

PILE DATA

BENT NO.	1	2	3	4
Type	Found	Found	Found	Found
Kind	C.P.	C.P.	C.P.	C.P.
Number (Both Lanes)	16	54	54	16
Approximate Length Ft.	50	30	30	50
Design Bearing Tons	30	30	30	30
Min. Tip Penetration Elev.	699.0	699.0	699.0	699.0
Pile Standard	52.02	52.02	52.02	52.02
Hammer Energy Req'd. Ft. Lbs.	8,000	8,000	8,000	8,000

Note: All piles shall be driven to the minimum penetrations noted and to not less than the Design Bearings noted.
Minimum hammer energy required for Precast Concrete Piles is 8300 Ft. Lbs.
Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bent No 1 and 4 before piles are driven.
Pre-bore holes thru compacted fill for piles at bents No. 1 & 4.

GENERAL NOTES:
Minimum energy requirement based on plan length of piles.
Cost for preboring and backfilling shall be included in unit price bid for piles in place.

Design Specifications:
A.A.S.H.O. - 1965
Design Loading:
4520-44
15" 1/2" 1/2" Future Wearing Surface
Modified 24,000# Tandem Axle
Earth 120# Equivalent Fluid Pressure 30"
Design Unit Stresses:
Class B Concrete (substructure) $f_c = 1200$ psi
Class B1 Concrete (superstructure) $f_c = 1600$ psi
Reinforcing Steel $f_s = 20,000$ psi
Superstructure deck to be surface sealed

ESTIMATED QUANTITIES

ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class I Excavation for Structures Cu.Yd.	130	—	130
Cast-in-Place Concrete Piles * Lin.Ft.	484.0	—	484.0
Class B Concrete Cu.Yd.	90.0	—	90.0
Class B1 Concrete Cu.Yd.	—	1301.4	1301.4
Reinforcing Steel Lb.	9,500	316,260	325,760
Bridge Rail (Single Tube Type) Lin.Ft.	—	642	642

Note: All concrete and reinforcement above footings in intermediate bents is included in superstructure quantities.
No payment for excavation will be allowed at end Bents No. 1 and 4.
* See Special Provisions for optional use of Precast concrete, Prestressed Concrete or 15" Treated Timber Piles.

BM #5 - Elev. 731.21 - R.R. Spike in 18" Elm Rt. Sta. 84+75

BRIDGE OVER FRONT STREET
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-11521 RTE. I-435 STA. 76+83.72 N.B. LANE
76+71.96 S.B. LANE
JACKSON COUNTY

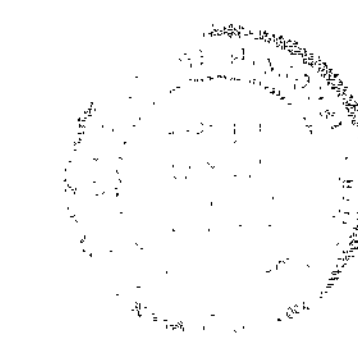
SUBMITTED BY: *W.D. Crowley* DATE: Feb. 23, 1968
APPROVED BY: *M.J. [Signature]* DATE: Feb. 23, 1968

STD. 52.01
STD. 52.02
STD. 54.00
A-1682

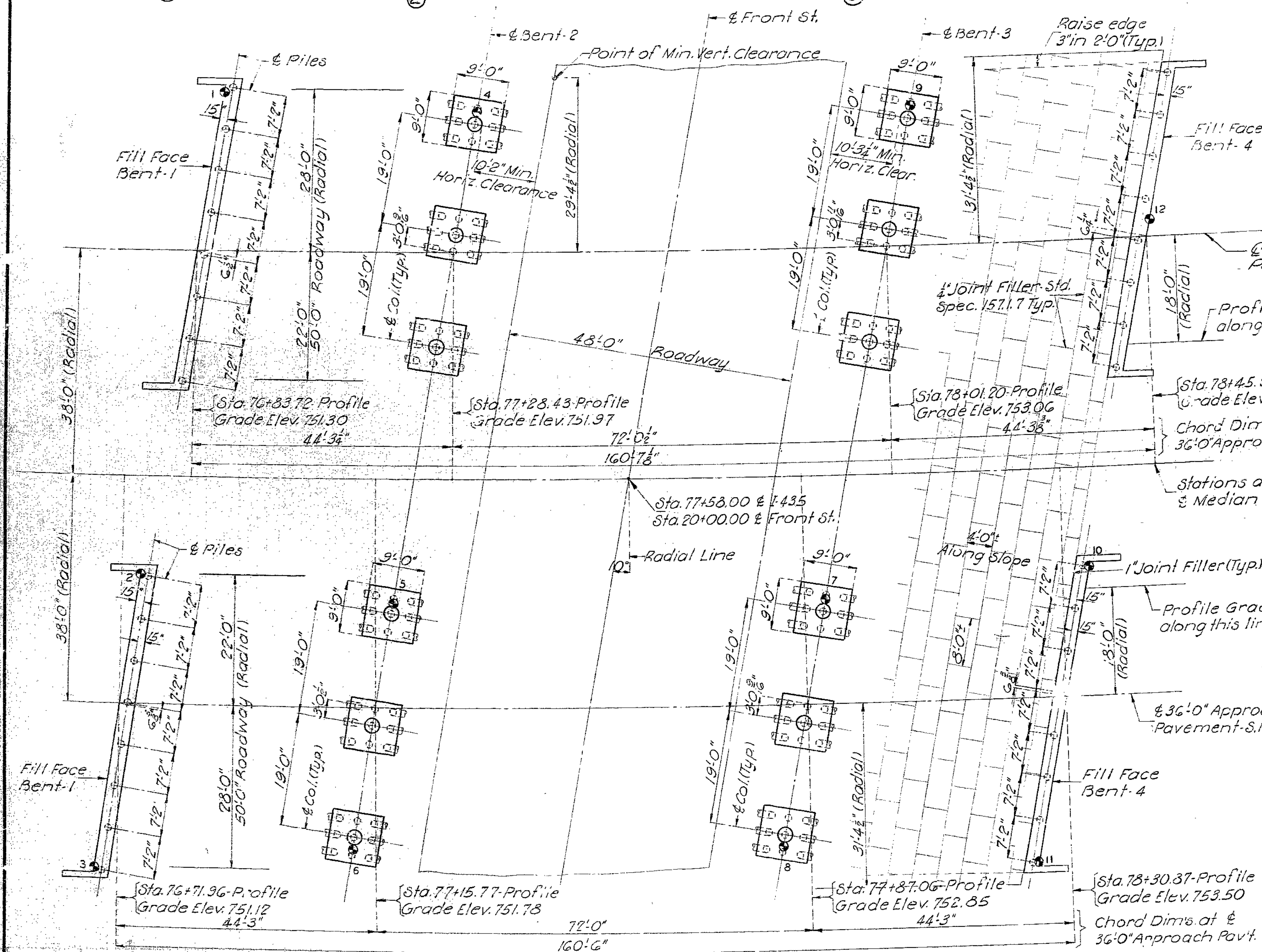
Note: For Substructure Layout see Sheet No. 3.

Note: For Boring Data see Sheet No. 2.
* Indicates location of boring.

SUBMITTED BY E. LYN CROWLEY
SIGNATURE *E. Lyn Crowley*
REGISTERED PROFESSIONAL ENGINEER
SERIAL NUMBER E-5993



Sheet No. 1 of 9.

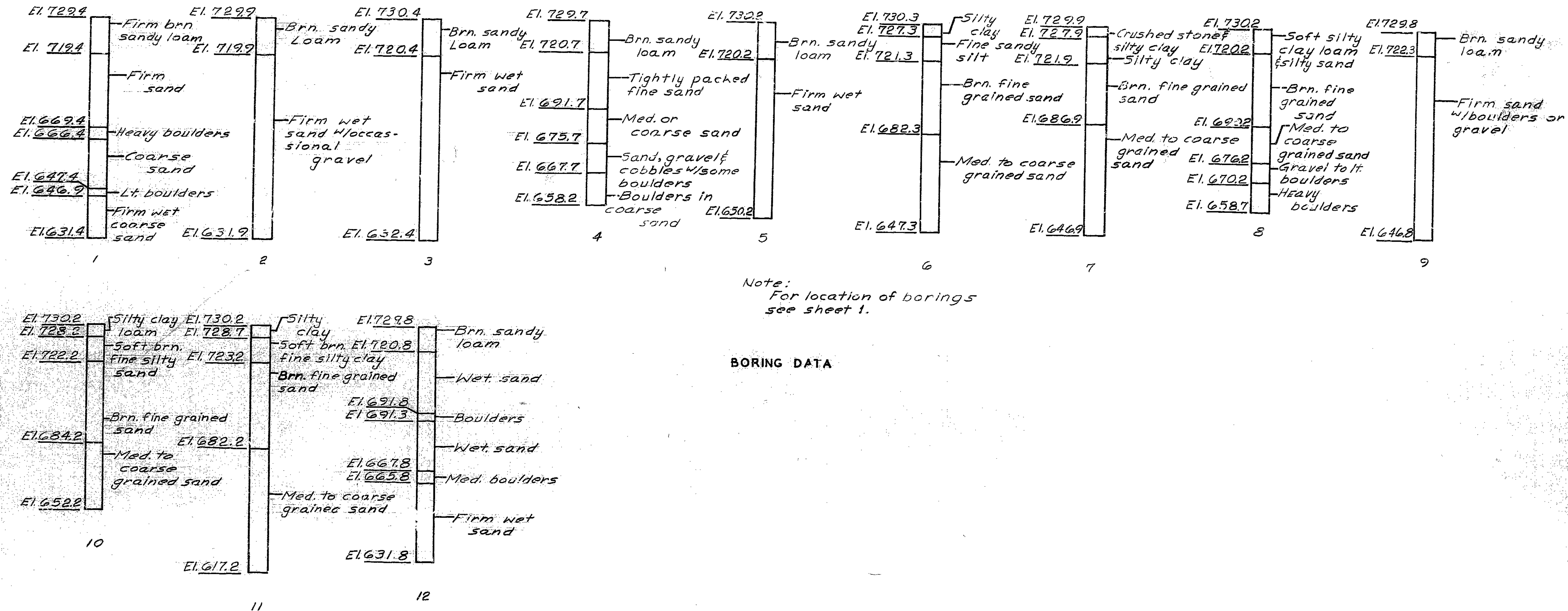


CROWLEY, WADE, MILSTEAD, INC.
ENGINEERS - ARCHITECTS
INDEPENDENCE, MISSOURI
Designed: F.D. POLAND 3-61 Checked: J.E. RIESENMEYER 3-61
Detailed: H.H. BUNTON 4-61 Checked: J.E. RIESENMEYER 4-61
Quantities: B.W. FOSTER 5-61 Checked: H.H. BUNTON 5-61

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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	40	



494

DETAILED MARCH 1967 BY H.L.W.
CHECKED APRIL 1967 BY B.F.F.

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

Sheet No. 2 of 9

BRIDGE OVER FRONT STREET
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-1(52) RTE. I-435 STA. 76+83.72 N.B. LANE
76+71.96 S.B. LANE
JACKSON COUNTY

A-1682

MISSOURI STATE HIGHWAY DEPARTMENT

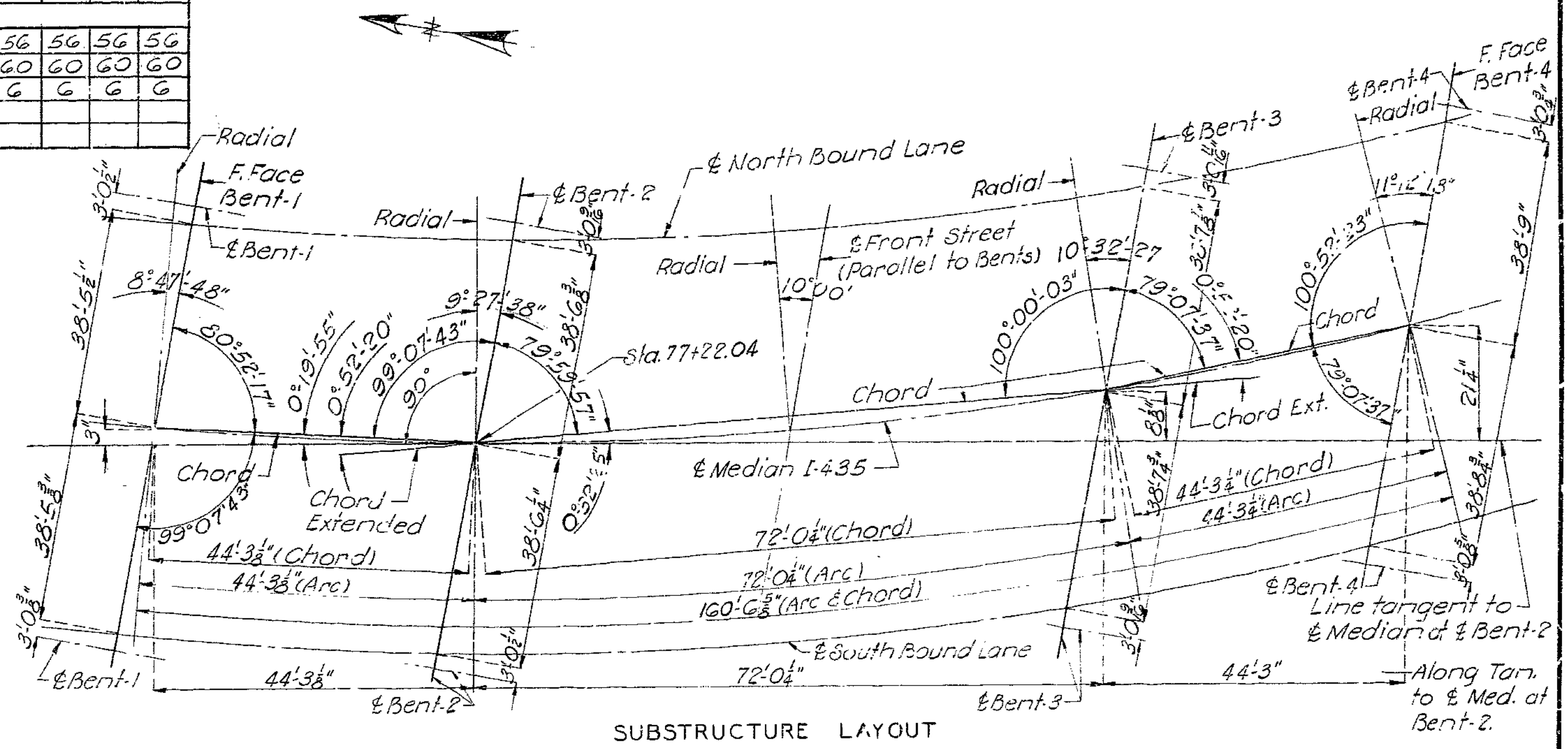
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	41	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION	BENDING SKETCHES & CUTTING DIAGRAMS				NO.	SIZE	LENGTH	MARK	LOCATION	BT. 2	BT. 3		
SUPERSTRUCTURE - BOTH LANES									SUPERSTRUCTURE INT. BENTS					S.B.L.	N.B.L.	S.B.L.	N.B.L.
698	#5	5'-0"	C1	Curb	13 1/2" 3'-6 3/4"				64	#8	14'-9"	G1	Beam	16	16	16	16
48	#5	4'-0"	C2	End Post	10 3/4" 2'-4 1/2"				32	#9	21'-6"	G2	"	8	8	8	8
16	#6	5'-3"	C3	"					32	#9	12'-6"	G3	"	8	8	8	8
16	#6	22'-9"	C4	Curb	3'-0 3/4" 6'-11 1/2"				32	#9	36'-9"	G4	"	8	8	8	8
16	#5	22'-9"	C5	"	2'-4 1/2" 5'-10 3/4"				112	#9	28'-0"	G5	"	28	28	28	28
24	#5	24'-9"	C6	"	10'-6"												
32	#6	10'-0"	R14	End Post	4-H5 Cut 16												
16	#5	4'-9"	R1	End Post	5-V21 Cut 20												
8	#5	5'-6"	R2	"													
8	#5	6'-0"	R3	"													
8	#5	6'-6"	R4	"													
8	#5	6'-9"	R5	"													
16	#5	7'-0"	R6	"													
698	#5	5'-3"	R7	Parapet													
20	#5	4'-3"	R8	"													
32	#5	27'-9"	R9	"													
64	#5	8'-6"	R10	"													
64	#5	18'-3"	R11	"													
740	#5	19'-3"	S1	Slab													
740	#5	35'-6"	S2	"													
280	#5	21'-6"	S3	"													
168	#11	39'-3"	S4	"													
168	#11	29'-6"	S5	"													
168	#11	18'-6"	S6	"													
140	#5	39'-3"	S7	"													
168	#9	52'-6"	S8	"													
168	#7	30'-0"	S9	"													
168	#7	18'-3"	S10	"													
84	#10	60'-0"	S11	"													
84	#10	47'-6"	S12	"													
84	#11	36'-0"	S13	"													
8	#5	5'-9"	R12	End Post	13'-8" G1 13'												
8	#5	6'-3"	R13	"	20'-5" G2 15'												
8	#5	6'-3"	R13	"	35'-6" G4 15'												
SUPERSTR. END BENTS 1&4 - BOTH LANES					G1, G2, & G4												
16	#6	19'-6"	H1	Beam													
16	#6	36'-6"	H2	"													
64	#6	27'-6"	H3	"													
16	#6	7'-0"	H4	Wing													
32	#6	10'-6"	H5	"													
280	#6	7'-9"	S14	Arm Slab													
8	#6	10'-3"	T1	Wing Bt 1													
8	#6	10'-3"	T2	" Bt 4													
352	#5	9'-0"	U2	Beam													
40	#4	8'-3"	V21	Wing													
MARK					A				B				C				
R2					2'-1 1/2"				9"				6 3/4"				
R3					2'-4 1/2"				9"				6 3/4"				
R4					2'-7 1/2"				9"				6 3/4"				
R5					2'-9"				9"				6"				
R6					2'-9 1/2"				9"				7 1/2"				
R7					2'-3 1/2"				7 1/2"				8 1/2"				
R12					2'-3"				9"				6"				
R13					2'-6 1/2"				9"				5 1/2"				
7 1/2" R14																	
8'-0" D3																	
2'-3 1/2" U2																	
13 1/2" C1																	
23 1/2" C1																	
3'-4 1/2" U2																	
5'-3" D3																	
4'-8 1/2" R14																	
6 1/2" 5'-2" C2																	
13 1/2" C1																	
17 1/2" C2																	
18" 4'-2 1/2" T1																	
18" 4'-4" T2																	
16" 4'-4" T1																	
16" 4'-5" T2																	
4'-8 1/2" 2'-4" T2																	
4'-8 1/2" 2'-5" T1																	
18" 4'-2 1/2" T1																	
18" 4'-4" T2																	
16" 4'-4" T1																	
16" 4'-5" T2																	
C1, D3, U2 & R14																	
U1																	
T1 & T2																	
R3																	
C2																	

Note: Hooks and bends shall be in accordance with the A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI-315-65). Two diameter bends shall not be used unless specified in bending diagrams.

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



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

BRIDGE OVER FRONT STREET
STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
PROJECT NO. I-IG-435-1(52) RTE. I-435 STA. 76+83.72 N.B. LANE
76+71.96 S.B. LANE
JACKSON COUNTY

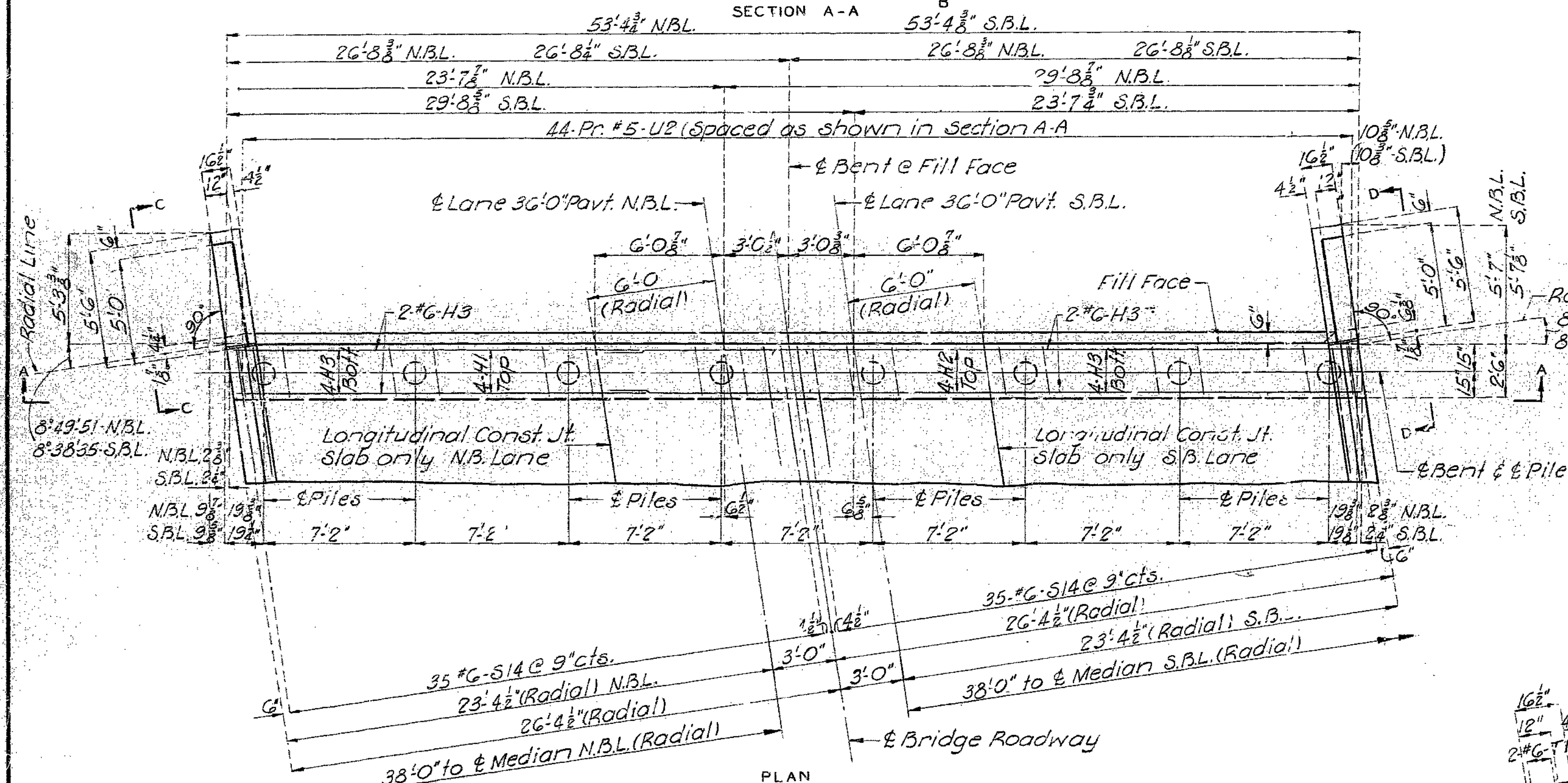
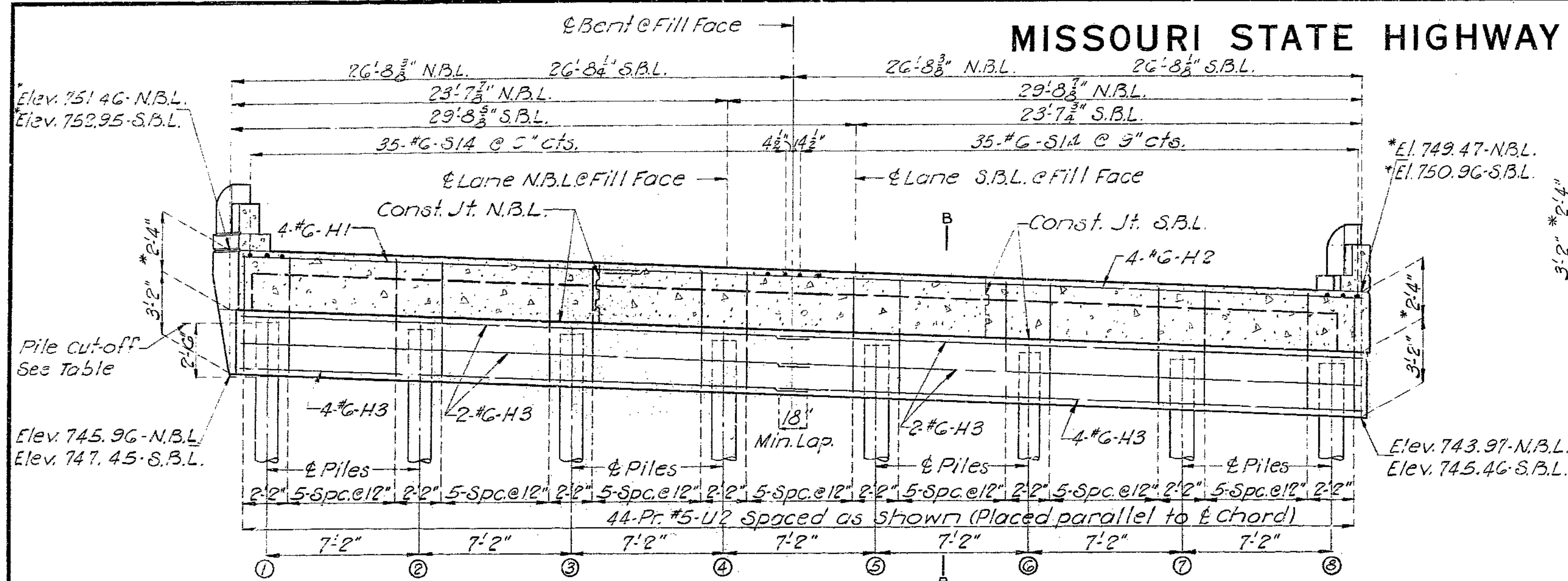
495

No. 90.3 Revised June 1961 Dec. 1964

DETAILED APRIL 1967 BY H.H.S.
 CHECKED MAY 1967 BY J.E.R.

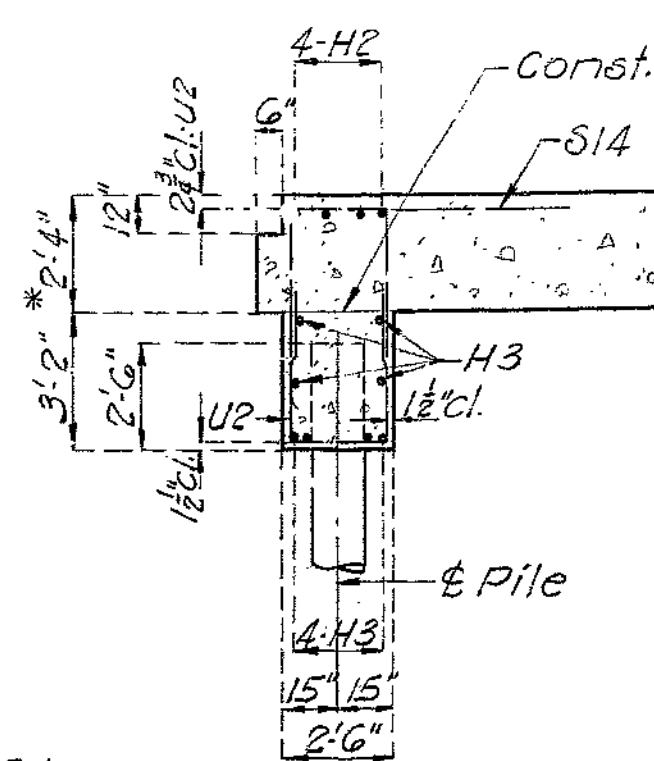
MISSOURI STATE HIGHWAY DEPARTMENT

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5	MO.		19	42	



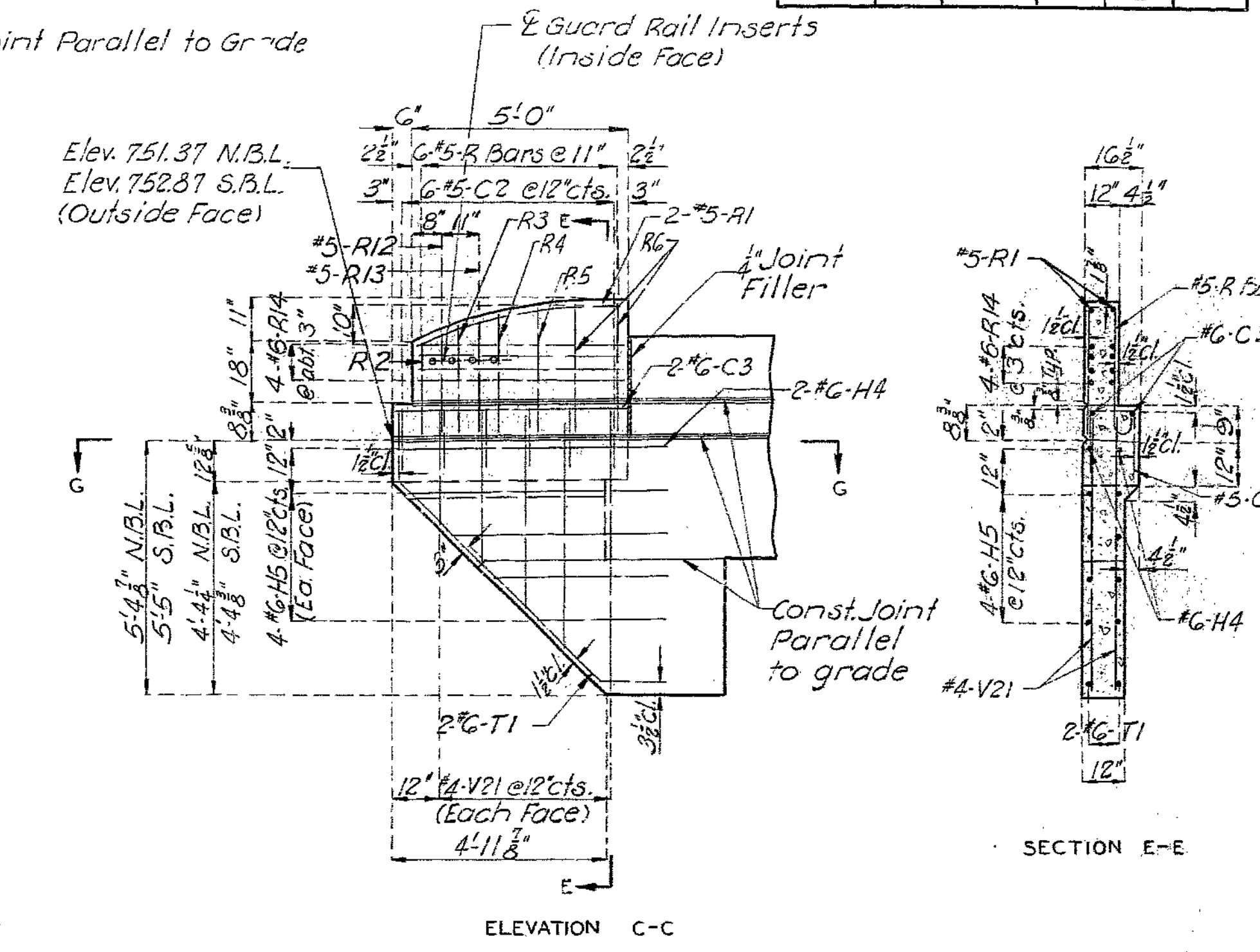
Note: Dimensions and elevations marked * are taken at fill face.
 Fill at end bents shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.
 For Timber Header Detail see Sheet No. 6.
 Anchors for attaching guard rail shall be 3/4" threaded malleable iron (Galv) inserts having a Min. depth of 3 1/2" and filled with a plastic closing plug.
 Cost for furnishing and installing the inserts and plugs will be included in price bid for other items.

DETAILS OF END BENT - I

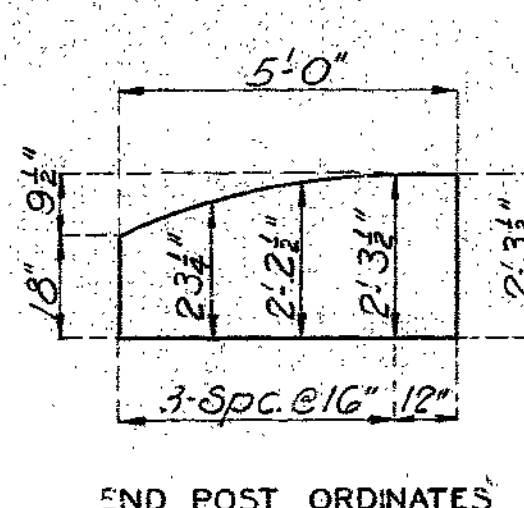


SECTION B-B

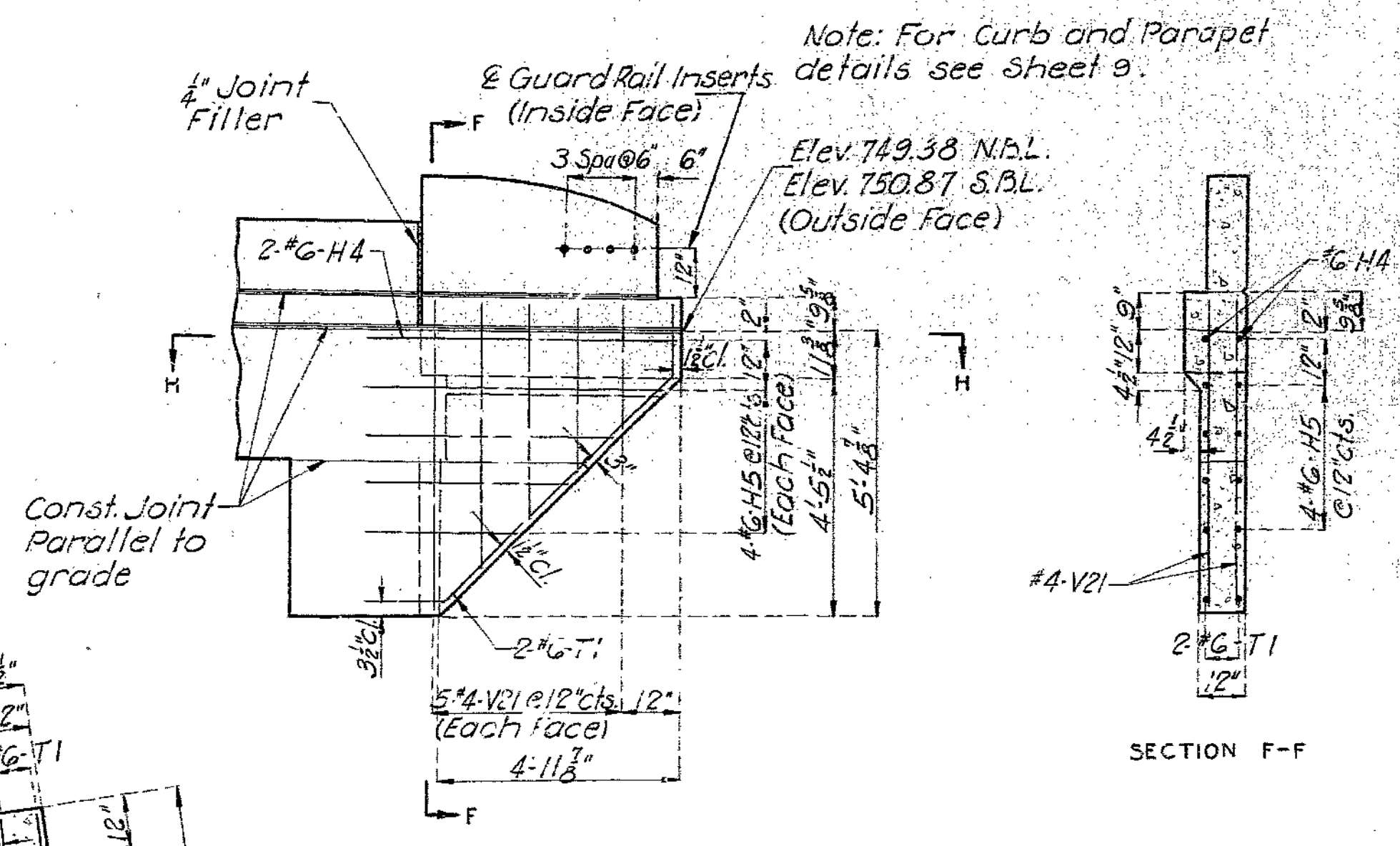
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NO.	ELEV.	NO.	ELEV.
1	749.89	1	748.40
2	749.62	2	748.13
3	749.36	3	747.86
4	749.09	4	747.60
5	748.82	5	747.33
6	748.55	6	747.06
7	748.29	7	746.80
8	748.02	8	746.53



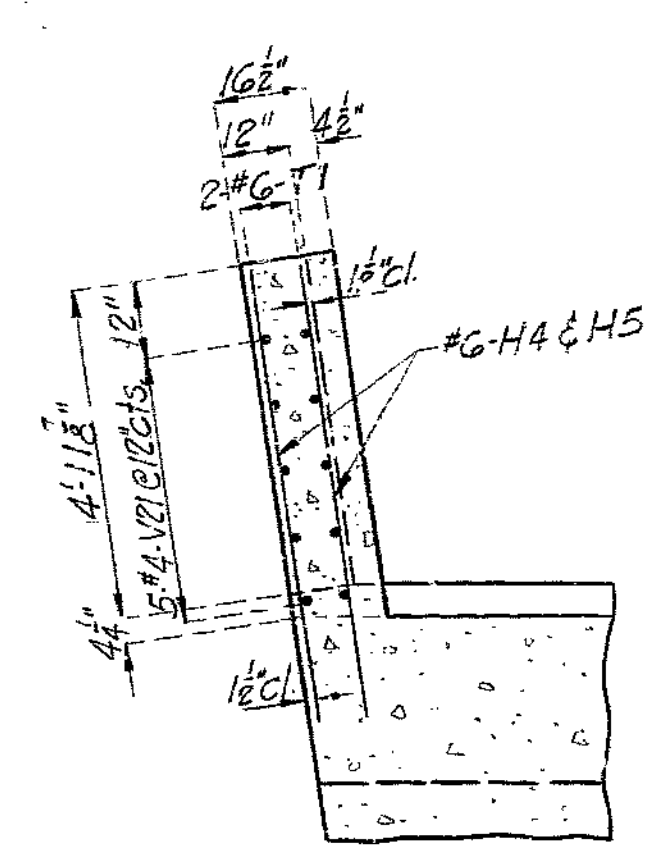
ELEVATION C-C



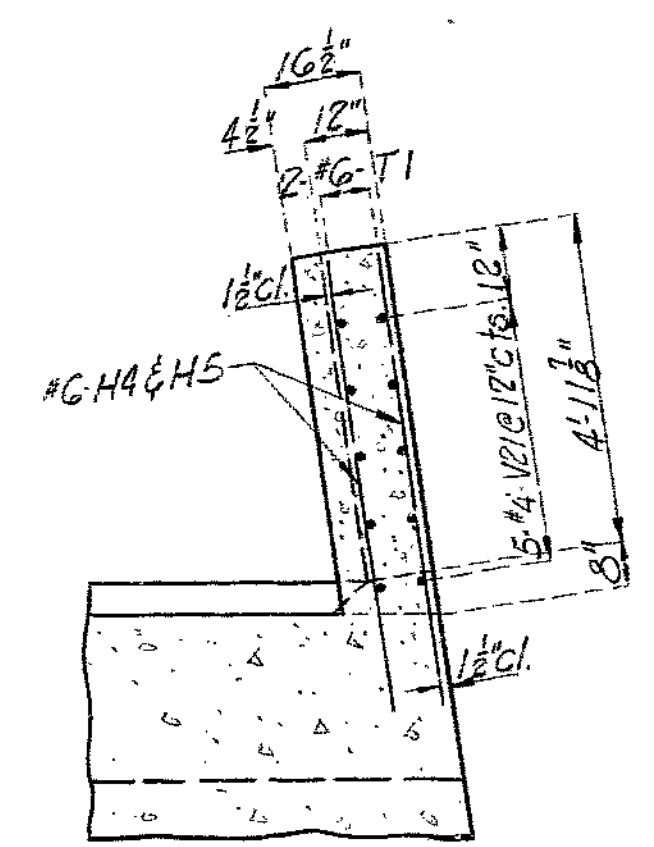
END POST ORDINATES



ELEVATION D-D



SECTION G-G



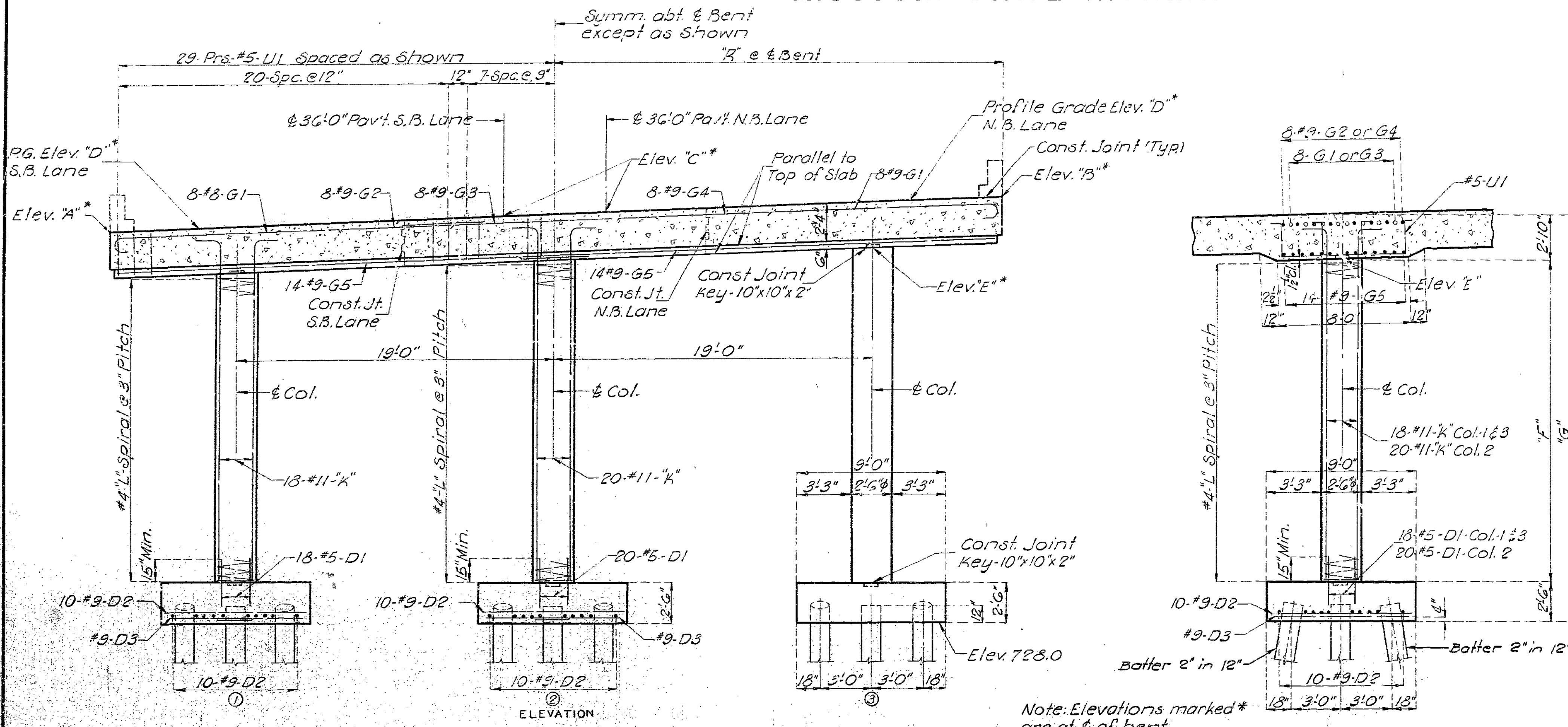
SECTION H-H

BRIDGE OVER FRONT STREET
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-IG-435-1152) RTE. I-435 STA. 76+83.72 N.B. LANE
 76+71.96 S.B. LANE
 JACKSON COUNTY

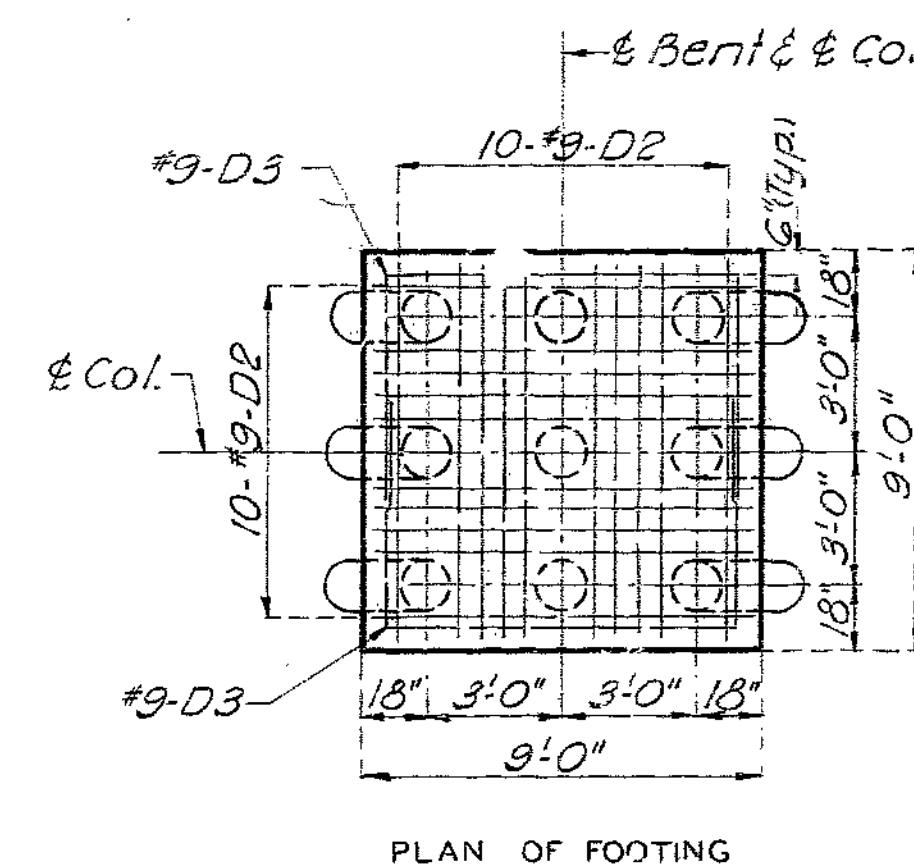
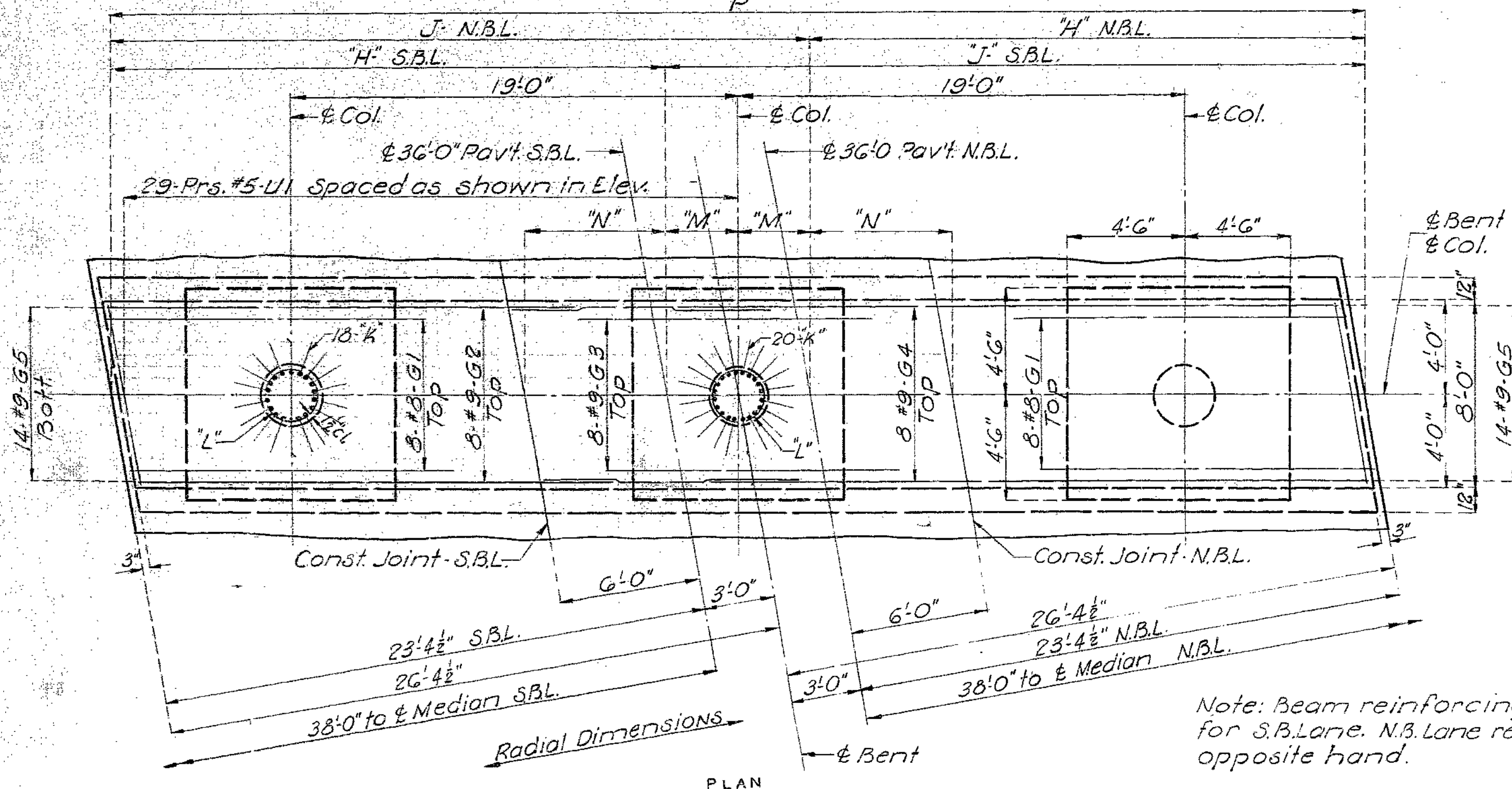
496

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	43	



Note: Elevations marked * are at & of bent.



LANE	SOUTH BOUND						NORTH BOUND					
	2			3			2			3		
BENT												
COL.	1	2	3	1	2	3	1	2	3	1	2	3
ELEV. 'A'	751.62			752.70			750.15			751.25		
ELEV. 'B'	753.60			754.66			752.12			753.21		
ELEV. 'C'	752.50			753.57			751.25			752.34		
ELEV. 'D'	751.78			752.85			751.97			753.06		
EL. 'V. E'	749.07	749.78	750.25	750.15	750.85	751.54	747.60	748.30	749.00	748.70	749.37	750.08
'F'	18'6 1/2"	19'3 3/8"	19'11 1/8"	19'7 3/8"	20'4 1/8"	21'0 3/8"	17'1 1/2"	17'9 3/8"	18'6"	18'2 3/8"	18'10 1/8"	19'7"
'G'	23'10 3/8"	24'7 3/8"	25'3 3/8"	24'11 3/8"	25'8 3/8"	26'4 3/8"	22'5 3/8"	23'1 3/8"	23'10"	23'6 3/8"	24'2 3/8"	24'11"
'H'	23'8 3/8"			23'9 3/8"			23'8 3/8"			23'9 3/8"		
'J'	29'9 3/8"			29'10 3/8"			29'9 3/8"			29'10 3/8"		
'K'	V1	V2	V3	V4	V5	V6	V7	V8	V1	V9	V10	V4
'L'	V11	V12	V13	V14	V15	V16	V17	V18	V11	V19	V20	V14
'M'	3'0 3/8"			3'0 3/8"			3'0 3/8"			3'0 3/8"		
'N'	6'1 1/8"			6'1 1/8"			6'1 1/8"			6'1 1/8"		
'P'	53'5 3/8"			53'7 3/8"			53'5 3/8"			53'8 3/8"		
'R'	26'8 3/8"			26'9 3/8"			26'8 3/8"			26'10 3/8"		

BRIDGE OVER FRONT STREET
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-IG-435-(52) RTE. I-435 STA. 76+83.72 N.B. LANE
 76+71.96 S.B. LANE
 JACKSON COUNTY

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DETAILED MARCH 1967 BY H.H.B.
 CHECKED APRIL 1967 BY J.E.R.

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

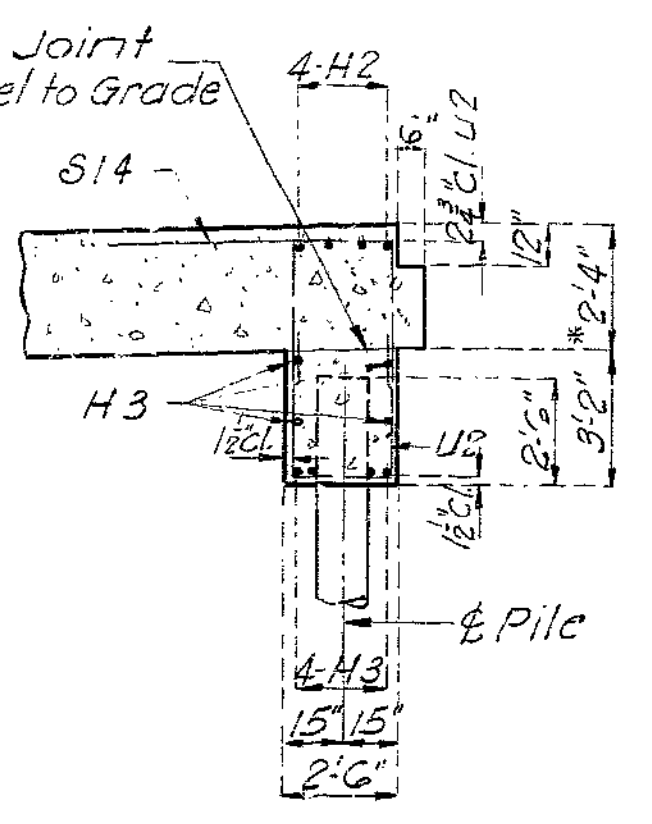
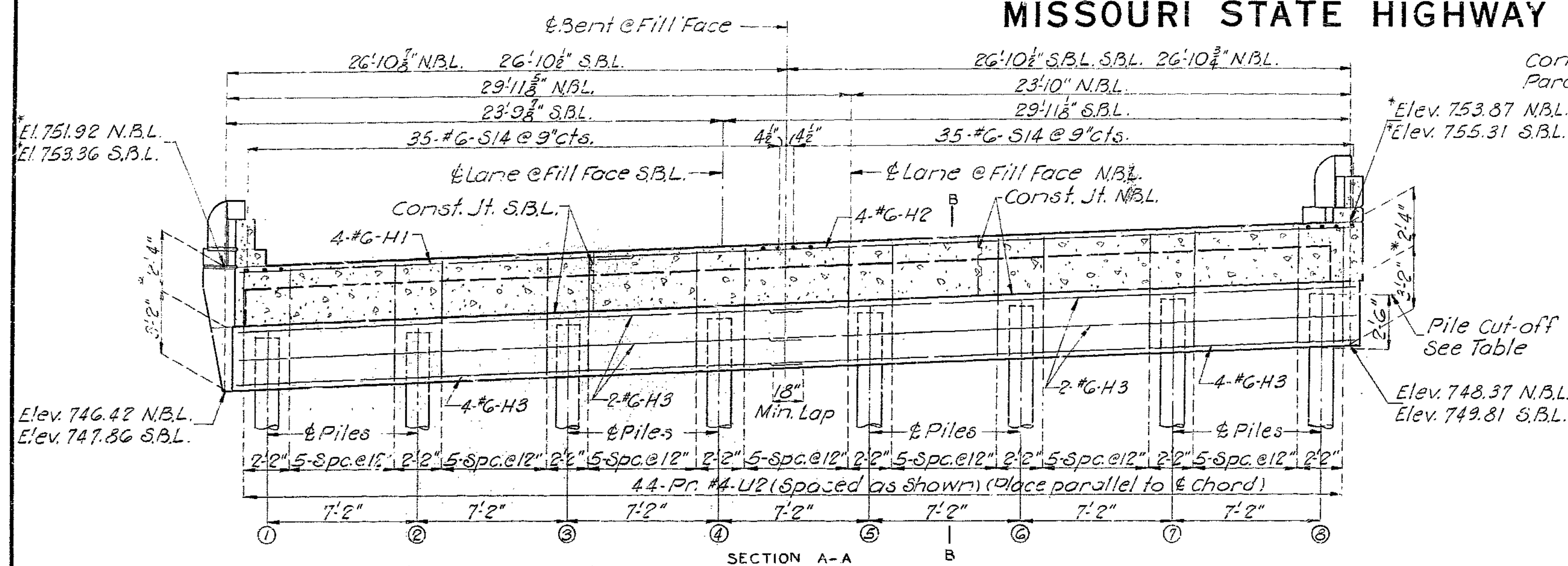
DETAILS OF INTERMEDIATE BENTS 2 & 3

Sheet No. 5 of 9.

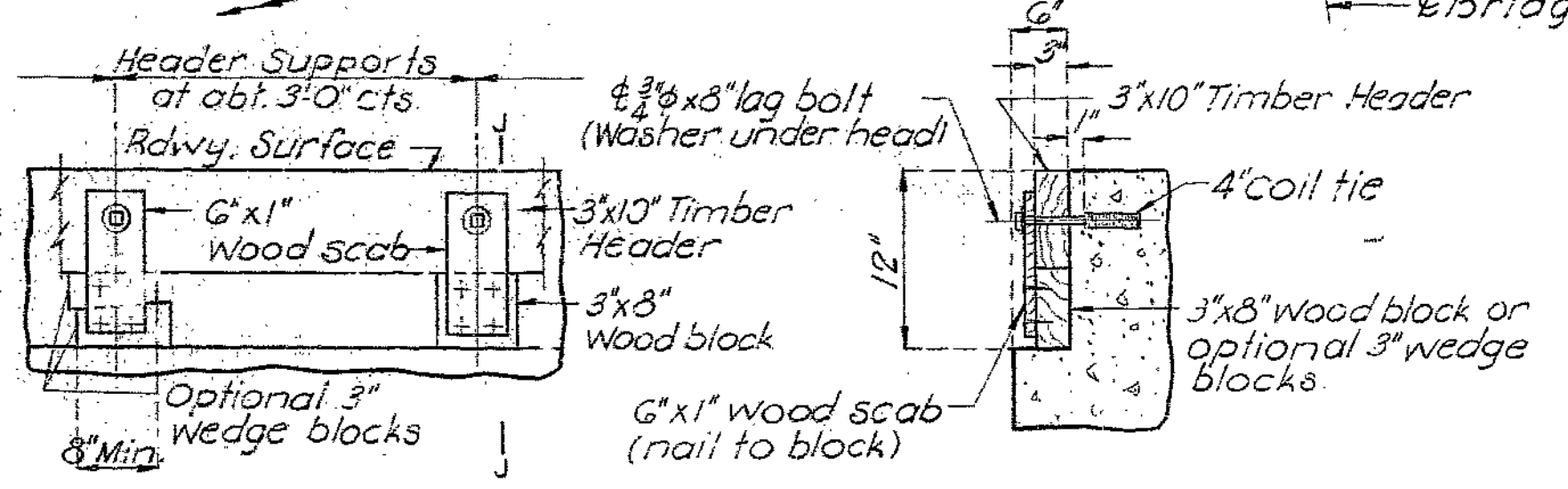
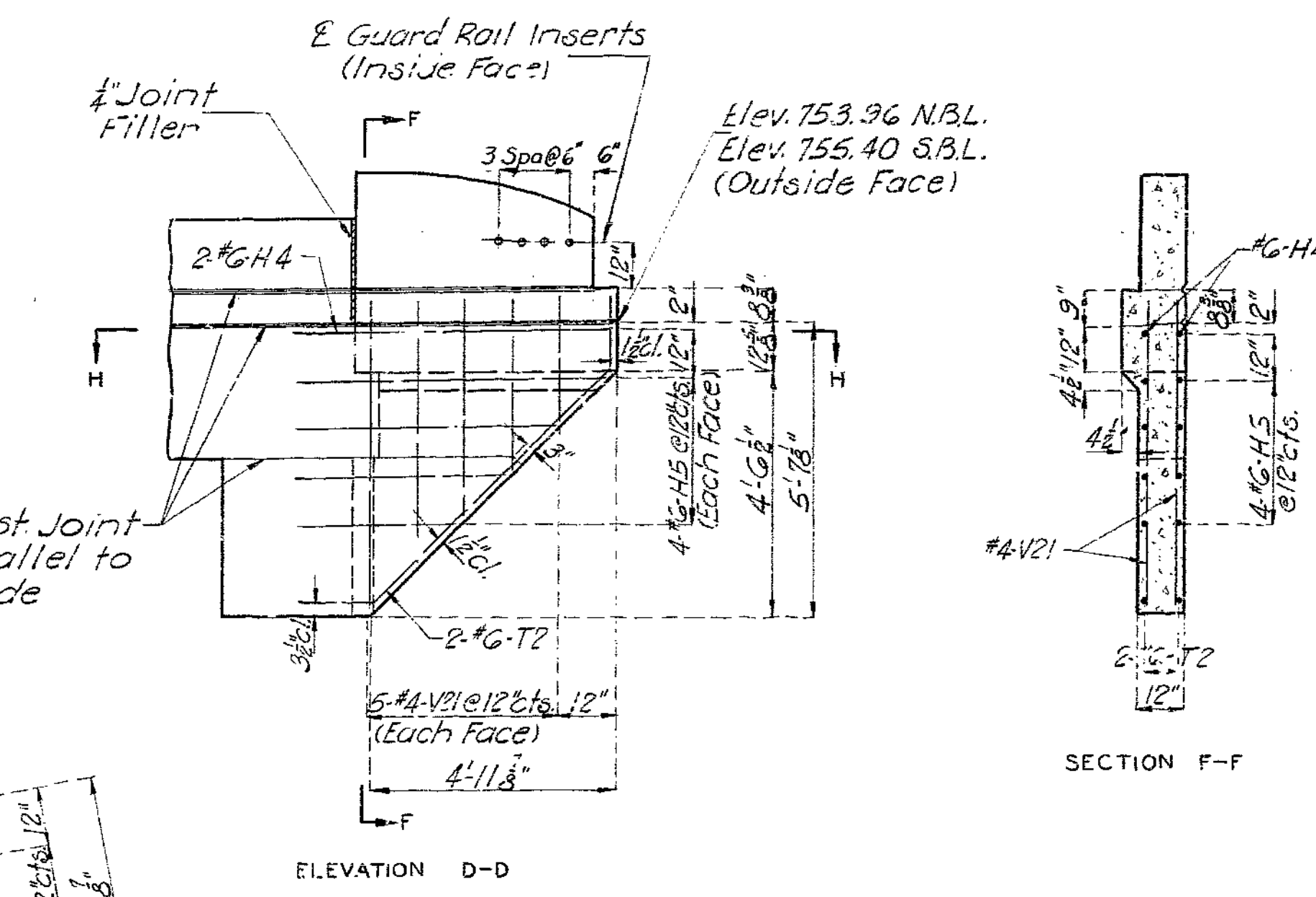
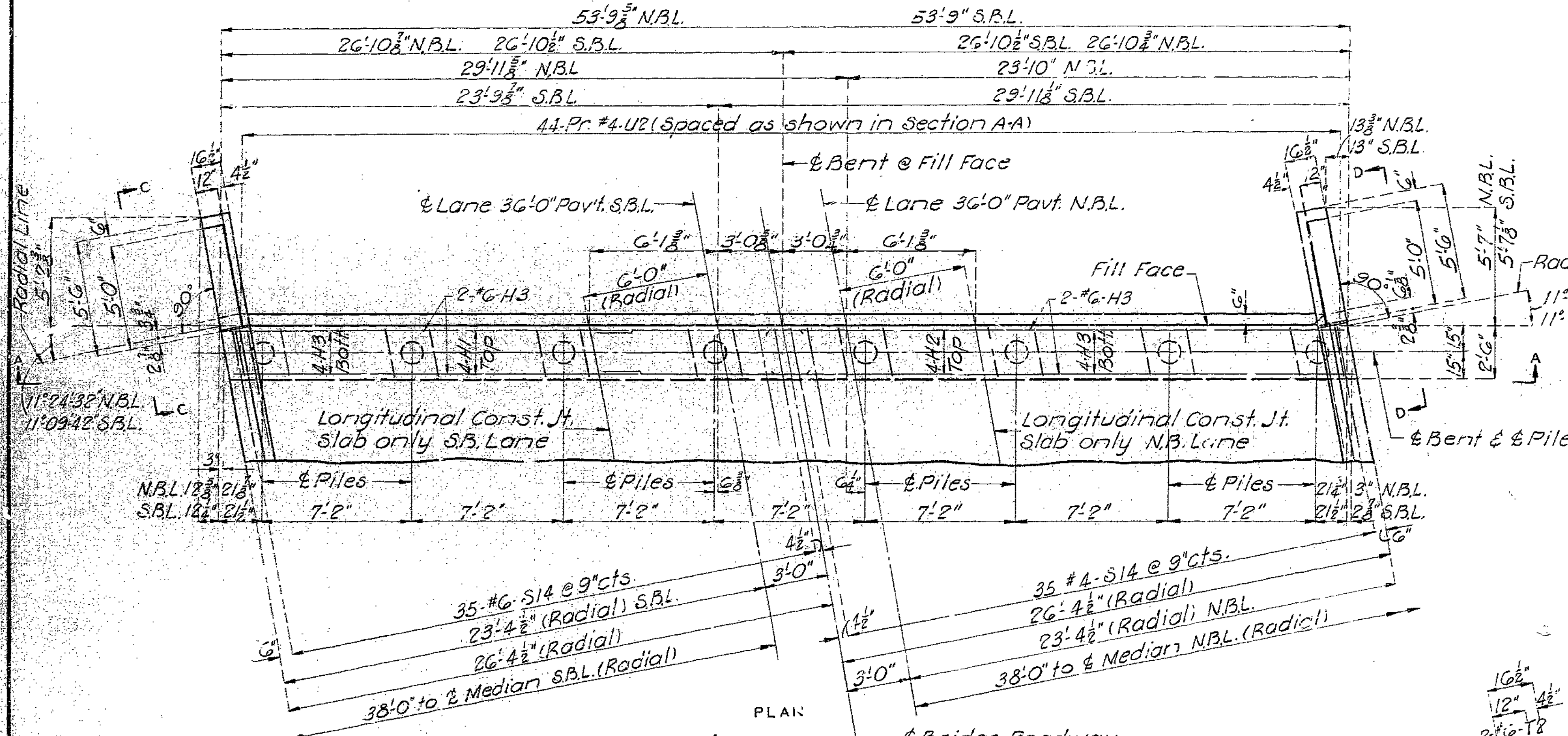
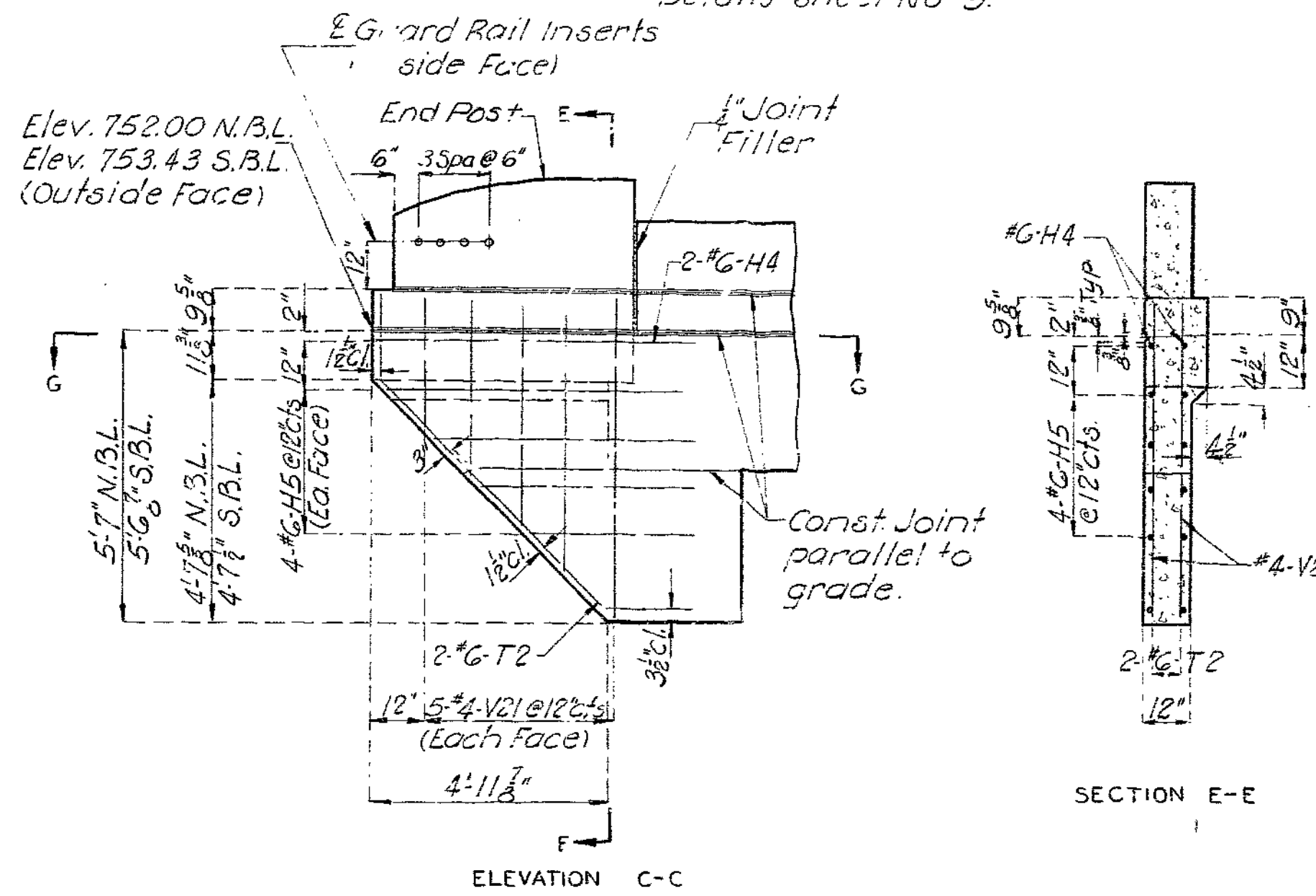
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MISSOURI STATE HIGHWAY DEPARTMENT

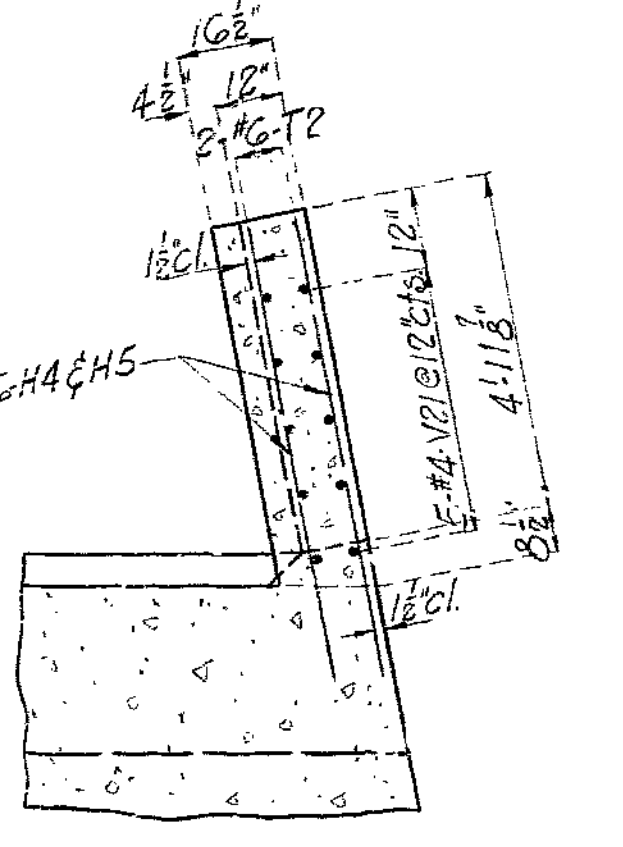
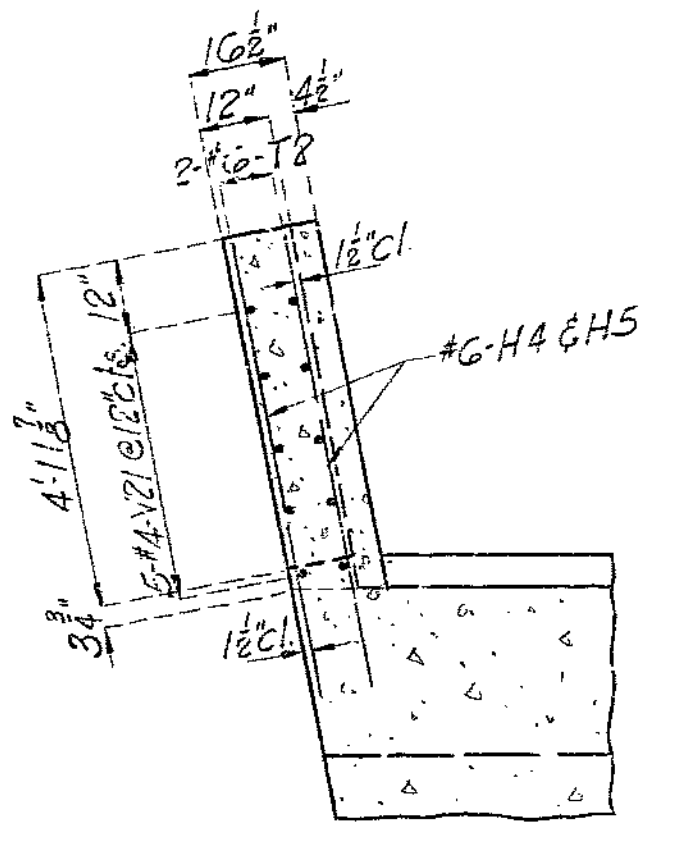
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	44	



N. B. LANE		S. B. LANE	
NO.	ELEV.	NO.	ELEV.
1	748.99	1	750.43
2	749.25	2	750.69
3	749.51	3	750.95
4	749.76	4	751.21
5	750.02	5	751.47
6	750.28	6	751.73
7	750.54	7	751.99
8	750.80	8	752.25



Note: For End Bent notes see Sheet No. 4.



DETAILS OF TIMBER HEADER
Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF END BENT - 4

BRIDGE OVER FRONT STREET
STATE ROAD: INTERSTATE ROUTE 435
IN KANSAS CITY
PROJECT NO. I-IG-435-I(52)RTE. I-+35 STA. 76+83.72 N.B. LANE
76+71.96 S.B. LANE
JACKSON COUNTY

DETAILED APRIL 1967 BY H.H.B.
CHECKED APRIL 1967 BY J.E.R.

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

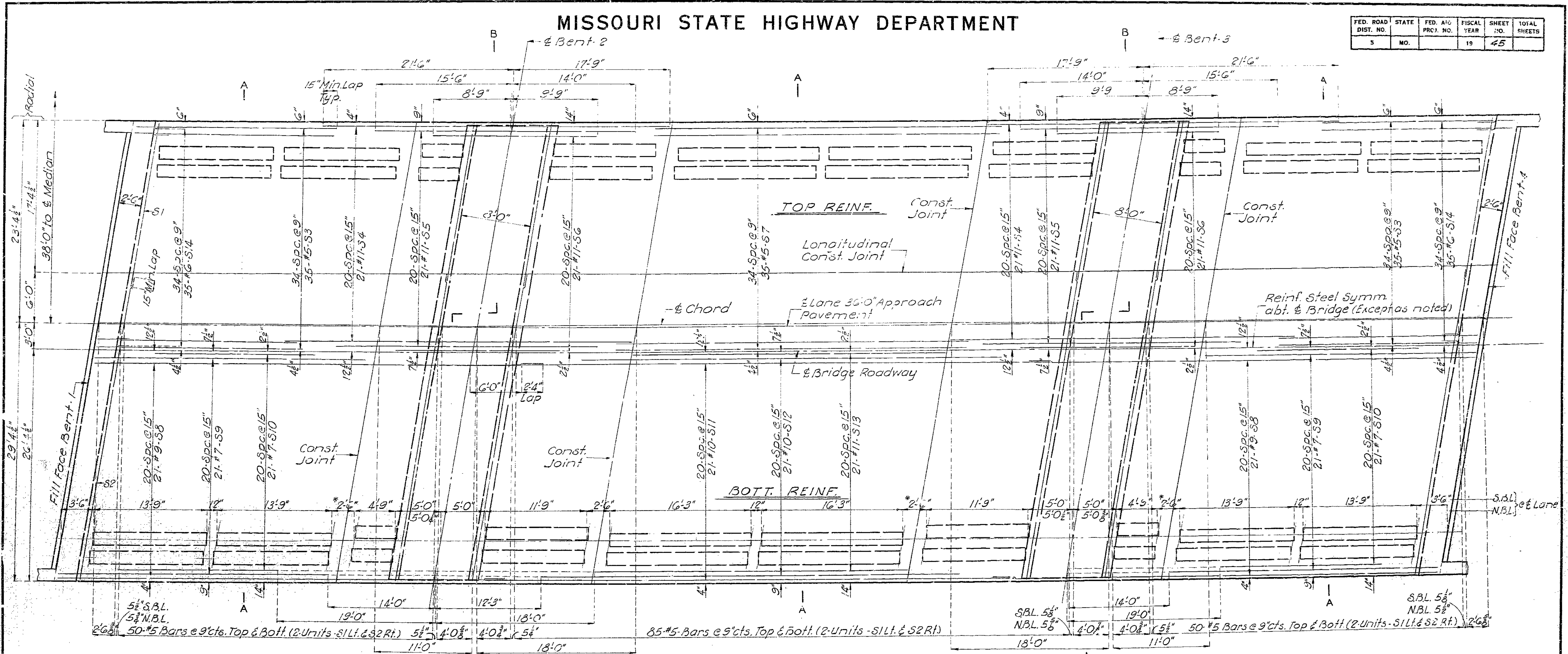
Sheet No. 6 of 9.

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MISSOURI STATE HIGHWAY DEPARTMENT

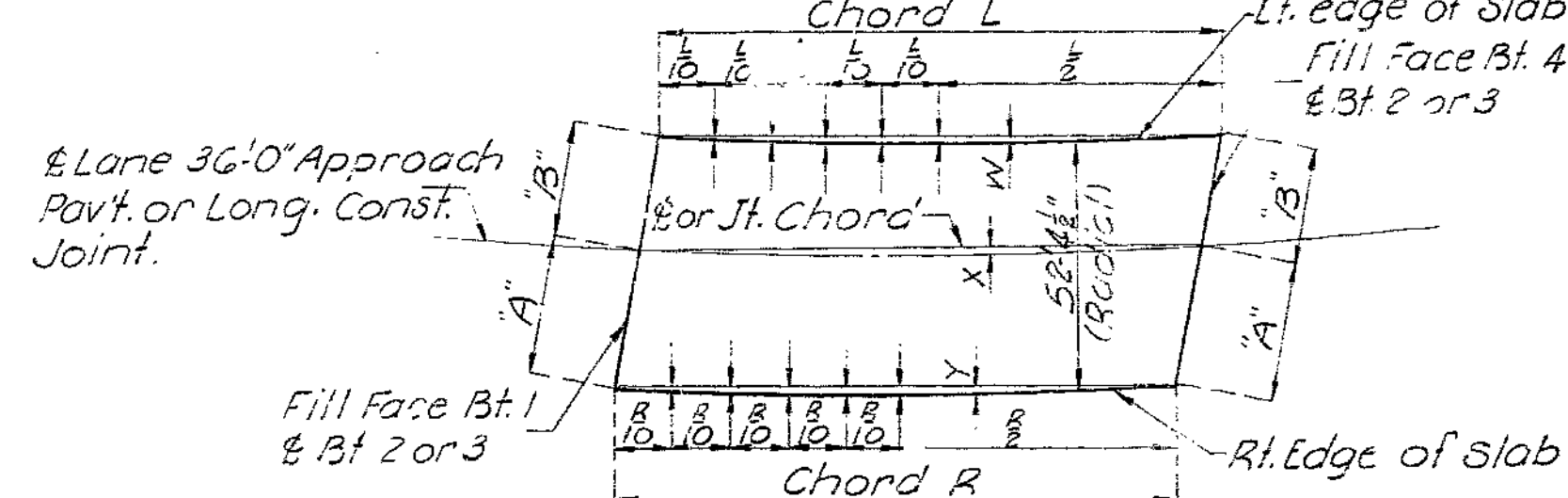
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5			19	45	



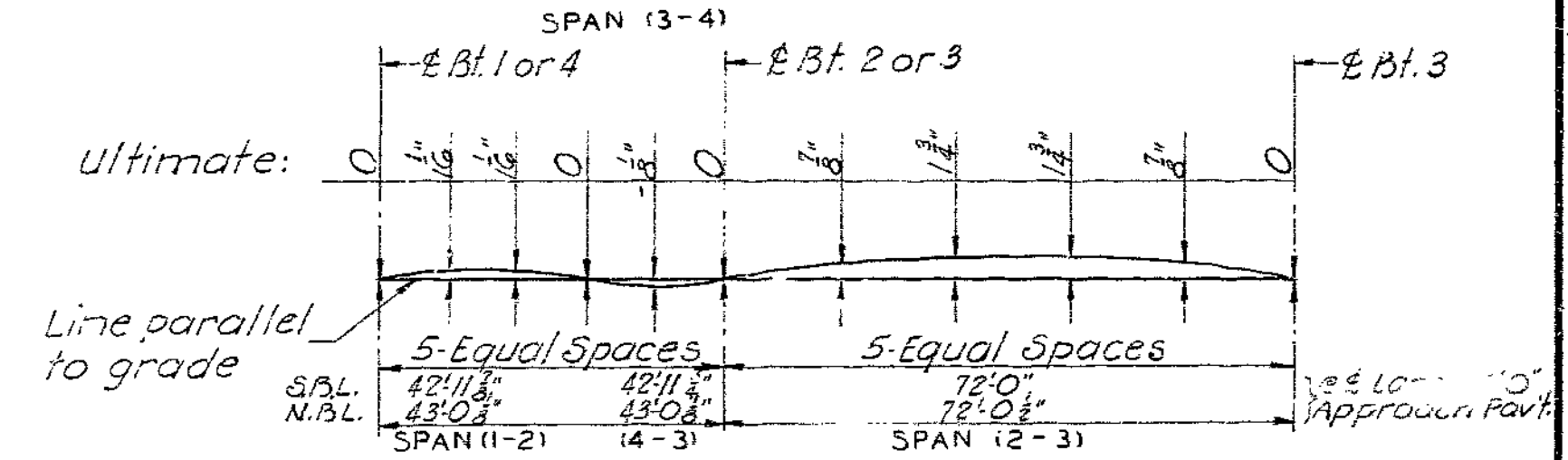
PLAN OF SLAB SHOWING REINFORCEMENT (South Bound Lane shown, N.B. Lane similar - See Orientation Sketch Sheet 8.)

Note: The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the roadway slab at a rate of not less than 43 cubic yards per hour. He shall observe all construction joints shown on plans unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slab at a rate which will permit a continuous pouring through some or all of these joints. Finishing machine load will not be permitted on concrete less than 48 hours old. All dimensions are perpendicular or parallel to lane chords (FF Bent-1 to Bent-2 etc.) unless otherwise called out or shown.

Place longitudinal reinforcing parallel to ϕ of lane chords. Place transverse reinforcing parallel to bents. All dimensions are horizontal. For Sections AA and B-B see Sheet 8. For curb and parapet reinforcing see Sheet 9. 2'-6" Dimensions marked (*) vary a maximum of $\frac{1}{8}$ " from Lt. edge of slab to right edge.



SPAN	Chords			Offset W, X, Y				A'e J.	B'e J.	Bent No	B'e e	B'e e	
	L	R	For Jt.	5' Pt.	4' Pt.	3' Pt.	2' Pt.						1' Pt.
(1-2) S.B.L.	44'3"	44'3"	44'2 1/2"	5"	4"	3"	2"	1"	35'9"	17'0 1/2"	1	29'3 1/2"	23'7 1/2"
(2-3) S.B.L.	72'0 1/2"	72'0"	72'11 1/2"	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	35'11 1/2"	17'8"	3	29'10 1/2"	23'9 1/2"
(3-4) S.B.L.	44'3 1/2"	44'3"	44'2 1/2"	5"	4"	3"	2"	1"	36'0 1/2"	17'8 1/2"	4	29'11 1/2"	23'9 1/2"
(1-2) N.B.L.	44'3 1/2"	44'3 1/2"	44'3 1/2"	5"	4"	3"	2"	1"	17'7"	35'3 1/2"	1	23'7 1/2"	23'8 1/2"
(2-3) N.B.L.	72'0 1/2"	72'0 1/2"	72'0 1/2"	2 1/2"	2"	1 3/4"	1 1/2"	1 1/2"	17'7 1/2"	35'10 1/2"	2	23'8 1/2"	29'9 1/2"
(3-4) N.B.L.	44'3 1/2"	44'3 1/2"	44'3 1/2"	5"	4"	3"	2"	1"	17'8 1/2"	36'0"	3	23'9 1/2"	29'10 1/2"
									17'8 1/2"	36'1"	4	23'10 1/2"	29'11 1/2"



Note: The contractor shall camber forms to allow for ultimate dead load deflection. THEORETICAL CAMBER DIAGRAM

BRIDGE OVER FRONT STREET
STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
PROJECT NO. I-1G 435-1152) RTE. I-435 STA. 76+83.72 N.B. LANE
JACKSON COUNTY 76+71.96 S.S. LANE

499

DETAILED APRIL 1967 BY H.H.B.
 CHECKED APRIL 1967 BY J.E.R.

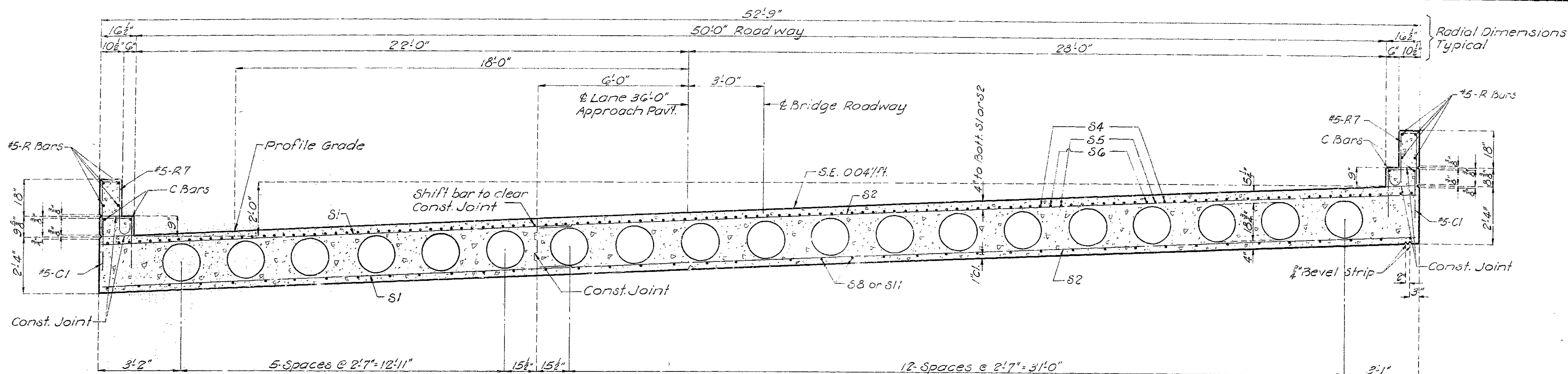
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 7 of 9.

A-1682

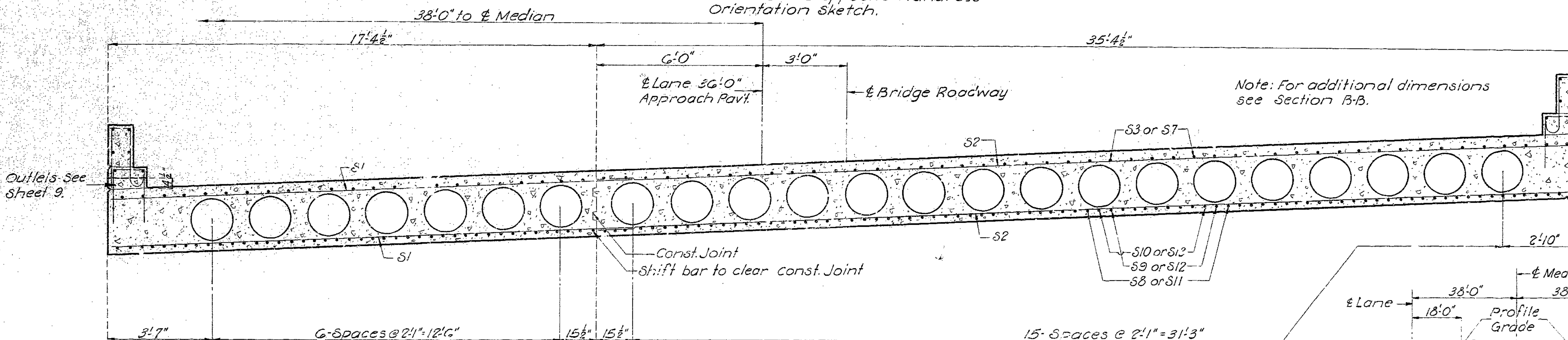
MISSOURI STATE HIGHWAY DEPARTMENT

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



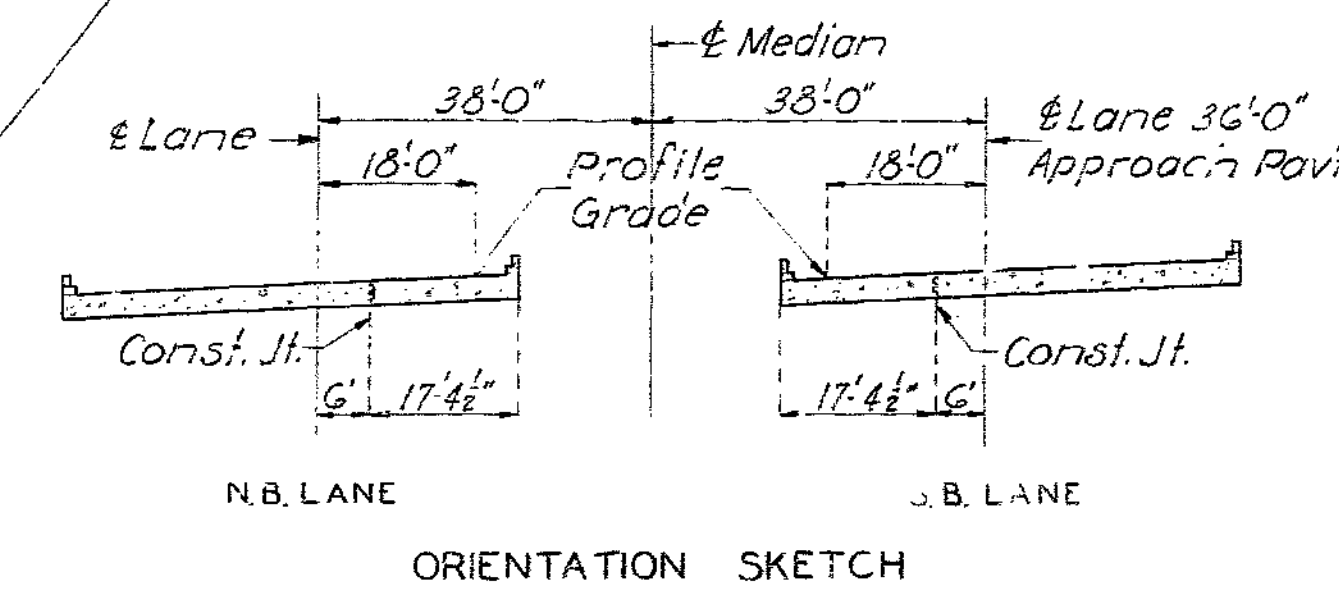
SECTION B-B

South Bound Lane shown. N.B. Lane similar except transverse dimensions opposite hand. See Orientation Sketch.



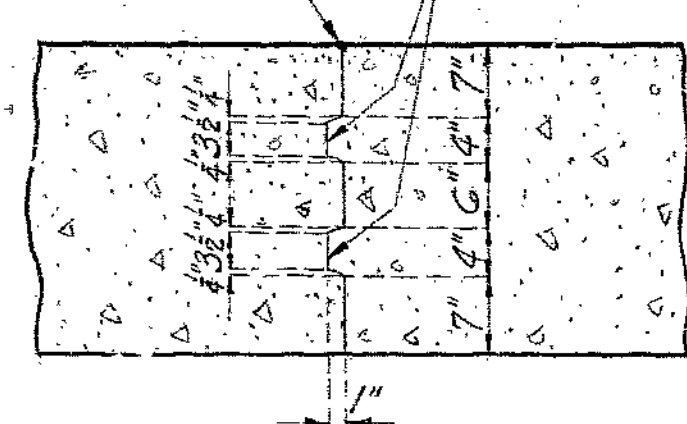
SECTION A-A

Note: For additional dimensions see Section B-B.



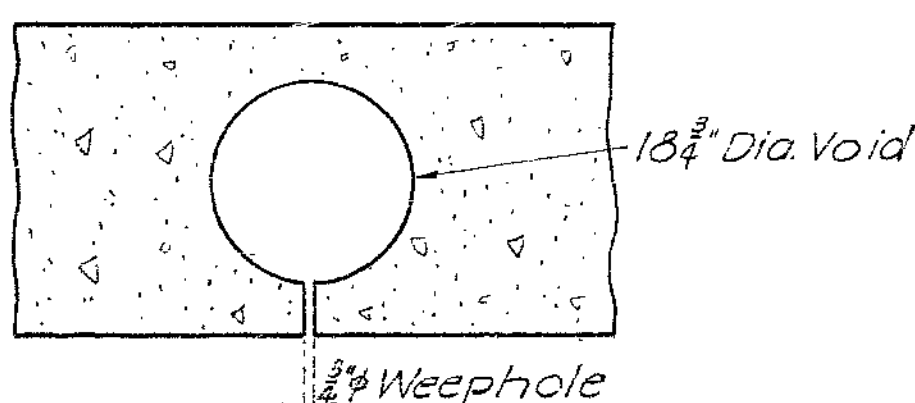
BRIDGE OVER FRONT STREET
 STATE ROAD: INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-1G-435-1152 RTE. I-435 STA. 76+83.72 N.B. LANE
 76+71.96 S.B. LANE
 JACKSON COUNTY

with $\frac{1}{4}$ " radius edging tool.



DETAIL OF SLAB CONSTRUCTION JOINT

Note: One $\frac{1}{4}$ " diameter hole shall be provided at each end of each void. Weepholes shall be placed in straight lines parallel to bents.



DETAIL OF WEEPHOLES IN VOIDS

Note: Fiber tubes for producing voids shall have an outside diameter of 18.7" and a wall thickness of .300" and shall be anchored to joists carrying the floor form at not more than 2'-6" centers. See Special Provisions for metal tube alternate for voids.
 For location of Sections A-A and B-B see Sheet No. 7.
 For curb, parapet, and handrail details see Sheet No. 9.

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

Sheet No. 8 of 9.

500

DETAILED APRIL 1967 BY H.H.B.
 CHECKED APRIL 1967 BY J.E.R.

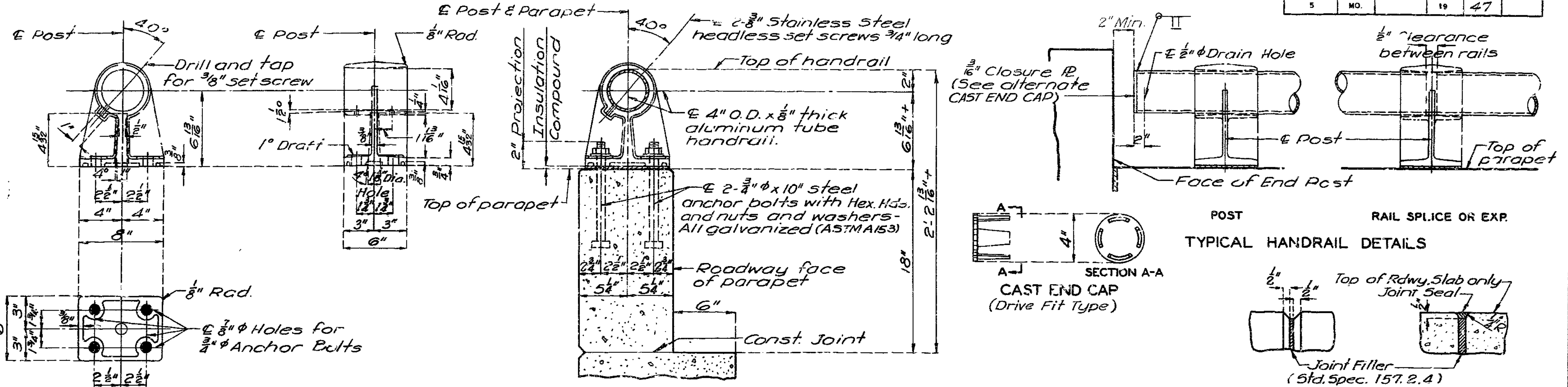
A-1682

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	47	

GENERAL HANDRAIL NOTES:

All handrail posts shall be set normal to grade.
 Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet.
 Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.
 All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.
 The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.
 All fillets 1/4" except as noted.
 All drafts 3° except as noted.
 Pipe rail to be fabricated in a minimum of 2 panel lengths.
 Omit set screw on side adjacent to filled joint in parapet and curb at all expansion points.
 Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade.
 Concrete end posts to be vertical.
 All exposed edges of end posts shall have 1/2" bevel.
 All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.
 If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.
 Integrally cast test coupons, and a coat of clear lacquer specified in Std. Spec. 56.24 and 56.35 respectively, will not be required for these rail posts.

MISSOURI STATE HIGHWAY DEPARTMENT

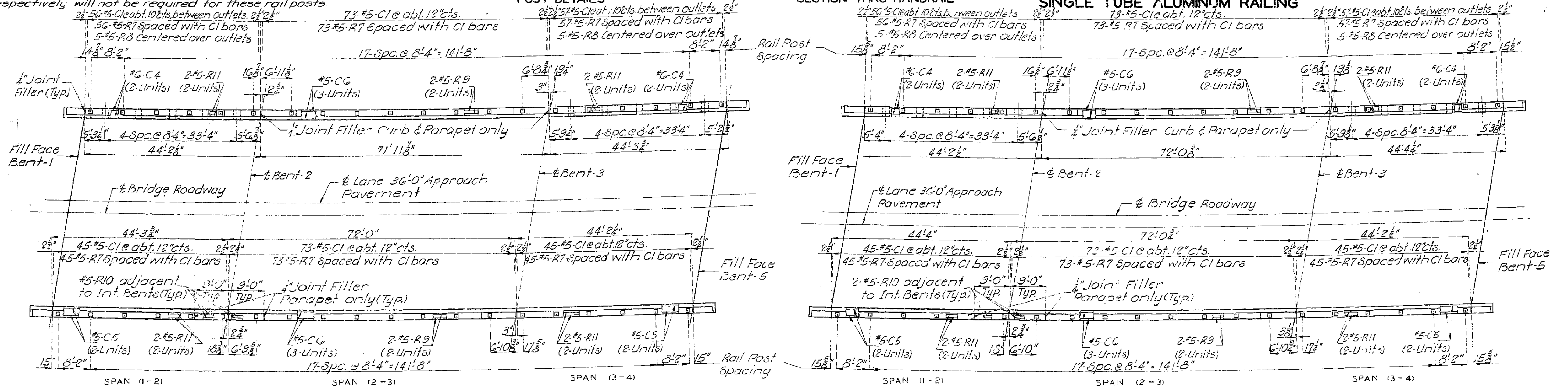


POST DETAILS

SECTION THRU HANDRAIL

SINGLE TUBE ALUMINIUM RAILING

FILLED JOINT DETAILS



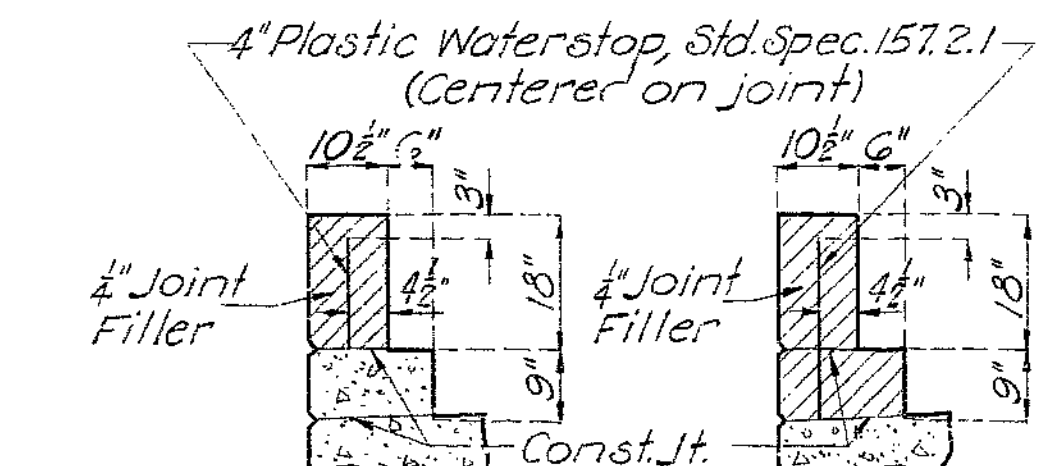
PLAN SHOWING RAIL POST SPACING, CURB OUTLETS, AND REINFORCING (SOUTH BOUND LANE)

PLAN SHOWING RAIL POST SPACING, CURB OUTLETS, AND REINFORCING (NORTH BOUND LANE)

Note: Handrail Post spacing dimensions are parallel to grade and along ϵ of rail at top of parapet.

All other dimensions are along outside edge of slab parallel to grade at top of slab. For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6.

SPAN	CURB		PARAPET
	LT.	RT.	
(1-2)	#6-C4	#5-C5	#5-R11 (2-Units)
(3-4)	(2-Units)	(2-Units)	(2-Units)
(2-3)	#5-C6	#5-R9	(2-Units)
	(3-Units)	(2-Units)	

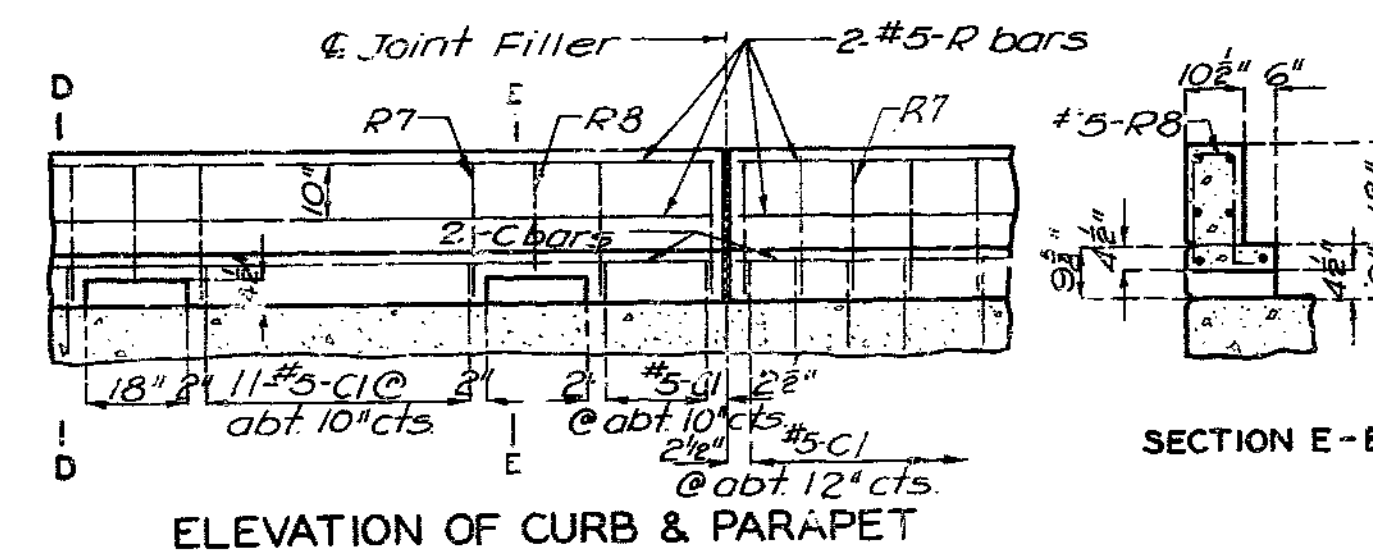


PARAPET JOINT CURB & PARAPET JOINT
 Note: Plastic water stop shall be placed in all parapet and curb filled joints. (Except at End Bts.) Left side of str. only.
 Cost of plastic water stop complete in place to be included in unit price bid for concrete.

DETAILS OF PLASTIC WATER STOP

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

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



ELEVATION OF CURB & PARAPET

SECTION E-E

BRIDGE OVER FRONT STREET

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. 1-IG-435-1(52) RTE. 1-435 STA.

JACKSON

COUNTY

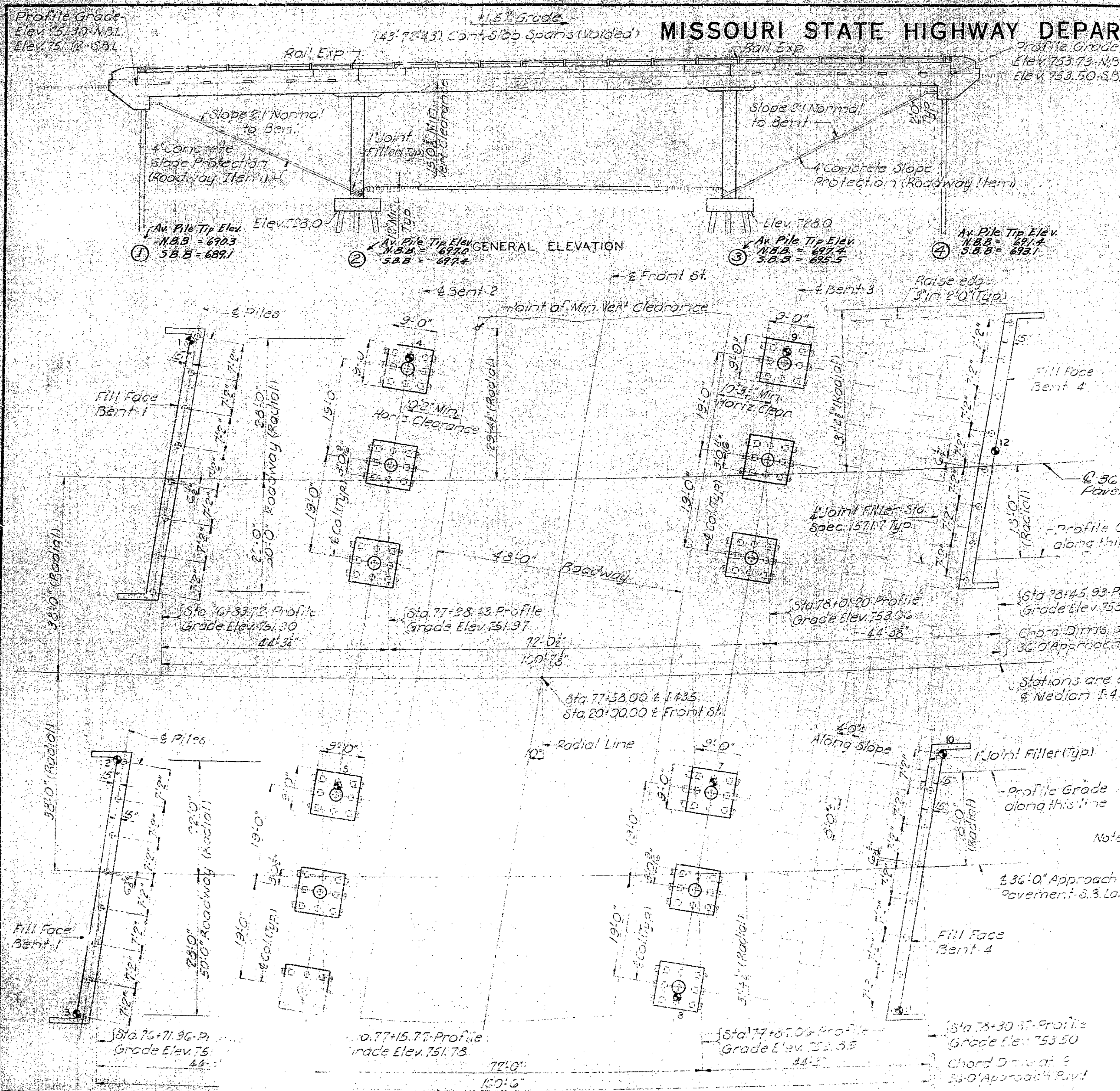
761 82 72 N.B. LANE
761 71 96 S.B. LANE

501

REVISED JAN. 1967
MAR. 1964
STD. 15.2

DETAILED APRIL 1967 BY H.H.B.
CHECKED APRIL 1967 BY J.E.R.

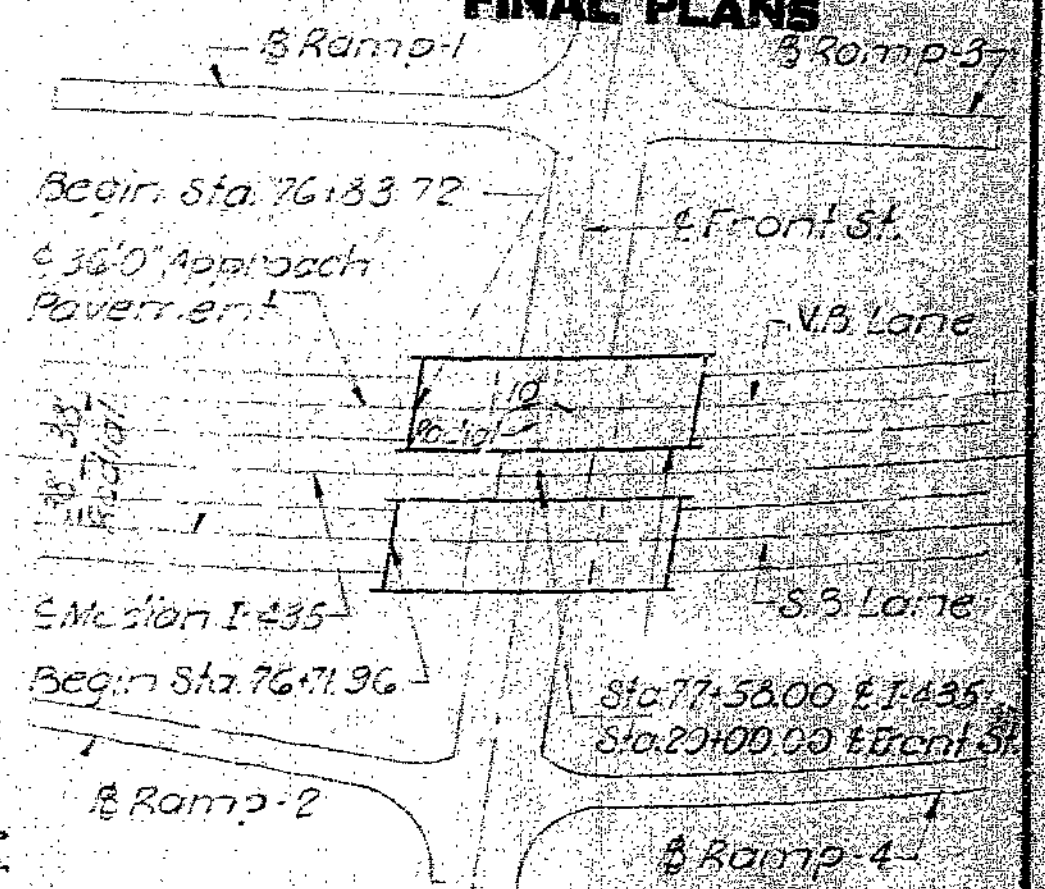
MISSOURI STATE HIGHWAY DEPARTMENT



PILE DAT

BENT NO.	1	2	3	4
Type	Found	Found	Found	Found
Kind	10B P 42 TR	TR	TR	TR
Number (Bainlines)	16	16	16	16
Average Length Ft.	58.5	31.8	32.6	58.4
Design Bearing Tons	60	30	30	60
Min. Tip Penetration Elev.	6530	6530	6530	6530
Hammer Energy Used Ft. Lbs.	22,500	15,000	15,000	22,500

Note: All piles were driven to the minimum penetrations noted and to not less than the Design Bearing noted.
 Minimum hammer energy required for Precast Concrete Piles is 8300 Ft. Lbs.
 Compacted roadway fill (full roadway width) was placed up to elevation of bottom of concrete beam in front of and not less than 25' in back of End Bent No. 1 and 4 before piles were driven.
 Pre-bore holes thru compacted fill for piles at Bent No. 1 & 4.
 Minimum energy requirement based on plan length of piles.
 Cost for boring and backfilling was included in unit price bid for piles in place.



GENERAL NOTES:

Design Specifications:
 A.A.S.H.O. 1965
 Design Loading:
 HS20-44
 15' 60 ft. Future Wearing Surface
 Modified 24,000# Tandem Axle
 Earth 120# Equivalent Fluid Pressure 30#

Design Unit Stresses:
 Class B Concrete (Substructure) $f_c = 1200$ psi
 Class B Concrete (Superstructure) $f_c = 1600$ psi
 Reinforcing steel $f_s = 20,000$ psi
 Superstructure deck was surface sealed.

FINAL QUANTITIES

	Substr.	Superstr.	Total
Class I Exc. for Str.	CuYd. 128	-	128
15" Tr. Timber Piles (Int. Bents Only) Lin. Ft.	3474	-	3474
14" C.I.P.C.P. (End Bents Only) Lin. Ft.	0	-	0
Class B Concrete CuYd.	90	-	90
Class B Concrete CuYd.	-	1301.4	1301.4
Reinforcing Steel Lb.	9500	1316,260	1,325,760
Bridge Rail (Single Tube Type) Lin. Ft.	-	642	642
10B P 42 Piling* (18% in Place) Lb. as L.S.	1	-	1

Note: All concrete and reinforcement above footings in intermediate bents is included in superstructure quantities.
 No payment for excavation was allowed at end Bents No. 1 and 4.
 See Special Provisions for optional use of Precast concrete, Prestressed Concrete or 15" Treated Timber Piles.

BIMs
 PK Nail Centered in Lt. Wing Curb @ End of End Post @ Bent #1
 N.B.B. 67' Lt. E. 76+81 Elev. = 750.19
 PK Nail Centered in Rt. Wing Curb @ End of End Post @ Bent #4
 S.B.B. 67' Rt. E. 78+30 Elev. = 756.11

BRIDGE OVER FRONT STREET
 STATE ROAD INTERSTATE ROUTE 435
 IN KANSAS CITY
 PROJECT NO. I-IC-435-1152 RTE. I-435 STA. 76+83.72 N.B. LANE
 76+71.96 S.B. LANE
 JACKSON COUNTY

SUBMITTED BY: E. LYN CROWLEY DATE Feb. 23, 1965
 BRIDGE ENGINEER
 APPROVED BY: J. J. [Signature] DATE Feb. 23, 1965
 CHIEF ENGINEER
 STD. 54.00
 A-1682

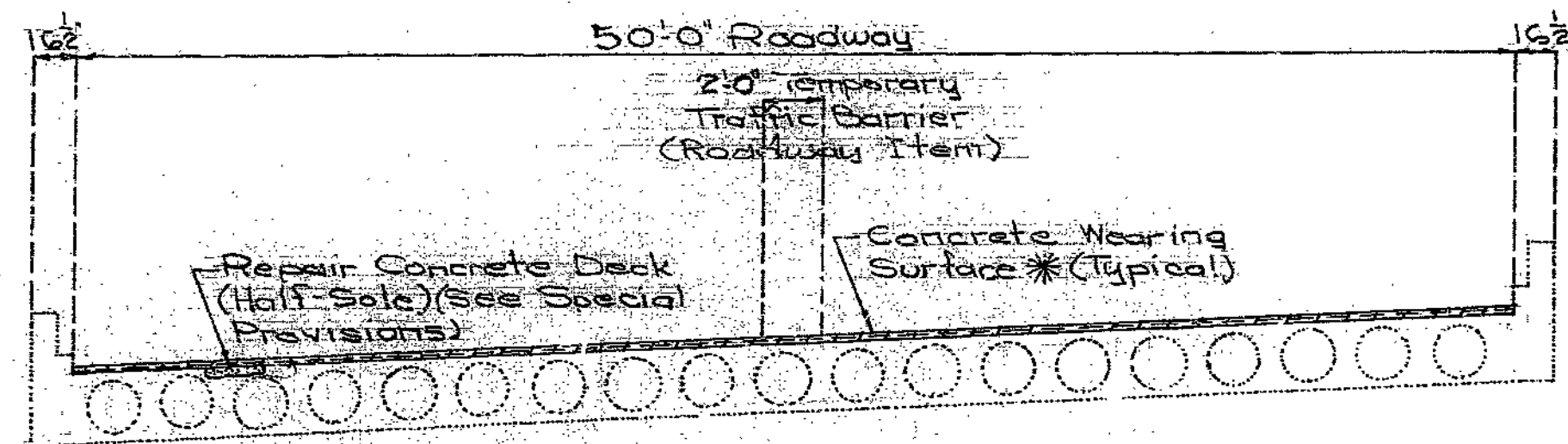
GROWLEY, WADE, MILSTEAD, L.
 ENGINEERS - ARCHITECTS
 INDEPENDENCE, MISSOURI
 Designed BY: [Signature] Checked BY: [Signature]
 Detailed BY: [Signature] Checked BY: [Signature]
 Quantities BY: [Signature] Checked BY: [Signature]

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

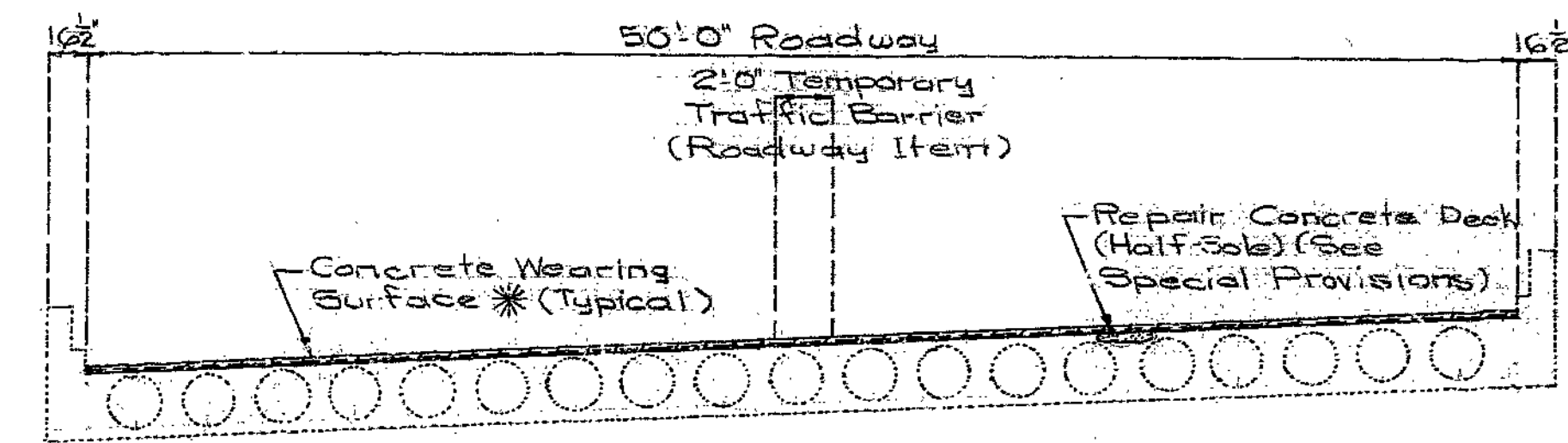
502

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.		14
SEC. 25	TWP. 50N	RGE. 23W



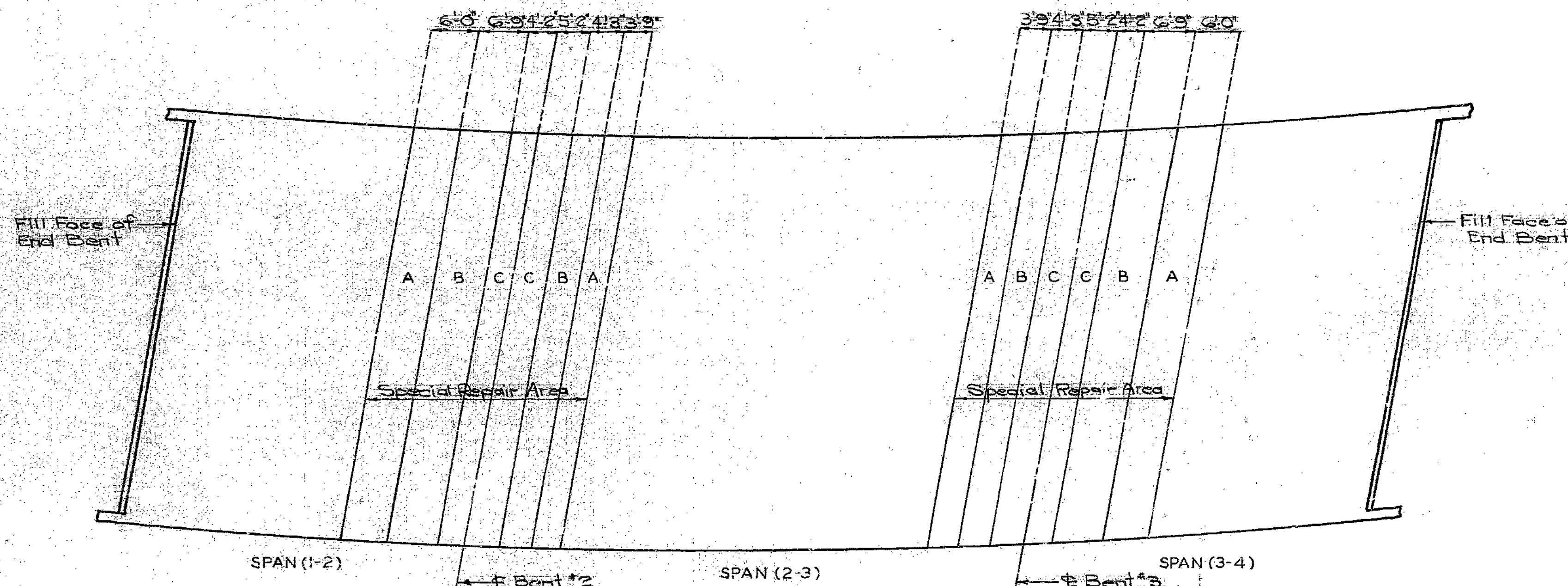
NORTH BOUND LANE



SOUTH BOUND LANE

* 1 3/4" (Min.) for latex modified concrete
 2 1/4" (Min.) for low slump concrete

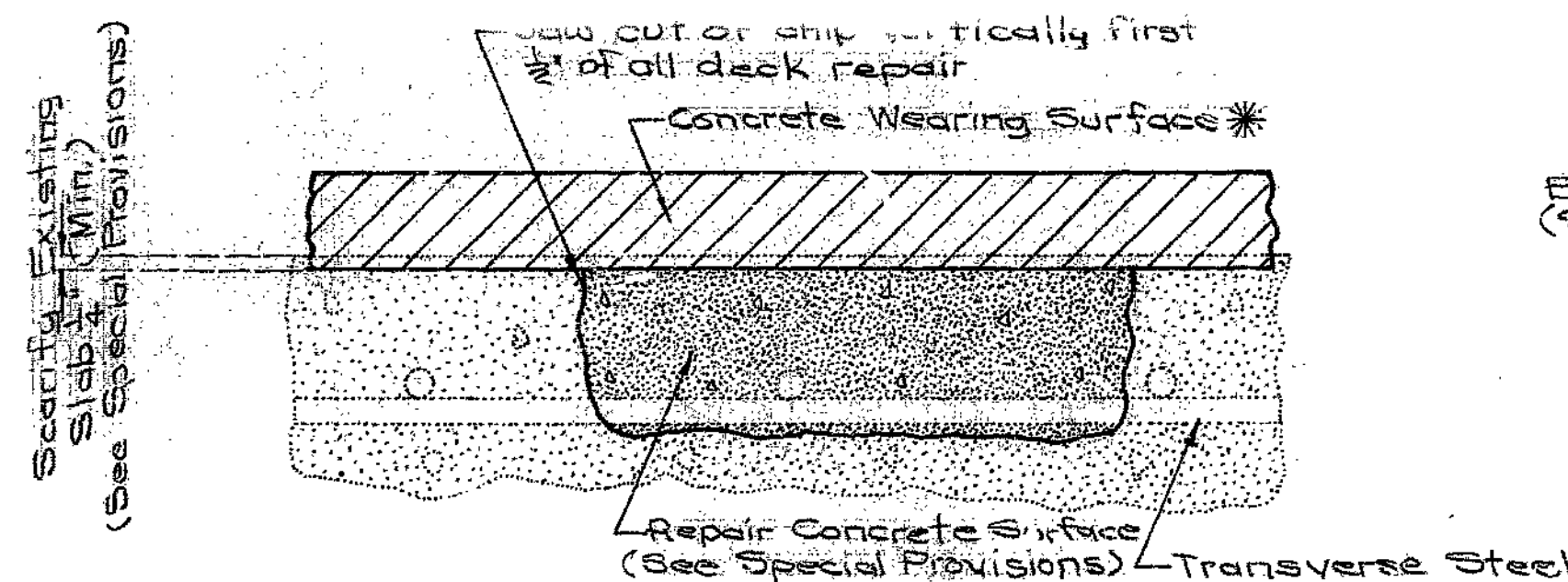
Note: Outline of old work is indicated by light dotted lines.
 Heavy lines indicate new work.
 Contractor to maintain two lanes of traffic in each direction during construction. (See Road Plans.)



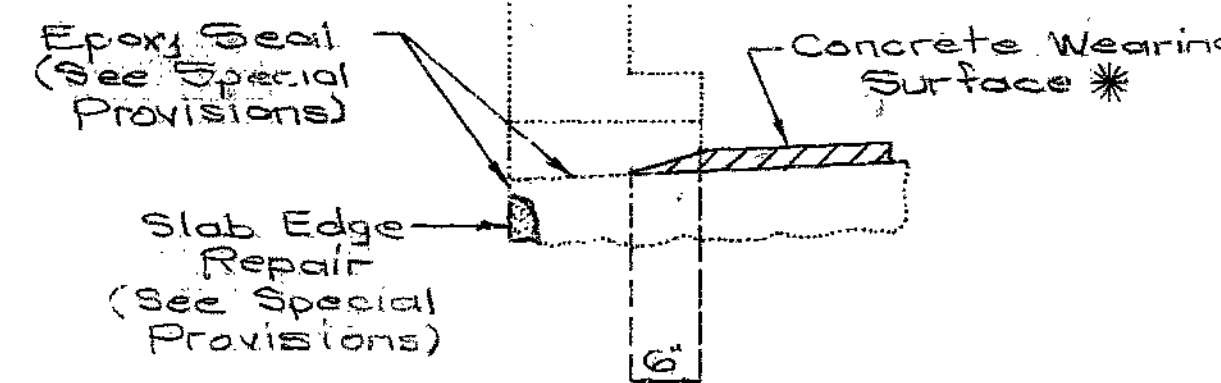
PLAN OF EXISTING SLAB
 (North Bound Lane shown. South Bound Lane similar)

Note: Any repair in the remainder of the bridge that is within 5'-0" of Zone A shall be completed before removing old concrete in Zones A. Zones with the same letter designation may be repaired at the same time.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Repairing Concrete Deck (Half-Soling)	Sq. Ft.	964
Concrete Wearing Surface * (See Special Provisions)	Sq. Yd.	1784
Slab Edge Repair	Lin. Ft.	40



HALF-SOLED AREA



TYPICAL SECTION AT CURB SHOWING OUTLET

SEE FINAL PLANS

REPAIRS TO BRIDGE OVER FRONT STREET

STATE ROAD: INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. IR-IRG-435-1(181)

JOB NO. 4-1435-686

JACKSON

STA. 76+83.72 N.B. LANE
 STA. 76+71.96 S.B. LANE

RTE. I-435

COUNTY

STD.
STD.
A-1682R

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

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

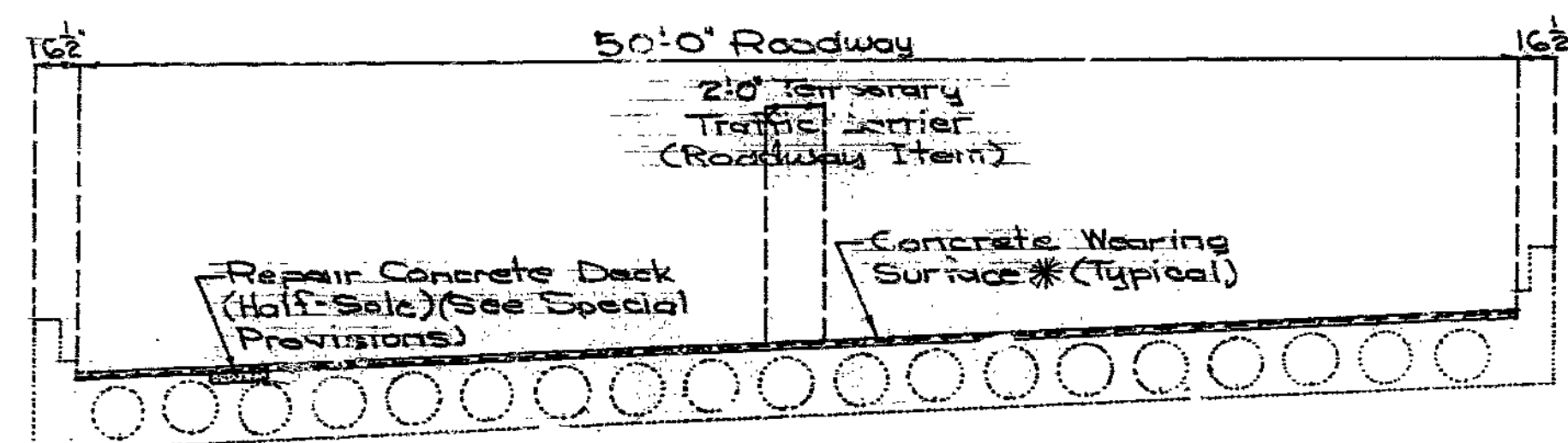
Sheet No. 1 of 1

DATE 4/23/86

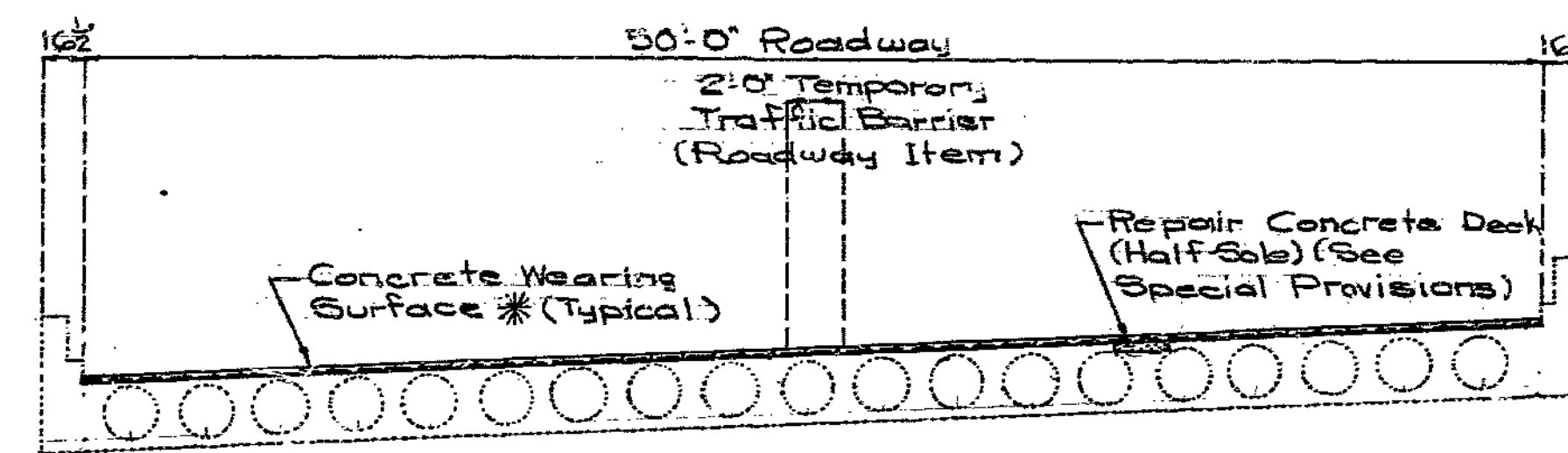
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MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.		14
SEC. 25	TWP. 50N	R9E 33W



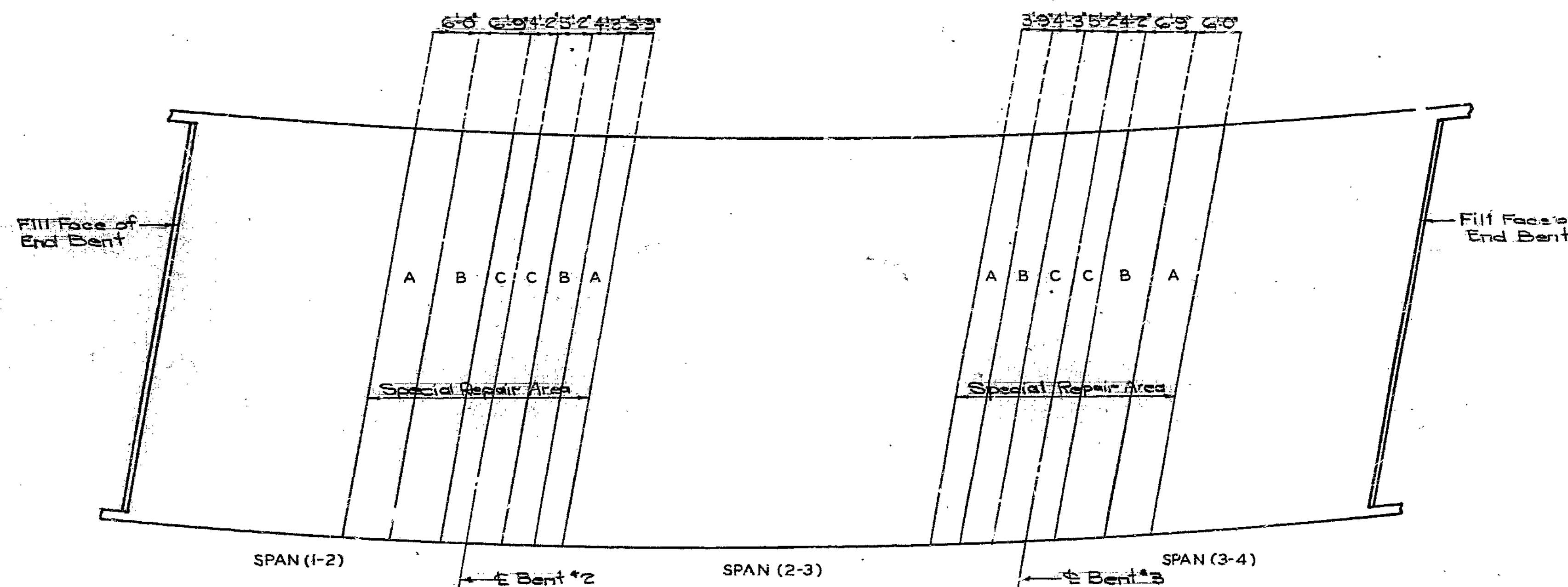
NORTH BOUND LANE



SOUTH BOUND LANE

* 1 1/2" (Min.) for latex modified concrete
2" (Min.) for low slump concrete

Note: Outline of old work is indicated by light dotted lines.
Heavy lines indicate new work.
Contractor to maintain two lanes of traffic in each direction during construction. (See Road Plans.)

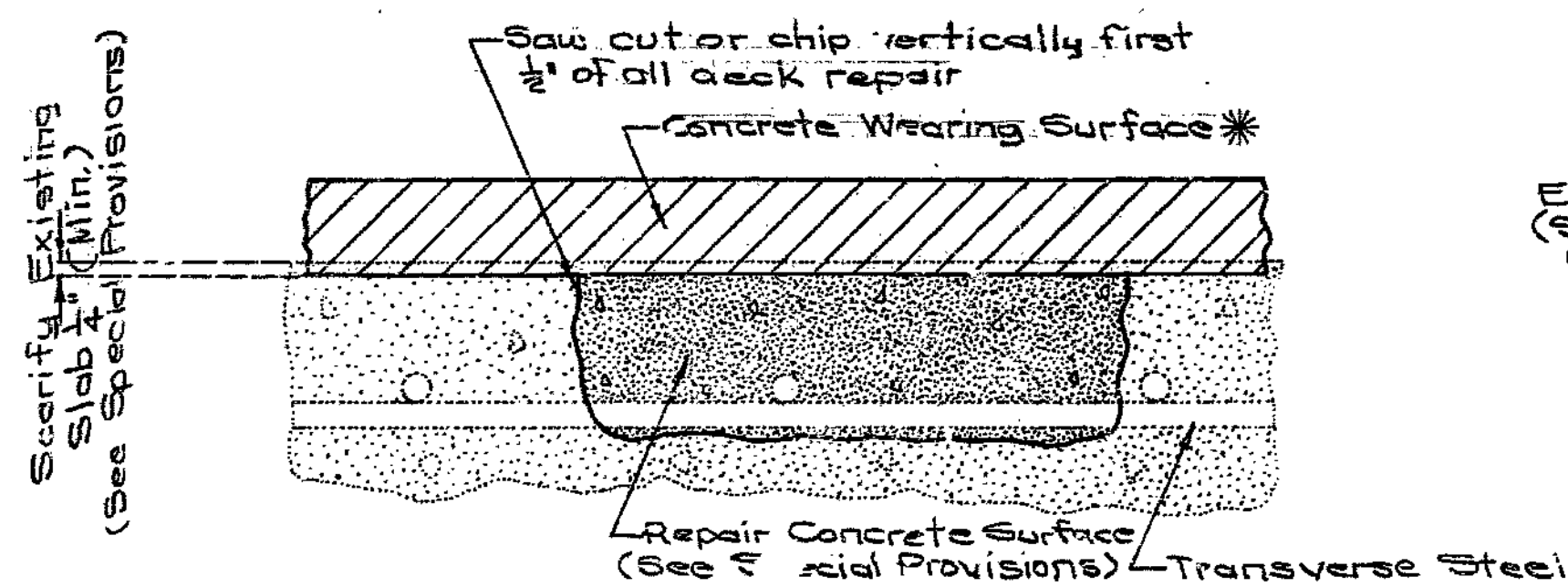


PLAN OF EXISTING SLAB

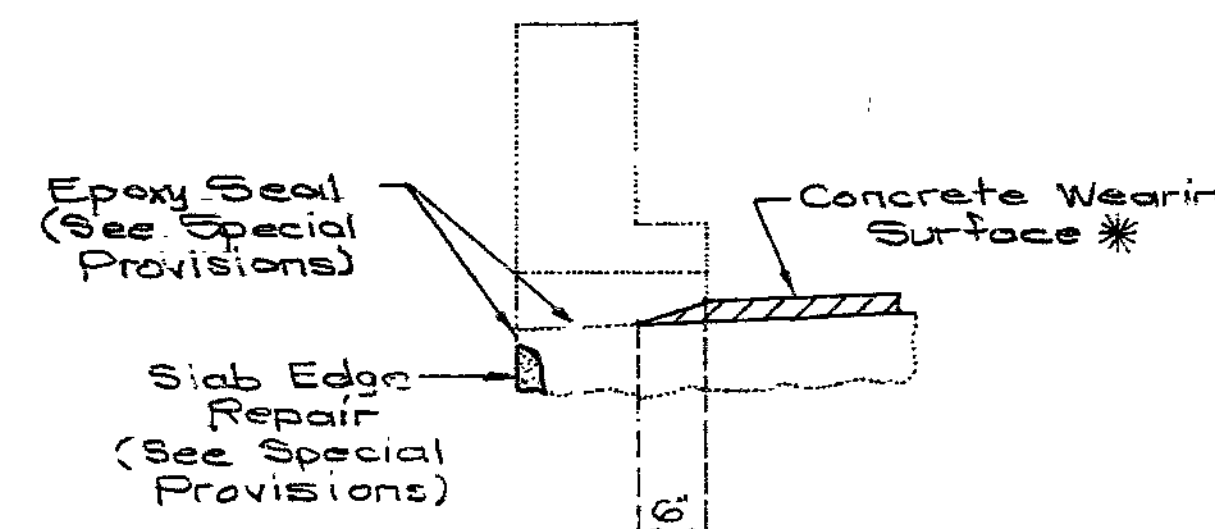
(North Bound Lane shown; South Bound Lane similar)

Note: Any repair in the remainder of the bridge that is within 5'-0" of Zone A shall be completed before removing old concrete in Zones A.
Zones with the same letter designation may be repaired at the same time.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Repairing Concrete Deck (Half-Soling)	Sq. Ft.	230
Concrete Wearing Surface * (See Special Provisions)	Sq. Yd.	1784
Slab Edge Repair	Lin. Ft.	126



HALF-SOLED AREA



TYPICAL SECTION AT CURB SHOWING OUTLET

REPAIRS TO BRIDGE OVER FRONT STREET

STATE ROAD: INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. IR-IRG-435-1(121)

JOB NO. 4-1435-686

JACKSON

STA. 76+83.72 N.B. LANE
STA. 76+71.96 S.B. LANE

RTE. I-435

COUNTY

STD.
STD.
A-1682R

DATE 4/23/86

Sheet No. 1A of 1

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

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

324

STATE	PROJ. NO.	SHEET NO.
MO.		70
Sec./Sur. 25 Twp. 50N Rge. 33W		

GENERAL NOTES:

DESIGN SPECIFICATIONS:
AASHTO - 1996

DESIGN UNIT STRESSES:
Class B1 Concrete (Safety Barrier Curb) $f'c=28$ MPa
Reinforcing Steel (Grade 420) $f_y=420$ MPa

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.

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

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

MAINTAIN TRAFFIC:
See Roadway Plans for traffic control during construction.

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

ROADWAY SURFACING:
Roadway surfacing adjacent to bridge ends to match bridge overlay. (See Rdwy. Plans)

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

ANCHORS:
The contractor shall use one of the resin anchor systems listed in the job special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job special provisions.

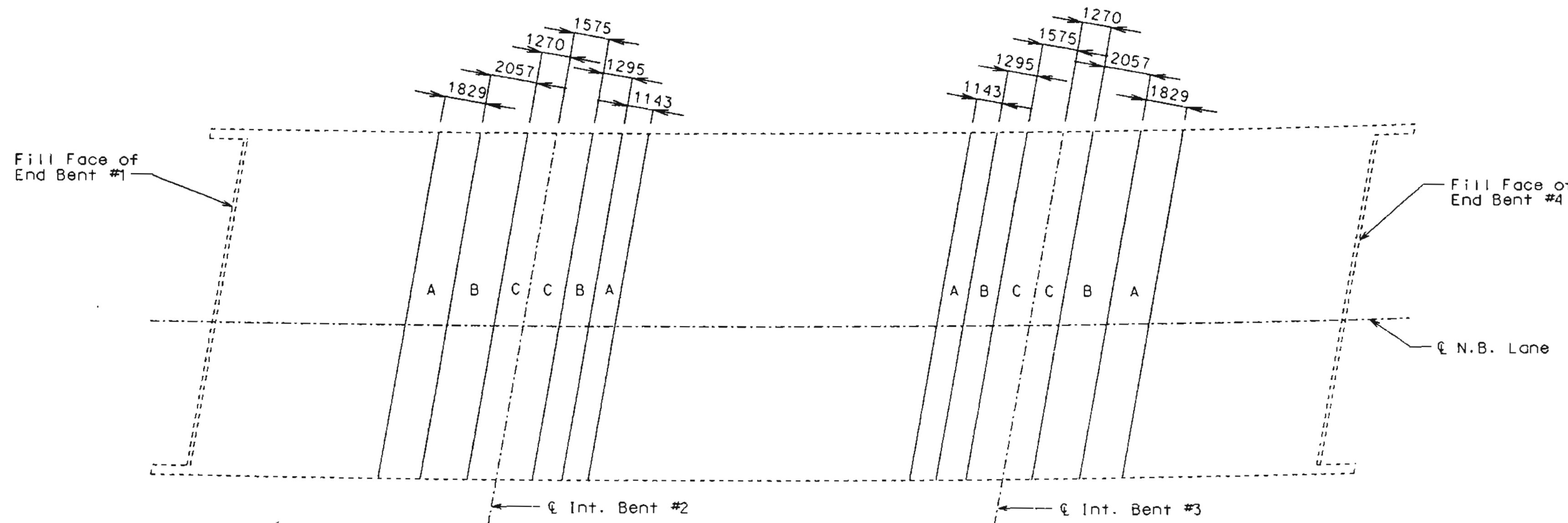
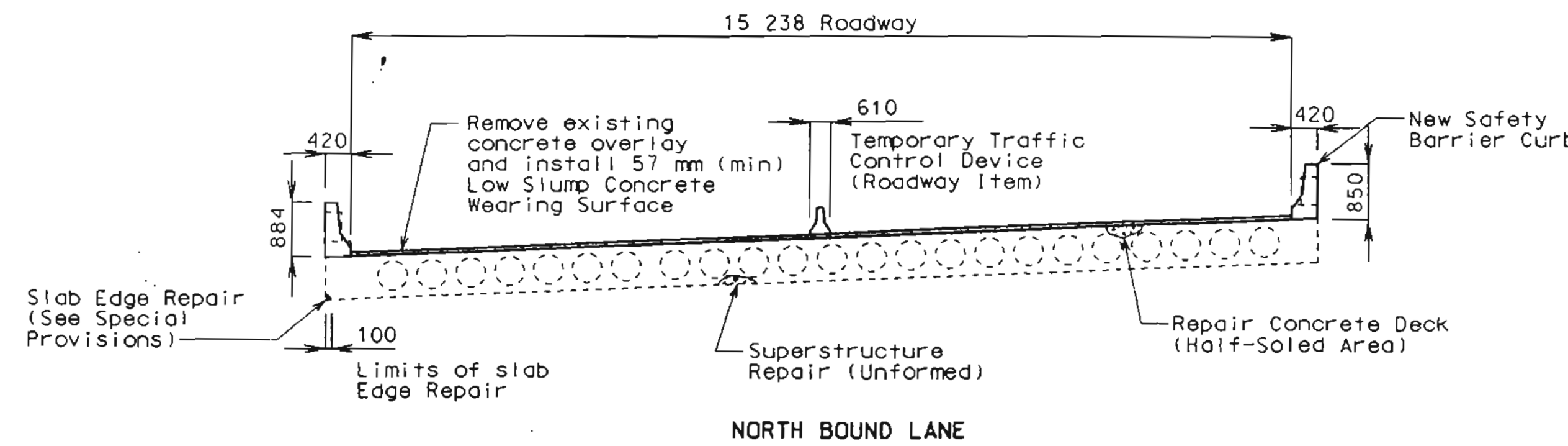
Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for safety barrier curb.

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

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

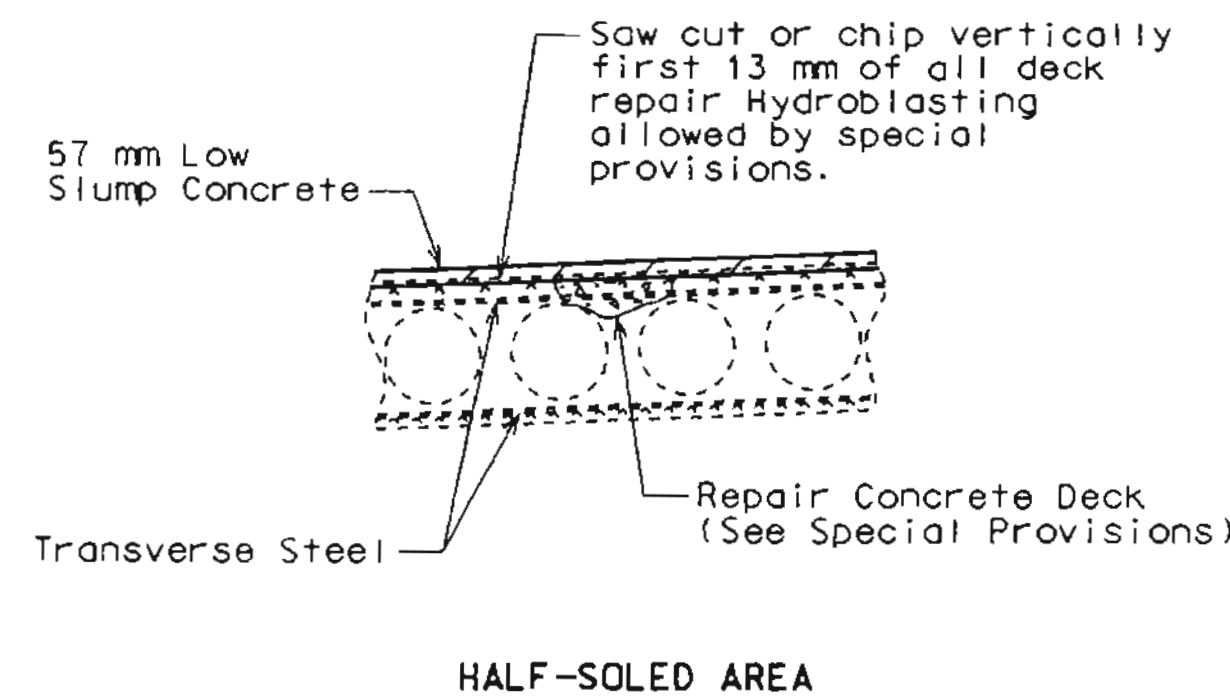
MISCELLANEOUS:
All dimensions are shown in millimeters (mm) unless otherwise specified.

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



PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES

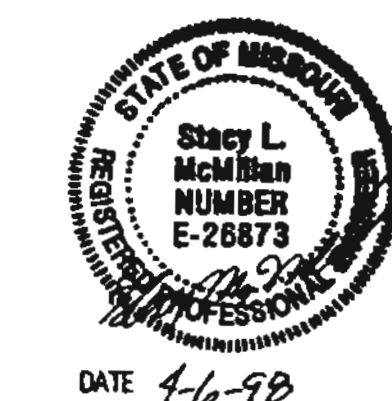
NOTES:
Any repair in the remainder of the bridge that is within 1524 mm of Zones A shall be completed before removing old concrete in Zones A.
Zones with same letter designation may be repaired at the same time.
Sequence for repair: Zones A, Zones B, then Zones C.



HALF-SOLED AREA

ESTIMATED QUANTITIES		
ITEM		TOTAL
Curb Removal (Bridge) - Metric	meter	105
Removal of Low Slump Concrete Wearing Surface-Metric	sq. meter	746
Superstructure Repair (Unformed) - Metric	sq. meter	5
** Safety Barrier Curb - Metric	meter	105
Repairing Concrete Deck (Half Soled) - Metric	sq. meter	40
Slab Edge Repair (Bridge) - Metric	meter	5
Low Slump Concrete Wearing Surface - Metric	sq. meter	746

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



DATE 4-6-98

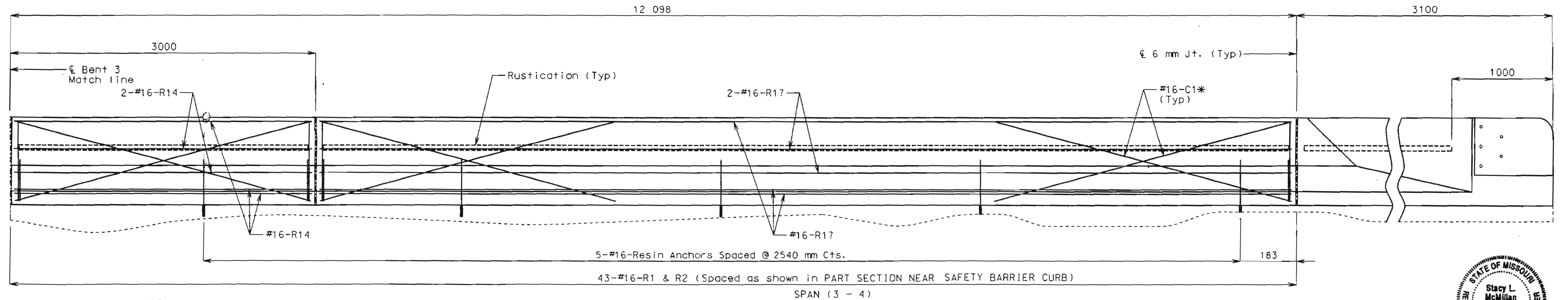
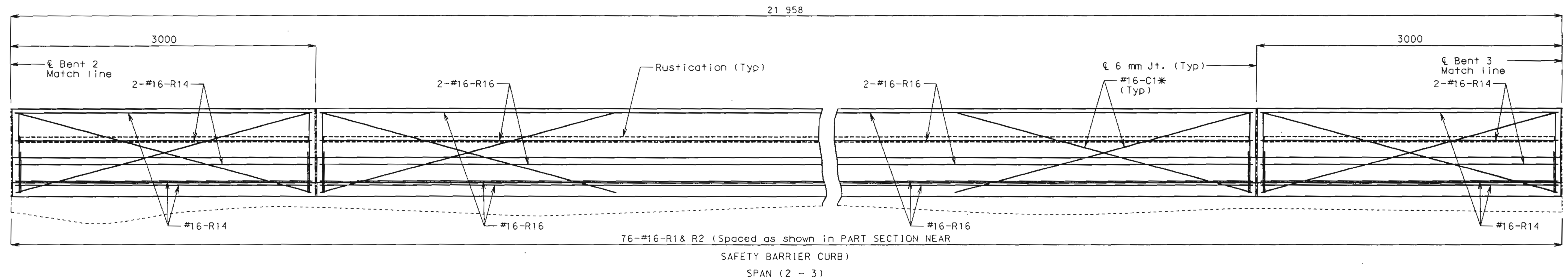
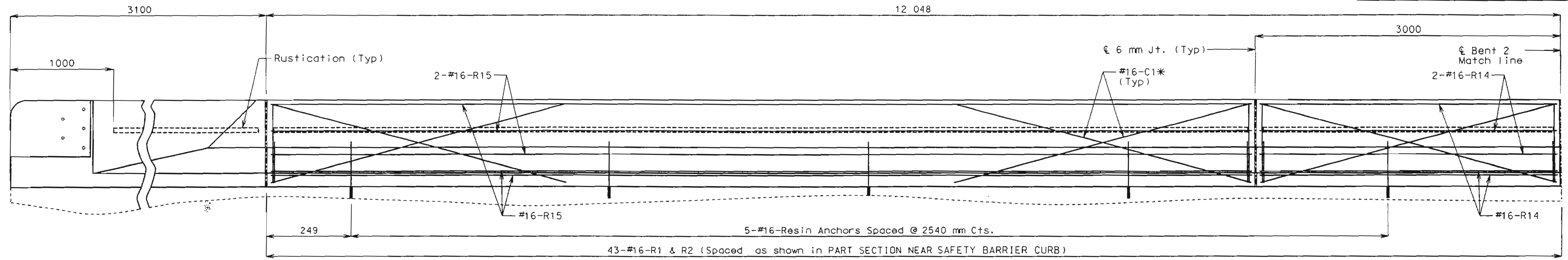
REPAIRS TO
BRIDGE OVER FRONT STREET

STATE ROAD : INTERSTATE ROUTE 435
FROM RTE. 24 TO MISSOURI RIVER
IN KANSAS CITY

PROJECT NO. STA. 2+341.998 (Match Existing)
JOB. NO. J411250 RTE. I-435 NB

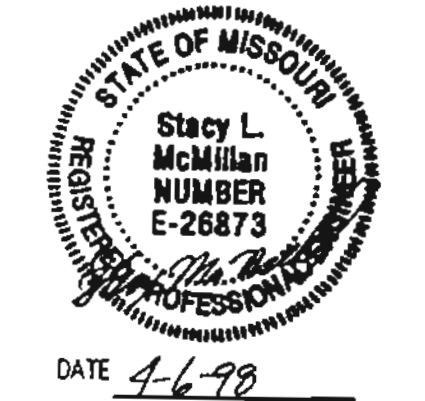
Designed
Detailed FEB. 1998
Checked MAR. 1998

STATE	PROJ. NO.	SHEET NO.
MO.		71



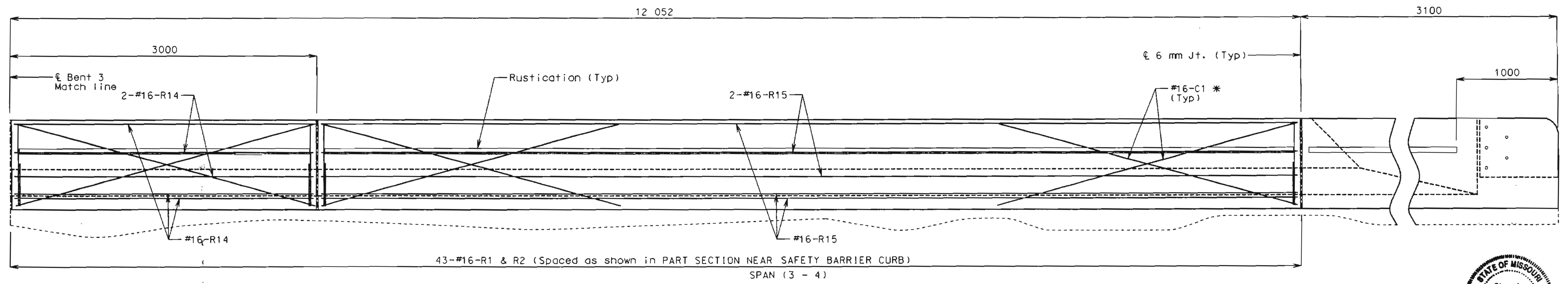
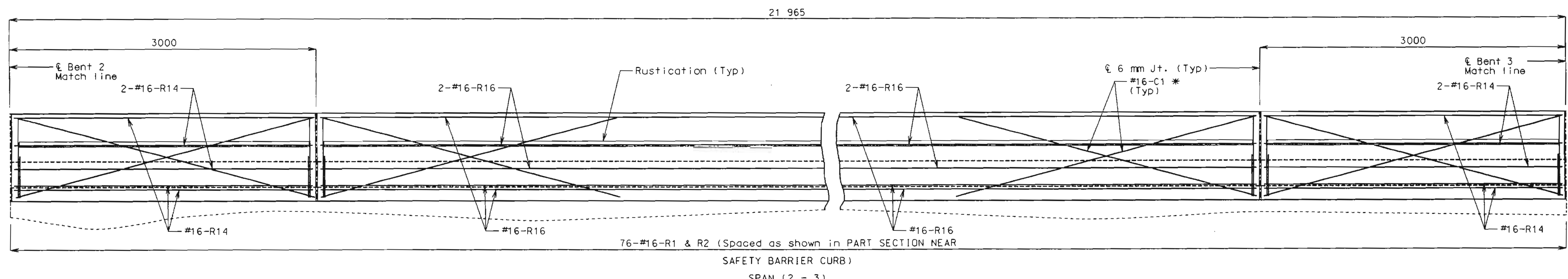
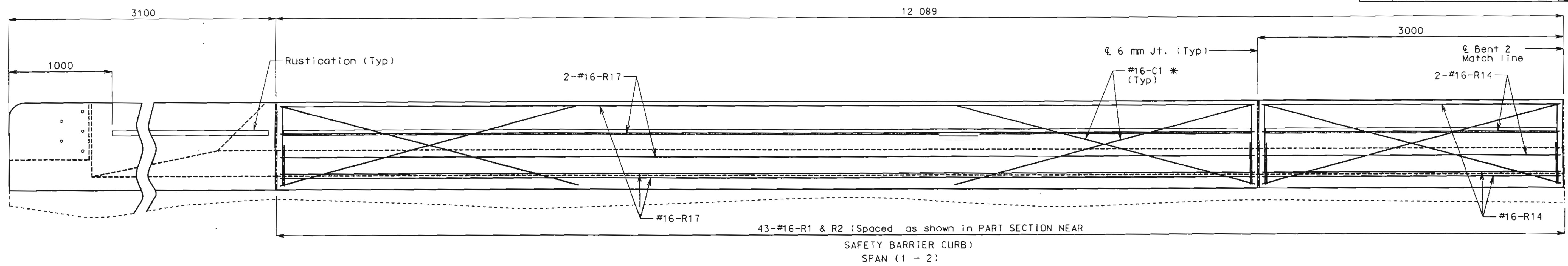
NOTES:
 Longitudinal dimensions shown are horizontal.
 Dimensions are taken along outside edge of slab.
 For details of Safety Barrier Curb see sheets 4 & 5.
 For details of Safety Barrier Curb at End Bents, see sheet 6.

SECTION NEAR LEFT SAFETY BARRIER CURB
 * Slip-form Option Only



Detailed FEB. 1998
 Checked MAR. 1998

STATE	PROJ. NO.	SHEET NO.
MO.		72



NOTES:

Longitudinal dimensions shown are horizontal.

Dimension are taken along outside edge of slab.

For details of Safety Barrier Curb see sheets 4 & 5.

For details of Safety Barrier Curb at End Bents, see sheet 6.



SECTION NEAR RIGHT SAFETY BARRIER CURB
* Slip-form Option Only

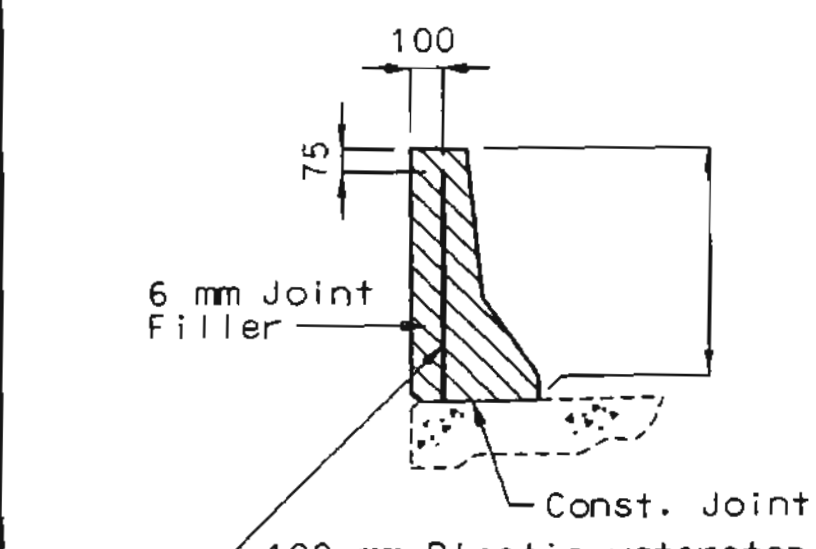
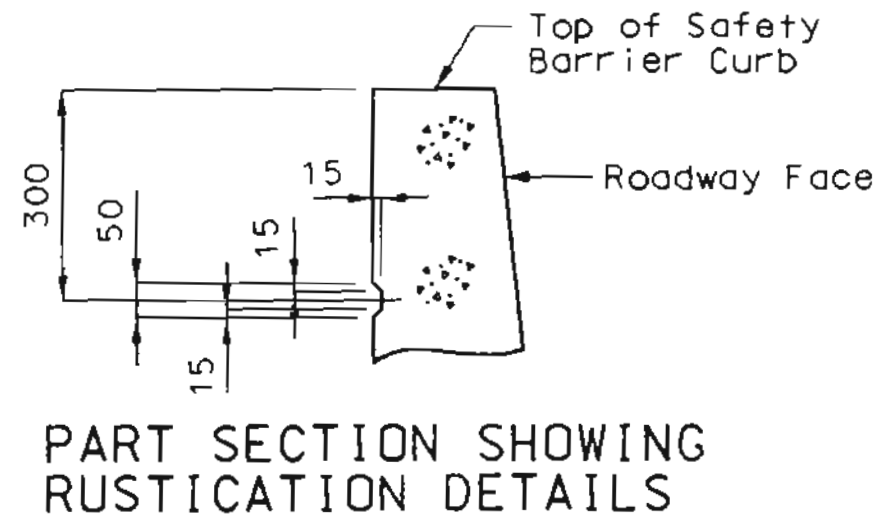
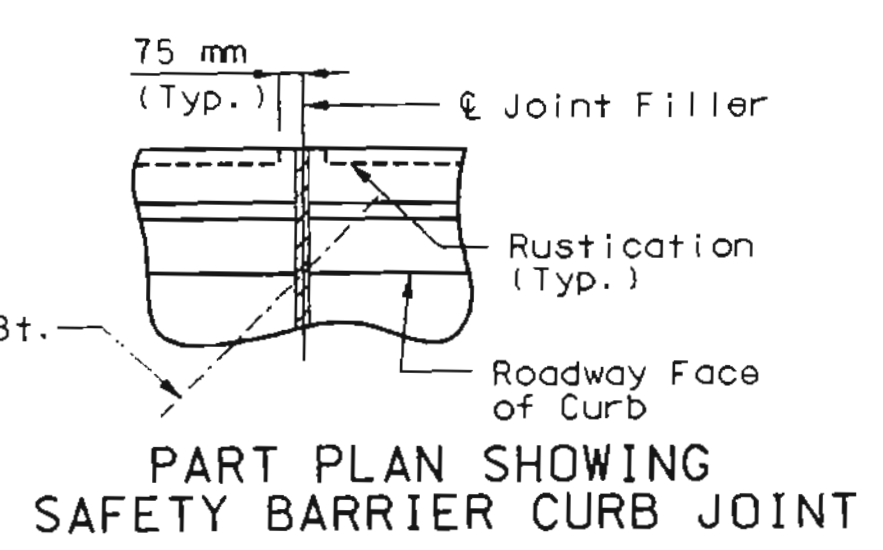
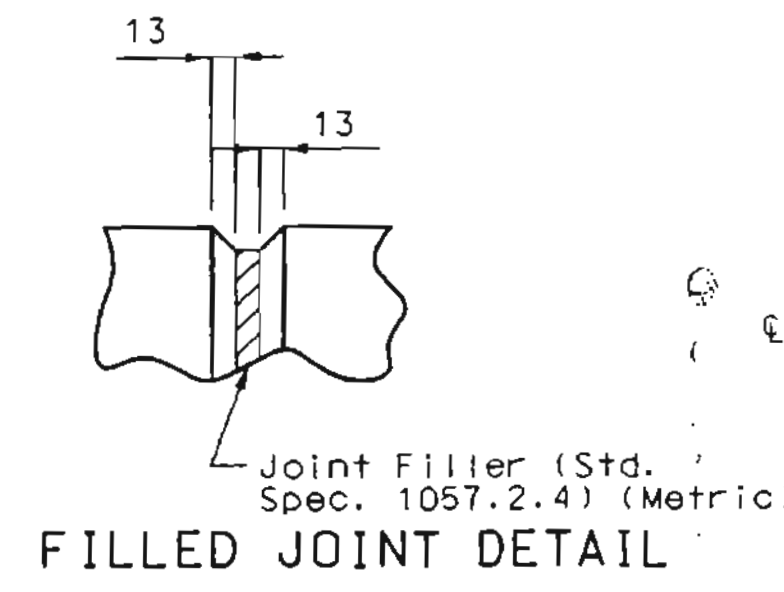
Detailed FEB. 1998
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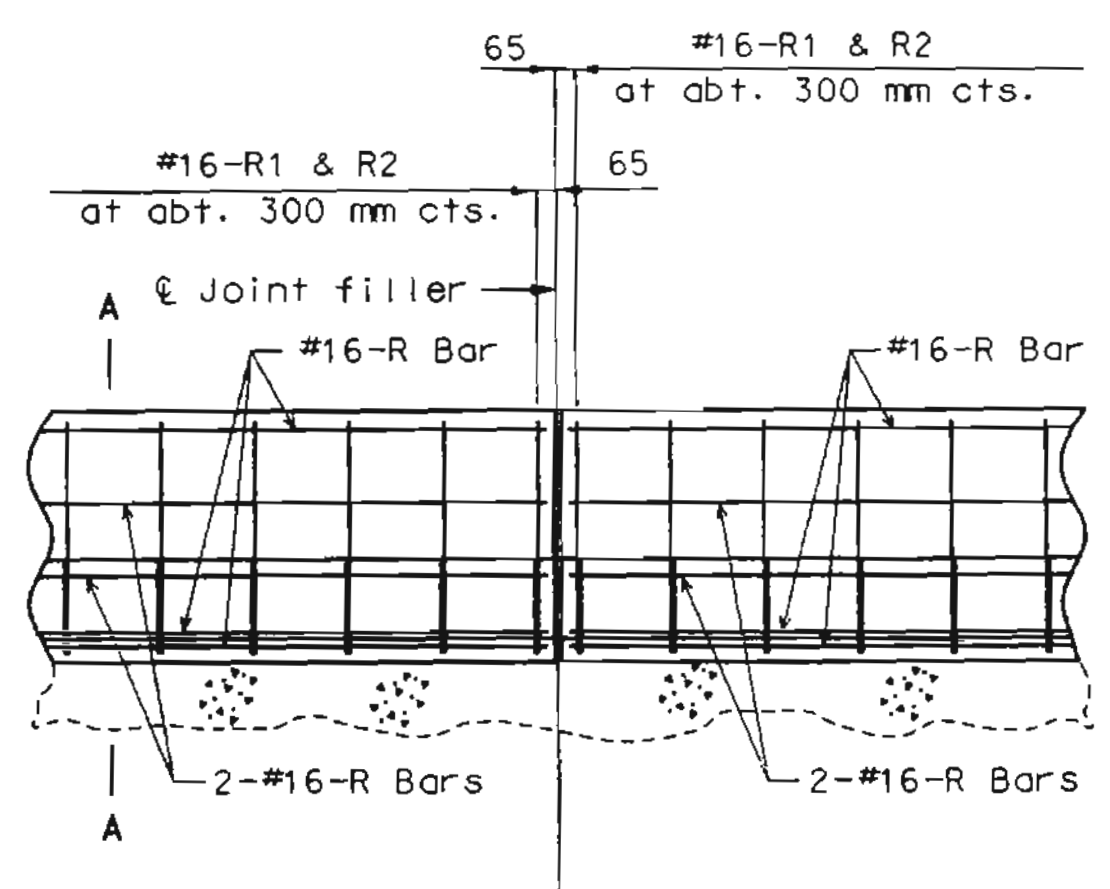
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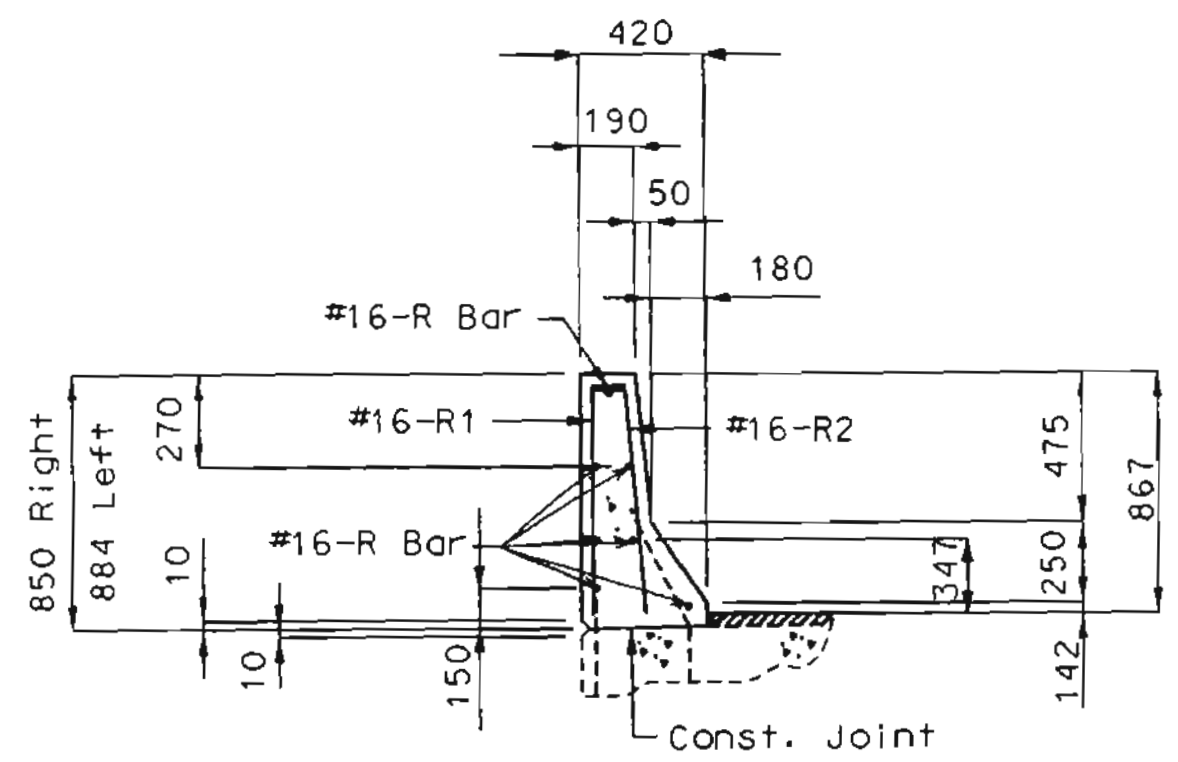


Note:
 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Metric) (Centered on joint)
 Plastic waterstop shall be placed in all safety barrier curb filled joints (except structures with superelevation, use on all lower safety barrier curb joints only).
 Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

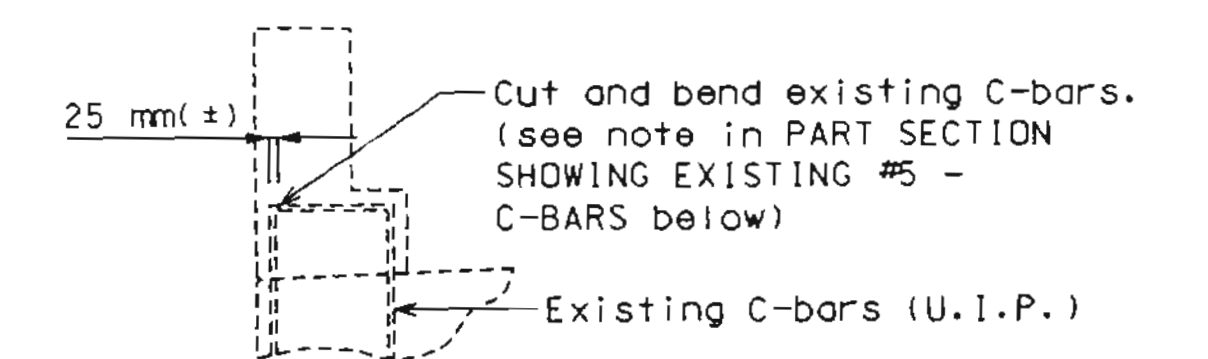


PART SECTION NEAR LEFT SAFETY BARRIER CURB

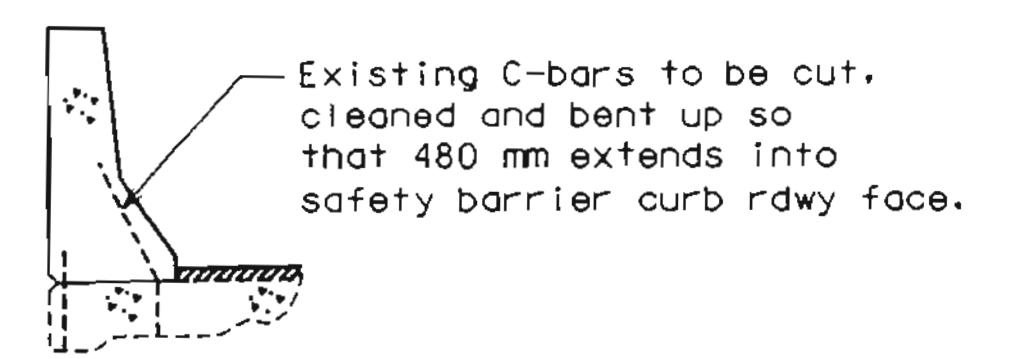


Note:
 Use a minimum lap of 1000 mm for #16 horizontal safety barrier curb bars.
 The cross-sectional area above the slab = 247 835 sq. mm. (left)
 = 240 695 sq. mm. (right)

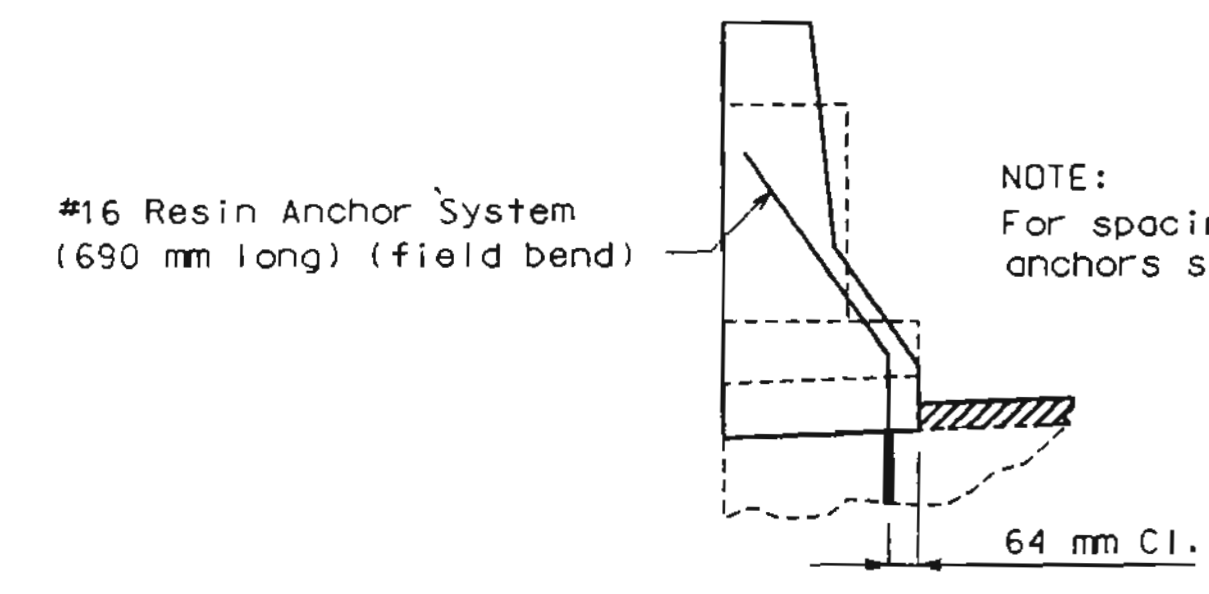
PART SECTION A-A



PART SECTION THRU EXISTING CURB



PART SECTION SHOWING EXISTING #5 - C-BARS

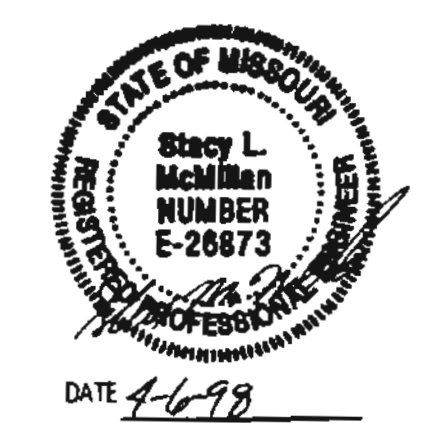


PART SECTION SHOWING RESIN ANCHOR AT EXISTING SLAB DRAIN LOCATIONS

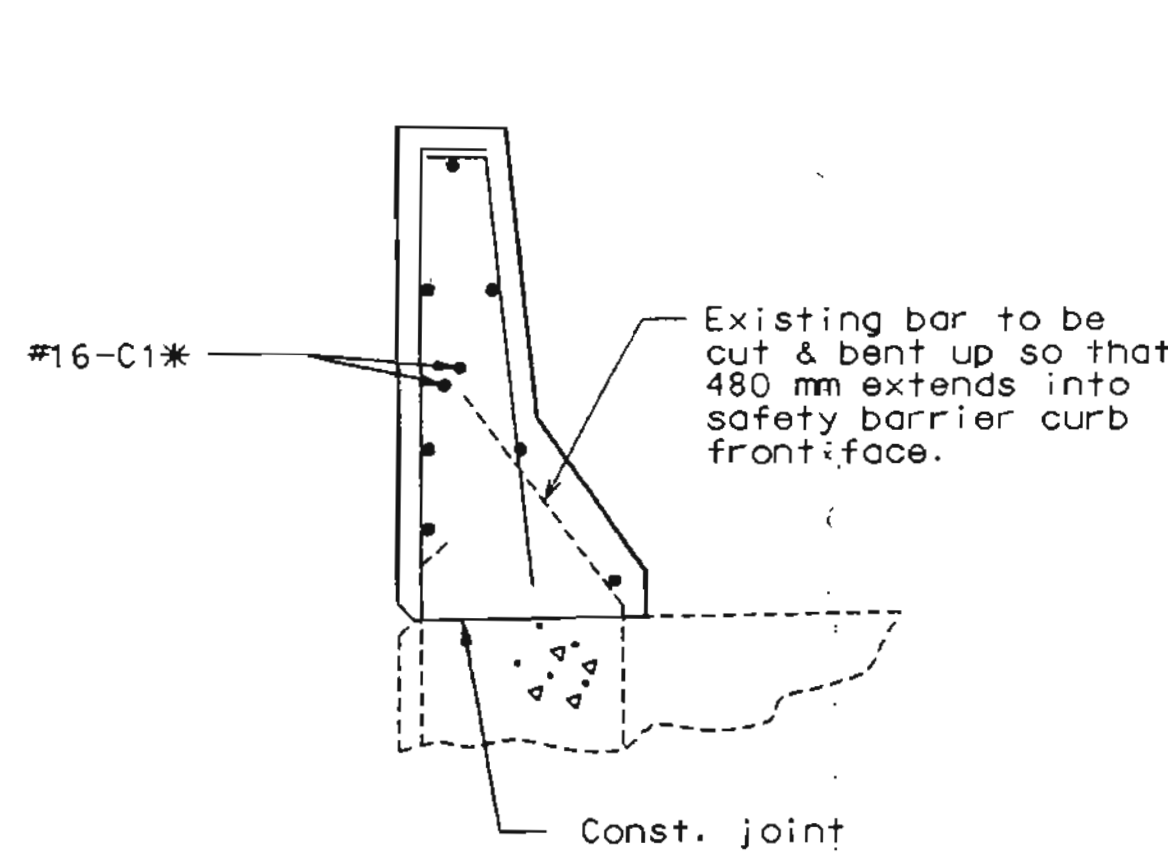
NOTE:
 For spacing of resin anchors see sheet 2.

Note:
 Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.
 All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.
 When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.
 Concrete in the safety barrier curb shall be Class B1
 Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

SAFETY BARRIER CURB
 (Left barrier curb shown, right barrier curb similar)

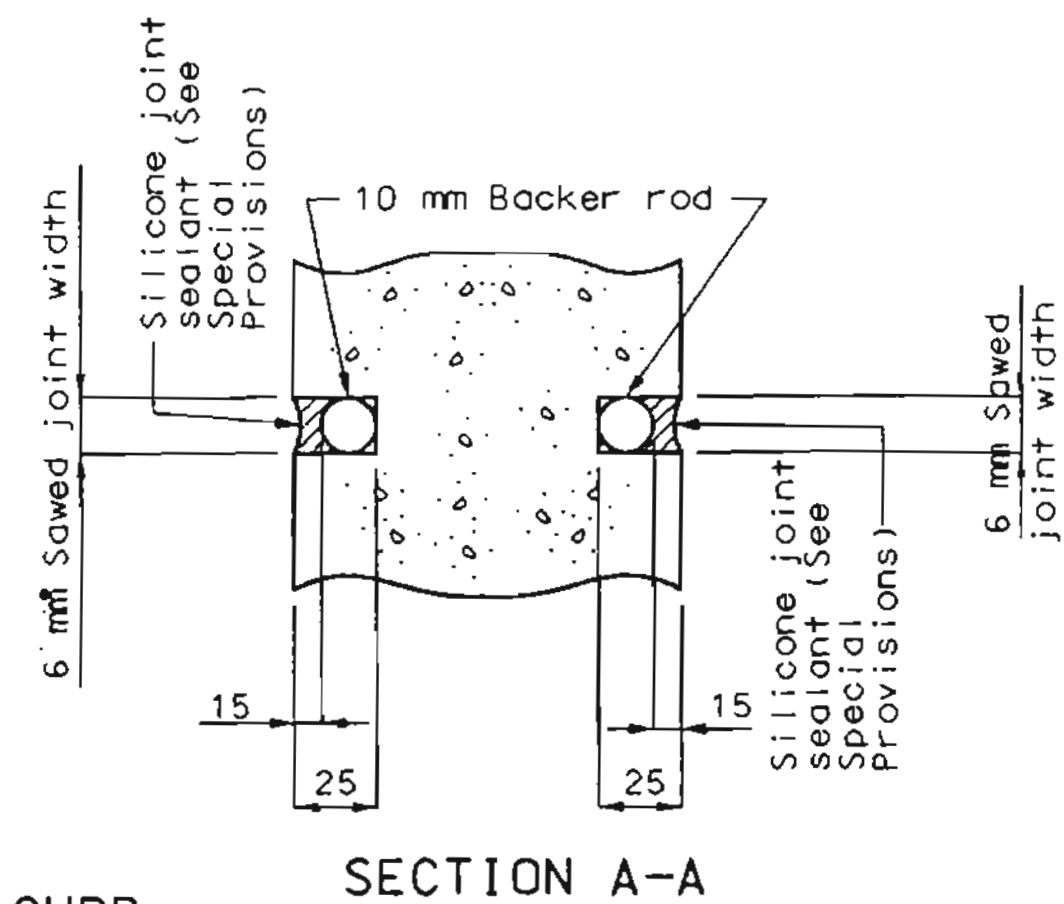


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PART SECTION THRU SAFETY BARRIER CURB SHOWING C-BARS

Note: * Each side of joint location.

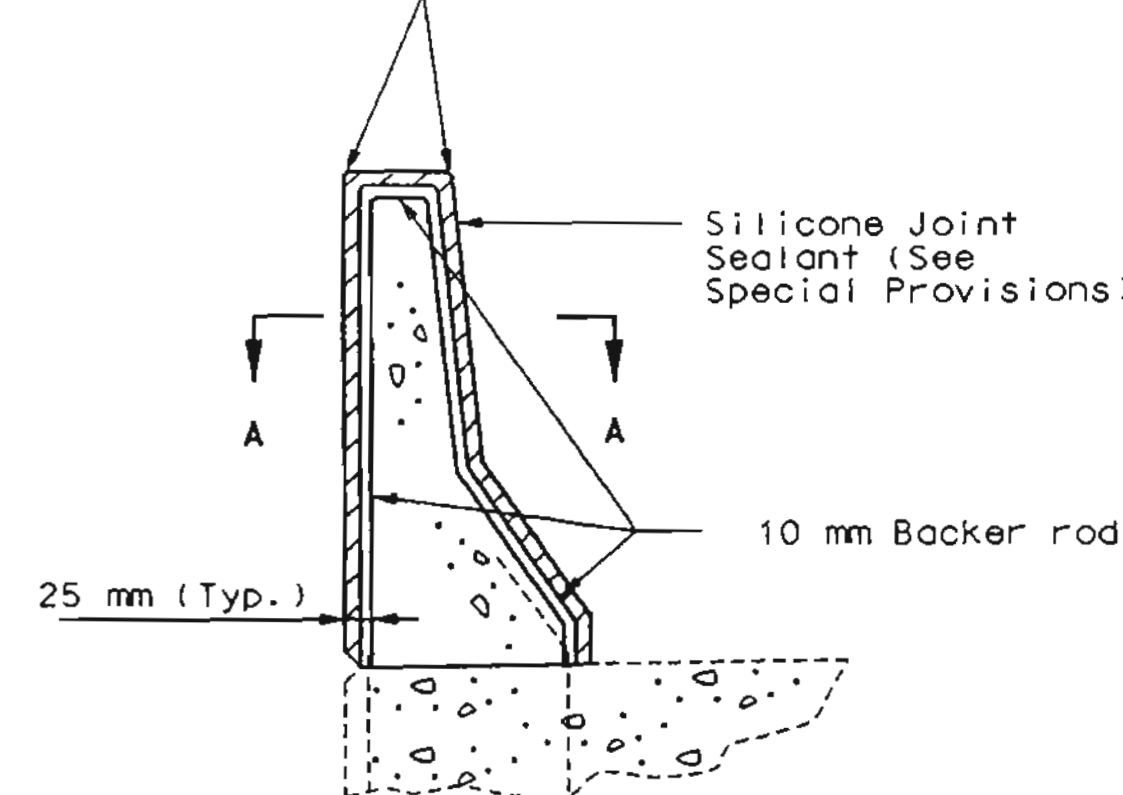


SECTION A-A

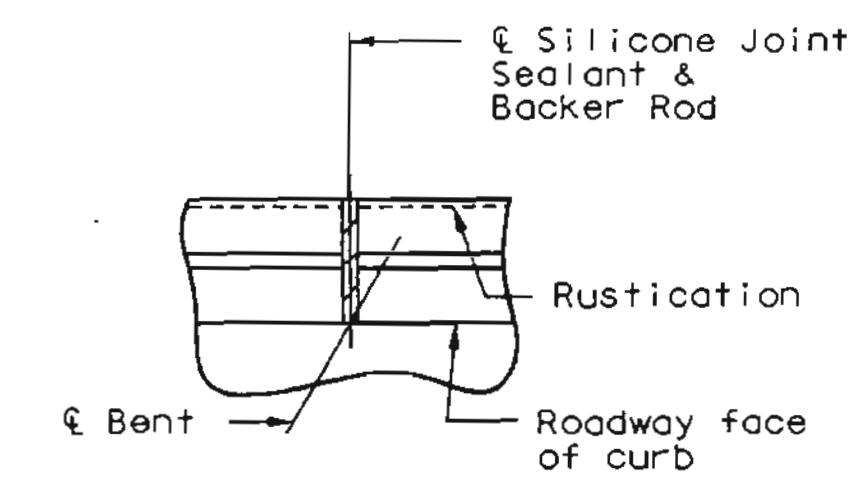
Note:

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

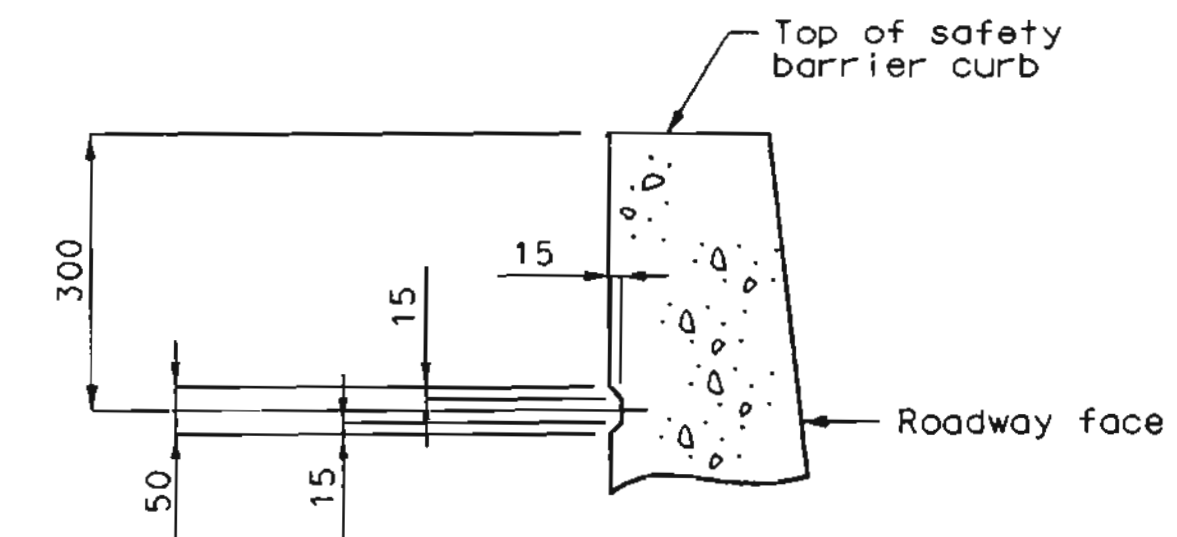
10 mm Bevel, 15 mm Radius or alternate as approved by the engineer



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

Note:

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

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

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

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

Note:

Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler. Plastic waterstop shall not be used with slip-form option.

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

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

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Left barrier curb shown; right barrier curb similar)



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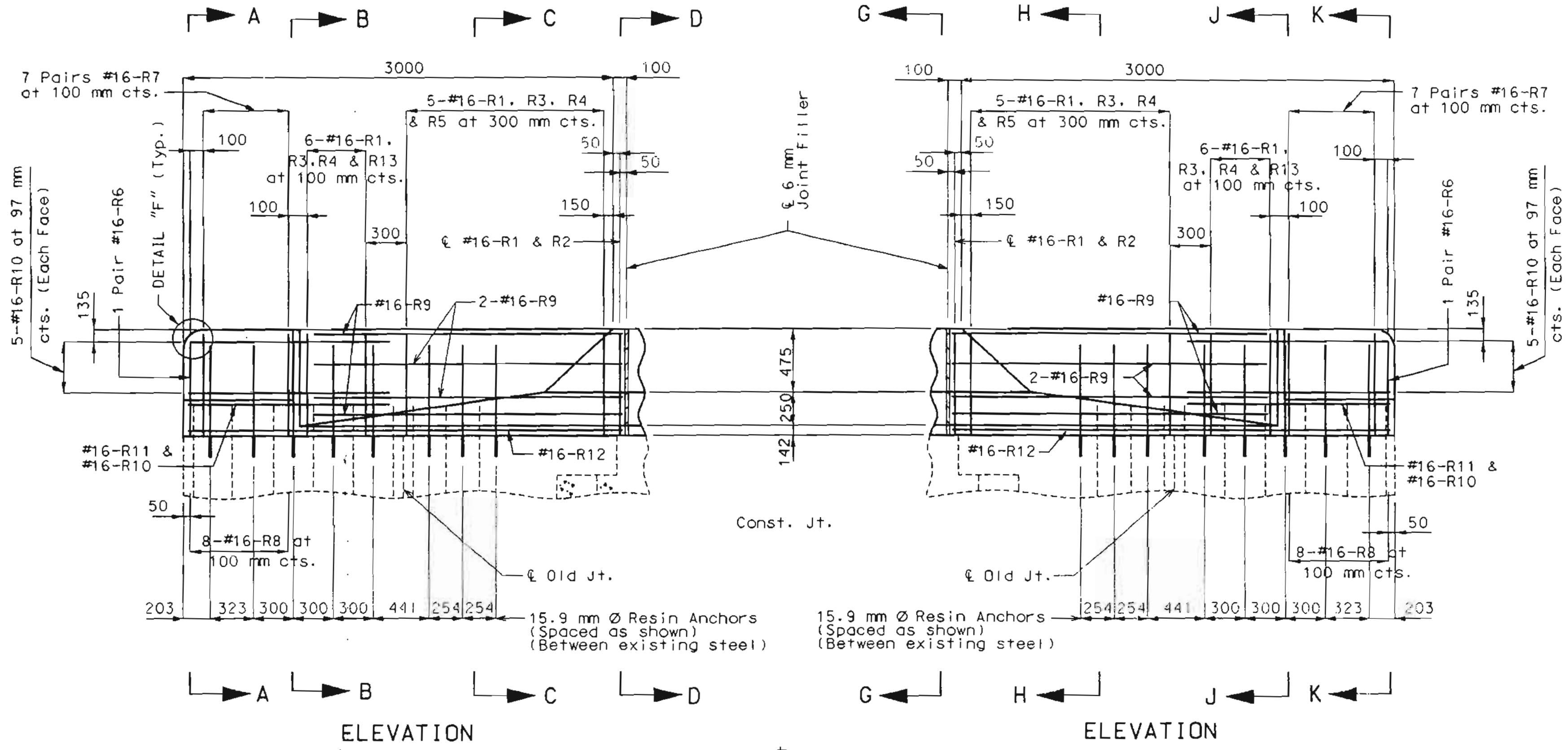
Detailed FEB. 1998
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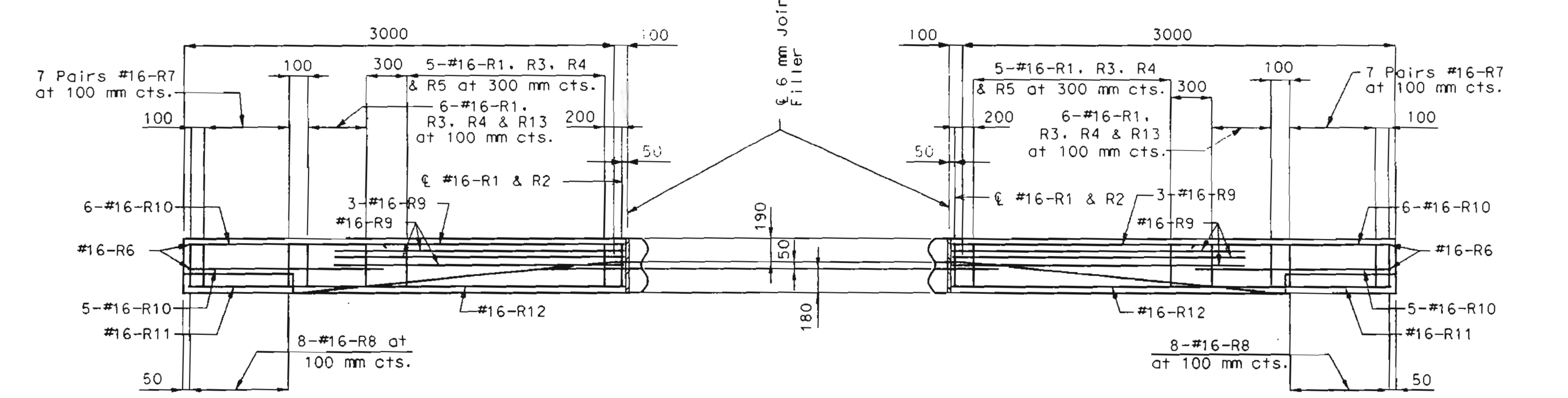
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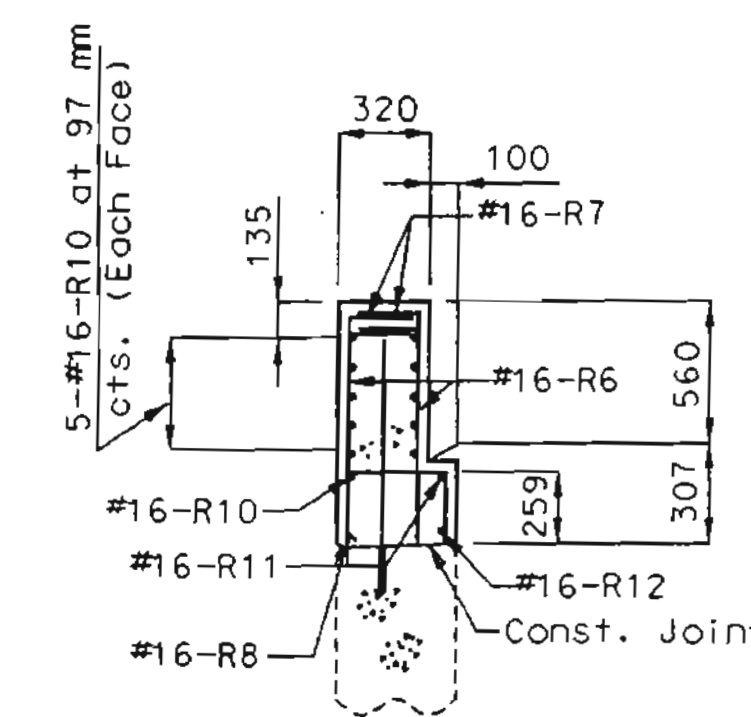
ELEVATION

ELEVATION

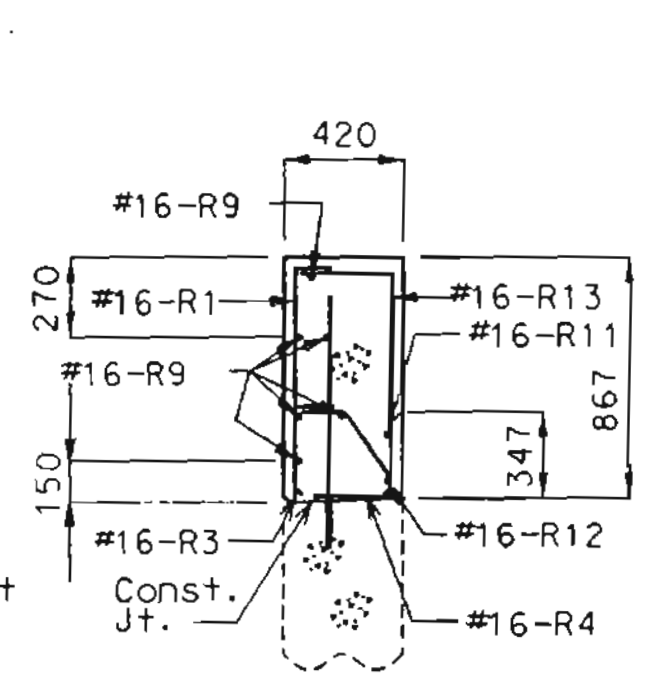


PLAN

PLAN

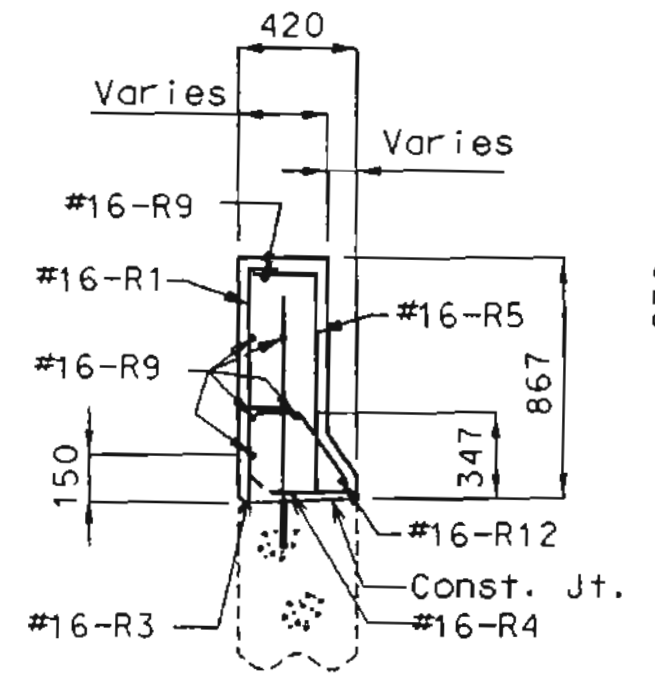


PART SECTION A-A

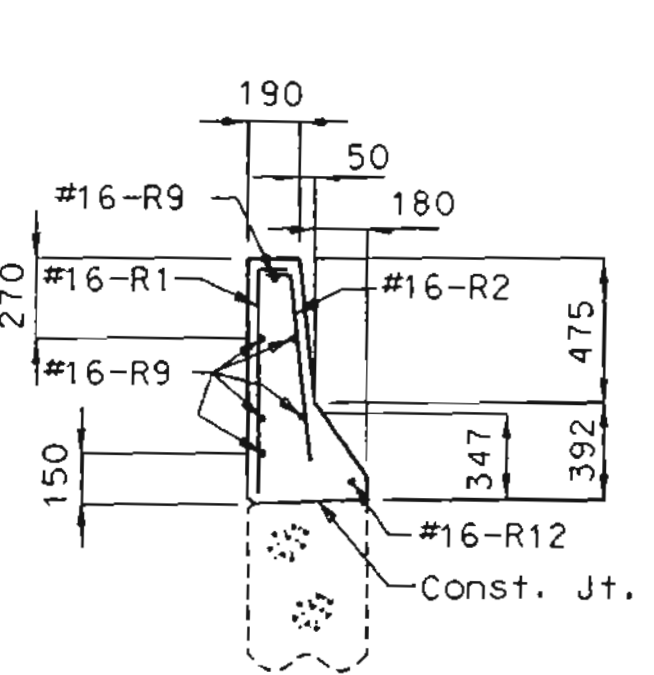


PART SECTION B-B

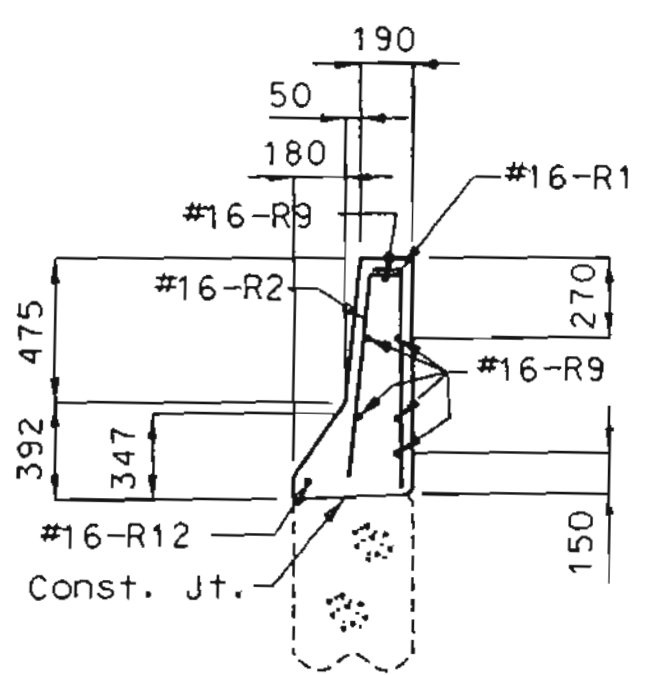
Note: #16-R10 bars not shown for clarity.



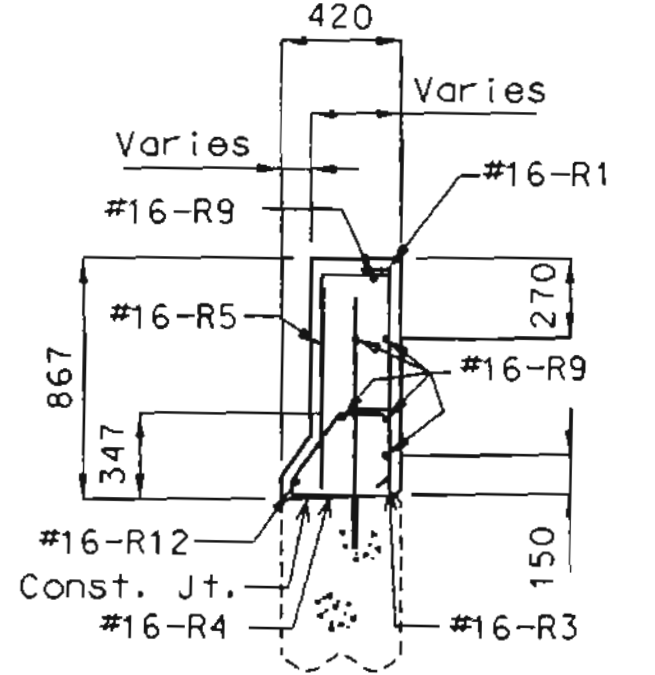
PART SECTION C-C



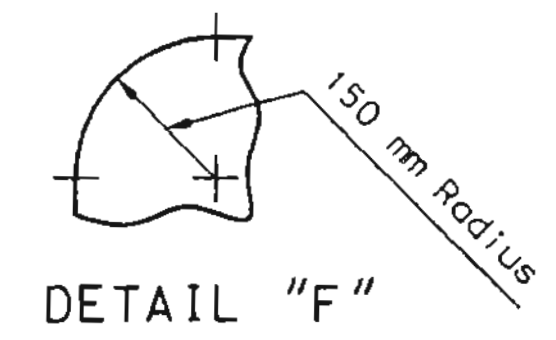
PART SECTION D-D



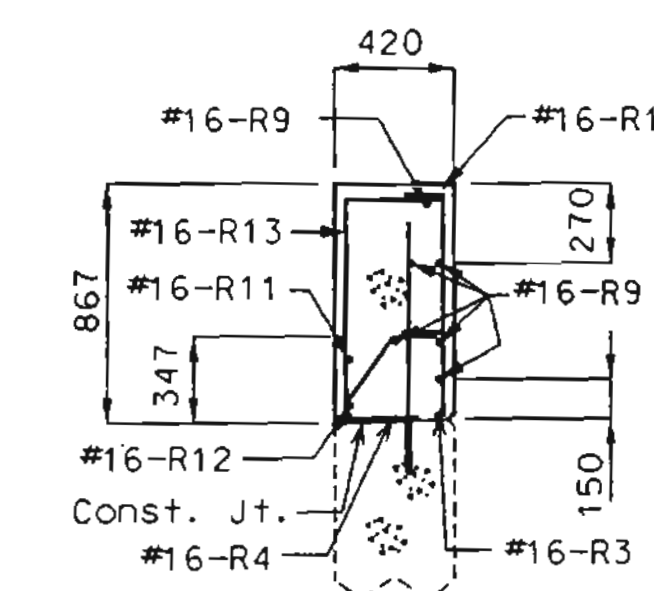
PART SECTION G-G



PART SECTION H-H

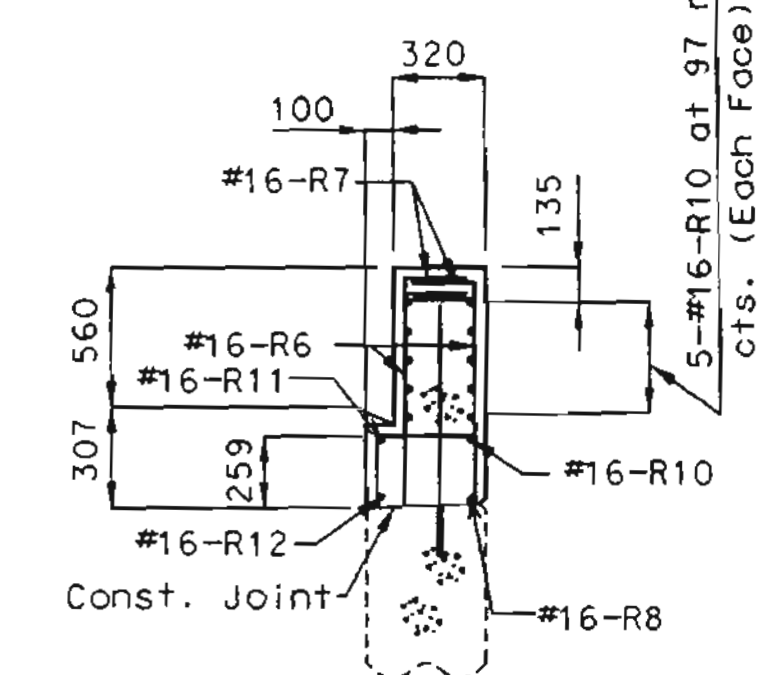


DETAIL "F"

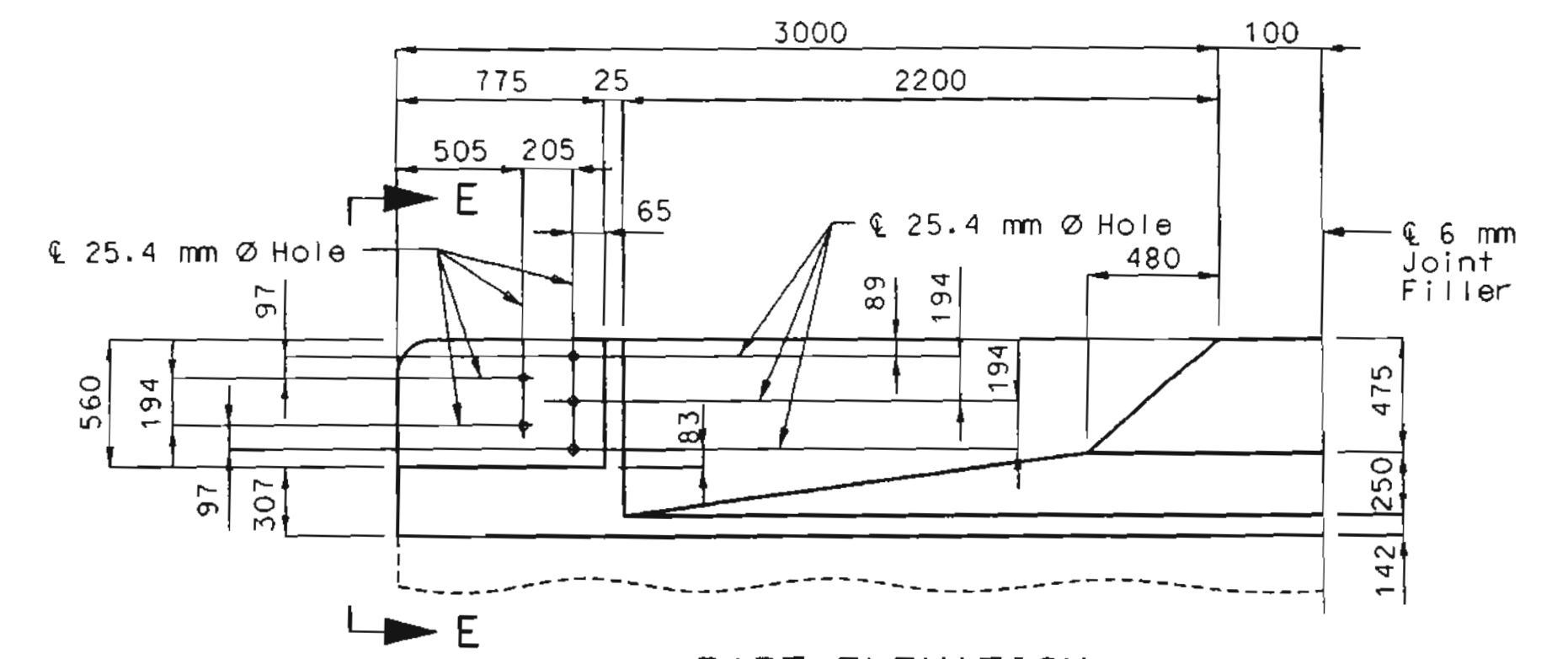


PART SECTION J-J

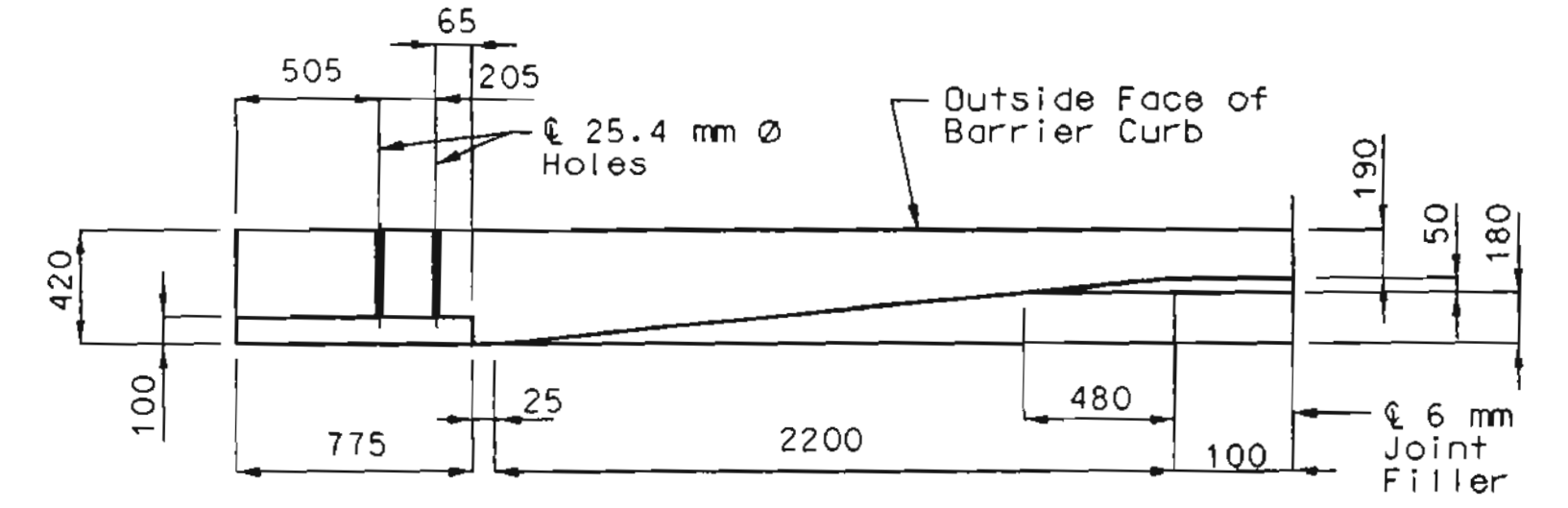
Note: #16-R10 bars not shown for clarity.



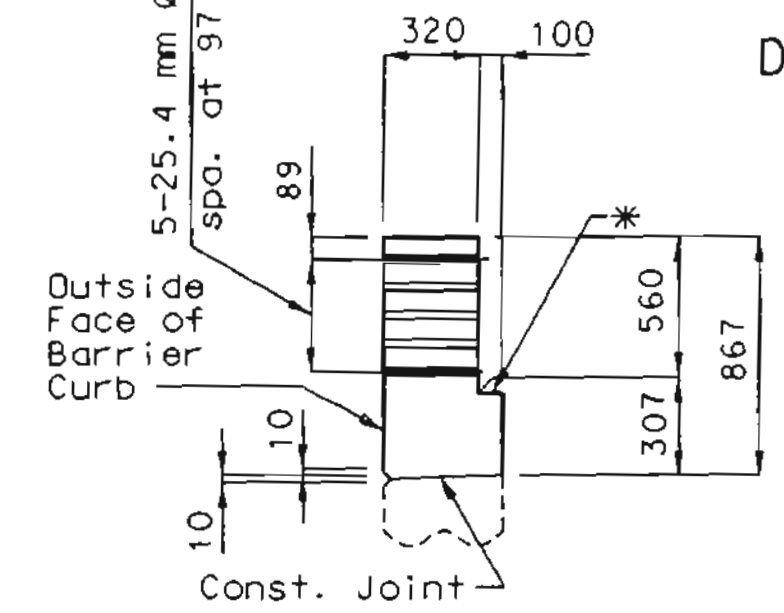
PART SECTION K-K



PART ELEVATION

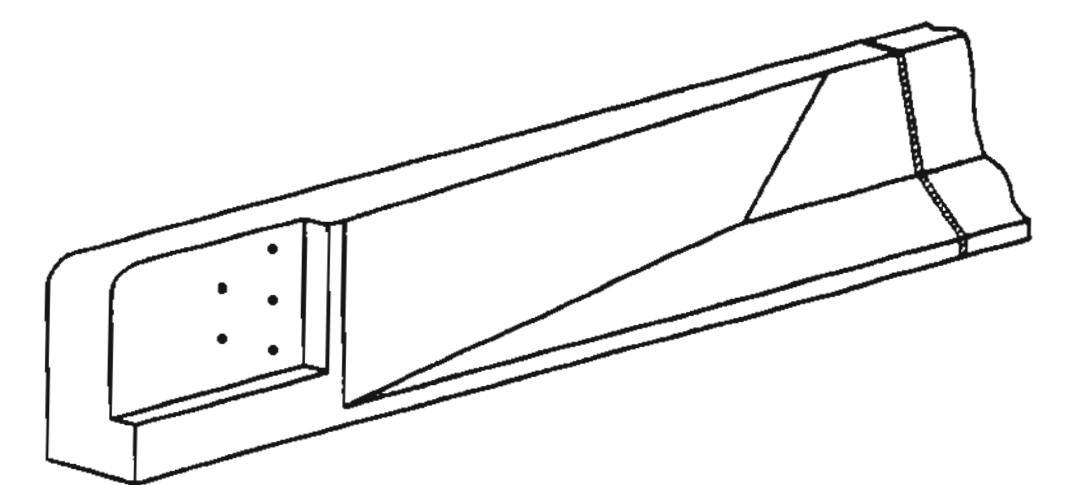


PART PLAN
DETAILS OF GUARD RAIL ATTACHMENT



PART ELEVATION E-E

* Slope 6 mm toward roadway



AUXILIARY VIEW OF SAFETY BARRIER CURB

DETAILS OF SAFETY BARRIER CURB AT END BENTS

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

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

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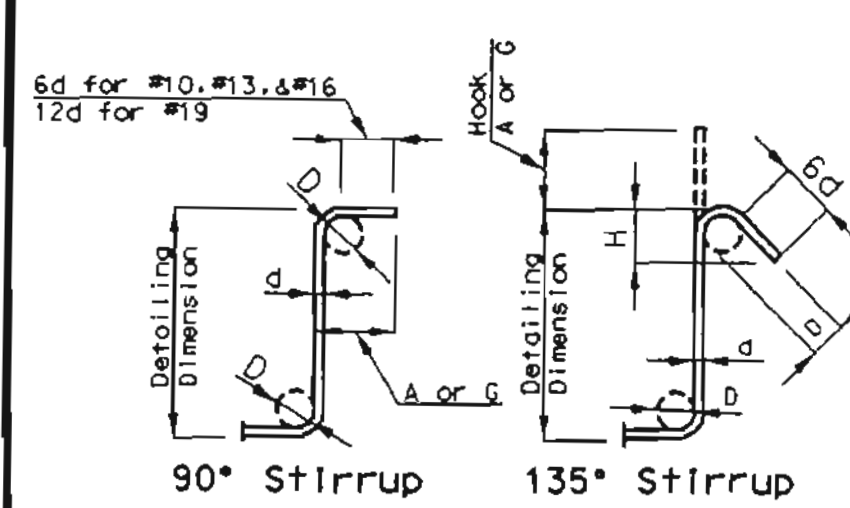
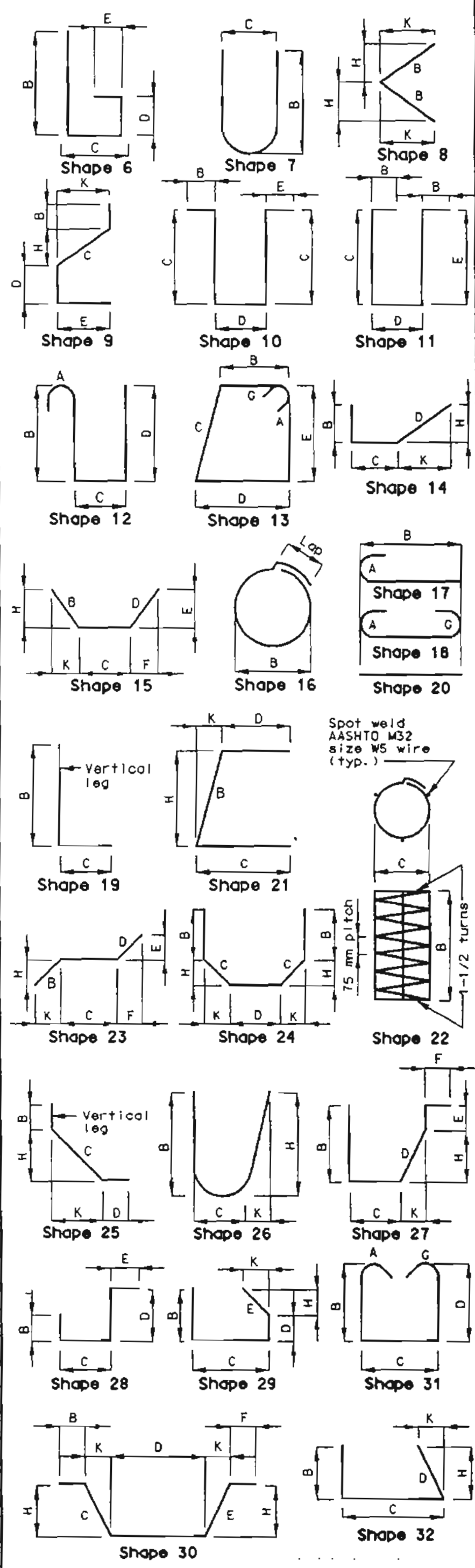
BILL OF REINFORCING STEEL

BILL OF REINFORCING STEEL

State MD Proj. No. 76 Sheet No. 76

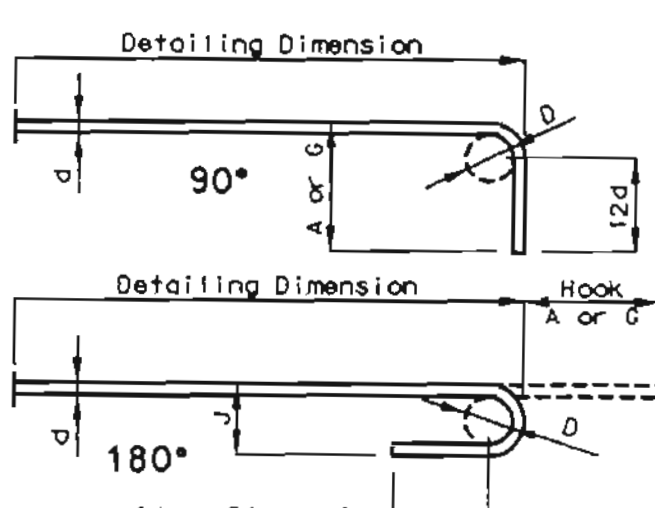
No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K			
Size	Mark								mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
		BAR. CURB																
40	16 C1	S/F OPTION	E 20						3027							3025	3025	188
372	16 R1	BAR. CURB	E 19 S						775	100						875	840	485
328	16 R2	BAR. CURB	E 15 S						780	100				775	75	880	850	433
44	16 R3	BAR. CURB	E 19 S						295	150						445	410	28
44	16 R4	BAR. CURB	E 27 S						300	90	270	150				810	760	52
20	16 R5	BAR. CURB	E 19 S	V			4		775	240						1015	980	
		INCREMENT = 35 MM							775	110						885	850	28
8	16 R6	BAR. CURB	E 19 S						715	230						945	910	11
56	16 R7	BAR. CURB	E 19 S						775	230						1005	970	84
32	16 R8	BAR. CURB	E 10 S							220	330					770	705	35
24	16 R9	BAR. CURB	E 20						2225							2225	2225	83
44	16 R10	BAR. CURB	E 20						1525							1525	1525	104
4	16 R11	BAR. CURB	E 20						990							990	990	6
4	16 R12	BAR. CURB	E 20						3025							3025	3025	19
24	16 R13	BAR. CURB	E 19 S						775	330						1105	1070	40
58	16 R14	BAR. CURB	E 20						2220							2920	2920	263
14	16 R15	BAR. CURB	E 20						8975							8975	8975	195
28	16 R16	BAR. CURB	E 20						8480							8480	8480	369
14	16 R17	BAR. CURB	E 20						9020							9020	9020	196

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			
Size	Mark								mm	mm	mm	mm	mm	mm	mm	mm	kg	



STIRRUP HOOK DIMENSIONS (mm)
Grades 300 & 420 MPa

Bar Size	0	90° Hook		135° Hook	
		Hook A or G	Hook A or G	Hook A or G	Approx. H
#13	50	115	115	80	80
#16	65	155	140	95	
#19	115	305	205	115	

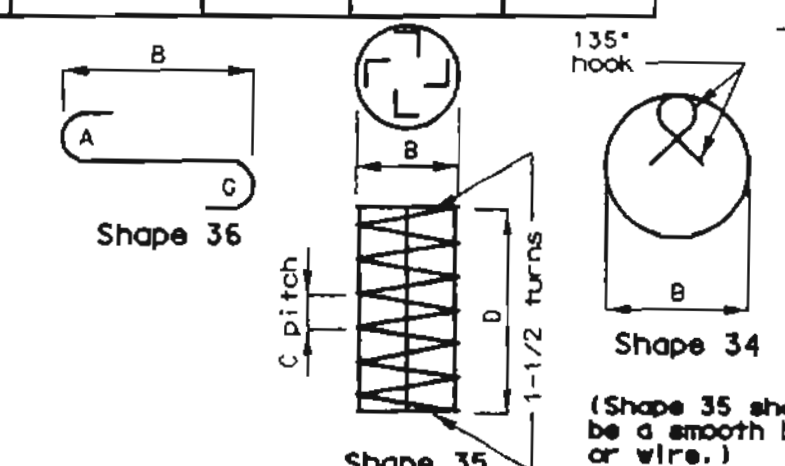


END HOOK DIMENSIONS (mm)
All Grades

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	

Two additional #16-R14 are included in the bar bill for testing.

Notes:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = bar dimensions vary in equal increments between dimensions shown on this line and the following line.
No. Ea. = number of bars of each length
Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricator's use (nearest 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
Payweights are based on actual lengths.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa



BENDING DIAGRAMS

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Sec./Sur. 25 Twp. 50 N Rge. 33 W		

GENERAL NOTES:

DESIGN SPECIFICATIONS:
AASHTO - 1996

DESIGN UNIT STRESSES:
Class B1 Concrete (Safety Barrier Curb) $f'c=28$ MPa
Reinforcing Steel (Grade 420) $f_y=420$ MPa

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.

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

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

MAINTAIN TRAFFIC:
See Roadway Plans for traffic control during construction.

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

ROADWAY SURFACING:
Roadway surfacing adjacent to bridge ends to match bridge overlay. (See Rdwy. Plans)

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

ANCHORS:
The contractor shall use one of the resin anchor systems listed in the job special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job special provisions.

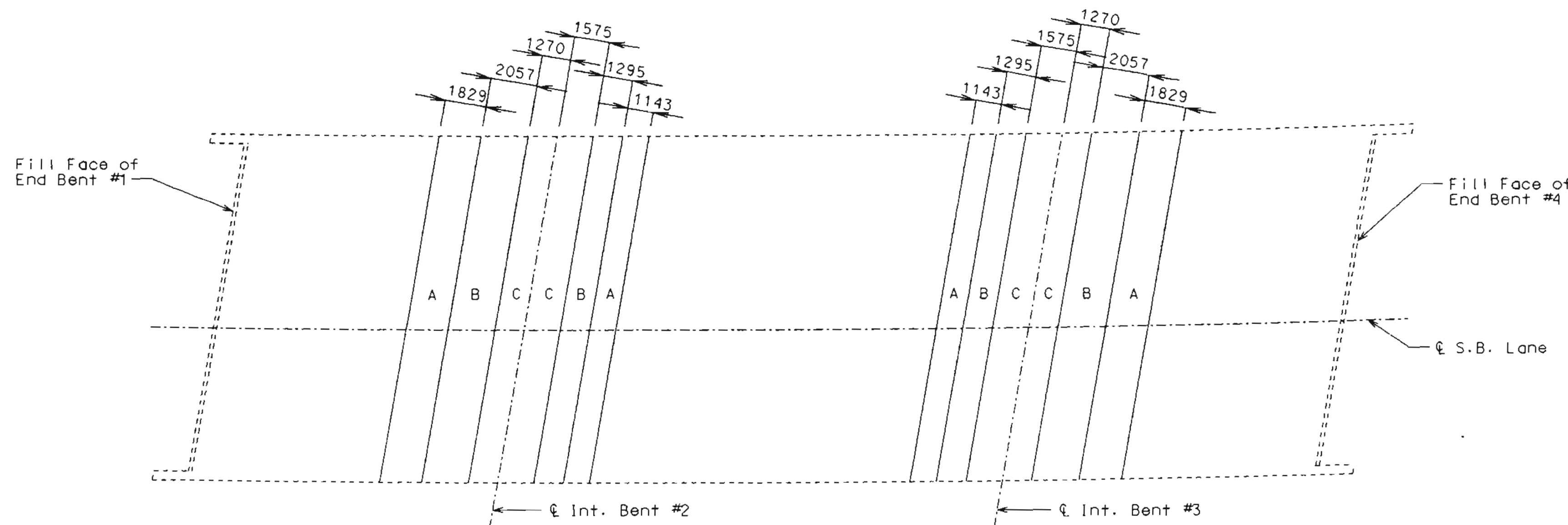
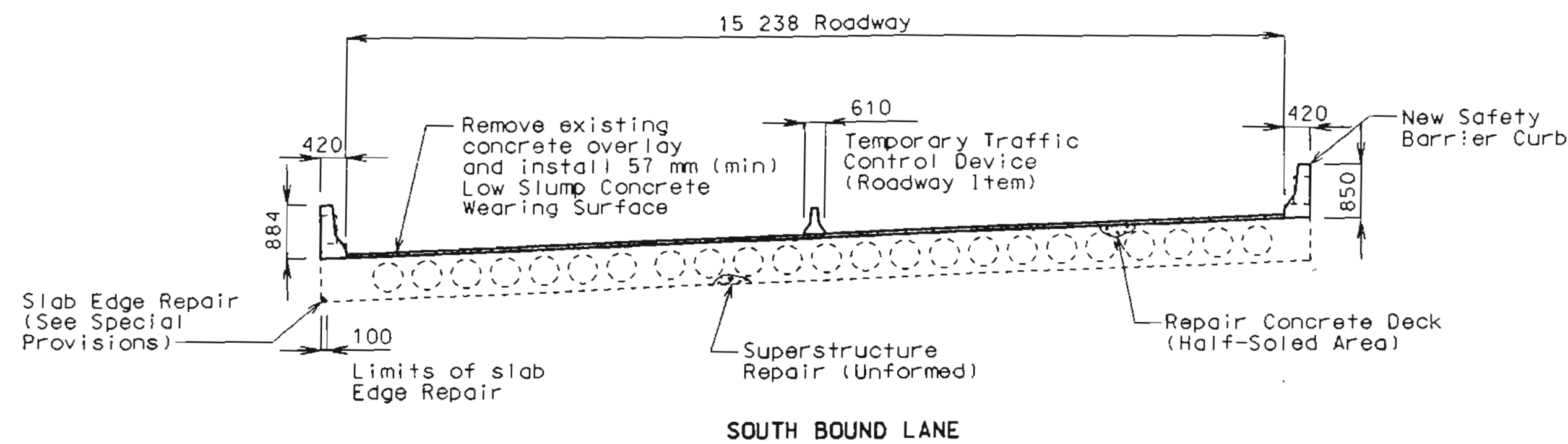
Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for safety barrier curb.

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

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

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

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

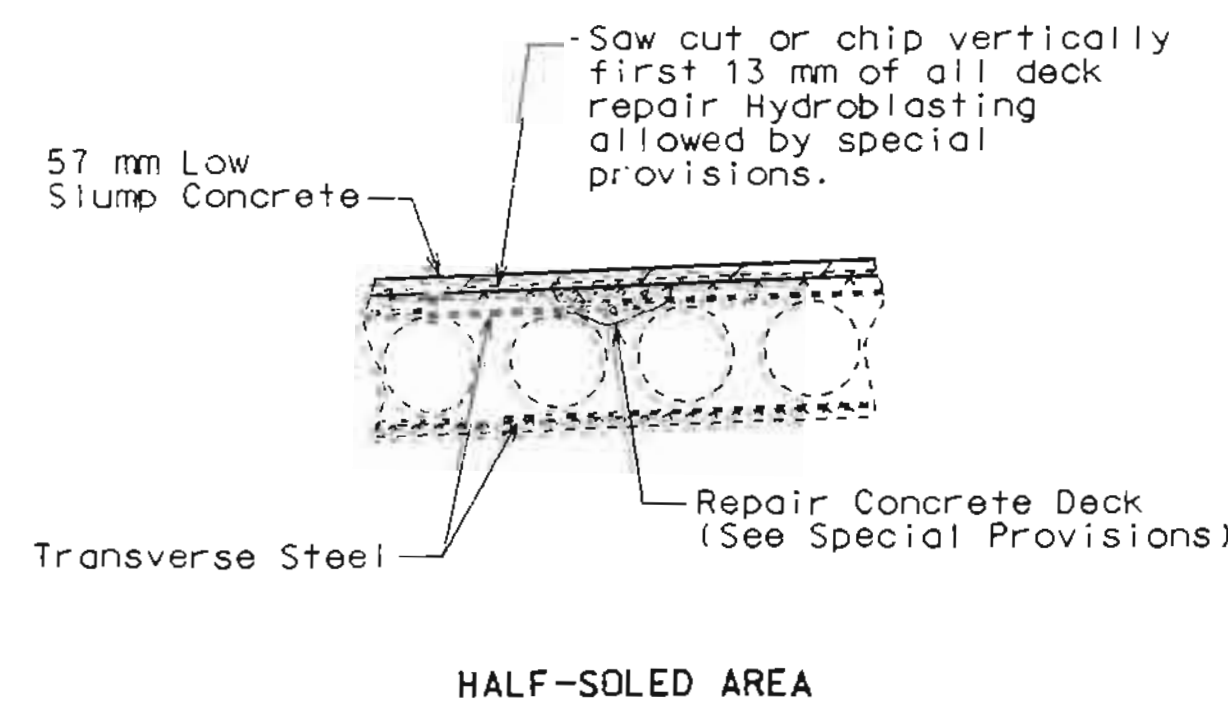


PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES

NOTES:
Any repair in the remainder of the bridge that is within 1524 mm of Zones A shall be completed before removing old concrete in Zones A.
Zones with same letter designation may be repaired at the same time.
Sequence for repair: Zones A, Zones B, then Zones C.

ESTIMATED QUANTITIES		
ITEM		TOTAL
Curb Removal (Bridges) - Metric	meter	105
Removal of Low Slump Concrete Wearing Surface-Metric	sq. meter	746
Superstructure Repair (Unformed) - Metric	sq. meter	1
* Safety Barrier Curb - Metric	meter	105
Repairing Concrete Deck (Half Soled) - Metric	sq. meter	40
Slab Edge Repair (Bridges) - Metric	meter	3
Low Slump Concrete Wearing Surface - Metric	sq. meter	746

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



REPAIRS TO
BRIDGE OVER FRONT STREET

STATE ROAD : INTERSTATE ROUTE 435
FROM RTE. 24 TO MISSOURI RIVER
IN KANSAS CITY

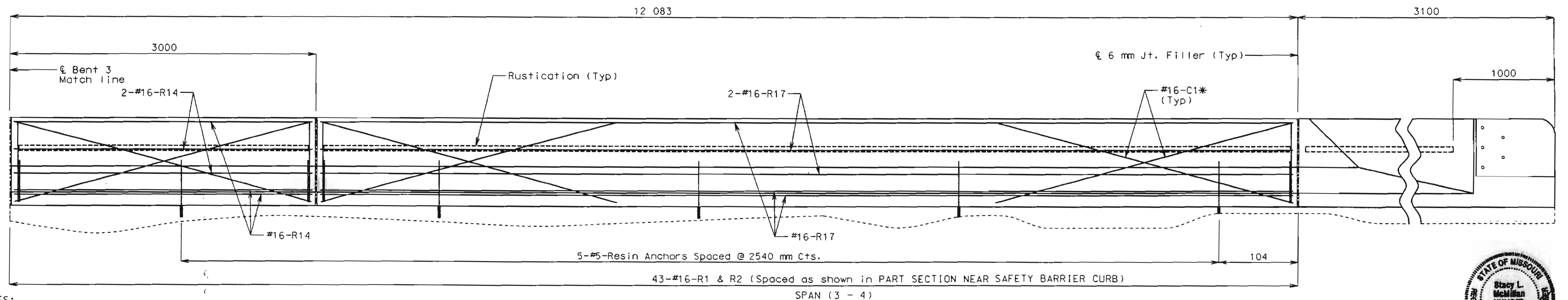
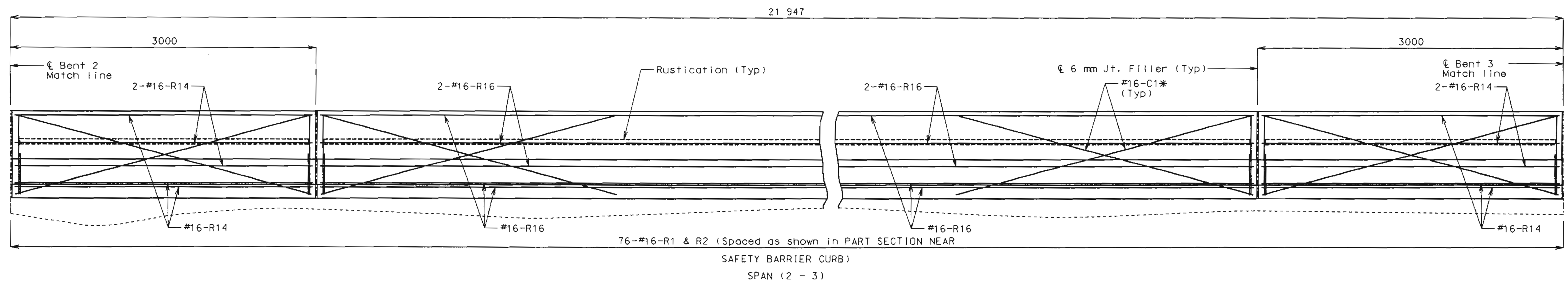
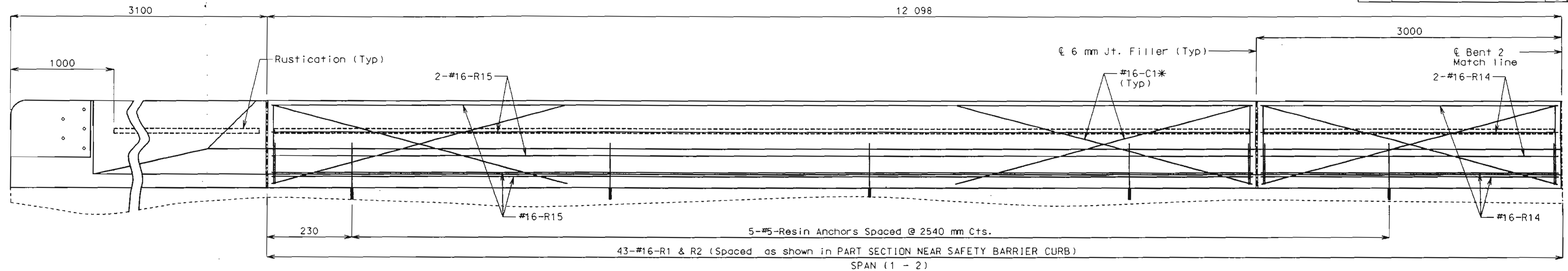
PROJECT NO. STA. 2+338.413 (Match Existing)
JOB. NO. J411250 RTE. I-435 SB

Designed FEB. 1998
Detailed
Checked MAR. 1998

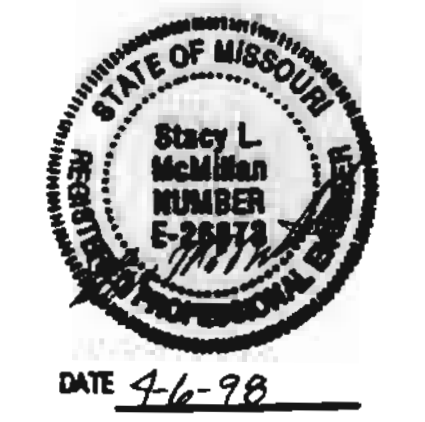
JACKSON COUNTY
Date: 4/7/98

STD. M706.35
A16823

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NOTES:
 Longitudinal dimensions shown are horizontal.
 Dimensions are taken along outside edge of slab.
 For details of Safety Barrier Curb see sheets 4 & 5.
 For details of Safety Barrier Curb at End Bents, see sheet 6.



SECTION NEAR LEFT SAFETY BARRIER CURB

* Slip-form Option Only

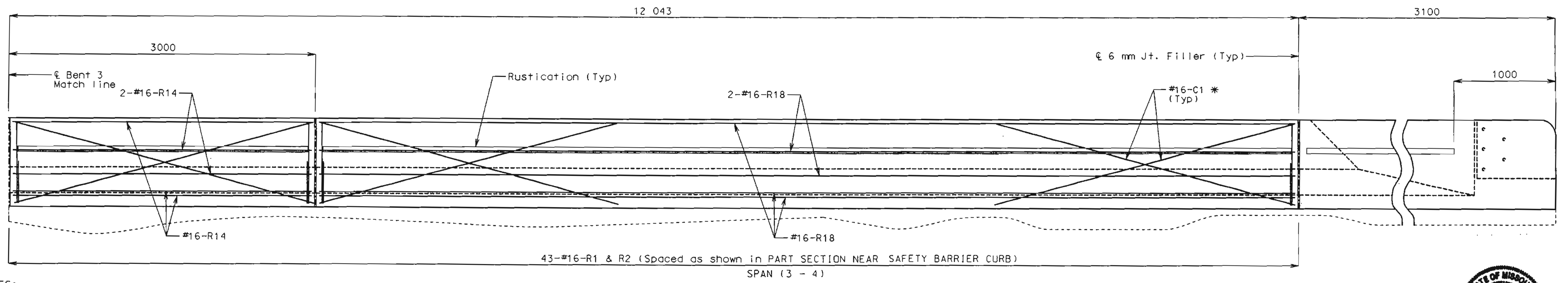
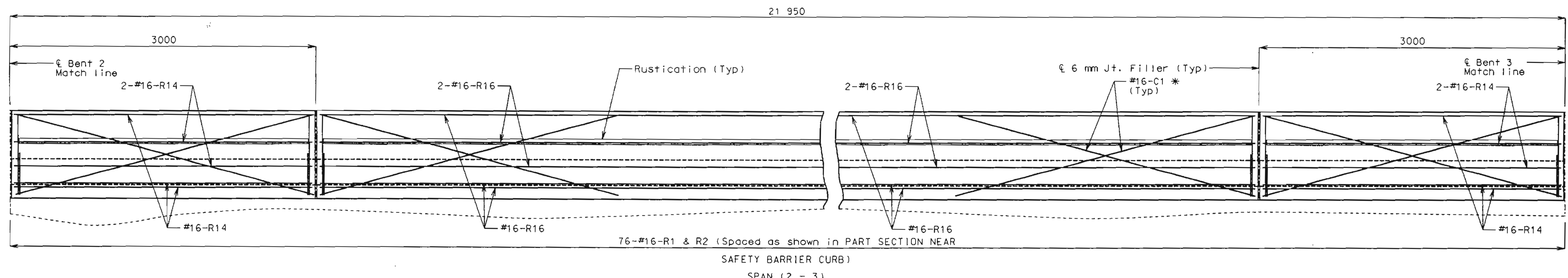
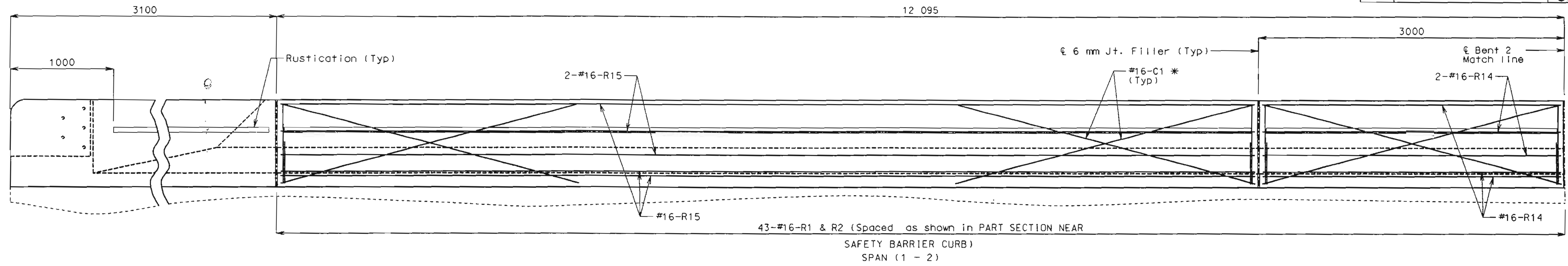
Detailed FEB. 1998
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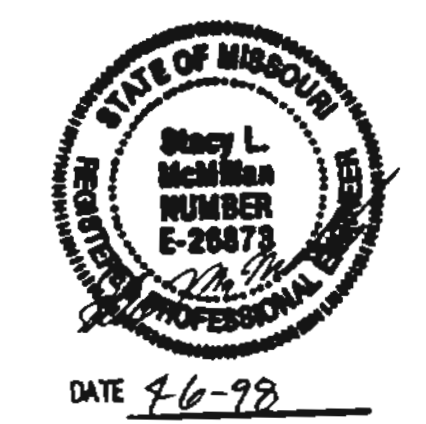
JACKSON COUNTY
 Date: / /

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NOTES:
 Longitudinal dimensions shown are horizontal.
 Dimension are taken along outside edge of slab.
 For details of Safety Barrier Curb see sheets 4 & 5.
 For details of Safety Barrier Curb at End Bents, see sheet 6.



SECTION NEAR RIGHT SAFETY BARRIER CURB

* Slip-form Option Only

Detailed FEB. 1998
 Checked MAR. 1998

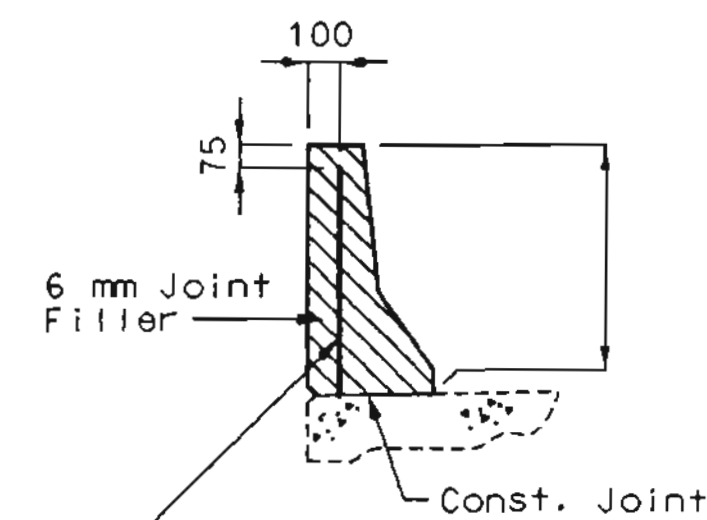
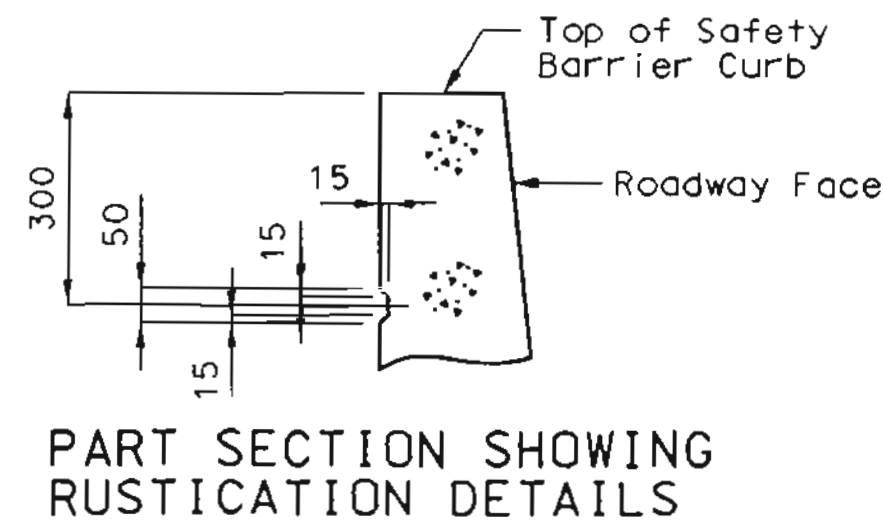
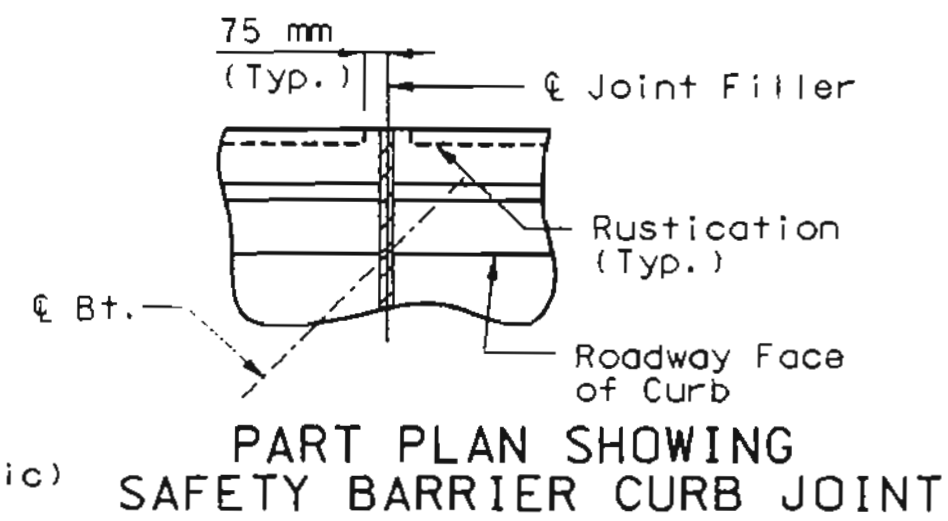
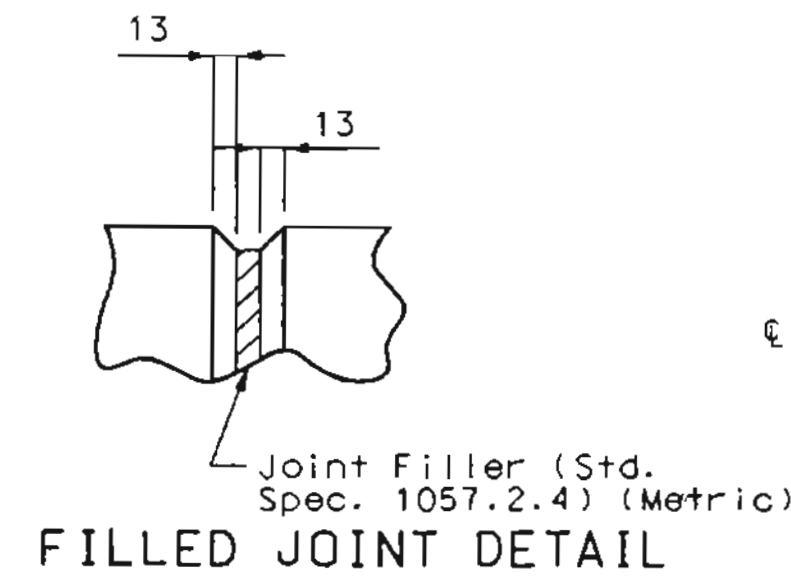
Sheet No. 3 of 7

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Date: / /

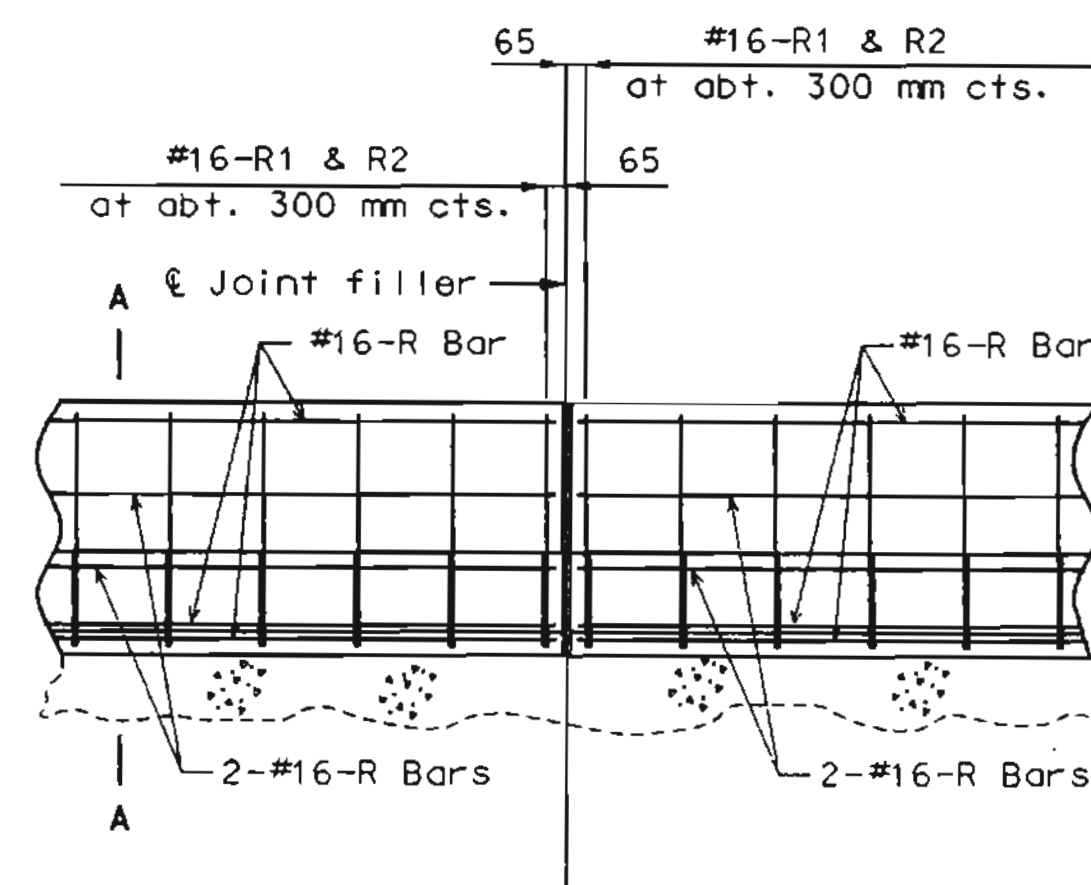
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STATE	PROJ. NO.	SHEET NO.
MO.		66

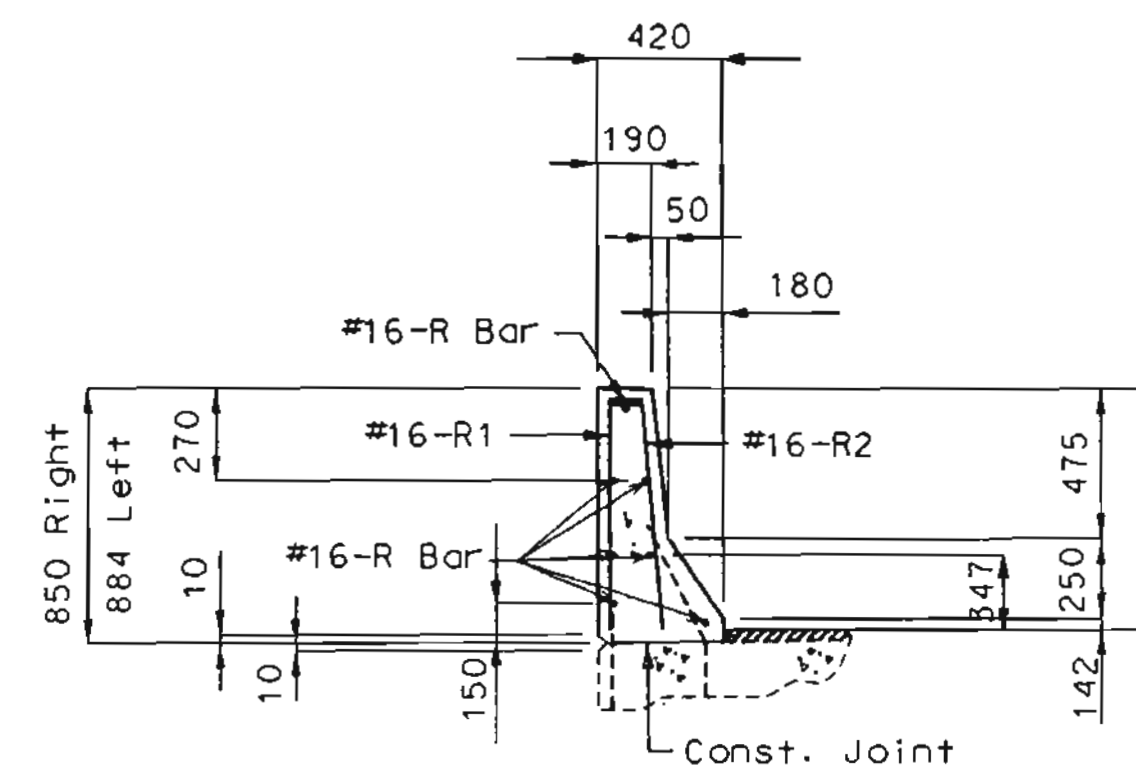


Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Metric) (Centered on joint)
 Plastic waterstop shall be placed in all safety barrier curb filled joints (except structures with superelevation, use on all lower safety barrier curb joints only).
 Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

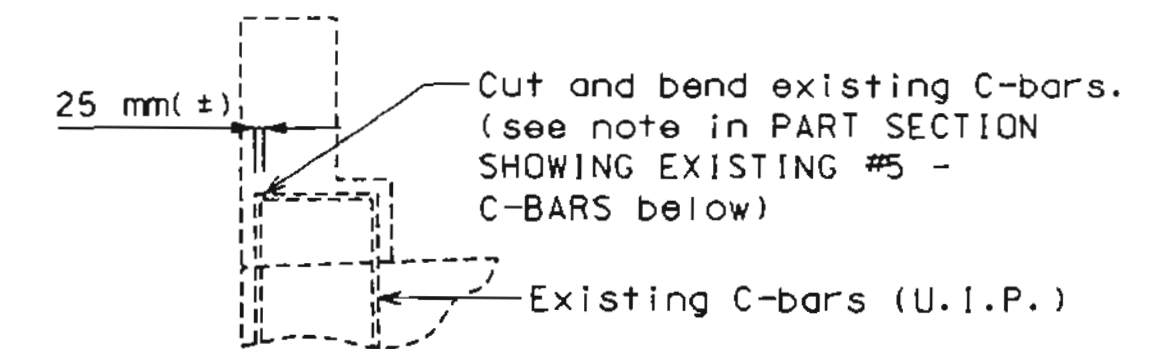


PART SECTION NEAR LEFT SAFETY BARRIER CURB

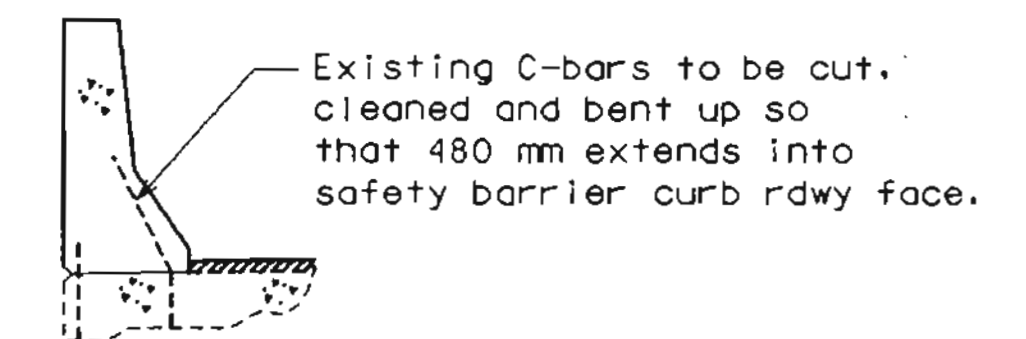


Note:
 Use a minimum lap of 1000 mm for #16 horizontal safety barrier curb bars.
 The cross-sectional area above the slab = 247 835 sq. mm. (left)
 = 240 695 sq. mm. (right)

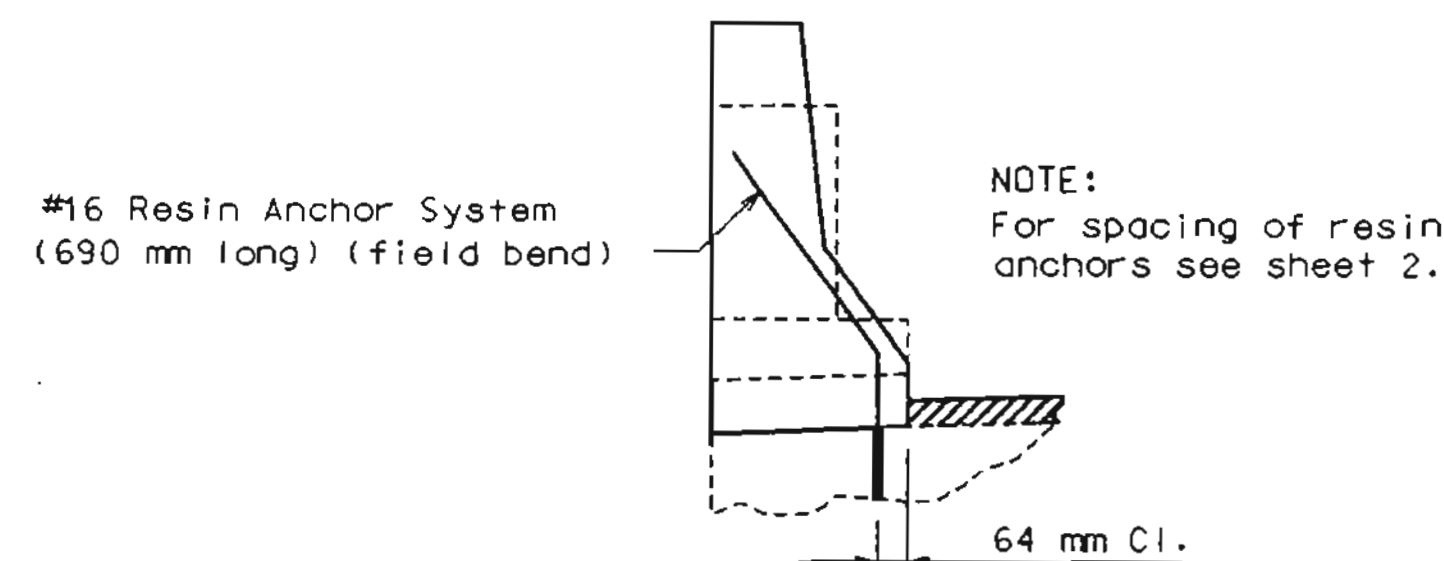
PART SECTION A-A



PART SECTION THRU EXISTING CURB



PART SECTION SHOWING EXISTING #5 - C-BARS



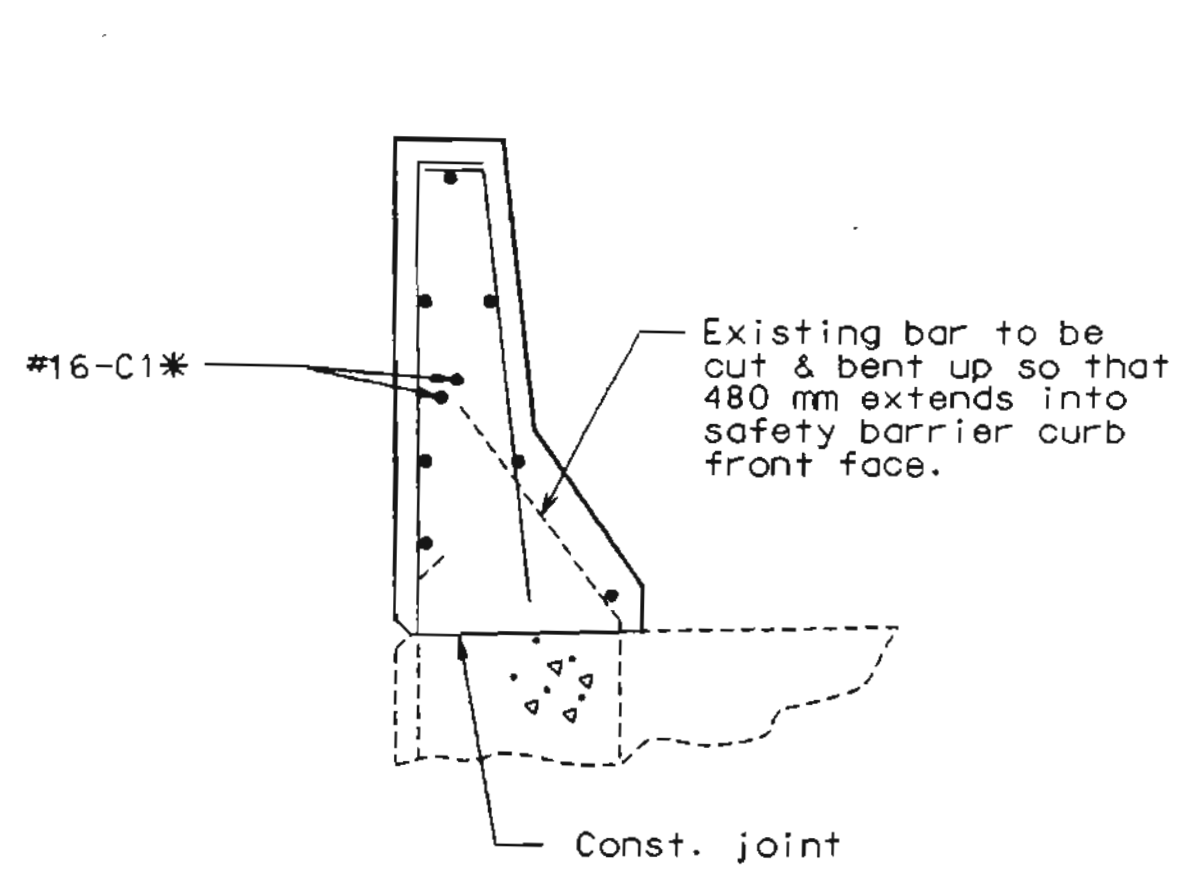
PART SECTION SHOWING RESIN ANCHOR AT EXISTING SLAB DRAIN LOCATIONS

Note:
 Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.
 All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.
 When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.
 Concrete in the safety barrier curb shall be Class B1
 Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.



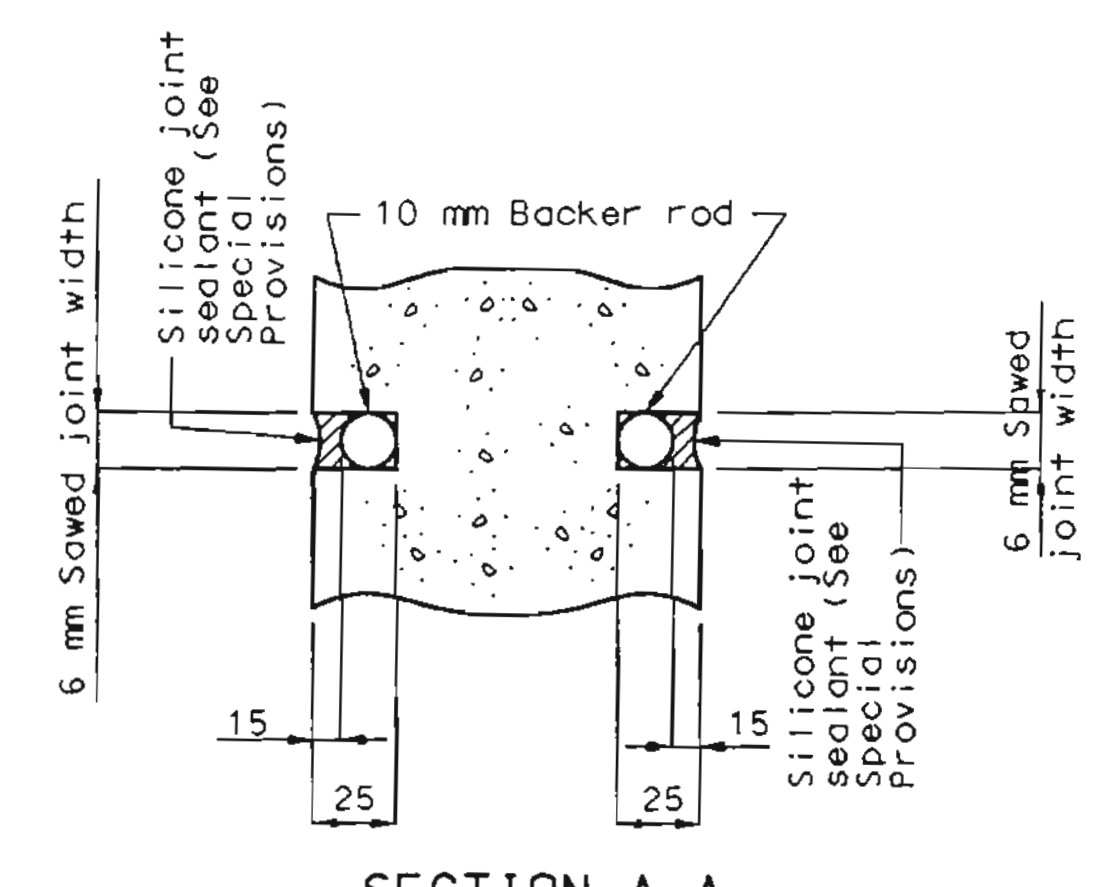
SAFETY BARRIER CURB
 (Left barrier curb shown, right barrier curb similar)

State	Proj. No.	Sheet No.
MO		67



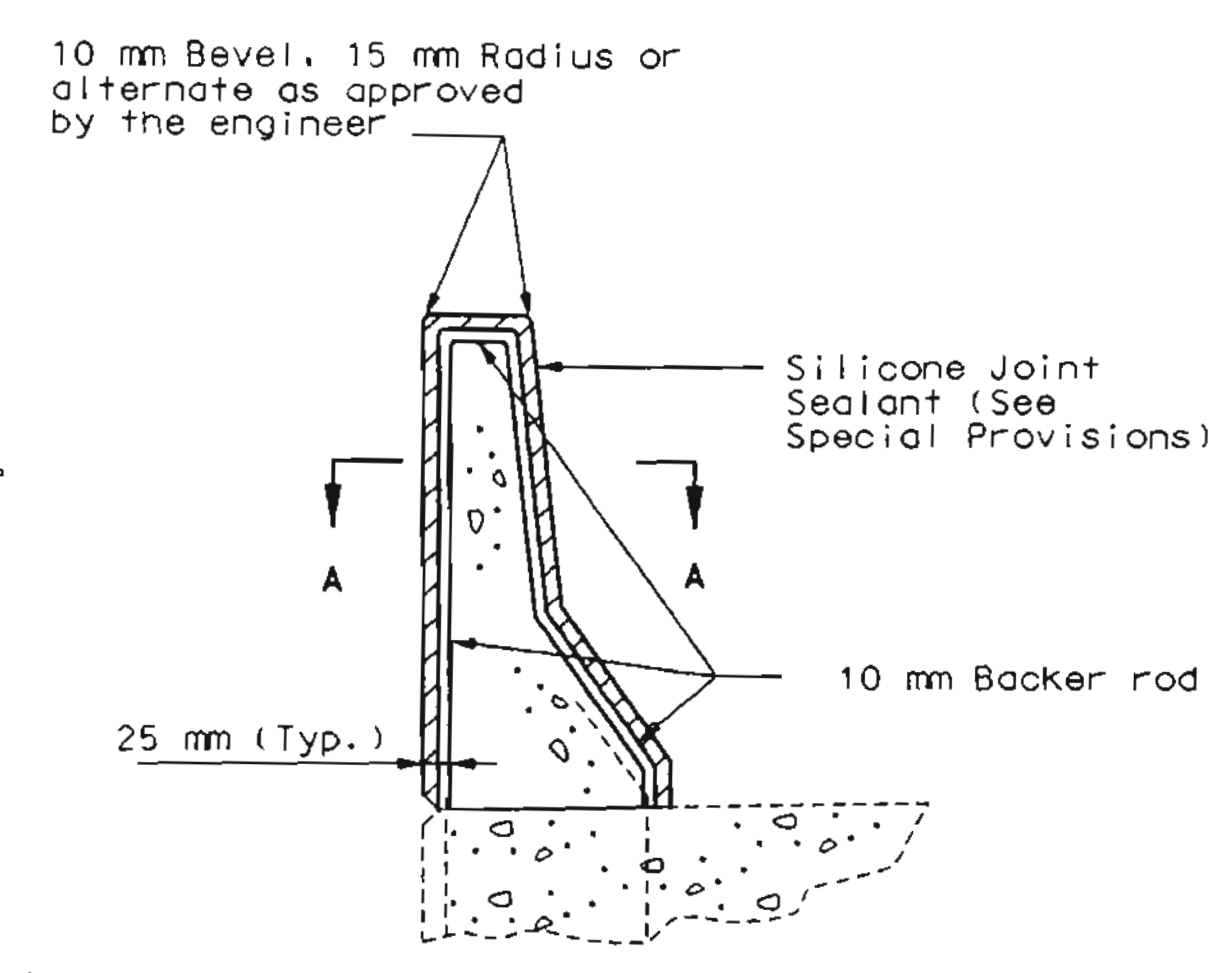
PART SECTION THRU SAFETY BARRIER CURB SHOWING C-BARS

Note: * Each side of joint location.

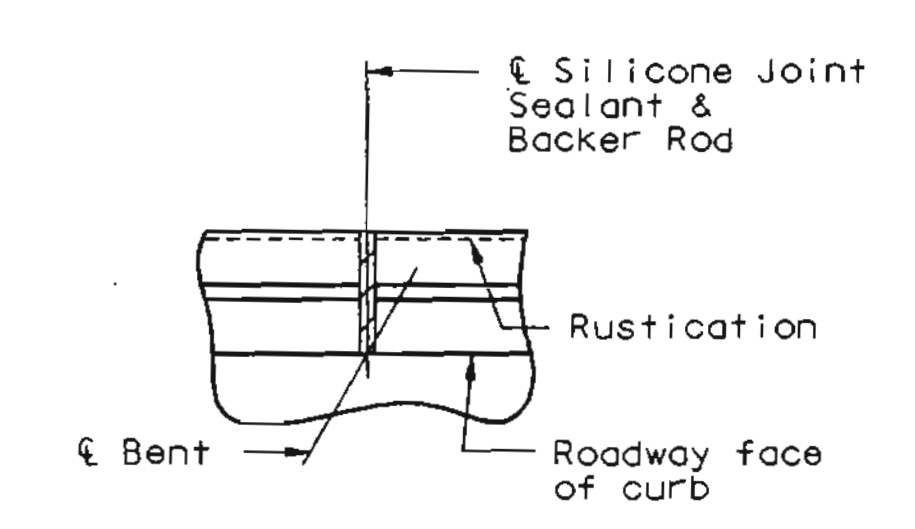


SECTION A-A

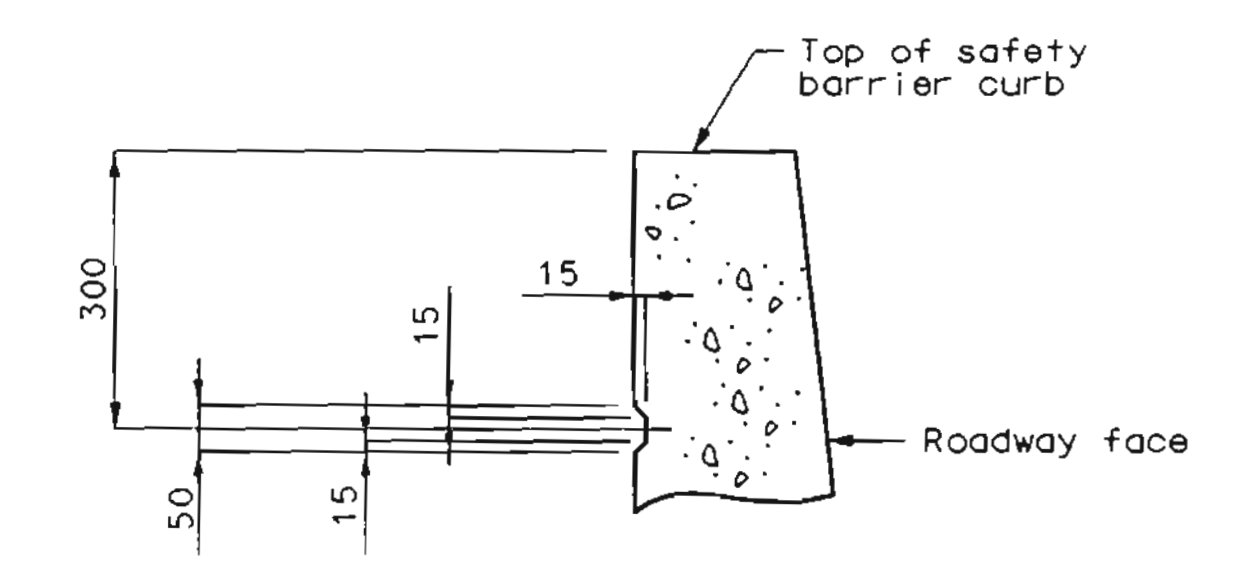
Note:
Cost of silicone joint sealant and backer rod complete in place to be included on the contract unit price for safety barrier curb.



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

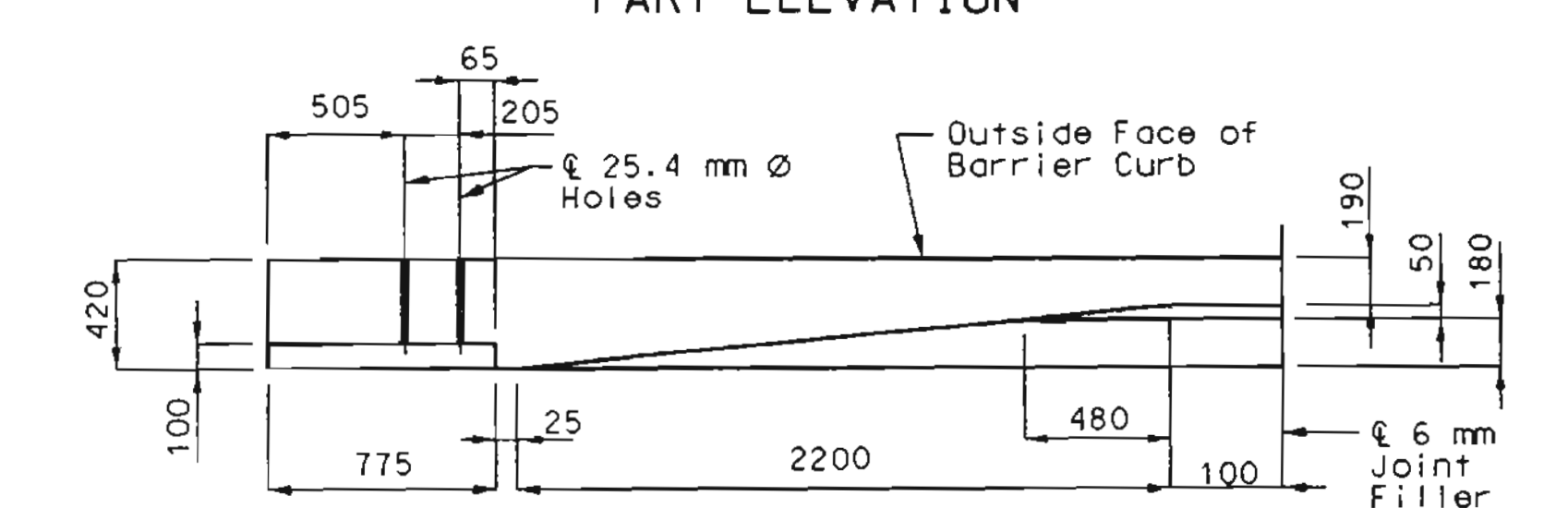
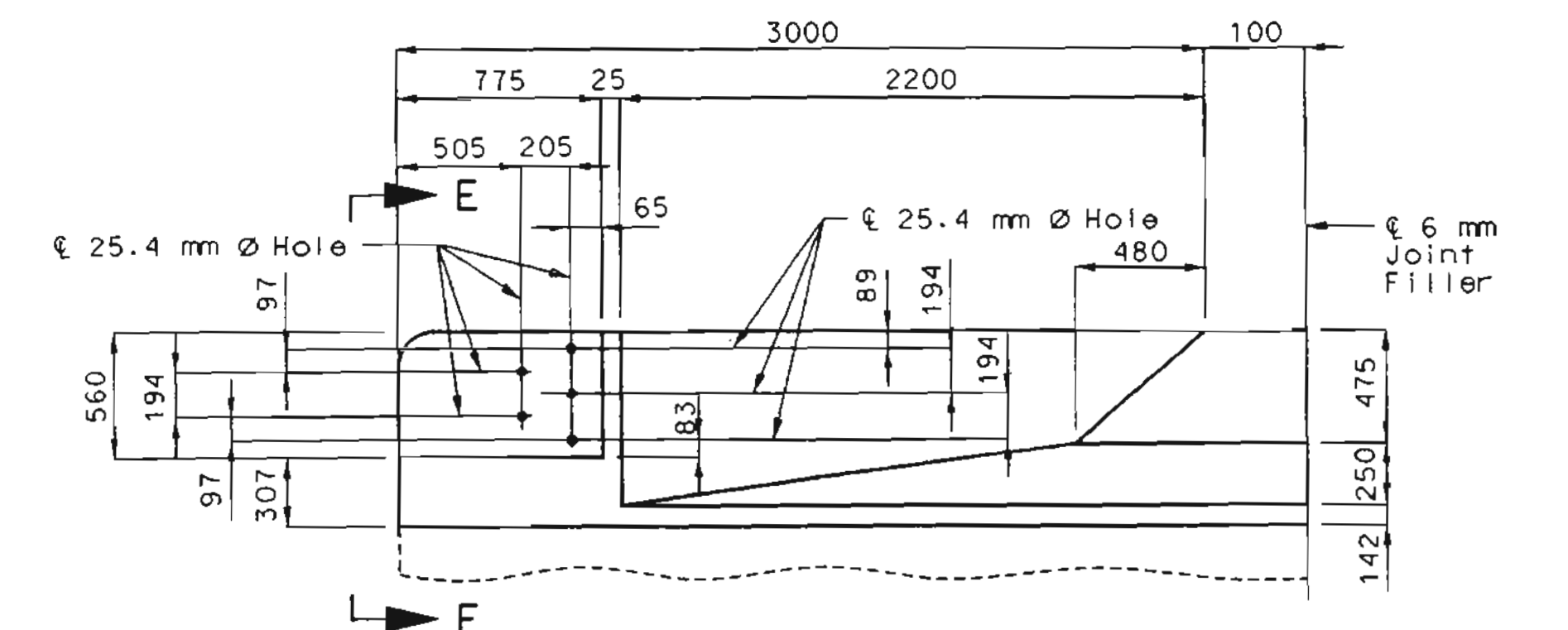
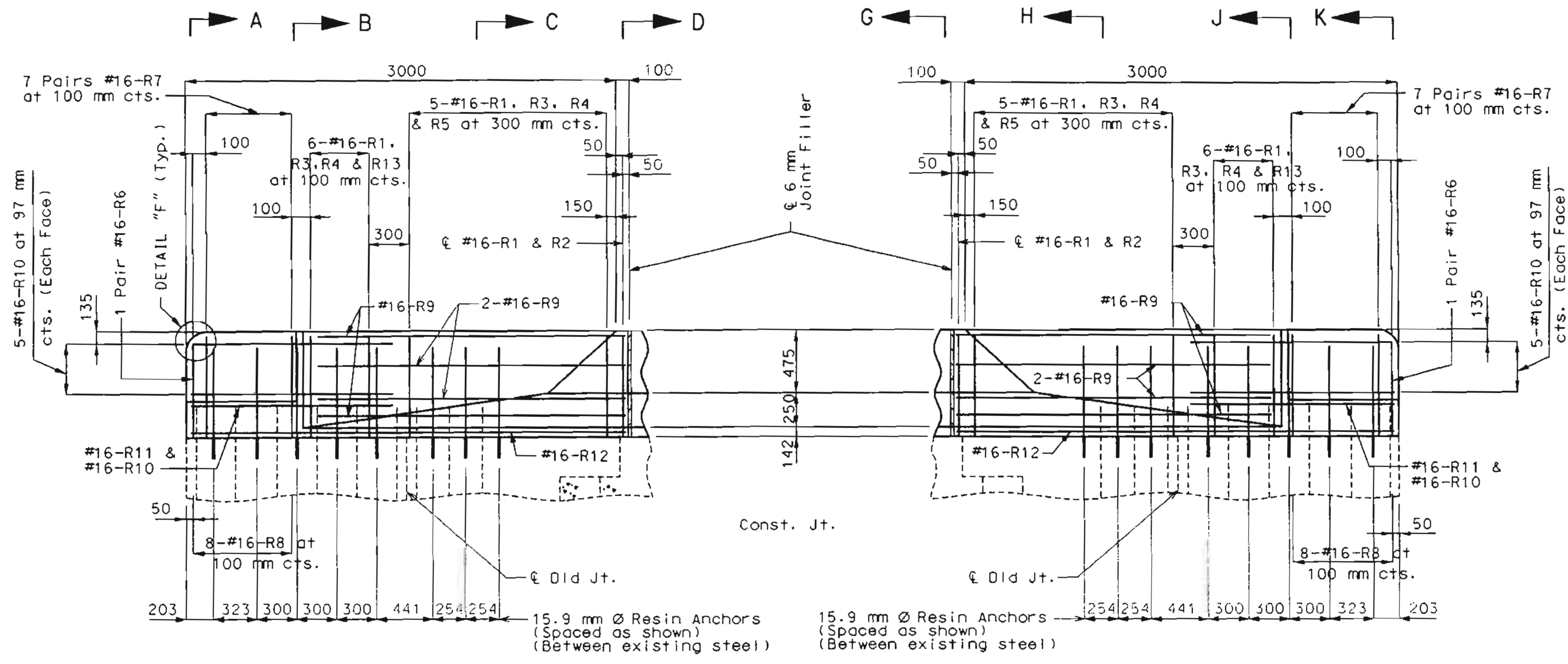
Note:
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.
When the safety barrier curb is bid per meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.
Concrete in the safety barrier curb shall be Class B1 with $f'c = 28$ MPa.
Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

Note:
Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.
Plastic waterstop shall not be used with slip-form option.
Barrier Curbs at end bents shall be cast-in-place, slip-form option is not allowed.
C bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

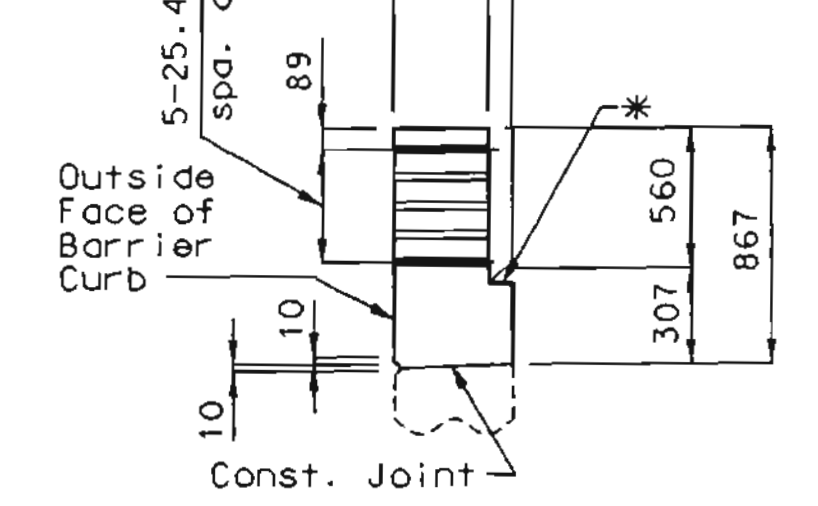


OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB
(Left barrier curb shown; right barrier curb similar)

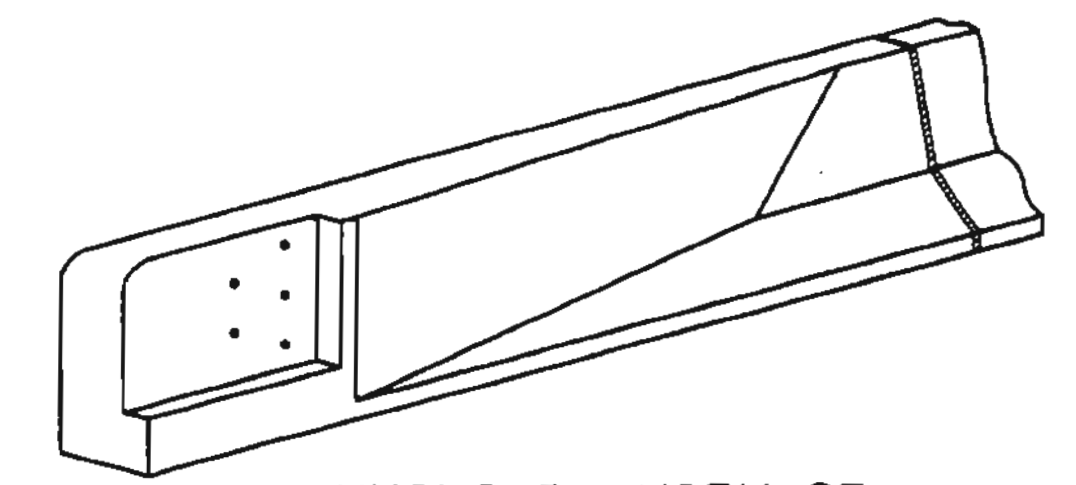
STATE	PROJ. NO.	SHEET NO.
MO.		68



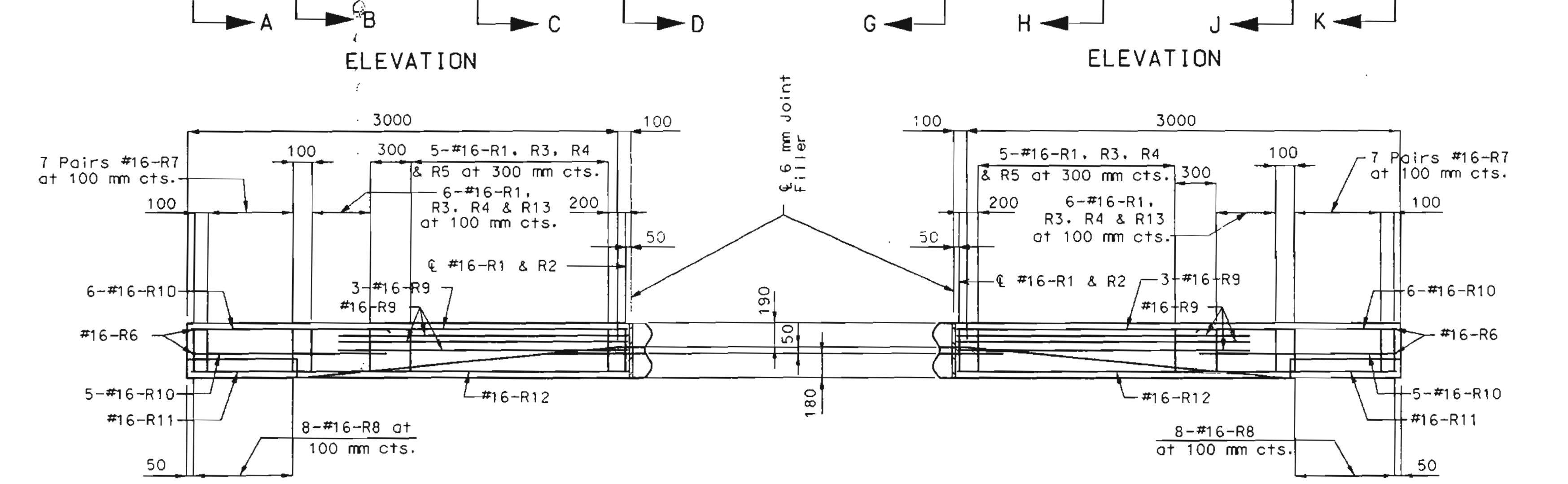
PART PLAN
DETAILS OF GUARD RAIL ATTACHMENT



PART ELEVATION E-E
* Slope 6 mm toward roadway

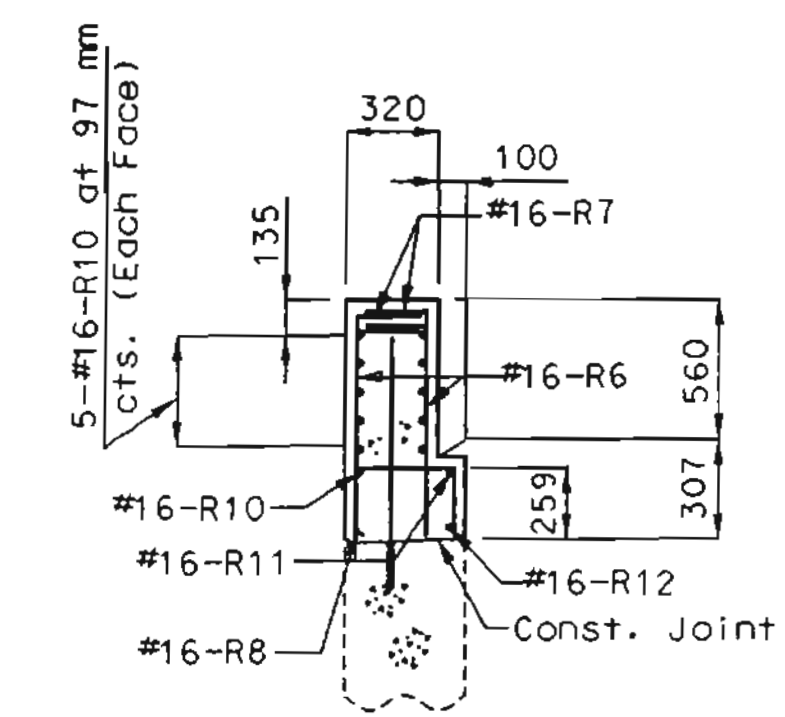


AUXILIARY VIEW OF SAFETY BARRIER CURB

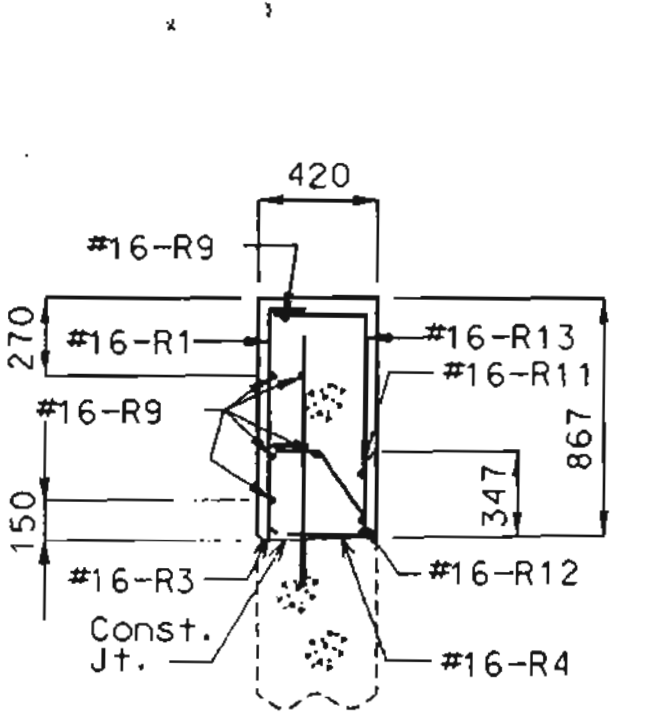


PLAN

PLAN

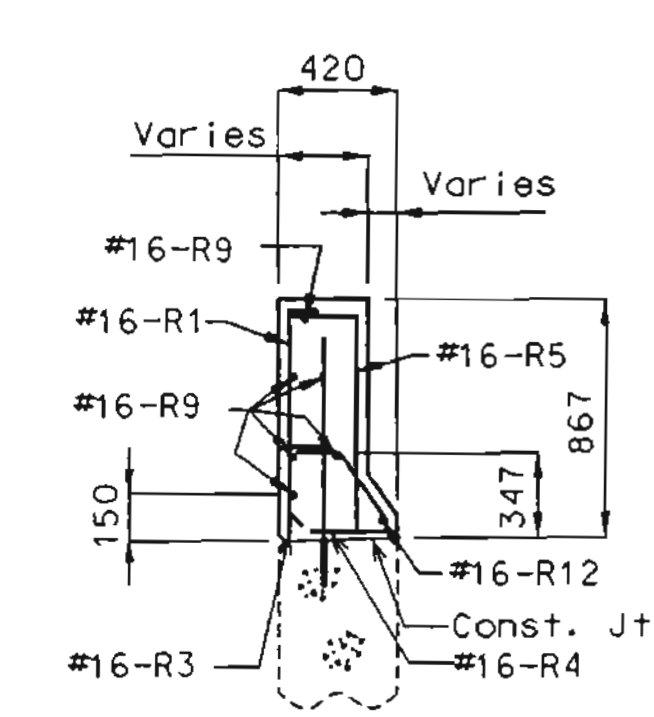


PART SECTION A-A

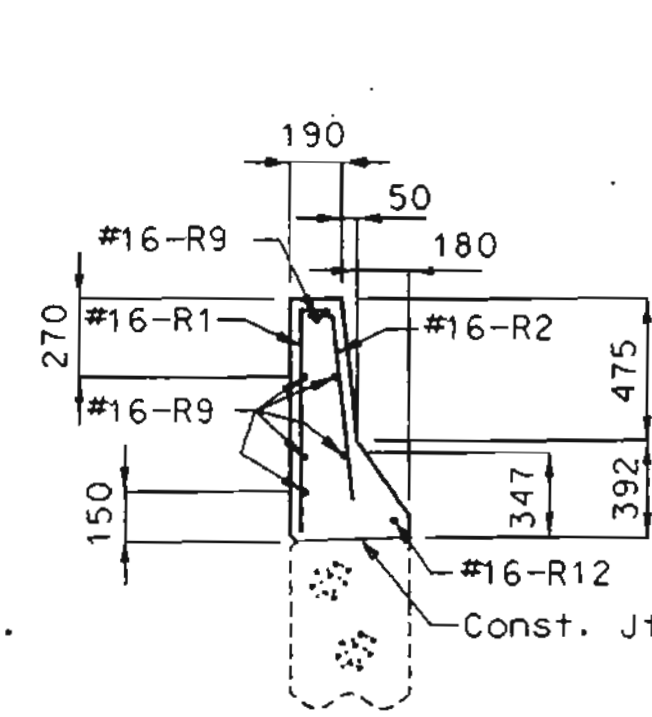


PART SECTION B-B

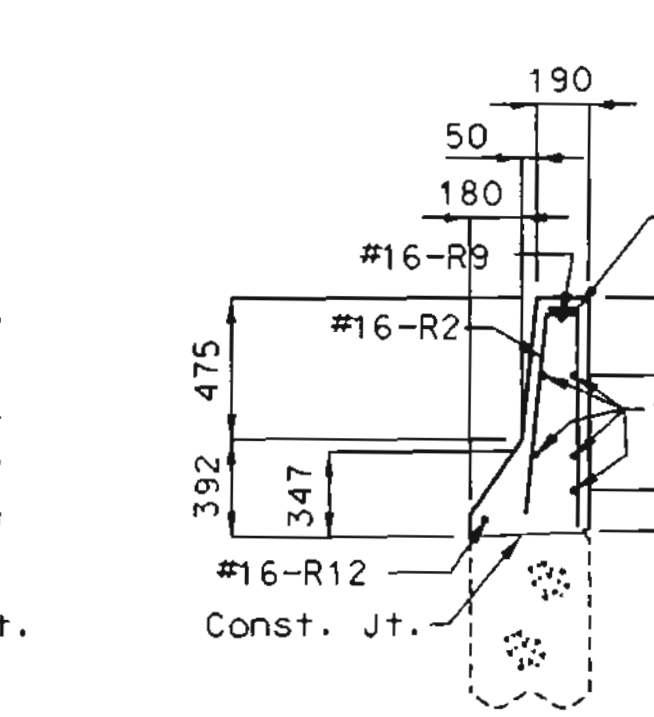
Note: #16-R10 bars not shown for clarity.



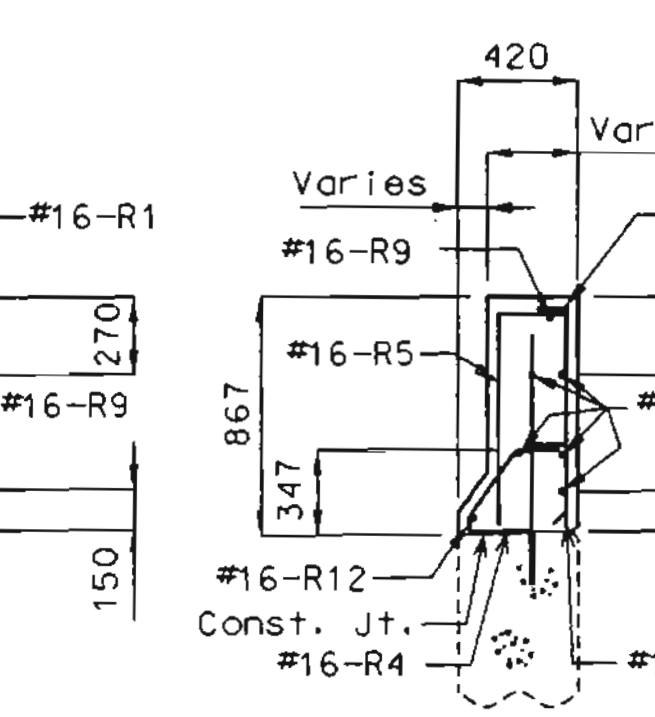
PART SECTION C-C



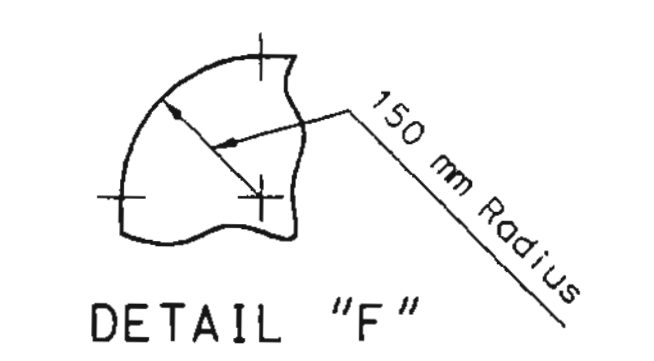
PART SECTION D-D



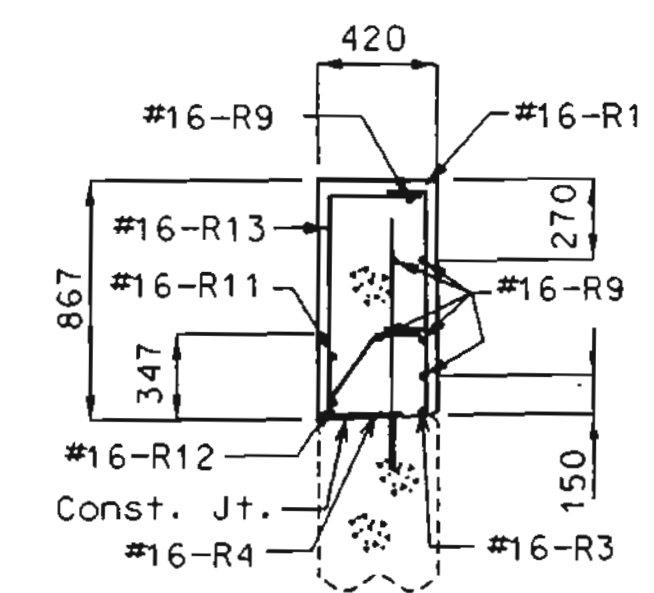
PART SECTION G-G



PART SECTION H-H

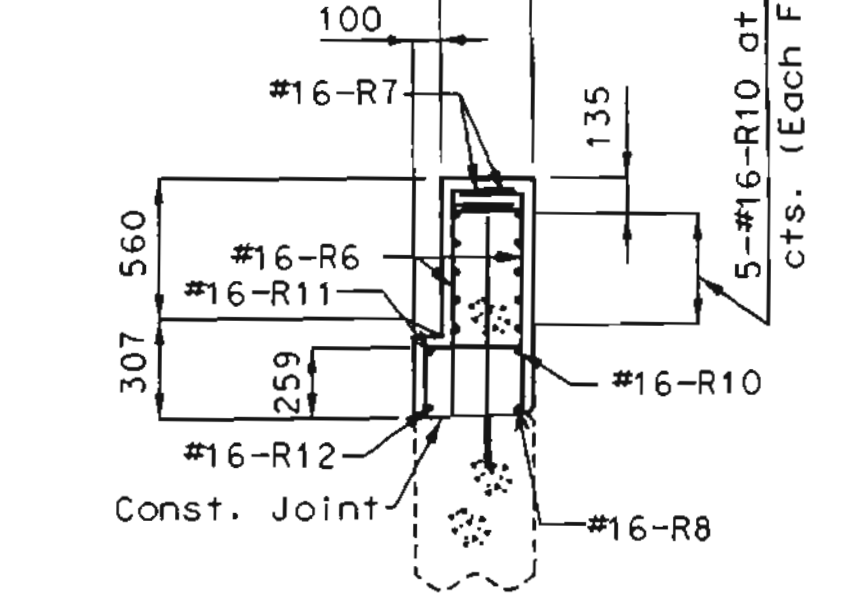


DETAIL "F"



PART SECTION J-J

Note: #16-R10 bars not shown for clarity.



PART SECTION K-K

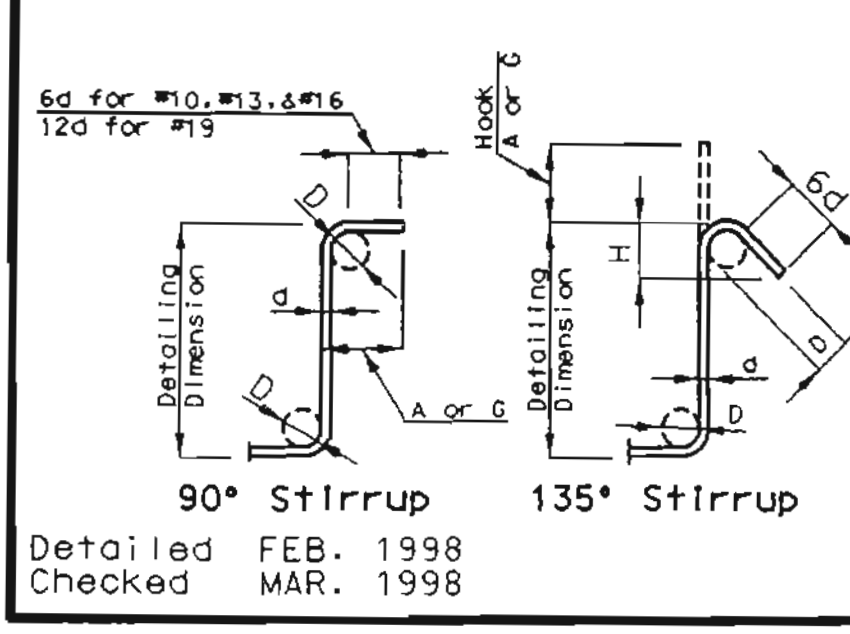
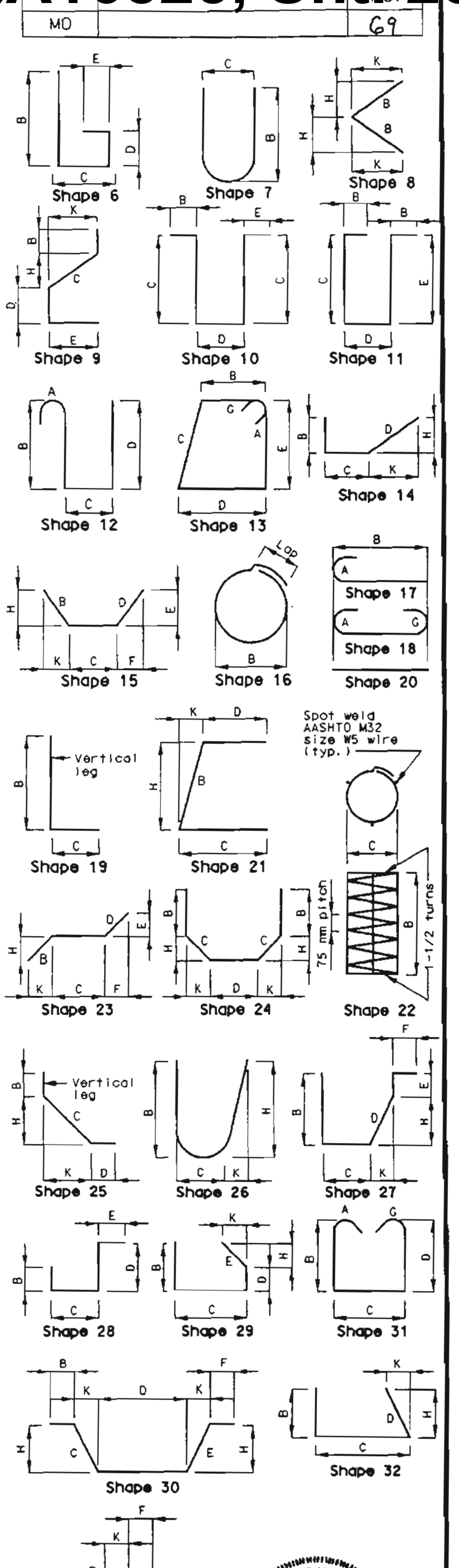


DATE 4-6-98

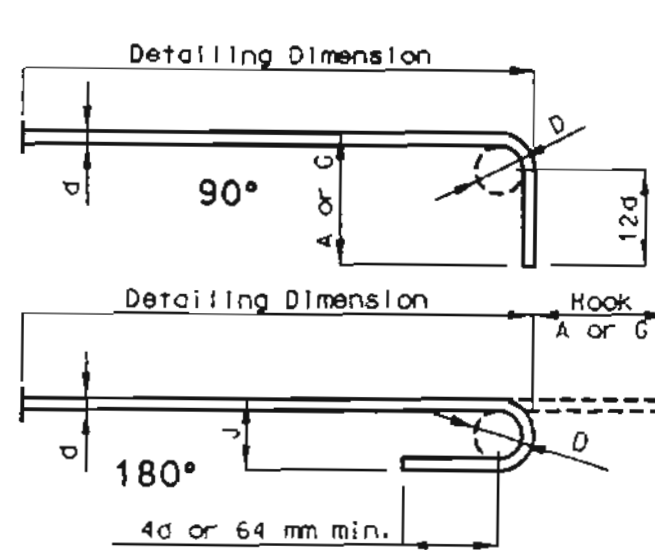
DETAILS OF SAFETY BARRIER CURB AT END BENTS
(Left barrier curb shown; right barrier curb similar.)

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substit. (X)	Varies (V)	No. Each	Dimensions					Nominal Length	Actual Length	Mass	
									B	C	D	E	F				H
Size	Mark								mm	mm	mm	mm	mm	mm	mm	kg	
		BAR. CURB															
40	16 C1	S/F OPTION	E	20						3027					3025	3025	188
372	16 R1	BAR. CURB	E	19 S						775	100				875	840	485
328	16 R2	BAR. CURB	E	15 S						780	100			775	860	850	433
44	16 R3	BAR. CURB	E	19 S						295	150				445	410	28
44	16 R4	BAR. CURB	E	27 S						300	90	270	150		910	760	52
20	16 R5	BAR. CURB	E	19 S			V	4		775	240				1015	980	
		INCREMENT =								775	100				875	840	28
		35 MM															
8	16 R6	BAR. CURB	E	19 S						715	230				945	910	11
56	16 R7	BAR. CURB	E	19 S						775	230				1005	970	84
32	16 R8	BAR. CURB	E	10 S							220	330			770	705	35
24	16 R9	BAR. CURB	E	20						2225					2225	2225	83
44	16 R10	BAR. CURB	E	20						1525					1525	1525	104
4	16 R11	BAR. CURB	E	20						990					990	990	6
4	16 R12	BAR. CURB	E	20						3025					3025	3025	19
24	16 R13	BAR. CURB	E	19 S						775	330				1105	1070	40
58	16 R14	BAR. CURB	E	20						2920					2920	2920	263
14	16 R15	BAR. CURB	E	20						9020					9020	9020	196
28	16 R16	BAR. CURB	E	20						8480					8480	8480	369
7	16 R17	BAR. CURB	E	20						9005					9005	9005	98
7	16 R18	BAR. CURB	E	20						8965					8965	8965	97

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

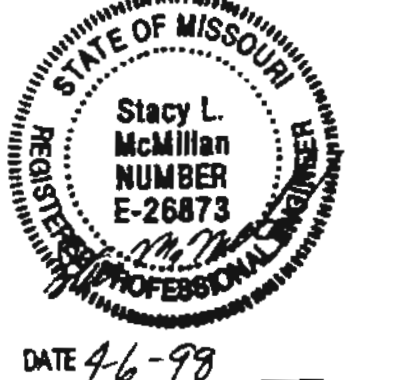
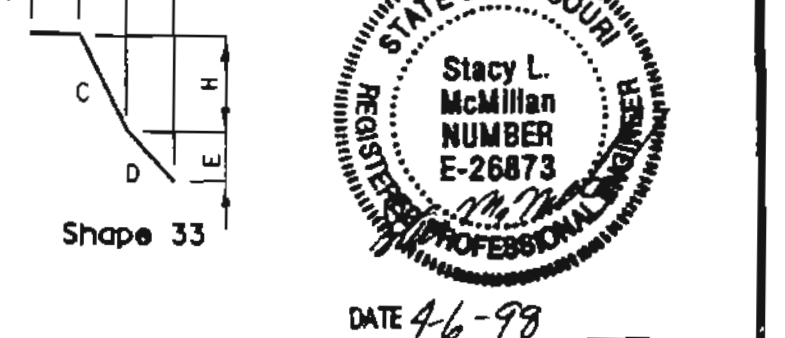
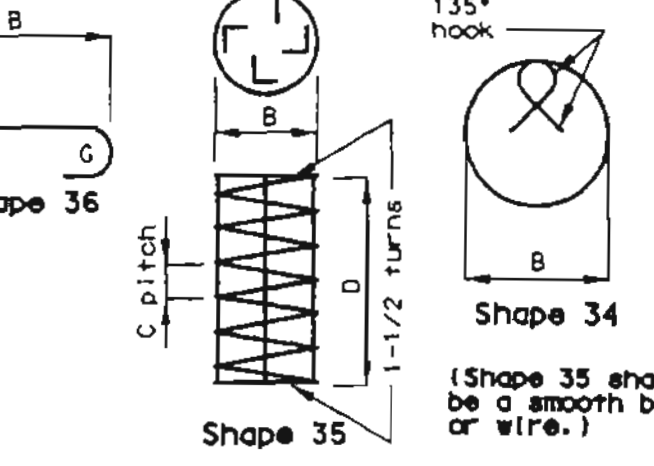


Bar Size	D	90° Hook		135° Hook	
		Hook A or G	Hook A or G	Hook A or G	Approx. H
#13	50	115	115	80	80
#16	65	155	140	95	95
#19	115	305	205	115	115



Bar Size	D	All Grades	
		180° Hook	90° Hook
#10	60	125	80
#13	80	150	105
#16	95	175	130
#19	115	200	155
#22	135	250	180
#25	155	275	205
#28	240	375	300
#32	275	425	335
#36	305	475	375
#43	465	675	550

Note:
 All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
 Hooks and bends shall be in accordance with the procedures as shown on this sheet.
 E = epoxy coated reinforcement
 S = stirrup
 X = bar is included in substructure quantities
 V = bar dimensions vary in equal increments between dimensions shown on this line and the following line.
 No. Ea. = number of bars of each length
 Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricator's use (nearest 5 mm).
 Actual lengths are measured along centerline bar to the nearest 5 mm.
 Poyweights 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



DATE 4-6-99

Detailed FEB. 1998
 Checked MAR. 1998