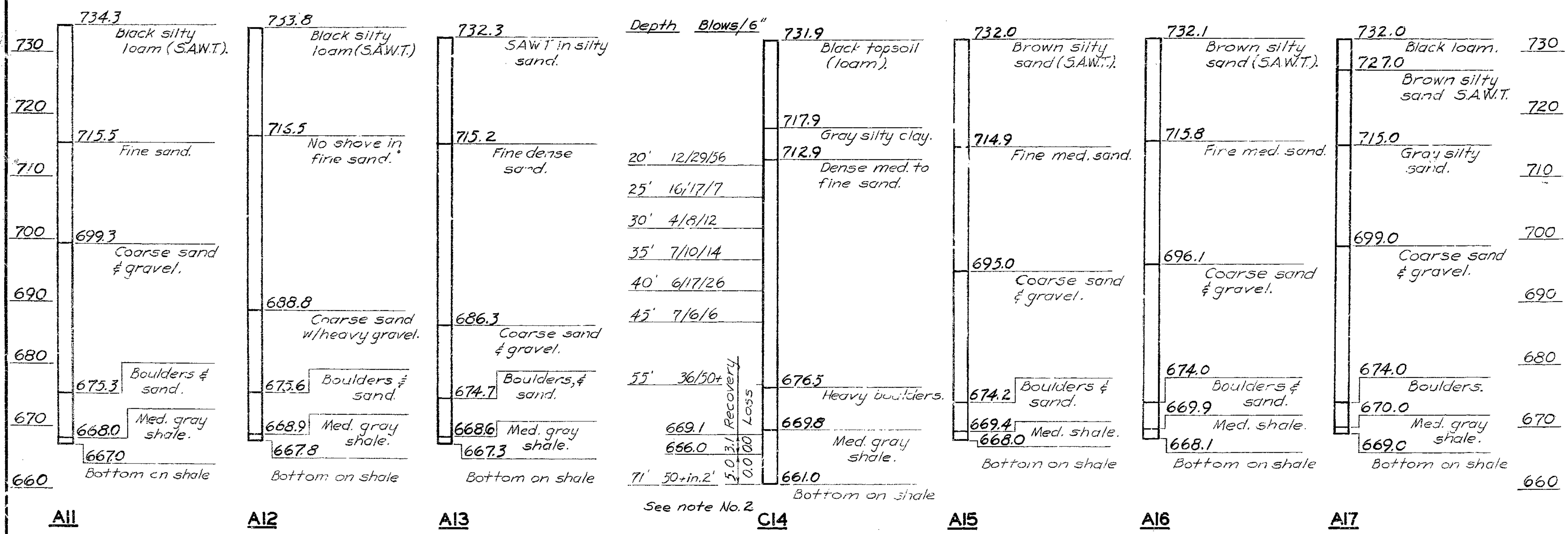
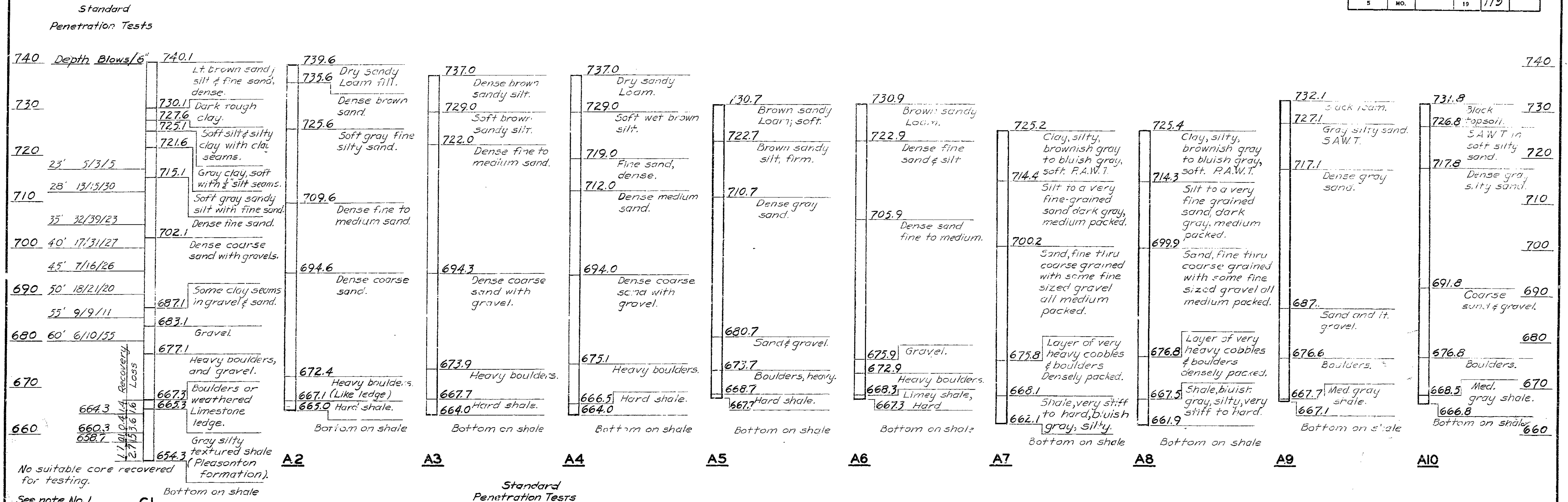
Sheet No. 3 of 23.

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 CONSULTING ENGINEERS KANSAS CITY, MO.

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	113	



NOTES

1. Due to this being an end bent and solid shale was drilled from Elev. 665.3 to Elev. 654.3 this hole was discontinued.
2. The Qu's are low due to weathering of core. Penetrations indicate the shale in place is much better.

Depth	Qu
63	3 TSP
65	4 TSP
67	2 TSP
69	1 TSP

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. IG-435-(52)(RTE. I-435) STA. 123+29.48 N.B.L. 122+97.22 S.B.L.
JACKSON COUNTY

DETAILED Feb. 1967 BY R.T.W.
 CHECKED Oct. 1967 BY W.B.H.

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

Sheet No. 4 of 23.

HARRINGTON AND CORTELYOU
 CONSULTING ENGINEERS KANSAS CITY, MO.

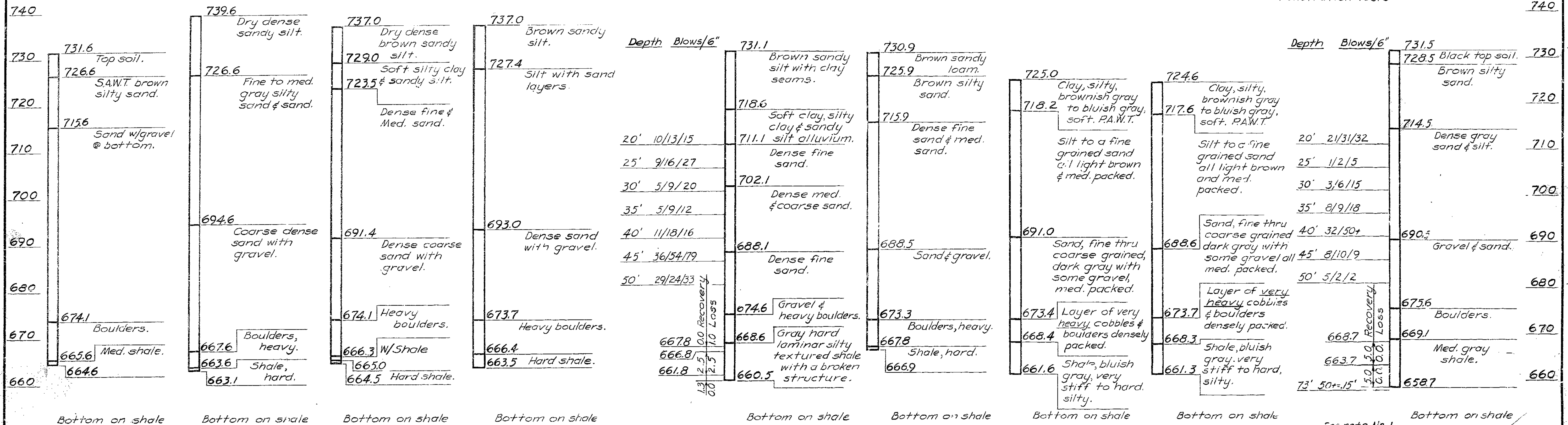
A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

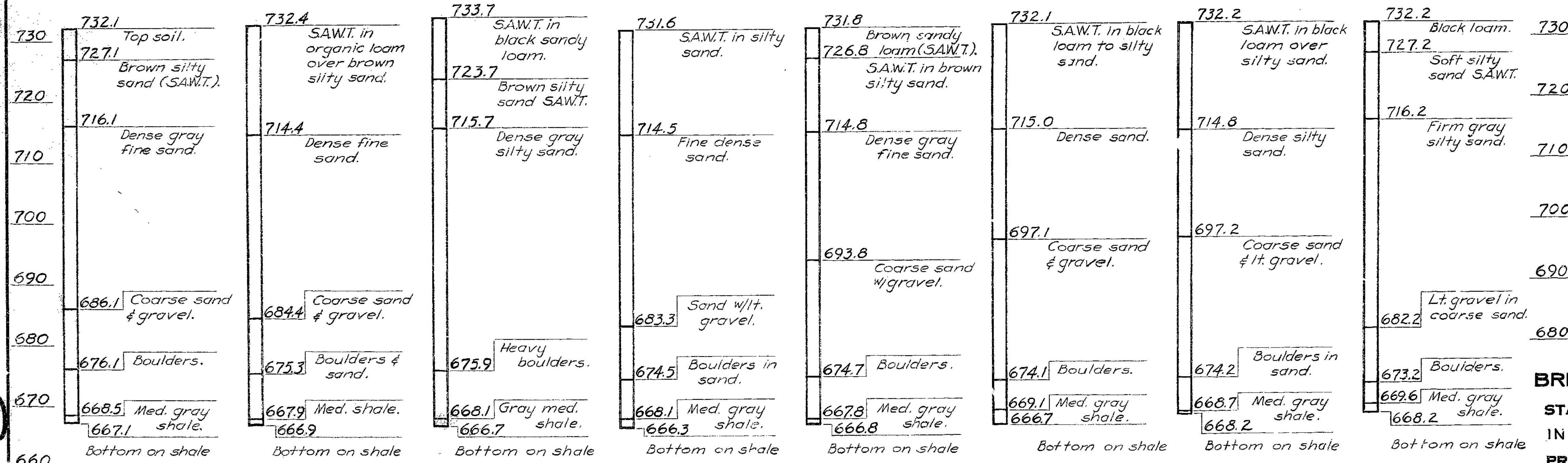
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	120	

Standard Penetration Tests

Standard Penetration Tests



A18 A19 A20 A21 C22 A23 A24 A25 C26



A27 A28 A29 A30 A31 A32 A33 A34

NOTES

1. Sampled @	Qu
63	6 TSF
65	9.5 TSF
69	5 TSF

BRIDGE OVER BIG BLUE RIVER

STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY

PROJECT NO. I.G-435-1(52)(RTE. I-435) STA. 123+29.48 N.B.L. 122+97.22 S.B.L.

JACKSON COUNTY

DETAILED Feb. 1967 BY R.T.W.
CHECKED Oct. 1967 BY W.B.H.

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

Sheet No. 5 of 23

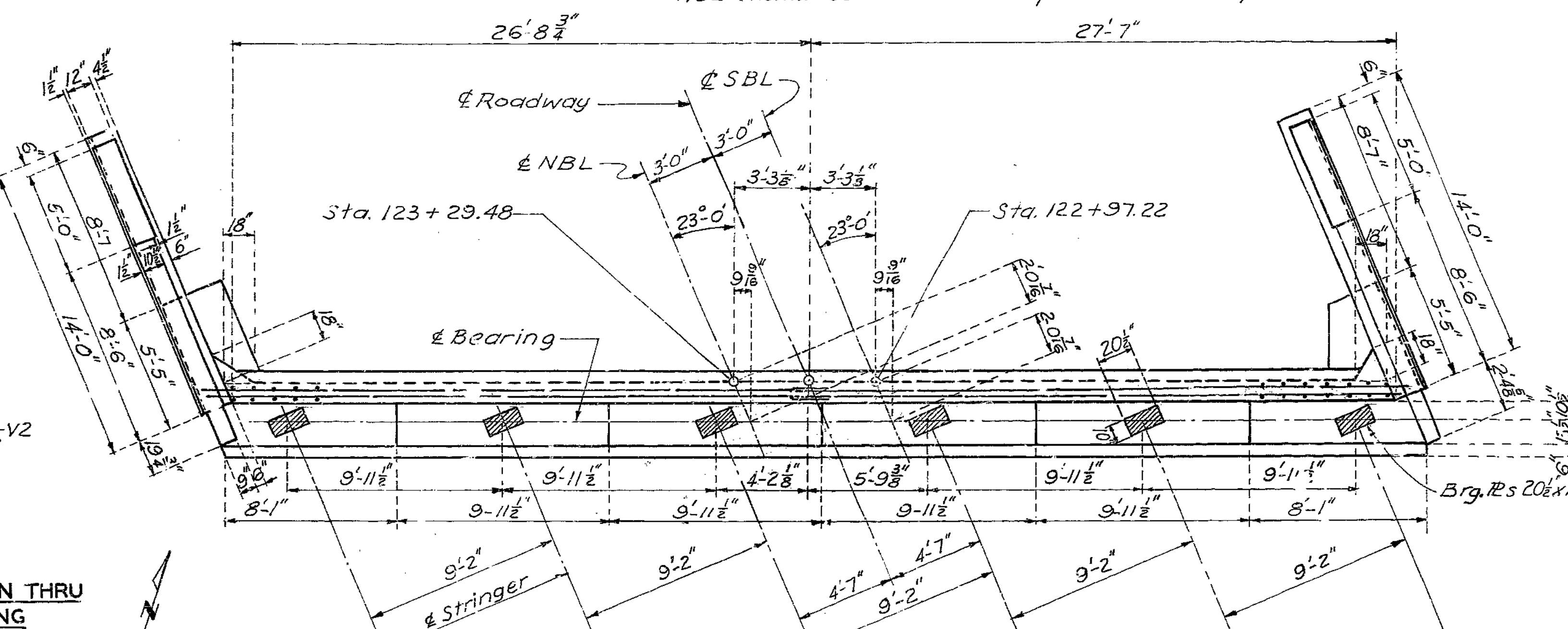
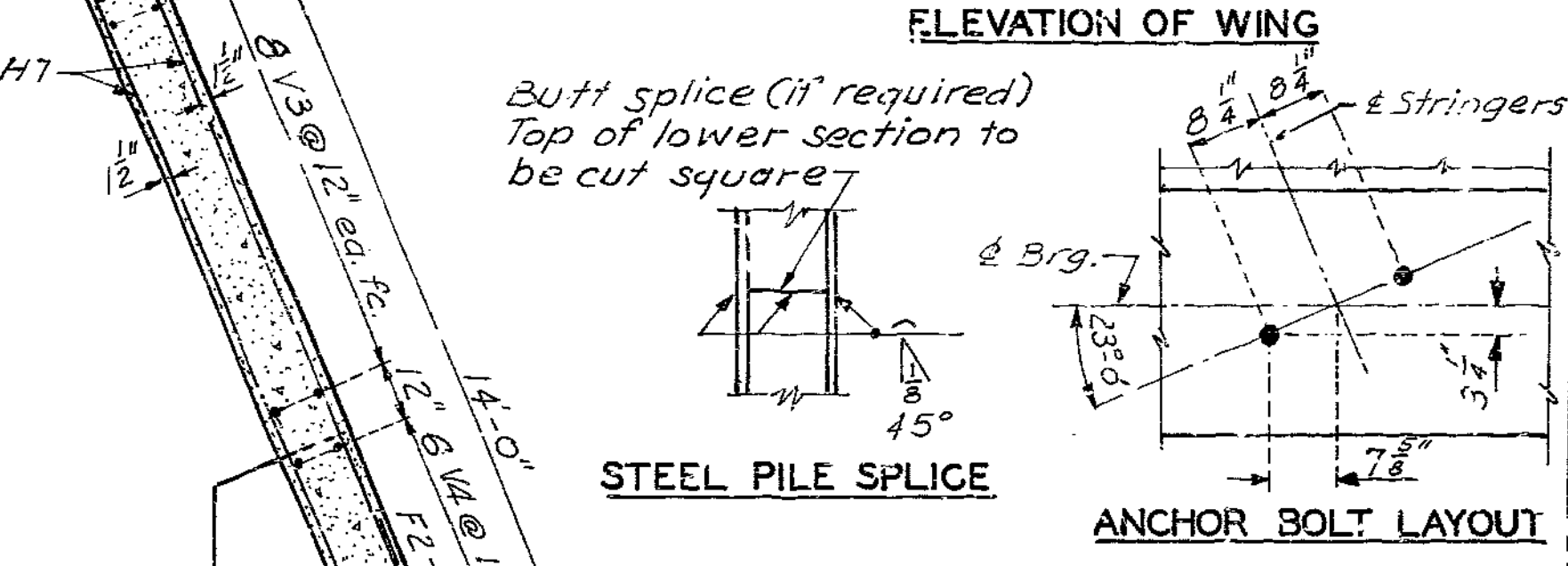
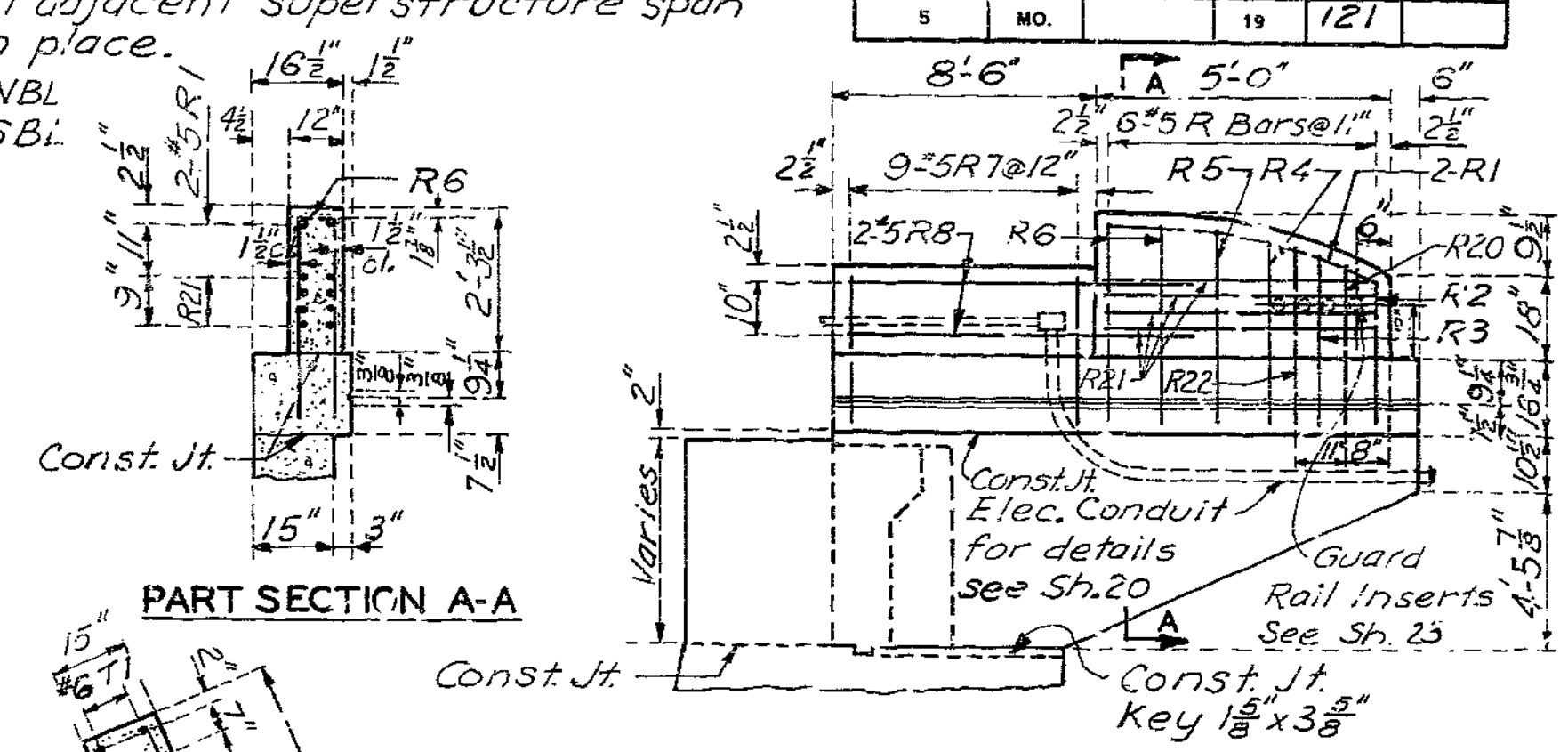
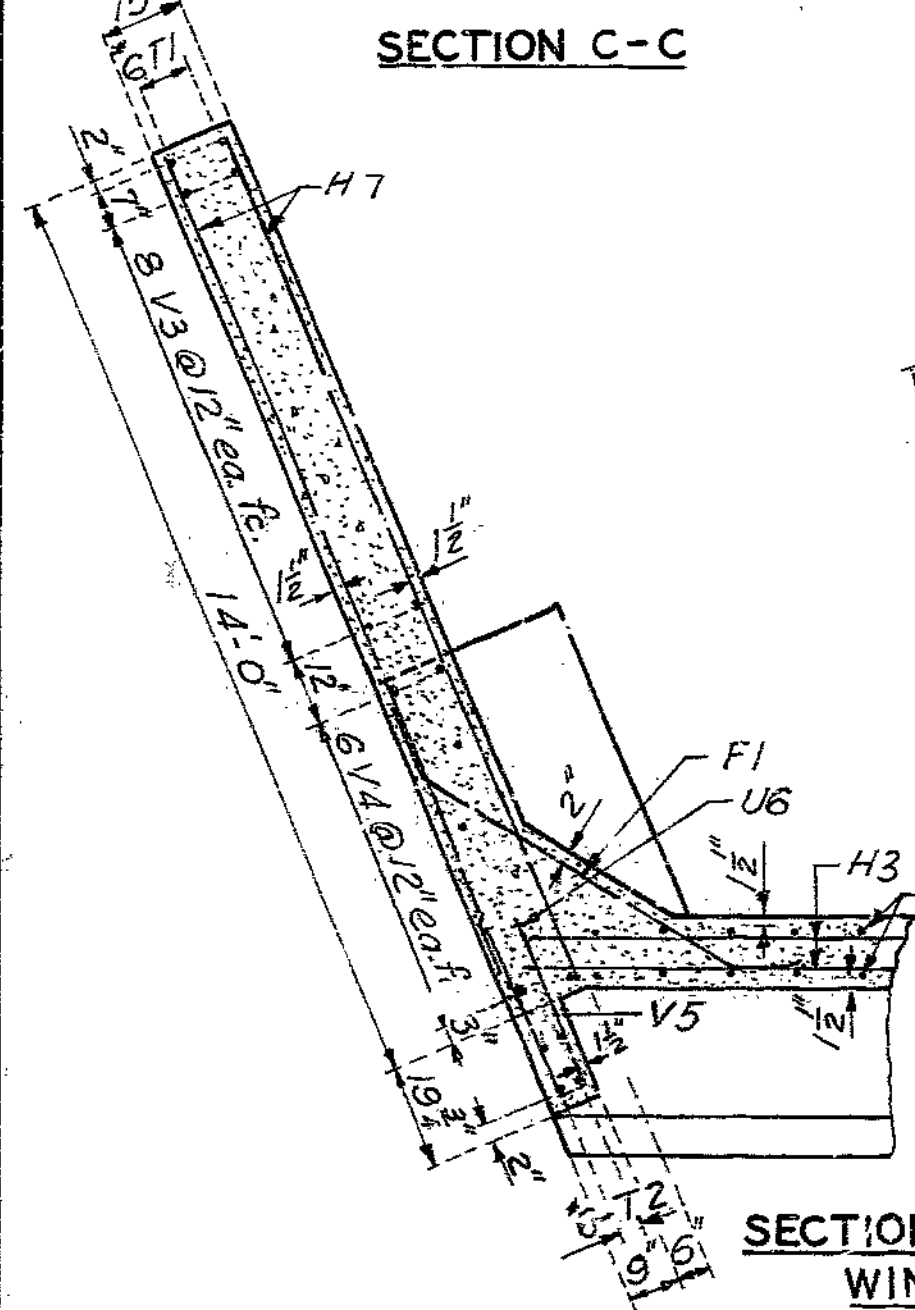
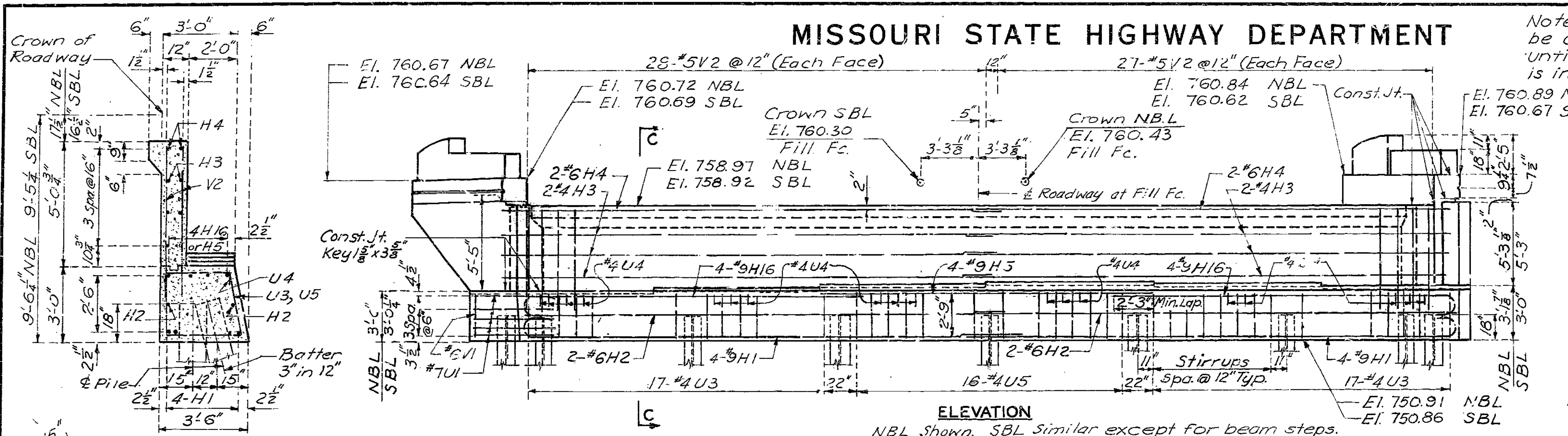
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CONSULTING ENGINEERS
KANSAS CITY, MO.

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

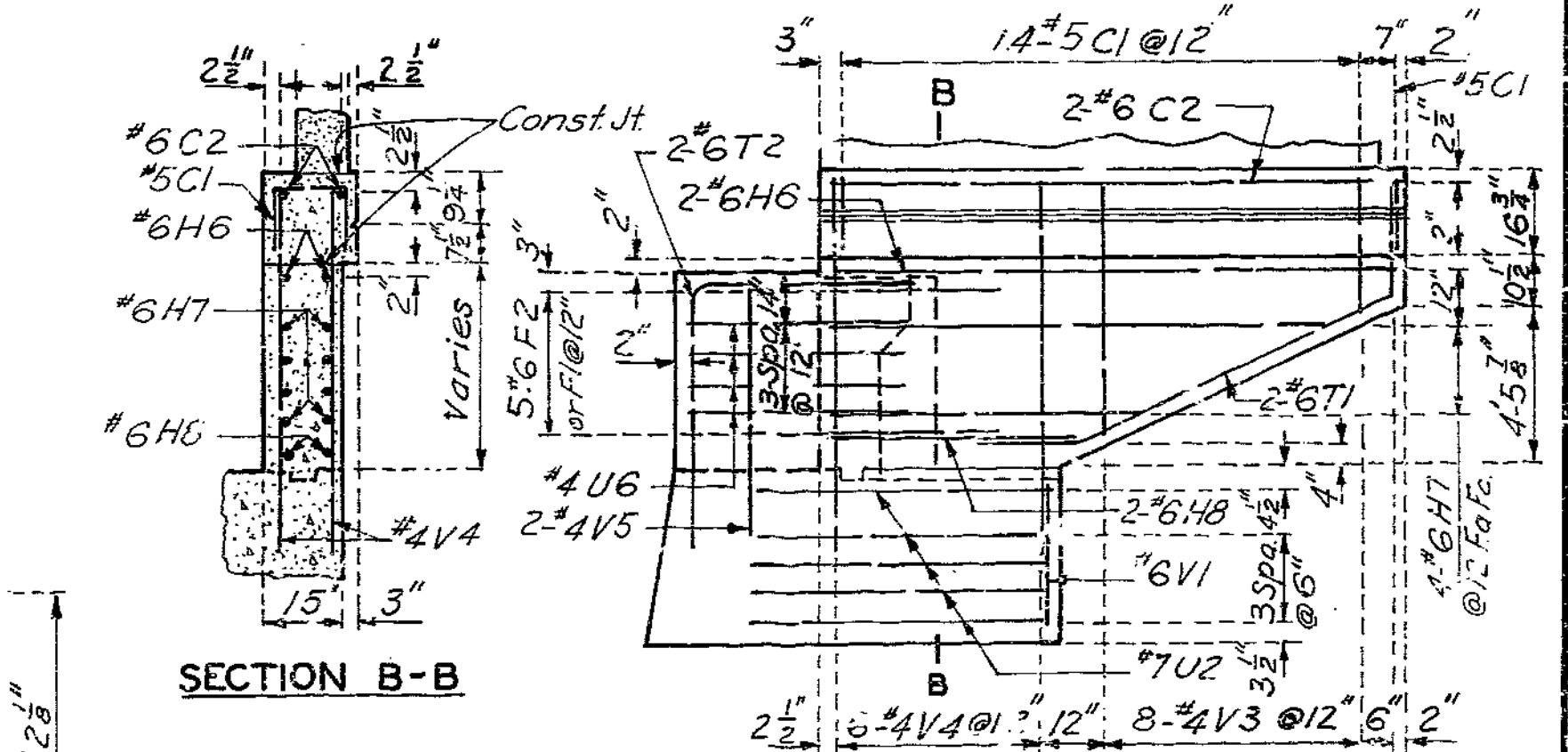
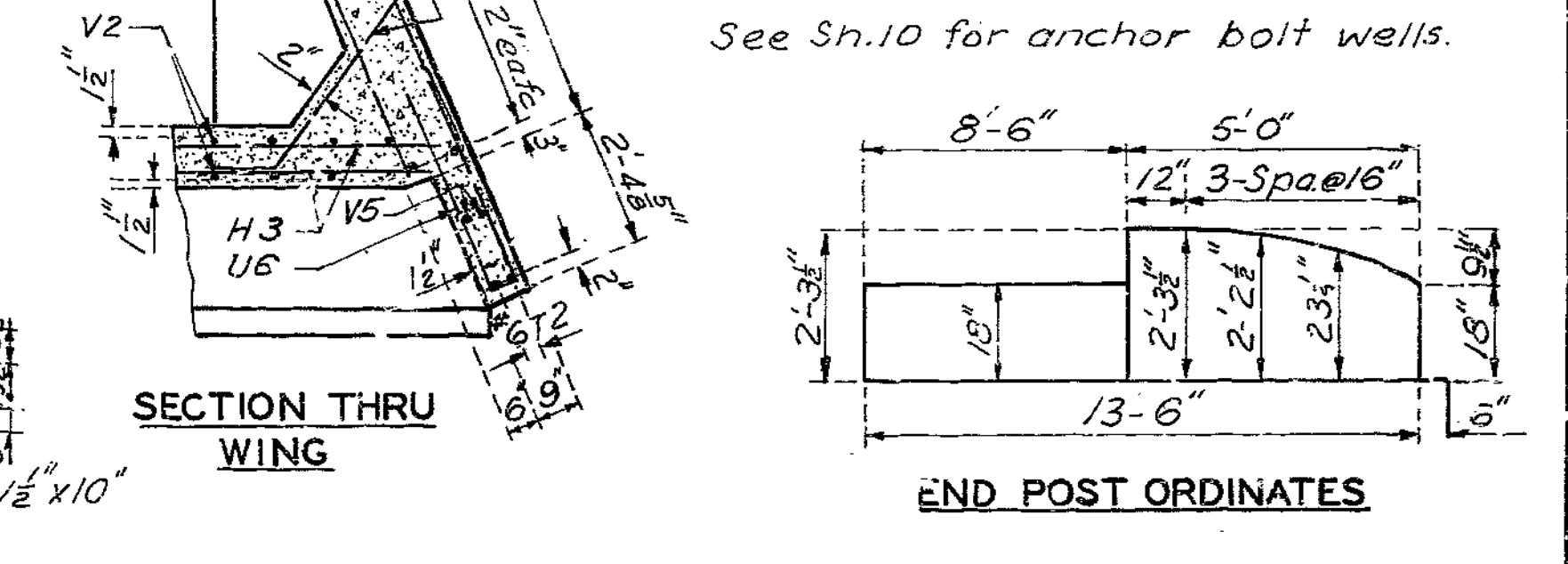
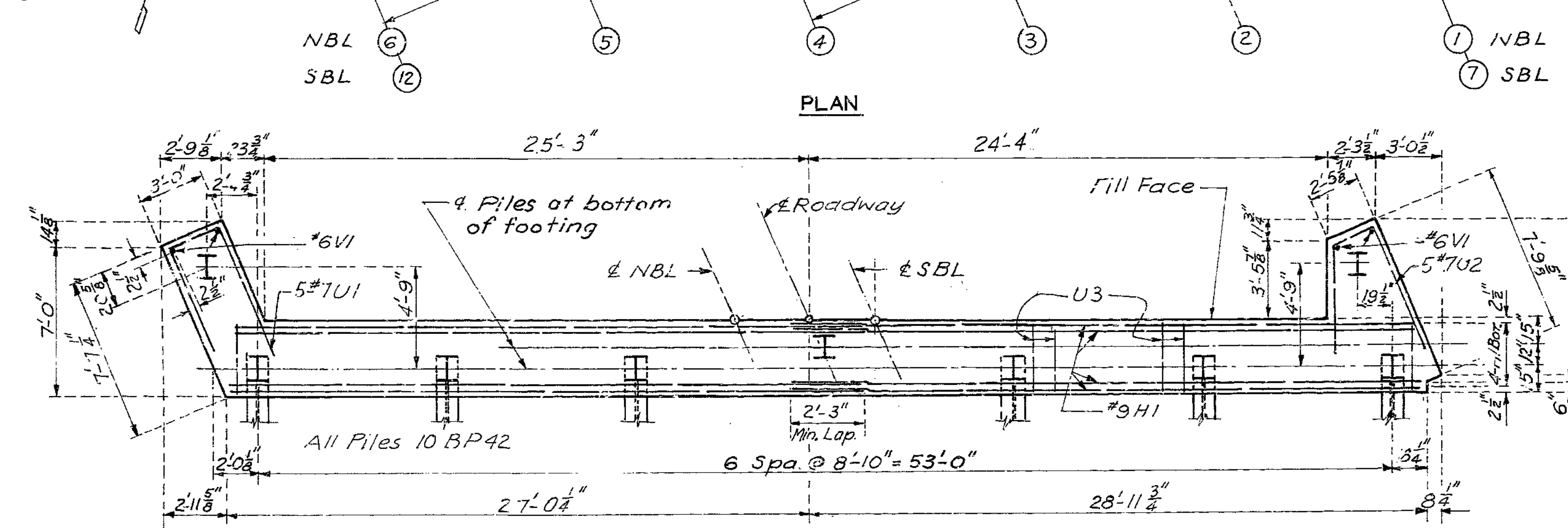
Note: Fill at end bent No. 1 shall not be carried above bottom of beam until adjacent superstructure span is in place.

FED. ROAD DIST. NO.	STATE NO.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5			19	121	



BRIDGE SEAT ELEVATIONS

NBL	SBL
① 754.07	⑦ 753.86
② 754.20	⑧ 753.88
③ 754.33	⑨ 754.11
④ 754.22	⑩ 754.19
⑤ 754.07	⑪ 754.04
⑥ 753.91	⑫ 753.88



BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. IG-435-1(52)(RTE. I-435) STA. 123+29.48 N.B.L.
 122+97.22 S.B.L.
 JACKSON COUNTY

DETAILED April 1967 by H.F.C.
 CHECKED Oct. 1967 by H.G.J.

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

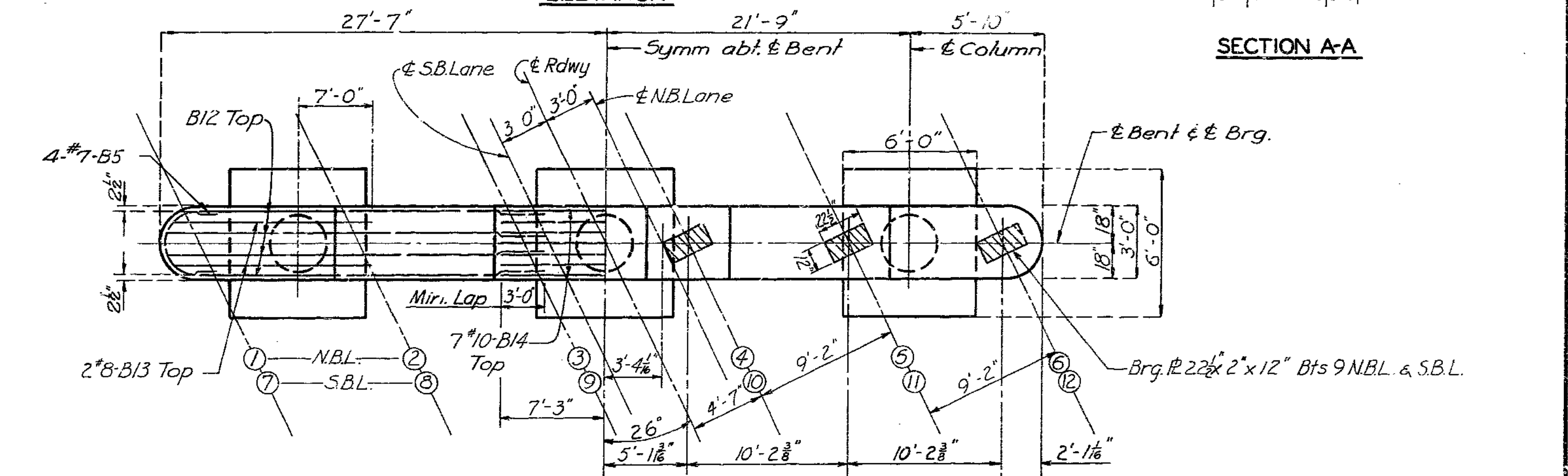
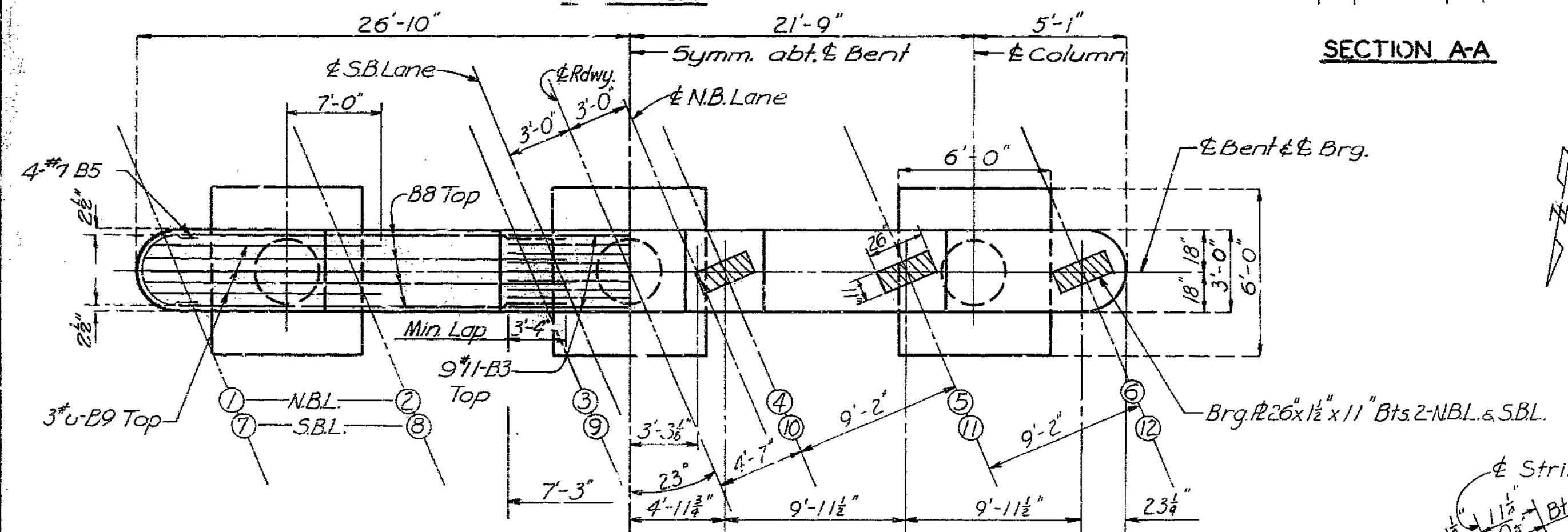
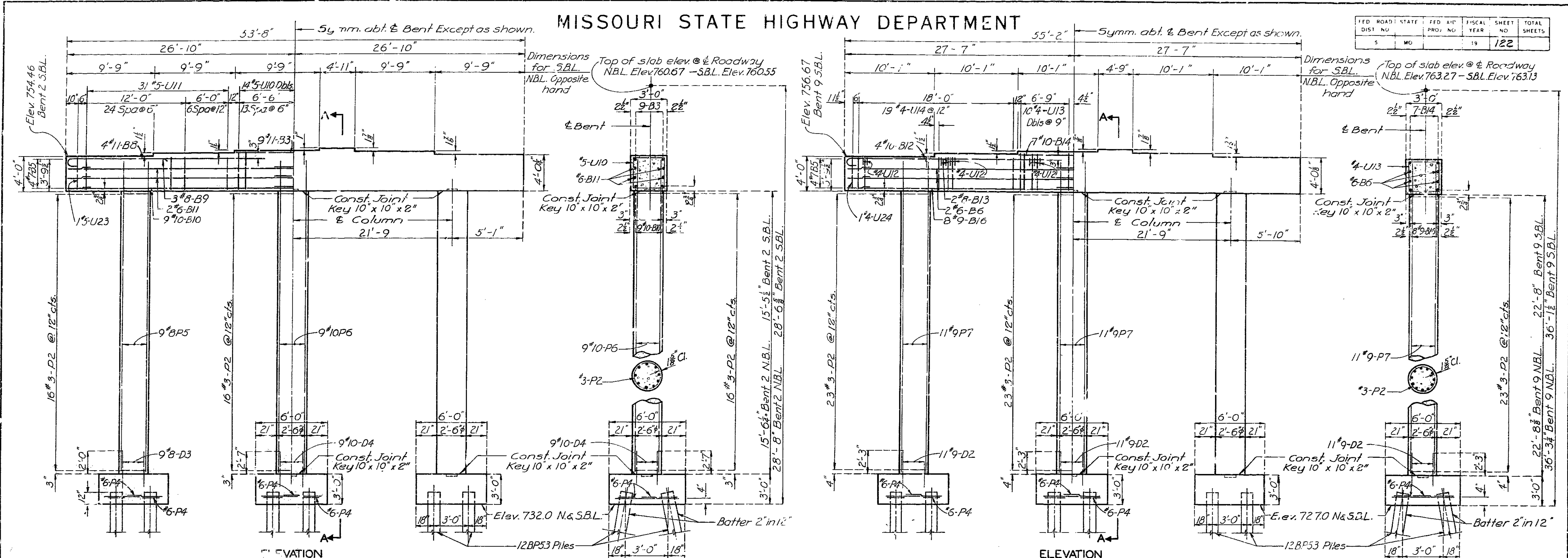
Sheet No. 6 of 23

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 KANSAS CITY, MO.

A-1685

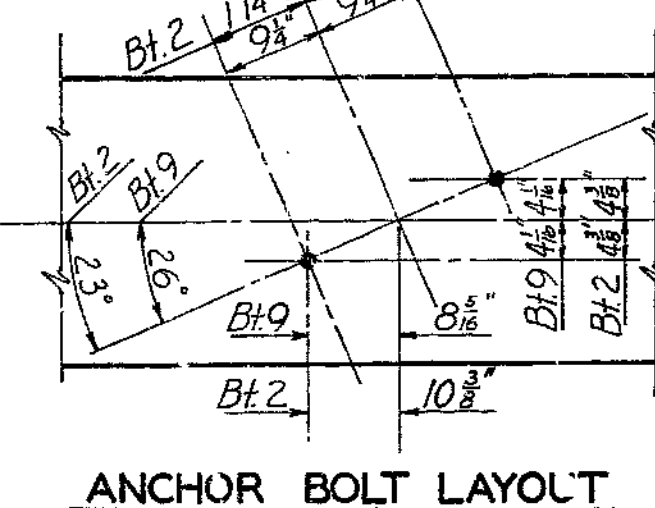
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	122	

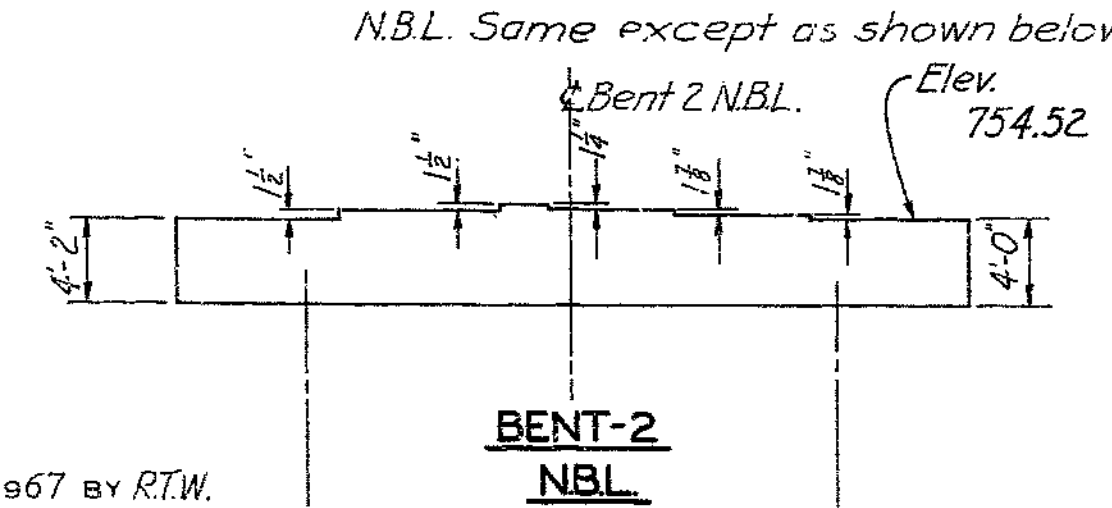


PLAN DETAILS OF INTERMEDIATE BENT NO. 2 SBL. N.B.L. Same except as shown below.

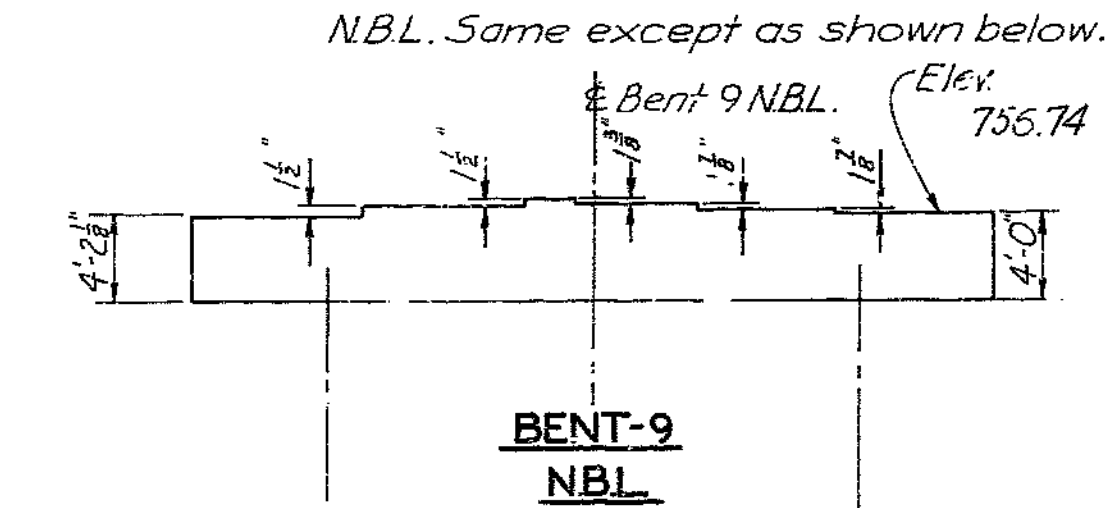
PLAN DETAILS OF INTERMEDIATE BENT NO. 9 SBL. N.B.L. Same except as shown below.



ANCHOR BOLT LAYOUT Note: See sheet 10 of 23 for details of anchor bolt wells.



BENT-2 NBL



BENT-9 NBL

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO: IG-435-1 (52) (RTE. I-435) STA. 123+29.48 NBL.
 122+97.22 SBL.
 JACKSON COUNTY

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 KANSAS CITY, MO.

A-1685

20

No. 19.6 Revised Sept. 1962
 No. 19.6 Revised Jan. 1965

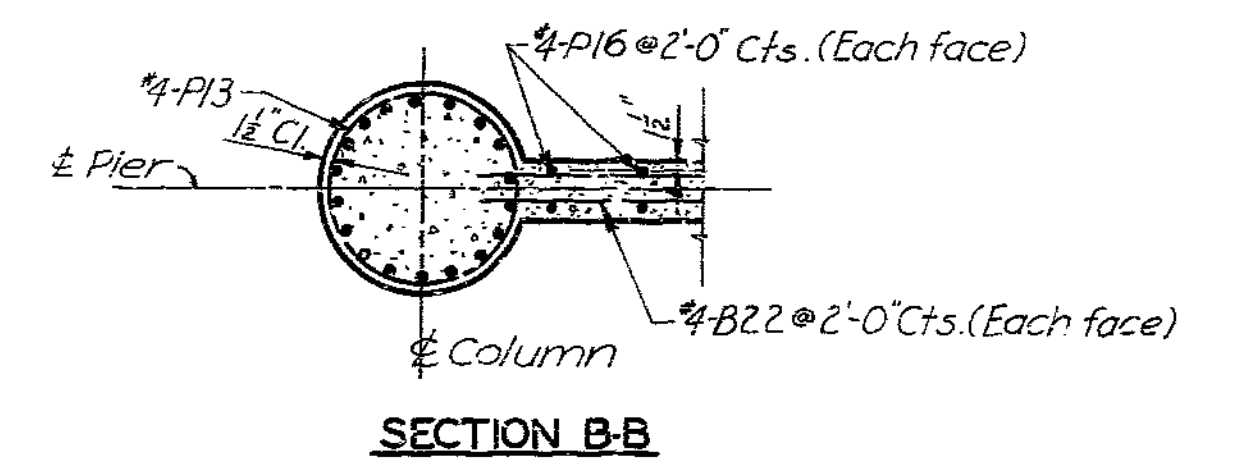
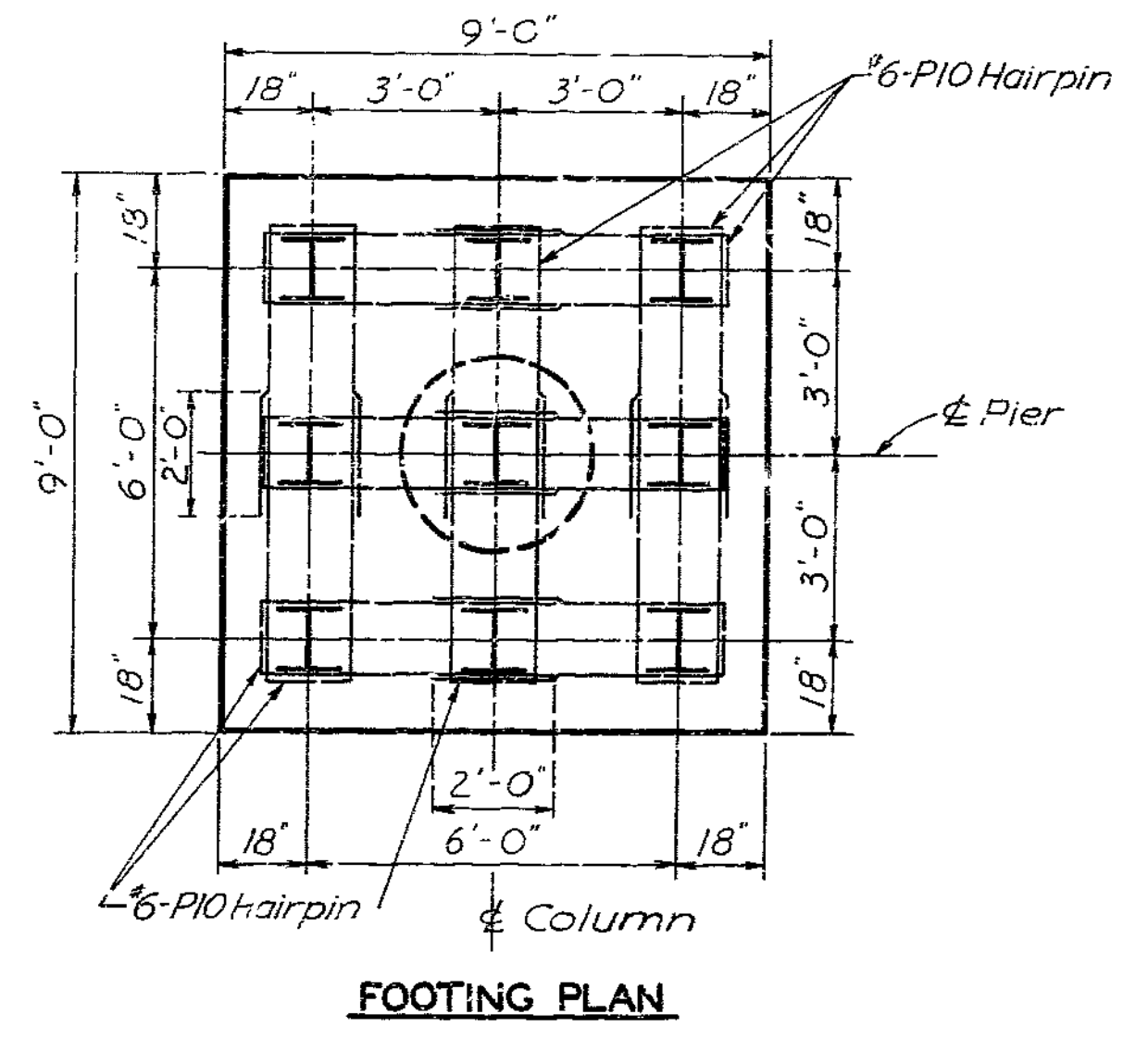
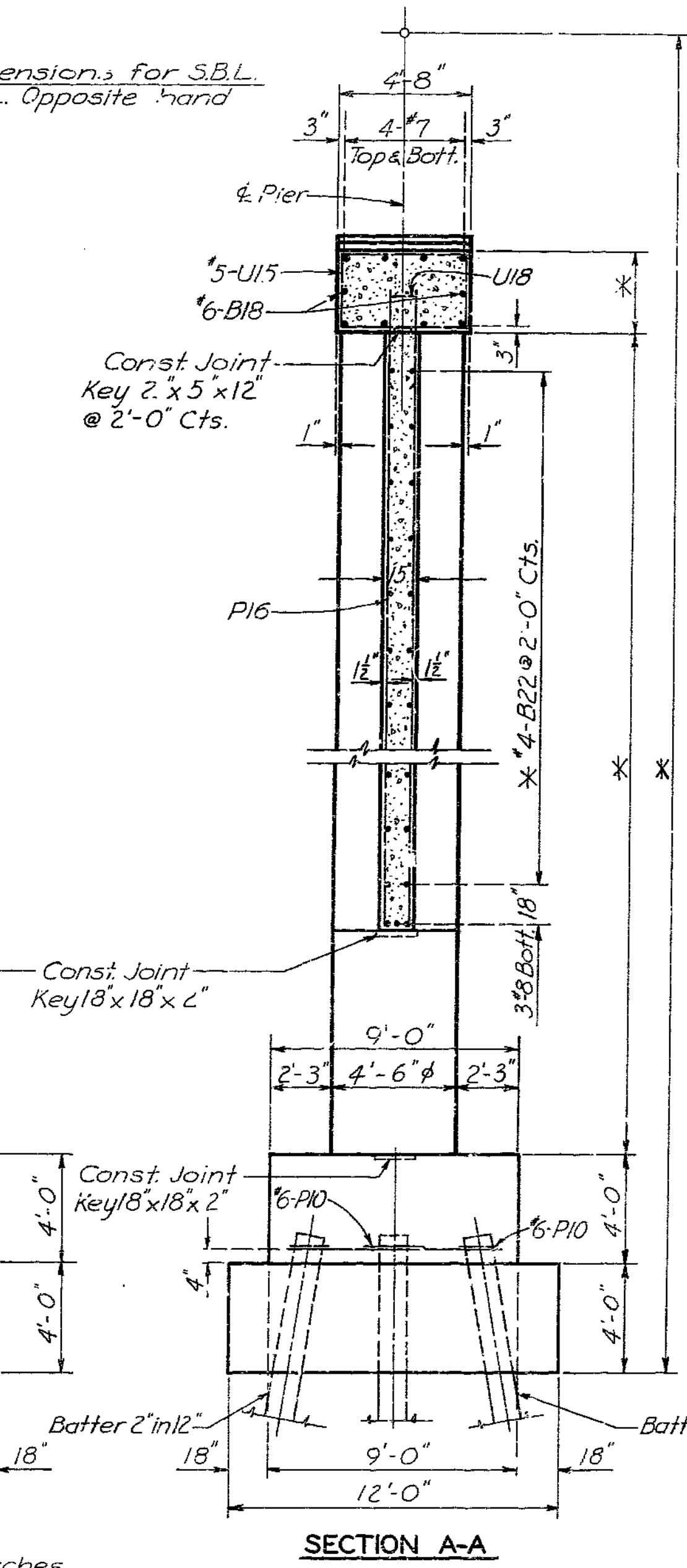
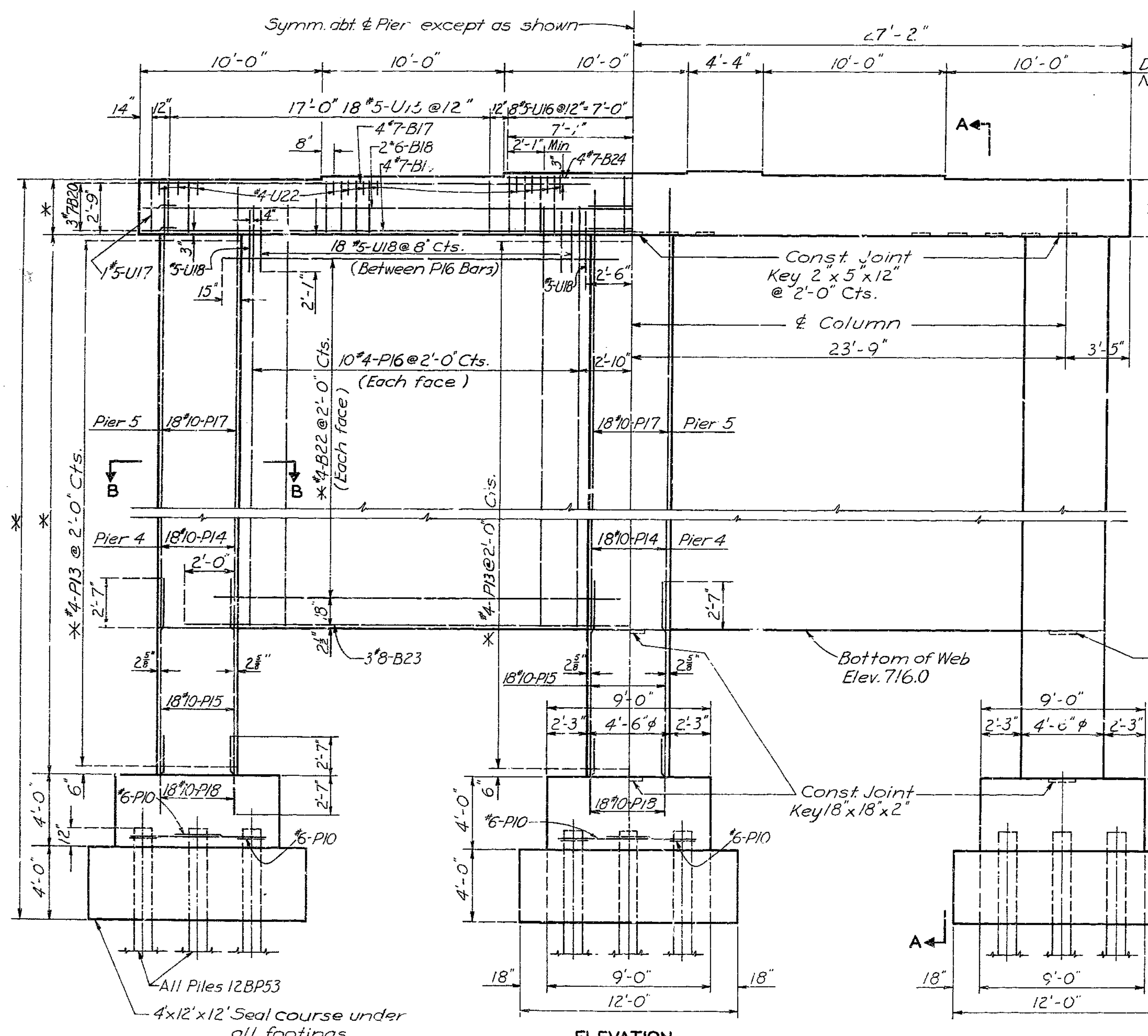
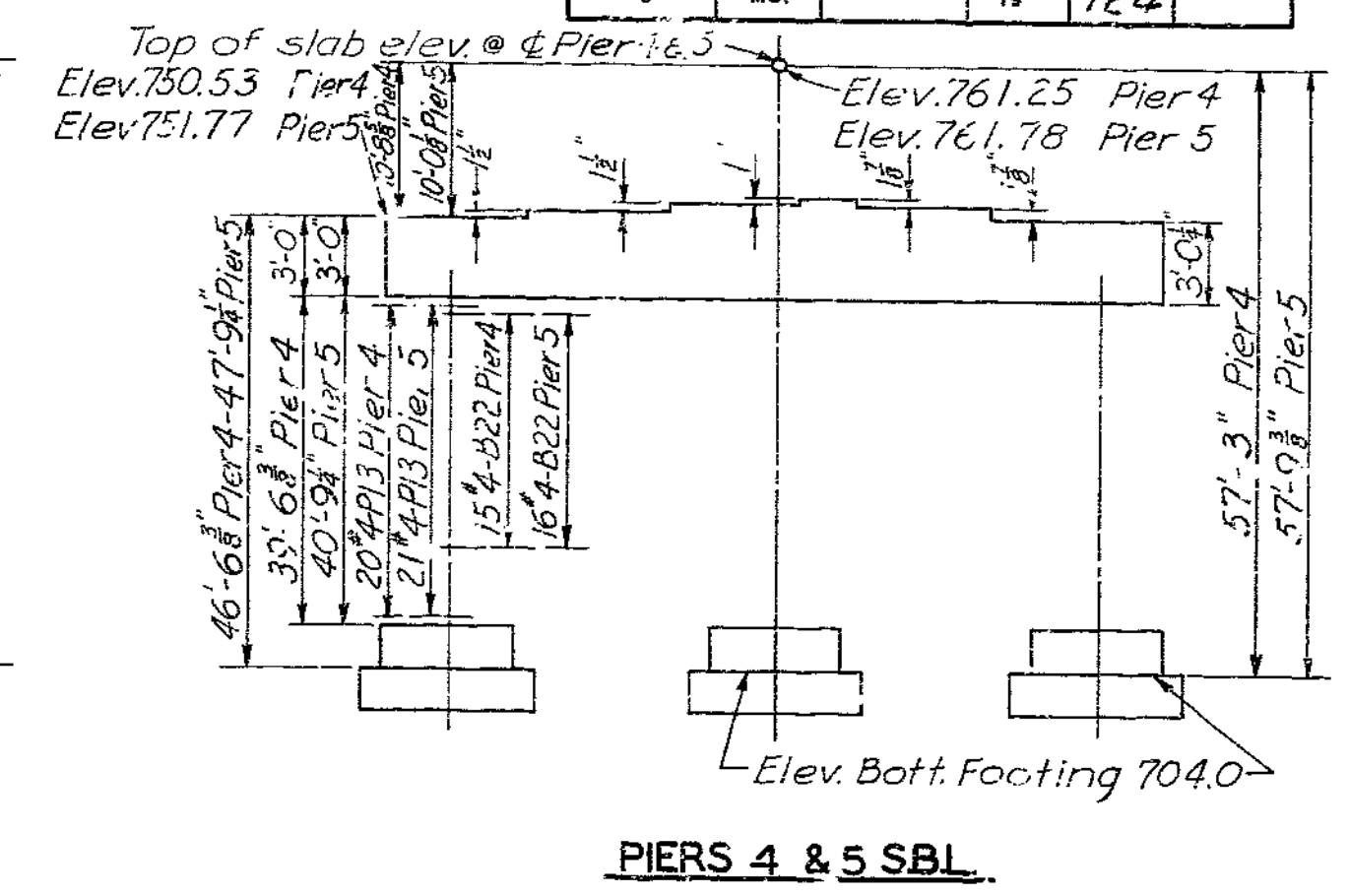
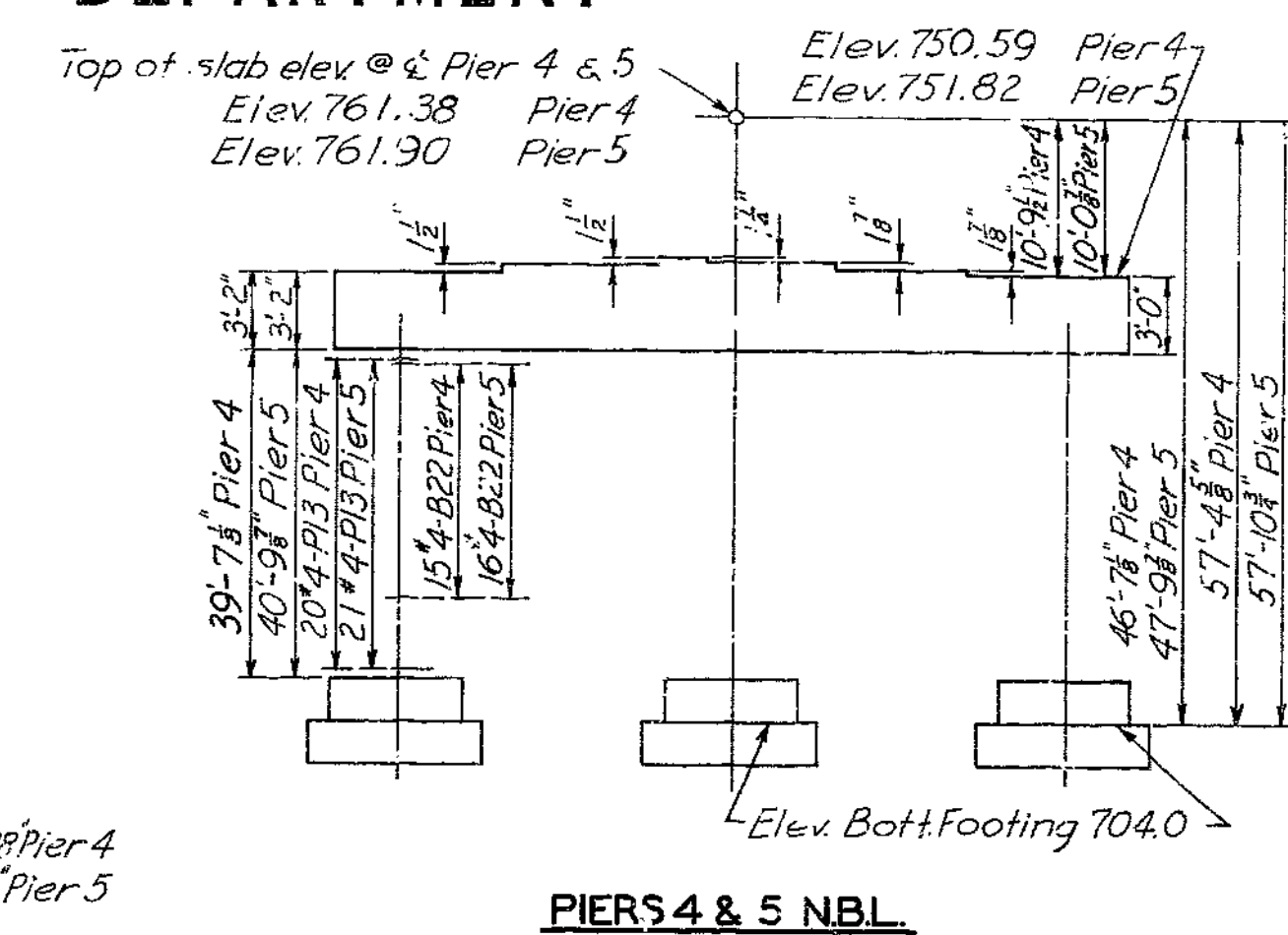
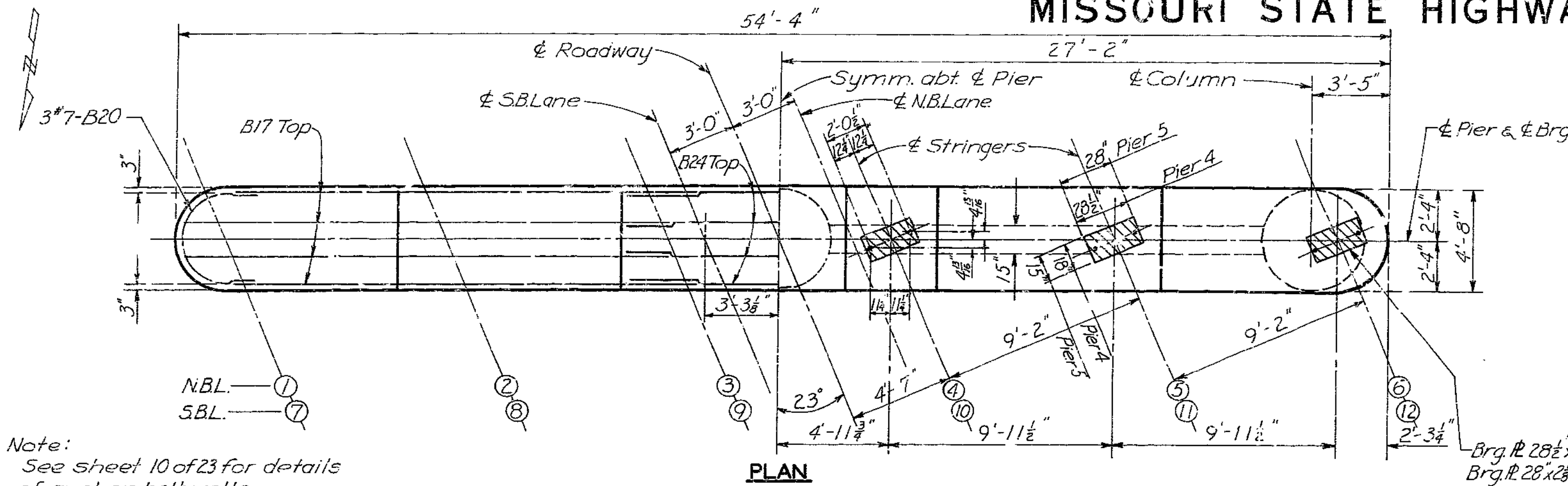
DETAILED April 1967 by RTW.
 CHECKED Oct. 1967 by MBH

Note: This drawing is not to scale. Follow dimensions

Sheet No. 7 of 23

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	Mo.		19	124	



DETAILS OF INTERMEDIATE PIERS 4 & 5

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. HG-435-1 (52) (RTE I-435) STA. 123+29.48 NBL.
 122+97.22 SBL.
 JACKSON COUNTY

22

DETAILED April 1967 BY R.T.W.
 CHECKED Oct. 1967 BY WBH

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

* See Elevation Sketches

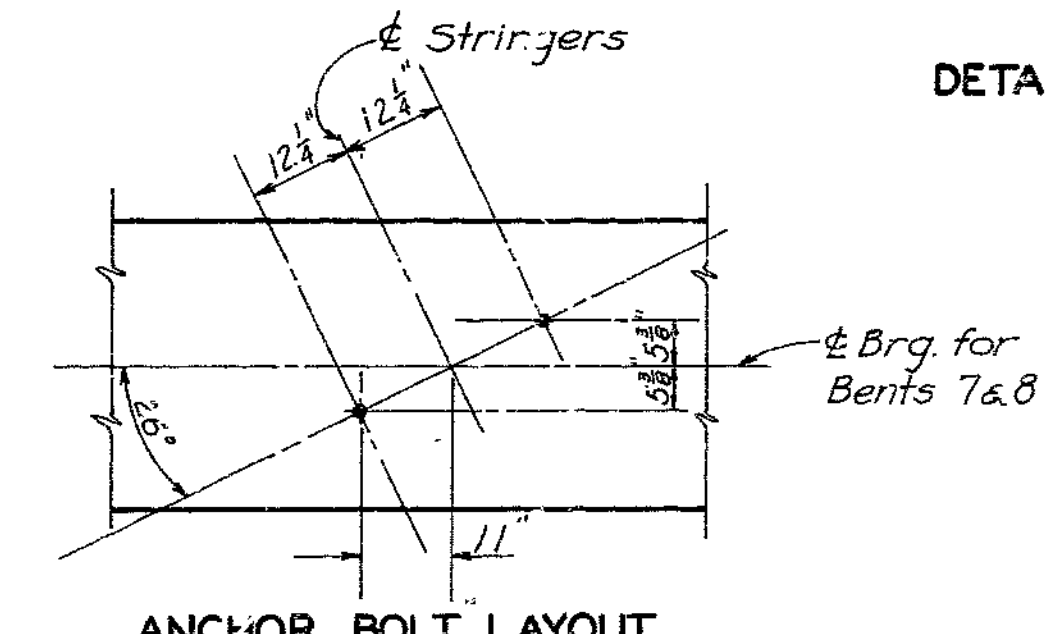
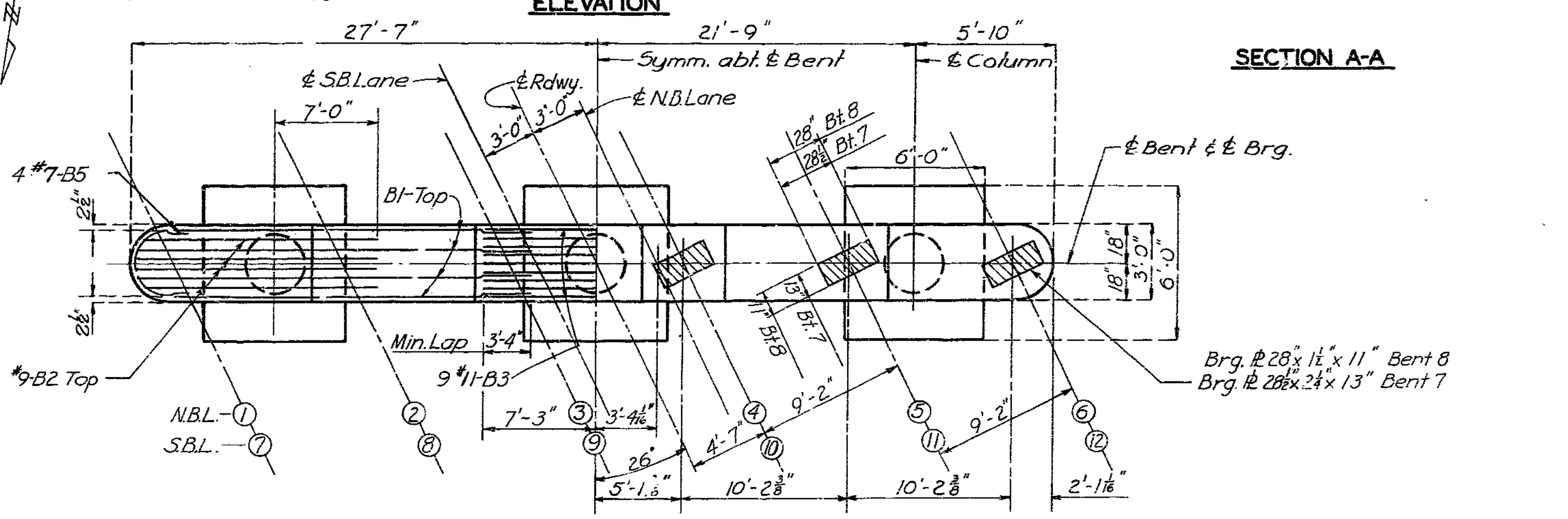
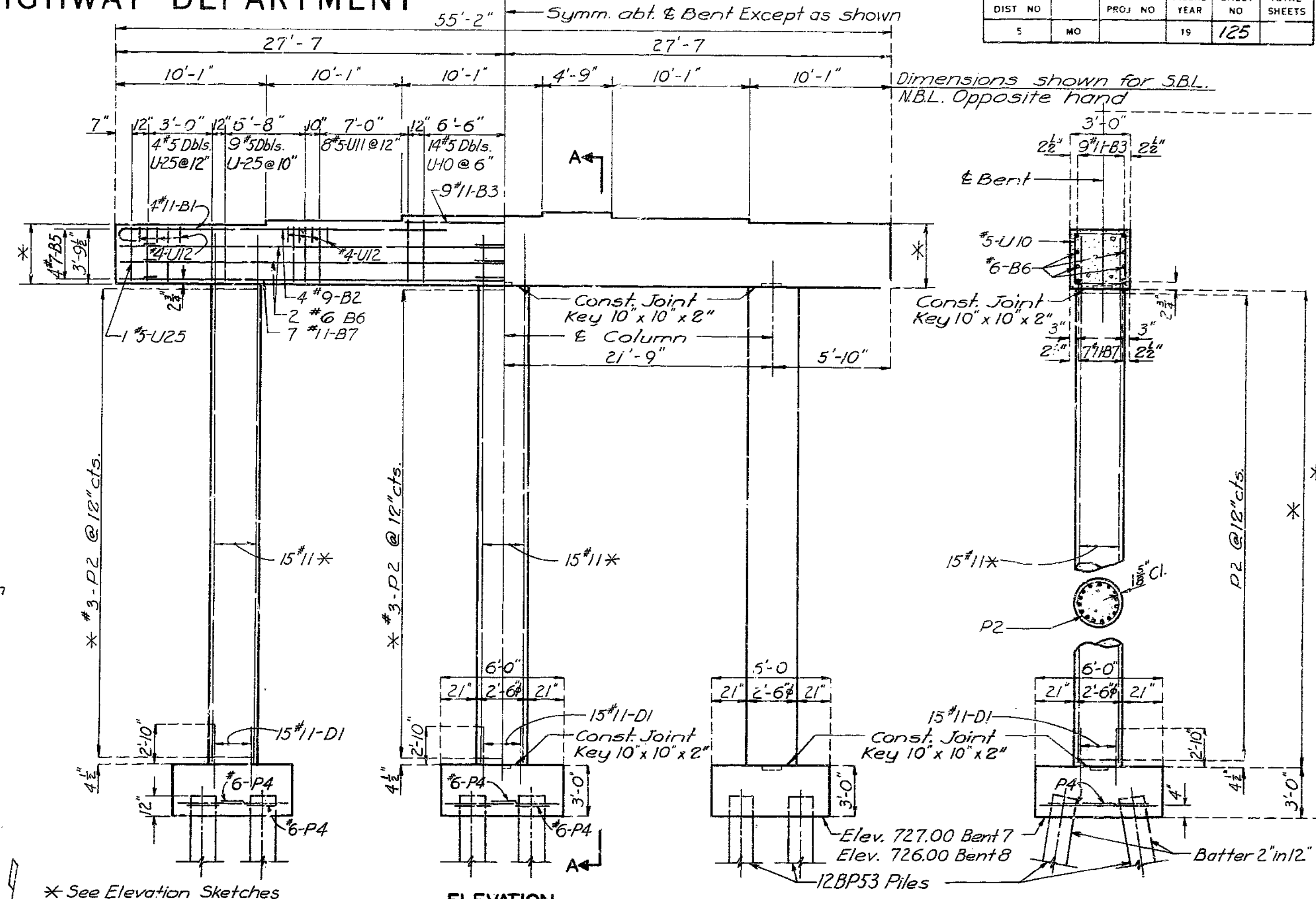
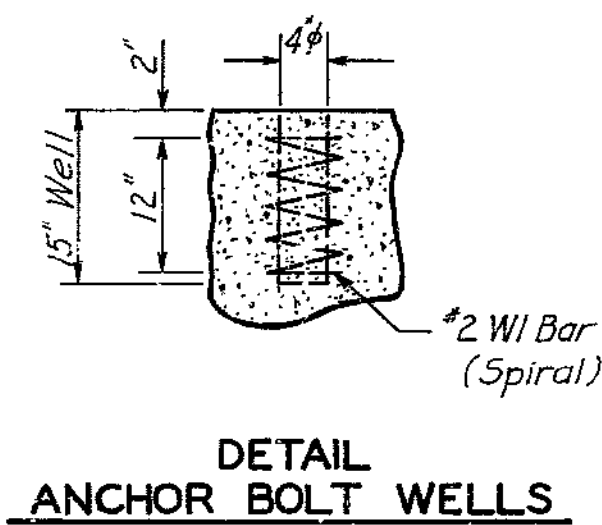
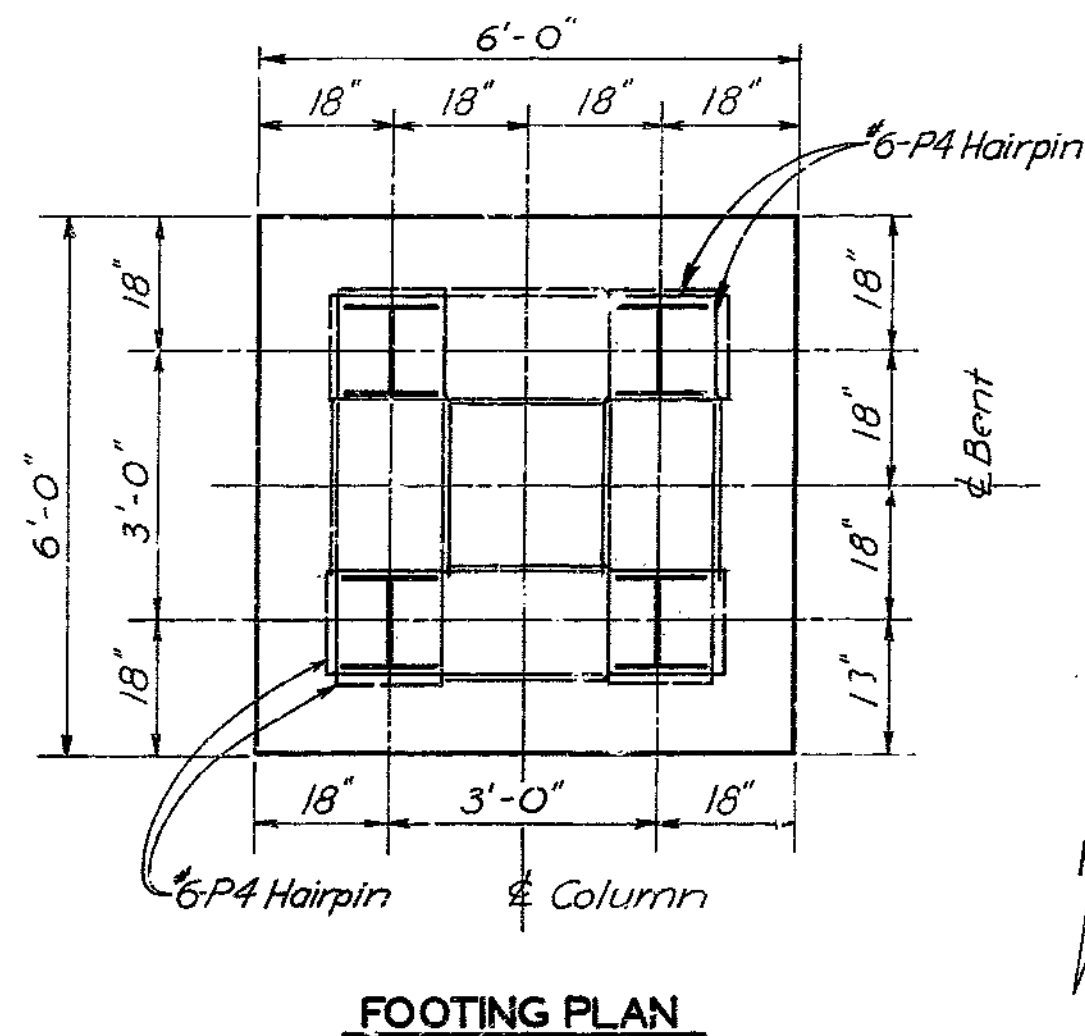
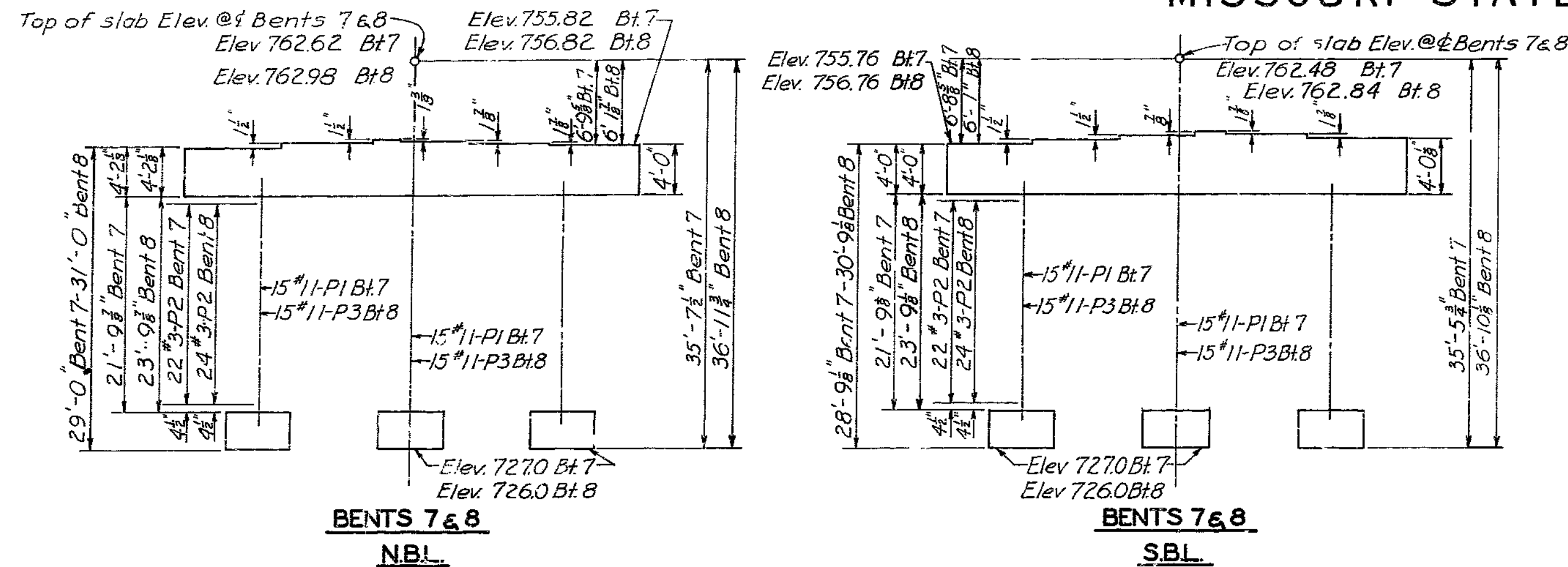
Sheet No. 9 of 23.

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 CONSULTING ENGINEERS
 KANSAS CITY, MO.

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	125	



DETAILS OF INTERMEDIATE BENTS NO. 7 & 8

BRIDGE OVER BIG BLUE RIVER
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. IG-435-(52)/RTE-1-435 STA. 123+29.48 N.B.L.
 122+97.22 S.B.L.
 JACKSON COUNTY

23

Revised
 No. 19.5
 Jan. 1965

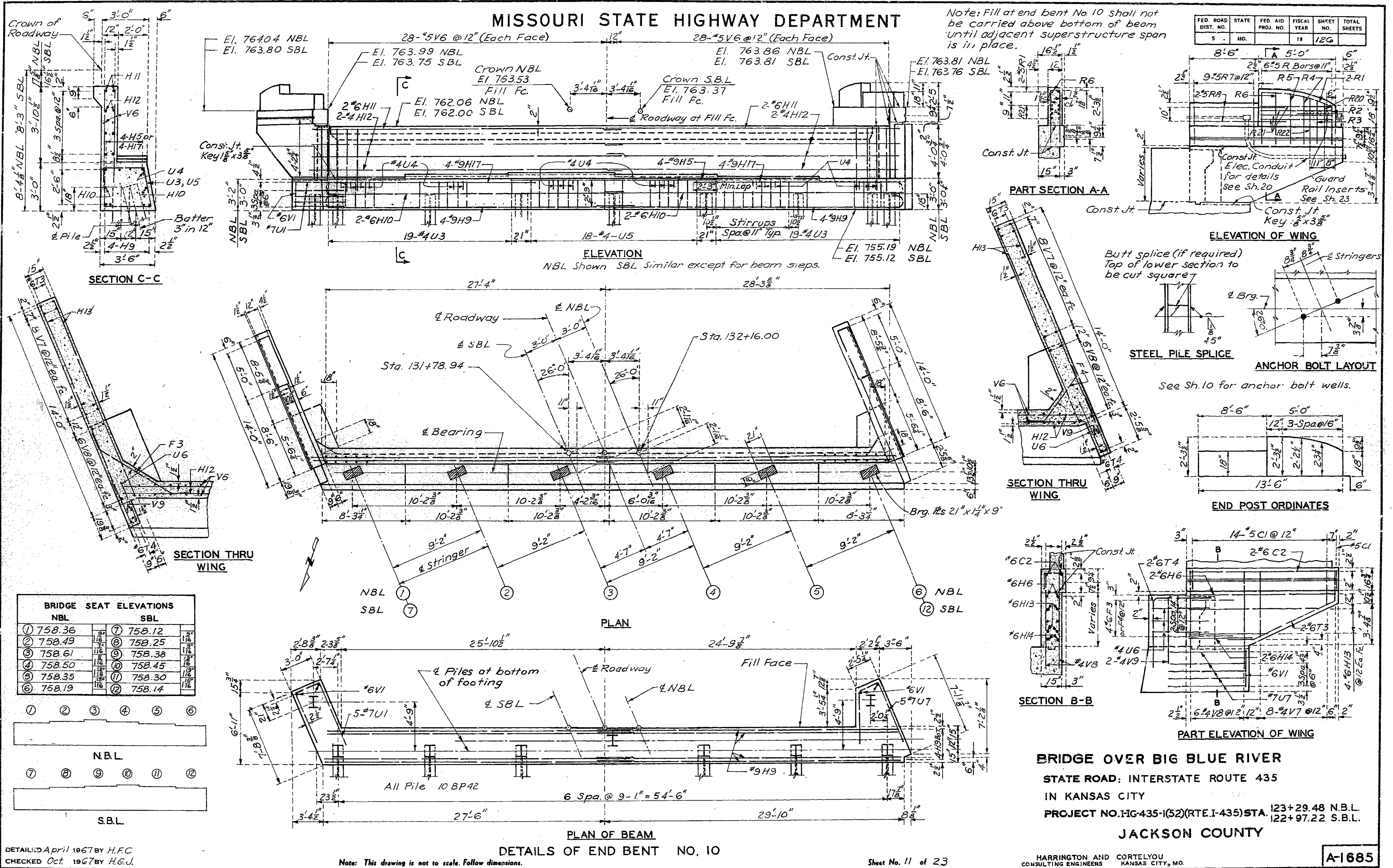
DETAILED April 1967 by R.T.W.
 CHECKED Oct. 1967 by W.B.H.

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

Sheet No. 10 of 23

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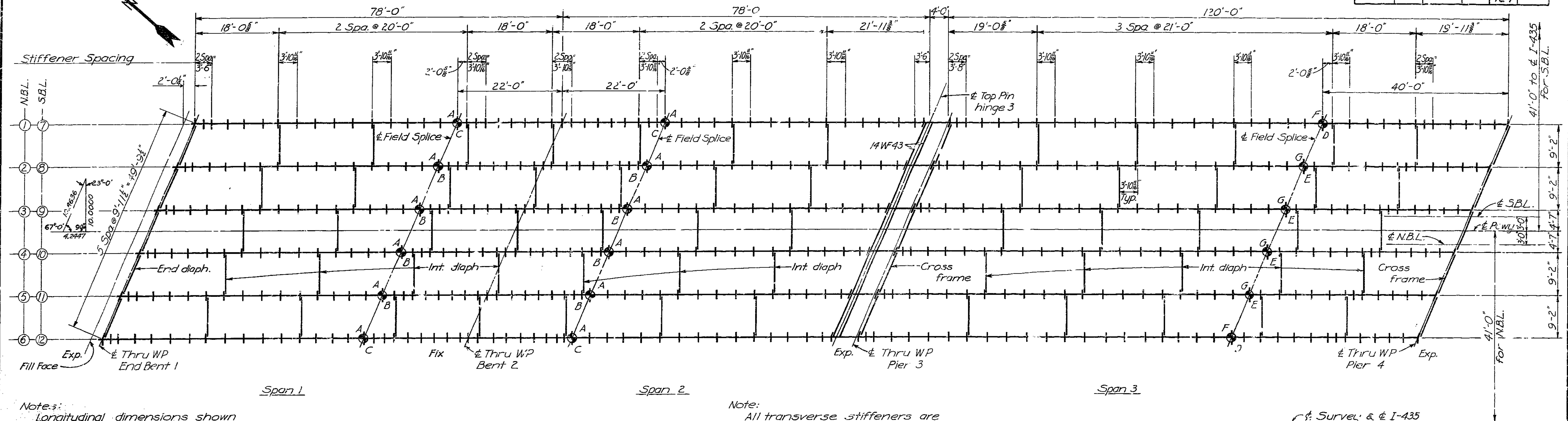
DETAIL: April 1967 by H.F.C.
CHECKED Oct. 1967 by H.G.U.

BRIDGE OVER BIG BLUE RIVER
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IG-435-1(52) (RTE. I-435) STA. 123+29.48 N.B.L.
122+97.22 S.B.L.
JACKSON COUNTY

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

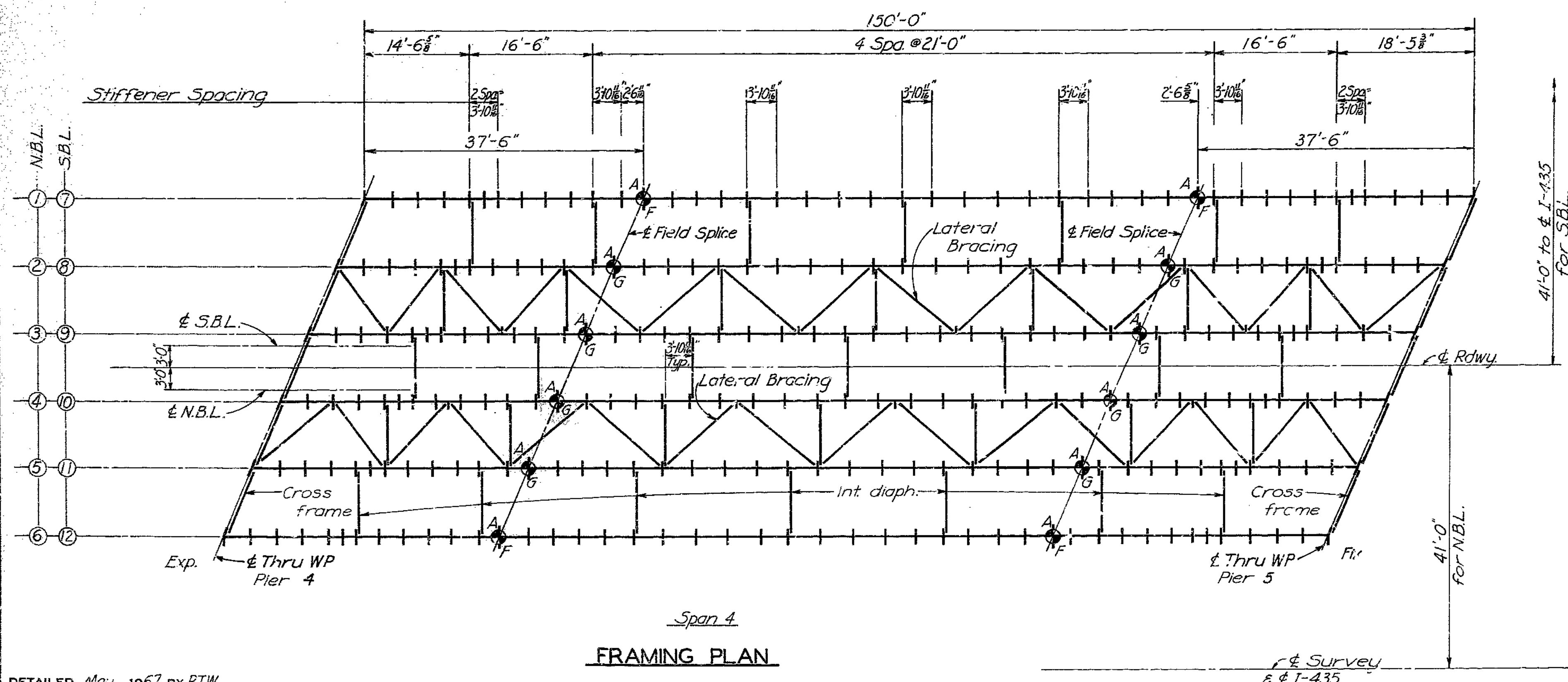
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MO.		19	127	



Notes:
Longitudinal dimensions shown are taken along top of girder web.

Note:
All transverse stiffeners are normal to top flange, and are equally spaced between those shown.

Top A
Bottom C
Field splice designation, see sheet 10.



FRAMING PLAN

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

BRIDGE OVER BIG BLUE RIVER
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO: IG-435-1 (52) (RTE. I-435) STA. 123+29.48 NBL.
122+97.22 SBL.
JACKSON COUNTY

DETAILED May 1967 BY R.T.W.
CHECKED Oct. 1967 BY D.H.L.

Sheet No. 12 of 23.

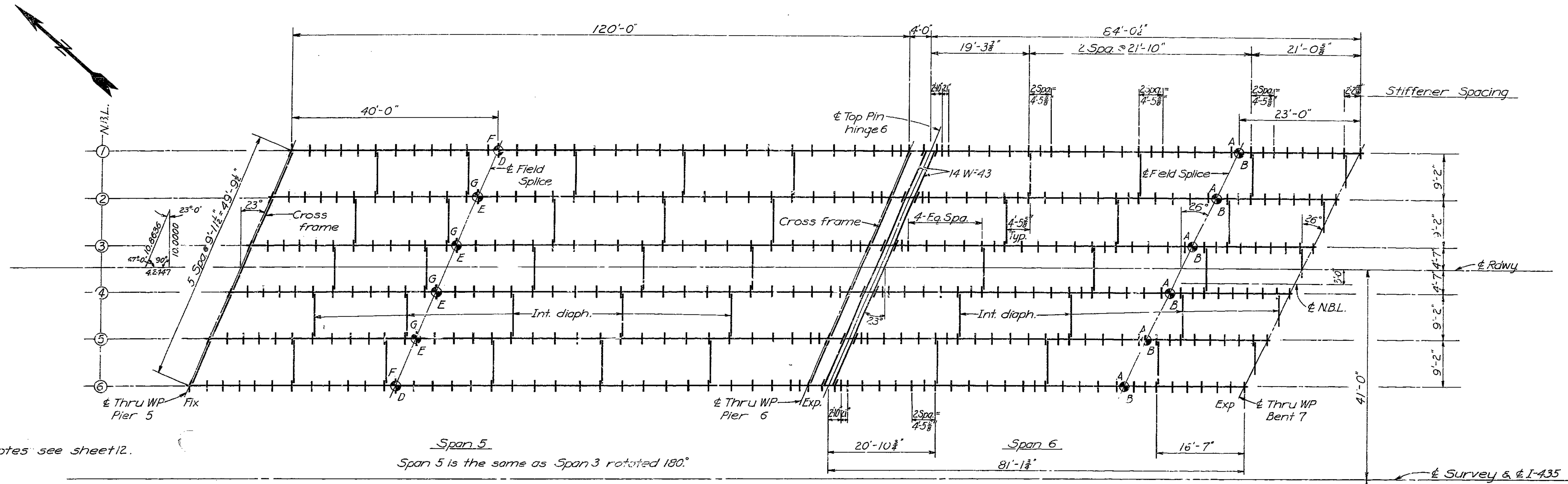
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KANSAS CITY, MO.

A-1685

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MISSOURI STATE HIGHWAY DEPARTMENT

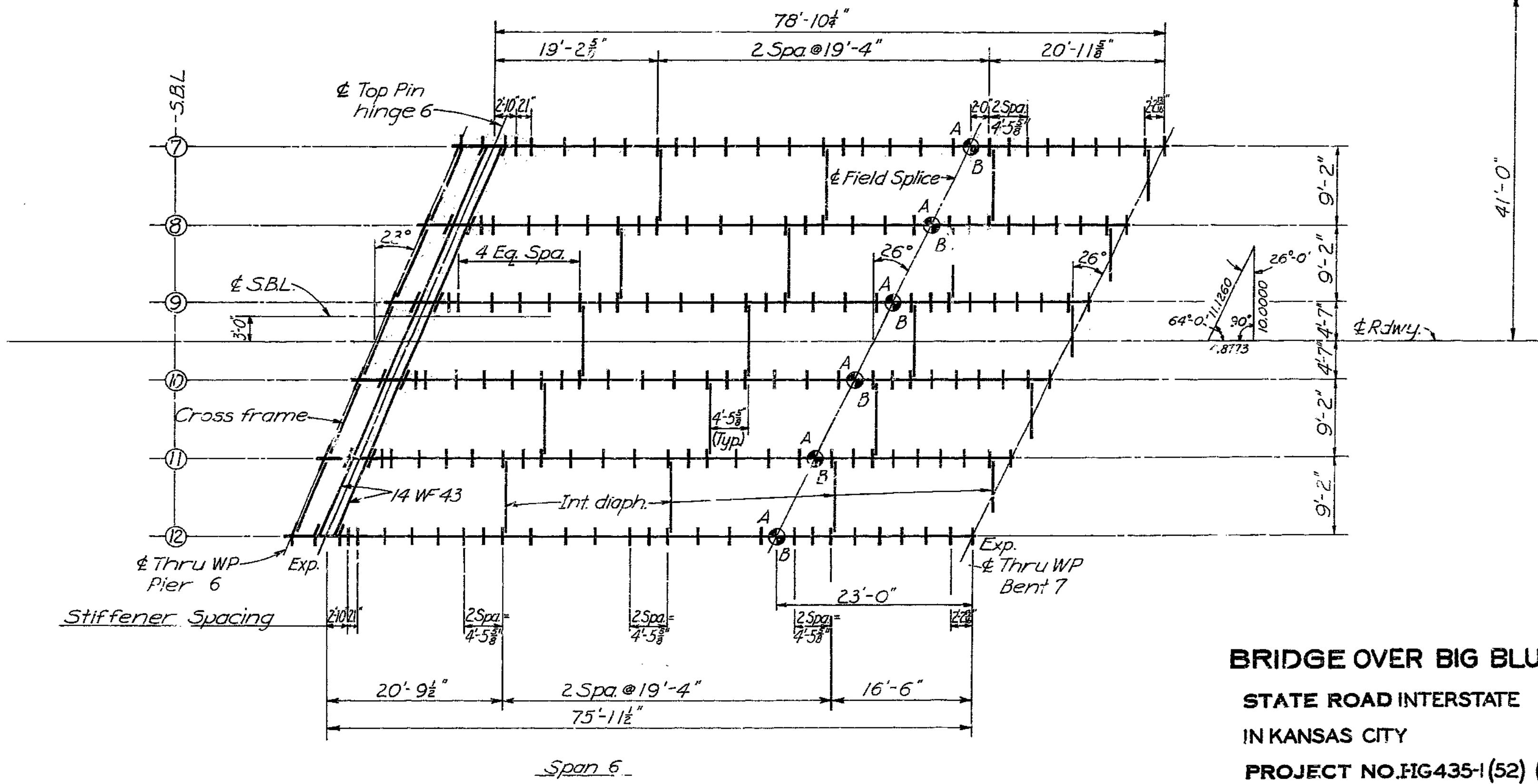
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	128	



Note: for notes see sheet 12.

Span 5
Span 5 is the same as Span 3 rotated 180°

Note:
Spans 1,2,3,4,5,7,8,&9 for SBL are the same as those of the NBL, except as shown. See sheets 12 & 14.



FRAMING PLAN

BRIDGE OVER BIG BLUE RIVER
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IG435-1(52) (RTE. I-435) STA. 123+2948 NBL.
122+9722 SBL.
JACKSON COUNTY

26
DETAILED May 1967 BY R.T.W.
CHECKED Oct. 1967 BY D.H.L.

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

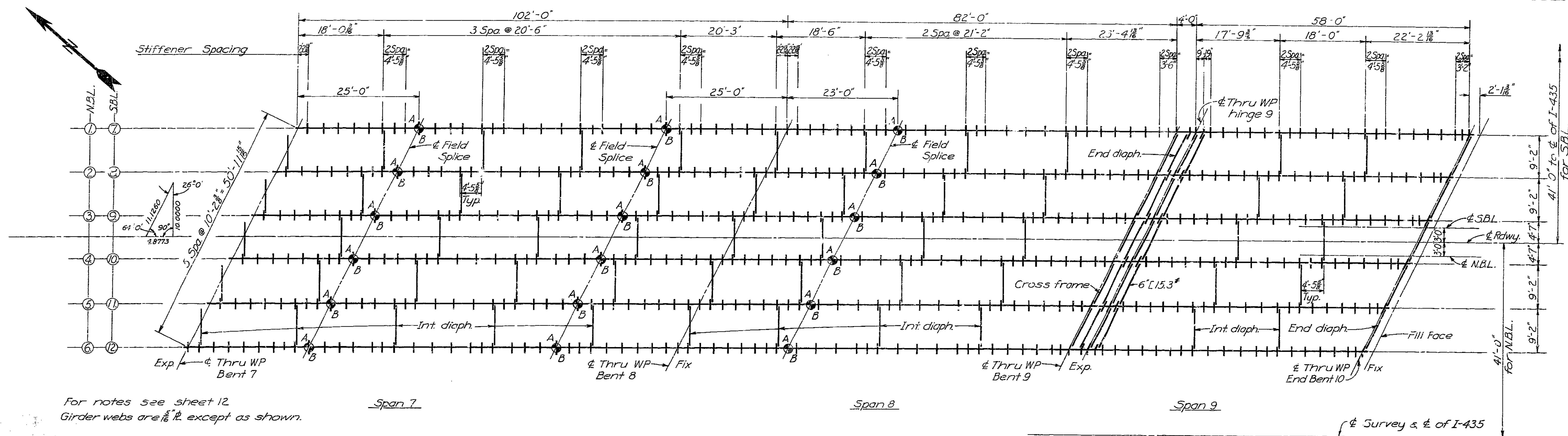
Sheet No. 13 of 23.

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS
KANSAS CITY, MO.

A-1685

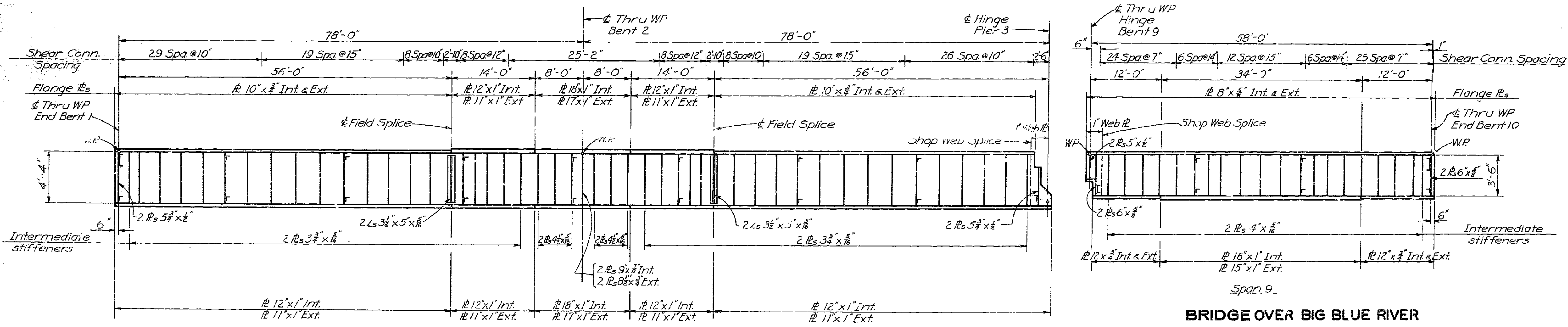
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	129	



For notes see sheet 12
Girder webs are 1/8" R except as shown.

FRAMING PLAN



BRIDGE OVER BIG BLUE RIVER
STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. HG435-1(52) (RTE. I-435) STA. 123+29.48 NBL
122+97.22 SBL
JACKSON COUNTY

GIRDER ELEVATION

DETAILED June 1967 BY R.T.W.
CHECKED Oct. 1967 BY D.H.L.

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

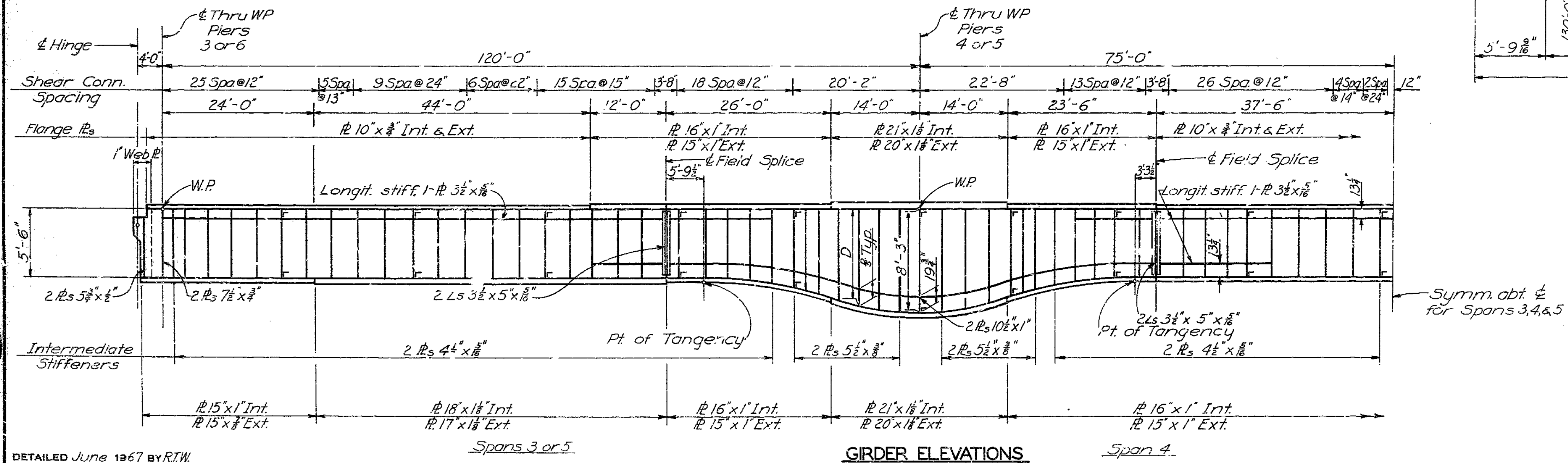
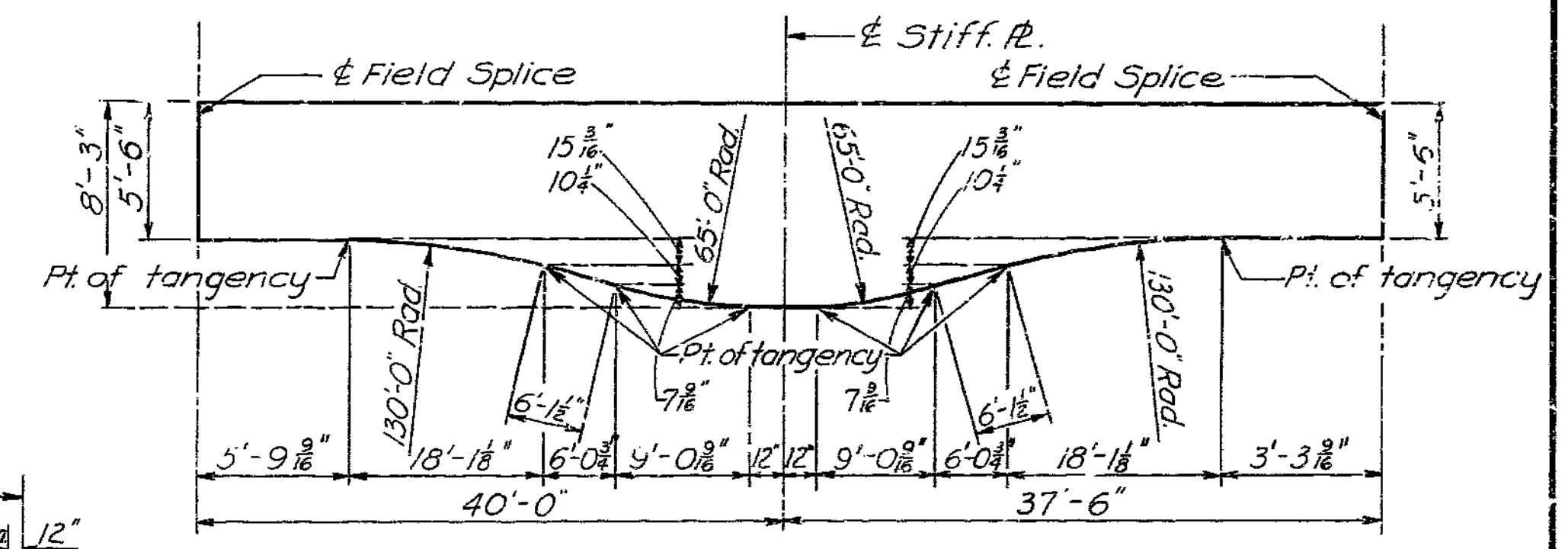
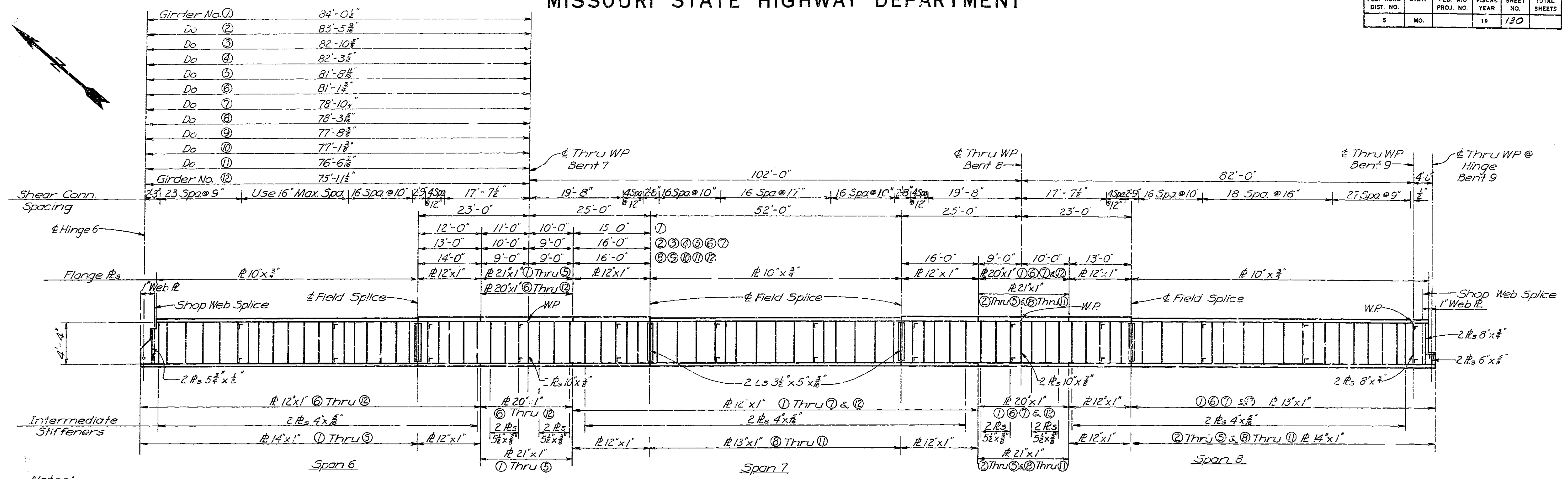
Sheet No. 14 of 23.

HARRINGTON AND CORTEJO
CONSULTING ENGINEERS
KANSAS CITY, MO.

A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	130	



BRIDGE OVER BIG BLUE RIVER
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. HG 435-1 (52) (RTE-I-435) STA. 123+29.48 NBL.
 122+97.22 SBL.
 JACKSON COUNTY

28
 DETAILED June 1967 BY R.T.W.
 CHECKED Oct. 1967 BY D.H.L.

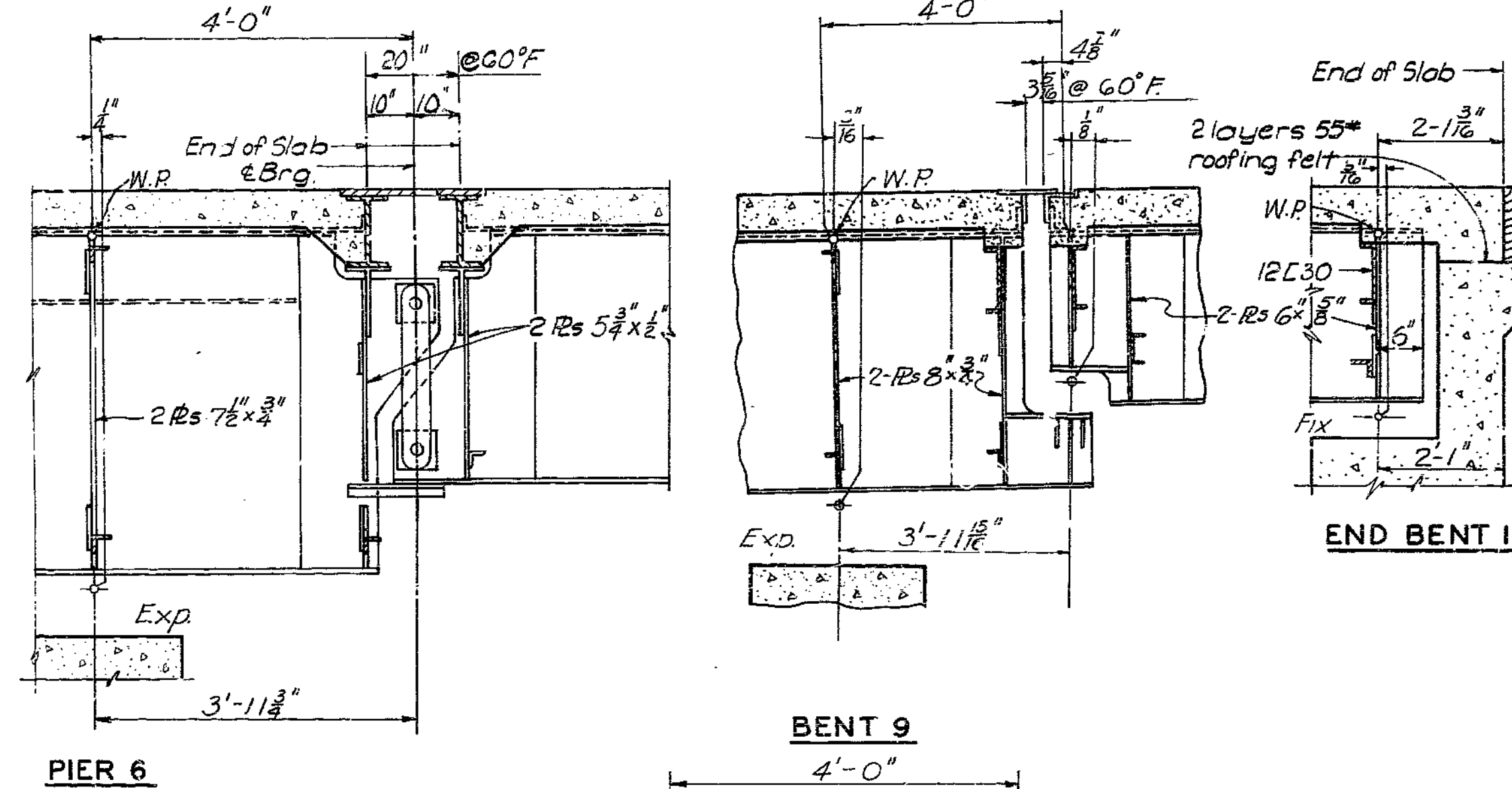
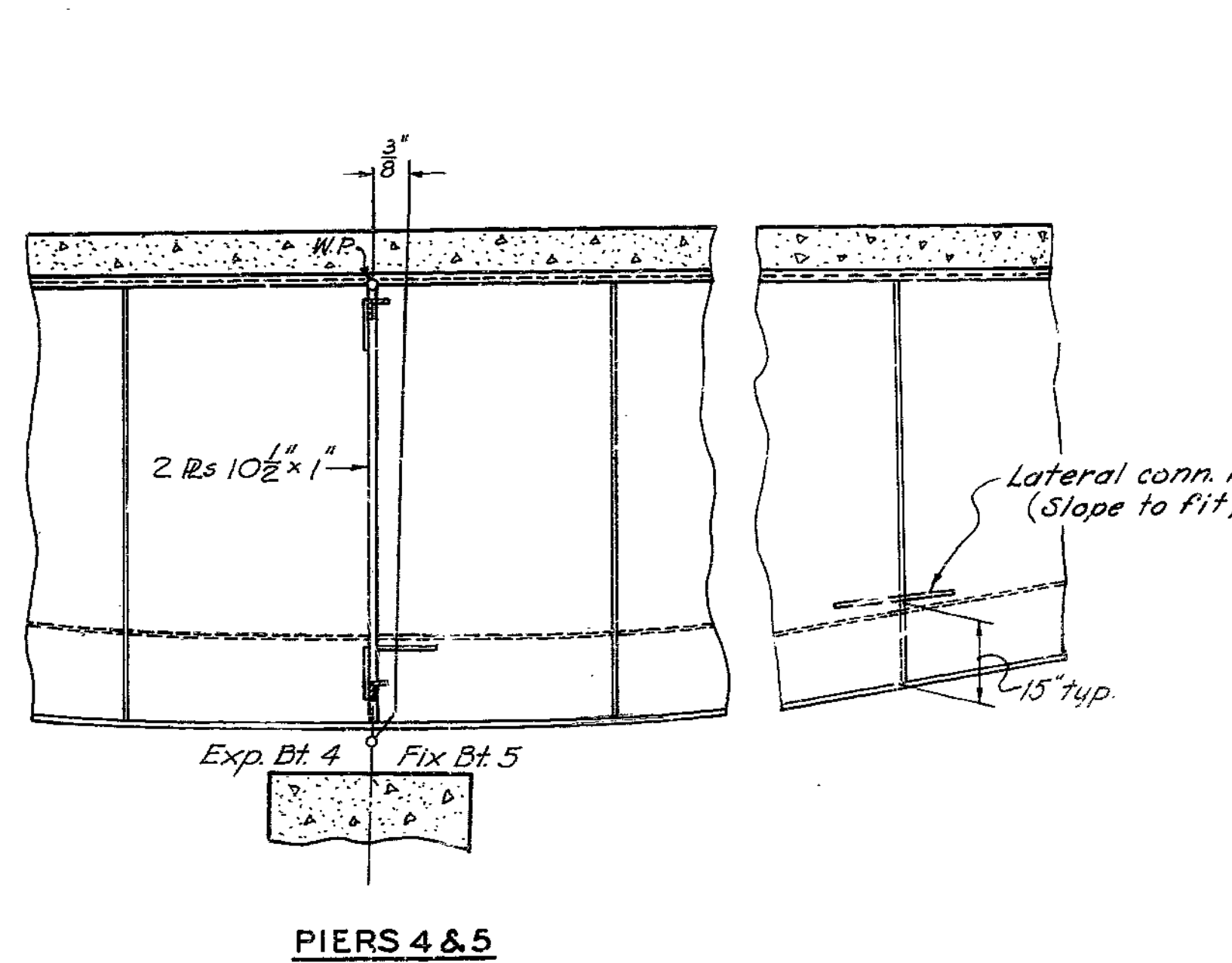
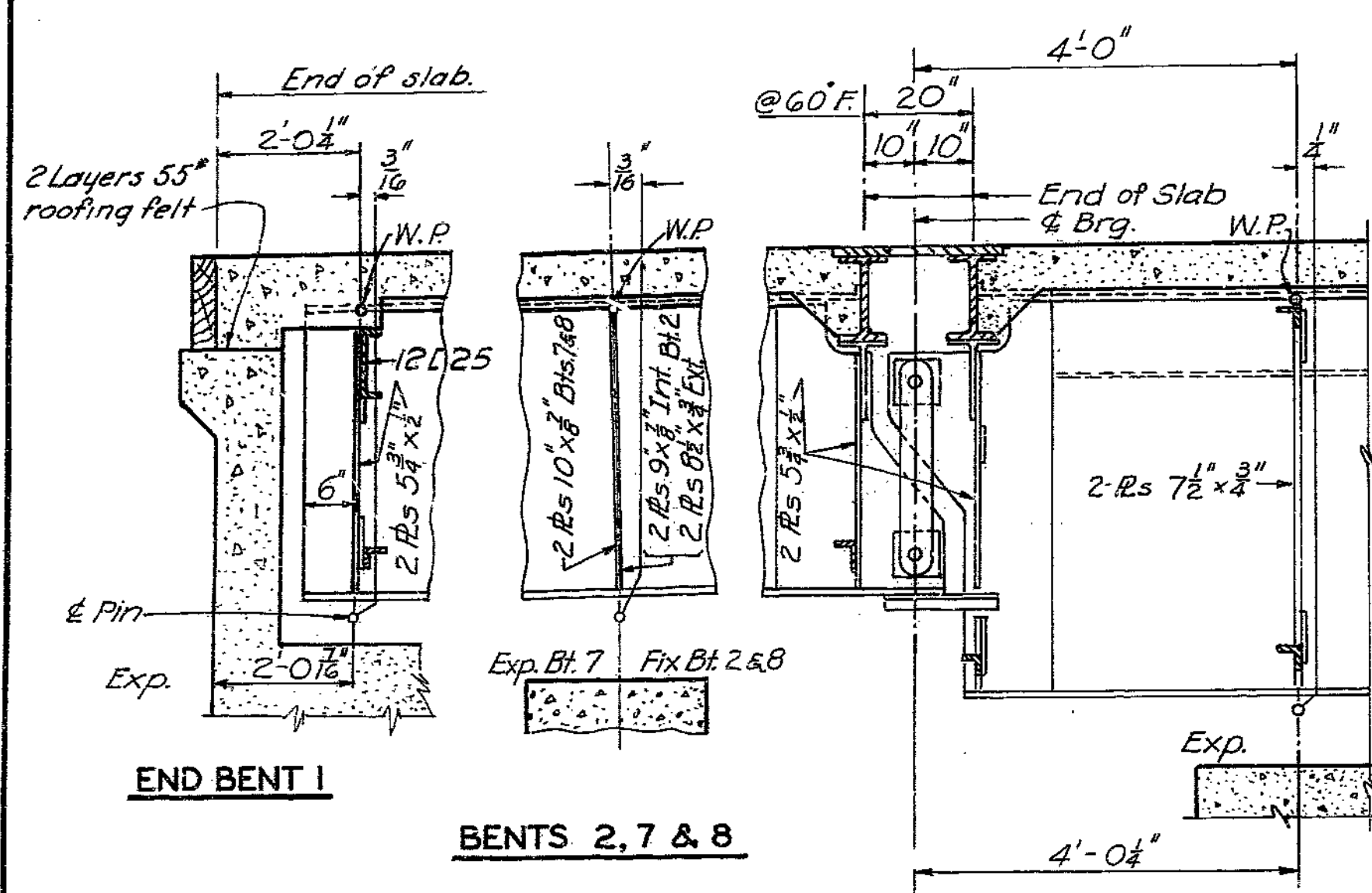
Sheet No. 15 of 23.

HARRINGTON AND CORTELYOU
 CONSULTING ENGINEERS
 KANSAS CITY, MO.

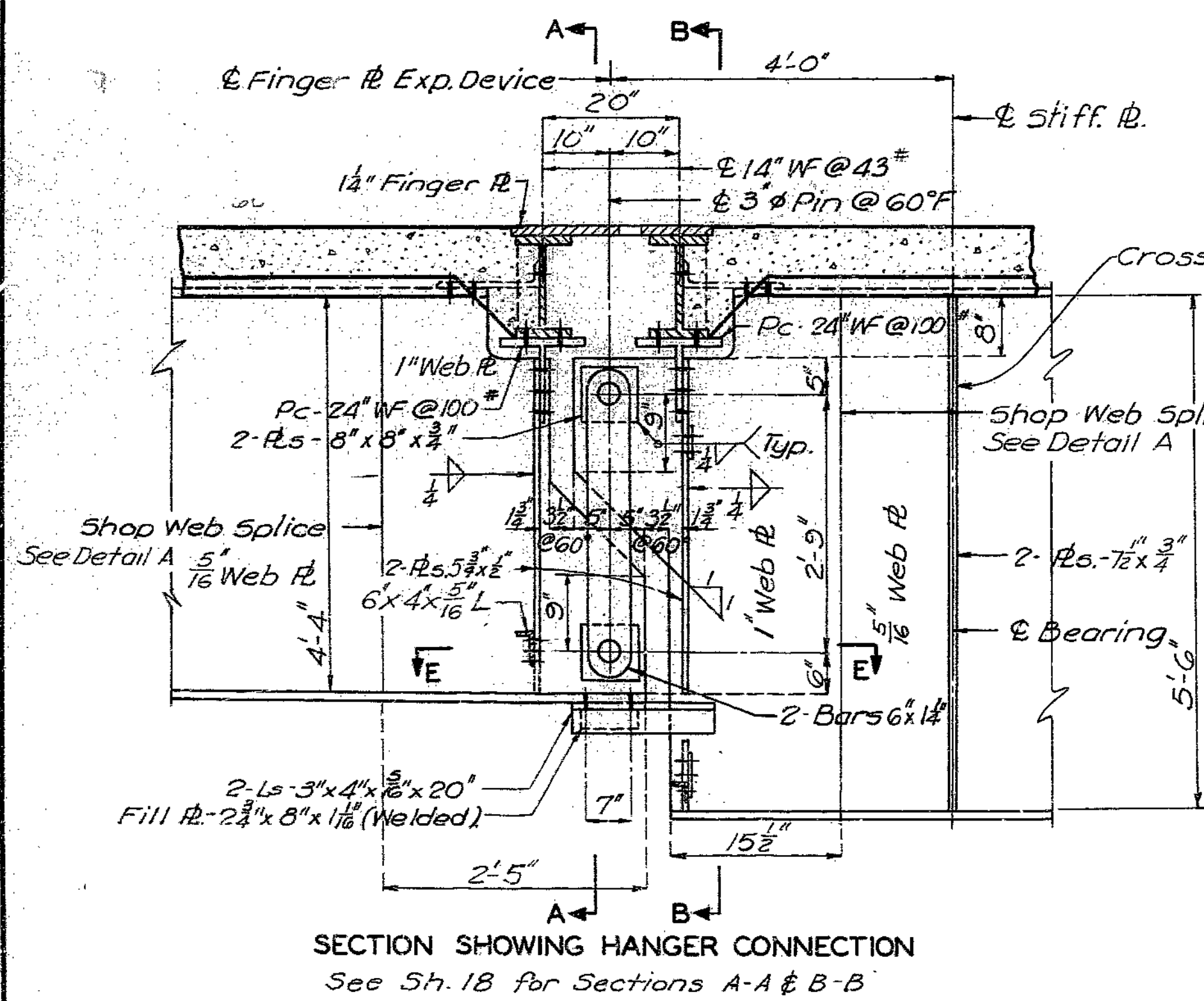
A-1685

MISSOURI STATE HIGHWAY DEPARTMENT

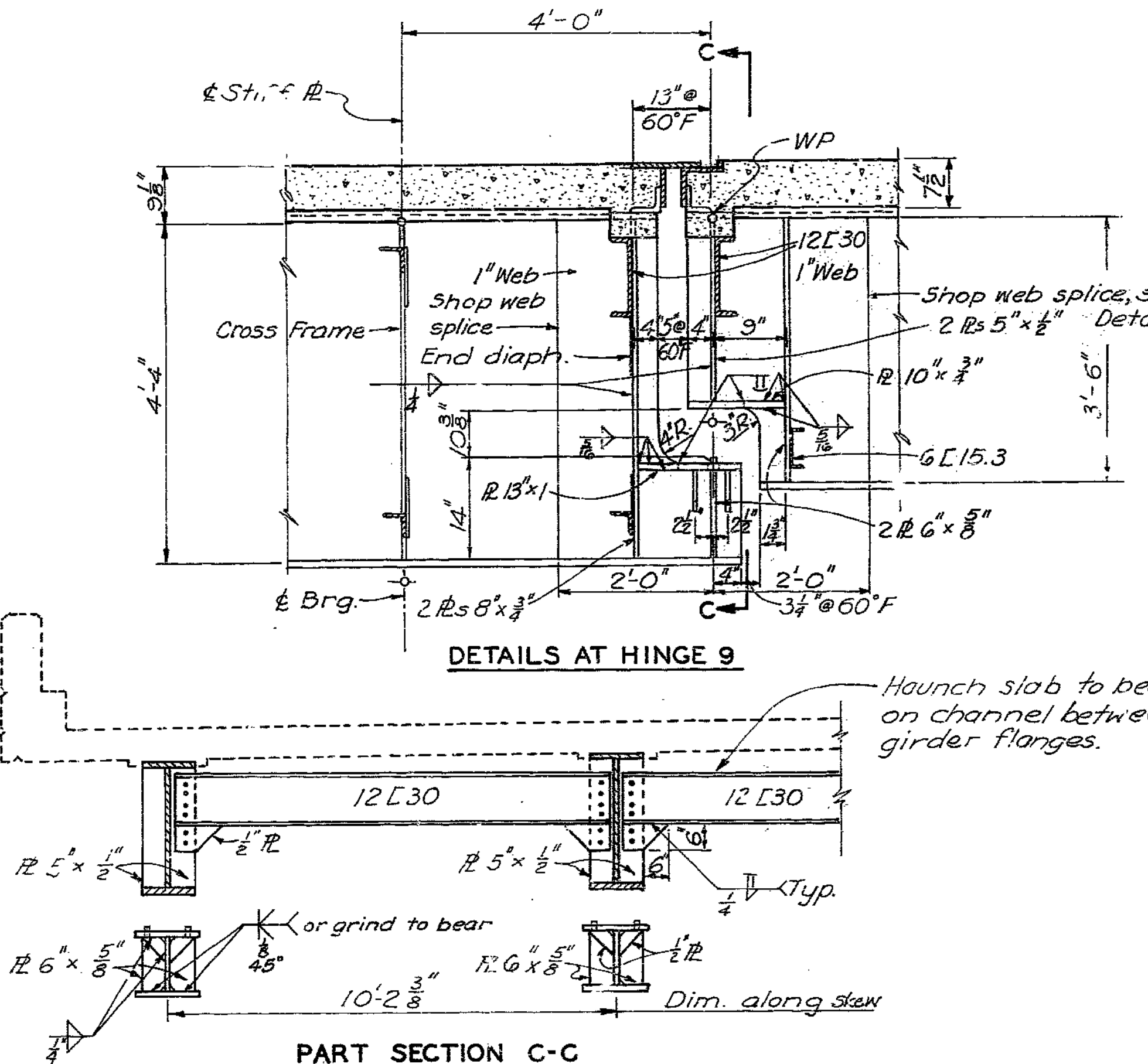
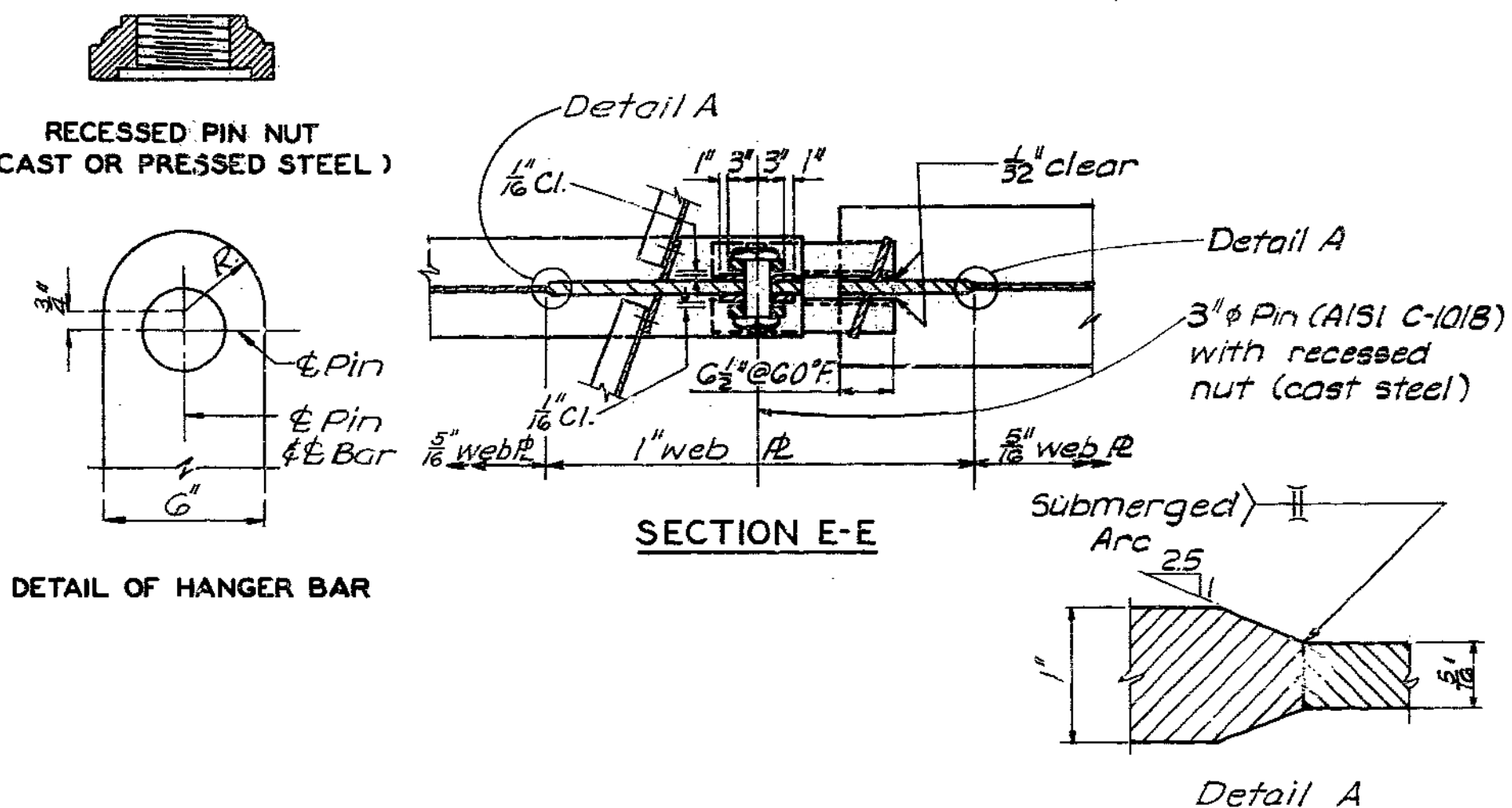
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	132	



LONGITUDINAL SECTIONS



HINGE 3 & 6

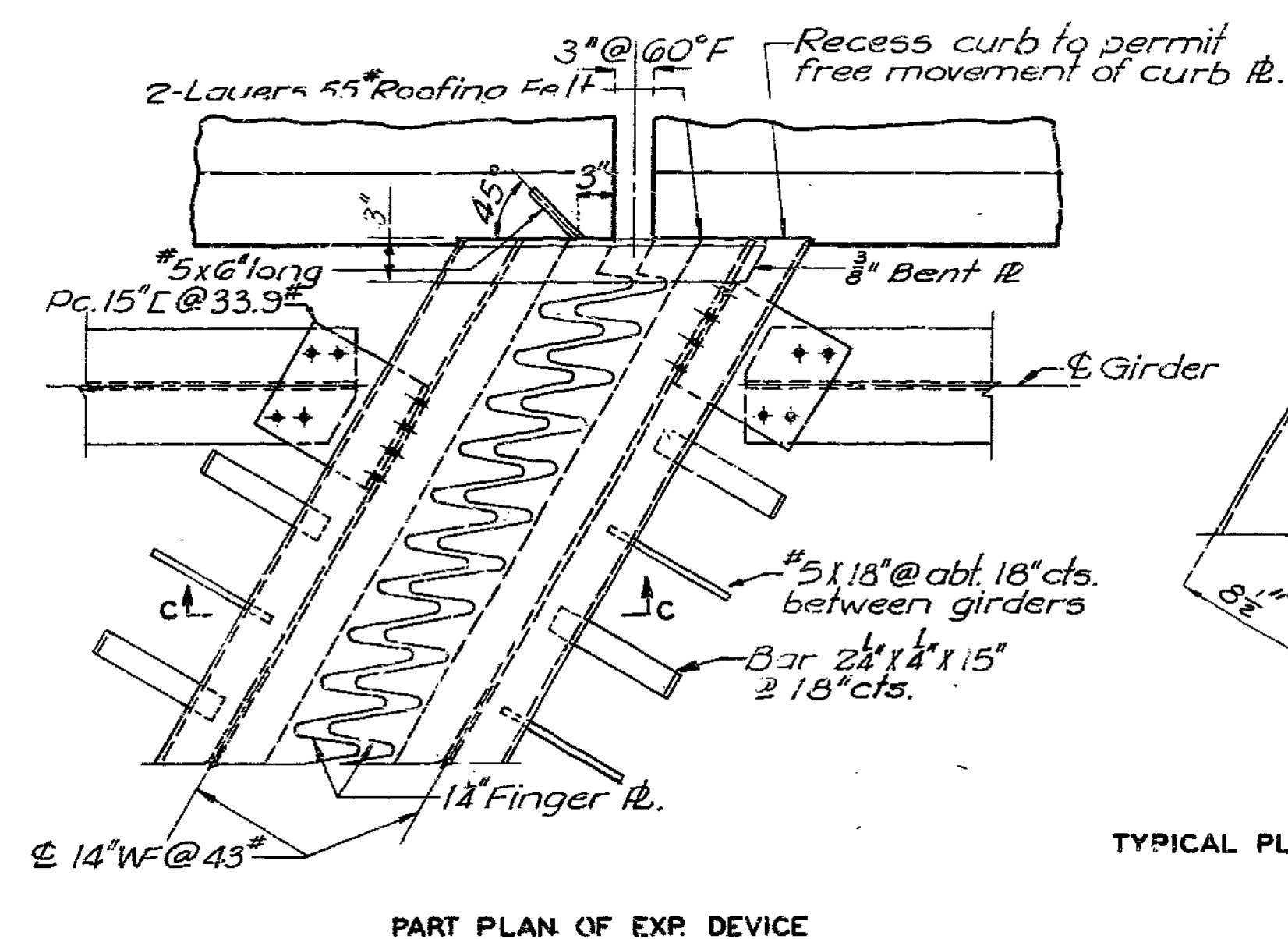


BRIDGE OVER BIG BLUE RIVER
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-435-1(52)(RTE. I-435) STA. 123+29.48 N.B.L.
 122+97.22 S.B.L.
 JACKSON COUNTY

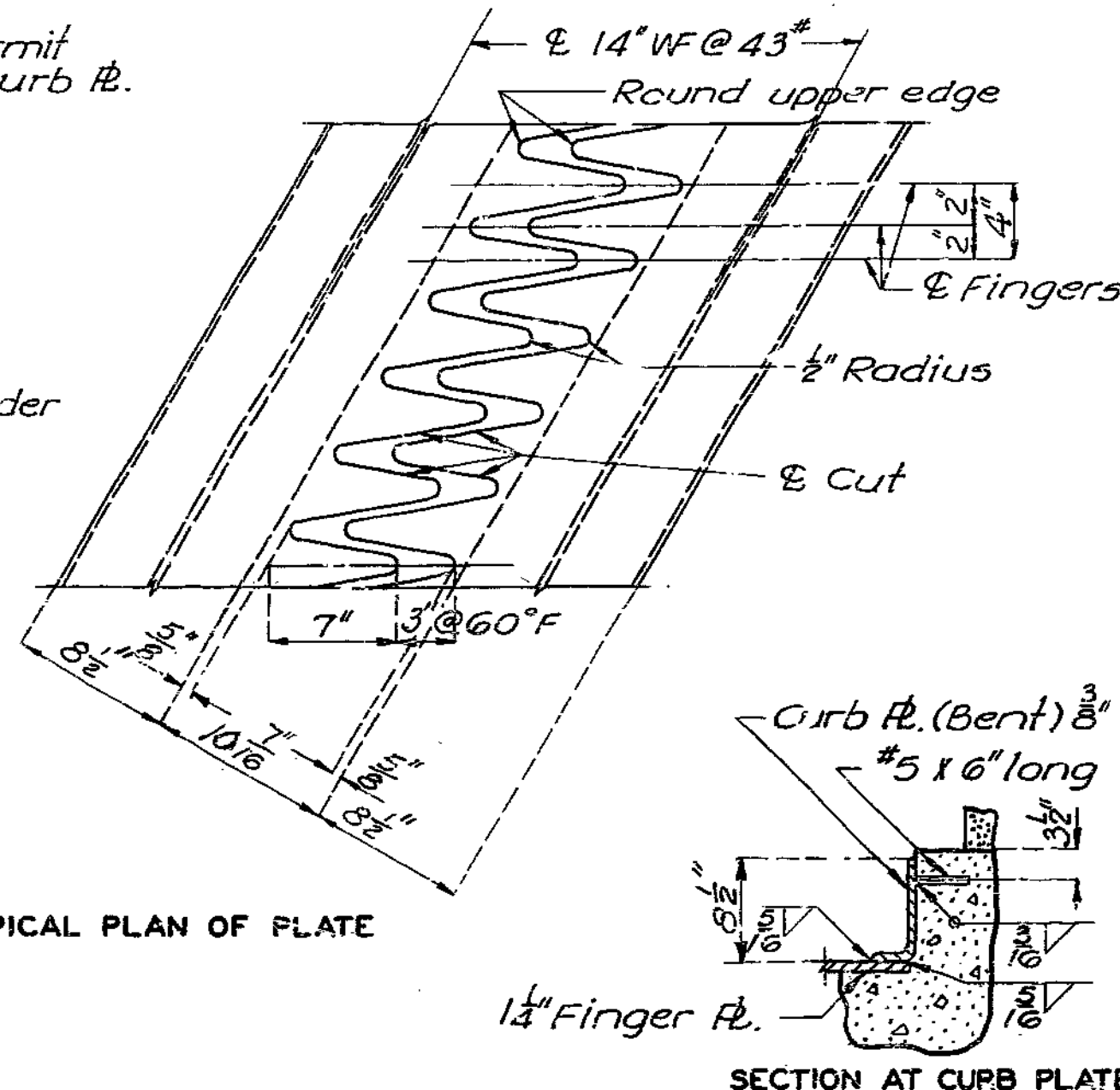
30

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		13	133	

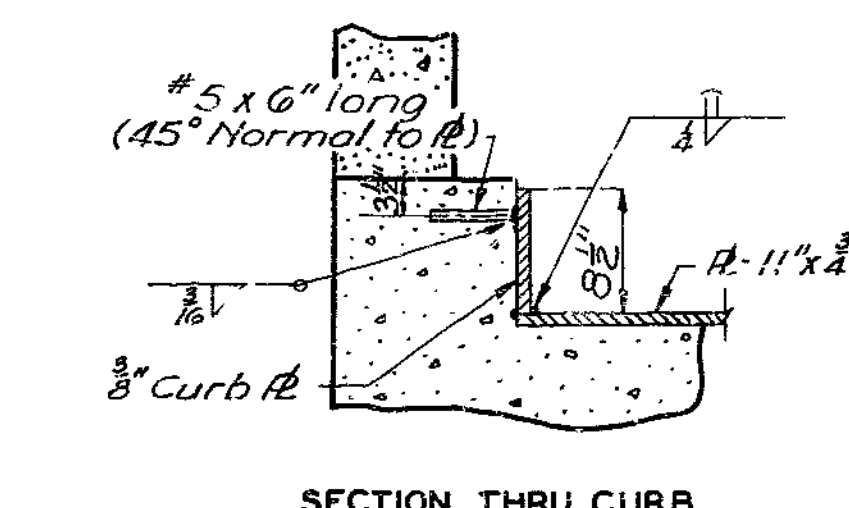


PART PLAN OF EXP. DEVICE



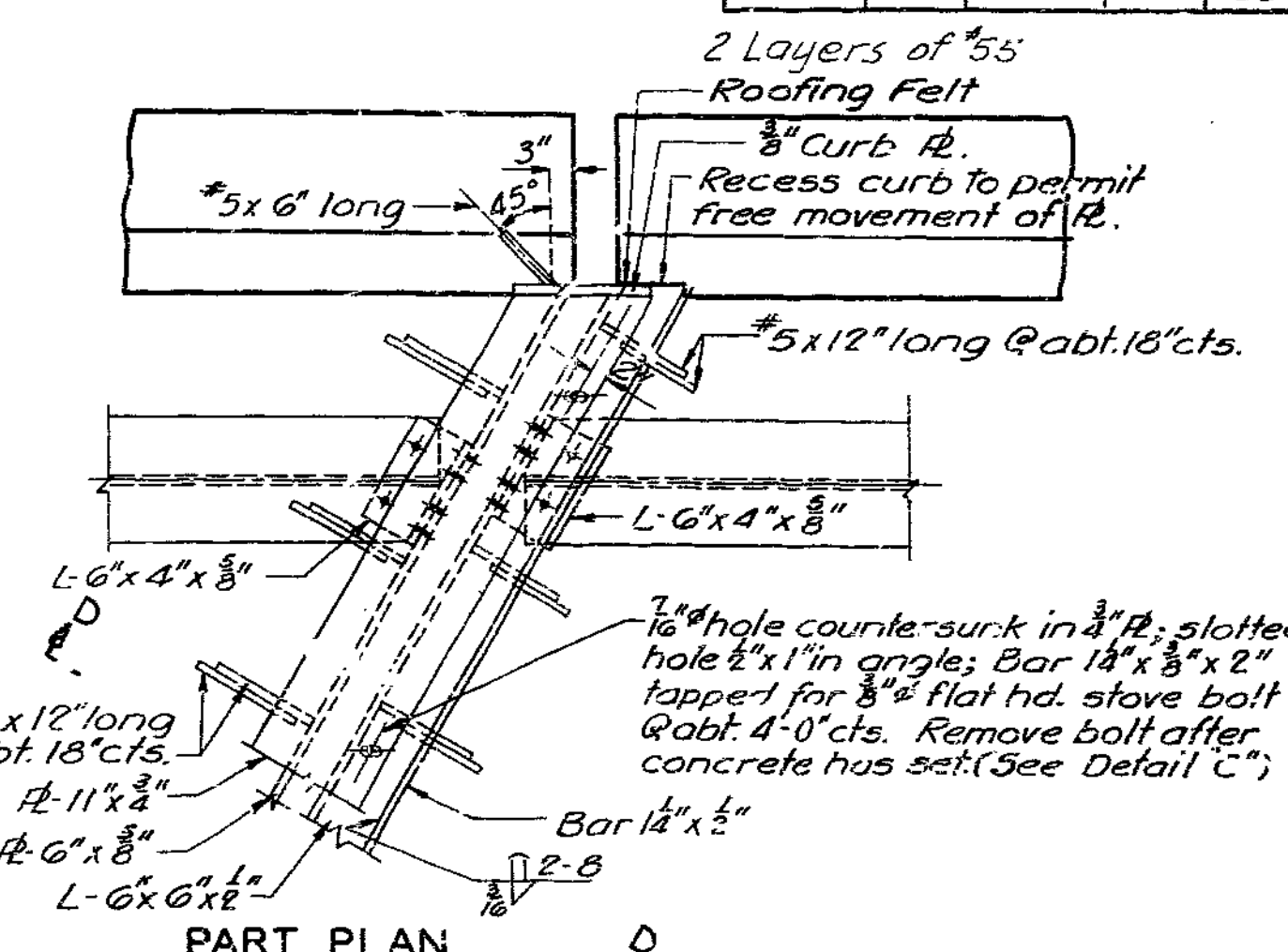
TYPICAL PLAN OF PLATE

SECTION AT CURB PLATE



SECTION THRU CURB

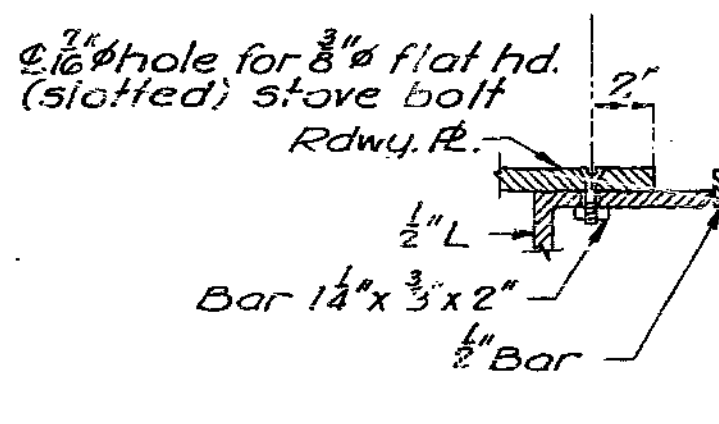
Note: Expansion Device shall be fabricated in one section except that when the length is over 50 feet, splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.
No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.
Use 2 Layers of 55* Roofing Felt between the sliding contact surface of curb plate and concrete curb.



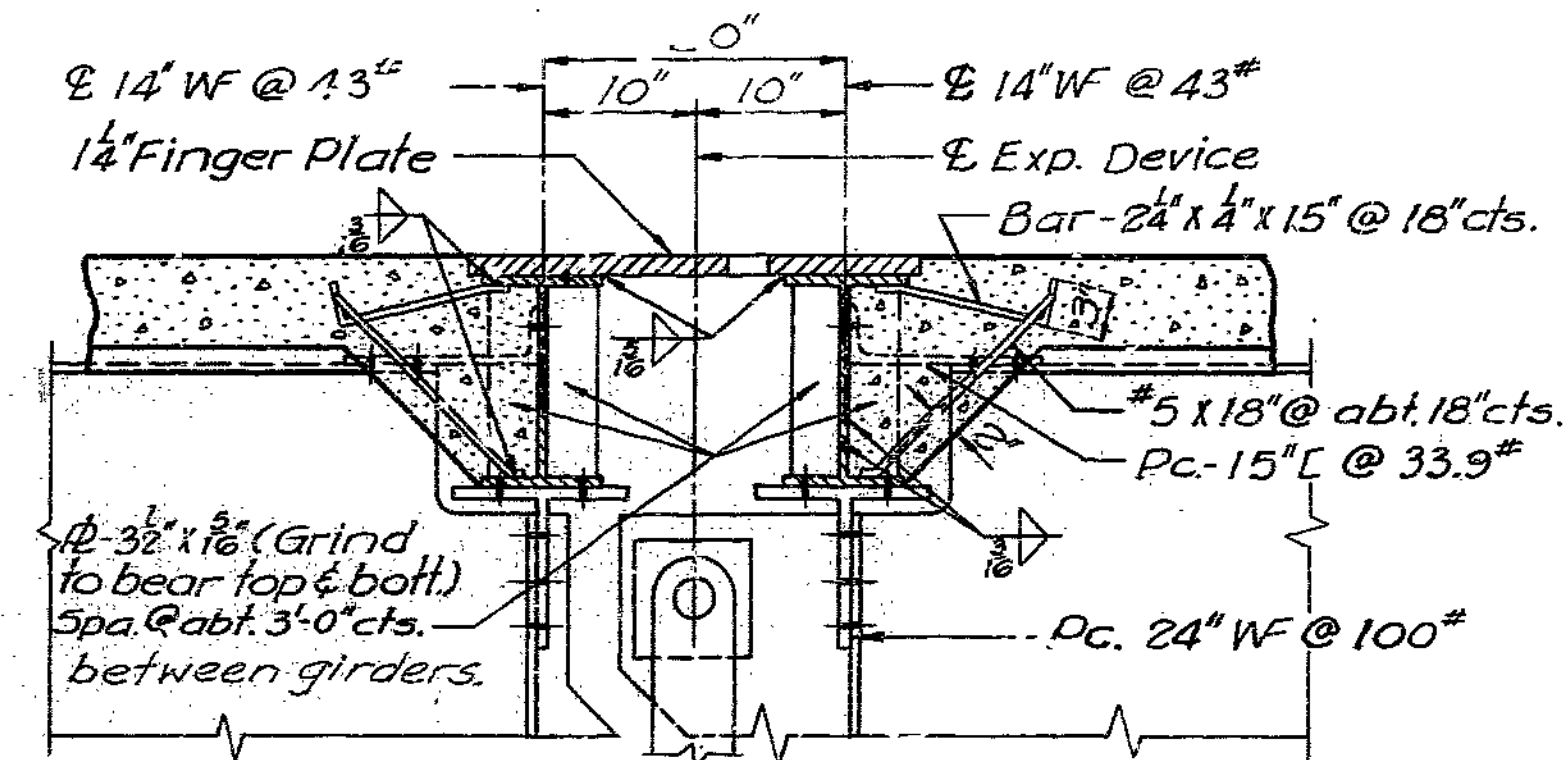
PART PLAN

SECTION D-D

EXPANSION DEVICE AT HINGE 9



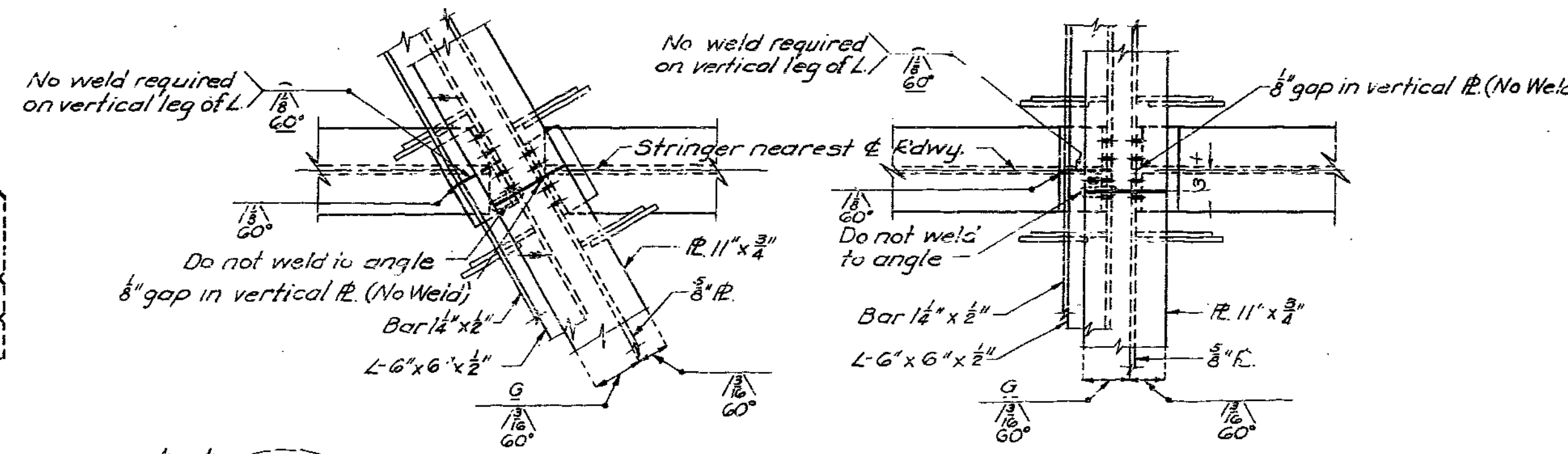
DETAIL "C"



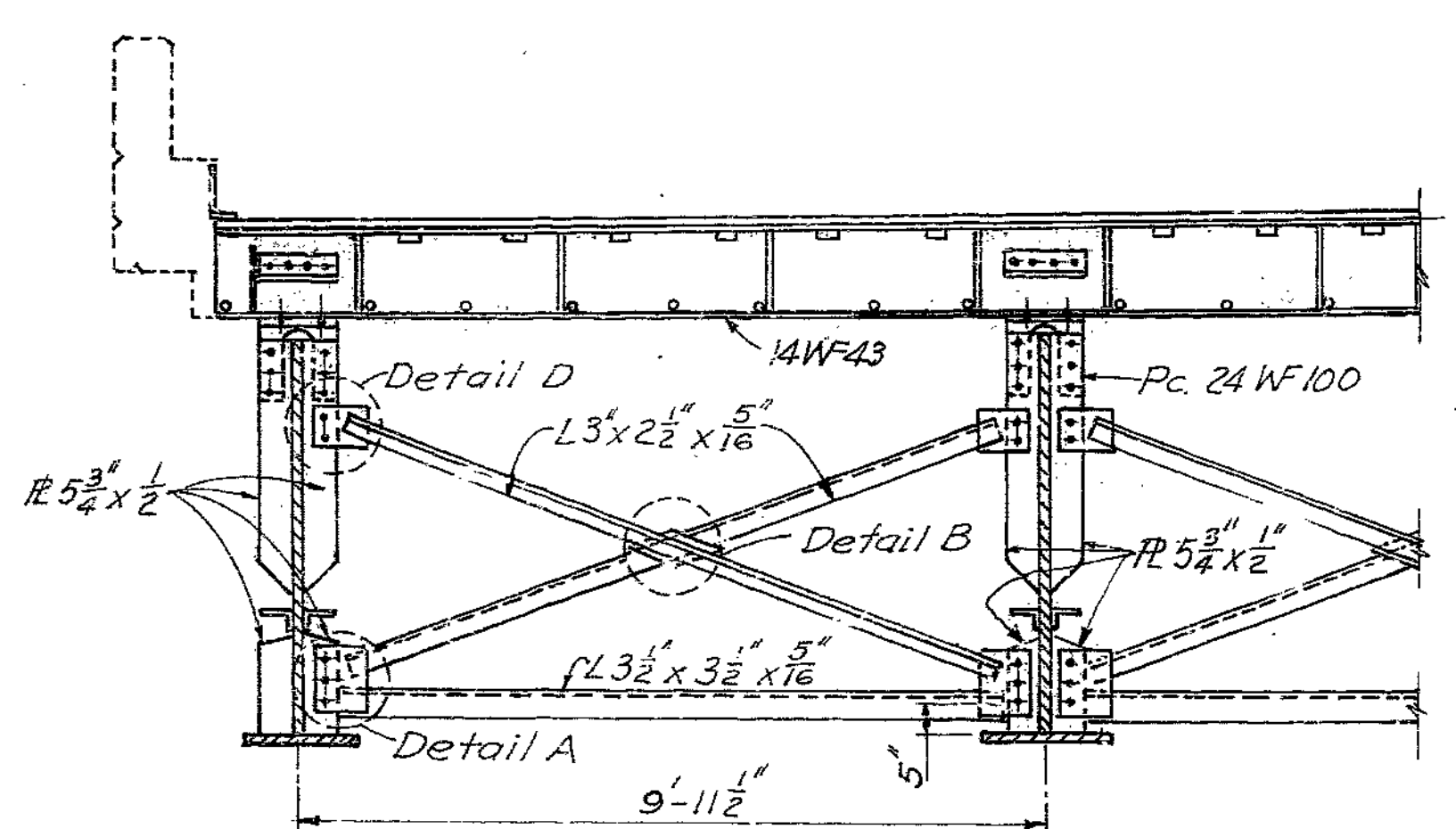
SECTION C-C

Note: Finger plates shall be cut with a gas torch from one plate 2'-0" x 12". The surface of cut shall be perpendicular to the surface of plate. The cut shall not exceed 5" in width. The centerline of cut shall not deviate more than 1/8" from the position of centerline cut shown above. No part of expansion device may be spliced.
1 1/2" finger plate and 14" WF @ 43" shall be bent to conform to crown of roadway.
All holes shown to be subpunched 1/16" and reamed to 3/16" in field.

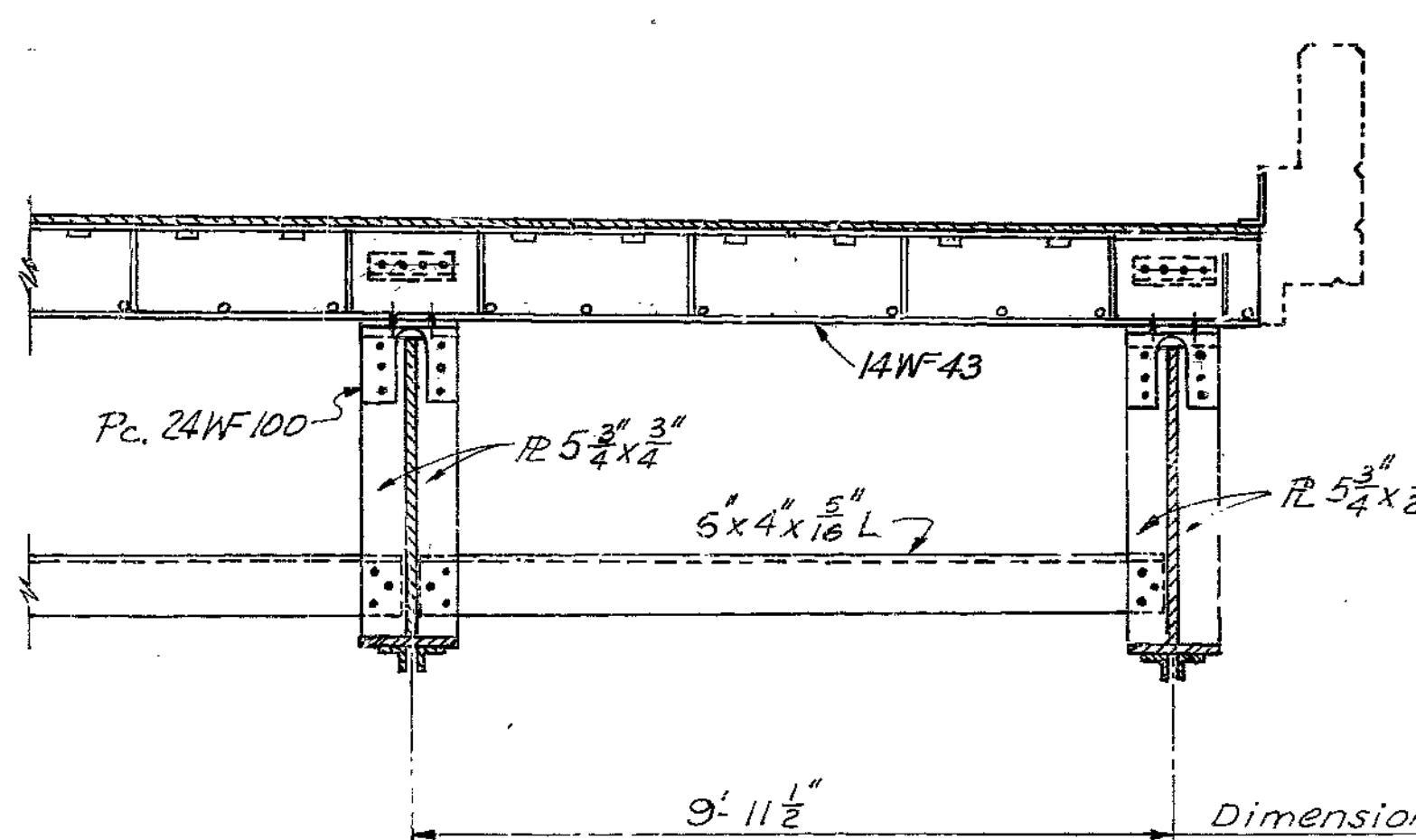
DETAILS OF FINGER PLATE EXPANSION DEVICE



RIGHT ADVANCE SKEW (Left Advance Similar)
PERMISSIBLE FIELD SPLICE AT INT. BENT (End Bent Similar)

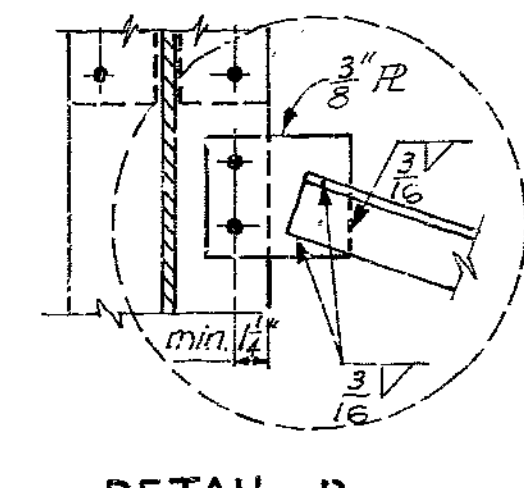


SECTION B-B



SECTION A-A

PART SECTIONS AT HINGES 3 & 6



DETAIL D

BRIDGE OVER BIG BLUE RIVER
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. IG-435-1(52)(RTE.1-435) STA. 123+29.48 N.B.L. 122+97.22 S.B.L.
JACKSON COUNTY

31
DETAILED June 19 67 BY HFC
CHECKED Oct. 19 67 BY DHL

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

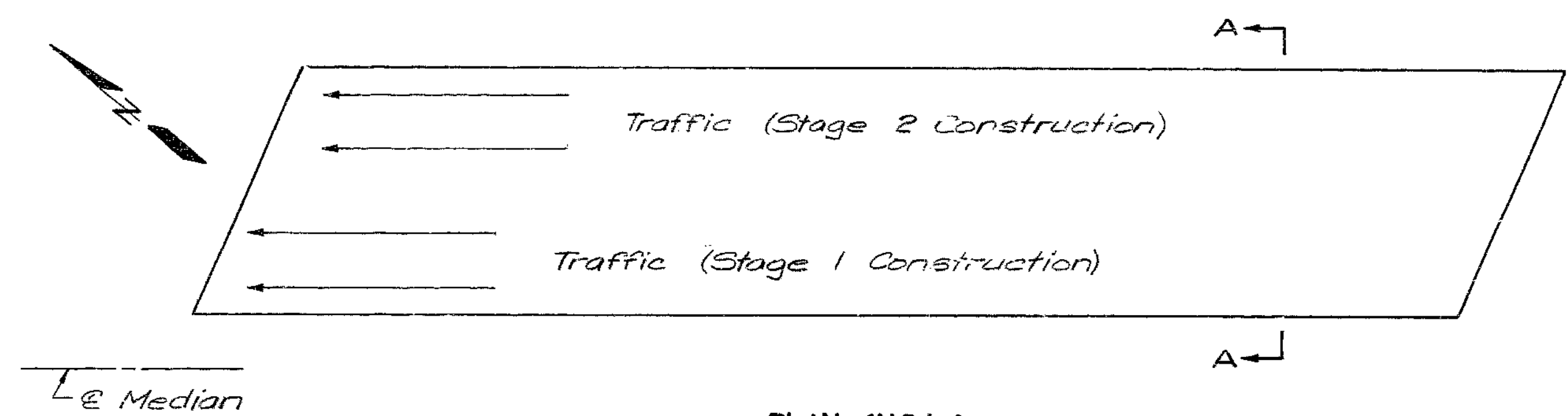
Sheet No. 18 of 23

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

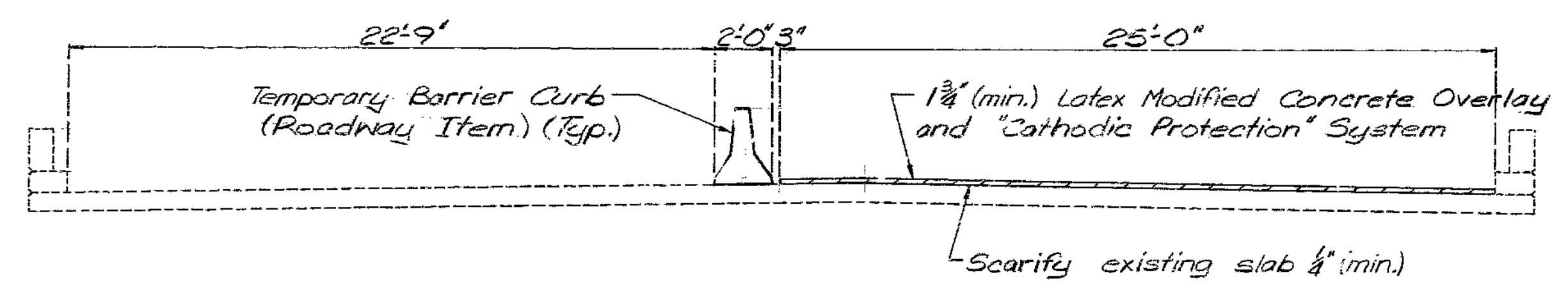
A-1685

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

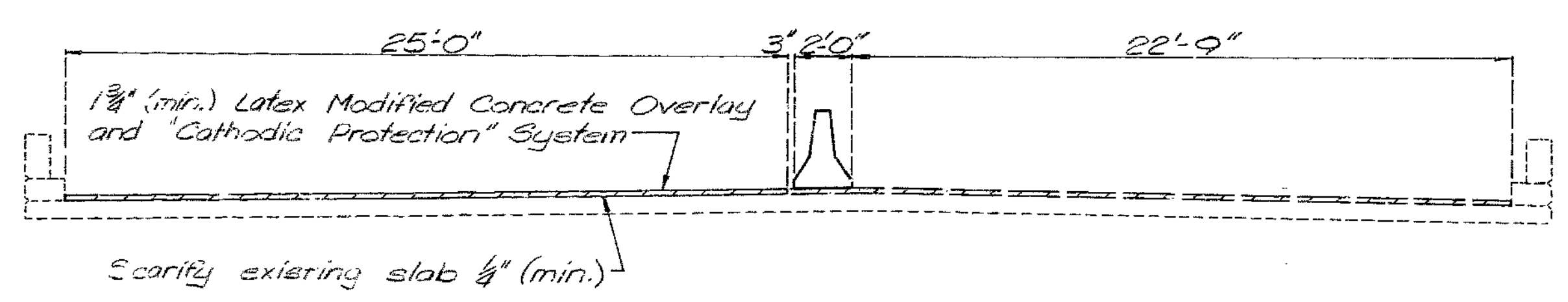
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	10
SEC./SUR. 30	TWP 50N RGE 32W	



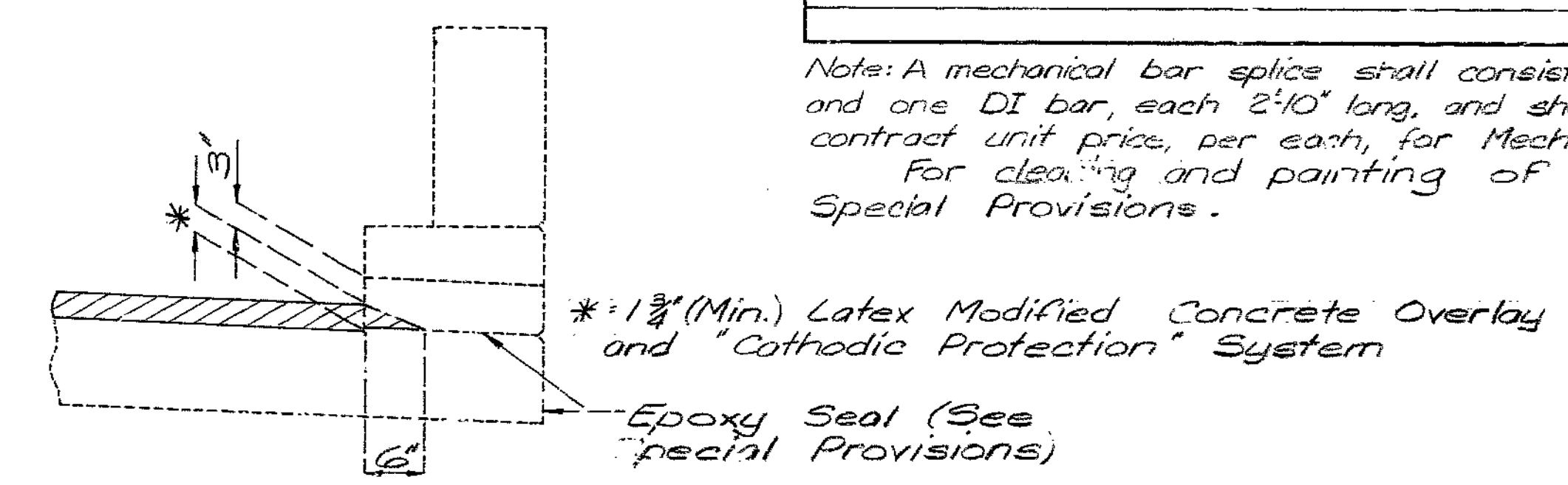
PLAN (N.B.L.)



SECTION A-A (STAGE 1 CONSTRUCTION)



SECTION A-A (STAGE 2 CONSTRUCTION)



TYPICAL SECTION AT CURB SHOWING OUTLETS

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. -1977 and Interims thru 1983.

Design Unit Stresses:
 Class B1 Concrete $f'_c = 4,000$ psi
 Reinforcing Steel (Grade 60) $F_y = 60,000$ psi

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

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

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

Two lanes of traffic over structure to be maintained during construction.

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

ESTIMATED QUANTITIES		
ITEM		TOTAL
Special Work	Lump Sum	1
Class B1 Concrete	Cu. Yd.	26.9
Repairing Concrete Deck (Half-Soling)	Sq. Ft.	6649
Full Depth Repair	Sq. Ft.	1330
Latex Concrete Wearing Surface	Sq. Yd.	4926
Reinforcing Steel	LB.	1200
Cathodic Protection System	Lump Sum	1
Steel Bar Dams	Each	3
Mechanical Bar Splices	Each	1
Cleaning and Painting Bearings	Each	60

Note: A mechanical bar splice shall consist of one DB-SAE bar and one DI bar, each 2'-10" long, and shall be paid for at the contract unit price, per each, for Mechanical Bar Splices.

For cleaning and painting of bearings see Special Provisions.

306

DESIGNED Jan. 1985
 DETAILED Jan. 1985
 CHECKED Jan. 1985

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

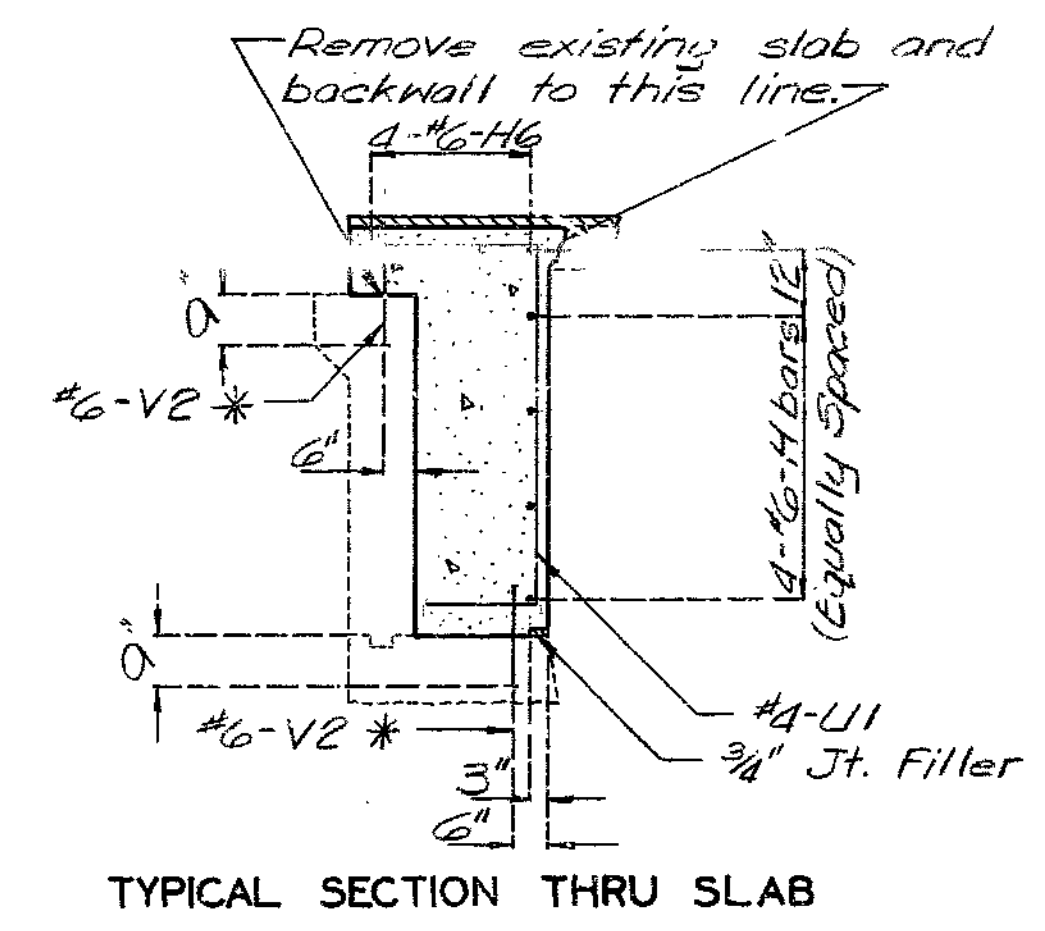
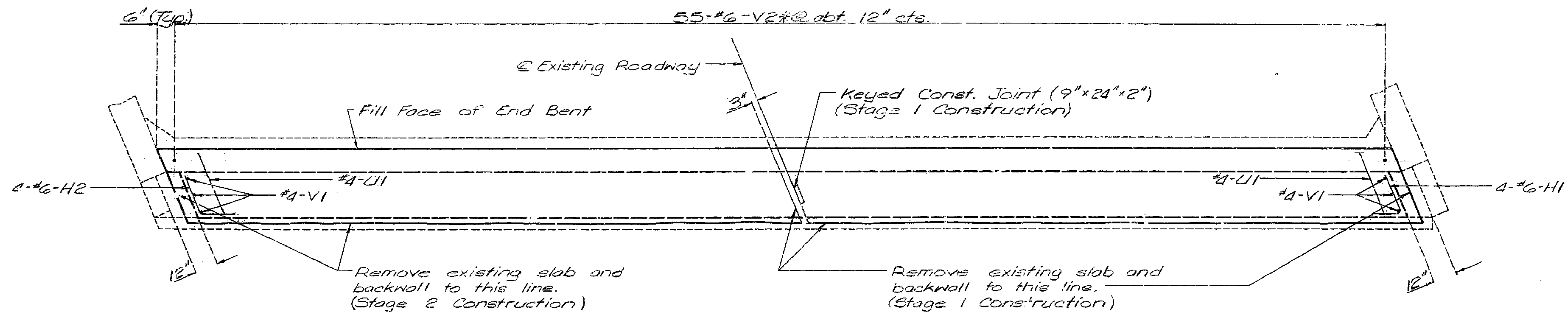
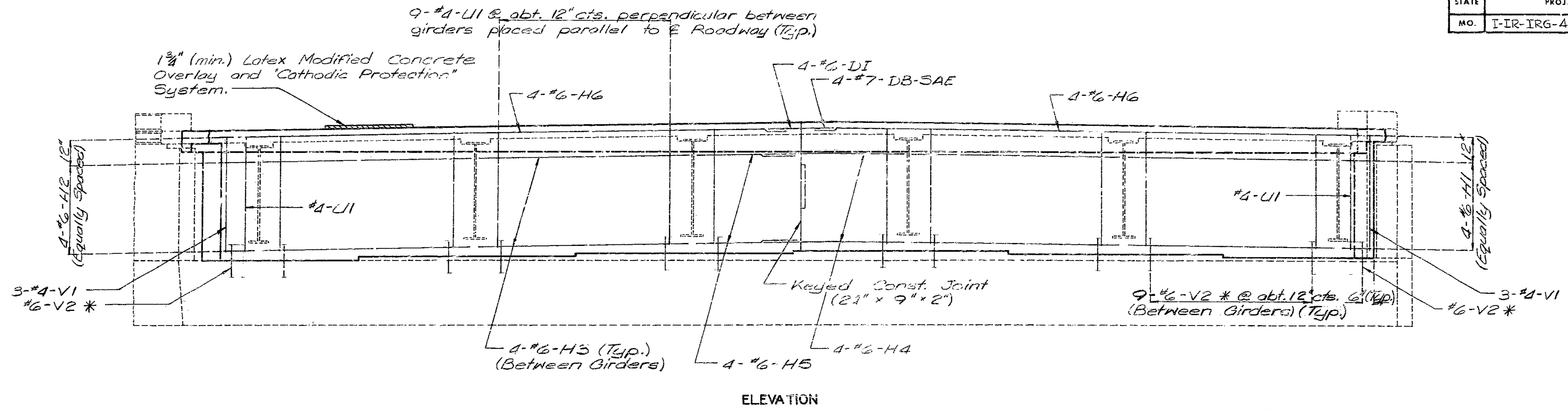
SEE PLAN PLANS
 Sheet No. 1 of 7

REPAIRS TO N.B.L. OF
 BRIDGE OVER BIG BLUE RIVER
 STATE ROAD: INTERSTATE ROUTE I-435
 IN KANSAS CITY
 PROJECT NO. STA. 123+29.48 ±
 JOB NO. 4-I435-443 R1E. I-435 N.B.L.
 JACKSON COUNTY

DATE FEBRUARY 26, 1985

STD. 706.35
STD. 712.40
A-1685R

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	17



NOTES:

DB-SAE and DI bars shall be bent in field as required to maintain a minimum concrete cover of 1/2".

#6" designates dowel bar- which shall have mechanical splices at the ends adjacent to next pour.

"DI" designates dowel bars which shall be inserted into the mechanical splices of DB-SAE bars.

DB-SAE and DI bar splices shall be equal to that of Richmond Screw Anchor Co. Inc.

* Drill 1" hole 9" deep and grout #6-V2 bars in place. (See Special Provisions.)

DETAILS OF END BENT NO. 1 N.B. LANE

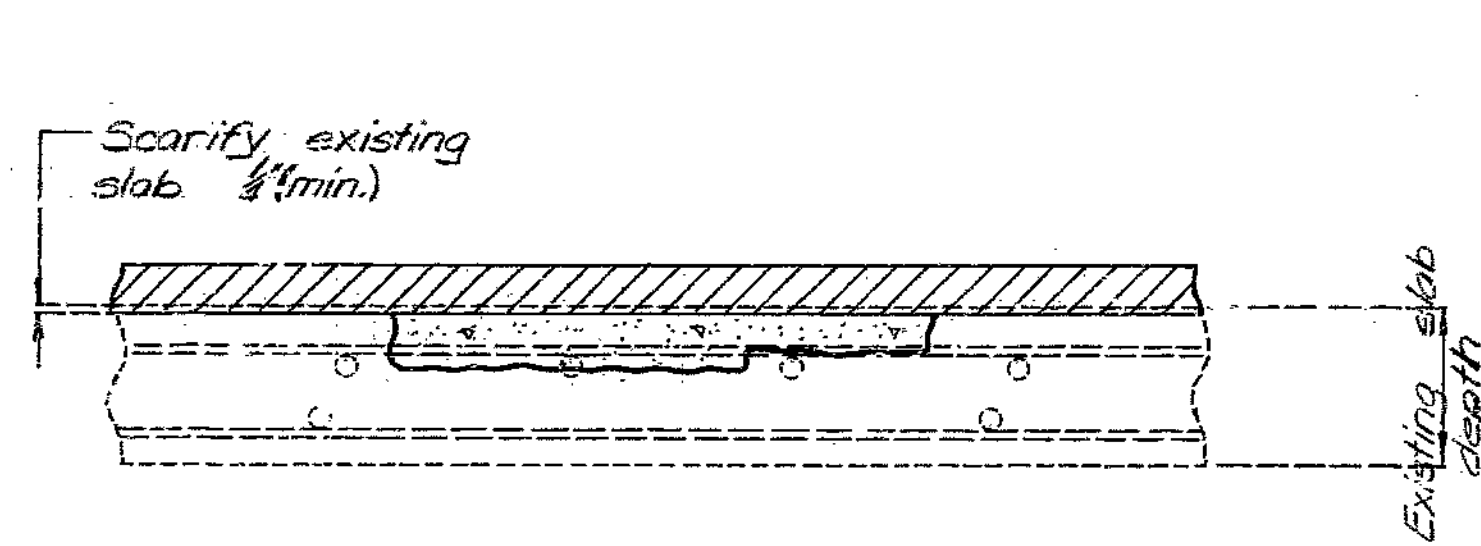
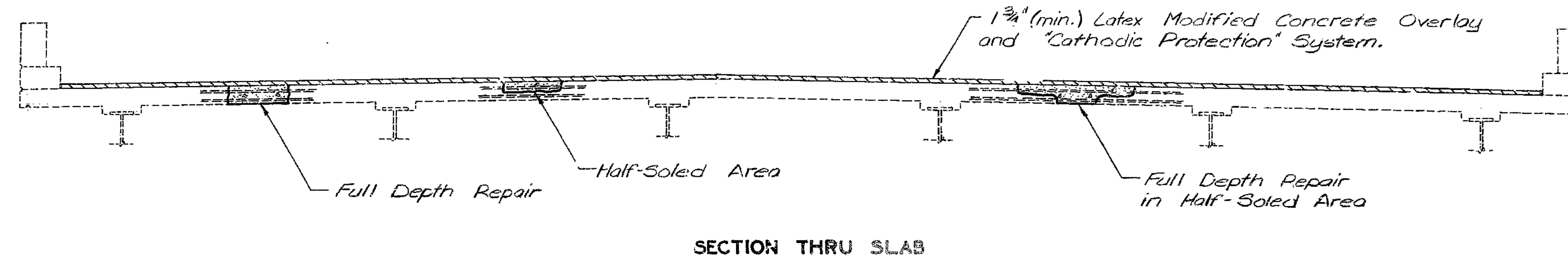
307

DETAILED Jan. 1985
CHECKED Jan. 1985

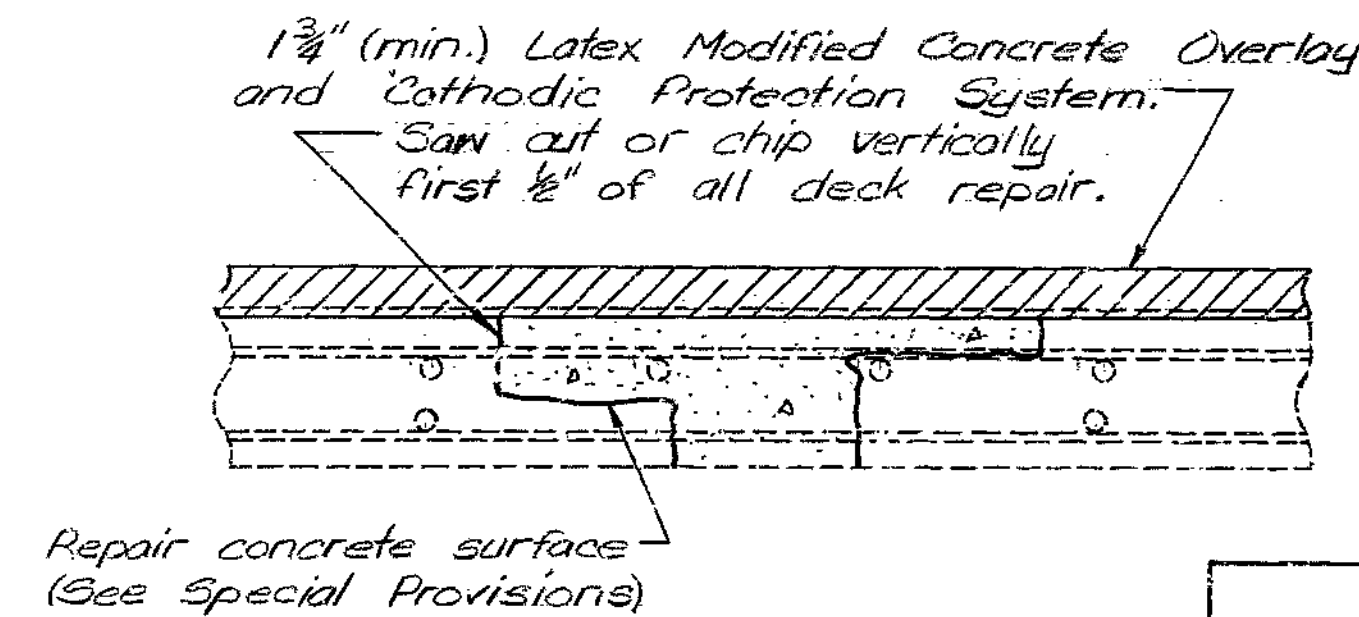
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 of 7

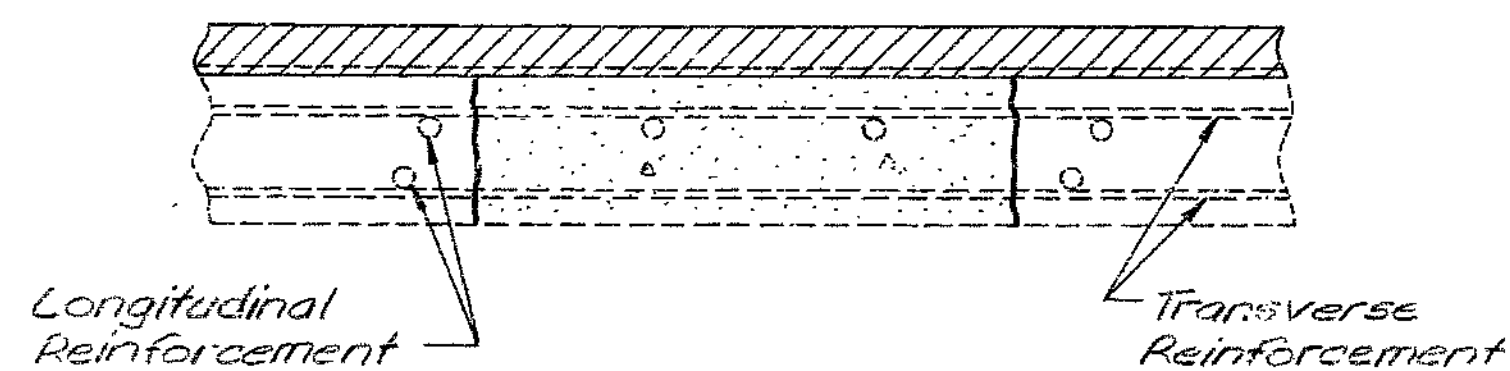
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	16



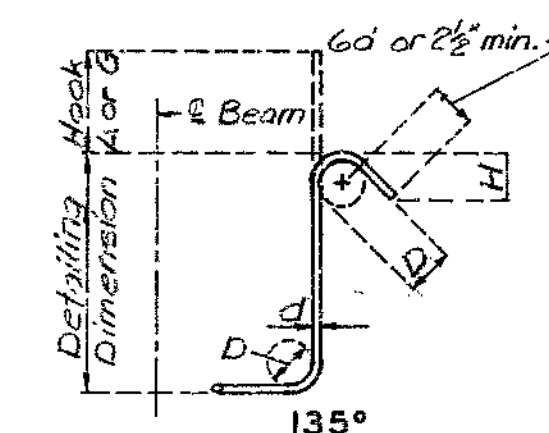
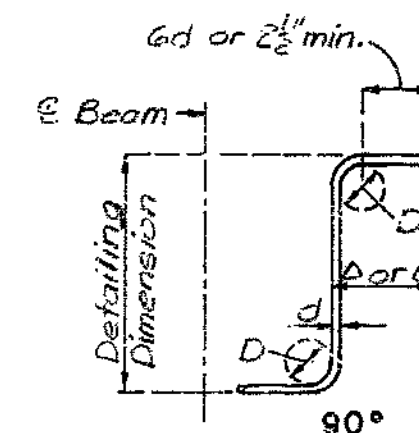
HALF-SOLED AREA



FULL DEPTH REPAIR HALF-SOLED AREA



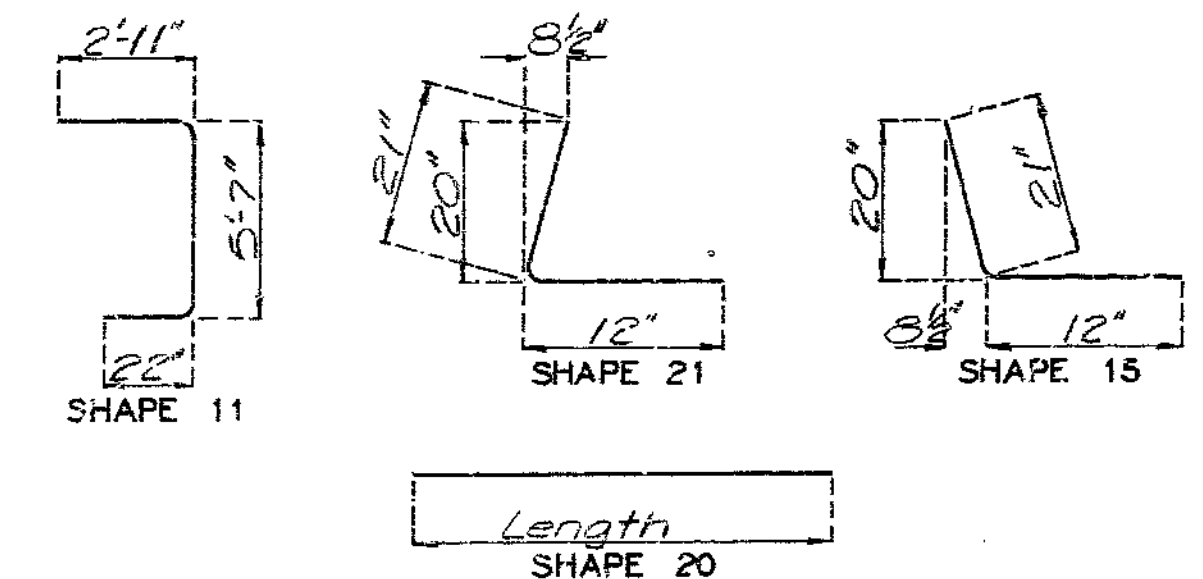
FULL DEPTH REPAIR



Notes:
 Hooks and bends shall be in accordance with the procedures as shown on this sheet.
 S - Stirrup.
 Nominal Lengths - Are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (nearest inch)
 Actual Length - Are measured along centerline bar to the nearest inch.
 Payweights are based on Actual Lengths.

BILL OF REINFORCING STEEL						
NO. REQD.	SIZE & MARK	LOCATION	SHAPE	NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT (LBS.)
4	6 H1	Diaphragm	215	2'-9"	2'-7"	16
4	6 H2	Diaphragm	155	2'-9"	2'-7"	16
16	6 H3	Diaphragm	20	9'-0"	9'-0"	216
4	6 H4	Diaphragm	20	6'-2"	6'-2"	37
4	6 H5	Diaphragm	20	4'-4"	4'-4"	26
8	6 H6	Slab	20	26'-10"	26'-10"	322
47	4 U1	Diaphragm	115	10'-4"	10'-2"	319
6	4 V1	Diaphragm	20	5'-7"	5'-7"	22
102	6 V2	End Bt. No. 1	20	18"	18"	230

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK		135° HOOK
		HOOK A OR G	HOOK A OR G	APPROX. 1
#4	2"	4 1/2"	4 1/2"	3"
#6	4 1/2"	3"	7"	4 1/2"



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

DETAILED Jan. 1985
 CHECKED Jan. 1985

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

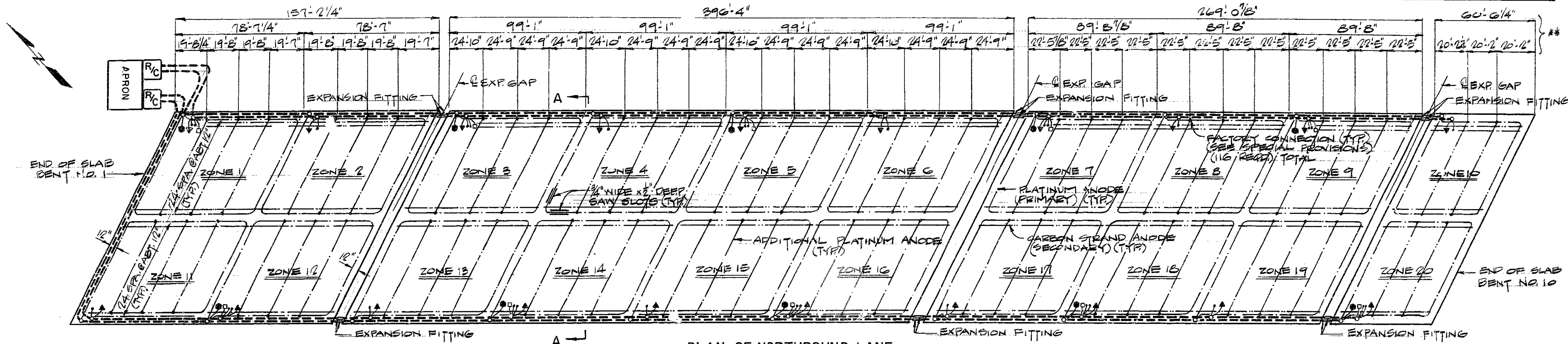
Sheet No. 3 of 7

JACKSON COUNTY

A-1685R

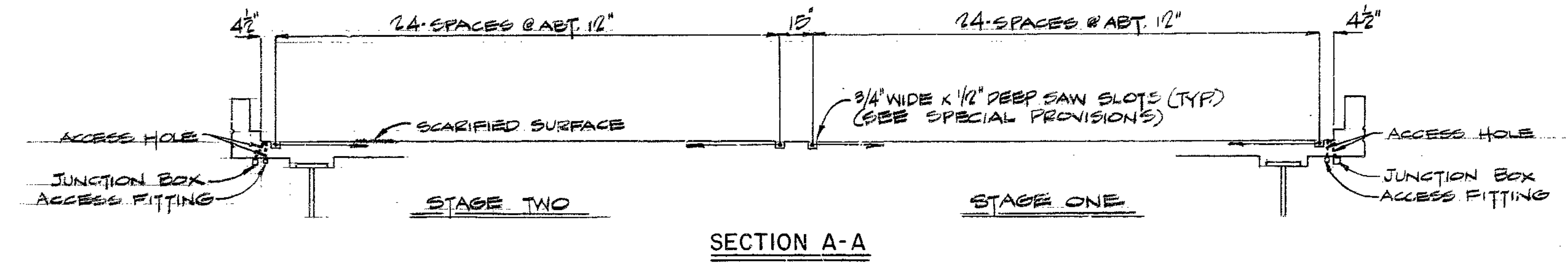
308

STATE	PROJ NO	SHEET NO
MO	I-IR-TRG-435-1(148)	19



PLAN OF NORTHBOUND LANE

**NOTE: DIMENSIONS ARE ON GRADE AT CENTERLINE OF STRUCTURE (END TO END OF SLAB). ACTUAL ANODE LENGTHS (PRIMARY AND SECONDARY) FOR EACH ZONE ARE THE RESPONSIBILITY OF THE CONTRACTOR.

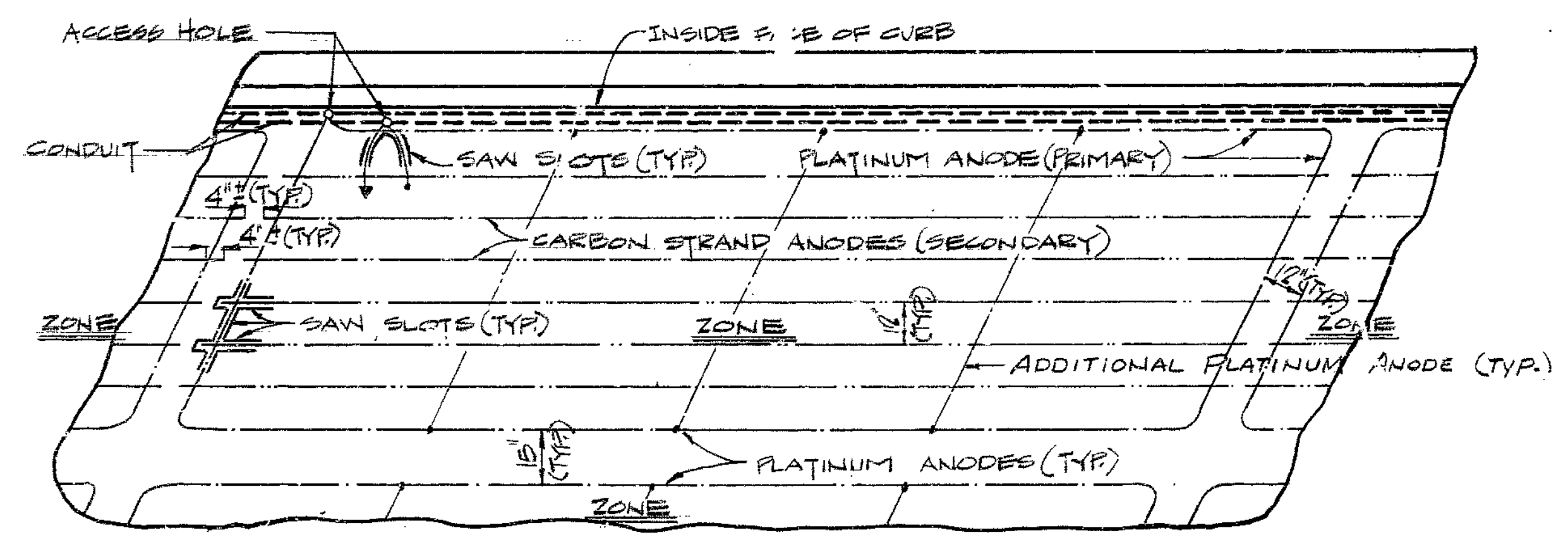


SECTION A-A

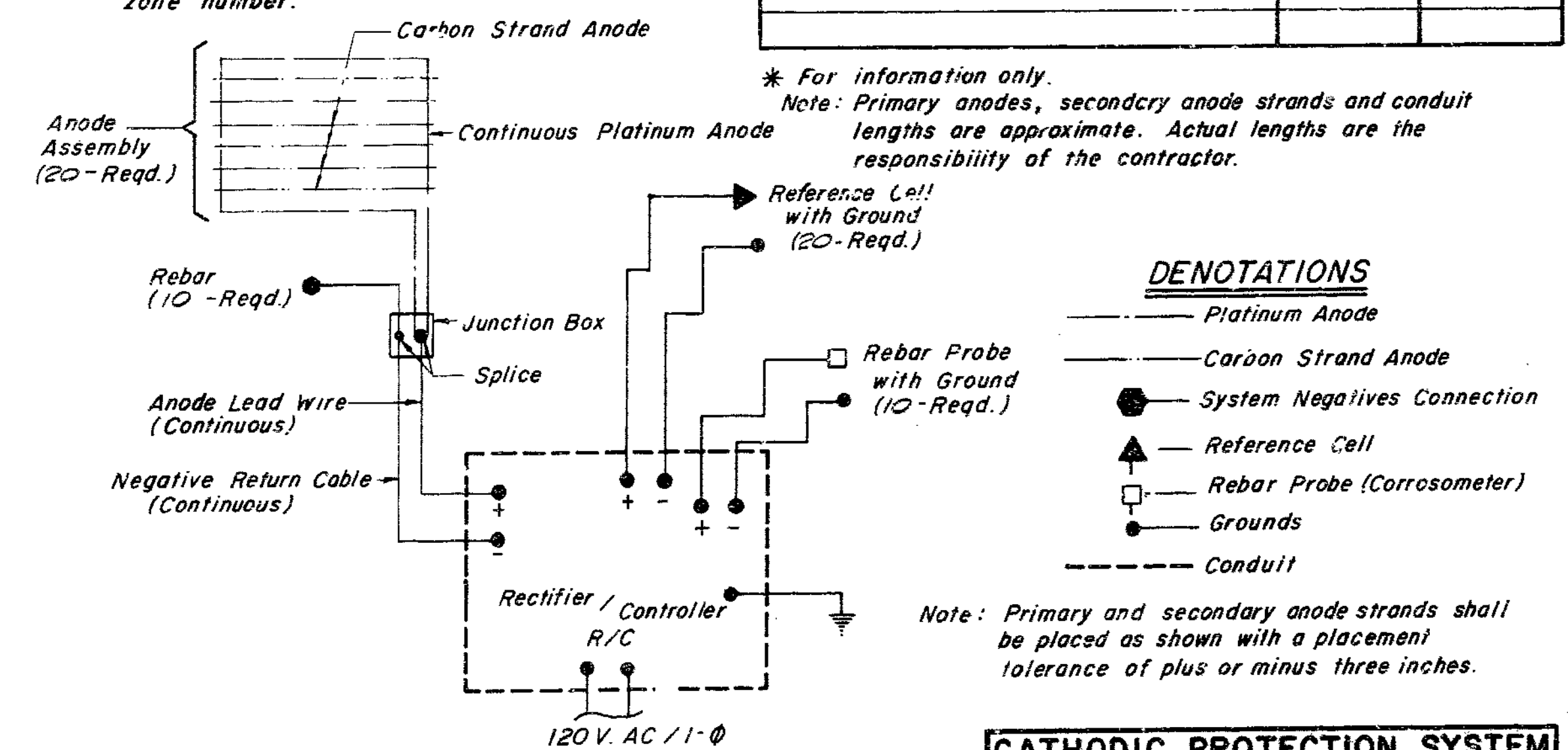
NOTE: The anode leads and system negative return leads shall be routed in the same conduit. The reference cell, reference cell ground leads, rebar probe and probe ground leads shall be routed in the same conduit. Reference cells are to be placed between anodes. Reference cell ground shall be welded to top rebar within one foot of reference cell. All zones are similar with varying widths (see Section A-A). Anode assembly number must match zone number.

ESTIMATED QUANTITIES *		
ITEM	UNIT	QUANTITY
Primary Anodes	Lin. Ft.	6050
Secondary Anode Strands	Lin. Ft.	40,300
Reference Cells	Each	20
Rebar Probes	Each	10
Thermite Welds	Each	94
Conduit 2" PVC	Lin. Ft.	3550

* For information only. Note: Primary anodes, secondary anode strands and conduit lengths are approximate. Actual lengths are the responsibility of the contractor.



TYPICAL ZONE LAYOUT EXCEPT AS NOTED



DENOTATIONS

- Platinum Anode
- Carbon Strand Anode
- System Negatives Connection
- ▲ Reference Cell
- Rebar Probe (Corrosometer)
- Grounds
- - - Conduit

Note: Primary and secondary anode strands shall be placed as shown with a placement tolerance of plus or minus three inches.

PARTIAL SCHEMATIC

CATHODIC PROTECTION SYSTEM

DETAILED Feb. 1985
CHECKED Feb. 1985

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

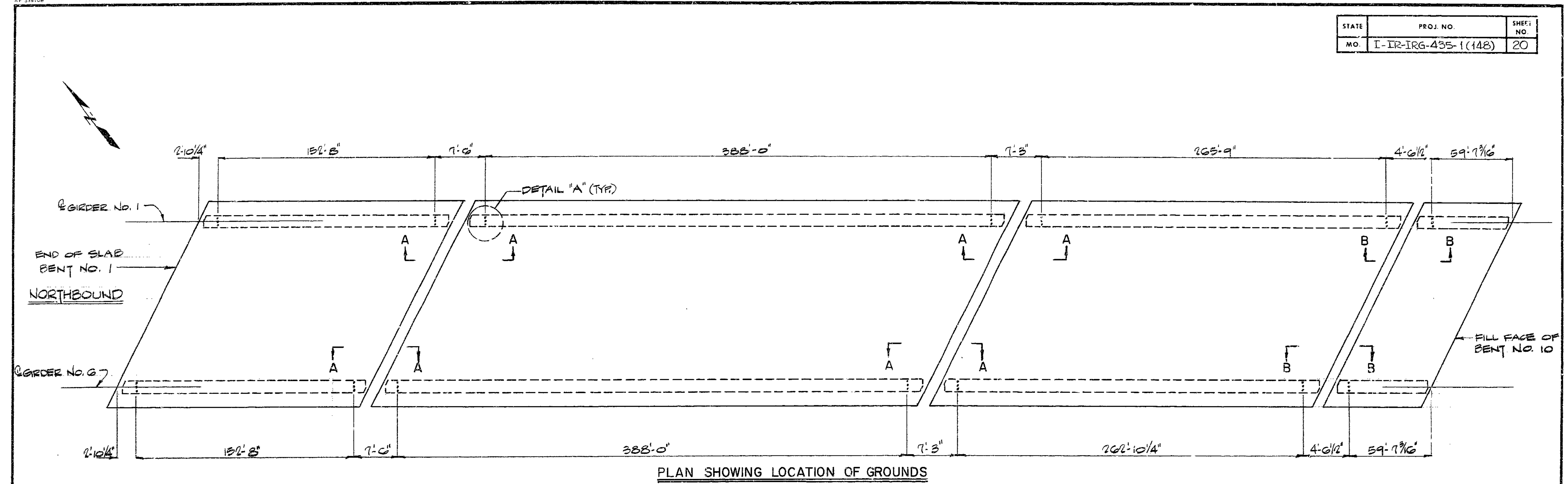
Sheet No. 4 of 7

JACKSON COUNTY

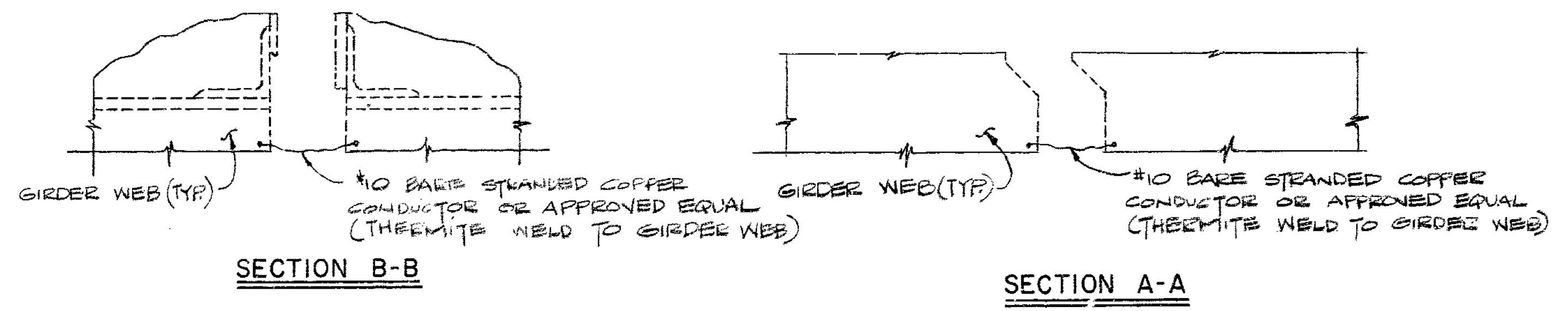
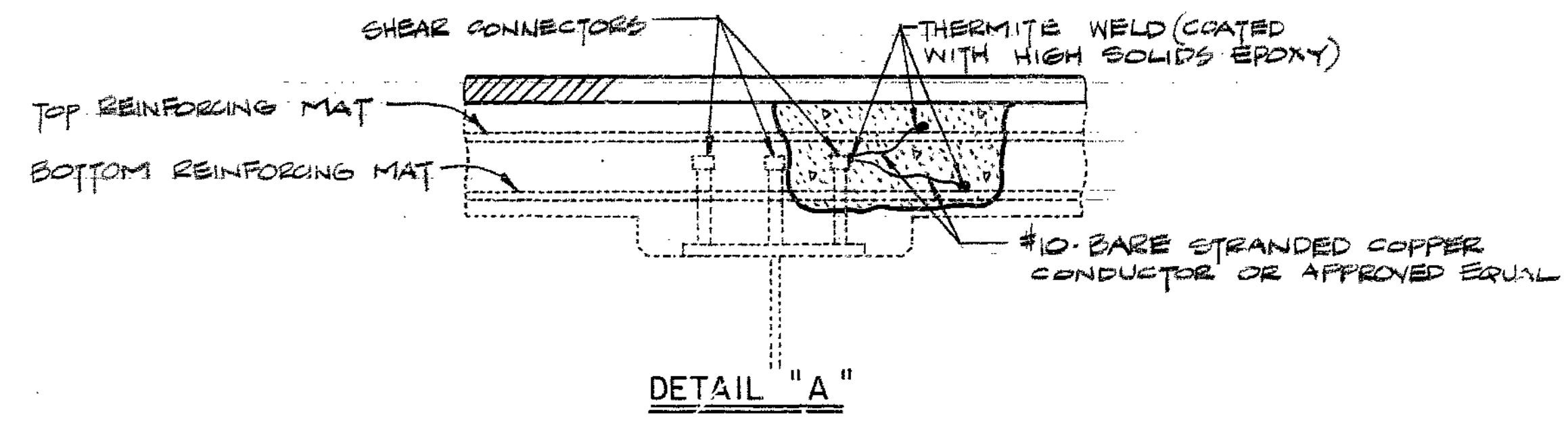
A-1685R

309

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	20



PLAN SHOWING LOCATION OF GROUNDS



NOTE: GROUNDING LOCATIONS MAY BE SHIFTED A MAXIMUM OF 5'-0" LONGITUDINALLY TO COINCIDE WITH A DECK REPAIR AREA.

310

DETAILED FEB. 1985
CHECKED FEB. 1985

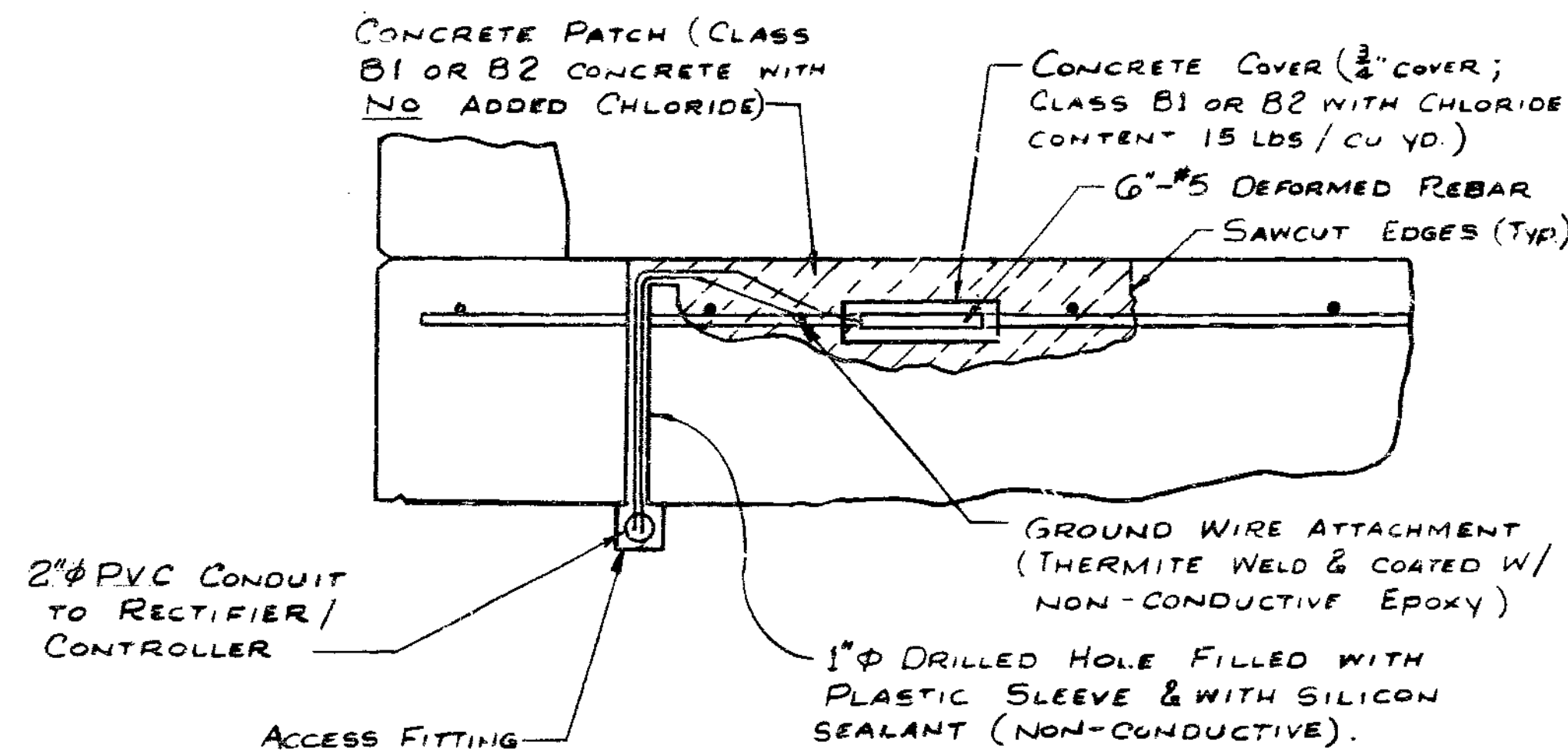
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 5 of 7

JACKSON COUNTY

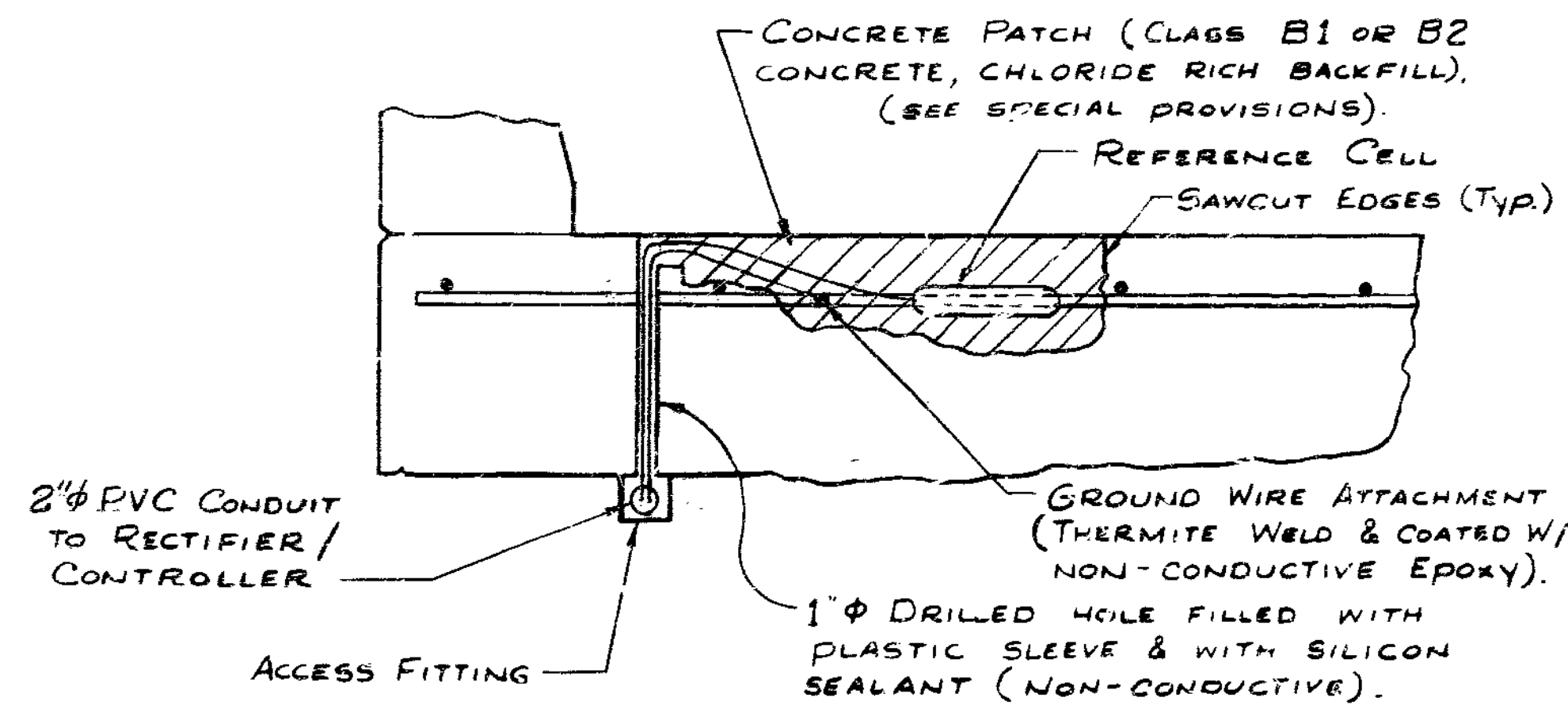
A-1685R

STATE	PROJ NO	SHEET NO
MO	I-IR-IRG-435-1(48)	21

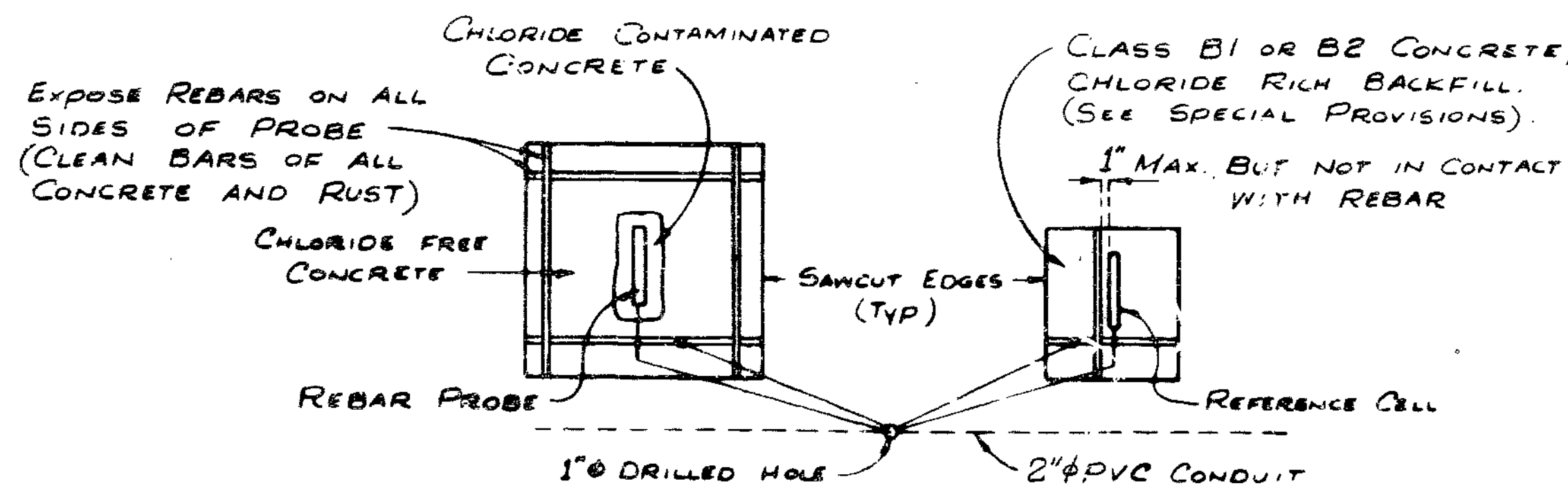


REBAR PROBE DETAILS

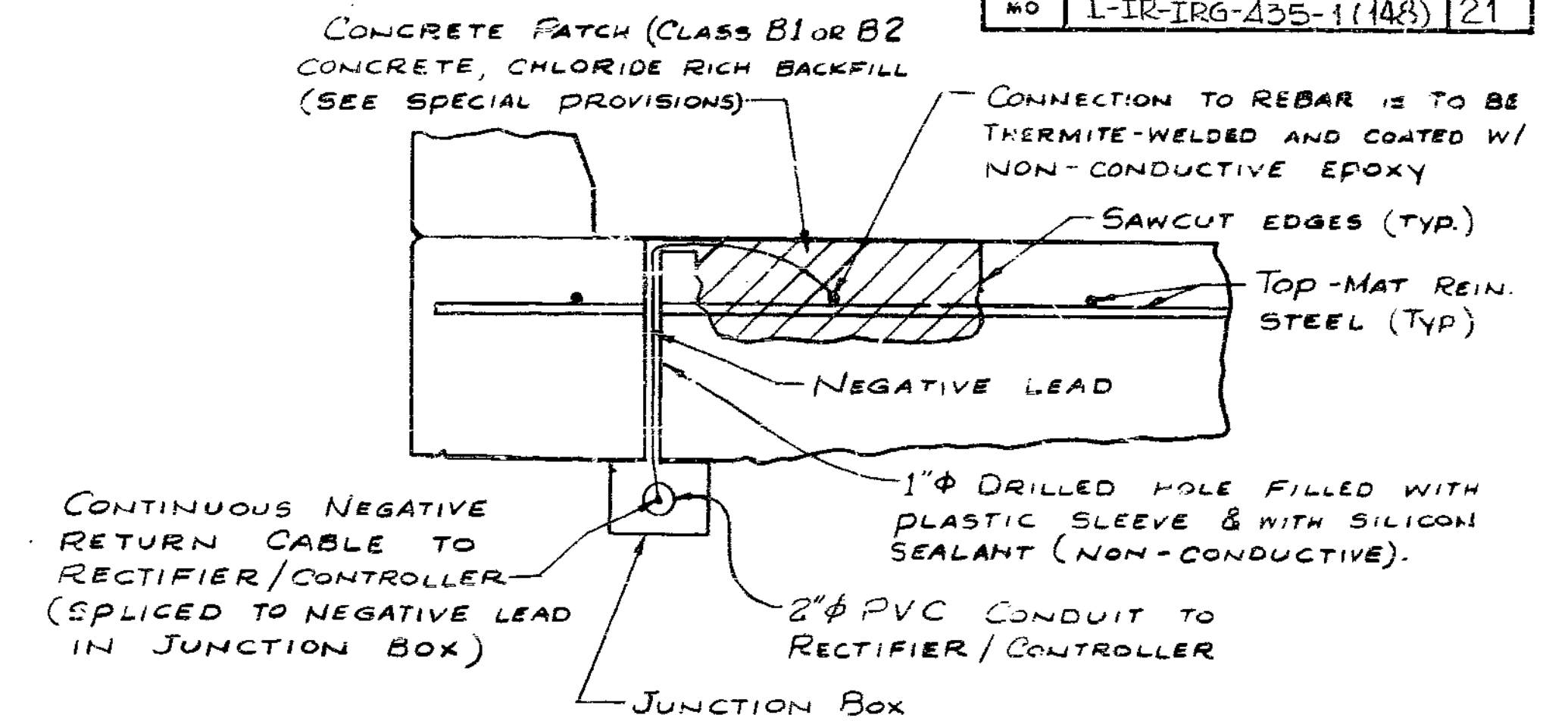
NOTE: THE REFERENCE CELL SHALL BE PLACED IN THE EXCAVATED AREA WITHIN 1" BUT NOT IN DIRECT CONTACT OF TOP-MAT REINFORCING STEEL.



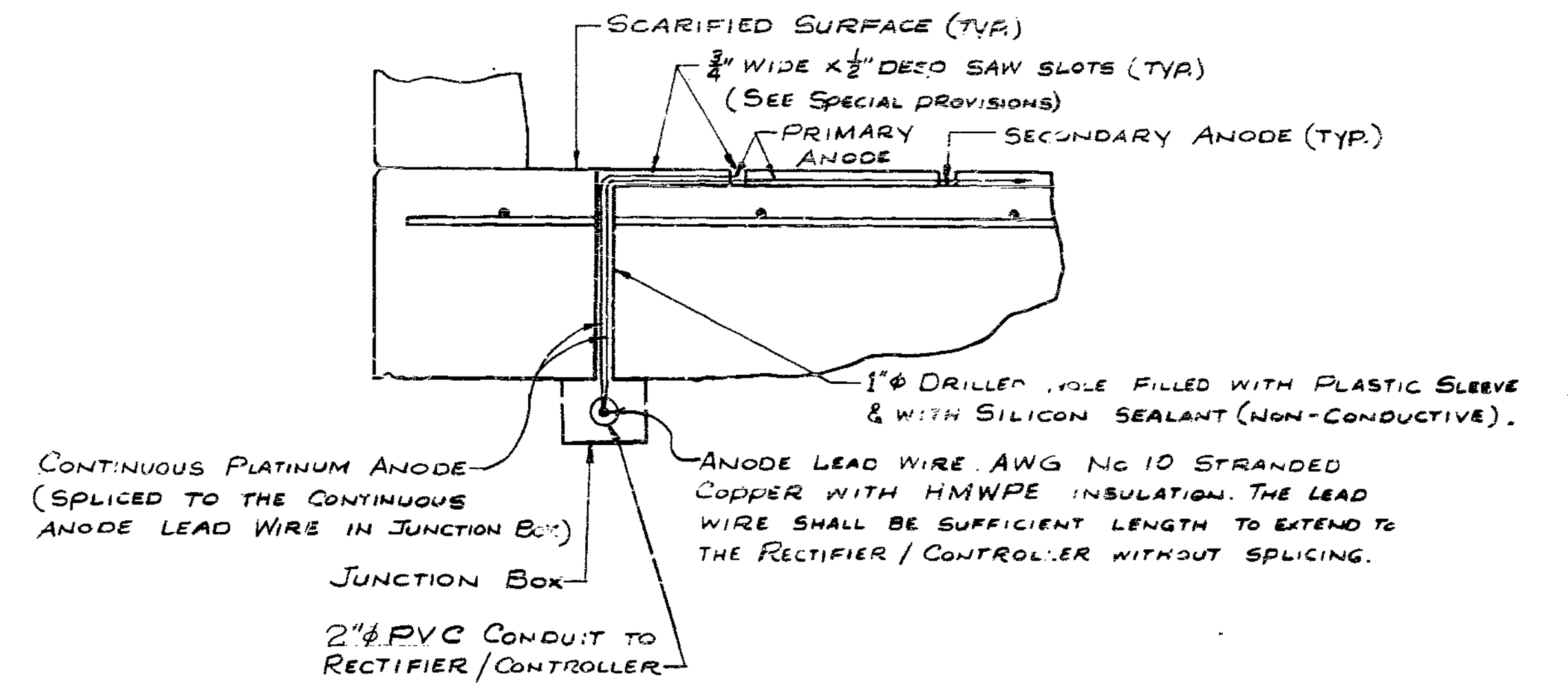
REFERENCE CELL DETAILS



PLAN OF REBAR PROBE AND REFERENCE CELL



SYSTEM NEGATIVES CONNECTION DETAIL

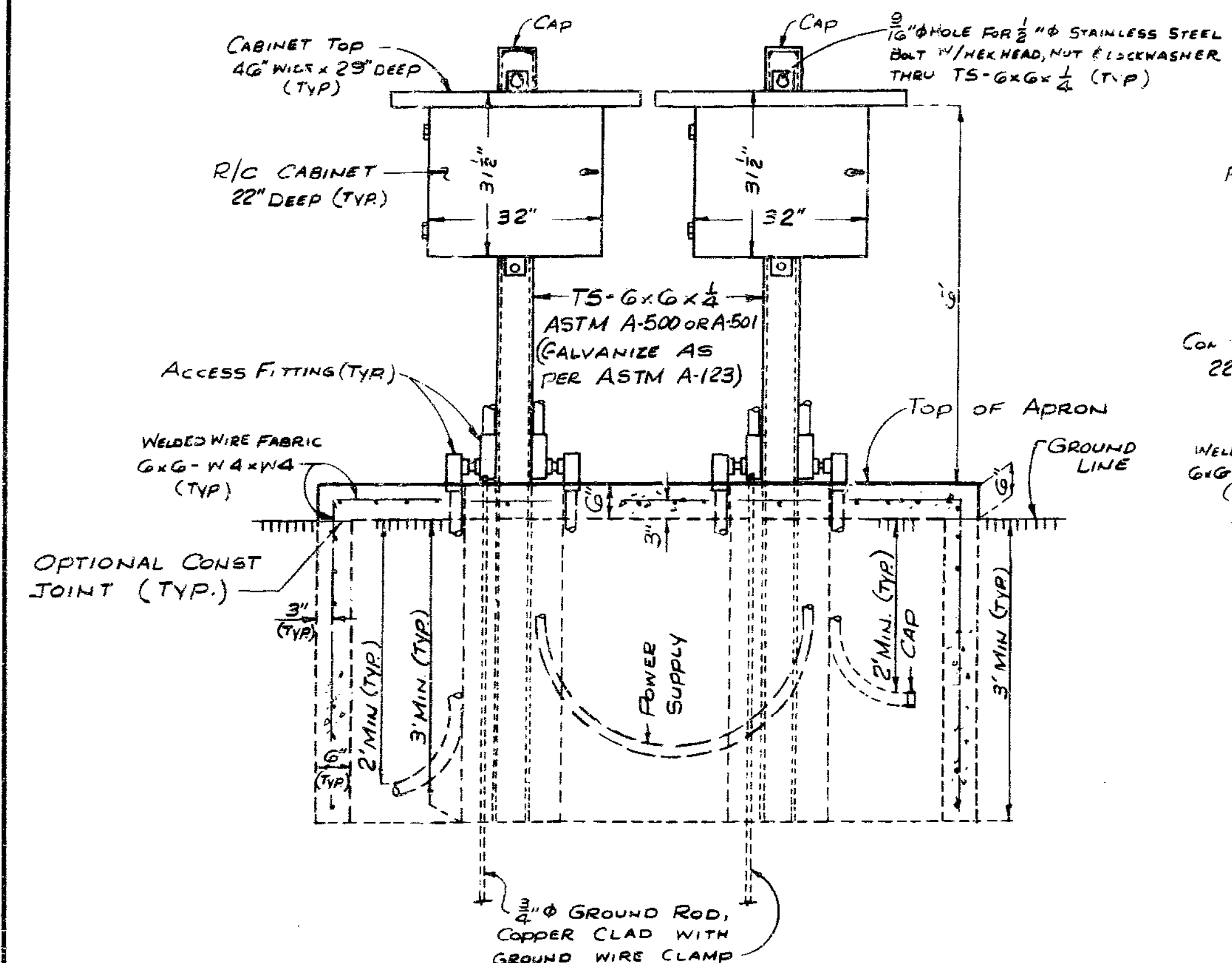


PRIMARY ANODE TO ANODE LEAD WIRE DETAIL

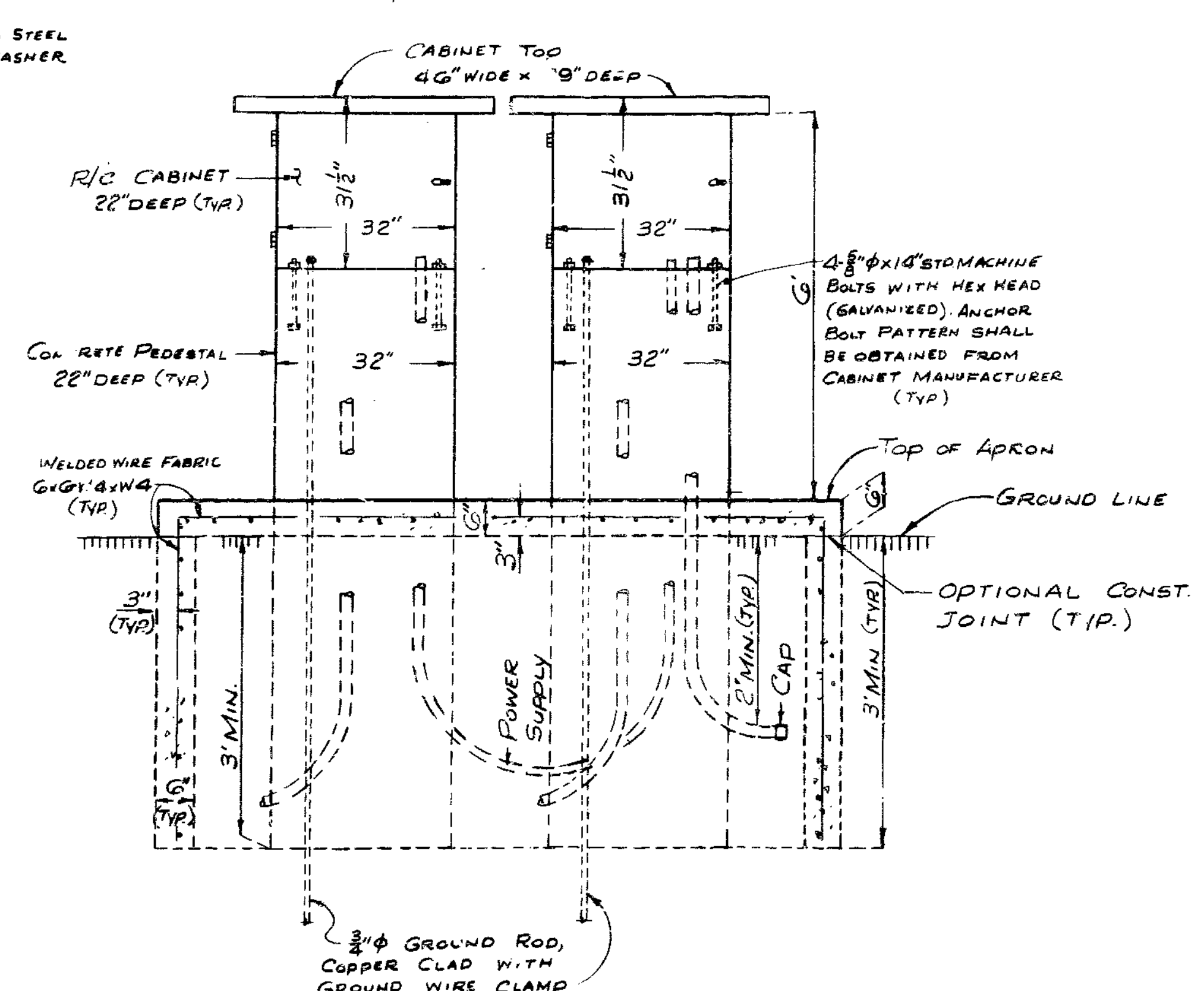
Note: All concrete removal shall be initiated by saw cutting the first 1/2".

Notes: Conduit shall be schedule 40 Heavy Wall PVC (Polyvinyl Chloride Plastic). Each section of conduit shall bear the Underwriters Laboratories, Inc. (UL) label. Conduit shall be secured to concrete with clamps at abt. 5'-0" cts. Weepholes shall be provided at appropriate locations to drain any moisture in the conduit lines. The location and direction of conduit may be shifted to meet field conditions as approved by the engineer. Use expansion couplings and access fittings where appropriate. The junction boxes shall be PVC molded, surface mounted, size 6"x6"x4". They shall be equal to "Carlton" Electrical Construction Products or "Triangle" Conduit & Cable Co. Inc. The conduit terminations and cover shall be of water tight construction.

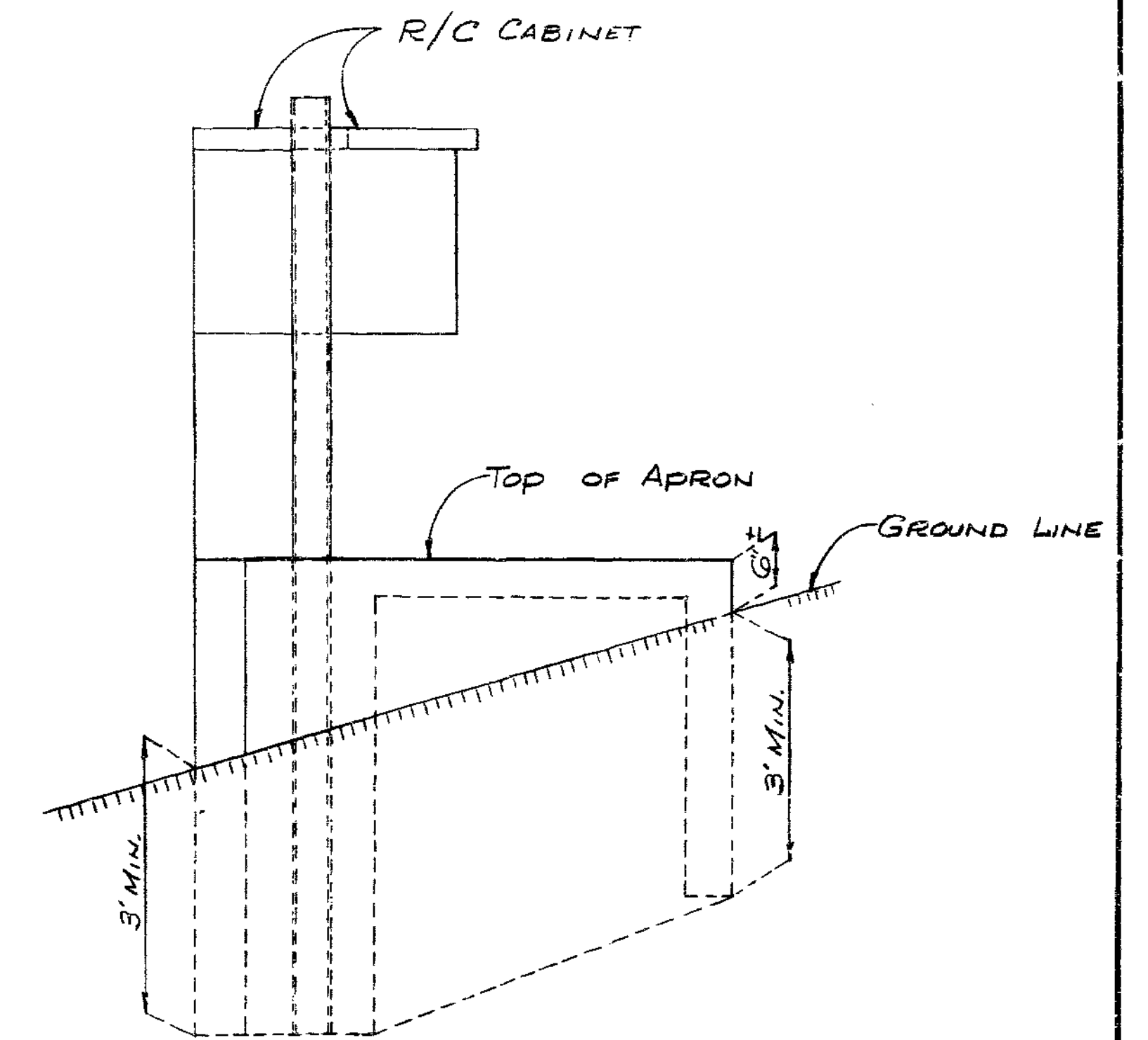
STATE	PROJ. NO.	SHEET NO.
MO	I-IR-IRG-435-1(14B)	22



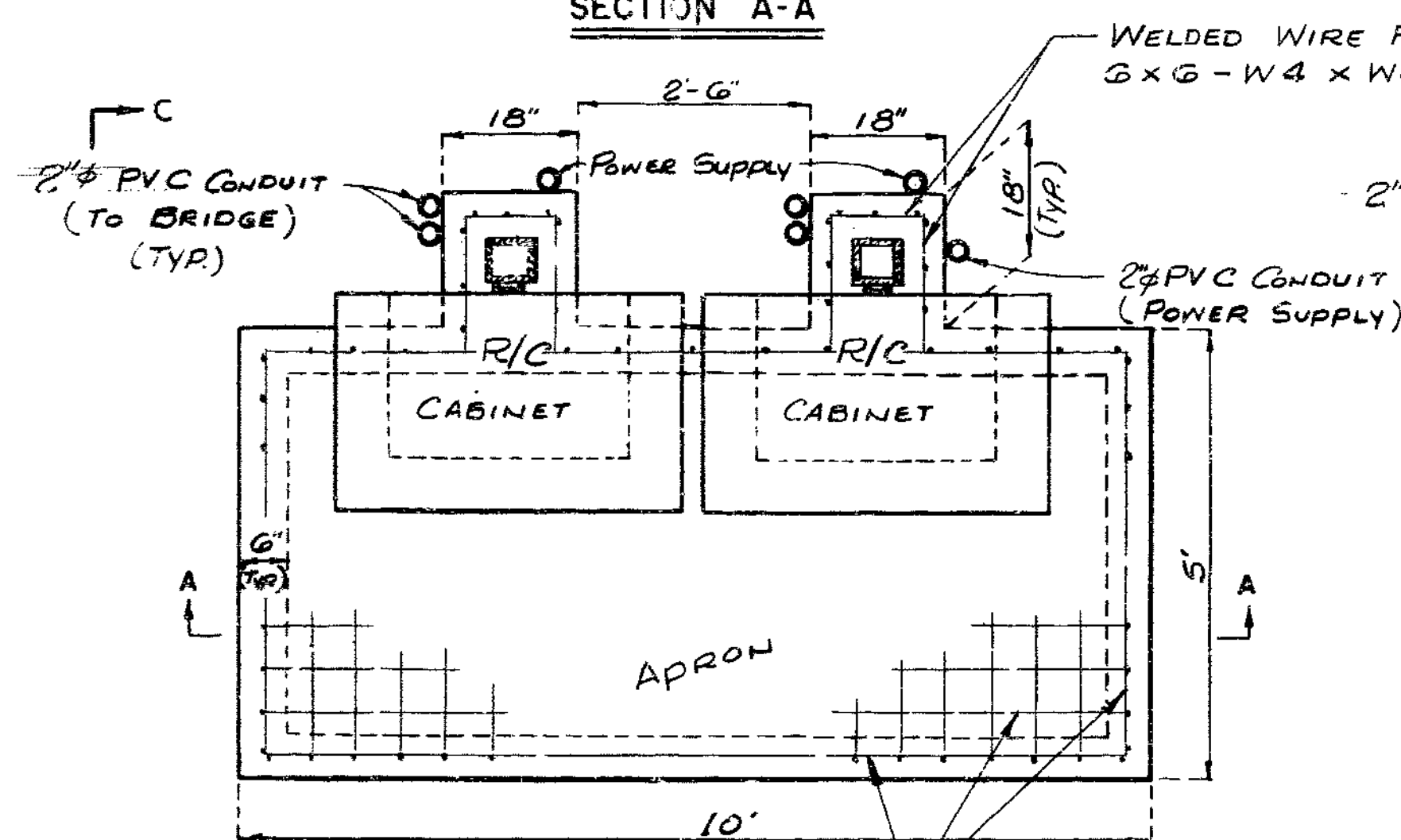
SECTION A-A



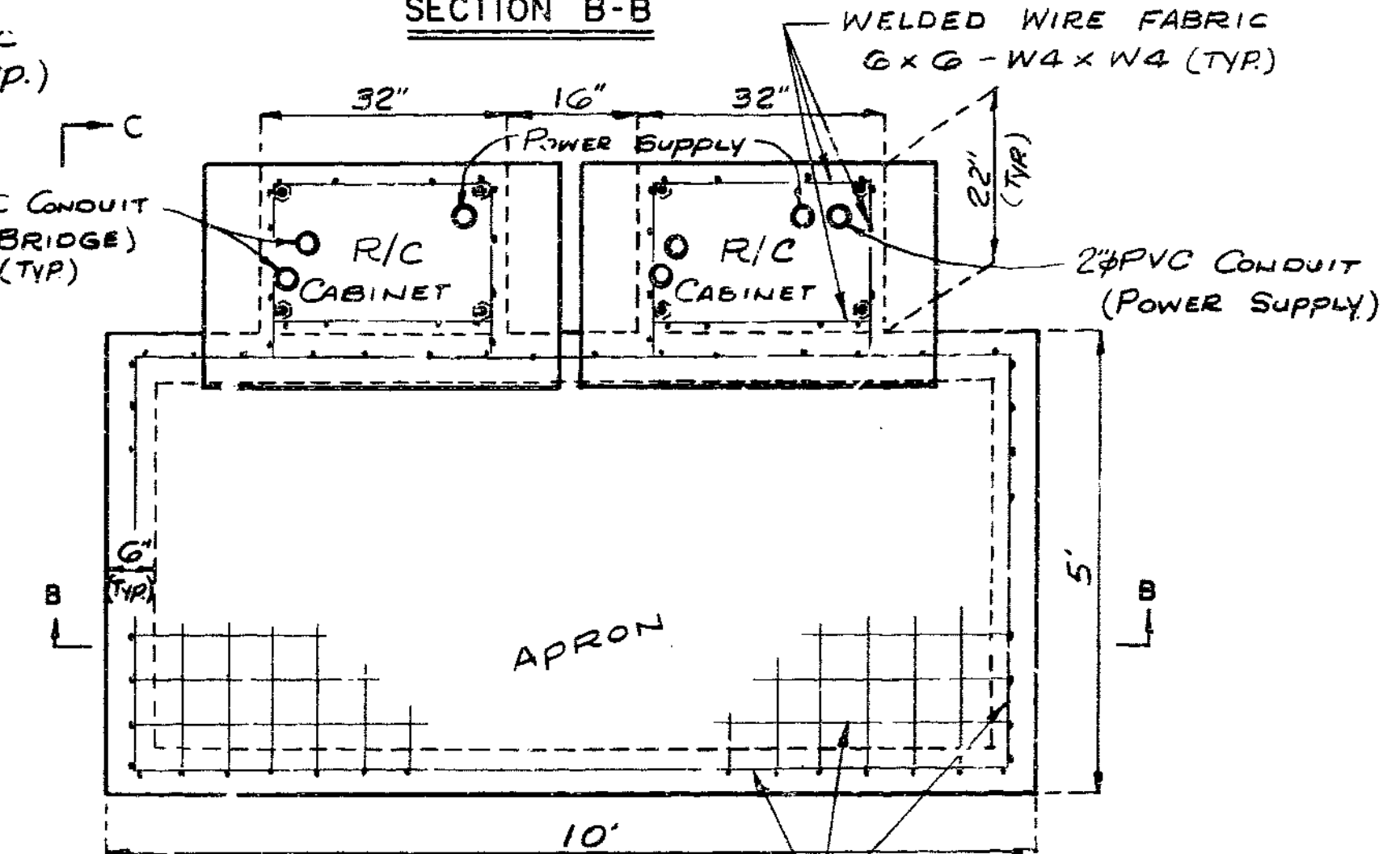
SECTION B-B



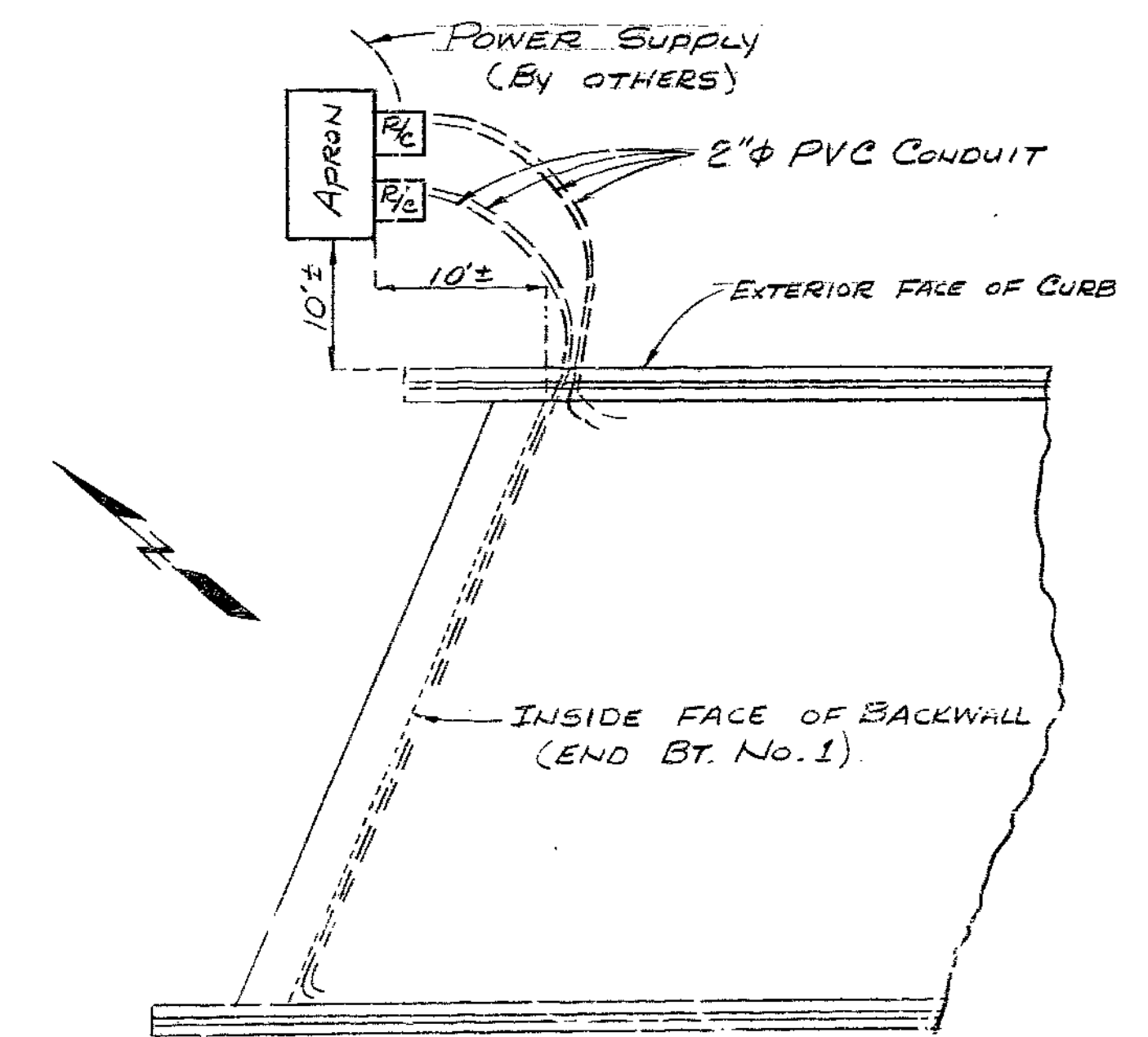
ELEVATION C-C



PLAN OPTION A



PLAN OPTION B



PLAN LOCATION OF RECTIFIER/CONTROLLER

Note: The 3/4" ground rods shall be sufficient length to extend a minimum of 10'-0" below bottom of concrete pedestal.
 Ground wire shall be #6 AWG minimum.
 Knockouts or drilled holes shall be provided in cabinets for all conduit.
 Locations of such are the responsibility of the contractor and cabinet manufacturer.

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

DETAILED FEB. 1985
 CHECKED FEB. 1985

Sheet No. 7 of 7

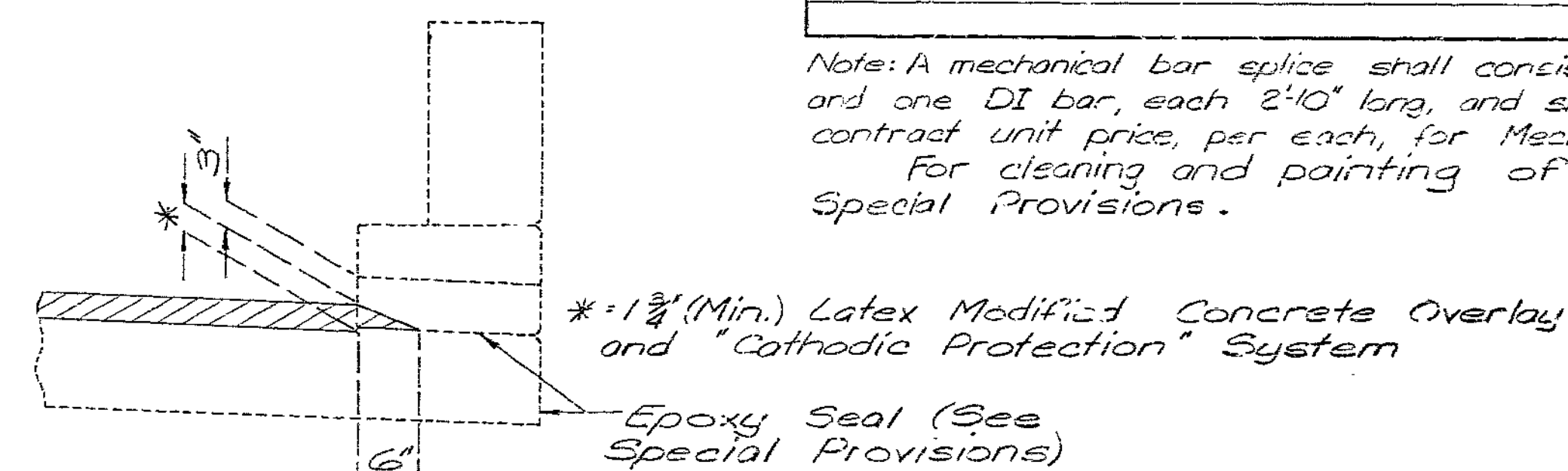
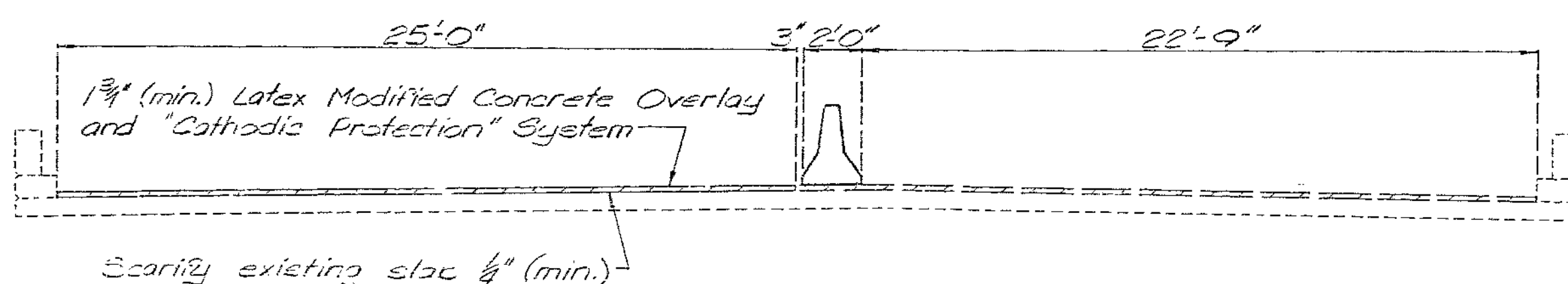
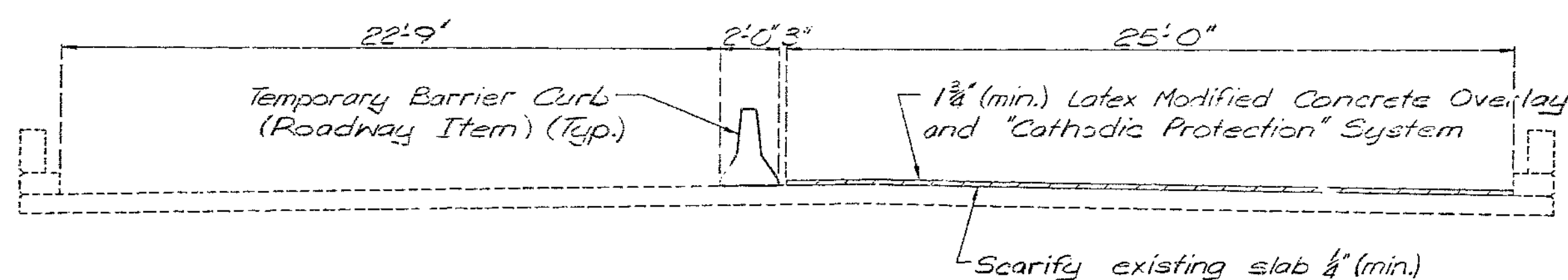
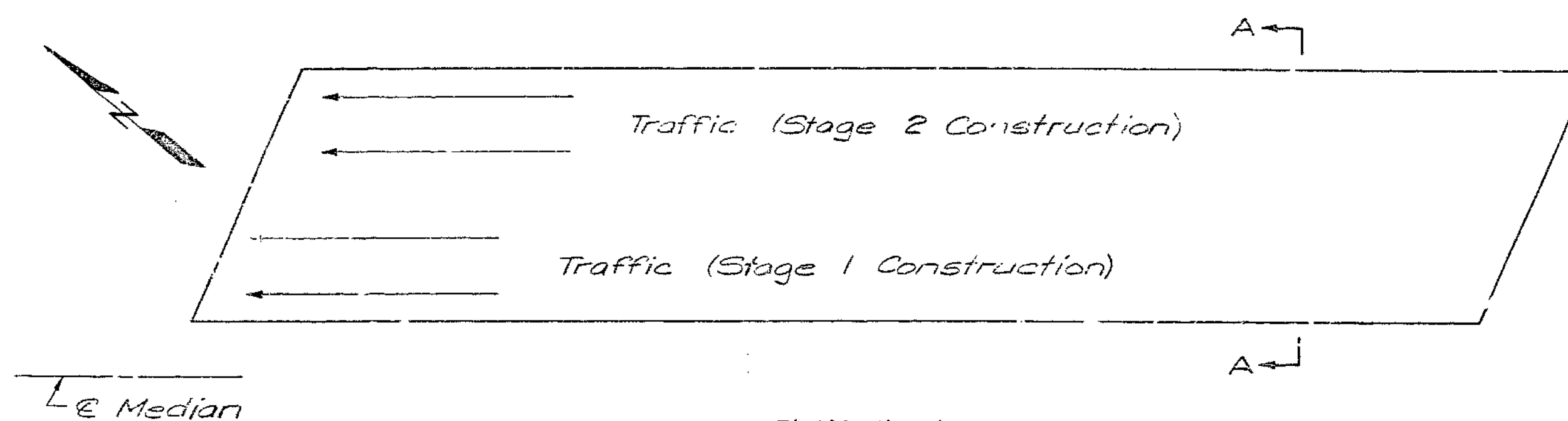
JACKSON COUNTY

A-1685R

312

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO	I-IR-IRG-435-1(4A)	16
SEC/SUR 30	TWP 50N RGE 32W	



GENERAL NOTES

Design Specifications: A.A.S.H.T.O. -1977 and Interims thru 1983.

Design Unit Stresses:
 Class B1 Concrete $f'_c = 4,000$ psi
 Reinforcing Steel (Grade 60) $f_y = 60,000$ psi

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

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

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

Two lanes of traffic over structure to be maintained during construction.

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

ESTIMATED QUANTITIES		
ITEM		TOTAL
Special Work	Lump Sum	1
Class B1 Concrete	Cu. Yd.	26.9
Repairing Concrete Deck (Half-Solino)	Sq. Ft.	5222
Full Depth Repair	Sq. Ft.	58
Latex Concrete Wearing Surface	Sq. Yd.	4926
Reinforcing Steel	Lb.	1200
Cathodic Protection System	Lump Sum	1
Steel Bar Doms	Each	3
Mechanical Bar Splices	Each	4
Cleaning and Painting Bearings	Each	60

Note: A mechanical bar splice shall consist of one DB-SAE bar and one DI bar, each 2'-10" long, and shall be paid for at the contract unit price, per each, for Mechanical Bar Splices.

For cleaning and painting of bearings see Special Provisions.

313

DESIGNED Jan. 1985
 DETAILED Jan. 1985
 CHECKED Jan. 1985

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

Sheet No. 1A of 7

REPAIRS TO N.B.L. OF
 BRIDGE OVER BIG BLUE RIVER

STATE ROAD: INTERSTATE ROUTE I-435

IN KANSAS CITY

PROJECT NO.

STA. 123+29.48 ±

JOB NO. 4-I435-443

RTE. I-435 N.B.L.

JACKSON

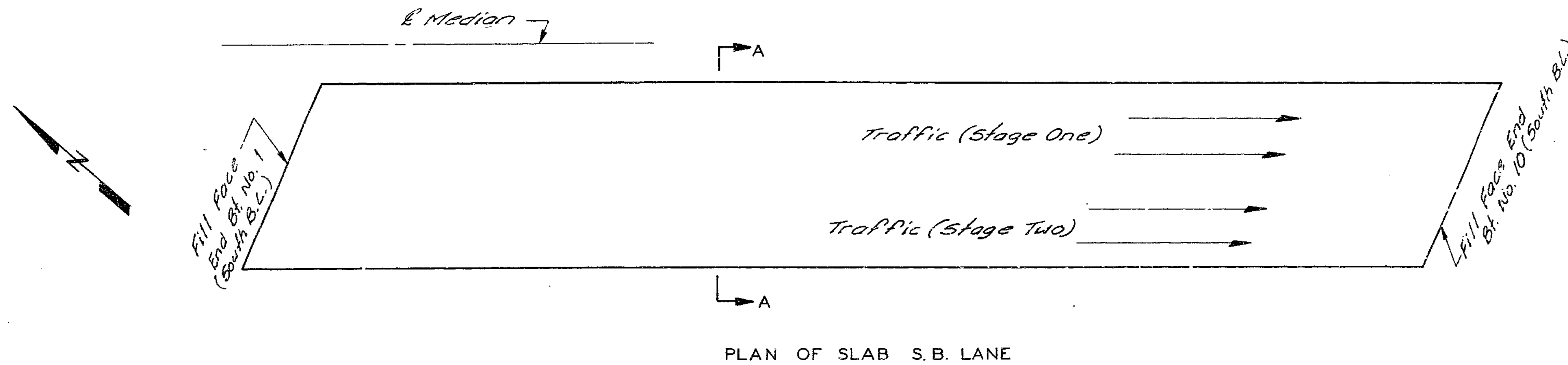
COUNTY

DATE FEBRUARY 23, 1985

STD. 708.5E
STD. 712.4D
A-1685R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PRG. NO.	SHEET NO.
MO	I-IR-IRG-435-1(148)	13
SEC./SUR. 30	TWP. 50 N	RGE. 32 W

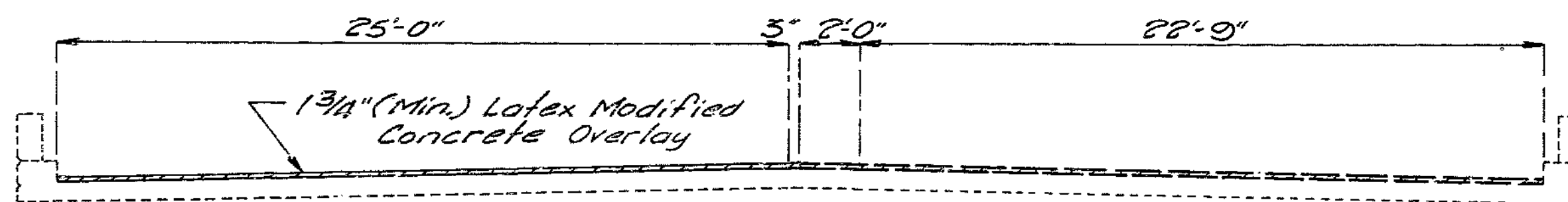
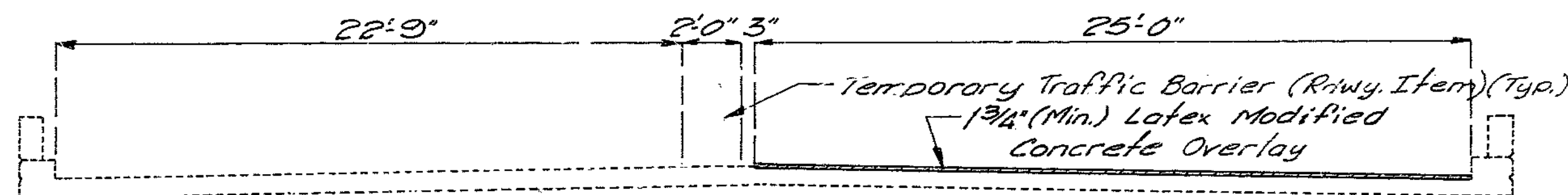


General Notes:

- Design Specifications: A.A.S.H.T.O. - 1977 and interims through 1983.
- Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.
- Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.
- Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.
- Two lanes of traffic over structure to be maintained during construction.
- Design Unit Stresses:
Class B1 Concrete $f'_c = 4,000$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi

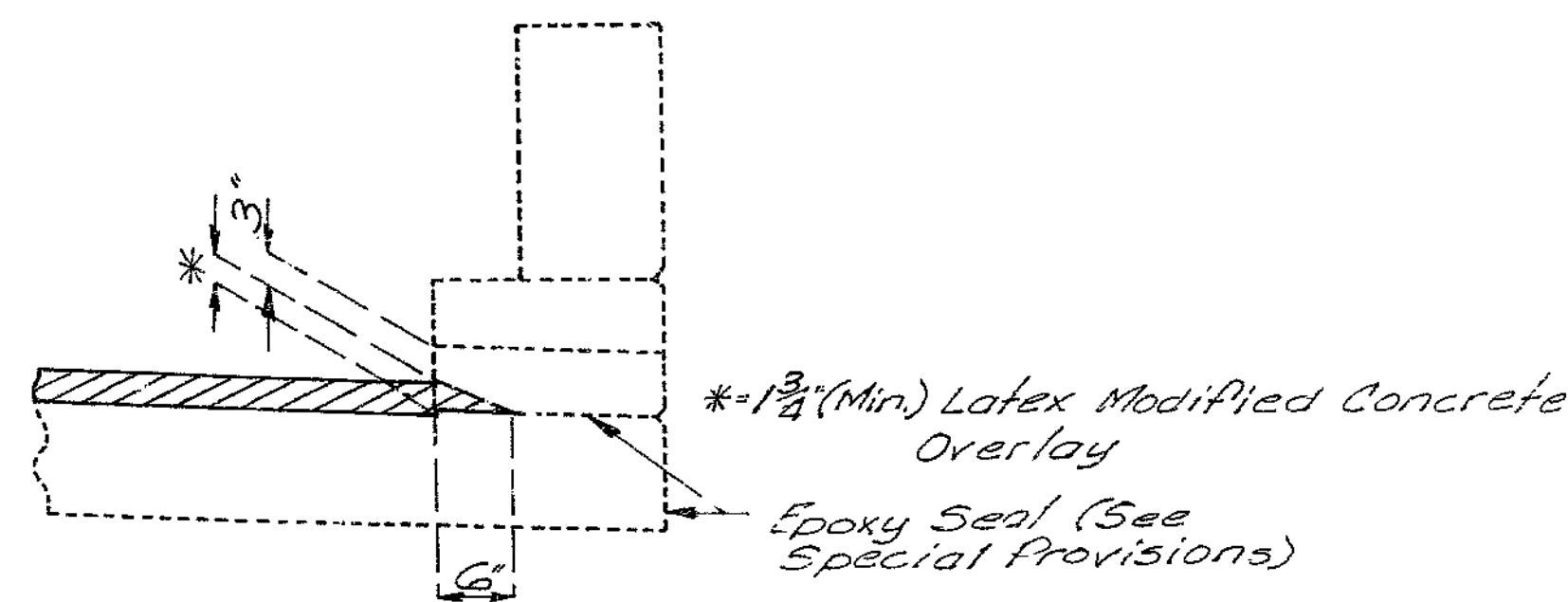
Note: A mechanical bar splice shall consist of one D3-SAE bar and one D1 bar, each 2'-10" long, and be paid for at the contract unit price, per each, for Mechanical Bar Splices.

All Joint Filler shall meet the requirements of Std. Spec. 1057.2.A except as noted.



ESTIMATED QUANTITIES		
ITEM		TOTAL
Class B1 Concrete	Cu. Yds.	26.6
Repair Concrete Deck (Half Soling)	Sq. Ft.	3,527
Full Depth Repair	Sq. Ft.	1,323
Latex Concrete Wearing Surface	Sq. Yds.	4,898
Reinforcing Steel	Lbs.	1,200
Steel Bar Dams	Each	3
Mechanical Bar Splices	Each	4
Cleaning and Painting Bearings	Each	60
Special Work	Lump Sum	1

Note: For cleaning and painting of bearings see Special Provisions.



REPAIRS TO S.B.L. OF BRIDGE OVER BIG BLUE RIVER

STATE ROAD - INTERSTATE ROUTE I-435

IN KANSAS CITY

PROJECT NO.

STA. 122 + 97.22 ±

JACKSON JOB NO. 4-I435-443

RTE. I-435 S.B.L.

JACKSON COUNTY

COUNTY

DATE FEBRUARY 25, 1985

STD. 706.35

STD. 712.40

A-1685R1

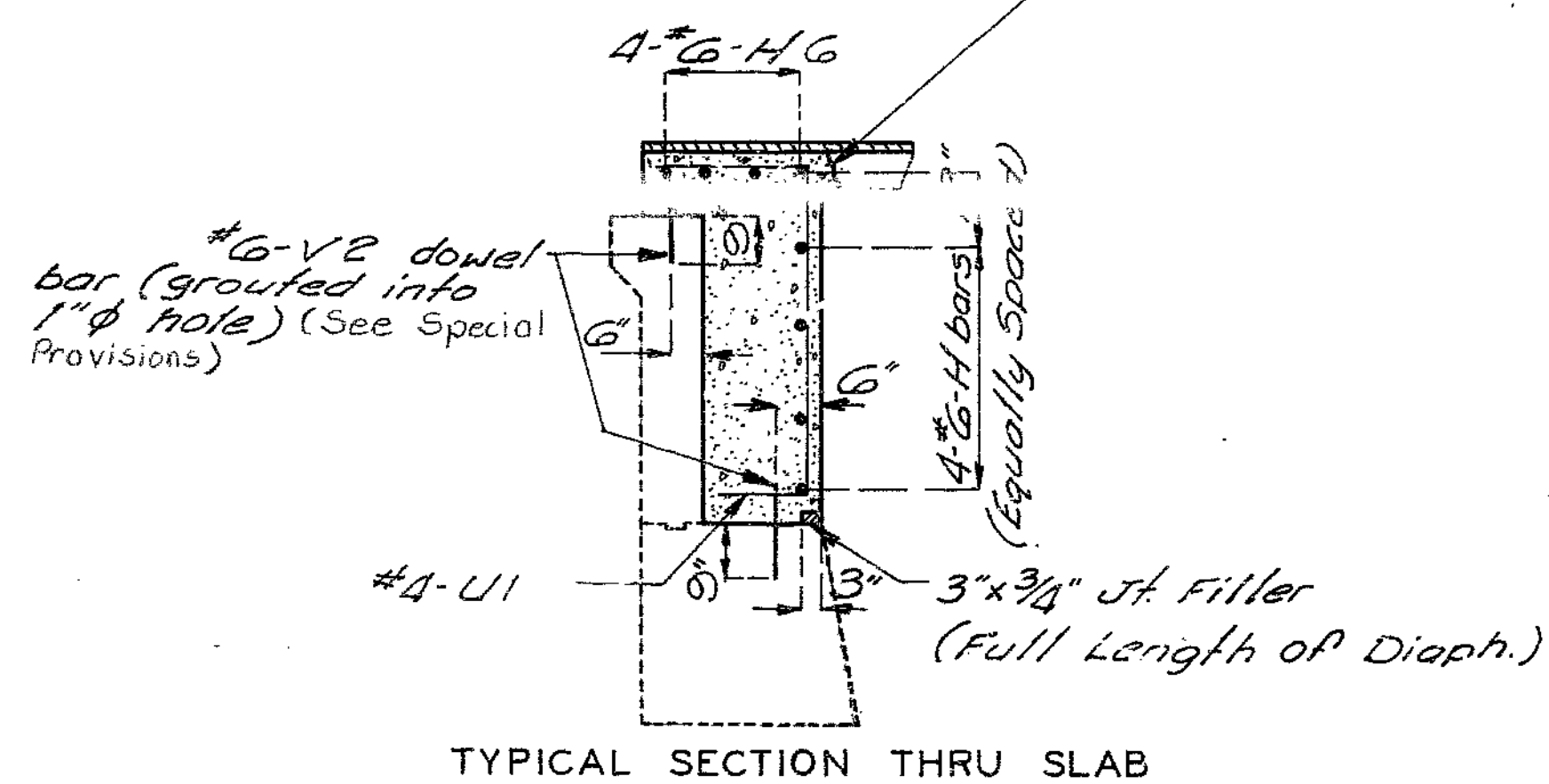
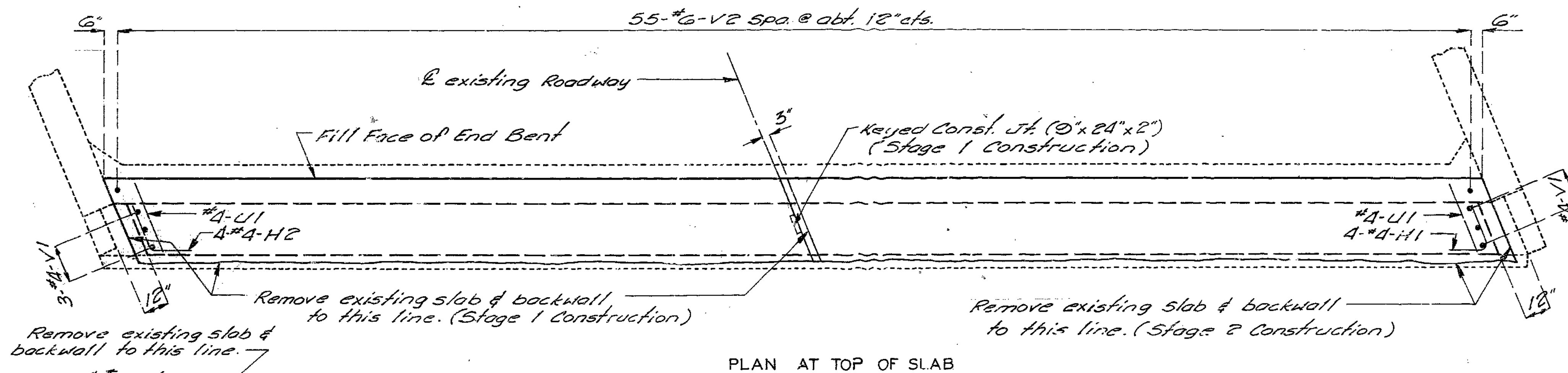
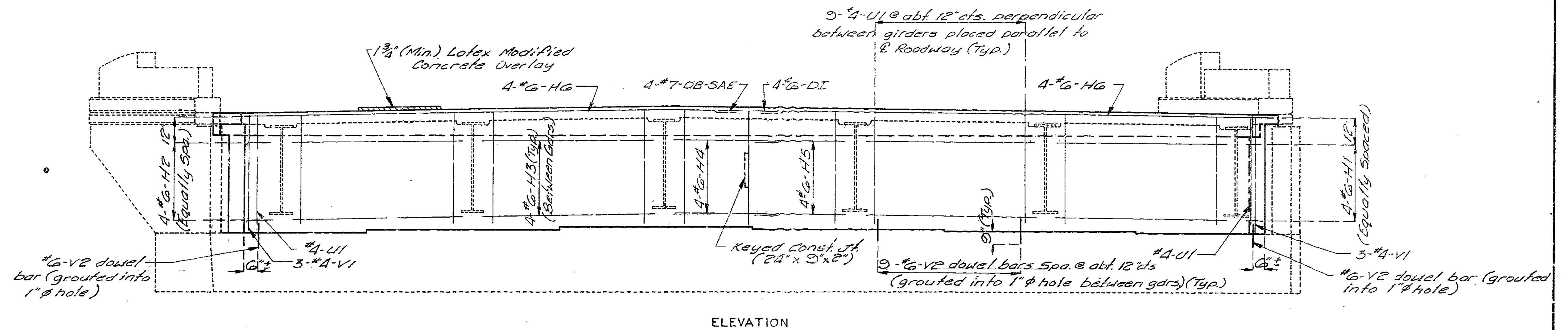
DESIGNED Jan. 1985
 DETAILED Jan. 1985
 CHECKED Jan. 1985

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

Sheet No. 1 of 3

314

STATE	PROJ NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	14



Notes:

DB-SAE and DI bars shall be bent in field as required to maintain a minimum concrete cover of 1 1/2".

"DB-SAE" designates dowel bars which shall have mechanical splices at the ends adjacent to the next pour.

"DI" designates dowel bars which shall be inserted into the mechanical splices of DB-SAE bars.

DB-SAE and DI bar splices shall be equal to that of Richmond Screw Anchor Co. Inc.

DETAILS OF END BENT NO. 1 S.B. LANE

315

DETAILED Jan. 1985
CHECKED Jan. 1985

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

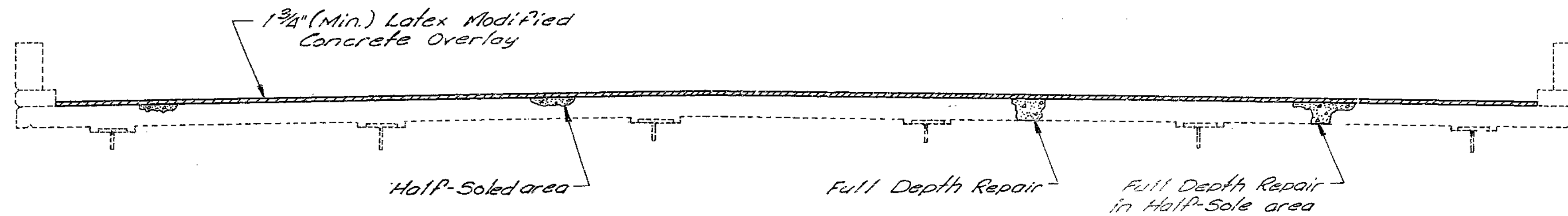
Sheet No. 2 of 3

JACKSON

COUNTY

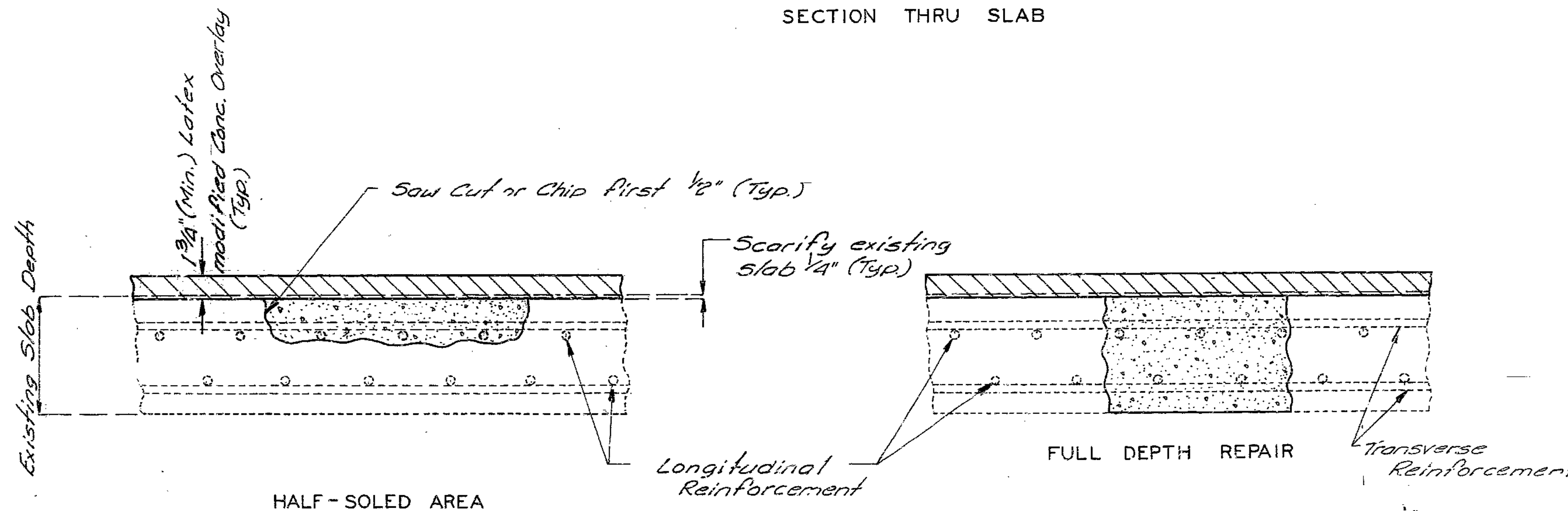
A-1685RI

STATE	PROJ. NO	SHEET NO.
MO. I-IR-IRG-435-1 (148)		15



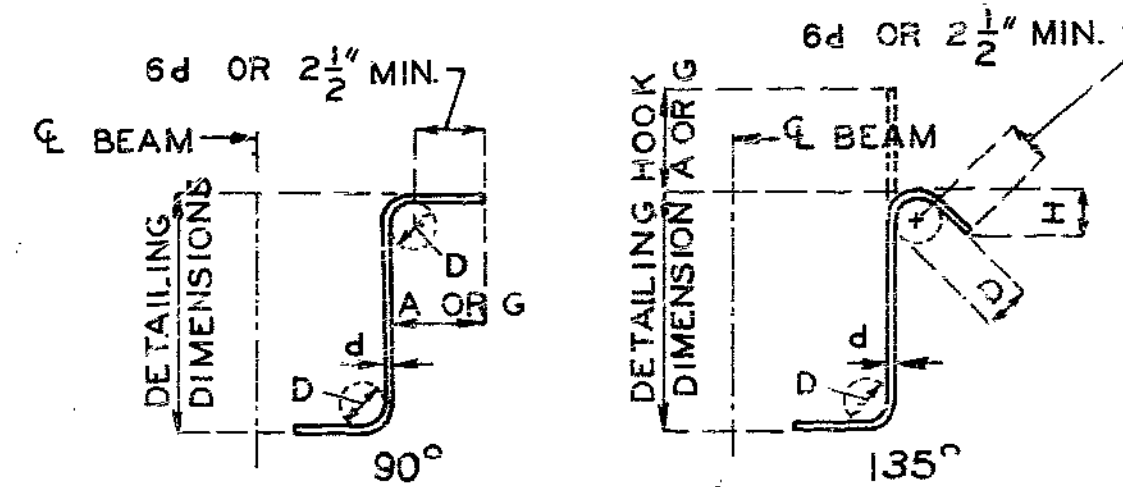
SECTION THRU SLAB

Note:
 Hooks and bends shall be in accordance with the procedures as shown on this sheet.
 S- Stirrup.
 Nominal lengths - are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (nearest inch)
 Actual lengths - are measured along centerline bar to the nearest inch.
 Payweights are based on actual length.



HALF-SOLED AREA

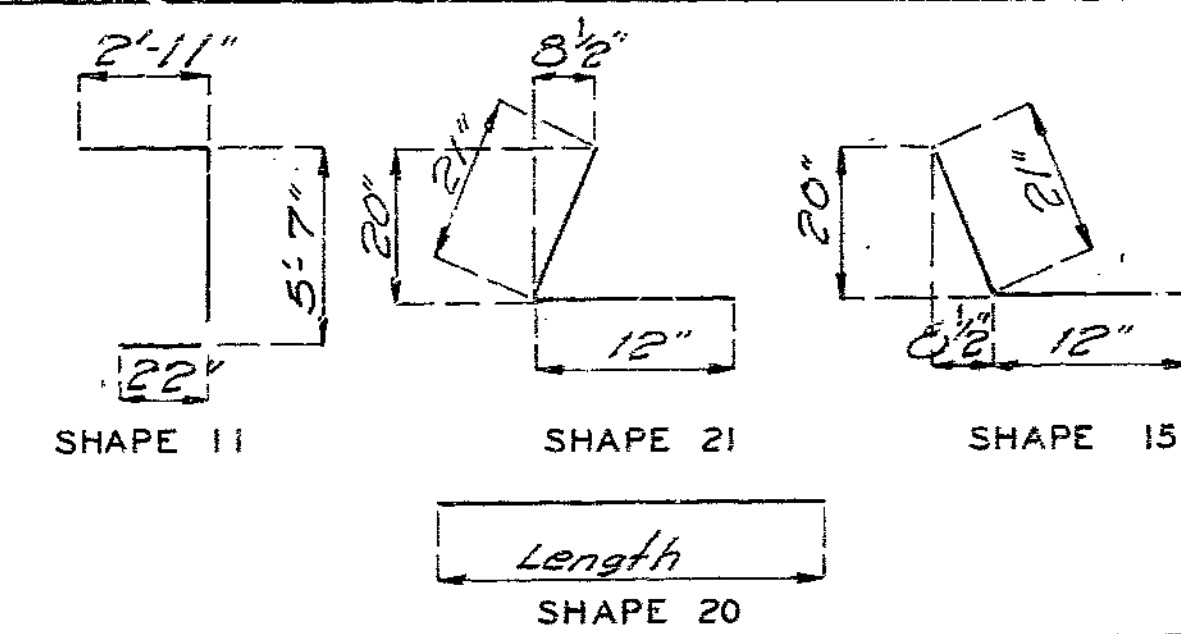
FULL DEPTH REPAIR



STIRRUP HOOK DIMENSIONS				
GRADES 40-50 60 KSI				
BAR SIZE	D (IN)	90° HOOK		135° HOOK
		HOOK A OR G	HOOK A OR G	APPL. CX. H
#4	2"	4-1/2"	4-1/2"	3"
#6	4-1/2"	8"	7"	4-1/2"

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

BILL OF REINFORCING STEEL						
NO. REQD.	SIZE & MARK	LOCATION	SHAPE	NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT (LBS.)
4	6 H1	Diaphragm	21 S	2'-0"	2'-7"	16
4	6 H2	Diaphragm	15 S	2'-0"	2'-7"	16
16	6 H3	Diaphragm	20	5'-0"	5'-0"	216
4	6 H4	Diaphragm	20	6'-2"	6'-2"	37
4	6 H5	Diaphragm	20	4'-4"	4'-4"	26
8	6 H6	Slab	20	26'-10"	26'-10"	322
47	4 U1	Diaphragm	11 S	10'-4"	10'-3"	319
6	4 V1	Diaphragm	20	5'-7"	5'-7"	22
10E	6 V2	Beam & Bkwl.	20	18"	18"	230



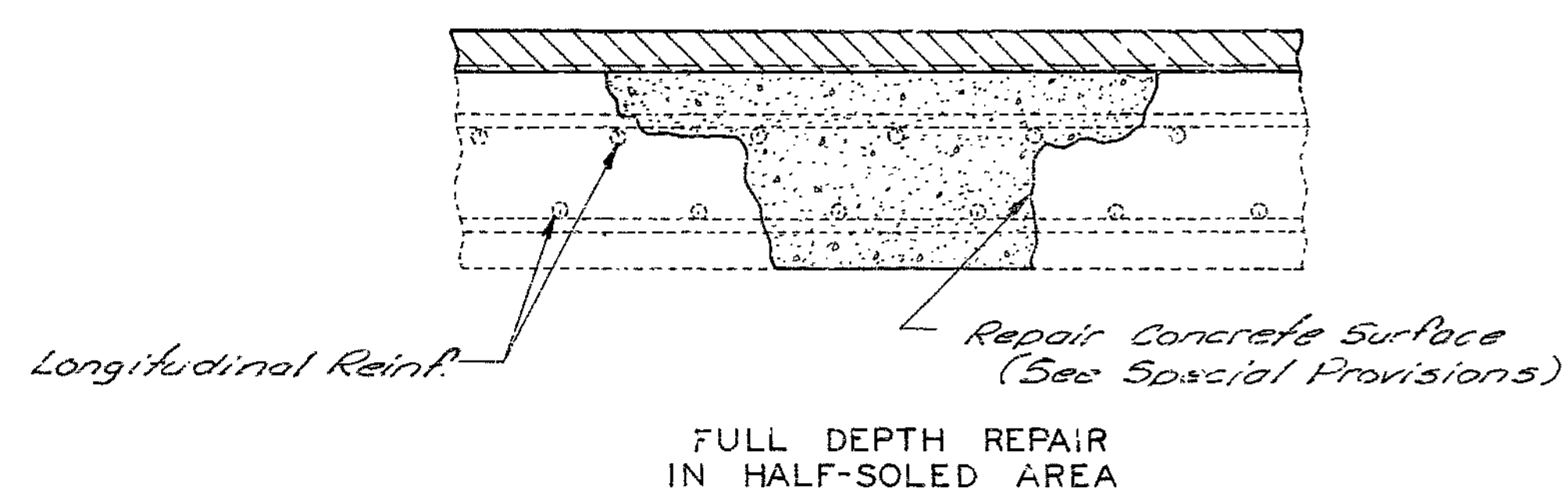
SHAPE 11

SHAPE 21

SHAPE 15

Length

SHAPE 20



FULL DEPTH REPAIR IN HALF-SOLED AREA

316

DETAILED Jan. 1985
 CHECKED Jan. 1985

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

Sheet No. 3 of 3

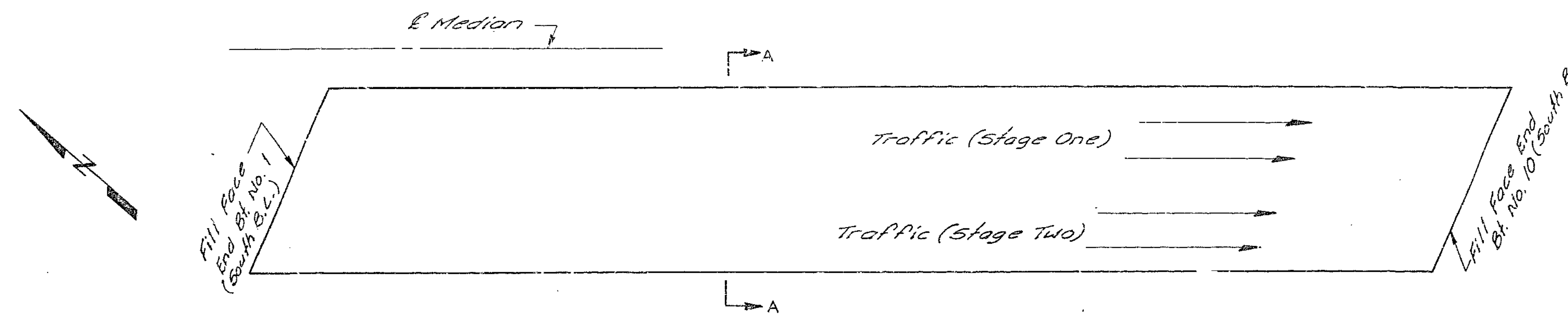
JACKSON

COUNTY

A-1685RI

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ NO	SHEET NO
MO.	I-IR-IRG-435-1(148)	13
SEC/SUR	30 TWP 50 N RGE 32 W	



PLAN OF SLAB S.B. LANE

General Notes:

Design Specifications: A.A.S.H.T.O. - 1977 and interims through 1983.

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

Bars bonded in old concrete not removed shall be clearly stripped and embedded into new concrete where possible.

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

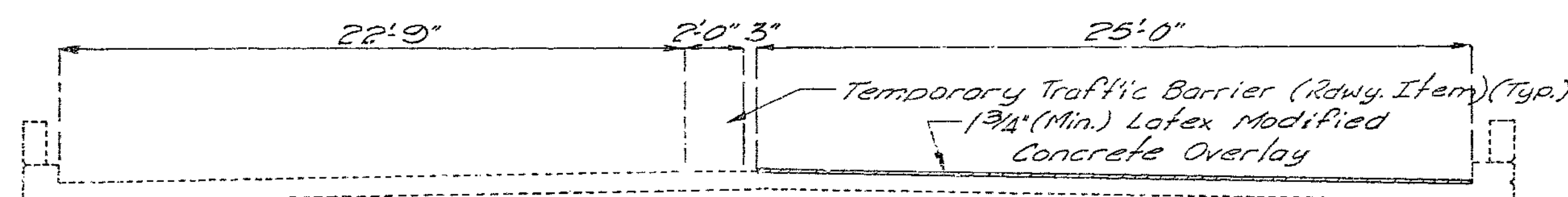
Two lanes of traffic over structure to be maintained during construction.

Design Unit Stresses:

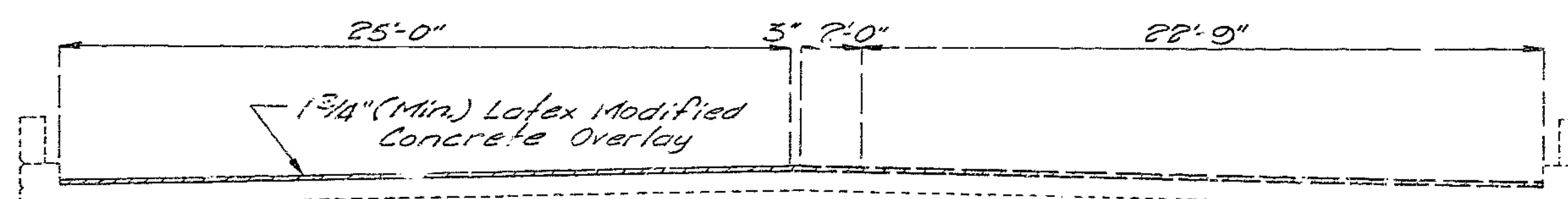
Class B1 Concrete $f_c = 4,000$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi

Note: A mechanical bar splice shall consist of one D8-SAE bar and one D1 bar, each 2'-10" long, and be paid for at the contract unit price, per each, for Mechanical Bar Splices.

All Joint Filler shall meet the requirements of Std. Spec. 1057.2.4 except as noted.



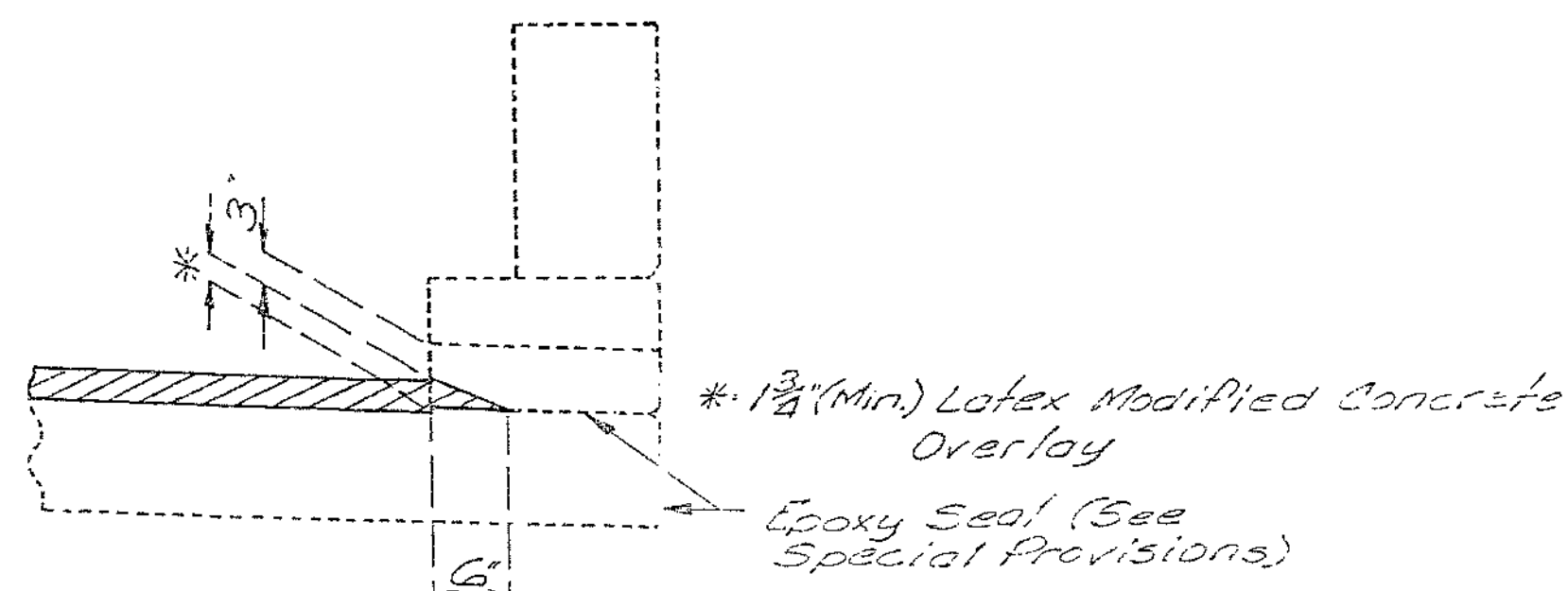
SECTION A-A (STAGE ONE)



SECTION A-A (STAGE TWO)

ESTIMATED QUANTITIES		
ITEM		TOTAL
Class B1 Concrete	Cu. Yds.	26.6 ✓
Repair Concrete Deck (Half Solina)	Sq. Ft.	1162 ✓
Full Depth Repair	Sq. Ft.	0 ✓
Latex Concrete Wearing Surface	Sq. Yds.	4.898 ✓
Reinforcing steel	Lbs.	1200 ✓
Steel Bar Dams	Each	3 ✓
Mechanical Bar Splices	Each	4 ✓
Cleaning and Painting Bearings	Each	60 ✓
Special work	Lump Sum	1 ✓

Note: For cleaning and painting of bearings see Special Provisions.



TYPICAL SECTION AT CURB SHOWING OUTLETS

DESIGNED Jan. 1985
DETAILED Jan. 1985
CHECKED Jan. 1985

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

Sheet No. 1A of 3

DATE FEBRUARY 25, 1985

REPAIRS TO S.B.L. OF BRIDGE OVER BIG BLUE RIVER

STATE ROAD - INTERSTATE ROUTE I-435
IN KANSAS CITY

PROJECT NO. STA. 122 + 97.22 ±

JOB NO. 4-I435-443 RTE. I-435 S.B.L.

JACKSON COUNTY

STD. 706.35

STD. 712.10

A-1685R

317

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	F.A.-450-1(250)	26
SEC./SUR.	30 TWP. 50N RGE. 32W	

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.

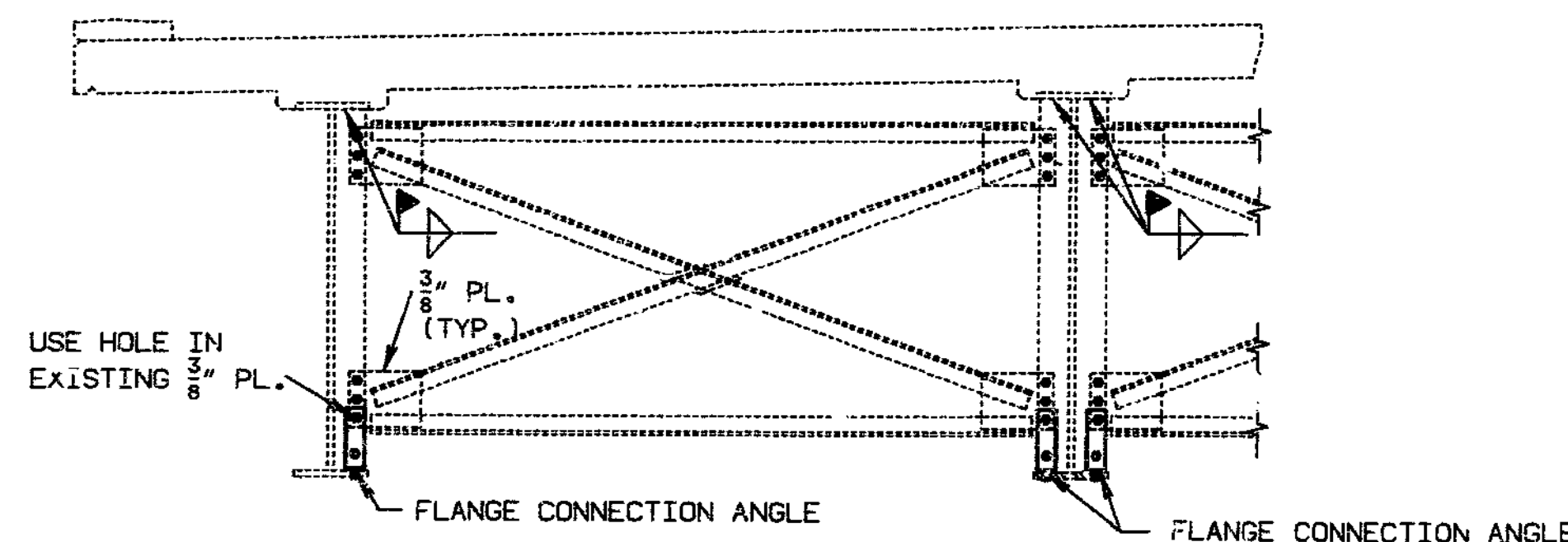
PAINTING:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT FOR SYSTEM C SHALL BE GREEN.)

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

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

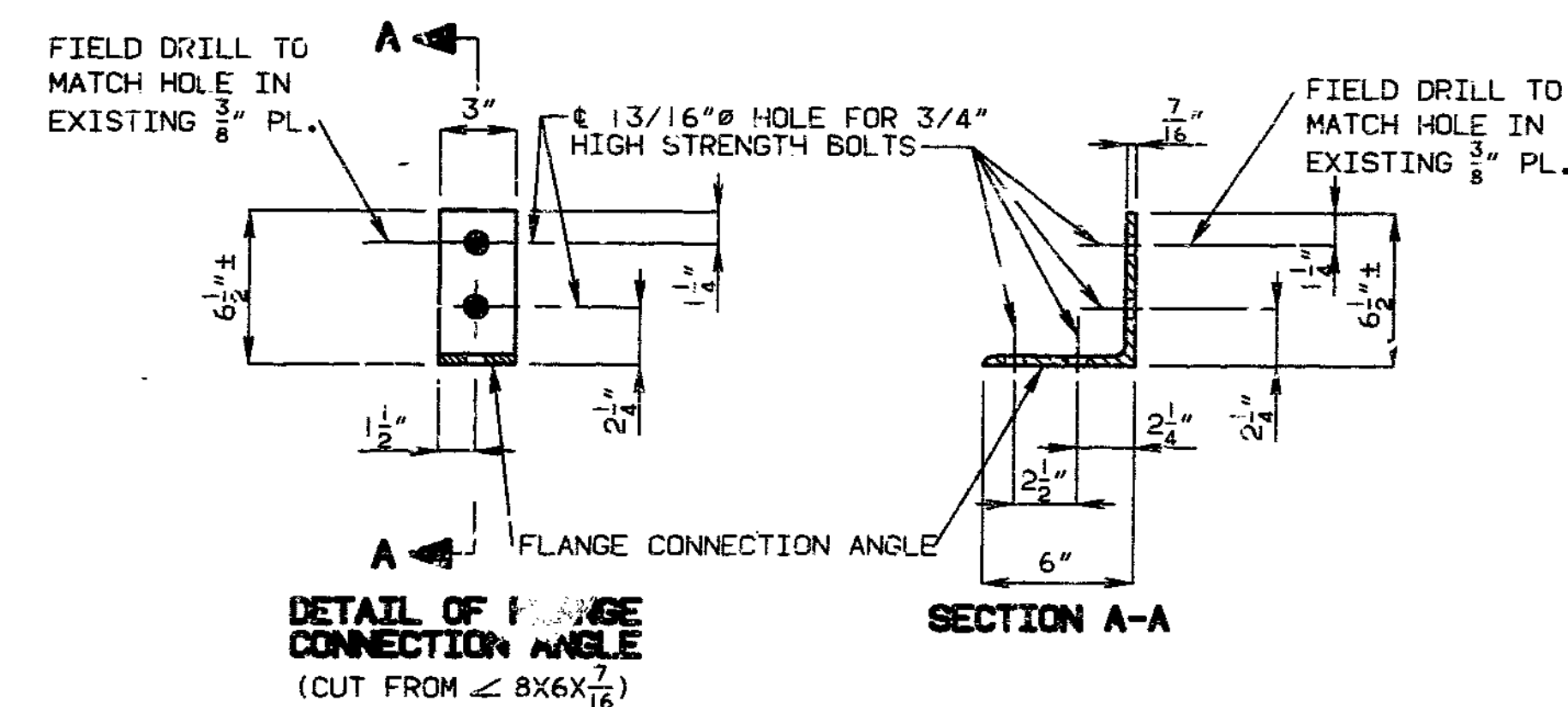
ESTIMATED QUANTITIES		
ITEM		TOTAL
MOBILIZATION	LUMP SUM	1
REPAIR "A"	EACH	760
REPAIR "B"	LIN. IN.	270
REPAIRING (SYSTEM C) ALUMINUM	LUMP SUM	1

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



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS REPAIR "A"

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



DETAIL OF FLANGE CONNECTION ANGLE (CUT FROM \angle 8X6X $\frac{7}{16}$)

SECTION A-A

218789

DETAILED APR. 1991
CHECKED APR. 1991

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

SEE FINAL PLANS

SHEET NO. 1 OF 2.

REPAIRS TO BRIDGE OVER BIG BLUE RIVER

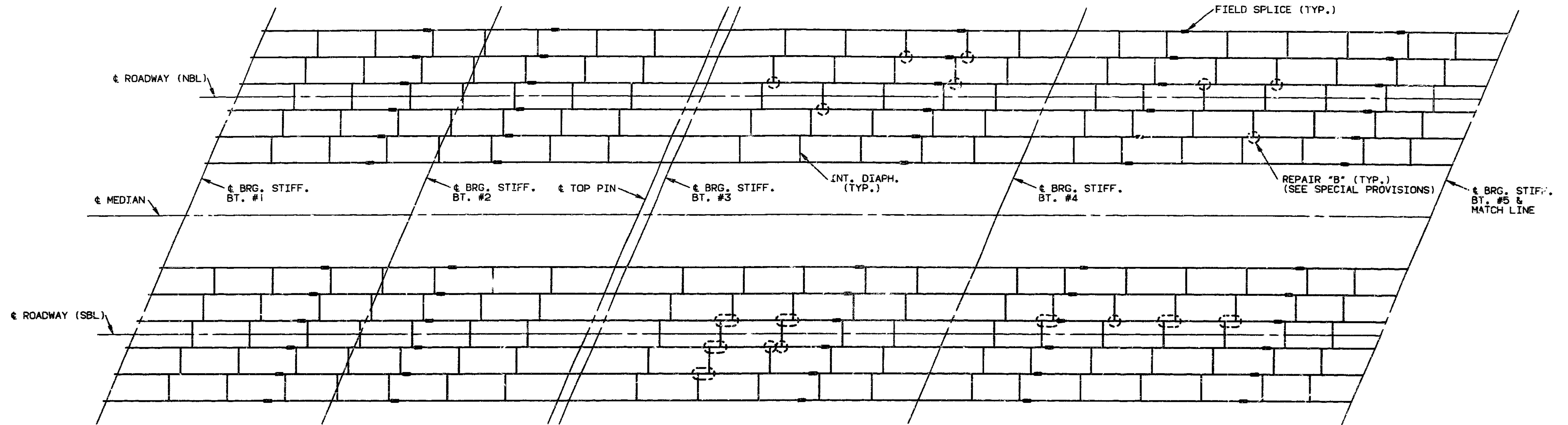
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY -435- STA. 123+29.48 N.B.L.
PROJECT NO. F.A. (450)1(250) STA. 122+97.22 S.B.L.
JOB NO. 41 1026-435 RTE. I-435

JACKSON COUNTY

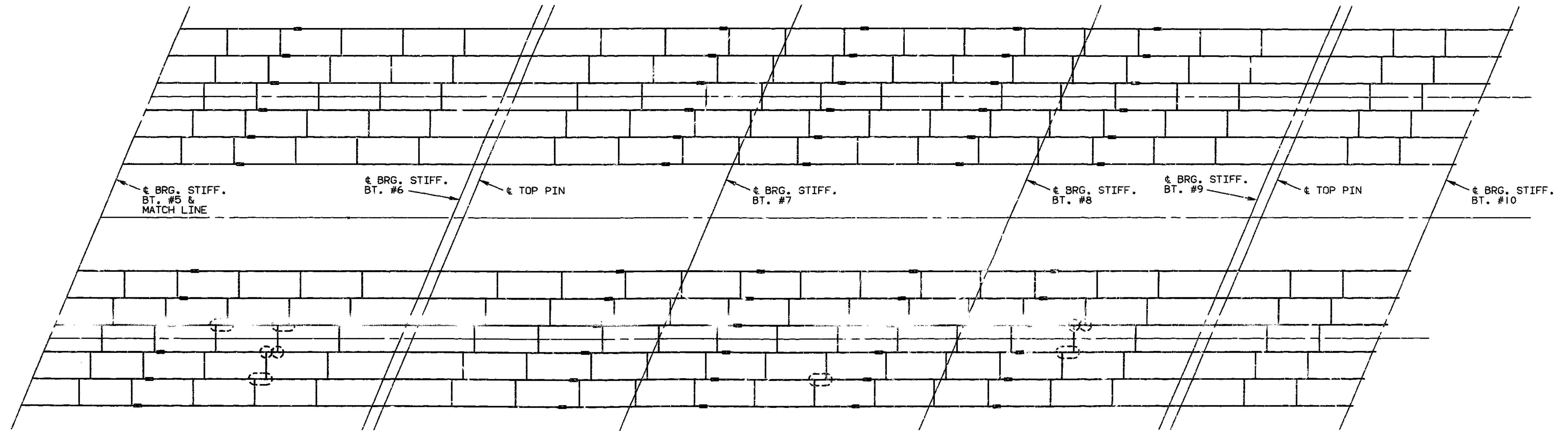
DATE 6/5/91

A-1685R2

STATE	PROJ. NO.	SHEET NO.
MO.	F.A. - 450 - (250)	27



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS



PART PLAN OF STRUCTURAL STEEL SHOWING REPAIR AREAS

298 219

DETAILED APR. 1991
CHECKED APR. 1991

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

SHEET NO. 2 OF 2.

JACKSON COUNTY

A-1685R2

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	F.A.-435-1(250)	
SEC./SUR. 30 TWP. 50N RGE. 32W		

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:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT FOR SYSTEM C SHALL BE GREEN.)

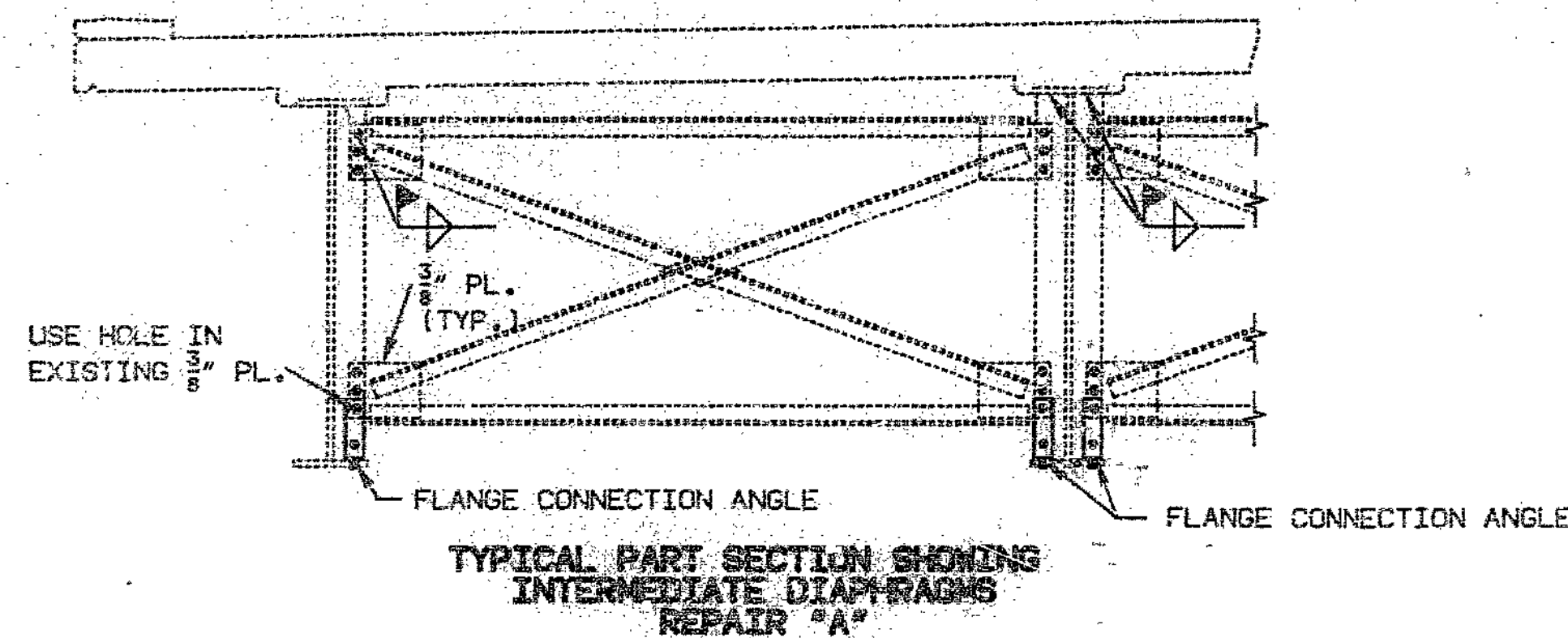
TRAFFIC MAINTAINED:
TWO LANES OF TRAFFIC IN EACH DIRECTION OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION.

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

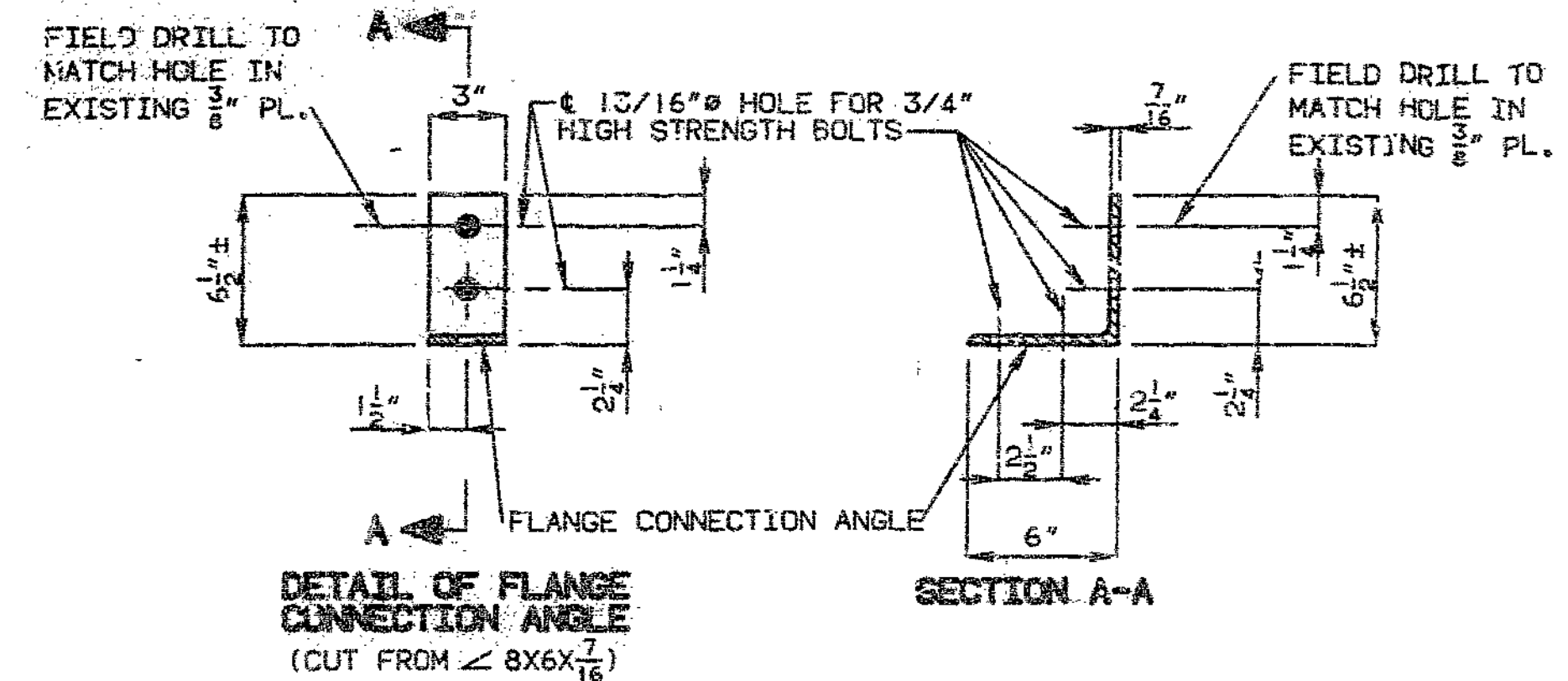
FINAL QUANTITIES		
ITEM		TOTAL
MOBILIZATION	LUMP SUM	1
REPAIR "A"	EACH	760
REPAIR "B"	LIN. IN.	281
REPAINTING (SYSTEM C) ALUMINUM	LUMP SUM	1

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

289-220



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



REPAIRS TO BRIDGE OVER BIG BLUE RIVER

STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY STA. 123+29.48 N.B.L.
PROJECT NO. F.A.-435-1(250) STA. 122+97.22 S.B.L.
JOB NO. 41 1026-435 R/E. I-435

JACKSON COUNTY

DETAILED APR. 1991
CHECKED APR. 1991

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

SHEET NO. 1 OF 2.

DATE 6/5/91

A-1685R2

No.	Sheet Title
1	General Notes and Estimated Quantities
2	Staged Construction Sequence
3	End Bent and Hinge Removal Details
4	Hinge Modification Details
5	Details of Type 'N' PTFE Bearings
6	Slab Cross Section and Haunching Diagram
7	Slab Plan Stage I - Units 1 - 2
8	Slab Plan Stage I - Units 3 - 4
9	Slab Plan Stage II - Units 1 - 2
10	Slab Plan Stage II - Units 3 - 4
11	Slab Plan Stage III - Units 1 - 2
12	Slab Plan Stage III - Units 3 - 4
13	Miscellaneous Slab Details
14	Slab Pouring Sequence
15	Slab Drain Locations
16	Details of Slab Drains
17	Finger Plate Details Hinges Near Bents No. 3 & 6
18	Miscellaneous Expansion Device Details - Hinges Near Bents No. 3 & 6
19	Details of Preformed Compression Joint Seal at Hinge Near Bent No. 9
20	Details of Bent Curb Plates
21	Safety Barrier Curb Details
22	Miscellaneous Barrier Curb Details
23	Barrier Curb at End Bents
24	Bill of Reinforcing Steel - Stage I
25	Bill of Reinforcing Steel - Stage II
26	Bill of Reinforcing Steel - Stage III

Estimated Quantities			
Item		Superstr.	Total
Partial Removal of Substructure Concrete	lump sum		1
Removal of Existing Bridge Deck - Metric	sq. meter	4302.7	4302.7
Slab on Steel - Metric	sq. meter	4303	4303
* Safety Barrier Curb - Metric	meter	552.5	552.5
Type N PTFE Bearings	each	12	12
Preformed Compression Expansion Joint Seal (102mm) - Metric	meter	17.5	17.5
Expansion Device (Finger Plate) - Metric	meter	33.2	33.2
Fabricated Structural Carbon Steel (Misc) - Metric	kilogram	17 325	17 325
Slab Drain	each	128	128
Field Coat (System G) Gray - Metric	Megagram	17.3	17.3
Rehabilitation of Existing Wings	lump sum		1

The table of Estimated Quantities for Slab on Steel represents the quantities used by the state in preparing the cost estimate for concrete slabs. Variations may be encountered in these estimated quantities but these variations cannot be used for an adjustment in the contract unit price per square meter of Slab on Steel.

Slab on steel shall be constructed using cast-in-place conventional forming.

All concrete and reinforcement above the existing construction joint in the end bents is included with the Estimated Quantities for Slab on Steel.

* Safety barrier curb shall be cast-in-place option or slip-form option.

Estimated Quantities for Slab on Steel					
Item		Stage I	Stage II	Stage III	Total
Reinforcing Steel (Epoxy Coated)	kilogram	62 330	75 305	70 845	208 480
Concrete	cu. meter	279.4	341.4	362.8	983.6

- 26 Bill of Reinforcing Steel - Stage III
- 26A Bill of Reinforcing Steel - Wing Rehabilitation
- 23 Barrier Curb at End Bent No. 1
- 23A Barrier Curb at End Bent No. 10
- 3 End Bent and Hinge Removal Details
- 3A Details Showing Rehabilitation of Right Wing at End Bent No. 10
- 3B Details Showing Rehabilitation of Right Wing at End Bent No. 10
- 3C Details Showing Rehabilitation of Left Wing at End Bent No. 10
- 3D Details Showing Rehabilitation of Left Wing at End Bent No. 10

General Notes:

Design Specifications:
 AASHTO-1996 Load Factor Design
 Seismic Performance Category A

Design Loading:
 MS18 Modified
 No Future Wearing Surface
 Fatigue Stress - Case I

Design Unit Stresses:
 Class B1 Concrete (Safety Barrier Curb) $f'c = 28 \text{ MPa}$
 Class B2 Concrete (Superstructure, except Safety Barrier Curb) $f'c = 28 \text{ MPa}$
 Reinforcing Steel (Grade 420) $fy = 420 \text{ MPa}$
 Structural Carbon Steel (ASTM A709M Grade 250) $fy = 250 \text{ MPa}$

Fabricated Steel Connections
 Field connections shall be made with 19.0 mm diameter high strength bolts and 20.6 mm diameter holes, except as noted.

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

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

Protective Coating (New steel only)
 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.

Hinge Modifications
 Removal of existing structural steel in hinge areas as shown shall be included in the cost of Fabricated Structural Carbon Steel (Misc.) - Metric.

Miscellaneous
 Traffic over structure to be maintained during construction.

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.

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

Contractor shall take all necessary precautions to prevent debris and other material from dropping into the river. See Special Provisions.

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

Drawings are not to scale. Follow dimensions.

Elevations
 All elevations are specified in meters except as noted.



Repairs to: Bridge over Big Blue River

State Road I-435 from Rte. 24 to Missouri River
 In Kansas City
 Project No. Sta. 3+748.193 (Match existing)
 Job No. J4I1250 Rte. I-435 (SB)

JACKSON COUNTY

Date:

PROJECT No. 98-047 PROJECT NAME: MODOT-BR-NO. 46854-SB I-435 over Big Blue River S:\98047\STR\46854-SB\DRAWING\BNO1E.DGN

BUCHER, WILLIS & RATLIFF
 CORPORATION

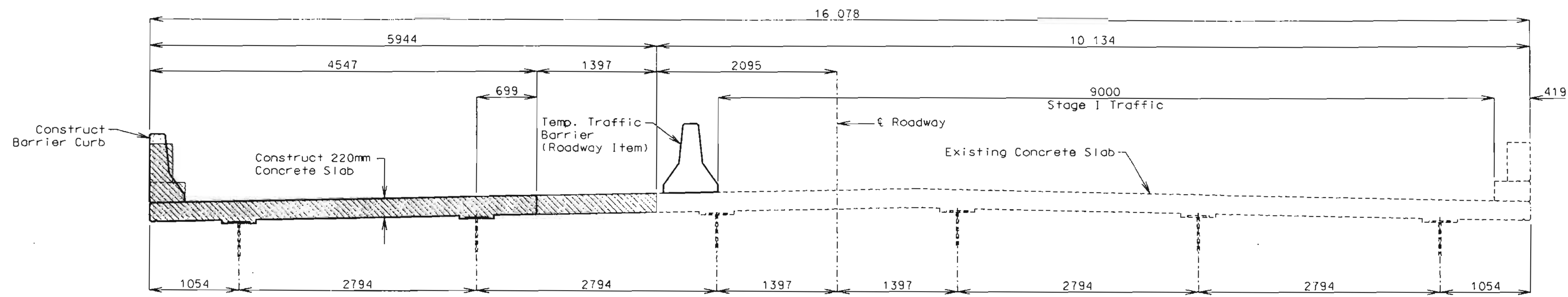
DRAWN BY:	DJM	JAN. 1998
TRACED BY:	MAH	FEB. 1998
CHECKED BY:	SAC	FEB. 1998

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

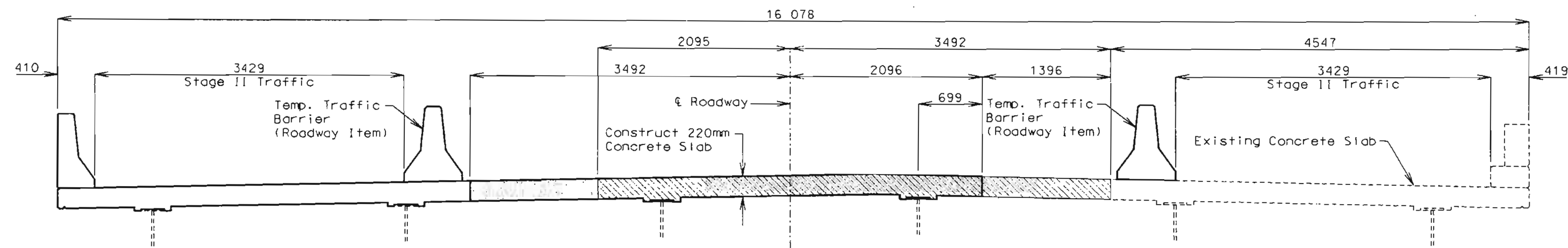
Revised 9-11-98

SHEET NO. 1 OF 26

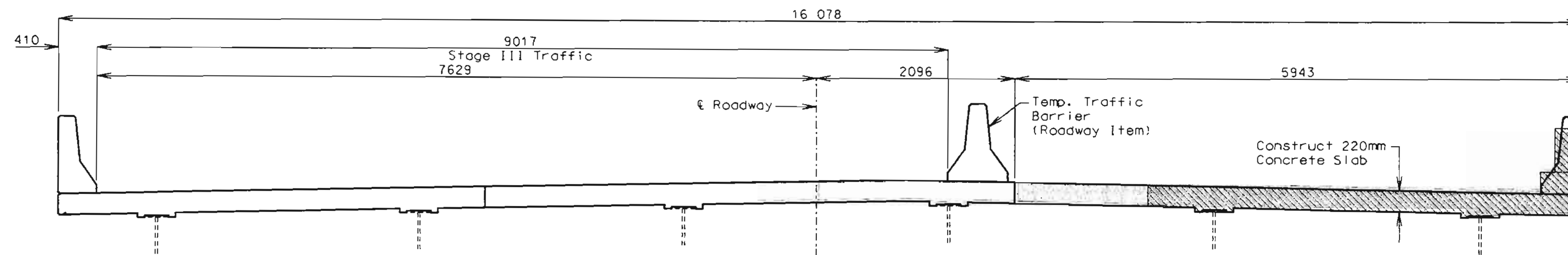
A16854



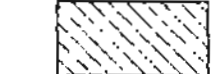

STAGE I CONSTRUCTION



STAGE II CONSTRUCTION



STAGE III CONSTRUCTION

- Legend
-  Staged Removal Limits
 -  Staged Construction Limits

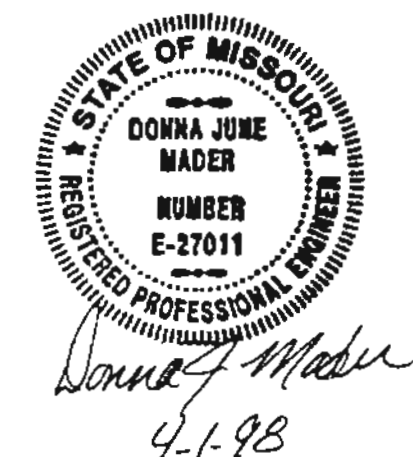
PROJECT No. 98-047 PROJECT NAME: I-435 over Big Blue River S:\98047\STRA\A6856\SB\CON\SEC\CONST.DGN

BWR BUCHER, WILLIS & RATLIFF CORPORATION		
7001 WIND PARKWAY	HAVERSI CITY, MISSOURI 64114	816-585-1200
DRAWN BY:	DJM	JAN, 1998
TRACED BY:	TWM	JAN, 1998
CHECKED BY:	TAC	FEB, 1998

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

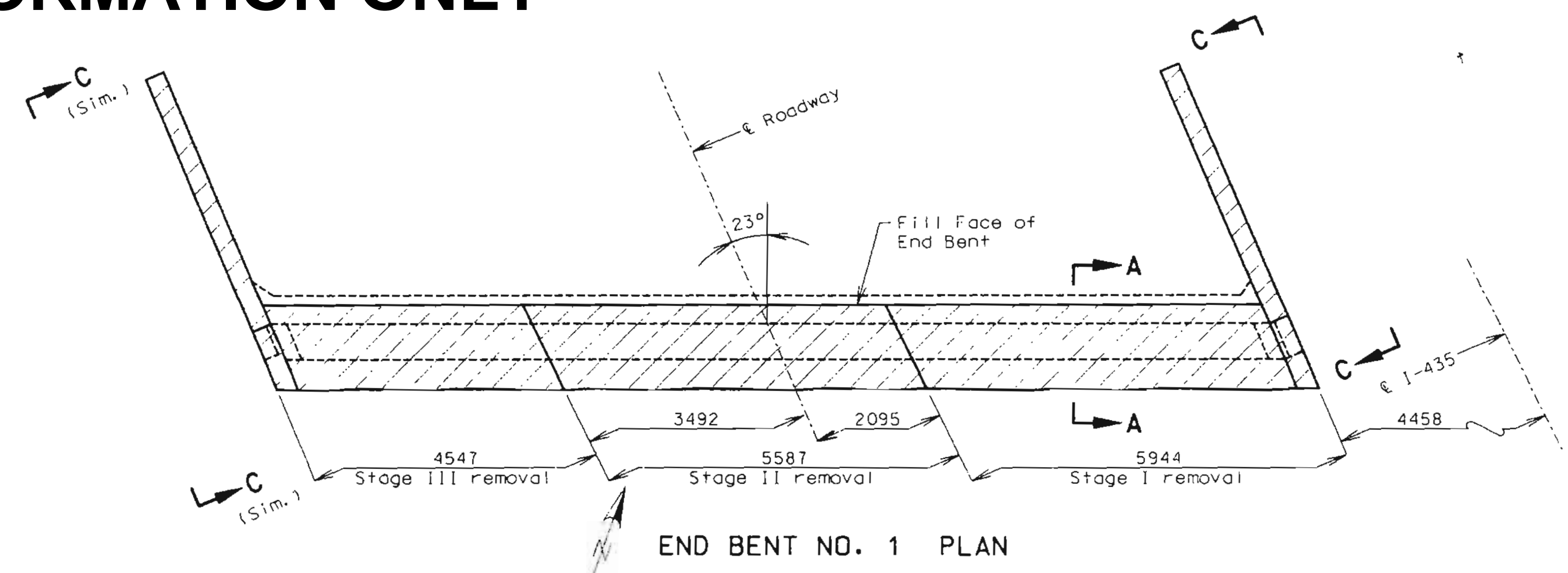
JACKSON COUNTY

STAGED CONSTRUCTION SEQUENCE

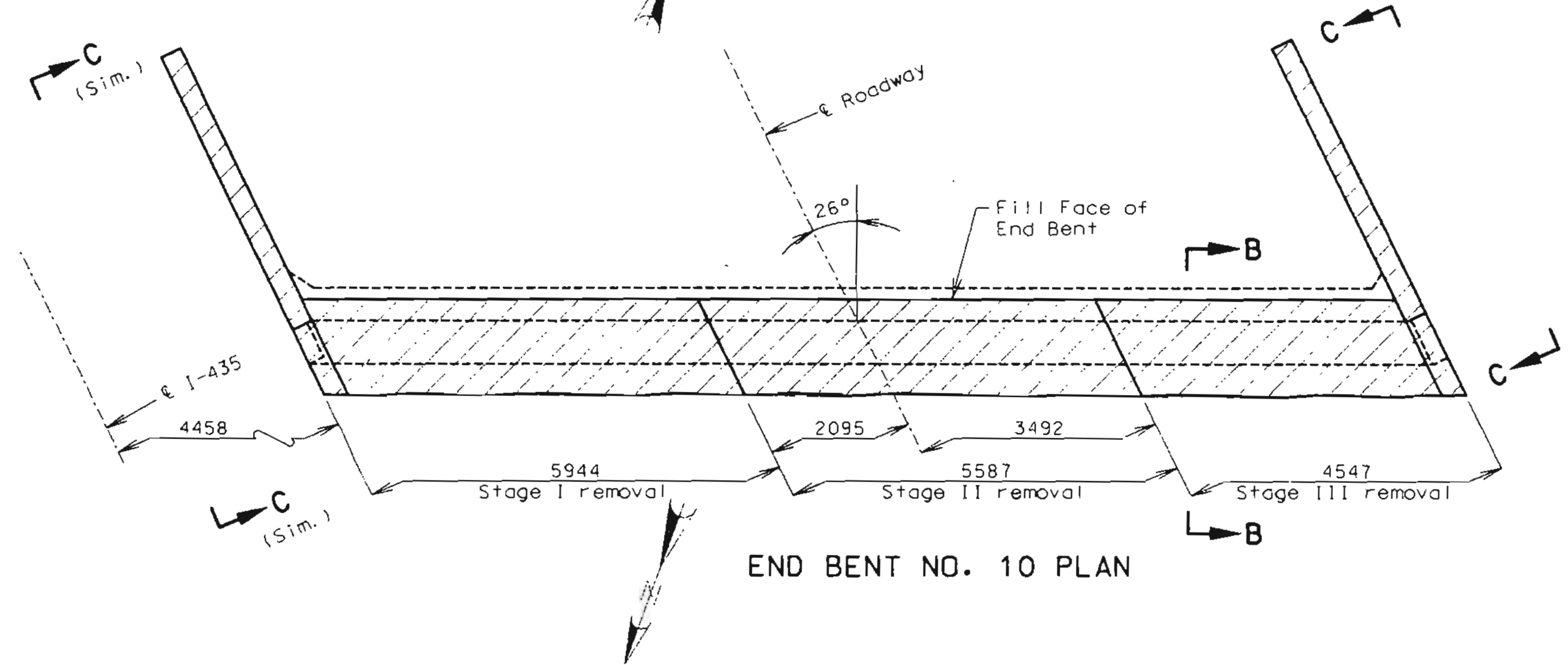


SHEET NO. 2 OF 26

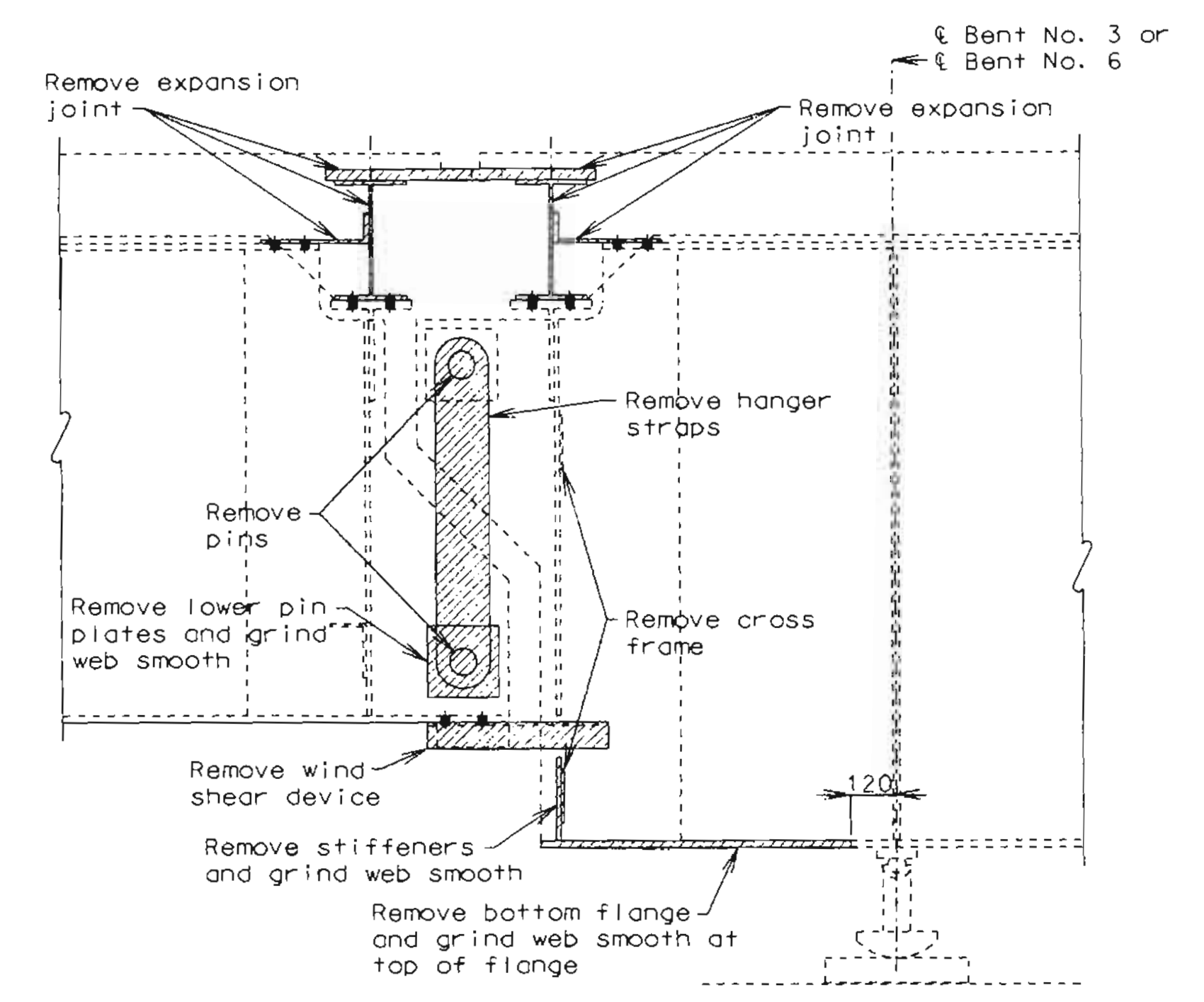
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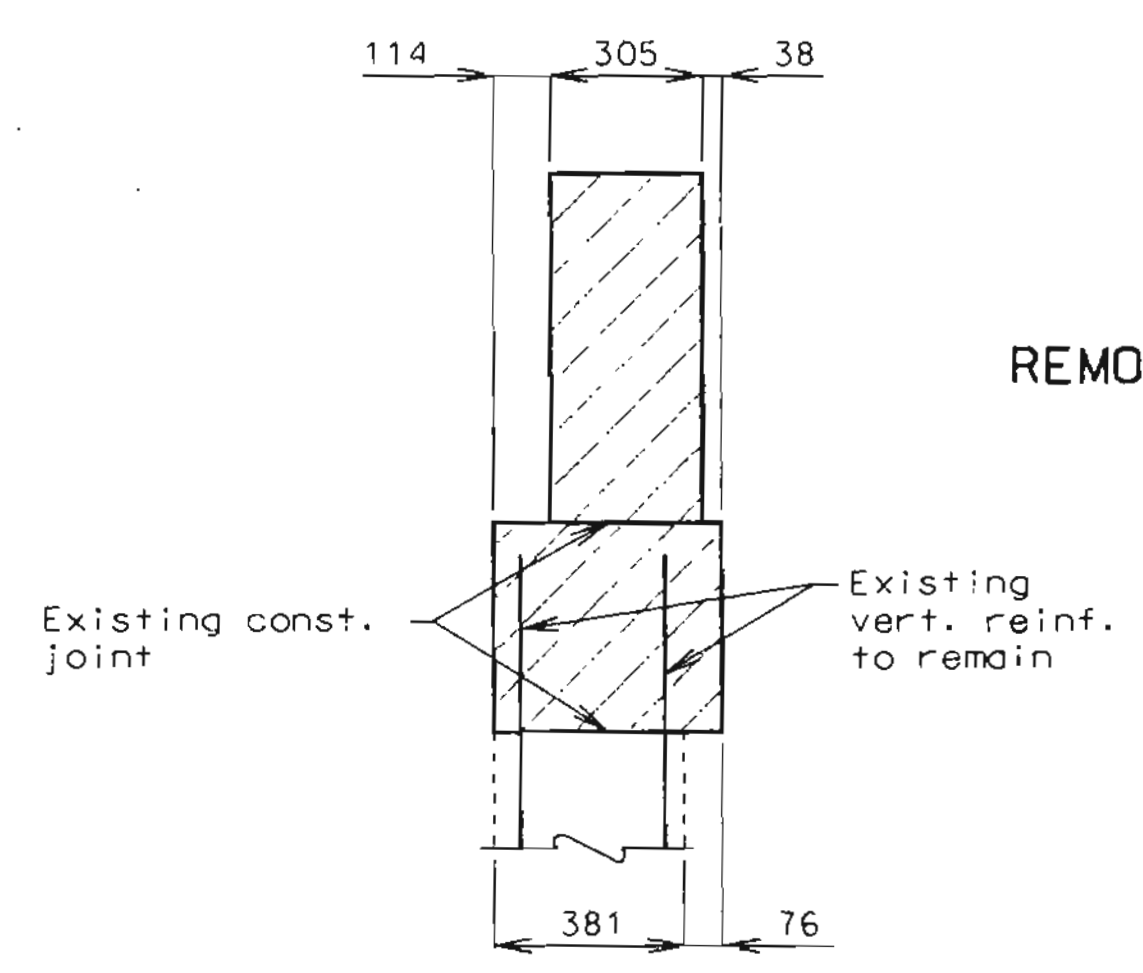
END BENT NO. 1 PLAN



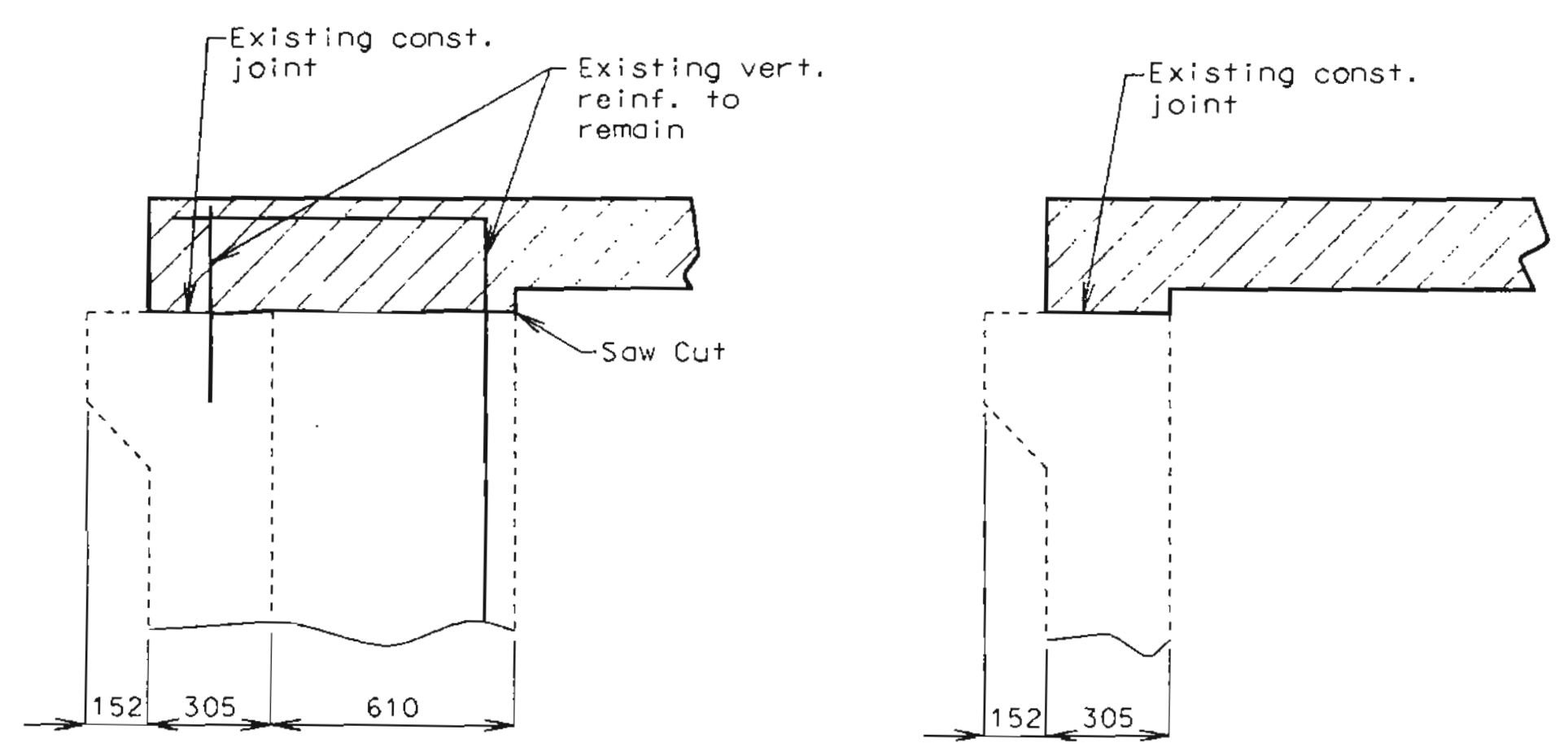
END BENT NO. 10 PLAN



REMOVAL DETAILS AT HINGES NEAR BENTS NO. 3 AND 6

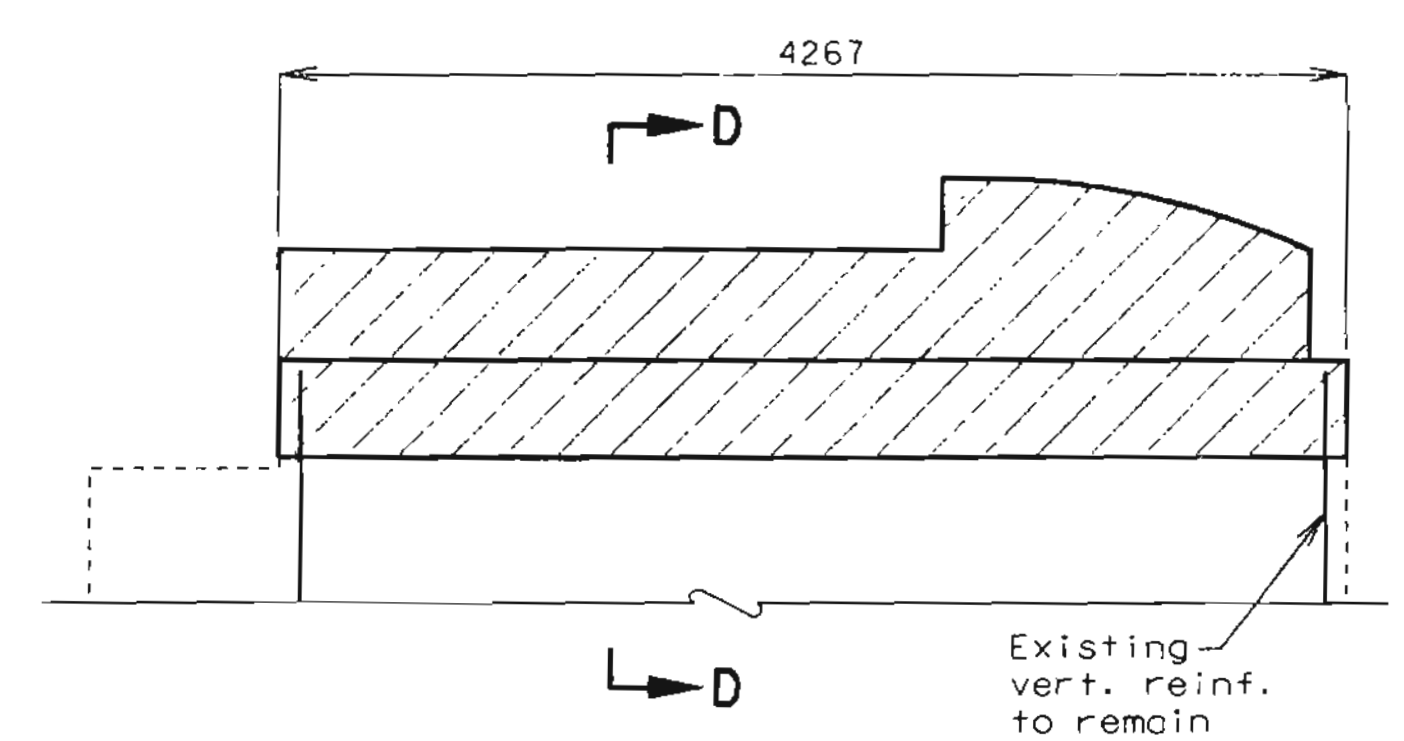


SECTION D-D

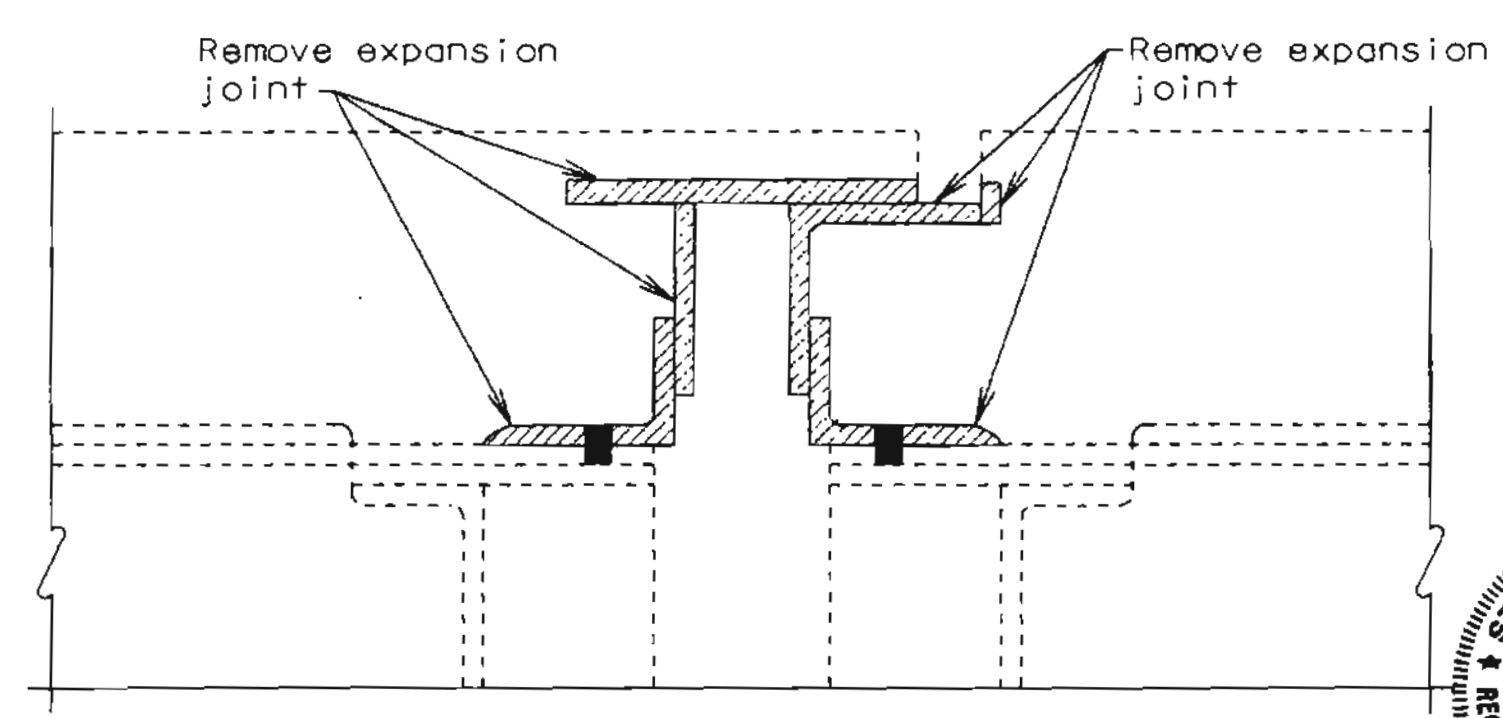


SECTION A-A

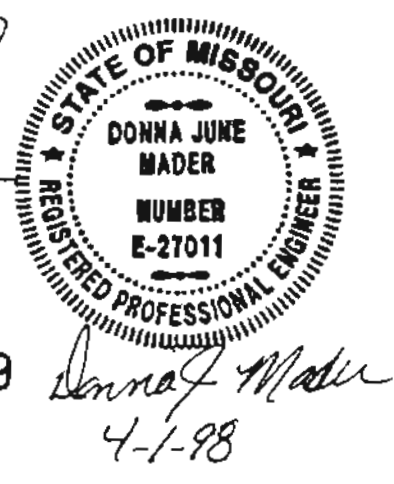
SECTION B-B



ELEVATION C-C



REMOVAL DETAILS AT HINGE NEAR BENT NO. 9



JACKSON COUNTY

END BENT AND HINGE
 REMOVAL DETAILS

SHEET NO. 3 OF 26

A16854

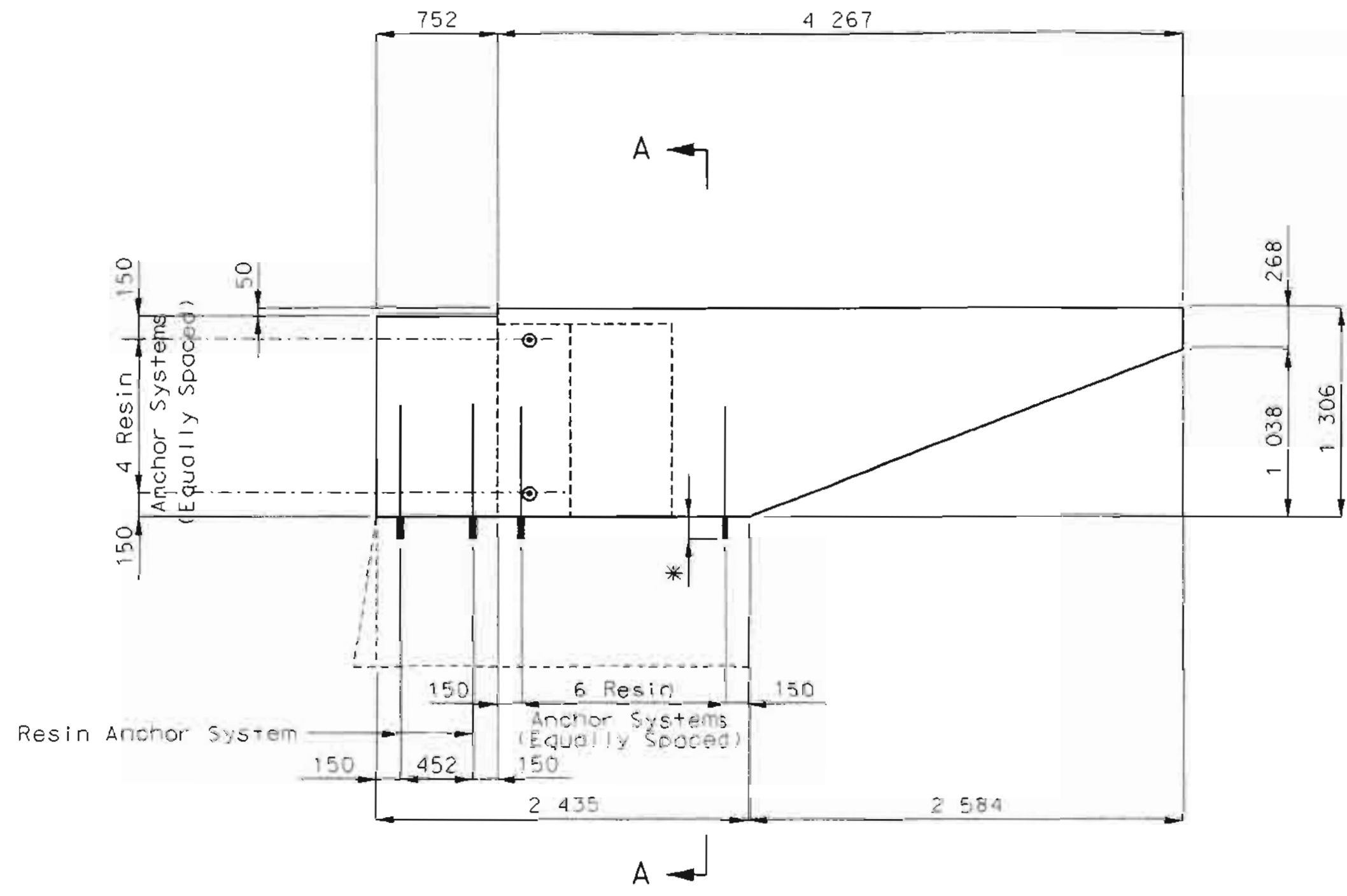
Note: This drawing is not to scale. Follow dimensions.

PROJECT NAME: MODOT Br. No. A6854-SB I-435 over Big Blue River. S:\98047\STR\A6854-SB.DGN VSBRENDV.DGN

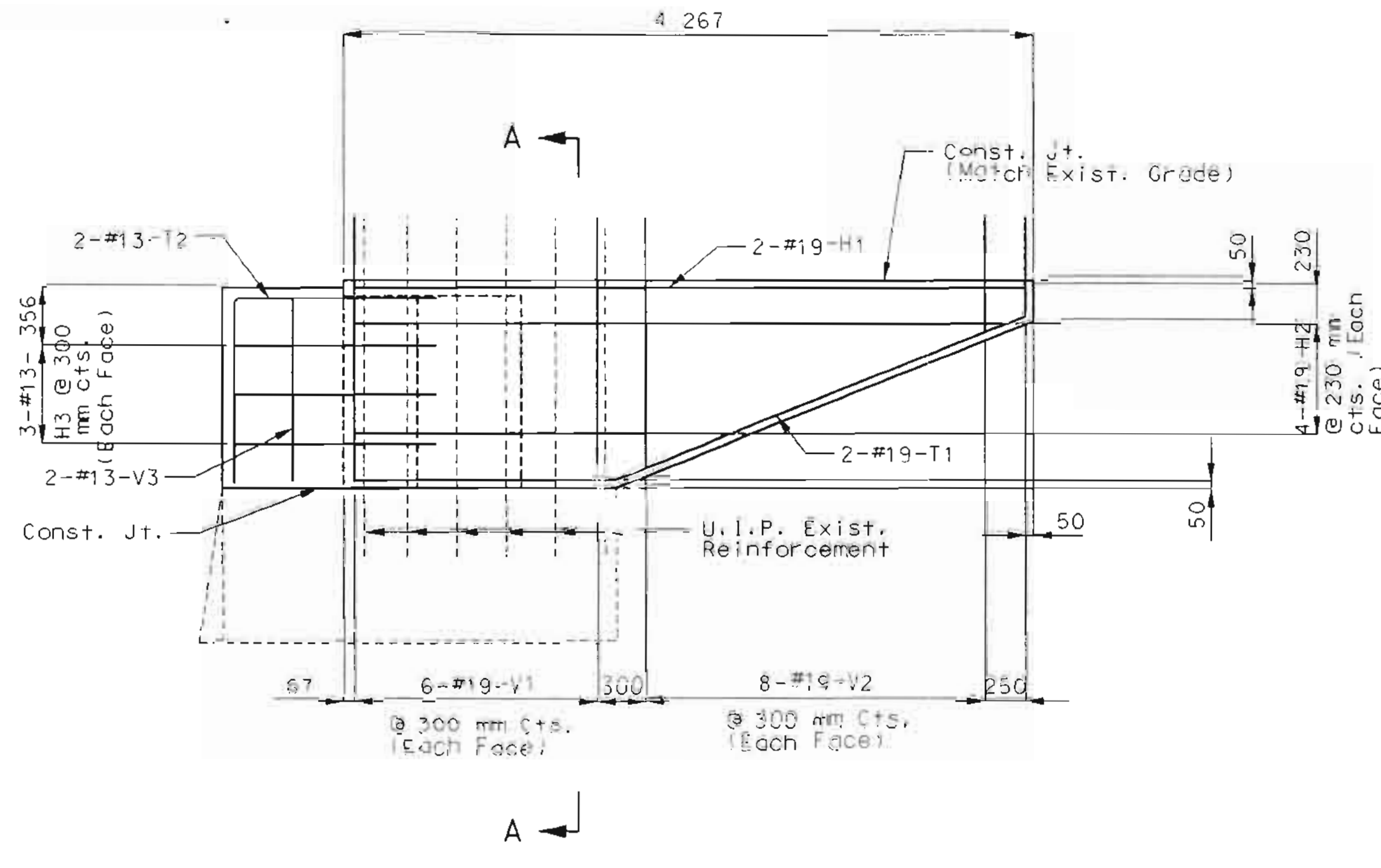
BUR BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARD PARKWAY, KANSAS CITY, MISSOURI 64114 816-363-2838

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	YWM	FEB. 1998
CHECKED BY:	KLW	FEB. 1998

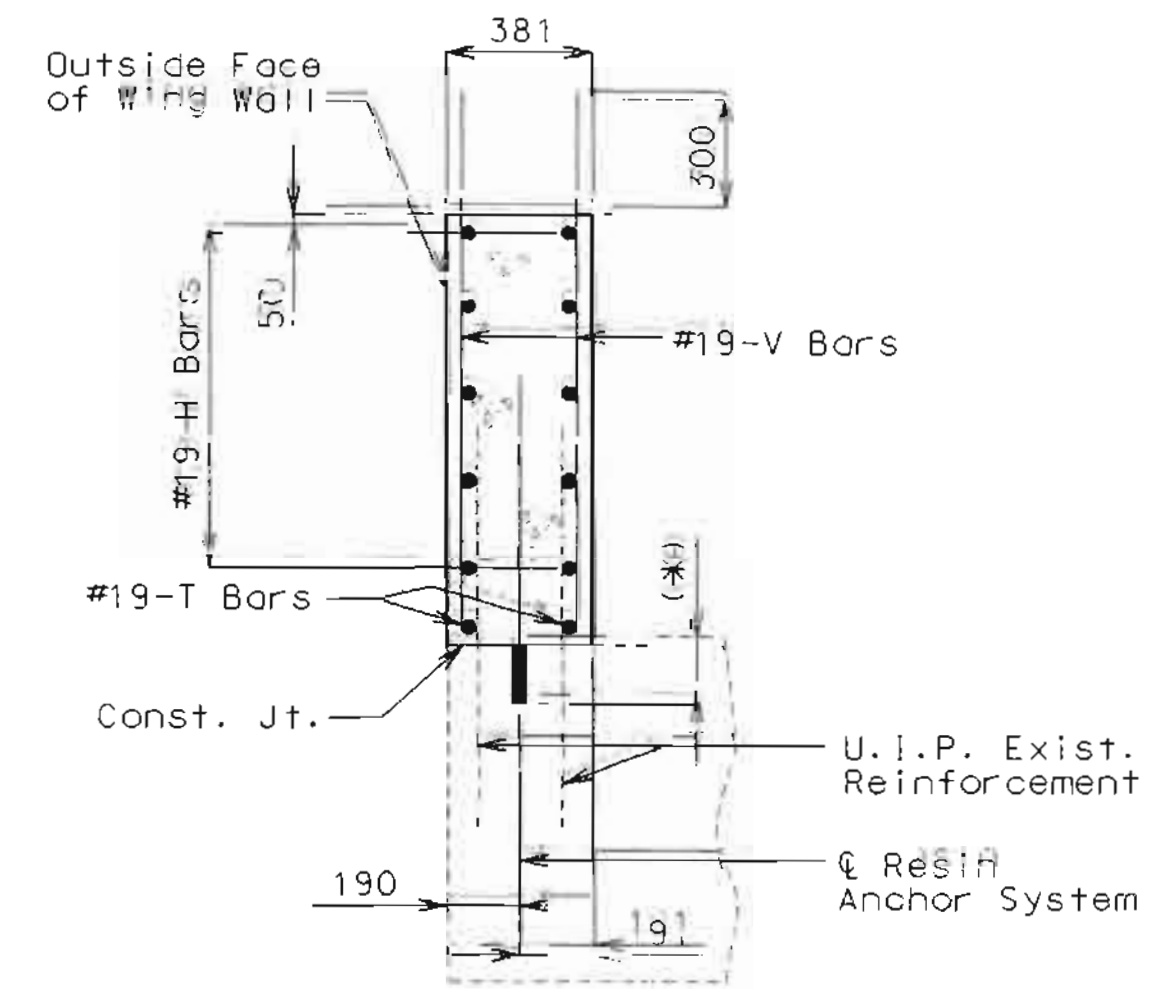
Sheet No.	
MO	



ELEVATION NEAR WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



ELEVATION NEAR WING SHOWING REINFORCEMENT



SECTION A-A

NOTE:

For details of Safety Barrier Curb at End Bent No. 10 see sheet No. 23A.

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 specifications, except as modified by the job special provisions.

Cost of furnishing and installing the resin anchor systems complete in place shall be included in the price bid for Rehabilitation of Existing Wings per LUMS 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.

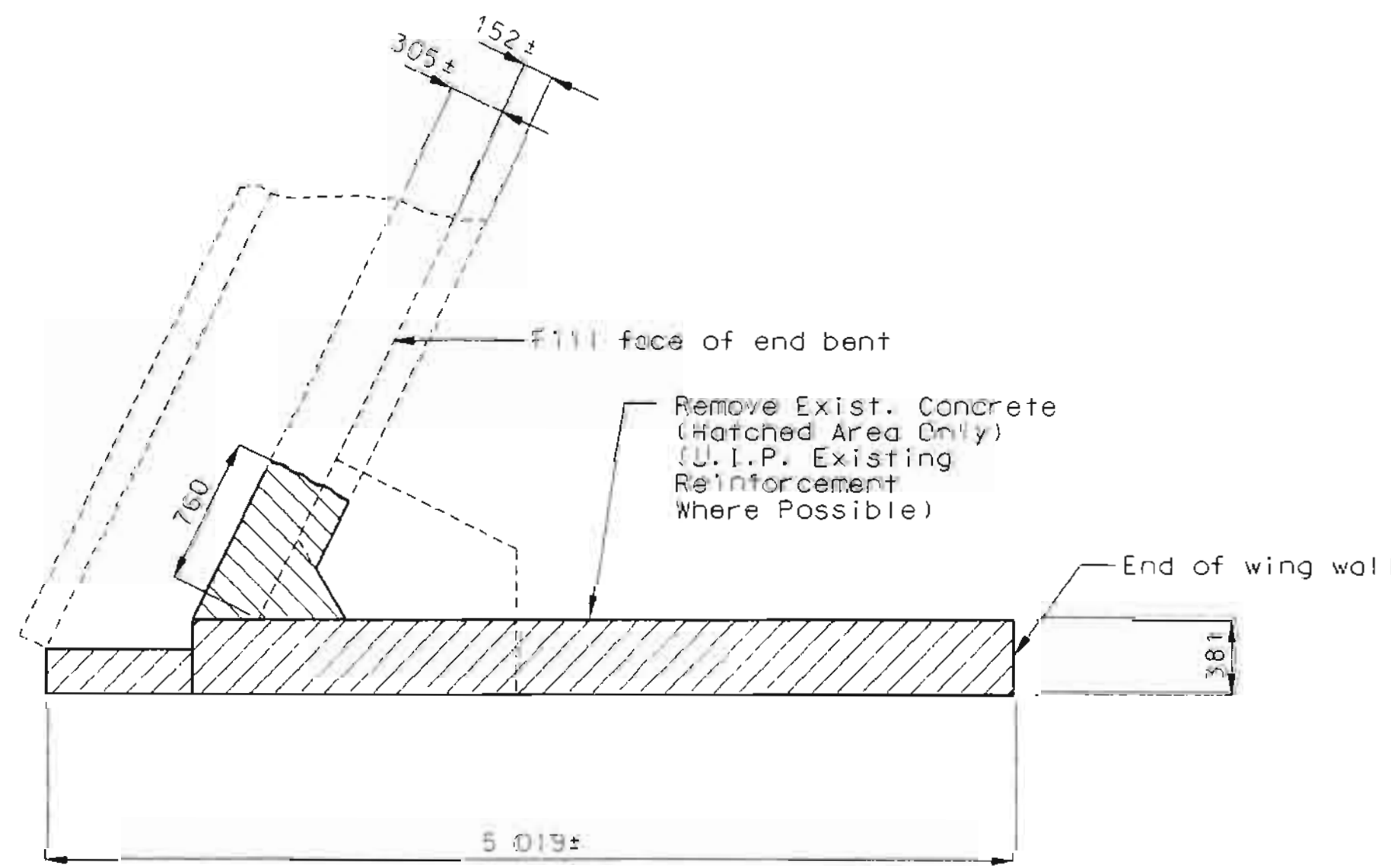
A #19 Grade 420 reinforcing bar 690 mm long (Except as noted) shall be substituted for the 19.1 ϕ threaded rod stud.

Cost of removing and replacing 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 LUMS Sum.

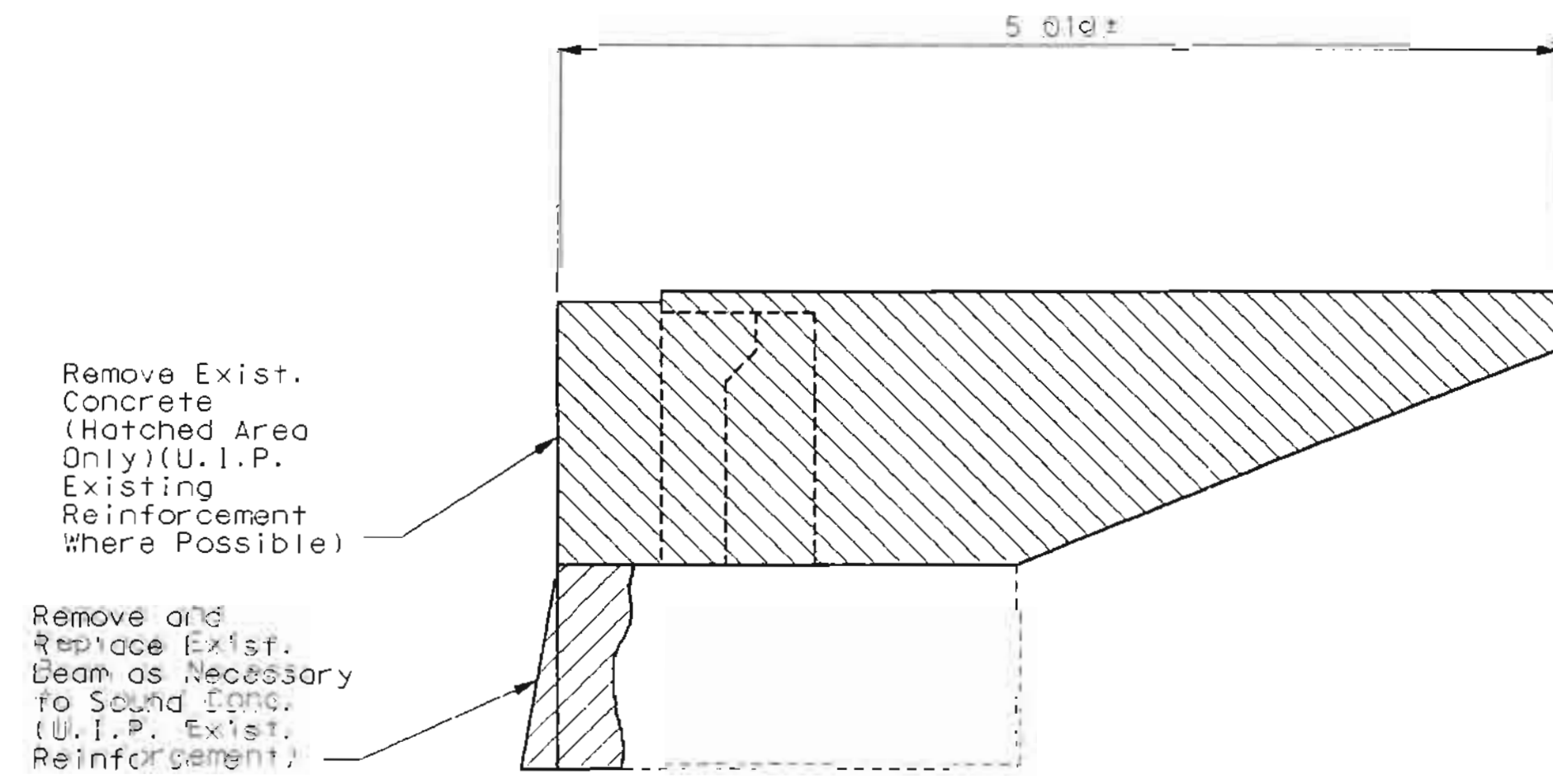
(* Manufacturer's Embedment Length (Typ.))

Work this sheet with sheet No. 38.

Concrete for wing replacement shall be Class B1.



ELEVATION OF EXISTING WING SHOWING CONCRETE REMOVAL



ELEVATION NEAR EXISTING WING SHOWING CONCRETE REMOVAL

DETAILS SHOWING REHABILITATION OF RIGHT WING AT END BENT NO. 10



DATE 9-16-98

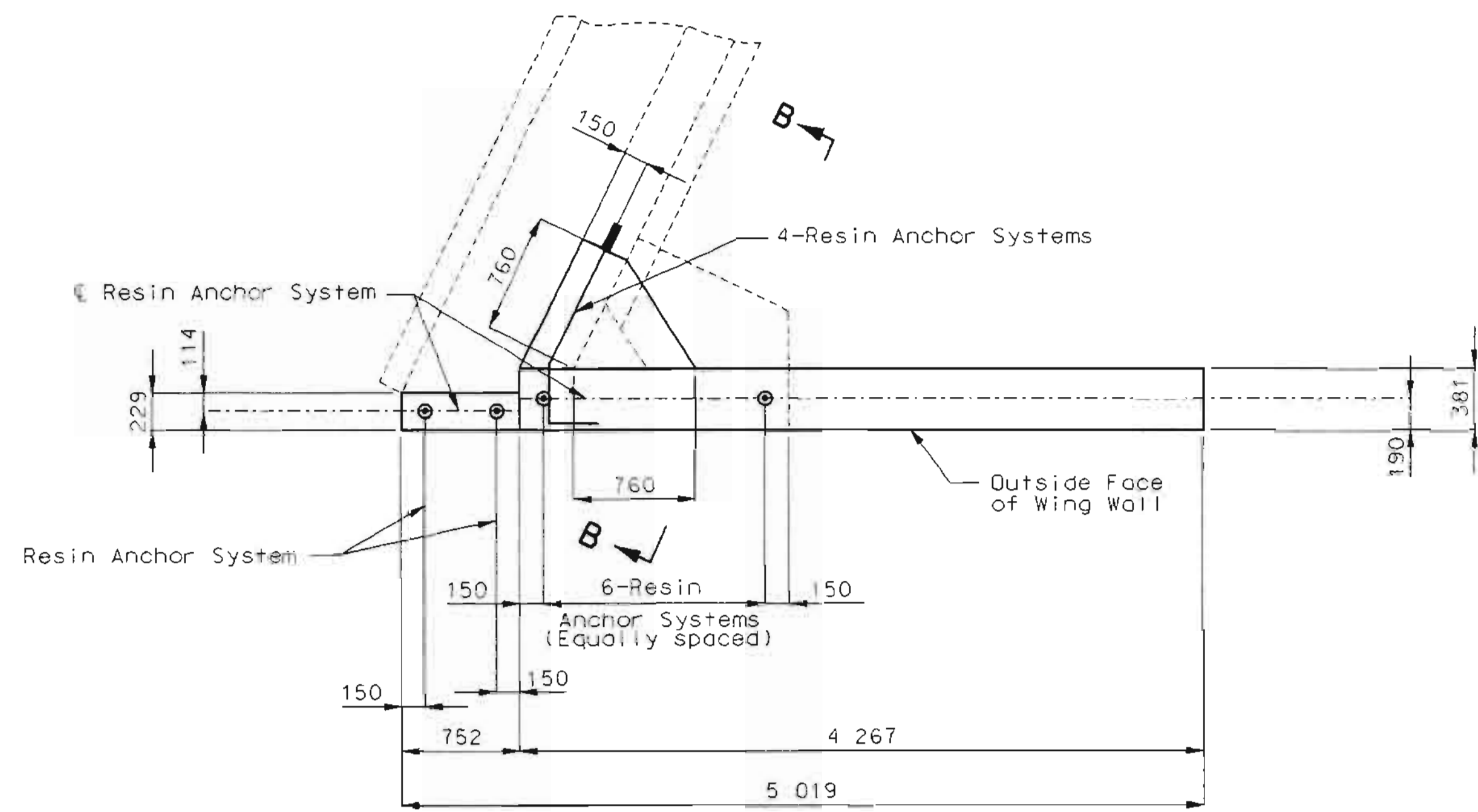
Checked Sept. 1998
Detailed Sept. 1998

Revised 9-11-98

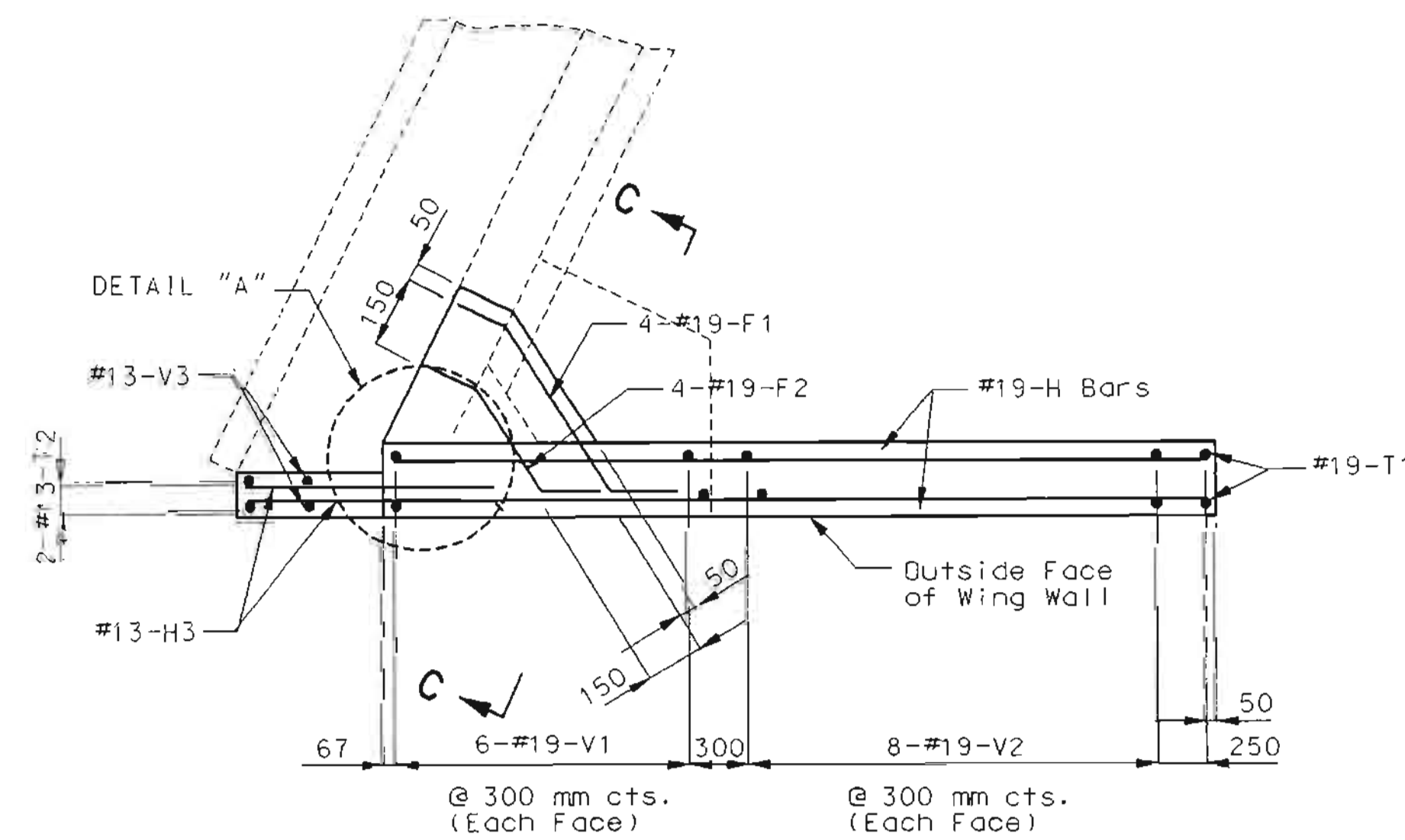
Sheet No. 3A of 26

JACKSON COUNTY

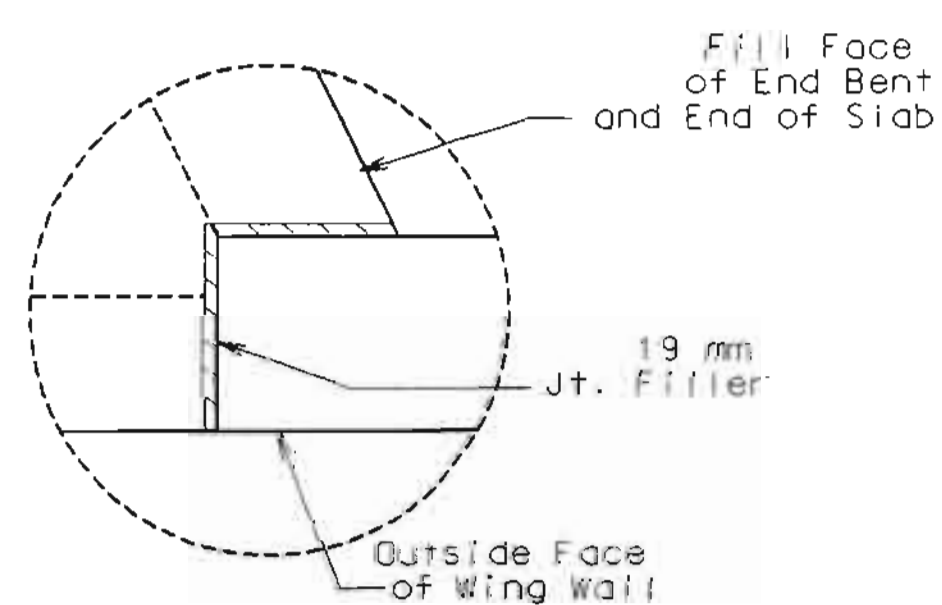
A16854



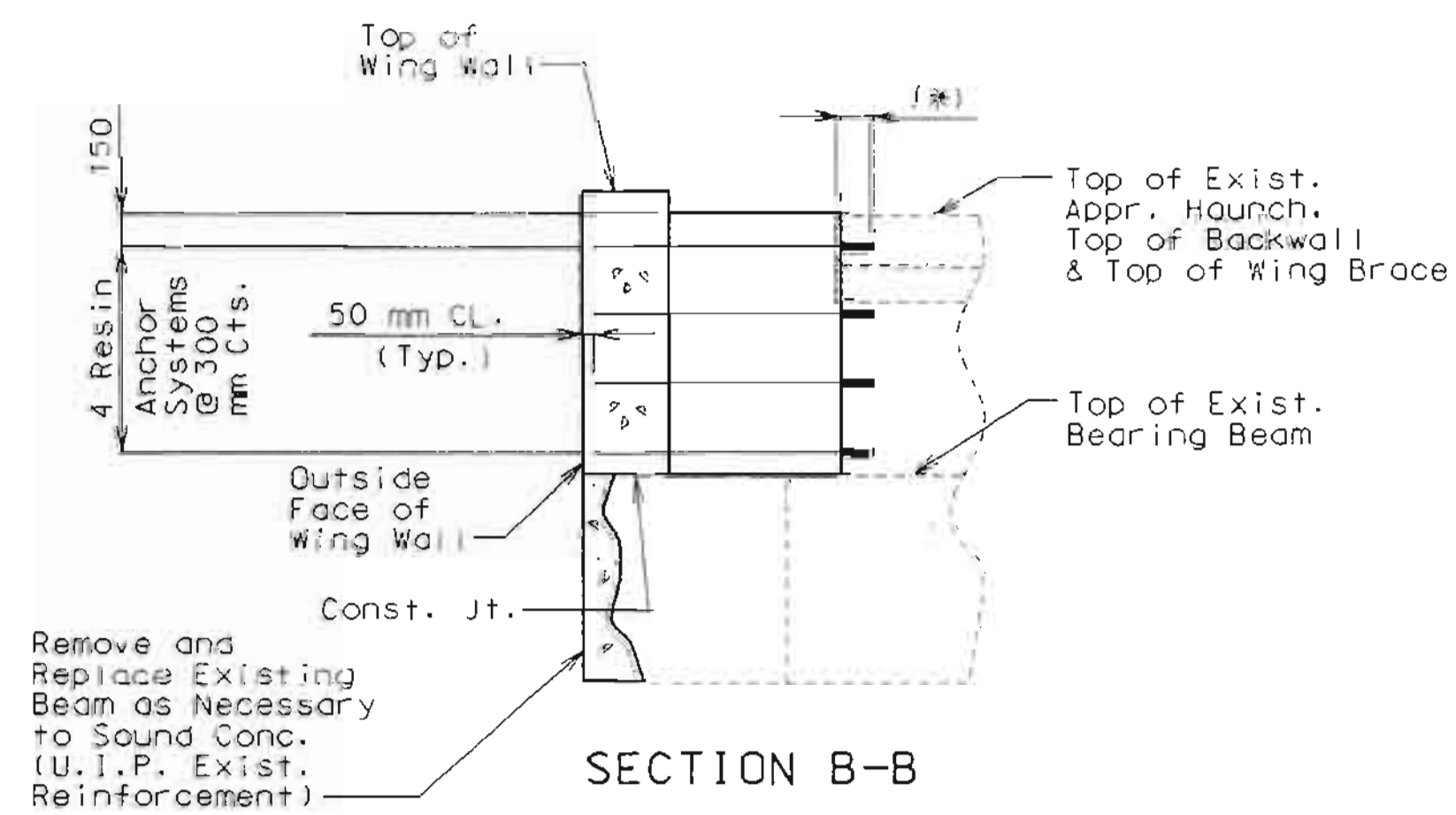
PLAN OF WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



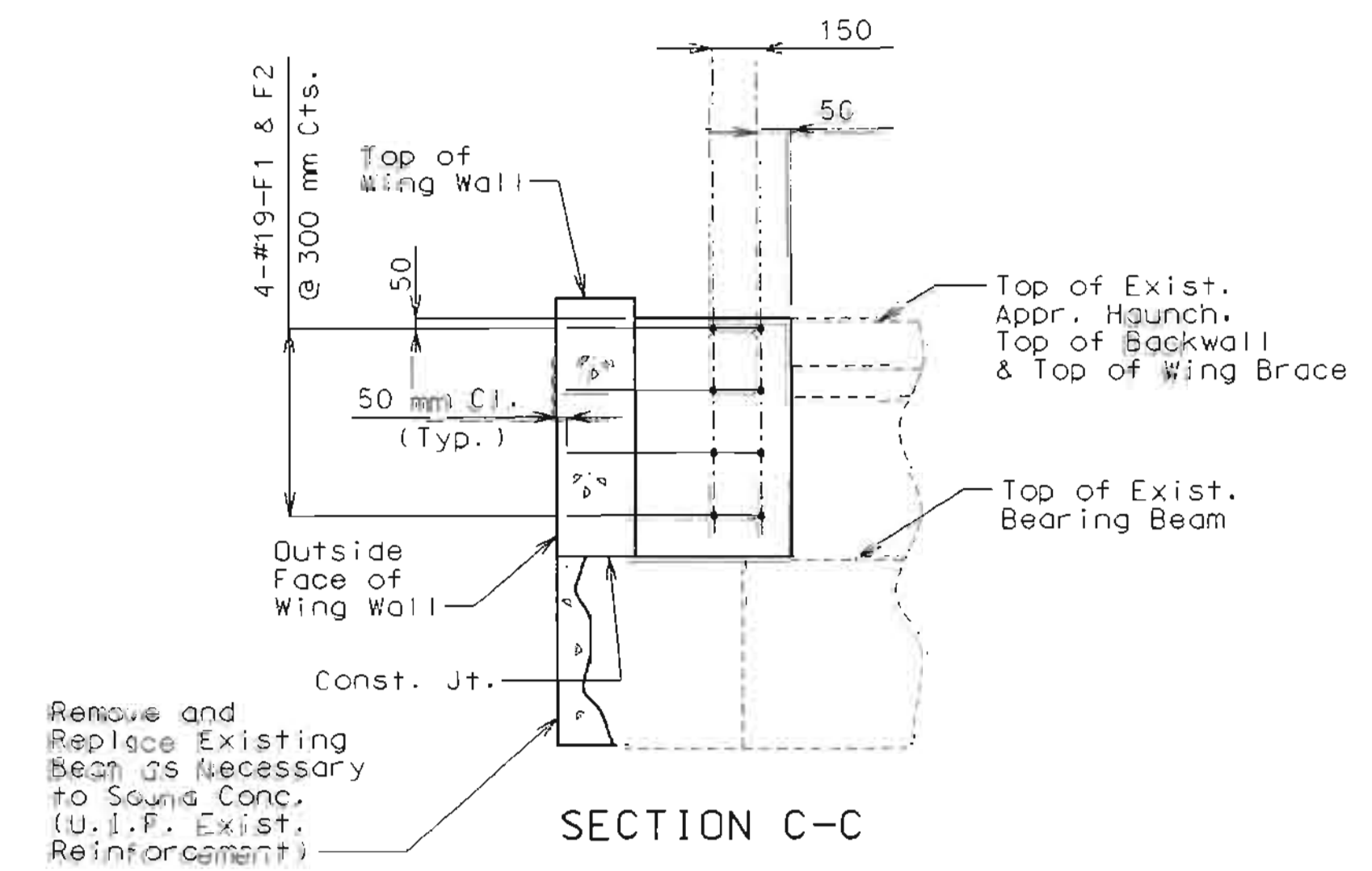
PLAN OF WING SHOWING REINFORCEMENT



DETAIL "A"



SECTION B-B



SECTION C-C

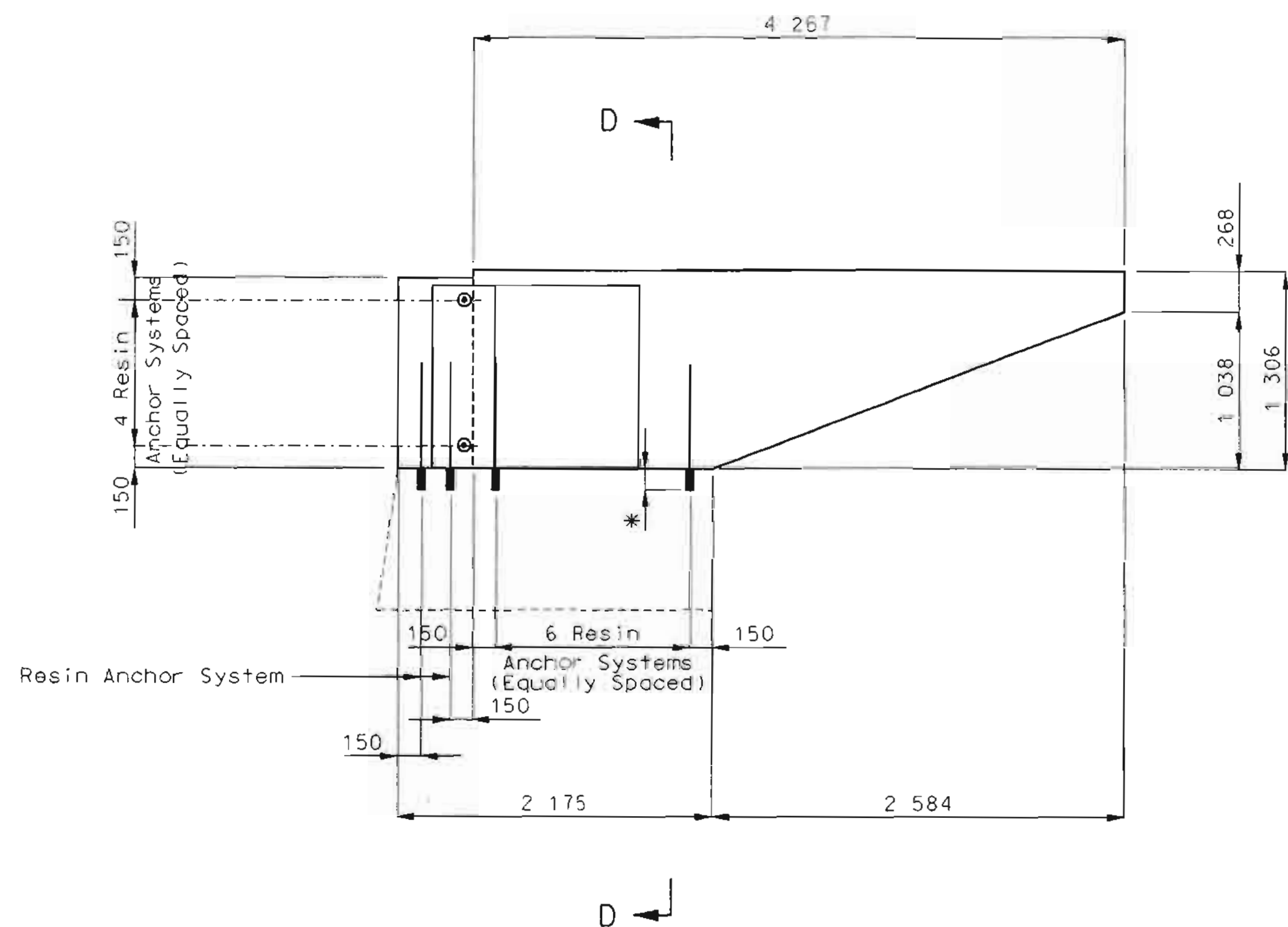
NOTE:

Work this sheet with sheet No. 3A.
 (*) Manufacturers Embedment Length (Typ.).

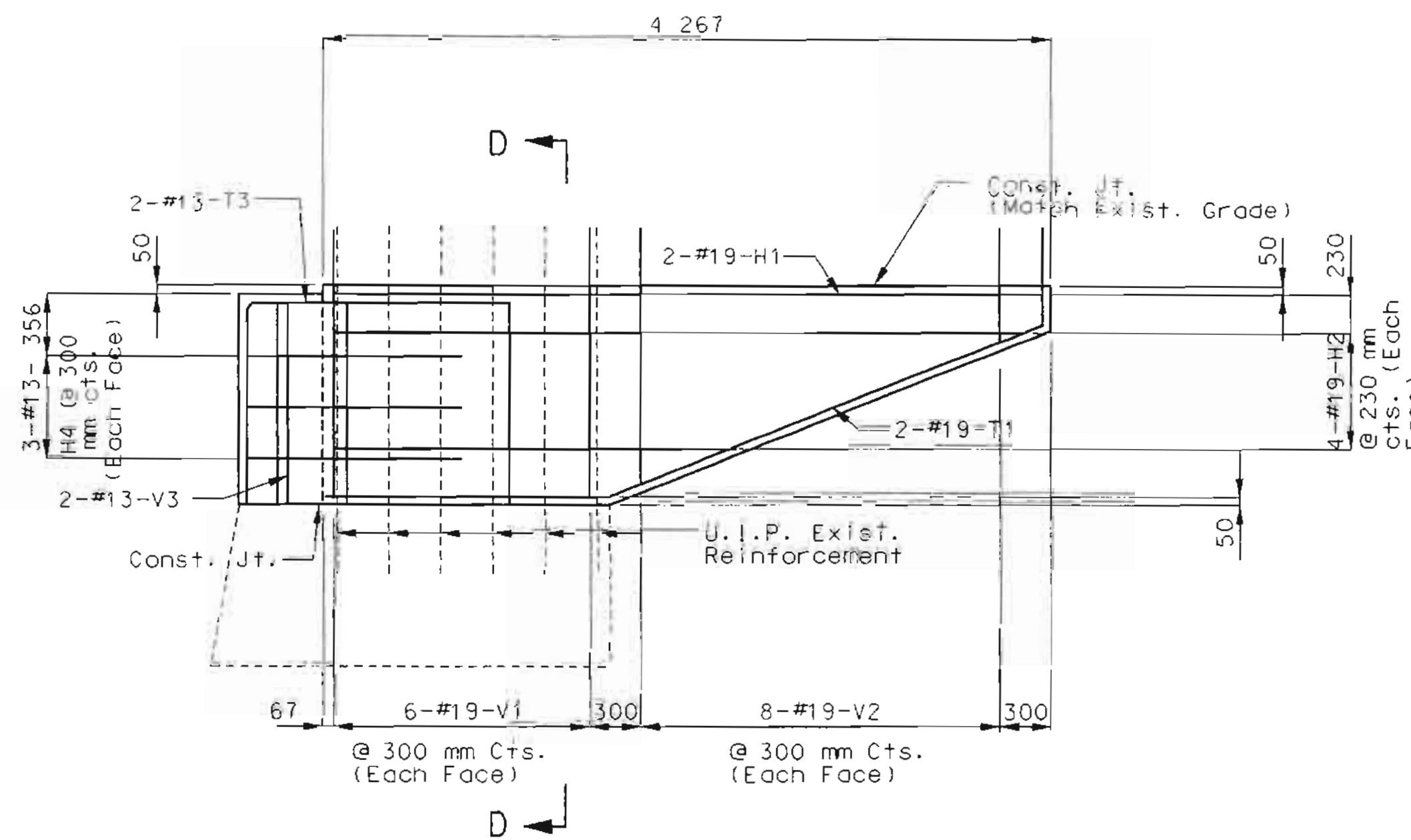
DETAILS SHOWING REHABILITATION OF RIGHT WING AT END BENT NO. 10



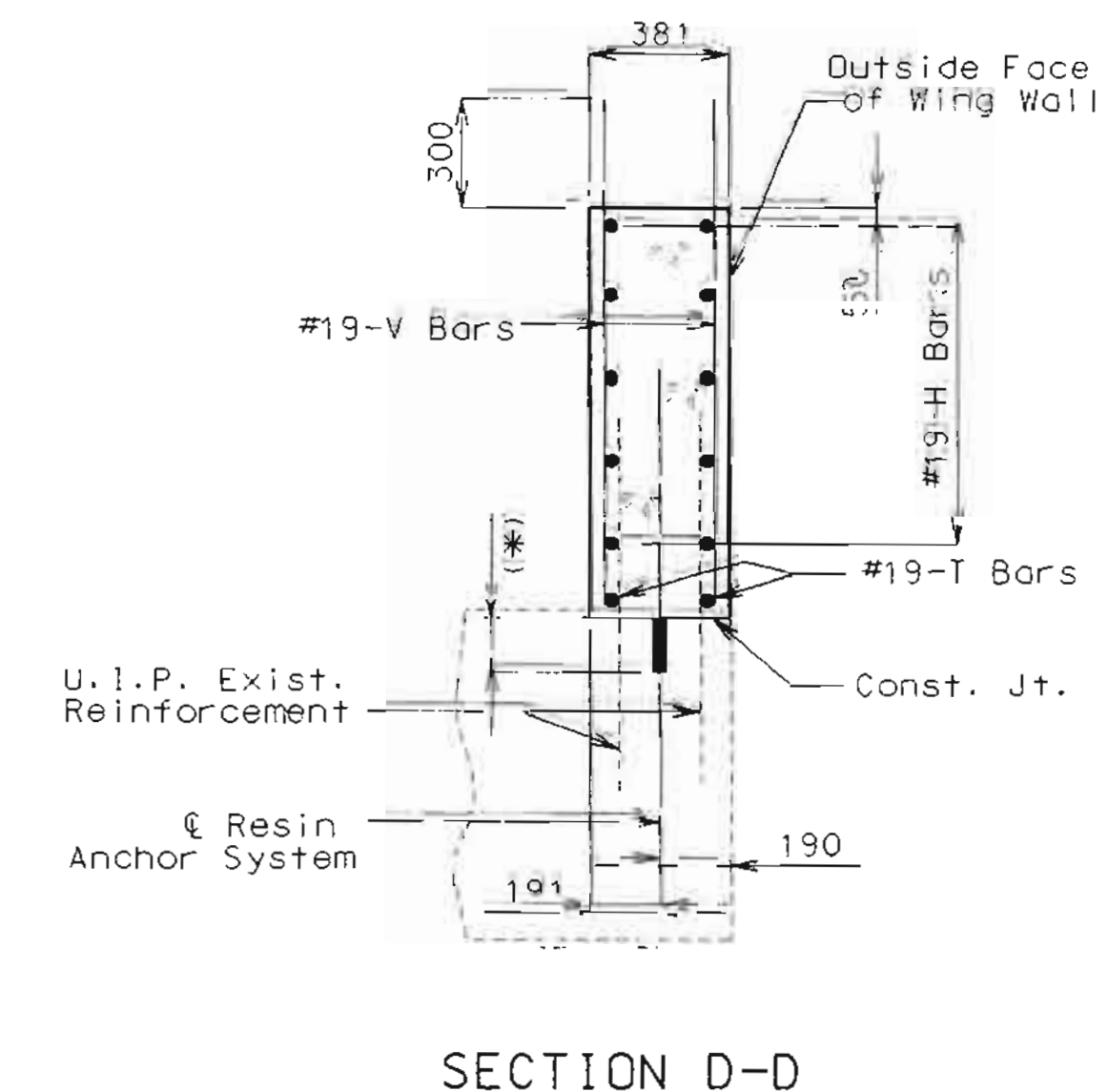
DATE 9-16-98



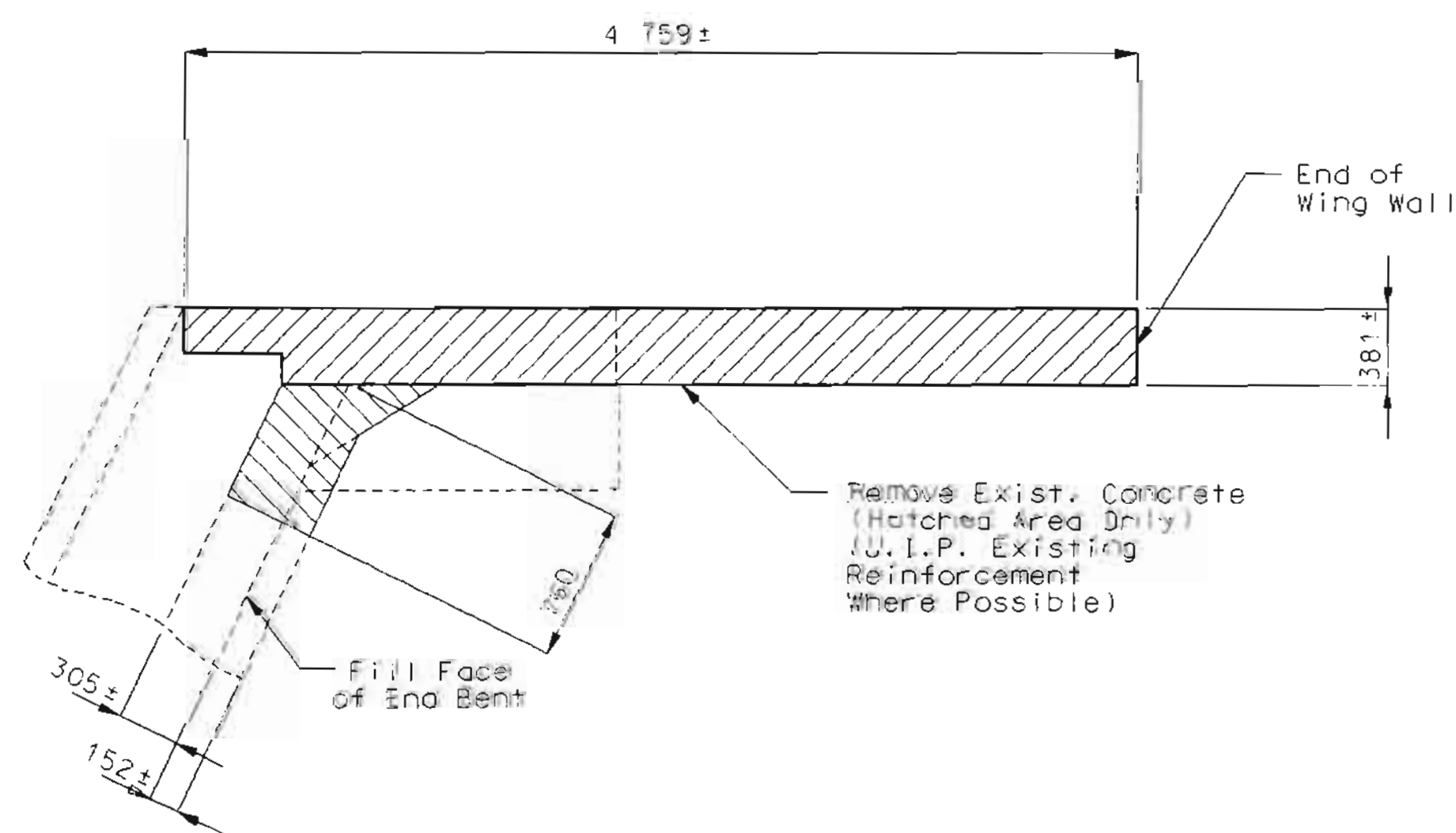
SECTION NEAR WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



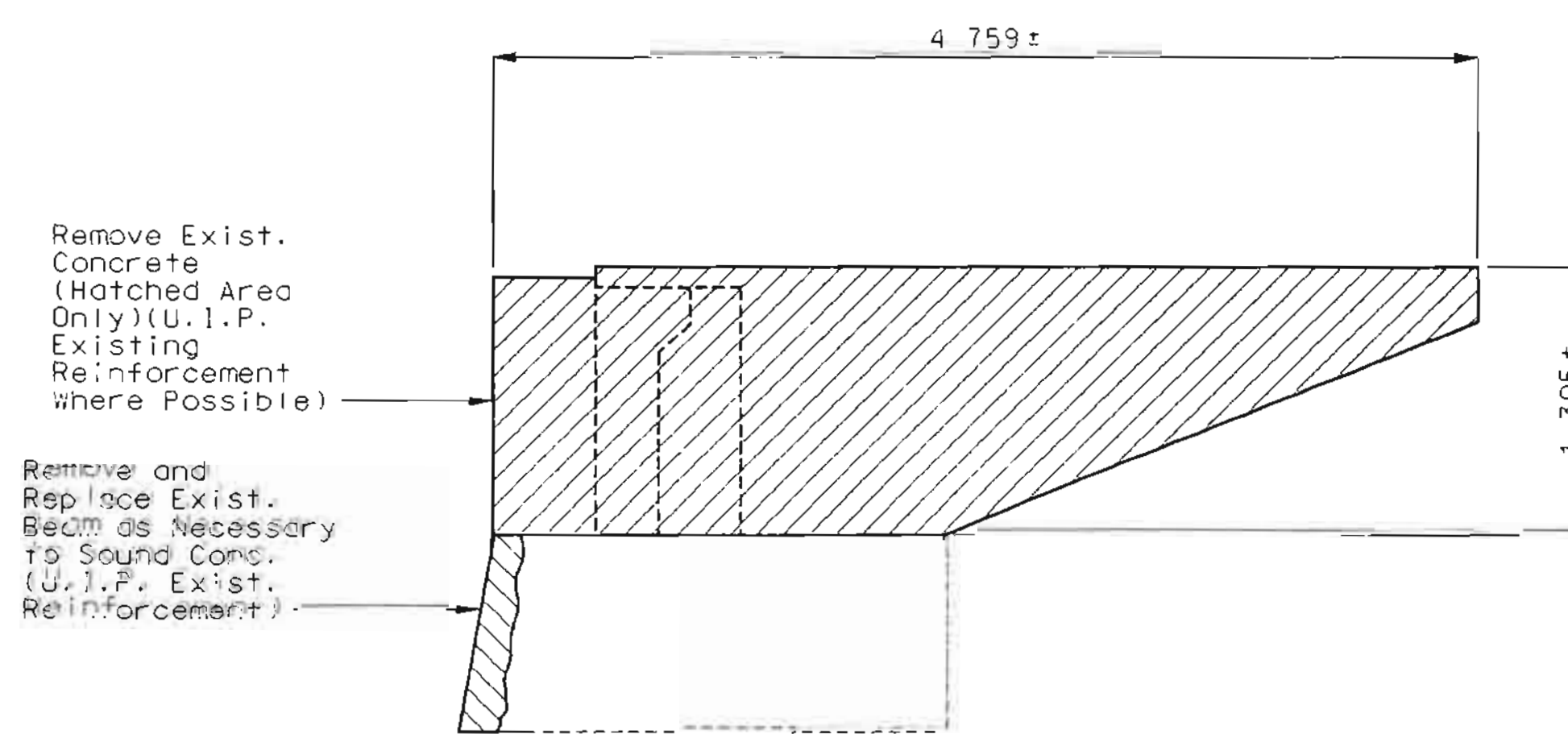
SECTION NEAR WING SHOWING REINFORCEMENT



SECTION D-D



PLAN OF EXISTING WING SHOWING CONCRETE REMOVAL



SECTION NEAR EXISTING WING SHOWING CONCRETE REMOVAL

DETAILS SHOWING REHABILITATION OF LEFT WING AT END BENT NO. 10

NOTE:

For details of Safety Barrier Curb at End Bent No. 10, see sheet No. 23A.

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 specifications, except as modified by the job special provisions.

Cost of furnishing and installing the resin 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 \emptyset threaded rod stud.

Cost of removing and replacing 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.

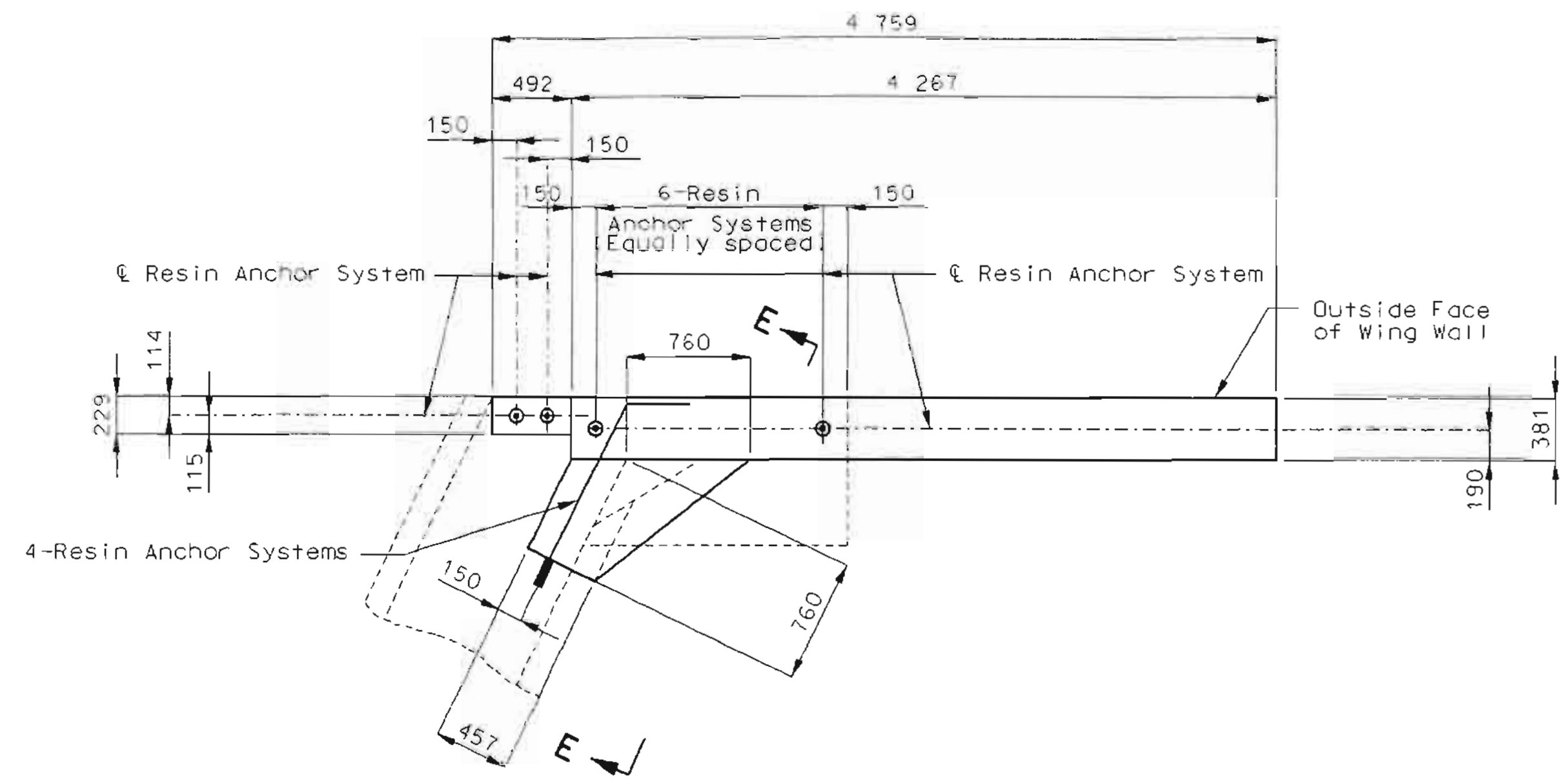
(* Manufacturer's Embedment Length (Typ.))

Work this sheet with sheet No. 3D.
 Concrete for wing replacement shall be Class B7.

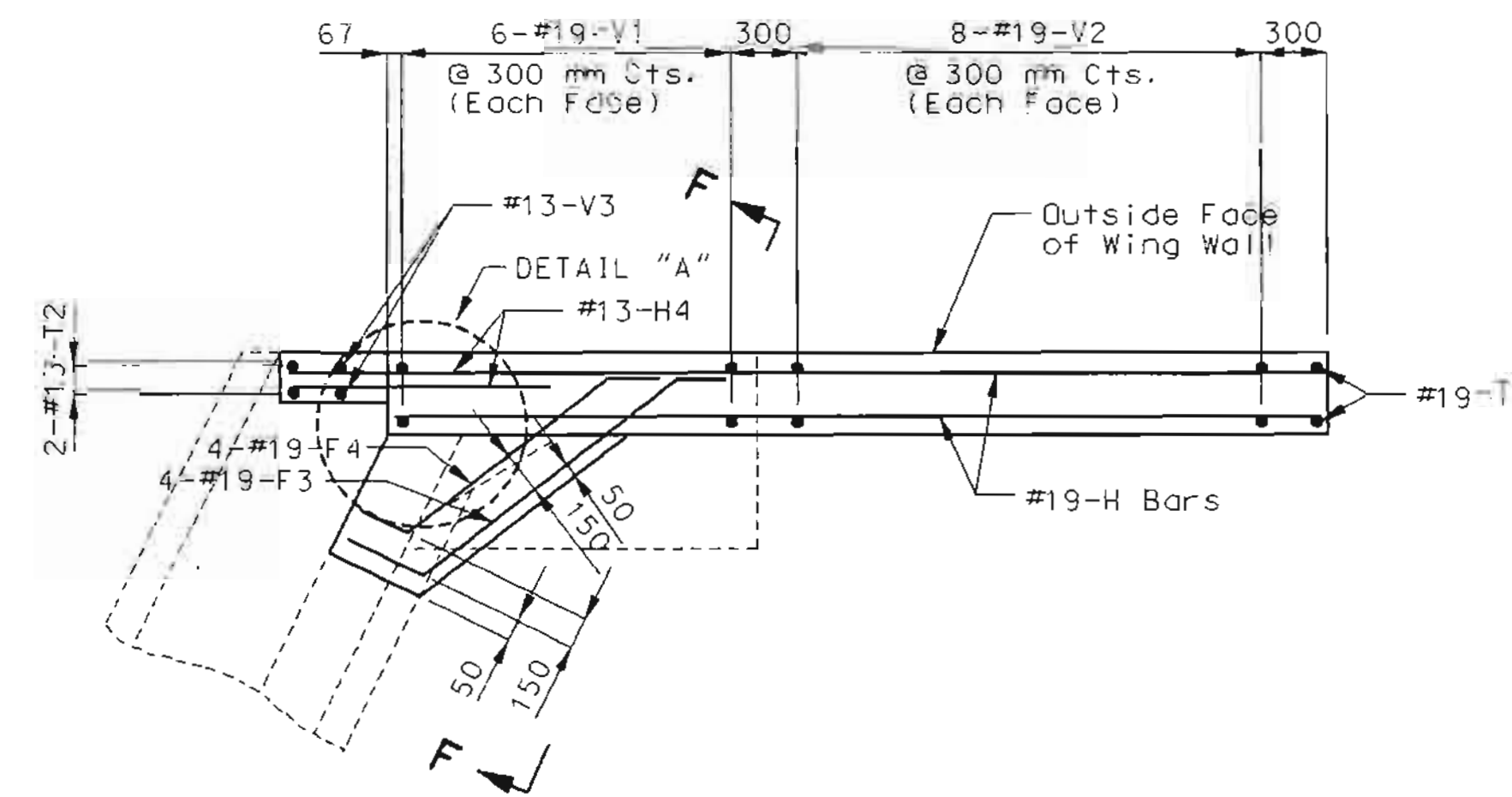


DATE 9-16-98

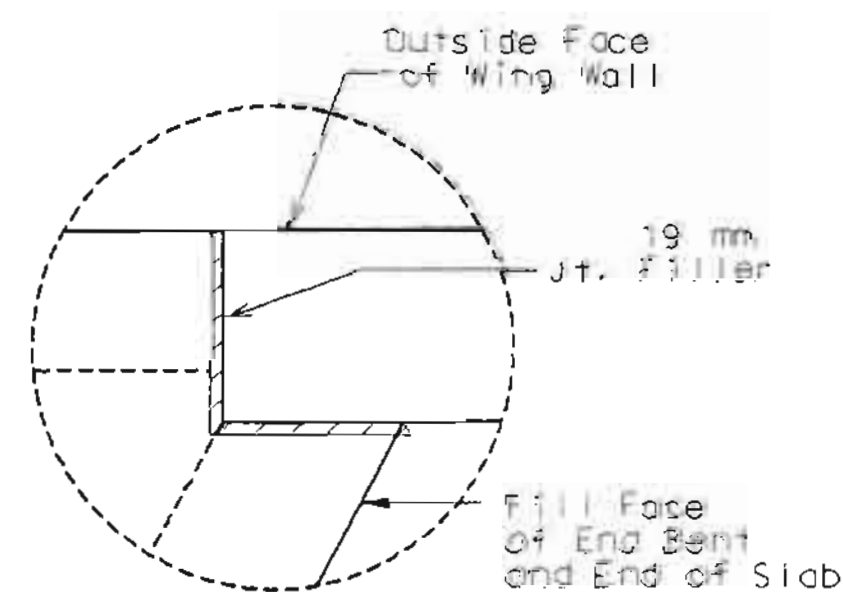
State	Project No.	Sheet No.
MO		



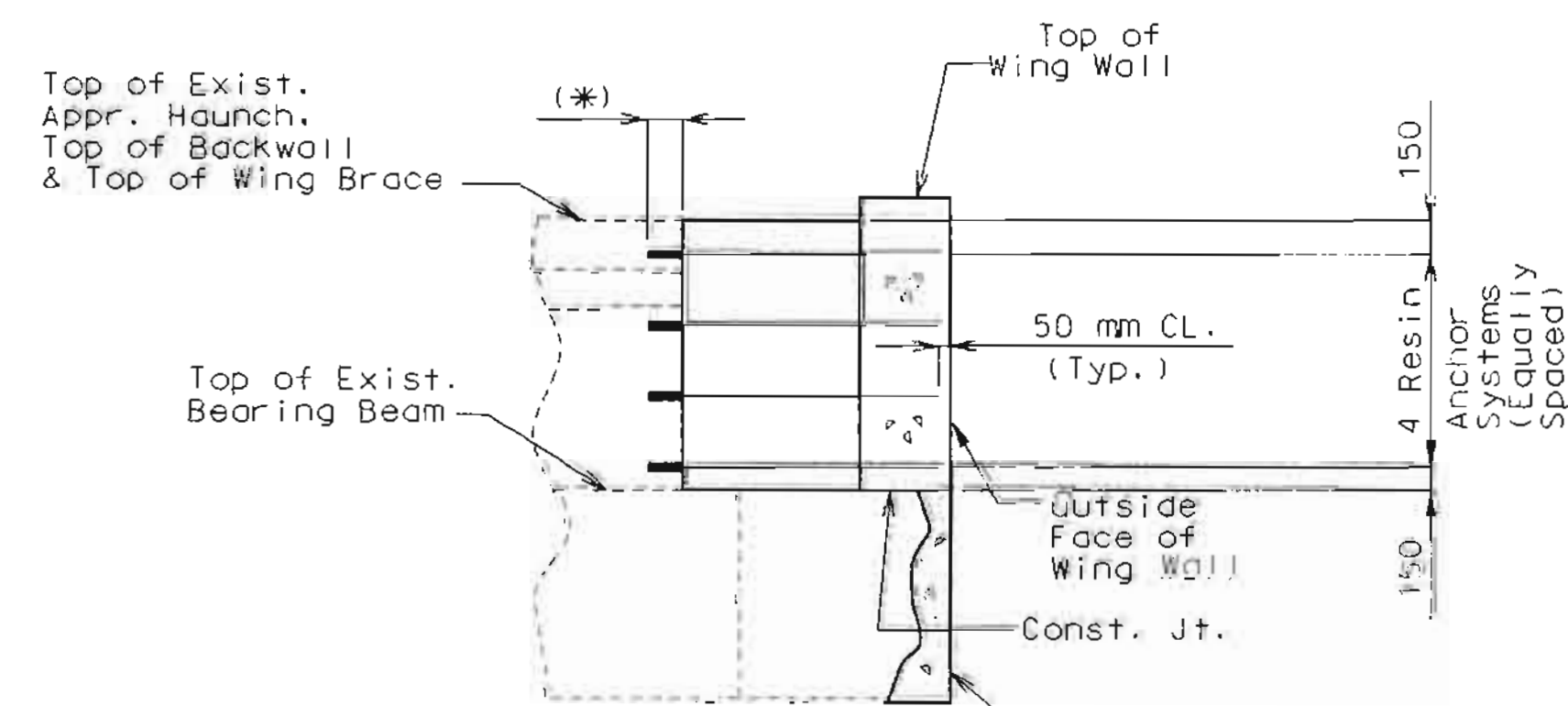
PLAN OF WING SHOWING RESIN ANCHOR SYSTEMS AND DIMENSIONS



PLAN OF WING SHOWING REINFORCEMENT

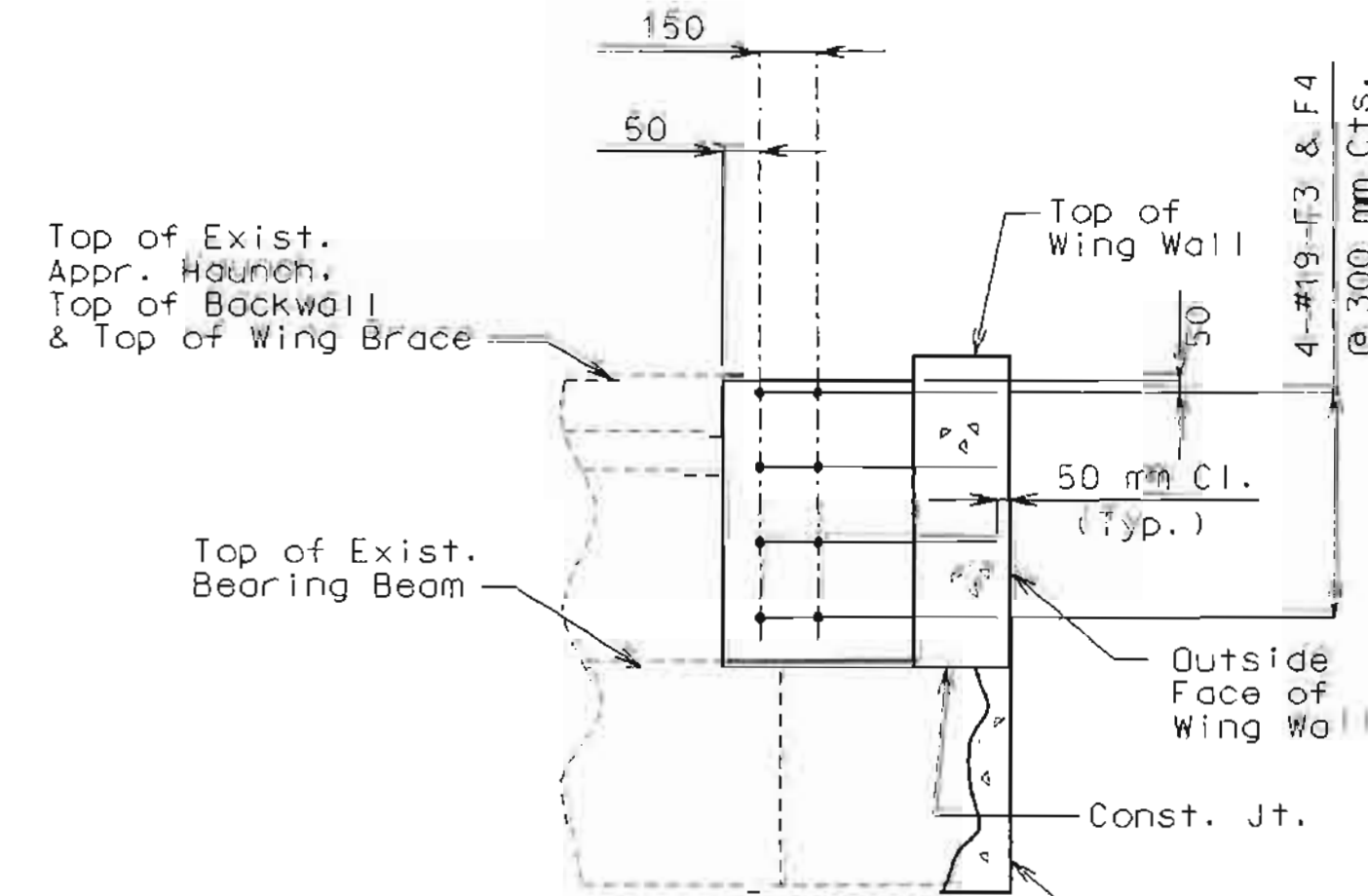


DETAIL "A"



SECTION E-E

Remove and Replace Existing Beam as Necessary to Sound Conc. (U.I.P. Exist. Reinforcement)



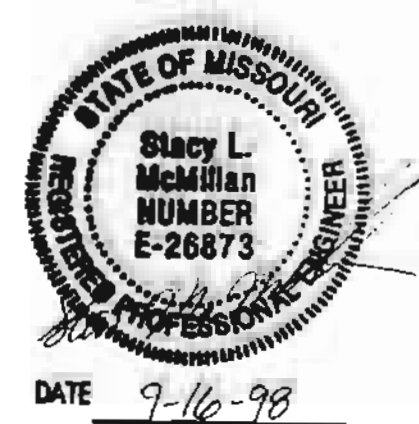
SECTION F-F

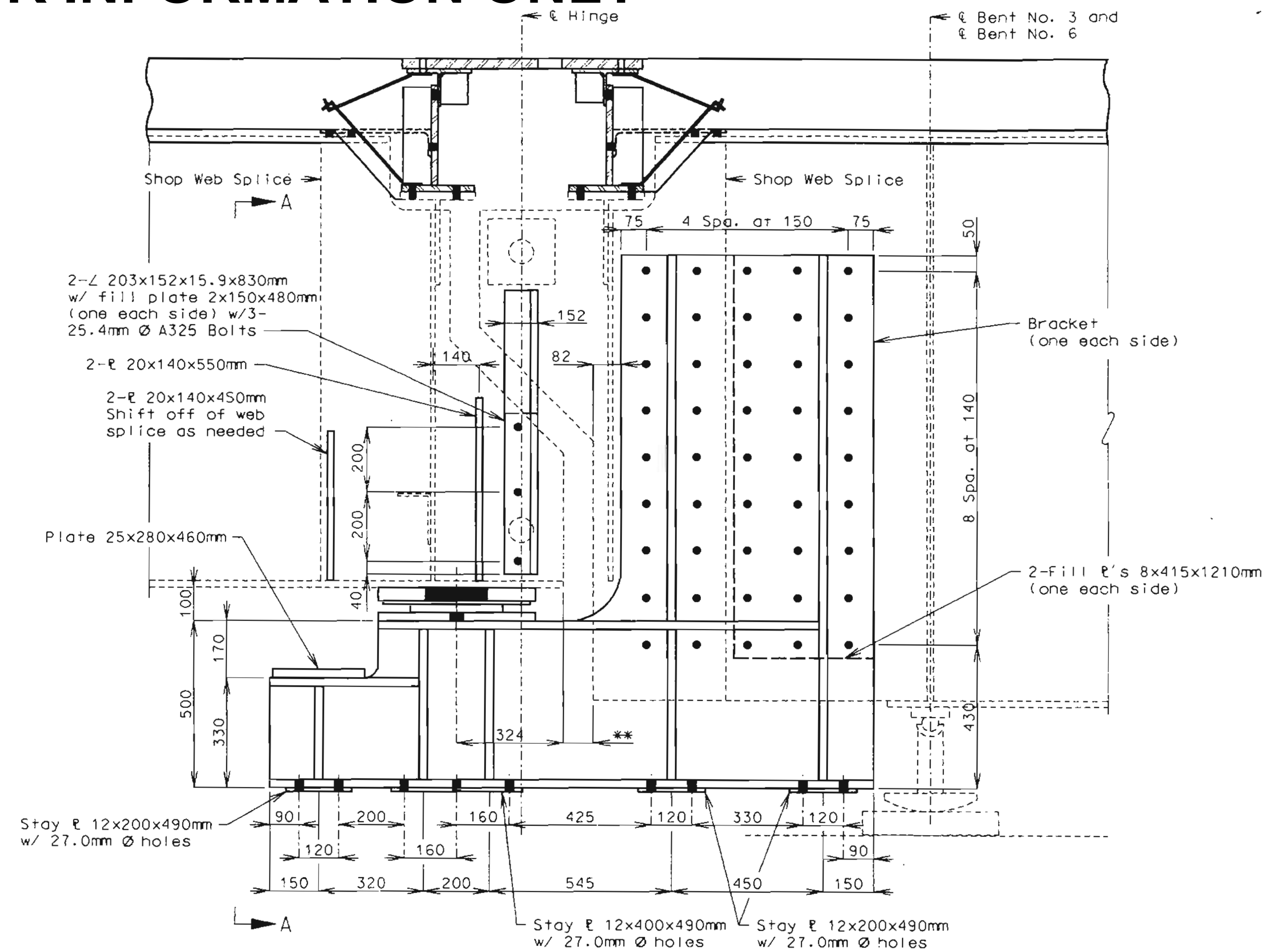
Remove and Replace Existing Beam as Necessary to Sound Conc. (U.I.P. Exist. Reinforcement)

NOTE:

Work this sheet with sheet No. 30.
 (*) Manufacturer's Embedment Length (Typ.).

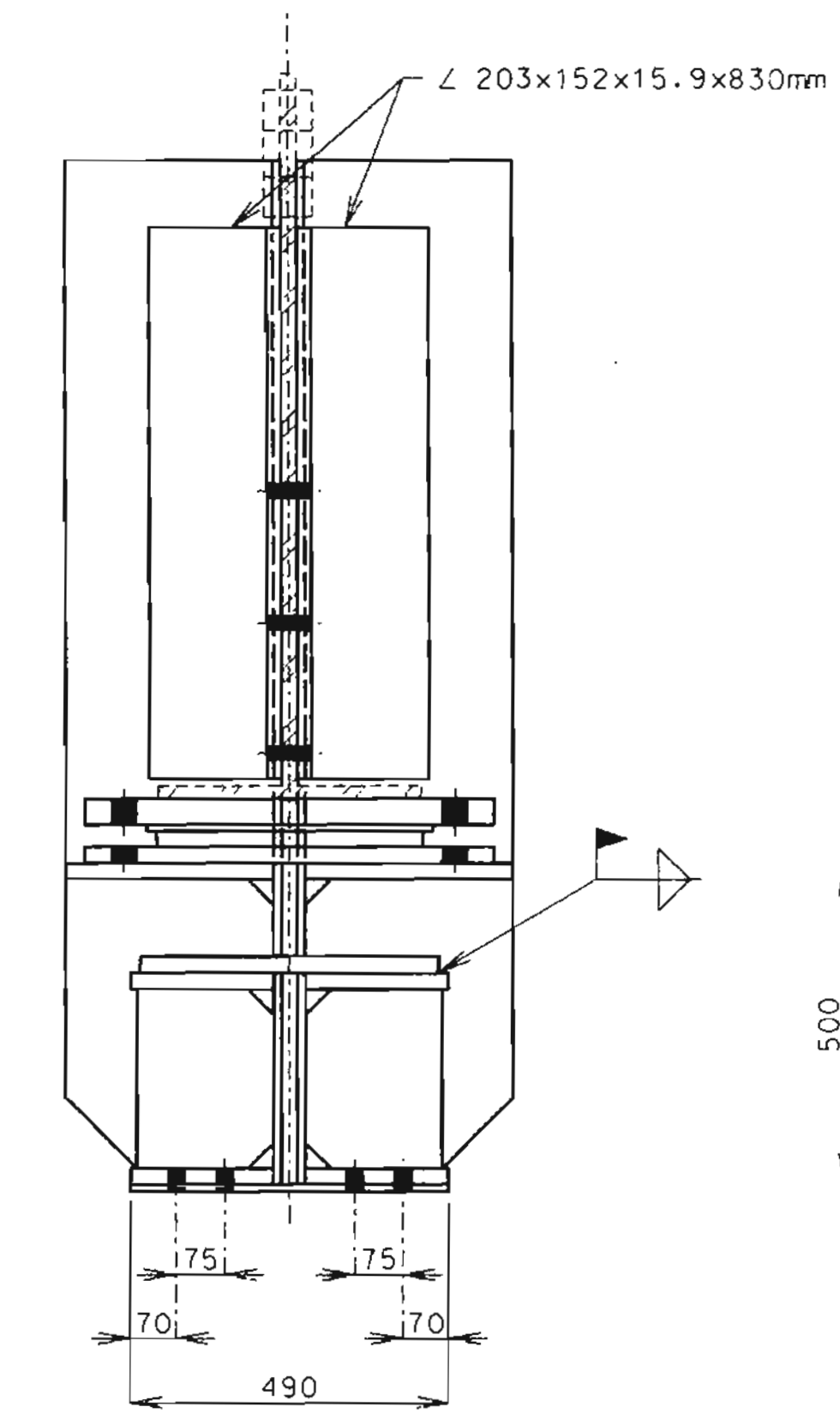
DETAILS SHOWING REHABILITATION OF LEFT WING AT END BENT NO. 10





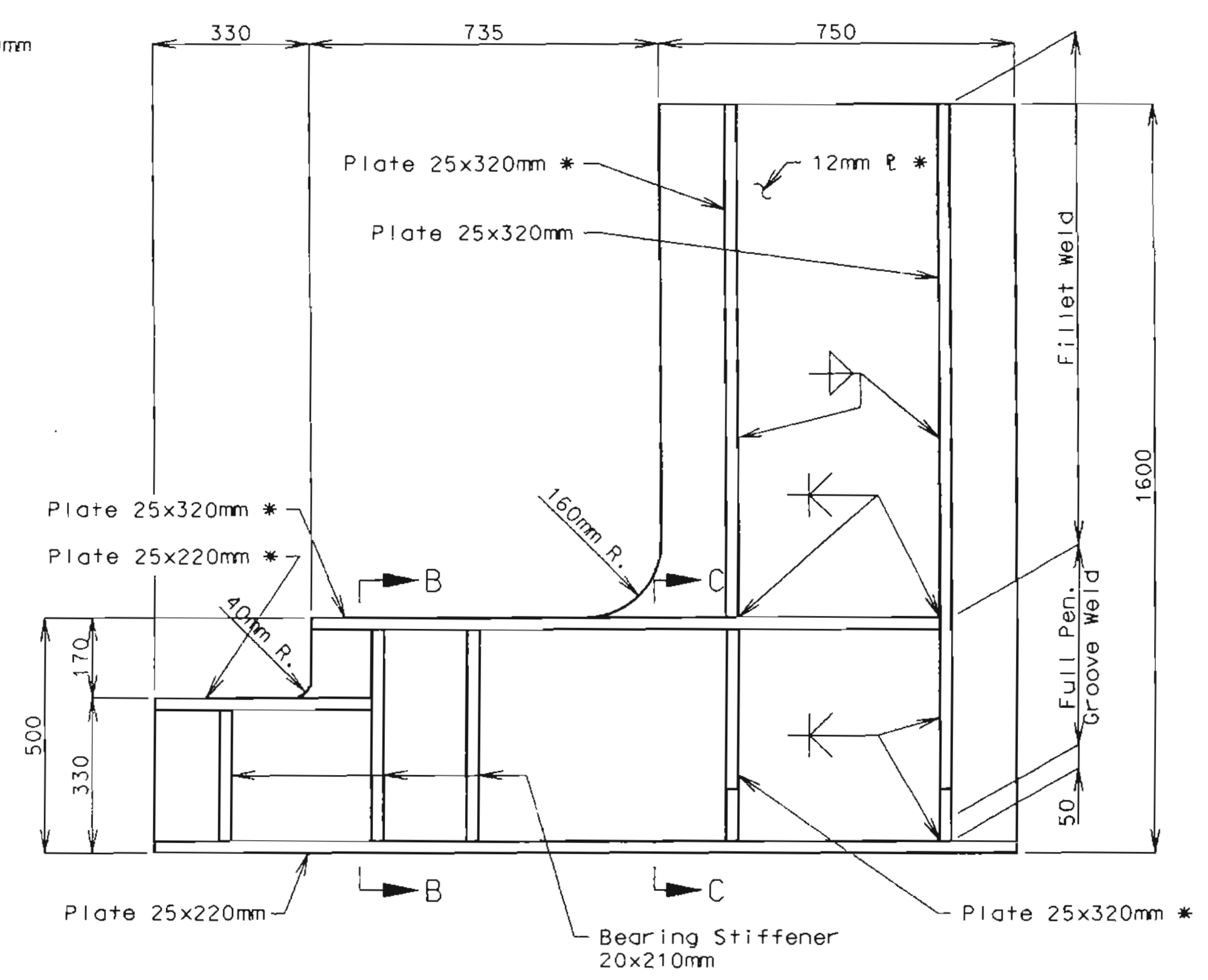
HINGE MODIFICATION DETAIL

** 89mm at 16°C (Based on original plan dimensions)



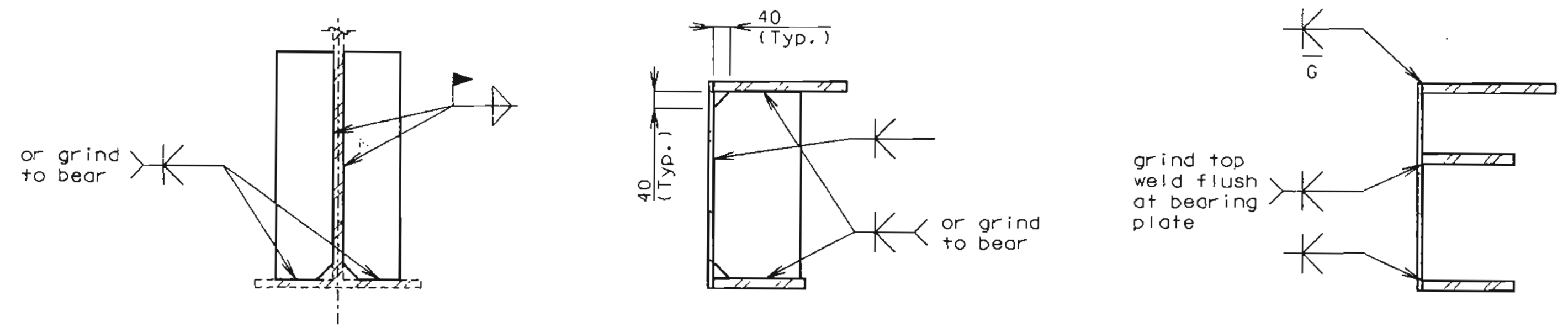
SECTION A-A

Note: Girder Stiffeners not shown for clarity.



BRACKET DETAIL

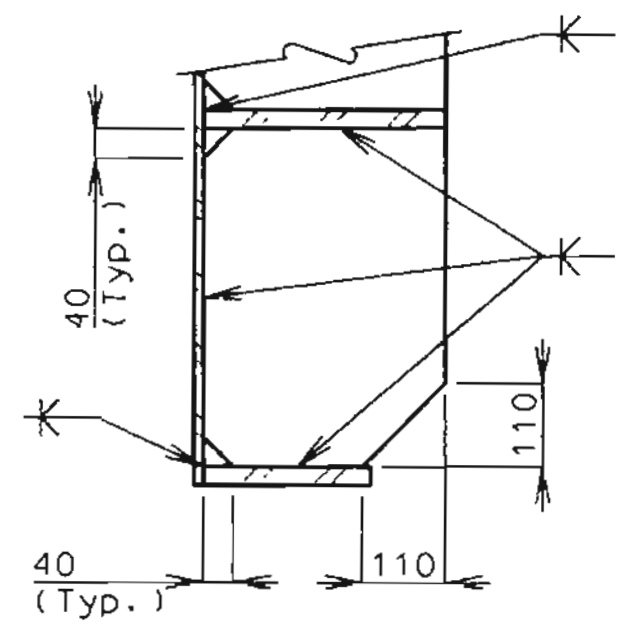
Note: Bolt holes not shown for clarity. (12 req'd as shown, 12 req'd opp. hand)



TYPICAL WELD DETAILS FOR STIFF. PLATES TO EXISTING GIRDER

TYPICAL BEARING STIFFENER DETAIL

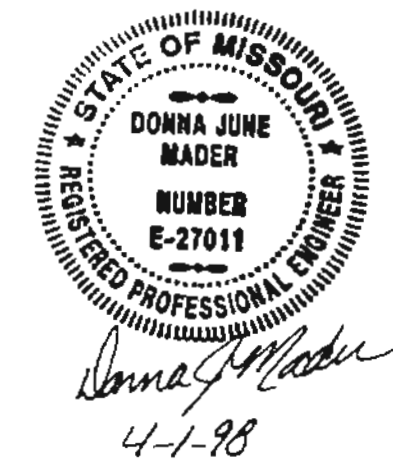
SECTION B-B



SECTION C-C

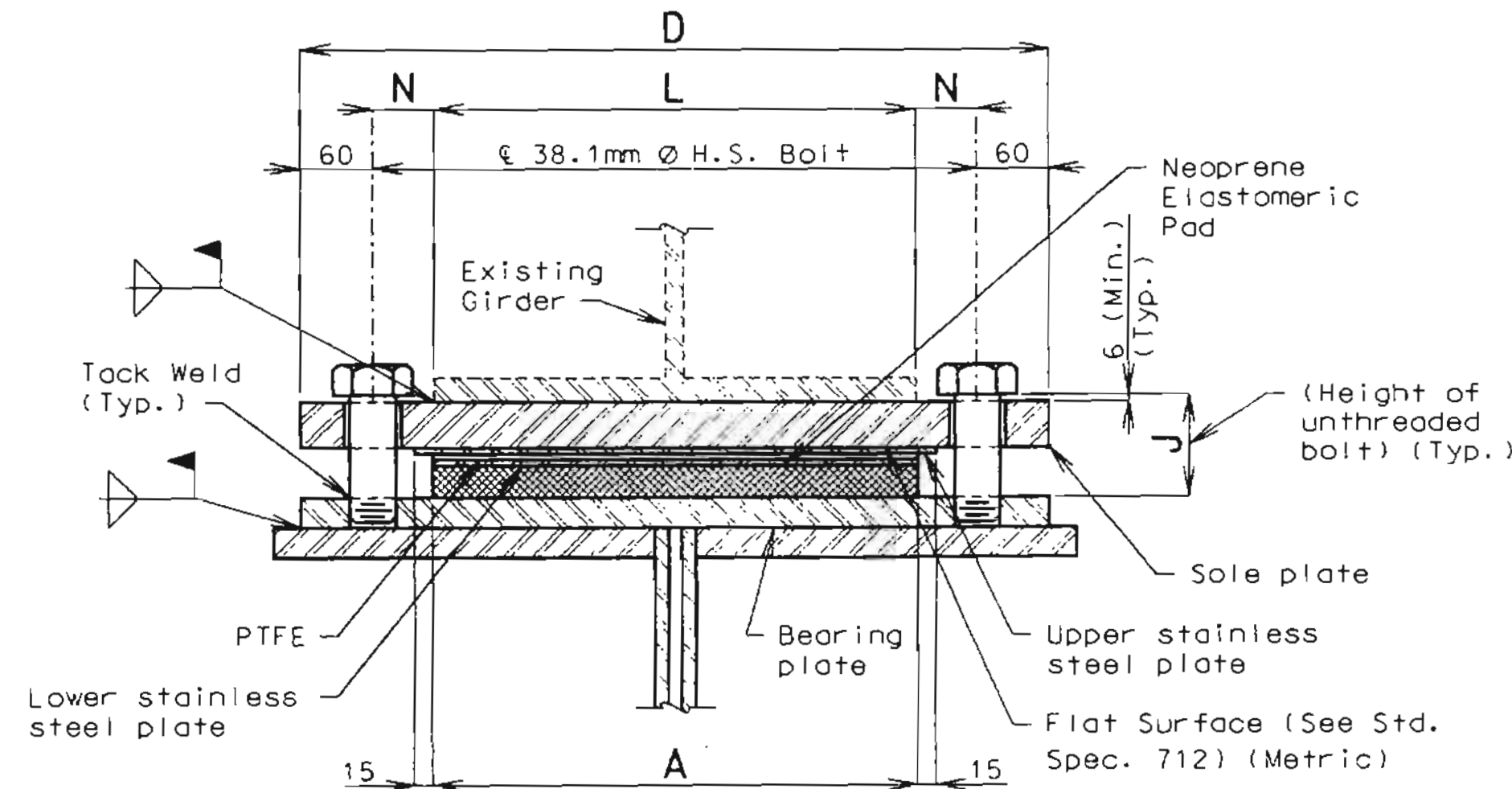
Notes:

- Position bracket 82mm from end of girder web as shown.
- Material for the hinge modification shall be ASTM A709M Grade 250 structural steel.
- Use 22.2mm Ø A325 bolts with 23.8mm Ø reamed holes, except as shown.
- Back gouge all full penetration groove welds.
- * Indicates plates subject to notch toughness requirements.
- Field verify fill plate thicknesses required in field and adjust as necessary.
- Complete hinge modifications before setting expansion joint fingers.
- For hinge removal details, See Sheet No. 3.
- For details of bearings, See Sheet No. 5.



BUCHER, WILLIS & RATLIFF CORPORATION	
7800 WIND PARKWAY KANSAS CITY, MISSOURI 64114 913-862-2699	
DRAWN BY: KLV	JAN. 1998
TRACED BY: TWM	JAN. 1998
CHECKED BY: DJM	FEB. 1998

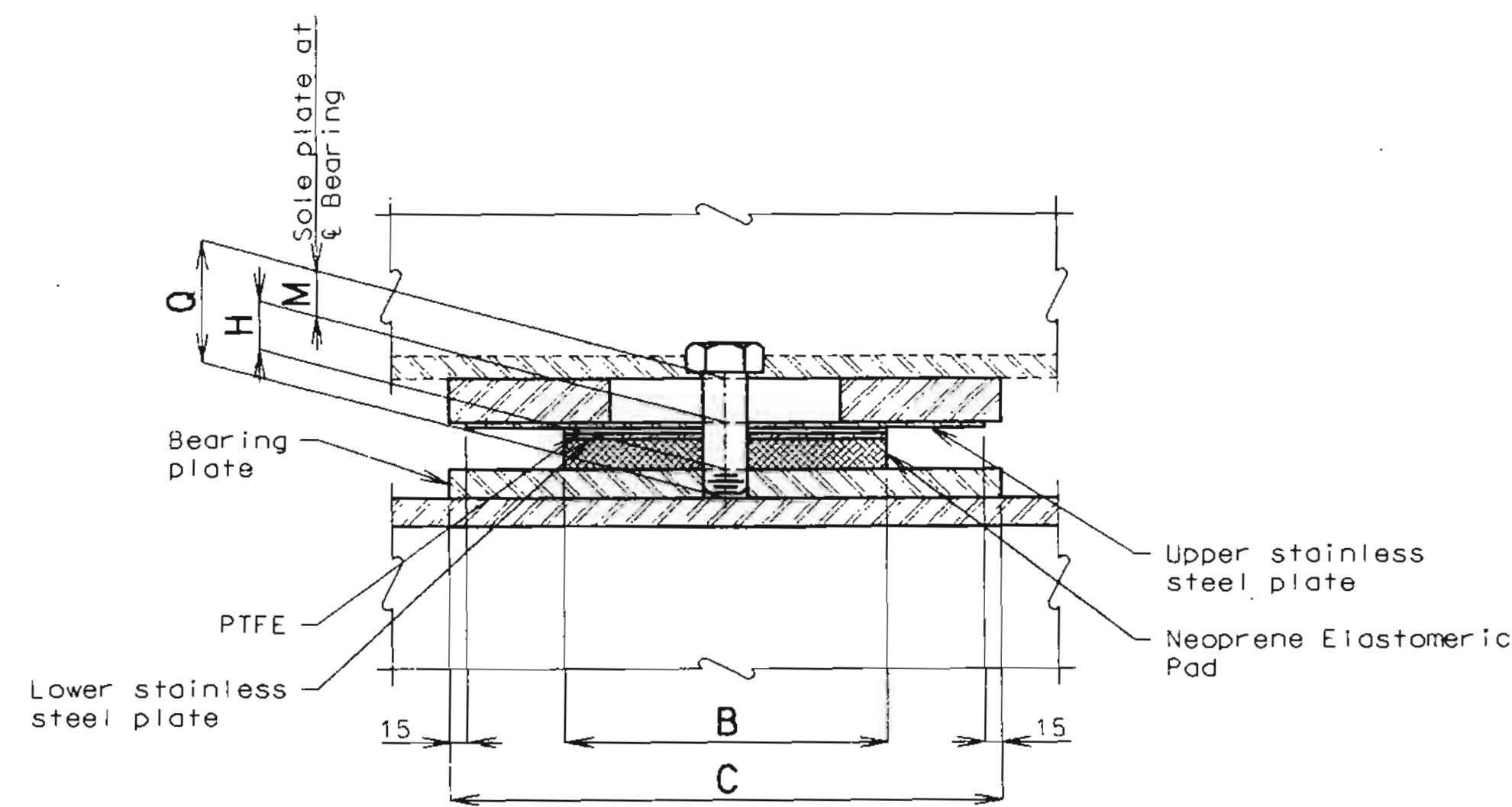
JACKSON COUNTY
HINGE MODIFICATION DETAILS



END VIEW

Note:

The location of 38.1mm Ø 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 38.1mm Ø high strength bolts. Adjustment of 6mm for hinge 3 and 5mm for hinge 6 for each 5° C temperature rise or fall shall be made.



SIDE VIEW

Note:

Bearing Plate to be tapped to receive 38.1mm Ø H.S. Bolts.

Notes:

Bolts shall be 38.1mm diameter, ASTM A325M bolts and shall extend 25mm into the bearing plate. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided.

All high strength bolts shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness).

Neoprene Elastomeric Pads shall be 70 durometer.

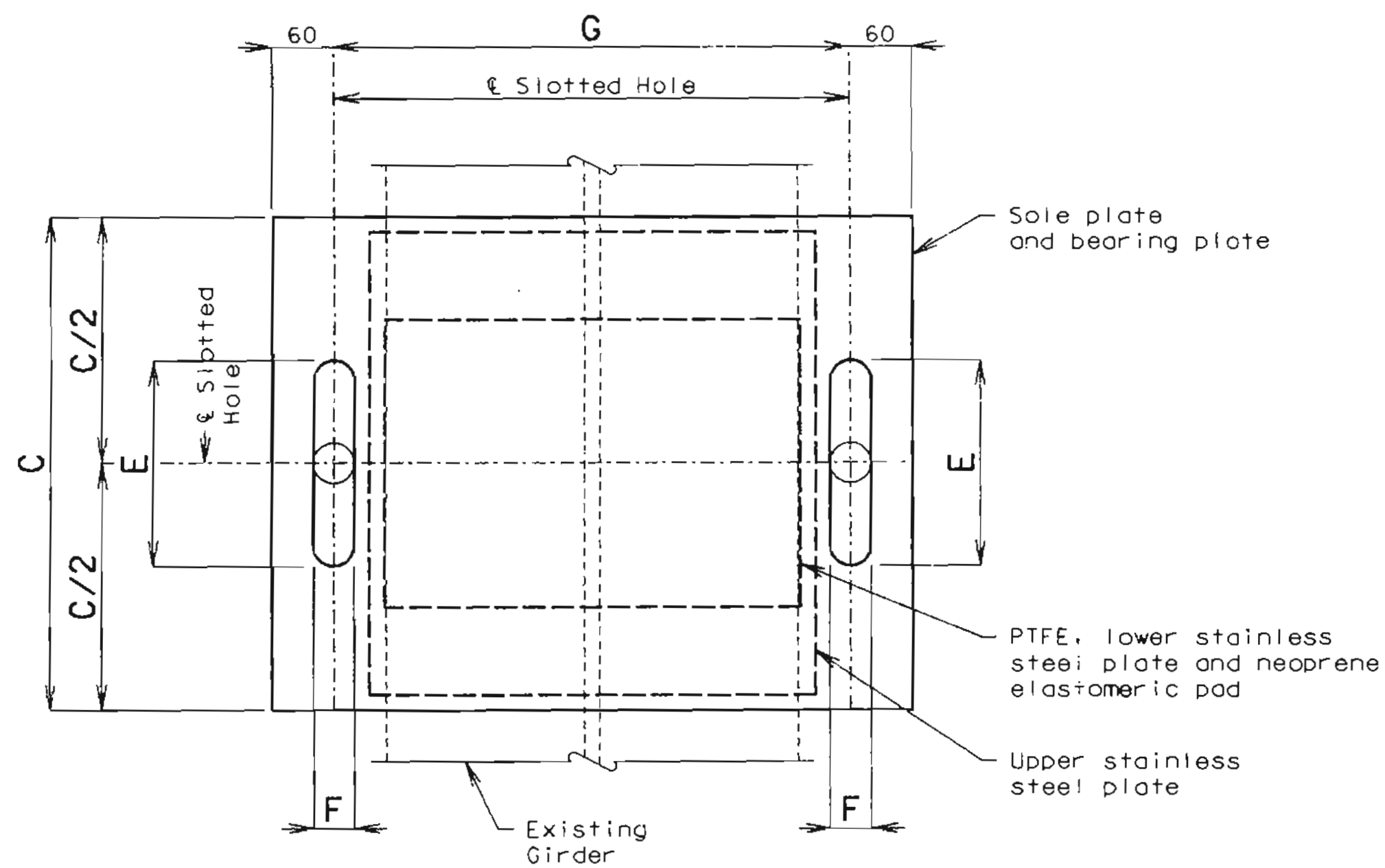
The upper and lower units shall be furnished bolted together as a single unit and field welded to the girder and retrofit bracket.

Structural steel for sole plate and bearing 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).

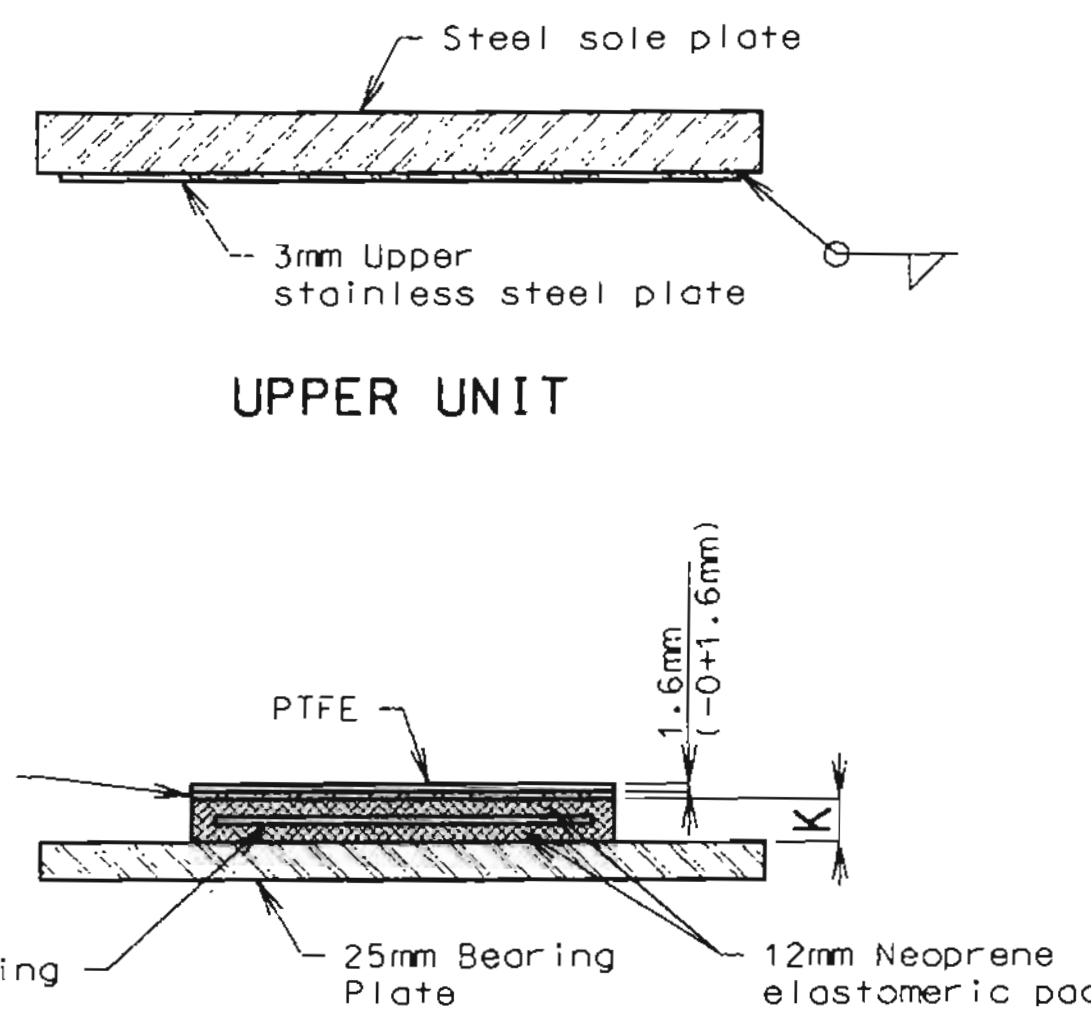
Payment for the sole plate, bearing plate and high strength bolts shall be included in the cost of the bearing assembly. See Special Provisions.

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

The bottom face of the 3mm stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.



PART PLAN VIEW



UPPER UNIT

LOWER UNIT

PTFE BEARING DEVICE

Bond Polytetrafluoroethylene (PTFE), lower stainless steel plate, neoprene elastomeric pad, and bearing plate together by Vulcanization to form an integral unit.

PTFE SLIDING BEARINGS

Bent No.	Girder	A	B	C	D	E	F	G	H	J	K	L	M	N	Q	Number of Shim Plates (*)	Number Required
3	7-12	410	280	480	630	190	41.3	510	35	81	27	279.4	40	115.3	100	1	2
3	8-11	410	280	480	630	190	41.3	510	35	81	27	304.8	40	102.6	100	1	4
6	7-12	410	280	480	630	190	41.3	510	35	81	27	304.8	40	102.6	100	1	6
																Total Bearings	12

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

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

PROJECT NO. 98-047 PROJECT NAME: MODOT-BF, No. A16854-SB r-135 over Big Blue River S:\98047\STR\A16854-SB.DGN\SBBER.ARDGN

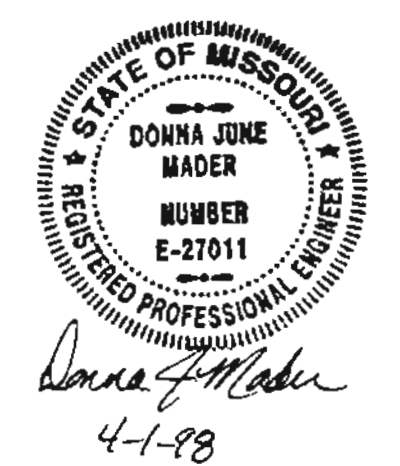
BUCHER, WILLIS & RATLIFF CORPORATION
 1920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-263-2896
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: JHH JAN. 1998
 CHECKED BY: TAC FEB. 1998

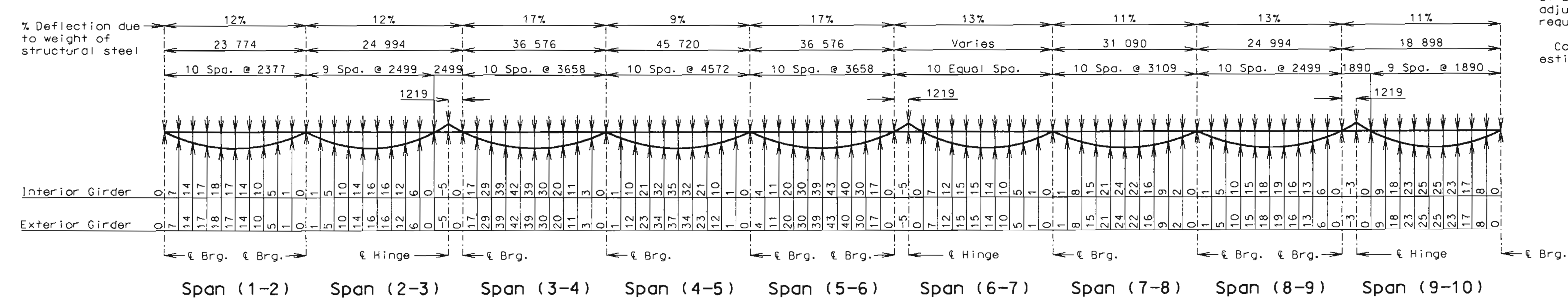
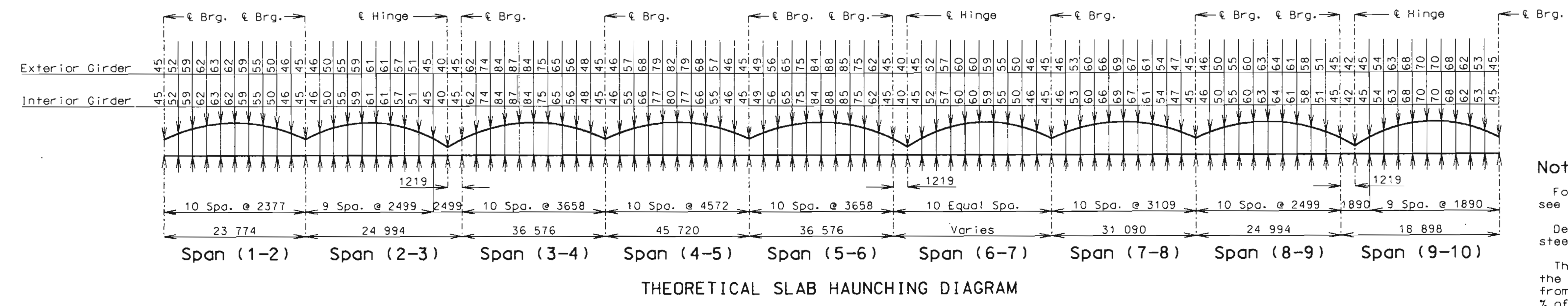
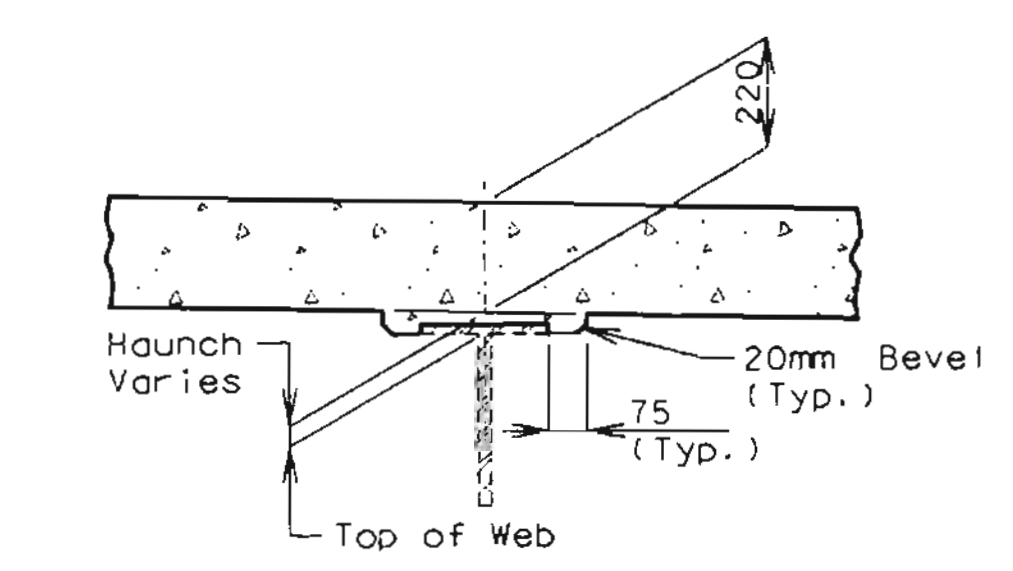
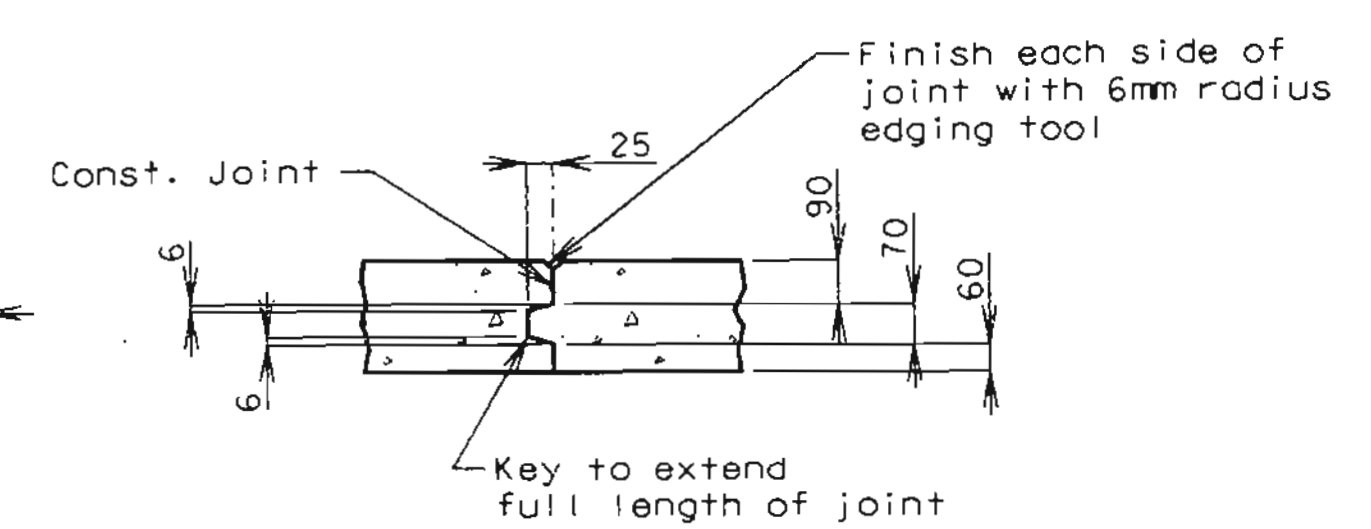
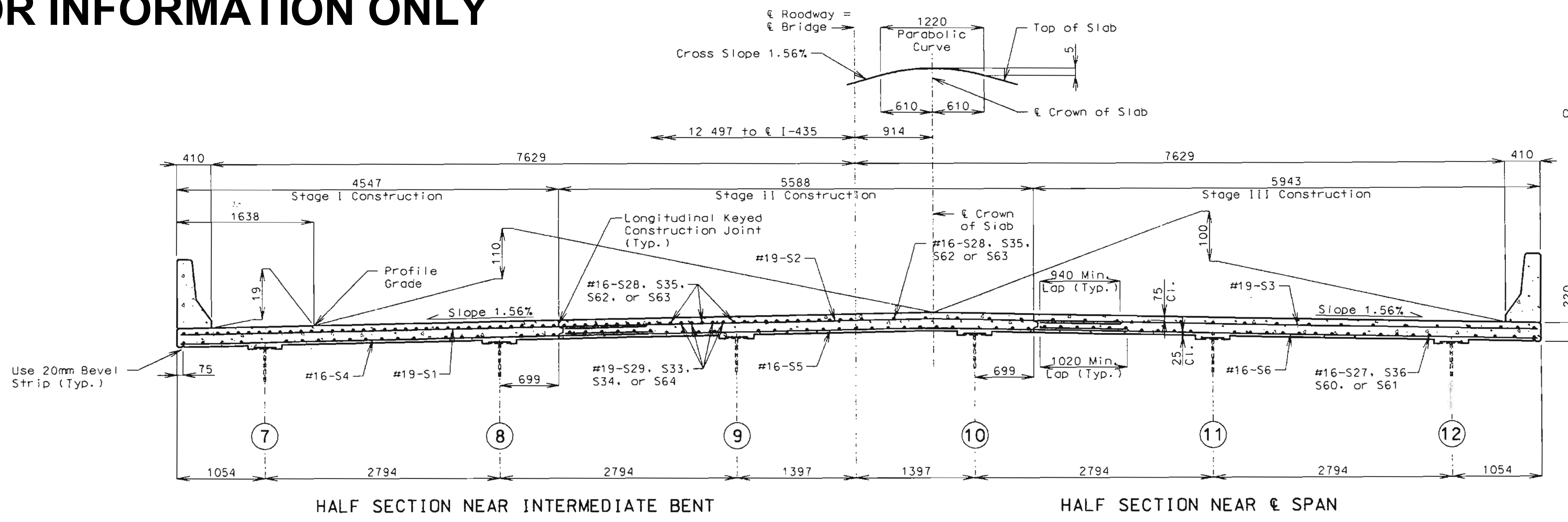
JACKSON COUNTY

DETAILS OF TYPE 'N'
PTFE BEARINGS

SHEET NO. 5 OF 26

A16854





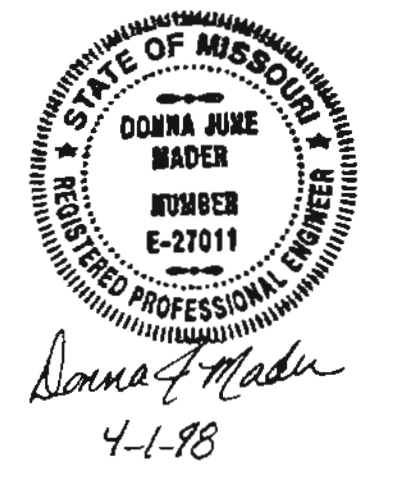
Notes:

For details of safety barrier curb not shown, see Sheets No. 21 and 22.

Dead load deflection includes weight of structural steel, concrete slab and barrier curb.

Theoretical slab haunch dimensions may vary if the girder deflection after slab removal differs from plan deflection by more or less than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

Concrete in the slab haunches is included in the estimated quantities for slab on steel.



BUCHER, WILLIS & RATLIFF CORPORATION
 7900 INWARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2500

DRAWN BY: MLJ/DJM JAN. 1998
 TRACED BY: TWM JAN. 1998
 CHECKED BY: KLW FEB. 1998

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

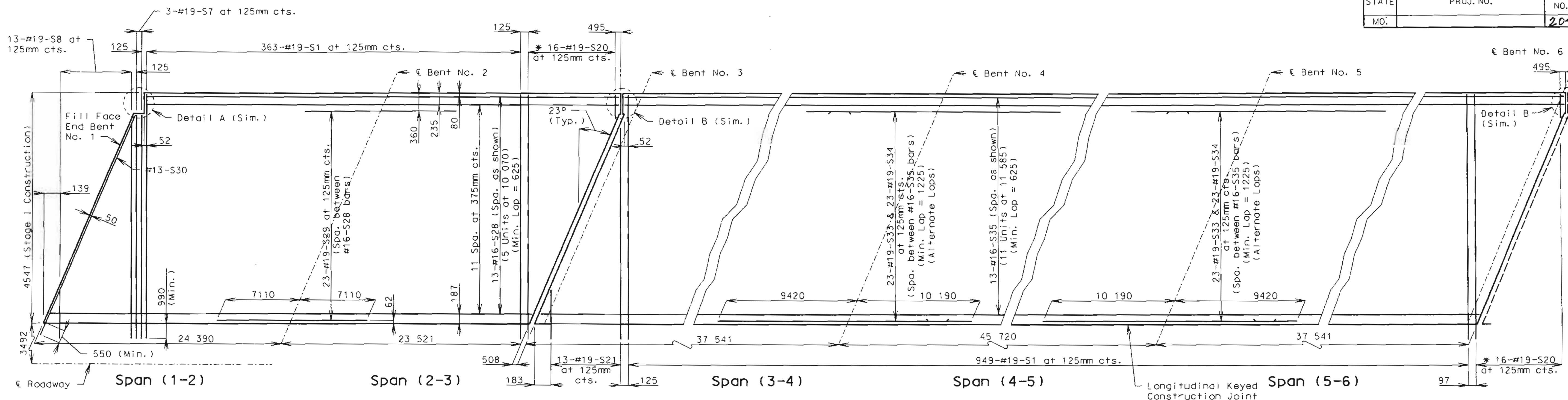
JACKSON COUNTY
 SLAB CROSS SECTION AND HAUNCHING DIAGRAM

SHEET NO. 6 OF 26

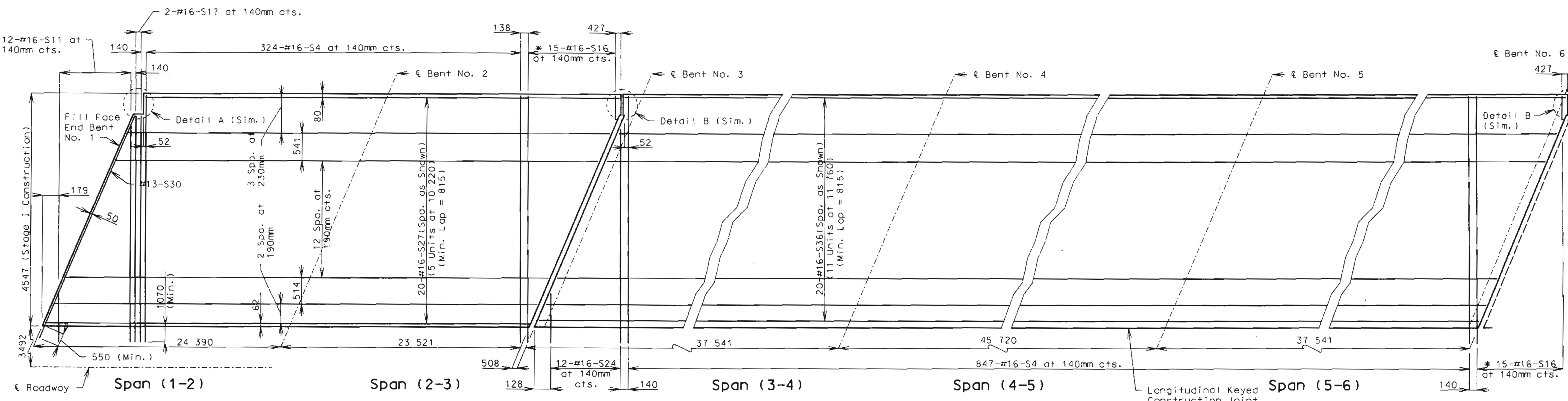
A16854

PROJECT No. 98-047 PROJECT NAME: MODOT-BF- No. A16854-SB I-435 over Big Blue River S:\PROJ\71STR\A16854-SB\DRAWINGS\SLAB.DGN

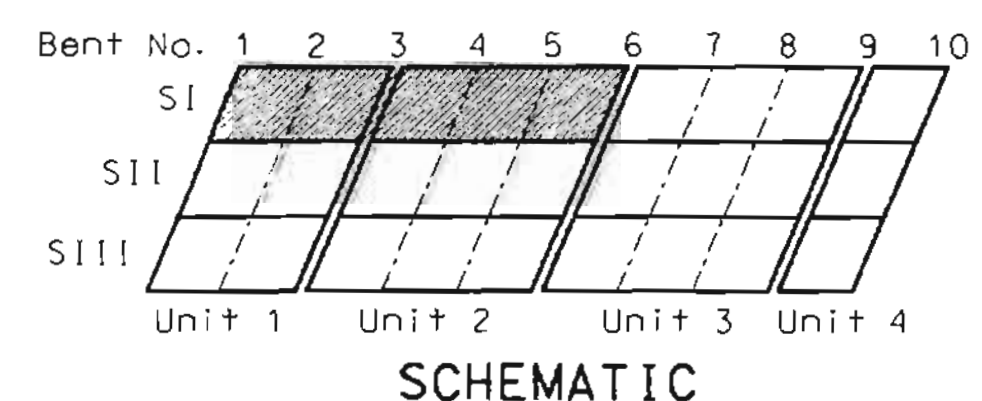
STATE	PROJ. NO.	SHEET NO.
MO.		204



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



SCHEMATIC

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

Notes:

- * Bar extension into Stage II Construction varies.
- See Sheet No. 13 for miscellaneous details and notes.
- For location of slob drains see Sheet No. 15.

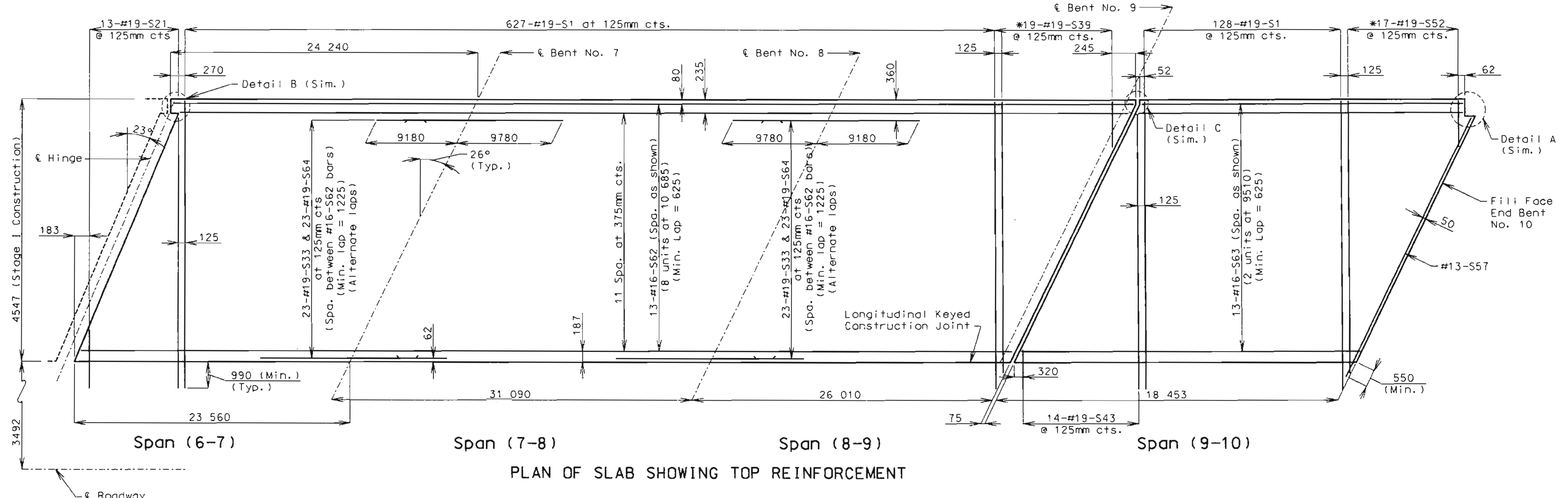


JACKSON COUNTY
SLAB PLAN
STAGE I - UNITS 1-2

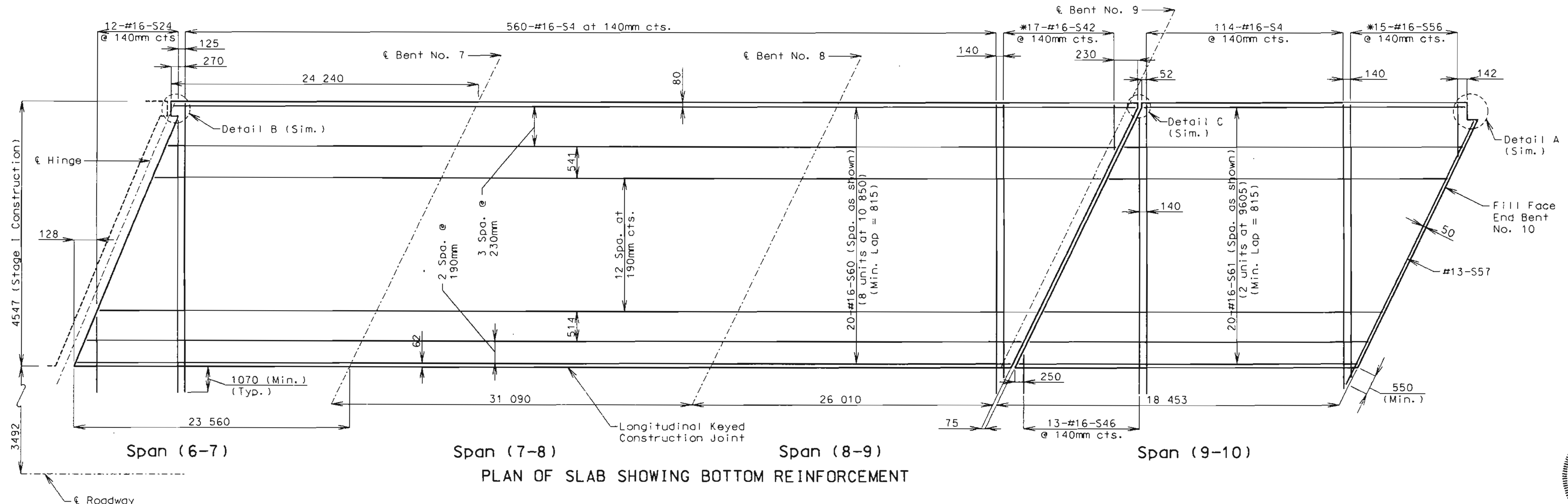
PROJECT No. 98-047 PROJECT NAME: ModOT-BR- No. A16854-SI 1-435 over Big Blue River S:\98047\STR\A16854\SR\CON\SBPL\112.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
DRAWN BY: MLJ/ JAN. 1998
TRACED BY: TWM/ JAN. 1998
CHECKED BY: KLW/ FEB. 1998

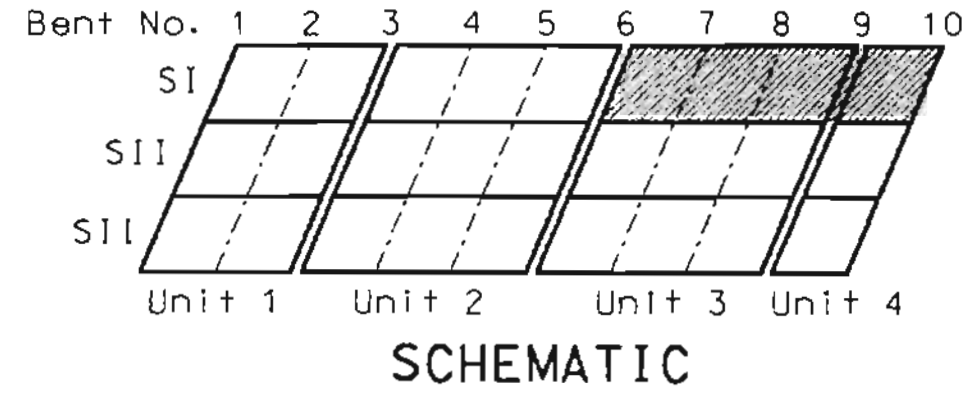
STATE	PROJ. NO.	SHEET NO.
MO.		205



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

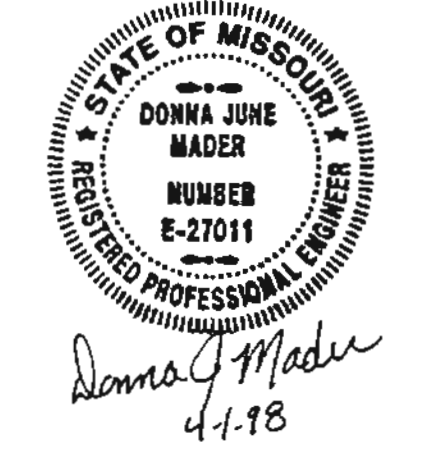


SCHEMATIC

Notes:

- Bar extension into Stage II construction varies.
- See Sheet No. 13 for miscellaneous details.
- Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
- For location of slab drains see Sheet No. 15.

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



BUCHER, WILLIS & RATLIFF CORPORATION

PROJECT No. 98-047 PROJECT NAME: MODOT-87, No. A16854-SB I-435 over Big Blue River, S.13804.7, S.13804.8, S.13804.9, S.13804.10, S.13804.11, S.13804.12, S.13804.13, S.13804.14, S.13804.15, S.13804.16, S.13804.17, S.13804.18, S.13804.19, S.13804.20, S.13804.21, S.13804.22, S.13804.23, S.13804.24, S.13804.25, S.13804.26, S.13804.27, S.13804.28, S.13804.29, S.13804.30, S.13804.31, S.13804.32, S.13804.33, S.13804.34, S.13804.35, S.13804.36, S.13804.37, S.13804.38, S.13804.39, S.13804.40, S.13804.41, S.13804.42, S.13804.43, S.13804.44, S.13804.45, S.13804.46, S.13804.47, S.13804.48, S.13804.49, S.13804.50, S.13804.51, S.13804.52, S.13804.53, S.13804.54, S.13804.55, S.13804.56, S.13804.57, S.13804.58, S.13804.59, S.13804.60, S.13804.61, S.13804.62, S.13804.63, S.13804.64, S.13804.65, S.13804.66, S.13804.67, S.13804.68, S.13804.69, S.13804.70, S.13804.71, S.13804.72, S.13804.73, S.13804.74, S.13804.75, S.13804.76, S.13804.77, S.13804.78, S.13804.79, S.13804.80, S.13804.81, S.13804.82, S.13804.83, S.13804.84, S.13804.85, S.13804.86, S.13804.87, S.13804.88, S.13804.89, S.13804.90, S.13804.91, S.13804.92, S.13804.93, S.13804.94, S.13804.95, S.13804.96, S.13804.97, S.13804.98, S.13804.99, S.13804.100

DRAWN BY: MLJ JAN. 1998
 TRACED BY: TAC JAN. 1998
 CHECKED BY: KLW FEB. 1998

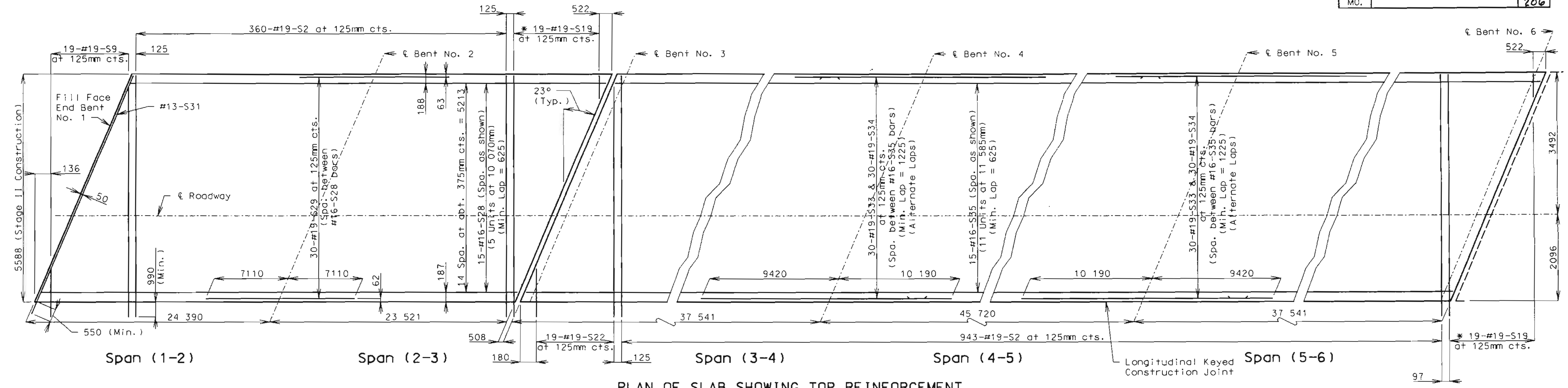
JACKSON COUNTY

SLAB PLAN
 STAGE I - UNITS 3-4

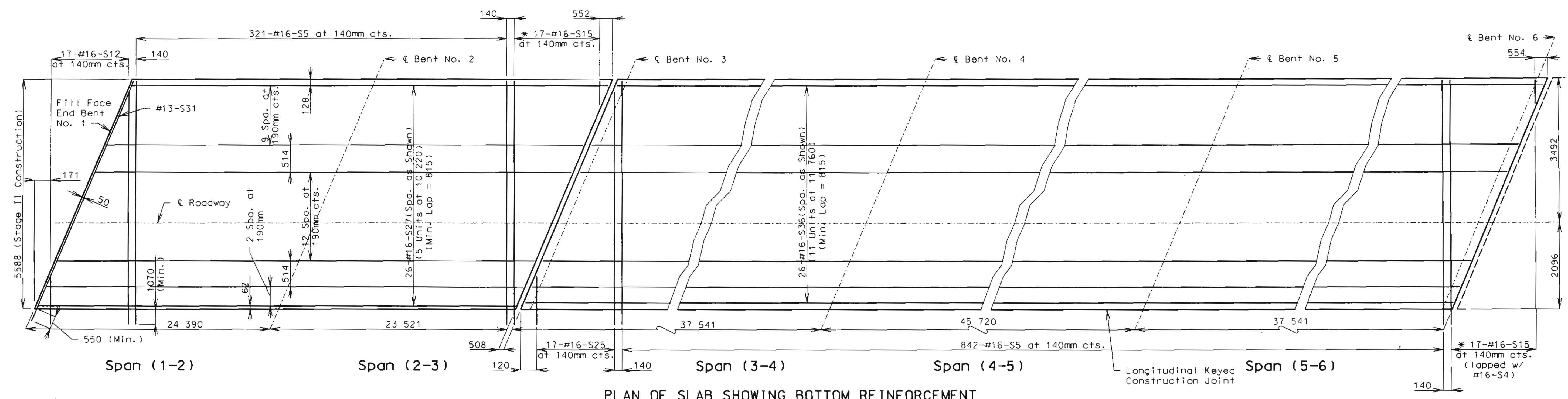
SHEET NO. 8 OF 26

A16854

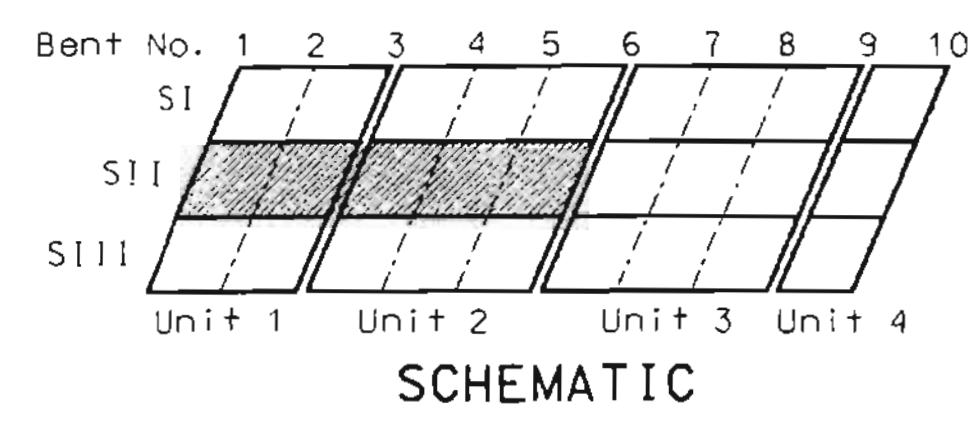
STATE	PROJ. NO.	SHEET NO.
MO.		206



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



SCHEMATIC

- Notes:
- Lap transverse bars with bars extending from Stage I Construction.
 - See Sheet No. 13 for miscellaneous details and notes.
 - * Bar extension into Stage III Construction varies.



Donna J. Mader
4-1-98

JACKSON COUNTY

SLAB PLAN
STAGE II - UNITS 1-2

SHEET NO. 9 OF 26

A16854

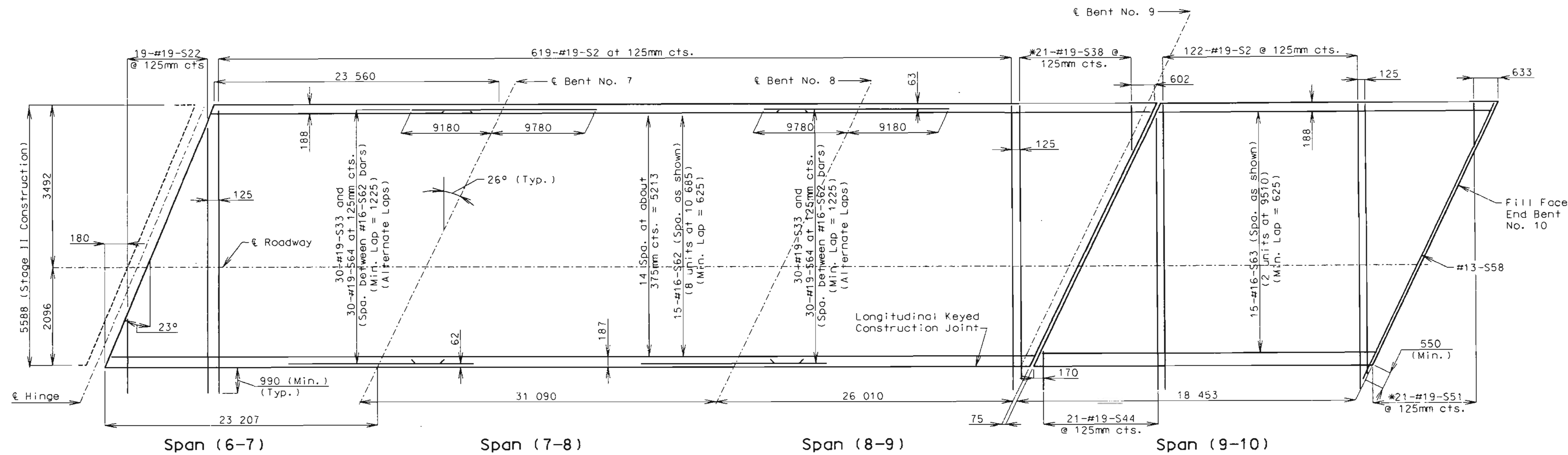
Note: This drawing is not to scale. Follow dimensions.

PROJECT NO. 98-047 PROJECT NAME: MO007-BF, No. A16854-SB 1-435 over Big Blue River. S:\98047\STR\A16854-SB\000\N\SBP\N212.DGN

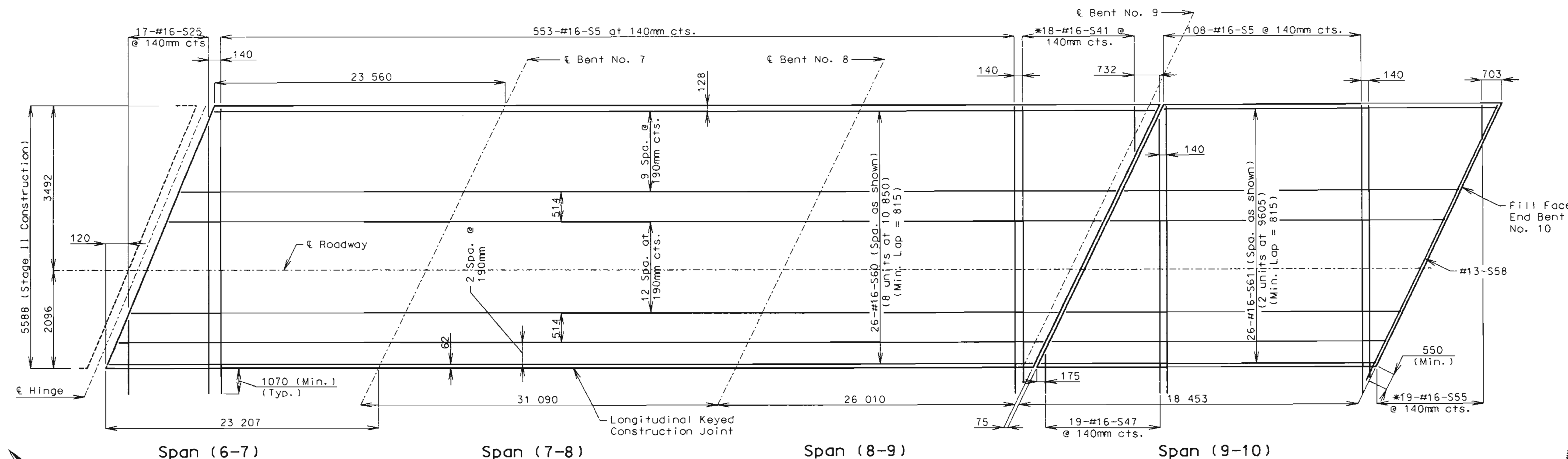
BUR BUCHER, WILLIS & RATLIFF CORPORATION
1920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 BR 363-2690

DRAWN BY:	MLJ	JAN, 1998
TRACED BY:	TWM	JAN, 1998
CHECKED BY:	KLW	FEB, 1998

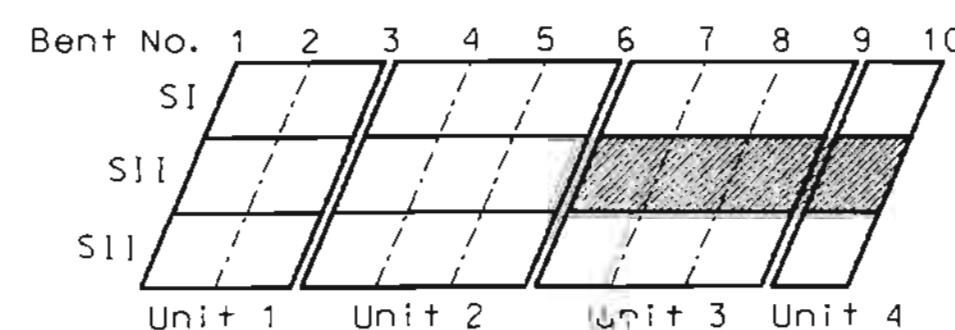
STATE	PROJ. NO.	SHEET NO.
MO.		207



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



SCHEMATIC

Notes:

- Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
- *Bar extension into Stage III Construction varies.
- Lap transverse bars with bars extending from Stage I Construction.
- See Sheet No. 13 for miscellaneous details and notes.

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



Donna June Mader
1-1-98

PROJECT No. 98-047 PROJECT NAME: MODOT-BP, NO. A6854-SB, 1+435 over Big Blue River, S-19047-STR-A16854-SB-DCN-SBPLN234.DGN

BUR BUCHER, WILLIS & RATLIFF CORPORATION

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	KLW	FEB. 1998

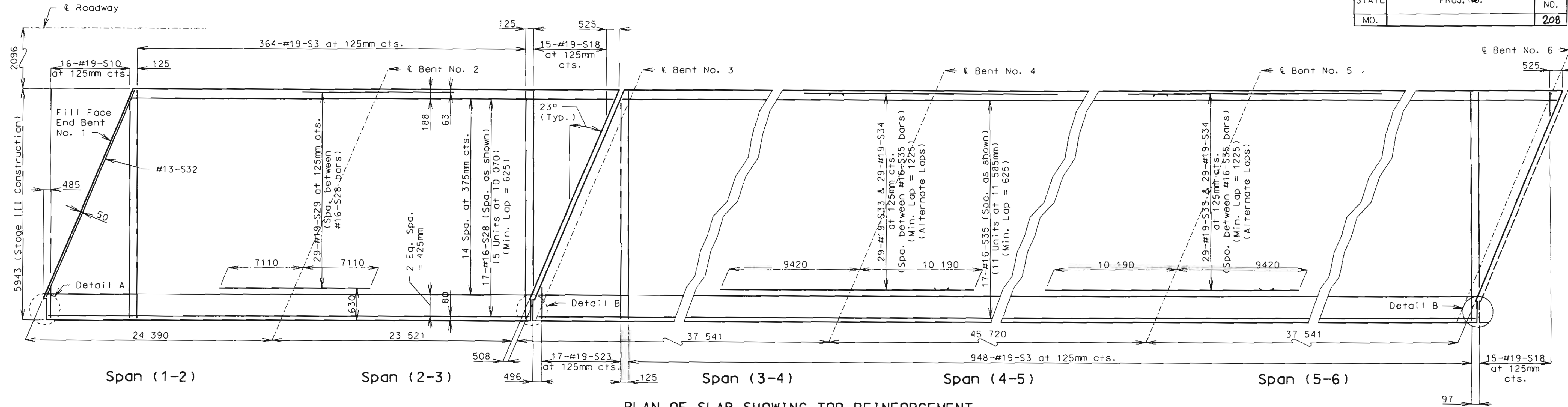
JACKSON COUNTY

SLAB PLAN
STAGE II - UNITS 3-4

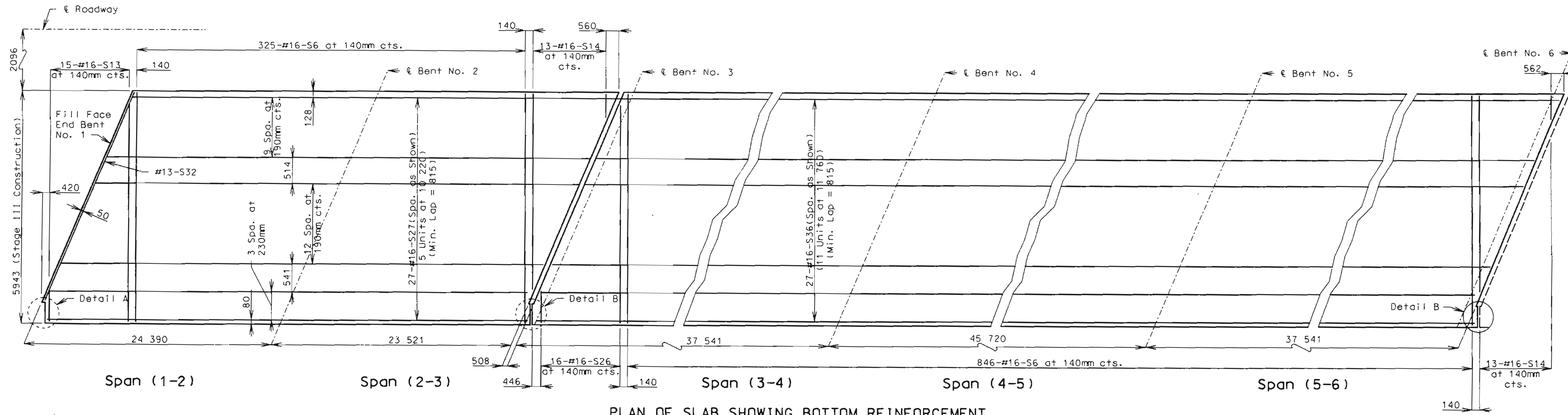
SHEET NO. 10 OF 26

A16854

STATE	PROJ. NO.	SHEET NO.
MO.		208



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Bent No.	1	2	3	4	5	6	7	8	9	10
SI										
SI I										
SI II										
Unit	Unit 1	Unit 2	Unit 3	Unit 4						

SCHMATIC

Notes:
 Lap transverse bars with bars extending from Stage II Construction.
 See Sheet No. 13 for miscellaneous details and notes.
 For location of slab drains see Sheet No. 15.



Donna June Mader
4-1-88

JACKSON COUNTY

SLAB PLAN
 STAGE III - UNITS 1-2

SHEET NO. 11 OF 26

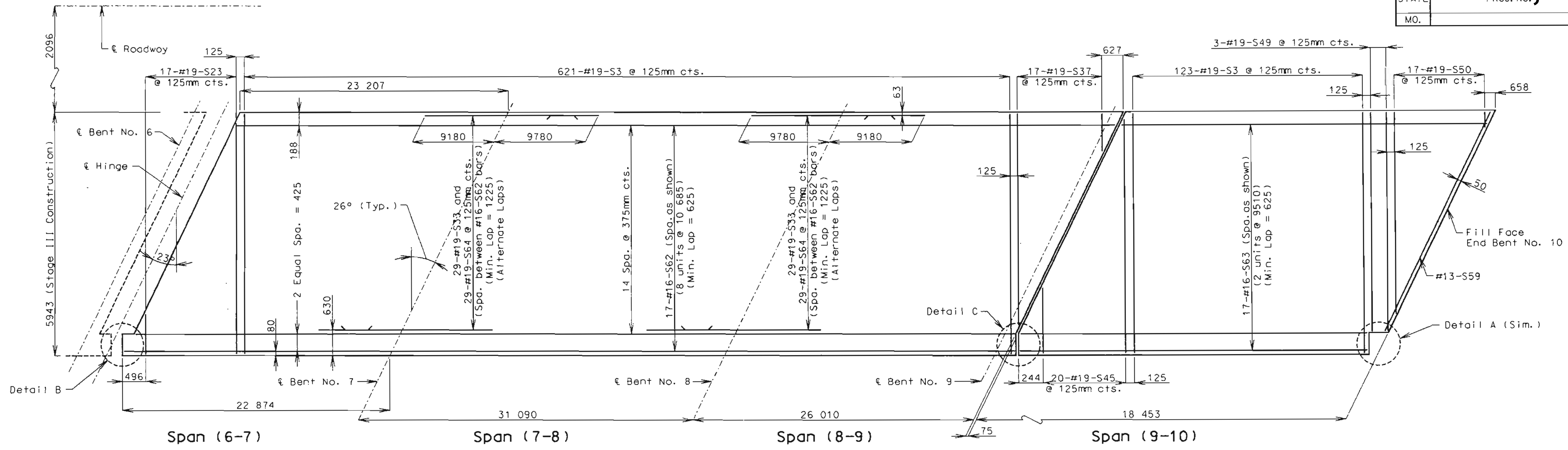
A16854

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

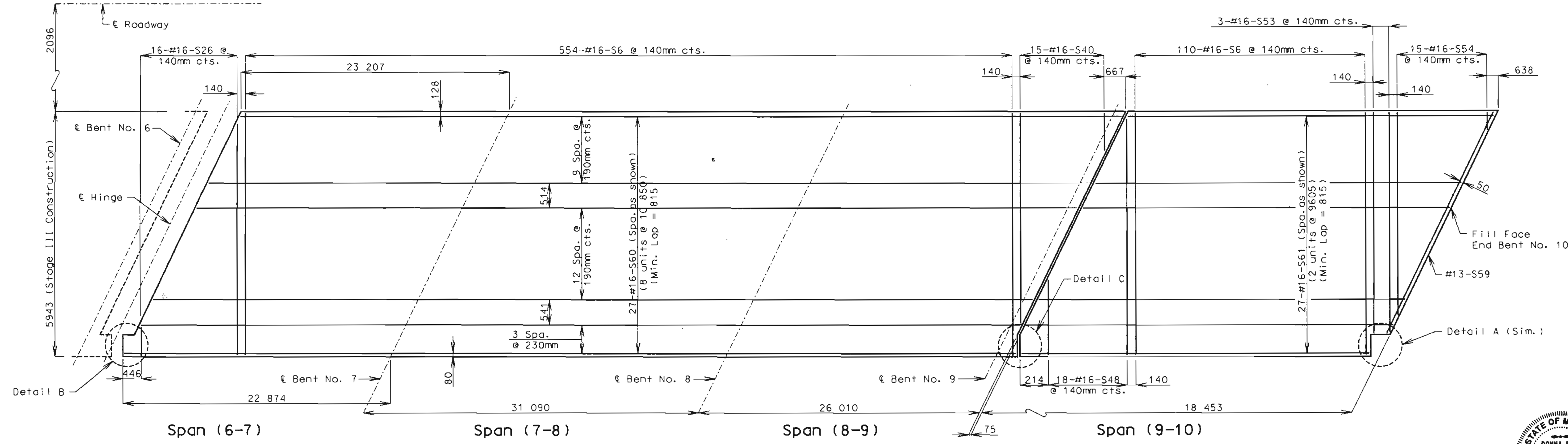
PROJECT NO. 98-047 PROJECT NAME: MODOT-BF. No. A6854-SB 1-135 over Big Blue River. S:\98047\STR\A6854-SB\UGA\SBP\LN17.DGN

BUR **BUCHER, WILLIS & RATLIFF CORPORATION**
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: TWW JAN. 1998
 CHECKED BY: KILW FEB. 1998

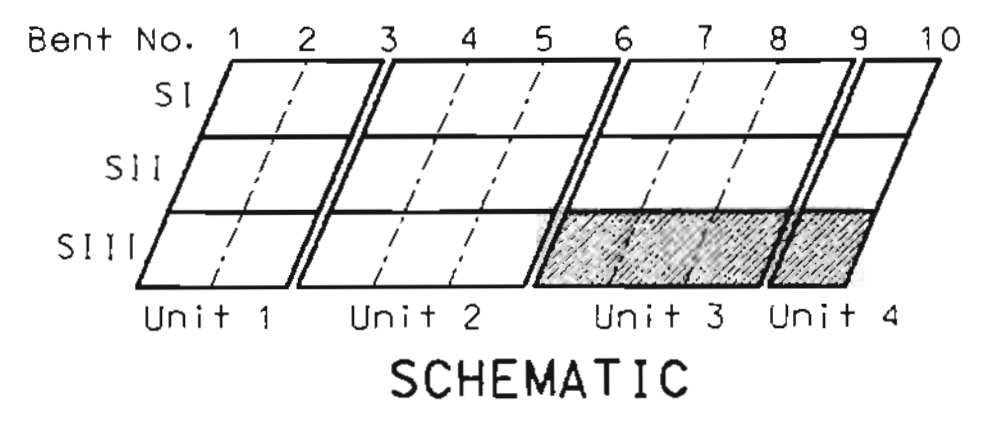
STATE	PROJ. NO.	SHEET NO.
MO.		209



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



Notes:
 Lap transverse bars with bars extending from Stage II Construction.
 Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
 See sheet No. 13 for miscellaneous details and notes.
 For location of slab drains see Sheet No. 15.

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

PROJECT No. 98-047 PROJECT NAME: MODOT Br. No. A16854 SB I-435 over Big Blue River S:\98047\STR\A16854-SB\CON\SPR\N134.DGN

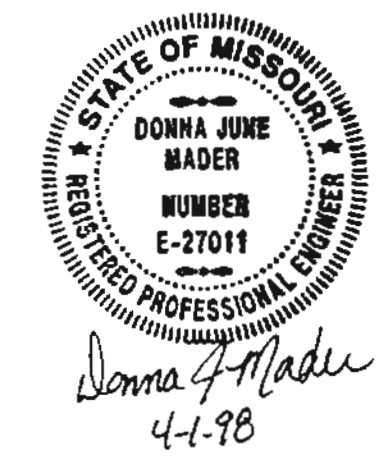
BUCHER, WILLIS & RATLIFF CORPORATION
 7520 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-383-2695

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	KLW	FEB. 1998

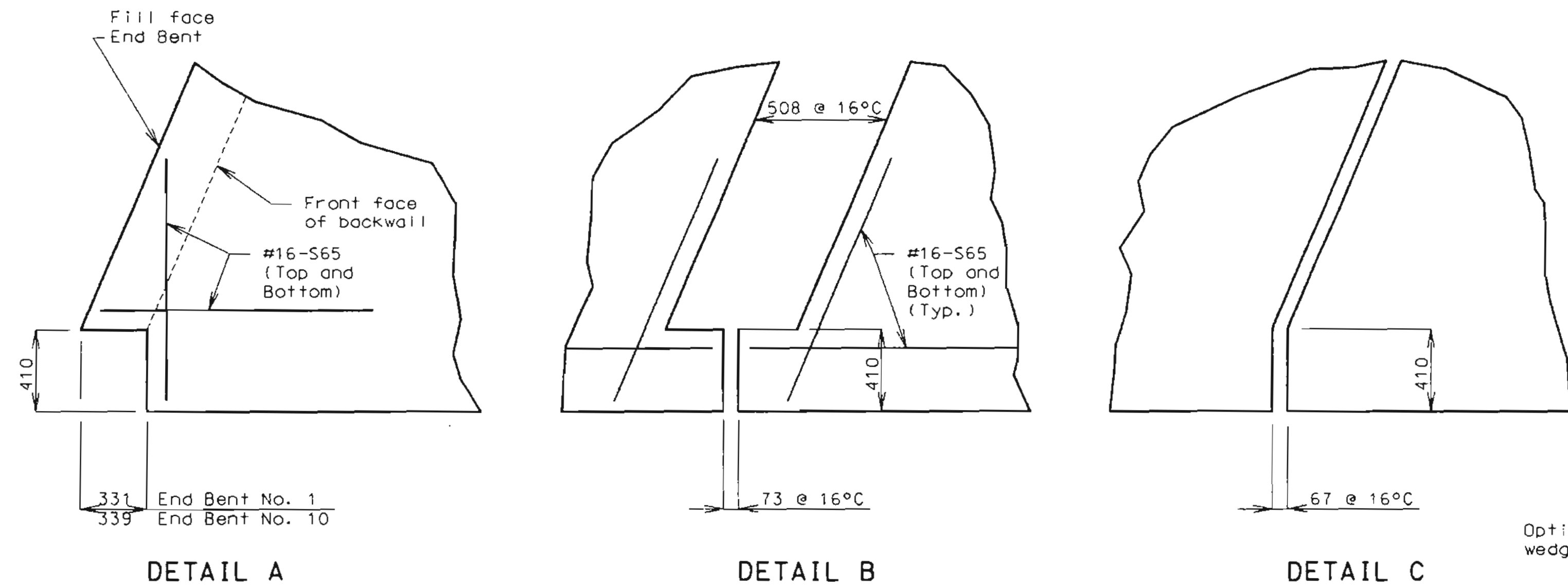
JACKSON COUNTY
 SLAB PLAN
 STAGE III - UNITS 3-4

SHEET NO. 12 OF 26

A16854



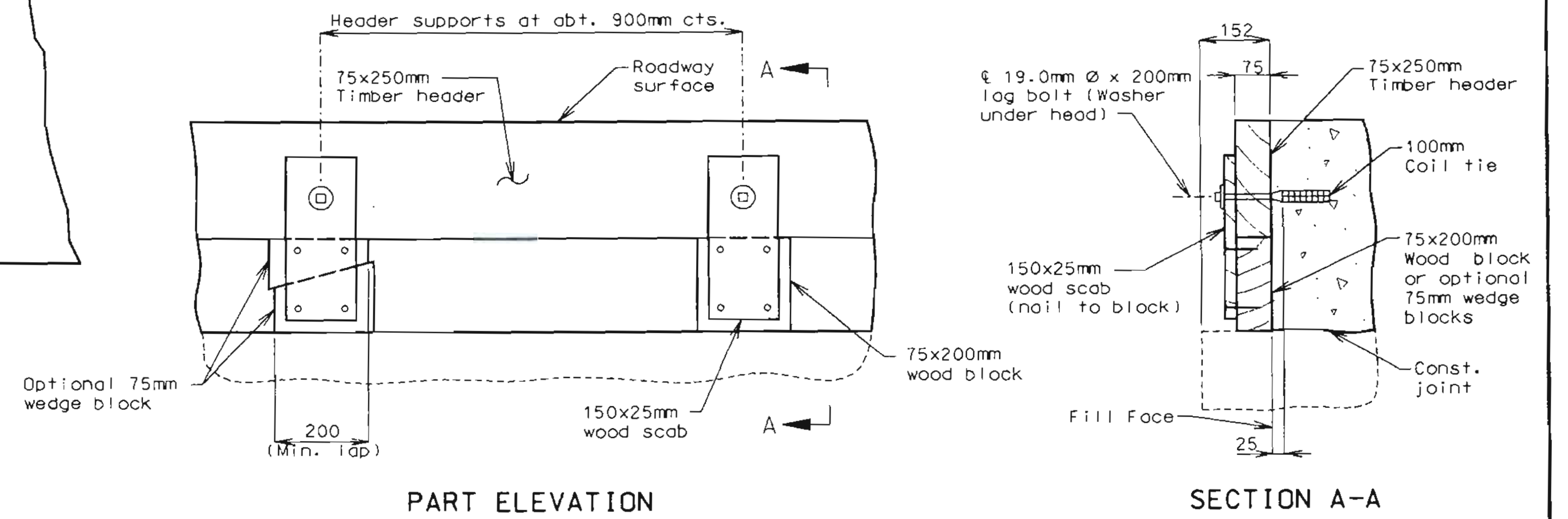
STATE	PROJ. NO.	SHEET NO.
MO.		210



DETAIL A

DETAIL B

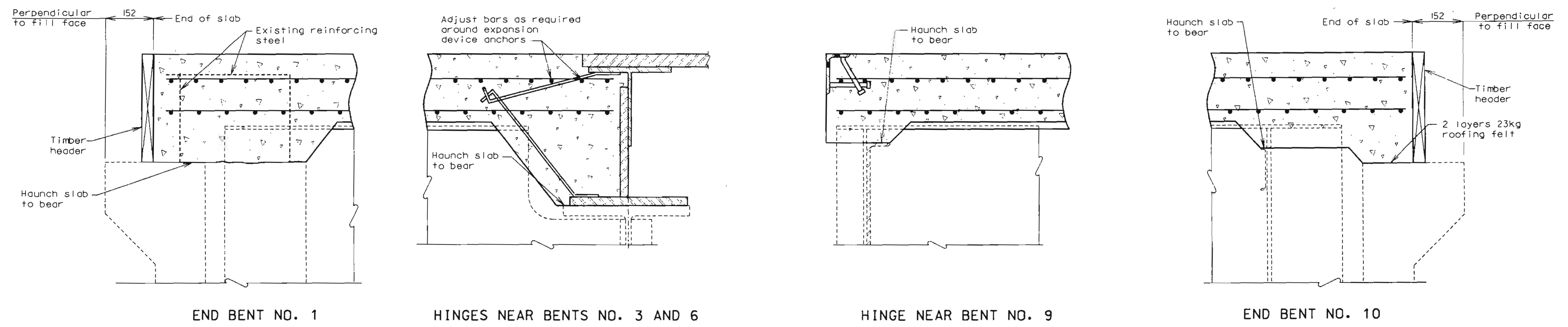
DETAIL C



PART ELEVATION

SECTION A-A

DETAILS OF TIMBER HEADER



END BENT NO. 1

HINGES NEAR BENTS NO. 3 AND 6

HINGE NEAR BENT NO. 9

END BENT NO. 10

PART LONGITUDINAL SECTIONS

Notes:
 Longitudinal slab dimensions are measured horizontally at 16°C.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25mm from 20mm vertical plate at expansion device at hinges near Bents No. 3 and 6, and 25mm from vertical leg of angle at expansion device at hinge near Bent No. 9.
 Cost of timber headers complete-in-place to be included in contract unit price for slab on steel.

PROJECT NO. 98-047 PROJECT NAME: I-435 over Big Blue River S:\98047\STR\A6854\SB\CON\SBLS\BMS.DGN

BUR **BUCHER, WILLIS & RATLIFF**
 CORPORATION
 7020 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2696

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TWM	JAN. 1998
CHECKED BY:	KLW	FEB. 1998

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

JACKSON COUNTY

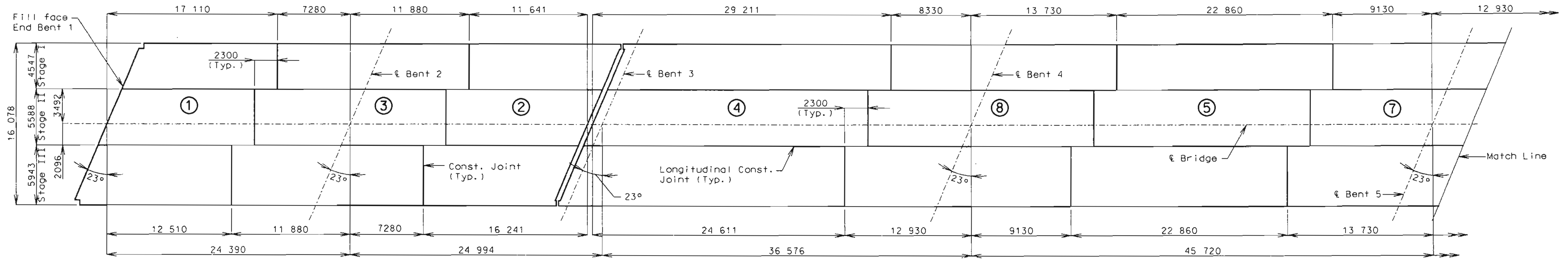
MISCELLANEOUS SLAB DETAILS

SHEET NO. 13 OF 26

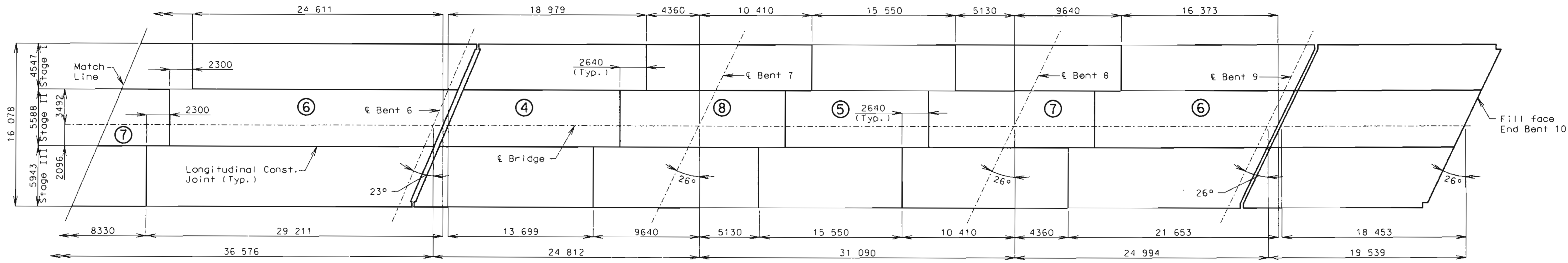
A16854

STATE OF MISSOURI
 DONNA JUNE MADER
 REGISTERED PROFESSIONAL ENGINEER
 NUMBER E-27011
 Donna J. Mader
 4-1-98

STATE	PROJ. NO.	SHEET NO.
MO.		211



Span (1-2) Span (2-3) Span (3-4) Span (4-5)



Span (5-6) Span (6-7) Span (7-8) Span (8-9) Span (9-10)

	Sequence of Pours			Min. Rate of Pour cu m/hr	
	Direction			With Retarder	No Retarder
Basic Sequence	1	2	3	20	20
	Either Direction				
Alternate pours to the Basic Skip Sequence are subject to the approval of the Engineer in accordance with Section 703.3.12.4 of Missouri Standard Specifications (Metric).					
Alternate "A" Pours	1	3 + 2	1 to End	20	23
Alternate "B" Pours	1 + 3 + 2 End to End			20	23

Spans (1-2) and (2-3)

	Sequence of Pours				Min. Rate of Pour cu m/hr	
	Direction				With Retarder	No Retarder
Basic Sequence	4	5	6	7	8	20
	Either Direction					
Alternate pours to the Basic Skip Sequence are subject to the approval of the Engineer in accordance with Section 703.3.12.4 of Missouri Standard Specifications (Metric).						
Alternate "A" Pours	4	8 + 5	7 + 6	5 to End		20
Alternate "B" Pours	4 + 8 + 5 End to 7		7 + 6 5 to End			30
Alternate "C" Pours	4 + 8 + 5 + 7 + 6 End to End					30

Spans (3-4) to (5-6) and Spans (6-7) to (8-9)

Notes:
 The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.
 The contractor shall pour and satisfactorily finish Span (9-10) roadway slab at a rate of not less than 20 cubic meters per hour.

PROJECT NO. 98-047 PROJECT NAME: MO07-IB, No. A16854-SB 1+35 Over Big Blue River S:\98047\STRV\A16854-SB\A16854-SB.POUR.DGN

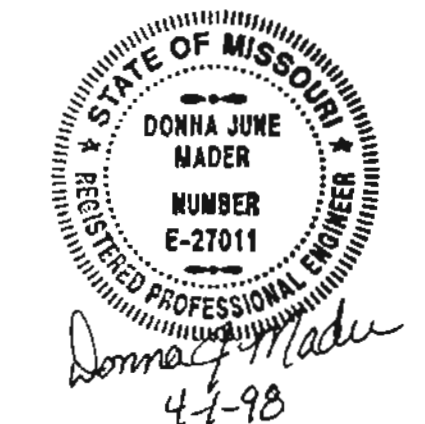
BUCHER, WILLIS & RATLIFF CORPORATION
 2920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-361-2698

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	TWM	FEB. 1998
CHECKED BY:	KLW	FEB. 1998

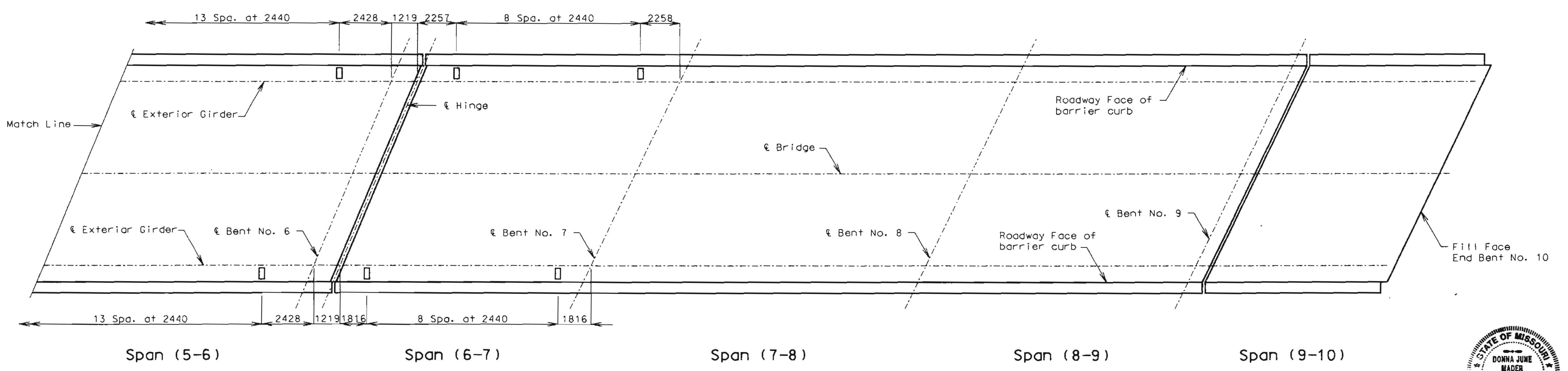
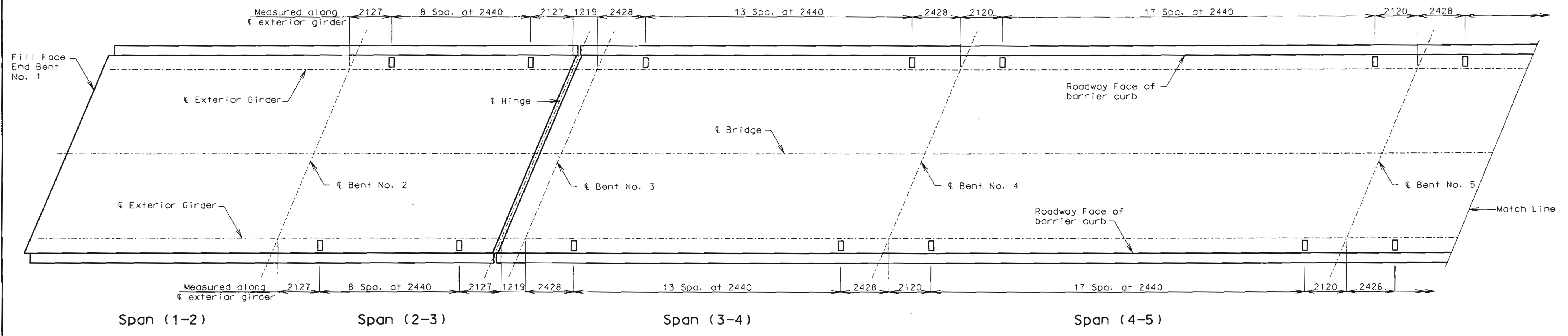
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

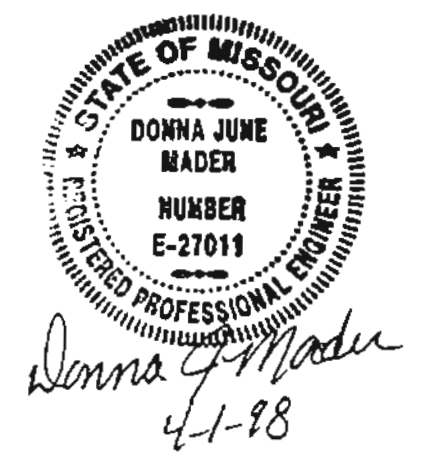
SLAB POURING SEQUENCE



STATE	PROJ. NO.	SHEET NO.
MO.		212



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS



PROJECT NAME: MODOT-Br-No. A6854-SB 1-435 over Big Blue River S:\9804\STR\A6854-SB\CDN\SDRAWN\LDN

BUR BUCHER, WILLIS & RATLIFF CORPORATION
7920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2606

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	TWM	JAN. 1998
CHECKED BY:	TAC	FEB. 1998

JACKSON COUNTY

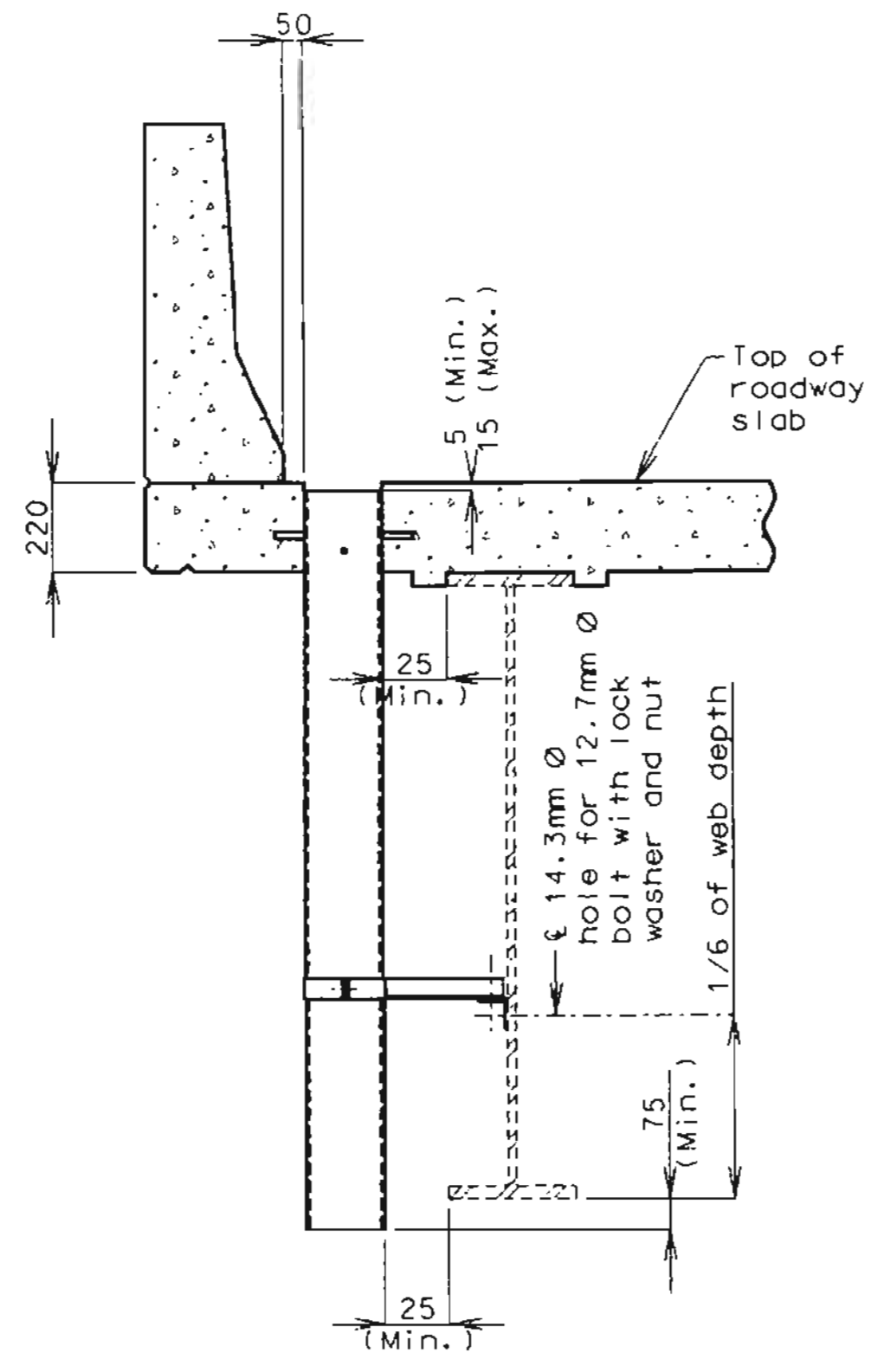
SLAB DRAIN LOCATIONS

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

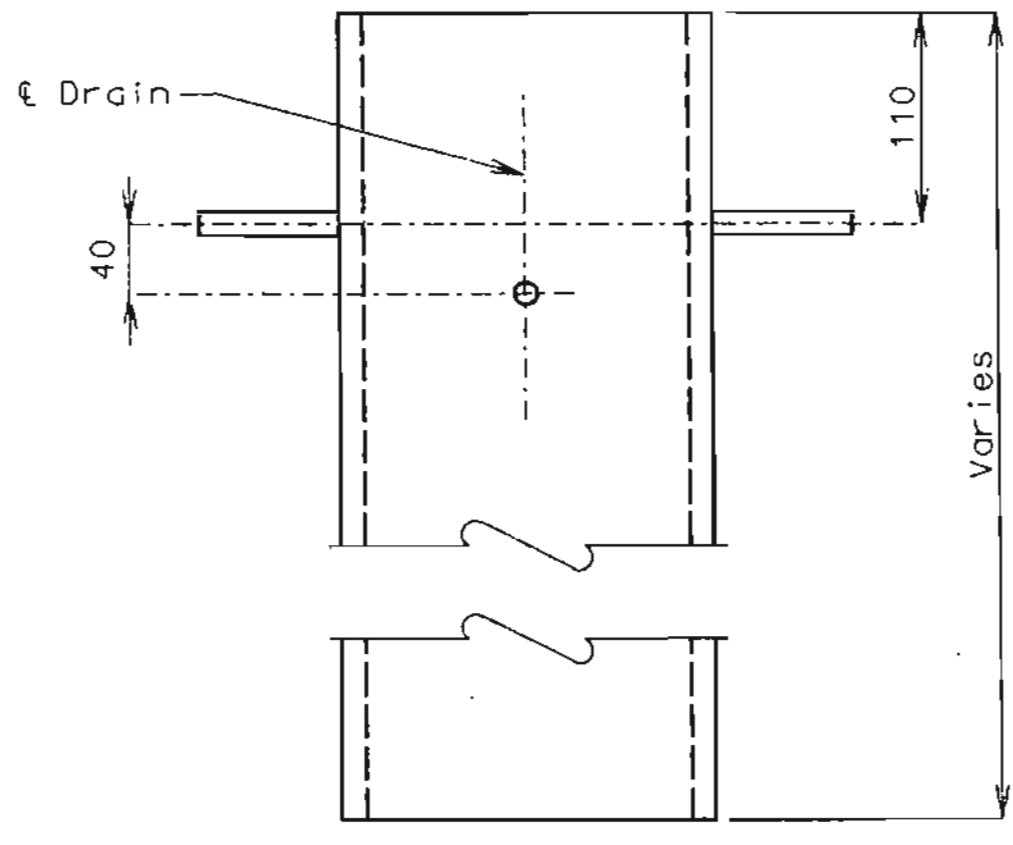
SHEET NO. 15 OF 26

A16854

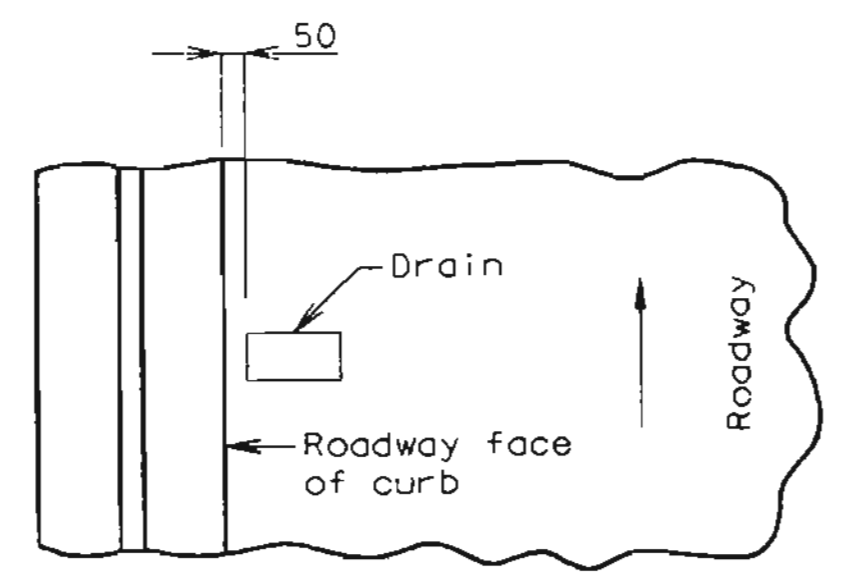
STATE	PROJ. NO.	SHEET NO.
MO.		213



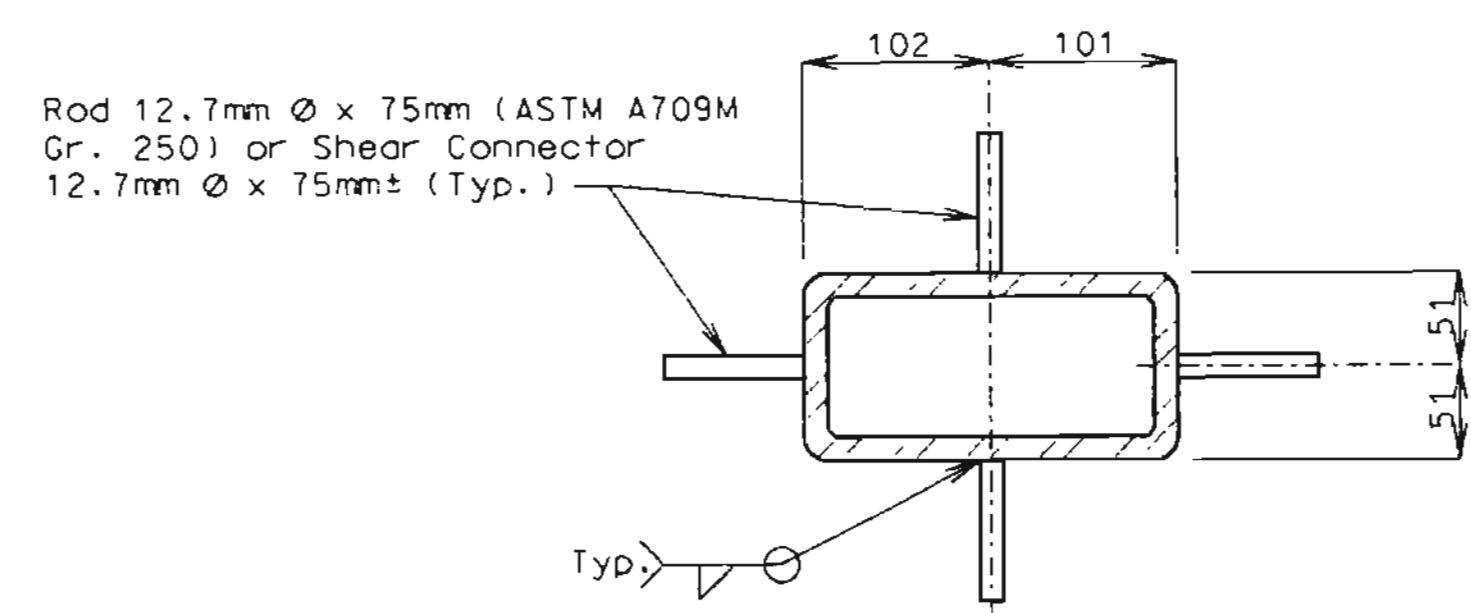
PART SECTION NEAR DRAIN



ELEVATION OF DRAIN



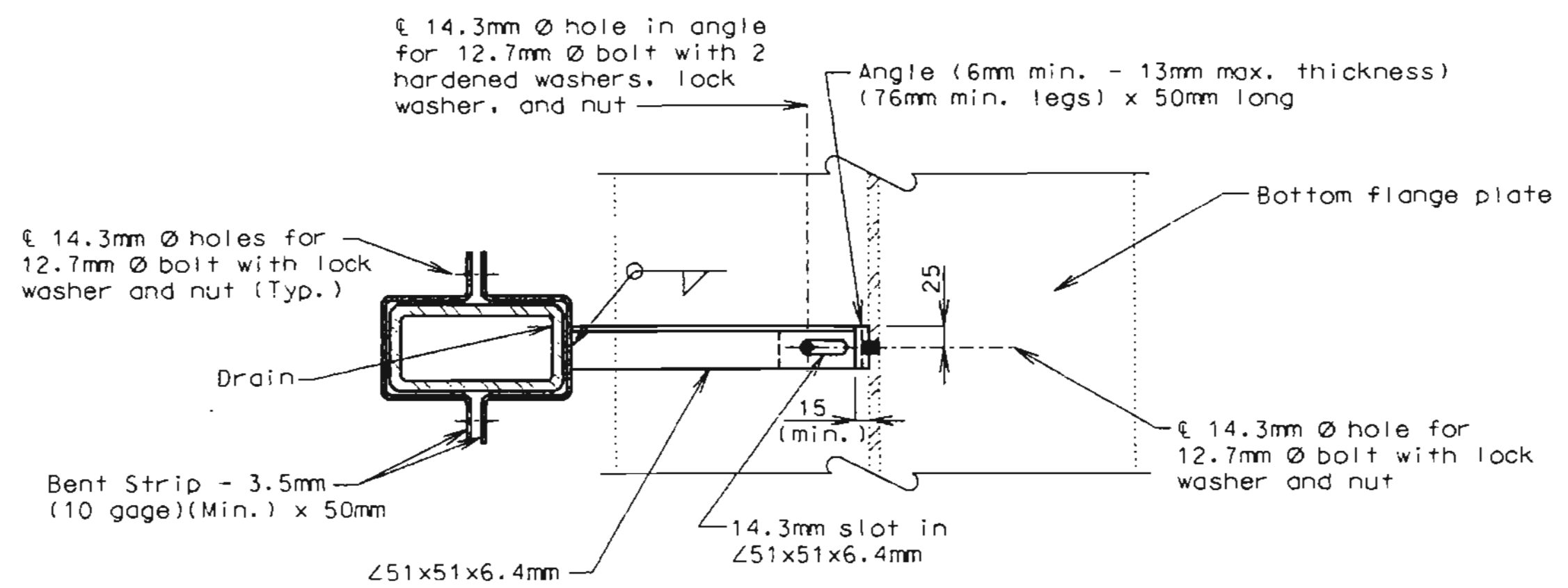
PART PLAN OF SLAB AT DRAIN



PLAN OF DRAIN

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.
- Shift reinforcing steel in field where necessary to clear drains.
- 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.
- See Sheet No. 15 for location of slab drains.



PART PLAN SHOWING BRACKET ASSEMBLY

PROJECT No. 98-047 PROJECT NAME: MODOT - Br. No. A6854-SB I-435 over Big Blue River S:\98047\STR\A16854-SB.DGN\SBDRAN2.DGN

BWR BUCHER, WILLIS & RATLIFF CORPORATION
 1200 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2096

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	MAH	JAN. 1998
CHECKED BY:	TAC	FEB. 1998

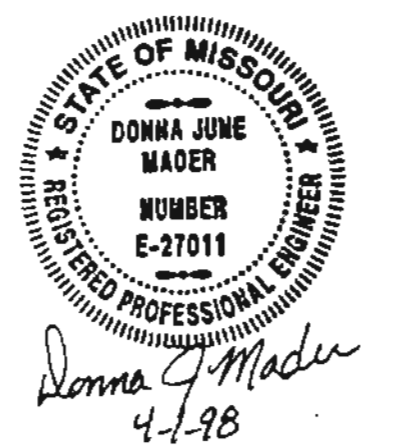
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

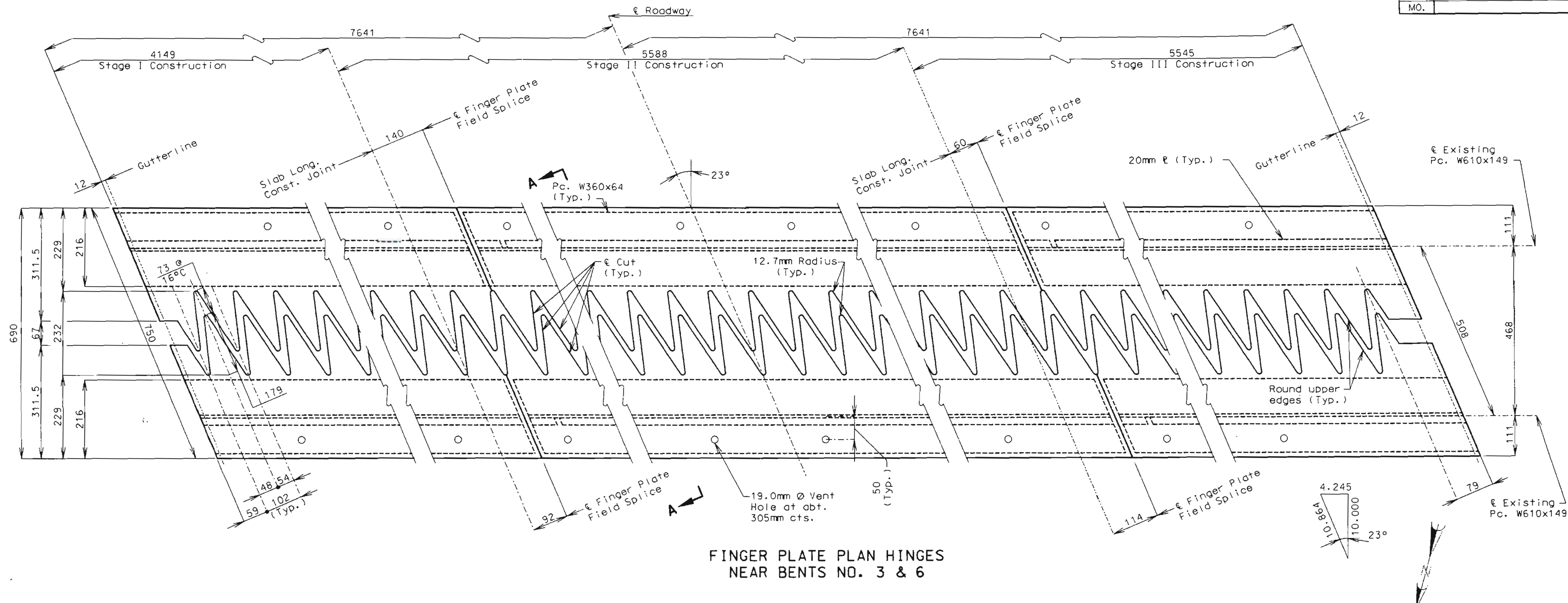
DETAILS OF SLAB DRAINS

SHEET NO. 16 OF 26

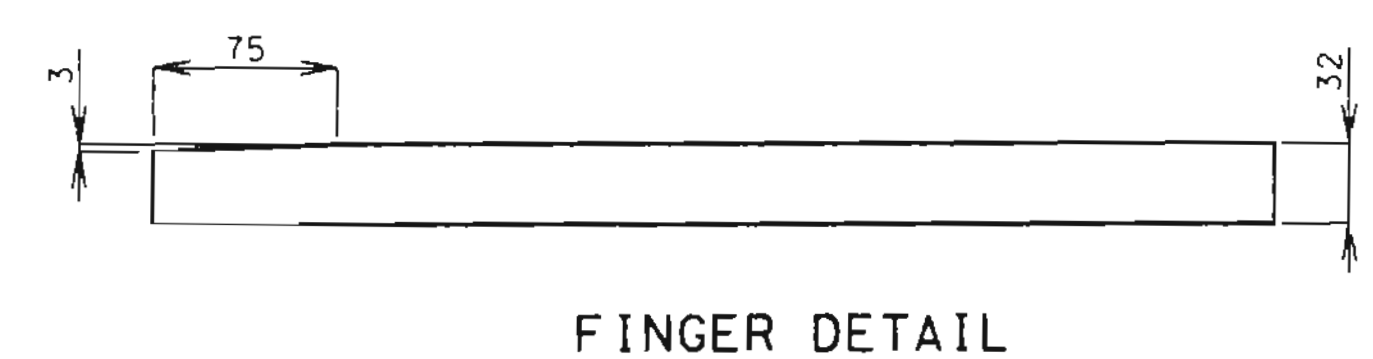
A16854



STATE	MO.	PROJECT NO.	214
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FINGER PLATE PLAN HINGES NEAR BENTS NO. 3 & 6



FINGER DETAIL

Hinge No.	Joint Movement Per 5°C Temperature Change
3	6 mm
6	5 mm

Notes:

- Plan dimensions are based on installation at 16° Celsius. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change. See table on this sheet.
- Material for the expansion device shall be ASTM A709M Grade 250 structural steel.
- Structural steel for the expansion device and curb plates 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 installing structural steel for the expansion device will be made at the contract unit price for Expansion Device (Finger Plate) per meter.
- Concrete shall be forced under and around finger plate supporting hardware, angles and bars. Proper consolidation shall be achieved by localized internal vibration.
- Finger plate shall be cut with a machine guided gas torch from one plate. The plate from which fingers are cut may be spliced before fingers are cut. The surface of cut shall be perpendicular to the surface of plate. The cut shall not exceed 3mm in width. The centerline of cut shall not deviate more than 2mm from the position of centerline of cut shown.
- 32mm finger plate and W360x64 shall be bent to conform to crown of roadway.
- See Sheet No. 18 for Section A-A.

PROJECT NO. 98-047 PROJECT NAME: I-405 OVER BIG BLUE RIVER S:\98047\STRV\A16854\SB\DON\SBE\VP\6.DWG

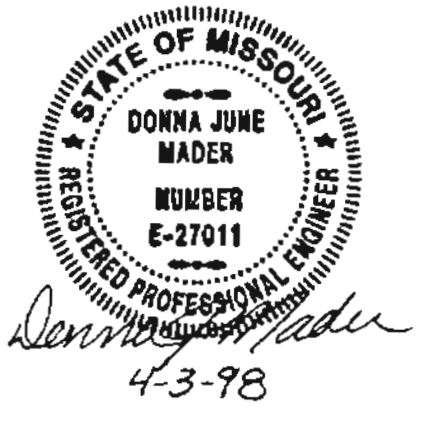
BUCHER, WILLIS & RATLIFF CORPORATION
1920 WARD PARKWAY, SUITE 201, MISSOURI BATH, MO. 65053-2884

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	DJM	JAN. 1998

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

JACKSON COUNTY

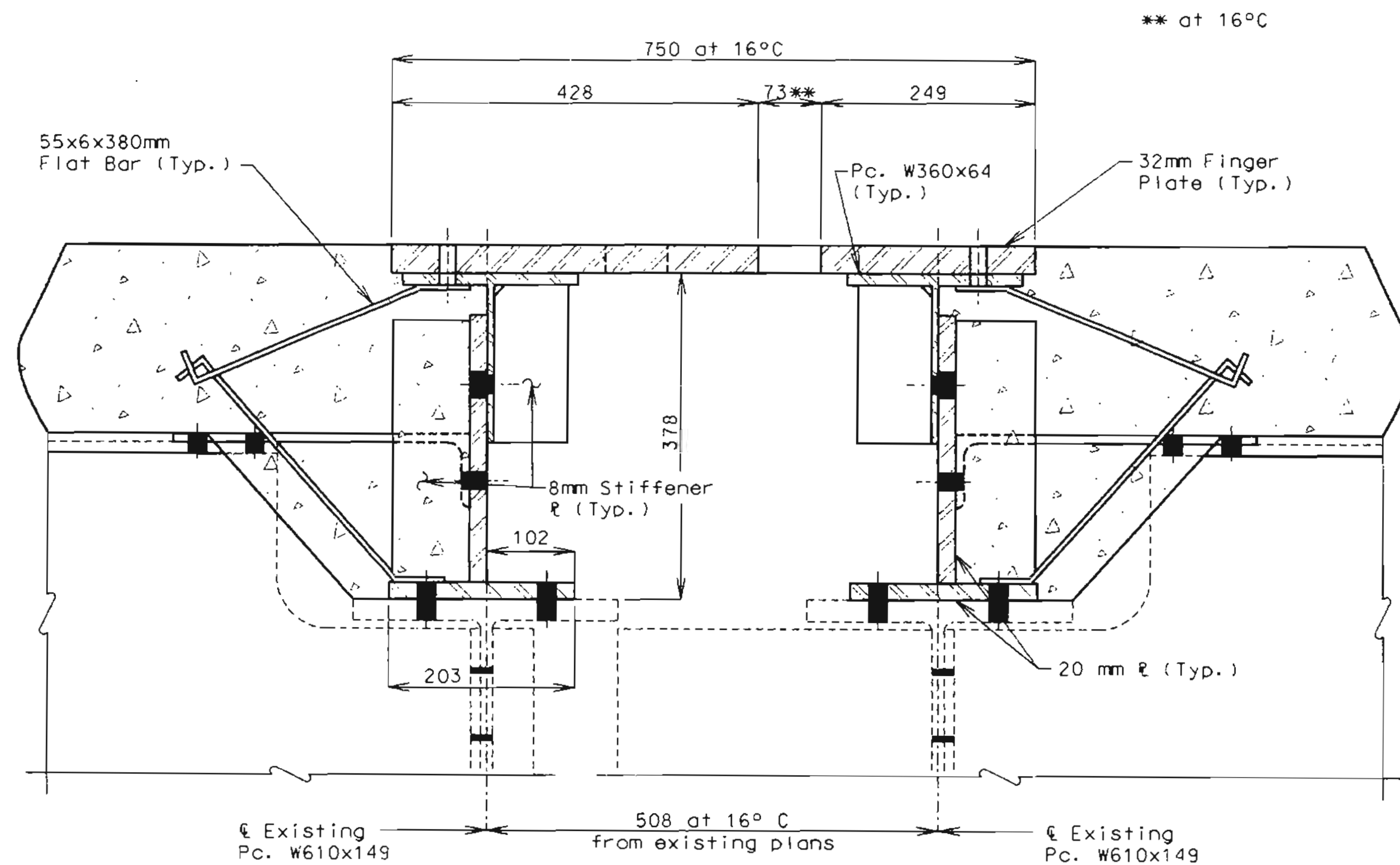
FINGER PLATE DETAILS
HINGES NEAR BENTS
NO. 3 & 6



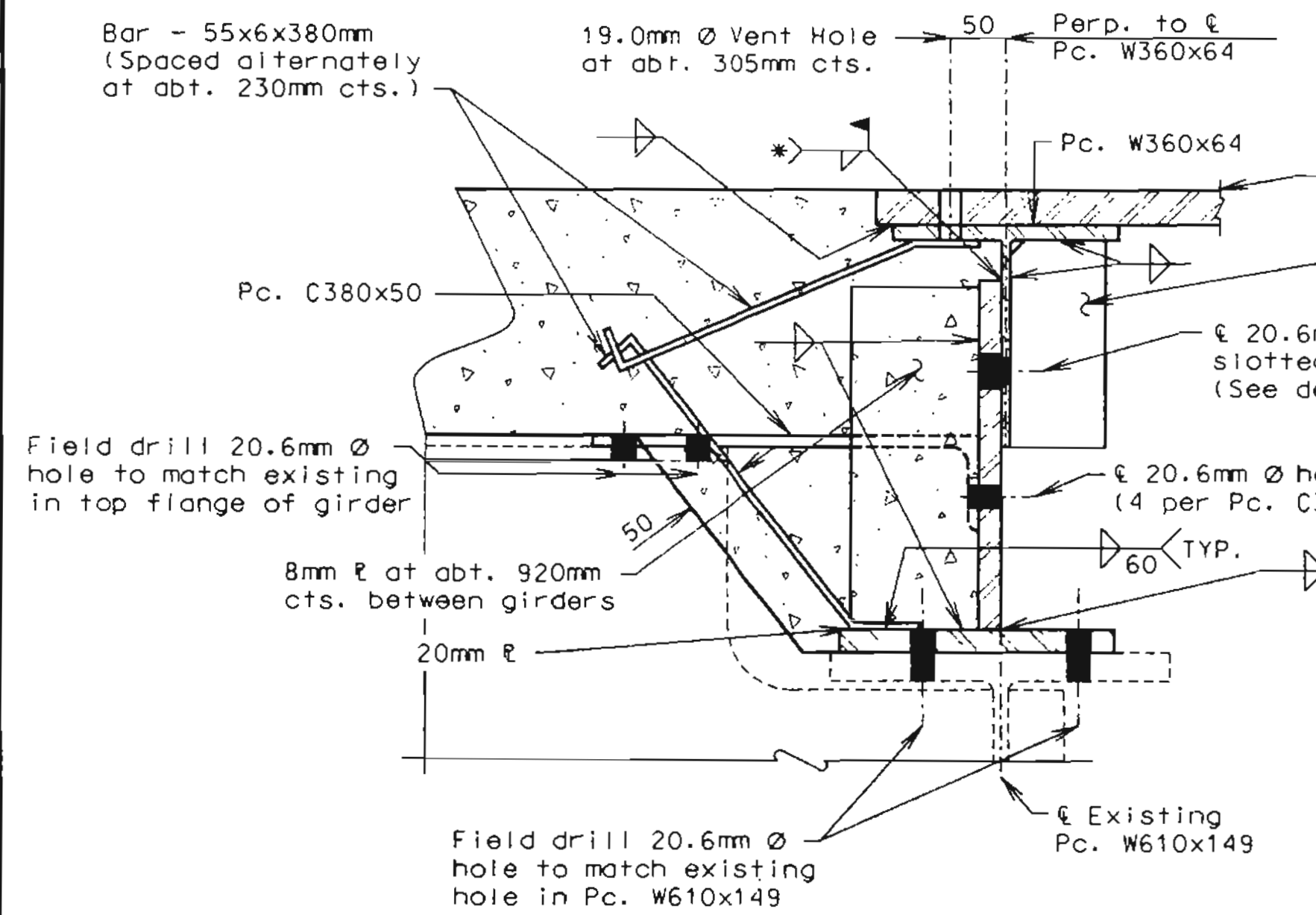
SHEET NO. 17 OF 26

A16854

STATE	PROJ. NO.	SHEET NO.
MO.		215



SECTION A-A



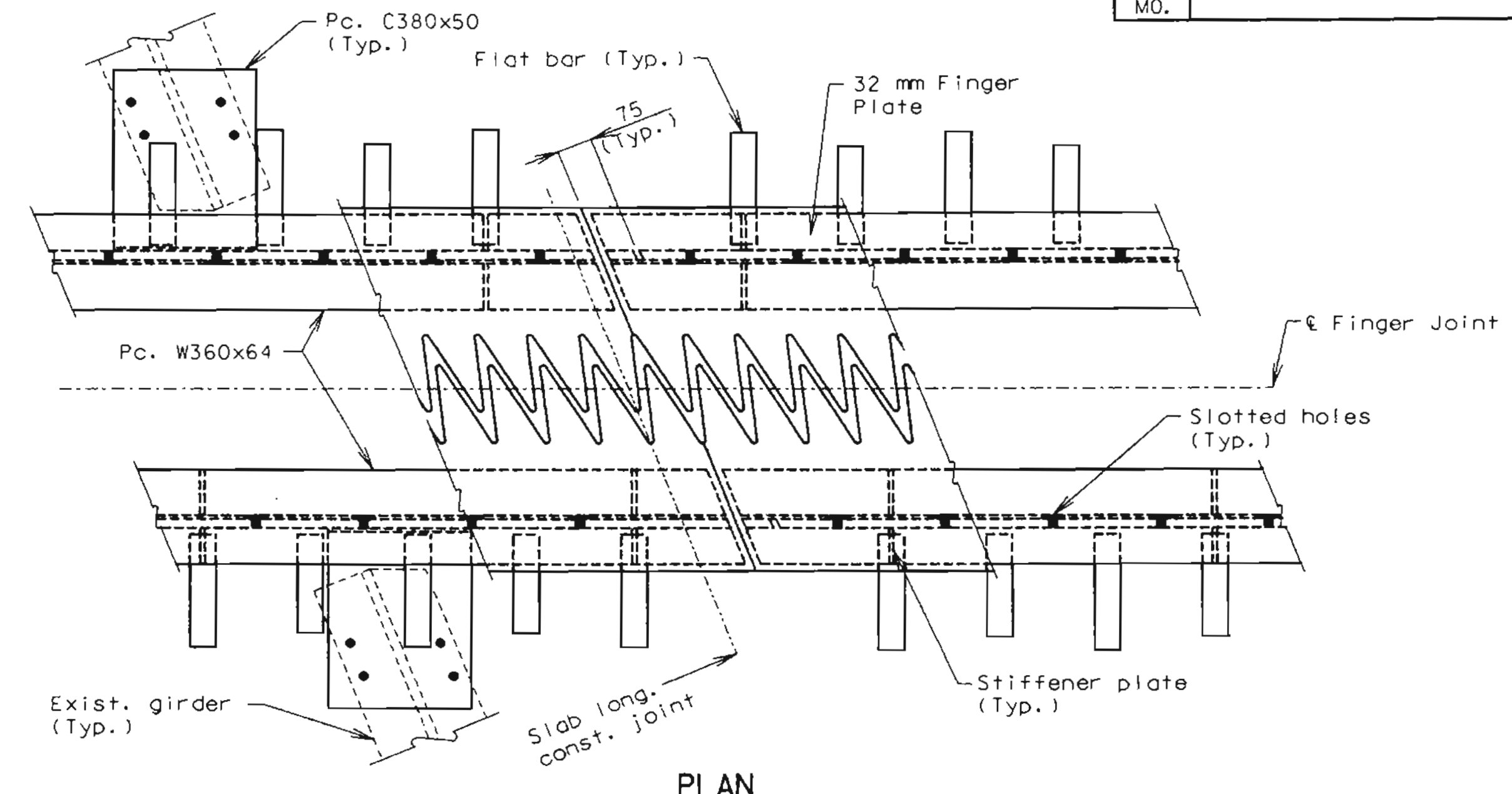
CONNECTION DETAILS

*Weld in all accessible areas after final vertical adjustments have been made and approved by the engineer.

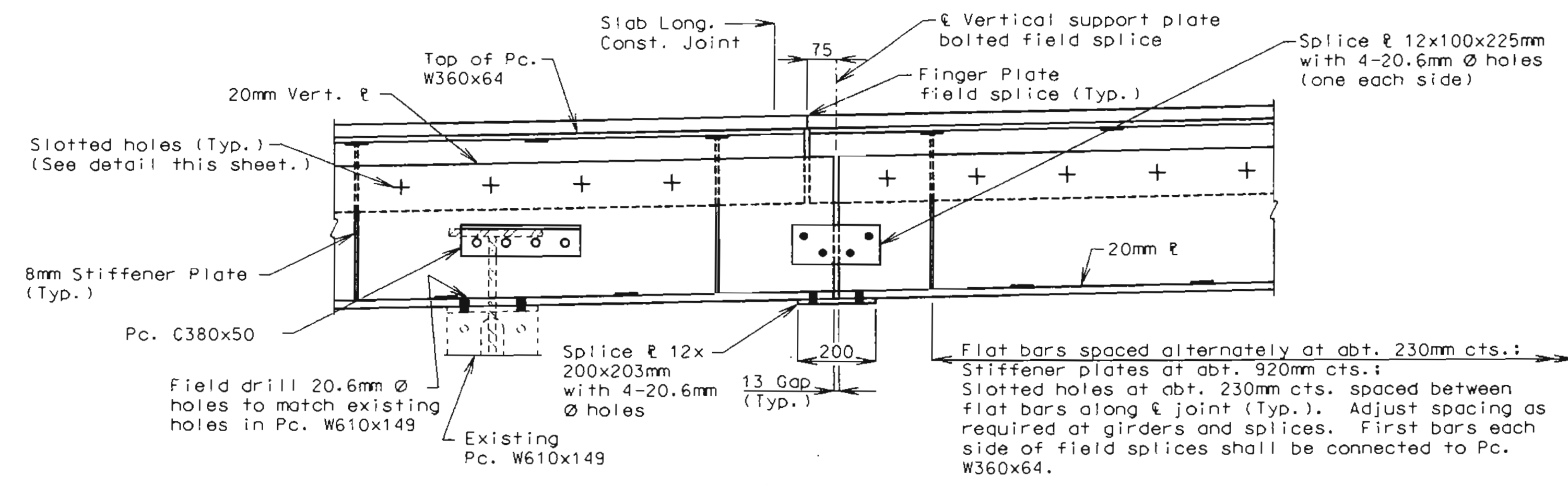
PROJECT NO. 98-047 PROJECT NAME: LOGDOT BR. NO. A6564-SB I-435 over Big Blue River S:\98047\STRV\A6564-SB\DOCS\SEMSEXP.DWG

BUCHER, WILLIS & RATLIFF CORPORATION
1920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 MO-641-2616

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	DJM	JAN. 1998



PLAN

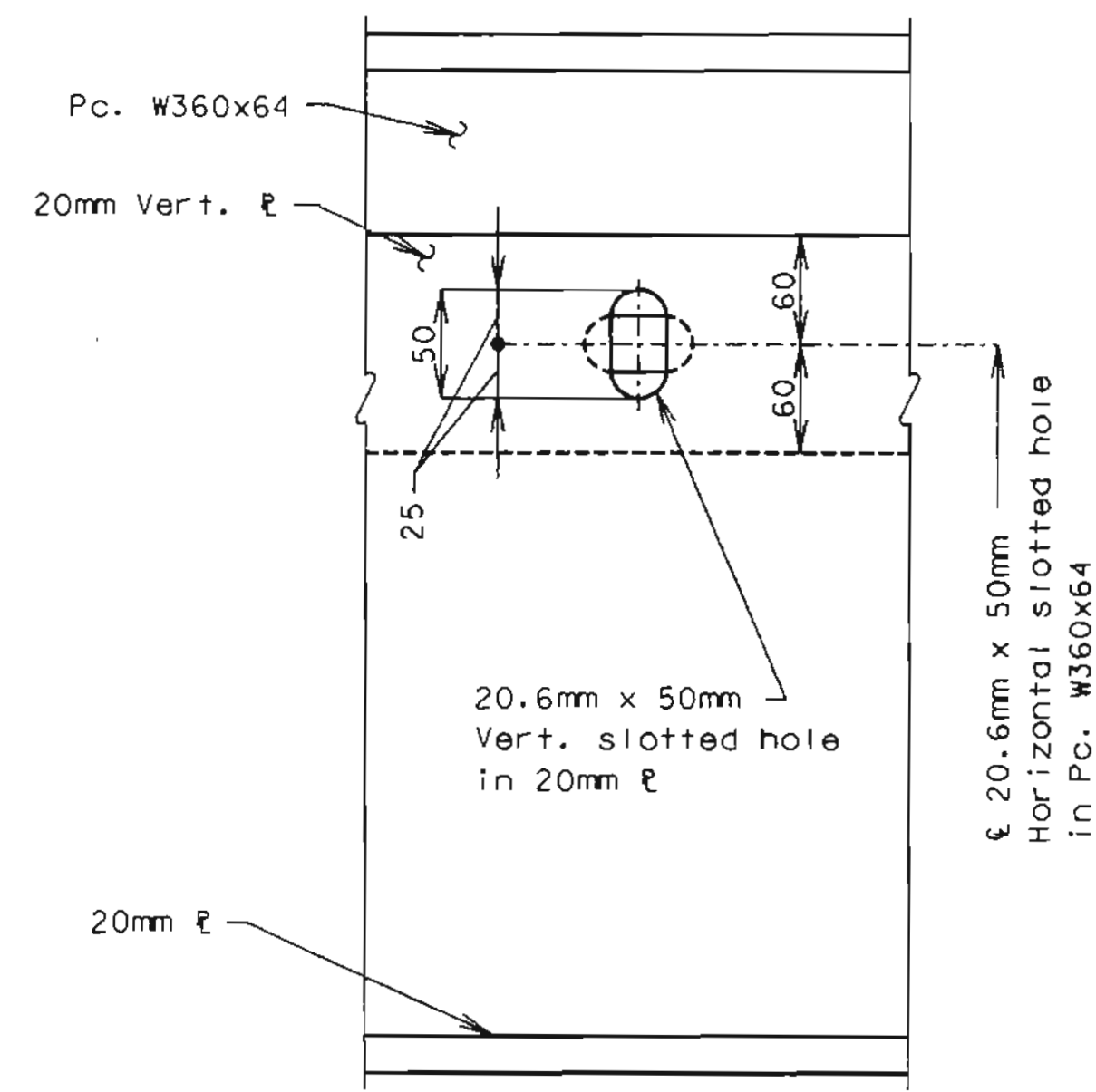


ELEVATION

FINGER PLATE SUPPORT ASSEMBLY

Notes:

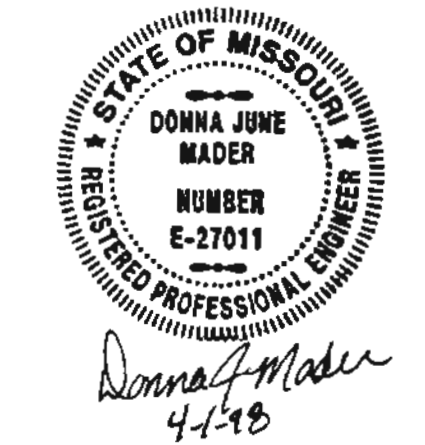
- Use 19.0mm Ø high strength bolts.
- See Sheet No. 17 for finger plate details and expansion device notes.



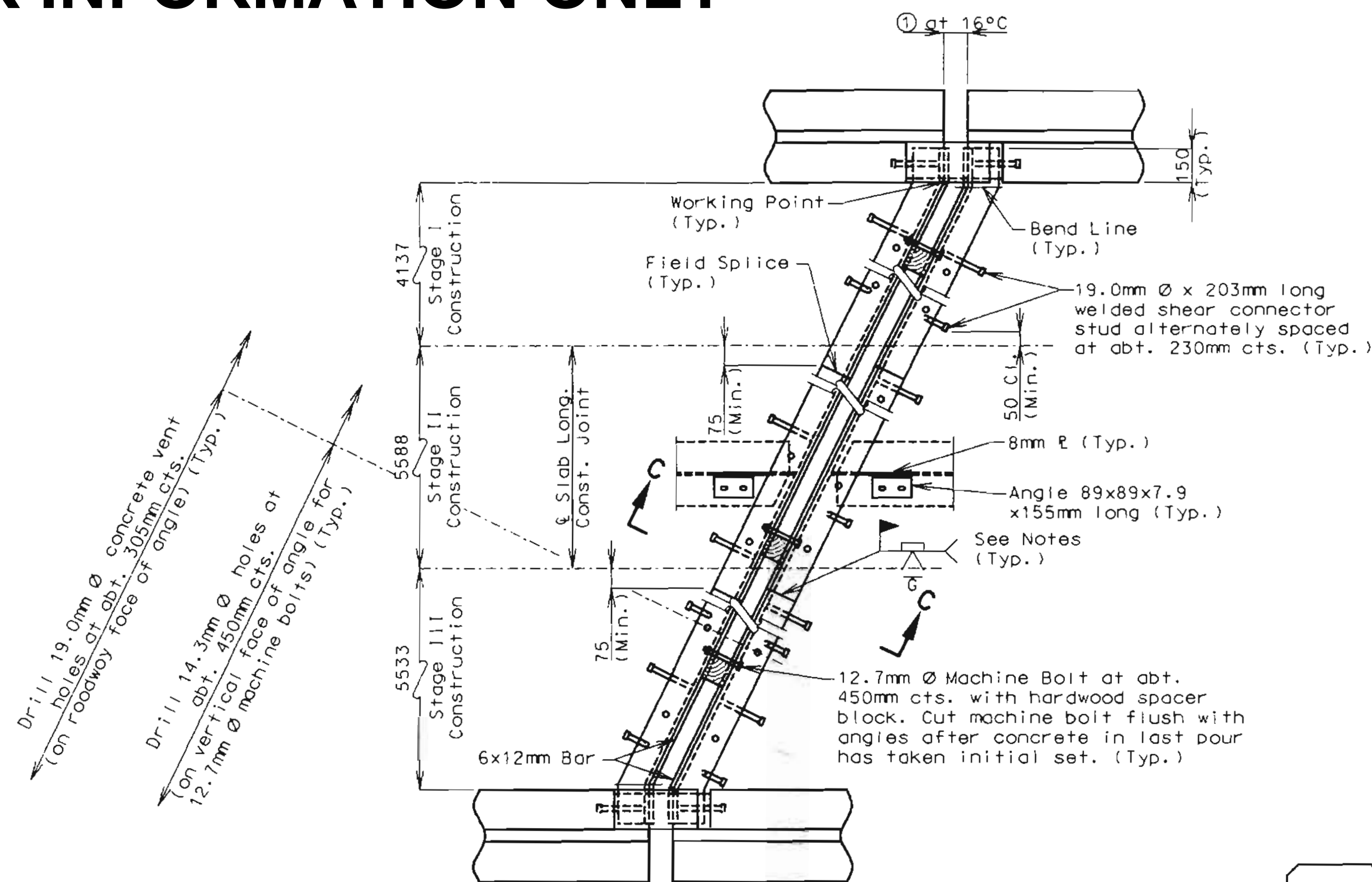
SLOTTED HOLE DETAIL

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

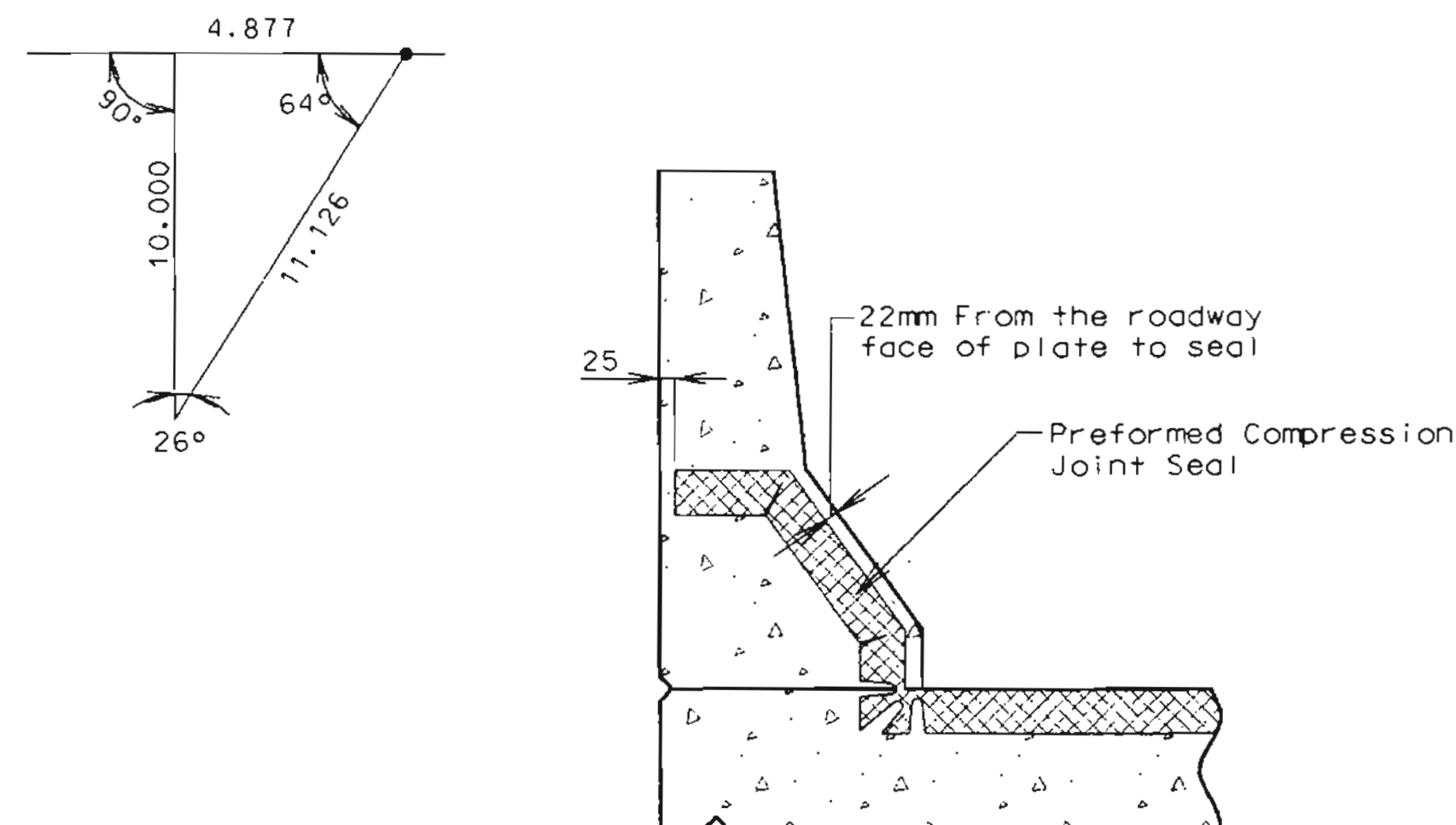
JACKSON COUNTY
MISCELLANEOUS EXPANSION
DEVICE DETAILS-HINGES
NEAR BENTS NO. 3 & 6



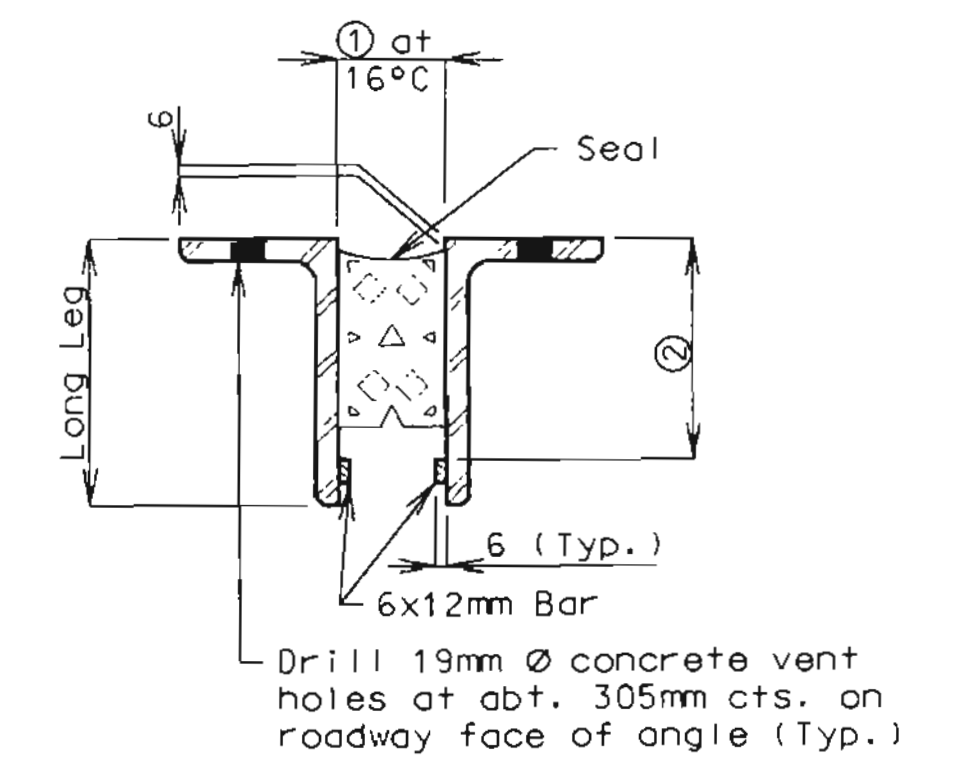
STATE	PROJ. NO.	SHEET NO.
MO.		216



PLAN AT HINGE NEAR BENT NO. 9



PART SECTION THRU SAFETY BARRIER CURB SHOWING SEAL



PART CROSS SECTION THRU EXPANSION JOINT

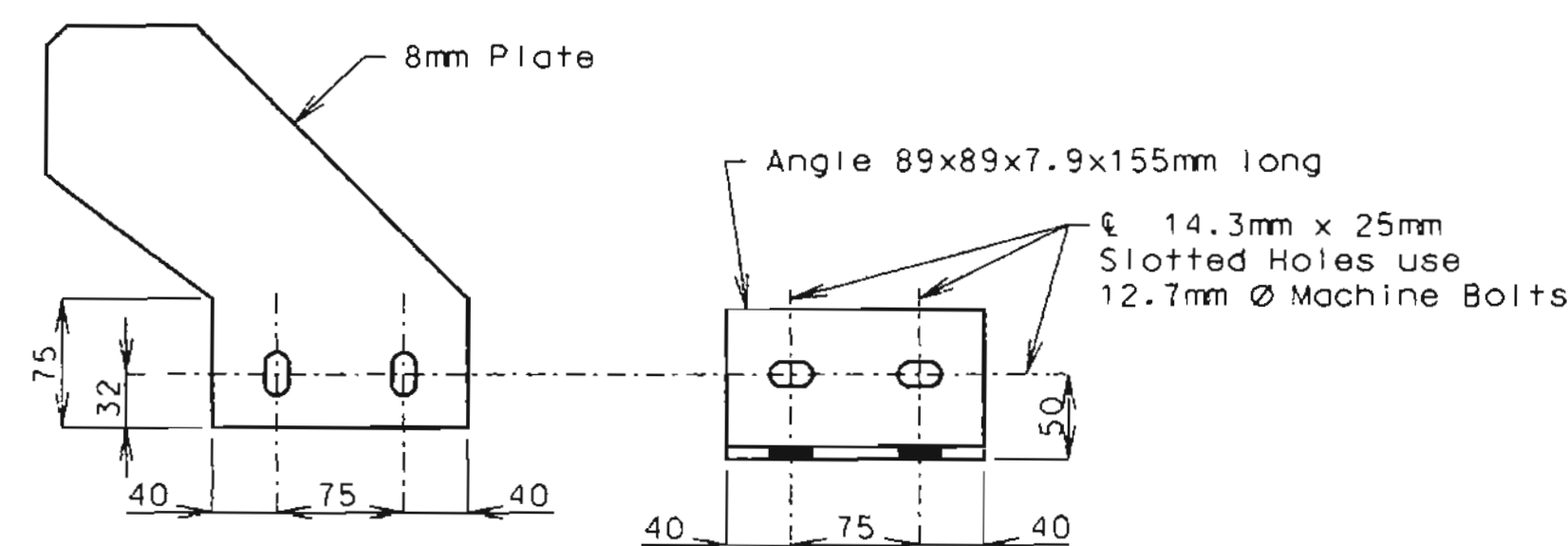
Table of Transverse Bridge Seal Dimensions

Location	Seal Width	①	②	Required Movement Range (M.L)
Hinge No. 9	102mm	67mm *	Manufacturer's recommended height	41mm

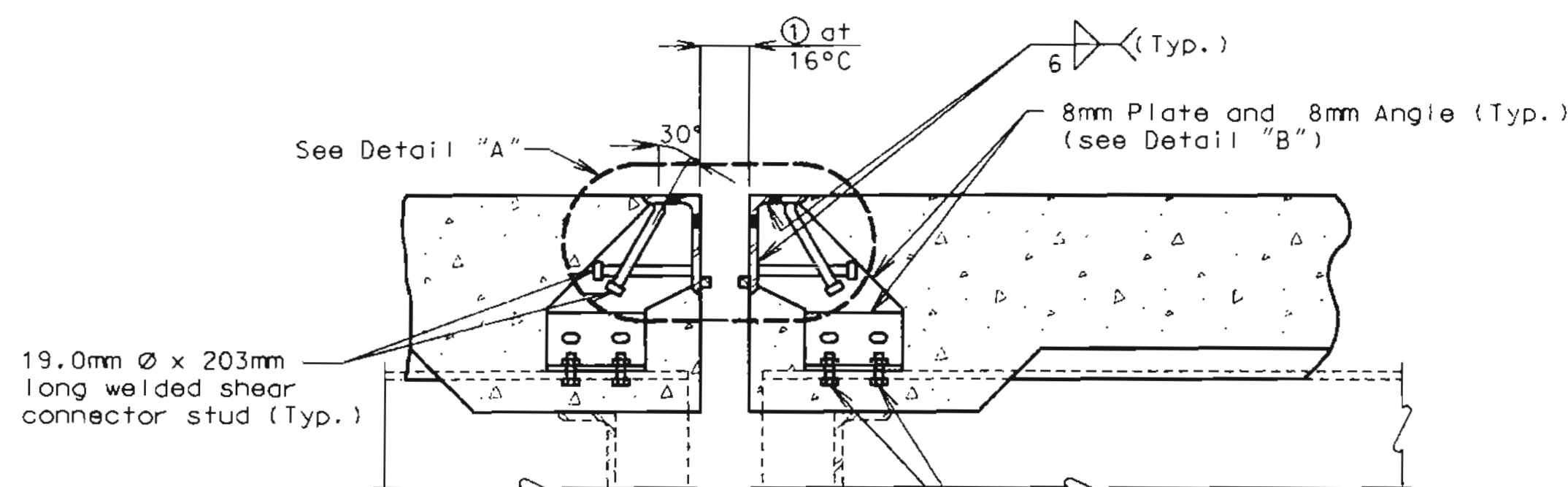
* Gap is in slab and barrier curb.

Size of Armor Angle: Horizontal leg of angle shall be a minimum of 75mm. Minimum thickness of angle shall be 12.7mm. Vertical leg of angle shall be a minimum of ② + 20mm.

If a seal size larger than that indicated on the plans is used, the movement range, the opening at 16 degree Celsius and all dimensions for the armor angles shall be shown on the shop drawings.

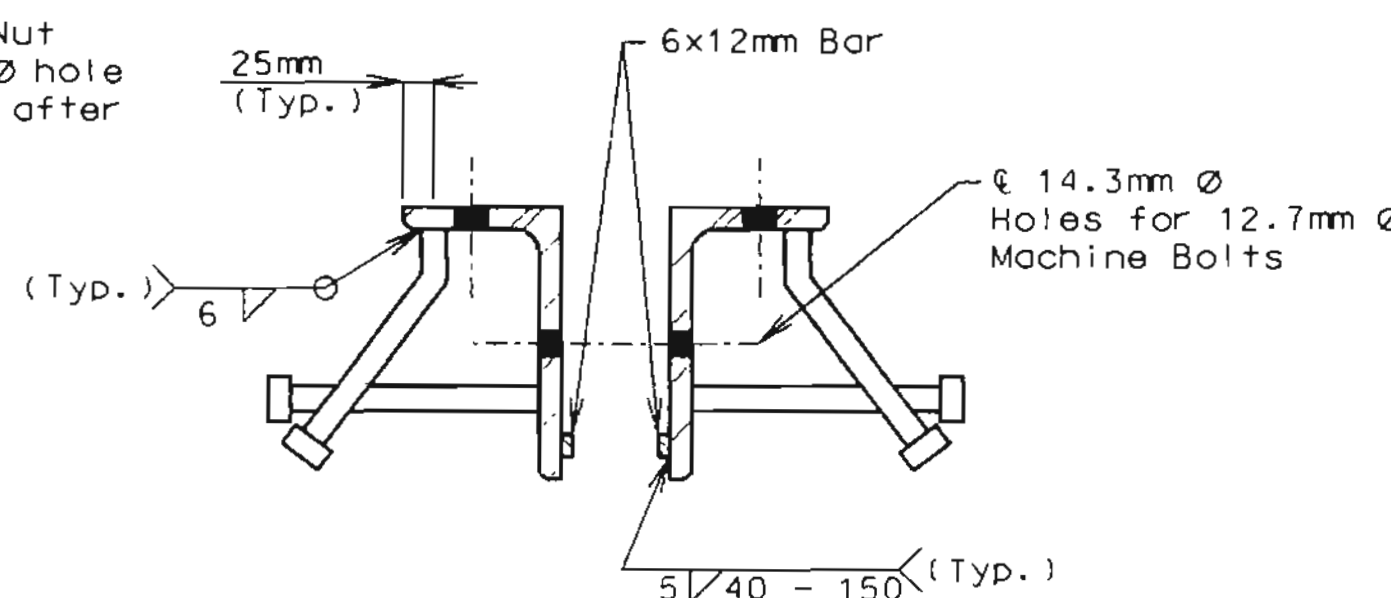


DETAIL "B"



SECTION C-C

Note: Concrete shall be forced under armor angle and around studs. Proper consolidation of the concrete shall be achieved by localized internal vibration.



DETAIL "A"

Notes:

Structural steel for expansion device shall be fabricated in three sections. Device shall extend 75mm beyond edge of slab longitudinal construction joint and spliced with a complete joint penetration groove weld.

The expansion device shall be bent to conform to crown and grade of roadway.

Structural steel for the armored joint shall be ASTM A709M Grade 250.

Plan dimensions are based on installation at 16 degree Celsius.

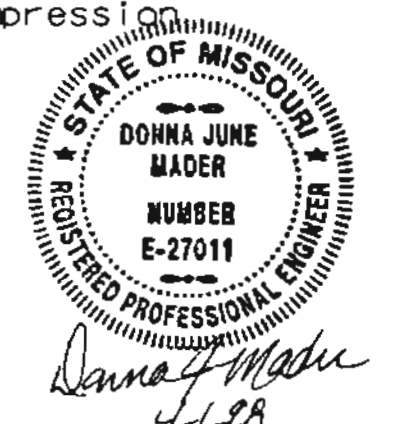
Dimension ① shall be increased 2mm for each 5 degree Celsius fall in temperature and decreased 2mm for each 5 degree Celsius rise in temperature at installation.

See Special Provisions for the requirements of compression joint seal.

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.

Furnishing, coating or galvanizing and installing the structural steel armored joint and curb plates shall be included in the contract unit price for Preformed Compression Expansion Joint Seal.

Neoprene extrusions shall meet ASTM D3542.



JACKSON COUNTY

DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT HINGE NEAR BENT NO. 9

SHEET NO. 19 OF 26

A16854

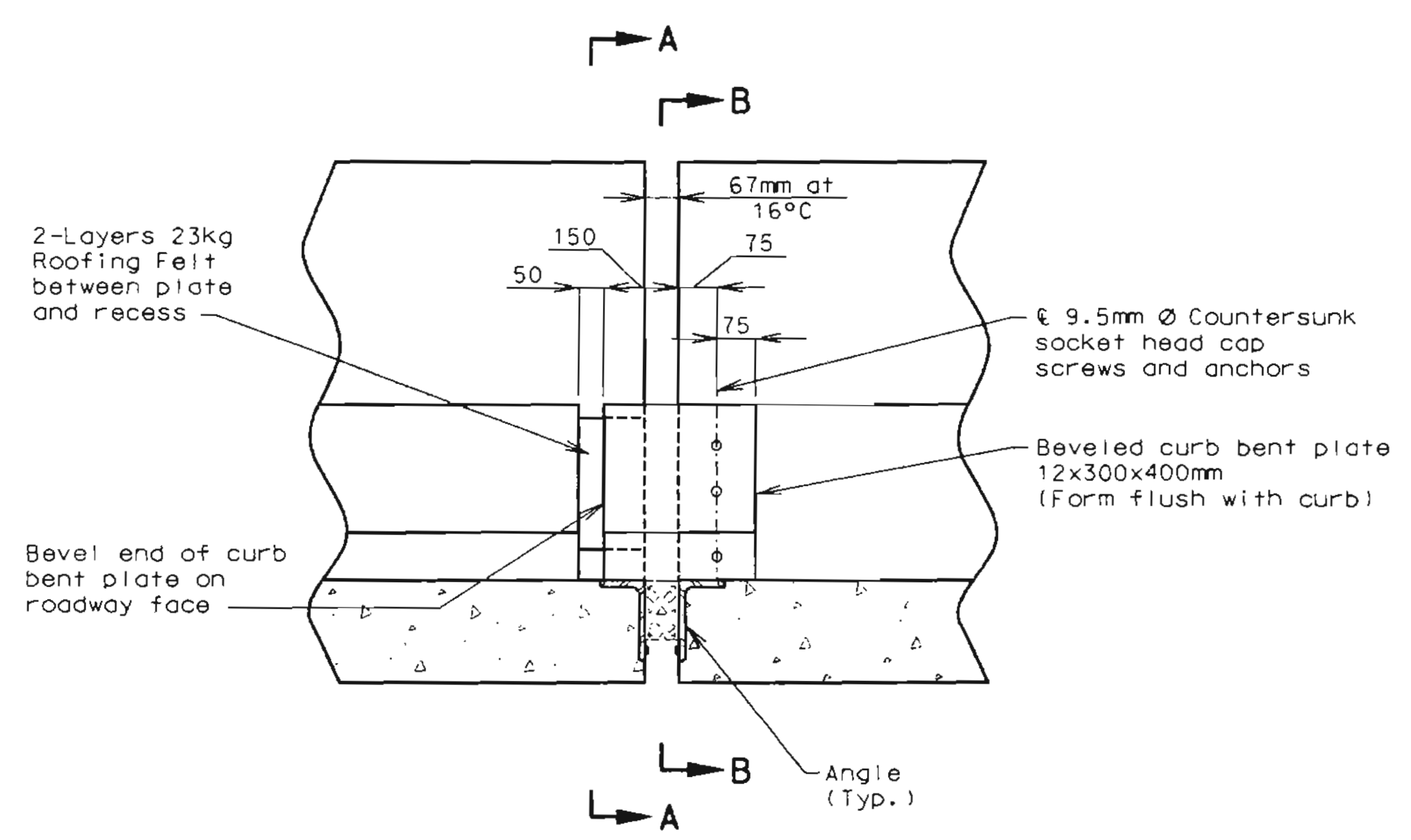
Note: This drawing is not to scale. Follow dimensions.

PROJECT No. 98-04T PROJECT NAME: MoDOT Br. No. A6854-SB 1-435 Over Big Blue River S-1680-1715 (A16854-SB) DGN: SBE:XP9 DGN

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	MAH	JAN. 1998
CHECKED BY:	DJM	JAN. 1998

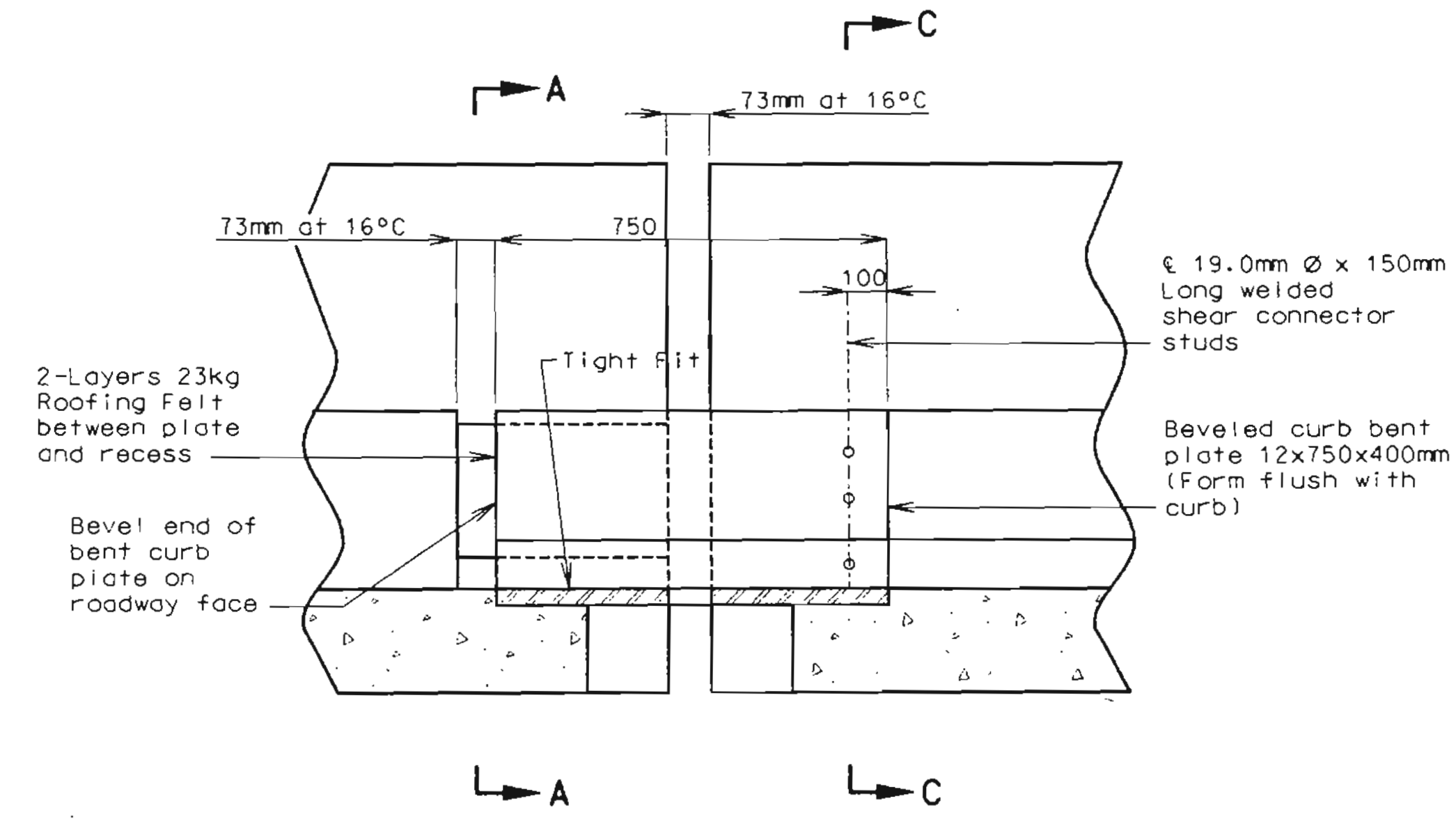
BUCHER, WILLIS & RATLIFF CORPORATION
1990 WARD PARKWAY, KANSAS CITY, MISSOURI 64114-3092

STATE	PROJ. NO.	SHEET NO.
MO.		217



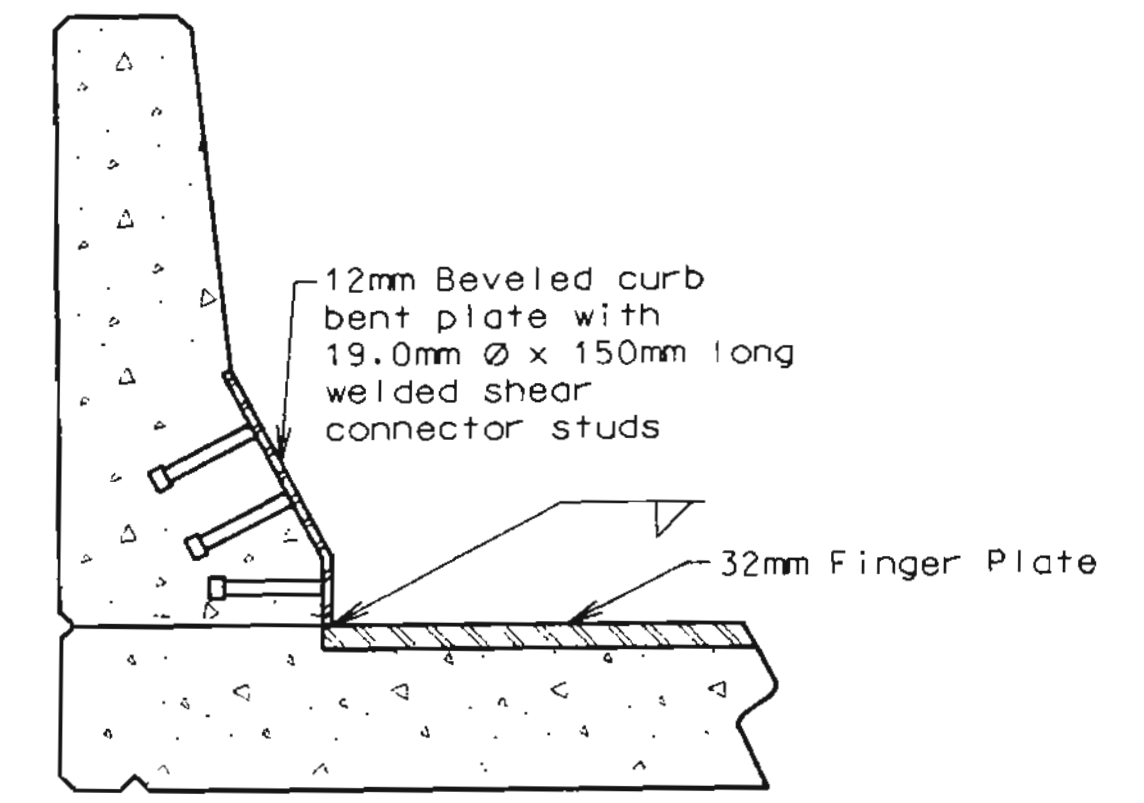
PART ELEVATION OF BARRIER CURB AT HINGE NEAR BENT NO. 9

Right barrier shown, left barrier similar

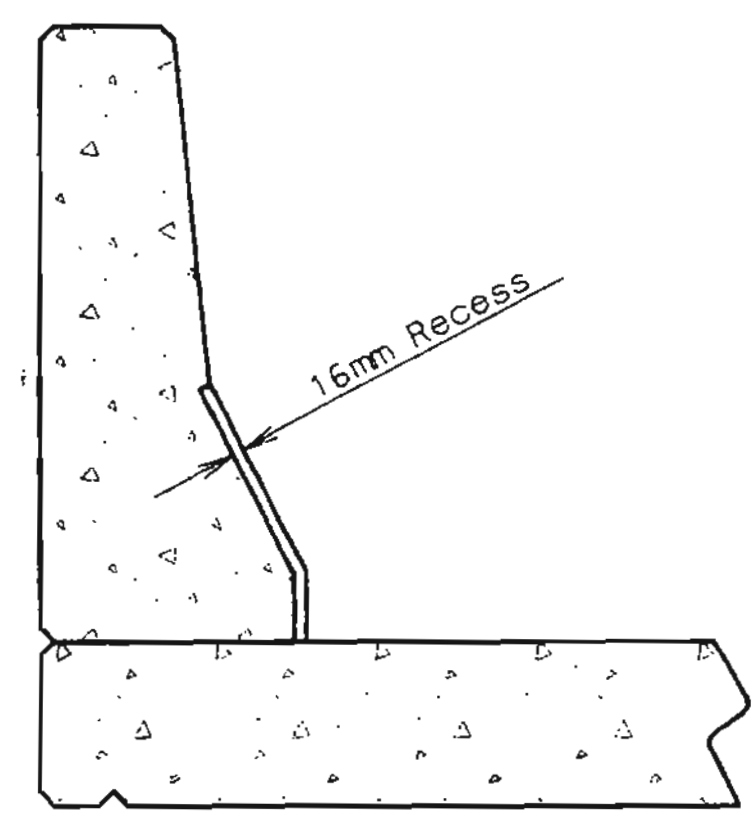


PART ELEVATION OF BARRIER CURB AT HINGES NEAR BENTS NO. 3 & 6

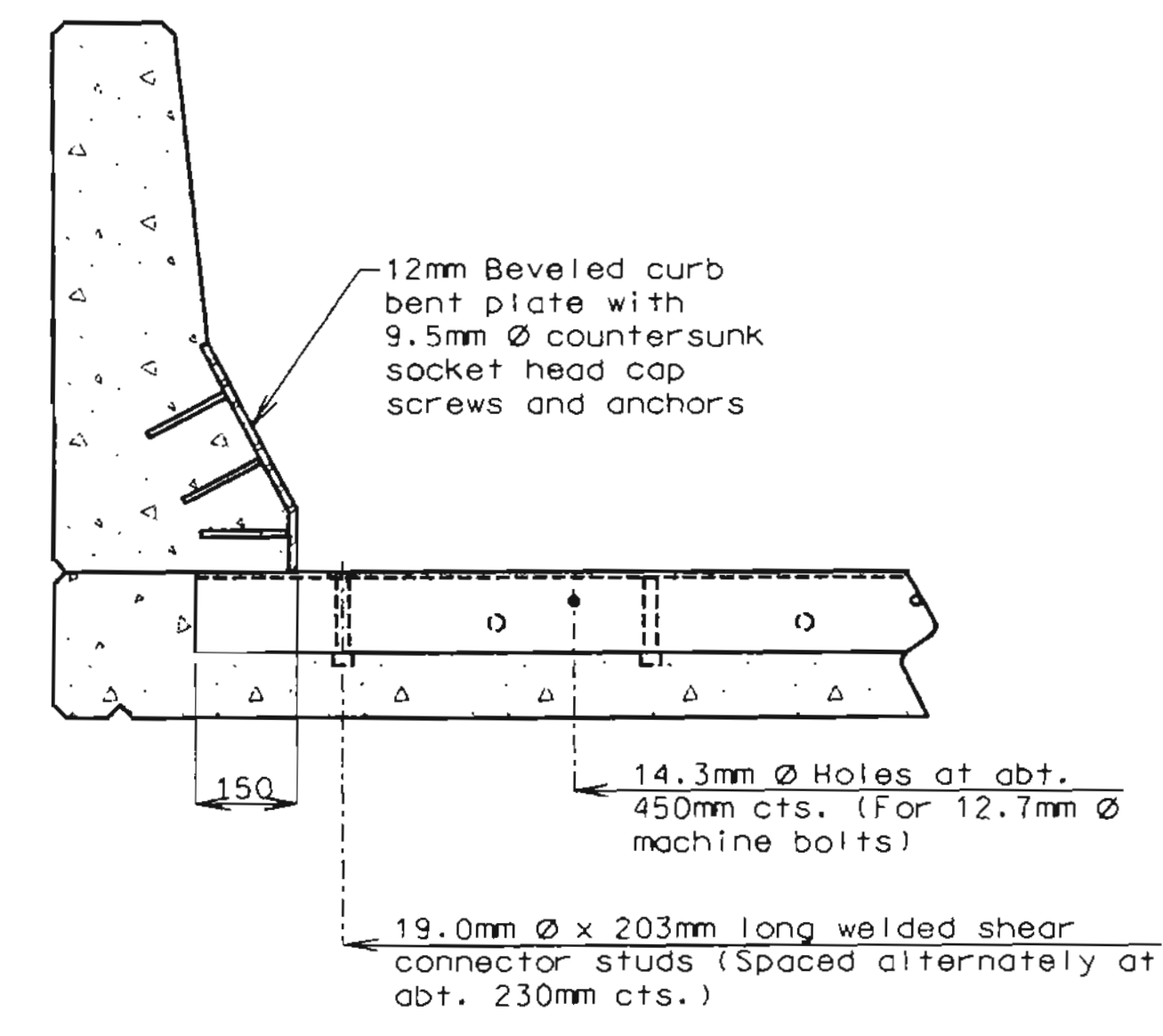
Right barrier shown, left barrier similar



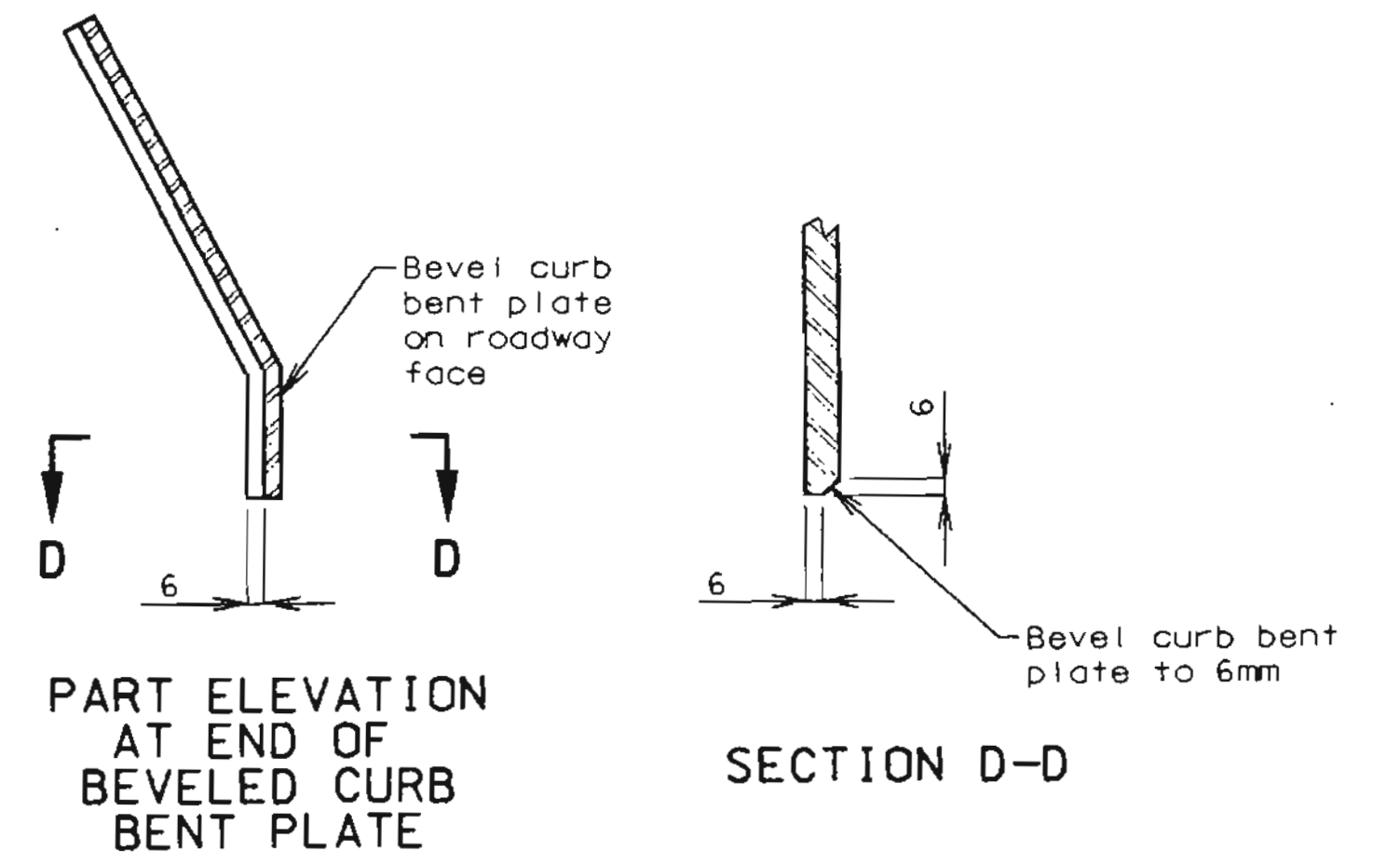
PART SECTION C-C



PART SECTION A-A



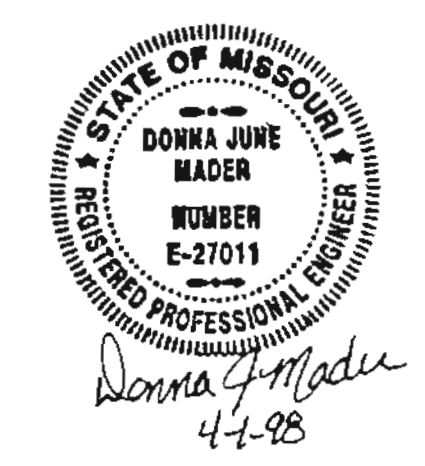
PART SECTION B-B



PART ELEVATION AT END OF BEVELED CURB BENT PLATE

SECTION D-D

Note: See Sheets No. 17, 18 and 19 for additional expansion device details and notes.



PROJECT NO. 98-047 PROJECT NAME: MO007-BF, No. A6854-SB 1-45 over Big Blue River S:\98047\STR\A6854-SB\DGN\SBE\SPR\AR.DGN

BUCHER, WILLIS & RATLIFF CORPORATION	
7820 WARD PARKWAY, KANSAS CITY, MISSOURI 64114, 816-363-2696	
DRAWN BY:	MLJ JAN. 1998
TRACED BY:	TWM FEB. 1998
CHECKED BY:	KLW FEB. 1998

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

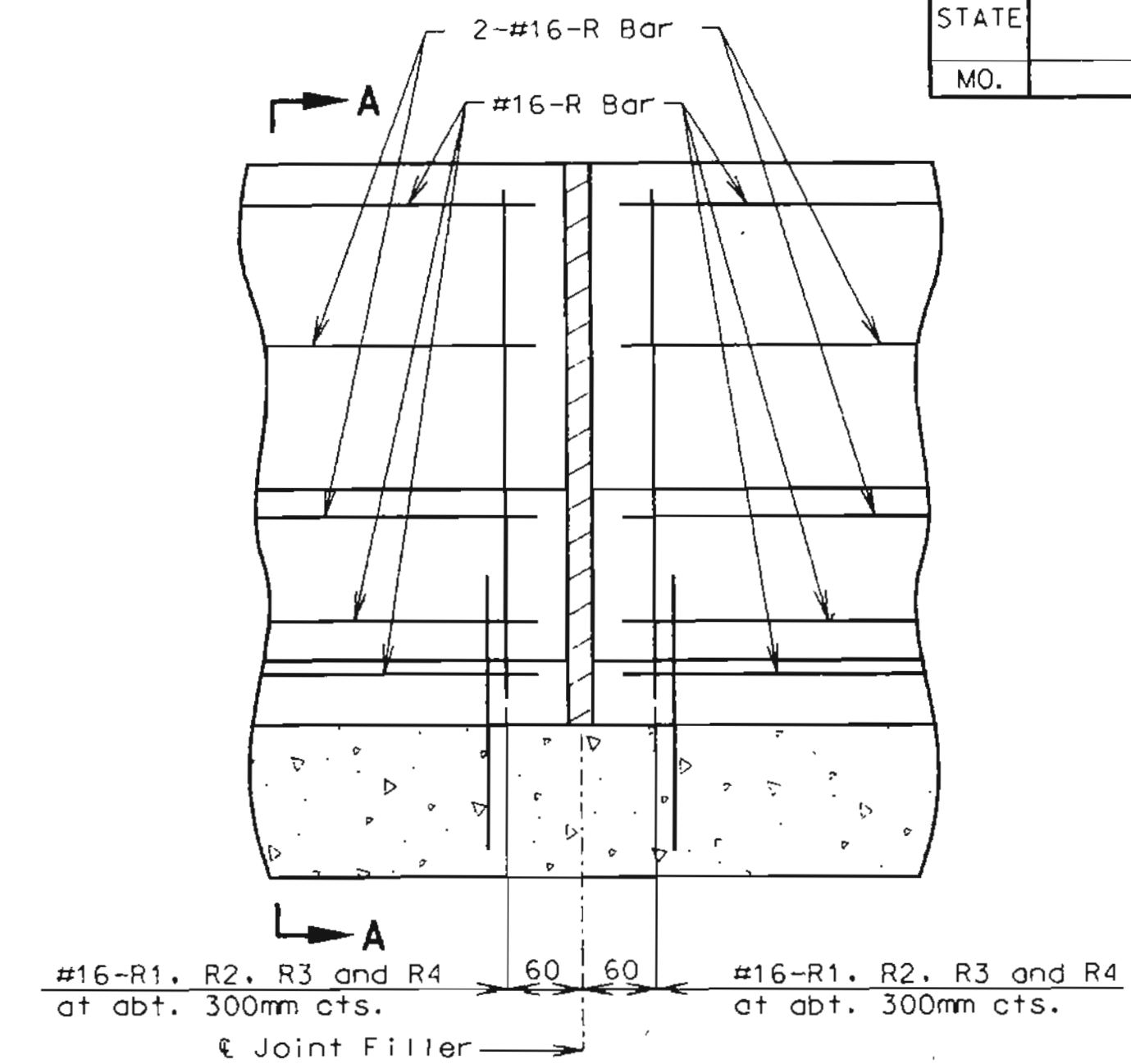
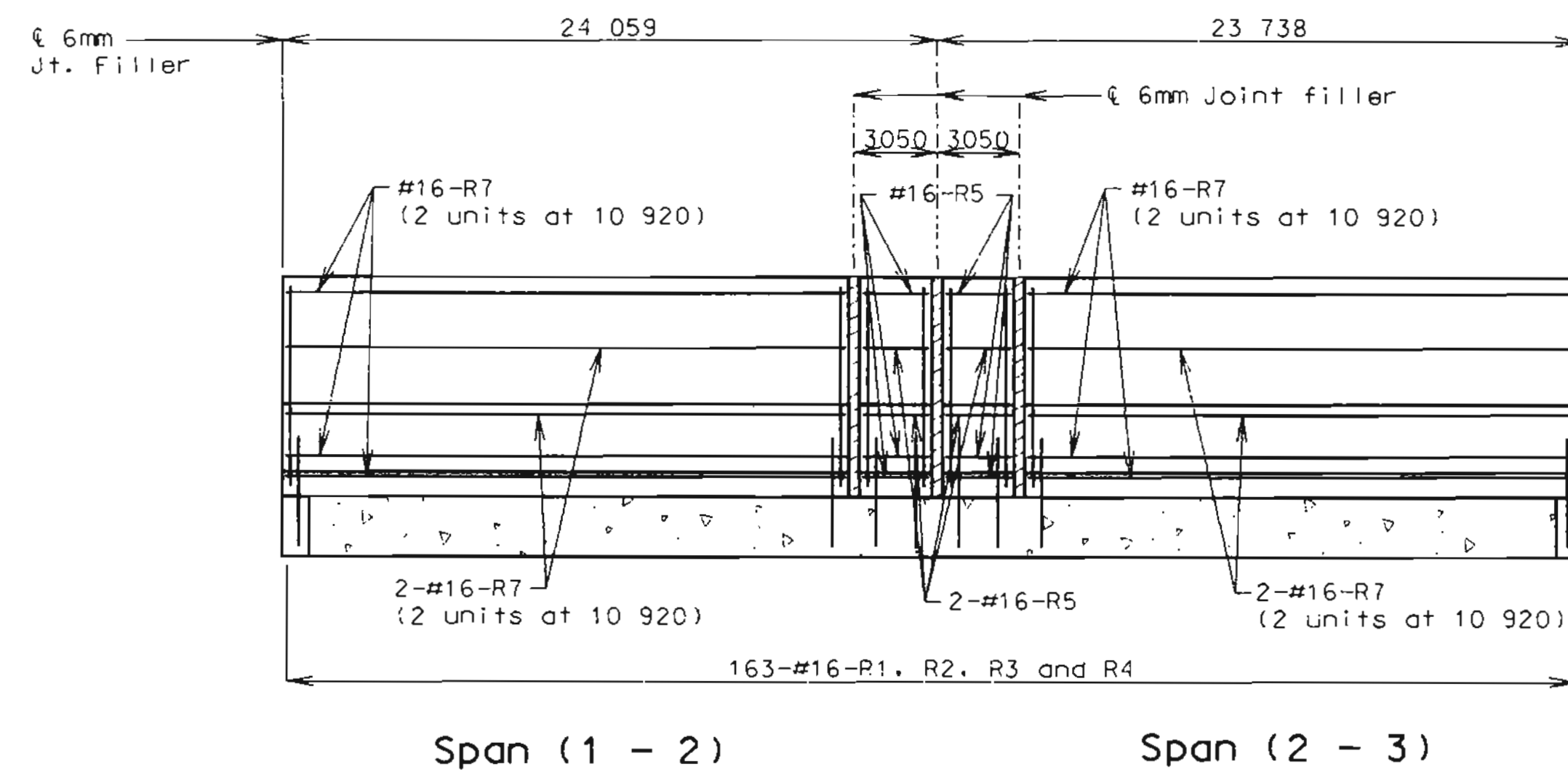
JACKSON COUNTY

DETAILS OF BENT CURB PLATES

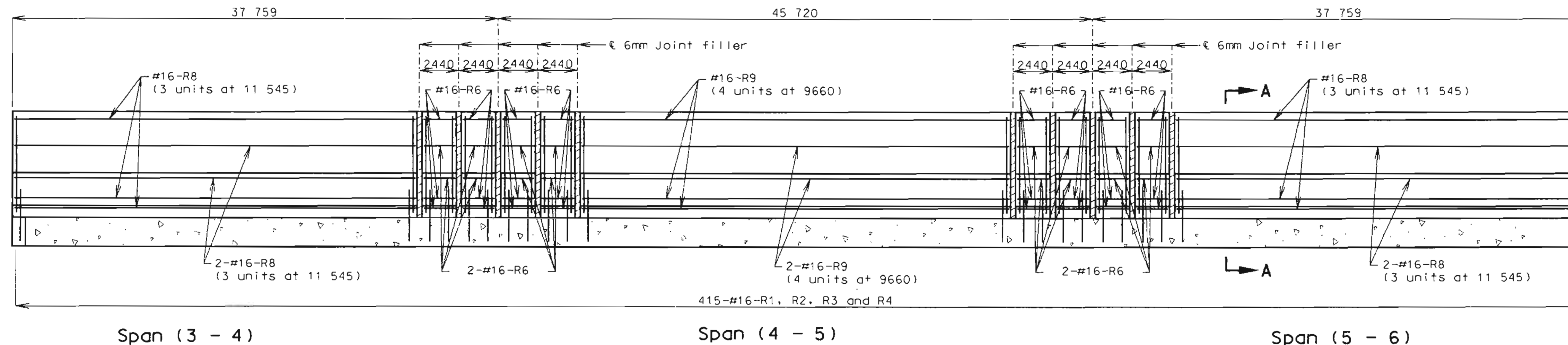
SHEET NO. 20 OF 26

A16854

STATE	PROJ. NO.	SHEET NO.
MO.		218



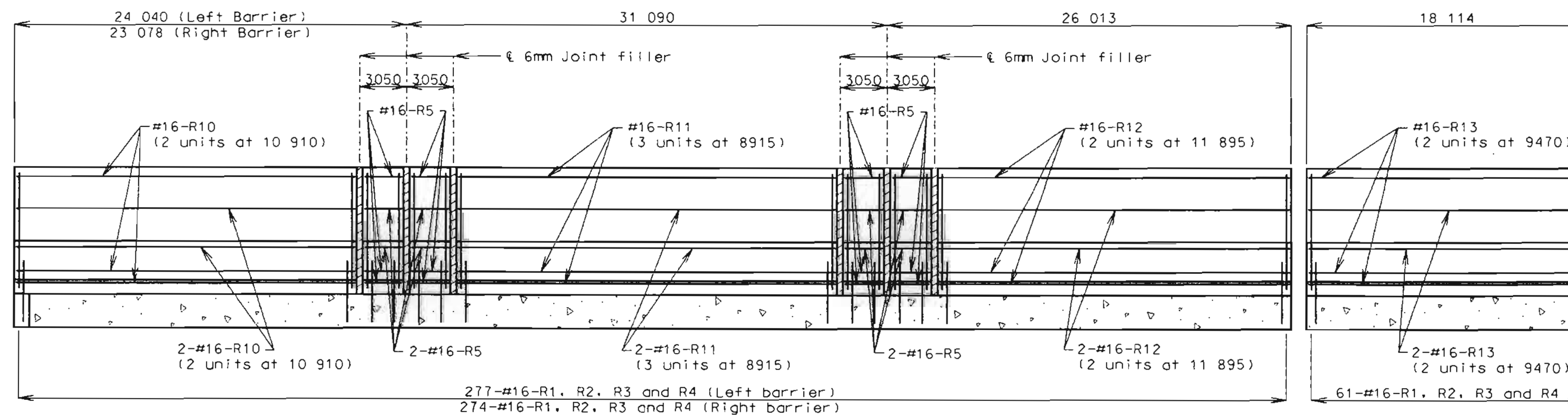
PART SECTION NEAR SAFETY BARRIER CURB



Span (3 - 4)

Span (4 - 5)

Span (5 - 6)



Span (6 - 7)

Span (7 - 8)

Span (8 - 9)

Span (9 - 10)

Notes:

Space R1, R2, R3 and R4 bars as shown in Part Section Near Safety Barrier Curb.

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

Longitudinal dimensions are taken from original construction plans and are along top of outside edge of slab parallel to grade.

See Sheet No. 22 for Section A-A and miscellaneous safety barrier curb details, and notes.

PROJECT NO. 98-041 PROJECT NAME: MOBILE BRIDGE OVER Big Blue River, S109047 STR. A16854 SB UOCH SBBAREL.DGN

BWR BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-343-2696

DRAWN BY:	DJM	FEB. 1998
TRACED BY:	TWM	FEB. 1998
CHECKED BY:	TAC	FEB. 1998

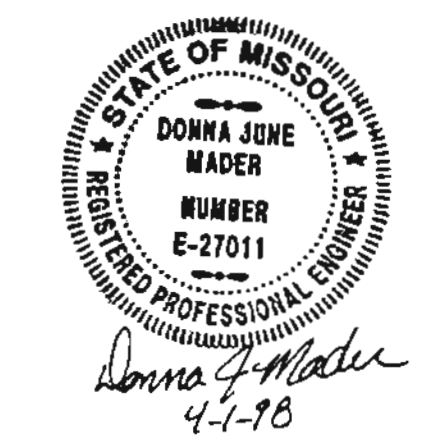
SECTIONS NEAR BARRIER CURB

Right barrier similar except as shown.

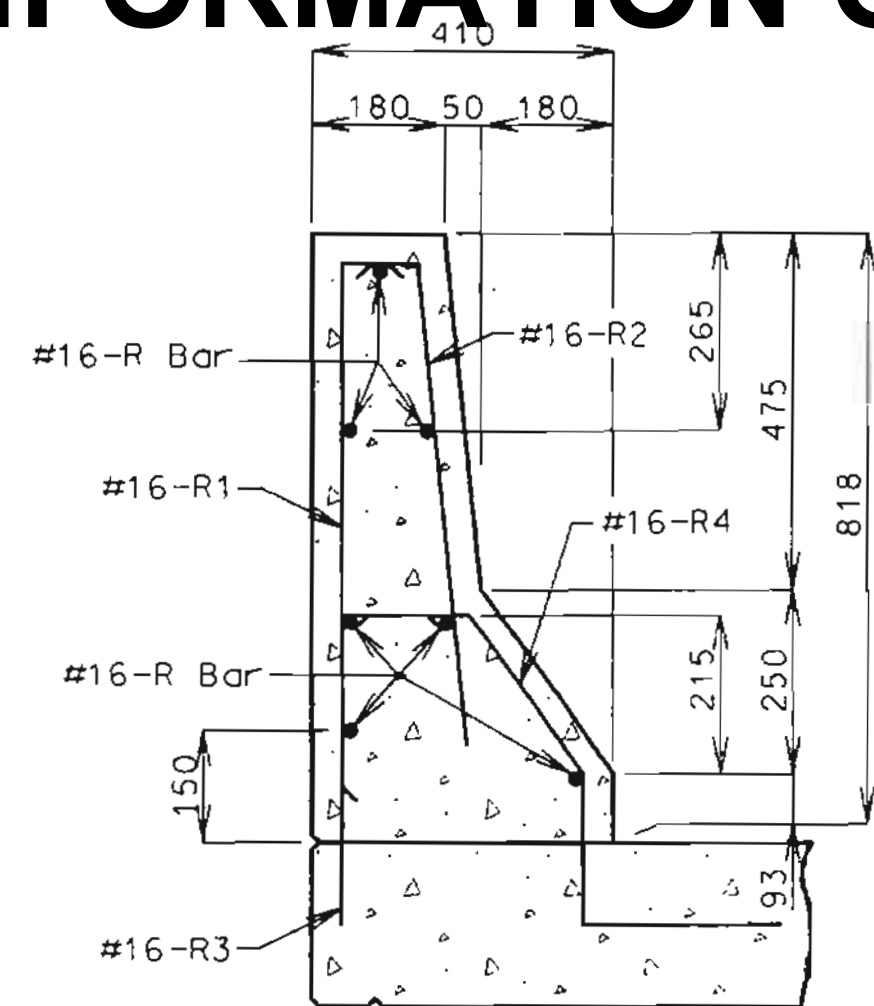
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

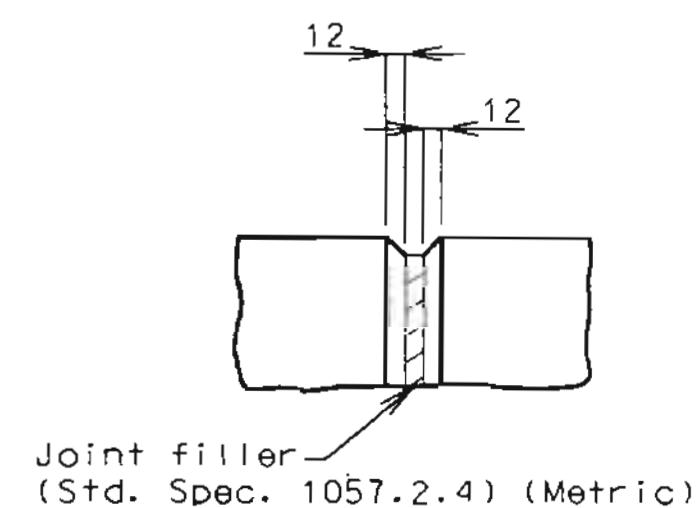
SAFETY BARRIER CURB DETAILS



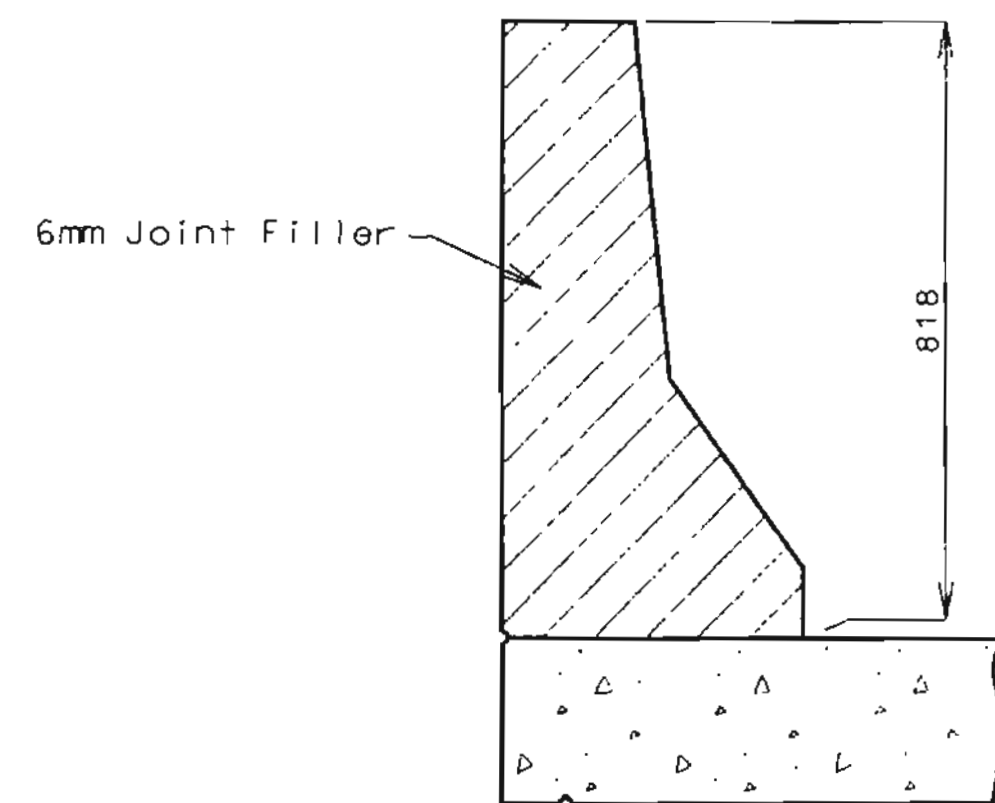
STATE	PROJ. NO.	SHEET NO.
MO.		219



SECTION A-A

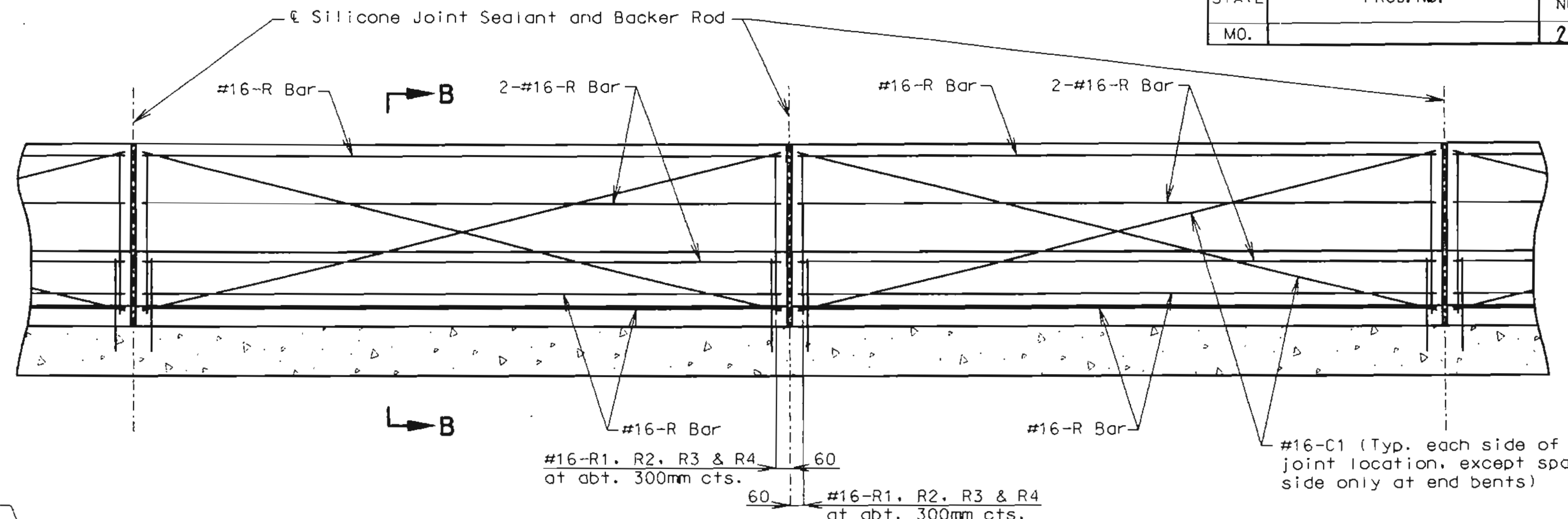


FILLED JOINT DETAIL

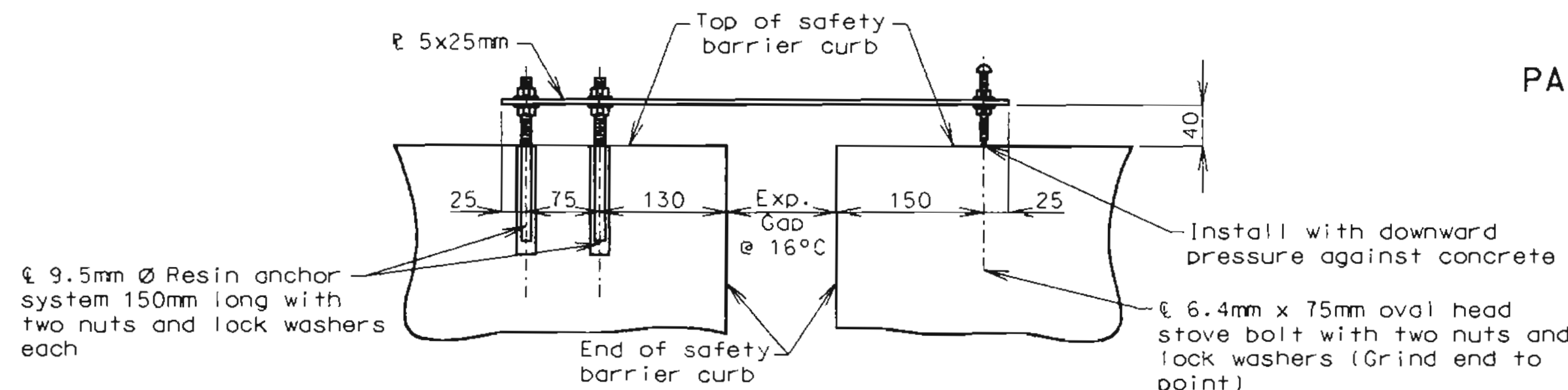


FILLED JOINT

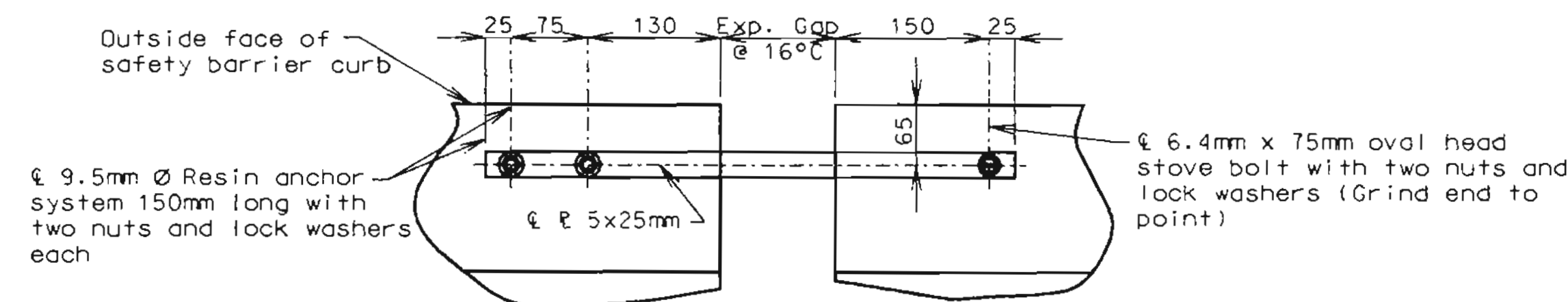
CAST-IN-PLACE BARRIER CURB DETAILS



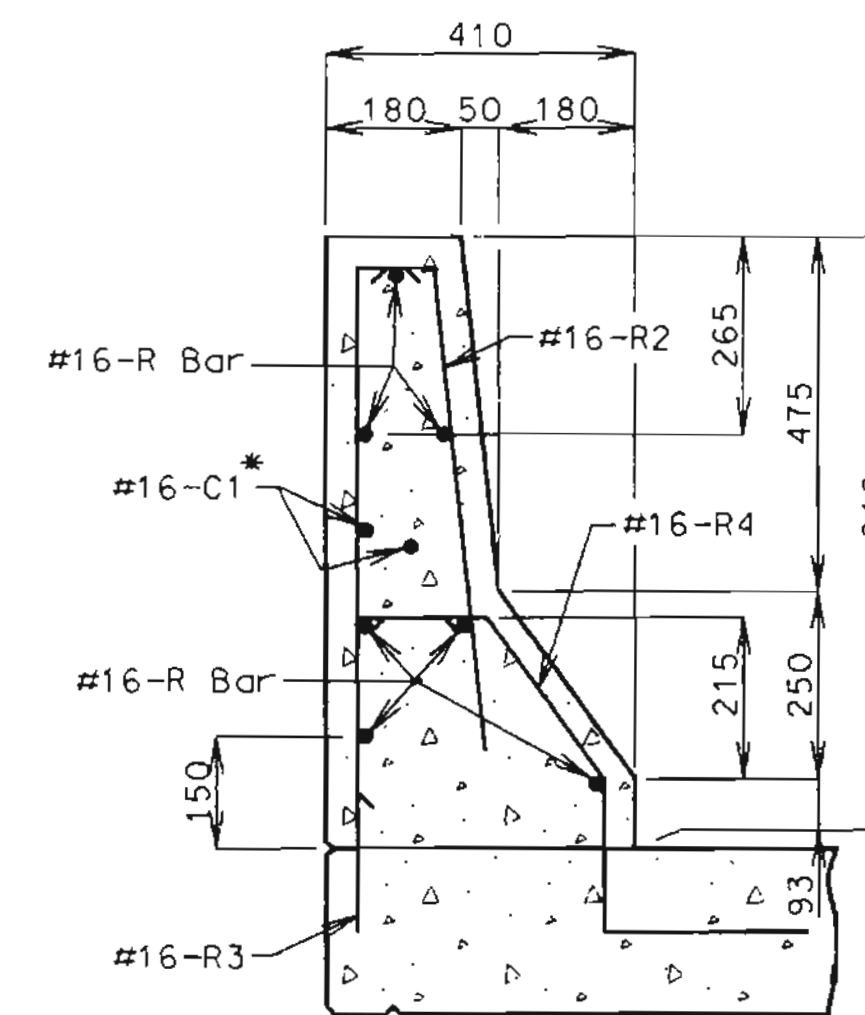
PART SECTION NEAR SAFETY BARRIER CURB (OPTIONAL SLIP-FORM BARRIER)



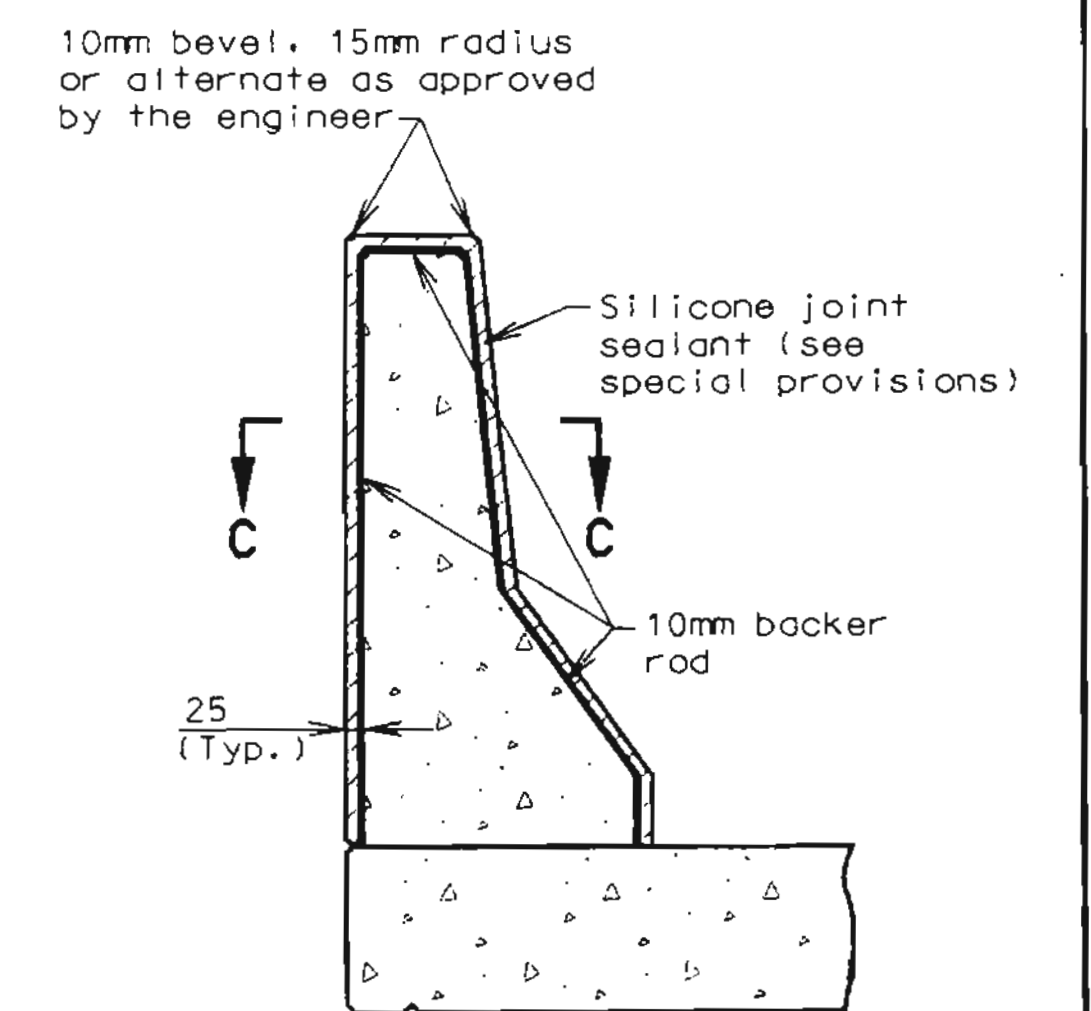
PART ELEVATION OF BARRIER CURB SHOWING MOVEMENT GAUGE



PART PLAN OF BARRIER CURB SHOWING MOVEMENT GAUGE



SECTION B-B



SECTION THRU JOINT

* Each side of joint location, except bridge side only at end bents

Notes:

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 15mm radius or a 10mm bevel, unless otherwise noted.

Concrete in the safety barrier curb shall be class B1.

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

Measurement of the 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.

Joint sealant and backer rods shall be used on all slip-form safety barrier curbs instead of joint filler.

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

The cross-sectional area of the barrier curb above the slab = 212 225 sq. mm.

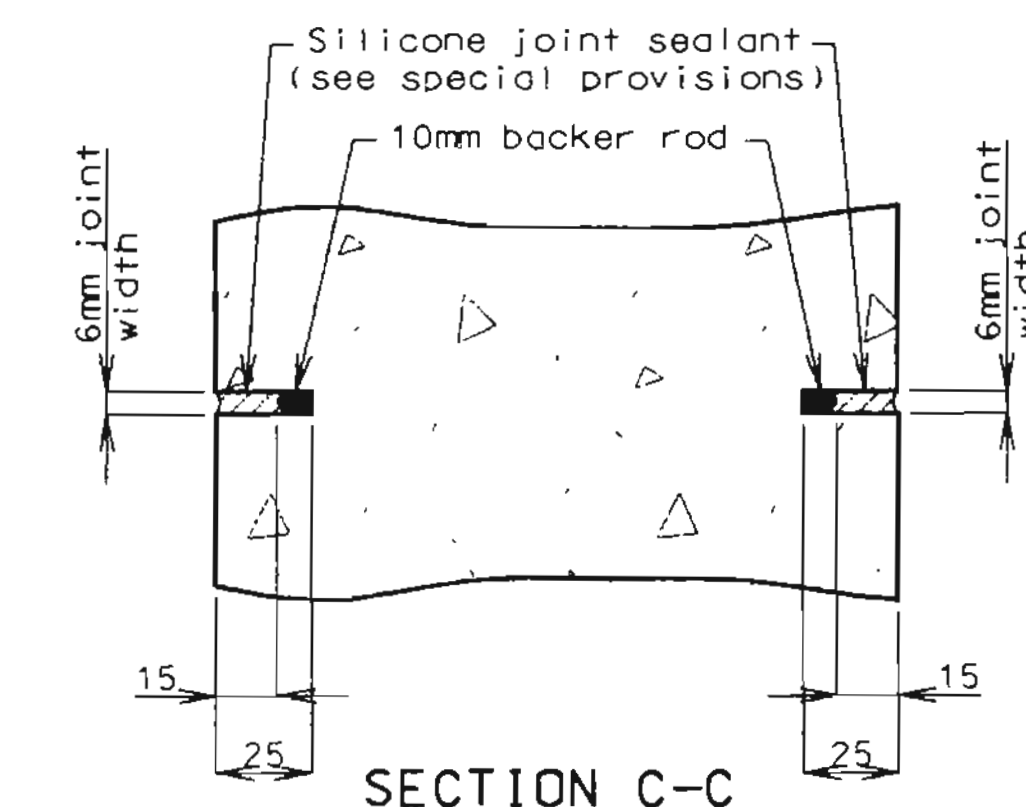
A movement gauge shall be provided on one side of the bridge at all safety barrier curb expansion joints.

All steel for movement gauge shall be galvanized.

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

Field cut horizontal leg on R4 bars to allow clearance at end bents and finger joints.

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



SECTION C-C

SLIP-FORM BARRIER CURB DETAILS

JACKSON COUNTY

MISCELLANEOUS BARRIER CURB DETAILS

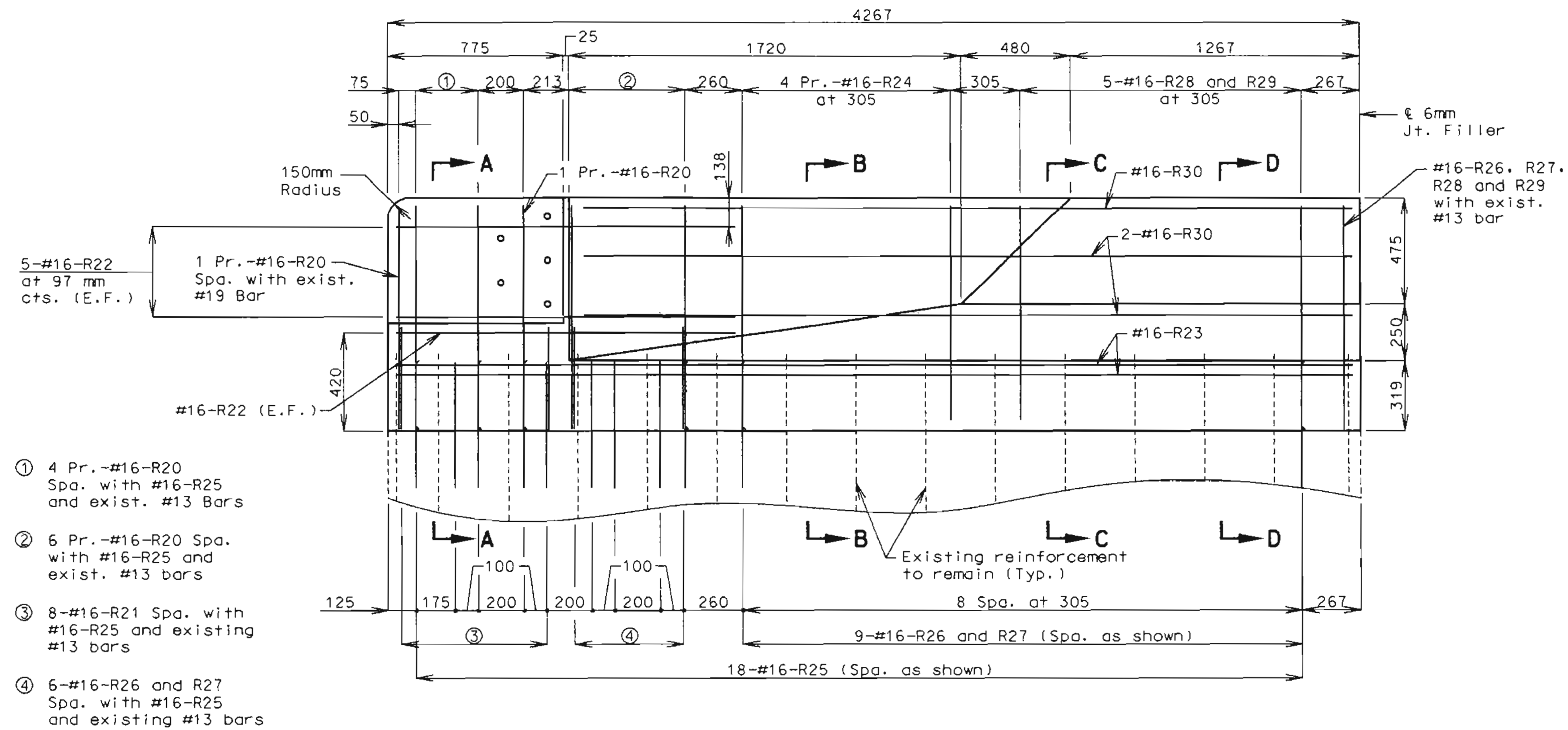
SHEET NO. 22 OF 26

A16854

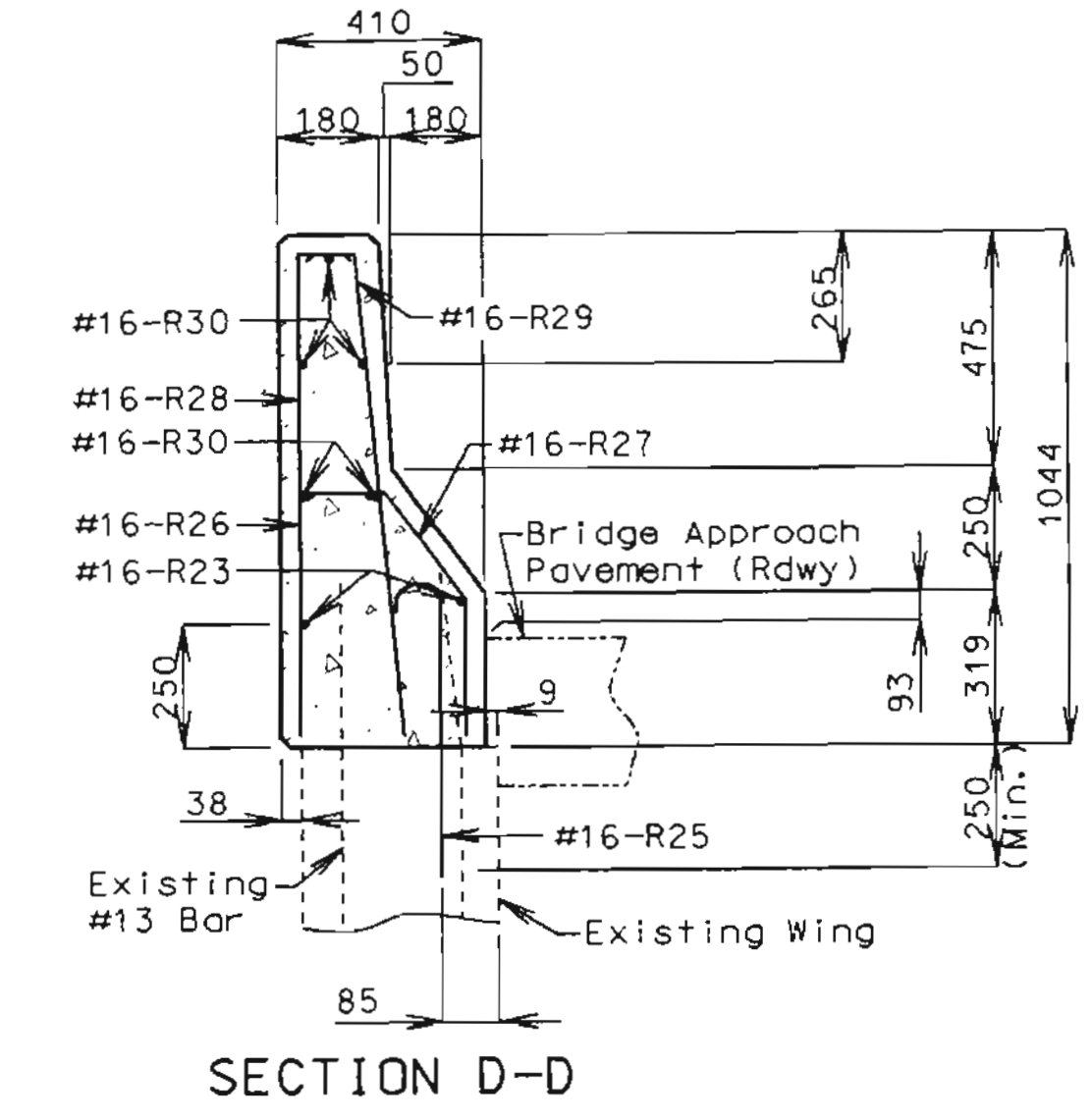
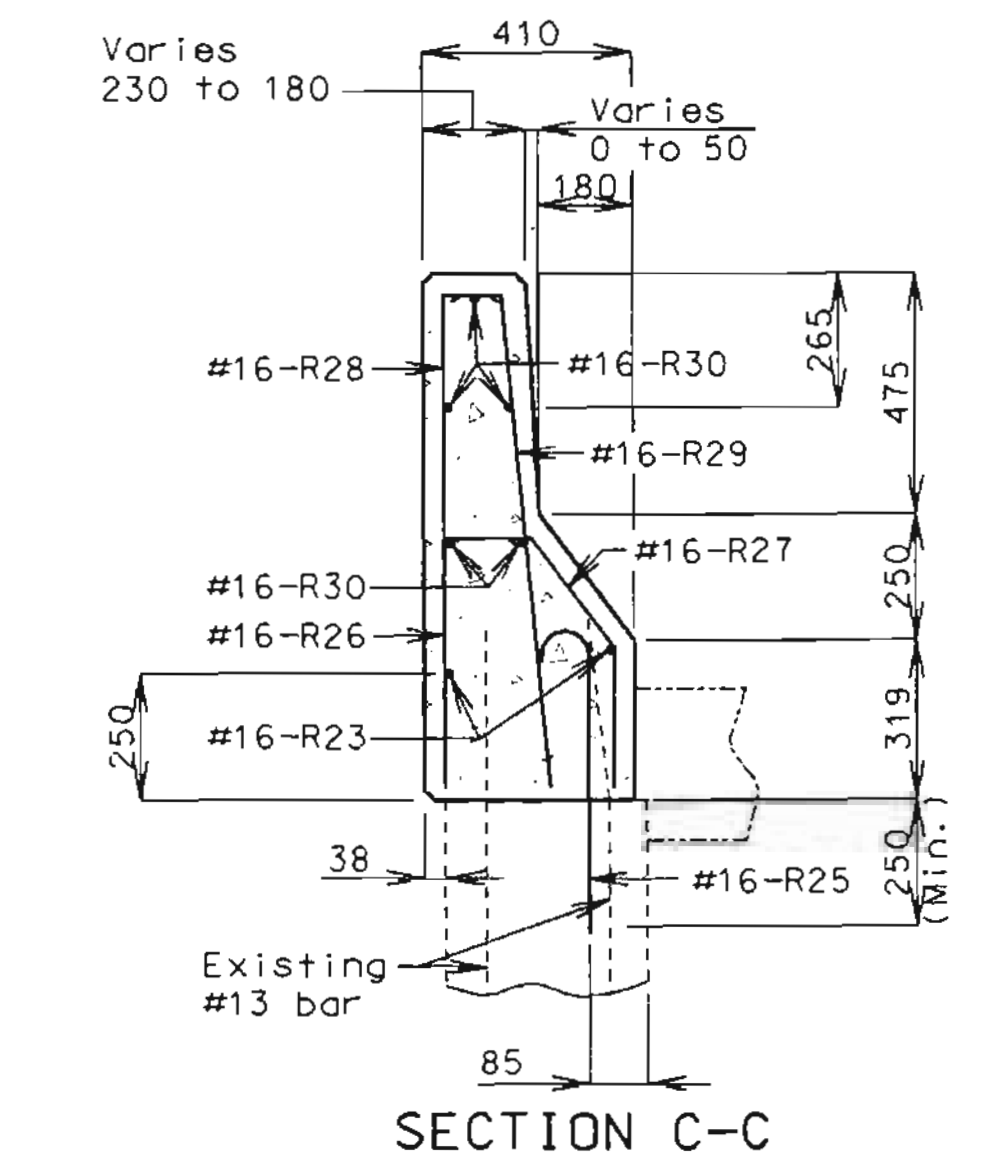
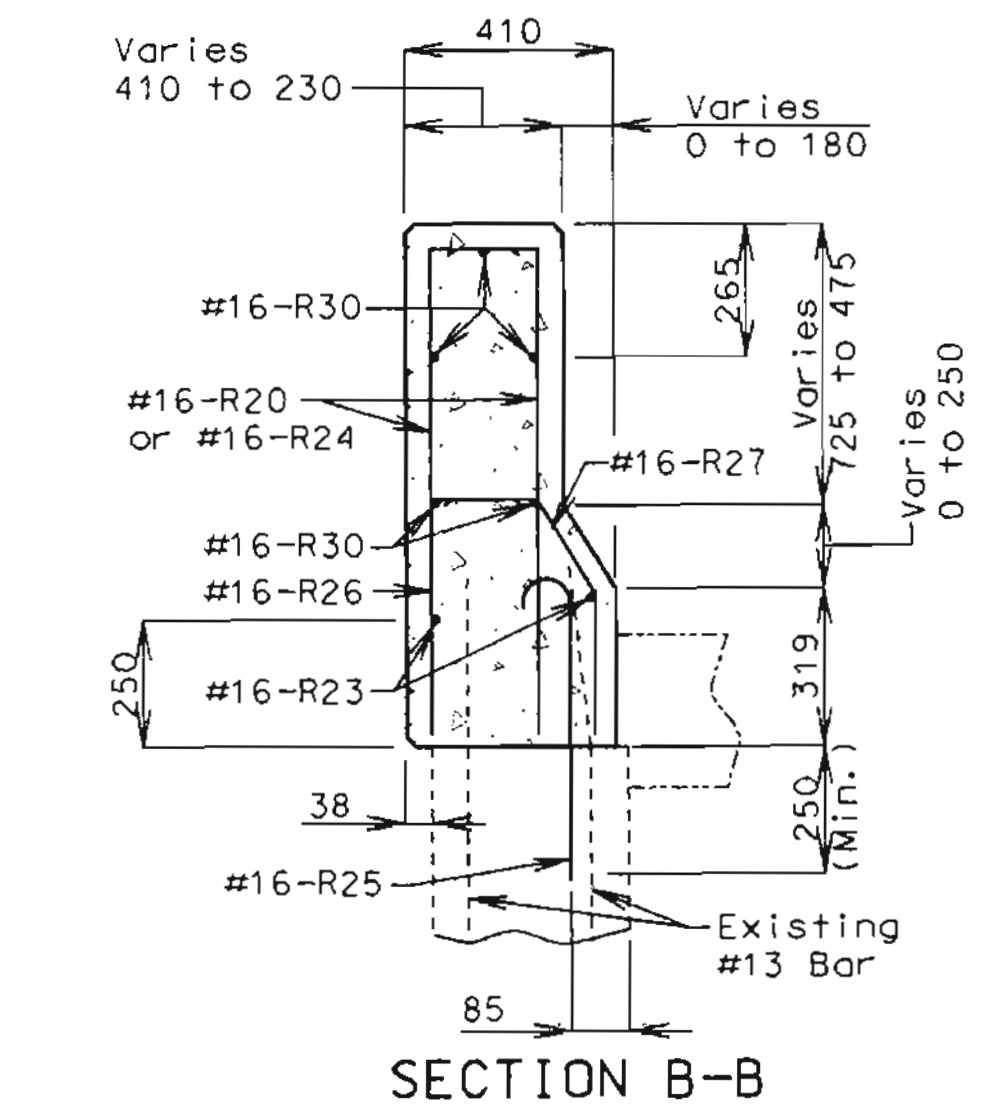
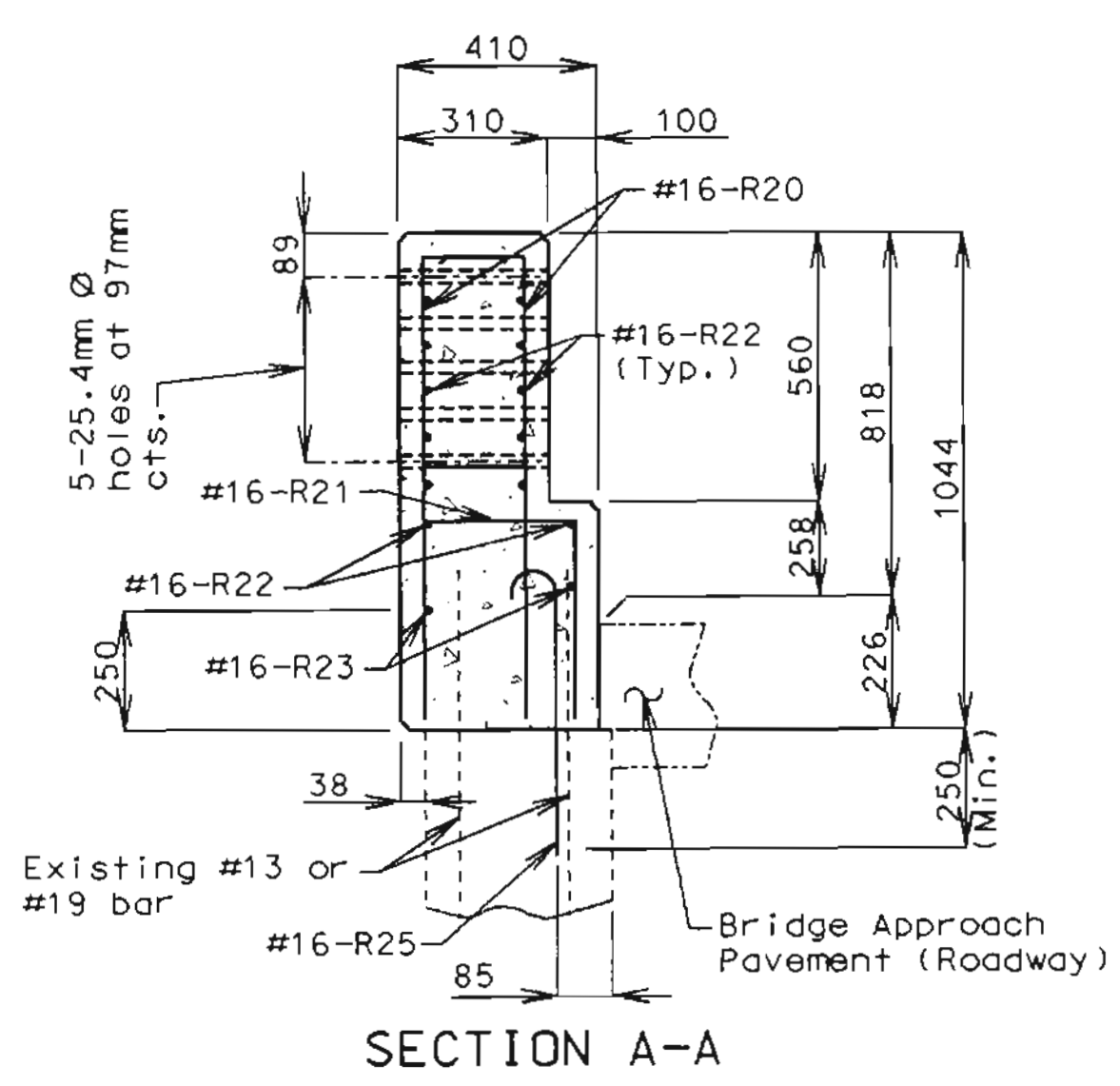
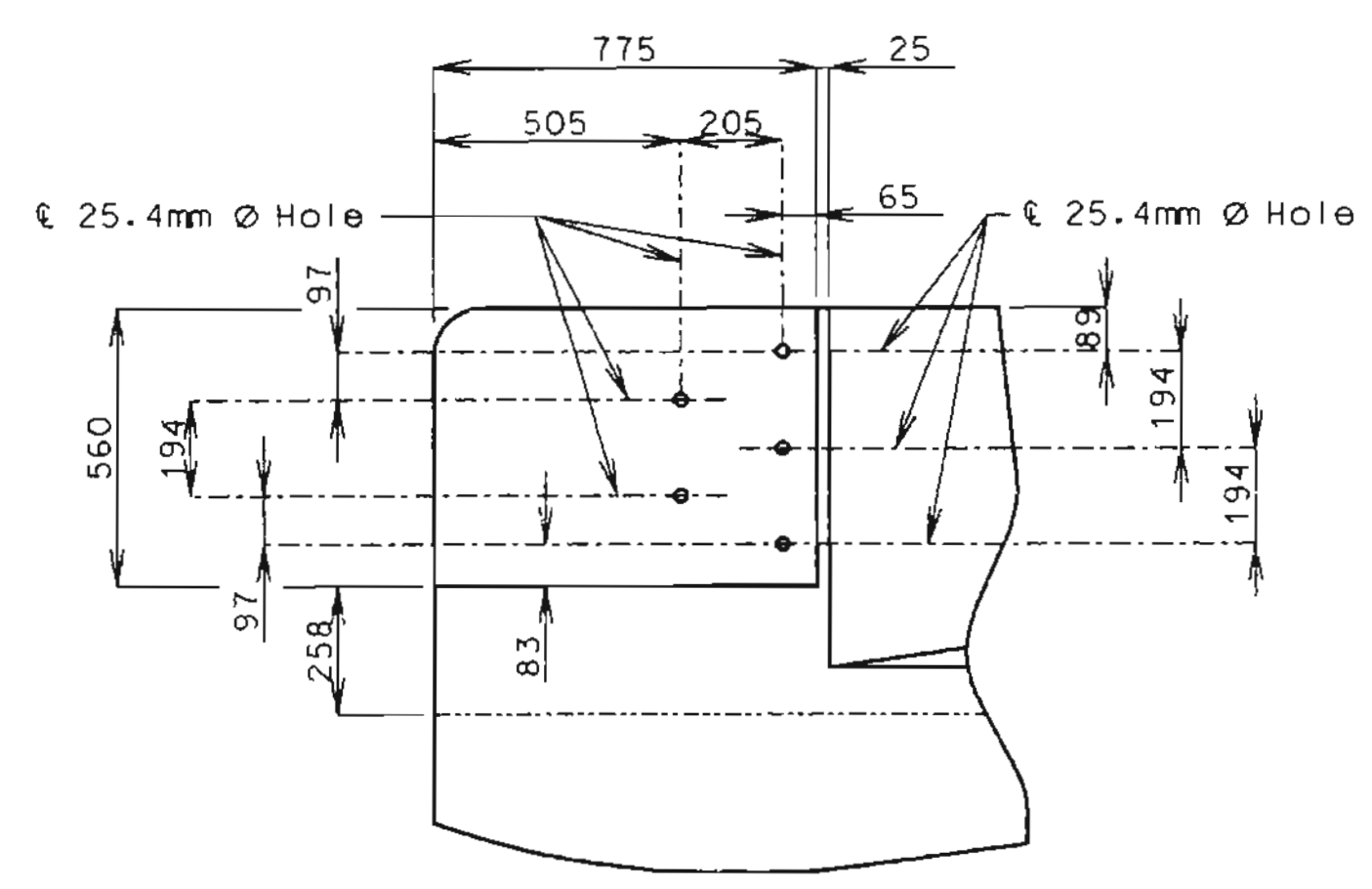
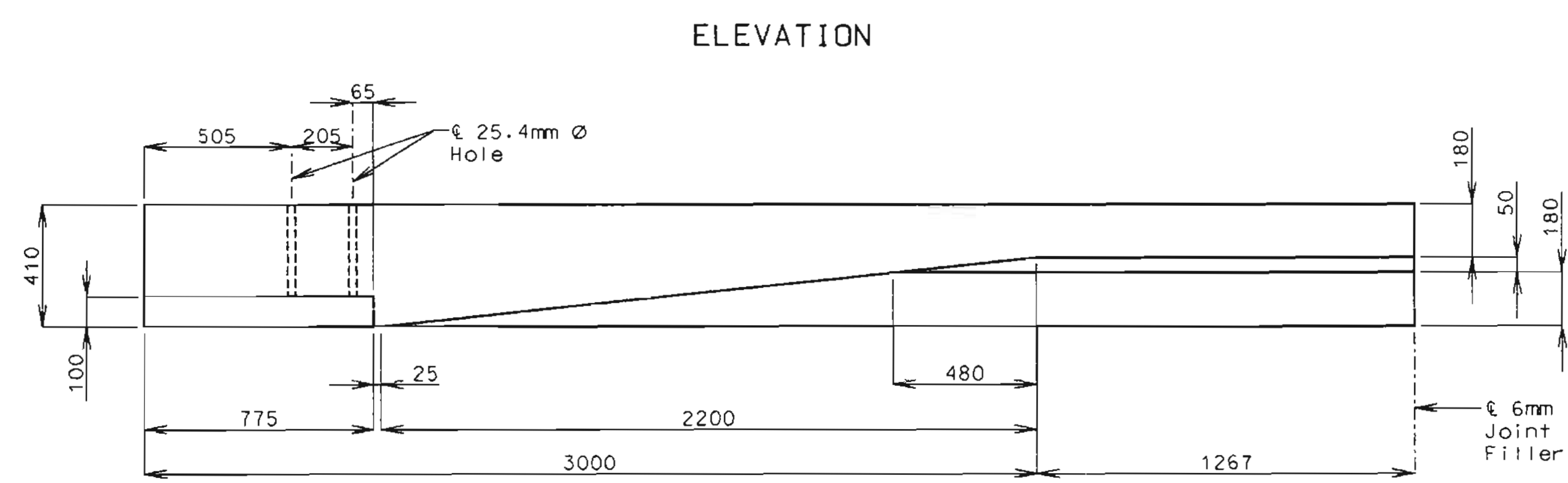
PROJECT NO. 98-047 PROJECT NAME: I-40 DOT-BR. NO. A16854-SB 1-4-95 OVER Big Blue River S:\98047\STR\A16854-SB\DR\SB\A16854-SEC.DWG

BWR BUCHER, WILLIS & RATLIFF CORPORATION
 DRAWN BY: DJM JAN. 1998
 TRACED BY: MAH JAN. 1998
 CHECKED BY: TAC FEB. 1998

STATE OF MISSOURI
 DONNA JUNE MADER
 NUMBER E-27011
 REGISTERED PROFESSIONAL ENGINEER
 Donna J. Mader
 4-1-98



- ① 4 Pr. -#16-R20 Spa. with #16-R25 and exist. #13 Bars
- ② 6 Pr. -#16-R20 Spa. with #16-R25 and exist. #13 bars
- ③ 8-#16-R21 Spa. with #16-R25 and existing #13 bars
- ④ 6-#16-R26 and R27 Spa. with #16-R25 and existing #13 bars



Barrier Curb shall be constructed on existing abutment wings at End Bent No. 1.

Notes:
 Barrier curb shall be constructed on all four existing abutment wings.
 Field bend existing #13 and #16 bars as required to maintain 40 mm clearance.
 The contractor shall use one of the resin anchor systems listed in the job special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job special provisions.
 #16-R25 bars shall be used with the resin anchor system and shall have a minimum ultimate pullout strength of 68.9 kN in existing concrete with f'c=21 MPa, see special provisions.

Cost of furnishing and installing #16-R25 and anchor system shall be included in the price bid for Safety Barrier Curb.
 For additional barrier curb notes, see Sheet No. 22.
 E.F. = Each Face



PROJECT No. 98-047 PROJECT NAME: I-405 over Big Blue River S:\98047\STR\M6856\SB\JOB\SB\ARB1.DGN

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	TWM	FEB. 1998
CHECKED BY:	MLJ	FEB. 1998

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

Revised 9-11-98

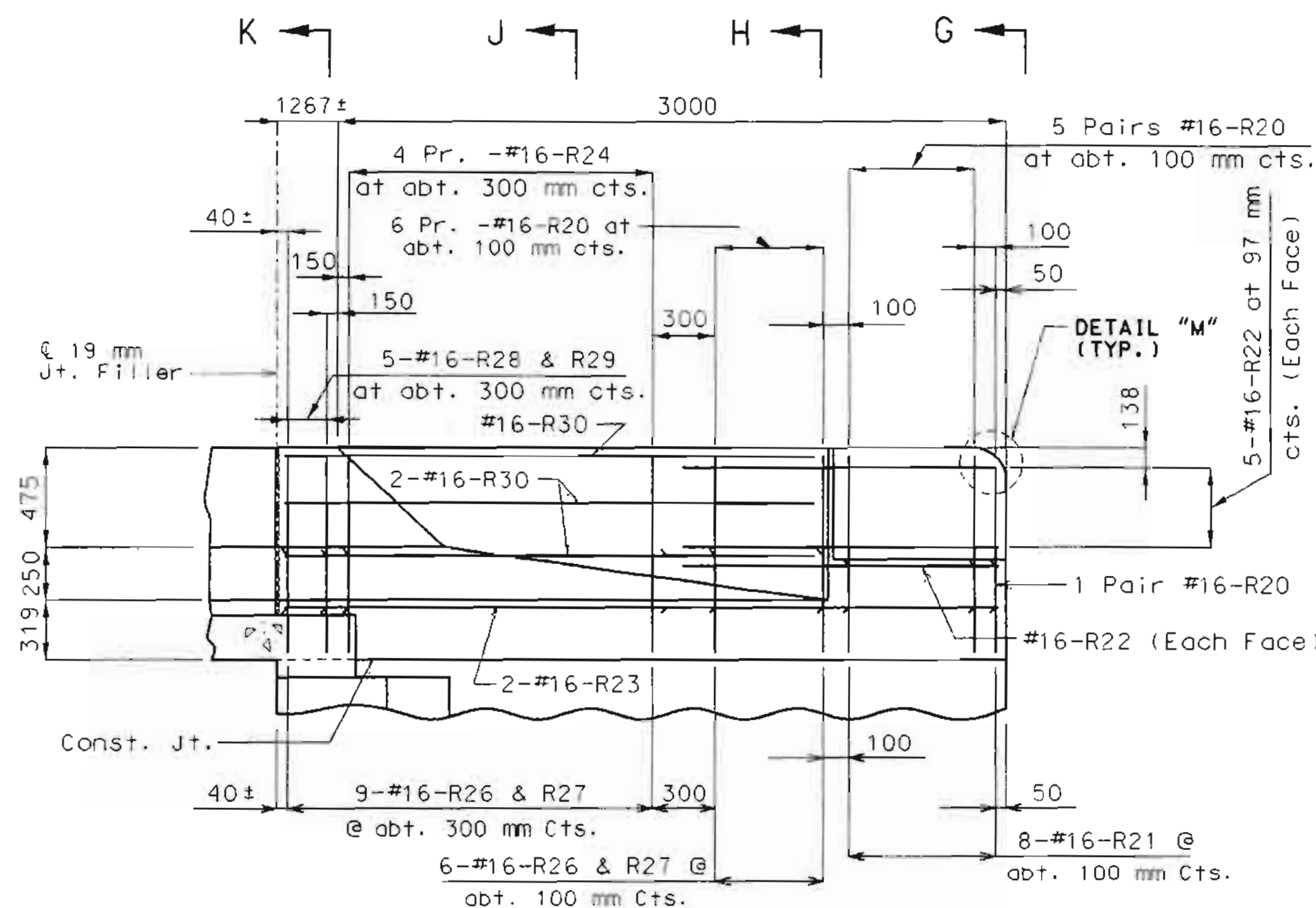
JACKSON COUNTY
 END BENT NO. 1

BARRIER CURB AT
 END BENTS

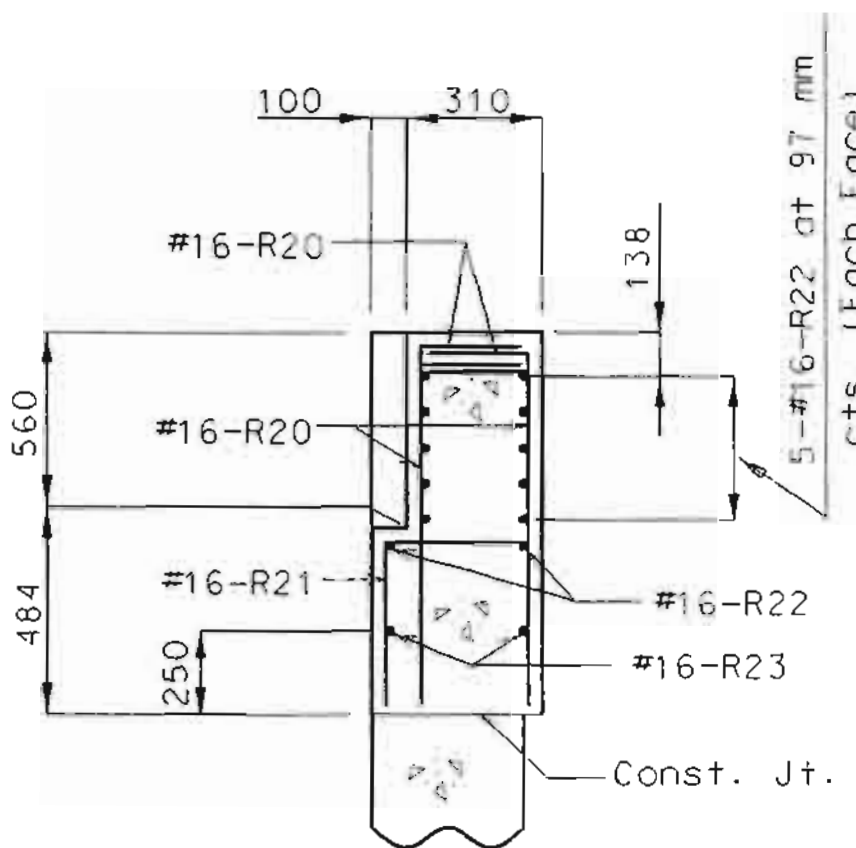
SHEET NO. 23 OF 26

A16854

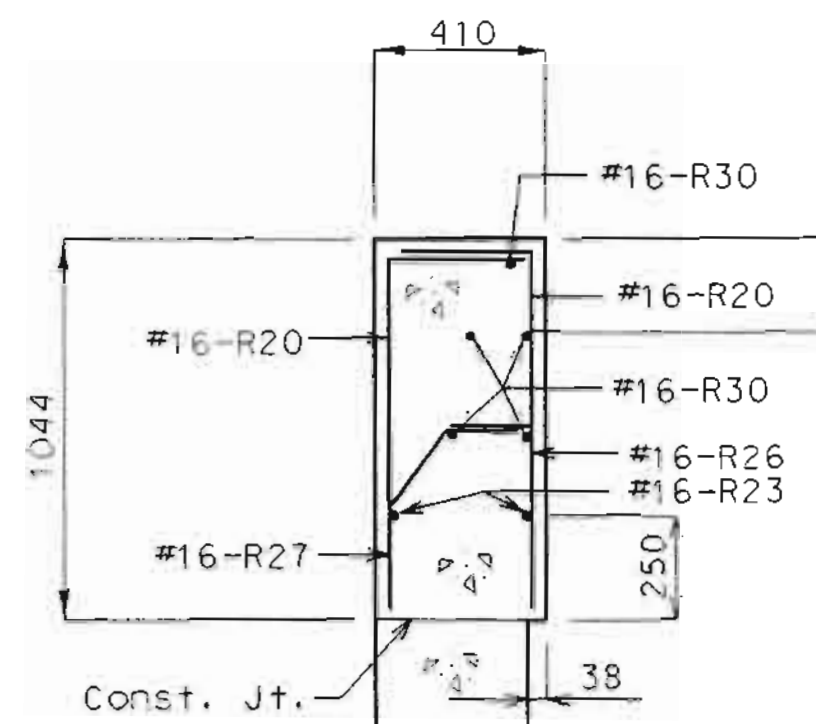
STATE	PROJ. NO.	SHEET NO.
MO.		



ELEVATION



PART SECTION G-G

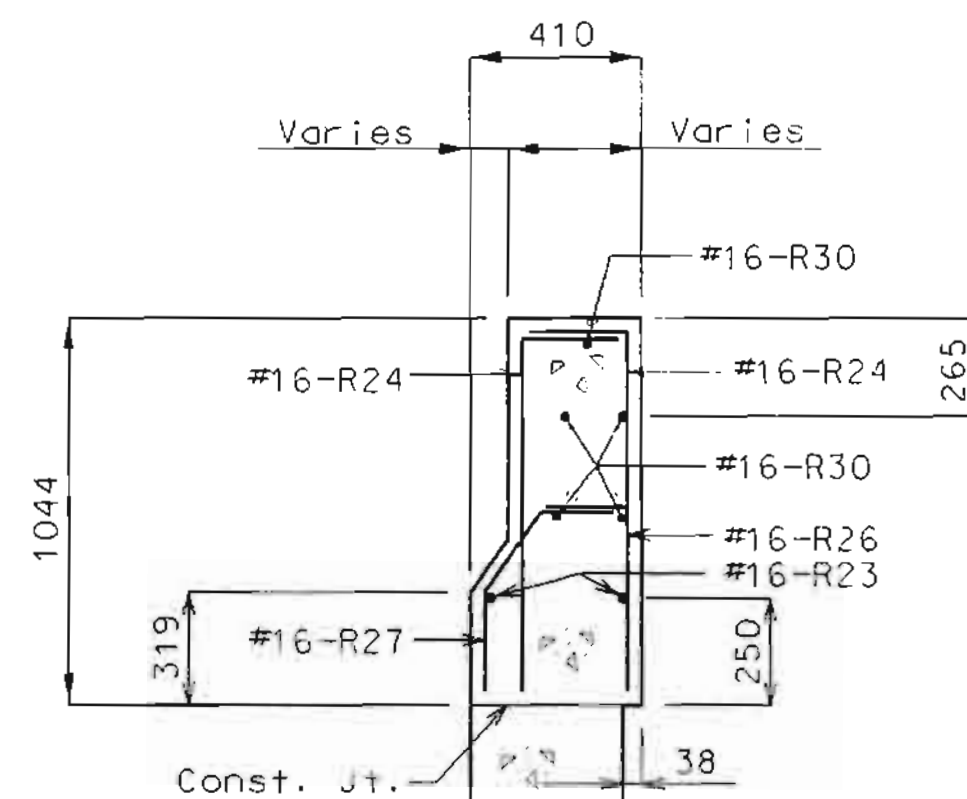


PART SECTION H-H

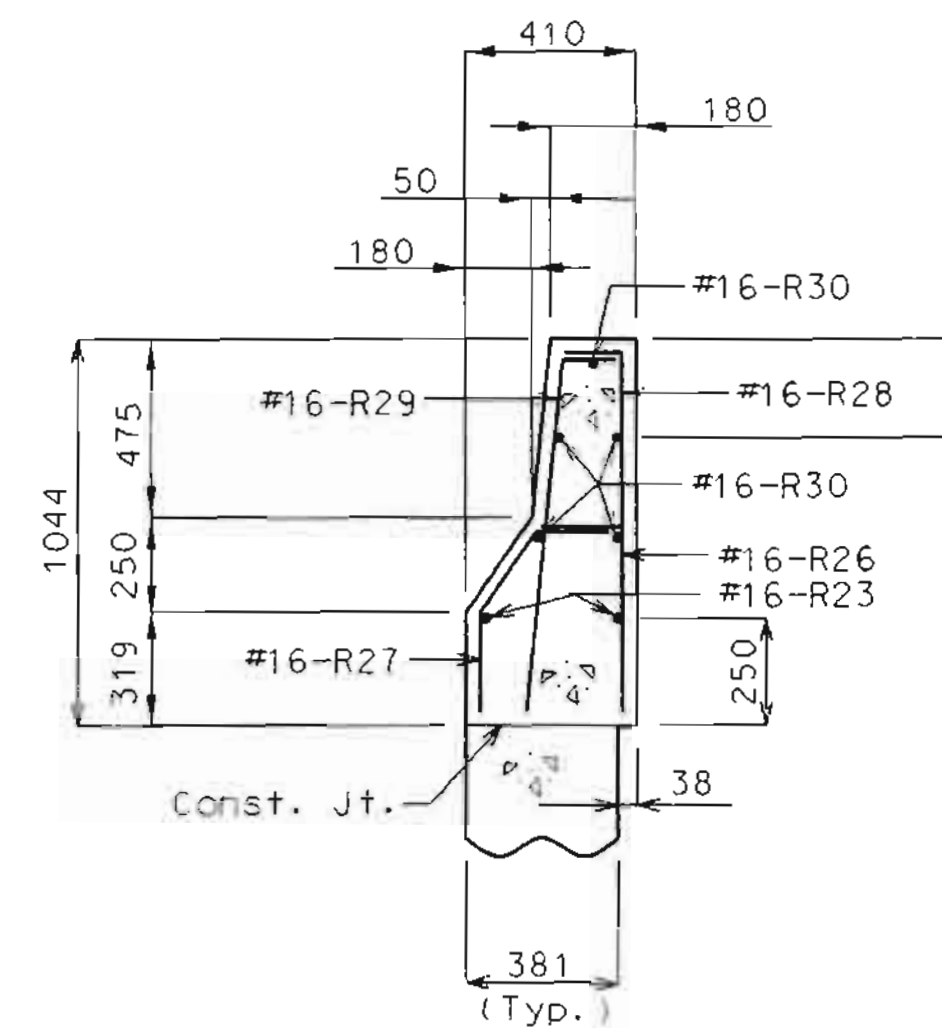
Note: #16-R22 bars not shown for clarity.

NOTE:

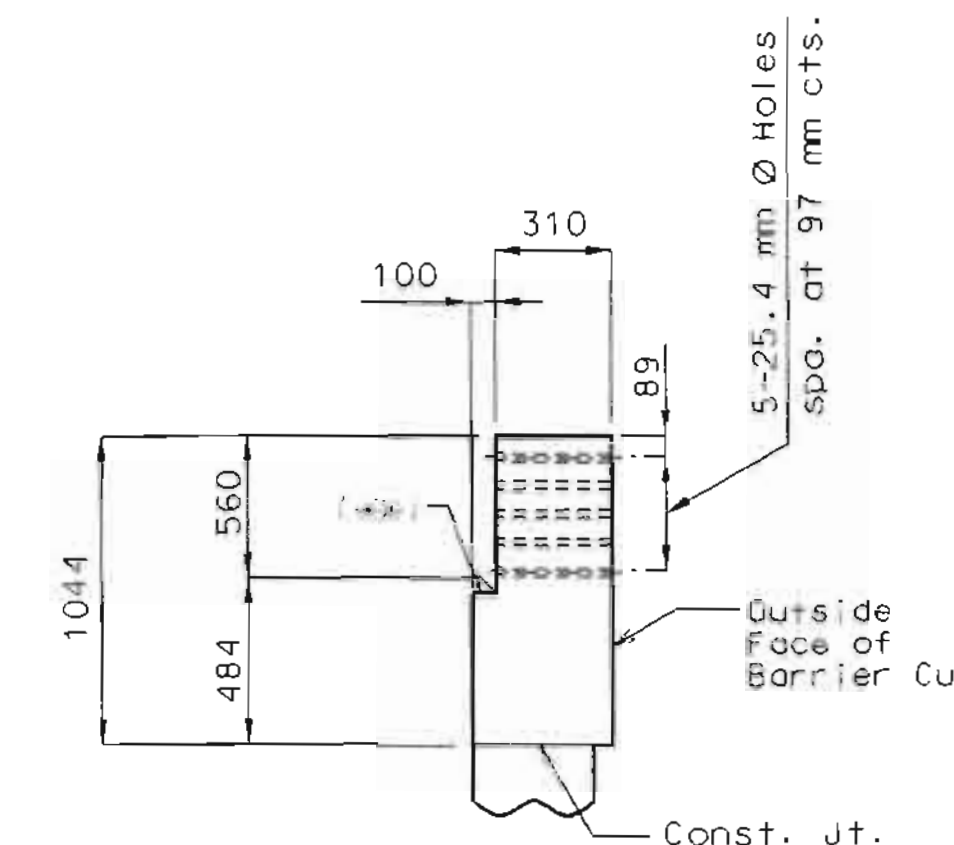
For details of wing removal and replacement at End Bent No. 10, see sheet No. 3A, 3B, 3C & 3D.



PART SECTION J-J

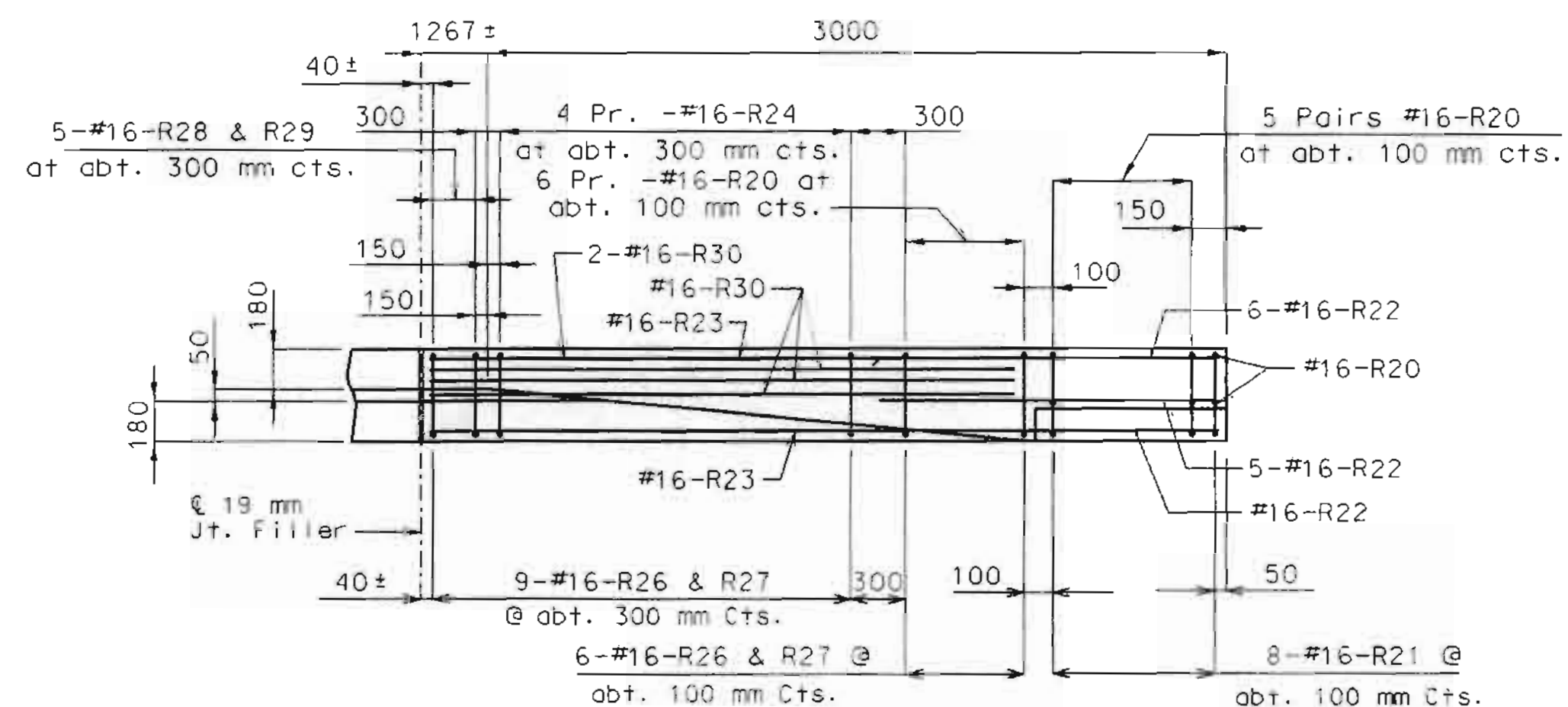


PART SECTION K-K

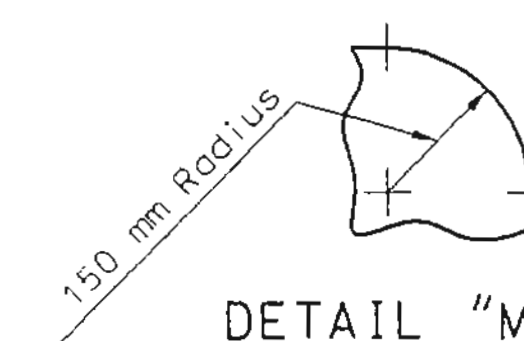


PART ELEVATION L-L

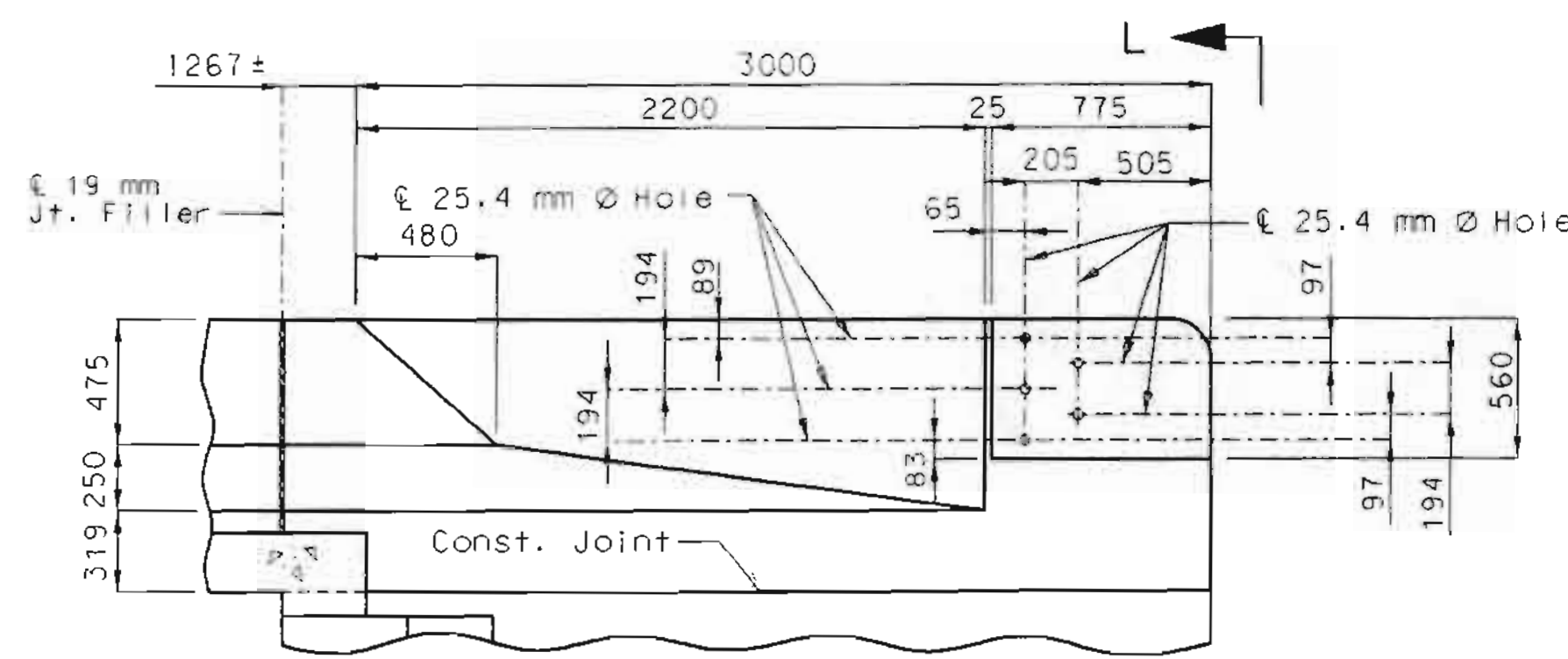
(**) Slope 6 mm toward roadway



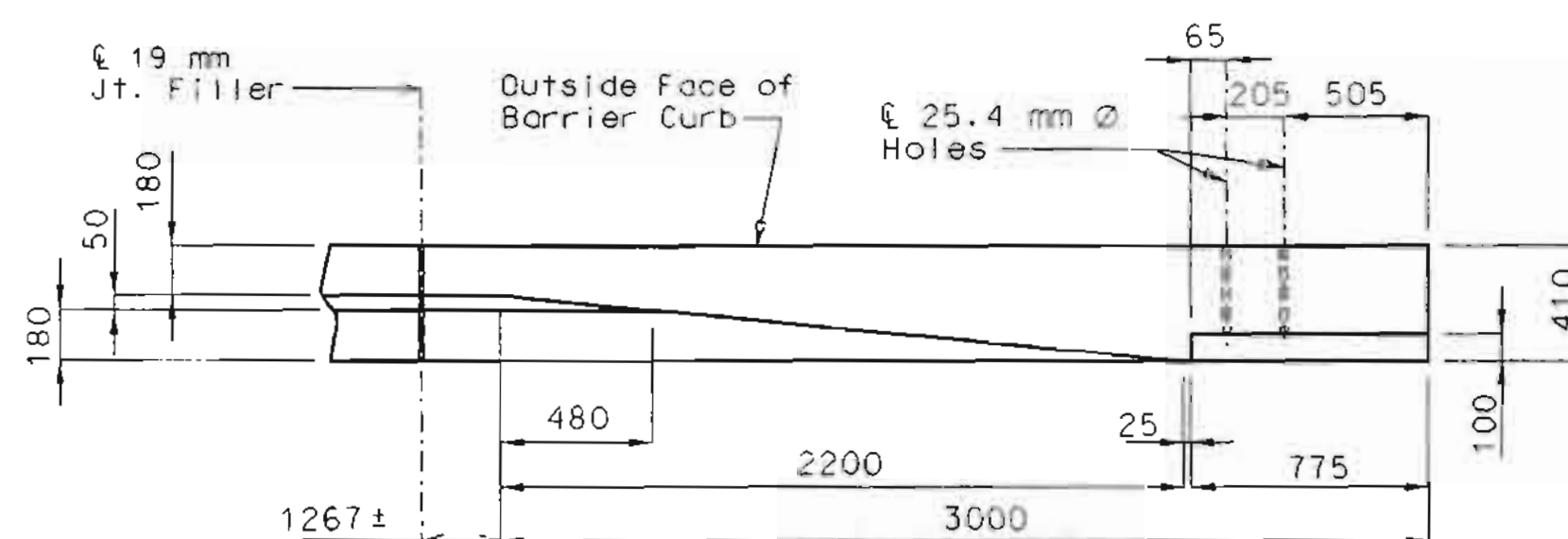
PLAN



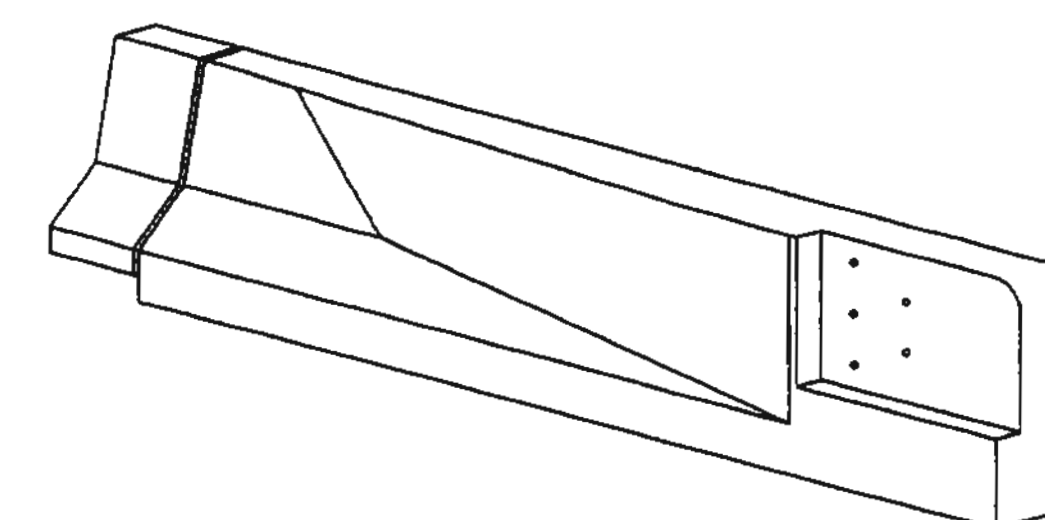
DETAIL "M"



PART ELEVATION



PART PLAN
DETAILS OF GUARD RAIL ATTACHMENT



AUXILIARY VIEW OF
SAFETY BARRIER CURB

DETAILS OF SAFETY BARRIER CURB AT END BENT NO. 10

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

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

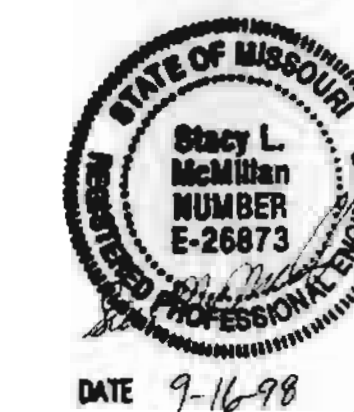
Detailed Sept. 1998
Checked Sept. 1998

Revised 9-16-98

Sheet No. 23A of 26

JACKSON COUNTY

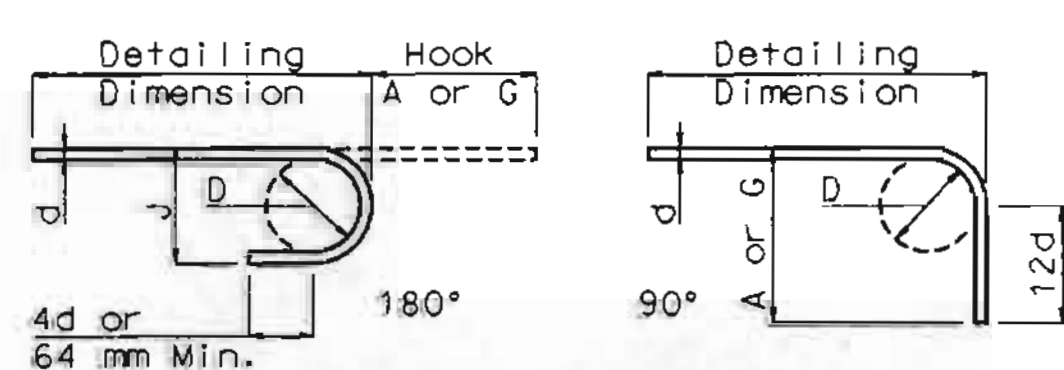
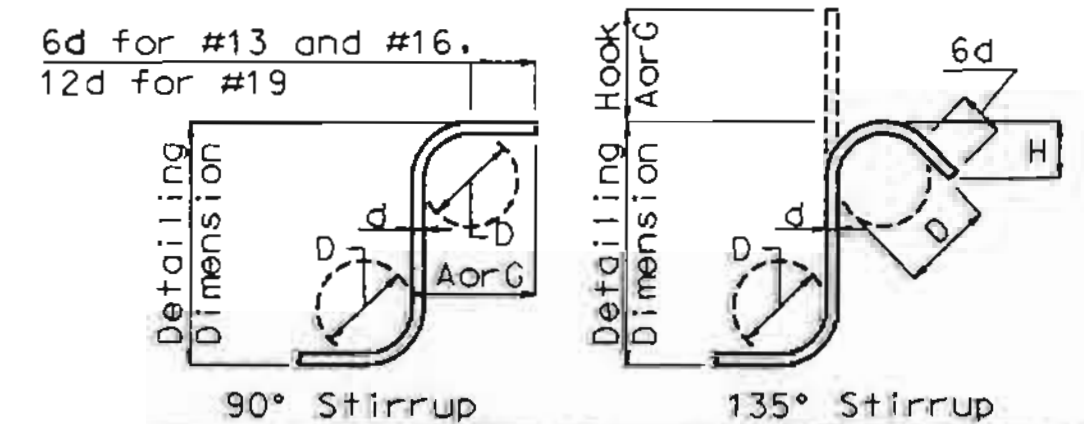
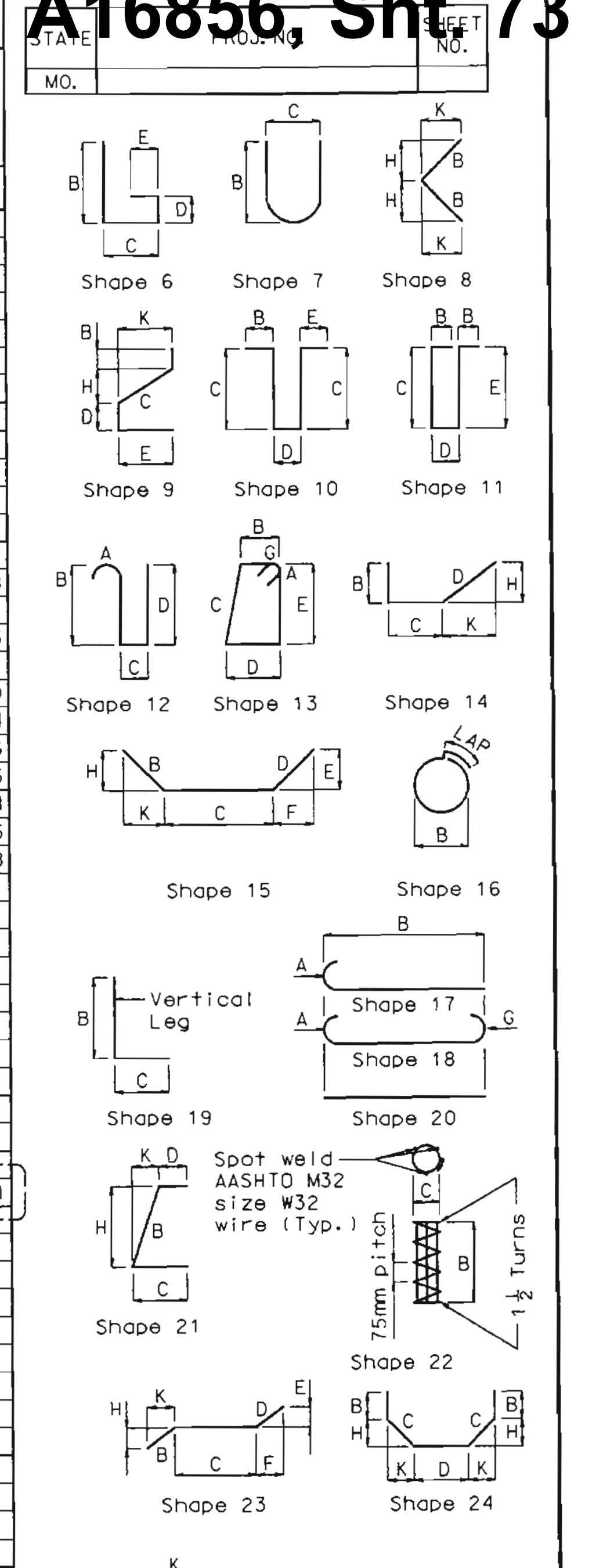
A16854



No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions								Nominal Length	Actual Length	Mass				
									B	C	D	E	F	H	K								
									mm	mm	mm	mm	mm	mm	mm								
Superstructure																							
64	16-C1	Slip Form Barr.	E	20											2450	2450	243						
916	16-R1	Barrier Curb	E	19	S										765	90	855	825	1173				
916	16-R2	Barrier Curb	E	15	S										770	90	860	830	1180				
916	16-R3	Barrier Curb	E	19	S										435	155	590	560	796				
916	16-R4	Barrier Curb	E	27	S										155	290	220	305	230	170	970	910	1294
42	16-R5	Barrier Curb	E	20											2950		2950	2950	192				
56	16-R6	Barrier Curb	E	20											2340		2340	2340	203				
28	16-R7	Barrier Curb	E	20											10 920		10 920	10 920	475				
42	16-R8	Barrier Curb	E	20											11 545		11 545	11 545	753				
28	16-R9	Barrier Curb	E	20											9660		9660	9660	420				
14	16-R10	Barrier Curb	E	20											10 910		10 910	10 910	237				
21	16-R11	Barrier Curb	E	20											8915		8915	8915	291				
14	16-R12	Barrier Curb	E	20											11 895		11 895	11 895	258				
14	16-R13	Barrier Curb	E	20											9470		9470	9470	206				
48	16-R20	Barrier Curb	E	19	S										930	170	1100	1070	80				
16	16-R21	Barrier Curb	E	10	S											400	330	1130	1065	26			
24	16-R22	Barrier Curb	E	20											1500		1500	1500	56				
4	16-R23	Barrier Curb	E	20											4190		4190	4190	26				
16	16-R24	Barrier Curb	E	19	S										930	140	1070	1040	26				
36	16-R25	Barrier Curb	E	17											565		740	740	41				
32	16-R26	Barrier Curb	E	19	S										485	125	610	580	29				
32	16-R27	Barrier Curb	E	27	S										125	290	275	230	170	690	625	31	
12	16-R28	Barrier Curb	E	19	S										930	90	1020	990	18				
12	16-R29	Barrier Curb	E	15	S										935	90	930	100	1025	995	19		
10	16-R30	Barrier Curb	E	20											3410		3410	3410	53				
2069	19-S1	Slab	E	20											5485		5485	5485	25 364				
1847	16-S4	Slab	E	20											5565		5565	5565	15 952				
3	19-S7	Slab	E	20											5075		5075	5075	34				
13	19-S8	Slab	E	20											1170		1170	1170	85				
		Inc. = 295													4710		4710	4710					
12	16-S11	Slab	E	20											1350		1350	1350	59				
		Inc. = 330													4980		4980	4980					
30	16-S16	Slab	E	20											710		710	710	141				
		Inc. = 330													5330		5330	5330					
2	16-S17	Slab	E	20											5155		5155	5155	16				
32	19-S20	Slab	E	20											850		850	850	219				
		Inc. = 295													5275		5275	5275					
26	19-S21	Slab	E	20											1275		1275	1275	177				
		Inc. = 295													4815		4815	4815					
24	16-S24	Slab	E	20											1230		1230	1230	113				
		Inc. = 330													4860		4860	4860					
100	16-S27	Slab	E	20											10 220		10 220	10 220	1586				
65	16-S28	Slab	E	20											10 070		10 070	10 070	1016				
23	19-S29	Slab	E	20											14 220		14 220	14 220	731				

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions								Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K				
									mm	mm	mm	mm	mm	mm	mm				
4	13-S30	Slab	E	20											4985		4985	4985	20
92	19-S33	Slab	E	20											18 290		18 290	18 290	3761
46	19-S34	Slab	E	20											2545		2545	2545	262
143	16-S35	Slab	E	20											11 585		11 585	11 585	2571
220	16-S36	Slab	E	20											11 760		11 760	11 760	4015
19	19-S39	Slab	E	20											760		760	760	130
		Inc. = 255													5350		5350	5350	
17	16-S42	Slab	E	20											660		660	660	79
		Inc. = 290													5300		5300	5300	
14	19-S43	Slab	E	20											1535		1535	1535	100
		Inc. = 255													4850		4850	4850	
13	16-S46	Slab	E	20											1420		1420	1420	64
		Inc. = 290													4900		4900	4900	
17	19-S52	Slab	E	20											1075		1075	1075	118
		Inc. = 255													5155		5155	5155	
15	16-S56	Slab	E	20											1180		1180	1180	75
		Inc. = 290													5240		5240	5240	
2	13-S57	Slab	E	20											5090		5090	5090	10
160	16-S60	Slab	E	20											10 850		10 850	10 850	2694
40	16-S61	Slab	E	20											9605		9605	9605	596
104	16-S62	Slab	E	20											10 685		10 685	10 685	1725
26	16-S63	Slab	E	20											9510		9510	9510	384
46	19-S64	Slab	E	20											1895		1895	1895	195
24	16-S65	Slab	E	20											1030		1030	1030	38
1	Delete																		
18	16-R25	Barrier Curb	E	17											565		740	740	21
1	Add																		

Two additional 19-S1, 13-S30 and 16-S4 are included in bar bill for testing



Stirrup Hook Dimensions				
All Grades				
Bar Size	D (mm)	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

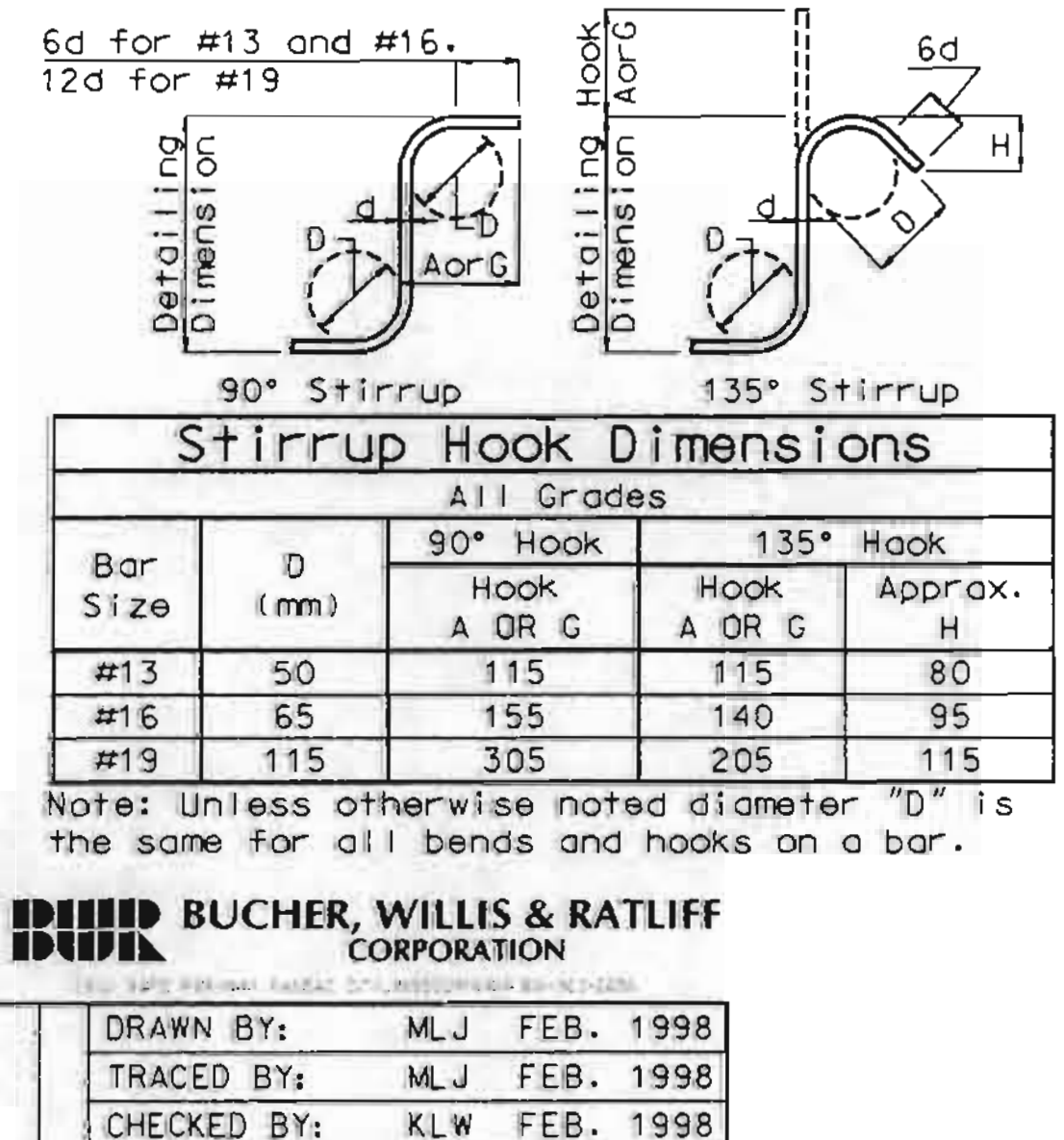
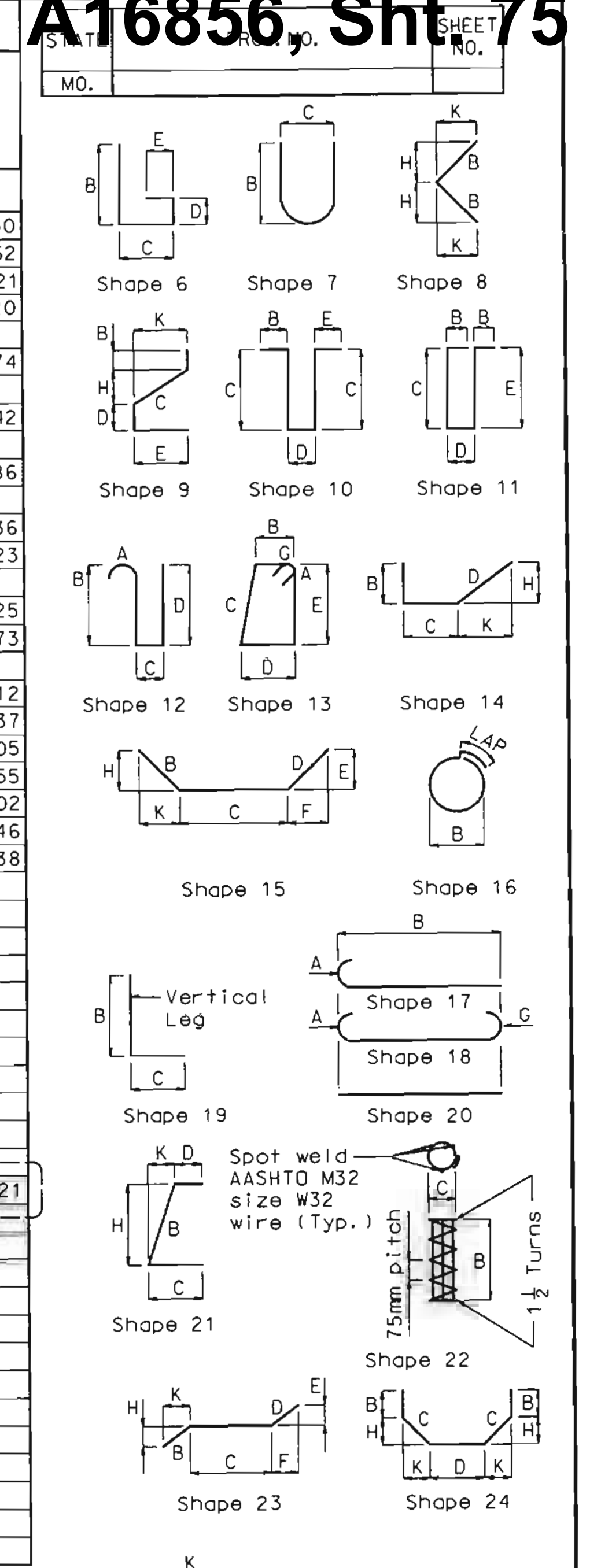
End Hook Dimensions				
All Grades				
Bar Size	D (mm)	180° Hook		90° Hook
		A OR G	J	A OR G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Notes:

All standard hooks and bends other than 180 deg. are to be bent with same procedure as for 90 deg. 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

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions								Nominal Length	Actual Length	Mass					
								Dimensions															
								B	C	D	E	F	H	K	mm				mm	kg			
Superstructure																							
64	16-C1	Slip Form Barr.	E	20										2450	2450	243							
913	16-R1	Barrier Curb	E	19	S									765	90	855	825	1169					
913	16-R2	Barrier Curb	E	15	S									770	90	860	830	1176					
913	16-R3	Barrier Curb	E	19	S									435	155	590	560	794					
913	16-R4	Barrier Curb	E	27	S										155	290	220	305	230	170	970	910	1289
42	16-R5	Barrier Curb	E	20										2950		2950	2950	192					
56	16-R6	Barrier Curb	E	20										2340		2340	2340	203					
28	16-R7	Barrier Curb	E	20										10 920		10 920	10 920	475					
42	16-R8	Barrier Curb	E	20										11 545		11 545	11 545	753					
28	16-R9	Barrier Curb	E	20										9660		9660	9660	420					
14	16-R10	Barrier Curb	E	20										10 910		10 910	10 910	237					
21	16-R11	Barrier Curb	E	20										8915		8915	8915	291					
14	16-R12	Barrier Curb	E	20										11 895		11 895	11 895	258					
14	16-R13	Barrier Curb	E	20										9470		9470	9470	206					
48	16-R20	Barrier Curb	E	19	S									930	170	1100	1070	80					
16	16-R21	Barrier Curb	E	10	S										400	330	1130	1065	26				
24	16-R22	Barrier Curb	E	20										1500		1500	1500	56					
4	16-R23	Barrier Curb	E	20										4190		4190	4190	26					
16	16-R24	Barrier Curb	E	19	S									930	140	1070	1040	26					
36	16-R25	Barrier Curb	E	17										565		740	740	41					
32	16-R26	Barrier Curb	E	19	S									485	125	610	580	29					
32	16-R27	Barrier Curb	E	27	S									125	290	275	230	170	690	625	31		
12	16-R28	Barrier Curb	E	19	S									930	90	1020	990	18					
12	16-R29	Barrier Curb	E	15	S									935	90	1025	995	19					
10	16-R30	Barrier Curb	E	20										3410		3410	3410	53					
2056	19-S3	Slab	E	20										5840		5840	5840	26 836					
1835	16-S6	Slab	E	20										5840		5840	5840	16 632					
16	19-S10	Slab	E	20		V	1							1335		1335	1335	127					
		Inc. = 295												5760		5760	5760						
15	16-S13	Slab	E	20		V	1							1200		1200	1200	82					
		Inc. = 330												5820		5820	5820						
26	16-S14	Slab	E	20		V	2							1120		1120	1120	125					
		Inc. = 330												5080		5080	5080						
30	19-S18	Slab	E	20		V	2							1040		1040	1040	208					
		Inc. = 295												5170		5170	5170						
34	19-S23	Slab	E	20		V	2							860		860	860	245					
		Inc. = 295												5580		5580	5580						
32	16-S26	Slab	E	20		V	2							750		750	750	160					
		Inc. = 330												5700		5700	5700						
135	16-S27	Slab	E	20										10 220		10 220	10 220	2141					
85	16-S28	Slab	E	20										10 070		10 070	10 070	1328					
29	19-S29	Slab	E	20										14 220		14 220	14 220	922					
2	13-S32	Slab	E	20										5900		5900	5900	12					
116	19-S33	Slab	E	20										18 290		18 290	18 290	4742					

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions								Nominal Length	Actual Length	Mass
								Dimensions										
								B	C	D	E	F	H	K	mm			
58	19-S34	Slab	E	20										2545		2545	2545	330
187	16-S35	Slab	E	20										11 585		11 585	11 585	3362
297	16-S36	Slab	E	20										11 760		11 760	11 760	5421
17	19-S37	Slab	E	20		V	1							1130		1130	1130	120
		Inc. = 255												5210		5210	5210	
15	16-S40	Slab	E	20		V	1							1150		1150	1150	74
		Inc. = 290												5210		5210	5210	
20	19-S45	Slab	E	20		V	1							755		755	755	142
		Inc. = 255												5600		5600	5600	
18	16-S48	Slab	E	20		V	1							620		620	620	86
		Inc. = 290												5550		5550	5550	
3	19-S49	Slab	E	20										5430		5430	5430	36
17	19-S50	Slab	E	20		V	1							1190		1190	1190	123
		Inc. = 255												5270		5270	5270	
3	16-S53	Slab	E	20										5430		5430	5430	25
15	16-S54	Slab	E	20		V	1							1090		1090	1090	73
		Inc. = 290												5150		5150	5150	
2	13-S59	Slab	E	20										6050		6050	6050	12
216	16-S60	Slab	E	20										10 850		10 850	10 850	3637
54	16-S61	Slab	E	20										9605		9605	9605	805
136	16-S62	Slab	E	20										10 685		10 685	10 685	2255
34	16-S63	Slab	E	20										9510		9510	9510	502
58	19-S64	Slab	E	20										1895		1895	1895	246
24	16-S65	Slab	E	20										1030		1030	1030	38
1	Delete																	
18	16-R25	Barrier Curb	E	17										565		740	740	21
1	Add																	



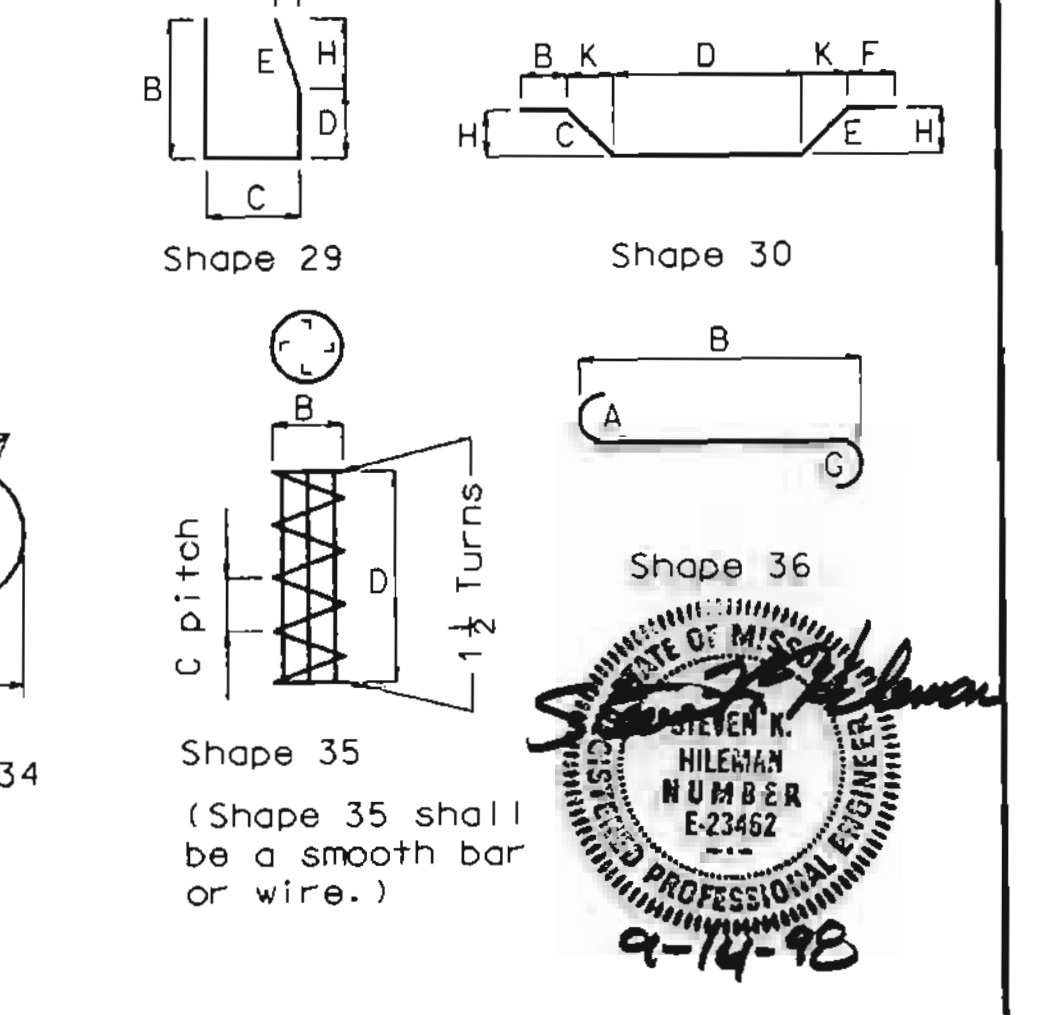
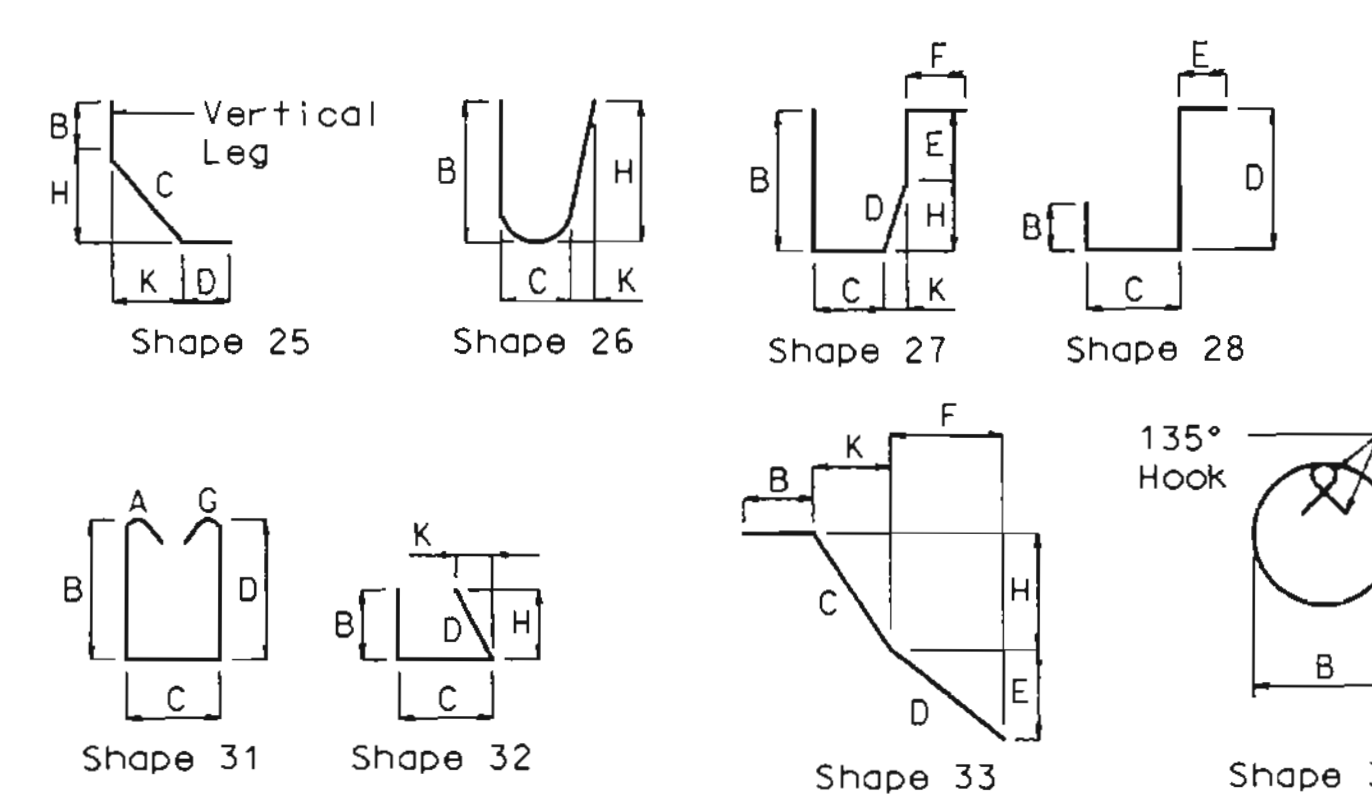
Bar Size	All Grades		
	D (mm)	180° Hook A OR G	90° Hook A OR G
#10	60	125	80
#13	80	150	105
#16	95	175	130
#19	115	200	155
#22	135	250	180
#25	155	275	205
#29	240	375	300
#32	275	425	335
#36	305	475	375
#43	465	675	550

Notes:

All standard hooks and bends other than 180 deg. are to be bent with same procedure as for 90 deg. 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. eq. = 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 5mm)
Actual lengths are measured along centerline bar to the nearest 5mm.
Pay items 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



Bending Diagrams

JACKSON COUNTY

BILL OF REINFORCING STEEL - STAGE III

SHEET NO. 26 OF 26

A16854

Revised 9-11-98

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

PROJECT: MAJ. ROAD - No. A6854-SB L-335 over Big Bus River. S:\38041\STR\A6854-SB\VDVA\SBORLDEN



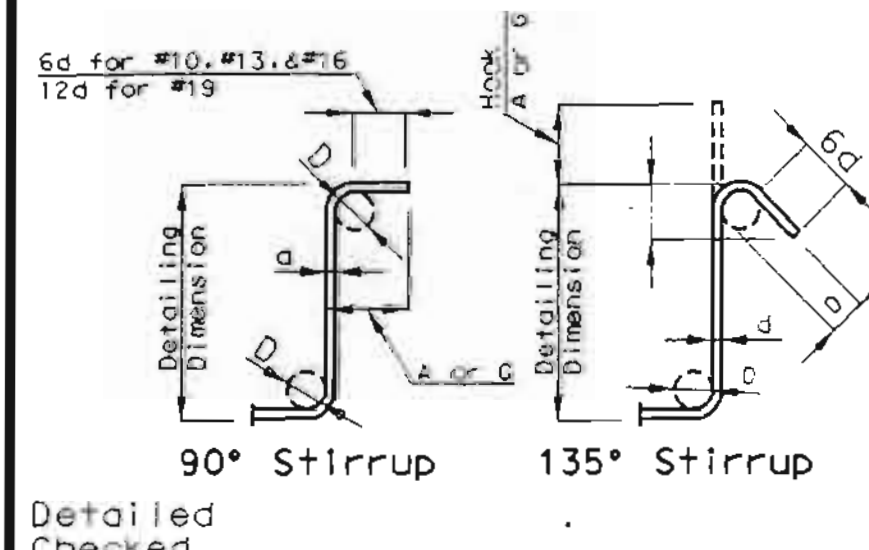
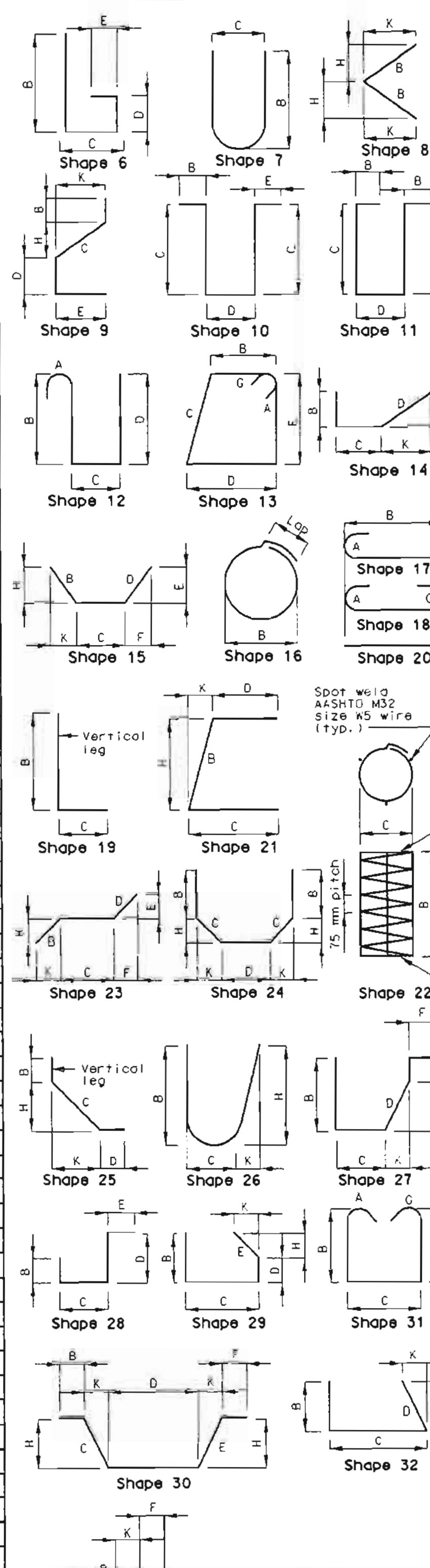
BILL OF REINFORCING STEEL

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Var. (V)	Dimensions							Nominal Length	Actual Length	Mass
								B	C	D	E	F	H	K			
								mm	mm	mm	mm	mm	mm	mm			
		WING REHAS															
4	19 F1	WING		23	S	X		305	1164	250	134	214	259	162	1720	1700	15
4	19 F2	WING		23	S	X		305	1029	210	111	178	259	162	1545	1520	14
4	19 F3	WING		23	S	X		390	1673	305	189	240	351	169	2370	2340	21
4	19 F4	WING		23	S	X		295	1388	305	189	240	266	129	1990	1960	18
4	19 H1	WING	E	20		X		4190							4190	4190	37
16	19 H2	WING		20	X	V	4	4095							4095	4095	
		INCREMENT = 575 MM						2377							2375	2375	116
6	13 H3	WING		20		X		1020							1020	1020	6
6	13 H4	WING		20		X		760							760	760	5
4	19 T1	WING		25	S	X		543	2705	1600		1009		2511	4850	4820	43
2	13 T2	WING		19	S	X		1200	1170						2370	2345	5
2	13 T3	WING		19	S	X		1200	910						2110	2085	4
24	19 V1	WING		20		X		1555							1555	1555	83
32	19 V2	WING	E	20	X	V	4	1489							1490	1490	
		INCREMENT = 120 MM						645							645	645	76
4	13 V3	WING		20		X		1200							1200	1200	5

BILL OF REINFORCING STEEL

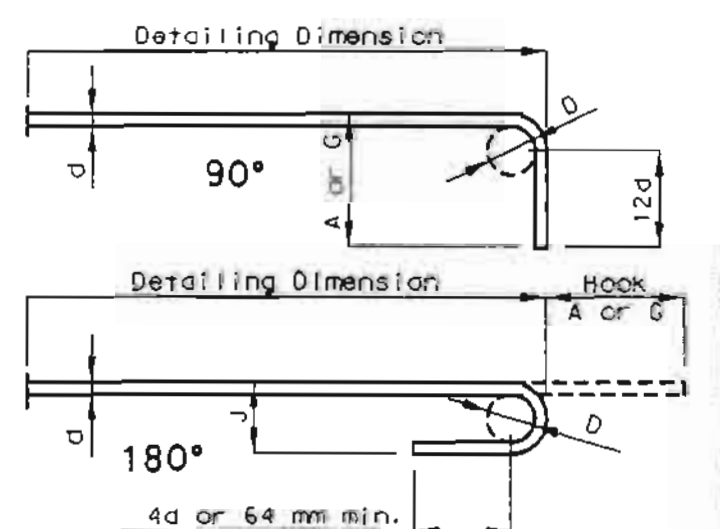
No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Var. (V)	Dimensions							Nominal Length	Actual Length	Mass
								B	C	D	E	F	H	K			
								mm	mm	mm	mm	mm	mm	mm			

State: MO Proj. No. No.



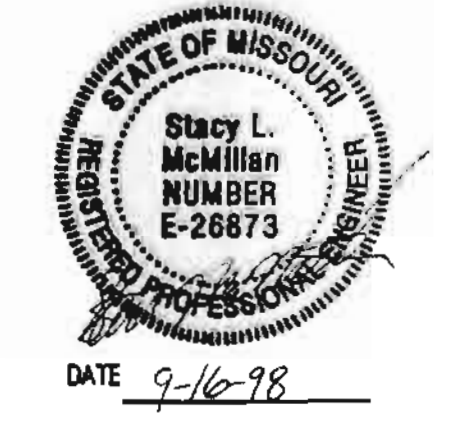
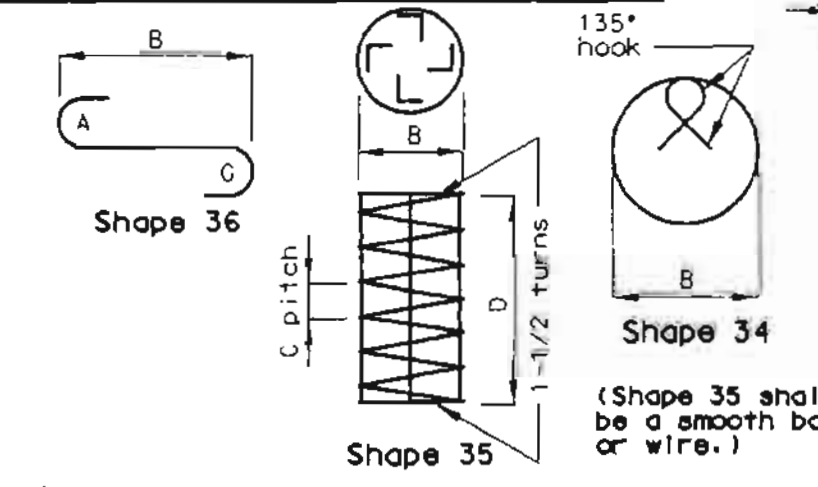
Bar Size	D	90° Hook		135° Hook	
		A or G	Approx. H	A or G	Approx. H
#13	50	115	115	80	
#16	65	155	140	95	
#19	115	305	205	115	

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



Bar Size	D	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. Y = bar dimensions vary in equal increments between dimensions shown on this line and the following line. No. Ed. = number of bars of each length. Nominal lengths are based on cut to cut 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.



BENDING DIAGRAMS

STATE	PROJ. NO.	SHEET NO.
MO.		224
SEC./SUR. 31	TWP. 50N	RGE. 32W

Missouri Department of Transportation

No.	Sheet Title
1	General Notes and Estimated Quantities
2	Staged Construction Sequence
3	End Bent and Hinge Removal Details
4	Hinge Modification Details
5	Details of Type 'N' PTFE Bearings
6	Slab Cross Section and Haunching Diagram
7	Slab Plan Stage I - Units 1 - 2
8	Slab Plan Stage I - Units 3 - 4
9	Slab Plan Stage II - Units 1 - 2
10	Slab Plan Stage II - Units 3 - 4
11	Slab Plan Stage III - Units 1 - 2
12	Slab Plan Stage III - Units 3 - 4
13	Miscellaneous Slab Details
14	Slab Pouring Sequence
15	Slab Drain Locations
16	Details of Slab Drains
17	Finger Plate Details Hinges Near Bents No. 3 & 6
18	Miscellaneous Expansion Device Details - Hinges Near Bents No. 3 & 6
19	Details of Preformed Compression Joint Seal at Hinge Near Bent No. 9
20	Details of Bent Curb Plates
21	Safety Barrier Curb Details
22	Miscellaneous Barrier Curb Details
23	Barrier Curb at End Bents
24	Bill of Reinforcing Steel - Stage I
25	Bill of Reinforcing Steel - Stage II
26	Bill of Reinforcing Steel - Stage III

Estimated Quantities			
Item		Superstr.	Total
Partial Removal of Substructure Concrete	lump sum		1
Removal of Existing Bridge Deck - Metric	sq. meter	4328.1	4328.1
Slab on Steel - Metric	sq. meter	4328	4328
* Safety Barrier Curb - Metric	meter	556.0	556.0
Type N PTFE Bearings	each	12	12
Preformed Compression Expansion Joint Seal (102mm) - Metric	meter	17.5	17.5
Expansion Device (Finger Plate) - Metric	meter	33.2	33.2
Fabricated Structural Carbon Steel (Misc) - Metric	kilogram	17 325	17 325
Slab Drain	each	130	130
Field Coat (System G) Gray - Metric	megagram	17.3	17.3

The table of Estimated Quantities for Slab on Steel represents the quantities used by the state in preparing the cost estimate for concrete slabs. Variations may be encountered in these estimated quantities but these variations cannot be used for an adjustment in the contract unit price per square meter of Slab on Steel.

Slab on steel shall be constructed using cast-in-place conventional forming.

All concrete and reinforcement above the existing construction joint in the end bents is included with the Estimated Quantities for Slab on Steel.

* Safety barrier curb shall be cast-in-place option or slip-form option.

Estimated Quantities for Slab on Steel					
Item		Stage I	Stage II	Stage III	Total
Reinforcing Steel (Epoxy Coated)	kilogram	62 560	75 730	71 375	209 665
Concrete	cu. meter	281.0	343.4	364.9	989.3

Miscellaneous

Traffic over structure to be maintained during construction.

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.

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

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

Bars banded 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.

Contractor shall take all necessary precautions to prevent debris and other material from dropping into the river. See Special Provisions.

Dimensions

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

Drawings are not to scale. Follow dimensions.

Elevations

All elevations are specified in meters except as noted.

General Notes:

Design Specifications:
AASHTO-1996 Load Factor Design
Seismic Performance Category A

Design Loading:
MS18 Modified
No Future Wearing Surface
Fatigue Stress - Case I

Design Unit Stresses:
Class B1 Concrete (Safety Barrier Curb) f'c = 28 MPa
Class B2 Concrete (Superstructure, except Safety Barrier Curb) f'c = 28 MPa
Reinforcing Steel (Grade 420) fy = 420 MPa
Structural Carbon Steel (ASTM A709M Grade 250) fy = 250 MPa

Cathodic Protection System Removal
Reference existing Plans for Repairs to N.B.L. of Bridge over Blue River dated February 25, 1985 for original details of the system.

Remove all wiring associated with the cathodic protection system. Disconnect wiring from grounding points on girder shear connector studs without damaging studs.

Remove all conduit associated with the cathodic protection system to groundline and cap conduit ends.

Cut off the rectifiers/controllers near the top of concrete support pad and remove.

Items removed shall become the property of the contractor and shall be properly disposed of off site.

Removal and disposal of the cathodic protection system shall be included in the cost of Removal of Existing Bridge Deck - Metric.

Fabricated Steel Connections

Field connections shall be made with 19.0 mm diameter high strength bolts and 20.6 mm diameter holes, except as noted.

Joint Filler

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

Reinforcing Steel

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

Protective Coating (New steel only)

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.

Hinge Modifications

Removal of existing structural steel in hinge areas as shown shall be included in the cost of Fabricated Structural Carbon Steel (Misc.) - Metric.



Repairs to:
Bridge over Big Blue River

State Road I-435 from Rte. 24 to Missouri River
In Kansas City

Project No. Sta. 3+758.026 (Match Existing)
Job No. J4I1250 Rte. I-435 (NB)

JACKSON COUNTY

Date: 4-7-98

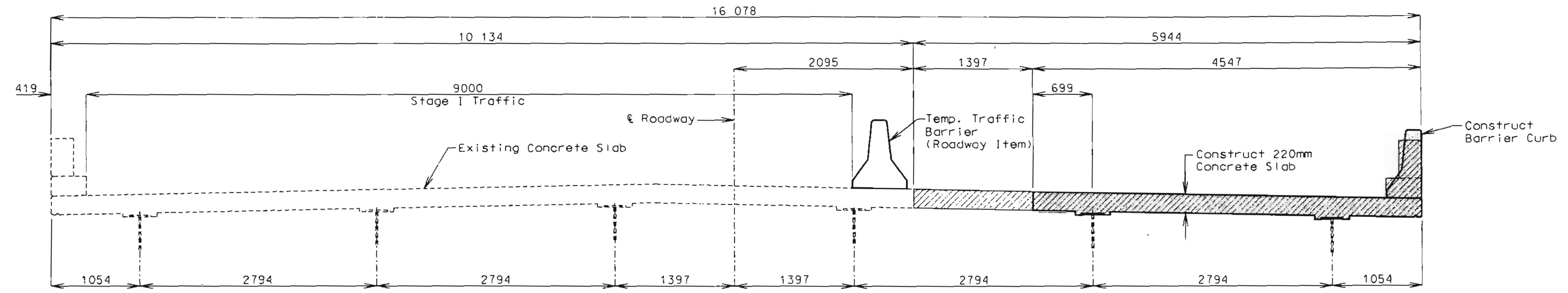
PROJECT NO. 98-047 PROJECT NAME: I-435 over Big Blue River S:\98047\STR\A8855\NB\DOCS\NBNOTE.DOC

BUR BUCHER, WILLIS & RATLIFF CORPORATION

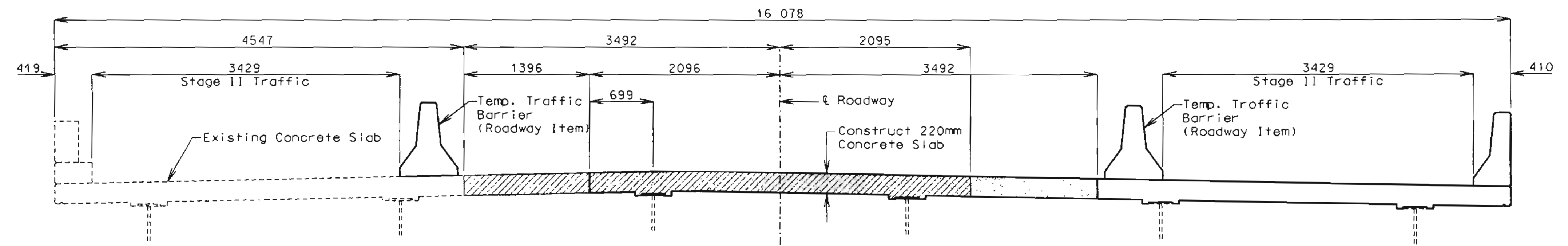
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TRACED BY:	MAH	FEB. 1998
CHECKED BY:	KLW	FEB. 1998

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

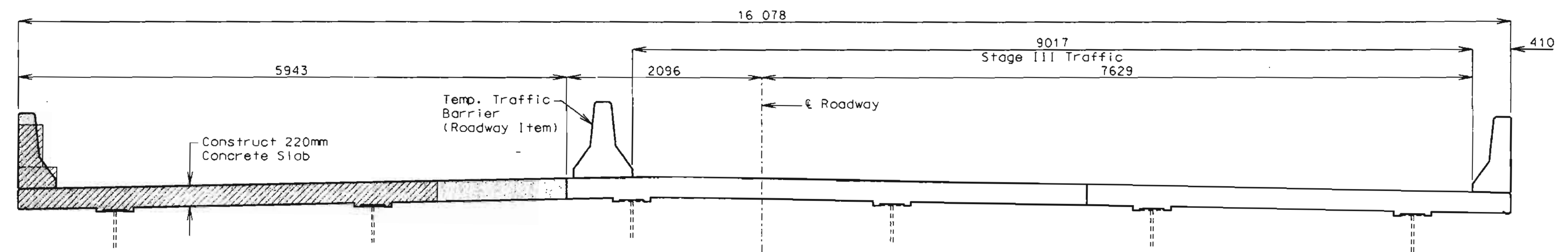
STATE	PROJ. NO.	SHEET NO.
MO.		225



STAGE I CONSTRUCTION



STAGE II CONSTRUCTION



STAGE III CONSTRUCTION

Legend

- Staged Removal Limits
- Staged Construction Limits

PROJECT NO. 98-047 PROJECT NAME: MODOT, B.F. NO. AB555-NB, I-435 over Big Blue River R:\98047\STR\AB555-NB\CON\WB\CONSET.DGN

BWR BUCHER, WILLIS & RATLIFF CORPORATION
TOLDO AND HIGHWAY KANSAS CITY, MISSOURI 64114 816-263-2696

DRAWN BY:	DJM	JAN, 1998
TRACED BY:	FWM	JAN, 1998
CHECKED BY:	MLJ	FEB, 1998

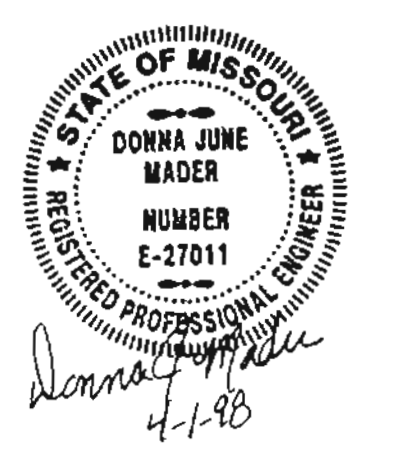
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

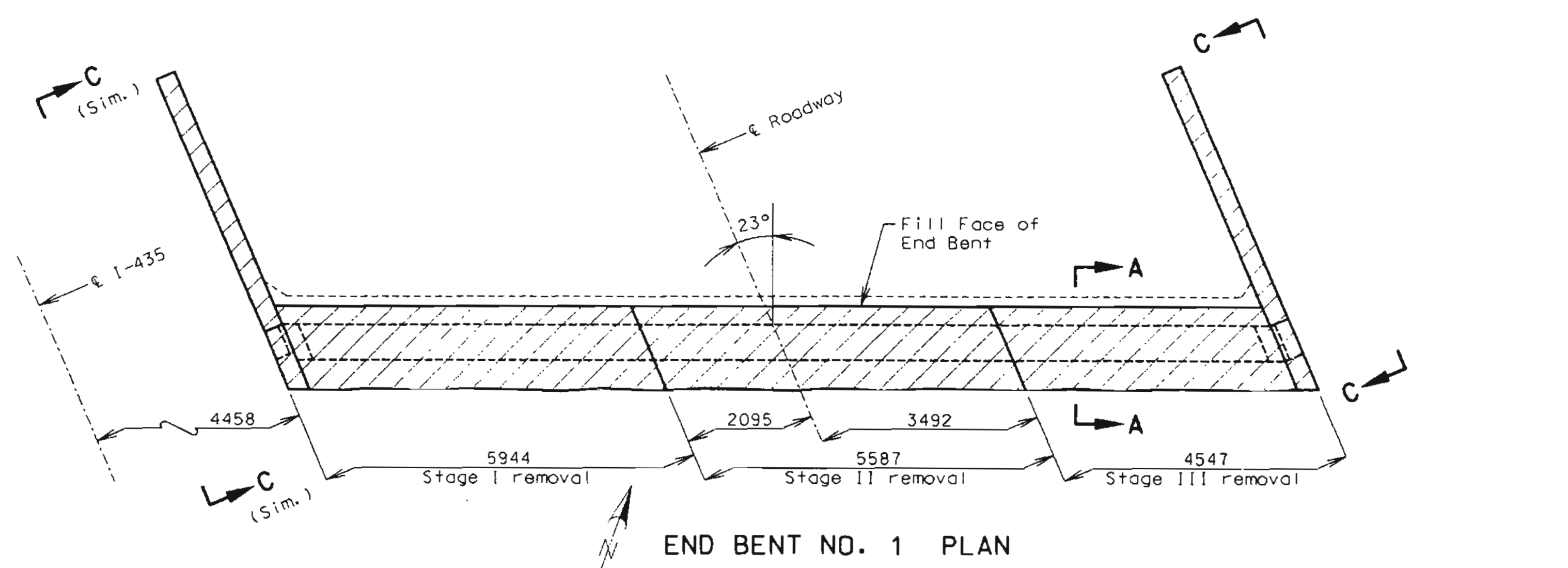
STAGED CONSTRUCTION SEQUENCE

SHEET NO. 2 OF 26

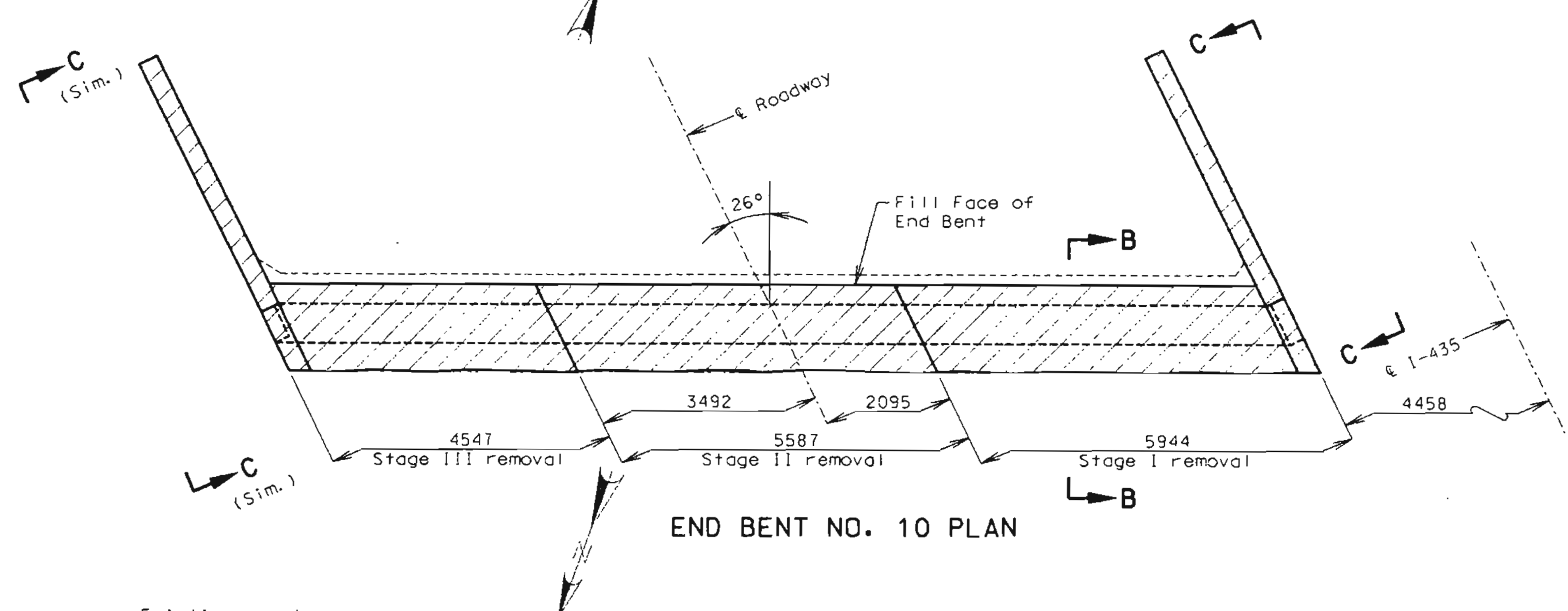
A16855



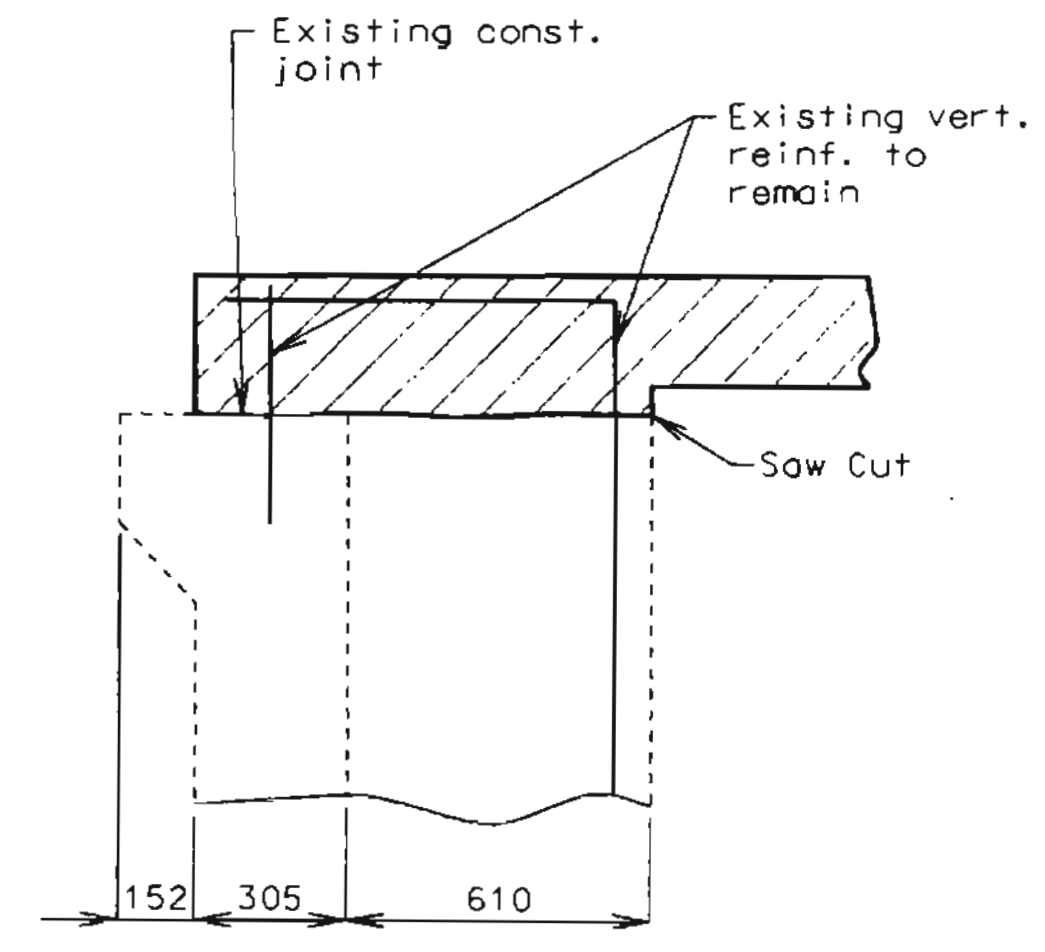
STATE	PROJ. NO.	SHEET NO.
MO.		226



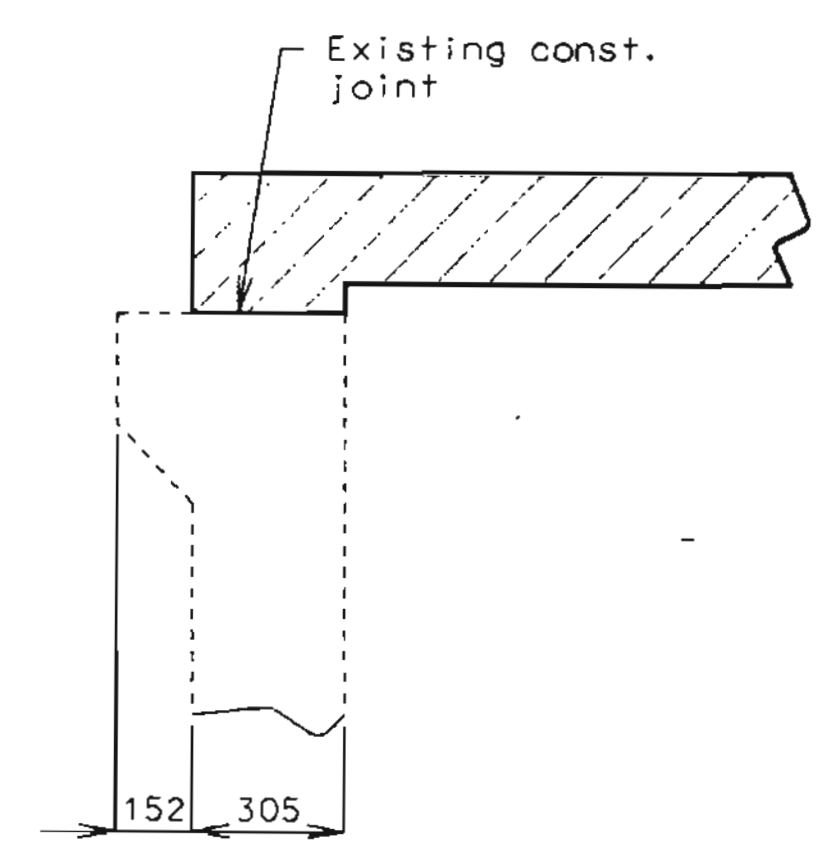
END BENT NO. 1 PLAN



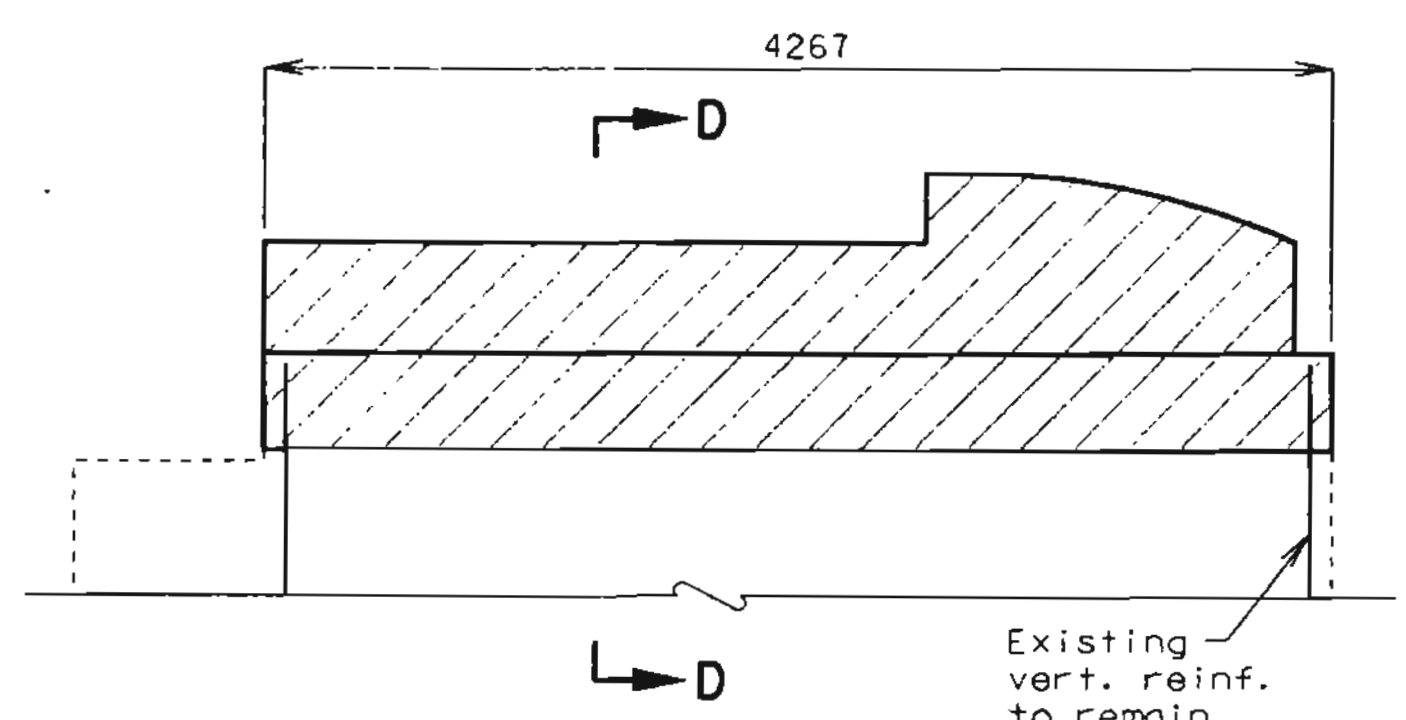
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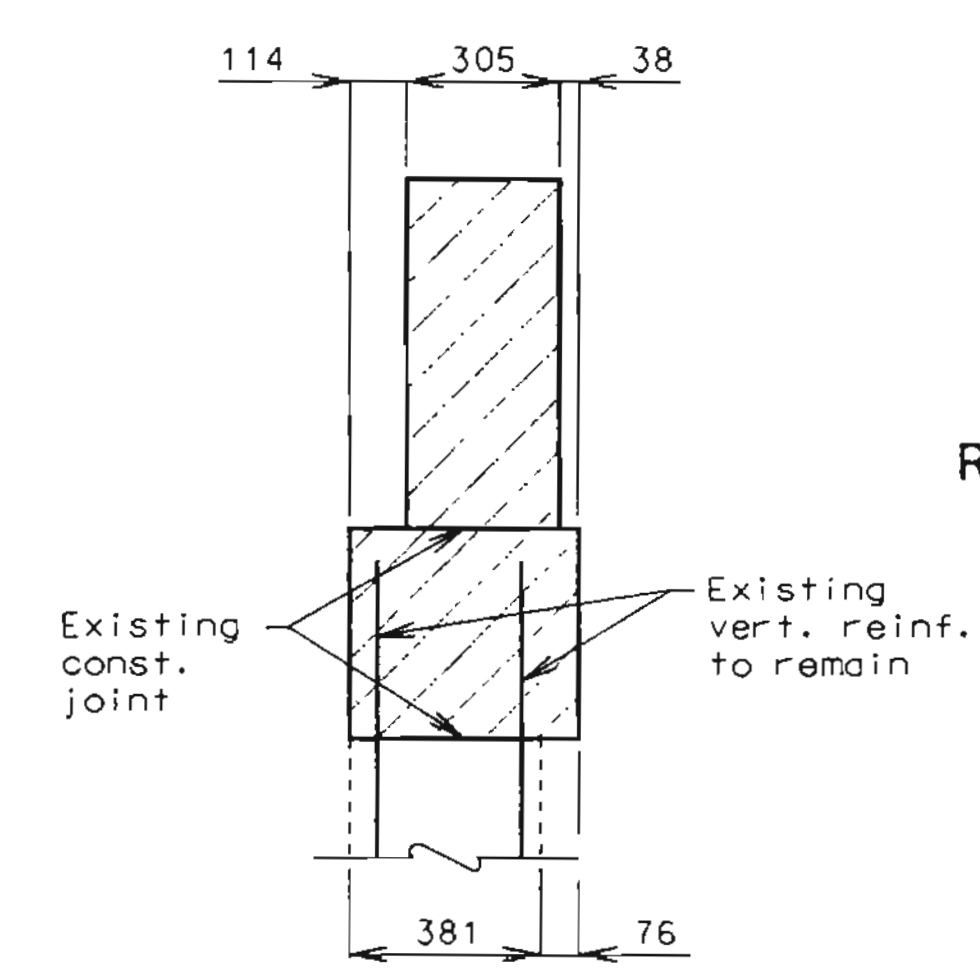
SECTION A-A



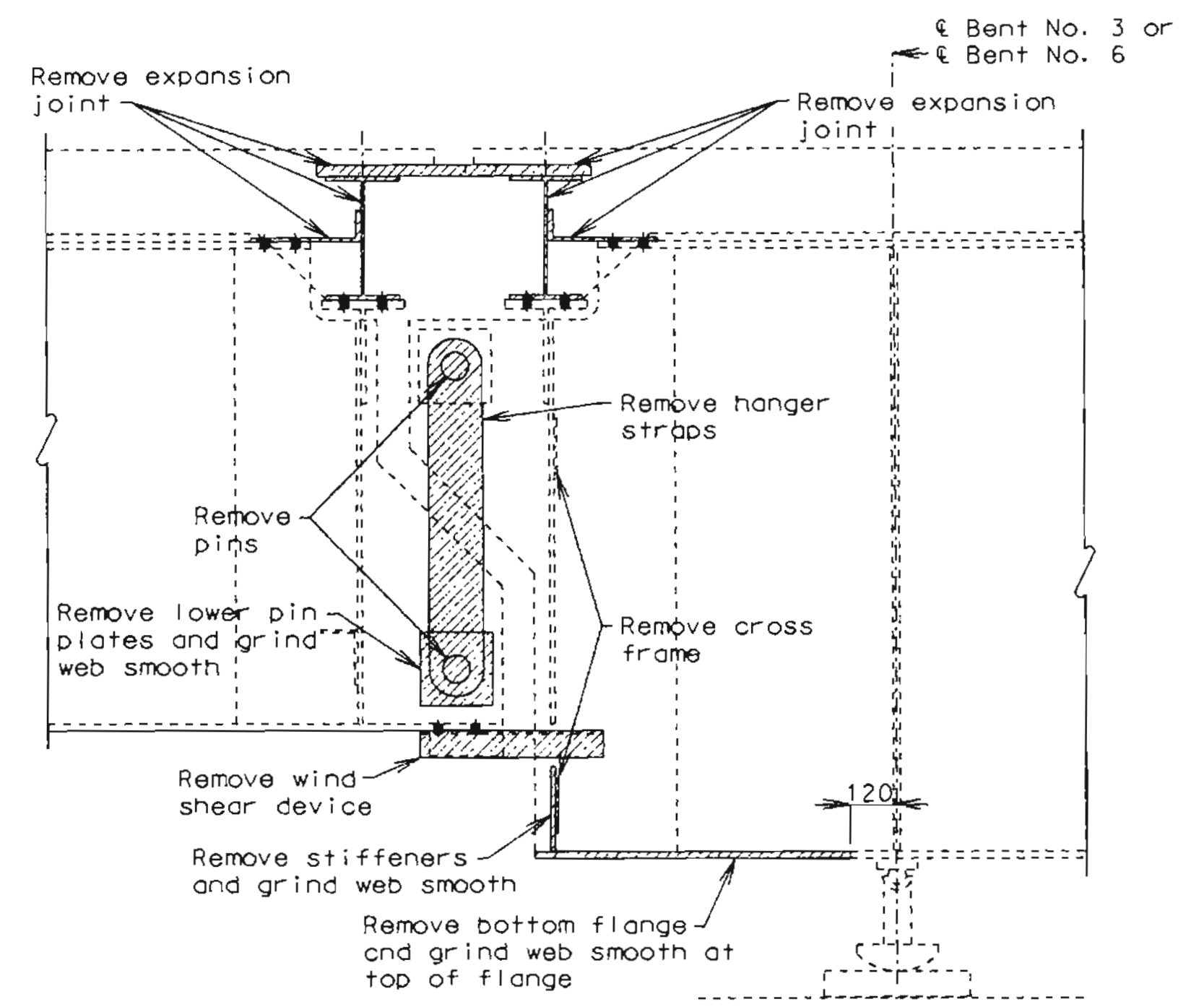
SECTION B-B



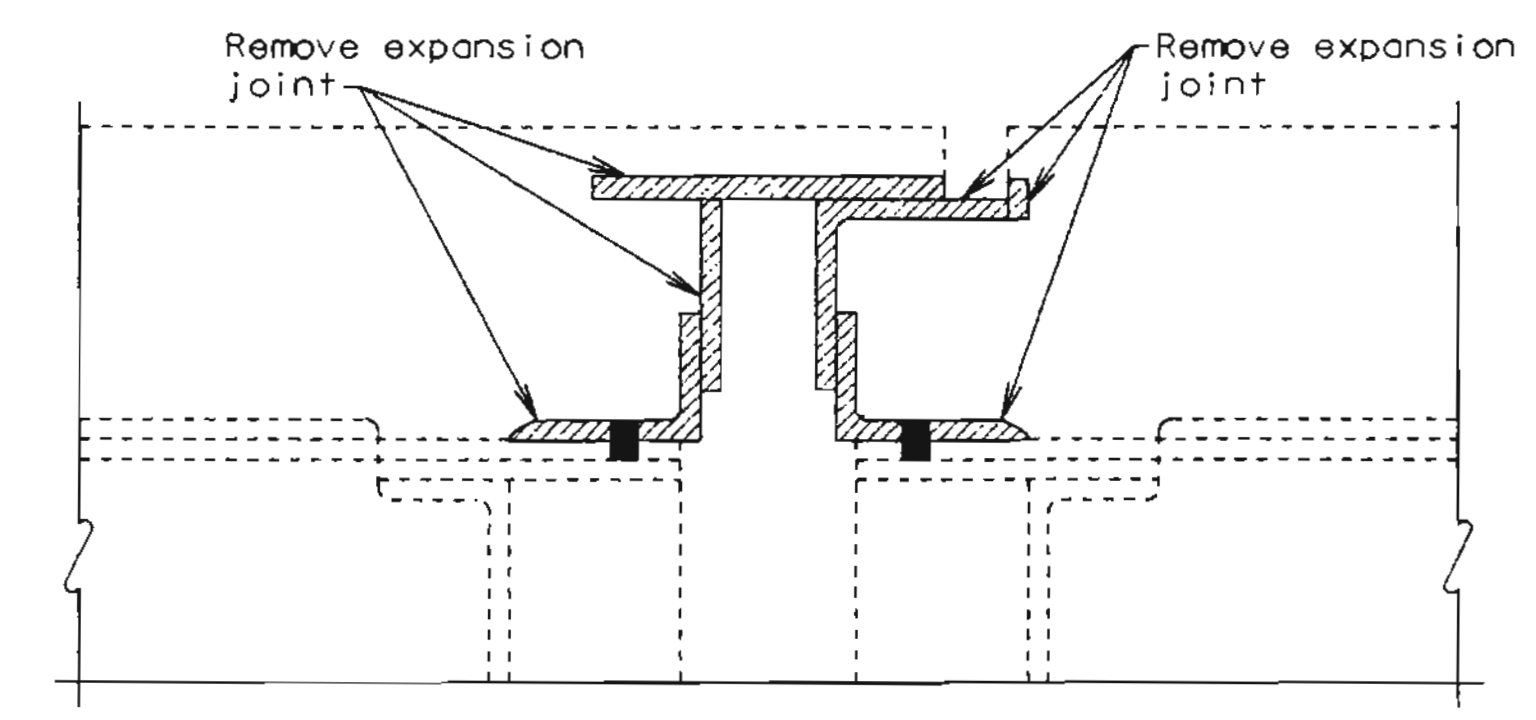
ELEVATION C-C



SECTION D-D

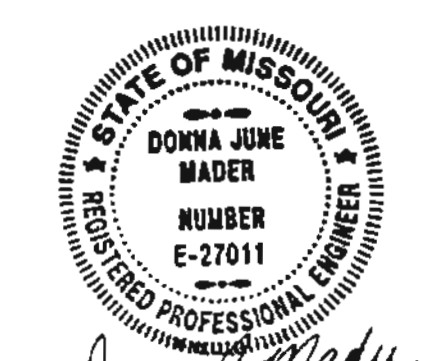


REMOVAL DETAILS AT HINGES NEAR BENTS NO. 3 AND 6



REMOVAL DETAILS AT HINGE NEAR BENT NO. 9

Removal Limits



JACKSON COUNTY

END BENT AND HINGE
REMOVAL DETAILS

SHEET NO. 3 OF 26

A16855

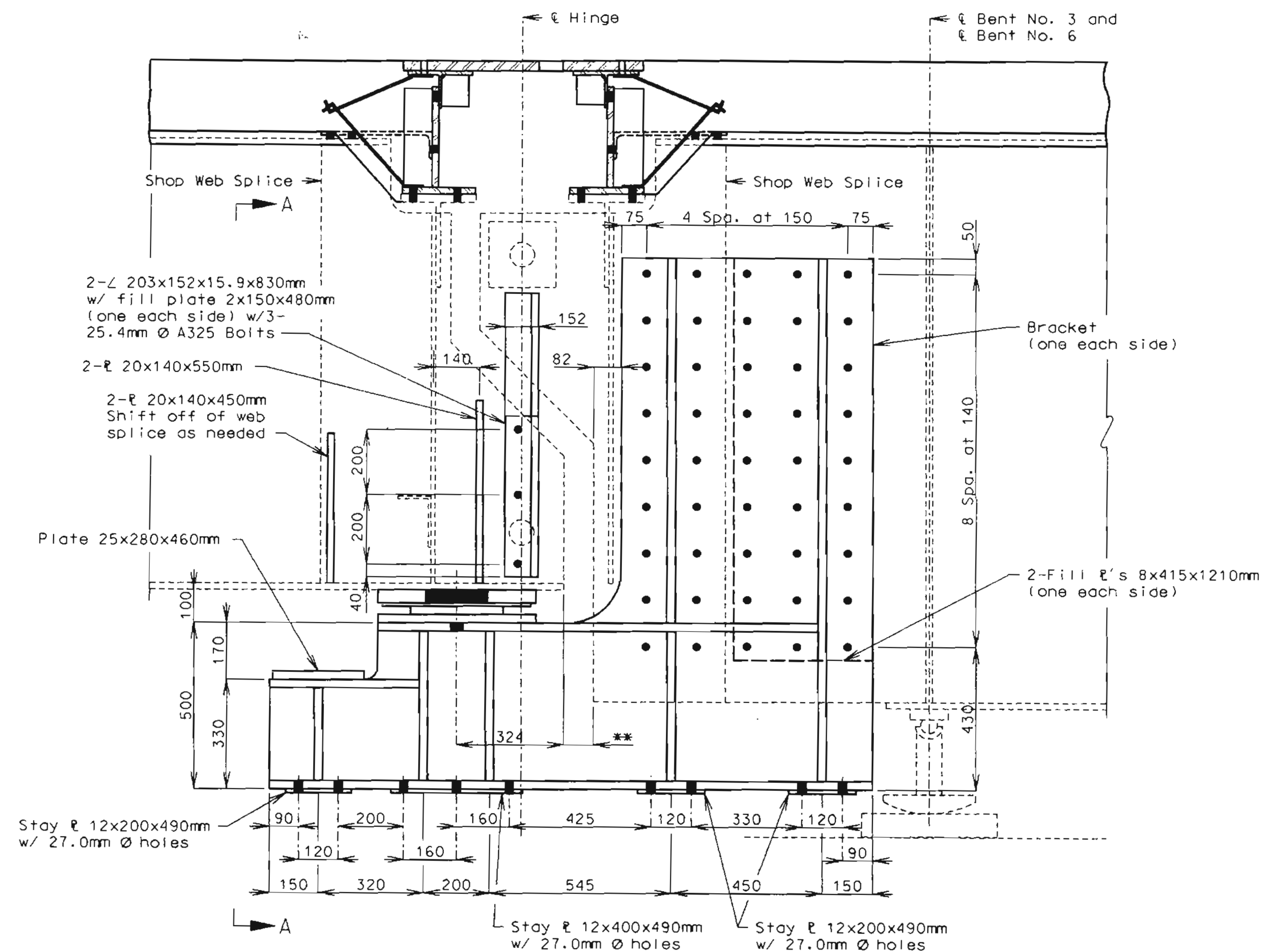
PROJECT NO. 98-047 PROJECT NAME: MODOT-BP. NO. A16855-NB I-435 over Big Blue River S:\98047\STR\A16855-NB\A16855-NB-REMOV.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
7920 WARD PARKWAY, KANSAS CITY, MISSOURI 64114 816-363-2696

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	MLJ	FEB. 1998

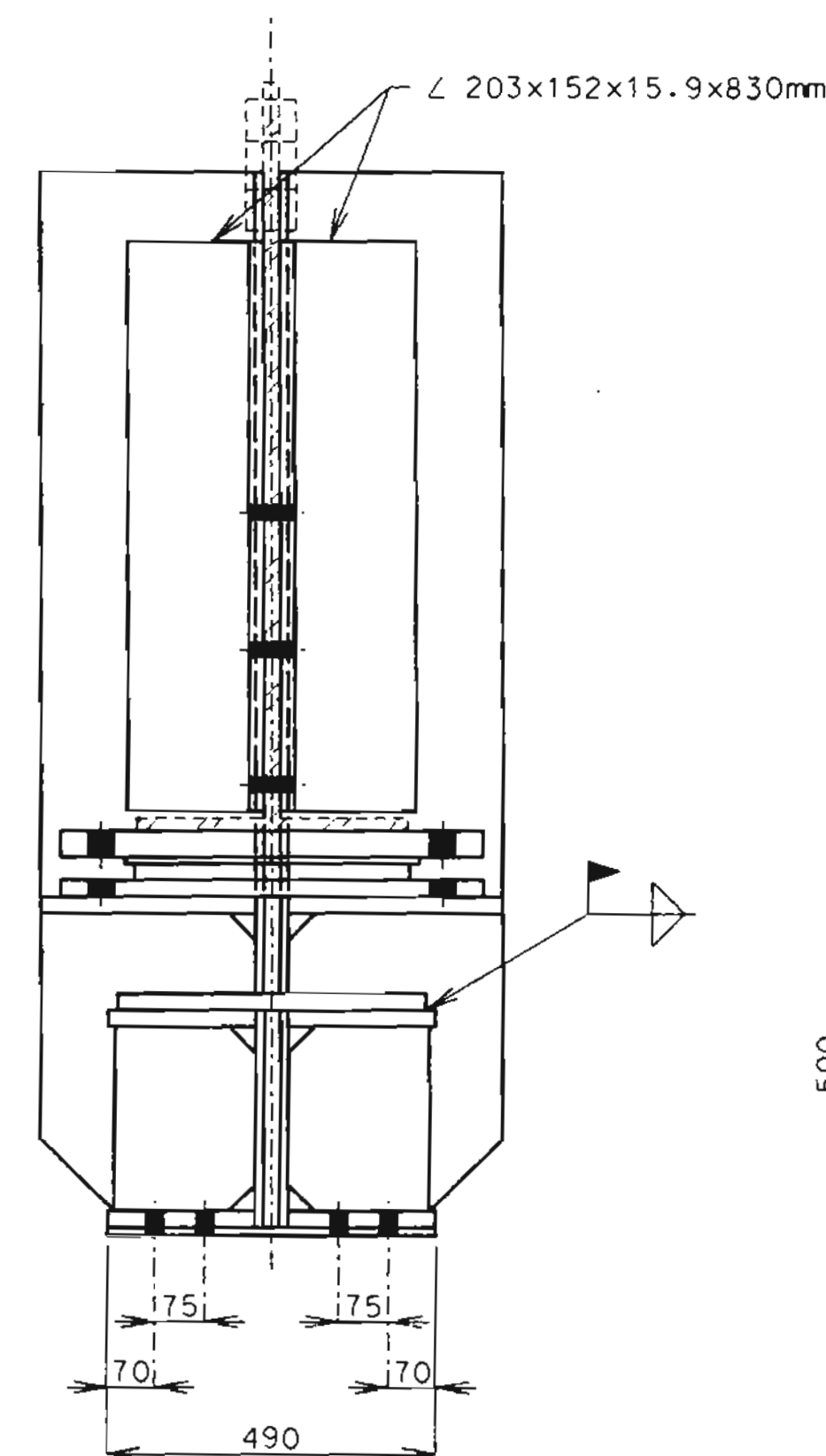
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ. NO.	SHEET NO.
MO.		227



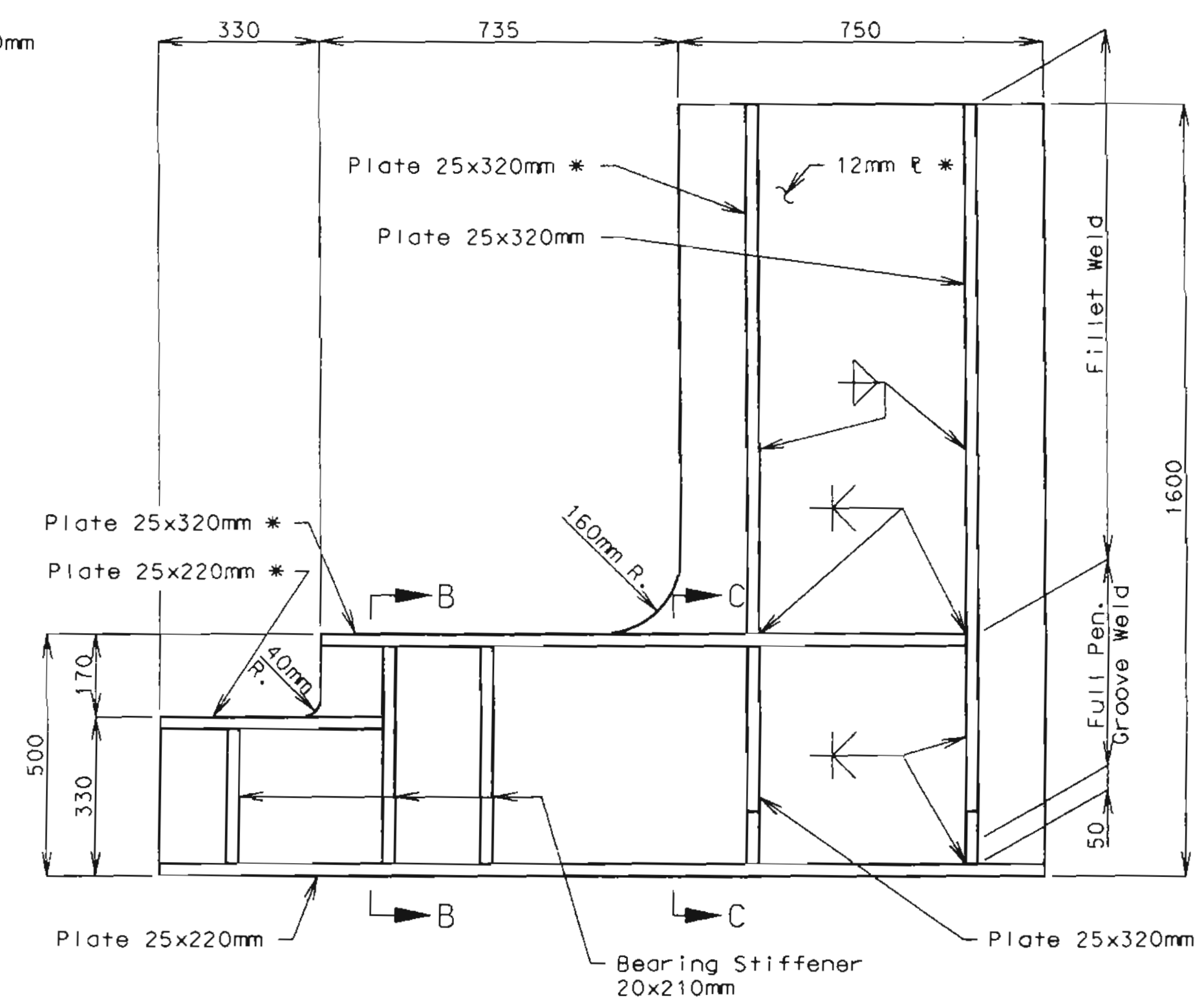
HINGE MODIFICATION DETAIL

** 89mm at 16°C (Based on original plan dimensions)



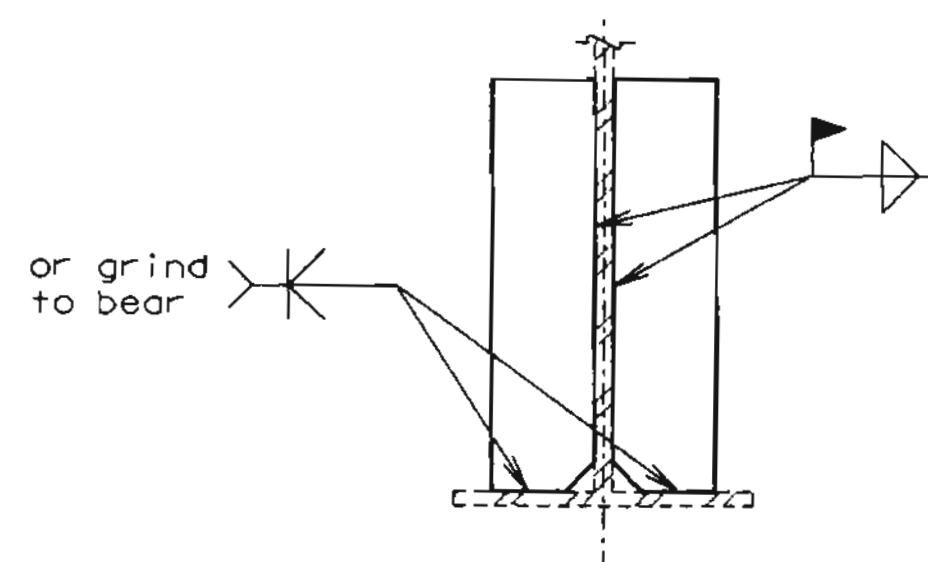
SECTION A-A

Note: Girder Stiffeners not shown for clarity.

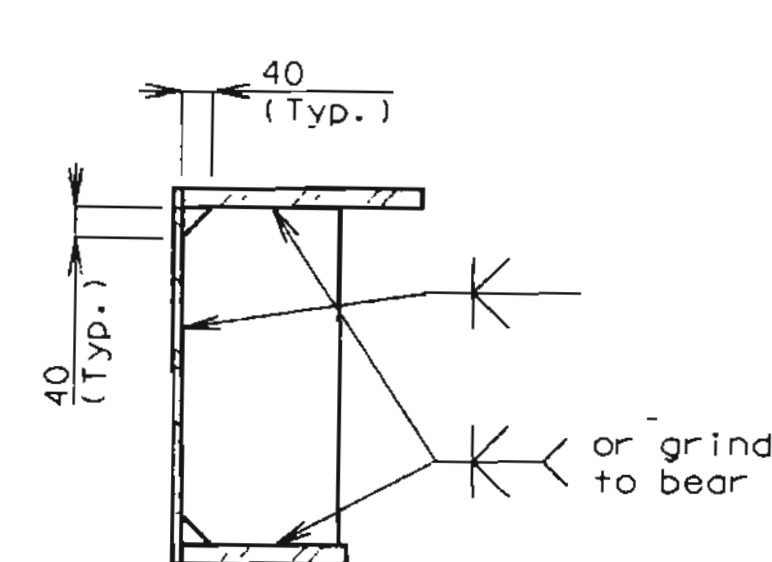


BRACKET DETAIL

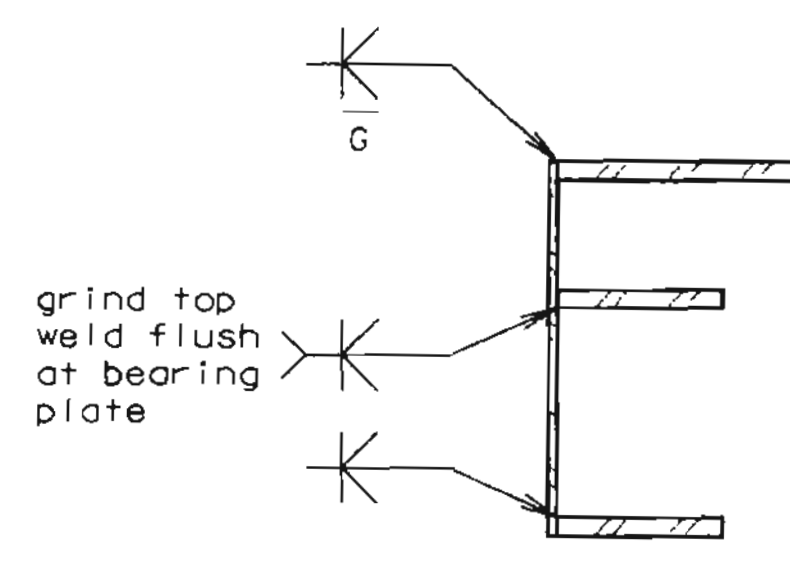
Note: Bolt holes not shown for clarity. (12 req'd as shown, 12 req'd opp. hand)



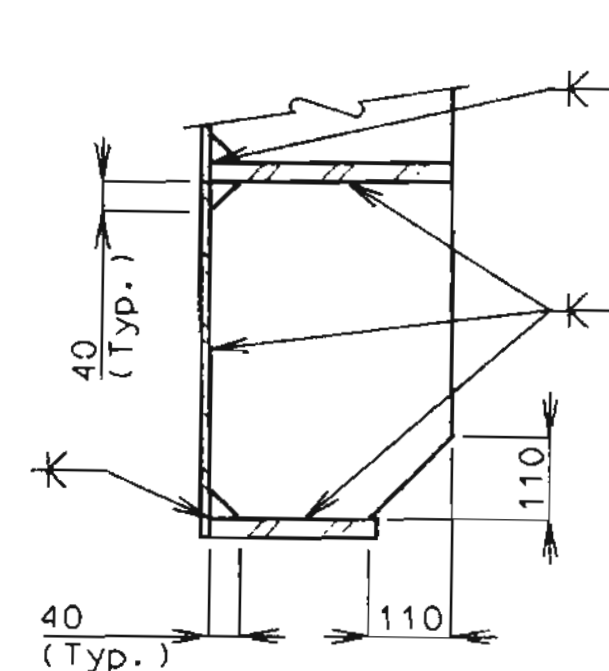
TYPICAL WELD DETAILS FOR STIFF. PLATES TO EXISTING GIRDER



TYPICAL BEARING STIFFENER DETAIL



SECTION B-B



SECTION C-C

Notes:

- Position bracket 82mm from end of girder web as shown.
- Material for the hinge modification shall be ASTM A709M Grade 250 structural steel.
- Use 22.2mm Ø A325 bolts with 23.8mm Ø reamed holes, except as shown.
- Back gouge all full penetration groove welds.
- * Indicates plates subject to notch toughness requirements.
- Field verify fill plate thicknesses required in field and adjust as necessary.
- Complete hinge modifications before setting expansion joint fingers.
- For hinge removal details. See Sheet No. 3.
- For details of bearings. See Sheet No. 5.

PROJECT NO. 98-047 PROJECT NAME: MODOT-97-DC-A6855-HB 1-435 over Big Blue River S:\98047\STR\A6855\HB\DCN\HBRIDGE.DGN

BUR BUCHER, WILLIS & RATLIFF CORPORATION

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TRACED BY:	TWM	JAN. 1998
CHECKED BY:	MLJ	FEB. 1998

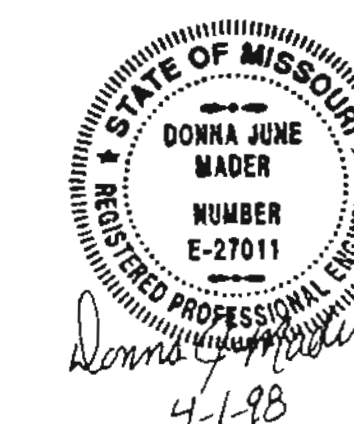
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

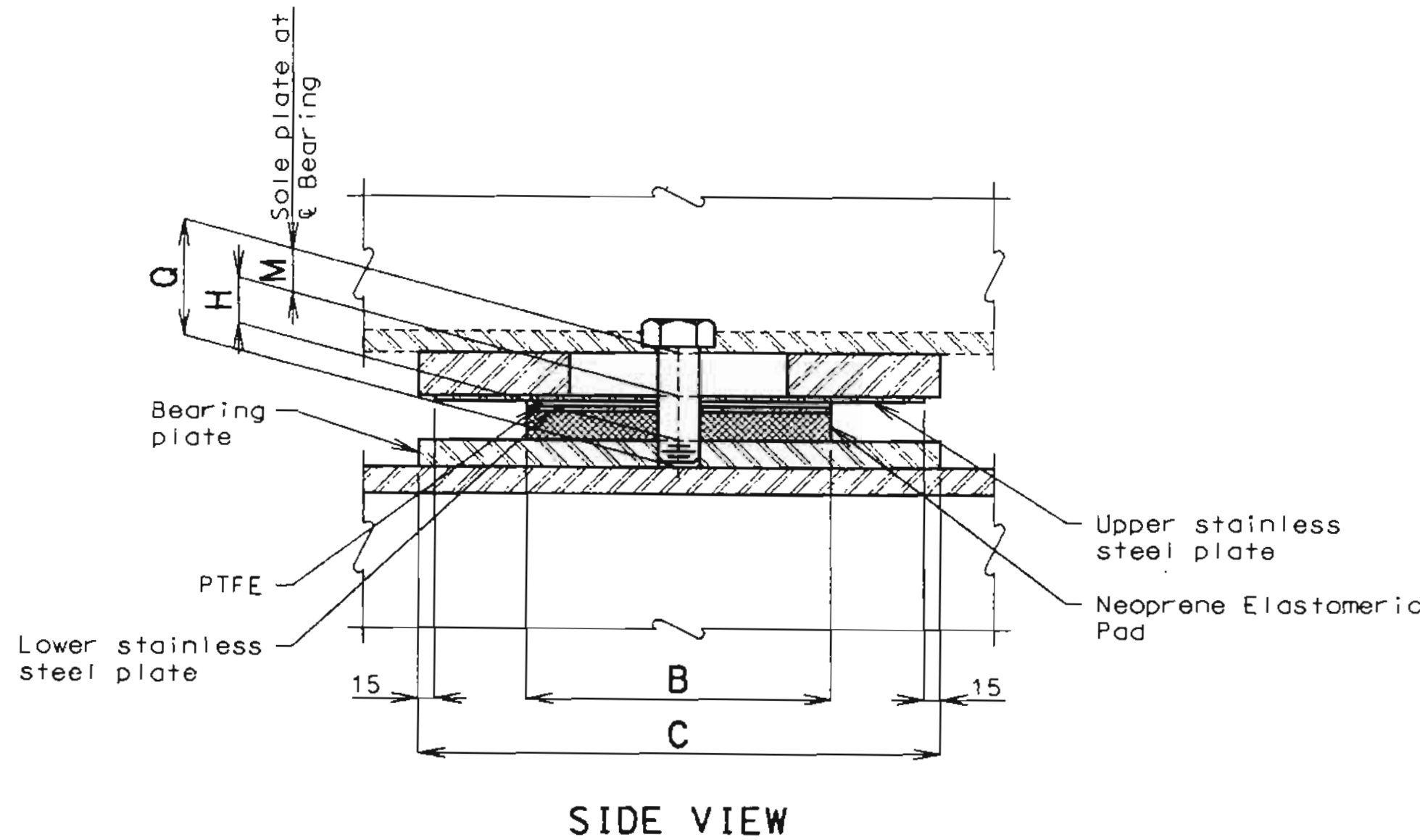
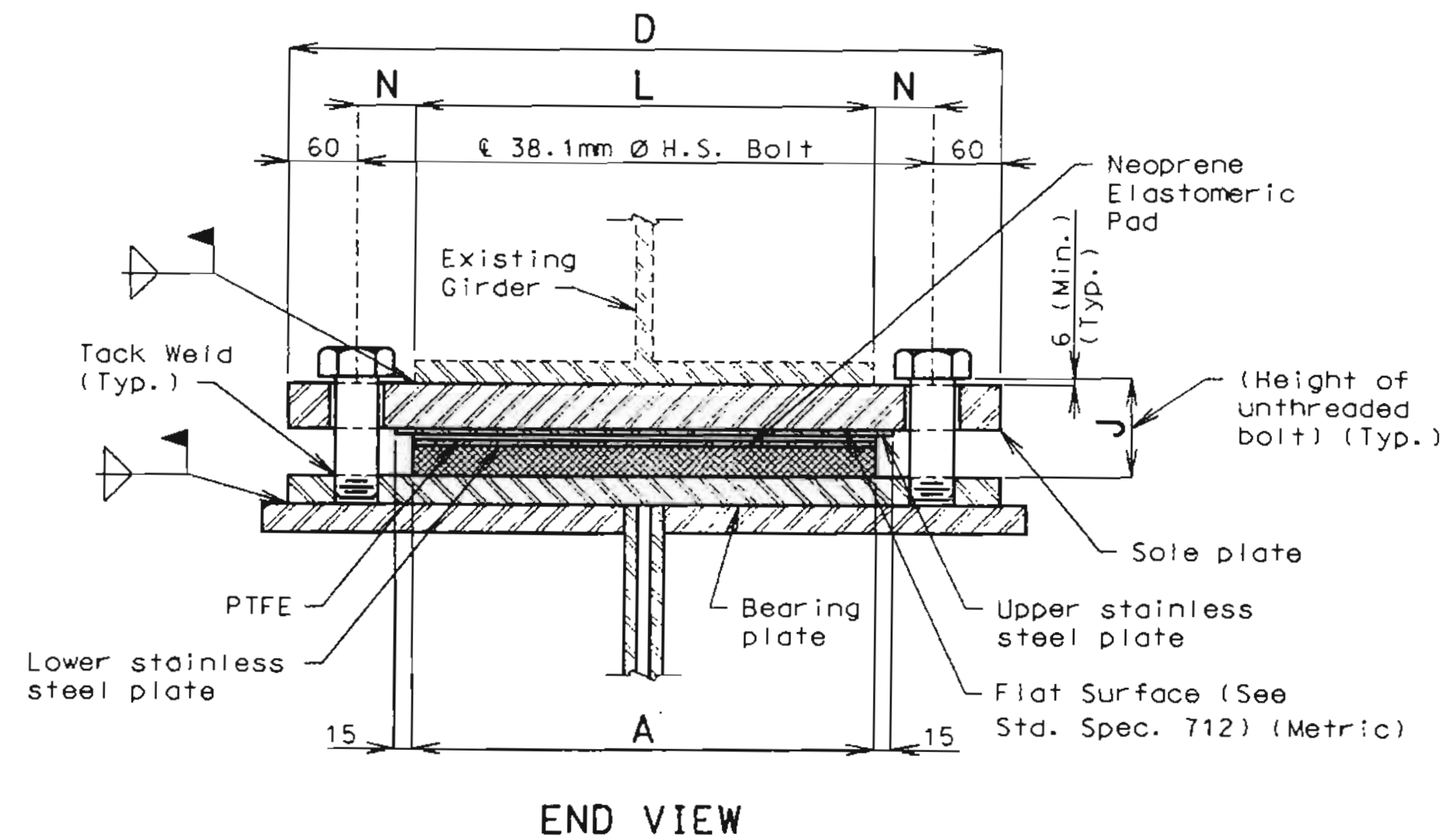
HINGE MODIFICATION DETAILS

SHEET NO. 4 OF 26

A16855



STATE	PROJ. NO.	SHEET NO.
MO.		228

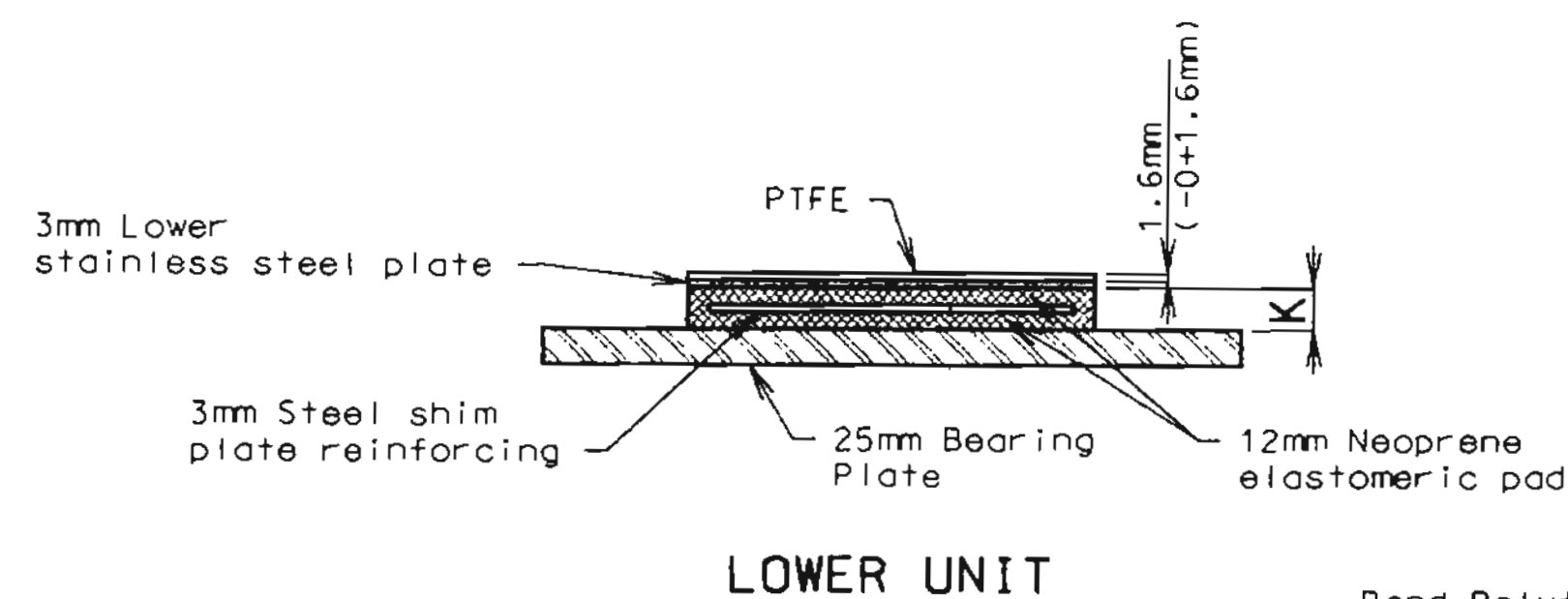
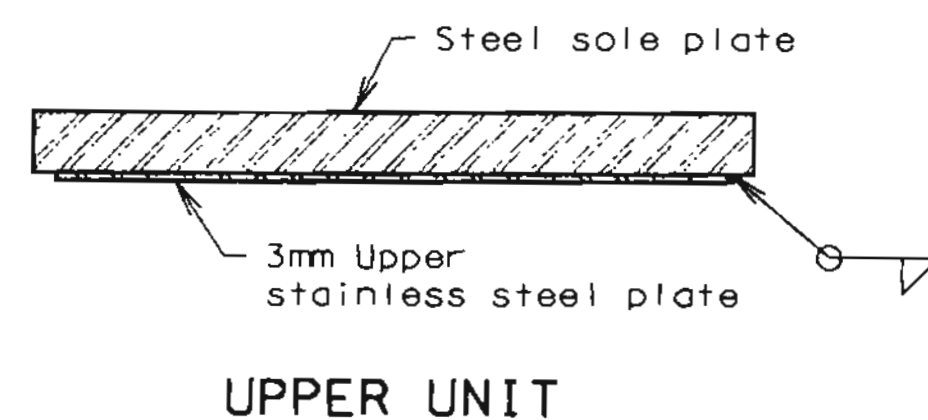
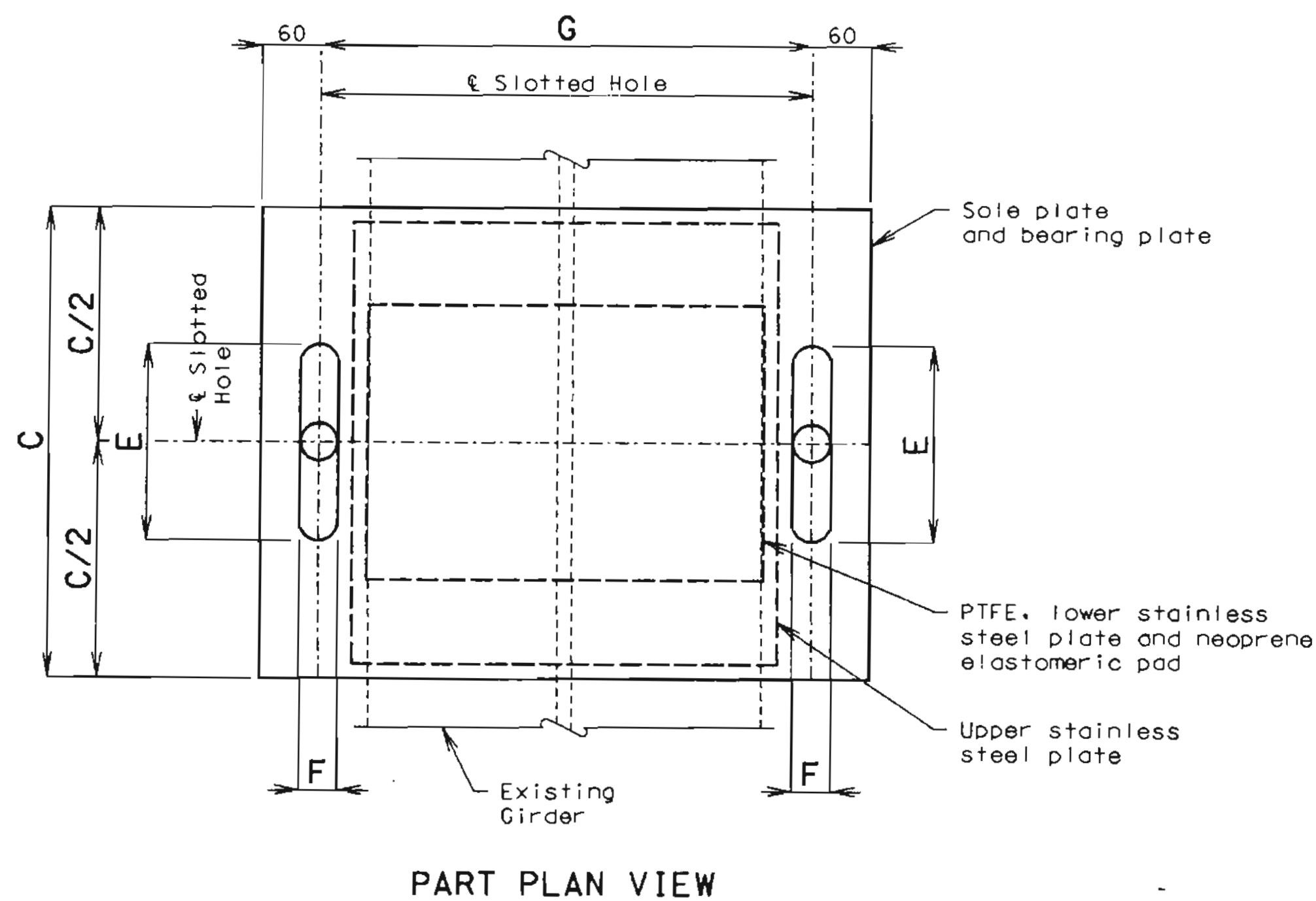


Note:

The location of 38.1mm Ø 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 38.1mm Ø high strength bolts. Adjustment of 6mm for hinge 3 and 5mm for hinge 6 for each 5° C temperature rise or fall shall be made.

Note:

Bearing Plate to be tapped to receive 38.1mm Ø H.S. Bolts.



PTFE BEARING DEVICE

Bond Polytetrafluoroethylene (PTFE), lower stainless steel plate, neoprene elastomeric pad, and bearing plate together by Vulcanization to form an integral unit.

PTFE SLIDING BEARINGS																	
Bent No.	Girder	A	B	C	D	E	F	G	H	J	K	L	M	N	Q	Number of Shim Plates (*)	Number Required
3	1-6	410	280	480	630	190	41.3	510	35	81	27	279.4	40	115.3	100	1	2
3	2-5	410	280	480	630	190	41.3	510	35	81	27	304.8	40	102.6	100	1	4
6	1-5	410	280	480	630	190	41.3	510	35	81	27	355.6	40	77.2	100	1	5
6	6	410	280	480	630	190	41.3	510	35	81	27	304.8	40	102.6	100	1	1
																Total Bearings	12

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

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

Notes:

Bolts shall be 38.1mm diameter, ASTM A325M bolts and shall extend 25mm into the bearing plate. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided.

All high strength bolts shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness).

Neoprene Elastomeric Pads shall be 70 durometer.

The upper and lower units shall be furnished bolted together as a single unit and field welded to the girder and retrofit bracket.

Structural steel for sole plate and bearing 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).

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

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

The bottom face of the 3mm stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.

PROJECT NO. 98-047 PROJECT NAME: MODOT-Br. No. A6855-NB 1-35 over Big Blue River S:\98047\STR\A6855-NB\DCN\WB\BR.DGN

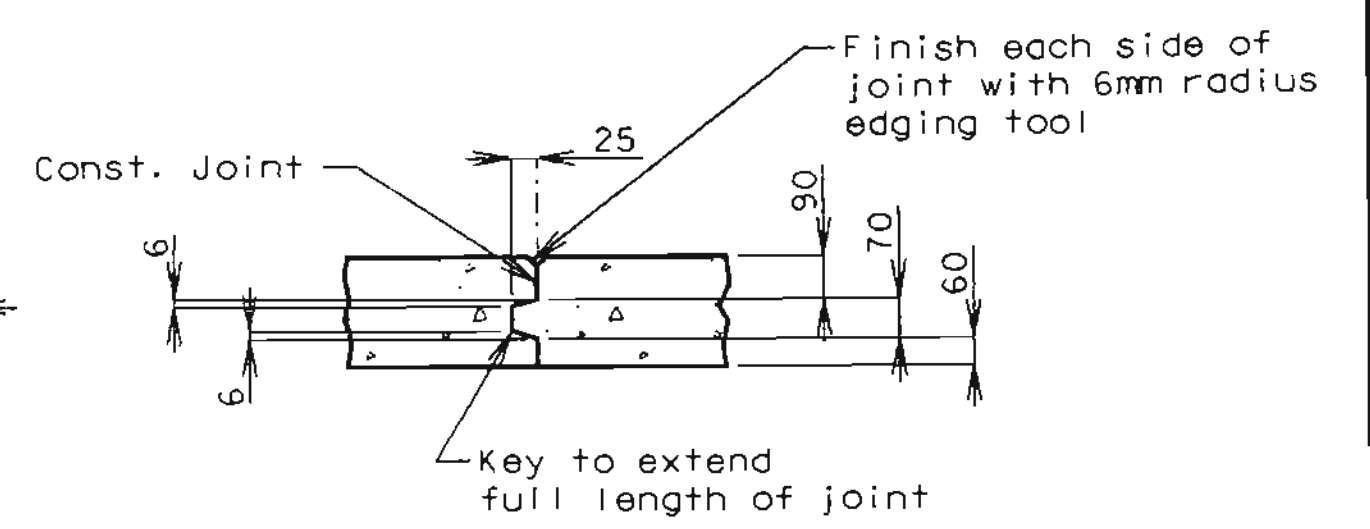
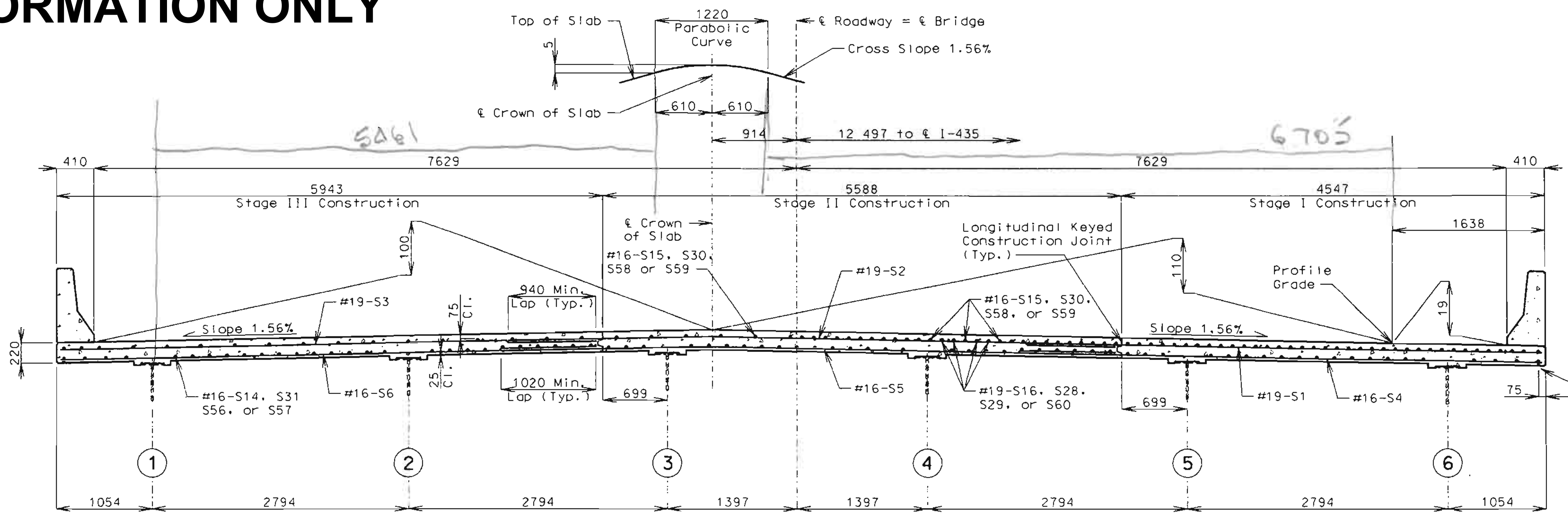
BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2658

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	JHH	JAN. 1998
CHECKED BY:	TAC	FEB. 1998

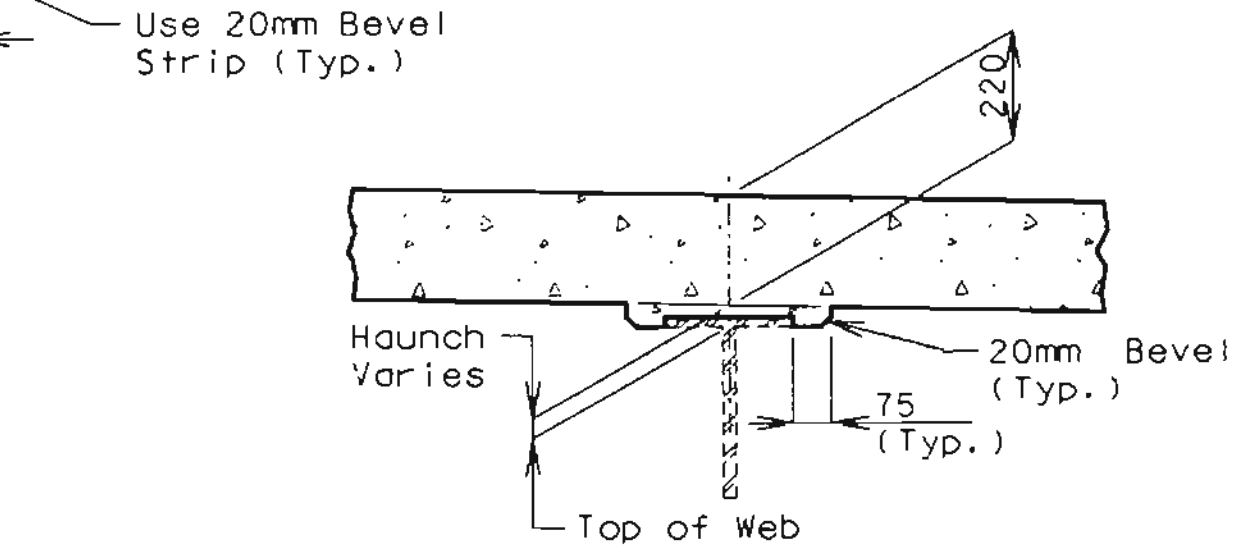


JACKSON COUNTY

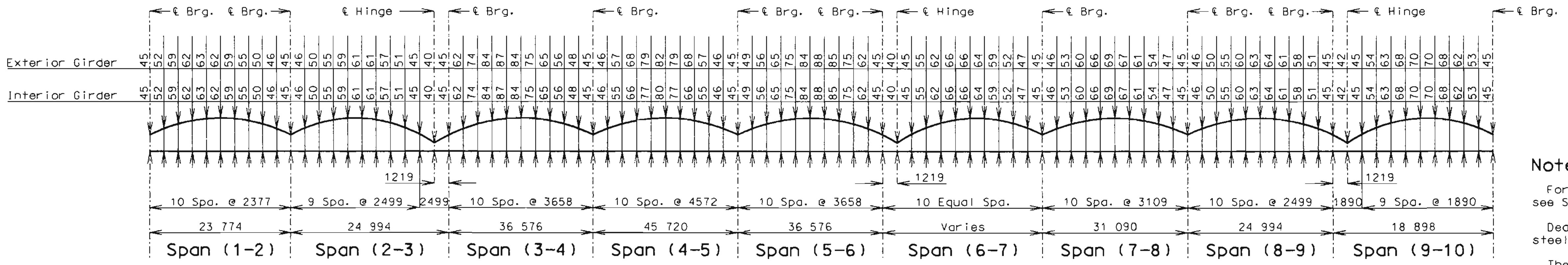
DETAILS OF TYPE 'N'
PTFE BEARINGS



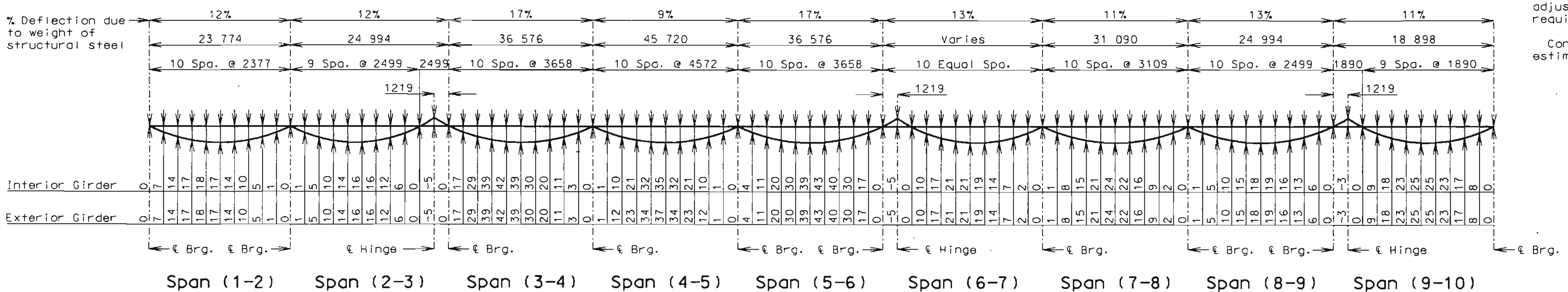
KEYED CONSTRUCTION JOINT



TYPICAL HAUNCH



THEORETICAL SLAB HAUNCHING DIAGRAM



DEAD LOAD DEFLECTION

Notes:
 For details of safety barrier curb not shown, see Sheets No. 21 and 22.
 Dead load deflection includes weight of structural steel, concrete slab and barrier curb.
 Theoretical slab haunch dimensions may vary if the girder deflection after slab removal differs from plan deflection by more or less than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.
 Concrete in the slab haunches is included in the estimated quantities for slab on steel.

PROJECT NO. 28-047 PROJECT NAME: MO DOT BR. No. 46855-46 I-435 over Big Blue River S198047 STR A16855 SHEET 82 OF 85

BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2696
 DRAWN BY: MLJ/DJM JAN, 1998
 TRACED BY: TWM JAN, 1998
 CHECKED BY: TAC FEB, 1998

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

JACKSON COUNTY

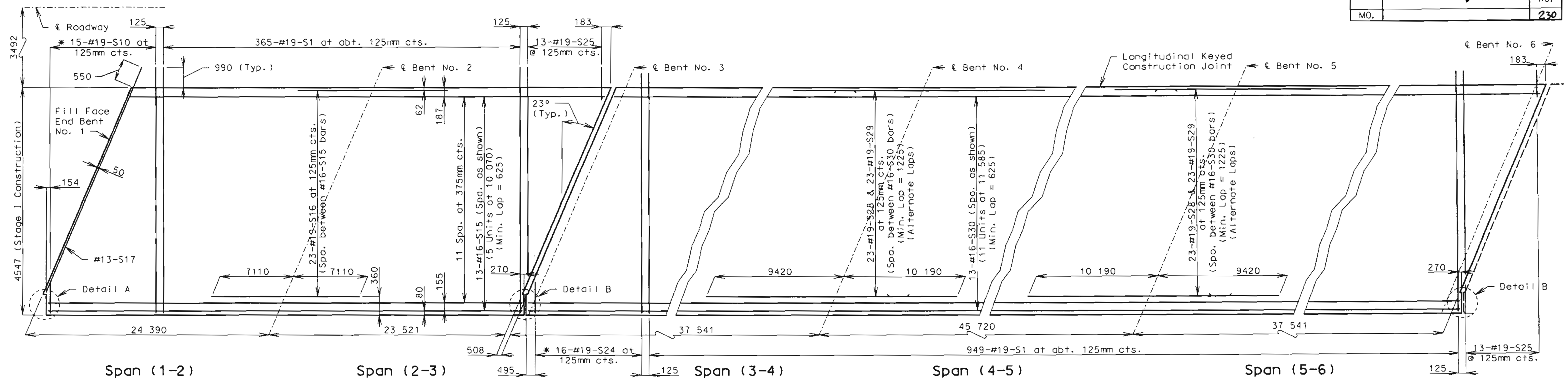
SLAB CROSS SECTION AND HAUNCHING DIAGRAM

SHEET NO. 6 OF 26

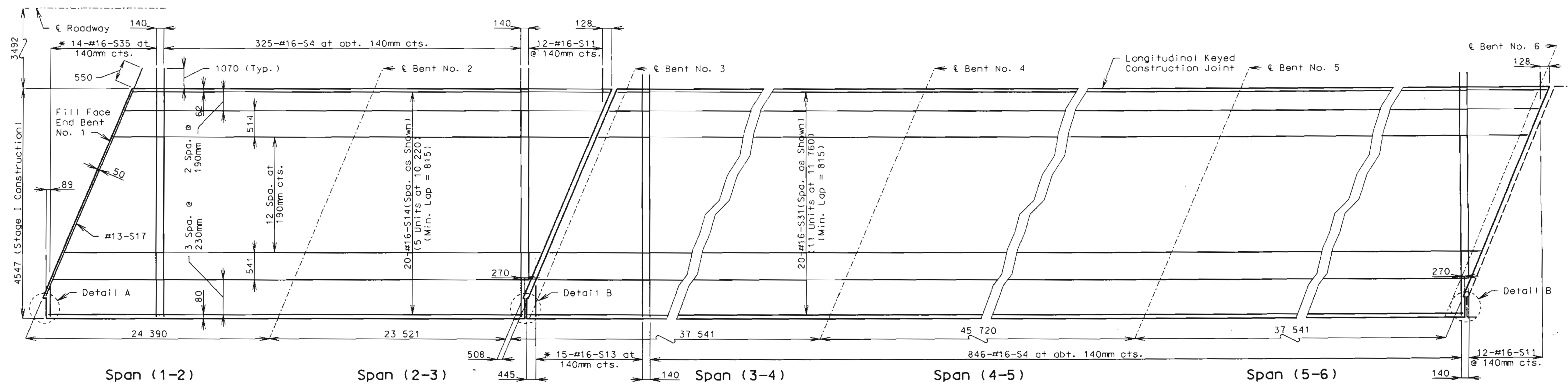
STATE OF MISSOURI
 DONNA JUNE MADER
 NUMBER E-27011
 REGISTERED PROFESSIONAL ENGINEER
 Donna J. Mader
 4-98

A16855

STATE	NO.	SHEET
MO.		230



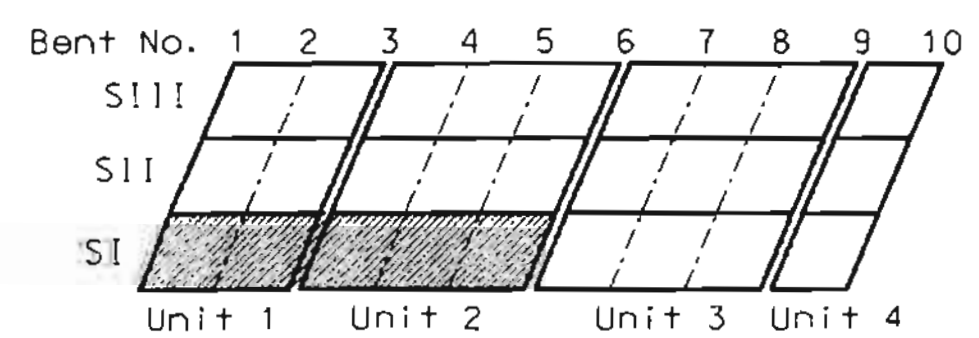
PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

- See Sheet No. 13 for miscellaneous details and notes.
- * Bar extension into Stage II construction varies.
- For location of slab drains see Sheet No. 15.



SCHEMATIC

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

PROJECT No. 98-047 PROJECT NAME: MODOT-#F. No. A6855-#B 1-35 over Big Blue River. S:\98047\STR\A6855#B\DRG\NBP\N12.DWG

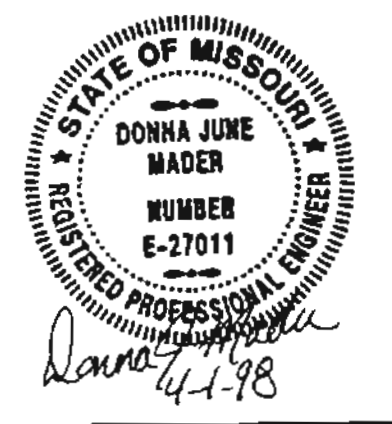
BUR **BUCHER, WILLIS & RATLIFF CORPORATION**
 2020 INARD PARKWAY, WADSWORTH, MISSOURI 64080-1288
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: TWM JAN. 1998
 CHECKED BY: DJM FEB. 1998

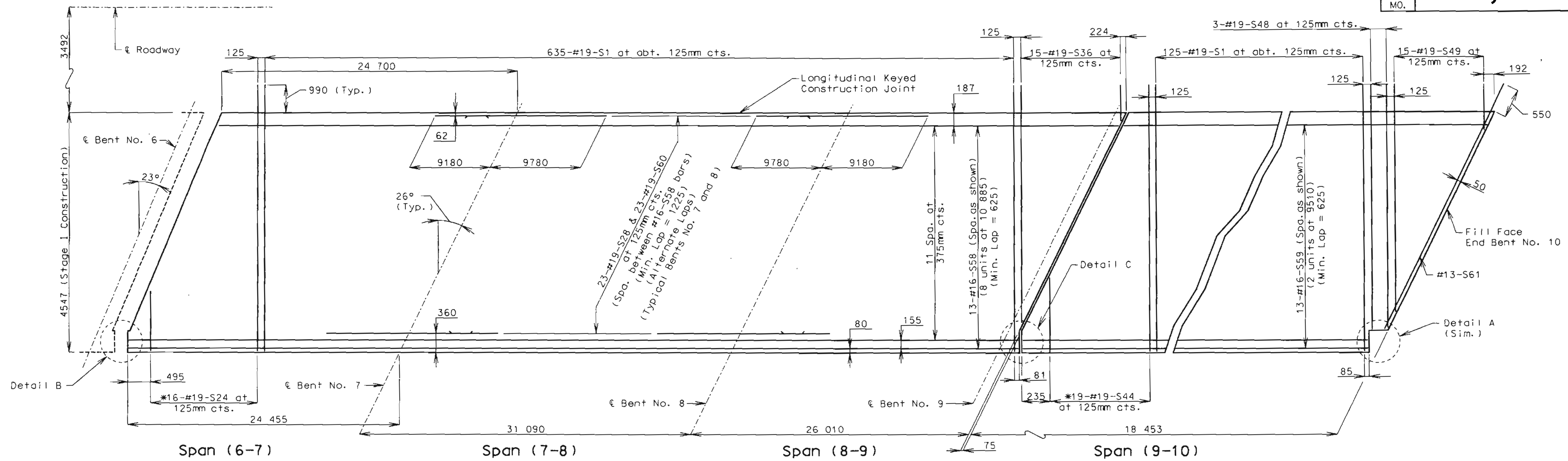
JACKSON COUNTY

SLAB PLAN
 STAGE I - UNITS 1-2

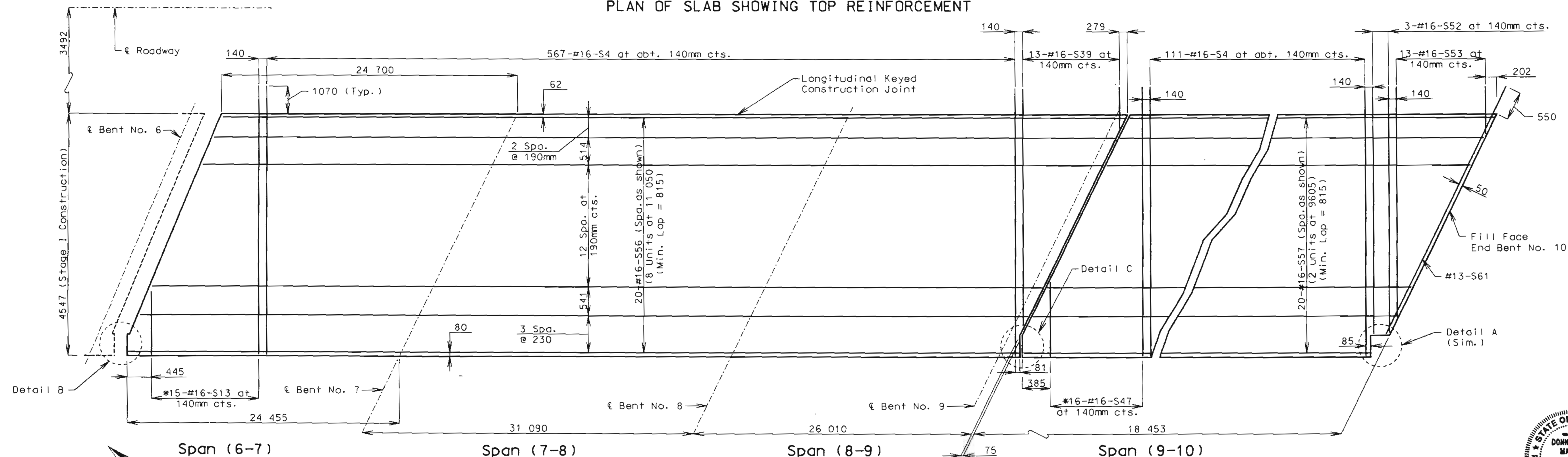
SHEET NO. 7 OF 26

A16855

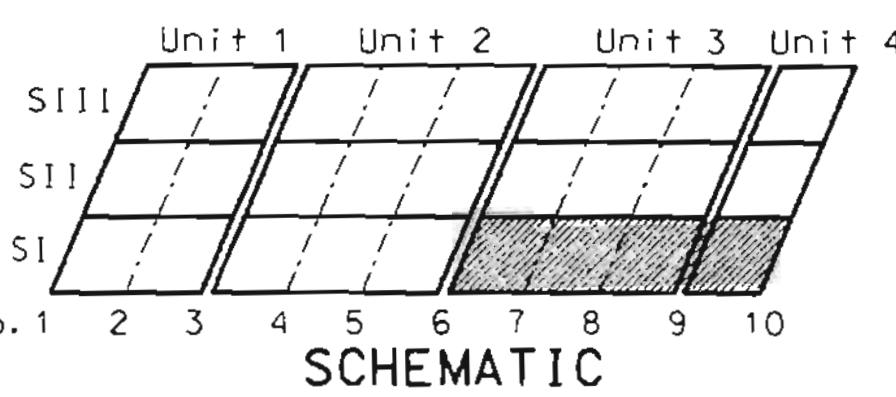




PLAN OF SLAB SHOWING TOP REINFORCEMENT



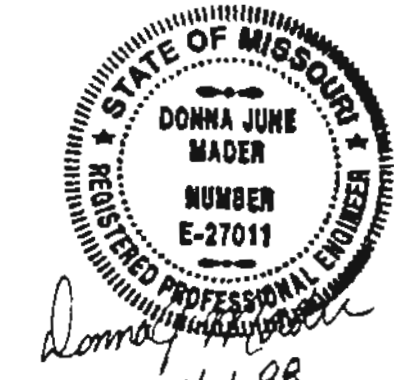
PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



Notes:
 See sheet No. 13 for miscellaneous details and notes.
 Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
 * Bar extension into Stage II Construction varies.
 For location of slab drains see Sheet No. 15.
 Note: This drawing is not to scale. Follow dimensions.

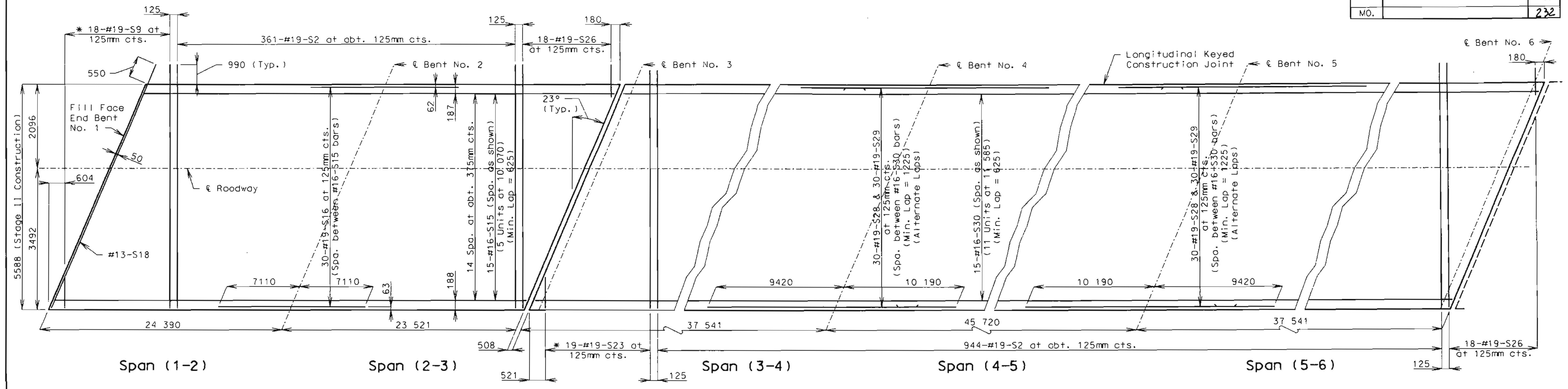
PROJECT NO. 98-047, PROJECT NAME: MODOT-BP, NO. A6855-NB 1-435 over Big Blue River, S:\98047\STR\A16855\B\DCN\BPLN134.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARU PARKWAY, KANSAS CITY, MISSOURI 64114 (913) 363-2696
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: TAC JAN. 1998
 CHECKED BY: DJM FEB. 1998

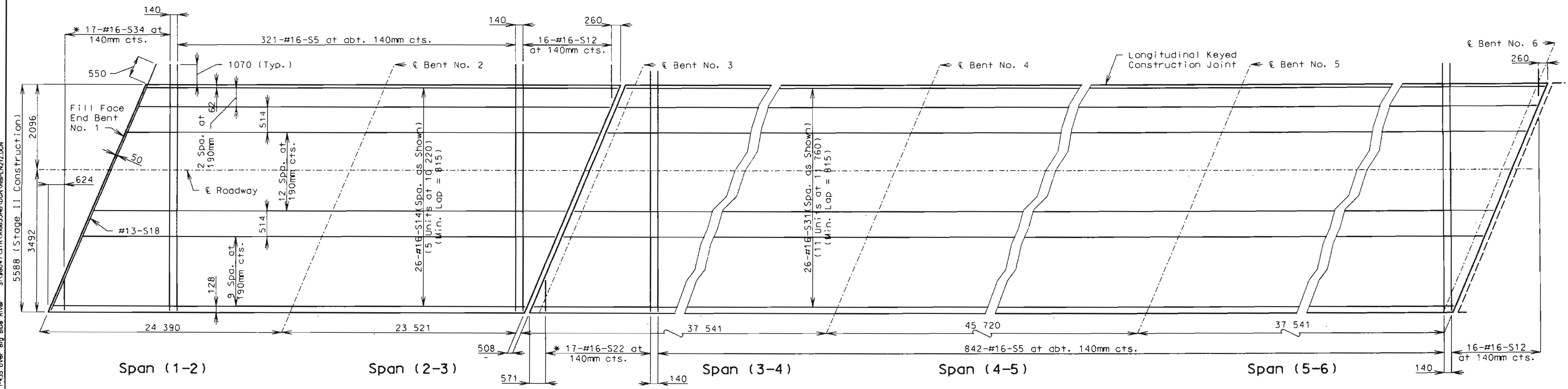


JACKSON COUNTY
 SLAB PLAN
 STAGE I - UNITS 3-4
 SHEET NO. 8 OF 26
A16855

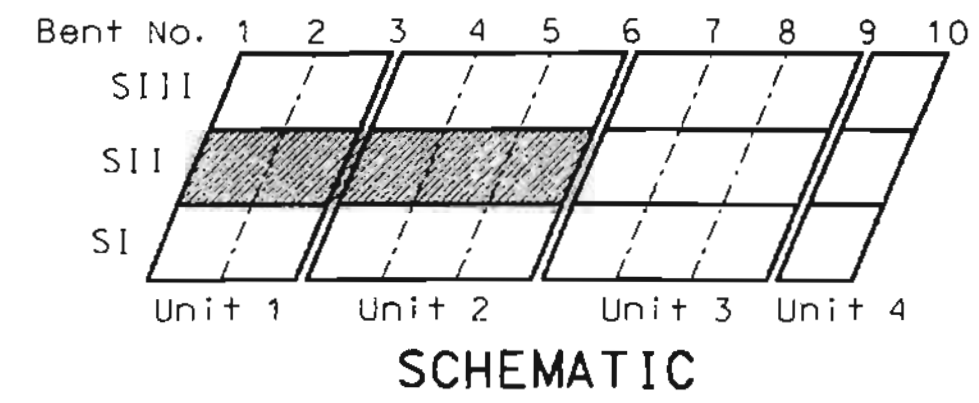
STATE	PROJ. NO.	SHEET NO.
MO.		232



PLAN OF SLAB SHOWING TOP REINFORCEMENT

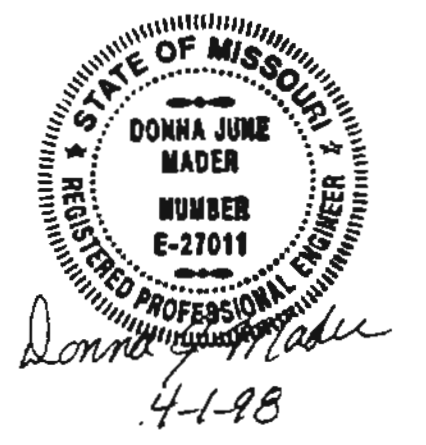


PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



SCHEMATIC

- Notes:
- Lap transverse bars with bars extending from Stage I Construction.
 - See Sheet No. 13 for miscellaneous details and notes.
 - * Bar extension into Stage III Construction varies.



PROJECT No. 98-047 PROJECT NAME: MODOT - B-1-435 over Big Blue River STATE: MISSOURI DRAWING NO.: A16856-NB-DGN-01-02.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
 7920 WARD PARKWAY, KANSAS CITY, MISSOURI 64114 816-863-3788

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TWM	JAN. 1998
CHECKED BY:	DJM	FEB. 1998

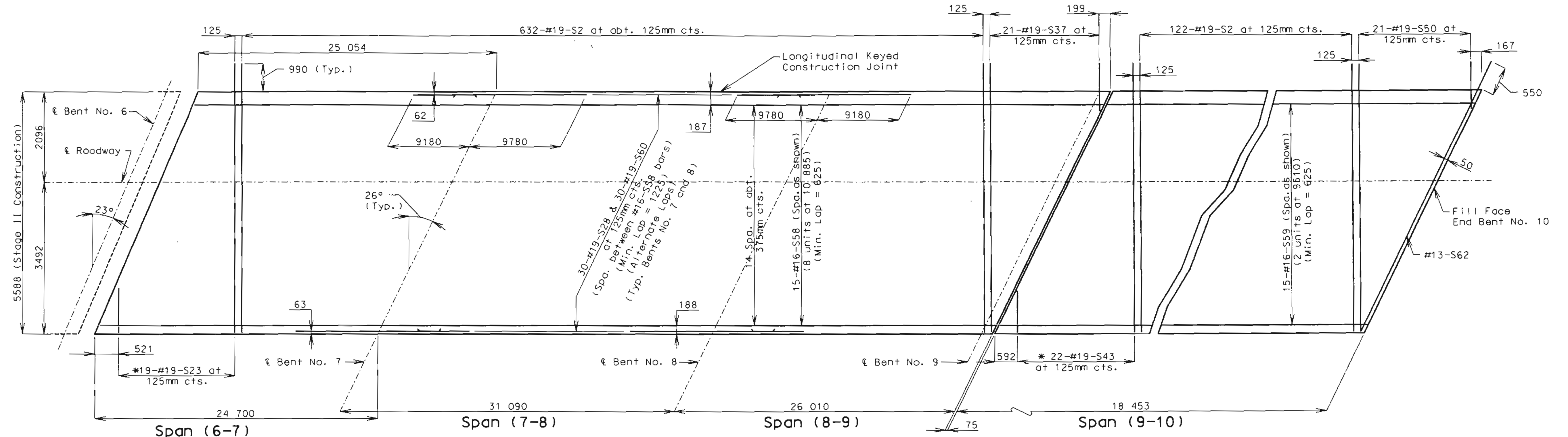
JACKSON COUNTY
 SLAB PLAN
 STAGE II - UNITS 1-2

SHEET NO. 9 OF 26

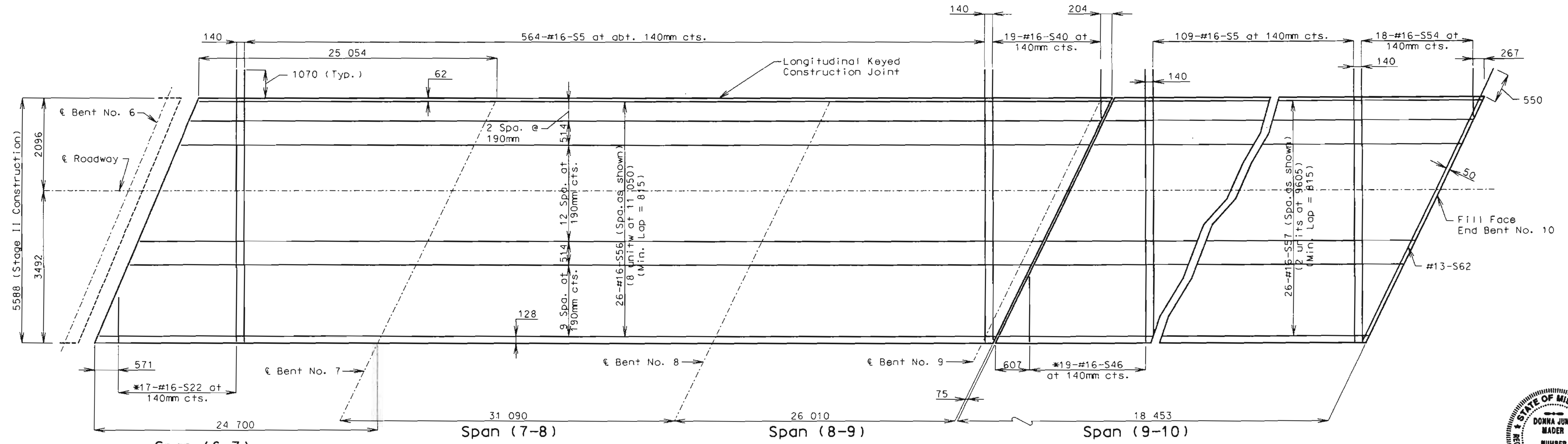
A16855

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

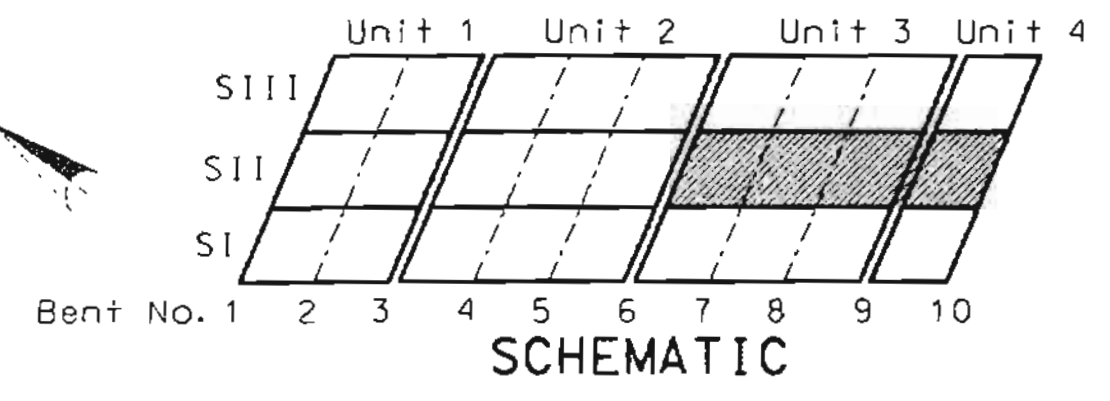
STATE	PROJ. NO.	SHEET NO.
MO.		233



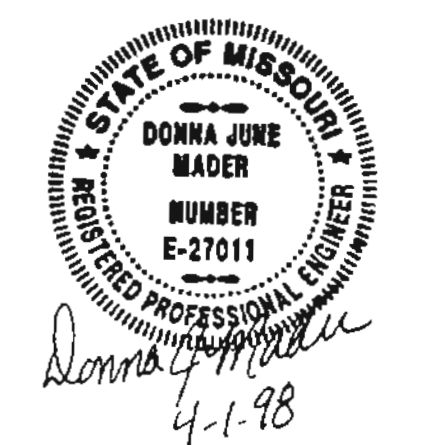
PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



Notes:
 Lap transverse bars with bars extending from Stage I Construction.
 See Sheet No. 13 for miscellaneous details and notes.
 Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
 * Bar extension into Stage III Construction varies.
 Note: This drawing is not to scale. Follow dimensions.



PROJECT No. 98-047 PROJECT NAME: HOUSTON BR. No. 46155-HB 1-415 over Big Blue River S:\9804\STR\A16855\86\CON\NBP\1214.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
 1920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2898
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: TAC JAN. 1998
 CHECKED BY: DJM FEB. 1998

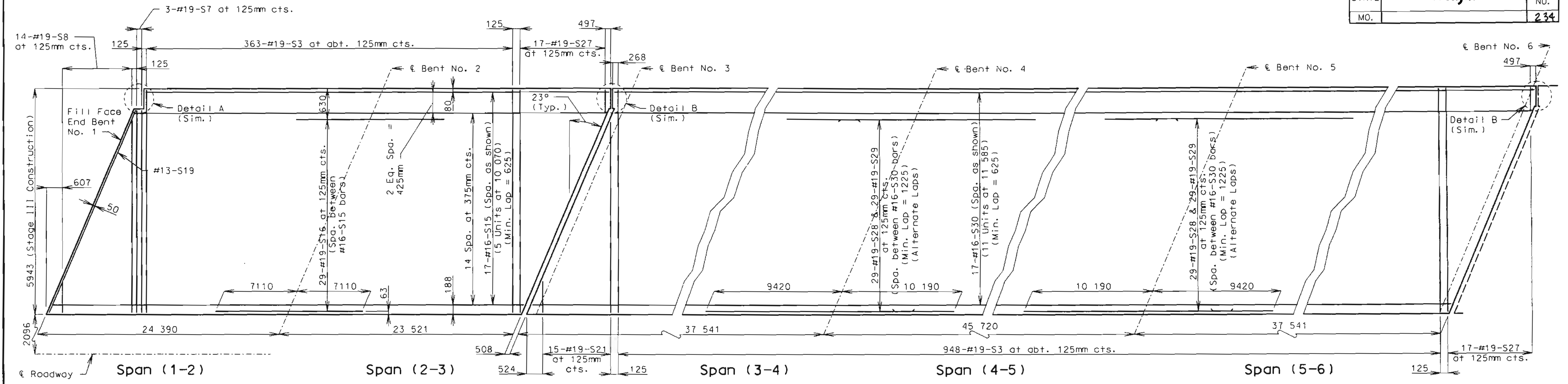
JACKSON COUNTY

SLAB PLAN
 STAGE II - UNITS 3-4

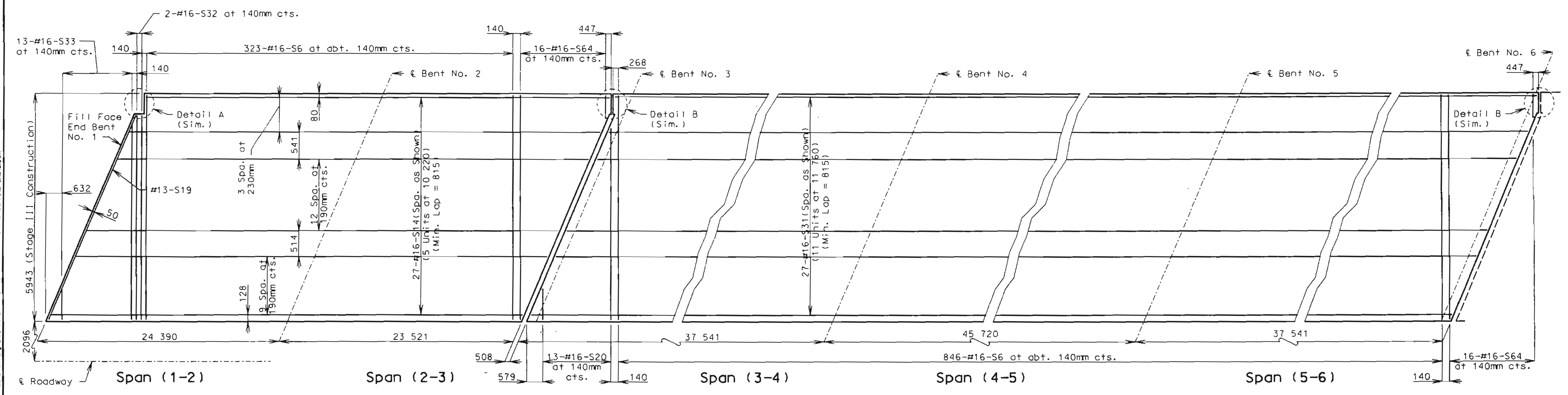
SHEET NO. 10 OF 26

A16855

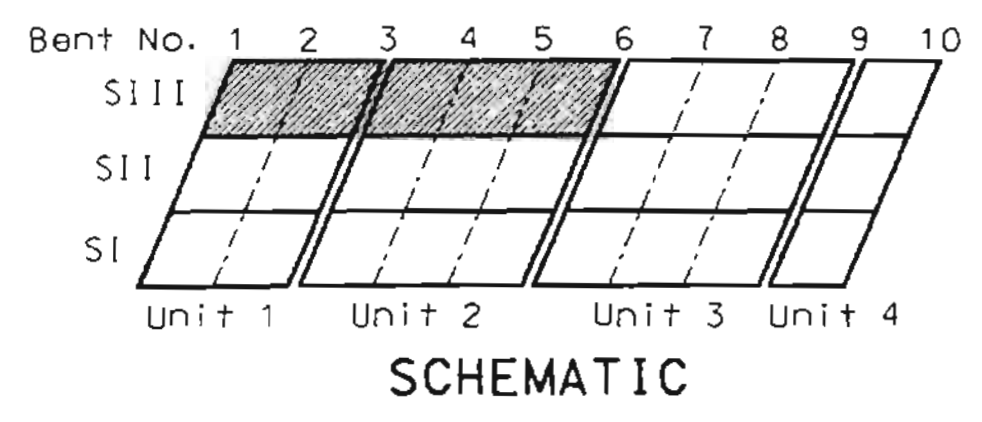
STATE	PROJECT NO.	SHEET NO.
MO.		234



PLAN OF SLAB SHOWING TOP REINFORCEMENT



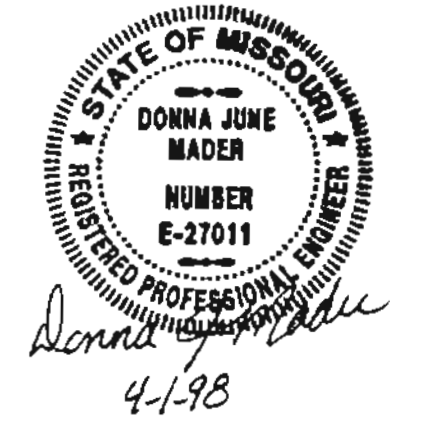
PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



SCHEMATIC

Notes:

- Lap transverse bars with bars extending from Stage II Construction.
- See Sheet No. 13 for miscellaneous details and notes.
- For location of slab drains see Sheet No. 15.



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CORPORATION
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TRACED BY:	TWM	JAN. 1998
CHECKED BY:	DJM	FEB. 1998

JACKSON COUNTY
SLAB PLAN
STAGE III - UNITS 1-2

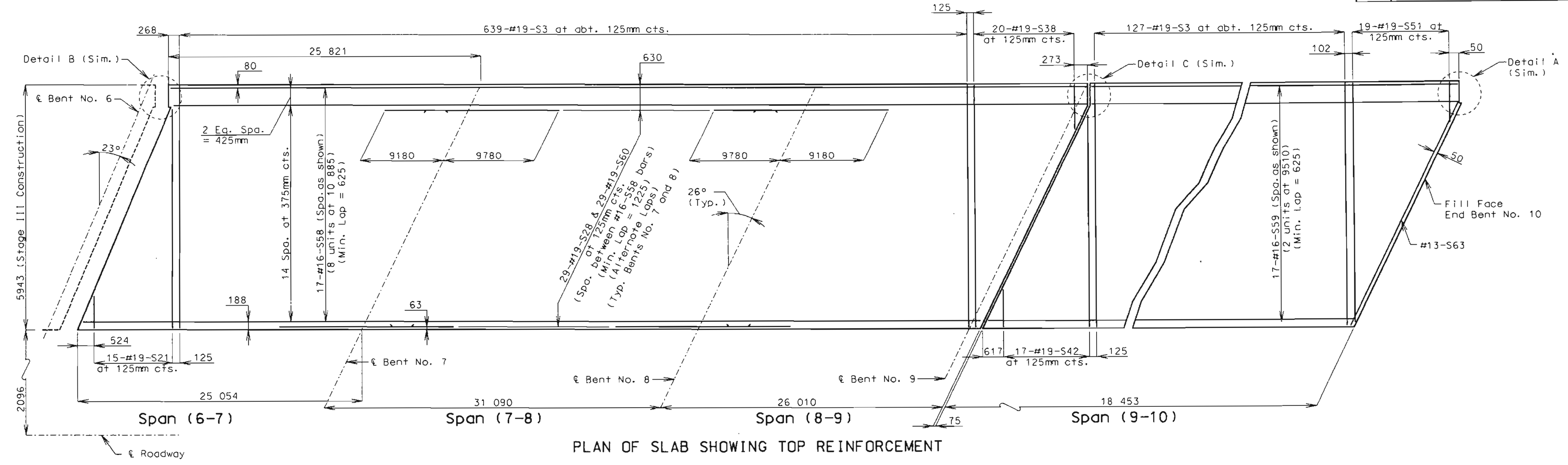
SHEET NO. II OF 26

A16855

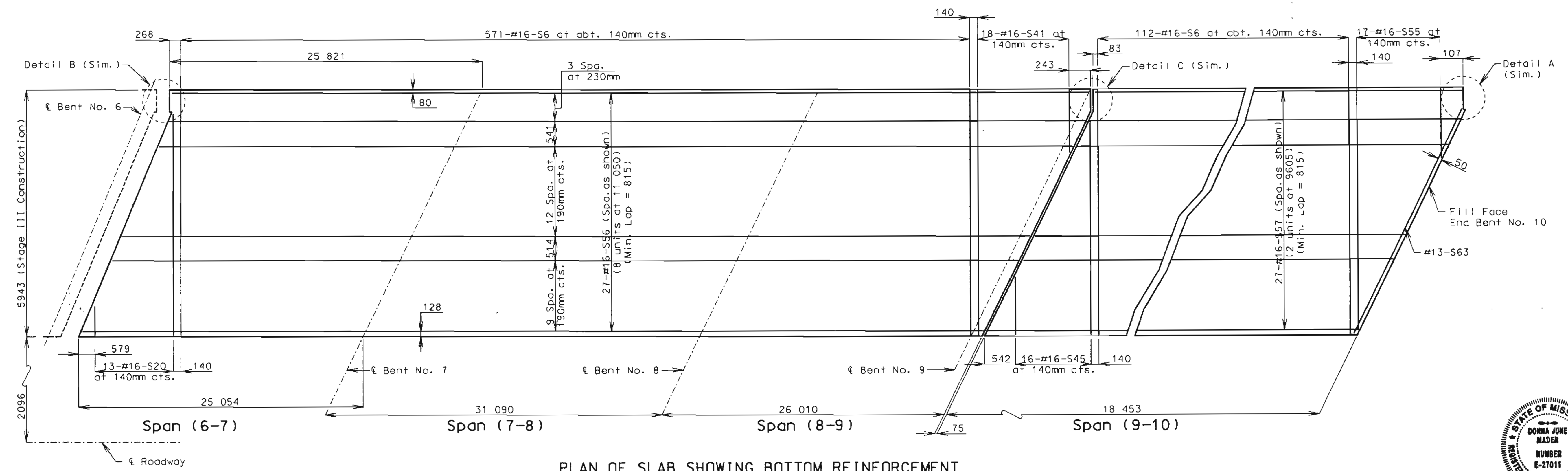
Note: This drawing is not to scale. Follow dimensions.

PROJECT No. 98-047 PROJECT NAME: MODDT-Br. No. A6855-mp 1-435 over Big Blue River. S:\98047\STR\A16855\B\DOCN\NPLN132.DGN

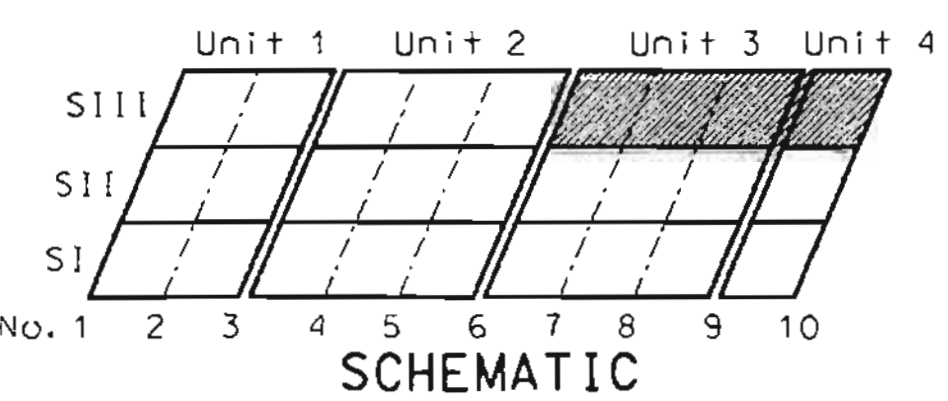
STATE	PROJ. NO.	SHEET NO.
MO.		235



PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



Notes:
 Lap transverse bars with bars extending from Stage II Construction.
 See Sheet No. 13 for miscellaneous details and notes.
 Field cut transverse bars at hinge near Bent No. 9 as required to clear expansion device support plates.
 For location of slab drains see Sheet No. 15.
 Note: This drawing is not to scale. Follow dimensions.

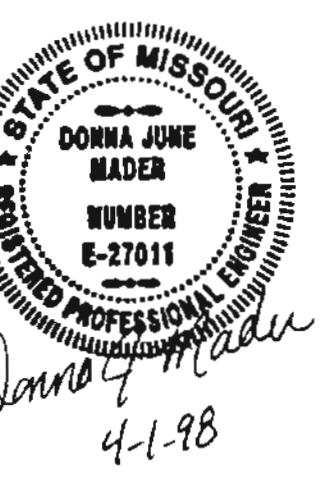
PROJECT No. 98-047 PROJECT NAME: MODOT-SP-1-35 over Big Blue River S:\98047\STR\ARB55\NB\DN\NPL\N34.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
 7020 HARBO PARKWAY SUITE 400 ARKAS CITY MISSOURI 64411 816-301-2998
 DRAWN BY: MLJ JAN. 1998
 TRACED BY: TAC JAN. 1998
 CHECKED BY: DJM FEB. 1998

JACKSON COUNTY

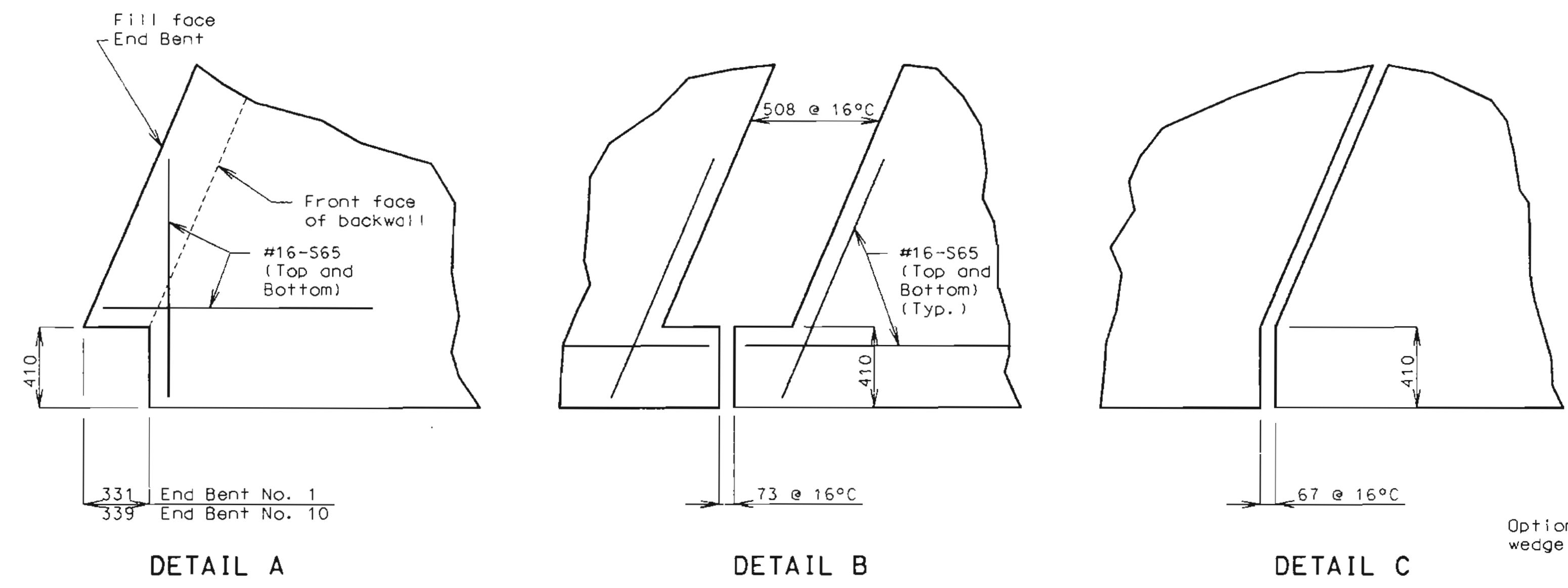
SLAB PLAN
 STAGE III - UNITS 3-4

SHEET NO. 12 OF 26



A16855

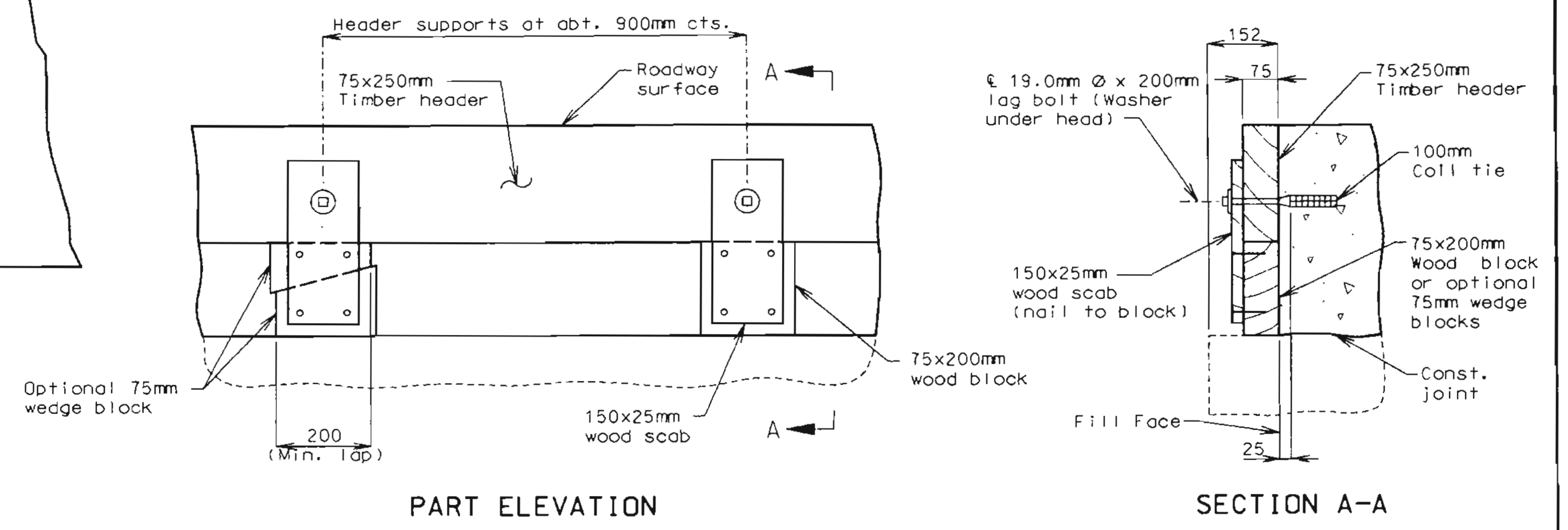
STATE	PROJ. NO.	SHEET NO.
MO.		236



DETAIL A

DETAIL B

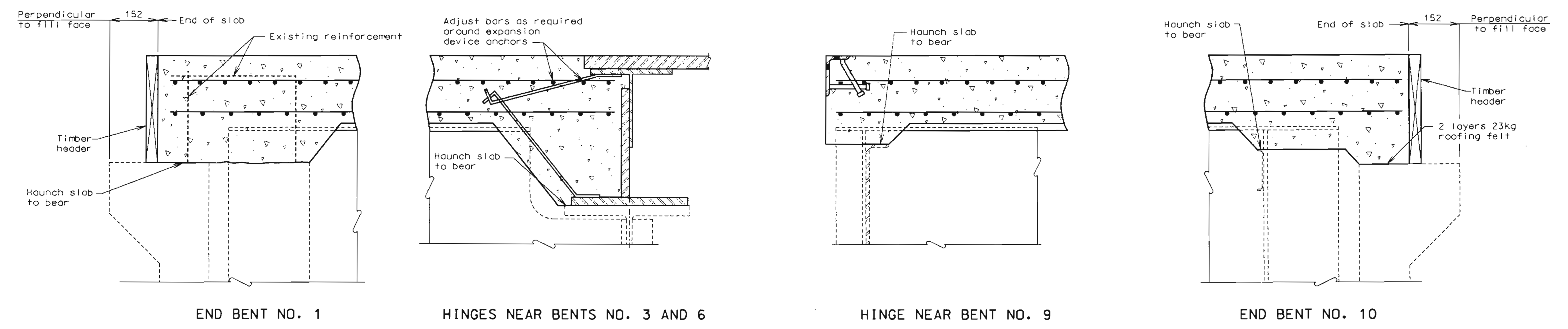
DETAIL C



PART ELEVATION

SECTION A-A

DETAILS OF TIMBER HEADER



END BENT NO. 1

HINGES NEAR BENTS NO. 3 AND 6

HINGE NEAR BENT NO. 9

END BENT NO. 10

PART LONGITUDINAL SECTIONS

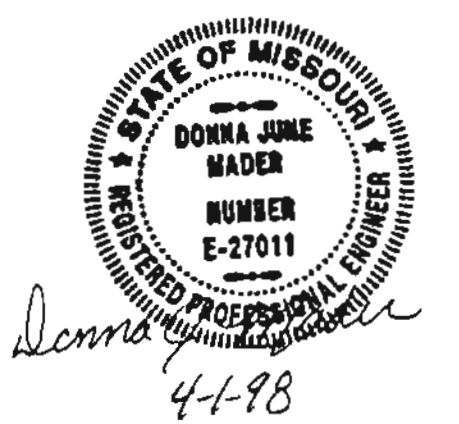
Notes:

- Longitudinal slab dimensions are measured horizontally at 16°C.
- Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25mm from 20mm vertical plate at expansion device at hinges near Bents No. 3 and 6, and 25mm from vertical leg of angle at expansion device at hinge near Bent No. 9.
- Cost of timber headers complete-in-place to be included in contract unit price for slab on steel.

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

PROJECT No. 98-047 PROJECT NAME: MODOT-Br... No. A6855-HE I-435 over Big Blue River S:\98047\STR\A6855\H\CON\NSL\BMS.DWG

BUCHER, WILLIS & RATLIFF CORPORATION	
7920 WINTER PARKWAY KANSAS CITY, MISSOURI 64114	816-363-2590
DRAWN BY: MLJ	JAN. 1998
TRACED BY: JHH	JAN. 1998
CHECKED BY: DJM	FEB. 1998

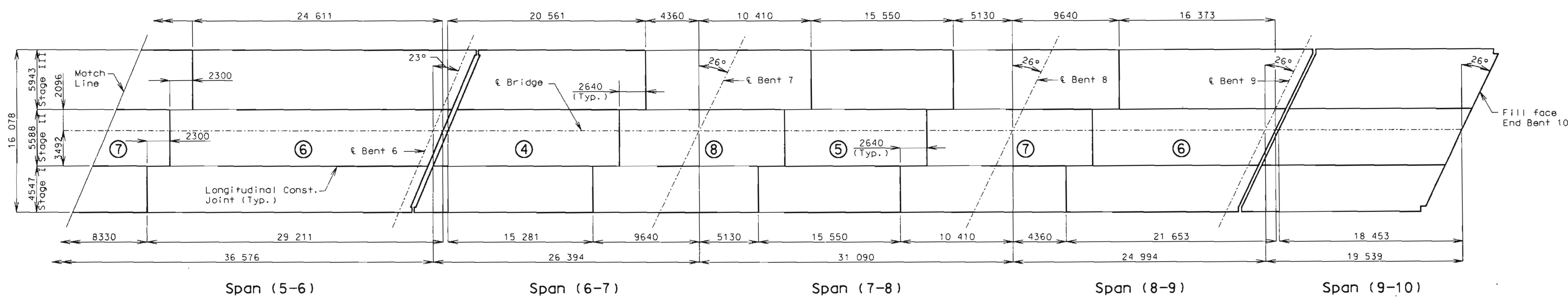
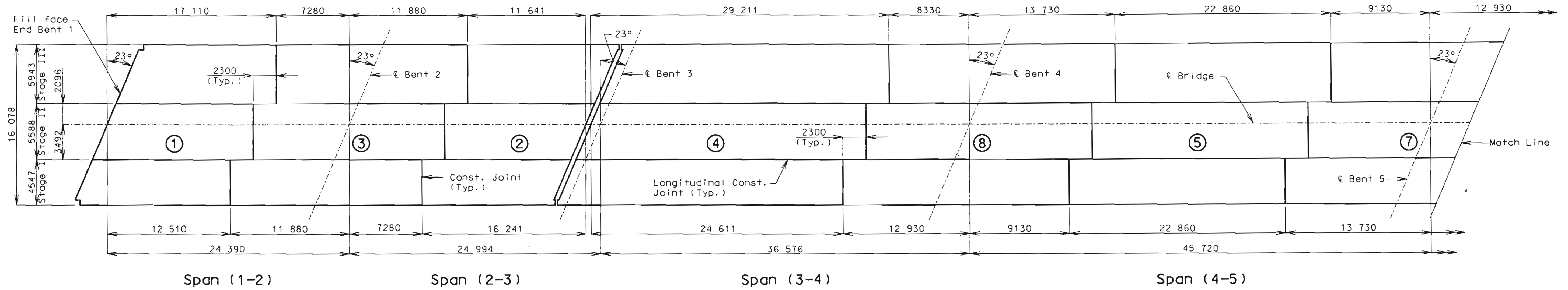


JACKSON COUNTY

MISCELLANEOUS SLAB DETAILS

SHEET NO. 13 OF 26

A16855



	Sequence of Pours			Min. Rate of Pour cu m/hr	
	Direction			With Retarder	No Retarder
Basic Sequence	1	2	3	20	20
Alternate pours to the Basic Skip Sequence are subject to the approval of the Engineer in accordance with Section 703.3.12.4 of Missouri Standard Specifications. (Metric)					
Alternate "A" Pours	1	3 + 2		20	23
	End to 3		1 to End		
Alternate "B" Pours	1 + 3 + 2			20	23
	End to End				

Spans (1-2) and (2-3)

	Sequence of Pours					Min. Rate of Pour cu m/hr	
	Direction					With Retarder	No Retarder
Basic Sequence	4	5	6	7	8	20	20
Alternate pours to the Basic Skip Sequence are subject to the approval of the Engineer in accordance with Section 703.3.12.4 of Missouri Standard Specifications. (Metric)							
Alternate "A" Pours	4	8 + 5		7 + 6		20	30
	End to 8		4 to 7	5 to End			
Alternate "B" Pours	4 + 8 + 5			7 + 6		20	30
	End to 7			5 to End			
Alternate "C" Pours	4 + 8 + 5 + 7 + 6					20	30
	End to End						

Spans (3-4) to (5-6) and Spans (6-7) to (8-9)

Notes:

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

The contractor shall pour and satisfactorily finish Span (9-10) roadway slab at a rate of not less than 20 cubic meters per hour.

PROJECT NO. 98-047 PROJECT NAME: MODOT-BF, NO. A16855-NB I-435 over Big Blue River S:\98047\STRV\A16855\NBDON\NBPOLR.DGN

BUCHER, WILLIS & RATLIFF CORPORATION
 1400 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2696

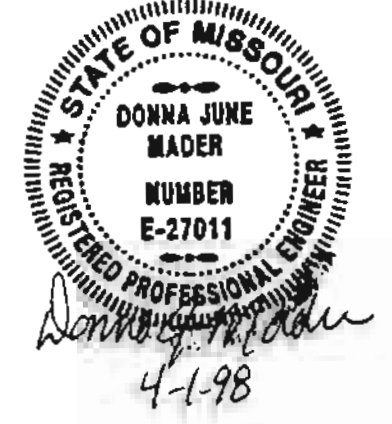
DRAWN BY: DJM JAN. 1998
 TRACED BY: MAH JAN. 1998
 CHECKED BY: TAC FEB. 1998

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

JACKSON COUNTY

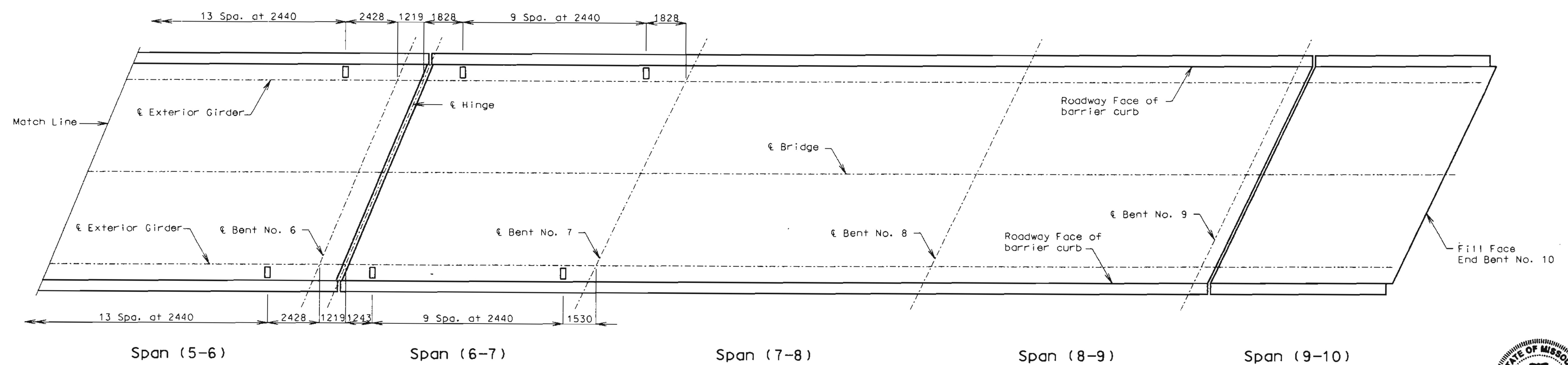
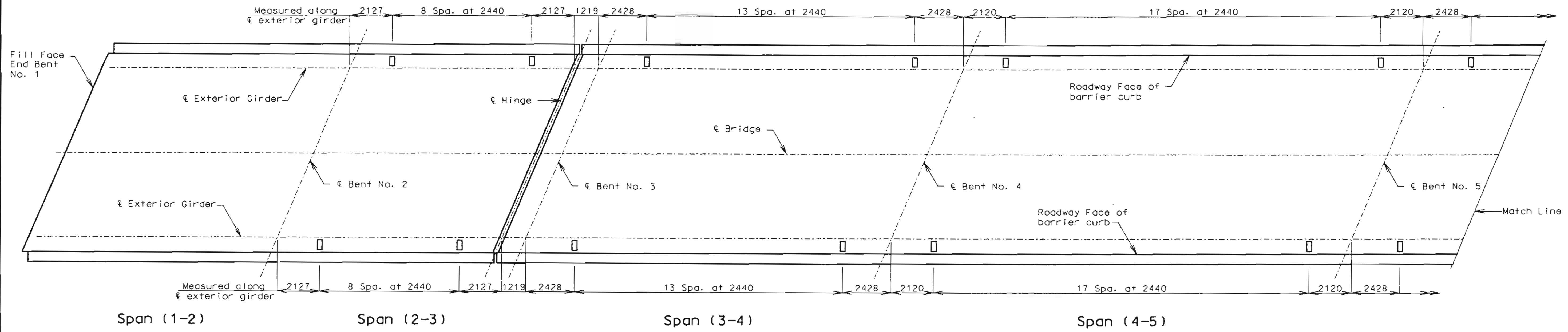
SLAB POURING SEQUENCE

SHEET NO. 14 OF 26



A16855

STATE	PROJ. NO.	SHEET NO.
MO.		238



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

PROJECT No. 98-047 PROJECT NAME: MODOT-Br. No. 46855-NB I-435 over Big Blue River S:\98047\STRV\16855\NB\DCN\NDR\ANKL.DGN

BWR BUCHER, WILLIS & RATLIFF CORPORATION

PROJ. WORD: JOURNALLY KANSAS CITY, MISSOURI 64106-3613-2692

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	MAH	JAN. 1998
CHECKED BY:	MLJ	JAN. 1998

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

JACKSON COUNTY

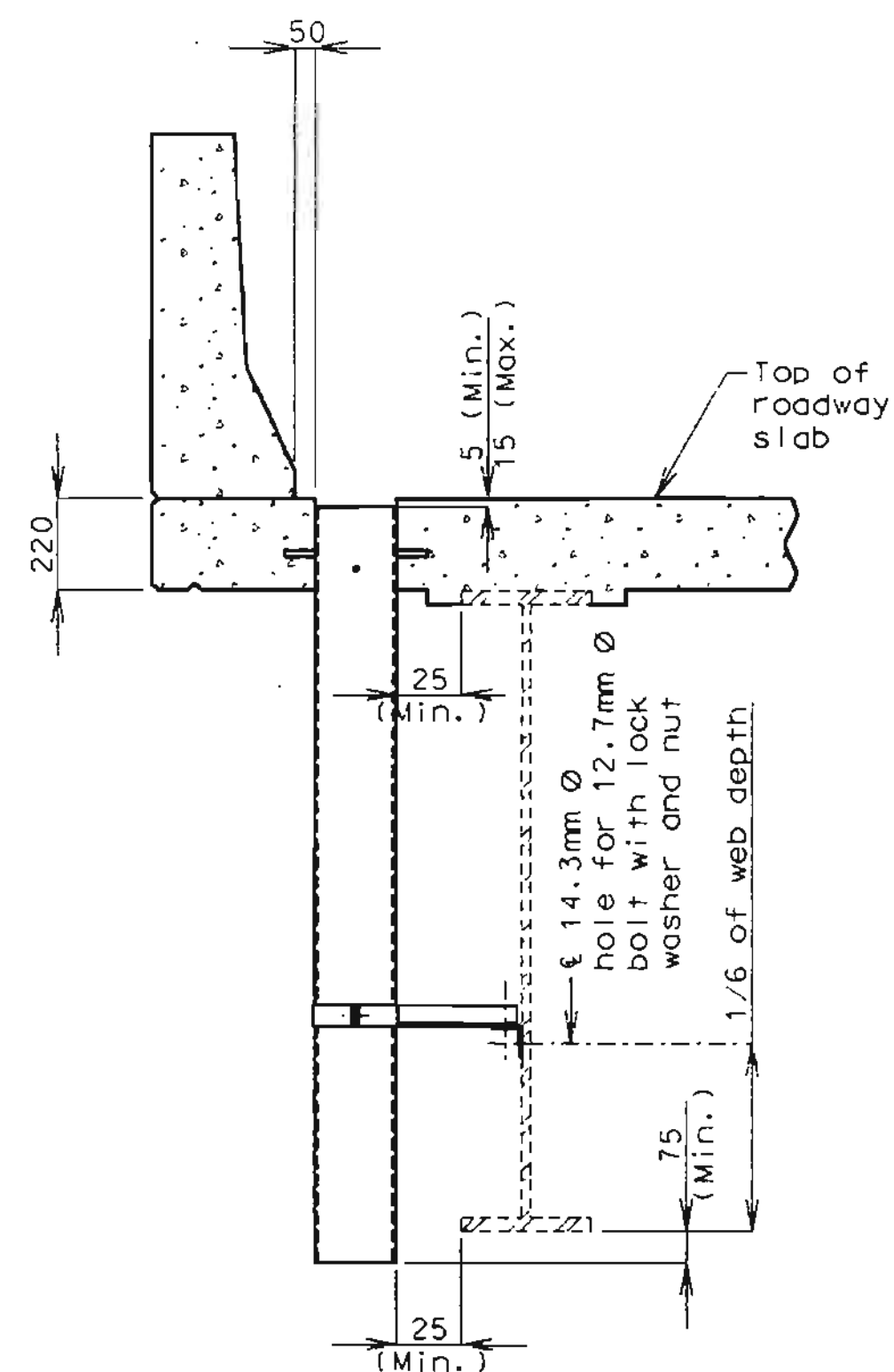
SLAB DRAIN LOCATIONS

SHEET NO. 15 OF 26

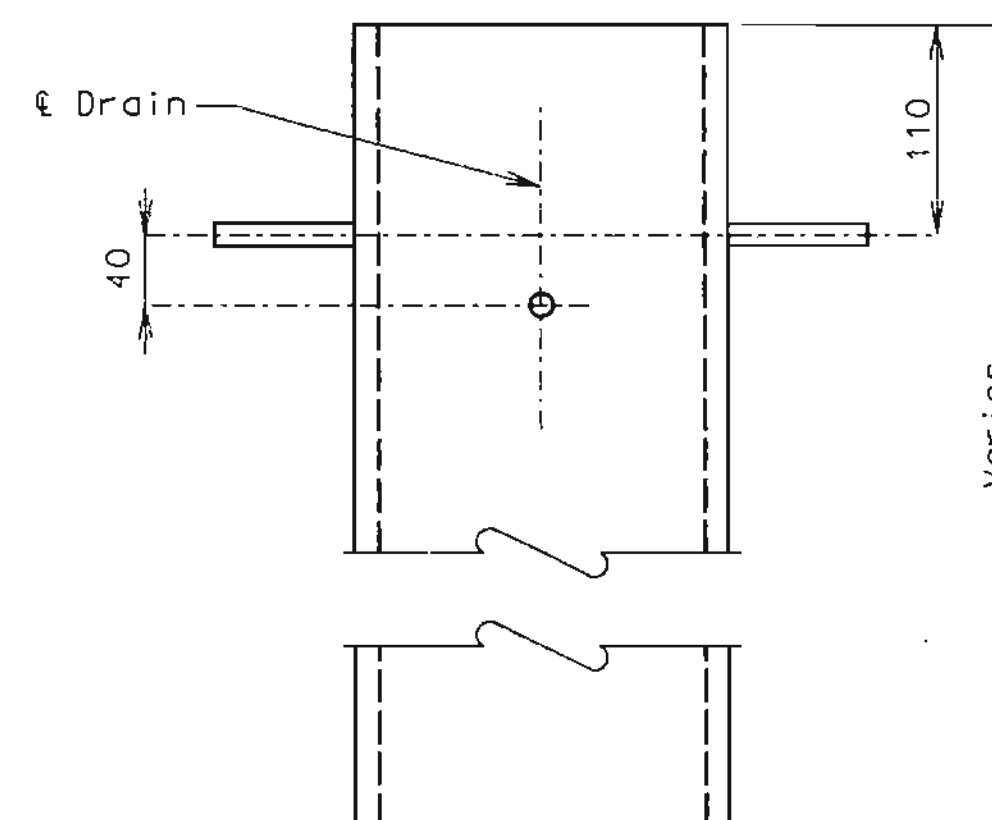
A16855



STATE	PROJ. NO.	SHEET NO.
MO.		239

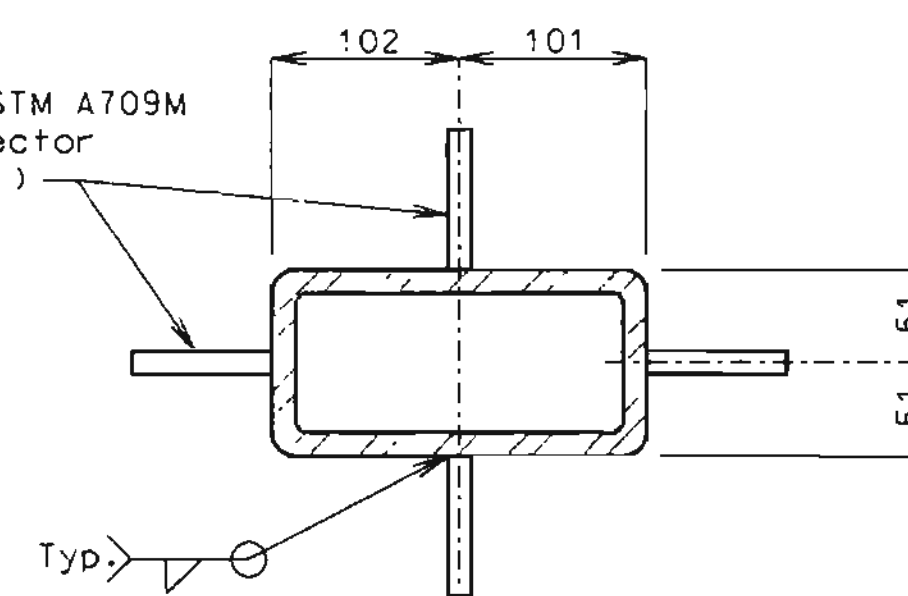


PART SECTION NEAR DRAIN

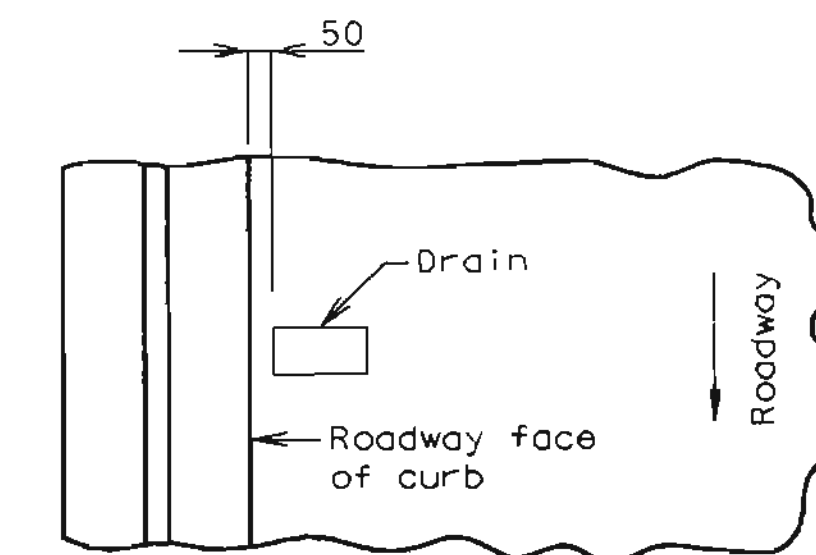


ELEVATION OF DRAIN

Rod 12.7mm \varnothing x 75mm (ASTM A709M Gr. 250) or Shear Connector 12.7mm \varnothing x 75mm \pm (Typ.)



PLAN OF DRAIN



PART PLAN OF SLAB AT DRAIN

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.

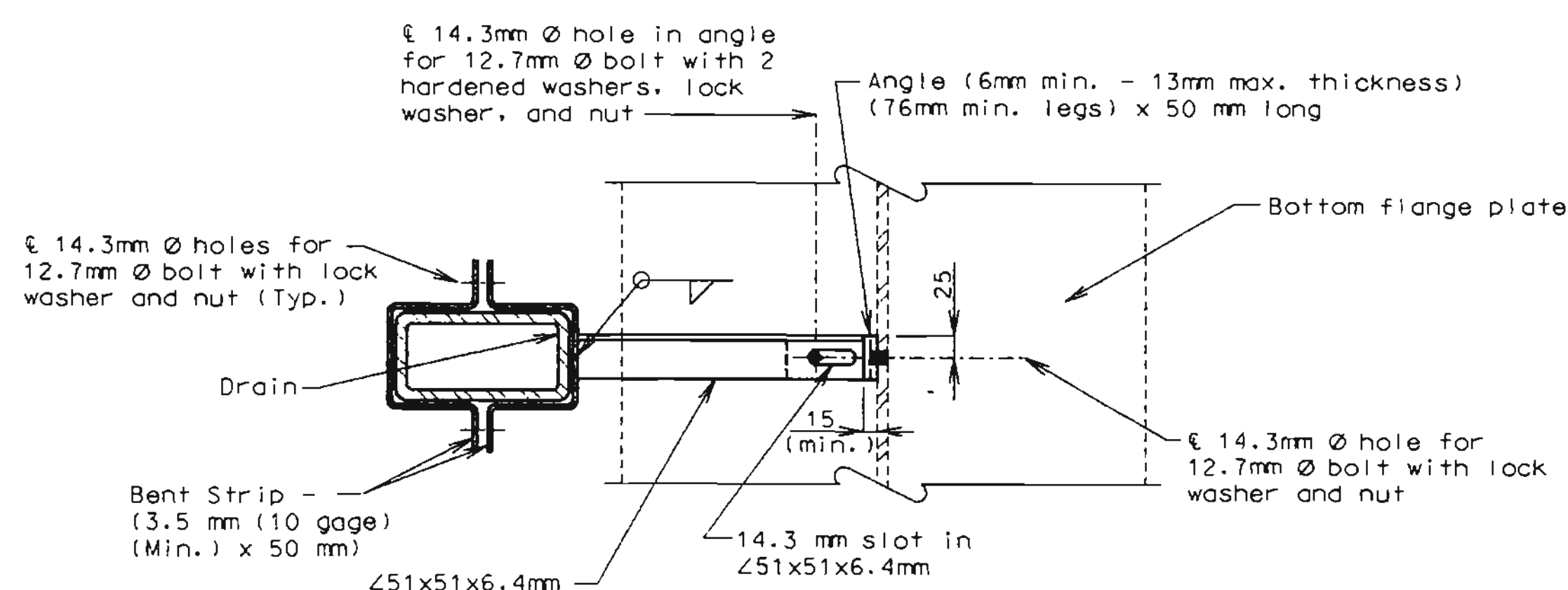
Shift reinforcing steel in field where necessary to clear drains.

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.

See Sheet No. 15 for location of slab drains.



PART PLAN SHOWING BRACKET ASSEMBLY

PROJECT No. 98-047 PROJECT NAME: MODOT Br. No. A16855-08 1-135 over Big Blue River S:\98047\STR\A16855\08\CON\WDR\ANZ.DGN

BUR BUCHER, WILLIS & RATLIFF CORPORATION

7920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2636

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	MAH	JAN. 1998
CHECKED BY:	MLJ	JAN. 1998

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

JACKSON COUNTY

DETAILS OF SLAB DRAINS

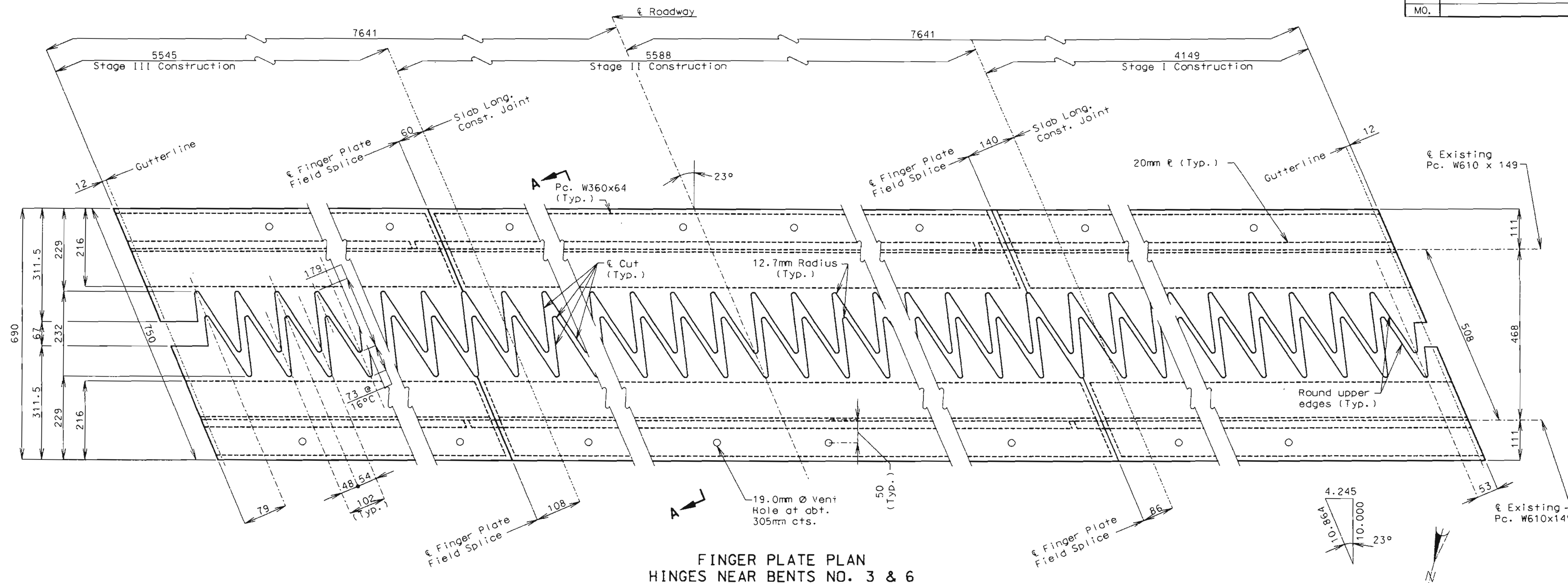
SHEET NO. 16 OF 26

A16855

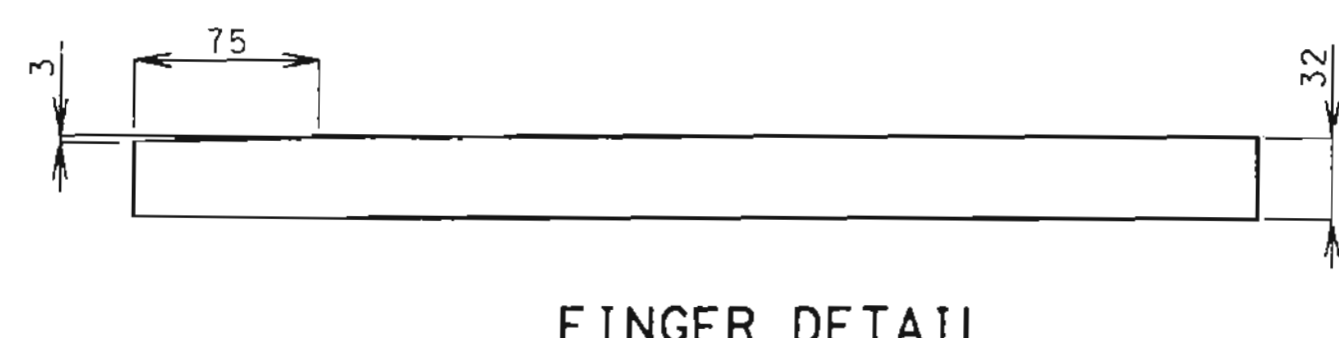


Donna J. Mader
4-1-98

STATE	PROJ. NO.	SHEET NO.
MO.		240



FINGER PLATE PLAN HINGES NEAR BENTS NO. 3 & 6



FINGER DETAIL

Hinge No.	Joint Movement Per 5°C Temperature Change
3	6 mm
6	5 mm

Notes:

- Plan dimensions are based on installation at 16° Celsius. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change. See table on this sheet.
- Material for the expansion device shall be ASTM A709M Grade 250 structural steel.
- Structural steel for the expansion device and curb plates 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 installing structural steel for the expansion device will be made at the contract unit price for Expansion Device (Finger Plate) per meter.
- Concrete shall be forced under and around finger plate supporting hardware, angles and bars. Proper consolidation shall be achieved by localized internal vibration.
- Finger plate shall be cut with a machine guided gas torch from one plate. The plate from which fingers are cut may be spliced before fingers are cut. The surface of cut shall be perpendicular to the surface of plate. The cut shall not exceed 3mm in width. The centerline of cut shall not deviate more than 2mm from the position of centerline of cut shown.
- 32mm finger plate and W360x64 shall be bent to conform to crown of roadway. See Sheet No. 18 for Section A-A.

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

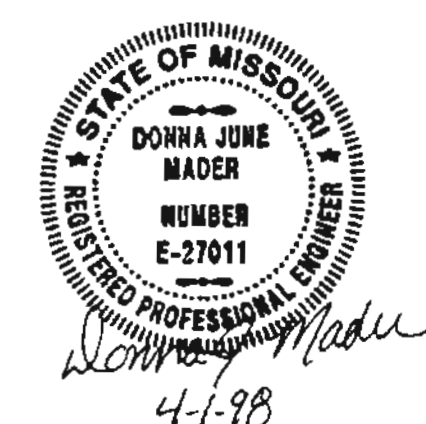
PROJECT NO. 98-047 PROJECT NAME: MODOT-Br. NO. A6855-NB 1-435 Over Big Blue River S:\98047\STR\A6855\NB\UDN\NBE\FP\16.DGN

BUR BUCHER, WILLIS & RATLIFF CORPORATION
7920 WARD PAVANWAY KANSAS CITY, MISSOURI 64114 816-263-2690

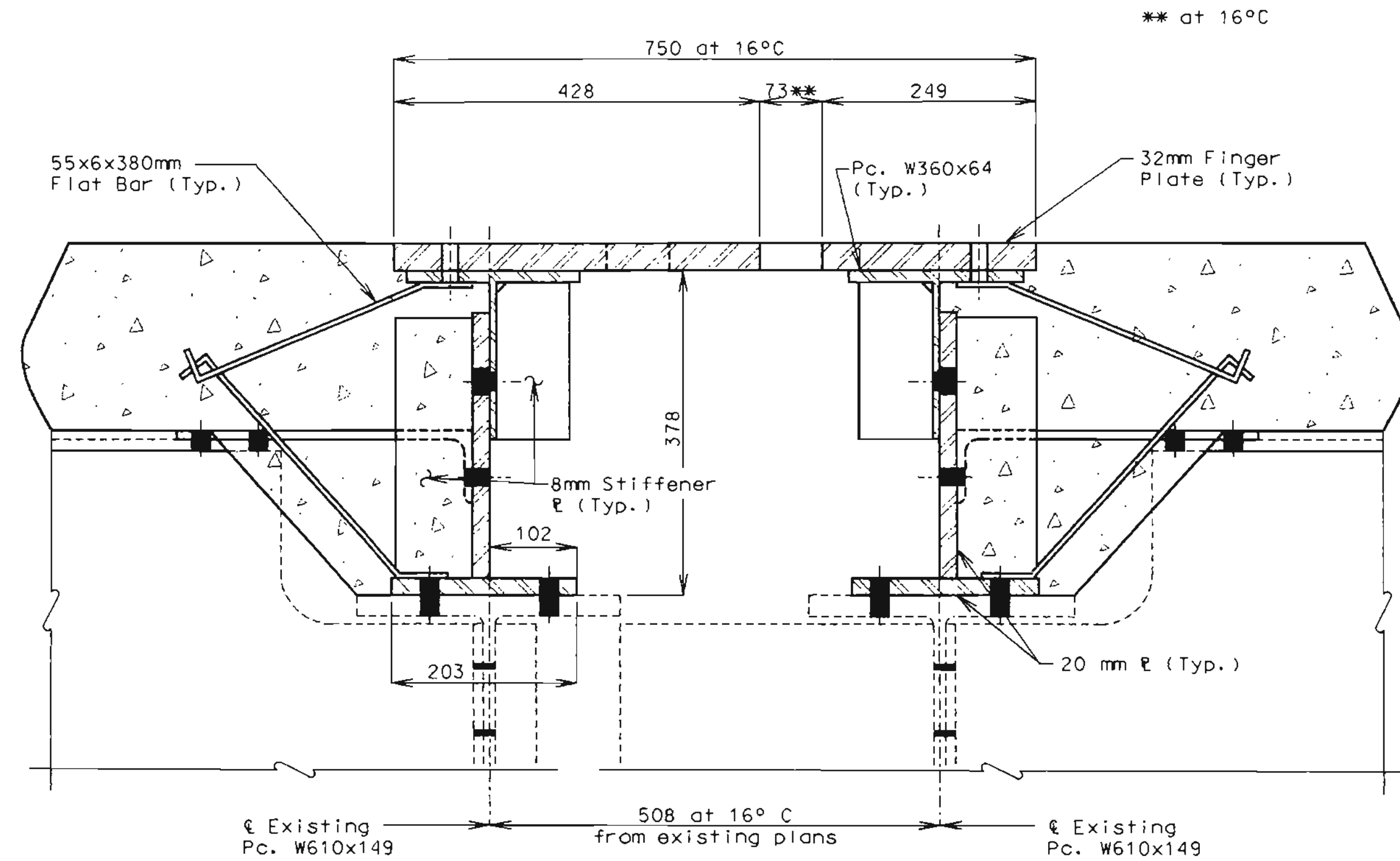
DRAWN BY:	DJM	FEB. 1998
TRACED BY:	TWM	FEB. 1998
CHECKED BY:	KLW	FEB. 1998

JACKSON COUNTY

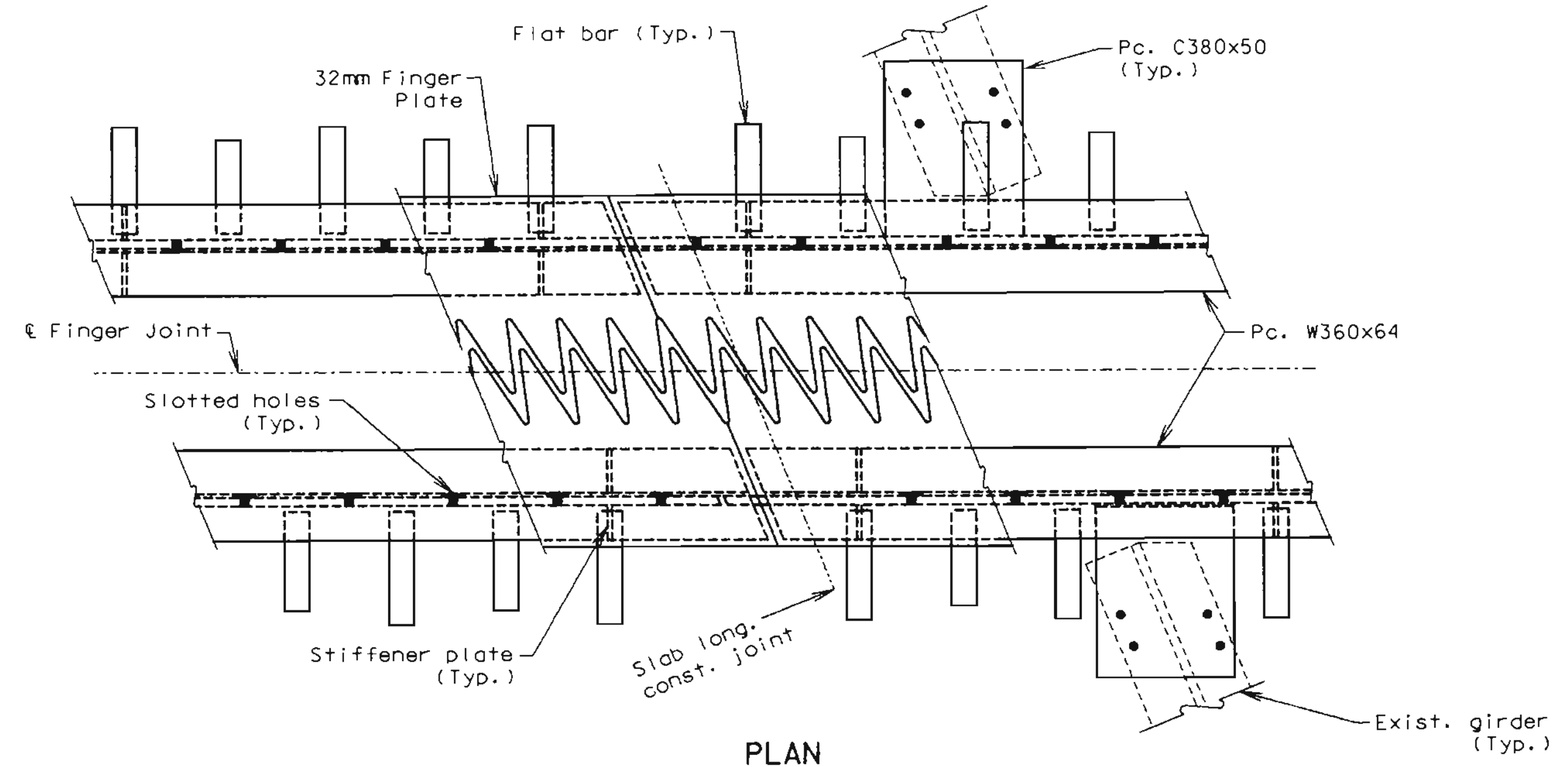
FINGER PLATE DETAILS HINGES NEAR BENTS NO. 3 & 6



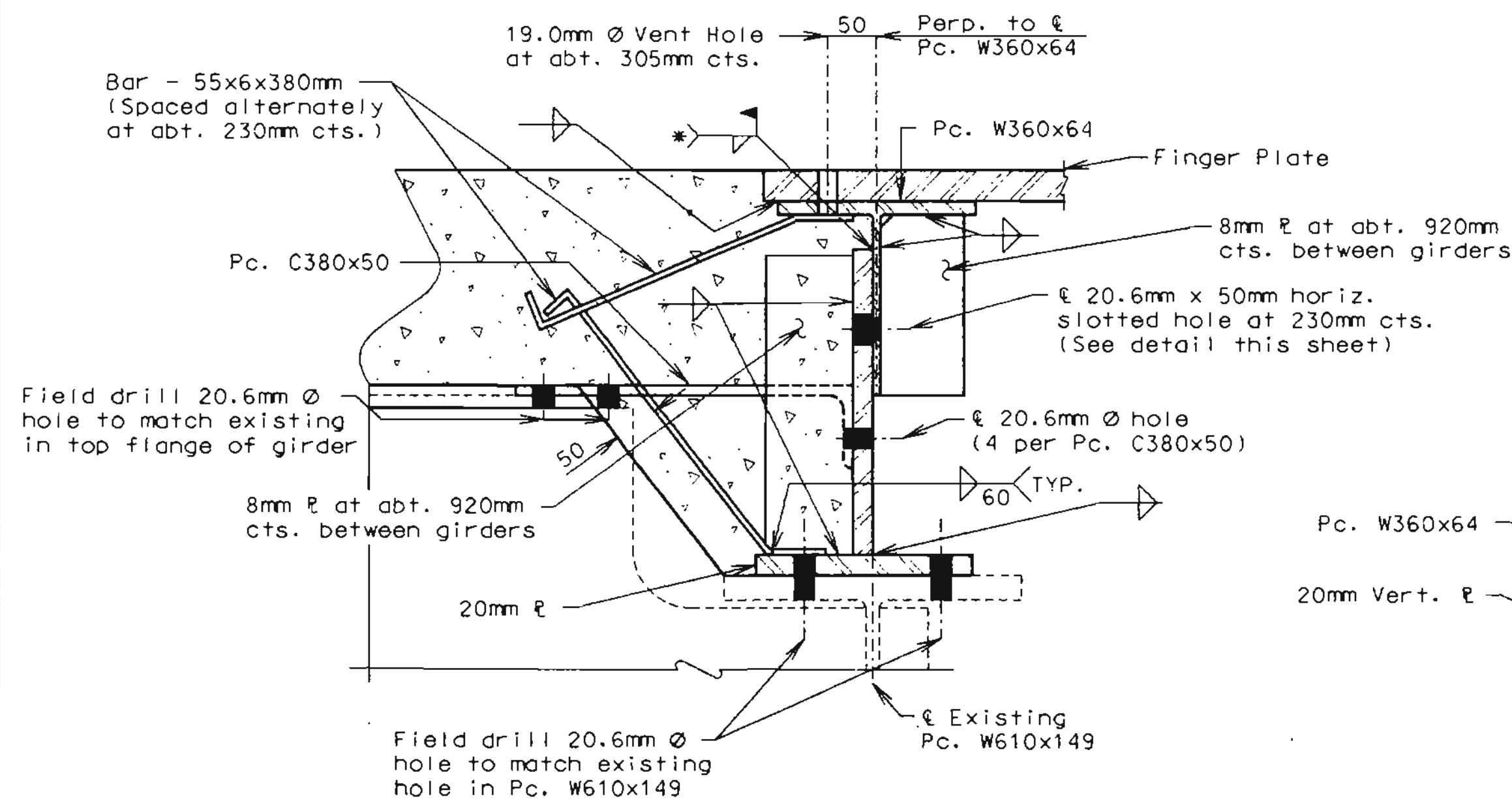
STATE	PROJ. NO.	SHEET NO.
MO.		241



SECTION A-A

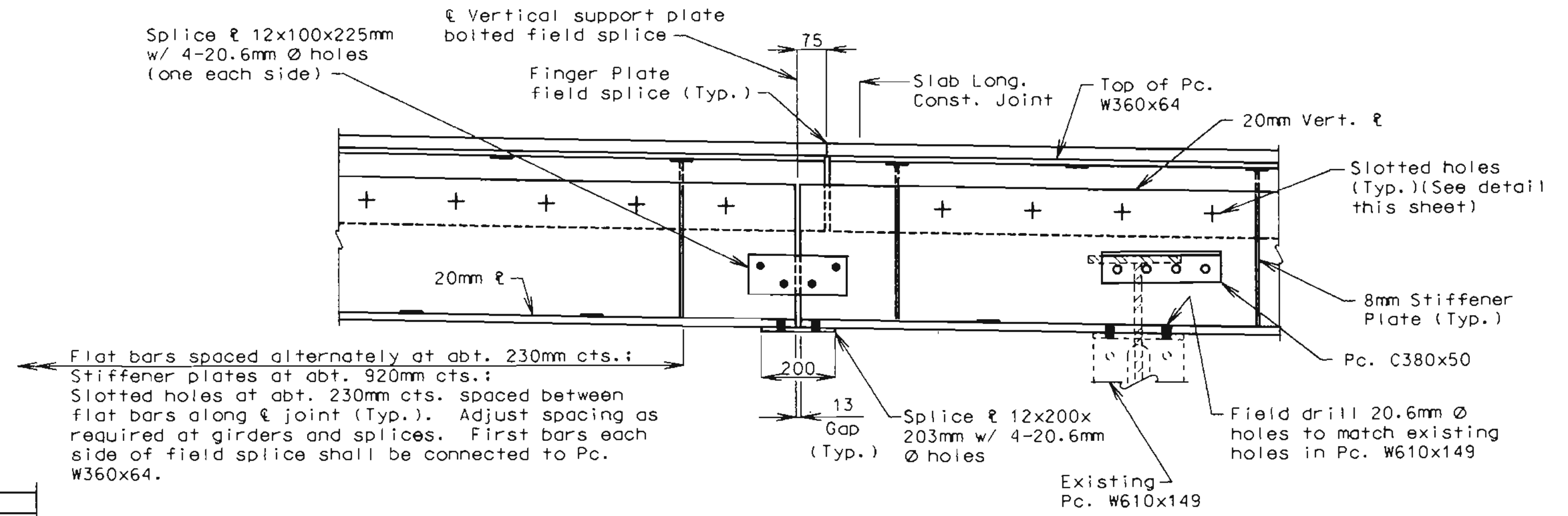


PLAN



CONNECTION DETAILS

*Weld in all accessible areas after final vertical adjustments have been made and approved by the engineer.

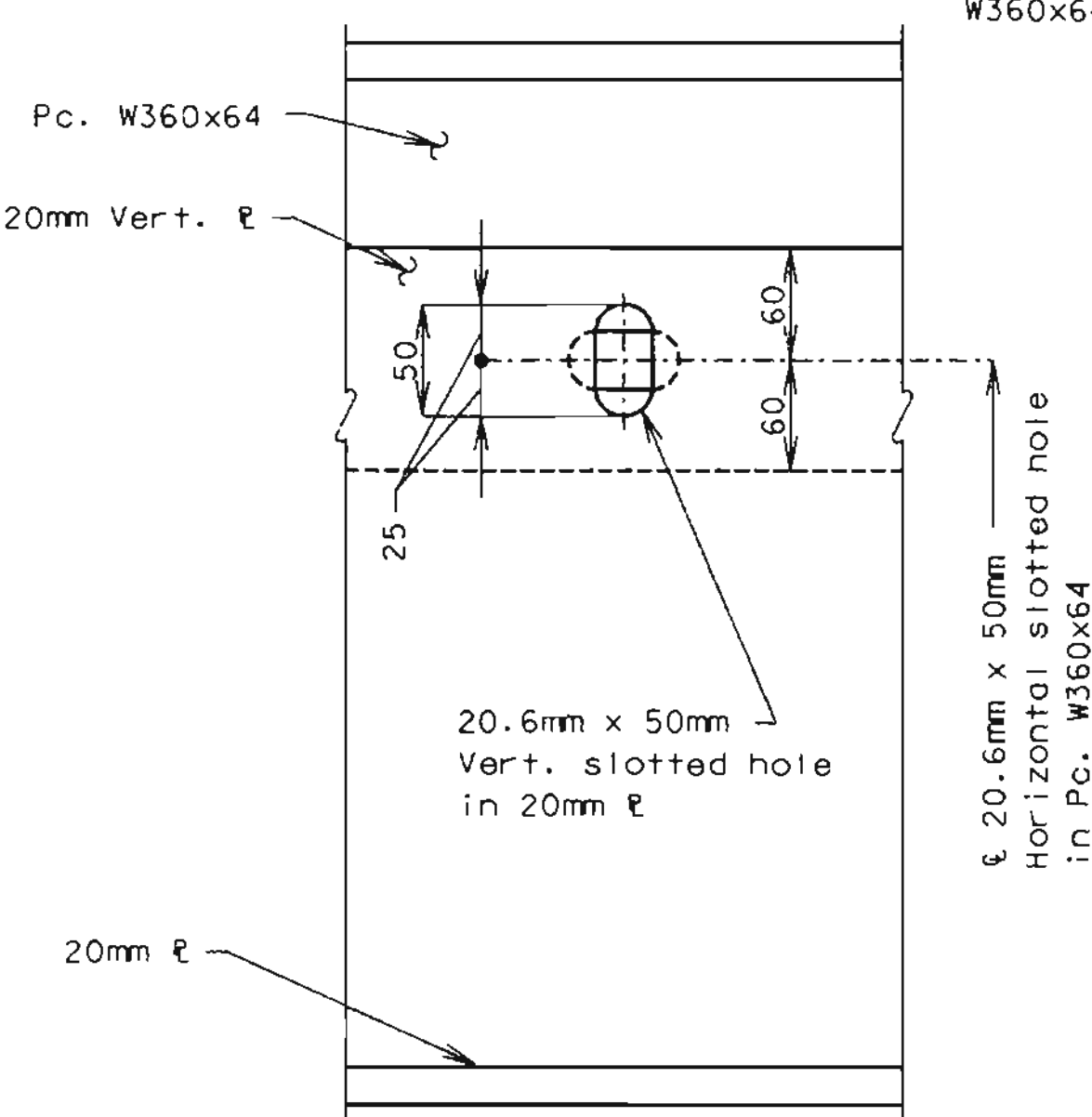


ELEVATION

FINGER PLATE SUPPORT ASSEMBLY

Notes:

- See Sheet No. 17 for finger plate details and expansion device notes.
- Use 19.0mm diameter high strength bolts.



SLOTTED HOLE DETAIL

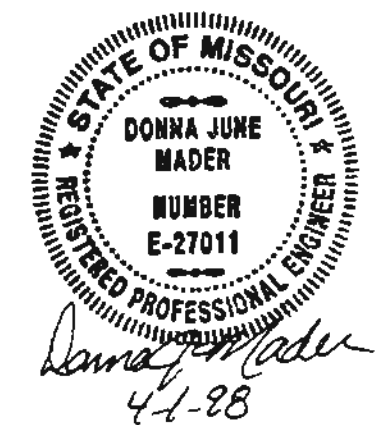
Note: This drawing is not to scale. Follow dimensions.

PROJECT NO. 98-047 PROJECT NAME: HUDOT-BF. No. A16855-NB 1-435 OVER Big Blue River S:\98047\STR\A16855-NB\DCN\A16855-NB.DWG

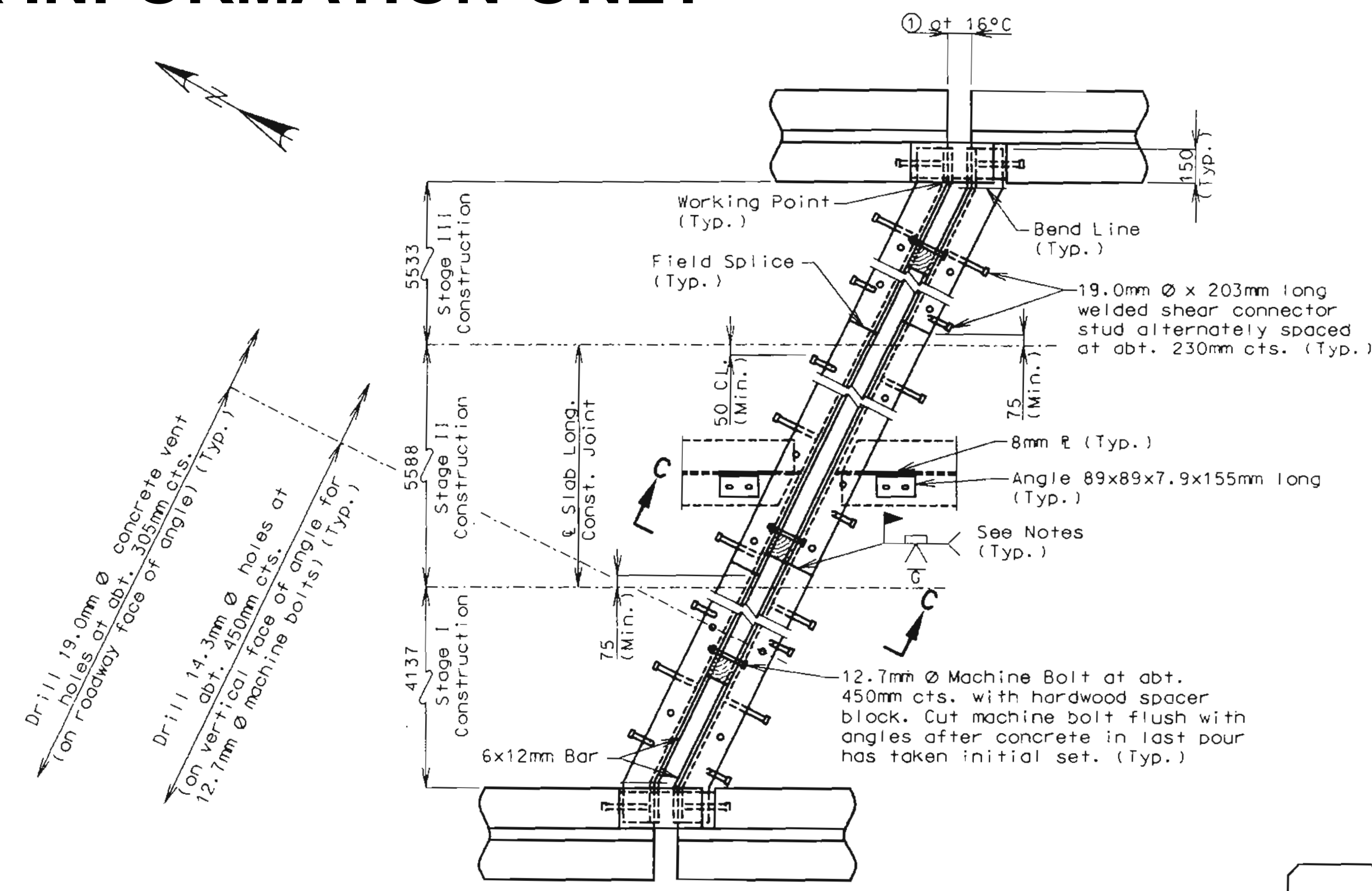
BWR BUCHER, WILLIS & RATLIFF CORPORATION

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CHECKED BY:	TAC	FEB. 1998

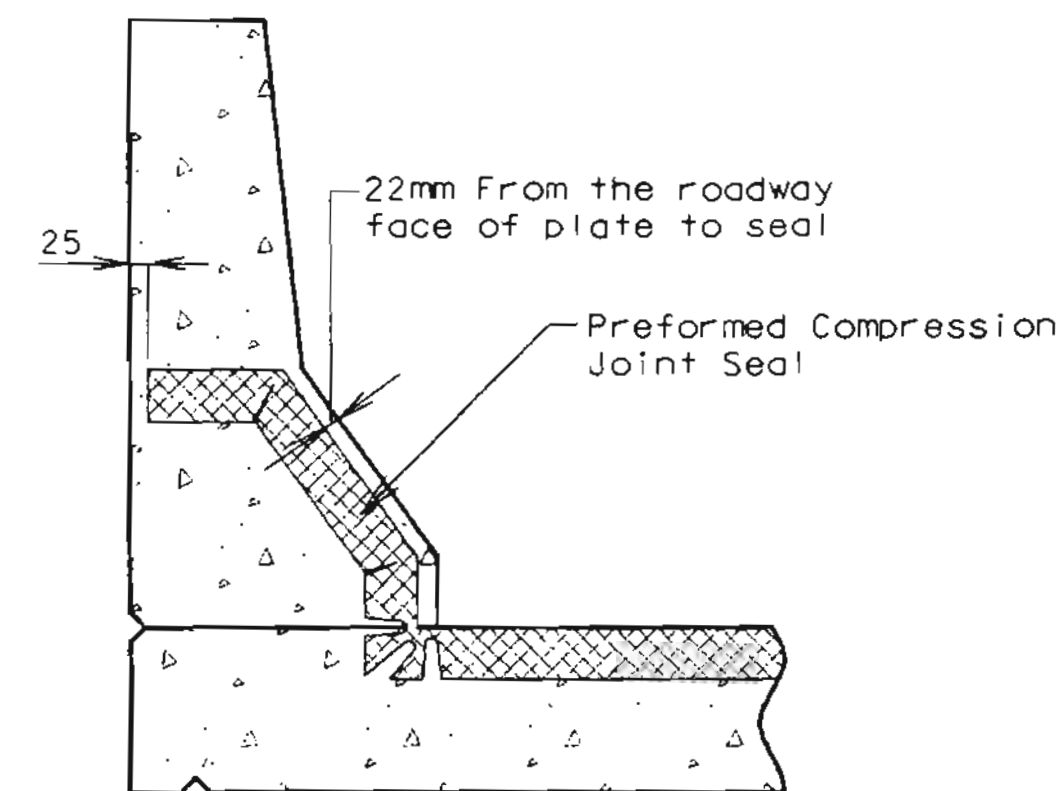
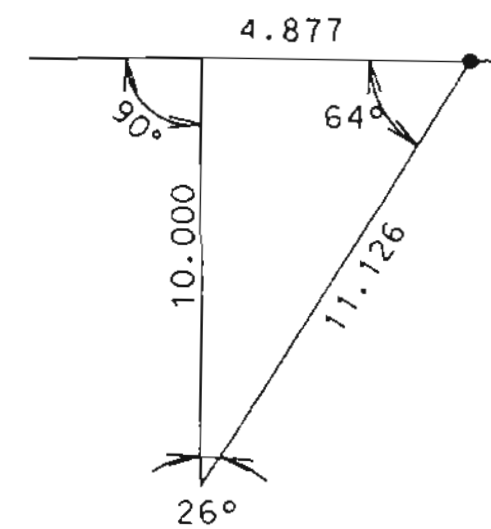
JACKSON COUNTY
MISCELLANEOUS EXPANSION
DEVICE DETAILS-HINGES
NEAR BENTS NO. 3 & 6



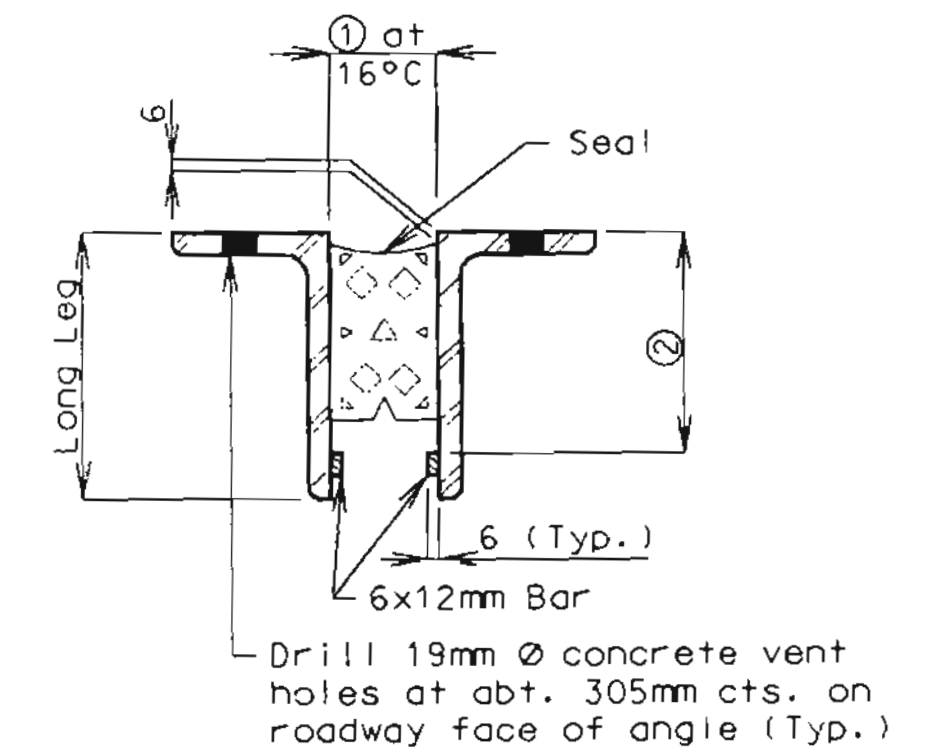
STATE	PROJ. NO.	SHEET NO.
MO.		242



PLAN AT HINGE NEAR BENT NO. 9



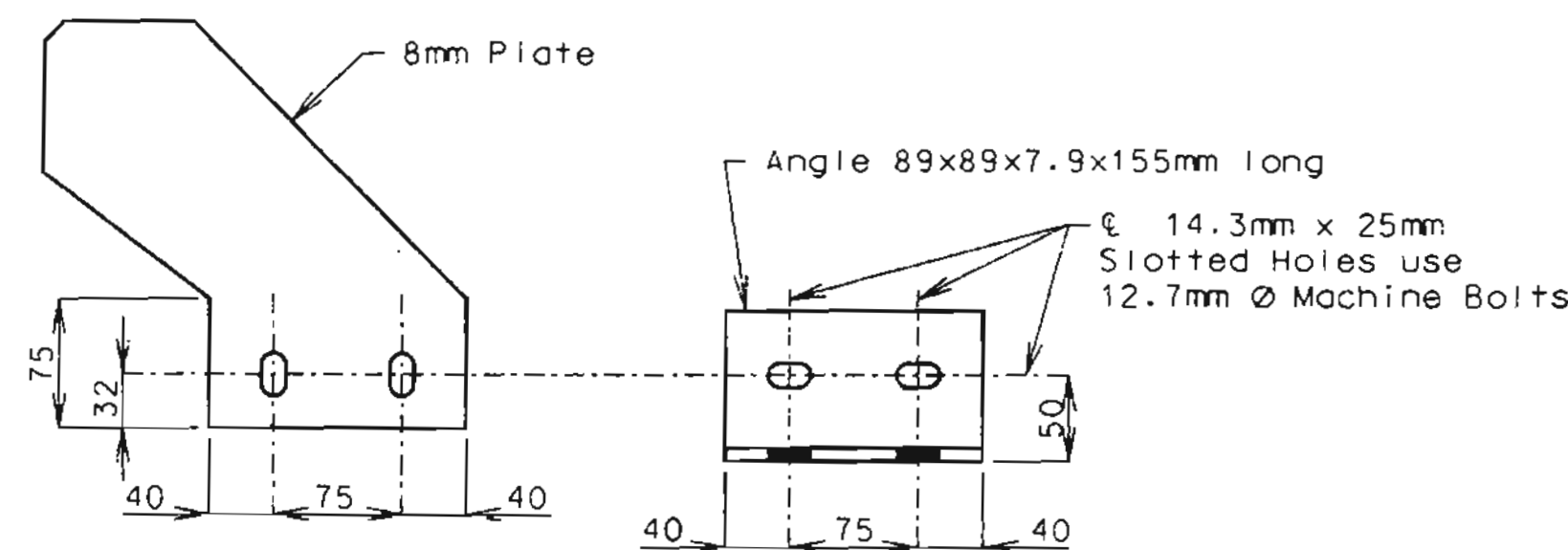
PART SECTION THRU SAFETY BARRIER CURB SHOWING SEAL



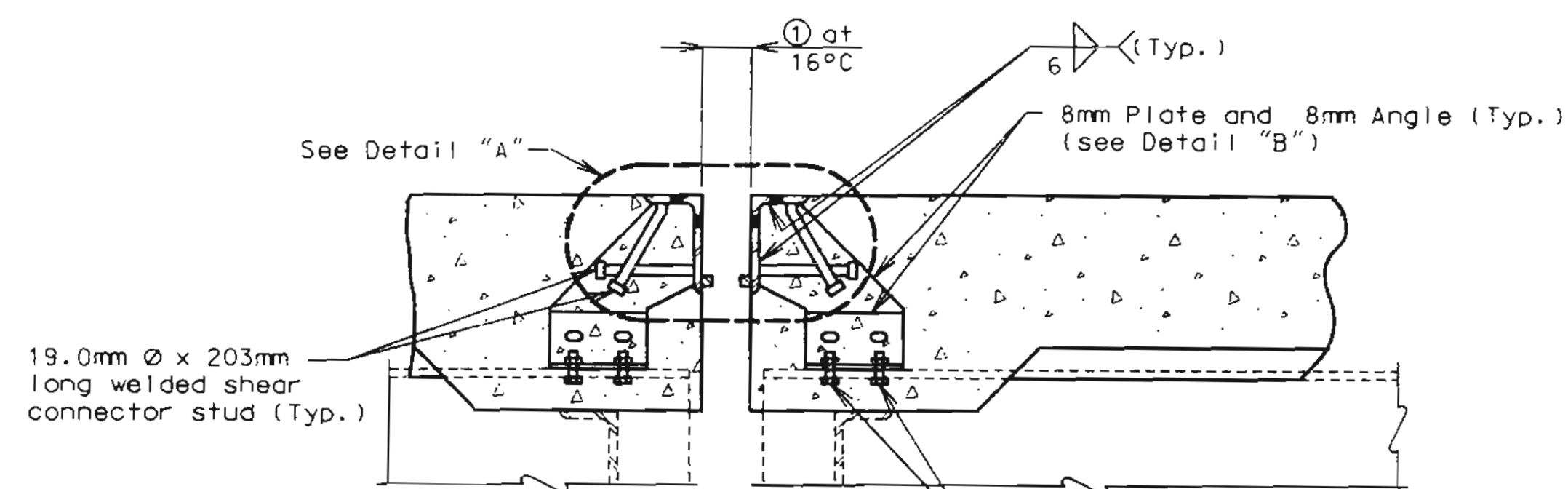
PART CROSS SECTION THRU EXPANSION JOINT

Location	Seal Width	①	②	Required Movement Range (M.L.)
Hinge No. 9	102mm	67mm *	Manufacturer's recommended height	41mm

* Gap is in slab and barrier curb.



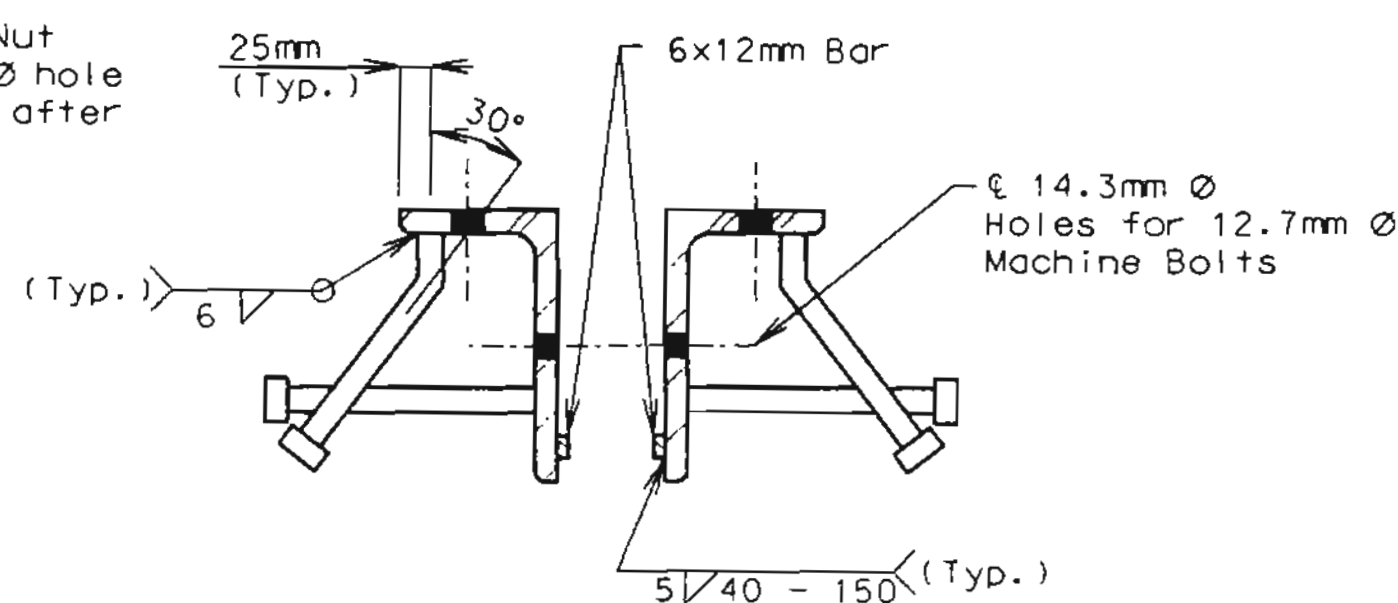
DETAIL "B"



SECTION C-C

Note: Concrete shall be forced under armor angle and around studs. Proper consolidation of the concrete shall be achieved by localized internal vibration.

12.7mm \varnothing Machine Bolt and Nut with field drilled 14.3mm \varnothing hole in top flange. Remove bolt after concrete has set. (Typ.)



DETAIL "A"

Notes:

Structural steel for expansion device shall be fabricated in three sections. Device shall extend 75mm beyond edge of slab longitudinal construction joint and spliced with a complete joint penetration groove weld.

The expansion device shall be bent to conform to crown and grade of roadway.

Structural steel for the armored joint shall be ASTM A709M Grade 250.

Plan dimensions are based on installation at 16 degree Celsius.

Dimension ① shall be increased 2mm for each 5 degree Celsius fall in temperature and decreased 2mm for each 5 degree Celsius rise in temperature at installation.

See Special Provisions for the requirements of compression joint seal.

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.

Furnishing, coating or galvanizing and installing the structural steel armored joint and curb plates shall be included in the contract unit price for Preformed Compression Expansion Joint Seal.

Neoprene extrusions shall meet ASTM D3542.

PROJECT No. 98-047 PROJECT NAME: MO DOT - Br. No. A16855-HE 1-435 over Big Blue River S:\98047\STR\A16855\HE\LDON\WBE.VP9.DGN

BUR **BUCHER, WILLIS & RATLIFF CORPORATION**
 1700 W. WARD PARKWAY, KANSAS CITY, MISSOURI 64114 216-363-2696

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TRACED BY:	TWM	FEB. 1998
CHECKED BY:	DJM	FEB. 1998

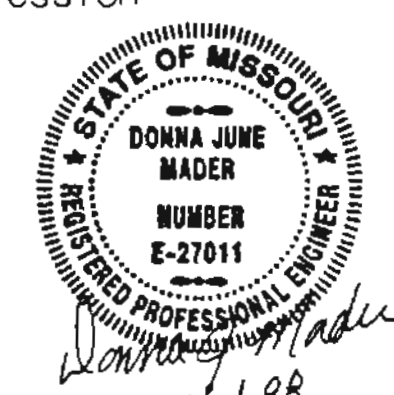
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

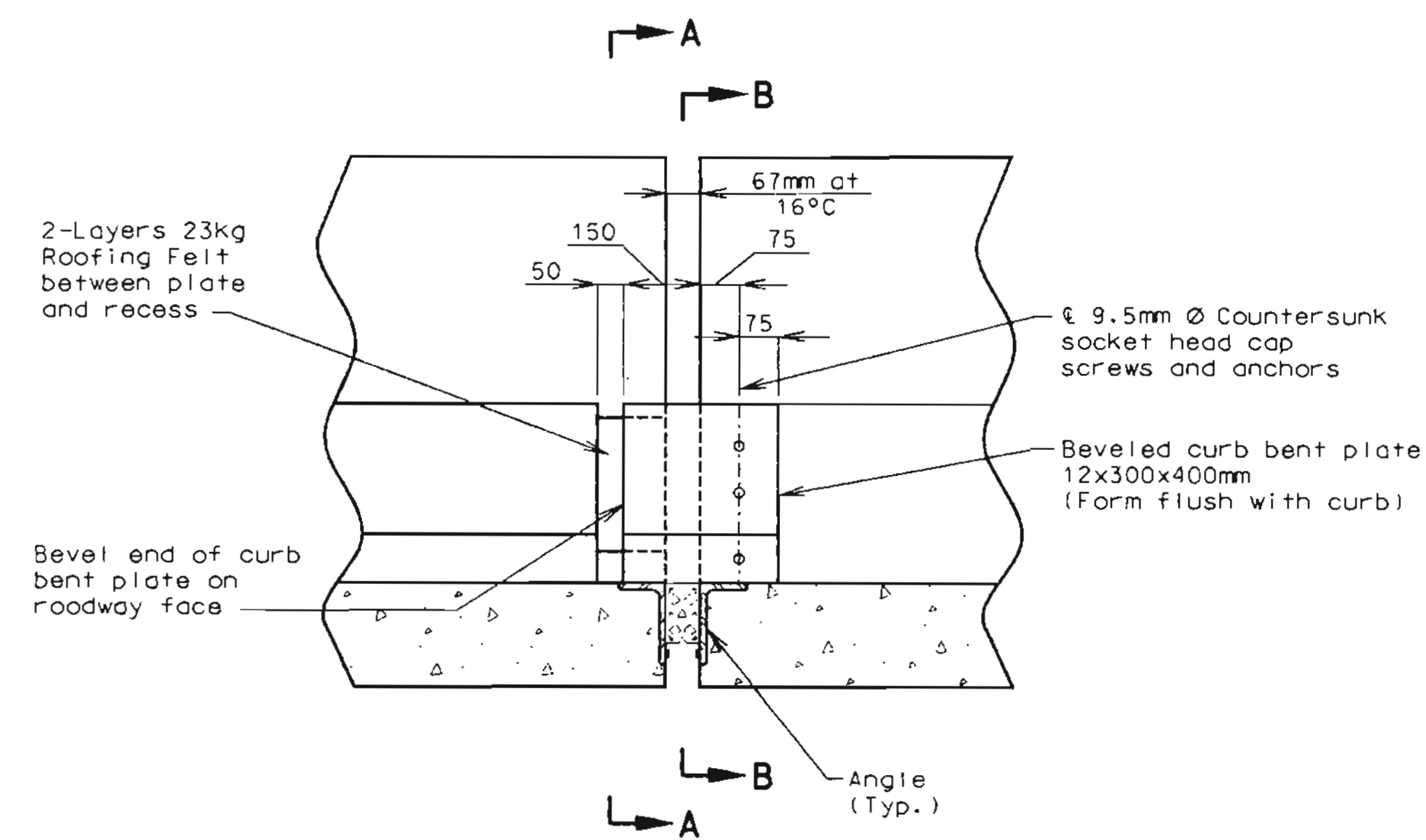
DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT HINGE NEAR BENT NO. 9

SHEET NO. 19 OF 26

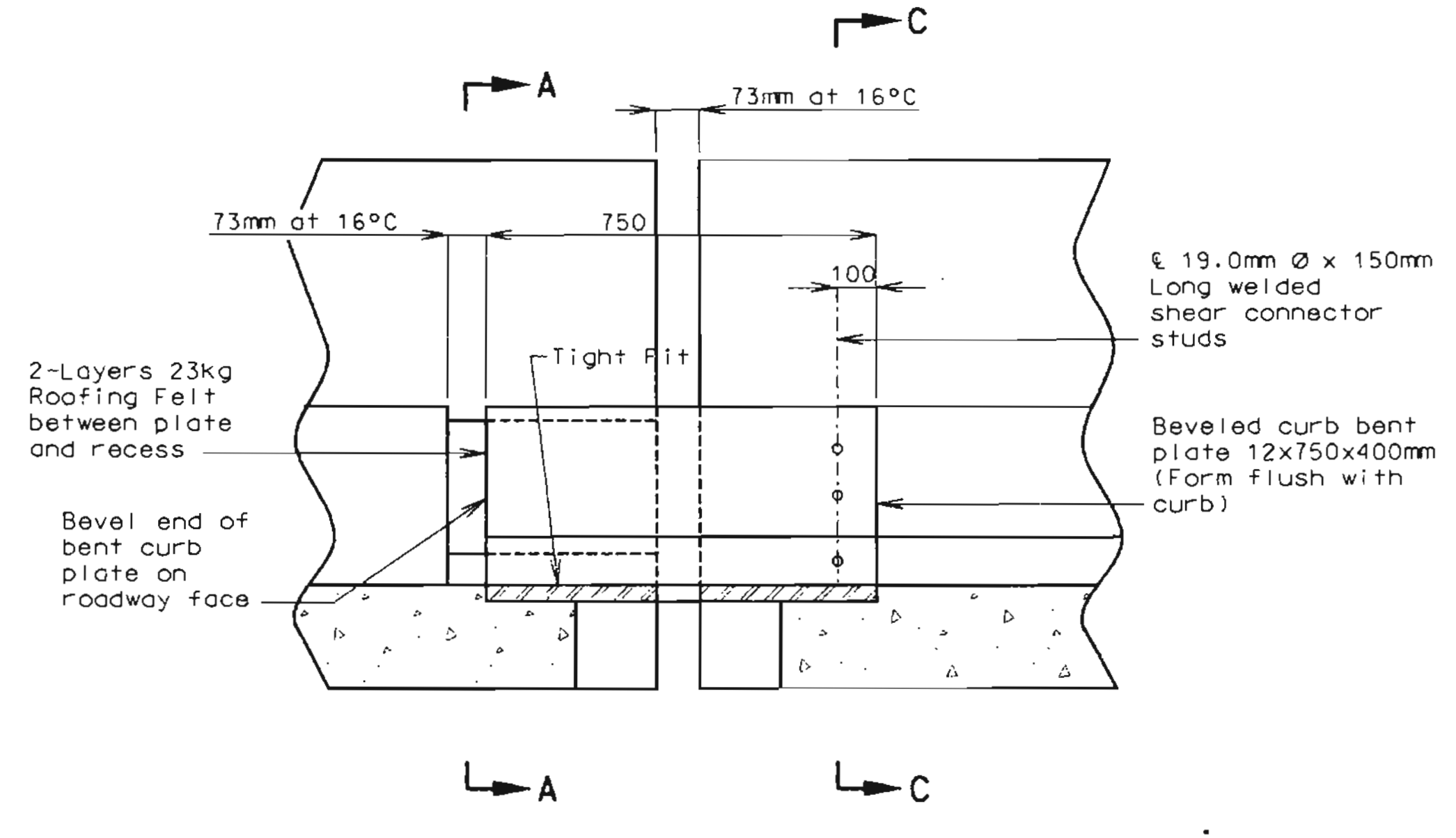
A16855



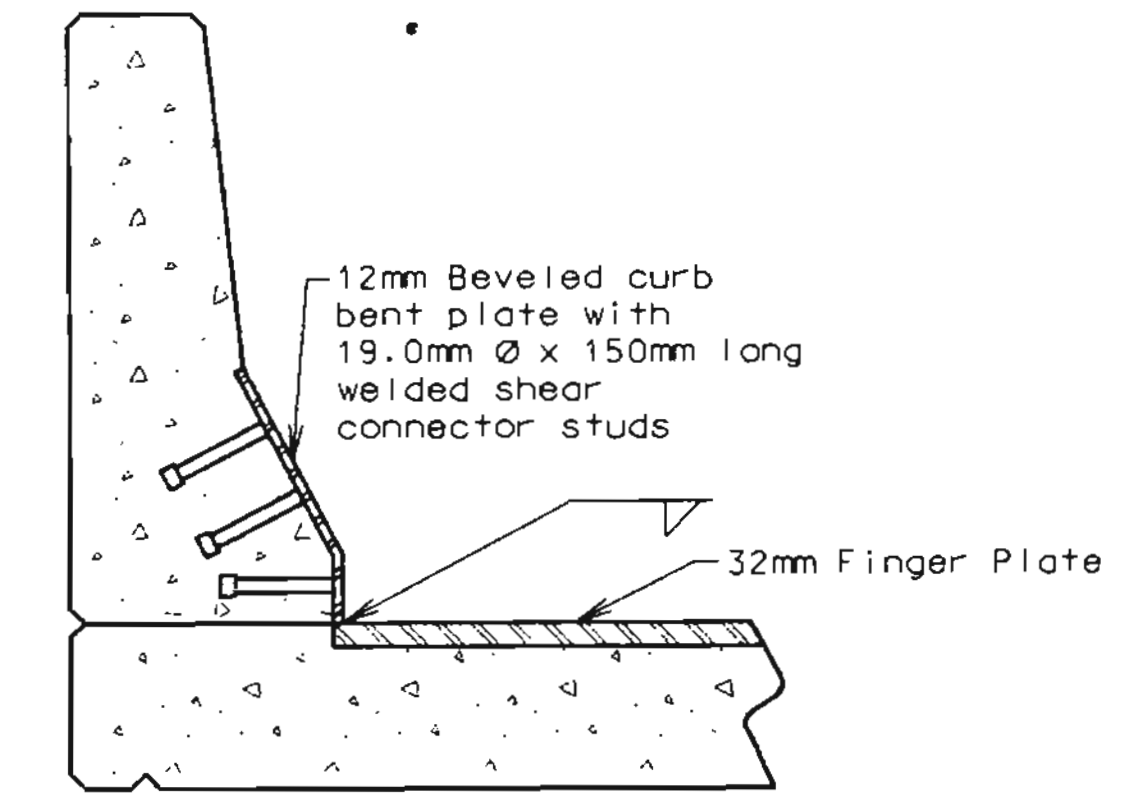
STATE	PROJ. NO.	SHEET NO.
MO.		243



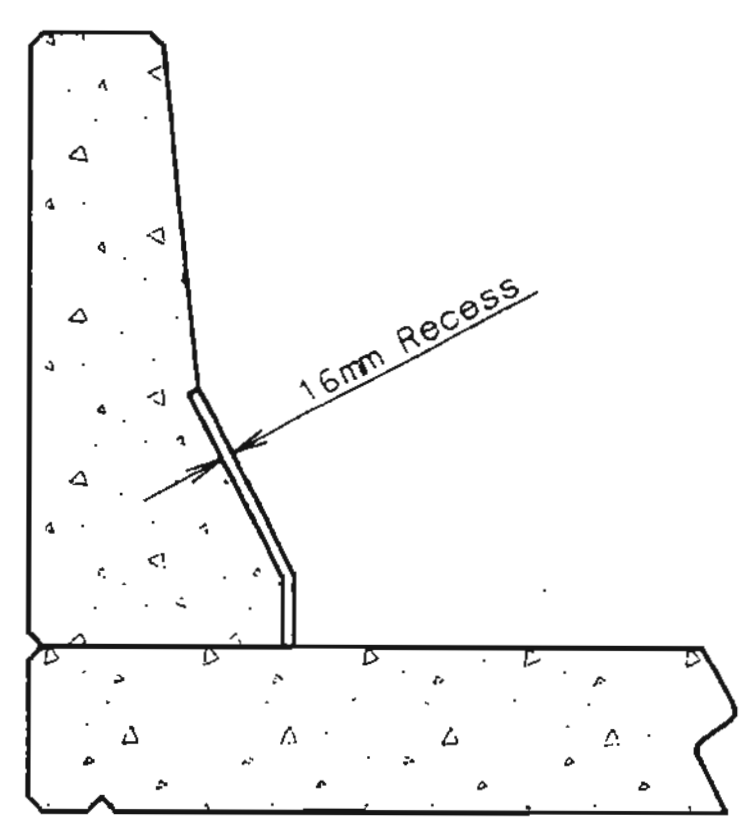
PART ELEVATION OF BARRIER CURB AT HINGE NEAR BENT NO. 9
Left barrier shown, right barrier similar



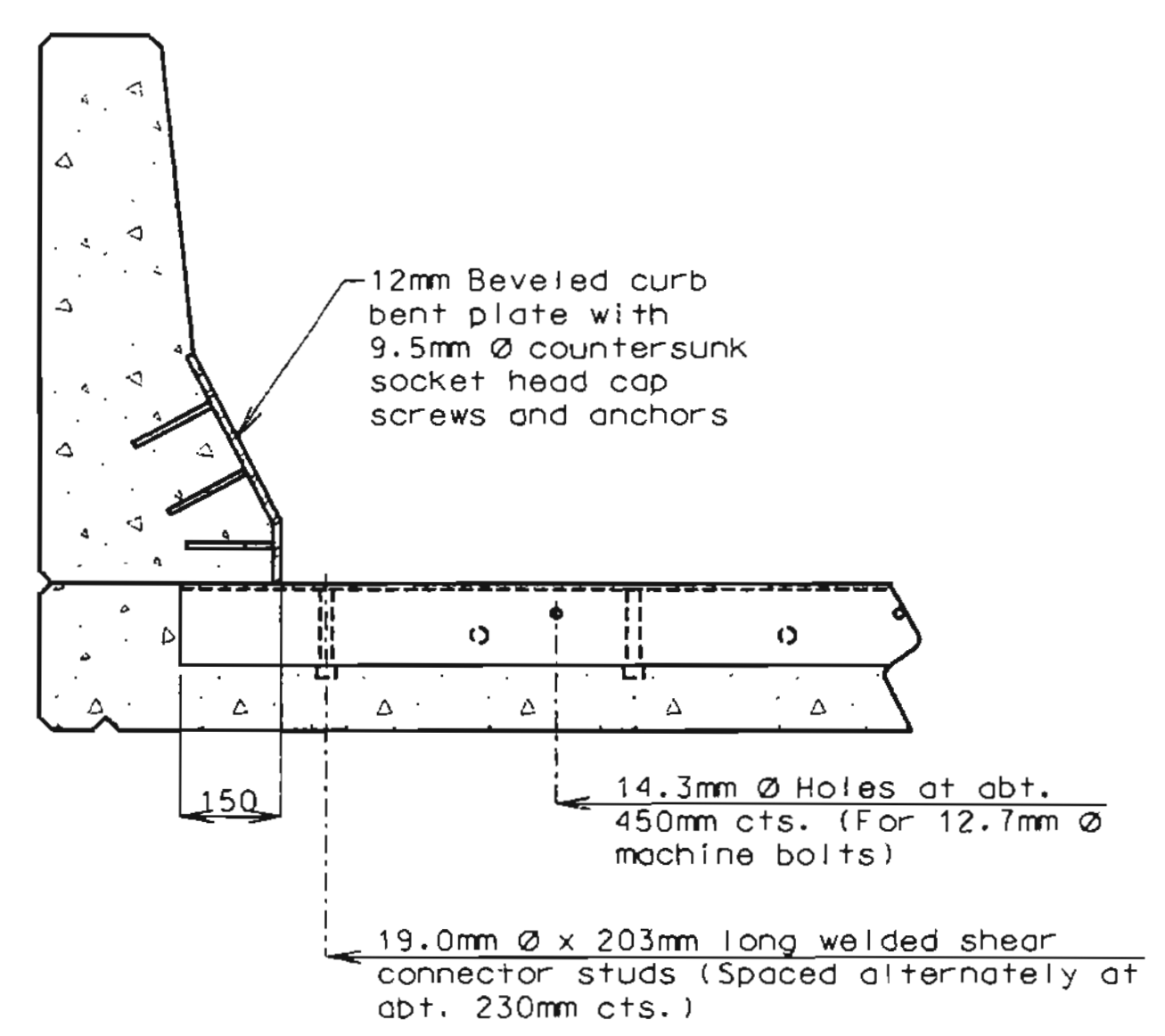
PART ELEVATION OF BARRIER CURB AT HINGES NEAR BENTS NO. 3 & 6
Left barrier shown, right barrier similar



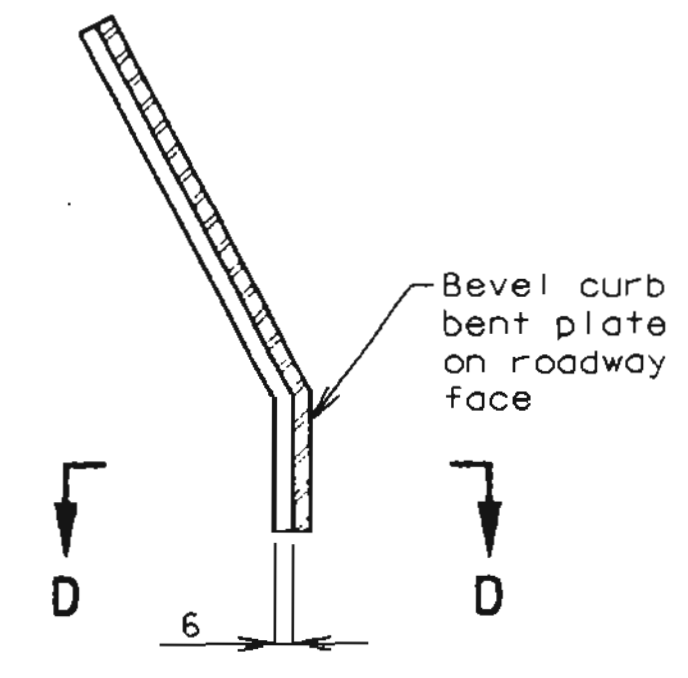
PART SECTION C-C



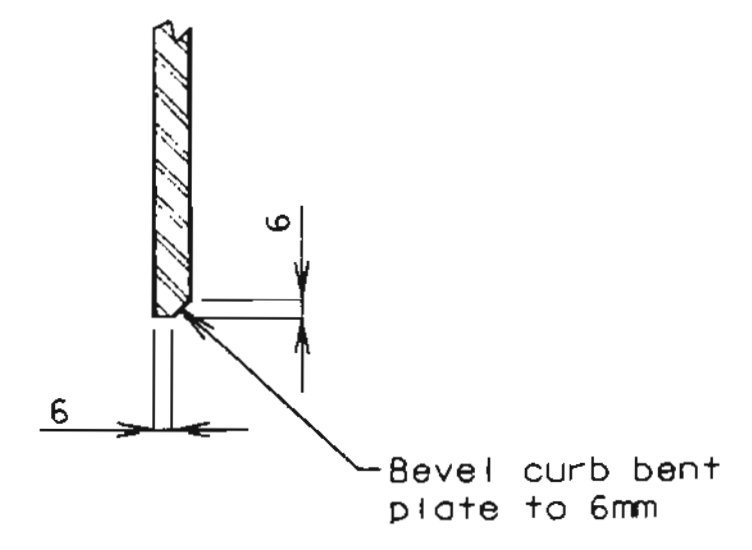
PART SECTION A-A



PART SECTION B-B



PART ELEVATION AT END OF BEVELED CURB BENT PLATE



SECTION D-D

Note:
See Sheets No. 17, 18 and 19 for additional expansion device details and notes.

PROJECT NO. 98-047 PROJECT NAME: MODOT-DR. NO. A6855-MB 1-435 OVER BIG BLUE RIVER S:\98047\STR\A6855\MB\CON\NBE\98R.R.DWG

BUCHER, WILLIS & RATLIFF CORPORATION
1920 WARD PARKWAY, KANSAS CITY, MISSOURI 64114 816-263-2696

DRAWN BY:	MLJ	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	DJM	JAN. 1998

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

JACKSON COUNTY

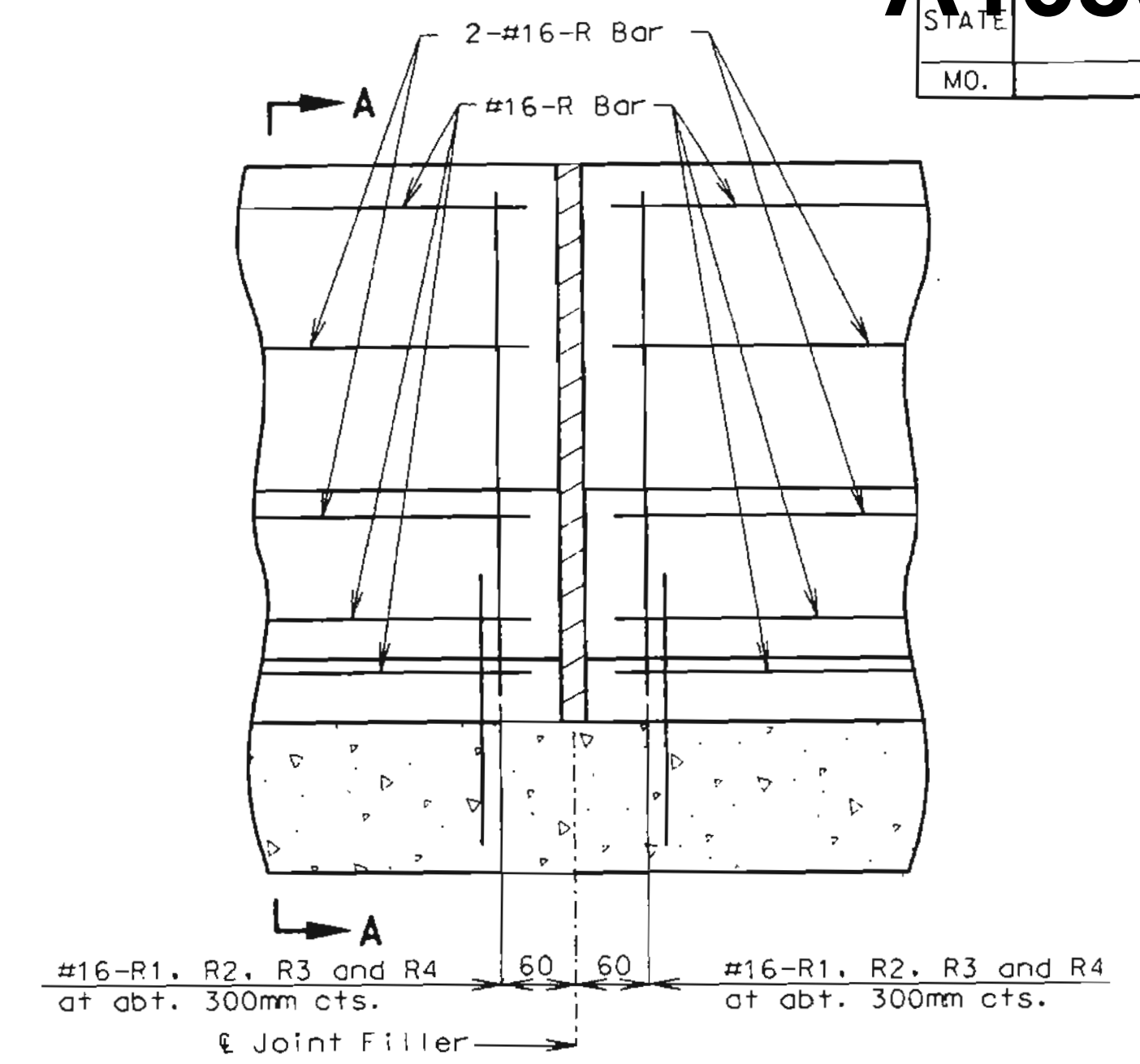
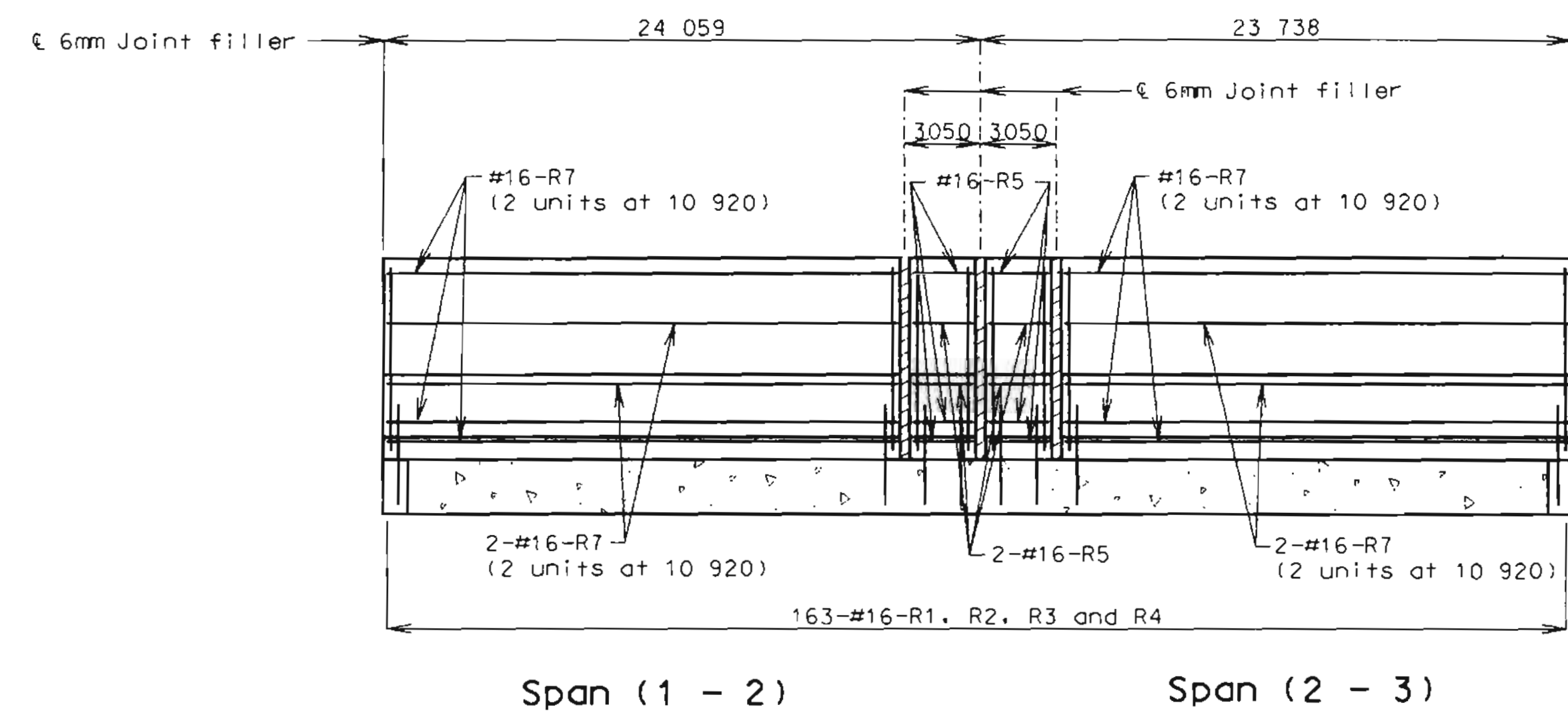
DETAILS OF BENT CURB PLATES



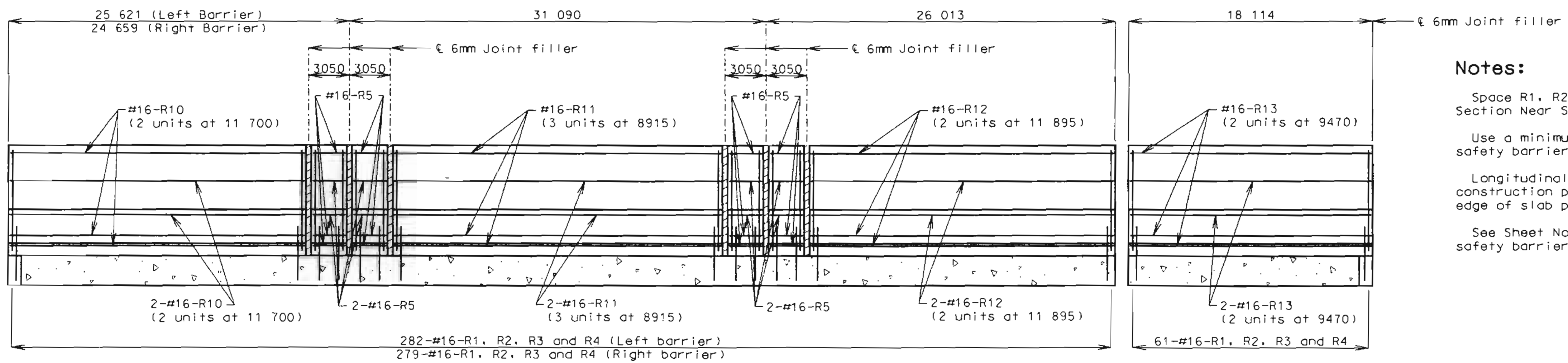
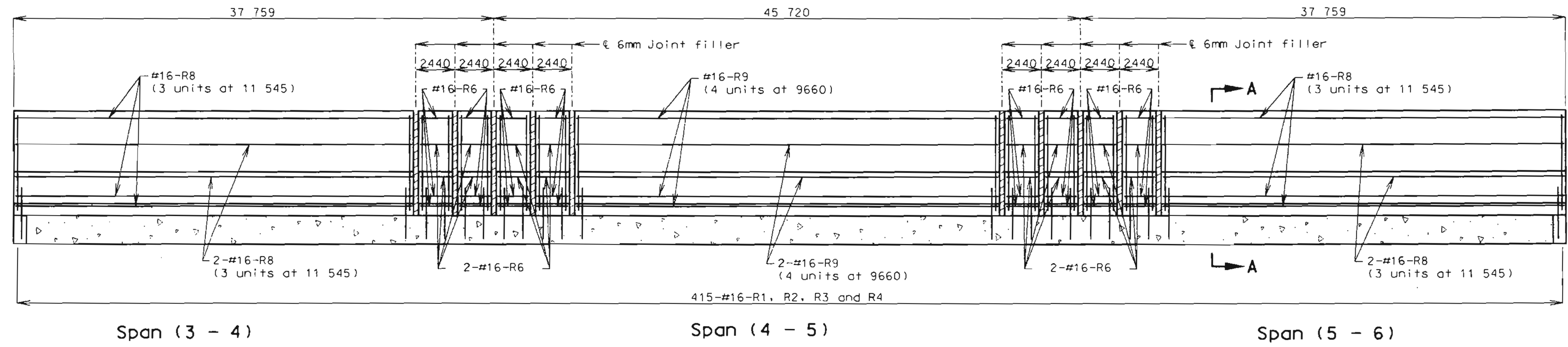
SHEET NO. 20 OF 26

A16855

STATE	PROJ. NO.	SHEET NO.
MO.		244



PART SECTION NEAR SAFETY BARRIER CURB



Notes:

- Space R1, R2, R3 and R4 bars as shown in Part Section Near Safety Barrier Curb.
- Use a minimum lap of 925mm for #16 horizontal safety barrier curb bars.
- Longitudinal dimensions are taken from original construction plans and are along top of outside edge of slab parallel to grade.
- See Sheet No. 22 for Section A-A and miscellaneous safety barrier curb details and notes.

SECTIONS NEAR BARRIER CURB

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

JACKSON COUNTY
SAFETY BARRIER CURB DETAILS



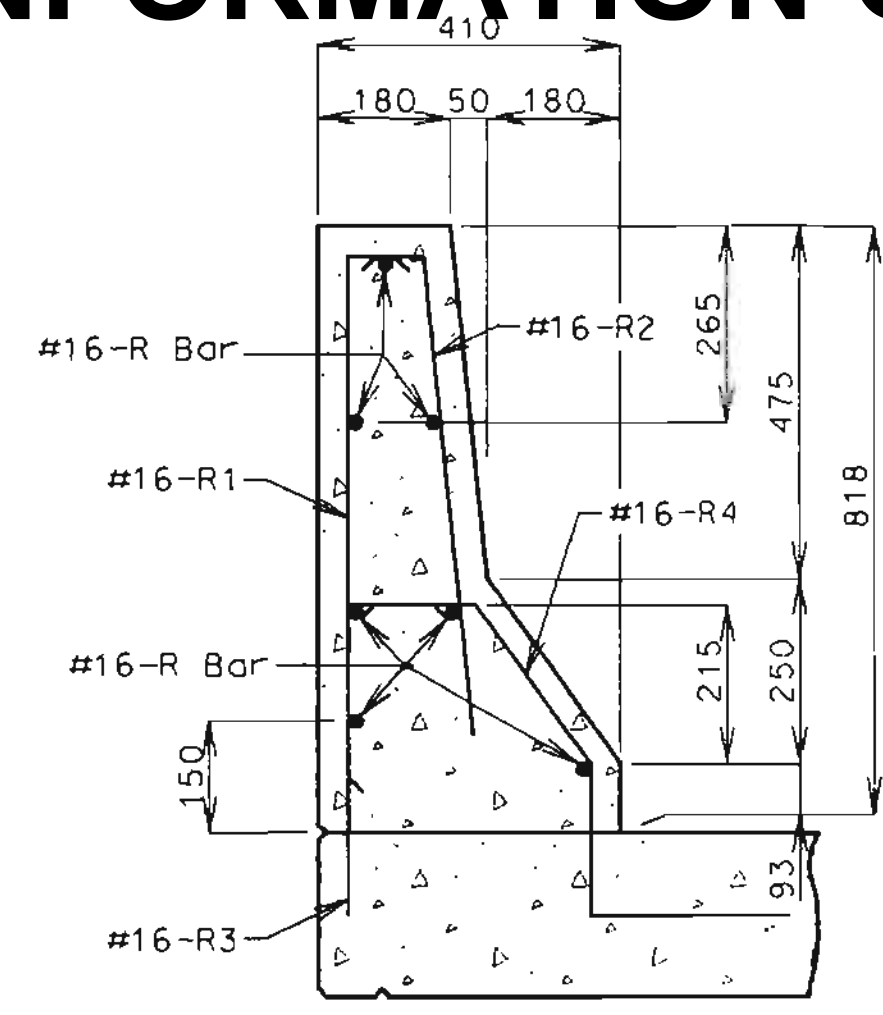
Donna J. Mader 1-1-98

PROJECT No. 98-047 PROJECT NAME: MO DOT Br. No. A16855-RB 1-435 over Big Blue River S:\98047\STR\A16855\B\CON\WB\AREL.DGN

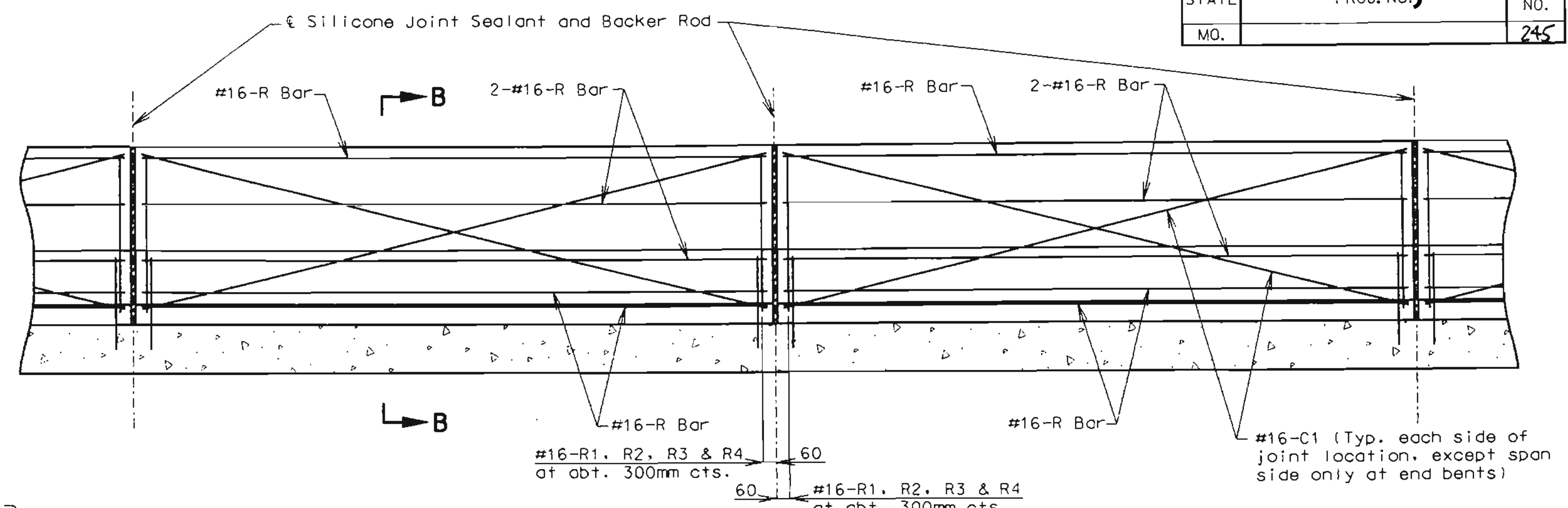
BUR **BUCHER, WILLIS & RATLIFF CORPORATION**
7020 WARD PARKWAY KANSAS CITY, MISSOURI 64114 (816) 363-2686

DRAWN BY: DJM JAN. 1998
TRACED BY: KRB JAN. 1998
CHECKED BY: TAC FEB. 1998

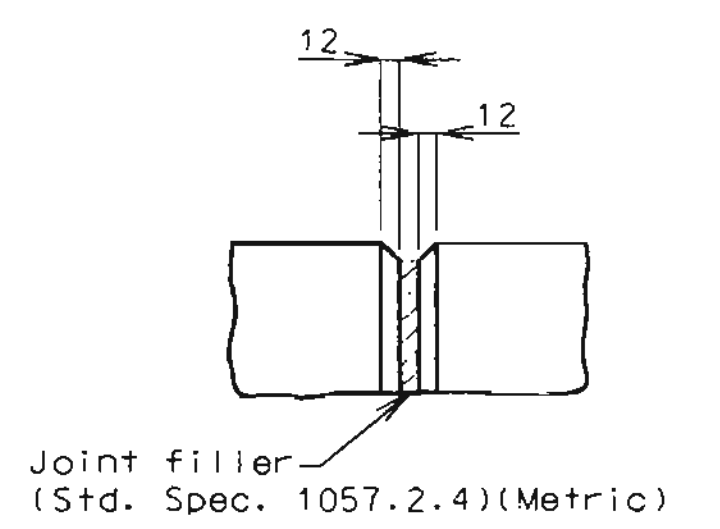
STATE	PROJ. NO.	SHEET NO.
MO.		245



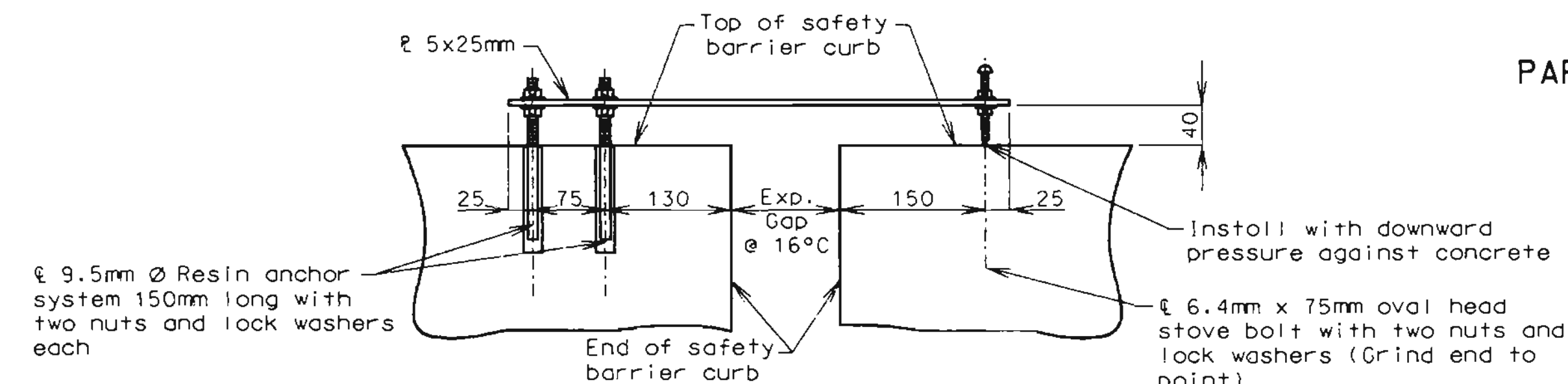
SECTION A-A



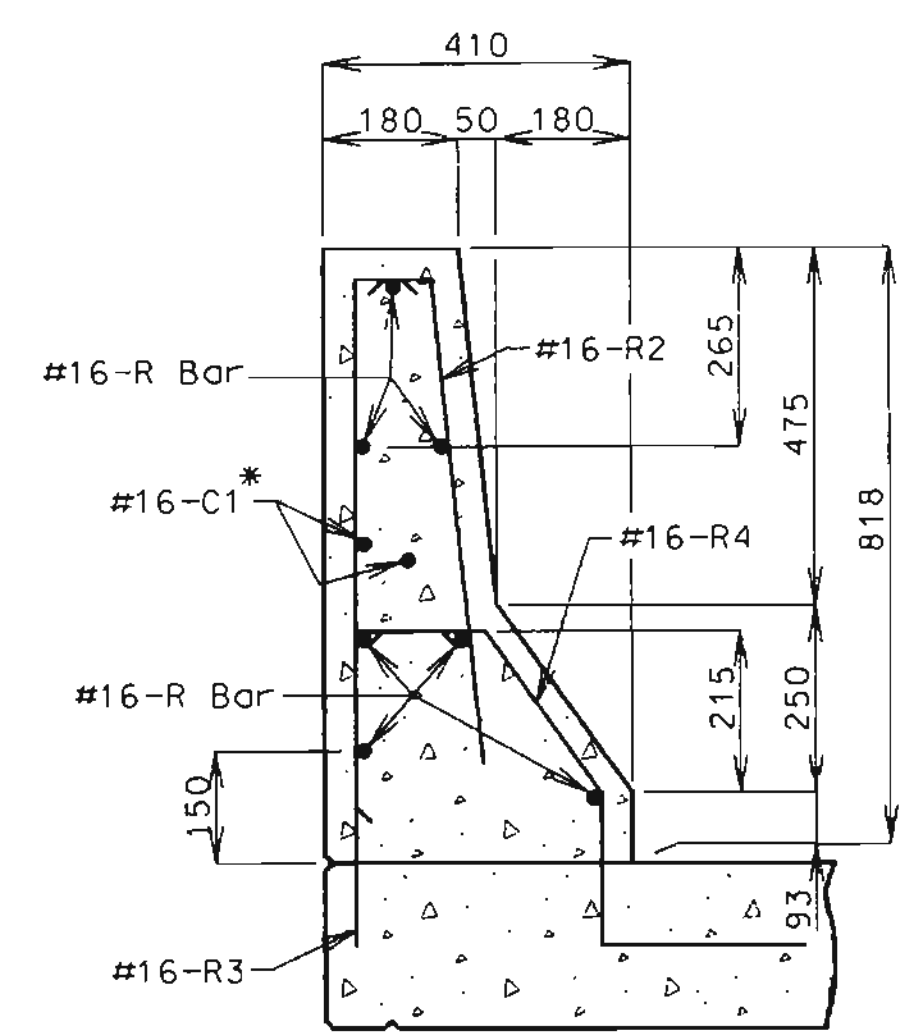
PART SECTION NEAR SAFETY BARRIER CURB (OPTIONAL SLIP-FORM BARRIER)



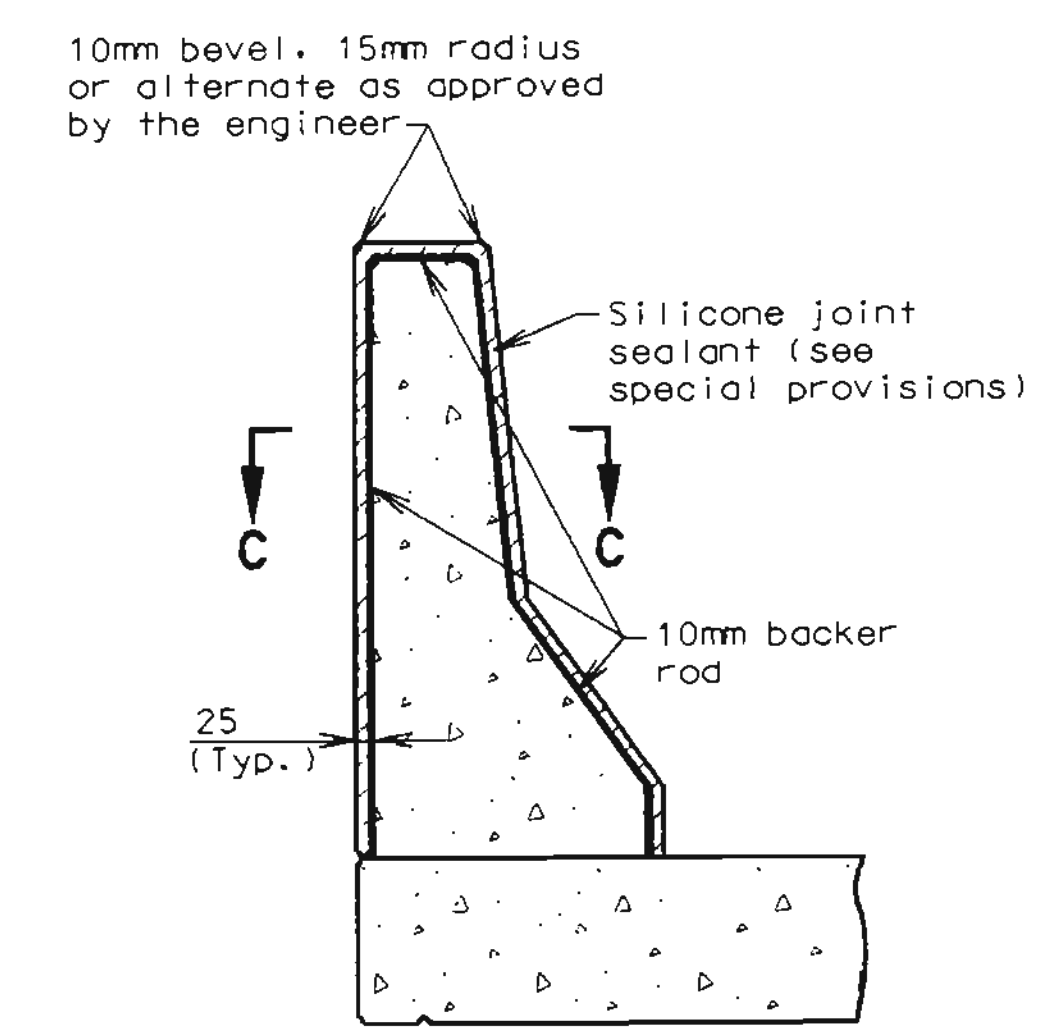
FILLED JOINT DETAIL



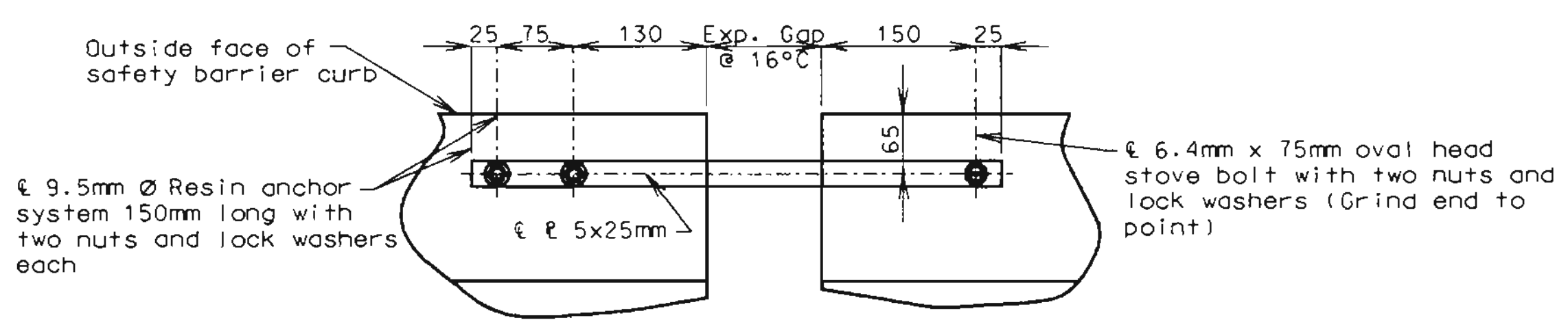
PART ELEVATION OF BARRIER CURB SHOWING MOVEMENT GAUGE



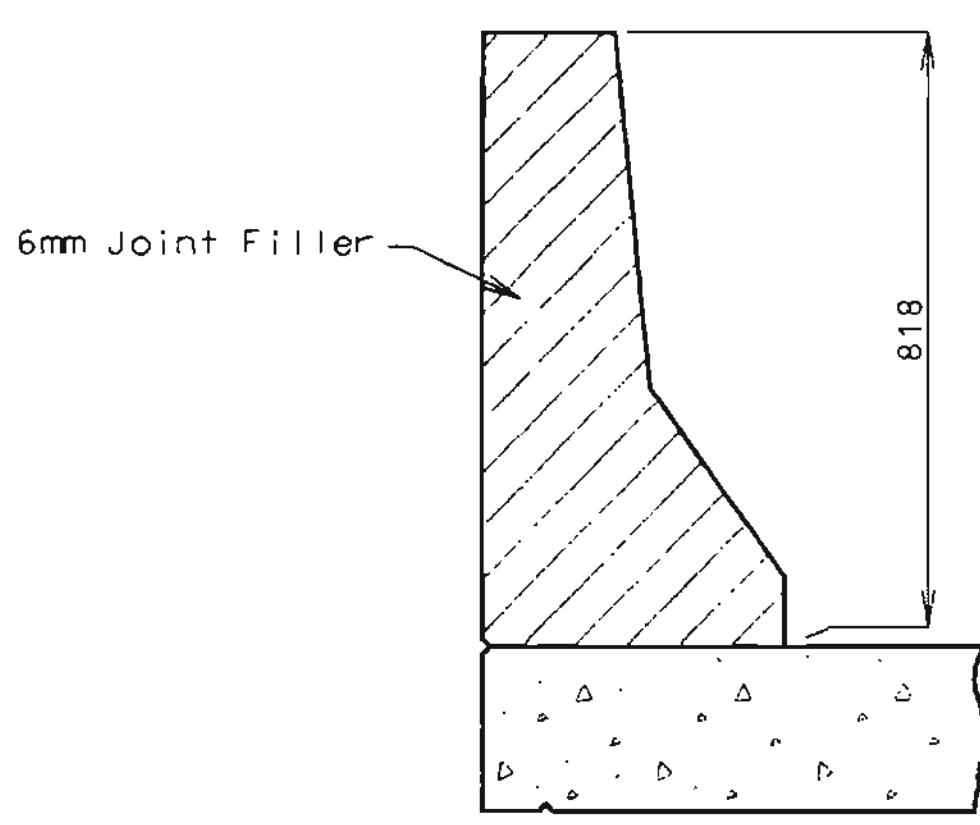
SECTION B-B



SECTION THRU JOINT



PART PLAN OF BARRIER CURB SHOWING MOVEMENT GAUGE



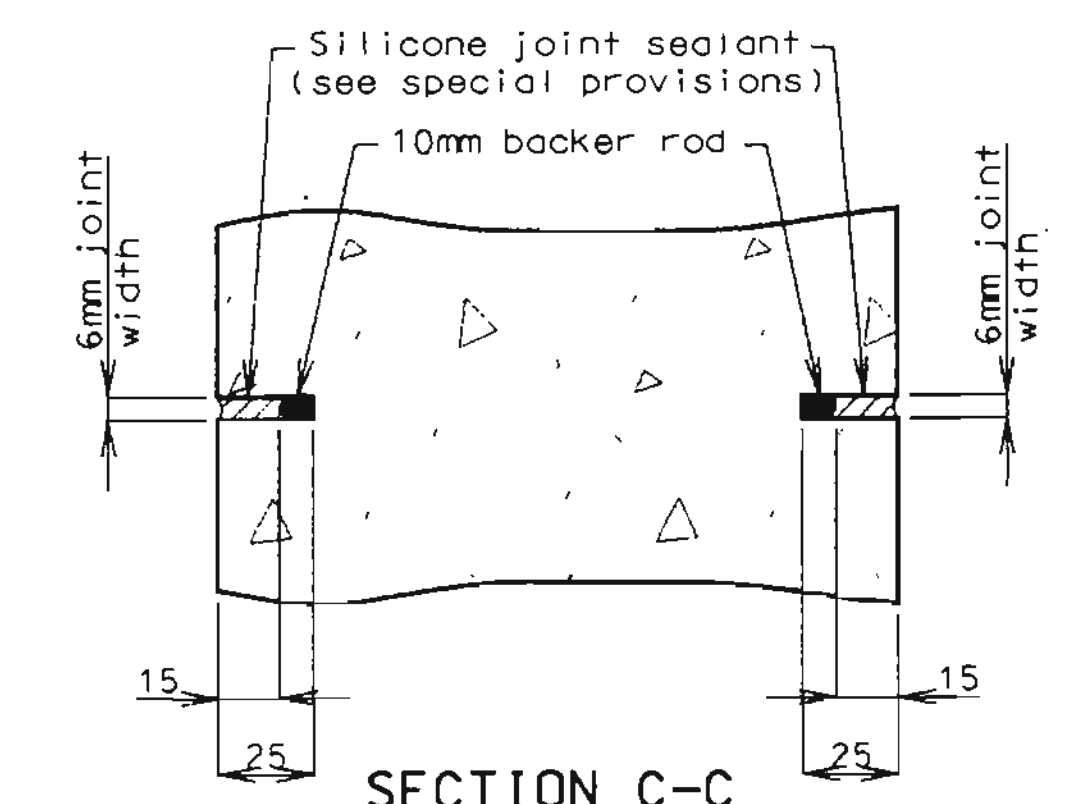
FILLED JOINT

CAST-IN-PLACE BARRIER CURB DETAILS

Notes:

- 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 15mm radius or a 10mm bevel, unless otherwise noted.
- Concrete in the safety barrier curb shall be class B1.
- When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.
- Measurement of the 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.
- Joint sealant and backer rods shall be used on all slip-form safety barrier curbs instead of joint filler.
- Use a minimum lap of 925mm for the #16 horizontal safety barrier curb bars.
- The cross-sectional area of the barrier curb above the slab = 212 225 sq. mm.
- A movement gauge shall be provided on one side of the bridge at all safety barrier curb expansion joints.
- All steel for movement gauge shall be galvanized.
- Cost of movement gauge complete in place shall be included in contract unit price for Safety Barrier Curb.
- Field cut horizontal leg on R4 bars to allow clearance at end bents and finger joints.

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



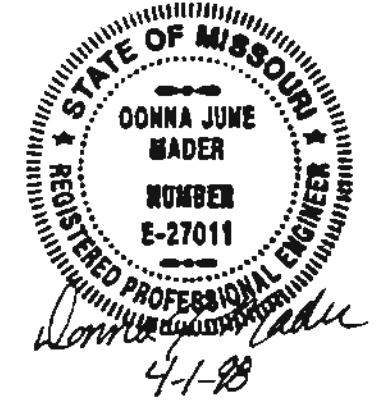
SECTION C-C

SLIP-FORM BARRIER CURB DETAILS

JACKSON COUNTY

MISCELLANEOUS BARRIER CURB DETAILS

SHEET NO. 22 OF 26



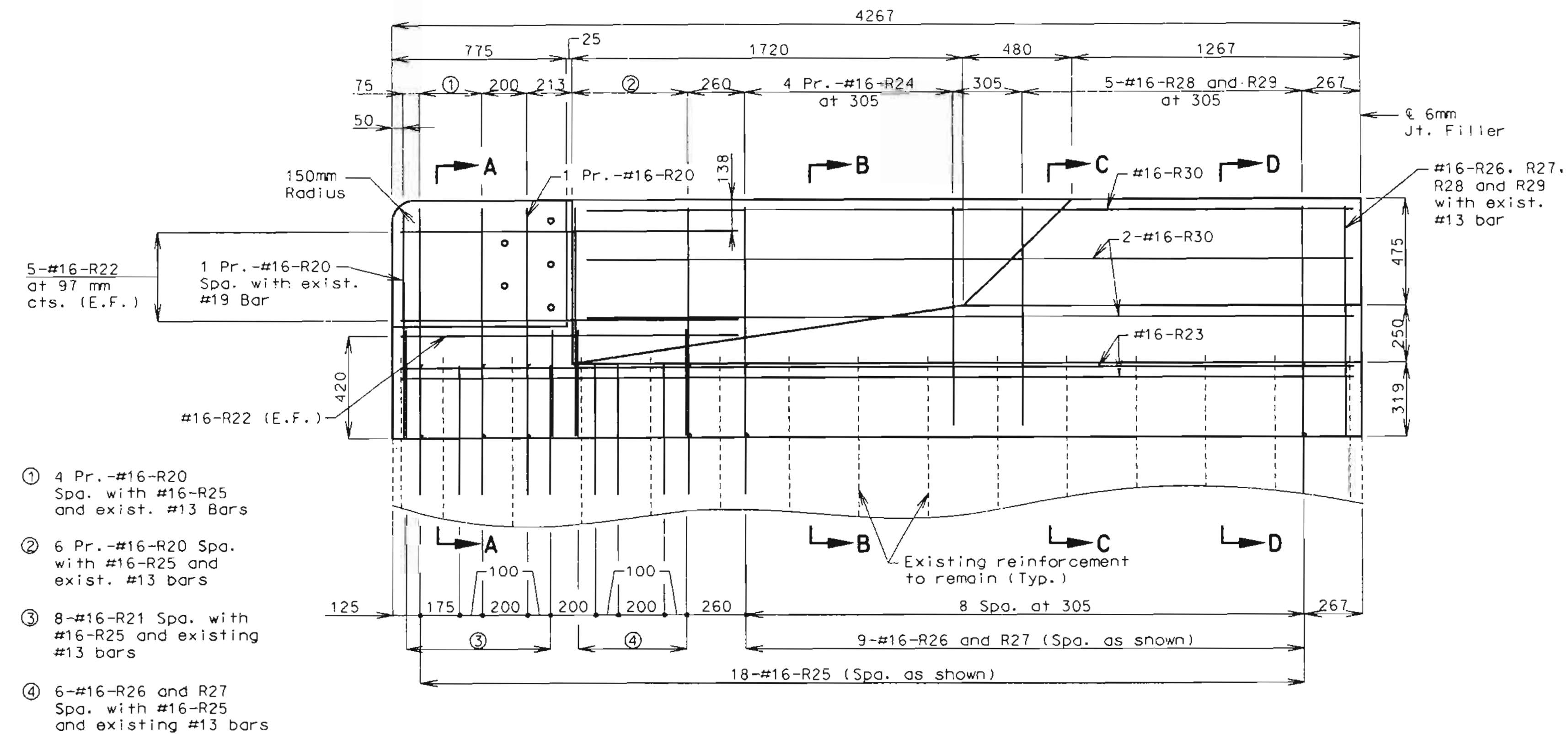
A16855

PROJECT NO. 98-047 PROJECT NAME: MOBOT-PC, No. A16855-NB 1-435 Over Big Blue River S:\380047\STRA\A16855\NB\DCN\NB\BARSSEC.DGN

BUR BUCHER, WILLIS & RATLIFF CORPORATION
 7020 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2696

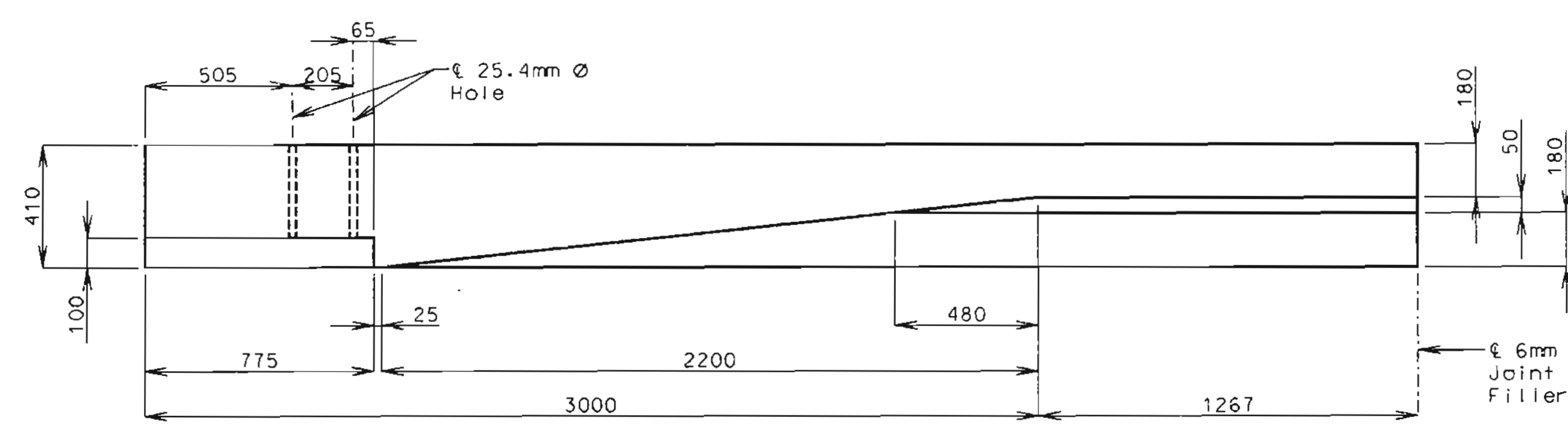
DRAWN BY:	DJM	JAN. 1998
TRACED BY:	MAH	JAN. 1998
CHECKED BY:	TAC	FEB. 1998

STATE	PROJ. NO.	SHEET NO.
MO.		246

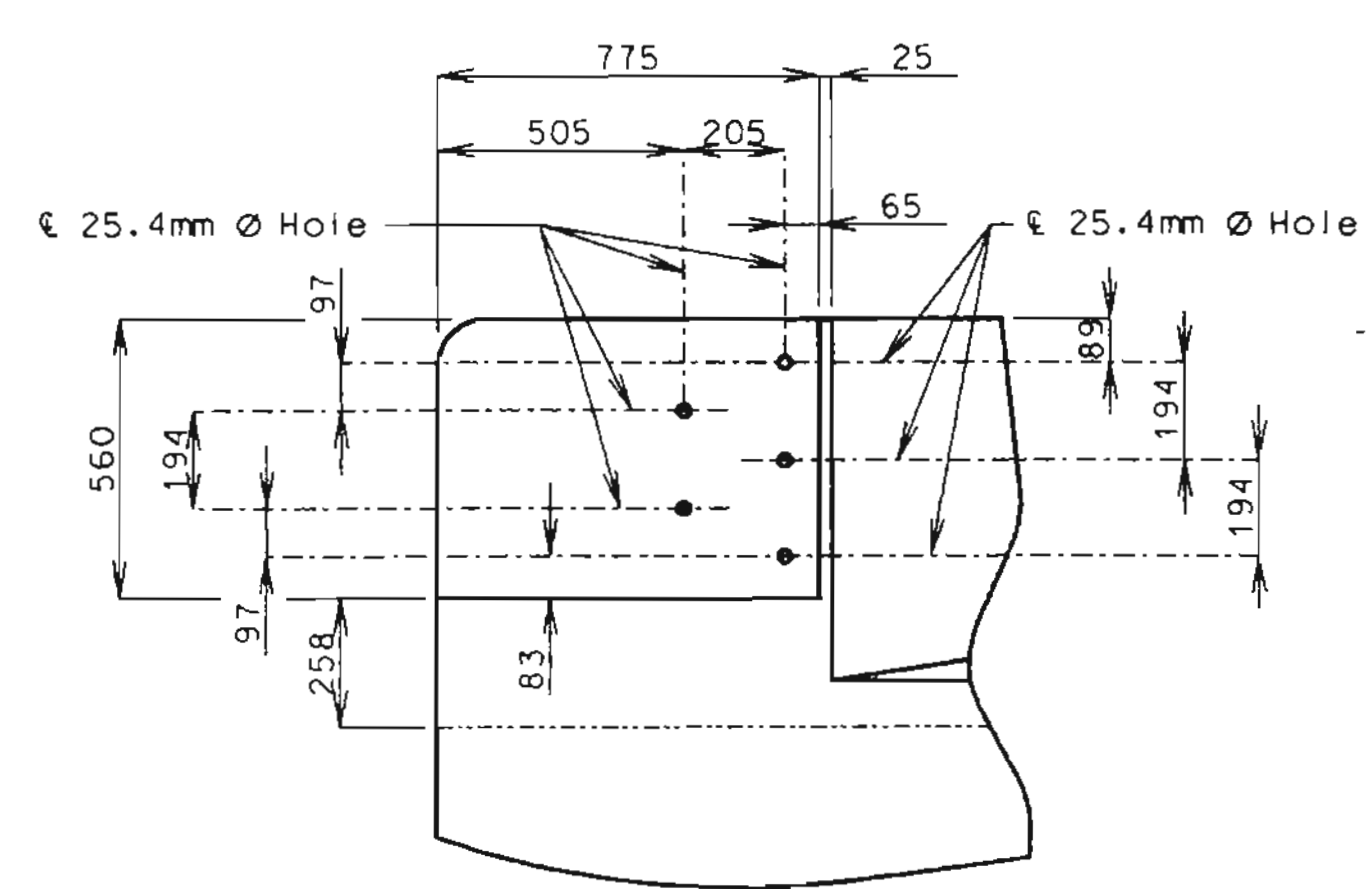


- ① 4 Pr. #16-R20 Spa. with #16-R25 and exist. #13 Bars
- ② 6 Pr. #16-R20 Spa. with #16-R25 and exist. #13 bars
- ③ 8 #16-R21 Spa. with #16-R25 and existing #13 bars
- ④ 6 #16-R26 and R27 Spa. with #16-R25 and existing #13 bars

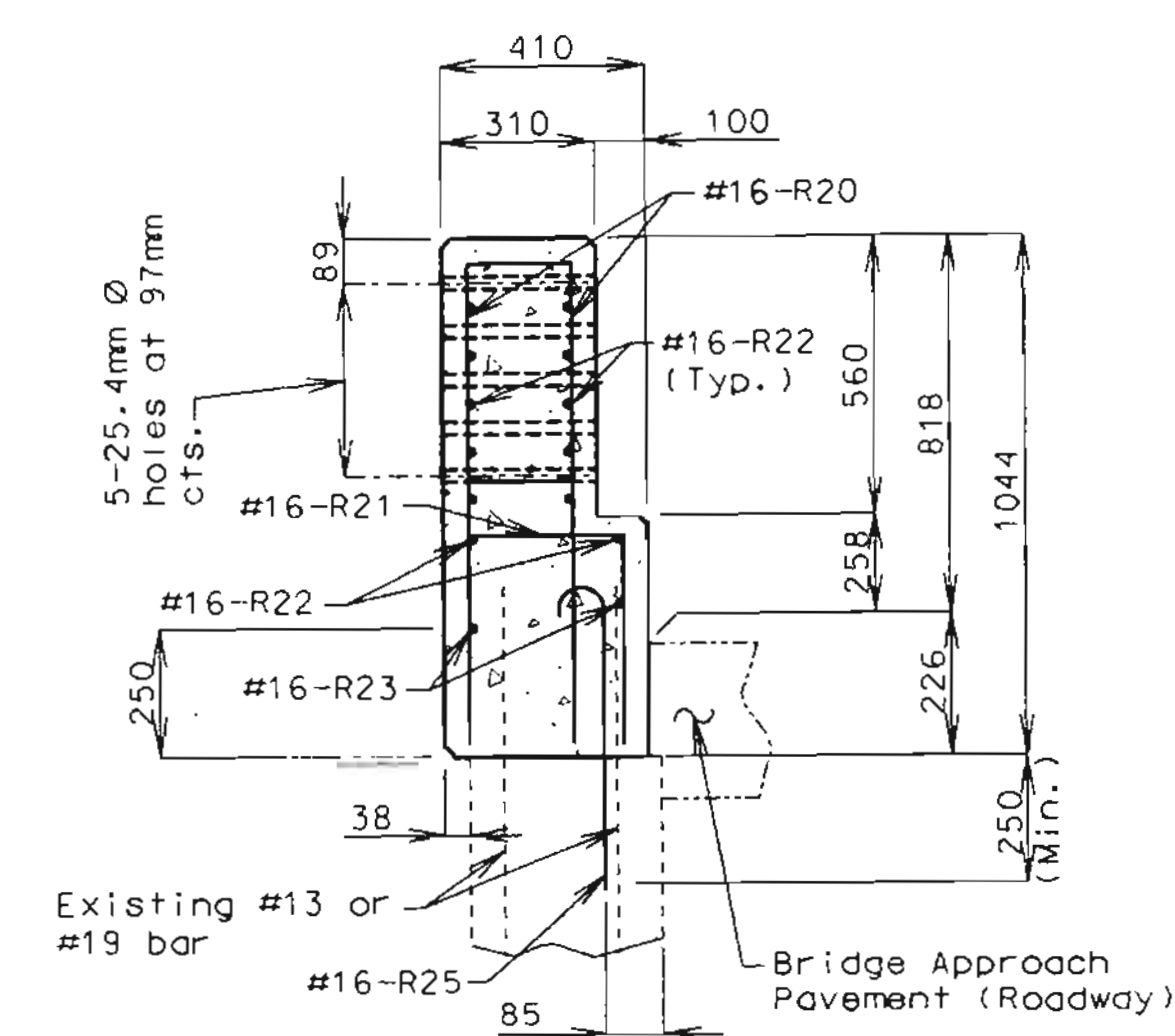
ELEVATION



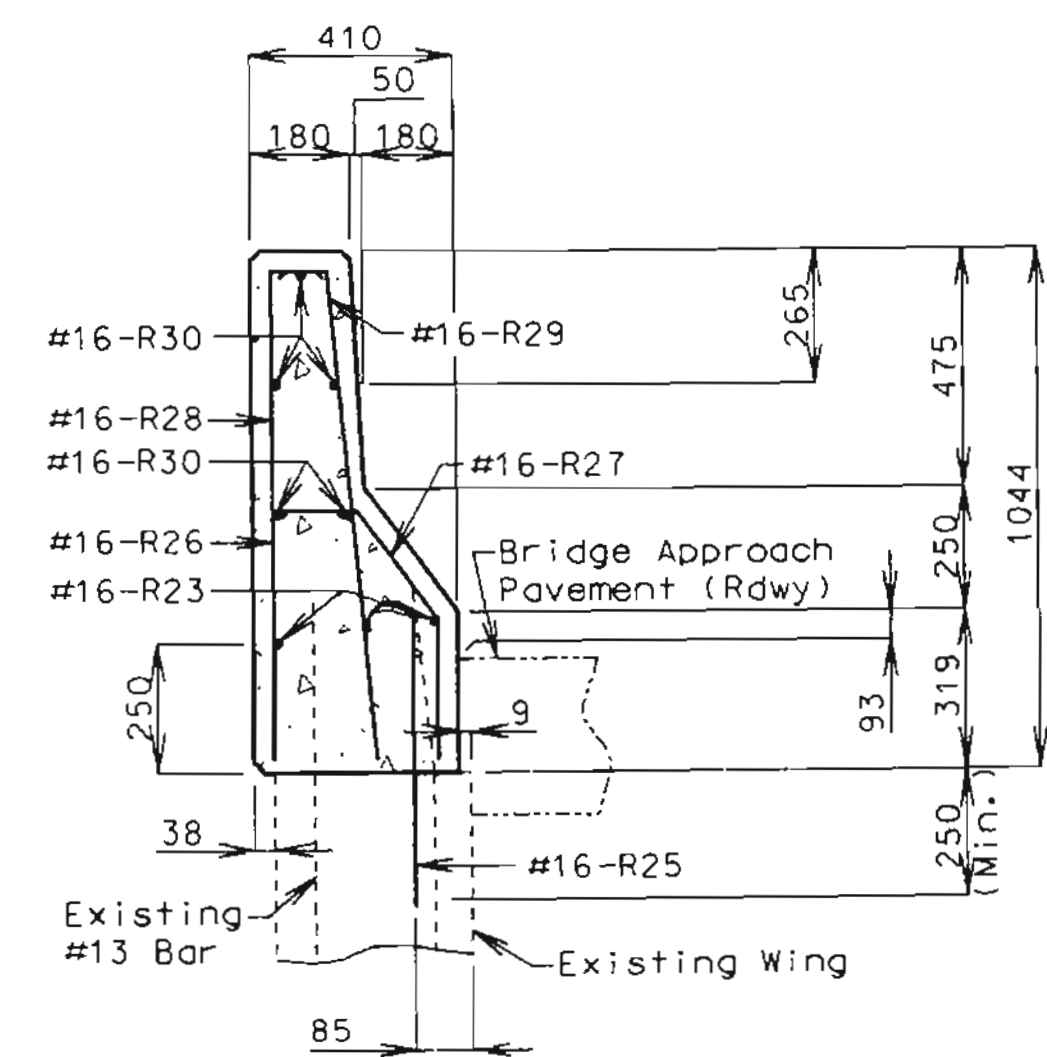
PLAN



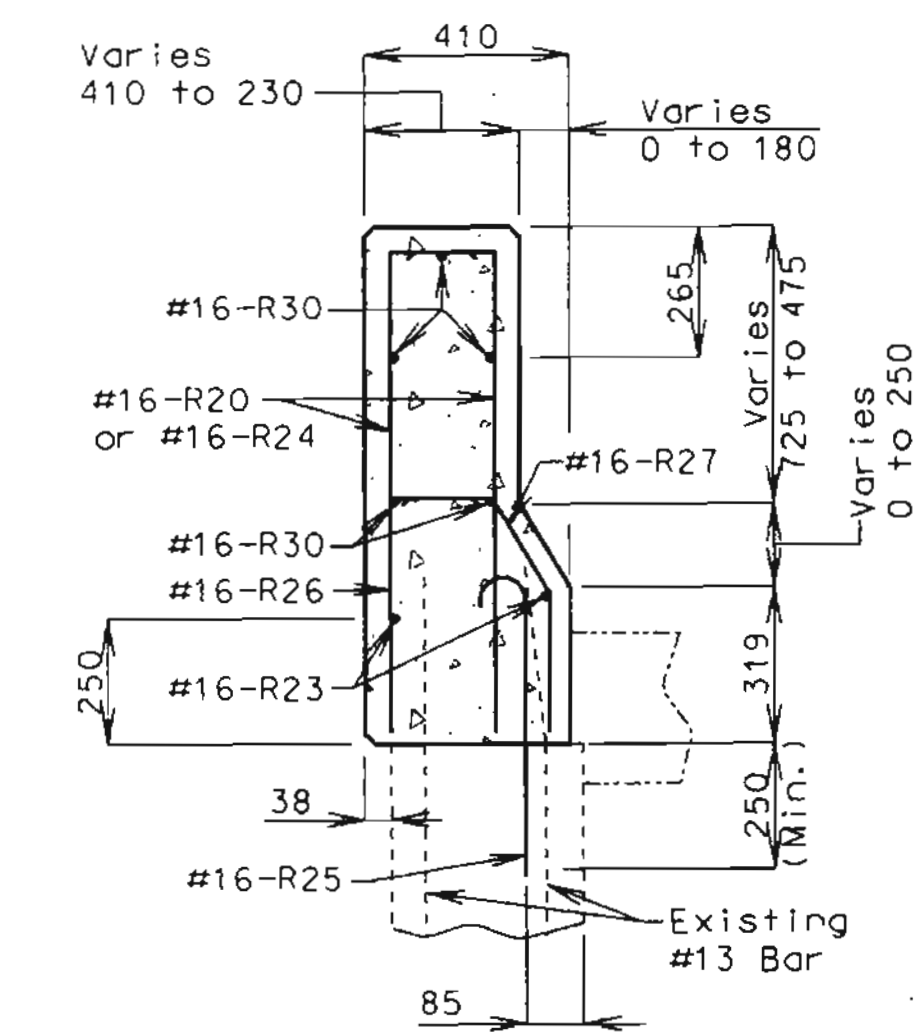
PART ELEVATION



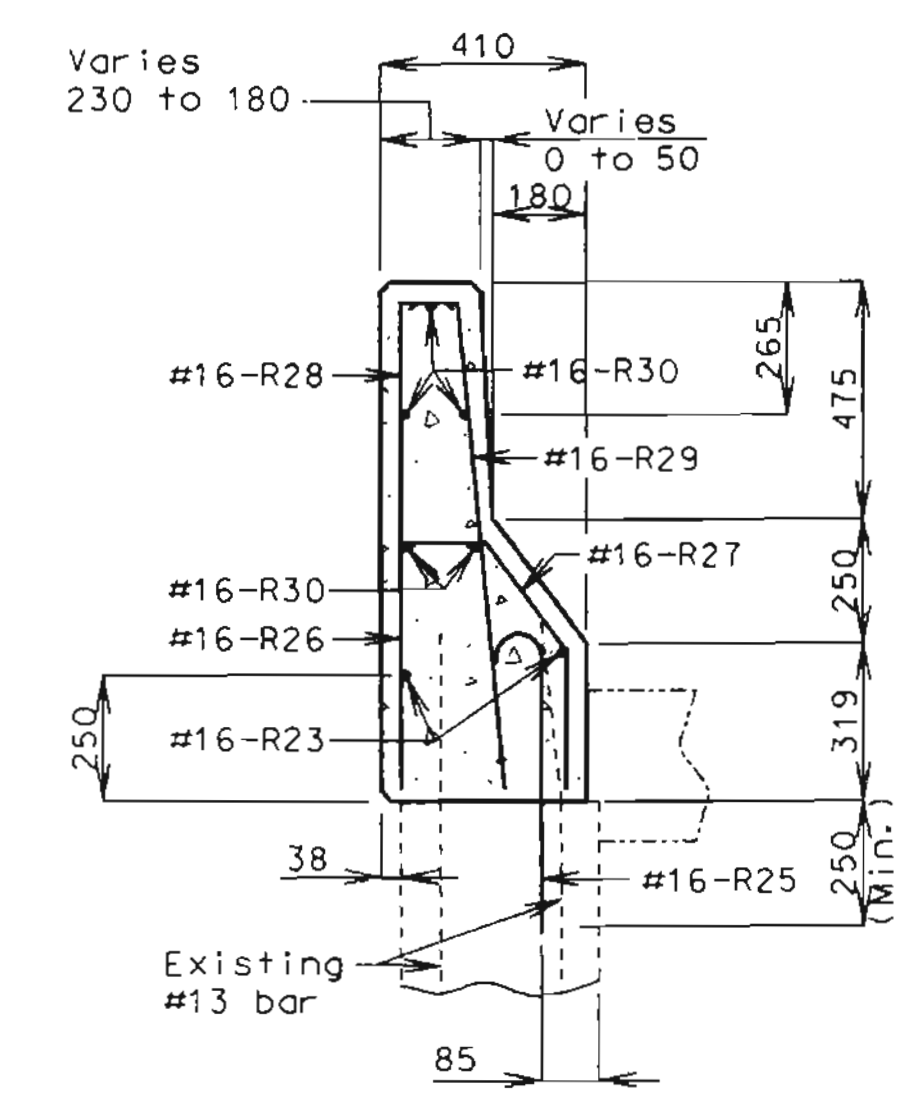
SECTION A-A



SECTION D-D



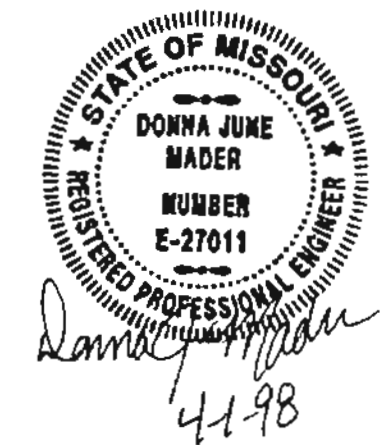
SECTION B-B



SECTION C-C

Notes:
 Barrier curb shall be constructed on all four existing abutment wings.
 Field bend existing #13 and #16 bars as required to maintain 40 mm clearance.
 The contractor shall use one of the resin anchor systems listed in the job special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job special provisions.
 #16-R25 bars shall be used with the resin anchor system and shall have a minimum ultimate pullout strength of 68.9 kN in existing concrete with f'c=21 MPa. see special provisions.
 Cost of furnishing and installing #16-R25 and anchor system shall be included in the price bid for Safety Barrier Curb.
 For additional barrier curb notes, see Sheet No. 22.

E.F. = Each Face



JACKSON COUNTY

BARRIER CURB AT
END BENTS

SHEET NO. 23 OF 26

A16855

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

PROJECT NO. 88-047 PROJECT NAME: MODOT-BR. No. A16855-NB 1-415 over Big Blue River S:\98047\STR\NB855\NB.DGN\NB855.BT.DGN

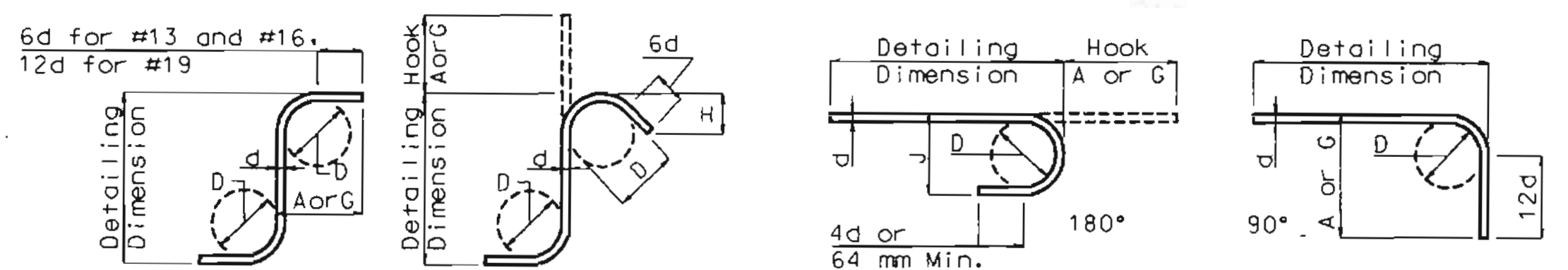
BUR **BUCHER, WILLIS & RATLIFF**
CORPORATION
7920 WARD PARKWAY, JAMES CITY, MISSOURI 64114, 816-363-2686

DRAWN BY:	DJM	JAN. 1998
TRACED BY:	TAC	JAN. 1998
CHECKED BY:	TAC	FEB. 1998

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions								Nominal Length	Actual Length	Mass				
								B	C	D	E	F	H	K								
								mm	mm	mm	mm	mm	mm	mm								
Superstructure																						
64	16-C1	Slip Form Bar.	E	20										2450		2450	243					
918	16-R1	Barrier Curb	E	19	S									765	90	855	1175					
918	16-R2	Barrier Curb	E	15	S									770	90	860	1183					
918	16-R3	Barrier Curb	E	19	S									435	155	590	798					
918	16-R4	Barrier Curb	E	27	S									155	290	220	305	230	170	970	910	1297
42	16-R5	Barrier Curb	E	20										2950		2950	192					
56	16-R6	Barrier Curb	E	20										2340		2340	203					
28	16-R7	Barrier Curb	E	20										10 920		10 920	475					
42	16-R8	Barrier Curb	E	20										11 545		11 545	753					
28	16-R9	Barrier Curb	E	20										9660		9660	420					
14	16-R10	Barrier Curb	E	20										11 700		11 700	254					
21	16-R11	Barrier Curb	E	20										8915		8915	291					
14	16-R12	Barrier Curb	E	20										11 895		11 895	258					
14	16-R13	Barrier Curb	E	20										9470		9470	206					
48	16-R20	Barrier Curb	E	19	S									930	170	1100	1070	80				
16	16-R21	Barrier Curb	E	10	S										400	330	1130	1065	26			
24	16-R22	Barrier Curb	E	20										1500		1500	1500	56				
4	16-R23	Barrier Curb	E	20										4190		4190	26					
16	16-R24	Barrier Curb	E	19	S									930	140	1070	1040	26				
36	16-R25	Barrier Curb	E	17										565		740	740	41				
32	16-R26	Barrier Curb	E	19	S									485	125	610	580	29				
32	16-R27	Barrier Curb	E	27	S									125	290	275	230	170	690	625	31	
12	16-R28	Barrier Curb	E	19	S									930	90	1020	990	18				
12	16-R29	Barrier Curb	E	15	S									935	90	930	100	1025	995	19		
10	16-R30	Barrier Curb	E	20										3410		3410	3410	53				
2076	19-S1	Slab	E	20										5485		5485	25 450					
1851	16-S4	Slab	E	20										5565		5565	15 987					
15	19-S10	Slab	E	20										1335		1335	114					
		Inc. = 295												5465		5465						
24	16-S11	Slab	E	20										1230		1230	113					
		Inc. = 330												4860		4860						
30	16-S13	Slab	E	20										750		750	142					
		Inc. = 330												5370		5370						
100	16-S14	Slab	E	20										10 220		10 220	1586					
65	16-S15	Slab	E	20										10 070		10 070	1016					
23	19-S16	Slab	E	20										14 220		14 220	731					
2	13-S17	Slab	E	20										4985		4985	10					
32	19-S24	Slab	E	20										850		850	219					
		Inc. = 295												5275		5275						
26	19-S25	Slab	E	20										1270		1270	177					
		Inc. = 295												4810		4810						
92	19-S28	Slab	E	20										18 290		18 290	3761					
46	19-S29	Slab	E	20										2545		2545	262					
143	16-S30	Slab	E	20										11 585		11 585	2571					

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions								Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K				
									mm	mm	mm	mm	mm	mm	mm				
220	16-S31	Slab	E	20										11 760		11 760	4015		
14	16-S35	Slab	E	20										1200		1200	73		
		Inc. = 330												5490		5490			
15	19-S36	Slab	E	20										1325		1325	104		
		Inc. = 255												4895		4895			
13	16-S39	Slab	E	20										1515		1515	66		
		Inc. = 290												4995		4995			
19	19-S44	Slab	E	20										720		720	128		
		Inc. = 255												5310		5310			
16	16-S47	Slab	E	20										980		980	78		
		Inc. = 290												5330		5330			
3	19-S48	Slab	E	20										5075		5075	34		
15	19-S49	Slab	E	20										1270		1270	102		
		Inc. = 255												4840		4840			
3	16-S52	Slab	E	20										5155		5155	24		
13	16-S53	Slab	E	20										1350		1350	62		
		Inc. = 290												4830		4830			
160	16-S56	Slab	E	20										11 050		11 050	2744		
40	16-S57	Slab	E	20										9605		9605	596		
104	16-S58	Slab	E	20										10 885		10 885	1757		
26	16-S59	Slab	E	20										9510		9510	384		
46	19-S60	Slab	E	20										1895		1895	195		
2	13-S61	Slab	E	20										5090		5090	10		
24	16-S65	Slab	E	20										1030		1030	38		

Two additional 19-S1 and 16-S4 are included in bar bill for testing.



Bar Size	D (mm)	All Grades		
		90° Hook	135° Hook	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

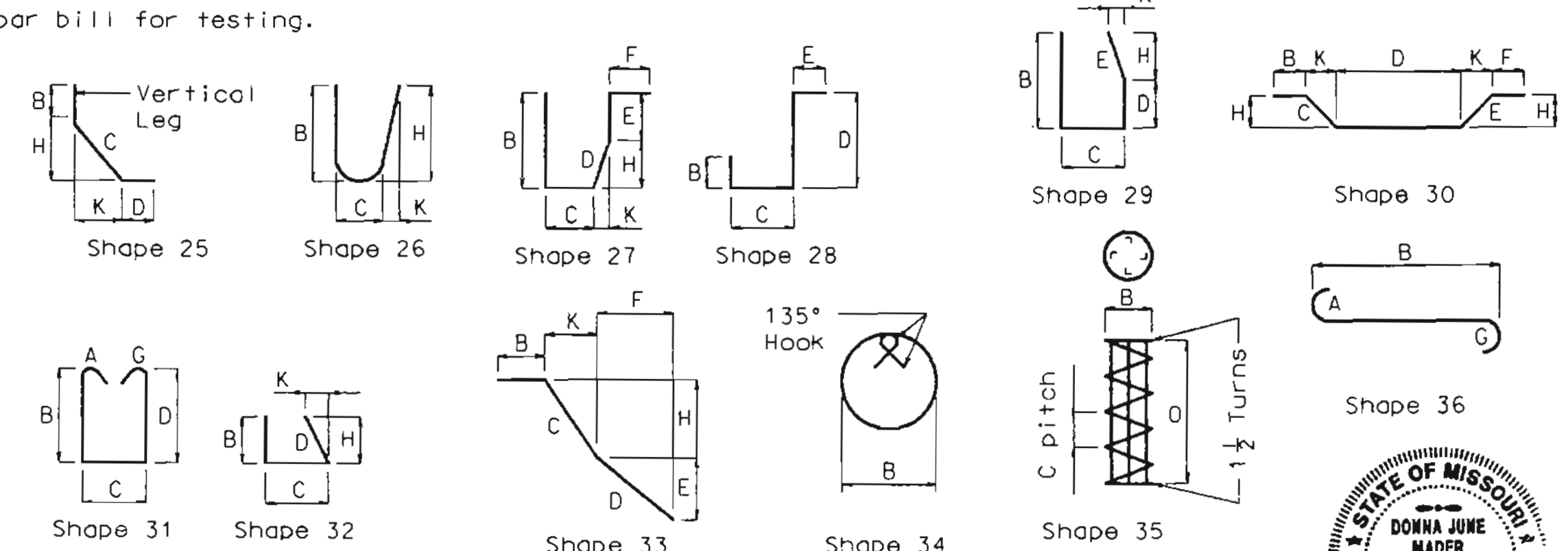
Bar Size	D (mm)	All Grades		
		180° Hook	90° Hook	Approx. H
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Notes:

All standard hooks and bends other than 180 deg. are to be bent with same procedure as for 90 deg. 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 5mm)
 Actual lengths are measured along centerline bar to the nearest 5mm.
 Pay items 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



Bending Diagrams

JACKSON COUNTY

BILL OF REINFORCING STEEL - STAGE I

STATE PROJ. NO. SHEET NO. 247

M.O.

Professional Engineer Seal: DONNA JUNE MADER, MISSOURI PROFESSIONAL ENGINEER, NUMBER E-27011, 4-7-98

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 19, Shape 20, Shape 21, Shape 22, Shape 23, Shape 24, Shape 25, Shape 26, Shape 27, Shape 28, Shape 29, Shape 30, Shape 31, Shape 32, Shape 33, Shape 34, Shape 35, Shape 36

Spot weld AASHTO M32 size W32 wire (Typ.)

75mm pitch

1 1/2 Turns

Vertical Leg

Shape 17

Shape 18

Shape 19

Shape 20

Shape 21

Shape 22

Shape 23

Shape 24

Shape 25

Shape 26

Shape 27

Shape 28

Shape 29

Shape 30

Shape 31

Shape 32

Shape 33

Shape 34

Shape 35

Shape 36

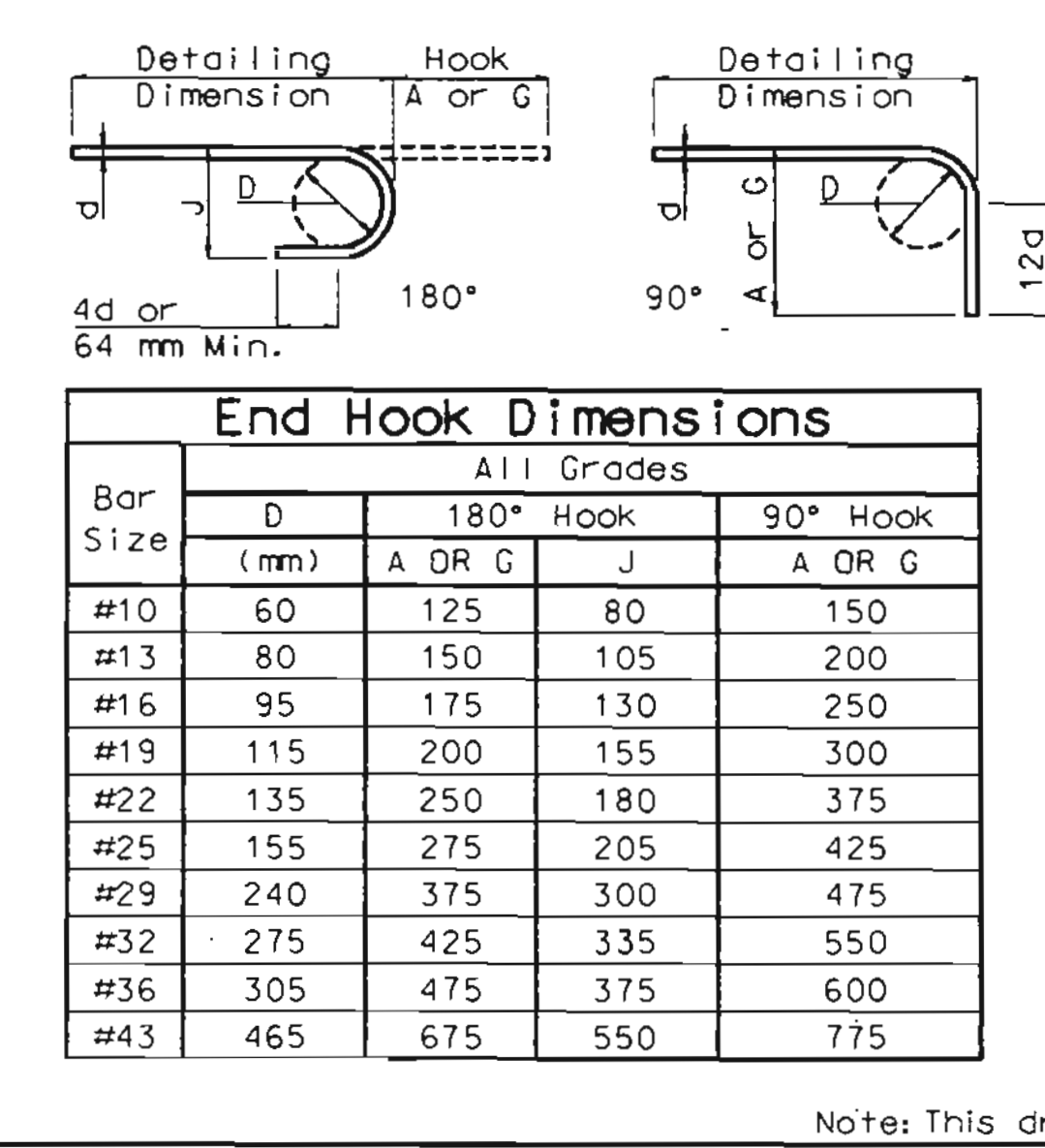
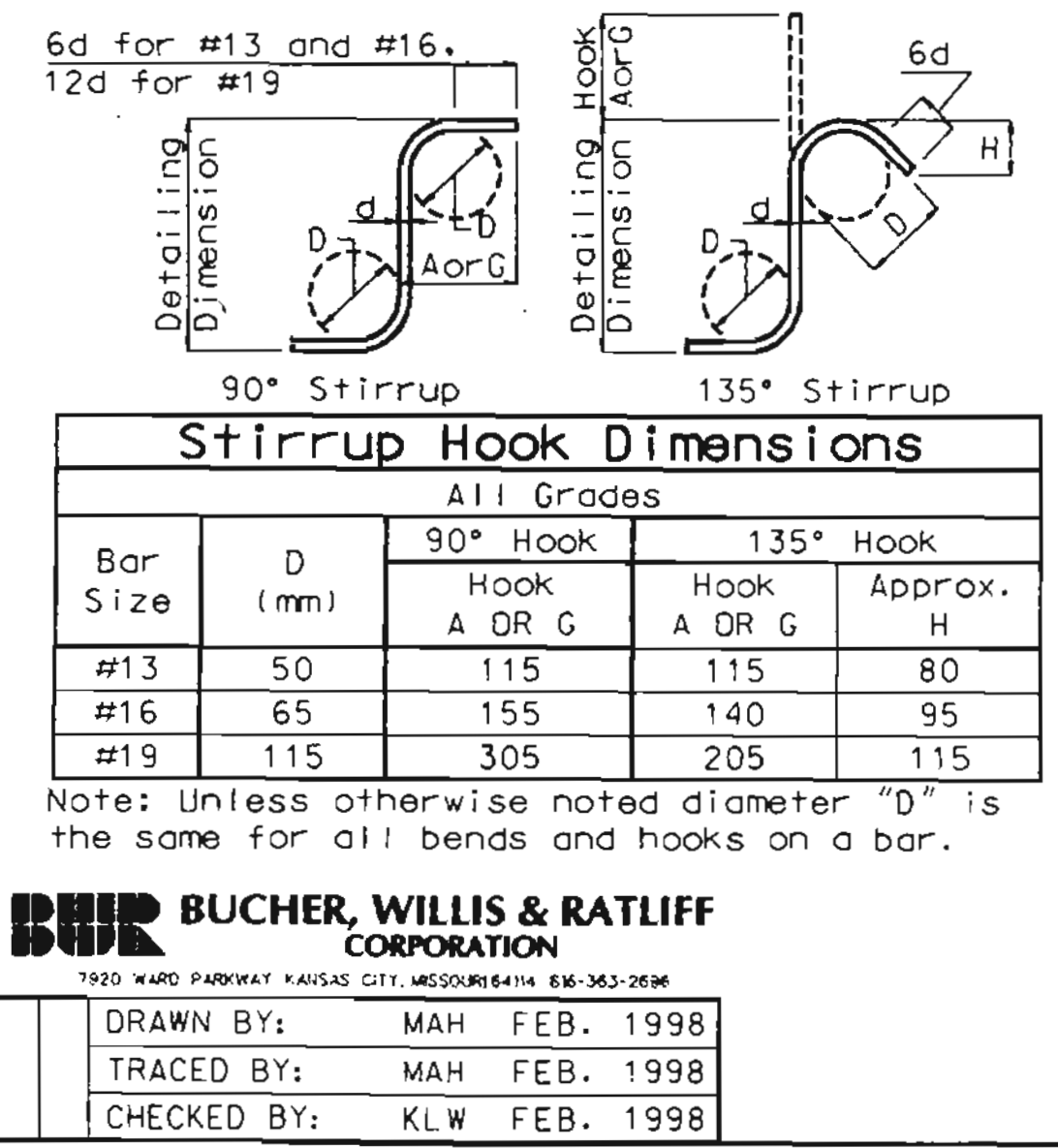
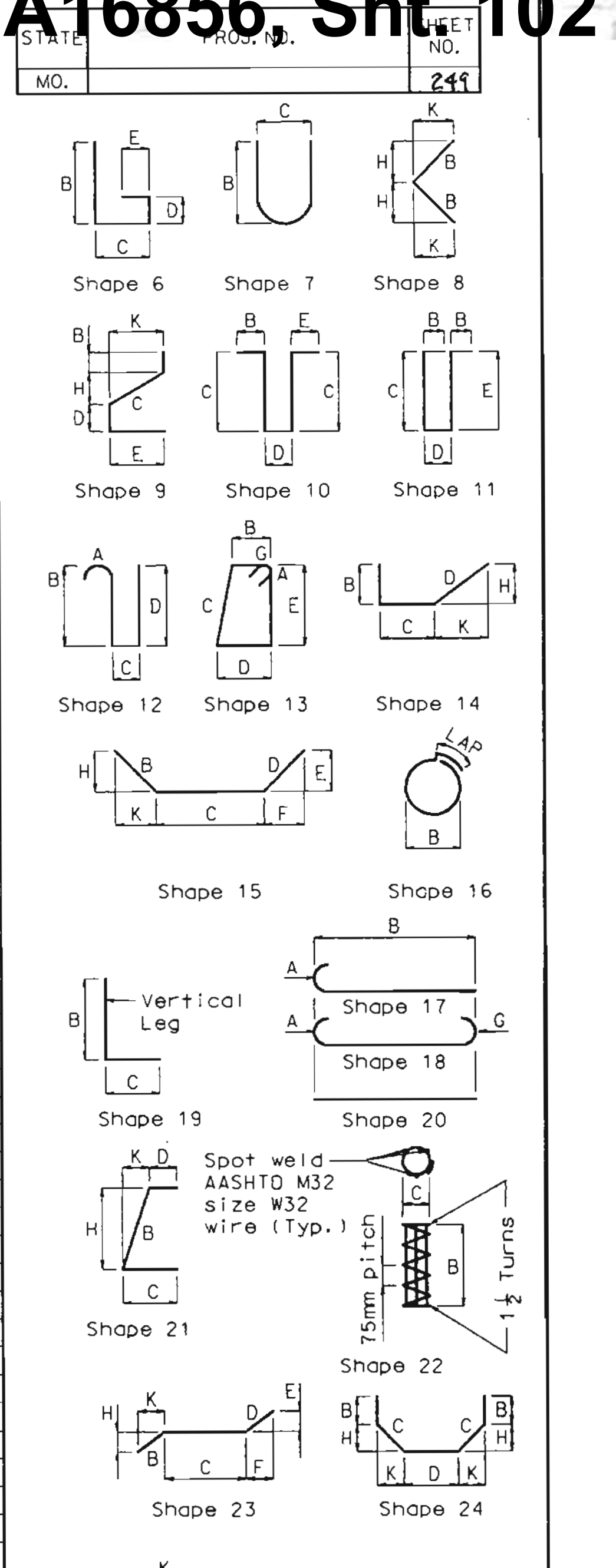
PROJECT No. 98-04 PROJECT NAME: MO001-Dr. No. A16855-1-1-15 over Big Blue River. S:\9804\STR\A16855\15\JOB\WBORR.DGN

BUHR BUCHER, WILLIS & RATLIFF CORPORATION
 DRAWN BY: MAH FEB. 1998
 TRACED BY: MAH FEB. 1998
 CHECKED BY: DJM FEB. 1998

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

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions								Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K				
									mm	mm	mm	mm	mm	mm	mm				
Superstructure																			
64	16-C1	Slip Form Bar.	E	20					2450							2450	2450	243	
921	16-R1	Barrier Curb	E	19	S				765	90					855	825	1179		
921	16-R2	Barrier Curb	E	15	S				770	90			765	75	860	830	1186		
921	16-R3	Barrier Curb	E	19	S				435	155					590	560	800		
921	16-R4	Barrier Curb	E	27	S					155	290	220	305	230	970	910	1301		
42	16-R5	Barrier Curb	E	20					2950						2950	2950	192		
56	16-R6	Barrier Curb	E	20					2340						2340	2340	203		
28	16-R7	Barrier Curb	E	20					10 920						10 920	10 920	475		
42	16-R8	Barrier Curb	E	20					11 545						11 545	11 545	753		
28	16-R9	Barrier Curb	E	20					9660						9660	9660	420		
14	16-R10	Barrier Curb	E	20					11 700						11 700	11 700	254		
21	16-R11	Barrier Curb	E	20					8915						8915	8915	291		
14	16-R12	Barrier Curb	E	20					11 895						11 895	11 895	258		
14	16-R13	Barrier Curb	E	20					9470						9470	9470	206		
48	16-R20	Barrier Curb	E	19	S				930	170					1100	1070	80		
16	16-R21	Barrier Curb	E	10	S					400	330				1130	1065	26		
24	16-R22	Barrier Curb	E	20					1500						1500	1500	56		
4	16-R23	Barrier Curb	E	20					4190						4190	4190	26		
16	16-R24	Barrier Curb	E	19	S				930	140					1070	1040	26		
36	16-R25	Barrier Curb	E	17					565						740	740	41		
32	16-R26	Barrier Curb	E	19	S				485	125					610	580	29		
32	16-R27	Barrier Curb	E	27	S					125	290	275		230	690	625	31		
12	16-R28	Barrier Curb	E	19	S				930	90					1020	990	18		
12	16-R29	Barrier Curb	E	15	S				935	90			930	100	1025	995	19		
10	16-R30	Barrier Curb	E	20					3410						3410	3410	53		
2077	19-S3	Slab	E	20					5840						5840	5840	27 110		
1852	16-S6	Slab	E	20					5840						5840	5840	16 786		
3	19-S7	Slab	E	20					5430						5430	5430	36		
14	19-S8	Slab	E	20			V	1	1230						1230	1230	99		
		Inc. = 295							5065						5065	5065			
135	16-S14	Slab	E	20					10 220						10 220	10 220	2141		
85	16-S15	Slab	E	20					10 070						10 070	10 070	1328		
29	19-S16	Slab	E	20					14 220						14 220	14 220	922		
2	13-S19	Slab	E	20					5900						5900	5900	12		
26	16-S20	Slab	E	20			V	2	1175						1175	1175	127		
		Inc. = 330							5135						5135	5135			
30	19-S21	Slab	E	20			V	2	1040						1040	1040	208		
		Inc. = 295							5170						5170	5170			
34	19-S27	Slab	E	20			V	2	860						860	860	245		
		Inc. = 295							5580						5580	5580			
116	19-S28	Slab	E	20					18 290						18 290	18 290	4742		
58	19-S29	Slab	E	20					2545						2545	2545	330		
187	16-S30	Slab	E	20					11 585						11 585	11 585	3362		
297	16-S31	Slab	E	20					11 760						11 760	11 760	5421		

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions								Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K				
									mm	mm	mm	mm	mm	mm	mm				
2	16-S32	Slab	E	20					5430						5430	5430	17		
13	16-S33	Slab	E	20			V	1	1295						1295	1295	66		
		Inc. = 330							5255						5255	5255			
20	19-S38	Slab	E	20			V	1	795						795	795	144		
		Inc. = 255							5640						5640	5640			
18	16-S41	Slab	E	20			V	1	685						685	685	88		
		Inc. = 290							5615						5615	5615			
17	19-S42	Slab	E	20			V	1	1090						1090	1090	119		
		Inc. = 255							5170						5170	5170			
16	16-S45	Slab	E	20			V	1	895						895	895	76		
		Inc. = 290							5245						5245	5245			
19	19-S51	Slab	E	20			V	1	1035						1035	1035	141		
		Inc. = 255							5625						5625	5625			
17	16-S55	Slab	E	20			V	1	1105						1105	1105	90		
		Inc. = 290							5745						5745	5745			
216	16-S56	Slab	E	20					11 050						11 050	11 050	3704		
54	16-S57	Slab	E	20					9605						9605	9605	805		
136	16-S58	Slab	E	20					10 885						10 885	10 885	2298		
34	16-S59	Slab	E	20					9510						9510	9510	502		
58	19-S60	Slab	E	20					1895						1895	1895	246		
2	13-S63	Slab	E	20					6050						6050	6050	12		
32	16-S64	Slab	E	20			V	2	750						750	750	160		
		Inc. = 330							5700						5700	5700			
24	16-S65	Slab	E	20					1030						1030	1030	38		



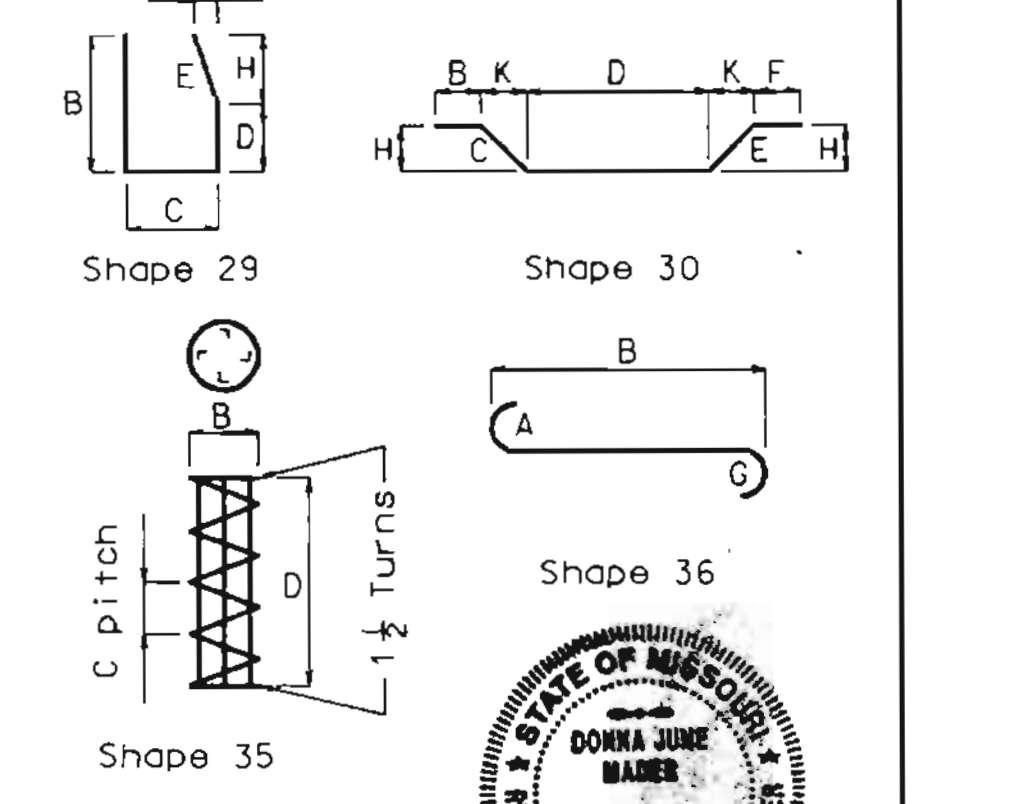
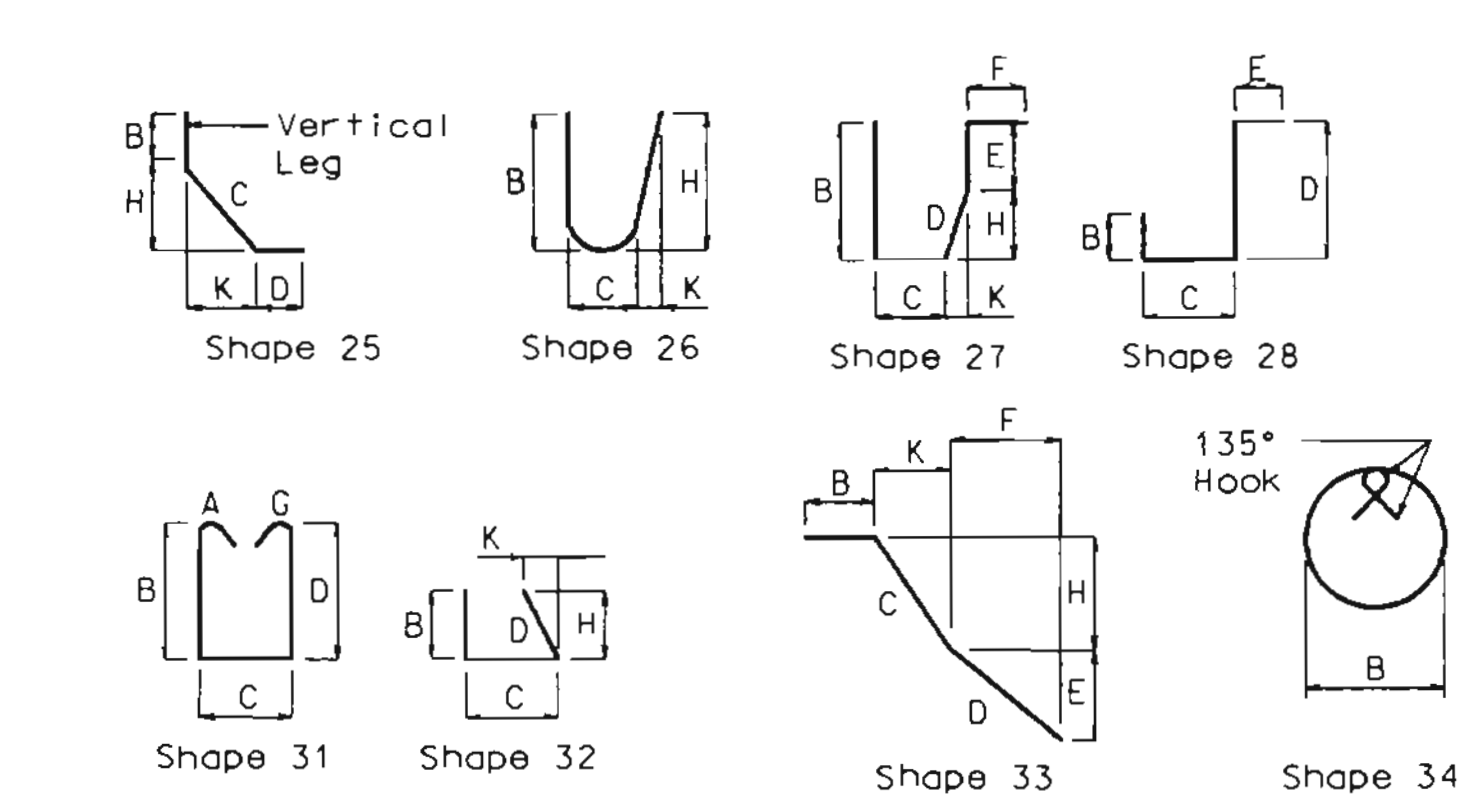
Notes:

All standard hooks and bends other than 180 deg. are to be bent with same procedure as for 90 deg. 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 5mm)
 Actual lengths are measured along centerline bar to the nearest 5mm.

Pay items 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



Bending Diagrams

JACKSON COUNTY

BILL OF REINFORCING STEEL - STAGE III

SHEET NO. 26 OF 26

A16855

STATE OF MISSOURI
 DONNA JUNE HANSEN
 REGISTERED PROFESSIONAL ENGINEER
 4-1-98

PROJECT: No. 98-DAT. PROJECT NAME: MODOT-BR. No. A6855-NB 1-435 o.v.r. Big Blue River. S:\98047\STR\A6855-NB\CHK\NBB0R3.DGN

BUH BUCHER, WILLIS & RATLIFF CORPORATION
 1920 WARD PARKWAY KANSAS CITY, MISSOURI 64114 816-363-2636

DRAWN BY: MAH FEB. 1998
 TRACED BY: MAH FEB. 1998
 CHECKED BY: KLW FEB. 1998

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