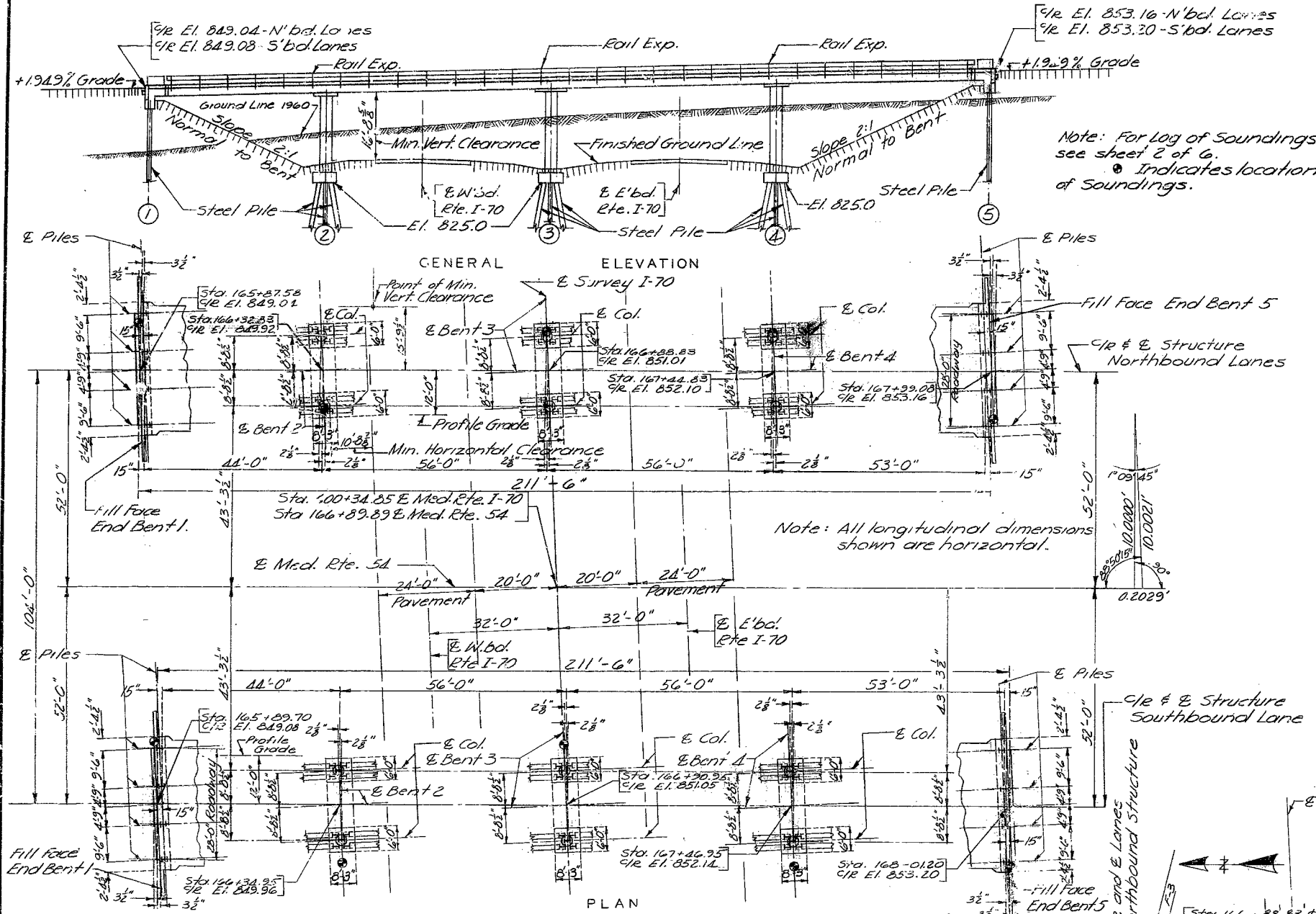


MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	105	

Twin 14'-56'-56'-53' Cont. Slab Spans (Voided)



GENERAL NOTES:  
Design Specifications A.A.S.H.O. - 1961.  
Loading H20-S16-44 (15#/sq. ft. Future Wearing Surface).  
Structural Steel Stress (A.S.T.M. A36-G2T) 20,000 psi.  
Reinforcing Steel Stress 20,000 psi.  
Concrete, Class B Stress 1,200 psi.  
Concrete, Class B1 Stress 1,600 psi.  
Superstructure concrete shall be Class B1.  
Substructure concrete shall be Class B or Class B1, except payment will be on the basis of Class B.  
Superstructure deck to be surface sealed (See special provisions) - see Standard Specification 55.3.13 for qualification of welding operators.  
Where joint filler is specified on the plans it shall conform to Standard Specification 15.2.4.  
Paint; shop, none; Field, by contractor in accordance with Standard Specification 55.4.10.

ESTIMATED QUANTITIES	Substr.	Superstr.	Total
ITEM			
Class I Excavation for Structures Cuts	195		195
Test Piles	120		120
12" Steel Piles in place	3879		3879
12" Steel Pile cut-offs	219		219
Class B Concrete	66.0		66.0
Class B1 Concrete		976.0	976.0
Reinforcing Steel	6320	230,630	246,950
Fabricated Structural Carbon Steel Lbs.		27120	27120
Loading Tests	1		1

Notes: All concrete and reinforcement in End Bents and above footings in Intermediate Bents is included in superstructure quantities.  
Excavation for Structures will be paid for as Class I.  
Class I Excavation for Structures will be computed from the original ground line (1960) or from the lower limits of roadway excavation, whichever is lower regardless of the sequence of operations and the method of removal.  
No payment for excavation will be allowed at End Bents No. 1 & 5.  
The estimated quantity of 12" Steel Piles in place includes 16 estimated splices at 8' per splice.  
Weight of bolts (steel to steel) is included in weight of fabricated structural steel on the basis of the following weights per 100 bolts: 3/4" 65#, 3/8" 95#, 1" 135#.

SUBMITTED BY  
*Don C. Schieber*  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. E-8115



B.M. 1/4 in center of West Hd. Will. Culv.,  
64' Pt. Sta. 164+05, Pte. 54, Elev. 817.64.

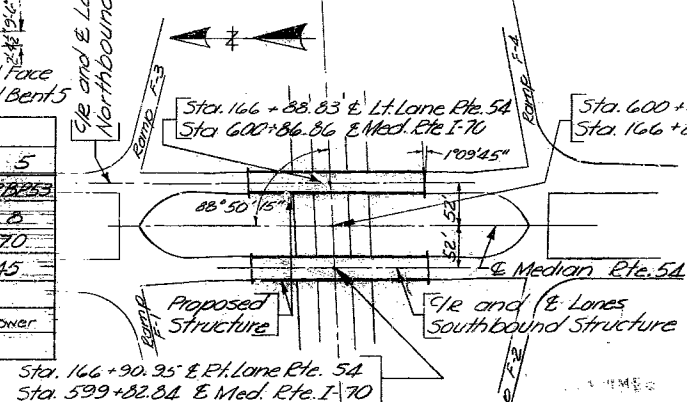
PILE DATA	1	2	3	4	5
BENT NUMBER	1	2	3	4	5
Pile Type & Size	12" DP53	12" DP53	12" DP53	12" DP53	12" DP53
No. in Nbd. & Sbd. Lanes	8	19*	20	18*	8
Approximate Length Ft.	70	50	50	50	70
Plan Bearing Tons	45	45	45	45	45
Hammer	Power	Power	Power	Power	Power
See Standard Specification 52.2.6					

Note: All pile shall be driven to not less than the Plan Bearing shown.  
Steel Pile authorized in lengths greater than 65' may be furnished in two pieces for field splicing and these splices, if made, will be paid for in accordance with Standard Specification 52.6.5.  
\* Test Piles shall be driven in permanent position, one for Bent No. 2, right footing, Sbd. Lane and one for Bent No. 4, left footing, Nbd. Lane. Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents Nos. 1 and 5 before steel piles are driven. See Special Provisions for Loading Test.

Drawn Mar. 1963 by SUSNIC  
Checked Mar. 1963 by Mail

R.W. BOOKER & ASSOCIATES  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

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



BRIDGE - ROUTE 54 UNDERPASS

STATE ROAD - INTERSTATE ROUTE 70  
ABOUT 1.25 MILES S. OF M'CREDIE  
PROJECT NO. HG-70-3(30) RTE. I-70 STA. 600+34.85  
CALLAWAY COUNTY

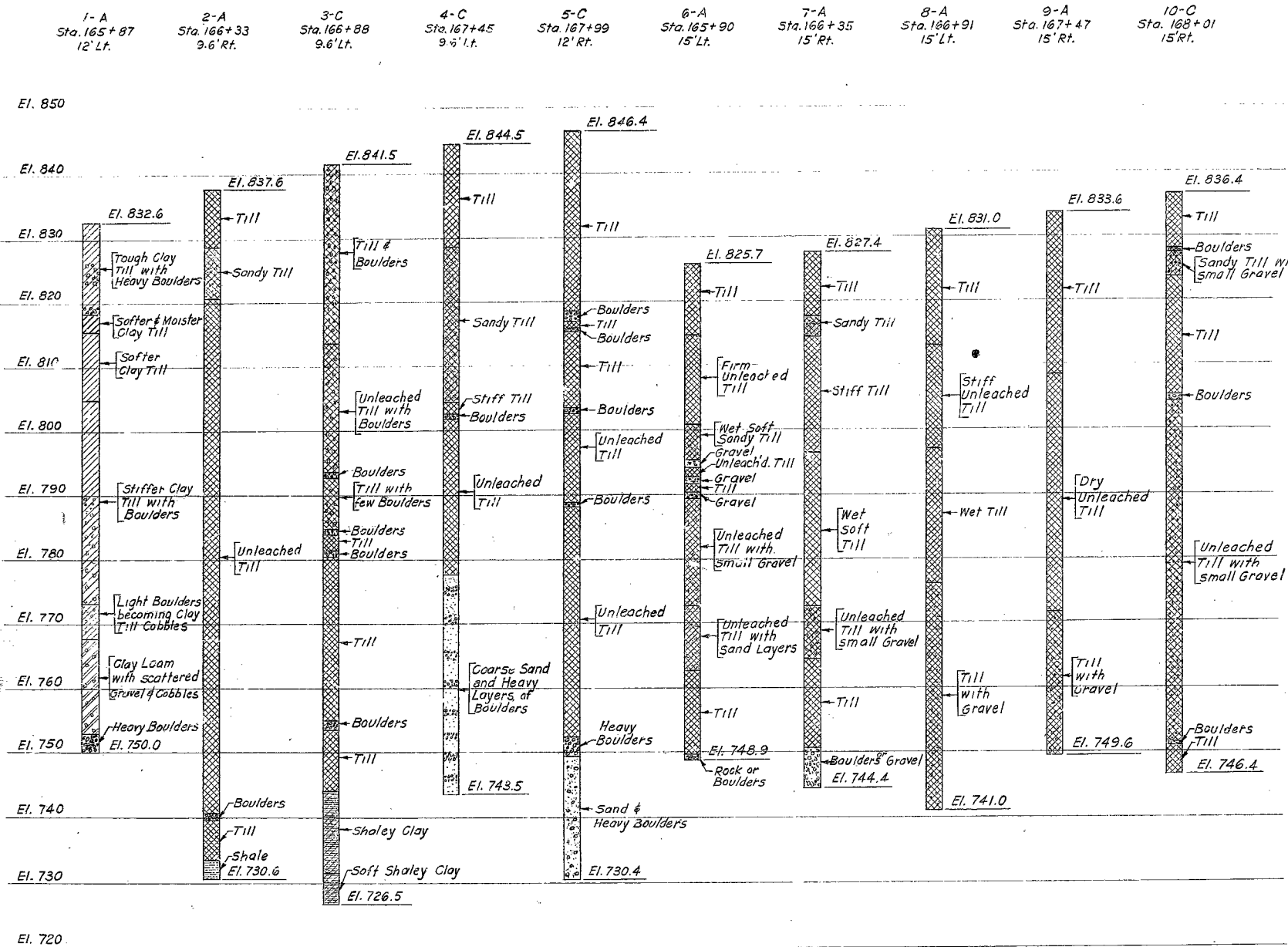
SUBMITTED BY *D.B. Jensen* DATE 6/3/63  
APPROVED BY *M.J. Bruden* DATE 6/3/63

STD. 54.00  
L-964

SEE FINAL PLANS BROWN-LINES

# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	106	



A-Indicates soundings taken with an Auger.  
C-Indicates soundings taken with a Core Drill.  
See Sheet 1 of 6 for location of soundings.  
Borings are dimensioned from 1/2 of Lanes.

## LOG OF SOUNDINGS

Drawn March 1963 by Blattner  
Checked March 1963 by Mali

R.W. BOOKER & ASSOCIATES  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

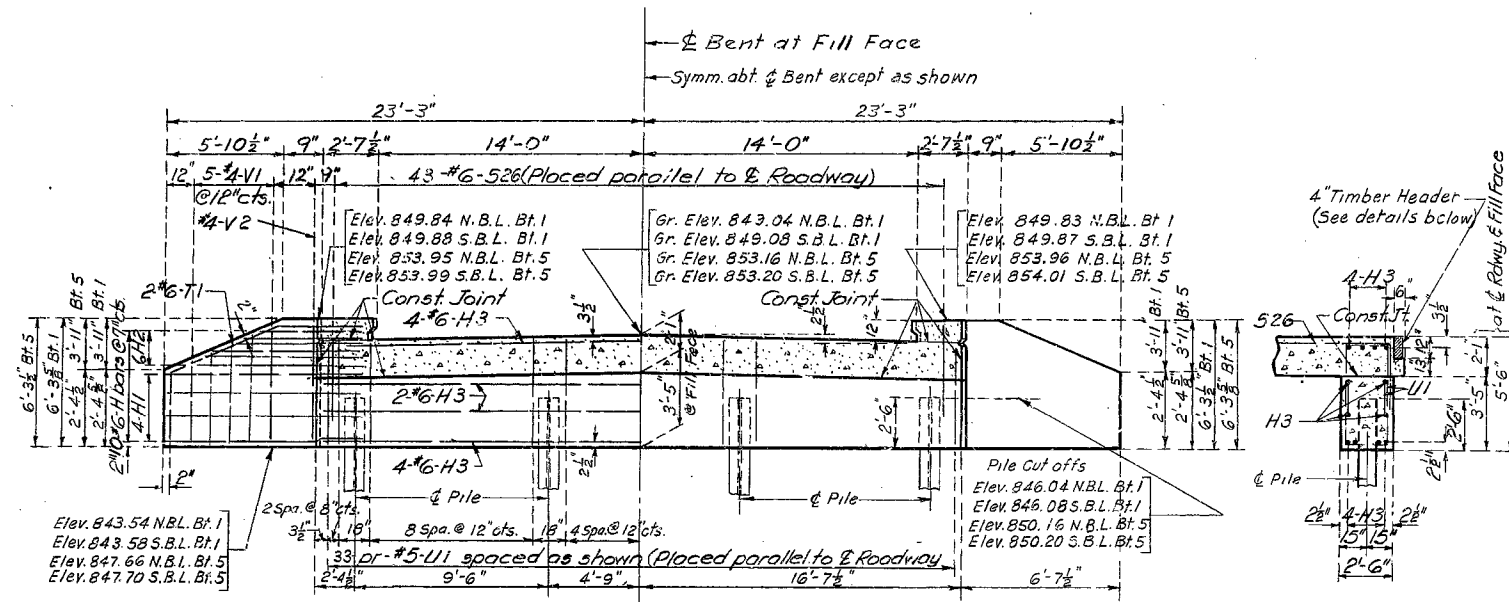
Note: This drawing is not to scale. Follow dimensions.

# COMPLETE BILL OF REINFORCING STEEL

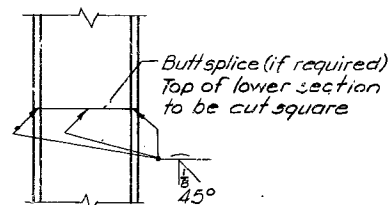
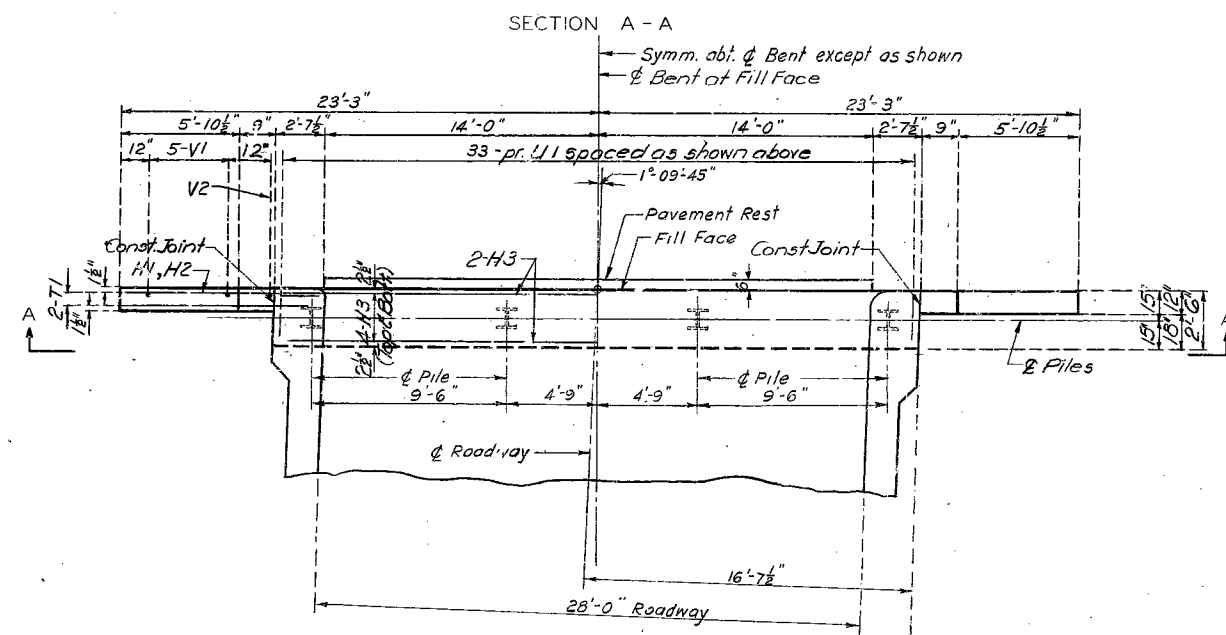
NO.	SIZE	LENGTH	MARK	LOCATION	BENDING SKETCHES & CUTTING DIAGRAMS		NO.	SIZE	LENGTH	MARK	LOCATION
SUPERSTR. (Nbd & Sbd Lanes)							SUPERSTR. Int. Bt 3 (Nbd & Sbd Lns)				
1000	#5	31'-3"	S1	Slab	2'-9" 8 1/2"	4'-0 3/4" 10 1/2"	26	#10	33'-9"	G1	Slab Beam
86	#5	28'-9"	S2	"			26	#9	30'-9"	G2	" "
46	#11	31'-6"	S3	"			124	#5	10'-3"	U2	" "
40	#11	23'-3"	S4	"							
40	#11	13'-0"	S5	"			32	#9	24'-6"	V4	Columns
86	#5	27'-9"	S6	"	5'-6" 2'-9"	8'-5 1/4" 4'-0 3/4"	84	#3	8'-0"	V3	"
46	#11	33'-9"	S7	"	8'-3"	12'-6"					
40	#11	22'-6"	S8	"	5V1 CUT 20	6H2 CUT 24					
40	#11	14'-0"	S9	"							
86	#5	24'-0"	S10	"			SUPERSTR. Int. Bt 4 (Nbd & Sbd Lns)				
46	#11	35'-9"	S11	"			28	#10	33'-9"	G1	Slab Beam
40	#11	21'-3"	S12	"			28	#9	30'-9"	G2	" "
40	#11	13'-9"	S13	"			168	#5	8'-9"	U3	" "
86	#5	37'-0"	S14	"							
54	#9	46'-0"	S15	"			64	#11	26'-6"	V6	Columns
48	#9	34'-3"	S16	"			88	#3	8'-0"	V7	"
48	#9	24'-6"	S17	"							
108	#9	58'-0"	S18	"			SUPERSTR. End Bt 5 (Nbd & Sbd Lns)				
48	#9	36'-6"	S19	"			24	#6	33'-0"	H3	Beam & Slab
48	#9	26'-0"	S20	"			132	#5	9'-0"	U1	" "
48	#9	35'-0"	S21	"			86	#6	8'-0"	S26	" "
48	#8	24'-6"	S22	"							
54	#11	55'-0"	S23	"			10	#4	8'-3"	V1	Wing Wall's
48	#10	41'-3"	S24	"			4	#4	6'-0"	V2	" "
48	#10	29'-3"	S25	"			16	#6	8'-9"	H1	" "
							12	#6	12'-6"	H2	" "
							8	#6	12'-0"	T1	" "
							SUBSTR. Int. Bt 2 (Nbd & Sbd Lns)				
							32	#9	6'-6"	D1	Footings
							24	#5	5'-9"	D2	"
							8	#6	12'-9"	D4	"
							24	#8	8'-0"	D5	"
							SUBSTR. Int. Bt 3 (Nbd & Sbd Lns)				
							32	#9	6'-6"	D1	Footings
							24	#5	5'-9"	D2	"
							8	#6	12'-9"	D4	"
							24	#8	8'-0"	D5	"
							SUBSTR. Int. Bt 4 (Nbd & Sbd Lns)				
							64	#11	7'-3"	D3	Footings
							24	#5	5'-9"	D2	"
							8	#6	12'-9"	D4	"
							24	#8	8'-0"	D5	"
											</

# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	DATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	40		19	107	

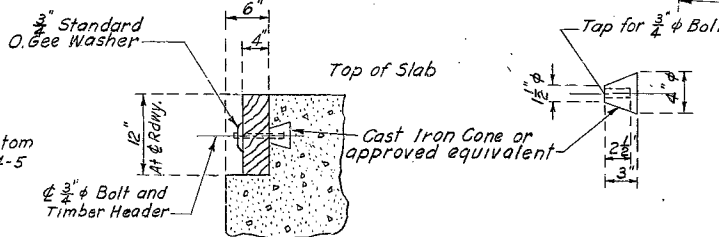


SECTION NEAR &

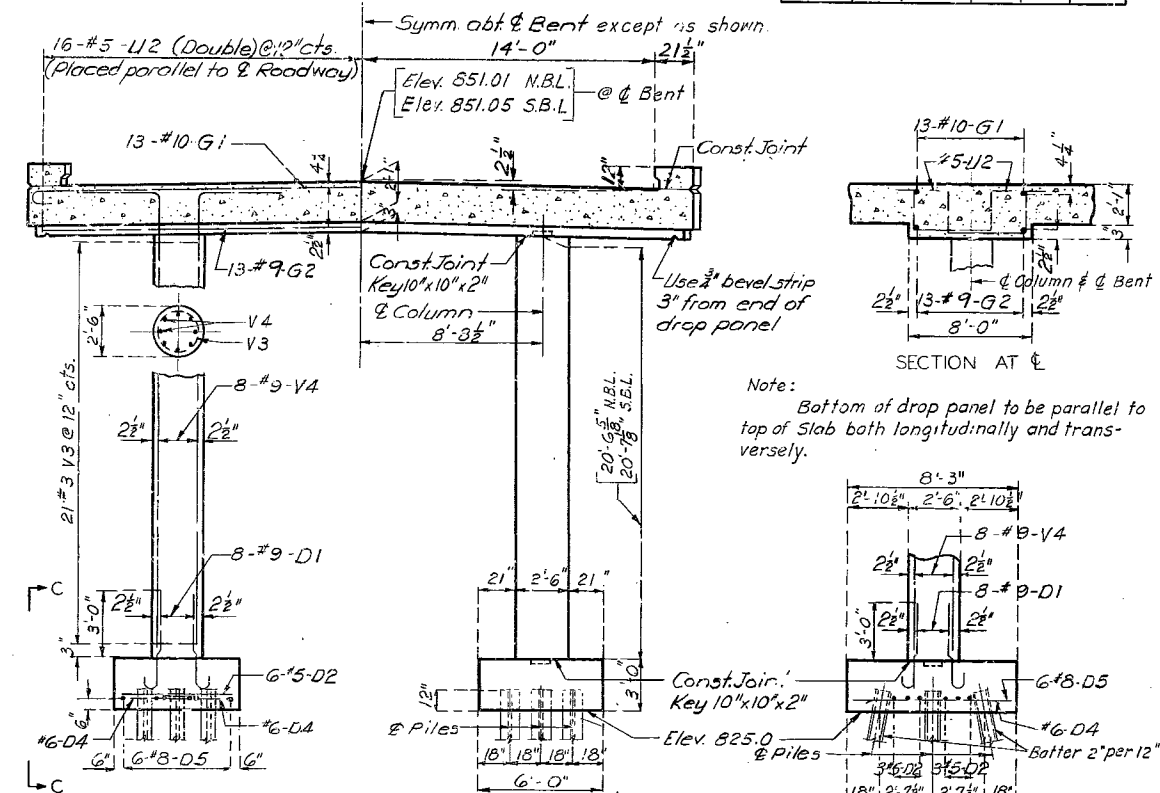


DETAILS OF END BENTS NO. 1 & 5  
NORTH BD. & SOUTH BD.

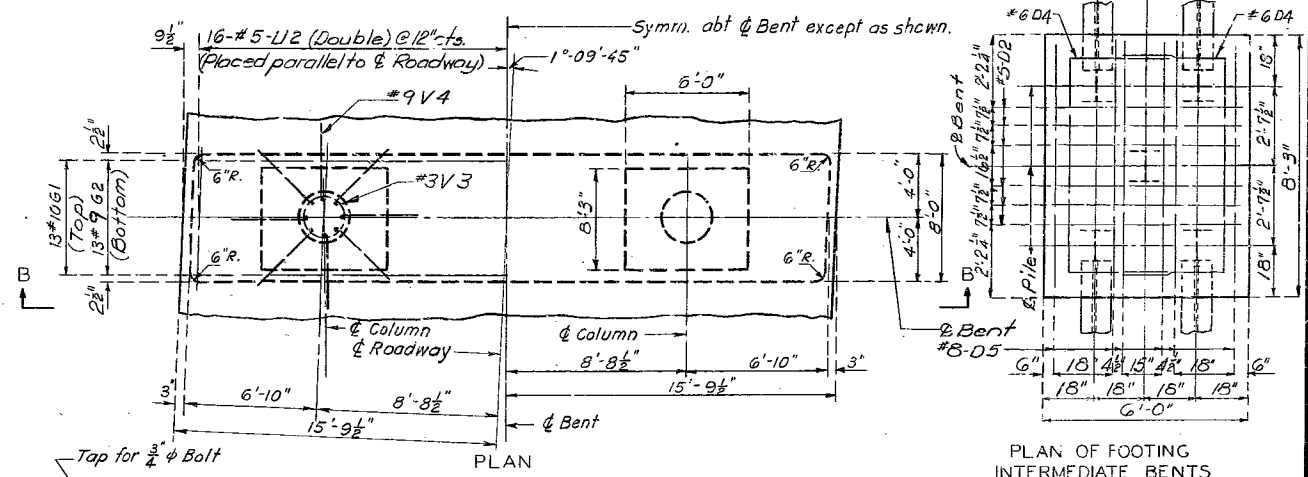
Note: Fill at end bents No. 1 & 5 shall not be carried above bottom of beam and wings until Superstructure spans 1-2 & 4-5 are in place.



Note: 3/4" & bolt shall be 6 1/2" long with hex. or square head, threaded 3" long and placed at 3'-0" cts. Cost of timber headers complete in place to be included in price bid for concrete.



SECTION B-B



DETAILS OF INT. BENT NO. 3  
NORTH BD. & SOUTH BD.

BRIDGE- ROUTE 54 UNDERPASS  
STATE ROAD INTERSTATE ROUTE 70  
ABOUT 1.25 MILES S. OF McCREIDIE  
PROJECT NO. HG-70-3(30)(RTE. I-70) STA. 600+34.85  
CALLAWAY COUNTY

106

No. 52.2 Revised Feb. 1962

Drawn March 1963 by Blattner  
Checked March 1963 by Mall

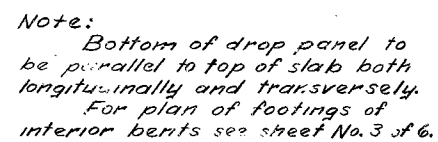
R.W. BOOKER & ASSOCIATES  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	108	



SECTION B - B



DETAILS OF INT. BENT NO. 2  
NORTH BD. & SOUTH BD.



SECTION B - B



DETAILS OF INT. BENT NO. 4  
NORTH BD. & SOUTH BD.

STATE ROAD INTERSTATE ROUTE 70  
ABOUT 1.25 MILES S. OF M<sup>C</sup>CREDIE  
PROJECT NO. HG-70-3(30)(RTE. I-70) STA. 600+34.85

L-964

Sheet No. 4 of 6

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

Drawn Mar. 1963 by Tyrey  
Checked Mar. 1963 by Mali

**R. W. BOOKER & ASSOCIATES**  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

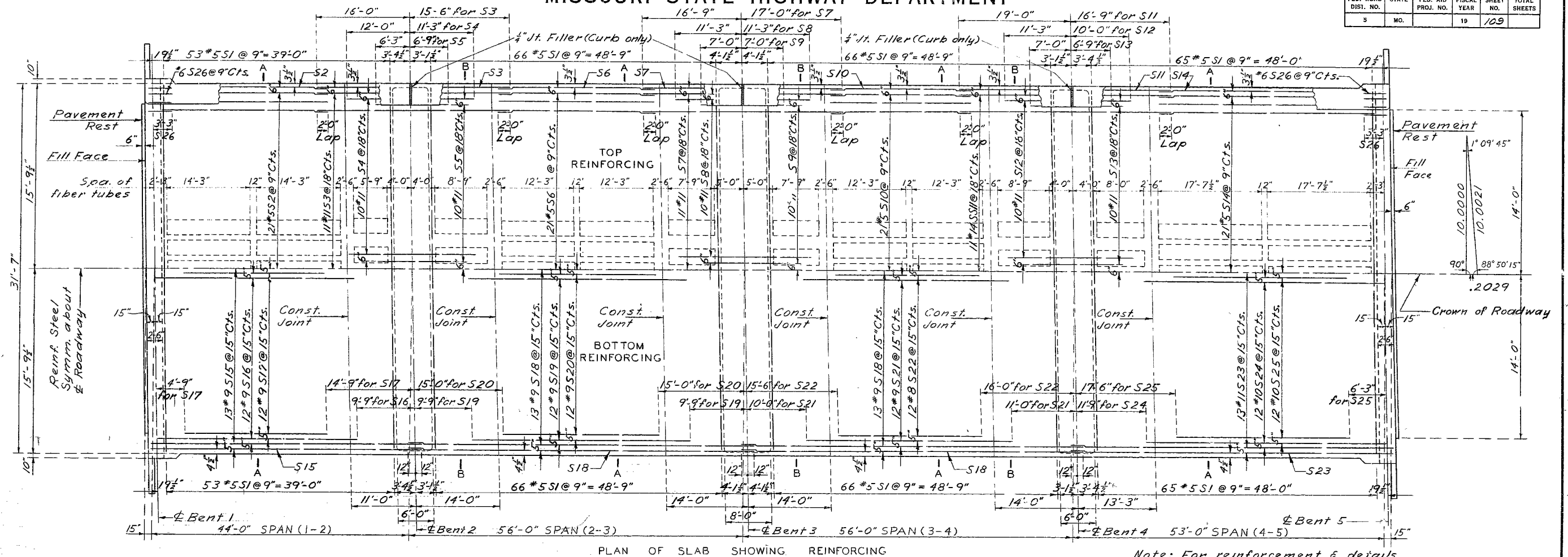
No. 52.5	Revised
----------	---------



Note: All longitudinal dimensions shown are horizontal.

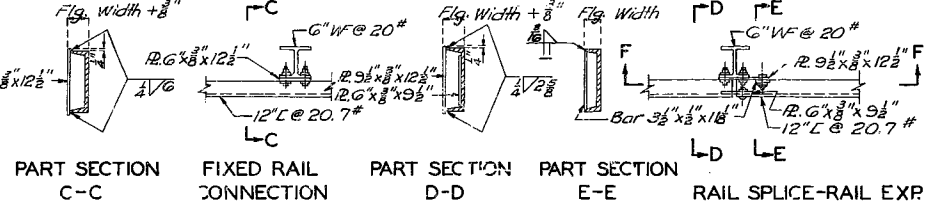
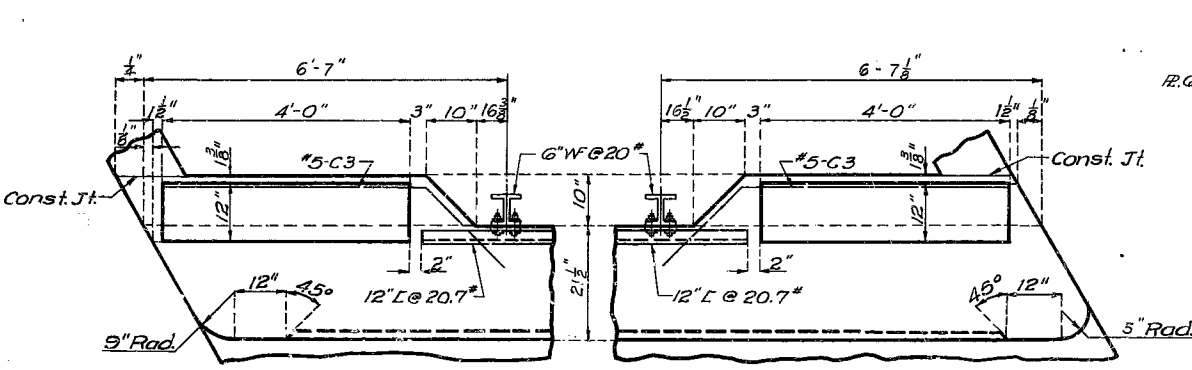
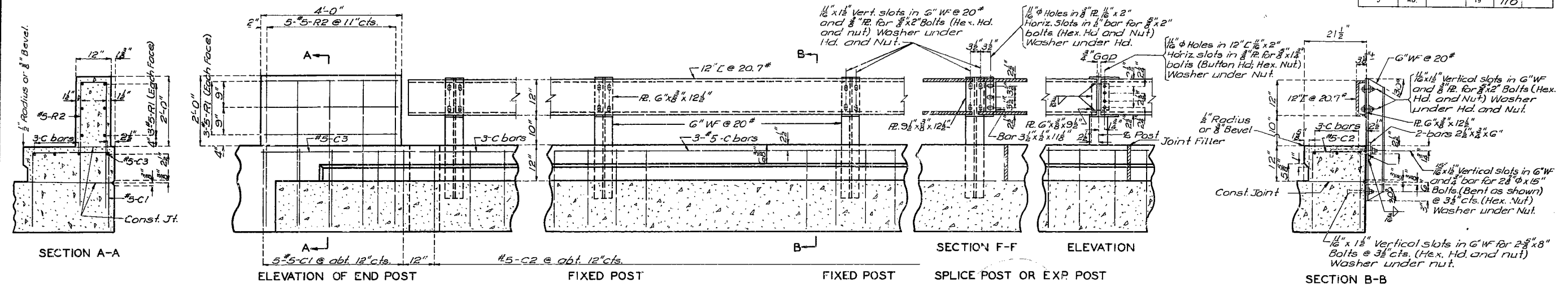
# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	169	



# MISSOURI STATE HIGHWAY DEPARTMENT

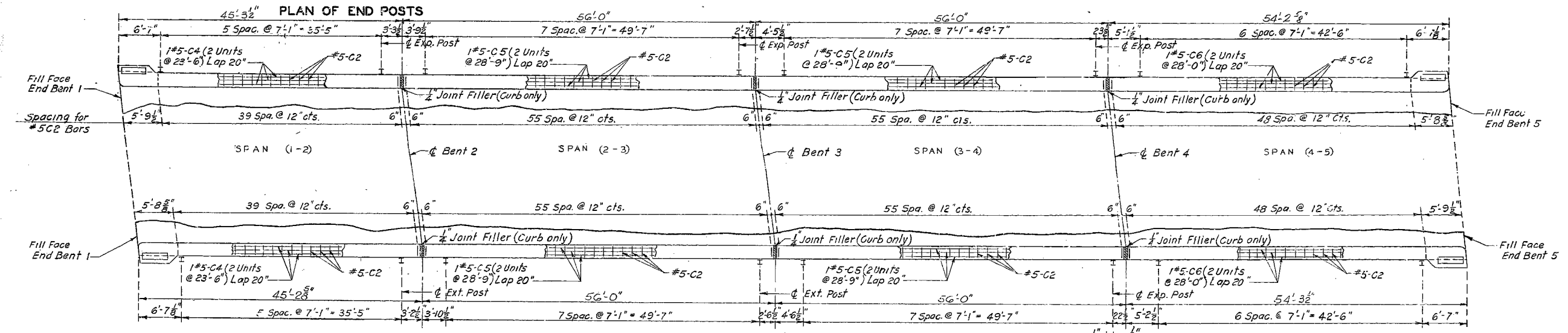
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	110	



Note: Channel rail to be adjusted for horizontal alignment by use of full size metal shims placed between G.W.F. and connection R. Shims G $\times$ 12 $\times$ 1/2" and 1/4" thickness with 1/2 $\times$ 1/4" vertical slots to be furnished with Structural Steel. Cost of shims to be included in price bid for other items.

## GENERAL NOTES:

Top of curbs and end posts to be built parallel to grade. Vertical faces of end posts to be vertical. All exposed edges of end posts to be beveled 1/2" G.W.F. posts to be set normal to grade. 12" L rails shall be fabricated to conform to horizontal and vertical alignment of curb.



Not. All longitudinal dimensions shown are horizontal.

Note: Omit curve on curb at ends of bridge where drain basin is provided on approach slab.

PART PLAN OF SLAB SHOWING RAIL POST SPACING AND CURB REINFORCING (NORTH BOUND & SOUTH BOUND)

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

## DETAILS OF BEVEL FOR FILLED JOINTS

**BRIDGE- ROUTE 54 UNDERPASS**  
STATE ROAD-INTERSTATE ROUTE 70  
ABOUT 1.25 MILES S. OF M<sup>o</sup>CREDIE  
PROJECT NO. IG-70-3(30)(RTE. I-70) STA. 600+34.85  
CALLAWAY COUNTY

109

No. 1.8 Revised April 1962  
Drawn March 1963 by Blattner  
Checked March 1963 by Mall  
R.W. BOOKER & ASSOCIATES  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

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

# MISSOURI STATE HIGHWAY DEPARTMENT

Twin 44'-56'-53' Cont. Slab Spans (Voided)

NO.	STAFF	ED. AID	FISCAL	SHEET	TOTAL
NO.	NO.	NO.	YEAR	NO.	SHEETS
				11	25

## GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1961.  
Loading H20-S16-44 (15' sq. ft. Future Wearing Surface).  
Structural Steel Stress (A.S.T.M. A36-62T) 20,000 psi.  
Reinforcing Steel Stress 20,000 psi.  
Concrete, Class B Stress 1,200 psi.  
Concrete, Class B1 Stress 1,600 psi.  
Superstructure concrete was Class B1.  
Substructure concrete was Class B1 except payment was on the basis of Class B.  
Superstructure deck was surface sealed (See special provisions).  
See Standard Specification 55.3.15 for qualification of welding operators.  
Where joint filler is specified on the plans it did conform to Standard Specification 157.2.4.  
Paint: Shop, none; Field, by contractor in accordance with Standard Specifications 55.4.10.

FINAL QUANTITIES			
ITEM	Substr.	Superstr.	Total
Class I Excavation for Structures Cu.Yds.	189.5		189.5
Test Piles Lin. Ft.	60		60
12" Steel Piles in place Lin. Ft.	1303		1303
12" Steel Pile Cut-offs Lin. Ft.	276		276
Class B Concrete Cu.Yds.	66.0		66.0
Class B1 Concrete Cu.Yds.		976.0	976.0
Reinforcing Steel Lbs.	6320	236,630	244,950
Fabricated Structural Carbon Steel Lbs.		27,980	27,980
Loading Tests Each	0		0
Partial Loading Test (Contingent) Each			

Notes: All concrete and reinforcement in End Bents and above footings in Intermediate Bents is included in superstructure quantities.

Excavation for Structures was paid for as Class I.  
Class I Excavation for Structures was computed from the original ground line (1960) from the lower limits of roadway excavation, whichever was lower, regardless of the sequence of operations and the method of removal.

No payment for excavation was allowed at End Bents No. 1 & 5.

The final quantity of 12" Steel Piles in place includes 3 splices @ 8' per splice.

Weight of bolts (steel to steel) is included in weight of fabricated structural steel on the basis of the following weights per 100 bolts: 8" 40#, 3/4" 65#, 3/8" 95#, 1" 135#.

J. M. Schaefer  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI NO. 1000

B.M. Top of Rt. Ear Abut. (N.B.L. Lt. Sta. 165+88)  
Rte. 54 Elev. 849.83

## BRIDGE - ROUTE 54 UNDERPASS

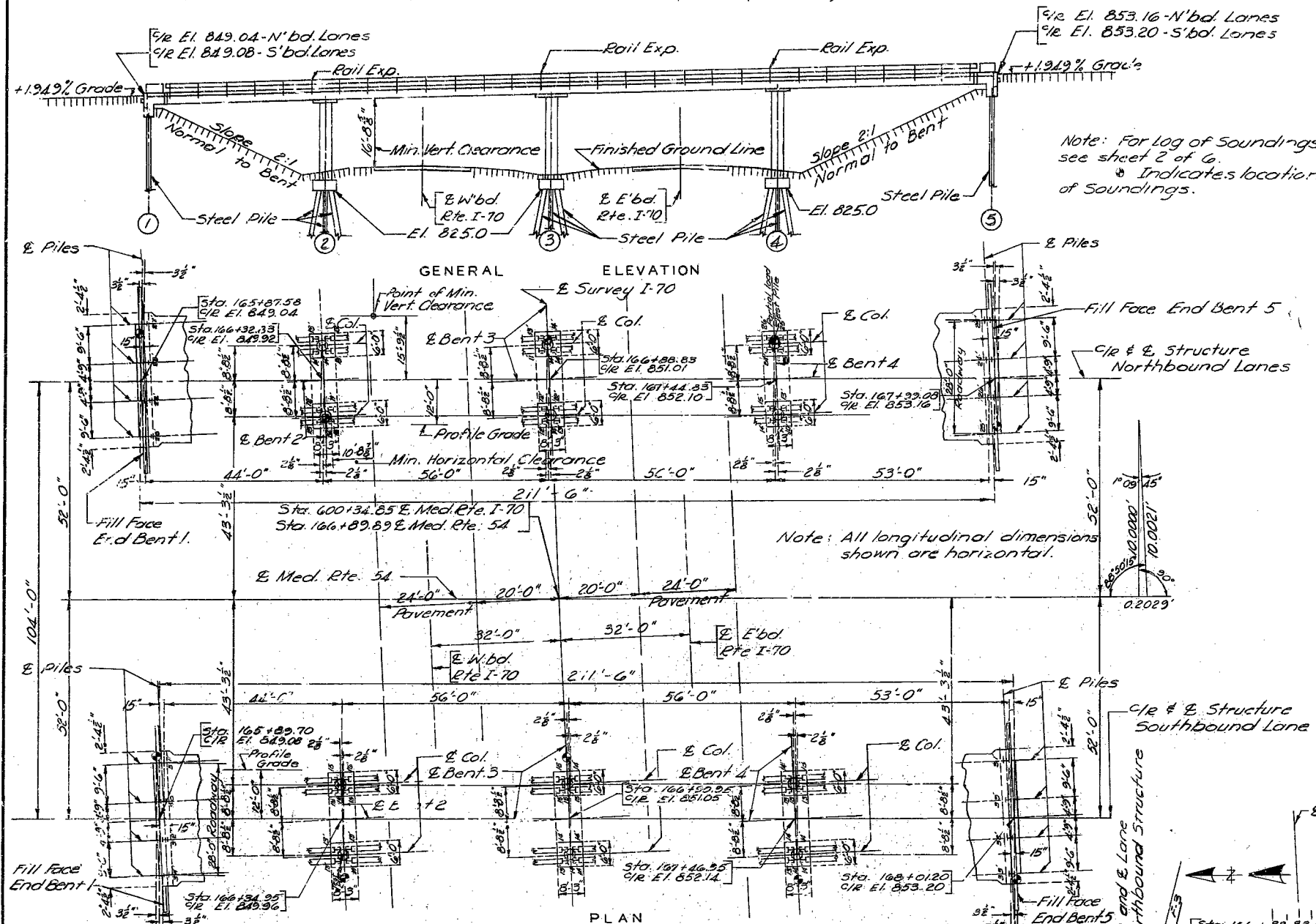
STATE ROAD - INTERSTATE ROUTE 70  
ABOUT 1.25 MILES S. OF McCREDE  
PROJECT NO. H-70-3(30) RTE. 1-70 STA. 600+34.85

CALLAWAY COUNTY

SUBMITTED BY J. B. Jentzen DATE 6/13/63  
APPROVED BY M. J. Jentzen DATE 6/13/63  
CHIEF ENGINEER

SD-54.00

L-964



Note: All longitudinal dimensions shown are horizontal.

PILE DATA	
BENT NUMBER	12345
Pile Type & Size	12BP3312BP5312BP5312BP5312BP53
Number(N/bd & S/bd/Lanes)	819*2015**8
Authorized Length, Ft.	3515151540
Plan Bearing Tons	4545454545
Hammer Vol. No.1 5000 Air	PowerPowerPowerPowerPower
See Standard Specification 52.2.6	

Note: All pile were driven to not less than the Plan Bearing shown.  
\*\* Lt. Flg. Bent #4 (N.B.L.): One pile driven for Partial Load Test. Four piles used as Hold Down Piles.

\* Test Pile was driven in permanent position, one for Bent No. 2, right footing, Sbd. Lane.  
Compacted roadway fill (full roadway width) was placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents Nos. 1 and 5 before steel piles were driven.  
See Special Provisions for Loading Test and see Change Order No. 1 for Partial Loading Test.  
Drawn Mar. 1963 by Susan  
Checked Mar. 1963 by A. J. J.

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

R. W. BOOKER & ASSOCIATES  
CONSULTING ENGINEERS  
215 NORTH ELEVENTH ST.  
ST. LOUIS 1, MISSOURI

LOCATION

SKETCH

Sheet No. 1A of 1

FINAL PLANS

# MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

WIDEN SUBSTRUCTURE AND SUPERSTRUCTURE EXISTING N.B.L. & S.B.L.  
(44', 56', 56', 53') CONTINUOUS CONCRETE SLAB SPANS (VOIDED)

GR.ELEV.849.27 @ RDWY. (N.B.L.)  
GR.ELEV.849.18 @ RDWY. (S.B.L.)

GR.ELEV.853.38 @ RDWY. (N.B.L.)  
GR.ELEV.853.30 @ RDWY. (S.B.L.)

+1.943% N.B.L., +1.949% S.B.L.

STATE	PROJ. NO.	SHEET NO.
MO.	12-125-70-3 (43)	36
SEC./SUR.	9 TWP. 48N RGE. 9W	

NOTE: ROADWAY FILL SHALL BE COMPLETED TO THE FINAL ROADWAY SECTION AND UP TO THE ELEVATION OF THE BOTTOM OF THE CONCRETE BEAM WITHIN THE LIMITS OF THE STRUCTURE AND FOR NOT LESS THAN 25' IN BACK OF THE FILL FACE OF THE END BENTS BEFORE PILING IS DRIVEN FOR ANY BENTS FALLING WITHIN THE EMBANKMENT SECTION.

4" CONCRETE SLOPE PROTECTION (EXTEND THRU MEDIAN) (2' SLOPE NORMAL) (RDWY. ITEM)

GENERAL ELEVATION

## GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989 LOAD FACTOR DESIGN

## DESIGN LOADING:

HS20-44 MODIFIED 24000# TANDEM AXLE  
NO FUTURE WEARING SURFACE.  
EARTH 120#/CU.FT. EQUIVALENT FLUID PRESSURE 45#/CU.FT.

## DESIGN UNIT STRESSES:

CLASS B CONCRETE (FOOTINGS)  $f'_c=3000$  PSI.  
CLASS B1 CONCRETE (SAFETY BARRIER CURB, INT BENT COLUMNS AND END BENTS BELOW LOWER CONST.JT.)  $f'_c=4,000$  PSI  
CLASS B2 CONCRETE (SUPERSTRUCTURE EXCEPT SAFETY BARRIER CURB)  $f'_c=4000$  PSI  
REINFORCING STEEL (GRADE 60)  $f_y=60,000$  PSI

## REINFORCING STEEL:

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE  $1\frac{1}{2}"$  UNLESS OTHERWISE SHOWN.  
BARS BONDED IN OLD CONCRETE NOT REMOVED SHALL BE CLEANLY STRIPPED AND EMBEDDED INTO NEW CONCRETE WHERE POSSIBLE. IF LENGTH IS AVAILABLE, OLD BARS SHALL EXTEND INTO NEW CONCRETE AT LEAST 40 DIAMETERS FOR SMOOTH BARS AND 30 DIAMETERS FOR DEFORMED BARS.

## JOINT FILLER

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4 EXCEPT AS NOTED.

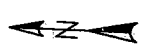
## CONSTRUCTION CLEARANCE:

FALSEWORK OVER EXISTING LANES SHALL BE CONSTRUCTED WITH A MINIMUM VERTICAL CLEARANCE OF 14'-3" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'-0" CENTERED ON EXISTING LANES.

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

TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. FOR DETAILS OF STAGE CONSTRUCTION, SEE SHEETS NO. 5 & 6.

NOTE: FOR ESTIMATED QUANTITIES AND PILE DATA, SEE SHEET NO. 2.  
⊙ INDICATES LOCATION OF BORING. FOR BORING DATA, SEE SHEETS NO. 3 & 4.



B.M. ELEV.849.83 X ON N.E. WINGWALL AT N. END EBL BR. RTE. 54.

## BRIDGE: RTE. 54 UNDERPASS

STATE ROAD: INTERSTATE ROUTE 70

IN KINGDOM CITY

PROJECT NO. 12-125-70-3 (43) STA. 600+34.85

JOB NO. 51 426-70

RTE. I-70

CALLAWAY

COUNTY

STD. 611.60
STD. 406.22
STD. 706.35
L-964R

442 365

DESIGNED MAR. 1990  
DETAILED MAR. 1990  
CHECKED APR. 1990

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

SEE FINAL PLANS  
SHEET NO. 1 OF 26

STATE	PROJ. NO.	SHEET NO.
MO.		

ESTIMATED QUANTITIES		N.B.L.		S.B.L.		
ITEM		SUBSTR.	SUPERSTR.	SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN.FT.		406		406	812
CURB REMOVAL	LIN.FT.		423		423	846
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM					1
ASPHALT REMOVAL	SQ. FT.		5979			5979
CLASS 1 EXCAVATION	CU.YD.	150		120		270
STRUCTURAL STEEL PILES (12")	LIN.FT.	637		529		1166
PREBORE FOR PILING	LIN.FT.	68		40		108
PILE POINT REINFORCEMENT	EACH	37		30		67
CLASS B CONCRETE	CU.YD.	29.4		26.1		55.5
SUPERSTRUCTURE REPAIR (UNFORMED) SEE SPECIAL PROVISIONS	SQ. FT.		400		400	800
CLASS B1 CONCRETE	CU.YD.		36.5		31.0	67.5
CLASS B2 CONCRETE	CU.YD.		334.3		188.5	522.8
SAFETY BARRIER CURB	LIN.FT.		445		445	890
REPAIRING CONCRETE DECK (HALF-SOLING)	SQ. FT.		900		900	1800
MICROSILICA CONCRETE WEARING SURFACE	SQ. YD.		922		959	1881
REINFORCING STEEL	LBS.	1970	6040	1740	5730	15,480
REINFORCING STEEL (EPOXY COATED)	LBS.		79,820		47,540	127,360

NOTE: ALL REINFORCEMENT IN END BENTS AND INTERMEDIATE BENT COLUMNS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.  
 ALL CONCRETE IN THE END BENTS AND INTERMEDIATE BENT COLUMNS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.  
 ALL CONCRETE IN THE END BENTS ABOVE TOP OF BEAM AND BELOW TOP OF SLAB SHALL BE CLASS B2.

PILE DATA (N.B.L.)					
BENT NO.	1	2	3	4	5
PILE TYPE AND SIZE	HP12X53	HP12X53	HP12X53	HP12X53	HP12X53
NUMBER	5	4 LT., 5 RT.	4 LT., 5 RT.	4 LT., 5 RT.	5
APPROXIMATE LENGTH FT.	21	13	14	26 LT., 12 RT.	25
DESIGN BEARING TONS	30	27 LT., 41 RT.	27 LT., 41 RT.	27 LT., 44 RT.	34
MINIMUM TIP PENETRATION ELEV.	825.0	815.0	814.0	815.0	825.0
HAMMER ENERGY REQUIRED FT.-LBS.	7000	7000 LT., 9600 RT.	7000 LT., 9600 RT.	7000 LT., 10,400 RT.	7400
PILE DATA (S.B.L.)					
BENT NO.	1	2	3	4	5
PILE TYPE AND SIZE	HP12X53	HP12X53	HP12X53	HP12X53	HP12X53
NUMBER	3	8	8	8	3
APPROXIMATE LENGTH FT.	34	14	13	14	33
DESIGN BEARING TONS	34	27	27	27	38
MINIMUM TIP PENETRATION ELEV.	825.0	813.0	813.0	813.0	825.0
HAMMER ENERGY REQUIRED FT.-LBS.	7400	7000	7000	7000	8400

NOTE: MINIMUM ENERGY REQUIREMENT OF HAMMER BASED ON PLAN LENGTH OF PILES.  
 ALL PILE SHALL BE DRIVEN TO THE MINIMUM PENETRATIONS AND TO NOT LESS THAN THE DESIGN BEARINGS NOTED.  
 PREBORE FOR PILES AT END BENT NO. 1 TO ELEV. 830.0.  
 MANUFACTURED PILE POINT REINFORCEMENT SHALL BE USED ON ALL PILES IN THIS STRUCTURE. SEE SPECIAL PROVISIONS.

DETAILED MAR. 1990  
 CHECKED MAR. 1990

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

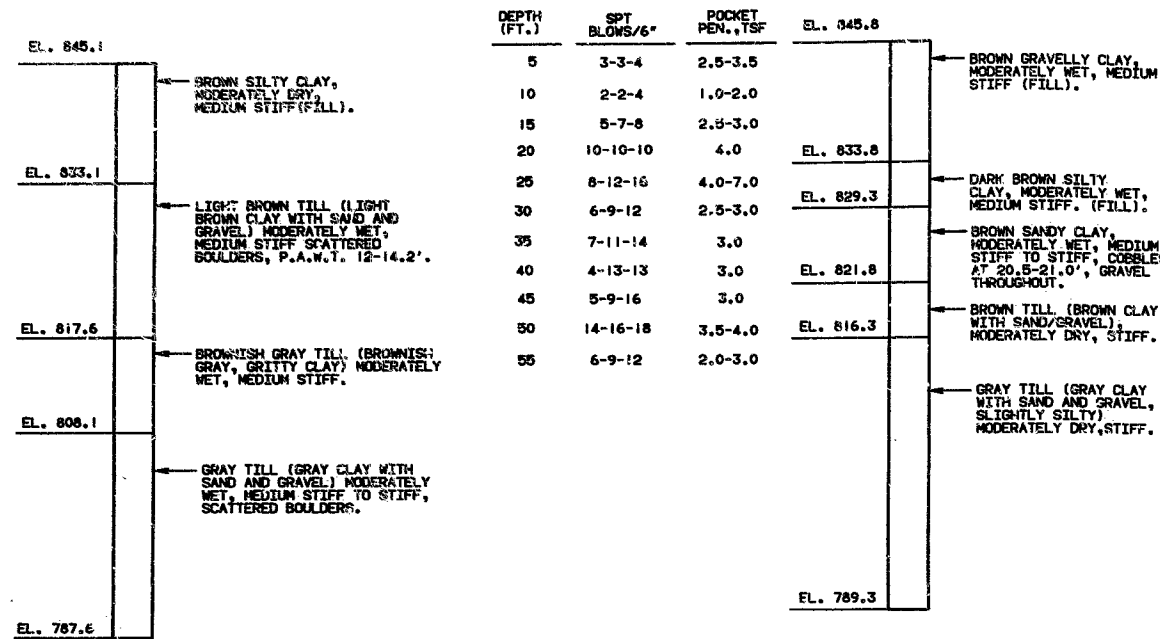
SEE FINAL PLANS  
 SHEET NO. 2 OF 26

CALLAWAY COUNTY

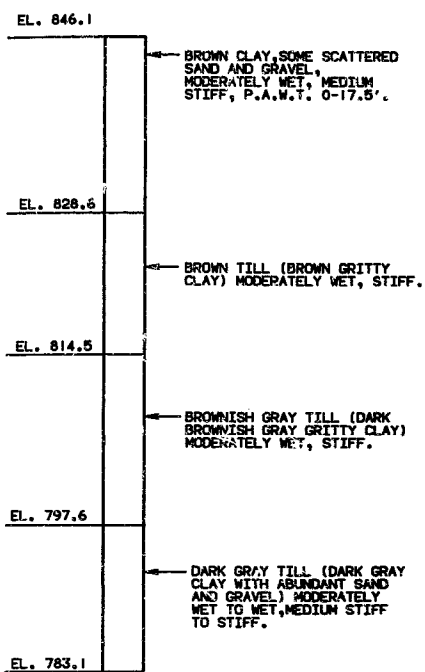
L-964R

4113-366

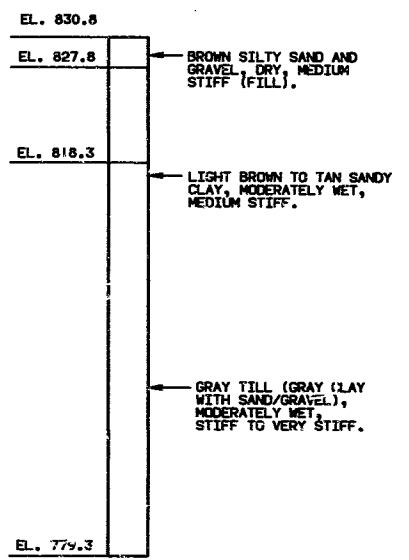




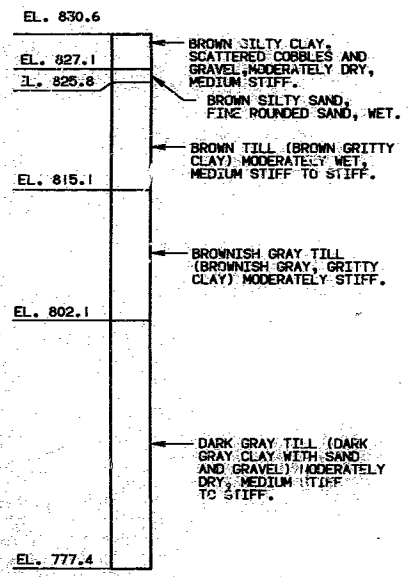
①



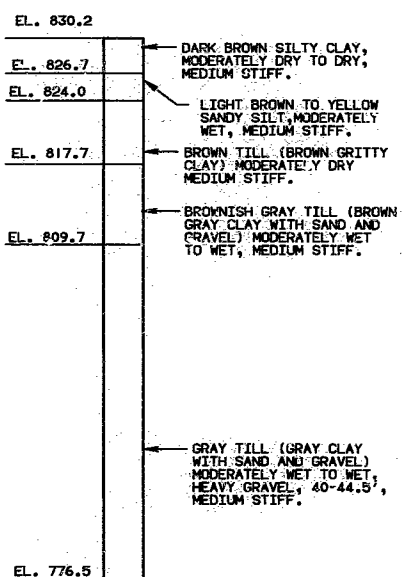
③



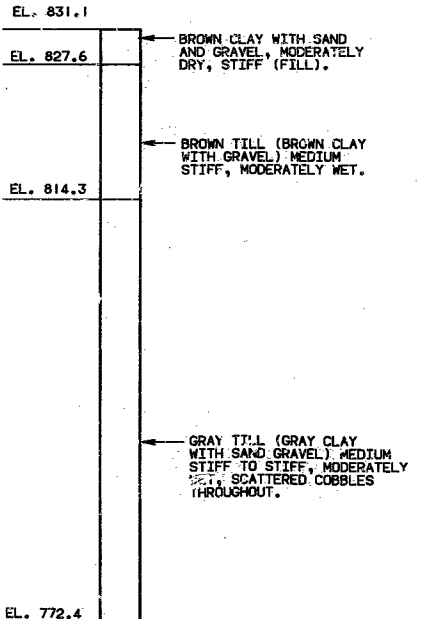
④



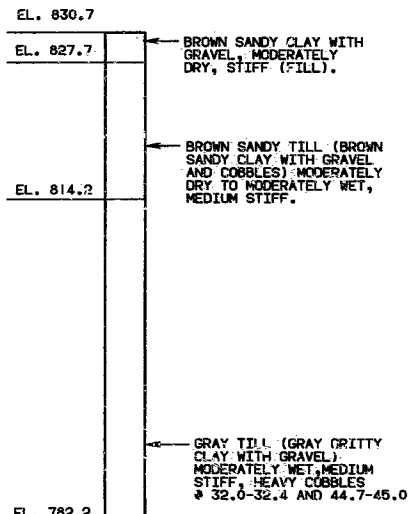
⑤



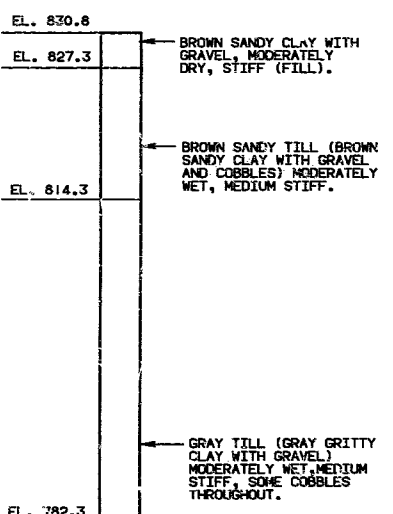
⑥



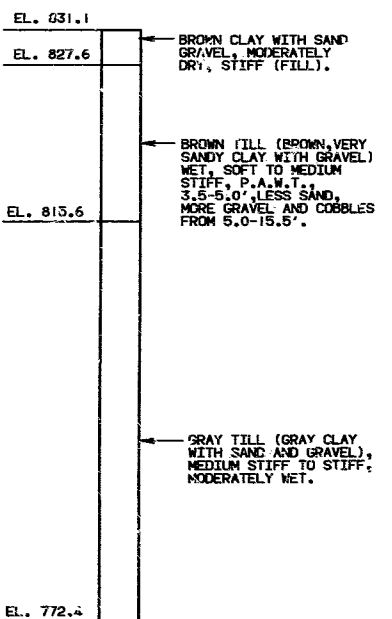
⑦



⑧



⑨



⑩

NOTE: FOR LOCATION OF BORINGS, SEE SHEET NO. 1.

# BORING DATA

DETAILED APR. 1990  
CHECKED APR. 1990

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

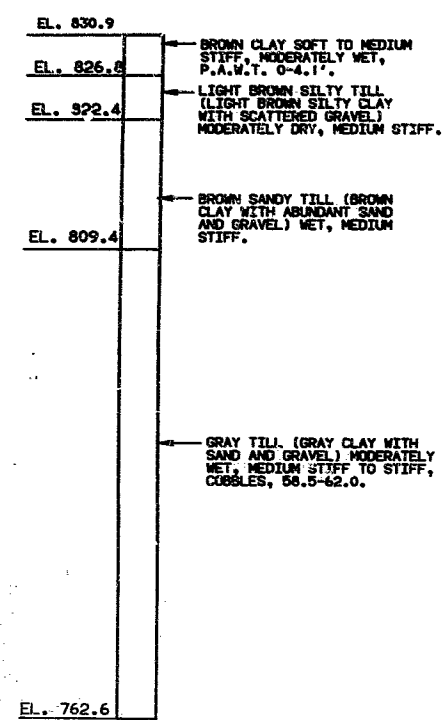
SHEET NO. 3 OF 26

CALLAWAY COUNTY L-964R

444-367

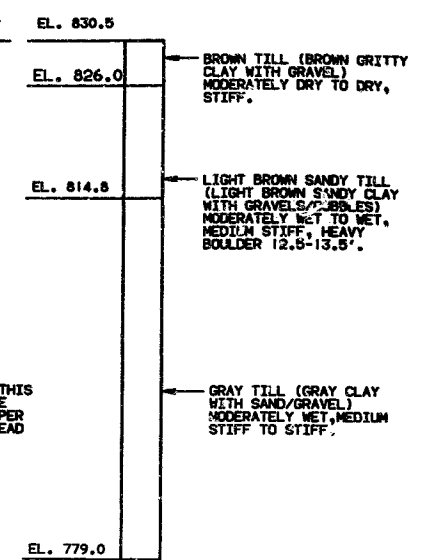
445 368

STATE	PROJ. NO.	SHEET NO.
MO.		39

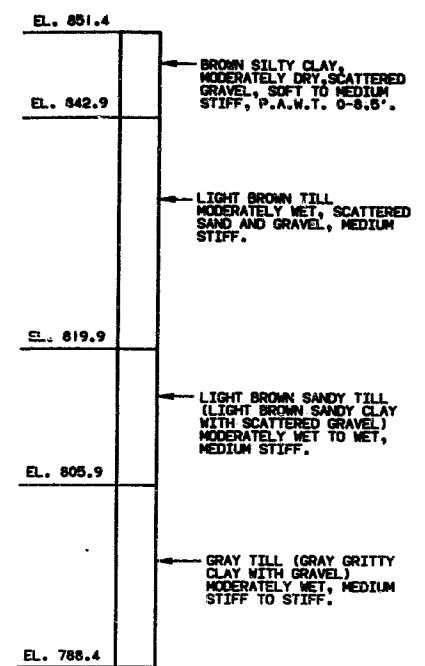


DEPTH (FT.)	SPT BLOWS/6"	POCKET PEN., TSF
5	7-12-13	5.8
10	4-9-14	4.0-4.5
15	1-4-8	2.0
20	8-10-13	2.5
25	4-9-13	2.5
30	7-11-13	2.5
35	7-11-16	3.0
40	7-11-13	2.5
45	7-6-4	2.5
50	9-16-17	2.5

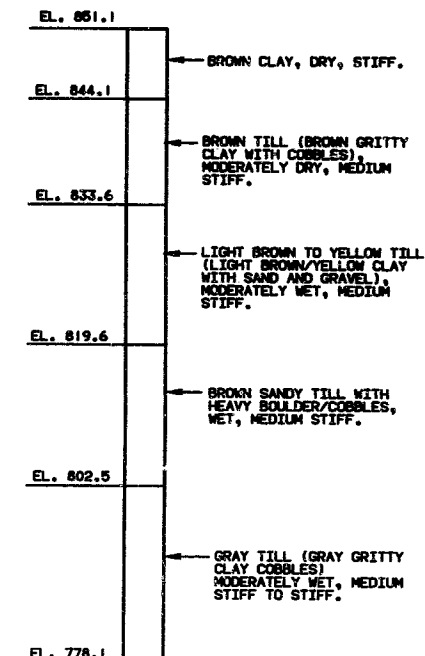
\* NOTE: THE BLOW COUNT FOR THIS INTERVAL IS IN ERROR BECAUSE DRILL STRING WAS NOT AT PROPER DEPTH. SAMPLED FALL-IN INSTEAD OF NATURAL GROUND.



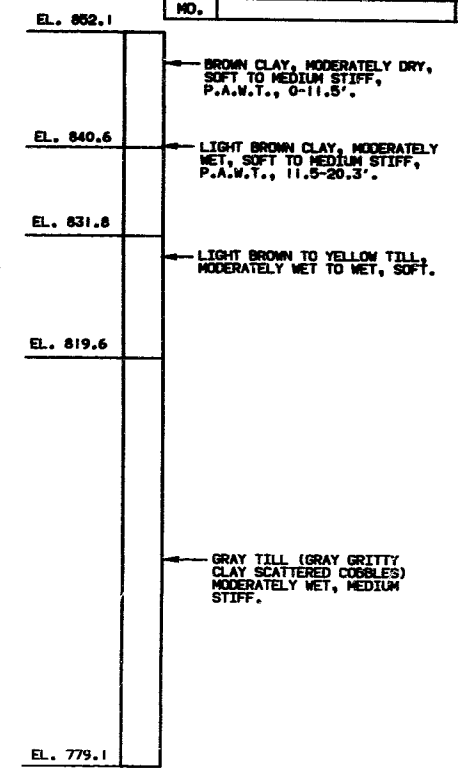
(12)  
(CORE)



(13)



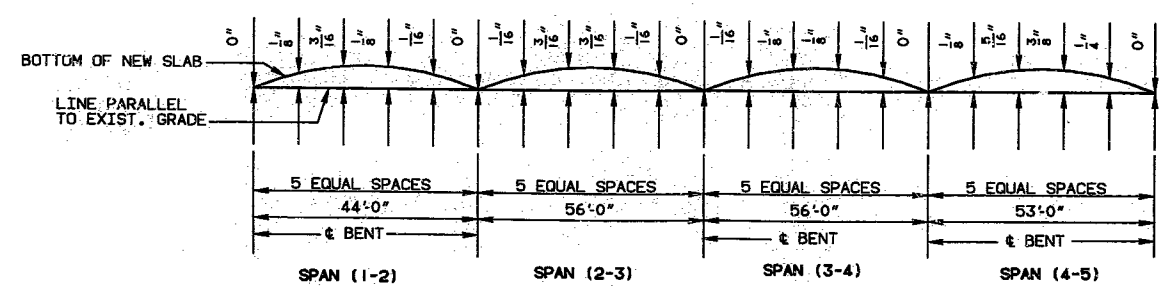
(14)



(15)

NOTE: FOR LOCATION OF BORINGS, SEE SHEET NO. 1.

### BORING DATA



CAMBER DIAGRAM

DETAILED APR. 1990  
CHECKED APR. 1990

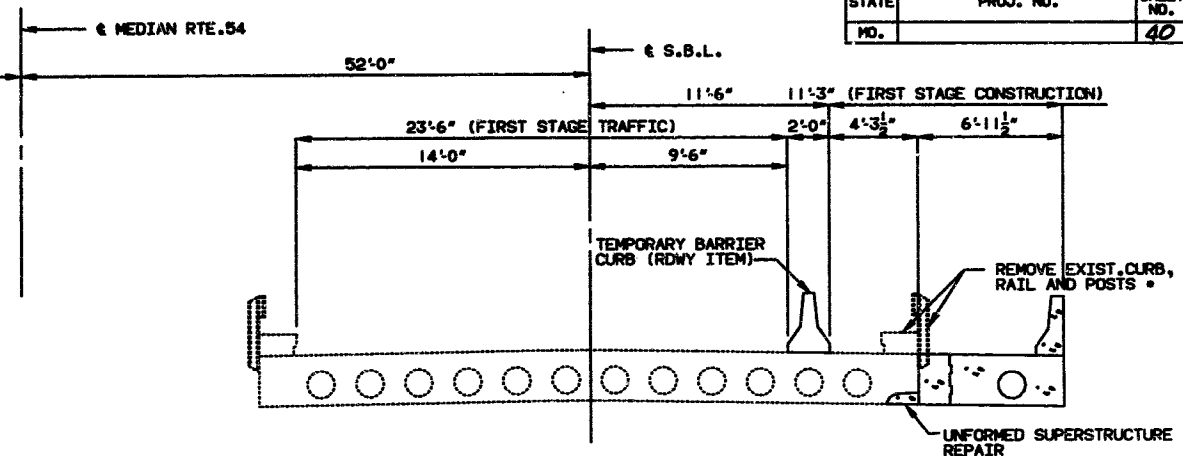
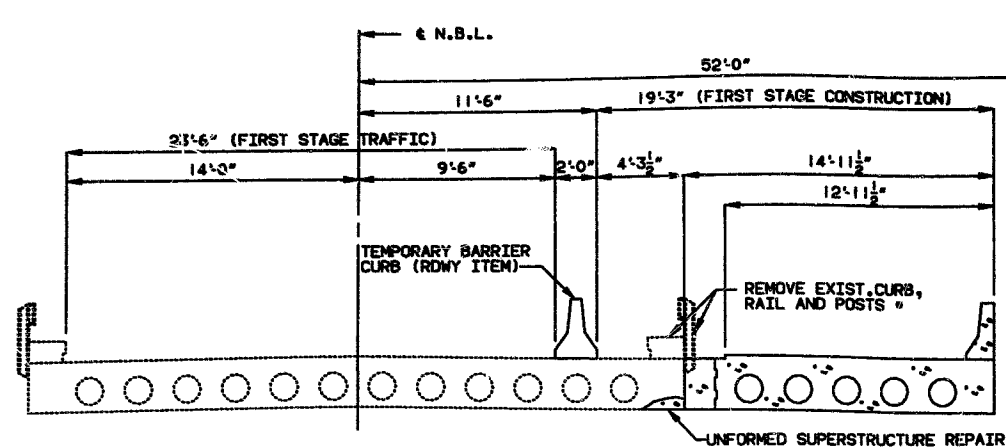
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 26

CALLAWAY COUNTY

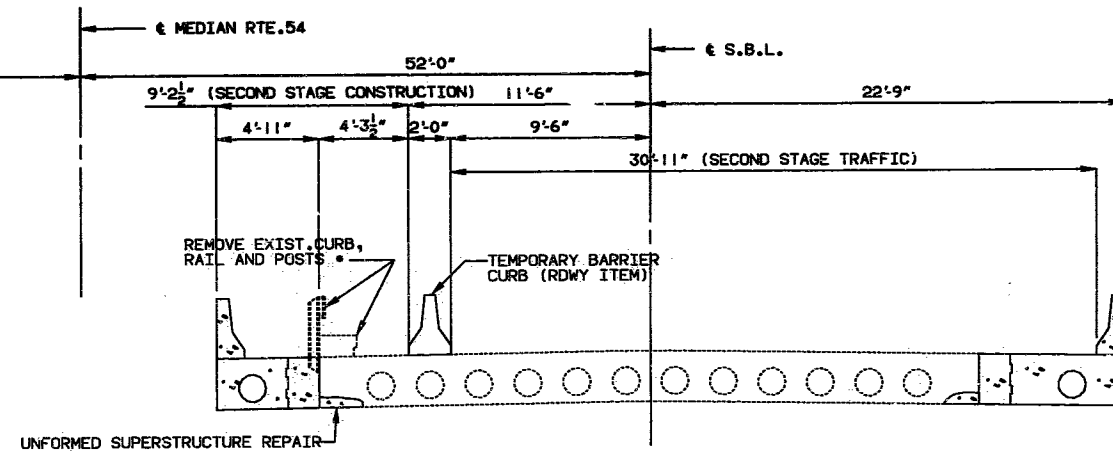
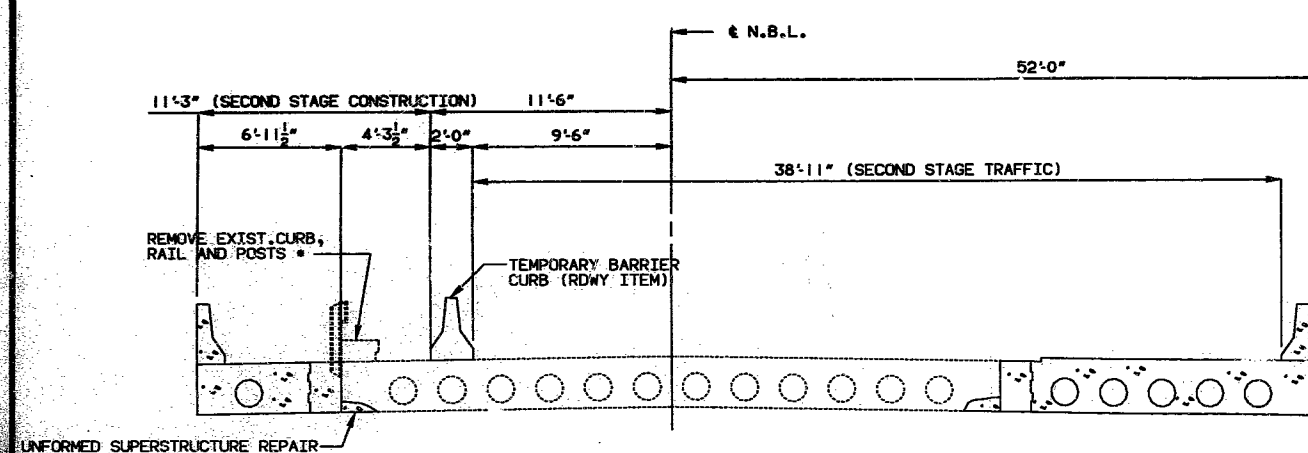
L-964R

STATE	PROJ. NO.	SHEET NO.
MO.		40



• EXISTING RAIL AND POSTS SHALL BE SALVAGED.  
(SEE SPECIAL PROVISIONS).

FIRST STAGE CONSTRUCTION



SECOND STAGE CONSTRUCTION

NOTE: FOR THIRD, FOURTH AND FIFTH STAGE CONSTRUCTION,  
SEE SHEET NO. 6.

446 369  
DETAILED JUNE 1990  
CHECKED JUNE 1990

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

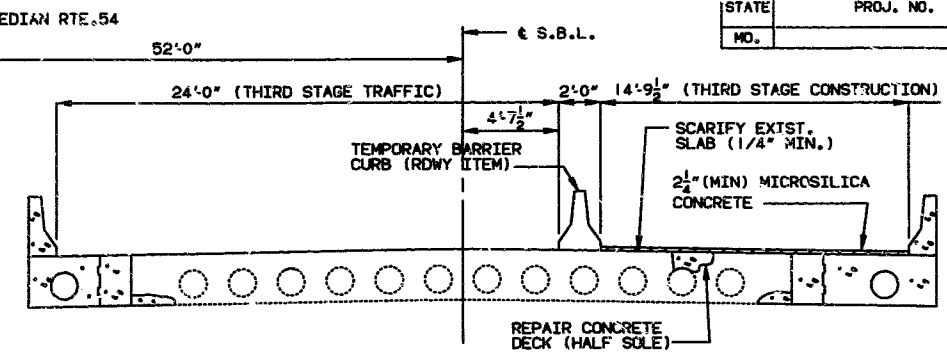
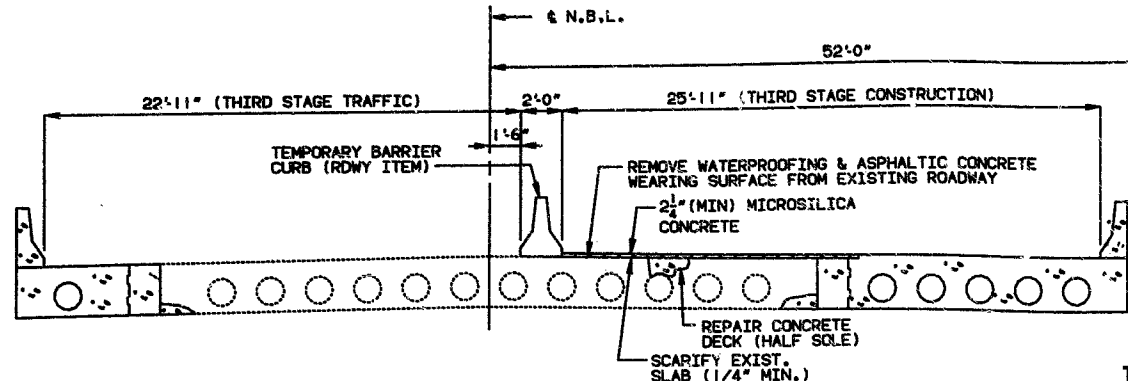
SHEET NO. 5 OF 26

CALLAWAY

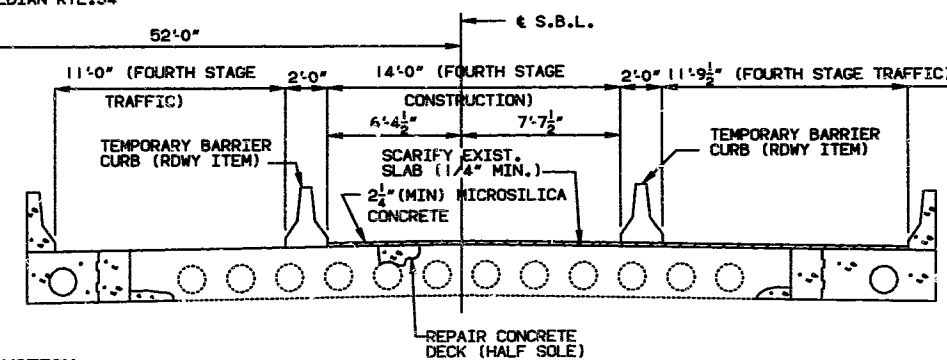
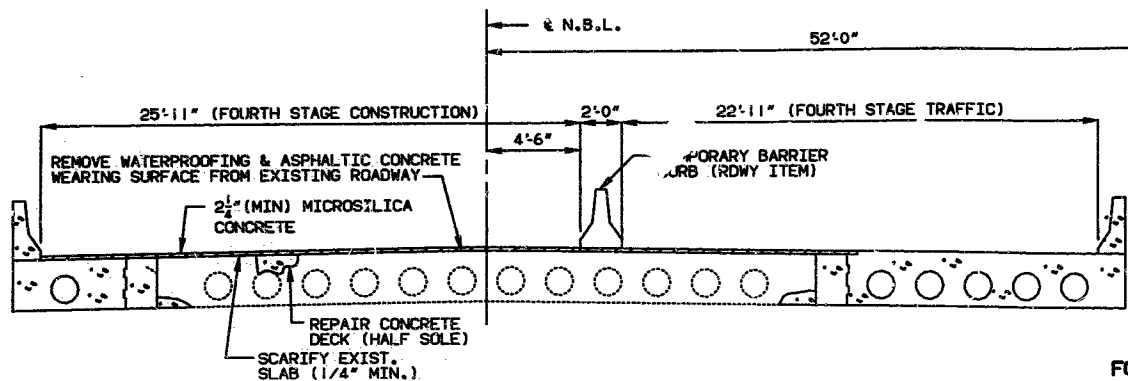
COUNTY

L-964R

STATE	PROJ. NO.	SHEET NO.
MO.		

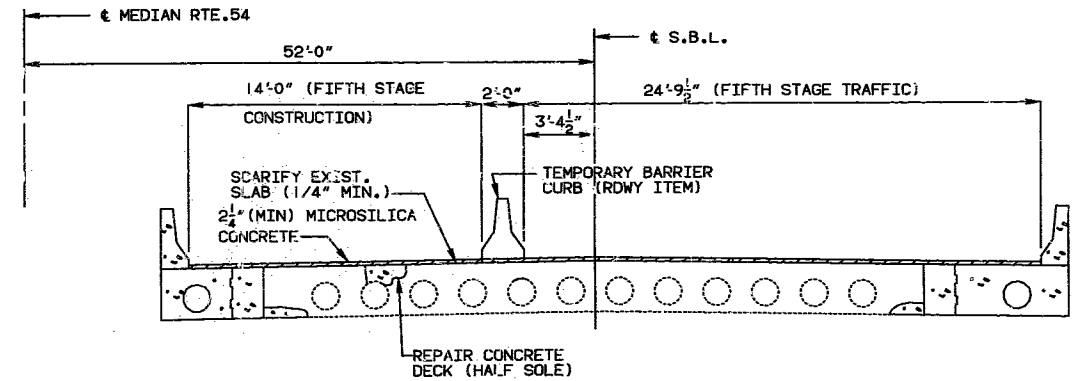


THIRD STAGE CONSTRUCTION

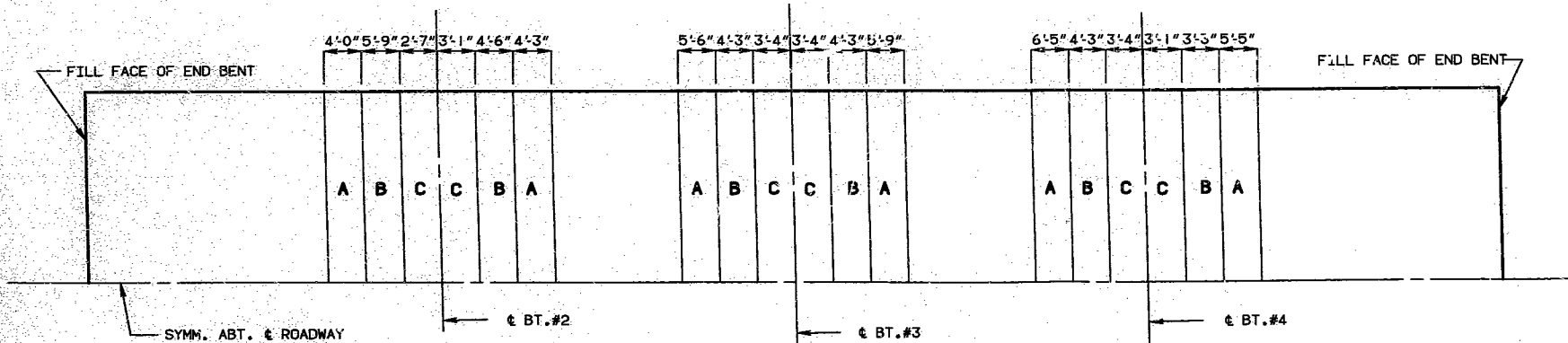


FOURTH STAGE CONSTRUCTION

NOTE: FOR FIRST AND SECOND STAGE CONSTRUCTION, SEE SHEET NO.5.

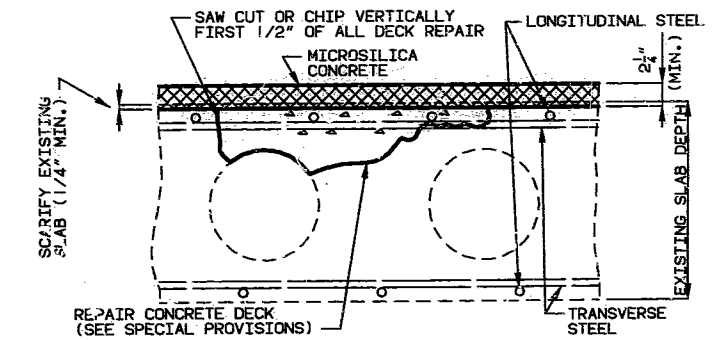


FIFTH STAGE CONSTRUCTION



PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES (TYPICAL BOTH LANES)

NOTE: SEQUENCE OF REPAIR: ZONE A, THEN ZONE B, THEN ZONE C.  
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.



HALF-SOLED AREA

DETAILED JUNE 1990  
CHECKED JUNE 1990

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

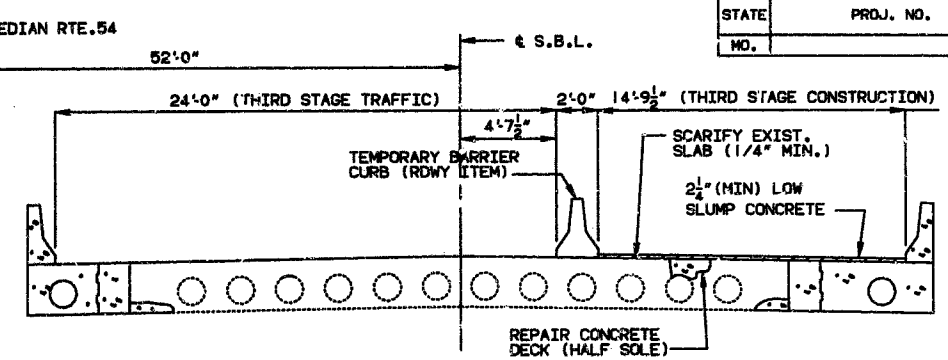
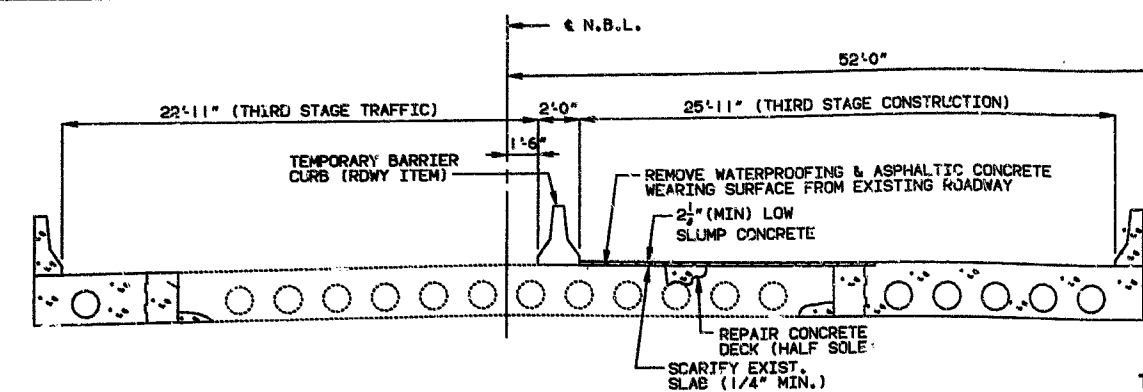
SHEET NO. 6 OF 26

CALLAWAY

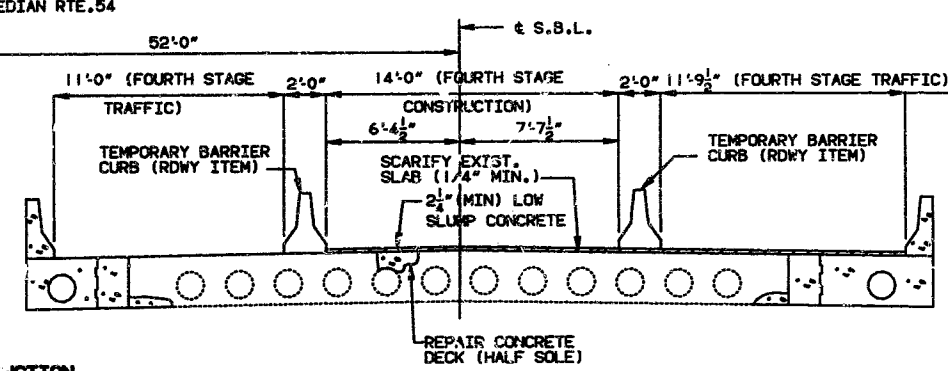
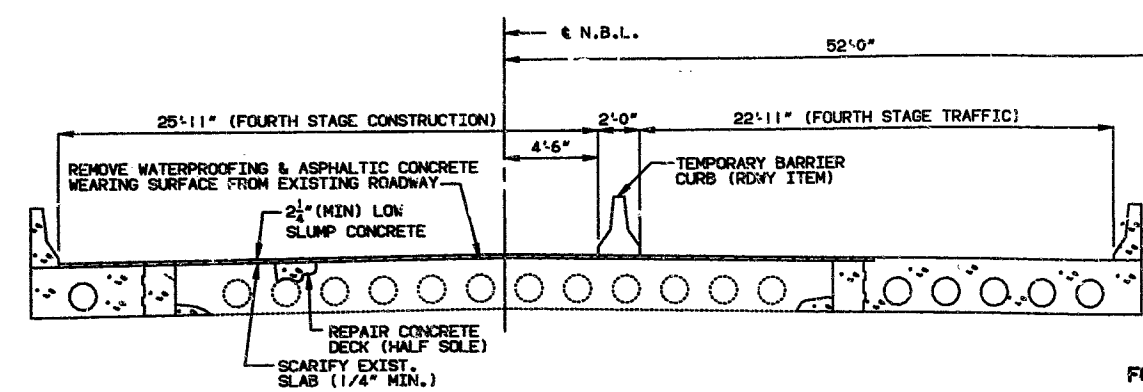
COUNTY

L-964R

447 370

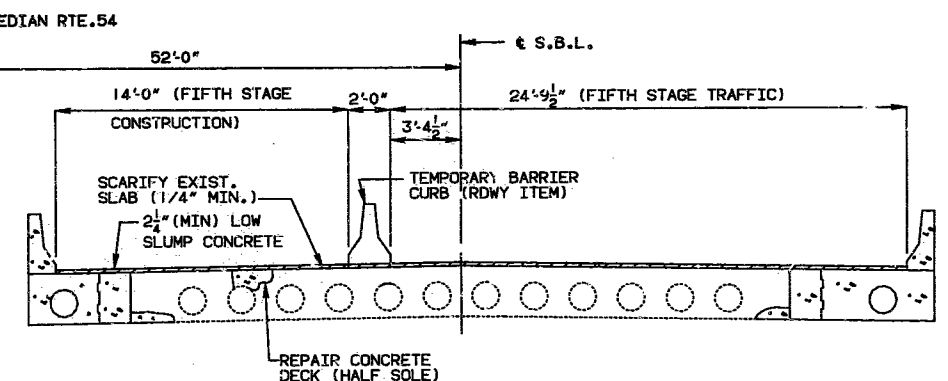


THIRD STAGE CONSTRUCTION

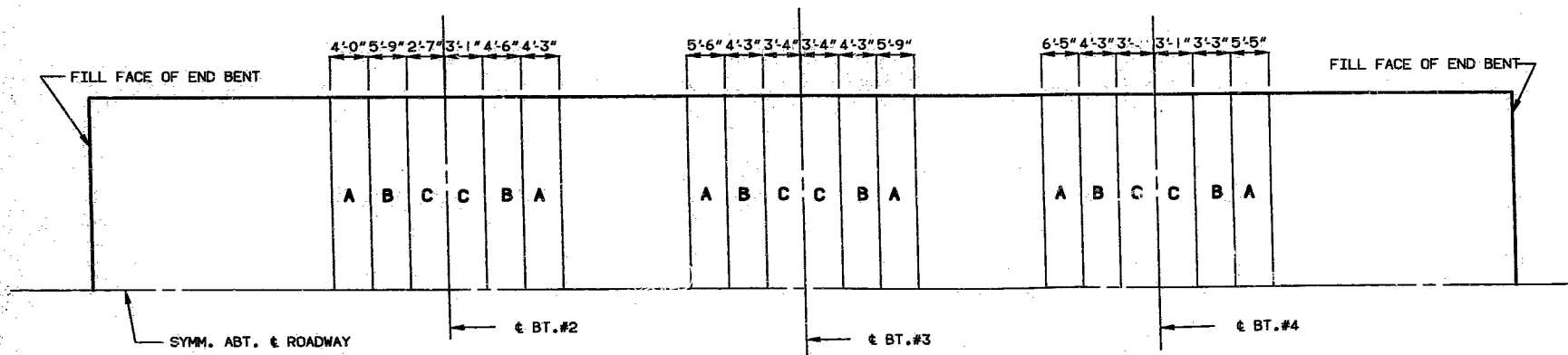


FOURTH STAGE CONSTRUCTION

NOTE: FOR FIRST AND SECOND STAGE CONSTRUCTION, SEE SHEET NO. 5.

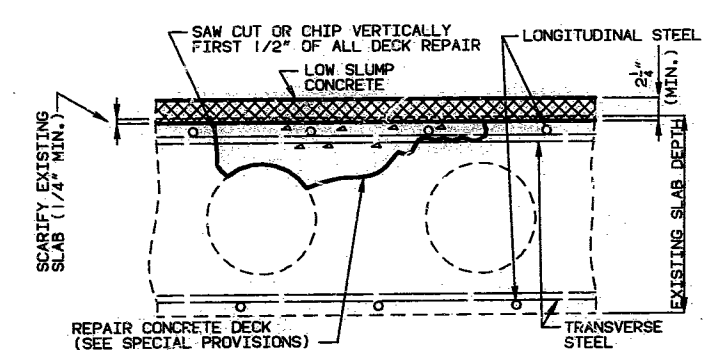


FIFTH STAGE CONSTRUCTION



PLAN OF EXISTING SLAB SHOWING SPECIAL REPAIR ZONES (TYPICAL BOTH LANES)

NOTE: SEQUENCE OF REPAIR: ZONE A, THEN ZONE B, THEN ZONE C.  
ANY REPAIR IN THE REMAINDER OF THE BRIDGE THAT IS WITHIN 5'-0" OF ZONE A SHALL BE COMPLETED BEFORE REMOVING OLD CONCRETE IN ZONE A.  
ZONES WITH THE SAME LETTER DESIGNATION MAY BE REPAIRED AT THE SAME TIME.



HALF-SOLED AREA

418 371

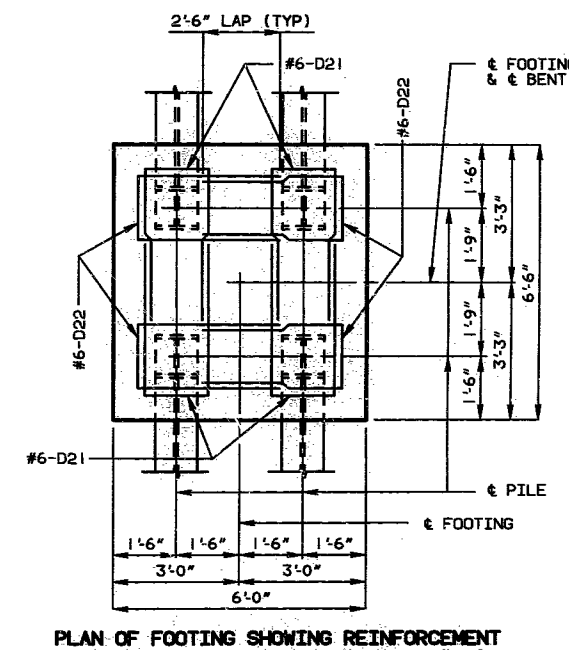
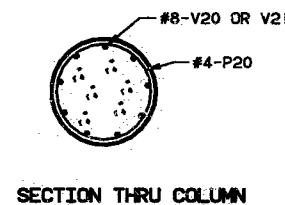
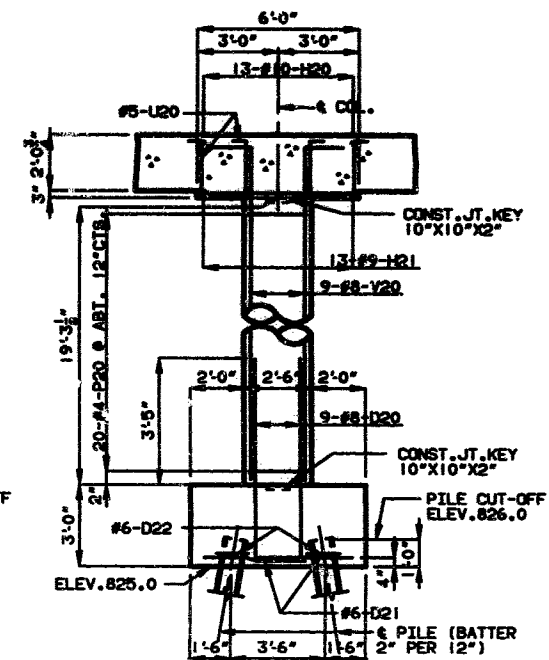
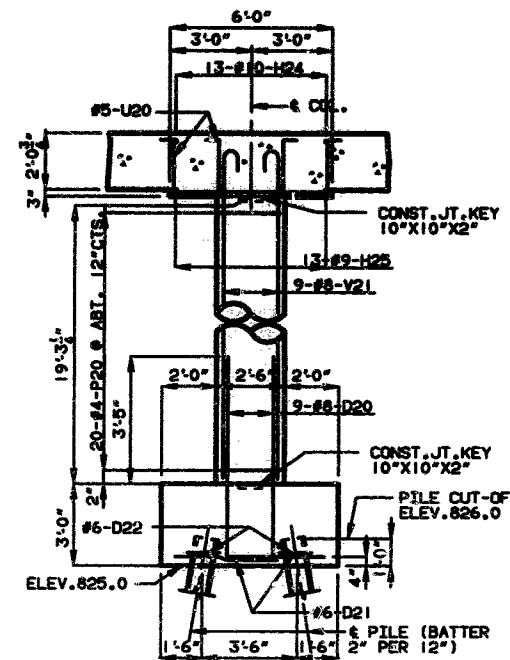
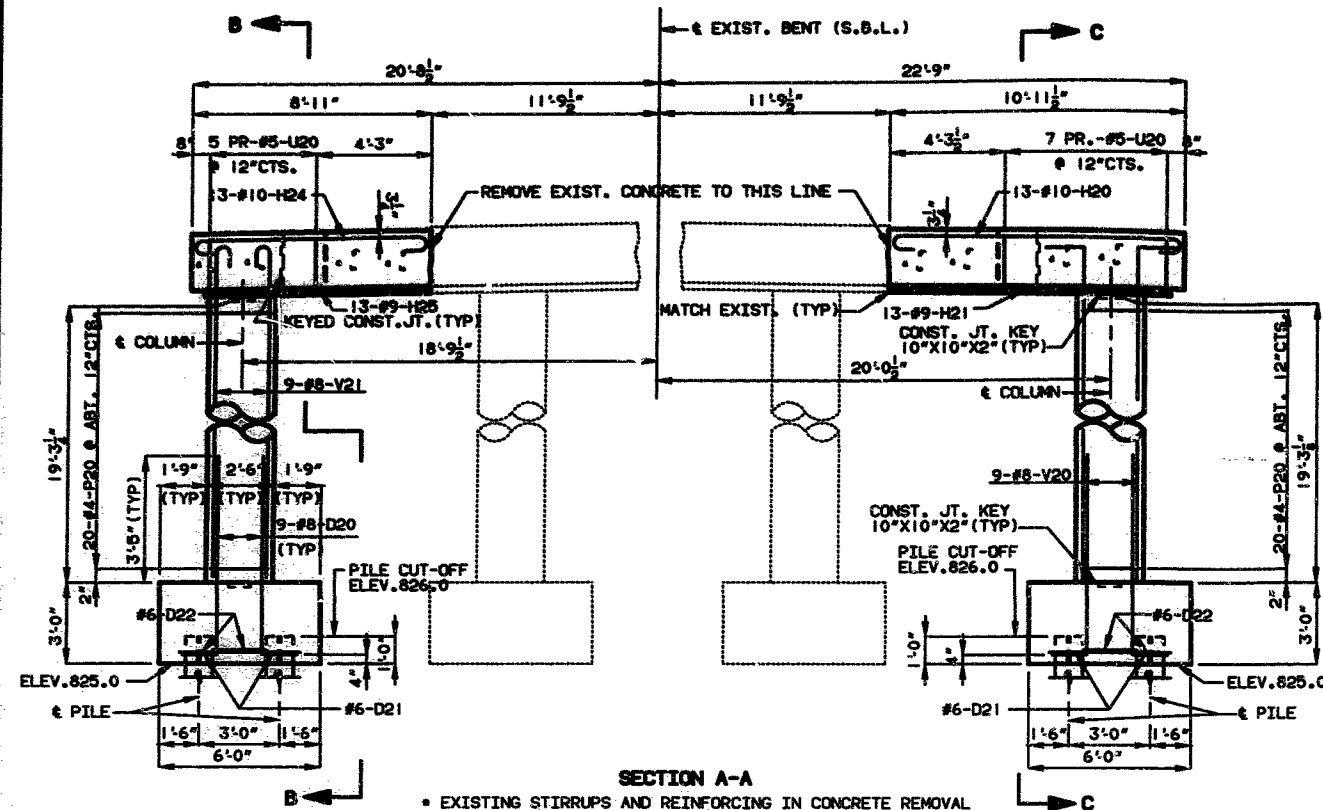




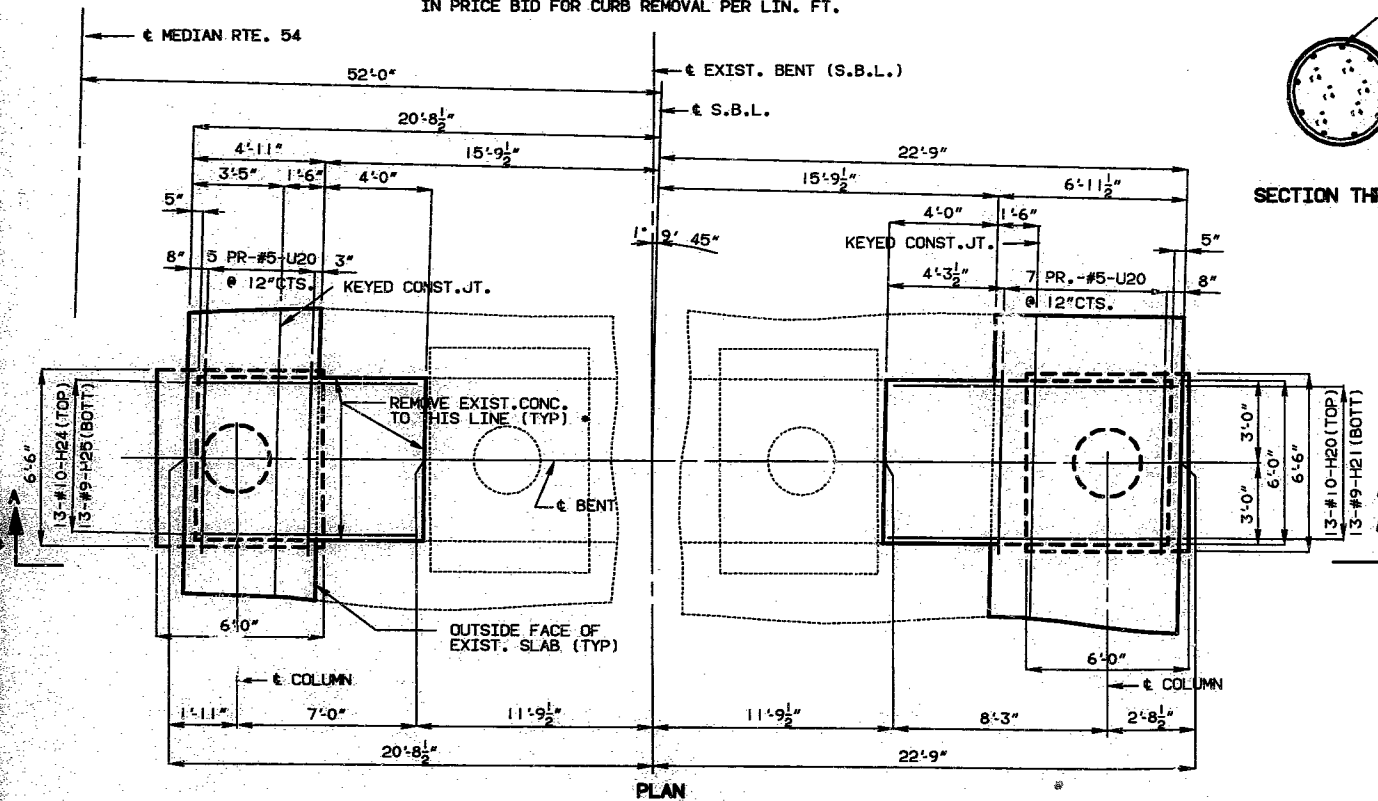




STATE	PROJ. NO.	SHEET NO.
MD.		25



NOTE: FOR DETAILS OF STEEL PILE SPLICE, SEE SHEET NO. 7.



# DETAILS OF INT. BENT NO. 2 (S.B.L.)

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

SHEET NO. 10 OF 26

CALLAWAY COUNTY L-964R

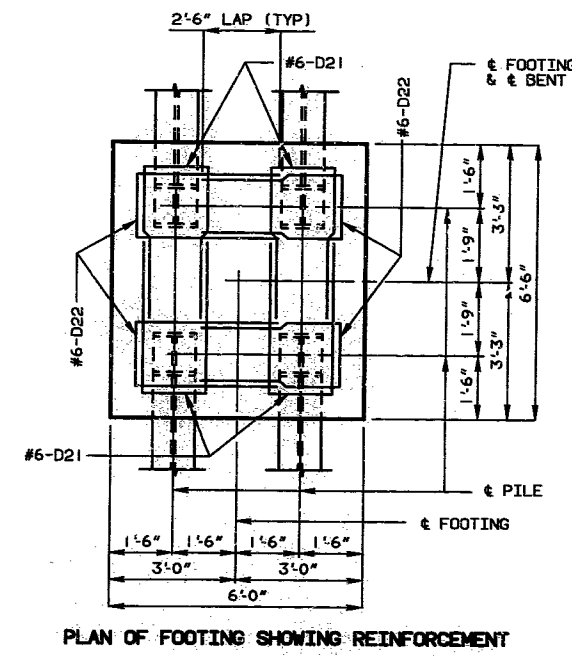
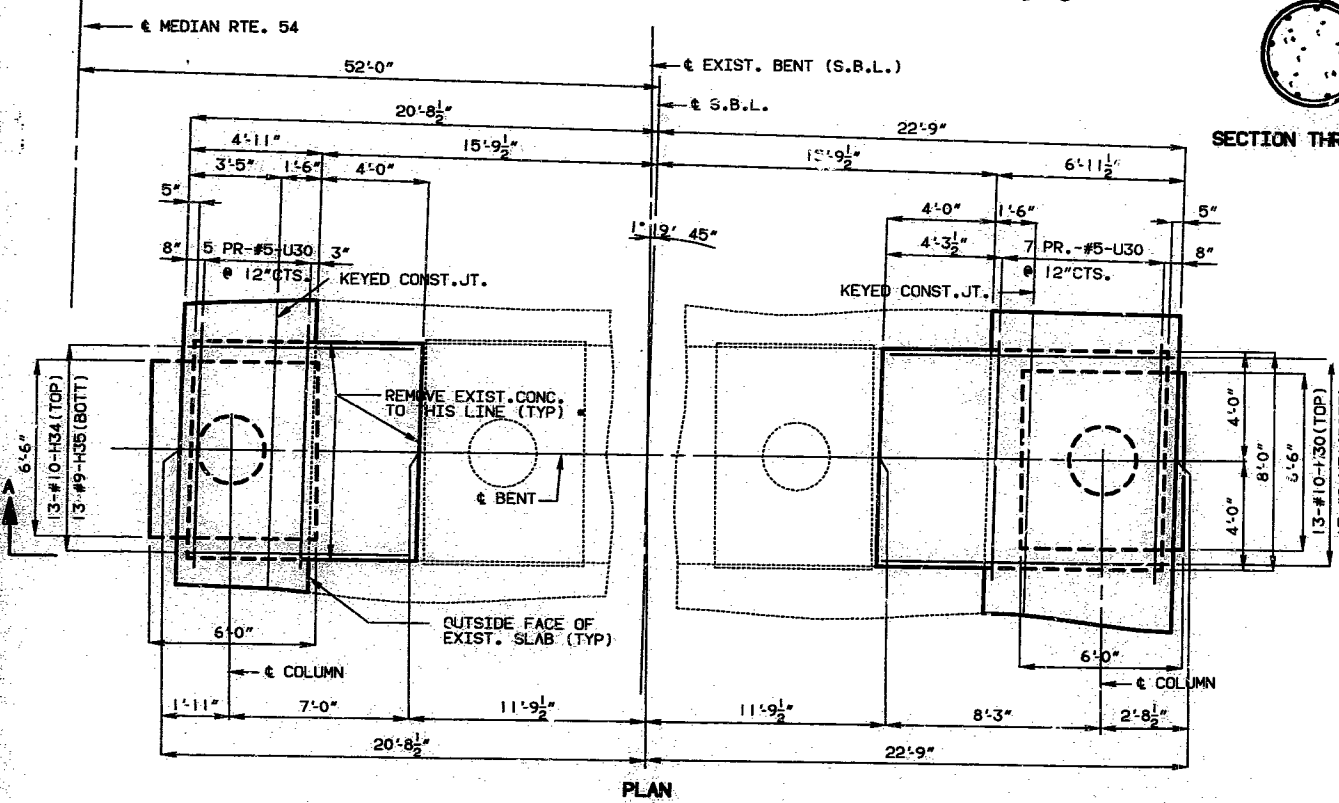
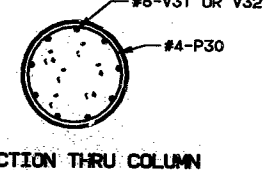
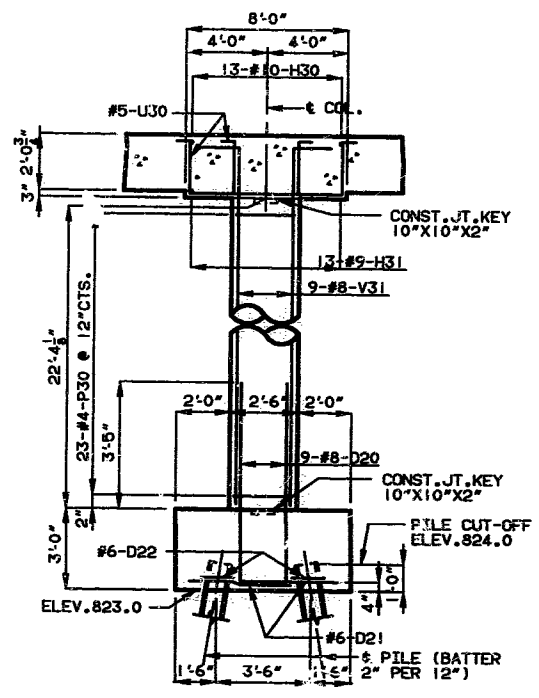
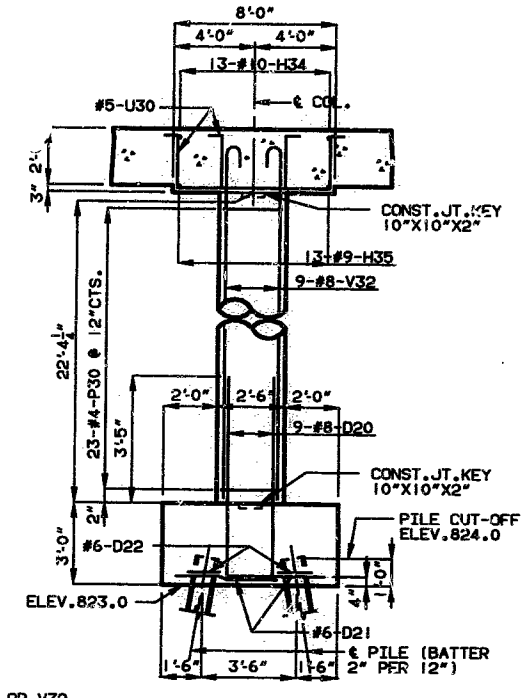
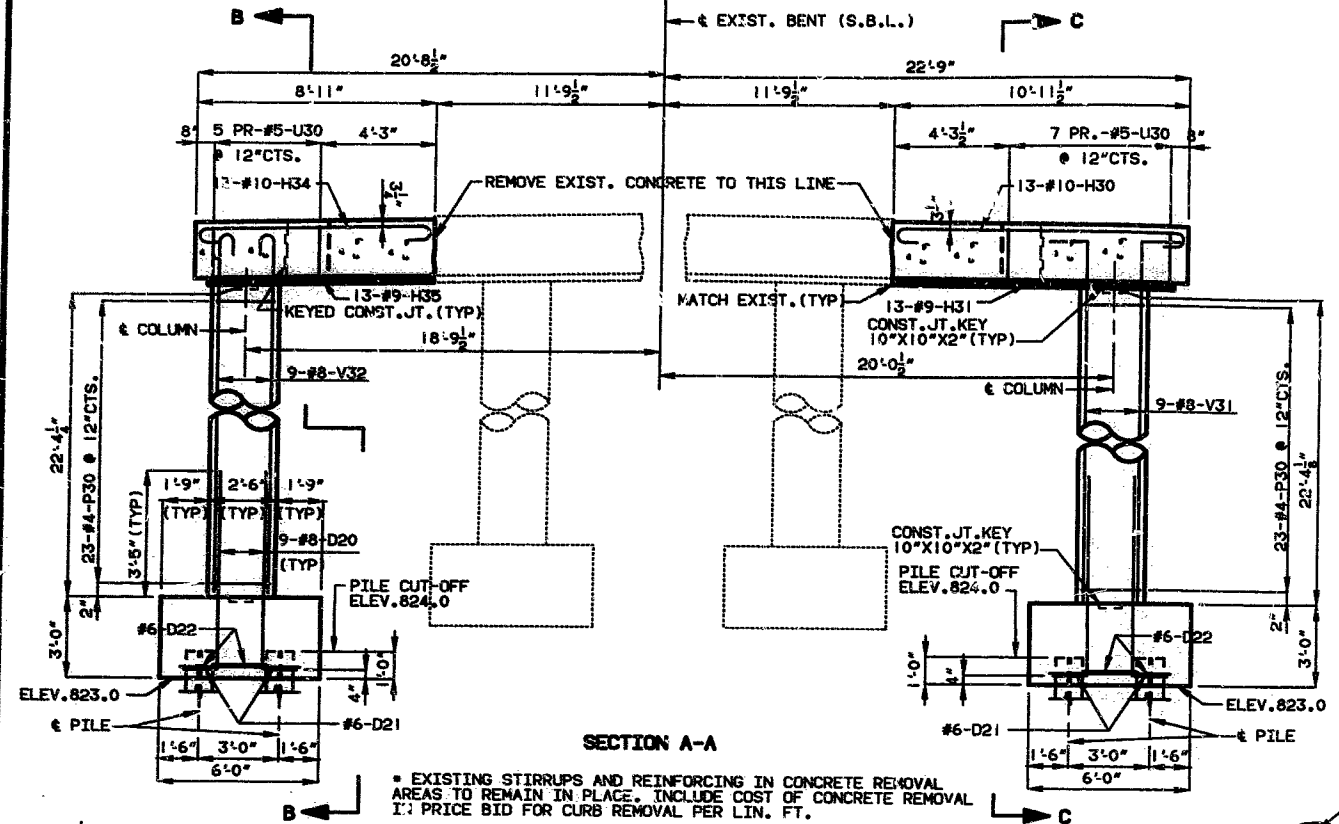
DETAILED APR. 1990  
CHECKED APR. 1990

487 375









NOTE: FOR DETAILS OF STEEL PILE SPLICE, SEE SHEET NO. 7.

484 377

DETAILED APR. 1990  
CHECKED APR. 1990

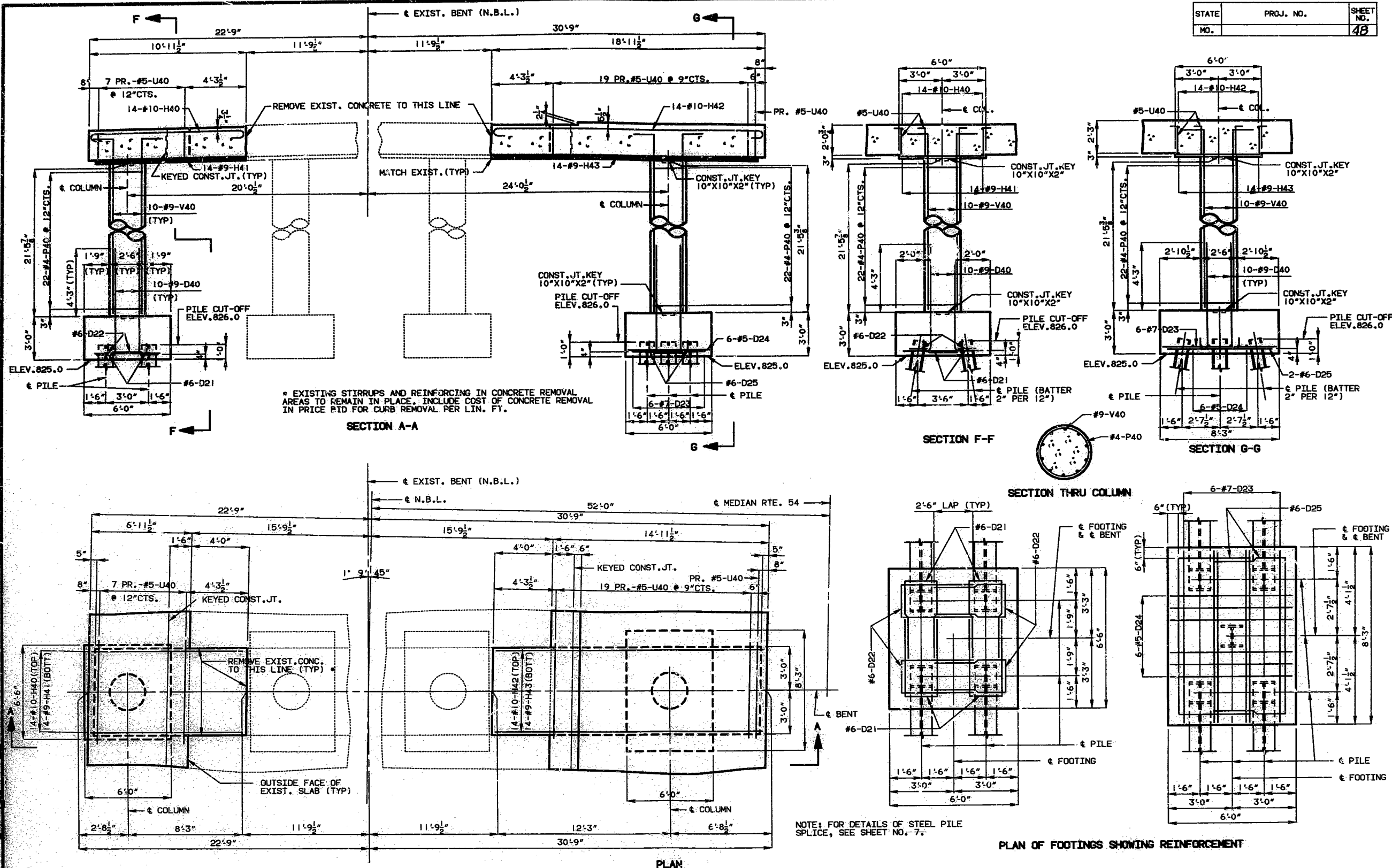
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

DETAILS OF INT. BENT NO. 3 (S.B.L.)

SHEET NO. 12 OF 26

CALLAWAY COUNTY L-964R

STATE	PROJ. NO.	SHEET NO.
MO.		48



485-378

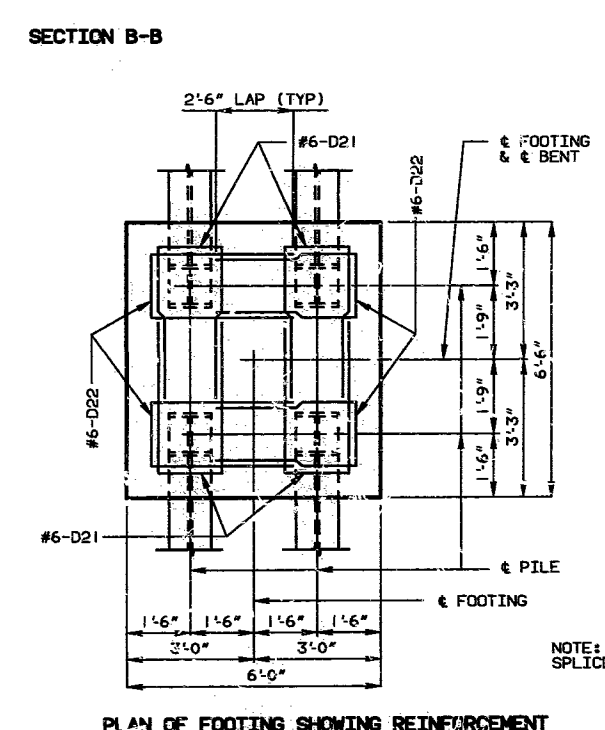
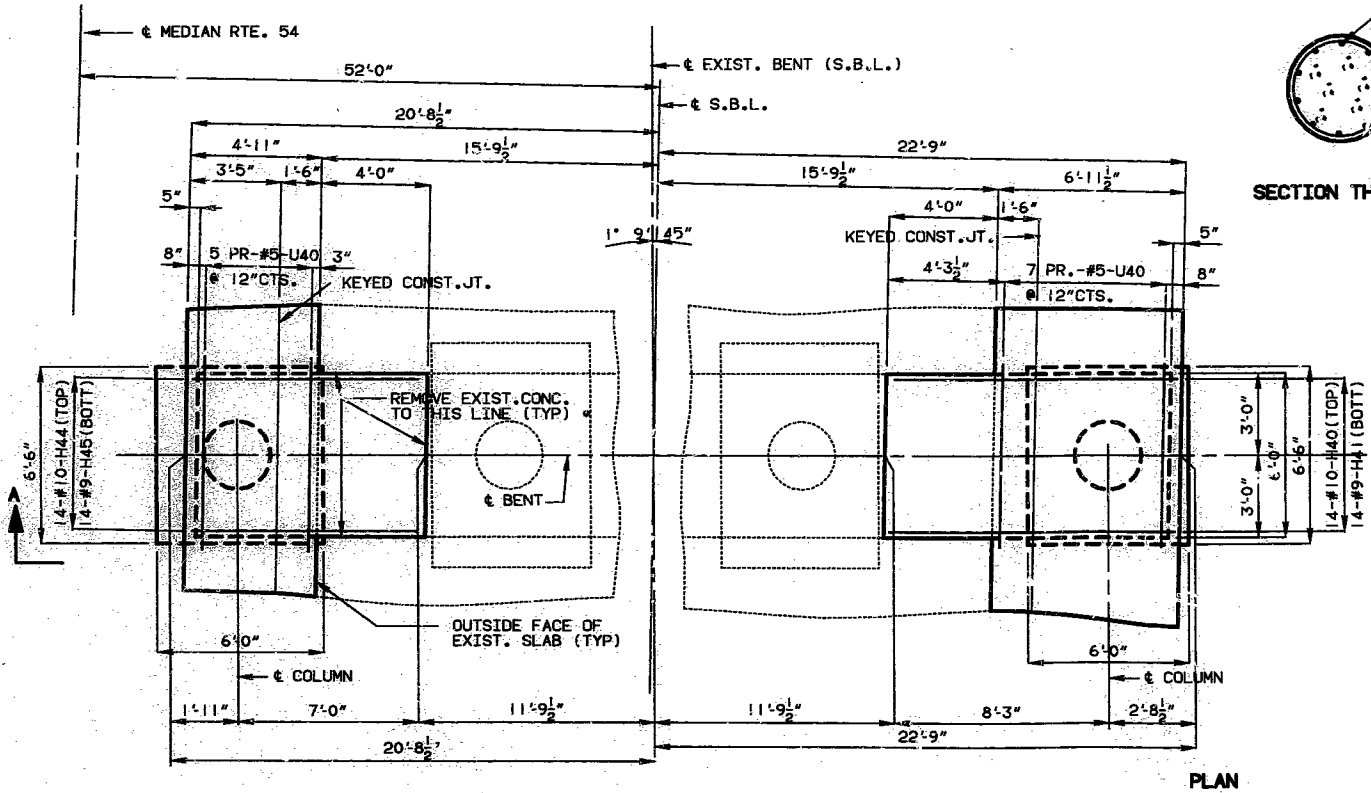
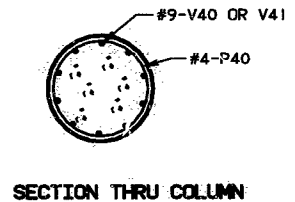
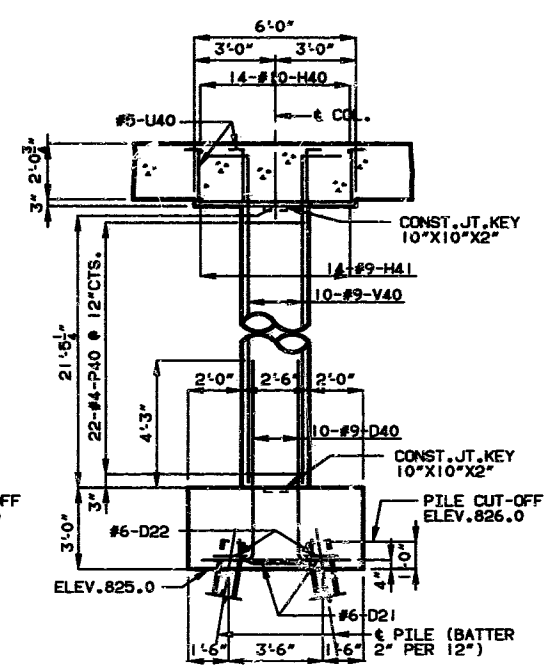
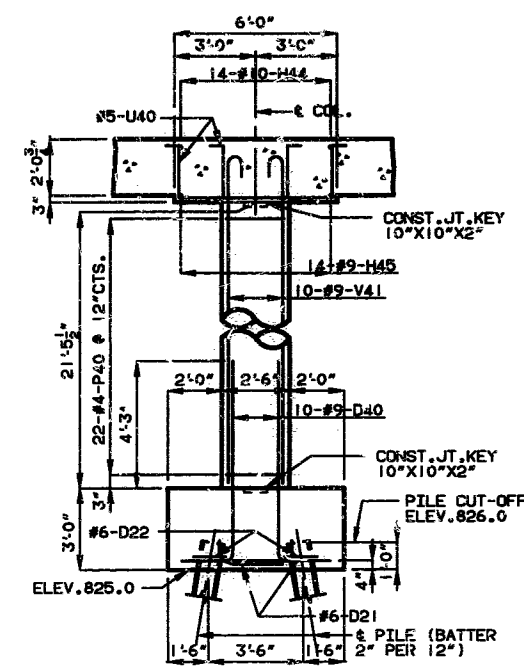
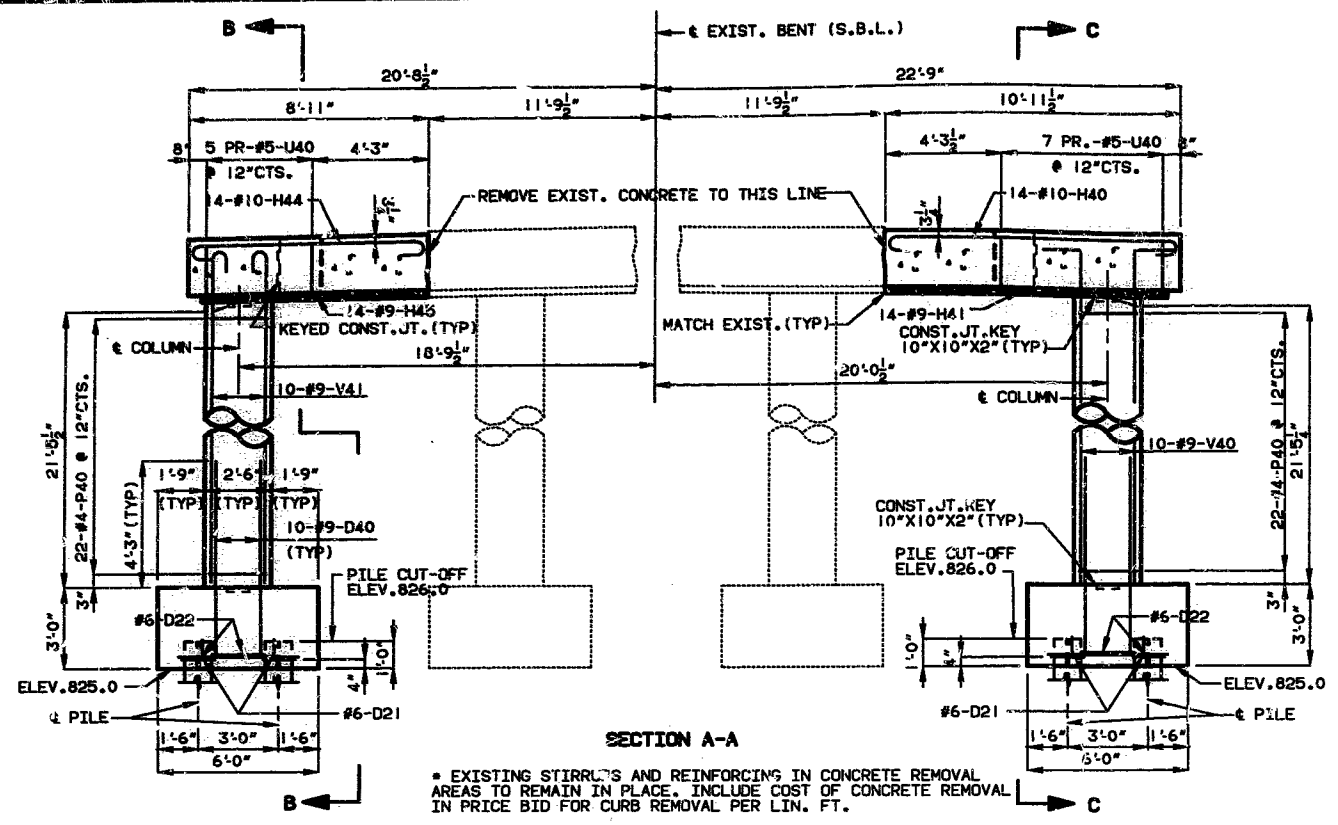
DETAILED MAR. 1990  
CHECKED MAR. 1990

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

DETAILS OF INT. BENT NO. 4 (N.B.L.)

SHEET NO. 13 OF 26

CALLAWAY COUNTY L-964R



NOTE: FOR DETAILS OF STEEL PILE SPLICE, SEE SHEET NO. 7.

DETAILS OF INT. BENT NO. 4 (S.B.L.)

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

SHEET NO. 14 OF 26

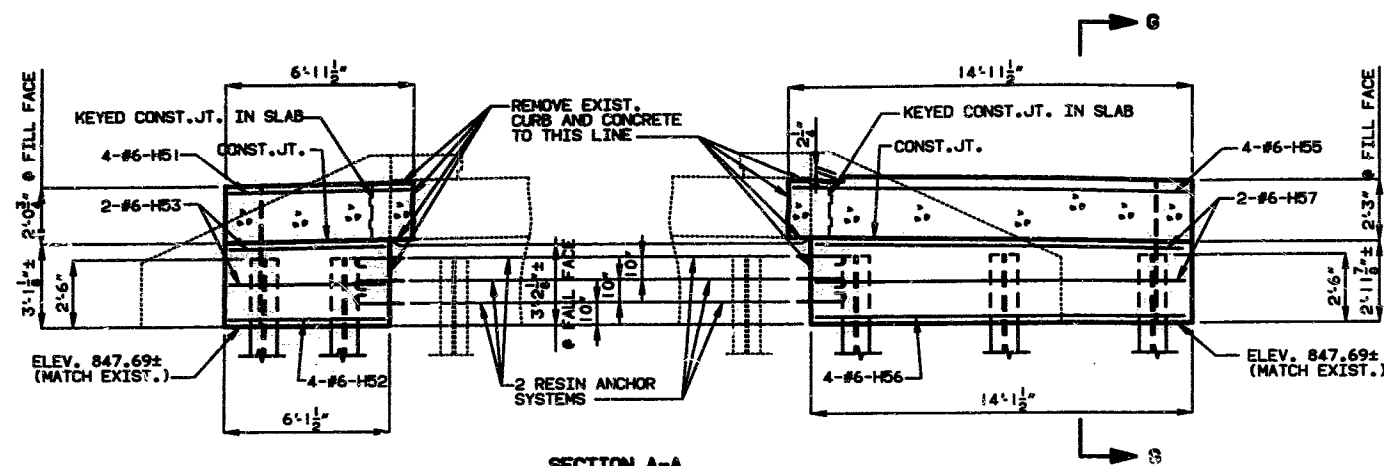
CALLAWAY COUNTY L-964R

486 379

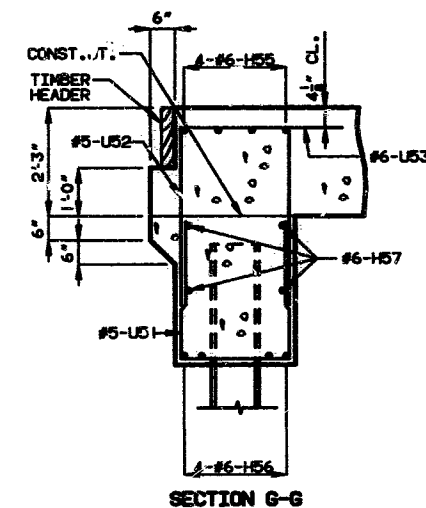
DETAILED MAR. 1990  
CHECKED MAR. 1990

STATE	PROJ. NO.	SHEET NO.
MD.		50

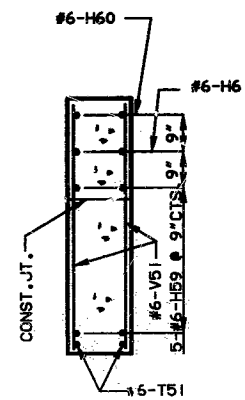
NOTE: FOR DETAILS OF TIMBER HEADER, SEE SHEET NO. 23.  
FOR DETAILS AND REINFORCEMENT OF BARRIER CURB,  
SEE SHEETS NO. 21 & 23.



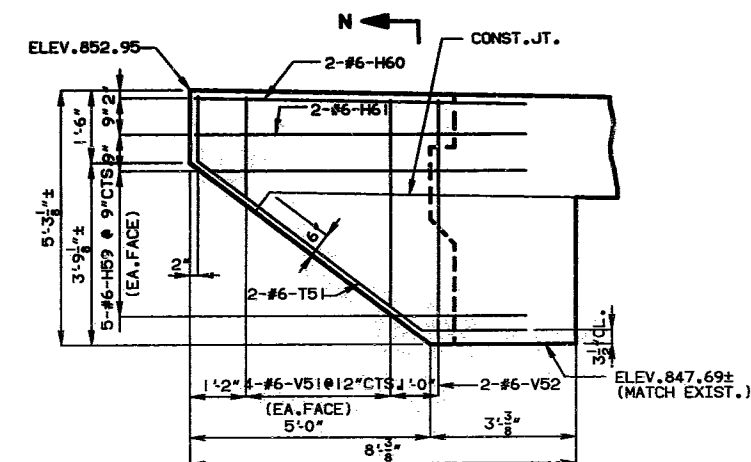
SECTION A-A  
NOTE: FOR DETAILS OF STEEL PILE SPLICE, SEE SHEET NO. 7.  
FOR RESIN ANCHOR SYSTEM NOTES, SEE SHEET NO. 17.



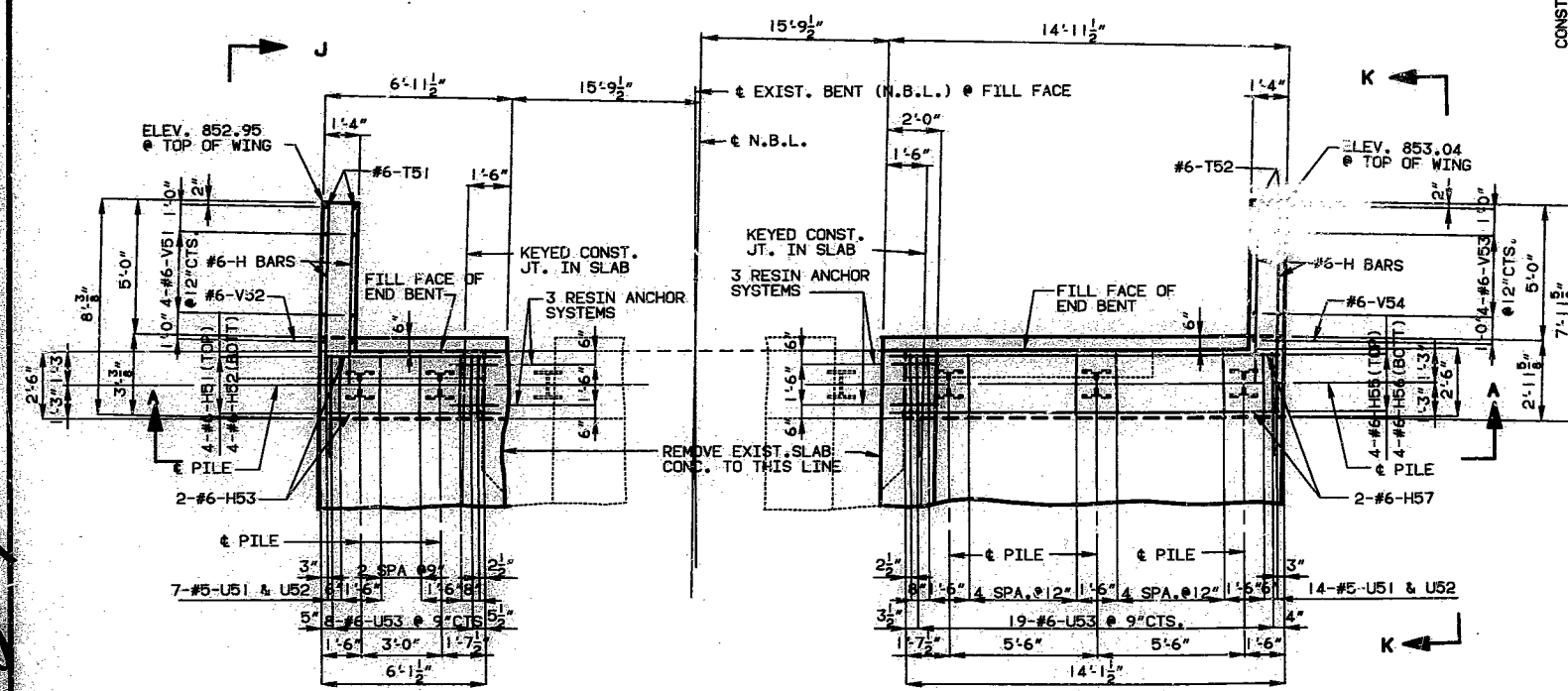
SECTION G-G



SECTION N-N

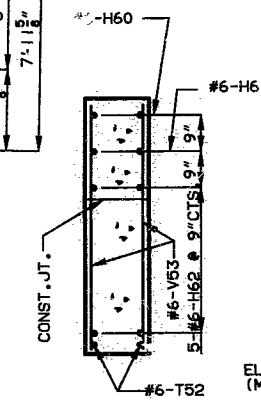


ELEVATION J-J

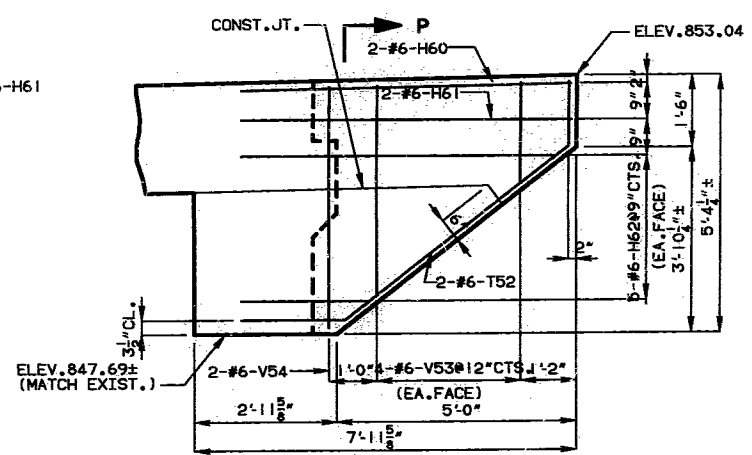


PLAN

NOTE: PLACE ALL U BARS PARALLEL TO & ROADWAY.



SECTION P-P



ELEVATION K-K

# DETAILS OF END BENT NO. 5 (N.B.L.)

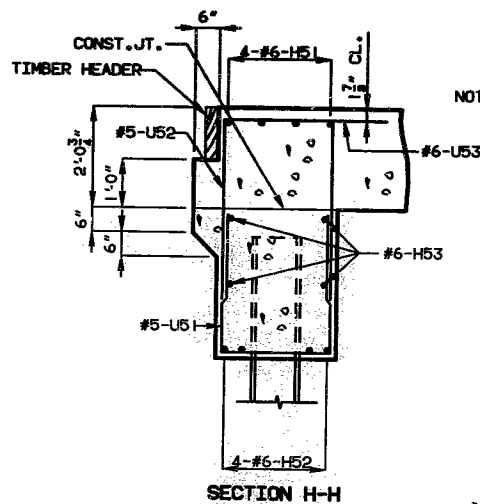
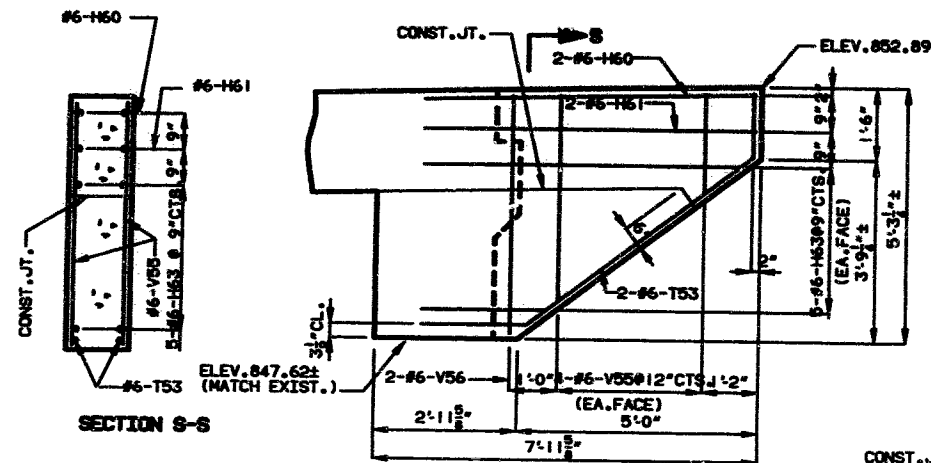
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 15 OF 26

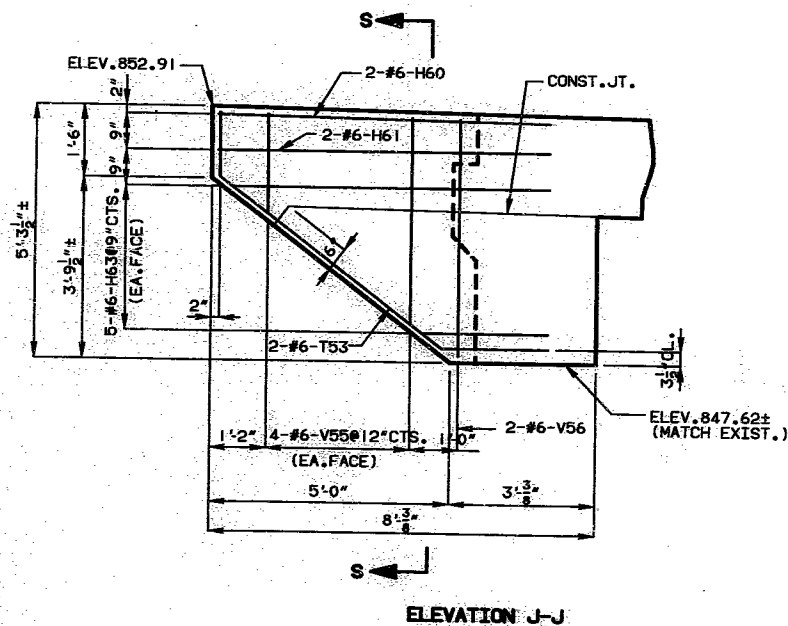
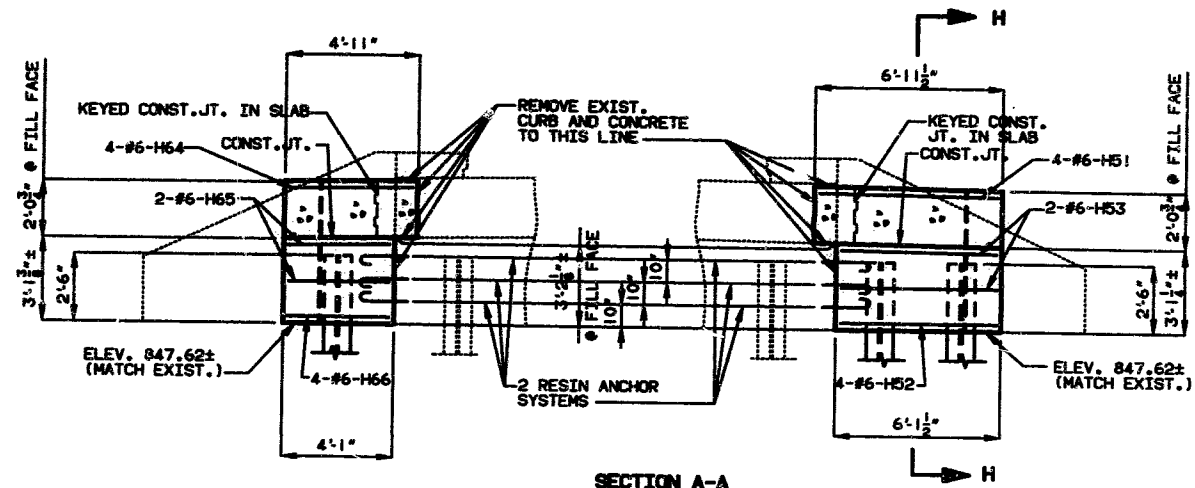
CALLAWAY COUNTY L-964R

DETAILED MAR. 1990  
CHECKED MAR. 1990

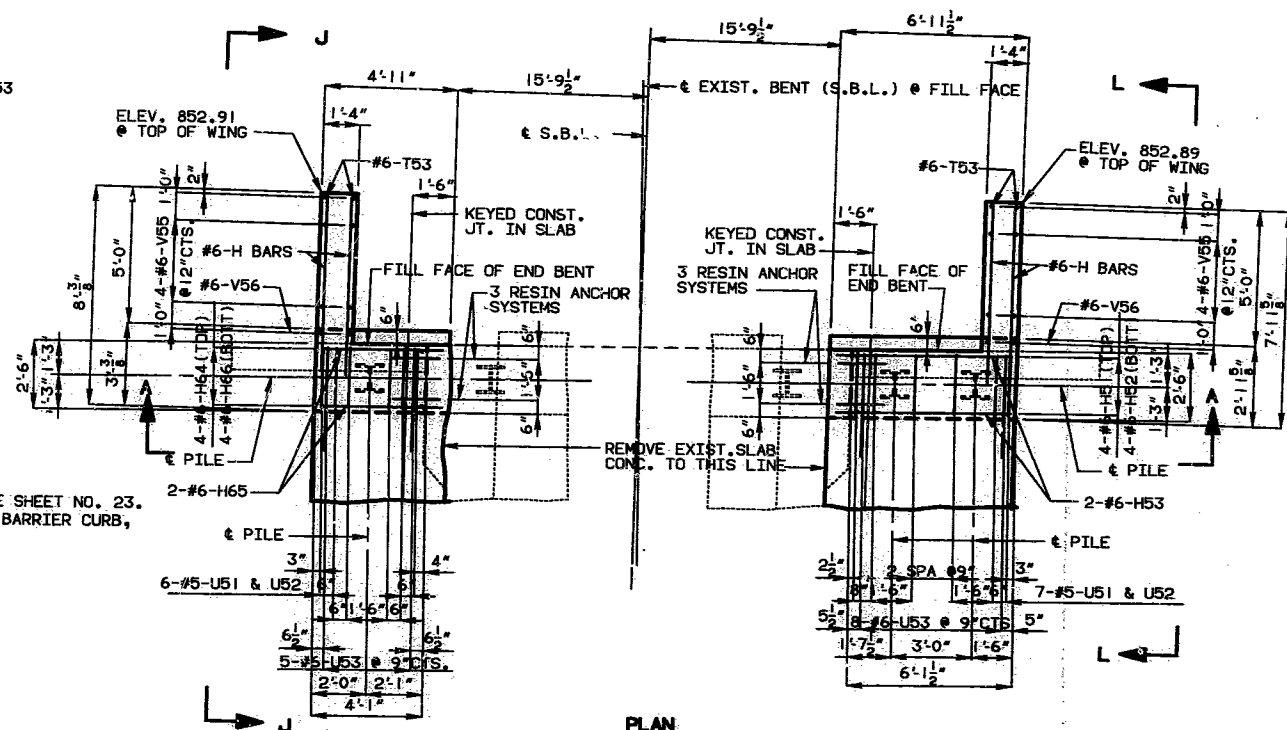
STATE	PROJ. NO.	SHEET NO.
MD.		51



NOTE: FOR DETAILS OF STEEL PILE SPLICE, SEE SHEET NO. 7.  
FOR RESIN ANCHOR SYSTEM NOTES, SEE SHEET NO. 17.



NOTE: FOR DETAILS OF TIMBER HEADER, SEE SHEET NO. 23.  
FOR DETAILS AND REINFORCEMENT OF BARRIER CURB, SEE SHEET NO. 23.



NOTE: PLACE ALL U BARS PARALLEL TO ROADWAY.

# DETAILS OF END BENT NO. 5 (S.B.L.)

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

SHEET NO. 16 OF 26

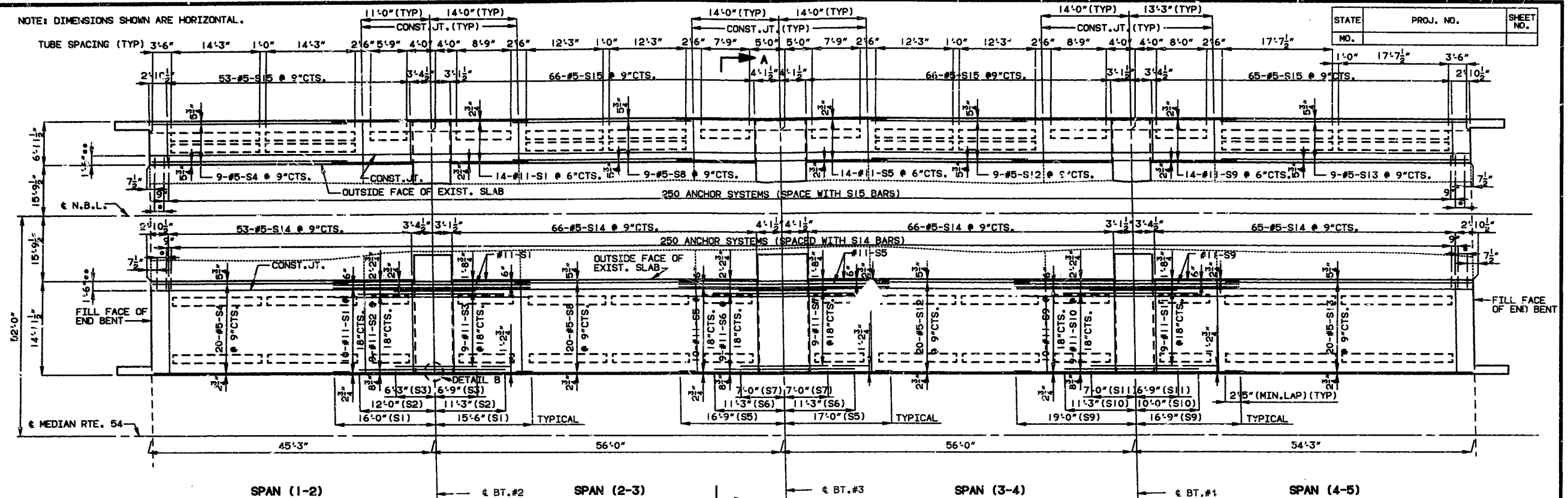
CALLAWAY COUNTY L-964R

DETAILED MAY 1990  
CHECKED MAY 1990

488 381

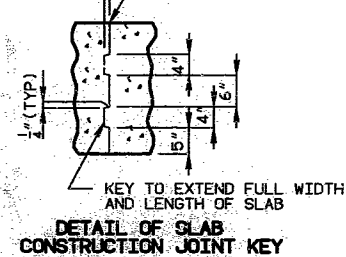


NOTE: DIMENSIONS SHOWN ARE HORIZONTAL.

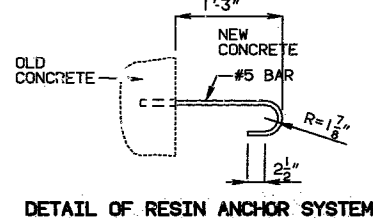


PLAN OF SLAB SHOWING TOP REINFORCEMENT (N.B.L.)

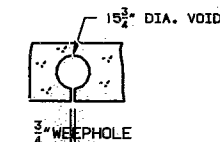
FINISH EACH SIDE OF JOINT WITH 1/4" RADIUS EDGING TOOL



NOTE: THE CONTRACTOR SHALL FURNISH AN APPROVED RETARDER TO RETARD THE SET OF THE CONCRETE TO 2.5 HOURS AND SHALL POUR AND SATISFACTORILY FINISH THE ROADWAY SLAB AT A RATE OF NOT LESS THAN 25 CU. YDS. PER HR. THE CONTRACTOR SHALL OBSERVE THE TRANSVERSE CONSTRUCTION JOINTS SHOWN ON THE PLANS UNLESS HE CAN DEMONSTRATE TO THE ENGINEER THAT HE IS EQUIPPED TO POUR AND SATISFACTORILY FINISH THE ROADWAY SLAB AT A RATE WHICH PERMITS A CONTINUOUS POURING THROUGH SOME OR ALL OF THESE JOINTS.



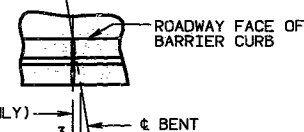
NOTE: COST OF FABRICATING AND INSTALLING RESIN ANCHOR SYSTEMS SHALL BE INCLUDED IN CONTRACT UNIT PRICE BID FOR CONCRETE. THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS. THESE RESIN ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS AND THAT AN EPOXY COATED #5 GRADE 60 REINFORCING BAR SHALL BE USED.



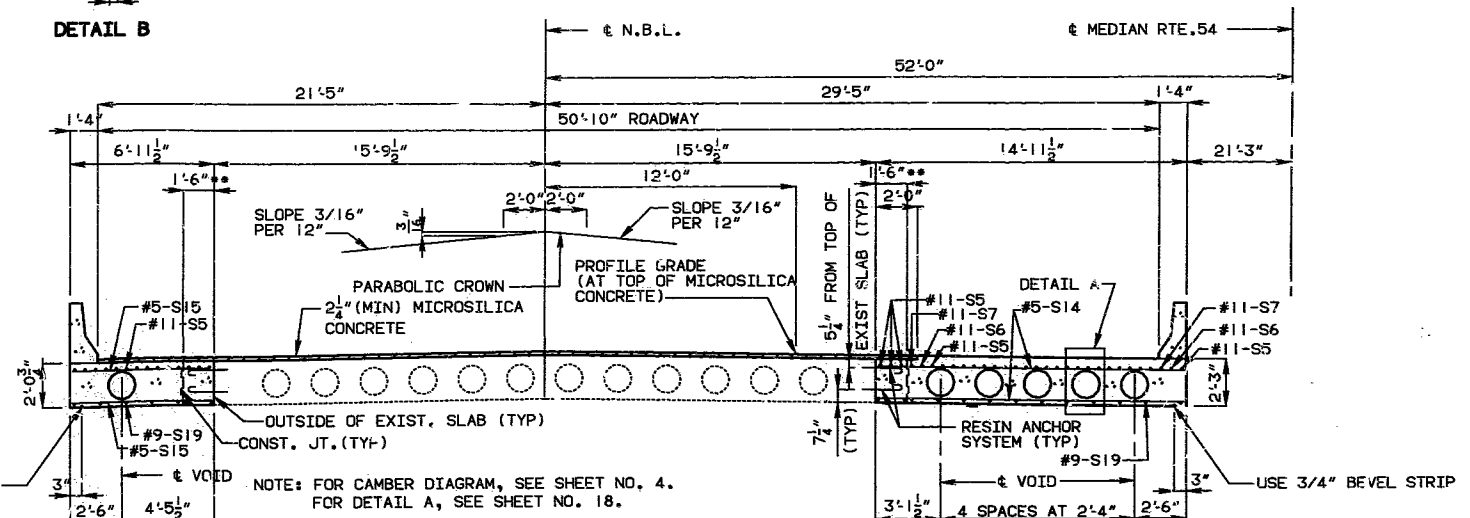
NOTE: ONE 3/4" WEEPHOLE SHALL BE PROVIDED NEAR EACH END OF EACH VOID. WEEPHOLES SHALL BE PLACED IN STRAIGHT LINES PARALLEL TO BENTS.

DETAIL OF WEEPHOLE IN VOIDS

1/4" JT. FILLER (BARRIER CURB ONLY)



DETAIL B



SECTION A-A

(VOID SPACING TYPICAL NEAR ALL INTERMEDIATE BENTS)

DETAILED FEB. 1990  
CHECKED FEB. 1990

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

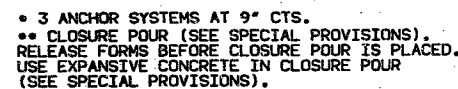
SHEET NO. 17 OF 26.

CALLAWAY

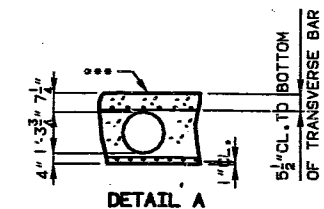
COUNTY

L-964R

STATE	PROJ. NO.	SHEET NO.
NO.		



\*\*\* TOP SURFACE OF SLAB (NBL-RT.SIDE)  
TOP SURFACE OF MICROSILICA CONCRETE  
(NBL-LT.SIDE).



SECTION A-A  
(VOID SPACING TYPICAL NEAR CENTER OF ALL SPANS)

NOTE: TUBES  
DIAMETER OF  
LESS THAN 3'-0"  
OR NOT LESS  
THAN 3'-0"  
FOR THE  
FULL LENGTH  
SEE SHEET N

NOTE: TUBES FOR PRODUCING VOIDS SHALL HAVE AN OUTSIDE DIAMETER OF 15.7" AND SHALL BE ANCHORED AT NOT MORE THAN 3'-0" CENTERS. FIBER TUBES SHALL HAVE A WALL THICKNESS OF NOT LESS THAN .300".

FOR LOCATION OF 3/4" BEVEL STRIPS ON BOTTOM OF SLAB, SEE SHEET NO. 17.

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

DETAILED	FEB. 1990
CHECKED	MAR. 1990

SHEET NO. 18 OF 26

CALLAWAY

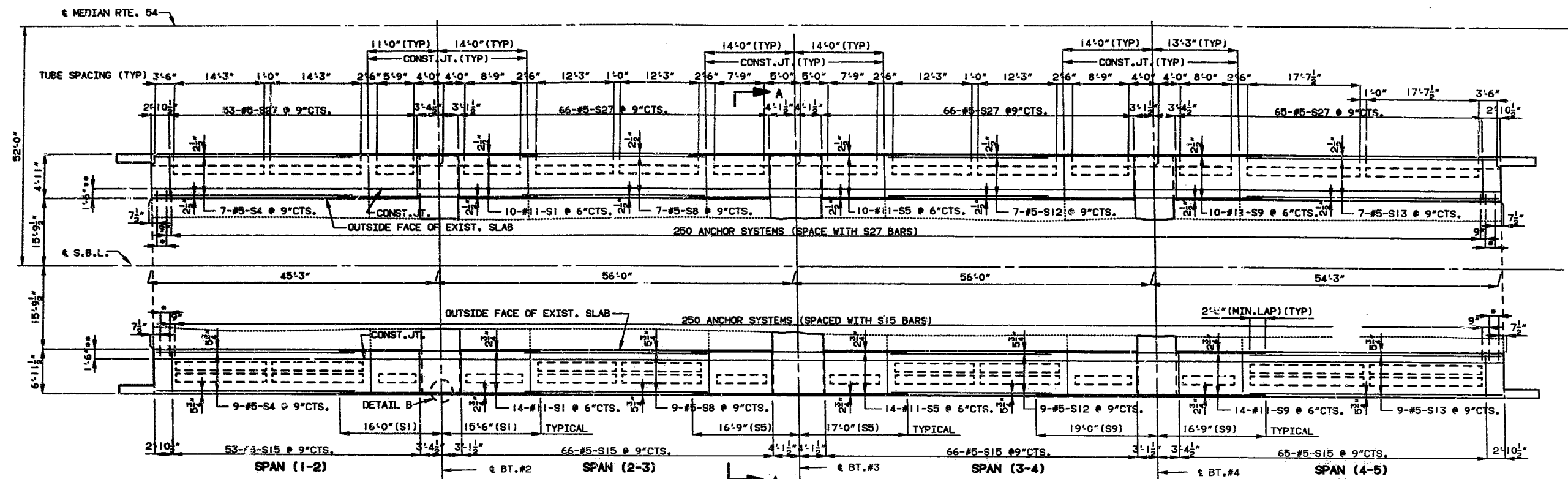
COUNTY

**L-964R**

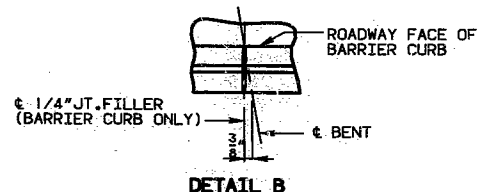
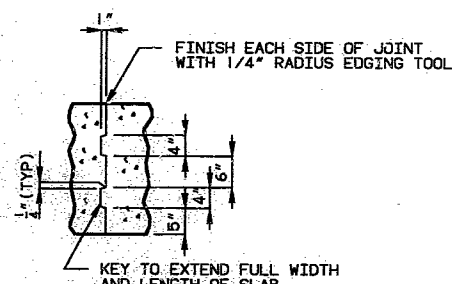
[illegible]

NOTE: DIMENSIONS SHOWN ARE HORIZONTAL.

STATE	PROJ. NO.	SHEET NO.
MO.		



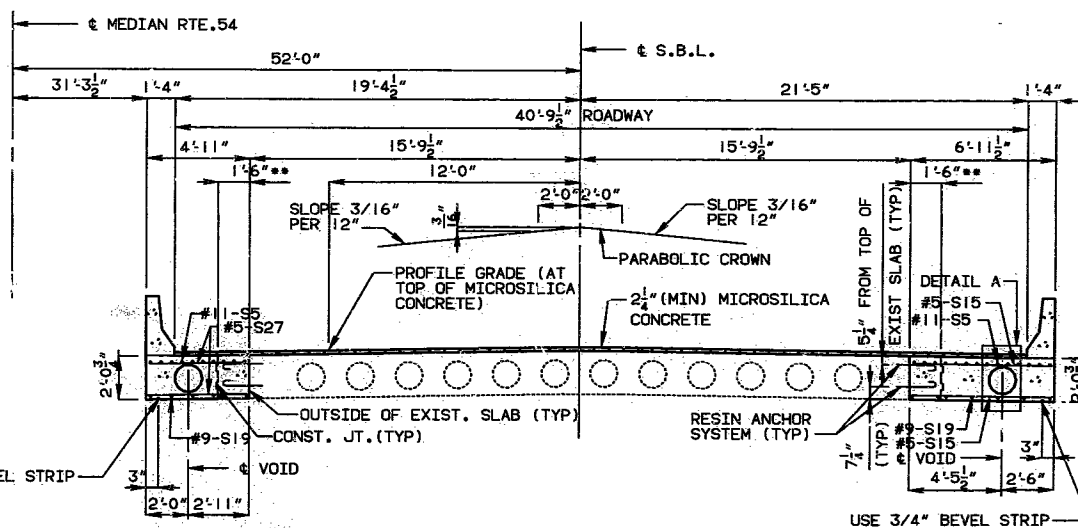
\* 3 ANCHOR SYSTEMS AT 9" CTS.  
 \*\* CLOSURE POUR (SEE SPECIAL PROVISIONS). RELEASE FORMS BEFORE CLOSURE POUR IS PLACED. USE EXPANSIVE CONCRETE IN CLOSURE POUR (SEE SPECIAL PROVISIONS).



#### DETAIL OF SLAB CONSTRUCTION JOINT KEY

NOTE: THE CONTRACTOR SHALL FURNISH AN APPROVED RETARDER TO RETARD THE SET OF THE CONCRETE TO 2.5 HOURS AND SHALL POUR AND SATISFACTORILY FINISH THE ROADWAY SLAB AT A RATE OF NOT LESS THAN 25 CU. YDS. PER HR. (THE CONTRACTOR SHALL OBSERVE THE TRANSVERSE CONSTRUCTION JTS. SHOWN ON THE PLANS UNLESS HE CAN DEMONSTRATE TO THE ENGINEER THAT HE IS EQUIPPED TO POUR AND SATISFACTORILY FINISH THE ROADWAY SLAB AT A RATE WHICH PERMITS A CONTINUOUS POURING THROUGH SOME OR ALL OF THESE JOINTS).

NOTE: FOR CAMBER DIAGRAM, SEE SHEET NO. 4.  
 FOR DETAIL A, SEE SHEET NO. 20.  
 FOR DETAILS OF RESIN ANCHOR SYSTEM, SEE SHEET NO. 17.



DETAILED FEB. 1990  
 CHECKED FEB. 1990

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

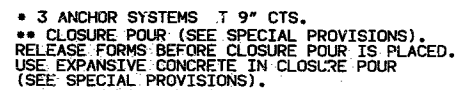
SHEET NO. 19 OF 26.

CALLAWAY

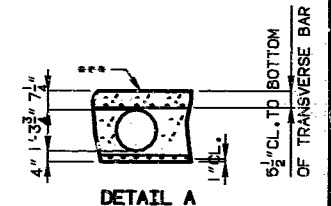
COUNTY

L-964R

STATE	PROJ. NO.	SHEET NO.
MO.		



\*\*\* TOP SURFACE OF MICROSILICA CONCRETE



(VOID SPACING TYPICAL NEAR CENTER OF ALL SPANS)

DETAILED FEB. 1990  
CHECKED MAR. 1990

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

SHEET NO. 20 OF 26

**CALLAWAY**

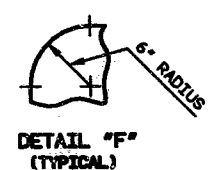
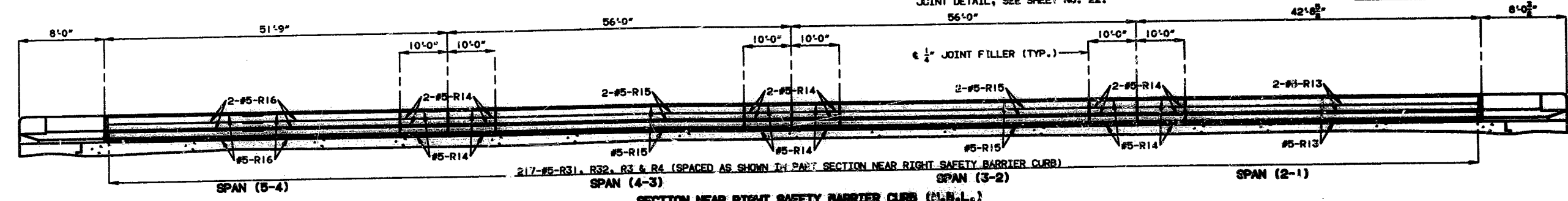
**COUNTY** \_\_\_\_\_

**L-964R**

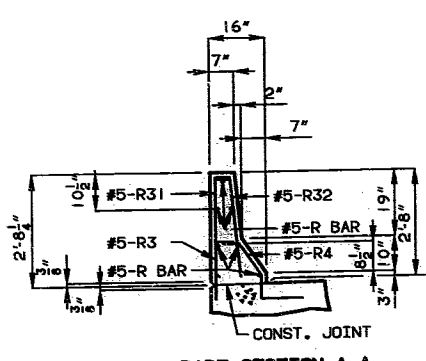
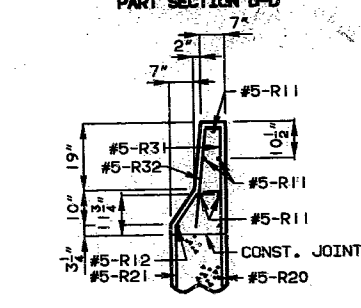
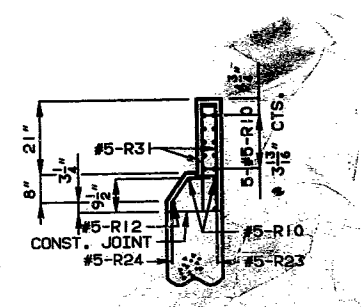
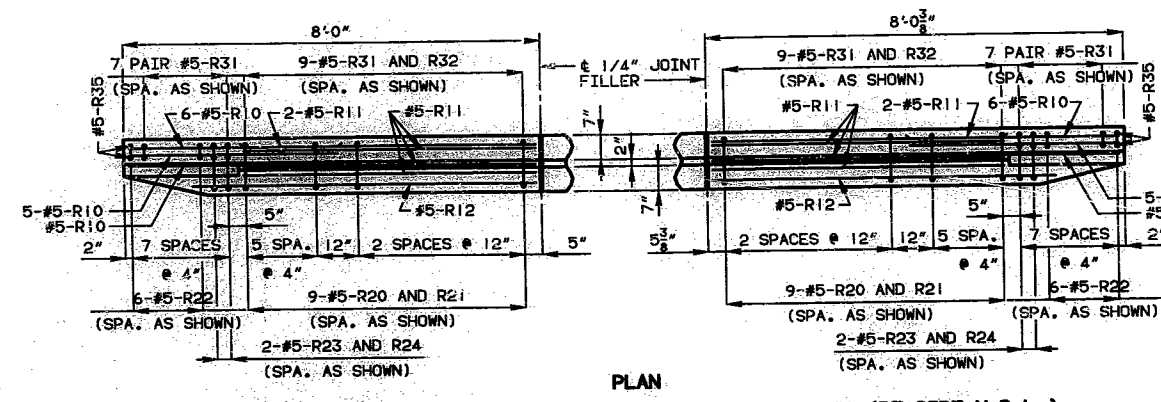
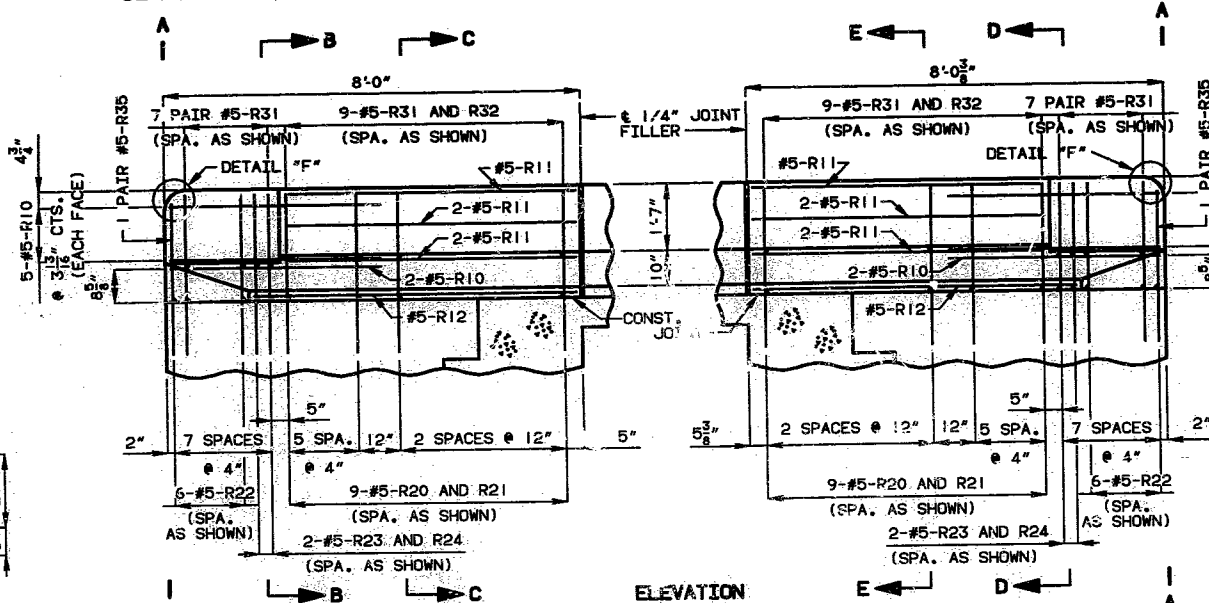
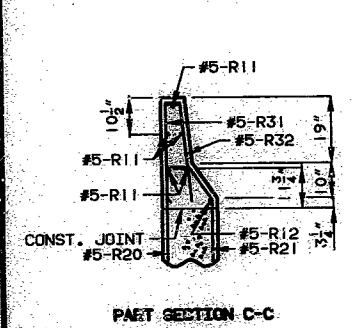
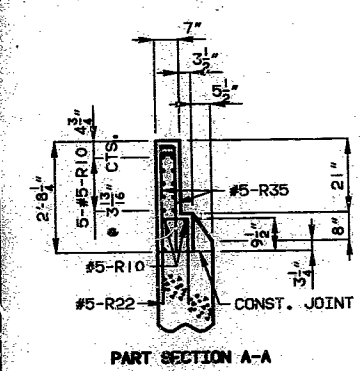
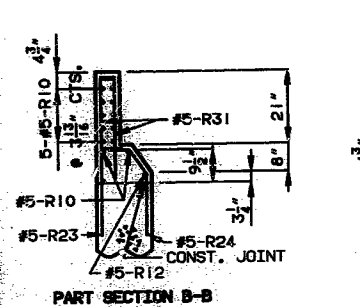


STATE	PROJ. NO.	SHEET NO.
NO.		36

NOTE: FOR NOTES PERTAINING TO SAFETY BARRIER CURB, SEE SHEET NO. 22.  
FOR DETAILS OF PLASTIC WATERSTOP AND FILLED JOINT DETAIL, SEE SHEET NO. 22.



DETAILS OF RUSTICATION



NOTE: USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS. THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 2.27 SQ. FT.

BT.#5 (RT.SIDE-N.B.L.)

BT.#1 (RT.SIDE-N.B.L.)

PART SECTION NEAR RIGHT SAFETY BARRIER CURB (N.B.L.)

CALLAWAY

COUNTY

L-964R

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

SHEET NO. 21 OF 26

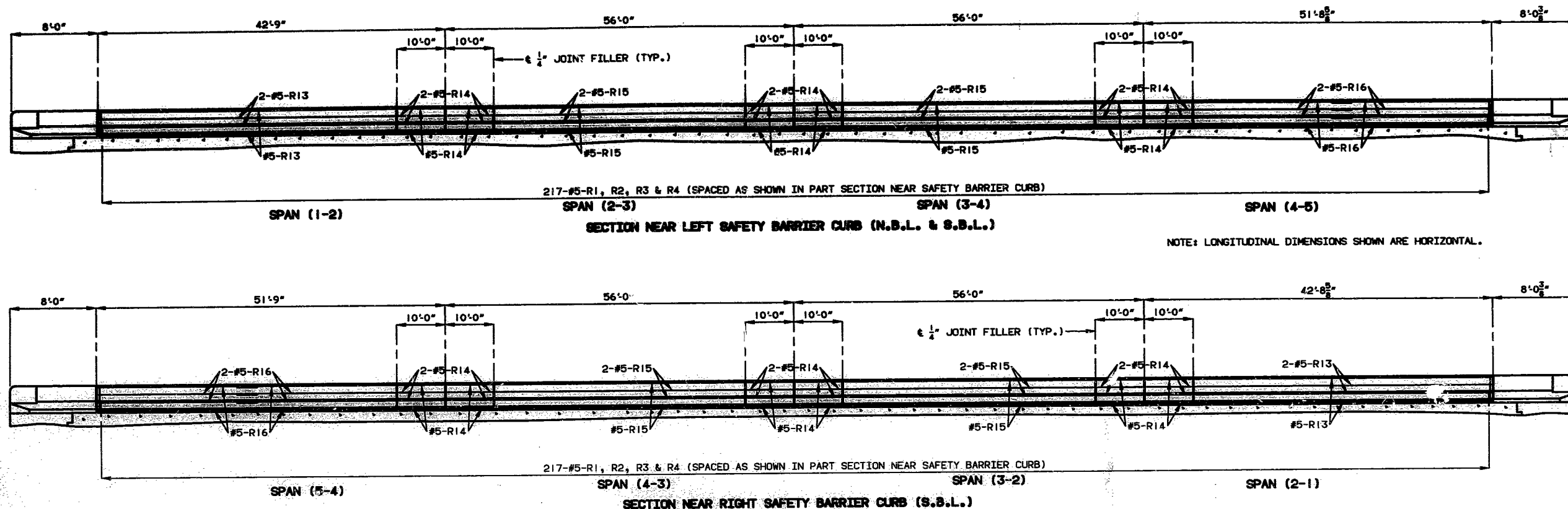
386

BARREIR CURB ELEVATION REVISED  
JAN. 1990  
DETAILED MAR. 1990  
CHECKED MAR. 1990

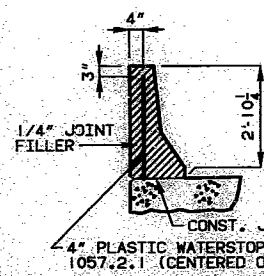


NOTE: RUSTICATION NOT SHOWN FOR CLARITY.  
FOR RUSTICATION DETAILS, SEE SHEET NO. 23.

STATE	PROJ. NO.	SHEET NO.
NO.		57



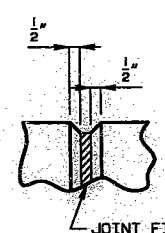
434 387



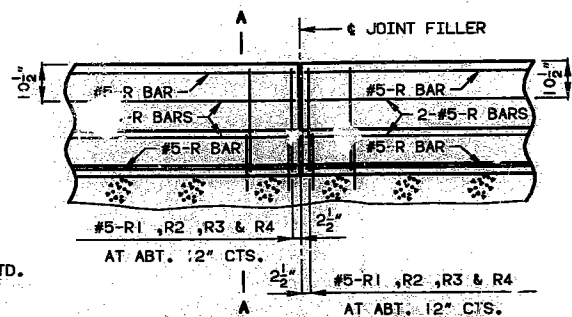
NOTE: PLASTIC WATERSTOP SHALL BE PLACED IN ALL SAFETY BARRIER CURB FILLED JOINTS. (EXCEPT STRUCTURES WITH SUPERELEVATION, USE ON ALL LOWER SAFETY BARRIER CURB JOINTS ONLY).

COST OF PLASTIC WATERSTOP COMPLETE IN PLACE TO BE INCLUDED IN CONTRACT UNIT PRICE FOR SAFETY BARRIER CURB.

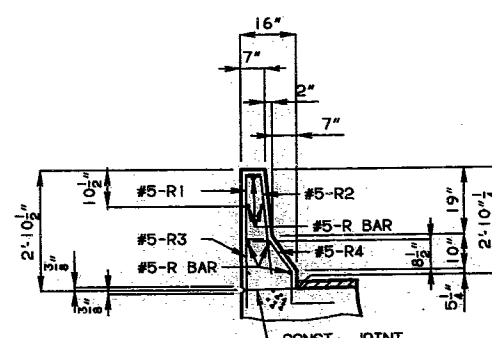
DETAILS OF PLASTIC WATERSTOP



FILLED JOINT DETAIL



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



NOTE: USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.

THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 2.51 SQ. FT.

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 1/2" RADIUS OR A 3/8" BEVEL, UNLESS OTHERWISE NOTED.

WHEN THE SAFETY BARRIER CURB IS BID BY LINEAR FEET, 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 LINEAR FOOT FOR EACH STRUCTURE, MEASURED ALONG THE OUTSIDE TOP OF SLAB FROM END OF WING TO END OF WING.

BARREIR CURB ELEVATION REVISED  
JAN. 1990

DETAILED MAR. 1990  
CHECKED MAR. 1990



## COMPLETE BILL OF REINFORCING STEEL

[illegible]

SHAPE 33

**NOTES:**

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE RENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. 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 PUT TO CUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE (NEAREST INCH)

ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PA WEIGHTS ARE BASED ON ACTUAL LENGTHS.

160° HOOKS				
BAR SIZE	D (IN.)	ALL GRADES		50° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	5"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/4"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 1/4"	19"
#10	10 1/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24 1/2"
#14	18 1/4"	27 3/4"	21 3/4"	27 1/2"

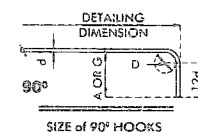
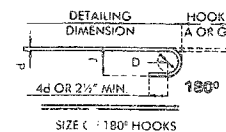
Sheet No. 24 of 26

L-964 R

STIFFRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK		135° HOOK
		HOCK A OR G	HOCK A OR G	APPROX. H
#3	1 1/4"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 3/4"	3 3/4"
#6	4 1/4"	10"	7 3/4"	4 1/2"

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

Note: This drawing is not to scale. Follow dimensions





COMPLETE BILL OF REINFORCING STEEL																
NO. REQD.	MARK NO.	LOCATION	E	S	V	DIMENSIONS										WEIGHT
						B	C	D	E	F	G	H	I	J	K	
						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	
10	6W2	WING	E 20			2	0.000									6.0
		THICK = 11.750 IN														
2	6Y31	WING	E 25			14.125	5 10.375	2 2.000								2.8
2	6Y32	WING	E 25			14.125	5 10.625	2 2.000								2.8
11	5U11	BEAM	E 10 S				2 9.000	2 3.000								1.6
21	5U12	SLAB	E 10 S				3 10.500	2 3.000								2.1
27	6U13	SLAB	E 21 S			4 1.000	3 10.500									2.3
8	6Y31	WING	E 20			2 2 1.000										2.1
		THICK = 8.625 IN														
2	6Y32	WING	E 20			4 11.000										4.1
8	6Y33	WING	E 25			2 2 1.000										2.1
		THICK = 9.000 IN														
2	6Y34	WING	E 20			5 0.000										5.0
26	11H1	SLAB	E 20			31 6.000										31.6
9	11H2	SLAB	E 20			23 3.000										23.3
11	11H3	SLAB	E 20			13 0.000										13.0
29	5S4	SLAB	E 20			31 7.000										31.7
28	11H4	SLAB	E 20			33 9.000										33.9
9	11H5	SLAB	E 20			22 0.000										22.0
9	11H6	SLAB	E 20			14 0.000										14.0
29	5S5	SLAB	E 20			28 7.000										28.7
28	11H7	SLAB	E 20			35 9.000										35.9
9	11H8	SLAB	E 20			21 3.000										21.3
29	11H9	SLAB	E 20			13 9.000										13.9
29	11H10	SLAB	E 20			24 10.000										24.1
29	11H11	SLAB	E 20			39 18.000										39.1
900	5S14	SLAB	E 20			14 9.000										14.9
900	5S15	SLAB	E 20			6 9.000										6.9
21	9S16	SLAB	E 20			46 6.000										46.6
16	9S17	SLAB	E 20			35 4.000										35.4
16	9S18	SLAB	E 20			24 6.000										24.6
42	9S19	SLAB	E 20			58 10.000										58.1
16	9S20	SLAB	E 20			36 6.000										36.6
16	9S21	SLAB	E 20			26 0.000										26.0
16	9S22	SLAB	E 20			35 0.000										35.0
18	8S23	SLAB	E 20			24 6.000										24.6
21	11S24	SLAB	E 20			55 6.000										55.6
16	10S25	SLAB	E 20			42 4.000										42.4
16	10S26	SLAB	E 20			29 3.000										29.3
263	5R1	BARRIER CURB	E 19 S			2 3.000	3.500									7.7
235	5R2	BARRIER CURB	E 15 S			2 8.125	3.500									7.1
436	5R3	BARRIER CURB	E 19 S			17.000	6.000									9.0
434	5R4	BARRIER CURB	E 27 S			4.000	11.125	9.000	12.000	9.125	6.375					13.5
4	5R5	BARRIER CURB	E 15 S			2 5.500	3.500									1.1
18	5R6	BARRIER CURB	E 27 S				3.000	11.125	19.750	9.125	6.375	3 1 3 0				5.6
12	5R7	BARRIER CURB	E 10 S			2 2.500	7.500									6.0
4	5R8	BARRIER CURB	E 19 S			2 2.500	6.000									1.1
4	5R9	BARRIER CURB	E 27 S			6.000	8.250	19.750								1.1
48	5R10	BARRIER CURB	E 20			5 0.000										2.5
20	5R11	BARRIER CURB	E 26			5 0.000										1.6
4	5R12	BARRIER CURB	E 20			6 1.000										2.5
12	5R13	BARRIER CURB	E 20			32 6.000										4.0
74	5R14	BARRIER CURB	E 20			9 9.300										7.3
24	5R15	BARRIER CURB	E 20			35 9.000										8.5

COMPLETE BILL OF REINFORCING STEEL																
NO. REQD.	MARK NO.	LOCATION	E	S	V	DIMENSIONS										WEIGHT
						B	C	D	E	F	G	H	I	J	K	
						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	
24	5R16	BARRIER CURB	E 20			21 6.000										21.6
16	5R17	BARRIER CURB	E 19 S			2 4.500	6.000									2.1
18	5R18	BARRIER CURB	E 19 S			2 2.500	6.000									2.2
18	5R19	BARRIER CURB	E 27 S				6.000	11.125	17.750	9.125	6.375	2 11 2 10				5.3
17	5R20	BARRIER CURB	E 15 S			2 0.500	6.000	7.500								2.7
4	5R21	BARRIER CURB	E 19 S			2 0.500	6.000									1.0
4	5R22	BARRIER CURB	E 27 S				6.000	8.250	17.750	6.750	4.750	2 0 2 7				1.1
203	5R23	BARRIER CURB	E 15 S			2 6.000	3.500									7.3
235	5R24	BARRIER CURB	E 15 S			2 6.125	3.500									6.7
4	5R25	BARRIER CURB	E 19 S			2 3.500	3.500									1.0
SOUTHSHORE LAKE																
END BY NO 1																
4	6H1	SLAB	E 20			6 8.000										4.0
4	6H2	BEAM	E 20			5 10.000										3.9
4	6H3	BEAM	E 20			5 10.000										3.9
4	6H4	SLAB	E 20			4 8.000										2.8
20	6H5	WING	E 20			4 7.000										5.7
		THICK = 12.500 IN														
4	6H10	WING	E 20			6 11.000										4.2
4	6H11	WING	E 20			6 11.000										4.2
4	6H15	BEAM	E 20			3 10.000										2.3
4	6H16	BEAM	E 20			3 10.000										2.3
4	6H17	WING	E 25			16.125	5 9.000	2 2.000				3 4.250	6 8.000	9 3 9 2		5.6
13	5U1	BEAM	E 10 S				2 9.000	2 3.000								7.4
13	5U2	SLAB	E 10 S				3 10.500	2 3.000								10.0
13	6U3	SLAB	E 19 S			4 1.000	3 10.500									1.5
16	6V1	WING	E 20			2 1.000										2.1
		THICK = 0.625 IN														
4	6V2	WING	E 20			4 11.000										4.1
INT BY NO 2																
13	10H24	SLAB	E 18			8 8.000										11.6
13	10H30	SLAB	E 18			10 6.000										13.6
13	9H21	DROP PANEL	E 20			10 3.000										10.3
13	9H25	DROP PANEL	E 20			8 3.000										8.3
40	4P20	COLUMN	E 16			2 3.000										7.1
24	5U20	SLAB	E 10 S			6.000	23.000	3 10.000	6.000							8.8
9	8V20	COLUMN	E 19			20 11.000	16.000									22.3
9	8V21	COLUMN	E 17			21 0.000										21.1
INT BY NO 3																
13	10H24	SLAB	E 18			8 8.000										11.6
13	10H30	SLAB	E 18			10 6.000										13.6
13	9H21	DROP PANEL	E 20			10 3.000										10.3
13	9H25	DROP PANEL	E 20			8 3.000										8.3
40	4P30	COLUMN	E 16			2 3.000										7.1
24	5U30	SLAB	E 10 S			6.000	23.000	3 4.000	6.000							10.2
9	8V31	COLUMN	E 19			24 0.000	16.000									25.4
9	8V32	COLUMN	E 17			24 1.000										25.0

\* Two (2) additional 53,523 and R14 bars are included in bar bill for testing.

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	





# MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

WIDEN SUBSTRUCTURE AND SUPERSTRUCTURE EXISTING N.B.L. & S.B.L.  
(44', 56', 56', 53') CONTINUOUS CONCRETE SLAB SPANS (VOIDED)

GR.ELEV. 853.38 @ RDWY. (N.B.L.)  
GR.ELEV. 853.30 @ RDWY. (S.B.L.)

STATE	PROJ. NO.	SHEET NO.
MO.	IR-70-3 (43)	36
SEC./SUR. 9	TWP. 48N	RGE. 5W

FINAL PLANS

NOTE: ROADWAY FILL SHALL BE COMPLETED TO THE FINAL ROADWAY SECTION AND UP TO THE ELEVATION OF THE BOTTOM OF THE CONCRETE BEAM WITHIN THE LIMITS OF THE STRUCTURE AND FOR NOT LESS THAN 28' IN BACK OF THE FILL FACE OF THE END BENTS BEFORE PILES ARE DRIVEN FOR ANY BENTS FALLING WITHIN THE EMBANKMENT SECTION.

## GENERAL ELEVATION

## GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989 LOAD FACTOR DESIGN

## DESIGN LOADING:

HS20-44 MODIFIED 24000# TANDEM AXLE  
NO FUTURE WEARING SURFACE.  
EARTH 120#/CU.FT. EQUIVALENT FLUID PRESSURE  
45#/CU.FT.

## DESIGN UNIT STRESSES:

CLASS B CONCRETE (FOOTINGS)  $f'_c=3000$  PSI.  
CLASS B1 CONCRETE (SAFETY BARRIER CURB, INT BENT COLUMNS AND END BENTS BELOW LOWER CONST.JT.)  $f'_c=4,000$  PSI  
CLASS B2 CONCRETE (SUPERSTRUCTURE EXCEPT SAFETY BARRIER CURB)  $f'_c=4000$  PSI  
REINFORCING STEEL (GRADE 60)  $f_y=60,000$  PSI

## REINFORCING STEEL:

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE  $\frac{1}{2}$ " UNLESS OTHERWISE SHOWN.

BARS BONDED IN OLD CONCRETE NOT REMOVED SHALL BE CLEANLY STRIPPED AND EMBEDDED INTO NEW CONCRETE WHERE POSSIBLE. IF LENGTH IS AVAILABLE, OLD BARS SHALL EXTEND INTO NEW CONCRETE AT LEAST 40 DIAMETERS FOR SMOOTH BARS AND 30 DIAMETERS FOR DEFORMED BARS.

## JOINT FILLER

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4 EXCEPT AS NOTED.

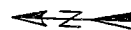
## CONSTRUCTION CLEARANCE:

FALSEWORK OVER EXISTING LANES SHALL BE CONSTRUCTED WITH A MINIMUM VERTICAL CLEARANCE OF 14'-3" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'-0" CENTERED ON EXISTING LANES.

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

TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. FOR DETAILS OF STAGE CONSTRUCTION, SEE SHEETS NO. 5 & 6.

NOTE: FOR ESTIMATED QUANTITIES AND PILE DATA, SEE SHEET NO. 2.  
① INDICATES LOCATION OF BORING. FOR BORING DATA, SEE SHEETS NO. 3 & 4.



B.M. ELEV. 855.77- Bolt at End Post WBL Sta 168+01 Bl RLSA  
(top of wall at Bt #5 SBL)

## BRIDGE: RTE. 54 UNDERPASS

STATE ROAD: INTERSTATE ROUTE 70

IN KINGDOM CITY

PROJECT NO. IR-70-3 (43) STA. 600+34.85

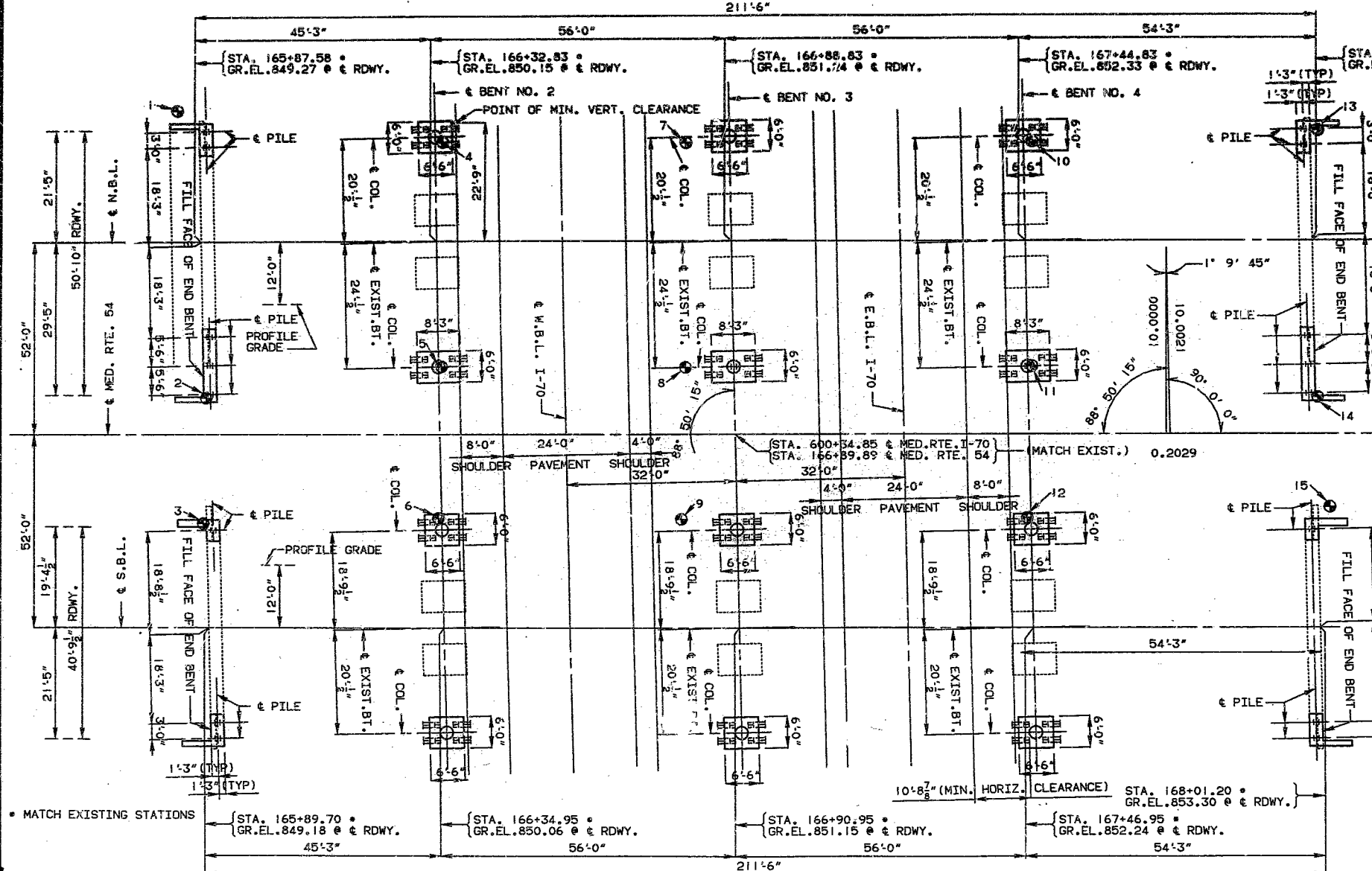
JOB NO. 5I 426-70

RTE. I-70

CALLAWAY

COUNTY

STD. 611.60
STD. 606.22
STD. 706.35
L-964R



## PLAN

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

SHEET NO. 1A OF 26

DESIGNED MAR. 1990  
DETAILED MAR. 1990  
CHECKED APR. 1990

442 392

FINAL QUANTITIES		N.B.L.		S.B.L.		
ITEM		SUBSTR.	SUPERSTR.	SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN.FT.		406		406	812
CURB REMOVAL	LIN.FT.		423		423	846
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM					1
ASPHALT REMOVAL	SQ. FT.		5979			5979
CLASS 1 EXCAVATION	CU.YD.	See Total		See Total		3120
STRUCTURAL STEEL PILES (12")	LIN.FT.	1040		920		1960
PREBORE FOR PILING	LIN.FT.	68		40		108
PILE POINT REINFORCEMENT	EACH	37		30		67
CLASS B CONCRETE	CU.YD.	29.4		26.1		55.5
SUPERSTRUCTURE REPAIR (UNFORMED) SEE SPECIAL PROVISIONS	SQ. FT.		458		444	882
CLASS B1 CONCRETE	CU.YD.		36.5		31.0	67.5
CLASS B2 CONCRETE	CU.YD.		34.3		188.5	522.8
SAFETY BARRIER CURB	LIN.FT.		223		16	239
REPAIRING CONCRETE DECK (HALF-SOLING)	SQ. FT.		188		1154	1342
MICROSILICA CONCRETE WEARING SURFACE	SQ. YD.		922		959	1881
REINFORCING STEEL	LBS.	1970	6040	1740	5730	15,480
REINFORCING STEEL (EPOXY COATED)	LBS.		79,820		47,540	127,360
CONTINGENT ITEM						
Modified Safety Barrier Curb	LIN. FT.		429		222	651

NOTE: ALL REINFORCEMENT IN END BENTS AND INTERMEDIATE BENT COLUMNS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.  
ALL CONCRETE IN THE END BENTS AND INTERMEDIATE BENT COLUMNS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.  
ALL CONCRETE IN THE END BENTS ABOVE TOP OF BEAM AND BELOW TOP OF SLAB SHALL BE CLASS B2.

PILE DATA (N.B.L.)					
BENT NO.	1	2	3	4	5
PILE TYPE AND SIZE	HP12X53	HP12X53	HP12X53	HP12X53	HP12X53
NUMBER	5	4 LT., 5 RT.	4 LT., 5 RT.	4 LT., 5 RT.	5
APPROXIMATE LENGTH FT.	36 - 50	19 - 31 LT., 22 - 26 RT.	15 LT., 11 - 14 RT.	17 - 22 LT., 23 - 32 RT.	29 - 35
DESIGN BEARING TONS	30	27 LT., 41 RT.	27 LT., 41 RT.	27 LT., 44 RT.	34
MINIMUM TIP PENETRATION ELEV.	825.0	815.0	814.0	815.0	825.0
HAMMER ENERGY REQUIRED FT.-LBS.	7000	7000 LT., 9600 RT.	7000 LT., 9600 RT.	7000 LT., 10,400 RT.	7400

PILE DATA (S.B.L.)					
BENT NO.	1	2	3	4	5
PILE TYPE AND SIZE	HP12X53	HP12X53	HP12X53	HP12X53	HP12X53
NUMBER	3	8	8	8	3
APPROXIMATE LENGTH FT.	42 - 47	13 - 20 LT., 20 - 23 RT.	18 - 20 LT., 17 - 25 RT.	15 - 24 LT., 22 - 26 RT.	32 - 37
DESIGN BEARING TONS	34	27	27	27	38
MINIMUM TIP PENETRATION ELEV.	825.0	813.0	813.0	813.0	825.0
HAMMER ENERGY REQUIRED FT.-LBS.	7400	7000	7000	7000	8400

NOTE: MINIMUM ENERGY REQUIREMENT OF HAMMER BASED ON PLAN LENGTH OF PILES.  
ALL PILE SHALL BE DRIVEN TO THE MINIMUM PENETRATIONS AND TO NOT LESS THAN THE DESIGN BEARINGS NOTED.  
PREBORE FOR PILES AT END BENT NO. 1 TO ELEV. 830.0.  
MANUFACTURED PILE POINT REINFORCEMENT SHALL BE USED ON ALL PILES IN THIS STRUCTURE. SEE SPECIAL PROVISIONS.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION  
UIP (44'-56'-56'-53') Cont. Concrete Voids Slab Spans

State	Proj. No.	Sheet No.
MO		81
SEC/SUR 9	TWP 48N RGE 9W	

General Notes:

Design Specifications:  
AASHTO - 1996 and Interims thru 2000  
Load Factor Design

Design Loading:  
HS20-44 Modified  
No Future Wearing Surface  
Earth - 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.

Design Unit Stresses:  
See Sheet No. 2.

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

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

Resin Anchors System  
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 "Bridge Approach Slab (Bridge)".

The 3/8" diameter resin anchor systems shall have a minimum ultimate pullout strength of 15.5 kips in concrete with  $f'_c=4000$  psi, see special provisions.

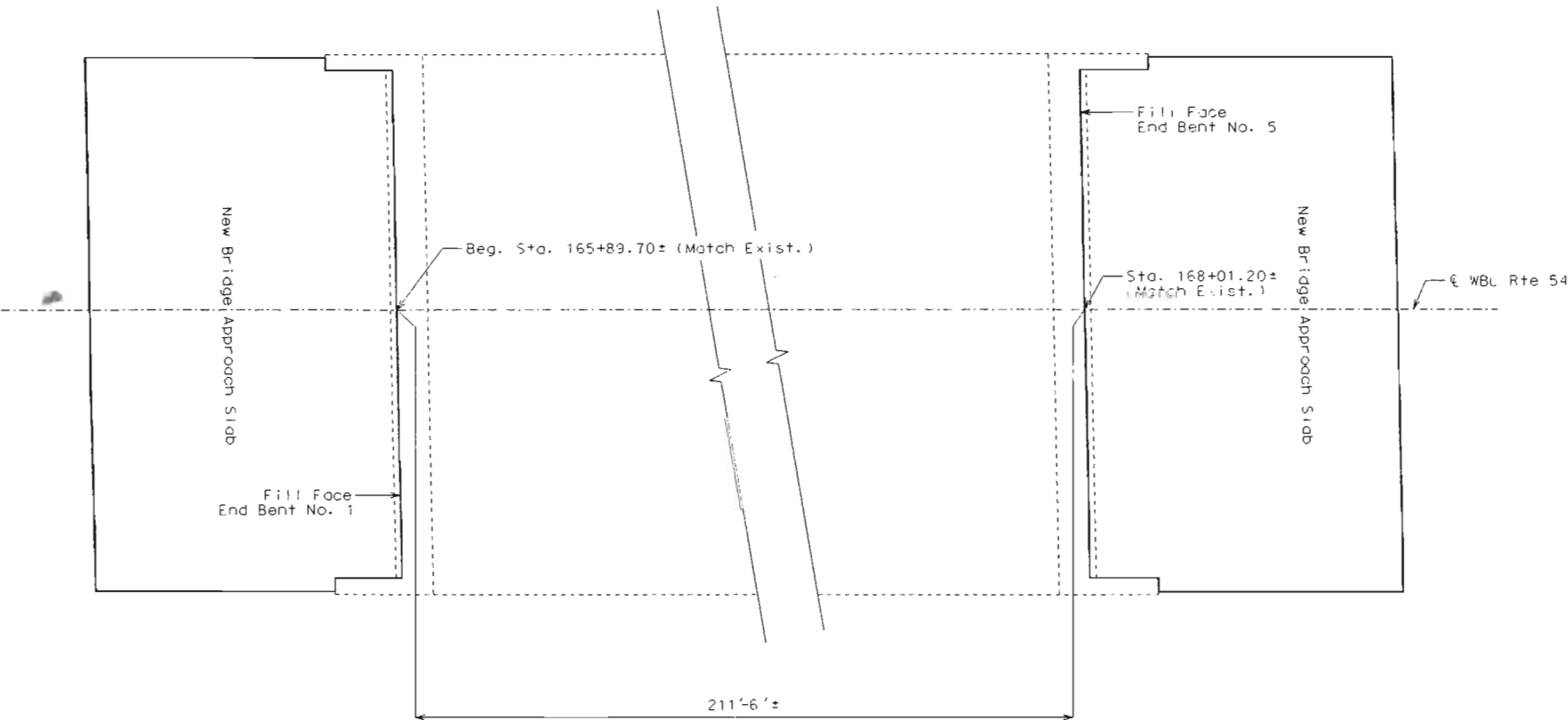
An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 3/8" threaded rod stud.

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

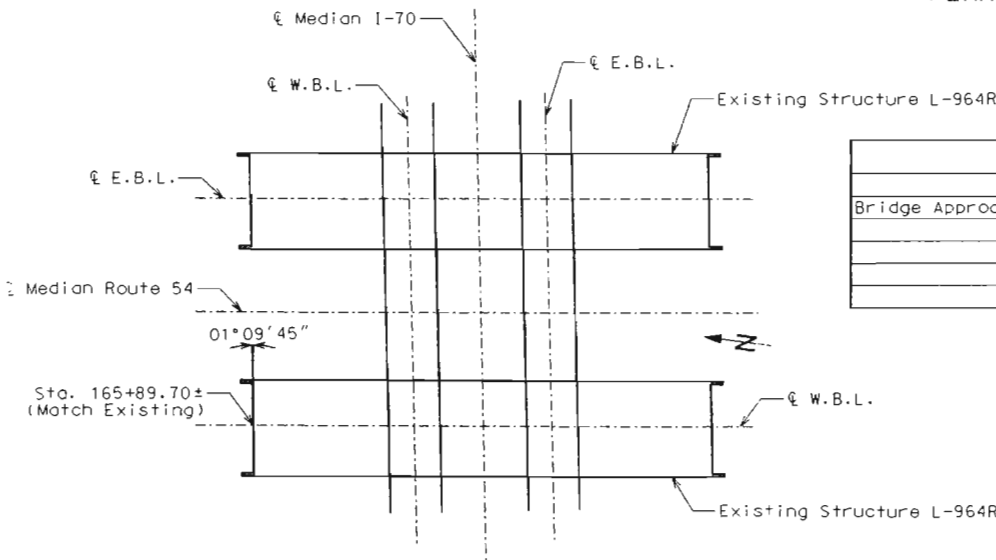
Contractor shall verify all dimensions in field before ordering new material.

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

Traffic  
See roadway plans for traffic control.



PLAN



LOCATION SKETCH

Estimated Quantities			
Item	Substr.	Superstr.	Total
Bridge Approach Slab (Bridge)	Sq. Yd.	236	236



REPAIRS TO BRIDGE OVER RTE I-70  
STATE ROAD FROM RTE FF SOUTH TO BUS. 54  
IN KINGDOM CITY  
PROJECT NO. STA. 165+89.70±  
(MATCH EXISTING)  
JOB NO. J5P0800 RTE. 54 (WBL)

CALLAWAY COUNTY  
Date: 12/07/01

STD. 706.35  
L09642

Designed NOV. 2001  
Detailed NOV. 2001  
Checked NOV. 2001

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

Sheet No. 1 of 2

BRIDGE REPAIRS TO BRIDGE OVER RTE I-70 IN KINGDOM CITY MO 12/05/2001

# GENERAL NOTES:

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

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

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

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

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

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

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

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

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

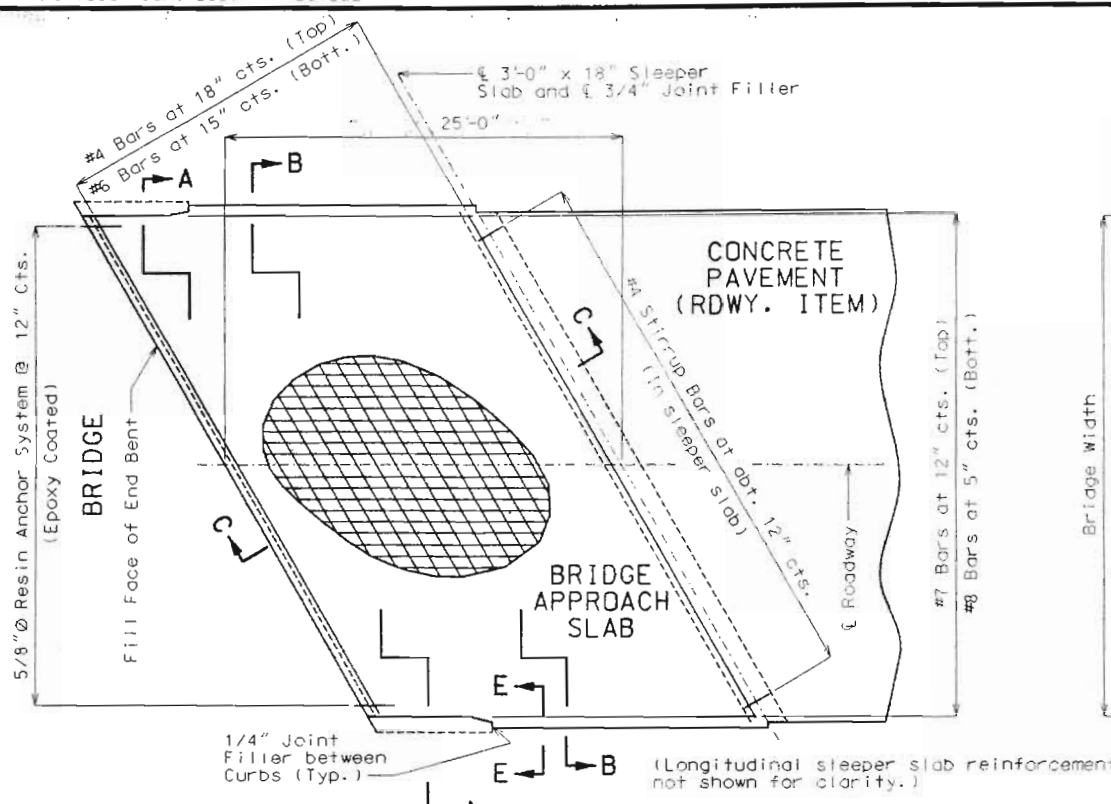
For Concrete Pavement details, see roadway plans.

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

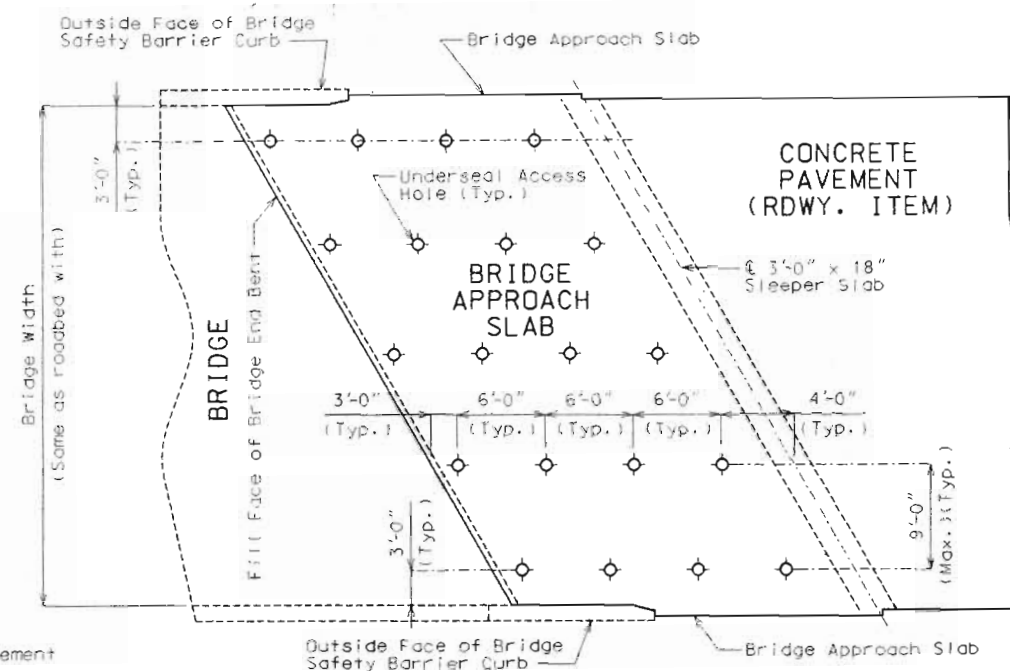
At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

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

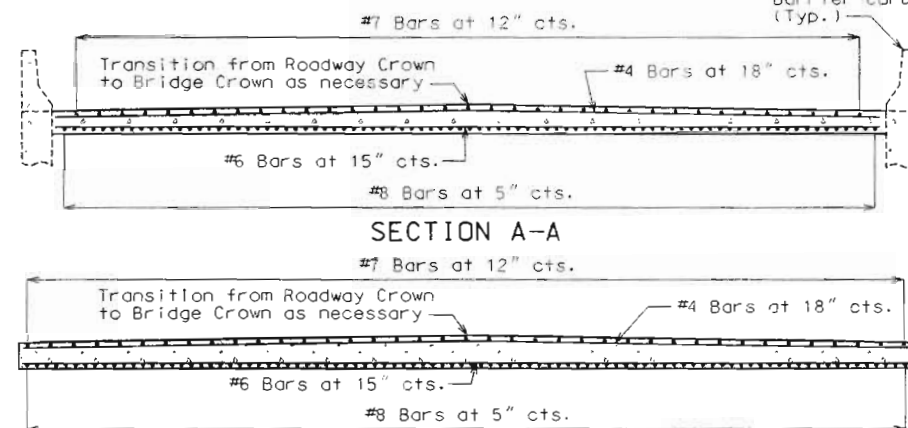
Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.



PART PLAN SHOWING REINFORCEMENT

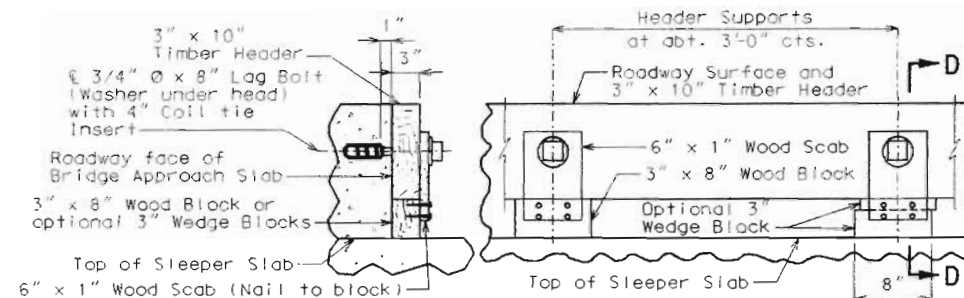


PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



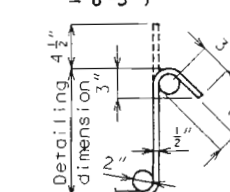
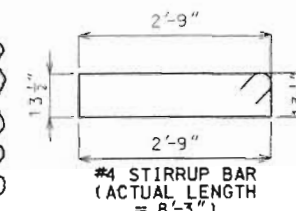
SECTION B-B

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



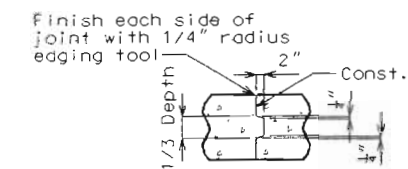
SECTION D-D  
Note: Remove timber header when concrete pavement is placed.

PART ELEVATION  
DETAILS OF TIMBER HEADER

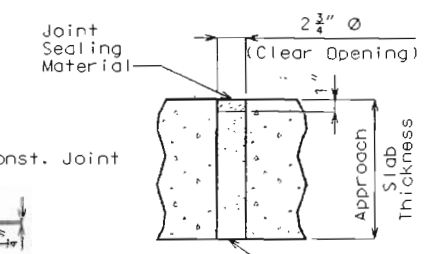


TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

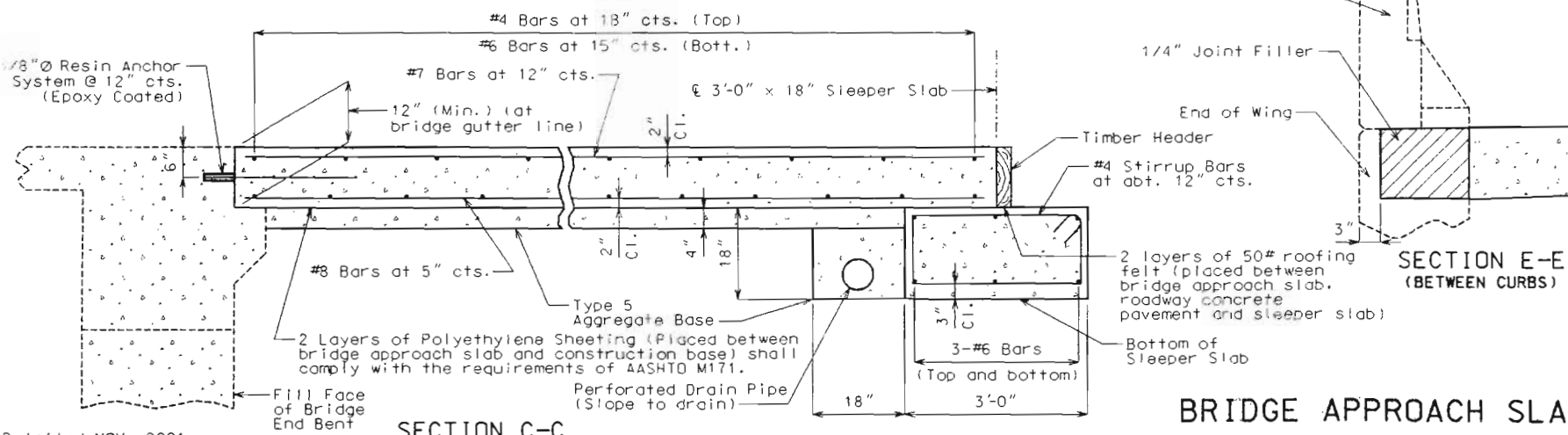
Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



SECTION C-C

BRIDGE APPROACH SLAB

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

Detailed NOV. 2001  
Checked NOV. 2001

Sheet No. 2 of 2

CALLAWAY COUNTY L09642



MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

UIP (44'-56'-56'-53') Cont. Concrete Voided Slab Spans

State	Job No.	Sheet No.
MO	J5P0800	8
SEC/SUR 9	TWP 48N	RGE 9W

CONTRACT I.D. 020215-504

General Notes:

Design Specifications:  
AASHTO - 1996 and Interims thru 2000  
Load Factor Design

Design Loading:  
HS20-44 Modified  
No Future Wearing Surface  
Earth - 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.

Design Unit Stresses:  
See Sheet No. 2.

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

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

Resin Anchors System  
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 "Bridge Approach Slab (Bridge)".

The 5/8" diameter resin anchor systems shall have a minimum ultimate pullout strength of 15.5 kips in concrete with f'c=4000 psi, see special provisions.

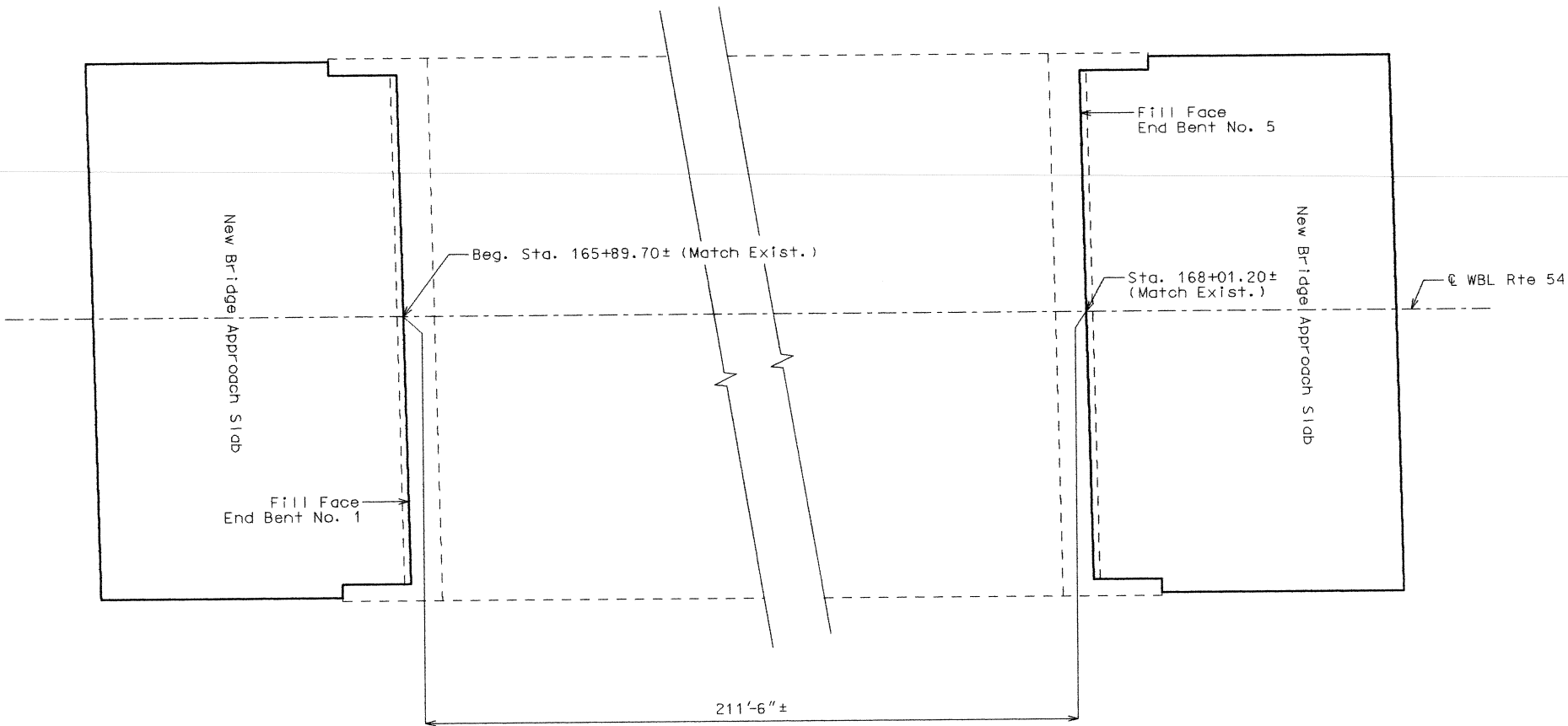
An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8" threaded rod stud.

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

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

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

Traffic  
See roadway plans for traffic control.



PLAN

Final Quantities

Item	Substr.	Superstr.	Total
Bridge Approach Slab (Bridge)	Sq. Yd.	236	236

FINAL PLANS

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

SIGNATURE

DATE

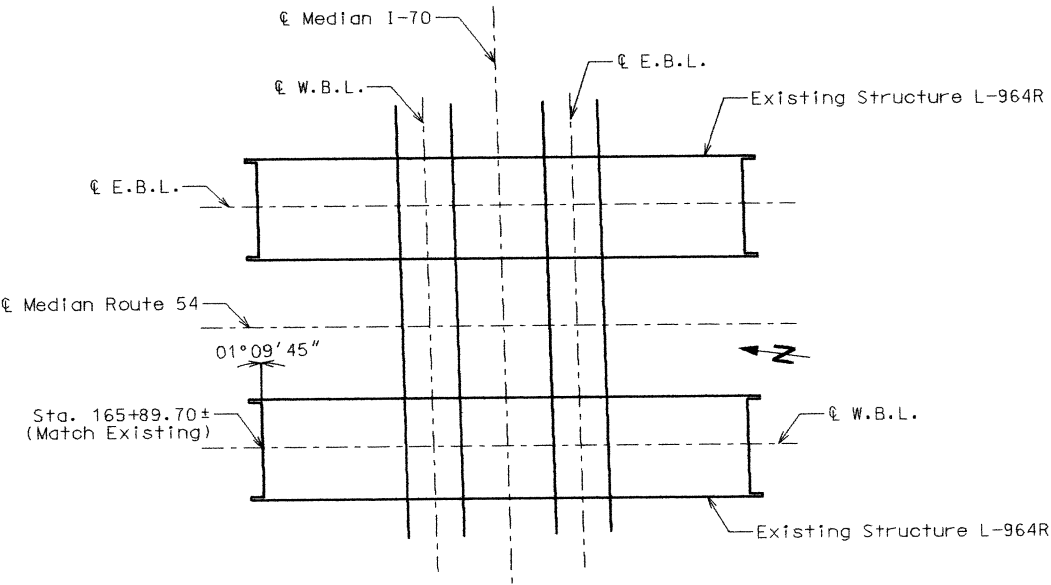
REPAIRS TO BRIDGE OVER RTE I-70

CALLAWAY COUNTY

Date: / /

STD. 706.35

L09642



LOCATION SKETCH

Designed NOV. 2001  
Detailed NOV. 2001  
Checked NOV. 2001

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

Sheet No. 1 of 2



State	Job No.	Sheet No.
MO	J5P0800	9

GENERAL NOTES: CONTRACT I. D. 020215-504

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

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

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

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

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

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

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

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

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

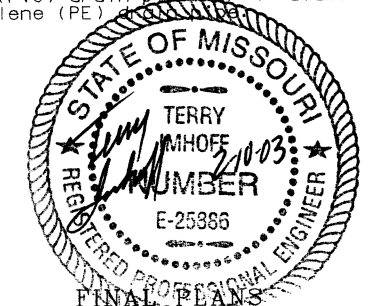
For Concrete Pavement details, see roadway plans.

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

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

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

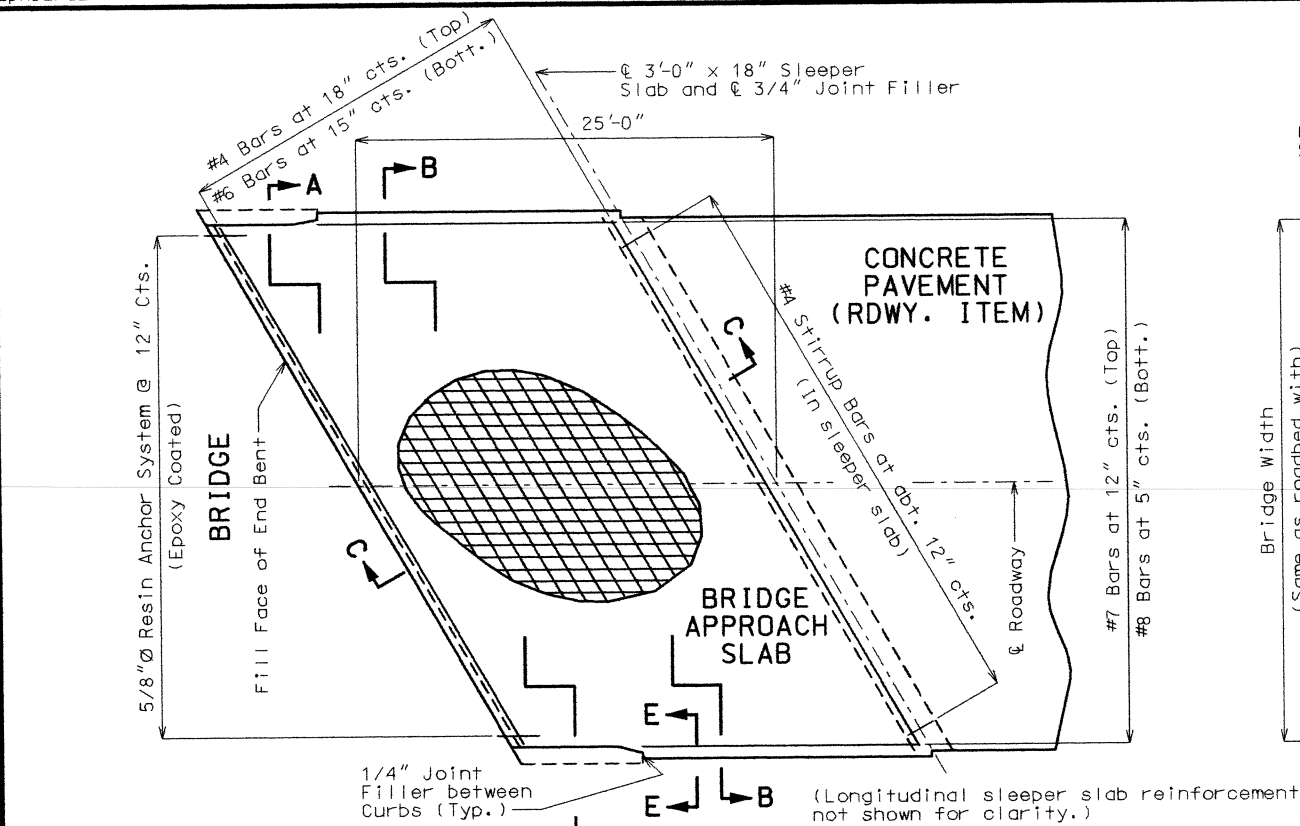
Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) pipe.



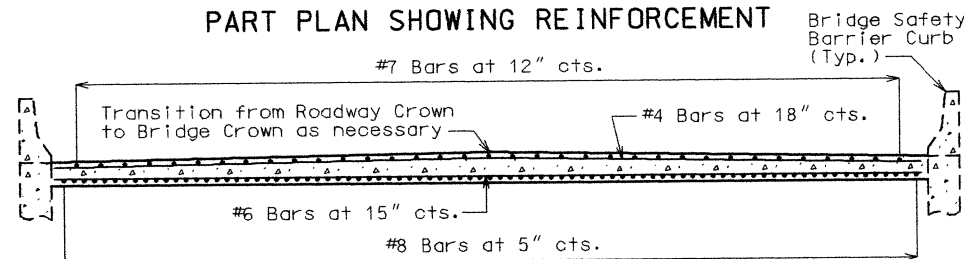
I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE. AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT, I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS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

SIGNATURE Tony Lohoff DATE 2-10-03

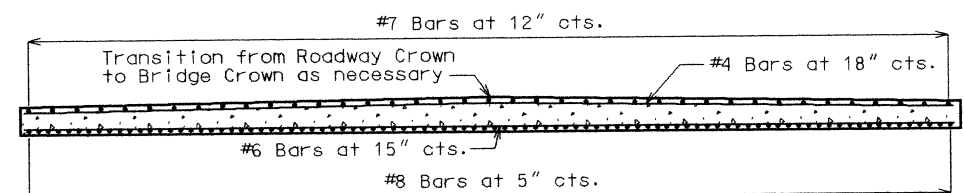
CALLAWAY COUNTY L09642



PART PLAN SHOWING REINFORCEMENT

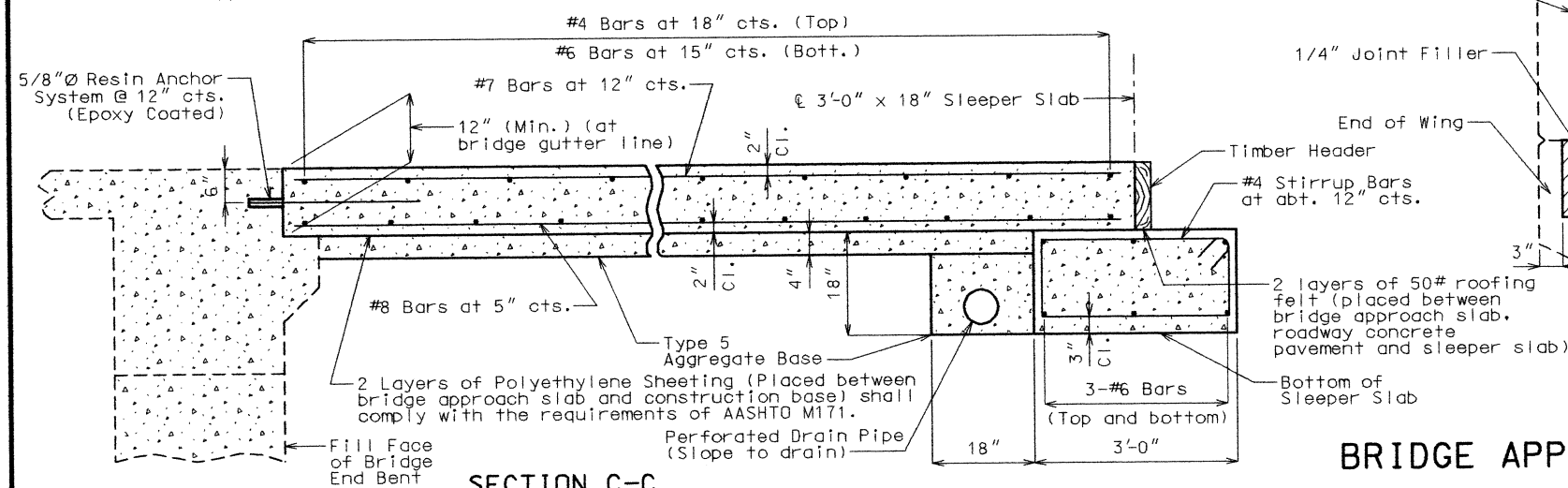


SECTION A-A



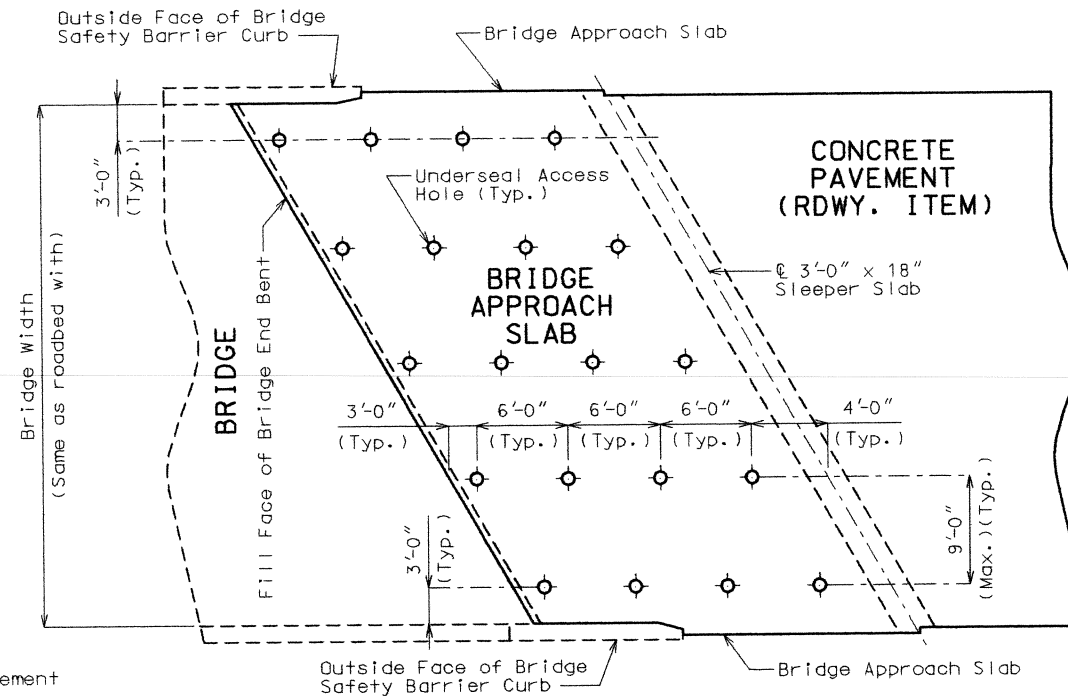
SECTION B-B

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

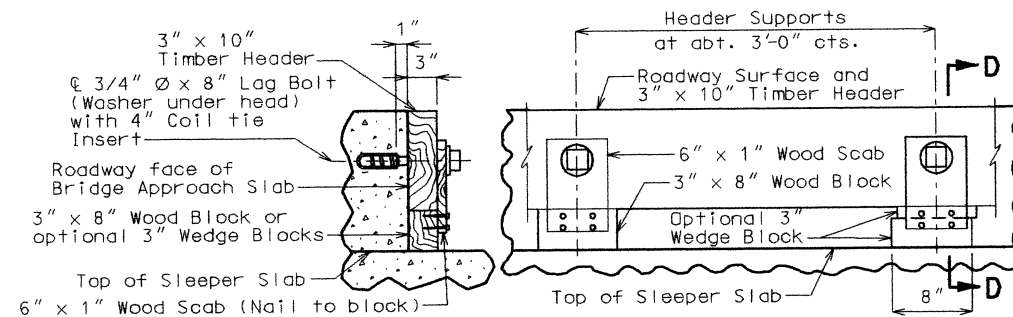


SECTION C-C

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



PART PLAN  
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

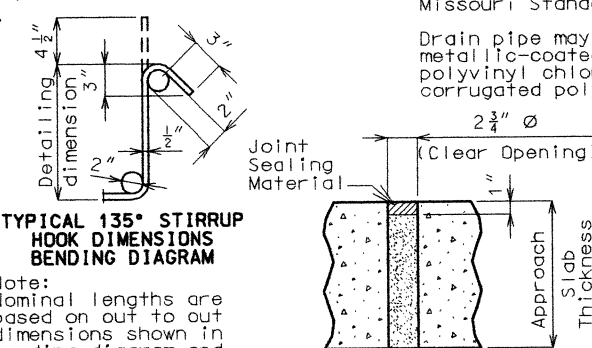


SECTION D-D

PART ELEVATION

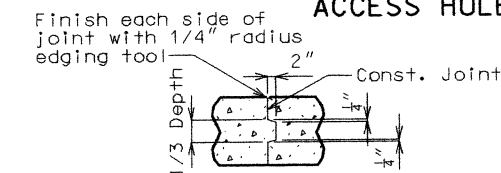
### DETAILS OF TIMBER HEADER

Note: Remove timber header when concrete pavement is placed.



TYPICAL 135° STIRRUP  
HOOK DIMENSIONS  
BENDING DIAGRAM

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



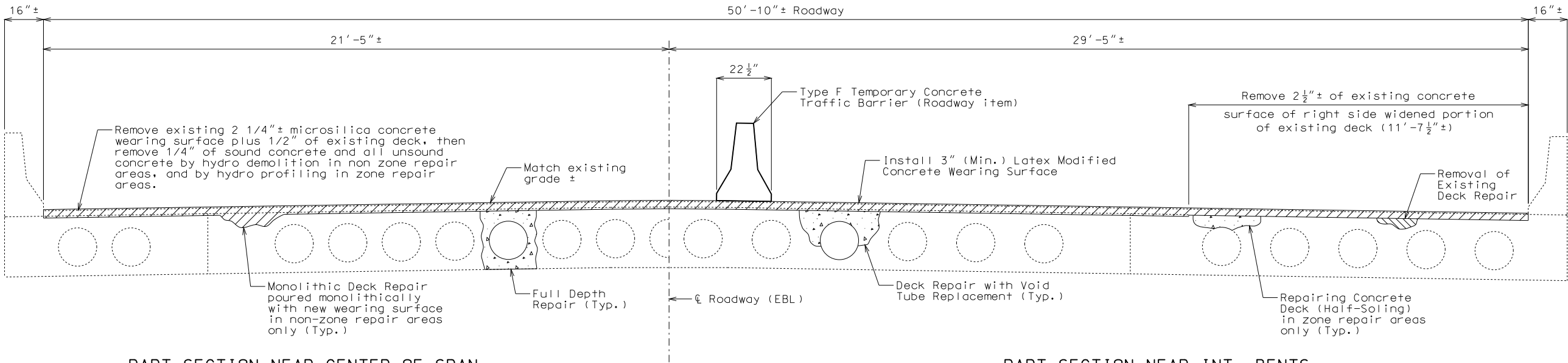
CONST. JOINT DETAIL  
(IF REQUIRED)

SECTION E-E  
(BETWEEN CURBS)

BRIDGE APPROACH SLAB

U.I.P. AND REHABILITATE EXISTING (44'-56'-56'-53') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW 1°9'45" RA)

SEC/SUR 9 TWP 48N RGE 9W



PART SECTION NEAR CENTER OF SPAN

PART SECTION NEAR INT. BENTS

Note: For deck repair details, see Sheet No. 2.  
Rapid-set concrete may be used for Repairing Concrete Deck (Half-Soling).

General Notes:

**Design Specifications:**  
2002 AASTHO LFD (17th Ed.) Standard Specifications  
Bridge Deck Rating = 7

**Design Loading:**  
HS20-44 (1990)

**Design Unit Stresses:**  
Class B-1 Concrete (Half-Soled Repair and Deck Repair with Void Tube Replacement)    f'c = 4,000 psi

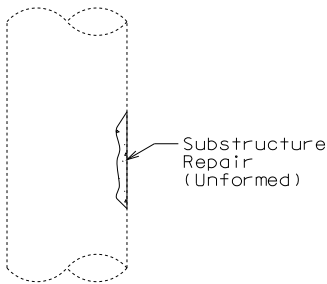
**Miscellaneous:**  
Roadway surfacing adjacent to bridge ends shall match new bridge overlay (Roadway item).

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

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

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

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



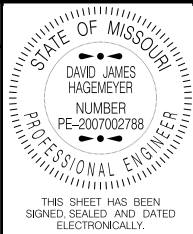
DETAIL OF SUBSTRUCTURE REPAIR AT INT. BENT NO. 2

Estimated Quantities		
Item		Total
Removal of Concrete Wearing Surface	sq. foot	10,751
Removal of Existing Deck Repair	sq. foot	250
Bridge Approach Slab (Major Road)	sq. yard	292
Latex Modified Concrete Wearing Surface	sq. yard	1195
Substructure Repair (Unformed)	sq. foot	50
* Repairing Concrete Deck (Half-Soling)	sq. foot	710
* Monolithic Deck Repair	cu. yard	3.1
Full Depth Repair	sq. foot	108
Total Surface Hydro Demolition	sq. yard	763
Deck Repair with Void Tube Replacement	sq. foot	50
* Hydro Surface Profiling	sq. yard	431

\* Monolithic Deck Repair will be made at a fixed unit price (See Special Provisions)  
\*\* In special repair zones

REPAIRS TO BRIDGE:  
ROUTE 54 (EBL) OVER ROUTE I-70  
IN KINGDOM CITY  
BEG. STA. 165+87.58± (Match Existing)

STD. 609.00  
STD. 617.20



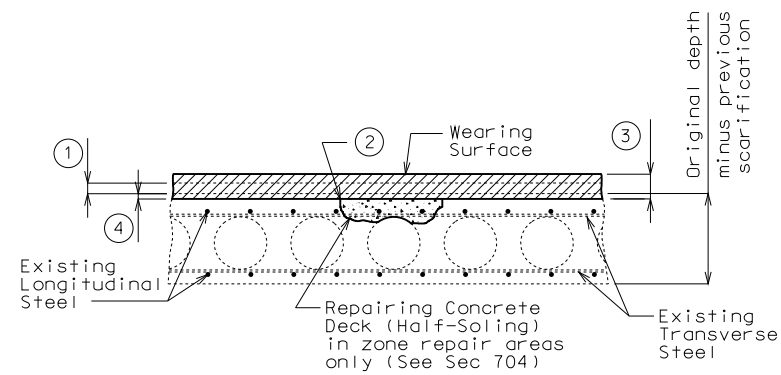
DATE PREPARED 2/8/2017	
ROUTE 54	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CALLAWAY	
JOB NO. J5P3119	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. L09643	

DESCRIPTION	DATE

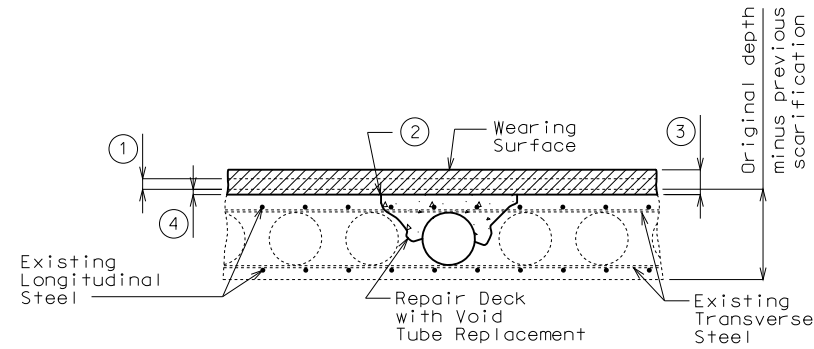
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

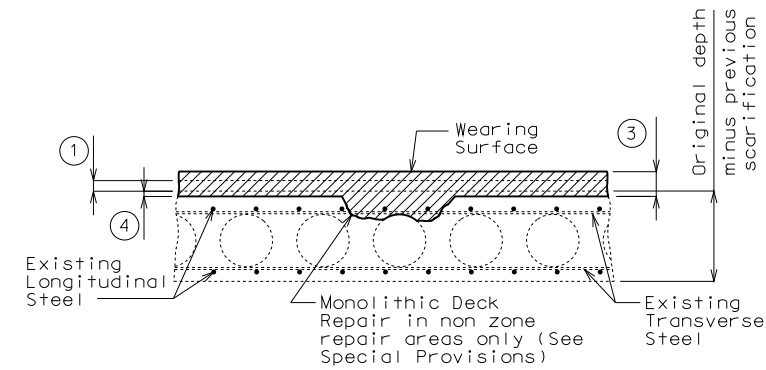
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



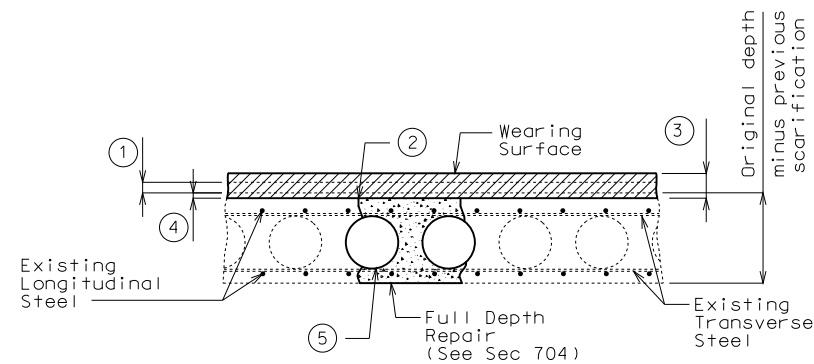
HALF-SOLED REPAIR



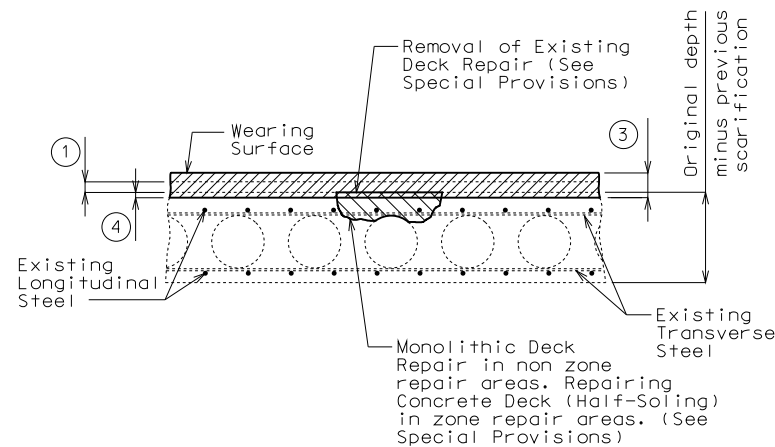
DECK REPAIR WITH VOID TUBE REPLACEMENT



MONOLITHIC DECK REPAIR

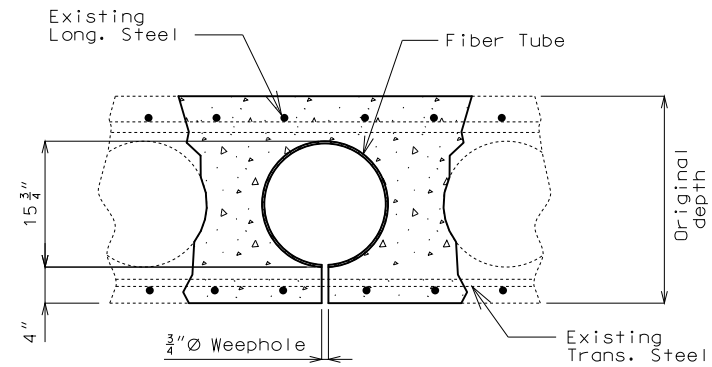


FULL DEPTH REPAIR



REMOVAL OF EXISTING DECK REPAIR

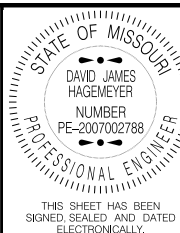
DECK REPAIR DETAILS



SECTION SHOWING VOID TUBE REPLACEMENT

Notes:  
Fiber tubes for producing voids shall have an outside diameter of 15 3/4" and a wall thickness of 0.25" and shall be anchored to joists carrying the floor form at not more than 4'-0" centers.  
One 3/4"Ø Weephole shall be provided at 2" from each end of each new void.

- ① Remove existing wearing surface plus 1/2" of existing deck. In the widened portion of the existing deck, remove 2 1/2" of existing concrete surface.
- ② One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- ③ 3" (Min.) Latex Modified Concrete Wearing Surface
- ④ Total surface hydro demolition of existing deck 1/4" min. of sound concrete and all deteriorated concrete in non zone repair areas.
- ⑤ Reform existing weephole, if encountered.



DATE PREPARED  
2/8/2017  
ROUTE 54 STATE MO  
DISTRICT BR SHEET NO. 2  
COUNTY CALLAWAY  
JOB NO. J3P3119  
CONTRACT ID.

PROJECT NO.  
BRIDGE NO. L09643

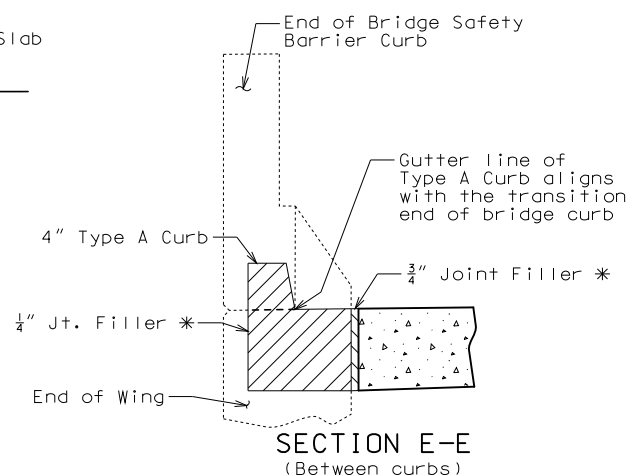
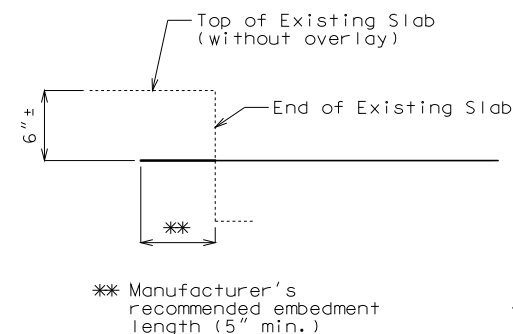
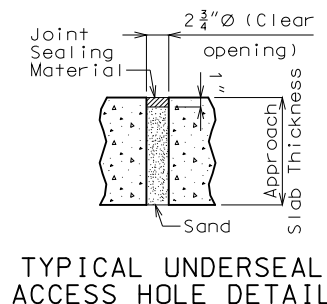
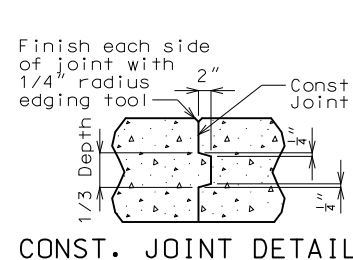
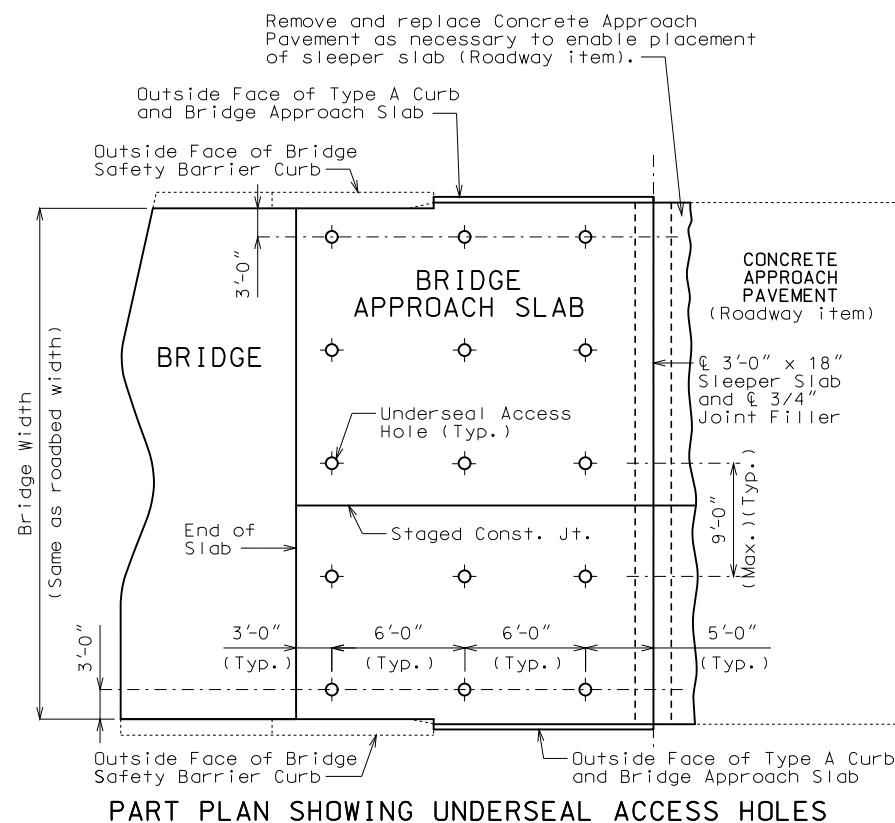
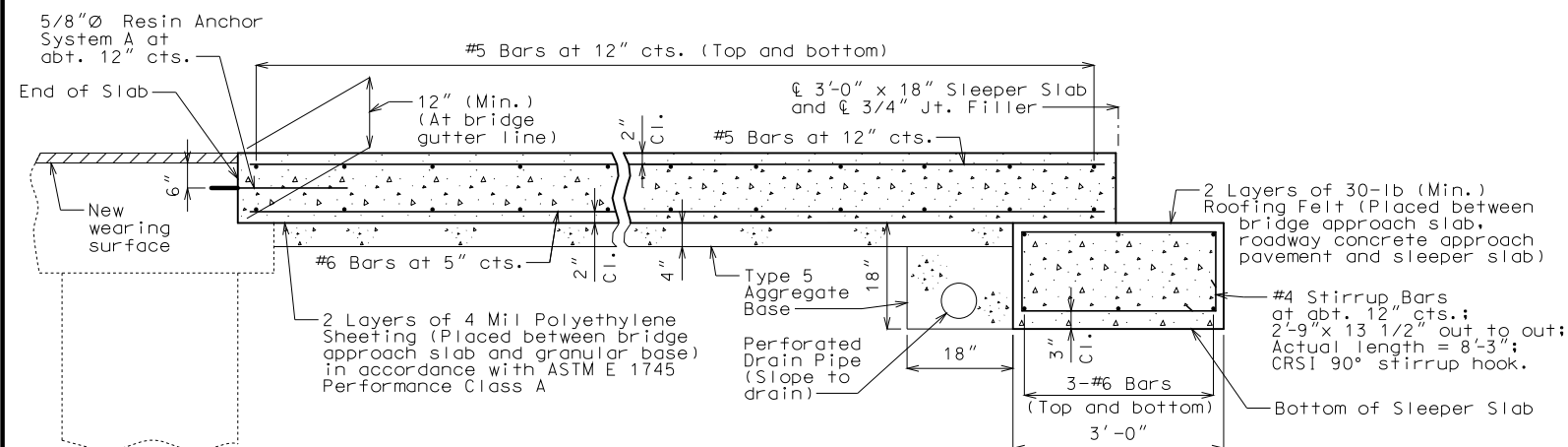
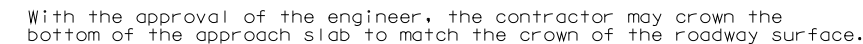
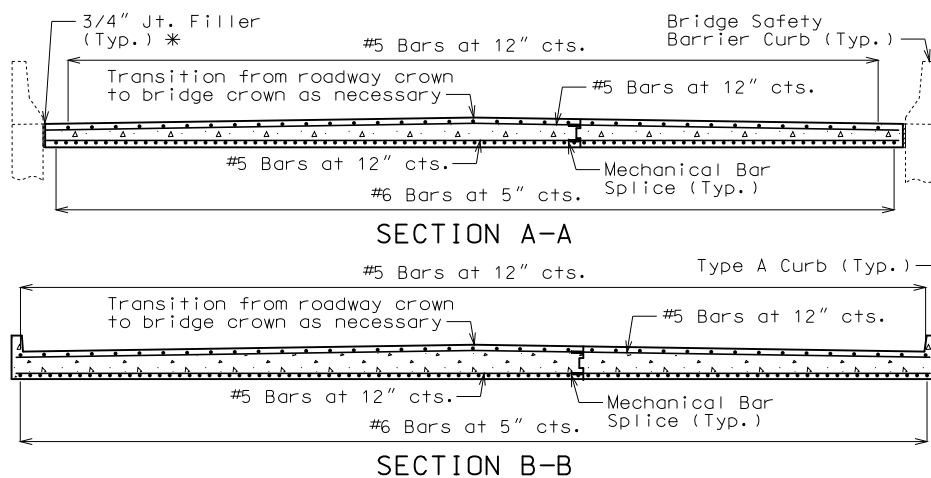
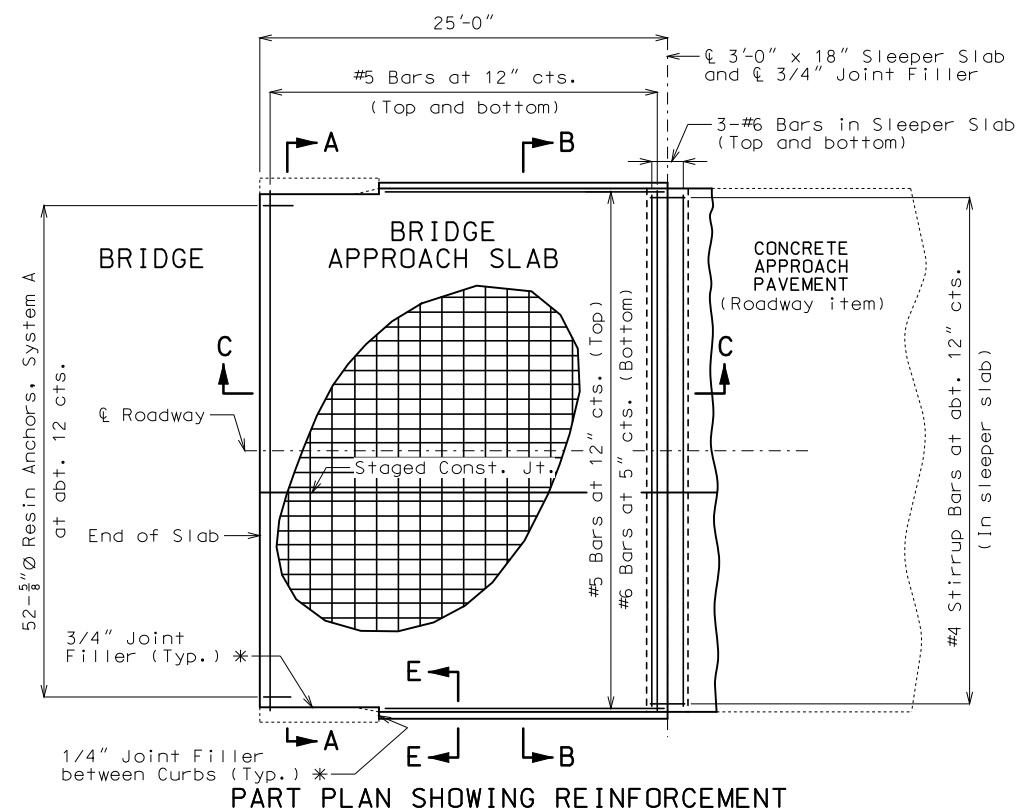
DESCRIPTION	DATE

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



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





General Notes:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ( $f'c = 4,000$  psi).

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

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #5 bars 29".

Mechanical bar splices shall be in accordance with Sec 710. (Estimated 56 splices per slab)

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

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

See roadway plans for location of staged construction joint.

For Concrete Approach Pavement details, see roadway plans.

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

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the sleeper slab, underdrain, type 5 aggregate base, joint filling and other exposures as shown on the plan, incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major Road) per square yard.

\* Seal joint between vertical face of approach slab and wing with Silicone Joint Sealant for Saw Cut and Formed Joints in accordance with Sec 717.

Resin Anchor Notes:

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

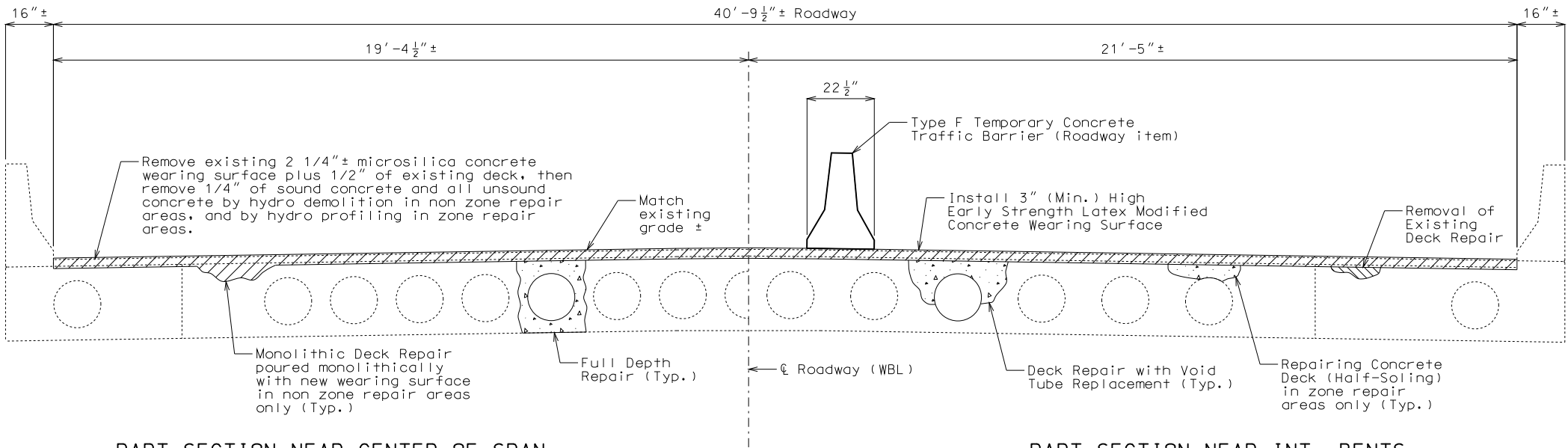
Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major Road).

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

An epoxy coated #5 Grade 60 reinforcing bar 2'-0" long shall be substituted for the 5/8"Ø threaded rod.



U.I.P. AND REHABILITATE EXISTING (44'-56'-56'-53') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW 1°9'45" RA)



PART SECTION NEAR CENTER OF SPAN

PART SECTION NEAR INT. BENTS

Note: Rapid-set concrete may be used for Repairing Concrete Deck (Half-Soling).

General Notes:

Design Specifications:  
2002 AASTHO LFD (17th Ed.) Standard Specifications  
Bridge Deck Rating = 7

Design Loading:  
HS20-44 (1990)

Design Unit Stresses:  
Class B-1 Concrete (Half-Soled Repair and Deck Repair with Void Tube Replacement) f'c = 4,000 psi

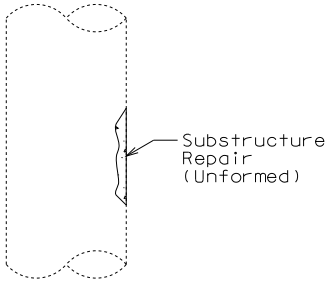
Miscellaneous:  
Roadway surfacing adjacent to bridge ends shall match new bridge overlay (Roadway item).

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

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

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

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



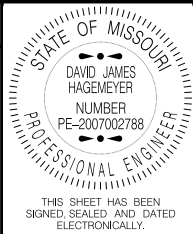
DETAIL OF SUBSTRUCTURE REPAIR AT INT. BENTS NO. 2 & 4

Estimated Quantities		
Item		Total
Removal of Concrete Wearing Surface	sq. foot	8627
Removal of Existing Deck Repair	sq. foot	1200
Latex Modified High Early Strength Concrete Wearing Surface	sq. yard	959
Substructure Repair (Unformed)	sq. foot	100
** Repairing Concrete Deck (Half-Soling)	sq. foot	570
* Monolithic Deck Repair	cu. yard	2.5
Full Depth Repair	sq. foot	86
Total Surface Hydro Demolition	sq. yard	613
Deck Repair with Void Tube Replacement	sq. foot	50
** Hydro Surface Profiling	sq. yard	346

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

\*\* In special repair zones

REPAIRS TO BRIDGE:  
ROUTE 54 (WBL) OVER ROUTE I-70  
IN KINGDOM CITY  
BEG. STA. 165+89.70± (Match Existing)



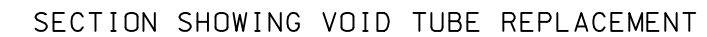
DATE PREPARED 2/8/2017	
ROUTE 54	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CALLAWAY	
JOB NO. J5P3119	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. L09644	

DESCRIPTION	DATE

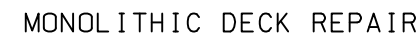
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

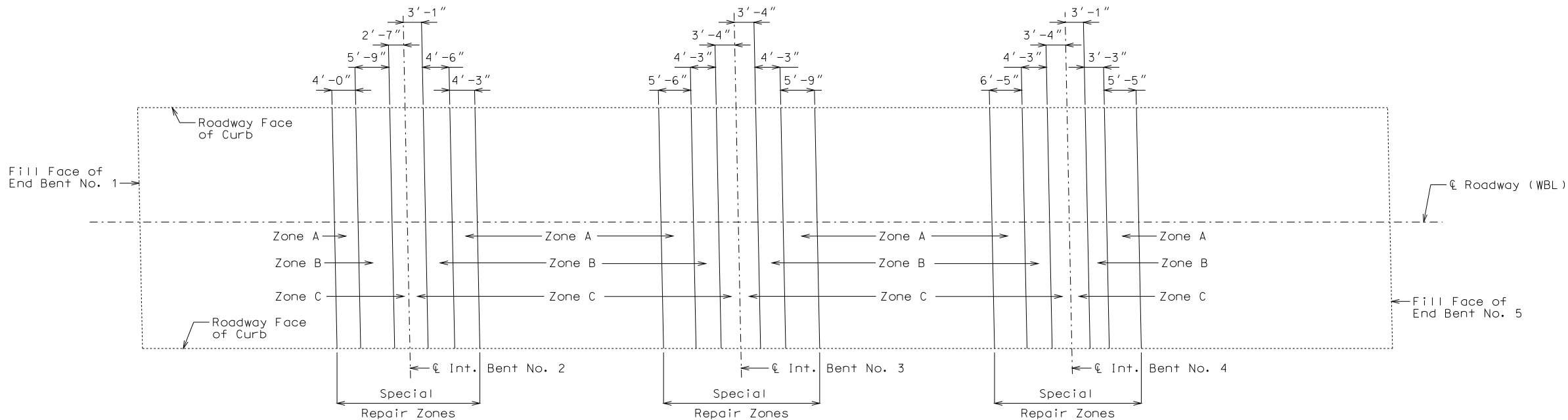


One 3/4"Ø Weephole shall be provided at 2" from each end of each new void.



## DECK REPAIR DETAILS

- ① Remove existing wearing surface plus 1/2" of existing deck.
- ② One inch vertical side shall be established outside the deteriorated area. See Sec 704.
- ③ 3" (Min.) for Latex Modified High Early Strength Concrete Wearing Surface
- ④ Total surface hydro demolition of existing deck 1/4" min. of sound concrete and all deteriorated concrete in non zone repair areas.
- ⑤ Reform existing weephole, if encountered.



PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

Notes:  
Any half-soling required in the areas designated as special repair zones shall be completed in alphabetical sequence. Any repair in the remainder of the bridge that is adjacent to Zone A and not designated as a special repair zone shall be completed after work in special repair zones.

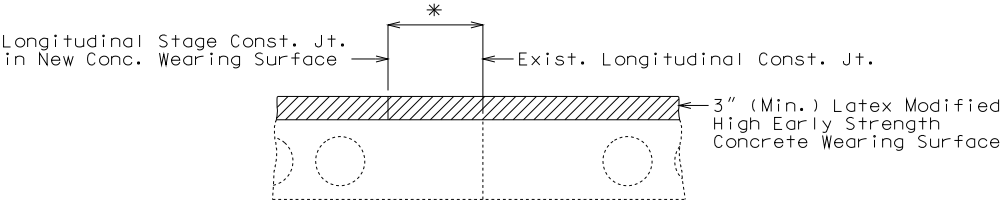
Removal and repair shall be completed in one special repair zone and concrete shall have attained a compressive strength of 3200 psi before work can be started in the next special repair zone. Before placing concrete in areas adjacent to areas of subsequent repair, the concrete shall be separated with a material such as polyethylene sheets to aid in removal of old concrete.

Zones with the same letter designation may be repaired at the same time.

If any single repair area does not exceed 4 square feet in size and the total repair within a special repair zone does not exceed 12 square feet, the special repair zone requirement does not apply for that zone. Any damage sustained to the void tube as a result of the contractor's operations shall be patched or replaced as required by the engineer at the contractor's expense.

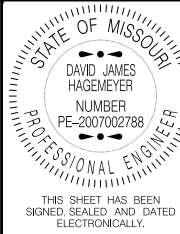
An exposed void in the deck shall be patched as approved by the engineer in a manner that shall maintain the void area completely free of concrete. Cost of patching an exposed void will be considered completely covered by the contract unit price for Repairing Concrete Deck (Half-Soling).

When a deteriorated portion of the void tube is beyond the point of patching as determined by the engineer, the portion of the deteriorated void tube shall be replaced. The void area shall be maintained completely free of concrete. Cutting of the longitudinal reinforcing steel will not be permitted. The fiber tubes for producing the voids shall have an outside diameter with the wall thickness the same as the existing tubes and anchored at not more than the original spacing. Cost of replacing the void tube will be considered completely covered by the contract unit price for Deck Repair with Void Tube Replacement.



PART SECTION AT LONGITUDINAL CONSTRUCTION JOINTS

\* Adjust the stage construction joint for the new concrete wearing surface to a clearance of 6 inches minimum from the existing longitudinal construction joint.



DATE PREPARED 2/8/2017	
ROUTE 54	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY CALLAWAY	
JOB NO. J5P3119	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. L09644	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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